PEBBLE PROJECT
ENVIRONMENTAL BASELINE DOCUMENT
2004 through 2008

CHAPTER 15.
FISH AND AQUATIC INVERTEBRATES
Bristol Bay Drainages

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ACRONYMS AND ABBREVIATIONS

ºC	degrees Celsius
ºF	degrees Fahrenheit
µS/cm	microSiemens per centimeter
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ASCI	Alaska Stream Condition Index
AWC	Anadromous Waters Catalog
CALC	Chronic Aquatic Life Criteria
cfs	cubic feet per second
CPUE	catch per unit effort
DO	dissolved oxygen
EBD	Environmental Baseline Document
EPT	Ephemeroptera, Plecoptera, and Trichoptera
FG	Fluvial Geomorphology Study Site
GIS	Geographical Information System
GPS	Global Positioning System
HSC	Habitat Suitability Criteria
Km	Kilometer(s)
km^2	square kilometer(s)
KR	Koktuli River mainstem
m^2	square meter(s)
m^3/sec	cubic meters per second
mg/L	milligram per liter
mi^2	Square Mile(s)
NFK	North Fork Koktuli River
PHABSIM	Physical Habitat Simulation (model)
RK	River Kilometer
RM	River mile
sf	square foot/feet
SFK	South Fork Koktuli River
SNTEMP	Stream Network Temperature (model)
TDS	Total Dissolved Solids
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
UT	Upper Talarik Creek
WAD	weak acid dissociable
WSE	water surface elevation

15. FISH AND AQUATIC INVERTEBRATES

15.1 Fish—Mine Study Area

15.1.1 Introduction

Numerous fish resource studies were conducted in the mine study area (Figure 15.1-1) from 2004 through 2008. These studies were conducted along a length of more than 236 miles (380 kilometers) of stream habitat in the North Fork Koktuli (NFK), South Fork Koktuli (SFK), and Upper Talarik (UT) watersheds, as well as in the upper Koktuli River (KR). Chapter 15, Section 15.1 of the Environmental Baseline Document (EBD) is a summary of the methods and results of the fish resource studies conducted in the mine study area during the 2004 through 2008 study period. In addition, Chapter 15, Section 15.1 synthesizes results of these studies with data collected during other Pebble Project studies in other resource areas, such as water quality, aquatic macroinvertebrates, hydrology, and wildlife.

Due to the large volume of fish resource data collected, there are seven appendices to Chapter 15, Section 15.1. These appendices are listed below.

- Appendix 15.1A, Fish Species Life History Information
- Appendix 15.1B, Reach Analysis
- Appendix 15.1C, Instream Flow: Main Channel Habitat Study
- Appendix 15.1D, Off-channel Habitat
- Appendix 15.1E, Open River Water Temperature Model
- Appendix 15.1F, Fluvial Geomorphology Studies
- Appendix 15.1G, Naming Convention Used for Waterbodies in the Mine Study Area

Appendices 15.1A and 15.1G are intended to provide readers with supplemental information that will enhance the reading of this EBD section. Appendix 15.1A describes the current distribution, behavioral and reproductive life history, and habitat requirements of fish species that may potentially be present in the mine study area based on previously documented species distributions in the Bristol Bay Basin. Appendix 15.1G describes the naming convention used to specify the numerous tributary streams and lakes in the study area. The other five appendices (i.e., Appendices 15.1B, 15.1C, 15.1D, 15.1E, and 15.1F) provide detailed methods and results of the EBD fish resource studies in a technical format.

In order to present the data in an ecologically meaningful framework, results of the fish resource studies are presented specific to each of the four watersheds included in the mine study area: the NFK, SFK, UT, and KR. In addition, the results discussion uses a reach-analysis approach to assess spatial trends throughout each of the major watersheds. Specifically, 18 distinct hydrological reaches within the NFK, SFK, and UT watersheds were delineated by R2 Resource Consultants, Inc. (R2), and Buell & Associates, Inc. based on a review of maps and existing data associated with multidisciplinary parameters influencing channel function. Parameters considered included: channel and valley morphology, geology, stream discharge, and surface water temperature. The review resulted in the delineation of six, five, and seven mainstem EBD reaches within the NFK, SFK, and UT, respectively (Figure 15.1-2). Additionally, tributaries and off-channel habitats within the three basins were assigned to one of the 18 mainstem

reaches based on the location of the tributary-mainstem confluence. Each tributary drainage was assigned to the mainstem reach that it flowed into, while off-channel habitats were assigned based on their proximity to the mainstem channel. While no formal reach delineation occurred for the mainstem KR, the portion of the KR in which fish resource studies were conducted during the 2004 through 2008 study period has been treated in the same manner as the other 18 delineated reaches for purposes of results analysis and presentation (Figure 15.1-2). The reach-analysis approach used herein is consistent with that used in Appendix 15.1B, which presents detailed results specific to each of the 19 delineated reaches for several of the fish resource studies.

To further facilitate the presentation of data, numerous graphics (including tables, figures, and maps) are included in Section 15.1. It is important for readers to note that these graphics were selected as representative examples of the larger body of data (as presented in the detailed technical Appendices 15.1B through 15.1F and in other EBD chapters) as a way to provide readers with summary images of fish resource patterns in the mine study area. Readers interested in more detailed results than those presented here should refer to the technical appendices and/or other EBD chapters for detailed information. When data sources for the selected graphics fall outside the realm of Section 15.1 and/or its associated appendices, references to the data source are provided in notes accompanying the tables and figures. In addition, the following map production notes will enhance the viewing of the maps included herein.

1. All maps are electronic and, although they can be printed for convenience, some detail is visible only when zoomed in to a finer scale on the electronic form. For example, some bar graphs included on the maps have data points that are close to zero, such that they appear to be absent on printed versions. However, when viewed electronically, readers will be able to more readily view such data points.

2. The maps were created and produced in a series, thus the legend was built for the map series and, as such, contains all possible data types for that series. Furthermore, the legend for any individual watershed map within a series may contain symbols for data that were not documented within that watershed and thus are not depicted on the map itself.

3. The map background orthophoto was generated by aerial photogrammetric methods using aerial photographs dated July 2004. As a result, the stream network seen on the image is represented as it was at one point in time during July 2004. In addition, locations were recorded using handheld Global Positioning System (GPS) units and thus have some level of error associated with them. This error is generally less for waypoints taken on the ground (on the order of a meter or two) than those taken from the air (up to 400 m). As a result of these two factors, GPS measurement error and a fixed orthophoto photo date, there are some data points on the maps that do not appear to be contained within a stream channel but are located nearby. When these data were checked for QAQC and found to be correct, then the marker identifying that point was left where it fell on the map and was not moved to be contained within a stream channel or waterbody. This is particularly important to keep in mind when viewing data collected in off-channel areas.

15.1.1.1 Regional Description

The following subsections contain brief descriptions of watershed characteristics and processes influencing the nature and condition of fish habitat and other aquatic resources in the mine study area. The fish resources of the study area are also described. Additionally, other wildlife species present in the

mine study area that are known to prey on fish are discussed herein, given potential predation effects that these species may have on fish distribution and abundance. Details on specific watershed physical characteristics in the study area, including climate, geology, physiography (topography and landforms), soils, surface water hydrology, and vegetation are provided in Chapters 2, 3, 4, 5, 7, and 13, respectively, and wildlife resources are discussed in detail in Chapter 16.

Climate

In the main part of the Bristol Bay drainages that is comprised of the Nushagak River and Kvichak River watersheds, the climate is transitional between maritime and continental. The narrow strip of Bristol Bay watershed along the northwestern side of the Alaska Peninsula is more maritime. Regional precipitation is greatest from late summer through early winter and is primarily generated by maritime storm systems. The most common circulation pattern consists of atmospheric lows moving in from the North Pacific Ocean along the Aleutian Island chain into the central and eastern Bering Sea (Albanese, 2008). These storms produce a strong southeasterly air flow near ground surface as winds spiral in a counter-clockwise direction toward the center of the low pressure cell. The storms are loaded with maritime moisture, with the heaviest precipitation occurring along the southeastern flanks of the Alaska and Aleutian ranges, outside of the Bristol Bay drainages. Considerable precipitation also occurs within the watershed, especially on higher terrain with southerly to easterly exposure. Less frequently, atmospheric lows situated at Kodiak Island and the Shelikof Strait area result in northeasterly air flows. Moisture is much lower with this flow pattern, but it still may produce precipitation in the main part of the watershed. By mid-winter, the lows tend to move into the central to eastern Gulf of Alaska, resulting in northerly to northwesterly surface-level air flows of colder, drier, continental air. (See Chapter 2 for details on climate.)

The long-term mean annual precipitation at the Iliamna Airport is 26.4 inches (67.1 centimeters), approximately 30 percent of which falls as snow. The average annual precipitation at the Iliamna Airport during the four complete water years of the study period (October 2004 through September 2008) was close to average: 25.3 inches (64.3 centimeters). The mean annual runoff at the USGS gaging stations on the lower reaches of the three mainstem channels in the mine study area (NFK, SFK, and UT) during the study period was 35 to 38 inches (88.9 to 96.5 centimeters), indicating that precipitation in the mine study area is considerably greater than at Iliamna.

Temperature, precipitation, and wind speed in the study area have been assessed at six meteorological stations (Chapter 2). Precipitation at those stations has been highest in the late summer and early fall (August through October) as a result of heavy rains. A secondary peak in precipitation occurs from January through March, when snow forms a persistent winter snow pack. Cold temperatures during the winter were persistent enough that streams generally froze. However, in some reaches of all three stream systems the influence of groundwater inflow has been sufficient to keep segments of the stream ice-free.

Physiography

Physiography, pertaining to the landforms and topographic features of the study area, has been described in Chapter 4 and summarized below. The mine study area encompasses portions of two physiographic divisions: the Nushagak-Big River Hills division and the Nushagak-Bristol Bay Lowlands division (Detterman and Reed, 1973).

The Nushagak-Big River Hills division includes an area of low, rolling hills separated by wide, shallow valleys. The elevation above sea level ranges from approximately 775 feet (236 meters) near the southwestern end of the study area to approximately 3,075 feet (937 meters) on Groundhog Mountain (northeast of Frying Pan Lake) and 2,760 feet (841 meters) on Kaskanak Mountain (west of Frying Pan Lake). The headwaters of the three main watersheds (NFK, SFK, and UT) lie within this division. All three drainage channels are highly sinuous with wide, shallow valleys and oxbow lakes. The NFK originates in the northern portion of the mine study area and flows to the west-southwest for 36 miles (58 km), before joining the SFK near the western extent of the mine study area. The SFK forms west of the Pebble Deposit and then flows south into Frying Pan Lake. From the Frying Pan Lake outlet, the SFK flows west-southwest for 34 miles (55 km), where it joins with the NFK to form the KR in the southwestern portion of the mine study area. The NFK and SFK surround a series of rolling hills west of Frying Pan Lake. The UT flows from its headwaters within the northeast portion of the mine study area to the south-southeast for 39 miles (62 km) into Iliamna Lake. A comparison of longitudinal profiles of the three rivers is depicted on Figure 15.1-4.

The Nushagak-Bristol Bay Lowlands division within the mine study area contains lowlands with abundant swamps and lakes. The topography in this division is relatively flat (maximum relief of a few hundred feet; Chapter 4), with most of the terrain gradually sloping toward Iliamna Lake. This division encompasses the lower portion of UT and a small portion of the lower section of SFK.

Vegetation

The vegetation in the three watersheds within the study area is predominately characterized by Shrub Vegetation Types (Chapter 13). Among these types, Dwarf Shrub Types are most common, accounting for over half the mapped area. Willows and alders cover hillsides, and willows occupy much of the riparian habitats. Forest Vegetation Types are scarcely represented in the study area. Small pockets of balsam poplar stands are found along the rivers. White spruce and paper birch are found in the northeast corner of the mapped area along the Upper Talarik, and form larger stands to the east of the study area in the Newhalen drainage. Wetland communities are common in the study area and have been mapped and described in detail in Chapter 14.

Geology

Glacial deposits formed by regional glaciation during the late-Wisconsin period dominate the surficial geology of the watersheds in the mine study area. Surficial deposits were first mapped by Detterman and Reed (1973) and were more recently studied by Hamilton and Klieforth (2010). The studies indicate that lobes of several large regional glaciers overrode the study area approximately 10,000 to 26,000 years ago, entering the watersheds from the north, northeast and south. Glaciers blocked the three major drainages of the mine study area (NFK, SFK, and UT) at various times. The lowlands at the headwaters of each of the drainages were filled with ice-dammed lakes resulting from glacial blockages. The lake basins are bounded by end moraine deposits and contain hummocky drift deposits with numerous kettle ponds. Terminal moraines enclose younger sets of glacial lakes during subsequent retreat (Hamilton and Klieforth, 2010). Surficial glacial lake deposits are particularly prevalent in the Wiggly Lake basin (upper NFK basin), Frying Pan Lake basin (upper SFK basin), and throughout the middle and upper part of the UT basins (Hamilton and Klieforth, 2010). Glacial lake deposits are generally composed of silt-rich sediment and have poor surface drainage. In contrast, outwash deposits that occur in portions of the NFK and SFK watersheds downstream of the lake basins consist of very porous coarse sediments.

Precipitation, snowmelt, and surface waters infiltrate rapidly in these areas and streams flowing across these deposits lose surface flow and in some reaches can go dry on a seasonal basis. Moraine and glacial drift deposits are also relatively porous and may contain numerous surface kettle ponds that drain to groundwater. The high storage capacity of the thick surficial materials, and to a lesser extent the surface ponds, in the study area attenuates high flows during wet periods and helps maintain base flows during dry periods.

Bedload transport has occurred through several modes and from various sources. Streambed cobble and gravel stones appear to be more angular upstream and more rounded downstream and are thought to have been transported during fall and spring freshets. Bedload also has been transported downstream by ice during breakup. Bedload sources have included the streambed, banks, and eroding terraces. Streambed fine sediment levels were conducive to good survival of incubating salmonid embryos in all three study rivers and appeared to be lowest in the NFK channel.

Fish Resources

The fish resources within the study area include five species of anadromous Pacific salmon, at least four species of non-anadromous salmonids, and numerous non-salmonid fishes. Detailed information regarding each of these species is provided in the specific watershed descriptions that follow. The runs of Pacific salmon inhabiting the study area fall within the Bristol Bay management area, which provides the largest commercial sockeye salmon fishery in the world as well as economically valuable fisheries for Chinook, chum, coho, and pink salmon (Jones et al., 2009). The Bristol Bay management area includes nine major river systems and is divided into five management districts. As a tributary to the Mulchatna and Nushugak rivers, the Koktuli River is a component of the Nushagak Management District. UT, as a tributary to Iliamna Lake and the Kvichak River, is a component of the Naknek-Kvichak Management District.

Non-salmon fishes also represent important components of subsistence and recreational fisheries in the Bristol Bay area. For example, species present in the mine study area that are used for subsistence purposes in the Kvichak River and Iliamna Lake area include arctic grayling, Dolly Varden, rainbow trout, several species of whitefish, burbot, and northern pike (Krieg et al., 2005). Several of these species are also targeted for sport harvest in the Bristol Bay sport fish management area, including arctic grayling, Dolly Varden, rainbow trout, and northern pike (Dye et al., 2006).

Wildlife Resources

Throughout the mine study area, several mammal and bird species that prey on fish have been documented. Many of these species are primarily carnivorous and heavily reliant on fish as part of their diet, while other species exhibit more opportunistic or omnivorous feeding behavior. Fish represent a smaller portion of the diet of the opportunistic feeders. Observations of the various fish predators in the mine study area were made during mammal and bird surveys conducted during the baseline study period. Summaries of the main fish predators are provided below (see Chapter 16 for detailed information).

Brown bears (*Ursus arctos*) are known to seasonally congregate along salmon-bearing streams and feed heavily on salmon during adult salmon migration and spawning seasons. Brown bear presence in the mine study area is well known, and bear observations by various Pebble Project field crews were common throughout the baseline study period. The presence and distribution of brown bears in the study area was

documented during large mammal and other wildlife surveys (Chapter 16, Section 16.2) and in the broader Bristol Bay region during studies by the Alaska Department of Fish and Game (ADF&G; Becker, 2003; Butler, 2007). Black bears (*U. americanus*) also feed on salmon, but are rare in the mine study area and generally avoid salmon-bearing streams when brown bears are present.

Red foxes (*Vulpes vulpes*) and gray wolves (*Canis lupus*) are canine species that consume fish as part of their diet. The red fox is an opportunistic predator and consumes a wide-variety of prey items, including both invertebrates and vertebrates. While gray wolves commonly hunt large mammal species such as caribou (*Rangifer tarandus*), recent studies in coastal Alaska and British Columbia suggest adult salmon may also be an important part of a wolf's diet, particularly during salmon spawning runs (Szepanski et al., 1999; Darimont and Reimchen, 2002; Darimont et al., 2008). Red foxes and gray wolves were observed during wildlife surveys conducted in the mine study area during the baseline study period (Chapter 16, Section 16.2). Pebble Project personnel also commonly reported red fox sightings in the mine study area. Wolf sightings in the mine study area were recorded, but to a lesser degree (Chapter 16, Section 16.2).

River otter (*Lontra canadensis*) and mink (*Neovison vison*) are small furbearing species that feed on a variety of prey items, including fish. These species are associated with riparian and aquatic habitats. River otters were observed in the mine study area in 2004 and 2005 (Chapter 16, Section 16.2), and river otter predation on spawning rainbow trout and other fish species was observed during fish studies conducted by R2 in 2008. While mink are common throughout the Bristol Bay region, they were not observed in the mine study area during the baseline wildlife surveys (Chapter 16, Section 16.2). The lack of direct observation in the mine study area may result from the low detectability of this small riparian species rather than their absence from the area (Cook and MacDonald, 2004a; Cook and MacDonald, 2004b).

Two raptor species in the mine study area—Osprey (*Pandion haliaetus*) and Bald Eagle (*Haliaeetus leucocephalus*)—consume fish as part of their diet. In particular, adult salmon, when available, make up a large part of the diet of Ospreys and Bald Eagles. The presence of these bird species in the mine study area was documented during raptor surveys conducted in 2004 and 2005 (Chapter 16, Section 16.3). Osprey and Bald Eagle nests were generally concentrated around riverine and lacustrine waterbodies.

There are several piscivorous (fish eating) bird species that occur in the mine study area (see Chapter 16, Sections 16.4 and 16.5). Observed species that regularly consume fish as part of their diets include: mergansers (*Mergus* spp.), loons (*Gavia* spp.), Red-necked Grebes (*Podiceps grisegena*), Double-crested Cormorants (*Phalacrocorax auritus*), gulls (*Larus* spp.), and Arctic Terns (*Stema paradisaea*). Yellowlegs (*Tringa* spp.) are also known to occasionally consume fish. Collectively, these species occur throughout the mine study area and are most commonly associated with riverine and lacustrine waterbody habitats.

While beavers (*Castor canadensis*) do not prey on fish, they are known to exert profound effects on hydrology, channel morphology, and aquatic habitat productivity, and subsequently affect the distribution of fish and other aquatic organisms (Butler, 1995; Collen and Gibson, 2001; Rosell et al., 2005). Beavers influence fish distribution and abundance in different ways: beaver activity can result in the creation and maintenance of fish spawning and rearing habitats, and/or beaver dams have the potential to prevent or delay fish movements. Beaver ponds (also referred to as beaver complexes) were common throughout the mine study area and were described as a distinct off-channel habitat type during aquatic habitat surveys conducted from 2004 through 2008. One hundred thirteen active beaver colonies were documented in the mine study area (Chapter 16, Section 16.2).

15.1.2 Study Objectives

The overall goal of the fish resource studies was to describe the baseline fish population characteristics and the aquatic habitat conditions and watershed processes that may potentially influence fish presence, distribution, and relative abundance. Baseline conditions refer to the habitats and associated fish populations and assemblages of aquatic biota as they currently exist in the watersheds. To address this overall goal, 13 studies, broadly consisting of three aquatic habitat assessments, six fish studies, and four instream flow habitat studies, were conducted during the 2004 through 2008 study period (Table 15.1-1). These studies are closely interrelated, yet each individual study was defined by its own specific study objectives.

In several cases, study objectives were geared towards specific types of waterbodies (rivers, streams, tributaries, off-channel habitats, lakes, and ponds) found within the three active river valleys in the mine study area. In particular, the fish resource studies often distinguish between mainstem, tributary, and off-channel habitats. Mainstem habitats are those that are located within the mainstem channel of the focal river or stream. For example, in the NFK watershed, the mainstem channel is the NFK river channel (NFK 1.0). Tributaries are streams that flow into and contribute water to other larger streams. In the example provided above, any of the streams that flow into the mainstem NFK river, such as NFK 1.190 and NFK 1.240, are thus classified as tributaries. Off-channel habitats are considered to be "off-channel", because they are located outside of the mainstem or tributary channel, yet are within the river's active valley. Off-channel habitats may have surface water connections to mainstem and tributary channels when flow levels are high enough to create hydrologic connections. These different types of habitats are depicted in Figure 15.1-4.

The aquatic habitat assessments were designed to provide a detail description of the types and amounts of aquatic habitat available in the mine study area. Specific study objectives for the aquatic habitat assessments are listed below.

- To describe channel morphology and valley form characteristics in mainstem and tributary channels
- To characterize riverine habitat types (e.g., pools, riffles, and runs/glides), their distribution throughout the river, as well as the amount of river and stream habitat available for fish
- To document the locations of special habitat features (e.g., tributaries, springs, seeps, and possible barriers to upstream fish migration) that may influence fish distribution and abundance throughout the mine study area
- To characterize the quality and quantity of off-channel habitat within representative off-channel habitat study areas

Overall, the fish studies were designed to describe fish species assemblages and patterns of fish distribution and abundance in the mine study area, as well as fish use of specific habitat types. The objectives of the fish studies are listed below.

- To document and describe patterns of fish distribution and relative abundance in mainstem, tributary, and off-channel habitats

- To describe and compare fish densities among mainstem, tributary, and off-channel habitat types
- To document fish presence during winter months when ice conditions are present
- To document the spatial and temporal distribution of adult anadromous salmon returning to and spawning in the mine study area
- To obtain annual abundance estimates of adult anadromous salmon

Existing habitats and fish populations are influenced by combinations of local and regional hydrology, geology, and climate. Understanding the current relationships between habitat and flow within the mainstem channels, as well as in off-channel areas, and the hydrodynamic influences on channel form and function are important for characterizing environmental baseline conditions. In addition, fluvial geomorphology studies can be used to describe channel form and to identify the fundamental physical and biological conditions and processes influencing channel morphology and the ways channels may change over time. These fundamental fluvial geomorphic conditions and processes include: the underlying local and upstream geology, hydrology, hydraulics, sediment supply, sediment transport, and biophysical influences. In turn, these various characteristics of channel form and function influence the quantity and quality of aquatic and terrestrial habitat for plants and animals dependent on the river environment for all or part of their life history. Thus, four main types of instream flow habitat studies were conducted in the mine study area during the 2004 through 2008 study period: mainstem channel instream flow habitat studies, off-channel instream flow habitat studies, water temperature monitoring and modeling, and fluvial geomorphology and spawning gravel quality studies. The objectives of these studies are listed below.

- To describe the relationships between stream flow and suitable fish habitat for target species at various life stages.
- To quantify the amount of fish habitat present under baseline flow conditions for target species at various life stages.
- To assess the hydrologic relationships between mainstem channel flow conditions and off-channel habitats
- To describe seasonal and longitudinal surface water temperature regimes in mainstem channels
- To develop flow-sensitive surface water temperature models for mainstem channels
- To characterize fluvial geomorphic conditions in the study area and to link potential changes in hydrology and drainage area through an evaluation of flow and channel forming processes in mainstem channels
- To assess spawning gravel quality and characteristics as influenced by flow and salmon-induced physical disturbance

Collectively, the aquatic habitat assessments, fish assemblage surveys, and instream flow habitat studies are geared towards providing a comprehensive and detailed description of the baseline conditions of fish resources in the mine study area. To further enhance this overview, results of these studies were closely

linked with results from other resource investigations in the mine study area, such as those focused on surface water hydrology (Chapter 7, Section 7.2), surface water quality (Chapter 9, Section 9.1), and aquatic invertebrates (Section 15.2).

15.1.3 Study Area

The fish resource-mine study area for the Pebble Project encompasses three watersheds: the NFK, the SFK, and the UT, as well as a 29-mile (46-km) long portion of the upper KR mainstem in the area immediately downstream of the confluence of the NFK and SFK (Figure 15.1-1). The KR flows for approximately 39 miles (62 km) before entering the Mulchatna River, which flows 44 miles (70 km) to the Nushagak River (Figure 15.1-5). The Nushagak River flows a distance of about 109 miles (175 km) before discharging into Bristol Bay. The UT drains to Iliamna Lake and from there to Bristol Bay via the Kvichak River, a distance of about 56 miles (90 km). The total distance from the Pebble Deposit to Bristol Bay along the three major river pathways is 228, 232, and 150 miles (*including the 33 miles to transit Iliamna Lake*) for the NFK, SFK and UT drainages, respectively. The watershed areas of the NFK, SFK, UT, and KR within the mine study area as compared to their major river basins and the entire Bristol Bay drainage area are provided in Table 15.1-2.

15.1.4 Scope of Work

Fish resource surveys within the mine study area were initiated in 2004 by Northern Dynasty Mines, Inc. (NDM) and were continued by the Pebble Partnership through 2008. The fish resource studies were designed to define and evaluate the physical, chemical, and biological baseline conditions of aquatic habitats and fish assemblages within the mine study area watersheds (Figure 15.1-1). The studies were closely linked with other resource investigations, in particular, those focused on surface water hydrology (Chapter 7, Section 7.2), surface water quality (Chapter 9, Section 9.1), and aquatic invertebrates (Section 15.2). Collectively, the fish resource studies, conducted over the 5-year period (2004 through 2008), can be grouped into three main categories: 1) aquatic habitat assessments, 2) fish assemblage surveys, and 3) instream flow habitat studies. Over the 5 years of study presented in this Chapter, 13 studies have been completed, broadly consisting of three aquatic habitat assessments, six fish studies, and four instream flow habitat studies. The timeframe for these studies, by year and watershed, is presented in Table 15.1-1. Field studies were carried out by HDR Alaska, Inc. (HDR) from 2004 through 2007 and by R2 Resource Consultants, Inc. (R2) in 2008.

15.1.5 Methods

Methods used to conduct the fish resource studies described in Table 15.1-1 are provided in the sections that follow. Due to the large number of studies that were conducted and the ensuing amount of detail related to specific methodologies and protocols, more detailed descriptions of the fish resource survey methods are provided in Appendix E of the EBD, as well in Appendices 15.1C through 15.1F.

15.1.5.1 Aquatic Habitat Assessments

Aquatic habitat surveys in the mine study area were conducted in 2004 through 2008, with each year's effort focused on specific geographic areas, habitat components, or various data gaps (Table 15.1-1). Aquatic habitat surveys were conducted in mainstem, tributary, and off-channel habitats. In addition,

mesohabitat mapping was completed for the mainstem portions of the NFK, SFK, and UT. Data collection methods used for each of these study components are described in the sections that follow.

Mainstem and Tributary Habitat Surveys

The majority of the mainstem channel and tributary habitat surveys used modified Tier 1 and Tier 3 aquatic habitat survey protocols adapted from the United States Forest Service (USFS) *Aquatic Habitat Management Handbook* (USFS, 2001). This methodology allows for habitat data collection at multiple tiers (i.e., Tiers 1, 2, and 3), with Tier 1 representing the broadest level of classification (e.g., reach-scale), and Tiers 2 and 3 finer levels of classification (e.g., meso- and microhabitat units). Such data are collected by conducting foot surveys, or boat surveys in larger rivers, and recording measurements and/or visual estimates of specified habitat parameters.

Modified Tier 1 aquatic habitat survey protocols were used to sample mainstem and tributary habitats in the NFK, SFK, and UT watersheds in 2004, 2007, and 2008 (USFS, 2001; Table 15.1-1). These protocols were used to collect information on channel morphology and valley form at a reach scale, with a reach defined as a section of channel with consistent channel morphology and flow volume. Reach-scale data were collected at channel morphology transects located within each reach. Parameters recorded included: USFS channel type (Paustian et al., 1992), discharge, substrate particle size distribution, bankfull width, bankfull depth, bed width, wetted width, and gradient. These data were collected using a combination of tools, such as a flow meter, Kevlar tape, stadia rod, and clinometer (Photo 15.1-1).

Modified Tier 3 aquatic habitat surveys (USFS, 2001) were conducted in 2004, 2005, 2007, and 2008 to identify and delineate individual habitat types (beaver pond complexes, backwaters/sloughs, ponds/lakes, cascades, pools, riffles, runs/glides, and wetlands) present in mainstem and tributary streams in the NFK, SFK, and UT watersheds (Table 15.1-1). Habitat units were delineated using visual estimation, and several parameters describing each habitat unit were recorded. Parameters such as habitat unit length, width, and depth were measured using either Kevlar tape, stadia rod, or a laser range finder in relatively long or wide habitat units. Visual estimation techniques were used to determine substrate composition and fish cover types. In addition to collecting reach-scale and habitat unit data, the locations of special habitat features (e.g., tributaries, springs, seeps, and possible barriers to upstream fish migration) were also recorded in 2008. For tributaries, seeps, and springs, the percent flow contribution to the mainstem was visually estimated, and water temperatures were measured.

In 2004 through 2007, anecdotal habitat data collection also occurred either in addition to or in lieu of the more formal USFS aquatic habitat survey methods. Anecdotal habitat data were collected in the NFK, SFK, and UT watersheds, and in the upper KR mainstem (Table 15.1-1). Parameters recorded included habitat type, sample length, wetted width, substrate composition, and cover types. While data collection methods are similar to those used for the Tier 3 aquatic habitat surveys (i.e., Kevlar tape, visual estimation), these anecdotal surveys differed from the Tier 3 surveys in that these surveys were conducted to collect data specific to selected fish sampling locations, rather than to delineate contiguous habitat units within a sample reach.

Off-channel Habitat Surveys

Off-channel habitat surveys were conducted from 2005 through 2008 in areas along the mainstem NFK, SFK, and UT river channels where high concentrations of off-channel habitats were found. The off-

channel habitats that were surveyed for habitat data represent a subset of the off-channel habitats encountered along transects established in these areas. Off-channel habitat transects were co-located with mainstem channel instream flow transects. Mainstem channel and off-channel transect establishment, as well as the collection of instream flow habitat data along these transects, is described in Section 15.1.5.3.

Off-channel habitat surveys were conducted using anecdotal habitat data collection in the SFK and UT in 2005 through 2007 and modified Tier 3 aquatic habitat survey protocols in the NFK in 2008 (Table 15.1-1). Methodologies and parameters recorded for the off-channel habitat surveys are similar to those used for the mainstem and tributary habitat surveys described above. Habitat units were delineated using visual estimation, and several parameters describing each habitat unit were recorded. Parameters such as sample length, wetted width, and water depth were measured using either Kevlar tape, stadia rod, or a laser range finder in relatively long or wide habitat units. Visual estimation techniques were used to determine substrate composition and fish cover types.

Mesohabitat Mapping

Habitat mapping of visually distinct habitat units on a reach-scale (referred to as mesohabitats) was used to estimate the overall quantity of aquatic habitat types available in the NFK, SFK, and UT. The mesohabitat mapping involved two main types of data collection and processing: field mapping and remote sensing analysis. Foot surveys were conducted within selected sample areas in the mainstem NFK, SFK, and UT in 2005 and 2007 to visually identify and delineate mesohabitat types (Table 15.1-1). Mesohabitat type definitions were based on Moore et al. (2006) and included run, riffle, pool, backwater, and beaver pond. Habitat unit lengths were measured using a laser range finder, and coordinates describing the upstream and downstream of each habitat unit were recorded using a handheld GPS unit.

For portions of each mainstem river that were not surveyed in the field, mesohabitats were mapped using remote-sensing data. Data sources utilized include 2004 ortho-rectified digital imagery of the NFK, SFK, and UT, 2008 ortho-rectified digital imagery of the UT, and 2004 geo-referenced videography from a low-flying helicopter of the SFK and UT. A series of steps were then undertaken in a GIS-software environment to be able to quantify the distribution of mesohabitat types within the NFK, SFK, and UT.

The first step involved using the 2005 and 2007 field data and a digitized channel margin layer to construct a polygon coverage describing mesohabitat units that were field surveyed. Habitat units delineated during field surveys were overlaid on the 2004 orthophotos and reviewed to calibrate the appearance of habitat types on the 2004 images. The second step was to expand the coverage of mesohabitat data. For portions of the mainstem rivers that were not surveyed, mesohabitat units were classified and delineated based on the 2004 imagery to create a polygon coverage for the remaining area. In addition, the 2004 videography and 2008 orthophotos were used to confirm habitat classifications and note temporal changes in habitats and channel locations. Lastly, the wetted area of all habitat unit polygons was calculated using a GIS function. The number of units and total area of each type of habitat was calculated for each EBD stream reach.

15.1.5.2 Fish Assemblage Surveys

Several studies were conducted annually from 2004 through 2008 in the mine study area to document and describe fish assemblage patterns in streams within the NFK, SFK, and UT watersheds and in the upper KR mainstem (Table 15.1-1). The studies included both extensive surveys to sample fish-bearing

waterbodies (e.g., mainstem rivers, tributaries, off-channel habitats, and lakes) within the mine study area, as well as several intensive studies to evaluate certain conditions (e.g., winter habitat use) or species behavioral patterns (e.g., the rainbow trout radiotelemetry study). In addition, adult salmon surveys were completed annually in all three watersheds to document the timing, distribution and abundance of salmon returning to these watersheds. Brief descriptions of methods used in completing these studies are provided below. More detailed descriptions are available in Appendix E of this EBD.

Fish Distribution and Relative Abundance Surveys

The 2004 through 2008 surveys document patterns of fish distribution, relative fish abundance, and fish density among habitat types (e.g., pool, riffle, run, etc.) within the NFK, SFK, and UT watersheds, and within the upper KR mainstem. Over the 5 years of study, there were 2,850 sampling units (discrete areas where fish were sampled) that were surveyed using a variety of fish sampling methods.

In general, the fish distribution and abundance surveys were completed using similar fish sampling, species identification, and life stage classification methods. The primary survey method for stream-dwelling fish was via direct underwater observation using snorkeling techniques (Northcote and Wilkie, 1963; Whitworth and Schmidt, 1980; Griffith, 1981; Griffith and Schill, 1984; Griffith et al., 1984; Hankin and Reeves, 1988). Other methods (e.g., electrofishing, minnow traps, beach seines, gill/tangle nets, angling, and dipnetting) were used when sampling conditions were not conducive to snorkeling (e.g., shallow water, fast water, deep water, and turbid water), or when there was a need to physically capture certain fish species for tagging and/or for genetic/toxicity sampling. Various fish sampling techniques applied during the fish studies are shown in Photos 15.1-2 and 15.1-3. To the extent possible, all fish observed and/or captured were identified to species and measured to fork length.

Coordinate data were collected using handheld GPS units to document fish observation locations. To describe fish abundance and density among habitat types, habitat data were collected at a subset of the fish distribution sampling locations, using either modified Tier 3 aquatic habitat survey protocols or anecdotal data collection, as described in the preceding aquatic habitat methods section.

Fish Use of Off-channel Habitats Study

Fish surveys were conducted in off-channel habitat areas in the NFK (2008), SFK (2005, 2006, and 2007), and UT (2007) watersheds (Table 15.1-1). To allow for a direct comparison between fish abundance and density in mainstem channel and off-channel habitats, mainstem channel habitats adjacent to the off-channel habitat areas were also surveyed as part of the off-channel habitat fish study. Snorkeling and electrofishing were the primary methods of sampling at both mainstem channel and off-channel sites, while other methods (e.g., minnow trapping, and seining) were used when site conditions precluded use of primary methods.

Winter Fish Surveys

Winter fish surveys were conducted in late October, November, and April at 157 sites in the NFK (2004, 2005, and 2006), SFK (2004 through 2007), and UT (2004 through 2007) watersheds, and in the upper KR mainstem in 2004 (Table 15.1-1). Winter fish sampling was generally limited, due to the iced-over and partially-frozen stream conditions from late fall through early spring that reduce the amount of open surface water available for sampling and that make sampling logistically difficult and risky. Furthermore,

this season in the mine study area is characterized by limited daylight hours and severe cold weather conditions presenting additional safety concerns for field crews and helicopter pilots. When sampling was conducted, site conditions, including open water surface area, ice thickness, and water depth, dictated the sampling techniques used at each site. Electrofishing and baited minnow traps were the primary survey techniques. Additionally, observations of fish were made through openings in the ice using direct observation, aided by aqua-scopes and face snorkeling. Sample sites were representative of mainstem, tributary, and off-channel habitats.

Mainstem Index Surveys

Mainstem index surveys were conducted in the mainstem NFK, SFK, and UT in 2004, 2005, 2007 and 2008. These surveys were designed to provide a snapshot of mainstem fish assemblages that would allow for comparison over time. Specifically, mainstem index surveys comprised of standardized and repeatable sampling at known locations in the mainstem channel of the NFK, SFK and UT to estimate the number of fish by species and life stage present and to provide an annual index of fish use in the mainstem that would be comparable over time and space. The 2004, 2005 and 2007 index sampling occurred at 12 pre-established mainstem index sites that were co-located with water quality and hydrology sites. Minnow traps were set for 24-hour periods in a variety of habitat types and captured fish were identified to species, enumerated, and measured. Sampling within these areas occurred repeatedly over the 2004 and 2005 survey years, allowing for temporal comparisons of fish assemblages. The 2008 surveys focused on 43 mainstem index sites established at 2.7-mile (4.3-kilometer [km]) intervals along the entire mainstem lengths of the NFK, SFK, and UT. Sampling included a full snorkel pass over the entire site length, as well as subsequent multi-pass beach seining. Modified Tier 3 habitat surveys (USFS, 2001) were completed to collect habitat data concurrent with the fish sampling and allow for comparison of fish assemblages across habitat types. Fish density by sampling method and habitat type were calculated and compared among habitat types.

Adult Salmon Surveys

Surveys to estimate the number of adult salmon spawning within the study area were initiated in 2004 and continued annually through 2008. These surveys were designed to document the spatial and temporal distribution of anadromous salmon returning to and spawning in the NFK, SFK, and UT watersheds, and to obtain estimates of spawning salmon abundance through direct observation. For this effort, aerial helicopter surveys were used to quantify spawning salmon throughout the entire lengths of the mainstem NFK, SFK, and UT, and in selected tributaries (Photo 15.1-4). The upper KR mainstem and Big Wiggly Lake, which is located on Tributary NFK 1.240, were also targeted for aerial surveys.

Differences in survey timing and frequency occurred among sampling years. For example, 2004 was the first year of baseline studies and seven aerial surveys were completed with a survey frequency of every 14 to 22 days. In contrast, surveys were conducted every 5 days in 2008 for 26 completed surveys. Otherwise, survey methods used were generally consistent among years. Surveys typically were conducted from early July through October or November to capture the range of dates adult Chinook, chum, coho, and sockeye salmon were present in the study area. Adult salmon were enumerated by species, and environmental conditions occurring during the surveys (e.g., weather, sun angle, glare, flow volume and depth, turbidity, stream bottom color, etc.) were recorded. A handheld global positioning system (GPS) unit was used to record the extent of each survey, and to mark areas of concentrated fish spawning, the upstream extent of salmon, and areas where environmental factors (e.g., ice cover, glare,

etc.) may have affected the counting process. Due to time and weather constraints, as well as helicopter availability, 2 to 3 days were typically required to cover the entire study area for each survey. In addition, aerial redd surveys were also conducted in 2004, 2005, and 2007. Redd locations were documented using a hand-held GPS unit.

Fish counts from aerial surveys are commonly used to estimate escapement of Pacific salmon species by watershed and year. Two common methods used for estimating salmon escapement are the area-under-the-curve (AUC) Trapezoidal Model (Neilson and Geen, 1981; Bue et al., 1998) and the Maximum Likelihood Estimation Model (Hilborn et al., 1999). Both of these models require assumptions about year- and stream-specific survey life and/or observer efficiency parameters. During the 2004 through 2008 study period, several attempts were made at determining site-specific values for survey life and observer efficiency. These attempts were unsuccessful at developing reliable estimates due to logistical constraints, such as low recovery of tagged fish on spawning grounds and physical stream conditions that affected the visibility of fish on reference videos. Without reliable estimates of observer efficiency and survey life, the utility of current escapement models is diminished (Holt and Cox, 2008). Furthermore, Holt and Cox (2008) present evidence that using the annual mean of survey counts is as good as, or better than, visual escapement models at illuminating trends in populations even when surveys have random spacing and high variability in frequency from year to year. For these reasons, a mean index count analysis, rather than an escapement analysis, was used to evaluate adult salmon abundance over the study period and among watersheds.

Index counts refer to the number of adult salmon observed on a given survey date. Annual mean index counts were calculated for each species by determining the mean of the index counts across the number of survey dates on which a species was observed. The subset of survey data included in the mean index count analysis was selected to allow for comparison of species-specific counts across watersheds and years. Thus, index counts from river reaches that were most consistently surveyed over the 5-year study period were used in the analysis. In order to maintain rigor in the analysis, it was also important to maximize the number of surveys included therein. Several surveys each year covered extended stream lengths and data within could not be parsed out by location; therefore, some variation in endpoints was allowed when selecting surveys for index counts. Surveys included by watershed are listed below.

- NFK—61 complete surveys that started at the confluence with the Koktuli River and ended near Big Wiggly Lake or at River Mile (RM) 34.78 (River Kilometer [RK] 55.98)
- SFK—67 complete surveys that started at the confluence with the Koktuli River and ended at the intermittent reach or at Frying Pan Lake
- UT—51 complete surveys that started at the mouth of the UT and ended at the confluence of Tributary 1.350 or at the headwaters

Inclusion of surveys with varied endpoints allowed incorporation of fish counts from upper reaches in all three watersheds, and although these data are diminished by comparison to overall counts, they add important information—especially for coho and sockeye salmon.

In addition to the mean index count analysis, an analysis of the spatial distribution and abundance of spawning salmon within each of the three major watersheds was conducted. Raw fish counts from 2008 surveys were used for this spawning distribution analysis, because spawning salmon locations were documented within each of the 18 pre-designated reaches in the NFK, SFK, and UT watersheds starting

that year. Reach-specific totals and mean numbers of spawning salmon for all survey dates were calculated for each species and were compared across reaches. All survey data collected in 2008 were included in the analysis.

Lastly, for each species, the 2004 through 2008 mean index counts were used to provide a first-order approximation of the relationship between counts in the NFK, SFK, and UT, and ADF&G's Bristol Bay fisheries statistics. Specifically, the Bristol Bay fisheries statistics considered were total inshore run estimates and commercial catch statistics for the Nushagak and Naknek-Kvichak districts (Morstad et al., 2010) and salmon escapement estimates for the Nushagak and Kvichak rivers (Baker et al., 2009). Although not directly comparable, the relative magnitude of the difference between the annual mean index counts and the Bristol Bay fisheries statistics will provide an indication of relative scale of the NFK, SFK, and UT runs compared to the runs into the larger river systems and respective commercial fishery districts.

Rainbow Trout Radio Telemetry Study

A rainbow trout radio telemetry study was conducted in 2007 and 2008 to investigate the seasonal distribution and migration patterns of adult rainbow trout in the UT and other streams associated with Iliamna Lake (Table 15.1-1). Radio transmitters were surgically implanted in 38 foraging fish captured between late August and mid-September 2007, and in 59 post-spawned fish captured between late-May and early-June 2008 (Photo 15.1-5). A combination of active (i.e. aerial) and passive (i.e. fixed) tracking was used to monitor fish movements (Photo 15.1-5). Fixed telemetry stations were positioned at the mouths of Lower Talarik Creek and the UT to provide continuous monitoring of transmitter movements as fish enter and exit the creeks. Mobile tracking surveys were conducted by fixed wing plane and/or helicopter. Survey frequency ranged from once per month from late fall through early spring (i.e., when fish are least active) to once per week from June through October (i.e., when fish are the most active).

15.1.5.3 Instream Flow Habitat Studies

A suite of interrelated instream flow habitat studies was conducted over the 5-year (2004 through 2008) study period. These studies are listed below.

- An assessment of habitat-flow relationships within the mainstem channel of the NFK, SFK and UT rivers
- An evaluation of off-channel habitats and their relationships to mainstem channel flow
- Defining water temperature and stream flow relationships within the mainstem channels
- An evaluation of flow and channel forming processes (collectively termed fluvial geomorphology) that included an assessment of spawning gravel characteristics as influenced by flow and salmon-induced physical disturbance

The methods associated with these studies are briefly described below, with more detail provided in Appendices 15.1C, 15.1D, 15.1E, and 15.1F.

Mainstem Channel Flow Habitat Studies

In 2004, instream flow habitat studies were initiated in all four watersheds in the mine study area (Table 15.1-1). The studies were completed using the United States Fish and Wildlife Service's (USFWS's) Instream Flow Incremental Methodology (IFIM), along with the companion suite of computer programs – **P**hysical **Hab**itat **Sim**ulation (PHABSIM; Bovee, 1982; Bovee et al., 1998) and were continued through 2008. The studies were designed to meet the objectives listed below.

- Describe existing mainstem channel habitats with regard to channel profiles, hydrology, and habitat conditions (e.g., habitat types, substrate, and cover)
- Define instream flow habitat relationships for target species at various life stages
- Based on the latter information, estimate the total amount of available habitat for target species at various life stages under baseline flow conditions in the mainstem channel of the NFK, SFK, UT, and upper KR mainstem

Application of PHABSIM in the watersheds followed the general procedures described in Bovee et al. (1998) and Milhous et al. (1984); field work was completed based on methods presented in Trihey and Wegner, (1981). The study involved the establishment of a series of transects (lines extending across the channel) within each stream located at different habitat types (e.g., riffle, run, pool, glide, cascade, and island complex; Bain and Stevenson, 1999), and the measurement of habitat characteristics (consisting of depth, mean column velocity, substrate type and/or cover) at intervals across the transects at different flows (Photo 15.1-6). Three distinct flow levels were targeted corresponding to a low-flow (representing approximately the 80 percent exceedence flow), mid-flow (representing the 50 percent exceedence flow), and high-flow (representing approximately 20 percent exceedence flow). These flow levels typically occurred in June, July, and August, respectively.

Transect locations were based on field reconnaissance surveys, topographic maps, and remote sensing data, as well as imaging and channel and habitat characteristics, professional judgment, and a stratified random approach. For studies conducted in 2004, 2005, and 2007, transect placement was designed to capture representative habitat types within reaches spanning the entire lengths of the mainstem NFK, SFK, and UT, the upper KR mainstem, and one of the major tributaries in UT. Transect placement was based on a combination of professional judgment and a stratified random sampling procedure. This approach resulted in the establishment of 92 transects, corresponding to 21 transects in the NFK, 28 in the SFK, 32 in the UT, five in the upper KR mainstem, and six in Tributary UT 1.190. An additional 46 transects were established in 2008 targeting specific areas of fish use, and to fill-in areas where no or few transects existed. The 46 transects were distributed within three NFK sites (14 transects), two SFK sites (12 transects), two UT sites (11 transects), and two tributary sites – one on NFK 1.190 (three transects) and one on SFK 1.190 (six transects).

Consistent surveying and data collection procedures, as outlined by Trihey and Wegner (1981), were used across sampling years. Physical and hydraulic measurements (e.g., channel profile and velocity data) were made at set intervals across each transect during targeted flow periods using a top setting rod and velocity meter. The flow and habitat data collected were subsequently used with PHABSIM programs to develop calibrated hydraulic models used to extrapolate hydraulic conditions beyond those measured in the field. The analysis presented in this section of the EBD pertains to 71 of the 92 transects established in 2004,

2005, and 2007 and the 46 transects established in 2008. Twenty-one of the original 92 transects were excluded from analysis due to a lack of sufficient model calibration data.

The hydraulic models were subsequently linked with Habitat Suitability Criteria (HSC) curves that represent the suitability of selected parameters (depth, velocity, and substrate/cover) for use by different life stages of the target fish species. The HSC curves for some species and life stages were based on existing literature-derived curves, while for others, field data were collected and site-specific HSC curves developed (Photo 15.1-7). The site-specific data consisted of depth, velocity, and substrate measurements made directly at observed fish locations as noted during snorkel surveys, as well as measurements made at distinct redds that represented spawning areas.

The draft HSC curves were linked with hydraulic and habitat models in PHABSIM to produce a series of habitat versus flow relationships by species and life stage for each transect. Appropriate versions of the USFWS microcomputer software (PHABSIM for Windows; v.1.20; PHABSIM DOS version) were used for all modeling analysis (Bovee and Milhous, 1978; Milhous et al., 1984; Milhous et al., 1989; Waddle, 2001). These relationships were linked with the mesohabitat mapping results and reach-specific hydrology data pertaining to a given species and life stage to produce both habitat time series and habitat duration curves for each of the main reaches in the NFK, SFK, and UT (Figure 15.1-6).

Off-channel Flow Habitat Studies

Off-channel habitats are defined as waterbodies located within a river's active valley, outside the mainstem channel. Off-channel habitats in glaciated river valleys are created by the interaction of channel processes, ground and surface water, vegetation, and beaver activity. The characteristics of many types of off-channel habitats, including their connections to mainstem channels, the relatively deep, slow-moving waters, and a mixture of woody debris and aquatic vegetation, make them especially attractive as refuge and rearing habitat for juvenile salmonid fishes. Therefore, studies were initiated in 2005 to assess the hydrological function of these waters in relation to the mainstem channels of the NFK, SFK, and UT. The studies resulted in the establishment and measurement of 37 transects that span representative off-channel habitat areas in the NFK (six transects), SFK (15 transects) and UT (16 transects) watersheds.

The off-channel transects were established at locations adjacent to or between the mainstem channel instream flow transects. Some off-channel habitat transects represented extensions of the actual mainstem channel instream flow transects from both ends into the floodplain. Transects were positioned perpendicular to the dominant flow and were approximately 1,000 feet (300 meters) long on either side of the mainstem channel. Physical and hydrological data along each off-channel habitat transect were collected at varying mainstem river flow levels. Data collection methodologies were designed so valley bottom profiles could be mapped and the variation in off-channel habitat water surface elevations (WSEs) could be linked to mainstem channel flow conditions. At each off-channel habitat encountered along the length of a transect, WSE at wetted edges was recorded, and water depths were measured so cross-section profiles of each habitat unit could be determined. Possible ground and/or surface water connections to the mainstem channel were noted. Mainstem channel WSEs associated with each off-channel habitat transect were also measured during the valley profile surveys. Photo 15.1-8 illustrates field data collection activities related to the off-channel habitat flow surveys.

Surveys of water connectivity were conducted in 2008 for the mainstem NFK, SFK, and UT to assess the hydrologic relationships between mainstem channel flow conditions and off-channel habitats. Potential

inlets and outlets to the mainstem channels were identified using aerial photos, topographic maps, and field surveys. For each identified hydraulic control point, WSEs and channel bed elevations were measured. Relationships between mainstem channel WSEs and bed elevations at hydraulic control points were used in conjunction with instream flow models to assess how flow changes might alter the availability of off-channel fish habitat. This assessment required an expansion of the measured to unmeasured areas within each system via ortho-rectified digital imagery and GIS analysis. Detailed methods are presented in Appendix 15.1D.

Water Temperature Monitoring and Modeling

Water temperature can affect a variety of salmonid species and their life history functions, including: the timing of adult upstream migrations and juvenile/smolt downstream migrations, the timing of spawning and duration of egg incubation, growth rates, and overall rates of survival (Quinn, 2005; McCullough et al., 2001; Sauter et al., 2001; Bjornn and Reiser, 1991). Temperatures in streams can vary hourly, daily, seasonally, annually, and spatially, with the degree of variation dependent on meteorological, topographical, and hydrological characteristics including patterns of runoff and groundwater exchange. Therefore, surface water temperatures were monitored in mine study area from 2004 through 2008 (Table 15.1-1). These data were subsequently used to develop and calibrate flow-sensitive surface water temperature models under these baseline conditions.

Surface Water Temperature Monitoring. Monitoring of surface water temperatures was initiated in 2004 and continued through 2008 at mainstem stations to collect baseline data on the existing surface water temperature regimes within the NFK, SFK, and UT systems (Chapter 7, Section 7.2; Photo 15.1-9). Continuous instream water temperatures have been measured at various locations and time periods since 2004 at intervals ranging from 1 minute to 2 hours, as described in Chapter 7.

Recorded water temperatures were compared to the Alaska Department of Environmental Conservation (ADEC) water temperature standards for the growth and propagation of fish, shellfish, other aquatic life, and wildlife (ADEC water temperature standards for aquatic life; ADEC, 2009). The ADEC water temperature standards for aquatic life depend on the type of fish habitat the station represents. According to these standards, the following life stage- and habitat-specific maximum temperatures may not be exceeded.

- Spawning areas, egg and fry incubation — 55ºF (13ºC)
- Migration routes, rearing areas — 59ºF (15ºC)
- At any time — 68ºF (20ºC)

Stream Network Temperature Model (SNTEMP). The USFWS SNTEMP (Version 3, revised in May 2005, after Theurer et al., 1984) was subsequently used to develop flow-sensitive surface water temperature models for each of the mainstem systems. Model documentation and detailed methodology are presented in Appendix 15.1E. SNTEMP is based on a combination of empirical and synthetic hydrological, meteorological, and stream geometry conditions. The model accounts for the physical processes of heat transfer and includes the following components.

- A heat transport model that predicts the average mean daily water temperature and the daily range in water temperature as functions of stream distance

- A heat flux model that predicts the energy balance between the water and its surrounding environment
- A solar model that predicts the solar radiation that penetrates the water as a function of latitude, time of year, and meteorological conditions
- A shade model that predicts the solar radiation-weighted shading resulting from both topography and riparian vegetation
- Meteorological corrections that predict changes in air temperature, relative humidity, and atmospheric pressure, as functions of a change in elevation

Fluvial Geomorphology and Spawning Gravel Quality

The fluvial geomorphology studies were initiated in 2005 and focused on describing channel geometry relationships and completing some preliminary hydraulic modeling in the SFK and UT (Table 15.1-1). Additional field data were collected in 2007 to describe the relationship between channel geometry and geomorphic processes in the NFK, SFK, UT, and upper KR mainstem (Table 15.1-1). Detailed data were collected at 52 Fluvial Geomorphology (FG) sites: 49 on the mainstem rivers and three on tributaries. Of the 49 mainstem sites, 15 were on the NFK, 16 on the SFK, 17 on the UT, and one on the upper KR mainstem. Two of the three tributary sites were in the SFK drainage and the third was in the NFK drainage. Data collected at each site included: information required for hydraulic modeling (based on based on the Hydraulic Engineering Center River Analysis System [HEC-RAS]), pebble count data (Wolman, 1954; Kondolf, 1997), site photographs, visual-based Manning's n roughness coefficient estimates, bank material composition, field notes, and qualitative estimates of bank vegetation type and density. The 2007 effort resulted in the identification of a characteristic discharge approximating bankfull flow conditions (Leopold and Maddock, 1953). The bankfull discharge is a representative parameter related to hydrologic and hydraulic conditions influencing channel form, primarily in alluvial channels.

The 2007 work also included collecting single bulk substrate samples at selected FG sites to begin assessing fine sediment levels in the river bed substrates. A radiotelemetry study of rock movement in the NFK was conducted in 2007 to evaluate riverbed mobility in more detail. Nineteen radiotagged rocks were deployed and monitored from September 15 through 30, 2007. In 2008, single bulk substrate samples were collected at additional FG sites and in sites containing spawning habitat (Photo 15.1-10). Replicate (three) substrate samples were also collected from nine sites (total samples = 54) within spawning habitat to statistically assess pre- and post-spawning fine sediment levels and to address the question of how the particle size distribution in known salmon spawning locations is affected by spawning fish, fall high flow events, and subsequent resorting of bed materials.

15.1.6 Results and Discussion

Existing aquatic habitats and fish resources within the NFK, SFK, and UT watersheds, and in the upper KR mainstem are summarized in this section. A discussion of the fish associations with available habitats and their known distributions throughout the study area, a synthesis of watershed processes and ecological influences on fish, and the relative contribution of fish in the study area to Bristol Bay fisheries are also included. As mentioned previously in Section 15.1.1, the data and graphics presented herein were selected as representative examples of the larger body of data (as presented in the detailed technical Appendices 15.1B through 15.1F and in other EBD chapters) as a way to provide readers with a summary

perspective of fish resource patterns in the mine study area. Readers interested in more detailed results than those presented here should refer to the technical appendices and/or other EBD chapters for more information.

Between 2004 and 2008, Pebble Project field crews conducted fish surveys at 2,850 distinct sites within the NFK, SFK, and UT watersheds (see fish location figures of specific watersheds in the subsections below). Data from sites where anadromous fish were documented were delivered to ADF&G as nominations to the State's Anadromous Waters Catalog (AWC). These data resulted in expansion of the known distribution of anadromous species and provided supporting information for existing anadromous streams (see anadromous fish distribution figures for specific watersheds in the subsections below).

Using the 2009 AWC as baseline, 22 new streams were nominated for the 2010 AWC — eight, five, and nine streams located in the NFK, SFK, and UT, respectively. The anadromous distribution was extended in an additional 14 streams, with five, two, and seven of those streams located in the NFK, SFK, and UT watersheds, respectively. The total lineal distance of nominated streams (new and extended distributions) was 23.1 miles (37.2 km). By watershed, the distribution of stream length nominated was 7.4 miles (11.9 km) in the NFK, 1.9 miles (3.1 km) in the SFK, and 13.9 miles (22.4 km) in the UT.

Sampling efforts at 1,260 sites located upstream of the documented anadromous fish distribution showed no anadromous fish present (see anadromous fish distribution figures for specific watersheds in the subsections below). For the purposes of the EBD, these sites have been considered as supporting only resident fishes. However, un-surveyed tributaries located upstream of the known anadromous fish distribution tributaries are assumed to have the potential to support anadromous fishes. Detailed maps of anadromous and resident fish presence at fish sampling sites are presented in Appendix 15.1B.

15.1.6.1 North Fork Koktuli River

NFK Watershed Overview

The NFK watershed is a relatively small drainage of the Nushagak-Mulchatna system. The Nushagak River Basin is one of eight river basins draining Southwestern Alaska into Bristol Bay (Figure 15.1-5). The NFK drainage is situated adjacent to the immediate vicinity of the Pebble Deposit (Figure 15.1-7). The NFK drainage area is approximately 113 square miles (mi^2; 292 square kilometers [km^2]) or 0.9 percent of the Nushagak-Mulchatna system and 0.3 percent of the entire Bristol Bay drainage basin (Table 15.1-2). The NFK includes an overall mainstem river length of 36 miles (58 km).

The NFK originates on the north slope of Groundhog Mountain, and generally flows west then southwest before joining the SFK to form the Koktuli River (Figure 15.1-7). The highest elevation in the NFK drainage is Groundhog Mountain (elevation 3,075 feet [937 meters]); the lowest elevation in the drainage is at the confluence of the NFK with the SFK at 580 feet (177 meters; Chapter 4). The watershed is bounded by a series of low, isolated mountain blocks — with Kaskanak Mountain to the south, Groundhog Mountain to the east, and Cone Mountain to the north. The northern surface water drainage divide is largely undefined.

A general map of fish resources study site locations in the NFK is shown on Figure 15.1-8. This map depicts 1,406 individual study site locations sampled between 2004 and 2008.

NFK Aquatic Habitat

This section describes the physical, chemical, and biological components of aquatic habitat documented in the NFK. These habitat components are discussed in distinct sections to facilitate comparison among watersheds.

NFK Physical Habitat Conditions

The mainstem NFK has been divided into six stream reaches with distinct hydrology, geology, and channel characteristics (Figure 15.1-7; Table 15.1-3). The six reach designations, NFK-A through NFK-F, progress from downstream to upstream along the length of the mainstem NFK. As discussed in Section 15.1.1, tributaries were assigned to the mainstem reach into which they flowed, and off-channel habitats were assigned to a mainstem reach based on their proximity to the mainstem channel. Photographs depicting representative channel characteristics of the mainstem NFK reaches are provided in Photos 15.1-11 through 15.1-16.

Channel Morphology. The NFK River is primarily a single-thread, gravel-bedded channel that is relatively straight in high gradient segments and meandering in low gradient segments. Channel slopes ranged from 0.09 to 0.80 percent and averaged 0.4 percent, as measured in the FG study sites. Tributaries were comprised of both high and moderate gradient, as well as alluvial fan channels. Large woody debris was scarce throughout the NFK due to a general lack of forest vegetation within the riparian zone. Large boulders deposited by retreating glaciers were sporadically located within the NFK channel and provided some instream cover, feeding station, and velocity shelter habitat for fish. The primary sources of sediment in the channel were likely from undercut banks and lateral erosion that occurred during high flows and ice break-up processes.

The three lowermost reaches (NFK-A, NFK-B, and NFK-C) flowed through primarily alluvial valley bottom deposits, consisting predominantly of abandoned stream terraces and deposits composed of re-worked glacial outwash. The stream channels within all three reaches were, overall, considered low gradient. High flows within NFK-A have overflowed the channel banks and extended into adjoining floodplains. Associated riparian zones, wetland complexes, and off-channel habitats extended well beyond the stream banks. For most of NFK-B, the channel flowed through a relatively narrow (approximately 1,525-foot; 465-meter wide) valley bottom bordered by low hills. NFK-C flowed across glacial outwash and moraine deposits. NFK-D and NFK-E were generally lower gradient than the other reaches and flowed through a variety of different geologic types, including glacial outwash and a silt, ice-rich section. Coarse bedload from upstream did not appear to have been transported downstream of NFK-E, where the bed was composed predominantly of sand and silt. The uppermost reach (NFK-F) flowed through predominantly alluvial and Brooks Lake drift deposits.

Hydrology. The surface water hydrology of the mine study area is described in detail as part of the Pebble Project EBD (Chapter 7, Section 7.2). The hydrologic regime of the NFK is influenced primarily by climate, geology, and groundwater influx, with stream flows driven by runoff from spring snowmelt and summer/fall rains. Except in losing reaches, base flows tend to remain high due to deep soils and associated groundwater storage, as well as the large volume of water associated with lakes in the watershed.

Seasonal flows in the NFK have two peaks (Figure 15.1-9), similar to other streams in Southwestern Alaska, and similar to the adjoining watersheds in the study area. The first peak occurs during the spring snowmelt season (with the majority of the snowmelt runoff typically occurring in May), while the second peak occurs during the fall rainy season (late August to November). These peaks are separated by two low flow seasons: a summer low flow (with minimum flows typically occurring in August), and a winter low flow (with minimum flows typically occurring in late March to late April) . The mean annual flow in the NFK was 270 cubic feet per second (cfs; 7.65 cubic meters per second [m^3/s]) during water years 2005 through 2008 at Hydrology Gage NK100A (USGS Gage No. 15302250). This discharge is equivalent to a mean annual unit runoff of 34.7 inches (88.1 centimeters) from the 106 mi^2 (274 km^2) watershed area at the gage.

Runoff was hydrologically flashy in steep NFK tributaries that drain the isolated mountain blocks where groundwater storage is limited. In contrast, the mainstem NFK showed a pronounced groundwater influence. Upstream from the upper two-thirds of NFK-C, the river has been classified as a "losing" stream. In this area, the NFK flows across unconsolidated outwash fan sediments with a high infiltration capacity, and water generated by stream flow, precipitation, and snowmelt rapidly infiltrates into a shallow aquifer (Chapter 7, Section 7.2). The groundwater flows down valley, emerging at the downstream end of the glacial outwash deposits. The downstream third of NFK-C, and a short stretch of NFK-B, were "gaining" reaches that exhibited evidence of substantial groundwater upwelling (Chapter 7, Section 7.2 and Chapter 9, Section 9.1). Similarly, the downstream portion of NFK-A (downstream from Hydrology Gage NK100A) received groundwater inflow increasing the local surface water discharges at these locations. The hydrologic regime of the NFK has an influence on the functionality and usability of fish habitat and, in turn, the distribution and abundance of fish that use the watershed.

Water Temperature. Water temperature data indicate that the NFK begins to seasonally warm in May and June and peaks in July and August. Temperatures cool down during September and October and stay near freezing from November through April. A series of temperature plots during calendar year 2007 at select NFK gages is shown on Figure 15.1-10 to indicate the general thermal regime across the watershed. More detailed temperature data, as well as a description of the SNTEMP flow-sensitive surface water temperature models that were developed and calibrated using these baseline data, are included in Appendix 15.1E.

The longitudinal thermal regime of the NFK was characteristic of a surface water system influenced by groundwater and coldwater tributary inflow (Figure 15.1-11). In most streams, water temperatures during the summer months (June, July and August) are expected to increase in the downstream direction because air temperatures increase with decreasing elevations. However, the NFK exhibited the opposite trend, with warmer temperatures found in the uppermost reaches (NFK-E and NFK-D) and cooler temperatures downstream at reaches NFK-C, NFK-B, and NFK-A. In 2007, mean daily summer water temperatures declined approximately 36 degrees Fahrenheit (ºF; 2 degrees Celsius [ºC]) in the mainstem between reaches NFK-D and NFK-C, immediately downstream of the confluence with Tributary 1.190 (Figure 15.1-11). Temperatures continued to decline downstream through the length of both NFK-C and NFK-B. Water temperatures, combined with flow records, indicated that the NFK receives groundwater inflow in NFK-C and in portions of NFK-B and NFK-A (downstream from Hydrology Gage NK100A). The groundwater input keeps the surface water temperatures relatively cool in the summer, and relatively warm in the winter.

While water temperatures have been at or near freezing during the winter season throughout most of the stream, there was greater variability in water temperatures during the summer (Appendix 15.1E). The daily temperature range during the summer months for all monitoring gages and years for the NFK watershed is provided in Table 15.1-4. The instantaneous minimum and maximum daily temperatures ranged from a low of 33ºF (0.3ºC) at monitoring site NFK119WT in Tributary 1.190 during 2008 to a high of 71.4ºF (21.9ºC) at monitoring sites NK100C in 2005 and NK100A1 in 2007.

Instantaneous summertime maximum temperatures exceeded the ADEC maximum water temperature standard for aquatic life of 68ºF (20ºC; ADEC, 2009) at one station (NK100C) in 2004 through 2007 and at station NK100A1 in 2007 (Table 15.1-4), representing 28 percent of the total summer maximum temperature recordings. The ADEC maximum water temperature standard for spawning and egg and fry incubation of 55ºF (13ºC; ADEC, 2009) was exceeded for 89 percent of the instantaneous station measurements, whereas the ADEC maximum water temperature standard for migration routes and rearing areas of 59ºF (15ºC; ADEC, 2009) was exceeded for 78 percent of the measurements of the summer maxima recorded during the study period. Anadromous salmonid fishes migrate and spawn in various NFK reaches during July and August. Thus, these summer temperatures naturally exceed state water quality numeric standards.

The thermal regime of the NFK has an influence on the behavior, metabolism, and growth of fish and their use of specific habitats. In the study area where freezing and low water temperatures are a concern, fish would likely be attracted to groundwater-fed channels during winter and early spring, because these sites represent areas of stable flows and relatively warmer water temperatures (Leman, 1993; Ebersole et al., 2003). Groundwater inflow offers temperature moderation in both the mainstem and tributary reaches in winter, such that a portion of these areas remain ice-free (Chapter 7, Section 7.2, Figure 7.2-5). These areas may provide overwintering habitat that is often limited in northern streams, and as such, enhance the survival of incubating embryos compared to frozen stream sections.

The annual water temperature regime of the NFK is cold, severely restricting rearing conditions. Because fish are cold-blooded species (cannot regulate their body temperature) all metabolism, activity, swimming speed, and behavior are directly a result of ambient water temperature conditions. Cold water restricts active feeding to a brief period (June through September) when water temperatures exceed 46ºF (8ºC) and hence productivity of the population is limited compared to watersheds where the active feeding period is longer (Campbell and Neuner, 1985). Notably, in this cold water river, warm water temperatures in the summer months also may be limiting to fish health and productivity. Given the open riparian nature of most of the streams in the NFK watershed, water temperatures warm quickly during the summer months and naturally have exceeded state thermal criteria for spawning, incubation, migration, and rearing habitat at a number of monitoring stations (Table 15.1-4).

Mainstem Channel Habitat. The baseline frequencies of mesohabitat types (e.g., pool, riffle, run/glide, etc.) for the mainstem NFK are shown on Figure 15.1-12. Riffle habitat was the dominant habitat type in NFK-A, B, C and D, with run/glide as a subdominant habitat feature. In NFK-E, beaver ponds, riffles, and glides were the most common habitat types. Pool habitats were relatively sparse (1 to 2 percent) in all mainstem NFK reaches. The frequency of USFS channel types along Tributary 1.190 and the results of Tier 3 field surveys are shown on Figures 15.1-13 and 15.1-14, respectively. Channel type codes are listed in Table 15.1-5. In general, all of the habitat studies indicate that the NFK overall contained mostly riffle habitat, followed by varying degrees of run and glide habitat, and relatively few beaver ponds and pools.

In addition, relatively small amounts of cascades and backwater/sloughs were observed in NFK 1.190 during the Tier 3 aquatic habitat surveys (Figure 15.1-14). As noted above, large woody debris was generally absent within the NFK due to a lack of forest vegetation in the riparian zone. As a result, instream cover for fish was largely provided by undercut banks and overhanging vegetation, along with scattered boulders and cobble materials.

Pacific salmon require cold, clear, and well oxygenated water with gravel- to cobble-sized substrates for spawning. The quality of spawning gravels in the NFK was good, based on grain size analysis of bulk substrate samples collected from three locations. The levels of fine sediments in samples collected from the NFK were lower than levels found in both the SFK and UT. Overall, the concentrations of size fractions that have been related to embryo survival (size fraction less than 0.03 inches or 0.84 millimeters) and fry emergence (less than 0.25 inches. or 6.4 millimeters) were well below levels considered harmful (over 10 percent and over 20 percent, respectively; after Shirazi et al., 1981; Lotspeich and Everest, 1981; Chapman and McLeod, 1987; Reiser and White, 1988; Kondolf, 2000). See Appendix 15.1F for detailed results of the spawning gravel analysis.

Off-channel Habitat. The off-channel habitat study area in NFK-C contained an estimated 32 acres of off-channel habitat (Table 15.1-6). The most frequently encountered type of off-channel habitat was beaver ponds (85 percent; Figure 15.1-15). Complex beaver ponds typically include a combination of ponded areas and connecting channels that create both pool and slow moving run/glide type habitats. With the exception of isolated ponds that are only connected to the mainstem channel during overbank flows, off-channel habitats can potentially be used by a diverse assemblage of fish species and life stages at a range of mainstem channel flows. Survey results indicated that many of the off-channel habitats were hydrologically connected to the mainstem channel via surface inflow at less than bankfull flows (approximately 580 cfs [16.4 m^3/s]; Appendix 15.1D). A subsample of 11 off-channel habitat sites showed engagement of sites at flows ranging between 14 and 490 cfs (0.4 and 13.9 m^3/s; Table 15.1-7). See Appendix 15.1D for more information regarding the off-channel habitat flow study.

NFK Chemical Habitat Conditions

A comparison of various water quality parameters reported in the mine study area and those reported for other water quality studies in the region is provided in Table 15.1-8. These parameters include water temperature, dissolved oxygen (DO), specific conductance, pH, turbidity, alkalinity, and hardness. The NFK watershed was characterized by generally good water quality conditions that support habitat conditions for a range of salmonid and non-salmonid fishes. Overall, the NFK water quality parameters measured were similar to those for other watersheds in the region (Table 15.1-8). The notable exceptions include: a maximum water temperature of 66.2ºF (19.0ºC), which is greater than those reported for other watersheds (excluding the SFK); a low DO minimum of 5.8 milligrams per liter (mg/L); and a broader range of reported values for pH, alkalinity, and water hardness. Concentrations of water quality parameters were found to vary as a factor of flow conditions, location within the watershed, or season (Chapter 9, Section 9.1).

In addition to the water quality parameters included in Table 15.1-8, concentrations of trace elements, cyanides, and nutrients were determined as part of the surface water quality studies in the mine study area (Chapter 9, Section 9.1). Natural exceedences of estimated freshwater aquatic life criteria were observed in the NFK for aluminum (total), cadmium (total and dissolved), copper (total and dissolved), iron (total), lead (total and dissolved), zinc (total), and weak acid dissociable (WAD) cyanide. The number of samples

exceeding these criteria was less than 1 percent for dissolved cadmium, total zinc, and total iron, less than 2 percent for dissolved copper, less than 3 percent for total cadmium, total copper, and WAD cyanide, less than 7 percent for total aluminum, and less than 8 percent for dissolved lead. The greatest number of CALC exceedences was for total lead (approximately 15 percent). The majority of the total aluminum exceedences occurred in April and May and thus, may be related to seasonal snowmelt events. No pattern was evident for lead exceedences, which occurred in various months and locations. Mean nutrient concentrations were generally low.

NFK Aquatic Macroinvertebrates

The productivity of streams is often measured in terms of the number and composition of species, and the density and/or abundance of periphyton and aquatic macroinvertebrates. Periphyton represents a broad assemblage of algae, bacteria, and other microscopic organisms that are attached to rocks, logs, and other submerged materials. The periphyton community often forms the food base for the aquatic macroinvertebrate community that is comprised of a mixture of organisms, including: nematodes, annelids, crustaceans, flatworms, mollusks, and insects. Insects are the most species-rich, and often most abundant group of benthic macroinvertebrates residing in freshwater habitats (Hershey and Lamberti, 2001; Ward, 19992). Macroinvertebrates are involved in the recycling of nutrients and decomposition of organic materials, serving as a conduit for the energy flow from organic matter resources to vertebrate populations, most notably fish (Hershey and Lamberti, 2001; Hauer and Resh, 1996). Studies of both communities have been conducted in the NFK and detailed results are described in Section 15.2. Because of the importance of macroinvertebrates as both food for fish and as indicators of stream health, annual results of the macroinvertebrate studies in the NFK are summarized for June sampling efforts below.

The macroinvertebrate taxa richness (i.e., the number of taxa present) of two sample sites (NK-100A and NK-100C) is shown on Figure 15.1-16. Taxa richness was determined for June sampling efforts in 2004, 2005, and 2007 using two different collection methods: the Alaska Stream Condition Index (ASCI) kick net and Surber methods. Taxa richness ranged from a low of 17 taxa at NK-100A in 2005 (Surber method) to a high of 30 taxa at NK-100C in 2007 (Surber method; Figure 15.1-16). Taxa richness was generally consistent among years for both sites, although taxa richness was slightly greater at NK-100C than NK-100A.

The macroinvertebrate communities in the NFK were largely composed of midge larvae (Family Chironomidae) and invertebrate species of the orders Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies; EPT taxa). The contribution of chironomids ranged from 36 percent at NK-100C in 2005 (Surber method) to 76 percent at NK-100A in 2005 (ASCI method; Figure 15.1-16). For EPT taxa, percentages ranged from 7 percent at NK-100C in 2007 (ASCI method) to 29 percent at NK-100C in 2005 (Surber method; Figure 15.1-16). The macroinvertebrate communities at both sites were dominated by chironomids in all years.

NFK Habitat/Flow Relationships

This section presents the results of instream flow habitat modeling and time series analyses computed for various salmonid fish species for each of three NFK reaches (NFK-A, NFK-B, and NFK-C) and one tributary (NFK 1.190). No results are displayed for NFK-D, NFK-E, and NFK-F, because transects were not established in those reaches. NFK-D and NFK-E contain smaller amounts of spawning habitat than the three downstream reaches, and no spawning activity has been reported in NFK-F. Thirty (30) transects were used in the analysis (Table 15.1-9): 13 in NFK-A, five in NFK-B, nine in NFK-C, and three in

Tributary NFK 1.190. Transect weightings based on the frequency of representative habitat types in a reach are summarized in Table 15.1-10.

Specific flow ranges corresponding to 90 percent or more of the maximum modeled habitat areas in each reach are shown for anadromous and non-anadromous fish categories in Table 15.1-11. The ranges vary as a factor of the results from different species as reported in Appendix 15.1C, Tables 28 to 36.

Results of the habitat time series analyses for Chinook, coho, and sockeye salmon spawning and juvenile life stages are summarized for NFK-A, NFK-B, and NFK-C on Figure 15.1-17. These results focus on the total habitat area versus river flow relationships, because this parameter provides reach-scale estimates of the total amount of habitat for a given species and life stage available under different flow conditions (refer to Appendix 15.1C for tributary results, other flow related parameters, and individual transect results). The results, expressed in acres, are presented graphically as a time series of habitat based on average flow conditions in the reaches. The time series analyses are presented graphically by reach in terms of the total habitat area that would occur on a daily basis during the time period in which an individual species and life stage may be present. For example, juvenile Chinook salmon may be present year-round, while adult spawning is limited from July through September, as depicted on Figure 15.1-17. This evaluation is useful for comparing the relative amounts of habitat provided for a given species and life stage under different flow conditions.

The total estimated amount of habitat area (spawning and juvenile) for each species available within a given reach, based on the median daily flows over the respective time periods for each life stage, is displayed on Figure 15.1-17. The results indicate there can be substantial variability in habitat amounts on a daily basis in response to changes in flow. This variation is most evident during flow transitional periods. For example, during the spring-summer periods when flows are declining there is a general increase in juvenile habitat. Similarly, during the summer-fall periods when flows increase, there is a general increase in spawning habitat. The overall process used in deriving the time series and the detailed results for these species, as well as other species and life stages (includes species and life stage habitat-flow relationships), and for Tributary NFK 1.190, are presented in Appendix 15.1C.

The time series analysis represents a first step in evaluating how baseline flow conditions influence fish habitats temporally and spatially. Additional time series analyses based on wet year, dry year, and average year conditions, as well as a series of associated habitat duration curves for each reach, are provided in Appendix 15.1C, Tables 30, 33, and 36, and Figures 31 through 33, 37 through 39, and 43 through 45. The appendix also contains estimates of total habitat area by species and life stage provided in the entire NFK (all reaches combined) during an average water year (Appendix 15.1C, Table 73).

NFK Special Habitat Features

Special habitat features that may influence the distribution and/or abundance of fish within the NFK watershed include seeps and springs, intermittent flow reaches, lakes and ponds, and beaver ponds.

Seeps and Springs. A comprehensive survey of seeps and springs was performed in 2005 and 2006, and the surface water expression of these features is presented in Chapter 9, Section 9.1, Figure 9.1-4. There was a large concentration of seeps and springs identified in the central portion of the NFK (along the upper portion of NFK-B and throughout NFK-C), southward to the boundary between the NFK and SFK

at Kaskanak Ridge, and throughout the Tributary NFK 1.190 subwatershed. Seeps and springs add to river flow and moderate stream temperatures in both summer and winter.

Such surface water expressions may offer groundwater upwelling sites salmonid fishes favor for spawning locations. Mainstem NFK-B and NFK-C and Tributary NFK 1.190 have been used for spawning by anadromous fishes (see the Fish Resources section below). These stable, cool water sources likely provide benefits to juvenile fishes during summer rearing. In the winter, seeps and springs may create localized areas of relatively warmer water that may be used as overwintering habitats and may promote higher salmonid embryo survival.

Intermittent Flow Reaches. There were no mainstem NFK reaches temporarily exhibiting seasonal surface water flow cessation during the 2004 through 2008 baseline period (Chapter 7, Section 7.2, Figure 7.2-5). Conversely, Tributary NFK 1.190.10 exhibited late summer intermittent flow conditions, immediately upstream of its confluence with Tributary NFK 1.190. The total length of dry stream channel in this tributary was slightly more than 2 miles (3.2 km).

Lakes and Ponds. Naturally-formed lakes and ponds are prevalent in the NFK watershed, consistent with the remnants of the glacial history. The largest named lakes in the watershed include Big Wiggly and Black lakes (Figure 15.1-7; see Appendix 15.1G for waterbody naming conventions). Most of the lakes and ponds in this watershed occur at relatively high elevations. The largest concentration of lakes and ponds is in the vicinity of the Big Wiggly Lake complex, adjacent and connected to NFK-D. Sockeye salmon adults have been recorded spawning along the lakeshore of the Big Wiggly complex of lakes and rearing of juvenile sockeye salmon in lakes is a critical life-history strategy (see Fish Resources section below). Surface water impoundments of this nature also provide habitat for other stream-dwelling fishes and provide water storage and extended surface water runoff volumes late in the summer period compared to watersheds without such storage.

Beaver Ponds. Beavers were ubiquitous throughout the NFK and, in some locations, have had a considerable effect on flow and habitat conditions. Analysis of aerial photos indicates that beavers have built dams spanning the mainstem channel in the headwaters of the NFK (see Appendix 15.1F). Such structures result in the ponding of water that creates a mosaic of small ponds and interconnecting channels. During wildlife surveys in the NFK, 25 beaver colonies were recorded (Chapter 16, Section 16.2, Figure 16.2-20). Beaver ponds in the NFK provide adult spawning and juvenile overwintering habitat for Pacific salmon. Coho salmon were reported spawning in beaver-created habitats in the NFK watershed. Beaver ponds and small stream channels influenced by groundwater, may provide ice-free habitat during winter (Murphy et al., 1989; Collen and Gibson, 2001). In addition, beaver ponds in the NFK were slightly warmer than other habitat types and thus, may represent a more productive habitat as compared to cooler mainstem channel habitat types. This may result in increased growth rates of juvenile salmon and more fish per unit area compared with mainstem channel fish (Appendix 15.1D).

NFK Potential Limiting Factors

Habitat features in either short supply or in poor relative condition that may be limiting fish abundance and productivity in the NFK are discussed below.

Velocity Shelter. A general scarcity of mainstem channel pool habitat and instream cover features in the NFK results in a lack of velocity shelter for rearing fishes. This condition suggests juvenile rearing may largely be relegated to off-channel habitats, especially for winter refuge when water temperature and

stream flows become quite low. The lack of juvenile winter rearing habitat in the mainstem NFK was evident in the instream flow habitat duration curves (Figure 15.1-17).

Water Temperature. The annual water temperature regime of the NFK is cold, and largely restricts rearing conditions (i.e., period of active feeding and growth) to a relatively short period of time (June through September) when water temperatures exceed 46ºF (8ºC). This is because fish are cold-blooded species (cannot regulate their body temperature) and many of their metabolic functions, including growth and other physiological processes, are linked to ambient water temperature conditions. Therefore, the overall productivity of the fish populations is likely limited as compared to watersheds with warmer water temperature regimes and where the active feeding period is longer (Campbell and Neuner, 1985). This limitation is likely typical of other regional streams.

Notable in this cold water river is the fact that warm water temperatures in the summer months also may be limiting to fish health and productivity. Given the open riparian nature of most of the streams in the NFK watershed, water temperatures warm quickly during the summer months and naturally exceed the ADEC maximum water temperature standard for spawning and incubation of 55ºF (13°C; ADEC, 2009). Exceedences represented 89 percent of the instantaneous station records reporting peak summer temperatures (June through August) during the baseline period. Temperatures also exceeded the ADEC maximum water temperature standard for migration routes and rearing areas of 59ºF (15°C; ADEC, 2009) for 78 percent of the summer records, and the ADEC maximum water temperature standard of 68ºF (20°C; ADEC, 2009) for 28 percent of the peak recorded summer temperature values over the baseline period. The recorded high temperatures in the NFK are several degrees higher than those reported for most other streams in the region (Table 15.1-8).

Water Quality. Water quality data indicate the waters of the NFK are soft (Chapter 9, Section 9.1). Soft waters are typically not as productive for fish growth as hard (more mineralized) waters. Low levels of mineralization can influence aquatic productivity, including fish biomass, in comparison to streams with high levels of mineralization (McFadden and Cooper, 1962; Hendrickson et al., 1973; Marshall et al., 1980). Thus, hardness and similar measures of mineralization (e.g., alkalinity, TDS, conductivity, etc.) can be used as screening level surrogates for stream productivity. This limitation is likely typical of most regional streams as summarized in Table 15.1-8.

Soft waters can also increase the acute toxicity of divalent trace metals to aquatic organisms. Toxicity increases inversely to water hardness (Carroll et al., 1979; Pagenkopf, 1983; Pascoe et al., 1986; Davies et al., 1993; Markich and Jeffree, 1994; Meyer et al., 1999). Pagenkopf (1983) provides evidence suggesting metal toxicity to fishes is a function of divalent trace metal attachment to gill surfaces. Markich and Jeffree (1994) and Meyer et al. (1999) imply as hardness increases, divalent calcium ions will bind to the gill surface in lieu of further metal attachment. Thus, metal toxicity is reduced in hard waters compared to soft waters. Chronic Aquatic Life Criteria (CALC) in Alaska waters for various trace metals are a function of hardness concentrations (ADEC, 2008). Based on water quality data collections for trace metals in the NFK, aluminum, cadmium, copper, iron, lead, and zinc occasionally exceeded estimated CALCs (Chapter 9, Section 9.1). Of these six metals, all but the aluminum and iron criteria are a function of water hardness. Given the low frequency and limited geographical extent of criteria exceedences, the baseline water quality conditions for trace metals are not regarded as a potential limiting factor to fish production in the NFK. However, the soft waters remain a risk to increased metal toxicity from cadmium, copper, lead, and zinc. Lead has a much higher frequency of exceedences than the other constituents in

the NFK, but is not considered a potential natural limiting factor to fish production since the exceedances are not seasonally or spatially correlated. Rather, the exceedances are spread throughout the year and basin suggesting no long term chronic exposure to fish. Of the 34 total lead exceedances, there were only seven instances with exceedances ocurring in consecutive months and no locations had exceedances ocurring more than two months in a row.

Generally, nutrient concentrations in the NFK were found to be low (Chapter 9, Section 9.1). The production of primary producers is based on a combination of sunlight, temperature, and nutrient availability. At any point in time, one of these factors will limit aquatic productivity. If the availability of nutrients is the concern, the current ratio of nitrogen to phosphorus suggests nitrogen would typically be the limiting nutrient for growth of photosynthetic organisms in the NFK. Should productivity of primary producers become reduced, based on a lack of nitrogen, it is likely secondary consumers and, ultimately, food resources for fish species may become reduced compared to other regional streams.

Stream Flow. Intermittent stream flows are generally not a concern along mainstem channels in the NFK. However, reduced flows in some of the tributaries could potentially limit fish production on a local level. For example, Tributary NFK 1.190.10 routinely exhibited late summer intermittent flow conditions, immediately upstream of its confluence with Tributary NFK 1.190. The total length of dry stream channel in this tributary was slightly more than 2 miles (3.2 km).

Groundwater. Surface water expression of groundwater can provide considerable benefits to spawning and rearing fish. Although the zones of observable groundwater influence are widespread in the NFK, there are areas in the mainstem channel where groundwater influx was not prevalent. Fish abundance and productivity might be reduced in these locations compared to areas of high groundwater input. As an example, chum salmon spawning was conspicuously absent in the middle portion of NFK-A (Appendix 15.1B, Figure B.1-10). This location is upstream of the zone of major groundwater influx to surface waters in the reach.

Potential limiting factors will vary for each species and life history stage. For example, anadromous salmonid species with extended freshwater residence time like Chinook, coho, and sockeye salmon, as well as resident salmonid fishes, are typically considered limited by the juvenile rearing life stage. Conversely, species with abbreviated residence time, like chum salmon, are considered spawning-limited in the stream environment. Based on the itemized list of limiting factors above, it is likely the most limiting life-history stage for most of the species is juvenile overwinter rearing.

For chum salmon in the NFK, the abundance and productivity of populations is limited by the amount of viable spawning habitat. Spawning habitat may be restricted, in part, due to the distribution of spawning gravels, as well as the hydrologic regime and groundwater inputs to areas downstream of NFK-D.

NFK Fish Resources/Assemblage

At least 13 different fish species were documented in the NFK from 2004 through 2008 (Table 15.1-12). This count is a minimum number, because certain resident fishes including sticklebacks, sculpin, and whitefish, were not consistently identified to species during field surveys. Overall, the greatest number of fish species (13) was found in NFK-C, and there was a general tendency for the number of species to decrease in reaches further upstream (Figure 15.1-18). Only three species groups were found in NFK-E (coho salmon, Dolly Varden, and sculpin) and NFK-F (Chinook salmon, Dolly Varden, and sculpin). In

general, the species composition found during the baseline period was similar to that documented by reconnaissance field efforts in the early 1990s (Buell, 1991). Buell's field effort documented all but two of the species (rainbow trout and chum salmon) that were collected during the EBD studies. Both of these species were located in small numbers in the lower mainstem NFK (reaches NFK-A through NFK-C). Buell's sampling in the mainstem NFK was limited to four off-channel sites sampled on a single date, as compared to multiple and repeated sampling throughout these reaches during the 2004 through 2008 study period (Figure 15.1-8). Thus, it is reasonable to have some variation in the species encountered.

The life stage periodicity (reflecting the timing of various life stage functions — spawning, egg incubation, fry, juvenile, and adult migration) for anadromous and non-anadromous salmonids is presented on a regional basis in Appendix 15.1A and on a fish study area basis on Figure 15.1-19. Figure 15.1-19 was developed based on a general understanding of local fish populations and refers to the general timing of fish life history stages for the entire aquatic resources study area (Appendix 15.1C). Life history information specific to the NFK watershed is included in the species descriptions below and in Appendix 15.1A.

Many fish species present in the NFK are important to commercial, subsistence, and recreational harvest. Anadromous salmonid fishes from the NFK, along with those from the Wood, Snake, and Igushik rivers and the Nushagak watershed downstream of the NFK, are considered part of the Nushagak Management District. Because no data are available to assess the relative contribution of these NFK fish to the fisheries, district-scale data are provided here as an indication of the importance of these fisheries. Based on a 20-year average (1988 through 2007), the annual commercial harvest for the overall Nushagak District was 52,190 Chinook, 476,508 chum, 28,660 coho, and 4,969,524 sockeye salmon (Jones et al., 2009). Over the same period, the average annual subsistence harvest for the overall Nushagak District was 13,047 Chinook, 4,461 chum, 5,420 coho, and 26,421 sockeye salmon.

In general, recreational harvest of anadromous salmonids is considerably less than commercial and subsistence harvest. NFK salmon are a part of the Bristol Bay Sport Fish Management Area. In the Bristol Bay Sport Fish Management Area, the average annual recreational harvest for the 2000 to 2004 time period was: 10,067 Chinook, 2,108 chum, 13,611 coho, and 12,288 sockeye salmon (Dye et al., 2006). Over the same period, the average annual recreational harvest in the Mulchatna River, into which the NFK eventually drains, was 194 Chinook and 160 sockeye salmon. Data specific to recreational harvest in the NFK are not available; however, it can be assumed that the number would be less than that for the Mulchatna River system.

The following sections describe the fish resources in the NFK by species assemblages under major grouping of anadromous salmonid fishes, non-anadromous (resident) salmonid fishes, and non-salmonid fishes. Data are presented in terms of mainstem channel reaches, off-channel habitat, and tributary waters draining into the mainstem reaches in the NFK. Many of the sampling techniques were not conducive to estimating catch-per-unit-of-effort (CPUE), but where sufficient electrofishing or snorkeling data exist from all survey passes, the species assemblages including collections of all life history stages indicate the trends presented in Table 15.1-13.

Furthermore, fish survey results are commonly discussed below using relative fish abundance and fish density metrics. The relative abundance metric, which is expressed as the total number of fish encountered per 328 lineal feet (100 meters), is used to describe fish assemblages throughout the watershed and among habitat types. This metric was calculated for each species by summing the total

number of fish observed or captured within a given habitat type and dividing it by the total lineal distance, in meters, of the habitat type surveyed; this metric was then multiplied by 100 such that the abundance metric is standardized to 100 meters or 328 feet. The fish density metric, which is expressed as the number of fish per 1,076 square feet (sf; 100 square meters [m^2]), is used to assess fish-habitat associations and allows for a direct comparison of fish numbers among habitat types. The fish density metric was calculated in a manner similar to the abundance metric, with habitat area (wetted width times sample length) used in place of sample length. The associated relative fish abundance and fish-habitat association figures represent a summary of the mainstem channel fish abundance and density figures presented in Appendix 15.1B. In Appendix 15.1B, these metrics were calculated separately for the 2004 through 2007 and 2008 study years, as well as for mainstem and tributary habitats. In the Section 15.1 relative abundance and fish-habitat association figures, only mainstem channel data are reported, and the metrics have been calculated by combining the 2004 through 2007 and 2008 data.

NFK Anadromous Salmonid Fishes

Anadromous salmonid fishes were the most abundant fish taxa encountered in the NFK watershed. The distribution, life history, spawning abundance, relative abundance, and habitat associations of each of the four (Chinook, chum, coho, and sockeye salmon) anadromous salmon species present in the NFK are discussed in the following sections. The presence of anadromous fish species in the six NFK reaches, as determined from 2004 through 2008 survey data, is shown in Table 15.1-14. The distribution of anadromous fishes throughout the NFK watershed based on data from 2004 through 2008, as well as the ADF&G anadromous stream layer, is depicted on Figure 15.1-20. Anadromous spawning locations throughout the NFK watershed are depicted on Figure 15.1-21, while specific spawning locations for each species and reach are provided in Appendix 15.1B.

Chinook Salmon. Chinook salmon (*Oncorhynchus tshawytscha*) were observed in all NFK reaches, with the exception of NFK-E (Table 15.1-14; Figure 15.1-18). The numbers of Chinook salmon tallied during the study period upstream of the confluence of Tributary 1.190 and NFK-C were relatively low compared to those in NFK-A, NFK-B, and NFK-C. Only four juvenile fish were observed in NFK-F in 2008, and eight juveniles and three adult carcasses were observed in NFK-D (Appendix 15.1B). Greater than 50 adults and 14,000 juveniles were observed in NFK-A, NFK-B, and NFK-C combined during on-the-ground surveys during the baseline study period.

Chinook salmon juveniles were present year-round in the NFK study area.In general the life history of Chinook salmon is for fry to emerge from redds in spring and stay in the watershed until outmigration to the ocean. While juveniles in some populations out-migrate as young-of-the-year fry, this life history pattern is uncommon in the Bristol Bay basin (Appendix 15.1A). Based on length frequency distributions, three age classes of juvenile Chinook salmon have been observed rearing in the NFK: young-of-the-year/subyearlings (0+), yearlings (1+), and 2+ age juveniles. The mean length of these Chinook salmon by age-class, is shown on Figure 15.1-22. No data were available to infer the age or length at which NFK juvenile salmon outmigrate.

Data suggest that at least some juvenile salmon overwinter in the NFK. Juvenile Chinook salmon have been documented in the NFK as early as April and as late as November (Appendix 15.1B, Tables B.1-2, B.2-2, B.3-7, and B.6-2). During the winter surveys, Chinook salmon were observed only in NFK-B and NFK-C, indicating that these reaches provide overwintering habitat.

Based on field surveys in mainstem habitats, the relative abundance of juvenile Chinook salmon is shown for selected reaches on Figure 15.1-23. In the lowermost NFK reaches (NFK-A, NFK-B, and NFK-C), juvenile Chinook salmon were the second-most abundant salmonid species observed. The greatest abundance of Chinook salmon was in NFK-B, at an estimated 513 fish per 328 feet (100 meters).

Juvenile Chinook salmon were predominantly found in mainstem channel, fast-water habitats (Figure 15.1-24). Few Chinook salmon were found in off-channel habitats (Figure 15.1-25). Densities of juvenile Chinook salmon in the mainstem channel were approximately 5 fish per 1,076 sf (100 m^2), compared to less than 1 fish per 1,076 sf (100 m^2) in side channel and in off-channel habitats (Appendix 15.1B, Figure B.3-11). In the mainstem NFK, densities in riffle and run/glide habitat ranged from approximately 2 to 30 fish per 1,076 sf (100 m^2) compared with approximately 3 fish per 1,076 sf (100 m^2) in pools (Figure 15.1-24). Juvenile Chinook salmon densities in Tributary NFK 1.190 complex ranged from less than 1 to approximately 20 fish per 1,076 sf (100 m^2; Appendix 15.1B, Table B.3-8).

Surveys for adult Chinook salmon in the NFK were conducted annually from 2004 through 2008. During this period, adult Chinook salmon entered the NFK to spawn as early as July 12 and were present as late as August 29 (Figure 15.1-26). The annual spawning run in the NFK was consistently 5 to 6 weeks long, with peak adult counts occurring between July 23 and August 4.

During the study period, the greatest adult Chinook salmon mean index counts were documented in 2004 and 2005 with a declining trend evident from 2006 through 2008 (Figure 15.1-26; Figure 15.1-27). Chinook salmon were the most abundant of the Pacific salmon in the NFK in 2004 and 2005. There was an order of magnitude decline in NFK Chinook salmon mean index counts from 2005 to 2006 (Figure 15.1-27). Total inshore run estimates for the entire Nushagak District (Morstad et al., 2010) and escapement estimates for the Nushagak River (Baker et al., 2009) also showed a decline over time (Table 15.1-15; Figure 15.1-27). At these scales, however, the largest reduction in run size for the Nushagak District and escapement for the Nushagak River was evident in 2007, 1 year later than the observed decline in the NFK mean index counts.

Reach-specific counts allowed for an assessment of the salmon spawner distribution within the NFK watershed. From 2004 through 2008, Chinook salmon spawning was observed in the lower four reaches of the NFK (NFK-A through NFK-D). Analysis of the relative abundance and distribution of spawning salmon among the NFK reaches indicates there was a greater number of spawning Chinook salmon in NFK-A compared to the other NFK reaches (Table 15.1-16; Figure 15.1-28). In 2008, the mean number of spawning adults in NFK-A was 113 fish, while NFK-B and NFK-C supported mean counts of 38 and 47 fish, respectively. In 2008, no spawning Chinook salmon were observed upstream of NFK-C. Adult Chinook salmon are typically associated with mainstem reaches and require sufficient discharge to complete their upstream migration (Appendix 15.1A); therefore, low flows in the upstream portions of the NFK and a general reduction in the amount of suitable spawning gravels may limit spawning for Chinook salmon upstream of NFK-C.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the NFK with respect to the Nushagak District and the greater Bristol Bay fishery. The Nushagak District is one of five fishery districts within Bristol Bay. Chinook salmon within this district, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, have contributed approximately 81 percent of the total Bristol Bay Chinook salmon catch, based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). The total inshore run estimates (harvest and escapement) provided by ADF&G for Nushagak District Chinook

salmon between 2004 and 2008 ranged from a low of 123,376 fish in 2007 to a high of 244,793 fish in 2005, with a 5-year average of 188,521 (Morstad et al., 2010; Table 15.1-15). During the same time period, Nushagak River Chinook salmon escapement estimates ranged from 53,344 in 2007 to 163,506 in 2005 and had a 5-year average of 106,131 (Baker et al., 2009). In contrast, the NFK Chinook salmon mean index counts (used as an index of escapement) ranged from 157 in 2008 to 1,838 in 2004 and averaged 891 for the 5-year study period (Table 15.1-15; Figure 15.1-27).

Chum Salmon. Chum salmon (*O. keta)* are generally restricted to low-gradient reaches in streams, because their leaping and swimming capabilities are not as strong as other anadromous salmonids (Powers and Orsborn, 1985; Reiser et al., 2006; Appendix 15.1A). A restricted distribution of chum salmon was evident in the NFK. Chum salmon were found from NFK-A through NFK-C (Table 15.1-14). While both juvenile and adult chum salmon have been observed in NFK-C, only adults have been documented in the lower two reaches.

In general, chum salmon fry emergence occurs in late winter and early spring before ice break-up (Appendix 15.1A). Chum salmon are known to seek spawning areas influenced by groundwater upwelling; therefore ice-free conditions would presumably be present at the time of fry emergence. Only 15 juvenile chum salmon were observed in the NFK during the entire study period from 2004 through 2008. These observations were made at three of the winter fish sampling sites in NFK-C in April 2006 (Appendix 15.1B, Table B.3-7). The lack of juvenile chum salmon observations in late spring/early summer, combined with the fact that only young-of-the year (age 0+) have been documented (Figure 15.1-22), indicate juvenile chum salmon only reside in the NFK for a brief period before completing their outmigration. This finding is consistent with the general life history patterns of chum salmon throughout their range, where juveniles are thought to overwinter as subyearlings in estuarine waters (Groot and Margolis, 1998). Chum salmon generally exhibit a much abbreviated river residence time as compared to other Pacific salmon species and are gone from natal rivers within a few weeks after emergence (Appendix 15.1A). In contrast, most juvenile Chinook and coho salmon remain in their natal streams for more than a year before migrating to the sea.

Due to the limited number of juvenile chum salmon observations, little information was obtained regarding juvenile habitat associations in the NFK. However, field survey notes indicate that the three winter fish sampling sites where juvenile chum salmon were observed (NFK06WT-02, NFK06WT-04, and NFK06WT-05; Appendix 15.1B, Figure B.3-22) were a combination of slow- and fast-water habitats, and cobble was the dominant substrate.

Surveys for adult chum salmon in the NFK were conducted annually from 2004 through 2008. Over this 5-year period, chum salmon entered the NFK to spawn as early as July 5 and were present as late as August 15 (Figure 15.1-29). The annual spawning run in the NFK typically lasted for 6 weeks. Peak adult counts occurred between July 12 and July 20. In 2004, chum salmon were observed during only a single NFK survey on July 12, when 435 adults were counted.

Chum salmon are the third most abundant Pacific salmon spawning in the NFK with annual mean index counts between 165 and 532 salmon (Table 15.1-15; Figure 15.1-30). In contrast to Chinook salmon, chum salmon mean index counts in the NFK showed a generally increasing trend over the study period (Figure 15.1-29; Figure 15.1-30). This trend was also observed for UT chum salmon, but was not evident in the SFK or ADF&G's Nushagak District chum salmon total run and Nushagak River escapement estimates (Baker et al., 2009; Morstad et al., 2010). At the larger scale of the Nushagak District, chum

salmon runs increased from 2004 through 2006 and then declined through 2008 (Morstad et al., 2010; Table 15.1-15). Nushagak River chum salmon escapement showed a trend similar to the District total inshore run, although an increase in escapement was observed in 2008 (Baker et al., 2009; Figure 15.1-30).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the watershed. In 2008, chum salmon were observed spawning in the three lowermost NFK reaches (NFK-A through NFK-C; Table 15.1-16; Figure 15.1-28). Analysis of the relative abundance and distribution of spawning salmon among the NFK reaches indicates there is a greater number of spawning chum salmon in NFK-C compared to other reaches. In 2008, the mean number of spawning adults in NFK-C was 326 adults, while NFK-A and NFK-B supported mean spawning counts of 49 and 51, respectively. This spawning distribution pattern is likely due to the distribution of springs and upwelling areas and the hydrologic regime of the NFK. In particular, NFK-C is characterized as a gaining reach, with numerous springs and areas of groundwater upwelling throughout its length (Chapter 7, Section 7.2). Areas of groundwater upwelling likely attract chum salmon spawning in this portion of the NFK watershed. Springs and upwellings are also present in NFK-A and NFK-B, but their distribution is more limited as compared to NFK-C.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the NFK with respect to the Nushagak District and the greater Bristol Bay fishery. Chum salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, contributed approximately 51 percent of the total Bristol Bay catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). The total inshore run estimates (commercial catch and escapement) provided by ADF&G for the Nushagak District chum salmon between 2004 and 2008 ranged from a low of 754,053 fish in 2004 to a high of 1,901,238 fish in 2006, with a 5-year average of 1,191,993 (Morstad et al., 2010; Table 15.1-15). During the same time period, Nushagak River chum salmon escapement estimates ranged from 161,483 in 2007 to 661,002 in 2006 and had a 5-year average of 377,724 (Baker et al., 2009). In contrast, the NFK chum salmon mean index counts (used as an index of escapement) ranged from 165 in 2005 to 532 in 2008 and averaged 362 for the 5-year study period (Table 15.1-15; Figure 15.1-30).

Coho Salmon. In contrast to Chinook and chum salmon, coho salmon (*O. kisutch)* were observed in five of the six NFK reaches (NFK-A through NFK-E), including Tributaries NFK 1.190, NFK 1.260, NFK 1.270, and NFK 1.280 (Table 15.1-14; Figure 15.1-20). Adult coho salmon are strong swimmers and generally have shallow body depths compared to the other anadromous salmon in the study area. This shape enables coho salmon to access smaller, shallower, and higher gradient stream channels than other anadromous salmon species.

Coho salmon fry generally emerge between mid-March and May (Appendix 15.1A). Length frequency data indicate four age classes of coho salmon juveniles occur in the NFK: subyearling (0+), yearling (1+), and 2+age and 3+age juveniles. Mean lengths for each age class are shown in Figure 15.1-22. In other systems, the preponderance of juvenile coho salmon overwinter in freshwater and outmigrate as 1+ fish, with some juveniles residing in freshwater for up to 2 years (Appendix 15.1A). In the NFK, it is unclear what proportion of juvenile coho salmon outmigrate as 1+, 2+, or 3+ age fish, especially given the presence of some 3+age fish. Juvenile coho salmon have been observed in the NFK watershed as early as April and as late as November (Appendix 15.1B, Tables B.2-2 and B.3-7). Juvenile coho salmon were

only found in NFK-B and NFK-C during the winter surveys, indicating that these reaches provide overwintering habitat.

The relative abundance of coho salmon juveniles was the highest of all four anadromous salmon species (Figure 15.1-23). In NFK-A through NFK-E, juvenile coho salmon represented the most abundant anadromous salmonid fish. However, they were less abundant than Dolly Varden in NFK-E, and no coho salmon juveniles were found in NFK-F (Table 15.1-14). The greatest relative abundances of coho salmon in the mainstem NFK were observed in NFK-C, where estimates ranged from 210 to 1500 fish per 328 feet (100 m; Figure 15.1-23).

Coho salmon juveniles were found in a variety of habitat types. In NFK-C, where data support density comparisons across mainstem channel, off-channel, and tributary habitat types, coho salmon densities were greatest in side channels (50 fish per 1,076 sf [100 m^2]) and in mainstem channels (25 fish per 1,076 sf [100 m^2]; Appendix 15.1B, Figure B.3-11). Coho salmon were also present in off-channel habitats at a density of 9 fish per 1,076 sf (100 m^2). Within the mainstem NFK, the greatest densities of coho salmon juveniles were found in NFK-C slow water habitats (Figure 15.1-24). The overall highest density (1,154 fish per 1,076 sf [100 m^2]) of juvenile coho salmon was found in backwater habitat that was connected to the mainstem channel within NFK-C. This was followed by more than an order of magnitude lower densities of coho salmon juveniles in pools (74 fish per 1,076 sf [100 m^2]), run/glides (34 fish per 1,076 sf [100 m^2]) and riffles (13 fish per 1,076 sf [100 m^2]). Coho salmon juveniles were also found in riffle habitat in NFK-A and NFK-B at densities of 18 and 35 fish per 1,076 sf (100 m^2), respectively (Figure 15.1-24). Among the off-channel habitat types, alcoves supported the greatest density of coho salmon (234 fish per 1,076 sf [100 m^2]; Figure 15.1-25; Appendix 15.1D). Juvenile coho salmon habitat associations in tributaries were similar to those in the mainstem, with higher densities observed in slow-water habitats (Appendix 15.1B, Table B.3-8).

Surveys for adult coho salmon were conducted annually from 2004 through 2008. Adults were observed entering the NFK as early as August 15 and were present as late as November 6 (Figure 15.1-31). During the 5-year study period, peak adult counts occurred between September 5 and September 28.

In the NFK, coho salmon mean index counts were the lowest of the anadromous salmon species over the study period, with annual mean index counts ranging from 43 to 478 adult salmon (Table 15.1-15; Figure 15.1-32). Similar to chum salmon, they showed a generally increasing trend over the years, with the exception of an order of magnitude decline in 2007. Estimates of coho salmon total run for Nushagak District and escapement to the Nushagak River were not available; however, it is worth noting that catch statistics for the Nushagak District also showed a substantial decline in coho salmon numbers in 2007 (Morstad et al., 2010; Table 15.1-15).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the watershed. During the 2008 study period, coho salmon were observed spawning in five NFK reaches (NFK-A through NFK-E; Table 15.1-16; Figure 15.1-28). As with chum salmon, NFK-C had the greatest number of spawning coho salmon. In 2008, the mean number of spawning adults in NFK-C was 210 adults. NFK-A had approximately half the number of spawning coho salmon (mean spawning count of 106 fish), while NFK-B, NFK-D, and NFK-E had 75 or fewer spawners (Table 15.1-16). This spawning distribution pattern may, in part, be due to the distribution of spawning gravels and the hydrologic regime in the upper portions of NFK-C and NFK-D. In particular, NFK-C is characterized as a gaining stream, with numerous springs and areas of groundwater upwelling throughout its length (Chapter 7, Section 7.2). Upwelling

may potentially serve to attract coho salmon spawning in this portion of the NFK watershed. Additionally, because coho salmon spawn later than the other anadromous salmonids (Appendix 15.1A), access to upstream reaches and tributaries becomes possible once stream flows begin to increase in September and October (Figure 15.1-9).

Mean index counts were used to provide a perspective of the relative size of salmon runs in the NFK with respect to the Nushagak District and the greater Bristol Bay fishery. Coho salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, contributed approximately 31 percent of the total Bristol Bay catch, based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Nushagak District run estimates and Nushagak River escapement estimates for coho salmon were not available. However, commercial catch for coho salmon in the Nushagak District from 2004 through 2008 ranged from 29,578 fish in 2007 to a high of 73,889 fish in 2008, with a 5-year average of 47,603 (Morstad et al., 2010; Table 15.1-15). Although not directly comparable, the NFK coho salmon mean index counts (used as an index of escapement) ranged from 43 in 2007 to 449 in 2006, and averaged 282 for the 5-year study period (Figure 15.1-32).

Sockeye Salmon. The longitudinal distribution of sockeye salmon (*O. nerka)* in the NFK extended from NFK-A to NFK-D (Table 15.1-14). Over the course of the 5-year study period, adults were observed in all four of these reaches, and juveniles were observed in NFK-A through NFK-C. Sockeye salmon in NFK-D were spawning in Big Wiggly Lake within the Tributary NFK 1.240 drainage, indicating that fry are also present in NFK-D for some period of rearing.

Juvenile sockeye salmon were observed in the NFK in April, July, and August (Appendix 15.1B). Based on length frequency distributions, the only age-class of juvenile sockeye salmon observed in the NFK was young-of-the-year fish (Figure 15.1-22). Sockeye salmon fry emerge in spring and typically move downstream or into lake rearing habitat within 2 to 3 weeks of emergence (Appendix 15.1A).

The relative abundance of juvenile sockeye salmon is shown for selected reaches on Figure 15.1-23. Sockeye salmon were less abundant in the NFK than both Chinook and coho salmon, but were comparable in numbers to chum salmon. This pattern is consistent with the abbreviated riverine residence time of both juvenile sockeye and chum salmon. Juvenile sockeye salmon abundance was similar in NFK-A and NFK-B at 4.0 and 4.5 fish per 328 feet (100 meters), respectively.

Because relatively few sockeye salmon juveniles were observed in the NFK, little information was obtained regarding their habitat associations. The observed fish were located primarily in mainstem habitats and were absent from tributary surveys. Densities were equally low, well below 1 fish per 1,076 sf (100 m^2) in mainstem channel, side channel, and off-channel habitat (Appendix 15.1B, Figure B.3-11), as well as in riffle and pool habitat (Figure 15.1-24). The only observed sockeye salmon juvenile densities greater than 1 fish per 1,076 sf (100 m^2) occurred in alcove off-channel habitats (Figure 15.1-25).

Surveys for adult sockeye salmon were conducted from 2004 through 2008. During the study period, adult sockeye salmon entered the NFK to spawn as early as July 5 and were present as late as September 17 (Figure 15.1-33). Annual peak counts of adult sockeye salmon occurred within a 1-week window from July 27 to August 4. Among the study years, the greatest peak count observed was 2,188 adults in 2007.

NFK sockeye salmon runs were the most stable of the four anadromous salmon runs during the study period. Mean index counts of NFK sockeye salmon ranged from 456 to 648 (Table 15.1-15). Sockeye

salmon were the most abundant of the Pacific salmon spawning in the NFK from 2006 to 2008 (Figure 15.1-34). Sockeye salmon total run estimates provided by ADF&G for the Nushagak District were also relatively stable compared to other species and sockeye salmon runs in other Bristol Bay districts (Morstad et al., 2010). In the Nushagak District, the largest sockeye salmon run from 2004 through 2008 occurred in 2006 (Morstad et al., 2010; Table 15.1-15). In the Nushagak River, sockeye salmon escapement estimates peaked 1 year earlier, in 2005, when escapement was nearly twice that observed in other years during the 5-year study period (Baker et al., 2009). These peaks in total run and escapement estimates were not evident in the NFK sockeye salmon mean index counts.

Reach-specific counts allow for an assessment of the salmon spawner distribution within the watershed. From 2004 through 2008, the observed spawning distribution for sockeye salmon included mainstem habitats in NFK-A, NFK-B, and NFK-C, and Big Wiggly Lake (NFK 1.240.P1) in NFK-D. Analysis of the relative abundance and distribution of spawning salmon among the NFK reaches in 2008 indicates that there was a greater number of spawning sockeye salmon in NFK-A compared to the other NFK reaches (Table 15.1-16; Figure 15.1-28). In 2008, the mean number of spawning adults in NFK-A was 536 fish. NFK-C had the second greatest spawning abundance (225 fish), while NFK-B and NFK-D supported relatively few sockeye salmon spawners.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the NFK with respect to the Nushagak River District and the greater Bristol Bay fishery. Sockeye salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, contribute approximately 20 percent of the total Bristol Bay catch, based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Total inshore run estimates (commercial catch and escapement) for the Nushagak District sockeye salmon from 2004 through 2008 ranged from a low of 8,248,738 fish in 2004 to a high of 15,738,137 fish in 2006 and had a 5-year average of 11,023,703 fish (Morstad et al., 2010; Table 15.1-15). During the same time period, Nushagak River sockeye salmon escapement estimates ranged from 492,000 in 2004 to 1,049,000 in 2005 and had a 5-year average of 620,000 (Baker et al., 2009). In contrast, the NFK sockeye salmon mean index counts (used as an index of escapement) ranged from 456 in 2006 to 648 in 2007 and averaged 568 for the 5-year study period.

NFK Non-anadromous (Resident) Salmonid Fishes

Non-anadromous salmonid fishes found in the NFK watershed include arctic grayling, Dolly Varden, rainbow trout, and several whitefish species (Table 15.1-17). Although these species are less abundant than anadromous salmonids, they represent an important component of the fish community in this watershed and support local and regional sport and subsistence fisheries. Rainbow trout are particularly important with respect to recreational fisheries. The catch rate for rainbow trout in the Mulchatna drainage averaged 3,993 fish per year from 2000 to 2004 (Dye et al., 2006). Subsistence use of rainbow trout was high and similar to other resident salmonids in 2004 for the towns of Iliamna, Newhalen, and Nondalton (Table 15.1-18; Fall et al., 2006).

The distribution, life history, relative abundance, and habitat associations of each of the four non-anadromous salmonid taxa present in the NFK are discussed below. The mean length of non-anadromous salmonids by age class captured in the NFK is presented on Figure 15.1-35.

Arctic Grayling. The distribution of arctic grayling (*Thymallus arcticus*) in the NFK included NFK-A through NFK-D (Table 15.1-17). Both juvenile and adult arctic grayling have been observed in NFK-A,

NFK-C, and NFK-D; only adults were observed in NFK-B. In comparison to the anadromous salmonids, relatively little data are available to describe stream-specific life history characteristics of arctic grayling in the NFK. Elsewhere in their range, adults overwinter in lakes or mainstem channels and migrate to upstream tributaries to spawn in May and June (see Appendix 15.1A). Following spawning, adults may return to lakes or mainstem channels or remain in upstream tributaries for a summer feeding season. In the NFK, adults have been observed from May through October, with no discernable pattern in the timing of the reaches they inhabit. Likewise, juvenile grayling have been seen from May through October in multiple reaches.

The relative abundance of arctic grayling in NFK-C is shown on Figure 15.1-23. Relatively few arctic grayling were observed in NFK-A and NFK-B (Appendix 15.1B, Tables B.1-2 and B.2-2). Abundance increased in NFK-C, where estimates ranged from 3 to 125 fish per 328 feet (100 meters). Overall, arctic grayling were less abundant than Chinook and coho salmon, similar in numbers to sockeye salmon and Dolly Varden, and more abundant than chum salmon and rainbow trout (Figure 15.1-23).

NFK-C was the only reach in which the density of arctic grayling could be compared across multiple channel and habitat types. Arctic grayling were observed in low numbers (less than 1 fish per 1,076 sf [100 m^2]) in mainstem channel habitats and absent in off-channel and side channel habitats surveyed in NFK-C (Appendix 15.1B, Figure B.3-11). Grayling were present in fast and slow water habitats in the mainstem NFK (Figure 15.1-24) and in the Tributary 1.190 complex (Appendix 15.1B, Figure B.3-9b). Arctic grayling were found primarily in mainstem pool habitats at approximately 5 fish per 1,076 sf (100 m^2). Densities in other mainstem and tributary habitats were less than 1 fish per 1,076 sf (100 m^2).

Dolly Varden. Dolly Varden (*Salvelinus malma*) were ubiquitous within all six reaches of the NFK (Table 15.1-17) and were found in both mainstem and tributary habitats (Appendix 15.1B). Juvenile and adult life history stages have been observed in all six reaches.

Both anadromous and non-anadromous populations of Dolly Varden are thought to exist within the Bristol Bay region (see Appendix 15.1A). Dolly Varden populations in the NFK are thought to be non-anadromous, because no evidence of anadromy was found during the 5 years of study. However, relatively little information has been collected regarding specific life history pattern(s) in the NFK. These patterns can be complex, with variations in spawning frequency, migration timing, and selection of overwintering sites. Adults have been observed in July, August, and September, while juveniles have been seen in April, July through September, and November (Appendix 15.1B, Tables B.1-2, B.2-2, B.3-7, B.4-2, B.5-2, and B.6-2).

The relative abundance of juvenile and adult Dolly Varden is shown for reaches with available data on Figure 15.1-23. Like arctic grayling, relatively few Dolly Varden were observed in NFK-A and NFK-B (Appendix 15.1B, Tables B.1-2 and B.2-2). The estimated abundance of Dolly Varden in NFK-C mainstem habitats ranged from 15 to 37 fish per 328 feet (100 meters; Figure 15.1-23). Within the Tributary 1.190 complex, the range of abundance estimates was much greater, from less than 1 to greater than 700 fish per 328 feet (100 meters; Appendix 15.1B, Table B.3-8b). Overall, Dolly Varden were less abundant than Chinook and coho salmon, similar in numbers to sockeye salmon and arctic grayling, and more abundant than chum salmon and rainbow trout (Figure 15.1-23).

The NFK-C was the only reach in which the density of Dolly Varden could be compared across multiple habitat types (Figure 15.1-24). Dolly Varden were present in mainstem channel, off-channel, and side

channel habitats (Appendix 15.1B, Figure B.3-11). Mainstem NFK densities were generally less than 3 fish per 1,076 sf (100 m^2) in all habitats (Figure 15.1-24). The density in Tributary 1.190 and in smaller tributaries was more variable and ranged from 5 fish per 1,076 sf (100 m^2) in riffle and cascade habitat to over 105 fish per 1,076 sf (100 m^2) in backwater habitat (Appendix 15.1B, Figure B.3-9b). Dolly Varden densities in off-channel habitats ranged from less than 1 fish per 1,076 sf (100 m^2) in beaver ponds to approximately 16 fish per 1,076 sf (100 m^2) in side channel habitat (Figure 15.1-36).

Rainbow Trout. Rainbow trout (*O. mykiss)* were only found in NFK-A and NFK-C (Table 15.1-17). In each of these reaches, observations included both adult and juvenile rainbow trout.

Only non-anadromous populations of rainbow trout are thought to occur in the Bristol Bay watersheds (see Appendix 15.1A). To date, there is no evidence of anadromy in the NFK rainbow trout populations. Little information was available or has been collected to describe stream-specific life history characteristics of rainbow trout in the NFK. Whereas most of the salmonid species present in the study area spawn in the summer or fall, rainbow trout are spring spawners. Small numbers of adult rainbow trout have been documented in the NFK in July and August, while juveniles have been observed in July, August, and September (Appendix 15.1B). Given the relatively small number of observations, no reach-specific utilization or migration patterns were discernable.

Overall, few collections and observations of rainbow trout were made during the NFK fish surveys (Appendix 15.1B). The relative abundance of rainbow trout in the mainstem NFK was less than 1 fish per 328 feet (100 meters; Figure 15.1-23). Relative abundance in Tributary NFK 1.190 was slightly greater, ranging from less than 1 to approximately 3 fish per 328 feet (100 meters; Appendix 15.1B, Figure B.3-8b). Rainbow trout occupied both fast- and slow-water habitats in the NFK, including backwater, cascade, pool, riffle, and run/glide, although densities in these habitat types were approximately or less than 1 fish per 1,076 sf (100 m^2; Appendix 15.1B, Figure B.3-9).

Whitefish. Representatives of the whitefish species group (Coregoninae) that were found in the NFK watershed included round whitefish (*Prosopium cylindraceum*), humpback whitefish (*Coregonus pidschian*), and the least cisco (*C. sardinella*). Fish belonging to this species group were documented from NFK-A through NFK-D (Table 15.1-17). In many cases, these fish were observed during snorkel surveys and could not be identified to species. Observations in the NFK-C during the study period identified round whitefish, while Buell (1994) documented both humpback whitefish and least cisco in the NFK. Whitefish observations in the NFK during the baseline study period were limited to the adult life stage. Adults were observed in the NFK as late as September (Appendix 15.1B). Although adult whitefish were found within the mainstem channel of NFK C, abundance estimates were low, ranging from less than 1 to approximately 18 fish per 328 feet (100 meters; Figure 15.1-23). Whitefish were not observed or captured in the tributaries. Whitefish spawning is thought to occur during the fall (Appendix 15.1A);however, no juvenile whitefish were observed during the study period.

NFK Non-Salmonid Fishes

Non-salmonid fishes found in the NFK watershed include northern pike, sculpin, and stickleback (Table 15.1-19). Of these three species, only northern pike are valued as a subsistence and sport fish to local communities. Information regarding the distribution, relative abundance, and habitat associations of these three non-salmonid species groups in the NFK is provided below.

Northern Pike. Juvenile and adult northern pike were documented in reaches NFK-C and NFK-D (Table 15.1-19). Adult pike were observed from June through October, while juveniles were recorded between July and November (Appendix 15.1B, Tables B.3-7 and B.4-2). These observations were made primarily in lakes or in outlet streams of lakes, with the majority of the observations occurring in Big Wiggly and Black lakes. During the 2008 mainstem index surveys, a single juvenile northern pike was observed in riffle habitat within NFK-D (Appendix 15.1B, Table B.4-4 and Figure B.4-14b).

Sculpin. Sculpin (*Cottus* sp.) have been documented in all reaches of the NFK, making it among the most widely distributed species in this watershed (Table 15.1-19). Although sculpin were not identified to species, both slimy sculpin *(Cottus cognatus*) and coast range sculpin (*Cottus aleuticus*) are known to inhabit the Bristol Bay basin (Appendix15.1A), and slimy sculpin have been previously documented in the NFK by Buell (1994) and ADF&G (2006b). During the 2004 through 2008 environmental baseline studies, both juvenile and adult sculpin were documented throughout the NFK, with the exception of NFK-E — where only juvenile and indeterminate life stages were observed.

The relative abundance of sculpin was generally low where they were documented. The exception was in NFK-C, where sculpin abundance ranged from 29 to 58 fish per 328 feet (100 meters) in the NFK mainstem (Figure 15.1-23) and from approximately 2 to 240 fish per 328 feet (100 meters) in NFK-C tributaries (Appendix 15.1B, Figure B.3-8b). Among the various mainstem channel habitat types, sculpin were most dense in backwater/sloughs (31 fish per 1,076 sf [100 m^2]) in the NFK-C mainstem (Figure 15.1-24) and in riffle and run/glide habitats within the Tributary 1.190 complex (approximately 30 to 45 fish per 1,076 sf [100 m^2]; Appendix 15.1B, Figure B.3-9b). In off-channel habitats, sculpin were found mostly in flowing habitat types, such as percolation channels and side channels, at densities less than 4 fish per 1,076 sf (100 m^2; Figure 15.1-36).

Stickleback. In the NFK, stickleback (Gasterosteidae) have been documented in NFK-A through NFK-D (Table 15.1-19). Consistent with the findings of Buell (1994), current observations included both juvenile and adult ninespine stickleback *(Pungitius pungitius)* and threespine stickleback *(Gasterosteus aculeatus)*.

Stickleback were observed in the NFK mainstem, in Tributaries 1.220, 1.240, and 1.270, and in off-channel habitats. Stickleback were primarily located in beaver ponds and associated outlet channels at densities of 1 and 25 fish per 1,076 sf (100 m^2), respectively (Figure 15.1-36) and were often the most abundant species in slackwater. Few, if any, stickleback were present in other off-channel habitats. The estimated stickleback density in glide habitat at one mainstem index site in 2008 was 0.45 fish per 1,076 sf (100 m^2; Appendix 15.1B, Table B.4-14a).

NFK Watershed Synthesis

Anadromous salmon spawn throughout the NFK. However, most of the spawning occurs in the lower and middle mainstem river reaches (NFK-A, NFK-B, and NFK-C). An assessment of individual anadromous species spawning distributions indicates that Chinook salmon use the large river reaches low in the drainage watershed. The greatest abundance of Chinook, as well as sockeye salmon, spawners during the baseline period was observed in NFK-A. Conversely, coho salmon spawning was ubiquitous throughout the NFK mainstem and tributary reaches. Nevertheless, the greatest abundance of coho and chum salmon, as well as chum salmon spawners, was found in NFK-C. The instream-flow model predictions help explain these patterns based on relationships between substrate sizes, water velocities, and species preferences for these criteria. In NFK-A, the model predicts the highest amounts of available Chinook

salmon spawning habitat, while the highest amounts of available coho and chum salmon spawning habitat were predicted in NFK-C. No similarity of pattern was evident for sockeye salmon. When considering the within-reach spawning distributions of sockeye salmon, and to a large extent chum salmon, a direct association between spawning area and areas identified as gaining reaches due to inflow from groundwater, seeps, or springs was evident.

The NFK thermal regime may also influence fish spawning distributions. The NFK exhibits a sharp temperature decline near the top of NFK-C where Tributary NFK 1.190 enters the mainstem channel. Flows from Tributary NFK 1.190 cool the river downstream as indicated by both instantaneous and monthly temperatures (Appendix 15.1E). NFK reaches above NFK 1.190 are warmer, and instantaneous temperatures have been documented that both exceed optimal temperatures for spawning and incubation and are higher than maximum temperatures recorded for other regional rivers. The arrival of coho salmon to the NFK coincides with onset of fall rains that help ensure adequate flows and temperatures for spawning in upper reaches. These flows and temperatures are not available to other species entering the river basin earlier in the season.

Although little spawning was observed in NFK-D over the study period, this reach contains habitat that supports a distinct life history strategy for sockeye salmon. Tributary NFK 1.240 drains into NFK-D at RM 27.92 (RK 44.93). Big Wiggly Lake in the NFK 1.240 drainage supports a population of lake-spawning sockeye salmon. Approximately 514 adult sockeye salmon were counted in these lakes in 2008. Limited sampling around the lake perimeter was unable to determine if juvenile rearing is occurring in these lakes as well, but rearing is assumed to occur in NFK-D and reaches downstream.

Based on mean index counts, the NFK supported the largest run of Chinook and chum salmon among the three watersheds in the study area. The abundance of Chinook and chum salmon runs in the SFK follow closely behind NFK. Coho salmon mean index counts were similar in the NFK and SFK and were substantially less in the NFK than in the UT (see Sections 15.1.6.2 and 15.1.6.3). The sockeye salmon run in the NFK was consistent year to year, yet it was the smallest run among the three watersheds.

The distributions of river-rearing, juvenile Pacific salmon follow similar patterns as the spawning distributions. Juvenile Chinook salmon were prominent in mainstem channel, fast-water habitats that dominated the lower three reaches of the NFK. Juvenile coho salmon, on the other hand, were widely dispersed throughout the mainstem NFK and in several tributaries and occupied numerous habitats. Off-channel habitat appeared particularly important to coho salmon rearing, because they were observed at their highest densities in off-channel backwater and alcove habitats. This wide distribution and broad habitat use for juvenile coho salmon is consistent with the fact that they were the most abundant juvenile fish species documented in the NFK.

Patterns evident for juvenile sockeye salmon distribution were also noteworthy. Sockeye salmon typically outmigrate from the river reaches in their first spring after emergence as subyearling fish (Appendix 15.1A). Thus, the observations of juvenile sockeye salmon in the middle NFK in April was not surprising. However, juvenile sockeye salmon also were documented in NFK-A, NFK-B, and NFK-C during summer sampling, indicating that some sockeye are rearing for at least several months within the NFK.

At least nine non-anadromous salmonid and non-salmonid fishes were present in the NFK during the study period. In general, these stream-dwelling fishes were distributed in low numbers throughout the lower reaches (NFK-A, NFK-B, and NFK-C). Arctic grayling, northern pike, and stickleback species also

were found in NFK-D. Dolly Varden and the sculpin species were the most widespread of non-anadromous fishes and were documented in all reaches as well as several tributaries. Relative abundance of these fishes was generally low, with the exception of Dolly Varden and sculpin in NFK-C. Although juvenile Chinook and coho salmon dominated the mainstem habitat in NFK-A, NFK-B, and NFK-C, Dolly Varden exhibited the highest relative abundance among all fishes within NFK-C tributaries.

Within the NFK, NFK-C and NFK-D had the most diverse species assemblages, and NFK-C and Tributary NFK 1.190 supported the highest relative abundance of the fishes documented over the study period. The abundance and diversity of fish in NFK-C did not appear to be driven by habitat availability. As predicted by the instream-flow model, NFK-B should provide much more available habitat for all juvenile salmonids except rainbow trout, and the highest estimates of available spawning habitat for four out of seven salmonids was in NFK-A. The habitat quality in NFK-C may be a factor influencing the richness of fish species. NFK-C gained inflow from Tributary 1.190, as well numerous seeps and springs located along the mainstem channel margin (Chapter 9, Section 9.1). Tributary 1.190 was also largely influenced by seeps and springs and contributed cooler water to NFK-C, providing an enhanced thermal regime to habitats downstream compared to those upstream in NFK-D, NFK-E, and NFK-F. Of the summer maxima temperature recorded during the study period in NFK-D, 78 percent exceeded rearing standards for salmonid fishes. The recorded high temperatures in the NFK are several degrees higher than those reported for other streams in the region, except for the SFK.

Intermittent stream flows were generally not a concern along mainstem channels in the NFK. However, reduced flows in some of the tributaries could potentially limit fish production on a local level. For example, Tributary NFK 1.190.10 routinely exhibited late summer intermittent flow conditions, immediately upstream of its confluence with Tributary NFK 1.190. The total length of dry stream channel in this tributary was slightly more than 2 miles (3.2 km).

The data collected during the study period reveal the preponderance of fish spawning and rearing in the NFK occurred in areas with a surface water expression of groundwater. These areas of detectable groundwater influence were widespread throughout the lower three reaches, with areas of higher groundwater concentration noted in the upper portion of NFK-B, NFK-C, and Tributary 1.190 (Chapter 7, Section 7.2). In areas where groundwater influx was not prevalent, fish diversity and abundance were reduced.

15.1.6.2 South Fork Koktuli Watershed

SFK Watershed Overview

The SFK is another relatively small drainage of the Nushagak-Mulchatna river system. The Nushagak basin is one of eight river basins draining Southwest Alaska into Bristol Bay (Figure 15.1-5). The headwaters of the SFK are situated in the Pebble Deposit area (Figure 15.1-37). The SFK drainage area comprises 107 mi^2 (277 km^2), which represents about 0.8 percent of the Nushagak-Mulchatna system and 0.3 percent of the entire Bristol Bay drainage basin (Table 15.1-2). The SFK includes an overall mainstem stream length of approximately 40 miles (64 km).

The SFK originates on the east flank of Kaskanak Mountain northwest of Frying Pan Lake (Figure 15.1-37). The SFK flows south then west before joining the NFK to form the KR. The highest elevation in the SFK drainage is Kaskanak Mountain (elevation 2,759 feet [841 meters]). The lowest elevation in the

watershed is at the confluence with the NFK at 580 feet (177 meters; Chapter 4). The watershed is bounded by a series of low, isolated mountain blocks, with Kaskanak Mountain to the north and west, Koktuli Mountain to the east, and Sharp Mountain to the south. Like the NFK, the northern surface water drainage divide is not well defined.

A general map of fish resources study site locations in the SFK is shown on Figure 15.1-38. This map depicts 1,887 individual study site locations sampled between 2004 and 2008.

SFK Aquatic Habitat

This section describes the physical, chemical, and biological components of aquatic habitat in the SFK. These habitat components are discussed in distinct sections to facilitate comparison among watersheds.

SFK Physical Habitat Conditions

The mainstem SFK has been divided into five stream reaches with distinct hydrology, geology, and channel characteristics (Figure 15.1-37; Table 15.1-20). The five reach designations (SFK-A through SFK-E) progress from downstream to upstream along the length of the mainstem SFK, and SFK-E includes an impounded segment near the headwaters formed by Frying Pan Lake. As discussed in Section 15.1.1, tributaries were assigned to the mainstem reach into which they flowed, and off-channel habitats were assigned to a mainstem reach based on their proximity to the mainstem channel. Photographs depicting representative channel and surrounding habitat characteristics of each reach are provided in Photos 15.1-17 through 15.1-21.

Channel Morphology. The SFK is primarily a single-thread, gravel-bedded channel with a geomorphic tendency toward a meandering planform. Channel gradients in the SFK were the lowest of the three watersheds and ranged from 0.03 to 0.60 percent, while averaging 0.20 percent at the FG study sites. Large woody debris was scarce throughout the SFK due to a general lack of forest vegetation within the riparian zone. Large boulders deposited by retreating glaciers were sporadically located within the SFK channel and provide instream cover, feeding station, and velocity shelter habitat for fish.

Like the NFK, the primary sources of sediment in the channel were from undercut banks and lateral erosion that occurs during high flows and ice break-up processes. Valley bottom deposits in the two lowermost reaches (SFK-A and SFK-B—downstream of Tributary SFK 1.190) consisted of reworked glacial outwash material, including abandoned stream terraces and recent alluvial deposits (Appendix 15.1F). These reaches were flanked by glacial moraine and drift deposits.

High flows have typically overflowed the banks, and large channels were bordered by floodplains and former stream terraces. Associated riparian zones, wetland complexes, and off-channel habitat extended well beyond the stream banks. Sediment sources consisted primarily of fluvial transport from upstream reaches and bank erosion. SFK-A and SFK-B exhibited an alluvial channel morphology that appears to reflect adjustment to the post-glacial flow regime (Appendix 15.1F). SFK-C, located upstream of Tributary SFK 1.190, flowed through glacial lacustrine (related to a lake environment) deposits and was relatively low gradient compared to the rest of the mainstem, with channel slopes on the order of 0.03 to 0.07 percent.

SFK-D flowed through primarily alluvial deposits with a high percentage of sand-sized materials. Portions of SFK-D contained stratified layers of gravel and lake deposits in the banks. The downstream end of the reach represents the lower limit to beaver dam construction across the mainstem channel. The drainage area at this point (approximately 18 mi^2 [47 km^2]) was nearly twice the corresponding area limit of mainstem beaver activity in the other two study rivers (10 to 11 mi^2 [26 to 28 km^2]; Appendix 15.1F). This result may reflect the attenuating influence of Frying Pan Lake on high flows in the SFK.

Upstream of Frying Pan Lake, SFK-E flowed across a former glacial lakebed, where fine sediments and organic materials were common and soils less well-drained. As a result, glacial lake deposits were prevalent in SFK-E upstream of Frying Pan Lake. The reach was represented by a palustrine (related to wetlands) channel type that typically contains more fine sediments than channel reaches elsewhere in the SFK watershed. Tributary channels flowing from the isolated mountain blocks into the middle of SFK-E were high and moderate gradient alluvial fan channels.

Hydrology. The surface water hydrology of the mine study area is described in detail as part of the Pebble Project EBD (Chapter 7, Section 7.2). The surface water hydrologic regime of the SFK is strongly influenced by climate, geology, and groundwater, with stream flows driven by runoff from spring snowmelt and summer/fall rains.

Seasonal flows in the SFK generally have two peaks (Figure 15.1-39), similar to other streams in Southwestern Alaska, and similar to the adjoining watersheds in the mine study area. The first peak occurs during the spring snowmelt season (with the majority of the snowmelt runoff typically occurring in May), while the second peak occurs during the fall rainy season (late August to November). These peaks are separated by two low flow seasons: a summer low flow (with minimum flows typically occurring in August), and a winter low flow (with minimum flows typically occurring in late March to late April).

The mean annual flow in the SFK was 191 cfs (5.4 m^3/s) during water years 2005 through 2008 at Hydrology Gage SK100B (USGS Gage No. 15302200). This discharge was equivalent to a mean annual unit runoff of 37.4 inches (95.0 centimeters) from the 69 mi^2 (180 km^2) watershed area at the gage. The lowermost gage in the SFK watershed (SK 100A), located prior to the confluence with the NFK, recorded a mean annual discharge of 269 cfs (7.6 m^3/s) between 2005 and 2008.

Runoff was flashy in steep tributaries that drain the isolated mountain blocks where groundwater storage is limited. In contrast, the mainstem SFK exhibited a pronounced groundwater influence. From the outlet of Frying Pan Lake downstream through SFK-C, the river flows generally decreased in a downstream direction as water infiltrated into permeable glacial outwash sediments. Portions of this section of the river often dry up in the late summer and have exhibited subsurface flows during the winter base flow period. For example, in March 2005, flows were 8.3 cfs (0.2 m^3/s) at the SK100F gage (RK 54.7) and 0 cfs (0 m^3/s) at the SK100C gage (RK 35.8) despite the contributing drainage area more than tripling between the two gage sites, from 11.9 to 37.5 mi^2 (31 to97 km^2; Chapter 7, Section 7.2). Groundwater flowed down valley to the southwest, but also to the southeast along a series of former glacial drainage-ways. Approximately 22 cfs (0.6 m^3/s) of groundwater flowed out of the SFK watershed and emerged in a tributary to the UT (UT 1.190).

Stream flow in the SFK was augmented by groundwater in the lower portion of SFK-B and SFK-A, where the river flowed across the western end of the terminal moraine and entered the relatively narrow valley between Kaskanak Mountain and Sharp Mountain. Springs, seeps, and upwelling groundwater

were common in the upstream end of this section of river. Documented base flow increases in this section were from 0.3 to almost 27 cfs (0.01 to 0.8 m^3/s) over a distance of 2.9 miles (4.6 km), with less than a 10 percent increase in contributing surface area (Chapter 7, Section 7.2). Groundwater contributions influenced conditions in this portion of the river year round. Ice-free (open water) conditions reflected the warming influence of groundwater observed throughout the winter. Like the NFK, the hydrologic regime of the SFK has a substantial influence on the functionality and usability of fish habitat and, in turn, the distribution and abundance of fish that use the watershed.

Water Temperature. Water temperatures in the SFK watershed begin to seasonally warm in May and June and generally peak in July and August. Temperatures cool during September and October and remain near freezing from November through April. A series of temperature plots during calendar year 2007 at select SFK gages is shown on Figure 15.1-40 to demonstrate the general thermal regime across the watershed. More detailed temperature data, as well as a description of the SNTEMP flow-sensitive surface water temperature models that were developed and calibrated using these baseline data, are provided in Appendix 15.1E.

The longitudinal thermal regime of the SFK is characteristic of a surface water system influenced by groundwater inflow (Figure 15.1-41). In most streams, water temperatures would be expected to increase in the downstream direction because air temperatures generally increase with decreasing elevations. However, after a bit of warming from Frying Pan Lake, the SFK exhibited the opposite trend—with warmer summer (June, July and August) temperatures found in SFK-C and SFK-D just below Frying Pan Lake and relatively cool temperatures in the downstream reaches (SFK-A and SFK-B). In 2007, mean daily summer water temperatures declined approximately 41ºF (5ºC) in the mainstem between SFK-C and SFK-B. Water temperatures, combined with flow records, indicated that the mainstem received groundwater inflow in SFK-B that was relatively cool in the summer, and relatively warm in the winter. The downstream reaches (including SFK-B) remain generally ice-free, the open water conditions reflecting the warming influence of groundwater observed throughout the winter (Chapter 7, Section 7.2, Figure 7.2-5).

While water temperatures remained at or near freezing during the winter season throughout most of the SFK, there was greater variability in water temperatures during the summer (Appendix 15.1E). The daily temperature range during the summer months for all monitoring gages and years for the SFK watershed is provided in Table 15.1-21. The instantaneous minimum and maximum daily temperatures ranged from a low of 35ºF (1.1ºC) at monitoring site SK119A in Tributary SFK 1.190, which discharges into SFK-B, in 2006 to a high of 75.9ºF (24.4ºC) at monitoring gage SK100F in 2004.

Instantaneous summertime maximum temperatures exceeded the ADEC maximum water temperature standard for aquatic life of 68ºF (20ºC; ADEC, 2009) at SK100F in 2004, 2005, and 2007, at station SK100G in 2005, and at SK100C in 2007 (Table 15.1-21), representing 17 percent of the total maximum summer temperature recordings. Summer temperature data indicate the ADEC maximum water temperature standard for spawning and egg and fry incubation of 55ºF (13ºC; ADEC, 2009) was exceeded for 93 percent of the records, and the ADEC maximum water temperature standard for migration routes and rearing areas of 59ºF (15ºC; ADEC, 2009) was exceeded for 76 percent of the summer records during the baseline period.

The thermal regime of the SFK likely has had an influence on the behavior, metabolism, and growth of fish and their use of specific habitats. In the study area where freezing and low water temperatures are a

concern, fish would be attracted to groundwater-fed channels during the winter and early spring, because these sites represent areas of stable flows and relatively warm water temperatures (Leman, 1993; Ebersole et al., 2003). Groundwater inflow offers temperature moderation in both the mainstem and tributary reaches in winter such that a portion of these areas remains ice-free (Chapter 7, Section 7.2, Figure 7.2-5). These areas may provide overwintering habitat that is often limited in northern streams, and as such, enhance the survival of incubating embryos compared to frozen stream reaches. In contrast, between the outlet of Frying Pan Lake downstream through SFK-C, the river was either losing surface water flow to subsurface layers or receiving warm water runoff from ponds and lakes. As a result, the shallow cross sections have allowed the remaining surface waters to heat more rapidly than in stable and gaining flow sections of the river. Although summer season stream temperatures in SFK were mostly cool, summer rearing conditions may be limited in portions of the mainstem from Frying Pan Lake downstream and including the upper portion of SFK-B due to these warming factors.

Throughout the majority of the year, the water temperature regime of the SFK is cold, severely restricting rearing conditions. Because fish are cold-blooded species (cannot regulate their body temperature) all metabolism, activity, swimming speed, and behavior are directly a result of ambient water temperature conditions. Cold water restricts active focal-point feeding behavior to a brief period (late May through mid-September) when water temperatures exceed 46ºF (8ºC; Campbell and Neuner, 1985). As a result, productivity of the fish populations can be thermally-limited compared to watersheds where the active feeding period is longer. Notably, in this cold water river, warmer water temperatures in the summer months also may be limiting to fish health and productivity. Given the open riparian nature of most of the streams in the SFK watershed, water temperatures warm quickly during the summer months and have naturally exceeded state thermal criteria for spawning, incubation, migration, and rearing habitat at a number of monitoring stations, especially upstream of SFK-B (Table 15.1-21).

Mainstem Channel Habitat. The baseline frequencies of mesohabitat types (e.g., pool, riffle, run/glide, etc.) are itemized at the reach level in Appendix 15.1B and summarized at the watershed scale level for the mainstem SFK on Figure 15.1-42. Riffle and run/glide habitats were the predominant habitat types in SFK-A through SFK-D. Pool habitat and beaver ponds were relatively sparse; there was less than 5 percent pool habitat in reaches SFK-A through SFK-D, and SFK-D was the only reach with a substantial amount of beaver-created habitat (18 percent; Figure 15.1-42). The frequency of USFS channel types along selected reaches in the SFK and the results of Tier 3 field surveys are shown on Figures 15.1-43 and 15.1-44, respectively. A list and descriptions of USFS channel type codes are provided in Table 15.1-5. In general, all of the habitat studies indicate that the SFK was comprised mostly of riffle and run/glide habitats with relatively few pools. Although widespread in off-channel habitats, beaver ponds were not prevalent in the mainstem reaches downstream of SFK-D accounting, in some part, for a lack of pools in these reaches. As noted above, large woody debris was generally absent within the SFK due to a lack of forest vegetation in the study area. As a result, instream cover for fish was largely provided by undercut banks and overhanging vegetation, along with scattered boulders and cobble materials that form velocity breaks and create feeding stations.

Overall, the prevalence of riffle and run/glide habitats within the SFK suggests the presence of substantial quantities of spawning habitat. This concept was confirmed as part of adult salmon surveys and redd measurements (see Fish Resources section below). However, given the lack of pools and slackwater habitat features in the mainstem river, both summer and winter rearing habitats might be more prevalent in off-channel waterbodies.

Pacific salmon require cold, clear, and well oxygenated water with gravel- to cobble-sized substrates for spawning. The quality of spawning gravels was good, based on grain size analysis of bulk substrate samples collected from three locations in the SFK. Although the levels of fine sediments in samples collected from the SFK were higher than levels found in samples from the NFK and UT, the concentrations of size fractions that have been related to embryo survival (size fraction less than 0.03 inches or 0.84 millimeters) and fry emergence (less than 0.25 inches or 6.4 millimeters) were all below levels considered harmful (less than 12 percent and 20 percent, respectively; after Shirazi et al., 1981; Lotspeich and Everest, 1981; Chapman and McLeod, 1987; Reiser and White, 1988; Kondolf, 2000). See Appendix 15.1F for detailed results of the spawning gravel analysis.

Off-channel Habitat. Like the NFK, the SFK system contained a substantial amount of off-channel habitat comprised of side channels, alcoves, overflow channels, beaver ponds, and isolated ponds (Figure 15.1-45). The SFK off-channel habitat study site contained an estimated 46 acres of off-channel habitat (Table 15.1-22). The most frequently encountered off-channel habitat type was beaver ponds (91 percent). These features typically included a combination of ponded areas and outlet channels that create both pool and slow moving run/glide type habitats. With the exception of isolated ponds that are only connected to the mainstem channel during overbank flows, off-channel habitats can potentially be used by a diverse assemblage of fish species and life stages at a range of mainstem channel flows.

Survey results indicated that many of the off-channel habitat sites were hydrologically connected to the mainstem channel via surface inflow at less than bankfull flows (approximately 620 cfs [18 m^3/s]; Appendix 15.1D). A subsample of 11 off-channel habitat sites showed the engagement of sites varied broadly within and between off-channel habitat types (Table 15.1-23). See Appendix 15.1D for more information regarding the off-channel flow study.

SFK Chemical Habitat Conditions

A comparison of various water quality parameters reported in the mine study area and those reported for other water quality studies in the region is provided in Table 15.1-8. These parameters include water temperature, DO, specific conductance, pH, turbidity, alkalinity, and hardness. Similar to the NFK, the water quality within the SFK watershed was generally good and supported a range of salmonid and non-salmonid fishes. Overall, the SFK water quality parameter values were similar to those for other watersheds in the region (Table 15.1-8). The notable exceptions include: a maximum water temperature of 74.3ºF (23.5ºC), which is greater than those reported for other watersheds; a DO minimum of 2.2 mg/L, which is the lowest DO concentration reported for the watersheds shown in Table 15.1-8; and a broader range of reported values for pH, alkalinity, and water hardness. Some concentrations were found to vary as a factor of flow conditions, location within the watershed, or season (Chapter 9, Section 9.1).

In addition to the water quality parameters included in Table 15.1-8, concentrations of trace elements, cyanides, and nutrients were determined as part of the surface water quality studies in the mine study area (Chapter 9, Section 9.1). As in the NFK, natural exceedences of estimated freshwater aquatic life criteria were observed in the SFK for aluminum (total), cadmium (total and dissolved), copper (total and dissolved), iron (total), lead (total and dissolved), zinc (total), and weak acid dissociable (WAD) cyanide. In addition, exceedences were observed for dissolved zinc and total mercury. The percent of samples exceeding the criteria for total aluminum (12 percent) and total and dissolved copper (approximately 42 and 34 percent, respectively) was greater in the SFK than in the NFK. All total aluminum samples from one mainstem location (SK100E) and from two tributary locations (SK116A and SK117A) had

concentrations naturally above criteria. Nearly all total copper samples from three locations (SK100G, SK100H, and SK100I) had concentrations naturally above criteria. These three sampling sites are located upstream of Frying Pan and are within or in the vicinity of the deposit location. Copper exceedences decreased in frequency and magnitude as the distance of the sampling location from the headwater areas increased. Lead exceeded criteria in approximately 6 percent of the dissolved samples and approximately 15.5 percent of the total samples. Similar to the NFK, no pattern was evident for lead exceedences, which suggests that naturally occurring elevated lead concentrations may be distributed throughout the SFK. Mean nutrient concentrations are generally low.

SFK Aquatic Macroinvertebrates

Like the NFK, studies of both the periphyton and aquatic invertebrate communities have been conducted in the SFK and detailed results are described in Section 15.2. Because of the importance of macroinvertebrates as both food for fish and as indicators of stream health, annual results of the macroinvertebrate studies in the SFK are summarized for June sampling efforts below.

The macroinvertebrate taxa richness of three sample sites (SK-100A, SK-100B, and SK-100D) is shown on Figure 15.1-46. As in the NFK, taxa richness was determined for June sampling efforts in 2004, 2005, and 2007 using two different collection methods: the ASCI kick net and Surber methods. Taxa richness ranged from a low of 15taxa at SK-100D in 2007 (ASCI method) to a high of 28 taxa at SK-100A in 2007 (ASCI method; Figure 15.1-46). The results across the three years of sampling for SK-100B suggest slightly increased mean taxa richness in 2007. In 2007, the mean taxa richness was lower in the upstream area of the watershed (SK-100D) compared to the stations (SK-100A and SK-100B) in lower elevation reaches.

Like the NFK, the macroinvertebrate communities in the SFK are largely composed of midge larvae (Family Chironomidae) and EPT taxa. The contribution of chironomids at the three sample sites ranged from 38 percent at SK-100D in 2007 (Surber method) to 91 percent at SK-100B in 2005 (Surber method; Figure 15.1-46). For EPT taxa, percentages ranged approximately 2 percent at SK-100B in 2007 (Surber method) to 40 percent at SK-100D in 2007 (Surber method). The macroinvertebrate communities at SK-100A and SK-100B were dominated by chironomids,. At SK-100D, EPT taxa and chironomids were present in more equal proportions, particularly for the Surber method.

SFK Habitat/Flow Relationships

This section presents the results of instream flow habitat modeling and time series analyses computed for various salmonid fish species for each of three SFK reaches (SFK-A, SFK-B, and SFK-C) and one tributary (SFK 1.190). No results are displayed for SFK-D and SFK-E, because transects were not established in those reaches. SFK-D is located directly below Frying Pan Lake and contains comparatively little spawning habitat. SFK-E extends above Frying Pan Lake and there have been relatively few anadromous salmonids found in this reach. There were 43 transects used in the analysis (Table 15.1-24): 19 in SFK-A, 12 in SFK-B, six in SFK-C, and six in Tributary SFK 1.190. Transect weighting, in accordance with the frequency of representative habitat types in a reach, are summarized in Table 15.1-10. The time series reflects the total habitat area of a reach for each day during the period a given species and life stage is present.

Specific flow ranges corresponding to 90 percent or more of the maximum modeled habitat areas in each reach are shown for anadromous and non-anadromous fish categories in Table 15.1-25. The ranges vary as a factor of the results from different species as reported in Appendix 15.1C, Tables 40 and 46.

Results of the habitat time series analyses for Chinook salmon, coho salmon, and sockeye salmon spawning and juvenile life stages are summarized for SFK-A, SFK-B, and SFK-C on Figure 15.1-47. These results focus on the total habitat area versus river flow relationship, because this parameter provides reach-scale estimates of the total amount of habitat for a given species and life stage available under different flow conditions (refer to Appendix 15.1C for tributary results, other flow-related parameters, and individual transect results). The results, expressed in acres, are presented graphically as a time series of habitat based on average flow conditions in the reaches. The time series analyses are presented graphically by reach in terms of the total habitat area that would occur on a daily basis during the time period in which an individual species and life stage may be present. For example, juvenile Chinook salmon may be present year-round, while adult spawning is limited from July through September, as depicted on Figure 15.1-47. This evaluation is useful for comparing the relative amounts of habitat provided for a given species and life stage under different flow conditions.

The total estimated amount of habitat area (spawning and juvenile), expressed in acres, for each species available within a given reach, based on the median daily flows over the respective time periods for each life stage, is displayed in the chart inserts on Figure 15.1-47. The results indicate there can be substantial variability in habitat amounts on a daily basis, in response to changes in flow. This variation is most evident during flow transitional periods. For example, during the spring-summer periods when flows are declining there is a general increase in juvenile habitat. Similarly, during the summer-fall period when flows increase there is a general increase in spawning habitat. The absence of juvenile habitat in SFK-C from February through April reflects the ephemeral nature of this reach, when a portion of the stream typically flows subsurface and the channel bed becomes dry. The overall process used in deriving the time series and the detailed results for these species, as well as other species and life stages, and for Tributary SFK 1.190, are presented in Appendix 15.1C.

As noted for the NFK, the time series analysis represents a first step in evaluating how baseline flow conditions influence fish habitats temporally and spatially. Additional time series analyses based on wet year, dry year, and average year conditions, as well as a series of associated habitat duration curves for each reach are provided in Appendix 15.1C (Tables 42, 45, and 48, and Figures 55 through 57, 61 through 63, and 67 through 69). Appendix 15.1C also contains estimates of total habitat area by species and life stage provided in the entire SFK (all reaches combined) during an average water year (Appendix 15.1C, Table 73).

SFK Special Habitat Features

Special features found within the SFK that likely influence the existing distribution and abundance of fish include seeps and springs, intermittent flow reaches, lakes and ponds, and beaver ponds, as discussed below.

Seeps and Springs. A comprehensive survey of seeps and springs in the SFK was performed in 2005 and 2006, and the surface water expression of these features was plotted in Figure 9.1-4 of Chapter 9, Section 9.1. There was a large concentration of seeps and springs upstream of Frying Pan Lake and in the central portion of the SFK, along the upper portion of SFK-B. Seeps and springs add to river flow and moderate

stream temperatures in both summer and winter. Summer water temperatures decline on the order of 41ºF (5ºC) in the mainstem between SFK-C and SFK-B, shortly downstream of the confluence with Tributary SFK 1.190 (Appendix 15.1E). Temperatures continued to decline downstream through the length of both SFK-C and SFK-B with the input of cool water seeps and springs.

Such surface water expressions may offer groundwater upwelling sites that anadromous salmonids favor in selecting spawning locations. The upper portion of SFK-B was heavily influenced by groundwater upwelling and was extensively used for spawning. These cool water sources may also provide summer rearing habitats for juvenile fishes. In the winter, these same groundwater upwelling sites may create localized areas of relatively more stable flow and may in fact provide water temperatures that are warmer than ambient winter temperatures. Thus, groundwater upwelling sites may be used as overwintering habitats and maypromote higher salmonid embryo survival.

Intermittent Flow Reaches. A large and variable portion of SFK-C at times exhibits intermittent flows during summer and winter (Chapter 7, Section 7.2, Figure 7.2-5). The severity and duration of low seasonal flow events vary by year. For example, based on flow records from gaging station SK100C during 2007, there was no surface flow in SFK-C for a period of 40 days between early July and early September, 2007. Conversely, the reach did not become completely dry in the summer of 2008. Cessation of flow in winter is more expected due to freezing conditions. When these channels are dry, fish must either move upstream or downstream to areas of flowing water, or become stranded within the influenced reach.

Lakes and Ponds. Lakes and ponds are prevalent in the SFK watershed, consistent with the area's glacial history. The largest named lakes in the watershed include Frying Pan and Chiquita lakes. Most of the lakes and ponds in this watershed are relatively high in the watershed. The largest concentration of lakes and ponds is in the vicinity of the Frying Pan Lake complex adjacent and connected to SFK-E. No adult anadromous species have been recorded spawning along the shore of Frying Pan Lake. However, limited observations of juvenile coho salmon and sockeye salmon in the lake indicate this habitat may have some potential for rearing. Surface water impoundments like Frying Pan Lake and nearby ponds also provide habitat for other stream-dwelling fishes and provide water storage and extended surface water runoff volumes late in the summer period compared to watersheds without such storage.

Beaver Ponds. Beavers can have a substantial influence on channel morphology and hydraulics. Beavers are ubiquitous throughout the NFK, SFK and UT systems and, in some locations, have had a considerable effect on flow and habitat conditions. Analysis of aerial photos indicates that beavers may have built dams spanning the mainstem channel in the headwaters of all three river systems (see Appendix 15.1F). Such structures have resulted in the ponding of water that create a mosaic of small ponds and interconnecting channels. During wildlife surveys in the SFK, 36 beaver colonies were recorded (Chapter 16, Section 16.2, Figure 16.2-20). Beaver ponds in the SFK provide adult spawning and juvenile overwintering habitat for Pacific salmon. Sockeye salmon adults were observed in beaver–created habitat in the SFK watershed. Beaver ponds and small stream channels influenced by groundwater, may provide large amounts of ice-free habitat during winter (Murphy et al., 1989; Collen and Gibson, 2001). In addition, beaver ponds in the SFK were slightly warmer than other habitat types and thus, may represent a more productive habitat as compared to cooler mainstem channel habitat types. This could support increased growth rates of juvenile salmon and more fish per unit area compared with mainstem channel fish (Appendix 15.1D).

SFK Potential Limiting Factors

Habitat features in either short supply or in poor relative condition that may be limiting fish abundance and productivity in the SFK are discussed below.

Velocity Shelter. A general lack of mainstem channel pool habitat, instream cover features, and large woody debris in the SFK results in a lack of velocity shelter for rearing fishes. This condition suggests juvenile rearing may need to rely on off-channel habitats, especially for winter refuge when water temperature and stream flow become quite low. The lack of juvenile winter rearing habitat is evident in the instream flow habitat duration curves (Figure 15.1-47).

Water Temperature. The annual water temperature regime of the SFK is cold, severely restricting rearing conditions. Because fish are cold-blooded species (cannot regulate their body temperature) all metabolism, activity, swimming speed, and behavior are directly linked to ambient water temperature conditions. Cold water restricts active feeding to a brief summer period (late-May to mid-September) when water temperatures exceed 46ºF (8ºC); therefore, productivity of the population is limited as compared to watersheds where the active feeding period is longer (Campbell and Neuner, 1985). This limitation is likely typical of many regional streams.

It is important to note that even within this cold water river, warn water temperatures in the summer months also may be limiting to fish health and productivity. Given the open riparian nature of most of the streams in the SFK watershed, water temperatures warm quickly during the summer months and naturally exceed the ADEC maximum water temperature standard for spawning and incubation of 55ºF (13°C; ADEC, 2009). Exceedences of the spawning and incubation criterion represented 93 percent of the station records reporting peak summer temperatures (June through August) during the study period. Temperatures also exceeded the ADEC maximum water temperature standard for migration routes and rearing areas of 59ºF (15°C; ADEC, 2009) for 76 percent of the summer records, and the ADEC maximum water temperature standard of 68ºF (20°C; ADEC, 2009) for 17 percent of the peak recorded summer temperature values over the study period. The maximum temperatures recorded in the SFK were greater than high temperatures reported for other streams in the region (Table 15.1-8).

Water Quality. Water quality data indicate that the waters of the SFK are soft (Chapter 9, Section 9.1). Soft waters are typically not as productive for fish growth as harder (more mineralized) waters. Low levels of mineralization can influence aquatic productivity, including fish biomass, in comparison to streams with high levels of mineralization (McFadden and Cooper, 1962; Hendrickson et al., 1973; Marshall et al., 1980). Thus, hardness and parameters influencing mineralization (e.g., alkalinity, TDS, conductivity, etc.) can be used as screening level surrogates for stream productivity. This limitation is evident in other streams within the region, as shown in Table 15.1-8.

Soft waters can also increase the acute toxicity of divalent trace metals to aquatic organisms. Toxicity increases inversely to water hardness (Carroll et al., 1979; Pagenkopf, 1983; Pascoe et al., 1986; Davies et al., 1993; Markich and Jeffree, 1994; Meyer et al., 1999). Pagenkopf (1983) provides evidence suggesting metal toxicity to fishes is a function of divalent trace metal attachment to gill surfaces. Markich and Jeffree (1994) and Meyer et al. (1999) imply as hardness increases, divalent calcium ions will bind to the gill surface in lieu of further metal attachment. Thus, metal toxicity is reduced in hard waters compared to soft waters. CALC in Alaska waters for various trace metals are a function of hardness concentrations (ADEC, 2008). Based on water quality data collections for trace metals in the SFK, aluminum, cadmium,

copper, iron, lead, mercury, and zinc exceeded estimated CALCs (Chapter 9, Section 9.1). Of these constituents, the cadmium, copper, lead, and zinc criteria are a function of water hardness. Given the low frequency and limited geographical extent of criteria exceedences, the SFK baseline water quality conditions for trace metals are not regarded as a potential limiting factor to fish production in the watershed. However, the soft waters remain a risk to increased metal toxicity from cadmium, copper, lead, and zinc. Copper and lead had much higher frequencies of exceedences than the other constituents in the SFK. Copper could be regarded as potential natural limiting factor to fish production since the exceedances are spatially correlated to specific locales closer to the general deposit area; this may be especially true in SFK-E upstream of Frying Pan Lake, where copper exceedences were most common. In general, lead is not considered a potetial natural limiting factor to fish production since the exceedances are not seasonally or spatially correlated. However, station UT135A had seven exceedances within eight field visits collected between October 2005 through September 2006. This concentration of lead exceedances suggests some chronic exposure to fish may have occurred.

Generally, nutrient concentrations in SFK were found to be low (Chapter 9, Section 9.1). The production of primary producers is based on a combination of sunlight, temperature, and nutrient availability. At any point in time, one of these factors will limit aquatic productivity. If the availability of nutrients is the concern, the current ratio of nitrogen to phosphorus suggests phosphorus would typically be the limiting nutrient for growth of photosynthetic organisms in the SFK. Should productivity of primary producers become reduced, based on a lack of phosphorus, it is likely secondary consumers and, ultimately, food resources for fish species may become reduced compared to other regional streams.

Stream Flow. Losing stream reaches occur along SFK mainstem reaches downstream of Frying Pan Lake (SFK-D and SFK-C), where surface water infiltrates permeable glacial outwash sediments (Chapter 7, Section 7.2). Portions of these channels go dry and intermittent stream flows are a concern to juvenile fish production. The low taxa richness values reported at Station SK100D in SFK-C (Figure 15.1-46) may reflect intermittent stream flows and imply reduced biological production.

Groundwater. Surface water expression of groundwater can provide considerable benefits to spawning and rearing fish. The distribution of zones of observable groundwater influence is limited to gaining reaches in SFK-A and throughout most of SFK-B. Fish abundance and productivity might be reduced in other locations with lower input of groundwater. As an example, salmon spawning is restricted upstream of SFK-B (Appendix 15.1B, Figures B.9-10, B.9-11, B.9-12, and B.9-13). This location is upstream of the zone of major groundwater influx to surface waters in the reach.

Potential limiting factors will vary for each species and life history stage. For example, anadromous salmonid species with extended freshwater residence time like Chinook, coho, and sockeye salmon, as well as resident salmonid fishes, are typically considered limited by the juvenile rearing life stage. Conversely, species with abbreviated residence time, like chum salmon, are considered spawning-limited in the stream environment. Based on the list of limiting factors above, it is likely the most limiting life-history stage for most of the species is juvenile overwinter rearing and survival.

For chum salmon in the SFK, the abundance and productivity of populations is limited by the amount of viable spawning habitat. This habitat may be restricted, in part, due to the distribution of spawning gravels, as well as the hydrologic regime and groundwater inputs to areas downstream of SFK-C.

SFK Fish Resources/Assemblage

More than 14 different fish species were documented in the SFK from 2004 through 2008 (Table 15.1-26; Figure 15.1-48). This is a minimum number, because some resident fishes (including sculpin, whitefish, and lamprey) were not consistently identified to species during field surveys. Overall, SFK-B had the greatest number (14) of fish species groups, and there was a tendency for the number of species to decrease in the upstream reaches. The species composition in the SFK, as determined during the 5-year study period, was similar to that documented by reconnaissance field efforts in the early 1990s (Buell, 1991; Buell, 1994). Buell's field effort documented 11 species that were common to the study area, only missing rainbow trout, burbot, and lamprey.

The life stage periodicity (reflects the timing of various life stage functions – spawning, egg incubation, fry, juvenile, and adult migration) for anadromous and non-anadromous salmonids is presented on a regional basis in Appendix 15.1A and on a fish study area basis on Figure 15.1-19. Figure 15.1-19 was developed based on a general understanding of local fish populations and refers to the general timing of fish life history stages for the entire aquatic resources study area (Appendix 15.1C). Life history information specific to the SFK watershed is included in the species descriptions below and in Appendix 15.1A.

Several fish species present in the SFK are important to commercial, subsistence, and recreational harvest. Anadromous salmonid fishes from the SFK, along with those from the Wood, Snake, and Igushik rivers and the Nushagak watershed downstream of the SFK, are considered part of the Nushagak Management District. Because no data are available to assess the relative contribution of these SFK fish to the fisheries, district-scale data are provided here as an indication of the importance of these fisheries. Based on a 20-year average (1988 through 2007), the annual commercial harvest for the overall Nushagak District was 52,190 Chinook, 476,508 chum, 28,660 coho, and 4,969,524 sockeye salmon (Jones et al., 2009). Over the same period, the average subsistence harvest was: 13,047 Chinook, 4,461 chum, 5,420 coho, and 26,421 sockeye salmon.

In general, recreational harvest of anadromous salmonids is considerably less than commercial and subsistence harvest. SFK salmon are a part of the Bristol Bay Sport Fish Management Area. In the Bristol Bay Sport Fish Management Area, the average annual recreational harvest for the years 2000 to 2004 was: 10,067 Chinook, 2,108 chum, 13,611 coho, and 12,288 sockeye salmon (Dye et al., 2006). Over the same period, the average annual recreational harvest in the Mulchatna River, into which the SFK eventually drains, was 194 Chinook and 160 sockeye salmon. Data specific to recreational harvest in the SFK are not available; however, it can be assumed that the number would be less than that for the Mulchatna River system.

The following sections describe the fish resources in the SFK by species assemblages under major grouping of anadromous salmonid fishes, non-anadromous (resident) salmonid fishes, and non-salmonid fishes. Data are presented in terms of mainstem channel reaches, off-channel habitat, and tributary waters draining into the mainstem reaches in the SFK. Many of the sampling techniques were not conducive to estimating CPUE, but where sufficient electrofishing or snorkeling data exist from all survey passes, the species assemblages including collections of all life history stages indicate the trends presented in Table 15.1-27.

Furthermore, fish survey results are commonly discussed below using relative fish abundance and fish density metrics. The relative abundance metric, which is expressed as the number of fish per 328 lineal feet (100 meters), is used to describe fish assemblages throughout the watershed and among habitat types. This metric was calculated for each species by summing the total number of fish observed or captured within a given habitat type and dividing it by the total lineal distance, in meters, of the habitat type surveyed; this metric was then multiplied by 100 such that the abundance metric is standardized to 100 meters or 328 feet. The fish density metric, which is expressed as the number of fish per 1,076 sf (100 m^2), is used to assess fish-habitat associations and allows for a direct comparison of fish numbers among habitat types. The fish density metric was calculated in a manner similar to the abundance metric, with habitat area (wetted width times sample length) used in place of sample length. The associated relative fish abundance and fish-habitat association figures represent a summary of the mainstem channel fish abundance and density figures presented in Appendix 15.1B. In Appendix 15.1B, these metrics were calculated separately for the 2004 through 2007 and 2008 study years, as well as for mainstem and tributary habitats. In the Section 15.1 relative abundance and fish-habitat association figures, only mainstem channel data are reported, and the metrics have been calculated by combining the 2004 through 2007 and 2008 data.

SFK Anadromous Salmonid Fishes

Anadromous salmonid fishes represent the most abundant fish taxa in the SFK watershed. The distribution, life history, spawning abundance, relative abundance, and habitat associations of Chinook, chum, coho, and sockeye salmon present in the SFK are discussed in the following sections. The presence of anadromous fish species in the SFK stream reaches, as determined from2004 through 2008 survey data, is presented in Table 15.1-28. The distribution of anadromous fishes based on data from 2004 through 2008, as well as the ADF&G's anadromous stream layer, is depicted on Figure 15.1-49. Anadromous spawning locations are depicted on Figure 15.1-50, while specific spawning locations for each species by reach are provided in Appendix 15.1B.

The seasonal distribution of anadromous salmonids in the SFK watershed appears to be largely dictated by the intermittent flow conditions that often occur in SFK-C. Such conditions create periods of low or no flow within SFK-C, and preclude fish use during those times (Figure 15.1-39, Gage SK100C). Thus, there has been a general lack of adult anadromous fish documented upstream of SFK-C. However, when surface flows are present, low numbers of juvenile anadromous fish have been observed in SFK-C and upstream reaches.

Chinook Salmon. The Chinook salmon distribution in the SFK watershed was restricted to SFK-A through SFK-D (Table 15.1-28, Figure 15.1-48). However, their presence in SFK-D was limited to three juvenile Chinook salmon observations over the study period. Field surveys in SFK-C identified 3 adults in 2005 and a total of 198 juveniles between 2004 and 2008 (Appendix 15.1B, Table B.9-7). The numbers of both juvenile and adult Chinook salmon observations were considerably higher in SFK-A and SFK–B; greater than 40 adults and 16,000 juveniles were observed in SFK-A and SFK-B combined during on-the-ground surveys during the baseline study period.

In general, Chinook salmon fry emerge in the spring and remain in the freshwater rearing habitat until outmigration (Appendix 15.1A). In some populations, juvenile Chinook salmon outmigrate as young-of-the-year fry or as subyearling juveniles. However, this life history pattern is thought to be uncommon in the Bristol Bay basin. Based on length frequency distributions, three age-classes of juvenile Chinook

salmon have been observed in the SFK: young-of-the-year subyearlings (0+), yearlings (1+), and 2+age juveniles. The mean lengths of juvenile Chinook salmon by age-class are shown on Figure 15.1-51. The proportion of juvenile Chinook salmon outmigrating at any age class is unknown. Juvenile Chinook salmon have been documented in the SFK as early as April and as late as November (Appendix 15.1B, Tables B.7-2 and B.8-7).

Based on field surveys, the relative abundance of juvenile Chinook salmon is shown for selected reaches on Figure 15.1-52. In SFK-A, Chinook salmon were the second most abundant salmonid present, with estimates ranging from 325 to 475 fish per 328 feet (100 meters). Chinook salmon were less abundant in SFK-B and SFK-C, ranging from 8 to 124 fish per 328 feet (100 meters) and, in order of species rank, were generally less abundant than coho salmon, arctic grayling, and Dolly Varden in most habitat types (Figure 15.1-52). Juvenile Chinook salmon were predominantly found in the main channel in both fast and slow water habitats.

Densities of Chinook salmon were calculated among the various habitat types that were documented during the 2008 mainstem index surveys in the SFK and among various tributary and off-channel habitat types. In the mainstem SFK, densities ranged from approximately 1 fish per 1,076 sf (100 m^2) in glide, riffle, and pool habitat to approximately 40 fish per 1,076 sf (100 m^2) in glide habitat (Appendix 15.1B). Riffles supported the second greatest observed density of Chinook salmon at 15 fish per 1,076 sf (100 m^2). Within the SFK tributaries, juvenile Chinook salmon observations were limited to Tributaries SFK 1.190.60 and SFK 1.240.10.10, where densities generally ranged from less than 1 fish per 1,076 sf (100 m^2) in fast-water habitats (cascades, riffles, run/glides) to approximately 26 fish per 1,076 sf (100 m^2; Appendix 15.1B, Tables B.8-8 and B.9-8). In the off-channel habitat intensive study area in the SFK, Chinook salmon density was greatest in side channels (approximately 7 fish per 1,076 sf [100 m^2]) and well below 1 fish per 1,076 sf (100 m^2) in other habitat types (Figure 15.1-53).

Aerial surveys for adult Chinook salmon in the SFK were conducted in 2004 through 2008. During the 5-year period, adult Chinook salmon entered the SFK as early as July 5 and were present in the watershed as late as August 23 (Figure 15.1-54). Survey counts peaked each year between July 20 and August 4.

The greatest adult Chinook salmon mean index counts were documented in 2004 with a declining trend evident from 2004 through 2006 (Figure 15.1-54; Figure 15.1-55). There was an order of magnitude decline in SFK Chinook salmon mean index counts from 2004 to 2006, with the greatest decline evident in 2005. The mean index counts were similar in 2006, 2007, and 2008. Chinook salmon numbers also showed a decline over time for the entire Nushagak District (Morstad et al., 2010) and in the Nushagak River (Baker et al., 2009; Table 15.1-15). The greatest reduction in run size at the District scale and in Nushagak River escapement were evident from 2006 to 2007, 2 years later than the greatest observed decline in the SFK.

Reach-specific counts allow for an assessment of the salmon spawner distribution within the SFK watershed. From 2004 through 2008, Chinook salmon spawning was observed only in the lowest three SFK reaches (SFK-A, SFK-B, and SFK-C; Appendix 15.1B). The relative abundance of spawners in SFK-C was very low, with only four spawning locations documented (Appendix 15.1B, Figure B.9-10). In 2008, spawning was documented only in SFK-A and SFK-B (Table 15.1-29; Figure 15.1-56). The mean number of spawners in SFK-A was 186, while SFK-B had a mean count of 58 spawners. Adult Chinook salmon are typically associated with mainstem reaches and require sufficient discharge to complete their upstream migration (Appendix 15.1A); therefore, low flows in and above SFK-C limit the

spawning distribution of this species. In addition, the instream flow habitat analysis indicates a large reduction in the available Chinook salmon spawning habitat in and above SFK-C, compared to SFK-A and SFK-B (Appendix 15.1C, Tables 40, 43, and 46).

Mean index counts were used to provide a perspective of the relative size of salmon runs in the SFK with respect to the Nushagak District and the greater Bristol Bay fishery. Chinook salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, have contributed approximately 81 percent of the total Bristol Bay Chinook salmon catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). The total inshore run estimates (harvest and escapement) provided by ADF&G for Nushagak District Chinook salmon between 2004 and 2008 ranged from a low of 123,376 fish in 2007 to a high of 244,793 fish in 2005, with a 5-year average of 188,521 (Morstad et al., 2010; Table 15.1-15). During the same time period, Nushagak River Chinook salmon escapement estimates ranged from 53,344 in 2007 to 163,506 in 2005 and had a 5-year average of 106,131 (Baker et al., 2009). In contrast, the SFK Chinook salmon mean index counts (used as an index of escapement) ranged from 148 in 2007 to 2,155 in 2004 and averaged 711 for the 5-year study period (Table 15.1-15).

Chum Salmon. Chum salmon distributions are generally restricted to low-gradient reaches in a watershed, because their swiming ability is not as strong as other anadromous salmonids (Appendix 15.1A). The distribution of chum salmon, from SFK-A through SFK-C (Table 15.1-28), is consistent with general observations for this species and, on a more local scale it may also be influenced by the cessation of groundwater upwelling im the mainstem above SFK B and the intermittent flow conditions within SFK-C. While few adult chum salmon have been observed in SFK-C, their presence suggests juveniles must also be present during certain periods of time (contingent on the occurrence of surface water flows).

Chum salmon fry emergence generally occurs in late winter and early spring before ice break-up (Appendix 15.1A). Chum salmon are known to seek spawning areas influenced by groundwater upwelling; therefore, ice-free conditions would presumably be present at the time of fry emergence. Observed juvenile chum salmon in the SFK comprise only young-of-the year (age 0+) life history stages in the SFK (Figure 15.1-51). Juvenile chum salmon were recorded in low numbers from April through September in SFK-B and April to July in SFK-A (Appendix 15.1B, Tables B.7-2 and B.8-7). The lack of juvenile chum salmon observations in late summer likely reflects their rather brief period of stream residence prior to outmigration. This finding is consistent with the general life history patterns of chum salmon (Groot and Margolis, 1998), where juveniles are thought to overwinter in estuarine waters.

The relative abundance of juvenile chum salmon is shown on Figure 15.1-52. Overall, abundances of juvenile chum salmon were low in the SFK, with the highest abundance found in SFK-A (1.5 fish per 328 feet [100 meters]). This abundance was two to three orders of magnitude less than both Chinook and coho juvenile salmon and about one order of magnitude less than juvenile sockeye salmon.

Because of their abbreviated residence time, little information was collected regarding juvenile chum salmon habitat associations in the SFK. However, observed juvenile chum salmon were generally found in mainstem run/glide and riffle habitat (Appendix 15.1B, Figures B.7-7 and B.8-8a) and were also documented in off-channel habitats, particularly beaver ponds, in very low numbers and densities (Figure 15.1-53). The observed density in off-channel beaver ponds was less than 1 fish/per 1,076 sf (100 m^2). Juvenile chum salmon were not observed during the 2008 mainstem index surveys, nor in SFK tributaries (Appendix 15.1B).

Aerial surveys for adult chum salmon in the SFK were conducted in 2004 through 2008. During the 5-year period, adult chum salmon entered the SFK to spawn as early as July 5 and were found during surveys as late as August 25 (Figure 15.1-57). Peak counts occurred each year between July 11 and July 26. No adult chum salmon were observed in the SFK in 2004.

Adult chum salmon were the least abundant Pacific salmon species in the SFK, with mean index counts between 71 and 353 salmon (Table 15.1-15; Figure 15.1-58). Overall, the SFK chum salmon mean index counts remained relatively stable (between 225 and 353 salmon) from 2005 through 2008, except for a mean index count of 71 salmon in 2007. At the Nushagak District scale, chum salmon runs increased between 2004 and 2006 and then declined through 2008 (Morstad et al., 2010; Table 15.1-15). Nushagak River chum salmon escapement showed a trend similar to the District total inshore run, although an increase in escapement was observed in 2008 (Baker et al., 2009).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the SFK. From 2004 through 2008, spawning chum salmon were observed in SFK-A, SFK-B, and in the very lower portion of SFK-C (Appendix 15.1B). The spawning abundance and distribution analysis using the 2008 aerial survey data revealed that chum salmon spawn predominantly in SFK-B (Table 15.1-29; Figure 15.1-56). The mean number of spawning chum salmon in SFK-B was 158, while SFK-A had a mean count of 86 spawning salmon. Chum salmon spawning is likely restricted to the lower portion of the SFK due to abundance of groundwater influence there as well as the intermittent flow conditions in SFK-C.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the SFK with respect to the Nushagak District and the greater Bristol Bay fishery. Chum salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, contributed approximately 51 percent of the total Bristol Bay catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). The total inshore run estimates (commercial catch and escapement) provided by ADF&G for the Nushagak District chum salmon between 2004 and 2008 ranged from a low of 754,053 fish in 2004 to a high of 1,901,238 fish in 2006, with a 5-year average of 1,191,993 (Morstad et al., 2010; Table 15.1-15). During the same time period, Nushagak River chum salmon escapement estimates ranged from 161,483 in 2007 to 661,002 in 2006 and had a 5-year average of 377,724 (Baker et al., 2009). In contrast, the SFK chum salmon mean index counts (used as an index of escapement) ranged from 71 in 2007 to 353 in 2008 and averaged 246 for the 5-year study period.

Coho Salmon. Coho salmon are distributed in all five reaches of the SFK (Table 15.1-28). Although adult coho salmon have not been observed above SFK-C, small numbers of juvenile coho salmon were found in SFK-D and SFK-E, upstream of Frying Pan Lake (Appendix 15.1B). These fish are either the result of undocumented spawning in these reaches, or the upstream movement of juveniles from downstream reaches.

In general, coho salmon fry emerge between mid-March and May (Appendix 15.1B). Length frequency data indicate four age-classes of coho salmon juveniles occur in the SFK: subyearling (0+), yearling (1+), 2+age, and 3+age juveniles. Mean fork lengths for each age class are shown on Figure 15.1-51. In many watersheds throughout their range, juvenile coho salmon overwinter in freshwater and outmigrate as 1+ fish, with some juveniles residing for up to 2 years in freshwater (Appendix 15.1A). In the SFK, the proportion of coho salmon juveniles outmigrating as 1+, 2+, or 3+ fish is currently unclear, although the length data indicate some 3+ age coho salmon remain in the SFK. Juvenile coho salmon have been documented in the SFK as early as April and as late as November (Appendix 15.1B, Table B.7-2 and B.8-

7). Juvenile coho salmon were found in SFK-A and SFK-B during the winter surveys, indicating that these reaches provide overwintering habitat.

The relative abundance of juvenile coho salmon is shown for selected reaches on Figure 15.1-52. In SFK-A, SFK-B, and SFK-C, coho salmon were the most abundant salmon, with estimates ranging from 5 to approximately 590 fish per 328 feet (100 meters). The highest abundance of coho salmon was in SFK-A. In SFK-D and SFK-E, closer to the upstream extent of their distribution and where spawning has not been documented, coho salmon were much less abundant (1 to 25 fish per 328 feet [100 meters]).

Densities of coho salmon were calculated among the various habitat types that were documented during the 2008 mainstem index surveys in the SFK and among various tributary and off-channel habitat types. In the mainstem SFK, densities were greatest in glide habitats at approximately 130 fish per 1,076 sf (100 m^2; Appendix 15.1B). Pools and riffles also supported coho salmon; densities ranged from approximately 2 to 70 fish per 1,076 sf (100 m^2) in pool habitat and from approximately 4 to 17 fish per 1,076 sf (100 m^2; Appendix 15.1B). Within the SFK tributaries, the greatest densities of juvenile coho salmon generally were in backwater and glide habitats, where densities of greater than 100 fish per 1,076 sf (100 m^2) were observed (Appendix 15.1B, Tables B.8-8 and B.9-8). In the off-channel habitat intensive study area in the SFK, coho salmon densities were greatest in side channels and percolation channels (approximately 22 and 33 fish per 1,076 sf [100 m^2], respectively; Figure 15.1-53). Coho salmon were also present in beaver ponds and isolated pools, but at lesser densities (approximately 1 to 7 fish per 1,076 sf [100 m^2]).

Aerial surveys for adult coho salmon in the SFK were conducted annually from 2004 through 2008. During 5-year period, adult coho salmon entered the SFK to spawn as early as July 30 and were present as late as November 16 (Figure 15.1-59). Peak counts occurred between September 5 and October 2.

Coho salmon mean index counts in the SFK were only slightly greater than those for chum salmon. Over the study period, mean index counts ranged from 121 to 494 salmon (Table 15.1-15; Figure 15.1-60). Similar to coho salmon in the NFK, they showed a generally increasing trend over the years with the exception of a decline in 2007. This decline in mean index counts was also seen in chum salmon and, to some extent, Chinook salmon in the SFK. Total run and escapement estimates were not available for Nushagak District and Nushagak River coho salmon; however, it is worth noting that catch statistics for the Nushagak District also showed a substantial decline in coho salmon numbers in 2007 (Morstad et al., 2010; Table 15.1-15).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the watershed. During the 2008 aerial surveys, coho salmon were observed spawning in SFK-A, SFK-B, and SFK-C (Table 15.1-29; Figure 15.1-56). The greatest numbers of spawning coho salmon occurred in SFK-B, with a mean survey count of 235 adults. SFK-A had the second greatest number of spawning adults, with an annual mean survey count of 186 adults. In addition, 49 spawning coho salmon were observed in SFK-C aerial surveys, with a mean survey count of eight adults. Adult coho salmon migrate into the watershed and spawn later than the other salmon species. Due to fall rains, river flows within the SFK for coho salmon are generally higher than for other spawning salmon, providing more frequent access for coho salmon to and above SFK-C. As a result, coho salmon have a broader spawning distribution within SFK-C compared to other anadromous salmon species. Nevertheless, the distribution of coho salmon upstream of SFK-B is influenced by low and intermittent flows in SFK-C, especially during the early period of their spawning migration (Figure 15.1-39, Gage SK100C). Coho salmon spawning sites were also

documented in three SFK tributaries: SFK 1.130 (the outlet to Chiquita Lake), SFK 1.190, and SFK 1.240 (Appendix 15.1B).

Mean index counts were used to provide a perspective of the relative size of salmon runs in the SFK with respect to the Nushagak District and the greater Bristol Bay fishery. Coho salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, contributed approximately 31 percent of the total Bristol Bay catch, based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Nushagak District run estimates and Nushagak River escapement estimates for coho salmon were not available. However, commercial catch for coho salmon in this district from 2004 through 2008 ranged from 29,578 fish in 2007 to a high of 73,889 fish in 2008, with a 5-year average of 47,603 (Morstad et al., 2010; Table 15.1-15). Although not directly comparable, the SFK coho salmon mean index counts (used as an index of escapement) ranged from 121 in 2007 to 494 in 2008 and averaged 309 for the 5-year study period (Table 15.1-15).

Sockeye Salmon. During the study period, sockeye salmon were distributed throughout four of the five mainstem reaches of the SFK: SFK-A, SFK-B, SFK-C, and SFK-E (Table 15.1-28). Adults were observed only in the lowermost SFK reaches (SFK-A, SFK-B, and SFK-C), whereas juveniles were documented in SFK-E in addition to the three lower SFK reaches. The number of juvenile sockeye salmon in SFK-E was low. Four juveniles were observed in Frying Pan Lake (SFK-E) in July 2004, and one was observed in the mainstem SFK in August 2008 (Appendix 15.1B). Sockeye salmon also were documented throughout Tributary SFK 1.190 and in the lower reaches of Tributary SFK 1.240.

Sockeye salmon fry typically emerge in early spring, either under the ice or within groundwater influenced ice-free areas (Appendix 15.1A). Within 2 to 3 weeks after emergence, juveniles tend to move downstream or into lake habitat. Length frequency data indicate that two age classes of sockeye salmon juveniles occur in the SFK: subyearling (0+ age) and yearling (1+ age). Mean lengths for each age class are shown on Figure 15.1-51. The proportion of juvenile sockeye salmon outmigrating at any age class is unknown. Juvenile sockeye salmon were observed during winter fish surveys in April, October, and November in SFK reaches with considerable groundwater input (SFK-A and SFK-B; Appendix 15.1B). These data indicate that SFK-A and SFK-B provide overwintering habitat for juvenile sockeye salmon.

The relative abundance of juvenile sockeye salmon is shown for selected reaches on Figure 15.1-52. Far fewer juvenile sockeye salmon were found than Chinook and coho salmon, but slightly more than chum salmon. This pattern is consistent with the abbreviated riverine residence time of both juvenile sockeye and chum salmon. Sockeye salmon were most abundant in SFK-B with estimates greater than 20 fish per 328 feet (100 meters).

Densities of sockeye salmon were calculated among the various habitat types that were documented during the 2008 mainstem index surveys in the SFK and among various tributary and off-channel habitat types. In the mainstem SFK, densities were consistently low across habitat types, ranging from less than 1 fish per 1,076 sf (100 m^2) in pool, riffle, and run/glide habitats to a high of approximately 2 fish per 1,076 sf (100 m^2) in riffle habitat (Appendix 15.1B). Within the SFK tributaries, juvenile sockeye salmon observations were limited to Tributaries SFK 1.240 and SFK 1.1.260, where densities generally ranged from less than 1 to approximately 3 fish per 1,076 sf (100 m^2) in pool, riffle, and run/glide habitats(Appendix 15.1B, Table B.9-8). In the off-channel habitat intensive study area in the SFK, sockeye salmon densities were largely similar to those in the mainstem SFK (less than 1 to approximately 2 fish per 1,076 sf [100 m^2]; Figure 15.1-53).

Aerial surveys for adult sockeye salmon in the SFK were conducted from 2004 through 2008. During this 5-year period, adult sockeye salmon entered the SFK to spawn as early as July 5 and adults were still present as late as September 18 (Figure 15.1-61). Aerial survey counts peaked between July 23 and August 3 in all years.

Sockeye salmon runs were the most stable of the four anadromous salmon runs in the SFK watershed during the study period. This pattern was similar to the observed annual variation in sockeye salmon runs in the NFK. However, SFK sockeye salmon mean index counts were, on average, more than two times greater than those in the NFK (Figure 15.1-34; Figure 15.1-62). SFK sockeye salmon were the most abundant of the Pacific salmon spawning in the SFK from 2005 to 2008, with mean index counts ranging from 1,019 to 1,791 fish (Table 15.1-15). Sockeye salmon total run estimates provided by ADF&G for the Nushagak District were also relatively stable compared to other Bristol Bay districts and to other species (Morstad et al., 2010). In the Nushagak District, the peak sockeye salmon run from 2004 through 2008 occurred in 2006 (Morstad et al., 2010; Table 15.1-15). In the Nushagak River, sockeye salmon escapement estimates peaked 1 year earlier, in 2005, when escapement was nearly twice that observed in other years during the 5-year study period (Baker et al., 2009). These peaks in total run and escapement estimates were not evident in the SFK sockeye salmon mean index counts (Table 15.1-15).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the watershed. The distribution of spawning sockeye salmon in the SFK was limited to the lowest three reaches (SFK-A through SFK-C; Appendix 15.1B). In 2008, the greatest abundance of spawning fish occurred in SFK-B, with a mean survey count of 1,530 adults, and 12,237 spawning observations over the course of the 2008 survey period (Table 15.1-29; Figure 15.1-56). SFK-A had a mean survey count of 815 spawning adults, and only 1 spawning adult was found in SFK-C. As with the other anadromous salmonids in the SFK watershed, the distribution of spawning sockeye salmon is likely influenced by low or intermittent flows that can occur in SFK-C during late July or early August (Figure 15.1-39; Gage SK100C). The presence of juvenile sockeye salmon in SFK-E suggests that either limited spawning may occur within that reach, contingent on flow conditions, or that some juveniles move upstream into SFK-E following emergence.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the SFK with respect to the Nushagak River District and the greater Bristol Bay fishery. Sockeye salmon within the Nushagak District, which is comprised of the Wood, Snake, Igushik, and Nushagak rivers, contribute approximately 20 percent of the total Bristol Bay catch, based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Total inshore run estimates (commercial catch and escapement) provided by ADF&G for the Nushagak District sockeye salmon from 2004 through 2008 ranged from a low of 8,248,738 fish in 2004 to a high of 15,738,137 fish in 2006, with a 5-year average of 11,023,703 (Morstad et al., 2010; Table 15.1-15). During the same time period, Nushagak River sockeye salmon escapement estimates ranged from 492,000 in 2004 to 1,049,000 in 2005 and had a 5-year average of 620,000 (Baker et al., 2009). In contrast, the SFK sockeye salmon mean index counts (used as an index of escapement) ranged from 1,019 in 2005 to 1,791 in 2008 and averaged 1,422 for the 5-year study period (Table 15.1-15).

SFK Non-anadromous (Resident) Salmonid Fishes

Although non-anadromous salmonid fishes are overall less abundant than anadromous salmonids in the SFK, they represent an important component of the fish community in this watershed. Rainbow trout are particularly important with respect to recreational fisheries for resident salmonids. The catch rate for

rainbow trout in the Mulchatna drainage averaged 3,993 fish per year from 2000 to 2004 (Dye et al., 2006). Subsistence catches of resident salmonids ranges from 55 to 92 percent of the households (depending on species) in the towns of Iliamna, Newhalen, and Nondalton (Table 15.1-18; Fall et al., 2006).

The distribution, life history, relative abundance, and habitat associations of each of the four non-anadromous salmonid taxa present in the SFK are discussed below. The mean length of arctic grayling, Dolly Varden, and rainbow trout by age class captured in the SFK is presented on Figure 15.1-63.

Arctic Grayling. Juvenile and adult arctic grayling were observed within all five (SFK-A through SFK-E) of the SFK mainstem reaches (Table 15.1-30). Adults were recorded during the months of May through September, with no discernable pattern in timing or reaches they inhabit (Appendix 15.1B, Tables B.7-2, B.8-7, B.9-7, B.10-6, and B.11-7). Juvenile grayling were observed between the months of April through November in multiple reaches.

Few data are available to describe stream-specific life history characteristics of arctic grayling in the SFK. As noted for the NFK and elsewhere in their range, adults overwinter in lakes or mainstem channels and migrate to upstream tributaries to spawn in May and June (Appendix 15.1A). Following spawning, adults may return to lakes or mainstem channels or remain in upstream tributaries for a summer feeding season.

The relative abundance of arctic grayling is shown on Figure 15.1-52. In the lower two reaches, grayling abundance ranged from approximately 1 to 39 fish per 328 feet (100 meters). Estimated abundance increased in the upper reaches, with estimates ranging from 5 to 45 fish per 328 feet (100 meters) in SFK-C, 20 to 280 fish per 328 feet (100 meters) in SFK-D, and 3 to 100 fish per 328 feet (100 meters) in SFK-E.

Overall, arctic grayling were found in the mainstem channel, side channel, and off-channel habitats in the SFK, as well as in tributaries (Appendix 15.1B). The density data presented for SFK-E on Figure 15.1-64 indicate that arctic grayling were observed in both fast and slow water habitats, with densities ranging from approximately 4 to 16 fish per 1,076 sf (100 m^2) in slackwaters and run/glides, respectively (Figure 15.1-64). Among the SFK tributaries, arctic grayling were most dense in slow-water habitats (approximately 20 to 30 fish per 1,076 sf [100 m^2] in slackwaters and pool habitat (Appendix 15.1B, Figures B.8-9, B.9-9, and B.11-9b). Arctic grayling were also present in beaver ponds and side channels at relatively low densities (Figure 15.1-65).

Dolly Varden. Like arctic grayling, Dolly Varden were distributed throughout the SFK (Table 15.1-30). Juvenile fish were observed in all five reaches, and adults in all but SFK-D. Both anadromous and non-anadromous populations of Dolly Varden are thought to occur in the Bristol Bay region, (Appendix 15.1A). While Dolly Varden has been included herein as a non-anadromous species, little is known about their stream-specific life history patterns. As noted for the NFK watershed, a complexity of life histories can exist within the non-anadromous populations, with variations in spawning frequency, migration timing, and selection of overwintering sites. In the SFK, adults have been observed in July, August, and September, while juveniles have been seen in April through November (Appendix 15.1B, Tables B.7-2, B.8-7, B.9-7, B.10-6, and B.11-7).

Based on field surveys, the relative abundance of Dolly Varden is shown for selected reaches on Figure 15.1-52. Dolly Varden abundance ranged from less than 1 to 55 fish per 328 feet (100 meters). The

pattern of Dolly Varden abundance in tributaries was also variable. Estimates of abundance in SFK-C tributaries were generally less than 10 fish per 328 feet (100 meters), while estimates in tributaries to SFK-E and SFK-B were variable (Appendix 15.1B, Tables B.8-8b, B.9-8b, and B.11-8b). These values ranged from less than 1 to greater than 35 fish per 328 feet (100 meters) for SFK-E and approximately 10 to 230 fish per 328 feet (100 meters) in SFK-B.

Similar to trends in the NFK, Dolly Varden were associated with a broad variety of habitats, including mainstem channel, side channel, and off-channel habitats, as well as SFK tributaries (Appendix 15.1B). The highest densities in the SFK-E mainstem were observed in backwater habitats affiliated with the mainstem channel (as high as 34 fish per 1,076 sf [100 m^2]; Figure 15.1-64). Densities in pool, riffle and run/glide habitat were much lower (less than 3 fish per 1,076 sf (100 m^2]). In SFK tributaries, the greatest observed Dolly Varden densities were in backwater and riffle habitats, at densities of approximately 35 to 45 fish per 1,076 sf (100 m^2; Appendix 15.1B, Figures B.8-9, B.9-9, and B.11-9b). Among off-channel habitats, Dolly Varden densities were generally low, with beaver ponds supporting the highest density of fish at 1.25 fish per 1,076 sf (100 m^2; Figure 15.1-65).

Rainbow Trout. The distribution of rainbow trout (adults and juveniles) in the SFK was limited to SFK-A, SFK-B, and SFK-E (Table 15.1-30). Both adults and juvenile life history stages were observed in each of the three reaches. Adult rainbow trout were documented in the SFK in July, August and September, while juveniles were observed in April through September (Appendix 15.1B, Tables B.7-2, B.8-7, and B.11-7).

The relative abundance of rainbow trout was low, ranging from less than 1 to approximately 3 fish per 328 feet (100 meters) in SFK-A and SFK-B, to 35 fish per 328 feet (100 meters) in SFK-E (Figure 15.1-52). The density of rainbow trout in mainstem habitat types in SFK-E ranged from less than 1 fish per 1,076 sf (100 m^2) in run/glide habitats to approximately 9 fish per 1,076 sf (100 m^2; Figure 15.1-64). In riffles, the observed density was approximately 6 fish per 1,076 sf (100 m^2). Among the SFK tributary habitats, rainbow trout densities were low (approximately 3 fish per 1,076 sf [100 m^2] in slackwater habitat; Appendix 15.1B, Figure B.8-9). Only three rainbow trout juveniles were observed in SFK off-channel habitats.

Whitefish. In the SFK, the whitefish species group may include humpback whitefish, least cisco and round whitefish. Adults of this species group were distributed in SFK-A, SFK-B, and SFK-C, whereas, juvenile observations were limited to SFK-C (Table 15.1-30). In the early 1990s, least cisco and humpback whitefish were documented in the SFK (Buell, 1994).

SFK Non-Salmonid Fishes

Non-salmonid fishes found in the SFK watershed included burbot, northern pike, sculpin, stickleback, and lamprey (Table 15.1-31). Northern pike are valued as a subsistence and sport fish to local communities. Information regarding the distribution, relative abundance, and habitat associations of these non-salmonid species groups in the SFK is provided below.

Burbot. The SFK is the only watershed in the study area where burbot (*Lota lota*) has been observed. The known distribution of burbot in the SFK includes SFK-B and SFK-C (Table 15.1-31). Only small groups (three or fewer individuals) of juvenile burbot were collected.

Northern Pike. In the SFK, adult northern pike were largely associated with lake habitats, including Frying Pan Lake, as well as in Tributaries 1.260, 1.370, and 1.380 with connectivity to other lakes. Pike were the predominant fish species found in Frying Pan Lake (HDR, 2006). Northern pike were also documented in reaches SFK-B through SFK-E (Table 15.1-31). Observations included both juveniles and adults in all reaches except for SFK-B, where only juvenile fish were observed. A small number of adults were observed in glide and pool habitats in mainstem and tributary reaches above and below Frying Pan Lake. Northern pike juveniles occupied both fast and slow water habitats in mainstem and tributary reaches where they were observed in pool, riffle, and run/glide habitats. Northern pike abundance estimates for the mainstem SFK ranged from less than 1 to approximately 4 fish per 328 feet (100 meters; Figure 15.1-64). Northern pike were more abundant in SFK-E in association with Frying Pan Lake habitats than in the downstream reaches.

Sculpin. Both juvenile and adult sculpin have been documented in all reaches of the SFK (Table 15.1-31). Although sculpin were not identified to species, slimy sculpin and coastrange sculpin are known to inhabit the Bristol Bay basin (Appendix 15.1A). Slimy sculpin have been documented by Buell (1994) and ADF&G (2006b) in the SFK.

In the mainstem SFK, the relative abundance of sculpin ranged from approximately 1 fish per 328 feet (100 meters) to 290 fish per 328 feet (100 meter; Figure 15.1-64). Sculpin were also found in tributaries within SFK-B, SFK-C, and SFK-E, where abundances ranged from approximately 1 to 230 fish per 328 feet (100 meters; Appendix 15.1B, Figures B.8-8b, B.9-8b, and B.11-8b).

Sculpin were captured in both fast and slow water habitats. In SFK-E, densities in the mainstem ranged from less than 1 to approximately 3 fish per 1,076 sf (100 m^2; Figure 15.1-33). Habitat associations and densities in SFK tributaries were similar, particularly in SFK-C and SFK-E tributaries (Appendix 15.1B, Figures B.9-9 and B.11-9b). The greatest sculpin densities occurred in pool, riffle, and run/glide habitats in the SFK-B tributaries, with densities ranging from approximately 20 to 40 fish per 1,076 sf (100 m^2; Appendix 15.1B, Figure B.8-9). In off-channel habitats, sculpin were found in beaver ponds at a density of approximately 1 fish per 1,076 sf (100 m^2; Figure 15.1-65).

Stickleback. In the SFK, stickleback have been documented in all reaches except SFK-D (Table 15.1-31). Consistent with Buell (1994), current observations in the SFK include both ninespine stickleback and threespine stickleback. Abundance and density estimates of stickleback were generally low. In the mainstem SFK, abundances were less than 2 fish per 328 feet (100 meters; Figure 15.1-52). Densities were less than 1 fish per 1,076 sf (100 m^2) in mainstem channel and off-channel habitats (Figure 15.1-64; Figure 15.1-65). Stickleback densities in the SFK tributaries were similarly low and ranged from less than 1 to 4 fish per 1,076 sf (100 m^2) among slackwater, pool, riffle, and run/glide habitats (Appendix 15.1B, Figures B.8-9, B.9-9, and B.11-9b).

Lamprey. Observations of lamprey in the SFK have been limited to the two lowermost reaches (SFK-A and SFK-B; Table 15.1-31). Only juvenile lamprey were observed, and these fish were not identified to species.

SFK Watershed Synthesis

In the SFK, all anadromous salmon spawning occurred downstream of Frying Pan Lake. However, most of the spawning occurred in the lowermost reaches of SFK-A and SFK-B. The spawning reach analysis

data showed spawning Chinook salmon were more prevalent in the large river reaches of SFK-A, whereas chum, coho, and sockeye salmon spawning was more abundant in SFK-B. In general, these spawning distributions were in contrast with the instream flow habitat results that indicated substantially more anadromous spawning habitat should be available in SFK-A compared to SFK-B and SFK-C. Other parameters, including hydrology and temperature, appeared to be related to spawning distributions. The species distributions of adult sockeye and chum salmon in these reaches showed a direct relationship between spawning and areas with inflow from groundwater, seeps, or springs. These salmon spawned only in the vicinity of groundwater both on a localized scale within a reach and among reaches. Furthermore, summertime surface water temperatures in the SFK increase in Frying Pan Lake and remain relatively high until the upstream end of SFK-B, where Tributary SFK 1.190 enters the mainstem channel. Due to cool water inflows from the tributary, as well as numerous spring and seeps, water temperatures at this location begin to decline and continue to decrease until the middle of SFK-B. This cold water upwelling area and the area immediately downstream supported the majority of salmon spawners in the SFK.

The observation that anadromous spawning was largely limited to the lower three reaches of the SFK reflected the unreliable habitat conditions associated with the large and variable ephemeral section of the river located in the middle of SFK-C. In some years, such as 2007, the ephemeral section completely dries for an extended time during salmon spawning periods and the lack of flow can create a fish passage barrier to upstream habitats. However, in high flows years, such as 2008, the ephemeral section remained fully wetted and anadromous salmon had access to the entire length of SFK-C. Adult chum, coho, and sockeye salmon expanded their distributions upstream in 2008, with small numbers of fish spawning in the available habitat in SFK-C. While chum and sockeye spawning locations were limited to the downstream portion of SFK-C, coho salmon spawned sporadically throughout the entire reach.

Based on mean index counts, the SFK supported the second largest run of Chinook and chum salmon among the three watersheds in the study area. The mean index counts of coho salmon in the SFK and NFK were similar. Both were substantially less than the UT coho salmon index counts. The sockeye salmon mean index counts in the SFK were consistently two to three times larger than those in the NFK, yet, in 3 out of 5 years, they were an order of magnitude less than the UT counts. In the other two years (i.e., 2006 and 2007), the SFK sockeye salmon mean index counts were within an order of magnitude as compared to those in the UT; this was the result of a dramatic decrease in the UT sockeye salmon mean index counts during these years.

The distributions of river-rearing juvenile Pacific salmon species followed similar patterns as the adult spawning distributions. The highest abundance and diversity of juvenile salmon were found in the lower two reaches. Very few Chinook salmon were found upstream of SFK-C. However, during high water years, small numbers of coho and sockeye salmon were documented in SFK-C and further upstream including in habitats above Frying Pan Lake. This expansion in juvenile distribution is, in general, consistent with spawning further upstream during high water years, but also implies that juvenile salmon may move upstream from spawning areas for rearing purposes in the SFK.

Juvenile Chinook salmon were prominent in mainstem channel, fast-water habitats that dominate the lower reaches of the SFK. Juvenile coho salmon were more widely dispersed and were found in a variety of habitat types. Coho salmon were observed at the highest densities among all salmonids in off-channel habitats. The wide distribution and broad habitat use for juvenile coho salmon is consistent with the

finding that coho salmon were the most abundant juvenile salmon documented in the SFK, and that four juvenile age classes of coho salmon were identified in SFK habitats.

Ten non-anadromous salmonids and non-salmonid fishes were present in the SFK, making this watershed the most species rich fish assemblage in the mine study area. A second distinction of the SFK fish assemblage was the presence of both burbot (SFK-B and SFK-C) and lamprey (SFK-A and SFK-B) species. These species were not present in any other watersheds. Unlike the anadromous salmonids, the stream resident fish species were distributed in low numbers throughout the SFK. Arctic grayling and Dolly Varden were the most abundant and broadly distributed of the resident fishes.

Overall, SFK-B supported the largest diversity of species and highest relative abundance of the fishes documented over the study period. This reach also supported the greatest amount of predicted available habitat for most species and life stages present. Tributary 1.190, which had abundant springs located along the stream margins, contributed river flow to SFK-B (Chapter 9, Section 9.1). As mentioned above, this reach was marked by a gradual decline in water temperatures to the midpoint of the reach, followed by a gradual increase in temperatures downstream. Similar to the NFK, the recorded high temperatures in the SFK were several degrees higher than those reported for other streams in the region.

Intermittent stream flows were a concern in mainstem channel of SFK-C during dry years. The river in this reach dries from the upstream and downstream ends inwards towards the middle, resulting in isolated pools that have the potential to strand fish and/or dewater incubating eggs. In addition, ephemeral flows were documented in three SFK tributaries: SFK 1.260, SFK 1.330, and SFK 1.370. These periodically dry habitats could potentially limit fish production on a local level.

The ephemeral reach area in SFK-C marks the beginning of a section of the SFK where the habitat transitions from that supportive of a Pacific salmon-dominated fish assemblage to habitat that supports populations of stream rearing and resident fishes. This transitional zone continues into SFK-E and upstream to the upper end of Frying Pan Lake. Below the transitional zone, water temperatures are cooler due to the large groundwater influence in SFK-B. Gravels and cobbles dominate the substrates. The overall abundance and diversity of fishes is greatest in these downstream habitats.

Within the transitional zone, river flow is unstable and ephemeral in some years during summer and winter low flow periods. Near the upstream end of the transitional zone the stream channel flattens and widens to create Frying Pan Lake. The stream gradient is reduced and substrates contain higher proportions of fines than elsewhere in the watershed. Macroinvertebrate richness is reduced in the transition zone due to river flow and channel conditions.

Upstream of the transition zone, the SFK returns to a river channel and stream gradient increases. Stream temperatures are influenced by numerous seeps and springs within tributary subwatersheds. Although cooler than the water temperatures within the transitional zone, the thermal regime in the mainstem headwater reaches is warmer than river reaches downstream of SFK-C. Fish abundance and diversity increase upstream of the transitional zone but are still reduced compared to the lowermost reaches, SFK-A and SFK-B. The fish assemblage in this headwater area is dominated by resident fish species.

Frying Pan Lake is at the upstream end of the transition zone and at the downstream end of SFK-E. This shallow lake helps to attenuate flows to downstream reaches and has a substantial warming effect on surface waters in the transition zone. It also provides habitat for a population of northern pike, an

aggressive predator of smaller fishes—including juvenile salmon and resident fishes. The environmental conditions within Frying Pan Lake are suboptimal for juvenile salmonids and, as such, may pose limitations on fish passage and influence the overall distribution of salmonid fishes throughout the SFK watershed.

The data collected during the study period show the preponderance of fish spawning and rearing in the SFK was associated with areas where there was a surface water expression of groundwater. These areas of detectable groundwater influence were widespread throughout the lower two reaches, with areas of higher groundwater influence noted in SFK-B. In areas where groundwater influx was not prevalent, fish diversity and abundance were reduced.

15.1.6.3 Upper Talarik Watershed

UT Watershed Overview

The UT watershed drains an area of about 135 mi^2 (350 km^2) and is part of the Iliamna Lake watershed (24,719 km^2) which drains into Bristol Bay through the Kvichak River (Figure 15.1-5). From its headwaters, which are located in the immediate vicinity of the Pebble Deposit (Figure 15.1-66), the UT flows in a south-southwesterly direction for about 39 miles (62 km) where it enters Iliamna Lake. The UT drainage represents about 1.7 percent of the Kvichak River system and 0.3 percent of the entire Bristol Bay drainage basin (Table 15.1-2).

The highest elevation in the UT drainage is Pig Mountain (elevation 2,809 ft; 856 meters) while the lowest elevation is at the stream outlet to Iliamna Lake (elevation about 46 ft; 14 meters). The watershed is bounded by a series of low, isolated mountain blocks: Koktuli Mountain to the west, Groundhog Mountain to the north, Dalton Mountain to the northeast, and a long unnamed ridge that separates the UT drainage from the Newhalen River to the east. The northwestern surface water drainage divide between the NFK and UT is inconspicuous. A general map of 1,518 aquatic resources study site locations in the UT sampled during the baseline period is shown on Figure 15.1-67.

UT Aquatic Habitats

This section describes the physical, chemical, and biological components of aquatic habitat in the UT. These habitat components are discussed in distinct sections to facilitate comparison among watersheds.

UT Physical Conditions

Fish-bearing waters in the mainstem UT have been divided into seven stream reaches with distinct hydrology, geology, and channel characteristics (Figure 15.1-66; Table 15.1-32). The seven reach designations (UT-A through UT-G) progress from downstream to upstream along the length of the mainstem UT. As discussed in Section 15.1.1, tributaries were assigned to the mainstem reach into which they flowed, and off-channel habitats were assigned to a mainstem reach based on their proximity to the mainstem channel. Photographs depicting representative channel characteristics of each reach are provided in Photos 15.1-22 through 15.1-28.

Channel Morphology. The UT is primarily a single-thread, gravel-bedded channel that is relatively straight along much of its length, except where the river valley and floodplain widens and multiple

channels have formed. The channel slopes of the UT were generally steeper than those of both the NFK and SFK. Channel slopes ranged from 0.1 to 2.0 percent with a mean of 0.5 percent in the FG study sites. As in the NFK and SFK, large woody debris was scarce in the upper portion of the UT watershed due to a general lack of forest vegetation in the riparian zone. The lower reaches were associated with larger trees, and large woody debris was more prevalent.

Alluvial transport and deposition were common within most of UT-B and the entire length of UT-A. Within these areas, high flows typically overflow the banks, and channels were bordered by relatively wide floodplains. Associated riparian zones (some supporting large trees), wetland complexes, and off-channel habitat extended well beyond the stream banks. Large woody debris was present within these sections of the UT and served to create and maintain habitat diversity.

In the upper third of UT-B and in UT-C, the river channel was low gradient, contained, and flowed through a relatively narrow (1,300 to 2,600 feet [400 to 800 meters]) valley bottom, bordered by low hills to the west and carved glacial deposits to the east.

UT-D, UT-E, and the lower half of UT-F were classified as alluvial floodplain channels that formed by re-working glacial outwash deposits. Multiple former stream terraces and colluvial slopes were evident where the current stream channel has downcut through glacial outwash and lacustrine deposits. Steep side slopes represent sediment sources where the channel impinges against the valley walls. Tributaries flowing in from the isolated mountain blocks were varied with high-gradient, contained, moderate-gradient, mixed control, and alluvial fan channels. Large woody debris was relatively sparse within these reaches due to a lack of source trees from the riparian zone.

In the upper half of UT-F and UT-G, the channel flowed across deep glacial lacustrine deposits. Channels tended to contain higher levels of fine sediment than elsewhere in the UT. The downstream limits of the lacustrine deposits were in the same area as the downstream limit of mainstem beaver dam construction. Channel elevations in UT-E, UT-F, and UT-G were comparable to elevations in the NFK and SFK.

Hydrology. The hydrology of the mine study area is described in detail in Chapter 7, Section 7.2. Like the NFK and SFK watersheds, the baseline hydrology of the UT mainstem channel was strongly influenced by climate, geology, and groundwater influx. Stream flows were driven by runoff from spring snowmelt and summer/fall rains. Base flows tended to remain high in both winter and late summer due to groundwater storage.

Similar to the NFK and SFK, flow in the UT generally has two peaks (Figure 15.1-68). The first peak occurs during the spring snowmelt season (with the majority of the snowmelt runoff typically occurring in late April and May), while the second peak occurs during the fall rainy season (late August to November). The key difference in timing between the UT and the NFK and SFK peak flows is a slightly earlier spring freshet in UT. The peaks in the UT are separated by two low flow seasons: a summer low flow (with minimum flows typically occurring in August), and a winter low flow (with minimum flows typically occurring in late March to mid April). The mean annual flow in UT was 232 cfs (6.6 m^3/s) during water years 2005 through 2008 at Hydrology Gage UT100B (USGS Gage No. 15300250). This discharge is equivalent to a mean annual unit runoff of 36.5 inches (92.7 centimeters) from the 86.2 mi^2 (223 km^2) drainage area at the gage. The lowest most gage in the UT watershed (UT100-APC3) recorded a mean annual discharge of 382 cfs (10.8 m^3/s) during the 2008 water year.

The UT hydrograph showed a pronounced groundwater influence. Most of the groundwater contributions to the UT mainstem come from aquifers located within the UT basin. In addition, the inter-basin transfer from the SFK has a localized effect in the receiving tributary (Tributary UT 1.190) and contributes a modest portion of the baseflow to the UT mainstem below the tributary confluence. Gage data indicated that approximately 22 cfs (0.6 m^3/s) of flow entered the UT watershed through cross-watershed transfer of groundwater from the SFK (Chapter 7, Section 7.2). The groundwater flowed eastward from the SFK, likely along flow paths formed by former glacial meltwater channels, and emerged in Tributary UT 1.190. Because of this groundwater influence, Tributary UT 1.190 exhibited a much higher unit runoff (i.e., flow per unit watershed area) and a much more stable hydrograph than other streams in the UT watershed (Figure 15.1-68). Flow records indicated the downstream portion of UT-F (downstream from Hydrology Gage UT100D) and UT-D also received groundwater inflow from UT aquifers, and portions of these reaches remained ice-free during winter months.

Water Temperature. Water temperatures in the UT watershed begin to seasonally warm in May and June and generally peak in July and August. Temperatures cool down during September and October and stay near freezing from November through April. A series of temperature plots during calendar year 2007 at select UT gages is shown on Figure 15.1-69 to indicate the general thermal regime across the watershed. More detailed temperature data, as well as a description of the SNTEMP flow-sensitive surface water temperature models that were developed and calibrated using these baseline data, are included in Appendix 15.1E.

During the study period, the longitudinal thermal regime of the UT was characteristic of a surface water system influenced by groundwater and coldwater tributary inflow (Figure 15.1-70). In particular, there was a broad distribution of distinct groundwater effects in the middle reaches of the UT and within Tributary UT 1.190. Water temperatures, combined with flow records, indicate that the UT received groundwater inflow in the downstream portion of UT-F (downstream from Hydrology Gage UT100D) that was relatively cool in the summer and relatively warm in the winter. Similarly, UT-D received relatively cool groundwater inflow in the summer.

While water temperatures remained at or near freezing during the winter season throughout most of the UT, there was greater variability in water temperatures during the summer (Appendix 15.1E). The daily temperature range during the summer months (June, July, and August) for all monitoring gages and years for the UT watershed is provided in Table 15.1-33. The instantaneous minimum and maximum daily temperatures ranged from a low of 36.5ºF (2.5ºC) at the most upstream monitoring site UT100E in UT-G in 2006 and 2007 to a high of 65.8ºF (18.8ºC) at station UT100D in UT-F during 2004.

Instantaneous summertime maximum temperatures did not exceed the ADEC maximum water temperature standard for aquatic life of 68ºF (20ºC; ADEC, 2009) during the 2004 through 2008 period (Table 15.1-33). Summer temperature data indicate that the ADEC maximum water temperature standard for spawning and egg and fry incubation of 55ºF (13ºC; ADEC, 2009) was exceeded for 59 percent of the instantaneous temperature records, and the ADEC maximum water temperature standard for migration routes and rearing areas of 59ºF (15ºC; ADEC, 2009) was exceeded for 44 percent of maximum records during the study period. Overall, the thermal regime of the UT was relatively cooler than the NFK and SFK. This thermal difference may be due, in part, to the prominent groundwater influence and the lack of any lake-related warming effects in the UT, such as those evident with Frying Pan Lake in the SFK and Big Wiggly Lake in the NFK.

The thermal regime of the UT has had an influence on the behavior, metabolism, and growth of fish, and their use of specific fish habitats. In the study area where freezing and low water temperatures are a concern, fish would likely be attracted to groundwater-fed channels during the winter, because these sites represent areas of stable flows and relatively warm water temperatures (Leman, 1993; Ebersole et al., 2003). The middle mainstem river reaches and Tributary UT 1.190 may offer thermal refuge to winter rearing life history stages. Similarly, the groundwater influence in these reaches during summer months may offer enhanced thermal conditions for summer rearing compared to other mainstem and tributary areas.

Mainstem Channel Habitat. The baseline frequencies of habitat types (e.g., pool, riffle, run/glide, etc.) in the mainstem UT, as determined from remote sensing techniques, were itemized in detail at the reach level in Appendix 15.1B and summarized at the watershed scale, as shown on Figure 15.1-71. Results of mesohabitat mapping indicate that riffle habitat was dominant and run/glide habitat was the subdominant habitat type in UT-A, UT-B, and UT-G. Conversely, run/glide was dominant, and riffles comprised a secondary component of habitat composition in UT-C, UT-D, UT-E and UT-F. Pool habitats represented a substantial proportion of the habitat composition only within UT-E (12 percent) and UT-F (22 percent). The frequency of pool habitats remained less than 10 percent by area in all other UT reaches. The frequency of USFS channel types is shown on Figure 15.1-72. This map is based on the overall lengths of channel segments identified during the field surveys along selected reaches in the UT. The USFS channel type codes and descriptions are provided in Table 15.1-5. Channel type frequencies and results of the Tier 3 habitat surveys indicated that riffle habitat dominated the morphology of the UT mainstem and tributary channels (Figure 15.1-73).

The prevalence of riffle and run/glide habitats within the UT indicates the potential for substantial quantities of spawning habitat. This concept was confirmed as part of adult salmon surveys and redd measurements (see *UT Fish Resources* section below). However, given the lack of pools and slackwater habitat features in the mainstem river in UT-A through UT-D, both summer and winter rearing habitats may be limited in the mainstem and more prevalent in off-channel habitats.

Pacific salmon require cold, clear, and well oxygenated water with gravel- to cobble-sized substrates for spawning. The quality of spawning gravels was good, based on grain size analysis of bulk substrate samples collected from three locations in the UT. The concentrations of fine sediment size fractions that have been related to embryo survival (less than 0.03 inches [0.84 millimeters]) and fry emergence (less than 0.25 inches [6.4 millimeters]) were all well below levels considered harmful (over 12 and 20 percent, respectively; after Shirazi et al., 1981; Lotspeich and Everest, 1981; Chapman and McLeod, 1987; Reiser and White, 1988; Kondolf, 2000). Refer to Appendix 15.1F for detailed results of the spawning gravel analysis.

Off-channel Habitat. Like the NFK and SFK, the UT system contained a substantial amount of off-channel habitat comprised of side channels, alcoves, percolation channels, beaver ponds, beaver pond outlet channels, and isolated ponds (Figure 15.1-74). The UT off-channel habitat study sites contained an estimated 13 acres of off-channel habitat. The area and frequency by off-channel habitat type is presented in Table 15.1-34.

Beaver ponds were the most frequently observed and most expansive off-channel habitat type in the UT. These complexes typically include a combination of ponded areas and associated outlet channels that create both pool and slow moving run/glide type habitats. Off-channel habitats provide a variety of

habitats that may be used by a diverse assemblage of fish species and life stages at a range of mainstem channel flows. Isolated ponds are unique among off-channel habitat types in that they are only connected to the mainstem channel during overbank flows.

Survey results showed many of the off-channel habitat sites were hydrologically connected to the mainstem channel via surface inflow at less than bankfull flows (approximately 550 cfs [16 m^3/s]; Appendix 15.1D). A subsample of 11 off-channel habitat sites shows that connectivity is established between the off-channel habitat sites and the mainstem channel at flows that ranged from 39 to 455 cfs (1.1 to 12.9 m^3/s; Table 15.1-35). See Appendix 15.1D for more information regarding the off-channel flow study.

UT Chemical Habitat Conditions

A comparison of various water quality parameters reported in the mine study area and those reported for other water quality studies in the region is provided in Table 15.1-8. These parameters include water temperature, DO, specific conductance, pH, turbidity, alkalinity, and hardness. Similar to the NFK and SFK, the UT watershed was characterized by generally good water quality conditions that support habitat for a range of salmonid and non-salmonid fishes. Overall, the reported values in the UT were similar to those for other watersheds in the region (Table 15.1-8). The notable exceptions include: a maximum water temperature of 60.3ºF (15.7ºC), which is slightly greater than the maxima reported for most of the other watersheds; a low DO minimum of 2.7 mg/L; and a broader range of reported values for pH, alkalinity, and water hardness. Some concentrations were found to vary as a factor of flow conditions, location within the watershed, or season (Chapter 9, Section 9.1).

In addition to the water quality parameters included in Table 15.1-8, concentrations of trace elements, cyanides, and nutrients were determined as part of the surface water quality studies in the mine study area (Chapter 9, Section 9.1). Natural exceedences of estimated freshwater aquatic life criteria were observed in the UT for aluminum (total and dissolved), iron (total), copper (total and dissolved), lead (total and dissolved), cadmium (total and dissolved), silver (total), and WAD cyanide. The number of samples exceeding these criteria was less than 1 percent for dissolved aluminum, dissolved cadmium, and total silver, less than 2 percent for total iron, total cadmium, dissolved lead, and WAD cyanide, less than 3 percent for dissolved copper, less than 8 percent for total copper, less than 9 percent for total lead, and approximately 22 percent for total aluminum. For aluminum, the majority of naturally occurring concentrations above criteria were primarily from one mainstem location (UT100E) and three tributary locations (UT135A, UT138A, and UT141A). The tributary where UT141A is located flows through the eastern portion of the general deposit area, and the other two are located nearby. The majority of these samples were collected between April and June. The majority of the copper exceedences occurred at station UT146A, which is located on a tributary that flows through the eastern portion of the deposit. No pattern was evident for lead exceedences, suggesting that these naturally elevated concentrations may be the result of localized sources throughout the watershed. Mean nutrient concentrations were generally low.

UT Aquatic Macroinvertebrates

Studies of both periphyton and aquatic invertebrate communities in the UT were conducted in conjunction with those for the NFK and SFK, and detailed results are described in Section 15.2. Because of the

importance of macroinvertebrates as both food for fish and as indicators of stream health, annual results of the macroinvertebrate studies in the UT are summarized for June sampling efforts below.

The macroinvertebrate taxa richness of three sample sites (UT-100B, UT-100C, and UT-100D) is shown on Figure 15.1-75. Similar to the NFK and SFK, taxa richness was determined for June sampling efforts in 2004, 2005, and 2007 using two different collection methods: the ASCI kick net and Surber methods. Taxa richness ranged from a low of 15 taxa at UT-100C in 2007 (Surber method) to a high of 26 taxa at UT-100B in 2004 and 2007 and in UT-100C in 2004 (ASCI method; Figure 15.1-75). The results across the 3 years of sampling for UT-100B and UT-100D indicate reduced taxa richness in 2005. In all years, the mean taxa richness was generally similar among all three sites, which are located in reaches UT-C, UT-D, and UT-F.

The macroinvertebrate communities in the UT were largely composed of midge larvae (Family Chironomidae) and EPT taxa. The contribution of chironomids at the three sample sites ranged from 29 percent at UT-100D in 2005 (Surber method) to 91 percent at UT-100C in 2007 (ASCI method; Figure 15.1-75). For EPT taxa, percentages ranged from 4 percent at UT-100D in 2004 (ASCI method) to 35 percent at UT-100B in 2007 (ASCI method). The macroinvertebrate communities at all sites were dominated by chironomids in all years.

UT Habitat/Flow Relationships

This section presents the results of instream flow habitat modeling and time series analyses computed for various salmonid fish species for each of five UT mainstem river reaches (UT-B, UT-C, UT-D, UT-E and UT-F) and for one tributary (UT 1.190). No results are presented for UT-A or UT-G, because transects were not established in these reaches. UT-A is the most downstream reach that extends into Iliamna Lake and receives substantial tributary (UT 1.60) and accretion flow. UT- G is the most upstream reach and is contained within the immediate area of the Pebble Deposit. There were 40 transects used in the analysis (Table 15.1-36): five in UT-B, seven in UT-C, seven in UT-D, 10 in UT-E, six in UT-F, and five in Tributary UT 1.190. Transect weighting, in accordance with the frequency of representative habitat types in a reach, are summarized in Table 15.1-10. The time series reflect the total habitat area of a reach for each day during the period a given species and life stage is present.

Specific flow ranges corresponding to 90 percent or more of the maximum modeled habitat areas in the five UT reaches are shown for anadromous and non-anadromous fish categories in Table 15.1-37. The ranges vary as a factor of the results from different species as reported in Appendix 15.1C, Tables 52 through 66.

Results of the habitat time series analyses for Chinook salmon, coho salmon, sockeye salmon, and rainbow trout spawning and juvenile life stages for UT-C, UT-D, UT-E, and UT-F are summarized on Figure 15.1-76. These results focus on the total habitat area versus river flow relationships, because this parameter provides reach-scale estimates of the total amount of habitat for a given species and life stage available under different flow conditions (refer to Appendix 15.1C for tributary results, other flow-related parameters, and individual transect results). The results, expressed in acres, are presented graphically as a time series of habitat based on average flow conditions in the reaches. The time series analyses are presented graphically by reach in terms of the total habitat area that would occur on a daily basis during the time period the time period in which an individual species and life stage may be present. For example, juvenile Chinook salmon may be present year-round, while adult spawning is limited from July through

September, as depicted on Figure 15.1-76. This evaluation is useful for comparing the relative amounts of habitat provided for a given species and life stage under different flow conditions.

The total estimated amount of habitat area (spawning and juvenile), expressed in acres, for each species available within a given reach, based on the median daily flows over the respective time periods for each life stage, is displayed on Figure 15.1-76. The results indicate there can be substantial variability in habitat amounts on a daily basis, in response to changes in flow. This variation is most evident during flow transitional periods. For example, during the spring-summer period when flows are declining there is a general increase in juvenile habitat. Similarly, during the summer-fall period when flows increase there is a general increase in spawning habitat. The overall process used in deriving the time series and the detailed results for these species, as well as other species and life stages, and for Tributary UT 1.190, are presented in Appendix 15.1C.

The time series analysis represents a first step in evaluating how UT baseline flow conditions influence fish habitats temporally and spatially. Additional time series based on wet year, dry year, and average year conditions, as well as a series of associated habitat duration curves for each reach are provided in Appendix 15.1C (Tables 54, 57, 60, 63,and 66, and Figures 79 through 81, 85 through 87, 91 through 93, 97 through 99, and 103 through 105). The appendix also contains estimates of total habitat area by species and life stage provided in the entire UT (all reaches combined) during an average water year (Appendix 15.1C,Table 73).

UT Special Habitat Features

Special features found within the UT that likely influence the existing distribution and abundance of fish include seeps and springs, intermittent flow reaches, lakes and ponds, and beaver ponds are discussed below.

Seeps and Springs. A comprehensive survey of seeps and springs in the UT was performed in 2005 and 2006, and the surface water expression of these features was plotted on Figure 9.1-4 in Chapter 9, Section 9.1. There was an abundance of seeps and springs throughout the UT among the tributaries draining the Koktuli Mountains, as well as the hills and divides along the entire western boundary of the watershed and along the mainstem UT. Seeps and springs were also prevalent along Tributaries UT 1.190 and UT 1.310. Seeps and springs add to river flow and moderate stream temperatures in both summer and winter. Summer water temperatures declined on the order of 36ºF (2ºC) in the mainstem between UT-F and UT-E and between UT-D and UT-C, immediately downstream of the confluence with Tributary UT 1.190. Stream temperatures remained cool with the input of seep and spring water throughout the length of the UT downstream through UT-A (Figure 15.1-70).

Such surface water expressions may offer groundwater upwelling sites salmonid fishes favor for selecting spawning locations. In addition, these cool water sources are a benefit to summer rearing for juvenile fishes. Seeps and springs also offer temperature moderation in the mainstem and tributary reaches in the winter such that portions of the watershed remain ice-free and survival of incubating embryos maybe enhanced compared to frozen stream sections.

Intermittent Flow Reaches. There were no mainstem UT reaches temporarily exhibiting seasonal surface water flow cessation during the study period (Chapter 7, Section7.2, Figure 7.2-5). Drainages in

the UT have considerable groundwater contributions that maintain base stream flows in most channels in the watershed.

Lakes and Ponds. Lakes and ponds were prevalent in the UT. Most were concentrated along the eastern boundary of the watershed, with the largest concentration along the long unnamed ridge that separates the UT drainage from the Newhalen River to the east. A large lake was located east of the headwaters of Tributary UT 1.60 (First Creek) and a series of kettle ponds and lakes occurred east of UT-D and UT-E. Adult coho and sockeye spawning was observed in a small lake associated with Tributary UT 1.350.20 as well as in beaver ponds in the UT. Surface water impoundments of this nature provide habitat for other stream-dwelling fishes and provide water storage and extended surface water runoff volumes late in the summer period compared to watersheds without such storage.

Beaver Ponds. Beavers can have a considerable influence on channel morphology and hydraulics. Beavers were ubiquitous throughout the NFK, SFK, and UT watersheds, and in some locations have had a considerable effect on flow and habitat conditions. Analysis of aerial photos indicated that beavers built dams that spanned the mainstem channel in the headwaters of all three river systems (see Appendix 15.1F). Such structures resulted in the ponding of water that created a mosaic of small ponds and interconnecting channels. During wildlife surveys in the UT, 51 beaver colonies were recorded (Chapter 16, Section 16.2, Figure 16.2-20). Beaver ponds were found in off-channel habitat areas throughout the UT active valley. Beaver ponds in the UT provide adult spawning and juvenile overwintering habitat for Pacific salmon. Coho and sockeye salmon were reported spawning in beaver-created habitats in the UT watershed. Elsewhere it has been documented that beaver ponds and small, groundwater-influenced stream channels provide ice-free fish habitat during winter (Murphy et al., 1989; Collen and Gibson, 2001). In addition, beaver ponds in the UT were slightly warmer than other habitat types and thus, may represent a more productive habitat as compared to mainstem channel habitat types. This could support increased growth rates of juvenile salmon and more fish per unit area compared with mainstem channel fish (Figure 15.1-77; Appendix 15.1D).

UT Potential Limiting Factors

Habitat features in either short supply or in poor relative condition that may be limiting fish abundance and productivity are discussed below.

Velocity Shelter. A general lack of mainstem channel pool habitat, instream cover features, and large woody debris in the UT results in low levels of velocity shelter for rearing fishes. This condition indicates juvenile rearing may need to rely on off-channel habitats, especially for winter refuge when water temperature and stream flows become low. The lack of juvenile winter rearing habitat was evident in the instream flow habitat duration curves (Figure 15.1-46).

Water Temperature. The annual water temperature regime was cold in the UT and cooler than in either the NFK or SFK. This thermal regime restricts rearing conditions and growth potential. Because fish are cold-blooded species (cannot regulate their body temperature), all metabolism, activity, swimming speed, and behavior are influenced by ambient water temperature conditions. Cold water restricts active feeding to a brief summer period (mid-May to mid-September) when water temperatures exceed 46ºF (8ºC); therefore, productivity of the population is limited as compared to watersheds where the active feeding period is longer (Campbell and Neuner, 1985). This limitation is likely typical of many regional streams.

Notable for this cold water river, the warmer water temperatures in the summer months also may be limiting to fish health and productivity. Given the open riparian nature of most of the streams in the UT watershed, water temperatures warm quickly during the summer months and naturally exceed ADEC maximum water temperature standard for spawning and incubation of 55ºF (13°C; ADEC, 2009). Exceedences represented 59 percent of the station records reporting peak summer temperatures (June through August) during the baseline period. Water temperatures also exceeded the ADEC maximum water temperature standard for migration routes and rearing areas of 59ºF (15°C; ADEC, 2009) for 44 percent of the summer records. None of the instantaneous maximum summer temperature records exceeded the ADEC maximum water temperature standard of 68ºF (20°C; ADEC, 2009) over the study period. Maximum temperatures in the UT are more like other regional streams than the NFK or SFK (Table 15.1-8).

Water Quality. Water quality data indicate that the waters of the UT are soft (Chapter 9, Section 9.1). Soft waters are typically not as productive for fish growth as harder (more mineralized) waters. Low levels of mineralization can influence aquatic productivity, including fish biomass, in comparison to streams with high levels of mineralization (McFadden and Cooper, 1962; Hendrickson et al., 1973; Marshall et al., 1980). Thus, hardness and similar measures of mineralization (e.g., alkalinity, TDS, conductivity, etc.) can be used as screening level surrogates for stream productivity. This limitation is typical of other regional streams, as summarized in Table 15.1-8.

Soft waters can also increase the acute toxicity of divalent trace metals to aquatic organisms. Toxicity increases inversely to water hardness (Carroll et al., 1979; Pagenkopf, 1983; Pascoe et al., 1986; Davies et al., 1993; Markich and Jeffree, 1994; Meyer et al., 1999). Pagenkopf (1983) provides evidence suggesting metal toxicity to fishes is a function of divalent trace metal attachment to gill surfaces. Markich and Jeffree (1994) and Meyer et al. (1999) imply as hardness increases, divalent calcium ions will bind to the gill surface in lieu of further metal attachment. Thus, metal toxicity is reduced in hard waters compared to soft waters. CALC in Alaska waters for various trace metals are a function of hardness concentrations (ADEC, 2008). Based on water quality data collections for trace metals in the UT, total and dissolved concentrations of aluminum, cadmium, copper, and lead, and total concentrations of iron and silver occasionally exceeded CALCs (Chapter 9, Section 9.1). Of these six metals, the copper, cadmium, lead, and silver criteria are a function of water hardness. Given the low frequency and limited geographical extent of criteria exceedences, the UT baseline water quality conditions for trace metals are not regarded as a potential limiting factor to fish production in the watershed. However, the soft waters remain a risk to increased metal toxicity from cadmium, copper, lead, and silver. Lead and copper had much higher frequencies of exceedences than the other constituents in the UT and could be regarded as a potential natural limiting factors to fish production in some locales; this may be especially true in the vicinity of the Pebble Deposit, where copper exceedences were most common.

Generally, nutrient concentrations in the UT were found to be low (Chapter 9, Section 9.1). The production of primary producers is based on a combination of sunlight, temperature, and nutrient availability. At any point in time, one of these factors will limit aquatic productivity. If the availability of nutrients is the concern, the current ratio of nitrogen to phosphorus suggests phosphorus would typically be the limiting nutrient for growth of photosynthetic organisms in the UT. Should productivity of primary producers become reduced, based on a lack of phosphorus, it is likely secondary consumers and, ultimately, food resources for fish species in the UT may become reduced compared to other regional streams.

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Groundwater. Surface water expression of groundwater can provide considerable benefits to spawning and rearing fish. The distribution of zones of observable groundwater influence included UT-D and the lowermost portion of UT-F, as well as in Tributary UT 1.190. Fish abundance and productivity might be reduced in other locations with a lower input of groundwater.

Potential limiting factors will vary for each species and life history stage. For example, anadromous salmonid species with extended freshwater residence time like Chinook, coho, and sockeye salmon, as well as resident salmonid fishes, are typically considered limited by the juvenile rearing life stage. Conversely, species with abbreviated residence time, like chum salmon, are considered spawning-limited in the stream environment. Based on the list of limiting factors above, it is likely the most limiting life-history stage for most of the species is juvenile overwinter rearing and survival.

For chum salmon in the UT, the abundance and productivity of populations is limited by the amount of viable spawning habitat. This habitat may be restricted, in part, due to the distribution of spawning gravels, as well as the hydrologic regime and groundwater inputs to areas downstream of UT-D.

UT Fish Resources/Assemblage

More than 12 different fish species were documented in the UT from 2004 through 2008 (Table 15.1-38). This is a minimum number, because some resident fishes (including sticklebacks, sculpin, and whitefish) were not consistently identified to species during the field surveys. Overall, species numbers remained relatively constant within most reaches, with the greatest number of species (11) found in UT-C and UT-D (Figure 15.1-78). Only four species were found in the headwater reach (UT-G). With a few exceptions, the species composition found during the study period was similar to that documented by reconnaissance field efforts in the early 1990s (Buell, 1991; Buell, 1994). The exceptions included the finding of northern pike by Buell (1994), and the documentation of Chinook, chum, and pink salmon, and whitefish in the UT as part of the study. These differences were most likely due to differences in survey methods and the areas surveyed.

The life stage periodicity (reflects the timing of various life stage functions – spawning, egg incubation, fry, juvenile, and adult migration) for anadromous and non-anadromous salmonids is presented on a regional basis in Appendix 15.1A and on a fish study area basis on Figure 15.1-19. Figure 15.1-19 was developed based on a general understanding of local fish populations and refers to the general timing of fish life history stages for the entire aquatic resources study area (Appendix 15.1C). Life history information specific to the UT watershed is included in the species descriptions below and in Appendix 15.1A.

Many fish species present in the UT are important to commercial, recreational, and subsistence harvest. Anadromous salmonid fishes from the UT, along with those from the from the Alagnak and Naknek rivers and the Kvichak watershed downstream of the UT, are considered part of the Naknek-Kvichak Management District. Because no data are available to assess the relative contribution of these UT fish to the fisheries, district-scale data are provided here as an indication of the importance of these fisheries. Based on a 20-year average (1988 through 2007), the annual commercial harvest for the overall Naknek-Kvichak District was 3,359 Chinook, 190,082 chum, 6,680 coho, and 8,159,760 sockeye salmon (Jones et al., 2009). Over the same period, the average annual subsistence catch was 1,342 Chinook, 852 chum, 1,186 coho, and 78,980 sockeye salmon.

In general, recreational harvest of anadromous salmonids is considerably less than commercial and subsistence harvest. UT salmon are a part of the Bristol Bay Sport Fish Management Area. In the Bristol Bay Sport Fish Management Area, the average annual recreational harvest for the 2000 to 2004 time period was: 10,067 Chinook, 2,108 chum, 13,611 coho, and 12,288 sockeye salmon (Dye et al., 2006). Over the same period, the average annual recreational harvest in the Kvichak River, into which the UT eventually drains, was 91 Chinook and 1,495 sockeye salmon. Data specific to recreational harvest in the UT are not available; however, it can be assumed that the number would be less than that for the Kvichak River system.

The following sections describe the fish resources in the UT by species assemblages under major grouping of anadromous salmonid fishes, non-anadromous (resident) salmonid fishes, and non-salmonid fishes. Data are presented in terms of mainstem channel reaches, off-channel habitat, and tributary waters draining into the mainstem reaches in the UT. Many of the sampling techniques were not conducive to estimating CPUE, but where sufficient electrofishing or snorkeling data exist from all survey passes, the species assemblages including collections of all life history stages indicate trends, as presented in Table 15.1-39.

Furthermore, fish survey results are commonly discussed below using relative fish abundance and fish density metrics. The relative abundance metric, which is expressed as the total number of fish encountered per 328 lineal feet (100 meters), is used to describe fish assemblages throughout the watershed and among habitat types. This metric was calculated for each species by summing the total number of fish observed or captured within a given habitat type and dividing it by the total lineal distance, in meters, of the habitat type surveyed; this metric was then multiplied by 100 such that the abundance metric is standardized to 100 meters or 328 feet. The fish density metric, which is expressed as the number of fish per 1,076 sf (100 m^2), is used to assess fish-habitat associations and allows for a direct comparison of fish numbers among habitat types. The fish density metric was calculated in a manner similar to the abundance metric, with habitat area (wetted width times sample length) used in place of sample length. The associated relative fish abundance and fish-habitat association figures represent a summary of the mainstem channel fish abundance and density figures presented in Appendix 15.1B. In Appendix 15.1B, these metrics were calculated separately for the 2004 through 2007 and 2008 study years, as well as for mainstem and tributary habitats. In the Section 15.1 relative abundance and fish-habitat association figures, only mainstem channel data are reported, and the metrics have been calculated by combining the 2004 through 2007 and 2008 data.

UT Anadromous Salmonid Fishes

Anadromous salmonid fishes (Chinook, chum, coho, sockeye, and pink salmon) were the most abundant and widely distributed fish taxa in the UT watershed. The distribution, life history, spawning abundance, relative abundance, and habitat associations of Chinook, chum, coho, and sockeye salmon present in the UT are discussed in the following sections. Due to the infrequent observations of pink salmon (336 total fish observed on four dates; see below), their presence and distribution in the UT watershed is only briefly discussed. The presence of anadromous fish species in the UT reaches, as determined from 2004 through 2008 survey data, is shown in Table 15.1-40. The distribution of anadromous fishes based on data from 2004 through 2008, as well as the ADF&G's anadromous stream layer, is depicted on Figure 15.1-79. Anadromous salmon spawning areas are depicted on Figure 15.1-80, while specific spawning locations for each species and reach are provided in Appendix 15.1B.

Chinook Salmon. The distribution of Chinook salmon in the UT extends from UT-A to UT-F, comprising nearly the entire length of the watershed (Figure 15.1-79). Both adult and juvenile Chinook salmon have been documented in every reach from UT-A through UT-F (Table 15.1-40). Chinook salmon were also observed in Tributaries UT 1.190 and UT 1.410 (Appendix 15.1B).

Chinook salmon fry generally emerge in the spring and remain in the freshwater rearing habitat until outmigration (Appendix 15.1A). While juveniles in some populations outmigrate as young-of-the-year fry, this life history pattern is thought to be uncommon in the Bristol Bay basin. Based on length frequency distributions, three age-classes of juvenile Chinook salmon have been observed in the UT: young-of-the-year subyearlings (0+), yearlings (1+), and 2+ age juveniles. The mean lengths of juvenile Chinook salmon by age-class based on fish measurements from the UT are shown on Figure 15.1-81. However, the proportion of juvenile Chinook salmon outmigrating at any age-class is unknown. Observations during the winter surveys documented juvenile Chinook salmon in UT-C, UT-D, and UT-E in the late fall prior to ice-up, and again in the following April (Appendix 15.1B), suggesting these reaches may provide overwintering habitat for rearing fish.

Based on field surveys, the relative abundance of juvenile Chinook salmon is shown for selected reaches on Figure 15.1-82. Juvenile Chinook salmon were the most abundant salmonids observed in UT-C, UT-D, and UT-E, with estimates as high as 320, 430, and 90 fish per 328 feet (100 meters), respectively. The abundance of juvenile Chinook salmon declined in UT-F to 13 fish per 328 feet (100 meters).

Juvenile Chinook salmon were predominantly found in mainstem channel habitats (run/glide, pool, and riffle) with the greatest observed densities occurring in run/glide habitat in UT-C (approximately 2 to 20 fish per 1,076 sf [100 m^2]; Figure 15.1-83). In other mainstem habitats, juvenile densities ranged from less than 1 to 9 fish per 1,076 sf (100 m^2) in riffles and were less than 3 fish per 1,076 sf (100 m^2) in pool habitat. Densities of juvenile Chinook salmon were considerably less in off-channel habitats, where the greatest observed density was 0.25 fish per 1,076 sf (100 m^2; Figure 15.1-77). Densities in tributaries were also low, with less than 0.05 fish per 1,076 sf (100 m^2; Appendix 15.1B, Table B.17-8).

Aerial surveys for adult Chinook salmon in the UT were conducted in 2004 through 2008. During this 5-year period, adult Chinook salmon entered the UT to spawn as early as July 6 and were present as late as September 17 (Figure 15.1-84). This run timing is protracted compared to the Chinook salmon spawning runs in the NFK and SFK, which started in early July and finished by August 29 and August 23, respectively. Adult counts peaked between July 31 and August 8.

During the course of the study, adult Chinook salmon mean index counts in the UT were greatest in 2004, with a mean index count of 178 salmon (Figure 15.1-84; Figure 15.1-85). The mean index count declined sharply in 2005 and remained relatively stable thereafter through 2008. Similar trends in Chinook salmon runs were also observed in the NFK and SFK watersheds and in the larger, encompassing Nushagak District, although the timing of the decline has been variable across years (Morstad et al. Table 15.1-15). Chinook salmon total run size for the Naknek-Kvichak District and escapement estimates into the Kvichak River were not available. However, it is worth noting that catch statistics for Naknek-Kvichak District Chinook salmon remained relatively stable from 2004 through 2008 (Morstad et al., 2010; Table 15.1-41).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the UT watershed. Chinook salmon spawning has been documented in UT-A through UT-F (Figure 15.1-86), as well as in Tributaries UT 1.190 and UT 1.410 (Appendix 15.1B). The overall numbers of spawning adults in the UT in 2008 were low, ranging from five spawning adult observations in UT-F to 55 observations in UT-E (Table 15.1-42). UT-E and UT-C had the greatest mean survey counts of 14 and 13 spawning adults, respectively. Mean survey counts in UT-A, UT-B, UT-D, and UT-F ranged from three to five adults. Although the relative spawning abundance of Chinook salmon in the UT reaches is low, the UT Chinook salmon are more widely distributed than in either the NFK or SFK. The preponderance of springs and seeps throughout the mainstem UT (Chapter 7, Section 7.2) may facilitate access to upper stream reaches during low flow periods when adult Chinook salmon migrate upstream to spawn.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the UT with respect to the Naknek-Kvichak District and the greater Bristol Bay fishery. The Naknek-Kvichak District is one of five fishery districts within Bristol Bay. Chinook salmon within this district, which is comprised of the Kvichak, Alagnak, and Naknek rivers, have contributed approximately 5 percent of the total Bristol Bay Chinook salmon catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Naknek-Kvichak District run estimates and Kvichak River escapement estimates for Chinook salmon were not available. However, commercial catch for Chinook salmon in the Naknek-Kvichak District from 2004 through 2008 ranged from 1,344 fish in 2008 to a high of 2,333 fish in 2006, with a 5-year average of 1,580 (Morstad et al., 2010; Table 15.1-41). Although not directly comparable, the UT Chinook salmon mean index counts (used as an index of escapement) ranged from 28 in 2008 to 178 in 2004 and averaged 76 for the 5-year study period.

Chum Salmon. Like Chinook salmon, the distribution of chum salmon in UT extends from UT-A to UT-F (Table 15.1-40). This documented distribution is largely comprised of adult chum salmon observations made during the aerial surveys conducted during the study period. Aside from the aerial surveys, only three adults and one juvenile chum salmon were observed during snorkel surveys conducted in the UT (Appendix 15.1B). The adult observations occurred in UT-C (August 2004), UT-E (July 2007), and UT-F (July 2008), and the one juvenile was observed in UT-D (July 2007).

The relative abundance of juvenile and adult chum salmon is shown for selected UT reaches on Figure 15.1-82. Chum salmon were the least abundant salmonid species shown throughout the UT, with all estimates less than 1 fish per 328 feet (100 meters). Due to the limited number of juvenile chum salmon observations, data were insufficient to evaluate juvenile length-frequency distributions, life history traits, and habitat associations (fish density) for this species. Juvenile chum salmon tend to have a rather brief period of stream residence prior to outmigration (Appendix 15.1A). It is therefore likely that the only

juvenile age-class for chum salmon in the UT is young-of-the-year, as was the case with chum salmon in the NFK and SFK.

Aerial surveys for adult chum salmon in the UT were conducted annually from 2004 through 2008. No adult chum salmon were observed during the 2004 aerial surveys and only three adults were observed in 2005 (July 24). Adults were observed in a minimum of two surveys in all other study years (Figure 15.1-87). In 2006 through 2008, adult chum salmon entered the UT to spawn as early as July 15 and were present as late as August 24. Peak adult counts occurred between July 31 and August 3.

Chum salmon are the least abundant of the four Pacific salmon species consistently found in the UT. Mean index counts for 2006 through 2008 were low, ranging between five and 17 adult chum salmon (Figure 15.1-88; Table 15.1-41). Despite these low counts, there appeared to be an overall increasing trend in chum salmon mean index counts in the UT from 2006 through 2008 (Figure 15.1-87; Figure 15.1-88). While this trend is similar to that observed for chum salmon in the NFK, the overall numbers of chum salmon in the NFK were much greater than in the UT. For comparison, the greatest mean index count in the NFK was 532 salmon (Table 15.1-15). Chum salmon total run for Naknek-Kvichak District and escapement estimates into the Kvichak River were not available ; however, chum salmon catch statistics for the Naknek-Kvichak District also showed an increasing trend, particularly from 2004 through 2006 (Morstad et al., 2010; Table 15.1-41).

Reach-specific counts allow for an assessment of the salmon spawner distribution within the UT. As with Chinook salmon, chum salmon spawning has been documented in UT-A through UT-F (Table 15.1-40), and the overall numbers of spawning adults in the UT in 2008 were low (Table 15.1-42). Total spawning chum salmon observations ranged from five observations in both UT-B and UT-C to 25 observations in UT-D. Across all UT reaches, the mean survey counts of spawning chum salmon in 2008 were consistently low (Figure 15.1-86). The maximum mean count of nine spawning fish occurred in UT-F, and the lowest mean count of two spawning fish occurred in UT-B (Table 15.1-42). The even distribution of spawning chum salmon throughout the UT is likely a result of the substantial groundwater inflow documented in the middle and upper reaches of the watershed (Chapter 7, Section 7.2), which may facilitate access to headwater reaches for upstream migrating adults as well as provide suitable spawning conditions. Furthermore, the relatively small body size of chum salmon typically enables chum salmon to access upstream reaches with low flows.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the UT with respect to the Naknek-Kvichak District and the greater Bristol Bay fishery. Chum salmon within the Naknek-Kvichak District, which is comprised of the Kvichak, Alagnak, and Naknek rivers, contributed approximately 20 percent of the total Bristol Bay catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Naknek-Kvichak District run estimates and Kvichak River escapement estimates for chum salmon were not available. However, commercial catch for chum salmon in this district from 2004 through 2008 ranged from 29,972 fish in 2004 to a high of 457,855 fish in 2006, with a 5-year average of 262,758 (Morstad et al., 2010; Table 15.1-41). Although not directly comparable, the UT chum salmon mean index counts (used as an index of escapement) ranged from five in 2007 to 17 in 2008 and averaged 12 for the 3 years of the study period for which mean index counts were calculated.

Coho salmon. Coho salmon were the second-most abundant anadromous salmonid observed in the UT during the study period (Table 15.1-41). Both juveniles and adults were found in all UT reaches, from

UT-A to UT-G, and were the only anadromous salmonid observed in UT-G (Table 15.1-40). Coho salmon juveniles were present in the UT watershed year-round (Appendix 15.1B).

In general, coho salmon incubation and early fry development stages occur from the time of spawning through the winter months, with fry emerging in the spring (Appendix 15.1A). Based on length frequency distributions, four age-classes of coho salmon juveniles have been observed in UT: subyearling (0+), yearling (1+), 2+age, and 3+age fish (Bailey, 2009). Mean lengths for each age-class are shown on Figure 15.1-81. In many river systems throughout its range, coho salmon outmigrate as 1+ age, yearling fish, with some juveniles residing for up to 2 years in freshwater (Appendix 15.1A). However, the proportion of juvenile coho salmon outmigrating in the UT at any age-class is unknown. Juvenile coho salmon have been documented in UT as early as April and as late as November (Appendix 15.1B, Tables B.15-2, B.16-6, and B.17-7.). Observations during winter surveys indicated coho salmon were present in UT-D through UT-F in November, and again the following April, suggesting these reaches may provide overwintering habitat.

The relative abundance of juvenile and adult coho salmon in the UT is shown for selected reaches on Figure 15.1-82. Throughout the watershed, coho salmon abundance was the highest of fishes in most reaches—with the exception of UT-G, where sculpin were more abundant, and UT-C, where arctic grayling were more abundant. Abundance estimates for coho salmon ranged from a low of approximately 1 fish per 328 feet (100 meters) in UT-D beaver ponds to greater than 1,700 fish per 328 feet (100 meters) in UT-D pool habitat.

Coho salmon were found in mainstem channel, off-channel, and side channel habitats. Among the mainstem channel habitats, juvenile coho salmon densities were greatest in run/glide habitats; densities ranged from approximately 15 to 210 fish per 1,076 sf (100 m^2; Figure 15.1-83). Among the other mainstem channel habitats, densities ranged from approximately 15 to 65 fish per 1,076 sf (100 m^2) in riffles and from approximately 10 to 80 fish per 1,076 sf (100 m^2) in pool habitats. Juvenile coho salmon densities were similar within mainstem channels and side channels at 42 and 52 fish per 1,076 sf (100 m^2), respectively (Appendix 15.1B, Figure B.16-11). Overall, the density within off-channel habitats in the UT was lower (approximately 12 fish per 1,076 sf [100 m^2]). However, densities among various off-channel habitat types were similar to those observed in the mainstem channel (Figure 15.1-77); coho salmon densities in off-channel habitats ranged from approximately 2 fish per 1,076 sf (100 m^2) in isolated pools to approximately 60 fish per 1,076 sf (100 m^2) in percolation channels. Juvenile coho salmon were also commonly found in tributaries in the UT watershed (Appendix 15.1B, Tables B.17-8 and B.18-8). Juvenile densities in tributaries were greater than 100 fish per 1,076 sf (100 m^2) in several habitat types, including pools, backwaters, and run/glides. The greatest observed juvenile density was approximately 800 fish per 1,076 sf (100 m^2) in backwater habitat in Tributary UT 1.410 (Appendix 15.1B, Table B.17-8).

Aerial surveys for adult coho salmon in the UT were conducted from 2004 through 2008. Adult coho salmon entered the UT to spawn as early as August 8 and were present as late as November 16 (Figure 15.1-89). Adult peak counts occurred between September 2 and September 5.

Over the study period, the mean index counts for coho salmon remained relatively stable (1,143 to 1,773 salmon) in the UT, although an increase in the mean index count was observed from 2004 to 2006 (Figure 15.1-90). The coho salmon mean index counts in the UT were considerably greater than those in the NFK and SFK, which ranged from 43 to 494 during the 5-year study period (Table 15.1-15). Coho salmon total

run for Naknek-Kvichak District and escapement estimates to the Kvichak River were not available; however, coho salmon catch statistics for the Naknek-Kvichak District remained relatively stable from 2004 through 2008 (Morstad et al., 2010; Table 15.1-41).

In 2008, aerial surveys conducted in the UT indicated that Tributary UT 1.60 supported proportionally large runs of both coho and sockeye salmon. A separate mean index count for UT 1.60 allowed for a direct comparison between the spawning runs in this tributary and the UT watershed as a whole. For coho salmon, the overall timing of the UT 1.60 spawning run was shorter and the run size smaller than that observed in the UT mainstem survey area (Figure 15.1-91). In addition, the UT 1.60 run peaked approximately 10 days later than the mainstem run. The mean index counts for coho salmon were 332 in UT 1.60 and 1,598 in the mainstem index area (Figure 15.1-92). In 2008, Tributary UT 1.60 supported approximately 17 percent of the total coho salmon run in the UT watershed.

Reach-specific counts allow for an assessment of the salmon spawner distribution within the watershed. Coho salmon spawning was documented in all mainstem UT reaches, as well as in Tributaries UT 1.60, UT 1.350, UT 1.350.60, UT 1.390, and UT 1.410 (Appendix 15.1B). Analysis of the relative abundance and distribution of spawning coho salmon among the UT reaches in 2008 revealed a greater number of spawning coho in UT-E than in the other reaches (Table 15.1-42; Figure 15.1-86). The mean number of spawners observed in UT-E was 293 fish. UT-D and UT-F also had relatively high numbers of spawning fish, with means of 188 and 185 fish, respectively. The three lowest reaches (UT-A through UT-C) had moderate numbers of spawning fish, with means ranging from 45 fish in UT-C to 99 fish in UT-A. Only six total spawning adults were observed in UT-G. Similar to the NFK and SFK, the wide distribution of coho salmon in the UT may be a function of the late coho salmon migration period coinciding with increased stream flows (Figure 15.1-68). High stream flows can facilitate upstream movements and access to upstream reaches.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the UT with respect to the Naknek-Kvichak District and the greater Bristol Bay fishery. Coho salmon within the Naknek-Kvichak District, which is comprised of the Kvichak, Alagnak, and Naknek rivers, contributed approximately 6 percent of the total Bristol Bay catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Naknek-Kvichak District run estimates and Kvichak River escapement estimates for coho salmon were not available. However, commercial catch for coho salmon in this district from 2004 through 2008 ranged from 2,142 fish in 2004 to a high of 7,059 fish in 2008, with a 5-year average of 3,972 (Morstad et al., 2010; Table 15.1-41). Although not directly comparable, the UT coho salmon mean index counts (used as an index of escapement) ranged from 1,143 in 2004 to 4,363 in 2006 and averaged 2,219 for the 5-year study period.

Sockeye Salmon. The distribution of sockeye salmon in the UT extended from UT-A to UT-F (Table 15.1-40). Both juveniles and adults were found in all six of these UT reaches. While sockeye salmon was the most abundant adult anadromous salmonid observed in the UT during the study period, juvenile sockeye salmon were observed less frequently than coho and Chinook salmon juveniles (Appendix 15.1B, Tables B.12-7, B.13-7, B.14-6, B.15-2, B.16-6, B.17-7, and B.18-7). This observation is likely a reflection of juvenile sockeye salmon moving downstream and/or into lake rearing habitats within 2 to 3 weeks of emergence (Appendix 15.1A).

Sockeye salmon incubation and early fry development stages occur from the time of spawning through the winter months, with fry emerging in the early spring (April and May; Figure 15.1-19). Emergence

typically occurs either under the ice or within groundwater influenced ice-free areas (Appendix 15.1A). Length frequency data indicate that two age-classes of sockeye salmon juveniles occur in the UT: young-of-the-year (0+ age) and yearling (1+ age). Mean lengths for each age-class are shown on Figure 15.1-81. The proportion of juvenile sockeye salmon outmigrating at any age class is unknown for the UT. Juvenile sockeye salmon were observed during fish surveys in April and in June through September.

The relative abundance of juvenile sockeye salmon is shown for selected reaches on Figure 15.1-82. Ranging from a low of approximately 1 to 8 fish per 328 feet (100 meters) in UT-F to a high of approximately 5 to 35 fish per 328 feet (100 meters) in UT-E, sockeye salmon juveniles were less abundant than coho salmon and, in most cases, Chinook salmon. This result reflects the absence of juvenile sockeye salmon during fish surveys due to their abbreviated riverine residence time.

Sockeye salmon densities in the mainstem UT habitats, including run/glides, riffles, and pools, were consistently low, at less than 3 fish per 1,076 sf (100 m^2; Figure 15.1-83). Densities in the off-channel habitats were also considerably low (less than 2 fish per 1,076 sf [100 m^2]; Figure 15.1-77). The greatest observed density of juvenile sockeye salmon (approximately 5 fish per 1,076 sf [100 m^2]) was in pool habitat within Tributary UT 1.390 (Appendix 15.1B, Table B.17-8).

Aerial surveys for adult sockeye salmon in the UT were conducted from 2004 through 2008. During the study period, adult sockeye salmon entered the UT to spawn as early as July 6 and were present as late as October 2 (Figure 15.1-93). The timing of annual peak counts ranged from July 17 to August 3.

The mean index count analysis suggests a decreasing trend in the UT sockeye salmon spawning runs from 2004 through 2007 and then increasing through 2008 (Figure 15.1-93; Figure 15.1-94). The greatest mean index count during the baseline period occurred in 2004, when a mean of 31,088 fish was observed (Table 15.1-41). In comparison, the 2008 mean index count was 11,120 salmon. Adult sockeye salmon mean index counts from 2004 through 2008 have generally been one to two orders of magnitude greater in the UT than in the NFK and SFK (Table 15.1-15). The exception was observed in 2006 and 2007, when mean index counts in the UT dropped below 5,000 fish (Table 15.1-41). During the study period, sockeye salmon escapement in the Kvichak River also peaked in 2004 and dropped by more than 50 percent in 2005 (Baker et al., 2009). For the entire Naknek-Kvichak District, the total run remained relatively stable over this 5-year period, ranging from approximately 13.9 to 17.8 million sockeye salmon (Morstad et al., 2010; Table 15.1-41).

In 2008, aerial surveys were conducted for Tributary UT 1.60 and indicated that UT 1.60 supported proportionally large runs of both coho and sockeye salmon. A separate mean index count for UT 1.60 allowed for a direct comparison between the spawning runs in this tributary and the UT watershed as a whole. For sockeye salmon, peak index counts for both UT 1.60 and the UT mainstem survey area occurred on August 3 (Figure 15.1-95). However, the overall timing of the UT 1.60 spawning run was shorter and the run size smaller than that observed in the UT mainstem survey area. The mean index counts for sockeye salmon were 8,308 in UT 1.60 and 11,120 in the mainstem index area (Figure 15.1-96). In 2008, Tributary UT 1.60 supported approximately 43 percent of the total sockeye salmon run in the UT watershed.

Reach-specific counts allow for an assessment of the salmon spawner distribution within a watershed. Sockeye salmon were observed spawning in UT-A through UT-F, as well as in Tributaries UT 1.60, UT 1.190, UT 1.350.20, UT 1.390, and UT 1.410 (Appendix 15.1B). Analysis of the relative abundance and

distribution of spawning sockeye salmon among the UT reaches in 2008 revealed that the greatest numbers of spawning sockeye salmon occurred in UT-A (Table 15.1-43; Figure 15.1-97). The total number of sockeye salmon spawning observations in UT-A (including Tributary UT 1.60) in 2008 was 103,233 adults. These observations were made over a total of 10 surveys; therefore, the mean survey count of spawning fish in UT-A is 10,323 adults. Upstream of UT-A, the number of spawning sockeye salmon within each UT reach progressively decreased, from a mean survey count of 4,608 in UT-B to a mean of 47 in UT-F.

Mean index counts were used to provide a perspective of the relative size of salmon runs in the UT with respect to the Naknek-Kvichak District and the greater Bristol Bay fishery. Sockeye salmon within the Naknek-Kvichak District, which is comprised of the Kvichak, Alagnak, and Naknek rivers, contribute approximately 33 percent of the total Bristol Bay catch based on the 20-year average from 1989 to 1998 (Morstad et al., 2010). Total inshore run estimates (commercial catch and escapement) provided by ADF&G for the Naknek-Kvichak District sockeye salmon from 2004 through 2008 ranged from a low of 13,945,960 fish in 2006 to a high of 17,792,948 fish in 2008, with a 5-year average of 16,006,818 (Morstad et al., 2010; Table 15.1-41). During the same time period, Kvichak River sockeye salmon escapement estimates ranged from approximately 2.3 million in 2005 to 5.5 million in 2004 and had a 5-year average of approximately 3.3 million (Baker et al., 2009; Table 15.1-41). In contrast, the UT sockeye salmon mean index counts (used as an index of escapement) ranged from 2,362 in 2007 to 31,088 in 2004 and averaged 11,841 for the 5-year study period.

Pink Salmon. Adult pink salmon (*O. gorbuscha)* were documented in the UT during aerial spawning surveys in 2006 and 2007. Three hundred thirty-six pink salmon were observed on two dates in 2006: 315 on July 31 and 21 on September 4. In 2007, only three pink salmon were observed: one on July 26 and two on August 10. All observations occurred in the lower half of the UT. No juvenile pink salmon were observed during the study period. Pink salmon are known to spawn in odd and even year cohorts within a river basin (Appendix 15.1A). Thus, it was anticipated that a small run of pink salmon would occur during 2008 surveys. However, no adult pink salmon were observed in the UT in 2008. It is uncertain whether the pink salmon observed in 2006 and 2007 constitute a sustainable run into UT or whether the fish were strays from another system. The UT was the only watershed in the mine study area where pink salmon were observed during the 2004 through 2008 environmental baseline fish resource studies.

UT Non-anadromous (Resident) Salmonid Fishes

Non-anadromous salmonid fishes found in the UT watershed include arctic grayling, Dolly Varden, rainbow trout, and whitefish species (Table 15.1-43). Although these species were less abundant than anadromous salmonids, they represent an important component of the fish community in this watershed and support local and regional sport and subsistence fisheries. Rainbow trout are particularly important with respect to recreational fisheries for resident salmonids. The catch rate for rainbow trout in the Kvichak River drainage averaged 21,219 fish per year from 2000 to 2004 (Dye et al., 2006). Fall et al. (2006) reported between 55 and 92 percent of the households in the towns of Iliamna, Newhalen, and Nondalton gathered resident salmonid fishes for subsistence use, depending upon the species (Table 15.1-18).

The distribution, life history, relative abundance, and habitat associations of each of the four non-anadromous salmonid taxa present in the UT are discussed in the following sections. The mean length of non-anadromous salmonids by age class captured in the UT is shown on Figure 15.1-98.

Arctic Grayling. Arctic grayling were found in all reaches of the UT, with the exception of the headwater reach (UT-G; Table 15.1-43). Both adult and juvenile fish were observed in UT-A through UT-F.

Relatively little is known about the life history of arctic grayling in the UT. Elsewhere in their range, adults overwinter in lakes or mainstem channels and migrate to upstream tributaries to spawn in May and June (see Appendix 15.1A). In the UT, both adults and juveniles have been observed from May through October (Appendix 15.1B, Tables B.15-2 and B.17-7). The mean length of arctic grayling by age class that were captured in UT is presented on Figure 15.1-98.

The relative abundance of juvenile and adult arctic grayling is shown for selected reaches on Figure 15.1-82. Unlike the SFK, where arctic grayling abundance was markedly higher in the headwater reaches, the abundance of this species in the UT was greatest in the middle reach. The highest recorded abundance for juvenile arctic grayling was in UT-C at 2,600 fish per 328 feet (100 meters). Abundance of grayling in the reaches upstream and downstream of UT-C were substantially lower, ranging from less than 1 fish per 328 feet (100 meters) to 25 fish per 328 feet (100 meters).

Fish-habitat associations, based on data from UT-C, UT-E, and UT-F, indicated that arctic grayling used habitats within mainstem channel, side channel, and off-channel habitats. Fish densities were consistently highest in run/glide habitats, with densities up to approximately 160 fish per 1,076 sf (100 m^2; Figure 15.1-83). Densities in riffles ranged from less than 1 to approximately 3 fish per 1,076 sf (100 m^2) and were approximately 2 fish per 1,076 sf (100 m^2) in pool habitat. Arctic grayling were inconsistently found in off-channel habitat types (Figure 15.1-99), but were primarily located in percolation channels at a density of 5.5 fish per 1,076 sf (100 m^2) and in beaver ponds at a density of 0.05 fish per 1,076 sf (100 m^2).

Dolly Varden. Like arctic grayling, Dolly Varden were widely distributed throughout the UT (Table 15.1-43), although none were documented in UT-A. Both adult and juvenile fish were observed from UT-B upstream into UT-G.

Both anadromous and non-anadromous populations of Dolly Varden are thought to occur in Bristol Bay drainages (Appendix 15.1A). However, little is known about the life history pattern(s) they exhibit in the UT. Adults have been observed from June through October and juveniles from April through November in UT (Appendix 15.1B Tables B.14-6, B.15-2, B.16-6, B.17-7, and B.18-7). In addition, juvenile Dolly Varden have been documented in November and April of the following year in UT-C through UT-G, indicating they overwinter in UT.

The relative abundance of juvenile and adult Dolly Varden is shown for selected reaches on Figure 15.1-82. Dolly Varden abundances were generally low relative to other species, with estimates ranging from less than 1 to approximately 8 fish per 328 feet (100 meters) from UT-C upstream through UT-G. Abundance estimates in tributaries within these reaches were higher, ranging from approximately 8 to 38 fish per 328 feet (100 meters; Appendix 15.1B, Figures B.14-8b, B.17-8b, and B.18-8b).

Dolly Varden densities were generally low across all mainstem habitat types (Figure 15.1-83). Habitat-specific densities of Dolly Varden were less than 1 fish per 1,076 sf (100 m^2) in pool, riffle, and run/glide habitats in reaches UT-C, UT-E, and UT-F. Slightly greater densities, ranging from approximately 2 to 3 fish per 1,076 sf (100 m^2), were documented in UT-G. In tributaries, Dolly Varden densities ranged from

approximately 2 to 10 fish per 1,076 sf (100 m^2) and were generally greatest in pool and cascade habitat (Appendix 15.1B, Figures B.17-9b and B.18-9b). Dolly Varden were not frequently encountered in off-channel habitats (Figure 15.1-99). They were recorded only within beaver ponds at low densities of 0.2 fish per 1,076 sf (100 m^2).

Rainbow Trout. Similar to coho salmon, arctic grayling, and Dolly Varden, rainbow trout were widely distributed throughout the UT. However, they were not documented in the uppermost headwater reach, (UT-G; Table 15.1-43). Both adult and juvenile rainbow trout have been documented in UT-A through UT-D, and in UT-F. Only juvenile trout were documented in UT-E.

An adfluvial rainbow trout population exists in Iliamna Lake and its tributaries, including the UT. This population has been the subject of a radio telemetry study monitoring the movements and site fidelity of adult rainbow trout in the UT. Adult trout move from their overwintering areas at the mouths of several northwest Iliamna Lake tributaries into the lake and then into the UT to spawn after ice-out, from mid-May through June. An additional migration of large, adult trout foraging in the UT was documented in late summer. These fish move into the UT with spawning sockeye salmon and subsequently leave to return to Iliamna Lake. Ninety-five adfluvial rainbow trout from UT-A and two trout from UT-C were collected and radio tagged during the study. From May through October, one hundred seventy-seven additional rainbow trout adults were also observed throughout the UT (Appendix 15.1B, Tables B.12-7, B.13-7, B.14-6, B.15-2, and B.17-7). Based on size distributions, these adults represent a mix of post-spawning adfluvial fish and a resident population of rainbow trout.

Juvenile rainbow trout were also observed during most months (April through November) in the UT. Based on the scientific literature, stream residence time for juvenile adfluvial fish can be brief or last up to 3 years depending upon the watershed (Appendix 15.1A). Thus, the proportion of juvenile fish contributing to the resident and adfluvial rainbow trout populations with the UT is currently unknown.

The relative abundance of juvenile and adult rainbow trout is shown for reaches with available abundance data on Figure 15.1-82. Aside from chum salmon, rainbow trout abundance was generally the lowest of the salmonid species, with abundance estimates of less than 1 to 20 fish per 328 feet (100 meters). One exception was in UT-D, where rainbow trout abundance was as high as approximately 240 fish per 328 feet (100 meters).

Rainbow trout were found in low densities in multiple habitats in mainstem channel and off-channel habitats. In the mainstem UT, rainbow trout were found in both fast and slow water habitat types, including riffles, run/glides, and pools, at densities of less than 1 fish per 1,076 sf (100 m^2; Figure 15.1-83). Among off-channel habitats, rainbow trout were observed only in beaver ponds (0.08 fish per 1,076 sf [100 m^2]; Figure 15.1-99).

Whitefish. In the UT, the whitefish species assemblage was documented in UT-A, UT-C, and UT-D (Table 15.1-43). Adult whitefish were observed in each of these three reaches, whereas juveniles were only found in UT-D. In many cases, these fish were observed during snorkel surveys and could not be successfully identified to species. While round whitefish were documented in the NFK, other species of whitefish have been reported in the Bristol Bay drainage, including least cisco (McPhail and Lindsey, 1970) and humpback whitefish (Woody and Young, 2007). Thus, any of these species of whitefish could be found in UT reaches. Within the UT watershed, whitefish were found only in the mainstem channel. Abundance estimates ranged from 0.24 to 1.35 fish per 328 feet (100 meters; Figure 15.1-82), and

densities in pools, run/glides, and riffles were consistently less than 1 fish per 1,076 sf (100 m^2; Figure 15.1-83).

UT Non-Salmonid Fishes

Non-salmonid fishes found in the UT watershed include sculpin and stickleback species (Table 15.1-44). Information regarding the distribution, relative abundance, and habitat associations of these two non-salmonid species groups in the UT is provided below.

Sculpin. Sculpin have been documented in all mainstem reaches of the UT, making the cottids among the most widely distributed fish taxa in the watershed (Table 15.1-44). Both juvenile and adult sculpin have been documented in every UT reach except UT-B, where only the juvenile life stages were observed. Although sculpin were not identified to species, both slimy sculpin and coastrange sculpin are known to inhabit the Bristol Bay basin (Appendix 15.1A). Slimy sculpin were documented in the UT by Buell (1994).

Sculpin were the most abundant resident fishes throughout the mainstem UT, with abundance estimates ranging from 13 to 258 fish per 328 feet (100 meters) of stream (Figure 15.1-82). Sculpin were also found in off-channel and side channel habitats in UT-D, although they were less abundant in these habitats than in the mainstem channel (less than 1 fish per 328 feet [100 meters]; Appendix 15.1B, Figure B.15-8). Sculpin densities were variable among the mainstem riffle, run/glide, and pool habitats (Figure 15.1-83), but the greatest observed density of approximately 40 fish per 1,076 sf (100 m^2) was in run/glide habitat within UT-G. The greatest density in the UT tributaries was in UT-G, where 27 fish per 1,076 sf (100 m^2) were documented in pool habitat (Appendix 15.1B, Figure B.18-9b). Among the off-channel habitats, beaver ponds supported the greatest density of sculpin (approximately 3 fish per 1,076 sf (100 m^2; Figure 15.1-99).

Stickleback. Stickleback were documented in UT-A through UT-F in both fast and slow water habitats (Table 15.1-44). Observations included juvenile and adult life history stages, and both ninespine stickleback and threespine stickleback were found.

Stickleback abundance was generally low in most mainstem reaches, with less than 7 fish per 328 feet (100 meters) recorded (Figure 15.1-82). However, an abundance of 25 fish per 328 feet (100 meters) was documented in UT-D. Stickleback were also abundant in off-channel and side channel habitats; relative abundance estimates in UT-D and UT-E off-channel and side channel habitat ranged from approximately 4 to 50 fish per 328 feet (100 meters; Appendix 15.1B, Figures B.15-8 and B.16-10).

Stickleback densities were approximately 1 fish per 1,076 sf (100 m^2) or less in most habitat types (Figure 15.1-83). Stickleback densities in UT tributaries were similarly low (less than 0.2 fish per 1,076 sf [100 m^2] in run/glide and riffle habitats; Appendix 15.1B, Figure B.17-9b). However, among off-channel habitats in the UT, stickleback were the most dominant species found in isolated pools, beaver pond outlet channels, and beaver ponds, where densities were between 4 and 11 fish per 1,076 sf (100 m^2; Figure 15.1-99).

UT Watershed Synthesis

Four anadromous salmon species (Chinook, chum, coho, and sockeye salmon) spawned annually in habitats throughout the mainstem UT. Chinook and chum salmon were documented spawning from the beginning of UT-A, upstream to approximately 37 RM (59 RK) in UT-F. Sockeye and coho salmon were documented spawning from the lowest to highest reaches in the watershed. In addition, what appeared to be exploratory runs of pink salmon were documented in the UT in 2006 and 2007.

Based on the 2008 spawning abundance and distribution analysis, the greatest abundance of sockeye salmon spawners was found in the lowest reach (UT-A), with spawner abundance declining in numbers in each consecutive upstream reach continuing into the headwater reach (UT-G). In contrast, the greatest abundance of coho spawners were in middle and uppermost reaches (UT-D, UT-E, and UT-F). The instream-flow model predictions, which are based on relationships between substrate sizes, water velocities, and species preferences for these criteria, help to explain the pattern for coho salmon, because the greatest amount of available coho salmon spawning habitat was predicted in the middle reaches. However, results for sockeye salmon habitat availability do not explain the sockeye salmon distribution. It is possible the lack of prediction capability for sockeye salmon is related to a limited number of instream flow transects located within UT-A and UT-B, the reaches with the highest abundances of sockeye spawning.

It is interesting to note that, unlike the NFK and SFK, a direct relationship between spawning distributions of sockeye and chum salmon and groundwater inflow areas was not apparent in the UT. The UT generally has more stable flows, with no ephemeral areas and numerous seeps and springs contributing to river flow. The thermal regime in the UT also was distinct from the NFK and SFK, with slightly cooler temperatures. In typical fashion, water temperatures in the UT generally increase as the river flows downstream. This thermal difference in the UT compared to the SFK and NFK is likely attributed to the prominent groundwater influence in the middle and upper watershed, cold water input from Tributary UT 1.190, and a North/South alignment in the upper river that provides shade from the surrounding terrain and helps to insulate water temperature.

Five tributaries in the UT support spawning populations of anadromous salmonids. Most tributaries support small numbers of spawning sockeye and coho salmon. Large spawning populations were observed in UT 1.60, which is located low in the watershed—draining into the upstream end of UT-A. Aerial survey data indicate this creek may support as much as 43 percent of the watershed total for adult sockeye salmon and 17 percent of the total for coho salmon. The Tributary UT 1.60 and UT 1.350 subwatersheds also support a life history variation for coho and sockeye salmon. Small populations of lake-spawning sockeye and coho salmon were documented spawning in several small lakes and ponds within these subwatersheds.

A comparison of mean adult salmon index counts among watersheds shows that the UT sockeye salmon run was the largest run within the study area. The mean index counts for UT coho salmon were larger by one or two orders of magnitude than those in the NFK and SFK. In contrast, the runs of UT Chinook and chum salmon were generally an order of magnitude lower compared to the other two watersheds.

The overall distribution of river-rearing juvenile Pacific salmon in the UT was driven largely by juvenile coho salmon, with peaks in abundance in the middle to upper UT, including UT-C through UT-F. The highest abundance estimates for Chinook salmon in the UT also were located in the middle watershed.

Limited numbers of juvenile sockeye salmon were found up through UT-F in early summer, and they appear to rear in lower UT reaches throughout the summer. The only anadromous salmon documented in UT-G were coho salmon.

Juvenile Chinook salmon were predominantly found in mainstem channel, fast water habitats that are present through the UT. Juvenile coho salmon were widely dispersed throughout the mainstem channel and tributaries and occupied a variety of habitat types. High relative abundance and densities of coho salmon were found in the mainstem channel glides and riffles, pools, beaver ponds, and tributary backwaters. This broad habitat use is consistent with the fact the coho salmon were the most abundant juvenile fishes in this watershed.

Patterns evident for sockeye salmon distribution in the UT were also noteworthy. Although sockeye salmon typically out migrate in their first spring after emergence, some juvenile sockeye were found in the upper reaches of the UT early into the summer rearing period and in lower reaches throughout the summer. These data indicate that some sockeye are rearing in the mainstem UT for several months.

At least seven non-anadromous salmonids and non-salmonid fishes were present in the UT. In general, these stream-dwelling fishes were distributed in low numbers throughout most of the watershed. Dolly Varden, sculpin, and one arctic grayling were the only resident fishes found in the headwater reach (UT-G). Arctic grayling and sculpin were the most widespread of the non-anadromous fishes and were documented in all reaches, as well as in several tributaries. The relative abundance of these fishes was generally low, with the exception of arctic grayling in UT-C, rainbow trout in UT-B, and sculpin in UT-C, UT-E, and UT-F.

Although some species-specific abundance patterns were evident, overall the freshwater fish assemblage in the UT was more consistent throughout the watershed and tributaries compared to the NFK and SFK assemblages. Large numbers of fish and similar species composition were documented from UT-B to UT-F. This distribution may be reflective of the overall stable habitat conditions in the UT. No ephemeral areas were documented and no warm water lakes are present in the UT. Furthermore, areas of groundwater inflow were widely dispersed throughout the middle and upper portions of the watershed and, thus, a more stable flow regime was present. The relatively constant fish assemblage among reaches in the UT is consistent with similar levels of habitat availability in UT-B through UT-F, as predicted by the instream-flow model.

15.1.6.4 Koktuli River Mainstem

KR Mainstem Overview

The KR is a moderate-sized drainage (Figure 15.1-100) of the Nushagak-Mulchatna system that ultimately flows into Bristol Bay. The Nushagak River drainage is one of eight river basins draining Southwest Alaska into Bristol Bay (Figure 15.1-5). The KR drainage within the mine study area comprises 218 mi^2 (565 km^2; 140,000 acres) or 1.7 percent of the Nushagak-Mulchatna River system and 0.6 percent of the entire Bristol Bay drainage basin (Table 15.1-2). The KR has an upper mainstem river length of approximately 29 miles (46 km) within the mine study area and an overall mainstem river length of 39 miles (62 km).

The KR originates at the confluence of the NFK and SFK, flowing northwesterly until it exits the fish resources study area at its confluence with the Swan River. The highest elevation in the KR drainage is Cone Mountain (elevation 2,760 feet [841 meters]; Chapter 4). The lowest elevation in the watershed within the mine study area is at the confluence with the Swan River at 580 feet (177 meters). The watershed is bounded by a series of low, isolated mountain blocks with Cone Mountain to the northeast. The surface water drainage divides are poorly defined.

The upper reach of the mainstem KR is more than 31 miles (50 km) downstream from the Pebble Deposit, therefore the study efforts in the KR were less intense than in the other three watersheds. Because the fish resources mine study area was limited to the upper KR mainstem, conditions related to non-fish resource areas (e.g., hydrology and water quality) are not described in this section. The information presented below is limited to the results of instream flow habitat and fish studies and applies only to the area sampled. Instream flow habitat surveys included four transects in spawning habitats (Table 15.1-10). Fish resource surveys in the KR have included: fish/habitat association studies in mainstem waters, fish distribution and relative abundance surveys, winter fish surveys, and adult salmon surveys (Table 15.1-1). Locations of these study sites are summarized on Figure 15.1-100. Other information and data pertaining to the KR are presented in: Chapter 7, Section 7.2 (hydrology); Chapter 9, Section 9.1 (water quality); Section 15.2 (invertebrates); Appendix 15.1C (instream flow); and Appendix 15.1D (water temperature).

KR Aquatic Habitat

KR Habitat/Flow Relationships

The habitat time series for the KR was computed for salmonid fish species in the mainstem KR reach (Photo 15.1-29). Four (4) transects corresponding to two transects in riffle and one each in run and island complex habitats were used in the analysis. Transect weighting in accordance with the frequency of representative habitat types in the reach is summarized in Table 15.1-10. The time series reflect the total habitat area for each day during the period a given species and life stage is present. Modeling results are presented for spawning and juvenile life stages of Chinook, chum, coho, and sockeye salmon, as well as for spawning, juvenile, and resident adult life stages of arctic grayling, Dolly Varden, and rainbow trout in Appendix 15.1C (Tables 70 through 72, and Figures 112 through 114). The total estimated amount of habitat expressed in acres, for each species available within a given reach based on the median daily flows over the respective time periods for each life stage is displayed in the appendix figures.

The results indicate a substantial variability in habitat amounts on a daily and monthly basis, in response to changes in flow. This variation is most evident during flow transitional periods. For example, during the spring-summer period when flows are declining there is a general increase in juvenile habitat. During the late summer-fall period, when flows increase, there is a general decrease in spawning habitat when river velocities become slightly higher than optimal for spawning for most of the salmonid species. Conversely, the spring spawning species, including arctic grayling and rainbow trout, show a strong decrease in available spawning area when river flow decreases in the late May and June time frame. The time series analysis represents a first step in evaluating how baseline flow conditions influence fish habitats in the KR temporally and spatially. Additional time series based on wet, dry, and average year conditions, as well as a series of associated habitat duration curves for the KR are provided in Appendix 15.1C.

KR Fish Resources/Assemblage

Based on sampling conducted between 2004 and 2008, the fish community inhabiting the upper KR mainstem consists of at least 10 different species (Table 15.1-45), including: four anadromous salmonid (Chinook, chum, coho, and sockeye salmon), four non-anadromous (resident) salmonid (arctic grayling, Dolly Varden, rainbow trout, and whitefish species), and two non-salmonid fishes (sculpin species and threespine stickleback). Off-channel habitats were not surveyed in the KR watershed, and thus, inferences about fish use of off-channel habitats in the KR watershed cannot be made. The species composition mix of anadromous and resident fish species in the KR is shown on Figure 15.1-100.

The life stage periodicity for anadromous and non-anadromous salmonids is presented on Figure 15.1-19. Figure 15.1-19 was developed based on a general understanding of local fish populations and refers to the general timing of fish life history stages for the entire aquatic resources study area (Appendix 15.1C). Life history information specific to the KR is included in the species descriptions below and general life histories are described in Appendix 15.1A.

KR Anadromous Salmonid Fishes

Anadromous salmonid fishes represent the most abundant fish taxa in the KR (Figure 15.1-100). The distribution, life history, spawning abundance, relative abundance, and habitat associations of each of the four species of anadromous salmonids present in the upper KR mainstem are discussed below.

Chinook Salmon. Chinook salmon have been documented in the upper KR mainstem (Table 15.1-46). Field surveys identified both juvenile and adult Chinook salmon in July and August (Appendix 15.1B, Table B.19-2). In addition to providing spawning, incubation, and rearing habitat, the upper KR mainstem is a migratory corridor for adult and juvenile Chinook salmon that use upstream habitats in the NFK and SFK watersheds.

Chum Salmon. Chum salmon have likewise been documented in the upper KR mainstem (Table 15.1-46), although field surveys only identified adults. These fish were observed in July and August (Appendix 15.1B, Table B.19-2). The abbreviated riverine residence time of juvenile chum salmon prior to downstream migration likely explains the absence of juvenile observations in the upper KR mainstem during summer surveys. In addition to providing spawning, incubation, and rearing habitat, the upper KR mainstem is a migratory corridor for adult and juvenile chum salmon that use upstream habitats in the NFK and SFK watersheds.

Coho Salmon. Coho salmon have been documented in the upper KR mainstem (Table 15.1-46), with adults found in July and juveniles in July and August (Appendix 15.1B, Table B.19-2). In addition to providing spawning, incubation, and/or rearing habitat, the upper KR mainstem is a migratory corridor for adult and juvenile coho salmon that use the NFK and SFK.

Sockeye Salmon. Sockeye salmon have been documented in the upper KR mainstem (Table 15.1-46). Field surveys identified juvenile and adult sockeye salmon in July and August (Appendix 15.1B, Table B.19-2). In addition to providing spawning, incubation, and rearing habitat, the upper KR mainstem is a migratory corridor for adult and juvenile sockeye salmon that use upstream habitats in the NFK and SFK watersheds.

ADF&G Commercial Fish Division sockeye salmon harvest and spawning escapement estimates since 1990 for the Nushagak Fish District have been summarized in Chapter 21 and by ADF&G (2006a). Harvest of fish destined for the Nushagak District appears to occur at a rate of 60 to 70 percent.

KR Non-anadromous (Resident) Salmonid Fishes

Although non-anadromous salmonid fishes are generally less abundant than anadromous salmonids in the upper KR mainstem, they represent an important component of the fish community in this watershed. The distribution, life history, relative abundance, and habitat associations of each of the four taxa of non-anadromous salmonids present in the upper KR mainstem are discussed in the following sections.

Arctic Grayling. Arctic grayling were documented in the upper KR mainstem (Table 15.1-46). Adults and juveniles were observed in July through September, and juveniles were recorded in July (Appendix 15.1B, Table B.19-2). Arctic grayling (8.1 fish per 328 feet [100 meters]) were more abundant than both Dolly Varden and rainbow trout. The relative abundance of arctic grayling could only be compared across two habitat types, pools (11 fish per 328 feet [100 meters]) and riffles (4.9 fish per 328 feet [100 meters]).

Dolly Varden. Both adult and juvenile Dolly Varden have been documented in the upper KR mainstem (Table 15.1-46). Field surveys identified adults and juveniles in July, but only juveniles in April and August (Appendix 15.1B, Table B.19-2). Dolly Varden (3.0 fish per 328 feet [100 meters]) were more abundant than rainbow trout, but less abundant than all other species recorded. In considering fish-habitat associations, the relative abundance of Dolly Varden could only be compared across two habitat types, riffles (5.6 fish per 328 feet [100 meters]) and pools (0.7 fish per 328 feet [100 meters]).

Rainbow Trout. Both adult and juvenile rainbow trout have been documented in the upper KR mainstem (Table 15.1-46). Field surveys identified adults in July and September. Juvenile trout were observed only during the month of July (Appendix 15.1B, Table B.19-2). Rainbow trout were the least abundant salmonid fish observed (2.0 fish per 328 feet [100 meters]) and were associated with both riffle (2.1 fish per 100 meter) and pool (2.0 fish per 100 meter or 328 ft) habitat types.

Whitefish. Adult whitefish were documented in the upper KR mainstem (Table 15.1-46) in July and August (Appendix 15.1B, Table B.19-2). These fish were observed during snorkel surveys and could not be identified to species. Round whitefish were documented upstream in the NFK watershed and other species of whitefish have been reported in the Bristol Bay drainage, including least cisco (McPhail and Lindsey, 1970) and humpback whitefish (Woody and Young, 2007). Thus, all of these species could be present in the KR.

KR Non-salmonid Fishes

The distribution, life history, relative abundance, and habitat associations of the two non-salmonids present in the upper KR mainstem are discussed in the following sections.

Sculpin. Sculpin have been documented in the upper KR mainstem (Table 15.1-46), although observations were limited to five individuals. Sculpin were seen in July and included one juvenile as well as four from an indeterminate life stage (Appendix 15.1B, Table B.19-2). Although sculpin were not identified to species, slimy sculpin are known to inhabit the Bristol Bay basin (Appendix 15.1A).

Stickleback. Stickleback have been documented in the upper KR mainstem (Table 15.1-46). Observations included threespine stickleback and unidentified stickleback reported in April and July. Given the presence of ninespine stickleback in the NFK and SFK, this species and threespine stickleback may constitute the unidentified specimens. Overall, 10 juvenile stickleback were observed in addition to three fish from an indeterminate life stage (Appendix 15.1B, Table B.19-2).

15.1.7 Summary

Thirteen independent fish resource studies were conducted in the mine study area from 2004 through 2008. Habitat surveys covered more than 150 miles (240 km) of riverine habitats and documented that the NFK, SFK, and UT are riffle and run dominated systems with limited mainstem channel pool habitat. Off-channel habitats are abundant and provide rearing habitat in the forms of pool and beaver pond that arenot as available in mainstem channels. Riparian vegetation is primarily composed of shrub species with little forested area. Thus, instream fish cover is provided primarily by overhanging vegetation and undercut banks. Fish population surveys documented at 15 different species within the mine study area: five anadromous salmonid species, four resident salmonid species, five resident non-salmonid species, and one lamprey species. The SFK watershed supported the most diverse fish species assemblage (14 species), although the NFK and UT watersheds supported similar fish assemblages (12 species each).

The greatest abundance of anadromous salmonids were documented in the UT, with the greatest abundances observed for coho and sockeye salmon. Pacific salmon counts in the NFK and SFK were generally an order of magnitude less than those in the UT, although Chinook salmon was the most abundant Pacific salmon in these rivers in some years. Pacific salmon were widely distributed throughout the mainstem rivers. However, in the SFK, there is an ephemeral reach that demarcates a break in Pacific salmon distributions. Only small numbers of adult Pacific salmon were observed above this ephemeral reach and only in high water years when the reach does not completely dry. The distribution of Pacific salmon appears to largely coincide with the distribution of seeps and springs.

The fish studies conducted from 2004 through 2008 resulted in the expansion of the known distribution of anadromous fish species in the Mine Study Area and provided supporting information for existing anadromous streams. Using the ADF&G's 2009 AWC as a baseline, 22 new anadromous streams were nominated, including eight, five, and nine streams in the NFK, SFK, and UT watersheds, respectively (ADF&G, 2010). The anadromous distribution was extended in an additional 14 streams, with five, two, and seven of those streams located in the NFK, SFK, and UT watersheds, respectively. The total lineal distance of nominated streams (new and extended distributions) was 23.1 miles (37.2 km). By watershed, the distribution of stream length nominated was 7.4 miles (11.9 km) in the NFK, 1.9 miles (3.1 km) in the SFK, and 13.9 miles (22.4 km) in the UT.

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15.1.9 Glossary

Adfluvial—A migratory population of freshwater fish that move from lake environments where they rear and mature into flowing streams and rivers where they spawn and develop early life history stages.

Age 0+—Age of fish less than one- year old, or young-of-the-year, subyearling fry.

Age 1+—Age of fish older than one- and younger than two-years old, or yearling.

Age 2+—Age of fish older than two- but younger than three- years old.

Alluvial—Valley floor material formed by riverine flood deposition of fine and coarse sediments.

Alluvial Fan—Fan of coarse and fine sediment deposited by alluvial means at a rapid change in gradient, typically occurring from steep to shallow gradients like at the terminus of a tributary stream.

Anadromous—Fish species that reside in marine waters but migrate into freshwater for spawning and rearing of early life history stages.

ASCI—Alaska Stream Condition Index; a macroinvertebrate collection method adapted from the U.S. EPA rapid bioassessment protocols.

Baseline—For this report; baseline represents the pre-development watershed situation, including physical, chemical and biological conditions, between 2004 and 2008.

Beaver Complex—A series of interconnected ponds and/or stream channels created by beaver dams.

Channel Geometry—The form or shape of a stream channel, including the contours of its bed.

Channel Morphology—The form or shape of a stream channel, including the contours of its bed.

Colluvial—Valley floor material formed by hillside erosion and deposition of fine and coarse sediments from material transported by gravity.

Confined (Contained) Channels—A channel with restricted freedom to erode its banks and migrate laterally across the floodplain or valley floor, a narrow ratio of floodplain or valley width to channel bankfull width.

Confluence—A place where two or more streams join to flow together.

Cottid—Fishes belonging to the family Cottidae.

Downcut—The fluvial action of a stream in cutting through or scouring its bed material.

Ephemeral Stream—Streams with temporary surface water flow.

Exceedence Flow—The flow level at which the stream flow is surpassed a given percent of the time. For example, an 80 percent exceedence flow is the flow value which all other stream flow values are greater 80 percent of the time. The percent exceedence and the stream flow level are inversely proportional; that is to say, the lower the flow, the greater the percent exceedence, and vice versa.

Flashy—A flashy stream is one that exhibits significantly increased flows immediately following the onset of a precipitation event and a rapid return to pre-rain conditions shortly after the end of the precipitation. That is to say, water that precipitates within a flashy stream's watershed will make its way quickly from the land into the stream and be flushed through the system rapidly.

Fluvial Geomorphology—Study of landforms produced by stream action.

Fish Production—The conversion of energy into fish mass. Total weight or abundance of fish in a given area.

Freshwater Residence Time—The time an adult salmon lives within its natal spawning stream. This factor is used as the base period a salmon is visible on the spawning grounds to surveyors in the Area-Under-The-Curve (AUC) methodology to assess salmon spawning escapement estimates.

Gaining (Stream) Reaches—Stream reaches where groundwater influx is generating increasing surface water flows.

Geomorphology—The study of the evolution and configuration of landforms.

Glacial Drift Deposits—Sand, gravel, boulders, etc. moved and deposited by a glacier or by water arising from its melting ice.

Hanging Deltas –Alluvial deposits at the mouth of a river that are truncated by fluvial or glaciated processes.

Intermittent Stream—Stream with periodic surface water flows.

Kettle Ponds—Landforms occurring as the result of blocks of ice calving from the front of a receding glacier and becoming partially to wholly buried by glacial outwash. When the ice blocks melt, kettle holes are left in the outwash.

Lacustrine—Material deposited by or settled out of lake waters and exposed by the lowering of water levels or the elevation of land.

Lentic—Still water habitats, such as reservoirs, lakes, ponds, swamps, wetlands.

Life History Stage (Form)—Stage of fish as they pass through the various phases of their life cycle.

Life History Strategies –Species expression of various spatial and temporal strategies during their life cycle to cope with environmental conditions.

Losing (Stream) Reaches—Stream reaches where surface water is lost to subsurface layers or groundwater in unconsolidated stream bed materials.

Macroinvertebrates (Aquatic Invertebrates)—Organisms without a backbone that are large enough to be seen without the aid of a microscope.

Mainstem Channel—The principal channel of a river into which other rivers in the watershed flow.

Median—The middle value (if the total number of values is odd) or the average of the two middle values (if the total number of values is even) in an ordered list of values. Half of the values are less than the median and half are greater than the median.

Moraine—An accumulation of material which has been transported or deposited by ice. Transportation of material may occur in three ways: on the surface of the ice, in the ice, and beneath the ice.

Non-Salmonid Fishes—Fishes belonging to any family other than Salmonidae.

Off-Channel Habitat—Aquatic habitats located beyond a river's main channel, yet still within the river's active valley.

Orographic—Change in climatic conditions due to topographic influences.

Outwash Deposits—Sedimentary deposits resulting from the melting action of glaciers.

Pacific Salmon—Fish species belonging to the genus *Oncorhynchus*. In the Bristol Bay region of Alaska, there are five species of Pacific salmon: Chinook (*O. tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), pink (*O. gorbuscha*), and sockeye salmon (*O. nerka*).

Palustrine—Channel type with very little flowing water; marsh-like.

Periphyton—Micro-algae that are attached to rocks or other solid surfaces.

Physiography—Study discipline pertaining to the physical patterns and processes of landform shape and evolution.

Planform –The outline or shape of the channel line in the stream-wise direction, projected on the horizontal plane as viewed from above. Often referring to channel shape (e.g., straight, braided, sinuous, meandering, planebedded, etc.).

Radio Tagging—The act of tagging radio-transmitters to species.

Radio Telemetry—The use of various types of radio-transmitters (VHF, satellite, or GPS) attached to species to track their movements.

Resident Fishes—Fish that reside its entire life cycle in the local freshwater stream network.

Salmon Escapement—The number of salmon of a specific species arriving at a natal stream or river to spawn.

Salmonid—Fishes belonging to the Family Salmonidae.

Seep—A wet place where a liquid, usually groundwater, oozes from the ground to the surface. Seeps are usually not flowing.

Spatial Distribution—Distribution of a particular parameter across the landscape.

Spawning Escapement—Number of fish escaping ocean and riverine fisheries to return to the spawning grounds to spawn.

Spring—Any natural occurrence where water flows to the surface of the earth from below the surface. Thus, a spring is where the aquifer surface meets the ground surface. Springs usually have a flow rate associated with their surface water discharge.

Stream Network—The spatial configuration of streams, including mainstem and tributary channels, within a given watershed or basin.

Stream Terrace—A flat topped, geologically older, fluvially-formed surface, situated at a higher elevation than the contemporary floodplain.

Study Transects—Survey lines extending across the streams for sampling channel characteristics.

Subsistence Fisheries—Fisheries designed for the private consumption of gathered fish.

Taxa—A taxonomic category or group, such as a phylum, order, family, genus or species.

Temporal Distribution—Distribution of species over time; typically referring to routine seasonal changes experienced during the year.

Terminal Moraines—Deposit of sediment left behind from the terminal (leading) edge of a glacier.

Tertiary—The first geologic period of the Cenozoic Era, usually subdivided into the Paleogene and the Neogene and characterized by the formation of major mountain ranges and the first grasses and grasslands.

Total Inshore Run—The estimated number of anadromous fish of a specific species returning to freshwater to spawn; calculation can include harvest and escapement estimates.

Transect Weighting Factor—Instream flow transects, representing a specific habitat feature, were weighted in accordance with the frequency of the specific habitat type in the study reach.

Tributary—A river or stream that flows into a larger river or stream or other waterbody.

Unconfined Channel—A channel with freedom to erode its banks and migrate laterally across the floodplain or valley floor, a large ratio of floodplain or valley width to channel bankfull width.

Watershed Processes—Physical or chemical processes that provide an overarching influence on habitat characteristics in a watershed (i.e., geologic, hydrologic, fluvial, erosion, sediment transport, heat input, etc.).

Velocity Shelter—A location within a stream at which the flow velocity is reduced, such that it provides a refuge or shelter to fish. Velocity shelters are usually created by an upstream flow obstruction (e.g., boulders, instream vegetation, woody debris) or by the reduced flow associated with the margins of a stream channel. These locations of reduced flow enable fish to expend less energy on holding their stream position and thereby serve as resting areas.

TABLES

TABLE 15.1-1
Fish Resource Studies by Major Study Category Conducted within the Mine Study Area Watersheds, 2004-2008

Investigation	Year				
	2004	2005	2006	2007	2008
Aquatic Habitat Assessments					
Mainstem and Tributary Habitat Surveys					
USFS Modified Tier 1 Aquatic Habitat Surveys (USFS, 2001)	NFK, SFK, UT			UT	NFK, SFK, UT
USFS Modified Tier 3 Aquatic Habitat Surveys (USFS, 2001)	NFK, SFK, UT	SFK, UT		UT	NFK, SFK, UT
Fish/Habitat Associations via Anecdotal Data Collection	NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT	
Off-Channel Habitat Surveys					
USFS Modified Tier 3 Aquatic Habitat Surveys (USFS, 2001)					NFK
Fish/Habitat Associations via Anecdotal Data Collection		SFK	SFK	SFK, UT	
Mesohabitat Mapping Field Surveys		NFK, SFK, UT		NFK, SFK, UT	
Fish Assemblage Surveys					
Fish Distribution and Relative Abundance Surveys	KR, NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT
Fish Use of Off-Channel Habitats Study		SFK	SFK	SFK, UT	NFK
Winter Fish Study	KR, NFK, SFK, UT	NFK, SFK, UT	NFK, SFK, UT	SFK, UT	
Mainstem Index Surveys	NFK, SFK, UT	NFK, SFK, UT		NFK, SFK, UT	NFK, SFK, UT
Adult Salmon Surveys	KR, NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT	KR, NFK, SFK, UT	NFK, SFK, UT
Rainbow Trout Radio Telemetry Study [a]				UT	UT
Instream Flow Habitat Studies					
Mainstem Channel Flow Habitat Studies	KR, NFK, SFK, UT	KR, NFK, SFK, UT		KR, NFK, SFK, UT	NFK, SFK, UT

Investigation	Year				
	2004	2005	2006	2007	2008
Off-Channel Flow Habitat Studies		SFK	SFK	UT	NFK
Water Temperature Monitoring/Modeling	NFK, SFK, UT	NFK, SFK, UT	NFK, SFK, UT	NFK, SFK, UT	NFK, SFK, UT
Fluvial Geomorphology and Spawning Gravel Quality		SFK, UT		KR, NFK, SFK, UT	NFK, SFK, UT

Notes:

a. The rainbow trout radio telemetry study was centered around Iliamna Lake downstream to the upper extent of tidal influence in the Kvichak River, with special emphasis on the Lower Talarik Creek and the UT.

KR = Koktuli River mainstem

NFK = North Fork Koktuli River

SFK = South Fork Koktuli River

UT = Upper Talarik Creek

TABLE 15.1-2
Watershed Areas of the North Fork Koktuli River, South Fork Koktuli River, Upper Talarik Creek, and Koktuli River within the Mine Study Area as Compared to Major River Systems in the Bristol Bay Drainage

River	Total Watershed Area (square miles)	Percent of Major River System	Percent of Bristol Bay Drainage [a]
NFK [b]	113	0.9	0.3
SFK [b]	107	0.8	0.3
KR [b, c]	218	1.7	0.6
Nushagak River	12,735	100	32.5
UT [d]	135	1.7	0.3
Kvichak River	8,017	100	20.1

Notes:

a. Total Bristol Bay Drainage is estimated at 39,184 square miles.

b. Within the Nushagak River System.

c. Watershed area for KR includes the portion of watershed within the mine study area, excluding the NFK and SFK watersheds.

d. Within the Kvichak River System.

KR = Koktuli River mainstem

NFK = North Fork Koktuli River

SFK = South Fork Koktuli River

UT = Upper Talarik Creek Sources:

EBD Chapter 7, Section 7.2 *Surface Water Hydrology*

Buell and Magee Bristol Bay Drainage Map (2007)

TABLE 15.1-3
Designated Stream Reaches in the North Fork Koktuli Watershed

Reach Name	Location (RK)	Description
NFK–A	0.0 – 13.7	Unconfined reach upstream of the confluence with the SFK
NFK–B	13.7 – 21.1	Confined, single-threaded channel
NFK–C	21.1 – 36.6	Multiple mainstem and off-channel habitats
NFK–D	36.6 – 48.4	Single-threaded channel, downstream of Tributary 1.280
NFK–E	48.4 – 52.5	Low gradient reach, downstream of canyon
NFK–F	52.5 – 57.7	Headwater confined canyon reach

NFK = North Fork Koktuli River

RK = River Kilometer

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1F *Fluvial Geomorphology Studies*.

TABLE 15.1-4
Range of Summer (June, July, and August) Water Temperatures in the North Fork Koktuli Watershed

	Water Temperature (˚C)				
Station	2004	2005	2006	2007	2008
NFK9WT	—	—	—	—	4.7-11.8 [a]
NFK8WT	—	—	—	—	1.9-17.7
NK100C	7.8-21.8 [a]	6.5-21.9 [b]	4.2-21.7	6.0-20.5	—
NK119A	5.3-16.8 [a]	3.4-19.6	0.9-15.1	1.9-15.4	—
NK119WT	—	—	—	—	0.3-15.4
NK100B	—	—	—	4.5-19.0	—
NFK4WT	—	—	—	—	5.1-14.3 [a]
NK100A1	—	—	—	3.6-21.9	—
NK100A	—	5.5-18.6	—	4.5-18.5	2.5-15.0
NFK1WT	—	—	—	—	6.4-12.7 [a]

Notes:

a. Data available for August only

b. Data available for June and July only

˚C = degrees Celsius

— = Not available.

Source: EBD Appendix 15.1E *Open River Water Temperature Model*.

TABLE 15.1-5
United States Forest Service Alaska Region Channel Type Legend

Code	Description
Palustrine Process Group	
PA1	Narrow Placid Flow Channel
PA2	Moderate Width Placid Flow Channel
PA3	Shallow Groundwater Fed Slough
PA4	Flood Plain Backwater Slough
PA5	Beaver Dam/Pond Channel
Flood Plain Process Group	
FP1	Uplifted Beach Channel
FP2	Foreland Uplifted Estuarine Channel
FP3	Narrow Low Gradient Flood Plain Channel
FP4	Low Gradient Flood Plain Channel
FP5	Wide Low Gradient Flood Plain Channel
Glacial Outwash Process Group	
GO1	Glacial Outwash Flood Plain Side Channel
GO2	Large Meandering Glacial Outwash Channel
GO3	Large Braided Glacial Outwash Channel
GO4	Moderate Width Glacial Channel
GO5	Cirque Channel
Alluvial Fan Process Group	
AF1	Moderate Gradient Alluvial Fan Channel
AF2	High Gradient Alluvial Cone Channel
AF8	Glacial Alluvial Cone Channel
Large Contained Process Group	
LC1	Low Gradient Contained Channel
LC2	Moderate Gradient Contained Narrow Valley Channel
Moderate Gradient Mixed Control Process Group	
MM1	Narrow Mixed Control Channel
MM2	Moderate Width Mixed Control Channel
Moderate Gradient Contained Process Group	
MC1	Narrow Shallow Contained Channel
MC2	Moderate Width and Incision, Contained Channel
MC3	Deeply incised Contained Channel
High Gradient Contained Process Group	
HC1	Shallowly Incised Muskeg Channel
HC2	Shallowly to Moderately Incised Footslope Channel
HC3	Deeply Incised Upper Valley Channel
HC4	Deeply Incised Muskeg Channel
HC5	Shallowly Incised Very High Gradient Channel
HC6	Deeply Incised Mountainslope Channel

Code	Description
HC8	Moderate/High Gradient Glacial Cascade Channel
HC9	High Gradient Incised Glacial Torrent Channel

Notes:

Channel Type naming conventions:

Deeply Incised = over 33 feet (10 meters)

High Gradient = 6 -15 percent

Low Gradient = less than 2 percent

Moderate Gradient = 2 - 6 percent

Moderate Width = 33 - 66 feet (10 - 20 meters)

Moderately Incised = 16.5 – 33 feet (5 - 10 meters)

Narrow Width = less than 33 feet (10 meters)

Shallowly Incised = less than 16.5 feet (5 meters)

Very High Gradient = over 15 percent

Wide = over 66 feet (20 meters)

Source: Paustian et al. (1992), Appendix C.

TABLE 15.1-6
Area and Frequency of Off-channel Waterbodies by Habitat Type in the North Fork Koktuli Watershed

Off-channel Waterbody Type	Area (acres)	Frequency (percent)
Beaver Complexes	27.0	85
Side Channels	1.6	5
Percolation Channels	1.3	4
Beaver Pond Outlet Channels	1.0	3
Alcoves	0.6	2
Isolated Ponds	0.3	1
Totals	31.8	100

Source: EBD Appendix 15.1D *Off-Channel Habitat.*

TABLE 15.1-7
Hydrologic Connectivity of Off-channel Waterbodies by Habitat Type in the North Fork Koktuli Watershed

Off-channel Waterbody Type	Mainstem River Connection Discharge (cfs)
Side Channels	14 – 490
Beaver Complexes	14 – 159
Percolation Channels	123 – 192

cfs = cubic feet per second

Source: EBD Appendix 15.1D *Off-Channel Habitat.*

TABLE 15.1-8
Regional Water Quality Data Comparison

Watershed	Period of Record	Number of Samples [a]	Ranges						
			Temperature (˚C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	Alkalinity (mg/L)	Hardness (mg/L)
South Fork Koktuli Basin [b]	Monthly 2004-2008	619	-0.2-23.5	2.2-18.2	1-133	4.4-8.9	0.1-24.4	2-65	5-60
North Fork Koktuli Basin [b]	Monthly 2004-2008	244	-0.2-19.0	5.8-14.6	7-77	4.7-8.4	0.1-23.9	5-38	6-52
Upper Talarik Basin [b]	Monthly 2004-2008	512	-0.4-15.7	2.7-18.6	10-151	4.5-8.2	0.1-18.5	3-74	7-62
Lower Nushagak River [c]	August 2005; June 2006	18	6.0-12.0	9.9-12.9	33-64	5.8-6.8	2.2-11.0	22-26	20-28
Nushagak River (USGS 15302500) [d]	1956-1986	213	0.0-16.5	9.5-13.8	24-65	5.7-7.8	0.0-12.0	—	14-31
Johnson River [e]	Summer months 1999-2001	18	0.0-6.7	11.5-15.3	32-105	6.9-7.9	—	10-21	—
Johnson River (USGS 15294700) [d]	Summer months 1999-2004	56	0.0-6.7	11.5-15.3	32-105	6.9-7.9	—	11-25	15-43
Tlikakila river (USGS 15297970) [f]	Monthly Spring-Fall 1999-2001	12	0.0-9.4	11.0-13.3	31-117	7.2-8.1	—	13-30	13-45
Chokotonk River (USGS 15297930) [f]	Monthly Spring-Fall 1999-2001	9	0.0-10.0	11.3-14.3	28-74	7.0-8.2	—	11-24	—
Chulitna River (USGS 15298050) [f]	Monthly Spring-Fall 1999-2001	13	1.0-14.5	10.0-13.2	53-85	7.0-7.8	—	21-32	—
Currant Creek (USGS 15297980) [f]	Monthly Spring-Fall 1999-2001	13	2.0-7.5	11.1-14.9	36-74	6.9-7.6	—	11-20	—

Watershed	Period of Record	Number of Samples [a]	Ranges						
			Temperature (˚C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Turbidity (NTU)	Alkalinity (mg/L)	Hardness (mg/L)
Kijik River (USGS 15297990) [f]	Monthly Spring-Fall 1999-2001	12	3.5-12.5	9.4-13.7	70-88	7.0-7.8	—	24-28	—
Tanalian River (USGS 15298010) [f]	Monthly Spring-Fall 1999-2001	13	5.5-13.5	10.1-13.8	44-54	7.0-7.8	—	10-13	—
Lake Clark Outlet (USGS 15299000) [f]	Monthly Spring-Fall 1999-2001	13	4.5-11.5	10.3-14.1	55-62	7.0-7.9	—	20-21	—
Hoseanna Creek Basin [g]	Summer 1987-1996	16	—	8.3-14.4	352-705	6.7-8.7	12.0-700	94-175	—
Beluga Coal Area [h]	1982-1984	6	-0.4-13.8	9.5-16.3	10-77	5.9-8.1	—	—	—

Notes:

a. Maximum number of samples collected, actual number of samples varies by constituent.

b. Data source is EBD Appendix 9.1C, *Surface Water Results*. When constituents were at levels below the Method Detection Limit, a value equal to one half of the Method Detection Limit was reported. Thus, some of minimum values shown here may represent half of the Method Detection Limit value. Method Detection Limit values vary by constituent and method of detection.

c. Data source is Zender Environmental Science and Planning Services (2006).

d. Data source is United States Geological Survey (2008).

e. Data source is Brabets and Riehle (2003).

f. Data source is Brabets (2002).

g. Data source is Vohden (1997).

h. Data source is Maurer (1987).

˚C = degrees Celsius

µS/cm = microSiemens per centimeter

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Units.

— = Not available.

TABLE 15.1-9
Instream Flow Transects by Reach, Habitat Type, and River Kilometer for the North Fork Koktuli Watershed

Reach	Transect	Habitat Type	RK
NFK-A	05-NFK1-IC3	Island Complex	3.37
NFK-A	08-NFK1-MS1-TR1	Island Complex	9.88
NFK-A	08-NFK1-MS1-TR2	Run	9.91
NFK-A	08-NFK1-MS1-TR3	Run	9.94
NFK-A	08-NFK1-MS1-TR4	Riffle	10.04
NFK-A	08-NFK1-MS1-TR5	Riffle	10.06
NFK-A	08-NFK1-MS1-TR6	Island Complex	10.10
NFK-A	08-NFK1-MS2-TR1	Island Complex	12.87
NFK-A	08-NFK1-MS2-TR2	Island Complex	12.89
NFK-A	08-NFK1-MS2-TR3	Island Complex	12.96
NFK-A	08-NFK1-MS2-TR4	Island Complex	13.06
NFK-A	08-NFK1-MS2-TR5	Island Complex	13.08
NFK-A	05-NFK1-RN1	Island Complex	13.23
NFK-B	07-NFK1-RF1	Riffle	14.29
NFK-B	05-NFK1-IC1	Island Complex	15.33
NFK-B	05-NFK1-RF2	Riffle	15.97
NFK-B	05-NFK1-RF1	Riffle	18.29
NFK-B	04-NFK-RF1	Riffle	20.94
NFK-C	04-NFK-RN1	Run	21.10
NFK-C	04-NFK-IC1	Island Complex	22.26
NFK-C	04-NFK-RN2	Run	22.67
NFK-C	04-NFK-RF2	Riffle	22.81
NFK-C	08-NFK2-MS1-TR1	Run	24.65
NFK-C	08-NFK2-MS1-TR2	Island Complex	26.21
NFK-C	08-NFK2-MS1-TR3	Riffle	26.96
NFK-C	04-NFK-RN3	Run	30.63
NFK-C	04-NFK-IC2	Island Complex	33.65
NFK-C	08-NFK-190-TR1 [a]	Pool	0.15
NFK-C	08-NFK-190-TR2 [a]	Run	0.17
NFK-C	08-NFK-190-TR3 [a]	Riffle	0.18

a. Transect located in Tributary NFK 1.190.

NFK = North Fork Koktuli River

RK = River Kilometer

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-10
Number of Physical Habitat Simulation Instream Flow Transects in the Mine Study Area and Transect Weightings by Habitat Type

Reach	Number of Transects				Transect Weighting			
	Island Complex	Pool	Run	Riffle	Island Complex	Pool	Run	Riffle
NFK-A	9	0	2	1	44.8%	0.0%	19.0%	36.2%
NFK-B	1	0	0	4	56.7%	0.0%	0.0%	43.3%
NFK-C	3	0	4	2	14.8%	0.0%	41.8%	43.4%
NFK-C [a]	0	1	1	1	0.0%	6.1%	26.7%	67.2%
SFK-A	8	0	4	7	16.6%	0.0%	27.8%	55.6%
SFK-B	2	1	8	1	17.3%	1.1%	45.4%	36.2%
SFK-C	0	3	2	1	0.0%	4.4%	65.0%	30.6%
SFK-B [a]	0	0	4	2	0.0%	0.0%	24.7%	75.3%
UT-B	0	3	2	0	0.0%	4.7%	95.3%	0.0%
UT-C	2	0	3	2	13.7%	0.0%	65.6%	20.7%
UT-D	0	0	5	2	0.0%	0.0%	83.3%	16.7%
UT-E	6	0	3	1	22.6%	0.0%	64.1%	13.3%
UT-F	0	1	3	2	0.0%	22.3%	54.6%	23.1%
UT-C [a]	0	0	1	4	0.0%	0.0%	16.7%	83.3%
KR	1	0	1	2	25.0%	0.0%	37.5%	37.5%

a. Transects located in tributaries NFK 1.190, SFK 1.190, and UT 1.190 in reaches NFK-C, SFK-B, and UT-C, respectively.

KR = Koktuli River

NFK = North Fork Koktuli River

SFK = South Fork Koktuli River

UT = Upper Talarik Creek

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-11
Range of Flows Offering 90 Percent or More of the Maximum Habitat Area for Various Categories and Life Stages of Fish in Three North Fork Koktuli River Reaches

	Range of Flows (cfs)		
Life History Stage	**NFK-A**	**NFK-B**	**NFK-C**
Spawning			
Anadromous Fishes	140 – 290	80 – 220	90 – 180
Non-anadromous Fishes	190 – 290	60 – 130	110 – 150
Juvenile Rearing			
Anadromous Fishes	45 – 85	130 – 365	60 – 150
Non-anadromous Fishes	45 – 260	95 - 265	<30 – 120
Adult Rearing			
Non-anadromous Fishes	45 – 315	130 – 340	70 – 160

Notes:

< = less than

cfs = cubic feet per second

NFK = North Fork Koktuli River

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-12
Fish Species Found in the North Fork Koktuli Watershed, 2004-2008

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Sockeye salmon	*Oncorhynchus nerka*
Arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
Rainbow trout	*Oncorhynchus mykiss*
Round whitefish	*Prosopium cylindraceum*
Whitefish [a]	*Coregoninae*
Sculpin [b]	*Cottus* sp.
Northern pike	*Esox lucius*
Ninespine stickleback	*Pungitius pungitius*
Threespine stickleback	*Gasterosteous aculeatus*

Notes:

a. Identified to subfamily, may include round whitefish, humpback whitefish, and least cisco.

b. Identified to genus, may include slimy sculpin and coastrange sculpin.

Source: EBD Appendix 15.1B *Reach Analysis.*

TABLE 15.1-13
Fish Catch per Unit Effort by Channel Type in North Fork Koktuli River Reach NFK-C

	Number of Fish per Hour			
	Salmonid Fishes			
Location	Anadromous	Resident	Non-Salmonids	Total All Species
Mainstem	106	20	180	306
Off-channel	185	11	26	222
Tributaries	7	24	58	89

NFK = North Fork Koktuli River

TABLE 15.1-14
Anadromous Salmonid Fishes Found by Reach in the North Fork Koktuli Watershed, 2004-2008

Species/Life Stage	NFK-A	NFK-B	NFK-C	NFK-D	NFK-E	NFK-F
Chinook salmon						
Adult	X	X	X	X		
Juvenile	X	X	X	X		X
Chum salmon						
Adult	X	X	X			
Juvenile			X			
Coho salmon						
Adult	X	X	X	X	X	
Juvenile	X	X	X	X	X	
Sockeye salmon						
Adult	X	X	X	X		
Juvenile	X	X	X			

NFK = North Fork Koktuli River

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-15
Adult Salmon Statistics for the Nushagak District, Nushagak River, and the North and South Fork Koktuli Watersheds

Species	Year	District Total Inshore Run [a]	District Commercial Catch [a]	Nushagak River Escapement [b]	NFK Mean Index Count	*N* (NFK)	SFK Mean Index Count	*N* (SFK)
Chinook salmon	2004	228,466	96,534	107,683	1,838 (±541.6)	3	2,155 (±321.5)	3
	2005	244,793	62,308	163,506	1,737 (±599.1)	4	789 (±317.3)	4
	2006	218,413	84,881	117,364	512 (±123.9)	4	251 (±76.5)	5
	2007	123,376	51,473	53,344	213 (±74.8)	8	148 (±47.4)	8
	2008	127,557	18,968	88,758	157 (±62.1)	8	213 (±79.4)	9
	5-Year Avg	188,521	62,833	106,131	891	--	711	--
Chum salmon	2004	754,053	458,902	283,811	--	1	--	0
	2005	1,322,149	966,050	456,025	165 (±73.8)	4	225 (±79.1)	4
	2006	1,901,238	1,240,235	661,002	439 (±171.6)	4	335 (±114.9)	7
	2007	1,114,758	953,275	161,483	310 (±113)	9	71 (±22.5)	11
	2008	867,769	492,341	326,300	532 (±205.8)	7	353 (±135.4)	7
	5-Year Avg	1,191,993	822,161	377,724	362	--	246	--
Coho salmon	2004	--	47,706	--	158 (±78.3)	3	166 (±104.5)	2
	2005	--	42,456	--	--	1	287 (±127.2)	4
	2006	--	44,385	--	449 (±260.7)	4	478 (±457.8)	3
	2007	--	29,578	--	43 (±16.3)	8	121 (±39.4)	10
	2008	--	73,889	--	478 (±138.6)	15	494 (±136.3)	20
	5-Year Avg	--	47,603	--	282	--	309	--
Sockeye salmon	2004	8,248,738	6,104,048	492,000	518 (±45)	2	1,454 (±155.5)	3
	2005	10,090,869	7,132,342	1,049,000	582 (±194.7)	5	1,019 (±387.5)	5
	2006	15,738,137	10,876,552	548,000	456 (±225.2)	7	1,153 (±396.2)	8
	2007	10,865,690	8,404,111	518,000	648 (±217.4)	10	1,693 (±455.3)	11
	2008	10,175,083	6,903,157	493,000	637 (±215.1)	12	1,791 (±627.1)	13
	5-Year Avg	11,023,703	7,884,042	620,000	568	--	1,422	--

Notes:

a. Data taken from Morstad et al. (2010), Appendix A18. Total inshore run for Chinook salmon includes harvest and escapement. Total inshore run for chum and sockeye salmon includes commercial catch and escapement. Total inshore run for coho salmon was not available.

b. Data taken from Baker et al. (2009), Appendices A6, B1, and C1.

N = sample size NFK = North Fork Koktuli River SFK = South Fork Koktuli River

TABLE 15.1-16
Spawning Salmon Observations in North Fork Koktuli River Reaches during 2008 Aerial Surveys

Species	NFK Reach	*N* (Number of Surveys)	Total Count	Mean	Standard Error
Chinook salmon	A	5	567	113	41.0
	B	5	189	38	19.6
	C	5	234	47	21.3
Chum salmon	A	7	344	49	24.1
	B	5	255	51	28.1
	C	7	2,279	326	128.4
Coho salmon	A	11	1,164	106	36.1
	B	10	746	75	25.1
	C	13	2,725	210	74.9
	D	7	185	26	10.3
	E	5	259	52	14.6
Sockeye salmon	A	8	4,284	536	189.7
	B	5	25	5	1.6
	C	9	2,029	225	78.9
	D	9	514	57	13.0

NFK = North Fork Koktuli River

TABLE 15.1-17
Non-anadromous Salmonid Fishes Found by Reach in the North Fork Koktuli Watershed, 2004-2008

Species/Life Stage	NFK-A	NFK-B	NFK-C	NFK-D	NFK-E	NFK-F
Arctic grayling						
Adult	X	X	X	X		
Juvenile	X		X	X		
Dolly Varden						
Adult	X	X	X	X	X	X
Juvenile	X	X	X	X	X	X
Rainbow trout						
Adult	X		X			
Juvenile	X		X			
Round whitefish						
Adult			X			
Whitefish sp.						
Adult	X	X	X	X		

NFK = North Fork Koktuli River

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-18
Subsistence Use of Non-anadromous Salmonid Fishes in Iliamna, Newhalen, and Nondalton

Percent of Households	Species
92%	Dolly Varden
77%	Rainbow trout
72%	Arctic grayling
55%	Whitefish

Source: Fall et al. (2006)

TABLE 15.1-19
Non-salmonid Fishes Found by Reach in the North Fork Koktuli Watershed, 2004-2008

Species/Life Stage	NFK-A	NFK-B	NFK-C	NFK-D	NFK-E	NFK-F
Northern pike						
Adult			X	X		
Juvenile			X	X		
Sculpin sp.						
Adult	X	X	X	X		X
Juv/Adult	X	X	X	X	X	X
Juvenile	X	X	X	X	X	X
Ninespine stickleback						
Adult			X			
Juv/Adult		X		X		
Juvenile	X		X	X		
Threespine stickleback						
Adult	X					
Juvenile	X			X		
Stickleback sp.						
Adult			X	X		
Juvenile			X	X		

NFK = North Fork Koktuli River

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-20
Designated Stream Reaches in the South Fork Koktuli Watershed

Reach Name	Location (RK)	Description
SFK–A	0.0 – 24.9	Upstream of the confluence with the NFK
SFK–B	24.9 – 34.3	Unconfined reach
SFK–C	34.3 – 51.7	Intermittent stream, with portion cutting through lacustrine deposit
SFK–D	51.7 – 54.7	Confined reach downstream of Frying Pan Lake
SFK–E	54.7 – 64.2	Frying Pan Lake and upstream of Frying Pan Lake

NFK = North Fork Koktuli River

RK = River Kilometer

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1F *Fluvial Geomorphology Studies*.

TABLE 15.1-21
Range of Summer (June, July, and August) Water Temperatures in the South Fork Koktuli Watershed

	Water Temperatures (˚C)				
Station	2004	2005	2006	2007	2008
SK100G	8-19.7 [a]	6.9-20.7	4.4-20.0	5.6-18.7	—
SK100F	7.7-24.4 [a]	6.5-22.8	4.7-19.5	5.4-23.3	—
SFK6WT	—	—	—	—	8.3-16.8 [a]
SK100C	—	6.9-19.4 [b]	7.7-19.5 [c]	6.8-20.5 [d]	—
SK119A	6.5-17.1 [a]	2.9-16.6	1.1-14.9	2.2-14.8	—
SFK119WT	—	—	—	—	0.7-13.8
SK100B1	—	—	5.4-11.5 [a]	4.1-13.1	—
SFK4WT	—	—	—	—	3.8-12.1 [a]
SK100B	—	—	6.0-16.5 [c]	4.0-17.0	2.5-15.0
SFK2WT	—	—	—	—	5.9-16.1 [a]
SK100A	6.5-18.4 [a]	6.0-19.1	4.4-17.8	5.1-18.2	—
SFK1WT	—	—	—	—	7.3-16.1 [a]

Notes:

a. Data available for August only.

b. Data available for June and July only.

c. Data available for July and August only.

d. Data available for June only.

˚C = degrees Celsius

— = Not Available

Source: EBD Appendix 15.1E *Open River Water Temperature Model*.

TABLE 15.1-22
Area and Frequency of Off-channel Waterbodies by Habitat Type in the South Fork Koktuli Watershed

Off-channel Waterbody	Area (acres)	Frequency (percent)
Beaver Complexes	42.0	91
Isolated Ponds	1.4	3
Side Channels	0.9	2
Beaver Pond Outlet Channels	0.9	2
Alcoves	0.9	2
Percolation Channels	0.0	0
Totals	46.1	100

Source: EBD Appendix 15.1D *Off-Channel Habitat.*

TABLE 15.1-23
Hydrologic Connectivity of Off-channel Waterbodies by Habitat Type in the South Fork Koktuli Watershed

Off-channel Waterbody	Mainstem River Connection Discharge (cfs)
Side Channels	5 – 435
Beaver Complexes	152 – 372

cfs = cubic feet per second

Source: EBD Appendix 15.1D *Off-Channel Habitat.*

TABLE 15.1-24
Instream Flow Transects by Reach, Habitat Type, and River Kilometer for the South Fork Koktuli Watershed

Reach	Transect	Habitat Type	RK
SFK-A	05-SFK1-IC1	Island Complex	2.39
SFK-A	05-SFK1-RF1	Riffle	4.91
SFK-A	08-SFK1-MS1-TR1	Run	6.91
SFK-A	08-SFK1-MS1-TR2	Island Complex	6.96
SFK-A	08-SFK1-MS1-TR3	Island Complex	7.02
SFK-A	08-SFK1-MS1-TR4	Island Complex	7.04
SFK-A	08-SFK1-MS1-TR5	Riffle	7.05
SFK-A	08-SFK1-MS1-TR6	Run	7.14
SFK-A	04-SFK-IC1	Island Complex	12.36
SFK-A	08-SFK1-MS2-TR1	Riffle	19.21
SFK-A	08-SFK1-MS2-TR2	Riffle	19.29
SFK-A	08-SFK1-MS2-TR3	Island Complex	19.42
SFK-A	08-SFK1-MS2-TR4	Island Complex	19.47
SFK-A	08-SFK1-MS2-TR5	Island Complex	19.55
SFK-A	08-SFK1-MS2-TR6	Run	19.60
SFK-A	04-SFK-RF3	Riffle	19.80
SFK-A	04-SFK-RN3	Run	20.10
SFK-A	07-SFK1-RF1	Riffle	24.21
SFK-A	04-SFK-RF2	Riffle	24.68
SFK-B	04-SFK-RN2	Run	24.91
SFK-B	04-SFK-IC2	Island Complex	25.67
SFK-B	05-SFK2-RF1	Riffle	26.22
SFK-B	05-SFK2-RN4	Run	27.03
SFK-B	05-SFK2-IC1	Island Complex	27.42
SFK-B	05-SFK2-RN7	Run	28.07
SFK-B	05-SFK2-RN6	Run	29.24
SFK-B	05-SFK2-RN3	Run	30.19
SFK-B	05-SFK2-RN5	Run	31.37
SFK-B	05-SFK2-RN2	Run	31.75
SFK-B	05-SFK2-PL1	Pool	33.16
SFK-B	05-SFK2-RN1	Run	33.80
SFK-B	08-SFK-190-TR1 [a]	Run	0.64
SFK-B	08-SFK-190-TR2 [a]	Run	0.66
SFK-B	08-SFK-190-TR3 [a]	Riffle	0.67
SFK-B	08-SFK-190-TR4 [a]	Riffle	0.70
SFK-B	08-SFK-190-TR5 [a]	Run	0.71
SFK-B	08-SFK-190-TR6 [a]	Run	0.73
SFK-C	05-SFK3-RN1	Run	34.81

Reach	Transect	Habitat Type	RK
SFK-C	04-SFK-RF1	Riffle	36.54
SFK-C	04-SFK-PL1	Pool	36.58
SFK-C	04-SFK-RN1	Run	36.62
SFK-C	05-SFK3-PL1	Pool	39.83
SFK-C	05-SFK3-PL2	Pool	40.93

a. Transect located in Tributary SFK 1.190.

RK = River Kilometer

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-25
Range of Flows Offering 90 Percent or More of the Maximum Habitat Area for Various Categories and Life Stages of Fish in Three South Fork Koktuli River Reaches

	Range of Flows (cfs)		
Life History Stage	**SFK-A**	**SFK-B**	**SFK-C**
Spawning			
Anadromous Fishes	90 – 160	95 – 155	30 – 55
Non-anadromous Fishes	65 – 125	85 – 100	30 – 50
Juvenile Rearing			
Anadromous Fishes	35 – 110	95 – 240	6 – 25
Non-anadromous Fishes	<30 – 180	<30 – 95	6 – 48
Adult Rearing			
Non-anadromous Fishes	<30 – 270	85 – 290	8 – 70

Notes:

< = less than

cfs = cubic feet per second

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-26
Fish Species Found in the South Fork Koktuli Watershed, 2004-2008

Common Name	**Scientific Name**
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Sockeye salmon	*Oncorhynchus nerka*
Arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
Rainbow trout	*Oncorhynchus mykiss*
Whitefish [a]	*Coregoninae*
Sculpin [b]	*Cottus* sp.
Northern pike	*Esox lucius*
Ninespine stickleback	*Pungitius pungitius*
Threespine stickleback	*Gasterosteous aculeatus*
Burbot	*Lota lota*
Lamprey [c]	*Lampetra* sp.

Notes:

a. Identified to subfamily, may include round whitefish, humpback whitefish, and least cisco.

b. Identified to genus, may include slimy sculpin and coastrange sculpin.

c. Identified to genus, may include Arctic and Pacific lamprey.

Source: EBD Appendix 15.1B *Reach Analysis.*

TABLE 15.1-27
Fish Catch per Unit Effort by Channel Type in the South Fork Koktuli Watershed

		Number of Fish per Hour			
		Salmonid Fishes		Non-Salmonid Fishes	Total All Fish Species
Location	Reach	Anadromous	Resident		
Mainstem	SFK-A	505	0	16	520
	SFK-B	628	0	0	628
	SFK-C	0	51	14	65
Off-channel	SFK-B	73	26	59	158
Tributaries	SFK-B	11	30	43	84
	SFK-C	40	26	46	112
	SFK-E	0	21	26	48

SFK = South Fork Koktuli River

TABLE 15.1-28
Anadromous Salmonid Fishes Found by Reach in the South Fork Koktuli Watershed, 2004-2008

Species/Life Stage	SFK-A	SFK-B	SFK-C	SFK-D	SFK-E
Chinook salmon					
Adult	X	X	X		
Juvenile	X	X	X	X	
Chum salmon					
Adult	X	X	X		
Juvenile	X	X			
Coho salmon					
Adult	X	X	X		
Juvenile	X	X	X	X	X
Sockeye salmon					
Adult	X	X	X		
Juvenile	X	X	X		X

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-29
Spawning Salmon Observations in South Fork Koktuli River Reaches during 2008 Aerial Surveys

Species	SFK Reach	*N* (Number of Surveys)	Total Count	Mean	Standard Error
Chinook salmon	A	7	1,300	186	71.3
	B	5	289	58	21.6
Chum salmon	A	7	605	86	37.1
	B	7	1,103	158	59.0
Coho salmon	A	12	2,352	196	71.8
	B	14	3,295	235	67.7
	C	6	49	8	3.3
Sockeye salmon	A	9	7,333	815	289.4
	B	8	12,237	1,530	531.4
	C	1	1	1	--

SFK = South Fork Koktuli River

TABLE 15.1-30
Non-anadromous Salmonid Fishes Found by Reach in the South Fork Koktuli Watershed, 2004-2008

Species/Life Stage	SFK-A	SFK-B	SFK-C	SFK-D	SFK-E
Arctic grayling					
Adult	X	X	X	X	X
Juvenile	X	X	X	X	X
Dolly Varden					
Adult	X	X	X		X
Juvenile	X	X	X	X	X
Rainbow trout					
Adult	X	X			X
Juvenile	X	X			X
Whitefish sp.					
Adult	X	X	X		
Juvenile			X		

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-31
Non-salmonid Fishes Found by Reach in the South Fork Koktuli Watershed, 2004-2008

Species/Life Stage	SFK-A	SFK-B	SFK-C	SFK-D	SFK-E
Burbot					
Juvenile		X	X		
Northern pike					
Adult			X	X	X
Juvenile		X	X	X	X
Sculpin sp.					
Adult	X	X	X	X	X
Juvenile	X	X	X	X	X
Ninespine stickleback					
Adult	X	X	X		X
Juvenile	X	X	X		X
Threespine stickleback					
Adult		X			
Juvenile	X	X			X
Stickleback sp.					
Adult					X
Juv/Adult	X	X	X		X
Juvenile		X	X		X
Lamprey sp.					
Juvenile	X	X			

SFK = South Fork Koktuli River

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-32
Designated Stream Reaches in the Upper Talarik Watershed

Reach Name	Location (RK)	Description
UT–A	0.0 – 5.9	Unconfined, low gradient reach upstream of the confluence with Iliamna Lake
UT–B	5.9 – 16.8	Unconfined, low gradient reach upstream of the confluence with First Creek (UT 1.60)
UT–C	16.8 – 24.8	Relatively confined reach downstream of Tributary UT 1.190
UT–D	24.8 – 36.3	Relatively confined reach downstream of mapped landslide
UT–E	36.3 – 45.1	Upstream of landslide and downstream of Tributary UT 1.350
UT–F	45.1 – 59.1	Reach immediately downstream of canyon
UT–G	59.1 – 62.4	Headwater canyon reach

RK = River Kilometer

UT = Upper Talarik Creek

Source: EBD Appendix 15.1F *Fluvial Geomorphology Studies*.

TABLE 15.1-33
Range of Summer (June, July, and August) Water Temperatures in the Upper Talarik Watershed

	Water Temperatures (˚C)				
Station	**2004**	**2005**	**2006**	**2007**	**2008**
UT100E	3.6-9.1 [a]	3.3-10.3	2.5-9.7	2.5-9.7	—
UT100D	7.8-18.8 [a]	4.5-18.5	2.7-16.8	4.3-17.0	—
UT135A	—	—	—	4.8-17.5	—
UT135AWT	—	—	—	—	8.6-17.1 [a]
UT135BWT	—	—	—	—	8.6-17.6 [a]
UT100C2	—	—	—	3.7-16.2	—
UT100C1	—	—	—	4.8-17.3	—
UT5WT	—	—	—	—	6.9-14.5 [a]
UT100C	—	—	—	4.7-16.6	—
UT119A	3.9-8.4 [a]	3.7-9.3	2.9-9.0	3.2-8.3	—
UT119WT	—	—	—	—	3.4-8.9
UT100B	—	5.8-15.5	6.0-15.0 [b]	4.5-14.5	4.0-13.0
UT4WT	—	—	—	—	5.7-11.5 [a]
UT3WT	—	—	—	—	4.8-15.4
UT2WT	—	—	—	—	7.3-14.9 [a]

Notes:

a. Data available for August only.

b. Data available for June and July only.

˚C = degrees Celsius

— = Not Available

Source: EBD Appendix 15.1E *Open River Water Temperature Model.*

TABLE 15.1-34
Area and Frequency of Off-channel Waterbodies by Habitat Type in the Upper Talarik Watershed

Off-channel Waterbody Type	Area (acres)	Frequency (percent)
Beaver Complexes	12.0	93
Side Channels	0.4	3
Beaver Pond Outlet Channels	0.1	1
Alcoves	0.1	1
Percolation Channels	0.1	1
Isolated Ponds	0.1	1
Totals	12.8	100

Source: EBD Appendix 15.1D *Off-Channel Habitat.*

TABLE 15.1-35
Hydrologic Connectivity of Off-channel Waterbodies by Habitat Type in the Upper Talarik Watershed

Off-channel Waterbody	Mainstem River Connection Discharge (cfs)
Side Channels	45 – 390
Beaver Complexes	39 – 455

cfs = cubic feet per second

Source: EBD Appendix 15.1D *Off-Channel Habitat.*

TABLE 15.1-36
Instream Flow Transects by Reach, Habitat Type, and River Kilometer for the Upper Talarik Watershed

Reach	Transect	Habitat Type	RK
UT-B	08-UTC1-MS1-TR1	Pool	6.08
UT-B	08-UTC1-MS1-TR2	Pool	6.14
UT-B	08-UTC1-MS1-TR3	Pool	6.16
UT-B	08-UTC1-MS1-TR4	Run	6.18
UT-B	08-UTC1-MS1-TR5	Run	6.21
UT-C	05-UTC1-IC1	Island Complex	16.84
UT-C	05-UTC1-RF2	Riffle	17.36
UT-C	05-UTC1-RN1	Run	19.34
UT-C	04-UTC-IC2	Island Complex	19.82
UT-C	04-UTC-RN1	Run	23.75
UT-C	04-UTC-RN2	Run	24.36
UT-C	04-UTC-RF2	Riffle	24.59
UT-C	05UT190-RF1 [a]	Riffle	0.50
UT-C	05UT190-RF3 [a]	Riffle	0.91
UT-C	05UT190-RF4 [a]	Riffle	1.12
UT-C	05UT190-RN1 [a]	Run	1.35
UT-C	05UT190-RF5 [a]	Riffle	2.48
UT-D	07-UTC2-RN3	Run	26.02
UT-D	07-UTC2-RN1	Run	29.31
UT-D	07-UTC2-RN2	Run	30.04
UT-D	05-UTC2-RF1	Riffle	32.36
UT-D	04-UTC-RF3	Riffle	34.62
UT-D	04-UTC-RN3	Run	34.76
UT-D	05-UTC2-RN2	Run	35.64
UT-E	05-UTC2-RF2	Riffle	36.70
UT-E	04-UTC-IC1	Island Complex	37.91
UT-E	08-UTC2-MS1-TR1	Run	41.66
UT-E	08-UTC2-MS1-TR2	Island Complex	41.73
UT-E	08-UTC2-MS1-TR3	Island Complex	41.76
UT-E	08-UTC2-MS1-TR4	Island Complex	41.83
UT-E	08-UTC2-MS1-TR5	Island Complex	41.88
UT-E	08-UTC2-MS1-TR6	Island Complex	41.90
UT-E	07-UTC2-RN5	Run	42.71
UT-E	07-UTC2-RN4	Run	44.63
UT-F	05-UTC3-RN3	Run	48.86
UT-F	05-UTC3-RN2	Run	52.01
UT-F	05-UTC3-PL1	Pool	56.65
UT-F	05-UTC3-RF1	Riffle	56.83
UT-F	05-UTC3-RF2	Riffle	57.25
UT-F	05-UTC3-RN1	Run	58.24

a. Transect located in Tributary UT 1.190.

RK = River Kilometer, UT = Upper Talarik Creek

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-37
Range of Flows Offering 90 Percent or More of the Maximum Habitat Area for Various Categories and Life Stages of Fish in Five Upper Talarik Creek Reaches

	Range of Flows (cfs)				
Life History Stage	**UT-B**	**UT-C**	**UT-D**	**UT-E**	**UT-F**
Spawning					
Anadromous Fishes	<80 – 115	<70 – 160	80 – 135	80 – 200	16 – 44
Non-anadromous Fishes	<80 – 130	100 – 160	65 – 105	65 – 95	17 – 23
Juvenile Rearing					
Anadromous Fishes	<80 – <80	<70 – 560	<40 – 40	90 – 510	6 – 7
Non-anadromous Fishes	<80 – <80	<70 – 590	<40 – 95	180 – 520	7 – 17
Adult Rearing					
Non-anadromous Fishes	<80 – <80	<70 – 120	<40 – 115	130 – 340	7 – 46

Notes:

< = less than

cfs = cubic feet per second

UT = Upper Talarik Creek

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

TABLE 15.1-38
Fish Species Found in the Upper Talarik Watershed, 2004-2008

Common Name	**Scientific Name**
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Sockeye salmon	*Oncorhynchus nerka*
Pink salmon	*Oncorhynchus gorbuscha*
Arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
Rainbow trout	*Oncorhynchus mykiss*
Whitefish [a]	*Coregoninae*
Sculpin [b]	*Cottus* sp.
Ninespine stickleback	*Pungitius pungitius*
Threespine stickleback	*Gasterosteus aculeatus*

Notes:

a. Identified to subfamily, may include round whitefish, humpback whitefish, and least cisco.

b. Identified to genus, may include slimy sculpin and coastrange sculpin.

Source: EBD Appendix 15.1B *Reach Analysis.*

TABLE 15.1-39
Fish Catch per Unit Effort by Channel Type in the Upper Talarik Watershed

		Number of Fish per Hour			
		Salmonid Fishes			
Location	Reach	Anadromous	Resident	Non-Salmonid Fishes	Total All Fish Species
Mainstem	UT-C	227	75	43	345
	UT-D	211	6	44	261
	UT-E	164	7	65	236
	UT-F	80	2	63	145
	UT-E	36	0	61	97
Off-channel	UT-D	143	0	4	147
	UT-E	74	0	22	96
Tributaries	UT-C	10	29	0	39
	UT-F	49	28	17	94
	UT-G	19	8	48	75

UT = Upper Talarik Creek

TABLE 15.1-40
Anadromous Salmonid Fishes Found by Reach in the Upper Talarik Watershed, 2004-2008

Species/Life Stage	UT-A	UT-B	UT-C	UT-D	UT-E	UT-F	UT-G
Chinook salmon							
Adult	X	X	X	X	X	X	
Juvenile	X	X	X	X	X	X	
Chum salmon							
Adult	X	X	X	X	X	X	
Juvenile				X			
Coho salmon							
Adult	X	X	X	X	X	X	X
Juvenile	X	X	X	X	X	X	X
Sockeye salmon							
Adult	X	X	X	X	X	X	
Juvenile	X	X	X	X	X	X	

UT = Upper Talarik Creek

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-41
Adult Salmon Statistics for the Naknek-Kvichak District, Kvichak River, and Upper Talarik Watershed

Species	Year	District Total Inshore Run [a]	District Commercial Catch [a]	Kvichak River Escapement [b]	UT Mean Index Count [c]	*N* (UT)
Chinook salmon	2004	--	1,360	--	178 (±94.5)	2
	2005	--	1,377	--	60 (±20.5)	3
	2006	--	2,333	--	49 (±25.2)	3
	2007	--	1,484	--	67 (±19.2)	9
	2008	--	1,344	--	28 (±12.4)	8
	5-Year Avg	--	1,580	--	76	--
Chum salmon	2004	--	29,972	--	--	0
	2005	--	204,777	--	--	1
	2006	--	457,855	--	13 (±2)	2
	2007	--	383,927	--	5 (±0.9)	8
	2008	--	237,260	--	17 (±5.6)	7
	5-Year Avg	--	262,758	--	12	--
Coho salmon	2004	--	2,142	--	1,143 (±689.6)	4
	2005	--	3,314	--	--	0
	2006	--	5,163	--	4,363 (±1,128.3)	3
	2007	--	2,180	--	1,773 (±589.5)	9
	2008	--	7,059	--	1,598 (±472.8)	14
	5-Year Avg	--	3,972	--	2,219	--
Sockeye salmon	2004	15,066,178	4,715,070	5,500,000	31,088 (±1,614)	2
	2005	15,984,566	6,706,386	2,320,000	10,981 (±2,698.7)	4
	2006	13,945,960	7,153,750	3,068,000	3,652 (±1,868.4)	6
	2007	17,244,437	9,022,511	2,810,000	2,362 (±845.4)	14
	2008	17,792,948	10,381,844	2,758,000	11,120 (±4,130.9)	14
	5-Year Avg	16,006,818	7,595,912	3,291,200	11,841	--

Notes:

a. Data taken from Morstad et al. (2010), Appendix A18. Total inshore run for sockeye salmon includes commercial catch and escapement.

b. Data taken from Baker et al. (2009), Appendix A5.

c. UT mean index count excludes data from UT 1.60.

N = sample size UT = Upper Talarik Creek

TABLE 15.1-42
Spawning Salmon Observations in Upper Talarik Creek Reaches during 2008 Aerial Surveys

Species	UT Reach	*N* (Number of Surveys)	Total Count	Mean	Standard Error
Chinook salmon	A	3	11	4	2.2
	B	5	26	5	2.1
	C	3	38	13	5.6
	D	5	14	3	0.9
	E	4	55	14	6.8
	F	2	5	3	1.5
Chum salmon	A	1	7	7	--
	B	3	5	2	0.7
	C	2	5	3	1.5
	D	4	25	6	2.8
	E	4	13	3	1.9
	F	2	18	9	3.0
Coho salmon	A	11	1,090	99	29.8
	B	8	438	55	21.0
	C	10	453	45	18.0
	D	14	2,632	188	61.1
	E	12	3,514	293	83.2
	F	8	1,477	185	53.8
	G	2	6	3	1.0
Sockeye salmon	A	10	103,233	10,323	3,677.8
	B	9	41,475	4,608	1,966.6
	C	6	16,937	2,823	1,504.8
	D	5	13,358	2,672	1,014.0
	E	6	2,355	393	140.8
	F	6	284	47	22.8

UT = Upper Talarik Creek

TABLE 15.1-43
Non-anadromous Salmonid Fishes Found by Reach in the Upper Talarik Watershed, 2004-2008

Species/Life Stage	UT-A	UT-B	UT-C	UT-D	UT-E	UT-F	UT-G
Arctic grayling							
Adult	X	X	X	X	X	X	
Juvenile	X	X	X	X	X	X	X
Dolly Varden							
Adult		X	X	X	X	X	X
Juvenile		X	X	X	X	X	X
Rainbow trout							
Adult	X	X	X	X		X	
Juv/Adult	X	X	X	X	X		
Juvenile	X	X	X	X	X	X	
Whitefish sp.							
Adult	X		X	X			
Juvenile				X			

UT = Upper Talarik Creek

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-44
Non-salmonid Fishes Found by Reach in the Upper Talarik Watershed, 2004-2008

Species/Life Stage	UT-A	UT-B	UT-C	UT-D	UT-E	UT-F	UT-G
Sculpin sp.							
Adult	X		X	X	X	X	X
Juvenile	X	X	X	X	X	X	X
Ninespine stickleback							
Adult				X	X		
Juvenile			X	X	X	X	
Threespine stickleback							
Adult			X	X			
Juvenile			X	X	X		
Stickleback sp.							
Adult	X		X	X			
Juv/Adult	X	X	X	X	X	X	
Juvenile	X		X	X	X	X	

UT = Upper Talarik Creek

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-45
Fish Species Found in the Upper Koktuli River Mainstem, 2004-2008

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Sockeye salmon	*Oncorhynchus nerka*
Arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
Rainbow trout	*Oncorhynchus mykiss*
Whitefish [a]	*Coregoninae*
Sculpin [b]	*Cottus* sp.
Stickleback [c]	*Gasterosteidae*

Notes:

a. Identified to subfamily, may include round whitefish, humpback whitefish, and least cisco.

b. Identified to genus, may include slimy sculpin and coastrange sculpin.

c. Identified to family: may include ninespine and threespine stickleback.

Source: EBD Appendix 15.1B *Reach Analysis*.

TABLE 15.1-46
Juvenile and Adult Fishes Found in the Upper Koktuli River Mainstem, 2004-2008

Species/Life Stage	Collected
Chinook salmon	
Adult	Yes
Juvenile	Yes
Chum salmon	
Adult	Yes
Juvenile	No
Coho salmon	
Adult	Yes
Juvenile	Yes
Sockeye salmon	
Adult	Yes
Juvenile	Yes
Arctic grayling	
Adult	Yes
Juvenile	Yes
Dolly Varden	
Adult	Yes
Juvenile	Yes
rainbow trout	
Adult	Yes
Juvenile	Yes
Whitefish sp.	
Adult	Yes
Juvenile	No
Sculpin sp.	
Adult	Yes
Juvenile	Yes
Threespine stickleback	
Adult	No
Juvenile	Yes
Stickleback sp.	
Adult	Yes
Juvenile	Yes

Source: EBD Appendix 15.1B *Reach Analysis*.

FIGURES

156°20'0"W
156°0'0"W
155°40'0"W
155°20'0"W
155°0'0"W
60°0'0"N
59°50'0"N
59°40'0"N

Swan River
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Big Wiggly Lake
Groundhog Mountain
Nondalton
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
Talarik Creek
Sharp Mountain
Upper Talarik Creek
Chiquita Lake
Kaskanak Creek
First Creek
Lake #2
Newhalen River
Iliamna
Newhalen
Iliamna Lake

Legend

- Watershed Boundary
- General Deposit Location

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Figure 15.1-1
Fish-Mine Study Area

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

156°20'0"W
156°0'0"W
155°40'0"W
155°20'0"W
155°0'0"W
60°0'0"N
59°50'0"N
59°40'0"N

Swan River
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
Talarik Creek
First Creek
Kaskanak Creek
Newhalen River
Iliamna Lake
Big Wiggly Lake
Frying Pan Lake
Chiquita Lake
Lake #2
Groundhog Mountain
Kaskanak Mountain
Koktuli Mountain
Sharp Mountain
Nondalton
Iliamna
Newhalen
NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E
UT-A
UT-B
UT-C
UT-D
UT-E
UT-F
UT-G

Legend

UT-A Mainstem Reach Example
Watershed Boundary
General Deposit Location

N
W E
S

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Figure 15.1-2
Fish-Mine Study Area Reaches

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers
0 1 2

Miles
0 1 2

April 2011

Author: R2 - JJZ

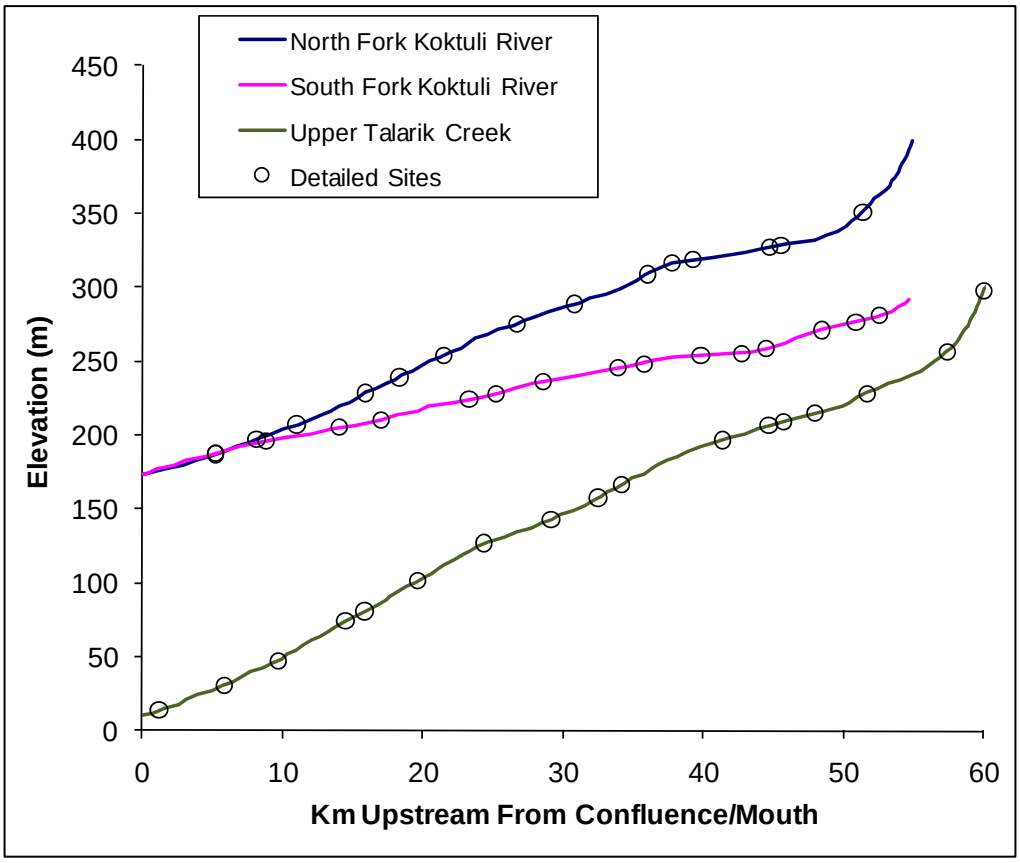


FIGURE 15.1-3
Comparison of Longitudinal Elevation Profiles of the Three Study Rivers

Notes:

Circles represent the locations of fluvial geomorphology study sites.

m = meters.

km = kilometers.

Source: EBD Appendix 15.1F *Fluvial Geomorphology Studies*.

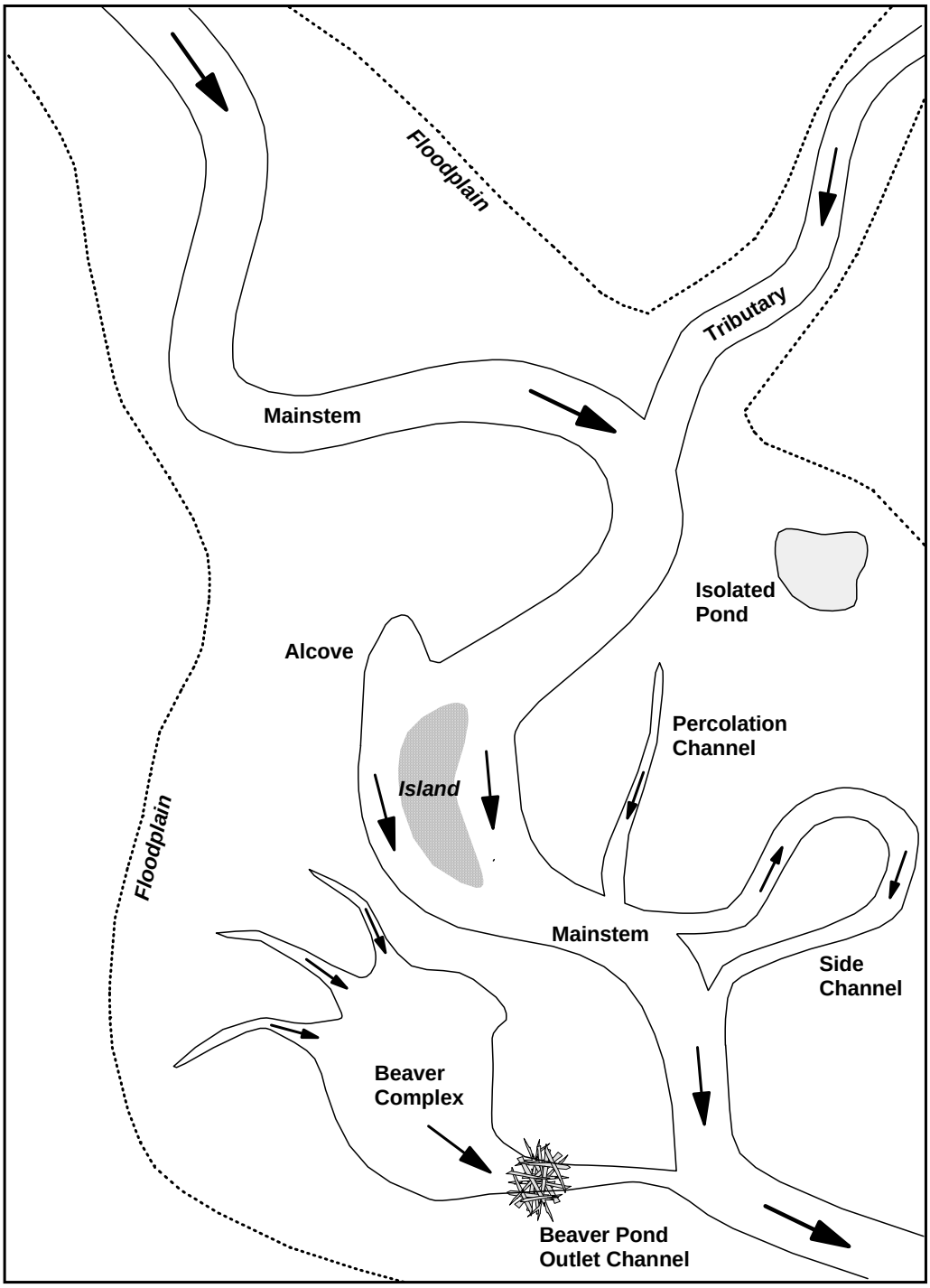


FIGURE 15.1-4
An Active River Valley with Off-Channel Habitat Types

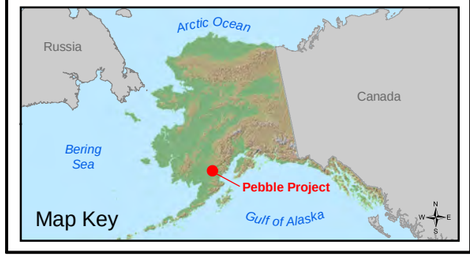
Notes:

Beaver ponds are also referred to as beaver complexes.

Source: EBD Appendix 15.1D *Off-channel Habitat*.

165°0'0"W
160°0'0"W
155°0'0"W
150°0'0"W
60°0'0"N
58°0'0"N

Bethel
Kuskokwim Bay
Iliamna
Williamsport
Iliamna Lake
Cook Inlet
Anchor Point
KENAI PENINSULA
Togiak
Dillingham
Cape Newenham
Naknek
Naknek Lake
Becharof Lake
Bristol Bay
Shelikof Strait
Kodiak
KODIAK ISLAND
Gulf of Alaska



Legend

- General Deposit Location
- North Fork Koktuli River, South Fork Koktuli River, Koktuli River, and Upper Talarik Creek Watershed Boundaries

N.E. Bristol Bay Drainages

- Alagnak
- Egegik
- Kvichak
- Naknek
- Nushagak
- Togiak/Osviak/Negukthlik/Kulukak
- Ugashik
- Wood/Snake Igushik

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Figure 15.1-5
Bristol Bay Regional Drainages

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 20 40
Miles 0 20 40

April 2011
Author: R2 - JJZ

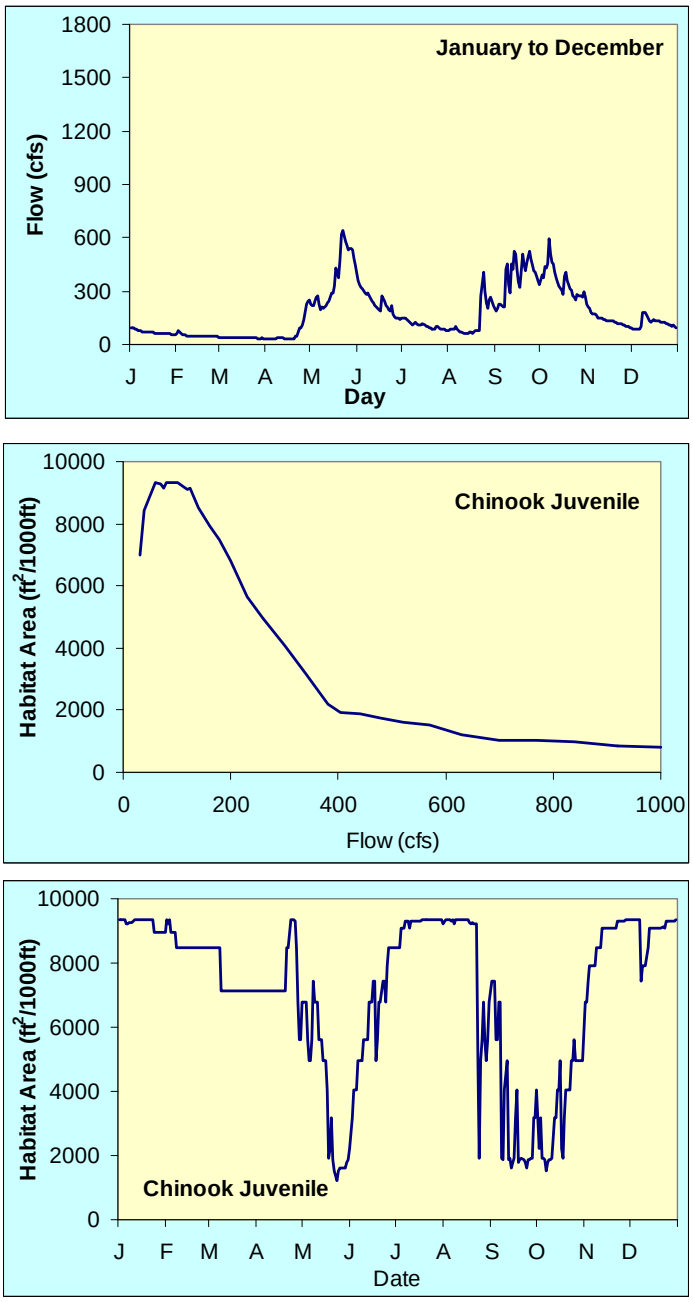


Figure 15.1-6

Example of Process Used in Developing Transect-specific Habitat Time Series for Juvenile Chinook Salmon Based on a Transect in the South Fork Koktuli Watershed

Notes:

Top figure depicts median daily flows as monitored at gage SK100B. The flows are linked with the habitat versus flow relationship for juvenile Chinook salmon Juvenile (middle figure) to produce habitat–time series (bottom figure).

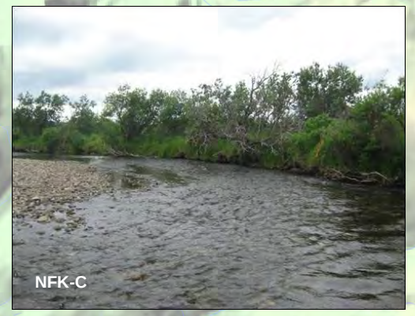
cfs = cubic feet per second

ft = feet

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

60°0'0"N 59°55'0"N 59°50'0"N



Black Lake

"Cone (Black) Mountain"

Groundhog Mountain

Kaskanak Mountain

Frying Pan Lake

Big Wiggly Lake (NFK 1.240.P1)

NFK 1.120 NFK 1.170 NFK 1.180 NFK 1.190 NFK 1.240 NFK 1.260 NFK 1.270 NFK 1.300 NFK 1.40

NFK-A NFK-B NFK-C NFK-D NFK-E NFK-F

Koktuli River North Fork Koktuli River South Fork Koktuli River Koktuli River Koktuli Mountain Upper Talarik Creek

Legend

NFK-A Mainstem Reach Example

NFK 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

N W E S

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Figure 15.1-7
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

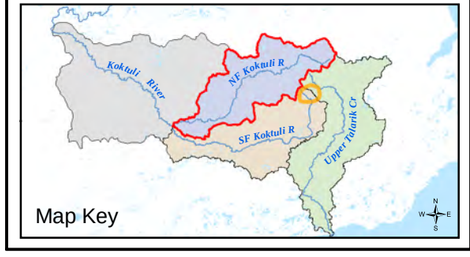
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N

Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Big Wiggly Lake
(NFK 1.240.P1)
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek

NFK 1.120
NFK 1.170
NFK 1.180
NFK 1.260
NFK 1.270
NFK 1.300
NFK 1.240
NFK 1.190.10
NFK 1.190
NFK 1.40

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Koktuli River



Legend

- Sampling Site Locations
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

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Figure 15.1-8
Location of all Fish Sampling Sites
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

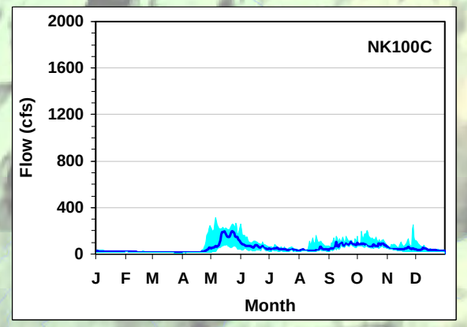
Kilometers 0 1 2
Miles 0 1 2

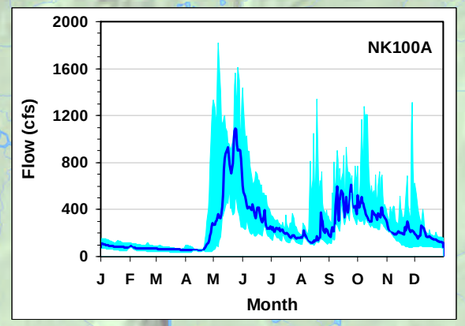
April 2011

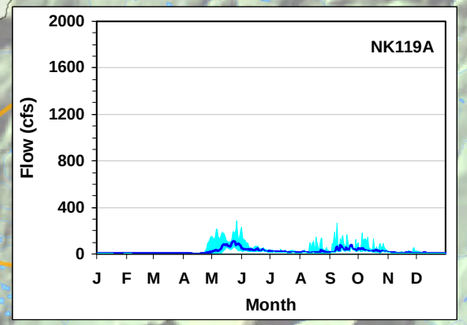
Author: R2 - JJZ

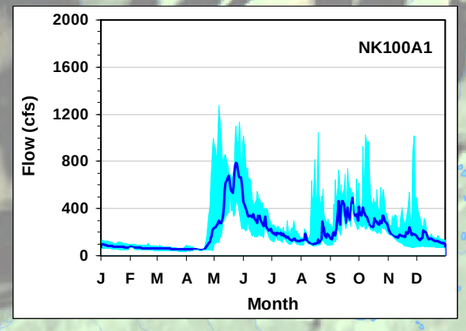
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

60°0'0"N 59°55'0"N 59°50'0"N









Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
NFK 1.120
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300
NFK 1.40
NFK-D
NFK-E
NFK-F
NFK-C
NFK-B
NFK-A
NK100C
NK119A
NK100A
NK100A1
Big Wiggly Lake
(NFK 1.240.P1)
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Koktuli River
North Fork Koktuli River
South Fork Koktuli River

Legend

- Daily Range*
- Daily Median*
- Hydrology Gage Site and Name (NK100A)
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Derived from four water years of measurements/synthesis, 2005-2008.

THE pebble PARTNERSHIP

Figure 15.1-9
Median and Range of Daily Flows
at Selected Hydrology Gage Sites
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

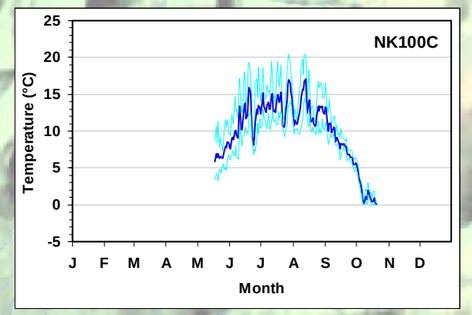
Kilometers 0 1 2
Miles 0 1 2

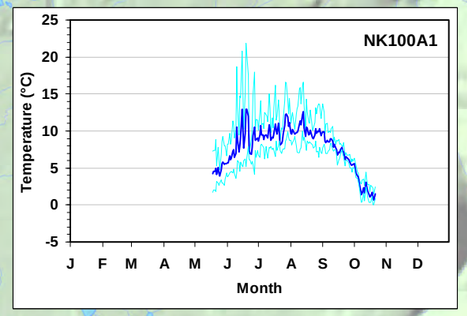
April 2011

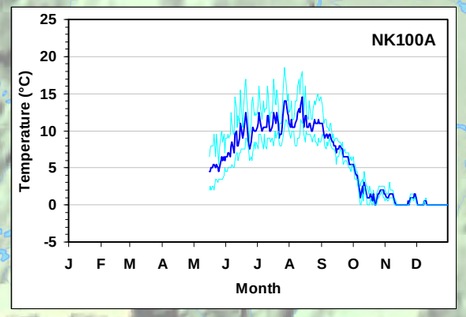
Author: R2 - JJZ

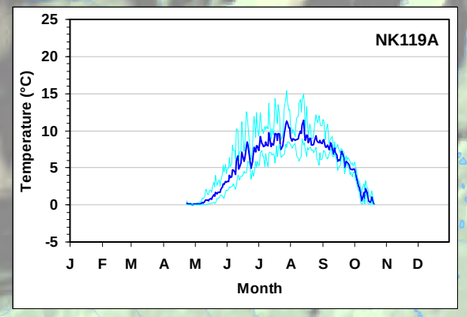
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

60°0'0"N 59°55'0"N 59°50'0"N









Black Lake

"Cone (Black) Mountain"

Groundhog Mountain

NFK 1.120 NFK 1.170 NFK 1.180 NFK 1.260 NFK 1.270 NFK 1.300 NFK 1.240 NFK 1.40 NFK 1.190

NFK-A NFK-B NFK-C NFK-D NFK-E NFK-F

NK100C NK119A NK100A NK100A1

Big Wiggly Lake (NFK 1.240.P1)

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Koktuli R

Kaskanak Mountain

Frying Pan Lake

Koktuli Mountain

Upper Talarik Creek

Legend

- Daily Range*
- Daily Mean*
- Temperature Monitoring Site and Name (NK100A)
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Derived from 2007 measurements.

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Figure 15.1-10
Maximum and Minimum Instantaneous Daily Water Temperatures at Selected Monitoring Sites
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

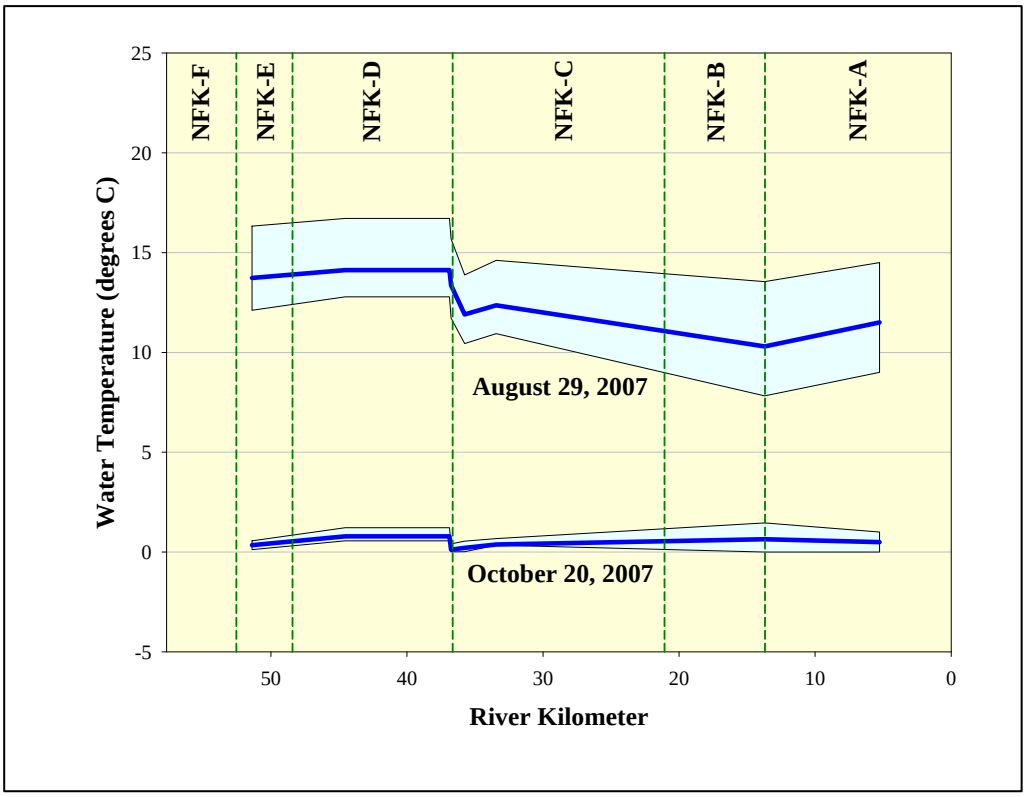
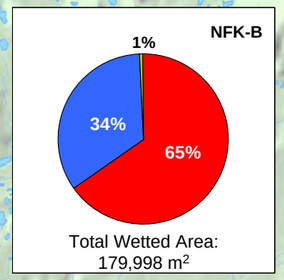


FIGURE 15.1-11
Longitudinal Trends of Maximum Instantaneous, Daily Mean, and Minimum Instantaneous Water Temperatures in the North Fork Koktuli Watershed, 2007

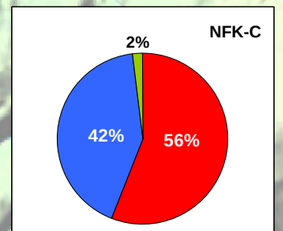
C = Celsius
NFK = North Fork Koktuli River
Example of river reach label = NFK-F
Dashed line indicates ends of river reaches.
Source: EBD Appendix 15.1E *Open River Water Temperature Model.*

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

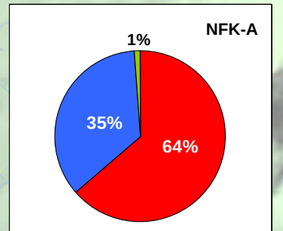
60°0'0"N 59°55'0"N 59°50'0"N



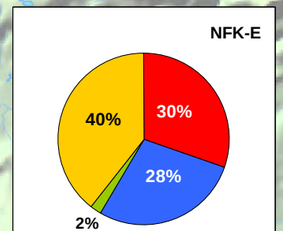
Total Wetted Area:
179,998 m^2



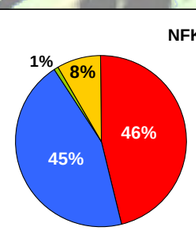
Total Wetted Area:
226,163 m^2



Total Wetted Area:
297,840 m^2



Total Wetted Area:
25,123 m^2



Total Wetted Area:
143,745 m^2

Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Big Wiggly Lake
(NFK 1.240.P1)
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kokhuli River

NFK 1.120
NFK 1.140
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

Legend

- Pool
- Run/Glide
- Riffle
- Beaver Pond

NFK-A Mainstem Reach Example
NFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-12
Frequency of Mesohabitat Types
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

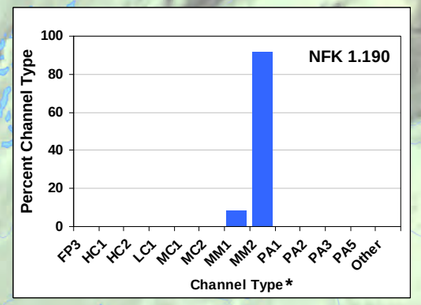
Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

60°0'0"N 59°55'0"N 59°50'0"N



Black Lake

"Cone (Black) Mountain"

Groundhog Mountain

NFK 1.120 NFK 1.140 NFK 1.170 NFK 1.180 NFK 1.190 NFK 1.240 NFK 1.260 NFK 1.270 NFK 1.300

NFK-A NFK-B NFK-C NFK-D NFK-E NFK-F

Big Wiggly Lake (NFK 1.240.P1)

Koktuli River

North Fork Koktuli River

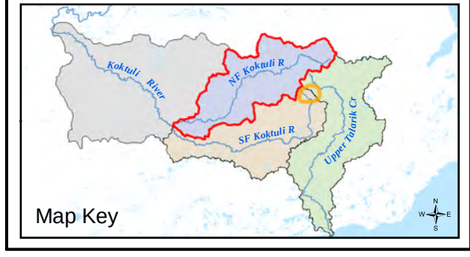
South Fork Koktuli River

Kaskanak Mountain

Frying Pan Lake

Koktuli Mountain

Upper Talarik Creek



Legend

HC1 USFS Channel Type*

NFK-A Mainstem Reach Example

NFK 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

* USFS Channel Type codes (Paustian et al. 1992) are provided in Table 15.1-5.

THE pebble PARTNERSHIP

Figure 15.1-13
Frequency of USFS Channel Types
Tributary North Fork Koktuli (NFK) 1.190

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

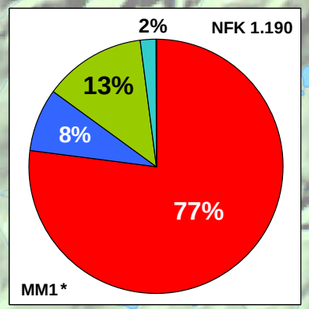
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N

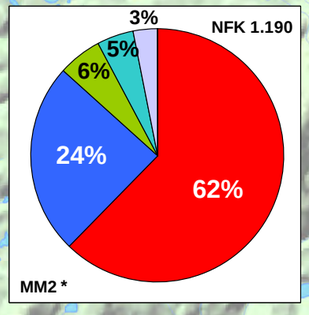
Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Big Wiggly Lake
(NFK 1.240.P1)
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek

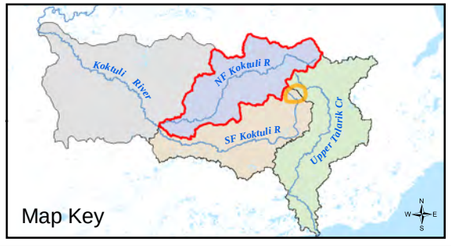
NFK 1.120
NFK 1.170
NFK 1.180
NFK 1.260
NFK 1.270
NFK 1.300
NFK 1.240
NFK 1.40
NFK 1.190

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

Koktuli River
North Fork Koktuli River
South Fork Koktuli River







Legend

- Pool
- Run/Glide
- Riffle
- Cascade
- Backwater/Slough

NFK-A Mainstem Reach Example
NFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

* USFS Channel Type codes are provided in Table 15.1-5.

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Figure 15.1-14
Frequency of Tier 3 Habitat Types
North Fork Koktuli (NFK) Tributary 1.190

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

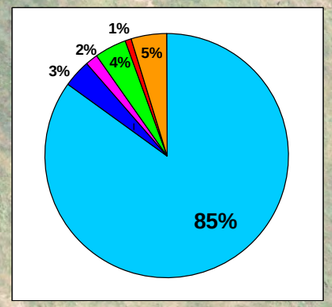
Author: R2 - JJZ

155°32'0"W

155°31'0"W

155°30'0"W

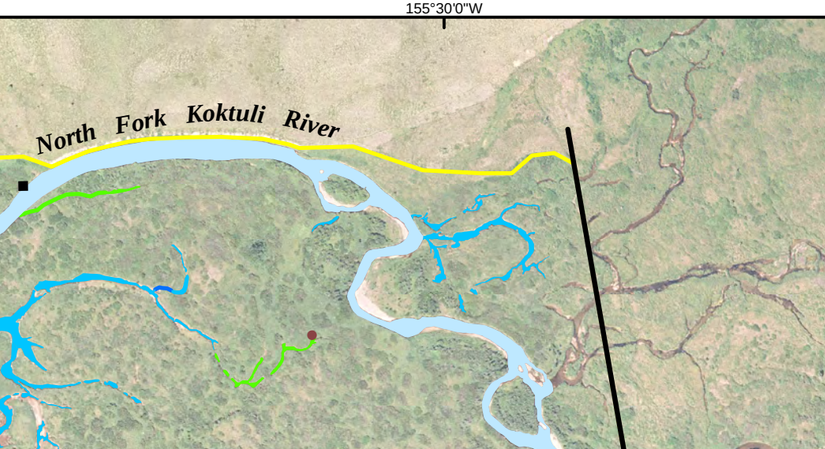
59°55'30"N



Frequency of Off-Channel Habitat Types

North Fork Koktuli River

NFK-C



Legend

- Beaver Pond
- Beaver Pond Outlet Channel
- Alcove
- Isolated Pond
- Side Channel
- Percolation Channel
- Study Area Extents
- Inlets
- Fish Sampling Sites
- Mainstem
- Active Valley Bottom
- NFK-C Mainstem Reach Example

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Figure 15.1-15
Distribution and Frequency of
Off-Channel Habitat Types in the
North Fork Koktuli River (NFK) Intensive Study Area

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Meters 0 50 100

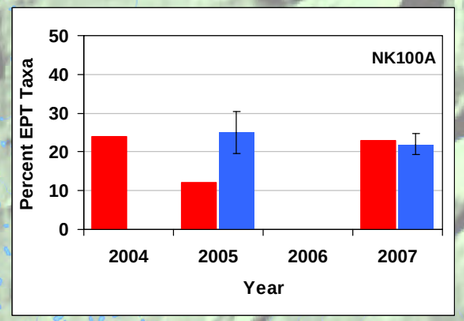
Feet 0 200 400

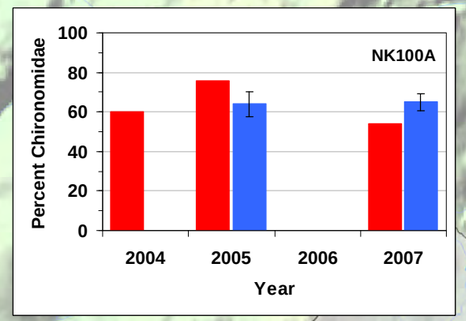
April 2011

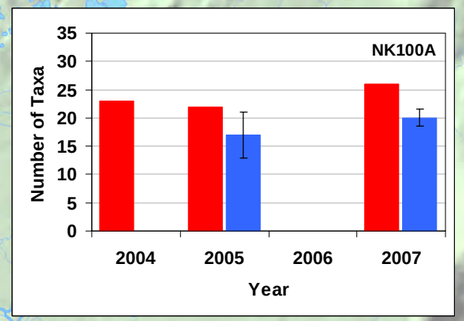
Author: R2 - JJZ

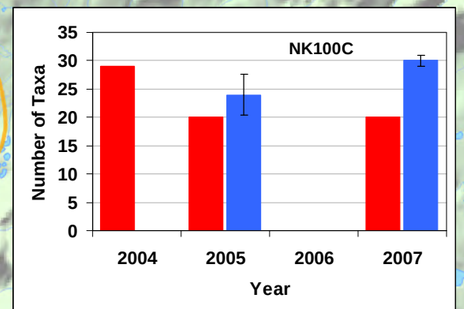
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

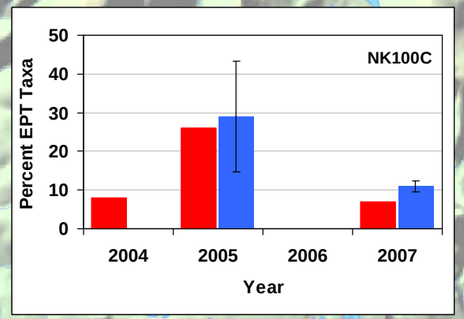
60°0'0"N 59°55'0"N 59°50'0"N

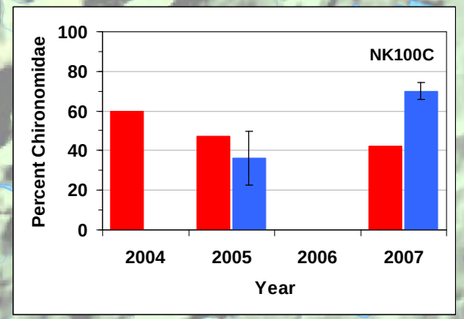












Black Lake

"Cone (Black) Mountain"

Groundhog Mountain

Kaskanak Mountain

Big Wiggly Lake
(NFK 1.240.P1)

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

NK100A
NK100C

NFK 1.40
NFK 1.120
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300

Koktuli River
North Fork Koktuli River
South Fork Koktuli River

Legend

- ASCI
- Surber
- Sampling Site and Name (NK100A)
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

N W E S

THE pebble PARTNERSHIP

Figure 15.1-16
Selected Parameters of Early Summer Macroinvertebrate Data
North Fork Koktuli River (NFK) Watershed

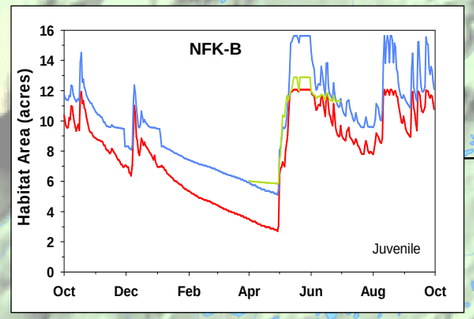
Alaska State Plane Zone 5
1983 North American Datum
Units Feet

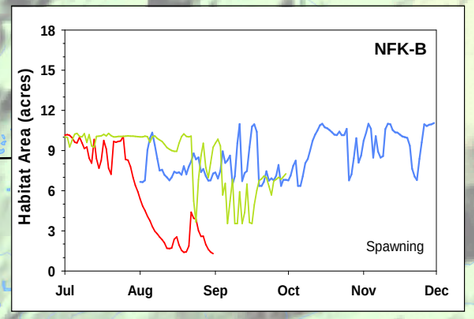
Kilometers 0 1 2
Miles 0 1 2

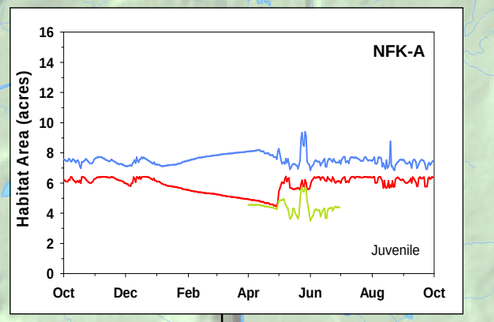
April 2011

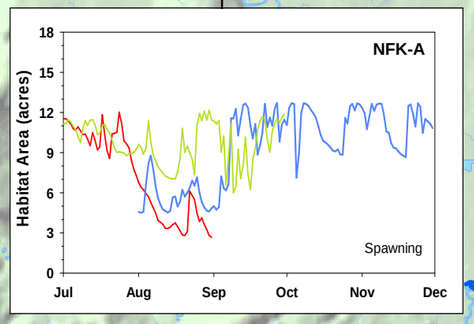
Author: R2 - JJZ

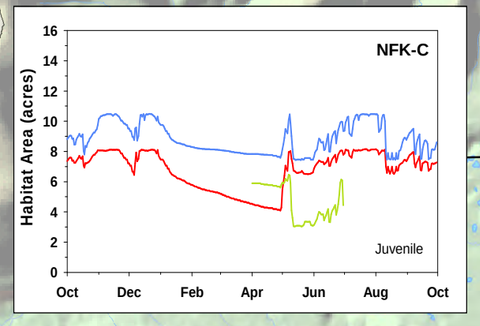
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N

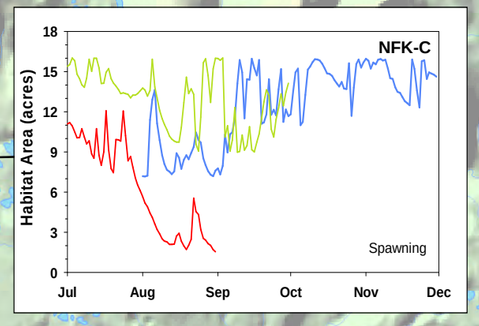




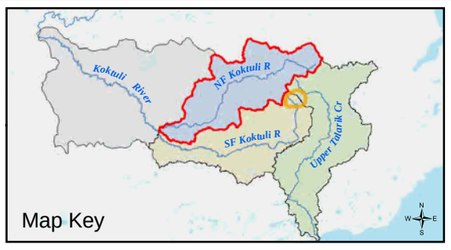








Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Big Wiggly Lake
(NFK 1.240.P1)
Frying Pan Lake
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F
NFK 1.40
NFK 1.120
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300



Legend

- Chinook Salmon
- Coho Salmon
- Sockeye Salmon
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-17
Habitat Area Time Series
North Fork Koktuli River (NFK) Watershed

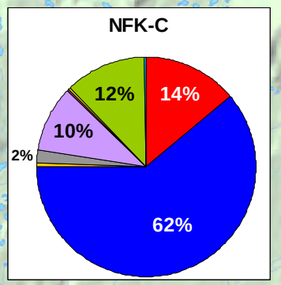
Alaska State Plane Zone 5
1983 North American Datum
Units Feet

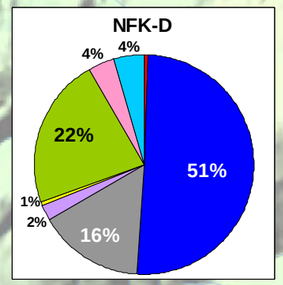
Kilometers 0 1 2
Miles 0 1 2

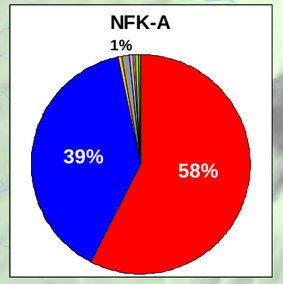
April 2011

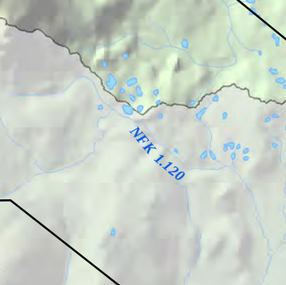
Author: R2 - JJZ

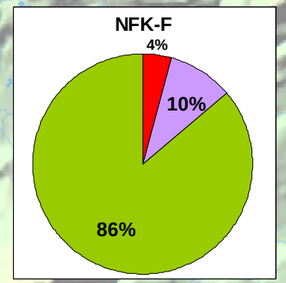
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N











Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
NFK 1.120
NFK 1.140
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300
NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F
Big Wiggly Lake
(NFK 1.240.P1)
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek

Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

Note: Pie slices of less than 1 percent are not depicted accurately by the graphing software.

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Figure 15.1-18
Fish Species Composition
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

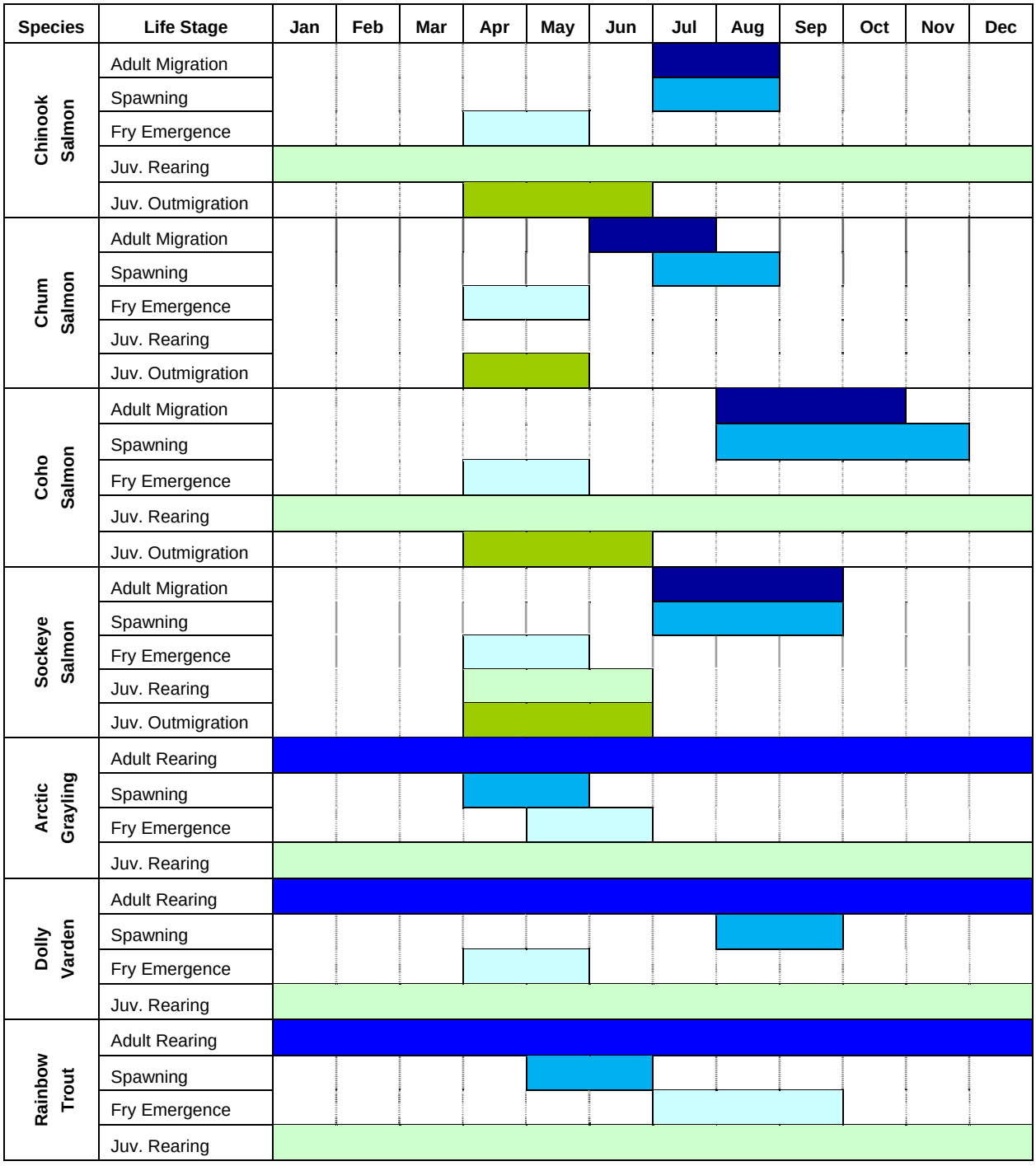


FIGURE 15.1-19
Life-history Stage Periodicity for Select Target Species in the Mine Study Area Based on a General Understanding of Local Populations

Source: EBD Appendix 15.1C *Instream Flow: Main Channel Habitat Study*.

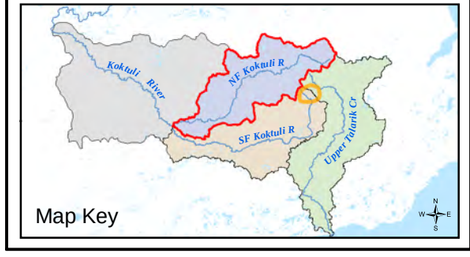
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N

Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Big Wiggly Lake
(NFK 1.240.P1)
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

NFK 1.40
NFK 1.120
1.170.40
NFK 1.170
NFK 1.180
NFK 1.220
NFK 1.260
NFK 1.270
NFK 1.300
NFK 1.240
1.190.10
1.190.30
NFK 1.190
1.190.40

Koktuli River
North Fork Koktuli River
South Fork Koktuli River



Legend

Anadromous Fish Distribution*

- R2 Anadromous Water Catalog Nominations (2004-2008 Data)
- ADF&G Anadromous Water Catalog Stream (2009)
- Sites With No Anadromous Fish Present (2004-2008 Data)

NFK-A Mainstem Reach Example
NFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

* Species include Chinook, chum, coho, and sockeye salmon.

THE pebble PARTNERSHIP

Figure 15.1-20
Known Distribution of Anadromous Fishes
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

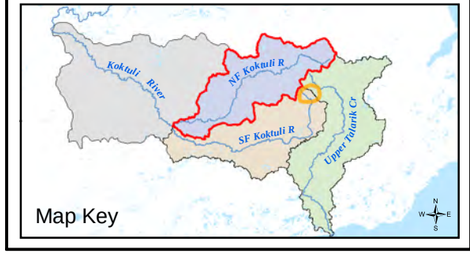
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N

Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Frying Pan Lake
Big Wiggly Lake
(NFK 1.240.P1)
Koktuli Mountain
Upper Talarik Creek

NFK 1.120
NFK 1.140
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

Koktuli River
North Fork Koktuli River
South Fork Koktuli River



Legend

- Anadromous Fish Spawning Locations*
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Species include Chinook, chum, coho, and sockeye salmon. Individual species maps are provided in Appendix 15.1B.

THE pebble PARTNERSHIP

Figure 15.1-21
Anadromous Fish Spawning Locations
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

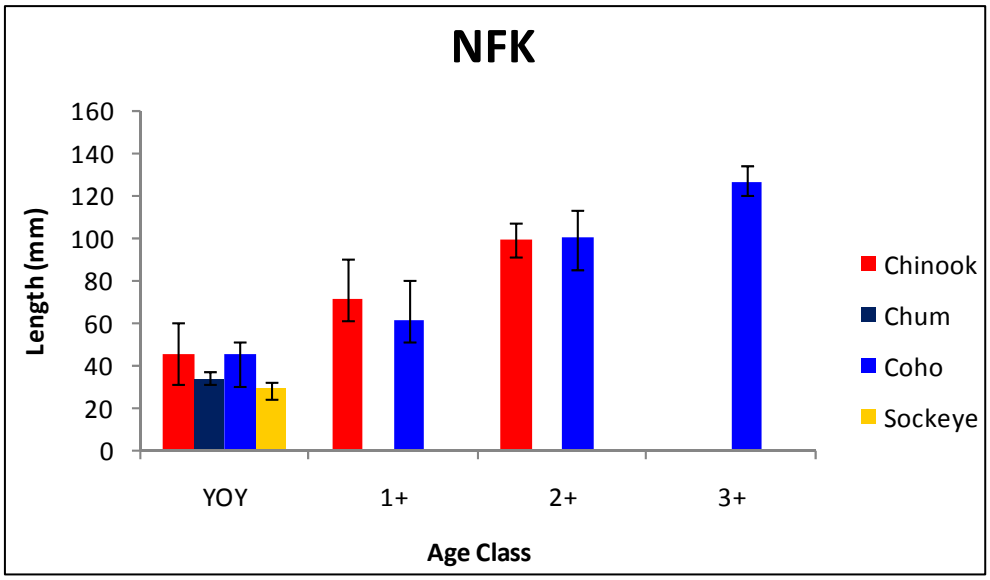
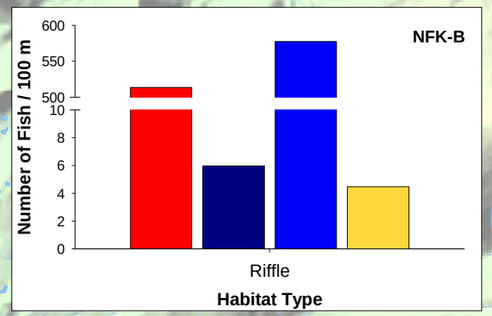
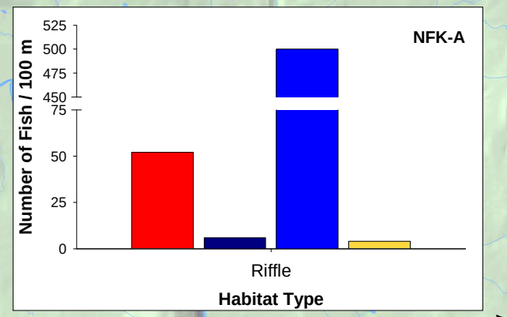


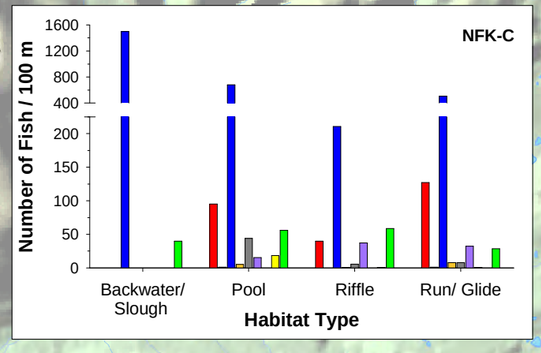
FIGURE 15.1-22
Mean Fork Length of Anadromous Salmonids by Age Class and Species in the North Fork Koktuli Watershed

Notes:
Based on fish measurements from the North Fork Koktuli Watershed.
Error bars indicate minimum and maximum measured lengths.
mm = millimeter
NFK = North Fork Koktuli River
YOY = young of the year
Source: R. Bailey (2009).

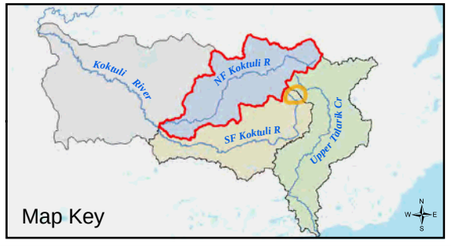
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N







Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Frying Pan Lake
Big Wiggly Lake
(NFK 1.240.P1)
Upper Talarik Creek
Mountain
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F
NFK 1.120
NFK 1.140
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300



Legend

Chinook Salmon	Arctic Grayling	Sculpin	NFK-A	Mainstem Reach Example
Chum Salmon	Dolly Varden	Stickleback	NFK 1.190	Tributary Name Example
Coho Salmon	Rainbow Trout	Northern Pike		Watershed Boundary
Sockeye Salmon	Whitefish	Other Species		General Deposit Location

Note: These data were collected using on-the-ground survey methods (e.g. electrofishing and snorkeling). Thus, more than 99 percent of the Chinook, chum, coho, and sockeye salmon data represent juvenile fishes.

THE pebble PARTNERSHIP

Figure 15.1-23
Fish Relative Abundance
North Fork Koktuli River (NFK) Watershed

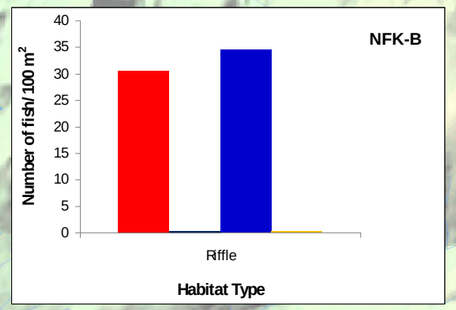
Alaska State Plane Zone 5
1983 North American Datum
Units Feet

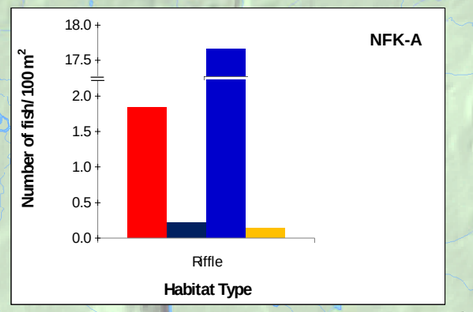
Kilometers 0 1 2
Miles 0 1 2

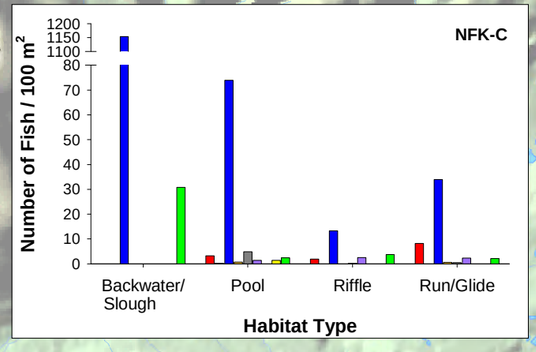
April 2011

Author: R2 - JJZ

155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N



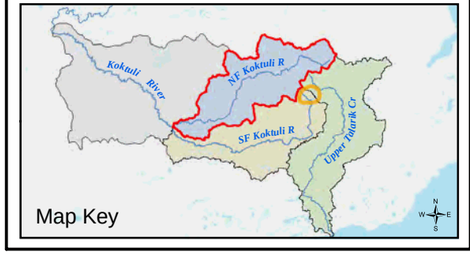




Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Frying Pan Lake
Big Wiggly Lake
(NFK 1.240.P1)
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Koktuli Mountain
Upper Talarik Creek

NFK 1.120
NFK 1.140
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F



Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species

NFK-A Mainstem Reach Example
NFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

Note: These data were collected using on-the-ground survey methods (e.g. electrofishing and snorkeling). Thus, more than 99 percent of the Chinook, chum, coho, and sockeye salmon data represent juvenile fishes.

THE pebble PARTNERSHIP

Figure 15.1-24
Fish/Habitat Association
North Fork Koktuli River (NFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

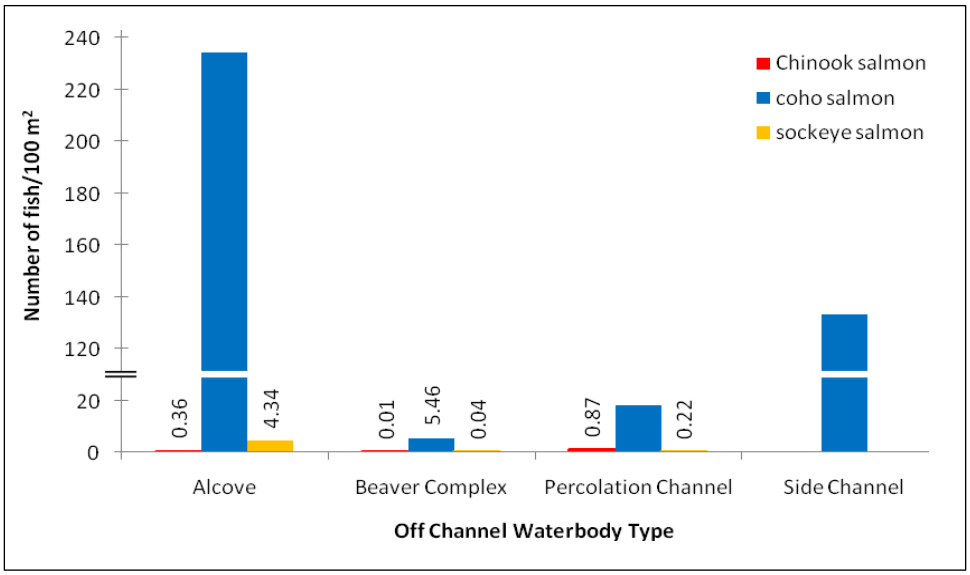


FIGURE 15.1-25
Fish Densities of Anadromous Salmonids among Off-Channel Habitat Types in the North Fork Koktuli Watershed

m^2 = square meters
Source: EBD Appendix 15.1D *Off-channel Habitat*.

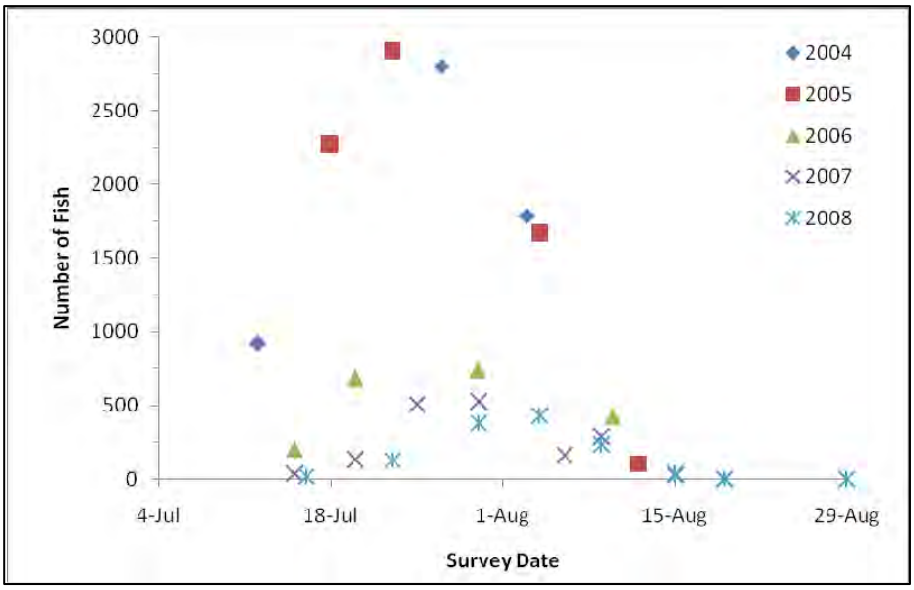


FIGURE 15.1-26
Index Counts of Adult Chinook Salmon from Aerial Surveys in the North Fork Koktuli Watershed

Note: Data presented includes only those used in the mean index count analysis.

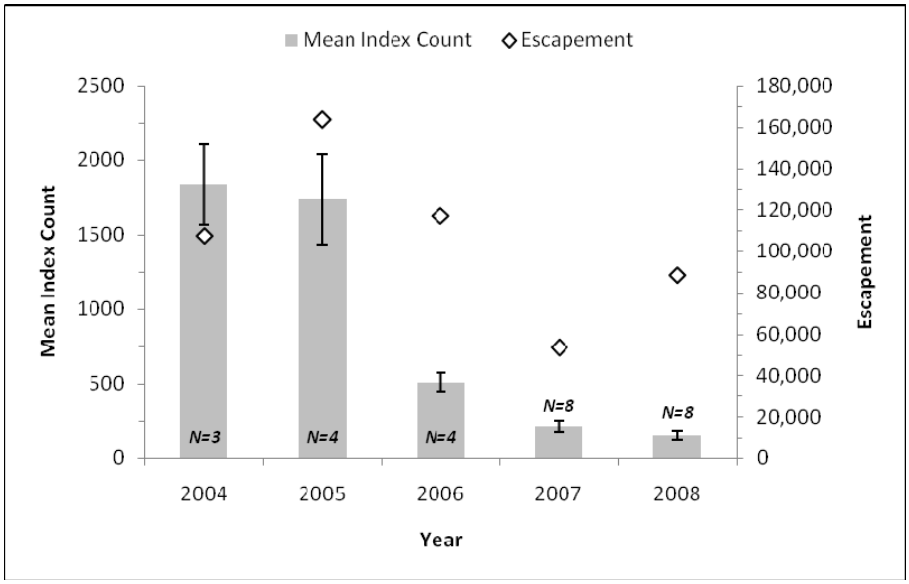


FIGURE 15.1-27
Chinook Salmon Annual Mean Index Counts (±1 Standard Error) in the North Fork Koktuli Watershed and Nushagak River Spawning Escapement

Note: *N* is the number of surveys included in the index analysis.

Source: Escapement estimates were taken from Baker et al. (2009), Appendix B1.

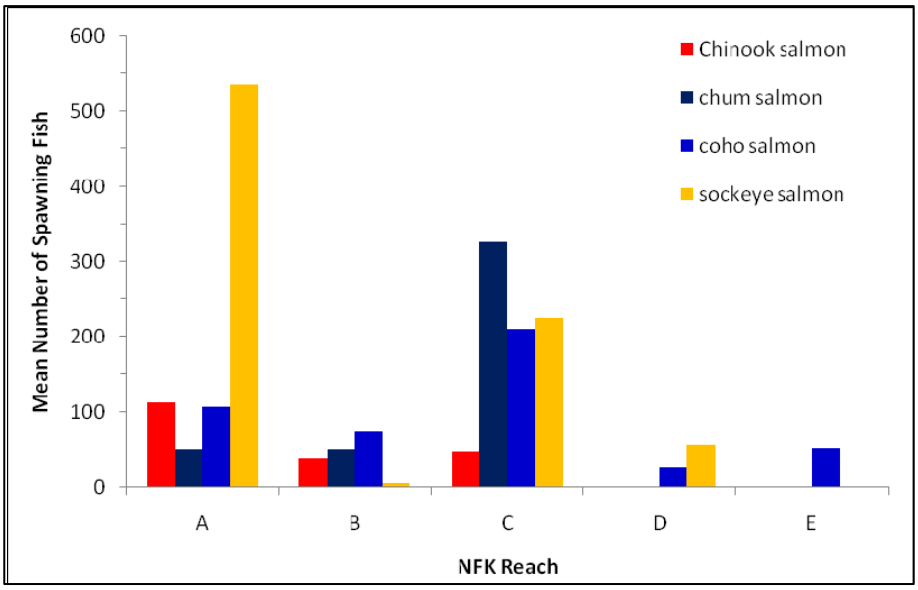


FIGURE 15.1-28
Mean Counts of Spawning Salmon by North Fork Koktuli Reach from All Aerial Surveys Flown in 2008

NFK = North Fork Koktuli River

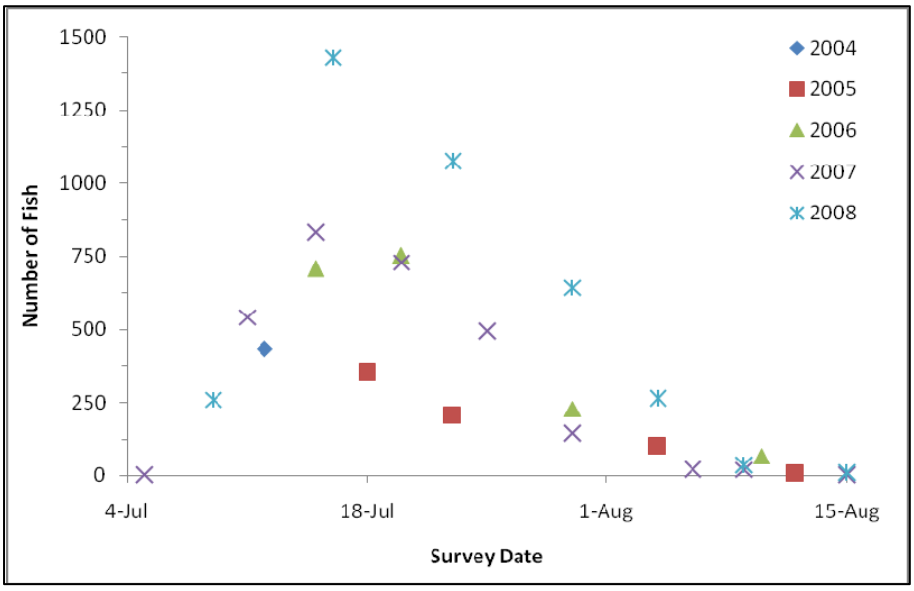


FIGURE 15.1-29
Index Counts of Adult Chum Salmon from Aerial Surveys in the North Fork Koktuli Watershed

Note: Data presented includes only those used in the mean index count analysis.

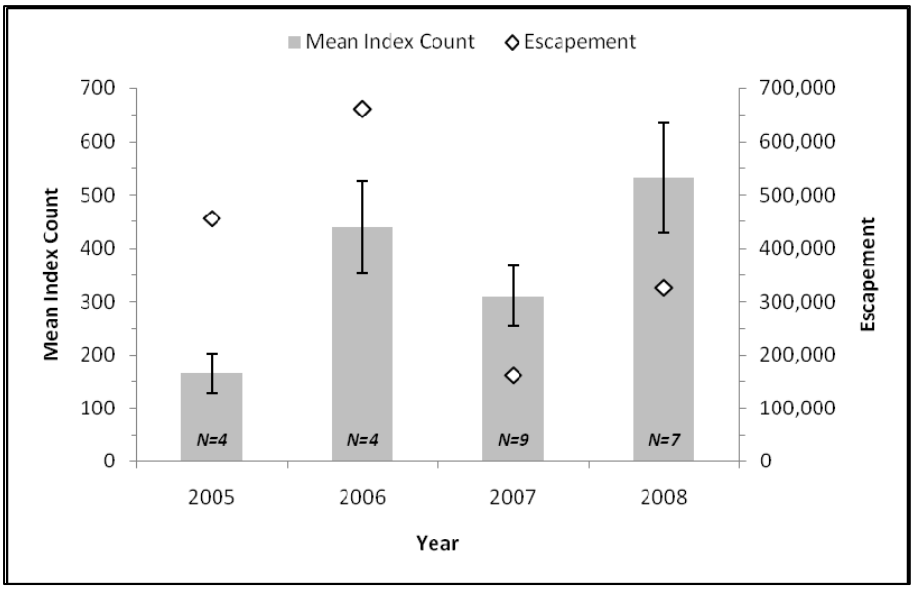


FIGURE 15.1-30
Chum Salmon Annual Mean Index Counts (±1 Standard Error) in the North Fork Koktuli Watershed and Nushagak River Spawning Escapement

Note: *N* is the number of surveys included in the index analysis.

Source: Escapement estimates were taken from Baker et al. (2009), Appendix C1.

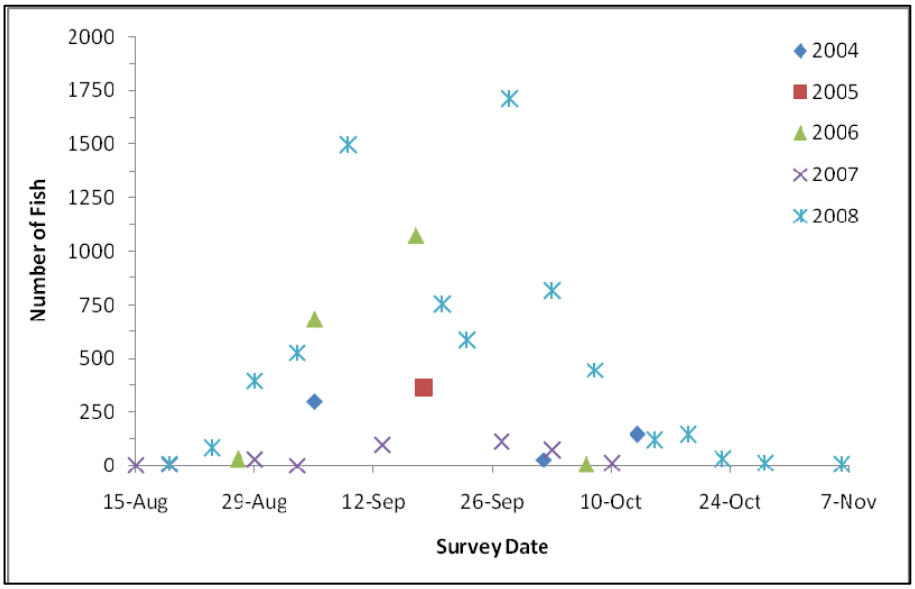


FIGURE 15.1-31
Index Counts of Adult Coho Salmon from Aerial Surveys in the North Fork Koktuli Watershed

Note: Data presented includes only those used in the mean index count analysis.

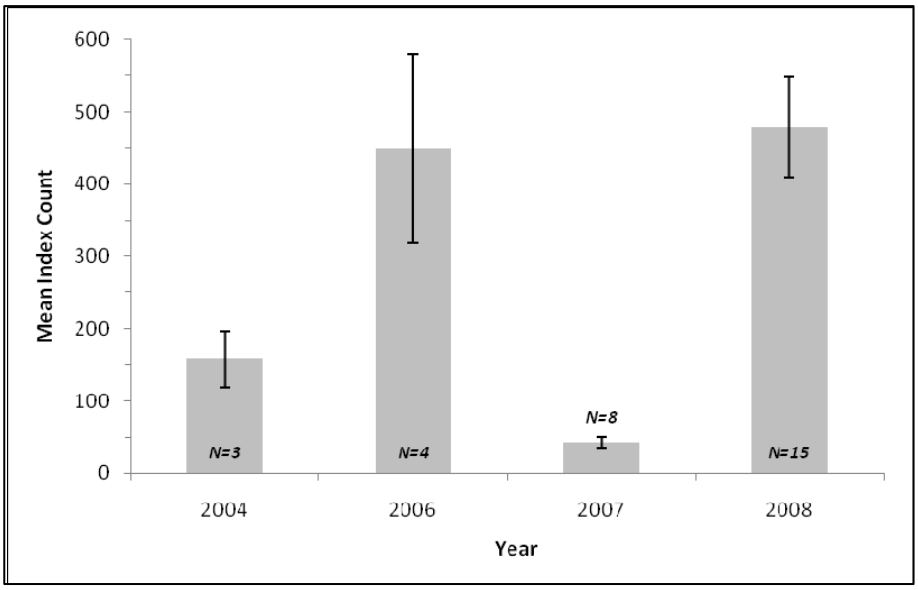


FIGURE 15.1-32
Coho Salmon Annual Mean Index Counts (±1 Standard Error) in the North Fork Koktuli Watershed
Note: *N* is the number of surveys included in the index analysis.

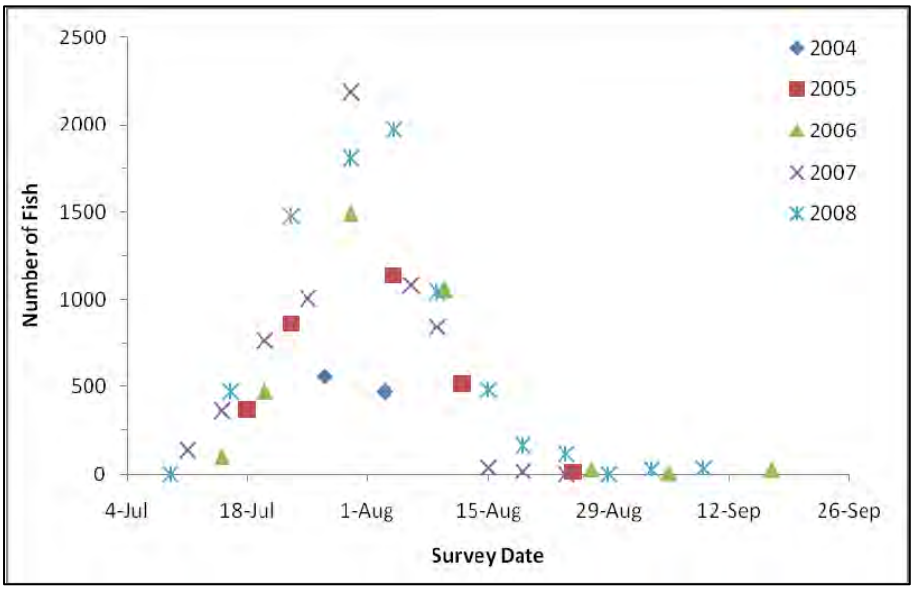


FIGURE 15.1-33
Index Counts of Adult Sockeye Salmon from Aerial Surveys in the North Fork Koktuli Watershed
Note: Data presented includes only those used in the mean index count analysis.

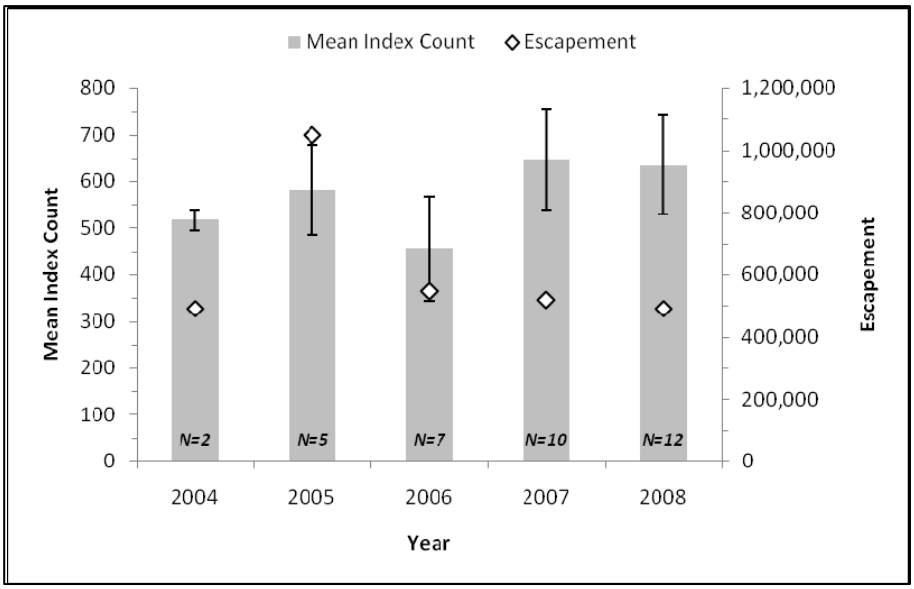


FIGURE 15.1-34
Sockeye Salmon Annual Mean Index Counts (±1 Standard Error) in the North Fork Koktuli Watershed and Nushagak River Spawning Escapement

Note: *N* is the number of surveys included in the index analysis.

Source: Escapement estimates were taken from Baker et al. (2009), Appendix A6.

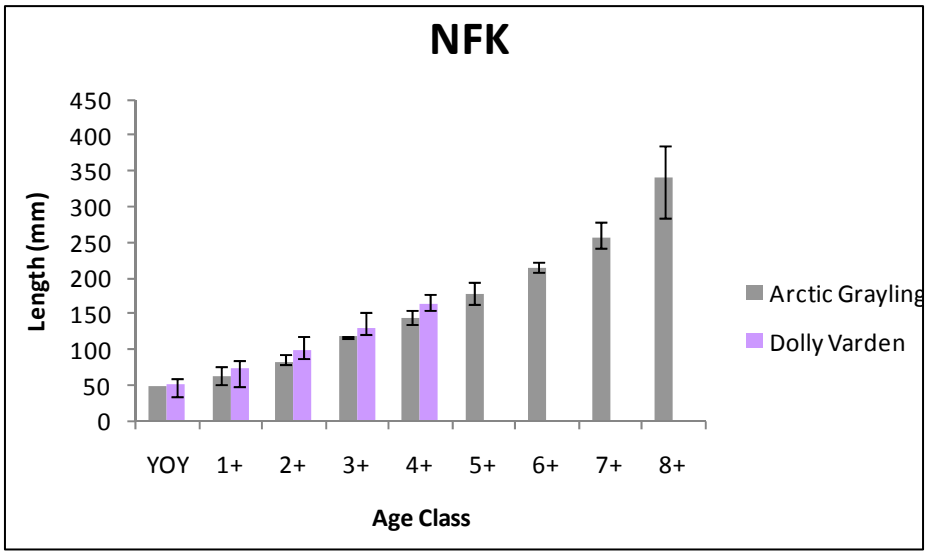


FIGURE 15.1-35
Mean Fork Length of Non-anadromous Salmonids by Age Class and Species in the North Fork Koktuli Watershed

Notes:

Based on fish measurements from the North Fork Koktuli Watershed.

Error bars indicate minimum and maximum measured lengths.

mm = millimeter

NFK = North Fork Koktuli River

YOY = young of the year

Source: R. Bailey (2009).

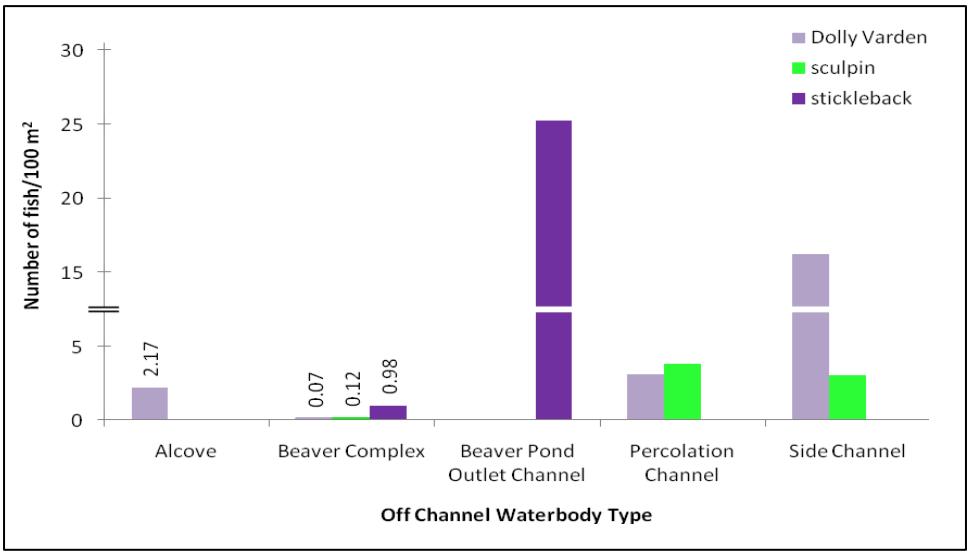


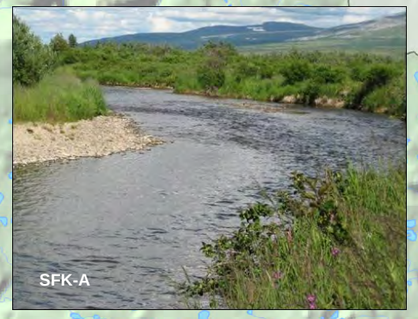
FIGURE 15.1-36
Fish Densities of Resident Species among Off-Channel Habitat Types in the North Fork Koktuli Watershed

m^2 = square meters

Source: EBD Appendix 15.1D *Off-channel Habitat*.

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N 59°50'0"N 59°45'0"N



Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Sharp Mountain
Chiquita Lake
Kaskanak Creek
SFK 1.340
SFK 1.240
SFK 1.310
SFK 1.190
SFK 1.20
SFK 1.130
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E

Legend

SFK-A Mainstem Reach Example
SFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

N W E S

THE pebble PARTNERSHIP

Figure 15.1-37
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

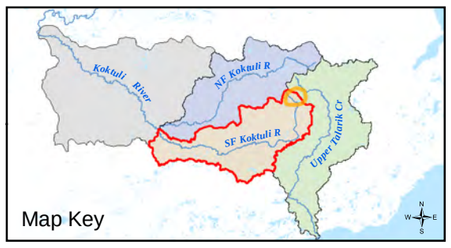
April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N 59°50'0"N 59°45'0"N

Koktuli River
North Fork Koktuli River
Kaskanak Mountain
SFK 1.340
SFK 1.240
SFK-E
Frying Pan Lake
SFK 1.310
Koktuli Mountain
SFK 1.190
SFK-D
Upper Talarik Creek
Koktuli River
SFK-C
SFK-A
SFK 1.20
South Fork Koktuli River
SFK-B
Sharp Mountain
SFK 1.130
Chiquita Lake
Kaskanak Creek



Map Key

Legend

- Sampling Site Locations
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

N W E S

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Figure 15.1-38
Location of all Fish Sampling Sites
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

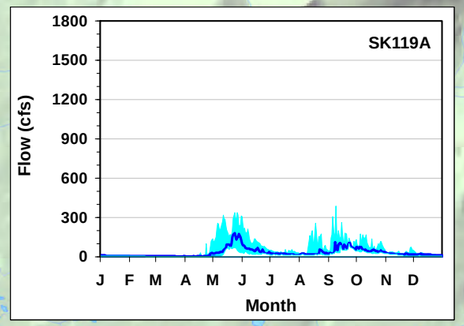
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
59°55'0"N
59°50'0"N
59°45'0"N

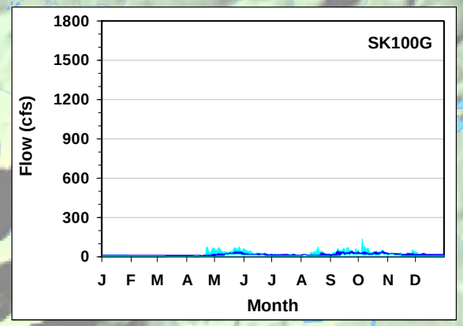
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Sharp Mountain
Chiquita Lake

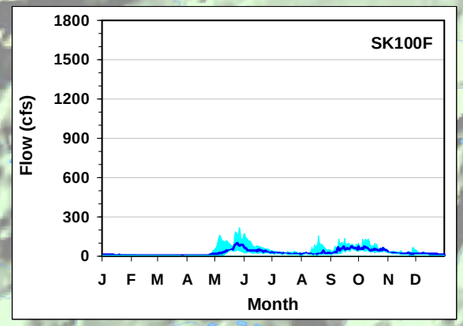
SK100A
SK100B
SK100C
SK100F
SK100G
SK119A

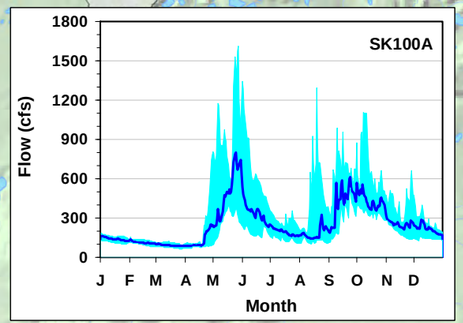
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E

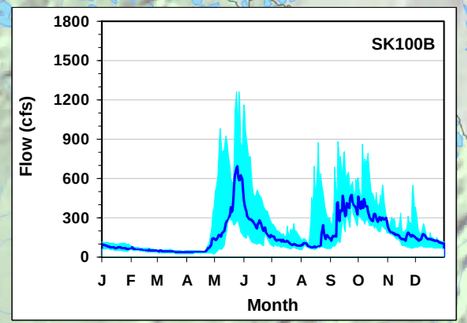
SFK 1.20
SFK 1.130
SFK 1.190
SFK 1.240
SFK 1.310
SFK 1.340

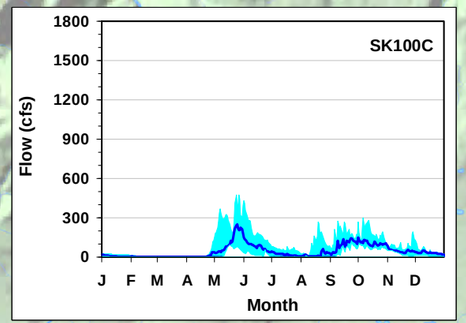


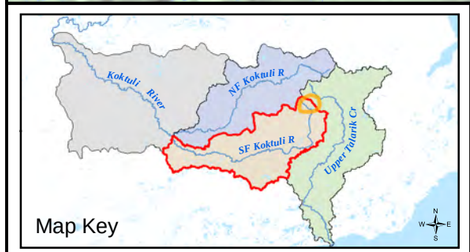












Legend

- Daily Range*
- Daily Median*
- Hydrology Gage Site and Name (SK100A)
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Derived from four water years of measurements/synthesis, 2005-2008.

THE pebble PARTNERSHIP

Figure 15.1-39
Median and Range of Daily Flows
at Selected Hydrology Gage Sites
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

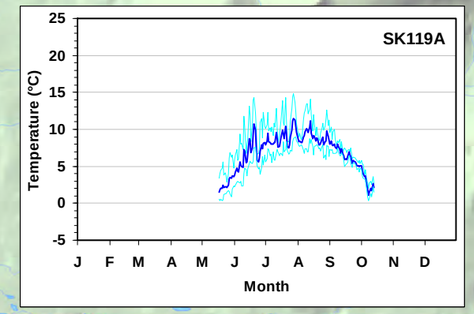
Kilometers 0 1 2
Miles 0 1 2

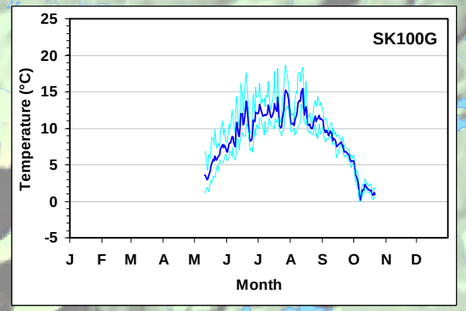
April 2011

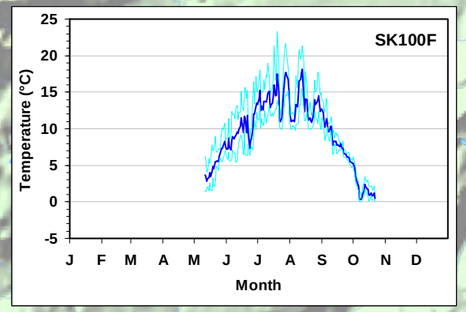
Author: R2 - JJZ

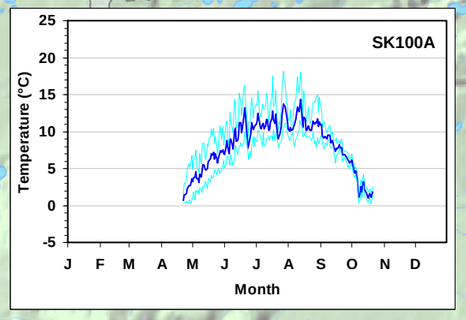
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
59°55'0"N
59°50'0"N
59°45'0"N

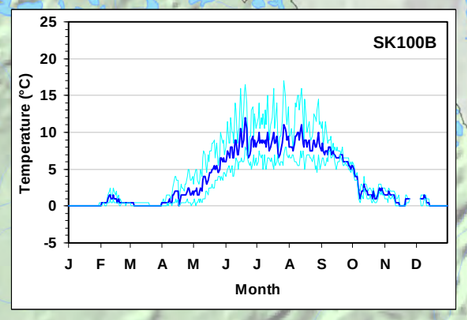
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Sharp Mountain
Chiquita Lake
SFK 1.340
SFK 1.240
SFK 1.310
SFK 1.190
SFK 1.20
SFK 1.130
SK100A
SK100B
SK100C
SK100F
SK100G
SK119A
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E

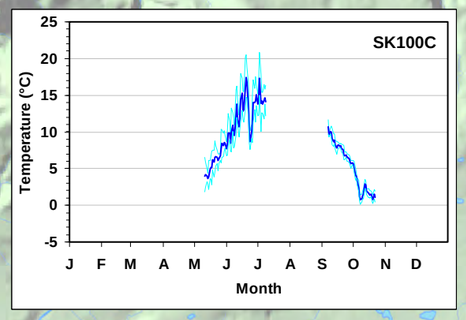












Legend

- Daily Range*
- Daily Mean*
- Temperature Monitoring Site and Name (SK100A)
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Derived from 2007 measurements.

THE pebble PARTNERSHIP

Figure 15.1-40
Maximum and Minimum Instantaneous Daily Water Temperatures at Selected Monitoring Sites
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

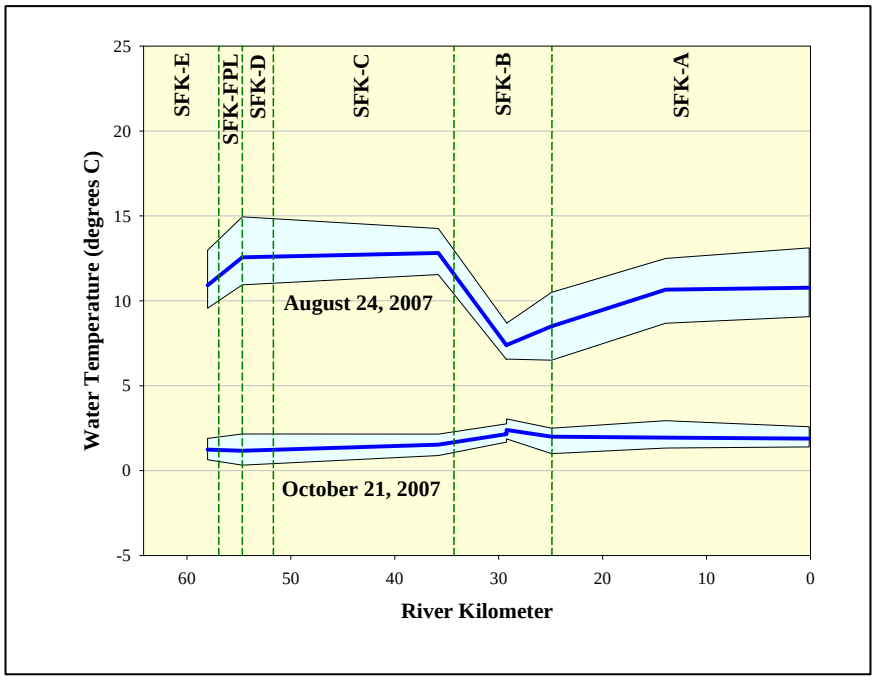
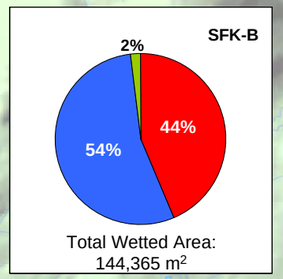


FIGURE 15.1-41
Longitudinal Trends of Maximum Instantaneous, Daily Mean, and Minimum Instantaneous Water Temperatures in the South Fork Koktuli Watershed, 2007

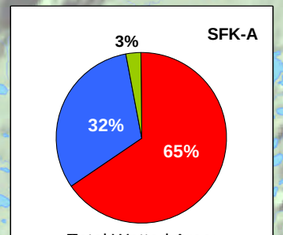
C = Celsius
SFK = South Fork Koktuli River
Example of river reach label = SFK-E
Dashed line indicates ends of river reaches.
Source: EBD Appendix 15.1E *Open River Water Temperature Model.*

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

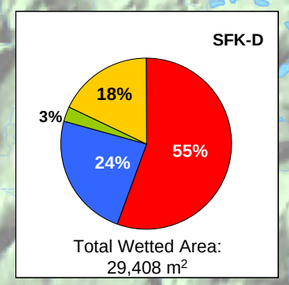
59°55'0"N 59°50'0"N 59°45'0"N



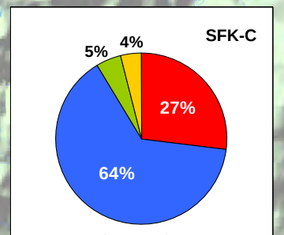
Total Wetted Area:
144,365 m²



Total Wetted Area:
452,898 m²



Total Wetted Area:
29,408 m²



Total Wetted Area:
108,390 m²

Legend

- Pool
- Run/Glide
- Riffle
- Beaver Pond

- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-42
Frequency of Mesohabitat Types
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

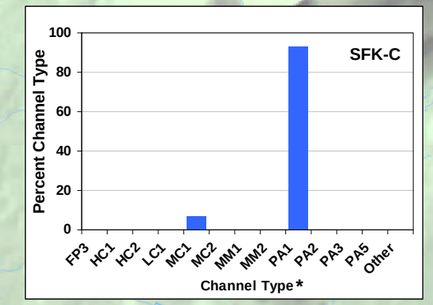
Kilometers 0 1 2
Miles 0 1 2

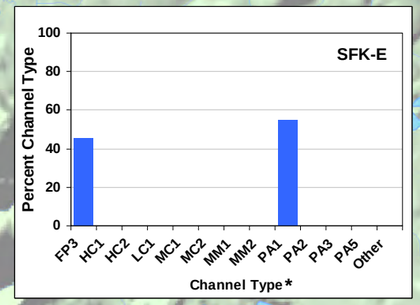
April 2011

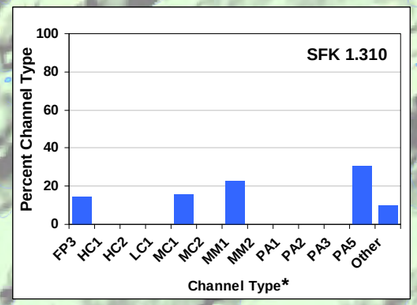
Author: R2 - JJZ

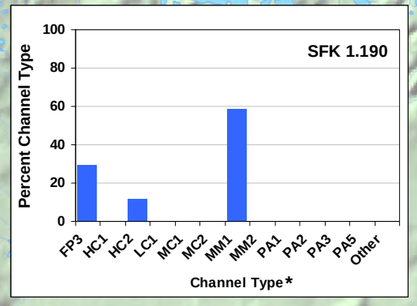
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
59°55'0"N
59°50'0"N
59°45'0"N

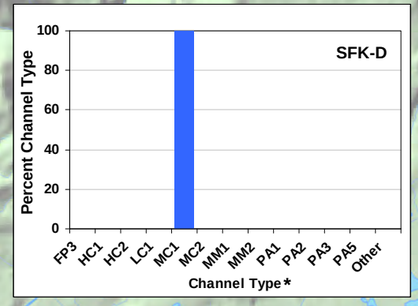
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Sharp Mountain
Chiquita Lake
SFK 1.340
SFK 1.240
SFK 1.310
SFK 1.190
SFK 1.130
SFK 1.20
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E











Legend

- HC1 USFS Channel Type*
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* USFS Channel Type codes (Paustian et al. 1992) are provided in Table 15.1-5.

THE pebble PARTNERSHIP

Figure 15.1-43
Frequency of USFS Channel Types
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

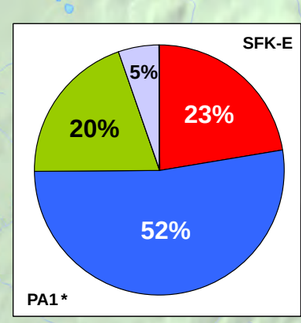
Kilometers 0 1 2
Miles 0 1 2

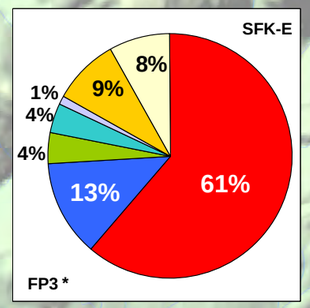
April 2011

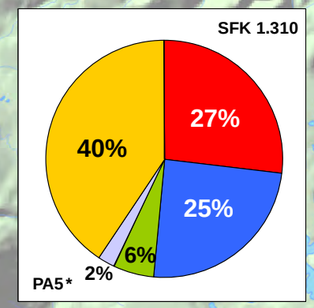
Author: R2 - JJZ

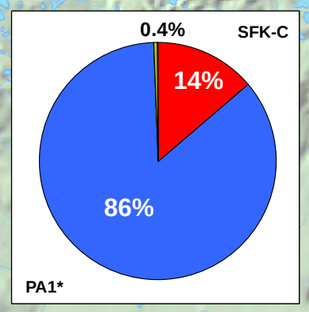
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

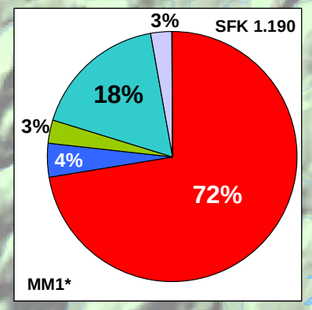
59°55'0"N 59°50'0"N 59°45'0"N



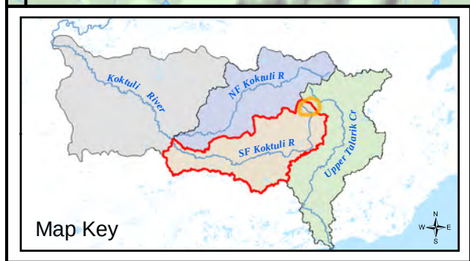








Kaskanak Mountain
Frying Pan Lake
Sharp Mountain
Chiquita Lake
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E
SFK 1.20
SFK 1.130
SFK 1.190
SFK 1.240
SFK 1.310
SFK 1.340



Legend

- Pool
- Run/Glide
- Riffle
- Cascade
- Backwater/Slough
- Beaver Pond
- Other

SFK-A Mainstem Reach Example
SFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

* USFS Channel Type codes are provided in Table 15.1-5.

THE pebble PARTNERSHIP

Figure 15.1-44
Frequency of Tier 3 Habitat Types
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

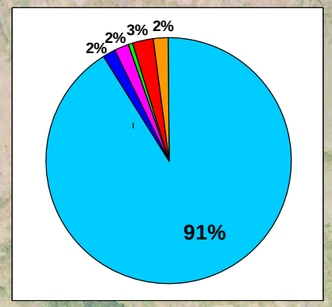
April 2011

Author: R2 - JJZ

155°31'0"W 155°30'0"W 155°29'0"W 155°28'0"W 155°27'0"W 155°26'0"W

59°49'0"N

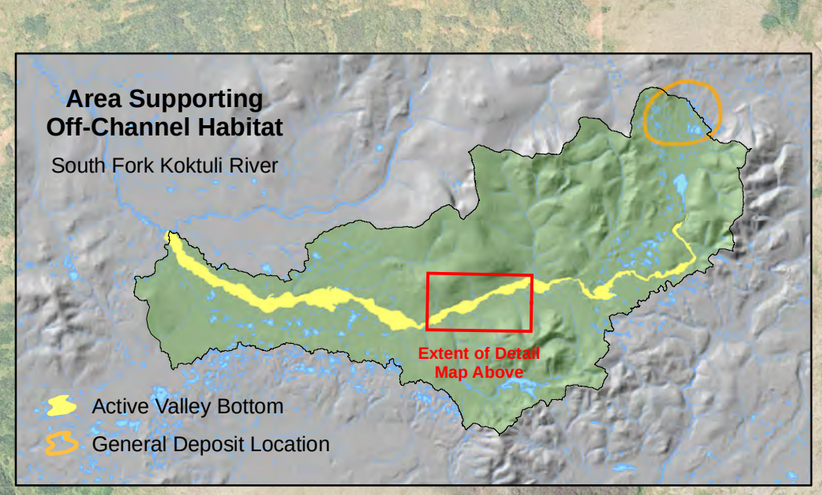
59°48'0"N



Frequency of Off-Channel Habitat Types

South Fork Koktuli River

SFK-B



Legend

- Beaver Pond
- Beaver Pond Outlet Channel
- Alcove
- Isolated Pond
- Side Channel
- Percolation Channel
- Study Area Extents
- Inlets
- Fish Sampling Sites
- Mainstem
- Active Valley Bottom
- SFK-B Mainstem Reach Example

N W E S

THE pebble PARTNERSHIP

Figure 15.1-45
Distribution and Frequency of
Off-Channel Habitat Types in the
South Fork Koktuli River (SFK) Intensive Study Area

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 0.1 0.2

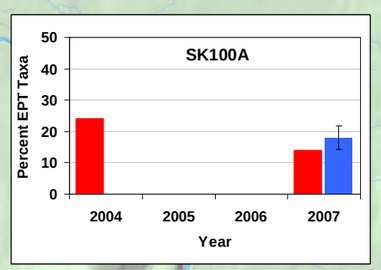
Miles 0 0.1 0.2

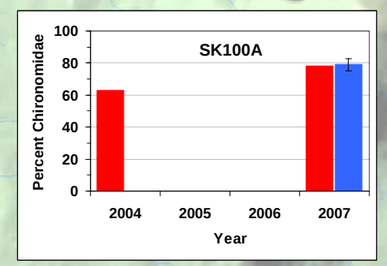
April 2011

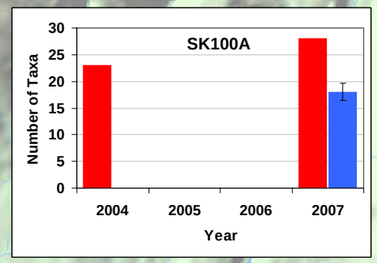
Author: R2 - JJZ

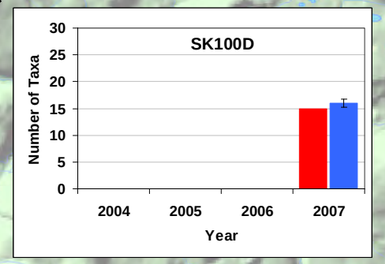
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

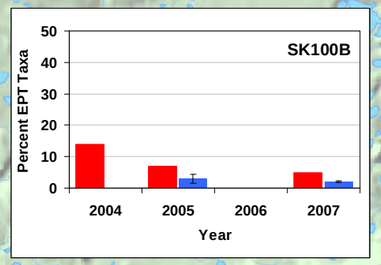
59°55'0"N 59°50'0"N 59°45'0"N

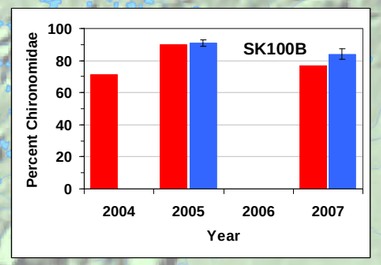


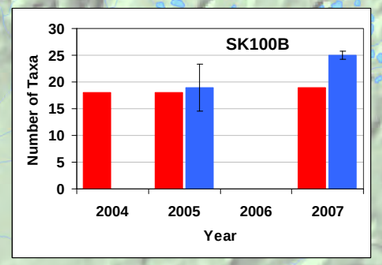


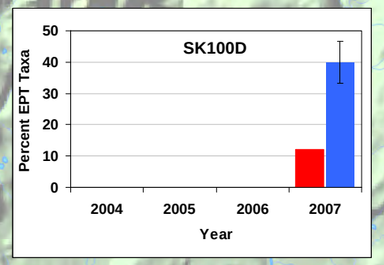


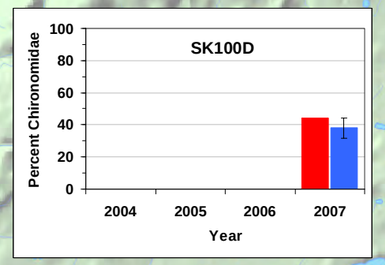












Legend

- ASCI
- Surber
- Sampling Site and Name (SK100A)
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-46
Selected Parameters of Early Summer Macroinvertebrate Data
South Fork Koktuli River (SFK) Watershed

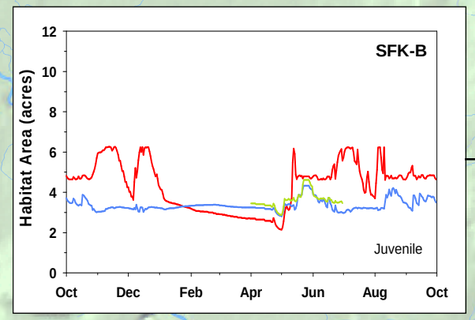
Alaska State Plane Zone 5
1983 North American Datum
Units Feet

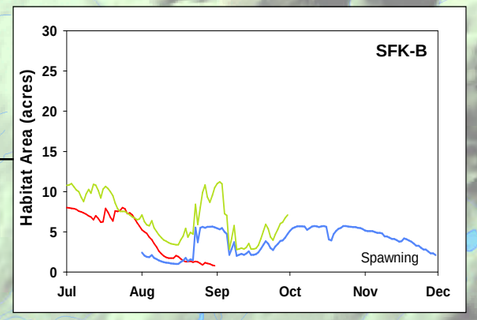
Kilometers 0 1 2
Miles 0 1 2

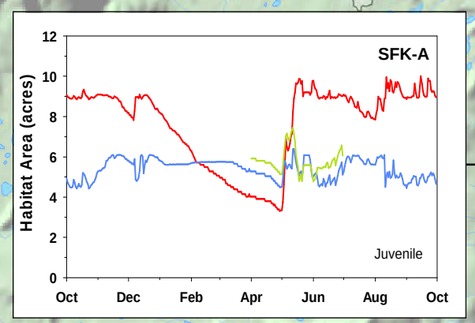
April 2011

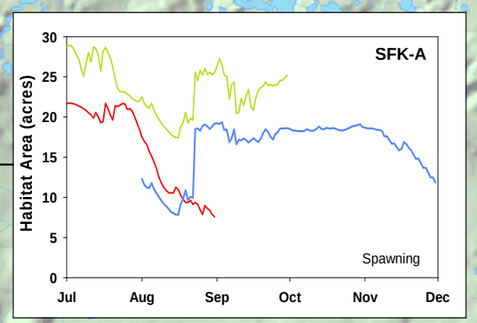
Author: R2 - JJZ

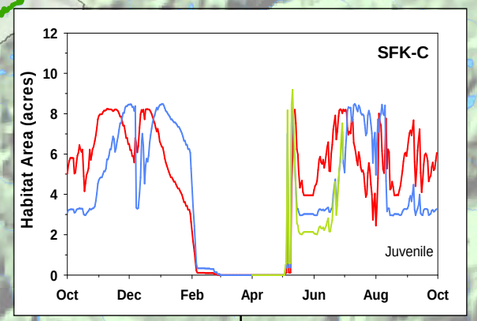
155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
59°55'0"N
59°50'0"N
59°45'0"N

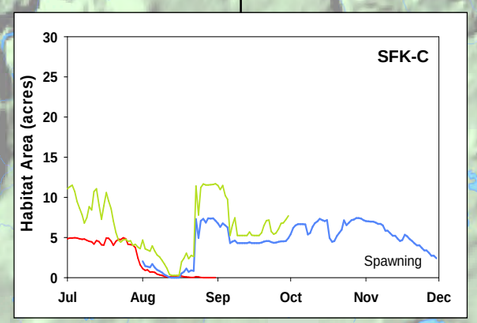


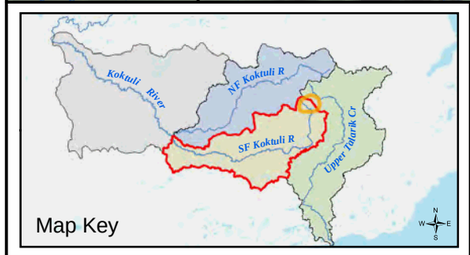












Legend

- Chinook Salmon
- Coho Salmon
- Sockeye Salmon

SFK-A Mainstem Reach Example
SFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-47
Habitat Area Time Series
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

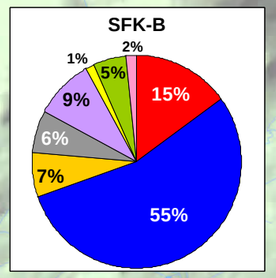
Kilometers 0 1 2
Miles 0 1 2

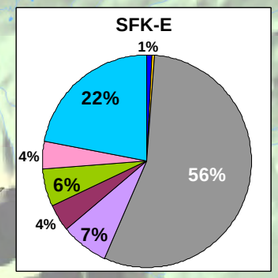
April 2011

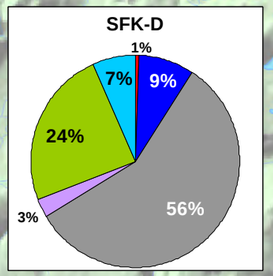
Author: R2 - JJZ

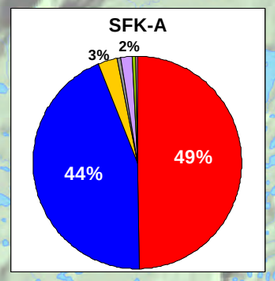
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

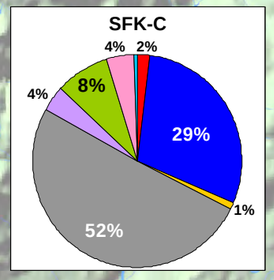
59°55'0"N 59°50'0"N 59°45'0"N











Kaskanak Mountain
Frying Pan Lake
Sharp Mountain
Chiquita Lake
Kaskanak Creek
Upper Talarik Creek
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
SFK 1.20
SFK 1.130
SFK 1.190
SFK 1.240
SFK 1.310
SFK 1.340
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E

Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

Note: Pie slices of less than 1 percent are not depicted accurately by the graphing software.

THE pebble PARTNERSHIP

Figure 15.1-48
Fish Species Composition
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

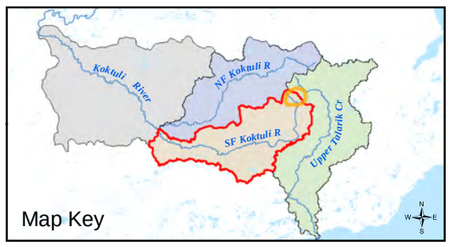
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N 59°50'0"N 59°45'0"N

Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Creek
Upper Talarik Creek
Kaskanak Mountain
Sharp Mountain
Koktuli Mountain
Frying Pan Lake
Chiquita Lake

SFK-A
SFK-B
SFK-C
SFK-D
SFK-E

SFK 1.20
SFK 1.130
SFK 1.190
SFK 1.190.30
SFK 1.190.40
SFK 1.190.60
SFK 1.240
SFK 1.240.10
SFK 1.310
SFK 1.340
SFK 1.370



Legend

Anadromous Fish Distribution*

- R2 Anadromous Water Catalog Nominations (2004-2008 Data)
- ADF&G Anadromous Water Catalog Stream (2009)
- Sites With No Anadromous Fish Present (2004-2008 Data)

SFK-A Mainstem Reach Example
SFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

* Species include Chinook, chum, coho, and sockeye salmon.

THE pebble PARTNERSHIP

Figure 15.1-49
Known Distribution of Anadromous Fishes South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

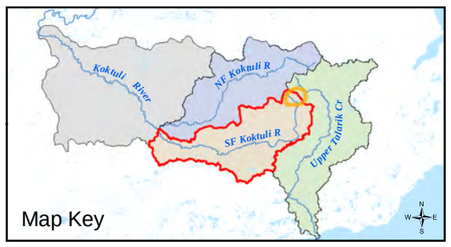
April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N 59°50'0"N 59°45'0"N

Koktuli River
North Fork Koktuli River
Kaskanak Mountain
SFK 1.340
SFK 1.240
SFK-E
Frying Pan Lake
SFK 1.310
Koktuli Mountain
SFK 1.190
SFK-D
Upper Talarik Creek
River
SFK-C
SFK 1.20
SFK-A
South Fork Koktuli
SFK-B
Sharp Mountain
SFK 1.130
Chiquita Lake
Koskanak Creek



Map Key

Legend

- Anadromous Fish Spawning Locations*
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

N W E S

* Species include Chinook, chum, coho, and sockeye salmon. Individual species maps are provided in Appendix 15.1B.

THE pebble PARTNERSHIP

Figure 15.1-50
Anadromous Fish Spawning Locations
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

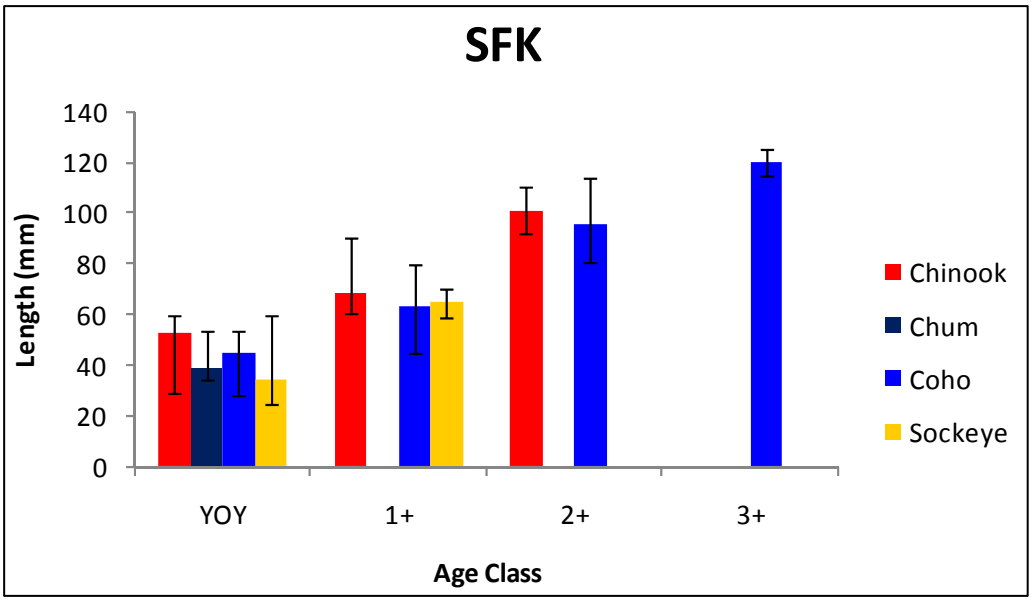
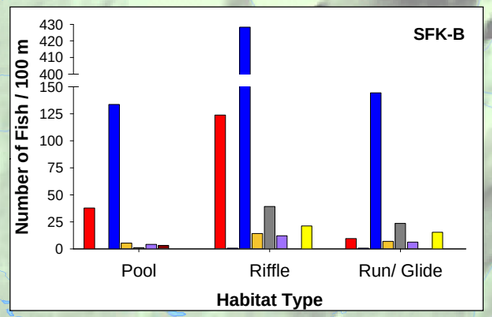


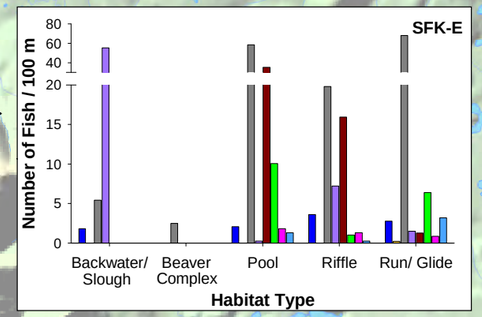
FIGURE 15.1-51
Mean Fork Length of Anadromous Salmonids by Age Class and Species in the South Fork Koktuli Watershed

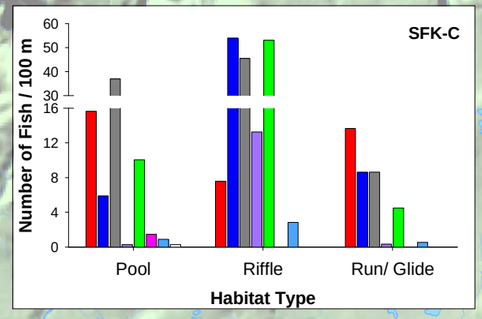
Note:
Based on fish measurements from the South Fork Koktuli Watershed.
Error bars indicate minimum and maximum measured lengths.
mm = millimeter
SFK = South Fork Koktuli River
YOY = young of the year
Source: R. Bailey (2009).

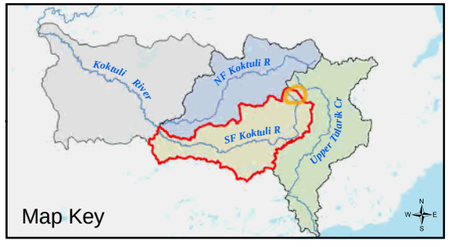
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
59°55'0"N
59°50'0"N
59°45'0"N

Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Koktuli River
Frying Pan Lake
Kaskanak Mountain
Sharp Mountain
Chiquita Lake
SFK 1.340
SFK 1.310
SFK 1.240
SFK 1.190
SFK 1.130
SFK 1.20
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E









Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

Note: These data were collected using on-the-ground survey methods (e.g. electrofishing and snorkeling). Thus, more than 99 percent of the Chinook, chum, coho, and sockeye salmon data represent juvenile fishes.

THE pebble PARTNERSHIP

Figure 15.1-52
Fish Relative Abundance
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

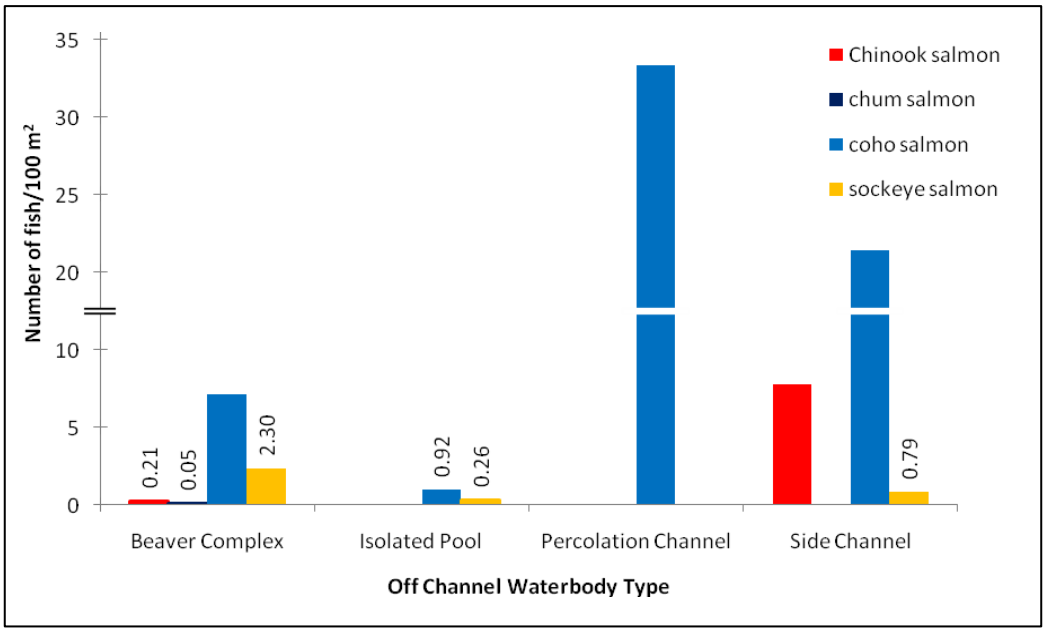


FIGURE 15.1-53
Fish Densities of Anadromous Salmonids among Off-Channel Habitat Types in the South Fork Koktuli Watershed

m^2 = square meters
Source: EBD Appendix 15.1D *Off-channel Habitat*.

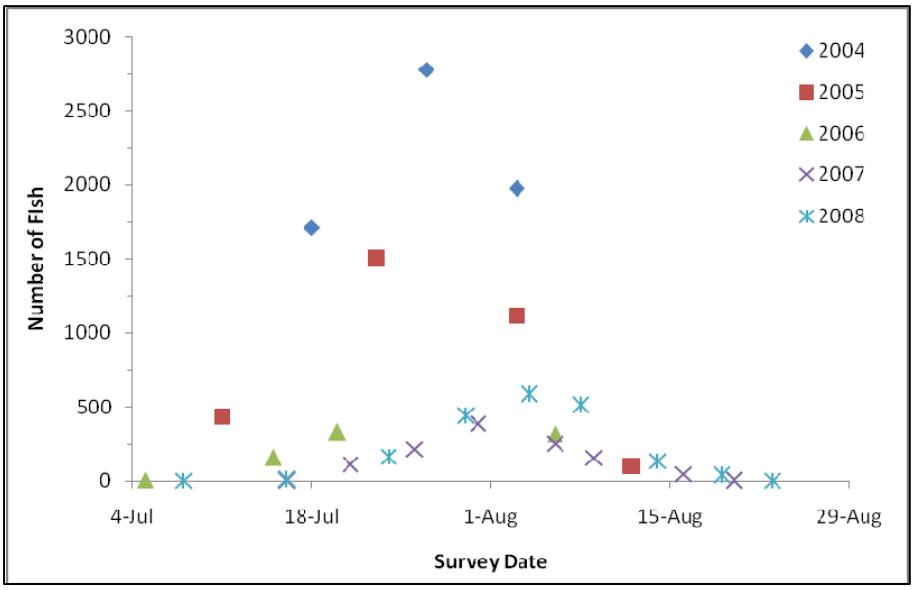


FIGURE 15.1-54
Index Counts of Adult Chinook Salmon from Aerial Surveys in the South Fork Koktuli Watershed
Note: Data presented includes only those used in the mean index count analysis.

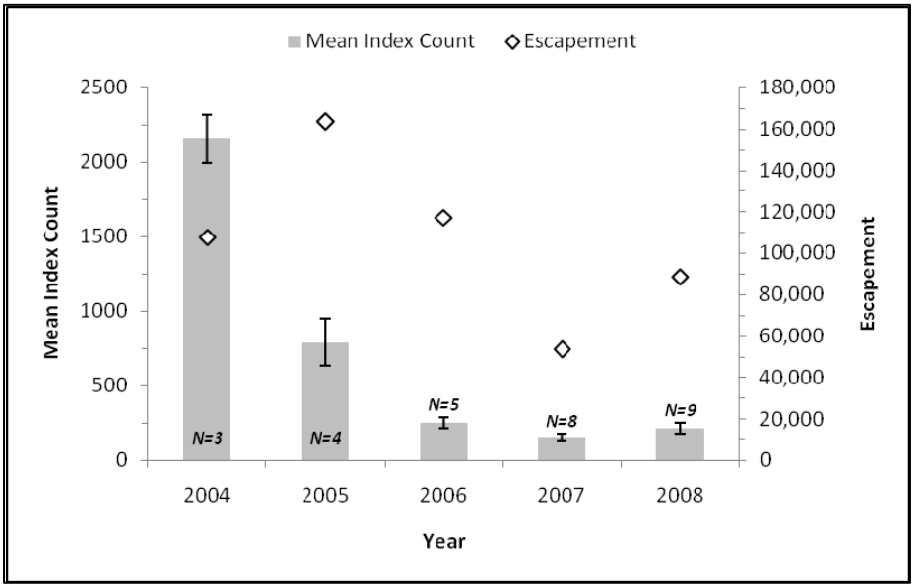


FIGURE 15.1-55
Chinook Salmon Annual Mean Index Counts (±1 Standard Error) in the South Fork Koktuli Watershed and Nushagak River Spawning Escapement
Note: *N* is the number of surveys included in the index analysis.
Source: Escapement estimates were taken from Baker et al. (2009), Appendix B1.

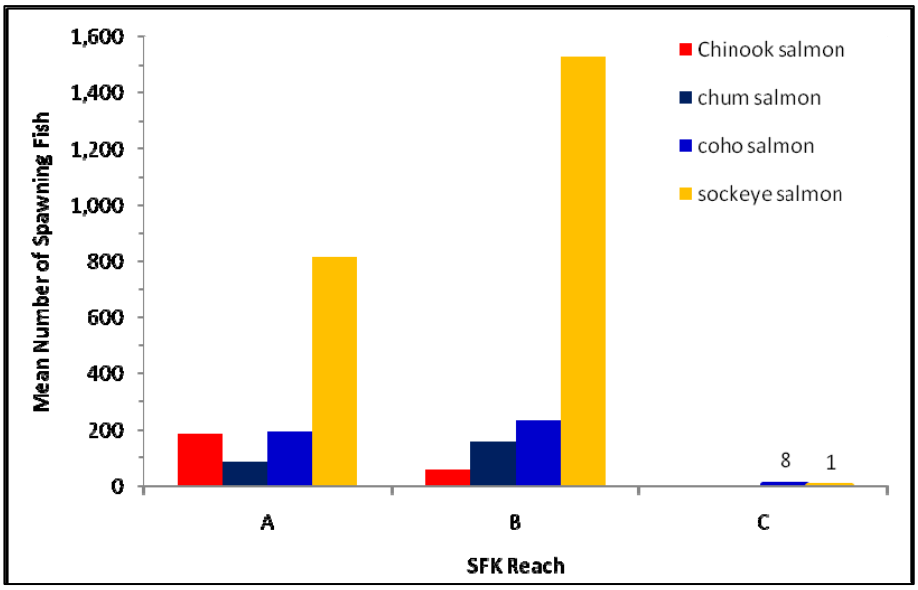


FIGURE 15.1-56
Mean Counts of Spawning Salmon by South Fork Koktuli Reach from All Aerial Surveys Flown in 2008

SFK = South Fork Koktuli River

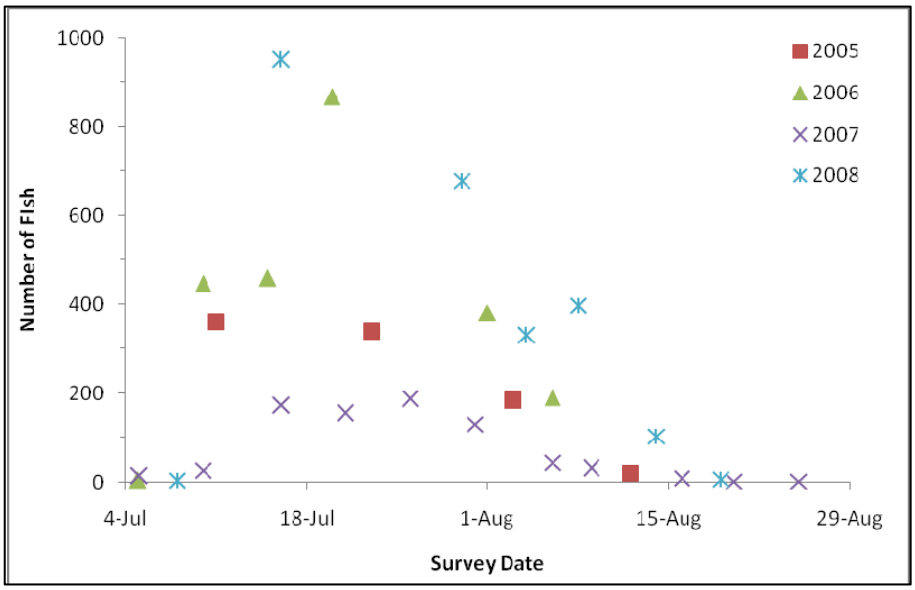


FIGURE 15.1-57
Index Counts of Adult Chum Salmon from Aerial Surveys in the South Fork Koktuli Watershed

Note: Data presented includes only those used in the mean index count analysis.

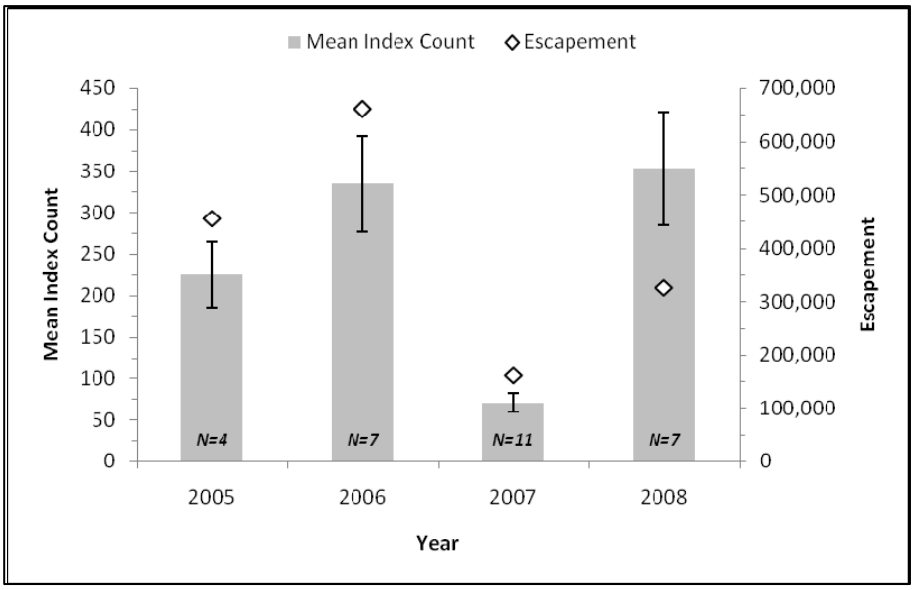


FIGURE 15.1-58
Chum Salmon Annual Mean Index Counts (±1 Standard Error) in the South Fork Koktuli Watershed and Nushagak River Spawning Escapement

Note: *N* is the number of surveys included in the index analysis.

Source: Escapement estimates were taken from Baker et al. (2009), Appendix C1.

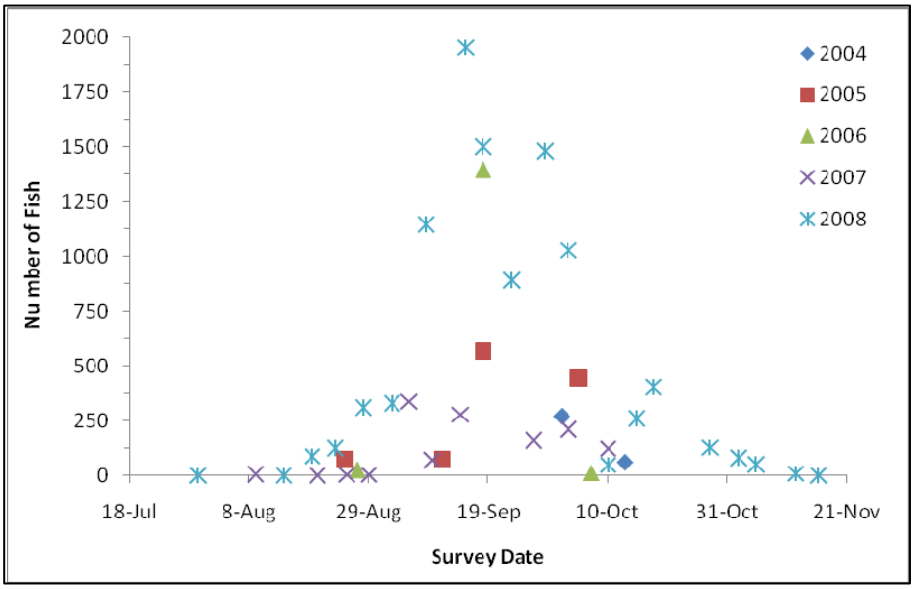


FIGURE 15.1-59
Index Counts of Adult Coho Salmon from Aerial Surveys in the South Fork Koktuli Watershed

Note: Data presented includes only those used in the mean index count analysis.

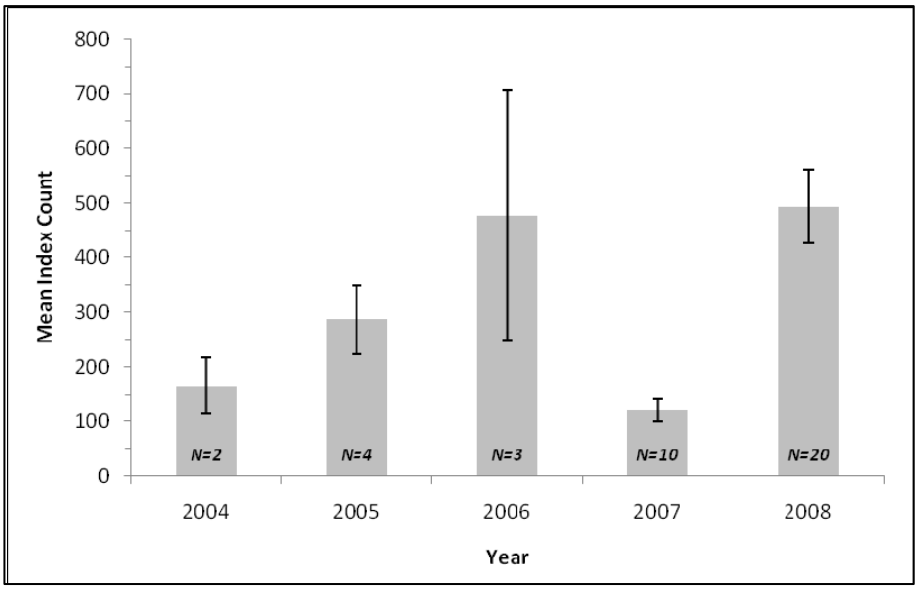


FIGURE 15.1-60
Coho Salmon Annual Mean Index Counts (±1 Standard Error) in the South Fork Koktuli Watershed
Note: *N* is the number of surveys included in the index analysis.

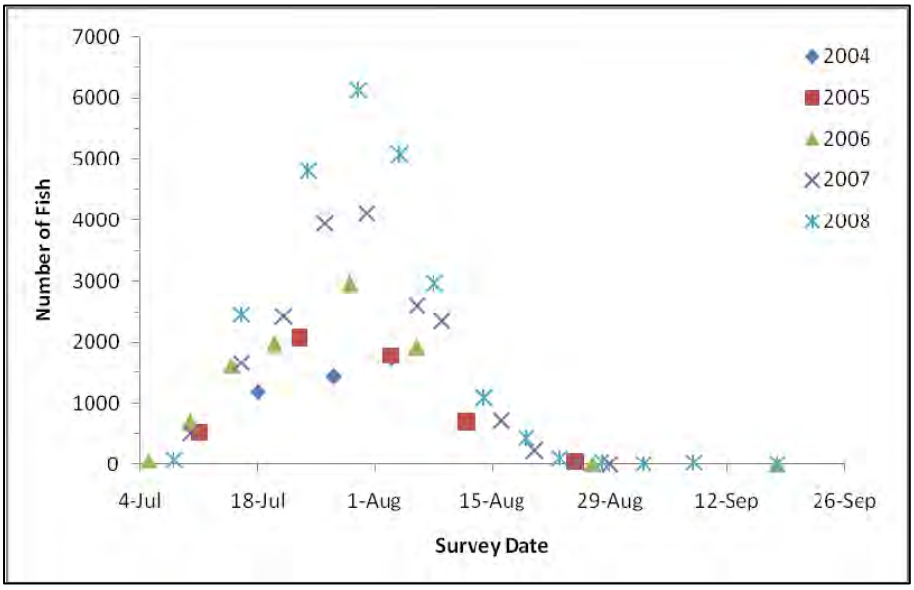


FIGURE 15.1-61
Index Counts of Adult Sockeye Salmon from Aerial Surveys in the South Fork Koktuli Watershed
Note: Data presented includes only those used in the mean index count analysis.

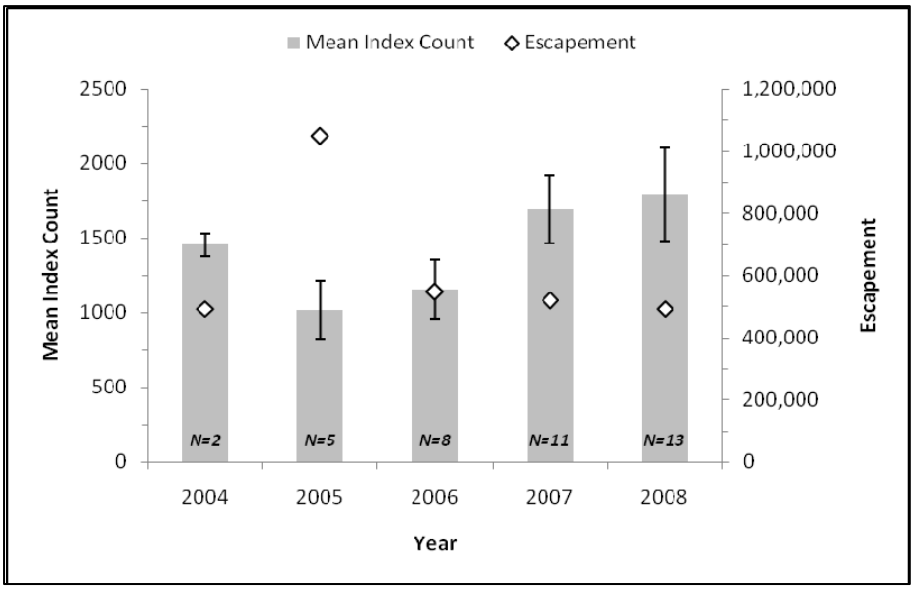


FIGURE 15.1-62
Sockeye Salmon Annual Mean Index Counts (±1 Standard Error) in the South Fork Koktuli Watershed and Nushagak River Spawning Escapement

Note: *N* is the number of surveys included in the index analysis.

Source: Escapement estimates were taken from Baker et al. (2009), Appendix A6.

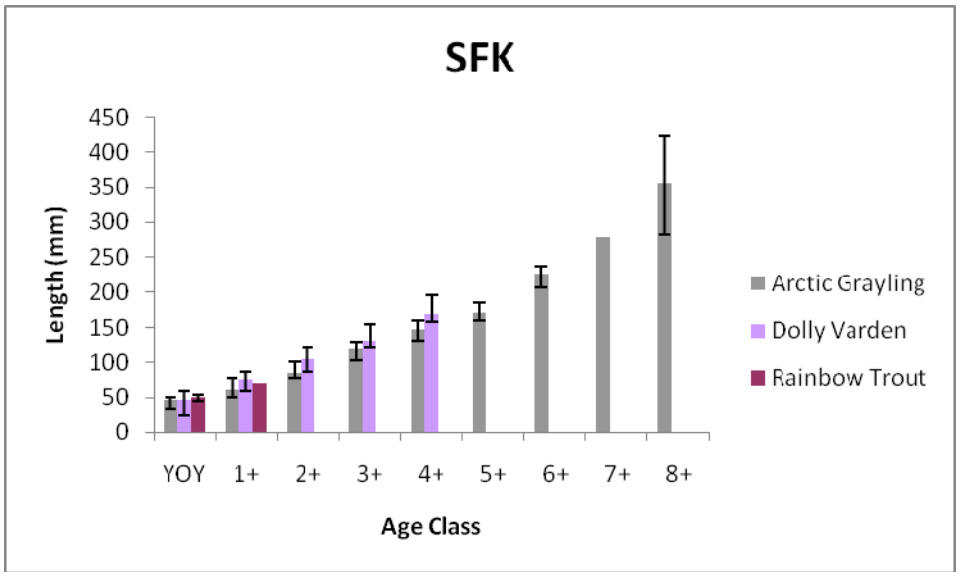
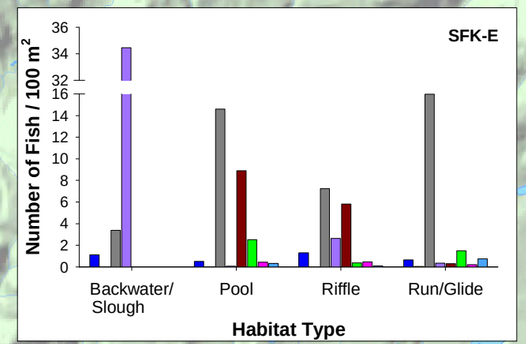


FIGURE 15.1-63
Mean Fork Length of Non-anadromous Salmonids by Age Class and Species in the South Fork Koktuli Watershed

Note: Based on fish measurements in the SFK. Error bars indicate minimum and maximum measured lengths.
mm = millimeter
SFK = South Fork Koktuli River
YOY = young of the year
Source: R. Bailey (2009).

155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
59°55'0"N
59°50'0"N
59°45'0"N

Koktuli River
North Fork Koktuli River
Kaskanak Mountain
SFK 1.340
SFK 1.240
SFK 1.310
SFK 1.190
SFK 1.130
SFK 1.20
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Sharp Mountain
Chiquita Lake
Kaskanak Creek
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E
South Fork Koktuli River



Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

Note: These data were collected using on-the-ground survey methods (e.g. electrofishing and snorkeling). Thus, 100 percent of the Chinook, chum, coho, and sockeye salmon data represent juvenile fishes.

THE pebble PARTNERSHIP

Figure 15.1-64
Fish/Habitat Association
South Fork Koktuli River (SFK) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

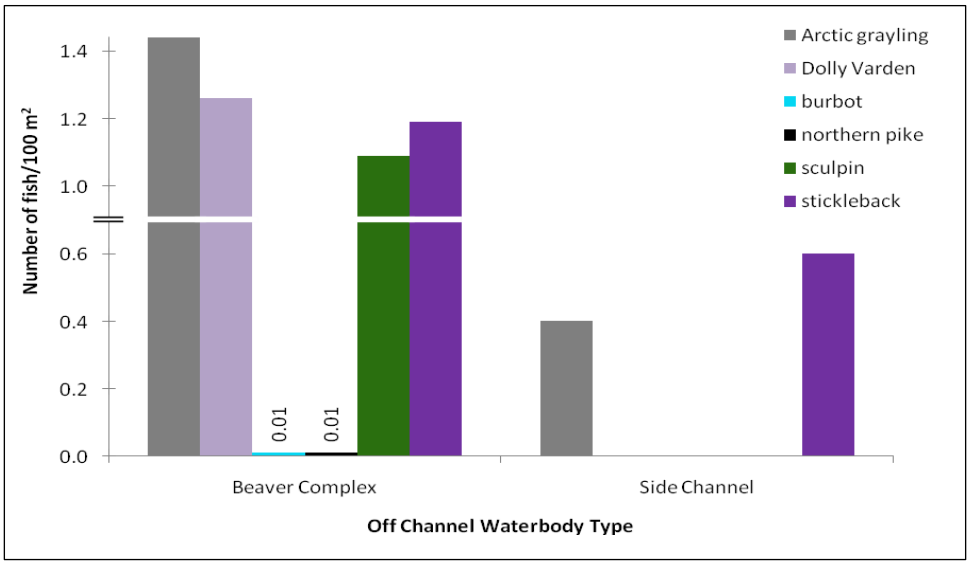


FIGURE 15.1-65
Fish Densities of Resident Species among Off-Channel Habitat Types in the South Fork Koktuli Watershed

m^2 = square meters

Source: EBD Appendix 15.1D *Off-channel Habitat*.

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

UT 1.390

UT-G

UT-F

UT 1.410

UT 1.350

UT-E

Kaskanak Mountain

Koktuli River

Frying Pan Lake

Koktuli Mountain

Talarik Creek

UT-D

South Fork Koktuli River

UT 1.190

Sharp Mountain

UT 1.60

Upper Talarik Creek

UT-C

Newhalen River

Chiquita Lake

Iliamna

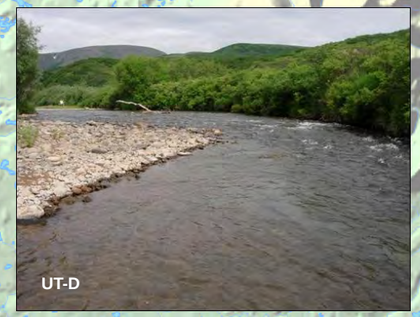
First Creek

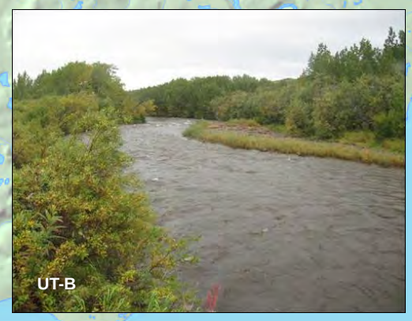
Lake #2

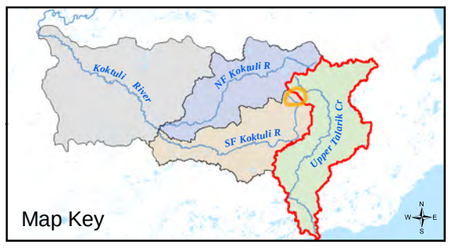
UT-B

UT-A

Iliamna Lake







Legend

UT-A Mainstem Reach Example

UT 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

N W E S

THE pebble PARTNERSHIP

Figure 15.1-66
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

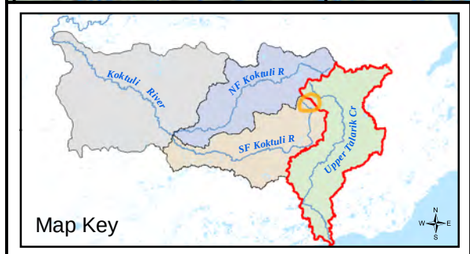
April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain
Nondalton
Big Wiggly Lake
River
Koktuli
Fork
North
Koktuli River
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
UT 1.390
UT-G
UT-F
UT 1.410
UT 1.350
UT-E
Talarik Creek
UT-D
Roadhouse Mountain
South
Fork
Koktuli
River
Sharp Mountain
UT 1.190
UT 1.60
Upper
UT-C
Newhalen
River
Chiquita Lake
Creek
Kaskanak
Creek
First
Creek
Lake #2
UT-B
Iliamna
Newhalen
UT-A
Iliamna Lake



Map Key

Legend

- Sampling Site Locations
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

N W E S

THE pebble PARTNERSHIP

Figure 15.1-67
Location of all Fish Sampling Sites
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

UT 1.390

UT-G

UT100E

UT-F

UT100D

UT 1.410

UT 1.350

Kaskanak Mountain

Koktuli River

Frying Pan Lake

Koktuli Mountain

UT135A

UT-E

Talarik Creek

South Fork Koktuli River

Koktuli River

UT-D

UT 1.190

UT119A

Sharp Mountain

UT 1.60

UT100B

UT-C

Chiquita Lake

Upper Talarik Creek

First Creek

Lake #2

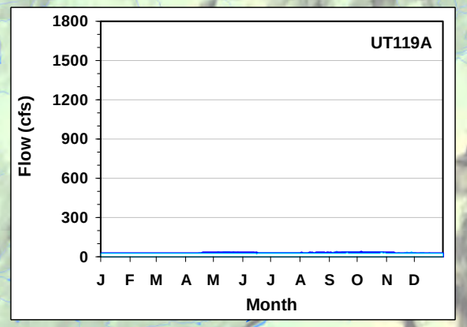
UT-B

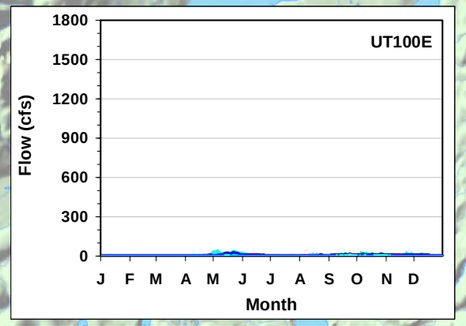
UT-A

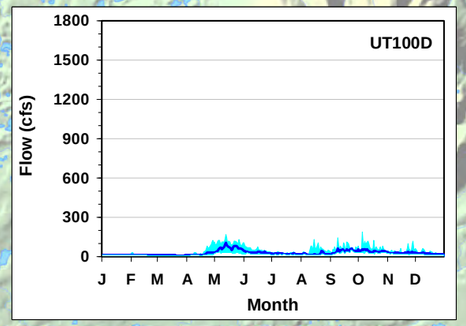
Newhalen River

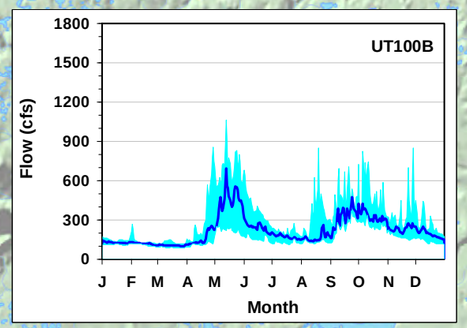
Iliamna

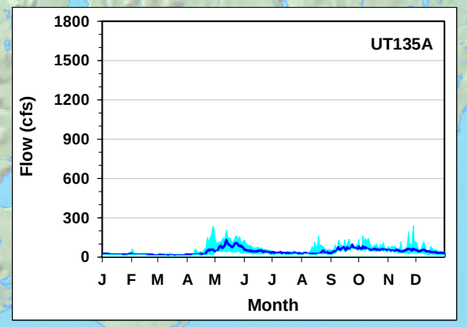
Iliamna Lake

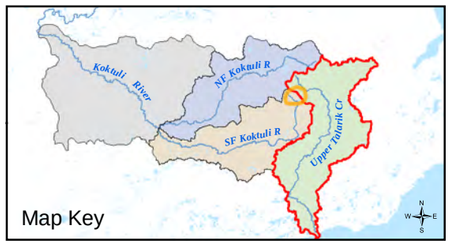












Legend

- Daily Range*
- Daily Median*
- Hydrology Gage Site and Name (UT100B)
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Derived from four water years of measurements/synthesis, 2005-2008.

THE pebble PARTNERSHIP

Figure 15.1-68
Median and Range of Daily Flows
at Selected Hydrology Gage Sites
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

UT-G

UT100E

UT-F

UT100D

UT 1.390

UT 1.410

UT 1.350

UT135A

Kaskanak Mountain

Koktuli Mountain

Frying Pan Lake

Koktuli River

UT-E

Talarik Creek

UT-D

South Fork Koktuli River

UT 1.190

UT119A

Sharp Mountain

UT 1.60

UT100B

UT-C

Chiquita Lake

Upper Talarik Creek

First Creek

Newhalen River

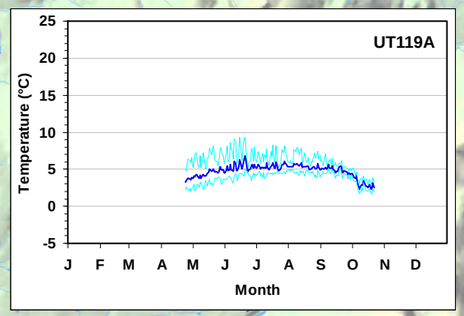
Iliamna

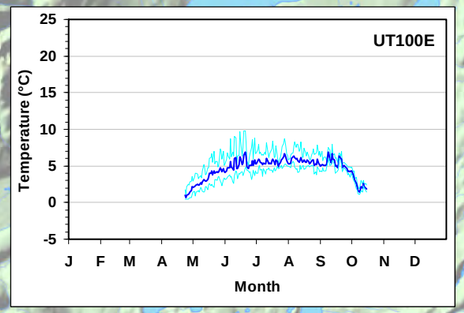
Lake #2

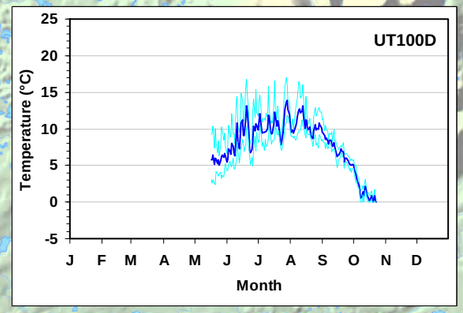
UT-B

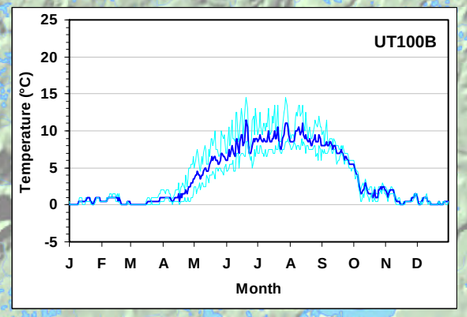
UT-A

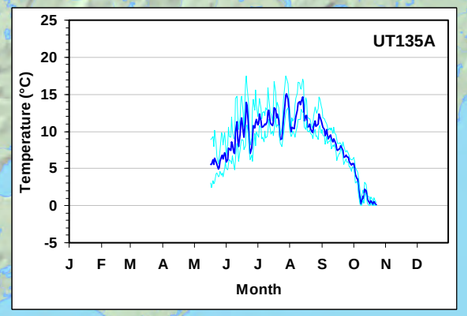
Iliamna Lake

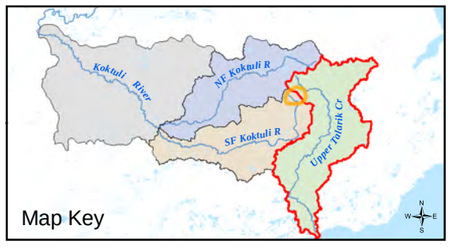












Legend

- Daily Range*
- Daily Mean*
- Temperature Monitoring Site and Name (UT100B)
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Derived from 2007 measurements.

THE pebble PARTNERSHIP

Figure 15.1-69
Maximum and Minimum Instantaneous Daily Water Temperatures at Selected Monitoring Sites
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

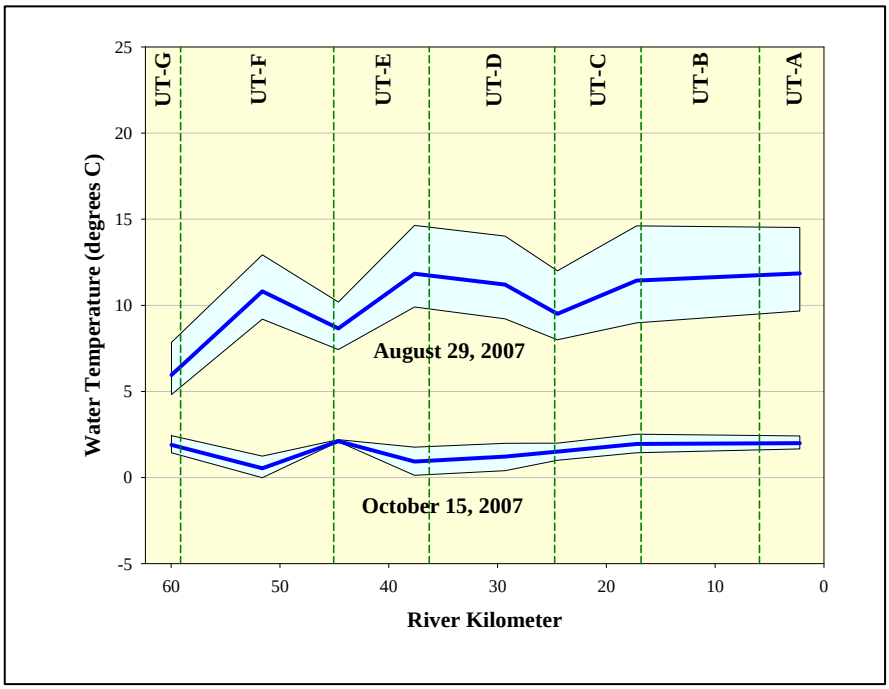


FIGURE 15.1-70
Longitudinal Trends of Maximum Instantaneous, Daily Mean, and Minimum Instantaneous Water Temperatures in the Upper Talarik Watershed, 2007

C = Celsius
UT = Upper Talarik Creek
Example of river reach label = UT-G
Dashed line indicates ends of river reaches.
Source: EBD Appendix 15.1E *Open River Water Temperature Model*

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Koktuli River

Frying Pan Lake

Koktuli Mountain

Talarik Creek

Upper Talarik Creek

Sharp Mountain

Chiquita Lake

Lake #2

First Creek

Newhalen River

Newhalen

Roadhouse Mountain

Iliamna Lake

UT 1,390

UT 1,410

UT 1,350

UT 1,190

UT 1,60

UT-G

UT-F

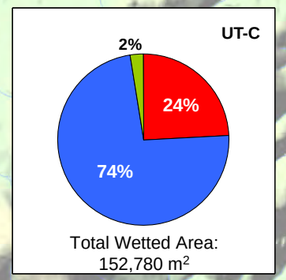
UT-E

UT-D

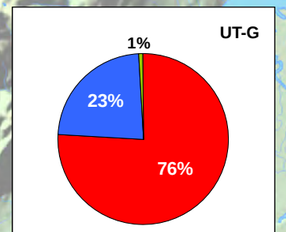
UT-C

UT-B

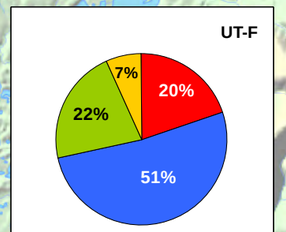
UT-A



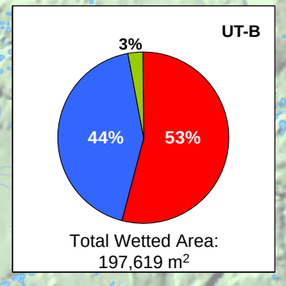
Total Wetted Area:
152,780 m^2



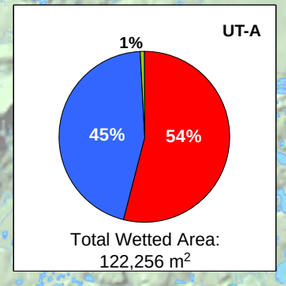
Total Wetted Area:
5,043 m^2



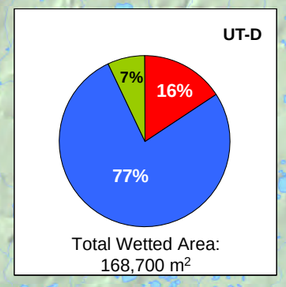
Total Wetted Area:
94,226 m^2



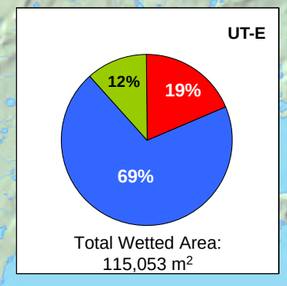
Total Wetted Area:
197,619 m^2



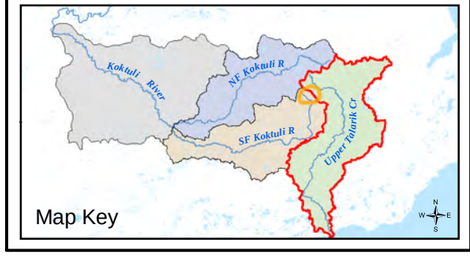
Total Wetted Area:
122,256 m^2



Total Wetted Area:
168,700 m^2



Total Wetted Area:
115,053 m^2



Legend

- Pool
- Run/Glide
- Riffle
- Beaver Pond

UT-A Mainstem Reach Example

UT 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-71
Frequency of Mesohabitat Types
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

UT-G

UT 1.380

UT-F

UT 1.410

UT 1.350

Kaskanak Mountain

Koktuli Mountain

Frying Pan Lake

UT-E

UT 1.310

Koktuli River

South Fork Koktuli River

Talarik Creek

UT-D

UT 1.190

Sharp Mountain

Upper Talarik Creek

UT 1.60

UT-C

Chiquita Lake

First Creek

Lake #2

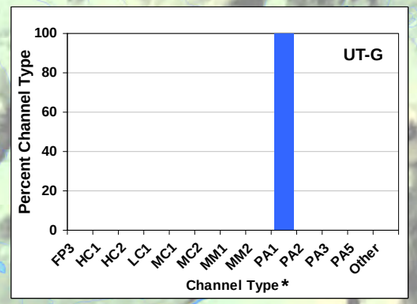
UT-B

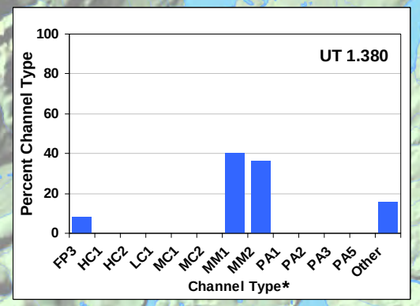
UT-A

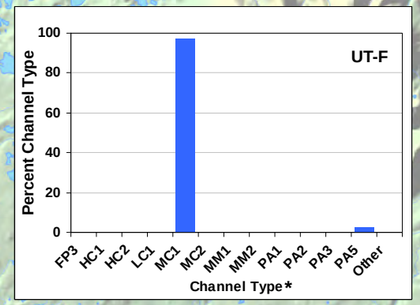
Newhalen River

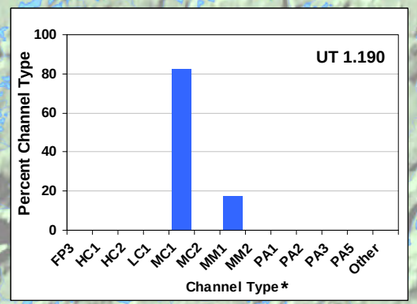
Iliamna

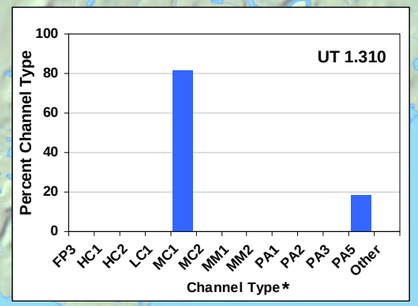
Iliamna Lake

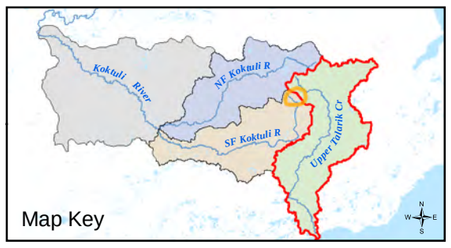












Legend

- HC1 USFS Channel Type*
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* USFS Channel Type codes (Paustian et al. 1992) are provided in Table 15.1-5.

N W E S

THE pebble PARTNERSHIP

Figure 15.1-72
Frequency of USFS Channel Types
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Frying Pan Lake

Koktuli Mountain

Sharp Mountain

Chiquita Lake

Lake #2

Kaskanak

Roadhouse Mountain

Newhalen

Iliamna Lake

UT-G

UT-F

UT-E

UT-D

UT-C

UT-B

UT-A

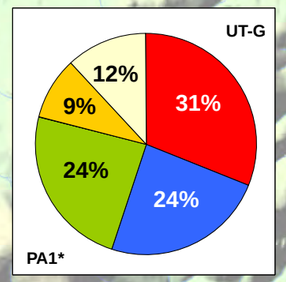
Talarik Creek

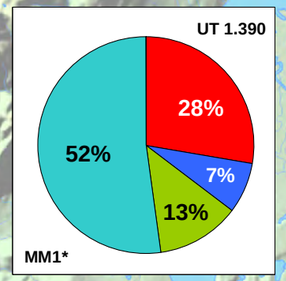
Upper Talarik Creek

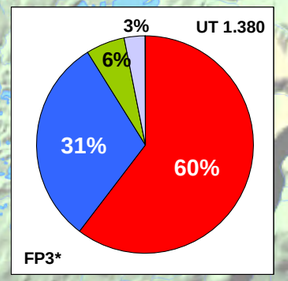
First Creek

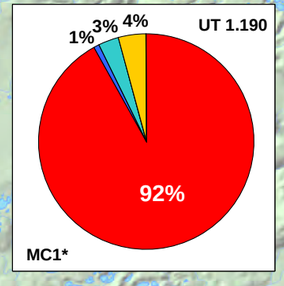
Newhalen River

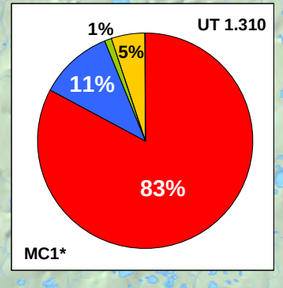
UT 1.390 UT 1.380 UT 1.370 UT 1.350 UT 1.410 UT 1.310 UT 1.190 UT 1.60

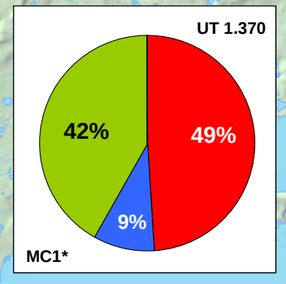


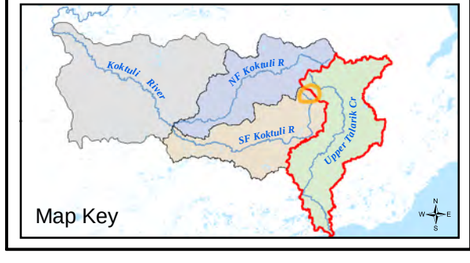












Legend

- Pool
- Run/Glide
- Riffle
- Cascade
- Backwater/Slough
- Beaver Pond
- Other

UT-A Mainstem Reach Example

UT 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

* USFS Channel Type codes are provided in Table 15.1-5.

THE pebble PARTNERSHIP

Figure 15.1-73
Frequency of Tier 3 Habitat Types
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

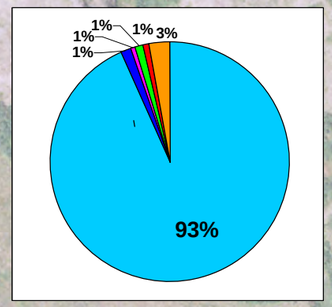
Miles 0 1 2

April 2011

Author: R2 - JJZ

155°15'0"W 155°14'0"W 155°13'0"W 155°12'0"W 155°11'0"W 155°10'0"W

59°48'0"N



Cumulative Frequency of Off-Channel Habitat Types for all Three Upper Talarik Intensive Study Areas

Upper Talarik Creek

UT-D

Area Supporting Off-Channel Habitat

Upper Talarik Creek

b

Extent of Detail Map Above

a

Active Valley Bottom

General Deposit Location

Legend

- Beaver Pond
- Beaver Pond Outlet Channel
- Alcove
- Isolated Pond
- Side Channel
- Percolation Channel
- Study Area Extents
- Inlets
- Fish Sampling Sites
- Mainstem
- Active Valley Bottom
- UT-D Mainstem Reach Example

THE pebble PARTNERSHIP

Figure 15.1-74a
Distribution and Frequency of Off-Channel Habitat Types in the Upper Talarik Creek (UT) Intensive Study Areas

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 0.1 0.2

Miles 0 0.1 0.2

April 2011

Author: R2 - JJZ

59°52'0"N

59°51'0"N

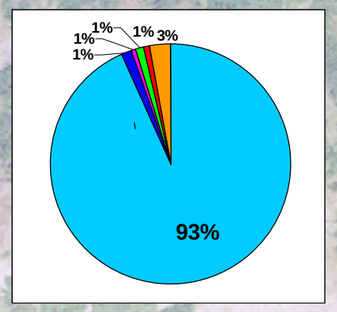
155°9'0"W

155°10'0"W

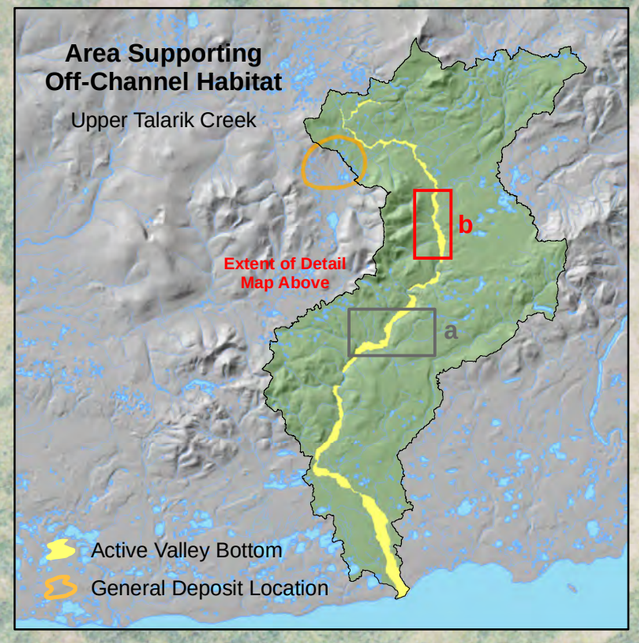
155°11'0"W

Upper Talarik Creek

UT-E



Cumulative Frequency of Off-Channel Habitat Types for all Three Upper Talarik Intensive Study Areas



Legend

- Beaver Pond
- Beaver Pond Outlet Channel
- Alcove
- Isolated Pond
- Side Channel
- Percolation Channel
- Study Area Extents
- Inlets
- Fish Sampling Sites
- Mainstem
- Active Valley Bottom
- UT-E Mainstem Reach Example

THE pebble PARTNERSHIP

Figure 15.1-74b
Distribution and Frequency of
Off-Channel Habitat Types in the
Upper Talarik Creek (UT) Intensive Study Areas

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 0.1 0.2

Miles 0 0.1 0.2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Big Wiggly Lake

Koktuli River

North Fork Koktuli River

Kaskanak Mountain

Frying Pan Lake

Koktuli Mountain

South Fork Koktuli River

Sharp Mountain

Chiquita Lake

Lake #2

Talarik Creek

Upper Talarik Creek

First Creek

Newhalen River

Iliamna

UT-G

UT-F

UT100D

UT-E

UT-D

UT100C

UT100B

UT-C

UT-B

UT-A

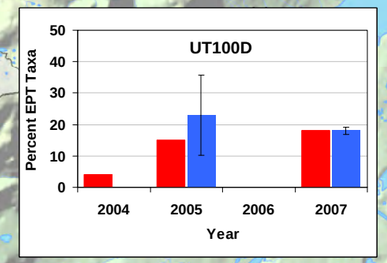
UT 1.390

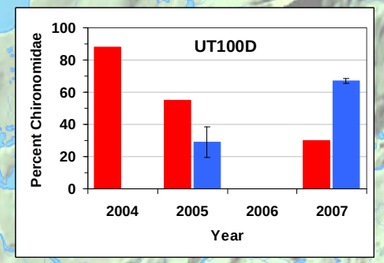
UT 1.410

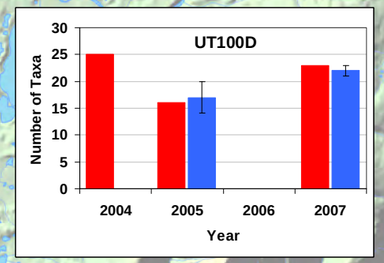
UT 1.350

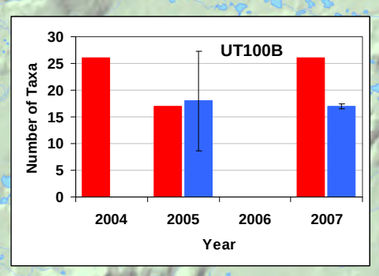
UT 1.190

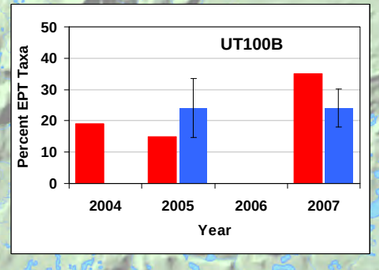
UT 1.60

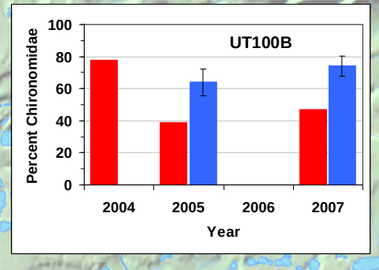


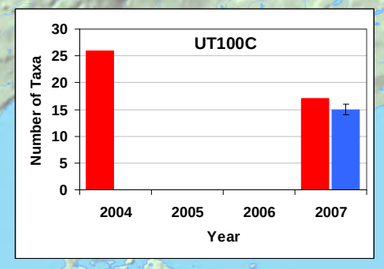


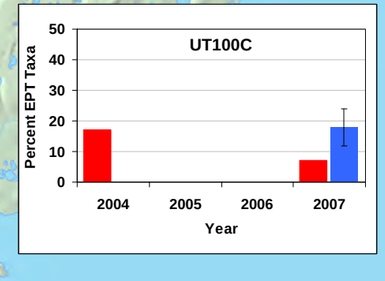


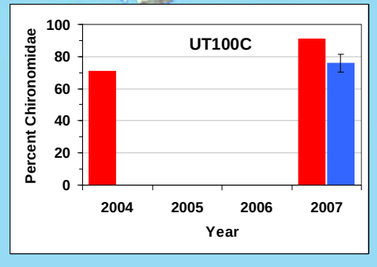


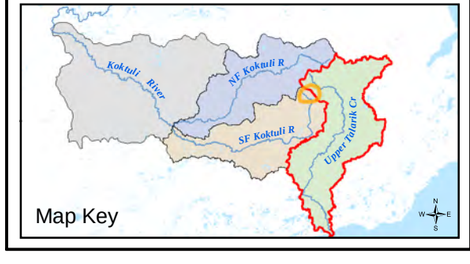












Legend

- ASCI
- Surber
- Sampling Site and Name (UT100B)
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-75
Selected Parameters of Early Summer Macroinvertebrate Data
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W 154°30'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Iliamna

Big Wiggly Lake

Kaskanak Mountain

Frying Pan Lake

Koktuli Mountain

Sharp Mountain

Chiquita Lake

Lake #2

North Fork Koktuli River

SF Koktuli River

Upper Talarik Creek

First Creek

UT 1,390

UT 1,410

UT 1,350

UT 1,190

UT 1,60

UT-G

UT-F

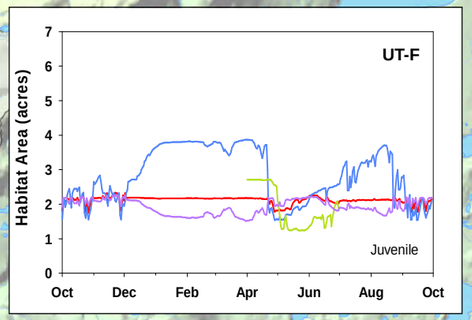
UT-E

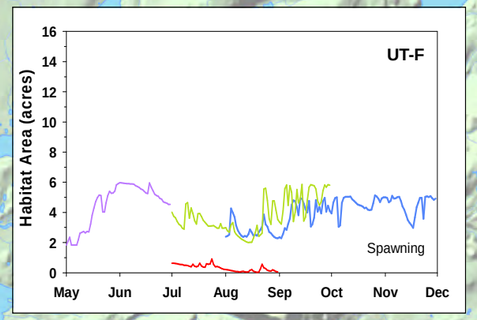
UT-D

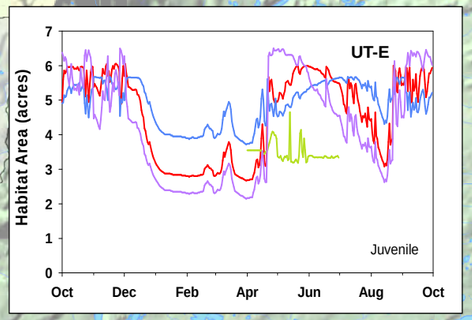
UT-C

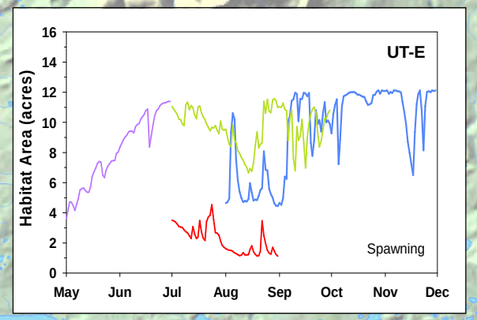
UT-B

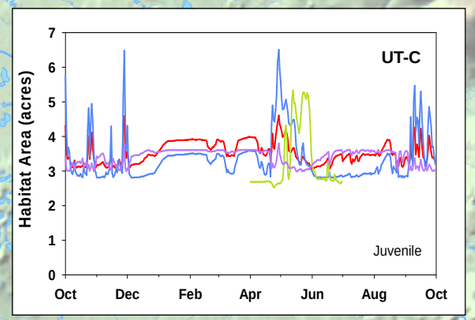
UT-A

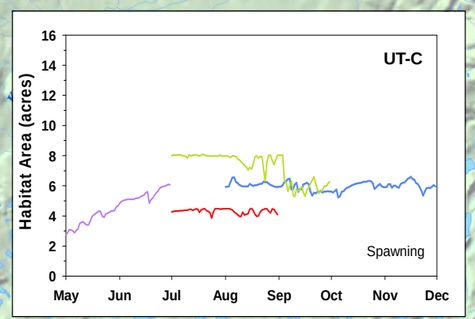


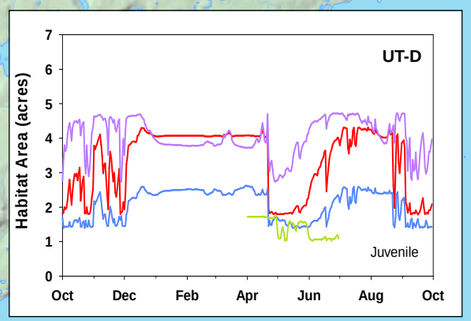


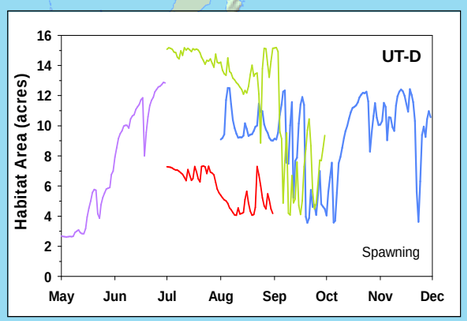


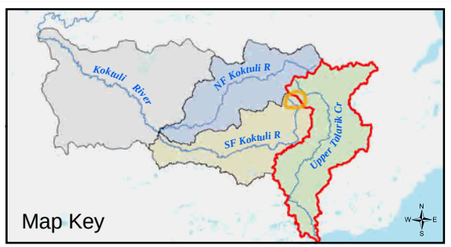












Legend

- Chinook Salmon
- Coho Salmon
- Sockeye Salmon
- Rainbow Trout
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

THE pebble PARTNERSHIP

Figure 15.1-76
Habitat Area Time Series
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

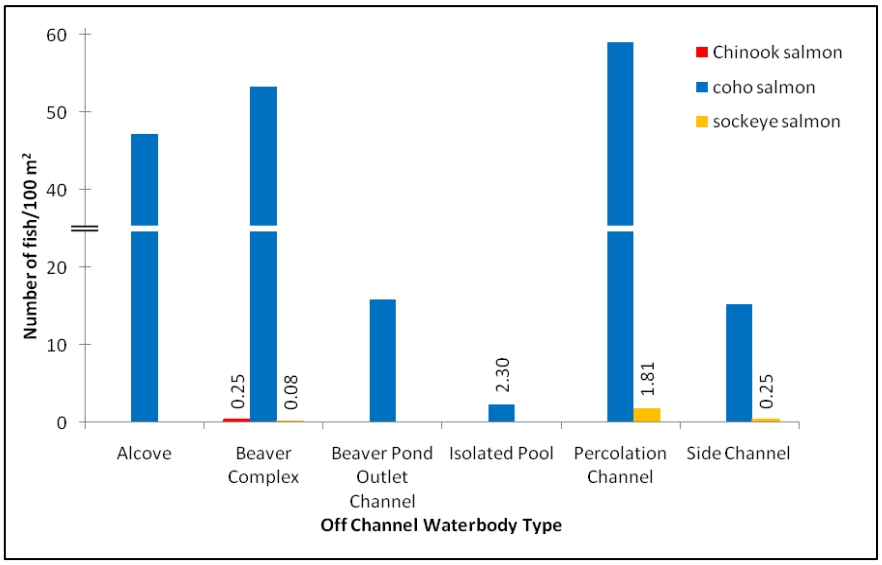


FIGURE 15.1-77
Fish Densities of Anadromous Salmonids among Off-Channel Habitat Types in the Upper Talarik Watershed

m^2 = square meters

Source: EBD Appendix 15.1D *Off-channel Habitat*.

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Frying Pan Lake

Koktuli Mountain

Talarik Creek

Upper Talarik Creek

Sharp Mountain

Chiquita Lake

First Creek

Lake #2

Newhalen River

Newhalen

Iliamna Lake

Roadhouse Mountain

UT 1.390

UT 1.410

UT 1.350

UT 1.190

UT 1.60

UT-G

UT-F

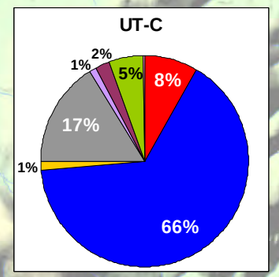
UT-E

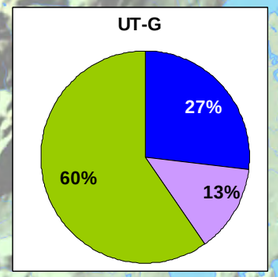
UT-D

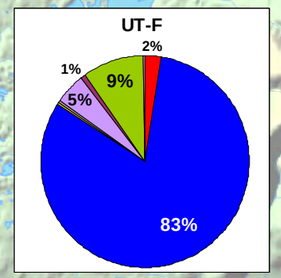
UT-C

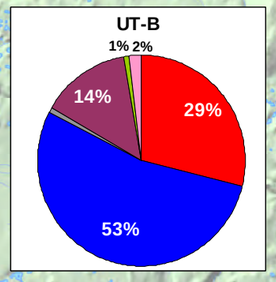
UT-B

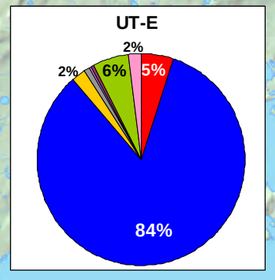
UT-A

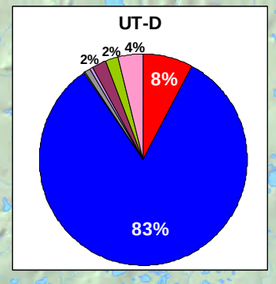


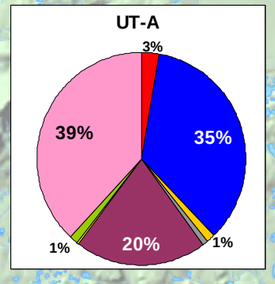


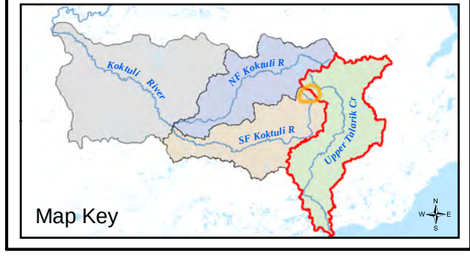












Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

Note: Pie slices of less than 1 percent are not depicted accurately by the graphing software.

THE pebble PARTNERSHIP

Figure 15.1-78
Fish Species Composition
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

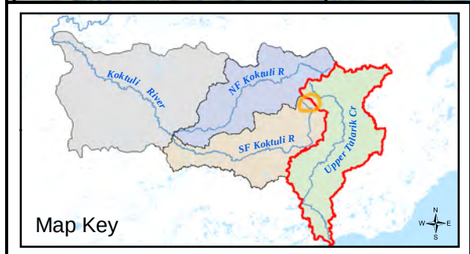
April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain
Nondalton
Big Wiggly Lake
River
Koktuli
Fork
North
Koktuli River
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
UT-G
UT-F
UT-E
UT-D
UT-C
UT-B
UT-A
UT 1.390
UT 1.350.60
UT 1.410
UT 1.350
Creek
Talarik
Roadhouse Mountain
South
Fork
Koktuli
River
UT 1.190
UT 1.60
Sharp Mountain
Upper
Chiquita Lake
Creek
Kaskanak
Creek
First
Lake #2
Newhalen
River
Iliamna
Newhalen
Iliamna Lake



Map Key

Legend

Anadromous Fish Distribution*

- R2 Anadromous Water Catalog Nominations (2004-2008 Data)
- ADF&G Anadromous Water Catalog Stream (2009)
- Sites With No Anadromous Fish Present (2004-2008 Data)

UT-A Mainstem Reach Example
UT 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

* Species include Chinook, chum, coho, and sockeye salmon.

N W E S

THE pebble PARTNERSHIP

Figure 15.1-79
Known Distribution of Anadromous Fishes
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

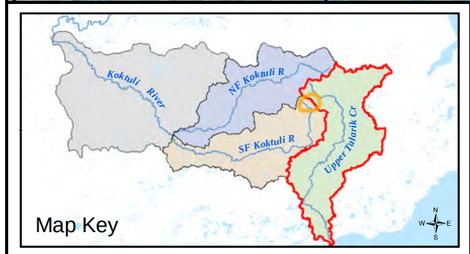
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain
Nondalton
Big Wiggly Lake
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
Roadhouse Mountain
Sharp Mountain
Chiquita Lake
Kaskanak Creek
Lake #2
Talarik Creek
Upper Talarik Creek
First Creek
Newhalen River
Iliamna
Newhalen
Iliamna Lake

UT-G
UT-F
UT-E
UT-D
UT-C
UT-B
UT-A

UT 1.390
UT 1.410
UT 1.350
UT 1.190
UT 1.60



Map Key

Legend

Anadromous Fish Spawning Locations*
UT-A Mainstem Reach Example
UT 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

* Species include Chinook, chum, coho, and sockeye salmon. Individual species maps are provided in Appendix 15.1B.

N W E S

THE pebble PARTNERSHIP

Figure 15.1-80
Anadromous Fish Spawning Locations
Upper Talarik Creek (UT) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

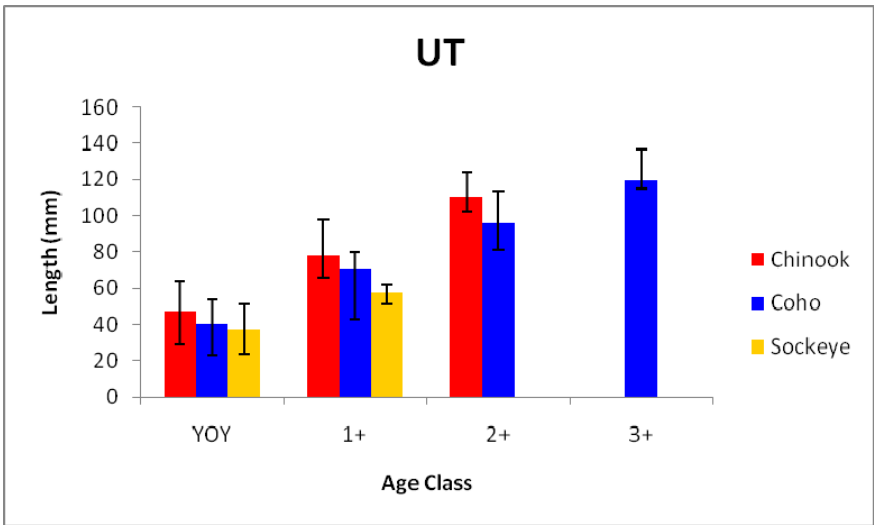


FIGURE 15.1-81
Mean Fork Length of Anadromous Salmonids by Age Class and Species in the Upper Talarik Watershed

Note: Based on fish measurements from the Upper Talarik Watershed.

Error bars indicate minimum and maximum measured lengths.

mm = millimeter

UT = Upper Talarik Creek

YOY = young of the year

Source: R. Bailey (2009).

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

UT 1.390

UT-G

UT-F

UT 1.410

UT 1.350

Kaskanak Mountain

Koktuli River

Frying Pan Lake

Koktuli Mountain

UT-E

Talarik Creek

UT-D

South Fork Koktuli River

Koktuli River

UT 1.190

UT 1.60

Sharp Mountain

Upper Talarik Cr

UT-C

Chiquita Lake

First Creek

Lake #2

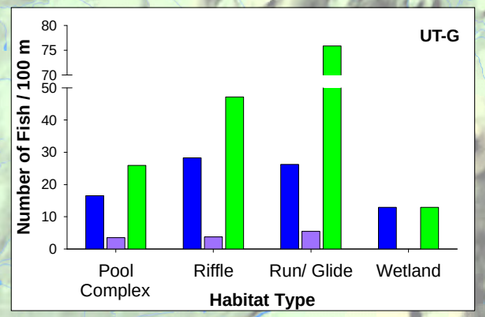
UT-B

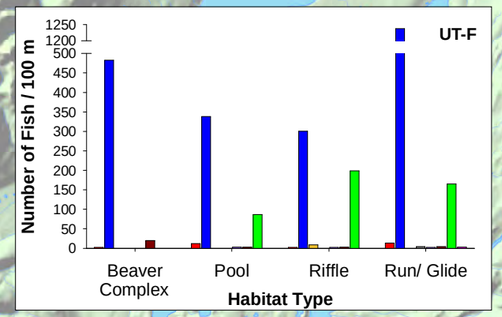
UT-A

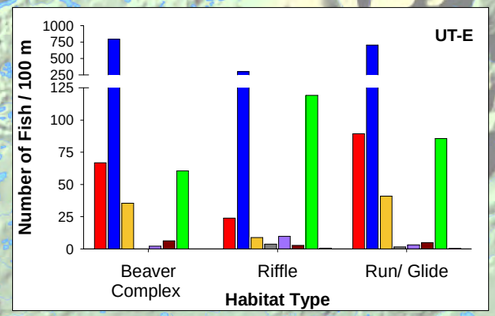
Newhalen River

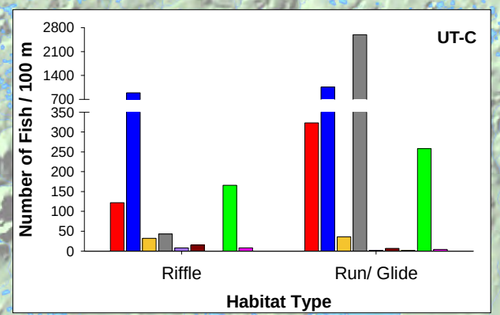
Iliamna

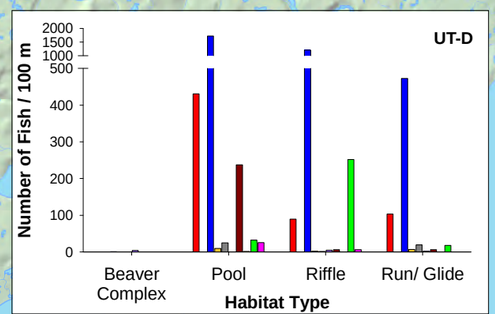
Iliamna Lake

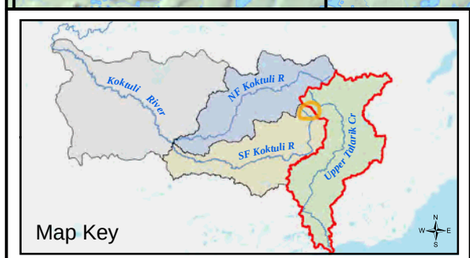












Legend

- Chinook Salmon
- Chum Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback
- Northern Pike
- Other Species
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

Note: These data were collected using on-the-ground survey methods (e.g. electrofishing and snorkeling). Thus, more than 99 percent of the Chinook, chum, coho, and sockeye salmon data represent juvenile fishes.

THE pebble PARTNERSHIP

Figure 15.1-82
Fish Relative Abundance
Upper Talarik Creek (UT) Watershed

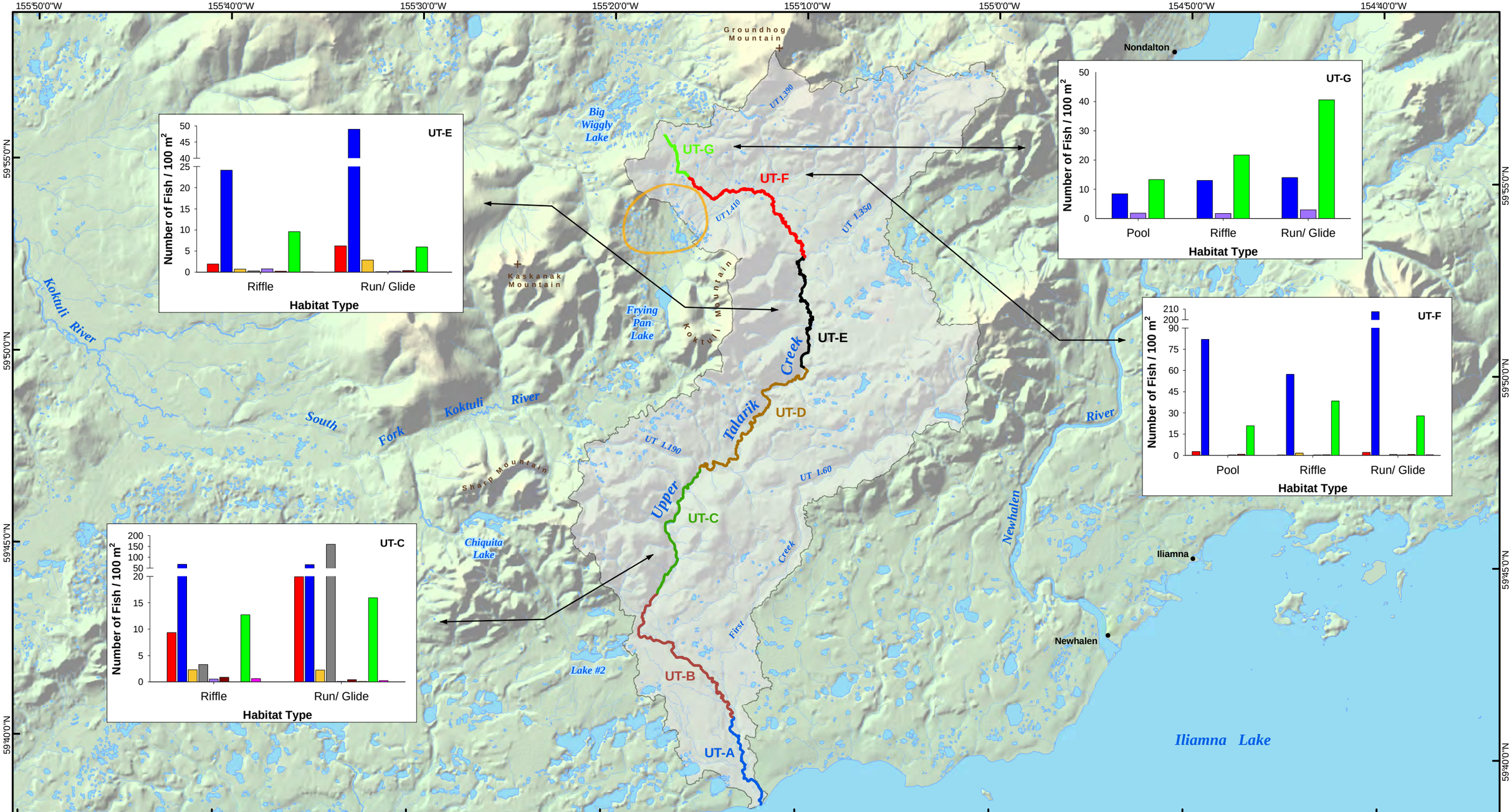
Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ



Note: These data were collected using on-the-ground survey methods (e.g. electrofishing and snorkeling). Thus, more than 99 percent of the Chinook, chum, coho, and sockeye salmon data represent juvenile fishes.

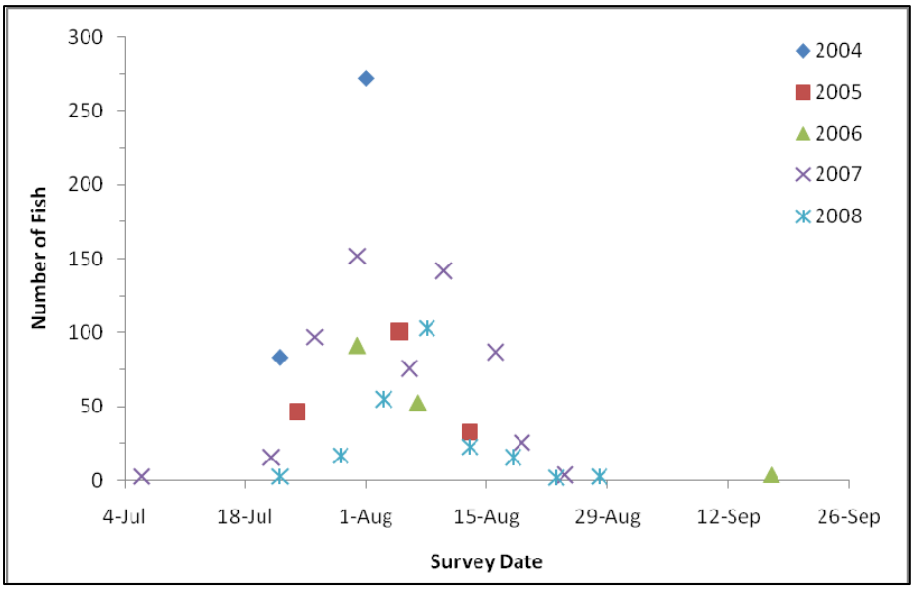


FIGURE 15.1-84
Index Counts of Adult Chinook Salmon from Aerial Surveys in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: Data presented includes only those used in the mean index count analysis.

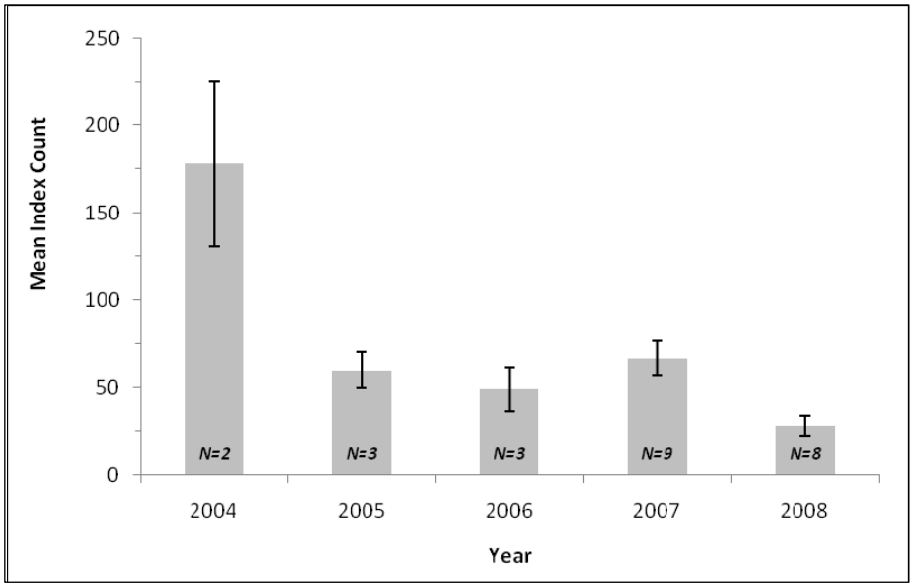


FIGURE 15.1-85
Chinook Salmon Annual Mean Index Counts (±1 Standard Error) in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: *N* is the number of surveys included in the index analysis.

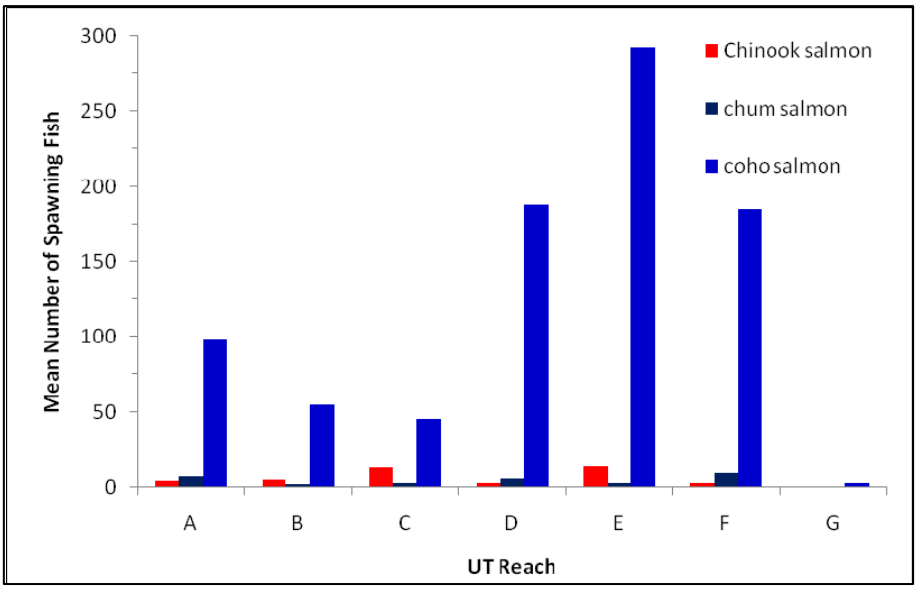


FIGURE 15.1-86
Mean Counts of Spawning Chinook, Chum, and Coho Salmon by Upper Talarik Reach from All Aerial Surveys Flown in 2008

UT = Upper Talarik Creek

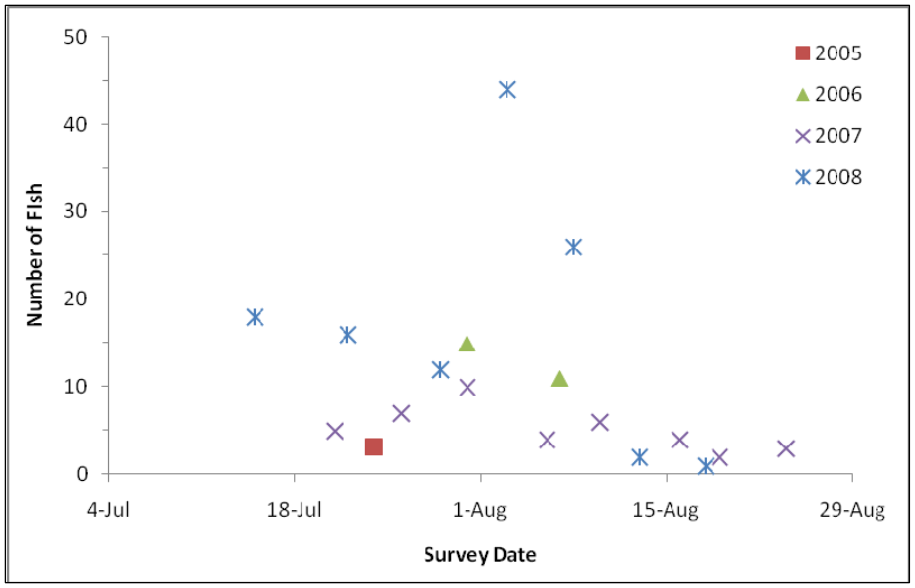


FIGURE 15.1-87
Index Counts of Adult Chum Salmon from Aerial Surveys in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: Data presented includes only those used in the mean index count analysis.

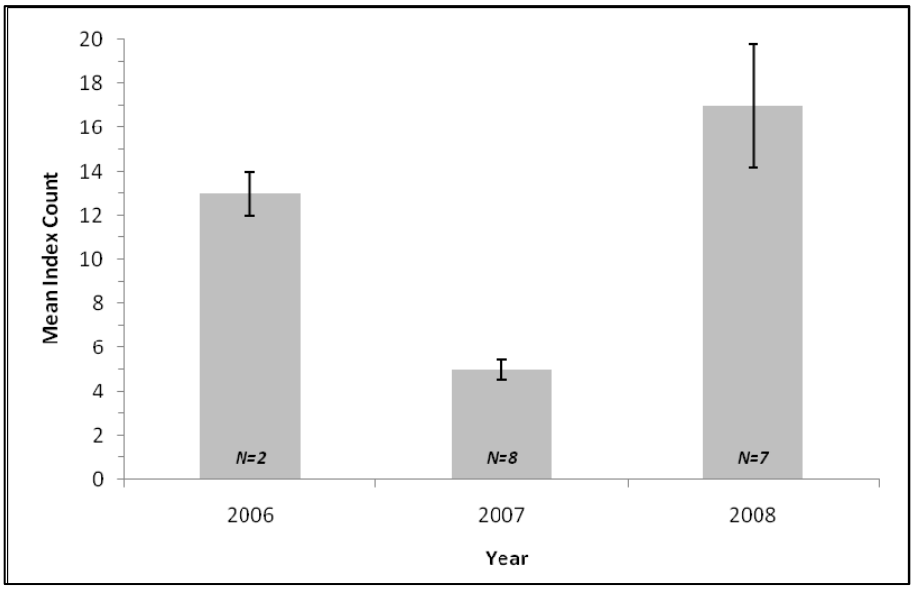


FIGURE 15.1-88
Chum Salmon Annual Mean Index Counts (±1 Standard Error) in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: N is the number of surveys included in the index analysis.

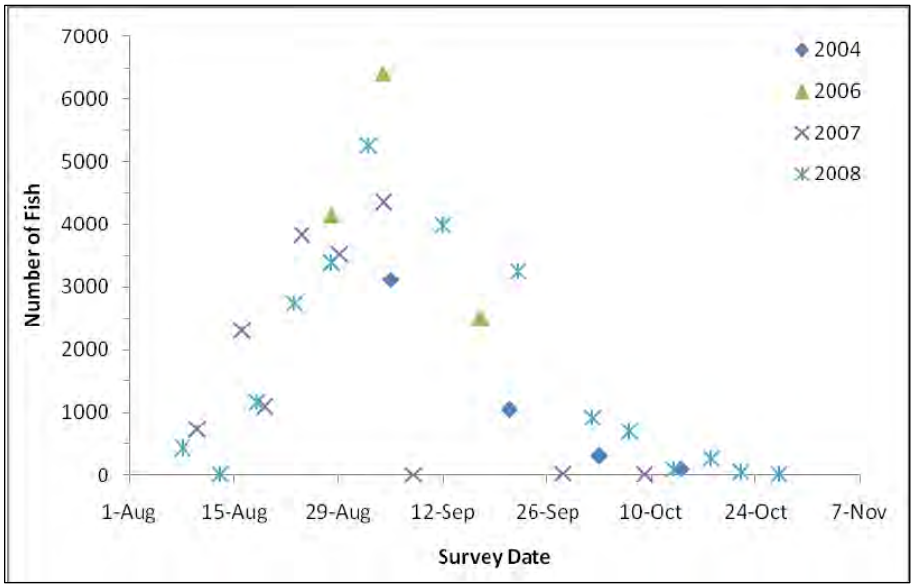


FIGURE 15.1-89
Index Counts of Adult Coho Salmon from Aerial Surveys in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: Data presented includes only those used in the mean index count analysis.

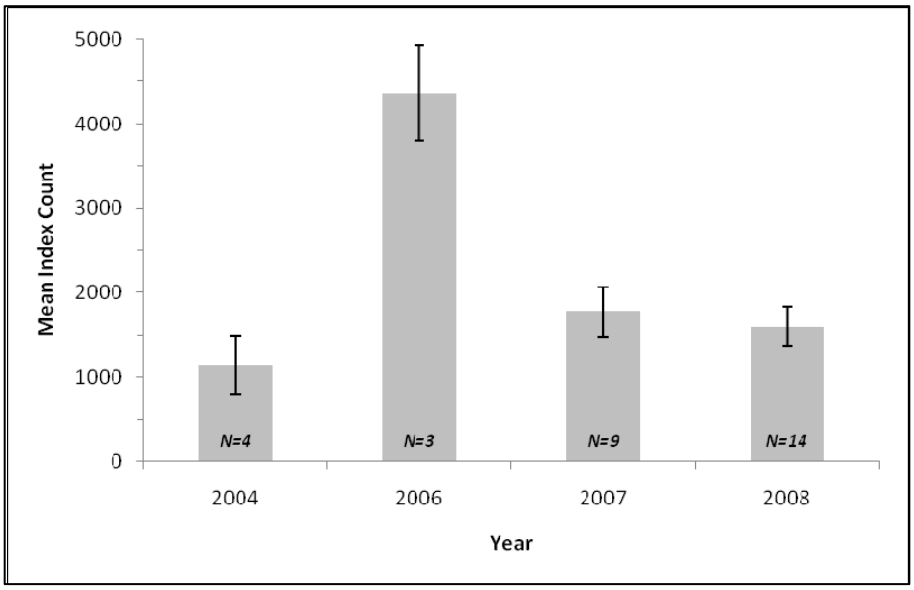


FIGURE 15.1-90
Coho Salmon Annual Mean Index Counts (±1 Standard Error) in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: *N* is the number of surveys included in the index analysis.

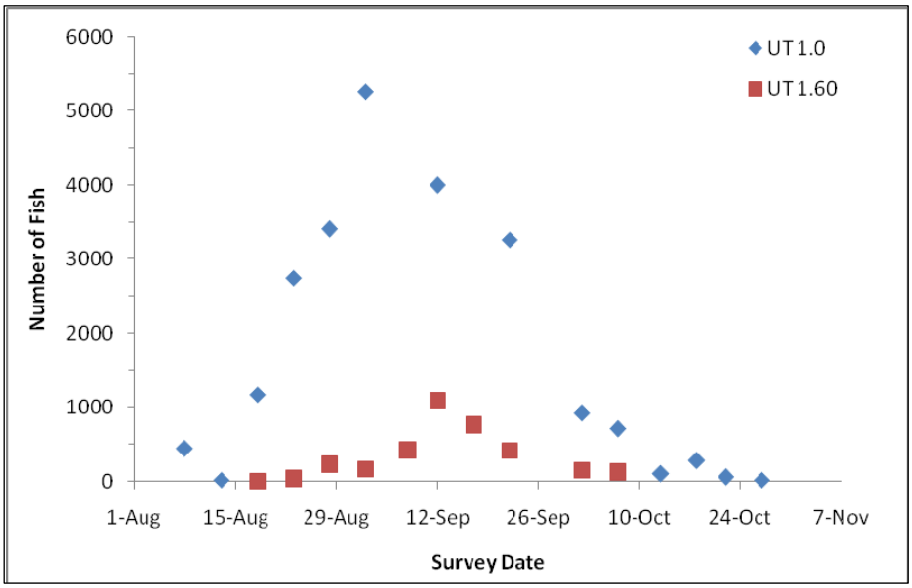


FIGURE 15.1-91
Index Counts of Adult Coho Salmon in the Upper Talarik Mainstem and Upper Talarik Tributary 1.60 from 2008 Aerial Surveys

Notes:

The Upper Talarik Mainstem (UT 1.0) index survey area includes Upper Talarik Tributary 1.190 and Upper Talarik Tributary 1.350.

Data presented includes only those used in the mean index count analysis.

UT = Upper Talarik Creek

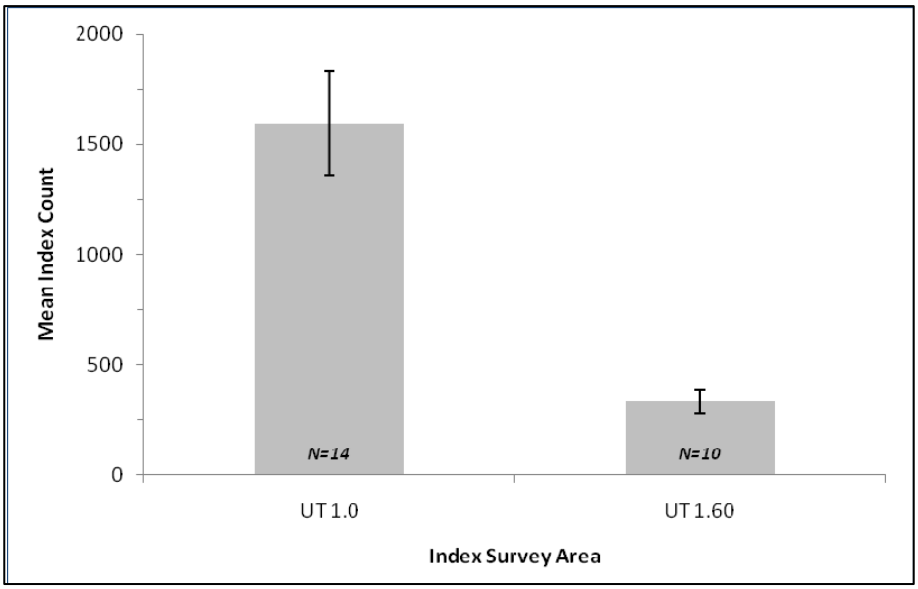


FIGURE 15.1-92
Coho Salmon Mean Index Counts (±1 Standard Error) in the Upper Talarik Mainstem and Upper Talarik Tributary 1.60 from 2008 Aerial Surveys

Notes:

The Upper Talarik Mainstem (UT 1.0) index survey area includes Upper Talarik Tributary 1.190 and Upper Talarik Tributary 1.350.

N is the number of surveys included in the index analysis.

UT = Upper Talarik Creek

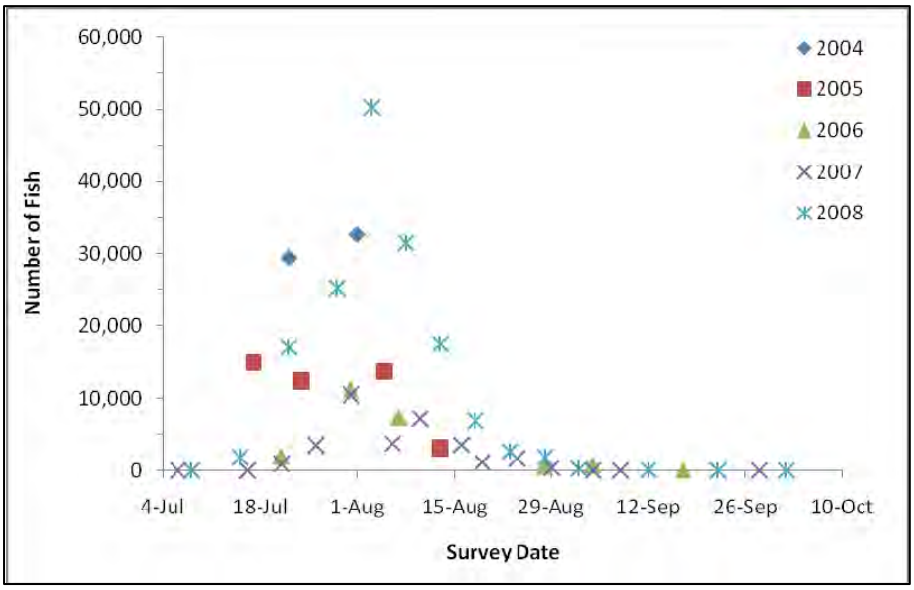


FIGURE 15.1-93
Index Counts of Adult Sockeye Salmon from Aerial Surveys in the Upper Talarik Watershed, Excluding Upper Talarik Tributary 1.60

Note: Data presented includes only those used in the mean index count analysis.

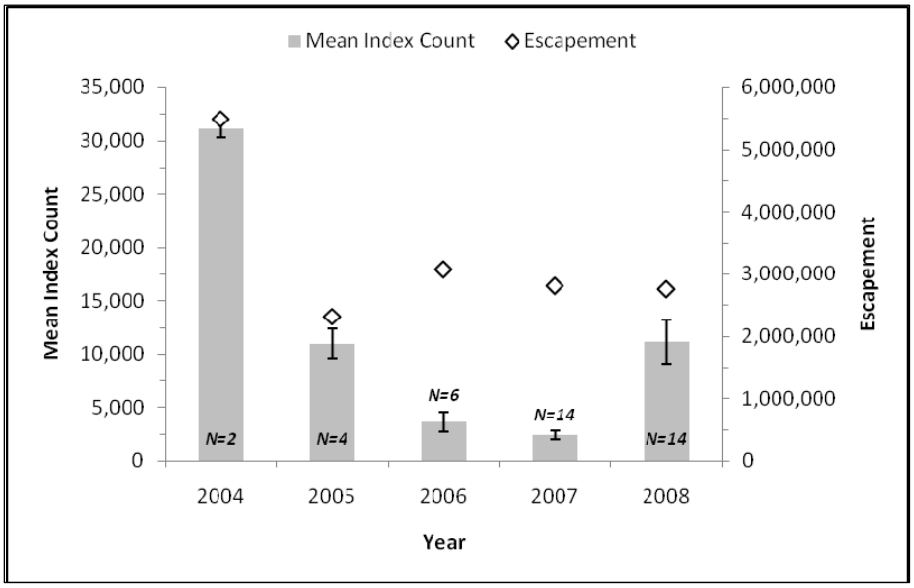


FIGURE 15.1-94
Sockeye Salmon Annual Mean Index Counts (±1 Standard Error) in the Upper Talarik Watershed (Excluding Upper Talarik Tributary 1.60) and Kvichak River Spawning Escapement

Note: *N* is the number of surveys included in the index analysis.

Source: Escapement estimates were taken from Baker et al. (2009), Appendix A5.

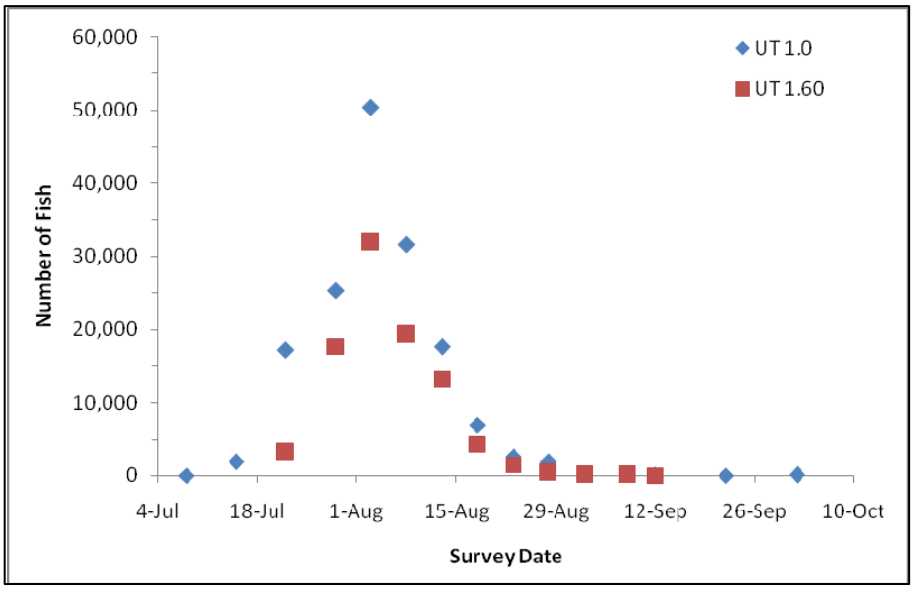


FIGURE 15.1-95
Index Counts of Adult Sockeye Salmon in the Upper Talarik Mainstem and Upper Talarik Tributary 1.60 from 2008 Aerial Surveys

Notes:

The Upper Talarik Mainstem (UT 1.0) index survey area includes Upper Talarik Tributary 1.190 and Upper Talarik Tributary 1.350.

Data presented includes only those used in the mean index count analysis.

UT = Upper Talarik Creek

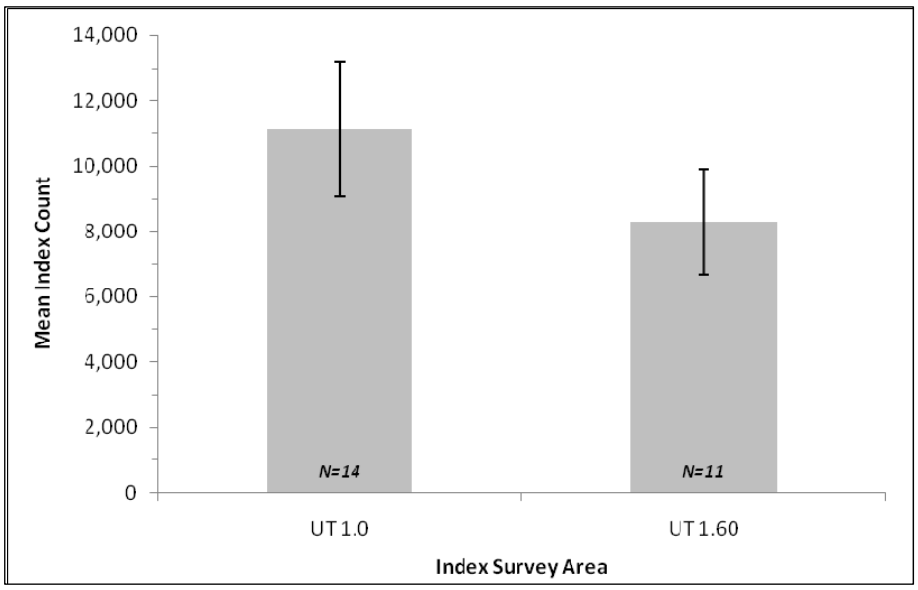


FIGURE 15.1-96
Sockeye Salmon Mean Index Counts (±1 Standard Error) in the Upper Talarik Mainstem 1.0 and Upper Talarik Tributary 1.60 from 2008 Aerial Surveys

Notes:

The Upper Talarik Mainstem (UT 1.0) index survey area includes Upper Talarik Tributary 1.190 and Upper Talarik Tributary 1.350.

N is the number of surveys included in the index analysis.

UT = Upper Talarik Creek

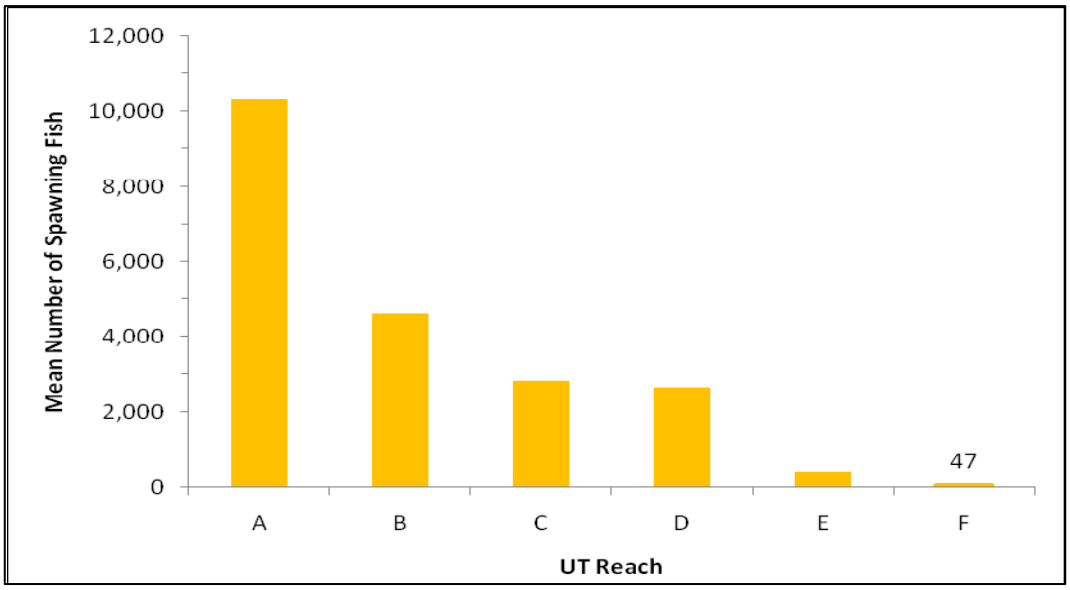


FIGURE 15.1-97
Mean Counts of Spawning Sockeye Salmon by Upper Talarik Reach from All Aerial Surveys Flown in 2008

UT = Upper Talarik Creek

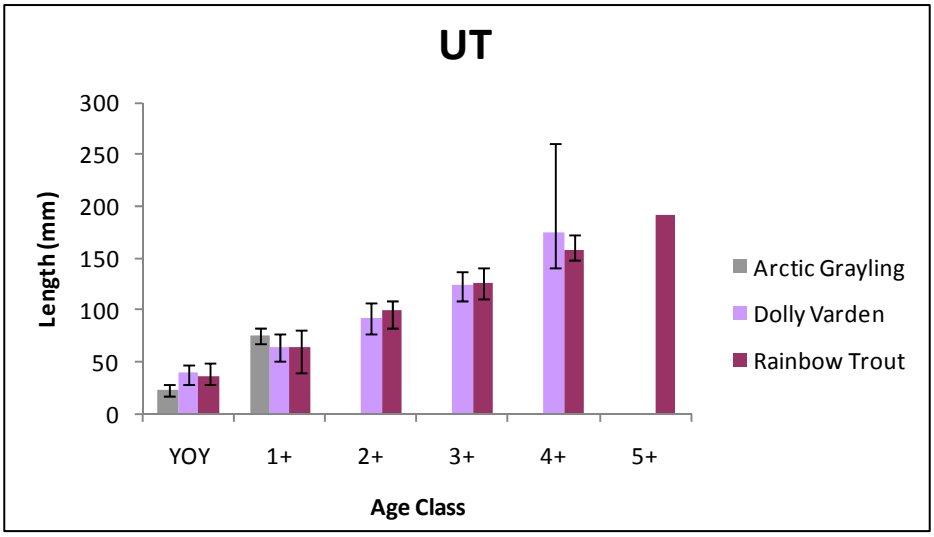


FIGURE 15.1-98
Mean Fork Length of Non-anadromous Salmonids by Age Class and Species in the Upper Talarik Watershed

Notes: Based on fish measurements from the UT. Error bars indicate minimum and maximum measured lengths.
mm = millimeter
UT = Upper Talarik Creek
YOY = young of the year
Source: R. Bailey (2009).

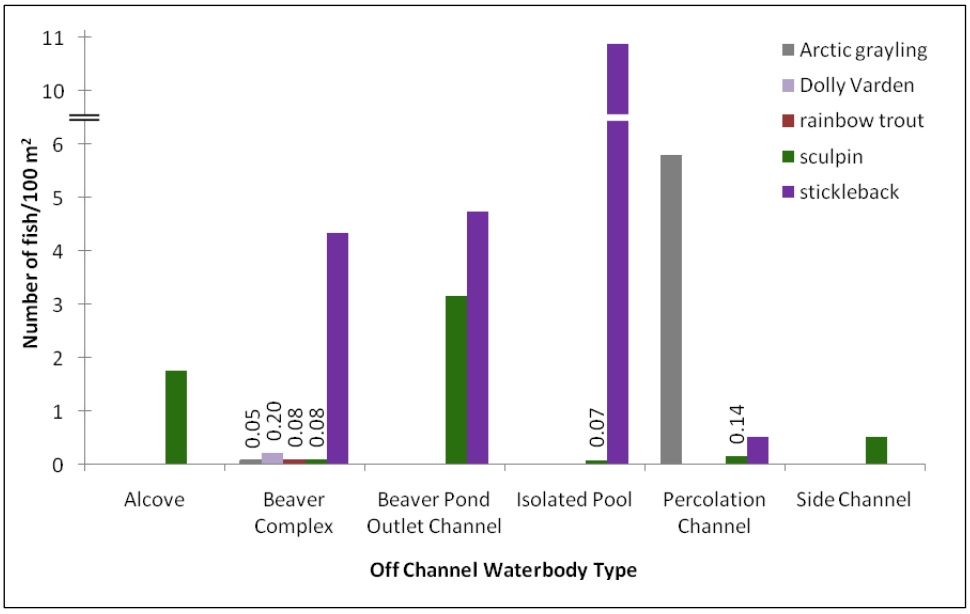


FIGURE 15.1-99
Fish Densities of Resident Species among Off-Channel Habitat Types in the Upper Talarik Watershed

m^2 = square meters

Source: EBD Appendix 15.1D *Off-channel Habitat*.

156°20'0"W 156°10'0"W 156°0'0"W 155°50'0"W 155°40'0"W 155°30'0"W

60°0'0"N

59°55'0"N

59°50'0"N

Swan River

Koktuli River

Koktuli

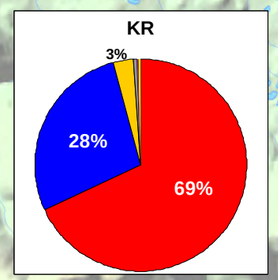
River

Black Lake

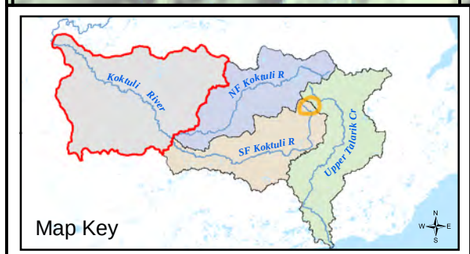
Koktuli River

North Fork

South Fork Koktuli River



Note: Pie slices of less than 1 percent are not depicted accurately by the graphing software.



Legend

Anadromous Fish Distribution*

- R2 Anadromous Water Catalog Nominations (2004-2008 Data)
- ADF&G Anadromous Water Catalog Stream (2009)
- Fish Sampling Sites
- Watershed Boundary

Fish Species Composition

- Chinook Salmon
- Coho Salmon
- Sockeye Salmon
- Arctic Grayling
- Dolly Varden
- Rainbow Trout
- Whitefish
- Sculpin
- Stickleback

* Species include Chinook, chum, coho, and sockeye salmon.

THE pebble PARTNERSHIP

Figure 15.1-100
Fish Sampling Sites, Species Composition, and Distribution Koktuli River (KR) Watershed

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

PHOTOGRAPHS

PHOTO 15.1-1: Surveys were completed to document the types, quality, and quantity of aquatic habitats present in streams and tributaries within the mine study area. Data were collected for mainstem channels (A), side channels (B), and split channels (C).

PHOTO 15.1-2: Several fish sampling methods were employed to document and describe patterns of fish distribution and relative abundance of juvenile (A) and adult salmonids in the proposed mining area. Sampling techniques included beach seines (B), snorkel surveys (C), electrofishing surveys, minnow traps, fyke nets, gill nets, tangle nets, and angling.

PHOTO 15.1-3: Snorkel surveys were calibrated using multi-pass electrofishing depletion sampling (A). Electrofishing was also used in sample sections not conducive to snorkeling (B). Captured fish were identified to species, measured (C), and released.

PHOTO 15.1-4: Images from helicopter surveys to enumerate adult salmon in the North Fork Koktuli, South Fork Koktuli, and Upper Talarik watersheds.

PHOTO 15.1-5: Radiotelemetry studies have been conducted to document movement and behavioral patterns of arctic grayling and rainbow trout within streams within the mine study area. These photos depict plane-based mobile tracking (A), a stationary tracking station (B), and surgical implanting of radio tag transmitters (C).

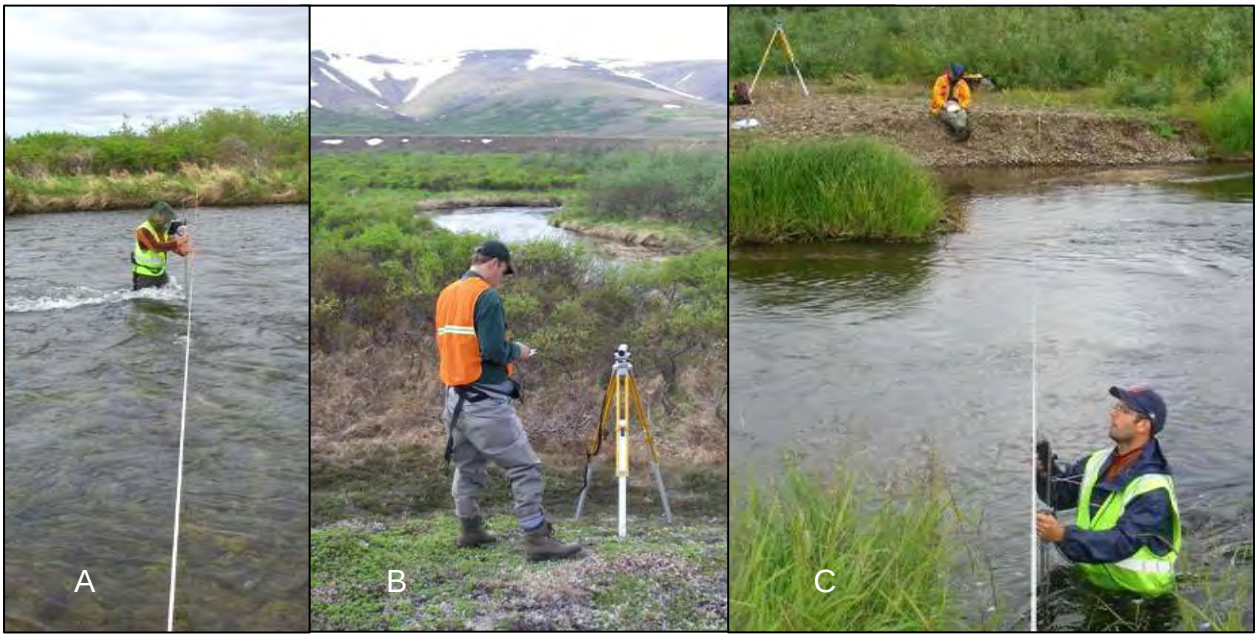


PHOTO 15.1-6: Instream flow habitat studies to determine habitat versus flow relationships for various target fish species and life stages have been conducted on each of the mainstem rivers in the mine study area, including the North Fork Koktuli River (A), South Fork Koktuli River (B), and Upper Talarik Creek (C), as well as selected tributaries.

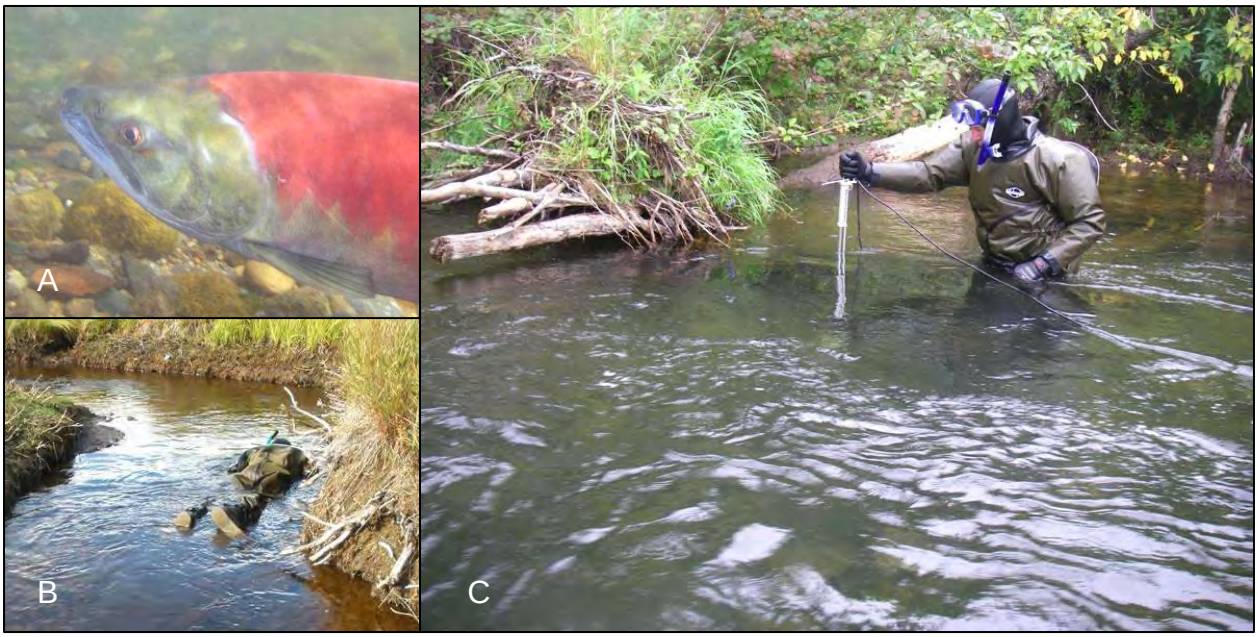


PHOTO 15.1-7: Microhabitat data were collected from spawning (A) and juvenile rearing (B) habitats and applied in developing site-specific Habitat Suitability Criteria curves for use in the instream flow habitat studies. Site-specific microhabitat data collection included measuring depth, velocity, substrate, and cover

(C).

PHOTO 15.1-8: Studies to evaluate and quantify off-channel habitats (A) and their connectivity (B) and flow responsiveness (C) to mainstem channel flows have been conducted in each of the three main drainages of the mine study area, including the North Fork Koktuli, South Fork Koktuli, and Upper Talarik.

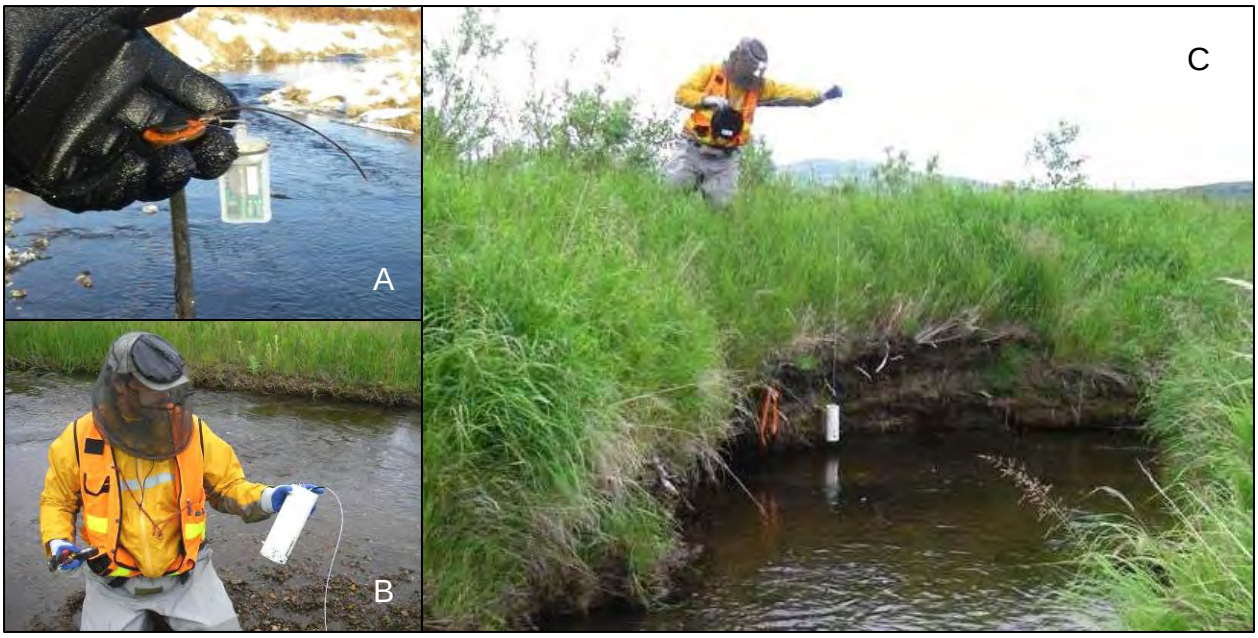


PHOTO 15.1-9: Water temperatures were monitored at numerous locations within each of the three watersheds (North Fork Koktuli, South Fork Koktuli, and Upper Talarik). Intragravel thermistors (A) and surface thermistors within a protective housing of PVC pipe (B) were installed in both mainstem channel and off-channel (C) habitats.

PHOTO 15.1-10: Fluvial geomorphology studies served to characterize the quality of spawning gravels by identifying the concentrations of fine sediments within the gravel matrix (A). Bulk substrate samples were collected from each of the mainstem rivers (North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek) before spawning (B) and after fall high flows prior to winter freeze-up (C).

PHOTO 15.1-11: Representative photos of North Fork Koktuli River reach NFK-A.

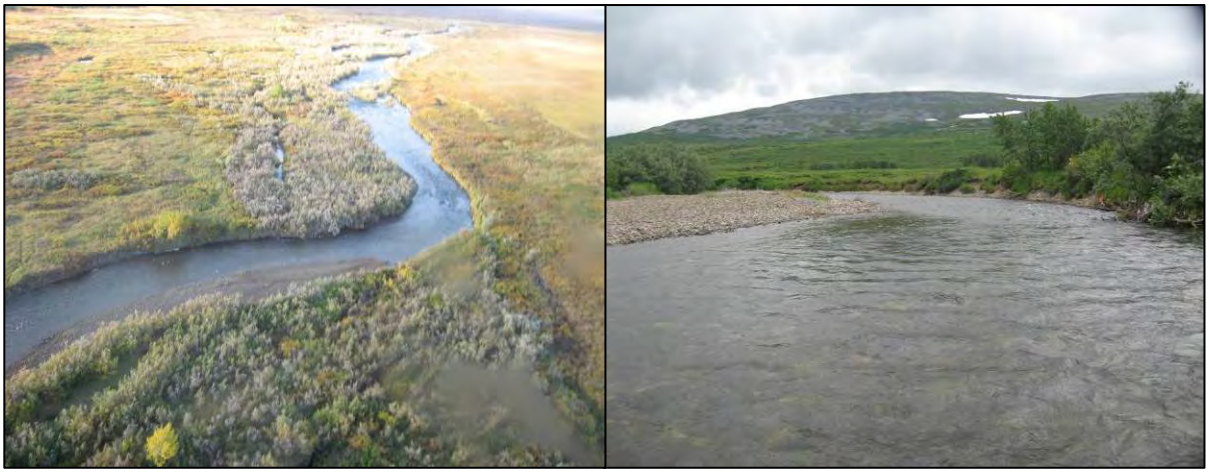


PHOTO 15.1-12: Representative photos of North Fork Koktuli River reach NFK-B.

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PHOTO 15.1-14: Representative photos of North Fork Koktuli River reach NFK-D.

PHOTO 15.1-15: Representative photos of North Fork Koktuli River reach NFK-E.

PHOTO15.1-16: Representative photos of North Fork Koktuli River reach NFK-F. Orthophoto is at 1:4,300 scale.

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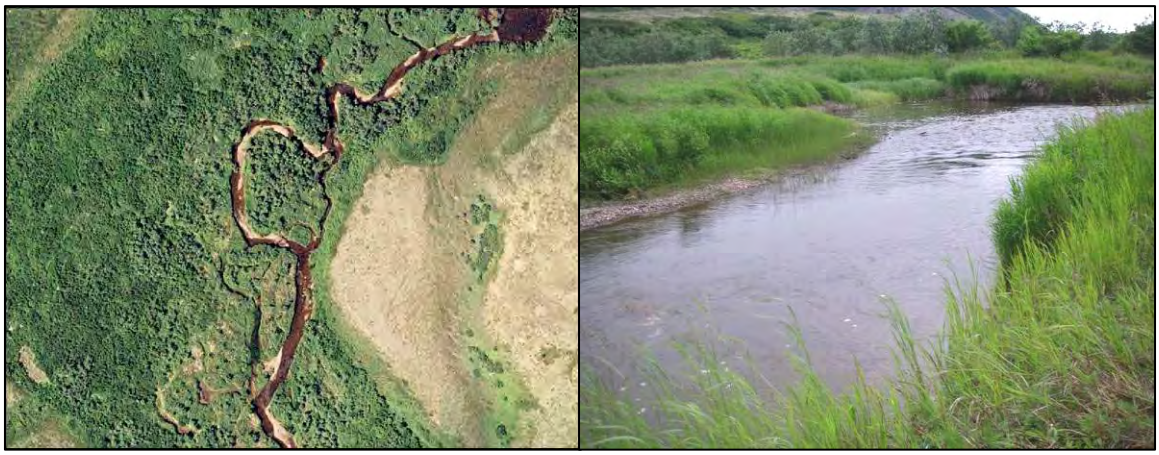

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APPENDIX 15.1A

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°C	degrees Celsius
Cm	centimeter(s)

FISH SPECIES LIFE HISTORY INFORMATION

1. CHINOOK SALMON, *ONCORHYNCHUS TSHAWYTSCHA*

1.1 CURRENT DISTRIBUTION

Chinook salmon are distributed from northern Hokkaido, Japan, to the Anadyr River in Siberia and from the San Joaquin River in Central California to the Coppermine River in the Canadian Arctic (Healey, 1991). In Alaska, Chinook salmon occur in large coastal rivers from the southern tip of Alaska's panhandle northward to Point Hope (Mecklenburg et al., 2002). Chinook salmon have been documented in several Bristol Bay tributaries, including the Kvichak and Nushagak river basins (Johnson and Weiss, 2007).

1.2 BEHAVIOR AND REPRODUCTION

As with other Pacific salmon, Chinook salmon are anadromous—meaning they reproduce and spend the early portion of their life in freshwater then metamorphose into smolts that migrate to sea for a period of adult growth, development, and maturation. Chinook salmon mature and begin their spawning migration between 3 and 6 years of age, but most spawning adults are ages 4 and 5 (Healey, 1991). In northwestern Canada and Alaska, adult Chinook salmon migrate to freshwater spawning grounds between late May and July, although this period may extend from April to September in some locations (Healey, 1991). While spawning generally takes place from July to November, spawning time varies regionally and depends on the distance and duration of river migration (Morrow, 1980; Scott and Crossman, 1973). Northern populations, such as those in Alaska, tend to spawn from July through September (Healey, 1991). Adults die following reproduction and egg deposition into one or more gravel nests known as redds.

Chinook salmon egg incubation varies with temperature, with lower temperatures resulting in increased time to hatching (Healey, 1991). After hatching in the spring, the young remain in the gravel for 2 to 3 weeks and then emerge as free-swimming, feeding fry (Morrow, 1980). While some juvenile Chinook salmon may rapidly disperse to sea, this life history pattern tends to be absent in locations north of 56 degrees North latitude, such as Alaska (Quinn, 2005). In these northern locations, most juvenile Chinook salmon remain in freshwater streams for 1 year before beginning their outmigration to sea, but some will remain in freshwater for 2 years (Morrow, 1980; Quinn, 2005).

1.3 HABITAT REQUIREMENTS

Owing to their large body size, adult Chinook salmon require deep holding water and sufficient stream flow to successfully complete their upstream migration. Spawning depths vary widely, from 5 to 720 centimeters (cm), with average spawning depths starting at 30 cm (Healey, 1991). The large body size of Chinook salmon also enables them to use large gravel and cobble substrates for spawning (Raleigh et al., 1986). Successful incubation requires clean water percolating through spawning gravels at temperatures less than 16 degrees Celsius (°C) (Healey, 1991).

Juvenile Chinook salmon occupy a variety of habitats during their stay in freshwater. Younger, smaller fry inhabit stream margins, eddies, backwaters, and side channels and are often associated with fallen trees, root wads, and areas with bank cover. As they increase in size, juvenile Chinook salmon move into stream and river habitats with increasing velocities (up to 1.2 meters per second). This movement is associated with a shift from predominantly sandy substrates to those with larger-sized gravel and boulders (Healey, 1991).

2. CHUM SALMON, *ONCORHYNCHUS KETA*

2.1 CURRENT DISTRIBUTION

Chum salmon have the widest distribution among the Pacific salmon, ranging from Korea to the Lena River in Russia and from the Mackenzie River in the Canadian Arctic down to Monterey, California. On the Pacific coast of North America, major chum salmon runs occur from the Kotzebue Sound of northwestern Alaska southward to Tillamook Bay, Oregon., There are major runs in Bristol Bay tributaries, including the Togiak, Nushagak, and Kvichak rivers (Salo, 1991). While chum salmon do not typically migrate long distances in freshwater reaches, some populations extend over 2 kilometers into tributaries of the Mackenzie and Yukon rivers (Quinn, 2005).

2.2 BEHAVIOR AND REPRODUCTION

Like other Pacific salmon species, chum salmon are anadromous. Compared to other Pacific salmon, they spend little time in freshwater and generally spawn soon after returning from the sea to lower stream reaches (Quinn, 2005). Chum salmon are typically fall spawners. However, in Alaska and northwestern Canada, spawning migration begins in early June (McPhail and Lindsey, 1970), and in Bristol Bay tributaries, major chum salmon runs tend to peak in early July and subside by the end of the month (Salo, 1991). Spawned-out males and females die within a few days after reproduction and egg deposition, although females may first attend their redds for a short period of time (Morrow, 1980).

Chum salmon incubation times are largely based on temperature. Since chum salmon juveniles hatch out under the cover of ice, the exact timing of hatching in Alaska is largely unknown. In British Columbia, hatching occurs between December and February (McPhail and Lindsey, 1970; Morrow, 1980). Hatchlings remain in the gravel for several weeks. After emergence, juvenile chum salmon rear in freshwater for a period of a few days to several weeks before migrating downstream toward estuarine waters (Grette and Salo, 1986). Generally, chum salmon outmigration occurs between mid-spring and late summer, but it tends to occur later in the season in more northern latitudes and takes longer in larger river systems (Salo, 1991). Juvenile chum salmon spend more rearing time in estuaries than other anadromous salmon, rearing for several months before dispersing into saltwater in late July or August (Johnson et al., 1997; Scott and Crossman, 1973). Chum salmon mature between 2 and 6 years of age (Salo, 1991).

2.3 HABITAT REQUIREMENTS

Chum salmon have been reported to spawn in shallower, lower flow streams and side channels compared to other Pacific salmon (Johnson et al., 1997). Chum salmon typically spawn over gravel substrates (2 to 3 cm in diameter), although coarser substrates may also be used (Morrow, 1980). Preferred spawning

areas are in groundwater-fed streams or at the head of riffles (Grette and Salo, 1986). Groundwater upwelling is important to redd site selection (Johnson et al., 1997). Health of the emergent chum salmon fry depends on dissolved oxygen, gravel composition, spawner density, and stream discharge (Salo, 1991).

Juvenile chum salmon move out of freshwater shortly after emergence and feed on aquatic invertebrates as they migrate downstream (Salo, 1991). Juveniles may remain near the mouth of their natal river after entering the estuary, or they may disperse rapidly throughout the estuarine system into tidal creeks and sloughs. Because of their increased rearing time in estuaries, estuarine habitat is thought to play a major role in determining subsequent adult return to freshwater (Johnson et al., 1997). A variety of microhabitats and food sources within the estuary may be used by chum salmon, and microhabitat selection may vary with fish size and environmental conditions such as food and refugia availability, predator presence, and salinity (Quinn, 2005).

3. COHO SALMON, *ONCORHYNCHUS KISUTCH*

3.1 CURRENT DISTRIBUTION

Coho salmon are widely distributed throughout the North Pacific basin. Their distribution ranges from the Sea of Japan north to Point Hope, Alaska, and south to the Sacramento River in California (Sandercock, 1991). Along the Pacific coast of Alaska, coho salmon are native to coastal rivers and streams, including the Kvichak and Nushagak river basins.

3.2 BEHAVIOR AND REPRODUCTION

Like other Pacific salmon species, coho salmon are anadromous. North American coho salmon typically spawn from October to March, although entry into freshwater and spawning time varies among populations and with environmental conditions (Morrow, 1980; Sandercock, 1991). In northwestern Canada and Alaska, adult coho salmon may begin their upstream migrations as early as late June and July; however, most of the spawning in these areas occurs in November. In the Bristol Bay area, adult returns to freshwater peak in August and September (McPhail and Lindsey, 1970) and spawning continues through the fall. Coho salmon adults die after spawning.

The length of incubation for coho salmon ranges from 35 to 101 days (Laufle et al., 1986). Specific to Alaska coho salmon, the incubation period ranges from 42 to 56 days (McPhail and Lindsey, 1970). After hatching, larval fish typically spend 2 to 3 weeks in the gravel before emerging between early March and mid-May (Laufle et al., 1986; McMahon, 1983). Juvenile coho salmon rearing time in freshwater is typically about 15 months, although some juveniles will remain in freshwater for up to 2 years (Sandercock, 1991). Smolt outmigration begins in February and may continue into June; however, in more northern populations, outmigration is likely to occur later and extend into July or August. While the majority of coho salmon reach maturity and return from the sea to reproduce in their natal tributaries as 3-year olds, precocious males that reach maturity during their first (referred to as “jacks”) or second year are a natural component of many Alaska coho populations (Sandercock, 1991).

3.3 HABITAT REQUIREMENTS

Adult coho salmon require deep holding cover for resting during upstream migration, as well as sufficient stream flow for upstream movement into tributaries. A minimum depth of 18 cm is needed for upstream migration of coho salmon (Laufle et al., 1986). Coho salmon spawning gravels are typically less than 15 cm in diameter, and optimal incubation temperatures range from 4°C to 11°C (Sandercock, 1991).

Newly emerged fry usually congregate along stream margins and in backwater pools. As juveniles grow, they disperse and aggressively defend their territory, which results in displacement of excess juveniles downstream to potentially less favorable habitat (Sandercock, 1991). Once territories are established, individuals typically rear in selected areas of the stream, feeding on drifting benthic organisms and terrestrial insects until the following spring (Hart, 1973). During their first winter, juveniles use a variety of slower water habitats –including alcoves, beaver ponds, and side channels (Nickelson et al., 1992). In the winter, this habitat provides low-velocity refuge from high flows. During summer low-flow periods, exposed complex large wood structures and side channels are important habitats for coho salmon (Grette and Salo, 1986).

4. PINK SALMON, *ONCORHYNCHUS GORBUSCHA*

4.1 CURRENT DISTRIBUTION

Pink salmon are widely distributed along the Pacific rim of Asia and North America, from Japan to North Korea, and from central California north to the Bering Sea. The range of this species also extends east and west of the Bering Strait as far as the Lena River in northern Siberia and the Mackenzie River delta in Canada (Heard, 1991). The most abundant North American populations are found in coastal rivers from the Fraser River in southern British Columbia north to the Norton Sound in Alaska (Quinn, 2005). In the Bristol Bay area, pink salmon are abundant (McPhail and Lindsey, 1970).

4.2 BEHAVIOR AND REPRODUCTION

Like other Pacific salmon species, pink salmon are anadromous. However, relative to other salmon species, pink salmon spend very little time in freshwater and display minimal variation in spawning age (McPhail and Lindsey, 1970; Quinn, 2005). Almost all pink salmon spawning occurs when fish are 2 years of age, resulting in reproductively isolated populations between even and odd spawning years. In a particular stream, it is common for either the even- or odd-year run to predominate, although in some streams, the populations may be equally abundant. In the Bristol Bay watershed, the even-year runs tend to predominate. In Alaska, pink salmon adults return to their natal rivers for spawning from June through September, with peak migrations occurring in July and August. Spawning times range from July through September (Heard, 1991). Adults die after spawning.

Pink salmon incubation times, which largely depend on temperature, range from 2 to 4 months, and hatching occurs between late December and February (Morrow, 1980). After hatching, alevins spend several weeks in the gravel before the fry emerge in April and May (McPhail and Lindsey, 1970). Upon emergence, pink salmon fry immediately migrate downstream (Heard, 1991). The young salmon spend

the next 18 months to 2 years at sea as they grow, develop, and mature before returning to their natal rivers (Scott and Crossman, 1973).

4.3 HABITAT REQUIREMENTS

Pink salmon generally spawn in the tidal areas and lower reaches of large rivers and their smaller tributaries (Heard, 1991; McPhail and Lindsey, 1970; Mecklenburg et al., 2002). Spawning takes place over redds with medium to small gravels, and in streams with moderate to fast stream flows (ranging from 30 to 140 centimeters per second) and depths of 30 to 100 cm (Heard, 1991; McPhail and Lindsey, 1970; Scott and Crossman, 1973). For successful embryonic development, temperatures above 4.5°C are needed (Morrow, 1980).

Because pink salmon fry outmigrate immediately upon emergence, they tend to feed very little in freshwater, but when they do, they consume insect larvae (McPhail and Lindsey, 1970). Before moving further off-shore, fry may occupy estuarine habitats for a short period of time where they are opportunistic and generalized feeders (Heard, 1991).

5. SOCKEYE SALMON, *ONCORHYNCHUS NERKA*

5.1 CURRENT DISTRIBUTION

Sockeye salmon populations occur in Asia from the Kuril Islands north to the Gulf of Anadyr, and in North America from the Sacramento River in California to Point Hope, Alaska (Burgner, 1991). In North America, sockeye salmon are primarily distributed from the Columbia River north to the Kuskokwim River in Alaska (Quinn, 2005). Among the Alaska and northwestern Canada populations, one of the largest spawning sockeye salmon complexes occurs in Alaska's Bristol Bay basin (McPhail and Lindsey, 1970). Some sockeye salmon live entirely in freshwater and are referred to as kokanee salmon. In Alaska, kokanee salmon are distributed from the southern tip of Alaska's panhandle to the Kenai Peninsula, which lies just east of Bristol Bay (Mecklenburg et al., 2002).

5.2 BEHAVIOR AND REPRODUCTION

Sockeye salmon are unique among other *Oncorhynchus* species in that the rearing of juveniles largely takes place in lakes. Spawning usually occurs in streams connected to lakes, although some populations spawn in lakes (Morrow, 1980). The Bristol Bay basin contains a large number of lakes and, consequently, large spawning complexes of sockeye salmon. Life history characteristics of these populations have been well studied (Burgner, 1991). In the Bristol Bay basin, adult sockeye salmon runs occur from early June to August, with 80 percent of the run occurring within a 12- to 14-day period (Burgner, 1991). Spawning takes place in August and September (McPhail and Lindsey, 1970). Eggs are deposited into redds, and adults die after spawning.

Sockeye salmon egg incubation takes between 6 and 9 weeks, and as with other salmon species, incubation time depends on temperature (McPhail and Lindsey, 1970). After spending 2 to 3 weeks in the gravel redd, sockeye salmon fry move either upstream or downstream into a lake associated with the spawning stream. The fry will rear for 1 to 2 years in the lake, where they will grow and begin to smolt

(McPhail and Lindsey, 1970; Quinn, 2005). The seaward outmigration of sockeye salmon smolts begins after ice break-up. In the Bristol Bay basin, peak outmigrations occur in June when water temperatures are around 4°C (McPhail and Lindsey, 1970; Morrow, 1980). Adults return to natal streams for spawning after spending 1 to 4 years at sea (Mecklenburg et al., 2002).

5.3 HABITAT REQUIREMENTS

Because juvenile sockeye salmon typically rear in freshwater lakes, adults tend to spawn in systems associated with lakes. Stable flow conditions appear to be an important criterion for sockeye salmon spawning, particularly when juveniles must migrate upstream to reach their lake-rearing habitats (Burgner, 1991). Spawning habitats are diverse and include lake inlet and outlet rivers, lake beaches, and spring-fed ponds and side channels, all of which offer stable flow conditions (Burgner, 1991; Quinn, 2005). Redds may be constructed in a variety of substrates, ranging from fine gravels in side channels to coarse lake shore gravels and rocky beaches (Burgner, 1991).

Recently emerged sockeye salmon fry may move directly into open water, or they may occupy the shallower water along the shoreline for a period of time as they transition into deeper lake habitats (Burgner, 1991). Diversity in prey item availability is reflected in the diets of juvenile sockeye salmon. For juveniles in littoral zones, dipteran insects are a primary food item, while zooplankton are an important food source in the limnetic zone (Burgner, 1991; McPhail and Lindsey, 1970).

6. RAINBOW TROUT, *ONCORHYNCHUS MYKISS*

6.1 CURRENT DISTRIBUTION

Rainbow trout are native to both Asia and North America. In Asia, they occur naturally on the Kamchatka Peninsula. In North America, rainbow trout distribution ranges from northwest Mexico to the Kuskokwim River in Alaska (Mecklenburg et al., 2002). Rainbow trout have been widely introduced on all continents. In the Alaska interior, introductions have been made to freshwater habitats near Fairbanks, Big Delta, and Summit Lake (Morrow, 1980). The distribution of native populations in Alaska extends from the Alaska panhandle along the coastline north to the Kuskokwim River and west to the Point Moller region of the Alaska Peninsula (Mecklenburg et al., 2002). While both anadromous and nonanadromous populations occur throughout most of this range, the majority of the Bristol Bay populations are nonanadromous (Quinn, 2005); the few anadromous populations of steelhead documented in the Bristol Bay watershed occur in the southernmost part of the watershed, south of Port Heiden (ADF&G, 2010). The life history discussion below focuses exclusively on nonanadromous rainbow trout.

6.2 BEHAVIOR AND REPRODUCTION

Resident rainbow trout are spring spawners. Adults tend to stay relatively close to their natal streams, and their spawning migrations are reportedly short (only a few kilometers; Morrow, 1980). Spawning takes place between mid-April and late June. Rainbow trout deposit eggs and sperm into redds, but unlike other *Pacific salmon* species, rainbow trout are iteroparous (can breed multiple times) and adults do not die shortly after spawning. Repeat spawning is common for resident rainbow trout (Quinn, 2005), and annual spawning may occur for up to 5 consecutive years for some fish (Morrow, 1980).

Rainbow trout incubation times typically range from 4 to 7 weeks, depending on water temperature. Fry emergence occurs within 3 to 7 days, and is usually between mid-June and mid-August (Morrow, 1980). After emergence, lake-resident rainbow trout fry may quickly disperse to lake habitats or remain in the stream for up to 3 years (McPhail and Lindsey, 1970; Scott and Crossman, 1973). Rainbow trout mature at an age of 3 to 5 years and may live for up to 9 years (Morrow, 1980).

6.3 HABITAT REQUIREMENTS

Rainbow trout can be either stream- or lake-resident fish. When in rivers and streams, rainbow trout are commonly found near lake outlets or below waterfalls and rapids (McPhail and Lindsey, 1970). Tributary streams are used as spawning habitat by both stream- and lake-resident populations (Morrow, 1980). Redds are often constructed in fine gravel substrates of riffles adjacent to pools. Preferred spawning and incubation water temperatures are between 10°C and 13°C, and groundwater upwelling and dissolved oxygen concentrations are important in determining egg survival rates (McPhail and Lindsey, 1970; Morrow, 1980). Juveniles from stream-resident populations occupy riffles during the summer months and tend to shift into pools for the autumn and winter months (McPhail and Lindsey, 1970).

Rainbow trout are opportunistic predators that feed on a wide variety of prey items. Prey items include various insects (e.g., dipteran larvae and adults), plankton, crustaceans, snails, leeches, fish eggs, smaller fishes, and even adult salmon carcasses (Morrow, 1980; Quinn, 2005; Scott and Crossman, 1973).

7. ARCTIC CHAR, *SALVELINUS ALPINUS*

7.1 CURRENT DISTRIBUTION

The arctic char is a circumpolar species, with a wide distribution that includes northern North America, northern Asia, northern Europe, Iceland, Greenland, and other arctic islands (Scott and Crossman, 1973). In Alaska, this species ranges from the Kenai and Alaska peninsulas, and the Aleutian and Kodiak islands, north to arctic Alaska drainages (Mecklenburg et al., 2002; Morrow, 1980). Both anadromous and nonanadromous forms of arctic char occur in northern North America. In much of Alaska, arctic char populations appear to be nonanadromous and confined to lakes (Morrow 1980).

7.2 BEHAVIOR AND REPRODUCTION

The arctic char is an iteroparous species and exhibits both anadromous and nonanadromous life histories, but direct evidence of anadromy in Alaskan populations is lacking (Mecklenburg et al., 2002). In the Bristol Bay region, some populations of arctic char are thought to be permanent lake-dwelling residents (McPhail and Lindsey, 1970). Anadromous arctic char begin their upstream spawning migration in late summer and early fall (i.e., from late July to early September), and spawning occurs in lakes and rivers in the fall, usually from September to October (McPhail and Lindsey, 1970; Quinn, 2005). Nonanadromous and lake-dwelling arctic char also spawn during from September to October. Following spawning and egg deposition, adults from both anadromous and nonanadromous populations overwinter in freshwater lakes and streams. For anadromous stocks, seaward return migrations are not made until the following spring (Quinn, 2005; Scott and Crossman, 1973). Adults of this iteroparous species may spawn annually or, as is often the case with females, only every second or third year (Scott and Crossman, 1973).

Egg incubation and embryonic development occur over the winter and may potentially last until ice break-up in spring. Newly hatched young remain in the gravel for 60 to 70 days, after which emergence occurs and fry begin active feeding (Morrow, 1980). Young char rear in freshwater for several years, with their first outmigration occurring at 5 to 7 years (McPhail and Lindsey, 1970). Arctic char may live for up to 20 years or more (Quinn, 2005).

7.3 HABITAT REQUIREMENTS

Arctic char spawning habitat can be varied and includes gravel shoals in lakes and pools with walnut-sized gravel, as well as riverine gravel beds located downstream from rapids (McPhail and Lindsey, 1970). This broad range of suitable habitats suggest a large tolerance for varied stream velocities as well. The thermal tolerance of Arctic char is well documented. Actual spawning takes place when water temperatures are near 4°C; water temperatures ranging from 3°C to 8°C are needed for successful embryonic development (Morrow, 1980; Quinn, 2005; Scott and Crossman, 1973). Prior to outmigration, young char occupy the rocky shores of lakes and streams (McPhail and Lindsey, 1970). For anadromous stocks, adult char may use estuaries or coastal areas near their natal streams as summer habitat, but direct evidence of such habitat use is lacking. Regardless of anadromy, most arctic char prefer to overwinter in freshwater lakes that are not necessarily the same as their natal sites (Quinn, 2005).

Arctic char are largely carnivorous and opportunistic feeders in that they often consume any available vertebrates and invertebrates that are small enough to be eaten (Scott and Crossman, 1973). Adults feed primarily on other fishes and benthic organisms such as young arctic char, young sockeye salmon, sticklebacks, chironomid larvae, and gastropods Young char may prey more heavily upon amphipods and insect larvae (McPhail and Lindsey, 1970; Scott and Crossman, 1973).

8. DOLLY VARDEN, *SALVELINUS MALMA*

8.1 CURRENT DISTRIBUTION

Dolly Varden are distributed in Asia from Japan and North Korea north to the Kamchatka and Chukchi peninsulas. In North America, Dolly Varden are found from northern Washington along the Pacific and arctic coasts to the Mackenzie River in Canada (Mecklenburg et al., 2002; Quinn, 2005). Two forms of Dolly Varden are recognized and are morphologically distinguishable by their gill-raker and vertebrate numbers (Mecklenburg et al., 2002). The two forms, a southern and a northern form, are geographically separated by the Alaska Peninsula. Alaska populations of the northern form range from Bristol Bay drainages north to the arctic coast (Mecklenburg et al., 2002). In Bristol Bay drainages, both anadromous and nonanadromous populations are thought to occur (McPhail and Lindsey, 1970).

8.2 BEHAVIOR AND REPRODUCTION

Dolly Varden exhibit a wide variety of life history, migration, and habitat use patterns, although there are some consistencies among populations found along the Pacific coast of Alaska. All Dolly Varden are iteroparous fall spawners, although northern forms spawn only every 2 to 3 years and southern forms spawn annually (Morrow, 1980; Quinn 2005). Spawning occurs from late August through November in river systems that may or may not contain lakes. The incubation time for Dolly Varden eggs is

approximately 130 days at 8.5°C, and fry emergence takes place 60 to 70 days after hatching (Morrow, 1980).

Following emergence, Dolly Varden fry behavior depends largely upon whether the fry belong to an anadromous or nonanadromous stock. For anadromous populations, juveniles remain in the river or river-lake system for 3 to 4 years before migrating seaward. Smolt outmigration occurs from early spring through July, and in some systems a second fall outmigration occurs. Because anadromous adult Dolly Varden overwinter in freshwater habitats after spawning, these adults outmigrate in the spring with the smolts. Time spent at sea is highly variable, ranging from 2 weeks to 7 months. Returns to freshwater may be solely for overwintering, or for both overwintering and spawning purposes. For stream-resident (i.e., nonanadromous) populations, knowledge of migratory patterns within the freshwater system is lacking, but it has been suggested that these fish occupy deep pools in the winter and larger reaches of streams in the summer. Northern and southern forms of Dolly Varden reach maturity at 7 to 9 years and at 4 to 6 years of age, respectively (Morrow, 1980).

8.3 HABITAT REQUIREMENTS

Juvenile and adult Dolly Varden migration patterns are difficult to characterize due the diversity of behaviors and life history patterns. Freshwater river systems with and without lakes are used by both juveniles and adults for various purposes (Morrow, 1980). For example, some Dolly Varden may spawn in a non-lake stream, yet overwinter in a river-lake system. Also, juveniles tend to migrate into several different streams after returning from a sea migration (Morrow, 1980). Dolly Varden spawn in streams with water temperatures ranging from 5.5°C to 6.5°C and with clean gravel ranging in size from 0.6 to 5 cm in diameter. Redds are usually located in streams with moderately strong currents and water depths greater than 30 cm recently emerged fry occupy the bottoms of pools and eddies (Morrow, 1980).

The freshwater prey of juvenile and adult Dolly Varden includes many insects, spiders, and annelids, in addition to snails, clams, fish eggs, and small fish. Fry consume various prey, including mayfly and midge larvae, winged insects, and small crustaceans (Morrow, 1980).

9. LEAST CISCO, *COREGONUS SARDINELLA*

9.1 CURRENT DISTRIBUTION

The least cisco occurs in both Asia and North America. Its Asian distribution ranges from the White Sea on the northwest coast of Russia east to the Bering Strait. In North America, least cisco populations are found in coastal areas from the Bristol Bay drainage of Alaska, north along the arctic coast and east to Bathurst Inlet and Cambridge Bay in Canada. In Alaska, inland populations are found in lakes and streams north of the Alaska Range, and in the Kuskokwim and Yukon River drainages (Mecklenburg et al., 2002). The least cisco has been characterized as having two distinct and largely geographically separated (allopatric) forms: an anadromous, migratory form common in coastal waters, and a nonmigratory, lake-dwelling form. In the Bristol Bay region of Alaska, migratory forms are present. In addition, dwarf versions of the nonmigratory form have been documented in Iliamna and Naknek lakes (McPhail and Lindsey, 1970).

9.2 BEHAVIOR AND REPRODUCTION

Both anadromous and nonanadromous least cisco spawn in September and October (Morrow, 1980). The anadromous spawning runs occur from early July to late September (Morrow, 1980). At the spawning site, a female may be joined by one or two males (and sometimes more) as she swims upward toward the surface and releases her eggs. Males release milt, and the fertilized eggs settle into the gravel crevices below. Spawned adults of migratory populations may then begin to move downstream to return to coastal waters, although little is known about migration distances or the habitats used along the way (Scott and Crossman, 1973).

Least cisco eggs incubate through the winter and hatch in the spring (McPhail and Lindsey, 1970). Feeding and habitat utilization behaviors of the newly hatched young are unknown, but it has been noted that by mid-June, large numbers of fry move downstream to deeper slower water. Sexual maturity is attained at 2 to 4 years of age, with most maturing after 3 years (Morrow, 1980). Least cisco may live for 8 to 11 years (Morrow, 1980), although in some instances fish over 20 years old have been reported (Scott and Crossman, 1973).

9.3 HABITAT REQUIREMENTS

Nonmigratory forms of least cisco are primarily lake dwellers and are common in large lakes and rivers (McPhail and Lindsey, 1970). Migratory forms are common in streams and in coastal and brackish waters (Morrow, 1980). Shallow rivers and lake shores with gravel and sand bottoms are used as spawning habitat (Morrow, 1980; Scott and Crossman, 1973). Spawning has been noted to occur in water with depths ranging from 1.3 to 2.6 meters, an average velocity of approximately 50 centimeters per second, and surface temperatures of 0°C to 3°C (Morrow, 1980). After hatching, fry from migratory populations move downstream to deeper and slower waters (Morrow, 1980; Scott and Crossman, 1973).

Least cisco primarily feed on planktonic crustaceans (e.g., amphipods, cladocerans, and mysids). River populations also rely on aquatic and terrestrial insects of various stages (Morrow, 1980; Scott and Crossman, 1973). Plant material may also be consumed (Morrow, 1980).

10. HUMPBACK WHITEFISH, *COREGONUS PIDSCHIAN*

10.1 CURRENT DISTRIBUTION

Humpback whitefish are distributed along the arctic coast from the Kara Sea in northern Siberia to the Sagavanirktok River in Alaska (Mecklenburg et al., 2002). In Alaska, distributional records for this species should be considered with caution due to potential species identification errors and confusion with other whitefish species (Morrow, 1980). It is generally accepted that humpback whitefish in Alaska range from the Kuskokwim River northward along the coast to the Bering, Chukchi, and western Beaufort Sea drainages (Mecklenburg et al., 2002; Morrow, 1980). Humpback whitefish populations also extend to inland reaches of the Kuskokwim and Colville River basins (Mecklenburg et al., 2002). Species distribution maps (Mecklenburg et al., 2002; Page and Burr, 1991) and a recent study (Woody and Young, 2007) indicate that this species is also found within the Bristol Bay drainage basin.

10.2 BEHAVIOR AND REPRODUCTION

Details regarding the life history and anadromy of humpback whitefish are confounded and limited, largely as a result of a systematic debate as to whether *C. pidschian* is distinct from or belongs to the *C. clupeaformis* species complex. While it has been maintained that *C. pidschian* differs from the other two species in the complex in modal gill-raker numbers, it is also possible that *C. pidschian* represents a truly anadromous form, and *C. clupeaformis* and *C. nelsoni* represent primarily lake- and stream-dwelling forms, respectively (Morrow, 1980). Mecklenburg et al. (2002) and Morrow (1980) recognize *C. pidschian* as a distinct species, and the life history account given here also recognizes this distinction.

Humpback whitefish are thought to be mostly anadromous, although some populations may reside entirely in freshwater (Mecklenburg et al., 2002; Morrow, 1980; Woody and Young, 2007). Upstream spawning runs begin in June, and spawning takes place from October to mid-November. Presumably, humpback whitefish demonstrate a spawning behavior similar to that of the Alaska whitefish (*C. nelsoni*), which involves a female being accompanied by one or more males as she swims toward the surface and releases her eggs. Fertilized eggs settle into the interstitial gravel substrate. Hatching is assumed to occur in late winter and spring, and the fry move downstream. Upon reaching sexual maturity between the ages of 4 and 6, mature fish return to their natal sites for spawning and may do so for multiple spawning seasons throughout their lives (Morrow, 1980). The life expectancy for humpback whitefish may be 20 years or more (Woody and Young, 2007).

10.3 HABITAT REQUIREMENTS

Humpback whitefish inhabit rivers, lakes, and near-shore coastal waters, and overwintering takes place near the mouths of rivers (Mecklenburg et al., 2002; Woody and Young, 2007). Migration patterns, distances traveled, and the habitats used along the way are largely unknown. However, humpback whitefish have been taken at sea several kilometers out, and others have been taken from upstream locations that signify migration distances of up to 1,600 kilometers (Mecklenburg et al., 2002; Morrow, 1980). Research in the Lake Clark and Kvichak River system suggests that some populations of humpback whitefish reside entirely in freshwater, and that some individuals may migrate to low-salinity estuarine habitats (Woody and Young, 2007). Specific spawning habitat conditions are also unknown.

Humpback whitefish have a limited diet. Adults mostly consume mollusks, crustaceans, and chironomid larvae. Young humpback whitefish feed largely on zooplankton (Morrow, 1980).

11. ROUND WHITEFISH, *PROSOPIUM CYLINDRACEUM*

11.1 CURRENT DISTRIBUTION

Round whitefish are distributed in freshwater locations in Asia from the Yenisei River east and south to the Kamchatka Peninsula. In North America, round whitefish range from mainland Alaska east to Canada and the western shore of the Hudson Bay. Other North American populations are found in the Great Lakes and from Labrador to Connecticut. Round whitefish have a broad distribution throughout mainland Alaska north of the Taku River near Juneau (Mecklenburg et al., 2002).

11.2 BEHAVIOR AND REPRODUCTION

Round whitefish begin their spawning activities with inshore or upstream migrations to spawning beds that may be either lake shores or gravelly river shallows (Morrow, 1980). The exact timing of these migrations and actual spawning appears to vary among locales and latitudes (Scott and Crossman, 1973). Generally, spawning occurs throughout the fall season, from September to December, and from late September through October in interior Alaska. Males and females pair prior to the act of spawning, and females broadcast their eggs such that fertilized eggs settle into rock and gravel crevices. No parental care is given to the eggs or young, and it is presumed that adults move out of the spawning beds shortly after spawning. Spawning occurs annually and in successive years for many adult round whitefish (Morrow, 1980).

Incubation lasts for approximately 140 days at a water temperature of 2.2°C (Scott and Crossman, 1973). Hatching occurs in spring, and newly hatched larvae absorb their yolk sacs for 2 to 3 weeks before they leave the spawning grounds. Maturity is attained between the fifth and seventh years. A maximum lifespan of at least 16 years has been reported for round whitefish (Morrow, 1980).

11.3 HABITAT REQUIREMENTS

Round whitefish is a predominantly freshwater species, with rare accounts in brackish waters (Mecklenburg et al., 2002). These whitefish primarily inhabit low flow habitats such as shallow areas of lakes, clear rivers, and streams (Mecklenburg et al., 2002). Spawning habitats include shallow inshore lake areas and shallow gravelly river mouths and shores (Scott and Crossman, 1973). However, in some southern parts of its range, round whitefish uncharacteristically occur in deep lakes and spawn in deeper waters (Scott and Crossman, 1973).

Round whitefish feed in shallow and inshore areas (McPhail and Lindsey, 1970). These benthic feeders primarily consume the immature stages of insects, particularly dipterans, chironomids, and caddisflies (Morrow, 1980; Scott and Crossman, 1973). To a lesser degree, adult caddisflies, small mollusks, cladocerans, and small fish are also consumed (Morrow, 1980; Scott and Crossman, 1973). There are also reports of the round whitefish feeding heavily on the eggs of other fish species such as lake trout, chum, suckers, and shad (McPhail and Lindsey, 1970).

12. ARCTIC GRAYLING, *THYMALLUS ARCTICUS*

12.1 CURRENT DISTRIBUTION

Arctic grayling occur in mainland Asia and North America. In Asia, they are distributed east of the Ob and Kara rivers in Siberia and north of the Eroo River in northern Mongolia. The North American distribution of arctic grayling includes Alaska and northern Canada eastward to Hudson Bay, and they have also been documented in the Missouri River headwaters of Montana (Mecklenburg et al., 2002). Arctic grayling occur naturally throughout most of Alaska and are also found on the St. Lawrence and Nunivak islands (Mecklenburg et al., 2002; Morrow, 1980).

12.2 BEHAVIOR AND REPRODUCTION

Prior to spawning, arctic grayling must make an upstream migration from the deeper waters of lakes rivers where they have overwintered to spawning areas located in smaller and shallower tributaries (Morrow, 1980; Scott and Crossman, 1973). Arctic grayling prepare for their spawning migration by congregating at tributary mouths and may begin migration via channels cut in the ice by surface runoff. Little is known about arctic grayling migration distances, but movements of up to 160 kilometers have been documented (Morrow, 1980). In Alaska and northwestern Canada, spawning takes place from early May to mid-June (McPhail and Lindsey, 1970). While no formal nest is constructed by the female, a shallow depression results from the tail-quivering reproductive behavior. Eggs and sperm are released over this depression (Morrow, 1980). After spawning, adults may return to lakes or rivers, or they may migrate further upstream to occupy stream pools for a summer feeding season (Morrow, 1980; Scott and Crossman, 1973). For those that migrate further upstream, a downstream return migration to overwintering sites takes place in mid-September (Morrow, 1980). Arctic grayling spawn multiple times over their lifespan, which may be as long as 11 or 12 years (Scott and Crossman, 1973).

Arctic grayling eggs hatch after 11 to 21 days, and active feeding by the young begins 3 to 8 days after hatching (Morrow, 1980; Scott and Crossman, 1973). Information regarding the movement of juveniles away from their natal sites is lacking, but presumably they occupy seasonal habitats similar to those occupied by adults. Sexual maturity can occur as early as 4 years of age, although, maturity is more commonly attained at 6 to 9 years (Scott and Crossman, 1973).

12.3 HABITAT REQUIREMENTS

Arctic grayling occupy freshwater habitats, preferring clear, cold water in lakes, large rivers, and rocky streams (Mecklenburg et al., 2002). Arctic grayling tend to remain near rocky shores and stream mouths in lakes and are often found midstream a short distance below the surface in streams (McPhail and Lindsey, 1970). Grayling are found predominantly in low velocity habitats such pools, spring fed channels and backwaters (Hubert et al 1985). Some arctic grayling use upstream pools as summer feeding habitat, and most overwinter in the deep waters of lakes and mainstem channels. Juveniles are thought to occupy similar seasonal habitats as adults, but territorial behaviors of larger fish and prey item availability are likely to limit juvenile fish distribution and lead to habitat partitioning (Morrow, 1980). Arctic grayling adults usually spawn in small tributaries with water temperatures around 7°C to 10°C and with gravelly and rocky substrates, but they also use mainstem channels with gravel substrates and silt-laden vegetated pools below riffles (Mecklenburg et al., 2002; Scott and Crossman, 1973).

Adult arctic grayling rely heavily on aquatic and terrestrial insects (e.g., mayflies, caddisflies, grasshoppers, and beetles) as prey items, but they also exhibit opportunistic feeding patterns (McPhail and Lindsey, 1970; Morrow, 1980). Young fish mainly consume zooplankton and, as they grow, gradually shift to feeding on immature insects (Scott and Crossman, 1973).

13. NORTHERN PIKE, *ESOX LUCIUS*

13.1 CURRENT DISTRIBUTION

The northern pike is a circumpolar freshwater species with a wide distribution in the northern hemisphere. In Alaska, it is widespread in the Arctic Ocean and Bering Sea drainages south to the Bristol Bay basin. It has also been introduced into the Ahrnklin and Susitna River drainages, and into lakes and streams on the Kenai Peninsula and around Anchorage (Mecklenburg et al., 2002).

13.2 BEHAVIOR AND REPRODUCTION

In early spring, just after ice melt occurs, adult northern pike move inshore or upstream to marshy, vegetated, and mud-bottomed spawning sites (Morrow, 1980). Actual spawning occurs in April to early May (Scott and Crossman, 1973). Following courtship, egg deposition and fertilization take place such that eggs are scattered on weedy vegetation or a muddy substrate. Over the next several days, repeated acts of spawning are common for both males and females. While no parental care is provided to the incubating eggs, most fully spawned adults do not leave the spawning area for 6 weeks, and some may linger for as long as 14 weeks. This species generally does not migrate, except for relatively short distances into and out of spawning areas (Morrow, 1980).

As with many other fish species, time to hatching for northern pike depends on water temperature. With a water temperature of 6°C, 23 to 29 days may be needed for hatching, whereas only 4 to 5 days may be needed at a temperature of 18°C (Morrow, 1980). Lacking a fully developed mouth, newly hatched pike larvae absorb their yolk sac over the next 6 to 10 days while clinging to weeds or the bottom via an adhesive gland on their heads (Scott and Crossman, 1973). The young then become active feeders and remain near their natal site over the next several weeks. Northern pike in more northern locations tend to grow more slowly, mature later, and live longer than their southern counterparts. In Alaska, age at maturity is thought to be 3 to 4 years (Morrow, 1980). The average life expectancy f northern pike ranges from 10 to over 20 years (Scott and Crossman, 1973).

13.3 HABITAT REQUIREMENTS

Northern pike reside in a variety of freshwater habitats with slow-moving waters, such as clear vegetated lakes, and quiet pools and backwaters of streams and rivers (Mecklenburg et al., 2002). From fall through spring, shallow waters less than 5 m deep are generally preferred, but in the heat of summer pike may move into deeper, cooler habitats (Scott and Crossman, 1973). Spring spawning sites are typically shallow vegetated areas (e.g., marshes, river floodplains, and bays of lakes) with depths less than 51 cm, and most spawning activity occurring at depths less than 25 cm. Suitable vegetation and quiet water appear to be the two most important factors in spawning site selection. Young pike less than 20 millimeters in length remain near the spawning ground for initial rearing, although high fry mortality is common and likely due to competition for food, predation, cannibalism, and water quality factors (e.g., pH, and carbonate and bicarbonate concentrations; Morrow, 1980).

Northern pike are voracious carnivores that feed primarily on other fish, including their own species. Food choice is largely based on availability. In Alaska, major prey items include whitefish, small pike, blackfish, burbot, suckers, dragonflies and damselflies (Morrow, 1980). Adults may also consume water

fowl, frogs, small mammals, and crayfish (Morrow, 1980). Newly hatched northern pike feed on various zooplankton and immature aquatic insects, and after 7 to 10 days they also begin to prey on small fish (Scott and Crossman, 1973). A juvenile northern pike's diet shifts with growth such that fish become an increasingly larger portion of their diet.

14. COASTRANGE SCULPIN, *COTTUS ALEUTICUS*

14.1 CURRENT DISTRIBUTION

The coastrange sculpin is distributed in North America from Alaska to southern California and is found in isolated populations in Washington and British Columbia. In Alaska, the known range extends south from Bristol Bay and east from Attu Island, including the Alaska Peninsula, and there is an isolated population in the Kobuk River in the arctic region of northwestern Alaska (Morrow, 1980; Mecklenburg et al., 2002). Coastrange sculpin have also been observed in Iliamna Lake, Naknek Lake, and Lake Aleknagik which drains into the Wood River, a tributary of the Nushagak River (Foote and Brown, 1998; Froese and Pauly, 2010).

14.2 BEHAVIOR AND REPRODUCTION

Coastrange sculpin spawning occurs between mid-February and August, peaking in May and June. Males court one or more females, who depart after depositing their eggs in rock crevices or the undersides of logs, cutbanks, or rocks (Morrow, 1980). Male coastrange sculpin guard nests of up to 7,000 eggs during the 10- to 20-day incubation period (Mason and Machidori, 1976; Morrow, 1980). Within hours of hatching, the larvae float to the water surface and assume a pelagic lifestage for approximately 30 days before becoming benthic for the remainder of their lives (Mason and Machidori, 1976). Sexual maturity is reached at age 3 and coastrange sculpin as old as 8 years have been documented (Morrow, 1980). In most populations, coastrange sculpin migrate downstream to estuarine or lower river areas to spawn and return upstream to overwinter between August and December, as do yearlings after spending up to a year in the downstream habitat. Non-migrating populations remain in winter habitat to spawn (Morrow, 1980).

14.3 HABITAT REQUIREMENTS

Coastrange sculpin inhabit both fresh and brackish waters and reside in fast streams with gravel substrate; less frequently, they may also inhabit lakes with sand or silt substrates, estuaries, and near-shore coastal waters (Mecklenburg et al., 2002). Coastrange sculpin occupy both swift and slow-water habitats (Mason and Machidori, 1976). Spawning typically occurs in lower stream reaches and in estuarine habitats (Morrow, 1980). Water temperature at the time of spawning is usually between 6°C and 8°C (Ikesumiju, 1975).

Coastrange sculpin feed mostly on the larva and nymphs of insects, although they are known to be opportunistic feeders depending on the time of year and time of day (Morrow, 1980). Common insect food sources include caddisflies, stoneflies, mayflies, and midges. Ingestion of pink salmon fry, ostracods, mysids, cladocerans, amphipods, and isopods has also been reported for this species (Morrow, 1980).

15. SLIMY SCULPIN, *COTTUS COGNATUS*

15.1 CURRENT DISTRIBUTION

The slimy sculpin is distributed in Asia from the Anadyr River to the Chukchi Peninsula. In North America, this species has a broad distribution ranging from Alaska south to the upper portions of the Fraser and Columbia rivers and east to the Great Lakes basin and Labrador, and from Nova Scotia south along the East Coast to Virginia (McPhail and Lindsey, 1970). In Alaska, known locations include the Alaska mainland, St. Lawrence and Nunivak islands, and the eastern Aleutian Islands (Mecklenburg et al., 2002). Range maps in Mecklenburg et al. (2002) and in Morrow (1980) indicate that slimy sculpin are present throughout the Bristol Bay basin, and others have documented slimy sculpin in Iliamna Lake (Foote and Brown, 1998).

15.2 BEHAVIOR AND REPRODUCTION

Slimy sculpin spawn between late March and late May following ice break-up in freshwater streams and lakes. Males construct a nest, approximately 2 to 4 cm high, beneath the cover of rocks and logs. As a ripe female approaches the nest, courtship ensues, and sperm and eggs are released into the nest (Morrow, 1980). Males usually mate with two or three females, who deposit their eggs into the male's nest. The males attend their nests during incubation for approximately 30 days (Morrow, 1980; Scott and Crossman, 1973). One week after hatching, the young leave the nest and occupy habitats similar to those used by adult sculpin. Sexual maturity is normally reached at age 2, and slimy sculpin may live up to 7 years. Aside from movement into shallow spawning waters, migration seldom occurs with this species (Morrow, 1980).

15.3 HABITAT REQUIREMENTS

The slimy sculpin is a freshwater species that resides in lakes and streams (Mecklenburg et al., 2002). As lake residents, they can be found from rocky near-shore shallows to depths up to 210 m, although depths ranging from 37 to 108 m appear to be most common (McPhail and Lindsey, 1970; Mecklenburg et al., 2002). As stream residents, slimy sculpin prefer fast-flowing streams with rocky and gravelly bottoms (Mecklenburg et al., 2002; Scott and Crossman, 1973). Slimy sculpin spawning habitat typically includes rocky lake shores and gravel-bottom streams with water depths of 2 to 30 cm. Spawning occurs when water temperatures are between 4.5°C and 10°C (McPhail and Lindsey, 1970; Morrow, 1980).

The diet of the slimy sculpin is almost exclusively insectivorous (Morrow, 1980). Aquatic insect larvae and nymphs (e.g., mayflies, caddisflies, dipterans, and odonates) are primary food items for fish of all sizes, although larger fish tend to consume larger prey items (Scott and Crossman, 1973). Ingestion of crustaceans, small fish, and aquatic vegetation has also been reported for this species (Morrow, 1980, Scott and Crossman, 1973).

16. NINESPINE STICKLEBACK, *PUNGITIUS PUNGITIUS*

16.1 CURRENT DISTRIBUTION

The ninespine stickleback has a circumpolar distribution extending across the northern lowland areas of North America, Europe, and Asia. Stickleback populations in North America are distributed from Alaska east through Canada to Labrador, Baffin Island, and Greenland; along the Atlantic coast, populations extend southward to New Jersey (McPhail and Lindsey, 1970). In Alaska, ninespine stickleback inhabit coastal regions of the Gulf of Alaska, the Aleutian Islands, Bristol Bay, and the Beaufort, Chukchi, and Bering seas. Interior populations occur to the north and west of the Kenai Peninsula (Mecklenburg et al., 2002).

16.2 BEHAVIOR AND REPRODUCTION

Ninespine stickleback spawn in freshwater during spring and summer. In Alaska and northwestern Canada, spawning takes place from May to late July (McPhail and Lindsey, 1970). Because ninespine stickleback usually occupy deep water or estuarine habitats during the fall and winter season, they must migrate to their shallow water spawning grounds in early spring (Morrow, 1980). Male stickleback use a hardening secretion and fragments of aquatic vegetation to construct tunnel-shaped nests (Scott and Crossman, 1973). Nests are attached to vegetation 10 to 15 cm above the creek bottom, or on occasion they may be located on the creek bottom (Morrow, 1980). After courtship and egg deposition, the male fertilizes the eggs. Males will stay with the nest throughout incubation and the early rearing period. Females may spawn several times in a single season, either with the same male or with others, and males often construct more than one nest. After spawning or attending to the young, adults return to deep pools or estuarine habitats and remain there until the following spawning season (Morrow, 1980).

As with many other fish species, stickleback incubation times vary with water temperature; at 18°C, hatching occurs in 1 week (Morrow, 1980). The attending male may then move the newly hatched young to a nursery area, which is a loose aggregation of nest-building materials located just above the nest (McPhail and Lindsey, 1970). After roughly 2 weeks, the young disperse from the nursery area into open water. Ninespine stickleback mature in 1 to 3 years and have a lifespan of roughly 3 years, with some females living for 5 or more years (Morrow, 1980).

16.3 HABITAT REQUIREMENTS

Ninespine stickleback may occupy marine, brackish, and freshwater habitats (Mecklenburg et al., 2002). Within Alaska, they tend to be restricted to freshwater and estuarine coastal zones, make little use of pure seawater habitats, and occur in high densities in heavily vegetated areas of lakes, ponds, and pools in slow streams (Mecklenburg et al., 2002; Morrow, 1980). Less dense aggregations of ninespine stickleback can also be found near sandy and gravelly beaches or other areas with sparse vegetation (McPhail and Lindsey, 1970). During the non-spawning and winter seasons, adults inhabit deep-water habitats (i.e., down to depths of approximately 20 m; Morrow, 1980). Spawning occurs in vegetated freshwater shallows of creeks and streams with water temperatures around 11°C or 12°C. After leaving their natal sites, young of the year may take up residence in or near rooted vegetation within lakes (Morrow, 1980).

Ninespine stickleback are carnivorous. Their diet includes a variety of aquatic insect larvae, crustaceans (e.g., copepods, chironomids, and ostracods), and other invertebrates (Morrow, 1980). During the breeding season, ninespine stickleback may also consume eggs and larvae of their own species (Hynes, 1950).

17. THREESPINE STICKLEBACK, *GASTEROSTEUS ACULEATUS*

17.1 CURRENT DISTRIBUTION

The threespine stickleback distribution includes parts of North America, Asia, and Europe. In North America, threespine stickleback occur along the Pacific coast from Baja California to the Bering Strait, and along the Atlantic coast from Chesapeake Bay to Hudson Bay and the Baffin Island vicinity (McPhail and Lindsey, 1970; Mecklenburg et al., 2002). Populations in Alaska are primarily distributed in coastal regions from the southern tip of the Alaska panhandle to the Bristol Bay region and along the Aleutian Islands (Mecklenburg et al. 2002). North of Bristol Bay, threespine stickleback records tend to be rare, and completely freshwater populations do not occur north of this area (McPhail and Lindsey, 1970; Mecklenburg et al., 2002). Dense populations have been documented in the large lakes of the Bristol Bay drainage (McPhail and Lindsey, 1970).

17.2 BEHAVIOR AND REPRODUCTION

Threespine stickleback are tolerant of marine, brackish, and freshwater habitats. Populations demonstrate a spectrum of habitat use and life history patterns, ranging from anadromous populations to entirely freshwater populations (Mecklenburg et al., 2002). In Alaska, entirely freshwater populations are present (McPhail and Lindsey, 1970). The occurrence of threespine stickleback in the Gulf of Alaska up to 800 kilometers from shore indicates anadromous populations may also occur in Alaska (Morrow, 1980). Spawning migrations in anadromous populations in Alaska typically occur in June (McPhail and Lindsey, 1970). These migrations involve movement from marine or brackish waters into spawning sites where salinity may vary from 0 to 28.5 parts per thousand (Morrow, 1980). For exclusively freshwater populations, adults move to freshwater spawning shallows from their deep water overwintering habitats (Morrow, 1980). Aside from using different spawning habitats and, consequently, displaying different migration patterns, spawning behaviors among these life history forms are generally similar. In Alaska, threespine stickleback spawn primarily in June and July. The male stickleback constructs a barrel-shaped nest from plant debris and algae (Scott and Crossman, 1973). Following courtship and egg deposition into the nest, the male fertilizes the eggs and then guards the nest throughout incubation and early rearing. Females may spawn several times in a single season, either with the same male or with others, and males often attend multiple clutches or nests simultaneously (Morrow, 1980).

Embryonic development time for threespine stickleback is from 1 to 2 weeks, depending on water temperature (Morrow, 1980). The attending male keeps the newly hatched young in the nest for a few days before the young leave the nest as free-swimming fry (McPhail and Lindsey, 1970). Sexual maturity is attained most commonly at 2 years, although anadromous forms may mature earlier at 1 year (Morrow, 1980). The maximum lifespan of the threespine stickleback is 3 years (McPhail and Lindsey, 1970).

17.3 HABITAT REQUIREMENTS

The threespine stickleback is tolerant of habitats that represent a wide range of salinity. This species may inhabit streams, rivers, ponds, lakes, tidal marshes, estuaries, inshore zones, and surface pelagic zones far from shore (Mecklenburg et al., 2002; Scott and Crossman, 1973). Marine forms may be found far from the mainland or remain closer to shore. Freshwater forms are usually associated with moderate amounts of aquatic vegetation in shallow zones, but also, as is the case in lakes of the Bristol Bay drainage in Alaska, dense stickleback populations may be found living on the surface of deep waters (McPhail and Lindsey, 1970). For both anadromous and resident populations, threespine stickleback spawning grounds are typically shallow sandy bottoms, and anadromous forms display a stronger preference for more densely vegetated spawning areas. Some young fish moving toward saltwater for the first time remain near shore in sheltering vegetation through the winter, but others move as far as 800 kilometers from shore (Morrow, 1980).

Threespine stickleback are voracious and opportunistic predators that may consume just about any available animal food (Scott and Crossman, 1973). The most important food sources are zooplankton, aquatic insect larvae, and small crustaceans (Morrow, 1980).

18. BURBOT, *LOTA LOTA*

18.1 CURRENT DISTRIBUTION

The burbot, an entirely freshwater species of cod, has a circumpolar distribution. In North America, its range extends southward to approximately 40 degrees North latitude. Its native range includes all of Alaska, except for off-shore islands, and most of the Alaska panhandle (Mecklenburg et al., 2002).

18.2 BEHAVIOR AND REPRODUCTION

In Alaska and many other parts of its range, burbot spawn under ice in late January and February (Morrow, 1980). At the time of spawning, 10 to 12 males and females congregate at the spawning site to form a large mass or ball approximately 2 meters in diameter (Scott and Crossman, 1973). No pairing between the sexes occurs; sperm and eggs are released into the center of the mass. Female burbot are highly fecund and may release from 500,000 to more than 1,000,000 eggs. After fertilization, the eggs settle to the substrate and undergo an incubation period (Morrow, 1980).

Embryonic development times vary with water temperature and from population to population. Generally, hatching occurs in early spring (McPhail and Lindsey, 1970; Morrow, 1980). Sexual maturity is usually reached at ages 3 to 4, although, in the Alaska interior, maturity may occur as late as age 7. The adult burbot life expectancy is 10 to 15 years, and some may live for over 20 years (Morrow, 1980; Scott and Crossman, 1973). Burbot migration patterns are poorly known. Individuals of this relatively sedentary species appear to make pre-spawning movements toward spawning grounds and/or post-spawning movements upriver toward feeding habitats (Morrow, 1980).

18.3 HABITAT REQUIREMENTS

Burbot occupy a wide variety of freshwater habitats including deep water lakes, large rivers, small streams, elevated lakes, and low-lying ponds (McPhail and Lindsey 1970). They are found at depths ranging from 0.3-meter in shallow spawning waters to over 200 meters in deep lakes (Mecklenburg et al., 2002). Spawning typically occurs in ice-covered streams or lake shallows over a substrate of clean sand, gravel, and stones at depths ranging from 0.3 to 1.5 meters, although spawning depths may be as great as 20 meters (McPhail and Lindsey, 1970; Morrow, 1980). Surface-water temperatures at time of spawning are between 0.6°C and 1.7°C. Post-spawning and into the summer months, adults may use shallow tributaries for feeding. Age 0 and 1 fish are commonly found in tributary streams along rocky and vegetated shores (Scott and Crossman, 1973).

The burbot is a voracious nocturnal carnivore, feeding primarily on other fishes (e.g., ciscoes, sticklebacks, and whitefish) as available (McPhail and Lindsey, 1970). During the winter, large burbot may shift their diets to include more benthic macroinvertebrates. Young burbot prey heavily on aquatic invertebrates, crayfish, and mollusks, as well as numerous other food sources (Scott and Crossman, 1973).

19. LONGNOSE SUCKER, *CATOSTOMUS CATOSTOMUS*

19.1 CURRENT DISTRIBUTION

The longnose sucker is found in Asia and North America. Its Asian distribution ranges from the Yana River to Anadyr River in northern Siberia. In North America, longnose sucker is distributed throughout much of mainland Canada and Alaska, and its range extends into the contiguous United States including Washington, the Great Lakes region, and New England (Morrow, 1980). This species is common throughout mainland Alaska (McPhail and Lindsey, 1970).

19.2 BEHAVIOR AND REPRODUCTION

Longnose suckers are spring spawners. As lake ice cover begins to melt, adult longnose suckers move into their spawning sites, which are typically shallow inlet streams or swift stream reaches with gravel substrates. The seasonal timing of spawning runs and actual spawning vary with latitude such that earlier occurrences are found in the more southern locations. Generally, runs and spawning occur from April to June or July (McPhail and Lindsey, 1970; Morrow, 1980). Spawning runs typically begin when water temperatures reach 5°C, and peak runs occur when temperatures are above 10°C (Morrow, 1980). During a brief spawning act which lasts for only seconds, a female is joined by several males in the middle of the stream center, and eggs and milt are released. Fertilized eggs settle into gravel crevices in the substrate. Many of the spawned adults move away from spawning sites as early as 5 days after their upstream migration began, but some, particularly river residents, will remain in the area for much of the summer (Morrow, 1980; Scott and Crossman, 1973). Longnose suckers may spawn in consecutive years or only every second or third year (Morrow, 1980).

The incubation time for longnose suckers is approximately 2 weeks. Newly hatched young will remain in the gravel for an additional 1 to 2 weeks (Scott and Crossman, 1973). After emerging, many young

suckers move downstream, while others remain in the natal area throughout the summer months (Morrow, 1980). For longnose suckers, age at maturity tends to increase with latitude. In British Columbia and other more southern locales, maturity has been reported at ages of 2 to 7 years. In the Northwest Territories, longnose suckers mature at 9 to 10 years (McPhail and Lindsey, 1970; Morrow, 1980).

19.3 HABITAT REQUIREMENTS

Longnose suckers inhabit clear, cold freshwater. Primary habitats include lake bottoms up to 183 m deep and slow, deep pools in tributary streams. The species has also been reported in brackish waters near the mouths of rivers (Scott and Crossman, 1973). Longnose sucker spawning habitats tend to be inlet streams, lake outlets, and lake shallows with gravel substrates (McPhail and Lindsey, 1970; Morrow, 1980). Preferred environmental conditions for spawning include gravel sizes of 50 to 100 millimeters in diameter, water velocities of 35 to 40 centimeters per second, and water depths of 10 to 60 cm (Morrow, 1980).

Like other sucker species, the longnose sucker feeds as it slowly swims along the substrate, ingesting bottom debris containing benthic invertebrates (Morrow, 1980). Numerous food items are consumed by suckers, with variation resulting largely from fish size, habitat, and seasonal availability (Scott and Crossman, 1973). In stream habitats, major food sources include algae, plants, dipterans, mayflies, caddisflies, beetles, spiders, and mollusks. Longnose suckers in lake habitats commonly consume small crustaceans (e.g., cladocerans and amphipods) and insect larvae and nymphs, particularly dipterans and mayflies. Young longnose suckers feed largely on cladocerans and insects (Morrow, 1980).

20. ARCTIC LAMPREY, *LAMPETRA CAMTSCHATICA*

20.1 CURRENT DISTRIBUTION

The arctic lamprey has an almost circumpolar distribution, ranging from Finland's Province of Lapland east to Kamchatka and across the Bering Sea to the Northwest Territories of Canada. In Alaska, arctic lamprey is distributed from the Kenai Peninsula northward to arctic coast drainages and is present in the Yukon, Kuskokwim, and Tanana River drainages (Mecklenburg et al., 2002). In Bristol Bay drainages, both anadromous and freshwater forms are thought to occur (McPhail and Lindsey, 1970; Morrow, 1980).

20.2 BEHAVIOR AND REPRODUCTION

Relatively little information regarding the life history of arctic lamprey is available. This may in part be due to confusion resulting from anomalous populations that may be different lamprey species. It is generally thought that arctic lamprey are represented by both anadromous and freshwater forms. Spawning takes place in the spring (Morrow, 1980). Spawning occurs between late May and mid-July in Bristol Bay drainages (McPhail and Lindsey, 1970). Both sexes participate in constructing a shallow depression, or nest, in the gravel substrate. Using his oral disc, the male attaches onto the female's head and wraps his body around the female's body. As the mating pair quivers and vibrates, eggs and sperm are released over the nest. A female may mate several times and usually with different males (Scott and Crossman, 1973). Adults die after spawning.

Arctic lamprey eggs hatch within a few weeks. Juveniles are called ammocoetes. The juveniles lack eyes and an oral disc and burrow into soft substrates, where they will filter feed and grow for 1 or 2 years (Morrow, 1980). It is possible that the ammocoete stage can last as long as 4 years (Scott and Crossman, 1973). Juveniles metamorphose into an adult form and migrate downstream to marine waters, lakes, or large rivers, depending upon their degree of anadromy. Transformation and downstream migration take place in the fall, or from August to November. The amount of time between downstream migration and returning spawning migration is unknown (Scott and Crossman, 1973). The life expectancy of arctic lamprey is thought to be at least 3 years (Morrow, 1980).

20.3 HABITAT REQUIREMENTS

Arctic lamprey spawning occurs over gravel-bottom riffles and runs within clear stream habitats (Mecklenburg et al., 2002). Shallow nests are typically constructed out of the main stream current. Suitable flows are 16 to 30 centimeters per second (Morrow, 1980), and gravel sizes range from 13 to 51 millimeters in diameter (Scott and Crossman, 1973). Water temperatures during spawning are between 12.2°C and 15° C. Juveniles burrow into soft muddy substrates of stream margins and backwaters (McPhail and Lindsey, 1970). As adults, anadromous arctic lamprey inhabit marine environments at depths up to 50 meters (Mecklenburg et al., 2002), while freshwater populations reside in lakes and large rivers (Scott and Crossman, 1973).

Anadromous and freshwater forms of arctic lamprey are generally considered to be parasitic, although freshwater forms have blunt teeth that may limit parasitic feeding. It is also possible that some freshwater populations may have been confused with other, nonparasitic lamprey species (Morrow, 1980). When parasitism is present, arctic lamprey adults use a variety of fish species as feeding hosts. Known host species include sockeye, pink, chum, and Chinook salmon, as well as rainbow trout, starry flounder, pygmy whitefish, smelt, cisco, longnose sucker, burbot, and threespine stickleback (Morrow, 1980; Scott and Crossman, 1973). It is likely that any fish of suitable size can be used as an arctic lamprey feeding host (Morrow, 1980). Arctic lamprey juveniles filter-feed on plankton, algae, and detritus while burrowed in soft substrates (McPhail and Lindsey, 1970; Scott and Crossman, 1973).

21. PACIFIC LAMPREY, *LAMPETRA TRIDENTATA*

21.1 CURRENT DISTRIBUTION

Pacific lamprey have been documented in various areas of the North Pacific rim. Along the Pacific coast of Asia, rare to occasional records of Pacific lamprey exist from marine environments near the eastern Kamchatka Peninsula, the Commander Islands, and Hokkaido, Japan. In North America, Pacific lamprey are distributed from northern Baja California to the eastern Bering and Chukchi seas (Mecklenburg et al., 2002). However, McPhail and Lindsey (1970) found only a single specimen north of the Alaska Peninsula. The fish was taken from the Wood River in the Bristol Bay drainage basin. Other records north of the Alaska Peninsula exist for St. Matthew Island, Nome, and Cape Lisburne (Mecklenburg et al., 2002).

21.2 BEHAVIOR AND REPRODUCTION

The Pacific lamprey is largely an anadromous and parasitic species, although some landlocked and nonparasitic populations occur in California and Oregon (Mecklenburg et al., 2002). Adults of anadromous forms usually migrate upstream into freshwater habitats from July to September, although they are not reproductively mature at this time. Overwintering occurs from October to March, and actual spawning occurs sometime between April and July. Using body motions and their oral discs, sexually mature males and females construct a shallow depression in a sandy gravel substrate, usually at the upstream end of a riffle. During spawning, eggs and sperm are released over the nest, and fertilized eggs settle into the substrate. The spawning act may occur several times over the next 12 hours, and males may spawn with more than one female in different nests. Adults die 1 to 14 days after spawning (Scott and Crossman, 1973).

Pacific lamprey eggs hatch in 1 to 3 weeks, depending on water temperatures (Morrow, 1980; Scott and Crossman, 1973). Larval lamprey, ammocoetes, lack eyes and an oral disc. The juveniles burrow into a substrate of fine sand and mud downstream from the nest and feed for several years by filtering the water. After 5 to 6 years, the ammocoetes metamorphose into a parasitic, but sexually immature form that has eyes, an oral disc, and horny teeth. These individuals migrate to sea during the late summer. Parasitic behaviors begin the following spring or summer and last for 12 to 20 months, after which time fish will return to freshwater to spawn. The average lifespan of adult Pacific lamprey is at least 7 years (Scott and Crossman, 1973).

21.3 HABITAT REQUIREMENTS

Anadromous Pacific lamprey migrate upstream to spawn, sometimes traveling several hundred kilometers to headwater areas. Once in streams, Pacific lamprey rely on rocks and stones to provide cover while they overwinter and undergo reproductive maturation. Spawning habitats are usually at the upstream edges of riffles, and substrates are often fine gravel and sand (Scott and Crossman, 1973)Ammocoetes burrow in silt, sand, and mud substrates in shallow eddies and backwaters of streams for 4 to 5 years (Mecklenburg et al., 2002). Although no specific velocity preferences were found in the literature, the fact that ammocoetes burrow in fine sediments and filter feed suggests these fish would more likely be found in low velocity habitats where fine sediments would be deposited. Ammocoetesleave their burrows and metamorphose into parasitic forms that rely on late summer flood conditions to carry them out to marine or estuarine waters (Scott and Crossman, 1973).

Anadromous Pacific lamprey feed during only two stages throughout their lifespan. While burrowed in substrates of sand, silt and mud, ammocoetes feed by filtering organic material and algae from ingested water (McPhail and Lindsey, 1970). Parasitic forms feed exclusively in the marine environment by latching onto other fish or marine vertebrates using their sucking disc. No feeding occurs in freshwater during seaward outmigrations nor during upstream spawning migrations (Morrow, 1980).

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23. GLOSSARY

Allopatric—occurring in separate, non-overlapping geographic areas.

Ammocoete—filter-feeding larval stage of a lamprey.

Amphipod—a member of an order of small crustaceans named so because their appendages are not all the same and found in terrestrial and aquatic environments.

Anadromous—relating to the life history characteristic in which fish reproduce and spend the early portion of their life in freshwater and then migrate to sea for a period of adult growth, development, and maturation before returning to natal spawning areas.

Anadromy—migration of adult or subadult fish from saltwater to freshwater for spawning.

Annelid—a member of the large group of segmented worms also known as ringed-worms.

Benthic—relating to the bottom or substrate of an aquatic environment.

Brackish—characterized by a mixture of freshwater and saltwater.

Chironomid—a member of a group of winged insects also known as non-biting midges.

Cladoceran—a member of a group of small crustaceans also known as water fleas.

Dipteran—a member of the insect order Dipter; includes the two-winged or "true" flies.

Emergence—departure of fish fry from the gravel or substrate into the water column.

Fry—a stage in the fish life cycle characterized by the commencement of active feeding; young newly-hatched fish.

Gastropod—a class of animals that belong to the mollusk family and include: snails, slugs, welks, conches, limpets, periwinkles, abalones, slugs, etc.

Isopod—a group of small crustaceans with flattened bodies and all similar appendages found in aquatic and terrestrial environments.

Iteroparous—capable of reproducing or breeding multiple times.

Limnetic—relating to the open water area away from the shore of a lake or pond.

Littoral—relating to the shallow shore region of a lake, sea, or ocean.

Milt—milky substance that contains sperm and is released by male fish to fertilize eggs.

Mysid—a group of small, shrimp-like, aquatic animals without backbones in the crustacean family.

Ostraocod—a class of very small aquatic animals without backbones in the crustacean family. They are bivalves like clams but are much smaller at 1 millimeter in size.

Outmigration—the migration of juvenile fish down a river system toward marine and brackish waters.

Pelagic—relating to the deeper open waters of a sea or ocean, not near the shore or bottom.

Plankton—small plants that float or drift in fresh or saltwater.

Redd—the gravel nest of salmonid fishes.

Resident—pertaining to nonanadromous, entirely freshwater fish populations.

Salmonid—any member of the fish family Salmonidae; includes salmon, trout, char, whitefish, and grayling.

Smolt—a young or juvenile fish, usually with silvery coloration, in the seaward migration phase of anadromous salmonids.

Stock—a discrete population of a fish species that tends to inhabit the same waters and breed in the same stream.

Zooplankton—small animals without backbones, mainly crustaceans and fish larvae, that float or drift in fresh or saltwater.

APPENDIX 15.1B

Reach Analysis Mine Study Area, 2004-2008

Appendix B – Reach Analysis

1.1 Introduction

Comprehensive studies in the vicinity of the Pebble Deposit were initiated in 2004 by Northern Dynasty Mines, Inc. and have been continued by the Pebble Partnership through 2008. The overall goal of the fish and aquatic resource studies was to describe baseline fish population characteristics in the mine study area and the condition of local aquatic habitats that support current fish production. Numerous studies were conducted during the five-year study period to achieve this goal. This appendix depicts the results of these fish and aquatic studies conducted within the vicinity of the Pebble Deposit and includes information on: fish distribution, mesohabitat mapping, aquatic habitat surveys, relative fish abundance, spawning distributions, winter habitat sampling, and mainstem index fish surveys. Detailed descriptions of the study area, objectives, and methods are provided in Chapter 11 of the consolidated study program for the Pebble Project (copy provided in Appendix E of this EBD).

The fish and aquatic data were collected along the length of more than 380 km of mainstem and tributary stream habitat in the North and South Fork Koktuli rivers (NFK and SFK, respectively) and Upper Talarik Creek (UT). In order to present the data within an ecologically meaningful framework, we delineated 18 distinct hydrologic reaches and summarized the fish and aquatic data that were collected within each reach. Reaches were delineated by R2 Resource Consultants, Inc. and Buell & Associates, Inc. based on a review of maps and existing data associated with multidisciplinary parameters influencing channel function. Parameters considered included: channel and valley morphology, geology, stream discharge, and surface water temperature. The review resulted in the delineation of six, five, and seven mainstem EBD reaches within the NFK, SFK, and UT, respectively (Table 1). Reach names were assigned alphabetically within each watershed, starting with reach A as the downstream most reach and moving upstream to the headwaters (Table 1). Additionally, tributaries and off-channel aquatic habitats within the three basins were assigned to one of the 18 mainstem reaches based on the location of the tributary-mainstem confluence. Each tributary drainage was assigned to the mainstem reach that it flowed into, while off-channel habitat was assigned based on its proximity to the mainstem channel. While no formal reach delineation occurred for the mainstem Koktuli River (KR), the portion of the KR for which fish and habitat data were collected during the 2004-2008 study period (Table 1) is included as its own section within this appendix and has been treated in the same manner as the other 18 delineated reaches for purposes of results analysis and presentation.

Table 1:
Delineated EBD reaches and associated river kilometers (RKm) used for the reach analysis.

EBD Reach	Downstream RKm	Upstream RKm	Appendix B Section
NFK-A	0	13.69	B.1
NFK-B	13.7	21.07	B.2
NFK-C	21.08	36.64	B.3
NFK-D	36.65	48.41	B.4
NFK-E	48.42	52.54	B.5
NFK-F	52.55	57.67	B.6
SFK-A	0	24.87	B.7
SFK-B	24.88	34.29	B.8
SFK-C	34.3	51.68	B.9
SFK-D	51.69	54.67	B.10
SFK-E	54.68	64.17	B.11
UT-A	0	5.93	B.12
UT-B	5.94	16.81	B.13
UT-C	16.82	24.75	B.14
UT-D	24.76	36.28	B.15
UT-E	36.29	45.06	B.16
UT-F	45.07	59.13	B.17
UT-G	59.14	62.38	B.18
KR	16.55	63.00	B.19

This appendix is organized into 19 reach-specific documents that depict the reach level analysis. Overall, the data analysis includes maps, tables, and figures that depict:

- reach location;
- fish sampling locations;
- habitat survey locations;
- species presence data;
- the spatial distributions of anadromous and resident fish species;
- mainstem mesohabitat mapping results;

- results of the mainstem and tributary United States Forest Service (USFS) modified Tier 1 and Tier 3 aquatic habitat surveys, including channel morphology characteristics, habitat type composition, stream habitat characteristics, pool habitat characteristics, and special habitat features;
- the temporal distributions of fish species by life stage and numbers of fish observed;
- relative fish abundance and density by habitat type within mainstem and tributary streams;
- relative fish abundance and density by channel location (i.e., main channel, side channel, off-channel);
- relative fish abundance and density by off-channel habitat types;
- anadromous fish spawning locations;
- adult anadromous fish counts from aerial spawning surveys conducted in 2008;
- winter fish sampling locations and relative fish abundance; and
- fish observations and fish density by habitat type at Mainstem Index Fish Survey sites in 2008.

The suite of maps, tables, and figures presented varies among the reaches. While some data (e.g., fish distribution and abundance surveys) were collected in all reaches, others (e.g., off-channel habitat studies) were applicable only to a subset. The presentation order of maps, tables and figures was structured to be as consistent as possible among basins within the confines of the aforementioned data differences among reaches.

The following map production notes will enhance the viewing of maps in Appendix B.

1. All maps are electronic and, although they can be printed for convenience, some detail is visible only when zoomed in to a finer scale on the electronic form. For example, some sampling locations are very close to or even adjacent to another sampling location and the marker symbols for these sites can be obscured by each other. The result is that what appears to be one sampling location marker on the map may in fact be multiple markers that are differentiated by zooming in on that area of the map.

2. Some data were collected at one point in a river and are denoted as data collection sites. Other data were collected over a length of river, i.e., sampling was continuous from point a to point b, and in this latter case the data are presented a sampling survey.

3. The Appendix B maps were created and produced in a series, thus the legend was built for the map series and, as such, contains all possible data types for that series. Furthermore, the legend for any individual reach map within a series may contain symbols for data that were not documented within that reach and thus are not depicted on the map itself.

4. The map background orthophoto was generated by aerial photogrammetric methods using aerial photographs dated July 2004. As a result, the stream network seen on the image is represented by

the way it was at one point in time during July 2004. In addition, all GPS locations have some level of error associated with them. This error is generally less for waypoints taken on the ground (on the order of a meter or two) than those taken from the air (up to 400 m). As a result of these two factors, GPS measurement error and a fixed orthophoto photo date, there are some data points on the maps that do not appear to be contained within a stream channel but are located nearby. When this data was checked for QA/QC and found to be correct, then the marker identifying that point was left where it fell on the map and was not moved to be contained within a stream channel or water body. This is particularly important to keep in mind when viewing data collected in off-channel areas.

5. To be consistent with the reach level analysis, all data points, whether they were collected from the mainstem river, a tributary draining into the mainstem, or a nearby off-channel area, are linked back to the mainstem reach for summary and analysis. The beginning and end points of the mainstem reaches were selected so as to end upstream of the closest tributary so that the data collected within that tributary would be associated with the nearest downstream mainstem reach. On the maps this may be reflected by tributary and off-channel data points that at first look appear to be outside the reach of interest however are linked to the mainstem reach by a drainage area.

PEBBLE PROJECT
ENVIRONMENTAL BASELINE STUDIES

APPENDIX B
REACH ANALYSIS

NORTH FORK KOKTULI RIVER BASIN

JANUARY 2011

Maps

Figure B.1-1a Reach NFK-A
Figure B.1-1b Reach NFK-A Mainstem and Tributaries Reference Map
Figure B.1-2 NFK-A Fish Sampling Sites by Method
Figure B.1-3 NFK-A All Aquatic Habitat Data Collection Sites
Figure B.1-4 NFK-A Anadromous Fish Distribution, 2004-2008 Observations
Figure B.1-5 NFK-A Resident Fish Distribution, 2004-2008 Observations
Figure B.1-6 NFK-A Mainstem Mesohabitat Types Delineated from Aerial Imagery
Figure B.1-9 NFK-A Chinook Salmon Spawning Locations
Figure B.1-10 NFK-A Chum Salmon Spawning Locations
Figure B.1-11 NFK-A Coho Salmon Spawning Locations
Figure B.1-12 NFK-A Sockeye Salmon Spawning Locations
Figure B.1-17 NFK-A Winter Fish Sampling Sites

Figure B.2-1a Reach NFK-B
Figure B.2-1b Reach NFK-B Mainstem and Tributaries Reference Map
Figure B.2-2 NFK-B Fish Sampling Sites by Method
Figure B.2-3 NFK-B All Aquatic Habitat Data Collection Sites
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CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.1
NORTH FORK KOKTULI RIVER REACH A (NFK-A)

Table B.1-1.
List of species found in NFK-A.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.1-2.
2004-2008 number of fish observations by lifestage within NFK-A mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult				Juvenile			Juvenile/Adult[a]					Total
			Jul	Aug	Sep	Subtotal	Jul	Aug	Subtotal	Apr	Jul	Aug	Sep	Subtotal	
Chinook salmon	2004	Minnow Trap						57	57						57
	2005	Minnow Trap						28	28						28
		Snorkel	1			1	4		4						5
	2006	Snorkel	3	2		5	3838	212	4050						4055
	2007	Snorkel	3			3	2182		2182						2185
	2008	Seine						1	1						1
		Snorkel		6		6		137	137						143
chum salmon	2005	Snorkel	3			3									3
	2006	Snorkel	2			2									2
	2007	Snorkel	8			8									8
coho salmon	2004	Electrofishing						3	3						3
		Minnow Trap						70	70						70
	2005	Minnow Trap						65	65						65
		Snorkel					1092		1092						1092
	2006	Snorkel					852	259	1111						1111
	2007	Snorkel					2031		2031						2031
	2008	Seine		1		1		2	2						3
		Snorkel						18	18						18
sockeye salmon	2005	Snorkel	4			4	1		1						5
	2006	Snorkel					17		17						17
	2007	Snorkel	5			5	32		32						37
	2008	Seine						1	1						1
		Snorkel		5		5									5
Pacific salmon sp.	2005	Minnow Trap						694	694						694

Table B.1-2. Continued

Species	Year	Method	Adult				Juvenile			Juvenile/Adult[a]					Total
			Jul	Aug	Sep	Subtotal	Jul	Aug	Subtotal	Apr	Jul	Aug	Sep	Subtotal	
arctic grayling	2005	Snorkel	37			37									37
	2006	Snorkel	28			28									28
	2007	Angling			9	9							3	3	12
		Snorkel	14			14									14
	2008	Angling			2	2									2
		Seine		14		14		3	3						17
		Snorkel		19		19									19
Dolly Varden	2004	Electrofishing						1	1						1
		Minnow Trap						7	7						7
	2005	Minnow Trap						2	2						2
		Snorkel									4			4	4
	2006	Snorkel					15		15						15
	2008	Angling			4	4									4
		Seine		1		1		1	1						2
		Snorkel		26		26									26
rainbow trout	2005	Snorkel					4		4						4
	2006	Snorkel						3	3						3
	2007	Snorkel	1			1	1		1						2
whitefish sp.	2006	Snorkel	2			2									2
	2007	Snorkel	1			1									1
	2008	Seine		4		4									4
		Snorkel		11		11									11
Salmonid sp.	2008	Visual Observation						1	1						1
sculpin sp.	2005	Electrofishing								1				1	1
	2007	Snorkel	1			1					1			1	2
	2008	Seine		4		4		44	44						48
		Snorkel										17		17	17
ninespine stickleback	2004	Minnow Trap						1	1						1
threespine stickleback	2004	Minnow Trap						1	1						1
	2005	Minnow Trap										26		26	26

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

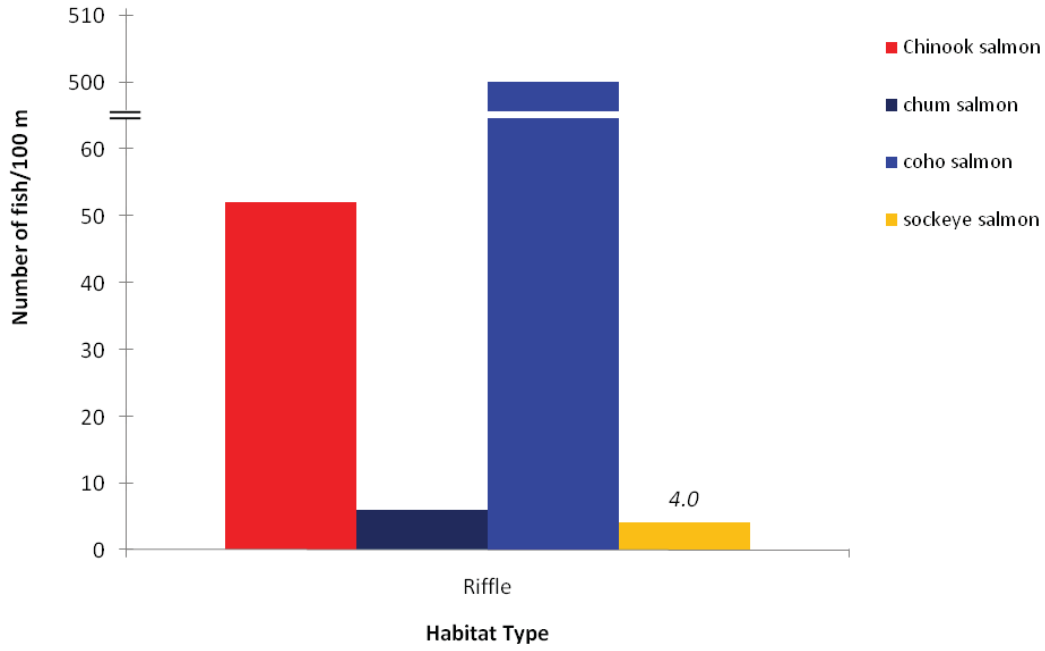


Figure B.1-7
2004-2007 fish abundance by habitat type within mainstem NFK-A.

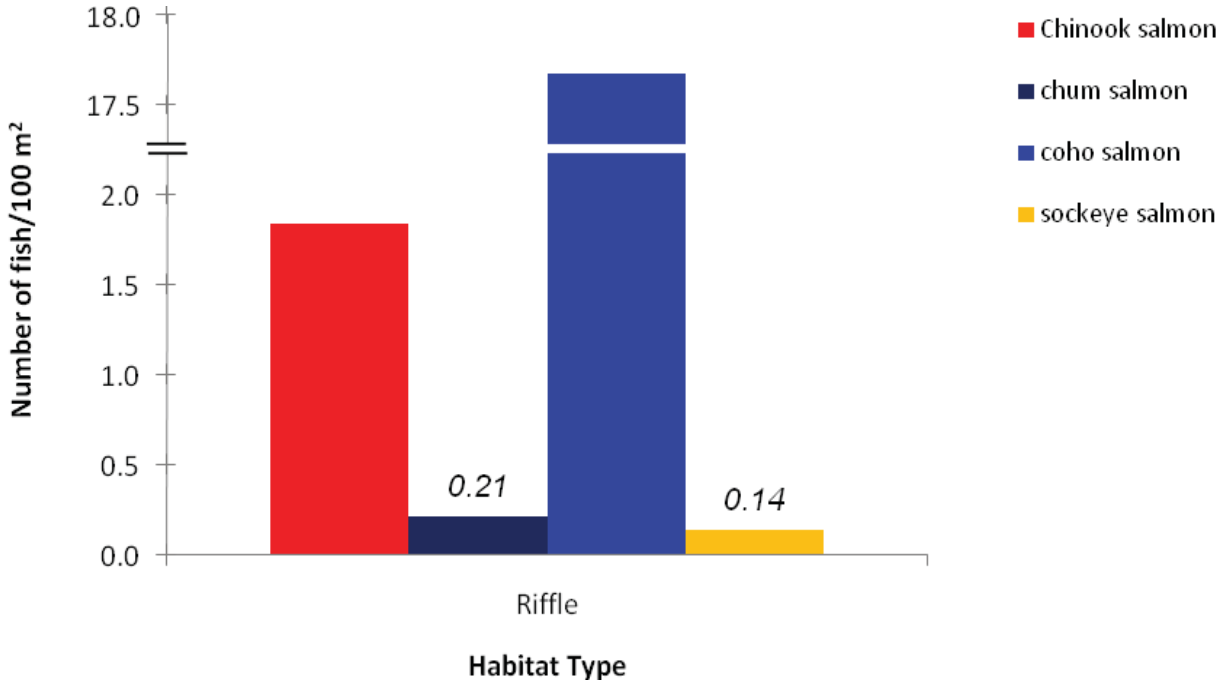


Figure B.1-8.
2004-2007 fish density by habitat type within mainstem NFK-A.

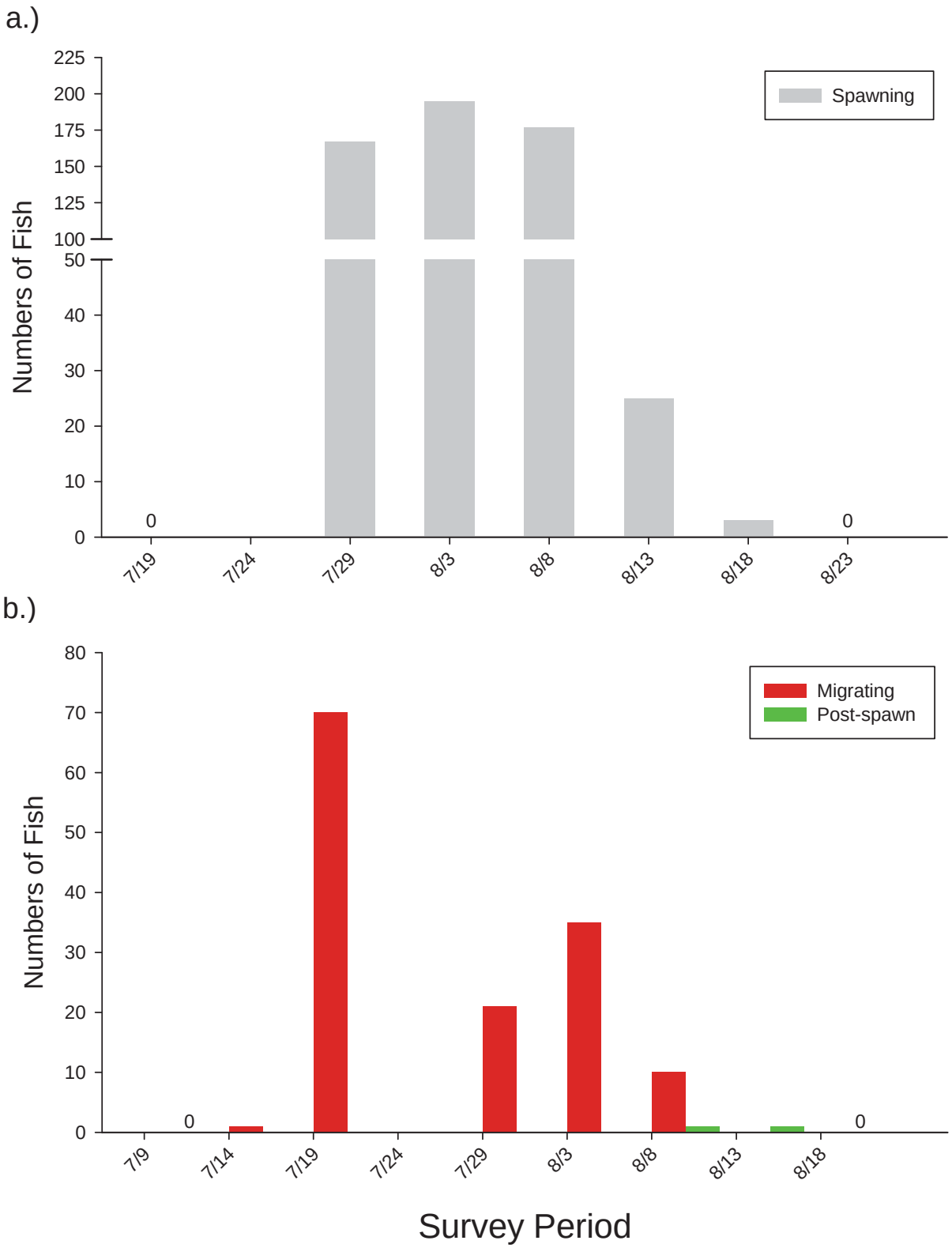


Figure B.1-13.
Observations of Chinook salmon during 2008 aerial surveys in NFK-A. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

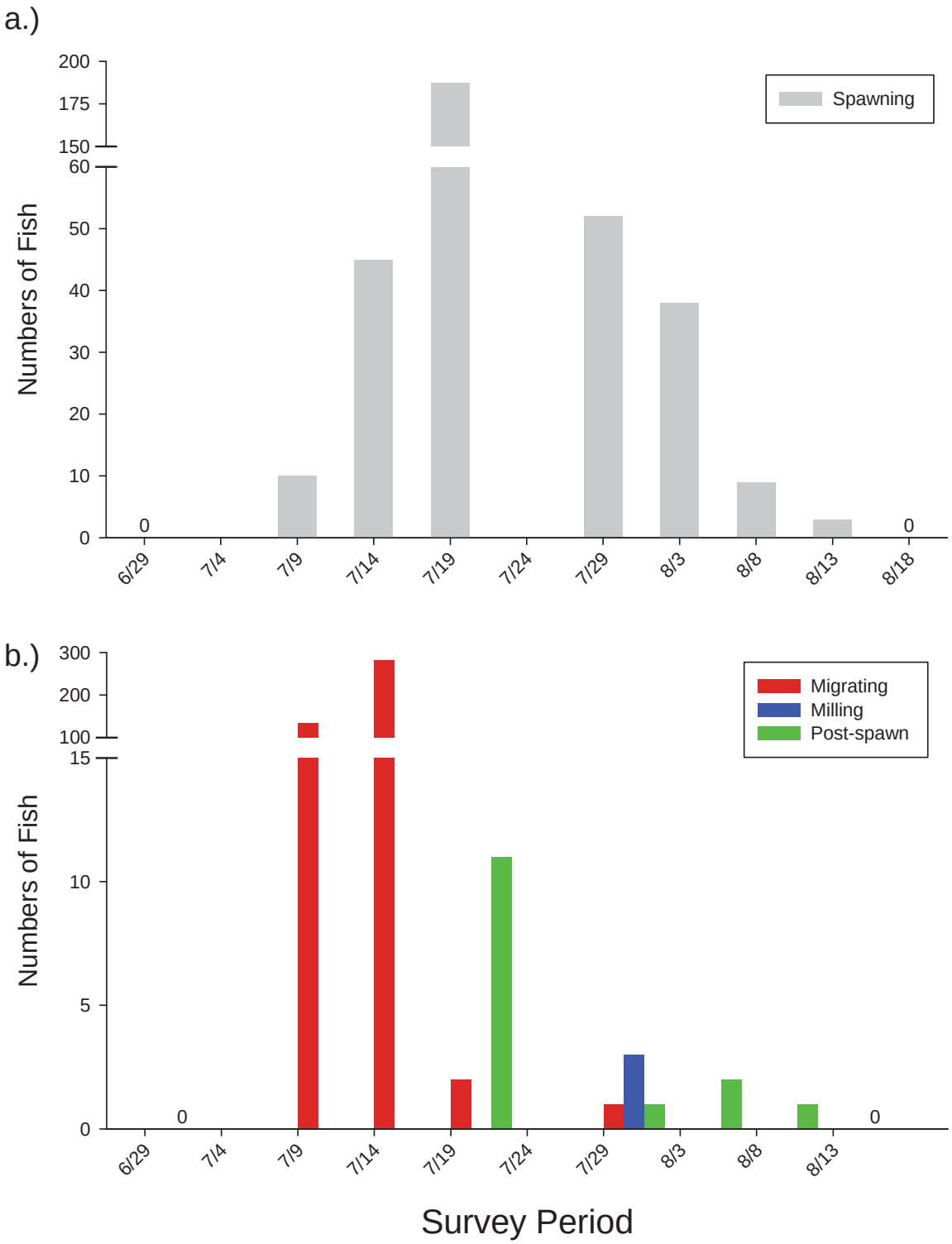


Figure B.1-14.
Observations of chum salmon during 2008 aerial surveys in NFK-A. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

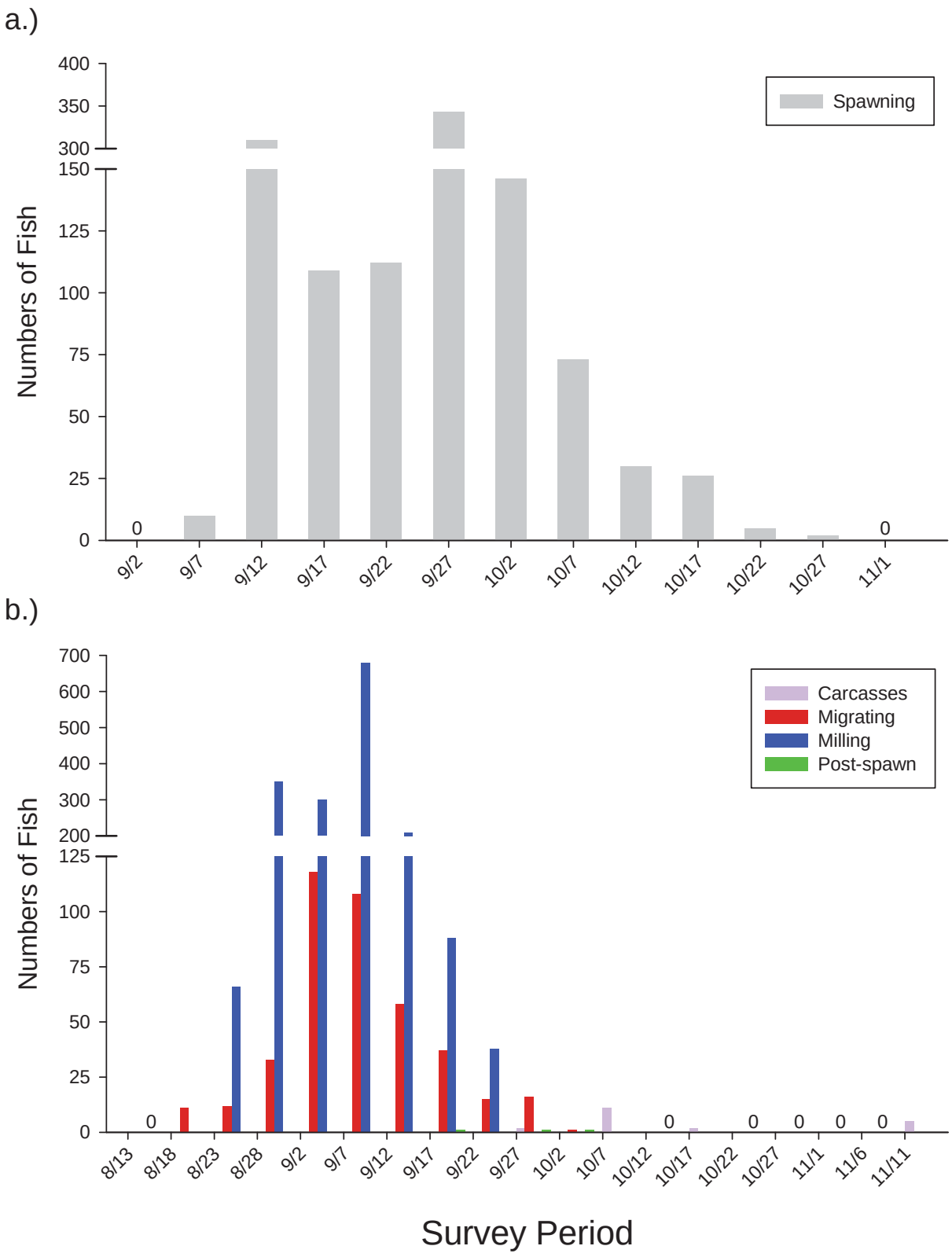


Figure B.1-15.
Observations of coho salmon during 2008 aerial surveys in NFK-A. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

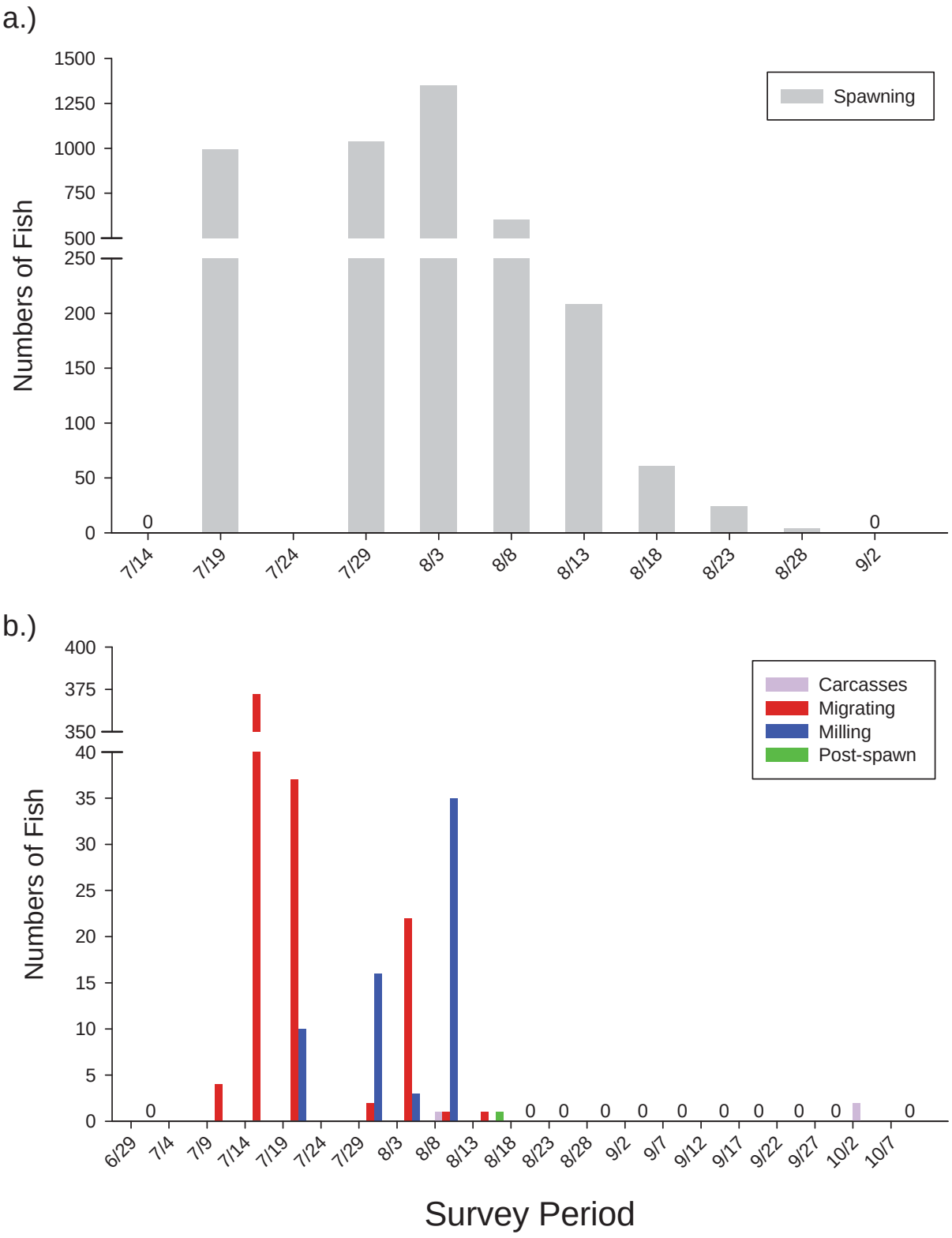


Figure B.1-16.
Observations of sockeye salmon during 2008 aerial surveys in NFK-A. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.1-3.
NFK-A fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Juvenile/Adult[a]	Total Fish Count
4/2/2005	NFK05WT-01	sculpin sp.	electrofishing	1	1

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Table B.1-4.
2008 fish observations by method at mainstem index sites located within NFK-A.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
NFK00.0	Chinook salmon	snorkel	6	135		141
	coho salmon	beach seine	1			1
	sockeye salmon	snorkel	5			5
	arctic grayling	beach seine	14	3		17
		snorkel	19			19
	Dolly Varden	beach seine	1			1
		snorkel	26			26
	whitefish sp.	beach seine	4			4
		snorkel	11			11
NFK00.0 Total			**87**	**138**		**225**
NFK04.33A	coho salmon	snorkel		3		3
	Sculpin sp.	beach seine	2	6		8
		snorkel			1	1
NFK04.33A Total			**2**	**9**	**1**	**12**
NFK04.33B	Chinook salmon	snorkel		2		2
	coho salmon	beach seine		1		1
	Sculpin sp.	beach seine		6		6
NFK04.33B Total				**9**		**9**
NFK08.66	Chinook salmon	beach seine		1		1
	coho salmon	beach seine		1		1
		snorkel		15		15
	sockeye salmon	beach seine		1		1
	Sculpin sp.	beach seine	2	16		18
		snorkel			14	14
NFK08.66 Total			**2**	**34**	**14**	**50**
NFK12.99A	Salmonid sp.	visual observation		1		1
	Sculpin sp.	beach seine		4		4
		snorkel			1	1
NFK12.99A Total				**5**	**1**	**6**
NFK12.99B	Dolly Varden	beach seine		1		1
	Sculpin sp.	beach seine		12		12
		snorkel			1	1
NFK12.99B Total				**13**	**1**	**14**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

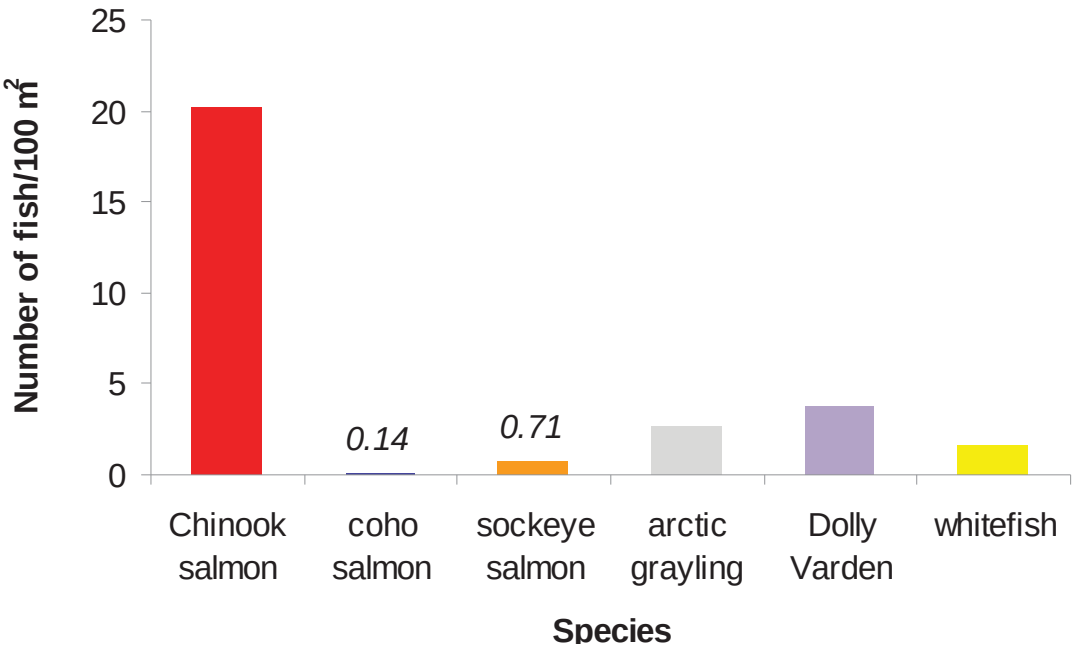


Figure B.1-18a.
2008 fish density in glide habitat at mainstem index site (RKm 0.00) within NFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

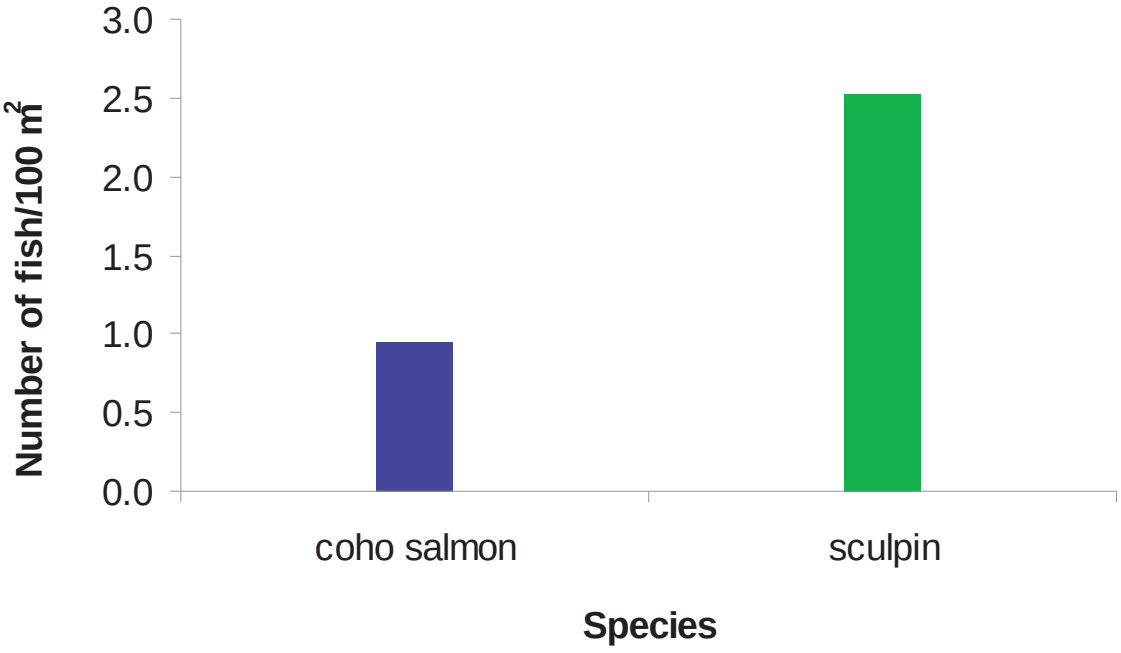


Figure B.1-18b.
2008 fish density in glide habitat at mainstem index site (RKm 4.33, channel A) within NFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

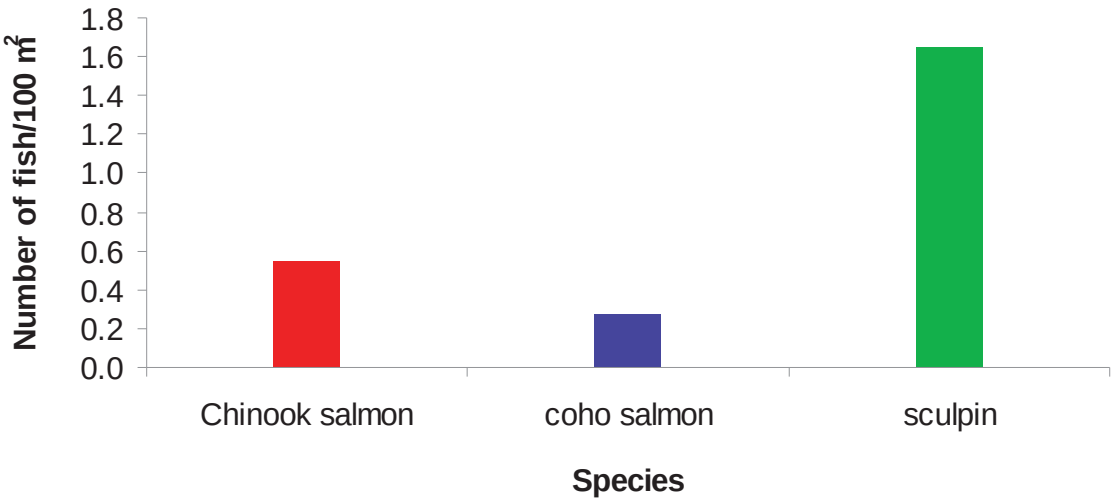


Figure B.1-18c.
2008 fish density in glide habitat at mainstem index site (RKm 4.33, channel B) within NFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

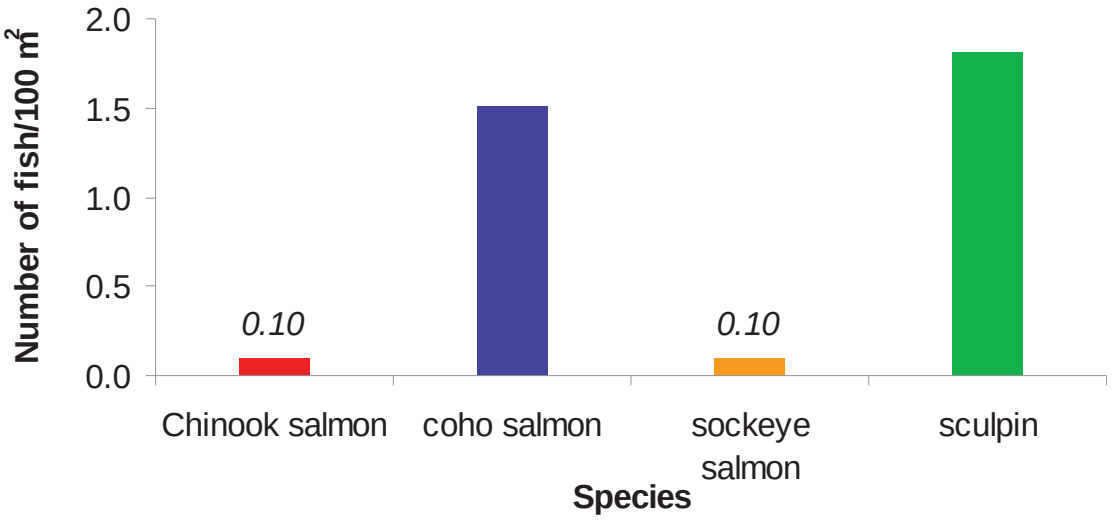


Figure B.1-18d.
2008 fish density in glide habitat at mainstem index site (RKm 8.66) within NFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

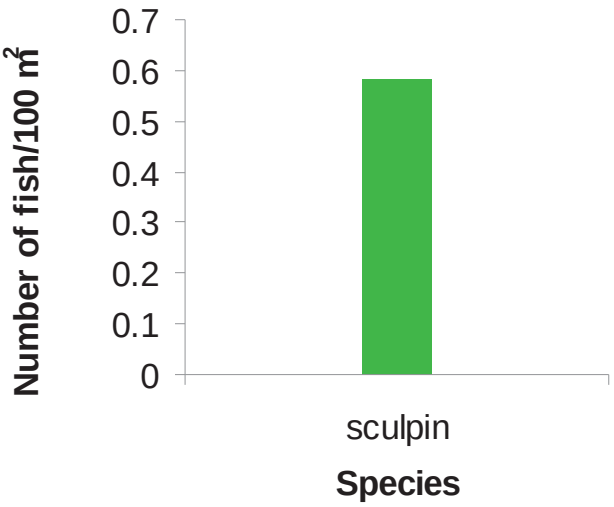


Figure B.1-18e.
2008 fish density in riffle habitat at mainstem index site (RKm 12.99, channel A) within NFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

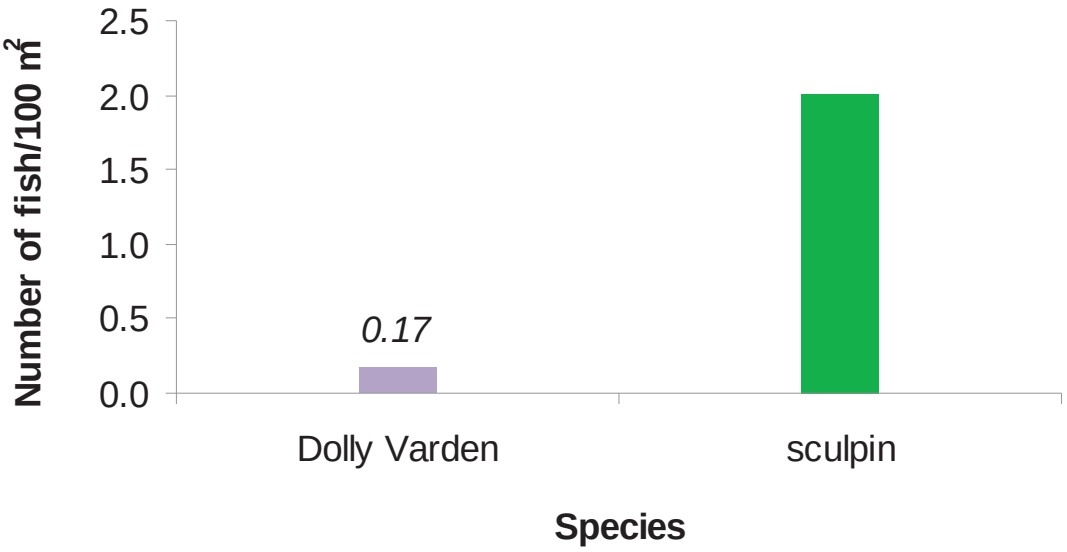
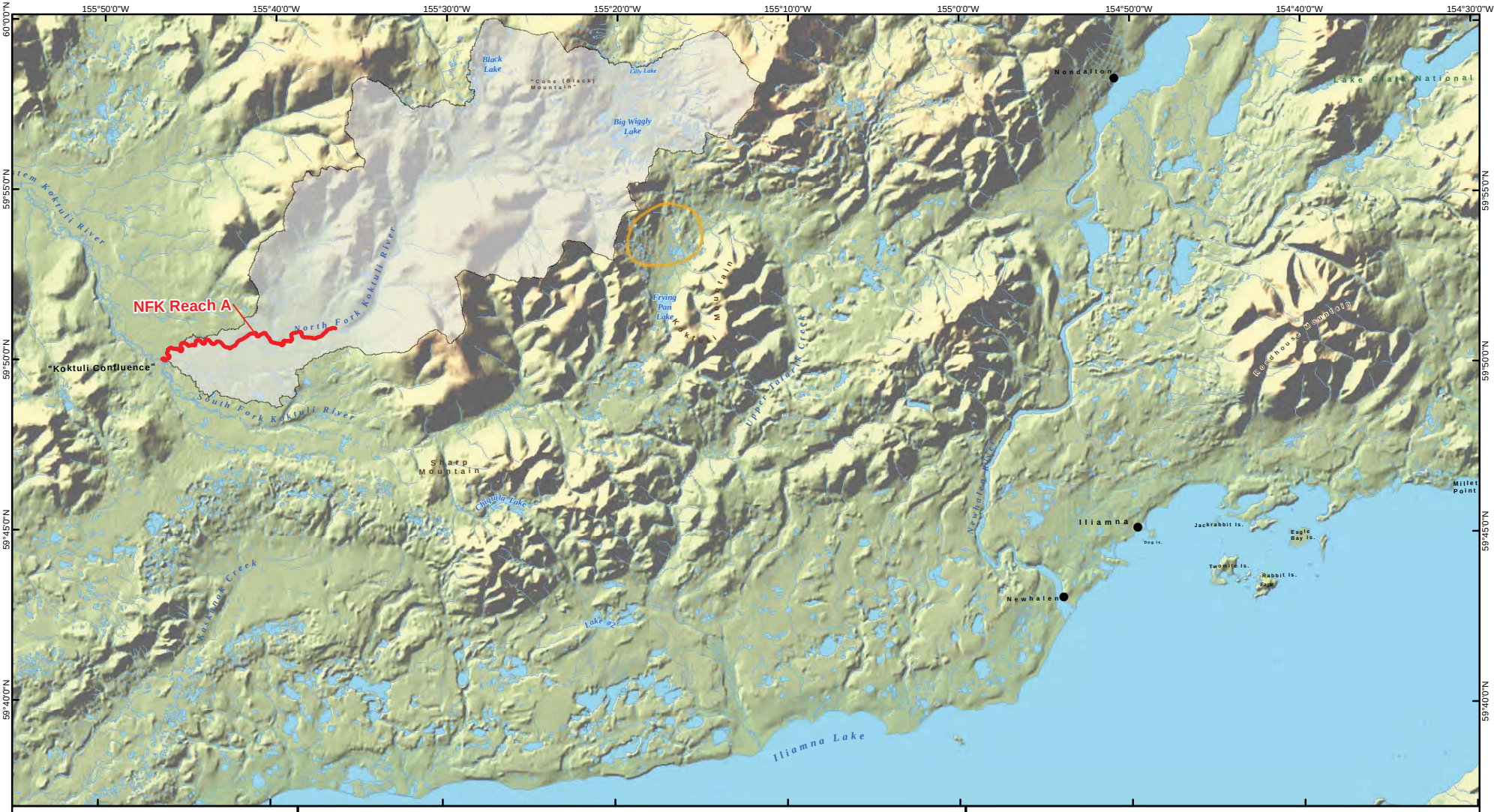


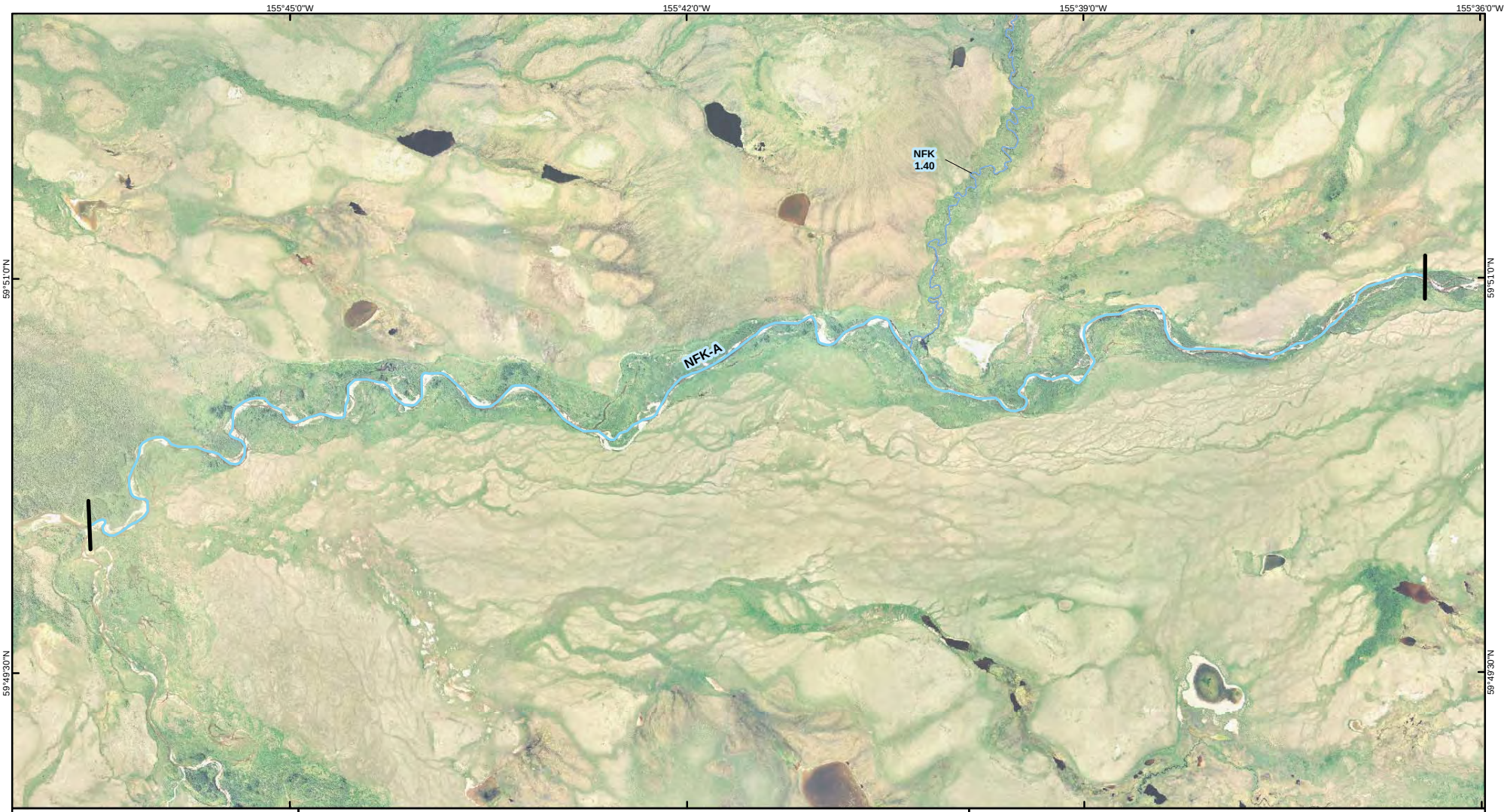
Figure B.1-18f.
2008 fish density in riffle habitat at mainstem index site (RKm 12.99, channel B) within NFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

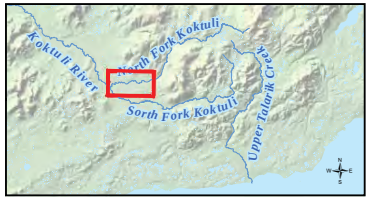


THE pebble PARTNERSHIP

Figure B.1-1a
Reach NFK-A

RDI_R2_OverviewLocator_NFK-A_Fig-B.1-1a_11x17L_1of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

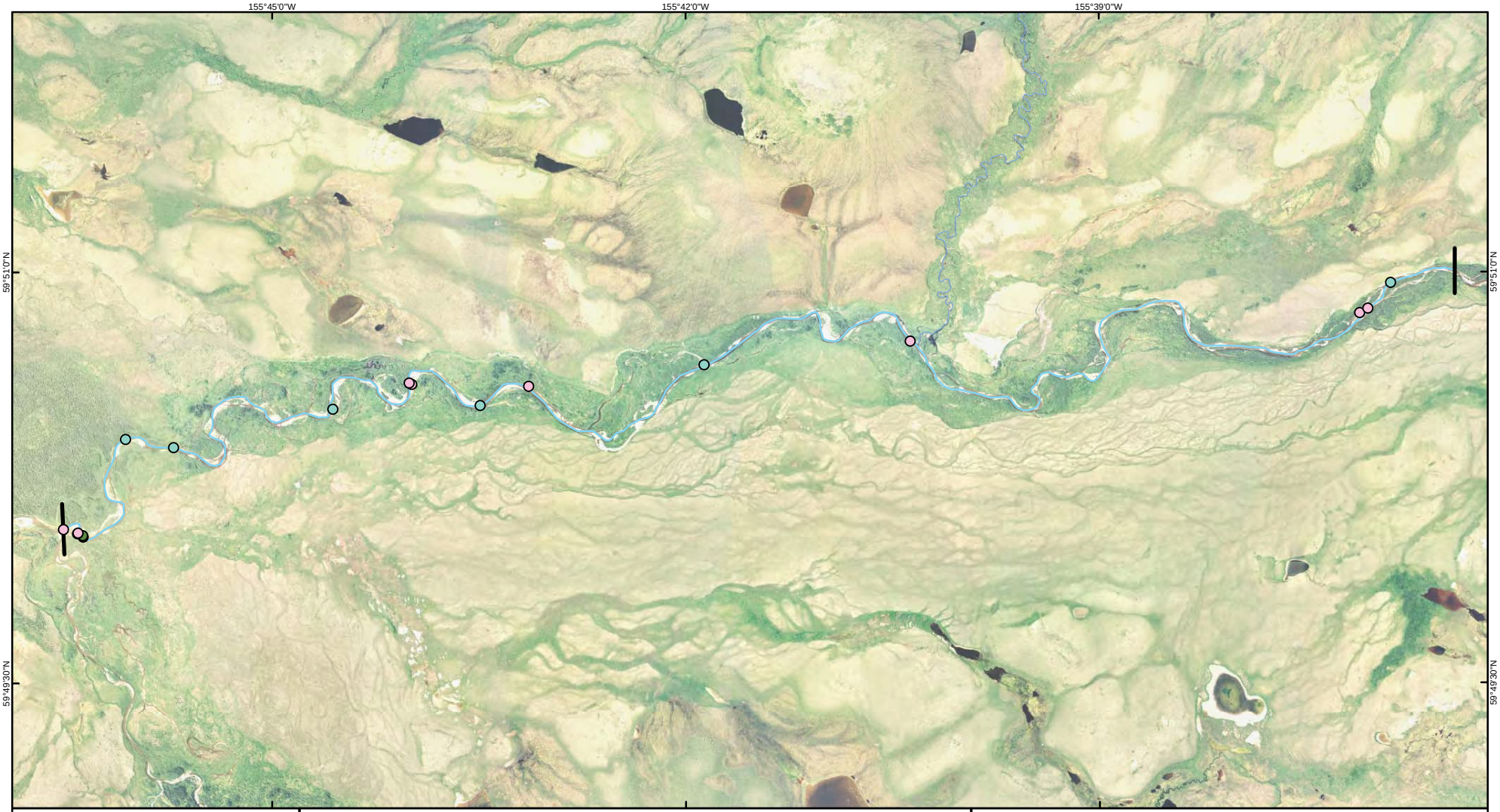
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-1b
NFK-A
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_NFK-A_Fig-B.1-1b_11x17L_1of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

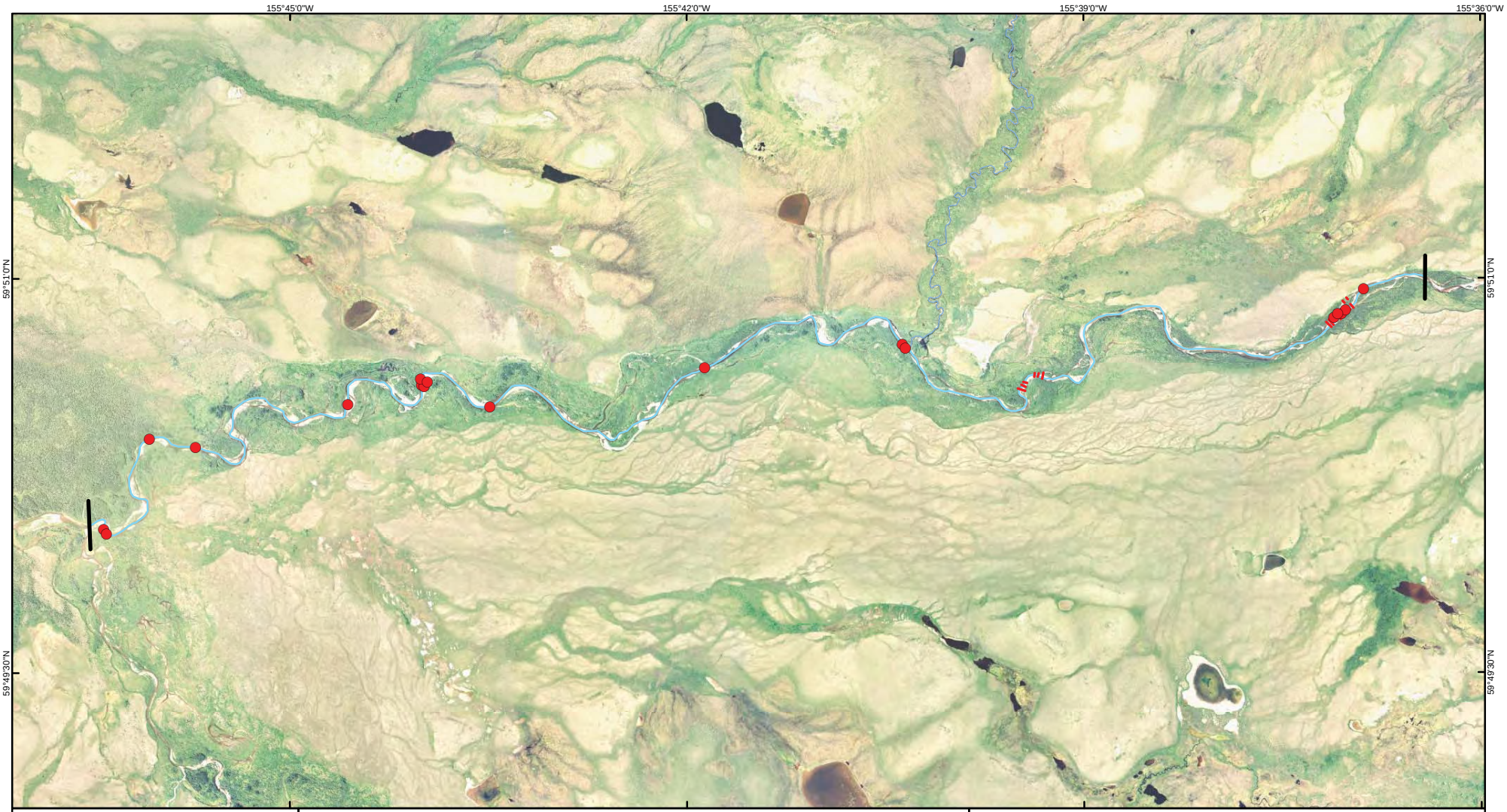
Miles
0 0.5 1

Kilometers
0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-2
NFK-A
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_NFK-A_Fig-B.1-2_11x17L_1of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

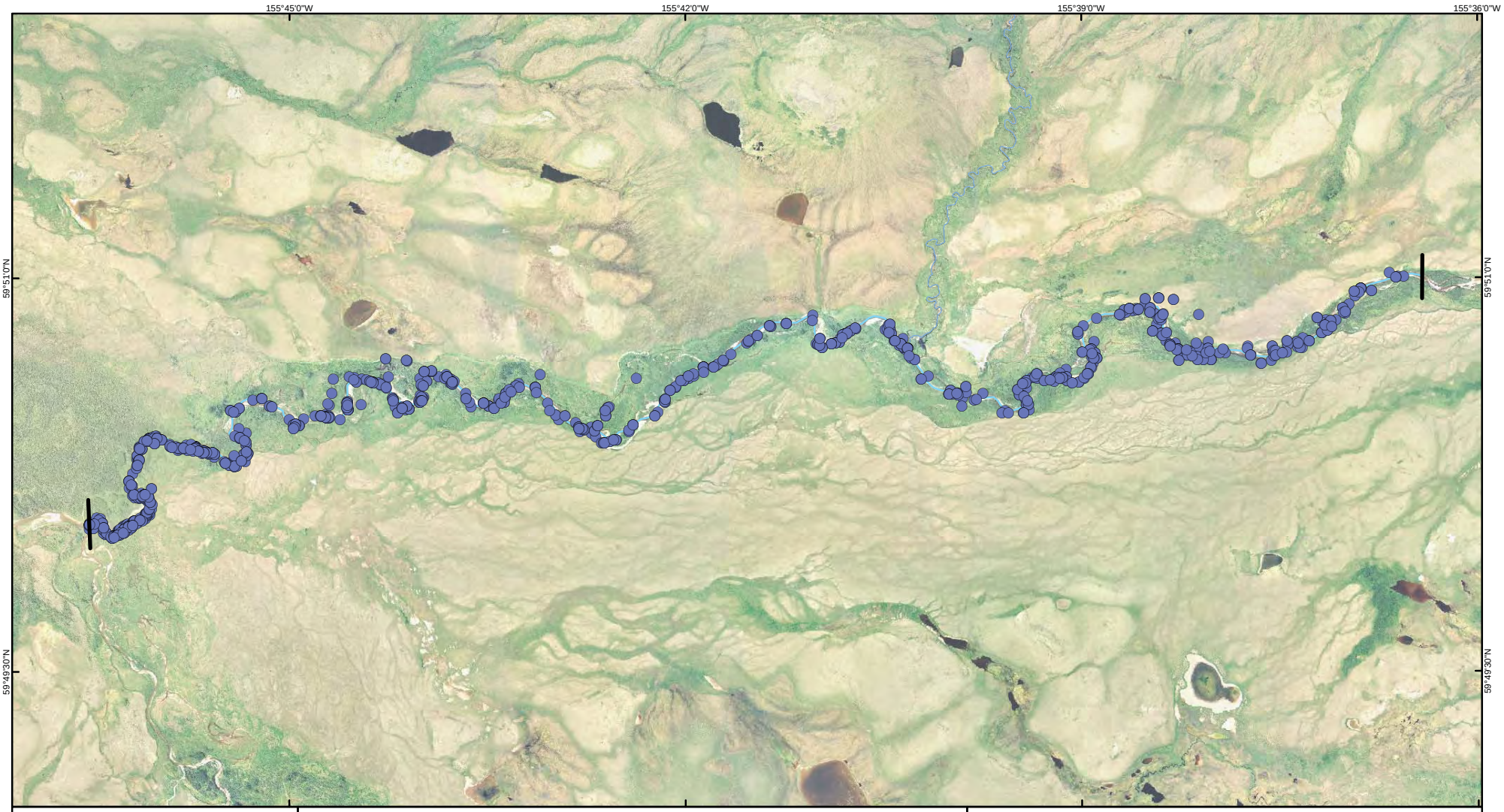
Miles: 0 0.5 1

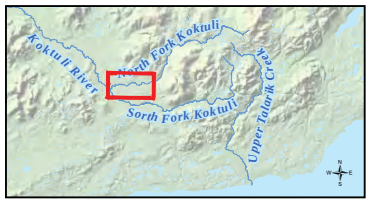
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-3
NFK-A
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_NFK-A_Fig-B.1-3_11x17L_1of19_D02.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

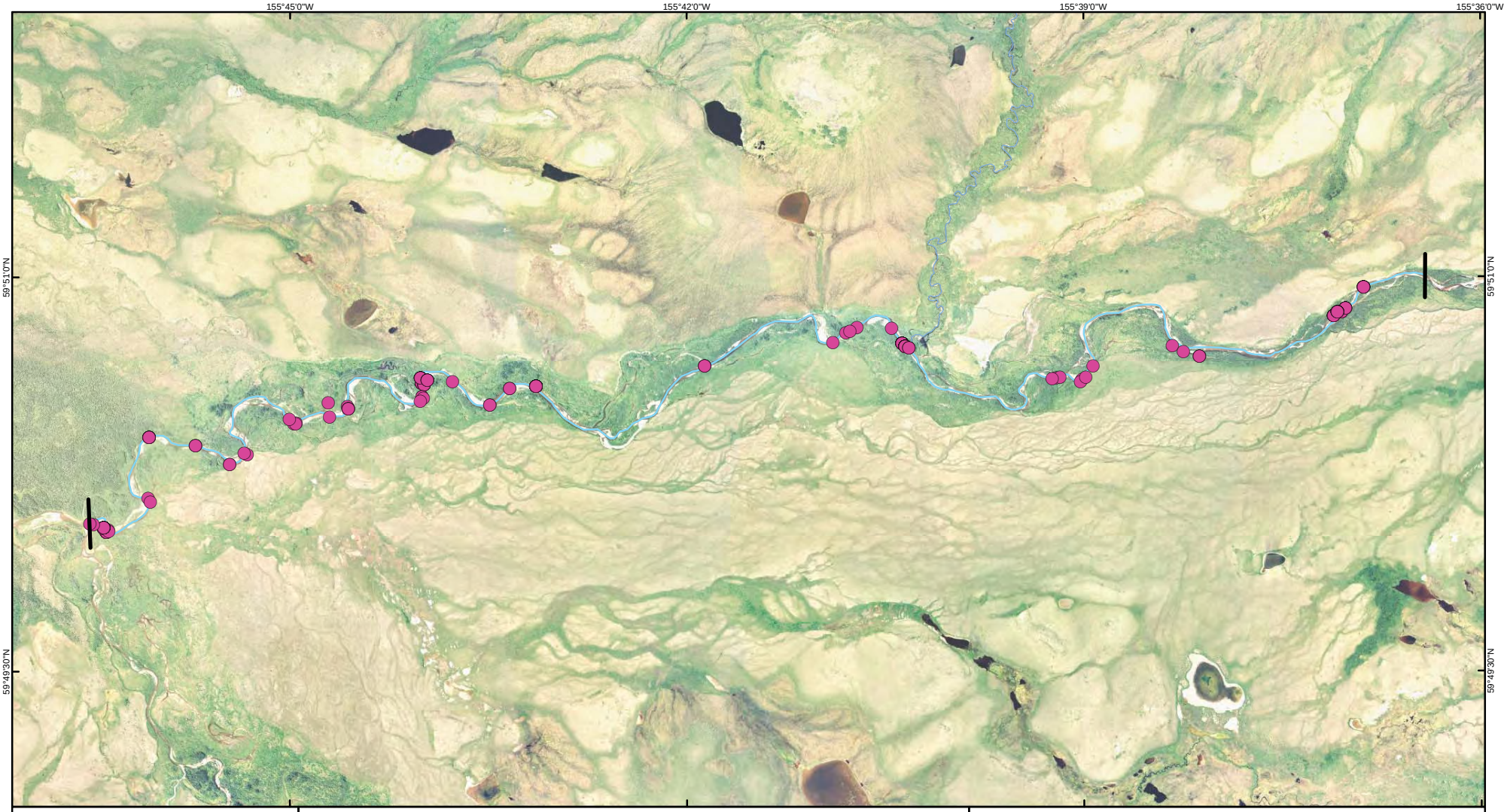
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-4
NFK-A
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_NFK-A_Fig-B.1-4_11x17L_1of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

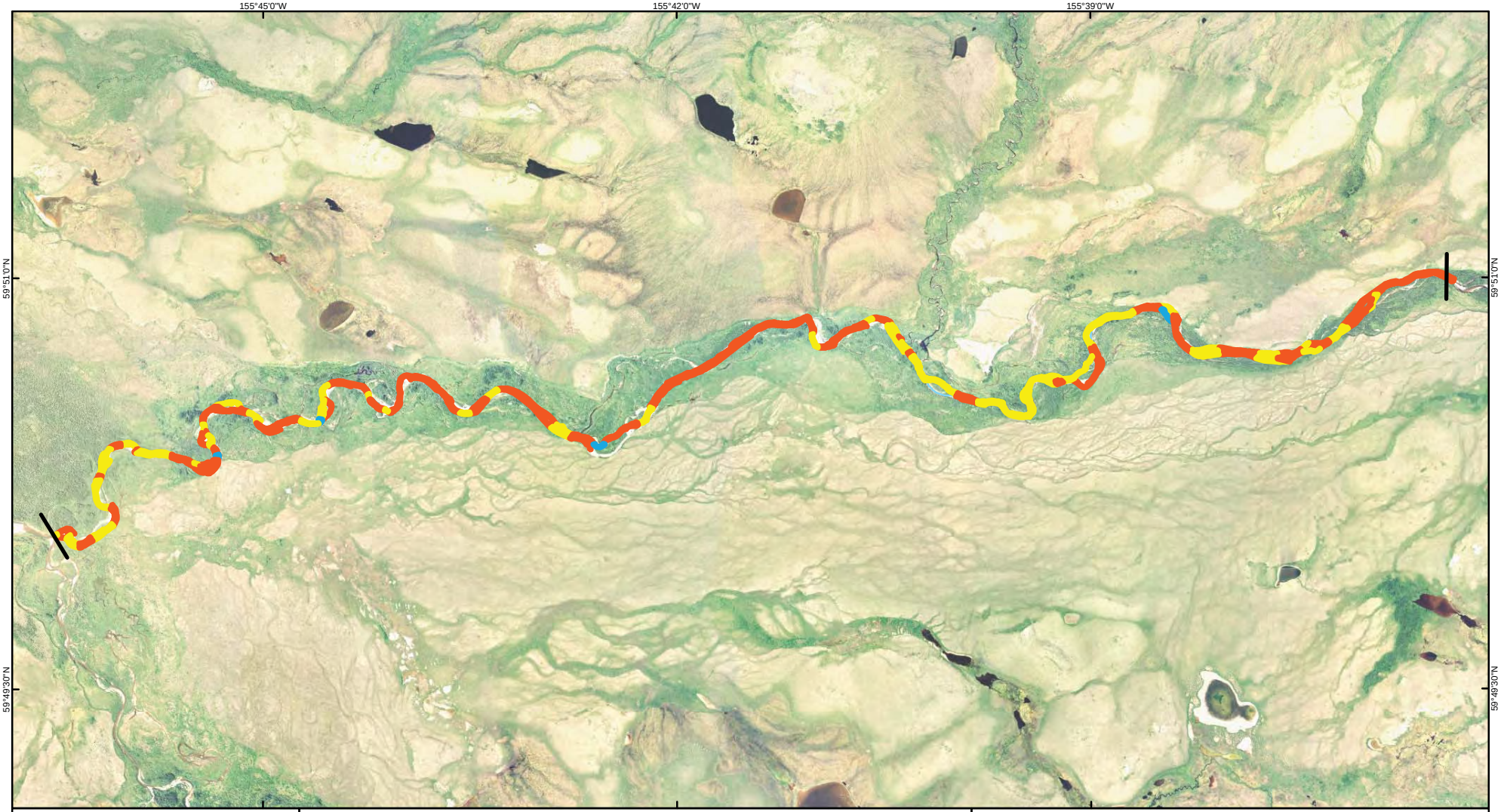
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-5
NFK-A
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_NFK-A_Fig-B.1-5_11x17L_1of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

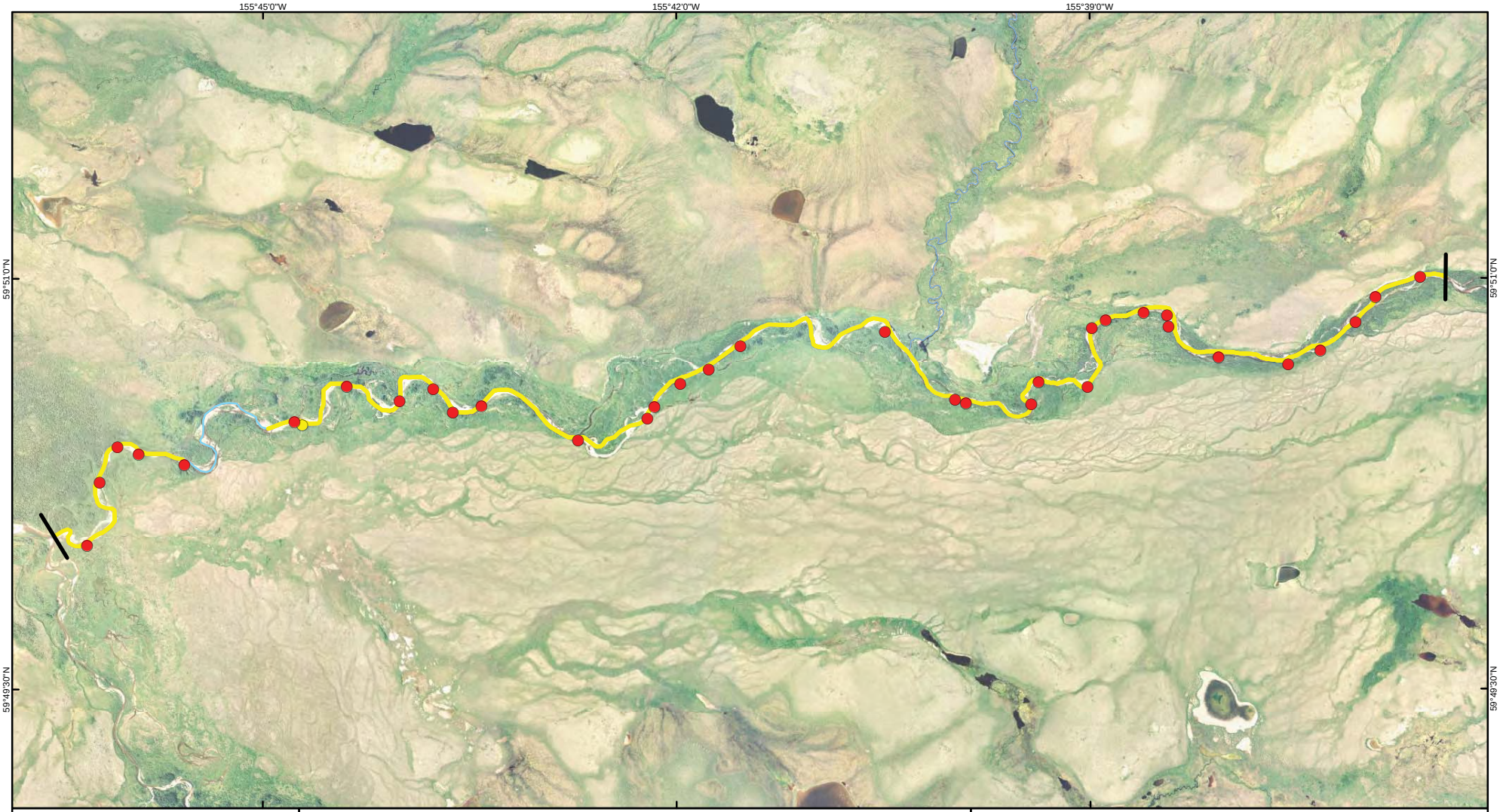
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-6
NFK-A
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_NFK-A_Fig-B.1-6_11x17L_1of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

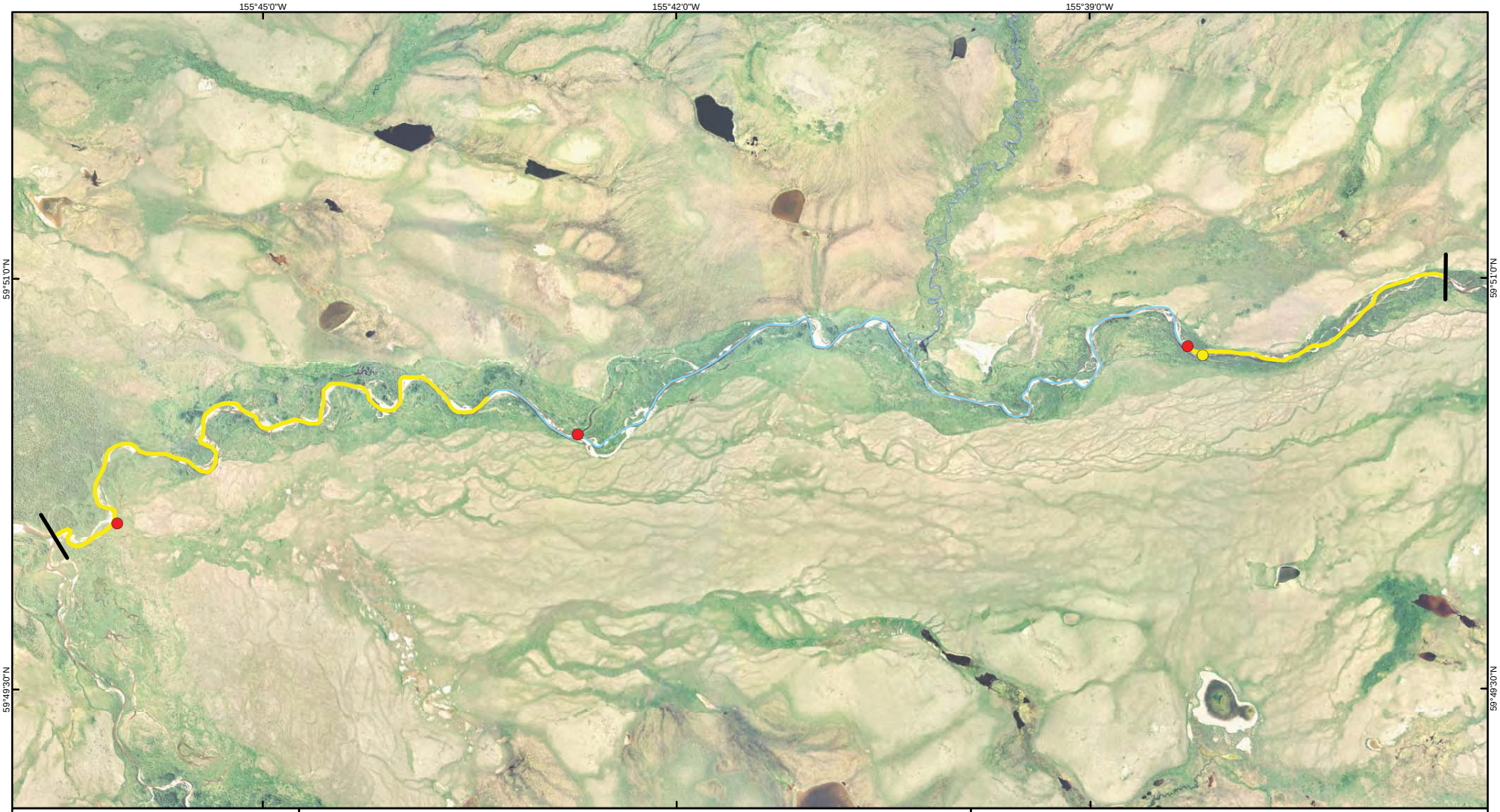
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-9
NFK-A
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-A_Fig-B.1-9_KS_11x17L_1of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

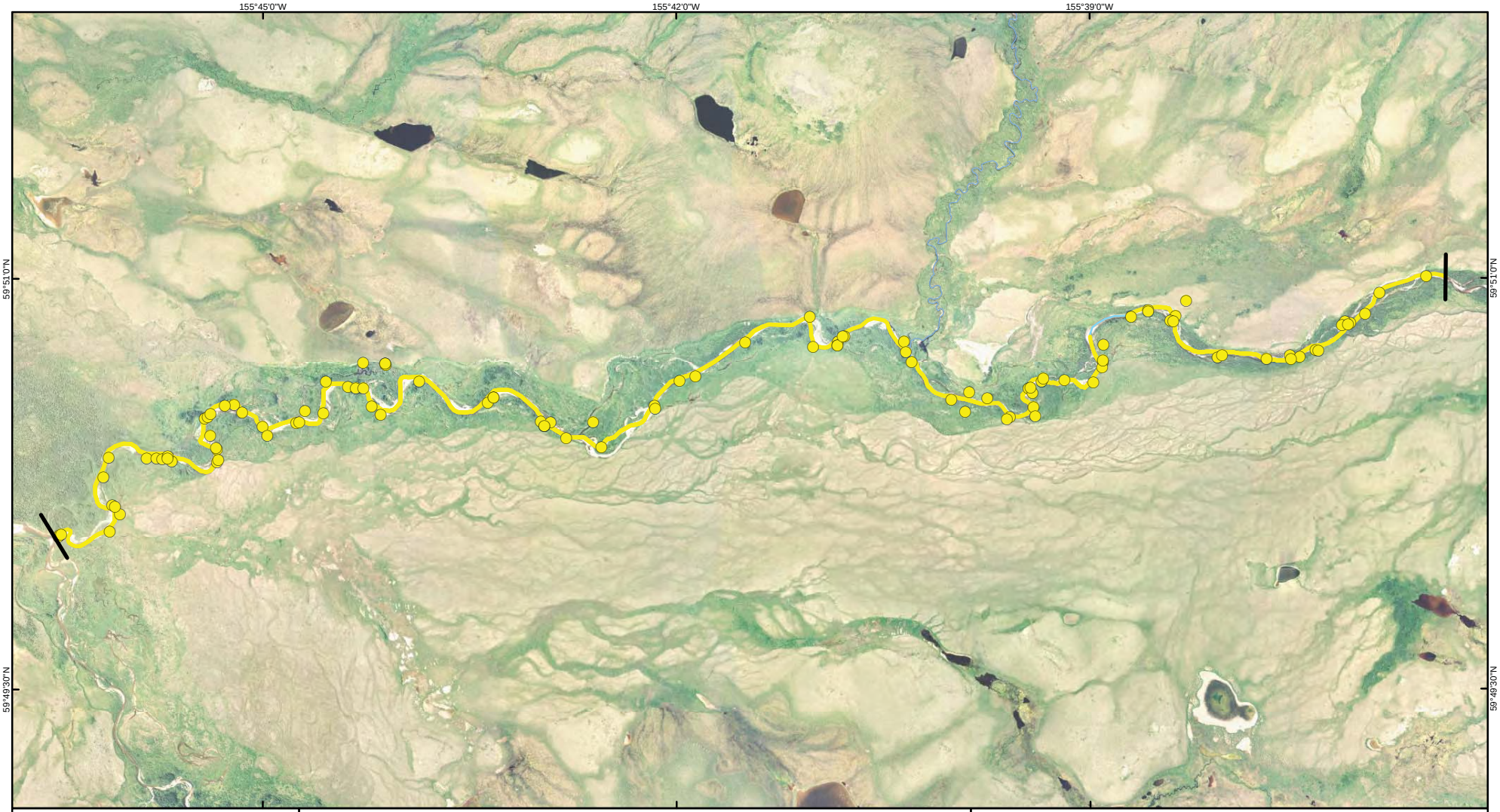
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-10
NFK-A
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-A_Fig-B.1-10_CH_11x17L_1of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

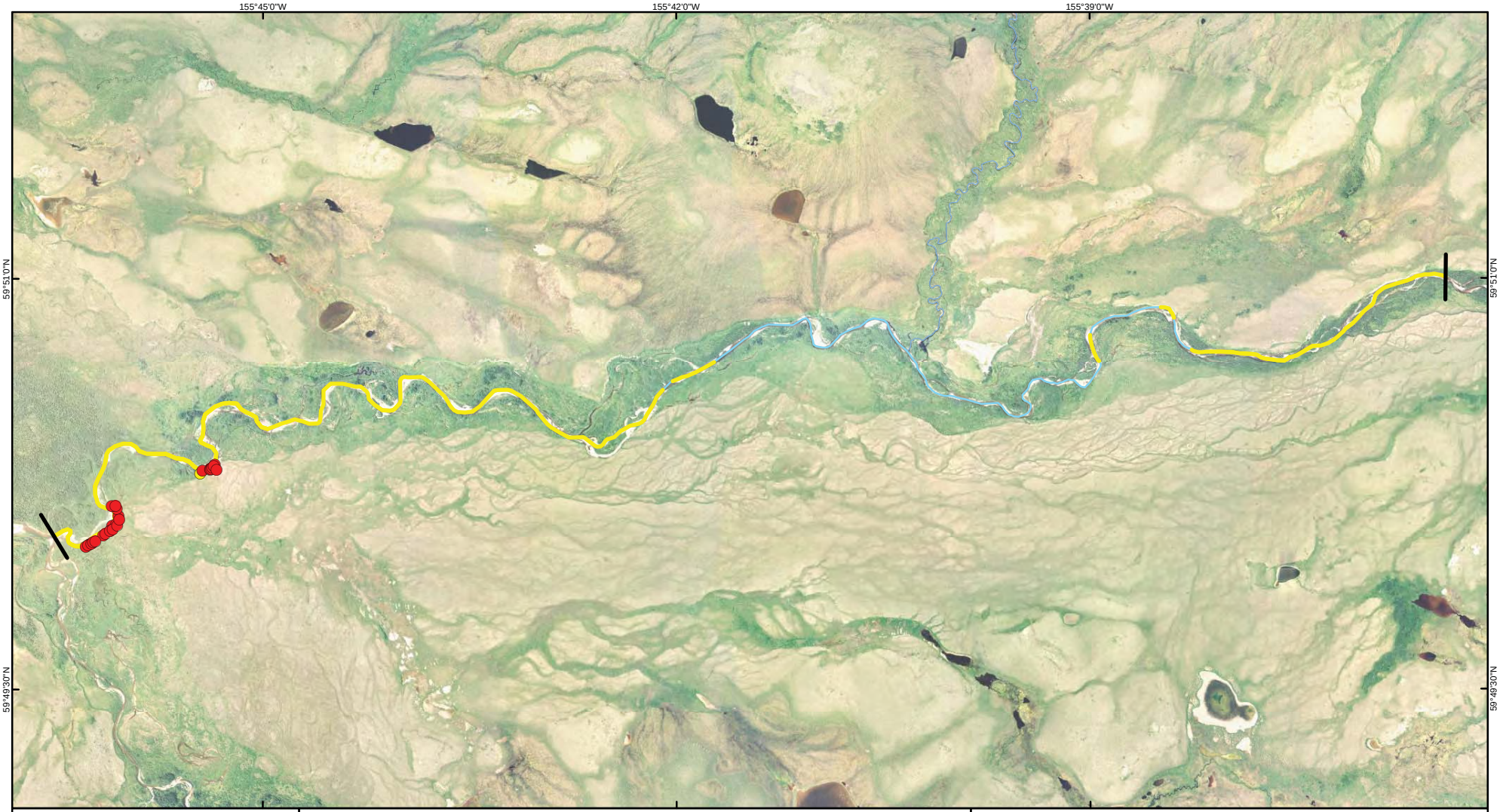
THE pebble PARTNERSHIP

Figure B.1-11
NFK-A
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-A_Fig-B.1-11_CS_11x17L_1of22_D04.mxd

February 5, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

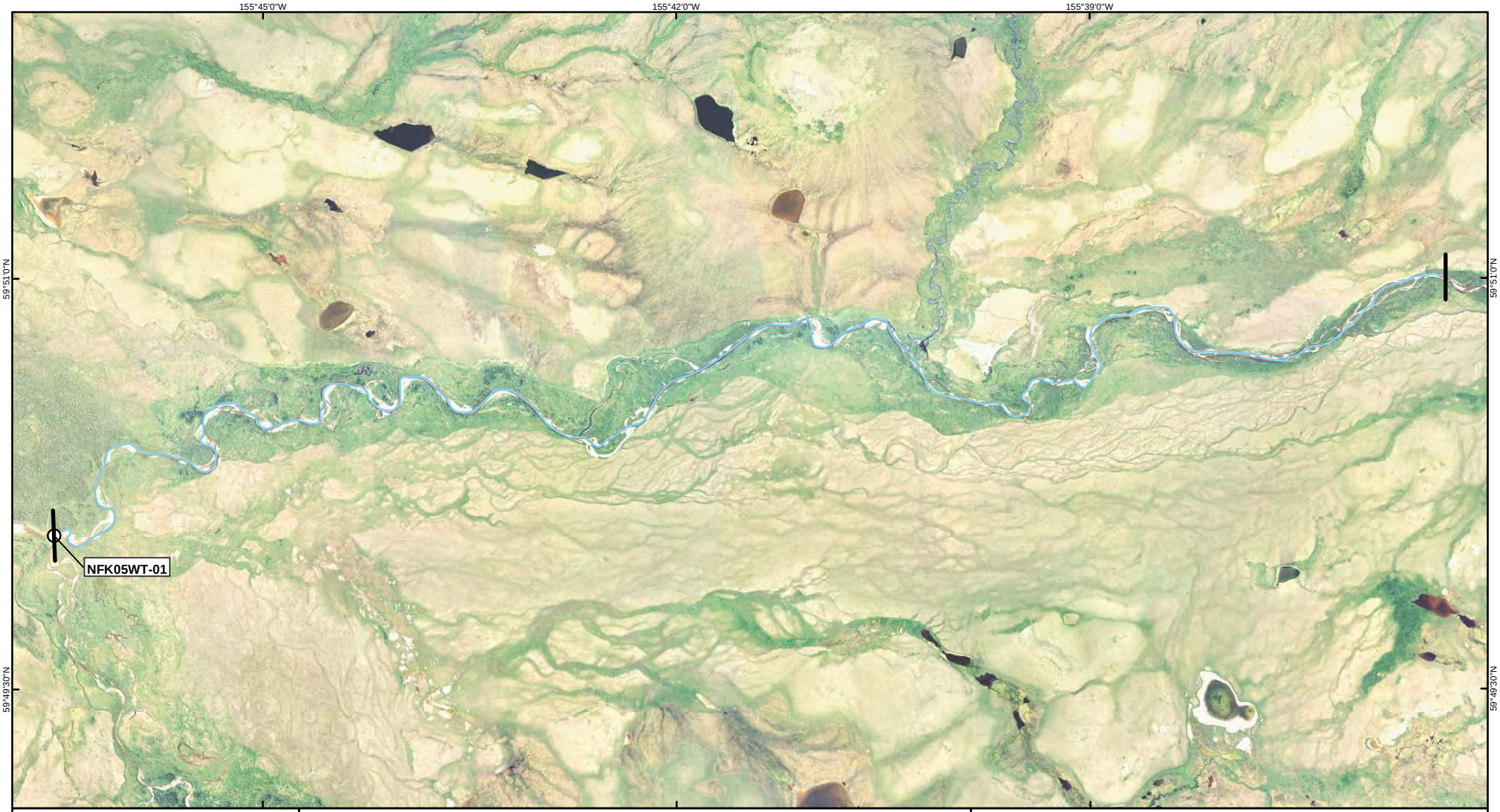
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-12
NFK-A
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-A_Fig-B.1-12_SS_11x17L_1of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.1-17
NFK-A
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_NFK-A_Fig-B.1-17_11x17L_1of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.2
NORTH FORK KOKTULI RIVER REACH B (NFK-B)

Table B.2-1.
List of species found in NFK-B.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.2-2.
2004-2008 number of fish observations by lifestage within NFK-B mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult				Juvenile					Juvenile/Adult[a]				Total
			Apr	Jul	Aug	Subtotal	Apr	Jul	Aug	Nov	Subtotal	Apr	Jul	Aug	Subtotal	
Chinook salmon	2005	Snorkel		1		1		204			204					205
	2006	Electrofishing								10	10					10
		Snorkel		1	3	4		609	65		674					678
	2007	Snorkel						1032			1032					1032
	2008	Seine							7		7					7
		Snorkel							119		119					119
chum salmon	2005	Snorkel		5		5										5
	2006	Snorkel		1		1										1
	2007	Snorkel		5		5										5
coho salmon	2004	Minnow Trap					17				17					17
	2005	Snorkel						2545			2545					2545
	2006	Electrofishing								4	4					4
		Snorkel						184	2		186					186
	2007	Snorkel						1614			1614					1614
	2008	Seine							2		2					2
		Snorkel							66		66					66
sockeye salmon	2005	Snorkel						1			1					1
	2006	Snorkel						2			2					2
	2007	Snorkel						41			41					41
	2008	Seine							17		17					17
arctic grayling	2005	Snorkel		46		46										46
	2006	Snorkel		16	4	20										20
	2007	Snorkel		20		20										20
	2008	Snorkel			3	3										3
Dolly Varden	2004	Minnow Trap					13				13					13
	2005	Snorkel		1		1		3			3		4		4	8
	2006	Electrofishing								10	10					10
		Snorkel						5			5					5
	2008	Snorkel							2		2					2

Table B.2-2. Continued

Species	Year	Method	Adult				Juvenile					Juvenile/Adult[a]				Total
			Apr	Jul	Aug	Subtotal	Apr	Jul	Aug	Nov	Subtotal	Apr	Jul	Aug	Subtotal	
whitefish sp.	2006	Snorkel		3		3										3
Salmonid sp.	2007	Snorkel						6			6					6
sculpin sp.	2004	Minnow Trap	2			2	1				1					3
	2005	Minnow Trap										1			1	1
	2008	Seine			2	2			16		16					18
		Snorkel												4	4	4
ninespine stickleback	2004	Minnow Trap										1			1	1

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

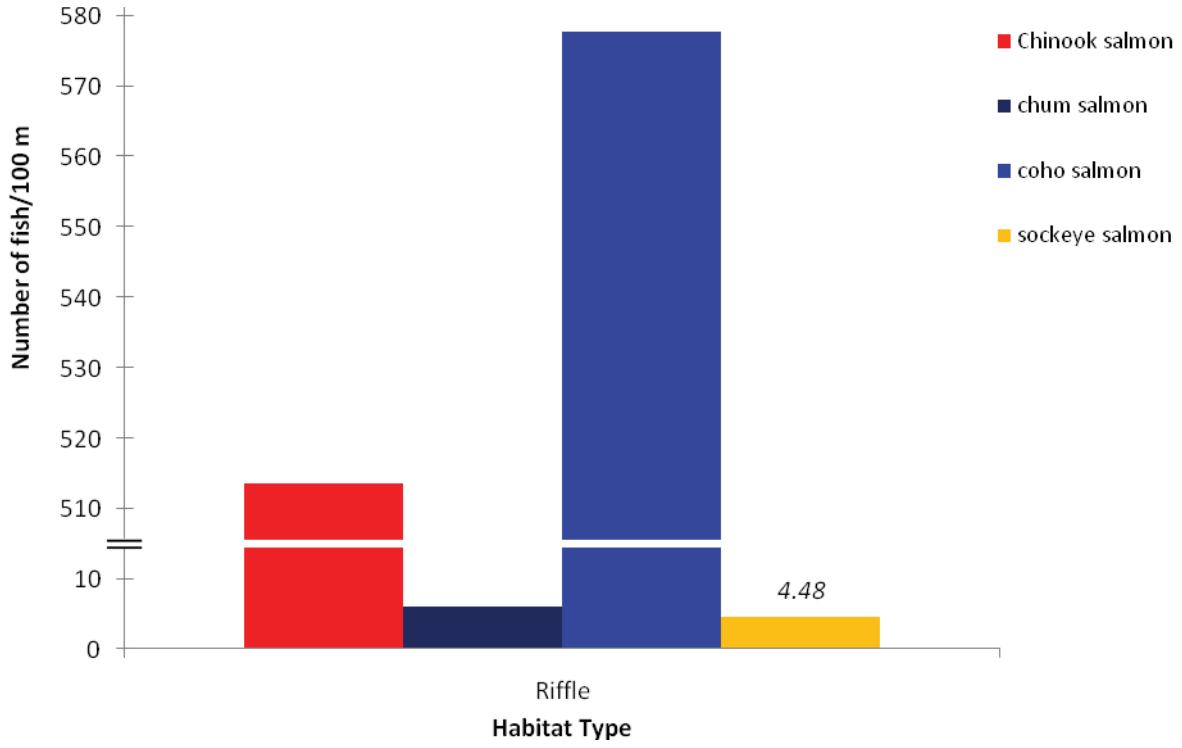


Figure B.2-7.
2004-2007 fish abundance by habitat type within mainstem NFK-B.

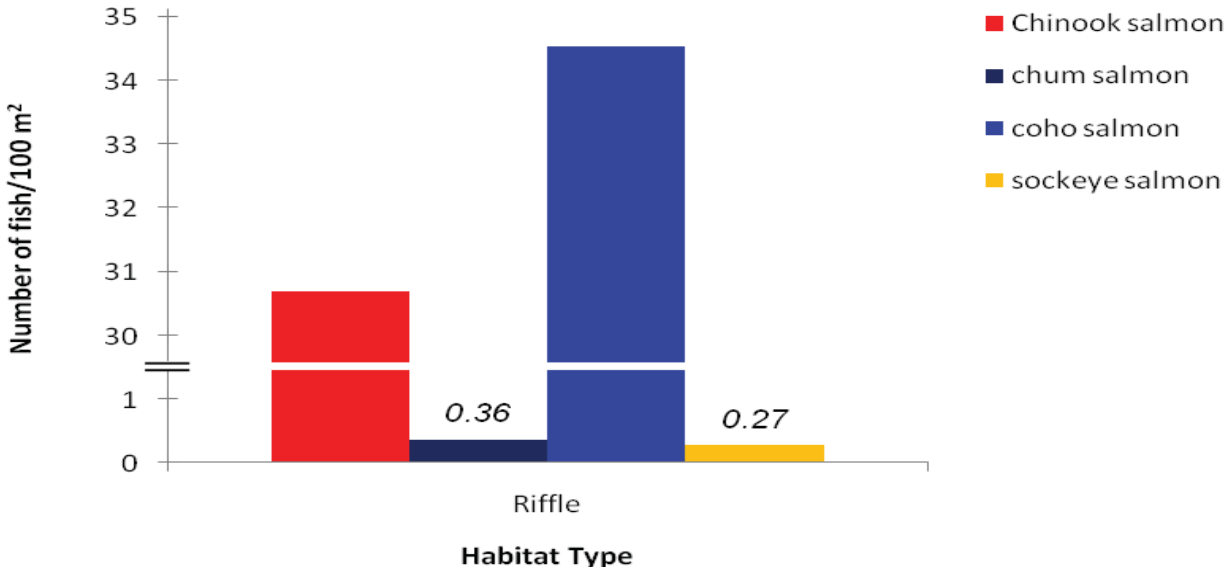


Figure B.2-8.
2004-2007 fish density by habitat type within mainstem NFK-B.

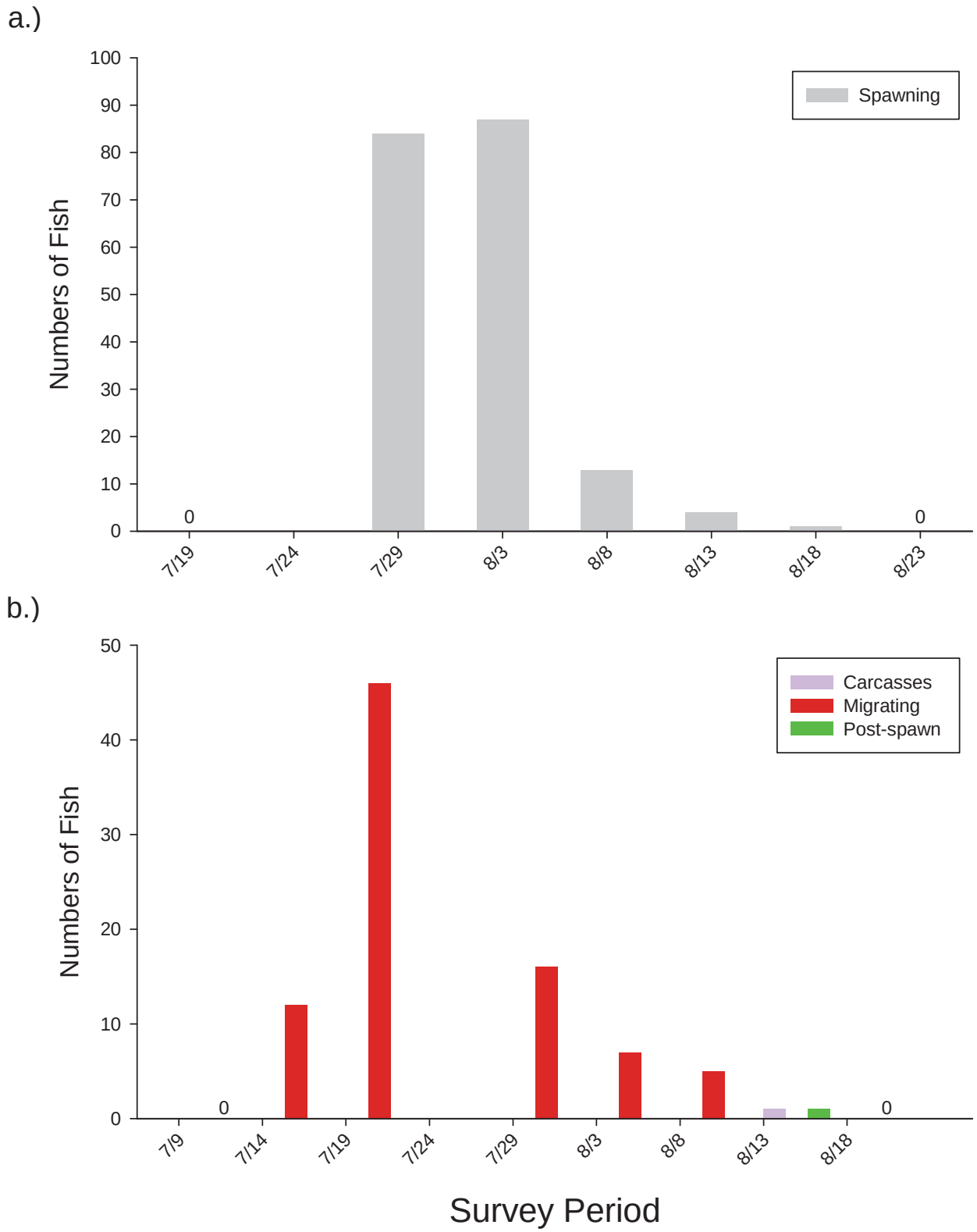


Figure B.2-13.
Observations of Chinook salmon during 2008 aerial surveys in NFK-B. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

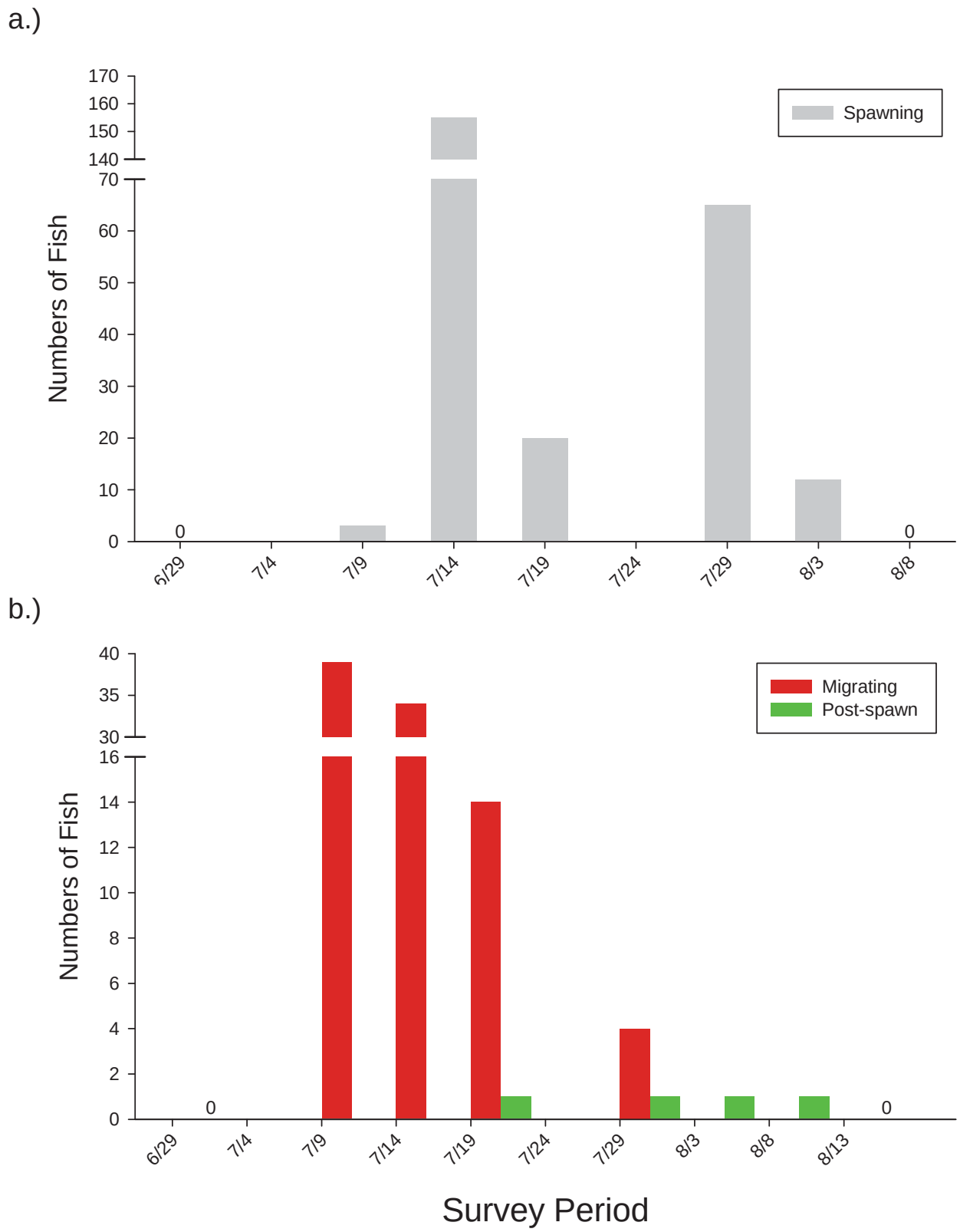


Figure B.2-14.
Observations of chum salmon during 2008 aerial surveys in NFK-B. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

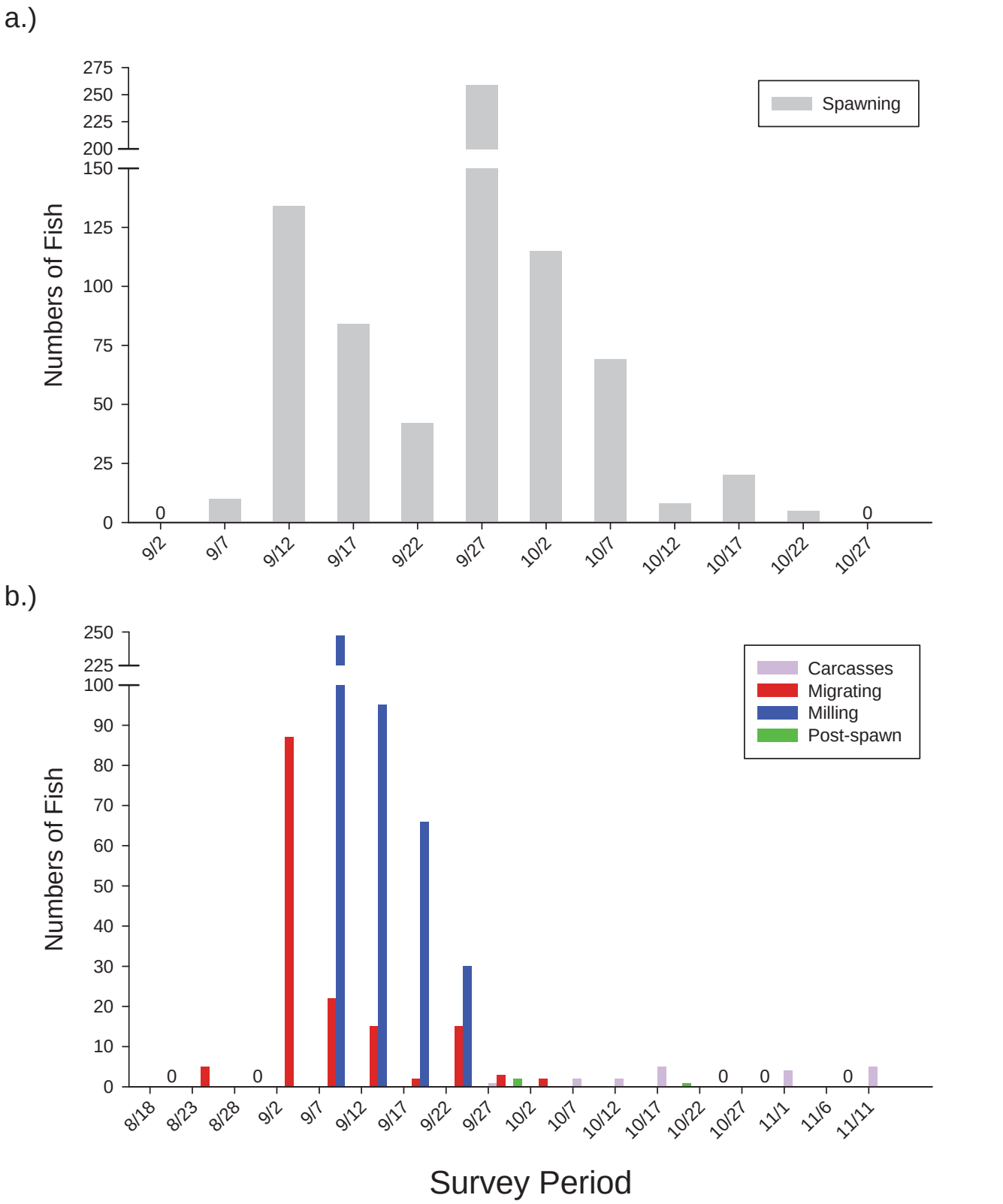


Figure B.2-15.
Observations of coho salmon during 2008 aerial surveys in NFK-B. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

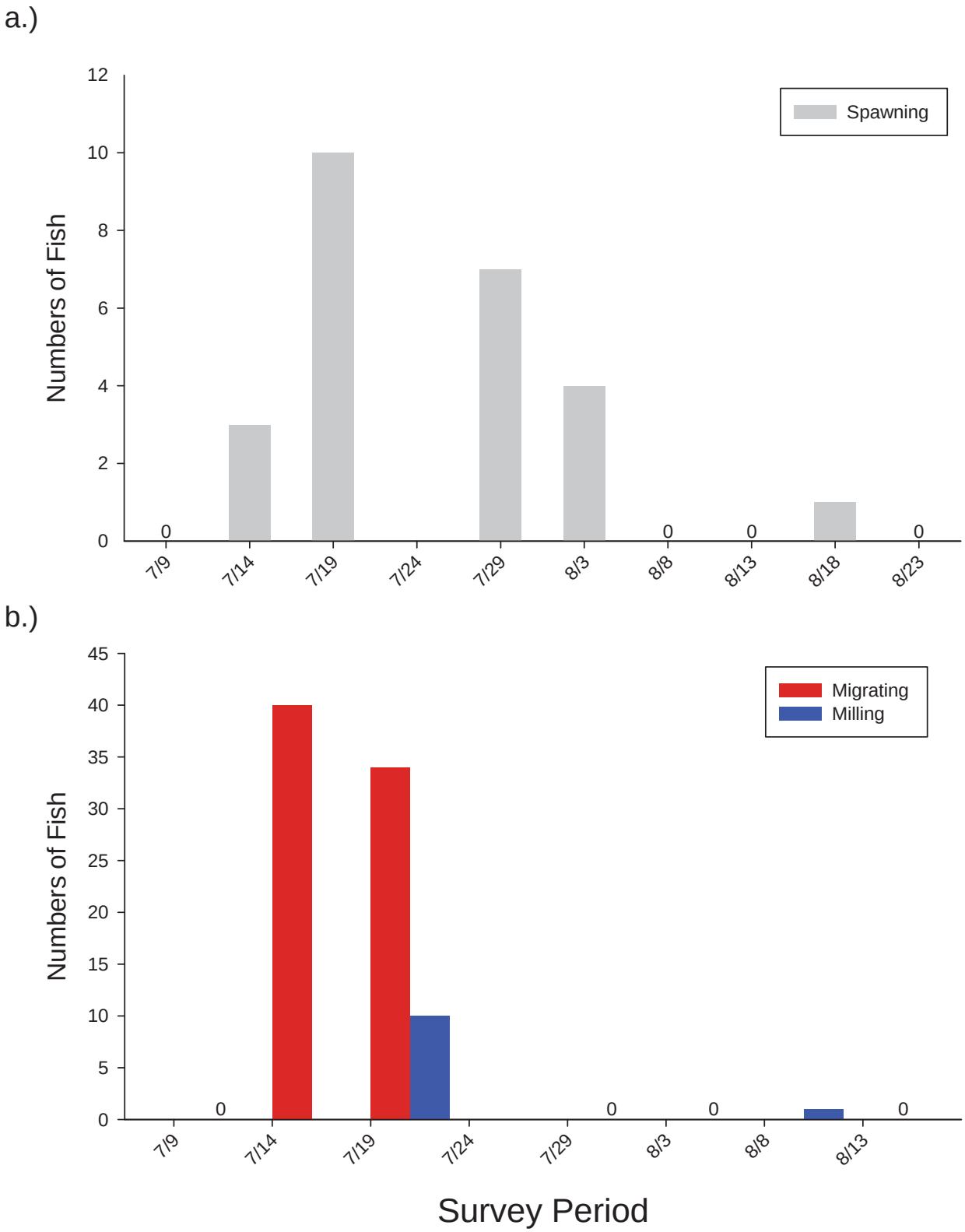


Figure B.2-16.
Observations of sockeye salmon during 2008 aerial surveys in NFK-B. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.2-3.
NFK-B fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Trap Set Time (Hours)	Lifestage			Total Fish Count
					Adult	Juveniles	Juvenile/Adult[a]	
4/9/2004	NFK04WT-16	Dolly Varden	minnow trap	24		2		2
4/14/2004	NFK04WT-10	Dolly Varden	minnow trap	24		2		2
		sculpin sp.	minnow trap	24		1		1
	NFK04WT-11	Dolly Varden	minnow trap	24		8		8
		sculpin sp.	minnow trap	24	2			2
	NFK04WT-12	coho salmon	minnow trap	24		17		17
		Dolly Varden	minnow trap	24		1		1
		ninespine stickleback	minnow trap	24			1	1
4/1/2005	NFK05WT-03	sculpin sp.	minnow trap				1	1
11/6/2006	NFK04WT-11	Chinook salmon	electrofishing			10		10
		coho salmon	electrofishing			4		4
		Dolly Varden	electrofishing			10		10

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.2-4.
2008 fish observations by method at mainstem index sites located within NFK-B.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
NFK17.32A	Chinook salmon	beach seine		7		7
	coho salmon	beach seine		1		1
		snorkel		3		3
	sockeye salmon	beach seine		17		17
	arctic grayling	snorkel	1			1
	sculpin sp.	beach seine	2	13		15
		snorkel			3	3
NFK17.32A Total			**3**	**41**	**3**	**47**
NFK17.32B	Chinook salmon	snorkel		119		119
	coho salmon	beach seine		1		1
		snorkel		63		63
	arctic grayling	snorkel	2			2
	Dolly Varden	snorkel		2		2
	sculpin sp.	beach seine		3		3
		snorkel			1	1
NFK17.32B Total			**2**	**188**	**1**	**191**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

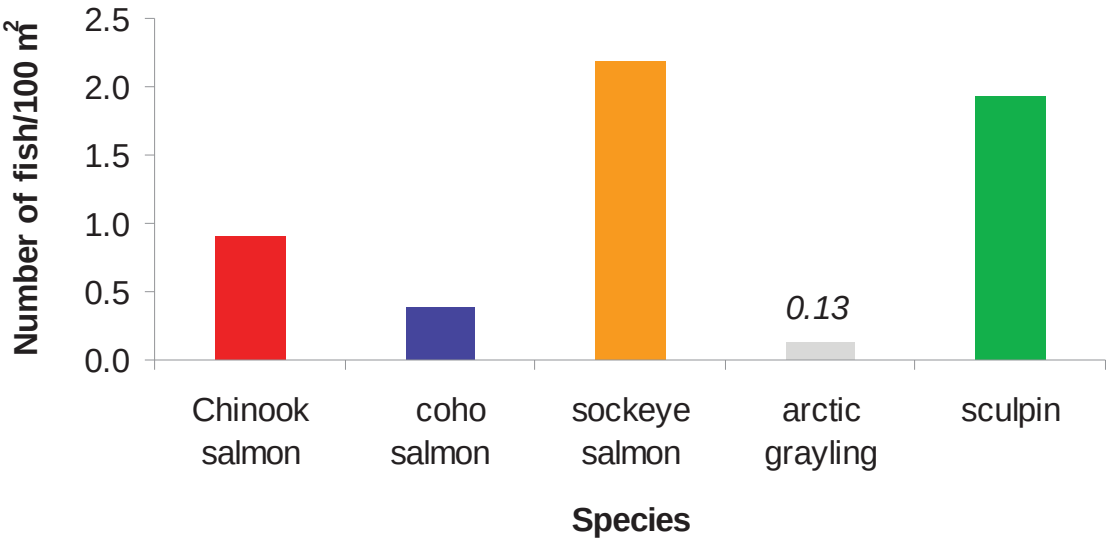


Figure B.2-18a.
2008 fish density in riffle habitat at mainstem index site (RKm 17.32, channel A) within NFK-B. Densities were calculated from the method that generated the greatest count of fish at this location.

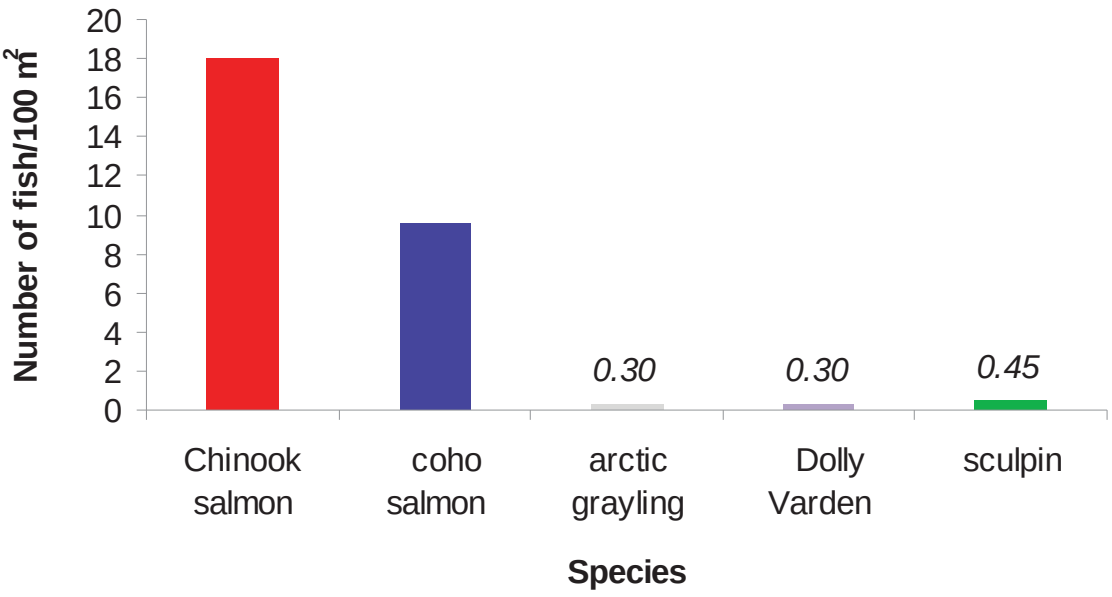
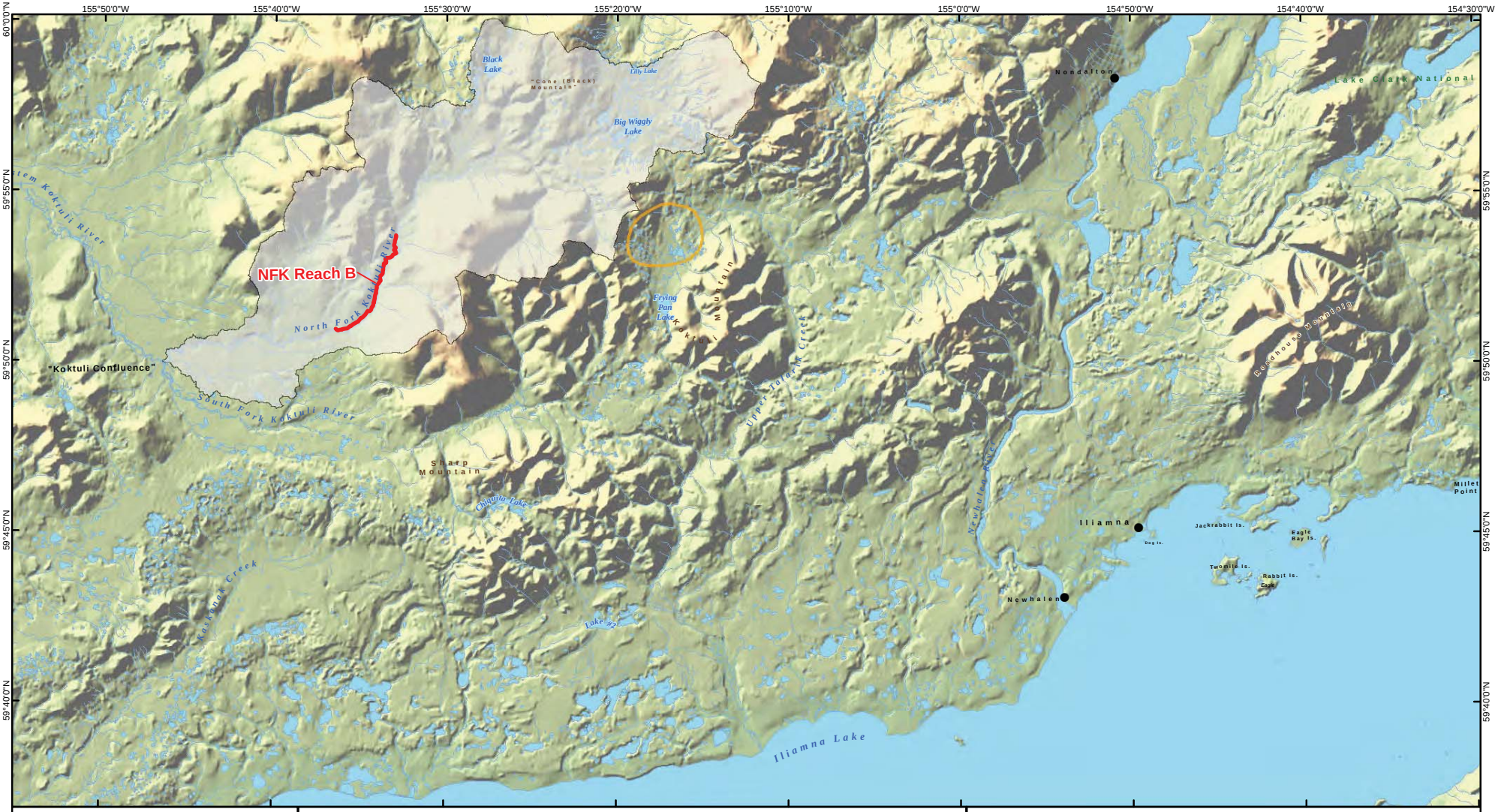
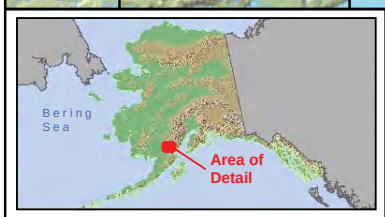


Figure B.2-18b.
2008 fish density in riffle habitat at mainstem index site (RKm 17.32, channel B) within NFK-B. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach NFK Reach B

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

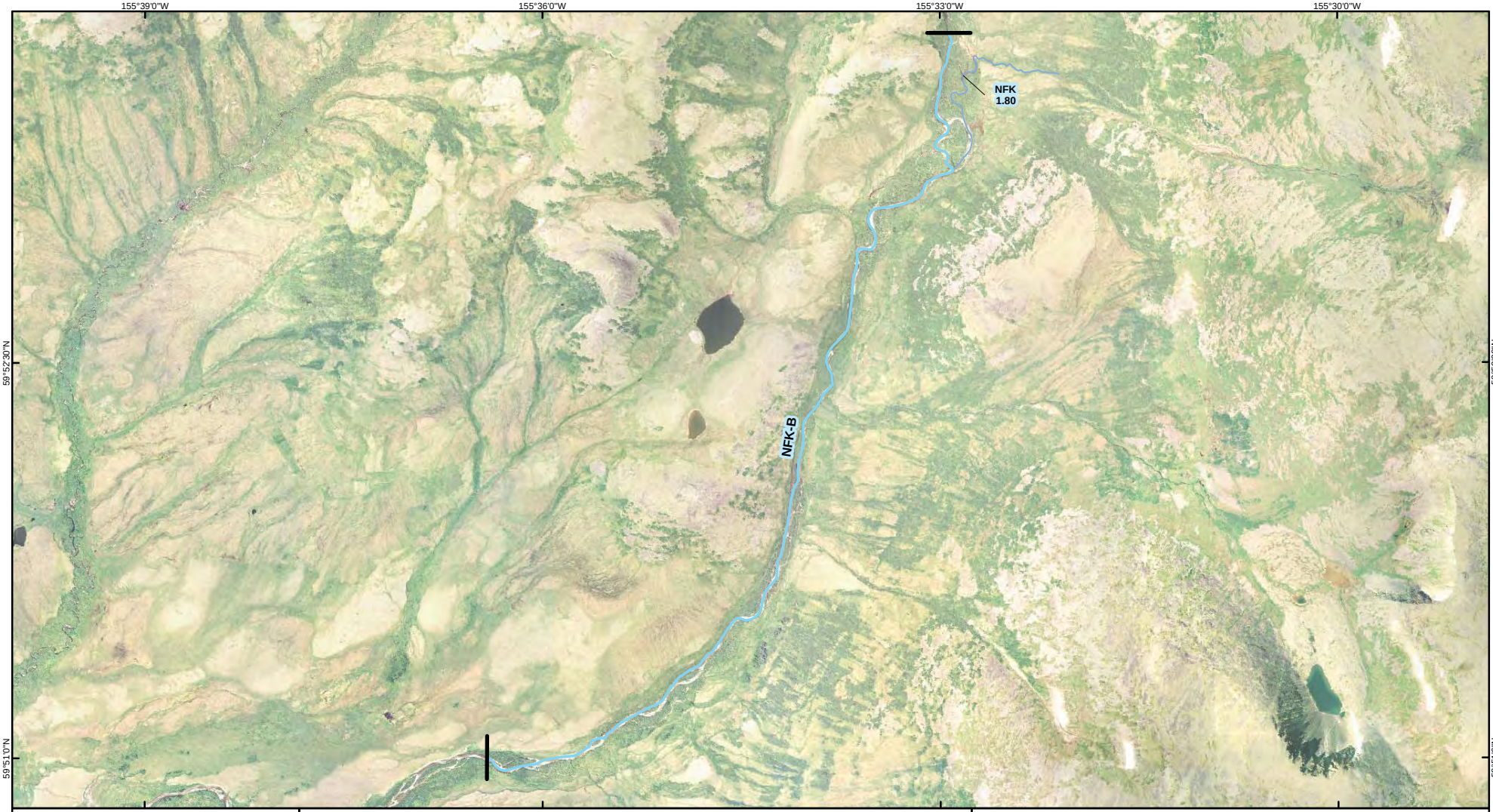
THE pebble PARTNERSHIP

Figure B.2-1a
Reach NFK-B

RDI_R2_OverviewLocator_NFK-B_Fig-B.2-1a_11x17L_2of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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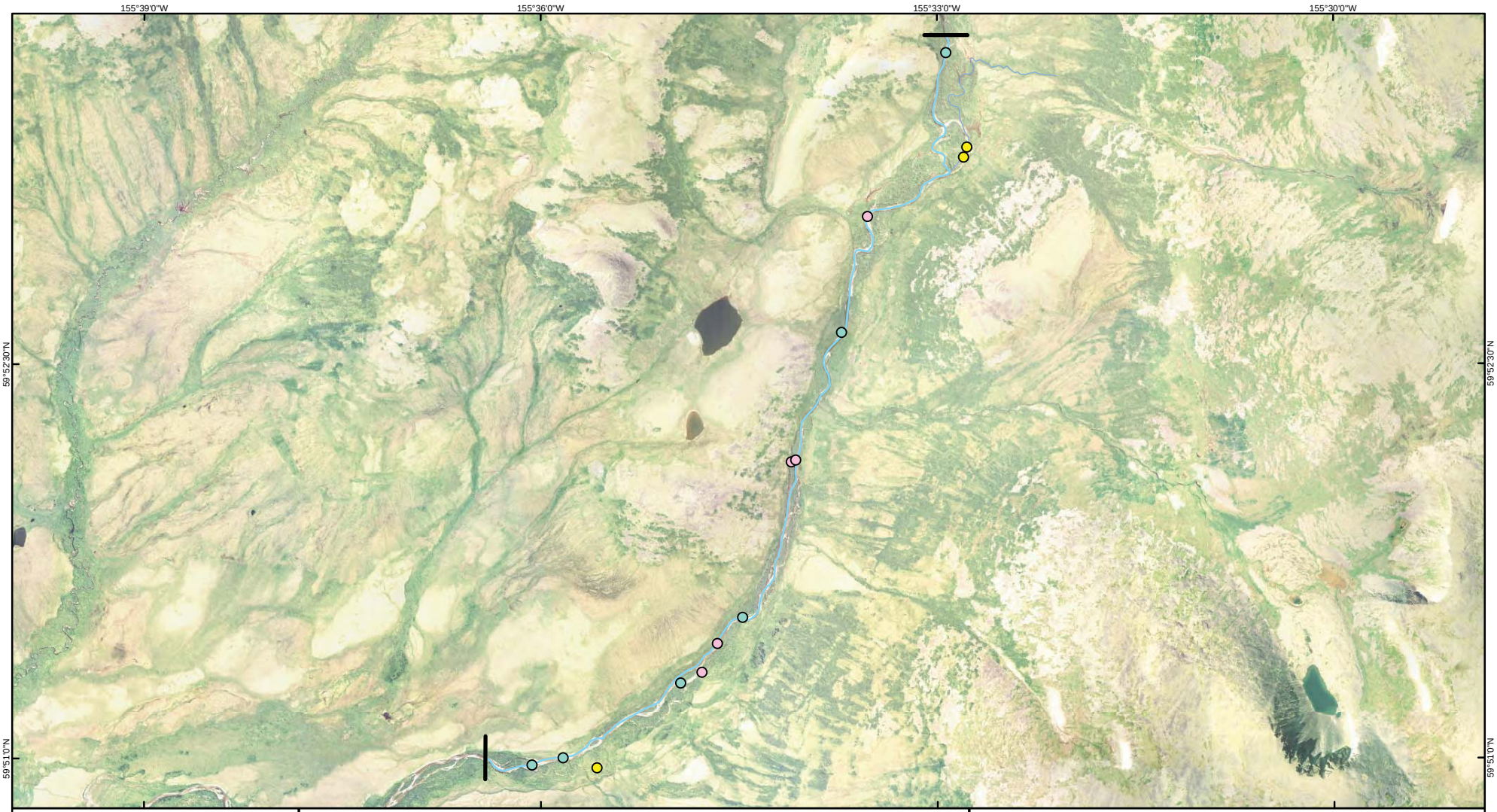
Figure B.2-1b
NFK-B
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_NFK-B_Fig-B.2-1b_11x17L_2of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

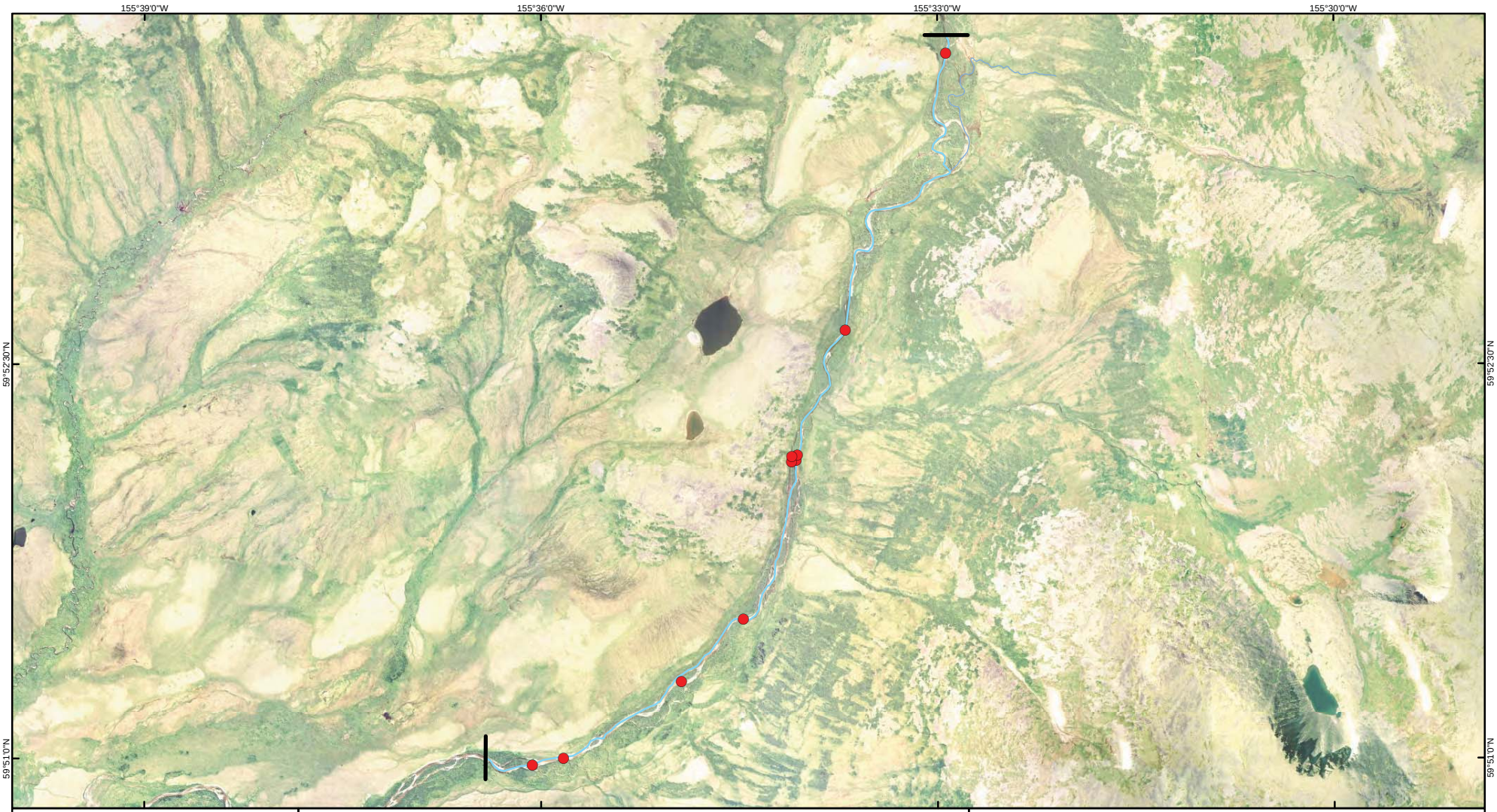
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-2
NFK-B
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_NFK-B_Fig-B.2-2_11x17L_2of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

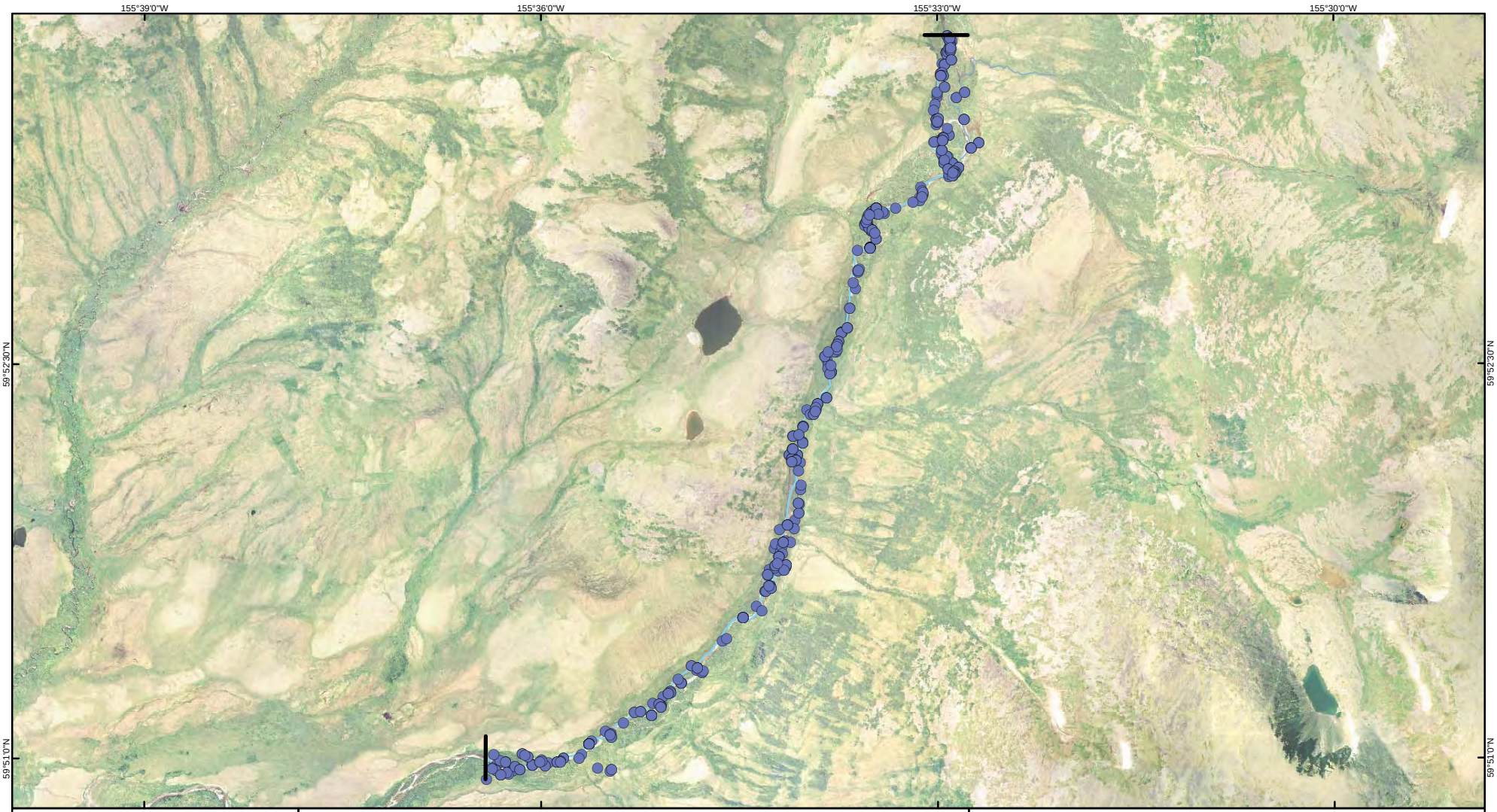
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-3
NFK-B
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_NFK-B_Fig-B.2-3_11x17L_2of19_D02.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

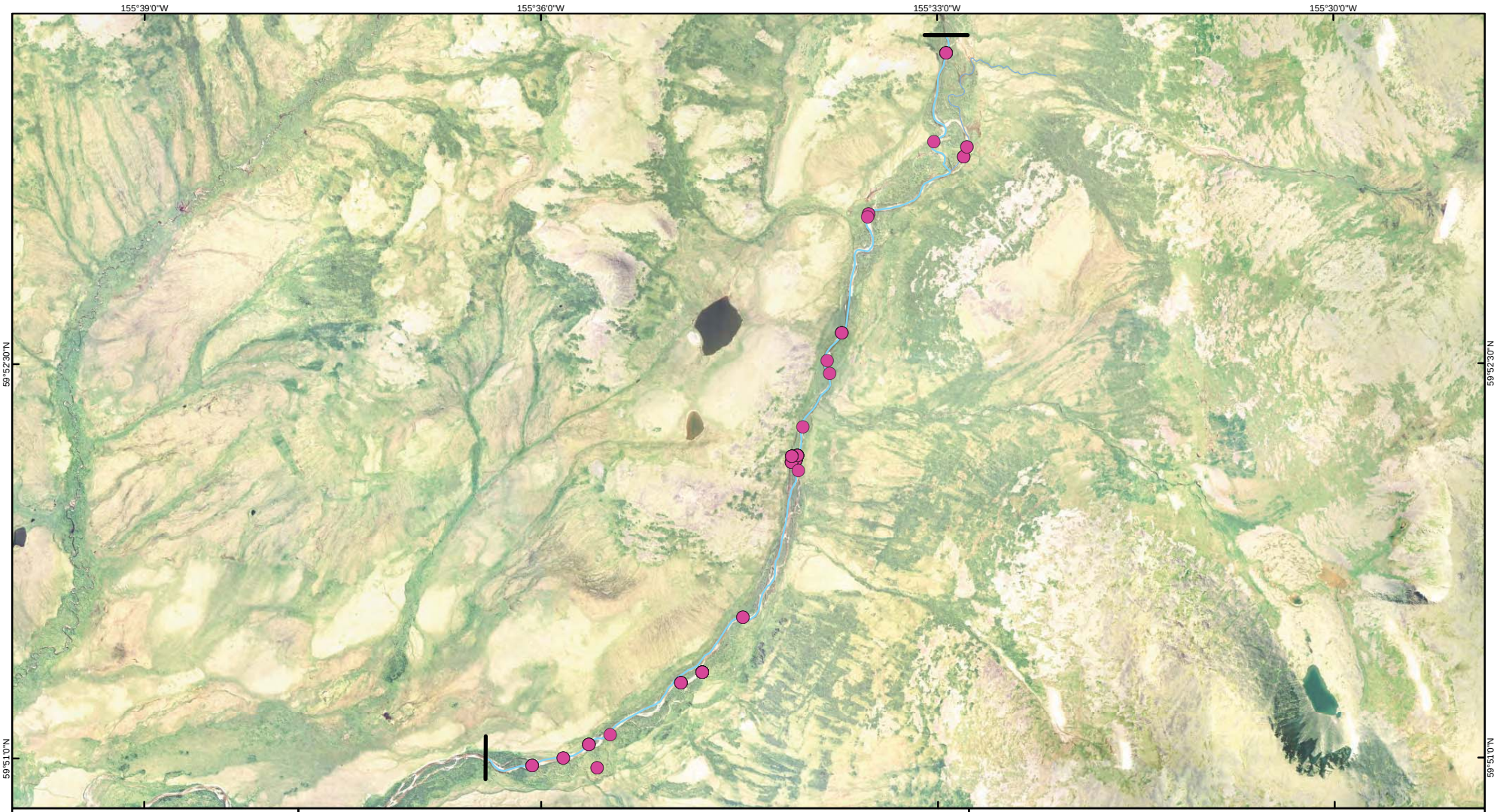
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-4
NFK-B
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_NFK-B_Fig-B.2-4_11x17L_2of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

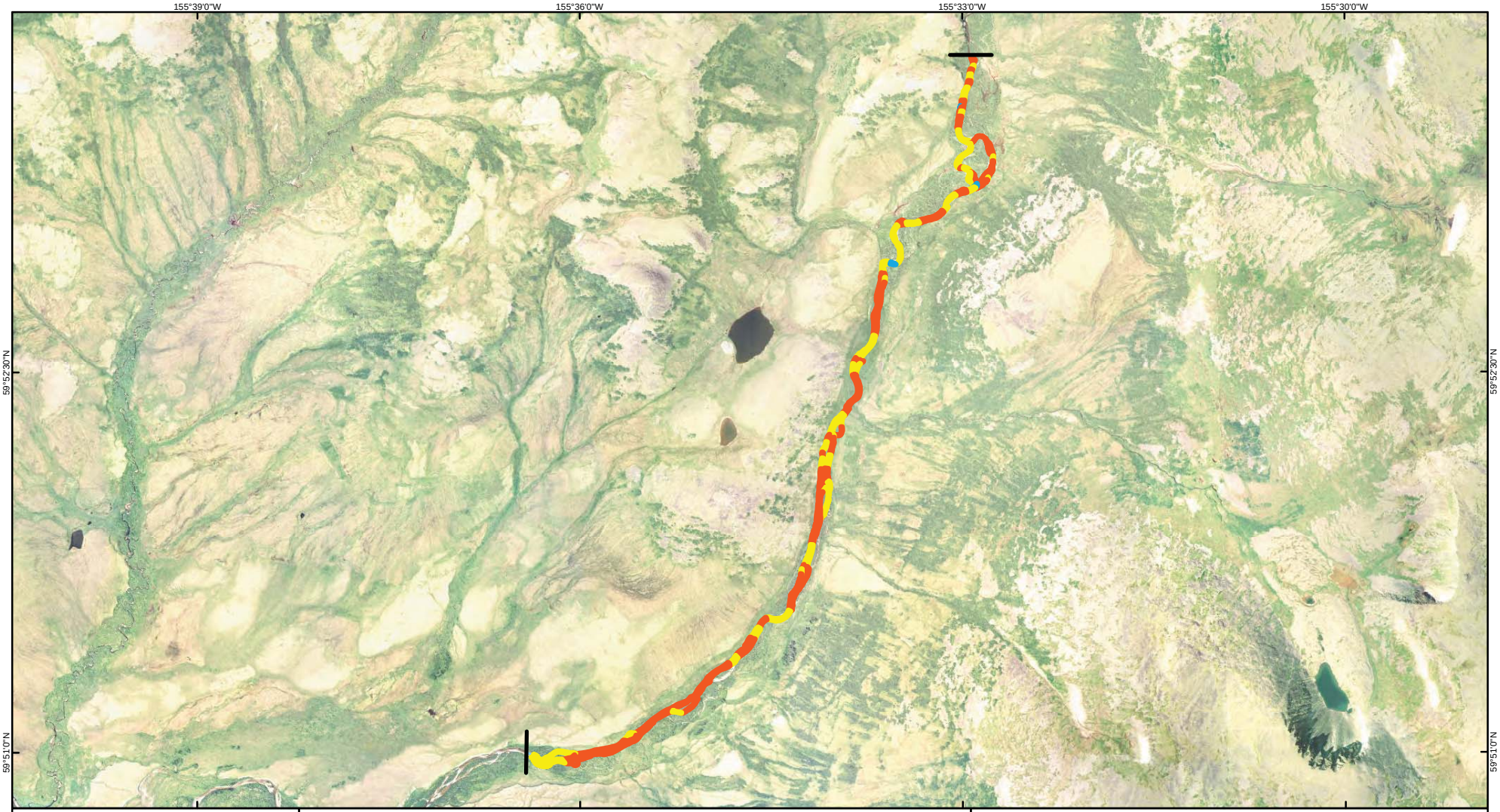
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-5
NFK-B
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_NFK-B_Fig-B.2-5_11x17L_2of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

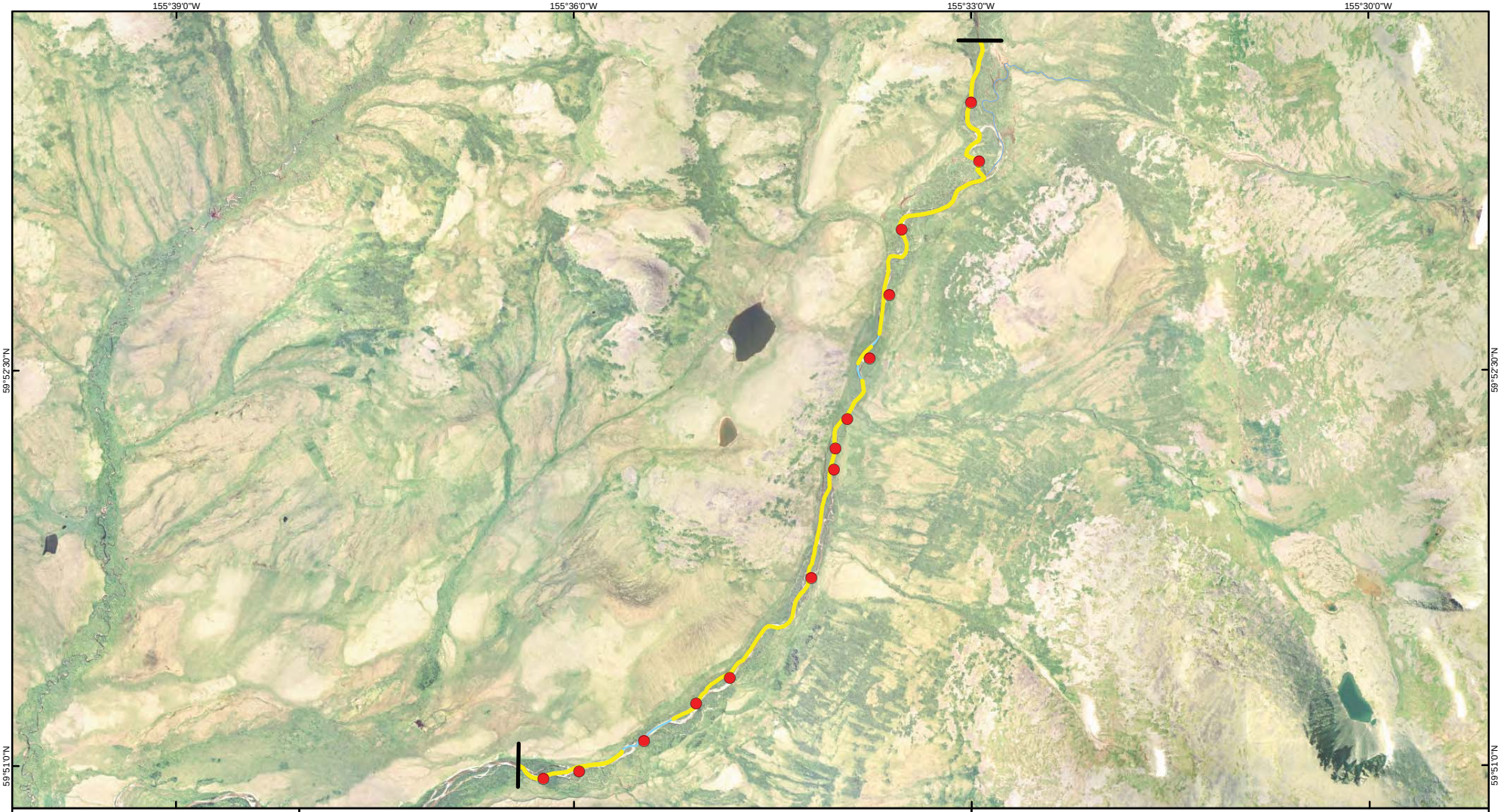
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-6
NFK-B
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_NFK-B_Fig-B.2-6_11x17L_2of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

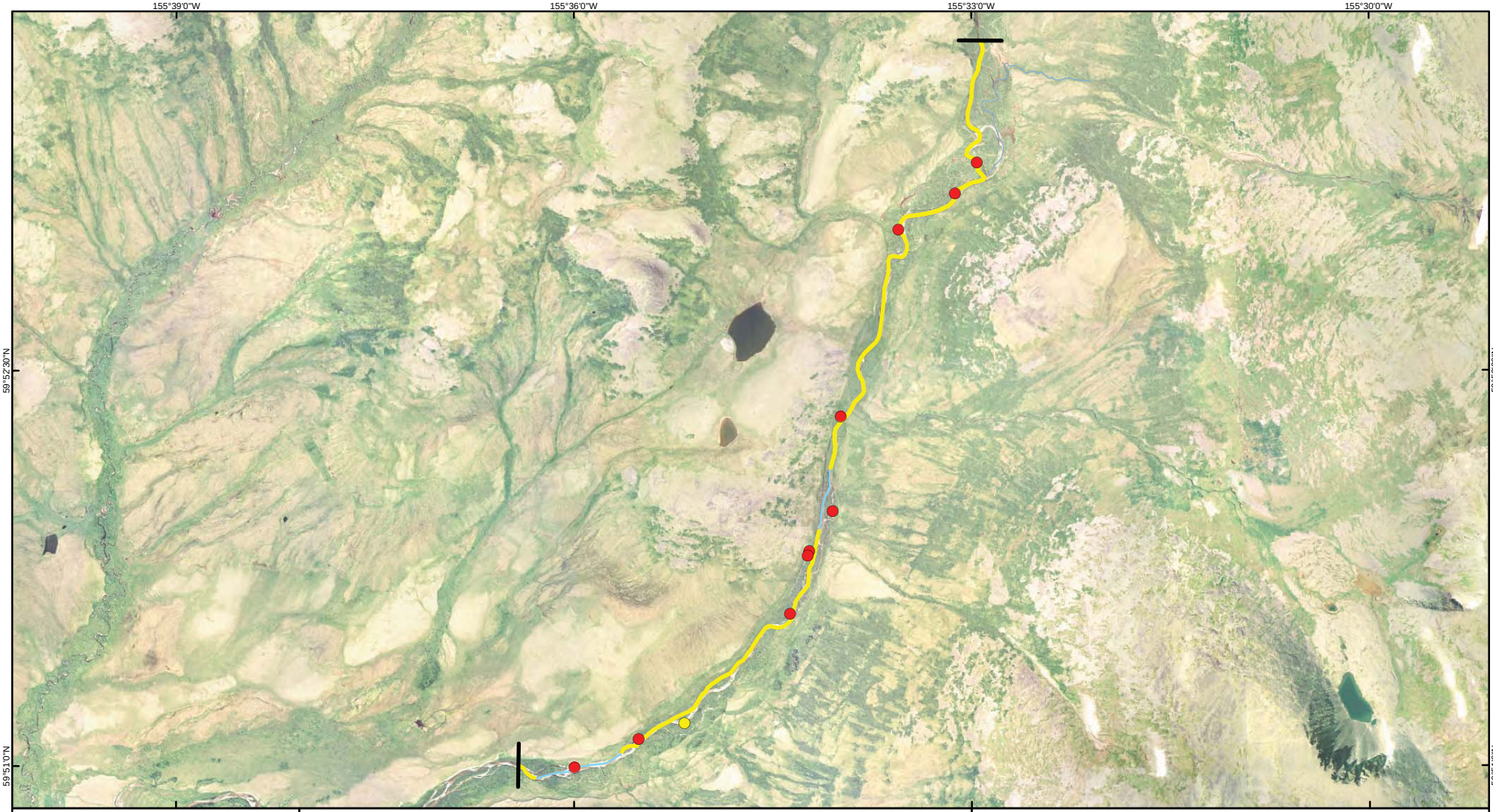
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-9
NFK-B
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-B_Fig-B.2-9_KS_11x17L_2of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

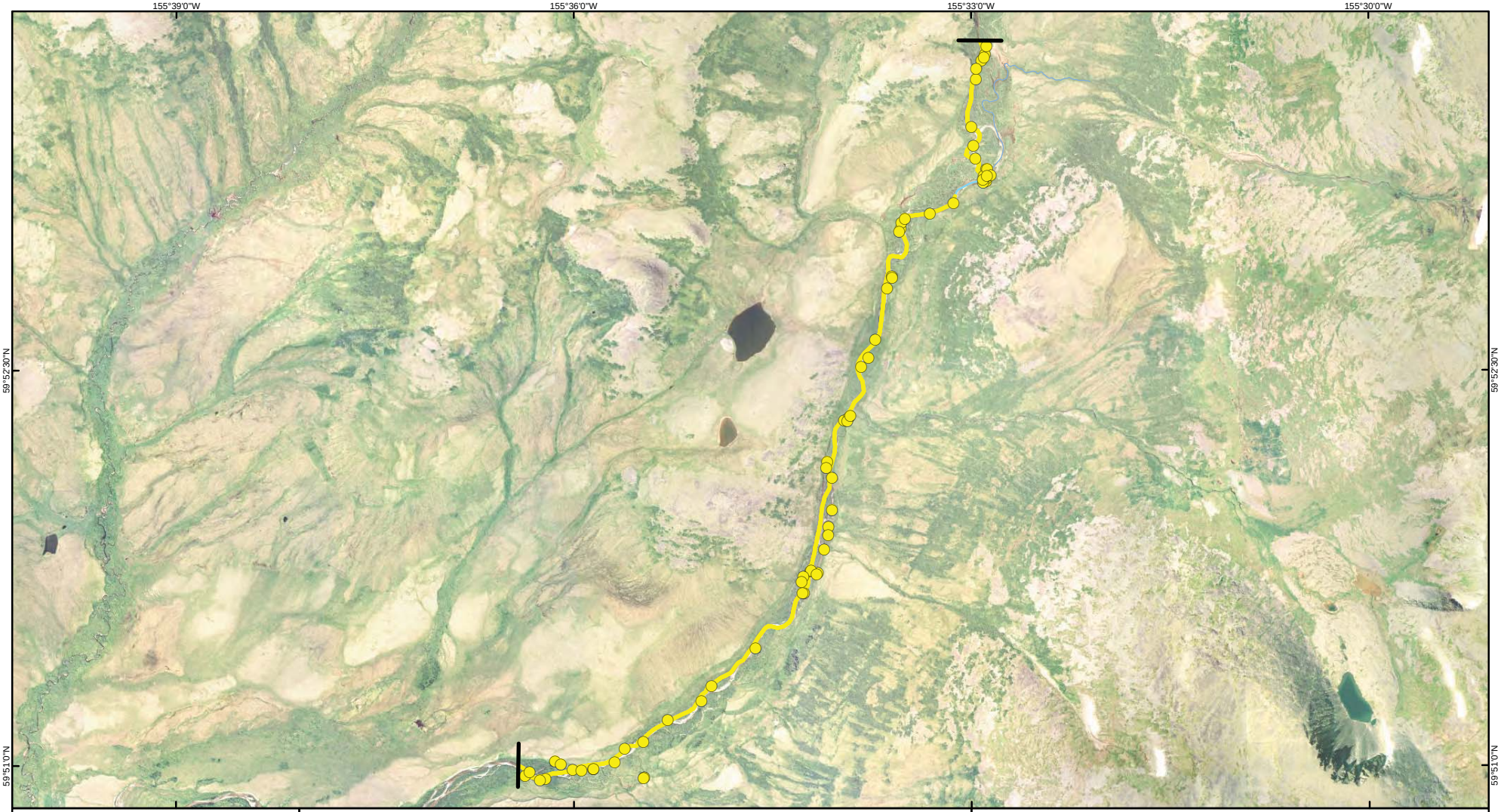
Miles: 0 0.5 1

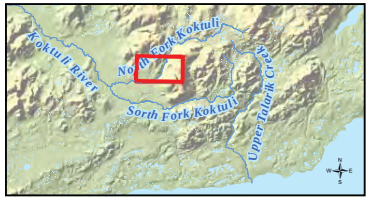
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-10
NFK-B
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-B_Fig-B.2-10_CH_11x17L_2of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

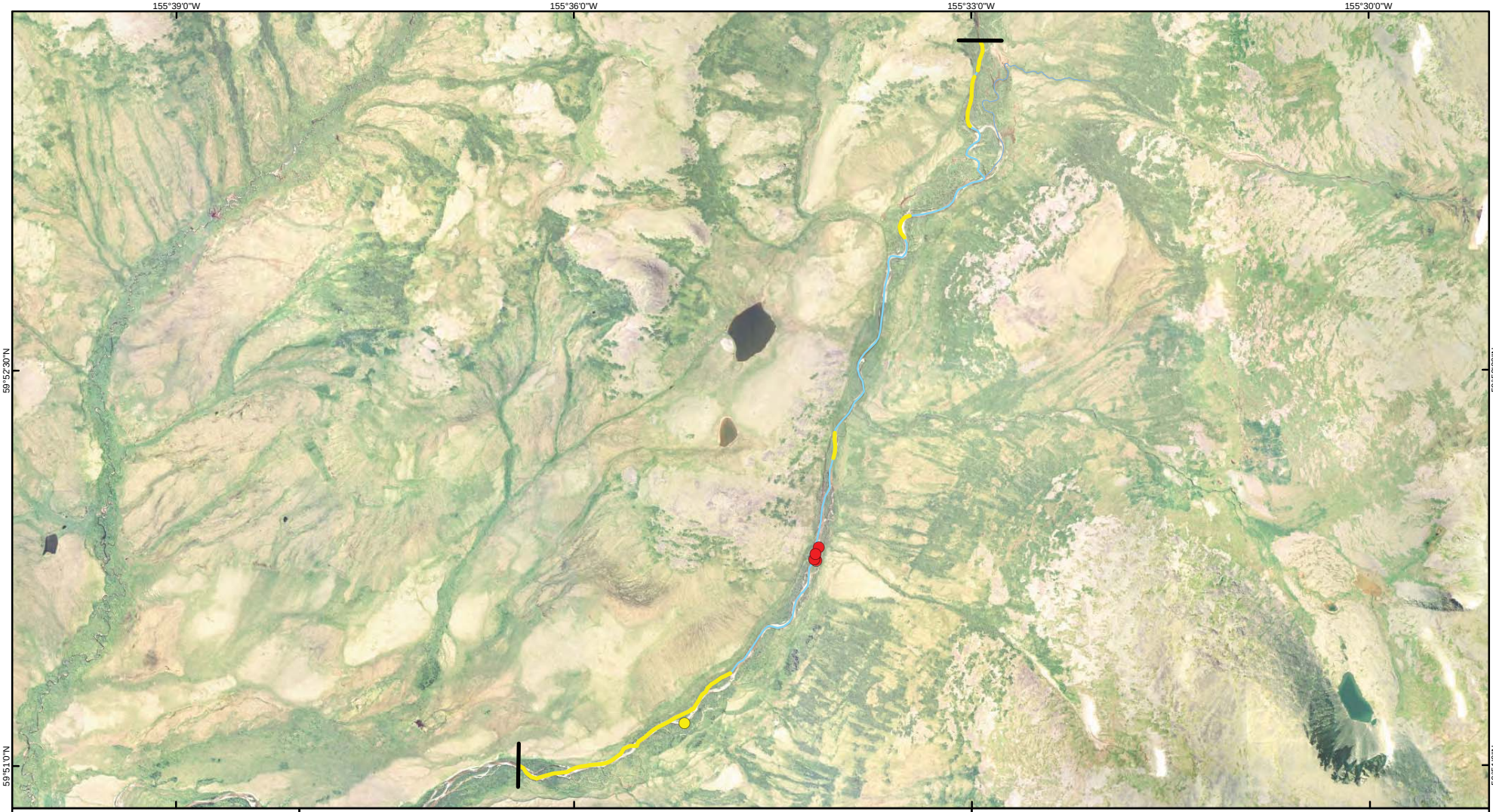
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-11
NFK-B
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-B_Fig-B.2-11_CS_11x17L_2of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

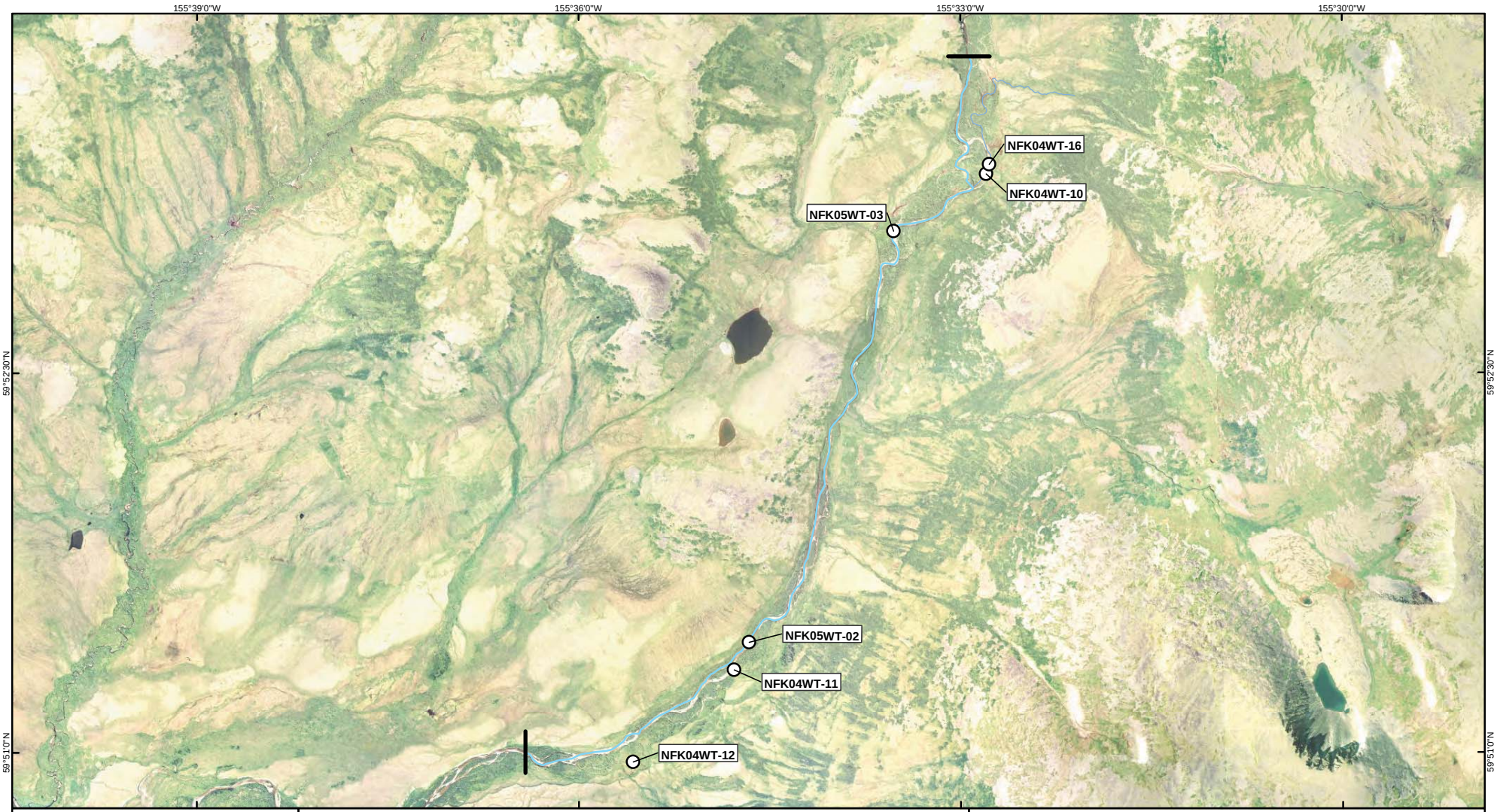
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-12
NFK-B
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-B_Fig-B.2-12_SS_11x17L_2of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.5 1

Kilometers
0 0.5 1

THE pebble PARTNERSHIP

Figure B.2-17
NFK-B
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_NFK-B_Fig-B.2-17_11x17L_2of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.3
NORTH FORK KOKTULI RIVER REACH C (NFK-C)

Table B.3-1.
List of species found in NFK-C.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
round whitefish	*Prosopium cylindraceum*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
northern pike	*Esox lucius*
ninespine stickleback	*Pungitius pungitius*
stickleback [c]	*Gasterosteidae*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

[c] identified to family, may include ninespine and threespine stickleback

Table B.3-2.
Channel morphology data from areas sampled within NFK-C tributary 1.190.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
NFK 1.190-SA1[e]	6/21/04	low gradient contained channel	1.7	6.0	7.5	0.6
NFK 1.190-SA1	8/10/08	moderate width mixed control channel	2.4	6.6	7.3	0.7
NFK 1.190-SA2	6/23/04	narrow shallow contained channel	3.0	3.8	9.2	0.6
NFK 1.190-SA2	8/14/08	moderate width mixed control channel	2.5	2.4	4.8	0.7
NFK 1.190-SA3	6/23/04	narrow shallow contained channel	NA	NA	NA	0.7
NFK 1.190-SA3	8/15/08	narrow mixed control channel	2.0	0.8	2.0	0.7
NFK 1.190.10-SA1	8/14/08	narrow mixed control channel	0.5	0	1.8	0.5
NFK 1.190.10-SA3	8/14/08	narrow mixed control channel	0.5	3.7	4.0	0.3
NFK 1.190.10-SA5	8/15/08	narrow mixed control channel	3.2	3.2	3.3	0.4
NFK 1.190.10-SA6	8/16/08	narrow mixed control channel	3.7	2.9	3.1	0.5
NFK 1.190.10-SA7	8/16/08	narrow shallow contained channel	1.3	4.0	5.1	0.3
NFK 1.190.10-SA8	8/16/08	narrow mixed control channel	1.0	4.1	4.5	0.3
NFK 1.190.10-SA9	8/19/08	narrow mixed control channel	1.8	2.0	2.5	0.1
NFK 1.190.10.03-SA1	9/14/08	narrow mixed control channel	1.5	0.7	2.0	0.4
NFK 1.190.10.20-SA1	9/6/08	narrow mixed control channel	2.8	0.8	1.3	0.5
NFK 1.190.10.30-SA1	9/4/08	narrow mixed control channel	1.3	1.0	1.4	0.4
NFK 1.190.10.40-SA1	9/5/08	narrow mixed control channel	2.2	1.7	2.6	0.5
NFK 1.190.10.40-SA2	9/5/08	narrow mixed control channel	2.7	1.1	1.6	0.5
NFK 1.190.10.40.10-SA1	9/5/08	narrow shallow contained channel	3.0	0.9	1.4	0.5
NFK 1.190.20-SA1	8/24/08	narrow shallow contained channel	1.5	1.3	1.7	0.7
NFK 1.190.20.10-SA1	8/24/08	narrow shallow contained channel	6.0	1.2	2.0	0.5
NFK 1.190.25-SA1	8/24/08	narrow shallow contained channel	3.7	0.9	1.5	0.4
NFK 1.190.30-SA1	8/25/08	narrow mixed control channel	2.2	2.0	2.4	0.7
NFK 1.190.30-SA2	8/26/08	narrow shallow contained channel	3.2	1.5	2.2	0.5
NFK 1.190.30-SA3	8/26/08	narrow shallow contained channel	3.5	1.3	2.0	0.7
NFK 1.190.40-SA1	8/19/08	moderate width mixed control channel	1.8	2.9	3.5	0.5

Table B.3-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
NFK 1.190.40-SA2	8/20/08	narrow mixed control channel	3.2	1.4	2.0	0.6
NFK 1.190.40.10-SA1	8/21/08	narrow mixed control channel	6.8	1.2	1.9	0.4
NFK 1.190.40.10-SA2	8/23/08	narrow placid flow channel	3.0	1.0	1.7	0.6
NFK 1.190.40.10.10-SA1	8/23/08	narrow mixed control channel	4.0	0.6	1.7	0.6
NFK 1.190.40.10.10.10-SA1	9/18/08	narrow mixed control channel	5.0	0.7	1.0	0.4
NFK 1.190.50-SA1	8/17/08	narrow mixed control channel	2.7	1.6	2.1	0.6
NFK 1.190.50-SA2	8/18/08	narrow mixed control channel	3.3	0.9	1.3	0.5
NFK 1.190.50-SA3	8/18/08	narrow mixed control channel	11.0	0.6	4.1	0.7
NFK 1.190.50.10-SA1	8/19/08	narrow mixed control channel	2.8	1.1	2.2	0.5
NFK 1.190.70-SA1	8/16/08	narrow mixed control channel	3.7	1.3	3.2	0.6
NFK 1.190.70-SA2	8/17/08	deeply incised upper valley channel	11.5	0.6	2.8	0.6
NFK 1.190.75-SA1	8/16/08	narrow mixed control channel	6.3	1.9	3.2	0.4
2004 NFK 1.190 TOTAL			2.5	4.5	8.6	0.6
2008 NFK 1.190 TOTAL			3.2	1.7	2.7	0.5

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not available.

[e] Sample Area was comprised of 94% low gradient contained channel and 6% beaver dam/pond channel.

Table B.3-3.
Percent composition of primary habitat types from areas sampled within NFK-C and tributary 1.190. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
NFK-C-SA1/ TOTAL	3591.1	14.7	52679.3	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	4 / 3	48 / 51	47 / 46	0 / 0
NFK 1.190-SA1[d]	4852.9	6.0	1719.0	0	0	1 / 0	6 / 100	0 / 0	NA	NA	NA	0 / 0	83 / 0	10 / 0	NA
NFK 1.190-SA1	6216.4	4.8	29655.1	4	0	4 / 2	0 / 0	4 / 3	0	0	0 / 0	6 / 5	63 / 64	24 / 26	0 / 0
NFK 1.190-SA2[d]	588.9	3.8	958.4	0	0	0 / 0	0 / 0	15 / 36	NA	NA	NA	0 / 0	49 / 64	36 / 0	NA
NFK 1.190-SA2	1785.0	4.1	7273.5	0	0	0 / 0	0 / 0	7 / 6	0	0	0 / 0	4 / 4	62 / 63	27 / 26	0 / 0
NFK 1.190-SA3[d]	178.1	NA	NA	NA	0	0 / NA	0 / NA	100 / NA	NA	NA	NA	0 / NA	0 / NA	0 / NA	NA
NFK 1.190-SA3	734.0	1.3	929.3	1	0	0 / 0	0 / 0	2 / 2	0	0	0 / 0	13 / 13	77 / 77	8 / 9	0 / 0
NFK 1.190.10-SA1	814.3	3.0	21.7	0	0	1 / 100	0 / 0	0 / 0	99	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
NFK 1.190.10-SA2	242.9	63.0	15302.7	0	0	0 / 0	100 / 100	0 / 0	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
NFK 1.190.10-SA3	2513.8	3.1	7715.1	15	0	2 / 1	0 / 0	0 / 0	0	0	0 / 0	21 / 21	46 / 49	31 / 29	0 / 0
NFK 1.190.10-SA4	828.6	6.3	5241.5	3	0	0 / 0	77 / 93	0 / 0	0	0	0 / 0	3 / 1	15 / 5	5 / 2	0 / 0
NFK 1.190.10-SA5	856.3	3.2	2706.9	0	0	0 / 0	0 / 0	10 / 8	0	0	0 / 0	3 / 3	78 / 81	9 / 8	0 / 0
NFK 1.190.10-SA6	196.8	2.9	567.6	0	0	0 / 0	0 / 0	88 / 87	0	0	0 / 0	0 / 0	0 / 0	12 / 13	0 / 0
NFK 1.190.10-SA7	188.0	4.0	755.3	0	0	0 / 0	0 / 0	8 / 4	0	0	0 / 0	4 / 3	66 / 74	22 / 19	0 / 0
NFK 1.190.10-SA8	1309.3	3.4	4426.8	6	0	4 / 2	0 / 0	1 / 1	0	0	0 / 0	35 / 33	31 / 36	28 / 28	0 / 0
NFK 1.190.10-SA9	2190.9	2.4	5334.0	0	0	2 / 1	0 / 0	0 / 0	0	0	4 / 39	21 / 13	35 / 22	39 / 24	0 / 0
NFK 1.190.10.03-SA1	213.4	1.6	342.2	0	0	5 / 17	0 / 0	0 / 0	0	0	0 / 0	6 / 14	21 / 15	68 / 54	0 / 0
NFK 1.190.10.20-SA1	1266.7	12.0	15155.2	0	0	4 / 1	0 / 0	0 / 0	0	0	21 / 88	3 / 1	49 / 5	16 / 2	7 / 4
NFK 1.190.10.25-SA1	46.5	0.6	29.5	0	0	15 / 28	0 / 0	0 / 0	0	0	0 / 0	0 / 0	72 / 50	13 / 22	0 / 0
NFK 1.190.10.30-SA1	1026.1	2.5	2223.0	0	0	3 / 2	0 / 0	0 / 0	13	0	12 / 40	10 / 6	14 / 9	48 / 43	0 / 0
NFK 1.190.10.40-SA1	424.1	1.6	666.8	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	13 / 16	68 / 66	19 / 18	0 / 0
NFK 1.190.10.40-SA2	411.0	1.0	362.5	4	0	0 / 0	0 / 0	0 / 0	0	16	0 / 0	0 / 0	72 / 87	12 / 13	0 / 0
NFK 1.190.10.40.10-SA1	662.1	0.9	598.4	7	0	0 / 0	0 / 0	2 / 2	0	1	0 / 0	6 / 8	85 / 83	7 / 7	0 / 0
NFK 1.190.10.40.15-SA1	39.6	0.4	14.0	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	100 / 100	0 / 0	0 / 0
NFK 1.190.10.60-SA1	97.0	0.4	40.1	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	0 / 0	100 / 100	0 / 0
NFK 1.190.20-SA1	1434.3	5.6	7759.0	1	0	3 / 1	12 / 70	1 / 0	0	3	1 / 3	9 / 4	35 / 10	33 / 10	2 / 2
NFK 1.190.20.10-SA1	214.0	1.1	148.5	0	0	0 / 0	0 / 0	29 / 39	0	35	0 / 0	0 / 0	31 / 55	5 / 5	0 / 0
NFK 1.190.25-SA1	706.5	1.0	726.6	4	0	0 / 0	0 / 0	14 / 21	0	0	0 / 0	4 / 6	54 / 49	28 / 25	0 / 0
NFK 1.190.30-SA1	704.5	1.7	1175.3	0	0	0 / 0	0 / 0	1 / 1	0	0	0 / 0	7 / 13	61 / 53	31 / 33	0 / 0
NFK 1.190.30-SA2	592.5	1.7	984.2	0	0	0 / 0	0 / 0	22 / 22	0	0	0 / 0	6 / 7	54 / 50	18 / 20	0 / 0
NFK 1.190.30-SA3	776.6	1.2	919.0	0	0	0 / 0	0 / 0	4 / 4	0	1	0 / 0	10 / 11	68 / 68	16 / 17	0 / 0
NFK 1.190.30-SA4	3.3	0.6	1.9	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	100 / 100	0 / 0	0 / 0
NFK 1.190.40-SA1	654.5	3.3	2151.1	0	0	0 / 0	30 / 49	1 / 0	0	0	0 / 0	7 / 6	56 / 41	5 / 4	0 / 0
NFK 1.190.40-SA2	1977.7	1.6	3151.9	0	0	1 / 1	0 / 0	5 / 5	0	0	0 / 0	1 / 1	87 / 86	6 / 6	0 / 0
NFK 1.190.40.10-SA1	654.4	1.2	770.2	0	0	0 / 0	0 / 0	20 / 20	0	0	0 / 0	5 / 6	75 / 73	1 / 1	0 / 0
NFK 1.190.40.10-SA2	854.3	0.8	628.4	3	0	0 / 0	0 / 0	8 / 7	0	0	0 / 0	7 / 8	63 / 71	10 / 14	13 / 0

Table B.3-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
NFK 1.190.40.10.10-SA1	471.5	1.5	681.6	0	0	0 / 0	0 / 0	20 / 10	0	5	0 / 0	5 / 3	50 / 28	13 / 8	7 / 51
NFK 1.190.40.10.10.10-SA1	633.3	1.1	695.1	4	0	0 / 0	0 / 0	41 / 20	0	1	0 / 0	9 / 7	32 / 21	14 / 11	4 / 40
NFK 1.190.40.10.10.20-SA1	12.0	0.5	6.2	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	100 / 100	0 / 0	0 / 0
NFK 1.190.50-SA1	695.0	1.4	986.5	0	0	1 / 1	0 / 0	7 / 7	0	0	0 / 0	4 / 4	80 / 79	8 / 9	0 / 0
NFK 1.190.50-SA2	623.8	0.9	556.8	0	0	0 / 0	0 / 0	11 / 14	0	0	0 / 0	2 / 2	73 / 70	14 / 14	0 / 0
NFK 1.190.50-SA3	1061.0	2.3	2337.0	0	0	0 / 0	0 / 0	50 / 62	0	5	0 / 0	0 / 0	45 / 38	1 / 0	0 / 0
NFK 1.190.50.10-SA1	308.0	0.9	270.0	0	0	0 / 0	0 / 0	6 / 4	0	0	0 / 0	0 / 0	94 / 96	0 / 0	0 / 0
NFK 1.190.50.15-SA1	85.0	0.4	37.3	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	94 / 94	6 / 6	0 / 0
NFK 1.190.70-SA1	1277.0	1.6	2072.3	0	0	0 / 0	0 / 0	3 / 5	0	0	0 / 0	0 / 0	94 / 92	2 / 2	0 / 0
NFK 1.190.70-SA2	523.0	1.7	599.3	0	0	0 / 0	0 / 0	35 / 63	0	33	0 / 0	0 / 0	32 / 37	0 / 0	0 / 0
NFK 1.190.75-SA1	366.4	2.6	947.1	6	0	1 / 1	0 / 0	0 / 0	0	0	0 / 0	2 / 2	96 / 97	1 / 0	0 / 0
NFK 1.190.80-SA1	255.5	1.3	270.7	6	0	0 / 0	0 / 0	9 / 13	0	16	0 / 0	1 / 2	45 / 65	30 / 20	0 / 0
2004 NFK 1.190 TOTAL	5619.9	4.5	2677.4	0	0	0 / 0	5 / 64	5 / 13	NA	NA	NA	0 / 0	77 / 23	13 / 0	NA
2008 NFK 1.190 TOTAL	36946.8	3.6	127237.1	2	0	2 / 1	3 / 21	7 / 4	3	1	1 / 13	8 / 6	55 / 39	19 / 15	1 / 1

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

[d] Data were recorded in 2004.

Table B.3-4.
Descriptive characteristics of primary habitat units from areas sampled within NFK-C and tributary 1.190. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation
NFK-C-SA1 / TOTAL	gravel	cobble	1	4	willow shrub
NFK 1.190-SA1[b]	gravel	NA	NA	0	willow shrub
NFK 1.190-SA1	cobble	gravel	1	3	willow shrub
NFK 1.190-SA2[b]	gravel	cobble	NA	0	other herbaceous
NFK 1.190-SA2	gravel	cobble	1	0	other herbaceous
NFK 1.190-SA3[b]	gravel	NA	NA	0	willow shrub
NFK 1.190-SA3	boulder	sand/silt	0	0	alder shrub
NFK 1.190.10-SA1	cobble	gravel, boulder	0	0	willow shrub/other herbaceous
NFK 1.190.10-SA2	sand/silt	organics	0	0	willow shrub/fen
NFK 1.190.10-SA3	cobble	gravel	2	3	willow shrub
NFK 1.190.10-SA4	sand/silt	organics	0	1	other herbaceous
NFK 1.190.10-SA5	cobble	gravel	0	1	willow shrub/other herbaceous
NFK 1.190.10-SA6	boulder	cobble	0	0	willow shrub/other herbaceous
NFK 1.190.10-SA7	cobble	gravel	0	1	willow shrub/other herbaceous
NFK 1.190.10-SA8	gravel	cobble	0	3	other herbaceous
NFK 1.190.10-SA9	sand/silt	gravel	0	24	other herbaceous
NFK 1.190.10.03-SA1	sand/silt	organics	0	0	willow shrub/tundra
NFK 1.190.10.20-SA1	sand/silt	gravel	0	5	willow shrub
NFK 1.190.10.25-SA1	sand/silt	organics	0	0	willow shrub/other herbaceous
NFK 1.190.10.30-SA1	gravel	cobble	0	1	other herbaceous
NFK 1.190.10.40-SA1	gravel	cobble	1	4	willow shrub/other herbaceous
NFK 1.190.10.40-SA2	cobble	gravel	0	22	willow shrub
NFK 1.190.10.40.10-SA1	cobble	boulder	0	10	willow shrub/other herbaceous
NFK 1.190.10.40.15-SA1	cobble	gravel	0	0	willow shrub/other herbaceous
NFK 1.190.10.60-SA1	organics	sand/silt	0	0	willow shrub/other herbaceous
NFK 1.190.20-SA1	sand/silt	organics	0	5	willow shrub/other herbaceous
NFK 1.190.20.10-SA1	boulder	cobble	0	35	other herbaceous
NFK 1.190.25-SA1	cobble	boulder	0	9	willow shrub/other herbaceous
NFK 1.190.30-SA1	cobble	gravel	6	2	alder shrub/willow shrub/other herbaceous
NFK 1.190.30-SA2	cobble	boulder	3	1	other herbaceous
NFK 1.190.30-SA3	cobble	boulder	7	3	willow shrub/other herbaceous
NFK 1.190.30-SA4	gravel	organics	0	0	alder shrub/willow shrub/other herbaceous
NFK 1.190.40-SA1	sand/silt	cobble	1	1	willow shrub/other herbaceous
NFK 1.190.40-SA2	cobble	gravel	0	1	other herbaceous
NFK 1.190.40.10-SA1	cobble	gravel	0	0	other herbaceous
NFK 1.190.40.10-SA2	cobble	gravel	0	2	other herbaceous
NFK 1.190.40.10.10-SA1	organics	sand/silt	0	14	other herbaceous
NFK 1.190.40.10.10.10-SA1	sand/silt	organics	0	1	willow shrub
NFK 1.190.40.10.10.20-SA1	sand/silt	gravel	0	0	willow shrub
NFK 1.190.50-SA1	gravel	cobble	0	10	other herbaceous
NFK 1.190.50-SA2	gravel	cobble	0	11	willow shrub/other herbaceous
NFK 1.190.50-SA3	cobble	boulder	2	1	other herbaceous

Table B.3-4. Continued

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation
NFK 1.190.50.10-SA1	gravel	sand/silt	0	0	willow shrub/other herbaceous
NFK 1.190.50.15-SA1	sand/silt	gravel	0	0	other herbaceous
NFK 1.190.70-SA1	gravel	cobble	0	2	other herbaceous
NFK 1.190.70-SA2	boulder	cobble	0	0	other herbaceous
NFK 1.190.75-SA1	cobble	boulder	0	0	other herbaceous
NFK 1.190.80-SA1	boulder	cobble	0	2	other herbaceous
2004 NFK 1.190 TOTAL	gravel	cobble	NA	0	willow shrub
2008 NFK 1.190 TOTAL	sand/silt	cobble	1	5	other herbaceous

[a] NA=data not available.
[b] Data were recorded in 2004.

Table B.3-5.
Summary of pool habitat data from areas sampled in NFK-C and tributary 1.190. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
NFK-C-SA1 / TOTAL	3.59	4	1	5	0.1	0	0.1	1692.4	0	1692.4	338.5	1.2	0.1
NFK 1.190-SA1[c]	4.85	0	55	55	0	1.1	1.1	0	911.4	911.4	16.9	0.4	0
NFK 1.190-SA1	6.22	25	7	32	0.4	0.1	0.5	1626.7	66.0	1692.7	52.9	0.5	0.5
NFK 1.190-SA2[c]	0.59	0	8	8	0	1.4	1.4	0	139.8	139.8	17.5	0.4	0.2
NFK 1.190-SA2	1.79	9	1	10	0.5	0.1	0.6	324.8	1.7	326.5	32.7	0.5	0.6
NFK 1.190-SA3[c]	0.18	0	2	2	0	1.1	1.1	0	6.2	6.2	3.1	0.3	0
NFK 1.190-SA3	0.73	8	0	8	1.1	0	1.1	117.0	0	117.0	14.6	0.4	1.1
NFK 1.190.10-SA1	0.81	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.10-SA2	0.24	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.10-SA3	2.51	46	3	49	1.8	0.1	2	1606.4	11.2	1617.6	33	0.4	2.0
NFK 1.190.10-SA4	0.83	4	1	5	0.5	0.1	0.6	50.8	6.0	56.8	11.4	0.4	0.6
NFK 1.190.10-SA5	0.86	3	0	3	0.3	0	0.3	70.6	0	70.6	23.5	0.3	0.3
NFK 1.190.10-SA6	0.20	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.10-SA7	0.19	1	1	2	0.5	0.5	1.1	22.7	4.2	26.8	13.4	0.4	1.1
NFK 1.190.10-SA8	1.31	29	3	32	2.2	0.2	2.4	1441	33.7	1474.7	46.1	0.5	2.4
NFK 1.190.10-SA9	2.19	38	1	39	1.7	0	1.8	710.7	4.7	715.4	18.3	0.4	1.8
NFK 1.190.10.03-SA1	0.21	2	0	2	1.0	0	1.0	48.7	0	48.7	24.4	0.6	1.0
NFK 1.190.10.20-SA1	1.27	8	0	8	0.6	0	0.6	77.0	0	77.0	9.6	0.3	0.6
NFK 1.190.10.25-SA1	5.00	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.10.30-SA1	1.03	19	1	20	1.8	0.1	1.9	137.8	3.9	141.7	7.1	0.3	1.9
NFK 1.190.10.40-SA1	0.42	12	0	12	2.9	0	2.9	104.7	0	104.7	8.7	0.3	2.9
NFK 1.190.10.40-SA2	0.41	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.10.40.10-SA1	0.66	12	0	12	1.8	0	1.8	45.1	0	45.1	3.8	0.2	1.8
NFK 1.190.10.40.15-SA1	4.00	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.10.60-SA1	0.10	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.20-SA1	1.43	9	0	9	0.6	0	0.6	333.5	0	333.5	37.1	0.4	0.6
NFK 1.190.20.10-SA1	0.21	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.25-SA1	0.71	7	0	7	1.0	0	1.0	40.2	0	40.2	5.7	0.3	1.0

Table B.3-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
NFK 1.190.30-SA1	0.70	7	0	7	1	0	1	153.0	0	153.0	21.9	0.3	1.0
NFK 1.190.30-SA2	0.59	10	0	10	1.7	0	1.7	70.3	0	70.3	7.0	0.3	1.7
NFK 1.190.30-SA3	0.78	23	0	23	2.9	0	2.9	102.3	0	102.3	4.4	0.3	2.9
NFK 1.190.30-SA4	0.00	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.40-SA1	0.65	6	0	6	0.9	0	0.9	118.9	0	118.9	19.8	0.3	0.9
NFK 1.190.40-SA2	1.98	4	0	4	0.2	0	0.2	33.1	0	33.1	8.3	0.3	0.2
NFK 1.190.40.10-SA1	0.65	8	0	8	1.2	0	1.2	46.9	0	46.9	5.9	0.3	1.2
NFK 1.190.40.10-SA2	0.85	14	0	14	1.6	0	1.6	52.6	0	52.6	3.8	0.3	1.6
NFK 1.190.40.10.10-SA1	0.47	6	0	6	1.3	0	1.3	23.3	0	23.3	3.9	0.4	1.3
NFK 1.190.40.10.10.10-SA1	0.63	11	0	11	1.7	0	1.7	46.7	0	46.7	4.2	0.4	1.7
NFK 1.190.40.10.10.20-SA1	1.00	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.50-SA1	0.70	7	0	7	1	0	1	41.6	0	41.6	5.9	0.3	1.0
NFK 1.190.50-SA2	0.62	3	0	3	0.5	0	0.5	10.4	0	10.4	3.5	0.3	0.5
NFK 1.190.50-SA3	1.06	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.50.10-SA1	0.31	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.50.15-SA1	9.00	0	0	0	0	0	0	0	0	0	0	0	0
NFK 1.190.70-SA1	1.28	2	1	3	0.2	0.1	0.2	6	2.9	8.9	3	0.3	0.2
NFK 1.190.70-SA2	0.52	0	1	0	0	0	0	0	0	0	0	0	0
NFK 1.190.75-SA1	0.37	2	0	2	0.5	0	0.5	19.0	0	19.0	9.5	0.2	0.5
NFK 1.190.80-SA1	0.26	1	0	1	0.4	0	0.4	4.2	0	4.2	4.2	0.3	0.4
2004 NFK 1.190 TOTAL	5.62	0	65	65	0	1.2	1.2	0	1057.4	1057.4	16.5	0.4	0
2008 NFK 1.190 TOTAL	36.95	336	19	355	0.9	0.1	1.0	7486.1	134.2	7620.3	21.5	0.4	1.0

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.
[c] Data were recorded in 2004.

Table B.3-6.
Special habitat features within NFK-C and tributary 1.190, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK-C-SA1	59.92377	-155.50105	barrier		beaver dam	temporary	0.6	1
	59.92537	-155.50314	barrier		beaver dam	temporary	0.8	0.5
NFK 1.190-SA1	59.93004	-155.41564	seep					
	59.92003	-155.40110	tributary	NFK 1.190.20				
	59.91716	-155.40218	tributary	NFK 1.190.25				
	59.91625	-155.40304	seep					
	59.91503	-155.40722	seep					
	59.91387	-155.41016	seep					
	59.91265	-155.41024	seep					
	59.91200	-155.41311	seep					
	59.90998	-155.41476	seep					
	59.90913	-155.41556	tributary	NFK 1.190.30				
	59.90723	-155.41531	seep					
	59.90505	-155.41573	seep					
	59.90338	-155.41673	tributary	NFK1.190.40				
	59.90258	-155.41665	seep					
	59.90221	-155.41788	seep					
	59.89619	-155.42468	tributary	NFK 1.190.50				
	59.89514	-155.42693	seep					
	59.89453	-155.42791	tributary	NFK 1.190.70				
NFK 1.190-SA2	59.89184	-155.43467	spring					
	59.89157	-155.43541	barrier		falls	permanent	0.3	0.3
	59.89152	-155.43555	seep					
	59.89074	-155.43710	seep					
	59.89041	-155.43819	seep					
	59.88906	-155.43990	seep					
	59.88864	-155.44060	seep					
	59.88850	-155.44073	seep					

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190-SA2 (cont)	59.88834	-155.44121	seep					
	59.88836	-155.44114	spring					
	59.88794	-155.44284	seep					
	59.88712	-155.44387	tributary	NFK 1.190.75				
	59.88701	-155.44427	seep					
	59.88638	-155.44418	seep					
	59.88504	-155.44648	seep					
	59.88463	-155.44731	tributary	NFK 1.190.80				
NFK 1.190-SA3	59.88454	-155.44790	spring					
	59.88391	-155.44861	seep					
	59.88316	-155.45052	seep					
	59.88314	-155.45056	barrier		falls	temporary	0.61	0.4
	59.88288	-155.45150	barrier		falls	permanent	0.51	1.5
	59.88276	-155.45219	seep					
	59.88279	-155.45245	barrier		falls	permanent	0.6	0.5
	59.88279	-155.45278	seep					
	59.88241	-155.45392	seep					
NFK 1.190.10-SA1	59.92637	-155.39905	barrier		beaver dam	temporary	0.95	1
NFK 1.190.10-SA2	59.92605	-155.39908	barrier		beaver dam	temporary	1.75	2.1
	59.92540	-155.39771	barrier		beaver dam	temporary	1.18	0.85
	59.92531	-155.39726	barrier		beaver dam	temporary	0.7	0.85
NFK 1.190.10-SA3	59.92127	-155.37865	tributary	NFK 1.190.10.03				
	59.92130	-155.37642	tributary	NFK 1.190.10.06				
	59.92139	-155.37491	barrier		beaver dam	temporary	1.2	1.82
	59.92156	-155.37455	seep					
	59.92149	-155.37420	seep					
NFK 1.190.10-SA4	59.92208	-155.37239	barrier		beaver dam	temporary	1.22	0.62
	59.92215	-155.37239	barrier		beaver dam	temporary	0.72	1.3
NFK 1.190.10-SA5	59.91944	-155.36562	tributary	unnamed				
	59.91875	-155.36600	tributary	unnamed				
NFK 1.190.10-SA6	59.91423	-155.35971	tributary	NFK 1.190.10.20				
NFK 1.190.10-SA7			none present					

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190.10-SA8	59.91175	-155.35836	barrier		beaver dam	temporary	0.3	0.41
	59.91153	-155.35868	tributary	unnamed				
	59.91071	-155.35759	tributary	unnamed				
	59.90999	-155.35787	seep					
	59.90940	-155.35740	seep					
	59.90872	-155.35651	tributary	NFK 1.190.10.30				
	59.90822	-155.35697	tributary	unnamed				
	59.90753	-155.35733	tributary	unnamed				
	59.90724	-155.35738	seep					
	59.90690	-155.35753	seep					
	59.90703	-155.35776	seep					
	59.90647	-155.35771	seep					
	59.90630	-155.35760	seep					
	59.90621	-155.35762	seep					
	59.90557	-155.35713	seep					
	59.90508	-155.35674	seep					
	59.90464	-155.35658	tributary	NFK 1.190.10.40				
NFK 1.190.10-SA9	59.90386	-155.35565	tributary	NFK 1.190.10.45				
	59.89952	-155.35334	tributary	NFK1.190.10.50				
	59.89687	-155.35334	seep					
	59.89607	-155.35368	tributary	NFK 1.190.10.55				
	59.89595	-155.35356	tributary	NFK1.190.10.60				
	59.89522	-155.35273	tributary	NFK 1.190.10.65				
	59.89333	-155.35230	seep					
	59.89307	-155.35241	seep					
	59.89214	-155.35329	barrier		falls	temporary	0.9	0.8
	59.89214	-155.35329	tributary	unnamed				
	59.89049	-155.35392	barrier		falls	temporary	0.35	0.7
	59.89045	-155.35366	seep					

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190.10.03-SA1	59.92095	-155.37759	seep					
	59.92090	-155.37697	seep					
	59.92097	-155.37684	seep					
	59.92084	-155.37651	seep					
NFK 1.190.10.20-SA1	59.91422	-155.35968	barrier		falls	permanent	0.9	1
	59.91422	-155.35881	seep					
	59.91435	-155.35200	seep					
	59.91444	-155.35134	seep					
	59.91352	-155.34764	seep					
	59.91334	-155.34706	seep					
	59.91262	-155.34613	barrier		falls	permanent	1.57	1.56
NFK 1.190.10.25-SA1			none present					
NFK 1.190.10.30-SA1	59.90808	-155.35067	seep					
NFK 1.190.10.40-SA1	59.90369	-155.36074	seep					
	59.90308	-155.36123	tributary	NFK 1.190.10.40.10				
	59.90245	-155.36158	tributary	NFK1.190.10.40.15				
	59.90201	-155.36188	seep					
NFK 1.190.10.40-SA2			none present					
NFK 1.190.10.40.10-SA1	59.90262	-155.36338	seep					
	59.90285	-155.36406	seep					
	59.90302	-155.36727	seep					
	59.90310	-155.36838	seep					
	59.90314	-155.36866	seep					
NFK 1.190.10.40.15-SA1			none present					
NFK 1.190.10.60-SA1			none present					

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190.20-SA1	59.91901	-155.38884	tributary	unnamed				
	59.91817	-155.38615	seep					
	59.91814	-155.38601	seep					
	59.91814	-155.38555	seep					
	59.91801	-155.38511	seep					
	59.91798	-155.38499	spring					
	59.91706	-155.37969	barrier		beaver dam	temporary	1.1	1.9
	59.91729	-155.38233	tributary	NFK 1.190.20.10				
NFK 1.190.20.10-SA1			none present					
NFK 1.190.25-SA1	59.91705	-155.40207	seep					
	59.91568	-155.39635	seep					
	59.91482	-155.39490	barrier		falls	temporary	0.6	0.6
	59.91463	-155.39455	tributary	unnamed				
	59.91425	-155.39285	seep					
	59.91423	-155.39270	seep					
NFK 1.190.30-SA1	59.90915	-155.42146	seep					
	59.90921	-155.42345	seep					
	59.90913	-155.42351	seep					
NFK 1.190.30-SA2	59.90899	-155.42532	seep					
	59.90909	-155.42624	seep					
	59.90906	-155.42660	seep					
	59.90925	-155.42681	seep					
	59.90888	-155.43033	seep					
	59.90892	-155.43108	seep					
	59.90892	-155.43108	seep					
	59.90867	-155.43290	seep					
	59.90856	-155.43361	seep					
NFK 1.190.30-SA3	59.90859	-155.43489	tributary	unnamed				
	59.90870	-155.43591	barrier		falls	permanent	0.55	0.5
	59.90877	-155.43678	seep					
	59.90885	-155.43772	seep					
	59.90850	-155.44023	seep					

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190.30-SA3 (cont)	59.90864	-155.44153	seep					
	59.90870	-155.44316	barrier		falls	permanent	0.75	0.84
	59.90863	-155.44366	seep					
	59.90859	-155.44519	tributary	unnamed				
NFK 1.190.30-SA4	59.90851	-155.44524	barrier		falls	temporary	0.64	0.5
	59.90859	-155.44519	seep					
NFK 1.190.40-SA1	59.90242	-155.41615	barrier		beaver dam	temporary	0.64	1.2
	59.90216	-155.41666	barrier		beaver dam	temporary	1.4	2.5
	59.90002	-155.41415	seep					
	59.89975	-155.41324	tributary	NFK 1.190.40.10				
NFK 1.190.40-SA2	59.89884	-155.41180	seep					
	59.89870	-155.41165	seep					
	59.89745	-155.41025	barrier		falls	permanent	0.5	0.7
	59.89737	-155.41009	seep					
	59.89711	-155.40990	seep					
	59.89547	-155.40783	tributary	NFK1.190.40.20				
	59.89464	-155.40730	seep					
	59.89414	-155.40732	barrier		falls	permanent	0.46	0.6
	59.89423	-155.40731	seep					
	59.89201	-155.40754	seep					
	59.89135	-155.40725	tributary	NFK1.190.40.30				
	59.89046	-155.40603	seep					
	59.89046	-155.40603	seep					
	59.88997	-155.40480	seep					
	59.88912	-155.40298	seep					
NFK 1.190.40.10-SA1	59.89970	-155.41280	spring					
	59.89990	-155.41146	seep					
	59.90008	-155.41104	seep					

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190.40.10-SA1 (cont)	59.90021	-155.40838	seep					
	59.89996	-155.40680	seep					
	59.89950	-155.40352	seep					
	59.89952	-155.40320	seep					
	59.89953	-155.40325	tributary	NFK 1.190.40.10.10				
NFK 1.190.40.10-SA2	59.89975	-155.40237	barrier		falls	temporary	0.6	0.6
	59.89976	-155.40197	barrier		falls	temporary	0.96	1.4
	59.89972	-155.39970	spring					
	59.89992	-155.39636	seep					
	59.90011	-155.39561	spring					
	59.90037	-155.39485	tributary	unnamed				
NFK 1.190.40.10.10-SA1	59.89968	-155.40257	tributary	NFK 1.190.40.10.10.10				
	59.89968	-155.40257	barrier		falls	temporary	0.54	0.34
	59.89939	-155.40185	barrier		falls	temporary	1.4	1
	59.89885	-155.39860	barrier		falls	temporary	0.58	0.64
	59.89892	-155.39839	seep					
	59.89885	-155.39785	tributary	NFK 1.190.40.10.10.20				
	59.89883	-155.39606	seep					
NFK 1.190.40.10.10.10-SA1	59.89947	-155.40197	seep					
	59.89952	-155.40157	barrier		falls	temporary	0.87	0.55
	59.89960	-155.40091	seep					
	59.89952	-155.40065	seep					
	59.89930	-155.39782	barrier		falls	temporary	0.5	0.45
	59.89931	-155.39620	seep					
NFK 1.190.40.10.10.20-SA1	59.89885	-155.39766	barrier		falls	permanent	1	0.8
NFK 1.190.50-SA1	59.89617	-155.42464	seep					
	59.89529	-155.42427	seep					
	59.89521	-155.42396	seep					
	59.89368	-155.41961	seep					
	59.89238	-155.41787	tributary	NFK 1.190.50.10				

Table B.3-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
NFK 1.190.50-SA2	59.89214	-155.41562	seep					
	59.89092	-155.41286	seep					
NFK 1.190.50-SA3	59.89023	-155.40995	tributary	NFK1.190.50.15				
	59.88376	-155.40762	seep					
	59.88278	-155.40699	seep					
NFK 1.190.50.10-SA1	59.89190	-155.41771	seep					
NFK 1.190.50.15-SA1			none present					
NFK 1.190.70-SA1	59.89267	-155.42848	seep					
	59.89179	-155.42875	seep					
	59.88465	-155.42977	seep					
NFK 1.190.70-SA2	59.88373	-155.42858	seep					
	59.88357	-155.42818	seep					
	59.88345	-155.42820	seep					
NFK 1.190.75-SA1	59.88711	-155.44391	barrier		falls	permanent	0.65	1.05
	59.88640	-155.44307	seep					
	59.88372	-155.44208	seep					
NFK 1.190.80-SA1	59.88371	-155.44750	seep					

Note: Blank cells indicate no data were collected for that record.

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Table B.3-7.
2004-2008 number of fish observations by lifestage within NFK-C mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult						Juvenile							Juvenile/Adult[a]					Total
			Apr	Jun	Jul	Aug	Sep	Sub-total	Apr	Jun	Jul	Aug	Sep	Nov	Sub-total	Apr	Jul	Aug	Sep	Sub-total	
Chinook Salmon	2004	Electrofishing									17	2	8		27						27
		Minnow Trap							1			9			10						10
	2005	Minnow Trap										29			29						29
		Snorkel			21			21			160				160						181
	2006	Electrofishing							27					21	48						48
		Minnow Trap							1						1						1
		Snorkel			4	3		7			1931	161			2092						2099
	2007	Snorkel									534				534						534
	2008	Electrofishing										105	28		133						133
		Seine										7			7						7
		Snorkel				6		6				2498			2498						2504
		Visual Observation										20			20						20
chum Salmon	2005	Snorkel			2			2													2
	2006	Electrofishing							15						15						15
		Snorkel			4			4													4
	2007	Snorkel			9			9													9
	2008	Snorkel				18		18													18
		Visual Observation				1		1													1
coho Salmon	2004	Electrofishing									42	4	26		72						72
		Minnow Trap							16			10			26						26
	2005	Minnow Trap										63			63						63
		Snorkel									2043				2043						2043
	2006	Electrofishing							5					5	10						10
		Minnow Trap							1						1						1
		Snorkel			1			1			1907	43			1950						1951
	2007	Gill/Tangle Net											1		1						1
		Snorkel									2095				2095						2095
coho salmon (cont)	2008	Angling					3	3													3
		Electrofishing										1679	53		1732						1732
		Minnow Trap											2		2						2
		Seine										17			17						17
		Snorkel				4		4				16140			16140						16144
		Visual Observation										443			443						443
sockeye salmon	2006	Electrofishing							93						93						93
		Snorkel			1			1			26				26						27
	2007	Snorkel			8			8			33				33						41
	2008	Electrofishing										22			22						22
		Snorkel				144		144				6			6						150
		Visual Observation										1			1						1
Pacific salmon sp.	2005	Minnow Trap										198			198						198

Table B.3-7. Continued

Species	Year	Method	Adult						Juvenile							Juvenile/Adult[a]					Total
			Apr	Jun	Jul	Aug	Sep	Sub-total	Apr	Jun	Jul	Aug	Sep	Nov	Sub-total	Apr	Jul	Aug	Sep	Sub-total	
arctic grayling	2004	Angling		2				2		1					1						3
		Electrofishing									22		40		62						62
		Minnow Trap										2			2						2
	2005	Snorkel			100			100			25				25						125
	2006	Snorkel			150	17		167			28				28						195
	2007	Snorkel			57			57			2				2						59
	2008	Angling					10	10													10
		Electrofishing				6		6				3			3						9
		Seine				22		22				18			18						40
		Snorkel				257		257										4		4	261
		Visual Observation										1			1						1
Dolly Varden	2004	Electrofishing			5		3	8			490	55	238		783				1	1	792
		Minnow Trap				2		2	14			123			137						139
	2005	Minnow Trap				1		1				214			214						215
		Snorkel			5			5			4				4		8			8	17
	2006	Electrofishing							6					19	25						25
		Snorkel			3			3			53	1			54		4			4	61
	2007	Snorkel									11				11		1			1	12
	2008	Electrofishing				1	5	6				253	228		481						487
		Minnow Trap											4		4						4
		Seine				1		1				2			2						3
		Snorkel				184		184				1163			1163			825		825	2172
		Visual Observation										6	2		8			3	1	4	12
rainbow trout	2005	Snorkel			3			3			1				1						4
	2008	Electrofishing											28		28						28
		Snorkel				11		11				12			12			41		41	64
		Visual Observation										1			1						1
round whitefish	2008	Electrofishing				5		5													5
		Seine				6		6													6
		Snorkel				10		10													10
whitefish sp.	2006	Snorkel			61	20		81													81
	2007	Snorkel			43			43													43
	2008	Snorkel				1		1													1
Salmonid sp.	2006	Snorkel										1			1						1
	2008	Snorkel										1			1						1
		Visual Observation										1			1			35	1	36	37
northern pike	2004	Electrofishing					2	2					1		1						3
	2005	Angling				10		10													10
	2006	Angling				10		10										3		3	13
		Electrofishing												1	1						1
	2007	Angling					9	9													9
		Gill/Tangle Net					3	3					9		9						12
	2008	Angling					11	11													11
		Gill/Tangle Net					2	2													2

Table B.3-7. Continued

Species	Year	Method	Adult						Juvenile							Juvenile/Adult[a]					Total
			Apr	Jun	Jul	Aug	Sep	Sub-total	Apr	Jun	Jul	Aug	Sep	Nov	Sub-total	Apr	Jul	Aug	Sep	Sub-total	
sculpin sp.	2004	Electrofishing															473	3	71	547	547
		Minnow Trap	2			1		3	4						4						7
		Visual Observation														1				1	1
	2005	Minnow Trap														1				1	1
	2006	Minnow Trap														1				1	1
	2008	Electrofishing				164	84	248				1654	434		2088			277		277	2613
		Seine				2		2				9			9						11
		Snorkel																1487		1487	1487
		Visual Observation										13			13			7	20	27	40
ninespine	2004	Minnow Trap										1			1						1
stickleback	2008	Electrofishing				3		3				18			18						21
stickleback sp.	2008	Snorkel										1			1			78		78	79
unidentified	2004	Electrofishing															1			1	1
sp.	2007	Snorkel															1			1	1
	2008	Visual Observation																	9	9	9

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

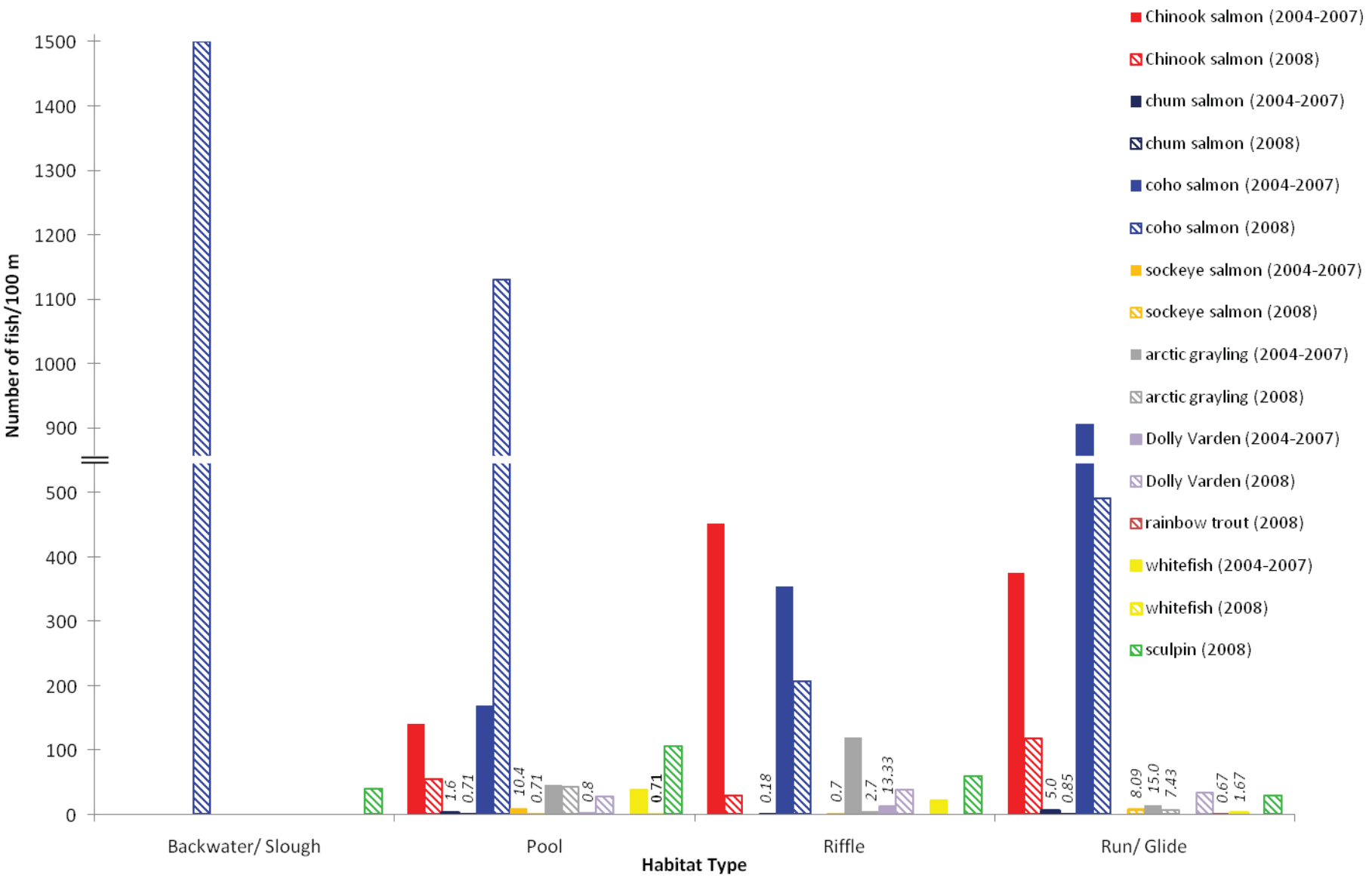


Figure B.3-8a.
2004-2008 fish abundance by habitat type within mainstem NFK-C.

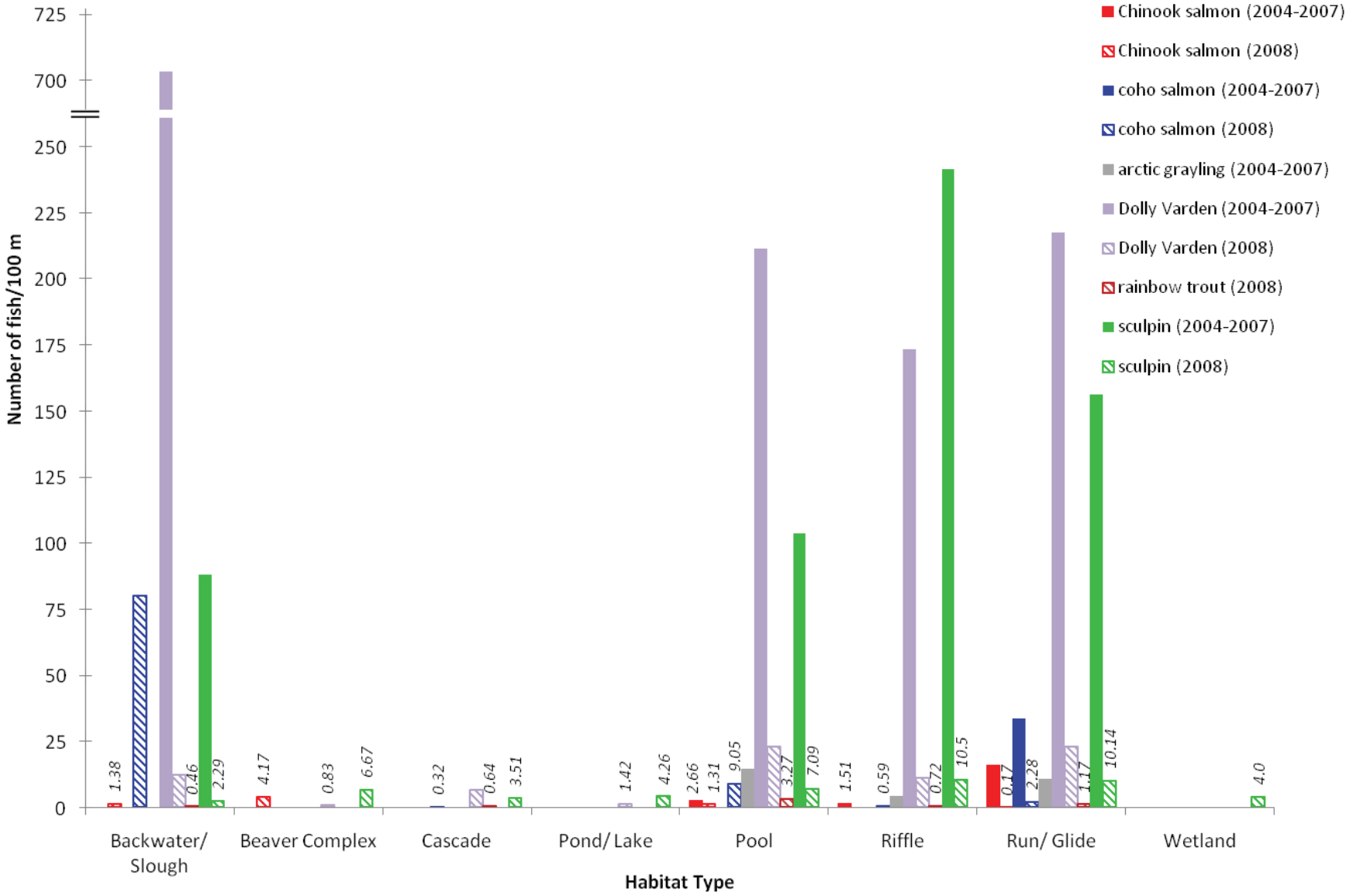


Figure B.3-8b.
2004-2008 fish abundance by habitat type within NFK-C tributaries.

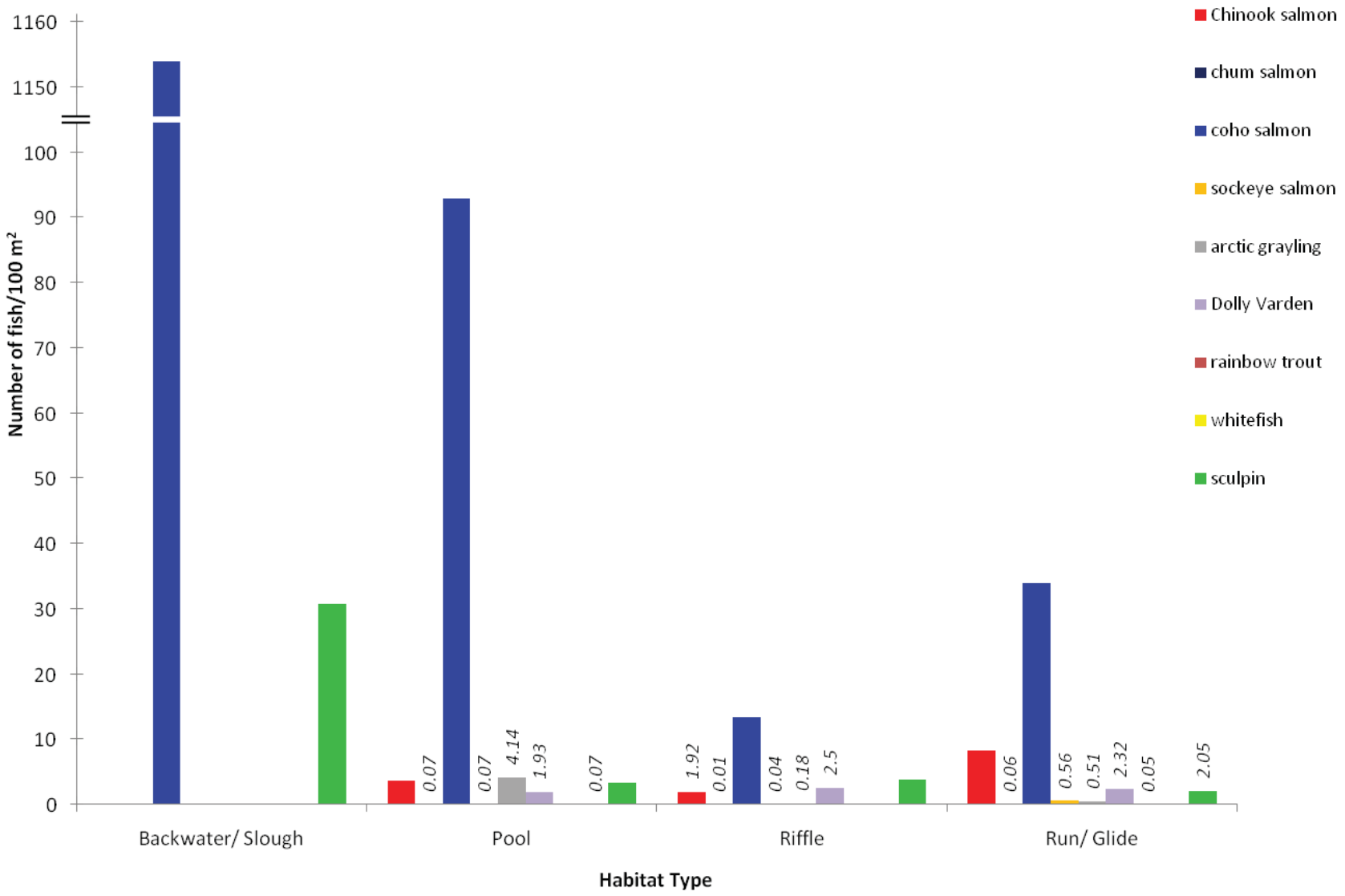


Figure B.3-9a.
2008 fish density by habitat type within mainstem NFK-C.

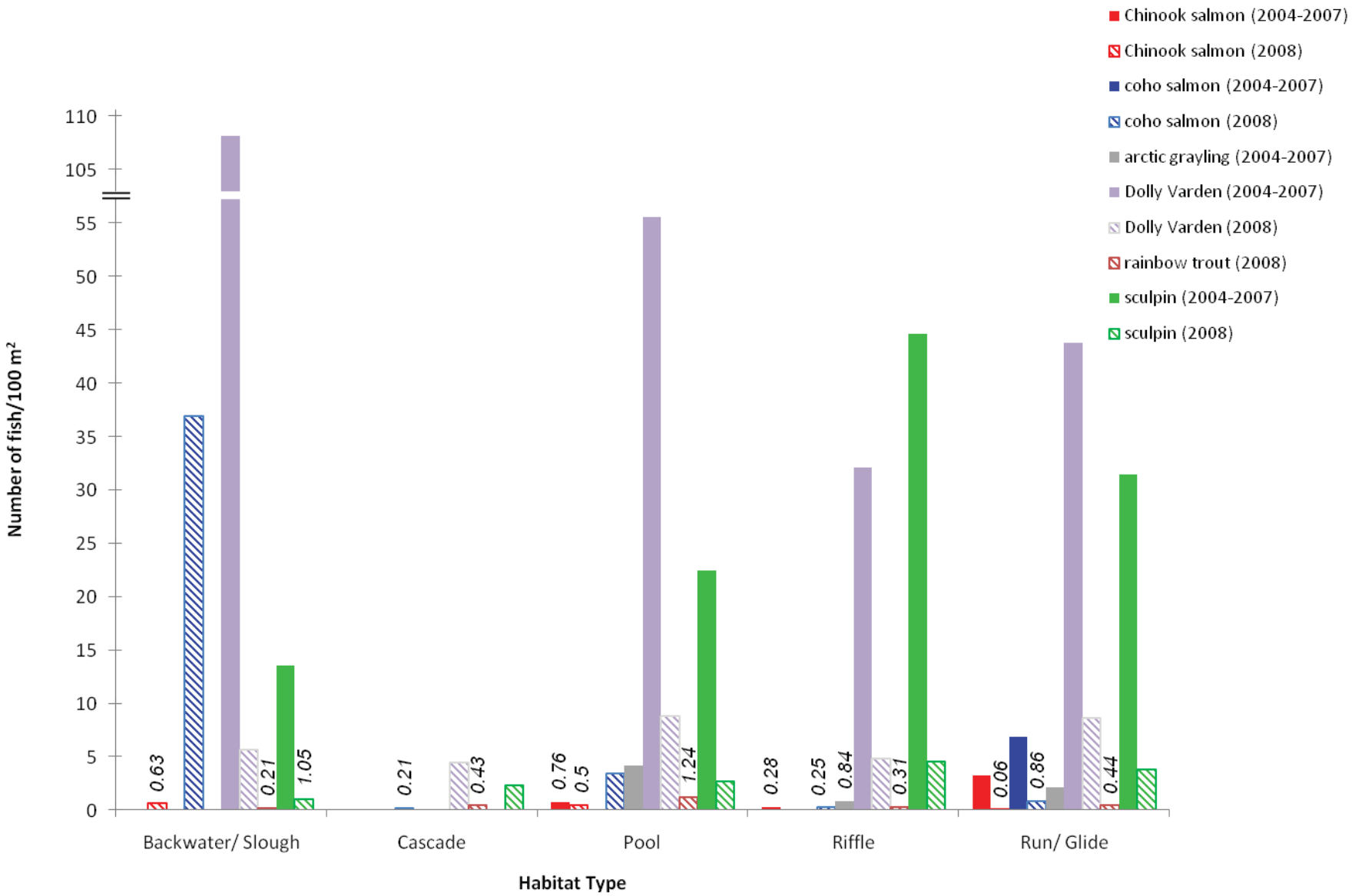


Figure B.3-9b.
2004-2008 fish density by habitat type within NFK-C tributaries.

Table B.3-8.
Densities of fish species by habitat type in NFK-C and tributary 1.190 in 2008.

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon			Chum Salmon	Coho Salmon			Sockeye Salmon			Arctic Grayling	Dolly Varden				Rainbow Trout				White -fish	Sculpin			
				Adult	Juv-enile	Total	Adult	Adult	Juv-enile	Total	Adult	Juv-enile	Total	Adult	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Adult	Juv-enile	Juv-enile/ Adult[a]	Total
NFK 1.0	Backwater/Slough	6.5	1184.62						1153.85	1153.85																30.77	30.77
	Pool	1451.0	106.13	0.07	3.58	3.65	0.07		92.83	92.83		0.07	0.07	4.14	0.07	1.38	0.48	1.93					0.07	0.21	1.38	1.79	3.38
	Riffle	25651.1	21.62	0.02	1.90	1.92	0.01		13.28	13.28	0.04		0.04	0.18	0.07	1.70	0.73	2.50						0.05	0.80	2.85	3.70
	Run/Glide	23747.8	47.65		8.17	8.17	0.06	0.02	33.91	33.93	0.56		0.56	0.51	0.07	1.66	0.59	2.32	0.05			0.05		0.05	0.49	1.51	2.05
	All Habitats	50856.4	36.34	0.01	4.88	4.89	0.04	0.01	25.33	25.34	0.28		0.29	0.44	0.07	1.67	0.65	2.39	0.02			0.02		0.05	0.67	2.20	2.92
NFK 1.190	Backwater/Slough	205.4	95.42						83.74	83.74						2.43	9.25	11.68									
	Cascade	139.6	3.58													1.43	1.43	2.87		0.72		0.72					
	Pool	485.0	29.28						12.58	12.58					0.82	2.47	12.37	15.67		0.62	0.21	0.82			0.21		0.21
	Riffle	3911.3	8.08						0.41	0.41					1.12	1.20	2.84	5.16						0.38	2.02	0.10	2.51
	Run/Glide	2009.2	12.69						1.00	1.00					0.70	4.28	6.17	11.15		0.15	0.20	0.35			0.10	0.10	0.20
	All Habitats	6750.5	13.54						3.98	3.98					0.92	2.25	4.68	7.85		0.10	0.07	0.18		0.22	1.21	0.09	1.53
NFK 1.190.10	Backwater/Slough	68.9	2.90																						2.90		2.90
	Beaver Complex	1575.0	0.70		0.63	0.63										0.06		0.06									
	Cascade	92.0	8.70												3.26	3.26	2.17	8.70									
	Pool	1342.0	11.70		0.15	0.15			0.07	0.07					2.09	3.43	2.46	7.97		0.22	1.49	1.71		0.30	1.34	0.15	1.79
	Riffle	1999.8	10.05												1.00	2.65	2.25	5.90		0.65	0.30	0.95		0.30	2.60	0.30	3.20
	Run/Glide	1804.1	14.63		0.06	0.06									1.94	3.77	3.10	8.81			0.55	0.55		0.17	4.38	0.67	5.21
	All Habitats	6881.8	9.34		0.19	0.19			0.01	0.01					1.25	2.48	1.98	5.71		0.23	0.52	0.76		0.19	2.19	0.29	2.67
NFK 1.190.10.03	Riffle	58.3	6.86		5.15	5.15										1.72		1.72									
	Pool	43.2	25.46		20.83	20.83										4.63		4.63									
	Riffle	14.8	27.03													13.51		13.51							13.51		13.51
	Run/Glide	94.6	3.17																					1.06	2.11		3.17
	All Habitats	210.9	10.43		5.69	5.69										2.37		2.37						0.47	1.90		2.37
NFK 1.190.10.20	Backwater/Slough	47.2	0																								
	Cascade	3.8	0																								
	Pool	56.5	0																								
	Riffle	177.6	0																								
	Run/Glide	103.0	0																								
	Wetland	520.0	0																								
	All Habitats	908.1	0																								
NFK 1.190.10.25	Backwater/Slough	8.4	0																								
	Riffle	1.0	0																								
	Run/Glide	6.6	0																								
	All Habitats	16.0	0																								
NFK 1.190.10.30	Backwater/Slough	8.6	0																								
	Pond/Lake	404.2	0																								
	Pool	70.7	2.83													1.41		1.41							1.41		1.41
	Riffle	11.9	0																								
	Run/Glide	100.5	7.96													1.99		1.99							5.97		5.97
	All Habitats	595.9	1.68													0.50		0.50							1.17		1.17
NFK 1.190.10.40	Pool	34.5	26.09																						26.09		26.09
	Riffle	129.2	27.09													5.42		5.42							21.67		21.67
	Run/Glide	58.3	25.73													3.43		3.43							22.30		22.30
	All Habitats	222.0	26.58													4.05		4.05							22.52		22.52

Table B.3-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon			Chum Salmon	Coho Salmon			Sockeye Salmon			Arctic Grayling	Dolly Varden				Rainbow Trout				White -fish	Sculpin			
				Adult	Juv-enile	Total	Adult	Adult	Juv-enile	Total	Adult	Juv-enile	Total	Adult	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Adult	Juv-enile	Juv-enile/ Adult[a]	Total
NFK 1.190.10.40.10	Backwater/Slough	1.7	0																								
	Cascade	4.2	0																								
	Pool	7.8	25.64													25.64		25.64									
	Riffle	147.5	8.81												0.68	2.03		2.71						0.68	5.42		6.10
	Run/Glide	7.7	0																								
	All Habitats	168.9	8.88												0.59	2.96		3.55						0.59	4.74		5.33
NFK 1.190.10.40.15	Riffle	15.8	6.33																						6.33		6.33
	All Habitats	15.8	6.33																						6.33		6.33
NFK 1.190.10.60	Run/Glide	16.0	6.25																						6.25		6.25
	All Habitats	16.0	6.25																						6.25		6.25
NFK 1.190.20	Backwater/Slough	32.4	9.26																						9.26		9.26
	Beaver Complex	5425.0	0.17																						0.17		0.17
	Pond/Lake	198.0	2.02													0.51		0.51							1.52		1.52
	Pool	44.4	11.26													2.25		2.25							9.01		9.01
	Riffle	190.0	31.58													0.53		0.53						5.26	25.79		31.05
	Run/Glide	100.2	25.95													1.00		1.00						3.99	20.96		24.95
	Wetland	161.2	4.34																					0.62	3.72		4.34
	All Habitats	6151.2	1.85													0.07		0.07						0.24	1.54		1.79
NFK 1.190.20.10	Cascade	14.7	0																								
	Riffle	54.4	29.41																						29.41		29.41
	Run/Glide	3.8	184.21																					26.32	157.89		184.21
	All Habitats	72.9	31.55																					1.37	30.18		31.55
NFK 1.190.25	Cascade	7.7	12.99																					12.99			12.99
	Pool	22.7	0																								
	Riffle	66.0	0																								
	Run/Glide	48.1	0																								
	All Habitats	144.5	0.69																					0.69			0.69
NFK 1.190.30	Cascade	41.4	4.83																	2.42		2.42		2.42			2.42
	Pool	142.9	10.50		0.70	0.70			0.70	0.70					0.70	4.20		4.90		0.70		0.70		0.70	2.80		3.50
	Riffle	417.3	6.23													1.92		1.92		0.72		0.72		0.96	2.64		3.59
	Run/Glide	220.0	15.91		0.91	0.91			0.91	0.91						4.09		4.09		0.91		0.91		2.27	6.82		9.09
	All Habitats	821.6	9.49		0.37	0.37			0.37	0.37					0.12	2.80		2.92		0.85		0.85		1.34	3.65		4.99
NFK 1.190.40	Backwater/Slough	28.5	14.04						10.53	10.53						3.51		3.51									
	Beaver Complex	184.0	4.35													0.54		0.54						3.26	0.54		3.80
	Cascade	5.9	84.75						16.95	16.95															67.80		67.80
	Pool	81.7	58.75						24.48	24.48						15.91		15.91						1.22	17.14		18.36
	Riffle	516.8	25.54						1.16	1.16					0.19	9.67		9.87						2.13	12.38		14.51
	Run/Glide	60.4	59.60						31.46	31.46						13.25		13.25						3.31	11.59		14.90
	All Habitats	877.3	26.56						5.59	5.59					0.11	8.32		8.43						2.28	10.26		12.54
NFK 1.190.40.10	Cascade	41.0	4.88													2.44		2.44						2.44			2.44
	Pool	36.1	2.77																	2.77		2.77					
	Riffle	273.4	6.58													2.19		2.19						2.19	2.19		4.39
	Run/Glide	32.5	9.23													9.23		9.23									
	All Habitats	383.0	6.27													2.61		2.61		0.26		0.26		1.83	1.57		3.39

Table B.3-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon			Chum Salmon	Coho Salmon			Sockeye Salmon			Arctic Grayling	Dolly Varden				Rainbow Trout				White -fish	Sculpin			
				Adult	Juv-enile	Total	Adult	Adult	Juv-enile	Total	Adult	Juv-enile	Total	Adult	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Adult	Juv-enile	Juv-enile/ Adult[a]	Total
NFK 1.190.40.10.10	Cascade	9.5	0																								
	Pool	9.6	0																								
	Riffle	26.6	0																								
	Run/Glide	18.8	0																								
	Wetland	345.6	0																								
	All Habitats	410.1	0																								
NFK 1.190.40.10.10.10	Cascade	9.7	0																								
	Pool	14.4	0																								
	Riffle	66.9	0																								
	Run/Glide	11.2	0																								
	Wetland	280.2	0																								
	All Habitats	382.4	0																								
NFK 1.190.40.10.10.20	Riffle	6.0	0																								
	All Habitats	6.0	0																								
NFK 1.190.50	Backwater/Slough	5.5	0																								
	Cascade	41.6	19.23													19.23		19.23									
	Pool	17.6	34.09													11.36		11.36						17.05	5.68		22.73
	Riffle	256.0	7.03												0.39	6.25		6.64							0.39		0.39
	Run/Glide	50.2	3.98													3.98		3.98									
	All Habitats	370.9	9.17												0.27	7.55		7.82						0.81	0.54		1.35
NFK 1.190.50.10	Cascade	11.9	0																								
	Riffle	30.0	3.33													3.33		3.33									
	All Habitats	41.9	2.39													2.39		2.39									
NFK 1.190.50.15	Riffle	7.7	0																								
	Run/Glide	2.5	0																								
	All Habitats	10.2	0																								
NFK 1.190.70	Backwater/Slough	3.6	55.56													27.78		27.78		27.78		27.78					
	Cascade	13.0	30.77																					7.69	23.08		30.77
	Pool	4.2	47.62													23.81		23.81		23.81		23.81					
	Riffle	159.5	11.29													0.63		0.63		2.51		2.51		4.39	3.76		8.15
	Run/Glide	8.8	34.09													11.36		11.36		22.73		22.73					
	All Habitats	189.1	15.34													2.12		2.12		4.23		4.23		4.23	4.76		8.99
NFK 1.190.75	Backwater/Slough	6.2	0																								
	Pool	4.4	45.45																					45.45			45.45
	Riffle	244.0	1.23													0.82		0.82		0.41		0.41					
	All Habitats	254.6	1.96													0.79		0.79		0.39		0.39		0.79			0.79
NFK 1.190.80	Cascade	34.5	0																								
	Riffle	11.2	0																								
	All Habitats	45.7	0																								

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

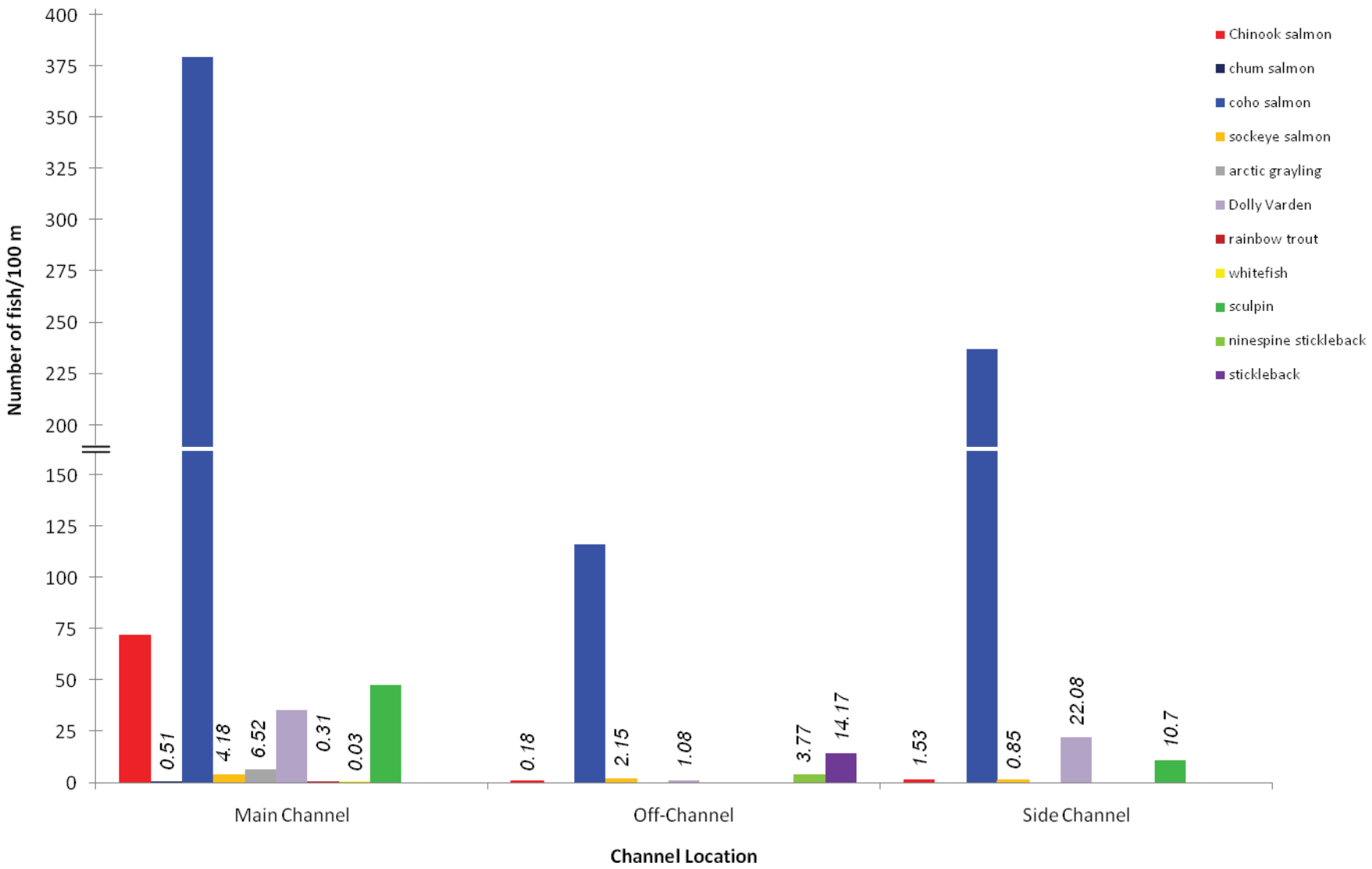


Figure B.3-10.
2008 fish abundance by channel location within NFK-C.

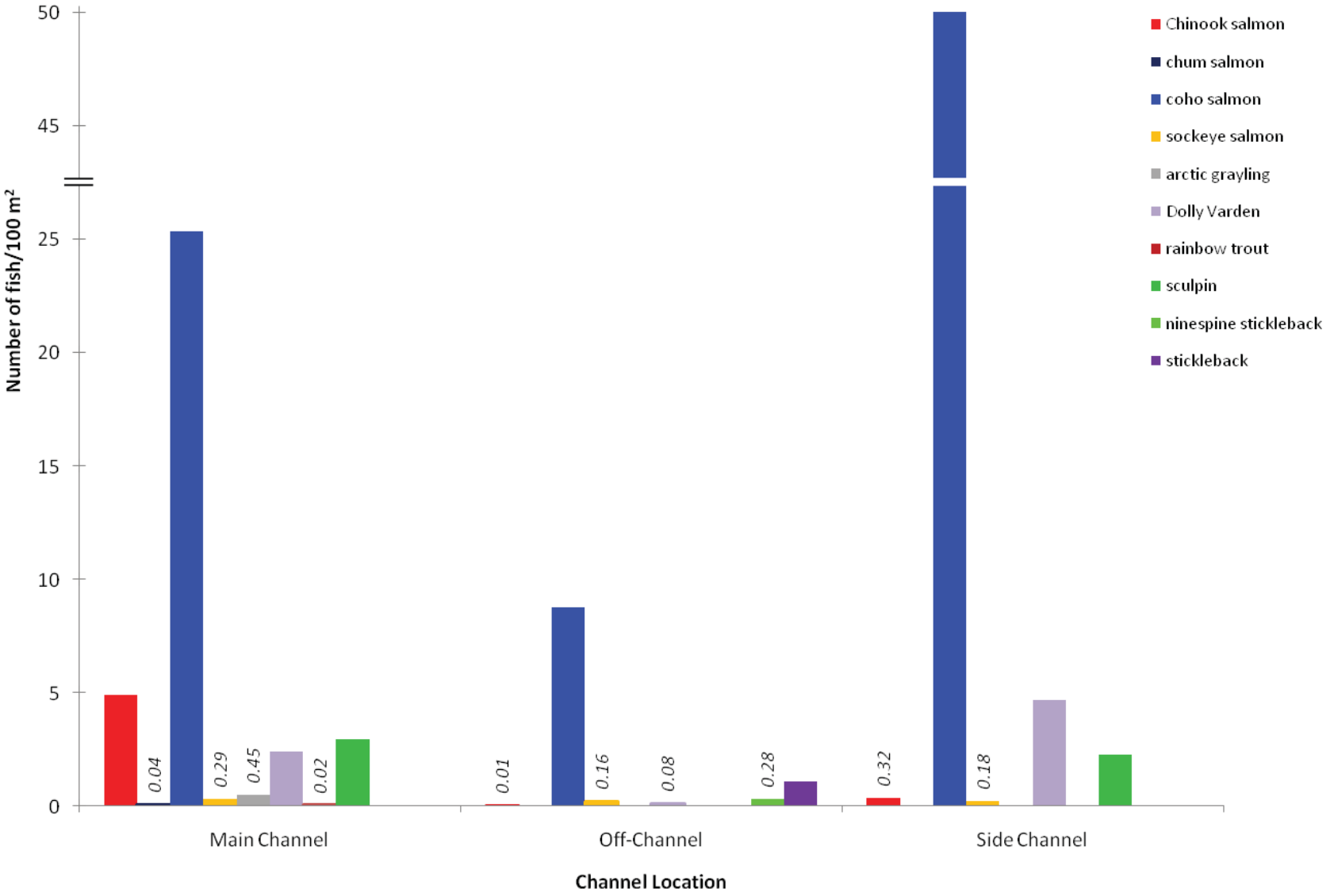


Figure B.3-11.
2008 fish density by channel location within NFK-C.

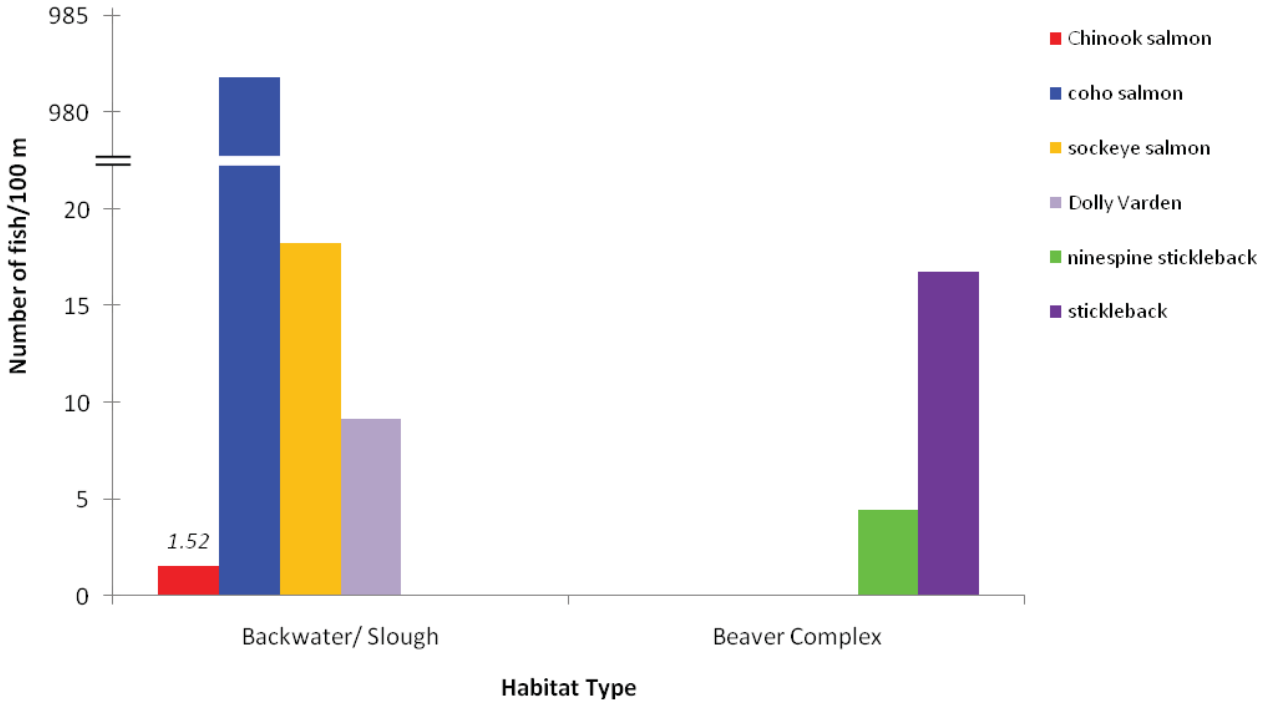


Figure B.3-12.
2008 fish abundance in NFK-C off-channel habitats.

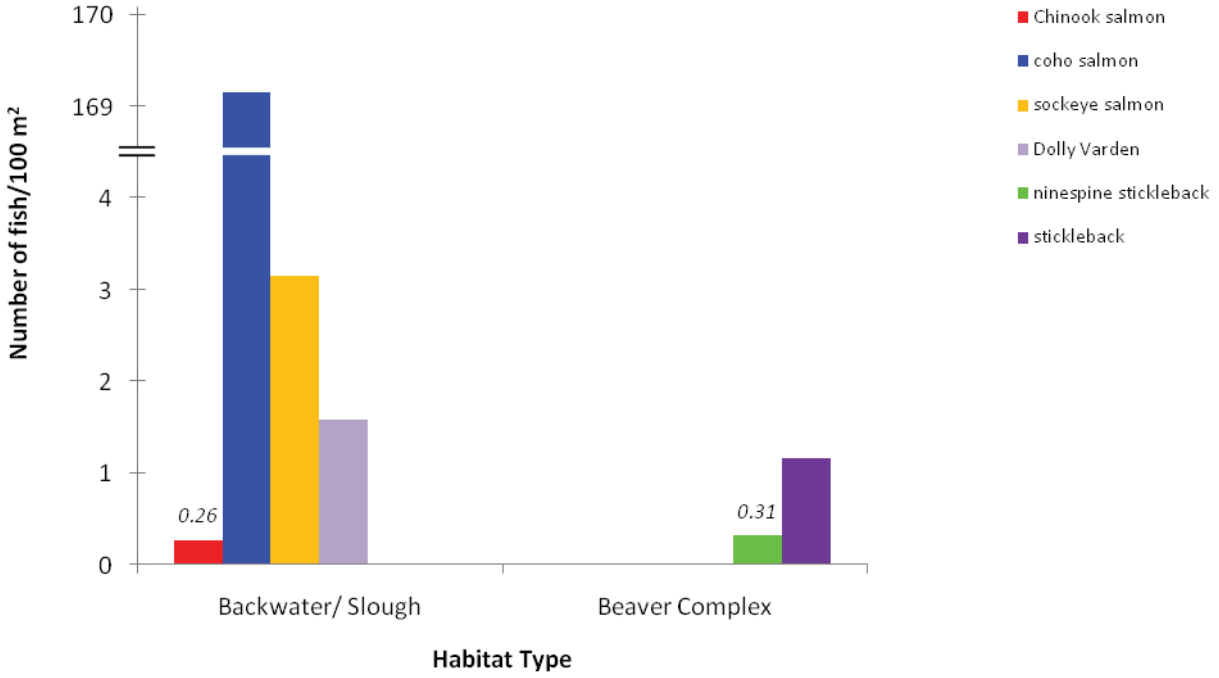


Figure B.3-13.
2008 fish density in NFK-C off-channel habitats.

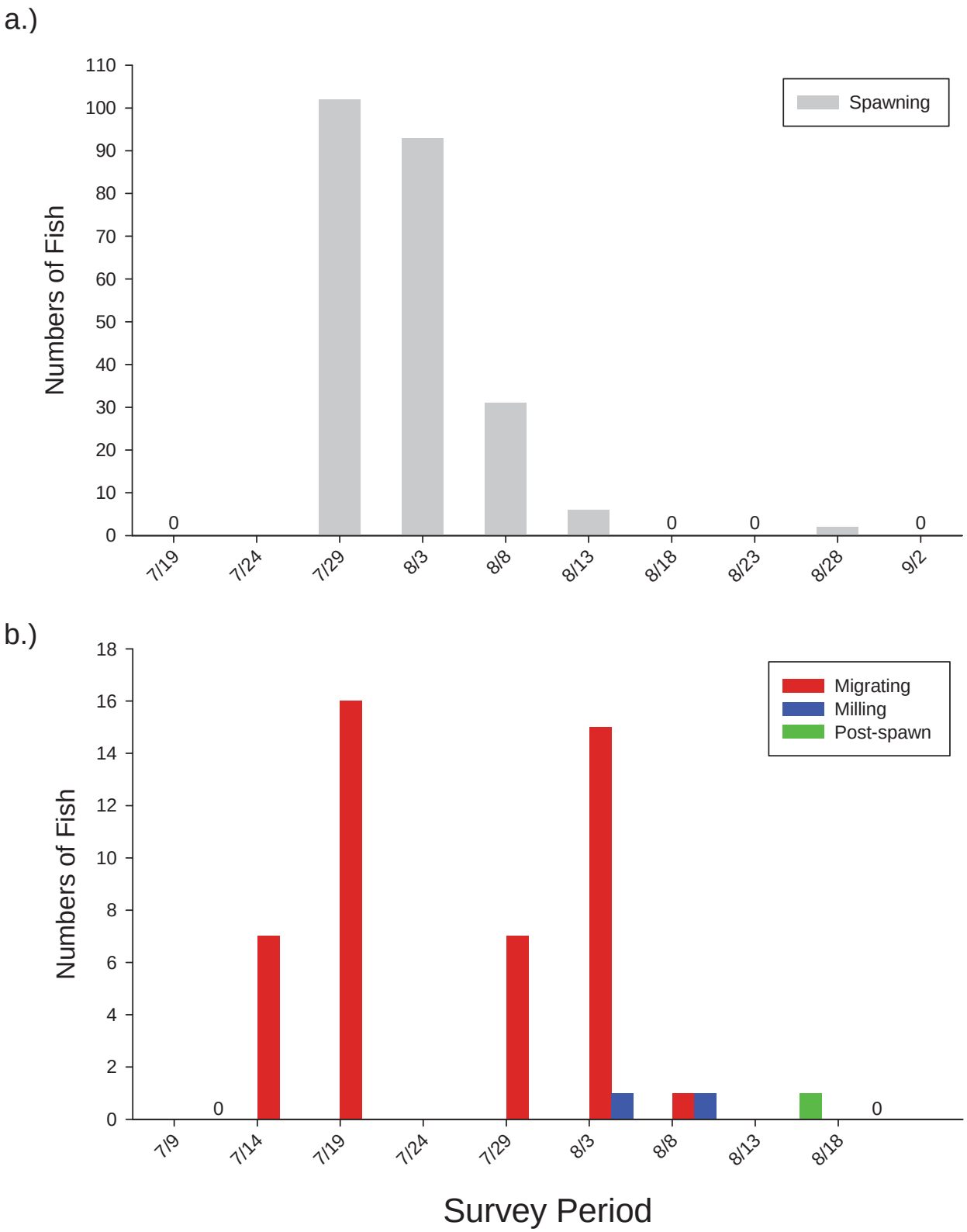


Figure B.3-18.
Observations of Chinook salmon during 2008 aerial surveys in NFK-C. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

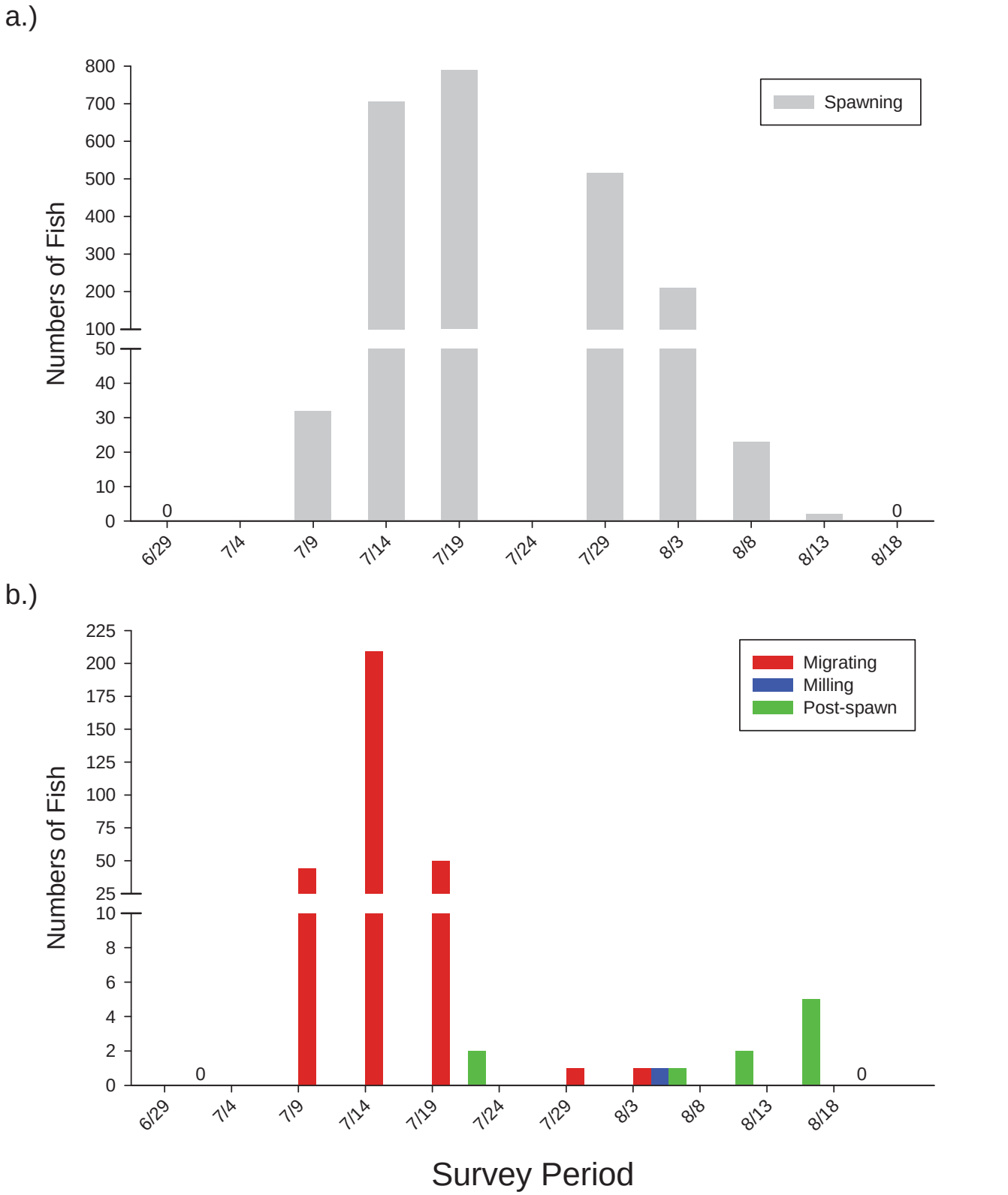


Figure B.3-19.
Observations of chum salmon during 2008 aerial surveys in NFK-C. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

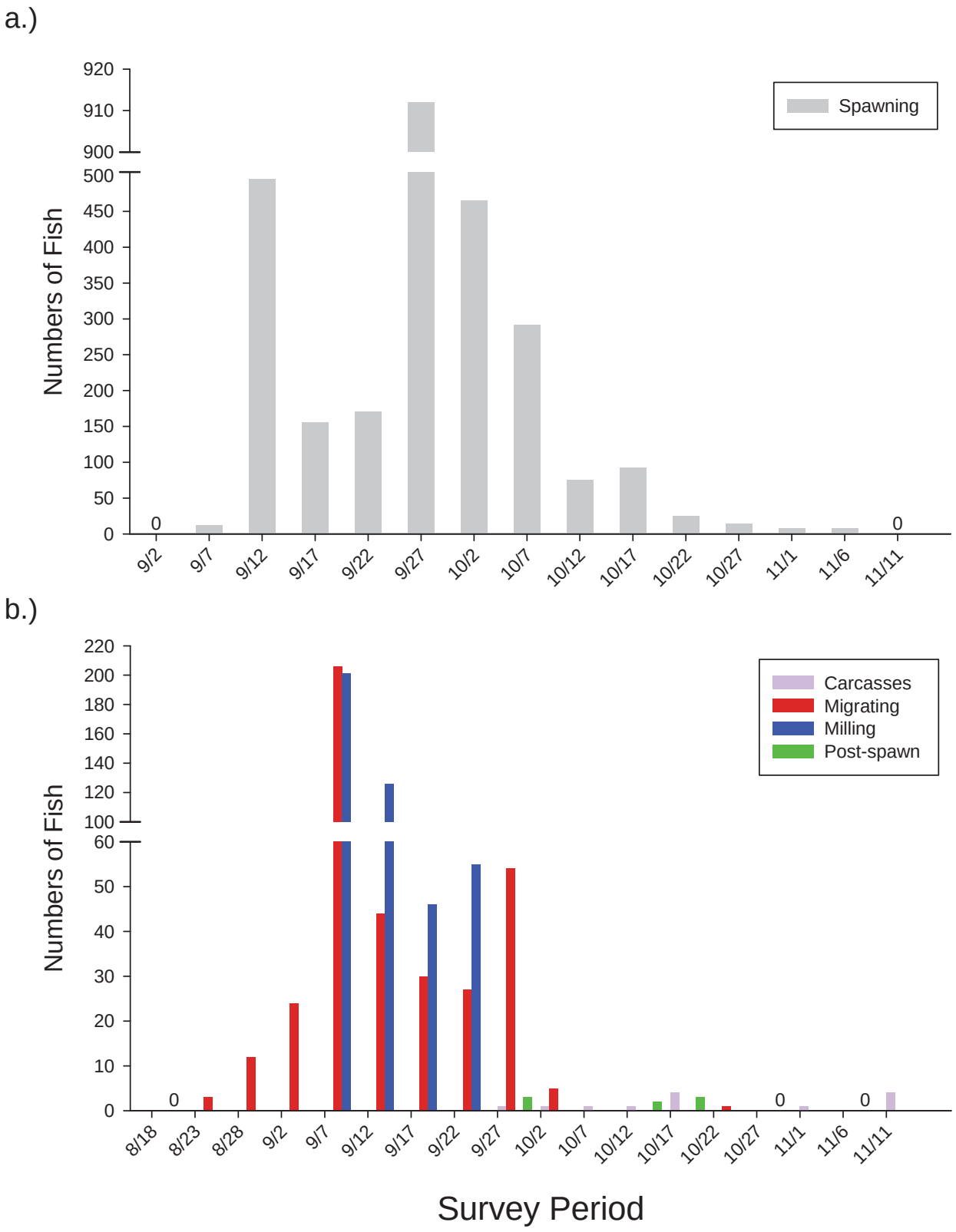
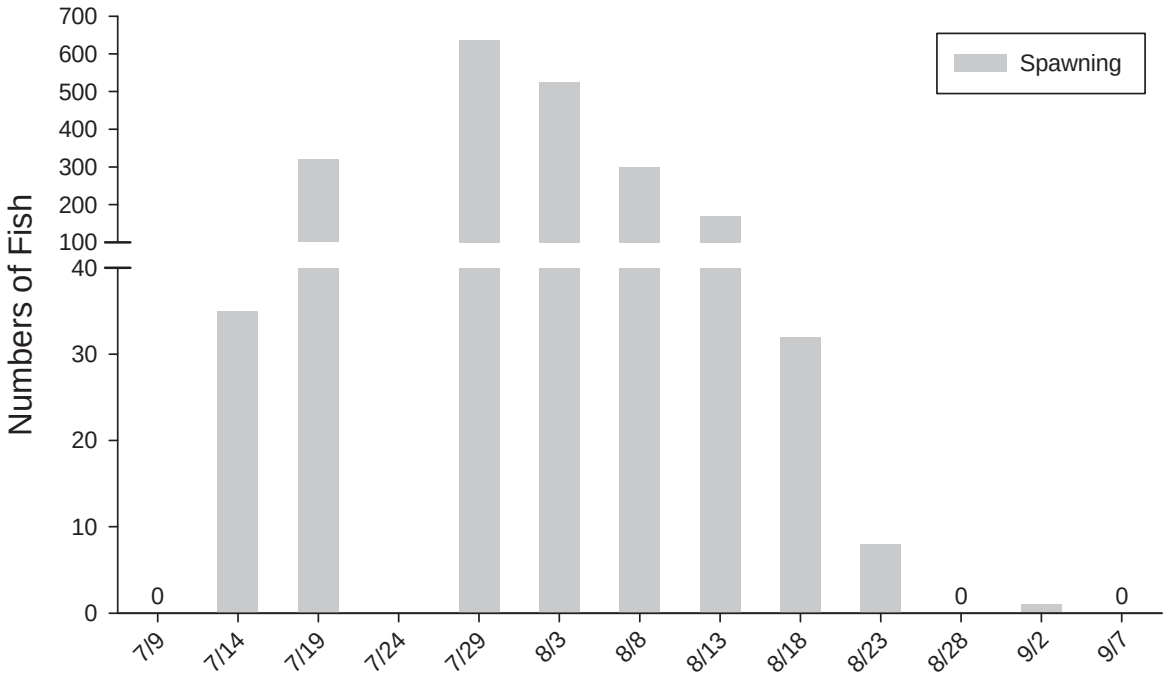


Figure B.3-20.
Observations of coho salmon during 2008 aerial surveys in NFK-C. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

a.)



b.)

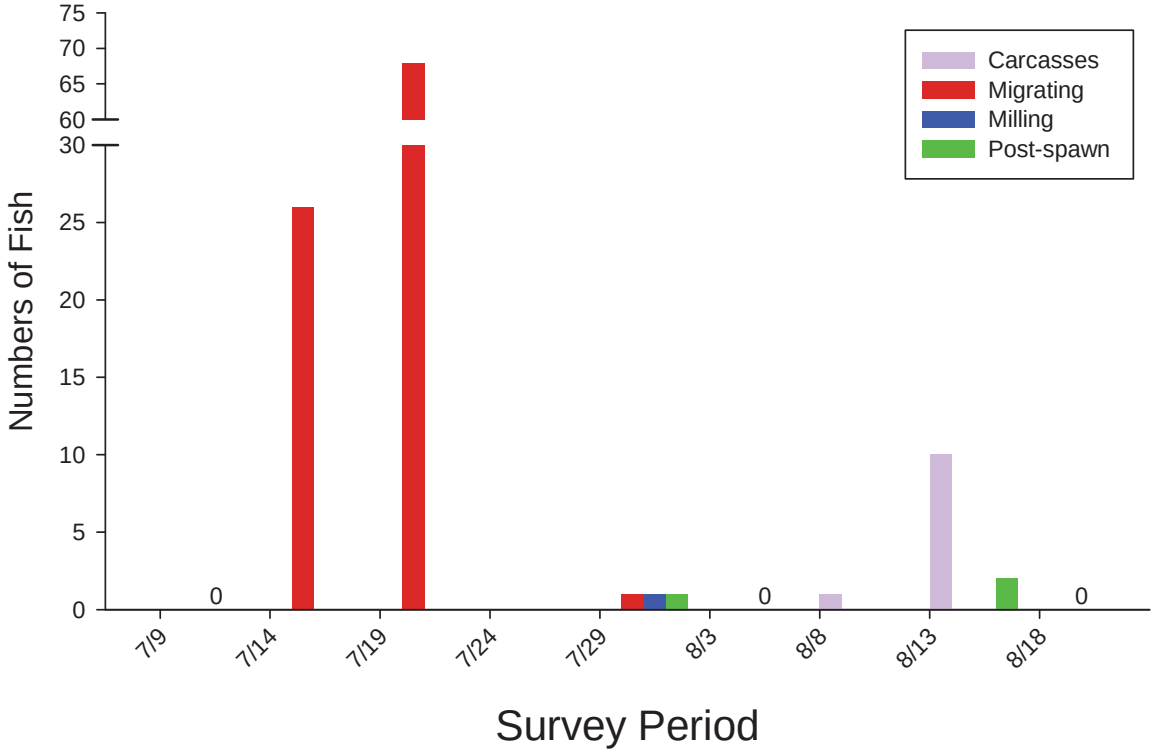


Figure B.3-21.
Observations of sockeye salmon during 2008 aerial surveys in NFK-C. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.3-9.
NFK-C fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/9/2004	NFK04WT-13	coho salmon	minnow trap		24		1		1	
		Dolly Varden	minnow trap		24		2		2	
		sculpin sp.	minnow trap		24	1	1		2	
	NFK04WT-14	coho salmon	minnow trap		24		10		10	
		Dolly Varden	minnow trap		24		6		6	
	NFK04WT-15	Chinook salmon	minnow trap		24		1		1	
		coho salmon	minnow trap		24		3		3	
		Dolly Varden	minnow trap		24		1		1	
4/14/2004	NFK04WT-04	Dolly Varden	minnow trap		24		2		2	
	NFK04WT-06	Dolly Varden	minnow trap		24		1		1	
		sculpin sp.	minnow trap		24		3		3	
	NFK04WT-07	coho salmon	minnow trap		24		2		2	
		Dolly Varden	minnow trap		24		2		2	
		sculpin sp.	visual observation					1	1	
	NFK04WT-09	sculpin sp.	minnow trap		24	1			1	
4/1/2005	NFK05WT-05	sculpin sp.	minnow trap		3			1	1	
4/6/2006	NFK06WT-02	Chinook salmon	minnow trap		20		1		1	
		coho salmon	minnow trap		20		1		1	
	NFK06WT-04	sculpin sp.	minnow trap		21			1	1	

Table B.3-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/7/2006	NFK06WT-02	Chinook salmon	electrofishing	40			17		17	42.5
		chum salmon	electrofishing	40			11		11	27.5
		sockeye salmon	electrofishing	40			13		13	32.5
	NFK06WT-03	Chinook salmon	electrofishing	50			4		4	8.0
		coho salmon	electrofishing	50			1		1	2.0
		sockeye salmon	electrofishing	50			35		35	70.0
	NFK06WT-04	Chinook salmon	electrofishing	20			1		1	5.0
		chum salmon	electrofishing	20			1		1	5.0
		coho salmon	electrofishing	20			4		4	20.0
		sockeye salmon	electrofishing	20			2		2	10.0
		Dolly Varden	electrofishing	20			6		6	30.0
4/7/2006	NFK06WT-05	Chinook salmon	electrofishing				5		5	
		chum salmon	electrofishing				3		3	
		sockeye salmon	electrofishing				43		43	

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

Table B.3-10.
2008 fish observations by method at mainstem index sites located within NFK-C.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
NFK21.65	Chinook salmon	snorkel		2		2
	coho salmon	snorkel		5		5
	arctic grayling	beach seine	1			1
	Dolly Varden	snorkel			1	1
	sculpin sp.	beach seine		1		1
		snorkel			13	13
NFK21.65 Total			**1**	**8**	**14**	**23**
NFK25.98	Chinook salmon	snorkel		12		12
	coho salmon	beach seine		1		1
		snorkel		121		121
	arctic grayling	beach seine	1			1
	sculpin sp.	snorkel			1	1
NFK25.98 Total			**1**	**134**	**1**	**136**
NFK30.31	Chinook salmon	beach seine		1		1
		snorkel		3		3
	arctic grayling	beach seine		1		1
	sculpin sp.	beach seine		3		3
		snorkel			6	6
NFK30.31 Total				**8**	**6**	**14**
NFK34.64	coho salmon	snorkel		13		13
	arctic grayling	beach seine		1		1
		snorkel			2	2
	Dolly Varden	snorkel			1	1
	sculpin sp.	beach seine	1	1		2
		snorkel			6	6
NFK34.64 Total			**1**	**15**	**9**	**25**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

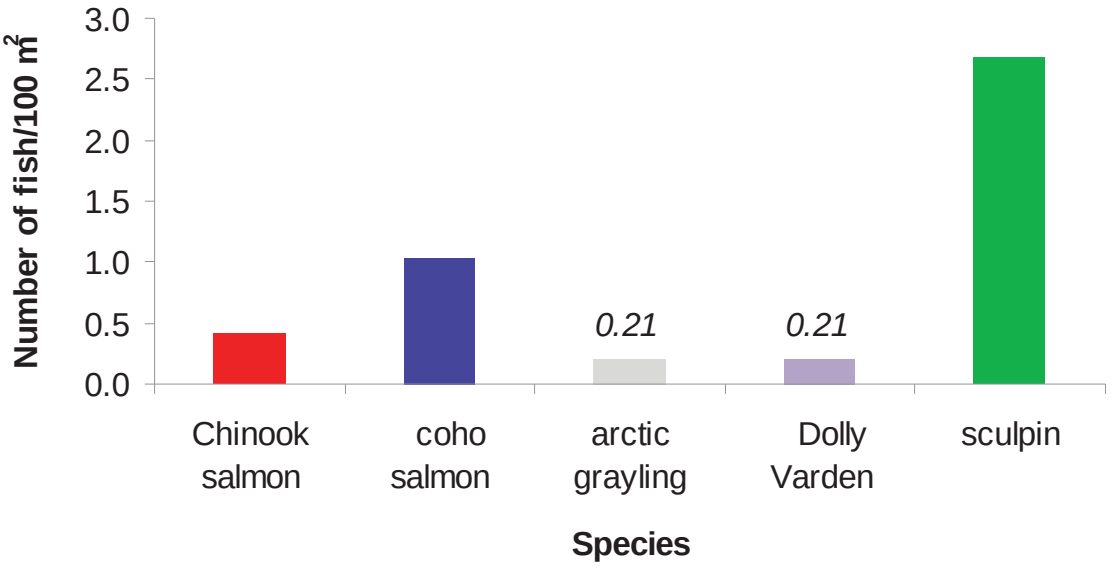


Figure B.3-23a.
2008 fish density in riffle habitat at mainstem index site (RKm 21.65) within NFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.

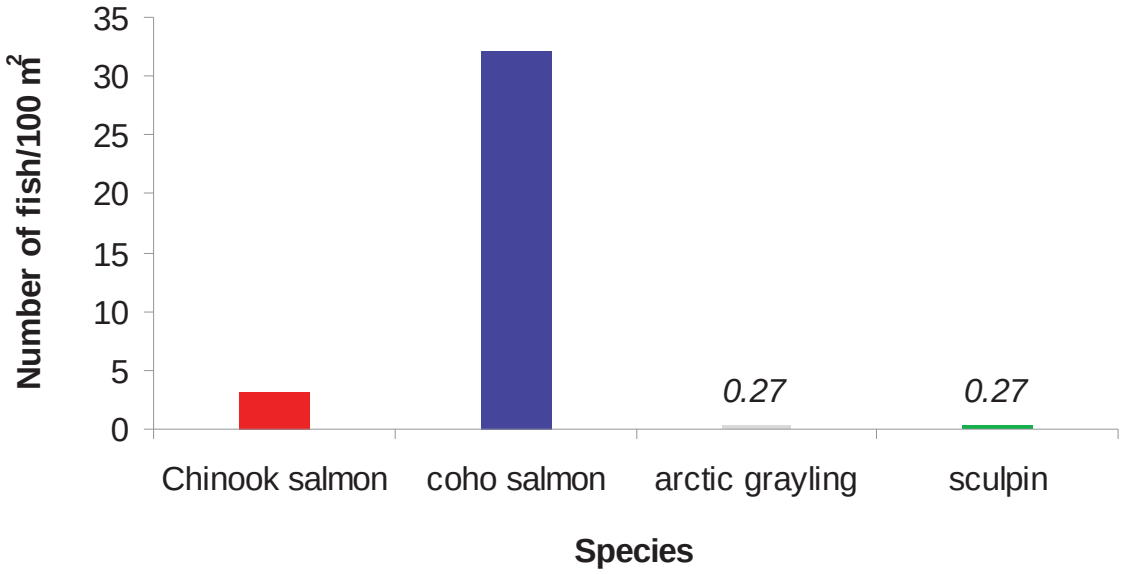


Figure B.3-23b.
2008 fish density in glide habitat at mainstem index site (RKm 25.98) within NFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.

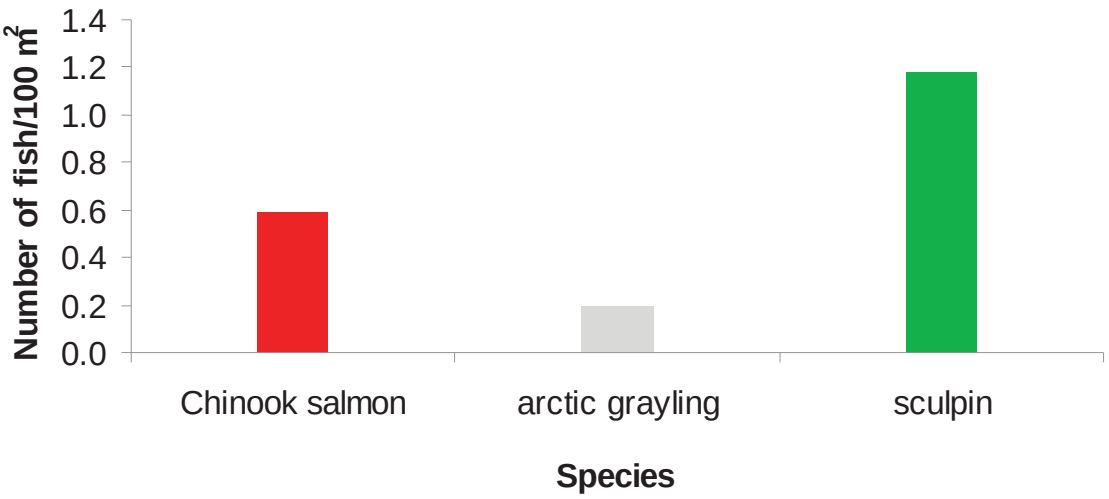


Figure B.3-23c.
2008 fish density in riffle habitat at mainstem index site (RKm 30.31) within NFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.

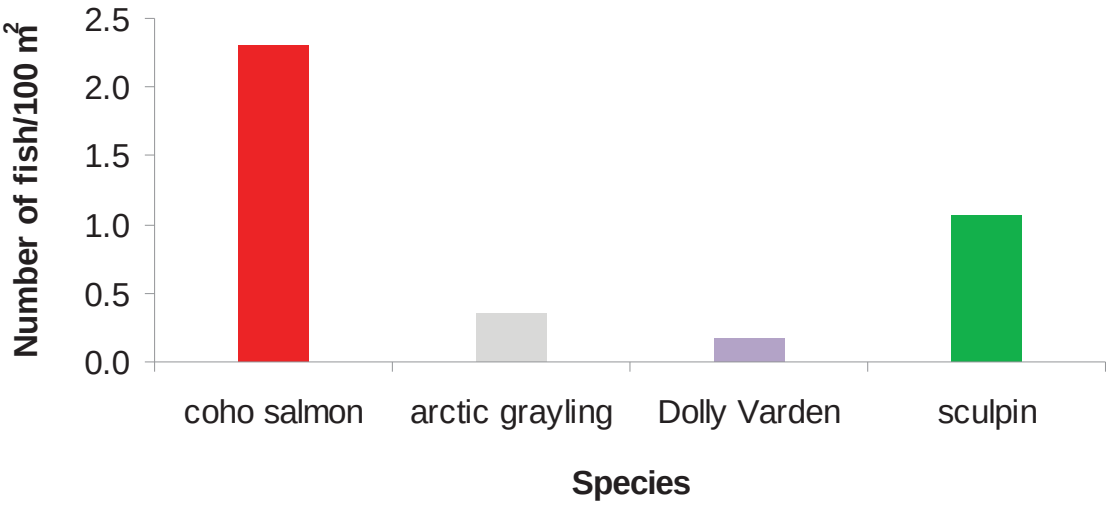
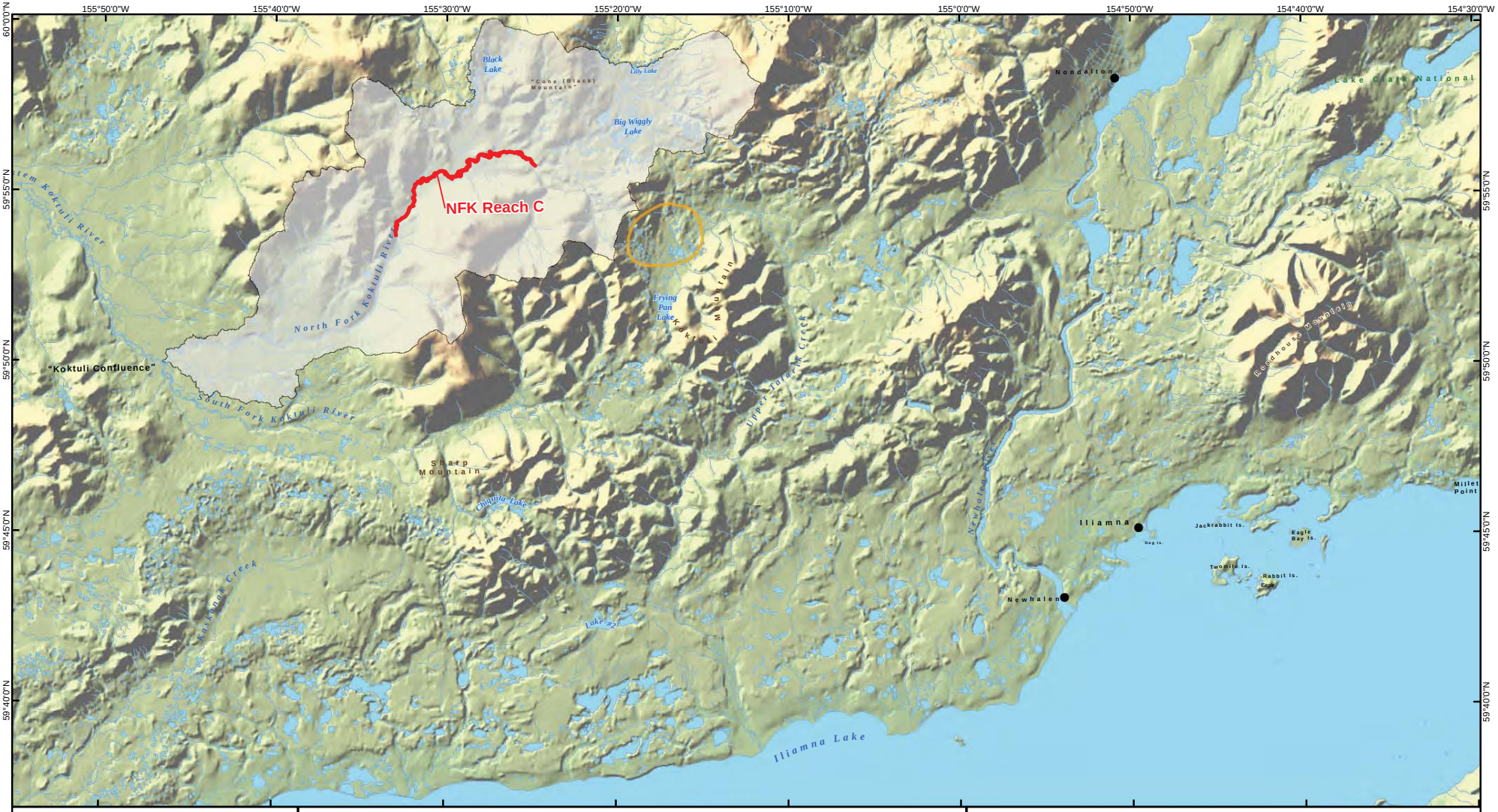
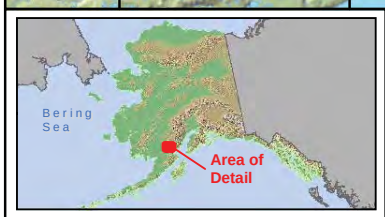


Figure B.3-23d.
2008 fish density in riffle habitat at mainstem index site (RKm 34.64) within NFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach NFK Reach C

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

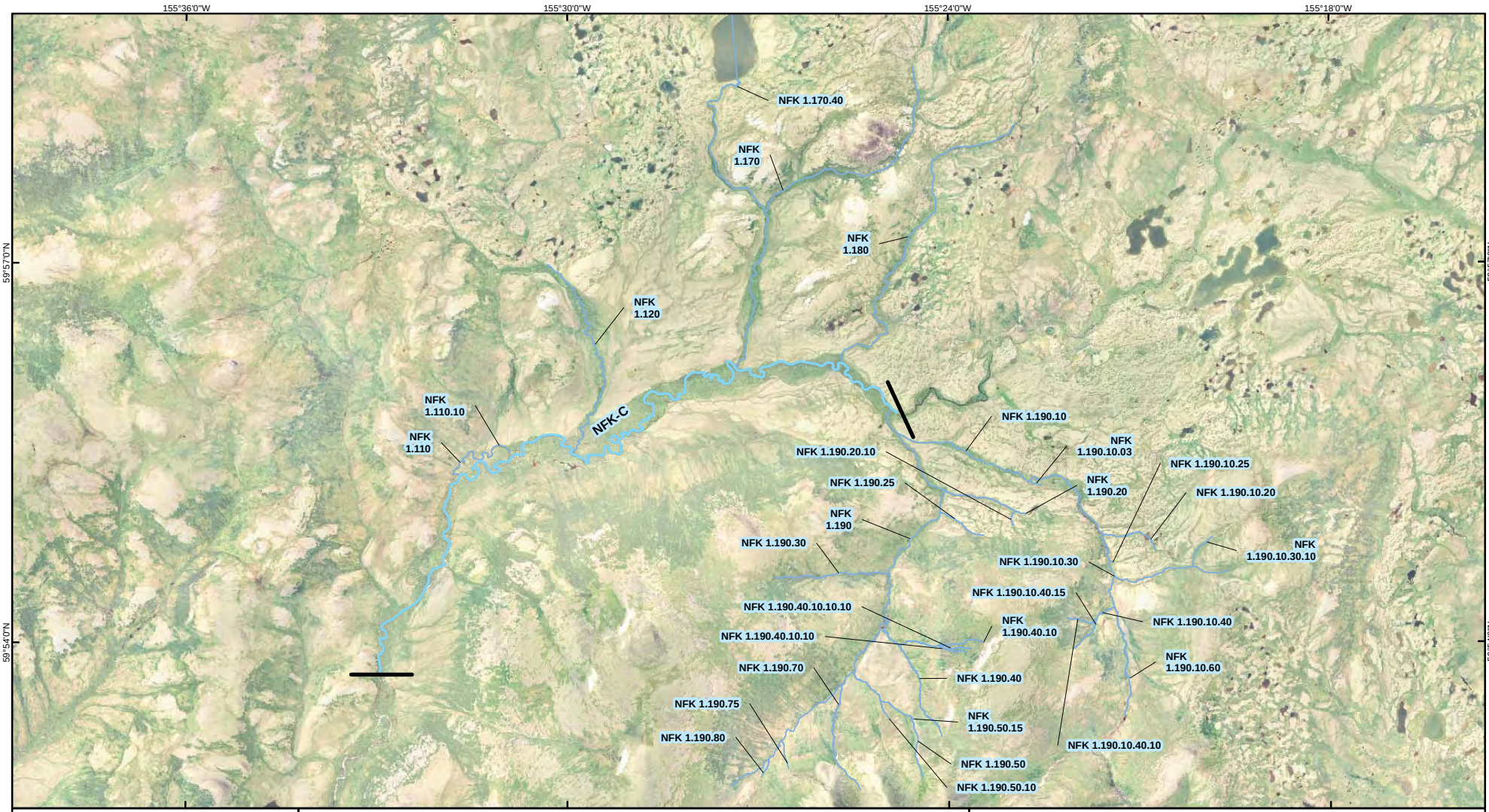
THE pebble PARTNERSHIP

Figure B.3-1a
Reach NFK-C

RDI_R2_OverviewLocator_NFK-C_Fig-B.3-1a_11x17L_3of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

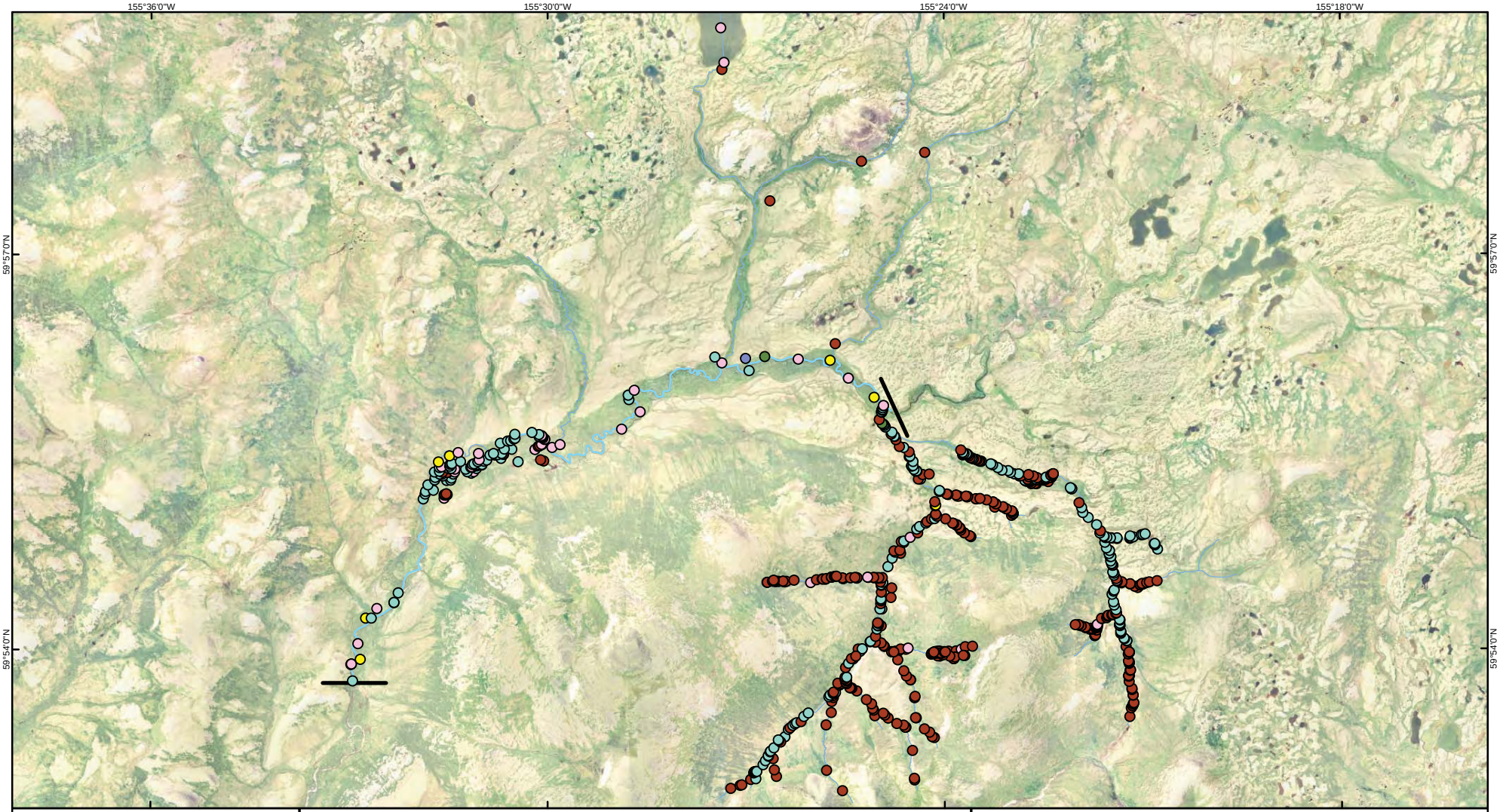
Miles: 0 1.1 2.2

Kilometers: 0 1.1 2.2

THE pebble PARTNERSHIP

Figure B.3-1b
NFK-C
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_NFK-C_Fig-B.3-1b_11x17L_3of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

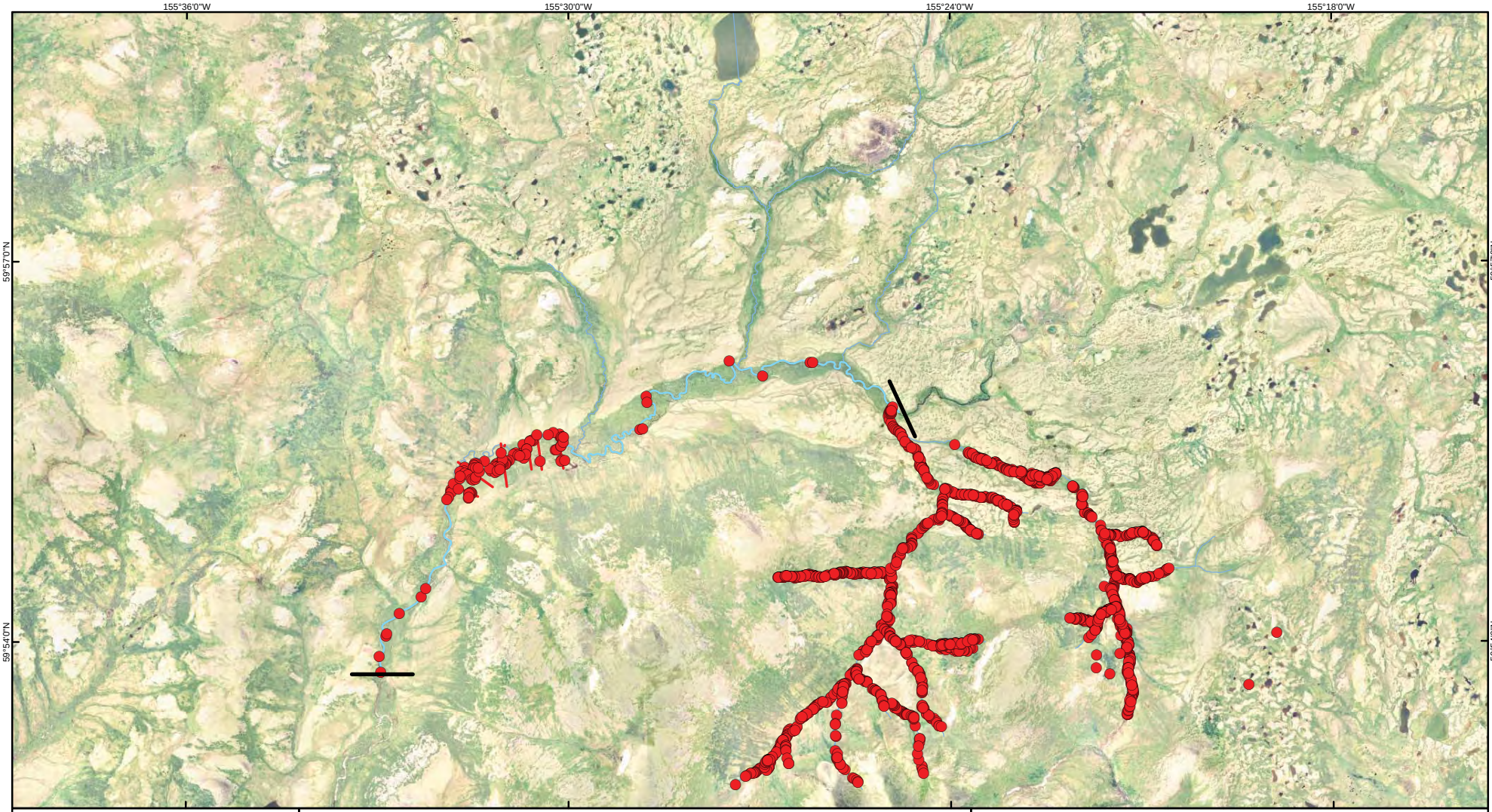
Miles: 0 1 2

Kilometers: 0 1 2

THE pebble PARTNERSHIP

Figure B.3-2
NFK-C
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_NFK-C_Fig-B.3-2_11x17L_3of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 1.1 2.2

Kilometers: 0 1.1 2.2

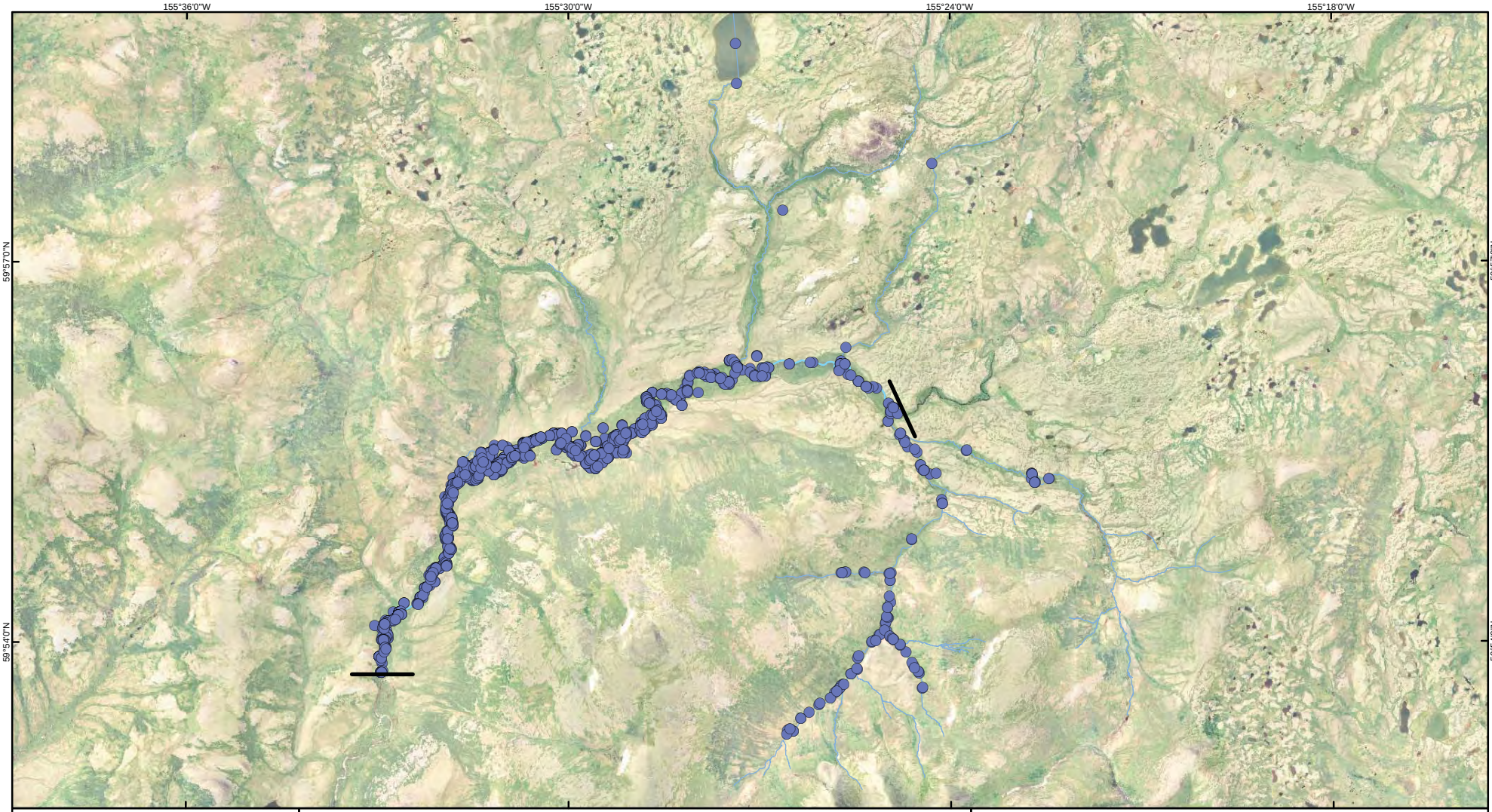
THE pebble PARTNERSHIP

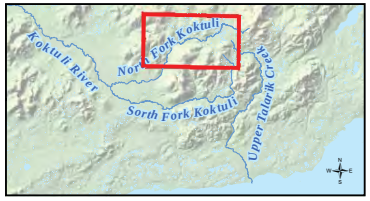
Figure B.3-3
NFK-C
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_NFK-C_Fig-B.3-3_11x17L_3of19_D02.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

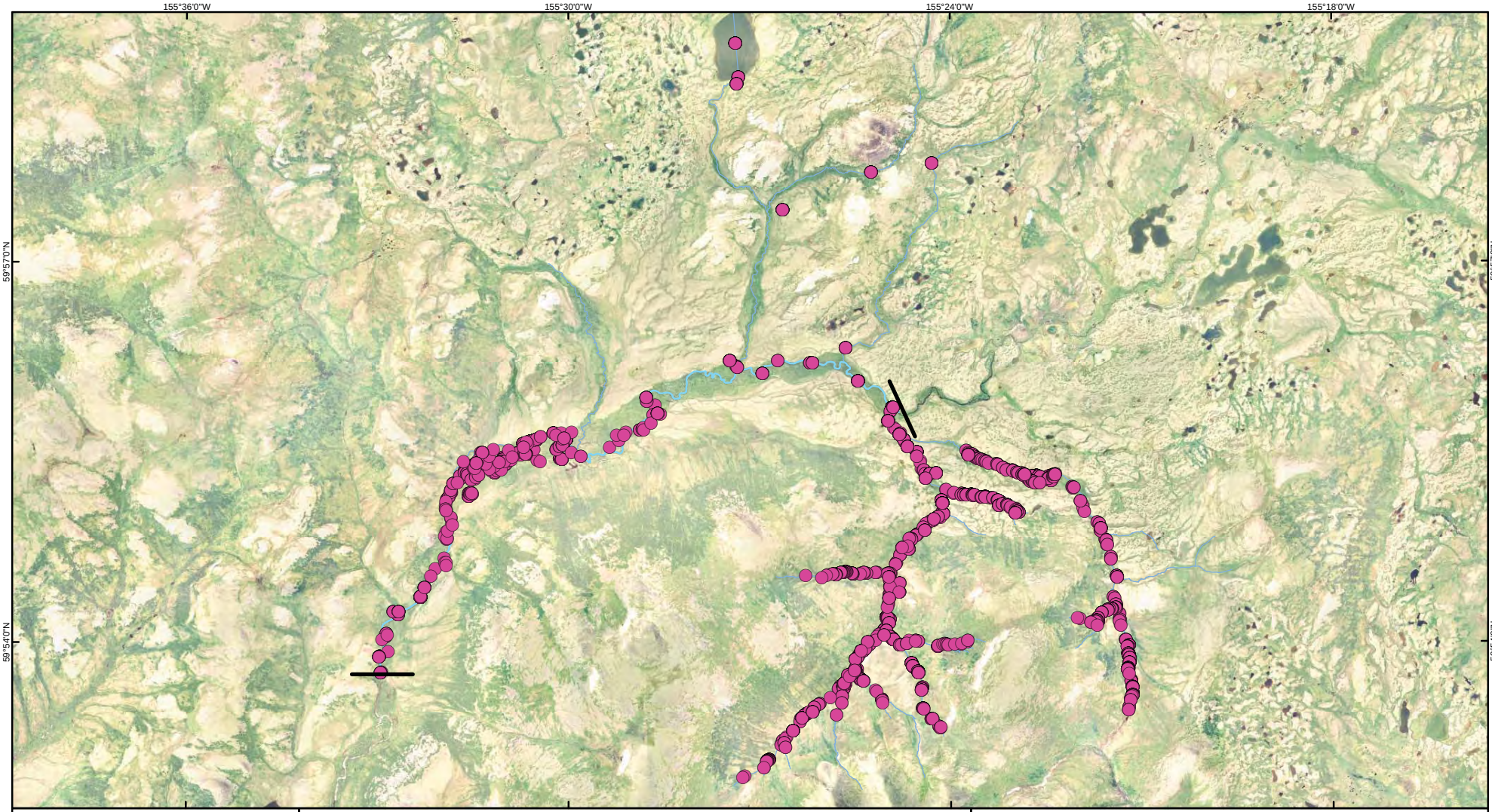
Miles: 0 — 1.1 — 2.2

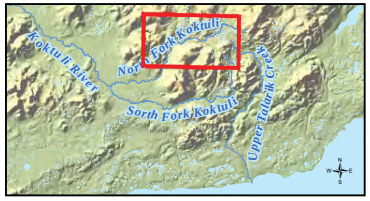
Kilometers: 0 — 1.1 — 2.2

THE pebble PARTNERSHIP

Figure B.3-4
NFK-C
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_NFK-C_Fig-B.3-4_11x17L_3of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

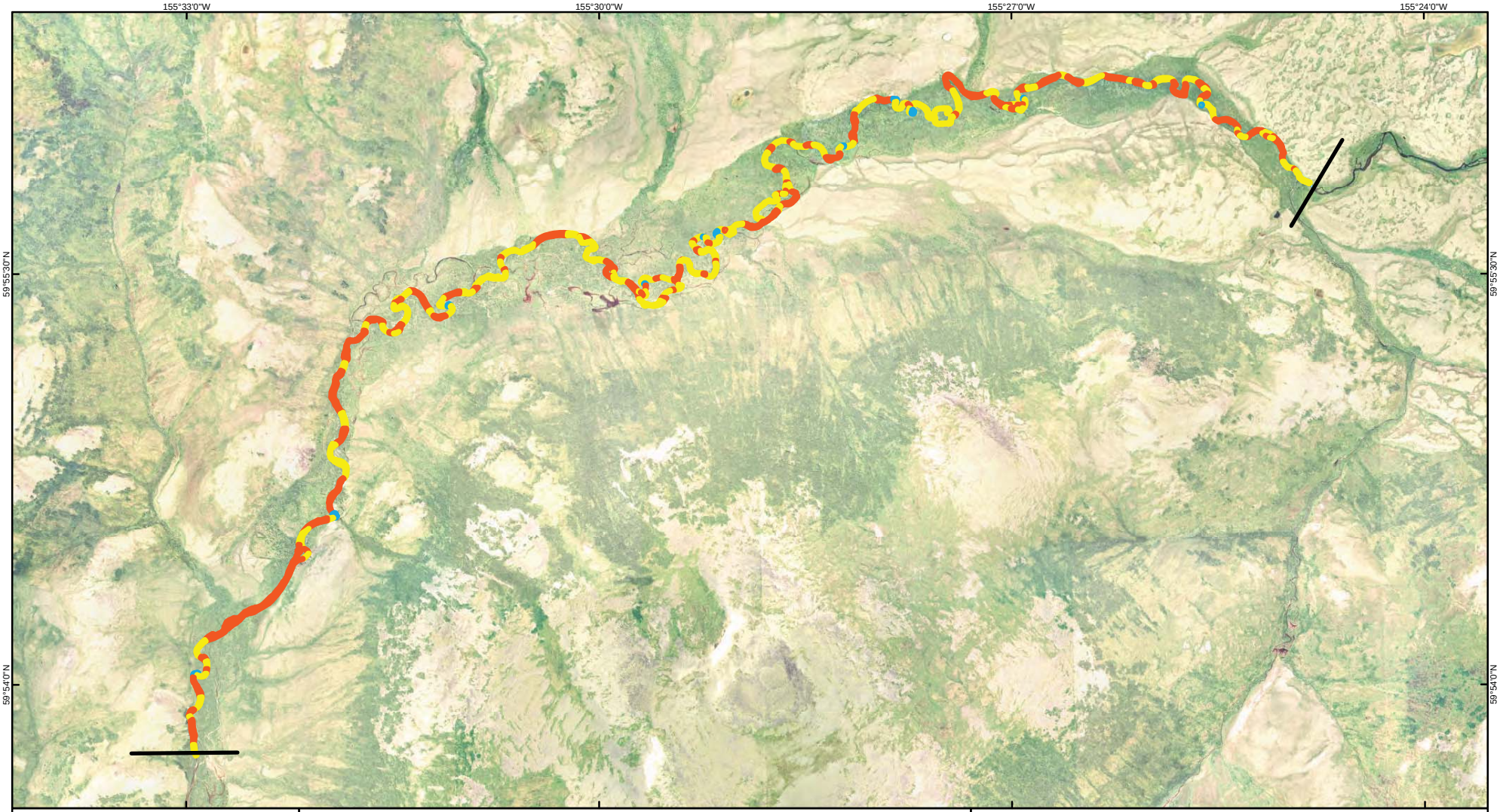
Miles: 0 — 1.1 — 2.2

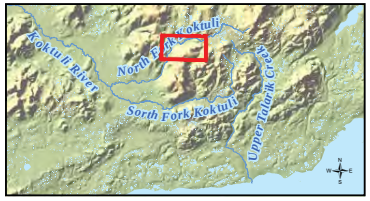
Kilometers: 0 — 1.1 — 2.2

THE pebble PARTNERSHIP

Figure B.3-5
NFK-C
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_NFK-C_Fig-B.3-5_11x17L_3of19_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

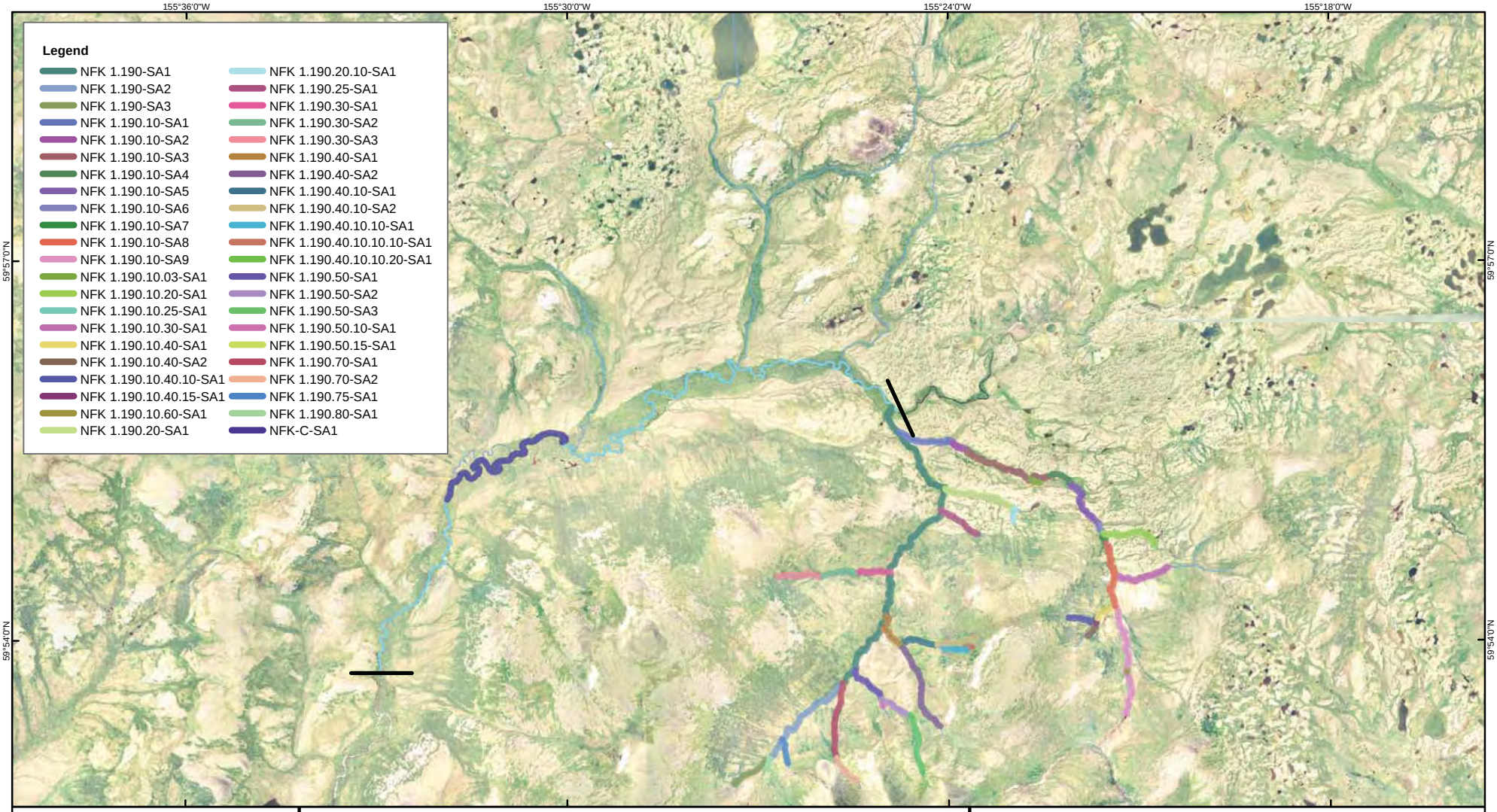
Miles: 0 0.5 1

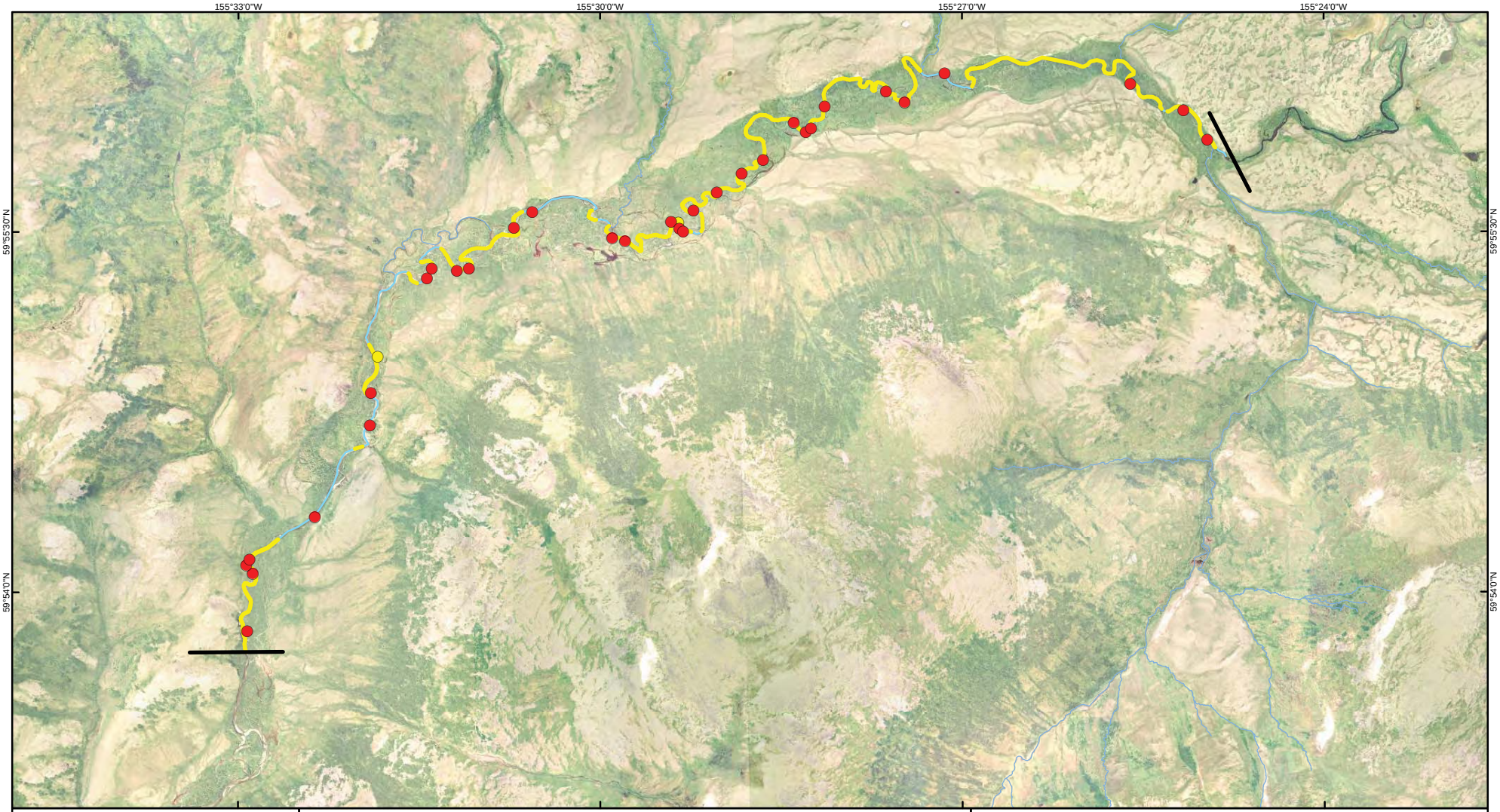
Kilometers: 0 0.5 1

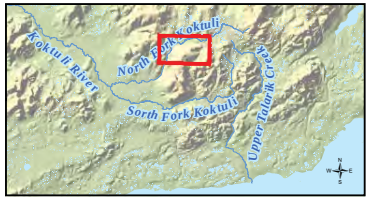
THE pebble PARTNERSHIP

Figure B.3-6
NFK-C
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_NFK-C_Fig-B.3-6_11x17L_3of19_D03.mxd	February 5, 2011
	Author: RDI - MRA


155°36'0"W
155°30'0"W
155°24'0"W
155°18'0"W
N,0.7°5'.69
N,0.4°5'.69
Legend
NFK 1.190-SA1
NFK 1.190-SA2
NFK 1.190-SA3
NFK 1.190.10-SA1
NFK 1.190.10-SA2
NFK 1.190.10-SA3
NFK 1.190.10-SA4
NFK 1.190.10-SA5
NFK 1.190.10-SA6
NFK 1.190.10-SA7
NFK 1.190.10-SA8
NFK 1.190.10-SA9
NFK 1.190.10.03-SA1
NFK 1.190.10.20-SA1
NFK 1.190.10.25-SA1
NFK 1.190.10.30-SA1
NFK 1.190.10.40-SA1
NFK 1.190.10.40-SA2
NFK 1.190.10.40.10-SA1
NFK 1.190.10.40.15-SA1
NFK 1.190.10.60-SA1
NFK 1.190.20-SA1
NFK 1.190.20.10-SA1
NFK 1.190.25-SA1
NFK 1.190.30-SA1
NFK 1.190.30-SA2
NFK 1.190.30-SA3
NFK 1.190.40-SA1
NFK 1.190.40-SA2
NFK 1.190.40.10-SA1
NFK 1.190.40.10-SA2
NFK 1.190.40.10.10-SA1
NFK 1.190.40.10.10.10-SA1
NFK 1.190.40.10.10.20-SA1
NFK 1.190.50-SA1
NFK 1.190.50-SA2
NFK 1.190.50-SA3
NFK 1.190.50.10-SA1
NFK 1.190.50.15-SA1
NFK 1.190.70-SA1
NFK 1.190.70-SA2
NFK 1.190.75-SA1
NFK 1.190.80-SA1
NFK-C-SA1
Kokuli River
North Fork Kokuli
South Fork Kokuli
Upper Talarik Creek
Legend
Mainstem Stream Reach
Tributary Streams
Reach Boundaries
Note: Some sample sites are visible only when viewing maps electronically at a finer scale
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
Miles
0
1.1
2.2
Kilometers
0
1.1
2.2
THE pebble PARTNERSHIP
Figure B.3-7
NFK-C
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas
RDI_R2_AquaticHabitatT3_NFK-C_Fig-B.3-7_11x17L_3of19_D02.mxd
January 14, 2011
Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

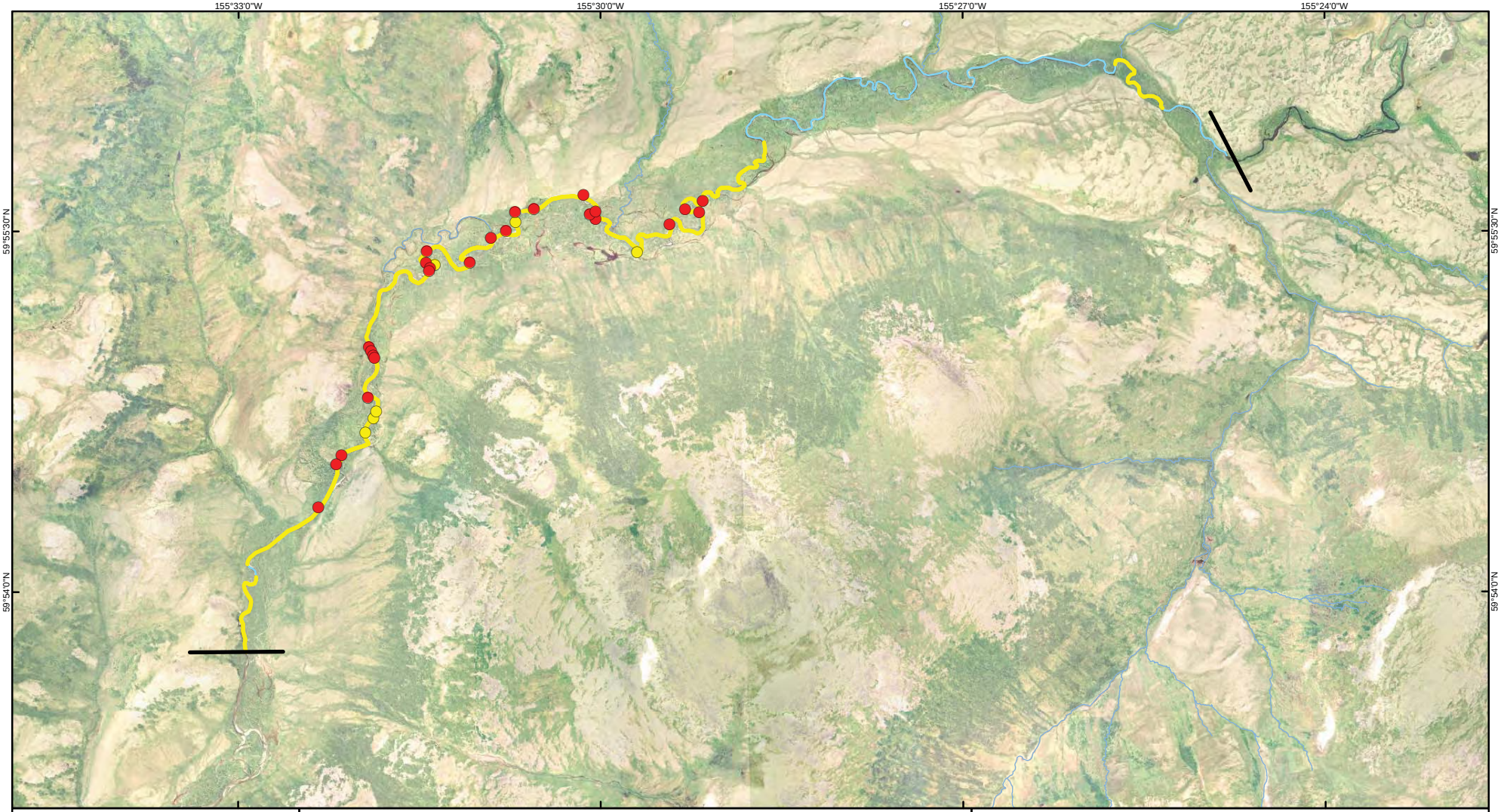
Miles: 0 0.6 1.2

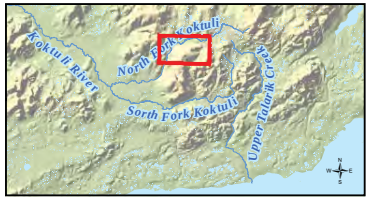
Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.3-14
NFK-C
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-C_Fig-B.3-14_KS_11x17L_3of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

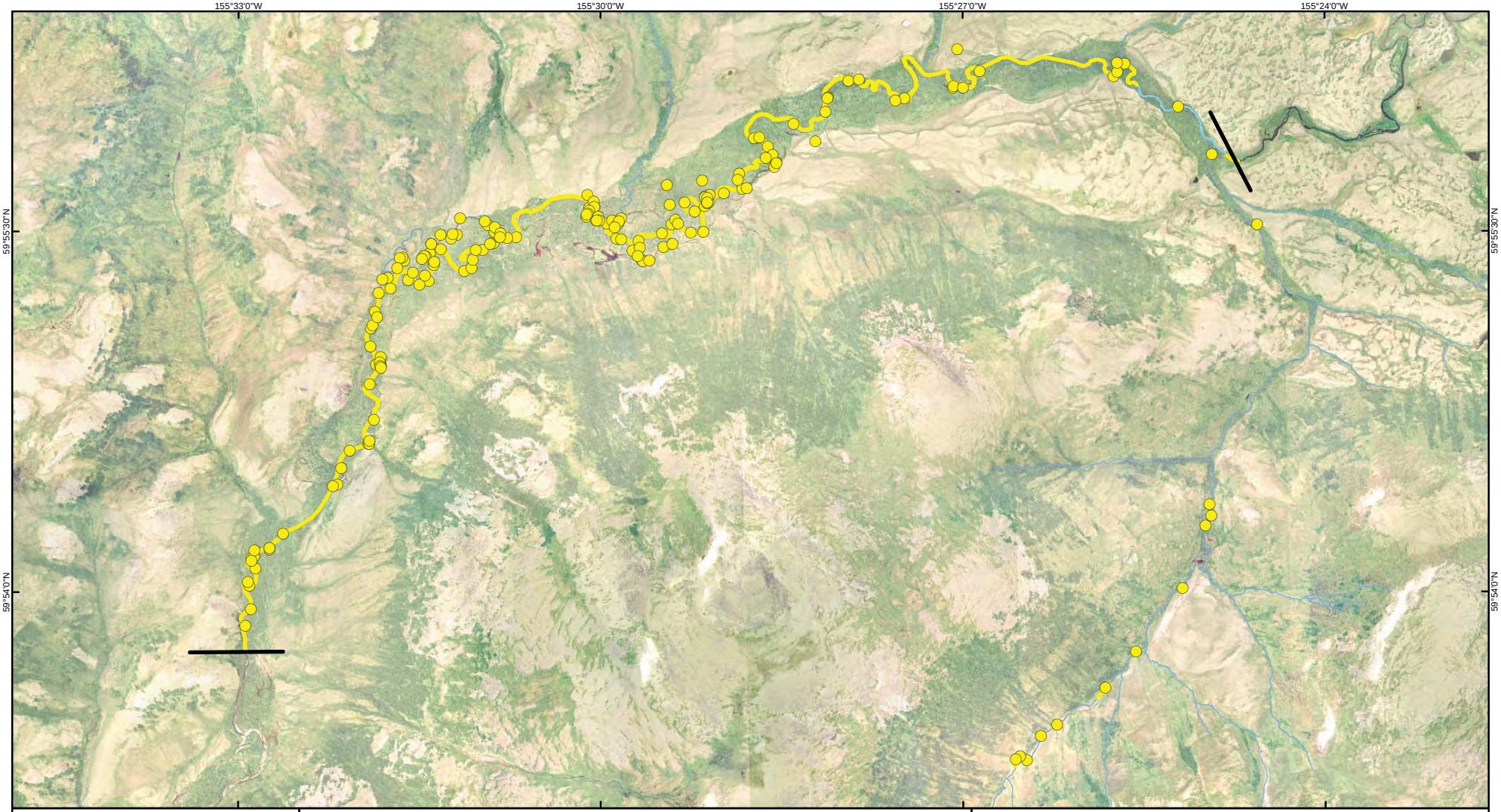
Miles
0 0.6 1.2

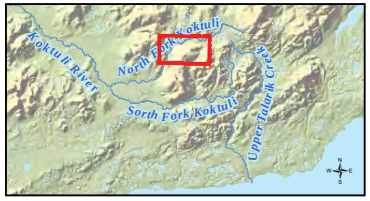
Kilometers
0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.3-15
NFK-C
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-C_Fig-B.3-15_CH_11x17L_3of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

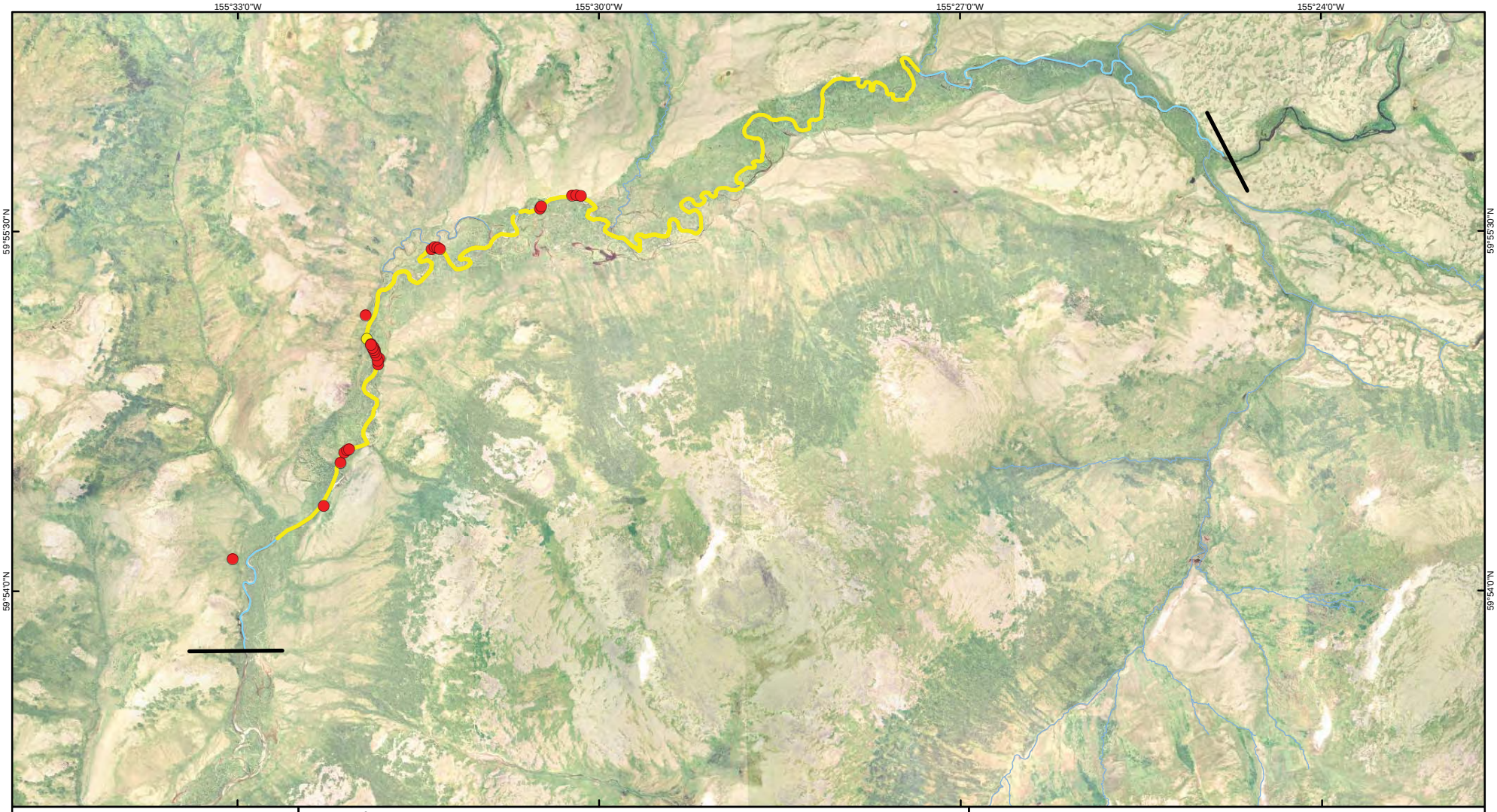
Miles
0 0.6 1.2

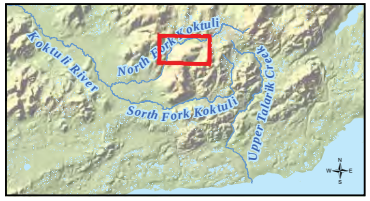
Kilometers
0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.3-16
NFK-C
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-C_Fig-B.3-16_CS_11x17L_3of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.3-17
NFK-C
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-C_Fig-B.3-17_SS_11x17L_3of22_D04.mxd	February 5, 2011
	Author: RDI - MRA

Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.3-22
NFK-C
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_NFK-C_Fig-B.3-22_11x17L_3of19_D03.mxd

February 5, 2011

Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.4
NORTH FORK KOKTULI RIVER REACH D (NFK-D)

Table B.4-1.
List of species found in NFK-D.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
northern pike	*Esox lucius*
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.4-2.
2004-2008 number of fish observations by lifestage within NFK-D mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

			Adult							Juvenile								Juvenile/Adult[a]					
Species	Year	Method	May	Jun	Jul	Aug	Sep	Oct	Sub-total	Apr	May	Jun	Jul	Aug	Sep	Oct	Sub-total	Apr	Jul	Aug	Sep	Sub-total	Total
Chinook salmon	2004	Electrofishing												4			4						4
	2008	Seine												4			4						4
coho salmon	2004	Electrofishing												9			9						9
		Minnow Trap												1			1						1
	2005	Electrofishing											13	34			47						47
		Minnow Trap											27				27						27
	2006	Electrofishing												2			2						2
	2008	Electrofishing													44		44						44
		Seine												1			1						1
		Snorkel												618			618						618
		Visual Observation					3		3					100			100						103
sockeye salmon	2007	Gill/Tangle Net				1			1														1
arctic grayling	2004	Angling	4	9					13		3						3						16
		Electrofishing												27			27						27
		Visual Observation		7					7		1	113					114						121
	2005	Angling	12						12														12
		Electrofishing											5	3			8						8
	2006	Angling												9			9						9
	2007	Gill/Tangle Net												1	1		2						2
	2008	Angling														1	1						1
		Gill/Tangle Net						1	1						1		1						2
		Seine												63			63						63
		Snorkel				3			3														3
Dolly Varden	2004	Electrofishing												8			8						8
		Minnow Trap												3			3						3
	2005	Electrofishing			1				1				4	1			5						6
		Minnow Trap											2				2						2
		Visual Observation											1				1						1
	2008	Snorkel												13			13			1		1	14
whitefish sp.	2007	Gill/Tangle Net				5	5		10														10
Salmonid sp.	2008	Snorkel												9			9						9
		Visual Observation												13			13			2		2	15

Table B.4-2. Continued

Species	Year	Method	Adult							Juvenile								Juvenile/Adult[a]					Total
			May	Jun	Jul	Aug	Sep	Oct	Sub-total	Apr	May	Jun	Jul	Aug	Sep	Oct	Sub-total	Apr	Jul	Aug	Sep	Sub-total	
northern pike	2004	Angling		1		12			13														13
		Electrofishing												1			1			2		2	3
		Minnow Trap												1			1						1
	2005	Angling				10			10														10
		Electrofishing											1				1						1
		Minnow Trap											1				1		2			2	3
	2006	Electrofishing												1			1						1
	2007	Angling				7			7														7
		Gill/Tangle Net				9	11		20						6		6						26
	2008	Angling					1	3	4														4
		Gill/Tangle Net					1	2	3														3
		Seine												1			1						1
		Snorkel												1			1						1
sculpin sp.	2004	Electrofishing																		152		152	152
		Minnow Trap				1			1					2			2						3
	2005	Electrofishing			4				4				27				27		3			3	34
		Minnow Trap																	2			2	2
	2008	Electrofishing																			95	95	95
		Seine				1			1					70			70						71
		Snorkel																		19		19	19
ninespine stickleback	2004	Minnow Trap								1							1	8				8	9
	2005	Minnow Trap																	2			2	2
threespine stickleback	2004	Electrofishing												1			1						1
stickleback sp.	2005	Minnow Trap																	3			3	3
	2008	Seine												2			2						2
		Snorkel																		48		48	48

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

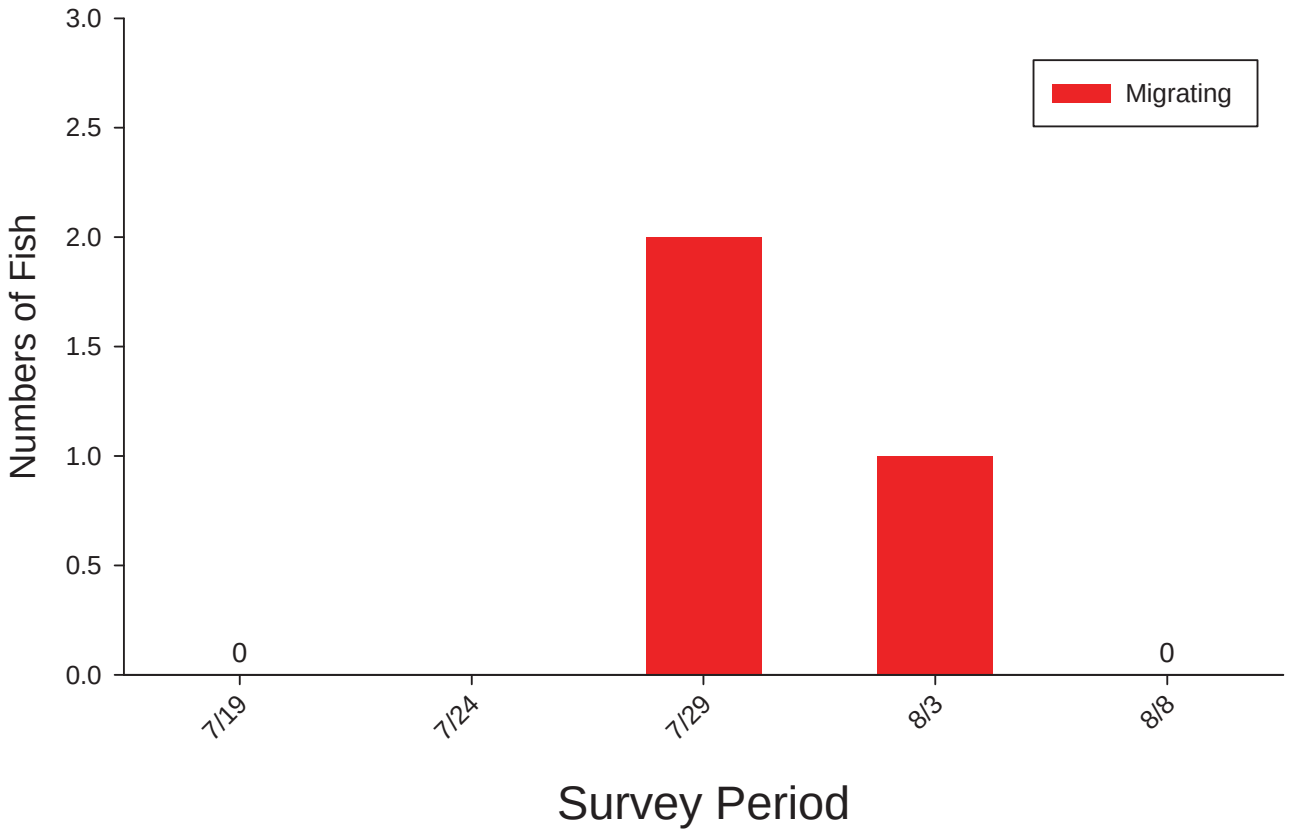


Figure B.4-10.
Number of Chinook salmon observed migrating during 2008 aerial surveys in NFK-D.

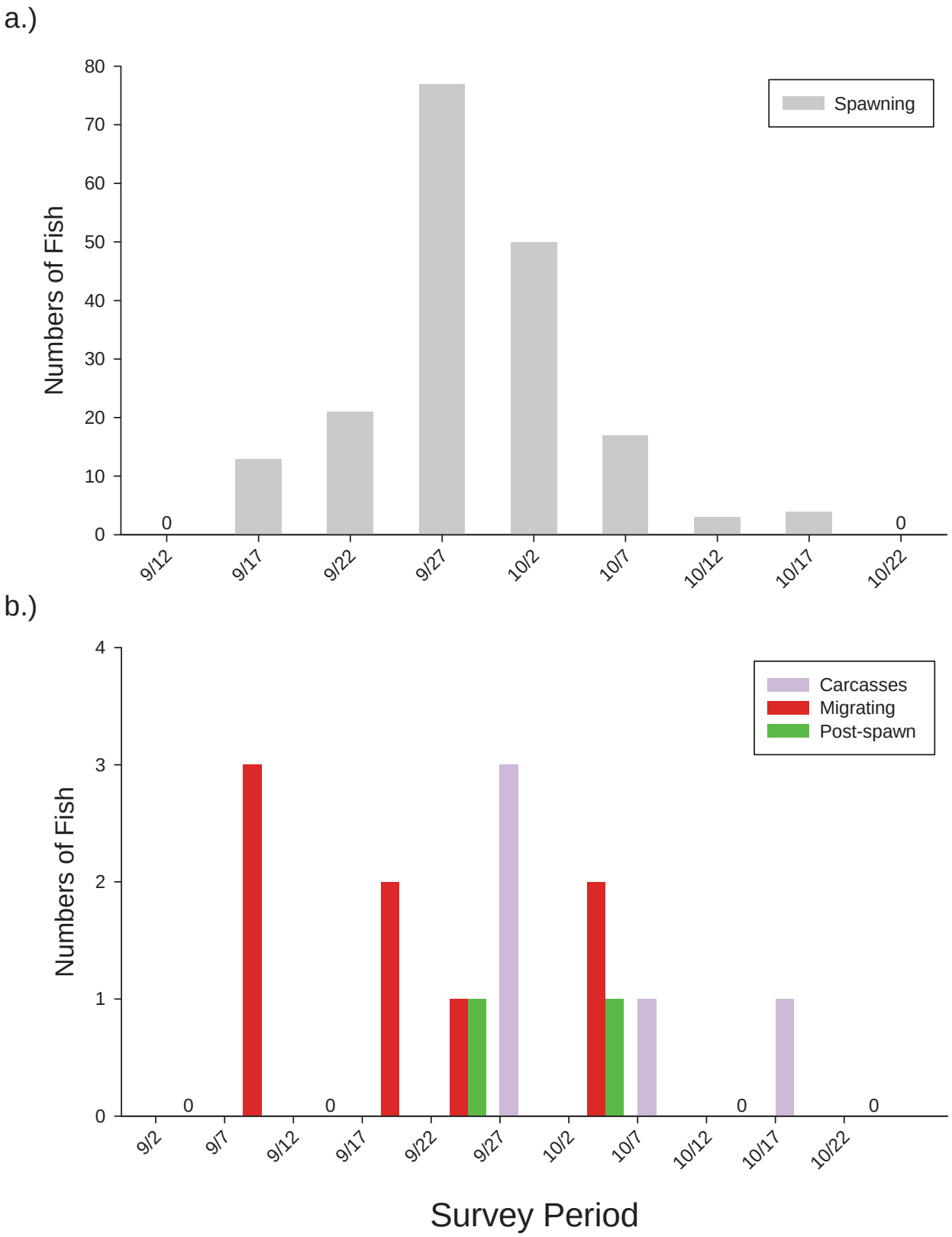


Figure B.4-11.
Observations of coho salmon during 2008 aerial surveys in NFK-D. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

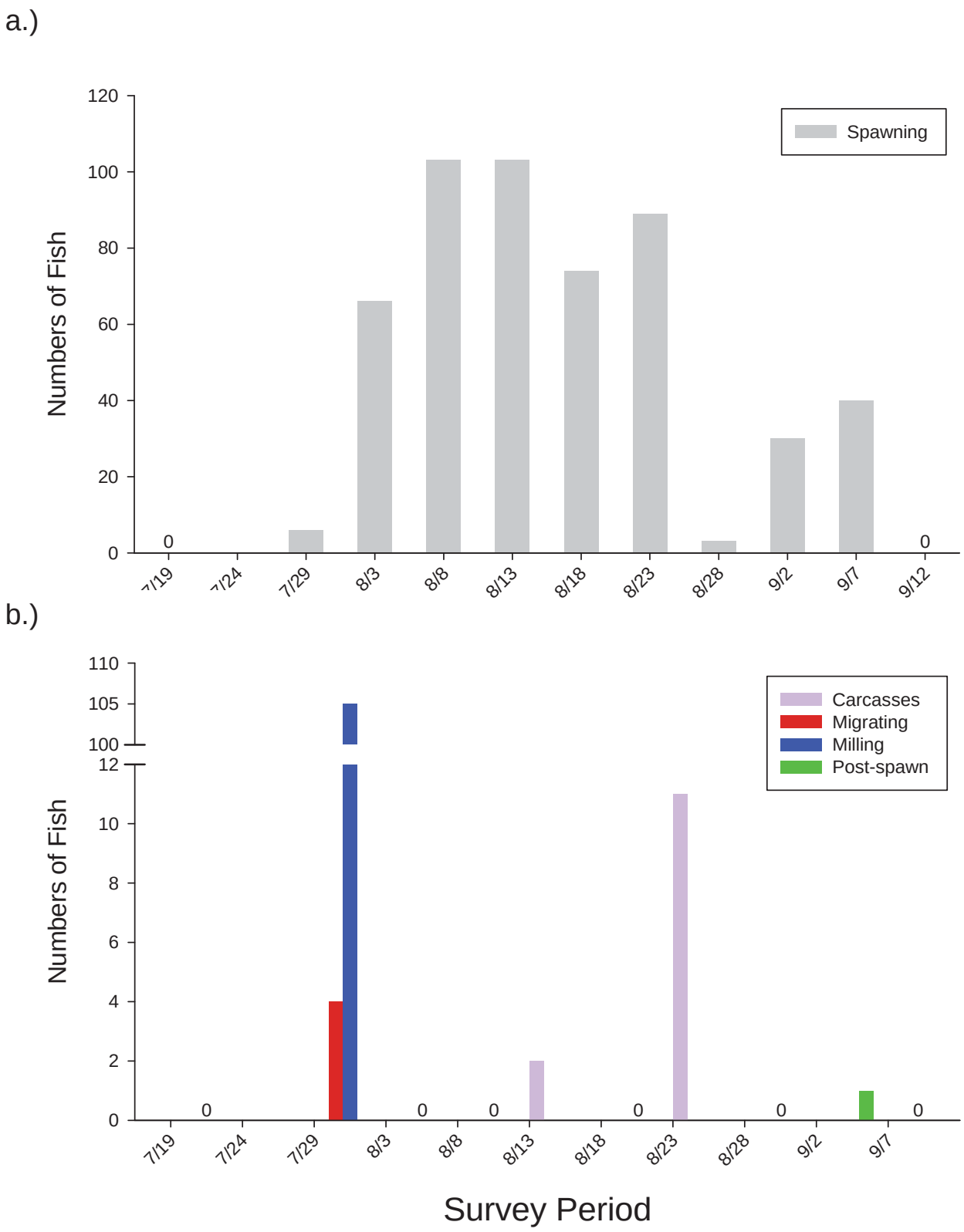


Figure B.4-12.
Observations of sockeye salmon during 2008 aerial surveys in NFK-D. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.4-3.
NFK-D fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Trap Set Time (Hours)	Lifestage		Total Fish Count
					Juveniles	Juvenile/Adult[a]	
4/14/2004	NFK04WT-02	ninespine stickleback	minnow trap	24	1		1
	NFK04WT-03	ninespine stickleback	minnow trap	24		8	8

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.4-4.
2008 fish observations by method at mainstem index sites located within NFK-D.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
NFK38.97	Chinook salmon	beach seine		3		3
	arctic grayling	beach seine		62		62
	Dolly Varden	snorkel		7		7
	Salmonid sp.	snorkel		3		3
	sculpin sp.	beach seine		1		1
	stickleback sp.	beach seine		2		2
NFK38.97 Total				**78**		**78**
NFK43.30	Chinook salmon	beach seine		1		1
	arctic grayling	beach seine		1		1
	Dolly Varden	snorkel		3		3
	northern pike	beach seine		1		1
	sculpin sp.	beach seine		5		5
		snorkel			5	5
NFK43.30 Total				**11**	**5**	**16**
NFK47.63	coho salmon	beach seine		1		1
	Dolly Varden	snorkel		1		1
	sculpin sp.	beach seine	1	64		65
		snorkel			2	2
NFK47.63 Total			**1**	**66**	**2**	**69**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

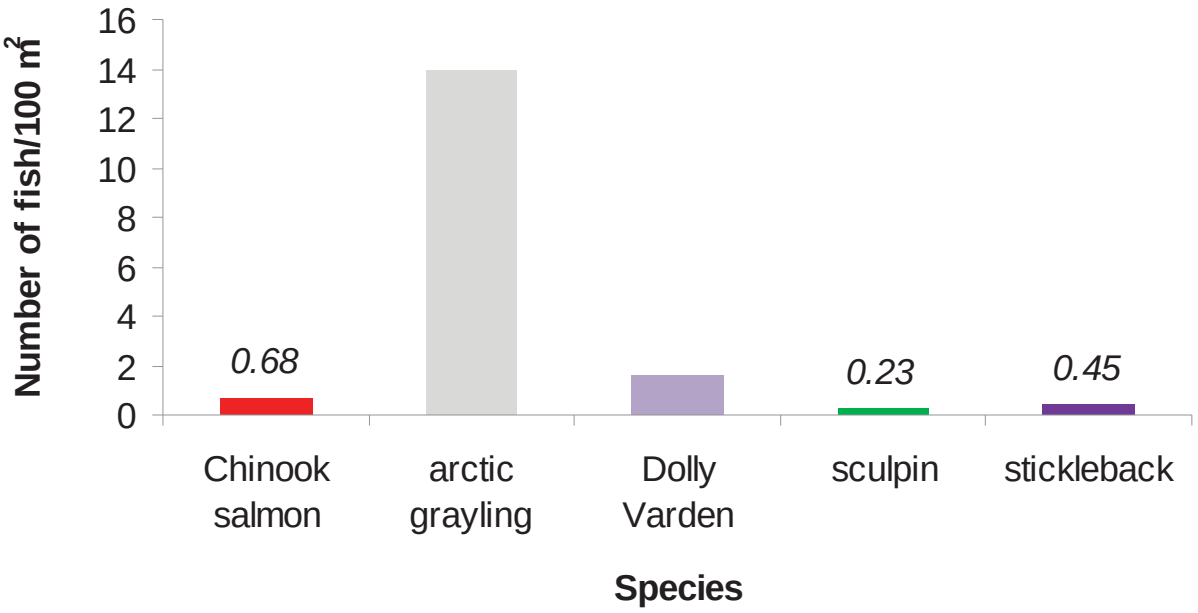


Figure B.4-14a.
2008 fish density in glide habitat at mainstem index site (RKm 38.97) within NFK-D. Densities were calculated from the method that generated the greatest count of fish at this location.

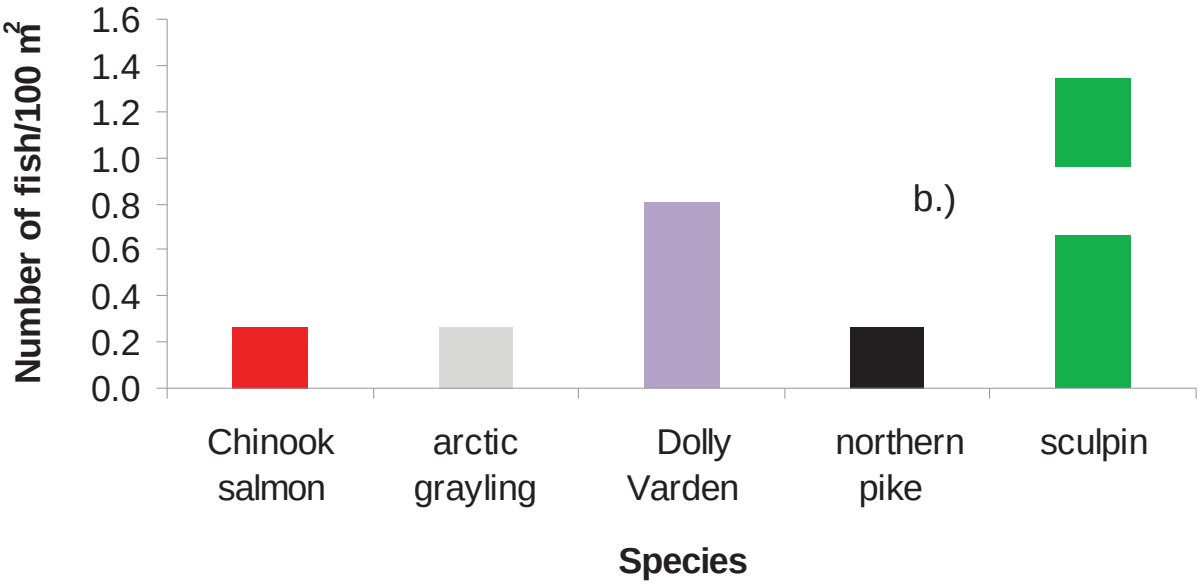


Figure B.4-14b.
2008 fish density in riffle habitat at mainstem index site (RKm 43.30) within NFK-D. Densities were calculated from the method that generated the greatest count of fish at this location.

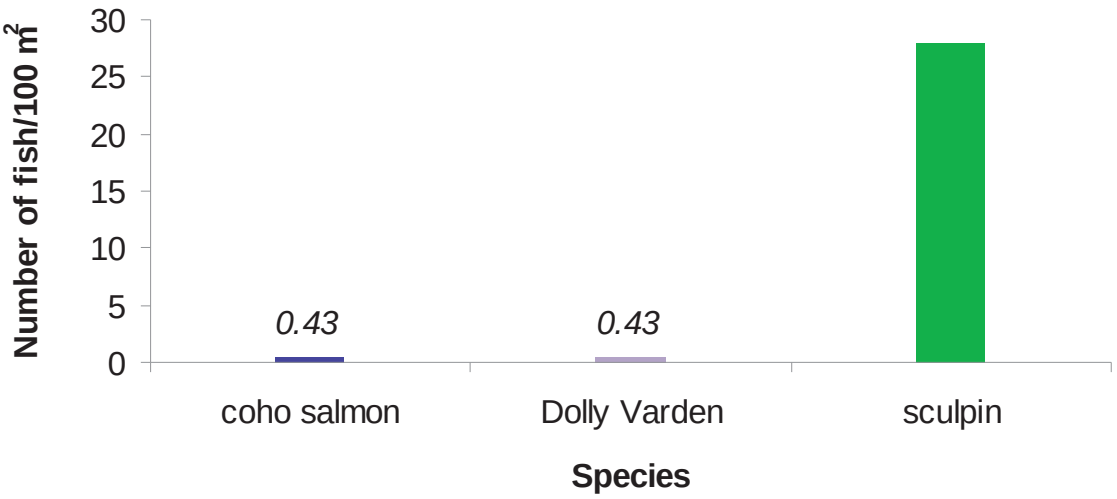
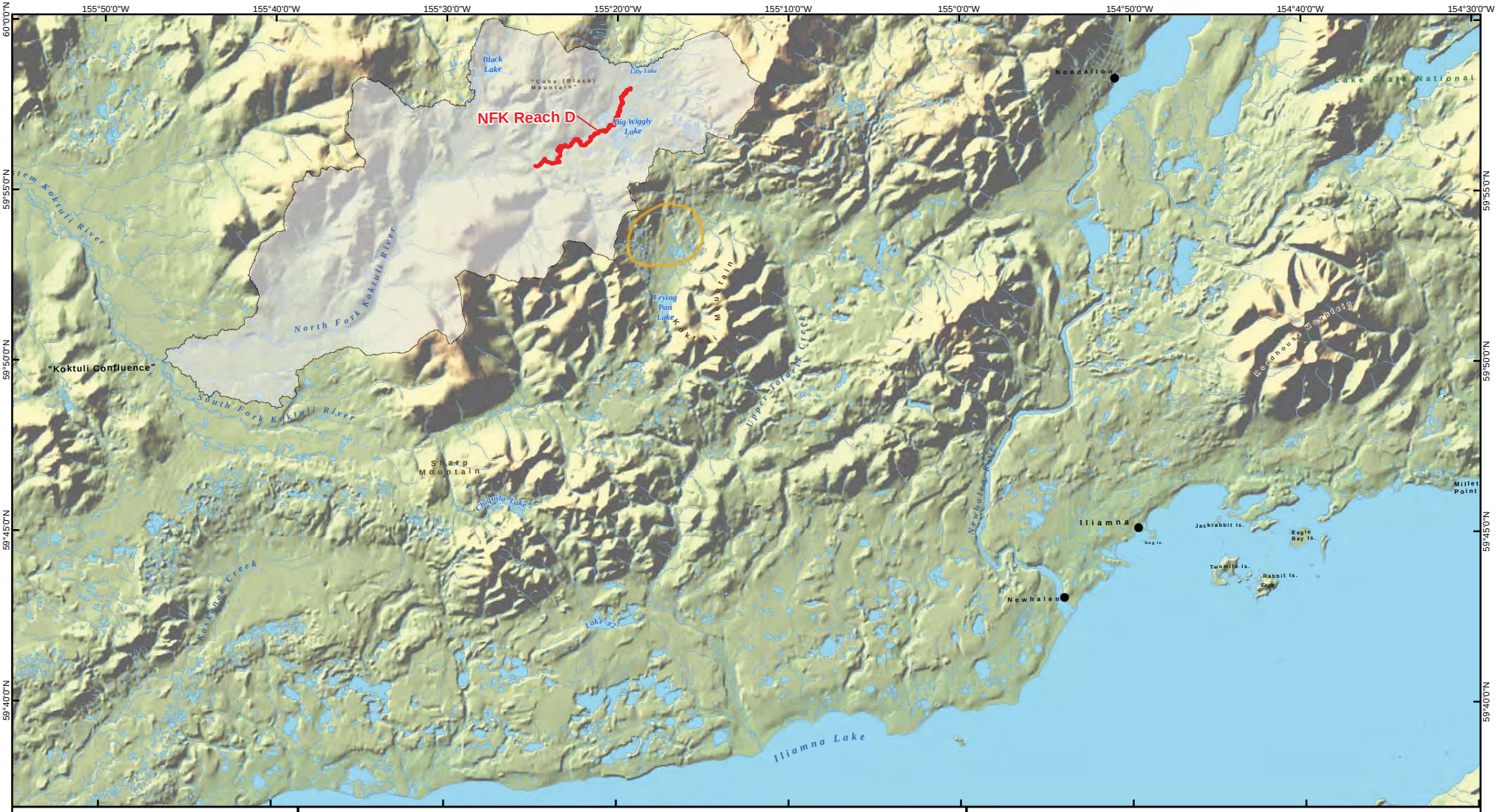
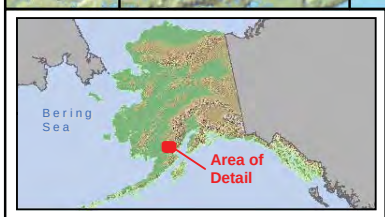


Figure B.4-14c.
2008 fish density in glide habitat at mainstem index site (RKm 47.63) within NFK-D. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach NFK Reach D

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

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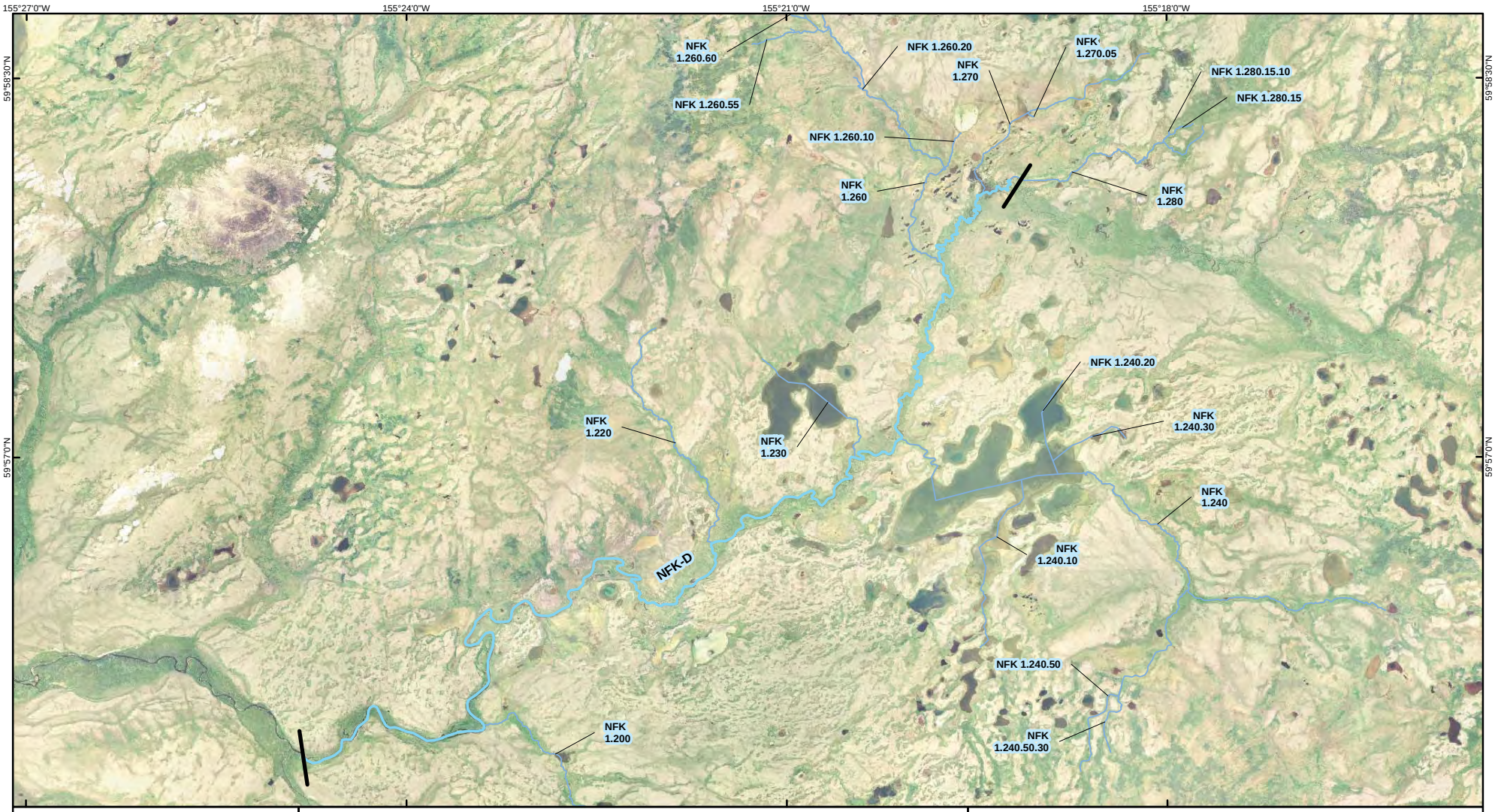
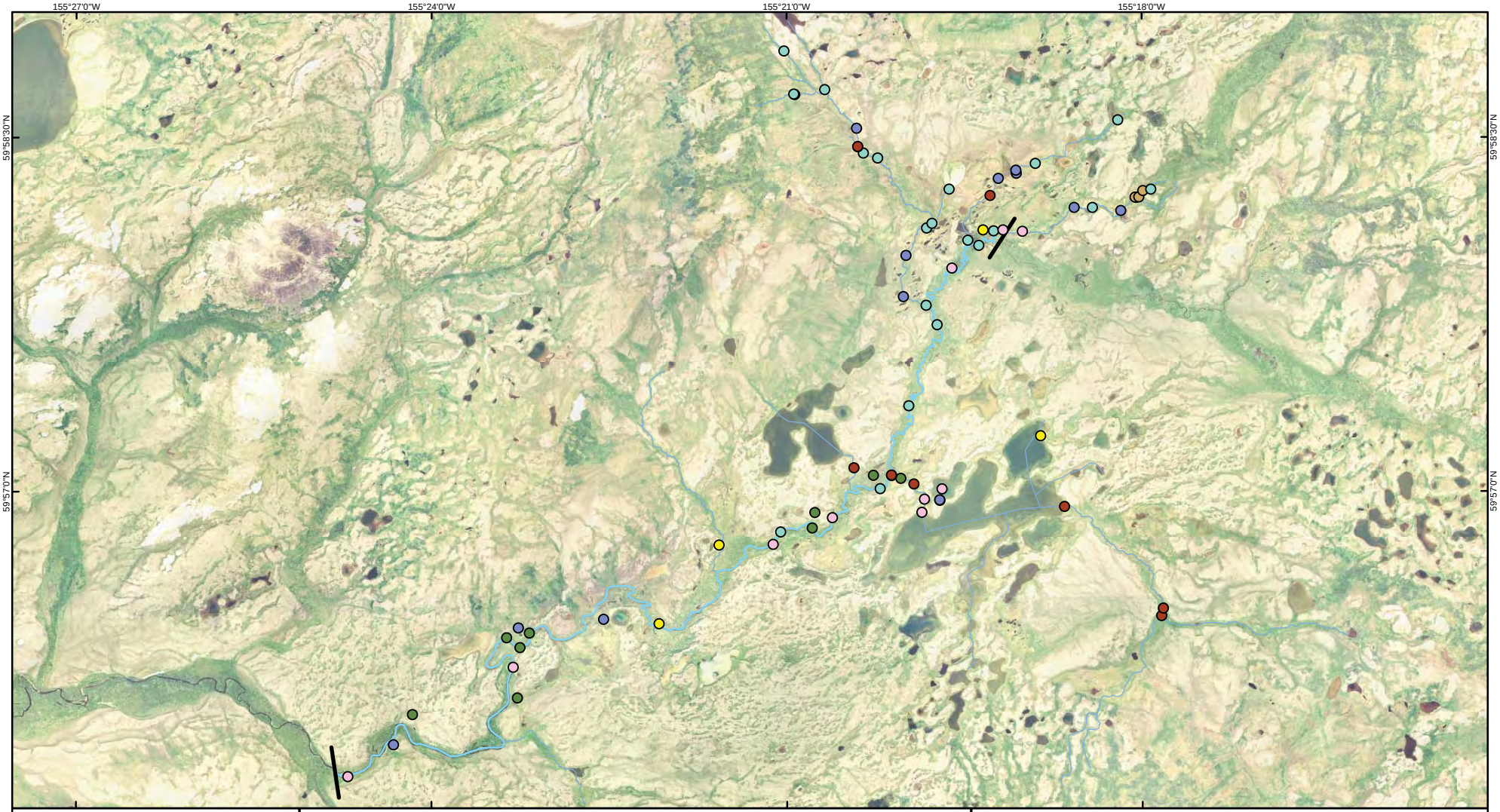
Figure B.4-1a
Reach NFK-D

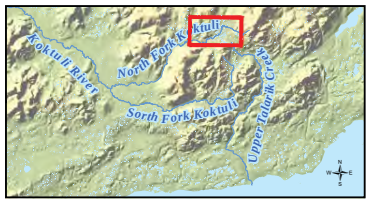
RDI_R2_OverviewLocator_NFK-D_Fig-B.4-1a_11x17L_4of19_D03.mxd

February 5, 2011

Author: RDI - MRA


155°27'0"W
155°24'0"W
155°21'0"W
155°18'0"W
59°58'30"N
59°57'0"N
NFK 1.260.60
NFK 1.260.55
NFK 1.260.20
NFK 1.270
NFK 1.270.05
NFK 1.280.15.10
NFK 1.280.15
NFK 1.260.10
NFK 1.260
NFK 1.280
NFK 1.240.20
NFK 1.240.30
NFK 1.220
NFK 1.230
NFK 1.240
NFK 1.240.10
NFK-D
NFK 1.240.50
NFK 1.200
NFK 1.240.50.30
Kokuli River
North Fork Kokuli
Sorth Fork Kokuli
Upper Talarik Creek
Legend
Mainstem Stream Reach
Tributary Streams
Reach Boundaries
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
Miles
0
0.5
1
Kilometers
0
0.5
1
THE pebble PARTNERSHIP
Figure B.4-1b
NFK-D
Mainstem and Tributaries
Reference Map
RDI_R2_MainstemTrib_NFK-D_Fig-B.4-1b_11x17L_4of19_D01.mxd
February 5, 2011
Author: RDI - MRA





Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

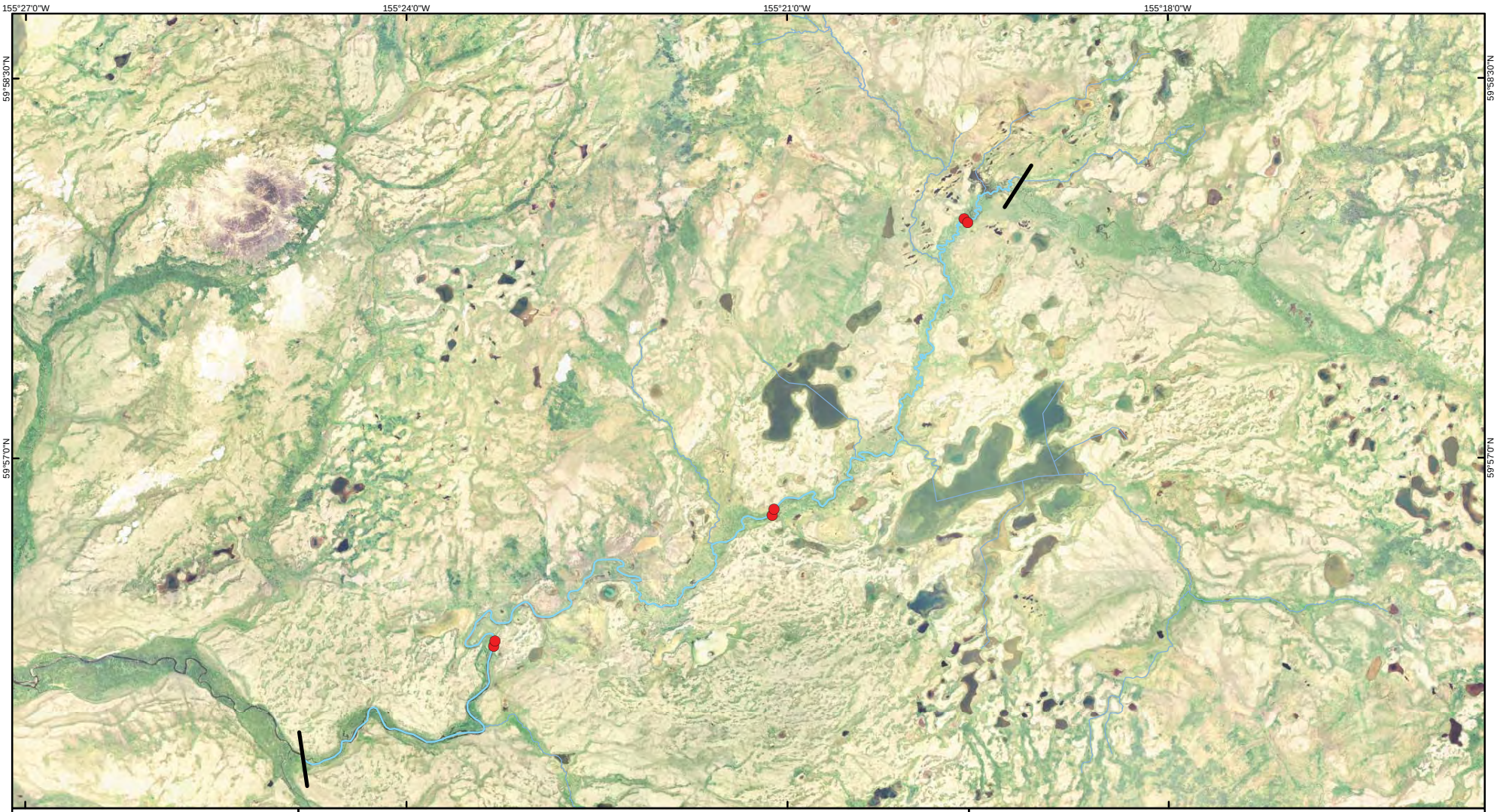
Miles
0 0.6 1.2

Kilometers
0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.4-2
NFK-D
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_NFK-D_Fig-B.4-2_11x17L_4of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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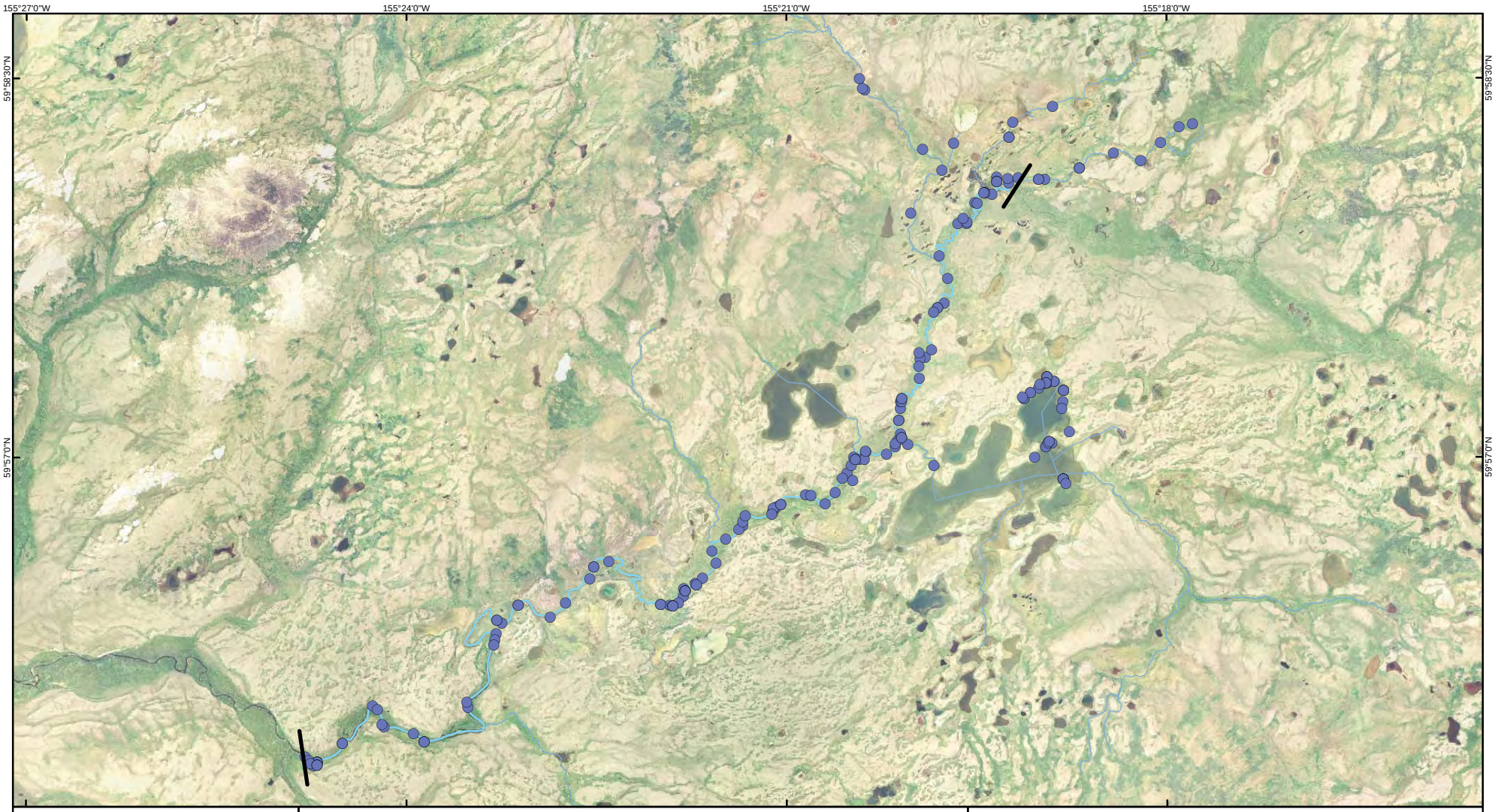
Figure B.4-3
NFK-D
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_NFK-D_Fig-B.4-3_11x17L_4of19_D02.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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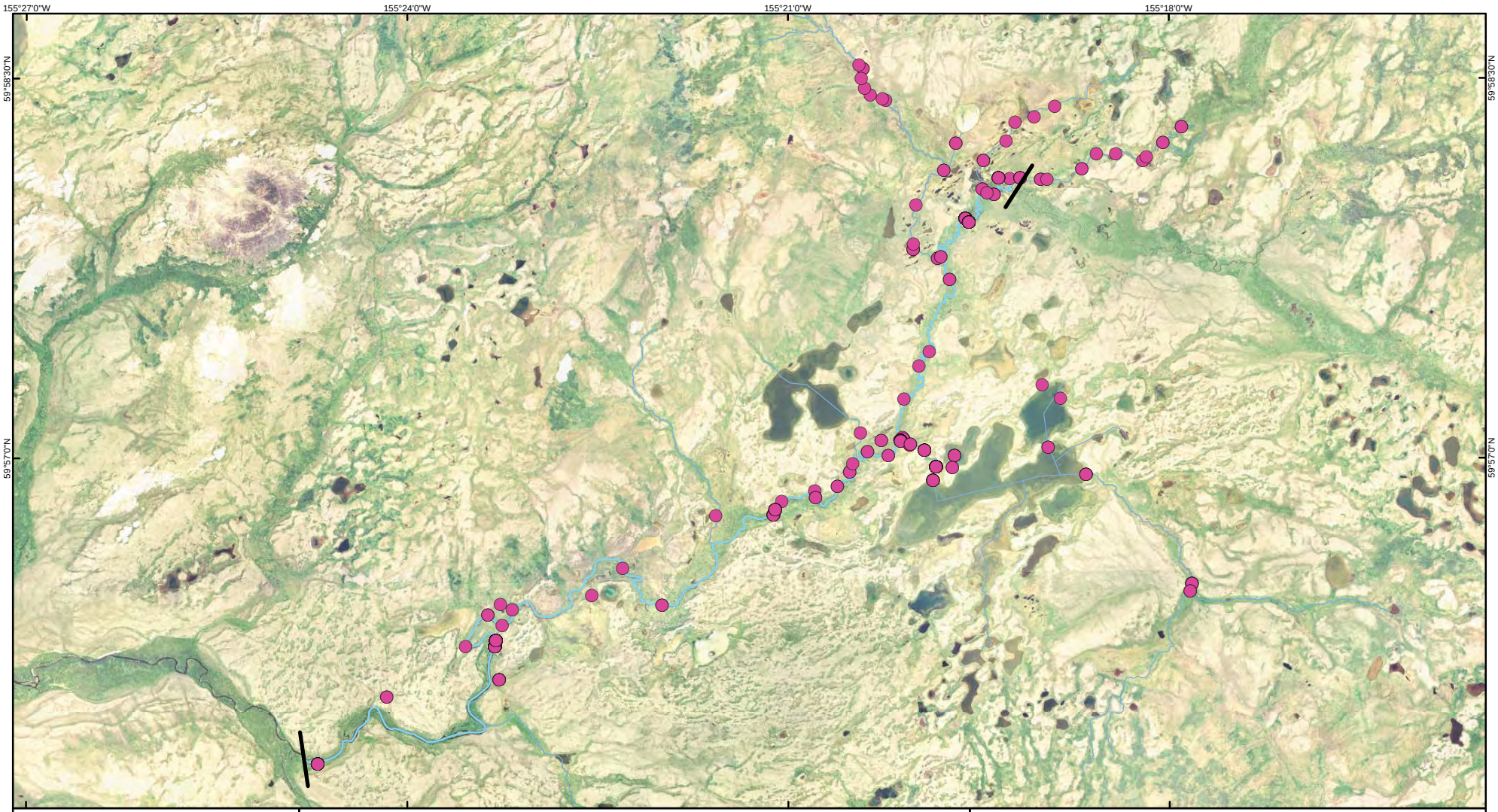
Figure B.4-4
NFK-D
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_NFK-D_Fig-B.4-4_11x17L_4of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

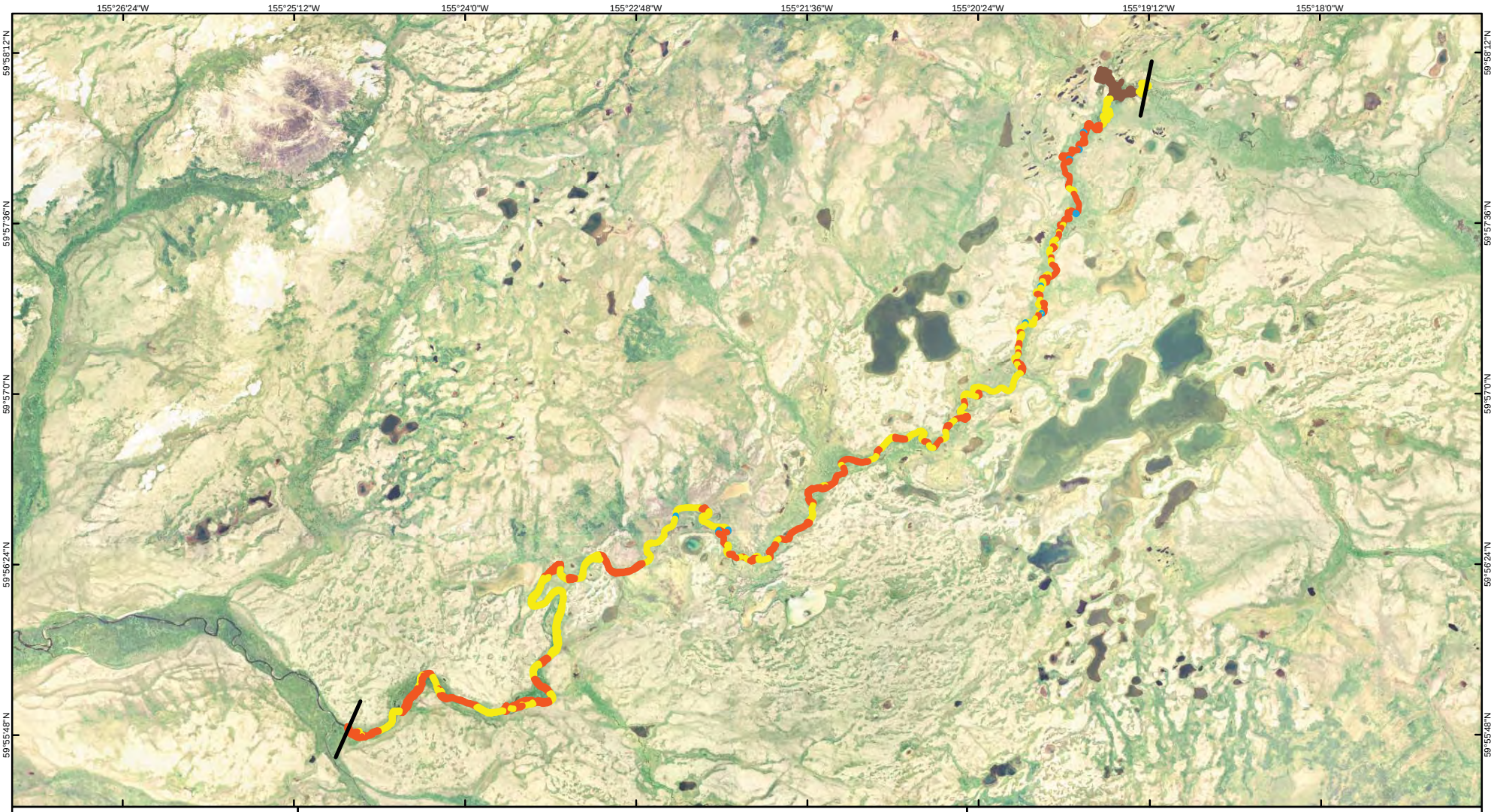
Miles: 0 0.5 1

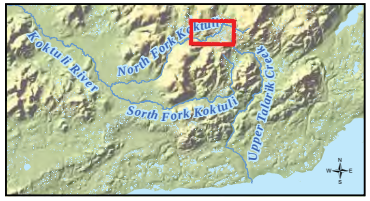
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.4-5
NFK-D
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_NFK-D_Fig-B.4-5_11x17L_4of19_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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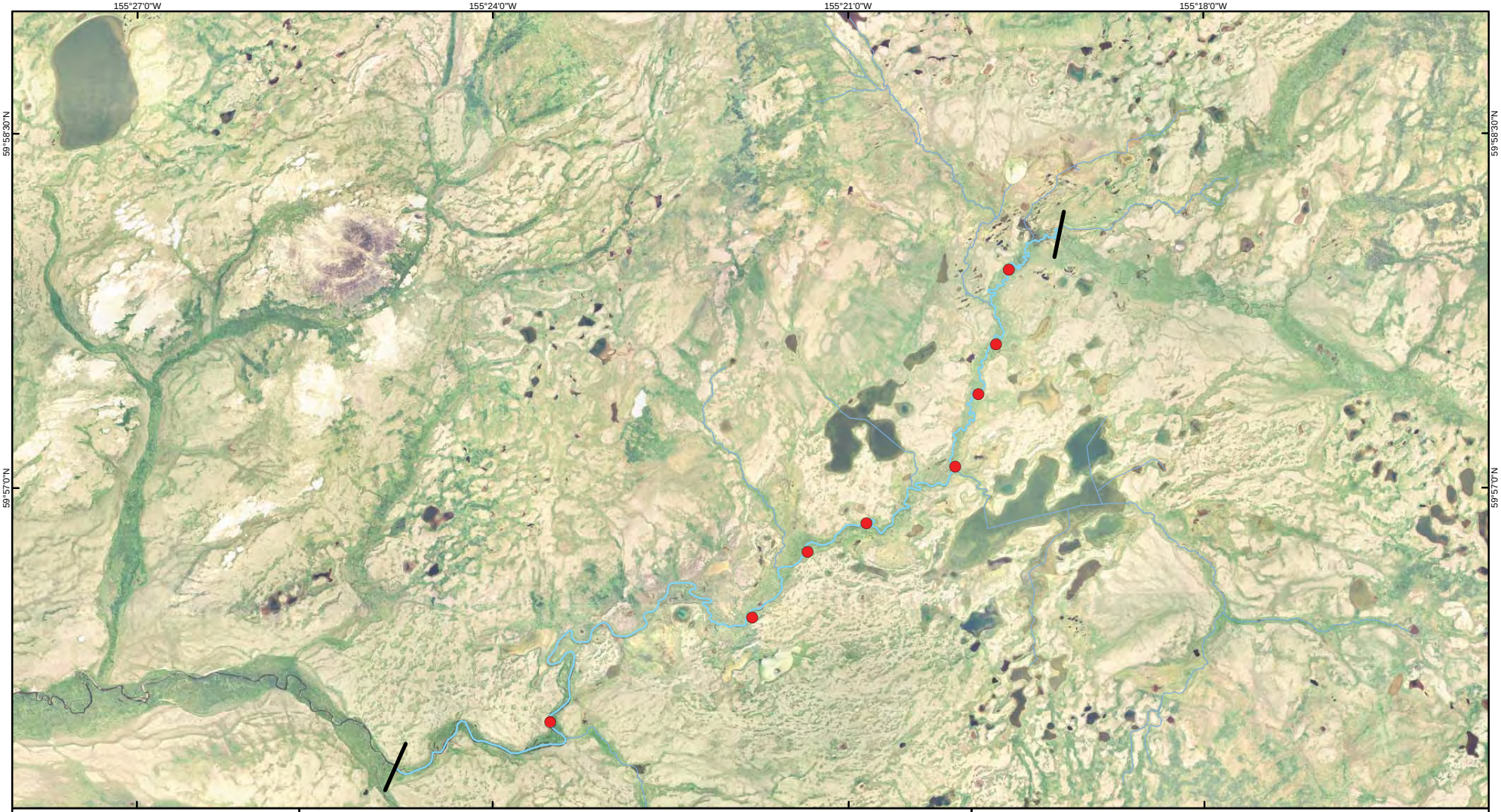
Figure B.4-6
NFK-D
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_NFK-D_Fig-B.4-6_11x17L_4of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

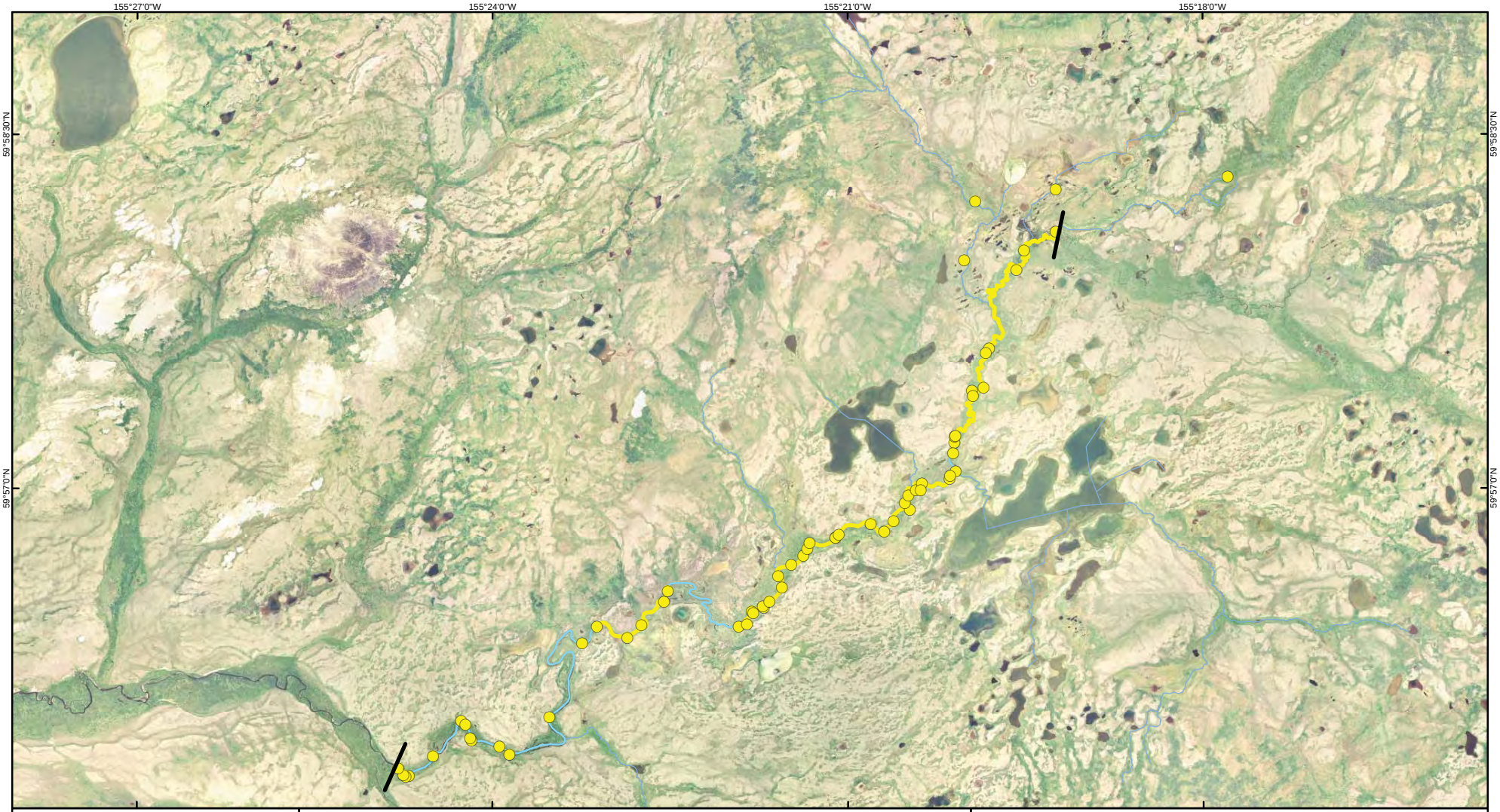
Miles: 0 0.6 1.2

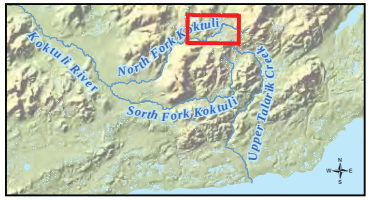
Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.4-7
NFK-D
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-D_Fig-B.4-7_KS_11x17L_4of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

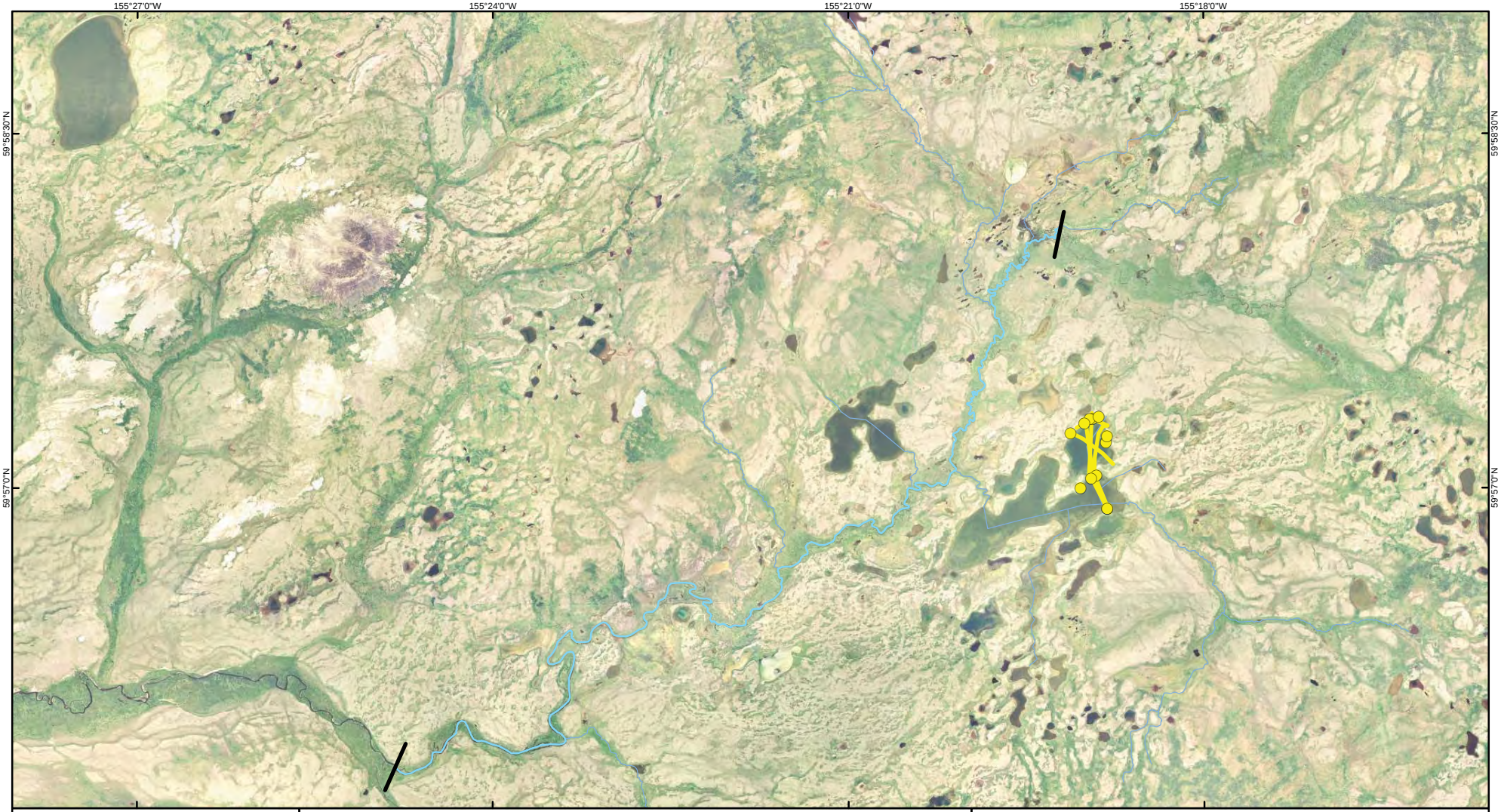
Miles
0 0.6 1.2

Kilometers
0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.4-8
NFK-D
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-D_Fig-B.4-8_CS_11x17L_4of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

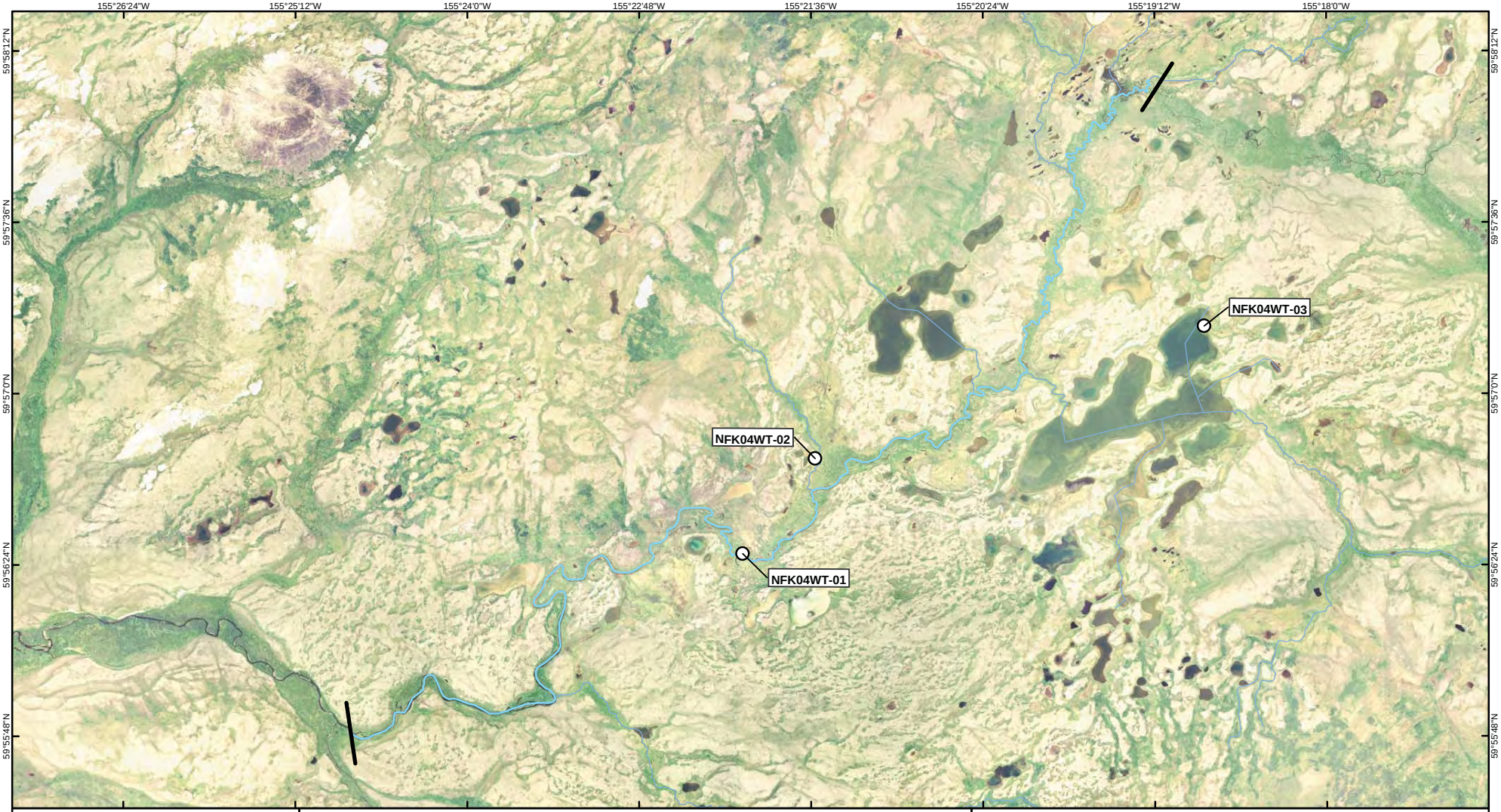
Miles: 0 0.6 1.2

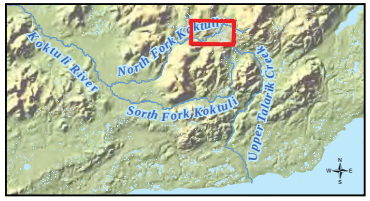
Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.4-9
NFK-D
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-D_Fig-B.4-9_SS_11x17L_4of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.4-13
NFK-D
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_NFK-D_Fig-B.4-13_11x17L_4of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.5
NORTH FORK KOKTULI RIVER REACH E (NFK-E)

Table B.5-1.
List of species found in NFK-E.

Common Name	Scientific Name
coho salmon	*Oncorhynchus kisutch*
Dolly Varden	*Salvelinus malma*
sculpin [a]	*Cottus* sp.

[a] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.5-2.
2004-2008 number of fish observations by lifestage within NFK-E mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult			Juvenile				Juvenile/Adult[a]			Total
			Aug	Sep	Subtotal	Jul	Aug	Sep	Sub-total	Aug	Sep	Sub-total	
coho salmon	2005	Electrofishing				16			16				16
	2008	Electrofishing						3	3				3
		Snorkel					32		32				32
Dolly Varden	2005	Electrofishing				2			2				2
	2008	Electrofishing	4	2	6		60	17	77	9	29	38	121
		Snorkel					7		7	48		48	55
		Visual Observation					1		1	1		1	2
sculpin sp.	2005	Electrofishing				7			7				7
	2008	Electrofishing									41	41	41
		Snorkel								3		3	3
		Visual Observation								2		2	2
unidentified sp.	2008	Snorkel								1		1	1

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

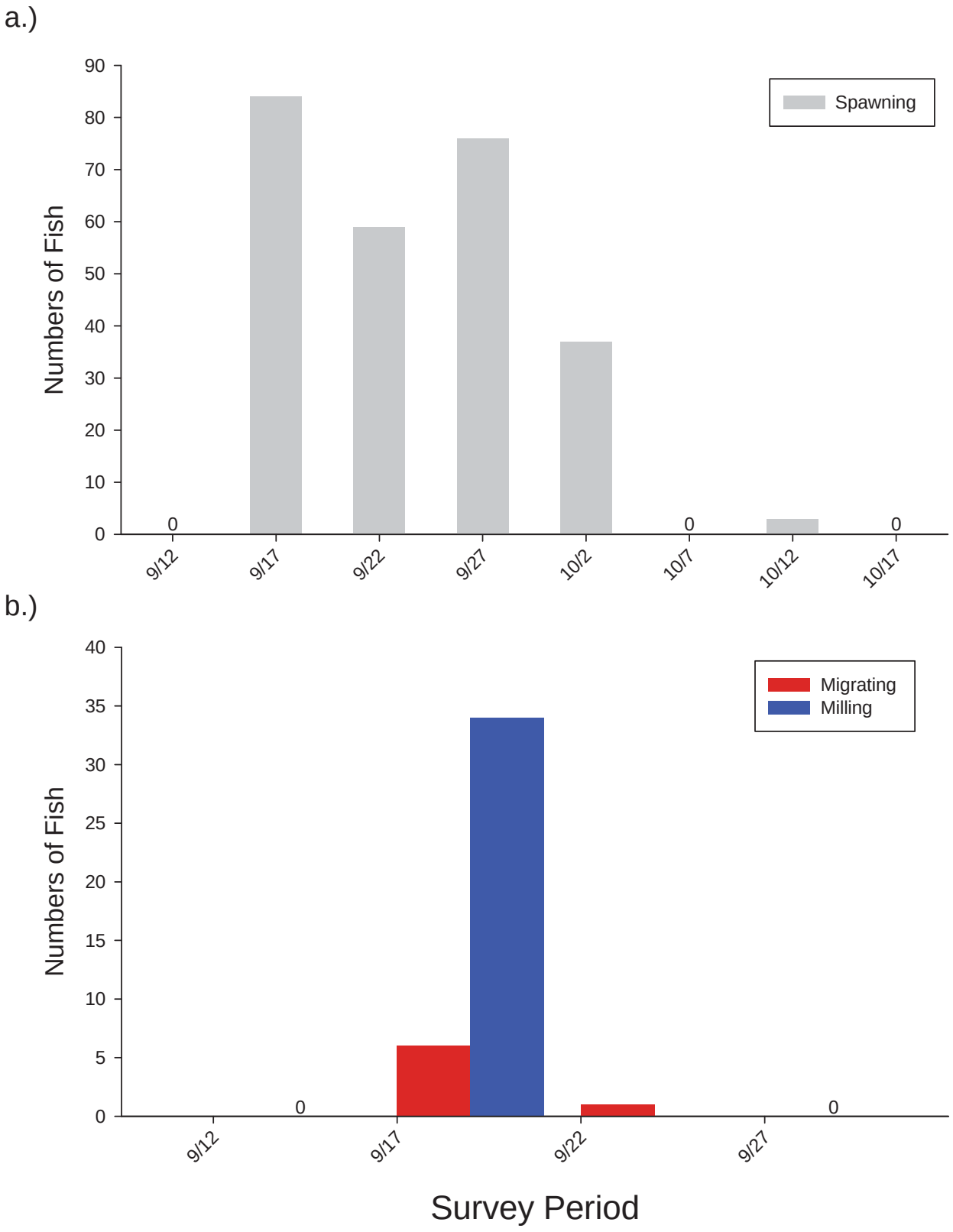
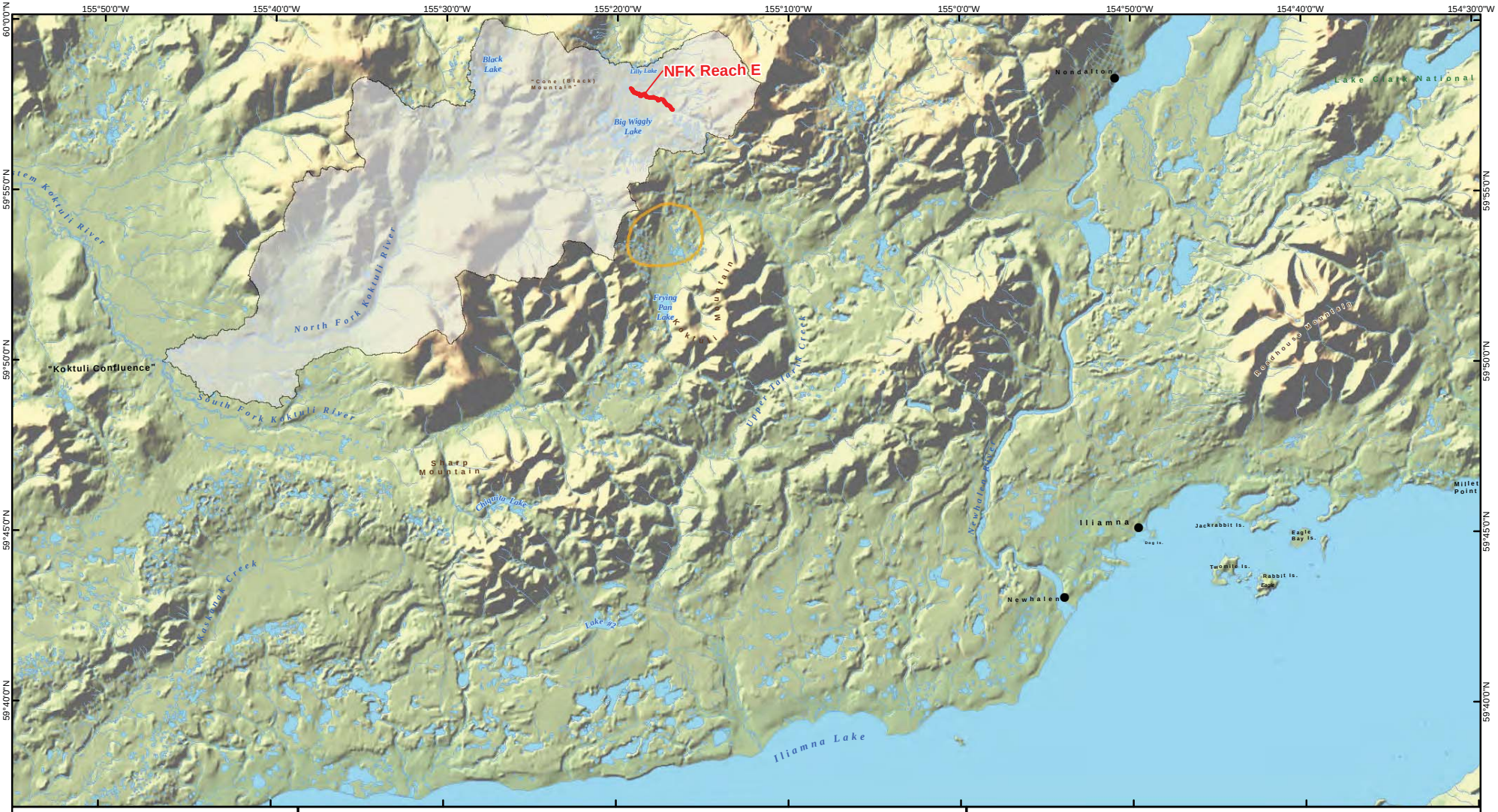


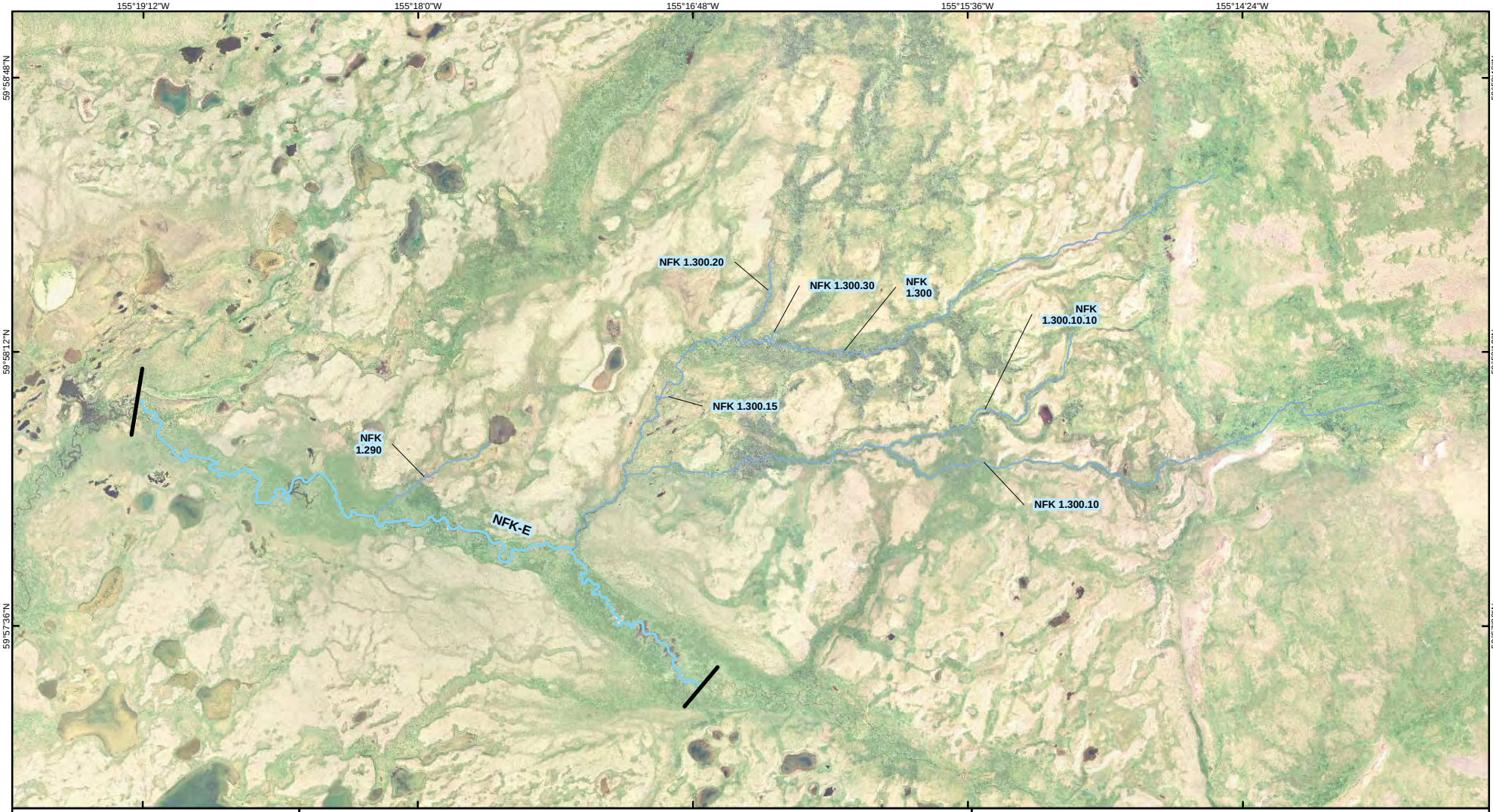
Figure B.5-8.
Observations of coho salmon during 2008 aerial surveys in NFK-E. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

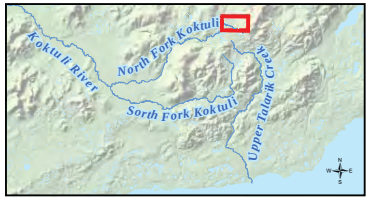
Table B.5-3.
2008 fish observations by method at mainstem index sites located within NFK-E.

Index Site	Species	Method	Juvenile/ Adult[a]	Total
NFK51.96	Dolly Varden	visual observation	1	1
NFK51.96 Total			**1**	**1**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.


155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
155°0'0"W
154°50'0"W
154°40'0"W
154°30'0"W
60°0'0"N
59°55'0"N
59°50'0"N
59°45'0"N
59°40'0"N
NFK Reach E
Black Lake
"Cone (Black) Mountain"
Lily Lake
Big Wiggly Lake
Nondalton
Lake Clark National
Stem Koktuli River
North Fork Koktuli River
"Koktuli Confluence"
South Fork Koktuli River
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Gasshouse Mountain
Sharp Mountain
Chigmit Lake
Kaskanak Creek
Lake #2
Newhalen River
Iliamna
Jackrabbit Is.
Dog Is.
Eagle Bay Is.
Twomile Is.
Rabbit Is.
Eagle
Newhalen
Millet Point
Iliamna Lake
Bering Sea
Area of Detail
Legend
General Deposit Location
Watershed Boundary
Mainstem Stream Reach
NFK Reach E
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
N
W
E
S
Miles
0
5
10
Kilometers
0
5
10
THE pebble PARTNERSHIP
Figure B.5-1a
Reach NFK-E
RDI_R2_OverviewLocator_NFK-E_Fig-B.5-1a_11x17L_5of19_D03.mxd
February 5, 2011
Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

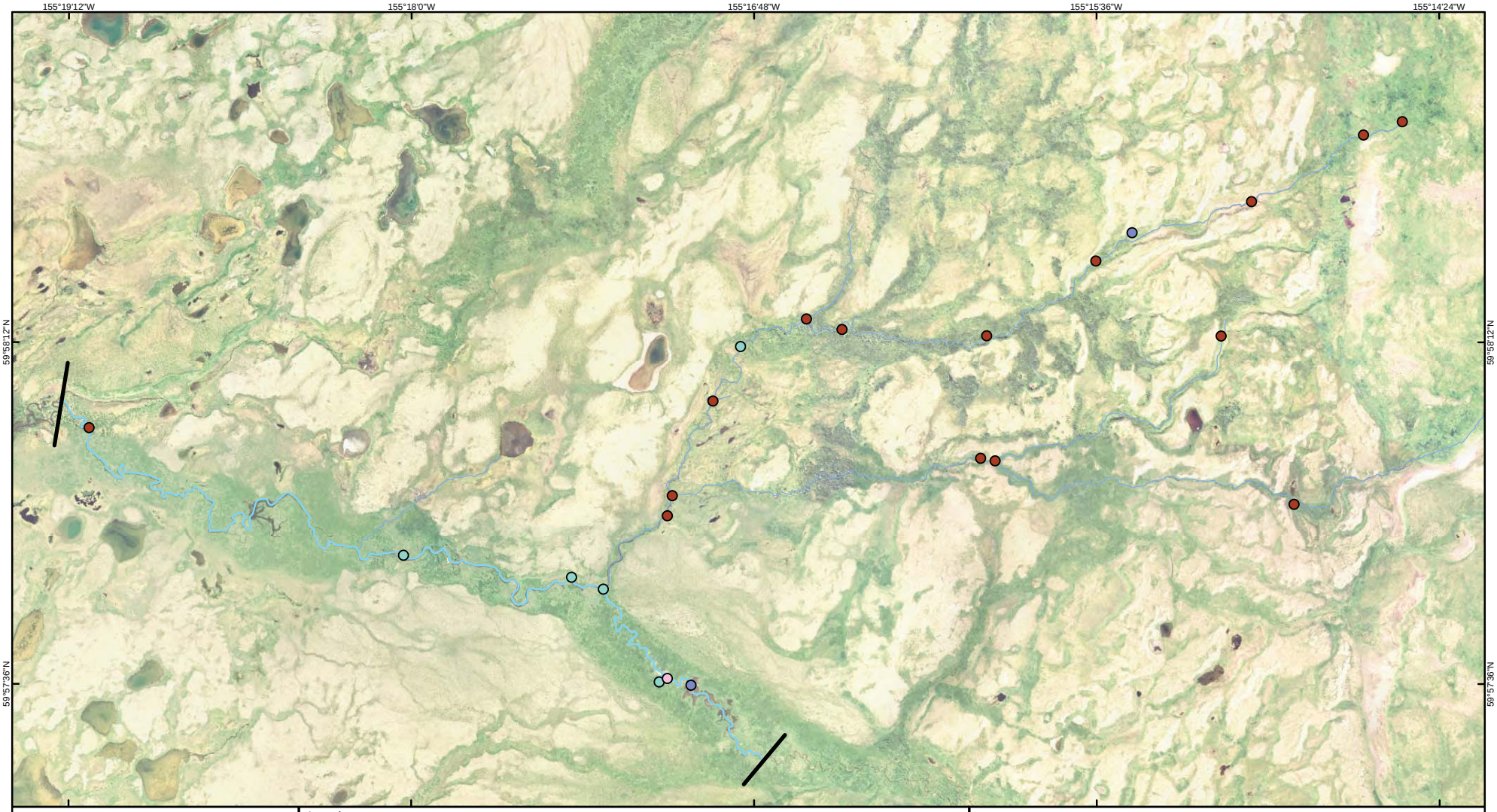
Miles
0 0.3 0.6

Kilometers
0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.5-1b
NFK-E
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_NFK-E_Fig-B.5-1b_11x17L_5of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach

Tributary Streams

Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.2 0.4

Kilometers
0 0.2 0.4

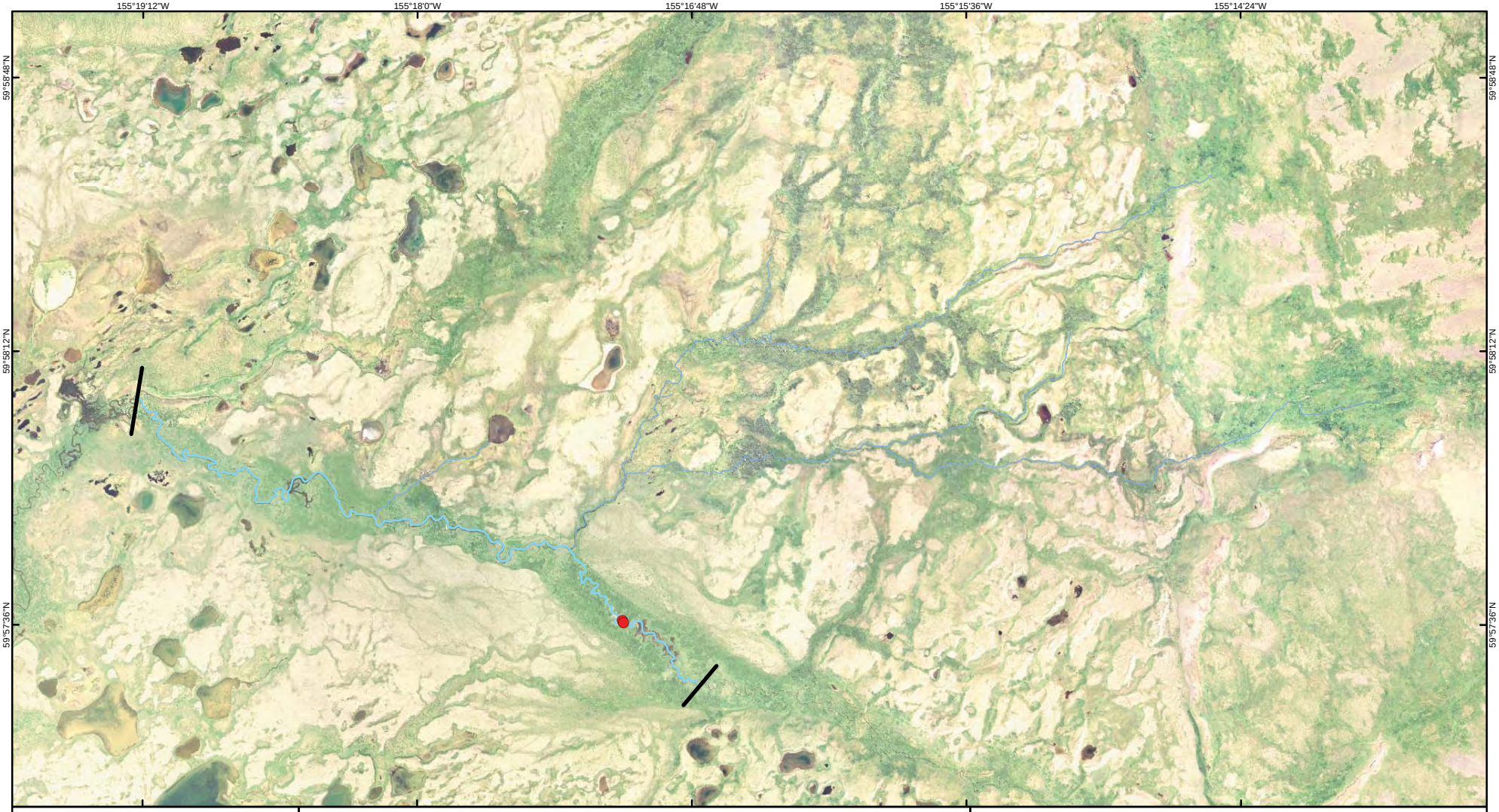
THE pebble PARTNERSHIP

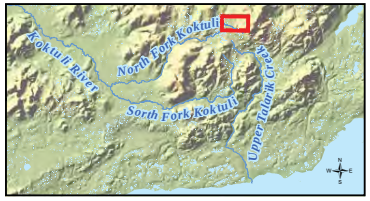
Figure B.5-2
NFK-E
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_NFK-E_Fig-B.5-2_11x17L_5of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 0.3 — 0.6

Kilometers: 0 — 0.3 — 0.6

THE pebble PARTNERSHIP

Figure B.5-3
NFK-E
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_NFK-E_Fig-B.5-3_11x17L_5of19_D02.mxd	February 5, 2011
	Author: RDI - MRA

Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

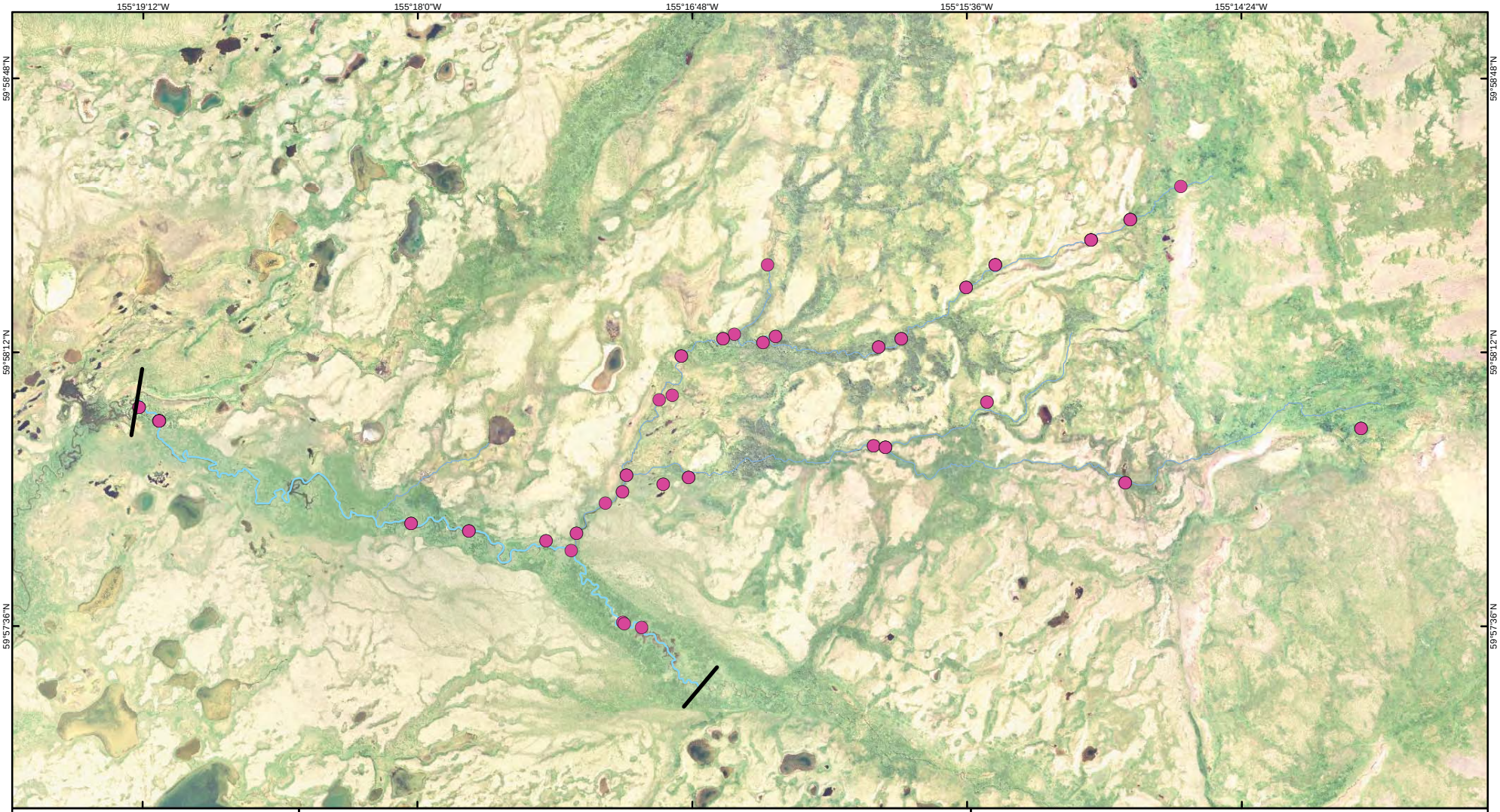
Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.5-4
NFK-E
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_NFK-E_Fig-B.5-4_11x17L_5of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.5-5
NFK-E
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_NFK-E_Fig-B.5-5_11x17L_5of19_D04.mxd	February 5, 2011
	Author: RDI - MRA

Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

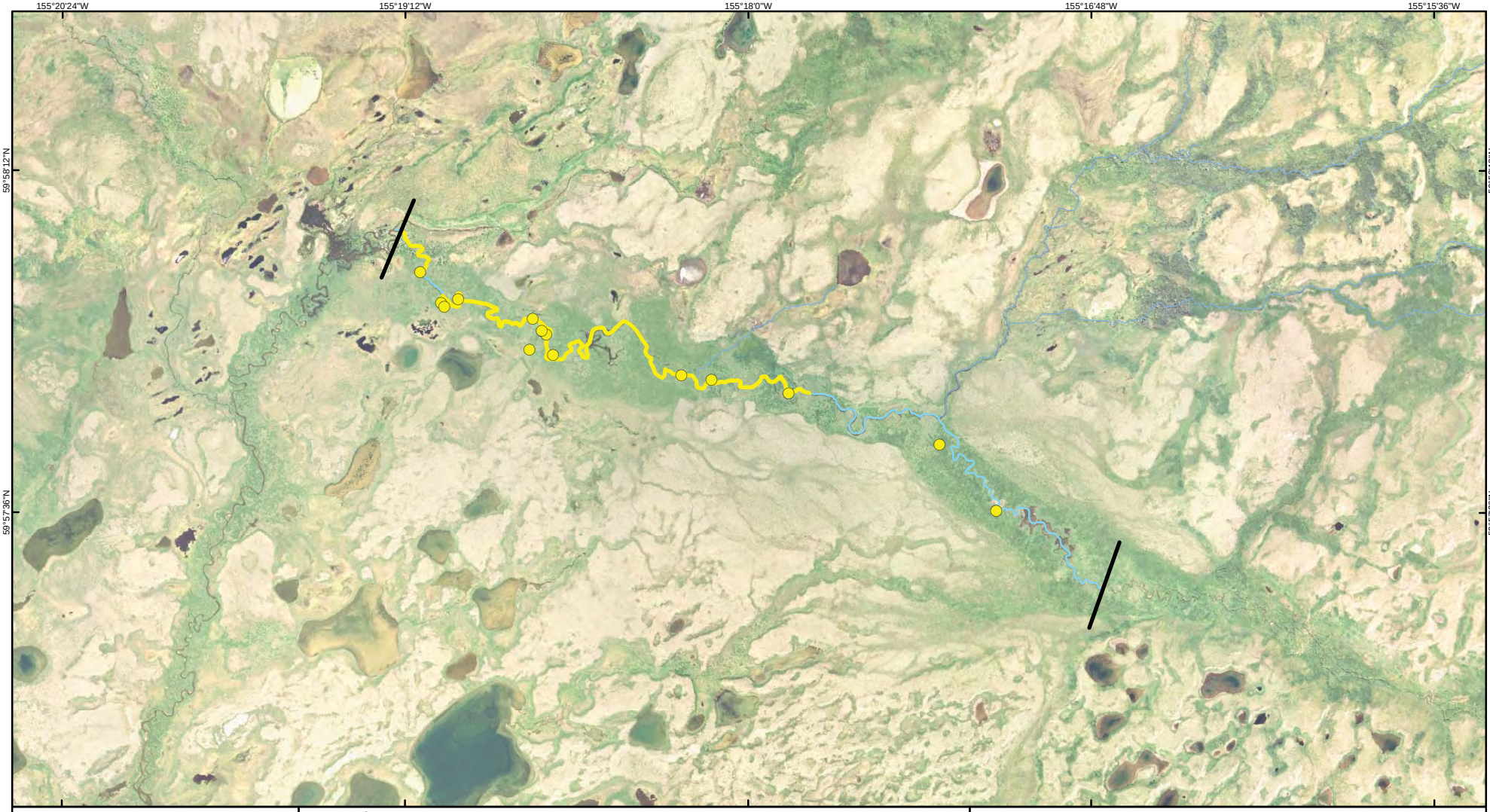
Miles: 0 0.2 0.4

Kilometers: 0 0.2 0.4

THE pebble PARTNERSHIP

Figure B.5-6
NFK-E
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_NFK-E_Fig-B.5-6_11x17L_5of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.2 0.4

Kilometers: 0 0.2 0.4

THE pebble PARTNERSHIP

Figure B.5-7
NFK-E
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_NFK-E_Fig-B.5-7_CS_11x17L_5of22_D04.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.6
NORTH FORK KOKTULI RIVER REACH F (NFK-F)

Table B.6-1.
List of species found in NFK-F.

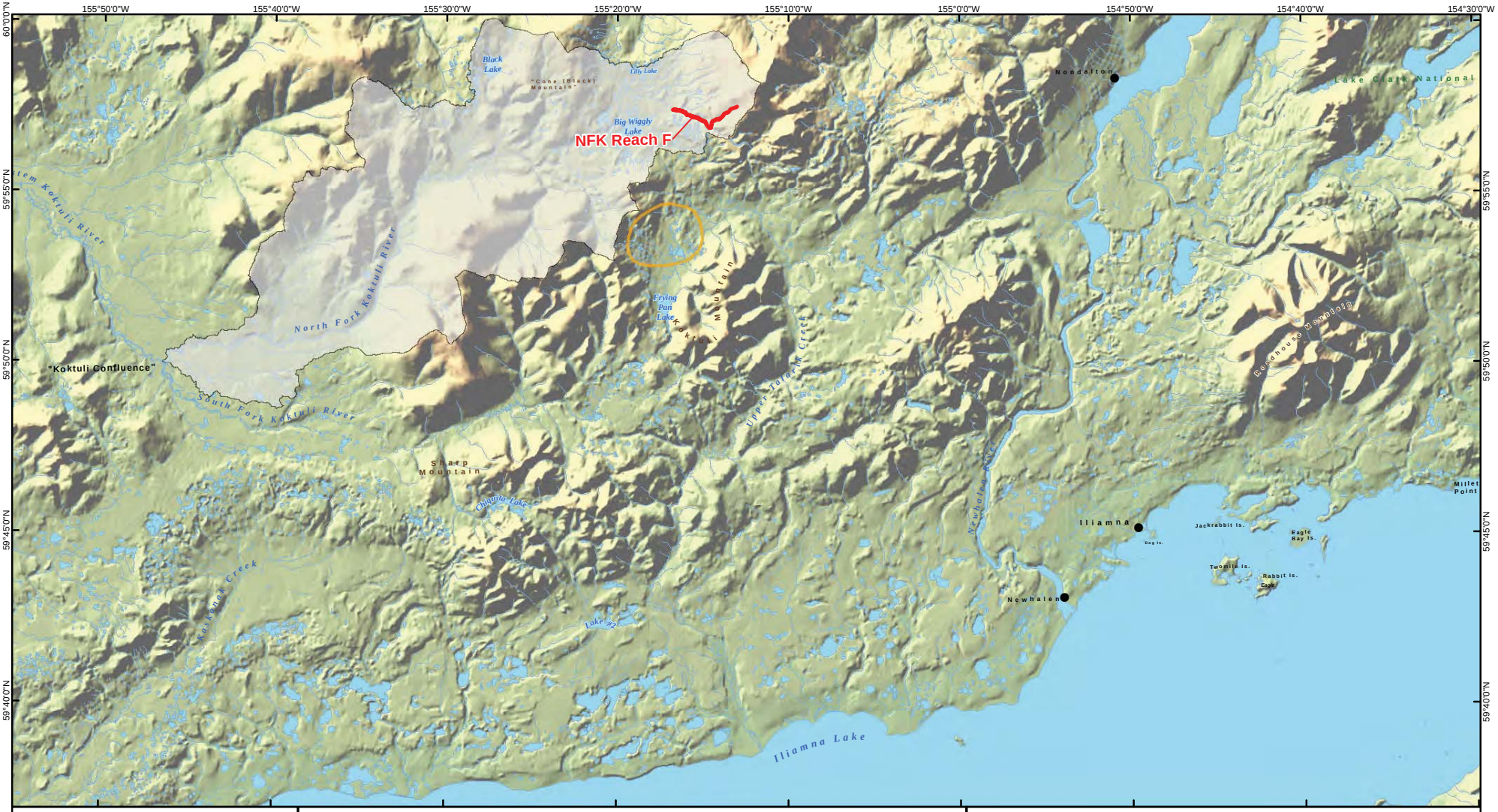
Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
Dolly Varden	*Salvelinus malma*
sculpin [a]	*Cottus* sp.

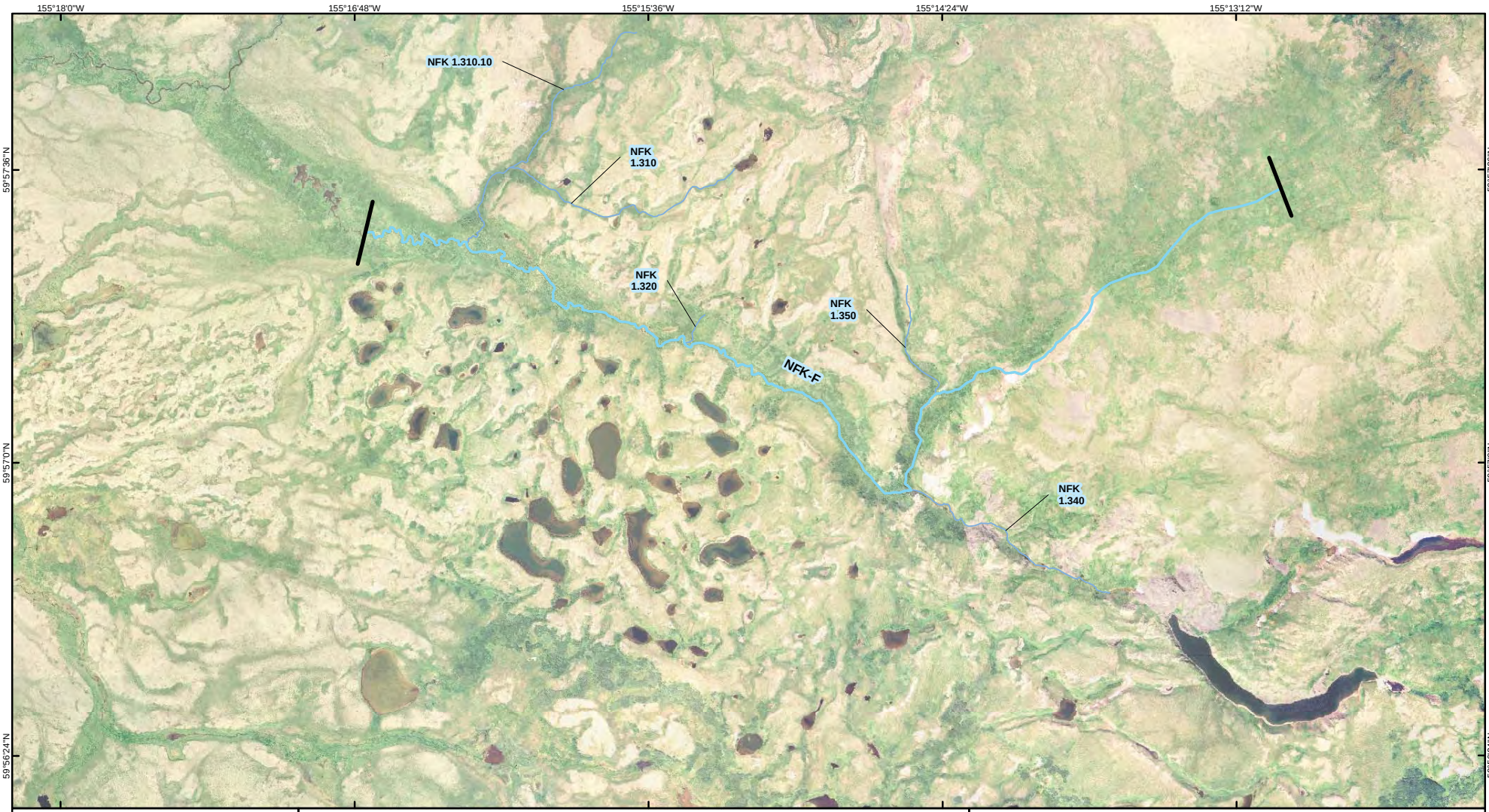
[a] identified to genus, may include slimy sculpin and coastrange sculpin

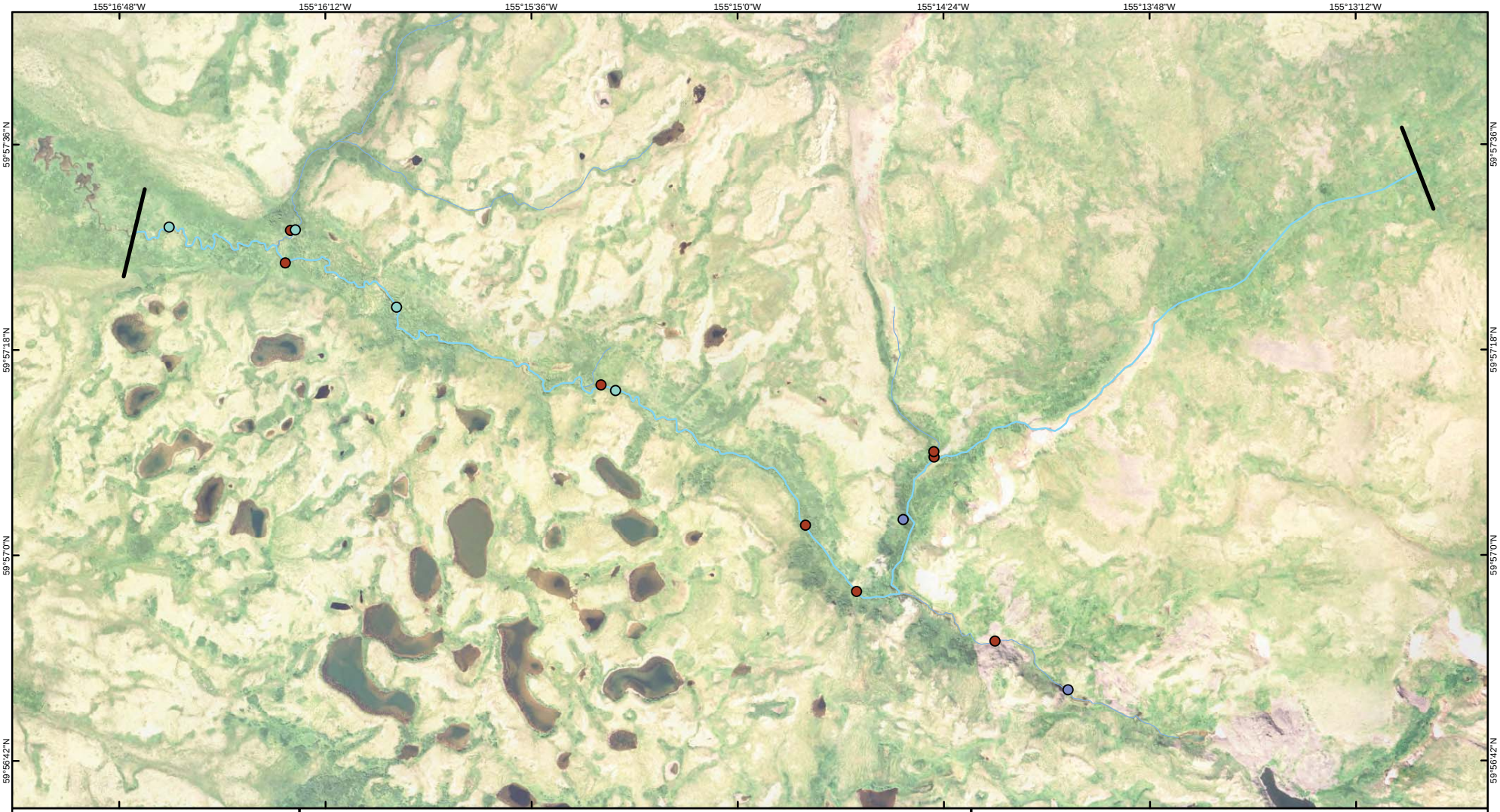
Table B.6-2.
2004-2008 number of fish observations by lifestage within NFK-F mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult			Juvenile				Juvenile/Adult[a]			Total
			Jul	Aug	Subtotal	Jul	Aug	Sep	Subtotal	Aug	Sep	Subtotal	
Chinook salmon	2008	Snorkel					4		4				4
Dolly Varden	2008	Electrofishing						4	4		1	1	5
		Snorkel								2		2	2
		Visual Observation		1	1						1	1	2
sculpin sp.	2005	Electrofishing	2		2	31			31				33
	2008	Electrofishing								29	14	43	43
		Snorkel								5		5	5

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.


155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
155°0'0"W
154°50'0"W
154°40'0"W
154°30'0"W
60°0'0"N
59°55'0"N
59°50'0"N
59°45'0"N
59°40'0"N
Black Lake
"Cone (Black) Mountain"
Lilly Lake
Big Wiggly Lake
NFK Reach F
Nondalton
Lake Clark National
tem Koktuli River
North Fork Koktuli River
"Koktuli Confluence"
South Fork Koktuli River
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Sandhouse Mountain
Sharp Mountain
Chigmit Lake
Kaskanak Creek
Lake #2
Newhalen River
Iliamna
Jackrabbit Is.
Dog Is.
Eagle Bay Is.
Twomile Is.
Rabbit Is.
Eagle
Newhalen
Millet Point
Iliamna Lake
Bering Sea
Area of Detail
Legend
General Deposit Location
Watershed Boundary
Mainstem Stream Reach
NFK Reach F
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
N
W
E
S
Miles
0
5
10
Kilometers
0
5
10
THE pebble PARTNERSHIP
Figure B.6-1a
Reach NFK-F
RDI_R2_OverviewLocator_NFK-F_Fig-B.6-1a_11x17L_6of19_D03.mxd
February 5, 2011
Author: RDI - MRA


155°18'0"W
155°16'48"W
155°15'36"W
155°14'24"W
155°13'12"W
59°57'36"N
59°57'0"N
59°56'24"N
NFK 1.310.10
NFK 1.310
NFK 1.320
NFK 1.350
NFK-F
NFK 1.340
Kokuli River
North Fork Kokuli
Sorth Fork Kokuli
Upper Talarik Creek
Legend
Mainstem Stream Reach
Tributary Streams
Reach Boundaries
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
Miles
0
0.3
0.6
Kilometers
0
0.3
0.6
THE pebble PARTNERSHIP
Figure B.6-1b
NFK-F
Mainstem and Tributaries
Reference Map
RDI_R2_MainstemTrib_NFK-F_Fig-B.6-1b_11x17L_6of19_D01.mxd
February 5, 2011
Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

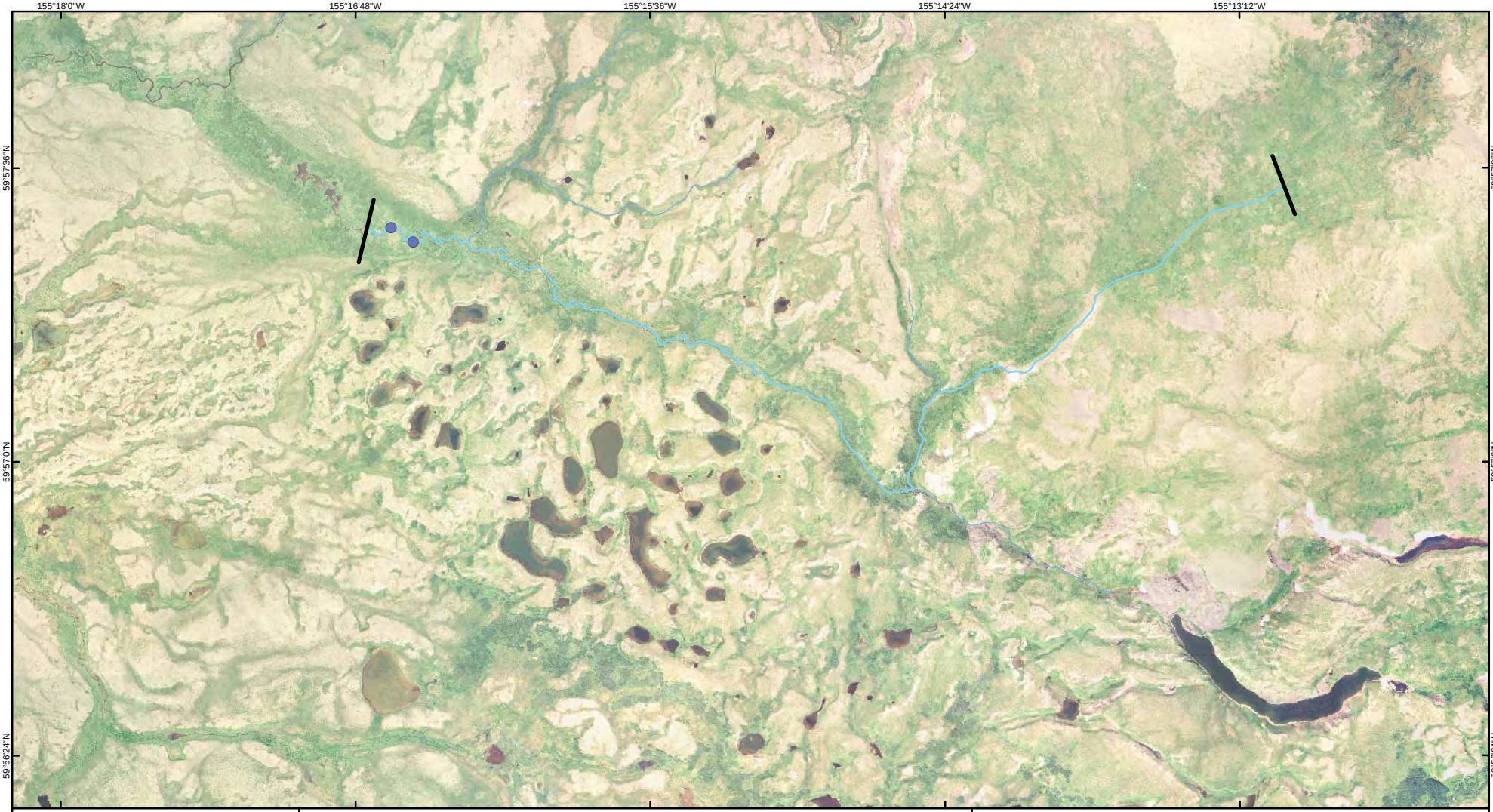
Miles
0 0.2 0.4

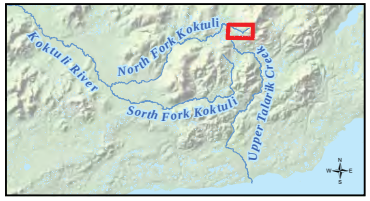
Kilometers
0 0.2 0.4

THE pebble PARTNERSHIP

Figure B.6-2
NFK-F
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_NFK-F_Fig-B.6-2_11x17L_6of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

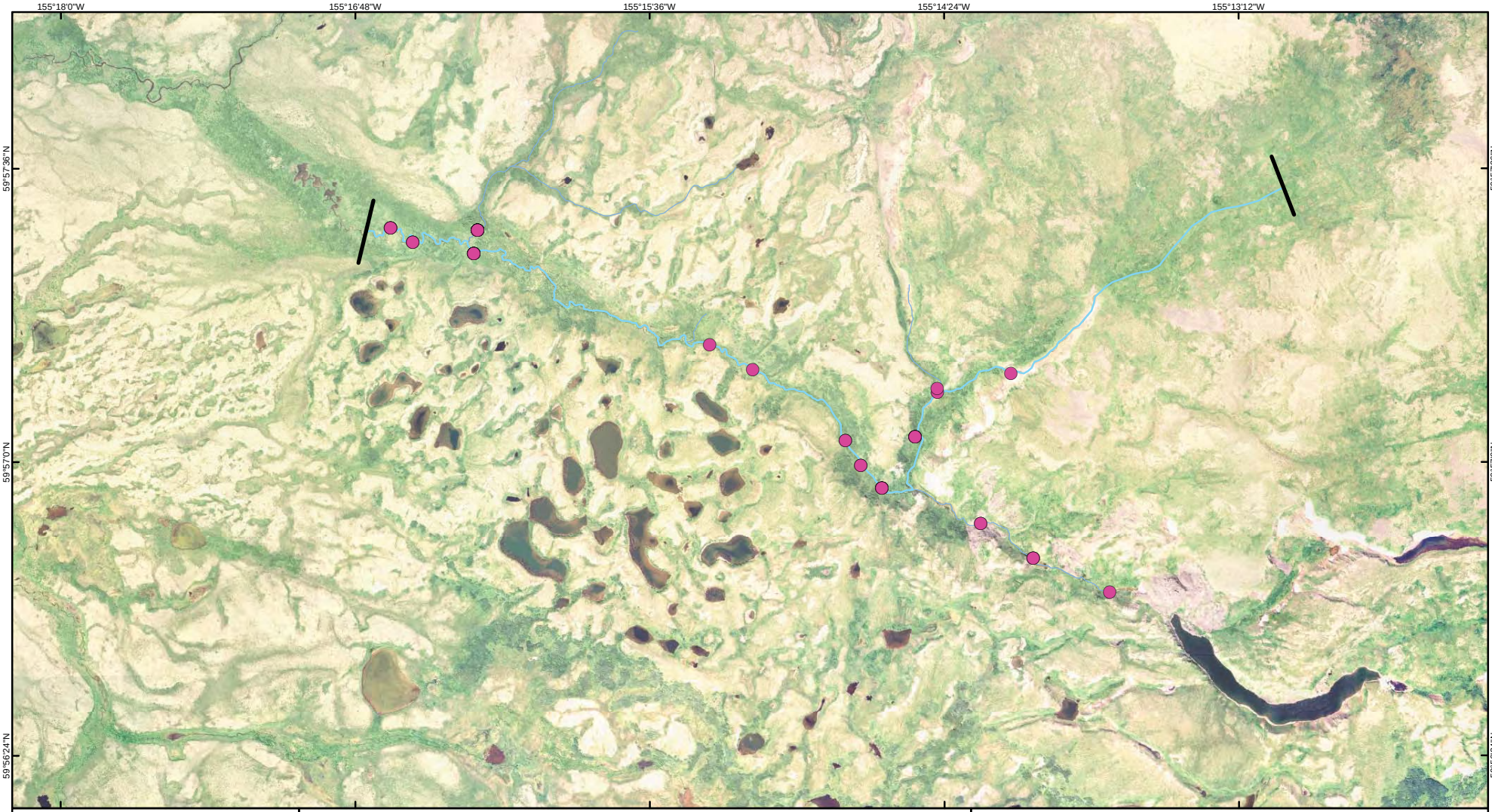
Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.6-3
NFK-F
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_NFK-F_Fig-B.6-3_11x17L_6of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.6-4
NFK-F
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_NFK-F_Fig-B.6-4_11x17L_6of19_D04.mxd	February 5, 2011
	Author: RDI - MRA

PEBBLE PROJECT
ENVIRONMENTAL BASELINE STUDIES

APPENDIX B
REACH ANALYSIS

SOUTH FORK KOKTULI RIVER BASIN

JANUARY 2011

Maps

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Figure B.7-3 SFK-A All Aquatic Habitat Data Collection Sites
Figure B.7-4 SFK-A Anadromous Fish Distribution, 2004-2008 Observations
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Figure B.7-9 SFK-A Chum Salmon Spawning Locations
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Figure B.7-11 SFK-A Sockeye Salmon Spawning Locations
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Figure B.8-16 SFK-B Sockeye Salmon Spawning Locations
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Figure B.9-4 SFK-C Anadromous Fish Distribution, 2004-2008 Observations
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Figure B.10-3 SFK-D All Aquatic Habitat Data Collection Sites
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CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.7
SOUTH FORK KOKTULI RIVER REACH A (SFK-A)

Table B.7-1.
List of species found in SFK-A.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*
lamprey [c]	*Lampetra* sp.

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

[c] identified to genus, may include arctic and Pacific lamprey

Table B.7-2.
2004-2008 number of fish observations by lifestage within SFK-A mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult					Juvenile						Juvenile/Adult[a]					Total
			Apr	Jul	Aug	Sep	Subtotal	Apr	Jul	Aug	Sep	Nov	Subtotal	Apr	Jul	Aug	Sep	Subtotal	
Chinook salmon	2004	Electrofishing								2			2						2
		Minnow Trap								9			9						9
	2005	Electrofishing							18				18						18
		Minnow Trap								7			7						7
		Snorkel		6			6		2104				2104						2110
	2006	Electrofishing						16					16						16
		Minnow Trap						3				205	208						208
		Snorkel		3	1		4		4514	796	106		5416						5420
	2007	Electrofishing							16				16						16
		Minnow Trap						2					2						2
		Snorkel		1			1		4084				4084						4085
	2008	Seine								15			15						15
		Snorkel								403			403						403
chum salmon	2005	Snorkel		3			3												3
	2006	Electrofishing						5					5						5
		Snorkel		13	1		14		1				1						15
	2007	Snorkel		5			5		1				1						6
coho salmon	2004	Electrofishing								3			3						3
		Minnow Trap						2		100			102						102
	2005	Electrofishing							164				164						164
		Minnow Trap								229			229						229
		Snorkel							3617				3617						3617
	2006	Electrofishing						3					3						3
		Minnow Trap						7				25	32						32
		Snorkel							1998	581	54		2633						2633

Table B.7-2. Continued

Species	Year	Method	Adult					Juvenile						Juvenile/Adult[a]					Total
			Apr	Jul	Aug	Sep	Subtotal	Apr	Jul	Aug	Sep	Nov	Subtotal	Apr	Jul	Aug	Sep	Subtotal	
coho salmon	2007	Electrofishing							82				82						82
(cont)		Minnow Trap						26					26						26
		Snorkel							3281				3281						3281
		Visual Observation						1					1						1
	2008	Seine								30			30						30
		Snorkel								662			662						662
Sockeye salmon	2005	Electrofishing							4				4						4
		Snorkel		41			41		90				90						131
	2006	Electrofishing						45					45						45
		Snorkel		14	5	1	20		187	3	6		196						216
	2007	Electrofishing						96					96						96
		Snorkel		29			29		321				321						350
	2008	Seine								7			7						7
		Snorkel			3		3			9			9						12
Pacific salmon sp.	2004	Minnow Trap								231			231						231
	2005	Minnow Trap								1102			1102						1102
arctic grayling	2005	Snorkel		47			47		18				18		2			2	67
	2006	Snorkel		16			16												16
	2007	Snorkel		57			57												57
	2008	Seine			2		2												2
		Snorkel			1		1												1
		Visual Observation			1		1												1
Dolly Varden	2004	Electrofishing								5			5						5
		Minnow Trap						3		25			28						28
	2005	Electrofishing							28				28						28
		Minnow Trap			1		1			14			14						15
		Snorkel		9			9		81				81		8			8	98

Table B.7-2. Continued

Species	Year	Method	Adult					Juvenile						Juvenile/Adult[a]					Total
			Apr	Jul	Aug	Sep	Subtotal	Apr	Jul	Aug	Sep	Nov	Subtotal	Apr	Jul	Aug	Sep	Subtotal	
Dolly Varden	2006	Electrofishing						5					5						5
(cont)		Minnow Trap						3				13	16						16
		Snorkel							10		4		14		1			1	15
	2007	Electrofishing							4				4						4
		Snorkel		4			4		165				165		5			5	174
	2008	Seine								1			1						1
		Snorkel								1			1						1
rainbow trout	2004	Electrofishing								2			2						2
		Minnow Trap								4			4						4
	2005	Minnow Trap						1					1						1
		Snorkel		2			2		3				3						5
	2006	Snorkel		1		2	3		1				1						4
	2007	Electrofishing							1				1						1
		Snorkel		5			5		4				4						9
	2008	Snorkel								1			1						1
whitefish sp.	2006	Snorkel		26	1		27												27
	2007	Snorkel		4			4												4
Salmonid sp.	2006	Snorkel								2			2						2
sculpin sp.	2004	Minnow Trap	2		2		4	3		2			5			14		14	23
	2005	Electrofishing												3				3	3
		Minnow Trap								1			1						1
	2006	Electrofishing						1					1	23				23	24
		Minnow Trap												2				2	2
		Snorkel									2		2				1	1	3
	2007	Minnow Trap						2					2						2
	2008	Seine			3		3			30			30						33
		Snorkel														41		41	41

Table B.7-2. Continued

Species	Year	Method	Adult					Juvenile						Juvenile/Adult[a]					Total
			Apr	Jul	Aug	Sep	Subtotal	Apr	Jul	Aug	Sep	Nov	Subtotal	Apr	Jul	Aug	Sep	Subtotal	
ninespine stickleback	2004	Minnow Trap						1		1			2						2
	2006	Electrofishing												1				1	1
	2007	Minnow Trap	13				13	19					19						32
threespine stickleback	2004	Minnow Trap						2					2						2
	2007	Minnow Trap						1					1						1
stickleback sp.	2006	Minnow Trap												1				1	1
lamprey sp.	2004	Electrofishing								1			1						1
	2006	Electrofishing						1					1						1
	2007	Electrofishing						3	2				5						5
		Snorkel							1				1						1
	2008	Seine								1			1						1
unidentified sp.	2006	Snorkel															2	2	2
	2007	Snorkel													3			3	3

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

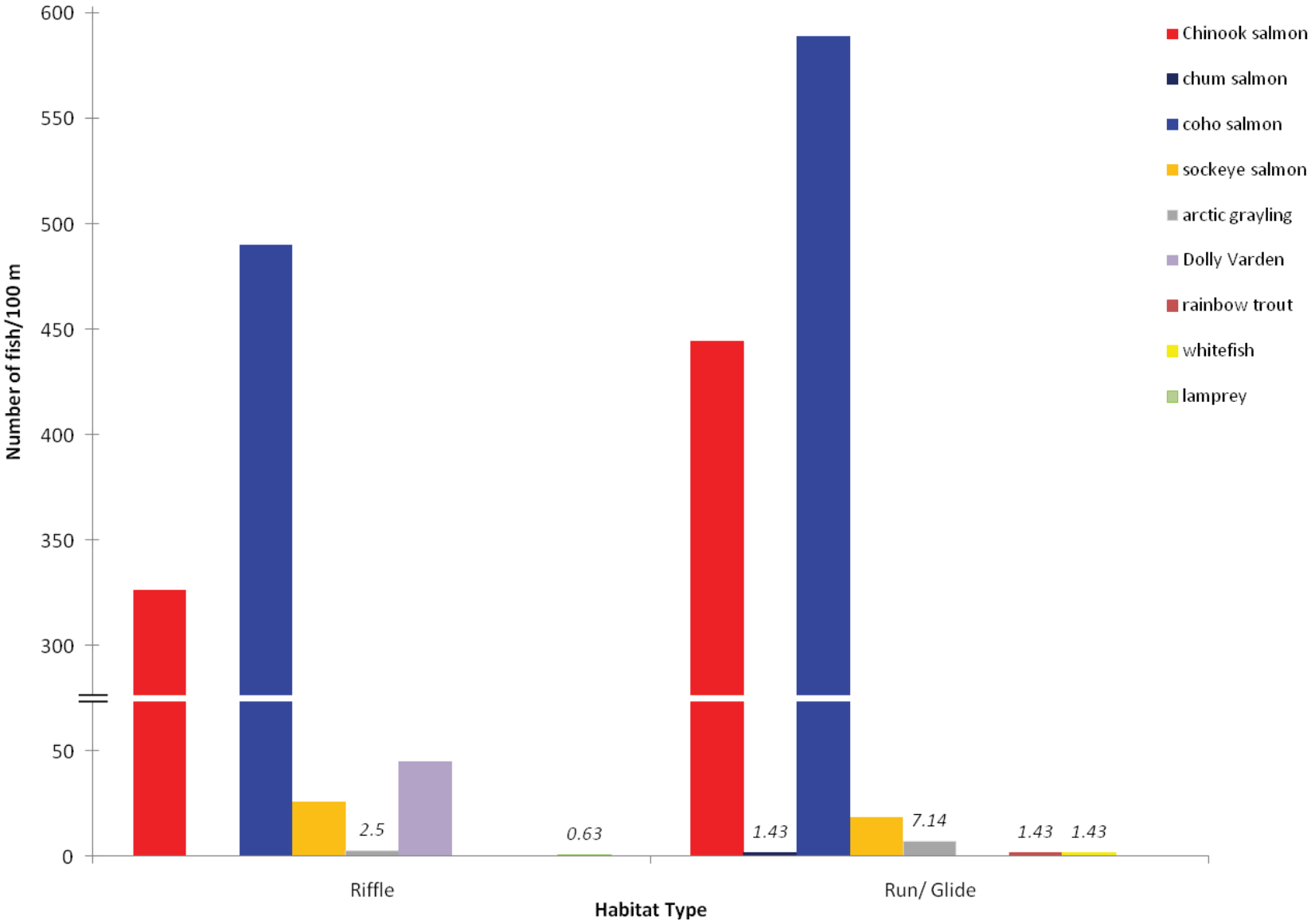


Figure B.7-7.
2004-2007 fish abundance by habitat type within mainstem SFK-A.

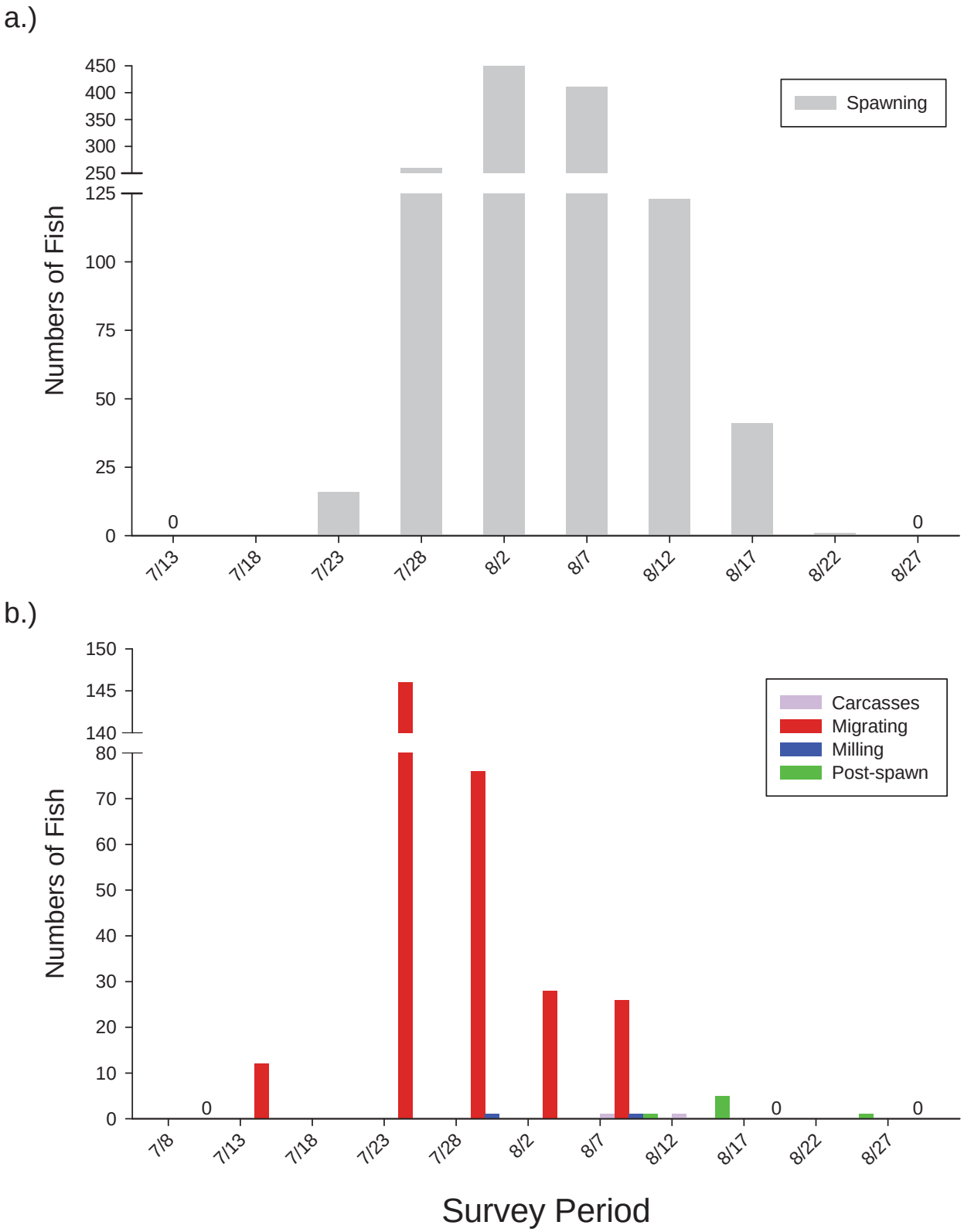


Figure B.7-12.
Observations of Chinook salmon during 2008 aerial surveys in SFK-A. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

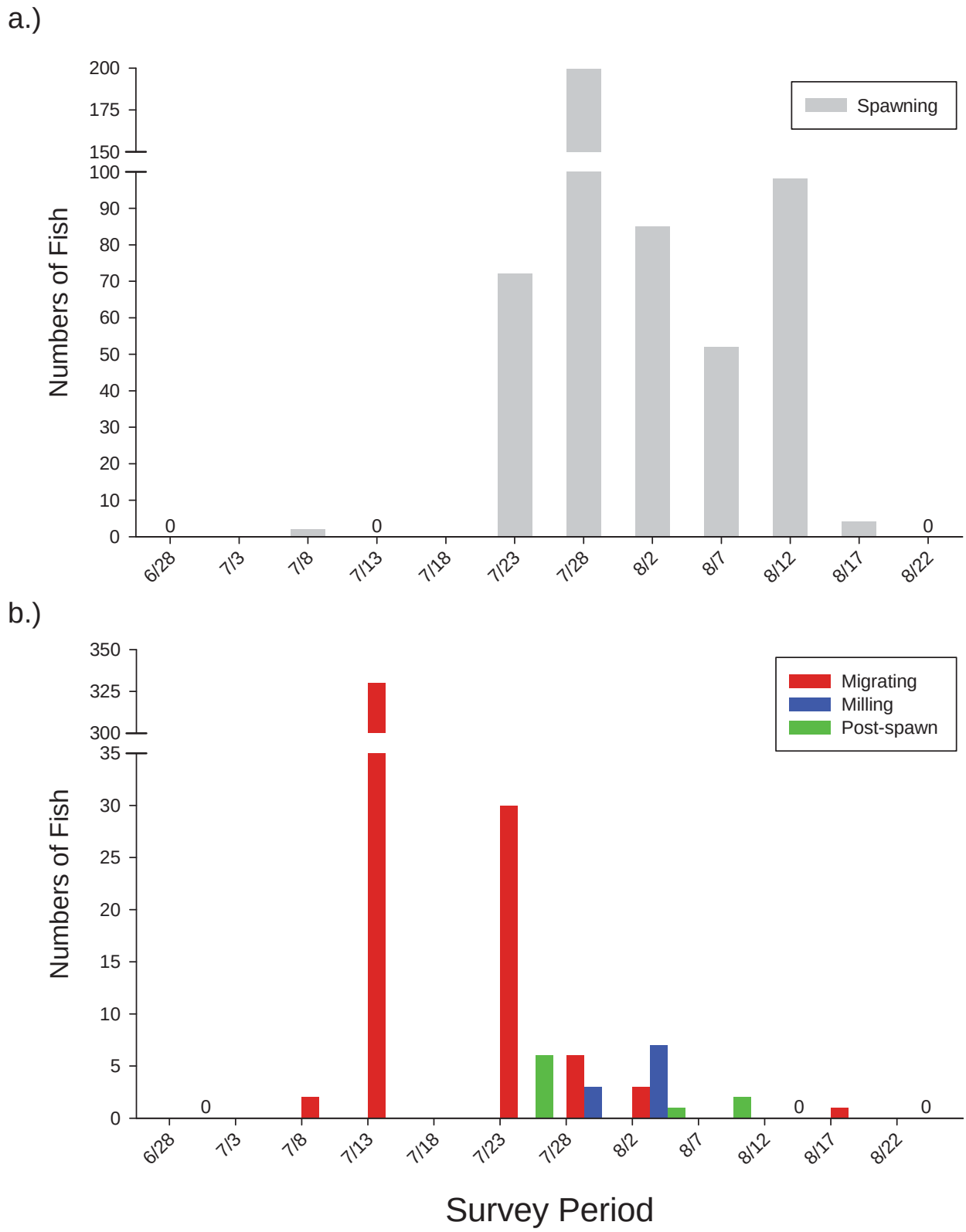


Figure B.7-13.
Observations of chum salmon during 2008 aerial surveys in SFK-A. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

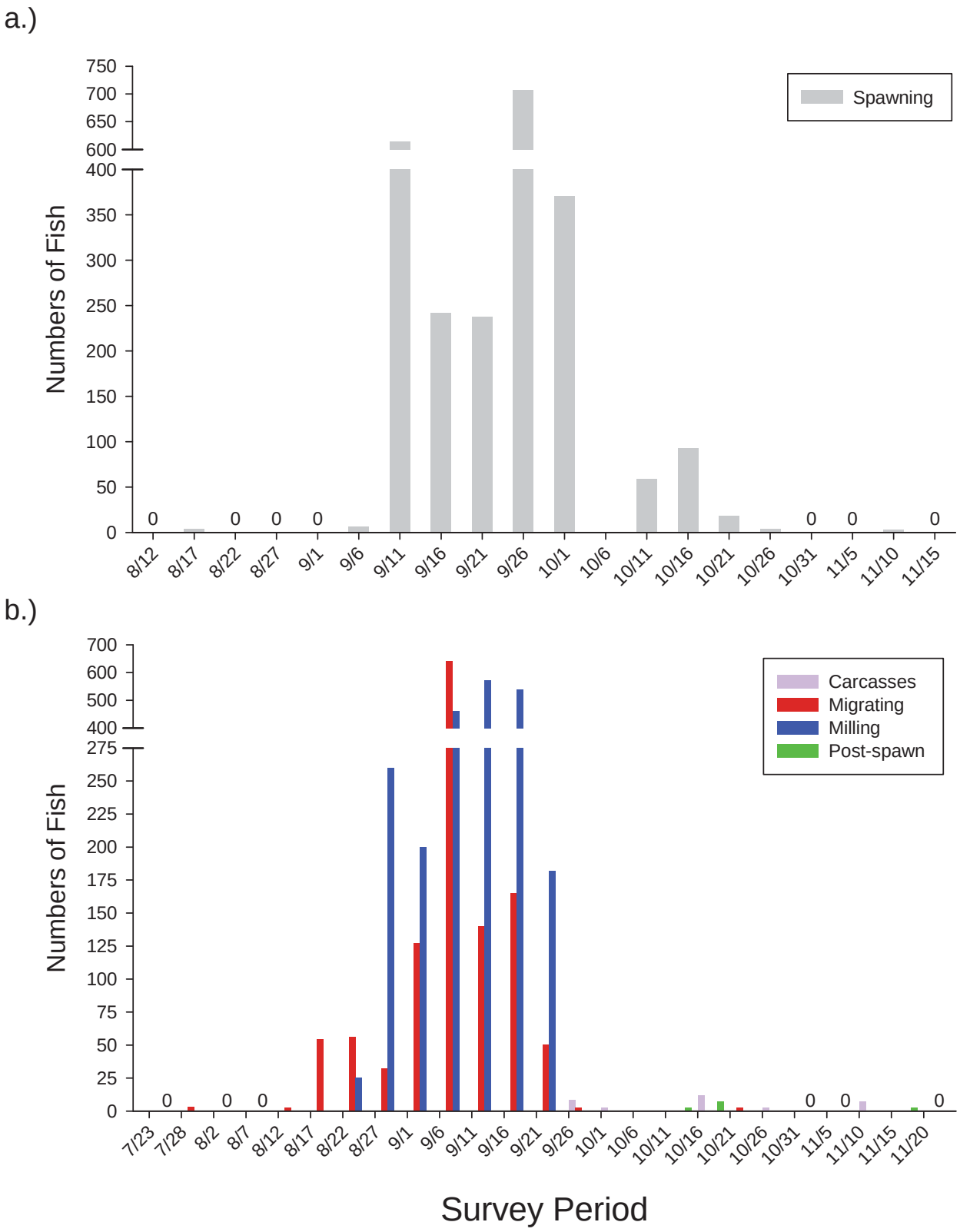


Figure B.7-14.
Observations of coho salmon during 2008 aerial surveys in SFK-A. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

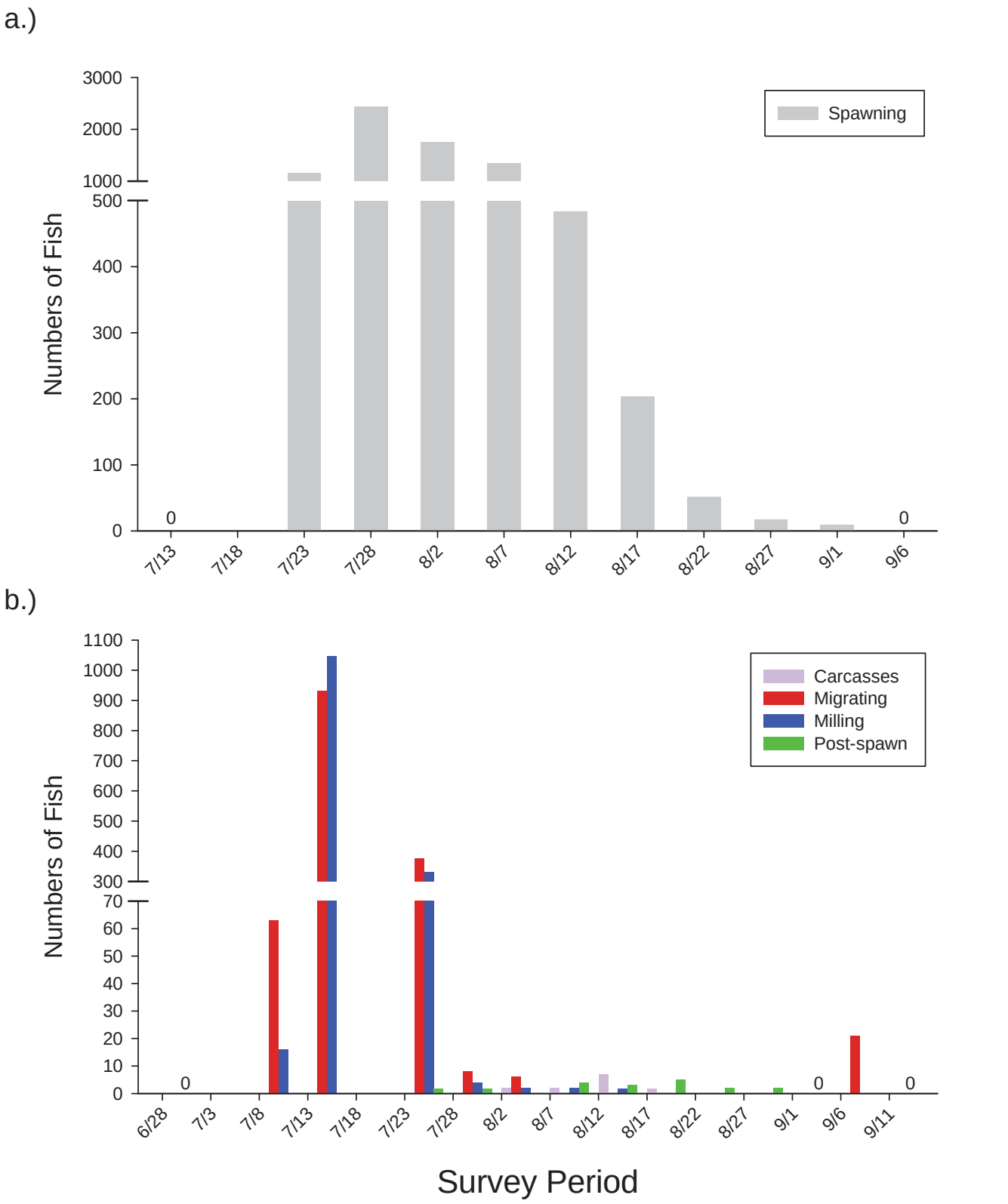


Figure B.7-15.
Observations of sockeye salmon during 2008 aerial surveys in SFK-A. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.7-3.
SFK-A fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/13/2004	SFK04WT-08	Dolly Varden	minnow trap		24		1		1	
		sculpin sp.	minnow trap		24	2			2	
	SFK04WT-09	Dolly Varden	minnow trap		24		2		2	
		sculpin sp.	minnow trap		24		1		1	
		ninespine stickleback	minnow trap		24		1		1	
	SFK04WT-10	coho salmon	minnow trap		24		1		1	
		threespine stickleback	minnow trap		24		1		1	
	SFK04WT-11A	coho salmon	minnow trap		24		1		1	
		sculpin sp.	minnow trap		24		2		2	
		threespine stickleback	minnow trap		24		1		1	
4/1/2005	SFK05WT-02	rainbow trout	minnow trap		2		1		1	
4/2/2005	SFK05WT-02	sculpin sp.	electrofishing					3	3	

Table B.7-3. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/4/2006	SFK06WT-01	Chinook salmon	electrofishing	100			6		6	6.0
		Chinook salmon	minnow trap		24		1		1	
		chum salmon	electrofishing	100			3		3	3.0
		coho salmon	electrofishing	100			3		3	3.0
		coho salmon	minnow trap		24		7		7	
		sockeye salmon	electrofishing	100			8		8	8.0
		Dolly Varden	electrofishing	100			4		4	4.0
		Dolly Varden	minnow trap		24		1		1	
		sculpin sp.	electrofishing	100			1	23	24	24.0
		sculpin sp.	minnow trap		24			1	1	
		ninespine stickleback	electrofishing	100				1	1	1.0
		stickleback sp.	minnow trap		24			1	1	
	SFK06WT-02	Chinook salmon	electrofishing	15			10		10	66.7
		Chinook salmon	minnow trap		24		1		1	
		chum salmon	electrofishing	15			2		2	13.3
		sockeye salmon	electrofishing	15			37		37	246.7
		Dolly Varden	electrofishing	15			1		1	6.7
		Dolly Varden	minnow trap		24		2		2	
		sculpin sp.	minnow trap		24			1	1	
		lamprey sp.	electrofishing	15			1		1	6.7
	SFK06WT-03	Chinook salmon	minnow trap		21		1		1	

Table B.7-3. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
11/1/2006	SFK-06-WT5	Chinook salmon	minnow trap		24		62		62	
		coho salmon	minnow trap		24		11		11	
		Dolly Varden	minnow trap		24		7		7	
	SFK-06-WT6	Chinook salmon	minnow trap		24		143		143	
		coho salmon	minnow trap		24		14		14	
		Dolly Varden	minnow trap		24		6		6	
4/5/2007	SFK07-10	Chinook salmon	minnow trap		22		2		2	
		coho salmon	minnow trap		22		26		26	
		sculpin sp.	minnow trap		22		2		2	
		ninespine stickleback	minnow trap		22	13	19		32	
		threespine stickleback	minnow trap		22		1		1	
4/6/2007	SFK07-10	coho salmon	visual observation				1		1	
		sockeye salmon	electrofishing				96		96	
		lamprey sp.	electrofishing				3		3	

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.7-4.
2008 fish observations by method at mainstem index sites located within SFK-A.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
SFK00.0	Chinook salmon	snorkel		45		45
	coho salmon	snorkel		37		37
	sculpin sp.	beach seine		3		3
		snorkel			4	4
	lamprey sp.	beach seine		1		1
SFK00.0 Total				**86**	**4**	**90**
SFK04.33	Chinook salmon	snorkel		54		54
	coho salmon	beach seine		2		2
		snorkel		144		144
	sockeye salmon	snorkel		1		1
	sculpin sp.	beach seine		6		6
		snorkel			3	3
SFK04.33 Total				**207**	**3**	**210**
SFK08.66	Chinook salmon	beach seine		9		9
	coho salmon	beach seine		2		2
		snorkel		46		46
	sockeye salmon	beach seine		1		1
	sculpin sp.	beach seine		9		9
		snorkel			12	12
SFK08.66 Total				**67**	**12**	**79**
SFK12.99	Chinook salmon	beach seine		3		3
		snorkel		102		102
	coho salmon	beach seine		20		20
		snorkel		116		116
	sockeye salmon	beach seine		2		2
		snorkel	3	2		5
	arctic grayling	snorkel	1			1
		visual observation	1			1
	sculpin sp.	beach seine		2		2
		snorkel			6	6
SFK12.99 Total			**5**	**247**	**6**	**258**

Table B.7-4. Continued

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
SFK17.32	Chinook salmon	beach seine		2		2
		snorkel		202		202
	coho salmon	beach seine		6		6
		snorkel		319		319
	sockeye salmon	beach seine		3		3
		snorkel		6		6
	arctic grayling	beach seine	2			2
	Dolly Varden	beach seine		1		1
		snorkel		1		1
	rainbow trout	snorkel		1		1
	sculpin sp.	beach seine	3	7		10
		snorkel			13	13
SFK17.32 Total			**5**	**548**	**13**	**566**
SFK21.65	Chinook salmon	beach seine		1		1
	sockeye salmon	beach seine		1		1
	sculpin sp.	beach seine		3		3
		snorkel			3	3
SFK21.65 Total				**5**	**3**	**8**

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

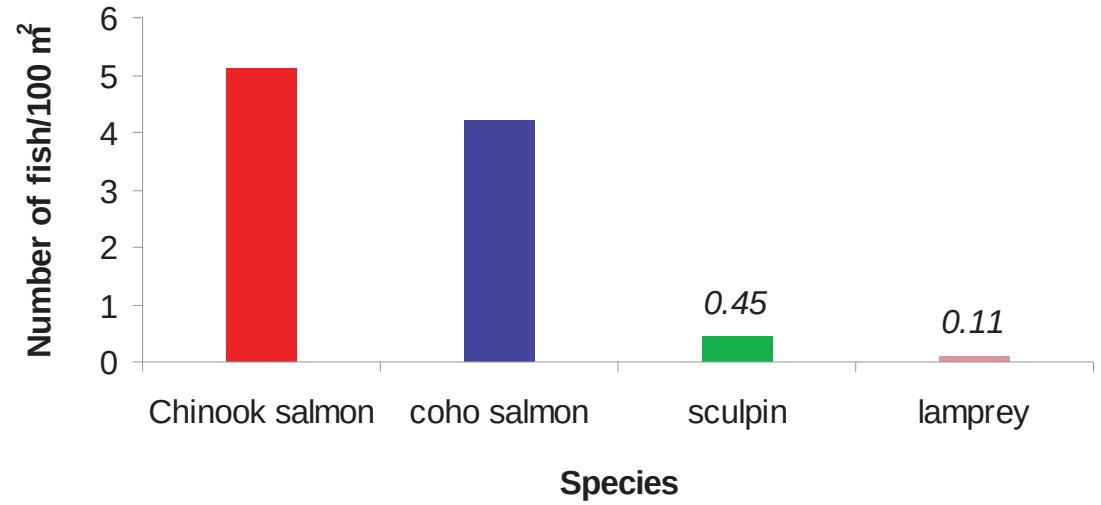


Figure B.7-17a.
2008 fish density in riffle habitat at mainstem index site (RKm 0.00) within SFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

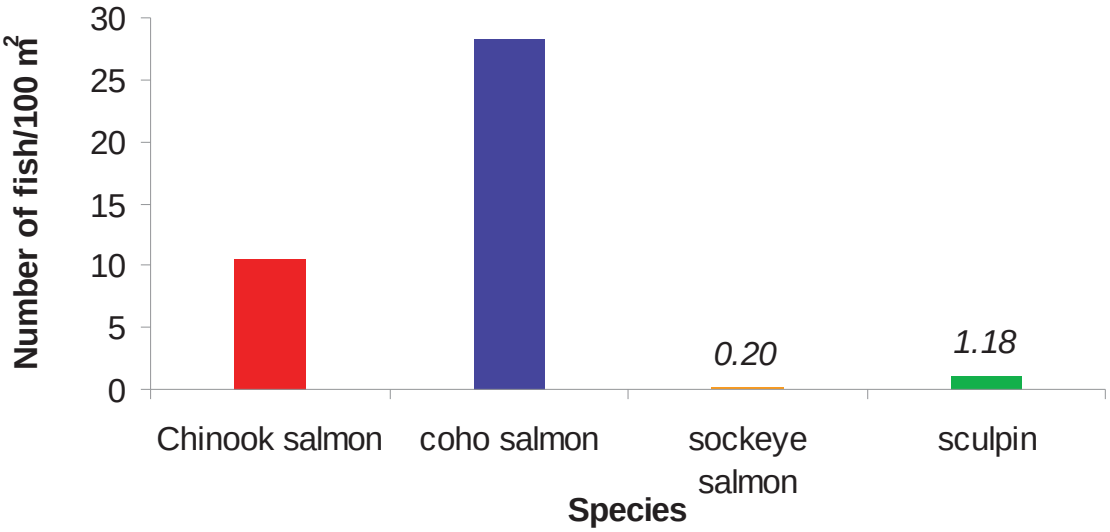


Figure B.7-17b.
2008 fish density in glide habitat at mainstem index site (RKm 4.33) within SFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

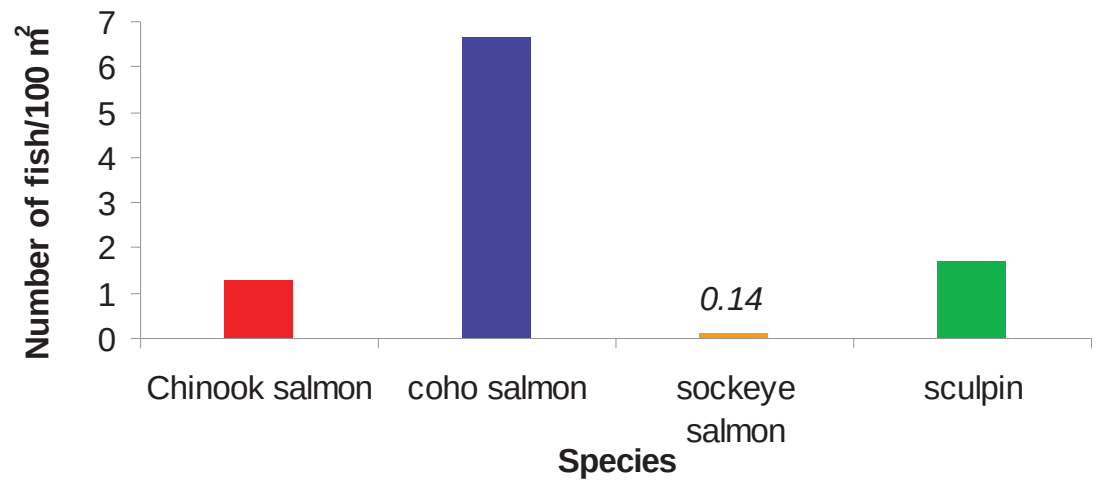


Figure B.7-17c.
2008 fish density in riffle habitat at mainstem index site (RKm 8.66) within SFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

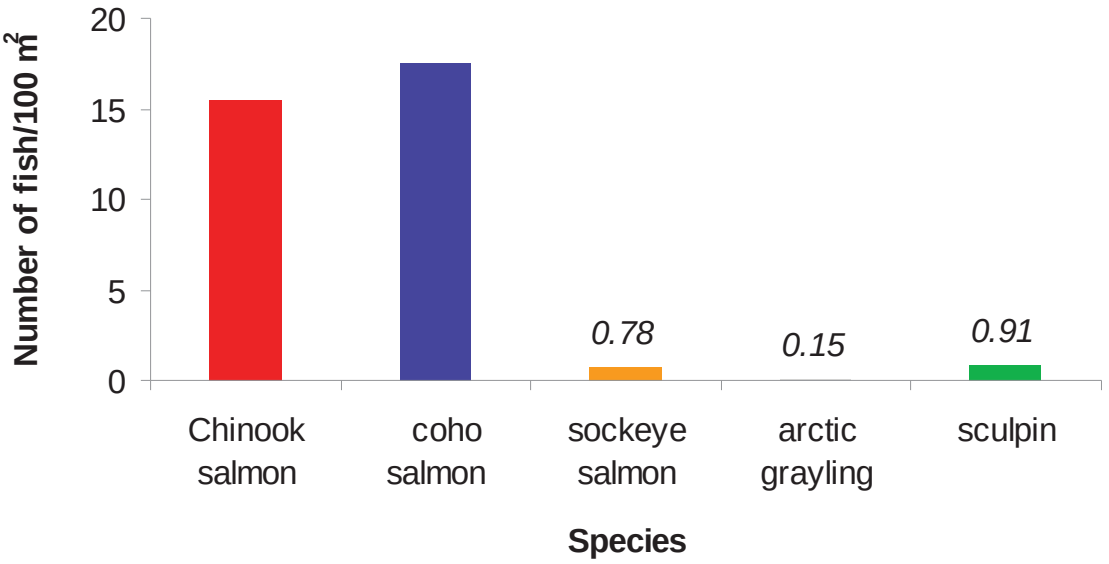


Figure B.7-17d.
2008 fish density in riffle habitat at mainstem index site (RKm 12.99) within SFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

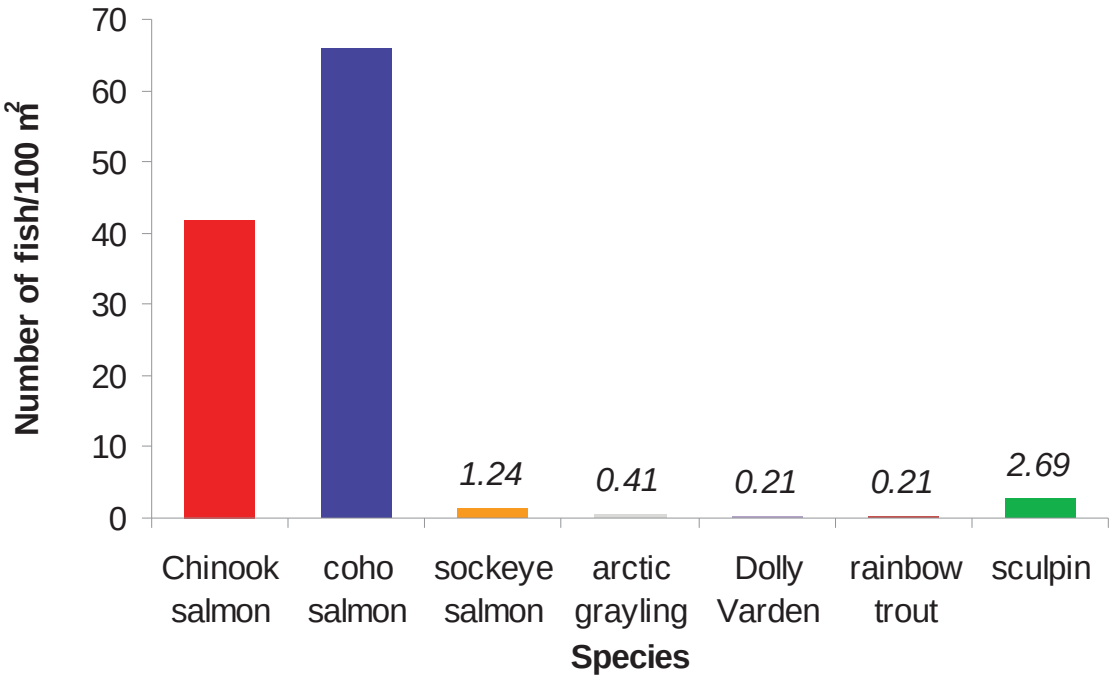


Figure B.7-17e.
2008 fish density in glide habitat at mainstem index site (RKm 17.32) within SFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.

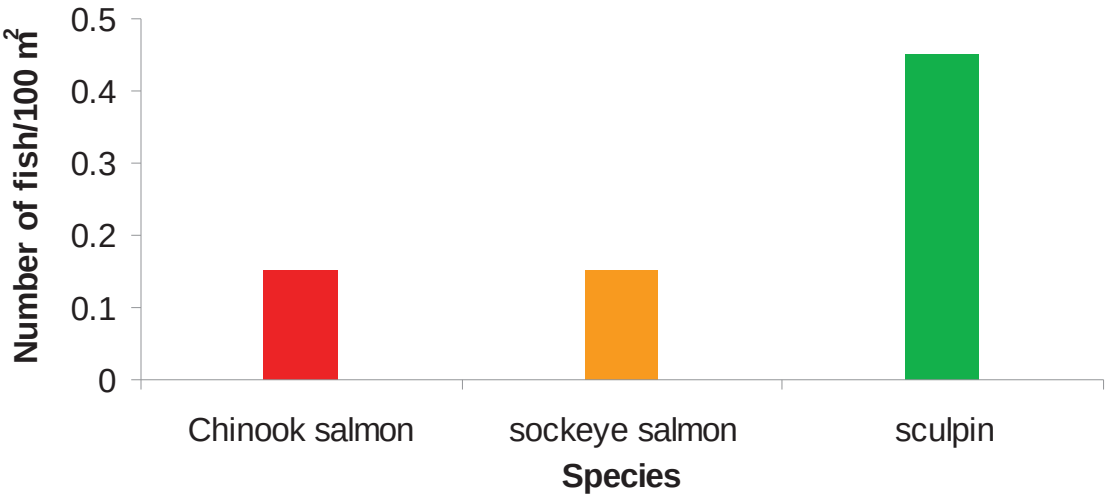
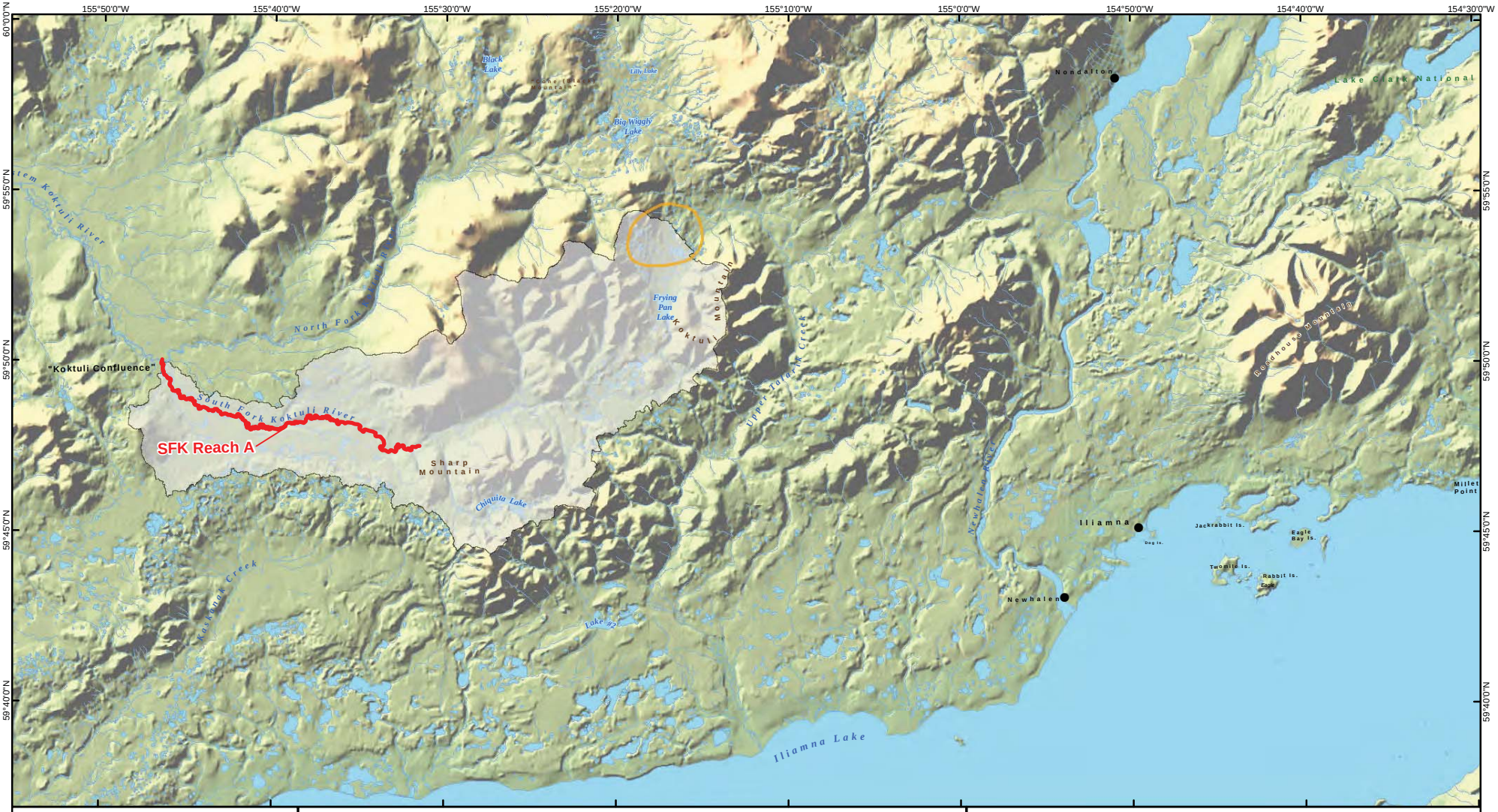
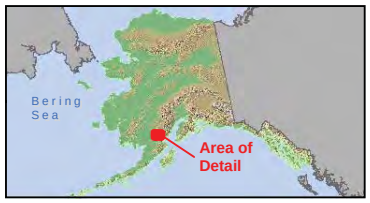


Figure B.7-17f.
2008 fish density in glide habitat at mainstem index site (RKm 21.65) within SFK-A. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach
- SFK Reach A

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

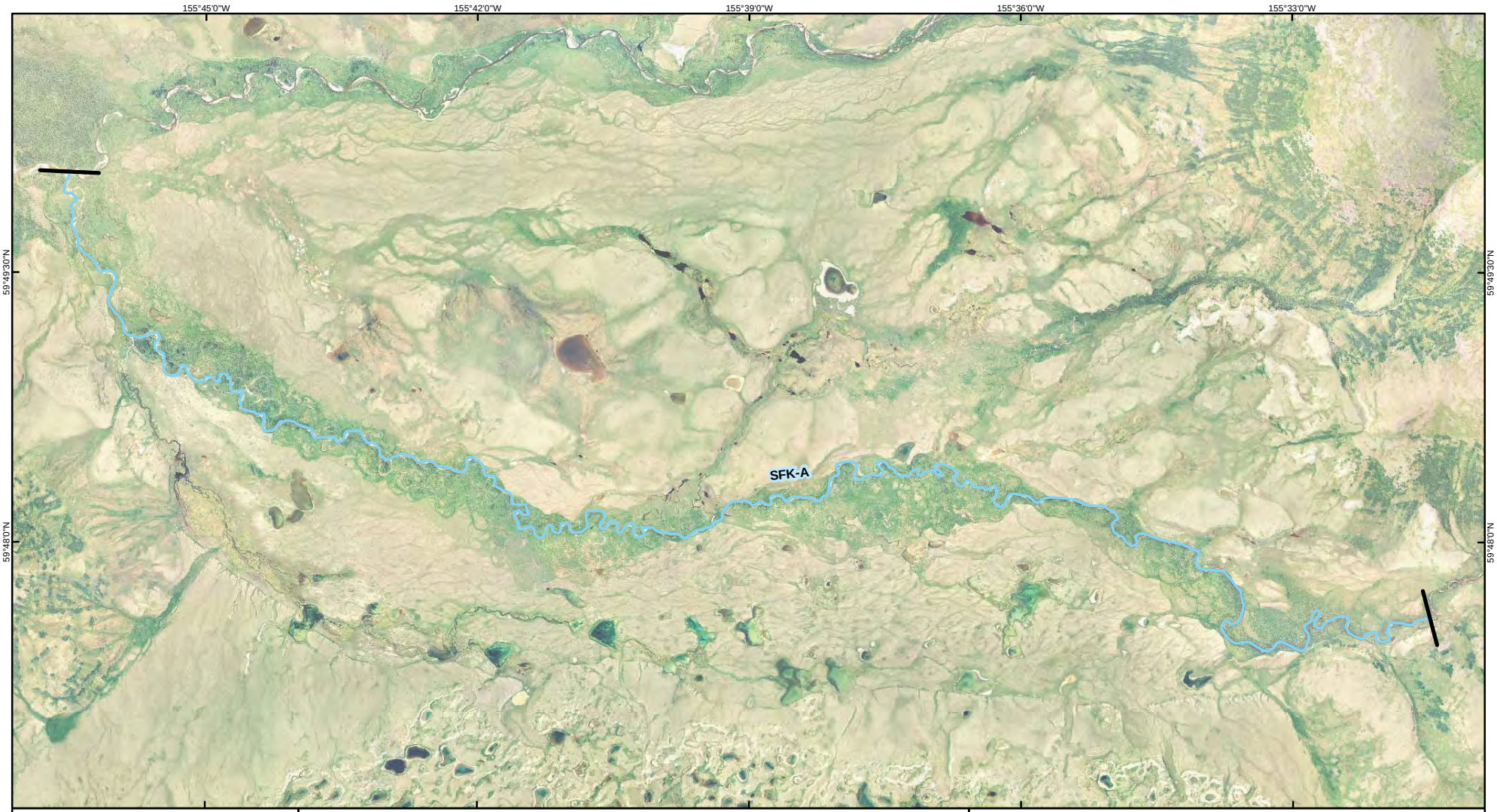
THE pebble PARTNERSHIP

Figure B.7-1a
Reach SFK-A

RDI_R2_OverviewLocator_SFK-A_Fig-B.7-1a_11x17L_7of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.7 1.4

Kilometers
0 0.7 1.4

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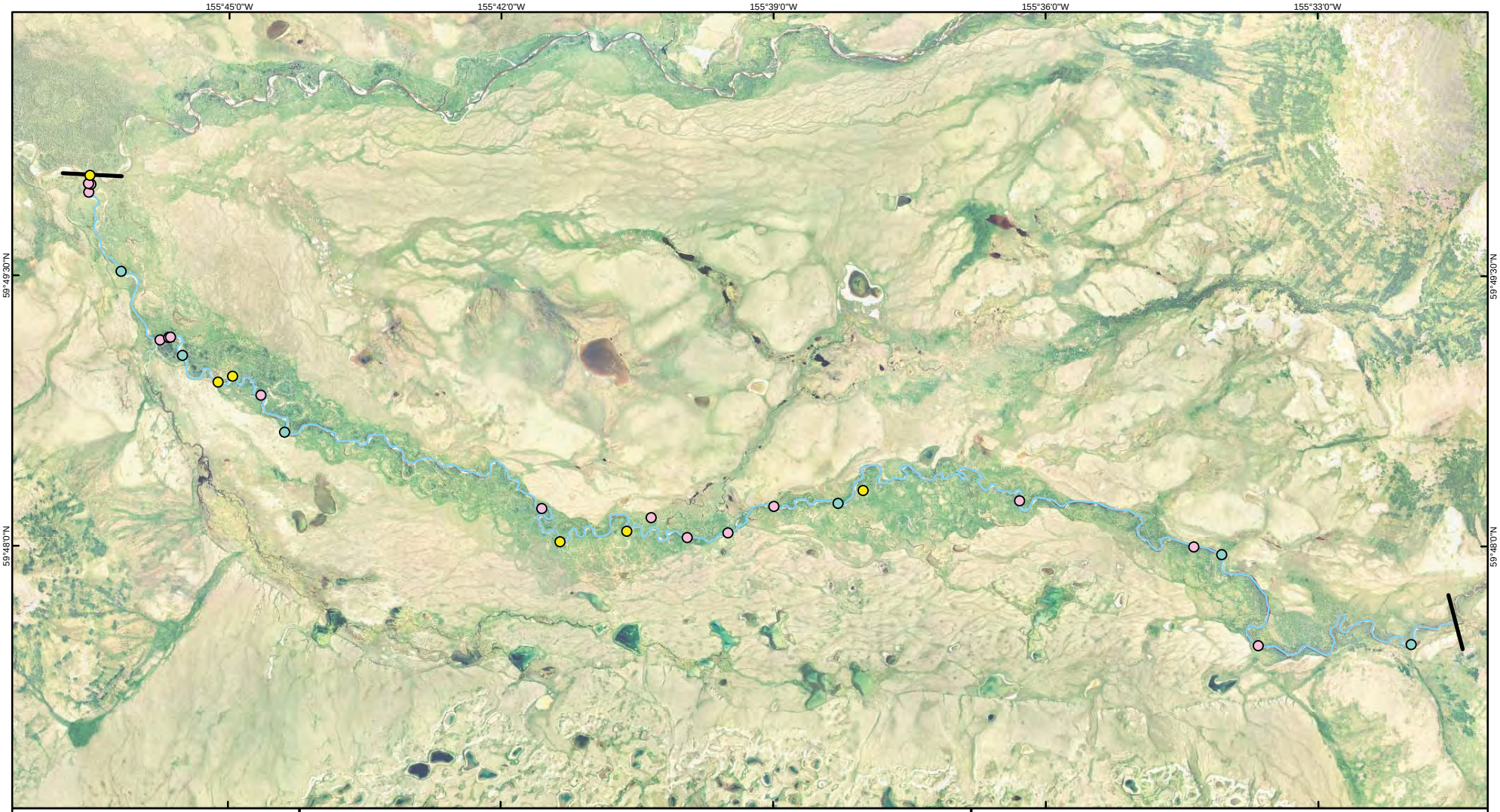
Figure B.7-1b
SFK-A
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_SFK-A_Fig-B.7-1b_11x17L_7of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

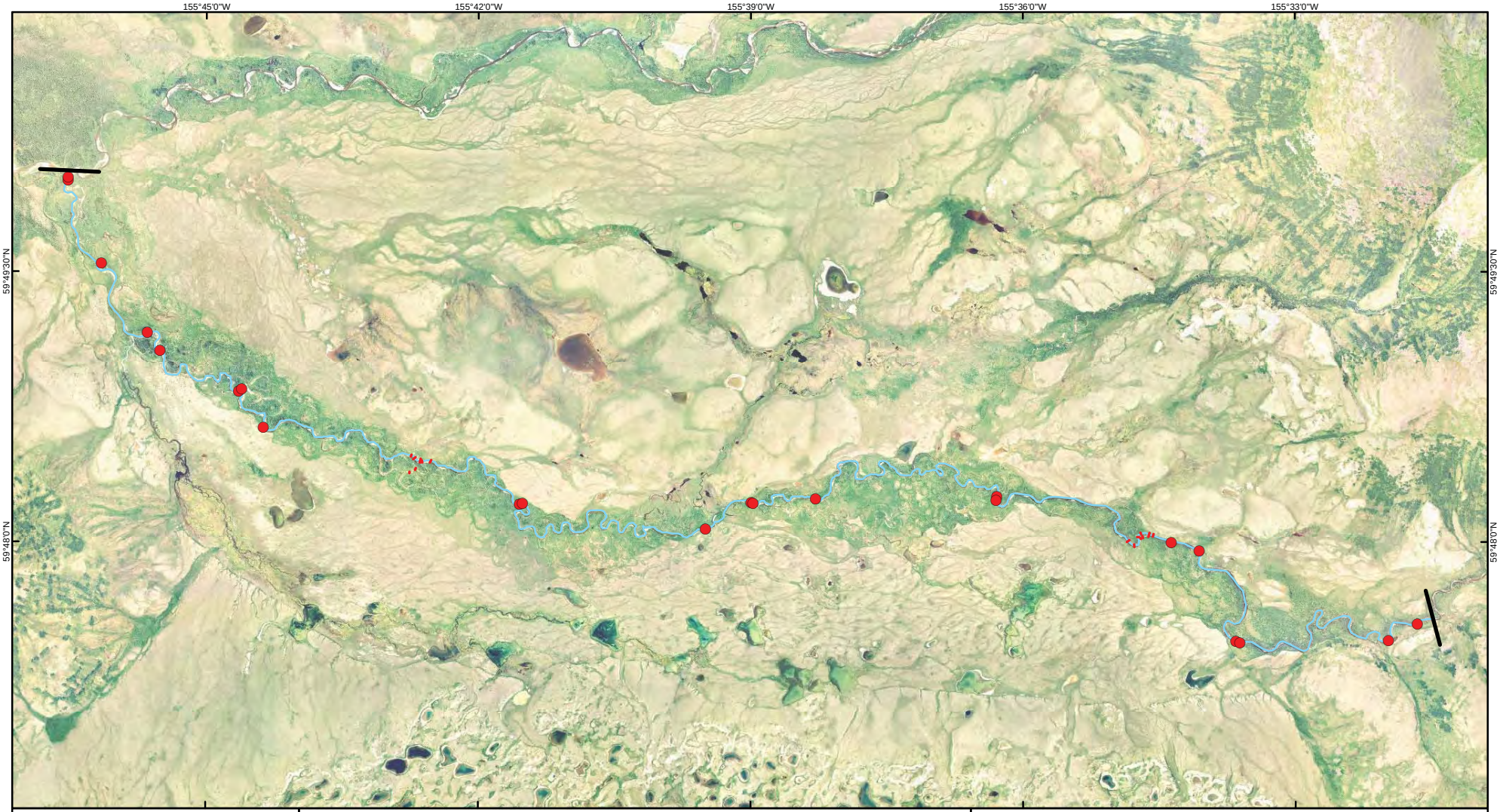
THE pebble PARTNERSHIP

Figure B.7-2
SFK-A
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_SFK-A_Fig-B.7-2_11x17L_7of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

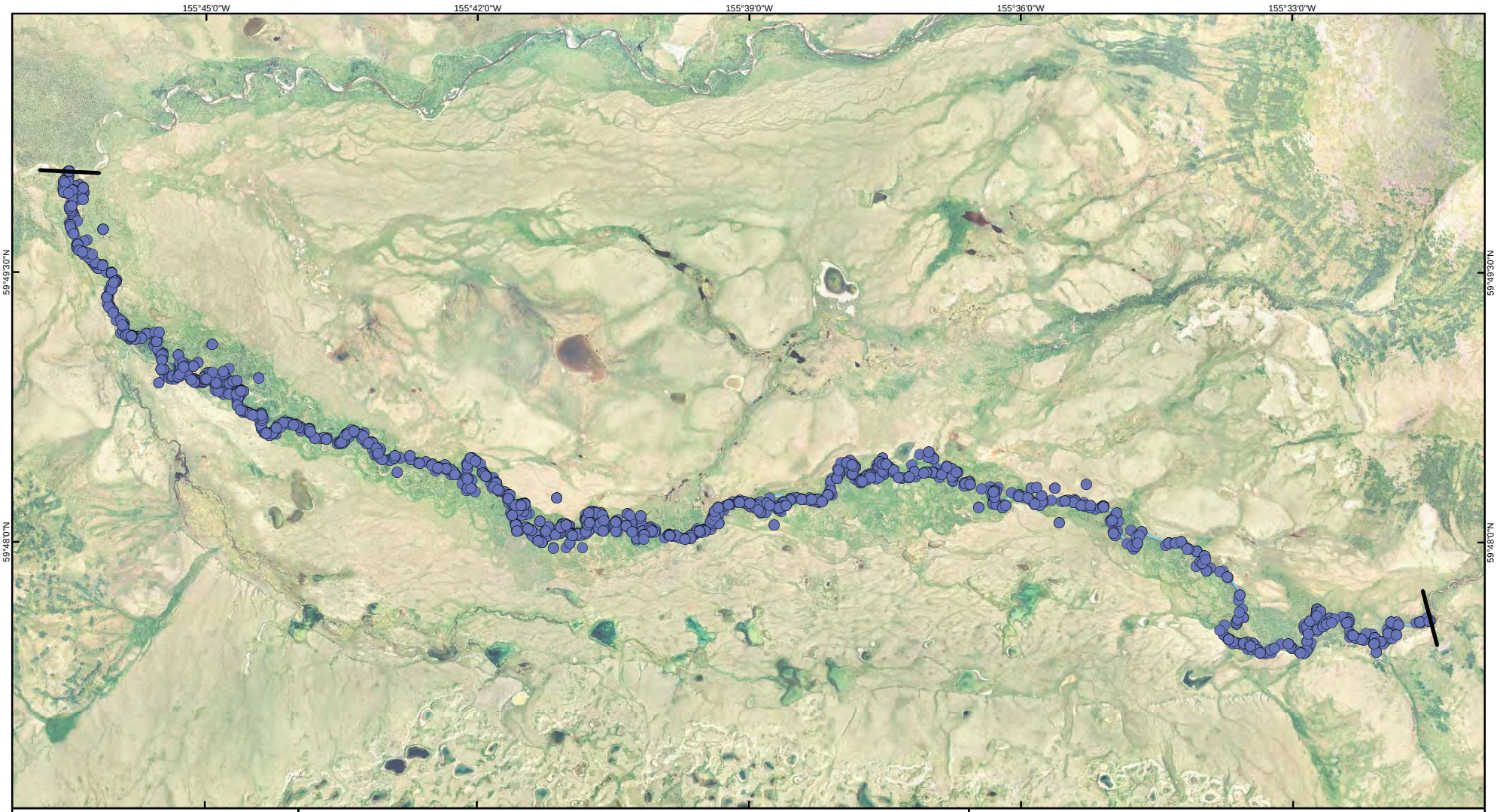
THE pebble PARTNERSHIP

Figure B.7-3
SFK-A
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_SFK-A_Fig-B.7-3_11x17L_7of19_D02.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

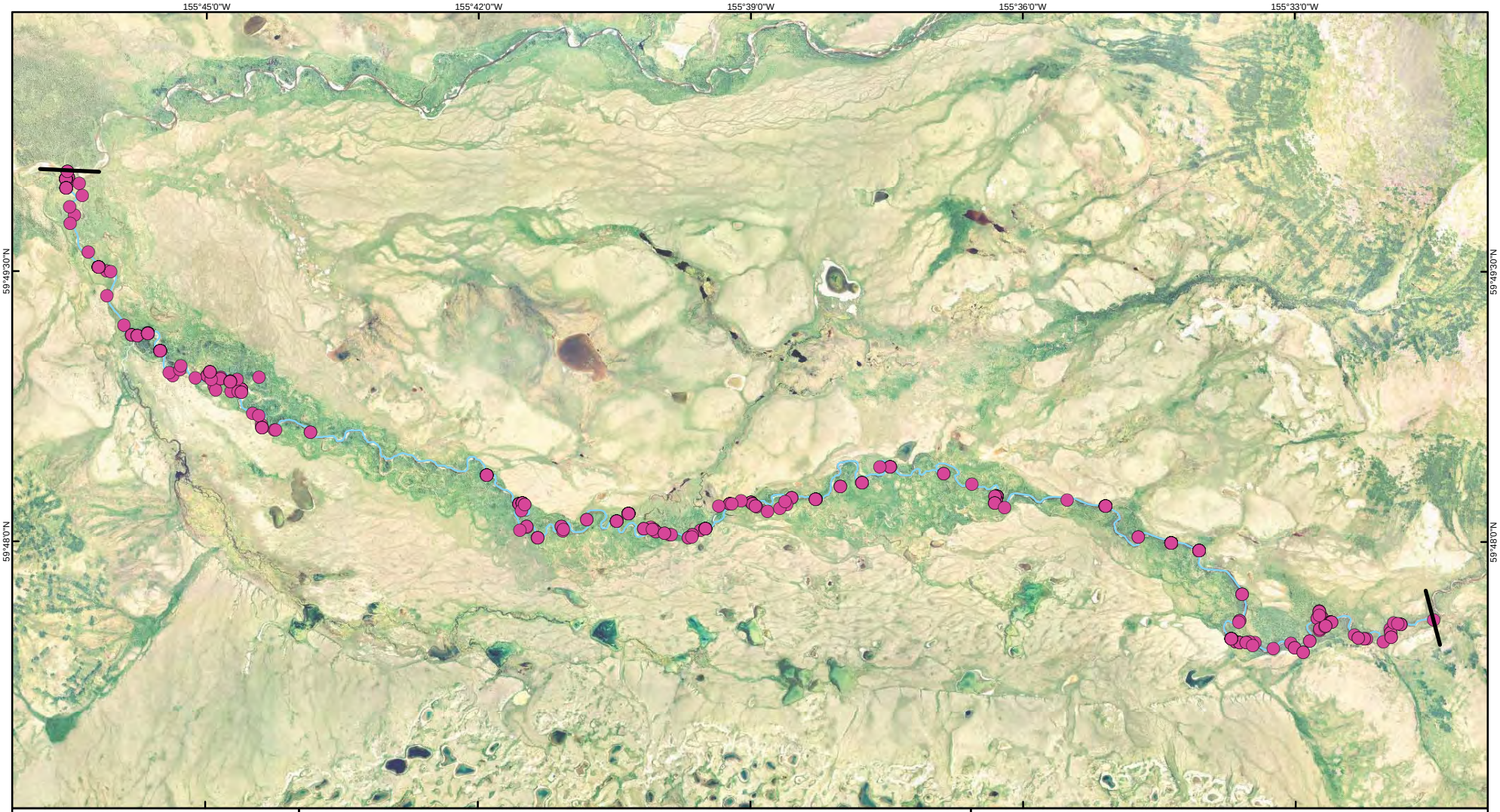
Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.7-4
SFK-A
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_SFK-A_Fig-B.7-4_11x17L_7of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

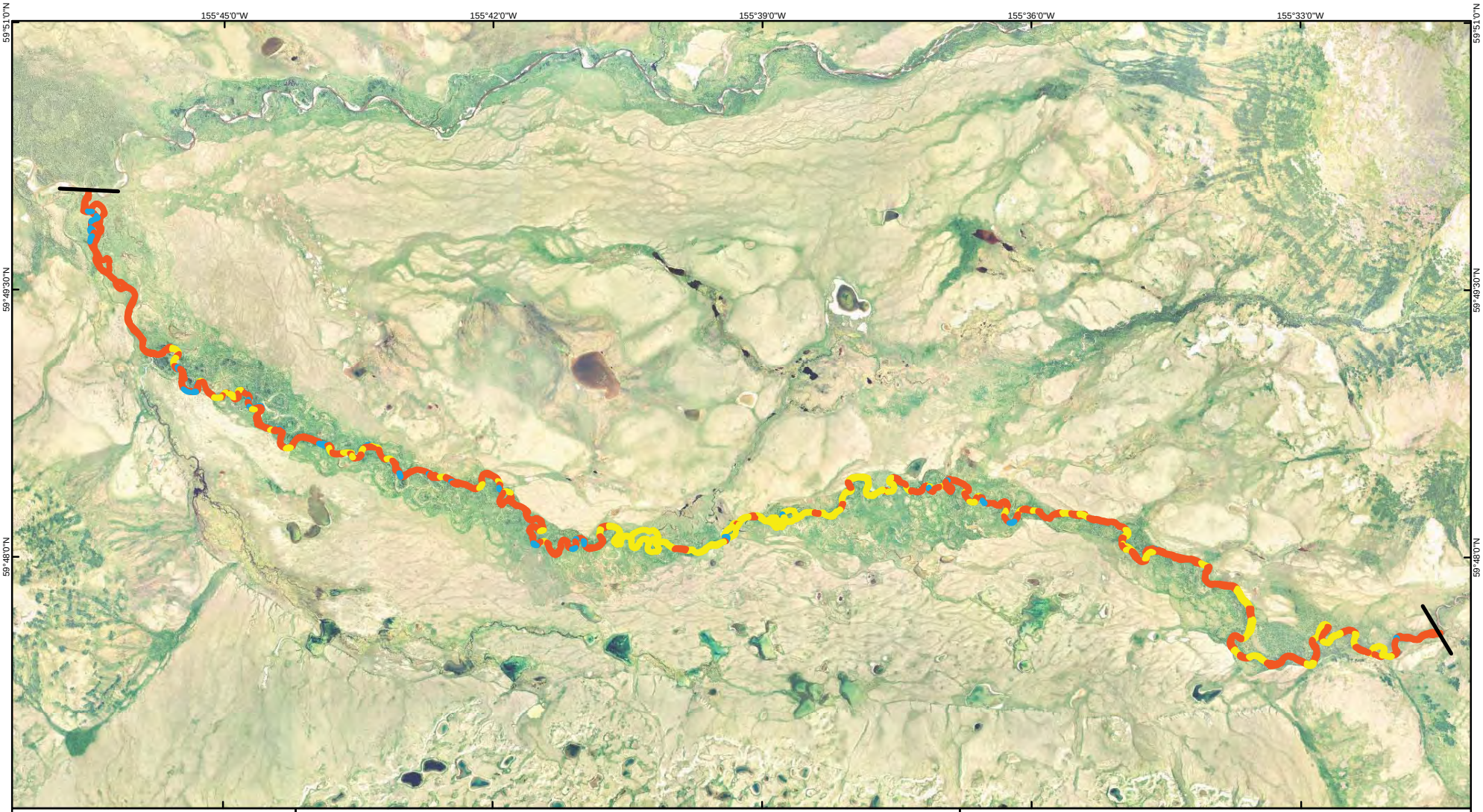
Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.7-5
SFK-A
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_SFK-A_Fig-B.7-5_11x17L_7of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

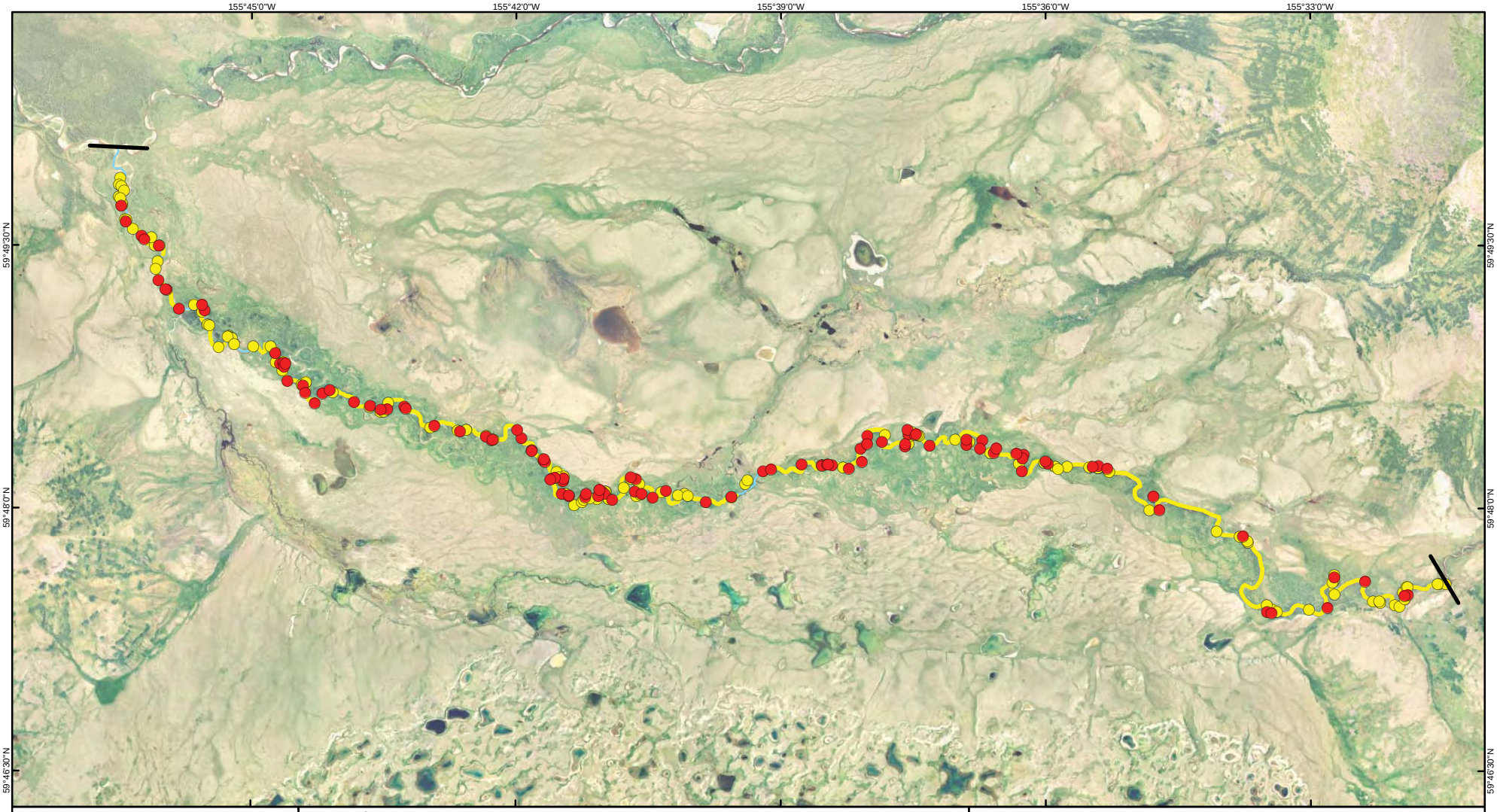
Miles: 0 0.7 1.4

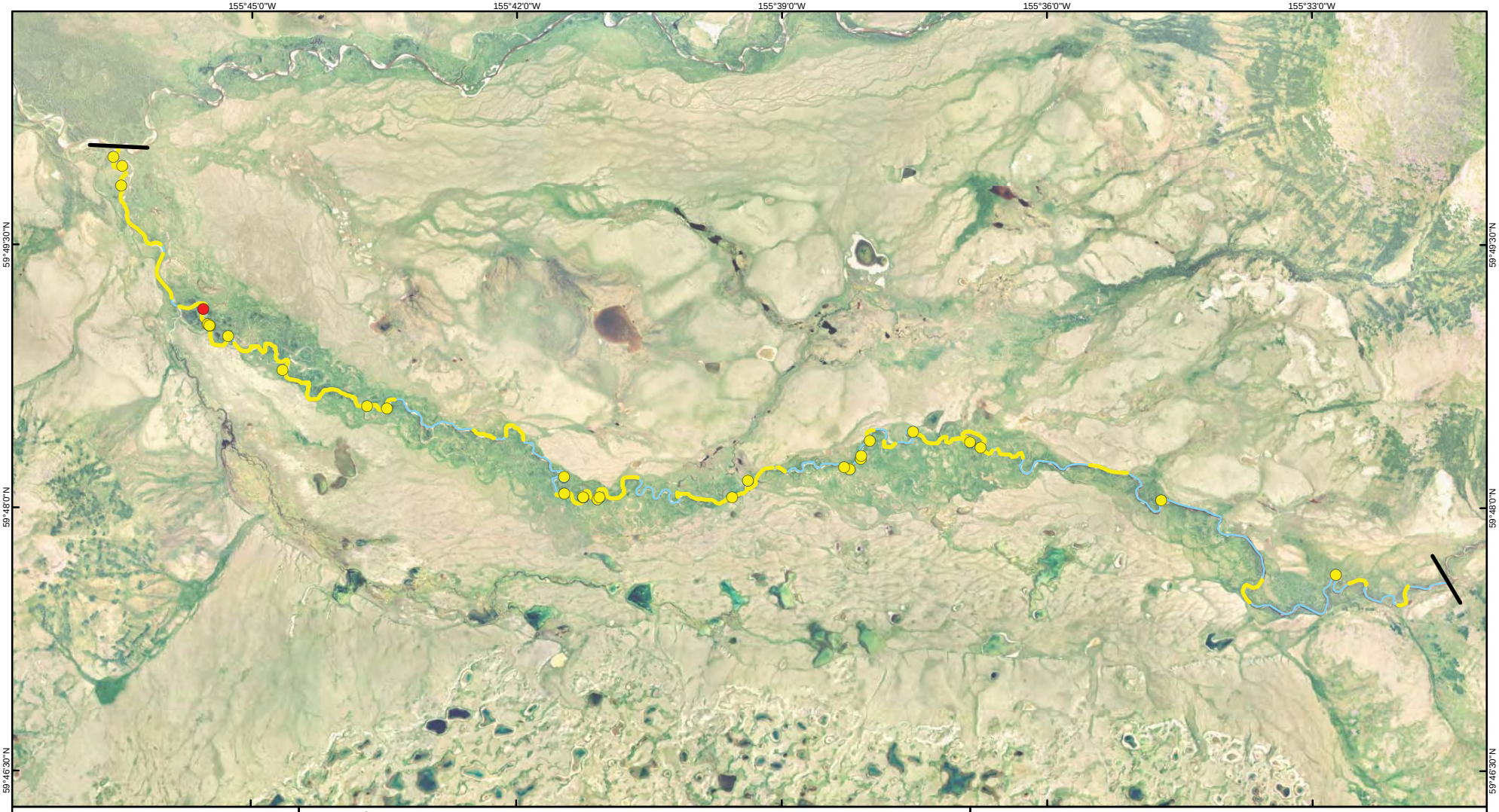
Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.7-6
SFK-A
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_SFK-A_Fig-B.7-6_11x17L_7of19_D03.mxd	February 5, 2011
	Author: RDI - MRA


155°45'0"W
155°42'0"W
155°39'0"W
155°36'0"W
155°33'0"W
59°49'30"N
59°48'0"N
59°46'30"N
Kokhanok
Iliamna Lake
Kokhanok
Kokhanok
Kokhanok



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

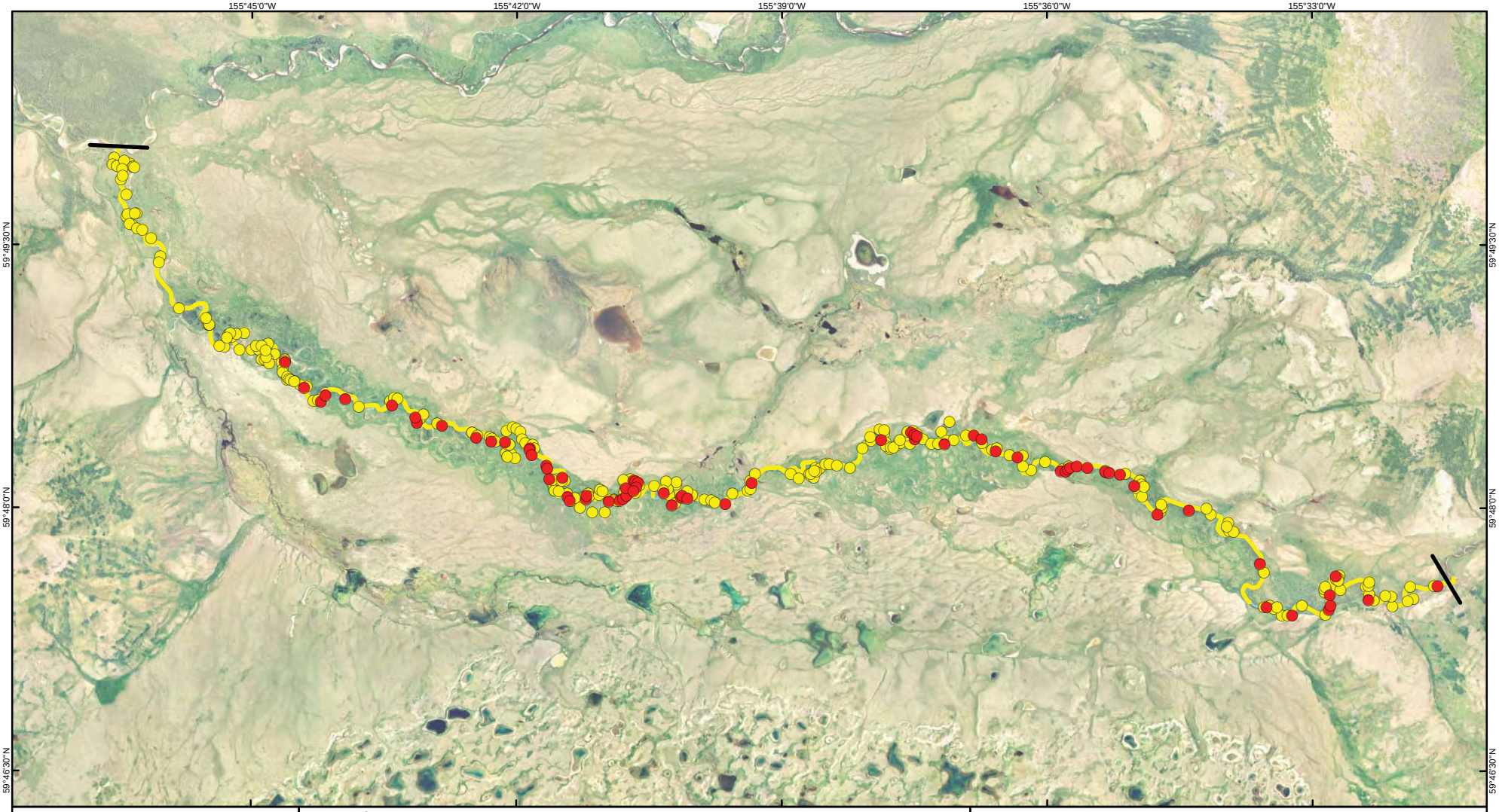
Miles: 0 0.8 1.6

Kilometers: 0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.7-9
SFK-A
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-A_Fig-B.7-9_CH_11x17L_7of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

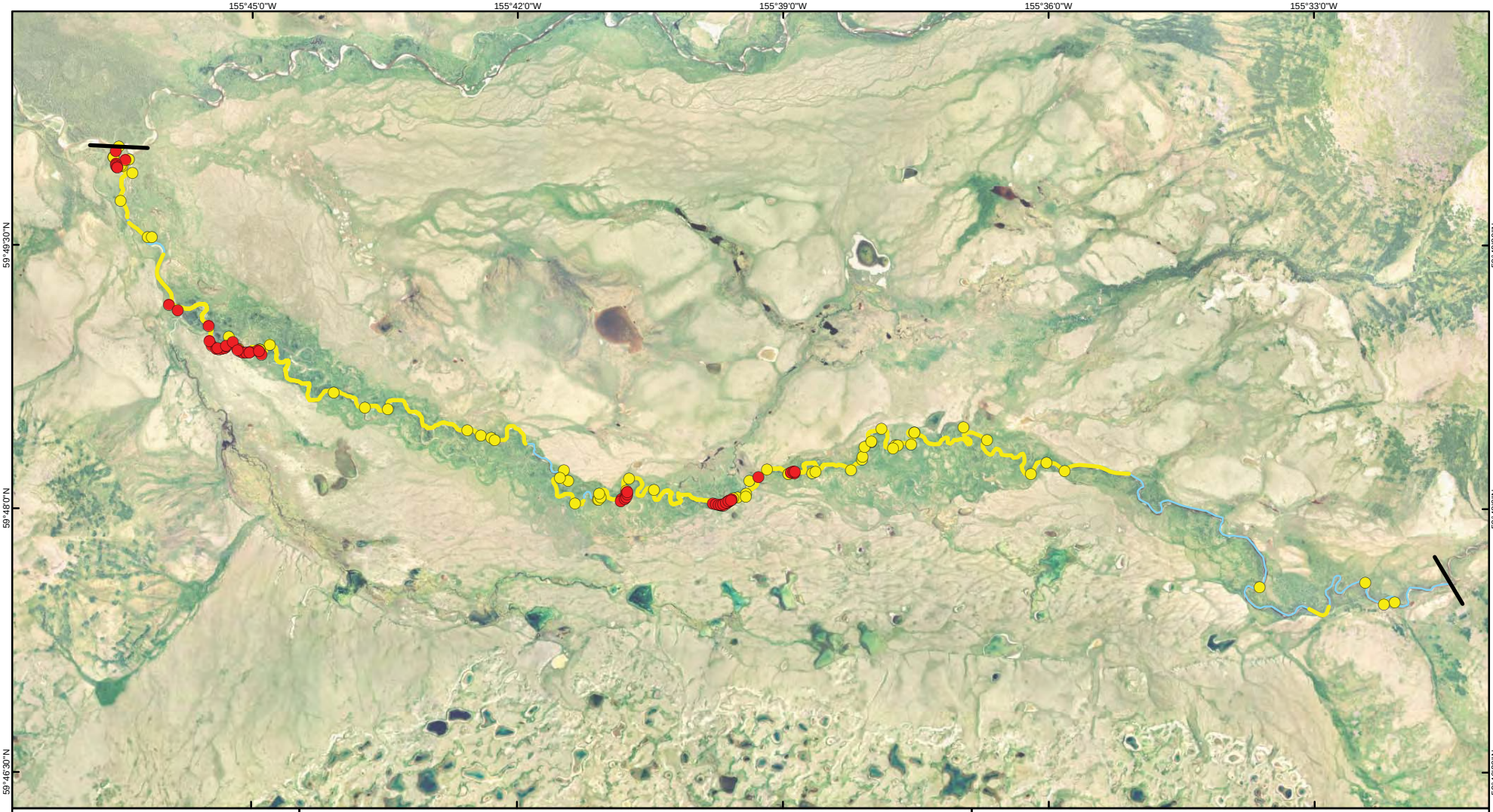
Miles: 0 0.8 1.6

Kilometers: 0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.7-10
SFK-A
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-A_Fig-B.7-10_CS_11x17L_7of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

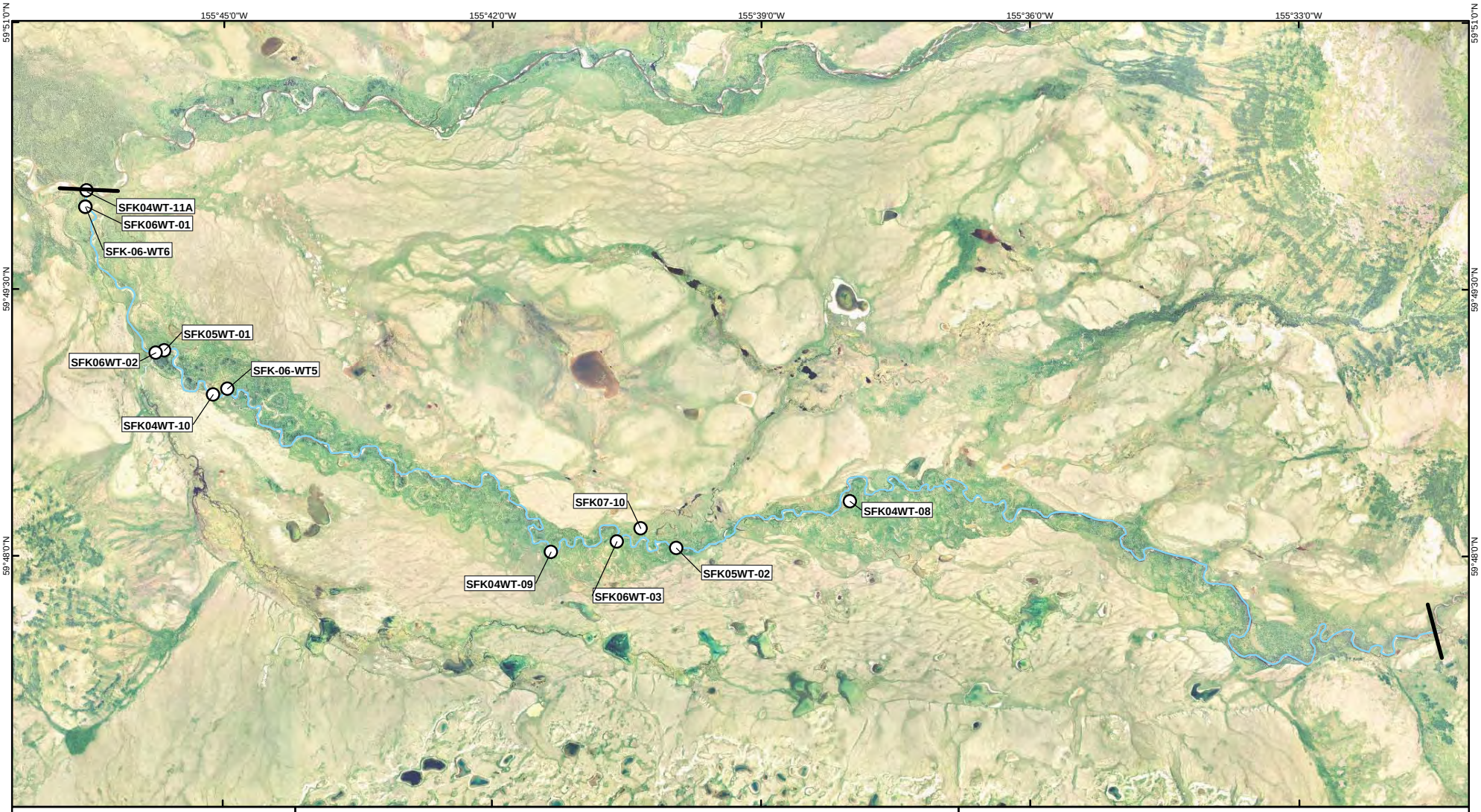
Miles: 0 0.8 1.6

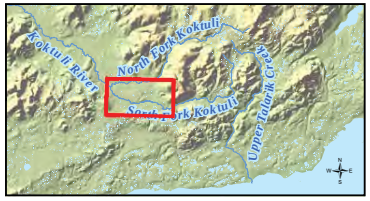
Kilometers: 0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.7-11
SFK-A
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-A_Fig-B.7-11_SS_11x17L_7of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.7-16
SFK-A
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_SFK-A_Fig-B.7-16_11x17L_7of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.8
SOUTH FORK KOKTULI RIVER REACH B (SFK-B)

Table B.8-1.
List of species found in SFK-B.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
burbot	*Lota lota*
northern pike	*Esox lucius*
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*
lamprey [c]	*Lampetra* sp.

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

[c] identified to genus, may include arctic and Pacific lamprey

Table B.8-2.
Channel morphology data from areas sampled within SFK-B tributary 1.190.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)	Average Wetted Width (m)	Average Bankfull Width (m)	Maximum Bankfull Depth (m)
SFK 1.190-SA1	7/2/08	narrow low-gradient floodplain channel	3.0	8.0	10.3	0.9
SFK 1.190-SA2	6/24/04	narrow shallow contained channel	2.1	4.4	6.1	0.7
SFK 1.190-SA2	7/8/08	narrow mixed control channel	3.4	5.9	7.7	0.8
SFK 1.190-SA3	7/10/08	narrow mixed control channel	2.5	3.8	5.0	0.5
SFK 1.190-SA4	7/10/08	narrow mixed control channel	2.7	2.9	5.2	0.5
SFK 1.190-SA5	7/11/08	narrow mixed control channel	5.0	2.0	2.9	0.4
SFK 1.190-SA6	7/11/08	shallowly to moderately incised footslope channel	12.0	1.3	2.3	0.7
SFK 1.190.20-SA1	7/23/08	deeply incised upper valley channel	6.8	4.4	5.8	0.8
SFK 1.190.20-SA2	7/24/08	shallowly to moderately incised footslope channel	8.5	4.2	7.2	0.6
SFK 1.190.20-SA3	9/12/08	shallowly to moderately incised footslope channel	11.0	2.5	3.5	0.5
SFK 1.190.20.10-SA1	9/17/08	narrow mixed control channel	4.0	1.1	1.9	0.6
SFK 1.190.20.10-SA2	9/17/08	narrow mixed control channel	5.0	1.0	2.0	0.3
SFK 1.190.20.20-SA1	9/16/08	shallowly incised muskeg channel	11.0	1.7	2.8	0.4
SFK 1.190.20.30-SA1	9/16/08	shallowly incised muskeg channel	10.0	1.3	2.3	0.3
SFK 1.190.20.40-SA1	9/15/08	shallowly incised muskeg channel	8.5	0.9	1.6	0.4
SFK 1.190.20.50-SA1	9/15/08	shallowly incised very high gradient channel	24.0	0.9	2.4	0.4
SFK 1.190.20.60-SA1	9/15/08	narrow mixed control channel	2.0	0.5	1.7	0.4
SFK 1.190.30-SA1	9/8/08	beaver dam/pond channel	1.5	1.7	1.9	0.6
SFK 1.190.30-SA2	9/8/08	narrow mixed control channel	5.0	1.5	1.7	0.5
SFK 1.190.30.10-SA1	9/10/08	narrow mixed control channel	5.0	1.0	1.5	0.6
SFK 1.190.40-SA1	8/26/08	narrow mixed control channel	3.1	1.7	2.5	0.7
SFK 1.190.40-SA2	9/7/08	narrow mixed control channel	3.7	1.3	2.5	0.5
SFK 1.190.50-SA1	8/25/08	narrow mixed control channel	2.3	2.3	2.8	0.5
SFK 1.190.50-SA2	8/25/08	narrow shallow contained channel	6.3	1.9	2.4	0.6
SFK 1.190.50-SA3	8/26/08	narrow mixed control channel	5.0	0.6	0.9	0.4

Table B.8-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)	Average Wetted Width (m)	Average Bankfull Width (m)	Maximum Bankfull Depth (m)
SFK 1.190.50.10-SA1	8/26/08	shallowly incised muskeg channel	8.0	0.7	1.0	0.3
SFK 1.190.60-SA1	7/12/08	narrow mixed control channel	3.3	4.4	5.8	0.7
SFK 1.190.60-SA2	7/14/08	narrow mixed control channel	5.0	2.7	4.3	0.5
SFK 1.190.60-SA3	7/14/08	narrow mixed control channel	3.5	1.3	2.6	0.4
SFK 1.190.60.10-SA1	9/22/08	narrow shallow contained channel	7.0	1.8	2.8	0.6
SFK 1.190.60.10-SA2	9/22/08	shallowly incised muskeg channel	13.3	1.8	3.0	0.6
SFK 1.190.60.20-SA1	9/17/08	shallowly incised muskeg channel	7.3	2.3	2.8	0.4
SFK 1.190.60.20.10-SA1	9/21/08	shallowly incised muskeg channel	12.0	0.5	1.6	0.4
SFK 1.190.60.40-SA1	9/22/08	shallowly incised muskeg channel	11.0	0.8	1.9	0.4
SFK 1.190.70-SA1	7/16/08	narrow mixed control channel	5.0	2.0	3.5	0.7
SFK 1.190.70-SA2	7/16/08	shallowly to moderately incised footslope channel	11.7	1.5	3.6	0.6
SFK 1.190.80-SA1	7/15/08	narrow mixed control channel	3.3	1.7	3.1	0.6
SFK 1.190.80-SA2	7/15/08	shallowly incised muskeg channel	13.0	0.5	1.3	0.6
SFK 1.190.80.10-SA1	9/18/08	narrow mixed control channel	7.7	1.2	2.1	0.4
SFK 1.190.80.20-SA1	9/21/08	narrow mixed control channel	3.0	0.5	1.5	0.5
2004 SFK 1.190 TOTAL			2.1	4.4	6.1	0.7
2008 SFK 1.190 TOTAL			6.4	2.4	3.6	0.6

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

Table B.8-3.
Percent composition of primary habitat types from areas sampled within SFK-B tributary 1.190. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a]	Total Wetted Area (m^2)[a]	Side Channel (% of Total Wetted Area)	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c,d]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK 1.190-SA1	2952.9	7.0	20651.4	5	0	11 / 8	0 / 0	0 / 0	0	0	0 / 0	18 / 18	37 / 36	34 / 38	0 / 0
SFK 1.190-SA2[d]	1262.2	4.4	5553.7	19	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	96 / 96	4 / 4	NA
SFK 1.190-SA2	2860.2	6.0	17103.9	2	0	4 / 2	0 / 0	0 / 0	0	0	0 / 0	5 / 5	82 / 86	8 / 7	0 / 0
SFK 1.190-SA3	1028.3	4.1	4198.8	1	0	4 / 3	0 / 0	2 / 2	0	0	0 / 0	1 / 1	91 / 93	1 / 1	0 / 0
SFK 1.190-SA4	1152.5	3.3	3795.3	3	0	0 / 0	0 / 0	17 / 16	0	0	0 / 0	1 / 0	81 / 82	2 / 2	0 / 0
SFK 1.190-SA5	827.7	1.2	987.8	0	0	0 / 0	0 / 0	99 / 99	0	0	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0
SFK 1.190-SA6	1183.4	2.2	2562.0	0	0	0 / 0	0 / 0	86 / 91	0	0	0 / 0	0 / 0	13 / 9	0 / 0	0 / 0
SFK 1.190.20-SA1	2280.8	5.5	12542.4	1	0	0 / 0	4 / 33	80 / 56	0	0	0 / 0	2 / 3	14 / 9	0 / 0	0 / 0
SFK 1.190.20-SA2	353.6	3.3	1154.2	0	0	0 / 0	0 / 0	98 / 98	0	0	0 / 0	2 / 2	0 / 0	0 / 0	0 / 0
SFK 1.190.20-SA3	858.4	2.5	2135.6	1	0	0 / 0	0 / 0	89 / 90	0	0	0 / 0	11 / 10	0 / 0	0 / 0	0 / 0
SFK 1.190.20-SA4	469.1	1.7	793.1	4	0	0 / 0	0 / 0	99 / 98	0	0	0 / 0	1 / 2	0 / 0	0 / 0	0 / 0
SFK 1.190.20.10-SA1	176.6	1.6	276.6	0	0	0 / 0	0 / 0	81 / 79	0	0	0 / 0	16 / 17	0 / 0	4 / 4	0 / 0
SFK 1.190.20.10-SA2	233.6	0.9	203.3	10	0	0 / 0	0 / 0	47 / 57	0	4	0 / 0	5 / 5	39 / 34	4 / 4	0 / 0
SFK 1.190.20.20-SA1	185.3	1.4	256.3	2	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.190.20.20-SA2	37.8	0.6	16.9	0	0	0 / 0	0 / 0	53 / 67	0	29	0 / 0	5 / 8	13 / 25	0 / 0	0 / 0
SFK 1.190.20.30-SA1	221.2	1.6	274.7	1	0	0 / 0	0 / 0	70 / 90	0	23	0 / 0	8 / 10	0 / 0	0 / 0	0 / 0
SFK 1.190.20.40-SA1	116.0	0.8	88.8	3	0	0 / 0	0 / 0	69 / 72	0	4	0 / 0	1 / 1	0 / 0	25 / 26	0 / 0
SFK 1.190.20.40.10-SA1	25.0	0.8	19.0	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.190.20.50-SA1	579.8	2.2	1142.6	2	0	0 / 0	0 / 0	72 / 37	0	12	0 / 0	2 / 1	0 / 0	0 / 0	14 / 62
SFK 1.190.20.60-SA1	333.2	0.8	192.6	11	0	0 / 0	0 / 0	46 / 52	0	28	0 / 0	14 / 19	0 / 0	2 / 3	9 / 26
SFK 1.190.30-SA1	166.3	7.3	1213.8	0	0	18 / 12	66 / 84	0 / 0	0	0	0 / 0	0 / 0	14 / 3	3 / 1	0 / 0
SFK 1.190.30-SA2	1721.1	1.2	2084.9	1	0	0 / 0	0 / 0	60 / 60	0	0	0 / 0	14 / 10	22 / 22	3 / 2	2 / 5
SFK 1.190.30.10-SA1	843.1	3.3	2591.8	0	0	0 / 0	0 / 0	0 / 0	0	7	0 / 0	2 / 1	70 / 21	12 / 4	8 / 75
SFK 1.190.40-SA1	1006.1	2.3	2327.7	2	0	5 / 7	3 / 22	5 / 4	0	0	0 / 0	8 / 6	69 / 50	11 / 10	0 / 0
SFK 1.190.40-SA2	1296.7	1.1	1376.9	0	0	0 / 0	0 / 0	5 / 2	0	0	0 / 0	1 / 1	92 / 94	3 / 3	0 / 0
SFK 1.190.40.10-SA1	580.4	1.4	823.6	3	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	57 / 43	14 / 7	20 / 11	9 / 39
SFK 1.190.50-SA1	245.3	1.7	407.9	0	0	0 / 0	0 / 0	4 / 4	0	0	0 / 0	7 / 9	70 / 65	19 / 22	0 / 0
SFK 1.190.50-SA2	939.9	1.6	1543.8	0	0	0 / 0	0 / 0	45 / 38	0	0	0 / 0	10 / 11	40 / 45	5 / 6	0 / 0
SFK 1.190.50-SA3	93.5	0.7	55.2	0	0	0 / 0	0 / 0	70 / 75	0	11	0 / 0	5 / 7	3 / 2	12 / 16	0 / 0
SFK 1.190.50.10-SA1	169.4	0.9	148.3	0	0	0 / 0	0 / 0	95 / 95	0	0	0 / 0	1 / 1	3 / 3	1 / 1	0 / 0
SFK 1.190.60-SA1	3299.9	4.2	13906.8	2	0	2 / 1	0 / 0	39 / 39	0	0	0 / 0	2 / 2	49 / 50	8 / 8	0 / 0
SFK 1.190.60-SA2	299.8	2.0	603.4	4	0	4 / 8	0 / 0	72 / 70	0	0	0 / 0	0 / 0	11 / 12	13 / 10	0 / 0
SFK 1.190.60-SA3	710.7	1.8	1240.0	8	0	0 / 0	0 / 0	25 / 23	0	3	0 / 0	1 / 2	45 / 50	27 / 25	0 / 0
SFK 1.190.60.10-SA1	671.9	1.8	1196.3	1	0	0 / 0	0 / 0	83 / 82	0	0	0 / 0	6 / 7	7 / 6	4 / 5	0 / 0
SFK 1.190.60.10-SA2	436.8	1.2	516.4	1	0	0 / 0	0 / 0	90 / 87	0	0	0 / 0	4 / 6	3 / 3	3 / 4	0 / 0
SFK 1.190.60.20-SA1	441.4	1.9	830.0	0	0	0 / 0	0 / 0	65 / 69	0	0	0 / 0	4 / 4	29 / 25	2 / 2	0 / 0
SFK 1.190.60.20.10-SA1	105.9	0.7	76.6	0	0	0 / 0	0 / 0	76 / 69	0	0	0 / 0	10 / 18	10 / 9	3 / 4	0 / 0
SFK 1.190.60.30-SA1	26.1	0.6	15.2	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	100 / 100	0 / 0	0 / 0
SFK 1.190.60.40-SA1	481.0	0.8	392.4	0	0	0 / 0	0 / 0	67 / 68	0	0	0 / 0	8 / 7	22 / 20	0 / 0	3 / 4

Table B.8-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a]	Total Wetted Area (m2)[a]	Side Channel (% of Total Wetted Area)	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c,d]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK 1.190.60.40.10-SA1	129.5	0.6	60.2	0	0	0 / 0	0 / 0	43 / 37	0	19	0 / 0	22 / 42	0 / 0	15 / 20	0 / 0
SFK 1.190.70-SA1	1986.2	2.1	4230.2	2	0	2 / 2	0 / 0	28 / 24	0	0	0 / 0	1 / 1	68 / 72	1 / 1	0 / 0
SFK 1.190.70-SA2	640.8	1.6	1036.2	0	0	0 / 0	0 / 0	99 / 98	0	0	0 / 0	1 / 2	0 / 0	0 / 0	0 / 0
SFK 1.190.80-SA1	1947.0	1.7	3280.4	2	0	0 / 0	0 / 0	30 / 22	0	0	0 / 0	0 / 0	67 / 74	3 / 3	0 / 0
SFK 1.190.80-SA2	105.9	0.4	45.9	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.190.80.10-SA1	583.5	1.1	660.2	1	0	0 / 0	0 / 0	58 / 58	0	0	0 / 0	1 / 1	39 / 38	3 / 3	0 / 0
SFK 1.190.80.20-SA1	102.4	1.0	100.8	0	0	0 / 0	0 / 0	4 / 2	0	0	0 / 0	10 / 21	68 / 58	18 / 19	0 / 0
2004 SFK 1.190 TOTAL	1262.2	4.4	5553.7	19	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	96 / 96	4 / 4	NA
2008 SFK 1.190 TOTAL	34905.9	3.2	109160.0	2	0	2 / 3	1 / 5	40 / 28	0	1	0 / 0	6 / 6	42 / 45	7 / 11	1 / 3

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

[d] Data were recorded in 2004.

Table B.8-4.
Descriptive characteristics of primary habitat units from areas sampled within SFK-B tributary 1.190. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK 1.190-SA1	gravel	cobble	0	3	willow shrub
SFK 1.190-SA2[b]	gravel	cobble	NA	11	NA
SFK 1.190-SA2	cobble	gravel	0	3	willow shrub
SFK 1.190-SA3	cobble	gravel	0	0	willow shrub
SFK 1.190-SA4	cobble	gravel	0	0	willow shrub
SFK 1.190-SA5	gravel	boulder	0	0	willow shrub
SFK 1.190-SA6	gravel	boulder	0	0	other herbaceous
SFK 1.190.20-SA1	sand/silt	boulder	0	1	alder shrub
SFK 1.190.20-SA2	boulder	cobble	0	0	other herbaceous
SFK 1.190.20-SA3	gravel	boulder	0	0	willow shrub/other herbaceous
SFK 1.190.20-SA4	boulder	gravel	0	0	willow shrub/other herbaceous
SFK 1.190.20.10-SA1	sand/silt	boulder	0	0	alder shrub/willow shrub
SFK 1.190.20.10-SA2	sand/silt	boulder	0	4	alder shrub/willow shrub
SFK 1.190.20.20-SA1	boulder	sand/silt	31	4	alder shrub/willow shrub
SFK 1.190.20.20-SA2	sand/silt	boulder	71	29	alder shrub/willow shrub
SFK 1.190.20.30-SA1	sand/silt	boulder	11	23	willow shrub/other herbaceous
SFK 1.190.20.40-SA1	sand/silt	gravel	0	4	willow shrub
SFK 1.190.20.40.10-SA1	boulder	gravel, sand/silt	0	0	willow shrub/other herbaceous
SFK 1.190.20.50-SA1	boulder	cobble	0	12	other herbaceous
SFK 1.190.20.60-SA1	sand/silt	organics	10	28	other herbaceous
SFK 1.190.30-SA1	sand/silt	organics	5	7	willow shrub
SFK 1.190.30-SA2	gravel	sand/silt	0	7	other herbaceous
SFK 1.190.30.10-SA1	sand/silt	organics	4	19	willow shrub
SFK 1.190.40-SA1	cobble	sand/silt	0	2	other herbaceous
SFK 1.190.40-SA2	gravel	sand/silt	0	3	other herbaceous
SFK 1.190.40.10-SA1	sand/silt	organics	0	5	willow shrub
SFK 1.190.50-SA1	cobble	boulder	0	3	alder shrub
SFK 1.190.50-SA2	boulder	cobble	0	1	alder shrub
SFK 1.190.50-SA3	sand/silt	organics	0	0	alder shrub
SFK 1.190.50.10-SA1	sand/silt	cobble	0	0	alder shrub/other herbaceous
SFK 1.190.60-SA1	cobble	boulder	2	3	alder shrub/willow shrub
SFK 1.190.60-SA2	boulder	gravel	0	3	alder shrub/other shrub
SFK 1.190.60-SA3	sand/silt	boulder	0	1	other shrub
SFK 1.190.60.10-SA1	boulder	cobble	0	0	alder shrub/willow shrub
SFK 1.190.60.10-SA2	boulder	cobble	0	0	alder shrub/willow shrub
SFK 1.190.60.20-SA1	boulder	sand/silt	0	0	alder shrub/willow shrub
SFK 1.190.60.20.10-SA1	cobble	boulder	0	0	willow shrub
SFK 1.190.60.30-SA1	sand/silt	cobble	0	0	willow shrub
SFK 1.190.60.40-SA1	gravel	sand/silt	14	14	willow shrub/other herbaceous
SFK 1.190.60.40.10-SA1	gravel	organics	11	0	willow shrub/other herbaceous
SFK 1.190.70-SA1	cobble	gravel	0	3	willow shrub/other shrub
SFK 1.190.70-SA2	boulder	cobble	0	0	alder shrub/willow shrub/other shrub
SFK 1.190.80-SA1	cobble	gravel	0	1	other shrub

Table B.8-4. Continued

Sample Area (SA)	Dominant Substrate	Subdominant Substrate	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK 1.190.80-SA2	boulder	cobble	0	10	other shrub
SFK 1.190.80.10-SA1	cobble	gravel	0	0	other herbaceous
SFK 1.190.80.20-SA1	gravel	sand/silt	0	0	willow shrub
2004 SFK 1.190 TOTAL	gravel	cobble	NA	11	NA
2008 SFK 1.190 TOTAL	cobble	gravel	1	3	willow shrub

[a] NA=data not available.
[b] Data were recorded in 2004.

Table B.8-5.
Summary of pool habitat data from areas sampled in SFK-B tributary 1.190. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK 1.190-SA1	2.95	22	3	25	0.7	0.1	0.8	3656.6	88.2	3744.8	149.8	0.8	0.8
SFK 1.190-SA2[c]	1.26	0	12	12	0	1.0	1.0	0	340.8	340.8	28.4	0.7	0.3
SFK 1.190-SA2	2.86	10	0	10	0.3	0	0.3	853.2	0	853.2	85.3	0.5	0.3
SFK 1.190-SA3	1.03	1	0	1	0.1	0	0.1	38.2	0	38.2	38.2	0.4	0.1
SFK 1.190-SA4	1.15	1	1	2	0.1	0.1	0.2	10.3	4.8	15.1	7.6	0.2	0.2
SFK 1.190-SA5	0.83	3	0	3	0.4	0	0.4	12.6	0	12.6	4.2	0.3	0.4
SFK 1.190-SA6	1.18	2	0	2	0.2	0	0.2	8.7	0	8.7	4.4	0.3	0.2
SFK 1.190.20-SA1	2.28	7	1	8	0.3	0	0.4	317.5	8.6	326.1	40.8	0.6	0.4
SFK 1.190.20-SA2	0.35	1	0	1	0.3	0	0.3	18.2	0	18.2	18.2	0.4	0.3
SFK 1.190.20-SA3	0.86	10	0	10	1.2	0	1.2	210.5	0	210.5	21.1	0.4	1.2
SFK 1.190.20-SA4	0.47	2	0	2	0.4	0	0.4	12.2	0	12.2	6.1	0.4	0.4
SFK 1.190.20.10-SA1	0.18	3	0	3	1.7	0	1.7	47.6	0	47.6	15.9	0.4	1.7
SFK 1.190.20.10-SA2	0.23	2	0	2	0.9	0	0.9	10.2	0	10.2	5.1	0.3	0.9
SFK 1.190.20.20-SA1	0.19	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.190.20.20-SA2	0.04	1	0	1	2.5	0	2.5	1.4	0	1.4	1.4	0.4	2.5
SFK 1.190.20.30-SA1	0.22	2	0	2	0.9	0	0.9	28.2	0	28.2	14.1	0.2	0.9
SFK 1.190.20.40.10-SA1	0.03	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.190.20.40-SA1	0.12	1	0	1	0.8	0	0.8	1.0	0	1.0	1.0	0.5	0.8
SFK 1.190.20.50-SA1	0.58	3	0	3	0.5	0	0.5	8.4	0	8.4	2.8	0.3	0.5
SFK 1.190.20.60-SA1	0.33	4	0	4	1.2	0	1.2	35.8	0	35.8	9	0.5	1.2
SFK 1.190.30-SA1	0.17	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.190.30-SA2	1.72	19	0	19	1.1	0	1.1	215.9	0	215.9	11.4	0.3	1.1
SFK 1.190.30.10-SA1	0.84	3	0	3	0.4	0	0.4	17.4	0	17.4	5.8	0.3	0.4
SFK 1.190.40-SA1	1.01	15	0	15	1.5	0	1.5	149.4	0	149.4	10	0.3	1.5
SFK 1.190.40-SA2	1.30	2	0	2	0.2	0	0.2	10.7	0	10.7	5.4	0.3	0.2
SFK 1.190.40.10-SA1	0.58	14	0	14	2.4	0	2.4	352.5	0	352.5	25.2	0.4	2.4
SFK 1.190.50-SA1	0.25	4	0	4	1.6	0	1.6	35.6	0	35.6	8.9	0.3	1.6
SFK 1.190.50-SA2	0.94	29	0	29	3.1	0	3.1	170.3	0	170.3	5.9	0.3	3.1
SFK 1.190.50-SA3	0.09	2	0	2	2.2	0	2.2	3.7	0	3.7	1.9	0.3	2.2

Table B.8-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK 1.190.50.10-SA1	0.17	1	0	1	0.6	0	0.6	1.3	0	1.3	1.3	0.2	0.6
SFK 1.190.60-SA1	3.30	7	3	10	0.2	0.1	0.3	225.8	32.2	258	25.8	0.4	0.3
SFK 1.190.60-SA2	0.30	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.190.60-SA3	0.71	2	0	2	0.3	0	0.3	23.4	0	23.4	11.7	0.3	0.3
SFK 1.190.60.10-SA1	0.67	8	0	8	1.2	0	1.2	83.6	0	83.6	10.5	0.3	1.2
SFK 1.190.60.10-SA2	0.44	4	0	4	0.9	0	0.9	30.9	0	30.9	7.7	0.3	0.9
SFK 1.190.60.20.10-SA1	0.11	3	0	3	2.7	0	2.7	14.1	0	14.1	4.7	0.2	2.7
SFK 1.190.60.20-SA1	0.44	3	0	3	0.7	0	0.7	33.8	0	33.8	11.3	0.3	0.7
SFK 1.190.60.30-SA1	0.03	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.190.60.40.10-SA1	0.13	1	0	1	0.8	0	0.8	25.3	0	25.3	25.3	0.4	0.8
SFK 1.190.60.40-SA1	0.48	10	0	10	2.1	0	2.1	28.8	0	28.8	2.9	0.3	2.1
SFK 1.190.70-SA1	1.99	2	0	2	0.1	0	0.1	24.1	0	24.1	12.1	0.4	0.1
SFK 1.190.70-SA2	0.64	2	0	2	0.3	0	0.3	16.0	0	16.0	8.0	0.3	0.3
SFK 1.190.80-SA1	1.95	1	0	1	0.1	0	0.1	5.0	0	5.0	5.0	0.3	0.1
SFK 1.190.80-SA2	0.11	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.190.80.10-SA1	0.58	2	0	2	0.3	0	0.3	3.8	0	3.8	1.9	0.3	0.3
SFK 1.190.80.20-SA1	0.10	2	1	2	2.0	0	2	20.9	0	20.9	10.5	0.4	2.0
2004 SFK 1.190 TOTAL	1.26	0	12	12	0	1.0	1.0	0	340.8	340.8	28.4	0.7	0.3
2008 SFK 1.190 TOTAL	34.91	211	8	219	0.6	0	0.6	6762.9	133.9	6896.8	31.5	0.4	0.6

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.
[c] Data were recorded in 2004.

Table B.8-6.
Special habitat features within SFK-B tributary 1.190, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190-SA1	59.81409	-155.42247	barrier		beaver dam	temporary	0.7	
	59.82676	-155.42732	tributary	SFK 1.190.20				
SFK 1.190-SA2	59.83189	-155.42825	tributary	unnamed				
	59.83222	-155.42771	tributary	unnamed				
	59.83185	-155.42801	tributary	unnamed				
	59.83790	-155.42641	tributary	SFK 1.190.40				
	59.84321	-155.43176	tributary	unnamed				
	59.84460	-155.43401	tributary	unnamed				
	59.84644	-155.43472	tributary	unnamed				
	59.84651	-155.43490	tributary	SFK 1.190.50				
	59.84700	-155.43523	tributary	SFK 1.190.60				
SFK 1.190-SA3			none present					
SFK 1.190-SA4	59.85231	-155.42465	seep					
	59.85243	-155.42455	seep					
	59.85272	-155.42401	seep					
	59.85264	-155.42441	tributary	unnamed				
	59.85104	-155.43067	seep					
	59.85294	-155.42322	seep					
	59.85208	-155.42608	tributary	SFK 1.190.70				
	59.85383	-155.41928	tributary	unnamed				
	59.85446	-155.41652	spring					
	59.85503	-155.41280	spring					
	59.85509	-155.41226	seep					
	59.85516	-155.41011	tributary	SFK 1.190.80				

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190-SA5	59.85558	-155.40962	barrier		falls	temporary	0.6	1.4
	59.85943	-155.40481	barrier		falls	permanent	0.48	1.2
	59.85972	-155.40417	barrier		falls	permanent	0.8	3.0
	59.85825	-155.40615	tributary	unnamed				
	59.85975	-155.40415	barrier		falls	permanent	0.9	3.1
	59.86031	-155.40349	barrier		falls	permanent	0.73	2.1
	59.86048	-155.40329	barrier		falls	permanent	0.48	0.6
SFK 1.190-SA6	59.86099	-155.40215	tributary	unnamed				
	59.86248	-155.39856	seep					
	59.86779	-155.40107	seep					
SFK 1.190.20-SA1	59.82721	-155.42768	barrier		beaver dam	temporary	2.1	2.6
	59.82828	-155.42858	tributary	unnamed				
	59.83120	-155.43700	barrier		falls	permanent	1.1	0.9
	59.83153	-155.43732	tributary	unnamed				
	59.83148	-155.43985	tributary	unnamed				
	59.83269	-155.44164	barrier		cascade	permanent	0.82	2.3
	59.83290	-155.44216	tributary	unnamed				
	59.83404	-155.44511	tributary	unnamed				
	59.83423	-155.44559	tributary	unnamed				
	59.83512	-155.44684	tributary	unnamed				
	59.83618	-155.44852	tributary	unnamed				
	59.83632	-155.44890	tributary	SFK 1.190.20.10				
	59.83757	-155.45180	barrier		falls	permanent	1.2	2.2
	59.83767	-155.45173	tributary	unnamed				
	59.83754	-155.45191	barrier		falls	permanent	1	0.6
	59.83749	-155.45270	tributary	unnamed				
	59.83776	-155.45443	tributary	SFK 1.190.20.20				

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.20-SA2	59.83836	-155.45538	seep					
	59.83842	-155.45595	seep					
	59.83876	-155.45760	seep					
	59.83785	-155.45466	tributary	unnamed				
	59.83876	-155.45760	seep					
	59.83879	-155.46071	tributary	SFK 1.190.20.30				
SFK 1.190.20-SA3	59.83939	-155.46135	seep					
	59.84020	-155.46338	barrier		falls	permanent	1.5	6.4
	59.84051	-155.46606	barrier		cascade/ falls	permanent	3.0	90.0
	59.84038	-155.46575	seep					
	59.84052	-155.46586	tributary	SFK 1.190.20.40				
	59.84092	-155.46689	barrier		falls	permanent	1	1.56
	59.84119	-155.46781	barrier		falls	permanent	1.03	1.61
	59.84116	-155.46798	barrier		barrier chute	permanent	1.01	1.74
	59.84212	-155.47059	tributary	SFK 1.190.20.50				
SFK 1.190.20-SA4	59.84225	-155.47129	tributary	SFK 1.190.20.60				
	59.84311	-155.47335	seep					
	59.84395	-155.47621	seep					
	59.84303	-155.47287	tributary	unnamed				
	59.84374	-155.47595	tributary	unnamed				
SFK 1.190.20.10-SA1	59.83675	-155.45054	tributary	unnamed				
	59.83680	-155.45097	barrier		falls	permanent	1.4	5.0
	59.83677	-155.45111	barrier		falls	permanent	0.95	1.75
	59.83674	-155.45129	tributary	unnamed				
SFK 1.190.20.10-SA2	59.83659	-155.45186	barrier		falls	temporary	0.35	0.25
	59.83642	-155.45339	tributary	unnamed				
SFK 1.190.20.20-SA1	59.83782	-155.45704	tributary	unnamed				
SFK 1.190.20.20-SA2	59.83771	-155.45747	barrier		falls	temporary	0.8	0.17
SFK 1.190.20.30-SA1			none present					
SFK 1.190.20.40-SA1	59.84093	-155.46600	tributary	SFK1.190.20.40.10				

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.20.40.10-SA1			none present					
SFK 1.190.20.50-SA1	59.84341	-155.47211	barrier		falls	permanent	0.45	0.3
	59.84351	-155.47226	seep					
	59.84356	-155.47223	seep					
SFK 1.190.20.60-SA1	59.84230	-155.47144	barrier		falls	temporary	0.76	0.62
	59.84222	-155.47163	barrier		barrier chute	permanent	0.92	1.63
	59.84225	-155.47180	barrier		falls	temporary	1.26	0.94
	59.84233	-155.47196	barrier		falls	temporary	1	0.94
	59.84215	-155.47262	barrier		falls	temporary	0.69	0.5
	59.84214	-155.47327	barrier		falls	temporary	0.75	1.18
	59.84231	-155.47474	barrier		falls	temporary	0.58	0.53
	59.84234	-155.47499	barrier		falls	temporary	0.81	0.56
SFK 1.190.30-SA1	59.82574	-155.42637	barrier		beaver dam	temporary	1.08	2.96
	59.82646	-155.42566	barrier		beaver dam	temporary	1.11	
	59.82658	-155.42548	tributary	SFK 1.190.30.10				
SFK 1.190.30-SA2	59.82842	-155.41625	seep					
	59.82894	-155.41418	seep					
	59.82939	-155.41338	tributary	unnamed				
	59.82946	-155.41254	barrier		falls	permanent	0.6	0.47
	59.82961	-155.41225	seep					
	59.82974	-155.41147	spring					
	59.82991	-155.41111	spring					
	59.83195	-155.40480	seep					
	59.83190	-155.40533	tributary	unnamed				
	59.83208	-155.40421	barrier		falls	temporary	0.65	0.56
	59.83205	-155.40410	barrier		falls	temporary	0.55	0.37

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.30.10-SA1	59.82771	-155.42339	seep					
	59.82812	-155.42266	seep					
	59.82867	-155.42248	seep					
	59.82911	-155.42240	seep					
	59.82969	-155.42189	barrier		falls	temporary	0.53	0.25
	59.83025	-155.42166	tributary	unnamed				
SFK 1.190.40-SA1	59.83828	-155.42676	barrier		falls	temporary	0.88	0.86
	59.83892	-155.42719	seep					
	59.83906	-155.42603	seep					
	59.83897	-155.42654	tributary	unnamed				
	59.83896	-155.42577	seep					
	59.83890	-155.42524	seep					
	59.84100	-155.41877	seep					
	59.84159	-155.41696	seep					
	59.84159	-155.41674	seep					
	59.84169	-155.41672	seep					
	59.84219	-155.41590	tributary	SFK 1.190.40.10				
SFK 1.190.40-SA2	59.84650	-155.41023	tributary	unnamed				
	59.84709	-155.40862	tributary	unnamed				
	59.84723	-155.40746	seep					
	59.84724	-155.40699	seep					
	59.84735	-155.40629	seep					
SFK 1.190.40.10-SA1	59.84187	-155.41337	tributary	unnamed				
	59.84092	-155.40928	barrier		falls	temporary	0.78	0.57
SFK 1.190.50-SA1	59.84712	-155.43772	seep					
SFK 1.190.50-SA2	59.84691	-155.43863	barrier		barrier chute	permanent	0.59	1.64
	59.84724	-155.44040	seep					
	59.84770	-155.45003	seep					
	59.84775	-155.45017	tributary	SFK1.190.50.10				
SFK 1.190.50-SA3	59.84818	-155.45328	seep					
	59.84825	-155.45473	barrier		dry channel	temporary	1.13	4.0

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.50.10-SA1	59.84787	-155.45404	seep					
SFK 1.190.60-SA1	59.84918	-155.43706	tributary	unnamed				
	59.85103	-155.44015	tributary	unnamed				
	59.85523	-155.44329	tributary	unnamed				
	59.85594	-155.44458	tributary	unnamed				
	59.85674	-155.44768	tributary	SFK 1.190.60.10				
	59.85802	-155.45040	tributary	unnamed				
	59.85947	-155.45136	tributary	unnamed				
	59.86162	-155.45255	tributary	unnamed				
	59.86252	-155.45267	seep					
	59.86344	-155.45305	seep					
	59.86321	-155.45316	tributary	unnamed				
	59.86393	-155.45347	seep					
	59.86490	-155.45423	seep					
	59.86460	-155.45406	tributary	unnamed				
	59.86467	-155.45419	tributary	unnamed				
	59.86544	-155.45489	seep					
	59.86520	-155.45462	tributary	unnamed				
	59.86580	-155.45535	seep					
	59.86580	-155.45535	seep					
	59.86670	-155.45651	seep					
	59.86698	-155.45735	seep					
	59.86699	-155.45748	tributary	unnamed				
	59.86707	-155.45753	tributary	unnamed				
	59.86739	-155.45827	tributary	unnamed				
	59.86737	-155.45863	tributary	unnamed				
SFK 1.190.60-SA2	59.86832	-155.45970	tributary	SFK 1.190.60.20				
	59.86858	-155.45934	tributary	unnamed				
	59.86941	-155.45960	tributary	unnamed				
	59.86970	-155.45940	seep					

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.60-SA3	59.87020	-155.45911	seep					
	59.87062	-155.45889	seep					
	59.87156	-155.45738	seep					
	59.87169	-155.45703	tributary	unnamed				
	59.87176	-155.45686	tributary	unnamed				
	59.87200	-155.45642	tributary	unnamed				
	59.87226	-155.45570	tributary	SFK 1.190.60.30				
	59.87226	-155.45570	tributary	unnamed				
	59.87263	-155.45495	seep					
	59.87255	-155.45519	tributary	unnamed				
	59.87277	-155.45463	seep					
	59.87288	-155.45427	seep					
	59.87345	-155.45357	seep					
	59.87362	-155.45357	tributary	SFK 1.190.60.40				
SFK 1.190.60.10-SA1	59.85689	-155.44932	tributary	unnamed				
	59.85690	-155.44964	barrier		falls	permanent	0.6	0.8
	59.85694	-155.45217	seep					
	59.85682	-155.45401	tributary	unnamed				
	59.85685	-155.45424	tributary	unnamed				
	59.85703	-155.45490	barrier		falls	permanent	0.85	1.8
	59.85695	-155.45482	tributary	unnamed				
	59.85720	-155.45690	tributary	unnamed				
SFK 1.190.60.10-SA2	59.85710	-155.45826	barrier		falls	permanent	0.5	0.7
	59.85692	-155.46030	barrier		falls	permanent	0.6	0.7
	59.85680	-155.46072	barrier		falls	permanent	0.65	1.8
	59.85680	-155.46072	seep					
	59.85687	-155.46091	barrier		falls	permanent	0.65	0.9
	59.85660	-155.46167	barrier		falls	permanent	0.55	0.55
	59.85661	-155.46223	barrier		cascade	permanent		5.5
	59.85658	-155.46268	barrier		falls	permanent	1.6	2.4

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.60.20-SA1	59.87008	-155.46180	seep					
	59.87008	-155.46180	tributary	unnamed				
	59.87062	-155.46306	tributary	unnamed				
	59.87096	-155.46368	tributary	SFK 1.190.60.20.10				
	59.87099	-155.46385	barrier		falls	permanent	0.85	1.9
SFK 1.190.60.20.10-SA1	59.87141	-155.46443	barrier		barrier chute	permanent	0.46	0.36
	59.87141	-155.46443	tributary	unnamed				
SFK 1.190.60.30-SA1			none present					
SFK 1.190.60.40-SA1	59.87380	-155.45304	barrier		falls	permanent	0.6	0.47
	59.87395	-155.45267	seep					
	59.87418	-155.45040	barrier		falls	permanent	0.6	0.42
	59.87410	-155.45004	barrier		falls	permanent	0.67	0.51
	59.87412	-155.44992	barrier		falls	permanent	0.5	0.43
	59.87398	-155.44809	barrier		falls	temporary	0.51	0.65
	59.87376	-155.44675	tributary	SFK1.190.60.40.10				
SFK 1.190.60.40.10-SA1			none present					
SFK 1.190.70-SA1	59.85251	-155.42504	seep					
	59.85353	-155.42432	seep					
	59.85467	-155.42423	tributary	unnamed				
	59.85492	-155.42419	seep					
	59.85531	-155.42451	tributary	unnamed				
	59.85567	-155.42476	seep					
	59.85584	-155.42463	seep					
	59.85711	-155.42499	seep					
	59.85947	-155.42592	seep					
	59.86035	-155.42601	seep					
	59.86114	-155.42662	seep					
	59.86061	-155.42656	tributary	SFK1.190.70.10				
	59.86331	-155.42529	seep					
	59.86485	-155.42504	seep					

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.70-SA2	59.86508	-155.42519	barrier		cascade	permanent	0.7	0.5
	59.86623	-155.42478	barrier		cascade	permanent	0.6	0.5
	59.86623	-155.42478	barrier		cascade	permanent	0.8	1.5
	59.86623	-155.42484	seep					
	59.86624	-155.42477	seep					
	59.86698	-155.42345	seep					
	59.86706	-155.42305	seep					
	59.86728	-155.42255	tributary	unnamed				
	59.86757	-155.42224	tributary	SFK1.190.70.20				
	59.86769	-155.42199	tributary	unnamed				
SFK 1.190.80-SA1	59.85535	-155.40815	tributary	unnamed				
	59.85529	-155.40708	tributary	unnamed				
	59.85542	-155.40588	tributary	unnamed				
	59.85544	-155.40554	tributary	unnamed				
	59.85544	-155.40695	seep					
	59.85566	-155.40528	seep					
	59.85566	-155.40484	seep					
	59.85599	-155.40409	seep					
	59.85597	-155.40371	seep					
	59.85564	-155.40450	tributary	unnamed				
	59.85569	-155.40448	tributary	SFK 1.190.80.10				
	59.85646	-155.40192	seep					
	59.85686	-155.39980	seep					
	59.85689	-155.39978	seep					
	59.85770	-155.39874	seep					
	59.85775	-155.39831	seep					
	59.85787	-155.39810	seep					
	59.85792	-155.39798	seep					

Table B.8-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.190.80-SA1 (cont)	59.85650	-155.40082	tributary	SFK 1.190.80.20				
	59.85658	-155.40030	tributary	unnamed				
	59.85876	-155.39671	seep					
	59.86021	-155.39164	tributary	unnamed				
	59.86083	-155.38919	seep					
	59.86083	-155.38889	seep					
	59.86021	-155.39161	tributary	unnamed				
	59.86031	-155.39149	tributary	unnamed				
	59.86035	-155.38984	tributary	unnamed				
	59.86082	-155.38830	tributary	unnamed				
SFK 1.190.80-SA2	59.86102	-155.38741	tributary	SFK 1.190.80.30				
	59.86114	-155.38742	tributary	unnamed				
SFK 1.190.80.10-SA1	59.85577	-155.40416	seep					
	59.85511	-155.40286	seep					
	59.85433	-155.40195	seep					
	59.85401	-155.40109	seep					
	59.85356	-155.40027	seep					
	59.85331	-155.39944	seep					
	59.85314	-155.39885	tributary	unnamed				
	59.85340	-155.39987	tributary	unnamed				
	59.85345	-155.39958	tributary	unnamed				
SFK 1.190.80.20-SA1	59.85699	-155.40004	seep					

Note: Blank cells indicate no data were collected for that record.

Table B.8-7.
2004-2008 number of fish observations by lifestage within SFK-B mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

			Adult							Juvenile								Juvenile/Adult[a]									
Species	Year	Method	Apr	May	Jun	Jul	Aug	Sep	Subtotal	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Total
Chinook salmon	2004	Electrofishing											2				2										2
		Minnow Trap											26				26										26
	2005	Electrofishing										3					3										3
		Minnow Trap											2				2										2
		Snorkel				30			30			1050		186			1236										1266
	2006	Electrofishing								4		9	2		4		19										19
		Minnow Trap								1					4	3	8										8
		Snorkel									570	1788	326	22	12	15	2733										2733
	2007	Electrofishing								3		5					8										8
		Snorkel										124					124										124
	2008	Seine											1				1										1
		Snorkel											1	8			9										9
chum salmon	2005	Snorkel				1			1																		1
	2006	Electrofishing									2						2										2
		Snorkel				27	3		30					1			1										31
	2007	Electrofishing								14							14										14
		Snorkel				8			8			1					1										9
coho salmon	2004	Electrofishing										19	7				26										26
		Minnow Trap								10			133				143										143
	2005	Electrofishing										9					9										9
		Minnow Trap											300				300										300
		Snorkel						33	33			2774		487			3261										3294
		Visual Observation												1			1										1
	2006	Electrofishing									27	2	16		8		53										53
		Minnow Trap								8					40	7	55										55
		Snorkel									986	3165	2181	137	57	8	6534										6534
		Visual Observation										76					76										76
	2007	Angling						1	1																		1
		Dip Net										10					10										10
		Electrofishing								53		265					318										318
		Minnow Trap								126		15					141										141
		Snorkel								13		3432					3445										3445
		Visual Observation										195					195										195
	2008	Angling						3	3																		3
		Electrofishing										95	10				105										105
		Minnow Trap												3			3										3
		Seine											16				16										16
		Snorkel										1	168	270			439										439
sockeye salmon	2005	Snorkel				45			45			109		16			125										170
	2006	Electrofishing								73	2	1					76										76
		Snorkel					8		8		275	42	411	82	22	10	842										850
		Visual Observation								100							100										100

Table B.8-7. Continued.

Species	Year	Method	Adult							Juvenile								Juvenile/Adult[a]									Total
			Apr	May	Jun	Jul	Aug	Sep	Subtotal	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	
sockeye salmon	2007	Dip Net										4					4										4
(cont)		Electrofishing								150		51					201										201
		Snorkel				218			218	8		262					270										488
		Visual Observation								210							210										210
	2008	Seine											6				6										6
		Snorkel					1		1																		1
arctic grayling	2004	Electrofishing										2					2										2
	2005	Angling		6					6																		6
		Gill/Tangle Net											2				2										2
		Snorkel				237		24	261					45			45										306
	2006	Angling				26			26			1					1										27
		Electrofishing													2		2										2
		Minnow Trap													1		1										1
		Snorkel			8	139	36	1	184			21	322	5	144	12	504										688
	2007	Angling						10	10																		10
		Dip Net										8					8										8
		Electrofishing								13		2					15										15
		Snorkel				152			152	1		154					155										307
	2008	Angling						6	6																		6
		Seine					16		16				3				3										19
		Snorkel					12		12					368			368						1			1	381
Dolly Varden	2004	Electrofishing				4			4			320	7				327				3					3	334
		Minnow Trap								17			164				181										181
	2005	Electrofishing										6					6										6
		Minnow Trap					4		4				61				61					13				13	78
		Snorkel				16		14	30			204		38			242				1					1	273
	2006	Electrofishing										8	2		2		12										12
		Minnow Trap								2					8	3	13										13
		Snorkel				3	22		25		116	90	113	4	11	17	351						3			3	379
	2007	Electrofishing								4		128					132										132
		Minnow Trap								75							75										75
		Snorkel										52					52										52
	2008	Angling						1	1																		1
		Electrofishing				1		1	2			183	17	98			298										300
		Minnow Trap												5			5										5
		Seine					2		2				6				6										8
		Snorkel					1	9	10			58		144			202				1		435			436	648
		Visual Observation																			3					3	3
rainbow trout	2005	Snorkel				1			1			3					3										4
	2006	Snorkel									1		6				7										7
	2007	Snorkel										1					1										1
	2008	Angling						2	2																		2
		Snorkel												30			30										30

Table B.8-7. Continued

Species	Year	Method	Adult							Juvenile								Juvenile/Adult[a]									Total
			Apr	May	Jun	Jul	Aug	Sep	Subtotal	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	
whitefish sp.	2005	Gill/Tangle Net					28		28																		28
		Snorkel				16			16																		16
	2006	Snorkel			1	62	87		150																		150
	2007	Snorkel				129			129																		129
	2008	Seine					3		3																		3
		Snorkel					5		5																		5
Salmonid sp.	2004	Visual Observation								106							106		10							10	116
	2005	Electrofishing								9							9										9
		Snorkel												1			1										1
		Visual Observation								10							10										10
	2006	Aquascope														30	30										30
		Electrofishing									1		2				3										3
		Snorkel									19	12	56		8		95										95
		Visual Observation					17		17		4						4										21
	2007	Electrofishing										6					6										6
		Snorkel				1			1			3					3										4
	2008	Visual Observation												1			1						1			1	2
burbot	2006	Minnow Trap								1							1										1
	2007	Electrofishing										1					1										1
northern pike	2006	Electrofishing													1		1										1
		Minnow Trap													1		1										1
	2007	Electrofishing								1							1										1
sculpin sp.	2004	Electrofishing																			453					453	453
		Minnow Trap	7				3		10	31			2				33										43
	2005	Minnow Trap																1								1	1
		Snorkel																					1			1	1
	2006	Electrofishing																			25	25				50	50
		Minnow Trap																1							2	3	3
		Snorkel						1	1		1		5	2			8						1			1	10
		Visual Observation																100								100	100
	2007	Electrofishing				2			2	13		92					105	19			7					26	133
		Minnow Trap	10						10	18							18	6								6	34
		Visual Observation										10					10				60					60	70
	2008	Electrofishing				32	12	6	50			322	34	12			368										418
		Seine											13				13										13
		Snorkel												1			1				80		1			81	82
		Visual Observation																			3					3	3
ninespine stickleback	2004	Electrofishing										1					1										1
		Minnow Trap								1							1										1
	2005	Snorkel												5			5						6			6	11
	2006	Electrofishing									2		3				5										5
		Minnow Trap																2								2	2
		Snorkel			1				1		1		180		2		183			1		3				4	188

Table B.8-7. Continued

Species	Year	Method	Adult							Juvenile								Juvenile/Adult[a]									Total
			Apr	May	Jun	Jul	Aug	Sep	Subtotal	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	
ninespine stickleback	2007	Electrofishing	1			1			2	6		111					117	2								2	121
(cont)		Minnow Trap	2						2	3		3					6										8
		Snorkel								1		1					2										2
		Visual Observation																			60					60	60
	2008	Snorkel																			1					1	1
threespine stickleback	2007	Electrofishing																1								1	1
		Minnow Trap										2					2										2
stickleback sp.	2006	Snorkel											2			2	4								1		5
		Visual Observation																							1	1	1
	2007	Electrofishing								2							2										2
		Snorkel										26					26				1					1	27
	2008	Snorkel																			7					7	7
lamprey sp.	2006	Snorkel									5						5										5
unidentified sp.	2004	Visual Observation																	2							2	2
	2005	Visual Observation																					1			1	1
	2006	Snorkel																		29	3	9	4	20		65	65
		Visual Observation																		2		3	10		10	25	25
	2007	Snorkel																3								3	3
	2008	Snorkel																					13			13	13

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

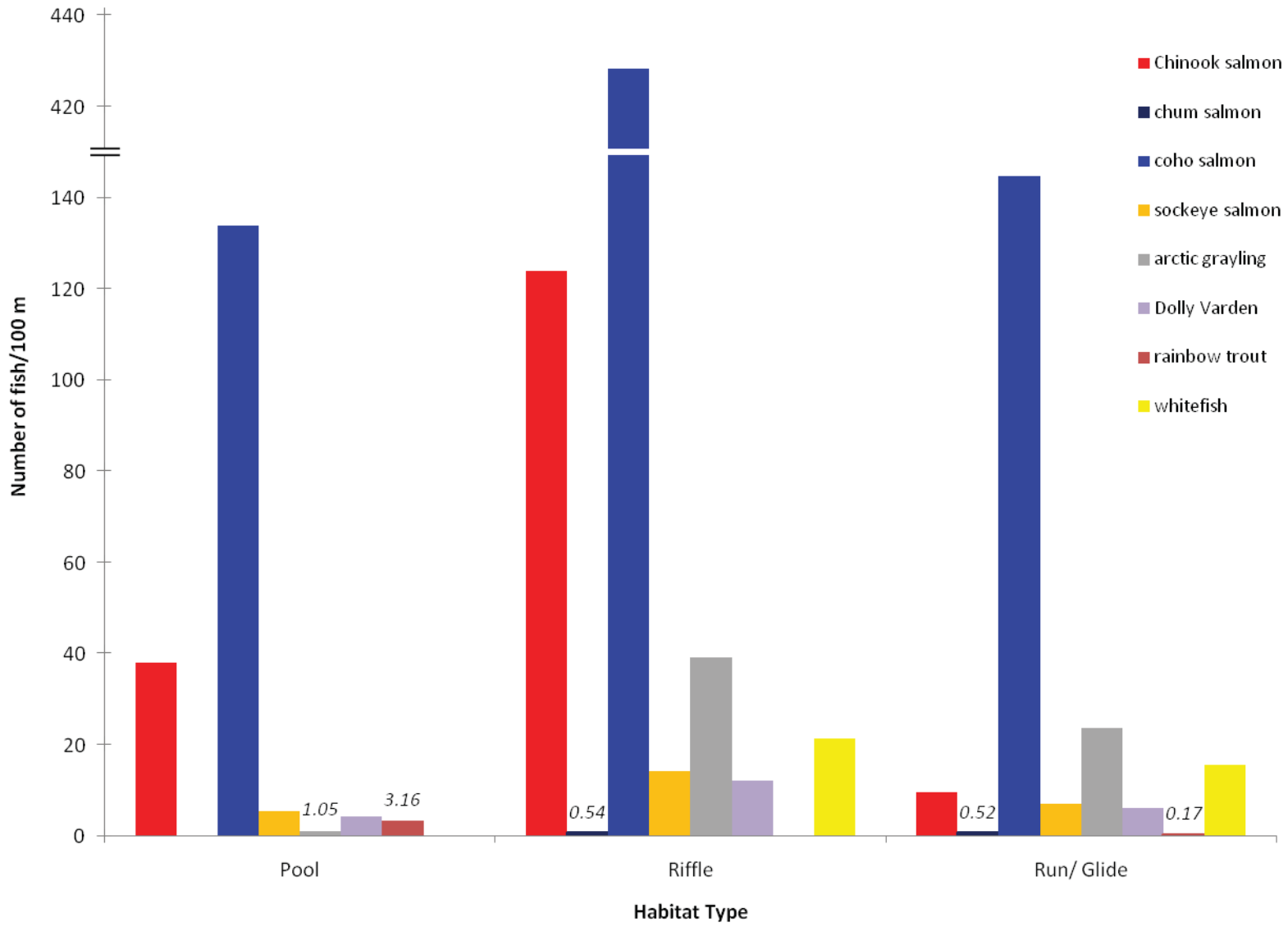


Figure B.8-8a.
2004-2007 fish abundance by habitat type within mainstem SFK-B.

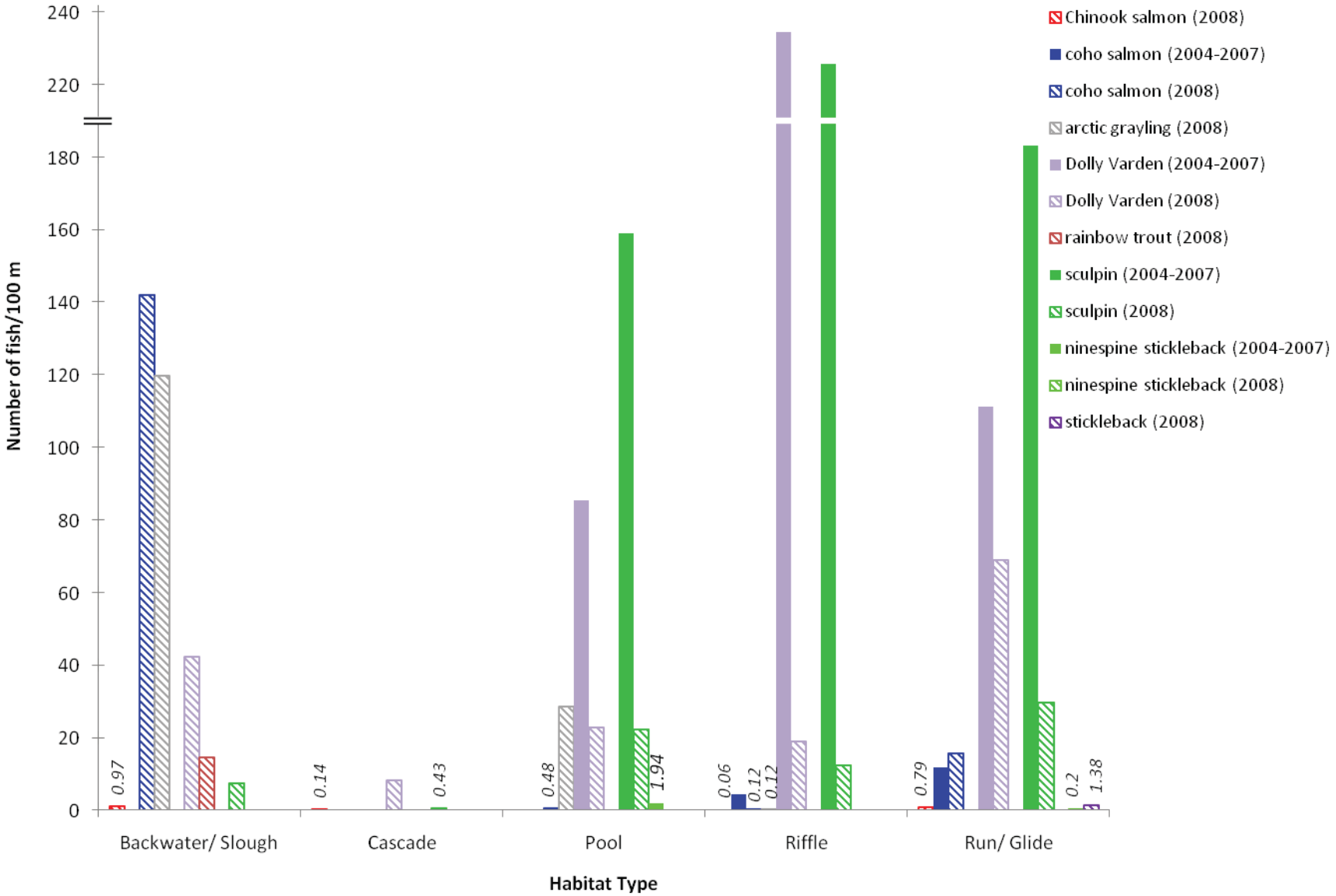


Figure B.8-8b.
2004-2008 fish abundance by habitat type within SFK-B tributaries.

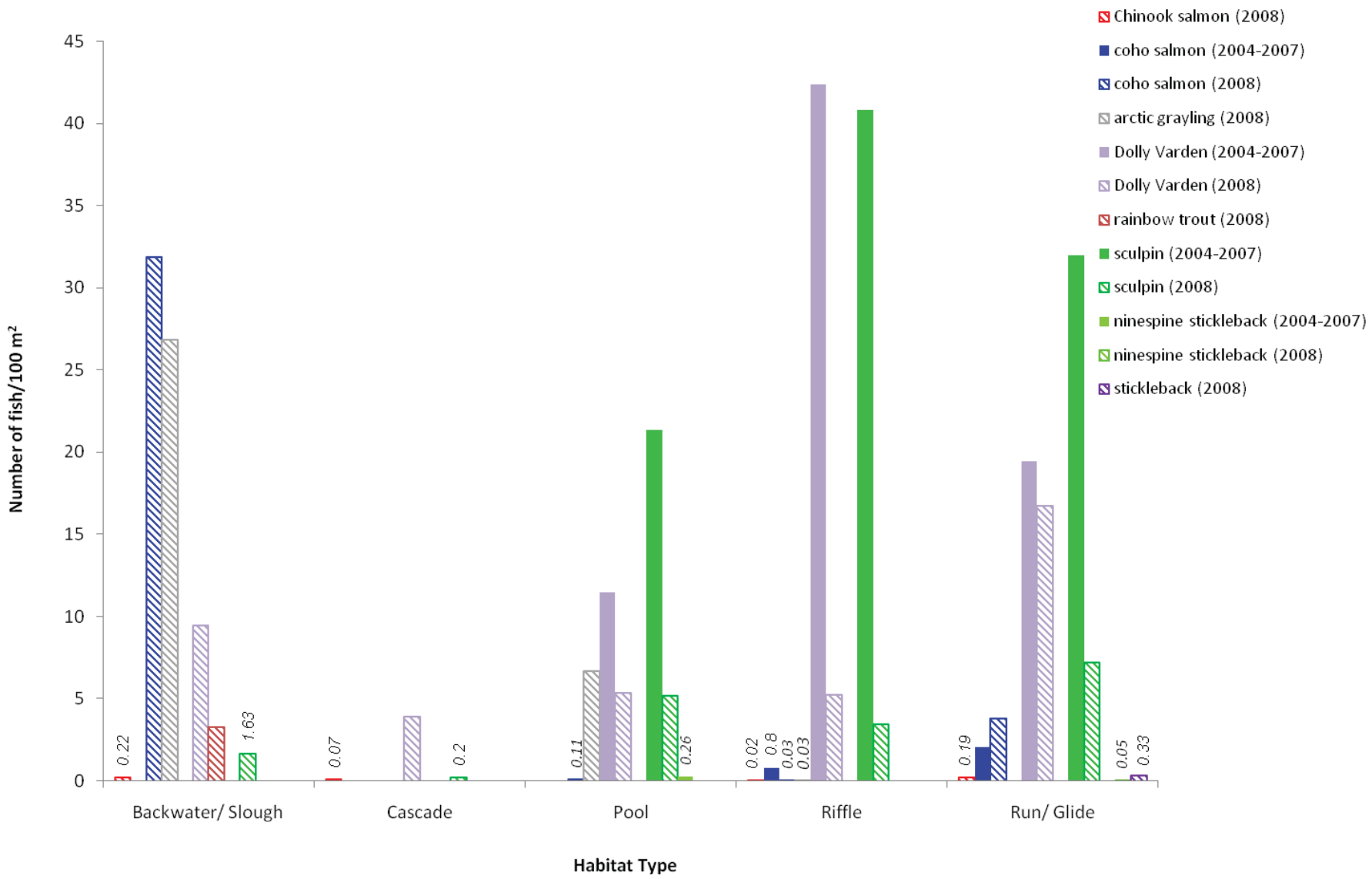


Figure B.8-9.
2004-2008 fish density by habitat type within SFK-B tributaries.

Table B.8-8.
Densities of fish species by habitat type in SFK-B tributary 1.190 in 2008.

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Coho Salmon	Arctic Grayling			Dolly Varden				Rainbow Trout	Sculpin				Ninespine Stickleback	Stickleback
				Juvenile	Juvenile	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile/ Adult[a]	Juvenile/ Adult[a]
SFK 1.190	Backwater/Slough	507.9	26.38		17.33		0.20	0.20		5.51	0.39	5.91		0.39	2.56		2.95		
	Pool	1199.2	10.84		0.17					3.34		3.34		0.33	5.17	1.83	7.34		
	Riffle	3260.2	9.45		0.06					2.67	0.64	3.31		0.67	4.88	0.52	6.07		
	Run/Glide	1379.0	18.42		1.02				0.07	5.15	0.65	5.87		1.16	8.85	0.94	10.95	0.07	0.51
	All Habitats	6346.3	13.02		1.67		0.02	0.02	0.02	3.56	0.50	4.08		0.69	5.61	0.82	7.12	0.02	0.11
SFK 1.190.20	Backwater/Slough	4.2	0																
	Beaver Complex	1932.0	0																
	Cascade	564.0	2.48							2.48		2.48							
	Pool	244.4	3.27						0.41	2.45		2.86		0.41			0.41		
	Riffle	200.6	6.48							3.49		3.49		0.50	2.49		2.99		
	All Habitats	2945.2	1.19						0.03	0.92		0.95		0.07	0.17		0.24		
SFK 1.190.20.10	Cascade	50.2	0																
	Pool	42.2	4.74							4.74		4.74							
	Riffle	33.0	3.03							3.03		3.03							
	Run/Glide	11.0	0																
	All Habitats	136.4	2.20							2.20		2.20							
SFK 1.190.20.20	Cascade	64.0	0																
	Pool	1.5	0																
	Riffle	4.0	0																
	All Habitats	69.5	0																
SFK 1.190.20.30	Cascade	52.8	0																
	Pool	13.4	14.93							14.93		14.93							
	All Habitats	66.2	3.02							3.02		3.02							
SFK 1.190.20.40	Cascade	13.3	0																
	Pool	1.1	0																
	Run/Glide	6.8	0																
	All Habitats	21.2	0																
SFK 1.190.20.50	Cascade	65.4	0																
	Pool	6.6	0																
	Wetland	468.0	0																
	All Habitats	540.0	0																
SFK 1.190.20.60	Cascade	21.9	0																
	Pool	14.5	0																
	Run/Glide	5.8	0																
	Wetland	27.2	0																
	All Habitats	69.4	0																

Table B.8-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Coho Salmon	Arctic Grayling			Dolly Varden				Rainbow Trout	Sculpin				Ninespine Stickleback	Stickleback
				Juvenile	Juvenile	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile/ Adult[a]	Juvenile/ Adult[a]
SFK 1.190.30	Backwater/Slough	136.3	161.41		106.38	47.69		47.69					7.34						
	Beaver Complex	372.0	0																
	Cascade	84.0	2.38							2.38		2.38							
	Pool	58.1	3.44							3.44		3.44							
	Riffle	96.6	0																
	Run/Glide	12.6	0																
	Wetland	60.0	0																
	All Habitats	819.6	27.33		17.69	7.93		7.93		0.49		0.49	1.22						
SFK 1.190.40	Backwater/Slough	145.6	178.57		41.21	123.63		123.63					13.74						
	Beaver Complex	517.7	0																
	Cascade	7.0	0																
	Pool	70.3	173.54			170.70		170.70			1.42	1.42			1.42		1.42		
	Riffle	427.1	0																
	Run/Glide	62.8	103.50		103.50														
	All Habitats	1230.5	36.33		10.16	24.38		24.38			0.08	0.08	1.63		0.08		0.08		
SFK 1.190.40.10	Pool	5.5	0																
	Riffle	7.2	0																
	All Habitats	12.7	0																
SFK 1.190.50	Backwater/Slough	1.0	200.00							200.00		200.00							
	Cascade	86.6	16.17							12.70		12.70		1.15	2.31		3.46		
	Pool	73.5	36.73							32.65		32.65		1.36	2.72		4.08		
	Riffle	204.3	7.83							5.38		5.38		0.98	1.47		2.45		
	Run/Glide	48.6	24.69							24.69		24.69							
	All Habitats	414.0	17.15							14.49		14.49		0.97	1.69		2.66		
SFK 1.190.50.10	Cascade	26.7	0																
	Pool	1.3	0																
	Riffle	4.4	0																
	Run/Glide	2.0	0																
	All Habitats	34.4	0																
SFK 1.190.60	Backwater/Slough	109.6	52.01	1.82		0.91		0.91		38.32	10.95	49.27							
	Cascade	388.0	8.25	0.26					0.26		7.73	7.99							
	Pool	57.8	25.95							5.19	20.76	25.95							
	Riffle	1291.1	14.02	0.08		0.15		0.15	0.39	2.17	11.23	13.79							
	Run/Glide	519.3	47.37	0.77						10.01	36.59	46.60							
	All Habitats	2365.8	22.44	0.34		0.13		0.13	0.25	5.28	16.44	21.98							
SFK 1.190.70	Backwater/Slough	14.5	6.90							6.90		6.90							
	Cascade[b]	56.0	1.79																
	Pool	7.6	39.47								39.47	39.47							
	Riffle	245.6	2.04							1.63		1.63				0.41	0.41		
	Run/Glide	18.0	27.78						5.56	22.22		27.78							
	All Habitats[b]	341.7	4.39						0.29	2.63	0.88	3.80				0.29	0.29		

Table B.8-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Coho Salmon	Arctic Grayling			Dolly Varden				Rainbow Trout	Sculpin					Ninespine Stickleback	Stickleback
				Juvenile	Juvenile	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile/ Adult[a]	Juvenile/ Adult[a]
SFK 1.190.80	Backwater/Slough	1.4	0																	
	Cascade	12.0	0																	
	Pool	5.0	0																	
	Riffle[b]	309.3	7.11							2.26	0.97	3.23								
	Run/Glide	27.8	35.97						7.19		28.78	35.97								
	All Habitats[b]	355.5	9.00						0.56	1.97	3.09	5.63								

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
[b] Total density includes unidentified fish.
Note: Blank cells indicate no data were collected for that record.

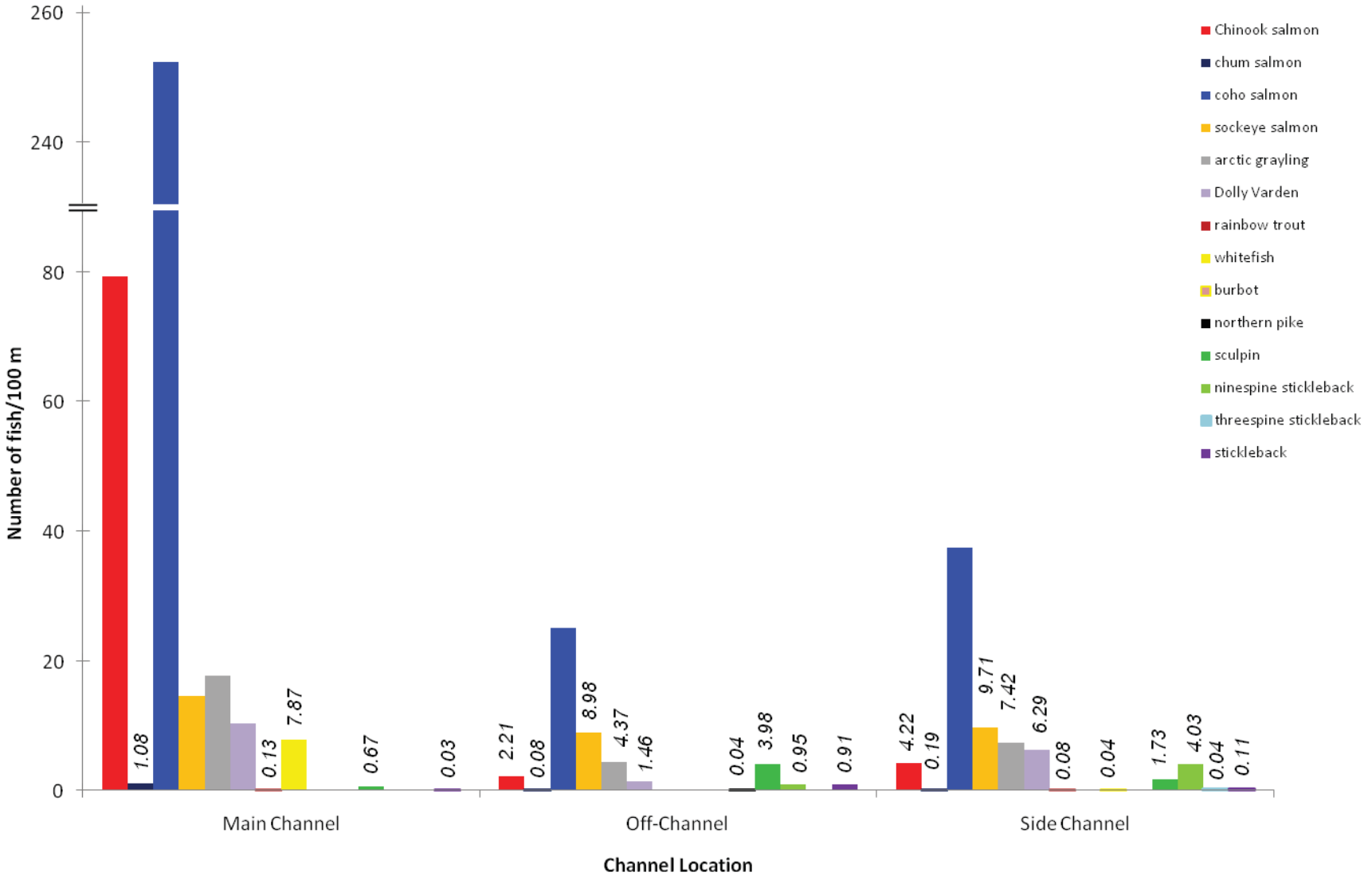


Figure B.8-10.
2004-2007 fish abundance by channel location within SFK-B.

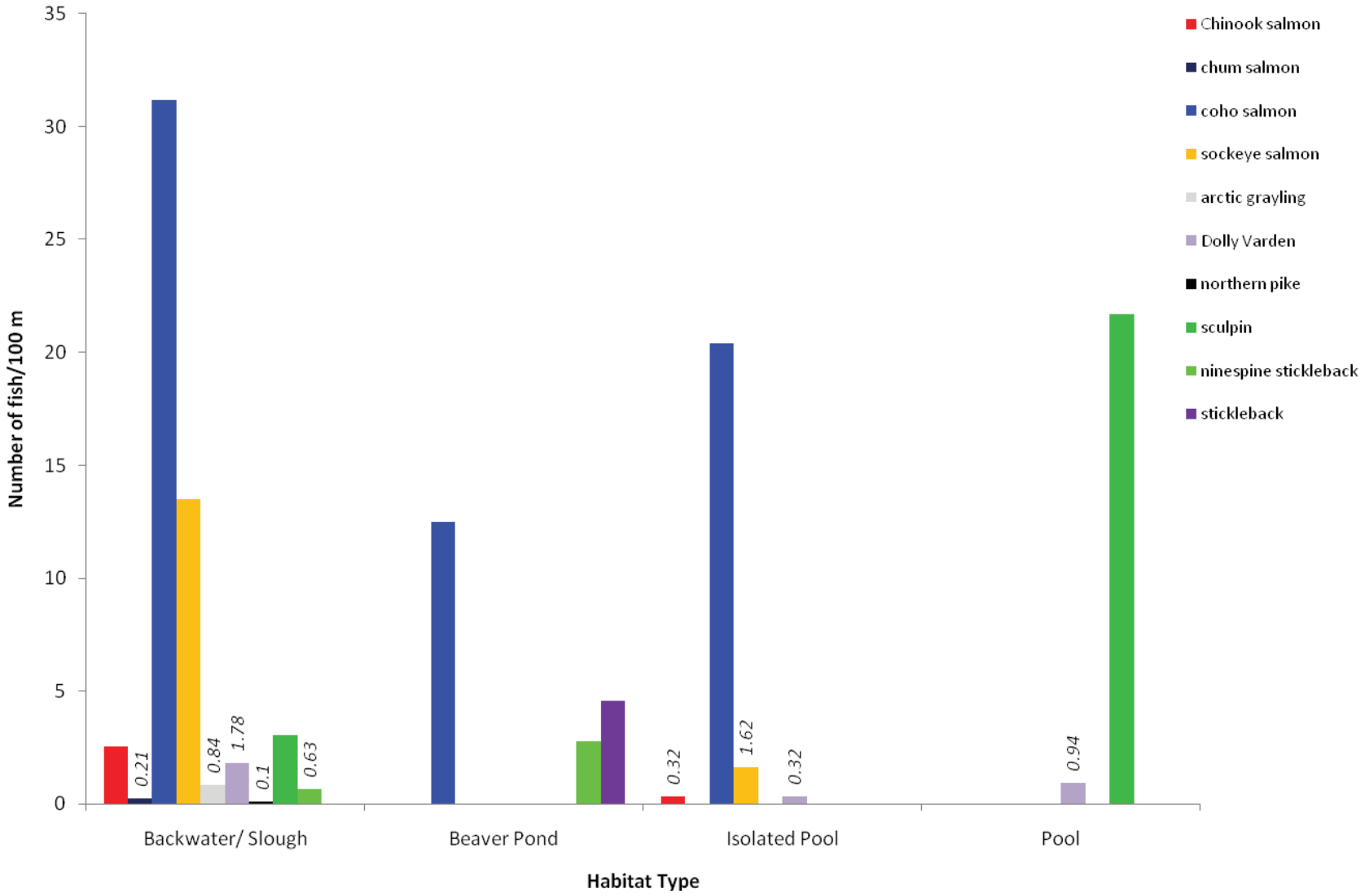


Figure B.8-11.
2004-2007 fish abundance in SFK-B off-channel habitats.

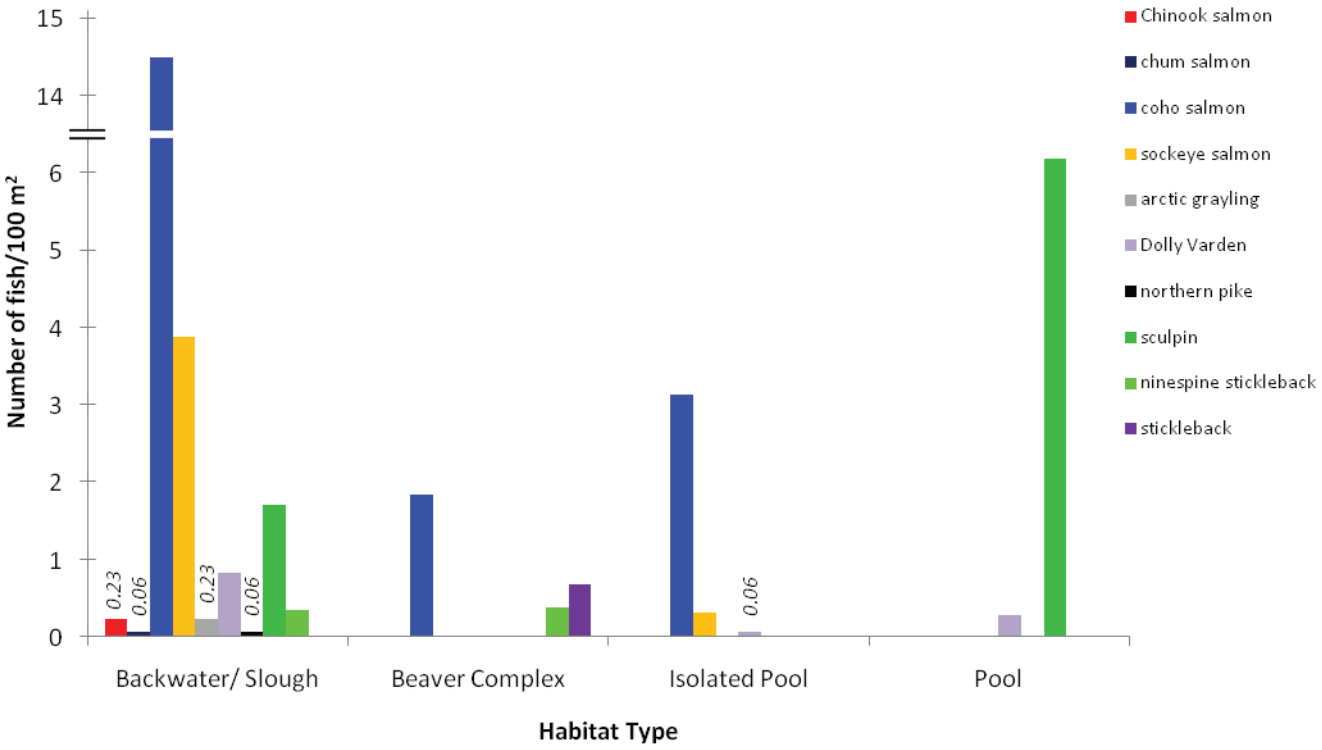


Figure B.8-12.
2004-2007 fish density in SFK-B off-channel habitats.

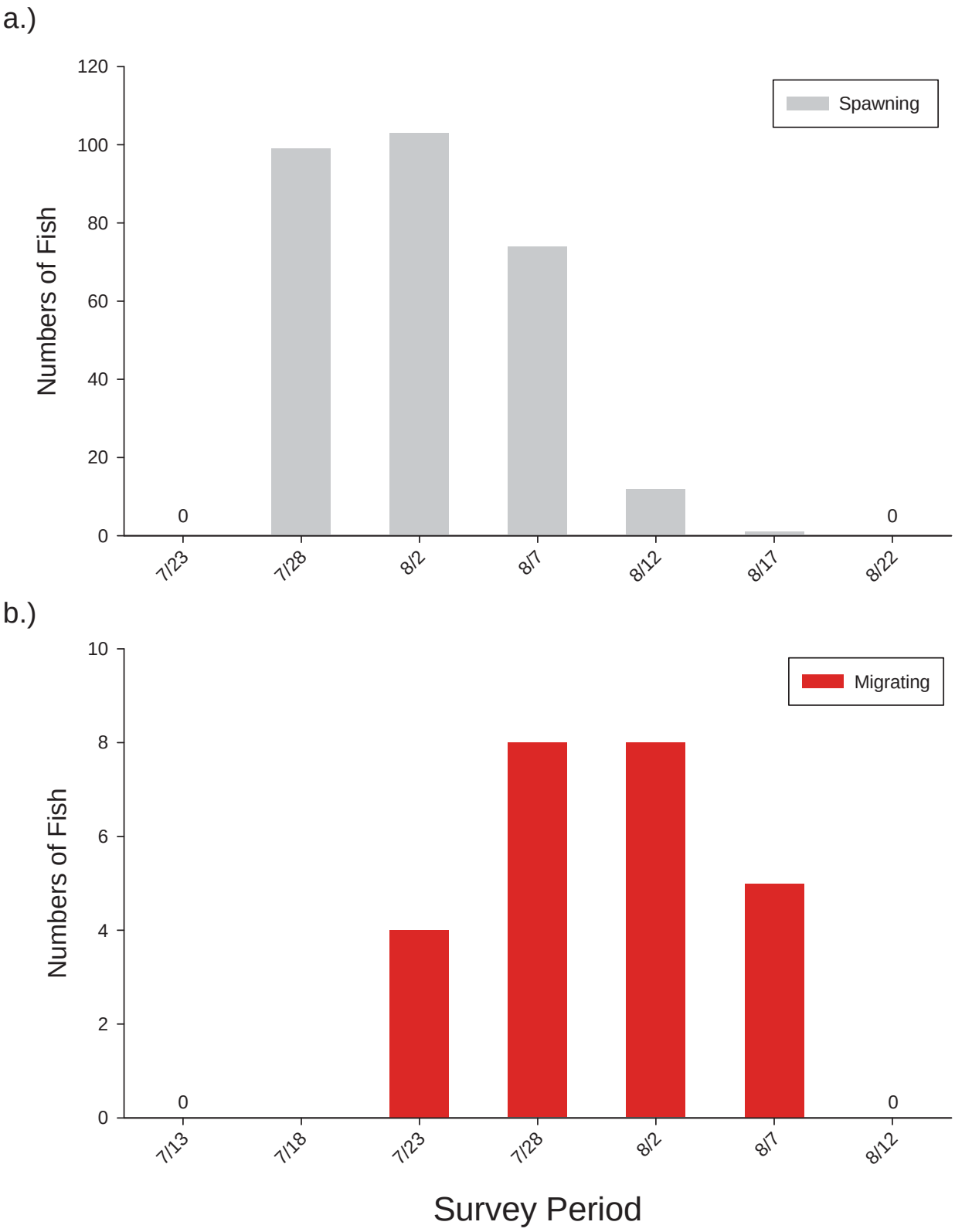


Figure B.8-17.
Observations of Chinook salmon during 2008 aerial surveys in SFK-B. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed migrating.

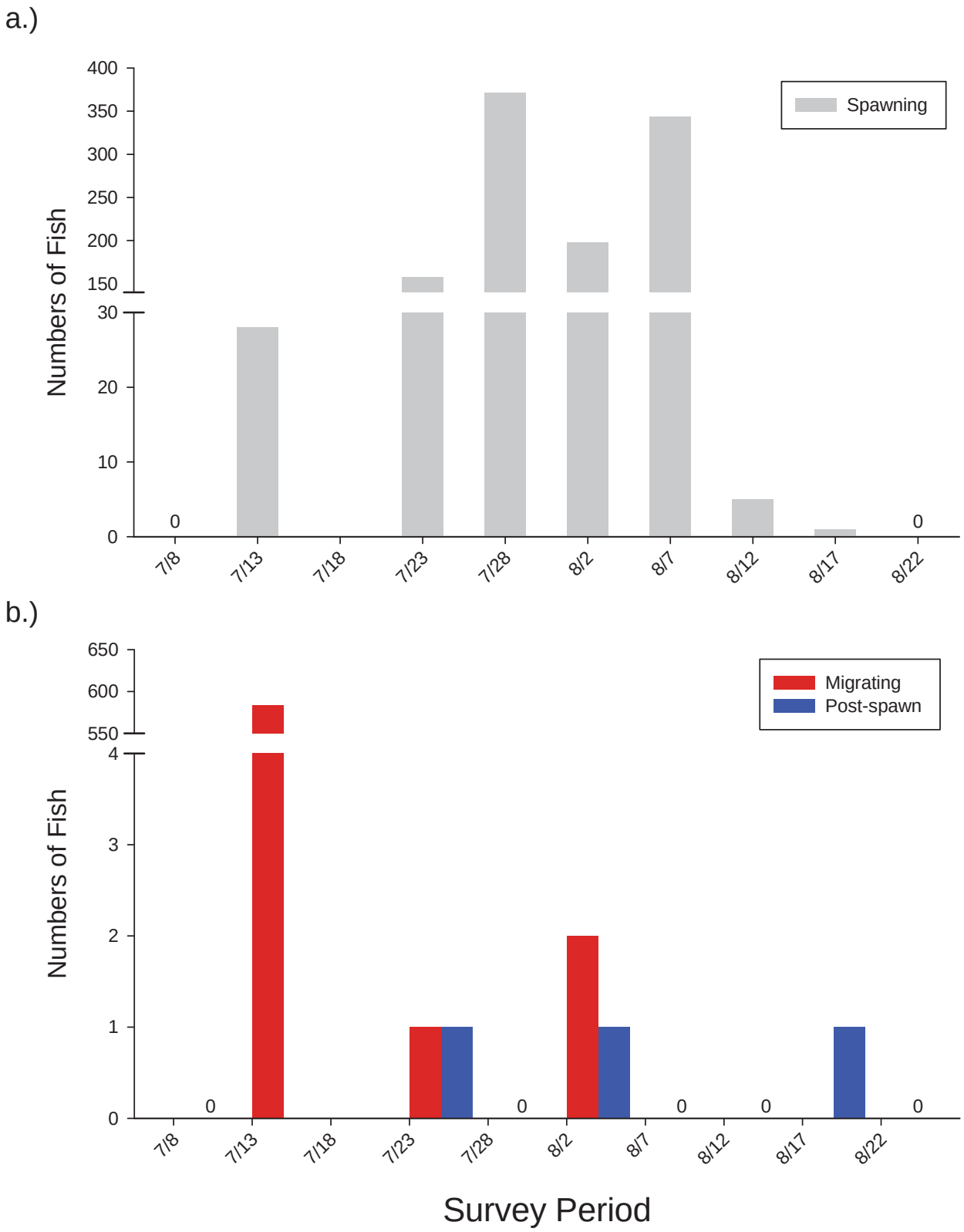


Figure B.8-18.
Observations of chum salmon during 2008 aerial surveys in SFK-B. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

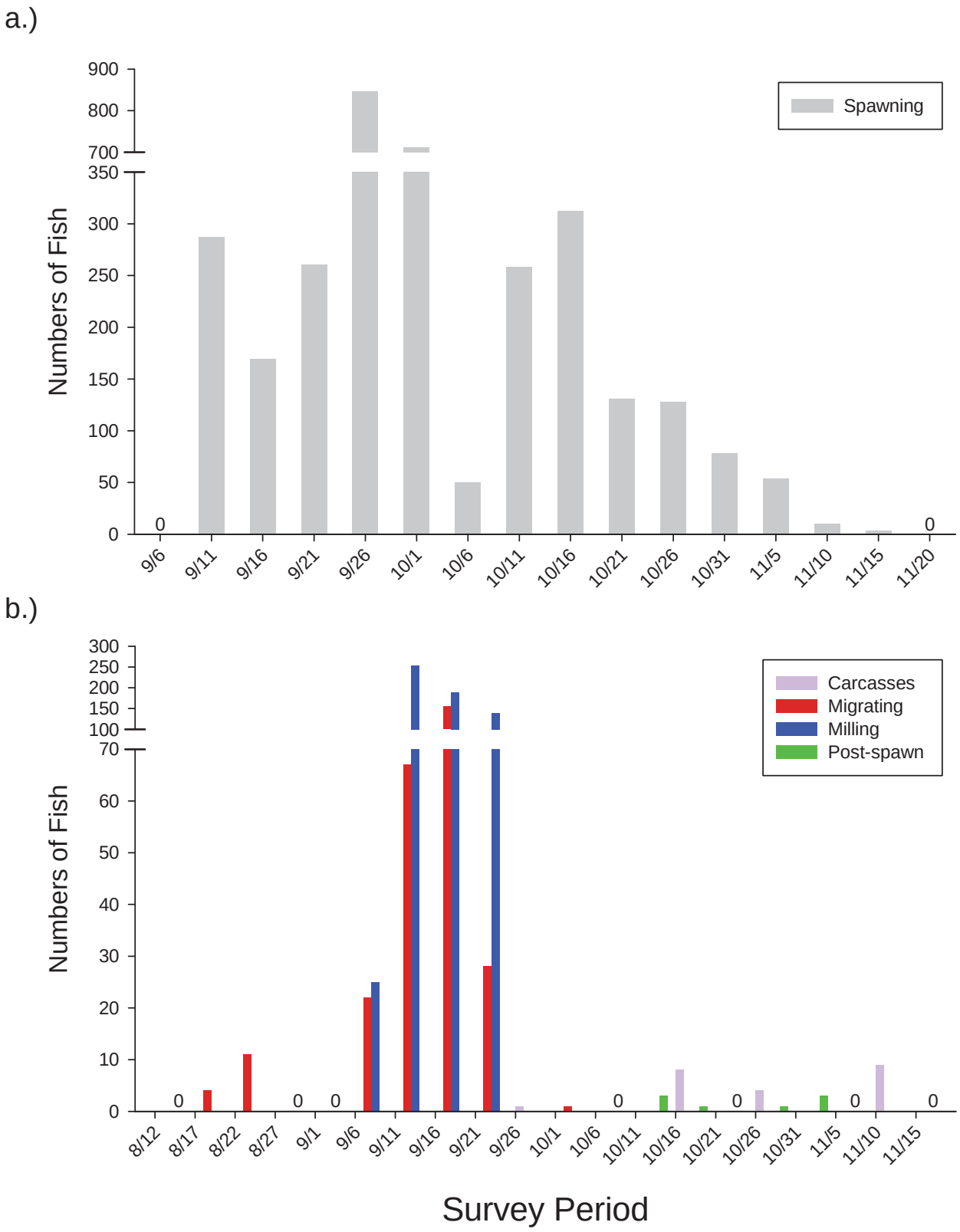
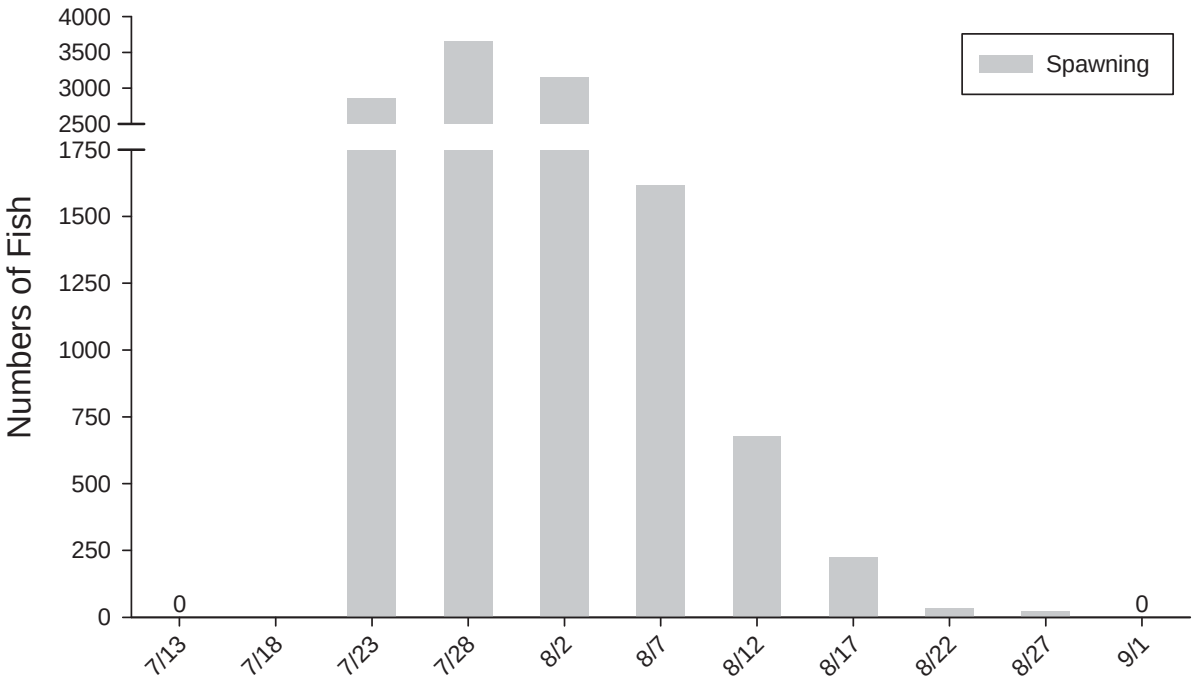


Figure B.8-19.
Observations of coho salmon during 2008 aerial surveys in SFK-B. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

a.)



b.)

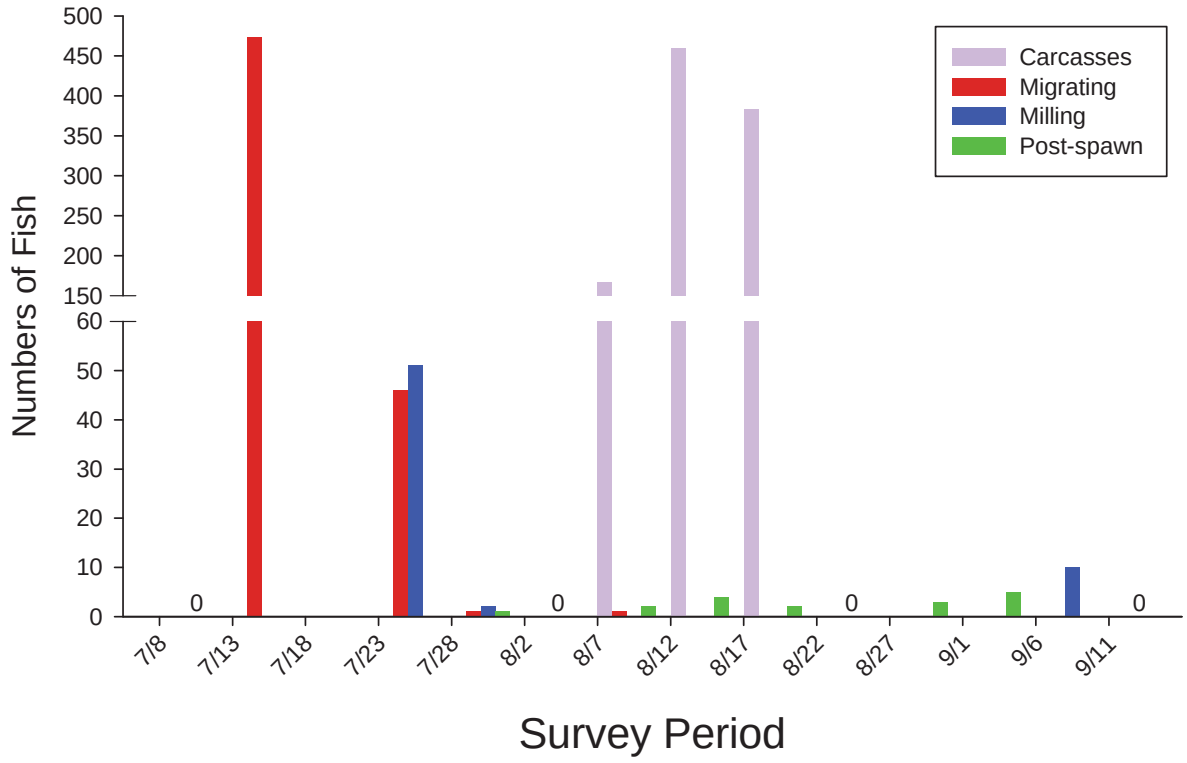


Figure B.8-20.
Observations of sockeye salmon during 2008 aerial surveys in SFK-B. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.8-9.
SFK-B fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/9/2004	SFK04WT-13	Salmonid sp.	visual observation				1		1	
		sculpin sp.	minnow trap		24		2		2	
	SFK04WT-14	Dolly Varden	minnow trap		24		1		1	
		Salmonid sp.	visual observation				100		100	
		sculpin sp.	minnow trap		24		6		6	
	SFK04WT-15	coho salmon	minnow trap		19		5		5	
		Dolly Varden	minnow trap		19		2		2	
		sculpin sp.	minnow trap		19		1		1	
4/13/2004	SFK04WT-03	Dolly Varden	minnow trap		24		5		5	
		Salmonid sp.	visual observation				1		1	
		sculpin sp.	minnow trap		24	4	15		19	
		ninespine stickleback	minnow trap		24		1		1	
	SFK04WT-04	Dolly Varden	minnow trap		24		1		1	
		Salmonid sp.	visual observation				1		1	
		sculpin sp.	minnow trap		24	1	4		5	
	SFK04WT-05	Dolly Varden	minnow trap		24		1		1	
		sculpin sp.	minnow trap		24	1	1		2	
	SFK04WT-06	Dolly Varden	minnow trap		24		2		2	
	SFK04WT-07	coho salmon	minnow trap		24		3		3	
		Dolly Varden	minnow trap		24		3		3	
		Salmonid sp.	visual observation				3		3	

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/15/2004	SFK04WT-12	coho salmon	minnow trap		24		2		2	
		Dolly Varden	minnow trap		24		2		2	
		sculpin sp.	minnow trap		24	1	2		3	
4/1/2005	SFK05WT-03	sculpin sp.	minnow trap					1	1	
	SFK05WT-04	Salmonid sp.	visual observation				10		10	
4/2/2005	SFK05WT-04	Salmonid sp.	electrofishing				9		9	
4/4/2006	SFK06WT-04	Chinook salmon	electrofishing	15			4		4	26.7
		Chinook salmon	minnow trap		24		1		1	
		coho salmon	minnow trap		24		8		8	
		sockeye salmon	electrofishing	15			9		9	60.0
		Dolly Varden	minnow trap		24		2		2	
		sculpin sp.	minnow trap		24			1	1	
		sculpin sp.	visual observation					100	100	
4/4/2006	SFK06WT-04	ninespine stickleback	minnow trap		24			2	2	
	SFK06WT-05	sockeye salmon	electrofishing	20			8		8	40.0
		burbot	minnow trap		20		1		1	
	SFK06WT-06	sockeye salmon	electrofishing				56		56	
		sockeye salmon	visual observation				100		100	

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
10/31/2006	SFK-06-WT3	Chinook salmon	electrofishing	20			4		4	20.0
		Chinook salmon	minnow trap		24		4		4	
		coho salmon	electrofishing	20			8		8	40.0
		coho salmon	minnow trap		24		40		40	
		arctic grayling	electrofishing	20			2		2	10.0
		arctic grayling	minnow trap		24		1		1	
		Dolly Varden	electrofishing	20			2		2	10.0
		Dolly Varden	minnow trap		24		8		8	
		northern pike	electrofishing	20			1		1	5.0
		northern pike	minnow trap		24		1		1	
	SFOCH-13H-C5	Salmonid sp.	snorkel	20			8		8	40.0
	SFOCH-17H-C1/C2	Chinook salmon	snorkel	80			9		9	11.3
		coho salmon	snorkel	80			30		30	37.5
		sockeye salmon	snorkel	80			14		14	17.5
10/31/2006	SFOCH-17H-C1/C2	arctic grayling	snorkel	80			89		89	111.3
		Dolly Varden	snorkel	80			7		7	8.8
		ninespine stickleback	snorkel	80			1		1	1.3
		unidentified sp.	snorkel	80				20	20	25.0

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
11/1/2006	05-SFK2-RN6	Chinook salmon	snorkel	45			1		1	2.2
	SFK-06-WT4r2	Chinook salmon	minnow trap		24		3		3	
		coho salmon	minnow trap		24		7		7	
		Dolly Varden	minnow trap		24		3		3	
		sculpin sp.	minnow trap		24			2	2	
	SFOCH-11T-C1	unidentified sp.	visual observation					6	6	
	SFOCH-13H-C1	unidentified sp.	visual observation					3	3	
11/2/2006	05-SFK2-PL1	stickleback sp.	snorkel	70				1	1	1.4
		unidentified sp.	visual observation					1	1	
	05-SFK2-PL1d/s	arctic grayling	snorkel				1		1	
		Dolly Varden	snorkel				4		4	
11/2/2006	SFOCH-05H-C1-G1	Chinook salmon	snorkel				14		14	
		coho salmon	snorkel				5		5	
		sockeye salmon	snorkel				7		7	
		arctic grayling	snorkel				5		5	
	SFOCH-11H-C3	stickleback sp.	snorkel				2		2	
11/3/2006	SFOCH-03H-C1	Salmonid sp.	aquascope				30		30	

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
11/4/2006	SFOCH-07H-C4	coho salmon	snorkel				3		3	
		sockeye salmon	snorkel				3		3	
		arctic grayling	snorkel				6		6	
		Dolly Varden	snorkel				13		13	
	SFOCH-07H-C5	stickleback sp.	visual observation					1	1	
4/2/2007	SFK07-01	coho salmon	minnow trap		23		5		5	
		sockeye salmon	visual observation				200		200	
		Dolly Varden	minnow trap		23		2		2	
		sculpin sp.	minnow trap		23			2	2	
	SFK07-02	sculpin sp.	minnow trap					4	4	
	SFK07-03	coho salmon	minnow trap		24		38		38	
		ninespine stickleback	minnow trap		24		1		1	
4/3/2007	SFK07-02	chum salmon	electrofishing				7		7	
		coho salmon	electrofishing				10		10	
		sockeye salmon	electrofishing				98		98	
	SFK07-03	coho salmon	minnow trap		23		36		36	
		Dolly Varden	minnow trap		23		1		1	
	SFK07-05	coho salmon	minnow trap		24		1		1	
		sculpin sp.	minnow trap		24		1		1	

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/4/2007	SFK07-03	coho salmon	electrofishing				1		1	
		sculpin sp.	electrofishing				13		13	
		stickleback sp.	electrofishing				2		2	
	SFK07-06	coho salmon	minnow trap		17		2		2	
		Dolly Varden	minnow trap		17		5		5	
		sculpin sp.	minnow trap		17	5	9		14	
	SFK07-07	coho salmon	minnow trap		17		6		6	
		Dolly Varden	minnow trap		17		55		55	
		sculpin sp.	minnow trap		17	1	3		4	
4/4/2007	SFK07-07	ninespine stickleback	minnow trap		17	1	1		2	
	SFK07-08	Dolly Varden	minnow trap		18		2		2	
		sculpin sp.	minnow trap		18	3	3		6	
4/5/2007	SFK07-06	chum salmon	electrofishing				1		1	
		sockeye salmon	electrofishing				11		11	
	SFK07-07	sockeye salmon	electrofishing				13		13	
	SFK07-09	coho salmon	minnow trap		21		38		38	
		Dolly Varden	minnow trap		21		10		10	
		sculpin sp.	minnow trap		21	1	2		3	
		ninespine stickleback	minnow trap		21	1	1		2	

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/22/2007	SFOCH-17H-C1/C2	coho salmon	snorkel	48			11		11	22.9
		unidentified sp.	snorkel	48				1	1	2.1
	SFOCH-22H-C1	coho salmon	snorkel	37			2		2	5.4
		sockeye salmon	snorkel	37			8		8	21.6
		arctic grayling	snorkel	37			1		1	2.7
		ninespine stickleback	snorkel	37			1		1	2.7
		unidentified sp.	snorkel	37				1	1	2.7
4/23/2007	SFOCH-09T-C2	unidentified sp.	snorkel					1	1	
4/25/2007	SFOCH-09T-C1	coho salmon	electrofishing	50			15		15	30.0
		arctic grayling	electrofishing	50			9		9	18.0
		Dolly Varden	electrofishing	50			1		1	2.0
		sculpin sp.	electrofishing	50				14	14	28.0
		ninespine stickleback	electrofishing	50				2	2	4.0
		threespine stickleback	electrofishing	50				1	1	2.0
	SFOCH-17H-C1/C2	Chinook salmon	electrofishing	48			2		2	4.2
		chum salmon	electrofishing	48			5		5	10.4
		coho salmon	electrofishing	48			4		4	8.3
		arctic grayling	electrofishing	48			1		1	2.1
		Dolly Varden	electrofishing	48			1		1	2.1
		sculpin sp.	electrofishing	48				5	5	10.4
		ninespine stickleback	electrofishing	48		1	4		5	10.4

Table B.8-9. Continued

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/ 100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/25/2007	SFOCH-22H-C1	Chinook salmon	electrofishing	37			1		1	2.7
		chum salmon	electrofishing	37			1		1	2.7
		coho salmon	electrofishing	37			23		23	62.2
		sockeye salmon	electrofishing	37			28		28	75.7
		sockeye salmon	visual observation				10		10	
4/25/2007	SFOCH-22H-C1	arctic grayling	electrofishing	37			3		3	8.1
		Dolly Varden	electrofishing	37			2		2	5.4
		northern pike	electrofishing	37			1		1	2.7
		ninespine stickleback	electrofishing	37			2		2	5.4

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.8-10.
2008 fish observations by method at mainstem index sites located within SFK-B.

Index Site	Species	Method	Adult	Juvenile	Total
SFK25.98	Chinook salmon	beach seine		1	1
	coho salmon	beach seine		13	13
		snorkel		168	168
	sockeye salmon	beach seine		4	4
	arctic grayling	beach seine	16	3	19
		snorkel	12		12
	Dolly Varden	beach seine	2	1	3
		snorkel	1		1
	whitefish sp.	beach seine	3		3
		snorkel	5		5
	sculpin sp.	beach seine		6	6
SFK25.98 Total			**39**	**196**	**235**
SFK30.31	Chinook salmon	snorkel		1	1
	coho salmon	beach seine		3	3
	sockeye salmon	beach seine		2	2
		snorkel	1		1
	Dolly Varden	beach seine		5	5
	sculpin sp.	beach seine		7	7
SFK30.31 Total			**1**	**18**	**19**

Note: Blank cells indicate no data were collected for that record.

.

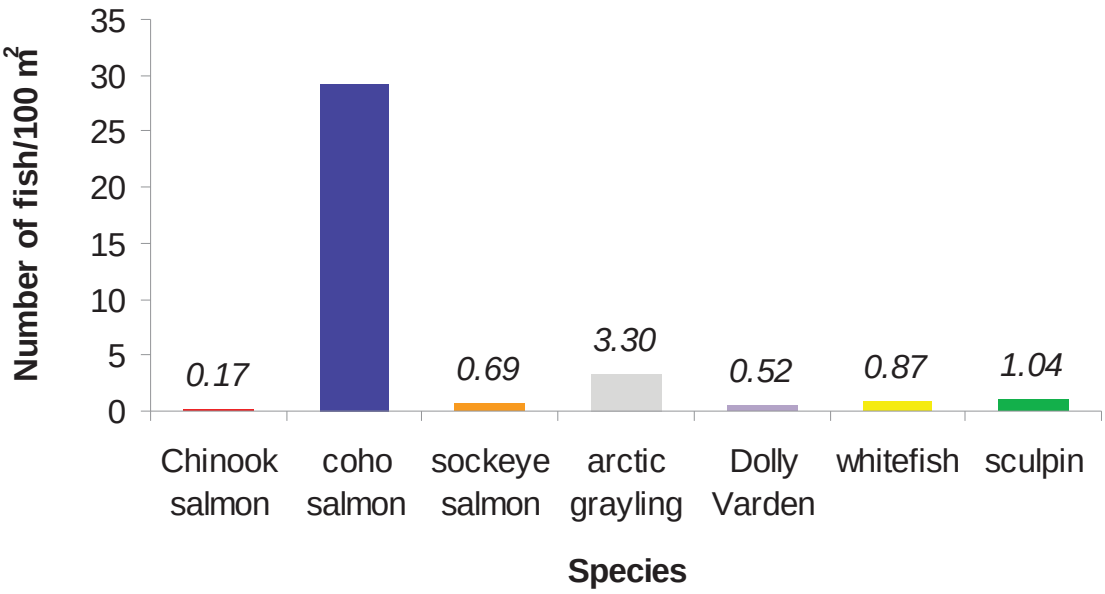


Figure B.8-22a.
2008 fish density in glide habitat at mainstem index site (RKm 25.98) within SFK-B. Densities were calculated from the method that generated the greatest count of fish at this location.

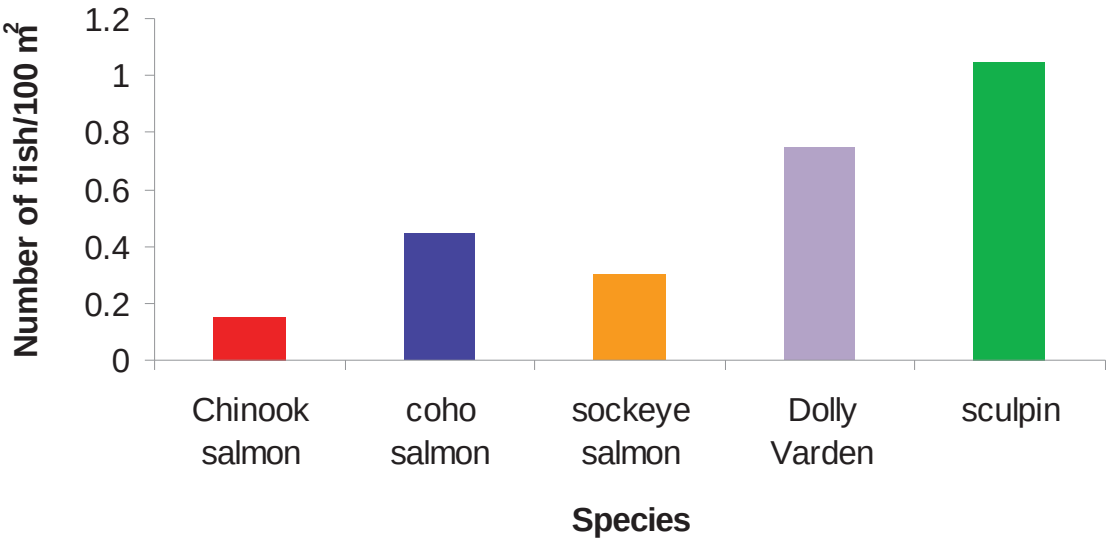
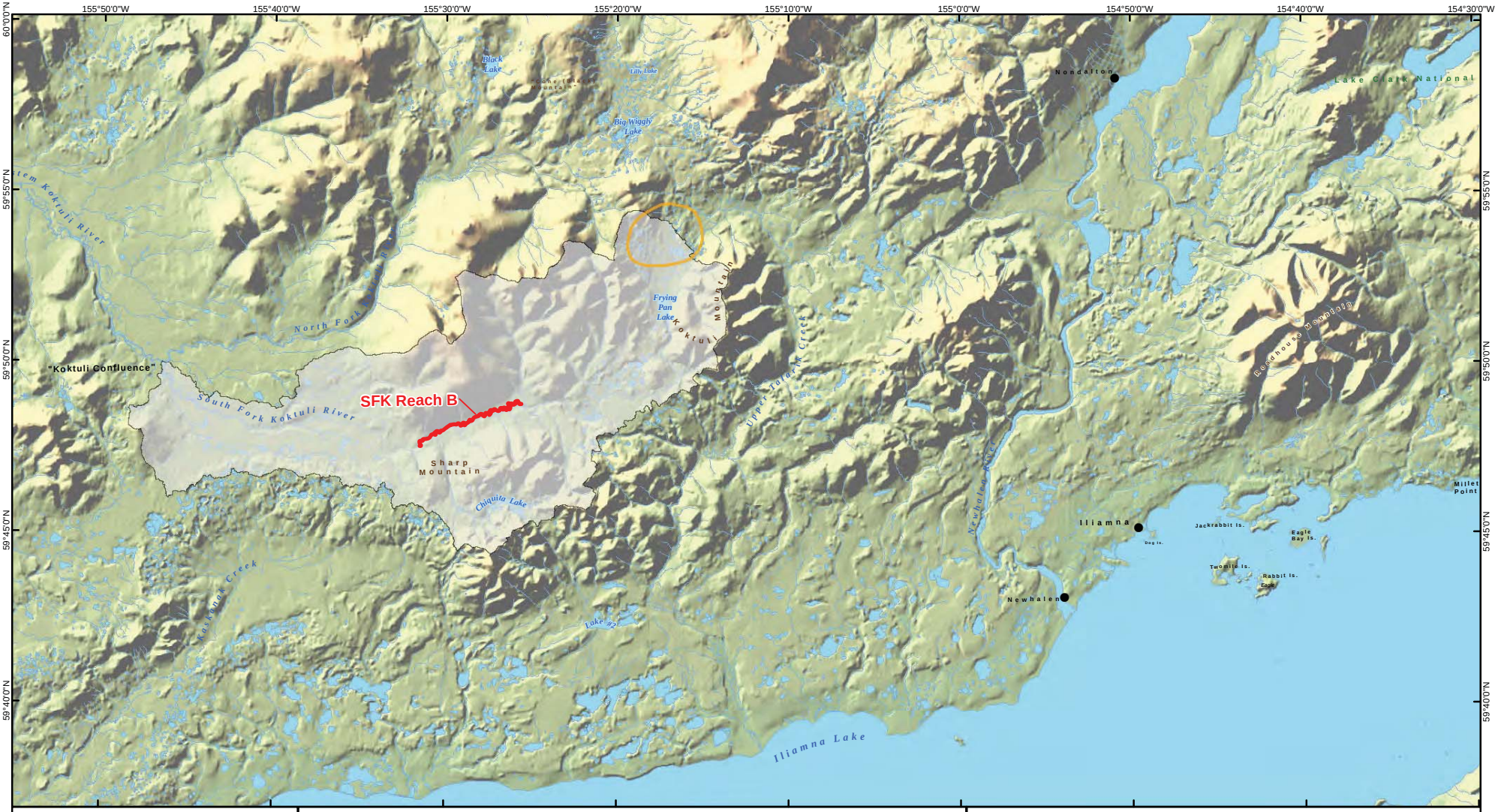
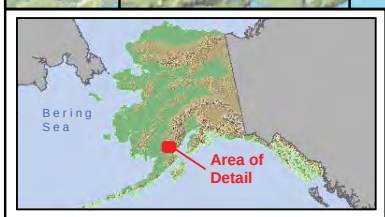


Figure B.8-22b.
2008 fish density in glide habitat at mainstem index site (RKm 30.31) within SFK-B. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach SFK Reach B

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

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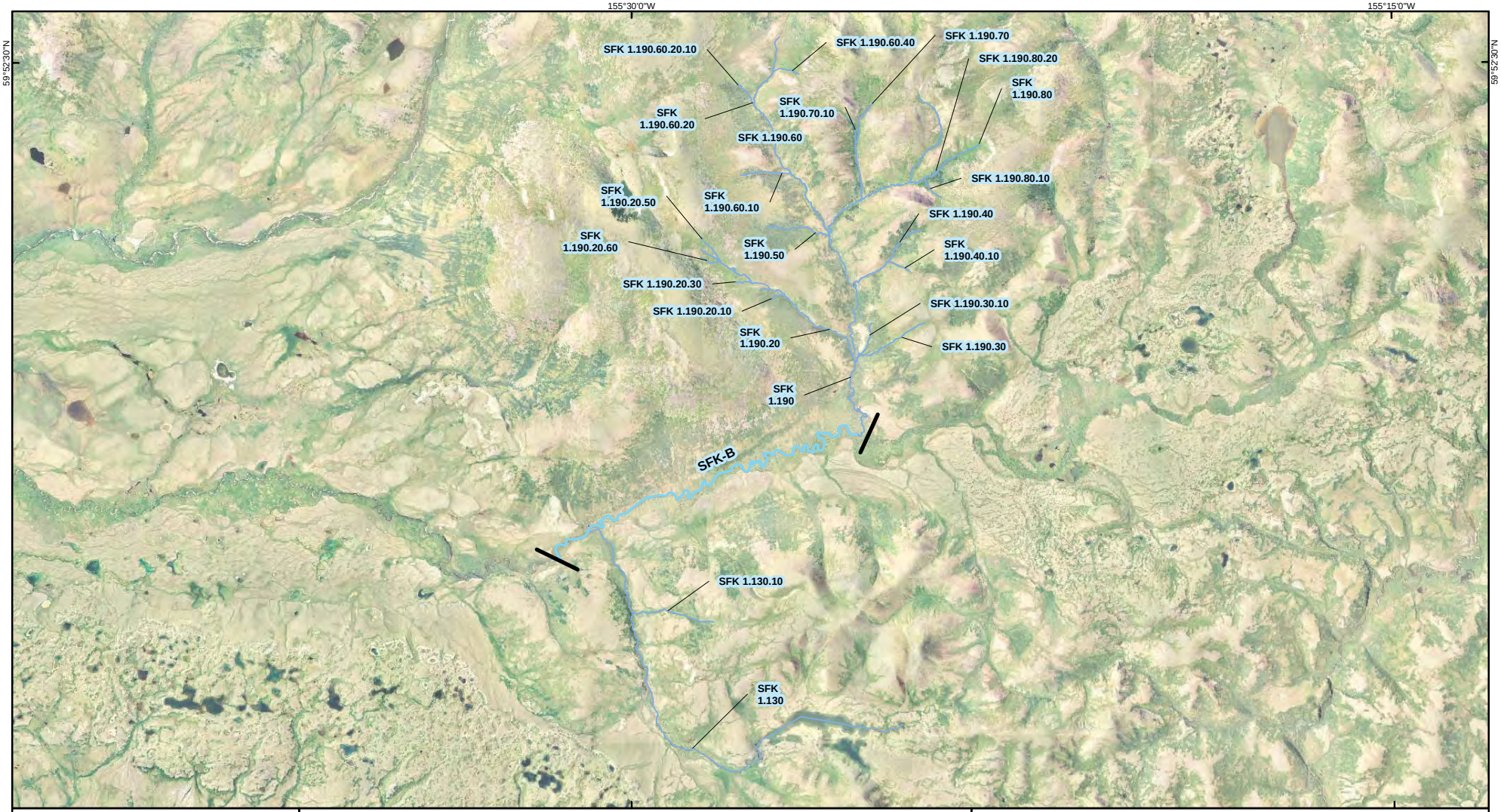
Figure B.8-1a
Reach SFK-B

RDI_R2_OverviewLocator_SFK-B_Fig-B.8-1a_11x17L_8of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.3 — 2.6

Kilometers: 0 — 1.3 — 2.6

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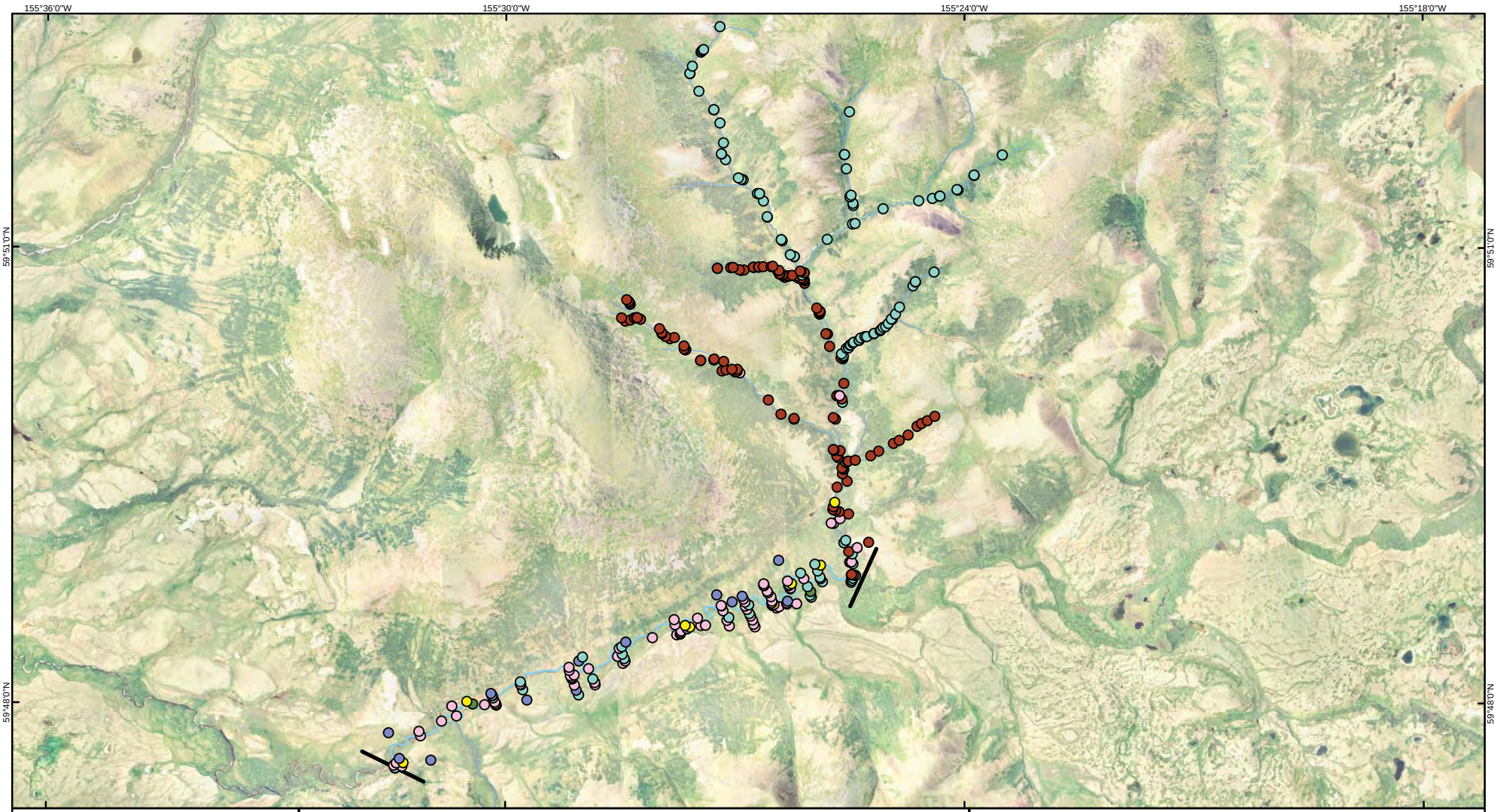
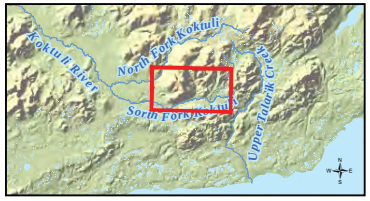
Figure B.8-1b
SFK-B
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_SFK-B_Fig-B.8-1b_11x17L_8of19_D01.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach

Tributary Streams

Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.9 1.8

Kilometers
0 0.9 1.8

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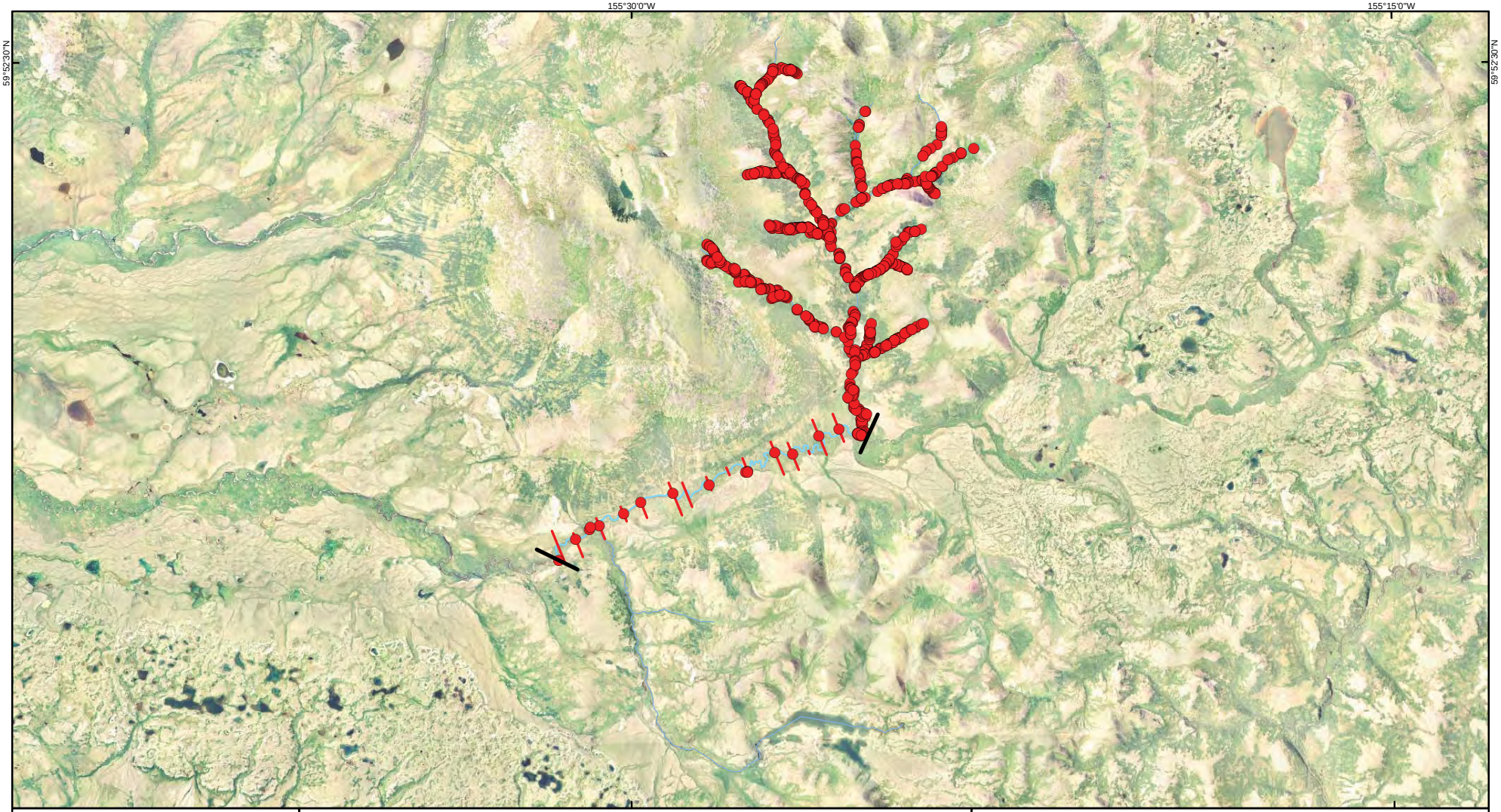
Figure B.8-2
SFK-B
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_SFK-B_Fig-B.8-2_11x17L_8of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 1.3 2.6

Kilometers
0 1.3 2.6

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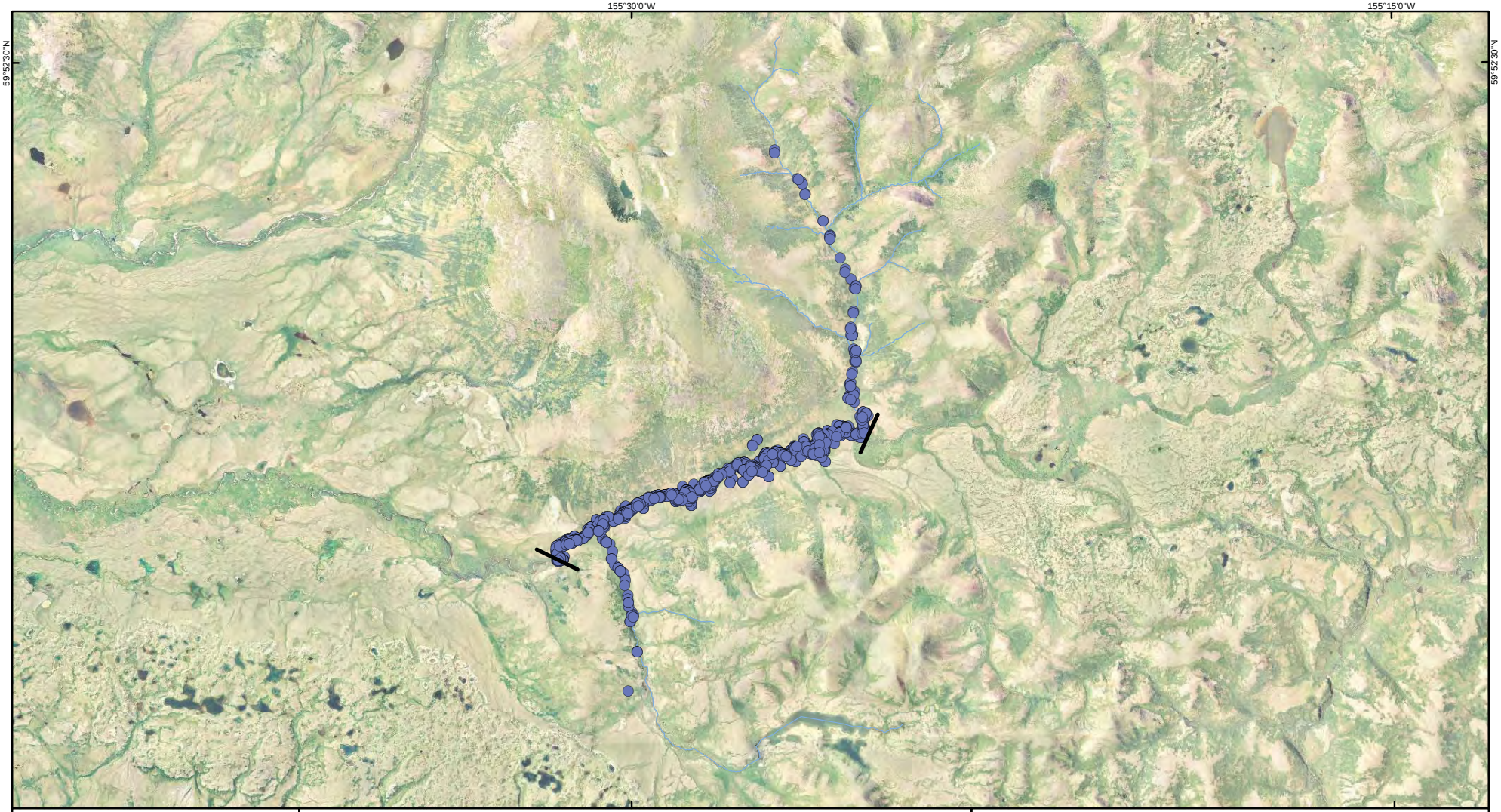
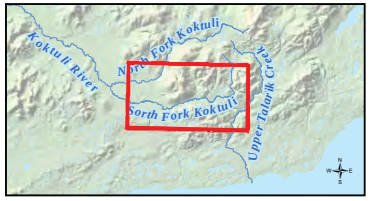
Figure B.8-3
SFK-B
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_SFK-B_Fig-B.8-3_11x17L_8of19_D02.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 1.3 2.6

Kilometers
0 1.3 2.6

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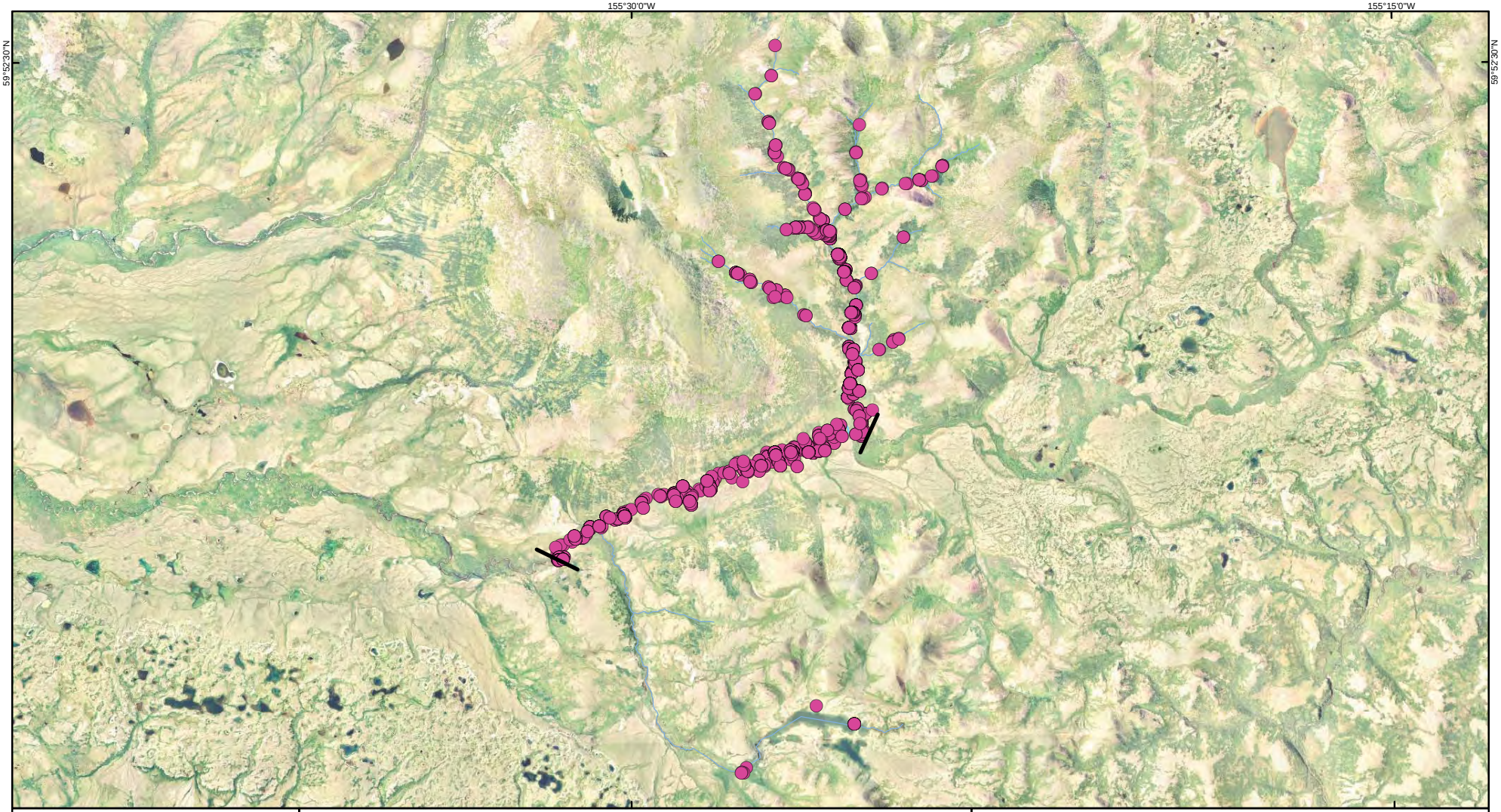
Figure B.8-4
SFK-B
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_SFK-B_Fig-B.8-4_11x17L_8of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 1.3 2.6

Kilometers
0 1.3 2.6

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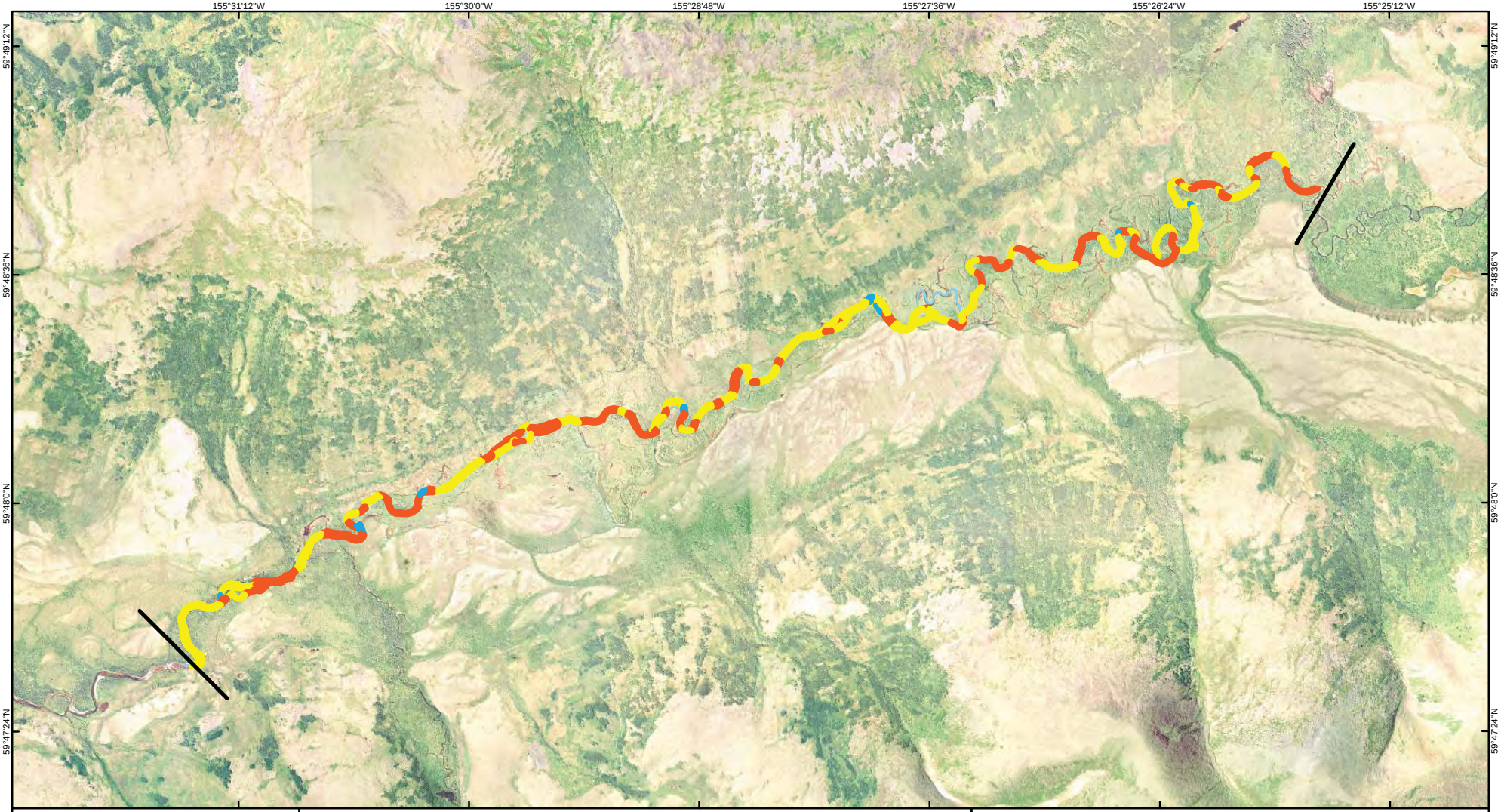
Figure B.8-5
SFK-B
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_SFK-B_Fig-B.8-5_11x17L_8of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.4 0.8

Kilometers: 0 0.4 0.8

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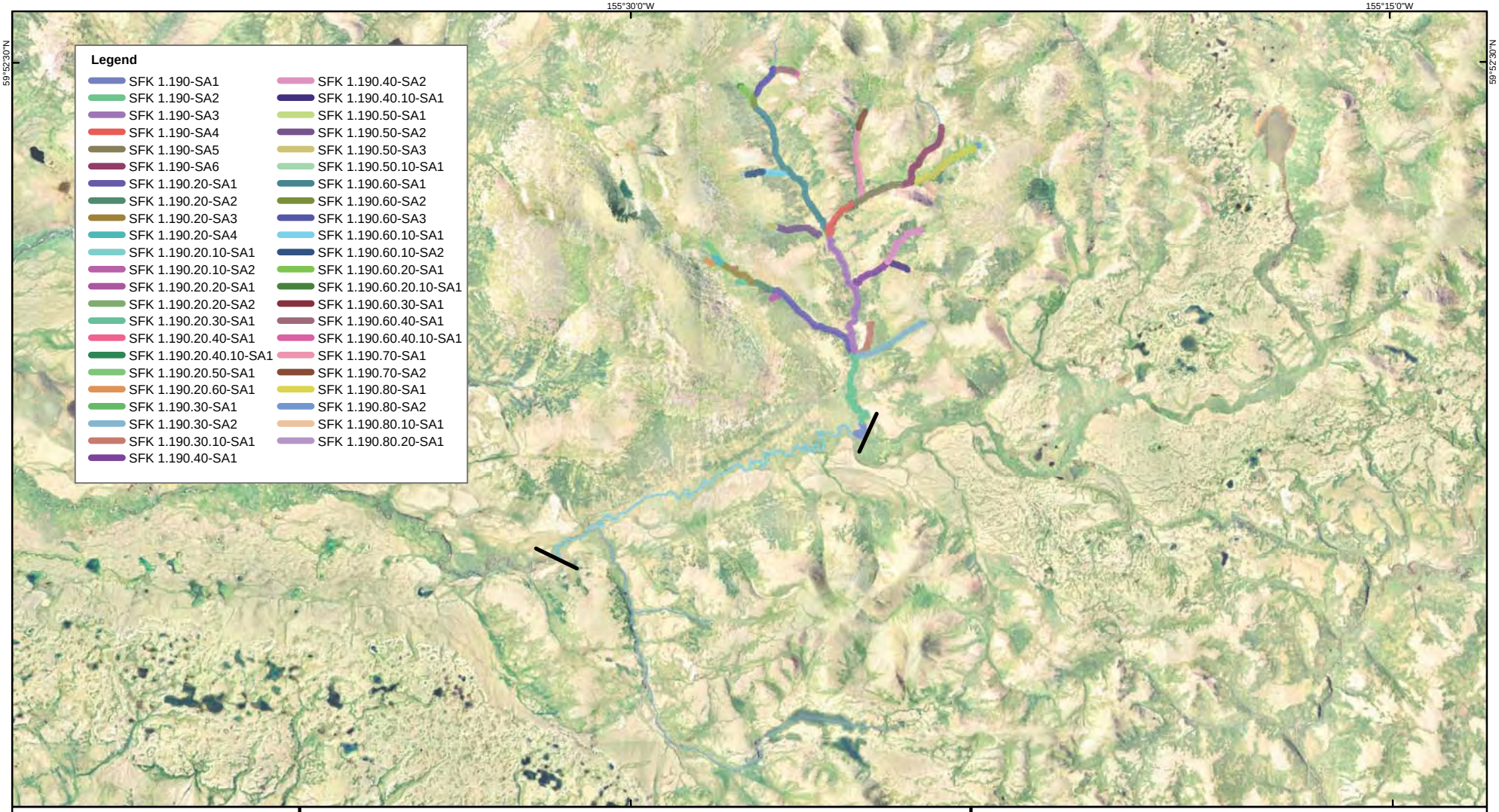
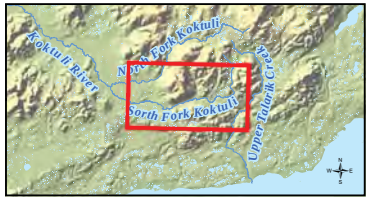
Figure B.8-6
SFK-B
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_SFK-B_Fig-B.8-6_11x17L_8of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.3 — 2.6

Kilometers: 0 — 1.3 — 2.6

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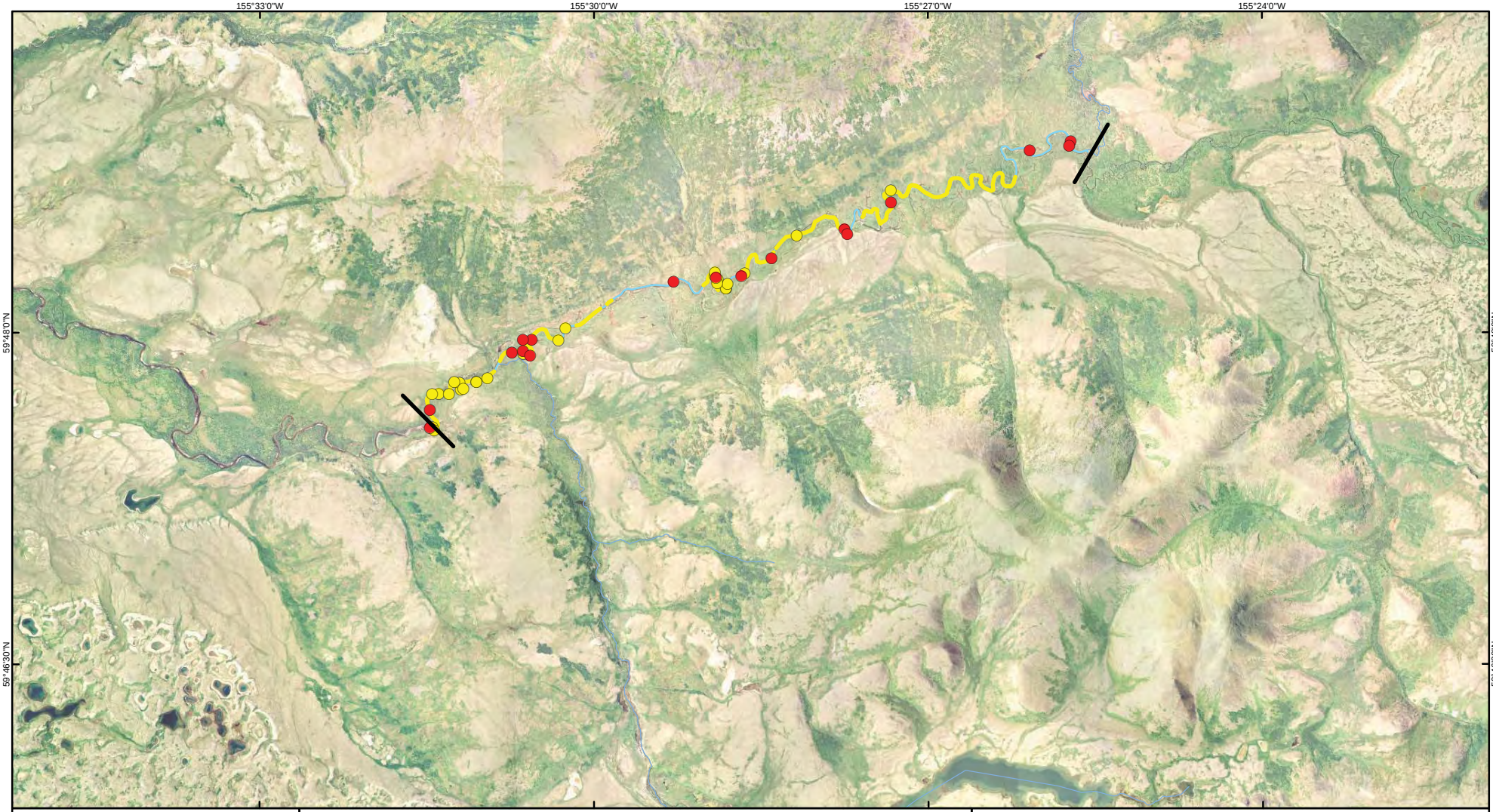
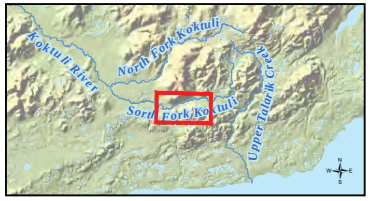
Figure B.8-7
SFK-B
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_SFK-B_Fig-B.8-7_11x17L_8of19_D02.mxd	January 14, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

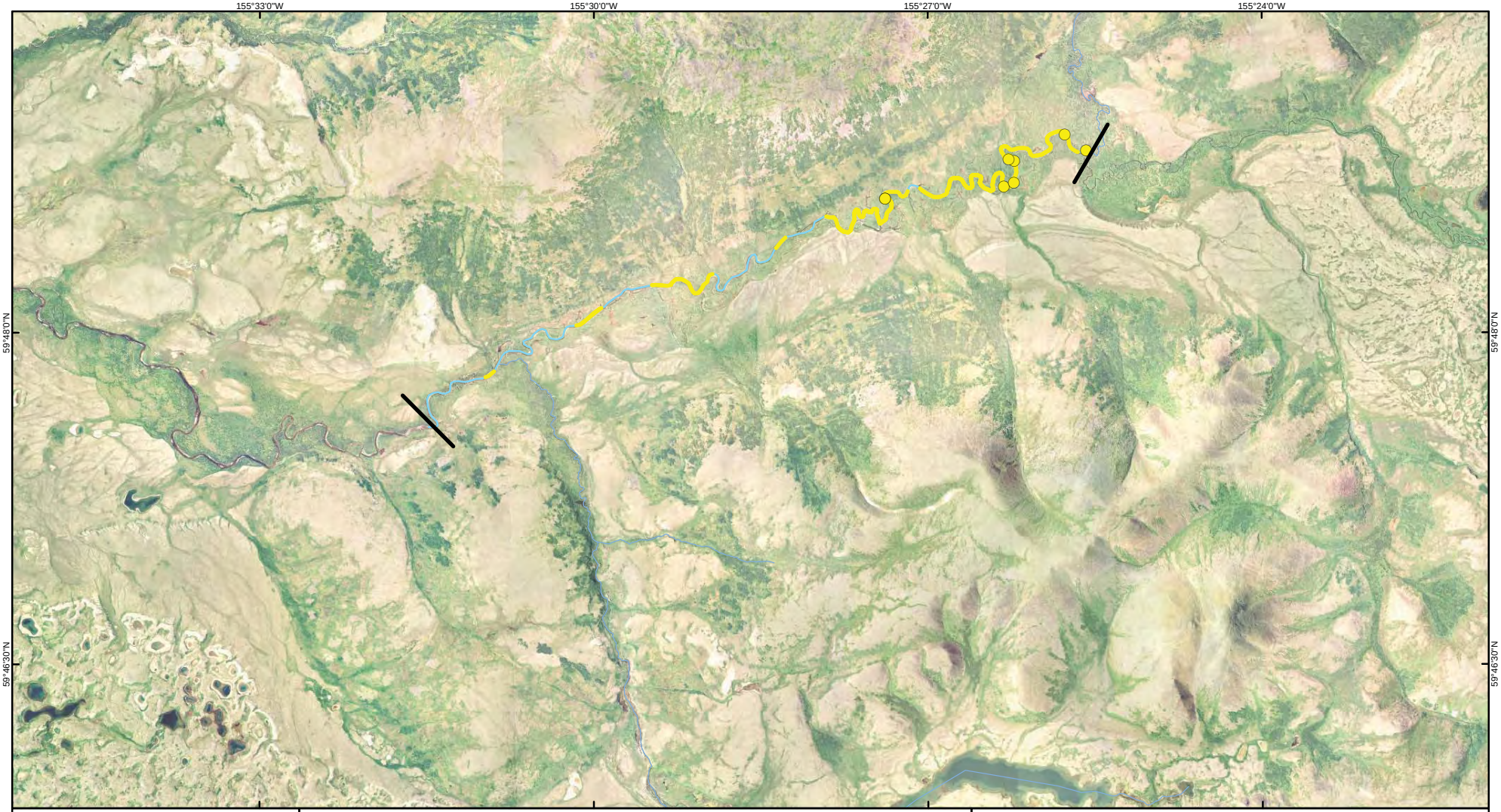
Miles: 0 0.6 1.2

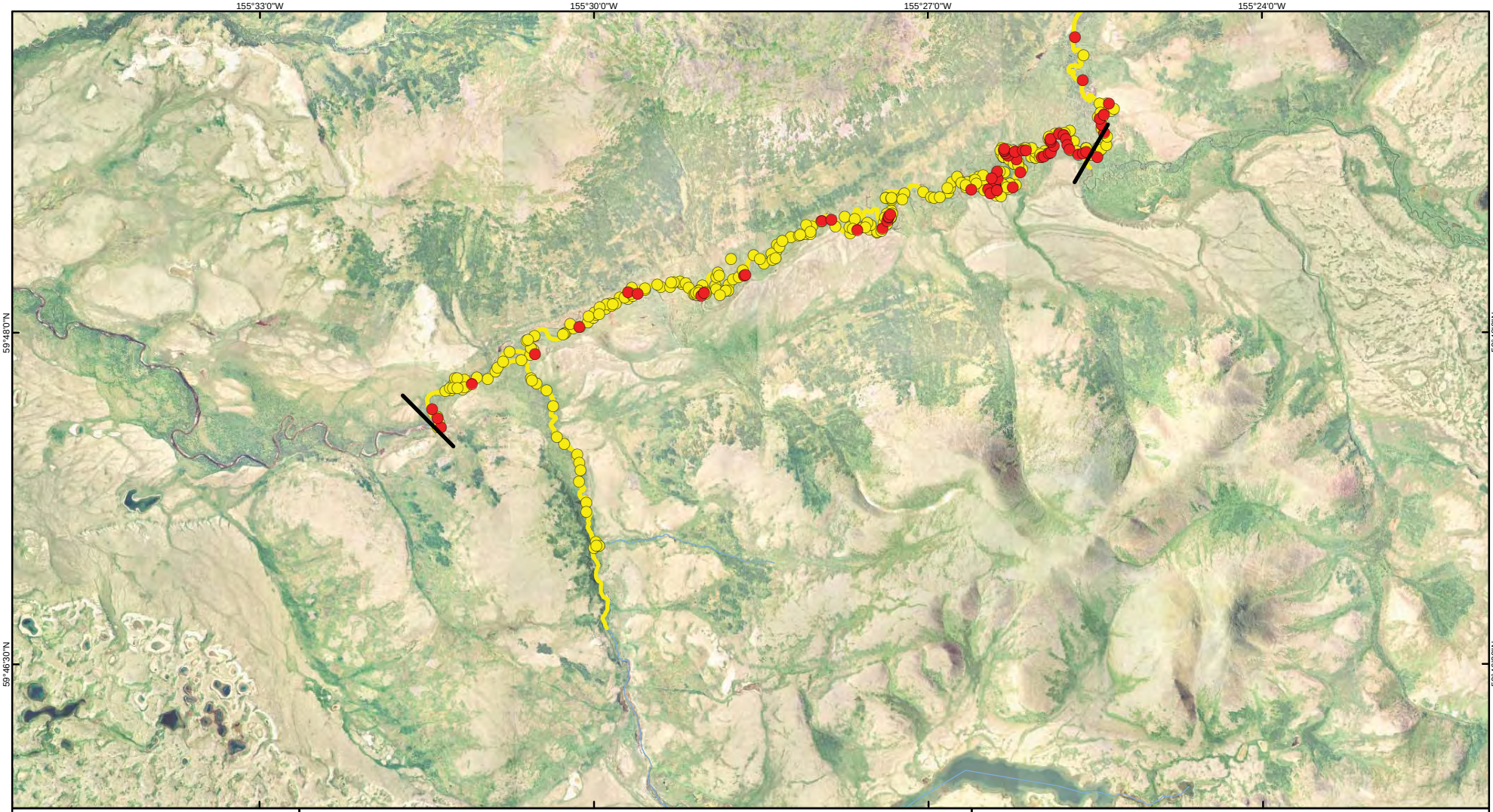
Kilometers: 0 0.6 1.2

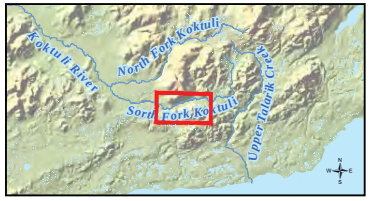
THE pebble PARTNERSHIP

Figure B.8-13
SFK-Ba
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-Ba_Fig-B.8-13_KS_11x17L_8of22_D04.mxd	February 5, 2011
	Author: RDI - MRA


155°33'0"W
155°30'0"W
155°27'0"W
155°24'0"W
59°48'0"N
59°46'30"N
Kokhanok
Iliamna Lake
Kokhanok
Kokhanok
Kokhanok





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

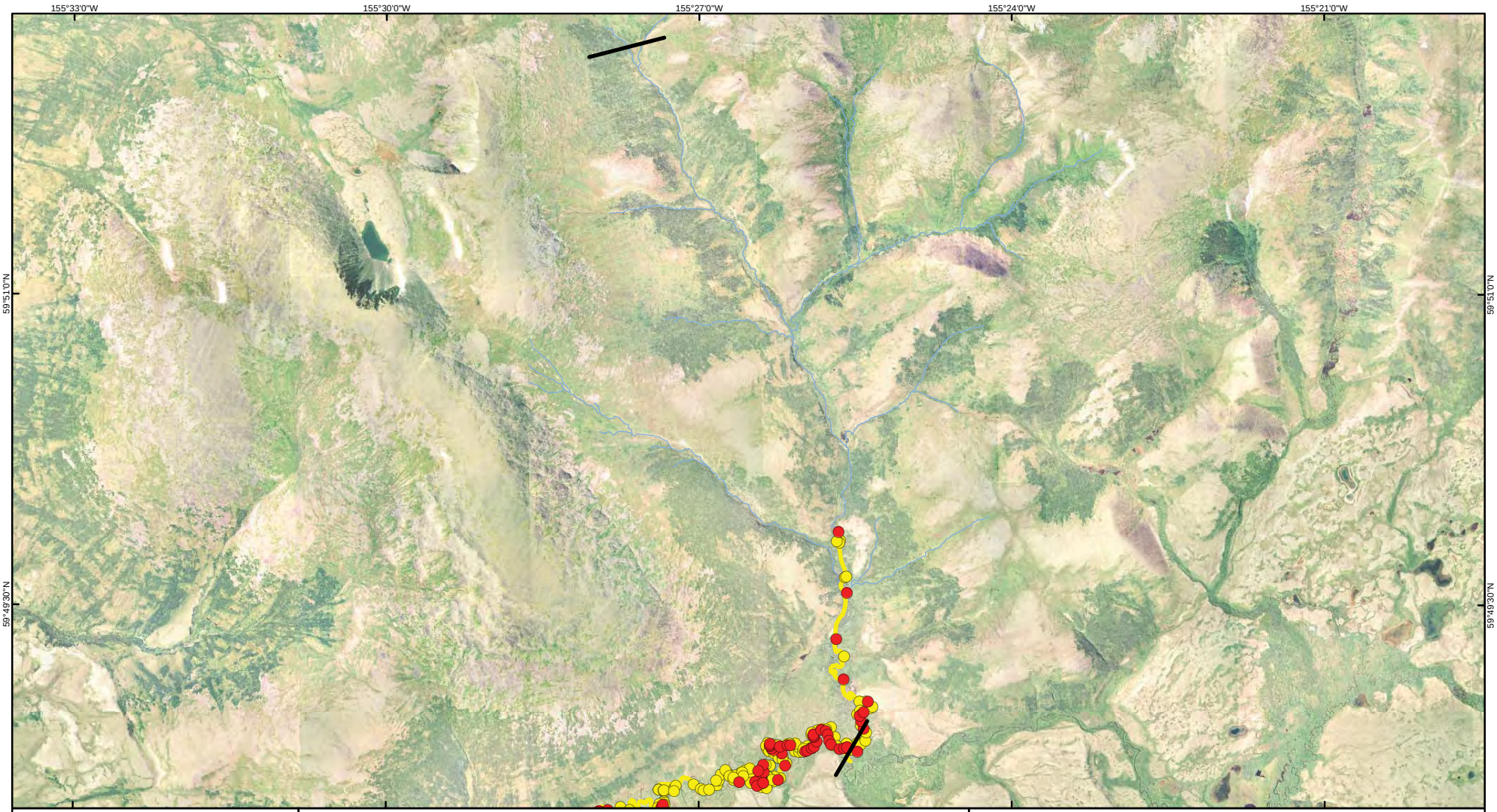
Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.8-15
SFK-Ba
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-Ba_Fig-B.8-15_CS_11x17L_8of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

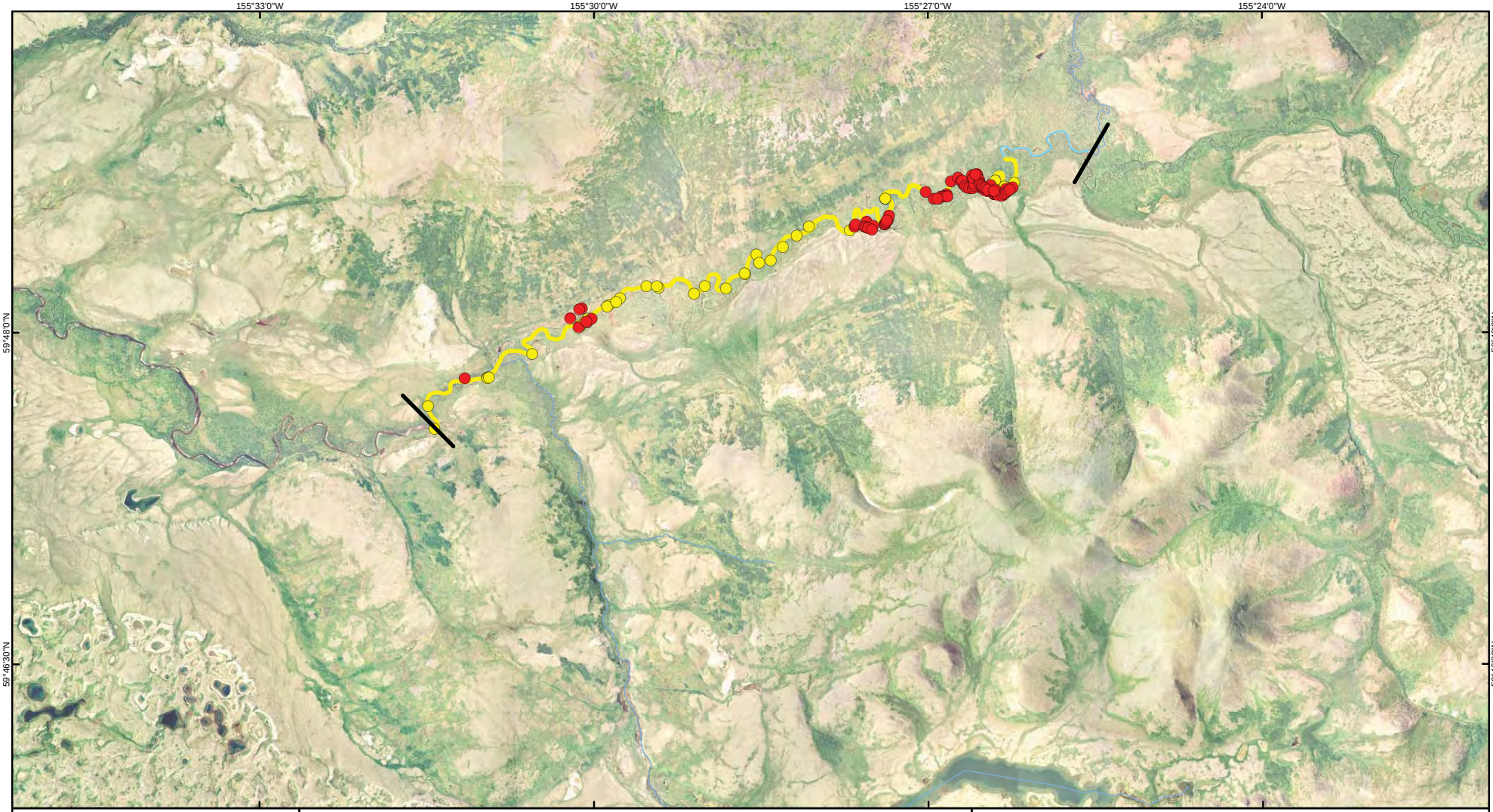
Miles: 0 0.7 1.4

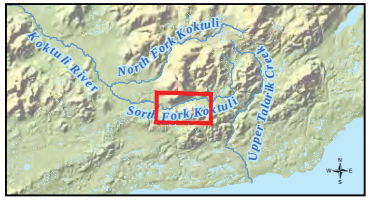
Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.8-15
SFK-Bb 1.190 Tributary
(*continued from SFK-Ba*)
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-Bb_Fig-B.8-15_CS_11x17L_9of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

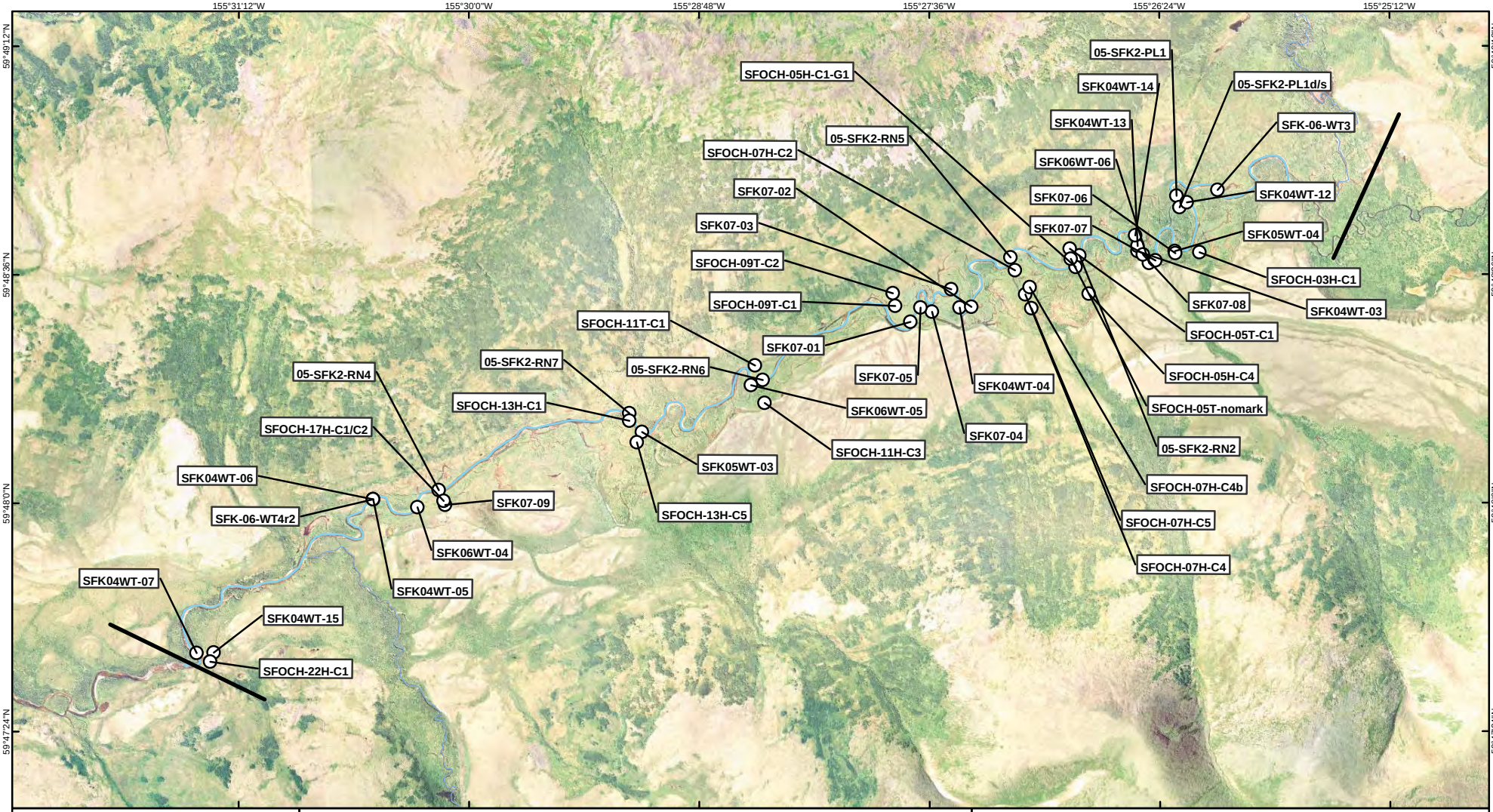
Miles: 0 0.6 1.2

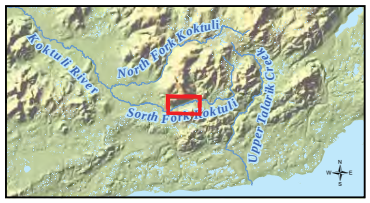
Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.8-16
SFK-Ba
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-Ba_Fig-B.8-16_SS_11x17L_8of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.4 0.8

Kilometers: 0 0.4 0.8

THE pebble PARTNERSHIP

Figure B.8-21
SFK-B
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_SFK-B_Fig-B.8-21_11x17L_8of19_D03.mxd

February 5, 2011

Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.9
SOUTH FORK KOKTULI RIVER REACH C (SFK-C)

Table B.9-1.
List of species found in SFK-C.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
whitefish [a]	*Coregoninae*
burbot	*Lota lota*
northern pike	*Esox lucius*
sculpin [b]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
stickleback [c]	*Gasterosteidae*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

[c] identified to family, may include ninespine and threespine stickleback

Table B.9-2.
Channel morphology data from areas sampled within SFK-C and tributaries 1.240 and 1.260.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
SFK-C-SA1	6/27/05	narrow placid flow channel	1.0	6.3	NA	NA
SFK-C-SA2	6/19/04	narrow placid flow channel	0.5	4.6	4.6	1.2
SFK-C-SA3	6/19/04	narrow placid flow channel	1.0	7.1	NA	NA
SFK-C-SA4	6/27/05	narrow placid flow channel	NA	8.2	NA	NA
SFK-C-SA5	6/19/04	narrow placid flow channel	NA	7.5	NA	NA
SFK-C-SA6	6/20/04	narrow placid flow channel	NA	7.6	NA	NA
SFK-C-SA7	6/20/04	narrow placid flow channel	NA	6.6	NA	NA
SFK-C-SA8	6/20/04	narrow placid flow channel	NA	5.9	NA	NA
SFK-C-SA9	6/20/04	narrow placid flow channel	NA	7.0	NA	NA
SFK-C-SA10	6/27/05	narrow placid flow channel	0.8	6.8	NA	NA
SFK-C-SA11	6/21/04	narrow placid flow channel	NA	4.6	NA	NA
SFK-C-SA12	6/21/04	narrow mixed control channel	0.7	4.5	11.6	1.0
SFK-C-SA13	6/27/05	narrow placid flow channel	1.0	5.5	NA	NA
SFK-C-SA14	6/27/05	narrow placid flow channel	1.0	6.6	NA	NA
SFK-C-SA15	7/11/04	narrow shallow contained channel	NA	5.9	NA	NA
2004 SFK-C TOTAL			0.7	5.9	8.1	1.1
2005 SFK-C TOTAL			0.9	6.7	NA	NA
SFK 1.240-SA1	7/1/08	moderate width placid flow channel	1.0	6.0	11.3	0.7
SFK 1.240-SA2	6/22/04	narrow shallow contained channel	1.5	NA	NA	NA
SFK 1.240-SA2	7/1/08	narrow low-gradient floodplain channel	1.0	4.0	7.2	1.0
SFK 1.240-SA3	6/22/04	narrow shallow contained channel	2.0	NA	NA	NA
SFK 1.240-SA3	7/8/08	narrow mixed control channel	1.0	4.3	4.7	0.8
SFK 1.240-SA3/4[e]	6/22/04	narrow placid flow channel	NA	NA	NA	NA
SFK 1.240-SA4	7/9/08	beaver dam/pond channel	NA	NA	NA	NA
SFK 1.240-SA5	7/9/08	moderate width placid flow channel	0.8	6.0	7.5	0.4
SFK 1.240-SA6	7/11/08	low-gradient floodplain channel	1.3	3.3	4.2	0.8
SFK 1.240-SA7	7/11/08	narrow mixed control channel	2.0	3.4	4.3	0.8

Table B.9-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
SFK 1.240-SA8	7/24/08	narrow mixed control channel	5.8	2.6	3.4	0.8
SFK 1.240-SA9	7/24/08	narrow shallow contained channel	4.2	1.5	2.4	0.4
SFK 1.240-SA10	7/24/08	narrow mixed control channel	10.0	0.8	1.5	0.5
SFK 1.240.10-SA1	7/25/08	narrow placid flow channel	0.8	2.6	3.5	0.8
SFK 1.240.10-SA3	7/25/08	narrow placid flow channel	1.0	1.6	3.1	0.9
SFK 1.240.10-SA4	8/8/08	narrow mixed control channel	4.2	1.0	1.9	0.6
SFK 1.240.10-SA5	8/9/08	shallowly to moderately incised footslope channel	8.0	0.7	3.4	0.8
SFK 1.240.10.10-SA1	8/10/08	narrow mixed control channel	2.4	1.1	2.4	0.7
SFK 1.240.10.10.10-SA1	8/20/08	narrow mixed control channel	2.5	0.5	0.7	0.5
SFK 1.240.10.10.20-SA1	8/20/08	narrow placid flow channel	1.5	0.2	0.3	0.2
SFK 1.240.10.20-SA1	8/9/08	narrow mixed control channel	3.0	1.1	4.0	0.4
SFK 1.240.10.30-SA1	8/9/08	shallowly to moderately incised footslope channel	9.3	1.1	2.3	0.5
SFK 1.240.25-SA1	8/25/08	shallowly incised muskeg channel	6.0	1.2	1.7	0.3
SFK 1.240.30-SA1	7/22/08	narrow mixed control channel	5.0	3.1	5.1	0.5
SFK 1.240.30-SA2	7/22/08	moderate width and incision contained channel	2.3	2.7	3.4	0.5
SFK 1.240.30-SA3	7/22/08	narrow shallow contained channel	3.8	2.7	3.5	0.6
SFK 1.240.40-SA1	8/24/08	narrow mixed control channel	5.2	1.9	3.2	0.5
SFK 1.240.40-SA2	8/25/08	narrow shallow contained channel	4.5	1.0	1.6	0.3
SFK 1.240.40.10-SA1	8/25/08	moderate width mixed control channel	4.8	0.8	1.1	0.2
SFK 1.240.70-SA1	8/24/08	moderate width mixed control channel	3.3	1.1	1.7	0.3
2004 SFK 1.240 TOTAL			1.7	NA	NA	NA
2008 SFK 1.240 TOTAL			3.6	2.3	3.5	0.6
SFK 1.260-SA1	6/21/04	narrow placid flow channel	0.4	5.4	6.3	0.5
SFK 1.260-SA1	7/1/08	moderate width placid flow channel	1.0	5.3	8.6	0.9
SFK 1.260-SA2	7/17/08	beaver dam/pond channel	0	4.3	8.9	0.9
SFK 1.260.10-SA1	9/22/08	beaver dam/pond channel	1.0	0.5	0.7	0.4
2004 SFK 1.260 TOTAL			0.4	5.4	6.3	0.5

Table B.9-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
2008 SFK 1.260 TOTAL			0.7	3.4	6.1	0.7

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not available.

[e] SFK 1.240-SA3/4 (2004) was comprised of 30% SA3 and 70% SA4.

Table B.9-3.
Percent composition of primary habitat types from areas sampled within SFK-C and tributaries 1.240 and 1.260. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK-C-SA1[d]	106.4	6.3	670.3	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	85 / 85	15 / 15	NA
SFK-C-SA2[e]	700.0	4.6	3220.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA3[e]	377.0	7.1	2676.7	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA4[d]	107.9	8.2	884.8	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA5[e]	436.0	7.5	3270.0	30	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA6[e]	200.0	7.6	1520.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA7[e]	200.0	6.6	1320.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA8[e]	200.0	5.9	1180.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	0 / 0	100 / 100	NA
SFK-C-SA9[e]	304.0	7.0	2128.0	34	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	27 / 27	74 / 74	NA
SFK-C-SA10[d]	102.7	6.8	698.4	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	31 / 31	69 / 69	NA
SFK-C-SA11[e]	214.0	4.6	946.0	3	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	7 / 3	40 / 42	53 / 55	NA
SFK-C-SA12[e]	200.0	4.5	900.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	47 / 47	53 / 53	NA
SFK-C-SA13[d]	106.6	5.5	586.3	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	8 / 8	92 / 92	NA
SFK-C-SA14[d]	118.2	6.6	780.1	0	0	1 / 1	0 / 0	0 / 0	NA	NA	NA	0 / 0	30 / 30	70 / 70	NA
SFK-C-SA15[e]	250.9	5.9	1480.3	17	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	36 / 36	64 / 64	NA
2004 SFK-C TOTAL	3081.9	5.9	18641.0	11	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	11 / 9	89 / 91	NA
2005 SFK-C TOTAL	541.8	6.7	3619.9	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	31 / 29	69 / 70	NA
SFK 1.240-SA1	451.0	6.4	2876.5	0	0	1 / 0	0 / 0	0 / 0	0	0	0 / 0	16 / 9	79 / 85	4 / 6	0 / 0
SFK 1.240-SA2[e]	821.0	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	4 / NA	82 / NA	14 / NA	NA
SFK 1.240-SA2	2884.6	5.4	15498.1	0	0	0 / 0	4 / 15	1 / 1	0	0	0 / 0	8 / 7	48 / 44	38 / 33	0 / 0
SFK 1.240-SA3[e]	200.0	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	0 / NA	100 / NA	0 / NA	NA
SFK 1.240-SA3	1226.4	5.0	6092.8	0	0	0 / 0	4 / 11	1 / 1	0	0	0 / 0	7 / 11	49 / 38	39 / 38	0 / 0
SFK 1.240-SA3/4[e,f]	200.0	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	10 / NA	81 / NA	10 / NA	NA
SFK 1.240-SA4	590.0	74.8	44133.5	0	0	0 / 0	92 / 99	0 / 0	0	0	0 / 0	0 / 0	1 / 0	7 / 1	0 / 0
SFK 1.240-SA5	4323.7	5.4	23224.4	0	0	18 / 15	0 / 0	0 / 0	0	0	0 / 0	5 / 7	51 / 52	26 / 26	0 / 0
SFK 1.240-SA6	1618.0	10.7	17307.8	11	0	2 / 0	15 / 69	4 / 2	0	0	0 / 0	2 / 1	63 / 23	14 / 4	0 / 0
SFK 1.240-SA7	1943.3	3.9	7494.5	2	0	12 / 12	0 / 0	11 / 13	0	0	0 / 0	0 / 0	72 / 71	6 / 5	0 / 0
SFK 1.240-SA8	1814.0	2.5	4509.7	9	0	0 / 0	0 / 0	93 / 92	0	0	0 / 0	1 / 1	6 / 7	0 / 0	0 / 0
SFK 1.240-SA9	893.3	1.6	1392.8	10	0	0 / 0	0 / 0	45 / 55	0	0	0 / 0	0 / 0	53 / 44	2 / 0	0 / 0
SFK 1.240-SA10	289.0	2.1	606.1	0	0	0 / 0	0 / 0	87 / 92	0	0	0 / 0	0 / 0	13 / 8	0 / 0	0 / 0
SFK 1.240.10-SA1	977.1	2.3	2252.8	5	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	3 / 3	72 / 70	24 / 27	0 / 0
SFK 1.240.10-SA2	697.6	27.3	19066.3	0	0	0 / 0	42 / 94	0 / 0	0	0	0 / 0	3 / 0	17 / 1	39 / 5	0 / 0
SFK 1.240.10-SA3	945.4	2.1	2028.8	12	0	7 / 3	6 / 35	0 / 0	0	0	0 / 0	4 / 4	77 / 53	5 / 4	0 / 0
SFK 1.240.10-SA4	926.9	1.1	1022.0	11	0	0 / 0	0 / 0	4 / 3	0	0	0 / 0	7 / 8	78 / 77	11 / 11	0 / 0
SFK 1.240.10-SA5	283.9	0.5	153.9	0	0	0 / 0	0 / 0	84 / 79	0	0	0 / 0	0 / 0	13 / 16	3 / 5	0 / 0
SFK 1.240.10.10-SA1	2003.4	5.1	10023.7	5	0	12 / 6	14 / 73	0 / 0	0	1	0 / 0	7 / 2	48 / 12	15 / 5	3 / 3
SFK 1.240.10.10.10-SA1	64.8	0.4	22.8	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	69 / 57	31 / 43	0 / 0
SFK 1.240.10.10.20-SA1	127.5	1.2	147.1	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	4 / 1	50 / 18	21 / 13	25 / 67

Table B.9-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK 1.240.10.20-SA1	503.2	1.1	574.7	0	0	9 / 7	0 / 0	5 / 5	0	0	0 / 0	2 / 2	63 / 63	20 / 23	0 / 0
SFK 1.240.10.30-SA1	285.3	0.8	211.9	0	0	0 / 0	0 / 0	77 / 79	0	4	0 / 0	1 / 1	18 / 19	0 / 0	0 / 0
SFK 1.240.25-SA1	968.6	1.4	1400.2	0	0	0 / 0	0 / 0	69 / 72	0	0	0 / 0	6 / 6	23 / 20	2 / 2	0 / 0
SFK 1.240.30-SA1	348.9	3.4	1179.3	6	0	0 / 0	0 / 0	59 / 56	0	0	0 / 0	0 / 0	41 / 44	0 / 0	0 / 0
SFK 1.240.30-SA2	629.2	3.3	2100.5	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	98 / 97	2 / 3	0 / 0
SFK 1.240.30-SA3	2057.7	2.1	4233.0	3	0	0 / 0	0 / 0	58 / 54	0	0	0 / 0	1 / 1	42 / 45	0 / 0	0 / 0
SFK 1.240.30-SA4	93.0	2.1	195.3	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.240.40-SA1	698.8	2.3	1641.3	0	0	0 / 0	0 / 0	78 / 77	0	0	0 / 0	3 / 4	15 / 16	4 / 4	0 / 0
SFK 1.240.40-SA2	249.0	0.9	217.1	0	0	0 / 0	0 / 0	87 / 87	0	0	0 / 0	0 / 0	13 / 13	0 / 0	0 / 0
SFK 1.240.40.10-SA1	362.3	0.8	295.1	0	0	0 / 0	0 / 0	41 / 38	0	0	0 / 0	1 / 1	56 / 58	2 / 3	0 / 0
SFK 1.240.70-SA1	33.5	0.8	26.9	0	0	0 / 0	0 / 0	24 / 21	0	0	0 / 0	0 / 0	76 / 79	0 / 0	0 / 0
2004 SFK 1.240 TOTAL	1221.0	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	4 / NA	85 / NA	11 / NA	NA
2008 SFK 1.240 TOTAL	28289.3	6.0	169928.6	2	0	5 / 3	6 / 50	22 / 8	0	0	0 / 0	4 / 3	48 / 26	15 / 10	0 / 0
SFK 1.260-SA1[e]	244.0	5.4	1278.5	21	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	8 / 4	76 / 79	16 / 17	NA
SFK 1.260-SA1	247.0	5.0	1230.2	8	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	10 / 7	40 / 48	50 / 46	0 / 0
SFK 1.260-SA2	1384.0	42.9	57246.6	0	0	3 / 0	58 / 22	0 / 0	4	0	19 / 75	17 / 3	0 / 0	0 / 0	0 / 0
SFK 1.260.10-SA1	916.1	72.8	66703.6	0	0	0 / 0	8 / 0	0 / 0	0	0	47 / 97	0 / 0	0 / 0	31 / 1	15 / 2
2004 SFK 1.260 TOTAL	244.0	5.4	1278.5	21	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	8 / 4	76 / 79	16 / 17	NA
2008 SFK 1.260 TOTAL	2547.1	50.2	125180.3	0	0	2 / 0	34 / 10	0 / 0	2	0	27 / 86	10 / 1	4 / 0	16 / 1	5 / 1

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

[d] Data were recorded in 2005.

[e] Data were recorded in 2004.

[f] SFK 1.240-SA3/4 (2004) was 30% SA3 and 70% SA4.

Table B.9-4.
Descriptive characteristics of primary habitat units from areas sampled within SFK-C and tributaries 1.240 and 1.260. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Dominant Substrate[a]	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK-C-SA1[b]	gravel	NA	NA	0	willow shrub/other herbaceous
SFK-C-SA2[c]	organic, gravel	NA	NA	48	NA
SFK-C-SA3[c]	NA	NA	NA	0	NA
SFK-C-SA4[b]	sand/silt	NA	NA	0	willow shrub/other herbaceous
SFK-C-SA5[c]	organic	NA	NA	25	NA
SFK-C-SA6[c]	organic, sand/silt	NA	NA	23	NA
SFK-C-SA7[c]	NA	NA	NA	26	NA
SFK-C-SA8[c]	gravel	NA	NA	51	NA
SFK-C-SA9[c]	cobble	gravel	NA	19	NA
SFK-C-SA10[b]	gravel	sand/silt	NA	10	other herbaceous
SFK-C-SA11[c]	gravel	sand/silt	NA	45	NA
SFK-C-SA12[c]	gravel	NA	NA	31	NA
SFK-C-SA13[b]	gravel	NA	NA	2	willow shrub
SFK-C-SA14[b]	gravel	sand/silt	NA	0	willow shrub
SFK-C-SA15[c]	NA	NA	NA	0	NA
2004 SFK-C TOTAL	gravel	organics	NA	28	NA
2005 SFK-C TOTAL	gravel	sand/silt	NA	2	willow shrub
SFK 1.240-SA1	gravel	cobble	11	2	willow shrub
SFK 1.240-SA2[c]	gravel	cobble	NA	14	NA
SFK 1.240-SA2	gravel	cobble	30	1	alder shrub
SFK 1.240-SA3[c]	NA	NA	NA	1	NA
SFK 1.240-SA3	cobble	gravel	22	0	alder shrub/other shrub
SFK 1.240-SA3/4[c,d]	gravel	cobble	NA	15	NA
SFK 1.240-SA4	sand/silt	organics	57	0	alder shrub/other shrub
SFK 1.240-SA5	sand/silt	gravel	82	3	other herbaceous
SFK 1.240-SA6	sand/silt	organics	89	1	alder shrub/other herbaceous
SFK 1.240-SA7	cobble	boulder	17	1	willow shrub
SFK 1.240-SA8	cobble	boulder	0	1	willow shrub/other shrub
SFK 1.240-SA9	boulder	gravel	0	0	willow shrub/other shrub
SFK 1.240-SA10	boulder	cobble	0	0	other shrub
SFK 1.240.10-SA1	gravel	sand/silt	1	11	willow shrub
SFK 1.240.10-SA2	sand/silt	organics	0	1	other shrub
SFK 1.240.10-SA3	sand/silt	gravel	0	2	other shrub
SFK 1.240.10-SA4	cobble	gravel	0	17	alder shrub/willow shrub/other herbaceous
SFK 1.240.10-SA5	cobble	boulder	0	1	other herbaceous
SFK 1.240.10.10-SA1	sand/silt	organics	0	7	other herbaceous
SFK 1.240.10.10.10-SA1	gravel	cobble	0	0	alder shrub/willow shrub/other herbaceous
SFK 1.240.10.10.20-SA1	sand/silt	organics	0	0	other herbaceous
SFK 1.240.10.20-SA1	cobble	boulder	0	9	other herbaceous
SFK 1.240.10.30-SA1	cobble	boulder	0	4	alder shrub/willow shrub/other herbaceous

Table B.9-4. Continued

Sample Area (SA)	Dominant Substrate[a]	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK 1.240.25-SA1	boulder	cobble	0	5	other herbaceous
SFK 1.240.30-SA1	cobble	boulder	0	0	willow shrub/other shrub
SFK 1.240.30-SA2	cobble	gravel	0	0	willow shrub/other shrub
SFK 1.240.30-SA3	cobble	gravel	0	1	other shrub
SFK 1.240.30-SA4	cobble	boulder	0	0	other shrub
SFK 1.240.40-SA1	boulder	cobble	0	2	other herbaceous
SFK 1.240.40-SA2	cobble	boulder	0	0	other herbaceous
SFK 1.240.40.10-SA1	gravel	cobble	0	0	other herbaceous
SFK 1.240.70-SA1	boulder	cobble	0	0	other herbaceous
2004 SFK 1.240 TOTAL	gravel	cobble	NA	12	NA
2008 SFK 1.240 TOTAL	sand/silt	gravel	24	3	alder shrub
SFK 1.260-SA1[c]	gravel	sand/silt	NA	5	NA
SFK 1.260-SA1	gravel	sand/silt	7	6	other herbaceous
SFK 1.260-SA2	sand/silt	organics	3	0	alder shrub/willow shrub/other shrub
SFK 1.260.10-SA1	organics	sand/silt	0	0	willow shrub/other herbaceous
2004SFK 1.260 TOTAL	gravel	sand/silt	NA	5	NA
2008 SFK 1.260 TOTAL	sand/silt	organics	2	1	willow shrub

[a] NA=data not available.
[b] Data were recorded in 2005.
[c] Data were recorded in 2004.
[d] SFK 1.240-SA3/4 (2004) was comprised of 30% SA3 and 70% SA4.

Table B.9-5.
Summary of pool habitat data from areas sampled in SFK-C and tributaries 1.240 and 1.260. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK-C-SA1[c]	0.11	0	2	2	0.0	1.9	1.9	0.0	155.9	155.9	78.0	0.9	1.9
SFK-C-SA2[d]	0.70	0	7	7	0.0	1.0	1.0	0.0	341.6	341.6	48.8	0.5	1.0
SFK-C-SA3[d]	0.38	0	4	4	0.0	1.1	1.1	0.0	210.7	210.7	52.7	0.4	0.8
SFK-C-SA4[c]	0.11	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SFK-C-SA5[d]	0.44	0	6	6	0.0	1.4	1.4	0.0	430.8	430.8	71.8	0.4	1.4
SFK-C-SA6[d]	0.20	0	7	7	0.0	3.5	3.5	0.0	305.6	305.6	43.7	1.0	3.5
SFK-C-SA7[d]	0.20	0	3	3	0.0	1.5	1.5	0.0	379.4	379.4	126.5	0.5	1.5
SFK-C-SA8[d]	0.20	0	9	9	0.0	4.5	4.5	0.0	480.7	480.7	53.4	0.5	4.0
SFK-C-SA9[d]	0.30	0	5	5	0.0	1.6	1.6	0.0	448.0	448.0	89.6	0.8	1.0
SFK-C-SA10[c]	0.10	0	6	6	0.0	5.8	5.8	0.0	365.3	365.3	60.9	0.8	5.8
SFK-C-SA11[d]	0.21	1	10	11	0.5	4.7	5.1	26.0	535.3	561.3	51.0	1.2	3.3
SFK-C-SA12[d]	0.20	0	8	8	0.0	4.0	4.0	0.0	283.2	283.2	35.4	0.6	2.0
SFK-C-SA13[c]	0.11	0	2	2	0.0	1.9	1.9	0.0	139.0	139.0	69.5	0.6	0.0
SFK-C-SA14[c]	0.12	0	1	1	0.0	0.8	0.8	0.0	23.8	23.8	23.8	0.3	0.0
SFK-C-SA15[d]	0.25	0	5	5	0.0	2.0	2.0	0.0	217.5	217.5	43.5	0.5	0.0
2004 SFK-C TOTAL	3.08	1	64	65	0.0	2.1	2.1	26.0	3632.7	3658.7	56.3	0.7	1.6
2005 SFK-C TOTAL	0.54	0	11	11	0.0	2.0	2.0	0.0	684.1	684.1	62.2	0.7	1.5
SFK 1.240-SA1	0.45	3	3	6	0.7	0.7	1.3	247.2	145.6	392.8	65.5	0.9	1.3
SFK 1.240-SA2[d]	0.82	2	8	10	0.2	1.0	1.2	134.9	172.0	307.0	30.7	0.6	0.4
SFK 1.240-SA2	2.88	11	6	17	0.4	0.2	0.6	1078.6	341.9	1420.6	83.6	0.6	0.6
SFK 1.240-SA3[d]	0.20	0	1	1	0.0	0.5	0.5	0.0	11.5	11.5	11.5	0.4	0.0
SFK 1.240-SA3	1.23	3	2	5	0.2	0.2	0.4	671.8	92.2	764	152.8	0.8	0.4
SFK 1.240-SA3/4[d,e]	0.20	1	2	3	0.5	1.0	1.5	121.1	74.8	195.9	65.3	0.6	0.5
SFK 1.240-SA4	0.59	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240-SA5	4.32	7	5	12	0.2	0.1	0.3	1574	419.5	1993.5	166.1	0.9	0.3
SFK 1.240-SA6	1.62	3	2	5	0.2	0.1	0.3	256.1	97.5	353.6	70.7	0.6	0.3
SFK 1.240-SA7	1.94	0	0	0	0	0	0	0	0	0	0	0	0

Table B.9-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK 1.240-SA8	1.81	4	0	4	0.2	0	0.2	63.1	0	63.1	15.8	0.5	0.2
SFK 1.240-SA9	0.89	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240-SA10	0.29	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.10-SA1	0.98	4	0	4	0.4	0	0.4	77.8	0	77.8	19.5	0.4	0.4
SFK 1.240.10-SA2	0.7	2	0	2	0.3	0	0.3	54.1	0	54.1	27.1	0.6	0.3
SFK 1.240.10-SA3	0.95	6	0	6	0.6	0	0.6	81.3	0	81.3	13.6	0.6	0.6
SFK 1.240.10-SA4	0.93	12	0	12	1.3	0	1.3	78.9	0	78.9	6.6	0.3	1.3
SFK 1.240.10-SA5	0.28	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.10.10-SA1	2	30	0	30	1.5	0	1.5	233.8	0	233.8	7.8	0.5	1.5
SFK 1.240.10.10.10-SA1	0.06	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.10.10.20-SA1	0.13	2	0	2	1.5	0	1.5	2.2	0	2.2	1.1	0.2	1.5
SFK 1.240.10.20-SA1	0.5	2	0	2	0.4	0	0.4	13	0	13	6.5	0.6	0.4
SFK 1.240.10.30-SA1	0.29	1	0	1	0.3	0	0.3	2.5	0	2.5	2.5	0.2	0.3
SFK 1.240.25-SA1	0.97	20	0	20	2.1	0	2.1	83.6	0	83.6	4.2	0.2	2.1
SFK 1.240.30-SA1	0.35	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.30-SA2	0.63	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.30-SA3	2.06	2	1	3	0.1	0	0.1	24.4	0	24.4	8.1	1.1	0.1
SFK 1.240.30-SA4	0.09	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.40-SA1	0.7	5	1	5	0.7	0	0.7	58.8	0	58.8	11.8	0.3	0.7
SFK 1.240.40-SA2	0.25	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.240.40.10-SA1	0.36	2	0	2	0.6	0	0.6	1.8	0	1.8	0.9	0.2	0.6
SFK 1.240.70-SA1	0.03	0	0	0	0	0	0	0	0	0	0	0	0
2004 SFK 1.240 TOTAL	1.22	3	11	14	0.2	0.9	0.5	256.1	258.3	514.4	36.7	0.6	0.3
2008 SFK 1.240 TOTAL	28.29	119	19	138	0.4	0.1	0.5	4603.1	1096.7	5699.8	41.3	0.5	0.5
SFK 1.260-SA1[d]	0.24	2	9	11	0.8	3.7	4.5	41.9	268.4	310.3	28.2	0.4	0.0
SFK 1.260-SA1	0.25	3	6	9	1.2	2.4	3.6	82.2	216.1	298.2	33.1	0.8	3.6
SFK 1.260-SA2	1.38	3	0	3	0.2	0	0.2	1530.4	0	1530.4	510.1	0.5	0.2
SFK 1.260.10-SA1	0.92	0	0	0	0	0	0	0	0	0	0	0	0

Table B.9-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
2004 SFK 1.260 Total	0.24	2	9	11	0.8	3.7	4.5	41.9	268.4	310.3	28.2	0.4	0.0
2008 SFK 1.260 Total	2.55	6	6	12	0.2	0.2	0.5	1612.5	216.1	1828.6	152.4	0.7	0.5

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.
[c] Data were recorded in 2005.
[d] Data were recorded in 2004.
[e] SFK 1.240-SA3/4 (2004) was comprised of 30% SA3 and 70% SA4.

Table B.9-6.
Special habitat features within SFK-C tributaries 1.240 and 1.260, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240-SA1			none present					
SFK 1.240-SA2	59.82614	-155.36823	tributary	SFK 1.240.10				
SFK 1.240-SA3	59.83996	-155.35236	spring					
SFK 1.240-SA4	59.84020	-155.34966	barrier		beaver dam	temporary	0.35	3.1
	59.84036	-155.34969	barrier		beaver dam	temporary	0.65	2.1
	59.84058	-155.34929	barrier		beaver dam	temporary	0.55	3
	59.84058	-155.34929	barrier		beaver dam	temporary	0.52	0.64
	59.84093	-155.34856	barrier		beaver dam	temporary	0.67	4.2
	59.84086	-155.34827	barrier		beaver dam	temporary	0.83	3.7
	59.84086	-155.34827	barrier		beaver dam	temporary	0.87	4.8
	59.84096	-155.34808	barrier		beaver dam	temporary	2.8	2.7
	59.84179	-155.34875	barrier		beaver dam	temporary	0.4	2
	59.84187	-155.34782	barrier		beaver dam	temporary	0.3	1.9
	59.84266	-155.34939	barrier		beaver dam	temporary	0.7	2.5
	59.84275	-155.34900	barrier		beaver dam	temporary	0.8	3.1
SFK 1.240-SA5	59.84530	-155.34822	seep					
	59.85409	-155.34699	spring					
	59.85974	-155.34273	seep					
SFK 1.240-SA6	59.86082	-155.34310	barrier		beaver dam	temporary	0.49	1.65
	59.86099	-155.34312	barrier		beaver dam	temporary	0.65	3.2
	59.86097	-155.34335	barrier		beaver dam	temporary	0.8	1.5
	59.86127	-155.34322	barrier		beaver dam	temporary	0.9	4.3
	59.86116	-155.34303	barrier		beaver dam	temporary	0.4	3.0
	59.86259	-155.34356	spring					
	59.86454	-155.34248	barrier		beaver dam	temporary	0.55	0.25
	59.86452	-155.34259	barrier		beaver dam	temporary	0.3	3.6
	59.86528	-155.34249	spring					
	59.86564	-155.34380	barrier		beaver dam	temporary	2.7	0.4

Table B.9-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240-SA6 (cont)	59.86572	-155.34369	barrier		beaver dam	temporary	0.3	1.7
	59.86556	-155.34340	barrier		beaver dam	temporary	0.9	3.0
	59.86592	-155.34416	barrier		beaver dam	temporary	1.3	2.5
	59.86692	-155.34459	barrier		beaver dam	temporary	1.1	3.2
	59.86563	-155.34387	spring					
SFK 1.240-SA7	59.86863	-155.34429	barrier		beaver dam	temporary	0.45	2.1
	59.86928	-155.34448	spring					
	59.87118	-155.34382	seep					
	59.87512	-155.34666	tributary	unnamed				
	59.87875	-155.35250	tributary	SFK 1.240.30				
SFK 1.240-SA8	59.87889	-155.35376	seep					
	59.87886	-155.35540	seep					
	59.87872	-155.35786	tributary	unnamed				
	59.87706	-155.36207	seep					
	59.87675	-155.36295	seep					
	59.87597	-155.36384	seep					
	59.87605	-155.36376	tributary	unnamed				
	59.87519	-155.36577	seep					
	59.87405	-155.37001	seep					
	59.87353	-155.37146	seep					
	59.87358	-155.37226	seep					
	59.87322	-155.37345	tributary	SFK 1.240.40				
SFK 1.240-SA9	59.87328	-155.37415	seep					
	59.87300	-155.37493	seep					
	59.87281	-155.37606	seep					
	59.87294	-155.37714	seep					
	59.87308	-155.37774	seep					
	59.87323	-155.38008	seep					
	59.87276	-155.38171	seep					
	59.87255	-155.38284	tributary	SFK 1.240.50				
	59.87246	-155.38317	tributary					

Table B.9-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240-SA9 (cont)	59.87222	-155.38392	seep					
	59.87222	-155.38392	seep					
	59.87227	-155.38373	tributary	SFK 1.240.60				
	59.87590	-155.38725	seep					
	59.87241	-155.39622	seep					
	59.87106	-155.38579	seep					
	59.87087	-155.38689	tributary	SFK 1.240.70				
	59.87241	-155.39622	seep					
SFK 1.240-SA10	59.87100	-155.38687	seep					
	59.87082	-155.38782	tributary	SFK 1.240.30.40				
	59.87067	-155.38879	seep					
	59.87063	-155.38914	seep					
	59.87061	-155.38929	seep					
	59.87024	-155.39221	seep					
SFK 1.240.10-SA1	59.83226	-155.37560	barrier		beaver dam	temporary	0.6	0.8
	59.83217	-155.37611	barrier		beaver dam	temporary	1.4	2.5
SFK 1.240.10-SA2	59.83224	-155.37594	barrier		beaver dam	temporary	0.97	1.5
	59.83225	-155.37582	barrier		beaver dam	temporary	2.3	2.8
	59.83236	-155.37614	barrier		beaver dam	temporary	0.7	1.1
	59.83236	-155.37614	barrier		beaver dam	temporary	1	1.7
	59.83312	-155.37652	barrier		beaver dam	temporary	1.3	1.5
	59.83322	-155.37726	barrier		beaver dam	temporary	0.98	1.7
	59.83372	-155.37903	barrier		beaver dam	temporary	0.55	1.4
	59.83512	-155.38055	seep					
	59.83510	-155.38084	seep					
	59.83562	-155.38225	tributary	SFK 1.240.10.10				
SFK 1.240.10-SA3	59.83579	-155.38361	seep					
	59.83560	-155.38338	seep					
	59.83588	-155.38464	seep					
	59.83586	-155.38515	seep					
	59.83573	-155.38602	seep					
	59.83573	-155.38602	seep					

Table B.9-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240.10-SA3 (cont)	59.83610	-155.38698	barrier		beaver dam	temporary	1.1	0.4
	59.83612	-155.38704	seep					
	59.83627	-155.38817	seep					
	59.83611	-155.38833	seep					
	59.83611	-155.38833	seep					
	59.83628	-155.38928	seep					
	59.83654	-155.39097	seep					
	59.83667	-155.39119	tributary	SFK 1.240.10.15				
	59.83698	-155.39157	tributary	SFK 1.240.10.20				
SFK 1.240.10-SA4	59.83728	-155.39140	seep					
	59.83741	-155.39196	seep					
	59.84011	-155.39225	barrier		falls	permanent	0.3	0.43
	59.84114	-155.39127	barrier		falls	permanent	0.3	0.5
	59.84215	-155.39069	tributary	SFK 1.240.10.30				
SFK 1.240.10-SA5	59.84230	-155.39052	seep					
	59.84260	-155.38954	dry tributary	unnamed	dry channel	temporary		
	59.84276	-155.38955	seep					
	59.84325	-155.38967	seep					
SFK 1.240.10.10-SA1	59.83611	-155.38218	seep					
	59.83620	-155.38195	seep					
	59.83691	-155.38118	barrier		beaver dam	temporary	0.65	0.4
	59.83702	-155.38128	barrier		beaver dam	temporary	1.2	0.55
	59.83728	-155.38042	barrier		beaver dam	temporary	0.95	0.8
	59.83719	-155.38035	barrier		beaver dam	temporary	0.75	0.51
	59.83737	-155.38035	barrier		beaver dam	temporary	0.6	0.55
	59.83734	-155.38038	barrier		beaver dam	temporary	0.8	0.4
	59.83695	-155.38066	barrier		beaver dam	temporary	1.6	1.4
	59.83696	-155.38021	barrier		beaver dam	temporary	1.2	1.3
	59.83710	-155.37974	barrier		beaver dam	temporary	1.25	1.4
	59.83716	-155.37932	barrier		beaver dam	temporary	0.5	1.2
	59.83719	-155.37917	barrier		beaver dam	temporary	1.8	2.1
	59.83843	-155.37809	barrier		falls	temporary	0.9	0.86

Table B.9-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240.10.10-SA1 (cont)	59.83865	-155.37693	barrier		falls	temporary	0.95	0.11
	59.83929	-155.37655	barrier		falls	temporary	0.83	0.65
	59.83944	-155.37605	barrier		falls	temporary	0.63	0.65
	59.83966	-155.37579	tributary	unnamed				
	59.83987	-155.37494	barrier		falls	temporary	0.45	0.8
	59.83987	-155.37494	barrier		falls	temporary	0.35	0.5
	59.84007	-155.37470	tributary	unnamed				
	59.84017	-155.37411	barrier		falls	temporary	0.55	0.4
	59.83995	-155.37437	seep					
	59.84035	-155.37367	barrier		falls	temporary	0.5	0.4
	59.84035	-155.37339	seep					
	59.84046	-155.37315	seep					
	59.84051	-155.37315	tributary	SFK 1.240.10.10.10				
	59.84048	-155.37305	barrier		falls	temporary	0.33	0.69
	59.84069	-155.37294	seep					
	59.84068	-155.37266	seep					
	59.84109	-155.37206	tributary	unnamed				
	59.84122	-155.37177	barrier		falls	temporary	0.35	0.22
	59.84142	-155.37163	seep					
	59.84142	-155.37163	tributary	SFK 1.240.10.10.20				
	59.84168	-155.37073	seep					
	59.84194	-155.37025	seep					
	59.84226	-155.36996	barrier		falls	temporary	0.54	0.48
	59.84236	-155.36953	barrier		dry channel	temporary		
	59.84273	-155.36941	seep					
	59.84287	-155.36913	seep					
	59.84314	-155.36886	tributary	unnamed				
	59.84345	-155.36846	tributary	unnamed				
SFK 1.240.10.10.10-SA1	59.84062	-155.37318	seep					
	59.84076	-155.37338	tributary	unnamed				
SFK 1.240.10.10.20-SA1	59.84151	-155.37154	seep					

Table B.9-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240.10.20-SA1	59.83729	-155.39290	tributary	unnamed				
	59.83743	-155.39333	seep					
	59.83749	-155.39344	seep					
	59.83756	-155.39380	tributary	unnamed				
SFK 1.240.10.30-SA1	59.84243	-155.39113	seep					
	59.84345	-155.39134	tributary	unnamed				
	59.84369	-155.39162	tributary	unnamed				
	59.84415	-155.39190	seep					
SFK 1.240.10.30-SA2			none present					
SFK 1.240.10.30-SA3			none present					
SFK 1.240.10.30-SA4			none present					
SFK 1.240.25-SA1	59.86524	-155.34947	barrier		falls	permanent	0.7	1.12
	59.86435	-155.35481	spring					
SFK 1.240.30-SA1			none present					
SFK 1.240.30-SA2	59.88217	-155.35726	seep					
	59.88341	-155.35751	spring					
	59.88578	-155.36084	seep					
	59.88387	-155.35824	tributary	unnamed				
	59.88453	-155.35863	tributary	unnamed				
	59.88569	-155.36063	tributary	unnamed				
SFK 1.240.30-SA3	59.88651	-155.36352	tributary	unnamed				
	59.88610	-155.36654	tributary	unnamed				
	59.88595	-155.36800	seep					
	59.88590	-155.36810	seep					
	59.88566	-155.36854	seep					
	59.88488	-155.37088	seep					
	59.88452	-155.37234	seep					
	59.88414	-155.37305	seep					
	59.88444	-155.37259	tributary	unnamed				
	59.88392	-155.37344	tributary	unnamed				
	59.88374	-155.37375	seep					
	59.88344	-155.37435	seep					

Table B.9-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.240.30-SA3 (cont)	59.88326	-155.37456	seep					
	59.88317	-155.37491	seep					
	59.88308	-155.37500	seep					
	59.88248	-155.37576	seep					
	59.88240	-155.37671	tributary	unnamed				
	59.88175	-155.37789	tributary	unnamed				
	59.88207	-155.37743	seep					
	59.88066	-155.38510	barrier		cascade	permanent	4.4	18.0
	59.88122	-155.39179	seep					
	59.88161	-155.38213	tributary	unnamed				
	59.88061	-155.38592	tributary	unnamed				
SFK 1.240.30-SA4	59.88038	-155.38633	tributary	unnamed				
SFK 1.240.40-SA1	59.87321	-155.37366	spring					
SFK 1.240.40-SA2	59.86879	-155.37450	spring					
	59.86832	-155.37402	seep					
	59.86807	-155.37408	seep					
SFK 1.240.40.10-SA1	59.86821	-155.37708	seep					
	59.86818	-155.37727	seep					
	59.86754	-155.37829	seep					
SFK 1.240.70-SA1	59.87089	-155.38641	spring					
SFK 1.260-SA1	59.82048	-155.34371	seep					
	59.82127	-155.34364	tributary	SFK 1.240				
SFK 1.260-SA2	59.82399	-155.33675	seep					
	59.82172	-155.33868	tributary	SFK 1.260.10				
	59.82401	-155.33735	barrier		beaver dam	temporary	0.45	0.9
	59.82447	-155.33792	barrier		beaver dam	temporary	0.45	0.6
	59.82452	-155.33819	barrier		beaver dam	temporary	0.6	0.7
SFK 1.260.10-SA1	59.82111	-155.33823	barrier		beaver dam	temporary	0.3	0.7
	59.82225	-155.33379	barrier		beaver dam	temporary	0.25	0.3

Note: Blank cells indicate no data were collected for that record.

Table B.9-7.
2004-2008 number of fish observations by lifestage within SFK-C mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

			Adult						Juvenile					Juvenile/Adult[a]					
Species	Year	Method	May	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	Total
Chinook salmon	2004	Visual Observation								1			1						1
	2005	Electrofishing							4		10		14						14
		Minnow Trap								1			1						1
		Snorkel			1			1		136			136						137
		Visual Observation			2			2											2
	2006	Snorkel								18		4	22						22
	2008	Electrofishing										24	24						24
coho salmon	2004	Electrofishing								42			42						42
	2005	Electrofishing							1	1	69		71						71
		Minnow Trap								25			25						25
		Snorkel							30	109			139						139
		Visual Observation								32			32						32
	2006	Snorkel								50		7	57						57
	2007	Dip Net								7			7						7
		Snorkel							1	42	19		62						62
	2008	Electrofishing								2	257		259						259
		Seine									167		167						167
		Snorkel								1446	657		2103						2103
sockeye salmon	2005	Electrofishing							4	1			5						5
		Snorkel							24				24						24
	2008	Electrofishing								59			59						59
		Seine									3		3						3
		Snorkel								6			6						6

Table B.9-7. Continued

Species	Year	Method	Adult						Juvenile					Juvenile/Adult[a]					Total
			May	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	
arctic grayling	2004	Angling			2			2	1	2			3						5
		Electrofishing								78	26		104						104
		Visual Observation		2				2						1				1	3
	2005	Angling	4					4											4
		Electrofishing									19		19						19
		Gill/Tangle Net				7		7								1		1	8
		Snorkel							361	112	24		497	1				1	498
	2006	Angling		1				1	1				1						2
		Snorkel			2		13	15		1697		14	1711						1726
	2007	Angling	2					2											2
		Dip Net								23			23						23
		Electrofishing								11			11						11
		Snorkel							485	1553	192		2230						2230
	2008	Electrofishing									28		28						28
		Seine									136		136						136
		Snorkel									294		294			6		6	300
Dolly Varden	2004	Electrofishing								13	7		20						20
	2005	Electrofishing								6	12		18						18
		Minnow Trap								13			13						13
		Snorkel								12			12						12
		Visual Observation								2			2						2
	2007	Snorkel									1		1						1
	2008	Electrofishing				6	6	12			100	82	182						194
		Seine									5		5			1		1	6
		Snorkel			1	3		4		2	64		66		22	7		29	99
		Visual Observation									8	15	23			1	1	2	25
whitefish sp.	2004	Electrofishing				1		1											1
	2006	Snorkel			1			1		3			3						4

Table B.9-7. Continued

Species	Year	Method	Adult						Juvenile					Juvenile/Adult[a]					Total
			May	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	
Salmonid sp.	2007	Snorkel							5				5						5
	2008	Electrofishing								1			1						1
		Snorkel									10		10						10
		Visual Observation									1		1			2		2	3
burbot	2004	Electrofishing								1	3		4						4
northern pike	2004	Electrofishing								12	4		16						16
		Visual Observation										2	2						2
	2005	Electrofishing								1			1						1
		Gill/Tangle Net									2		2						2
	2007	Dip Net								1			1						1
		Gill/Tangle Net			2			2		1			1						3
		Snorkel									3		3						3
	2008	Electrofishing									4		4						4
		Seine									1		1						1
		Snorkel									4		4		1			1	5
sculpin sp.	2004	Electrofishing													200	8		208	208
	2005	Electrofishing								24			24		141			141	165
		Minnow Trap													46			46	46
	2006	Snorkel															1	1	1
	2007	Electrofishing													3			3	3
	2008	Electrofishing			1	62	1	64		2	276	41	319						383
		Seine				1		1			7		7						8
		Snorkel													2	21		23	23
ninespine stickleback	2004	Electrofishing								4			4		11			11	15
		Visual Observation															2	2	2
	2006	Snorkel															50	50	50
	2007	Minnow Trap			24			24				217	217		18		5	23	264

Table B.9-7. Continued

Species	Year	Method	Adult						Juvenile					Juvenile/Adult[a]					Total
			May	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	Jun	Jul	Aug	Sep	Subtotal	
stickleback sp.	2006	Snorkel															1	1	1
		Visual Observation													2			2	2
	2007	Snorkel									3		3			1		1	4
	2008	Snorkel													82			82	82
unidentified sp.	2008	Visual Observation															2	2	2

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

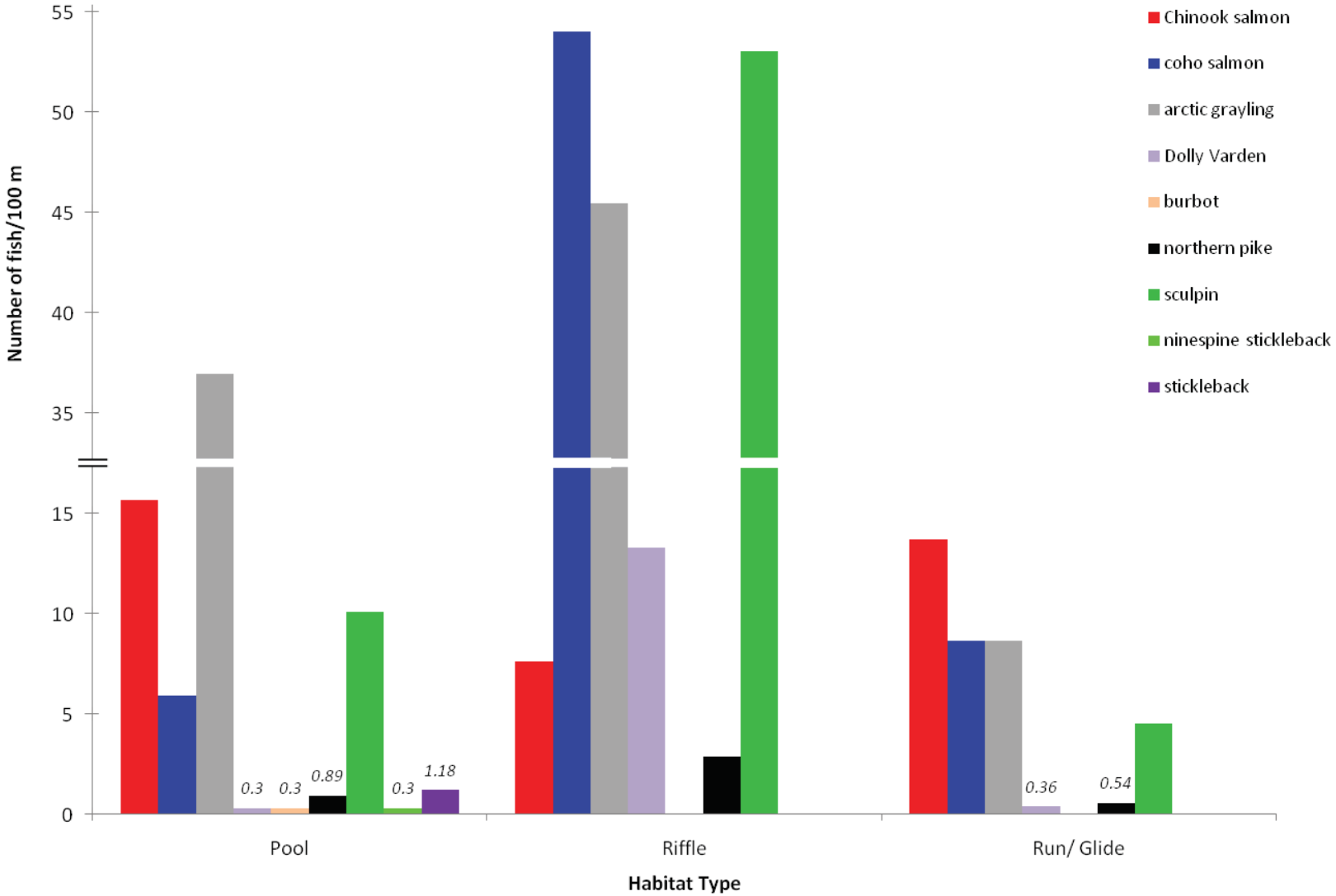


Figure B.9-8a.
2004-2007 fish abundance by habitat type within mainstem SFK-C.

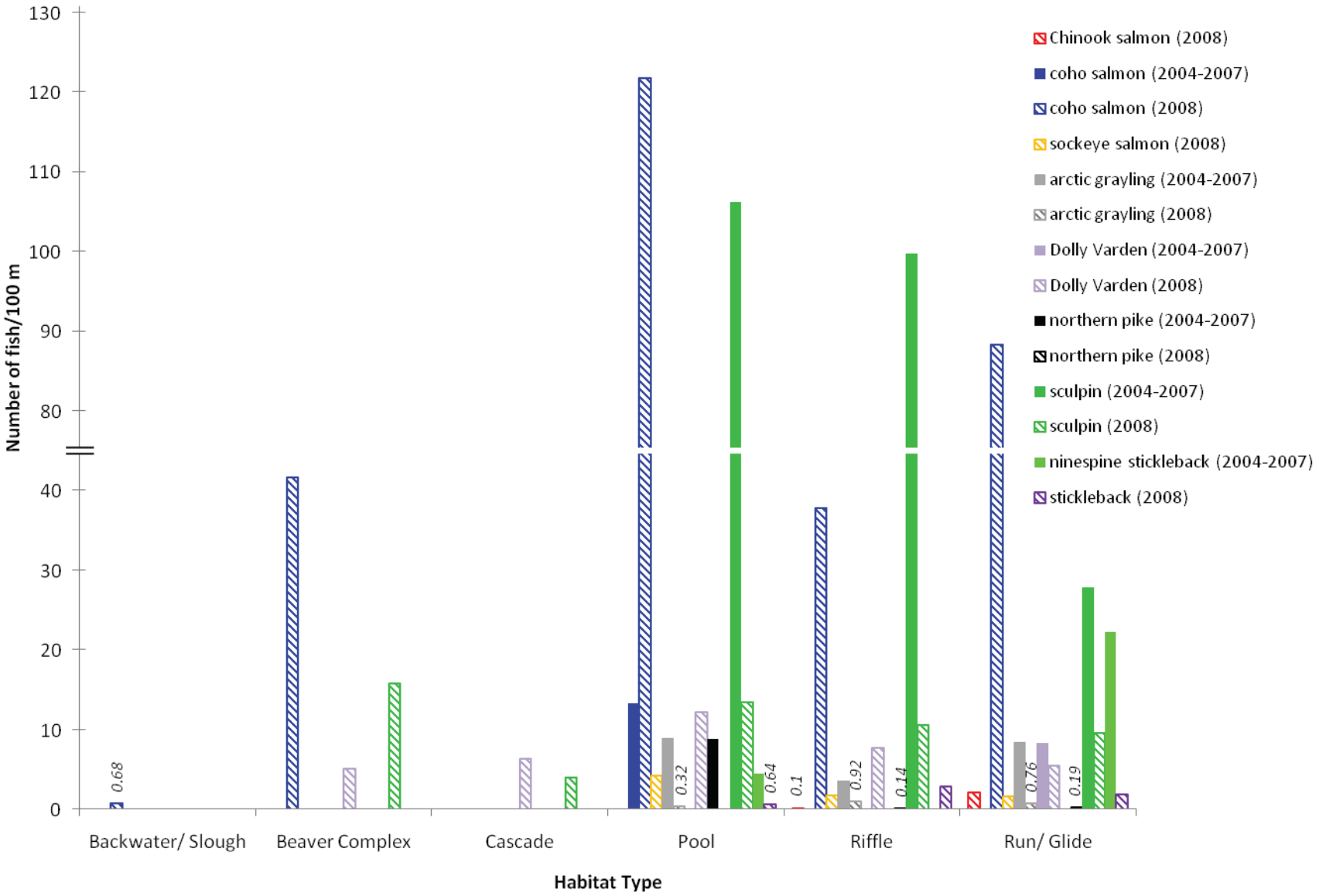


Figure B.9-8b.
2004-2008 fish abundance by habitat type within SFK-C tributaries.

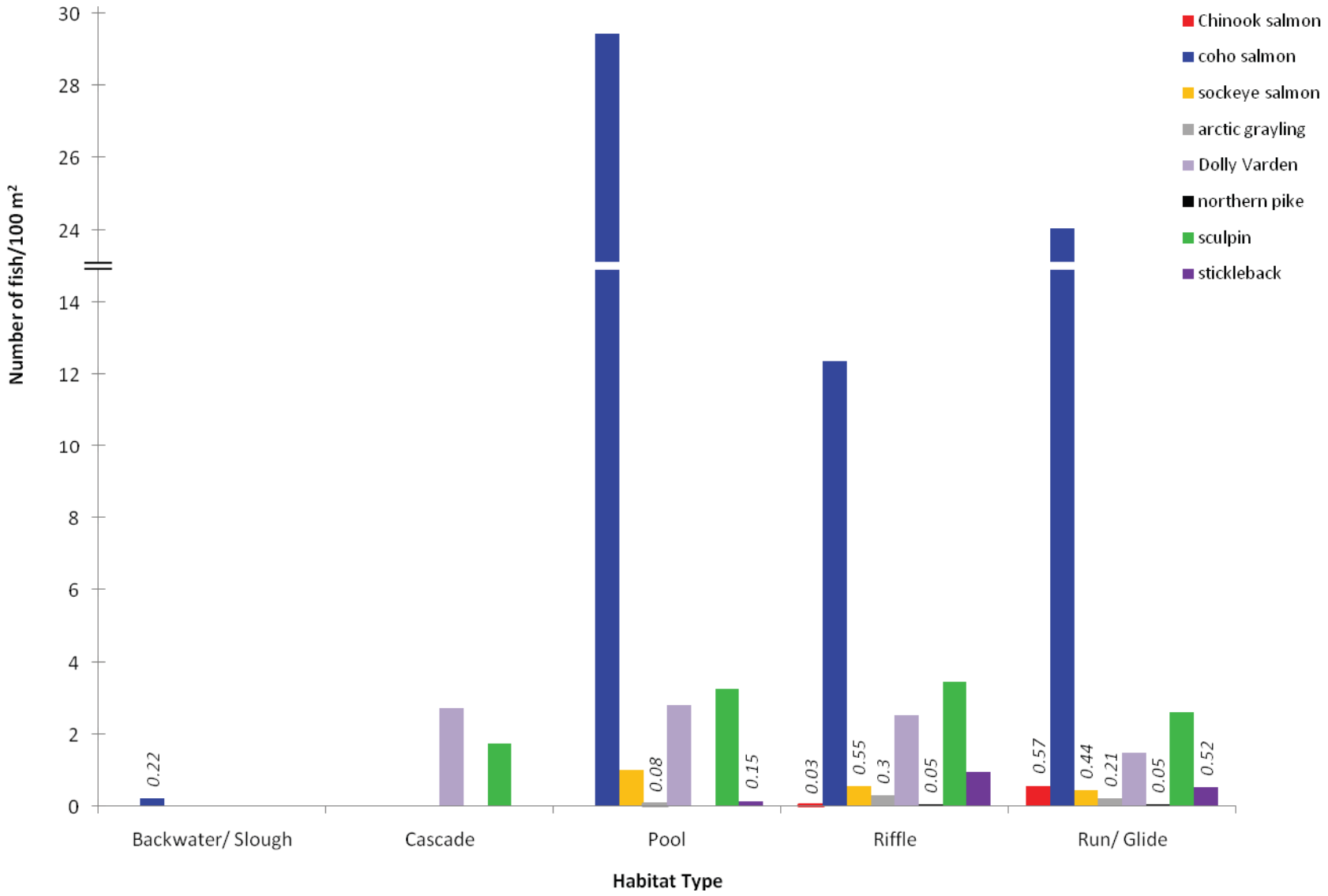


Figure B.9-9.
2008 fish density by habitat type within SFK-C tributaries.

Table B.9-8.
Densities of fish species by habitat type in SFK-C tributaries 1.240 and 1.260 in 2008.

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Coho Salmon	Sockeye Salmon	Arctic Grayling	Dolly Varden				Salmonid	Northern Pike			Sculpin				Stickleback
				Juvenile	Juvenile	Juvenile	Juvenile	Adult	Juvenile	Juvenile /Adult[a]	Total	Juvenile	Juvenile	Juvenile /Adult[a]	Total	Adult	Juvenile	Juvenile /Adult[a]	Total	Juvenile/ Adult[a]
SFK 1.240	Backwater/Slough	384.0	0																	
	Beaver Complex	5680.0	1.69		1.30				0.12	0.04	0.16							0.23	0.23	
	Cascade	526.5	4.94					0.19	2.09		2.28					0.19	2.47		2.66	
	Pool	1061.2	38.35		34.30	1.13				1.70	1.70						0.75	0.28	1.04	0.19
	Riffle	4632.3	20.10		13.92	0.76		0.15	2.03	0.06	2.25	0.02		0.02	0.02	0.19	1.49	0.15	1.83	1.30
	Run/Glide	3192.1	29.76		26.00	0.38		0.03	1.28	0.16	1.47					0.28	1.00		1.28	0.63
	All Habitats	15476.1	15.57		12.36	0.38		0.06	0.99	0.18	1.23	0.01		0.01	0.01	0.12	0.79	0.15	1.06	0.53
SFK 1.240.10	Backwater/Slough	2.7	37.04		37.04															
	Beaver Complex	510.1	2.94														2.94		2.94	
	Cascade	16.4	6.10						6.10		6.10									
	Pool	65.1	73.73		24.58		1.54		3.07		3.07					6.14	38.40		44.55	
	Riffle	610.9	41.58		22.59		3.11		0.82		0.82		0.33		0.33	3.93	10.80		14.73	
	Run/Glide	344.9	44.94		29.57		2.32		0.87		0.87		0.58		0.58	2.03	9.57		11.60	
	All Habitats	1550.1	30.58		16.58		1.81		0.71		0.71		0.26		0.26	2.26	8.97		11.23	
SFK 1.240.10.10	Backwater/Slough	34.6	0																	
	Beaver Complex	1875.0	0																	
	Pool	64.2	3.12														3.12		3.12	
	Riffle	315.5	6.02	0.63													5.39		5.39	
	Run/Glide	83.2	50.48	26.44													24.04		24.04	
	Wetland	305.8	0																	
	All Habitats	2678.3	2.35	0.90													1.46		1.46	
SFK 1.240.10.10.10	Riffle	1.6	0																	
	Run/Glide	7.0	0																	
	All Habitats	8.6	0																	
SFK 1.240.10.10.20	Pool	0.7	0																	
	Riffle	5.6	0																	
	Run/Glide	4.1	0																	
	Wetland	99.2	0																	
	All Habitats	109.6	0																	
SFK 1.240.10.20	Backwater/Slough	35.2	0																	
	Cascade	9.0	0																	
	Pool	8.1	0																	
	Riffle	81.6	2.45													1.23	1.23		2.45	
	Run/Glide	42.0	0																	
	All Habitats	175.9	1.14													0.57	0.57		1.14	
SFK 1.240.10.30	Cascade	13.2	0																	
	Pool	2.5	0																	
	Riffle	24.0	0																	
	All Habitats	39.7	0																	

Table B.9-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Coho Salmon	Sockeye Salmon	Arctic Grayling	Dolly Varden				Salmonid	Northern Pike			Sculpin				Stickleback
				Juvenile	Juvenile	Juvenile	Juvenile	Adult	Juvenile	Juvenile /Adult[a]	Total	Juvenile	Juvenile	Juvenile /Adult[a]	Total	Adult	Juvenile	Juvenile /Adult[a]	Total	Juvenile/ Adult[a]
SFK 1.240.25	Cascade	40.7	0																	
	Pool	22.4	31.25						31.25		31.25									
	Riffle	56.0	0																	
	Run/Glide	5.6	0																	
	All Habitats	124.7	5.61						5.61		5.61									
SFK 1.240.30	Cascade	40.8	14.71						9.80		9.80					4.90			4.90	
	Pool	8.4	47.62						47.62		47.62									
	Riffle	413.9	14.50					1.21	7.25		8.46					1.69	4.35		6.04	
	All Habitats	463.1	15.12					1.08	8.21		9.29					1.94	3.89		5.83	
SFK 1.240.40	Cascade	263.9	3.03						3.03		3.03									
	Pool	26.8	14.93						14.93		14.93									
	Riffle	145.1	8.96						8.96		8.96									
	Run/Glide	43.0	18.60						18.60		18.60									
	All Habitats	478.8	6.89						6.89		6.89									
SFK 1.240.40.10	Pool	1.3	76.92						76.92		76.92									
	Riffle	27.2	7.35						7.35		7.35									
	Run/Glide	7.2	0																	
	All Habitats	35.7	8.40						8.40		8.40									
SFK 1.240.70	Cascade	5.6	0																	
	Riffle	20.4	4.90					4.90			4.90									
	All Habitats	26.0	3.85					3.85			3.85									
SFK 1.260	Pool	30.6	3.27			3.27														
	Run/Glide	153.7	3.90		0.65	3.25														
	All Habitats	184.3	3.80		0.54	3.26														

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

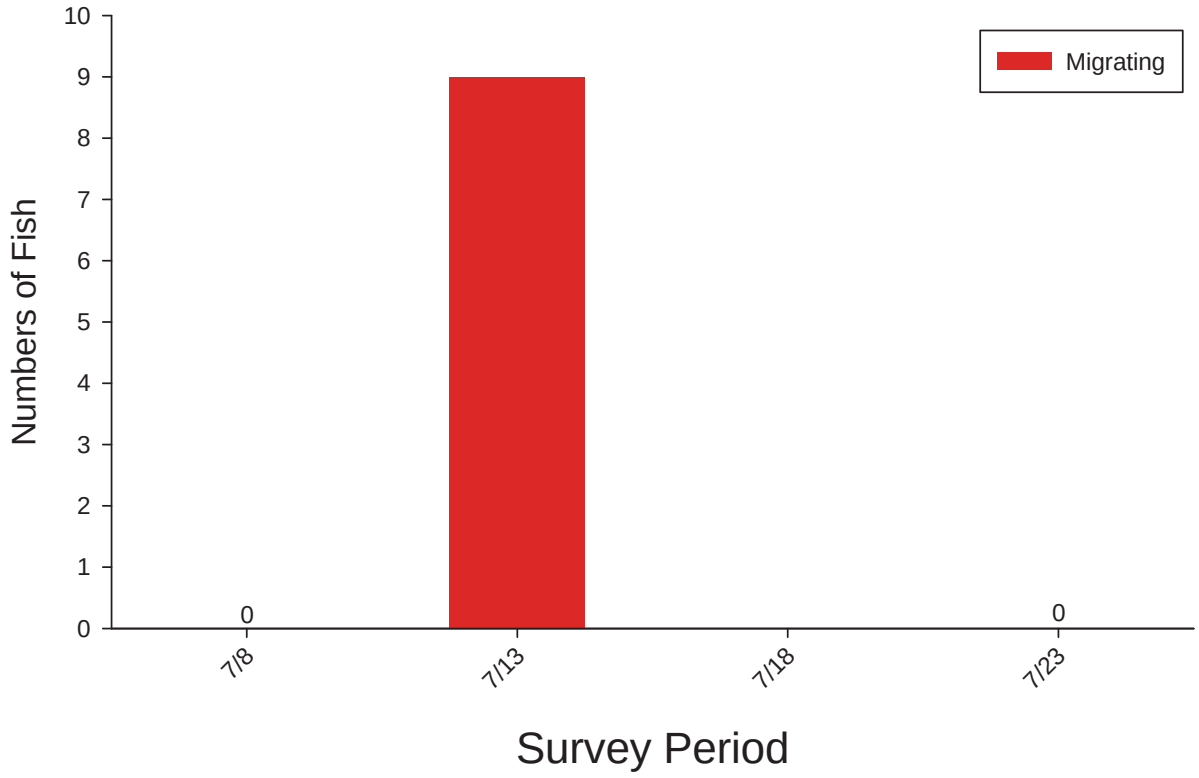


Figure B.9-14.
Number of chum salmon observed migrating during 2008 aerial surveys in SFK-C.

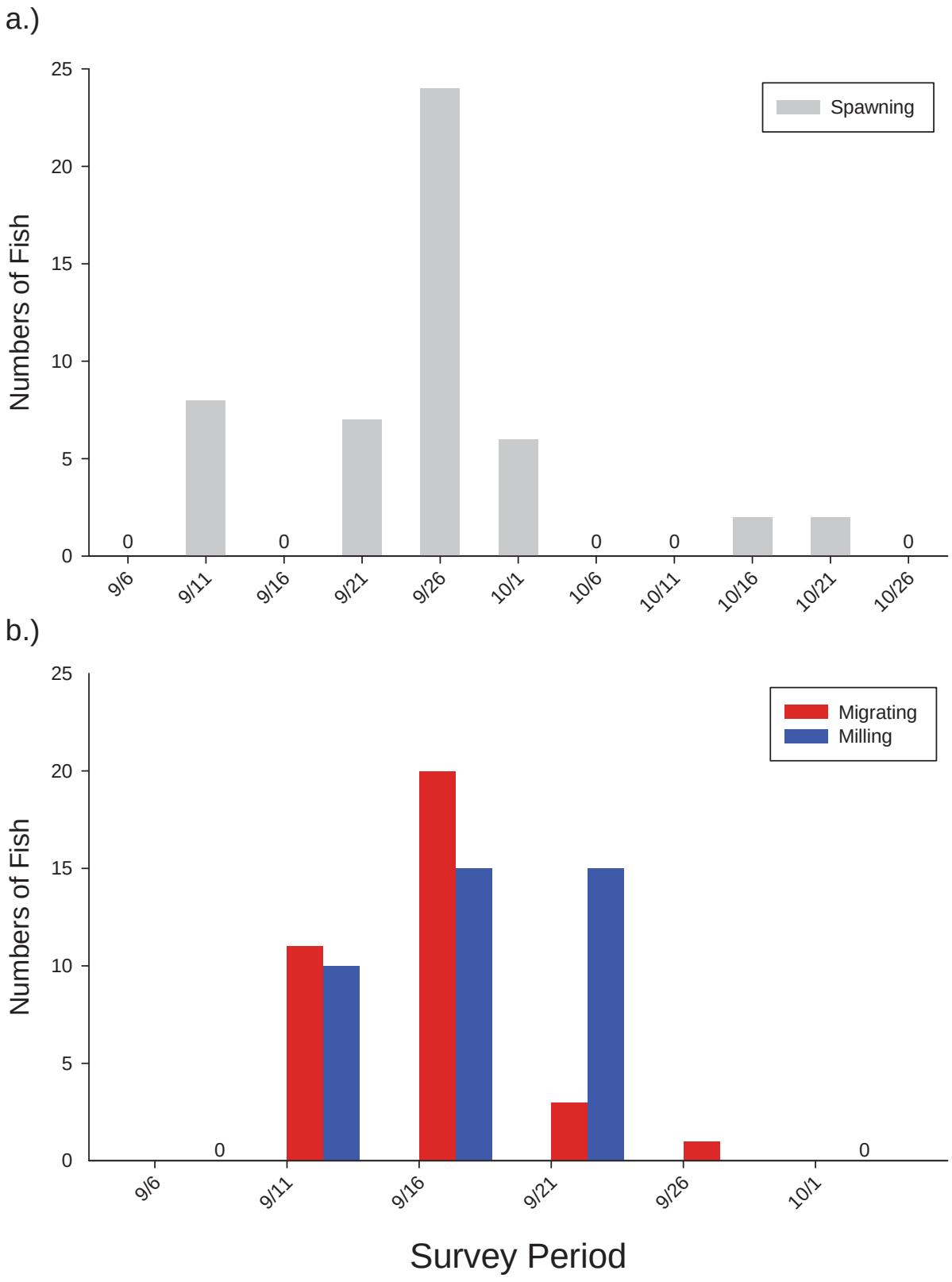


Figure B.9-15.
Observations of coho salmon during 2008 aerial surveys in SFK-C. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

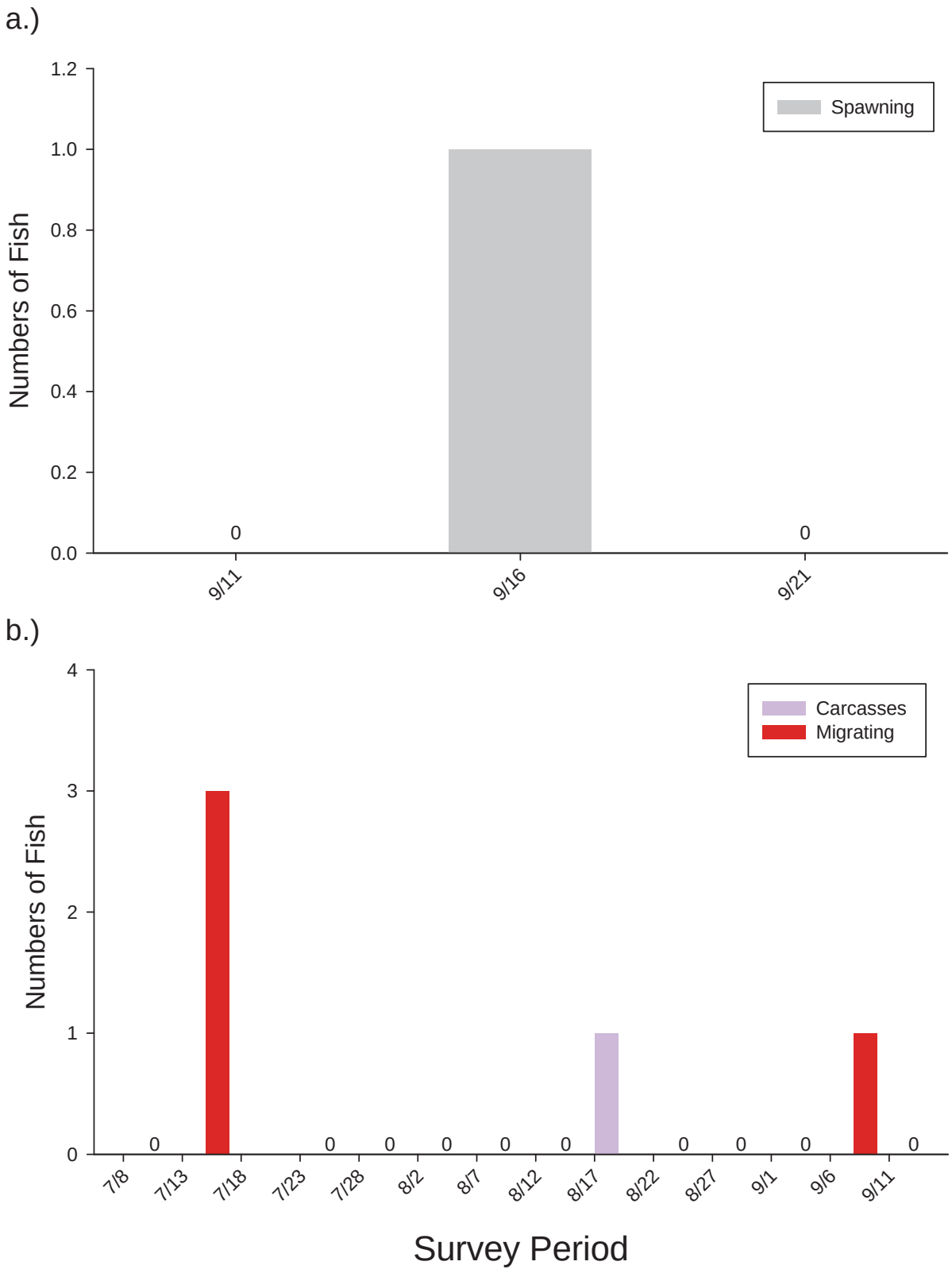


Figure B.9-16.
Observations of sockeye salmon during 2008 aerial surveys in SFK-C. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.9-9.
2008 fish observations by method at mainstem index sites located within SFK-C.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
SFK34.64	coho salmon	beach seine		166		166
		snorkel		156		156
	sockeye salmon	beach seine		3		3
	arctic grayling	beach seine		3		3
		snorkel		8	6	14
	Dolly Varden	beach seine		5	1	6
		snorkel			1	1
	sculpin sp.	beach seine	1	6		7
SFK34.64 Total			**1**	**347**	**8**	**356**
SFK38.97	arctic grayling	beach seine		40		40
		snorkel		118		118
	Dolly Varden	snorkel		1		1
SFK38.97 Total				**159**		**159**
SFK43.30	coho salmon	beach seine		1		1
		snorkel		2		2
	arctic grayling	beach seine		82		82
		snorkel		154		154
	Salmonid sp.	snorkel		10		10
	sculpin sp.	beach seine		1		1
SFK43.30 Total				**250**		**250**
SFK47.63	arctic grayling	beach seine		11		11
		snorkel		14		14
	northern pike	beach seine		1		1
		snorkel		4		4
SFK47.63 Total				**30**		**30**

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

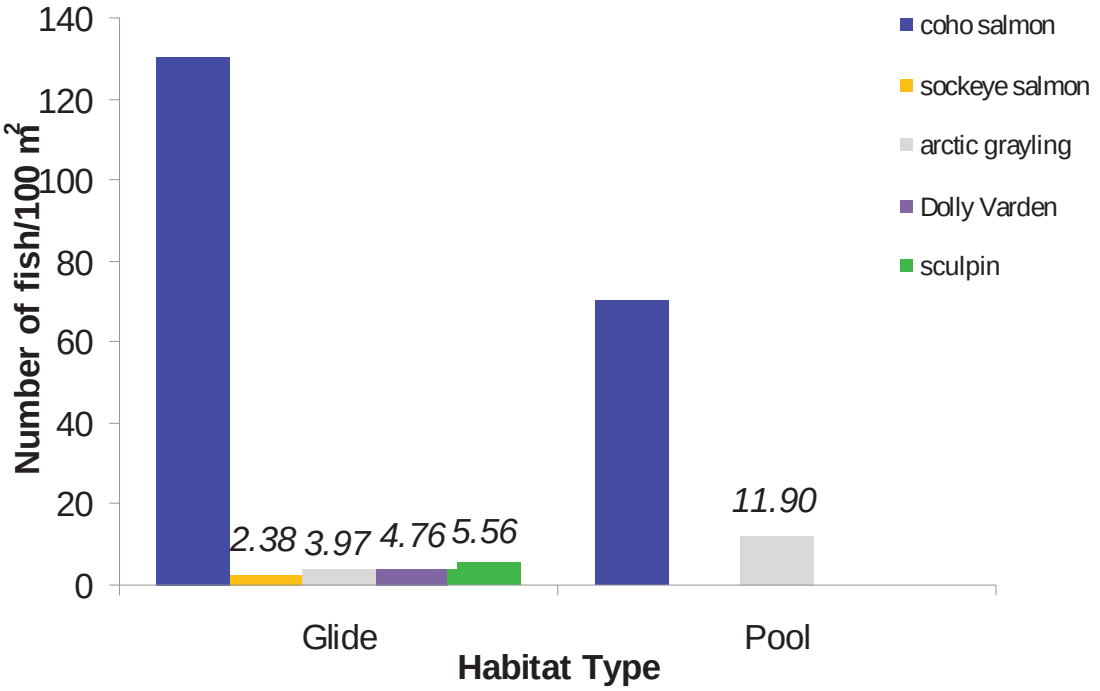


Figure B.9-17a.
2008 fish density by habitat type at mainstem index site (RKm 34.64) within SFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.

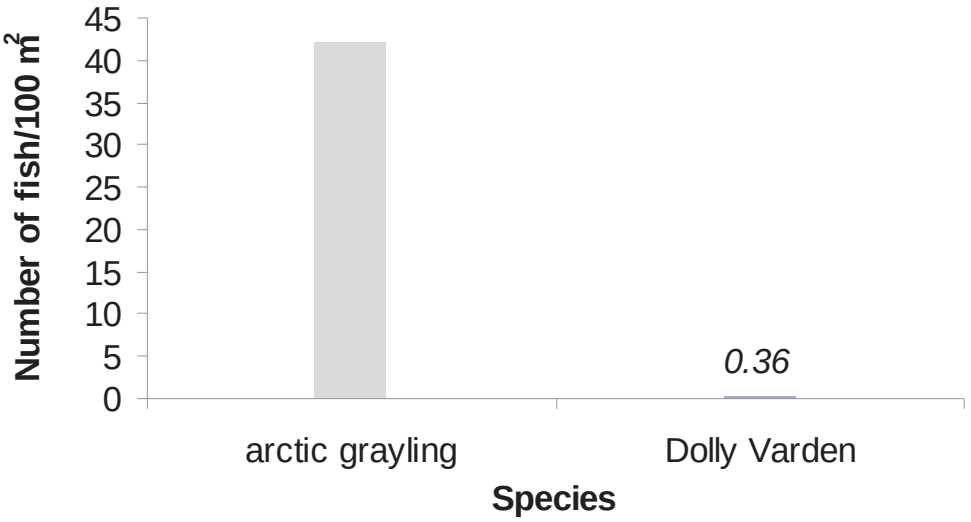


Figure B.9-17b.
2008 fish density in glide habitat at mainstem index site (RKm 38.97) within SFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.

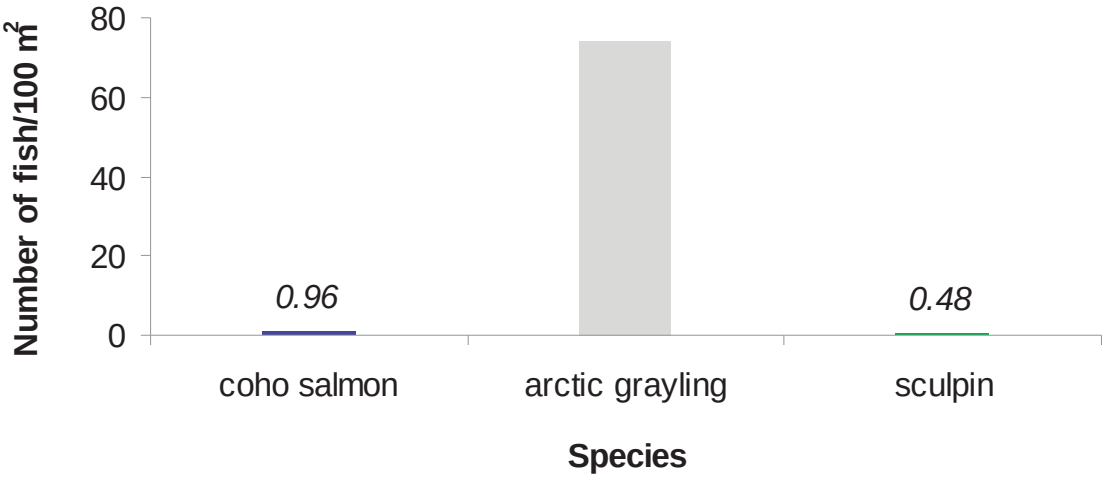


Figure B.9-17c.
2008 fish density in pool habitat at mainstem index site (RKm 43.30) within SFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.

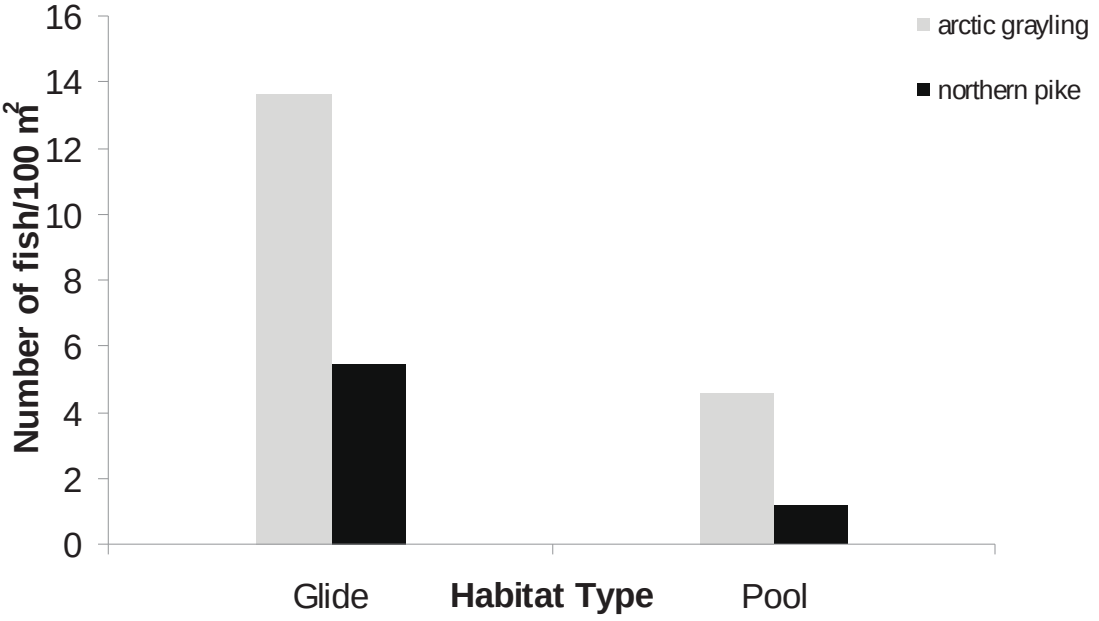
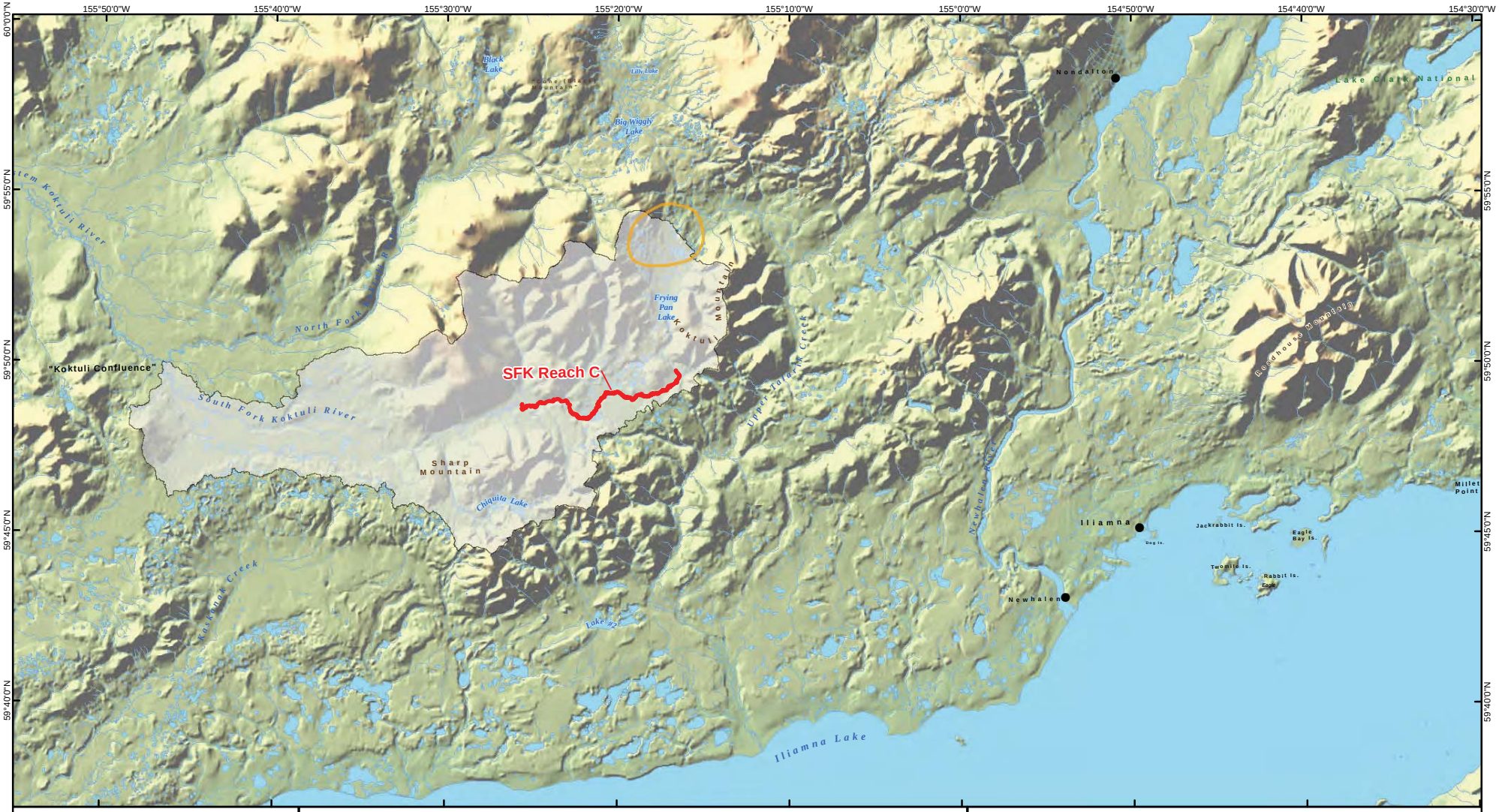
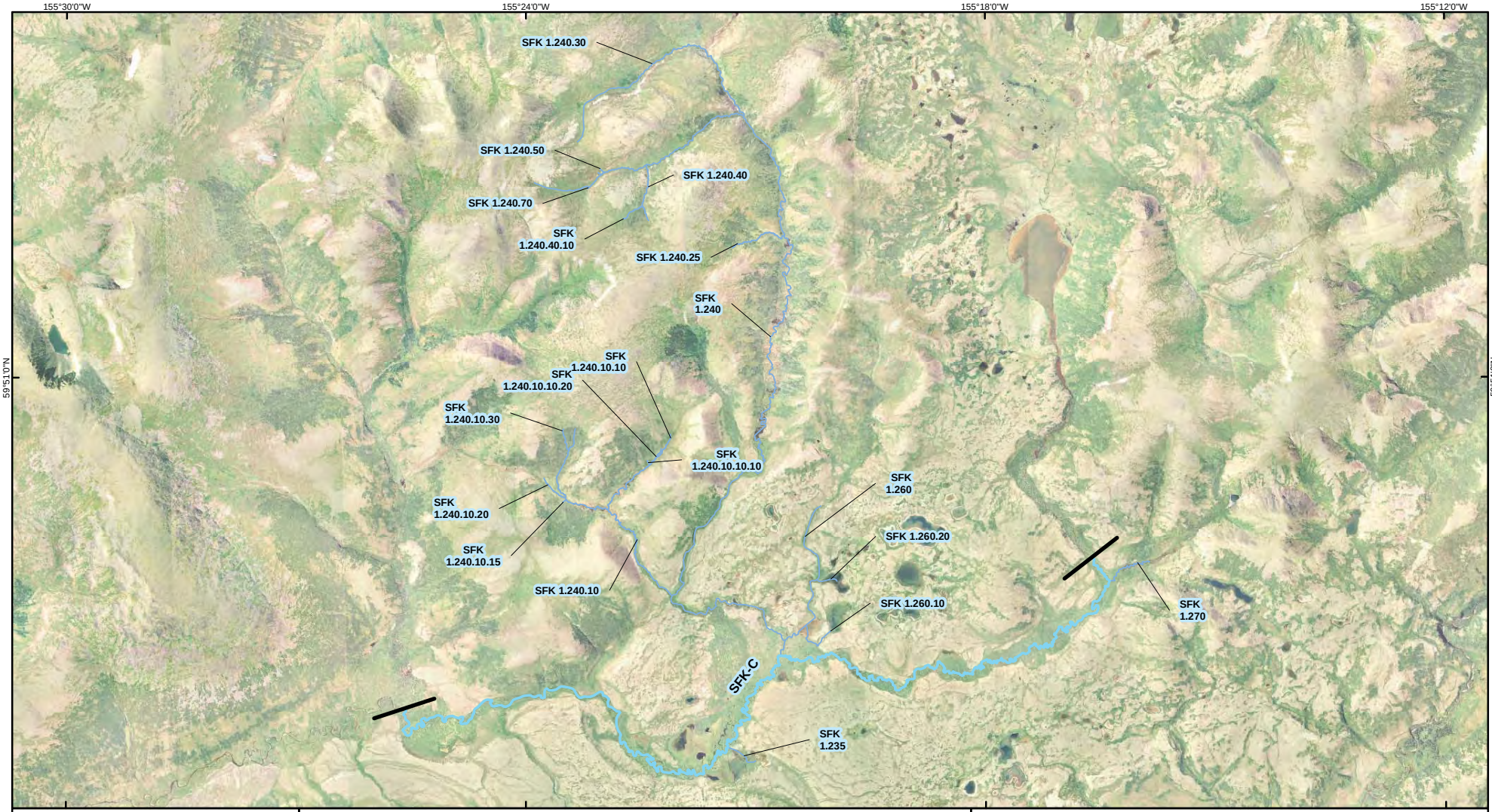
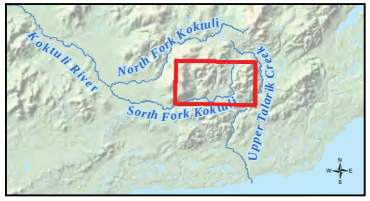


Figure B.9-17d.
2008 fish density by habitat type at mainstem index site (RKm 47.63) within SFK-C. Densities were calculated from the method that generated the greatest count of fish at this location.


155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
155°0'0"W
154°50'0"W
154°40'0"W
154°30'0"W
60°0'0"N
59°55'0"N
59°50'0"N
59°45'0"N
59°40'0"N
SFK Reach C
"Koktuli Confluence"
North Fork Koktuli River
South Fork Koktuli River
Item Koktuli River
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Sharp Mountain
Chiquita Lake
Kaskanak Creek
Lake #2
Black Lake
Lily Lake
Big Wiggly Lake
Nondalton
Lake Clark National
Gandhouse Mountain
Iliamna
Newhalen
Jackrabbit Is.
Dog Is.
Eagle Bay Is.
Twomile Is.
Rabbit Is.
Eagle
Millet Point
Iliamna Lake
Bering Sea
Area of Detail
Legend
General Deposit Location
Watershed Boundary
Mainstem Stream Reach
SFK Reach C
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
N
W
E
S
Miles
0
5
10
Kilometers
0
5
10
THE pebble PARTNERSHIP
Figure B.9-1a
Reach SFK-C
RDI_R2_OverviewLocator_SFK-C_Fig-B.9-1a_11x17L_9of19_D03.mxd
February 5, 2011
Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

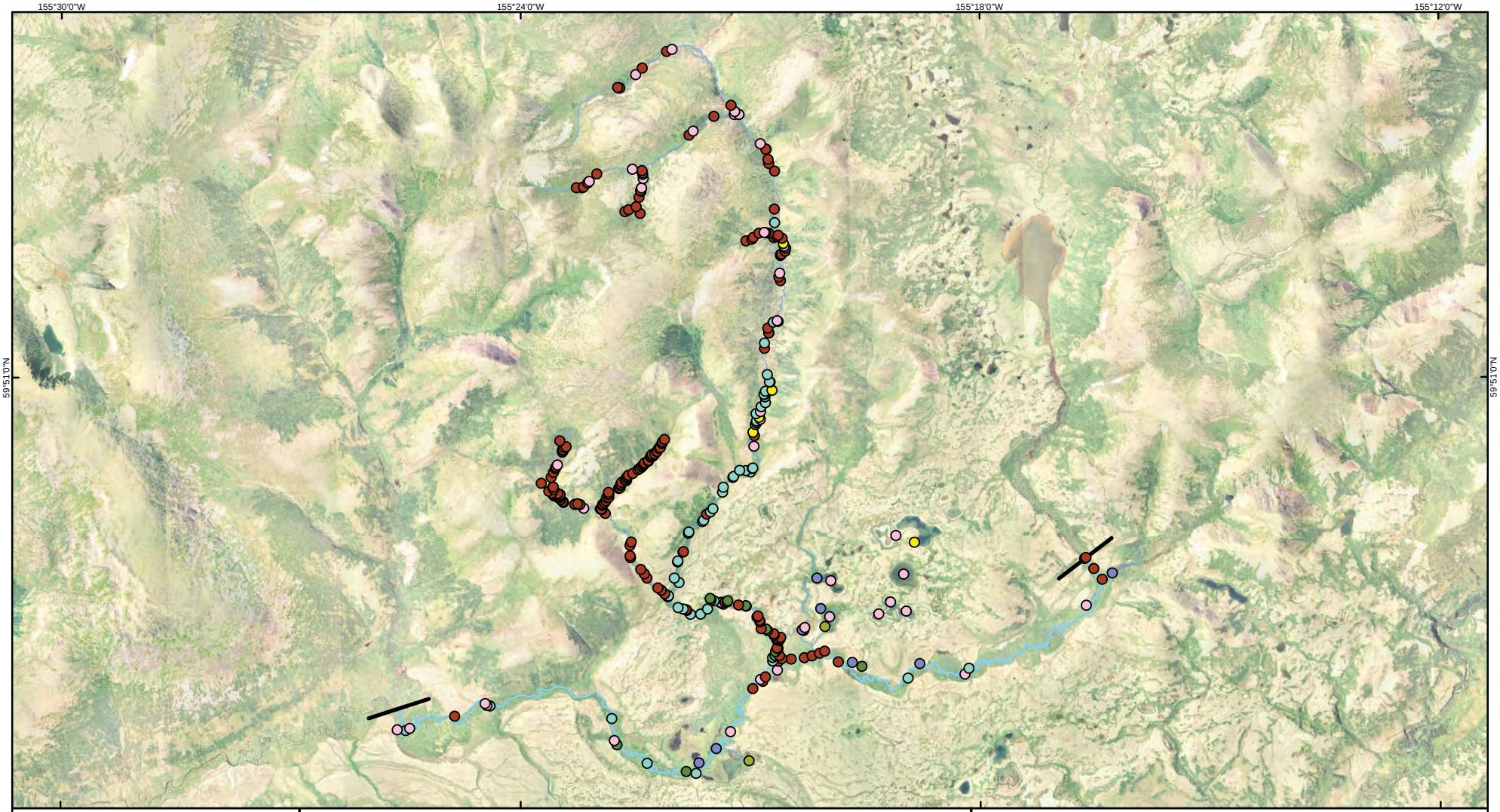
Miles
0 0.9 1.8

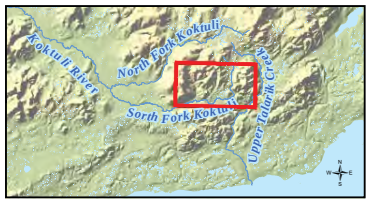
Kilometers
0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.9-1b
SFK-C
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_SFK-C_Fig-B.9-1b_11x17L_9of19_D01.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.9 1.8

Kilometers
0 0.9 1.8

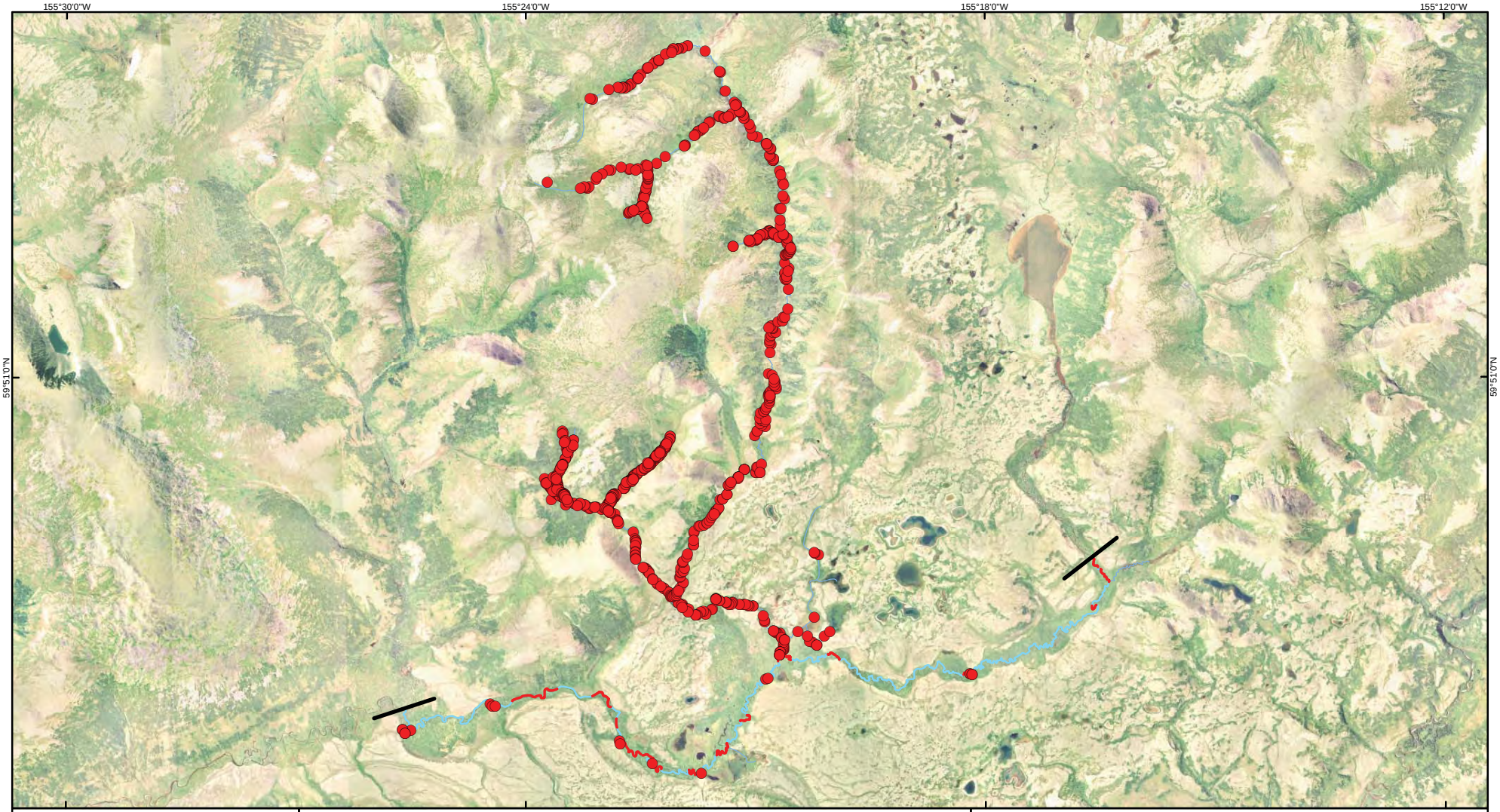
THE pebble PARTNERSHIP

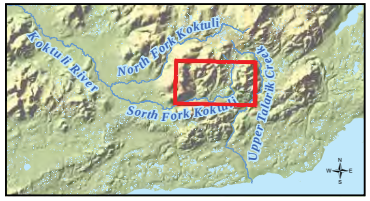
Figure B.9-2
SFK-C
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_SFK-C_Fig-B.9-2_11x17L_9of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

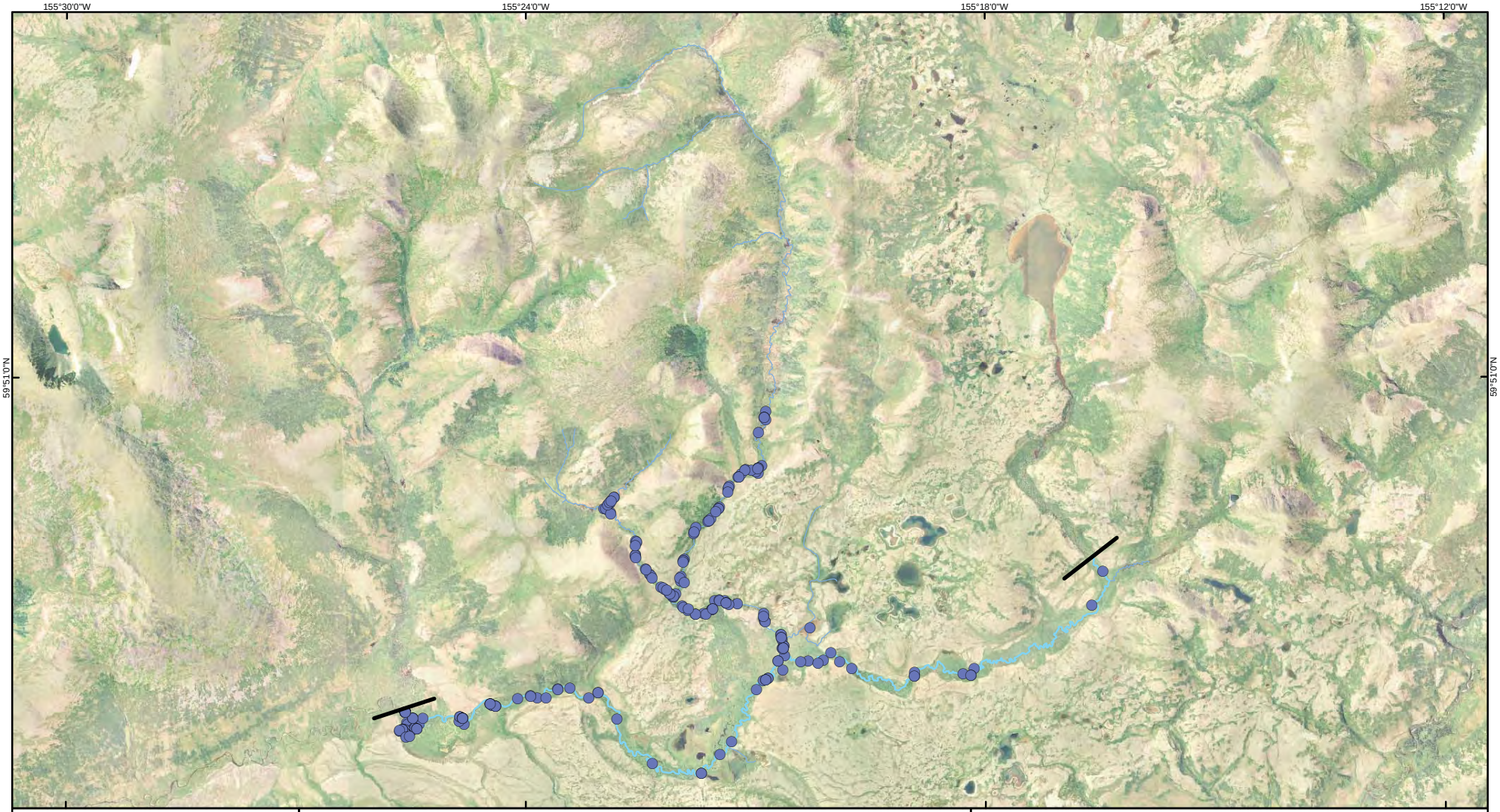
Miles
0 0.9 1.8

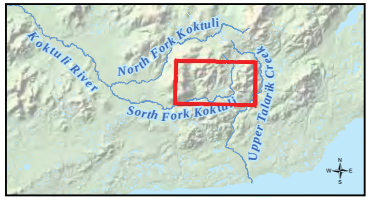
Kilometers
0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.9-3
SFK-C
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_SFK-C_Fig-B.9-3_11x17L_9of19_D02.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

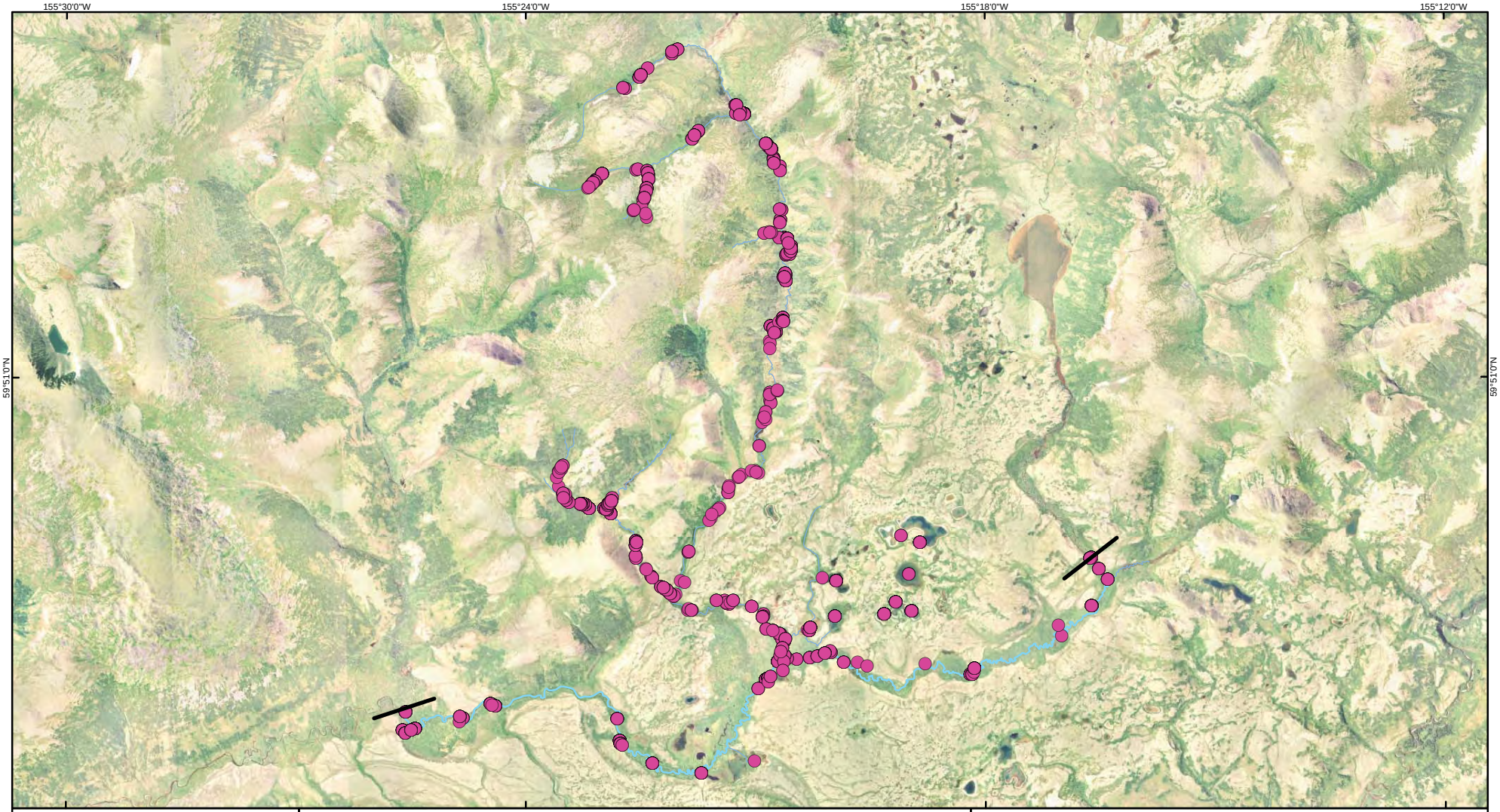
Miles
0 0.9 1.8

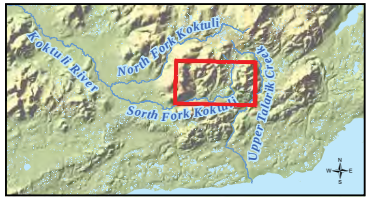
Kilometers
0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.9-4
SFK-C
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_SFK-C_Fig-B.9-4_11x17L_9of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

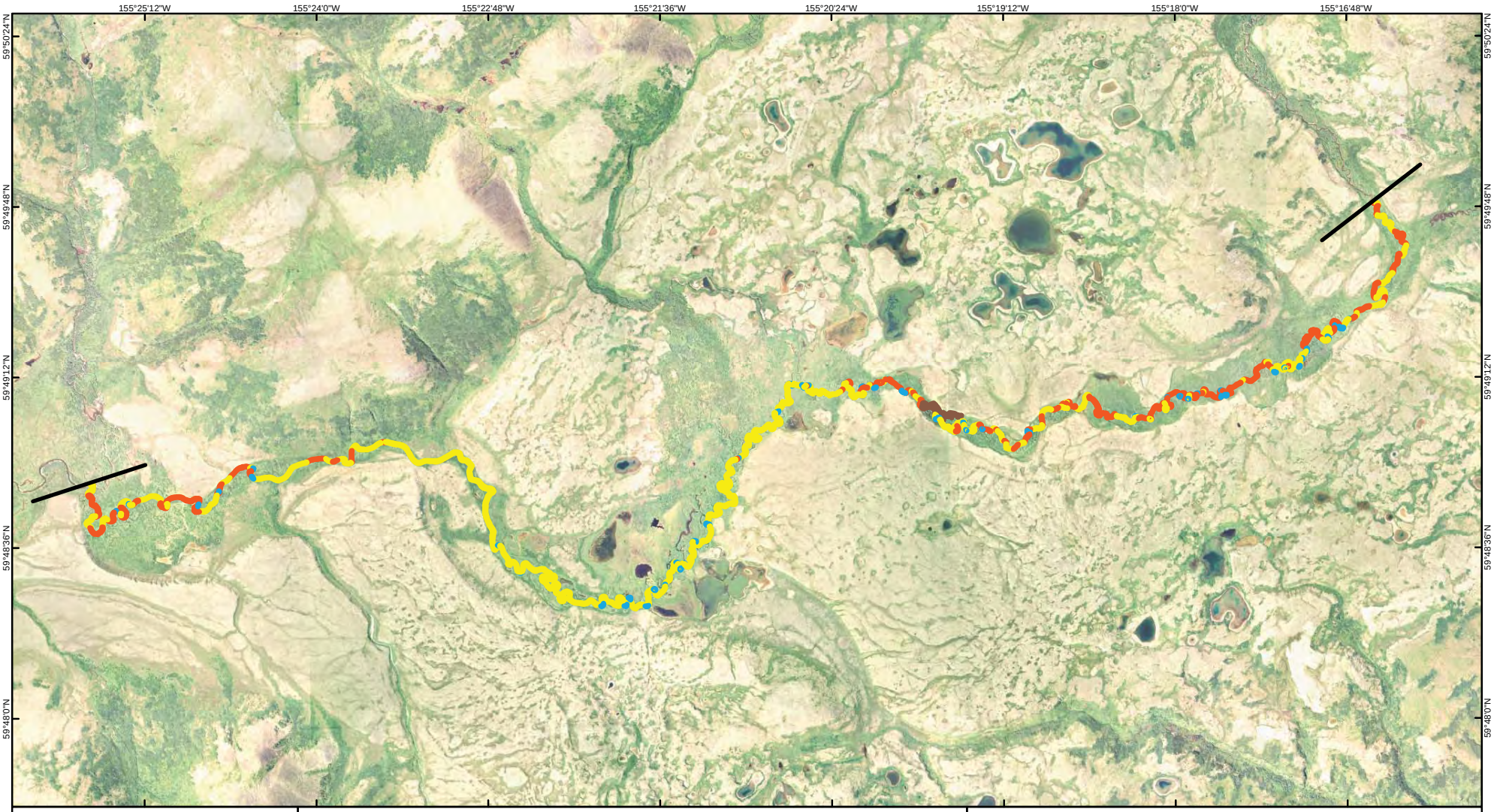
Miles
0 0.9 1.8

Kilometers
0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.9-5
SFK-C
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_SFK-C_Fig-B.9-5_11x17L_9of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

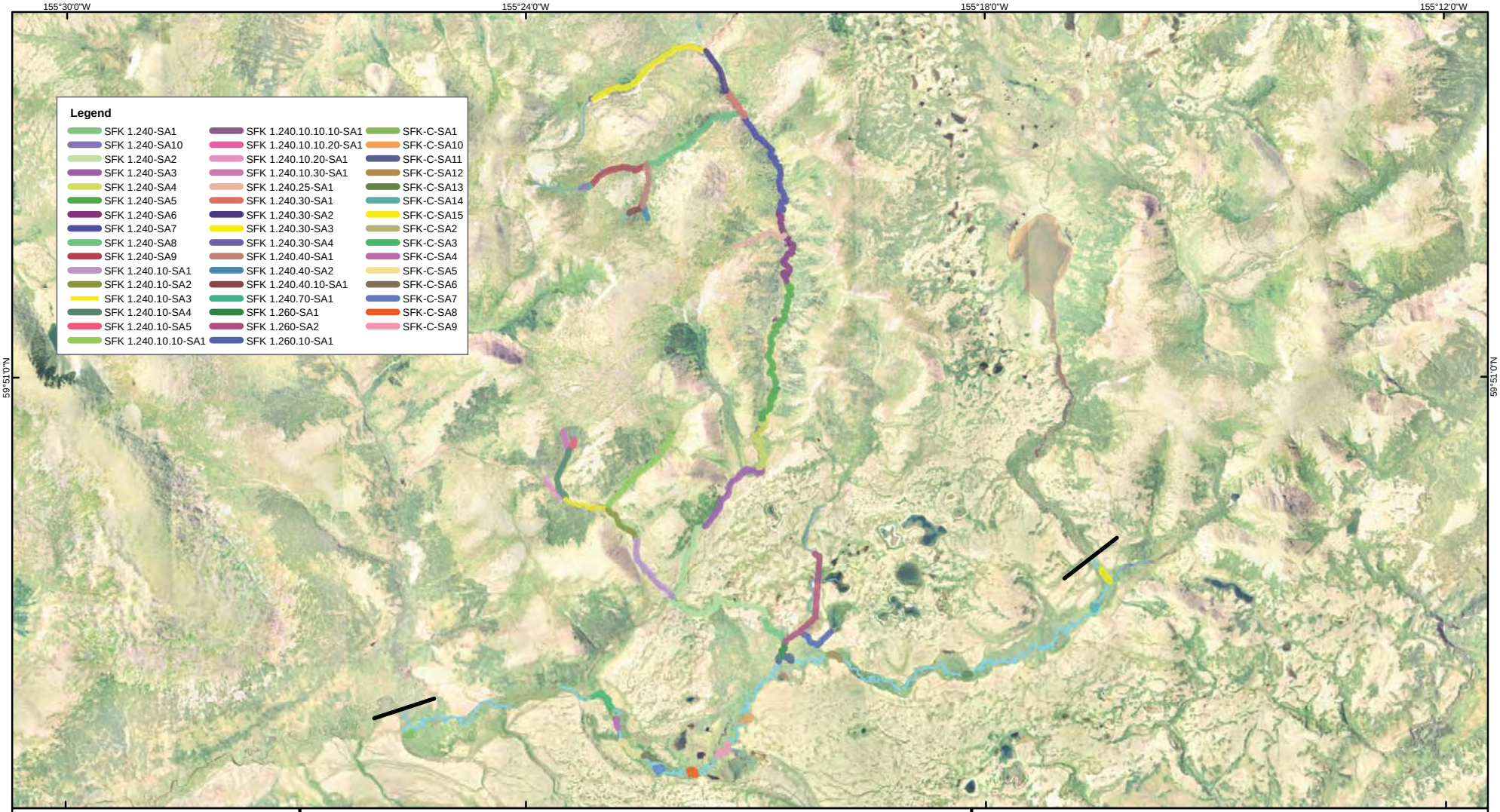
Miles: 0 0.5 1

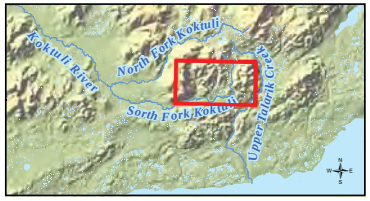
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.9-6
SFK-C
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_SFK-C_Fig-B.9-6_11x17L_9of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

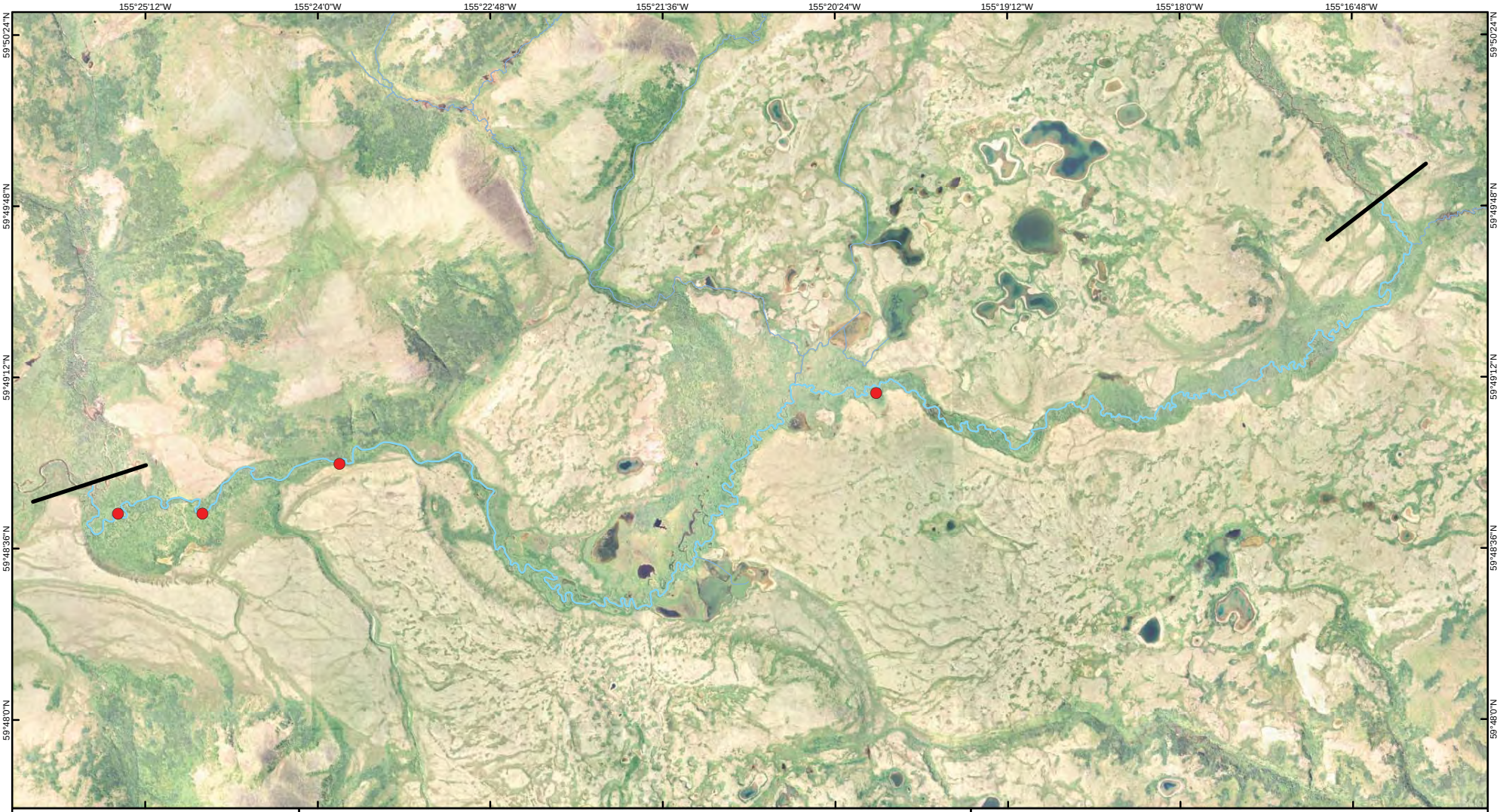
Miles: 0 0.9 1.8

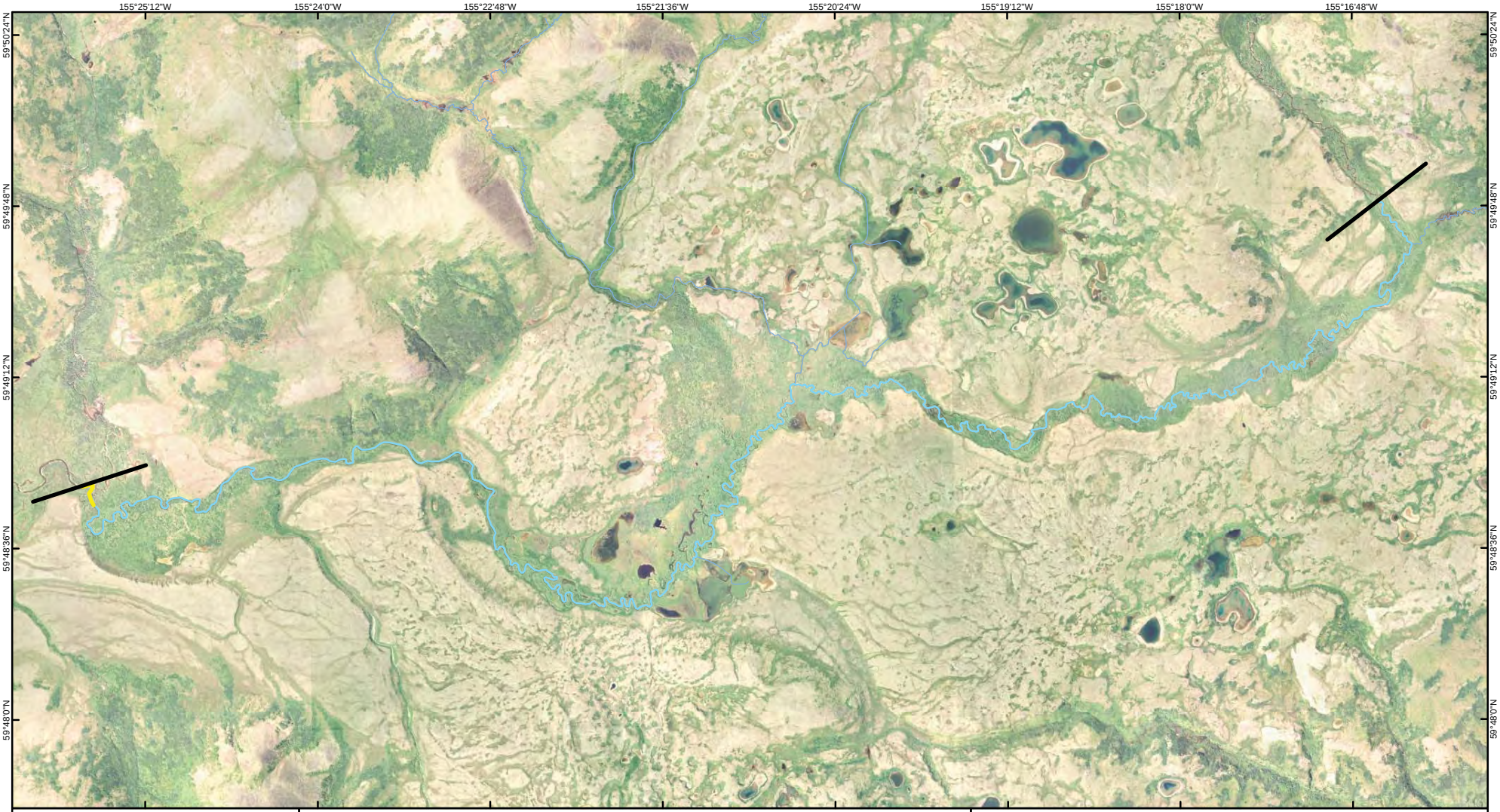
Kilometers: 0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.9-7
SFK-C
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_SFK-C_Fig-B.9-7_11x17L_9of19_D02.mxd	February 23, 2011
	Author: RDI - MRA


155°25'12"W
155°24'0"W
155°22'48"W
155°21'36"W
155°20'24"W
155°19'12"W
155°18'0"W
155°16'48"W
59°50'24"N
59°49'48"N
59°49'12"N
59°48'36"N
59°48'0"N
Kokhanok
Kokhanok
Kokhanok



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

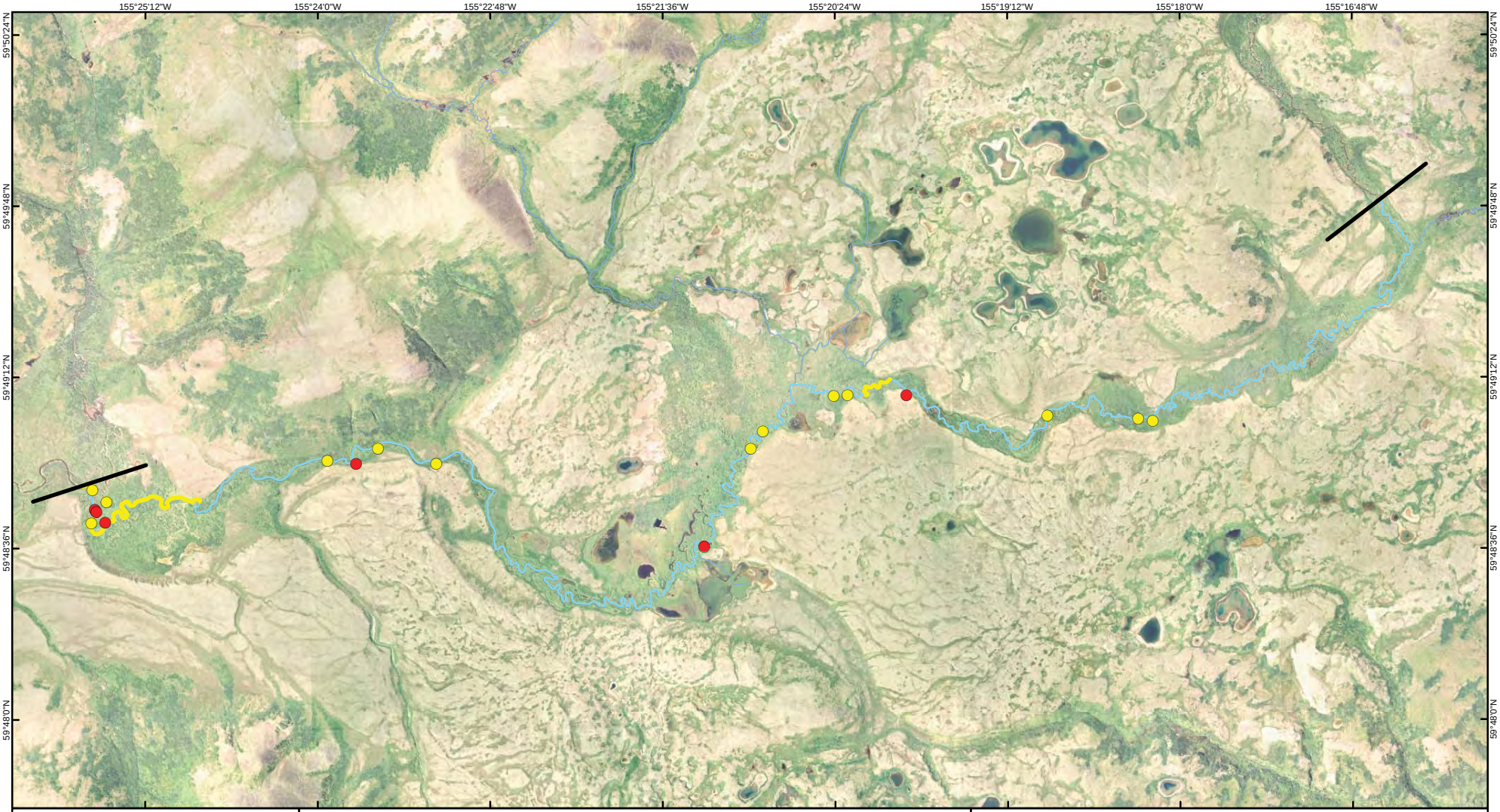
Miles: 0 0.5 1

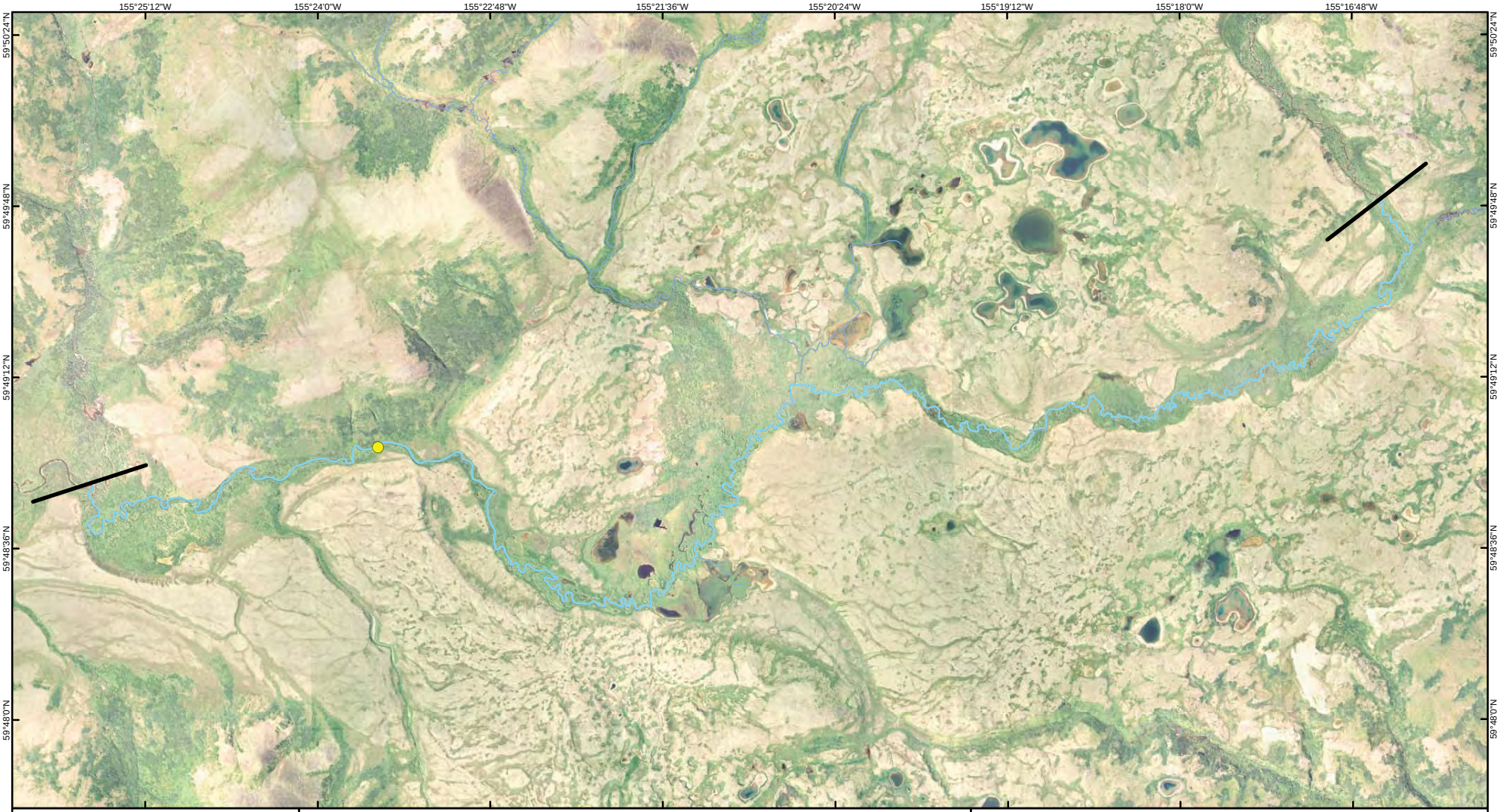
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.9-11
SFK-C
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_SFK-C_Fig-B.9-11_CH_11x17L_10of22_D04.mxd	February 5, 2011
	Author: RDI - MRA


155°25'12"W
155°24'0"W
155°22'48"W
155°21'36"W
155°20'24"W
155°19'12"W
155°18'0"W
155°16'48"W
59°50'24"N
59°49'48"N
59°49'12"N
59°48'36"N
59°48'0"N
Kokhanok
Kokhanok
Kokhanok


155°25'12"W
155°24'0"W
155°22'48"W
155°21'36"W
155°20'24"W
155°19'12"W
155°18'0"W
155°16'48"W
59°50'24"N
59°49'48"N
59°49'12"N
59°48'36"N
59°48'0"N
Kokhanok
Kokhanok
Kokhanok

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.10
SOUTH FORK KOKTULI RIVER REACH D (SFK-D)

Table B.10-1.
List of species found in SFK-D.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
coho salmon	*Oncorhynchus kisutch*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
northern pike	*Esox lucius*
sculpin [a]	*Cottus* sp.

[a] Identified to genus, may include slimy sculpin and coastrange sculpin

Table B.10-2.
Channel morphology data from areas sampled within SFK-D.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
SFK-D-SA1	7/11/04	narrow shallow contained channel	NA	7.3	NA	NA
SFK-D-SA2[e]	7/12/04	narrow shallow contained channel	NA	6.9	NA	NA
SFK-D-SA3	7/12/04	narrow shallow contained channel	0.5	10.9	11.9	0.4
2004 SFK-D TOTAL			0.5	7.9	11.9	0.4

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not available.

[e] Sample Area was comprised of 51% narrow shallow contained channel and 49% beaver dam/pond channel.

Table B.10-3.
Percent composition of primary habitat types from areas sampled within SFK-D in 2004.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a]	Total Wetted Area (m^2)[a]	Side Channel (% of Total Wetted Area)	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK-D-SA1	352.4	7.3	2572.5	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	2 / 2	98 / 98	NA
SFK-D-SA2	773.3	6.9	5322.0	0	0	0 / 0	49 / 49	0 / 0	NA	NA	NA	0 / 0	11 / 11	40 / 40	NA
SFK-D-SA3	737.3	10.9	8036.6	11	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	91 / 91	8 / 8	NA
2004 SFK-D TOTAL	1863.0	7.9	15931.1	6	0	0 / 0	21 / 17	0 / 0	NA	NA	NA	0 / 0	39 / 48	40 / 35	NA

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

Table B.10-4.
Descriptive characteristics of primary habitat units from areas sampled within SFK-D in 2004.

Sample Area (SA)	Dominant Substrate[a]	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK-D-SA1	NA	NA	NA	0	NA
SFK-D-SA2	NA	NA	NA	0	NA
SFK-D-SA3	gravel	NA	NA	0	alder shrub/willow shrub
2004 SFK-D TOTAL	gravel	NA	NA	0	alder shrub/willow shrub

[a] NA=data not available.

Table B.10-5.
Summary of 2004 pool habitat data from areas sampled in SFK-D.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK-D-SA1	0.35	0	7	7	0	2.0	2.0	0	317.7	317.7	45.4	0.6	0.9
SFK-D-SA2	0.77	0	9	9	0	1.2	1.2	0	495.4	495.4	55.0	0.6	0.5
SFK-D-SA3	0.74	0	1	1	0	0.1	0.1	0	45.0	45.0	45.0	0.4	0
2004 SFK-D Total	1.86	0	17	17	0	0.9	0.9	0	858.1	858.1	50.5	0.6	0.4

[a] A primary pool was defined as one that occupies 50% or more of the channel width.
[b] A secondary pool was defined as one that occupies <50% of the channel width.

Table B.10-6.
2004-2008 number of fish observations by lifestage within SFK-D mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

			Adult				Juvenile				Juvenile/Adult[a]		
Species	Year	Method	May	Jul	Aug	Subtotal	Jul	Aug	Oct	Subtotal	Jul	Subtotal	Total
Chinook salmon	2008	Snorkel						3		3			3
coho salmon	2004	Electrofishing					35			35			35
	2008	Snorkel						4		4			4
arctic grayling	2004	Electrofishing		1		1	222			222	7	7	230
		Visual Observation									3	3	3
	2005	Angling	7			7							7
	2006	Electrofishing							1	1			1
	2007	Angling	1			1							1
	2008	Seine						17		17			17
		Snorkel						3		3			3
Dolly Varden	2008	Snorkel						12		12			12
Salmonid sp.	2008	Snorkel						5		5			5
northern pike	2004	Electrofishing					13			13			13
		Visual Observation					15			15			15
	2007	Angling	1			1							1
	2008	Snorkel						1		1			1
sculpin sp.	2004	Electrofishing									109	109	109
	2008	Seine			1	1		1		1			2

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

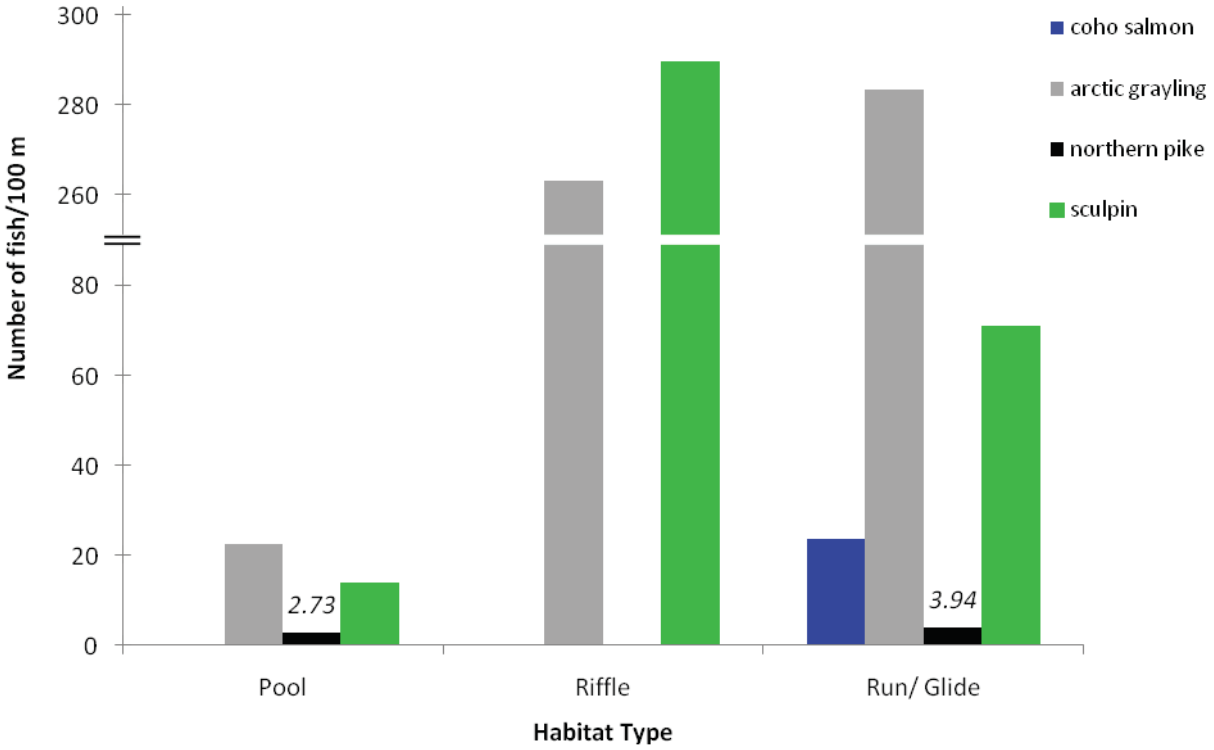


Figure B.10-8.
2004-2007 fish abundance by habitat type within mainstem SFK-D.

Table B.10-7.
SFK-D fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Juveniles	Total Fish Count	Fish Abundance (number/100 m)
10/31/2006	SFK-06-WT2	arctic grayling	electrofishing	30	1	1	3.3

Table B.10-8.
2008 fish observations by method at mainstem index sites located within SFK-D.

Index Site	Species	Method	Adult	Juvenile	Total
SFK51.96	Chinook salmon	snorkel		3	3
	coho salmon	snorkel		4	4
	arctic grayling	beach seine		17	17
		snorkel		3	3
	Dolly Varden	snorkel		12	12
	Salmonid sp.	snorkel		5	5
	northern pike	snorkel		1	1
	sculpin sp.	beach seine	1	1	2
SFK51.96 Total			**1**	**46**	**47**

Note: Blank cells indicate no data were collected for that record.

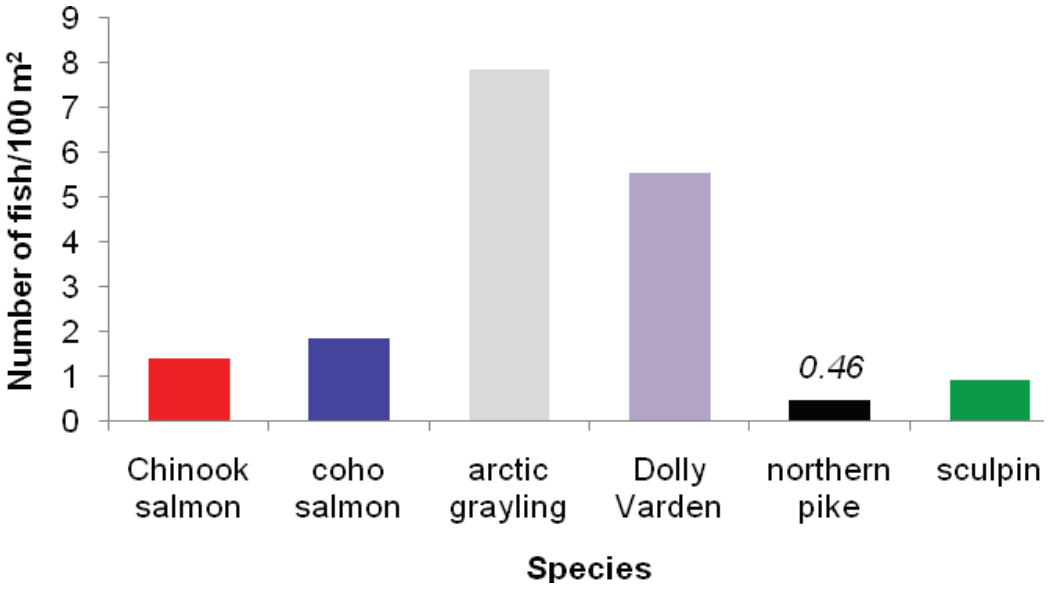
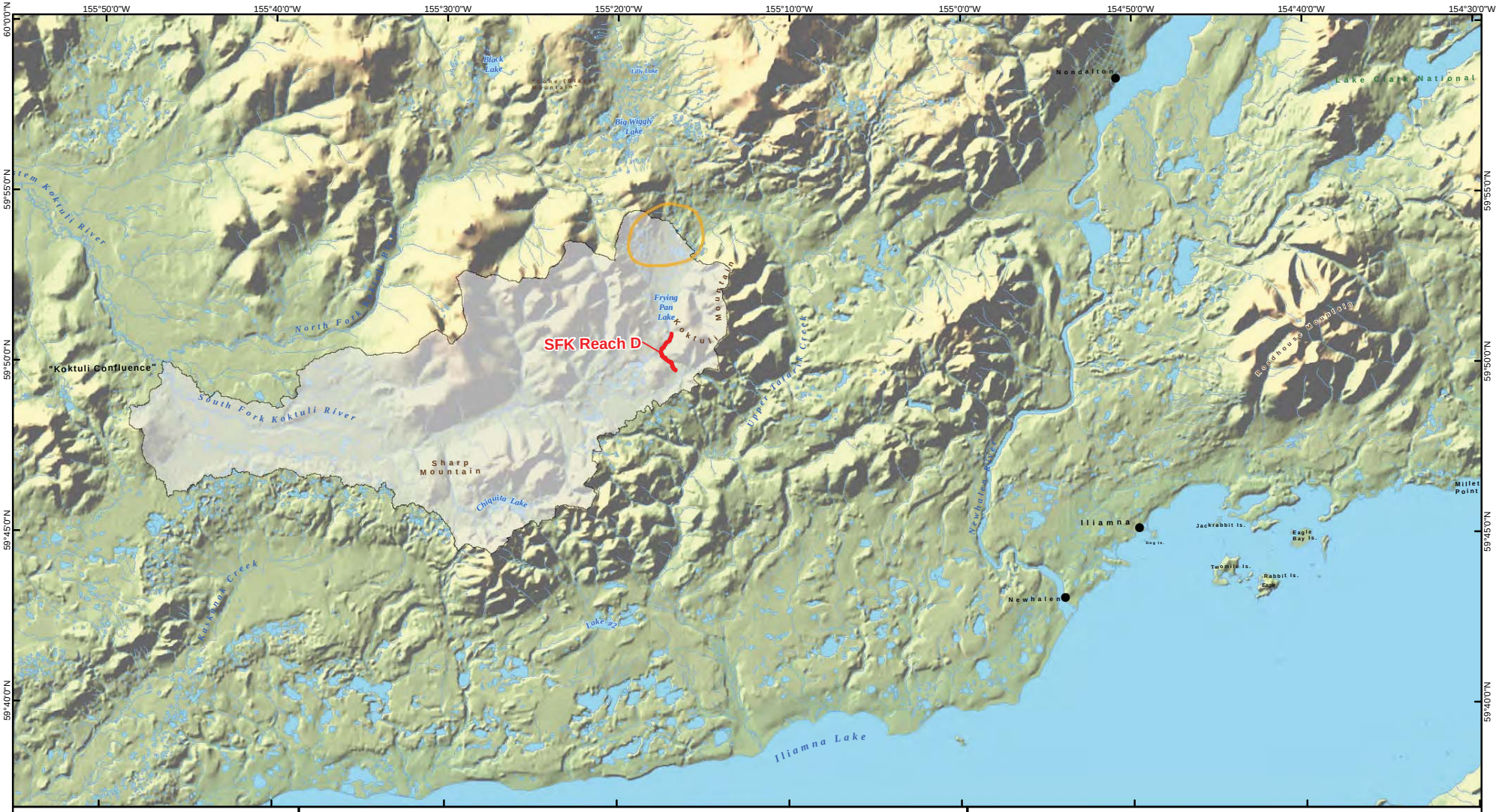
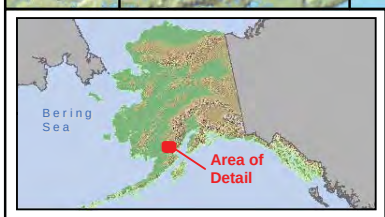


Figure B.10-10.
2008 fish density in pool habitat at mainstem index site (RKm 51.96) within SFK-D. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach SFK Reach D

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

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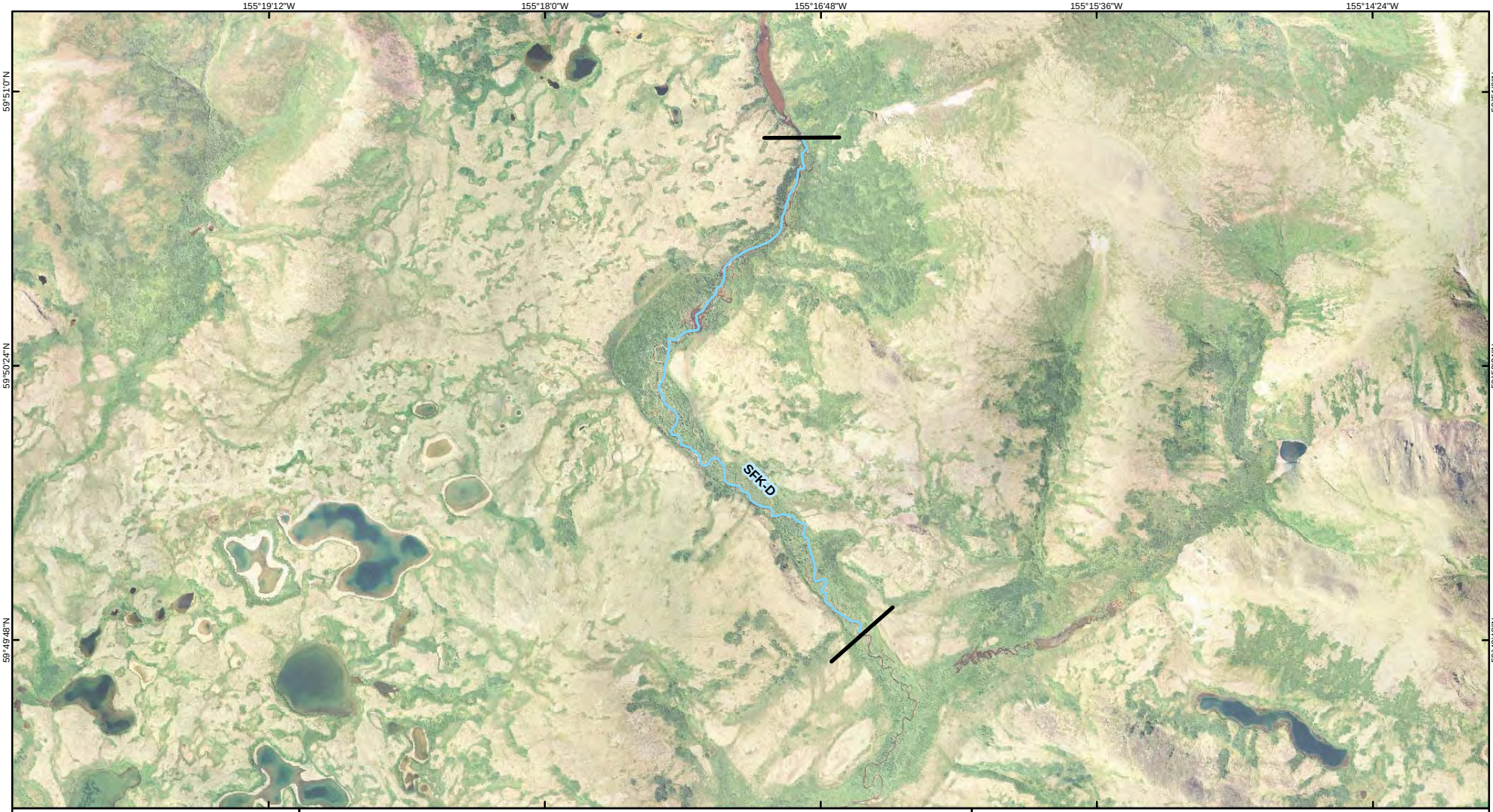
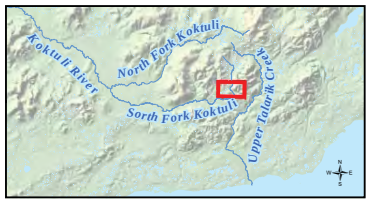
Figure B.10-1a
Reach SFK-D

RDI_R2_OverviewLocator_SFK-D_Fig-B.10-1a_11x17L_10of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.3 0.6

Kilometers
0 0.3 0.6

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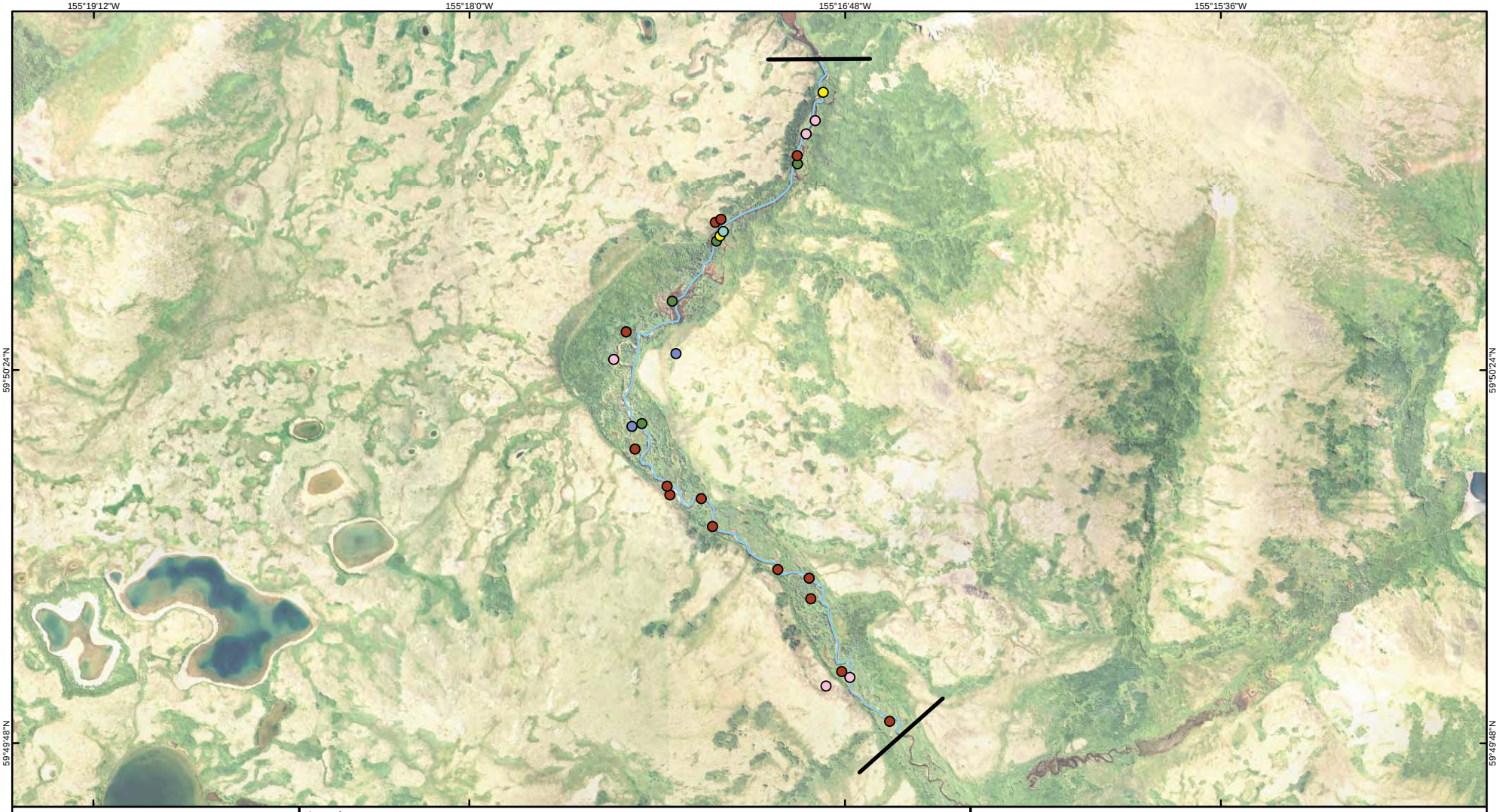
Figure B.10-1b
SFK-D
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_SFK-D_Fig-B.10-1b_11x17L_10of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach

Tributary Streams

Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.2 0.4

Kilometers
0 0.2 0.4

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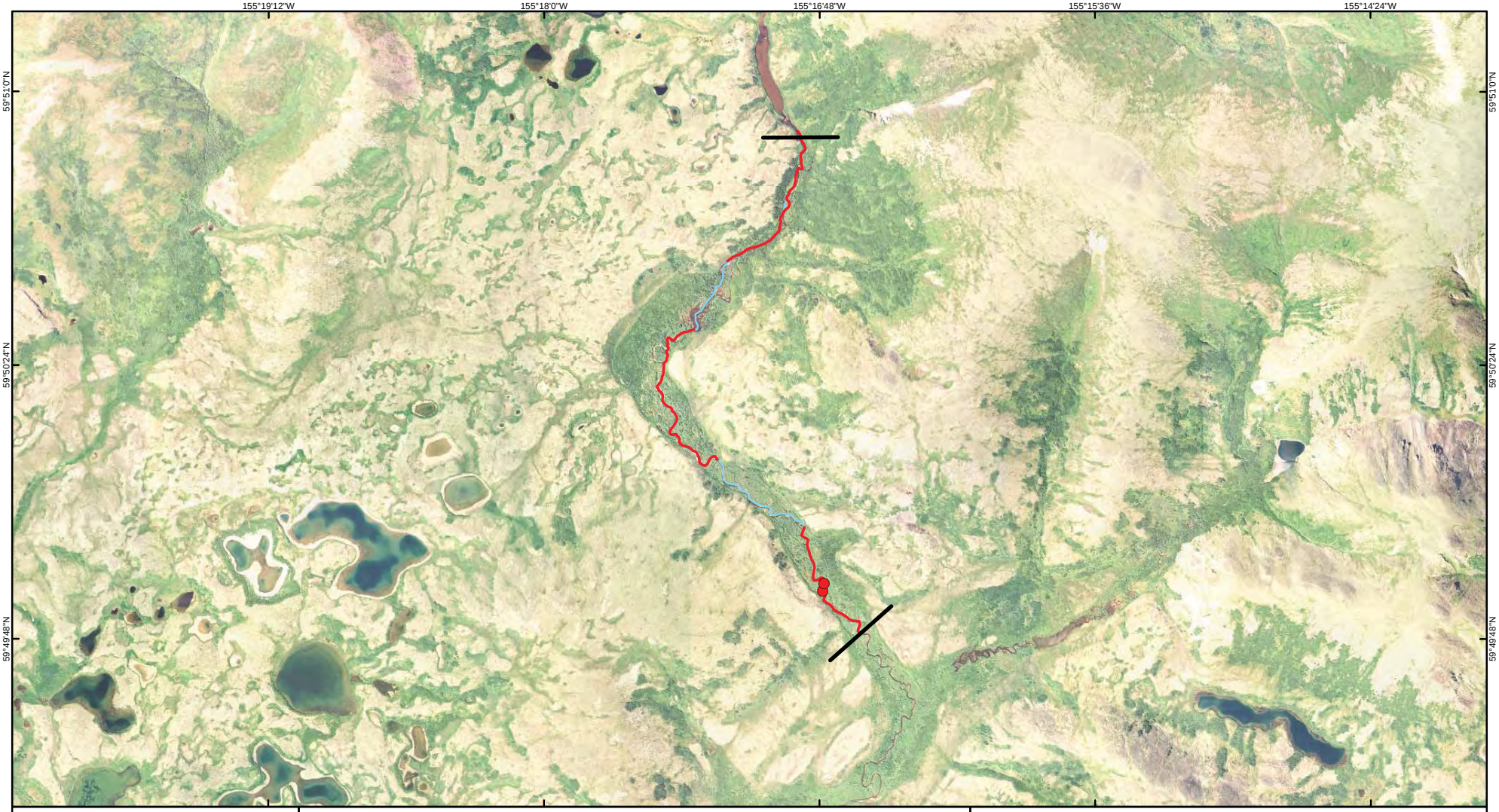
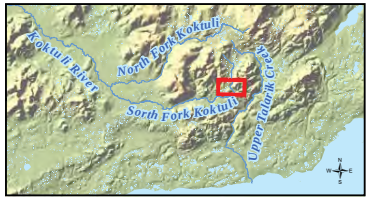
Figure B.10-2
SFK-D
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_SFK-D_Fig-B.10-2_11x17L_10of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

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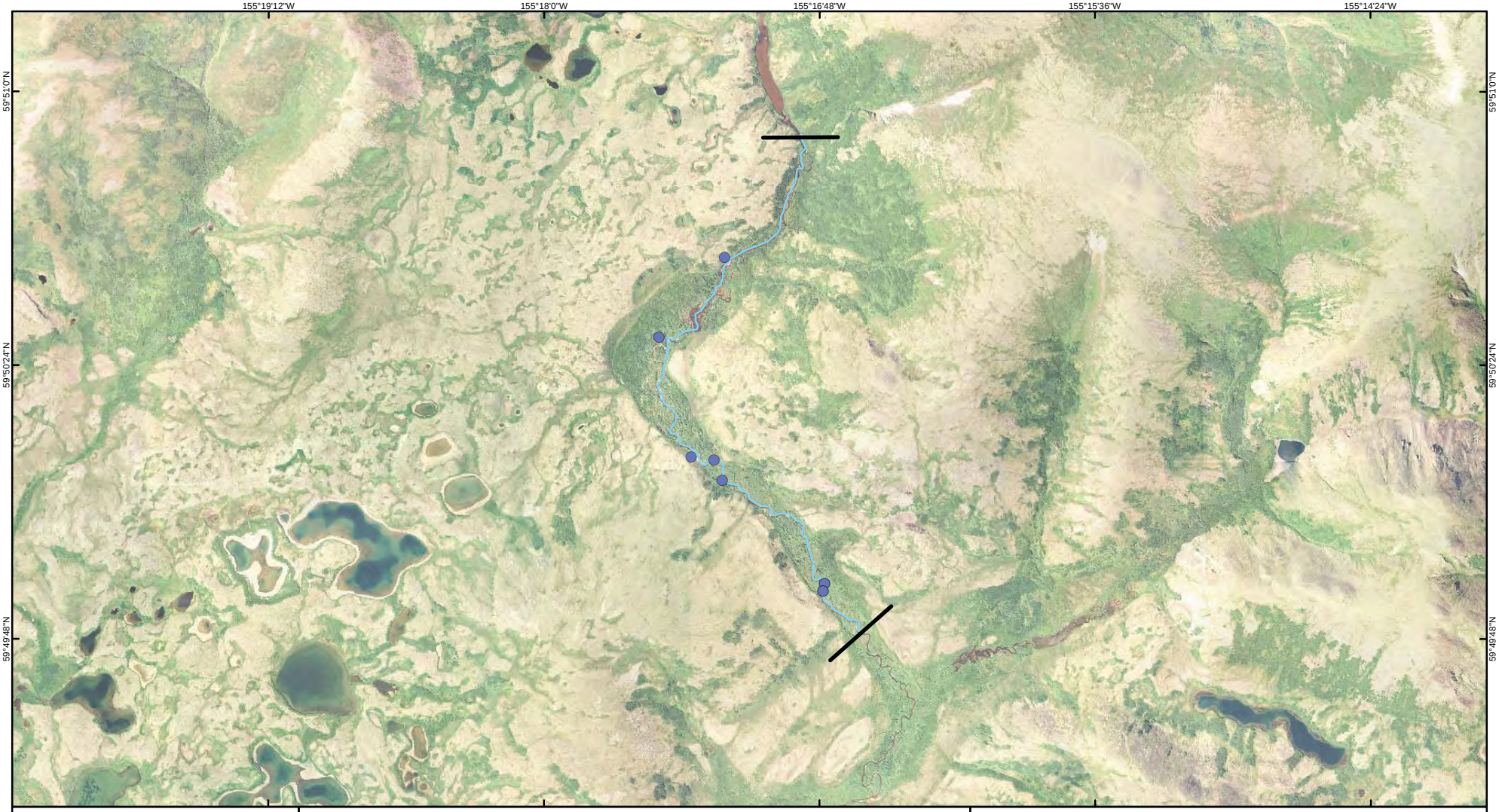
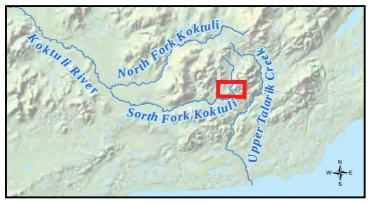
Figure B.10-3
SFK-D
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_SFK-D_Fig-B.10-3_11x17L_10of19_D02.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.3 0.6

Kilometers
0 0.3 0.6

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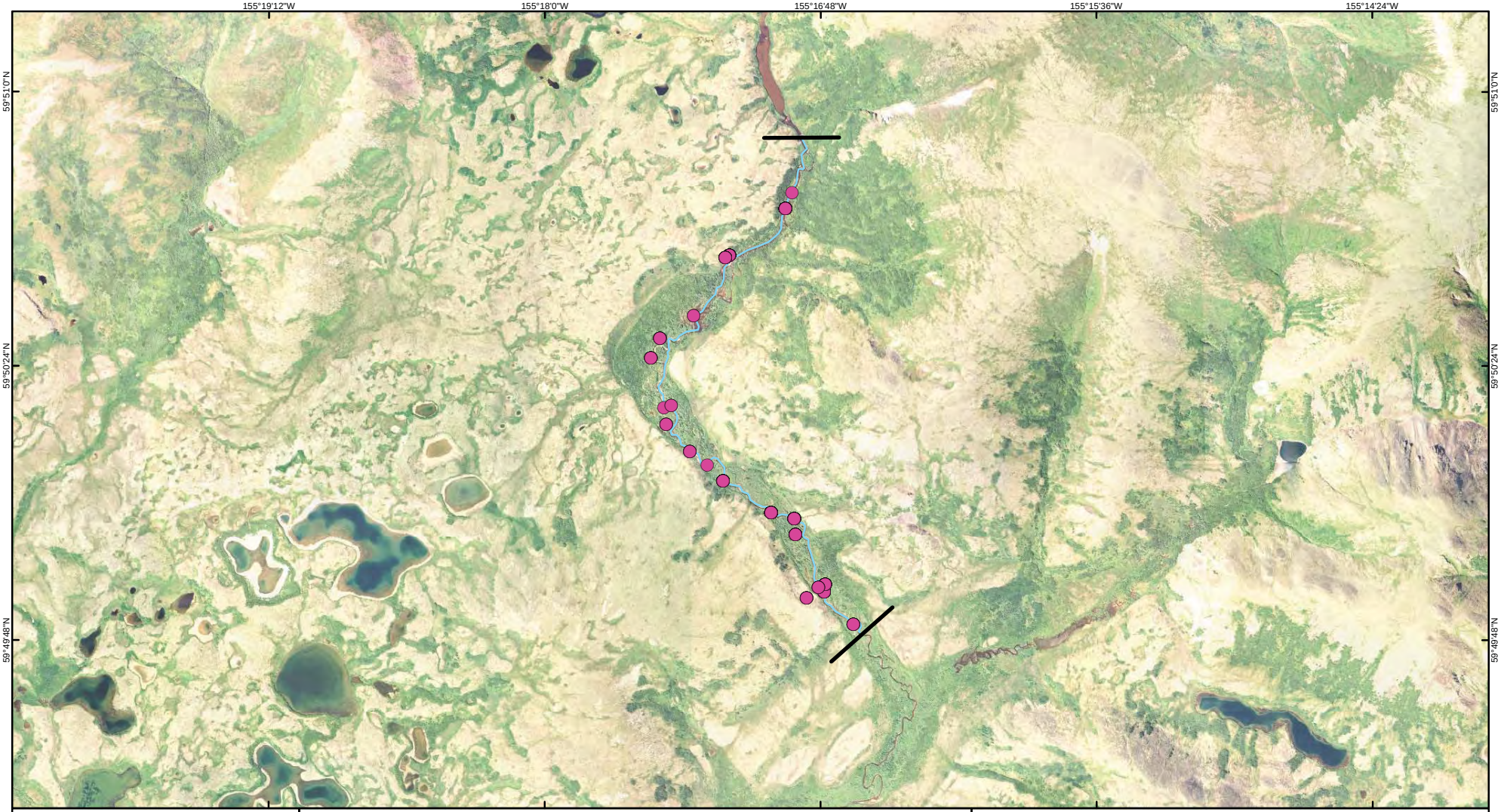
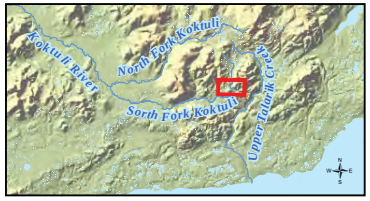
Figure B.10-4
SFK-D
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_SFK-D_Fig-B.10-4_11x17L_10of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

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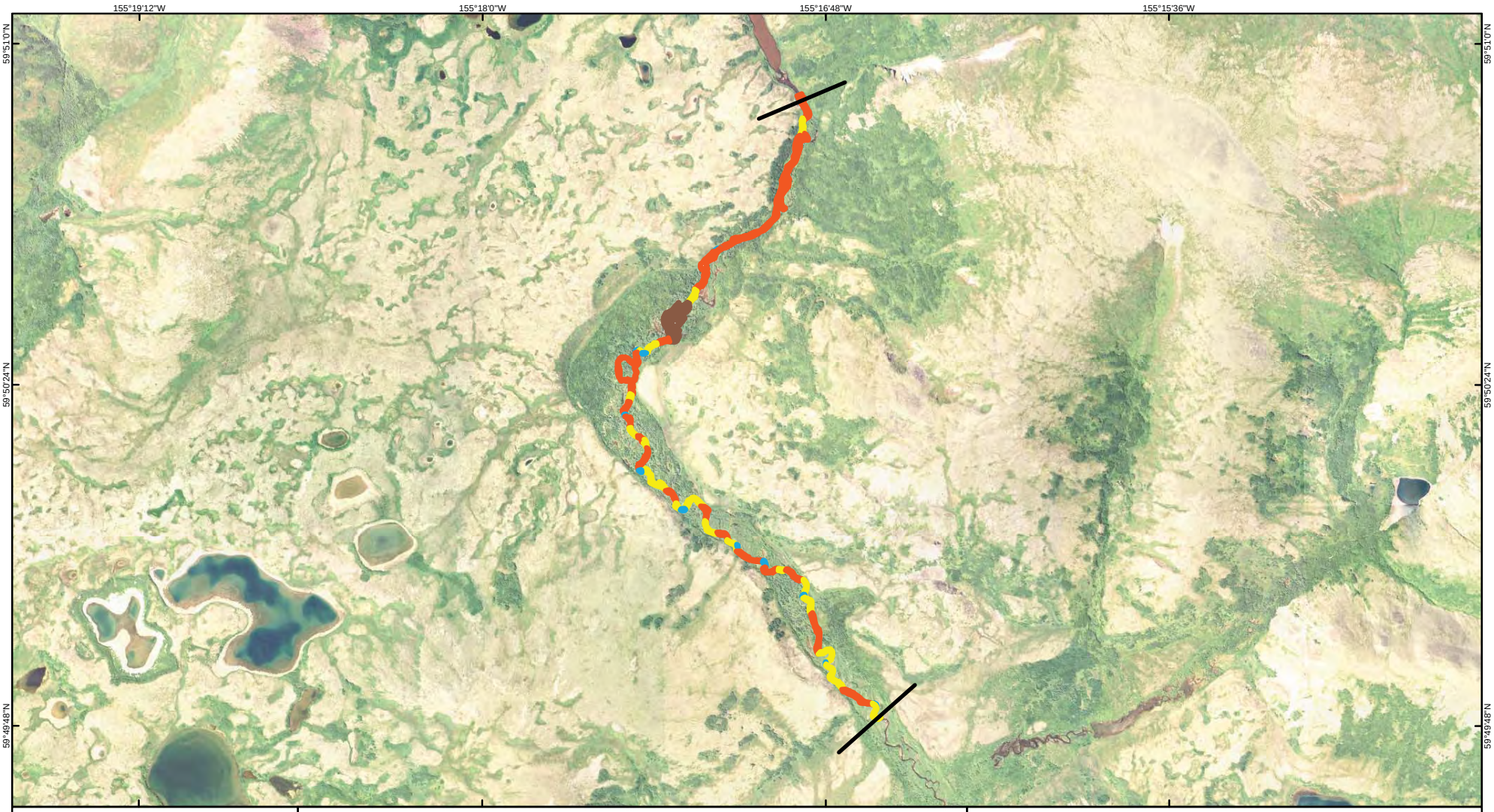
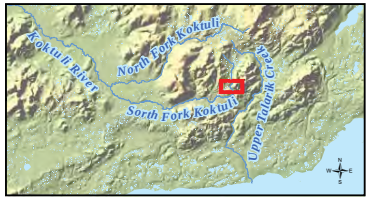
Figure B.10-5
SFK-D
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_SFK-D_Fig-B.10-5_11x17L_10of19_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.2 0.4

Kilometers: 0 0.2 0.4

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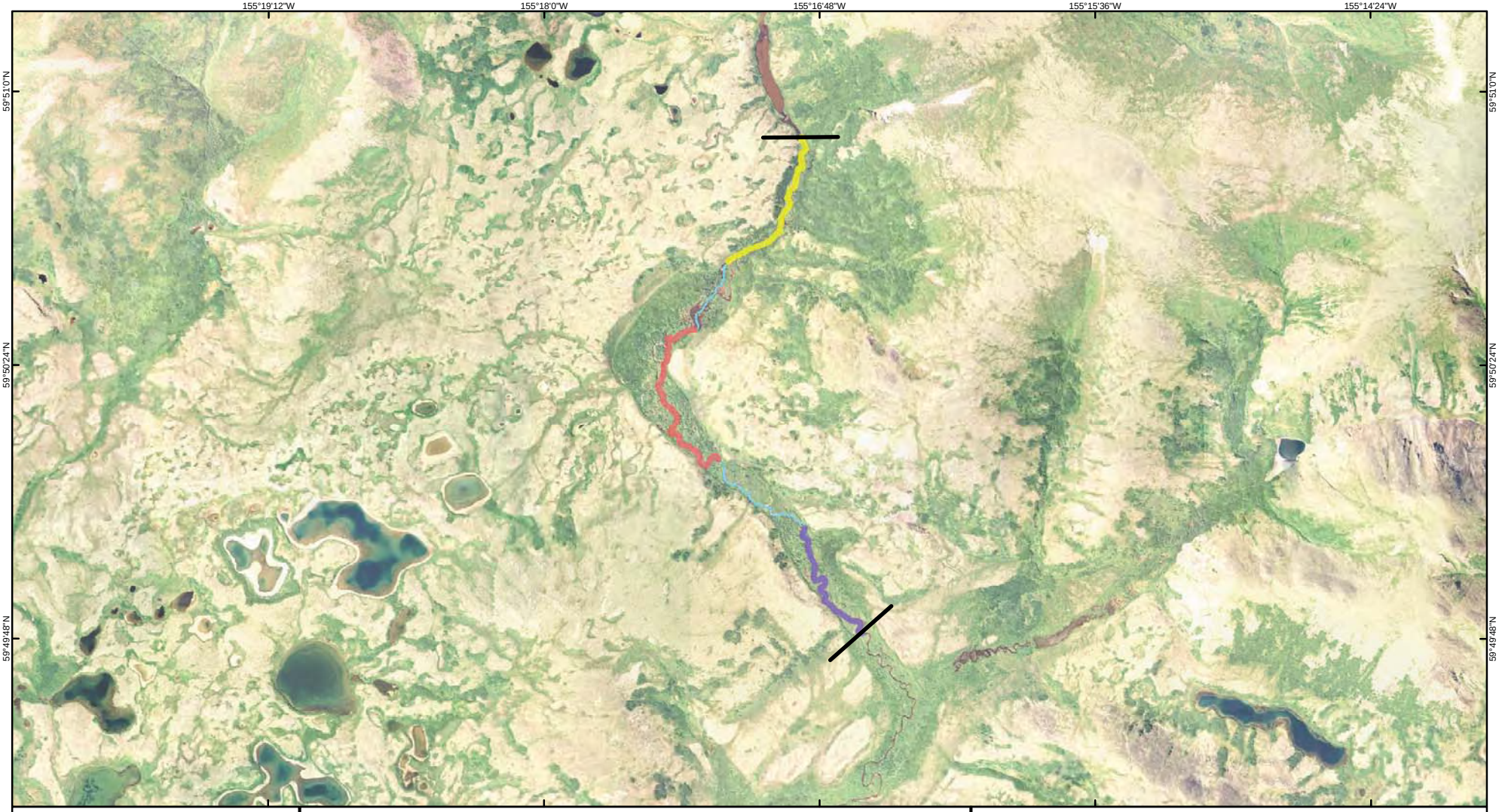
Figure B.10-6
SFK-D
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_SFK-D_Fig-B.10-6_11x17L_10of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- SFK-D-SA1
- SFK-D-SA2
- SFK-D-SA3
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

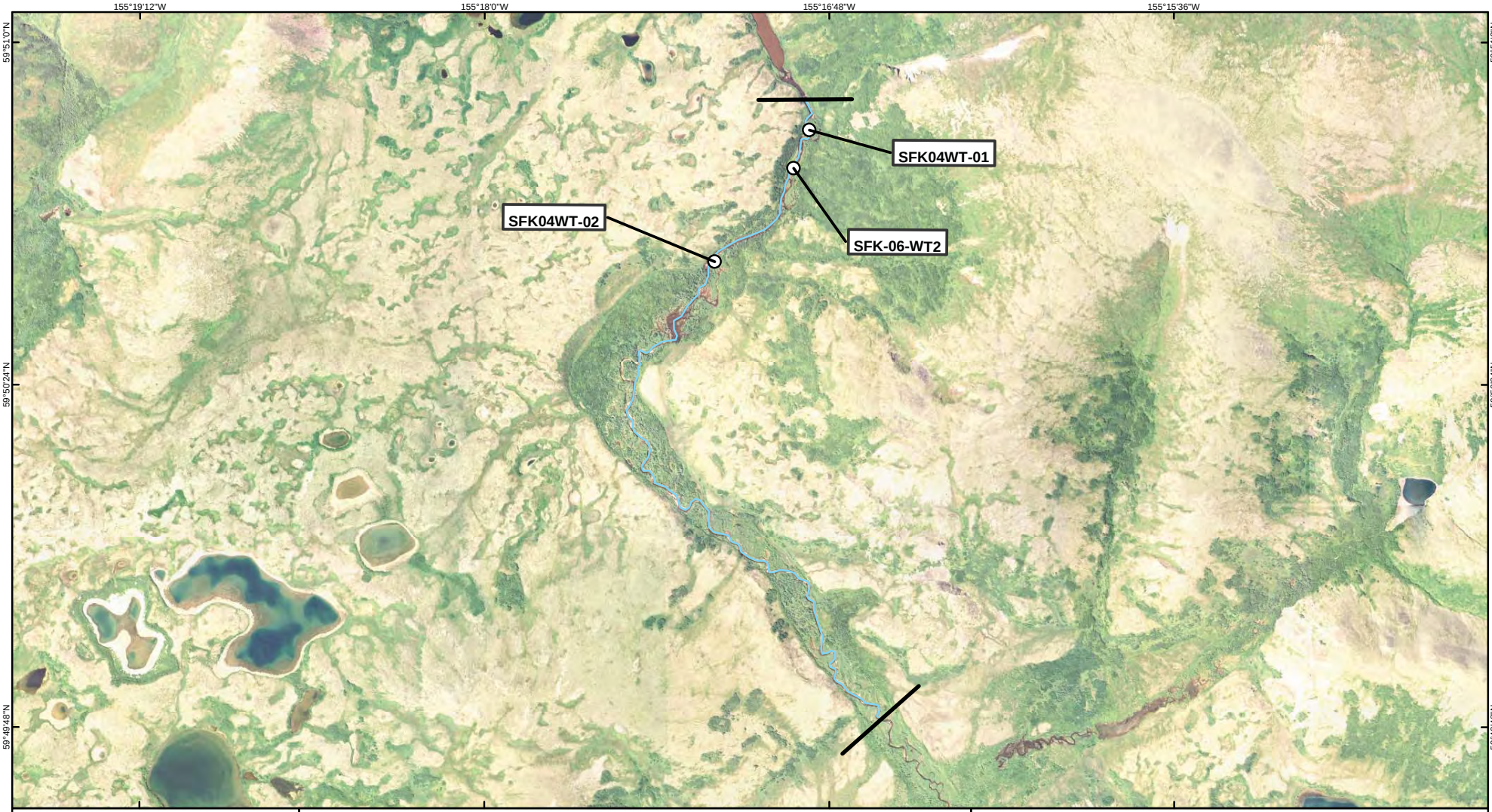
Miles: 0 0.3 0.6

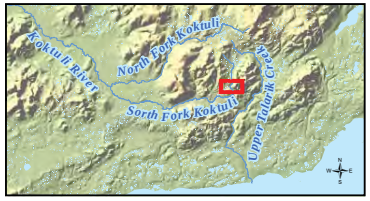
Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.10-7
SFK-D
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_SFK-D_Fig-B.10-7_11x17L_10of19_D02.mxd	February 21, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.2 0.4

Kilometers: 0 0.2 0.4

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Figure B.10-9
SFK-D
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_SFK-D_Fig-B.10-9_11x17L_10of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.11
SOUTH FORK KOKTULI RIVER REACH E (SFK-E)

Table B.11-1.
List of species found in SFK-E.

Common Name	Scientific Name
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
northern pike	*Esox lucius*
sculpin [a]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*

[a] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.11-2.
Channel morphology data from areas sampled within SFK-E and tributaries 1.310, 1.330, 1.340, 1.350, 1.360, 1.370, 1.400 and 1.440.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
SFK-E-SA1	8/13/08	narrow placid flow channel	1.3	6.3	7.8	0.9
SFK-E-SA2	8/15/08	narrow placid flow channel	1.5	5.5	6.8	0.7
SFK-E-SA3	8/15/08	narrow placid flow channel	1.5	3.3	4.2	0.7
SFK-E-SA4	8/16/08	narrow placid flow channel	1.3	1.6	3.1	0.7
SFK-E-SA5	8/17/08	narrow low-gradient floodplain channel	2.8	1.5	2.5	0.6
SFK-E REACH TOTAL			1.8	3.5	4.7	0.7
SFK 1.310-SA1	6/28/08	beaver dam/pond channel	1.7	33.8	44.2	1.5
SFK 1.310-SA2	9/20/08	narrow placid flow channel	1.5	0.9	2.0	0.4
SFK 1.310-SA3	9/19/08	beaver dam/pond channel	1.3	1.1	2.3	0.6
SFK 1.310-SA4	9/20/08	beaver dam/pond channel	2.0	0.7	2.0	0.2
SFK 1.310-SA6	9/20/08	beaver dam/pond channel	1.5	0.9	1.8	0.5
SFK 1.310-SA7	6/28/08	narrow mixed control channel	2.8	3.3	6.6	1.0
SFK 1.310-SA7/8[e]	6/23/04	narrow shallow contained channel	0.8	3.5	4.4	0.5
SFK 1.310-SA8	6/29/08	narrow mixed control channel	6.0	3.0	5.3	0.6
SFK 1.310-SA9	6/30/08	narrow mixed control channel	2.0	3.2	4.5	0.7
SFK 1.310-SA10	6/30/08	narrow shallow contained channel	4.0	2.1	4.0	0.4
SFK 1.310-SA11	8/10/08	deeply incised upper valley channel	12.1	0.9	2.2	0.4
SFK 1.310-SA12	9/5/08	shallowly incised very high gradient channel	23.0	0.5	1.5	0.3
SFK 1.310.10-SA1	8/12/08	moderate width mixed control channel	5.7	1.3	2.1	0.6
SFK 1.310.10.10-SA1	9/5/08	deeply incised muskeg channel	18.0	0.7	1.2	0.3
SFK 1.310.15-SA1	9/4/08	narrow mixed control channel	4.0	1.2	2.4	0.5
SFK 1.310.20-SA1	8/11/08	moderate width mixed control channel	4.3	1.3	1.7	0.5
SFK 1.310.20-SA2	8/11/08	moderate width mixed control channel	4.8	1.0	1.6	0.6
SFK 1.310.20.05-SA1	9/22/08	deeply incised muskeg channel	8.0	1.1	3.0	0.4
SFK 1.310.20.05-SA2	9/22/08	deeply incised muskeg channel	18.0	0.8	2.6	0.8
SFK 1.310.20.20-SA1	9/5/08	shallowly incised very high gradient channel	24.0	1.1	3.0	0.5

Table B.11-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
SFK 1.310.30-SA1	8/9/08	shallowly incised very high gradient channel	16.5	0.7	5.7	0.3
SFK 1.310.30.10-SA1	8/10/08	shallowly to moderately incised footslope channel	14.0	0.8	1.6	0.5
2004 SFK 1.310 TOTAL			0.8	3.5	4.4	0.5
2008 SFK 1.310 TOTAL			7.2	3.5	5.6	0.6
SFK 1.330-SA1	6/19/04	narrow placid flow channel	0.7	1.6	1.8	0.8
SFK 1.330-SA1	6/26/08	beaver dam/pond channel	1.0	2.0	3.4	0.9
SFK 1.330-SA2	6/27/08	beaver dam/pond channel	2.2	2.5	4.2	0.7
SFK 1.330-SA2/3[f]	6/19/04	narrow placid flow channel	NA	NA	NA	NA
SFK 1.330-SA3	6/28/08	narrow mixed control channel	3.8	1.6	2.9	0.8
SFK 1.330-SA4	6/29/08	narrow shallow contained channel	7.5	1.7	2.4	0.6
SFK 1.330-SA6	6/19/04	narrow shallow contained channel	4.5	NA	NA	NA
SFK 1.330.05-SA1	6/30/08	narrow placid flow channel	2.2	1.7	2.8	0.7
SFK 1.330.05-SA2	7/1/08	narrow shallow contained channel	4.7	1.6	1.6	0.7
2004 SFK 1.330 TOTAL			2.6	1.6	1.8	0.8
2008 SFK 1.330 TOTAL			3.3	1.9	2.9	0.7
SFK 1.340-SA1[g]	6/18/04	narrow placid flow channel	NA	NA	NA	NA
SFK 1.340-SA1	6/27/08	beaver dam/pond channel	0.3	1.6	1.4	0.6
SFK 1.340-SA2	6/30/08	narrow mixed control channel	0	3.0	4.6	0.7
SFK 1.340-SA3	7/2/08	narrow mixed control channel	2.1	1.3	2.9	0.6
SFK 1.340-SA4	8/26/08	narrow mixed control channel	1.0	0.9	1.6	0.5
SFK 1.340.40-SA1	9/3/08	narrow mixed control channel	2.0	2.0	5.6	0.6
SFK 1.340.40-SA2	9/3/08	narrow mixed control channel	2.2	1.3	3.5	0.8
SFK 1.340.40.20-SA1	9/4/08	narrow mixed control channel	2.5	1.1	1.5	0.5
2004 SFK 1.340 TOTAL			NA	NA	NA	NA
2008 SFK 1.340 TOTAL			1.6	1.6	3.1	0.6
SFK 1.350-SA1	8/7/08	narrow placid flow channel	2.0	1.1	1.8	0.5

Table B.11-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
SFK 1.350-SA2	8/9/08	shallowly to moderately incised footslope channel	12.5	1.4	2.3	0.4
SFK 1.350 TOTAL			5.5	1.2	2.0	0.5
SFK 1.360-SA1	8/22/08	narrow low-gradient floodplain channel	1.5	0.7	2.6	0.6
SFK 1.360-SA2	8/23/08	moderate width mixed control channel	3.8	2.1	3.3	0.5
SFK 1.360-SA3	8/25/08	shallowly to moderately incised footslope channel	6.0	2.1	3.1	0.7
SFK 1.360-SA4	9/4/08	narrow mixed control channel	5.8	1.4	2.8	0.5
SFK 1.360.01-SA1	8/27/08	narrow mixed control channel	5.7	1.0	2.7	0.5
SFK 1.360.10-SA1	8/25/08	deeply incised upper valley channel	15.0	1.1	2.0	0.6
SFK 1.360.10-SA2	8/25/08	narrow mixed control channel	5.0	0.9	1.9	0.5
SFK 1.360.10-SA3	8/26/08	shallowly to moderately incised footslope channel	12.0	1.1	2.5	0.7
SFK 1.360.10.10-SA1	9/4/08	narrow mixed control channel	2.5	0.8	1.9	0.4
SFK 1.360 TOTAL			6.0	1.3	2.7	0.5
SFK 1.370-SA1 / TOTAL	8/13/08	narrow placid flow channel	1.0	3.0	3.0	0.5
SFK 1.400-SA1 / TOTAL	8/22/08	shallowly incised muskeg channel	4.8	1.1	2.7	0.4
SFK 1.440-SA1 / TOTAL	9/21/08	narrow shallow contained channel	5.0	0.6	1.3	0.3

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not available.

[e] SFK 1.310-SA7/8 (2004) was comprised of 75% SA7 and 25% SA8.

[f] SFK 1.330-SA2/3 (2004) was comprised of 70% SA2 and 30% SA3.

[g] Sample Area was comprised of 63% narrow placid flow channel and 37% beaver dam/pond channel.

Table B.11-3.
Percent composition of primary habitat types from areas sampled within SFK-E and tributaries 1.310, 1.320, 1.330, 1.340, 1.350, 1.360, 1.370, 1.380, 1.400, and 1.440. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK-E-SA1	2522.4	6.7	16796.5	0	0	7 / 3	0 / 0	0 / 0	0	0	0 / 0	30 / 31	4 / 4	59 / 62	0 / 0
SFK-E-SA2	405.0	4.6	1876.6	0	0	5 / 3	0 / 0	0 / 0	0	0	0 / 0	15 / 14	11 / 8	69 / 75	0 / 0
SFK-E-SA3	903.3	4.1	3746.6	0	0	7 / 4	0 / 0	0 / 0	0	0	0 / 0	3 / 3	14 / 11	76 / 82	0 / 0
SFK-E-SA4	1172.5	1.9	2196.9	6	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	13 / 15	73 / 71	13 / 14	0 / 0
SFK-E-SA5	4122.8	5.9	24363.0	6	0	1 / 0	9 / 25	4 / 1	0	0	5 / 36	4 / 1	61 / 14	13 / 5	3 / 18
SFK-E TOTAL	9126.0	5.4	48979.6	4	0	3 / 2	4 / 12	2 / 0	0	0	2 / 18	13 / 13	40 / 13	35 / 34	1 / 9
SFK 1.310-SA1	1378.2	23.4	32240.2	0	20.6	0 / 0	45 / 89	0 / 0	0	0	0 / 0	6 / 1	31 / 9	17 / 1	0 / 0
SFK 1.310-SA2	444.3	1.1	509.5	0	100	0 / 1	4 / 18	0 / 0	0	0	0 / 0	13 / 20	51 / 35	32 / 26	0 / 0
SFK 1.310-SA3	553.5	2.7	1513.9	0	100	0 / 0	35 / 72	0 / 0	0	0	0 / 0	5 / 2	20 / 7	40 / 19	0 / 0
SFK 1.310-SA4	222.7	4.8	1066.7	0	99.8	22 / 5	34 / 80	0 / 0	0	0	0 / 0	6 / 2	22 / 5	17 / 9	0 / 0
SFK 1.310-SA5	112.7	2.4	264.9	0	100	8 / 3	92 / 97	0 / 0	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.310-SA6	41.8	1.1	45.4	0	100	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	0 / 0	100 / 100	0 / 0
SFK 1.310-SA7	1046.8	4.9	5085.0	1	0	0 / 0	5 / 25	3 / 2	0	0	0 / 0	0 / 0	76 / 64	16 / 9	0 / 0
SFK 1.310-SA7/8[d,e]	1133.0	3.5	3952.6	4	0	1 / 1	0 / 0	24 / 24	NA	NA	NA	0 / 0	65 / 65	10 / 10	NA
SFK 1.310-SA8	591.0	3.4	1998.5	0	0	0 / 0	0 / 0	70 / 72	0	0	0 / 0	0 / 0	30 / 28	0 / 0	0 / 0
SFK 1.310-SA9	1061.0	2.6	2737.2	0	0	0 / 0	0 / 0	5 / 4	0	0	0 / 0	0 / 0	95 / 96	0 / 0	0 / 0
SFK 1.310-SA10	1141.0	1.7	1931.1	0	0	0 / 0	0 / 0	54 / 49	0	0	0 / 0	0 / 0	46 / 51	0 / 0	0 / 0
SFK 1.310-SA11	505.1	1.1	575.5	0	0	0 / 0	0 / 0	57 / 61	0	0	0 / 0	3 / 4	38 / 34	1 / 1	0 / 0
SFK 1.310-SA12	217.7	0.7	152.9	0	0	0 / 0	0 / 0	96 / 96	0	0	0 / 0	2 / 2	1 / 1	1 / 1	0 / 0
SFK 1.310-SA13	53.0	0.5	24.4	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.310.05-SA1	52.0	1.7	90.5	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	19 / 17	81 / 83	0 / 0
SFK 1.310.10-SA1	1247.1	1.2	1472.7	1	0	0 / 0	0 / 0	26 / 23	0	0	0 / 0	2 / 2	72 / 75	0 / 0	0 / 0
SFK 1.310.10.10-SA1	125.7	0.6	69.6	0	0	0 / 0	0 / 0	33 / 46	0	0	0 / 0	0 / 0	39 / 26	28 / 27	0 / 0
SFK 1.310.15-SA1	574.5	0.7	417.3	0	0	0 / 0	0 / 0	15 / 15	0	0	0 / 0	3 / 3	65 / 64	17 / 18	0 / 0
SFK 1.310.20-SA1	692.5	1.3	900.5	1	0	0 / 0	0 / 0	2 / 2	0	0	0 / 0	4 / 4	82 / 82	13 / 13	0 / 0
SFK 1.310.20-SA2	684.9	1.1	770.3	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	1 / 1	97 / 98	2 / 1	0 / 0
SFK 1.310.20.05-SA1	318.9	0.9	300.3	0	0	0 / 0	0 / 0	97 / 97	0	0	0 / 0	3 / 3	0 / 0	0 / 0	0 / 0
SFK 1.310.20.05-SA2	356.6	0.9	307.9	0	0	0 / 0	0 / 0	99 / 99	0	0	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0
SFK 1.310.20.05.10-SA1	258.8	0.9	225.4	0	0	0 / 0	0 / 0	99 / 100	0	0	0 / 0	1 / 0	0 / 0	0 / 0	0 / 0
SFK 1.310.20.10-SA1	63.0	0.6	40.5	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.310.20.20-SA1	90.0	0.6	51.8	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.310.30-SA1	224.4	1.0	228.5	0	0	0 / 0	0 / 0	32 / 28	0	0	0 / 0	4 / 4	61 / 67	2 / 2	0 / 0
SFK 1.310.30.10-SA1	216.4	0.6	135.0	0	0	0 / 0	0 / 0	55 / 63	0	0	0 / 0	1 / 1	39 / 32	5 / 5	0 / 0
SFK 1.310.30.10.10-SA1	15.4	0.4	6.7	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	100 / 100	0 / 0	0 / 0
SFK 1.310.30.10.20-SA1	11.9	0.5	5.8	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	100 / 100	0 / 0	0 / 0
2004 SFK 1.310 TOTAL	1133.0	3.5	3952.6	4	0	1 / 1	0 / 0	24 / 24	NA	NA	NA	0 / 0	65 / 65	10 / 10	NA
2008 SFK 1.310 TOTAL	12300.8	4.3	53168.2	0	18.9	1 / 0	9 / 61	28 / 9	0	0	0 / 0	2 / 1	52 / 26	9 / 3	0 / 0
SFK 1.320-SA1 / TOTAL	255.2	39.6	9987.5	0	0	1 / 0	59 / 98	0 / 0	0	1	0 / 0	3 / 0	2 / 0	32 / 2	2 / 0

Table B.11-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK 1.330-SA1[d]	203.9	1.6	311.1	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	35 / 32	0 / 0	65 / 68	NA
SFK 1.330-SA1	542.2	2.8	1444.1	0	0	0 / 0	15 / 39	0 / 0	3	0	0 / 0	12 / 10	36 / 26	34 / 25	0 / 0
SFK 1.330-SA2	241.9	18.1	4385.4	0	0	0 / 0	75 / 97	0 / 0	0	0	0 / 0	3 / 0	19 / 2	2 / 0	0 / 0
SFK 1.330-SA2/3[d,f]	206.9	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	6 / NA	0 / NA	94 / NA	NA
SFK 1.330-SA3	454.3	1.8	798.1	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	3 / 3	93 / 93	4 / 4	0 / 0
SFK 1.330-SA4	232.5	2.1	494.5	0	0	2 / 3	0 / 0	55 / 51	0	0	0 / 0	16 / 17	21 / 19	7 / 11	0 / 0
SFK 1.330-SA5	180.0	91.7	16500.0	0	0	0 / 0	100 / 100	0 / 0	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
SFK 1.330-SA6[d]	161.0	NA	NA	NA	0	0 / NA	0 / NA	62 / NA	NA	NA	NA	0 / NA	38 / NA	0 / NA	NA
SFK 1.330.05-SA1	675.8	1.7	1125.9	23	0	4 / 13	0 / 0	1 / 0	0	0	0 / 0	10 / 9	63 / 45	14 / 9	8 / 23
SFK 1.330.05-SA2	415.0	1.6	659.1	0	0	0 / 0	0 / 0	22 / 23	0	0	0 / 0	3 / 2	69 / 68	6 / 7	0 / 0
2004 SFK 1.330 TOTAL	571.8	1.6	311.1	0	0	0 / 0	0 / 0	17 / 0	NA	NA	NA	15 / 32	11 / 0	57 / 68	NA
2008 SFK 1.330 TOTAL	2741.7	9.3	25407.2	1	0	1 / 1	16 / 84	8 / 2	1	0	0 / 0	7 / 2	52 / 9	13 / 2	2 / 1
SFK 1.340-SA1[d]	426.0	NA	NA	NA	0	0 / NA	19 / NA	0 / NA	NA	NA	NA	27 / NA	0 / NA	54 / NA	NA
SFK 1.340-SA1	1552.1	10.6	16478.2	3	0	6 / 15	32 / 76	0 / 0	0	0	0 / 0	8 / 2	30 / 5	20 / 3	4 / 0
SFK 1.340-SA2	1714.1	4.4	7500.0	12	0	1 / 0	14 / 51	29 / 13	0	0	0 / 0	4 / 6	49 / 21	2 / 1	2 / 8
SFK 1.340-SA3	844.0	4.1	3495.7	0	0	4 / 4	29 / 77	15 / 3	0	0	0 / 0	2 / 1	36 / 10	15 / 5	0 / 0
SFK 1.340-SA4	932.7	2.2	1484.8	0	0	1 / 1	9 / 65	6 / 2	0	28	0 / 0	0 / 0	30 / 15	25 / 15	1 / 2
SFK 1.340.40-SA1	555.1	2.9	1588.7	1	0	1 / 0	9 / 44	22 / 5	0	0	0 / 0	14 / 14	24 / 15	30 / 21	0 / 0
SFK 1.340.40-SA2	278.7	23.3	6501.0	0	0	1 / 0	39 / 98	9 / 0	0	0	0 / 0	0 / 0	50 / 2	1 / 0	0 / 0
SFK 1.340.40.20-SA1	110.6	0.6	68.0	0	0	0 / 0	0 / 0	42 / 40	0	0	0 / 0	0 / 0	50 / 46	8 / 14	0 / 0
2004 SFK 1.340 TOTAL	426.0	NA	NA	NA	0	0 / NA	19 / NA	0 / NA	NA	NA	NA	27 / NA	0 / NA	54 / NA	NA
2008 SFK 1.340 TOTAL	5987.3	6.5	37116.4	4	0	3 / 7	20 / 73	14 / 3	0	4	0 / 0	5 / 2	37 / 9	15 / 3	2 / 2
SFK 1.350-SA1	1166.4	1.6	1794.3	1	15.0	6 / 15	2 / 6	0 / 0	0	6	0 / 0	6 / 8	30 / 16	47 / 45	3 / 10
SFK 1.350-SA2	75.5	0.9	70.0	0	0	0 / 0	0 / 0	44 / 37	0	0	0 / 0	0 / 0	56 / 63	0 / 0	0 / 0
SFK 1.350 TOTAL	1241.9	1.6	1864.3	1	14.5	6 / 15	2 / 5	3 / 1	0	6	0 / 0	5 / 7	32 / 18	44 / 44	3 / 9
SFK 1.360-SA1	435.6	4.5	1962.9	1	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	12 / 6	49 / 15	33 / 12	7 / 67
SFK 1.360-SA2	1161.0	6.5	7522.0	0	0	0 / 0	10 / 70	28 / 9	0	0	0 / 0	5 / 1	54 / 19	3 / 1	0 / 0
SFK 1.360-SA3	364.8	1.9	700.7	0	0	0 / 0	0 / 0	36 / 37	0	0	0 / 0	9 / 9	54 / 54	0 / 0	0 / 0
SFK 1.360-SA4	885.7	1.2	1077.2	0	0	1 / 1	0 / 0	18 / 14	0	0	0 / 0	4 / 4	70 / 75	7 / 5	0 / 0
SFK 1.360.01-SA1	503.9	0.8	414.3	0	0	0 / 0	0 / 0	12 / 13	0	0	0 / 0	0 / 0	87 / 86	1 / 1	0 / 0
SFK 1.360.10-SA1	321.4	1.5	490.2	0	0	0 / 0	0 / 0	46 / 48	0	0	0 / 0	4 / 4	48 / 45	2 / 2	0 / 0
SFK 1.360.10-SA2	357.8	1.2	412.5	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	1 / 1	99 / 99	0 / 0	0 / 0
SFK 1.360.10-SA3	425.5	1.6	567.7	4	0	0 / 0	0 / 0	0 / 0	0	15	0 / 0	1 / 0	83 / 98	2 / 2	0 / 0
SFK 1.360.10.10-SA1	213.2	0.9	192.7	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	78 / 76	22 / 24	0 / 0
SFK 1.360.10.10-SA2	56.4	0.7	33.3	0	0	0 / 0	0 / 0	0 / 0	0	15	0 / 0	0 / 0	38 / 43	47 / 57	0 / 0
SFK 1.360 TOTAL	4725.2	2.9	13373.6	0	0	0 / 0	2 / 39	17 / 10	0	2	0 / 0	4 / 3	67 / 34	7 / 3	1 / 10
SFK 1.370-SA1 / TOTAL	783.8	58.9	43196.1	0	0	5 / 0	0 / 0	0 / 0	6	0	78 / 99	0 / 0	6 / 0	3 / 0	1 / 0
SFK 1.380-SA1 / TOTAL	928.6	54.4	50518.5	0	0	0 / 0	19 / 5	0 / 0	0	0	50 / 92	3 / 0	4 / 0	17 / 1	8 / 1

Table B.11-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
SFK 1.400-SA1 / TOTAL	757.6	1.4	1055.4	1	0	2 / 2	0 / 0	1 / 0	0	3	0 / 0	12 / 27	48 / 39	33 / 30	1 / 2
SFK 1.440-SA1 / TOTAL	358.5	11.7	4169.2	0	0	0 / 0	0 / 0	10 / 1	0	1	36 / 97	0 / 0	45 / 2	8 / 0	0 / 0

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

[d] Data were recorded in 2004.

[e] SFK 1.310-SA7/8 (2004) was 75% of SA7 and 25% of SA8.

[f] SFK 1.330-SA2/3 (2004) was 70% of SA2, and 30% of SA3.

Table B.11-4.
Descriptive characteristics of primary habitat units from areas sampled within SFK-E and tributaries 1.310, 1.320, 1.330, 1.340, 1.350, 1.360, 1.370, 1.380, 1.400, and 1.440. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate [a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK-E-SA1	sand/silt	organics	0	8	willow shrub/tundra
SFK-E-SA2	sand/silt	organics	0	49	willow shrub/tundra
SFK-E-SA3	sand/silt	gravel	6	64	tundra
SFK-E-SA4	gravel	sand/silt	1	9	willow shrub/tundra/other herbaceous
SFK-E-SA5	sand/silt	organics	0	4	willow shrub
SFK-E TOTAL	sand/silt	organics	1	14	willow shrub
SFK 1.310-SA1	sand/silt	organics	12	2	other shrub
SFK 1.310-SA2	sand/silt	organics	1	0	willow shrub/other herbaceous
SFK 1.310-SA3	sand/silt	organics	26	8	willow shrub/other herbaceous
SFK 1.310-SA4	sand/silt	organics	0	0	willow shrub/other herbaceous
SFK 1.310-SA5	sand/silt	organics	0	0	other herbaceous
SFK 1.310-SA6	organics	sand/silt	0	0	willow shrub/other herbaceous
SFK 1.310-SA7	gravel	cobble	9	5	alder shrub/willow shrub
SFK 1.310-SA7/8[b,c]	gravel	cobble	NA	1	NA
SFK 1.310-SA8	cobble	boulder	0	0	alder shrub/willow shrub
SFK 1.310-SA9	cobble	gravel	0	0	alder shrub/willow shrub
SFK 1.310-SA10	cobble	gravel	0	0	alder shrub/willow shrub
SFK 1.310-SA11	cobble	boulder	0	0	other shrub/tundra/other herbaceous
SFK 1.310-SA12	boulder	cobble	0	0	other herbaceous
SFK 1.310-SA13	boulder	gravel	0	0	other herbaceous
SFK 1.310.05-SA1	gravel	sand/silt	0	0	alder shrub/willow shrub/other herbaceous
SFK 1.310.10-SA1	gravel	cobble	0	0	willow shrub/other shrub/other herbaceous
SFK 1.310.10.10-SA1	organics	gravel	0	0	willow shrub/other shrub/other herbaceous
SFK 1.310.15-SA1	gravel	sand/silt	0	0	other herbaceous
SFK 1.310.20-SA1	cobble	gravel	0	2	willow shrub/other shrub/other herbaceous
SFK 1.310.20-SA2	cobble	boulder	0	1	willow shrub/other shrub/other herbaceous
SFK 1.310.20.05-SA1	cobble	gravel	0	0	willow shrub/other herbaceous
SFK 1.310.20.05-SA2	boulder	cobble	0	0	willow shrub/other herbaceous
SFK 1.310.20.05.10-SA1	organics	gravel	0	0	willow shrub/other herbaceous
SFK 1.310.20.10-SA1	organics	cobble	0	0	willow shrub/other shrub/other herbaceous
SFK 1.310.20.20-SA1	organics	cobble	0	0	willow shrub/other herbaceous
SFK 1.310.30-SA1	cobble	boulder	0	0	tundra
SFK 1.310.30.10-SA1	boulder	cobble	0	1	willow shrub/other shrub/tundra
SFK 1.310.30.10.10-SA1	cobble	organics	0	0	other shrub/tundra/other herbaceous

Table B.11-4. Continued

Sample Area (SA)	Dominant Substrate	Subdominant Substrate [a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK 1.310.30.10.20-SA1	cobble	organics	0	0	other shrub/tundra/other herbaceous
2004 SFK 1.310 TOTAL	gravel	cobble	NA	1	NA
2008 SFK 1.310 TOTAL	sand/silt	organics	3	1	willow shrub
SFK 1.320-SA1 / TOTAL	organics	sand/silt	0	1	other herbaceous
SFK 1.330-SA1[b]	gravel	organics	NA	25	NA
SFK 1.330-SA1	gravel	sand/silt	7	51	tundra
SFK 1.330-SA2	sand/silt	organics	4	27	tundra
SFK 1.330-SA2/3[b,d]	gravel	sand/silt	NA	5	NA
SFK 1.330-SA3	gravel	cobble	0	12	willow shrub
SFK 1.330-SA4	cobble	boulder	0	1	alder shrub/willow shrub
SFK 1.330-SA5	organics	sand/silt	0	0	other herbaceous
SFK 1.330-SA6[b]	gravel/ cobble	NA	NA	0	alder shrub/willow shrub
SFK 1.330.05-SA1	gravel	organics	2	10	willow shrub
SFK 1.330.05-SA2	boulder	cobble	0	12	willow shrub
2004 SFK 1.330 TOTAL	gravel	sand/silt	NA	11	alder shrub/willow shrub
2008 SFK 1.330 TOTAL	sand/silt	organics	2	19	willow shrub
SFK 1.340-SA1[b]	organics	gravel	NA	9	NA
SFK 1.340-SA1	organics	sand/silt	0	16	bog
SFK 1.340-SA2	organics	gravel	0	6	willow shrub
SFK 1.340-SA3	sand/silt	organics	0	2	willow shrub
SFK 1.340-SA4	sand/silt	organics	0	10	willow shrub
SFK 1.340.40-SA1	organics	sand/silt	0	7	other herbaceous
SFK 1.340.40-SA2	sand/silt	organics	1	0	other herbaceous
SFK 1.340.40.20-SA1	gravel	cobble	0	0	willow shrub
2004 SFK 1.340 TOTAL	organics	gravel	NA	9	NA
2008 SFK 1.340 TOTAL	organics	sand/silt	0	8	willow shrub
SFK 1.350-SA1	organics	sand/silt	0	22	other herbaceous
SFK 1.350-SA2	organics	gravel	0	0	willow shrub/other herbaceous
SFK 1.350 TOTAL	organics	sand/silt	0	21	other herbaceous
SFK 1.360-SA1	organics	sand/silt	0	2	tundra
SFK 1.360-SA2	sand/silt	gravel	2	1	willow shrub
SFK 1.360-SA3	gravel	boulder	0	3	willow shrub
SFK 1.360-SA4	gravel	cobble	0	1	willow shrub
SFK 1.360.01-SA1	gravel	sand/silt	0	20	willow shrub
SFK 1.360.10-SA1	gravel	boulder	0	2	willow shrub
SFK 1.360.10-SA2	gravel	cobble	0	13	willow shrub
SFK 1.360.10-SA3	gravel	boulder	0	0	alder shrub
SFK 1.360.10.10-SA1	sand/silt	gravel	5	0	alder shrub
SFK 1.360.10.10-SA2	sand/silt	gravel	9	19	willow shrub
SFK 1.360 TOTAL	sand/silt	gravel	1	4	willow shrub
SFK 1.370-SA1 / TOTAL	gravel	organics	0	0	tundra/other herbaceous

Table B.11-4.Continued

Sample Area (SA)	Dominant Substrate	Subdominant Substrate [a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
SFK 1.380-SA1 / TOTAL	sand/silt	organics	0	0	other herbaceous
SFK 1.400-SA1 / TOTAL	organics	sand/silt	3	7	willow shrub
SFK 1.440-SA1 / TOTAL	sand/silt	gravel	0	1	other herbaceous

[a] NA=data not available.
[b] Data were recorded in 2004.
[c] SFK 1.310-SA7/8 (2004) was comprised of 75% of SA7 and 25% of SA8.
[d] SFK 1.330-SA2/3 (2004) was comprised of 70% of SA2 and 30% of SA3.

Table B.11-5. Summary of pool habitat data from areas sampled in SFK-E and tributaries 1.310, 1.320, 1.330, 1.340, 1.350, 1.360, 1.370, 1.380, 1.400, and 1.440. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK-E-SA1	2.52	36	0	36	1.4	0	1.4	5197.1	0	5197.1	144.4	0.8	1.4
SFK-E-SA2	0.41	5	0	5	1.2	0	1.2	258.5	0	258.5	51.7	0.5	1.2
SFK-E-SA3	0.9	3	0	3	0.3	0	0.3	107.5	0	107.5	35.8	0.6	0.3
SFK-E-SA4	1.17	17	0	17	1.5	0	1.5	325.7	0	325.7	19.2	0.4	1.5
SFK-E-SA5	4.12	30	0	30	0.7	0	0.7	266.0	0	266.0	8.9	0.3	0.7
SFK-E TOTAL	9.13	91	0	91	1.0	0	1.0	6154.8	0	6154.8	67.6	0.5	1.0
SFK 1.310-SA1	1.38	11	10	21	0.8	0.7	1.5	238	82.1	320.1	15.2	0.6	1.5
SFK 1.310-SA2	0.44	8	0	8	1.8	0	1.8	100.4	0	100.4	12.6	0.4	1.8
SFK 1.310-SA3	0.55	5	0	5	0.9	0	0.9	33.9	0	33.9	6.8	0.4	0.9
SFK 1.310-SA4	0.22	2	0	2	0.9	0	0.9	16.2	0	16.2	8.1	0.4	0.9
SFK 1.310-SA5	0.11	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310-SA6	0.04	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310-SA7	1.05	0	4	4	0	0.4	0.4	0	55.8	55.8	14.0	0.3	0.4
SFK 1.310-SA7/8[c,d]	1.13	0	11	11	0.0	1.0	1.0	0.0	153.8	153.8	14.0	0.3	0.0
SFK 1.310-SA8	0.59	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310-SA9	1.06	0	1	1	0	0.1	0.1	0	6.7	6.7	6.7	0.3	0.1
SFK 1.310-SA10	1.14	0	2	2	0	0.2	0.2	0	8.3	8.3	4.2	0.3	0.2
SFK 1.310-SA11	0.51	5	0	5	1.0	0	1.0	20.4	0	20.4	4.1	0.2	1.0
SFK 1.310-SA12	0.22	2	0	2	0.9	0	0.9	3.2	0	3.2	1.6	0.2	0.9
SFK 1.310-SA13	0.05	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310.05-SA1	0.05	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310.10-SA1	1.25	8	0	8	0.6	0	0.6	29.2	0	29.2	3.7	0.2	0.6
SFK 1.310.10.10-SA1	0.13	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310.15-SA1	0.57	5	0	5	0.9	0	0.9	14.0	0	14.0	2.8	0.3	0.9
SFK 1.310.20-SA1	0.69	7	0	7	1.0	0	1.0	34.0	0	34.0	4.9	0.2	1.0
SFK 1.310.20-SA2	0.68	4	0	4	0.6	0	0.6	8.1	0	8.1	2.0	0.2	0.6
SFK 1.310.20.05-SA1	0.32	2	0	2	0.6	0	0.6	9.6	0	9.6	4.8	0.2	0.6
SFK 1.310.20.05-SA2	0.36	1	0	1	0.3	0	0.3	2.5	0	2.5	2.5	0.3	0.3

Table B.11-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK 1.310.20.05.10-SA1	0.26	1	0	1	0.4	0	0.4	1.0	0	1.0	1.0	0.2	0.4
SFK 1.310.20.10-SA1	0.06	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310.20.20-SA1	0.09	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310.30-SA1	0.22	6	0	6	2.7	0	2.7	8.4	0	8.4	1.4	0.2	2.7
SFK 1.310.30.10-SA1	0.22	1	0	1	0.5	0	0.5	0.8	0	0.8	0.8	0.2	0.5
SFK 1.310.30.10.10-SA1	0.02	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.310.30.10.20-SA1	0.01	0	0	0	0	0	0	0	0	0	0	0	0
2004 SFK 1.310 TOTAL	1.13	0	11	11	0.0	1.0	1.0	0.0	153.8	153.8	14.0	0.3	0.0
2008 SFK 1.310 TOTAL	12.3	68	17	85	0.6	0.1	0.7	519.6	152.8	672.4	7.9	0.4	0.7
SFK 1.320-SA1 / TOTAL	0.26	3	0	3	1.2	0	1.2	6.9	0	6.9	2.3	0.3	1.2
SFK 1.330-SA1[c]	0.20	4	11	15	2.0	5.4	7.4	99.8	73.9	173.7	11.6	0.5	0.5
SFK 1.330-SA1	0.54	7	2	9	1.3	0.4	1.7	140.9	21.6	162.5	18.1	0.5	1.7
SFK 1.330-SA2	0.24	1	1	2	0.4	0.4	0.8	18.9	5.7	24.6	12.3	0.5	0.8
SFK 1.330-SA2/3[c,e]	0.21	1	12	13	0.5	5.8	6.3	14.1	77.6	91.7	7.1	0.3	0.0
SFK 1.330-SA3	0.45	4	0	4	0.9	0	0.9	24.7	0	24.7	6.2	0.3	0.9
SFK 1.330-SA4	0.23	8	0	8	3.5	0	3.5	84.9	0	84.9	10.6	0.3	3.5
SFK 1.330-SA5	0.18	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.330-SA6[c]	0.16	0	1	1	0.0	0.6	0.6	0.0	2.5	2.5	2.5	0.1	0.0
SFK 1.330.05-SA1	0.68	15	1	16	2.2	0.1	2.4	106.1	6	112.2	7.0	0.4	2.4
SFK 1.330.05-SA2	0.42	3	0	3	0.7	0	0.7	12.2	0	12.2	4.1	0.3	0.7
2004 SFK 1.330 TOTAL	0.57	5	24	29	0.9	4.2	5.1	113.8	154.0	267.9	9.2	0.4	0.2
2008 SFK 1.330 TOTAL	2.74	38	4	42	1.4	0.1	1.5	387.6	33.4	421	10	0.4	1.5
SFK 1.340-SA1[c]	0.43	10	15	25	2.3	3.5	5.9	151.2	90.7	241.8	10.1	0.4	0.2
SFK 1.340-SA1	1.55	17	0	17	1.1	0	1.1	256.6	0	256.6	15.1	0.5	1.1
SFK 1.340-SA2	1.71	12	2	14	0.7	0.1	0.8	423.2	20.9	444.1	31.7	0.4	0.8
SFK 1.340-SA3	0.84	3	0	3	0.4	0	0.4	27.5	0	27.5	9.2	0.4	0.4

Table B.11-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
SFK 1.340-SA4	0.93	1	0	1	0.1	0	0.1	1.6	0	1.6	1.6	0.2	0.1
SFK 1.340.40-SA1	0.56	11	0	11	2.0	0	2.0	217.1	0	217.1	19.7	0.5	2.0
SFK 1.340.40-SA2	0.28	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.340.40.20-SA1	0.11	0	0	0	0	0	0	0	0	0	0	0	0
2004 SFK 1.340 TOTAL	0.43	10	15	25	2.3	3.5	5.9	151.2	90.7	241.8	10.1	0.4	0.2
2008 SFK 1.340 TOTAL	5.99	44	2	46	0.7	0	0.8	926	20.9	946.9	20.6	0.5	0.8
SFK 1.350-SA1	1.17	19	0	19	1.6	0	1.6	135.8	0	135.8	7.1	0.3	1.6
SFK 1.350-SA2	0.08	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.350 TOTAL	1.24	19	0	19	1.5	0	1.5	135.8	0	135.8	7.1	0.3	1.5
SFK 1.360-SA1	0.44	6	0	6	1.4	0	1.4	116.0	0	116.0	19.3	0.4	1.4
SFK 1.360-SA2	1.16	13	0	13	1.1	0	1.1	108.9	0	108.9	8.4	0.3	1.1
SFK 1.360-SA3	0.36	5	0	5	1.4	0	1.4	65.2	0	65.2	13.0	0.2	1.4
SFK 1.360-SA4	0.89	9	0	9	1.0	0	1.0	44.7	0	44.7	5.0	0.3	1.0
SFK 1.360.01-SA1	0.5	1	0	1	0.2	0	0.2	1.8	0	1.8	1.8	0.2	0.2
SFK 1.360.10-SA1	0.32	3	0	3	0.9	0	0.9	22.0	0	22.0	7.3	0.2	0.9
SFK 1.360.10-SA2	0.36	1	0	1	0.3	0	0.3	5.0	0	5.0	5.0	0.2	0.3
SFK 1.360.10-SA3	0.43	1	0	1	0.2	0	0.2	2.1	0	2.1	2.1	0.2	0.2
SFK 1.360.10.10-SA1	0.21	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.360.10.10-SA2	0.06	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.360 TOTAL	4.73	39	0	39	0.8	0	0.8	365.6	0	365.6	9.4	0.3	0.8
SFK 1.370-SA1 / TOTAL	0.78	0	0	0	0	0	0	0	0	0	0	0	0
SFK 1.380-SA1 / TOTAL	0.93	2	0	2	0.2	0	0.2	23.3	0	23.3	11.7	0.4	0.2
SFK 1.400-SA1 / TOTAL	0.76	12	0	12	1.6	0	1.6	279.9	0	279.9	23.3	0.4	1.6
SFK 1.440-SA1 / TOTAL	0.36	0	0	0	0	0	0	0	0	0	0	0	0

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.
[c] Data were recorded in 2004.
[d] SFK 1.310-SA7/8(2004) was comprised of 75% SA7 and 25% SA8.
[e] SFK 1.330-SA2/3(2004) was comprised of 70% SA2 and 30% SA3.

Table B.11-6.
Special habitat features within SFK-E and tributaries 1.310, 1.320, 1.330, 1.340, 1.350, 1.360, 1.370, 1.380, 1.400, and 1.440, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK-E-SA1	59.86854	-155.28743	seep					
	59.86938	-155.28817	seep					
	59.86972	-155.28789	seep					
	59.86966	-155.28775	seep					
	59.87009	-155.28677	spring					
	59.87015	-155.28636	spring					
	59.87015	-155.28636	spring					
	59.86803	-155.28573	tributary	SFK 1.310				
	59.86826	-155.28563	tributary	SFK 1.310				
	59.87009	-155.28645	tributary	unnamed				
	59.87026	-155.28630	seep					
	59.87174	-155.28637	seep					
	59.87251	-155.28648	tributary	SFK 1.330				
	59.87263	-155.28611	seep					
	59.87262	-155.28553	seep					
	59.87314	-155.28504	seep					
	59.87421	-155.28468	seep					
	59.87334	-155.28491	seep					
	59.87385	-155.28494	seep					
	59.87419	-155.28482	seep					
	59.87470	-155.28459	seep					
	59.87495	-155.28443	seep					
	59.87645	-155.28281	tributary	unnamed				
	59.87645	-155.28281	tributary, seep	unnamed				
	59.87741	-155.28031	tributary, seep	unnamed				
	59.87918	-155.28034	tributary	SFK 1.340				

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK-E-SA2	59.88001	-155.27837	seep					
	59.88001	-155.27837	tributary	unnamed				
	59.88024	-155.27699	tributary	SFK 1.350				
	59.88146	-155.27708	tributary	SFK 1.360				
	59.88146	-155.27708	tributary	unnamed				
SFK-E-SA3	59.88248	-155.27796	seep					
	59.88386	-155.27856	tributary	unnamed				
	59.88459	-155.27974	seep					
	59.88552	-155.27972	seep					
	59.88552	-155.27972	seep					
	59.88644	-155.27916	tributary	SFK 1.370				
SFK-E-SA4	59.88681	-155.28042	seep					
	59.88740	-155.28090	barrier		falls	temporary	0.42	0.35
	59.88740	-155.28090	tributary	SFK 1.380				
	59.88760	-155.28226	barrier		beaver dam	temporary	1.1	2.5
	59.88715	-155.28570	seep					
	59.88698	-155.28604	seep					
	59.88799	-155.28063	tributary	unnamed				
SFK-E-SA5	59.88985	-155.29368	barrier		falls	temporary	0.4	0.5
	59.89101	-155.29589	seep					
	59.89115	-155.29614	barrier		falls	temporary	0.25	0.16
	59.89115	-155.29614	barrier		falls	temporary	0.4	0.6
	59.89127	-155.29635	barrier		falls	temporary	0.6	1.2
	59.89137	-155.29649	barrier		falls	temporary	0.7	1.0
	59.89147	-155.29681	barrier		falls	temporary	0.8	1.5
	59.89156	-155.29707	barrier		falls	temporary	1.6	2.6
	59.89234	-155.29779	barrier		falls	temporary	0.35	0.8
	59.89234	-155.29779	barrier		falls	temporary	0.5	0.8

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK-E-SA5 (cont)	59.89244	-155.29796	barrier		falls	temporary	0.8	1.2
	59.89259	-155.29820	barrier		falls	temporary	0.4	0.3
	59.89295	-155.29858	seep					
	59.89292	-155.29885	barrier		falls	temporary	0.5	1.5
	59.89306	-155.29921	barrier		falls	temporary	0.5	0.84
	59.89320	-155.29960	barrier		falls	temporary	0.3	0.4
	59.89325	-155.30004	barrier		falls	temporary	1.5	1.7
	59.89333	-155.29980	barrier		falls	temporary	1.5	3.5
	59.89359	-155.30087	barrier		falls	temporary	0.5	1.5
	59.89356	-155.30008	tributary	SFK 1.400				
	59.89332	-155.30092	barrier		falls	temporary	1.5	3.6
	59.89344	-155.30105	barrier		falls	temporary	0.43	0.25
	59.89344	-155.30096	barrier		falls	temporary	0.35	0.4
	59.89353	-155.30157	barrier		falls	temporary	0.8	0.2
	59.89375	-155.30167	barrier		falls	temporary	0.52	0.35
	59.89393	-155.30212	barrier		falls	temporary	0.6	1.3
	59.89406	-155.30247	barrier		falls	temporary	0.8	1.6
	59.89460	-155.30341	barrier		falls	temporary	0.8	1.7
	59.89462	-155.30345	barrier		falls	temporary	0.4	0.75
	59.89465	-155.30432	seep					
	59.89447	-155.30408	spring					
	59.89478	-155.30436	barrier		falls	temporary	0.25	0.5
	59.89612	-155.30822	barrier		falls	temporary	0.4	0.35
	59.89685	-155.31047	barrier		falls	temporary	0.3	0.3
	59.89679	-155.31031	seep					
	59.89731	-155.31088	seep					
	59.89668	-155.31010	spring					
	59.89749	-155.31068	barrier		falls	permanent	0.5	0.8

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK-E-SA5 (cont)	59.89773	-155.31063	barrier		falls	permanent	0.4	0.3
	59.89929	-155.31344	seep					
	59.89886	-155.31392	seep					
	59.89910	-155.31396	seep					
	59.90047	-155.31695	seep					
	59.90099	-155.31691	spring, seep					
	59.90061	-155.31817	spring					
	59.90080	-155.31810	spring, seep					
	59.90097	-155.31770	tributary	SFK 1.440				
	59.90154	-155.31706	barrier		falls	temporary	0.3	0.34
	59.90183	-155.31732	spring					
	59.90216	-155.31742	barrier		falls	temporary	0.5	0.32
	59.90223	-155.31742	barrier		falls	temporary	0.4	0.6
	59.90221	-155.31766	barrier		falls	temporary	0.3	0.3
	59.90239	-155.31793	barrier		falls	permanent	0.3	1.0
	59.90251	-155.31809	barrier		falls	permanent	0.5	1.8
	59.90270	-155.31831	barrier		falls	temporary	0.4	0.3
	59.90345	-155.31983	seep					
	59.90345	-155.32012	barrier		falls	temporary	0.3	0.4
	59.90349	-155.32011	barrier		falls	temporary	0.4	0.23
	59.90349	-155.32033	barrier		falls	temporary	0.35	0.65
	59.90351	-155.32035	barrier		falls	temporary	0.3	0.4
	59.90358	-155.32054	barrier		falls	temporary	0.5	0.65
	59.90358	-155.32054	barrier		falls	temporary	0.6	0.4
	59.90359	-155.32071	barrier		falls	temporary	0.5	0.95
	59.90358	-155.32032	seep					
	59.90378	-155.32069	barrier		falls	temporary	0.5	0.5

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK-E-SA5 (cont)	59.90382	-155.32079	barrier		falls	temporary	0.5	0.2
	59.90396	-155.32124	barrier		beaver dam	temporary	0.8	1.55
	59.90476	-155.32316	seep					
	59.90396	-155.32124	seep					
SFK 1.310-SA1	59.86555	-155.28311	barrier		beaver dam	temporary	1.15	2.0
	59.86634	-155.28345	barrier		beaver dam	temporary	0.9	5.0
	59.86657	-155.28360	barrier		beaver dam	temporary	1.9	1.7
	59.86614	-155.28299	barrier		beaver dam	temporary	0.9	5.0
	59.86681	-155.28370	tributary, side channel	unnamed				
	59.86688	-155.28355	tributary, side channel	unnamed				
	59.86683	-155.28339	tributary, side channel	unnamed				
	59.86692	-155.28295	tributary, side channel	unnamed				
	59.86705	-155.28258	seep					
	59.86703	-155.28175	barrier		beaver dam			
	59.86703	-155.28175	tributary, side channel	unnamed				
	59.86726	-155.28065	barrier		beaver dam	temporary	0.42	
	59.86539	-155.28014	seep					
	59.86562	-155.27989	tributary	SFK 1.310.01				
SFK 1.310-SA2	59.86881	-155.28066	seep					
	59.86872	-155.28030	seep					
	59.86870	-155.28023	barrier		beaver dam	temporary	0.4	1.0
	59.86866	-155.28017	barrier		beaver dam	temporary	1.18	3.2

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.310-SA3	59.86759	-155.28283	seep					
	59.86758	-155.28234	seep					
	59.86752	-155.28186	tributary	unnamed				
	59.86774	-155.28152	barrier		beaver dam	temporary	0.6	1.17
	59.86783	-155.28113	barrier		beaver dam	temporary	0.55	1.7
	59.86815	-155.28086	barrier		beaver dam	temporary	0.7	0.11
	59.86775	-155.28077	tributary	unnamed				
	59.86830	-155.28036	barrier		beaver dam	temporary	1.46	2.15
	59.86864	-155.27926	barrier		beaver dam	temporary	1.1	2.6
	59.86843	-155.27936	barrier		beaver dam	temporary	1	1.9
SFK 1.310-SA4	59.86668	-155.28200	barrier		beaver dam	temporary	1.3	2.2
	59.86664	-155.28110	tributary	unnamed				
	59.86716	-155.28095	barrier		beaver dam	temporary	1.5	1.5
SFK 1.310-SA5	59.86659	-155.28107	barrier		beaver dam	temporary	0.78	1.5
	59.86646	-155.28082	barrier		beaver dam	temporary	0.6	1
	59.86590	-155.27994	barrier		beaver dam	temporary	0.35	2.5
SFK 1.310-SA6	59.86765	-155.28037	seep					
SFK 1.310-SA7	59.86795	-155.27789	barrier		beaver dam	temporary	1	1.1
	59.87154	-155.26871	tributary	SFK 1.310.03				
	59.87123	-155.26830	tributary	SFK 1.310.05				
SFK 1.310-SA8	59.86985	-155.26279	tributary	SFK 1.310.07				
	59.86806	-155.26034	seep					
	59.86788	-155.25974	tributary	SFK 1.310.10				
SFK 1.310-SA9	59.86710	-155.26069	seep					
	59.86555	-155.25900	seep					
	59.86479	-155.25890	seep					
	59.86421	-155.25843	seep					
	59.85949	-155.25391	tributary	SFK 1.310.20				
	59.85954	-155.25397	tributary	SFK 1.310.15				

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.310-SA10	59.85836	-155.25229	seep					
	59.85463	-155.25244	seep					
	59.85451	-155.25252	tributary	SFK 1.310.25				
	59.85287	-155.24882	tributary	unnamed				
SFK 1.310-SA11	59.85251	-155.24660	seep					
	59.85251	-155.24660	seep					
	59.85246	-155.24576	seep					
	59.85202	-155.24247	barrier		falls	permanent	0.56	0.65
	59.85165	-155.24113	seep					
	59.85165	-155.24112	seep					
	59.85120	-155.24003	tributary	unnamed				
SFK 1.310-SA12	59.85105	-155.23948	seep					
	59.85093	-155.23756	barrier		falls	permanent	0.78	0.73
	59.85083	-155.23688	tributary	unnamed				
SFK 1.310-SA13	59.85075	-155.23663	barrier		falls	permanent	0.7	0.52
	59.85069	-155.23623	barrier		falls	permanent	1.03	0.94
SFK 1.310.05-SA1			none present					
SFK 1.310.10-SA1	59.86784	-155.25816	seep					
	59.86794	-155.25741	seep					
	59.86805	-155.25716	barrier		falls	permanent	0.4	0.3
	59.86803	-155.25697	seep					
	59.86810	-155.25579	seep					
	59.86810	-155.25579	tributary	SFK 1.310.10.10				
	59.86784	-155.25516	barrier		falls	permanent	0.4	0.5
	59.86790	-155.25334	seep					
	59.86789	-155.25316	spring					
	59.86816	-155.25231	seep					
	59.86839	-155.25196	seep					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.310.10-SA1 (cont)	59.86843	-155.25172	seep					
	59.86860	-155.25106	seep					
	59.86873	-155.25045	seep					
	59.86833	-155.24778	barrier		falls	permanent	0.43	0.39
	59.86849	-155.24963	seep					
	59.86827	-155.24789	seep					
	59.86819	-155.24760	barrier		falls	permanent	0.4	0.32
	59.86811	-155.24690	seep					
	59.86749	-155.24410	barrier		falls	permanent	0.32	0.39
	59.86752	-155.24473	seep					
	59.86746	-155.24157	seep					
	59.86781	-155.24144	seep					
	59.86807	-155.24014	barrier		falls	permanent	0.54	0.45
	59.86841	-155.23850	barrier		falls	permanent	0.6	0.5
SFK 1.310.10.10-SA1	59.86827	-155.25558	barrier		falls	temporary	0.5	0.3
	59.86830	-155.25544	barrier		falls	temporary	0.43	0.6
	59.86811	-155.25586	seep					
	59.86829	-155.25528	barrier		falls	temporary	0.45	0.45
SFK 1.310.15-SA1	59.86070	-155.24777	seep					
	59.86100	-155.24736	seep					
SFK 1.310.20-SA1	59.85917	-155.25091	seep					
	59.85883	-155.24983	seep					
	59.85796	-155.24577	tributary	SFK 1.310.20.05				
SFK 1.310.20-SA2	59.85934	-155.24054	seep					
	59.85947	-155.24041	seep					
	59.86017	-155.23850	seep					
	59.86022	-155.23833	seep					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.310.20-SA2 (cont)	59.86010	-155.23747	tributary	SFK 1.310.20.20				
	59.86022	-155.23705	barrier		falls	permanent	0.4	0.3
	59.86022	-155.23705	barrier		falls	permanent	0.3	0.42
	59.86015	-155.23752	seep					
SFK 1.310.20.05-SA1	59.85780	-155.24557	spring					
	59.85743	-155.24472	seep					
	59.85642	-155.24351	seep					
	59.85629	-155.24315	tributary	SFK 1.310.20.05.10				
SFK 1.310.20.05-SA2	59.85534	-155.23940	seep					
	59.85512	-155.23822	seep					
	59.85512	-155.23822	tributary	unnamed				
	59.85512	-155.23822	tributary	unnamed				
SFK 1.310.20.05.10-SA1	59.85595	-155.24271	seep					
	59.85506	-155.24163	seep					
SFK 1.310.20.10-SA1			none present					
SFK 1.310.20.20-SA1	59.85984	-155.23700	barrier		falls	permanent	0.54	0.38
SFK 1.310.30-SA1	59.85162	-155.24614	tributary	SFK 1.310.30.10				
	59.85123	-155.24607	seep					
	59.85110	-155.24604	barrier		dry channel	temporary		10.1
	59.85110	-155.24604	barrier		dry channel	temporary		6.4
	59.85081	-155.24583	barrier		dry channel	temporary		11.9
	59.85068	-155.24581	barrier		dry channel	permanent	0.78	2.39
	59.85063	-155.24580	barrier		dry channel	permanent		3.12
SFK 1.310.30.10-SA1	59.85157	-155.24553	tributary	SFK 1.310.30.10.02				
	59.85152	-155.24553	tributary	SFK 1.310.30.10.03				
	59.85069	-155.24485	seep					
SFK 1.310.30.10.10-SA1			none present					
SFK 1.310.30.10.20-SA1			none present					
SFK 1.320-SA1	59.86650	-155.29592	seep					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.330-SA1	59.87268	-155.28696	barrier		beaver dam	temporary	0.85	1.2
	59.87268	-155.28696	seep					
	59.87307	-155.28844	seep					
	59.87311	-155.28870	barrier		beaver dam	temporary	0.68	
	59.87340	-155.28898	barrier		beaver dam			
	59.87365	-155.29410	tributary	SFK 1.330.05				
SFK 1.330-SA2	59.87387	-155.29508	barrier		beaver dam	temporary	1.8	3.86
SFK 1.330-SA3	59.87431	-155.29763	tributary	SFK 1.330.10				
	59.87539	-155.29887	spring					
	59.87551	-155.29914	spring					
	59.87786	-155.30448	barrier		beaver dam	temporary	1.5	2.7
SFK 1.330-SA4			none present					
SFK 1.330-SA5			none present					
SFK 1.330.05-SA1	59.87281	-155.29780	seep					
	59.87294	-155.29871	seep					
SFK 1.330.05-SA2	59.87051	-155.30612	seep					
	59.87053	-155.30588	seep					
SFK 1.340-SA1	59.87950	-155.28089	barrier		beaver dam	temporary	0.77	0.95
	59.88033	-155.28628	seep					
	59.88103	-155.28692	barrier		beaver dam	temporary	0.95	1.4
	59.88175	-155.28879	barrier		beaver dam	temporary	0.58	1.2
	59.88187	-155.29020	barrier		beaver dam	temporary	0.75	1.2
SFK 1.340-SA2	59.88215	-155.29237	barrier		beaver dam	temporary	0.92	1.4
	59.88227	-155.29414	barrier		beaver dam	temporary	1.2	1.0
	59.88333	-155.29644	tributary	SFK 1.340.10				
	59.88476	-155.29888	tributary	unnamed				
	59.88517	-155.29971	tributary	unnamed				
	59.88529	-155.29980	tributary	SFK 1.340.20				

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.340-SA2 (cont)	59.88501	-155.29925	tributary	unnamed				
	59.88686	-155.30386	barrier		cascade/falls	permanent	0.6	1.6
	59.88701	-155.30708	tributary	SFK 1.340.30				
	59.88807	-155.30958	barrier		cascade	temporary	0.35	0.62
	59.88828	-155.30959	barrier		falls	temporary	0.5	0.7
	59.88836	-155.30988	barrier		falls	temporary	0.5	0.6
	59.88835	-155.30983	tributary	unnamed				
	59.88836	-155.31115	tributary	SFK 1.340.40				
SFK 1.340-SA3	59.88957	-155.31276	barrier		falls	temporary	0.6	0.4
	59.88953	-155.31299	barrier		beaver dam	temporary	0.8	1.3
	59.88996	-155.31480	barrier		beaver dam	temporary	1.05	1.2
	59.89007	-155.31528	barrier		beaver dam	temporary	1.9	1.4
	59.89013	-155.31686	tributary	SFK 1.340.55				
	59.89198	-155.31868	barrier		falls	temporary	0.36	0.1
	59.89217	-155.31916	tributary	SFK 1.340.60				
SFK 1.340-SA4	59.89178	-155.32011	barrier		beaver dam	temporary	1.2	0.8
	59.89057	-155.32414	seep					
	59.89072	-155.32491	seep					
	59.89089	-155.32531	seep					
	59.89121	-155.32612	barrier		beaver dam	temporary	0.3	1.0
	59.89119	-155.32620	tributary	SFK 1.340.70				
	59.89157	-155.32700	seep					
	59.89183	-155.32718	tributary	unnamed				
	59.89245	-155.32888	seep					
	59.89266	-155.32972	seep					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.340.40-SA1	59.88794	-155.31241	barrier		falls	temporary	0.65	0.7
	59.88797	-155.31328	tributary	SFK 1.340.40.10				
	59.88779	-155.31367	seep					
	59.88754	-155.31373	barrier		falls	temporary	0.78	0.5
	59.88695	-155.31486	barrier		falls	temporary	0.52	0.8
	59.88686	-155.31513	seep					
	59.88676	-155.31534	barrier		falls	temporary	0.75	0.9
	59.88661	-155.31686	seep					
	59.88675	-155.31726	seep					
	59.88689	-155.31742	seep					
	59.88693	-155.31753	seep					
	59.88711	-155.31763	barrier		beaver dam	temporary	1.32	1.7
	59.88720	-155.31763	seep					
	59.88696	-155.31809	tributary	SFK 1.340.40.20				
SFK 1.340.40-SA2	59.88723	-155.31875	barrier		dry channel	temporary	0.7	3.0
	59.88724	-155.31993	barrier		dry channel	temporary	4.0	
	59.88713	-155.32014	barrier		falls	temporary	0.55	0.9
SFK 1.340.40.20-SA1	59.88688	-155.31817	seep					
	59.88665	-155.31915	seep					
SFK 1.350-SA1	59.88024	-155.27701	seep					
	59.87930	-155.27625	seep					
	59.87884	-155.27596	barrier		beaver dam	temporary	0.9	1.15
	59.87887	-155.27549	seep					
	59.87862	-155.27540	barrier		beaver dam	temporary	0.72	0.96
	59.87786	-155.27251	barrier		beaver dam	temporary	1.16	1.16
	59.87811	-155.27206	seep					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.350-SA1 (cont)	59.87874	-155.27158	seep					
	59.87775	-155.26847	spring					
	59.87803	-155.26801	seep					
	59.87812	-155.26768	seep					
SFK 1.350-SA2			none present					
SFK 1.360-SA1	59.88143	-155.27536	tributary	unnamed				
	59.88159	-155.27294	tributary	unnamed				
	59.88164	-155.27269	seep					
	59.88166	-155.27249	tributary	unnamed				
	59.88157	-155.27201	seep					
	59.88157	-155.27201	barrier		falls	temporary	0.41	0.65
SFK 1.360-SA2	59.88191	-155.26465	barrier		beaver dam	temporary	0.88	1.33
	59.87851	-155.25559	spring					
	59.87850	-155.25499	seep					
	59.87836	-155.25378	tributary	SFK 1.360.01				
SFK 1.360-SA3	59.87860	-155.25360	seep					
	59.87860	-155.25360	seep					
	59.87956	-155.24998	tributary	SFK 1.360.10				
SFK 1.360-SA4	59.87918	-155.24893	seep					
	59.87920	-155.24752	seep					
	59.87920	-155.24752	seep					
	59.87883	-155.24467	seep					
	59.87868	-155.24392	seep					
	59.87837	-155.24342	seep					
	59.87823	-155.24283	seep					
	59.87747	-155.24186	seep					
	59.87751	-155.24145	seep					
	59.87703	-155.24065	seep					
	59.87755	-155.24121	spring					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.360.01-SA1	59.87836	-155.25373	seep					
	59.87830	-155.25276	tributary	unnamed				
	59.87782	-155.25168	seep					
	59.87742	-155.25168	tributary	unnamed				
	59.87638	-155.25006	seep					
	59.87600	-155.24983	seep					
	59.87657	-155.25002	tributary	unnamed				
	59.87657	-155.25002	tributary	unnamed				
SFK 1.360.10-SA1	59.88002	-155.24867	barrier		falls	permanent	0.53	0.76
	59.87990	-155.24606	tributary	SFK 1.360.10.10				
SFK 1.360.10-SA2	59.88031	-155.24280	seep					
	59.88031	-155.24222	seep					
	59.88046	-155.24142	tributary	unnamed				
SFK 1.360.10-SA3	59.88068	-155.24120	barrier		falls	permanent	0.4	0.32
	59.88068	-155.24120	barrier		falls	temporary	0.31	0.3
	59.88085	-155.24030	seep					
	59.88173	-155.23824	seep					
SFK 1.360.10.10-SA1	59.87979	-155.24444	spring					
	59.87971	-155.24322	tributary	unnamed				
SFK 1.360.10.10-SA2			none present					
SFK 1.370-SA1	59.88659	-155.27921	seep					
	59.88671	-155.27901	seep					
SFK 1.380-SA1	59.89275	-155.28070	spring					
	59.89300	-155.27959	barrier		beaver dam	temporary	0.3	0.83
	59.89293	-155.27955	seep					
	59.89337	-155.27911	barrier		beaver dam	temporary	0.82	1.0
	59.89366	-155.27914	barrier		beaver dam	temporary	0.8	1.3
	59.89470	-155.27818	seep					

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.400-SA1	59.89373	-155.30001	barrier		beaver dam	temporary	0.2	0.38
	59.89373	-155.30001	barrier		beaver dam	temporary	0.5	0.68
	59.89382	-155.30012	barrier		beaver dam	temporary	0.29	0.5
	59.89394	-155.30016	barrier		beaver dam	temporary	0.47	0.57
	59.89414	-155.30018	barrier		falls	temporary	0.23	0.78
	59.89432	-155.30038	barrier		falls	temporary	0.4	0.75
	59.89450	-155.30054	barrier		falls	temporary	0.31	0.69
	59.89450	-155.30054	barrier		falls	temporary	0.19	0.16
	59.89450	-155.30054	seep					
	59.89454	-155.30052	barrier		falls	temporary	0.28	0.21
	59.89475	-155.30051	barrier		falls	temporary	0.47	0.58
	59.89495	-155.30061	barrier		falls	temporary	0.4	0.64
	59.89495	-155.30061	seep					
	59.89518	-155.30095	barrier		falls	temporary	0.24	0.84
	59.89532	-155.30115	barrier		falls	temporary	0.6	2.57
	59.89542	-155.30124	barrier		falls	temporary	0.41	0.68
	59.89547	-155.30134	seep					
	59.89551	-155.30150	barrier		falls	temporary	0.24	0.22
	59.89558	-155.30186	barrier		falls	temporary	0.28	0.19
	59.89590	-155.30206	barrier		falls	temporary	0.42	0.41
	59.89608	-155.30279	barrier		falls	temporary	0.21	0.64
	59.89630	-155.30368	barrier		falls	temporary	0.18	0.22
	59.89621	-155.30334	seep					
	59.89643	-155.30397	seep					
	59.89670	-155.30458	barrier		falls	temporary	0.39	0.5

Table B.11-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
SFK 1.400-SA1 (cont)	59.89660	-155.30455	barrier		falls	temporary	0.32	0.41
	59.89680	-155.30523	seep					
	59.89728	-155.30650	barrier		falls	temporary	0.51	1.0
	59.89727	-155.30658	seep					
	59.89725	-155.30702	seep					
SFK 1.440-SA1	59.90105	-155.31806	seep					
	59.90149	-155.31887	tributary	unnamed				
	59.90171	-155.31978	barrier		falls	temporary	0.4	0.45
	59.90161	-155.32009	barrier		falls	permanent	0.39	0.48
	59.90187	-155.32011	barrier		beaver dam	temporary	0.65	0.9

Note: Blank cells indicate no data were collected for that record.

Table B.11-7.
2004-2008 number of fish observations by lifestage within SFK-E mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult					Juvenile								Juvenile/Adult[a]						Total
			May	Jul	Aug	Sep	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Subtotal	May	Jun	Jul	Aug	Sep	Subtotal	
coho salmon	2004	Electrofishing									15				15							15
	2008	Seine										1			1							1
		Snorkel										28			28							28
sockeye	2004	Gill/Tangle Net									4				4							4
salmon	2008	Snorkel										1			1							1
arctic grayling	2004	Angling										1			1							1
		Electrofishing									32	101			133				15		15	148
		Gill/Tangle Net									13	30			43							43
		Minnow Trap									1				1							1
		Not Recorded									23				23			1			1	24
		Seine										14			14							14
		Visual Observation								1	1	10			12		1				1	13
	2005	Electrofishing										55			55							55
		Snorkel		3			3				494				494							497
	2006	Electrofishing												1	1							1
		Minnow Trap												1	1							1
		Snorkel											269		269							269
	2007	Angling	1				1															1
		Snorkel								617	15	336			968							968
		Visual Observation	2				2		2						2	2					2	6
	2008	Angling											11		11							11
		Electrofishing										2	40		42							42
		Seine										3			3							3
		Snorkel			16		16					551			551				4		4	571
		Visual Observation				1	1															1
Dolly Varden	2004	Electrofishing			5		5					143			143				3		3	151
	2006	Electrofishing						3							3							3
		Visual Observation						4							4							4
	2008	Electrofishing				1	1						75		75		1				1	77
		Snorkel										53			53				51		51	104
		Visual Observation											5		5							5

Table B.11-7. Continued

Species	Year	Method	Adult					Juvenile								Juvenile/Adult[a]						Total
			May	Jul	Aug	Sep	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Subtotal	May	Jun	Jul	Aug	Sep	Subtotal	
rainbow trout	2008	Snorkel			1		1					69			69				135		135	205
Salmonid sp.	2008	Snorkel										1			1							1
		Visual Observation																	1		1	1
northern pike	2004	Angling		67	35		102															102
		Electrofishing									32	27			59				4		4	63
		Gill/Tangle Net		17	2		19				381	110			491			136			136	646
		Minnow Trap									33	1			34							34
		Not Recorded									1				1							1
		Visual Observation				1	1			3	1		124		128			2			2	131
	2005	Angling			10		10															10
		Electrofishing										16			16							16
		Gill/Tangle Net			11		11															11
		Snorkel		3			3				6				6							9
	2007	Angling	2		10		12															12
		Snorkel										3			3							3
		Visual Observation							1						1	1					1	2
	2008	Angling				10	10															10
		Electrofishing											1		1							1
		Seine			1		1					2			2							3
		Snorkel			1		1					1			1							2
sculpin sp.	2004	Electrofishing			1		1											104	71		175	176
		Minnow Trap																4	2		6	6
	2008	Electrofishing				7	7			24			34		58		2				2	67
		Seine										2			2							2
		Snorkel															24		2		26	26
		Visual Observation																		1	1	1
ninespine stickleback	2004	Electrofishing			3		3					1			1							4
		Minnow Trap									2				2							2
		Not Recorded																2			2	2
	2007	Minnow Trap											14		14					46	46	60
	2008	Electrofishing				1	1			1					1							2

Table B.11-7. Continued

Species	Year	Method	Adult					Juvenile								Juvenile/Adult[a]						Total
			May	Jul	Aug	Sep	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Oct	Subtotal	May	Jun	Jul	Aug	Sep	Subtotal	
threespine stickleback	2004	Electrofishing										1			1							1
stickleback sp.	2004	Electrofishing																	15		15	15
	2008	Electrofishing			2		2						63		63					16	16	81
		Snorkel																	12		12	12
		Visual Observation																		21	21	21
unidentified	2004	Visual Observation															52				52	52
sp.	2008	Snorkel																	1		1	1

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

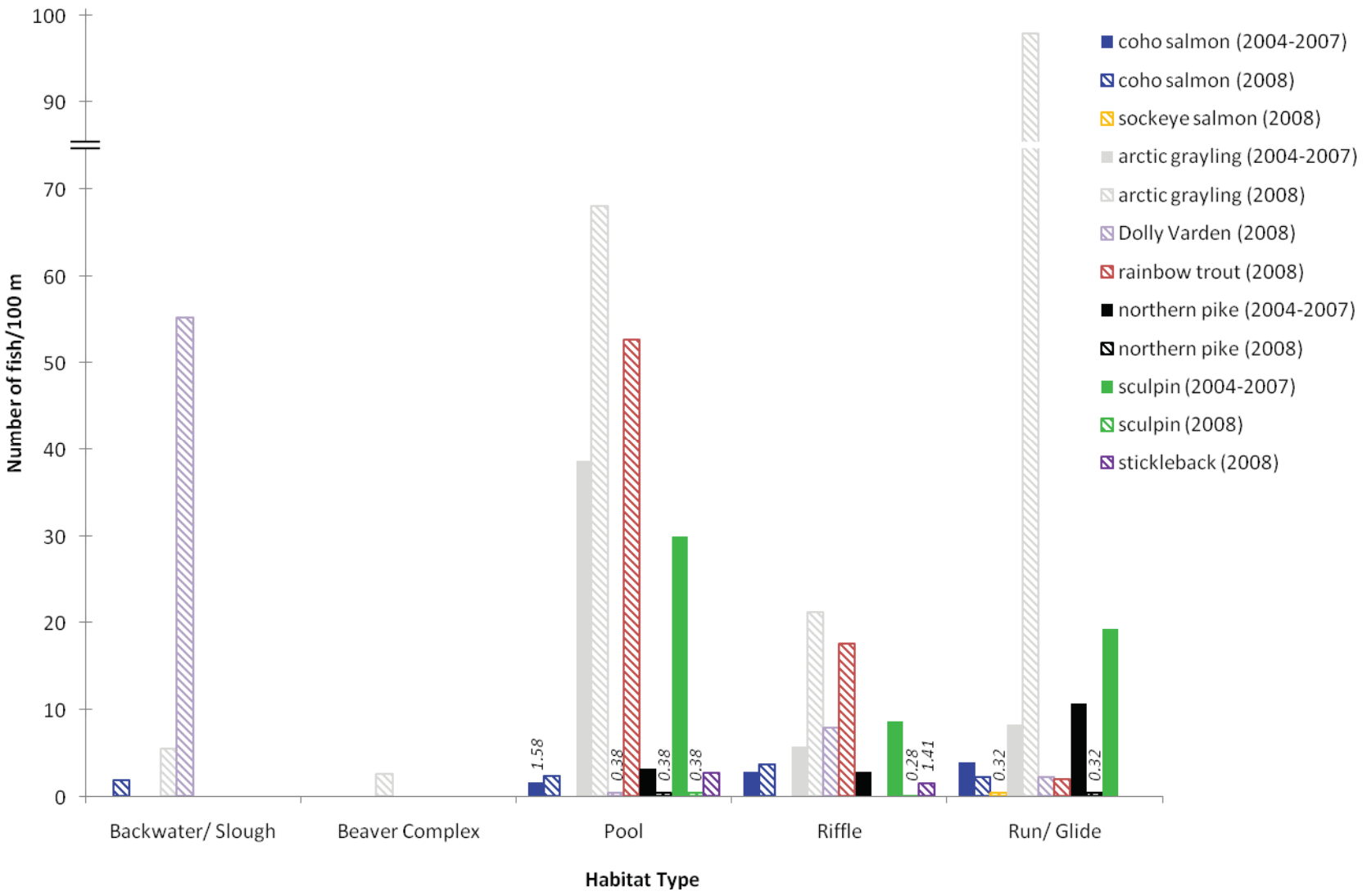


Figure B.11-8a.
2004-2008 fish abundance by habitat type within mainstem SFK-E.

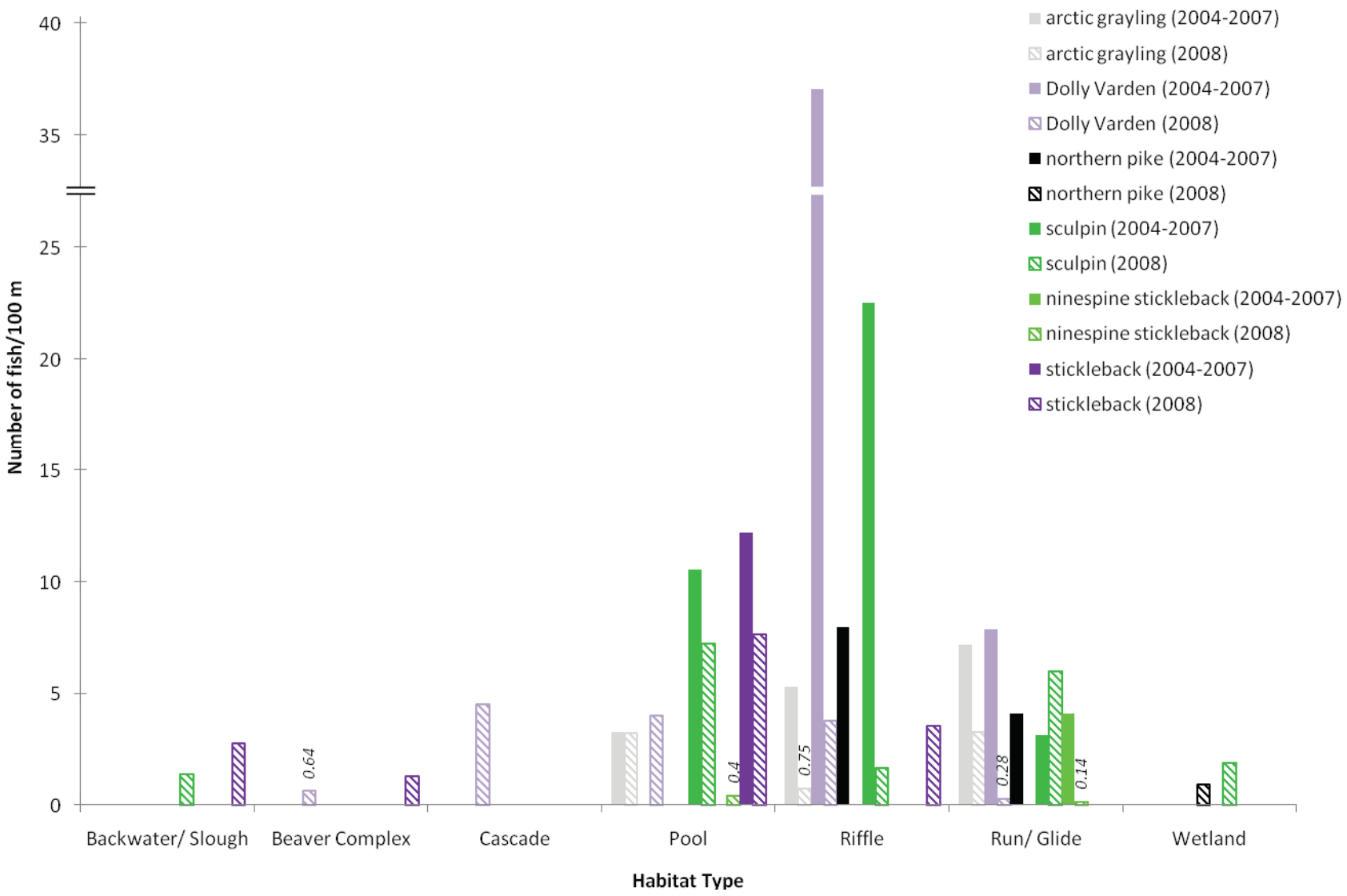


Figure B.11-8b.
2004-2008 fish abundance by habitat type within SFK-E tributaries.

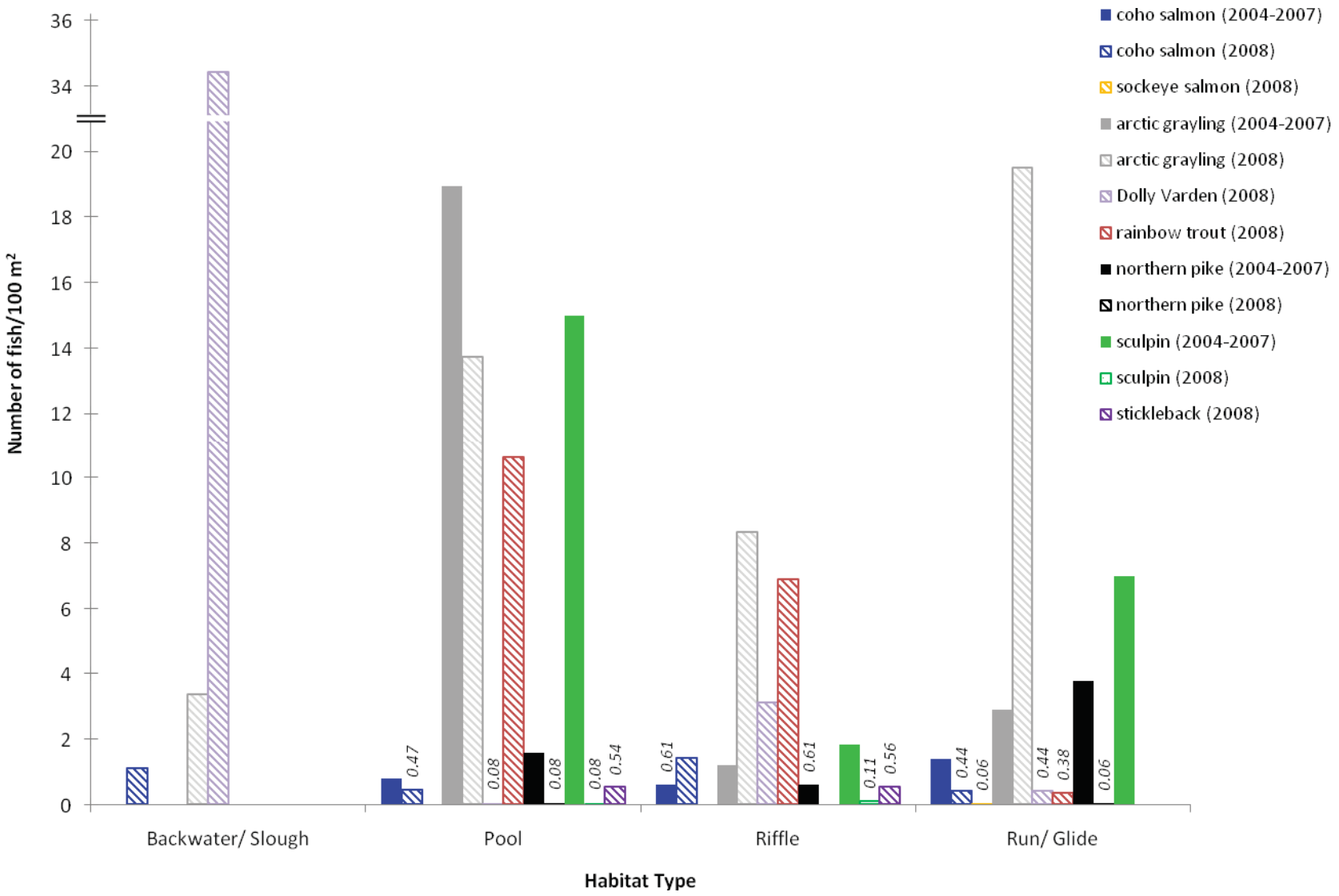


Figure B.11-9a.
2004-2008 fish density by habitat type within mainstem SFK-E.

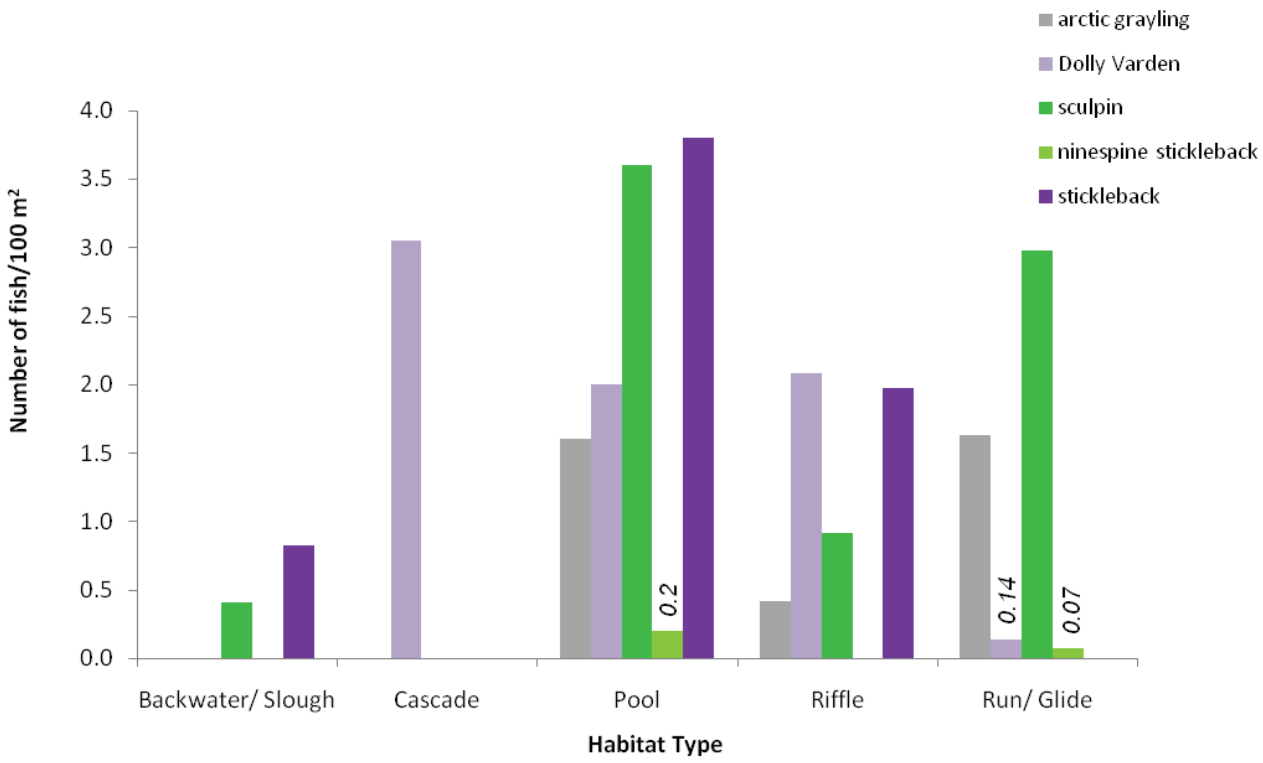


Figure B.11-9b.
2008 fish density by habitat type within SFK-E tributaries.

Table B.11-8.
Densities of fish species by habitat type in SFK-E and tributaries 1.310, 1.320, 1.330, 1.340, 1.350, 1.360, 1.370, 1.380, and 1.400 in 2008.

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/ 100 m^2)	Coho Salmon	Sockeye Salmon	Arctic Grayling				Dolly Varden				Rainbow Trout				Northern Pike			Sculpin				Ninespine Stickleback			Stickleback			
				Juv-enile	Juvenile	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total
SFK 1.0	Backwater/Slough	177.1	38.96	1.13			3.39		3.39		11.86	22.59	34.44																		
	Beaver Complex	492.0	0.20			0.20			0.20																						
	Cascade	45.0	0																												
	Pool	1287.7	25.63	0.47		0.54	13.20		13.75			0.08	0.08	0.08	0.31	10.25	10.64		0.08	0.08			0.08	0.08						0.54	0.54
	Riffle[b]	898.7	20.59	1.45			8.35		8.35		2.23	0.89	3.12		6.57	0.33	6.90						0.11	0.11						0.56	0.56
	Run/Glide	1573.7	20.91	0.44	0.60	0.51	18.75	0.25	19.51		0.32	0.13	0.44		0.38		0.38	0.06		0.06											
	All Habitats[b]	4474.2	20.43	0.63	0.02	0.36	12.20	0.09	12.65		1.03	1.14	2.17	0.02	1.54	3.02	4.58	0.02	0.02	0.04			0.04	0.04						0.27	0.27
SFK 1.310	Backwater/Slough	4.6	0																												
	Beaver Complex	90.7	0																												
	Cascade	202.4	3.95								3.95		3.95																		
	Pool	52.6	20.91				7.60		7.60		3.80		3.80									1.90	7.60	9.51							
	Riffle	1422.3	3.66				0.63		0.63		2.39		2.39									0.07	0.56	0.63							
	Run/Glide	371.6	6.46				5.38		5.38												0.27	0.54		0.81	0.27		0.27				
	All Habitats	2144.2	4.43				1.54		1.54		2.05		2.05								0.05	0.19	0.56	0.79	0.05		0.05				
SFK 1.310.05	Riffle	16.0	0																												
	Run/Glide	75.6	0																												
	All Habitats	91.6	0																												
SFK 1.310.10	Cascade	28.6	10.49								10.49		10.49																		
	Pool	13.9	28.78							7.19	21.58		28.78																		
	Riffle	110.3	2.72								2.72		2.72																		
	Run/Glide	4.6	0																												
	All Habitats	157.4	6.35							0.64	5.72		6.35																		
SFK 1.310.10.10	Riffle	32.8	0																												
	Run/Glide	1.5	0																												
	All Habitats	34.3	0																												
SFK 1.310.15	Cascade	11.5	0																												
	Pool	7.2	0																												
	Riffle	53.1	0																												
	Run/Glide	16.1	0																												
	All Habitats	87.9	0																												
SFK 1.310.20	Cascade	4.6	0																												
	Pool	14.6	13.70								13.70		13.70																		
	Riffle	244.6	7.36								7.36		7.36																		
	Run/Glide	28.6	6.99								6.99		6.99																		
	All Habitats	292.4	7.52								7.52		7.52																		
SFK 1.310.20.05	Cascade	40.0	2.50								2.50		2.50																		
	All Habitats	40.0	2.50								2.50		2.50																		
SFK 1.310.20.10	Cascade	9.0	0																												
	All Habitats	9.0	0																												
SFK 1.310.20.20	Cascade	12.0	0																												
	All Habitats	12.0	0																												
SFK 1.310.30	Pool	6.0	0																												
	Riffle	9.8	0																												
	All Habitats	15.8	0																												

Table B.11-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/ 100 m^2)	Coho Salmon	Sockeye Salmon	Arctic Grayling				Dolly Varden				Rainbow Trout				Northern Pike			Sculpin				Ninespine Stickleback			Stickleback			
				Juv-enile	Juvenile	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total
SFK 1.310.30.10	Cascade	14.8	0																												
	Pool	2.4	41.67								41.67		41.67																		
	Riffle	5.4	0																												
	All Habitats	22.6	4.42								4.42		4.42																		
SFK 1.320	Backwater/Slough	1.7	0																												
	Pool	1.9	157.89				157.89		157.89																						
	Riffle	2.4	83.33				83.33		83.33																						
	Run/Glide	2.9	0																												
	Wetland	14.8	0																												
	All Habitats	23.7	21.10				21.10		21.10																						
SFK 1.330	Pool	122.5	9.80																			8.16	1.63	9.80							
	Riffle	218.6	3.66																			0.46	3.20	3.66							
	Run/Glide	219.9	5.46																			4.09	1.36	5.46							
	All Habitats	561.0	5.70																			3.57	2.14	5.70							
SFK 1.340	Beaver Complex	348.0	2.30																										2.30		2.30
	Pool	89.4	24.61				1.12		1.12													1.12		1.12		1.12	1.12		21.25		21.25
	Riffle	274.2	19.33																			0.36		0.36					13.13	5.84	18.96
	Run/Glide	39.6	0																												
	All Habitats	751.2	11.05				0.13		0.13													0.27		0.27		0.13	0.13		8.39	2.13	10.52
SFK 1.350	Backwater/Slough	229.2	0.87																									0.87			0.87
	Cascade	4.0	0																												
	Pool	73.6	0																												
	Riffle	72.9	0																												
	Run/Glide	172.5	1.16				1.16		1.16																						
	Wetland	64.5	0																												
	All Habitats	616.7	0.65				0.32		0.32																			0.32			0.32
SFK 1.360	Beaver Complex	301.0	1.33								1.33		1.33																		
	Cascade	62.2	0																												
	Pool	34.8	2.87								2.87		2.87																		
	Riffle	42.5	0																												
	Run/Glide	52.5	0																												
	All Habitats	493.0	1.01								1.01		1.01																		
SFK 1.370	Backwater/Slough	4.8	20.83																		20.83			20.83							
	Riffle	21.8	27.52																		9.17	18.35		27.52							
	Run/Glide	90.0	3.33																		1.11	2.22		3.33							
	Wetland	67.1	2.98																1.49	1.49		1.49		1.49							
	All Habitats	183.7	6.53																0.54	0.54	2.18	3.81		5.99							
SFK 1.380	Pool	2.1	0																												
	Riffle	2.4	0																												
	Run/Glide	263.5	9.49				0.38		0.38												0.38	8.73		9.11							
	Wetland	684.0	0.15																		0.15			0.15							
	All Habitats	952.0	2.73				0.11		0.11												0.21	2.42		2.63							

Table B.11-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/ 100 m^2)	Coho Salmon	Sockeye Salmon	Arctic Grayling				Dolly Varden				Rainbow Trout				Northern Pike			Sculpin				Ninespine Stickleback			Stickleback			
				Juv-enile	Juvenile	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total	Adult	Juv-enile	Total	Adult	Juv-enile	Juv-enile/ Adult[a]	Total
SFK 1.400	Backwater/Slough	4.5	0																											
	Cascade	4.8	0																											
	Pool	79.3	0																											
	Riffle	111.7	0																											
	Run/Glide	69.9	0																											
	Wetland	18.0	0																											
	All Habitats	288.2	0																											

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.

[b] Total density includes unidentified fish.

Note: Blank cells indicate no data were collected for that record.

Table B.11-9.
SFK-E fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Juveniles	Total Fish Count	Fish Abundance (number/100 m)
4/5/2006	SFK06WT-07	Dolly Varden	electrofishing	30		3	3	10.0
		Dolly Varden	visual observation			4	4	
10/31/2006	SFK-06-WT1	arctic grayling	electrofishing	50		1	1	2.0
		arctic grayling	minnow trap		22	1	1	

Note: Blank cells indicate no data were collected for that record.

Table B.11-10.
2008 fish observations by method at mainstem index sites located within SFK-E.

Index Site	Species	Method	Adult	Juvenile	Total
SFK56.29	coho salmon	beach seine		1	1
	arctic grayling	beach seine		3	3
		snorkel		4	4
	Salmonid sp.	snorkel		1	1
	northern pike	beach seine	1	2	3
	sculpin sp.	beach seine		2	2
SFK56.29 Total			**1**	**13**	**14**

Note: Blank cells indicate no data were collected for that record.

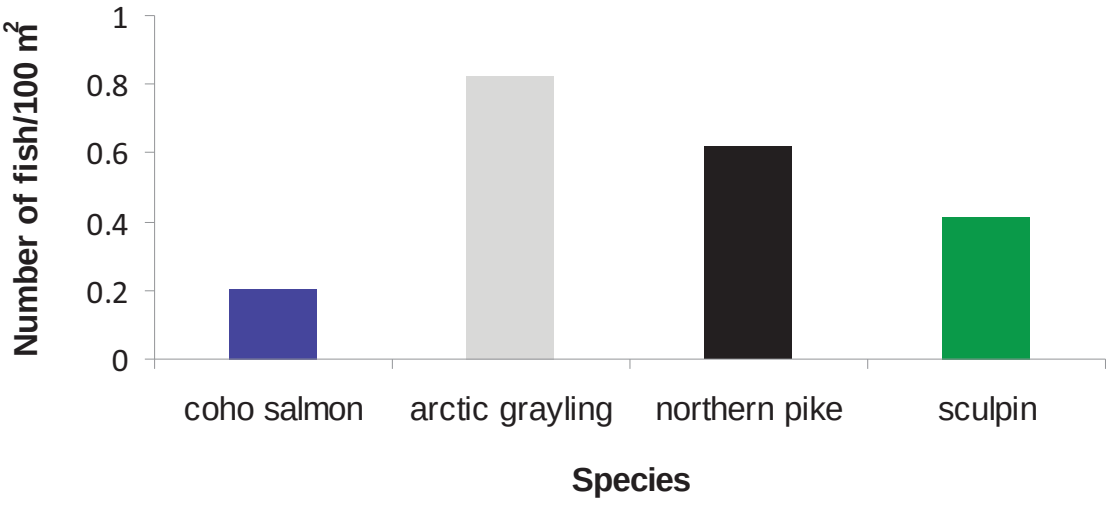
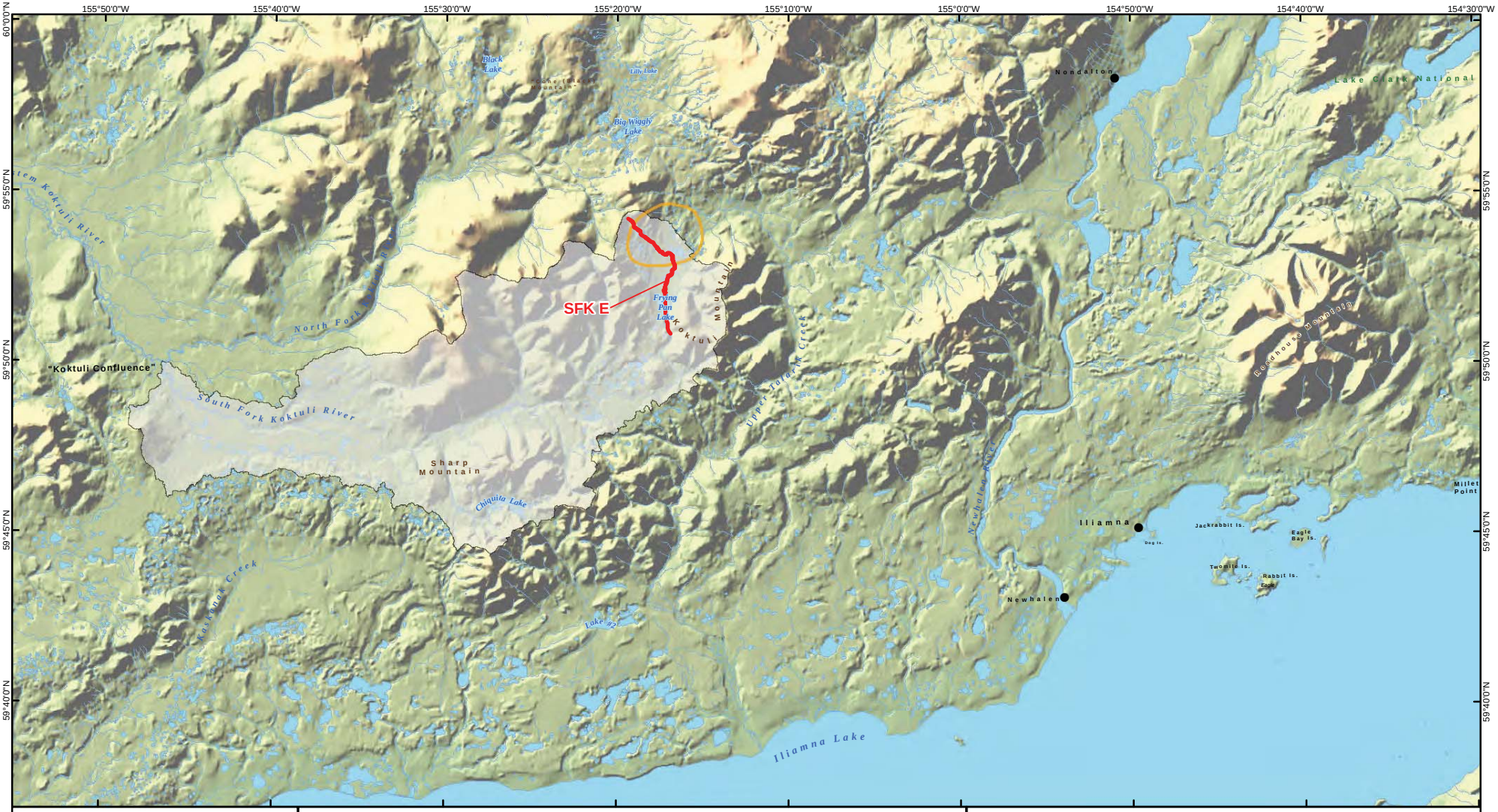
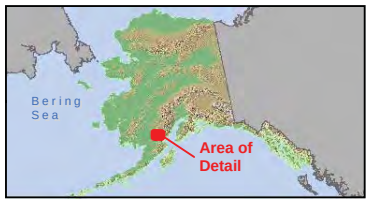


Figure B.11-11.
2008 fish density in glide habitat at mainstem index site (RKm 56.29) within SFK-E. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach
- SFK Reach E

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

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Figure B.11-1a
Reach SFK-E

RDI_R2_OverviewLocator_SFK-E_Fig-B.11-1a_11x17L_11of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

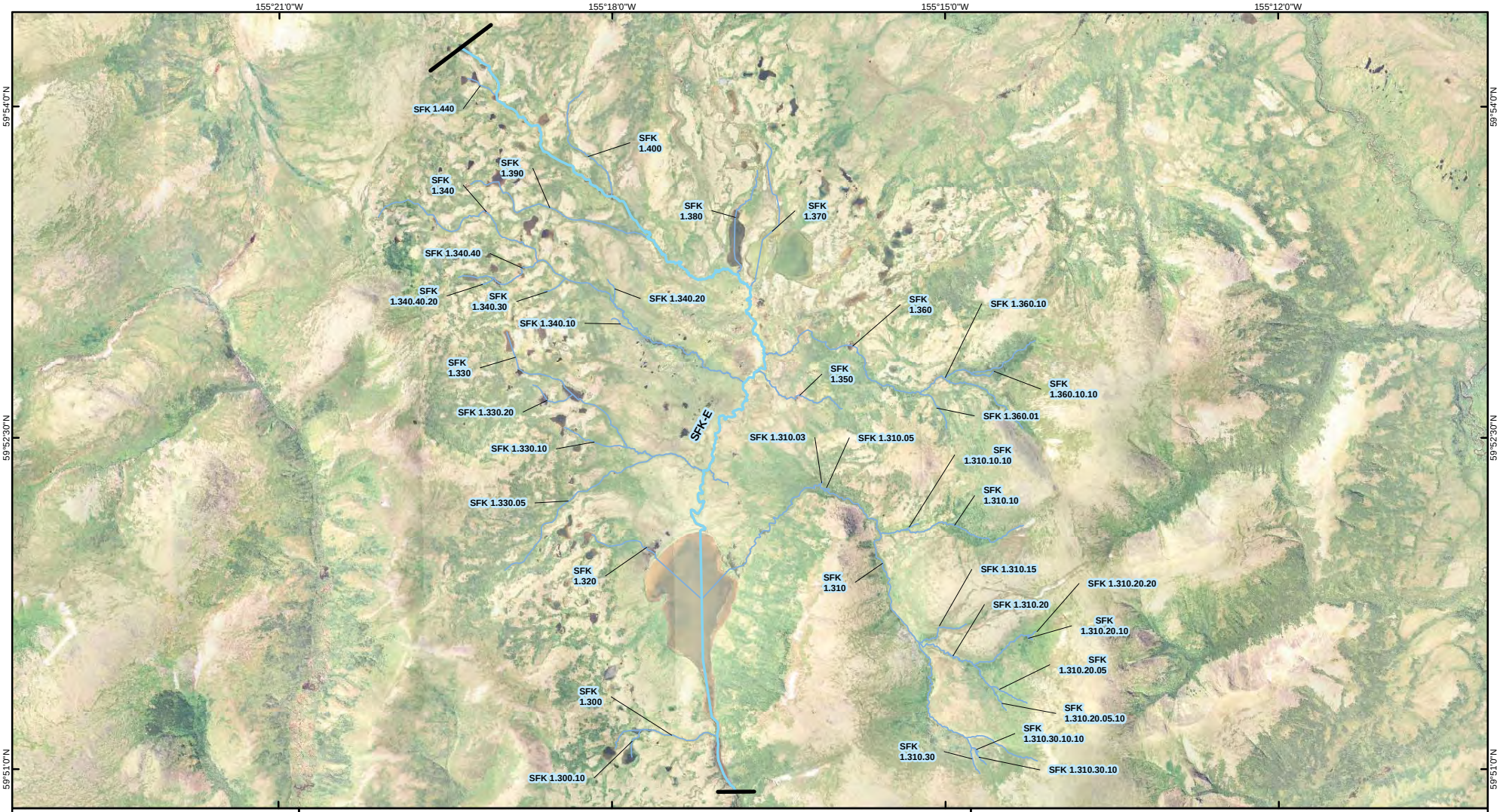
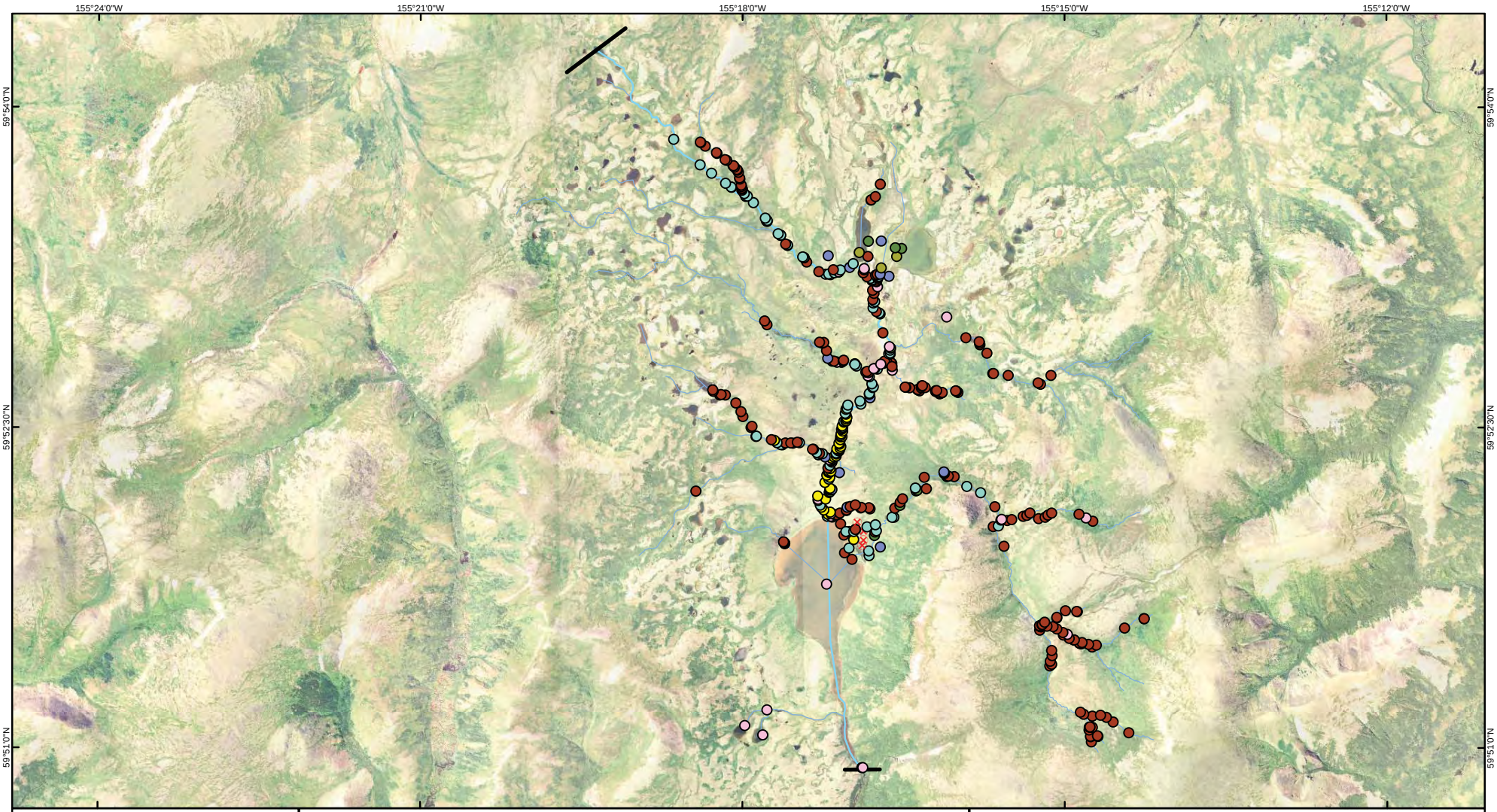


Figure B.11-1b
SFK-E
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_SFK-E_Fig-B.11-1b_11x17L_11of19_D01.mxd

February 5, 2011

Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.6 1.2

Kilometers
0 0.6 1.2

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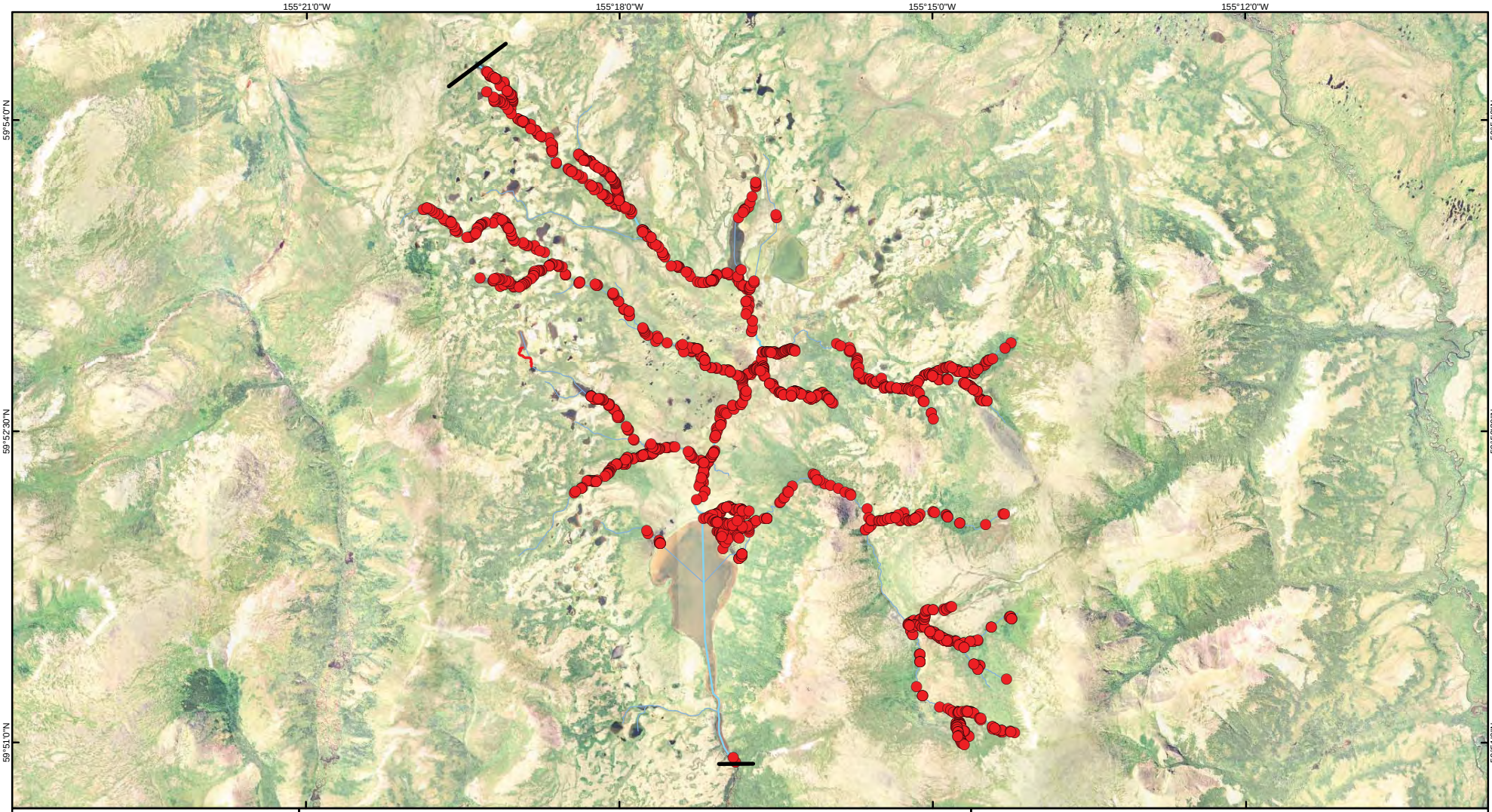
Figure B.11-2
SFK-E
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_SFK-E_Fig-B.11-2_11x17L_11of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

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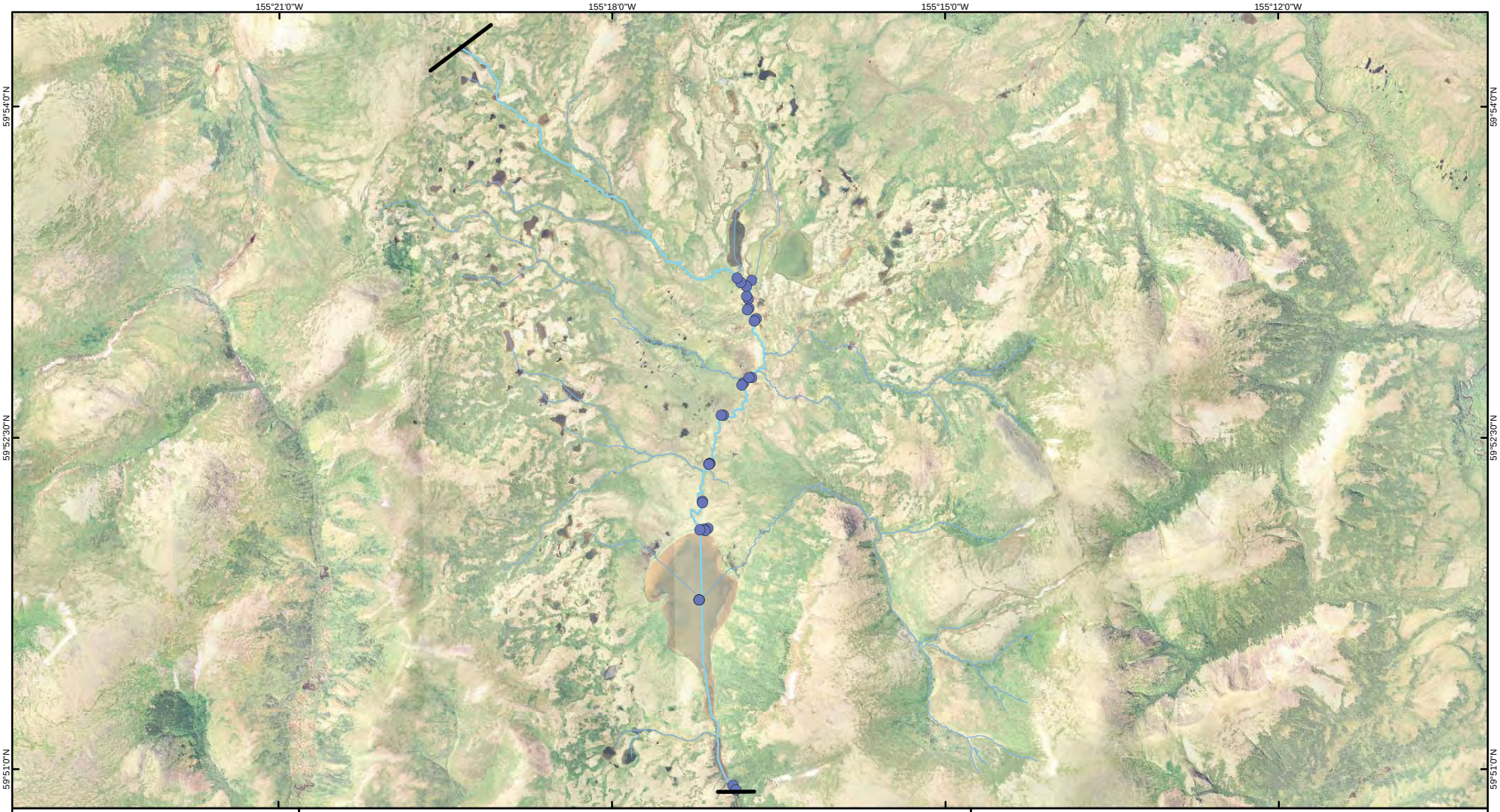
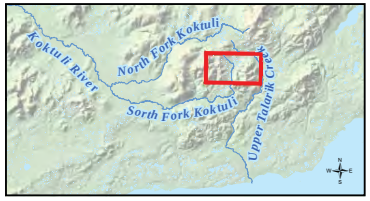
Figure B.11-3
SFK-E
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_SFK-E_Fig-B.11-3_11x17L_11of19_D02.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.6 1.2

Kilometers
0 0.6 1.2

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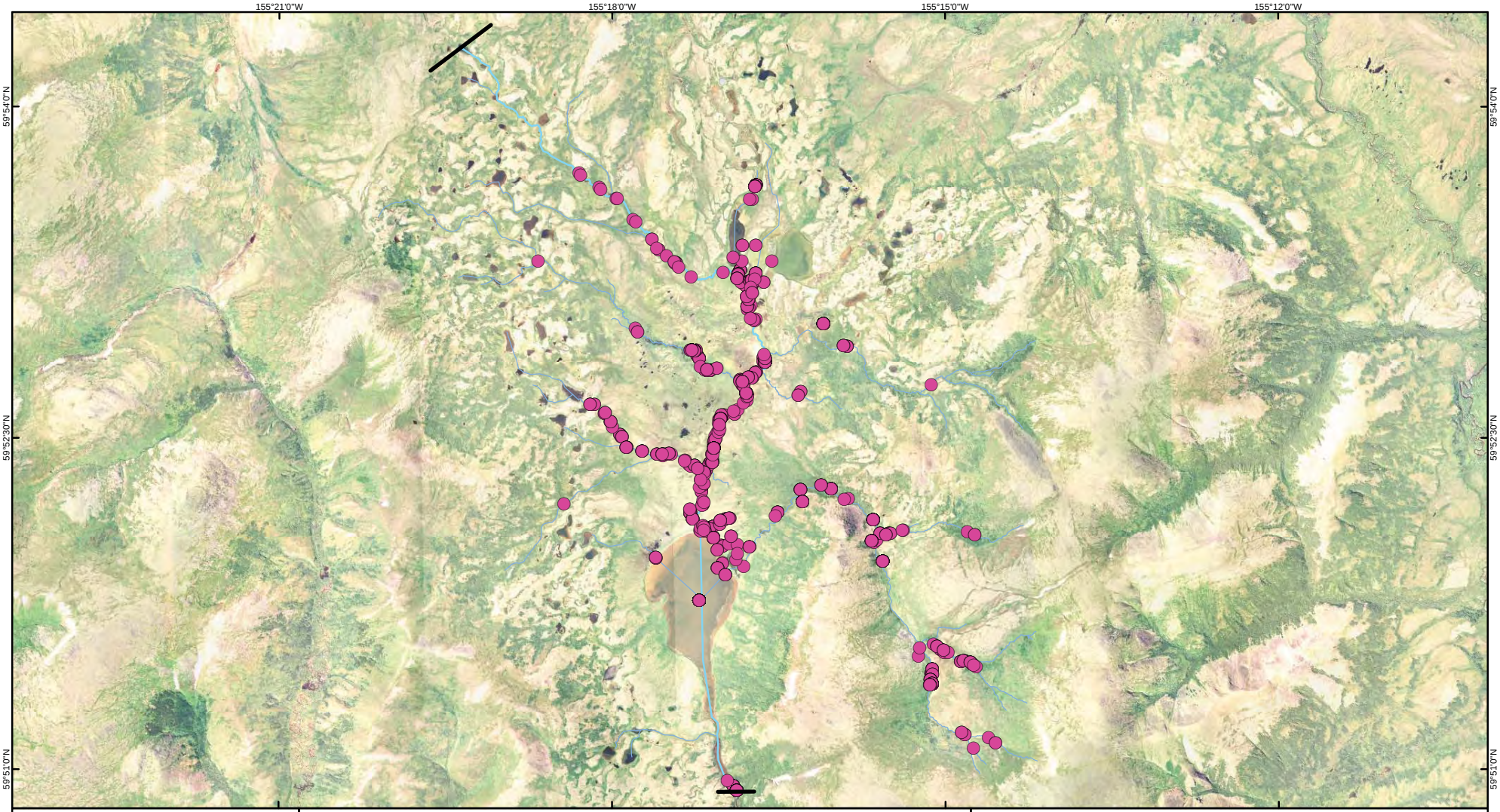
Figure B.11-4
SFK-E
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_SFK-E_Fig-B.11-4_11x17L_11of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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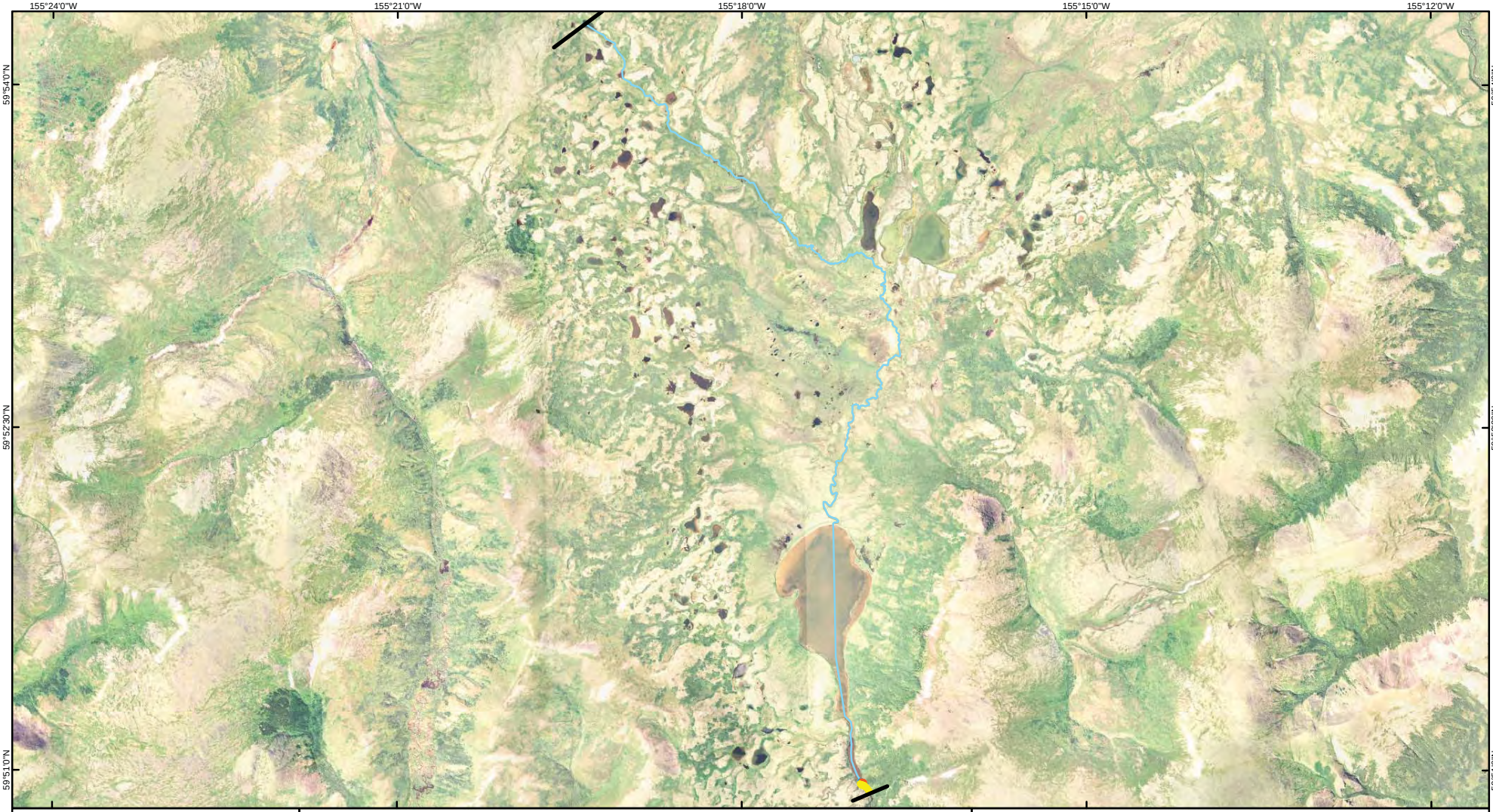
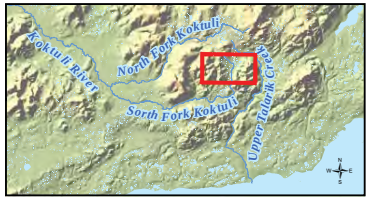
Figure B.11-5
SFK-E
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_SFK-E_Fig-B.11-5_11x17L_11of19_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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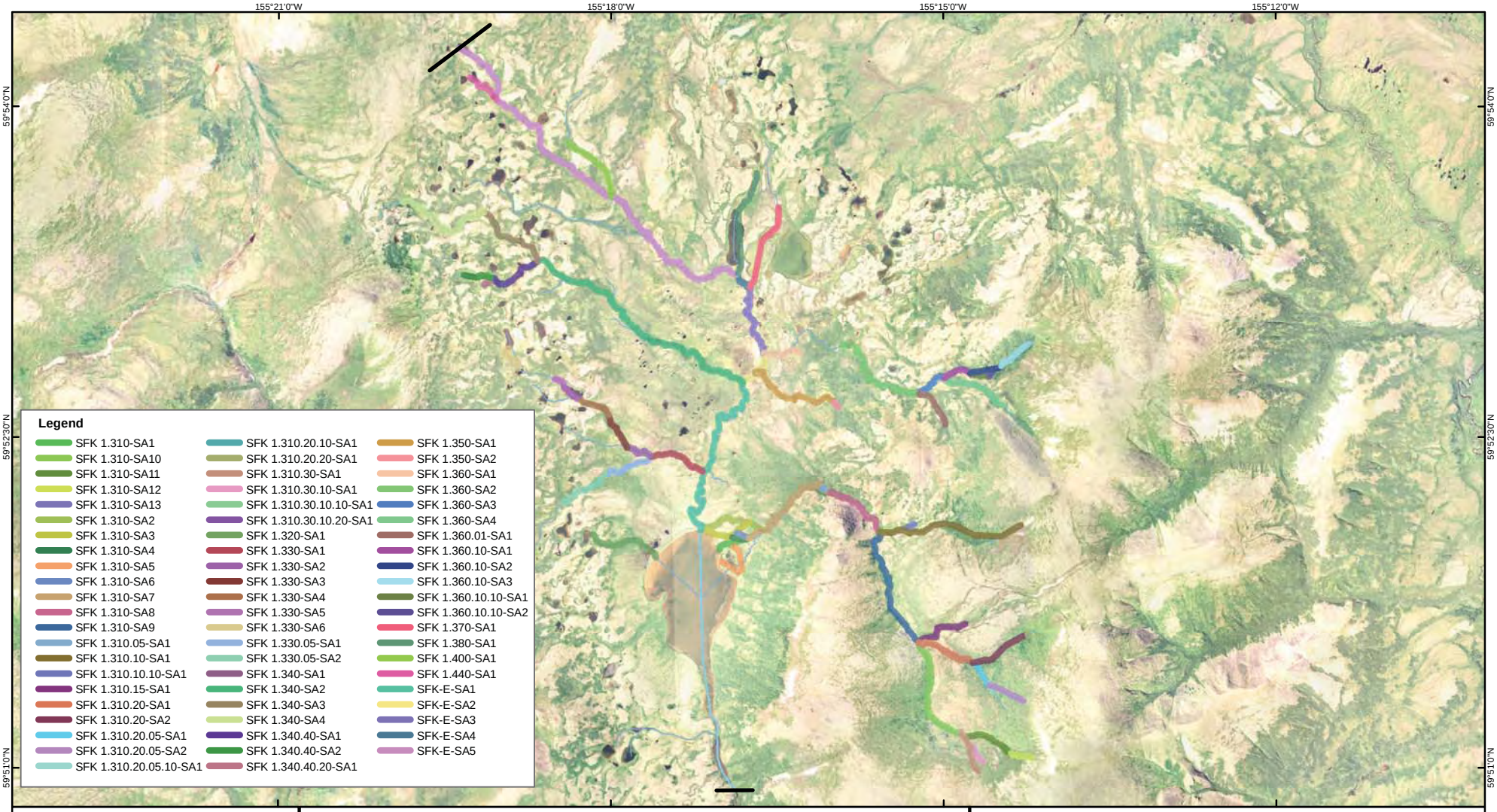
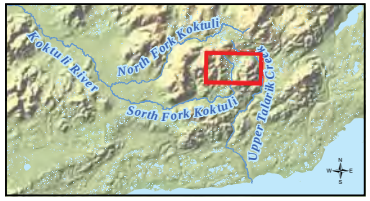
Figure B.11-6
SFK-E
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_SFK-E_Fig-B.11-6_11x17L_11of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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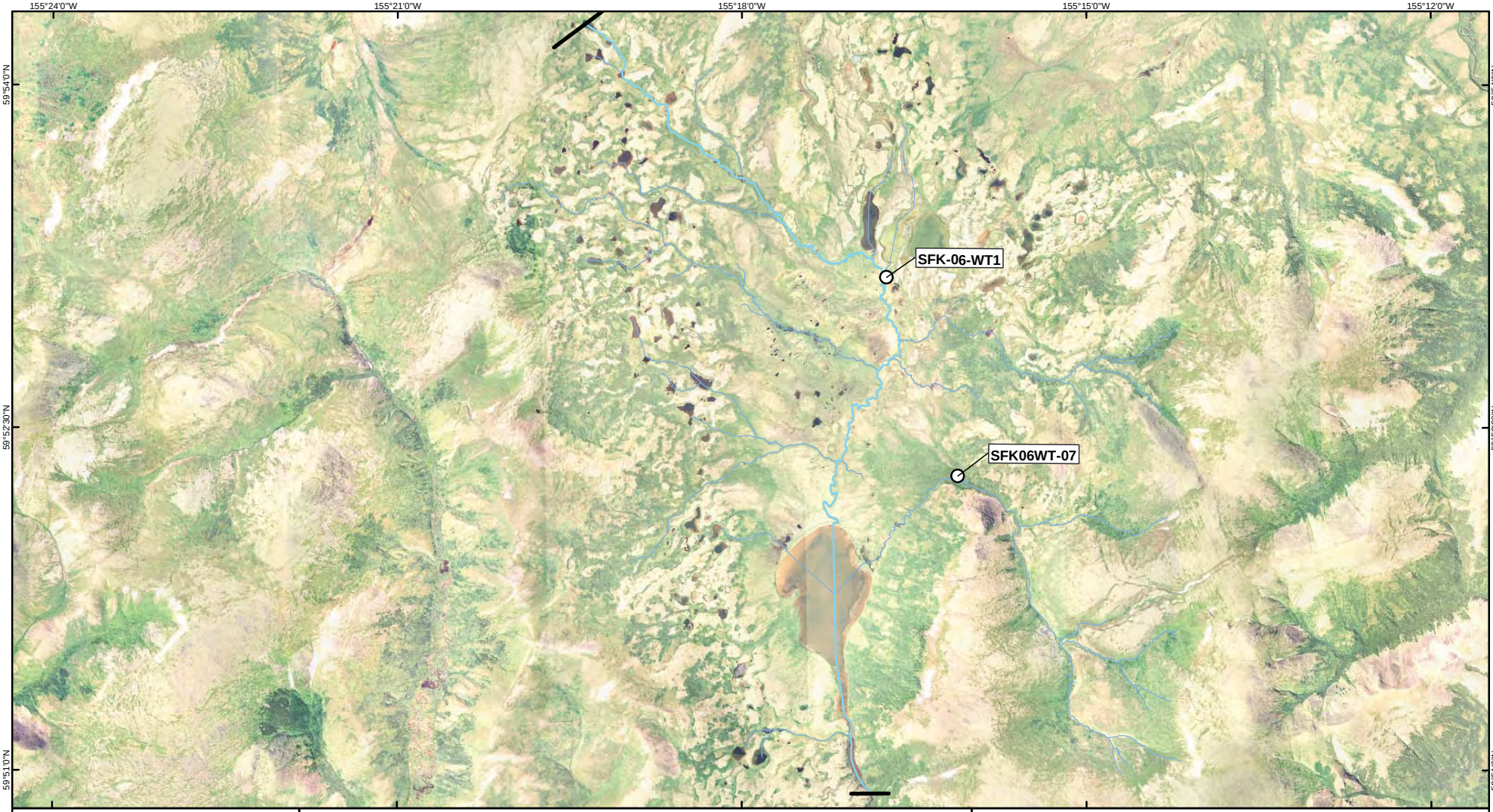
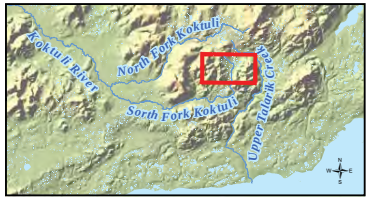
Figure B.11-7
SFK-E
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_SFK-E_Fig-B.11-7_11x17L_11of19_D02.mxd	January 14, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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Figure B.11-10
SFK-E
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_SFK-E_Fig-B.11-10_11x17L_11of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

PEBBLE PROJECT
ENVIRONMENTAL BASELINE STUDIES

APPENDIX B
REACH ANALYSIS

UPPER TALARIK CREEK BASIN

JANUARY 2011

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CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.12
UPPER TALARIK CREEK RIVER REACH A (UT-A)

Table B.12-1.
List of species found in UT-A.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
stickleback [c]	*Gasterosteidae*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

[c] identified to family, may include ninespine and threespine stickleback

Table B.12-2.
Channel morphology data from areas sampled within UT-A.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)	Average Wetted Width (m)	Average Bankfull Width (m)	Maximum Bankfull Depth (m)
UT-A-SA1 / TOTAL	9/7/08	low-gradient floodplain channel	1.4	18.0	30.3	1.4

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

Table B.12-3.
Percent composition of primary habitat types from areas sampled within UT-A in 2008.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a]	Total Wetted Area (m^2)[a]	Side Channel (% of Total Wetted Area)	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT-A-SA1 / TOTAL	11943.8	14.2	169530.0	16	0	6 / 4	0 / 0	0 / 0	0	0	0 / 0	9 / 13	55 / 62	30 / 22	0 / 0

[a]Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

Table B.12-4.
Descriptive characteristics of primary habitat units from areas sampled within UT-A in 2008.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate	Eroding Bank (% of Length)	Undercut Bank (% of Length)[a]	Dominant Riparian Vegetation
UT-A-SA1 / TOTAL	gravel	sand/silt	0	NA	willow shrub

[a] NA=data not available.

Table B.12-5.
Summary of 2008 pool habitat data from areas sampled in UT-A.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT-A-SA1 /TOTAL	11.94	32	0	32	0.3	0	0.3	22236.8	0	22236.8	694.9	0.9	0.3

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.

Table B.12-6.
Special habitat features within UT-A, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT-A-SA1	59.68118	-155.22060	tributary	UT 1.60				
	59.67698	-155.22267	spring					
	59.66582	-155.21210	spring					

Note: Blank cells indicate no data were collected for that record.

Table B.12-7.
2004-2008 number of fish observations by lifestage within UT-A mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult					Juvenile			Juvenile/Adult[a]					Total
			May	Jun	Aug	Sep	Subtotal	Aug	Sep	Subtotal	May	Jun	Aug	Sep	Subtotal	
Chinook salmon	2008	Snorkel							63	63						63
coho salmon	2004	Visual Observation			601		601			0						601
	2008	Snorkel				72	72		771	771						843
sockeye salmon	2008	Seine			1		1									1
		Snorkel			5	7	12		26	26						38
arctic grayling	2008	Angling		15			15									15
		Snorkel							3	3				1	1	4
rainbow trout	2007	Angling			23	13	36									36
	2008	Angling	20	68			88				1	1			2	90
		Seine						1		1						1
		Snorkel				4	4		316	316				3	3	323
whitefish sp.	2008	Angling		1			1									1
sculpin sp.	2008	Seine			1		1	9		9						10
		Snorkel											5	17	22	22
stickleback sp.	2008	Seine			27		27	22		22						49
		Snorkel											241	549	790	790

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

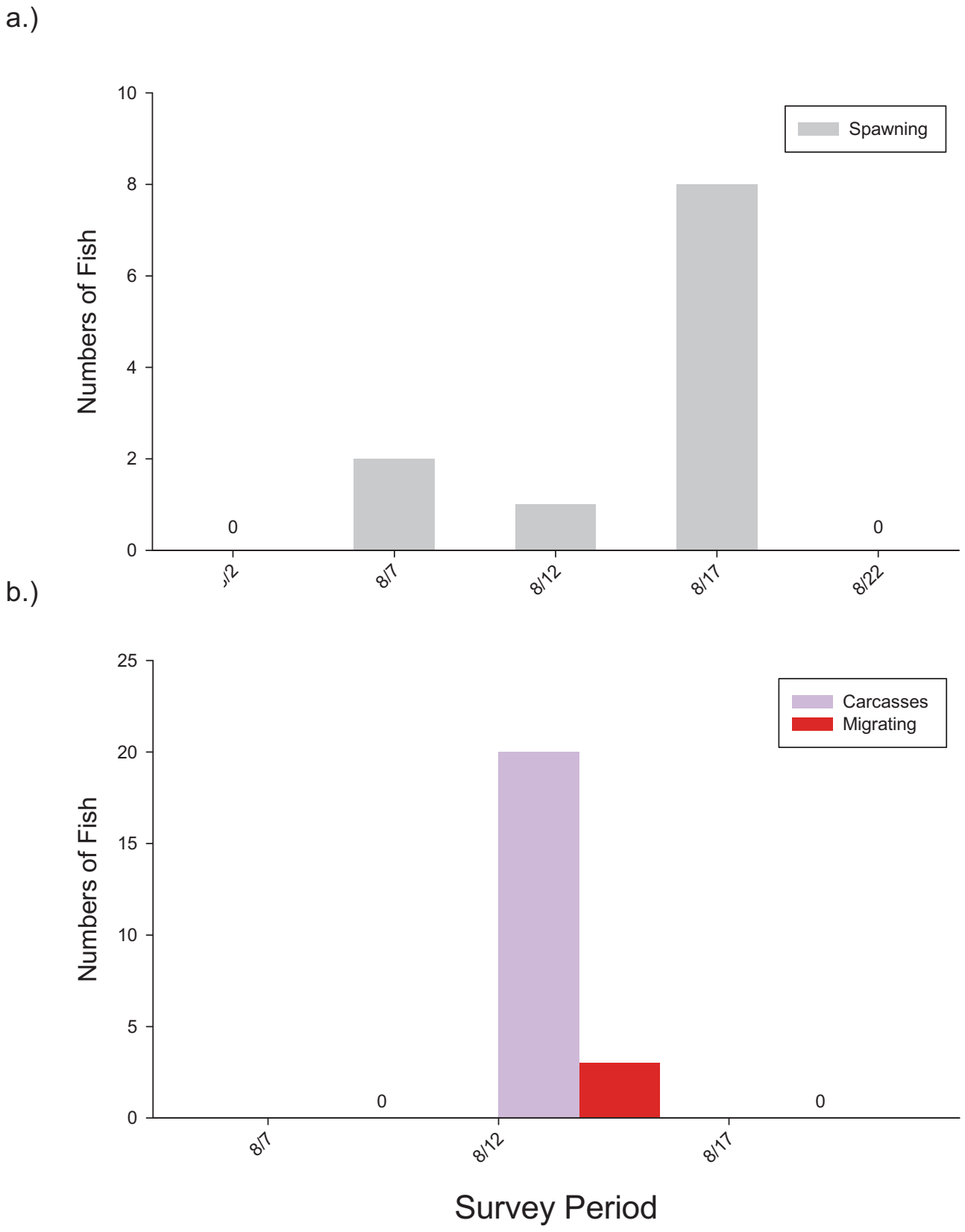


Figure B.12-12.
Observations of Chinook salmon during 2008 aerial surveys in UT-A. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

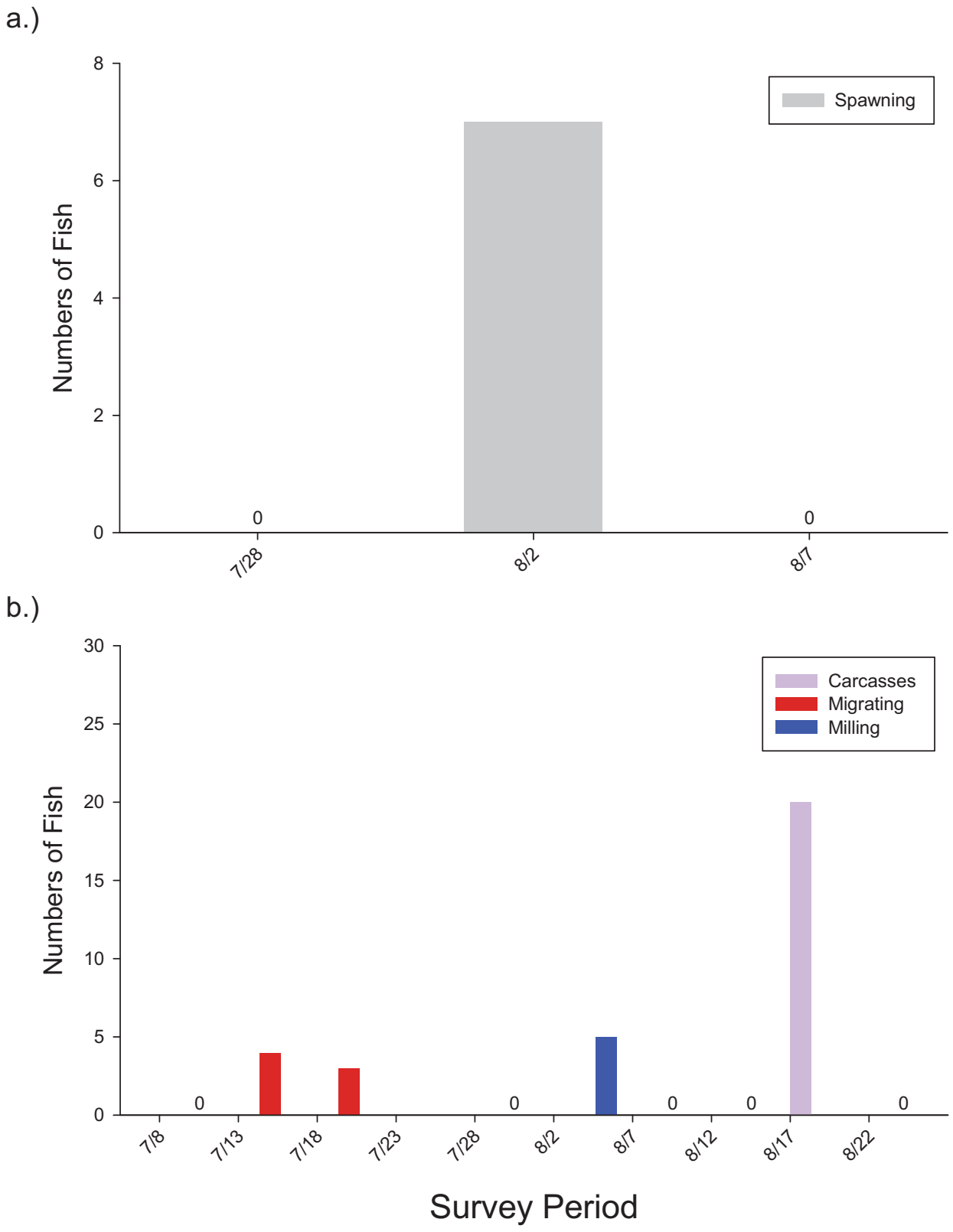


Figure B.12-13.
Observations of chum salmon during 2008 aerial surveys in UT-A. a.) Number of chum salmon spawning and b.) Number of chum salmon observed in spawning related behaviors.

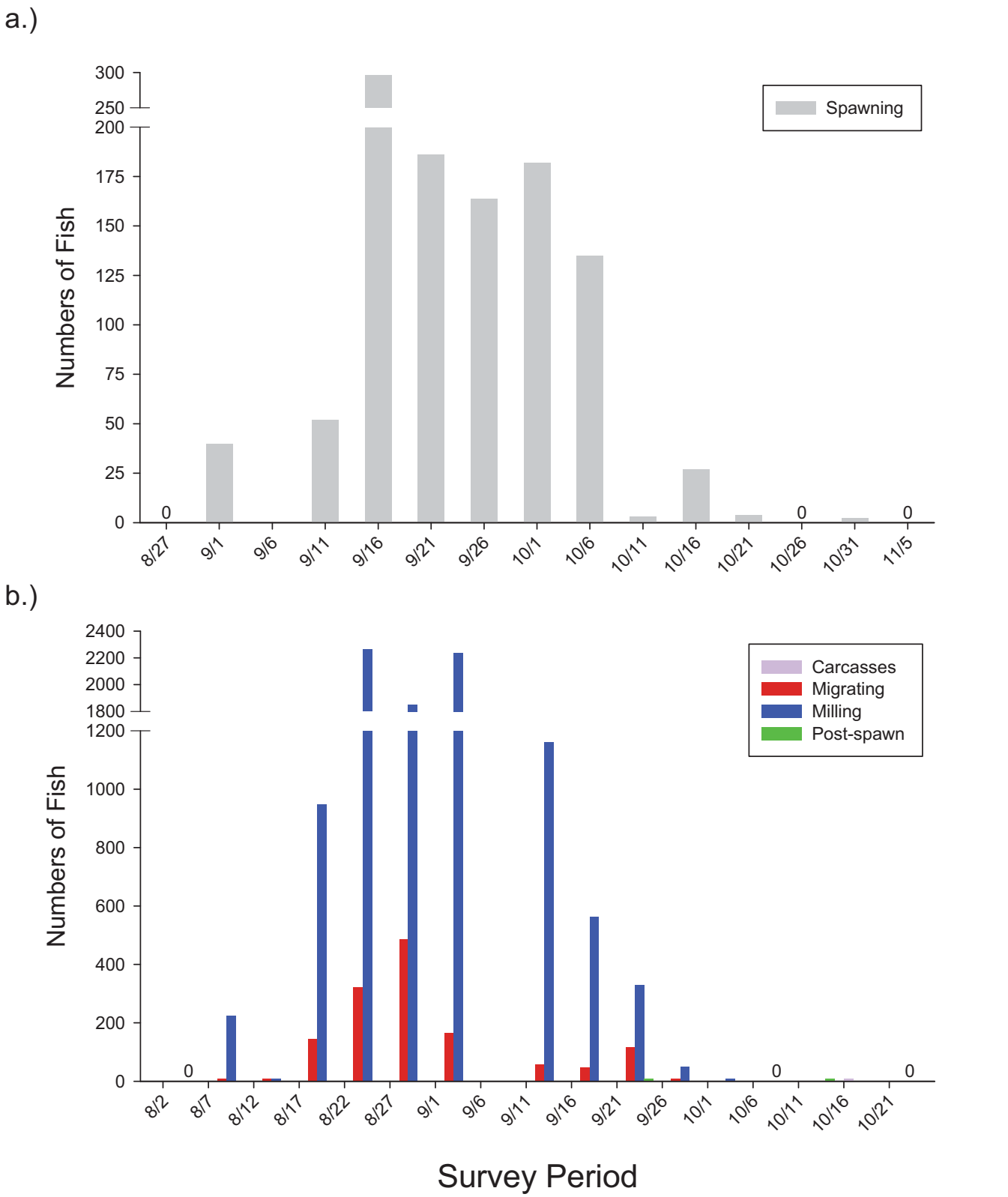


Figure B.12-14.
Observations of coho salmon during 2008 aerial surveys in UT-A. a.) Number of coho salmon spawning and b.) Number of coho salmon observed in spawning related behaviors.

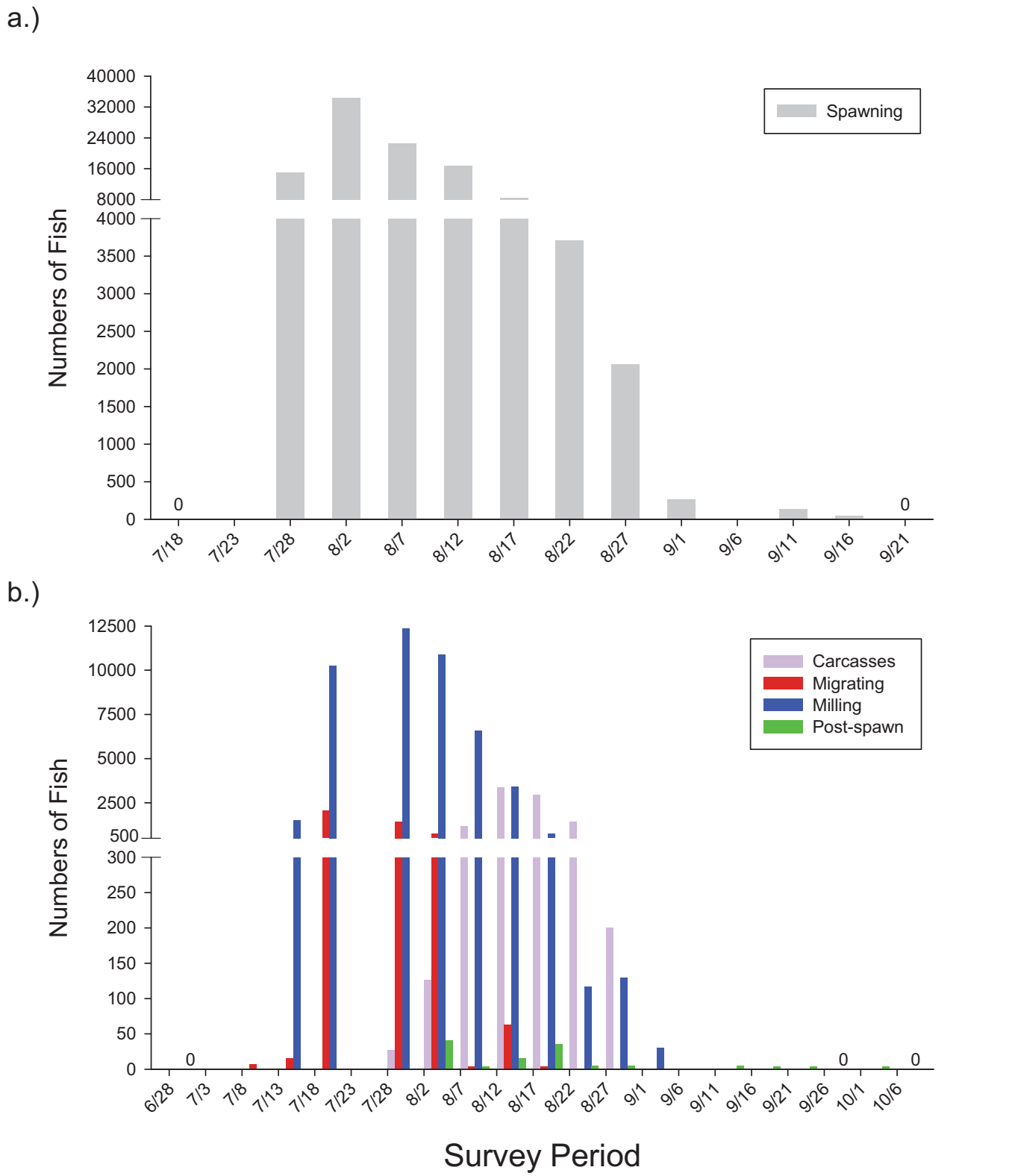


Figure B.12-15.
Observations of sockeye salmon during 2008 aerial surveys in UT-A. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.12-8.
2008 fish observations by method at mainstem index sites located within UT-A.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC00.0	sockeye salmon	beach seine	1			1
	sculpin sp.	beach seine	1	8		9
		snorkel			3	3
	stickleback sp.	beach seine	27	22		49
		snorkel			241	241
UTC00.0 Total			**29**	**30**	**244**	**303**
UTC04.33	sockeye salmon	snorkel	5			5
	rainbow trout	beach seine		1		1
	sculpin sp.	beach seine		1		1
		snorkel			2	2
UTC04.33 Total			**5**	**2**	**2**	**9**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

Figure B.12-16a.
2008 fish density in glide habitat at mainstem index site (RKm 0.00) within UT-A. Densities were calculated from the method that generated the greatest count of fish at this location.

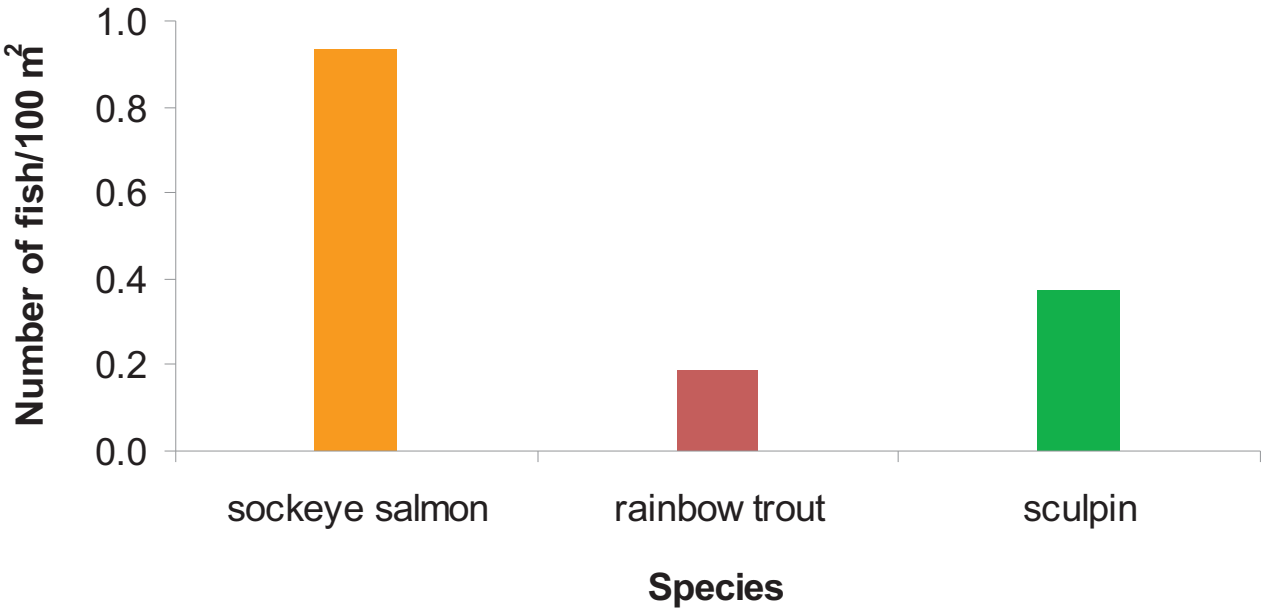
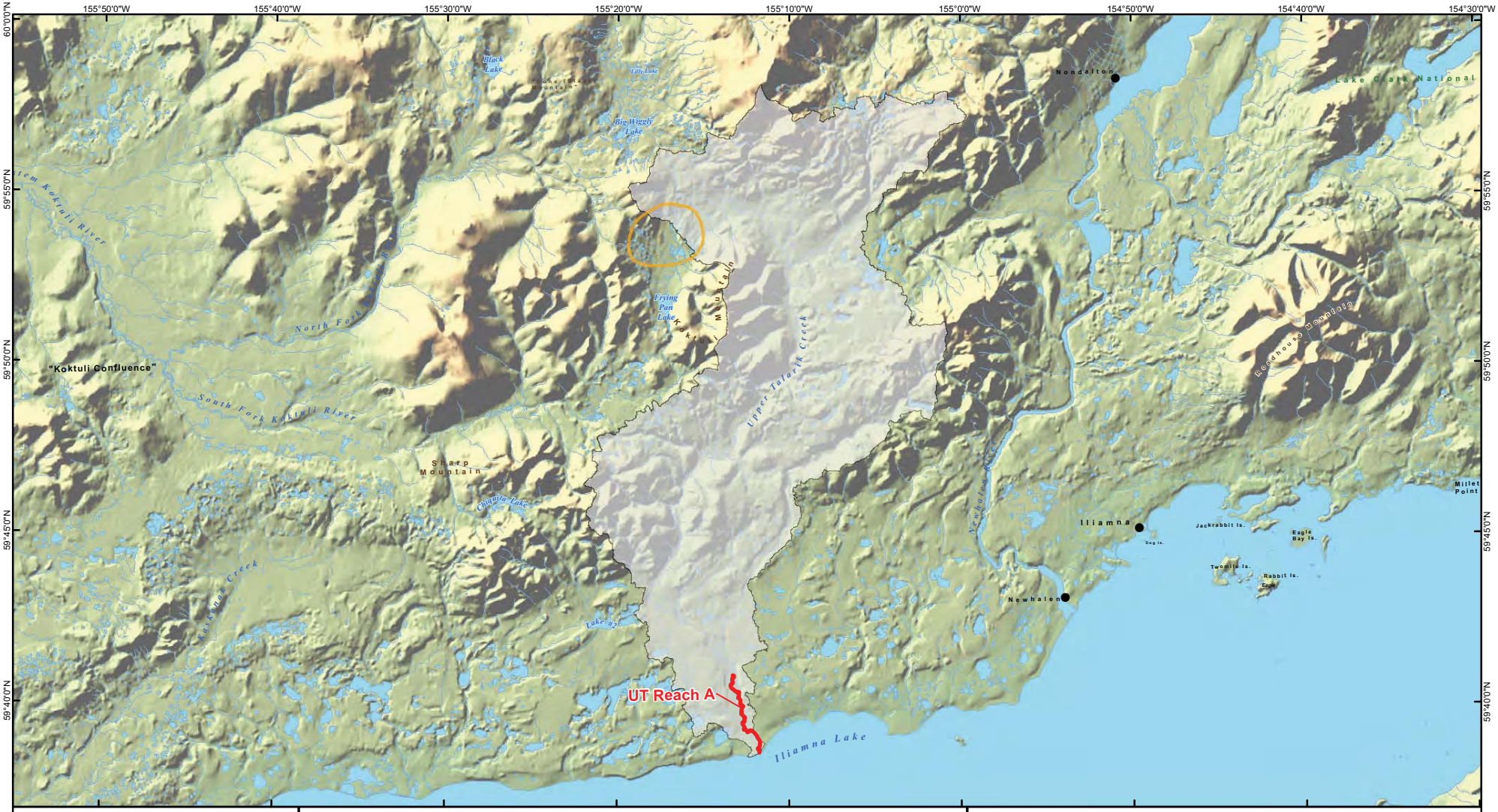
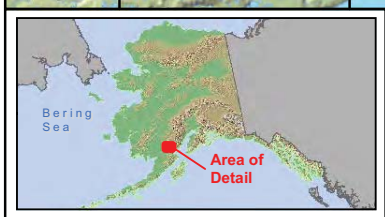


Figure B.12-16b.
2008 fish density in riffle habitat at mainstem index site (RKm 4.33) within UT-A. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach UT Reach A

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

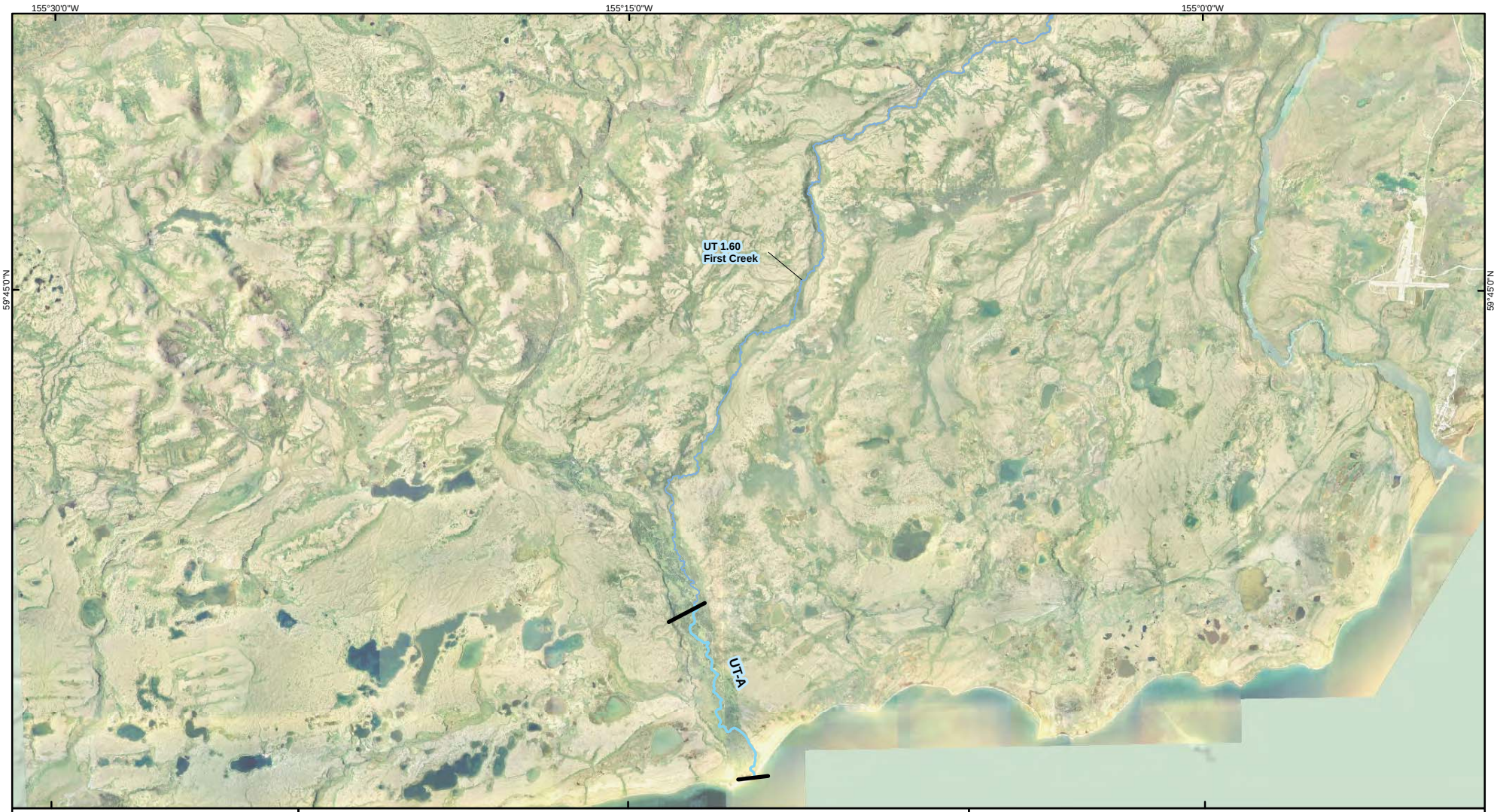
THE pebble PARTNERSHIP

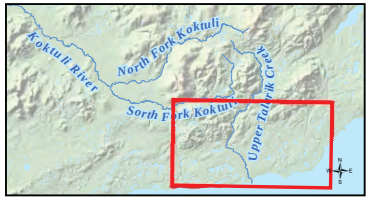
Figure B.12-1a
Reach UT-A

RDI_R2_OverviewLocator_UT-A_Fig-B.12-1a_11x17L_12of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

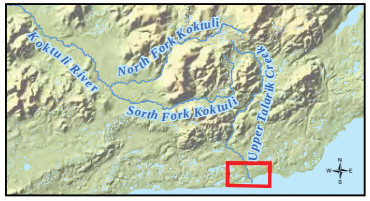
Miles: 0 — 1.8 — 3.6

Kilometers: 0 — 1.8 — 3.6

THE pebble PARTNERSHIP

Figure B.12-1b
UT-A
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-A_Fig-B.12-1b_11x17L_12of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach

Tributary Streams

Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

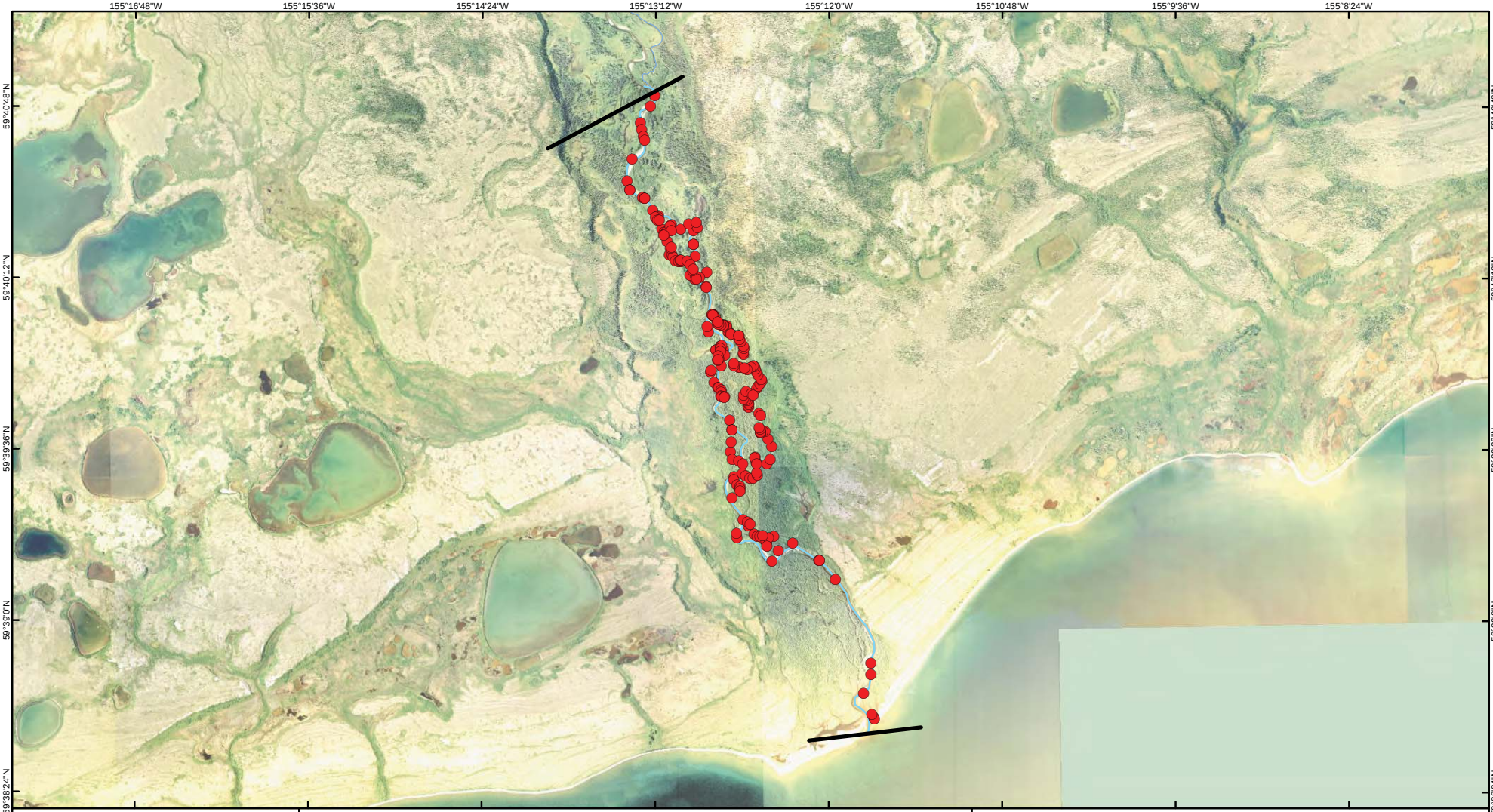
Miles
0 0.5 1

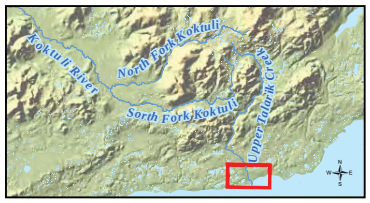
Kilometers
0 0.5 1

THE pebble PARTNERSHIP

Figure B.12-2
UT-A
Fish Sampling Sites By Method

RDI_R2_AllFishSites_ByMethod_UT-A_Fig-B.12-2_11x17L_12of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.12-3
UT-A
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-A_Fig-B.12-3_11x17L_12of19_D02.mxd	February 5, 2011
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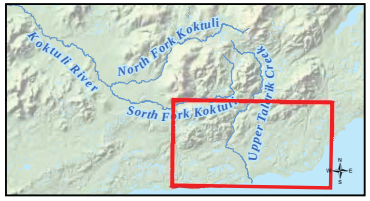


Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

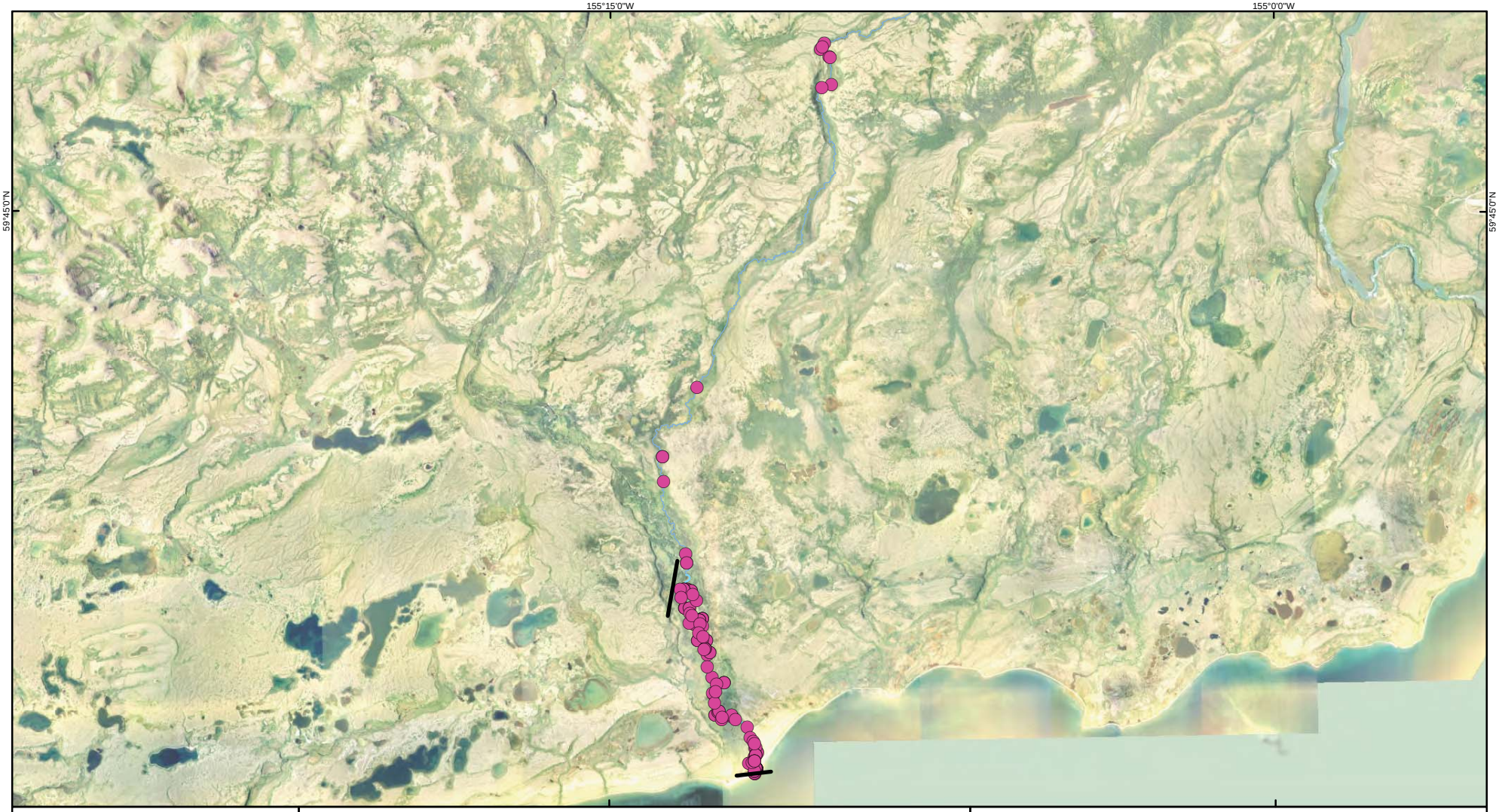
Miles
0 1.8 3.6

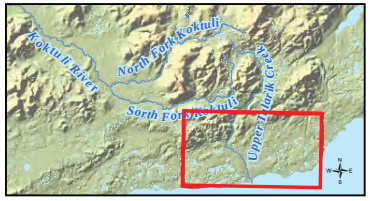
Kilometers
0 1.8 3.6

THE pebble PARTNERSHIP

Figure B.12-4
UT-A
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-A_Fig-B.12-4_11x17L_12of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 1.5 3

Kilometers
0 1.5 3

THE pebble PARTNERSHIP

Figure B.12-5
UT-A
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-A_Fig-B.12-5_11x17L_12of19_D04.mxd	February 5, 2011
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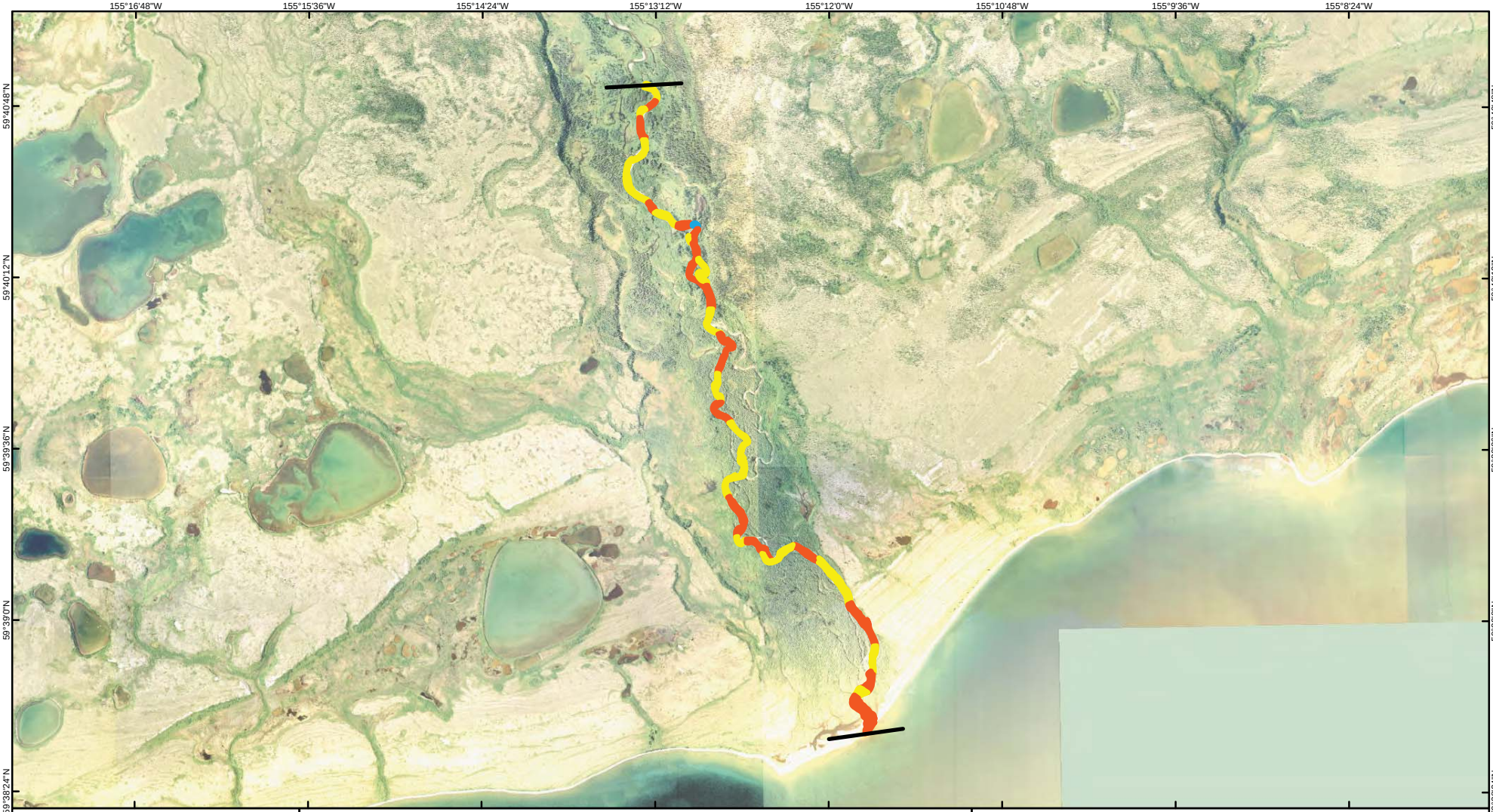

Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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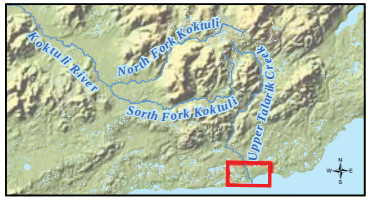
Figure B.12-6
UT-A
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_UT-A_Fig-B.12-6_11x17L_12of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- UT-A-SA1
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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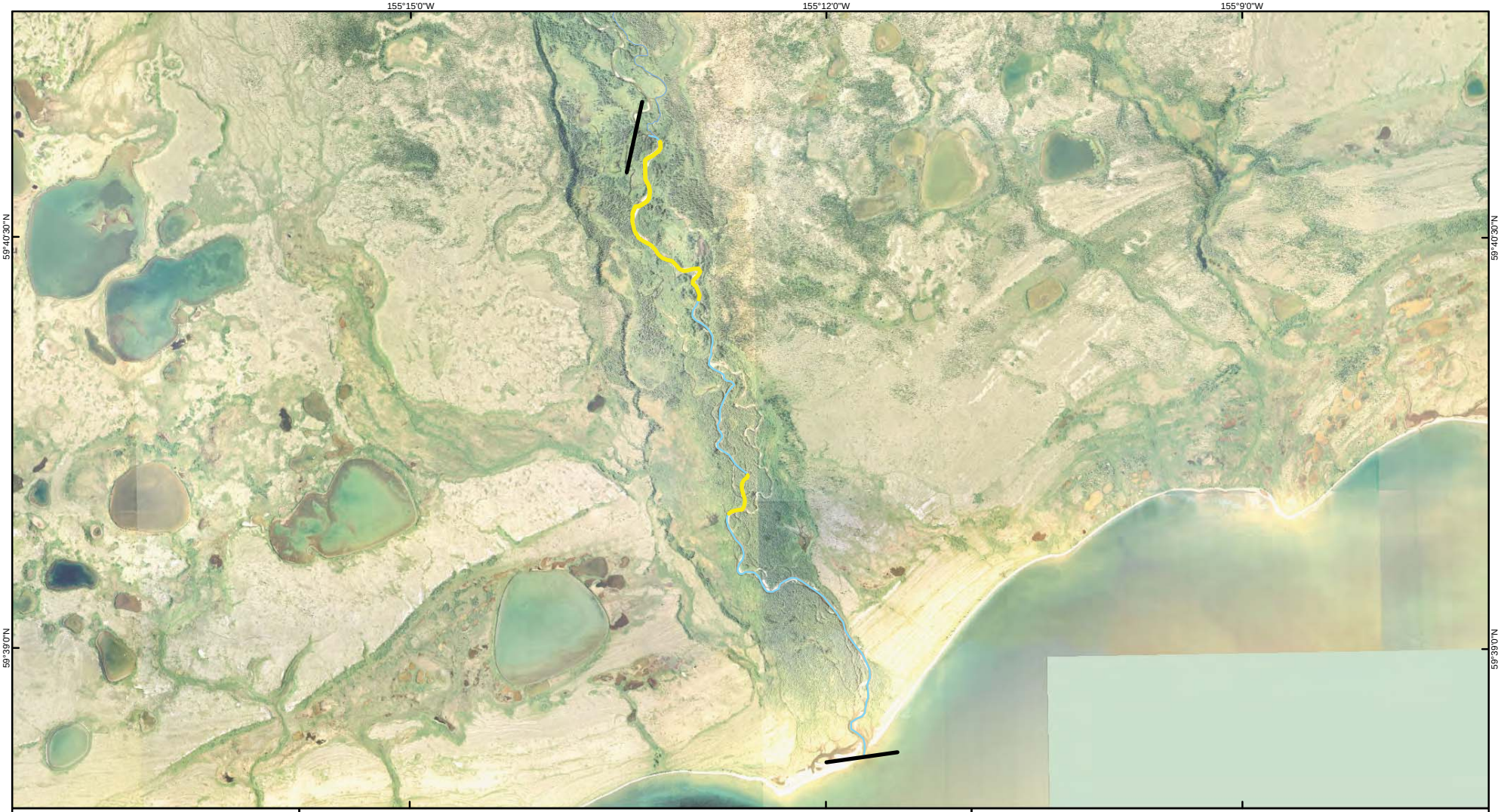
Figure B.12-7
UT-A
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_UT-A_Fig-B.12-7_11x17L_12of19_D02.mxd

January 14, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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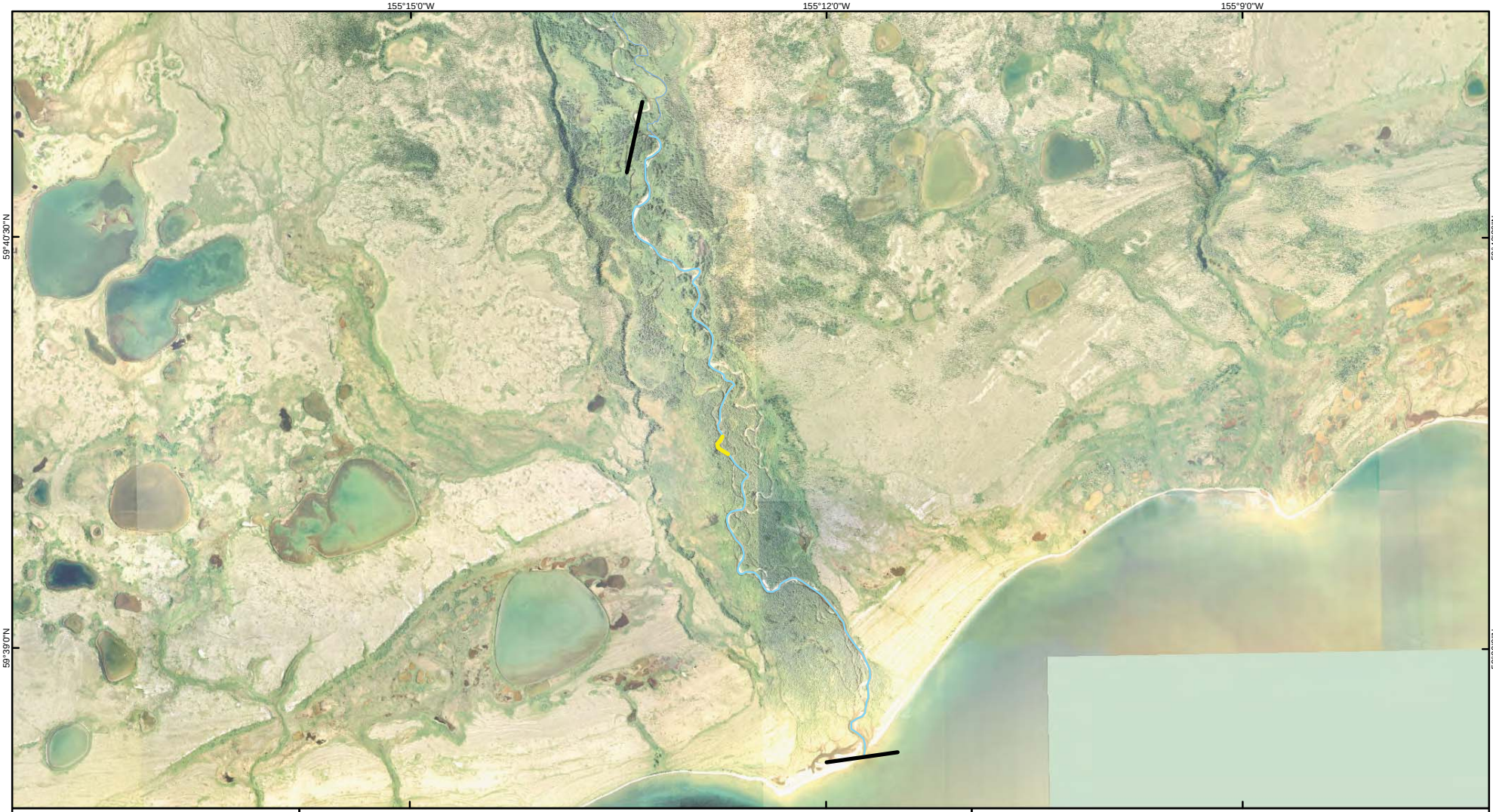
Figure B.12-8
UT-Aa
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Aa_Fig-B.12-8_KS_11x17L_13of22_D04.mxd

February 5, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

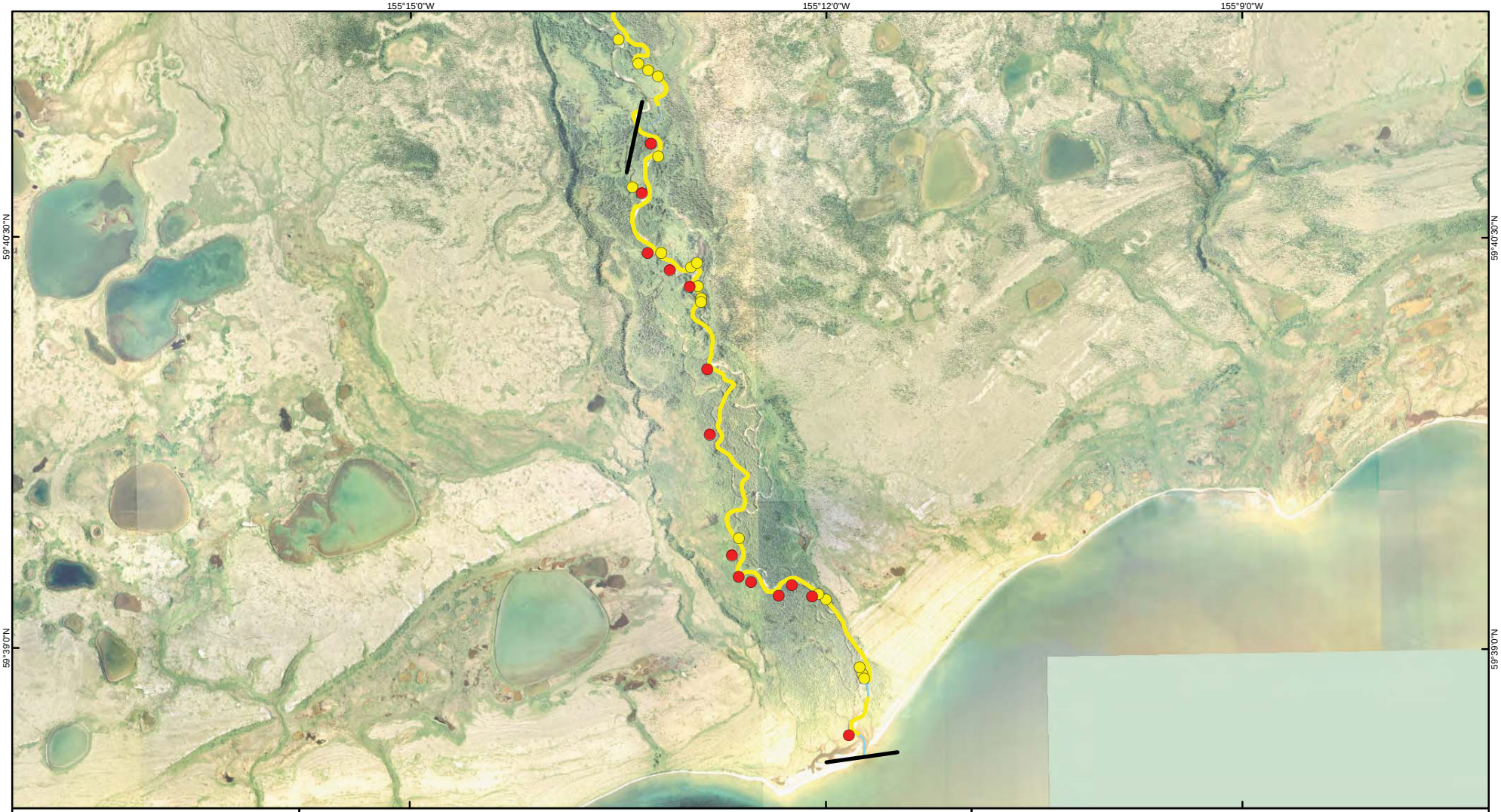
THE pebble PARTNERSHIP

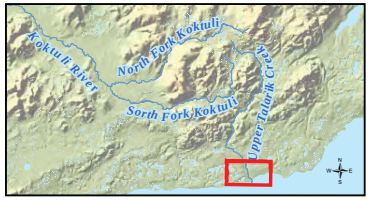
Figure B.12-9
UT-Aa
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Aa_Fig-B.12-9_CH_11x17L_13of22_D04.mxd

February 5, 2011

Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.5 1

Kilometers
0 0.5 1

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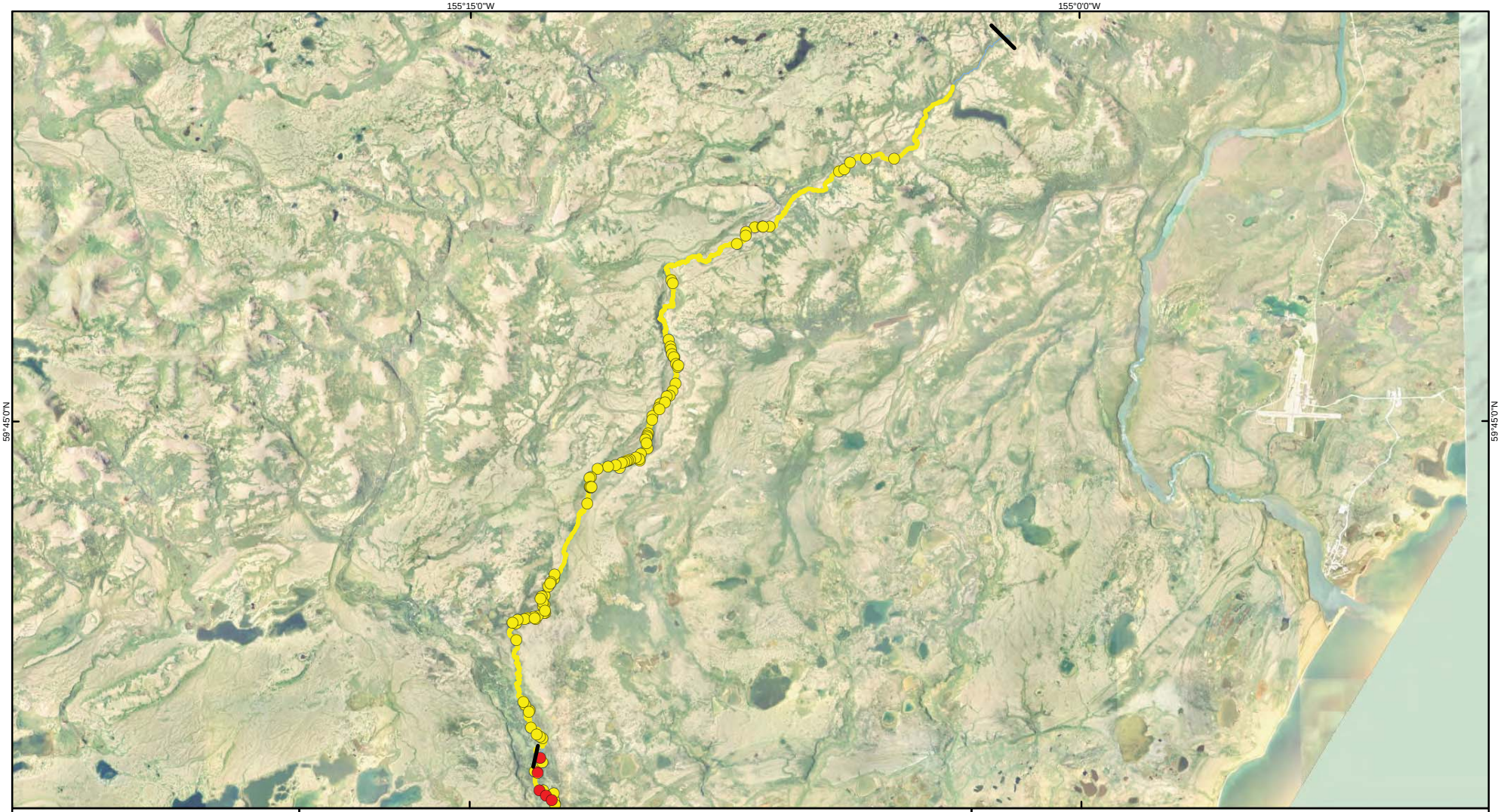
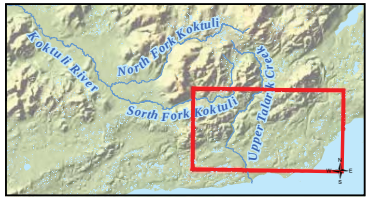
Figure B.12-10
UT-Aa
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Aa_Fig-B.12-10_CS_11x17L_13of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.7 — 3.4

Kilometers: 0 — 1.7 — 3.4

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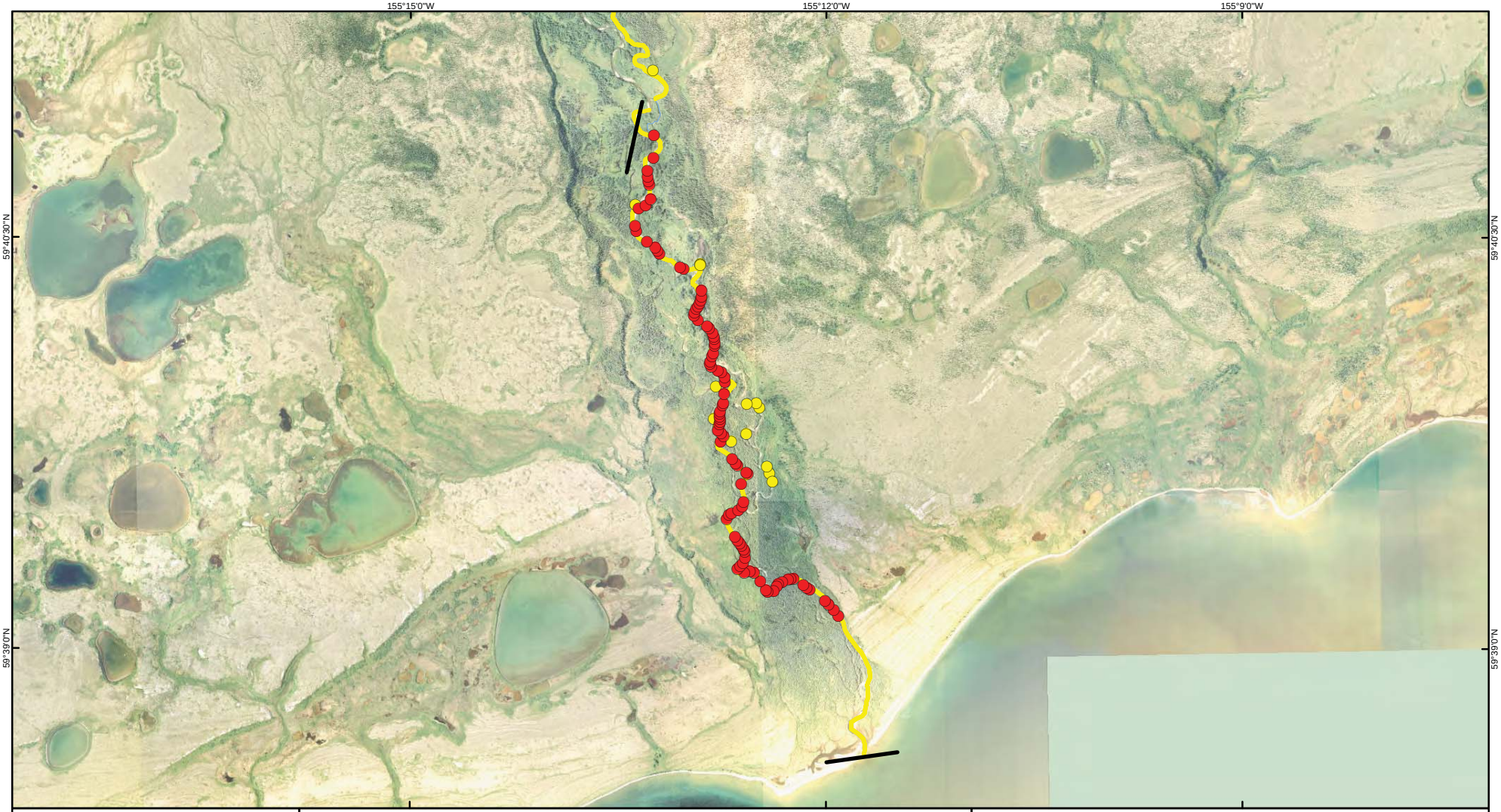
Figure B.12-10
UT-Ab First Creek
(*continued from UT-Aa*)
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Ab_Fig-B.12-10_CS_11x17L_14of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

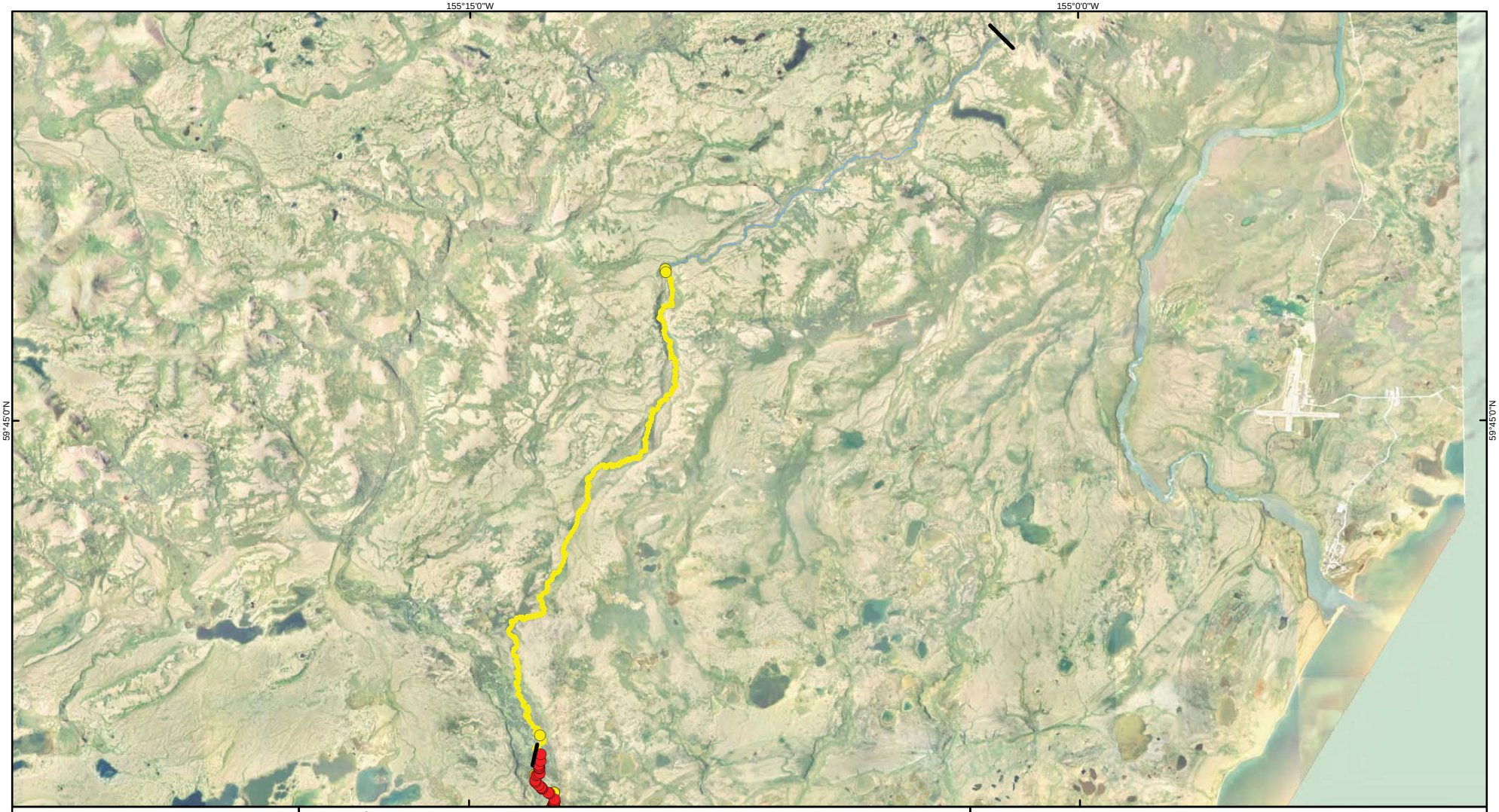
THE pebble PARTNERSHIP

Figure B.12-11
UT-Aa
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Aa_Fig-B.12-11_SS_11x17L_13of22_D04.mxd

February 5, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.7 — 3.4

Kilometers: 0 — 1.7 — 3.4

THE pebble PARTNERSHIP

Figure B.12-11
UT-Ab First Creek
(*continued from UT-Aa*)
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Ab_Fig-B.12-11_SS_11x17L_14of22_D04.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.13
UPPER TALARIK CREEK RIVER REACH B (UT-B)

Table B.13-1.
List of species found in UT-B.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
sculpin [a]	*Cottus* sp.
stickleback [b]	*Gasterosteidae*

[a] identified to genus, may include slimy sculpin and coastrange sculpin

[b] identified to family, may include ninespine and threespine stickleback

Table B.13-2.
Channel morphology data from areas sampled within UT-B.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)	Average Wetted Width (m)	Average Bankfull Width (m)	Maximum Bankfull Depth (m)
UT-B-SA1 / TOTAL	9/5/08	low-gradient floodplain channel	1.2	16.1	26.8	1.4

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

Table B.13-3.
Percent composition of primary habitat types from areas sampled within UT-B in 2008.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a]	Total Wetted Area (m^2)[a]	Side Channel (% of Total Wetted Area)	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT-B-SA1 / TOTAL	14973.1	15.2	226558.8	20	0	6 / 2	7 / 11	0 / 0	0	0	0 / 0	5 / 4	60 / 68	22 / 14	0 / 0

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

Table B.13-4.
Descriptive characteristics of primary habitat units from areas sampled within UT-B in 2008.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate	Eroding Bank (% of Length)	Dominant Riparian Vegetation
UT-B-SA1 / TOTAL	gravel	sand/silt	0	willow shrub

Table B.13-5.
Summary of 2008 pool habitat data from areas sampled in UT-B.

Sample Area (SA)	Length	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT-B-SA1 / TOTAL	14.97	17	0	17	0.1	0	0.1	9169.7	0	9169.7	539.4	1.0	0.1

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.

Table B.13-6.
Special habitat features within UT-B, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT-B-SA1	59.68348	-155.22167	tributary	UT 1.60				
	59.71301	-155.28367	spring					
	59.72042	-155.30091	spring					
	59.71486	-155.29647	spring					
	59.71506	-155.29252	spring					
	59.71467	-155.29238	spring					
	59.71374	-155.28665	spring					
	59.70329	-155.25378	spring					

Note: Blank cells indicate no data were collected for that record.

Table B.13-7.
2004-2008 number of fish observations by lifestage within UT-B mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult				Juvenile				Juvenile/Adult[a]			Total
			Jul	Aug	Sep	Subtotal	Jul	Aug	Sep	Subtotal	Aug	Sep	Subtotal	
Chinook salmon	2006	Snorkel		2		2		2		2				4
	2008	Seine						4		4				4
		Snorkel						258	2001	2259				2259
coho salmon	2005	Snorkel					120			120				120
	2006	Snorkel						28		28				28
	2008	Seine						84		84				84
		Snorkel			211	211		532	3421	3953				4164
sockeye salmon	2006	Snorkel		1		1								1
	2008	Seine		3		3		1		1				4
		Snorkel		4		4		1	1	2				6
arctic grayling	2008	Seine						1		1				1
		Snorkel			25	25		9	8	17		8	8	50
Dolly Varden	2008	Snorkel		1	2	3		2	1	3		13	13	19
rainbow trout	2005	Snorkel	1			1								1
	2006	Snorkel						18		18				18
	2008	Seine						9		9				9
		Snorkel			32	32		157	736	893		114	114	1039
sculpin sp.	2008	Seine						16		16				16
		Snorkel									18	39	57	57
stickleback sp.	2008	Snorkel										152	152	152

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

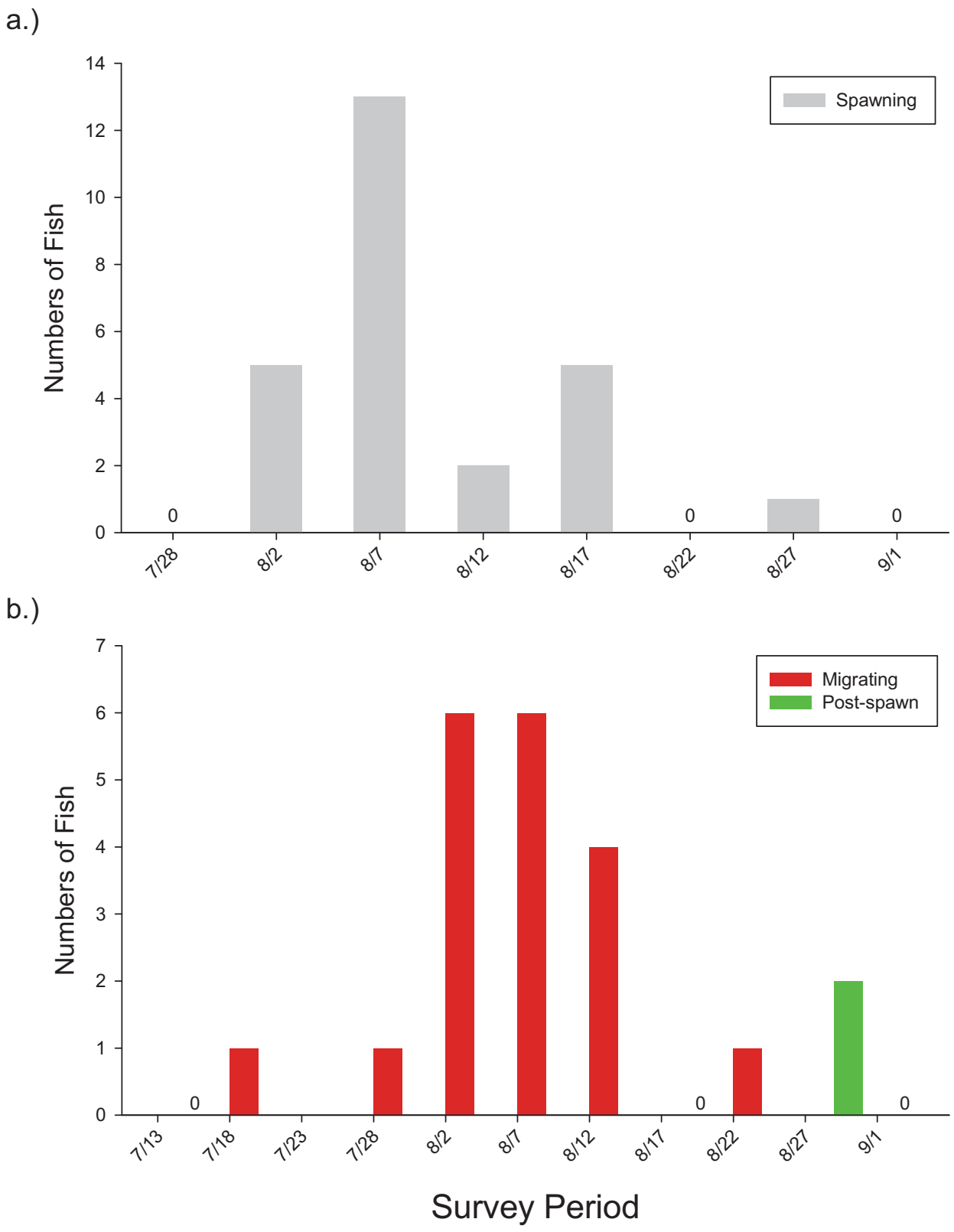


Figure B.13-12.
Observations of Chinook salmon during 2008 aerial surveys in UT-B. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

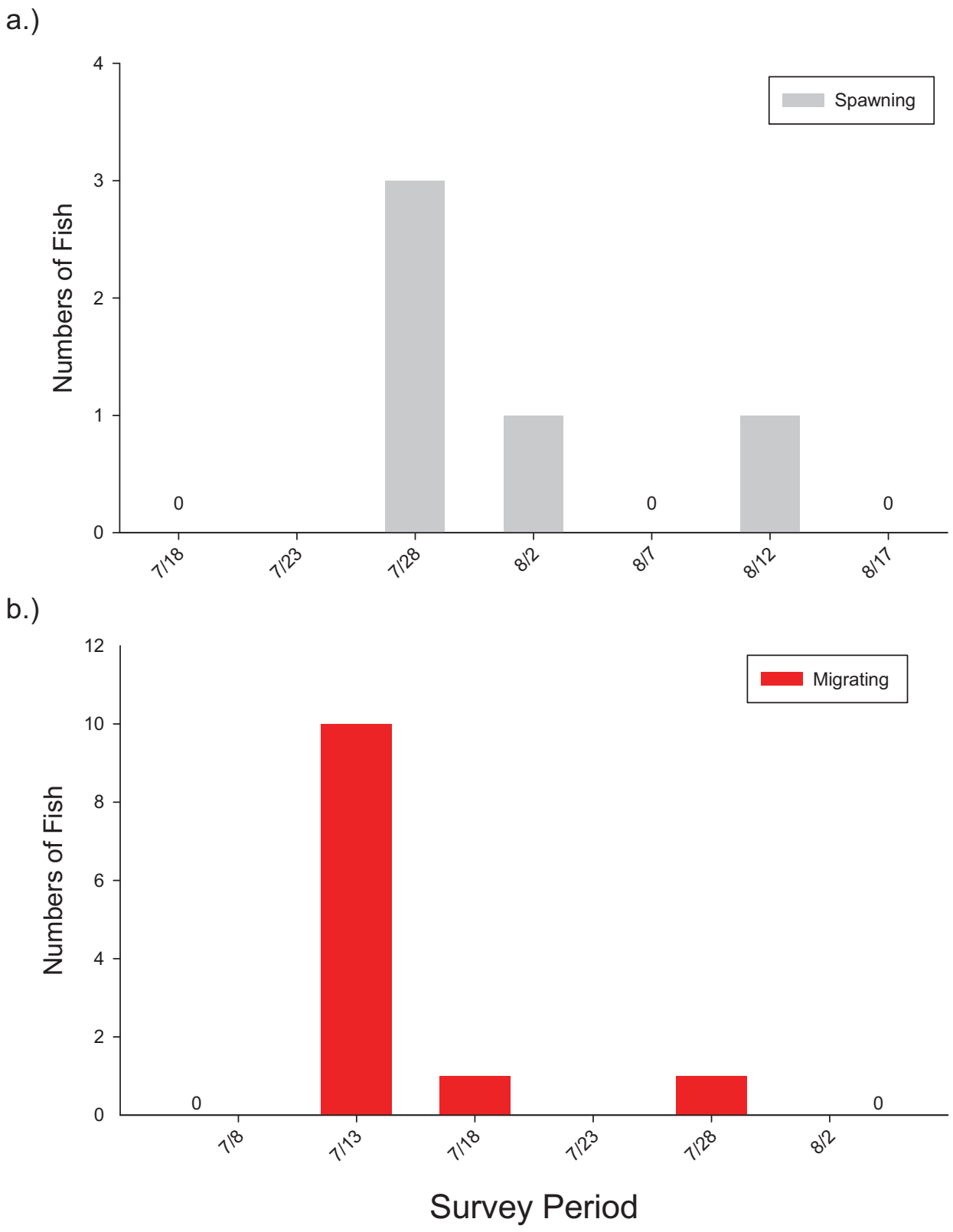


Figure B.13-13.
Observations of chum salmon during 2008 aerial surveys in UT-B. a.) Number of chum salmon spawning. b.) Number of chum salmon observed migrating.

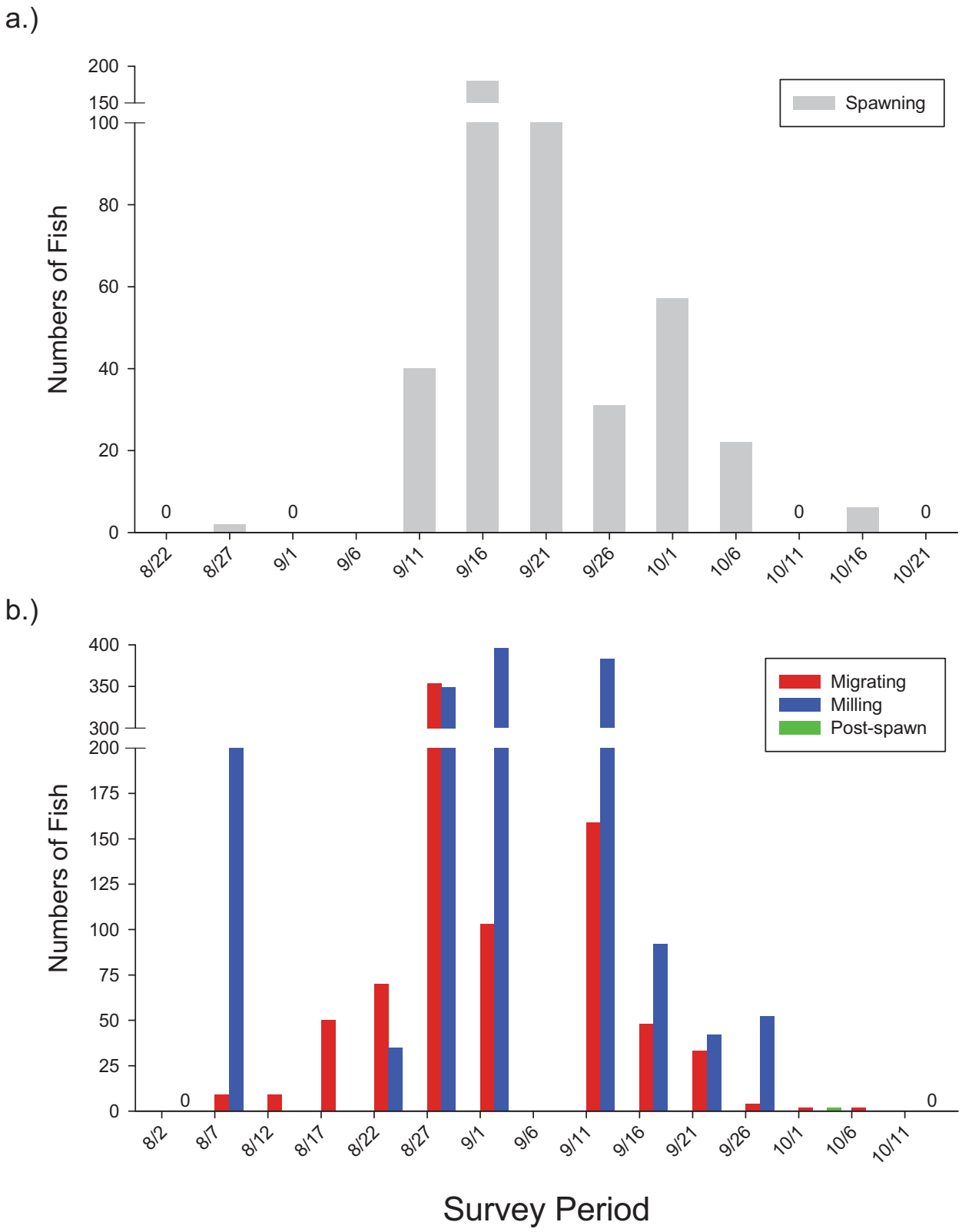


Figure B.13-14.
Observations of coho salmon during 2008 aerial surveys in UT-B. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

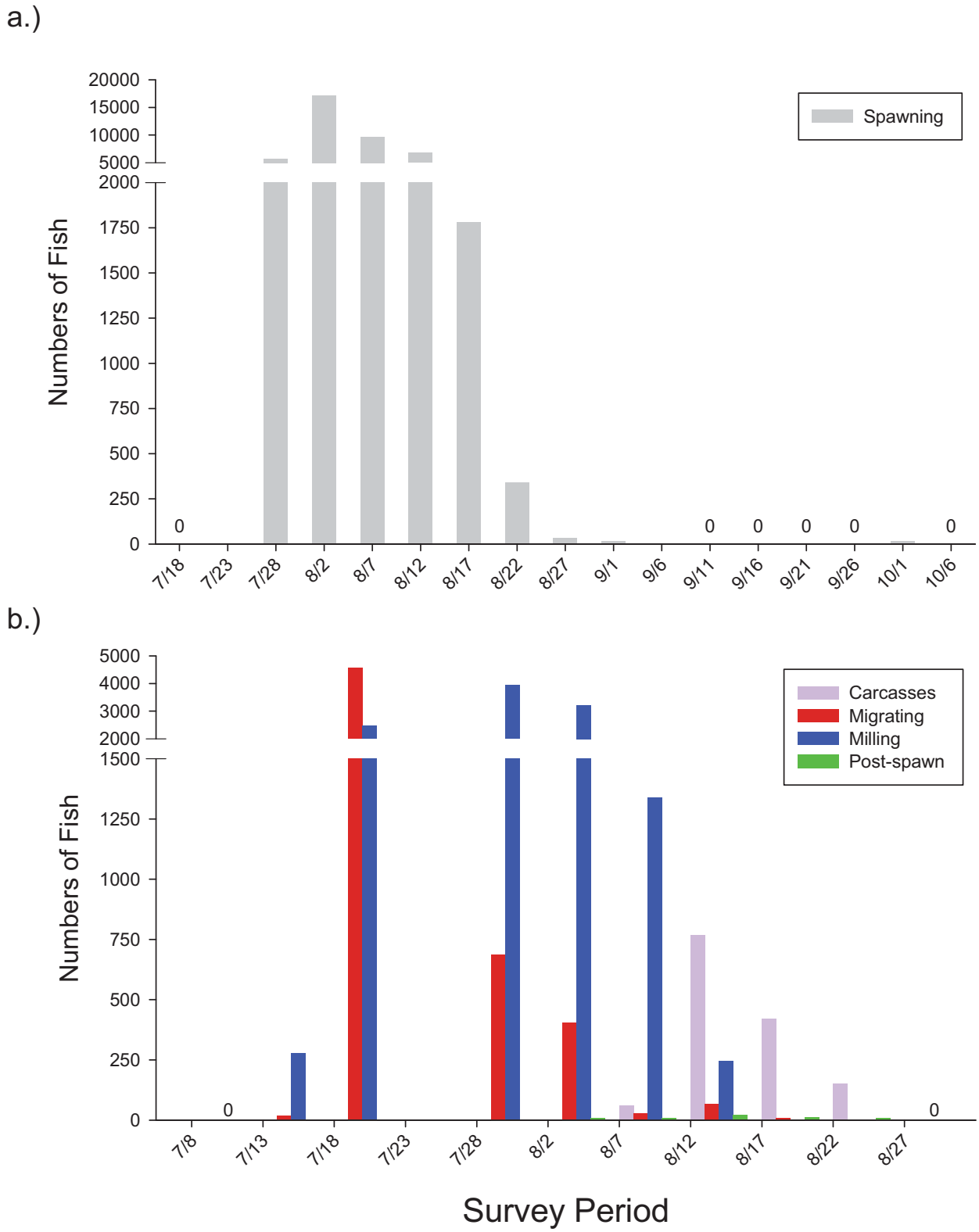


Figure B.13-15.
Observations of sockeye salmon during 2008 aerial surveys in UT-B. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.13-8. 2008 fish observations by method at mainstem index sites located within UT-B.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC08.66A	Chinook salmon	beach seine		1		1
		snorkel		209		209
	coho salmon	beach seine		7		7
		snorkel		285		285
	sockeye salmon	beach seine	3			3
		snorkel	3			3
	arctic grayling	snorkel		1		1
	Dolly Varden	snorkel	1			1
	rainbow trout	beach seine		3		3
		snorkel		53		53
	sculpin sp.	beach seine		4		4
		snorkel			16	16
UTC08.66A Total			**7**	**563**	**16**	**586**
UTC08.66B	Chinook salmon	beach seine		2		2
	coho salmon	beach seine		73		73
		snorkel		162		162
	sockeye salmon	beach seine		1		1
		snorkel	1			1
	rainbow trout	beach seine		1		1
		snorkel		34		34
	sculpin sp.	beach seine		5		5
UTC08.66B Total			**1**	**278**		**279**
UTC12.99A	Chinook salmon	beach seine		1		1
		snorkel		29		29
	coho salmon	beach seine		3		3
		snorkel		5		5
	rainbow trout	beach seine		1		1
		snorkel		30		30
	sculpin sp.	beach seine		3		3
		snorkel			1	1
UTC12.99A Total				**72**		**73**

Table B.13-8 Continued

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC12.99B	Chinook salmon	snorkel		20		20
	coho salmon	beach seine		1		1
		snorkel		80		80
	sockeye salmon	snorkel		1		1
	arctic grayling	beach seine		1		1
		snorkel		8		8
	Dolly Varden	snorkel		2		2
	rainbow trout	beach seine		4		4
		snorkel		40		40
	sculpin sp.	beach seine		4		4
		snorkel			1	1
UTC12.99B Total				**161**		**162**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

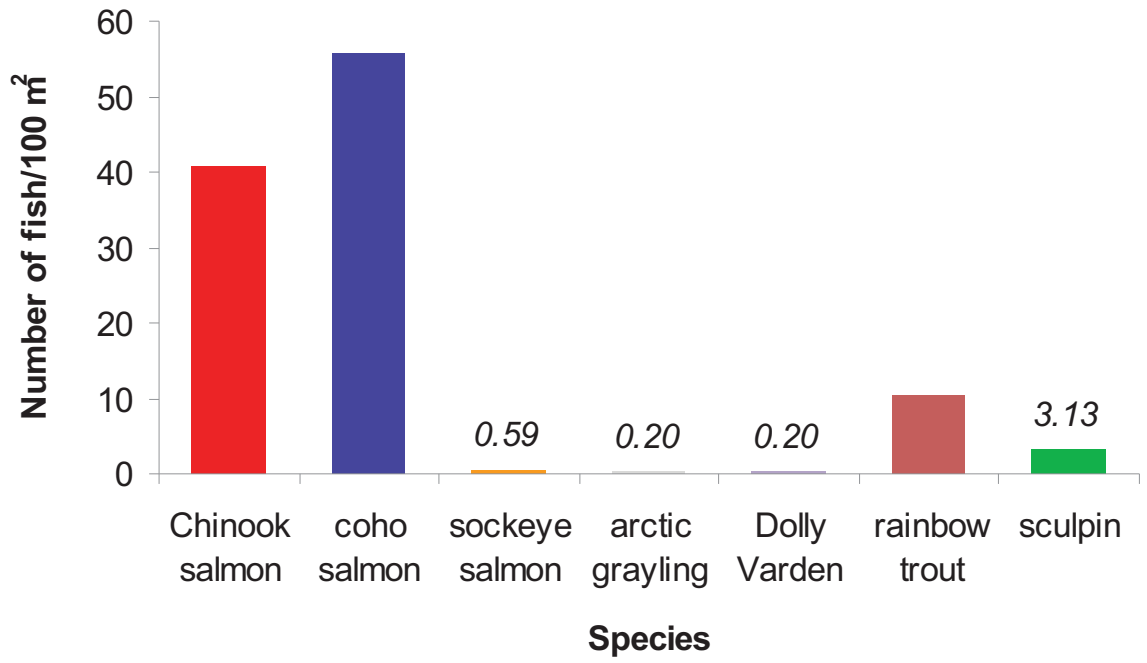


Figure B.13-16a.
2008 fish density in pool habitat at mainstem index site (RKm 8.66), channel A within UT-B. Densities were calculated from the method that generated the greatest count of fish at this location.

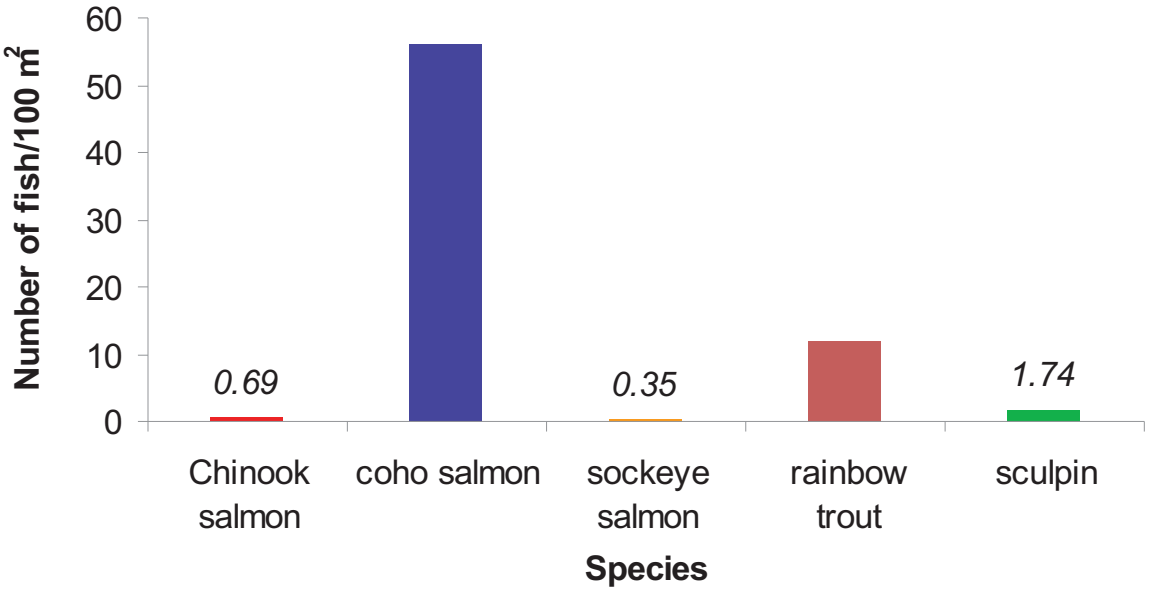


Figure B.13-16b.
2008 fish density in glide habitat at mainstem index site (RKm 8.66), channel B within UT-B. Densities were calculated from the method that generated the greatest count of fish at this location.

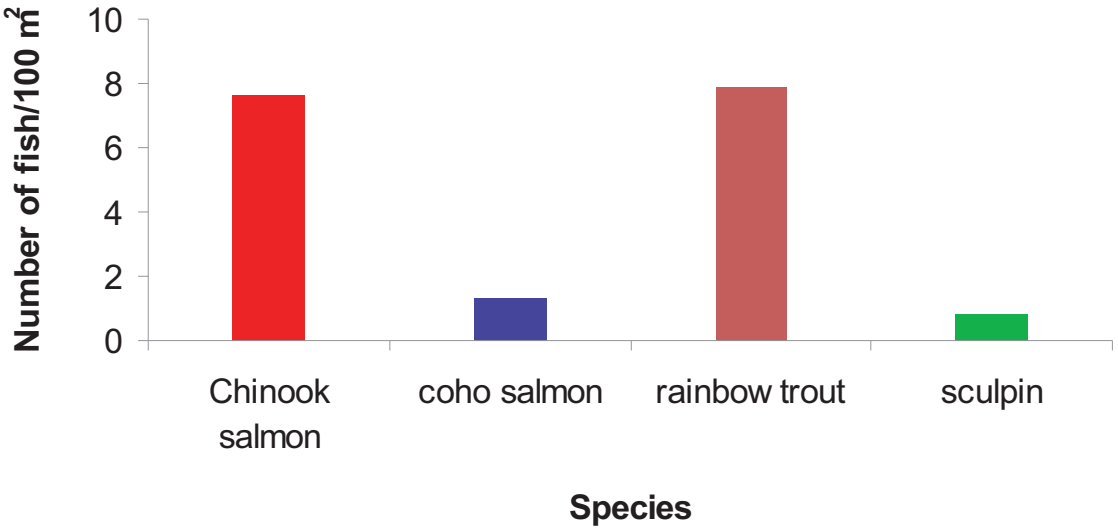


Figure B.13-16c.
2008 fish density in riffle habitat at mainstem index site (RKm 12.99) channel A within UT-B. Densities were calculated from the method that generated the greatest count of fish at this location.

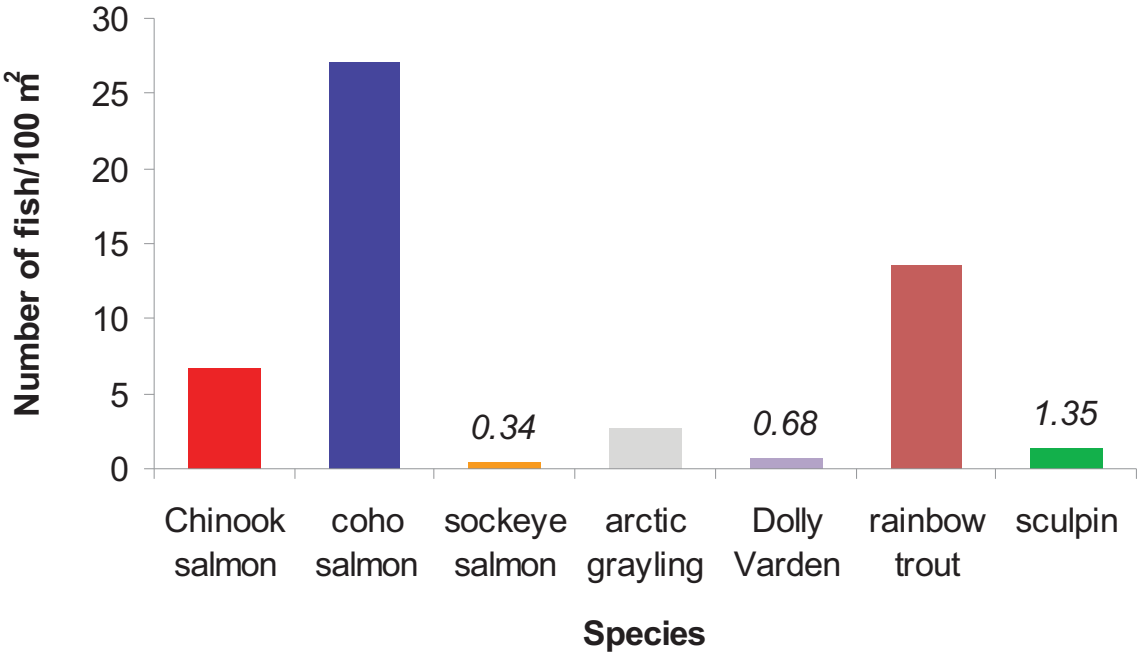
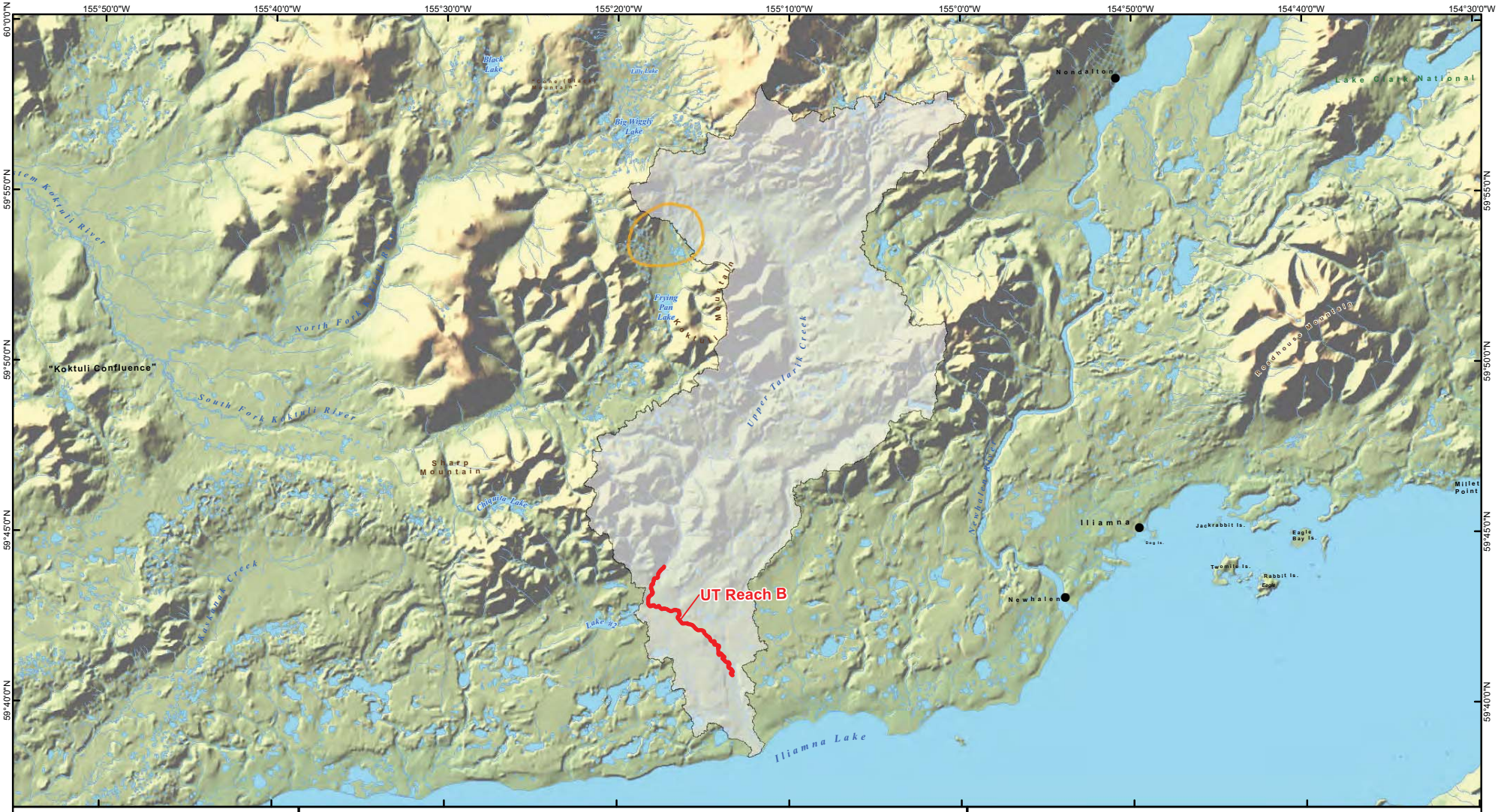
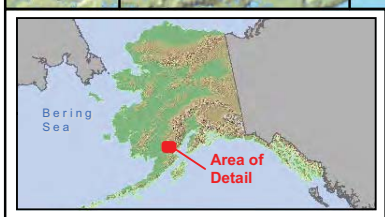


Figure B.13-16d.
2008 fish density in riffle habitat at mainstem index site (RKm 12.99) channel B within UT-B. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach UT Reach B

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

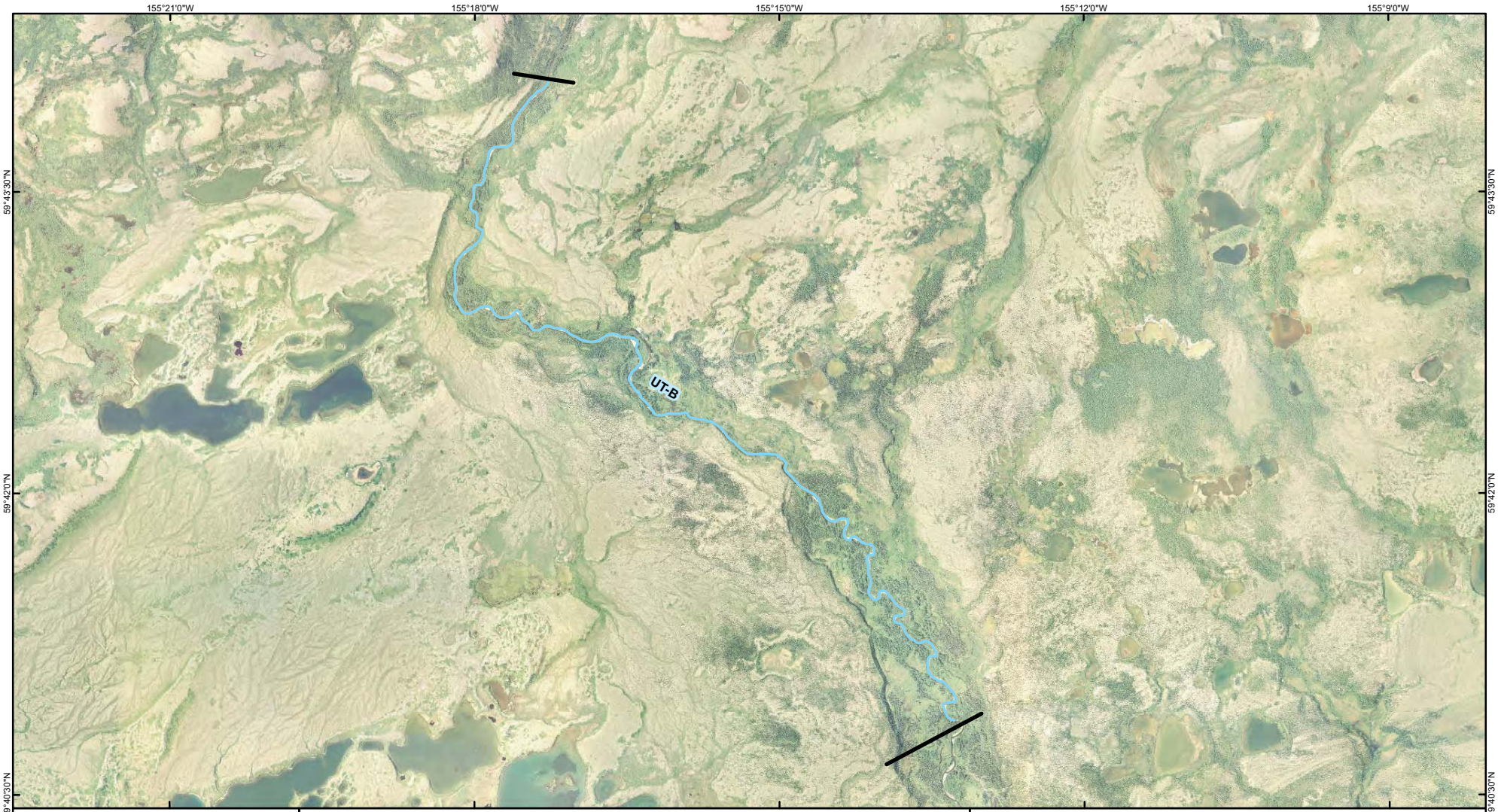
THE pebble PARTNERSHIP

Figure B.13-1a
Reach UT-B

RDI_R2_OverviewLocator_UT-B_Fig-B.13-1a_11x17L_13of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

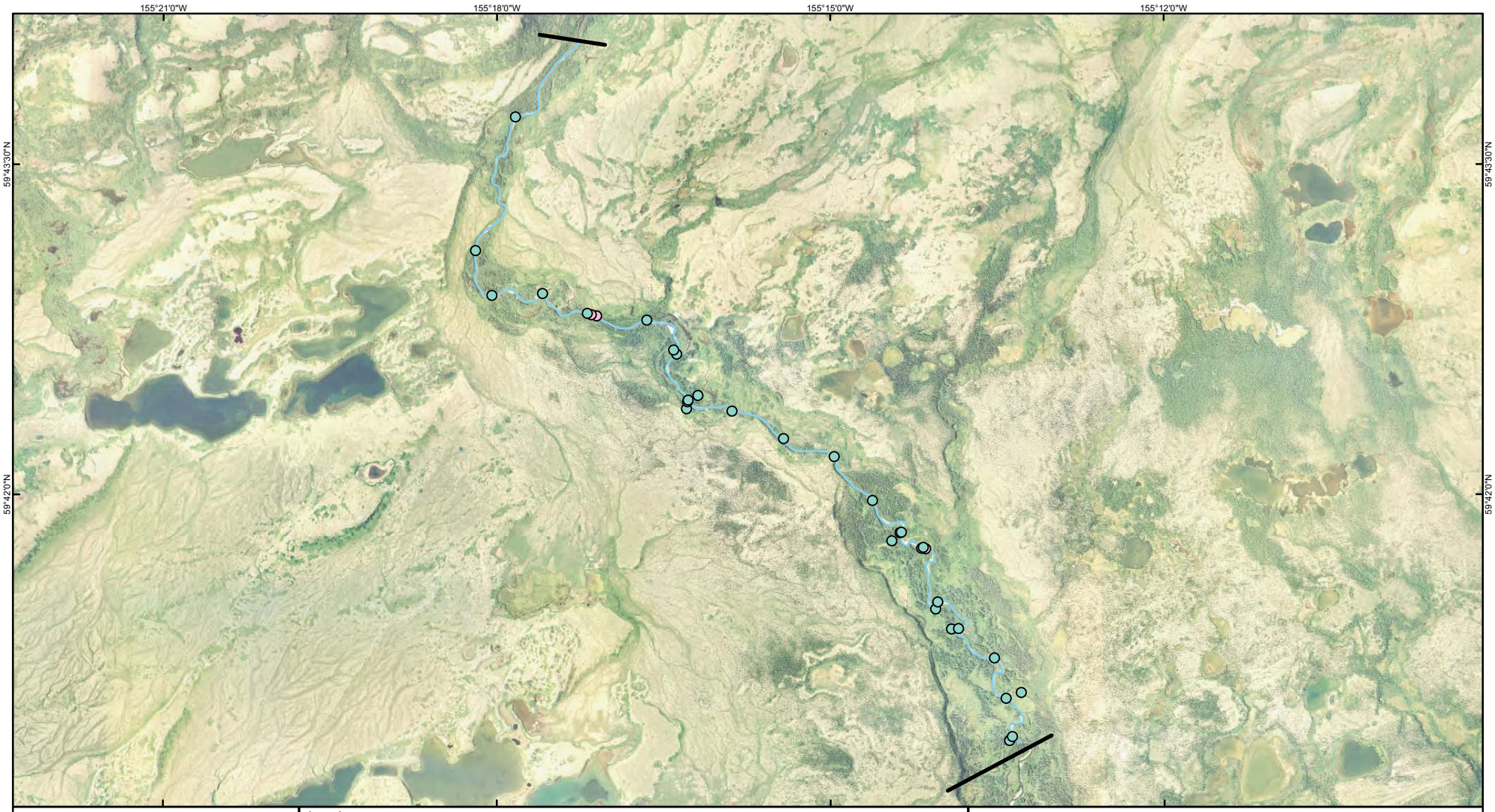
Miles: 0 0.7 1.4

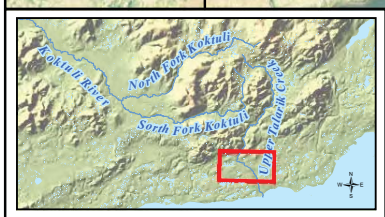
Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.13-1b
UT-B
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-B_Fig-B.13-1b_11x17L_13of19_D01.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.6 1.2

Kilometers
0 0.6 1.2

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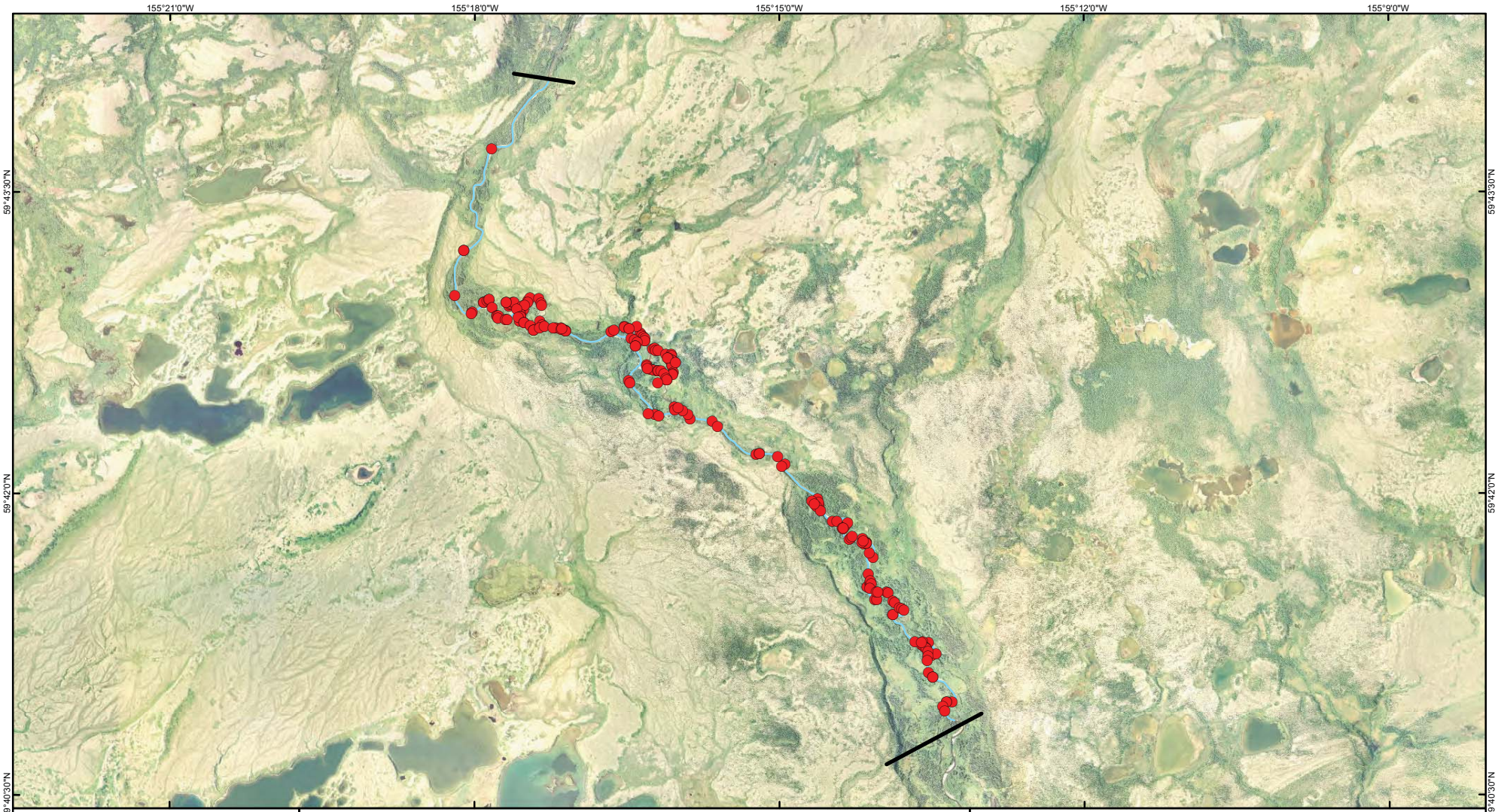
Figure B.13-2
UT-B
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_UT-B_Fig-B.13-2_11x17L_13of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

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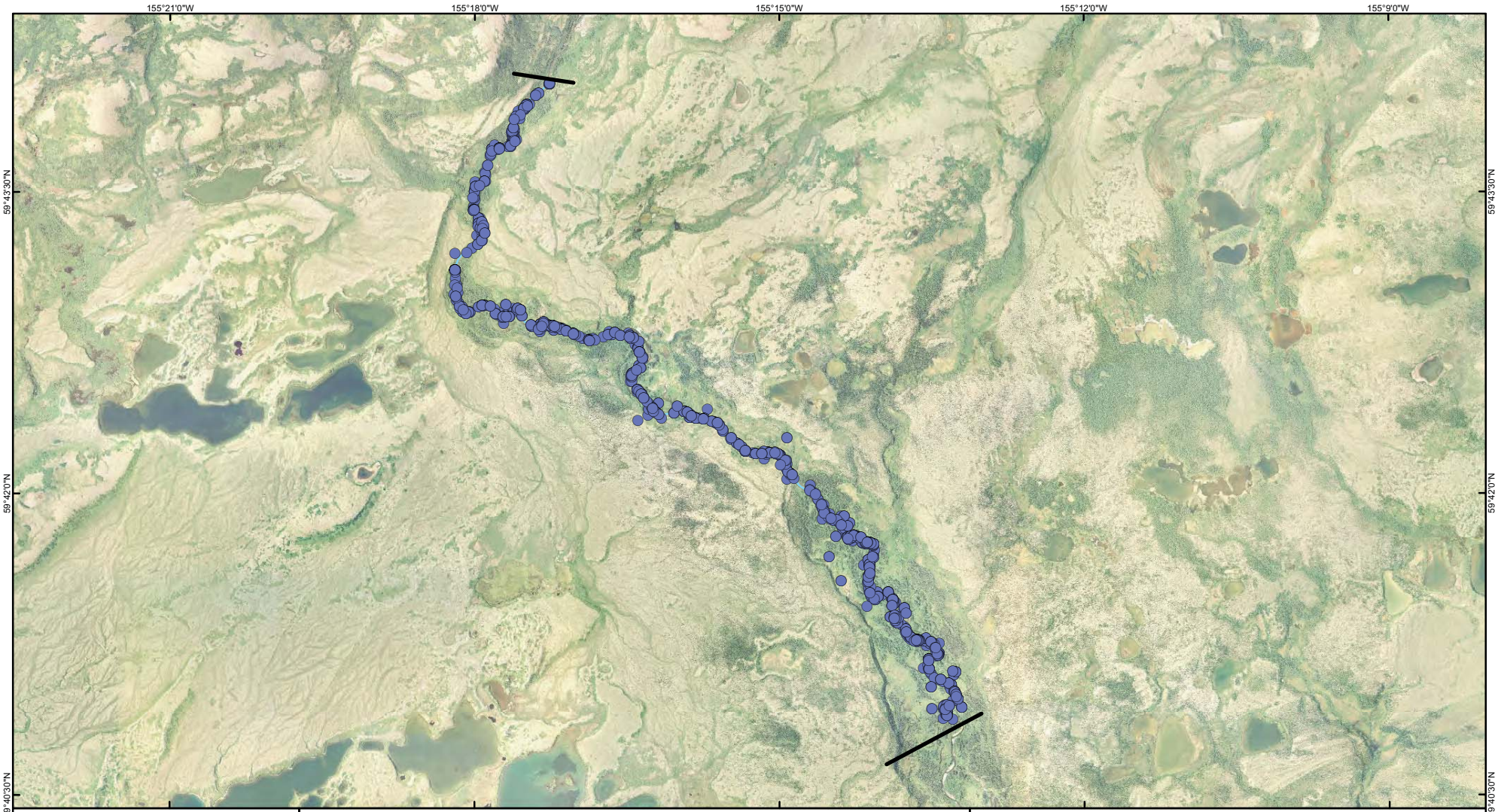
Figure B.13-3
UT-B
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-B_Fig-B.13-3_11x17L_13of19_D02.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

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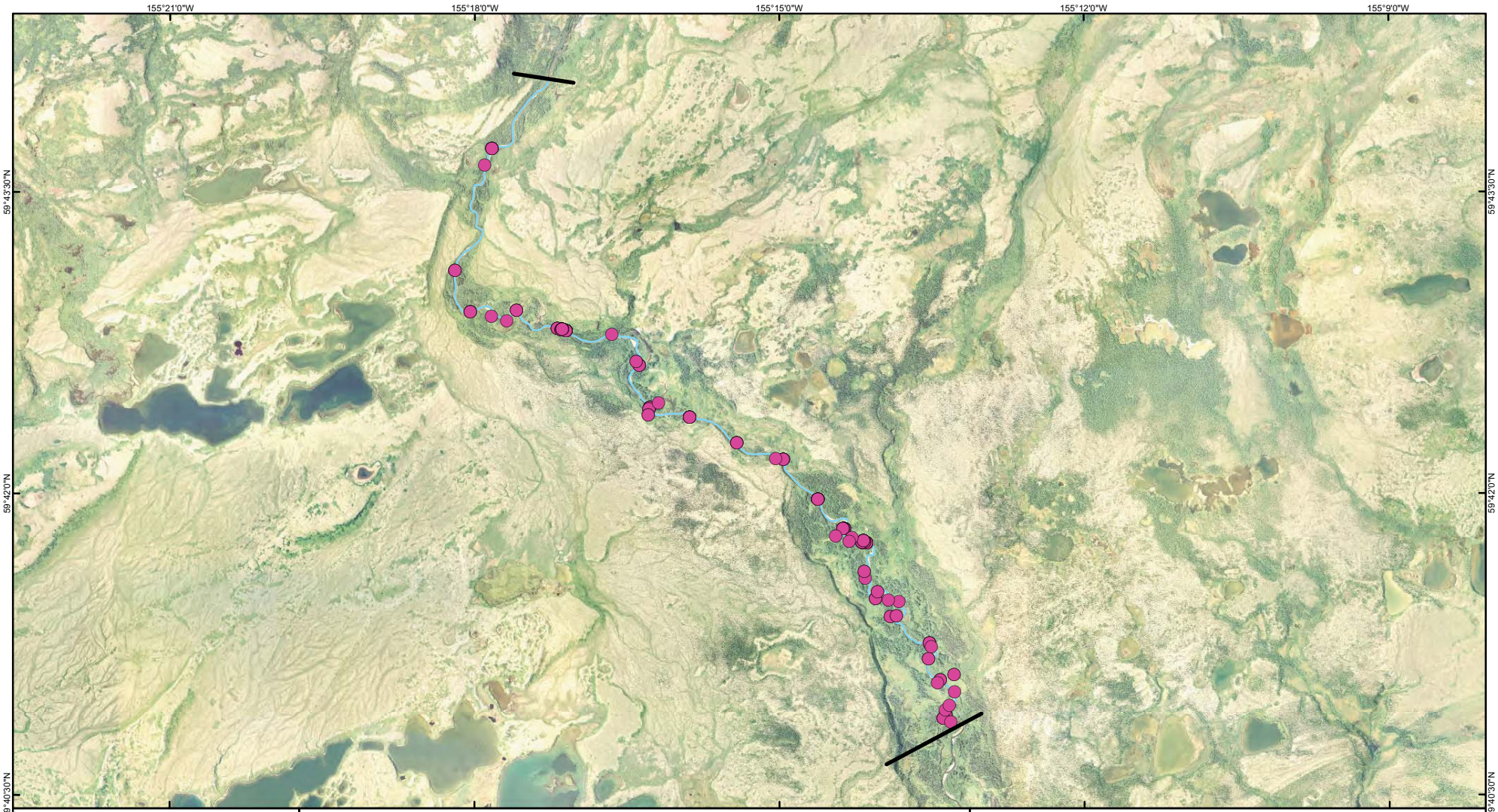
Figure B.13-4
UT-B
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-B_Fig-B.13-4_11x17L_13of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

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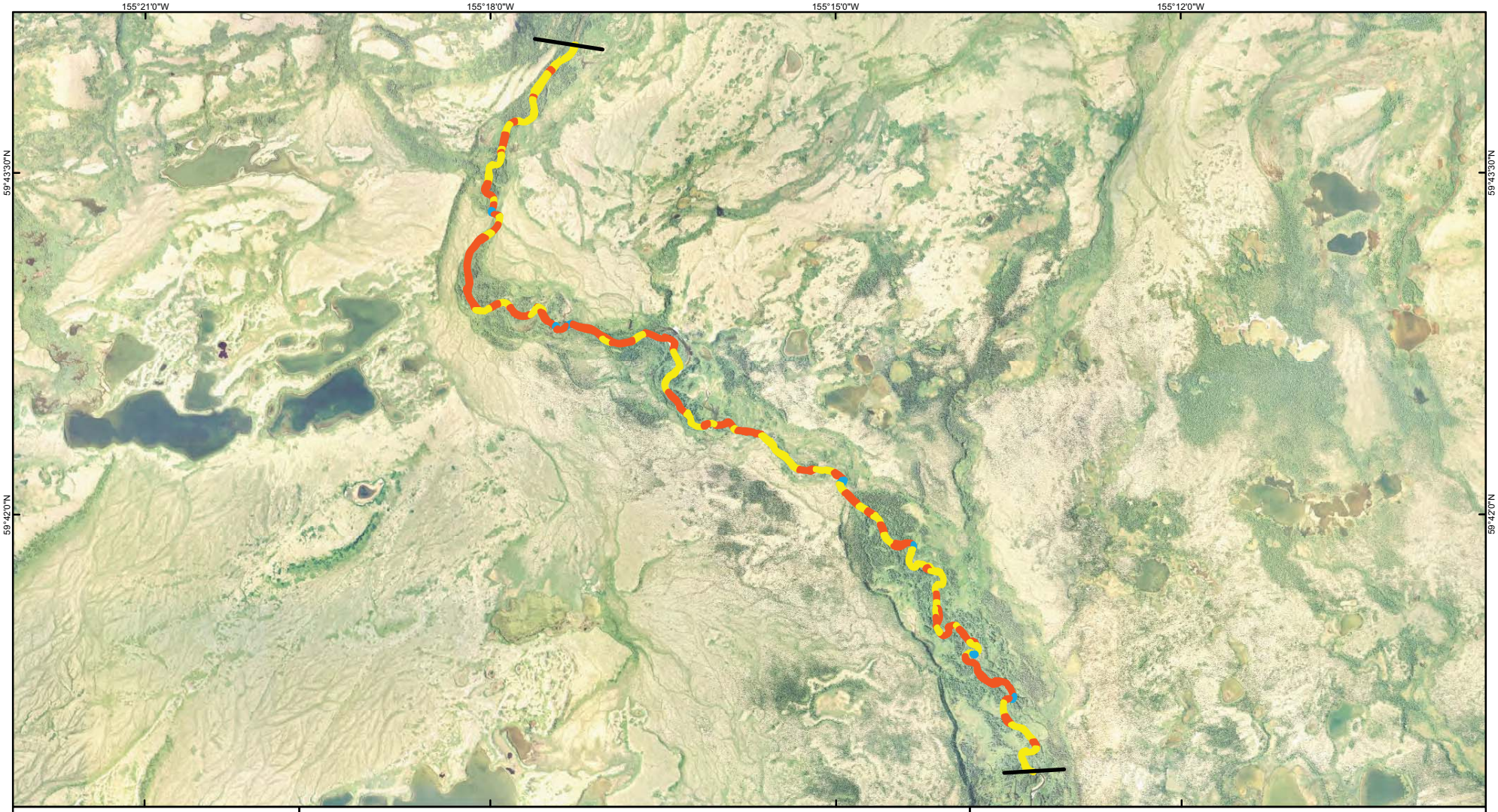
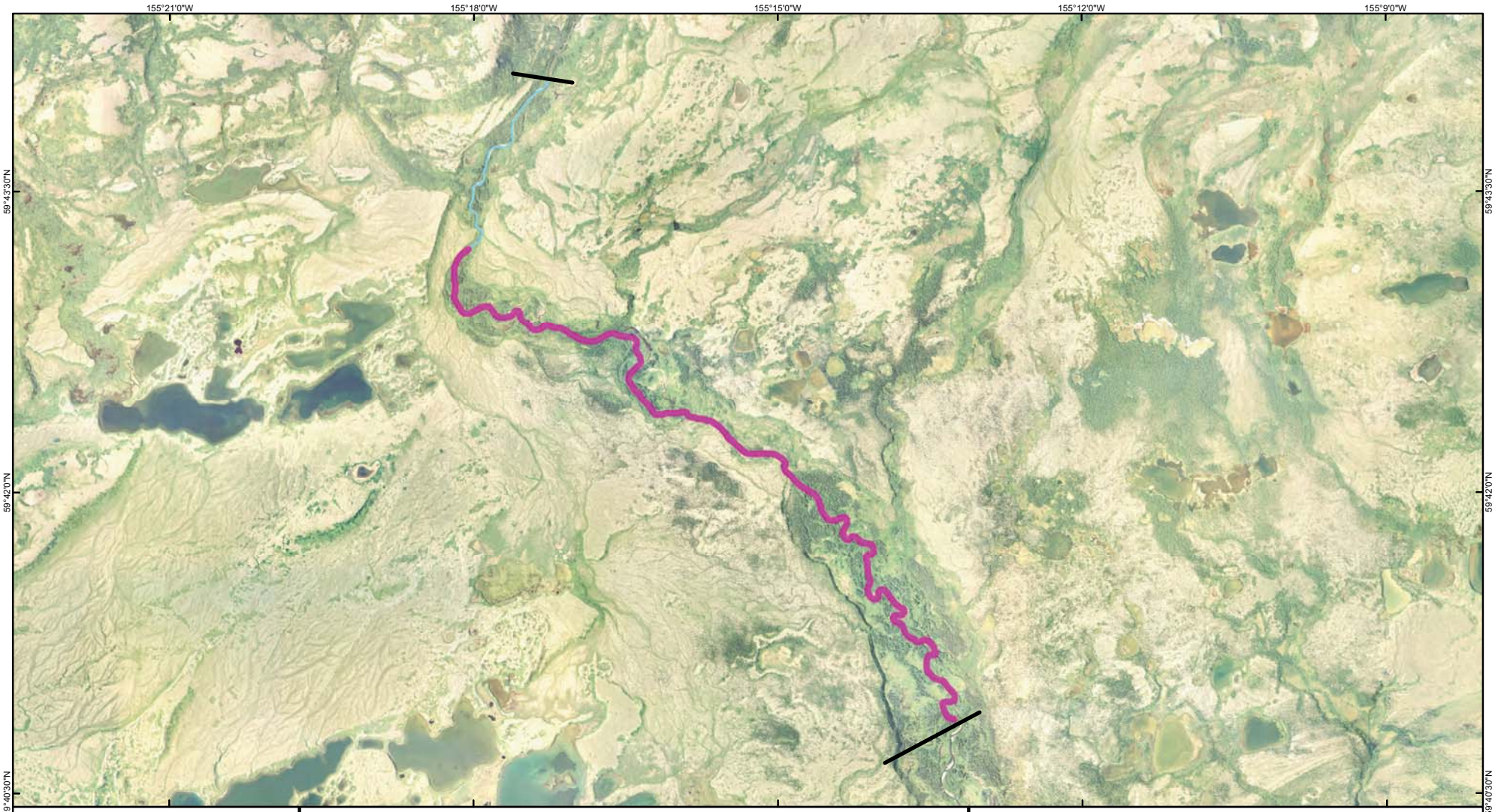
Figure B.13-5
UT-B
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-B_Fig-B.13-5_11x17L_13of19_D04.mxd	February 5, 2011
	Author: RDI - MRA


155°21'0"W
155°18'0"W
155°15'0"W
155°12'0"W
59°43'30"N
59°42'0"N
Kokhanok
North Fork Kokhanok
South Fork Kokhanok
Upper Talarik Creek
Legend
Mesohabitat Types
Pool (when present)
Run/Glide
Riffle
Beaver Complex (when present)
Mainstem Stream Reach
Reach Boundaries
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
Miles
0
0.6
1.2
Kilometers
0
0.6
1.2
THE pebble PARTNERSHIP
Figure B.13-6
UT-B
Mainstem Mesohabitat Types
Delineated From Aerial Imagery
RDI_R2_MesoHabitatTypes_UT-B_Fig-B.13-6_11x17L_13of19_D03.mxd
February 5, 2011
Author: RDI - MRA



Legend

- UT-B-SA1
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

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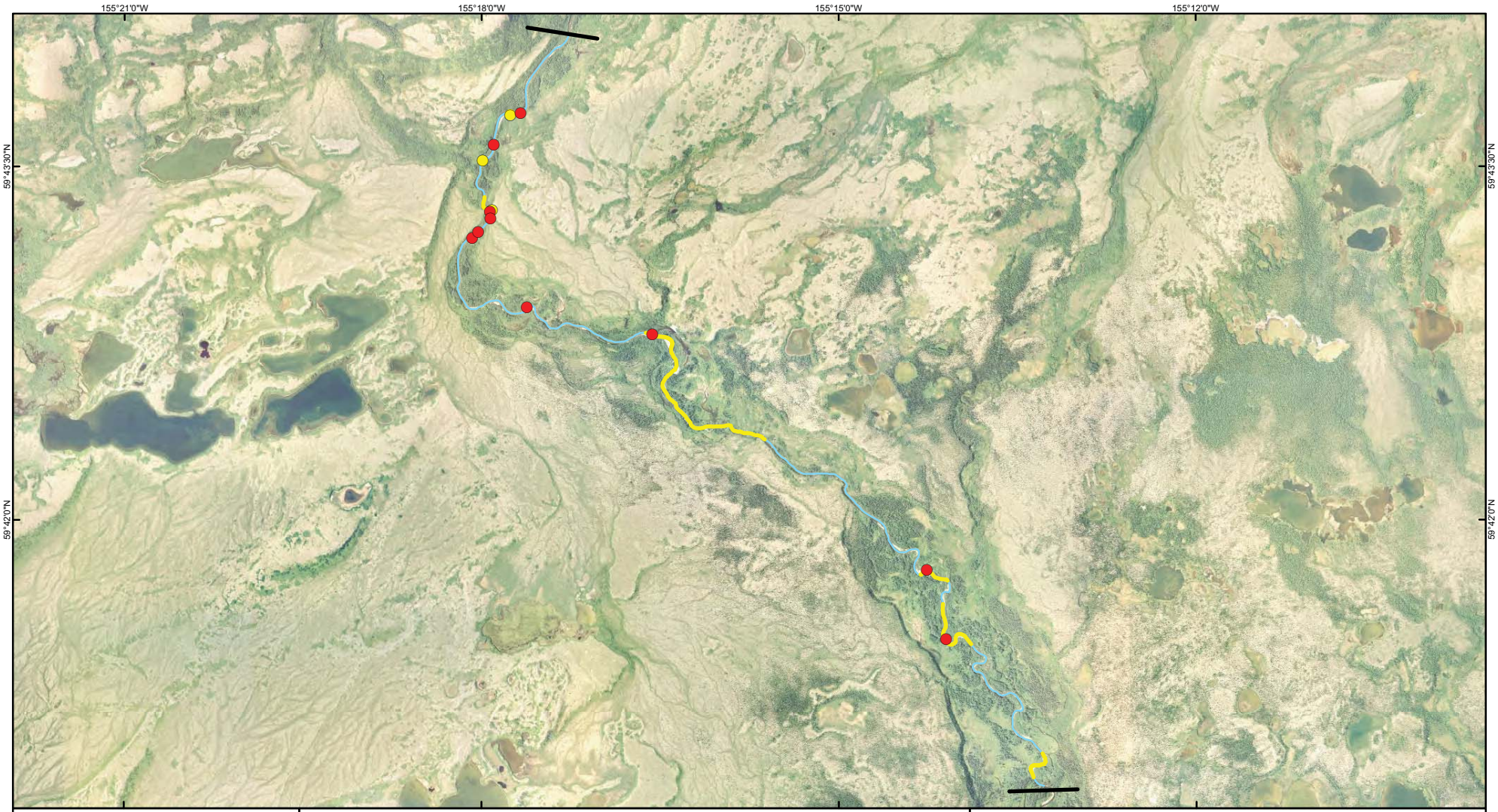
Figure B.13-7
UT-B
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_UT-B_Fig-B.13-7_11x17L_13of19_D02.mxd

January 14, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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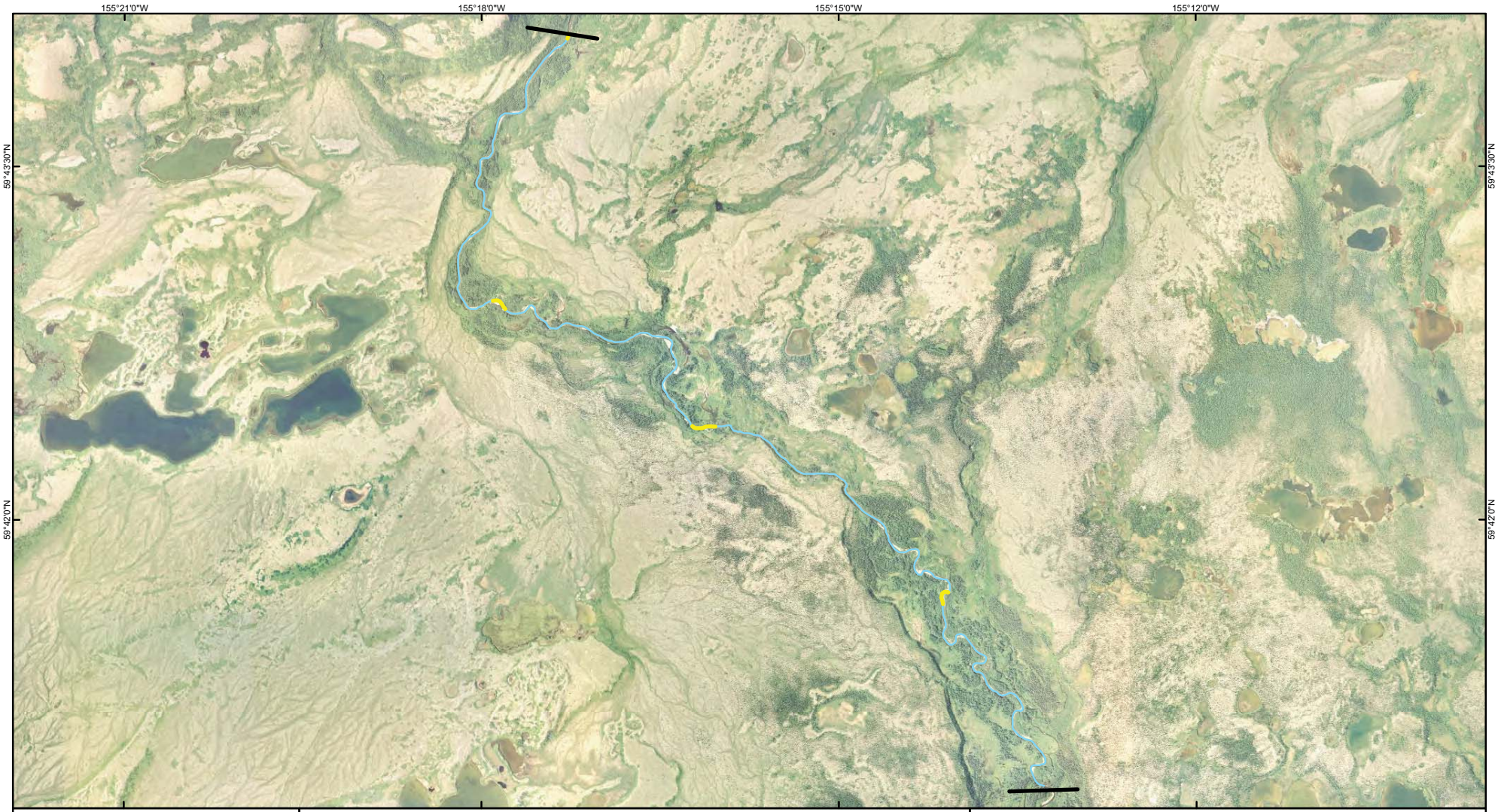
Figure B.13-8
UT-B
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-B_Fig-B.13-8_KS_11x17L_15of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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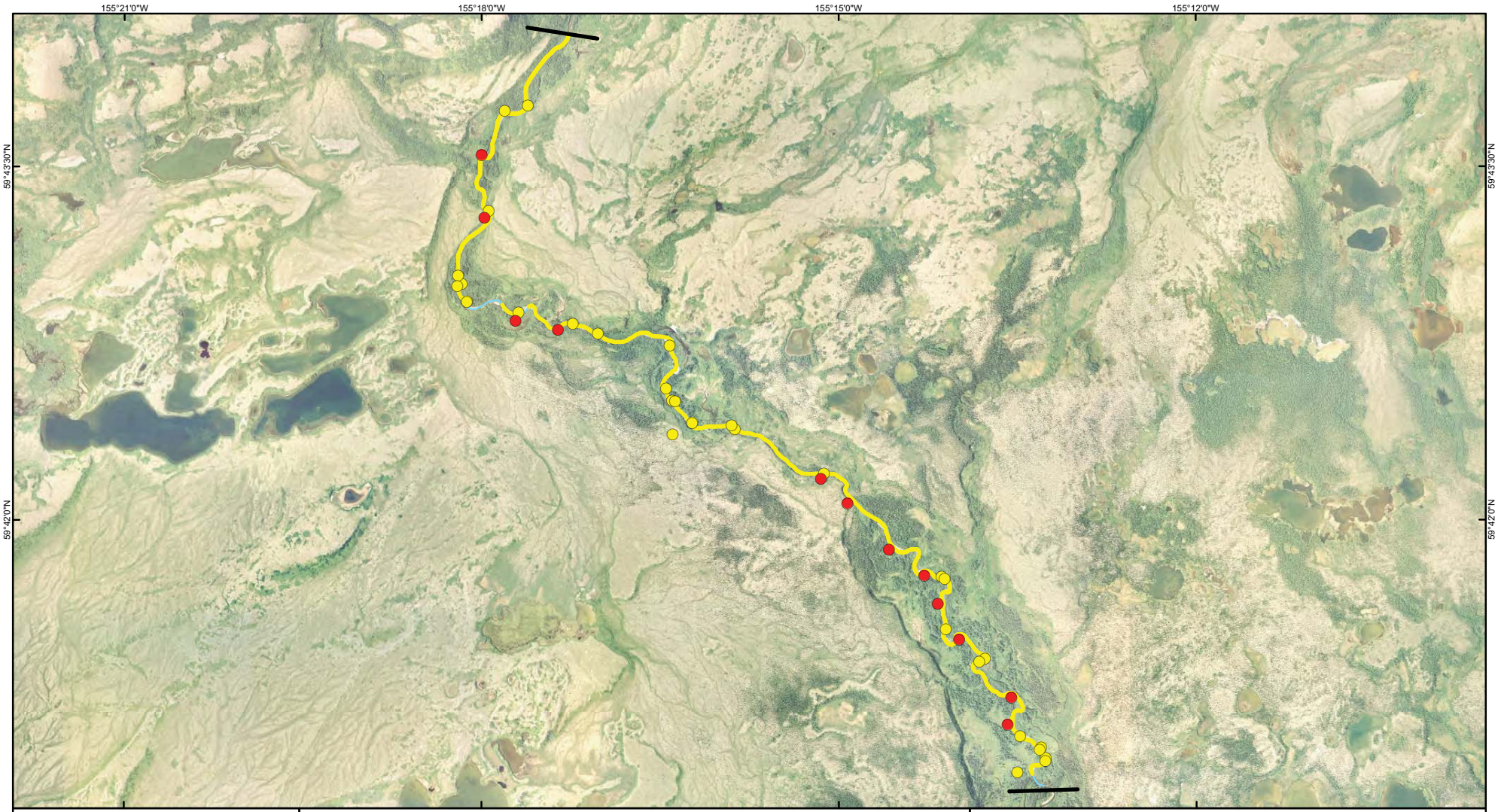
Figure B.13-9
UT-B
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-B_Fig-B.13-9_CH_11x17L_15of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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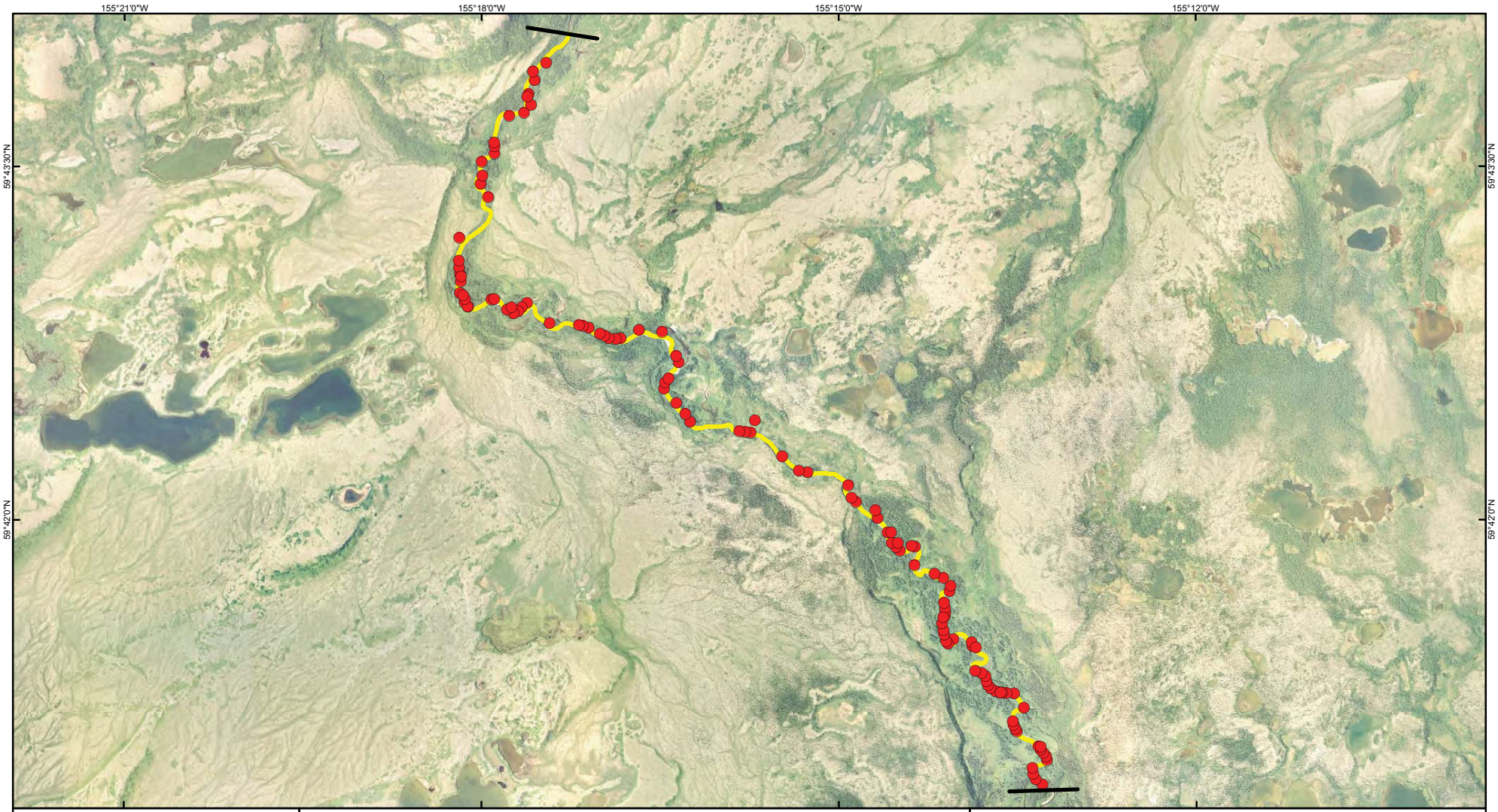
Figure B.13-10
UT-B
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-B_Fig-B.13-10_CS_11x17L_15of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

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Figure B.13-11
UT-B
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-B_Fig-B.13-11_SS_11x17L_15of22_D04.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.14
UPPER TALARIK CREEK RIVER REACH C (UT-C)

Table B.14-1.
List of species found in UT-C.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.14-2.
Channel morphology data from areas sampled within UT-C tributary UT 1.190.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
UT 1.190-SA1	6/23/04	narrow mixed control channel	3.0	NA	NA	NA
UT 1.190-SA2[e]	6/23/04	narrow shallow contained channel	8.3	NA	NA	NA
UT 1.190-SA3[f]	6/24/04	narrow shallow contained channel	1.0	NA	NA	NA
UT 1.190-SA4[g]	7/9/04	narrow shallow contained channel	2.5	NA	NA	NA
UT 1.190 TOTAL			4.6	NA	NA	NA

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not available.

[e] Sample Area was comprised of 96% narrow shallow contained channel and 4% deeply incised upper valley channel.

[f] Sample Area was comprised of 63% narrow shallow contained channel and 37% beaver dam/pond channel.

[g] Sample Area was comprised of 68% narrow shallow contained channel and 32% beaver dam/pond channel.

Table B.14-3.
Percent composition of primary habitat types from areas sampled within UT-C tributary 1.190 in 2004.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT 1.190-SA1	683.0	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	0 / NA	100 / NA	0 / NA	NA
UT 1.190-SA2	2564.0	NA	NA	NA	0	0 / NA	0 / NA	4 / NA	NA	NA	NA	0 / NA	96 / NA	0 / NA	NA
UT 1.190-SA3	247.0	NA	NA	NA	0	0 / NA	37 / NA	0 / NA	NA	NA	NA	0 / NA	63 / NA	0 / NA	NA
UT 1.190-SA4	452.8	NA	NA	NA	0	0 / NA	9 / NA	0 / NA	NA	NA	NA	1 / NA	84 / NA	6 / NA	NA
UT 1.190 TOTAL	3946.8	NA	NA	NA	0	0 / NA	4 / NA	3 / NA	NA	NA	NA	0 / NA	93 / NA	1 / NA	NA

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

Table B.14-4. Descriptive characteristics of primary habitat units from areas sampled within UT-C tributary 1.190 in 2004.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
UT 1.190-SA1	cobble	organic	NA	4	NA
UT 1.190-SA2	cobble	bedrock	NA	13	NA
UT 1.190-SA3	gravel	organic	NA	5	NA
UT 1.190-SA4	gravel	NA	NA	1	NA
UT 1.190 TOTAL	cobble	gravel	NA	9	NA

[a] NA=data not available.

Table B.14-5.
Summary of 2004 pool habitat data from areas sampled within UT-C tributary 1.190.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Secon-dary[b]	Total	Pri-mary	Secon-dary	Total	Pri-mary	Secon-dary	Total			
UT 1.190-SA1	0.68	0	2	2	0	0.3	0.3	0	16.7	16.7	8.4	0.3	0
UT 1.190-SA2	2.56	0	13	13	0	0.5	0.5	0	106.7	106.7	8.2	0.7	0.1
UT 1.190-SA3	0.25	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.190-SA4	0.45	1	8	9	0.2	1.8	2.0	25.7	131.7	157.4	17.5	0.6	0.4
UT 1.190 TOTAL	3.95	1	23	24	0	0.6	0.6	25.7	255.1	280.8	11.7	0.6	0.1

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.

Table B.14-6.
2004-2008 number of fish observations by lifestage within UT-C mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

			Adult				Juvenile						Juvenile/Adult[a]				
Species	Year	Method	Jun	Jul	Aug	Subtotal	Apr	Jun	Jul	Aug	Nov	Subtotal	Jun	Jul	Aug	Subtotal	Total
Chinook salmon	2005	Electrofishing								4		4					4
		Minnow Trap								11		11					11
		Snorkel							166			166					166
	2006	Electrofishing					5					5					5
		Snorkel			1	1			107	44		151					152
		Visual Observation			1	1											1
	2007	Angling								3		3					3
		Electrofishing					2	491				493					493
		Snorkel						434	213			647					647
	2008	Dip Net								1		1					1
		Snorkel								35		35					35
chum salmon	2004	Visual Observation			1	1											1
coho salmon	2004	Minnow Trap								84		84					84
	2005	Electrofishing							31			31					31
		Minnow Trap								159		159					159
		Snorkel							1604			1604					1604
	2006	Electrofishing					2					2					2
		Snorkel							768	1092		1860					1860
	2007	Electrofishing					25	4409	10			4444					4444
		Minnow Trap					2					2					2
		Snorkel						2780	417			3197					3197
	2008	Dip Net								17		17					17
		Seine								4		4					4
		Snorkel								265		265					265

Table B.14-6. Continued

Species	Year	Method	Adult				Juvenile						Juvenile/Adult[a]				Total
			Jun	Jul	Aug	Subtotal	Apr	Jun	Jul	Aug	Nov	Subtotal	Jun	Jul	Aug	Subtotal	
sockeye salmon	2004	Visual Observation			108	108				1		1					109
	2005	Snorkel		149		149			1			1					150
	2006	Snorkel			27	27				8		8					35
		Visual Observation			2	2											2
	2007	Electrofishing					2	126				128					128
		Snorkel						108	1			109					109
	2008	Seine			5	5											5
		Snorkel			91	91											91
Pacific salmon sp.	2005	Minnow Trap								243		243					243
arctic grayling	2004	Electrofishing													1	1	1
	2005	Snorkel		5		5											5
	2007	Angling	3		20	23		2		1		3					26
		Electrofishing						1579				1579					1579
		Snorkel	15			15		1264				1264					1279
	2008	Snorkel			1	1											1
Dolly Varden	2004	Electrofishing			12	12				13		13					25
		Minnow Trap					1					1					1
		Visual Observation													5	5	5
	2005	Electrofishing			7	7			10	22		32					39
		Snorkel		5		5			4			4					9
	2006	Electrofishing					1			12		13					13
		Minnow Trap									6	6					6
	2007	Electrofishing	1			1	1	30	37			68					69
		Snorkel	6			6		4				4	1			1	11

Table B.14-6. Continued

Species	Year	Method	Adult				Juvenile						Juvenile/Adult[a]				Total
			Jun	Jul	Aug	Subtotal	Apr	Jun	Jul	Aug	Nov	Subtotal	Jun	Jul	Aug	Subtotal	
rainbow trout	2004	Minnow Trap								2		2					2
	2005	Electrofishing							22	2		24					24
		Minnow Trap					1					1					1
		Snorkel		2		2			217			217					219
	2006	Electrofishing					1					1					1
		Snorkel			18	18				57		57					75
	2007	Angling	1		4	5									3	3	8
		Electrofishing						53				53					53
		Snorkel	9			9		10	2			12	7			7	28
whitefish sp.	2007	Snorkel	2			2											2
Salmonid sp.	2006	Snorkel								27		27					27
	2007	Electrofishing						9				9					9
		Snorkel						32	20			52					52
	2008	Snorkel								75		75					75
sculpin sp.	2004	Minnow Trap													4	4	4
	2005	Minnow Trap													10	10	10
	2007	Electrofishing											916			916	916
		Snorkel	1			1		2				2	2			2	5
	2008	Seine			1	1				1		1					2
		Snorkel													2	2	2
ninespine stickleback	2004	Minnow Trap													8	8	8
	2007	Electrofishing						2				2					2
		Minnow Trap					1					1					1
threespine stickleback	2004	Minnow Trap													2	2	2
	2007	Electrofishing	11			11		18				18	1			1	30
		Minnow Trap					3					3					3
stickleback sp.	2004	Minnow Trap													1	1	1
	2007	Electrofishing	1			1											1
		Snorkel	1			1		1				1	1	1		2	4

Table B.14-6. Continued

Species	Year	Method	Adult				Juvenile						Juvenile/Adult[a]				Total
			Jun	Jul	Aug	Subtotal	Apr	Jun	Jul	Aug	Nov	Subtotal	Jun	Jul	Aug	Subtotal	
unidentified sp.	2006	Snorkel													3	3	3
	2007	Electrofishing												1		1	1

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

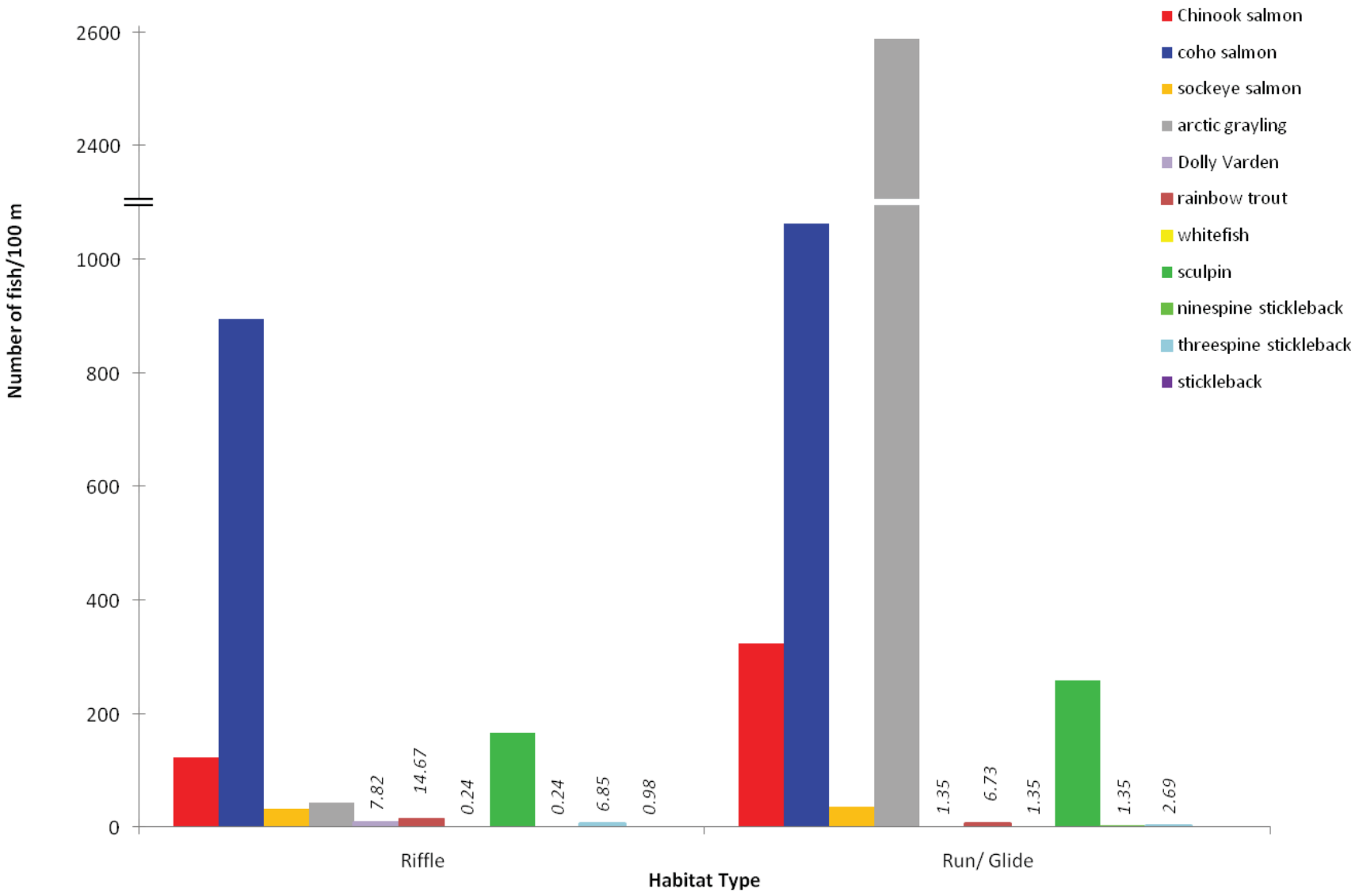


Figure B.14-8a.
2004-2007 fish abundance by habitat type within mainstem UT-C.

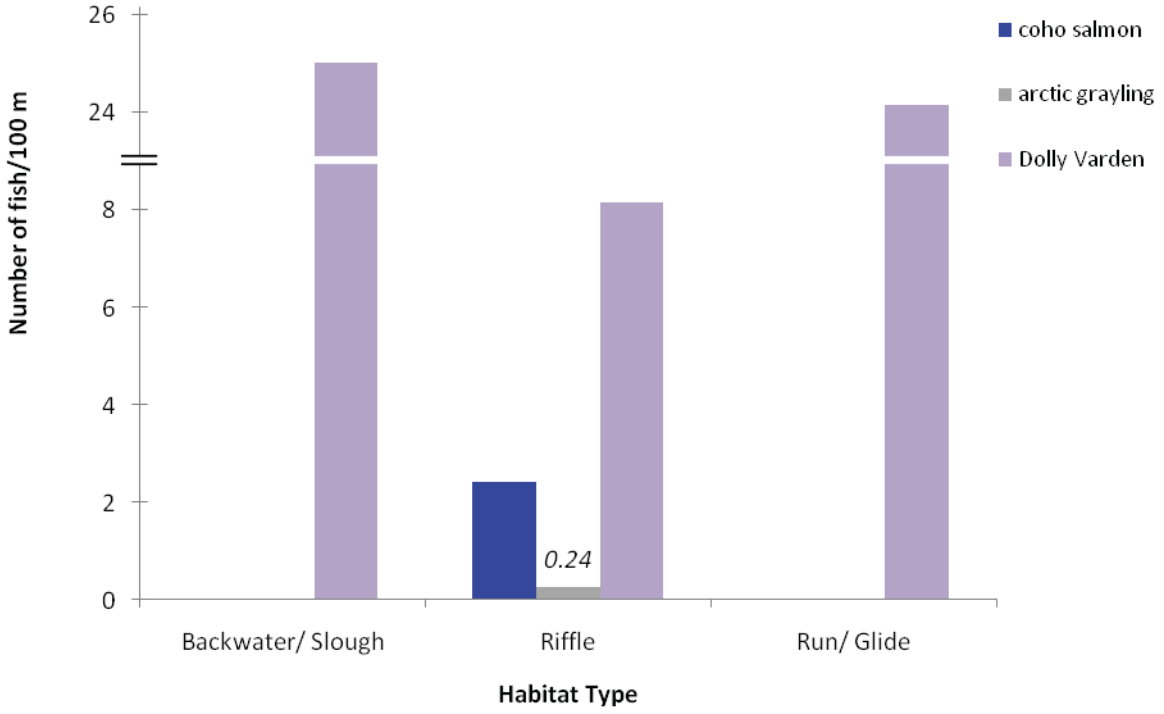


Figure B.14-8b.
2004-2007 fish abundance by habitat type within UT-C tributaries.

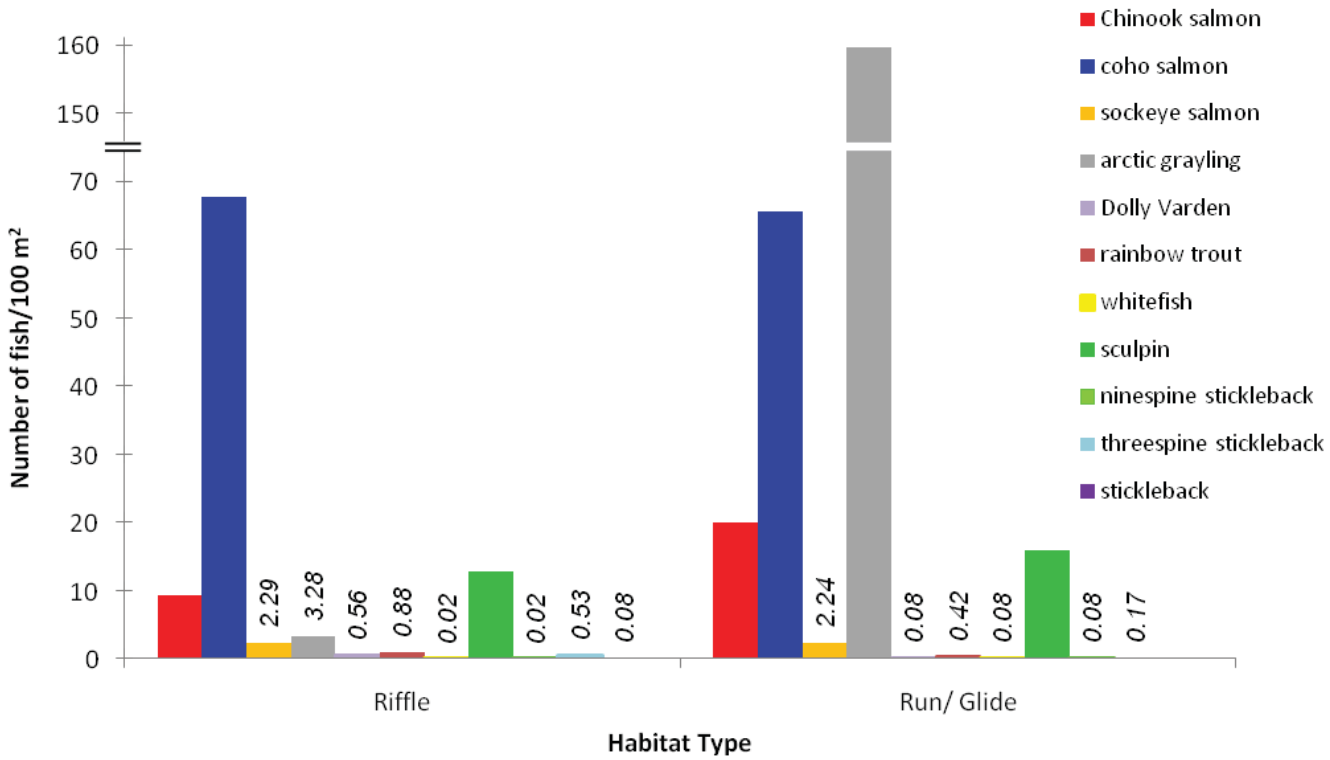


Figure B.14-9.
2004-2007 fish density by habitat type within mainstem UT-C.

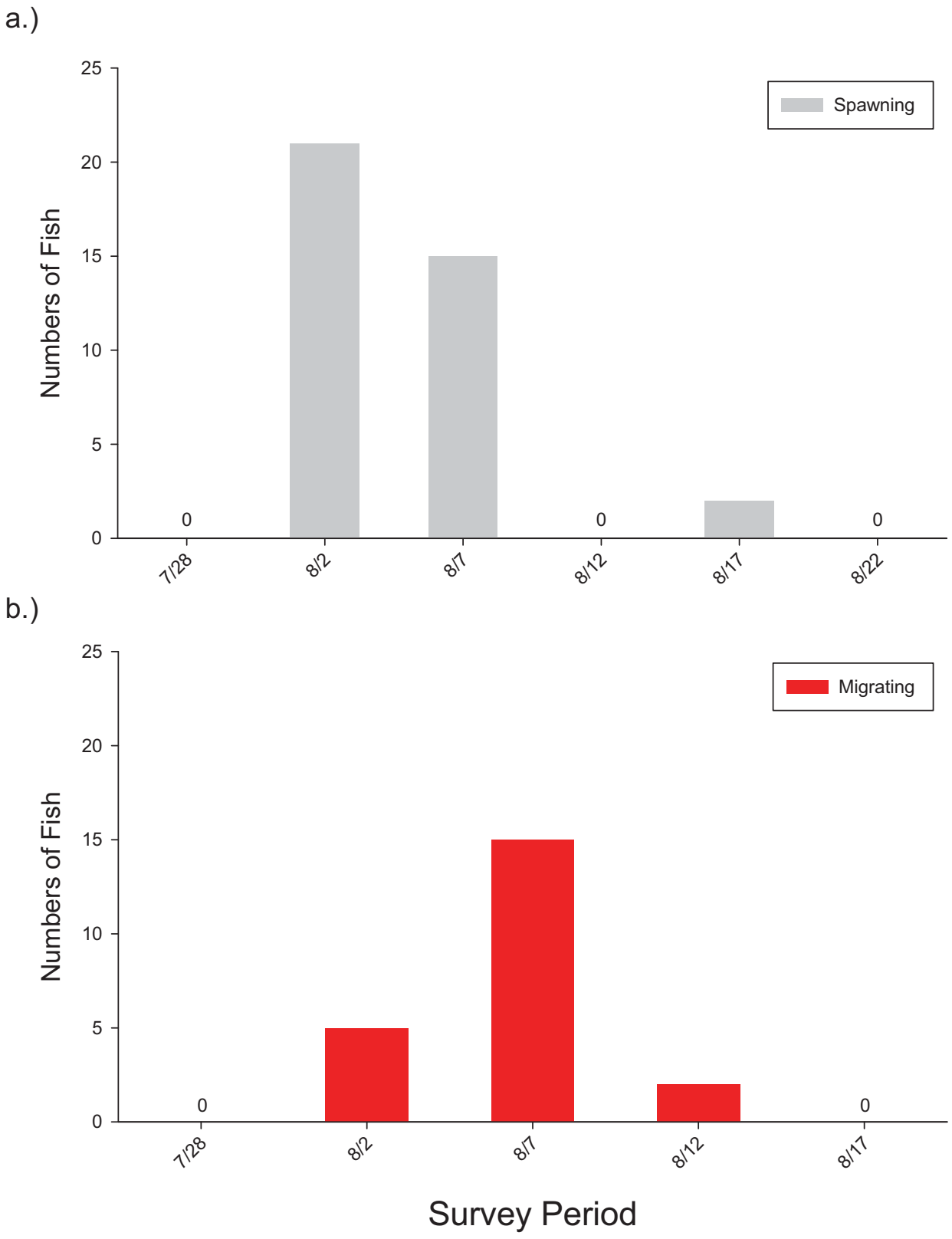


Figure B.14-14.
Observations of Chinook salmon during 2008 aerial surveys in UT-C. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed migrating.

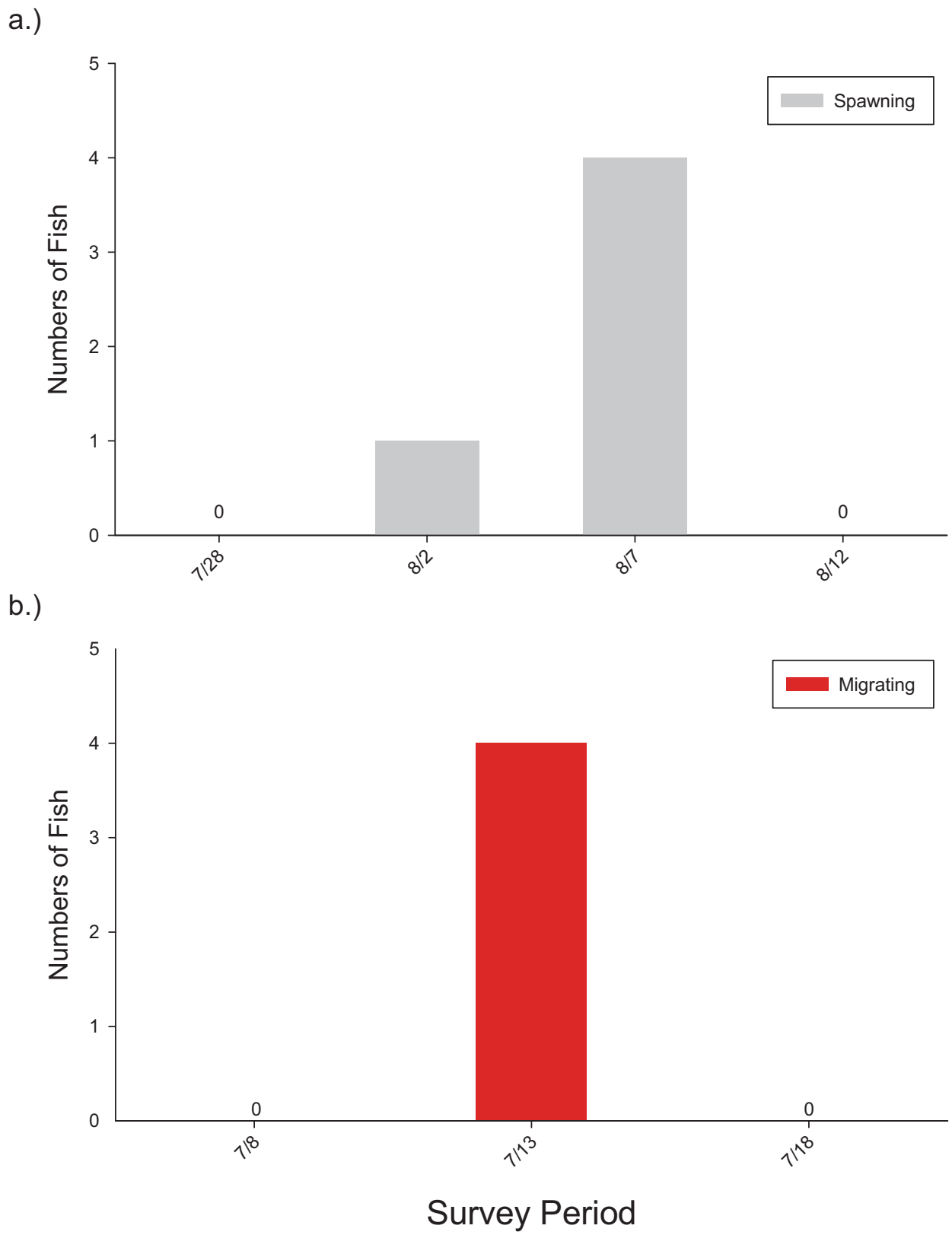


Figure B.14-15.
Observations of chum salmon during 2008 aerial surveys in UT-C. a.) Number of chum salmon spawning. b.) Number of chum salmon observed migrating.

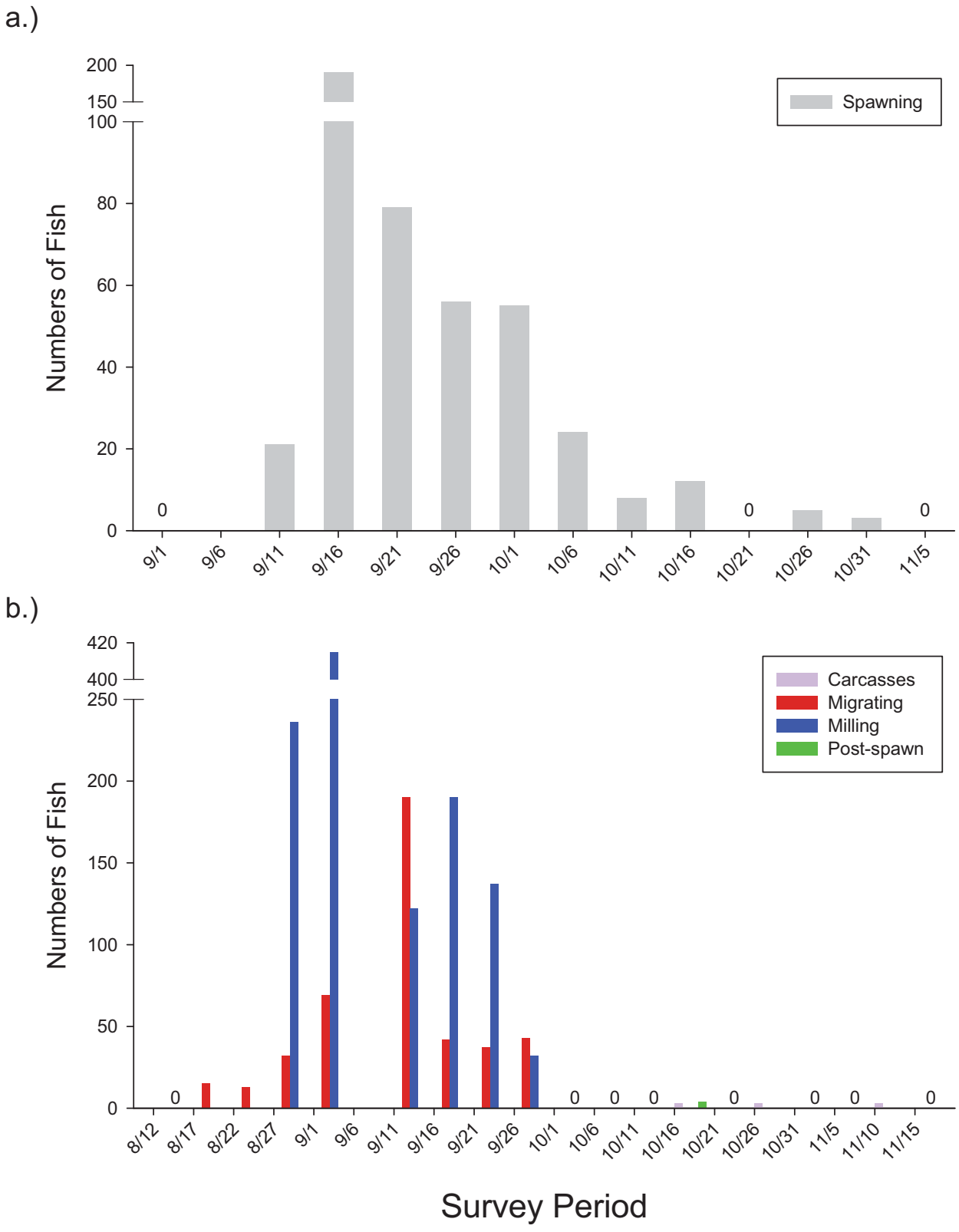


Figure B.14-16.
Observations of coho salmon during 2008 aerial surveys in UT-C. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

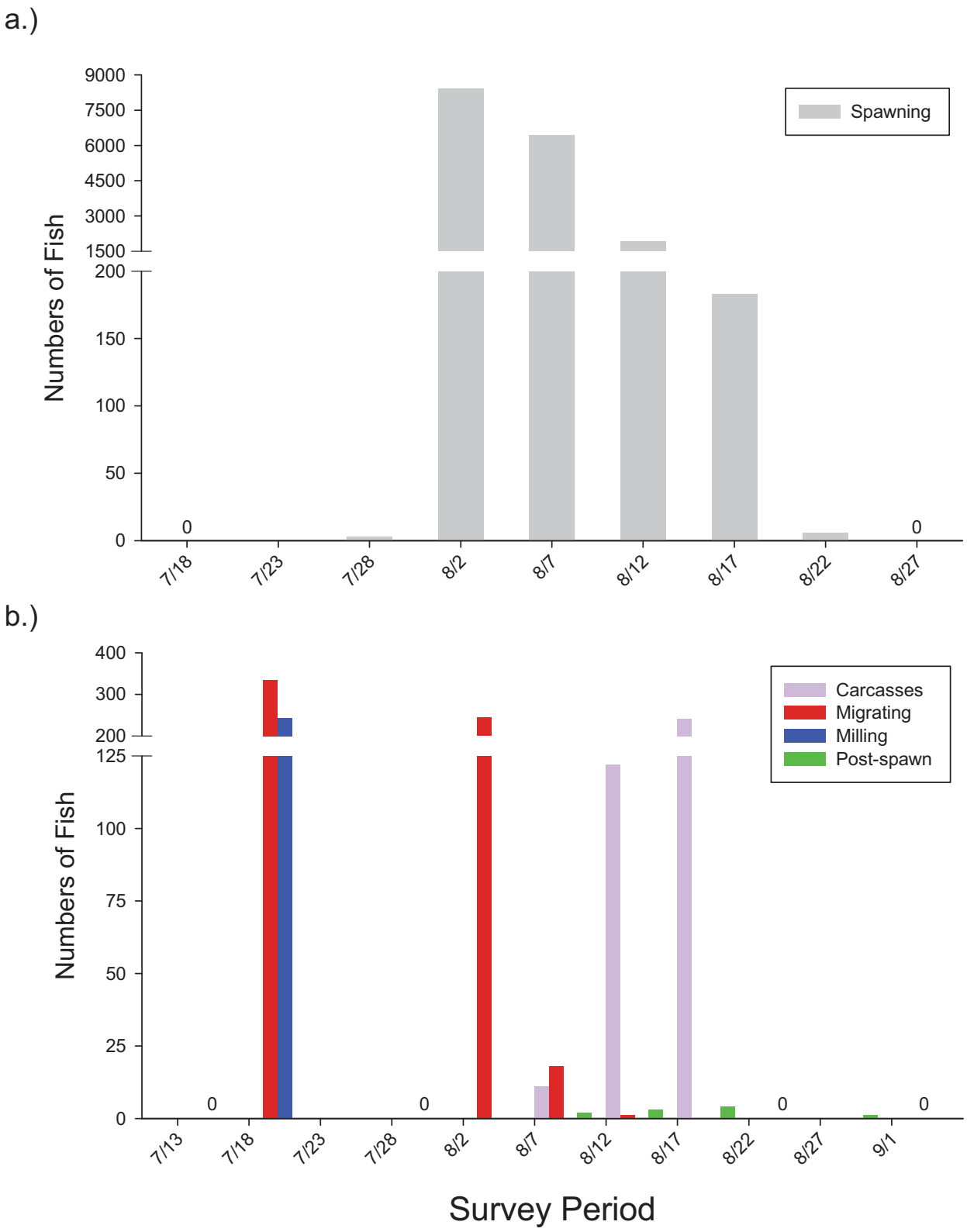


Figure B.14-17.
Observations of sockeye salmon during 2008 aerial surveys in UT-C. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.14-7.
UT-C fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Juveniles	Total Fish Count	Fish Abundance (number/100 m)
4/15/2004	UT-04WT-19	Dolly Varden	minnow trap		24	1	1	
4/3/2005	UT-05WT-01	rainbow trout	minnow trap		22	1	1	
4/6/2006	UT06WT-06	Dolly Varden	electrofishing			1	1	
	UT06WT-13	Chinook salmon	electrofishing			4	4	
		coho salmon	electrofishing			2	2	
		rainbow trout	electrofishing			1	1	
4/7/2006	UT06WT-14	Chinook salmon	electrofishing	110		1	1	0.9
11/4/2006	UT-04WT-18	Dolly Varden	minnow trap		24	2	2	
	UT06WT-06	Dolly Varden	minnow trap		25	4	4	
4/5/2007	UT07-10	coho salmon	minnow trap		24	2	2	
		ninespine stickleback	minnow trap		24	1	1	
		threespine stickleback	minnow trap		24	3	3	
	UT07-11	Chinook salmon	electrofishing			2	2	
		coho salmon	electrofishing			25	25	
		sockeye salmon	electrofishing			2	2	
		Dolly Varden	electrofishing			1	1	

Note: Blank cells indicate no data were collected for that record.

Table B.14-8.
2008 fish observations by method at mainstem index sites located within UT-C.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC17.32	Chinook salmon	snorkel		15		15
	coho salmon	beach seine		2		2
		snorkel		57		57
	sculpin sp.	snorkel			2	2
UTC17.32 Total				**74**	**2**	**76**
UTC21.65A	coho salmon	beach seine		2		2
		snorkel		38		38
	sockeye salmon	beach seine	5			5
		snorkel	91			91
	arctic grayling	snorkel	1			1
	Salmonid sp.	snorkel		75		75
	sculpin sp.	beach seine	1	1		2
UTC21.65A Total			**098**	**116**		**214**
UTC21.65B	Chinook salmon	dip net		1		1
		snorkel		20		20
	coho salmon	dip net		17		17
		snorkel		170		170
UTC21.65B Total				**208**		**208**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

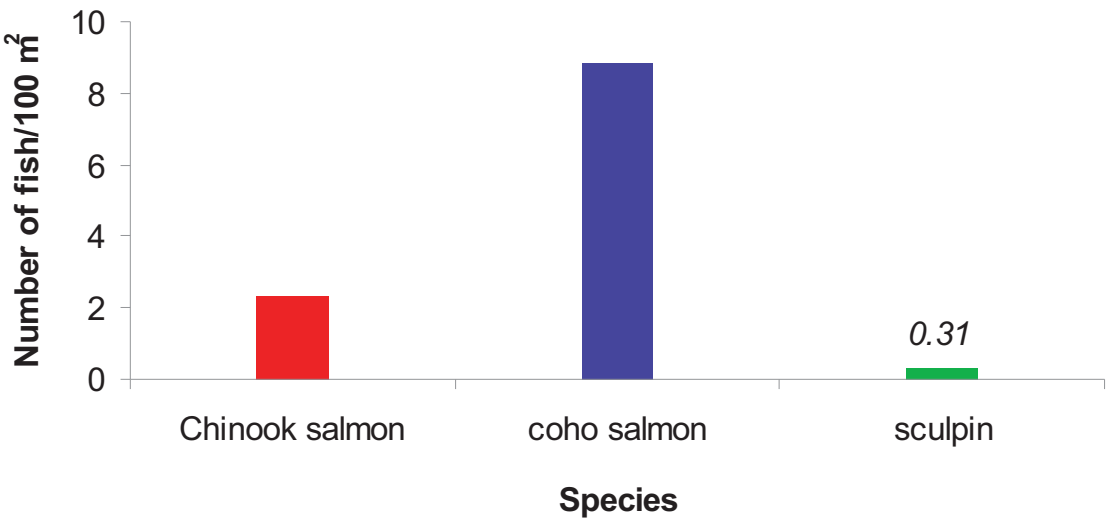


Figure B.14-19a.
2008 fish density in riffle habitat at mainstem index site (RKm 17.32) within UT-C. Densities were calculated from the method that generated the greatest count of fish at this location.

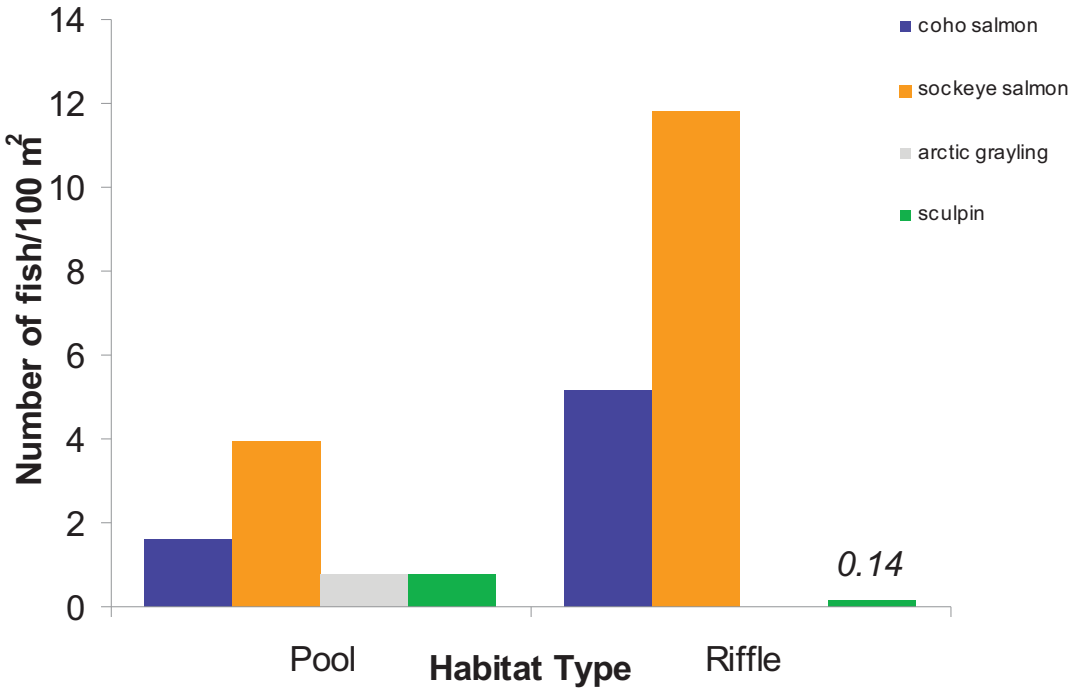


Figure B.14-19b.
2008 fish density by habitat type at mainstem index site (RKm 21.65), channel A within UT-C. Densities were calculated from the method that generated the greatest count of fish at this location.

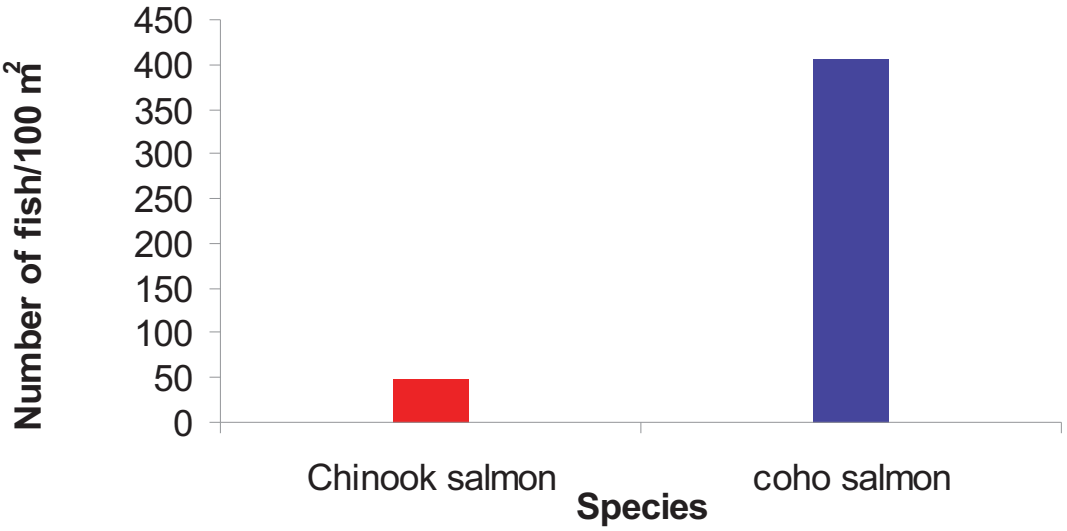
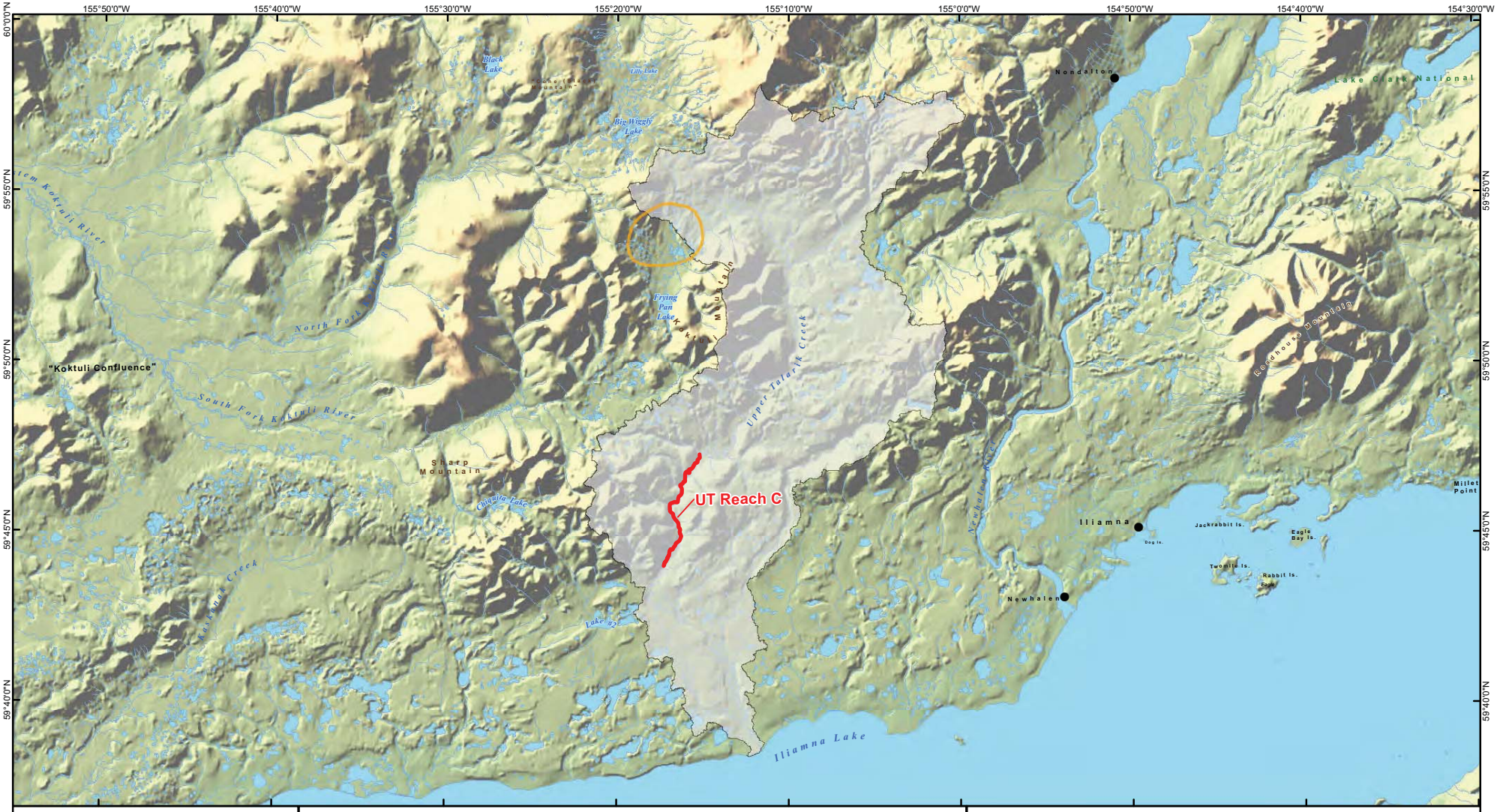
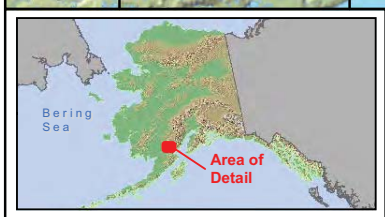


Figure B.14-19c.
2008 fish density in glide habitat at mainstem index site (RKm 21.65), channel B within UT-C. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach UT Reach C

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

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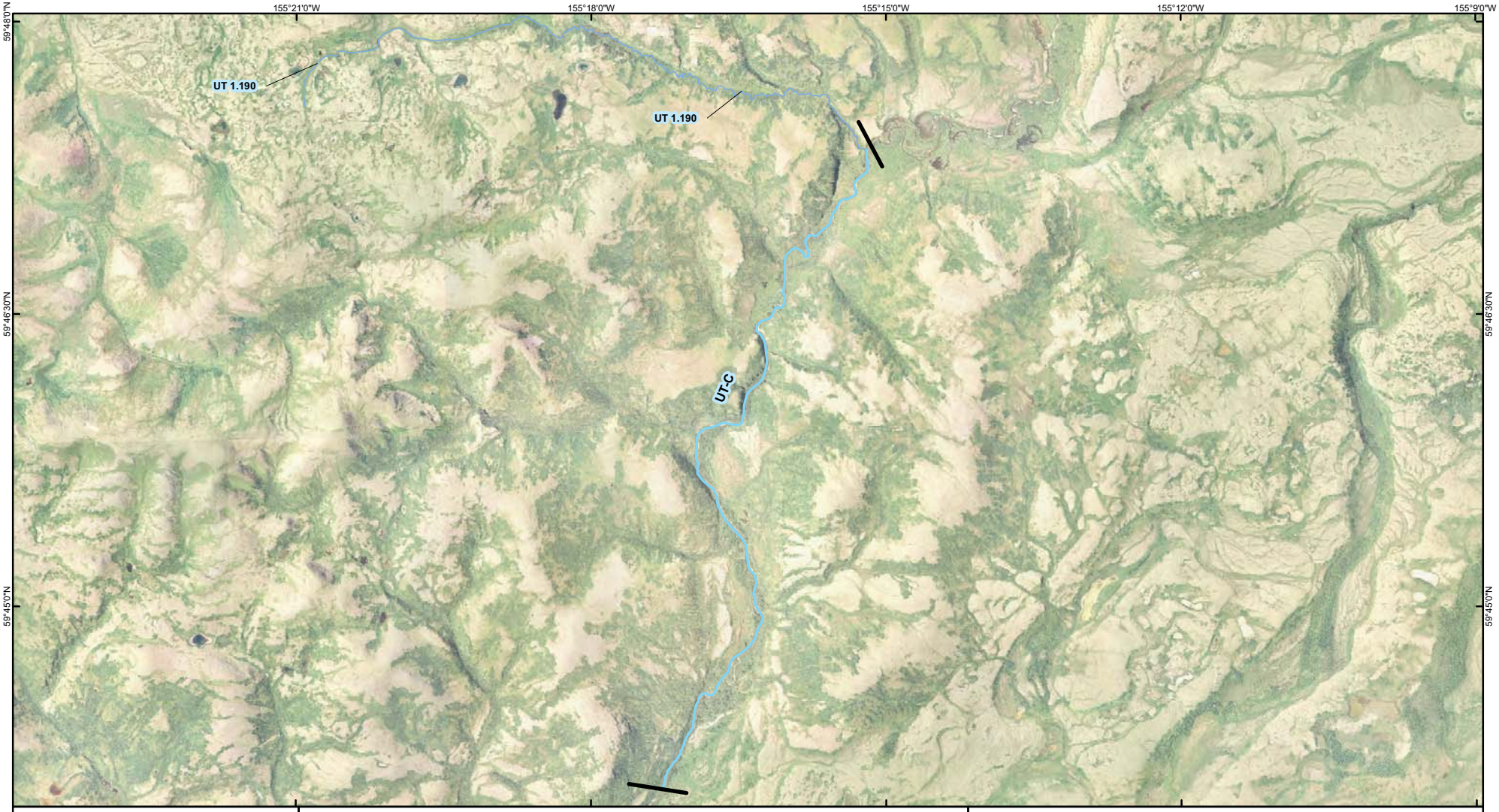
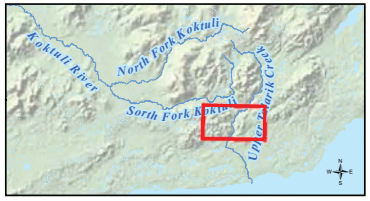
Figure B.14-1a
Reach UT-C

RDI_R2_OverviewLocator_UT-C_Fig-B.14-1a_11x17L_14of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 0.7 — 1.4

Kilometers: 0 — 0.7 — 1.4

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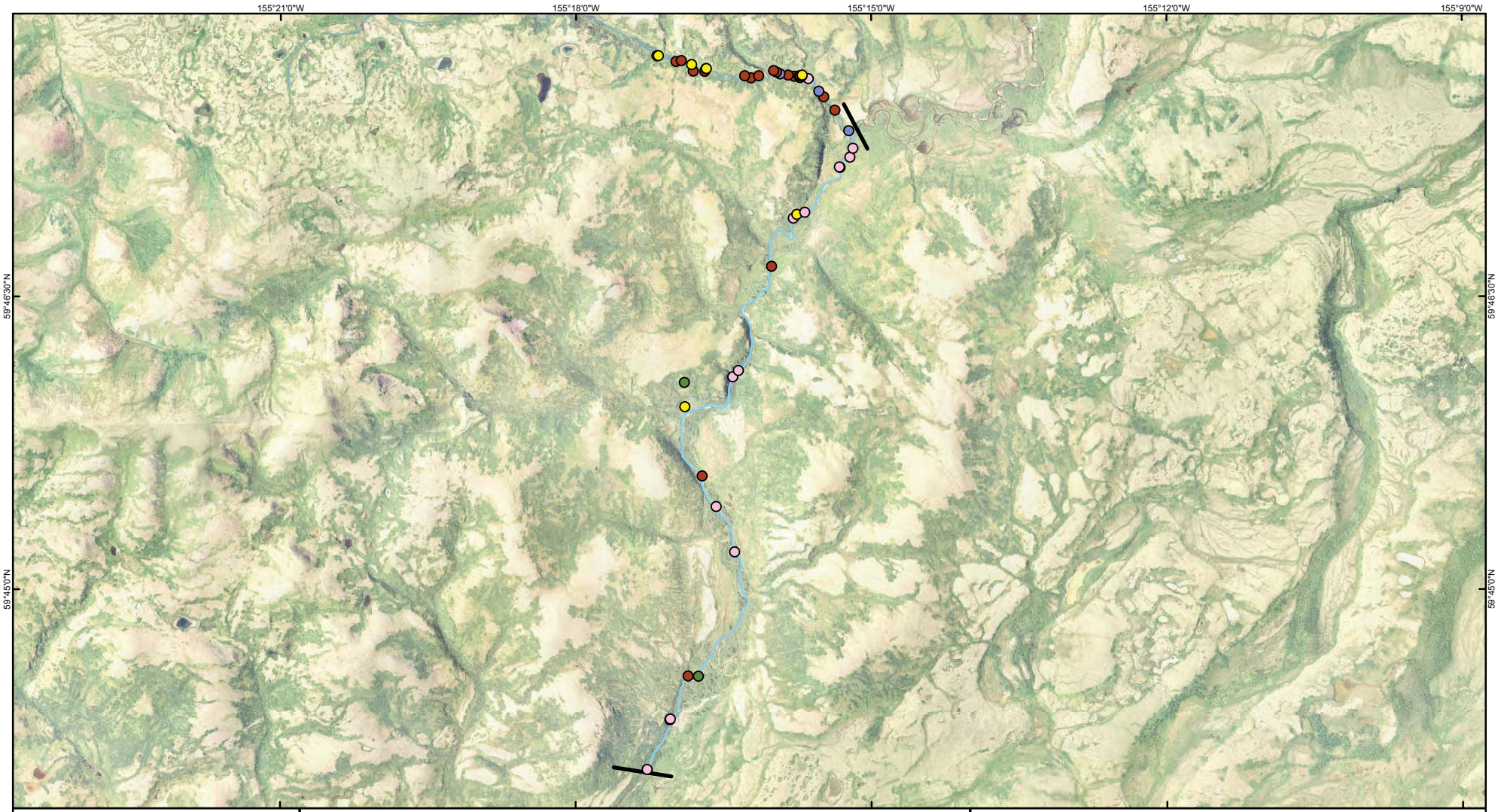
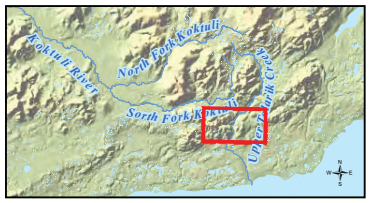
Figure B.14-1b
UT-C
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-C_Fig-B.14-1b_11x17L_14of19_D01.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach

Tributary Streams

Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.7 1.4

Kilometers
0 0.7 1.4

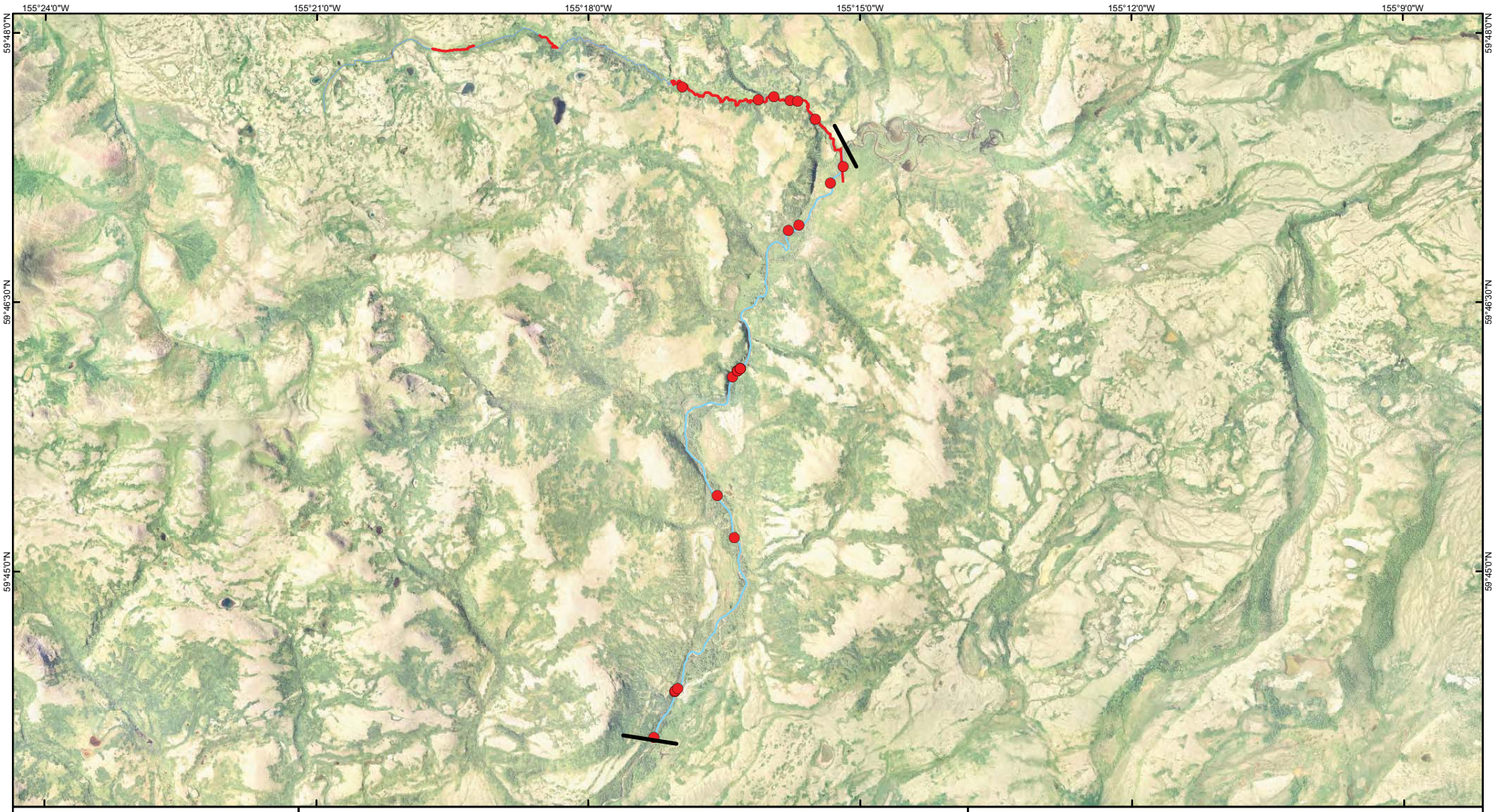
THE pebble PARTNERSHIP

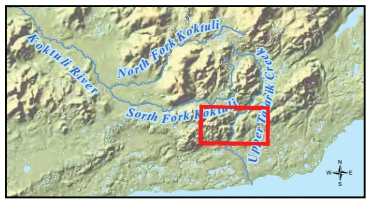
Figure B.14-2
UT-C
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_UT-C_Fig-B.14-2_11x17L_14of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

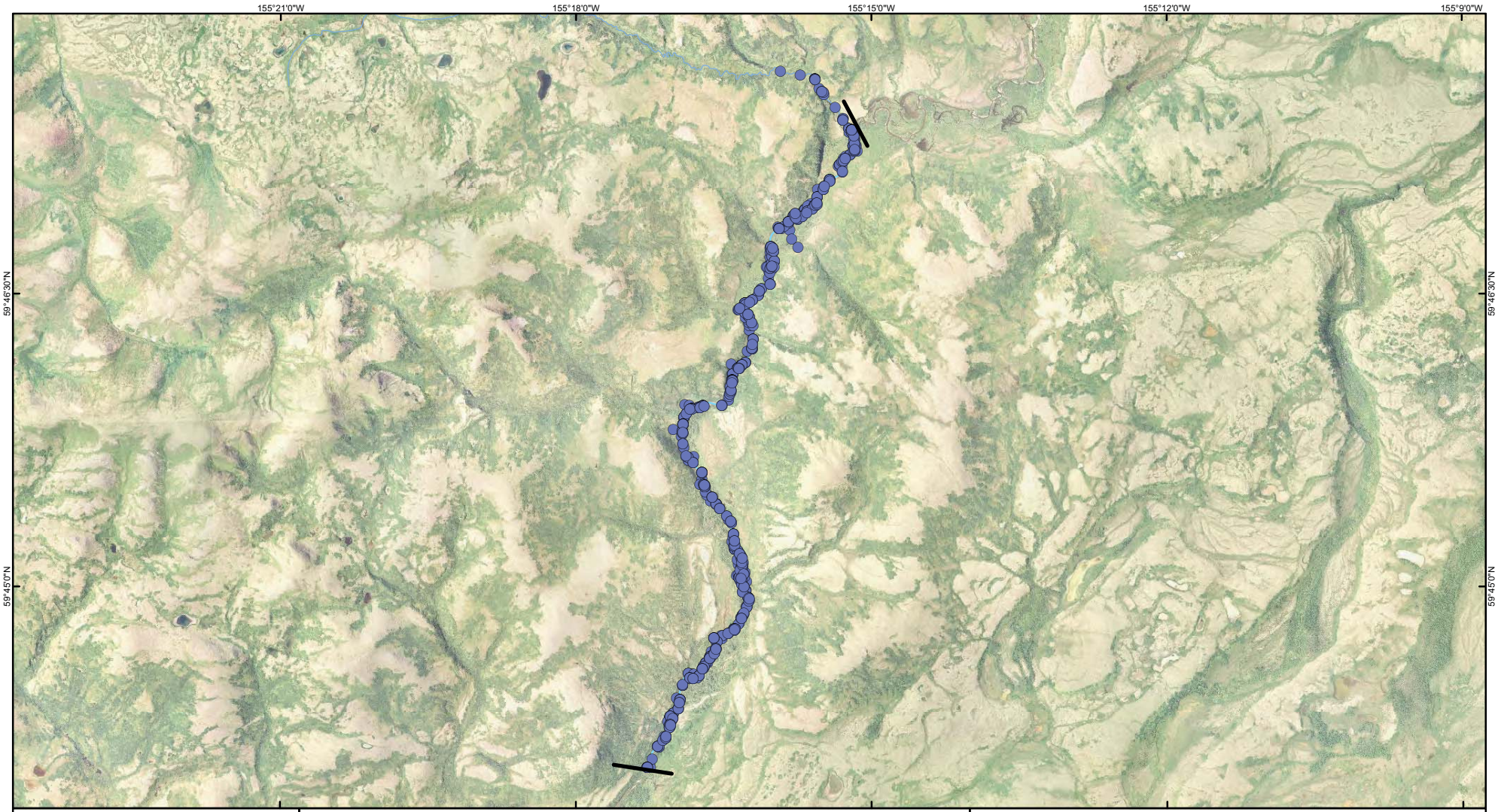
Miles
0 0.7 1.4

Kilometers
0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.14-3
UT-C
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-C_Fig-B.14-3_11x17L_14of19_D02.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

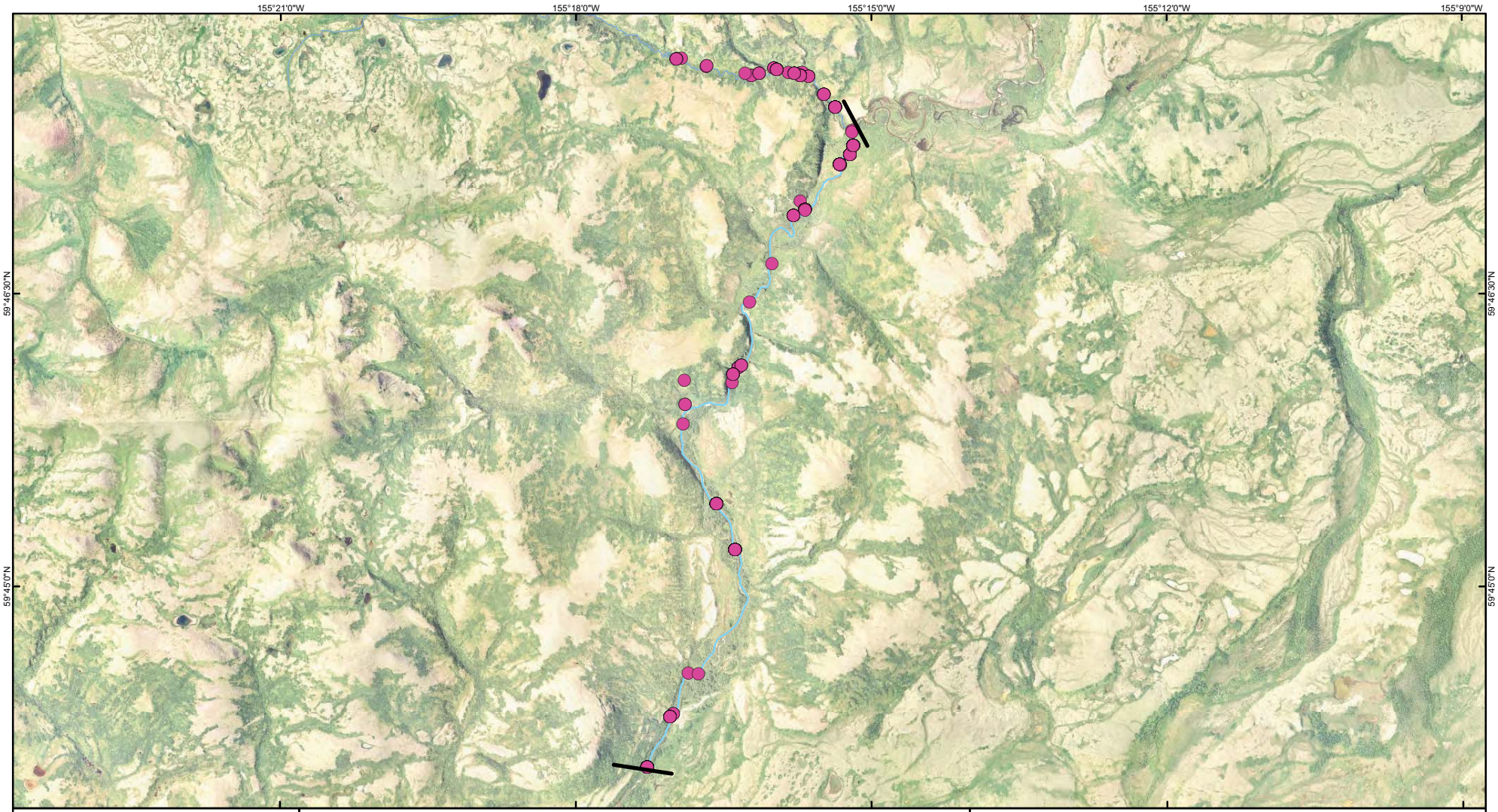
Miles: 0 — 0.7 — 1.4

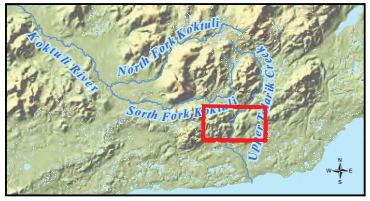
Kilometers: 0 — 0.7 — 1.4

THE pebble PARTNERSHIP

Figure B.14-4
UT-C
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-C_Fig-B.14-4_11x17L_14of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

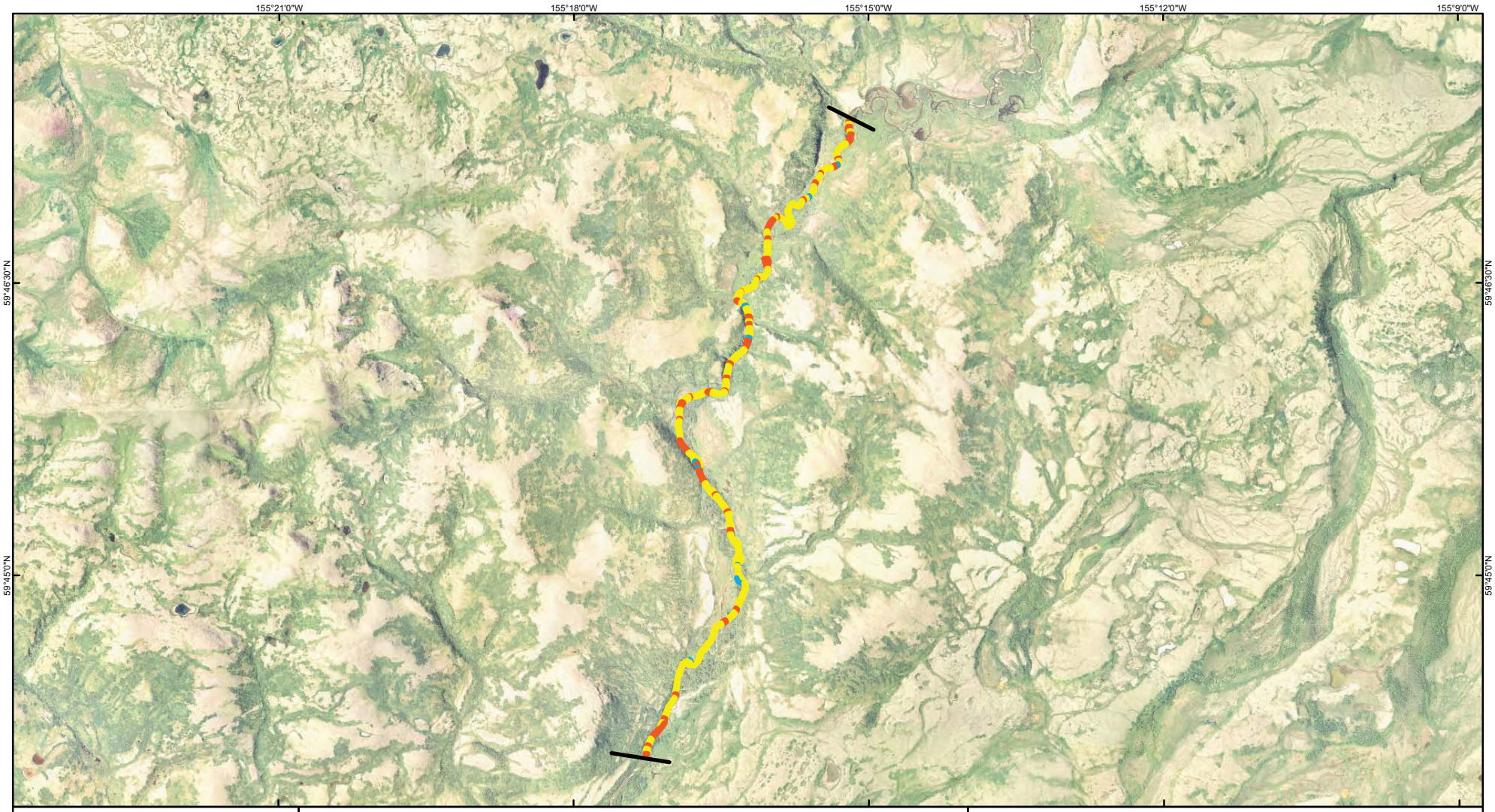
Miles: 0 0.7 1.4

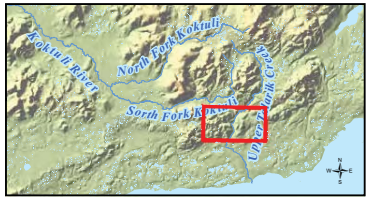
Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.14-5
UT-C
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-C_Fig-B.14-5_11x17L_14of19_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

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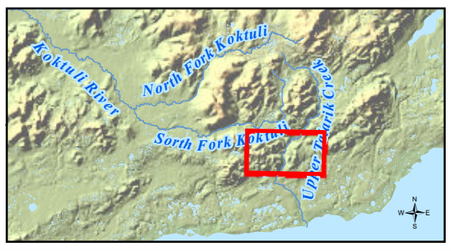
Figure B.14-6
UT-C
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_UT-C_Fig-B.14-6_11x17L_14of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

155°21'0"W
155°18'0"W
155°15'0"W
155°12'0"W
155°9'0"W
59°48'0"N
59°46'30"N
59°45'0"N



Legend

- UT 1.190 SA1
- UT 1.190 SA2
- UT 1.190 SA3
- UT 1.190 SA4
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

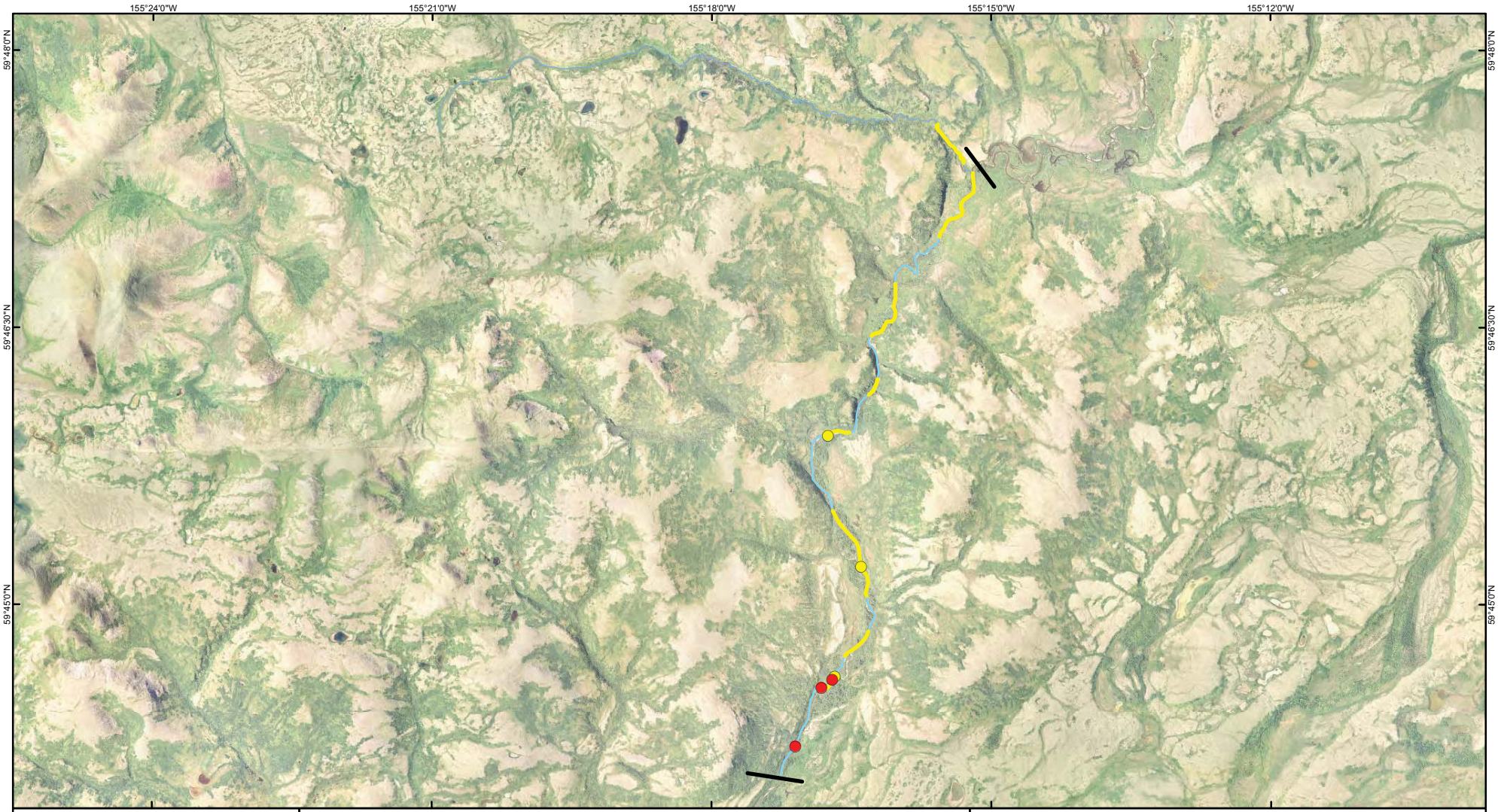
Miles
0 0.7 1.4

Kilometers
0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.14-7
UT-C
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_UT-C_Fig-B.14-7_11x17L_14of19_D02.mxd	July 19, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.7 1.4

Kilometers: 0 0.7 1.4

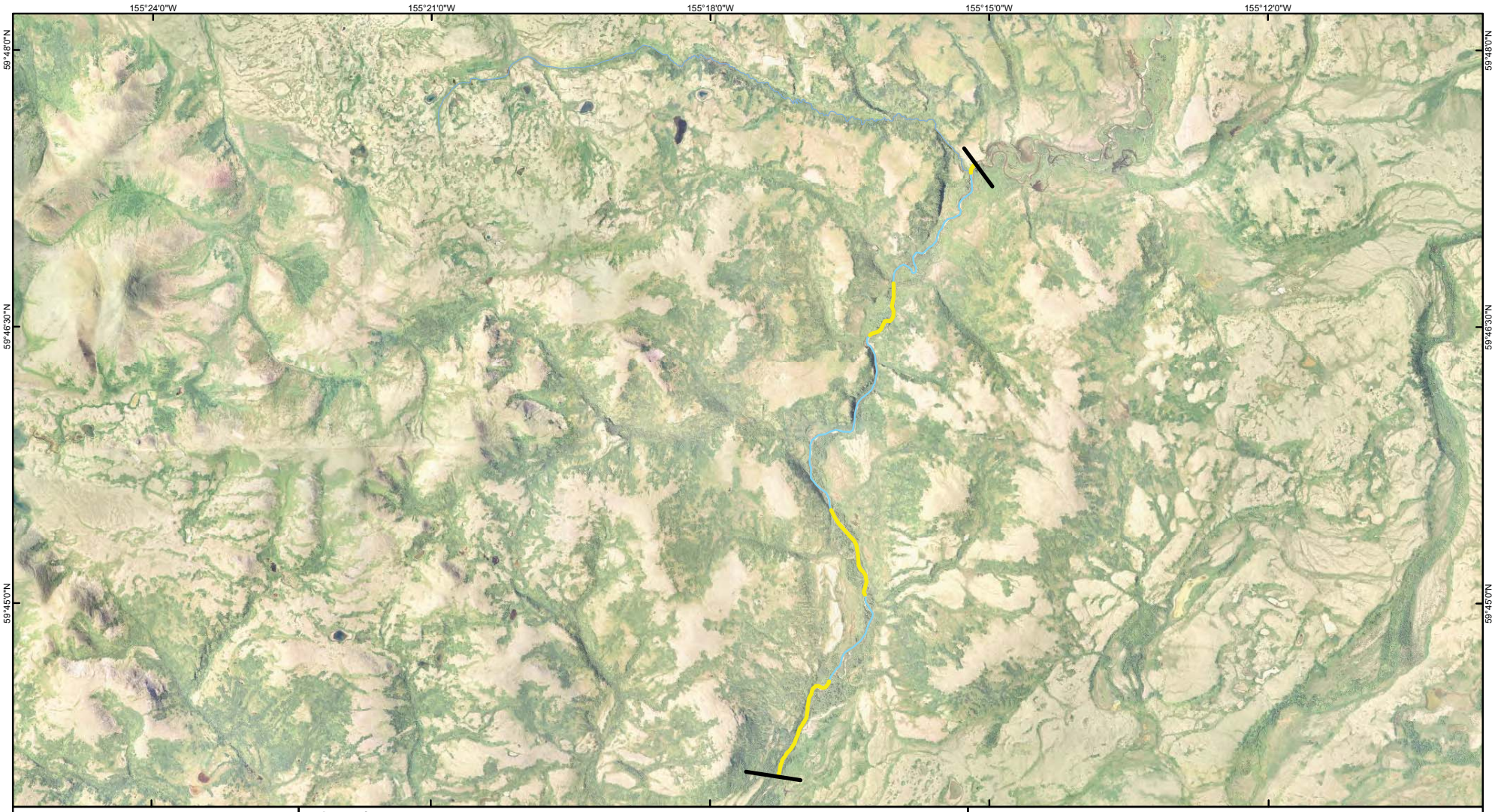
THE pebble PARTNERSHIP

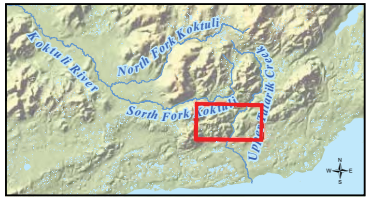
Figure B.14-10
UT-C
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-C_Fig-B.14-10_KS_11x17L_16of22_D04.mxd

February 5, 2011

Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

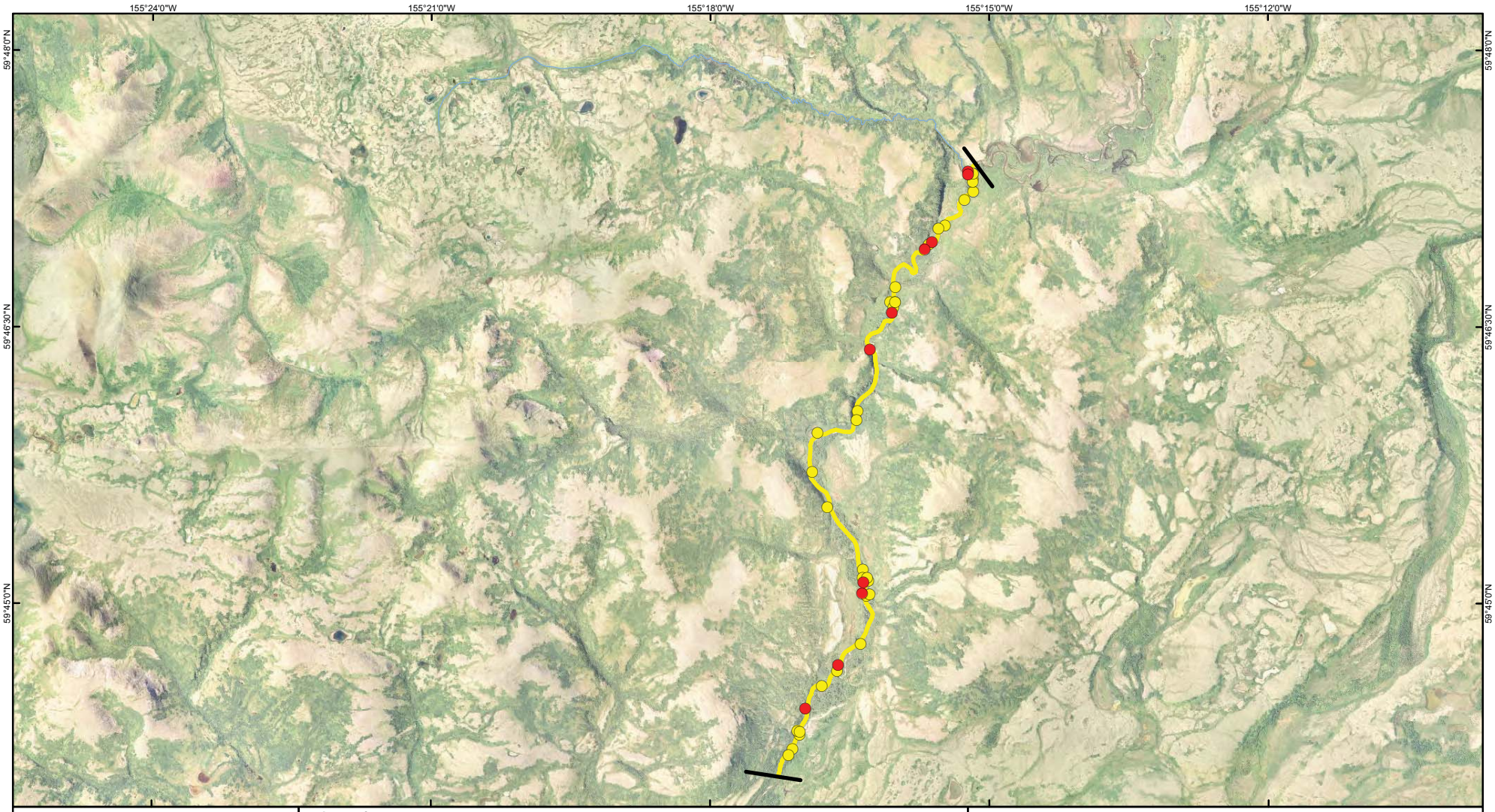
Miles: 0 0.7 1.4

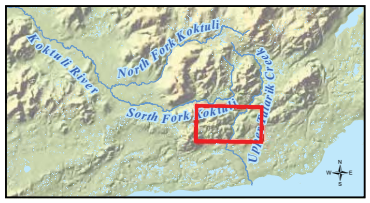
Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.14-11
UT-C
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-C_Fig-B.14-11_CH_11x17L_16of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

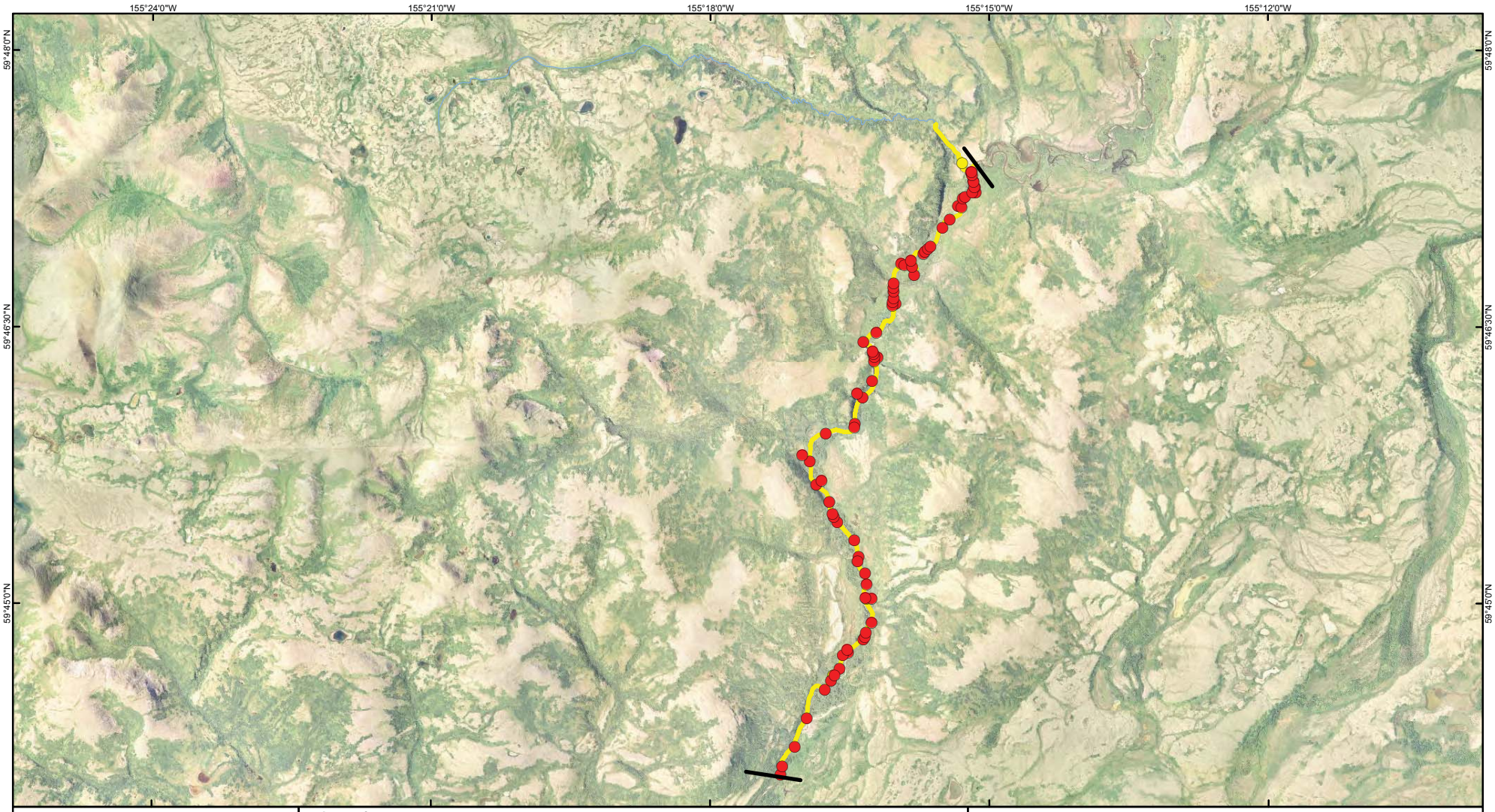
Miles
0 0.7 1.4

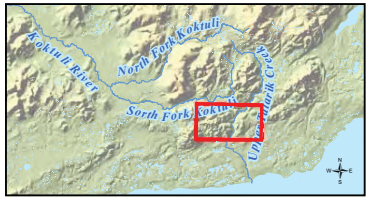
Kilometers
0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.14-12
UT-C
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-C_Fig-B.14-12_CS_11x17L_16of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

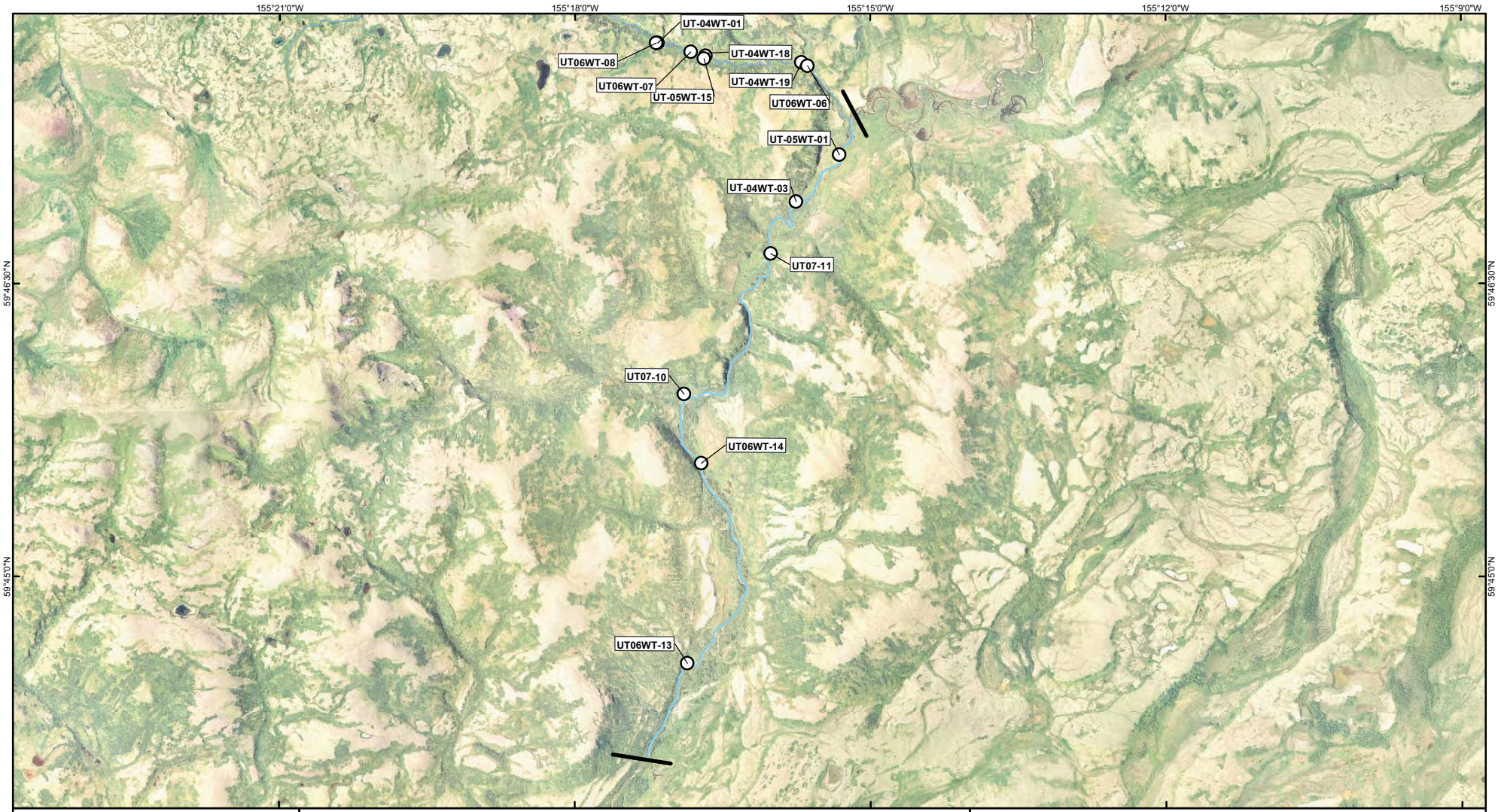
Miles: 0 0.7 1.4

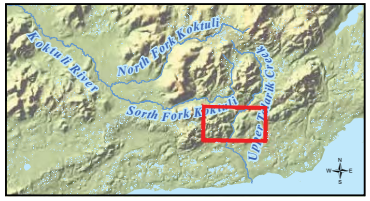
Kilometers: 0 0.7 1.4

THE pebble PARTNERSHIP

Figure B.14-13
UT-C
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-C_Fig-B.14-13_SS_11x17L_16of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 0.7 — 1.4

Kilometers: 0 — 0.7 — 1.4

THE pebble PARTNERSHIP

Figure B.14-18
UT-C
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_UT-C_Fig-B.14-18_11x17L_14of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.15
UPPER TALARIK CREEK RIVER REACH D (UT-D)

Table B.15-1.
List of species found in UT-D.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.15-2.
2004-2008 number of fish observations by lifestage within UT-D mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

			Adult						Juvenile							Juvenile/Adult[a]						
Species	Year	Method	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Subtotal	Total
Chinook salmon	2005	Minnow Trap							2			28			30							30
		Snorkel									981				981							981
	2006	Electrofishing							1					1	2							2
		Minnow Trap							1					4	5							5
		Snorkel									280				280							280
	2007	Electrofishing								34	35				69							69
		Minnow Trap											5		5							5
		Snorkel								10	317		41		368							368
	2008	Seine										10			10							10
		Snorkel										72			72							72
		Visual Observation		1				1														1
chum salmon	2007	Snorkel									1				1							1
coho salmon	2004	Electrofishing										1			1							1
		Minnow Trap							1			191			192							192
	2005	Minnow Trap							21			324			345							345
		Snorkel									1587				1587							1587
	2006	Electrofishing							4					18	22							22
		Minnow Trap							10					118	128							128
		Snorkel									2364				2364							2364
	2007	Electrofishing							17	141	1759				1917							1917
		Minnow Trap							50		158		807		1015							1015
		Snorkel				9		9	15	107	8569		2738		11429							11438
		Visual Observation				3		3														3
	2008	Angling			2	2		4														4
		Dip Net										2			2							2
		Seine										10			10							10
		Snorkel										213			213							213

Table B.15-2. Continued

Species	Year	Method	Adult						Juvenile							Juvenile/Adult[a]						Total
			Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Subtotal	
sockeye salmon	2005	Snorkel	13					13														13
	2006	Electrofishing							1						1							1
		Snorkel	21					21			4				4							25
	2007	Electrofishing								2	21				23							23
		Snorkel	11					11	13		27				40							51
	2008	Seine		20				20														20
		Snorkel		19				19														19
		Visual Observation		4				4														4
Pacific salmon sp.	2005	Minnow Trap										319			319							319
arctic grayling	2005	Snorkel	10					10														10
	2006	Snorkel	5					5														5
	2007	Electrofishing								3	27				30							30
		Snorkel	14					14			103		5		108							122
	2008	Seine		6				6														6
		Snorkel		1				1														1
Dolly Varden	2004	Electrofishing		1				1				4			4							5
	2007	Electrofishing							1	5	4				10							10
		Minnow Trap							1		1		7		9							9
		Snorkel	2			3		5			3		35		38			1		1	2	45
		Visual Observation											1		1							1
	2008	Seine		9				9				3			3							12
		Snorkel		1				1				5			5				11		11	17
rainbow trout	2004	Minnow Trap										19			19							19
	2005	Minnow Trap							12			3			15							15
		Snorkel	7					7			379				379			3			3	389
	2006	Electrofishing												3	3							3
		Minnow Trap												5	5							5
		Snorkel	1					1			10				10							11
	2007	Electrofishing							2	1	5				8							8
		Minnow Trap							1		9		3		13							13
		Snorkel	4					4	9	1	8		24		42							46

Table B.15-2. Continued

Species	Year	Method	Adult						Juvenile							Juvenile/Adult[a]						Total
			Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Subtotal	
rainbow trout	2008	Angling			2	1		3														3
(cont)		Seine		2				2				2			2							4
		Snorkel										2			2				4		4	6
whitefish sp.	2005	Snorkel									1				1							1
	2007	Snorkel	1					1														1
Salmonid sp.	2005	Visual Observation							2						2							2
	2006	Snorkel									3				3							3
	2007	Electrofishing								1	5				6							6
		Snorkel	1					1	8		11				19							20
		Visual Observation							4				1		5							5
sculpin sp.	2004	Minnow Trap		3				3				1			1				3		3	7
	2005	Minnow Trap														3			7		10	10
	2006	Electrofishing														45					45	45
		Minnow Trap					1	1						2	2	1					1	4
		Visual Observation														27					27	27
	2007	Electrofishing									3				3		86	265			351	354
		Minnow Trap	4			1		5			2				2			1		1	2	9
		Snorkel	1					1			1		1		2			1		1	2	5
		Visual Observation											2		2							2
	2008	Dip Net										1			1							1
		Seine		3				3				8			8							11
		Snorkel																	10		10	10
ninespine	2004	Minnow Trap		1				1														1
stickleback	2005	Minnow Trap							1						1	3					3	4
	2006	Electrofishing												1	1							1
		Minnow Trap												5	5							5
	2007	Electrofishing									2				2							2
		Minnow Trap	7					7			64				64			9		1	10	81
		Snorkel	1					1	38		273		1		312			6			6	319
		Visual Observation							1						1							1

Table B.15-2. Continued

Species	Year	Method	Adult						Juvenile							Juvenile/Adult[a]						Total
			Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Oct	Subtotal	
threespine	2006	Minnow Trap					1	1						14	14							15
stickleback	2007	Electrofishing	2					2	1		2				3			1			1	6
		Minnow Trap	1			2		3	1		51		51		103							106
		Snorkel	13					13			3				3			8			8	24
stickleback sp.	2006	Minnow Trap					1	1														1
	2007	Electrofishing									11				11							11
		Minnow Trap									23				23			10			10	33
		Snorkel	31					31	3		65		64		132			11		5	16	179
		Visual Observation									101				101							101
unidentified sp.	2006	Snorkel																9			9	9
	2007	Snorkel														19		1		4	24	24

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

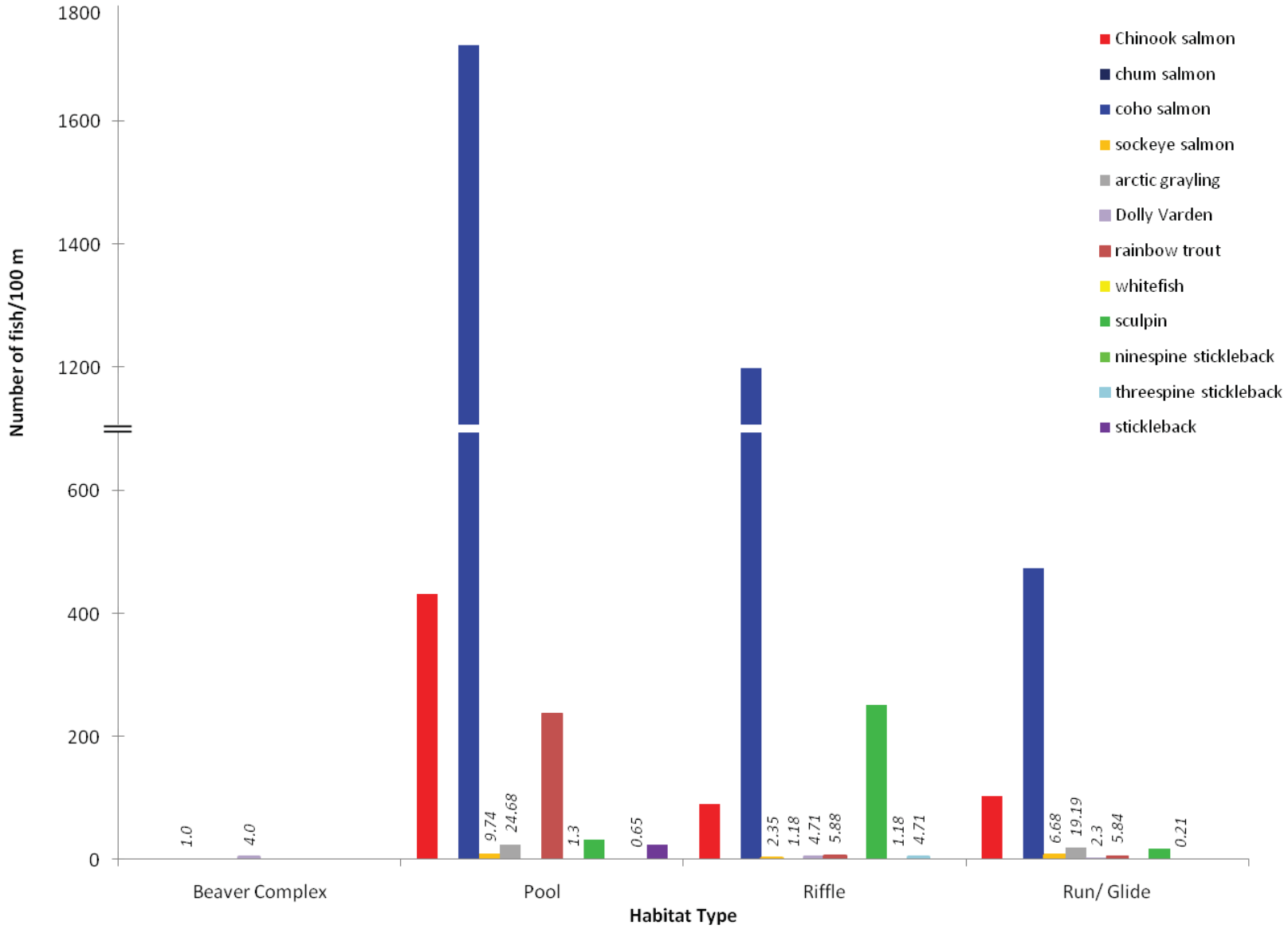


Figure B.15-7.
2004-2007 fish abundance by habitat type within mainstem UT-D.

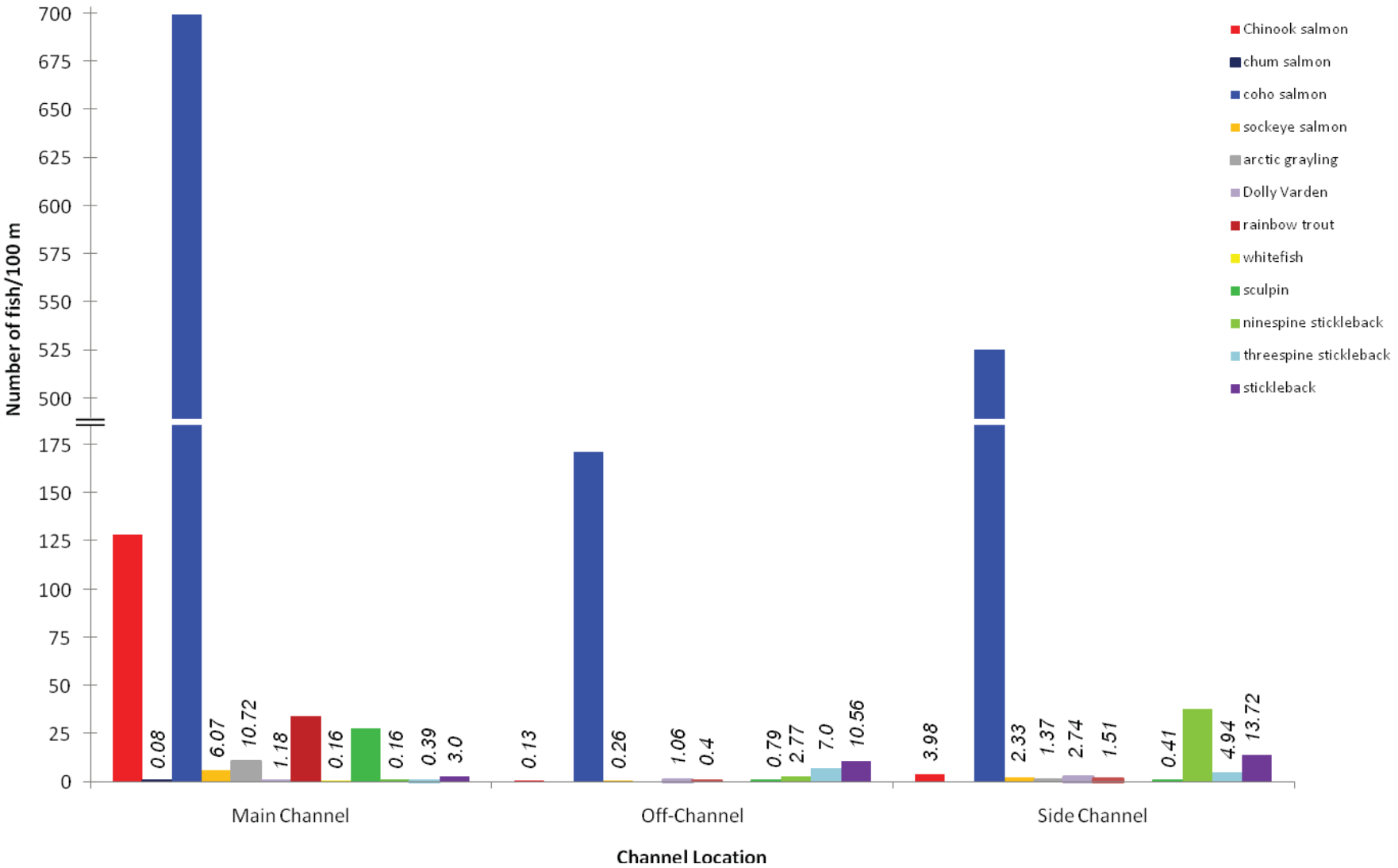


Figure B.15-8.
2004-2007 fish abundance by channel location within UT-D.

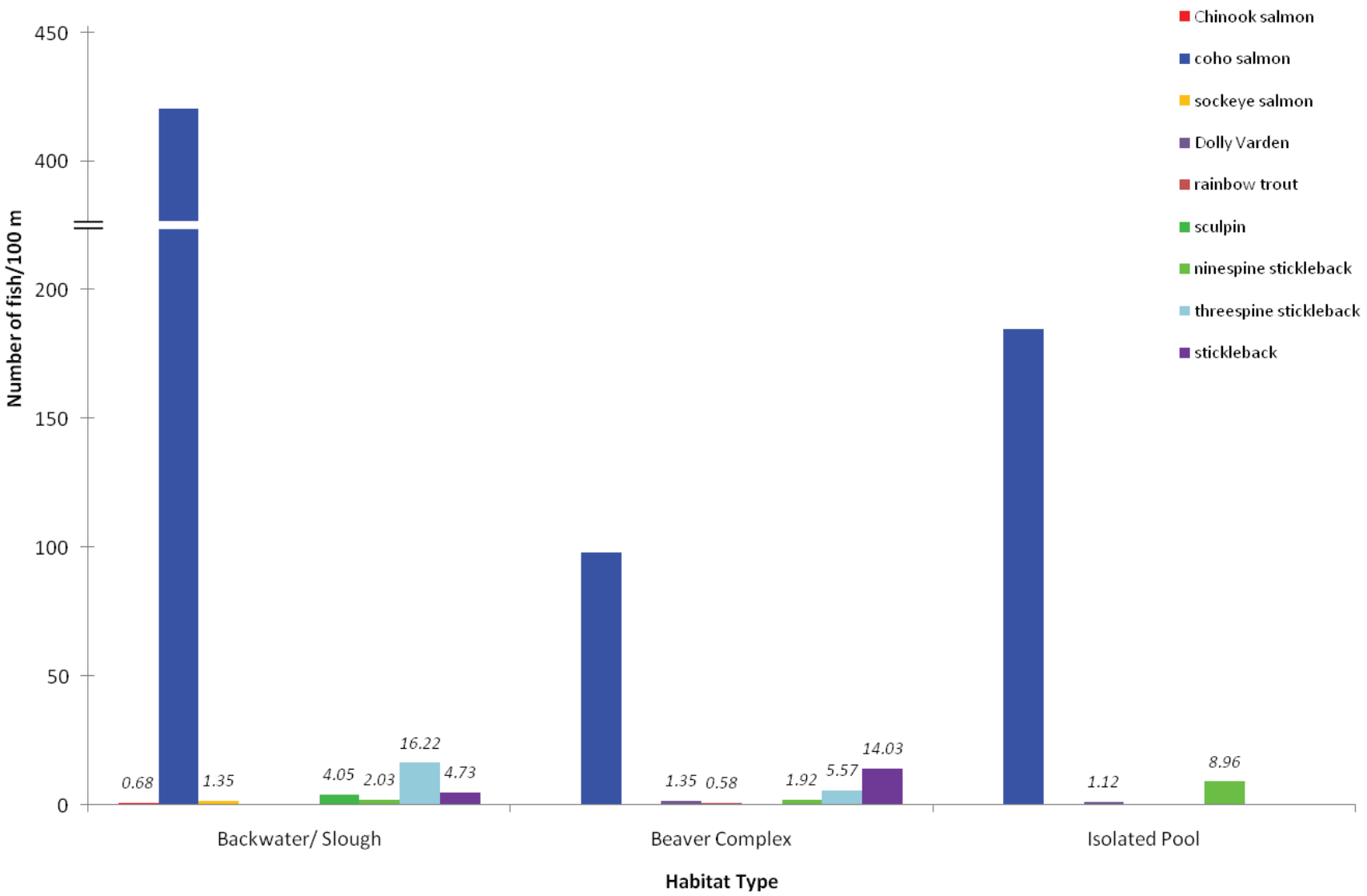


Figure B.15-9.
2004-2007 fish abundance in UT-D off-channel habitats.

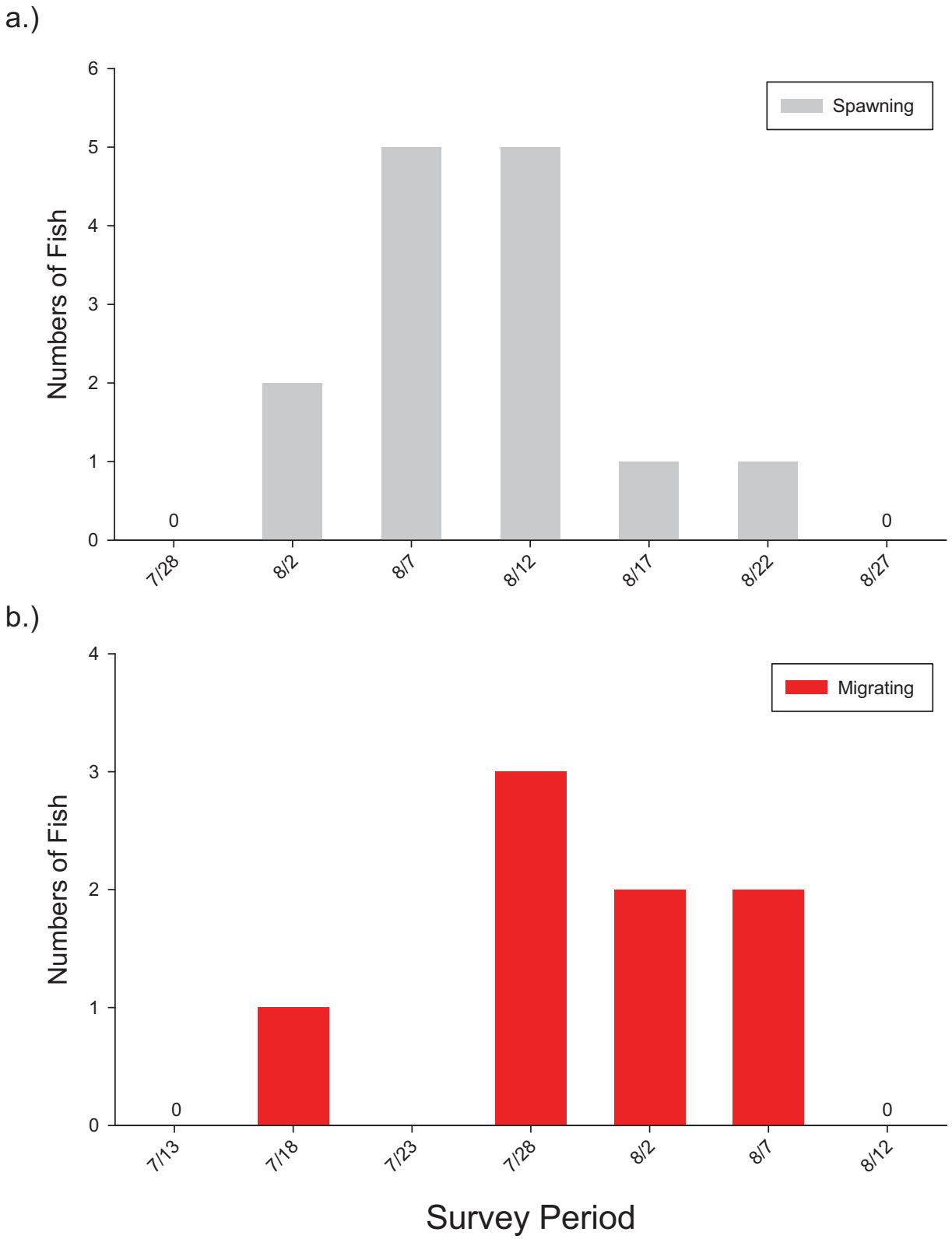


Figure B.15-14.
Observations of Chinook salmon during 2008 aerial surveys in UT-D. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed migrating.

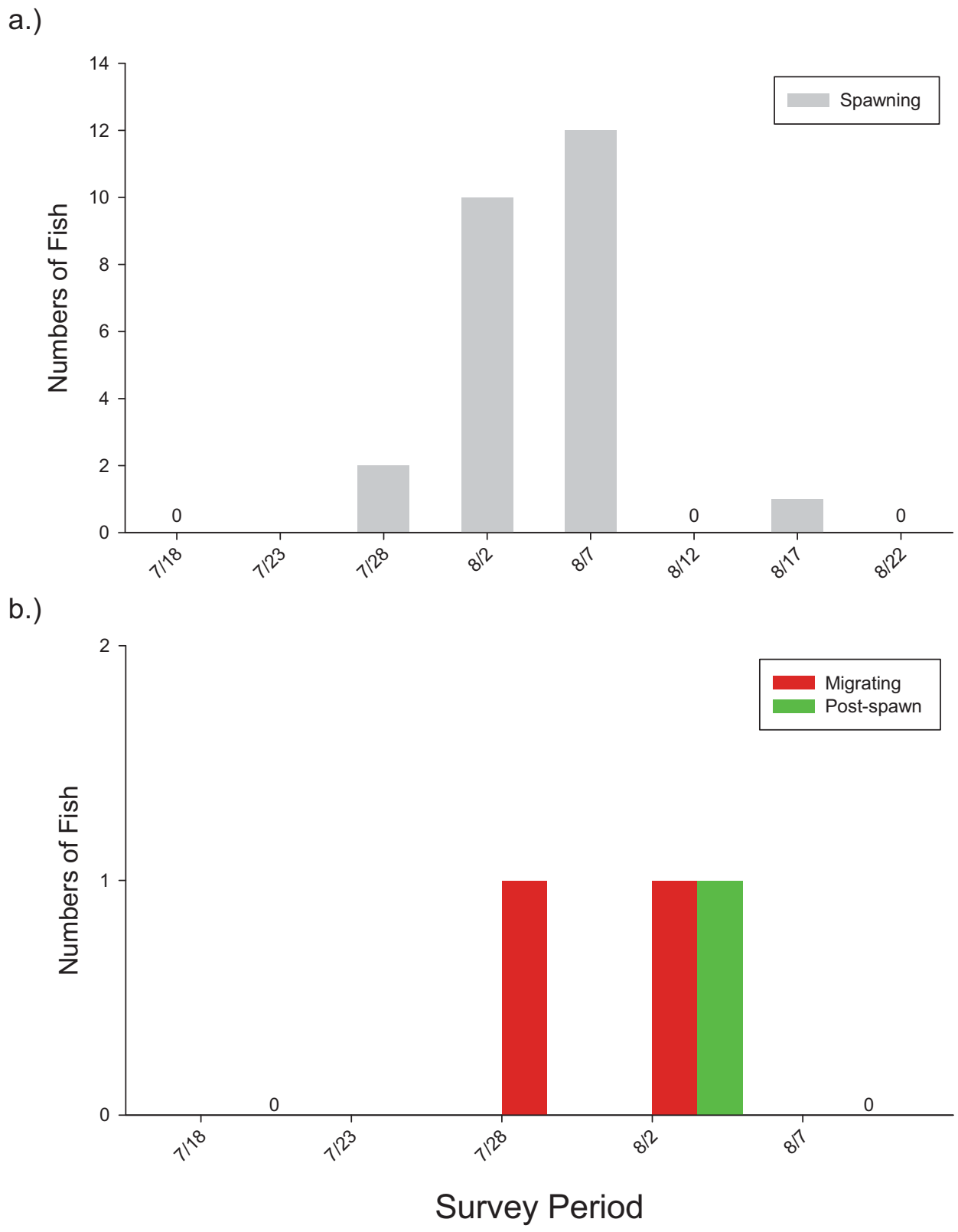


Figure B.15-15.
Observations of chum salmon during 2008 aerial surveys in UT-D. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

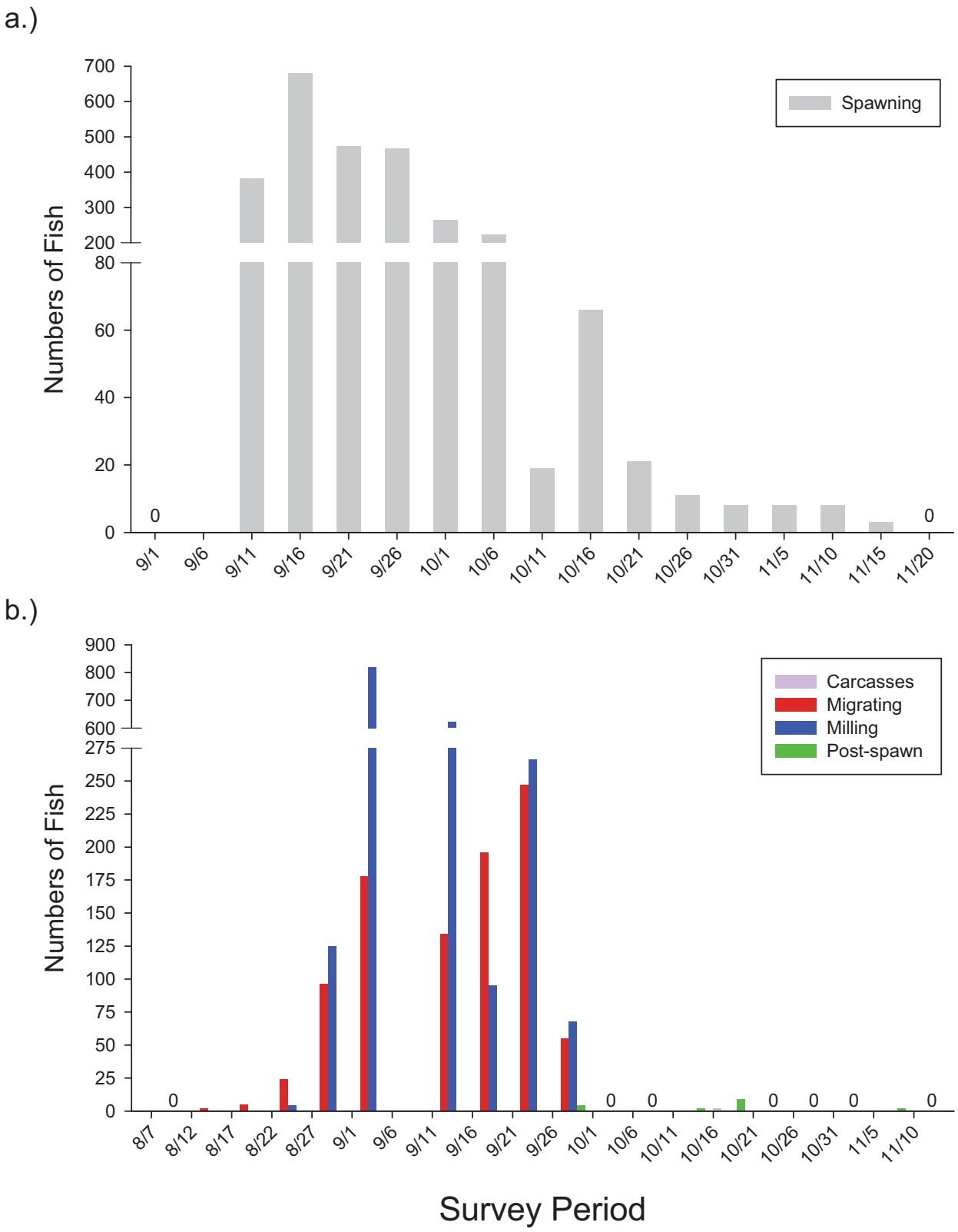


Figure B.15-16.
Observations of coho salmon during 2008 aerial surveys in UT-D. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

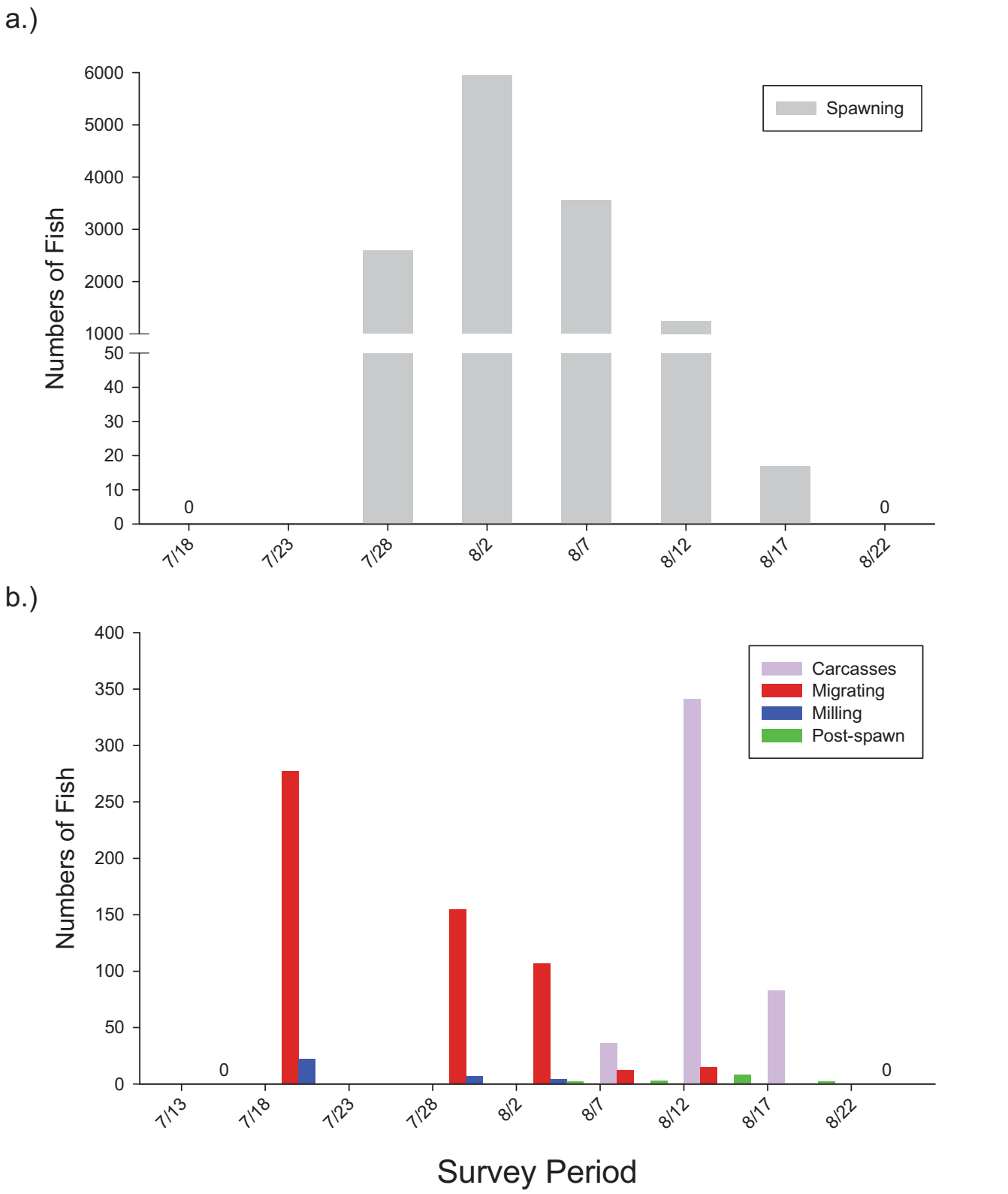


Figure B.15-17.
Observations of sockeye salmon during 2008 aerial surveys in UT-D. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.15-3.
UT-D fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/12/2004	UT-04WT-15	coho salmon	minnow trap		24		1		1	
4/3/2005	UT-05WT-02	coho salmon	minnow trap		22		1		1	
		rainbow trout	minnow trap		22		1		1	
		ninespine stickleback	minnow trap		22		1		1	
	UT-05WT-03	Salmonid sp.	visual observation				1		1	
	UT-05WT-04	coho salmon	minnow trap		22		2		2	
		rainbow trout	minnow trap		22		1		1	
		ninespine stickleback	minnow trap		22			3	3	
	UT-05WT-05	Chinook salmon	minnow trap		24		1		1	
		coho salmon	minnow trap		24		18		18	
		rainbow trout	minnow trap		24		2		2	
		Salmonid sp.	visual observation				1		1	
	UT-05WT-06	Chinook salmon	minnow trap		24		1		1	
		sculpin sp.	minnow trap		24			3	3	
	UT-05WT-07	rainbow trout	minnow trap		24		1		1	
	UT-05WT-12	rainbow trout	minnow trap		22		7		7	
4/6/2006	UT06WT-10	coho salmon	minnow trap		23		1		1	
		sockeye salmon	electrofishing	30			1		1	3.3
		sculpin sp.	electrofishing	30				45	45	150.0
	UT06WT-11	sculpin sp.	visual observation					7	7	
	UT06WT-12	Chinook salmon	electrofishing	40			1		1	2.5
		Chinook salmon	minnow trap		21		1		1	
		coho salmon	electrofishing	40			4		4	10.0
		coho salmon	minnow trap		21		9		9	
		sculpin sp.	minnow trap		21			1	1	
		sculpin sp.	visual observation					20	20	

Table B.15-3. Continued

Observation Date	Site	Species	Method	Sample Length (m)[a]	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
11/4/2006	UT-04WT-15	Chinook salmon	minnow trap		27		3		3	
		coho salmon	minnow trap		27		18		18	
		sculpin sp.	minnow trap		27		1		1	
		ninespine stickleback	minnow trap		27		3		3	
		threespine stickleback	minnow trap		27		1		1	
	UT-05WT-12	Chinook salmon	minnow trap		25		1		1	
		coho salmon	minnow trap		25		100		100	
		rainbow trout	minnow trap		25		5		5	
11/4/2006	UT-05WT-12	sculpin sp.	minnow trap		25	1	1		2	
		ninespine stickleback	minnow trap		25		2		2	
		threespine stickleback	minnow trap		25	1	13		14	
		stickleback sp.	minnow trap		25	1			1	
11/5/2006	UT-04WT-15	coho salmon	electrofishing				9		9	
		rainbow trout	electrofishing				3		3	
	UT-05WT-12	Chinook salmon	electrofishing	10			1		1	10.0
		coho salmon	electrofishing	10			9		9	90.0
		ninespine stickleback	electrofishing	10			1		1	10.0
4/5/2007	UT07-09	coho salmon	minnow trap		22		50		50	
		Dolly Varden	minnow trap		22		1		1	
		rainbow trout	minnow trap		22		1		1	
		threespine stickleback	minnow trap		22		1		1	
4/6/2007	UT07-09	coho salmon	electrofishing				17		17	
		Dolly Varden	electrofishing				1		1	
		rainbow trout	electrofishing				2		2	
		threespine stickleback	electrofishing				1		1	

Table B.15-3. Continued

Observation Date	Site	Species	Method	Sample Length (m)[a]	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/24/2007	UTOCHow01	Salmonid sp.	snorkel	17			5		5	29.4
		Salmonid sp.	visual observation				4		4	
		ninespine stickleback	visual observation				1		1	
	UTOCHow04	coho salmon	snorkel	45			1		1	2.2
		rainbow trout	snorkel	45			1		1	2.2
		ninespine stickleback	snorkel	45			25		25	55.6
		stickleback sp.	snorkel	45			3		3	6.7
		unidentified sp.	snorkel	45				1	1	2.2
4/25/2007	UTOCHow01	coho salmon	snorkel	17			8		8	47.1
		sockeye salmon	snorkel	17			4		4	23.5
		rainbow trout	snorkel	17			4		4	23.5
		unidentified sp.	snorkel	17				16	16	94.1
	UTOCHow03	coho salmon	snorkel				5		5	
		sockeye salmon	snorkel				6		6	
		rainbow trout	snorkel				3		3	
		Salmonid sp.	snorkel				1		1	
		unidentified sp.	snorkel					2	2	

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.15-4.
2008 fish observations by method at mainstem index sites located within UT-D.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC25.98	Chinook salmon	snorkel		7		7
	coho salmon	dip net		2		2
		snorkel		57		57
	sockeye salmon	beach seine	3			3
		snorkel	1			1
	Dolly Varden	beach seine		1		1
	sculpin sp.	beach seine		2		2
		dip net		1		1
		snorkel			6	6
UTC25.98 Total			**4**	**70**	**6**	**80**
UTC30.31	Chinook salmon	beach seine		7		7
		snorkel		53		53
	coho salmon	beach seine		10		10
		snorkel		88		88
	sockeye salmon	beach seine	17			17
		snorkel	17			17
	Dolly Varden	beach seine	8	2		10
		snorkel	1	5	11	17
	rainbow trout	beach seine	1	2		3
		snorkel		2	4	6
	sculpin sp.	beach seine	3	4		7
		snorkel			3	3
UTC30.31 Total			**47**	**173**	**18**	**238**
UTC34.64	Chinook salmon	beach seine		3		3
		snorkel		12		12
		visual observation	1			1
	coho salmon	snorkel		68		68
	sockeye salmon	snorkel	1			1
	arctic grayling	beach seine	6			6
		snorkel	1			1
	Dolly Varden	beach seine	1			1
	rainbow trout	beach seine	1			1
	sculpin sp.	beach seine		2		2
		snorkel			1	1
UTC34.64 Total			**11**	**85**	**1**	**97**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

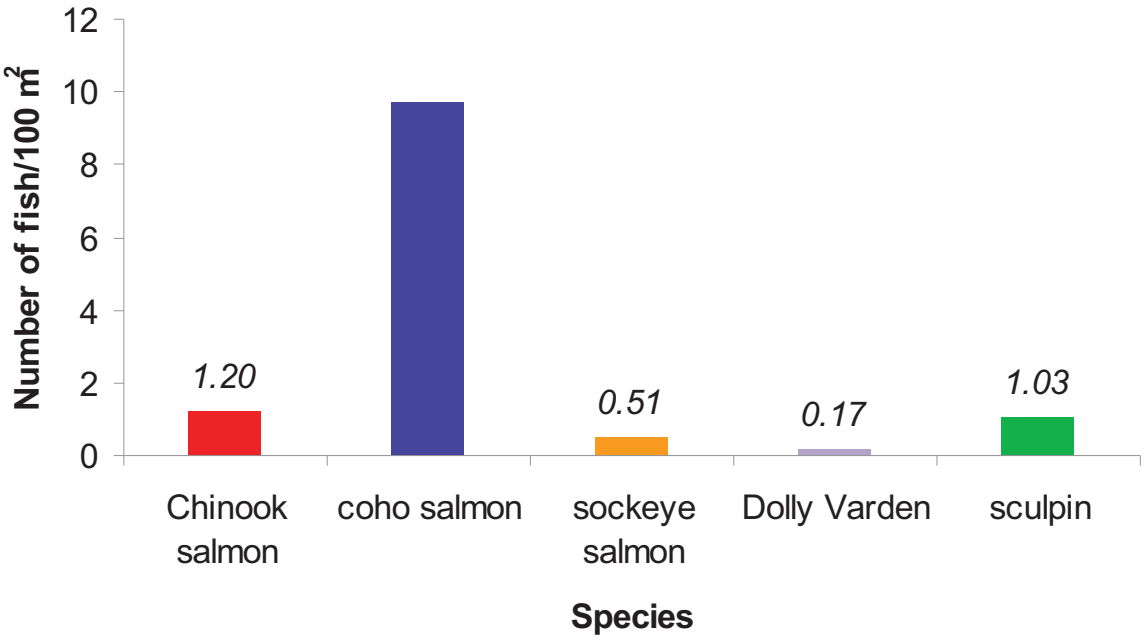


Figure B.15-19a.
2008 fish density in riffle habitat at mainstem index site (RKm 25.98) within UT-D. Densities were calculated from the method that generated the greatest count of fish at this location.

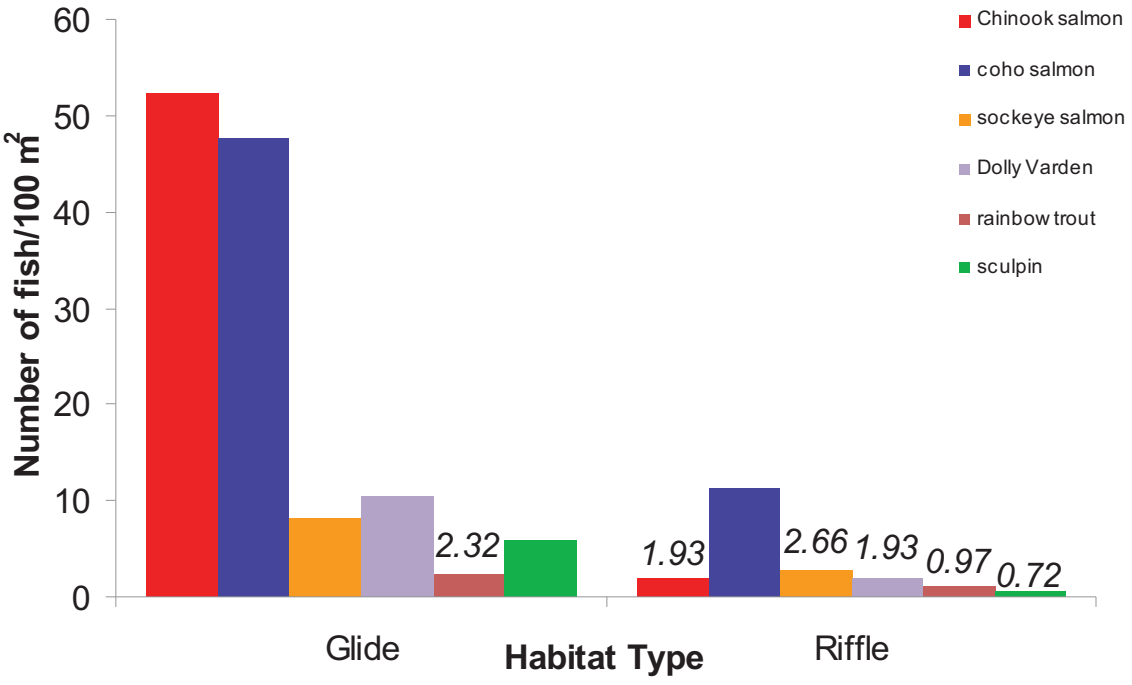


Figure B.15-19b.
2008 fish density by habitat type at mainstem index site (RKm 30.31) within UT-D. Densities were calculated from the method that generated the greatest count of fish at this location.

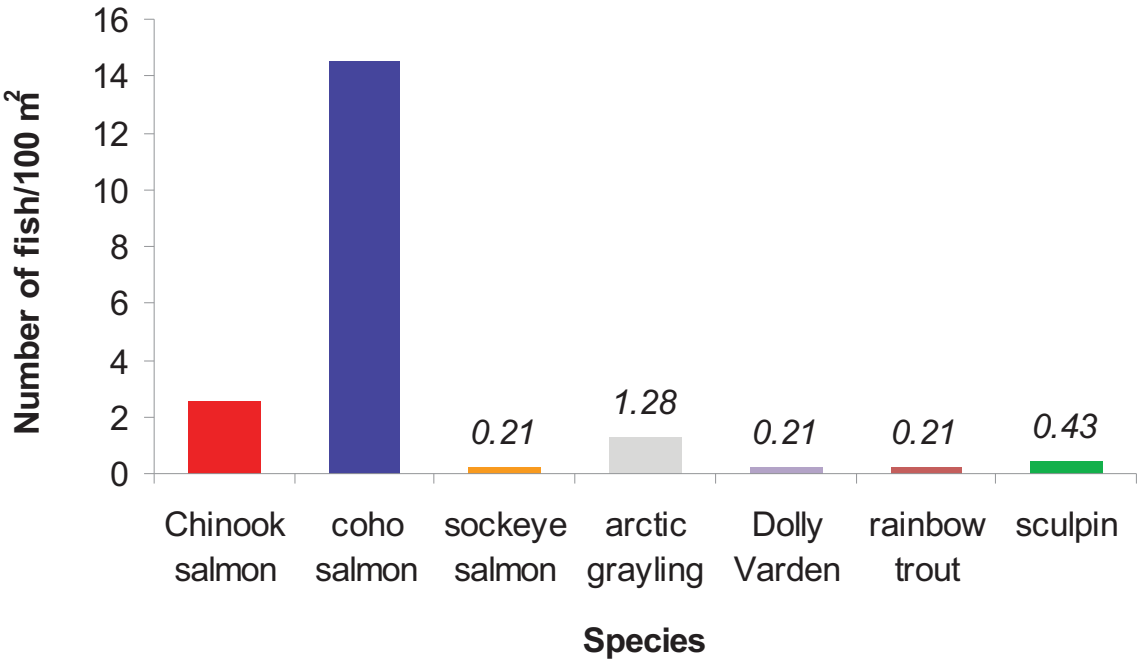
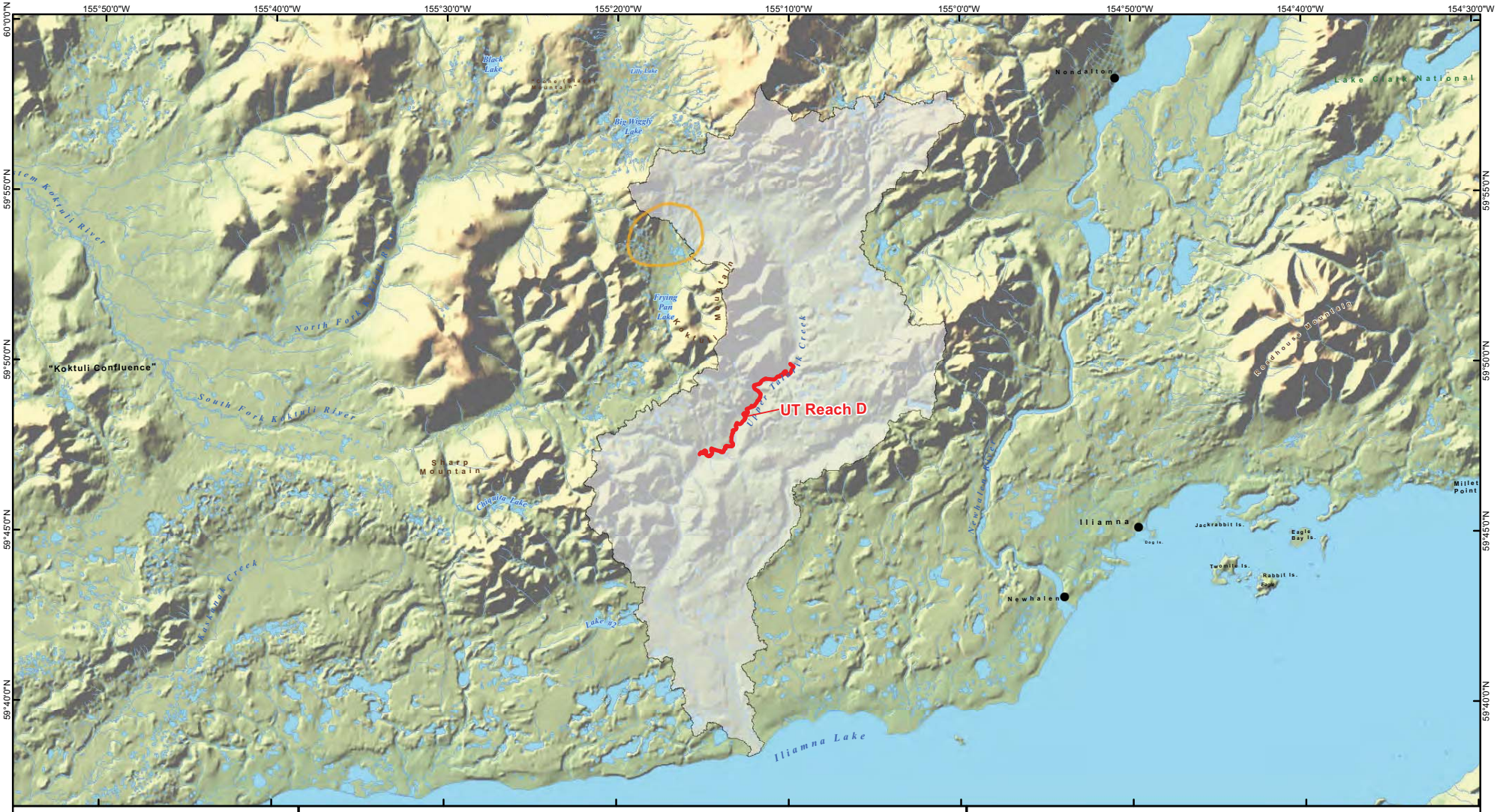
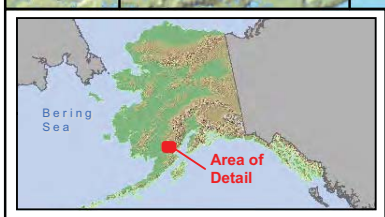


Figure B.15-19c.
2008 fish density in glide habitat at mainstem index site (RKm 34.64) within UT-D. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach UT Reach D

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

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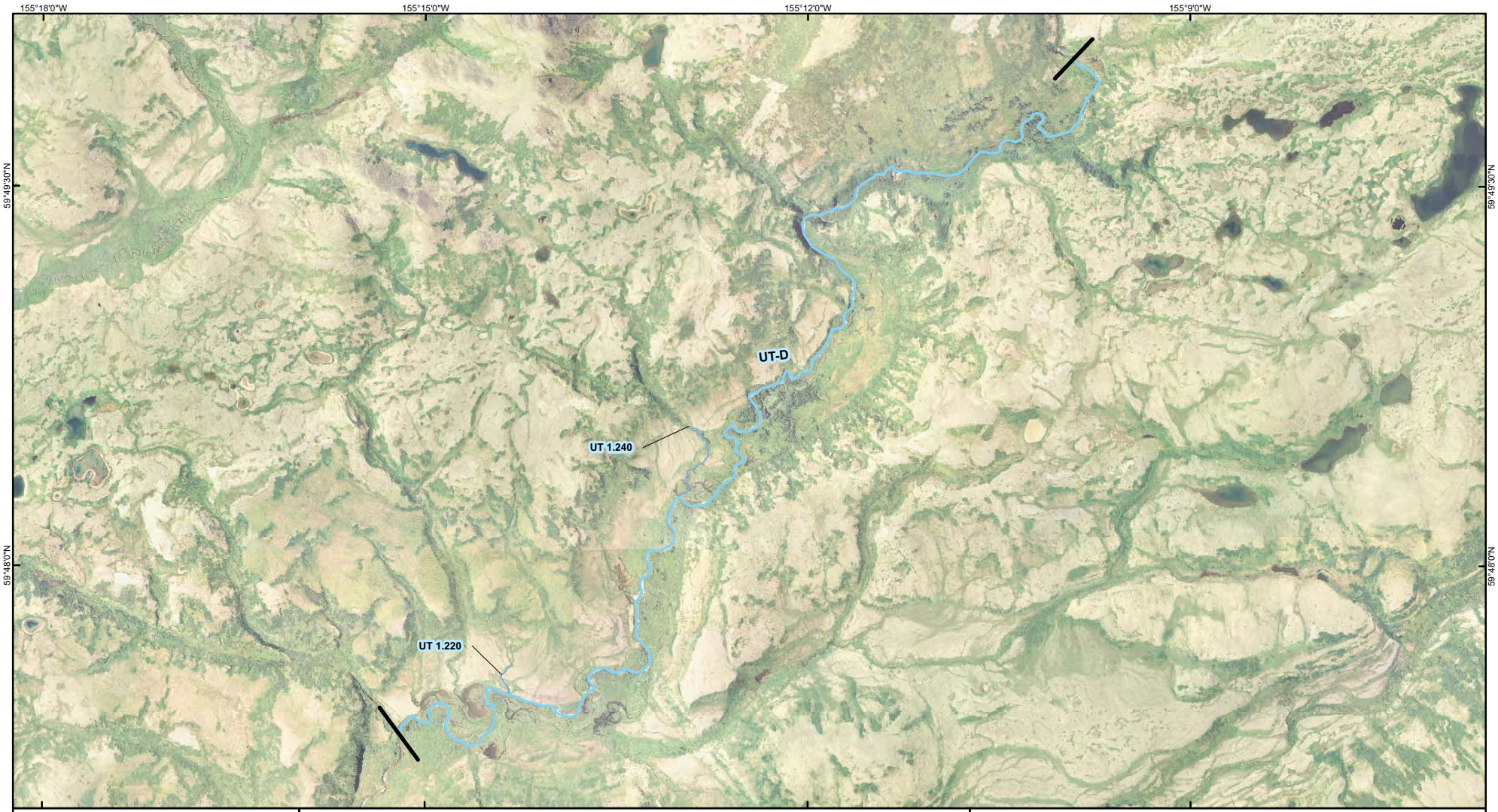
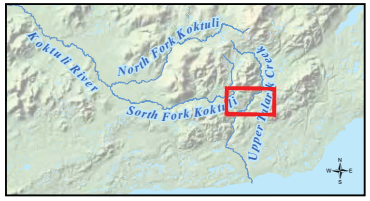
Figure B.15-1a
Reach UT-D

RDI_R2_OverviewLocator_UT-D_Fig-B.15-1a_11x17L_15of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

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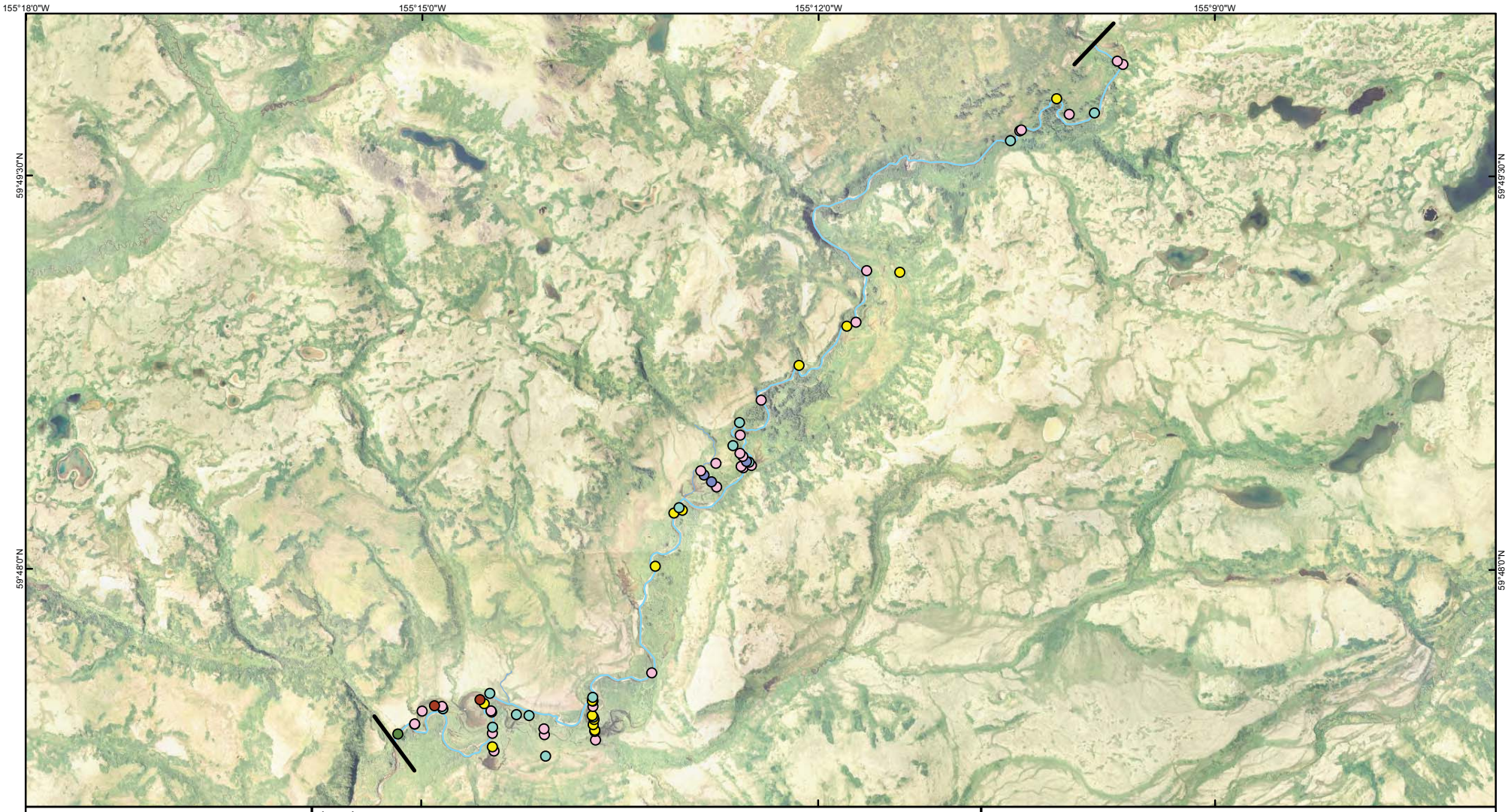
Figure B.15-1b
UT-D
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-D_Fig-B.15-1b_11x17L_15of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

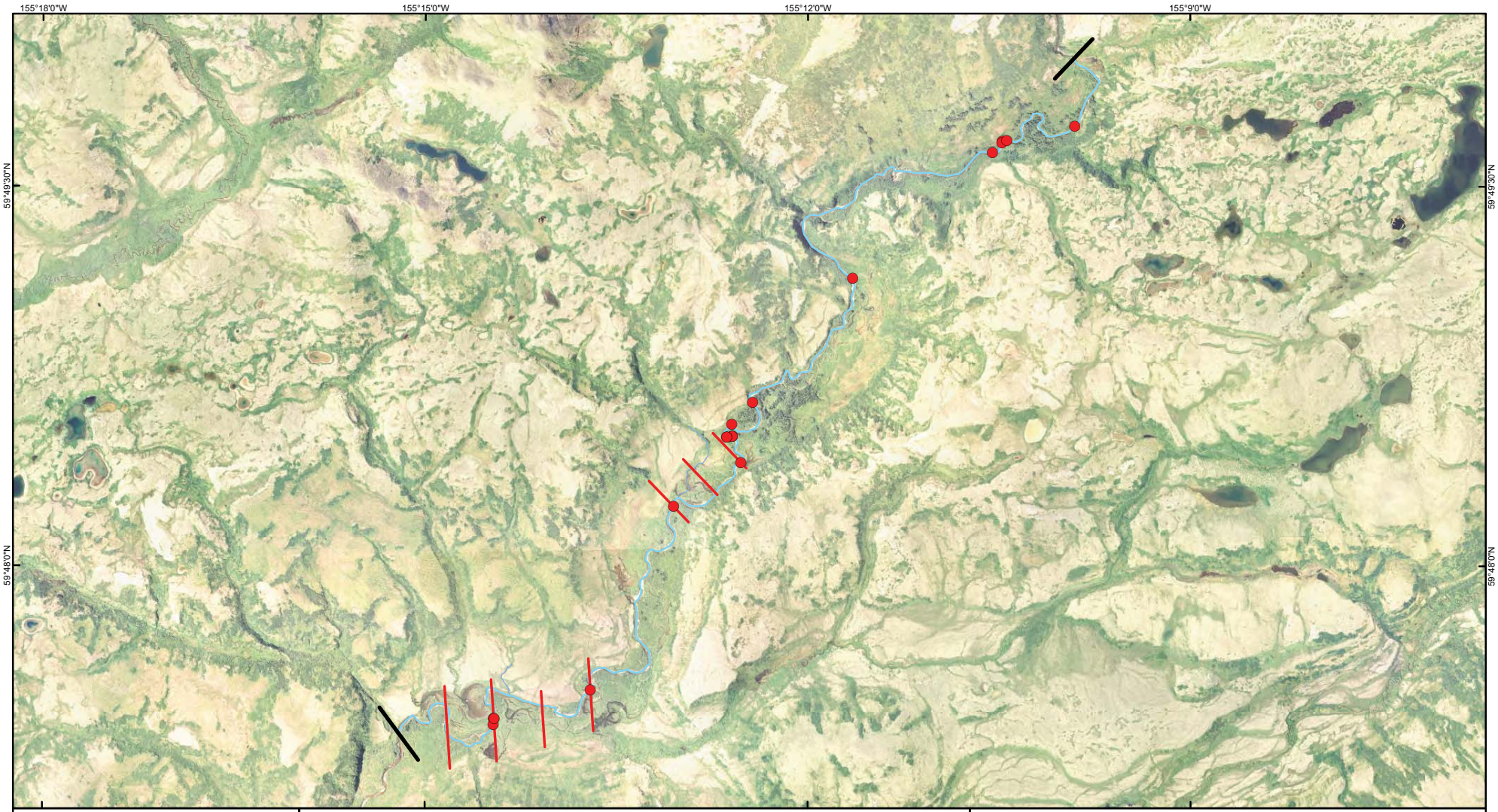
THE pebble PARTNERSHIP

Figure B.15-2
UT-D
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_UT-D_Fig-B.15-2_11x17L_15of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

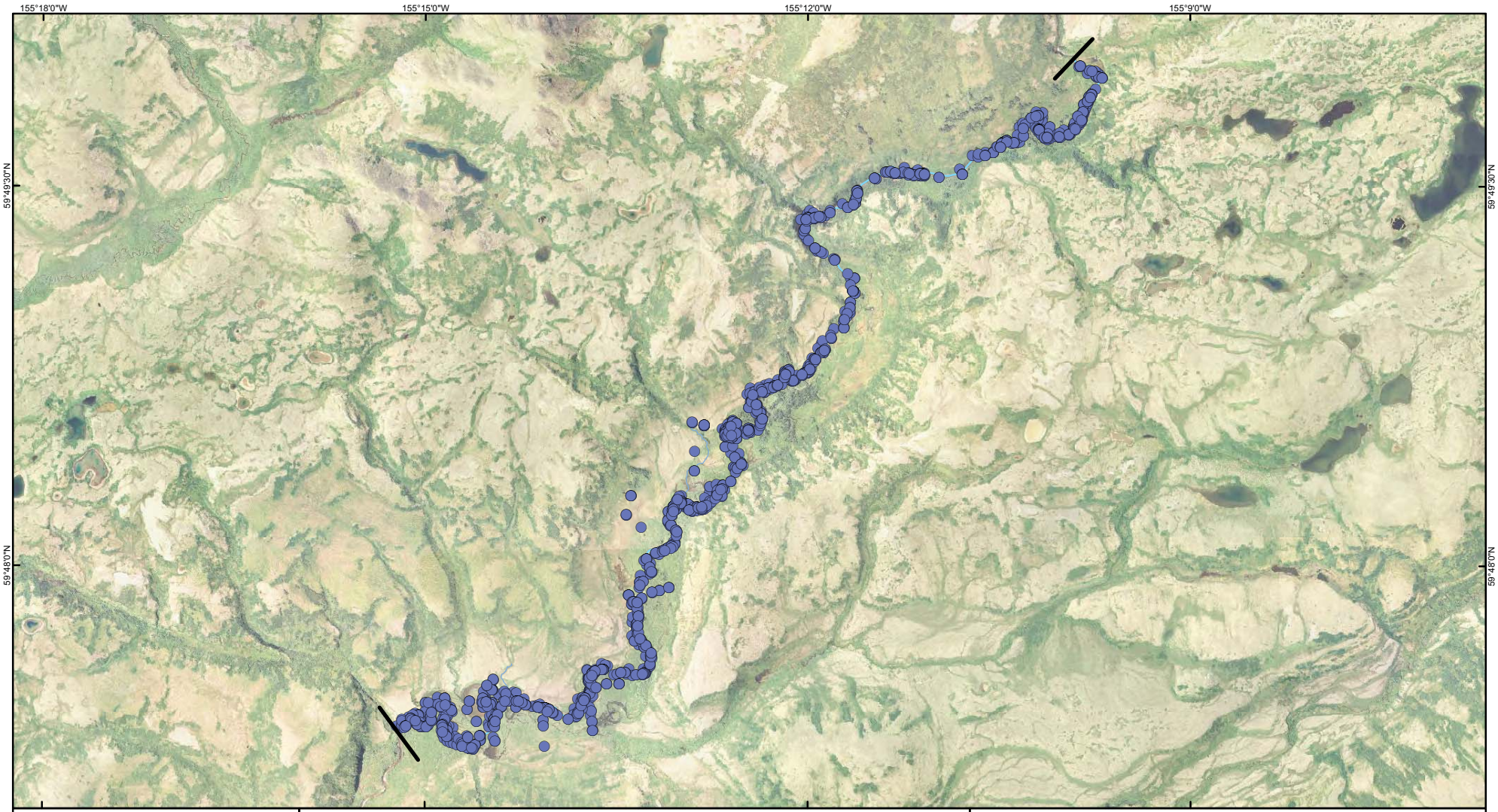
Miles: 0 — 0.5 — 1

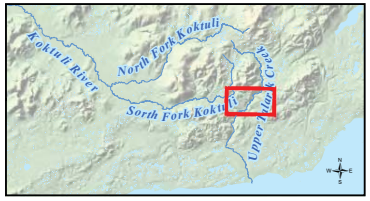
Kilometers: 0 — 0.5 — 1

THE pebble PARTNERSHIP

Figure B.15-3
UT-D
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-D_Fig-B.15-3_11x17L_15of19_D02.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

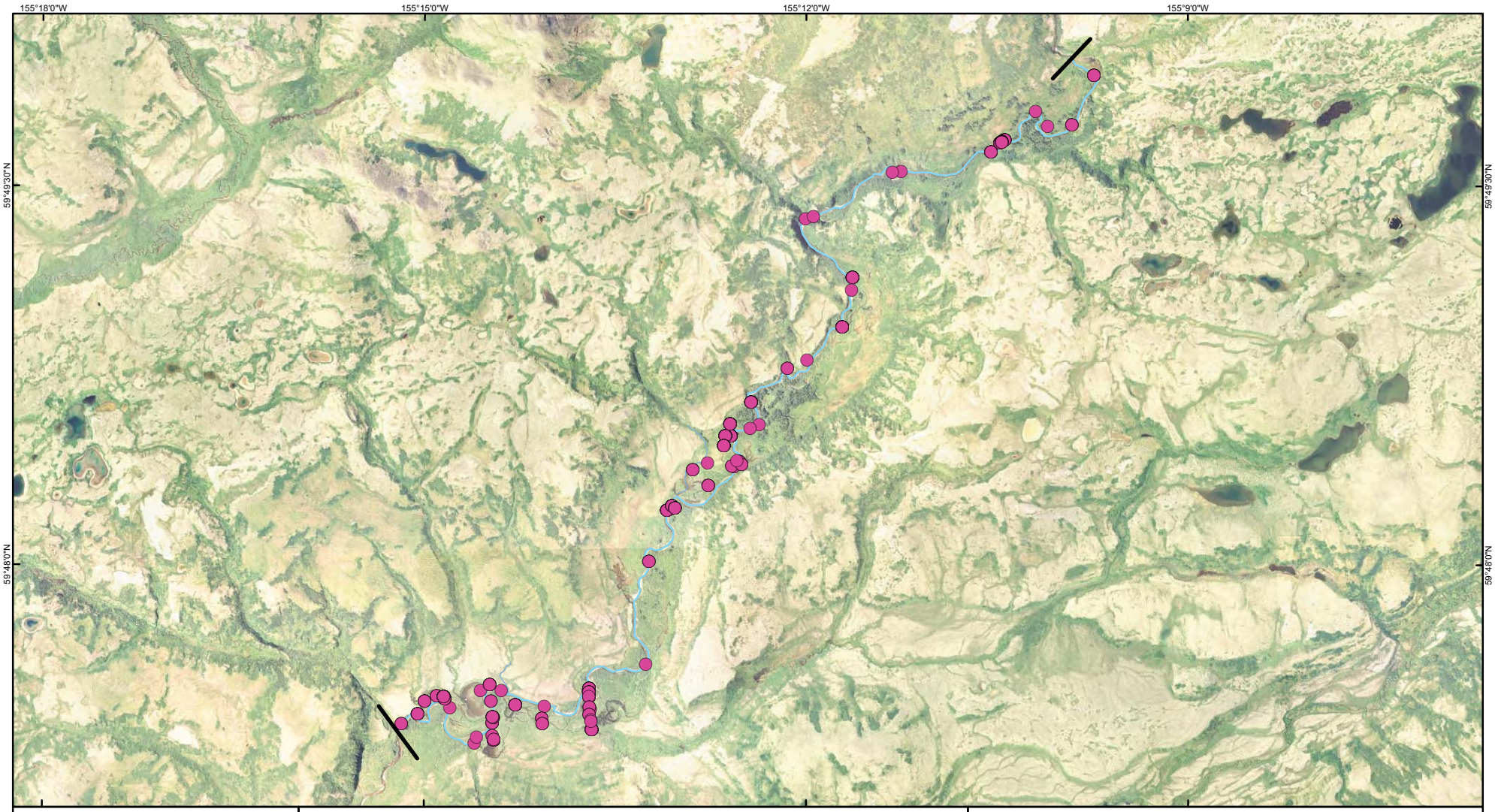
Miles: 0 — 0.5 — 1

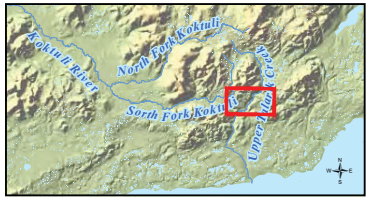
Kilometers: 0 — 0.5 — 1

THE pebble PARTNERSHIP

Figure B.15-4
UT-D
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-D_Fig-B.15-4_11x17L_15of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

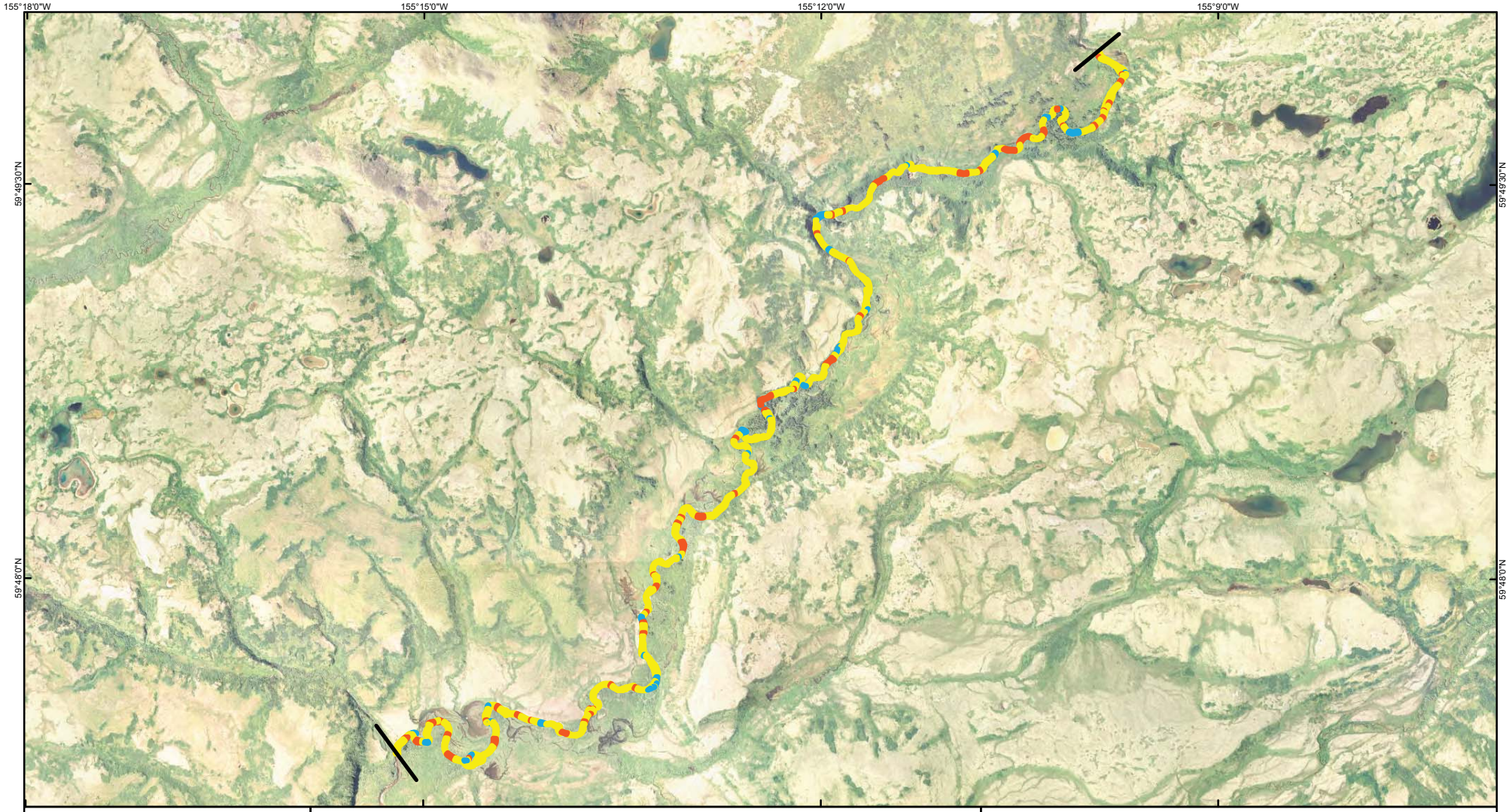
Miles: 0 — 0.5 — 1

Kilometers: 0 — 0.5 — 1

THE pebble PARTNERSHIP

Figure B.15-5
UT-D
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-D_Fig-B.15-5_11x17L_15of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

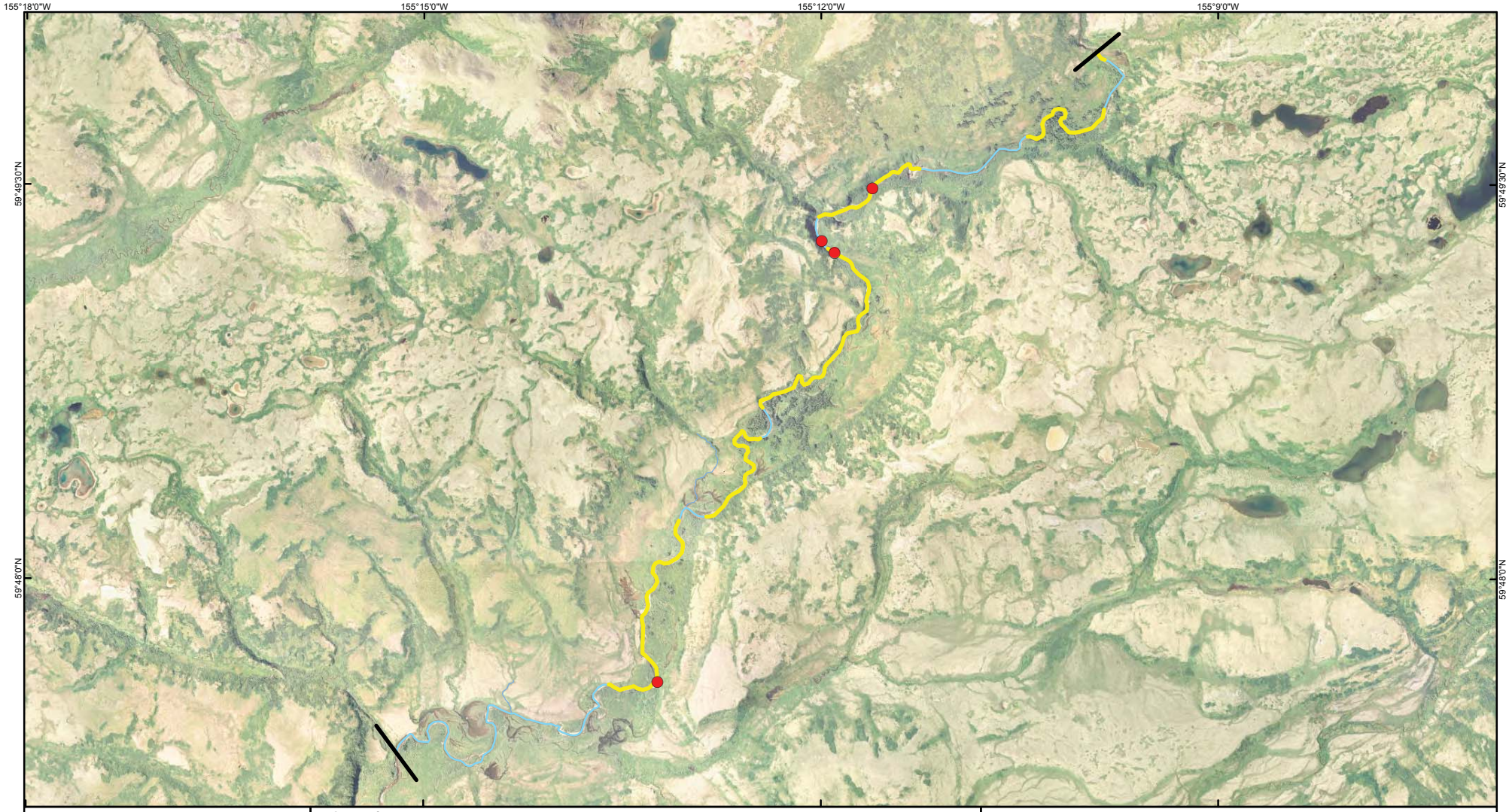
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.15-6
UT-D
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_UT-D_Fig-B.15-6_11x17L_15of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

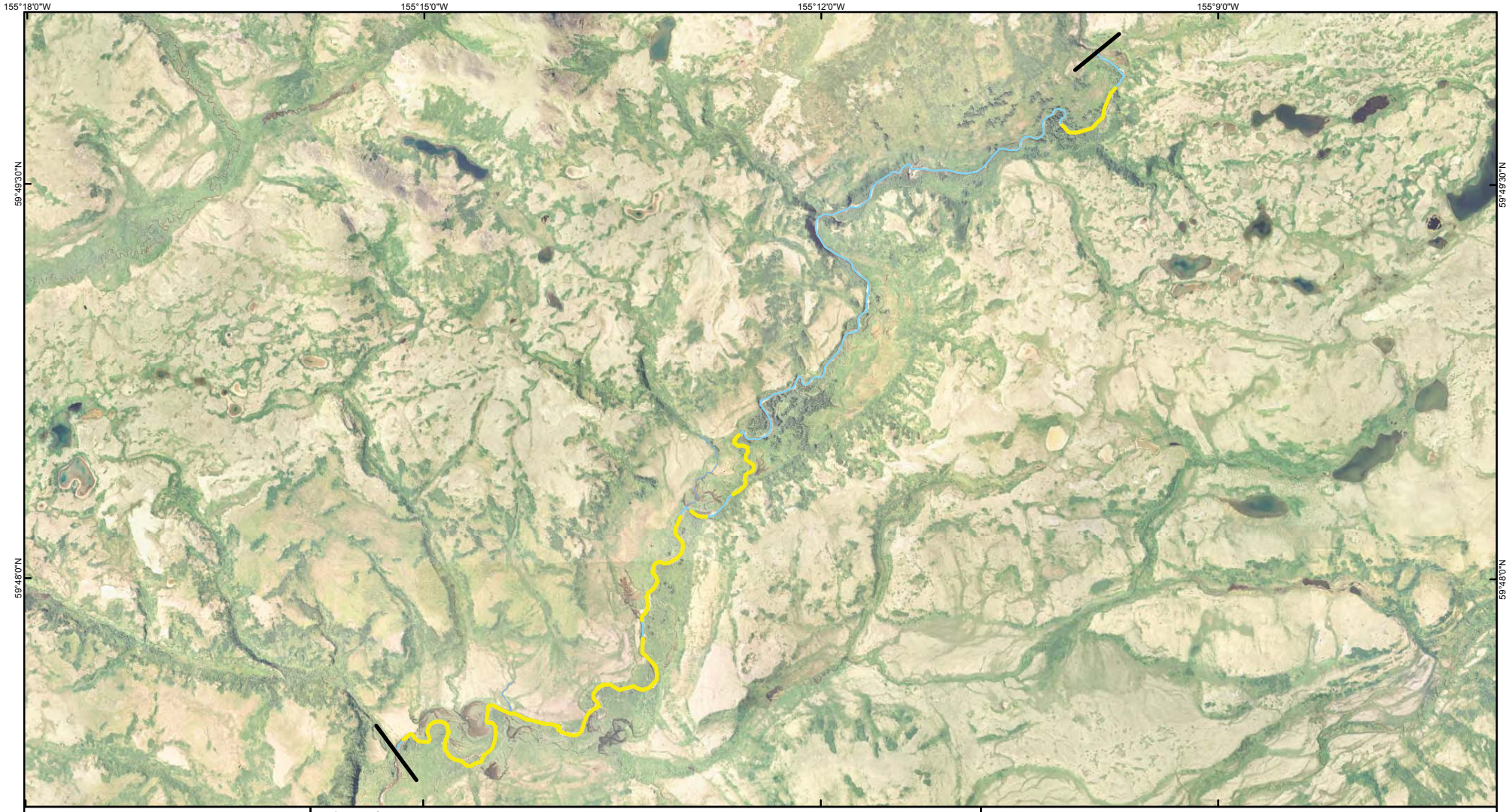
THE pebble PARTNERSHIP

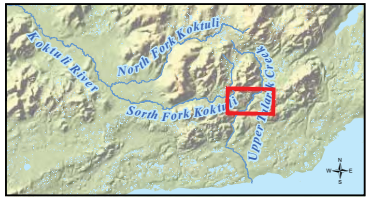
Figure B.15-10
UT-D
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-D_Fig-B.15-10_KS_11x17L_17of22_D04.mxd

February 5, 2011

Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

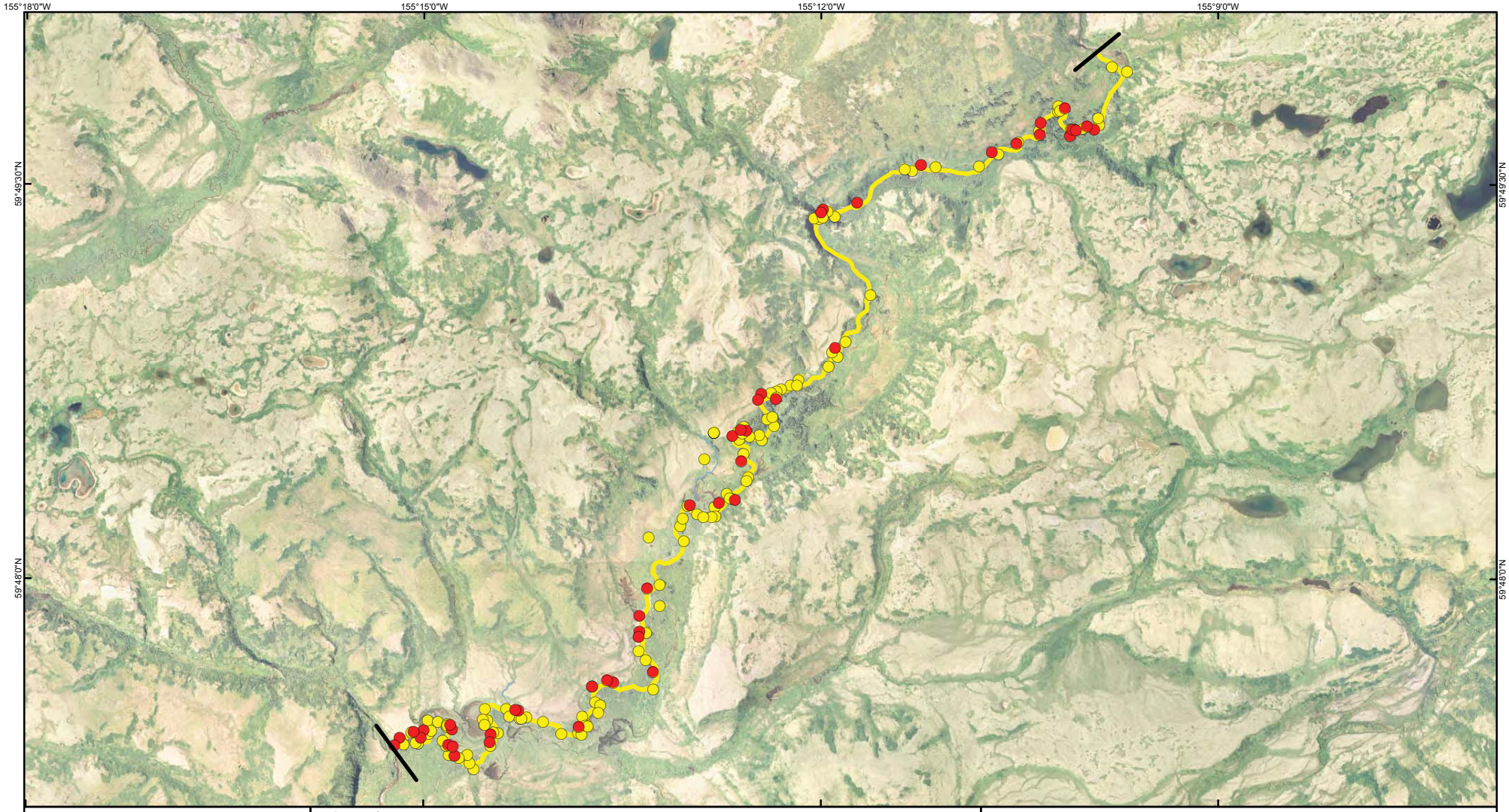
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.15-11
UT-D
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-D_Fig-B.15-11_CH_11x17L_17of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

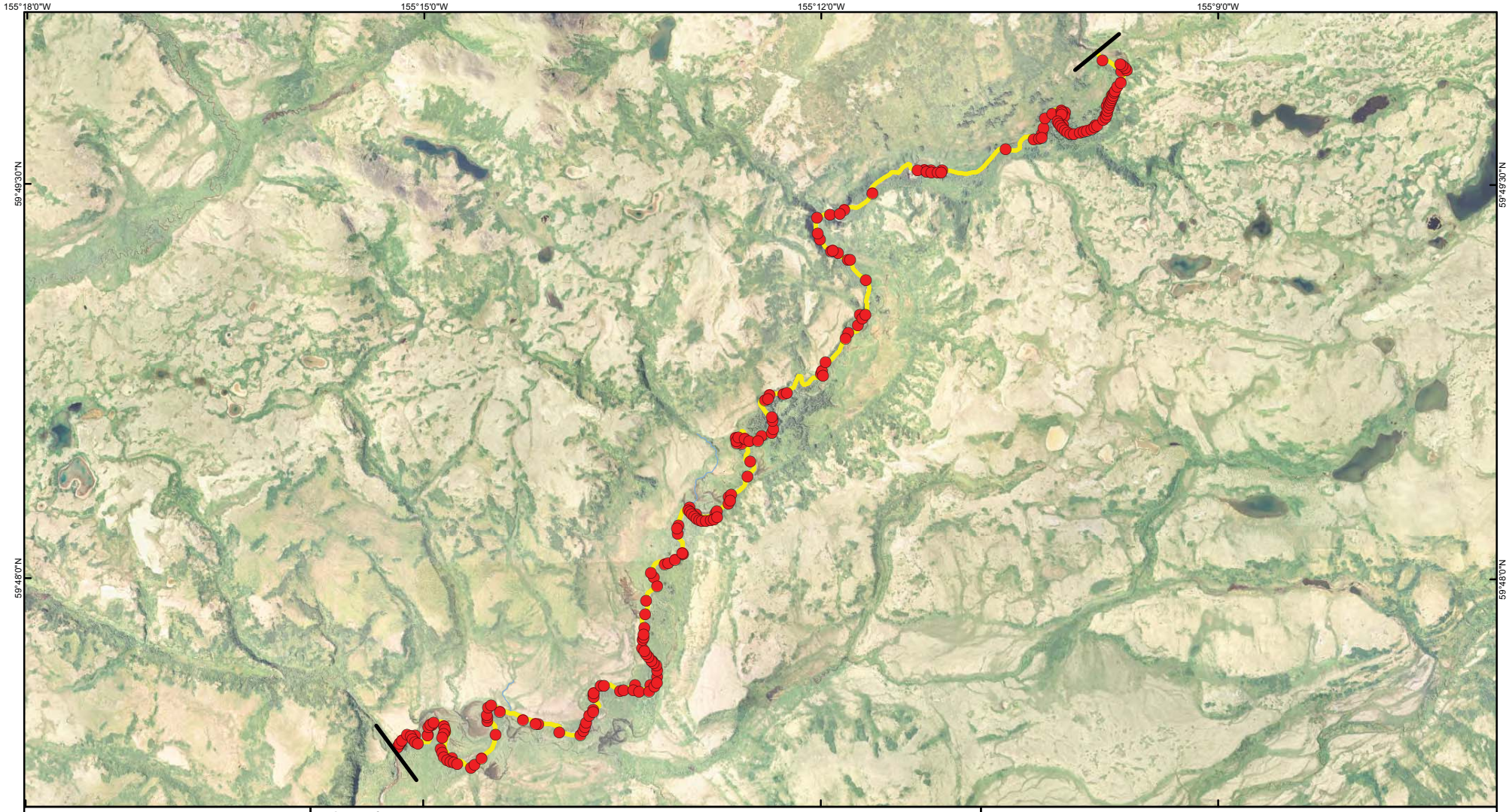
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.15-12
UT-D
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-D_Fig-B.15-12_CS_11x17L_17of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

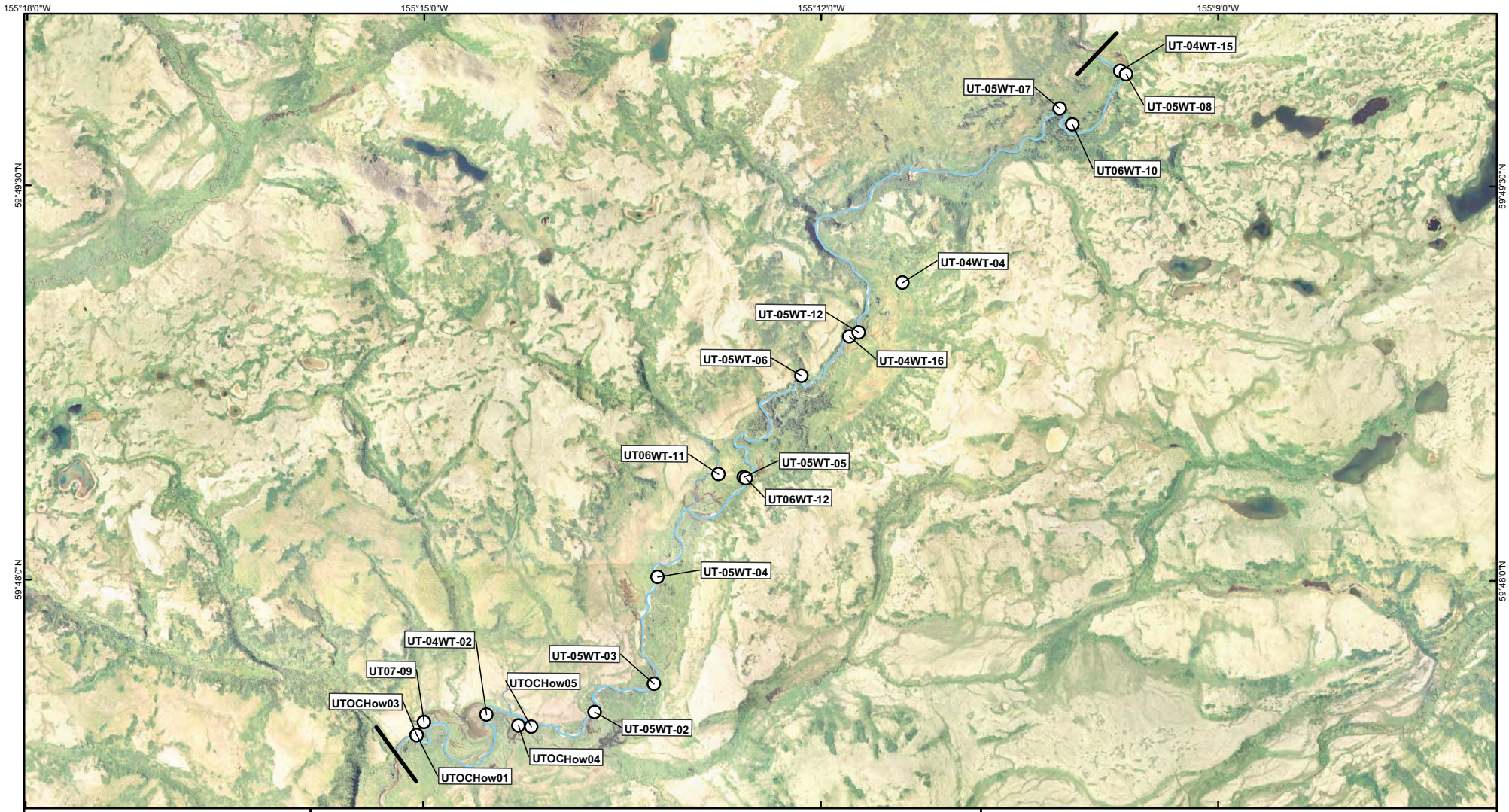
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.15-13
UT-D
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-D_Fig-B.15-13_SS_11x17L_17of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.15-18
UT-D
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_UT-D_Fig-B.15-18_11x17L_15of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.16
UPPER TALARIK CREEK RIVER REACH E (UT-E)

Table B.16-1.
List of species found in UT-E.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
sculpin [a]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
threespine stickleback	*Gasterosteus aculeatus*

[a] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.16-2.
Channel morphology data from areas sampled within UT-E tributary 1.310.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
UT 1.310-SA1[e]	6/20/04	narrow shallow contained channel	NA	NA	NA	NA
UT 1.310-SA2[f]	6/20/04	narrow shallow contained channel	NA	NA	NA	NA
UT 1.310-SA3	6/20/04	beaver dam/pond channel	NA	NA	NA	NA
UT 1.310-SA4	6/20/04	narrow shallow contained channel	2.5	NA	NA	NA
UT 1.310 TOTAL			2.5	NA	NA	NA

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not available.

[e] Sample Area was comprised of 81% narrow shallow contained channel and 19% beaver dam/pond channel.

[f] Sample Area was comprised of 83% narrow shallow contained channel and 17% beaver dam/pond channel.

Table B.16-3.
Percent composition of primary habitat types from areas sampled within UT-E tributary 1.310 in 2004.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT 1.310-SA1	1265.8	NA	NA	NA	0	0 / NA	2 / NA	0 / NA	NA	NA	NA	2 / NA	77 / NA	20 / NA	NA
UT 1.310-SA2	644.6	NA	NA	NA	0	0 / NA	17 / NA	0 / NA	NA	NA	NA	1 / NA	76 / NA	6 / NA	NA
UT 1.310-SA3	595.9	NA	NA	NA	0	0 / NA	100 / NA	0 / NA	NA	NA	NA	0 / NA	0 / NA	0 / NA	NA
UT 1.310-SA4	776.7	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	0 / NA	99 / NA	1 / NA	NA
UT 1.310 TOTAL	3283.0	NA	NA	NA	0	0 / NA	22 / NA	0 / NA	NA	NA	NA	1 / NA	68 / NA	9 / NA	NA

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

Table B.16-4.
Descriptive characteristics of primary habitat units from areas sampled within UT-E tributary 1.310 in 2004.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)	Dominant Riparian Vegetation[a]
UT 1.310-SA1	gravel	organic, sand/silt	NA	4	alder shrub/willow shrub
UT 1.310-SA2	gravel	organic, sand/silt	NA	0	NA
UT 1.310-SA3	organic	NA	NA	0	NA
UT 1.310-SA4	gravel	NA	NA	0	NA
UT 1.310 TOTAL	gravel	organics	NA	1	alder shrub/willow shrub

[a] NA=data not available.

Table B.16-5.
Summary of 2004 pool habitat data from areas sampled in UT-E tributary 1.310.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT 1.310-SA1	1.27	2	39	41	0.2	3.1	3.2	82.7	519.4	602.2	14.7	0.4	0.2
UT 1.310-SA2	0.64	1	16	17	0.2	2.5	2.6	11.1	104.4	115.4	6.8	0.4	0
UT 1.310-SA3	0.60	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.310-SA4	0.78	0	8	8	0	1.0	1.0	0	0	136.5	17.1	0.4	0
UT 1.310 TOTAL	3.28	3	63	66	0.1	1.9	2.0	93.8	760.3	854.2	12.9	0.4	0.1

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.

Table B.16-6.
2004-2008 number of fish observations by lifestage within UT-E mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult								Juvenile								Juvenile/Adult[a]							Total
			Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Oct	Subtotal	
Chinook salmon	2004	Electrofishing													2			2								2
	2005	Snorkel											36					36								36
	2006	Minnow Trap									4						4	8								8
		Snorkel											37					37								37
	2007	Electrofishing										292						292								292
		Snorkel										233	134			32		399								399
	2008	Snorkel												1				1								1
chum salmon	2007	Snorkel			1					1																1
coho salmon	2004	Electrofishing					1			1				17	22			39								40
		Minnow Trap									2							2								2
	2005	Snorkel											1125					1125								1125
	2006	Minnow Trap									1						105	106								106
		Snorkel											849					849								849
	2007	Electrofishing									11	2818	211			79		3119								3119
		Minnow Trap											50			128		178								178
		Snorkel						9		9		1936	4950			434		7320								7329
		Visual Observation											3			1		4								4
	2008	Snorkel												90				90								90
sockeye salmon	2006	Snorkel			4					4			18					18								22
		Visual Observation			15					15																15
	2007	Electrofishing										43	38					81								81
		Snorkel			105					105		57	163					220								325
	2008	Seine				1				1																1
		Snorkel				5				5				28				28								33
arctic grayling	2004	Angling		3						3																3
		Electrofishing					1			1					2			2								3
	2006	Snorkel			1					1																1
	2007	Electrofishing		1						1		3						3			1				1	5
		Snorkel						1		1		3	86					89								90
	2008	Seine				2				2																2
		Snorkel				1				1																1
Dolly Varden	2004	Electrofishing													1			1								1
		Minnow Trap									1							1								1
	2005	Snorkel			1					1			1					1								2
	2006	Minnow Trap															2	2								2
	2007	Electrofishing		1						1	2	45						47								48
		Minnow Trap											1			1		2								2
		Snorkel			1					1		3						3								4
	2008	Seine												1				1								1
		Snorkel																					1		1	1

Table B.16-6. Continued

Species	Year	Method	Adult								Juvenile								Juvenile/Adult[a]							Total
			Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	Jun	Jul	Aug	Sep	Oct	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Oct	Subtotal	
rainbow trout	2004	Electrofishing												3	7			10								10
		Minnow Trap									1							1								1
	2005	Minnow Trap									1							1								1
		Snorkel											1					1				2			2	3
	2006	Minnow Trap									1						9	10								10
		Snorkel											1					1								1
	2007	Electrofishing										18						18								18
		Snorkel										25				1		26								26
	2008	Snorkel												1				1								1
Salmonid sp.	2005	Snorkel											3					3								3
	2006	Snorkel											4					4								4
	2007	Electrofishing										21	51					72								72
		Snorkel										28	2					30								30
sculpin sp.	2004	Minnow Trap									1							1								1
	2005	Minnow Trap																	2						2	2
	2006	Minnow Trap							3	3																3
	2007	Electrofishing	2		3			3		8			5			2		7			801			1	802	817
		Snorkel		1				2		3		2	4			2		8				5			5	16
	2008	Seine				3				3				11				11								14
ninespine stickleback	2004	Minnow Trap	1							1																1
	2005	Minnow Trap																	2						2	2
	2007	Electrofishing											5			16		21				2			2	23
		Minnow Trap						1		1			14					14				1			1	16
threespine stickleback	2007	Electrofishing										1				3		4			2				2	6
		Minnow Trap														1		1						1	1	2
stickleback sp.	2004	Minnow Trap									1							1								1
	2007	Electrofishing											1					1								1
		Snorkel											197			7		204				11			11	215
		Visual Observation																				30			30	30
unidentified sp.	2004	Visual Observation																		6					6	6
	2007	Snorkel																						2	2	2

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

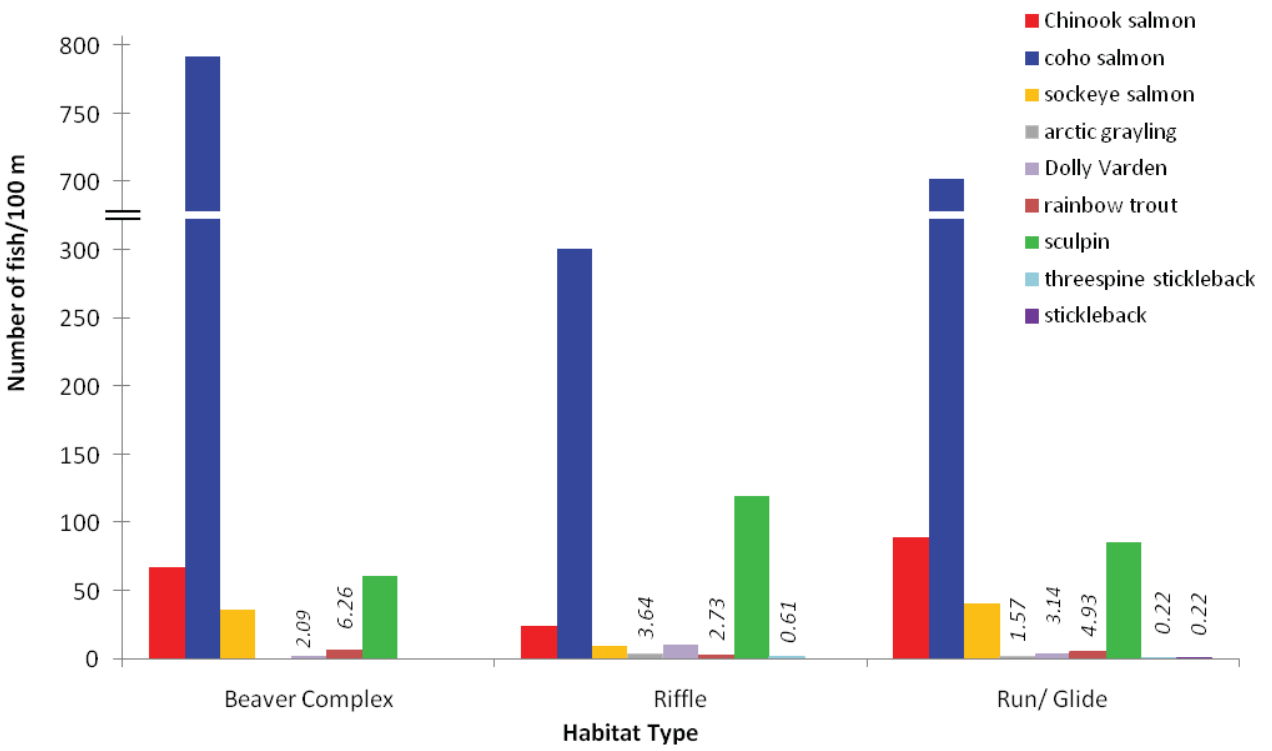


Figure B.16-8.
2004-2007 fish abundance by habitat type within mainstem UT-E.

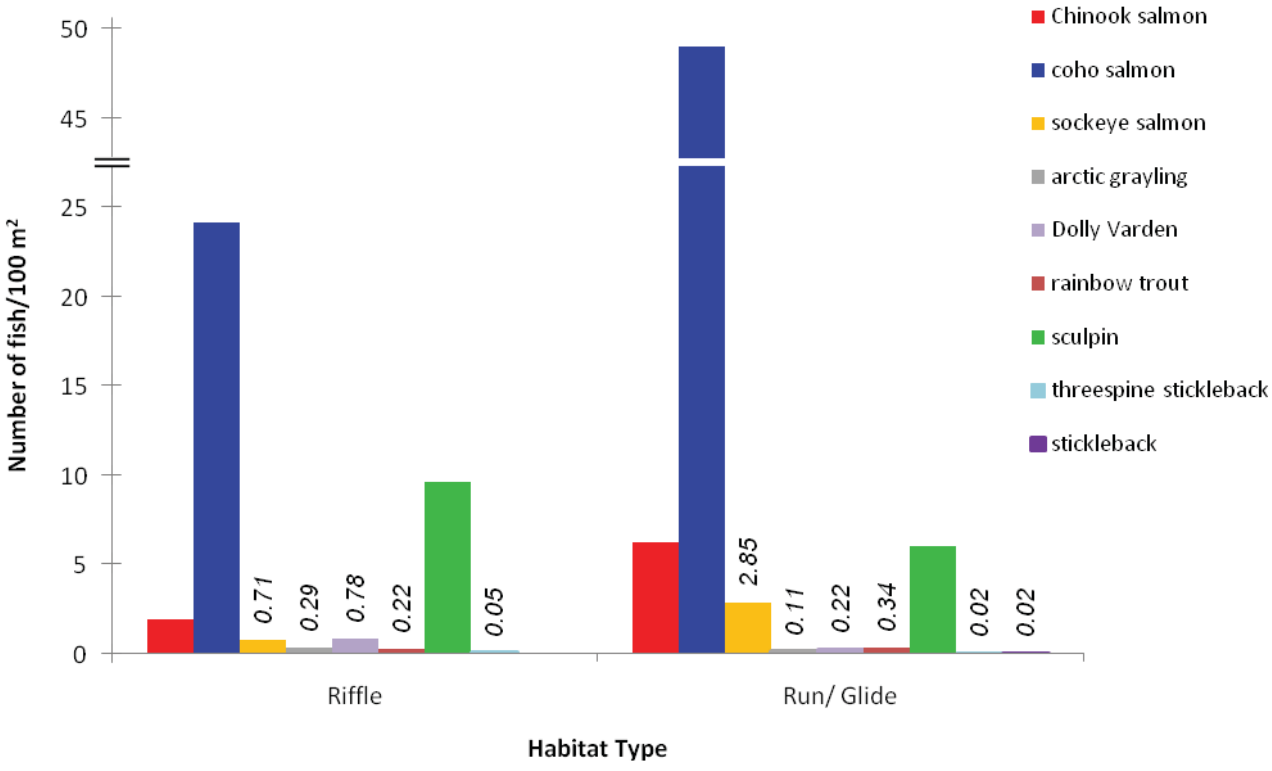


Figure B.16-9.
2004-2007 fish density by habitat type within mainstem UT-E.

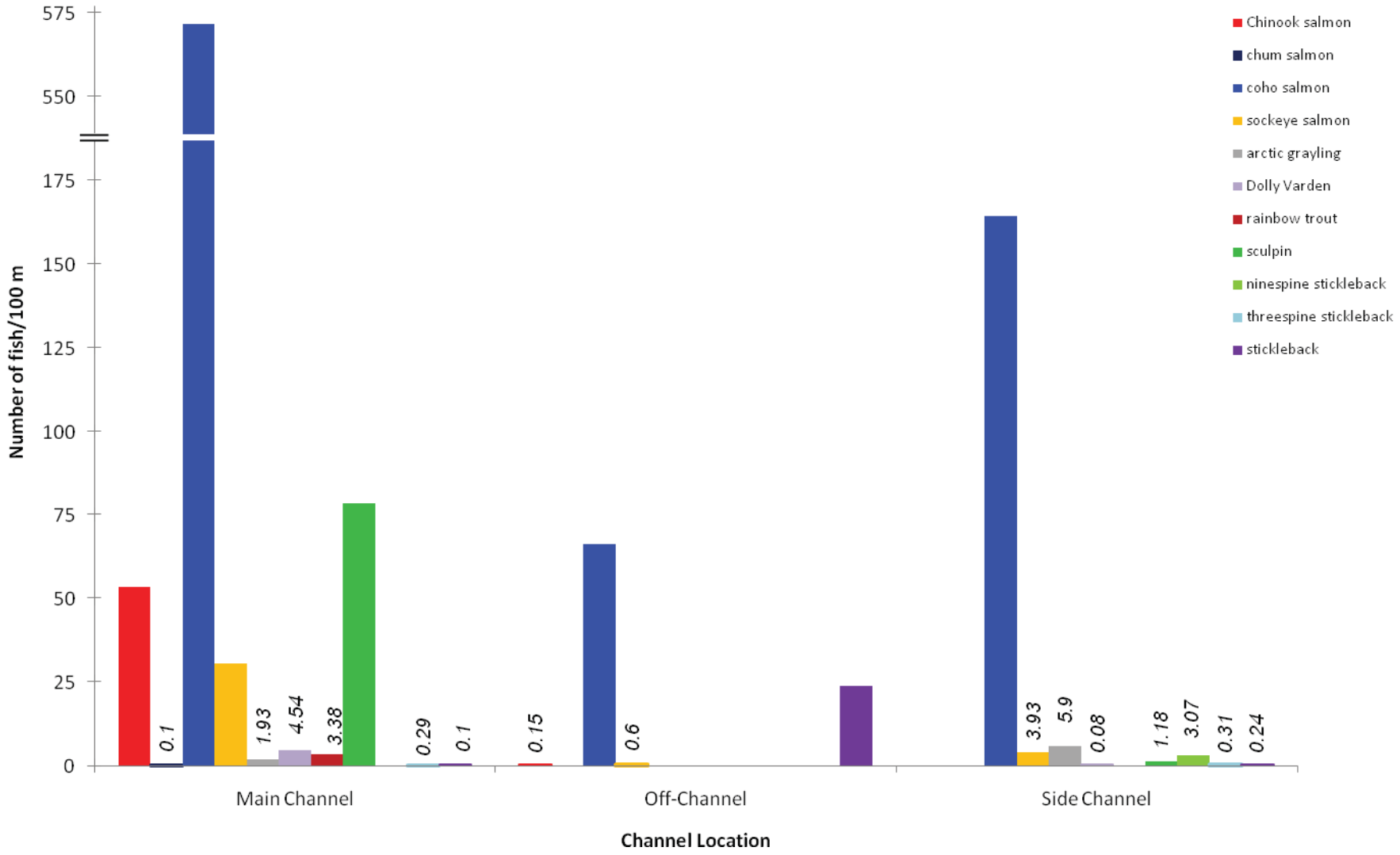


Figure B.16-10.
2004-2007 fish abundance by channel location within UT-E.

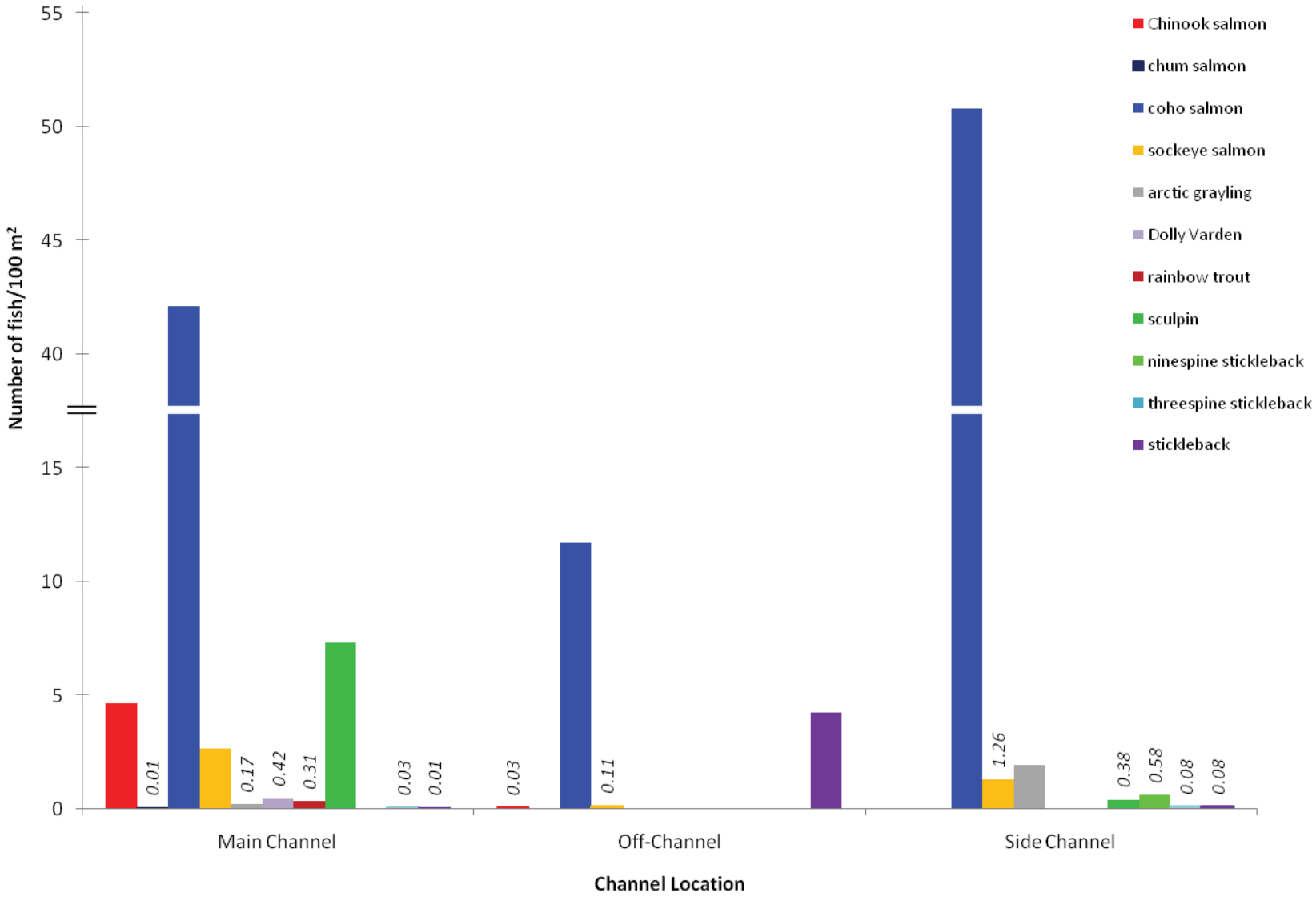


Figure B.16-11.
2004-2007 fish density by channel location within UT-E.

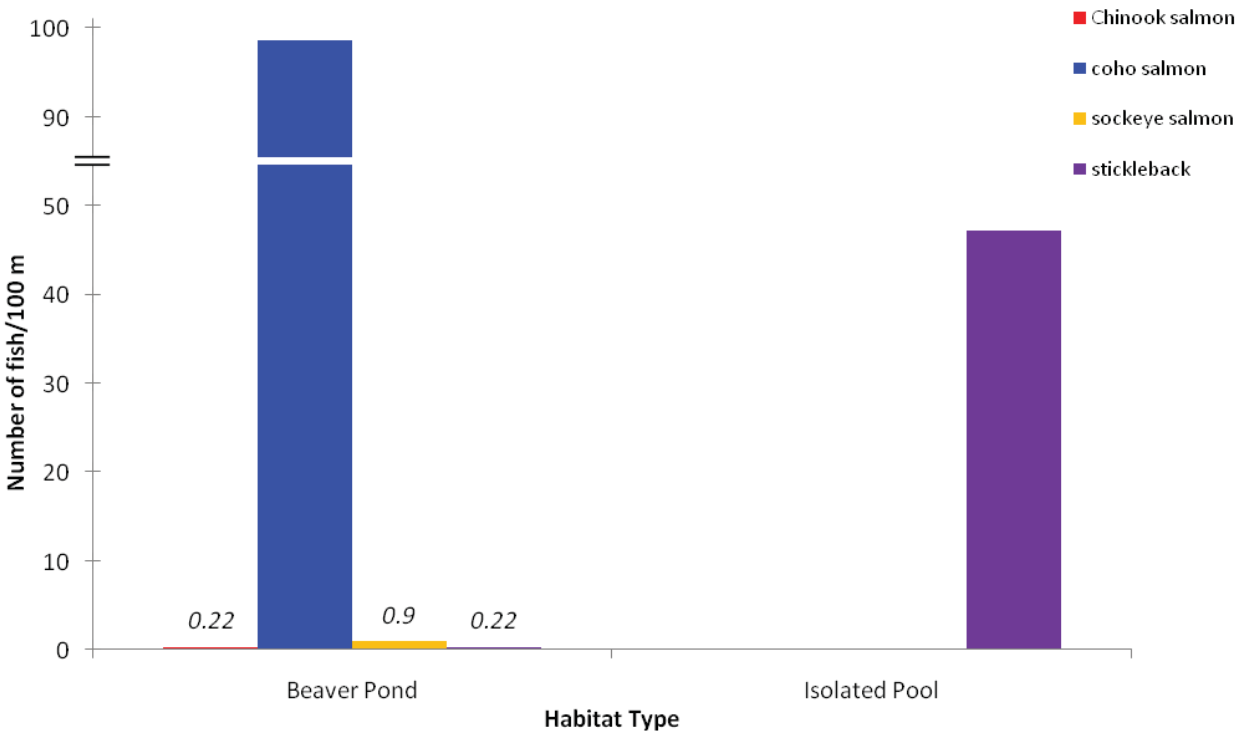


Figure B.16-12.
2004-2007 fish abundance in UT-E off-channel habitats.

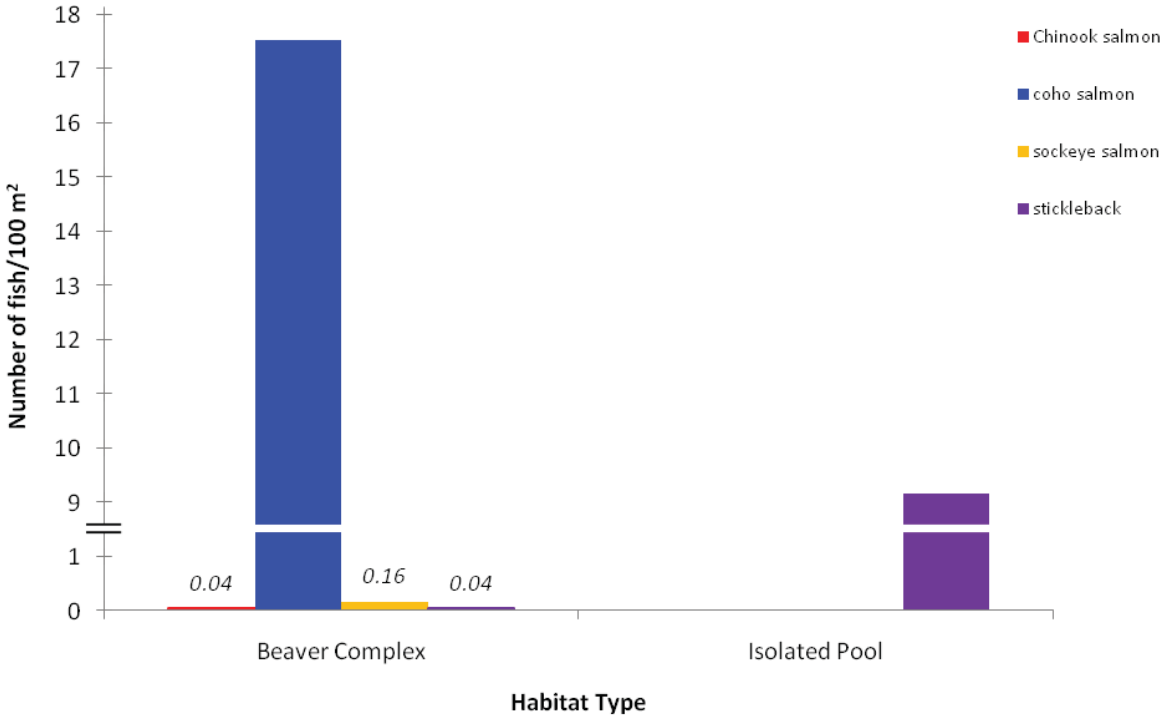


Figure B.16-13.
2004-2007 fish density in UT-E off-channel habitats.

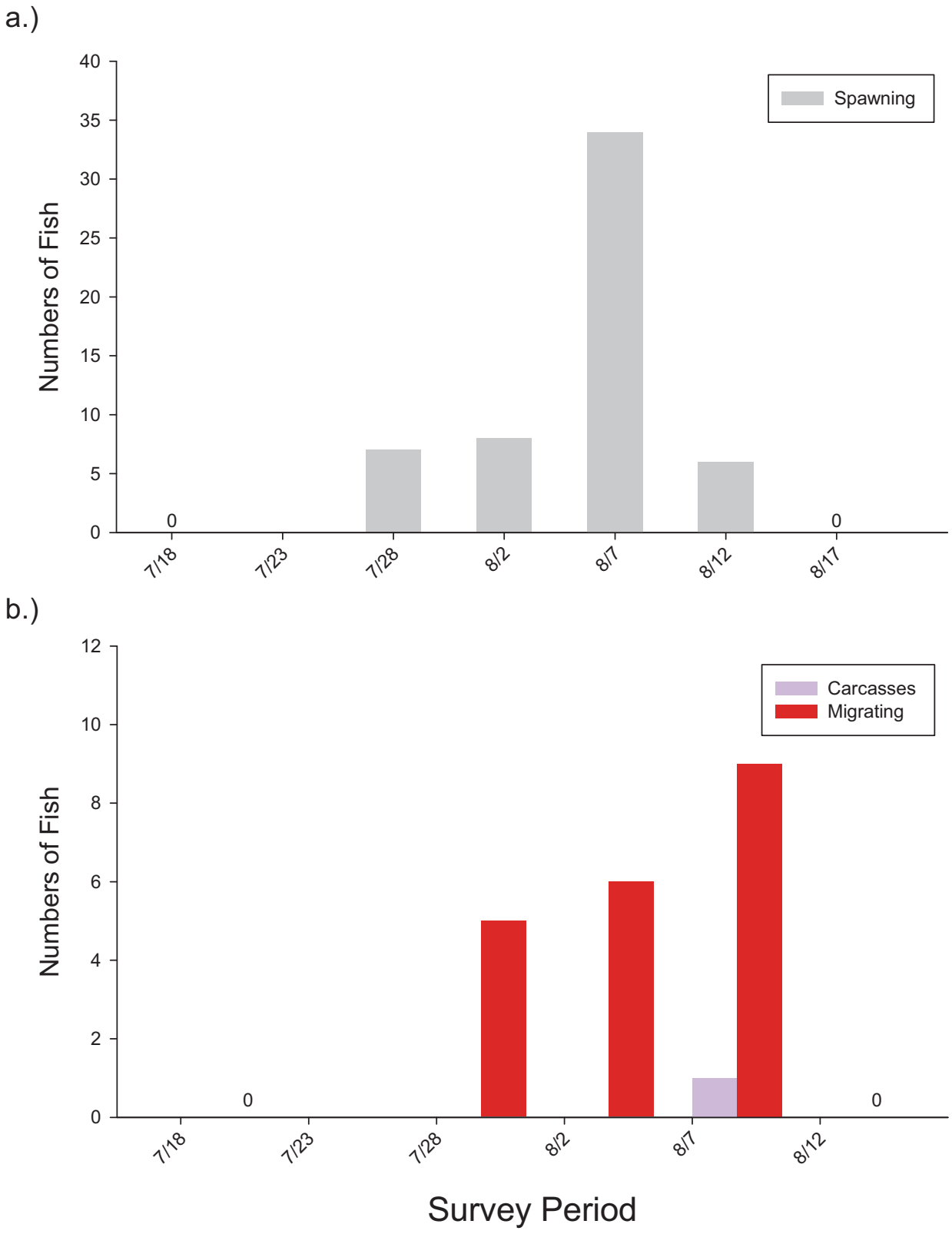


Figure B.16-18.
Observations of Chinook salmon during 2008 aerial surveys in UT-E. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed in spawning related behaviors.

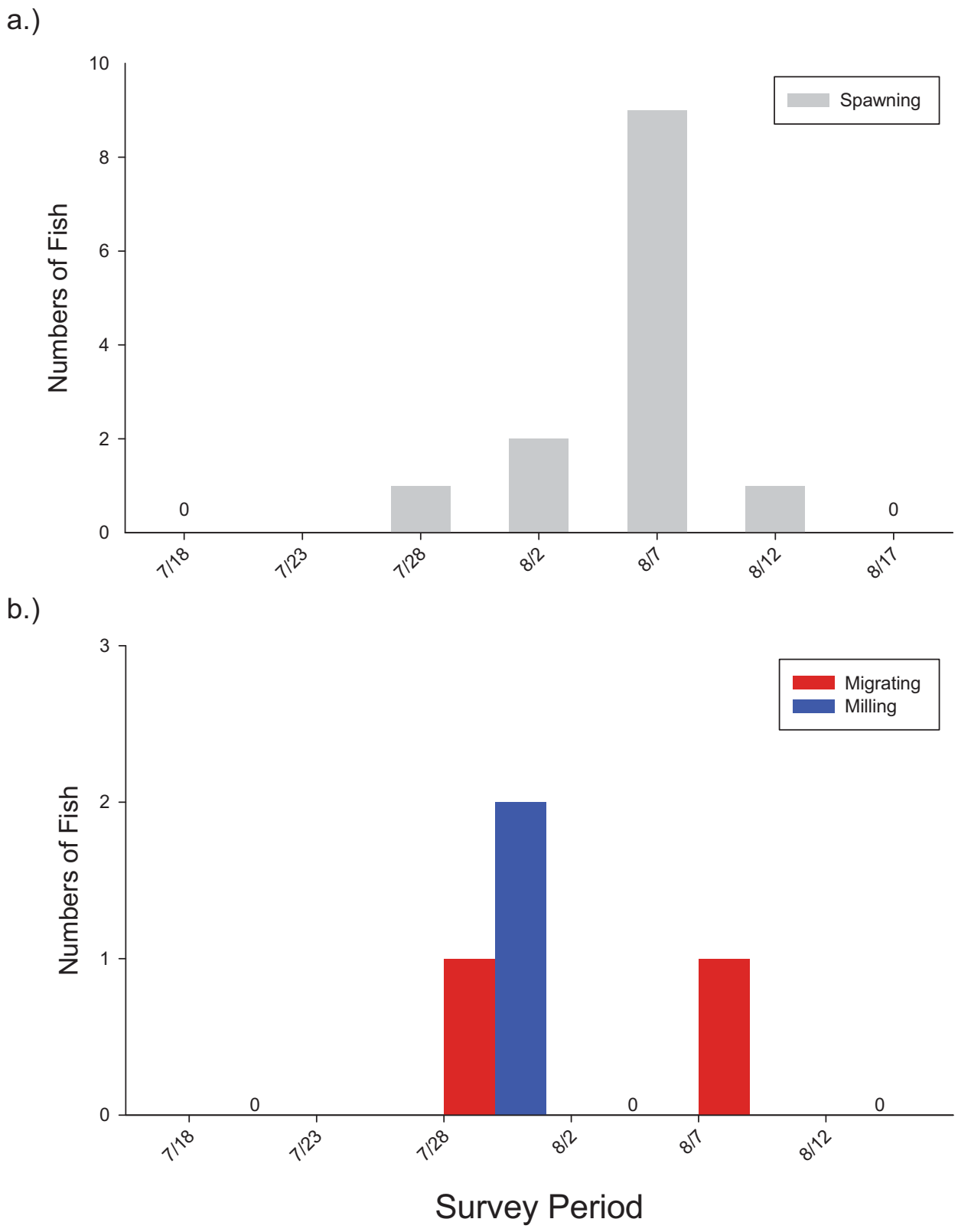


Figure B.16-19.
Observations of chum salmon during 2008 aerial surveys in UT-E. a.) Number of chum salmon spawning. b.) Number of chum salmon observed in spawning related behaviors.

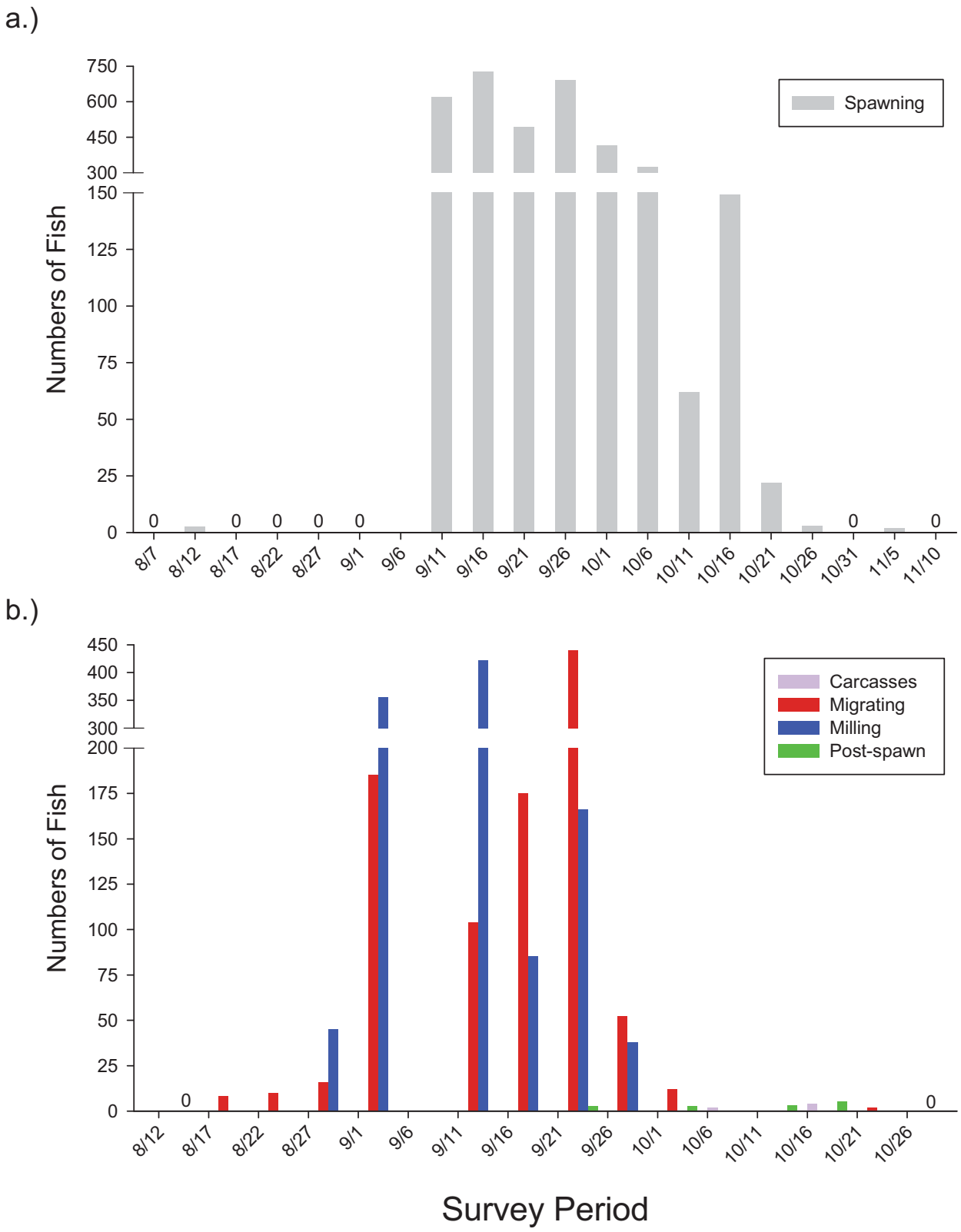


Figure B.16-20.
Observations of coho salmon during 2008 aerial surveys in UT-E. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

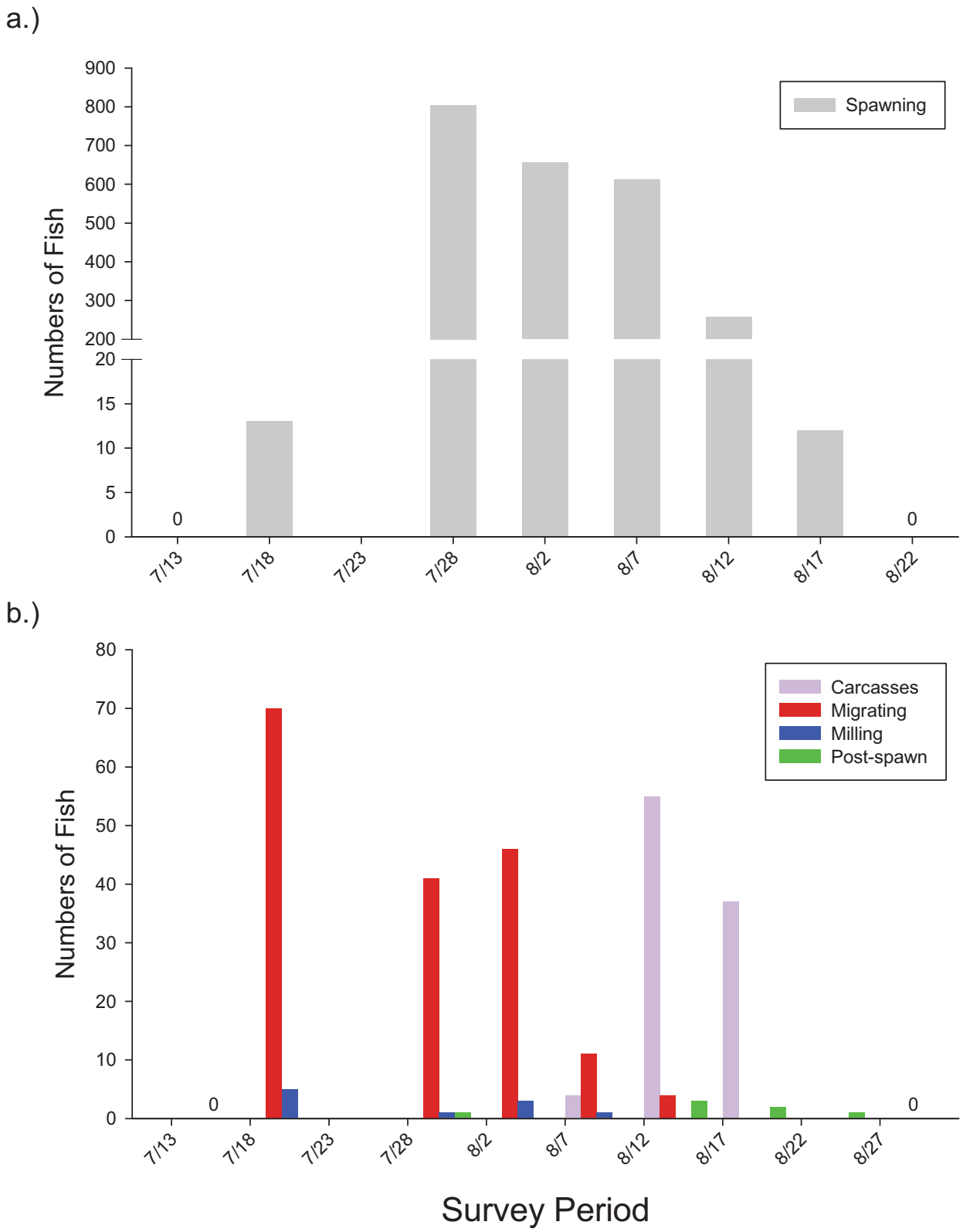


Figure B.16-21.
Observations of sockeye salmon during 2008 aerial surveys in UT-E. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.16-7.
UT-E fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Lifestage			Total Fish Count	Fish Abundance (number/100 m)
						Adult	Juveniles	Juvenile/ Adult[a]		
4/9/2004	UT-04WT-05	coho salmon	minnow trap		18		1		1	
		Dolly Varden	minnow trap		18		1		1	
		rainbow trout	minnow trap		18		1		1	
		sculpin sp.	minnow trap		18		1		1	
		stickleback sp.	minnow trap		18		1		1	
4/12/2004	UT-04WT-14	coho salmon	minnow trap		24		1		1	
		ninespine stickleback	minnow trap		24	1			1	
4/3/2005	UT-05WT-09	rainbow trout	minnow trap		22		1		1	
		sculpin sp.	minnow trap		22			1	1	
		ninespine stickleback	minnow trap		22			2	2	
	UT-05WT-11	sculpin sp.	minnow trap		22			1	1	
4/5/2006	UT06WT-05	coho salmon	minnow trap		23		1		1	
		rainbow trout	minnow trap		23		1		1	
4/6/2006	UT06WT-09	Chinook salmon	minnow trap		23		4		4	
11/4/2006	UT-04WT-05	Chinook salmon	minnow trap		24		4		4	
		coho salmon	minnow trap		24		105		105	
		Dolly Varden	minnow trap		24		2		2	
		rainbow trout	minnow trap		24		9		9	
		sculpin sp.	minnow trap		24	3			3	
4/4/2007	UT07-07	coho salmon	electrofishing	5			11		11	220.0
		Dolly Varden	electrofishing	5			2		2	40.0
		sculpin sp.	electrofishing	5		2			2	40.0

[a] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.16-8.
2008 fish observations by method at mainstem index sites located within UT-E.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC38.97	Chinook salmon	snorkel		1		1
	coho salmon	snorkel		38		38
	sockeye salmon	snorkel	1	28		29
	Dolly Varden	beach seine		1		1
		snorkel			1	1
	rainbow trout	snorkel		1		1
	sculpin sp.	beach seine	2	3		5
UTC38.97 Total			**3**	**72**	**1**	**76**
UTC43.30	coho salmon	snorkel		52		52
	sockeye salmon	beach seine	1			1
		snorkel	4			4
	arctic grayling	beach seine	2			2
		snorkel	1			1
	sculpin sp.	beach seine	1	8		9
UTC43.30 Total			**9**	**60**		**69**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

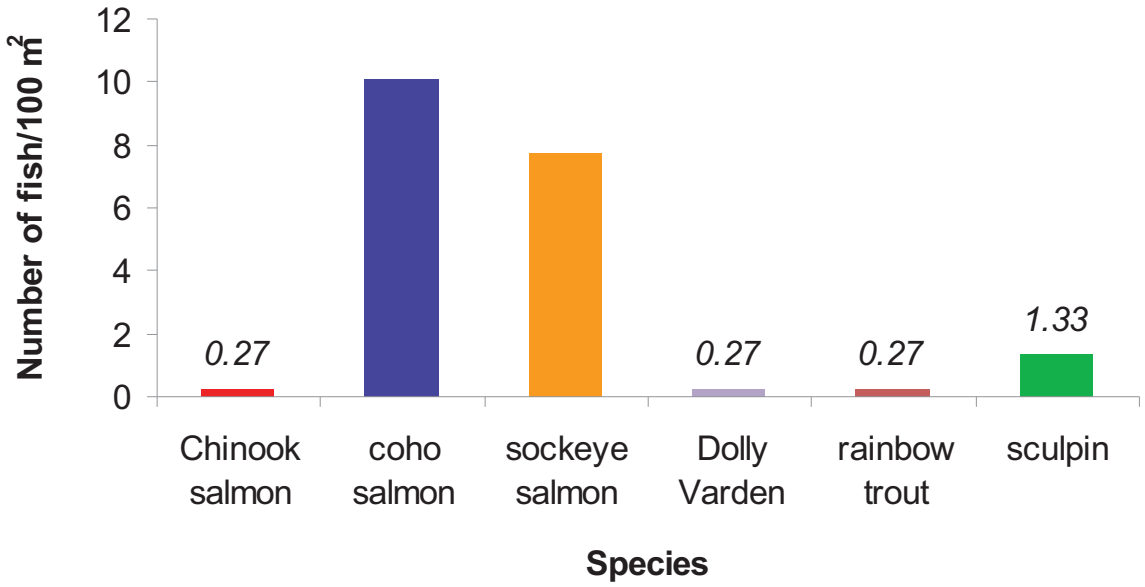


Figure B.16-23a.
2008 fish density in glide habitat at mainstem index site (RKm 38.97) within UT-E. Densities were calculated from the method that generated the greatest count of fish at this location.

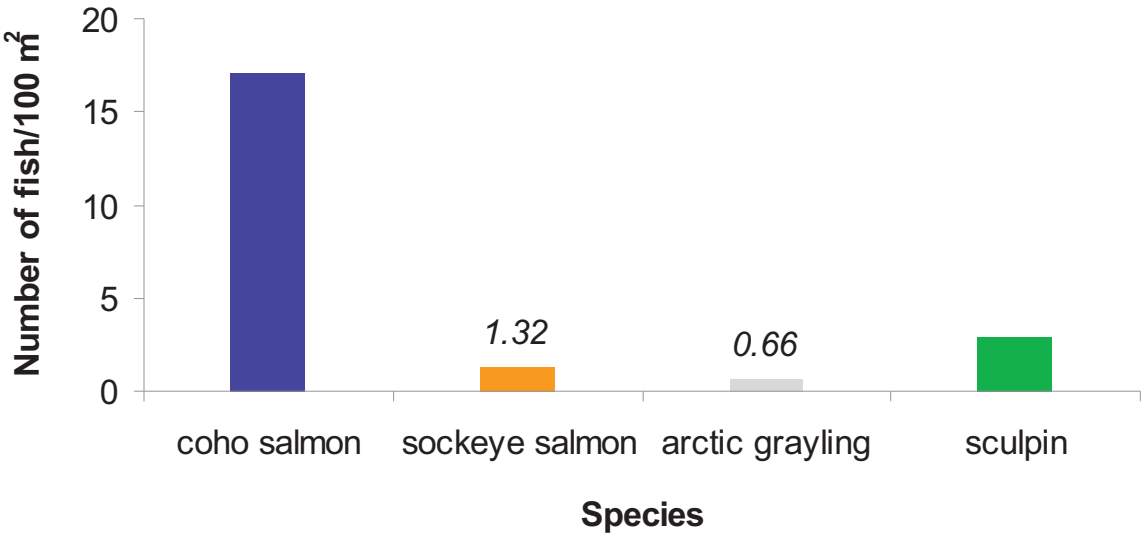
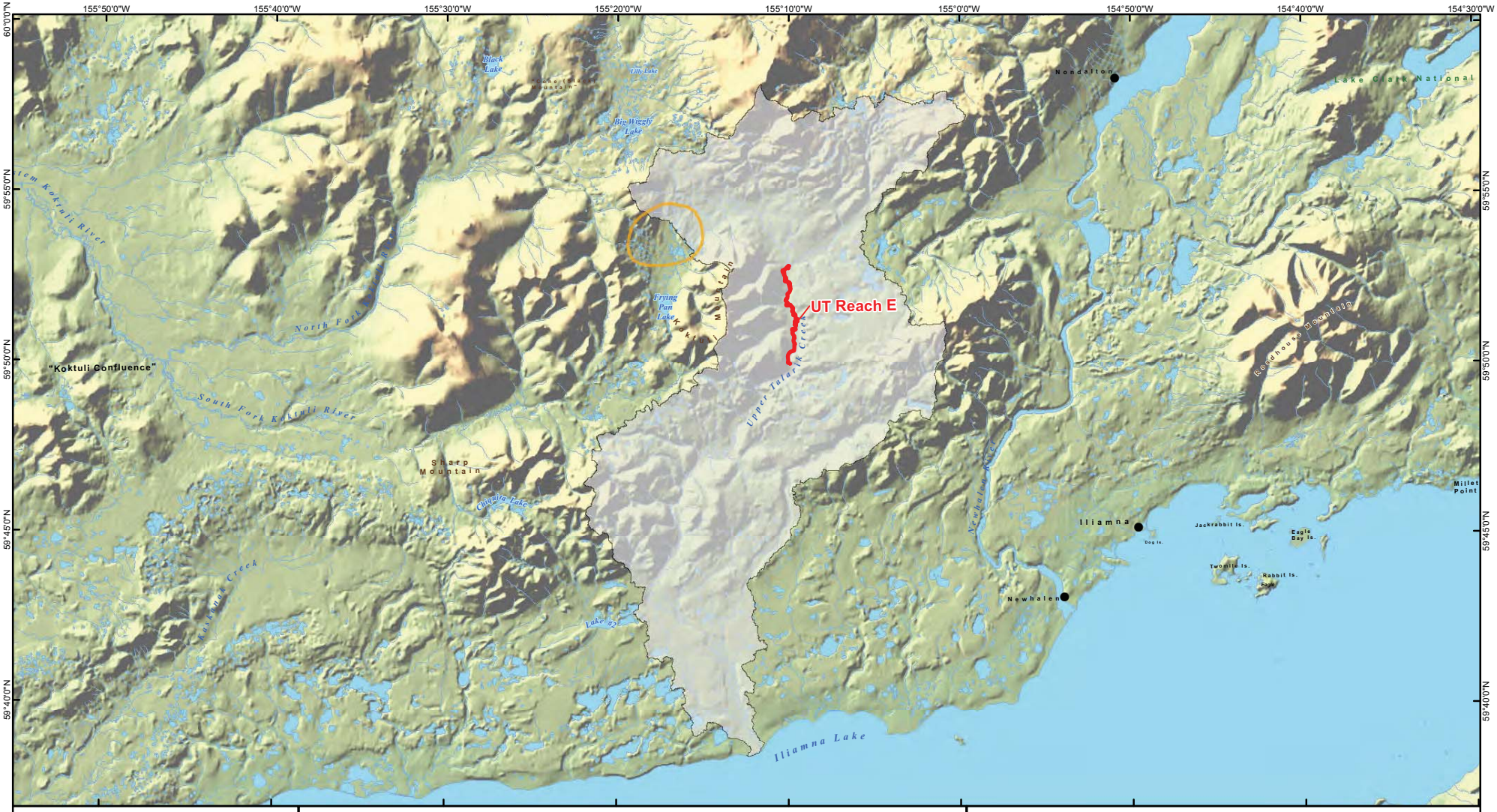


Figure B.16-23b.
2008 fish density in glide habitat at mainstem index site (RKm 43.30) within UT-E. Densities were calculated from the method that generated the greatest count of fish at this location.



Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach
- UT Reach E

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

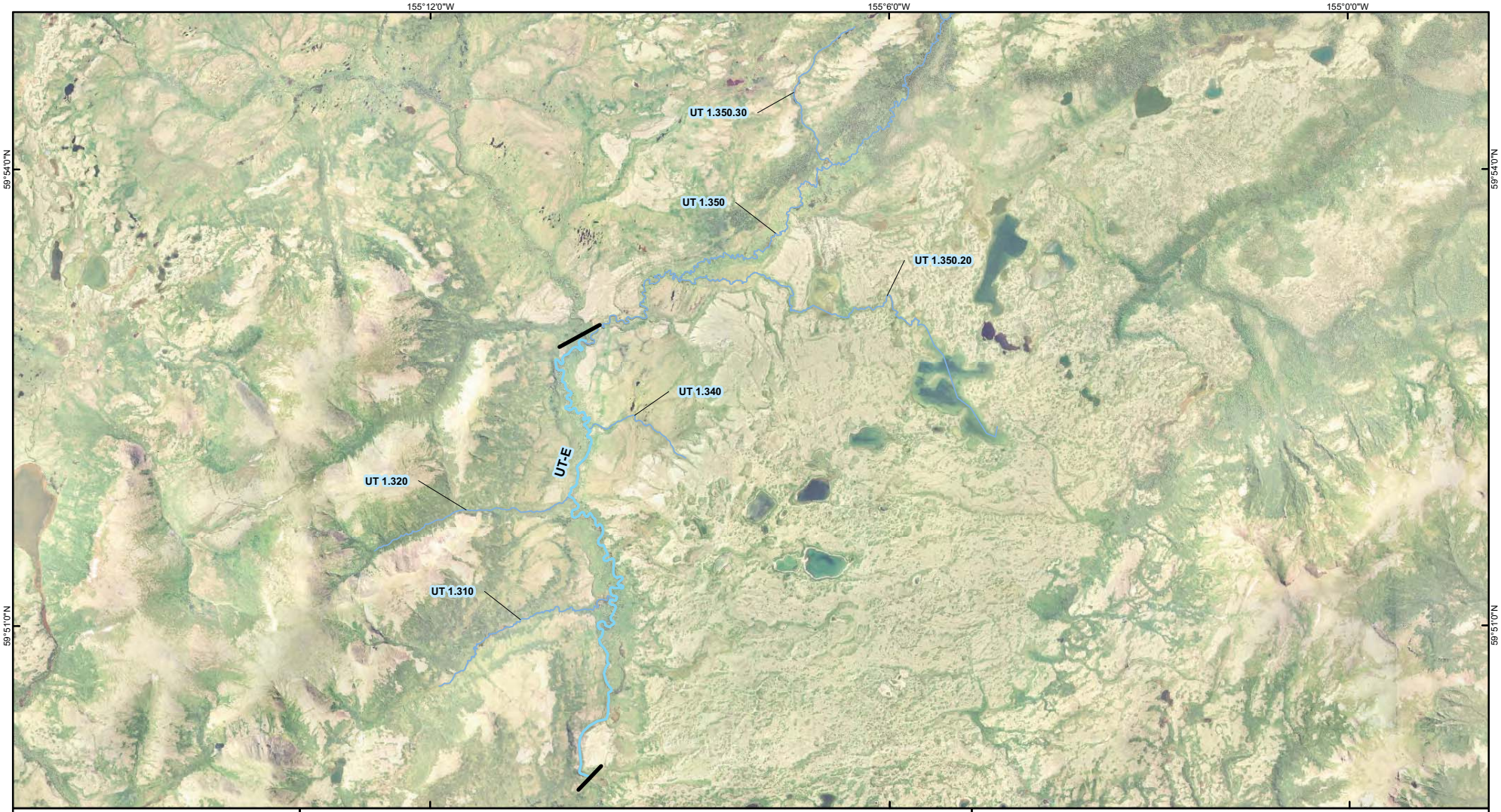
Miles: 0 5 10

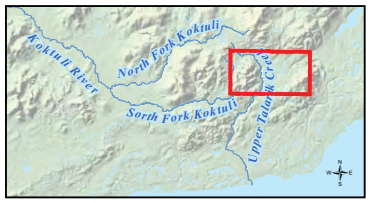
Kilometers: 0 5 10

THE pebble PARTNERSHIP

Figure B.16-1a
Reach UT-E

RDI_R2_OverviewLocator_UT-E_Fig-B.16-1a_11x17L_16of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

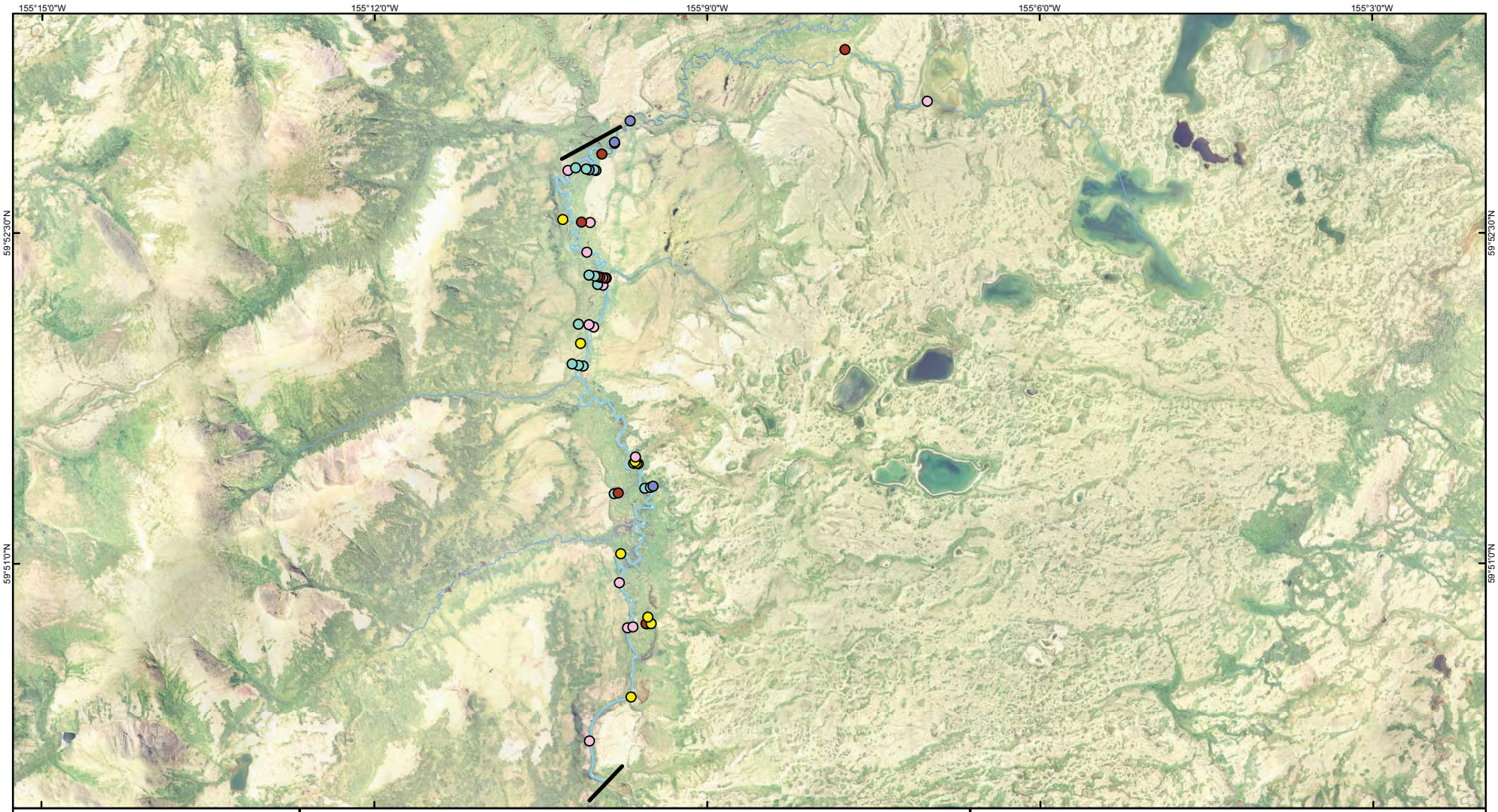
Miles: 0 0.9 1.8

Kilometers: 0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.16-1b
UT-E
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-E_Fig-B.16-1b_11x17L_16of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.6 1.2

Kilometers
0 0.6 1.2

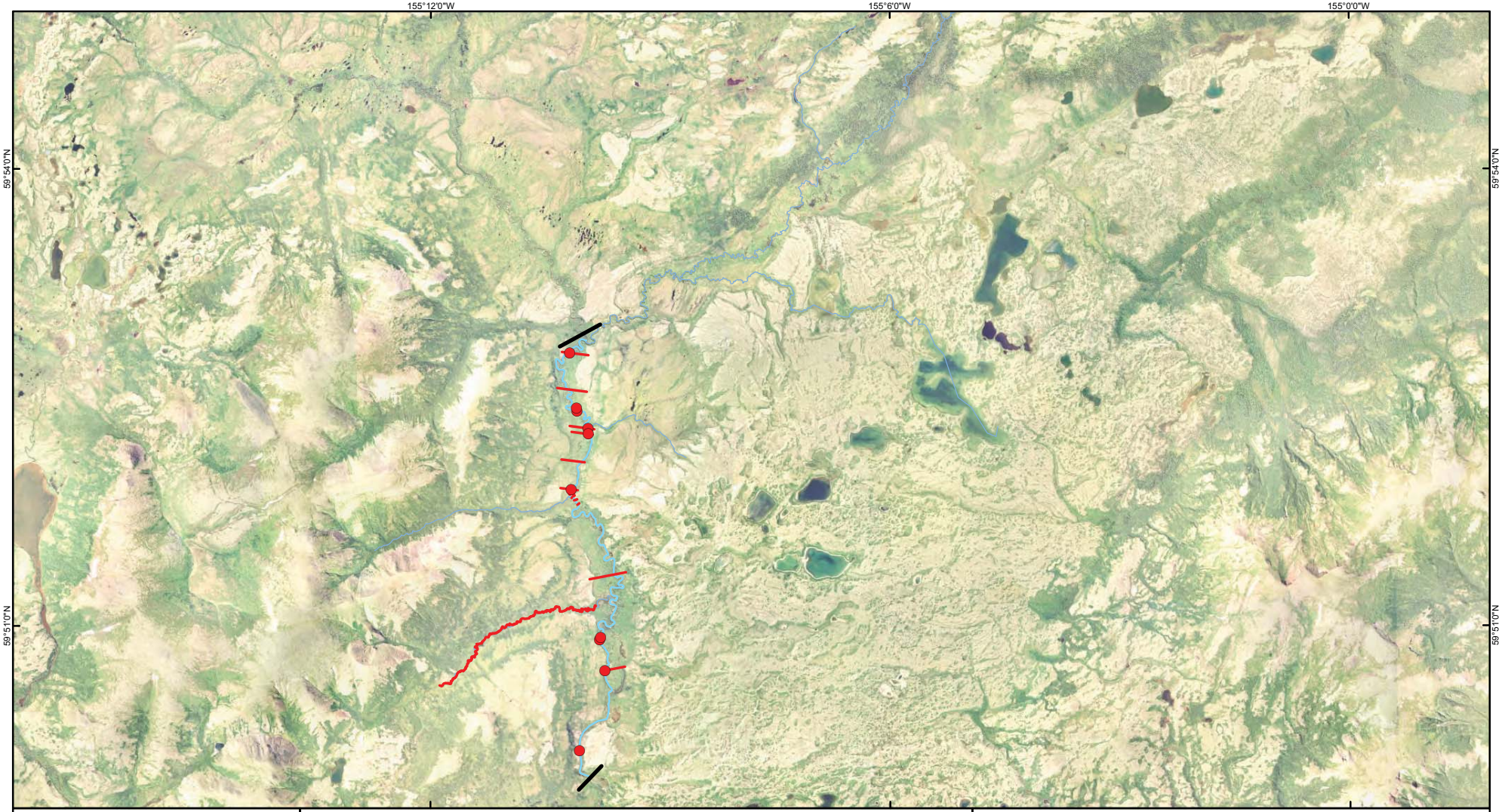
THE pebble PARTNERSHIP

Figure B.16-2
UT-E
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_UT-E_Fig-B.16-2_11x17L_16of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.9 1.8

Kilometers: 0 0.9 1.8

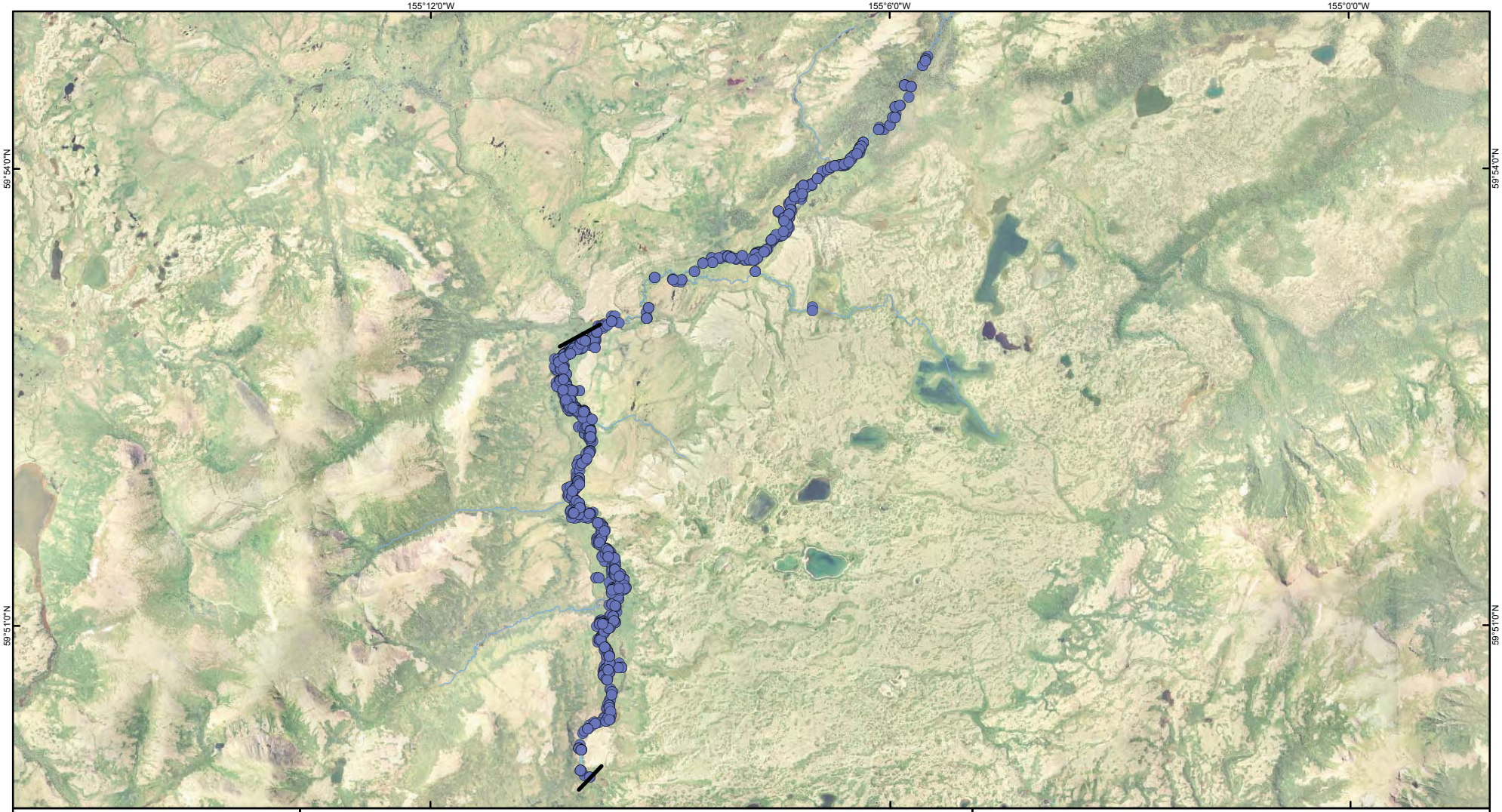
THE pebble PARTNERSHIP

Figure B.16-3
UT-E
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-E_Fig-B.16-3_11x17L_16of19_D02.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

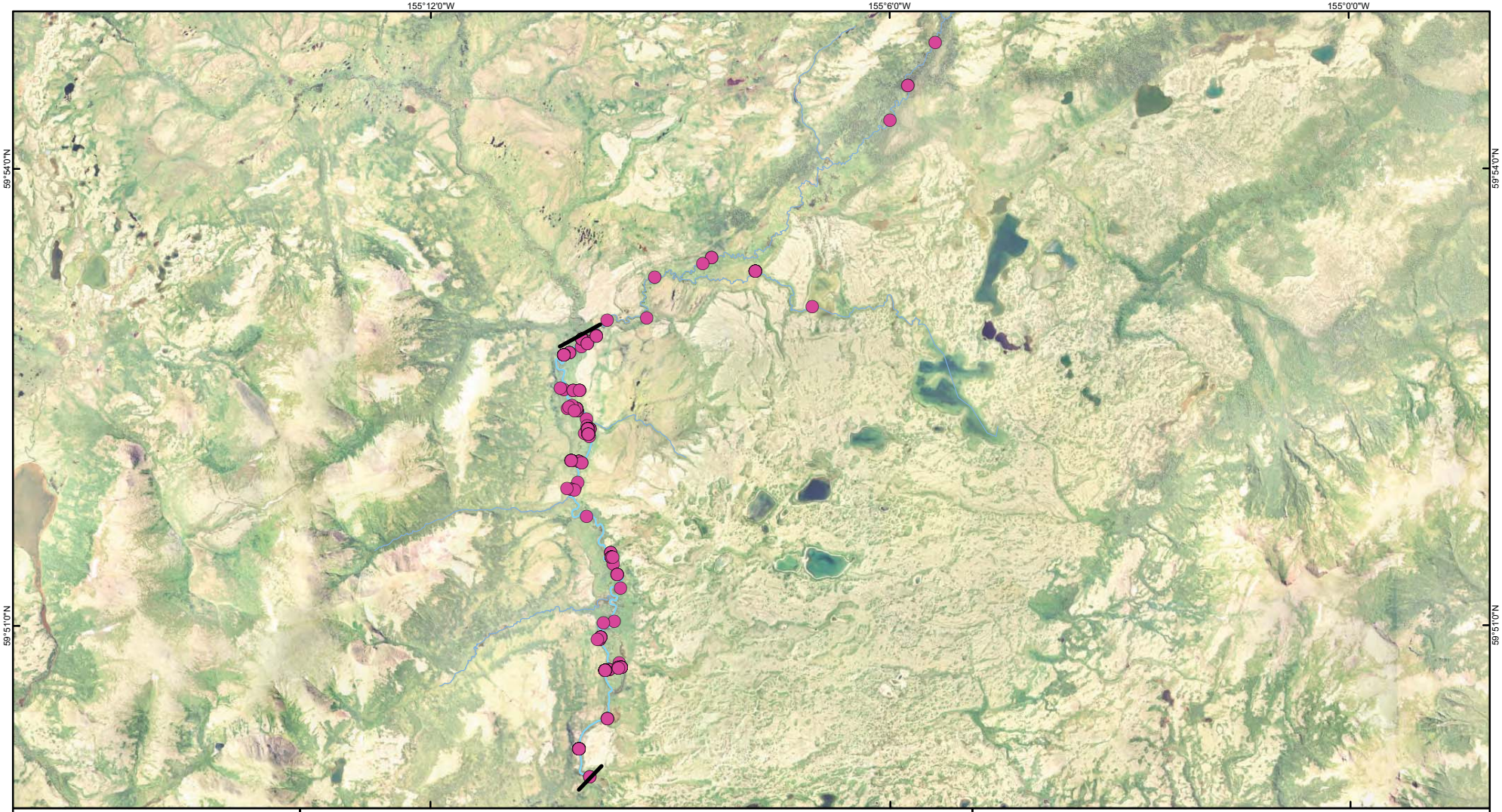
Miles: 0 0.9 1.8

Kilometers: 0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.16-4
UT-E
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-E_Fig-B.16-4_11x17L_16of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.9 1.8

Kilometers: 0 0.9 1.8

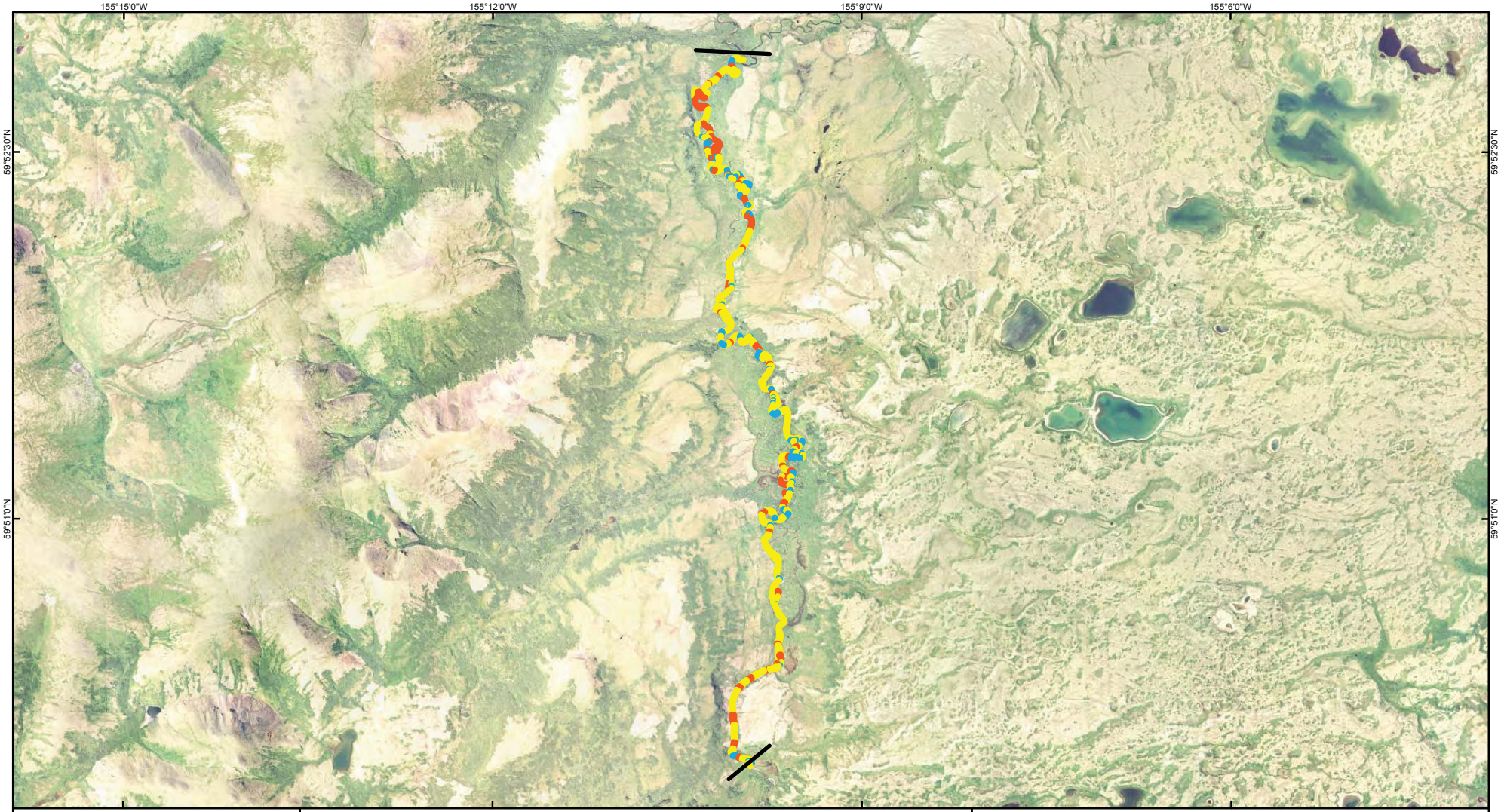
THE pebble PARTNERSHIP

Figure B.16-5
UT-E
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-E_Fig-B.16-5_11x17L_16of19_D04.mxd

February 5, 2011

Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

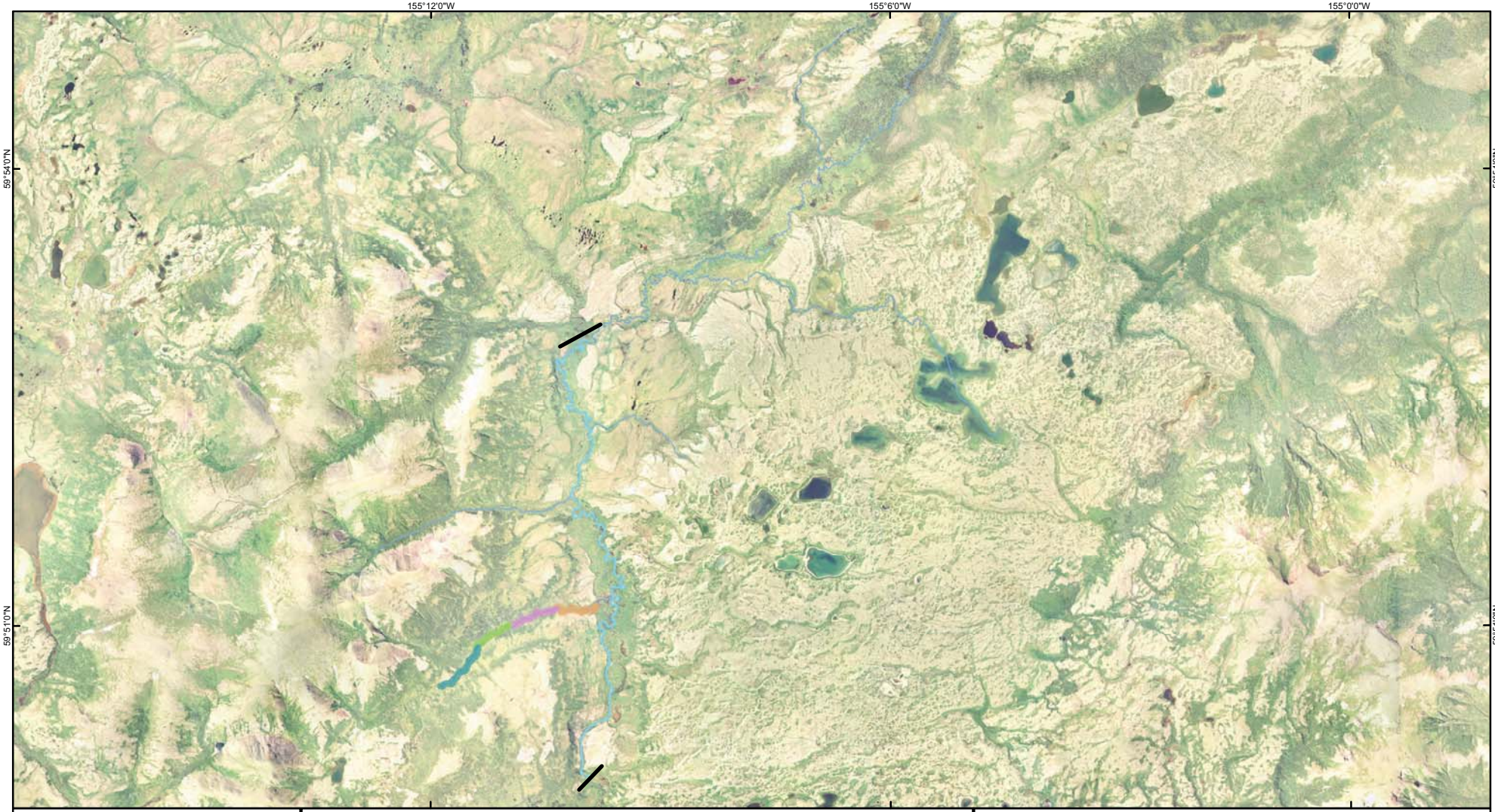
Miles: 0 0.6 1.2

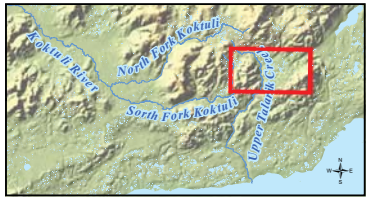
Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.16-6
UT-E
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_UT-E_Fig-B.16-6_11x17L_16of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- UT 1.310-SA1
- UT 1.310-SA2
- UT 1.310-SA3
- UT 1.310-SA4
- Mainstem Stream Reach
- Tributary Streams

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.9 1.8

Kilometers: 0 0.9 1.8

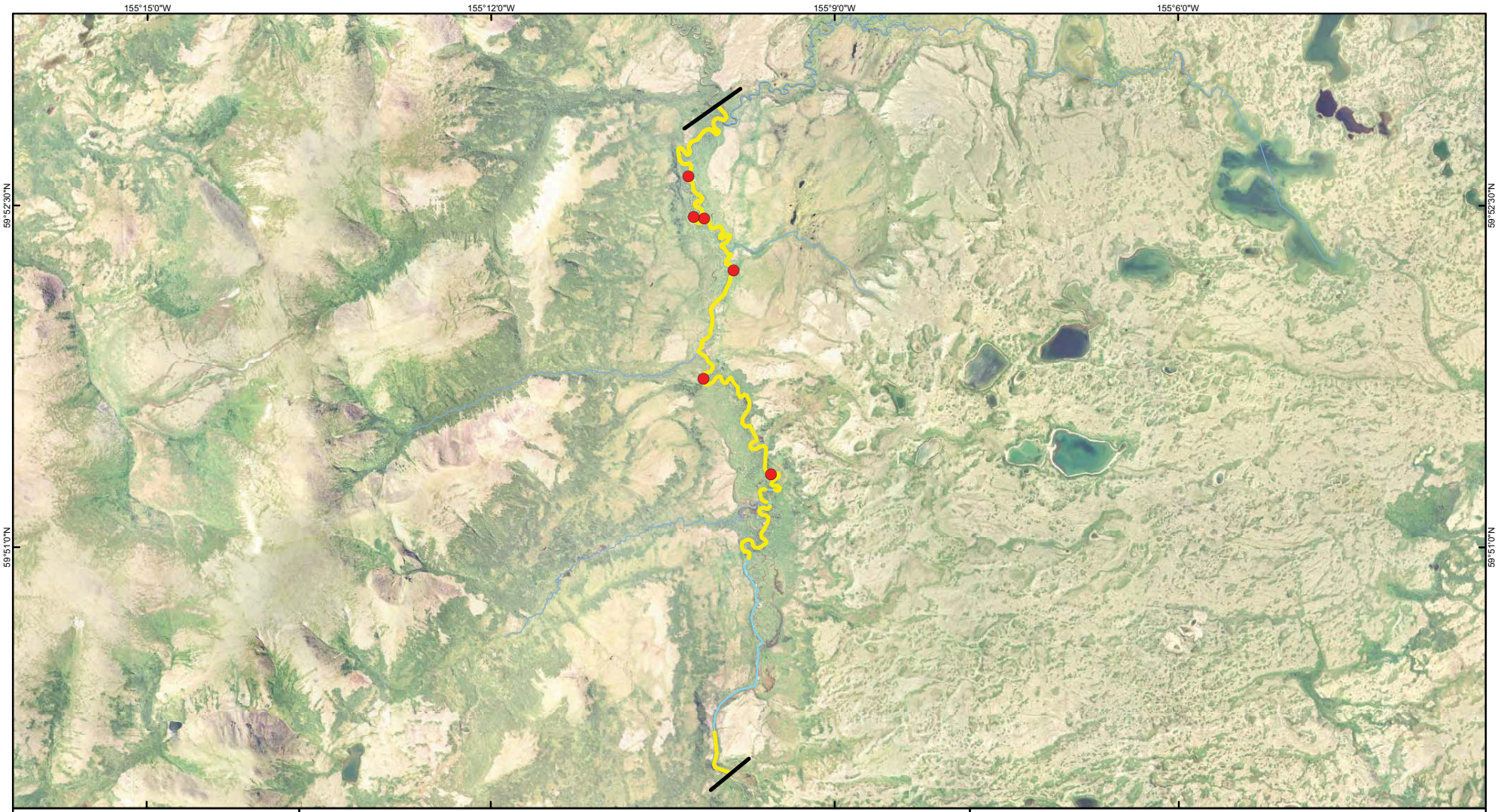
THE pebble PARTNERSHIP

Figure B.16-7
UT-E
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_UT-E_Fig-B.16-7_11x17L_16of19_D02.mxd

January 14, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

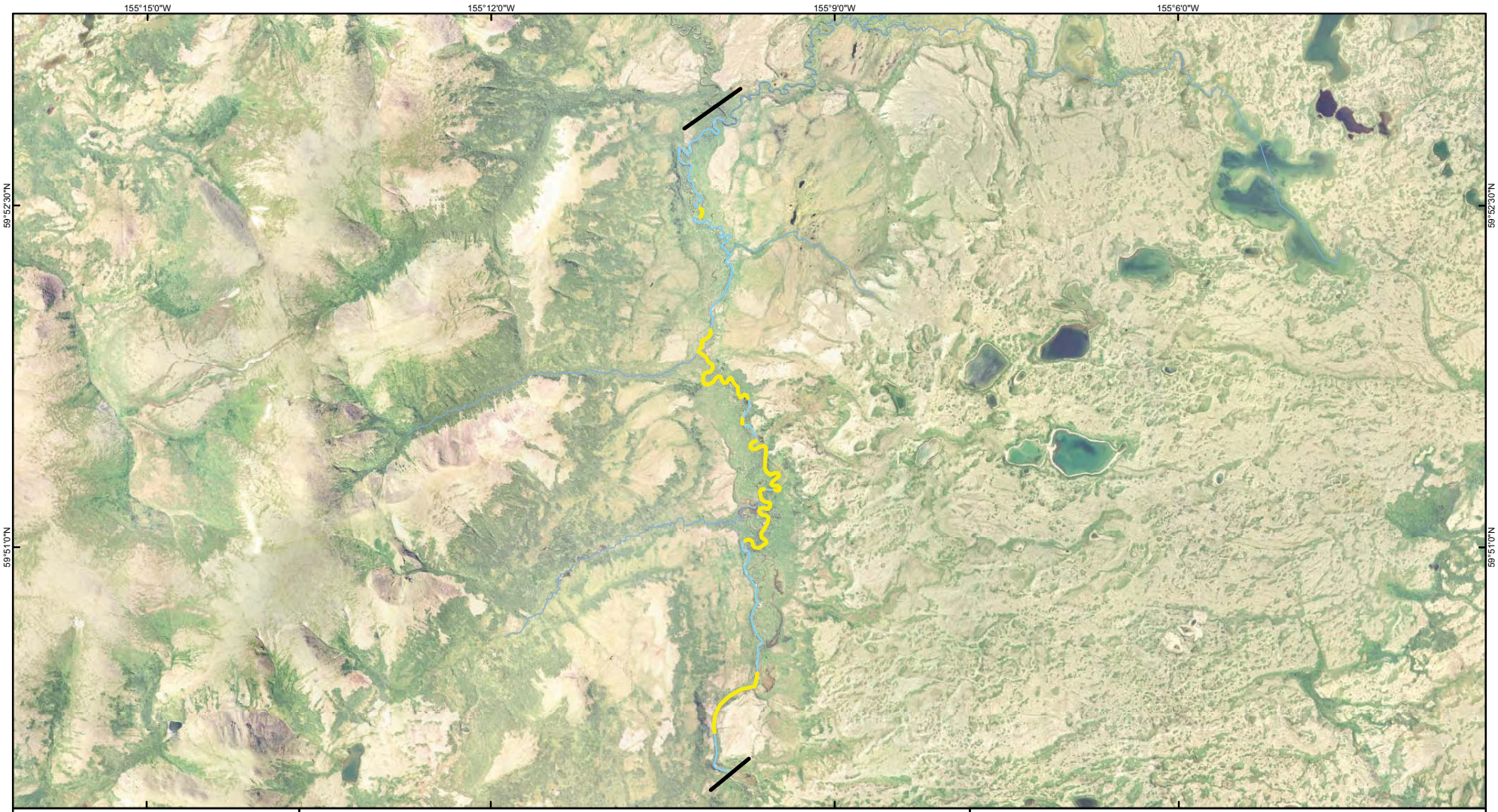
THE pebble PARTNERSHIP

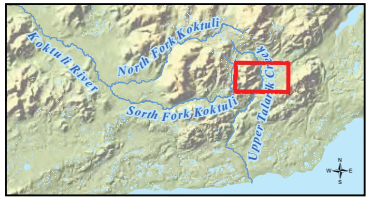
Figure B.16-14
UT-Ea
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Ea_Fig-B.16-14_KS_11x17L_18of22_D04.mxd

February 5, 2011

Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

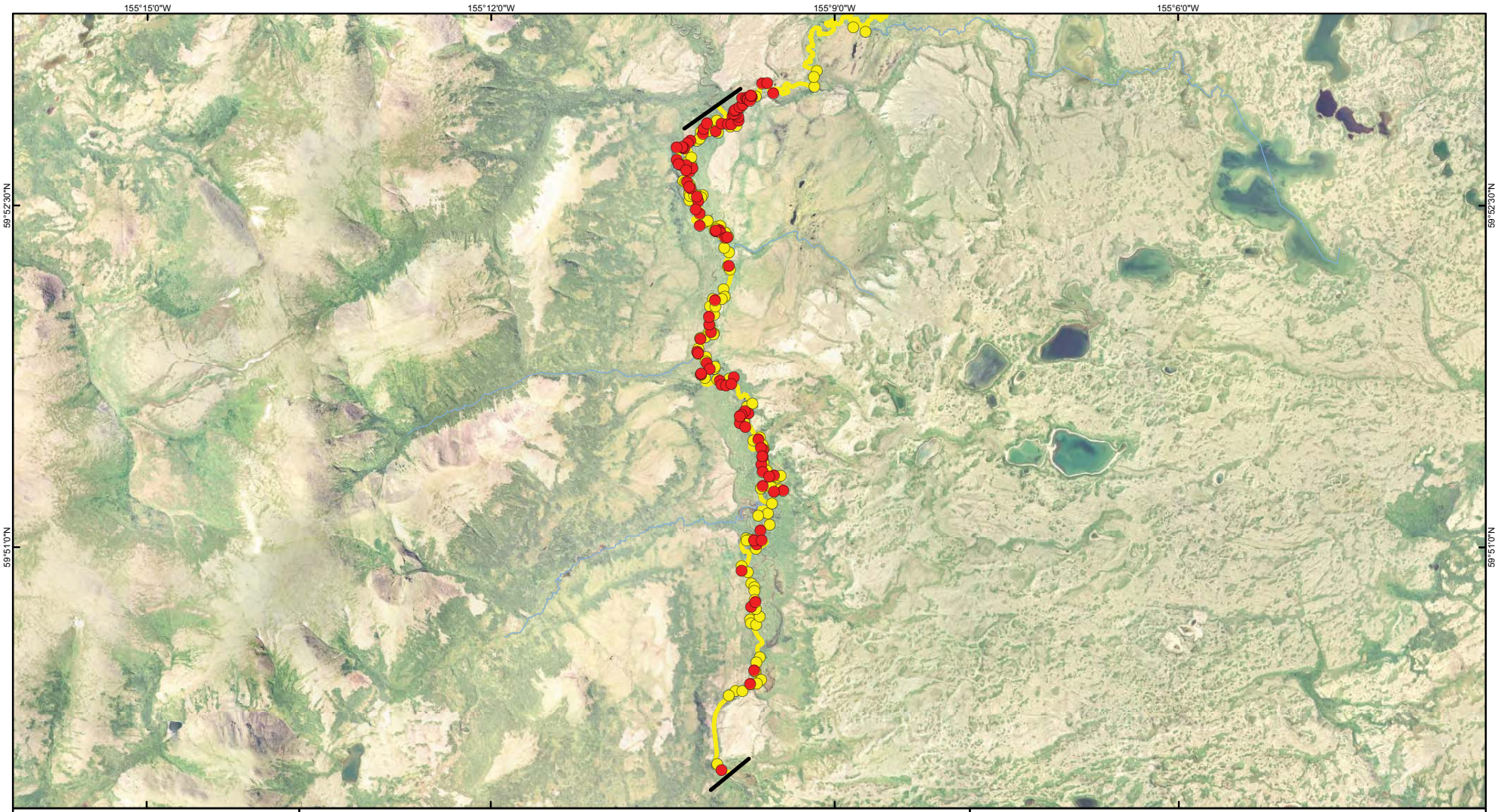
Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.16-15
UT-Ea
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Ea_Fig-B.16-15_CH_11x17L_18of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

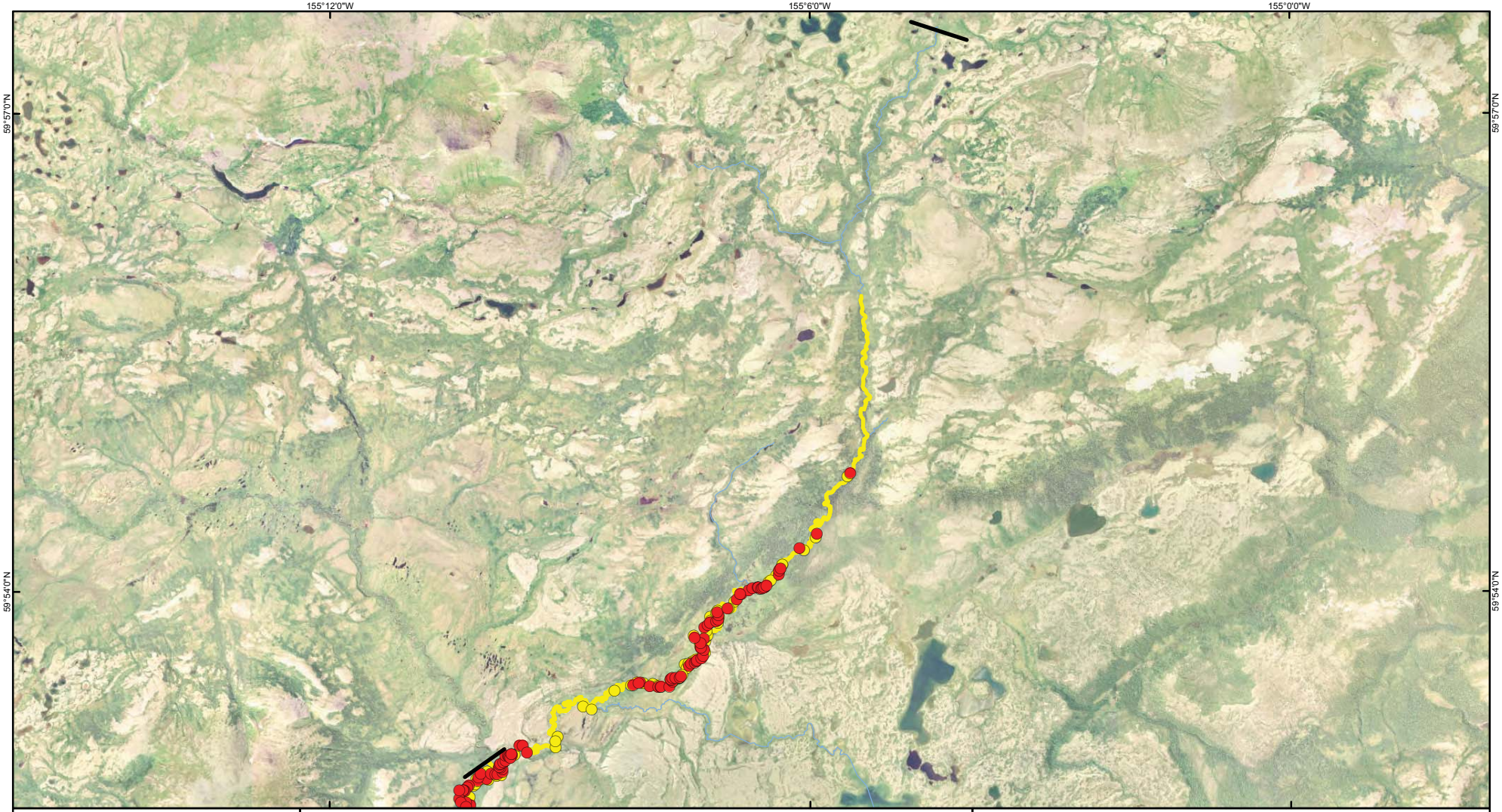
Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.16-16
UT-Ea
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Ea_Fig-B.16-16_CS_11x17L_18of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

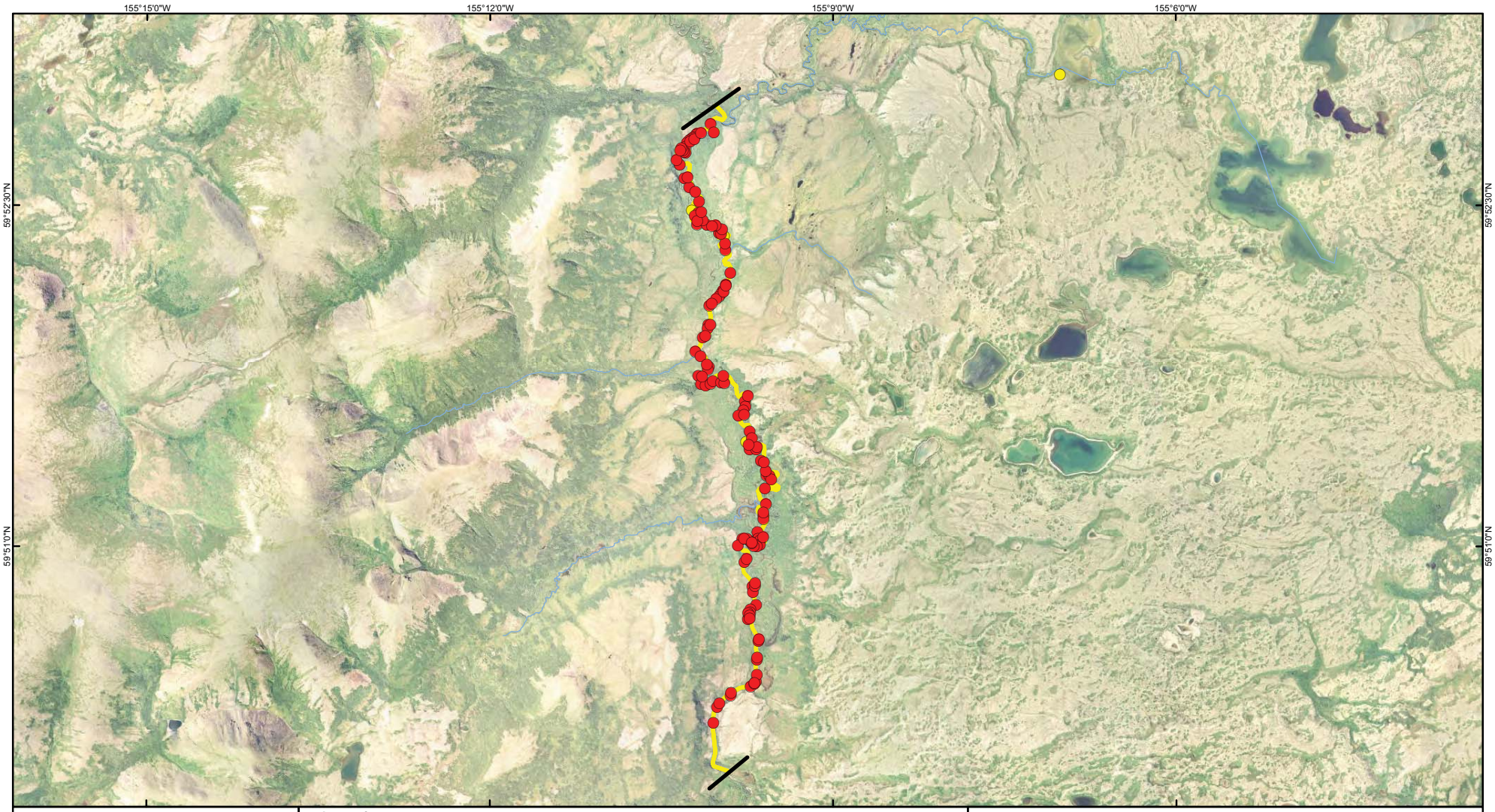
Miles: 0 0.8 1.6

Kilometers: 0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.16-16
UT-Eb 1.350 Tributary
(*continued from UT-Ea*)
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Eb_Fig-B.16-16_CS_11x17L_19of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

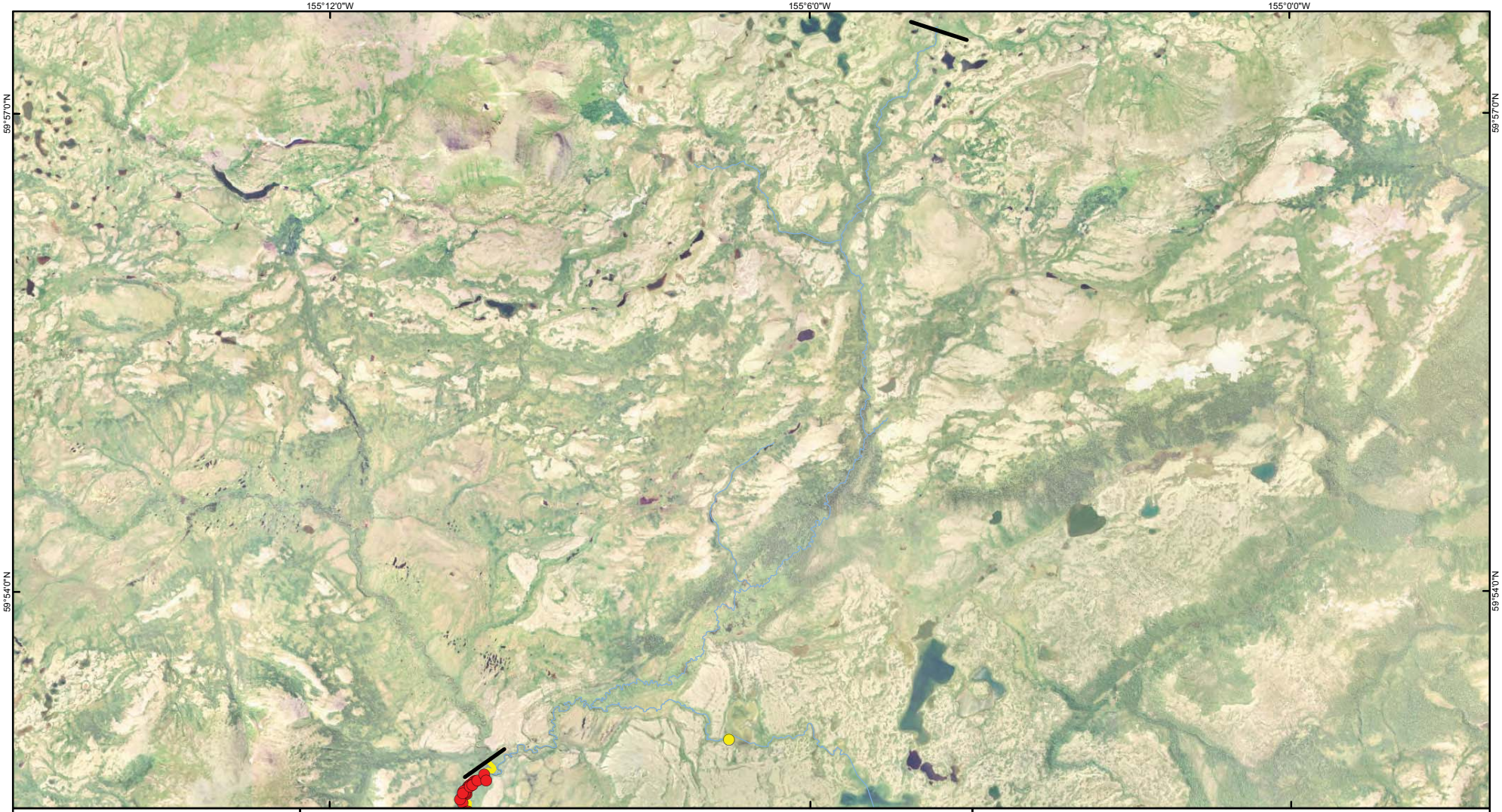
Miles: 0 0.6 1.2

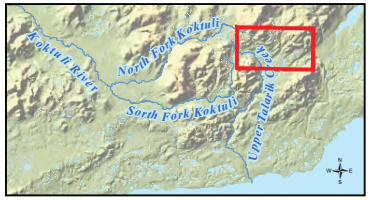
Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.16-17
UT-Ea
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Ea_Fig-B.16-17_SS_11x17L_18of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

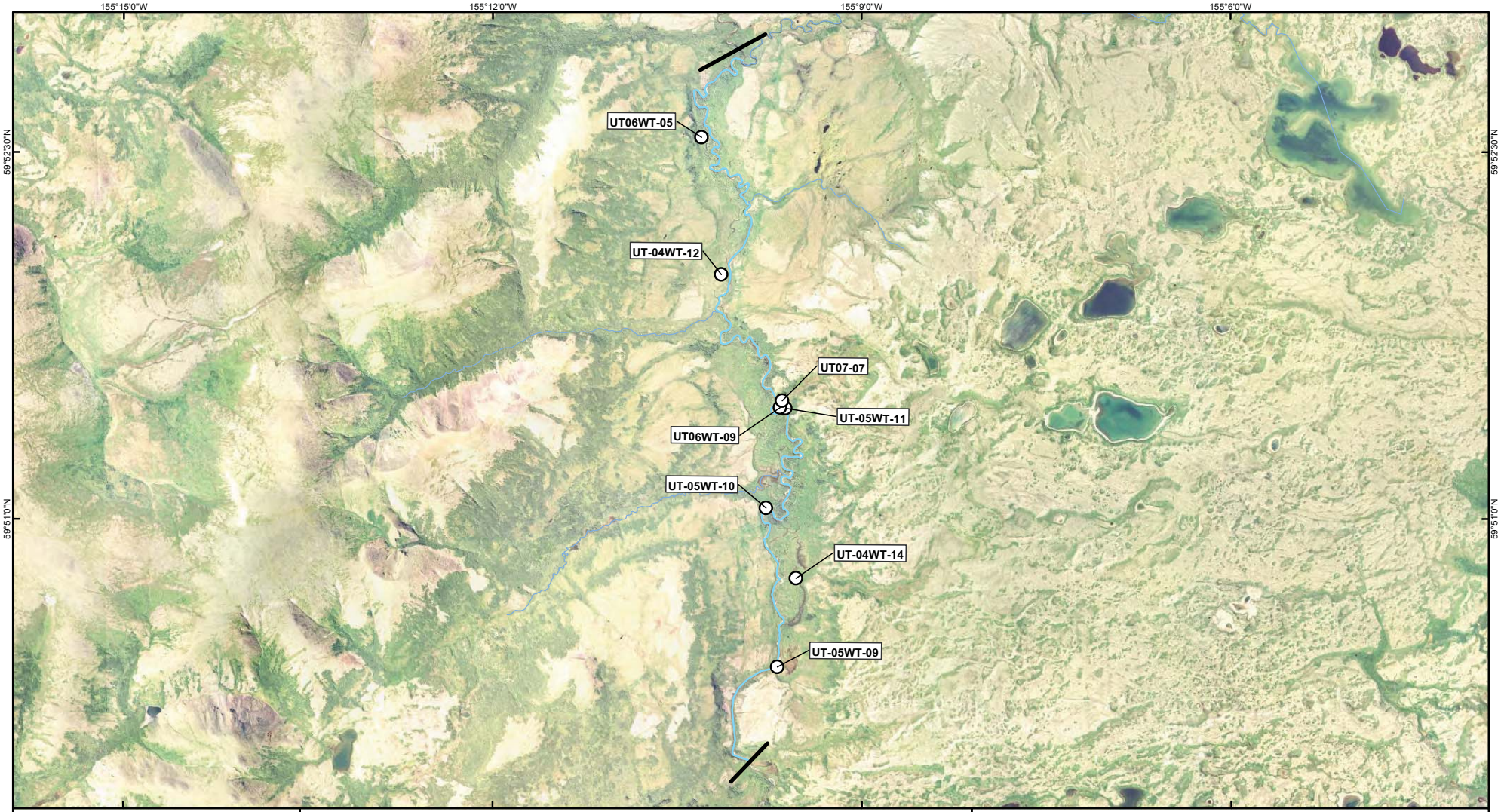
Miles: 0 0.8 1.6

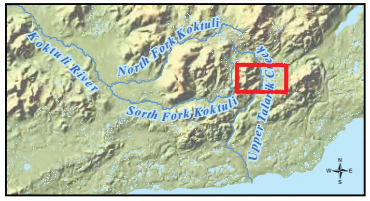
Kilometers: 0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.16-17
UT-Eb 1.350 Tributary
(*continued from UT-Ea*)
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-Eb_Fig-B.16-17_SS_11x17L_19of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.6 1.2

Kilometers: 0 0.6 1.2

THE pebble PARTNERSHIP

Figure B.16-22
UT-E
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_UT-E_Fig-B.16-22_11x17L_16of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.17
UPPER TALARIK CREEK RIVER REACH F (UT-F)

Table B.17-1.
List of species found in UT-F.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
sculpin [a]	*Cottus* sp.
ninespine stickleback	*Pungitius pungitius*
stickleback [b]	*Gasterosteidae*

[a] identified to genus, may include slimy sculpin and coastrange sculpin

[b] identified to family, may include ninespine and threespine stickleback

Table B.17-2.
Channel morphology data from areas sampled within UT-F and tributaries 1.360, 1.370, 1.380, 1.390, 1.410, 1.420, 1.430, 1.440, 1.460, and 1.470.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
UT-F-SA1	6/22/05	narrow shallow contained channel	1.4	7.5	NA	NA
UT-F-SA2	6/24/05	beaver dam/pond channel	1.0	6.2	NA	NA
UT-F-SA3	6/24/05	narrow shallow contained channel	1.0	14.0	NA	NA
UT-F-SA4	6/25/05	narrow shallow contained channel	1.0	4.6	NA	NA
UT-F-SA5[e]	6/25/05	narrow shallow contained channel	1.5	4.0	NA	NA
UT-F-SA6	7/9/04	narrow shallow contained channel	2.5	4.3	NA	NA
UT-F-SA7	7/9/04	narrow shallow contained channel	NA	4.4	NA	NA
2004 UT-F TOTAL			2.5	4.4	NA	NA
2005 UT-F TOTAL			1.3	7.3	NA	NA
UT 1.360-SA1	8/5/08	narrow mixed control channel	1.7	2.2	3.9	0.5
UT 1.360-SA2	8/6/08	narrow shallow contained channel	3.3	2.3	4.6	0.9
UT 1.360-SA3	8/8/08	narrow mixed control channel	12.5	1.1	2.0	0.6
UT 1.360.50-SA1	8/9/08	shallowly to moderately incised footslope channel	15.0	1.0	1.8	0.5
UT 1.360 TOTAL			6.4	1.8	3.4	0.7
UT 1.370-SA1	7/8/08	narrow mixed control channel	1.7	1.9	2.6	0.7
UT 1.370-SA1	8/3/07	narrow shallow contained channel	1.1	2.2	20.0	NA
UT 1.370-SA2	7/10/08	narrow mixed control channel	3.0	3.0	3.6	0.9
UT 1.370-SA3	7/10/08	narrow mixed control channel	2.0	2.5	3.5	0.6
UT 1.370-SA4	7/12/08	beaver dam/pond channel	1.5	2.7	2.3	0.8
UT 1.370-SA5	7/14/08	beaver dam/pond channel	2.5	2.1	2.8	0.5
UT 1.370-SA6A	8/3/08	beaver dam/pond channel	2.5	1.5	2.2	0.5
UT 1.370.13-SA1	8/22/08	narrow placid flow channel	1.0	0.7	1.1	0.5
UT 1.370.30-SA1	7/27/08	narrow mixed control channel	2.0	0.8	1.6	0.5
2007 UT 1.370 TOTAL			1.1	2.2	20.0	NA
2008 UT 1.370 TOTAL			1.9	1.8	2.4	0.6

Table B.17-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
UT 1.380-SA1	7/8/08	narrow low-gradient floodplain channel	1.0	3.4	4.8	0.6
UT 1.380-SA1/2[f]	7/16/07	moderate width and incision contained channel	1.6	1.6	1.8	NA
UT 1.380-SA2	7/8/08	narrow mixed control channel	2.2	2.0	2.8	0.6
UT 1.380-SA3	7/10/08	moderate width mixed control channel	3.0	2.4	3.0	0.7
UT 1.380-SA4	7/11/08	moderate width mixed control channel	3.3	2.0	3.7	0.9
UT 1.380-SA5	7/12/08	narrow mixed control channel	1.3	1.9	8.3	0.6
UT 1.380-SA7	7/13/08	narrow mixed control channel	1.5	1.4	3.2	0.5
UT 1.380-SA8	7/14/08	wide low-gradient floodplain channel	0.5	1.3	7.0	0.5
UT 1.380.10-SA1	7/16/08	narrow mixed control channel	1.5	2.2	2.5	0.9
UT 1.380.10-SA2	7/22/08	beaver dam/pond channel	1.0	2.1	2.4	0.8
UT 1.380.10-SA3	7/23/08	narrow low-gradient floodplain channel	1.8	1.9	3.9	0.5
UT 1.380.10-SA4	7/23/08	narrow mixed control channel	3.7	2.0	3.5	0.6
UT 1.380.10-SA5	7/24/08	narrow placid flow channel	1.8	1.6	1.8	0.8
UT 1.380.10-SA6	7/25/08	beaver dam/pond channel	3.5	1.0	1.8	0.5
UT 1.380.10.20-SA1	7/25/08	shallow groundwater-fed slough	1.5	0.9	1.8	0.6
UT 1.380.20-SA1	7/15/08	beaver dam/pond channel	1.0	1.1	2.3	0.5
UT 1.380.25-SA1	7/26/08	narrow mixed control channel	1.0	1.2	5.0	0.8
UT 1.380.30-SA1	7/14/08	narrow mixed control channel	6.0	1.6	5.5	0.3
2007 UT 1.380 TOTAL			1.6	1.6	1.8	NA
2008 UT 1.380 TOTAL			2.1	1.9	3.6	0.6
UT 1.390-SA1	7/9/08	narrow low-gradient floodplain channel	2.0	4.7	7.2	0.6
UT 1.390-SA1/2[g]	7/13/07	narrow mixed control channel	1.4	2.6	6.1	NA
UT 1.390-SA2/3/4[h]	7/14/07	narrow mixed control channel	4.6	NA	NA	NA
UT 1.390-SA2	7/9/08	narrow mixed control channel	3.1	5.1	7.5	0.6
UT 1.390-SA3	7/10/08	narrow mixed control channel	2.5	6.1	6.5	0.8
UT 1.390-SA4	7/11/08	narrow mixed control channel	3.9	5.1	6.9	0.8

Table B.17-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
UT 1.390-SA5	7/25/08	shallowly to moderately incised footslope channel	5.8	4.0	6.6	0.7
UT 1.390-SA6	7/26/08	narrow mixed control channel	6.0	2.4	5.3	0.6
UT 1.390.05-SA1	7/27/08	narrow placid flow channel	1.3	1.2	1.8	0.6
UT 1.390.10-SA1	7/28/08	narrow shallow contained channel	4.7	1.7	5.1	0.5
UT 1.390.10-SA2	7/28/08	narrow mixed control channel	1.8	1.9	3.4	0.6
UT 1.390.10-SA3	7/28/08	moderate width mixed control channel	12.0	1.7	3.0	0.8
UT 1.390.10.05-SA1	8/4/08	narrow mixed control channel	4.5	1.2	2.9	0.5
UT 1.390.10.10-SA1	8/5/08	narrow placid flow channel	0.5	0.5	1.6	0.5
UT 1.390.13-SA1	8/2/08	narrow shallow contained channel	1.5	0.9	2.7	0.4
UT 1.390.17-SA1	8/2/08	narrow mixed control channel	2.0	1.3	2.3	0.3
UT 1.390.19-SA1	8/2/08	shallowly incised muskeg channel	8.2	1.2	2.3	0.6
UT 1.390.19-SA2	8/2/08	moderate width mixed control channel	3.0	1.3	2.3	0.5
UT 1.390.30-SA1	8/2/08	narrow mixed control channel	2.7	1.0	2.6	0.4
2007 UT 1.390 TOTAL			4.0	2.6	6.1	NA
2008 UT 1.390 TOTAL			3.7	2.2	3.9	0.6
UT 1.410-SA1	7/15/08	narrow placid flow channel	1.5	3.4	4.2	0.9
UT 1.410-SA2	7/27/08	narrow placid flow channel	1.3	2.2	3.1	0.8
UT 1.410-SA3	7/27/08	narrow low-gradient floodplain channel	2.0	1.3	1.7	0.8
UT 1.410-SA4	7/27/08	narrow mixed control channel	4.5	1.0	1.1	0.5
UT 1.410.10-SA1	7/27/08	moderate width mixed control channel	2.5	2.1	3.7	0.6
UT 1.410.10-SA2	7/28/08	narrow shallow contained channel	3.8	1.3	2.1	0.5
UT 1.410.10-SA3	7/29/08	shallowly to moderately incised footslope channel	38.0	0.4	1.3	0.5
UT 1.410.10.10-SA1	7/29/08	narrow placid flow channel	1.7	1.0	1.7	0.7
UT 1.410.30-SA1	7/31/08	narrow mixed control channel	3.5	1.5	2.0	0.7

Table B.17-2. Continued

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)[d]	Average Wetted Width (m)[d]	Average Bankfull Width (m)[d]	Maximum Bankfull Depth (m)[d]
UT 1.410.30-SA2	7/31/08	shallowly to moderately incised footslope channel	11.5	1.7	3.1	0.8
UT 1.410.40-SA1	8/4/08	narrow placid flow channel	1.8	1.0	2.2	0.5
UT 1.410.40-SA2	8/4/08	narrow mixed control channel	2.7	0.8	1.6	0.7
UT 1.410.40.10-SA1	8/4/08	narrow mixed control channel	1.8	1.0	2.1	0.6
2008 UT 1.410 TOTAL			4.5	1.5	2.4	0.7
UT 1.420-SA1	7/29/08	narrow placid flow channel	0.8	1.1	2.4	0.7
UT 1.420-SA2	7/30/08	narrow mixed control channel	15.0	1.4	2.2	1.0
UT 1.420 TOTAL			6.5	1.2	2.3	0.8
UT 1.430-SA1 / TOTAL	8/6/08	narrow placid flow channel	1.8	0.9	1.3	0.7
UT 1.440-SA1 / TOTAL	8/5/08	narrow placid flow channel	1.0	1.0	2.8	1.4
UT 1.460-SA1	7/10/04	narrow shallow contained channel	1.0	NA	NA	NA
UT 1.460-SA1	7/30/08	narrow placid flow channel	2.0	2.0	2.4	0.6
UT 1.460-SA2	7/31/08	beaver dam/pond channel	2.0	2.1	3.7	0.9
2004 UT 1.460 TOTAL			1.0	NA	NA	NA
2008 UT 1.460 TOTAL			2.0	2.0	2.8	0.7
UT 1.470-SA1 / TOTAL	7/29/08	shallow groundwater-fed slough	1.5	1.0	2.4	0.6

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

[d] NA=data not recorded.

[e] Sample Area was comprised of 88% narrow shallow contained channel and 12% beaver dam/pond channel.

[f] UT 1.380-SA1/2 (2007) was comprised of 18% SA1 and 82% SA2.

[g] UT 1.390-SA1/2 (2007) was comprised 71% SA1 and 29% SA2.

[h] UT 1.390-SA2/3/4 (2007) was comprised 5% SA2, 40% SA3, and 55% SA4.

Table B.17-3.
Percent composition of primary habitat types from areas sampled within UT-F and tributaries 1.360, 1.370, 1.380, 1.390, 1.400, 1.410, 1.420, 1.430, 1.440, 1.450, 1.460, and 1.470. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT-F-SA1[d]	8348.0	7.5	61802.6	3	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	3 / 2	48 / 48	50 / 51	NA
UT-F-SA2[d]	306.5	6.2	1896.8	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	6 / 6	40 / 40	54 / 54	NA
UT-F-SA3[d]	324.1	14.0	4537.4	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	18 / 18	82 / 82	NA
UT-F-SA4[d]	1340.2	4.6	6067.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	4 / 3	54 / 55	41 / 42	NA
UT-F-SA5[d]	1203.1	4.0	4800.0	2	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	2 / 1	81 / 82	17 / 17	NA
UT-F-SA6[e]	200.0	4.3	860.0	6	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	51 / 51	49 / 49	NA
UT-F-SA7[e]	203.2	4.4	894.1	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	100 / 100	0 / 0	NA
2004 UT-F TOTAL	403.2	4.4	1754.1	3	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	0 / 0	75 / 76	25 / 24	NA
2005 UT-F TOTAL	11521.9	7.3	79103.9	3	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	3 / 2	51 / 48	46 / 50	NA
UT 1.360-SA1	1652.8	2.3	3737.5	0	0	1 / 1	0 / 0	0 / 0	0	0	0 / 0	3 / 3	88 / 89	8 / 7	0 / 0
UT 1.360-SA2	2836.7	2.6	7252.6	3	0	0 / 0	0 / 0	19 / 19	0	0	0 / 0	2 / 2	77 / 78	1 / 1	0 / 0
UT 1.360-SA3	948.5	1.1	1041.5	0	0	0 / 0	0 / 0	69 / 69	0	0	0 / 0	0 / 0	30 / 31	0 / 0	0 / 0
UT 1.360.10-SA1	61.7	1.4	88.9	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	20 / 35	67 / 46	13 / 19	0 / 0
UT 1.360.20-SA1	53.5	0.9	47.3	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	74 / 70	26 / 30	0 / 0
UT 1.360.50-SA1	111.0	0.9	96.0	0	0	0 / 0	0 / 0	80 / 83	0	0	0 / 0	2 / 3	18 / 14	0 / 0	0 / 0
UT 1.360 TOTAL	5664.2	2.2	12263.8	2	0	0 / 0	0 / 0	23 / 18	0	0	0 / 0	2 / 2	71 / 76	3 / 3	0 / 0
UT 1.370-SA1[f]	1563.7	2.2	3516.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	42 / 43	49 / 48	9 / 9	NA
UT 1.370-SA1	1258.7	2.2	2784.5	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	7 / 8	68 / 68	25 / 25	0 / 0
UT 1.370-SA2	583.1	2.2	1266.5	2	0	0 / 0	0 / 0	8 / 7	0	0	0 / 0	1 / 1	72 / 70	19 / 22	0 / 0
UT 1.370-SA3	1142.6	2.4	2746.9	2	0	1 / 0	0 / 0	8 / 6	0	0	0 / 0	3 / 4	59 / 53	29 / 37	0 / 0
UT 1.370-SA4	698.5	8.4	5765.4	0	0	4 / 1	19 / 73	0 / 0	0	2	0 / 0	4 / 1	35 / 9	36 / 16	0 / 0
UT 1.370-SA5	2787.2	14.8	41294.5	1	0	0 / 0	42 / 91	1 / 0	0	0	0 / 0	4 / 1	20 / 2	32 / 5	1 / 0
UT 1.370-SA6	916.9	1.5	1394.8	5	0	0 / 0	0 / 0	9 / 8	0	0	0 / 0	2 / 3	80 / 80	10 / 9	0 / 0
UT 1.370-SA6A	774.1	1.1	853.3	4	0	1 / 1	0 / 0	5 / 6	0	0	0 / 0	1 / 1	75 / 76	18 / 16	0 / 0
UT 1.370-SA7	648.9	1.2	754.0	0	0	0 / 0	0 / 0	5 / 6	0	0	0 / 0	0 / 0	86 / 81	6 / 4	2 / 9
UT 1.370.13-SA1	164.9	0.9	151.2	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	10 / 14	4 / 3	86 / 83	0 / 0
UT 1.370.15-SA1	166.5	1.0	172.4	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	70 / 72	30 / 28	0 / 0
UT 1.370.30-SA1	456.5	6.2	2821.6	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	53 / 9	16 / 2	32 / 89
2007 UT 1.370 TOTAL	1563.7	2.2	3516.0	0	0	0 / 0	0 / 0	0 / 0	NA	NA	NA	42 / 43	49 / 48	9 / 9	NA
2008 UT 1.370 TOTAL	9597.8	6.3	60005.0	1	0	0 / 0	14 / 70	3 / 1	0	0	0 / 0	3 / 1	52 / 14	25 / 9	2 / 5
UT 1.380-SA1	494.3	3.4	1698.2	0	0	3 / 2	0 / 0	0 / 0	0	0	0 / 0	6 / 5	61 / 65	31 / 28	0 / 0
UT 1.380-SA1/2[f,g]	2279.0	1.6	4233.0	0	0	0 / 0	0 / 0	1 / 0	NA	NA	NA	28 / 35	64 / 56	8 / 8	NA
UT 1.380-SA2	1810.9	2.5	4451.3	0	0	0 / 0	0 / 0	2 / 1	0	0	0 / 0	0 / 1	90 / 90	8 / 8	0 / 0
UT 1.380-SA3	1112.6	2.3	2583.5	0	0	0 / 0	0 / 0	67 / 66	0	0	0 / 0	1 / 1	29 / 30	3 / 3	0 / 0
UT 1.380-SA4	1112.3	2.5	2817.0	5	0	0 / 0	0 / 0	83 / 86	0	0	0 / 0	4 / 4	13 / 10	0 / 0	0 / 0
UT 1.380-SA5	135.2	1.6	218.4	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	35 / 40	65 / 60	0 / 0
UT 1.380-SA6	159.8	23.0	3672.2	0	0	0 / 0	79 / 98	0 / 0	0	0	0 / 0	0 / 0	0 / 0	21 / 2	0 / 0

Table B.17-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT 1.380-SA7	530.6	1.8	951.0	0	0	1 / 1	0 / 0	9 / 9	0	0	0 / 0	3 / 4	72 / 69	15 / 17	0 / 0
UT 1.380-SA8	958.0	25.6	24550.5	0	0	0 / 0	26 / 54	0 / 0	0	0	0 / 0	0 / 0	0 / 0	17 / 1	57 / 45
UT 1.380-SA9	609.0	64.3	39152.5	0	0	0 / 0	48 / 95	0 / 0	0	0	0 / 0	0 / 0	0 / 0	41 / 0	11 / 5
UT 1.380.10-SA1	315.5	1.9	583.9	0	0	1 / 0	0 / 0	0 / 0	0	0	0 / 0	10 / 12	63 / 61	26 / 27	0 / 0
UT 1.380.10-SA2	687.0	7.5	5165.1	0	0	0 / 0	55 / 88	0 / 0	0	0	0 / 0	2 / 1	16 / 4	28 / 7	0 / 0
UT 1.380.10-SA3	490.5	1.8	872.2	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	7 / 8	76 / 75	17 / 17	0 / 0
UT 1.380.10-SA4	389.0	2.0	759.8	0	0	0 / 0	0 / 0	4 / 4	0	0	0 / 0	9 / 9	69 / 73	18 / 14	0 / 0
UT 1.380.10-SA5	939.1	1.7	1574.8	0	0	3 / 5	0 / 0	1 / 1	0	0	0 / 0	9 / 11	59 / 57	27 / 26	0 / 0
UT 1.380.10-SA6	1240.0	15.7	19526.2	0	0	0 / 0	63 / 97	1 / 0	0	0	0 / 0	1 / 0	25 / 2	10 / 1	0 / 0
UT 1.380.10.20-SA1	256.9	1.1	278.1	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	3 / 5	58 / 56	39 / 39	0 / 0
UT 1.380.20-SA1	2086.7	34.3	71633.5	0	0	0 / 0	71 / 98	0 / 0	0	0	0 / 0	0 / 0	6 / 0	19 / 1	3 / 1
UT 1.380.25-SA1	571.7	9.3	5300.3	0	0	0 / 0	22 / 89	3 / 0	0	0	0 / 0	0 / 0	63 / 9	10 / 1	3 / 0
UT 1.380.30-SA1	194.0	1.4	265.8	0	0	0 / 0	0 / 0	28 / 47	0	0	0 / 0	0 / 0	72 / 53	0 / 0	0 / 0
2007 UT 1.380 TOTAL	2279.0	1.6	4233.0	0	0	0 / 0	0 / 0	1 / 0	NA	NA	NA	28 / 35	64 / 56	8 / 8	NA
2008 UT 1.380 TOTAL	14093.1	13.2	186054.2	0	0	0 / 0	24 / 82	13 / 2	0	0	0 / 0	2 / 0	38 / 6	16 / 2	5 / 7
UT 1.390-SA1	915.9	4.4	4061.0	4	0	1 / 0	0 / 0	0 / 0	0	0	0 / 0	2 / 3	89 / 95	8 / 2	0 / 0
UT 1.390-SA1/2[f,h]	1153.2	2.6	3175.1	3	0	0 / 0	0 / 0	9 / 9	NA	NA	NA	17 / 20	65 / 62	8 / 9	NA
UT 1.390-SA2	572.8	5.0	2840.6	13	0	3 / 2	0 / 0	5 / 5	0	0	0 / 0	4 / 2	88 / 91	0 / 0	0 / 0
UT 1.390-SA2/3/4[f,i]	3100.8	NA	NA	NA	0	0 / NA	0 / NA	68 / NA	NA	NA	NA	11 / NA	14 / NA	7 / NA	NA
UT 1.390-SA3	1617.7	4.7	7544.3	6	0	1 / 0	0 / 0	9 / 9	0	0	0 / 0	0 / 1	85 / 89	5 / 1	0 / 0
UT 1.390-SA4	2190.4	4.3	9420.6	4	0	1 / 0	0 / 0	74 / 76	0	0	0 / 0	1 / 1	24 / 23	1 / 0	0 / 0
UT 1.390-SA5	1138.5	3.3	3060.9	0	0	0 / 0	0 / 0	57 / 69	0	18	0 / 0	1 / 1	24 / 30	0 / 0	0 / 0
UT 1.390-SA6	1899.0	1.7	2946.9	2	0	0 / 0	0 / 0	60 / 58	0	6	0 / 0	0 / 1	22 / 37	11 / 5	0 / 0
UT 1.390.05-SA1	1564.3	3.2	5071.1	0	0	3 / 3	10 / 49	4 / 2	0	0	0 / 0	2 / 1	44 / 15	29 / 11	7 / 18
UT 1.390.10-SA1	985.2	1.6	1589.3	0	0	0 / 0	0 / 0	70 / 69	0	0	0 / 0	0 / 0	30 / 31	0 / 0	0 / 0
UT 1.390.10-SA2	1545.4	1.9	2983.8	0	0	0 / 0	0 / 0	24 / 20	0	0	0 / 0	0 / 0	69 / 66	5 / 6	2 / 7
UT 1.390.10-SA3	389.4	1.9	748.1	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
UT 1.390.10.05-SA1	582.0	1.3	758.7	9	0	0 / 0	0 / 0	18 / 18	0	0	0 / 0	1 / 1	78 / 77	3 / 4	0 / 0
UT 1.390.10.10-SA1	150.5	0.6	89.1	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	6 / 5	94 / 95	0 / 0
UT 1.390.13-SA1	96.3	0.6	59.3	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	93 / 87	7 / 13	0 / 0
UT 1.390.17-SA1	183.1	1.0	175.7	0	0	0 / 0	0 / 0	5 / 4	0	0	0 / 0	0 / 0	89 / 87	7 / 10	0 / 0
UT 1.390.19-SA1	610.2	1.6	985.6	0	0	0 / 0	0 / 0	59 / 55	0	0	0 / 0	2 / 2	37 / 42	1 / 1	0 / 0
UT 1.390.19-SA2	138.8	1.9	268.0	0	0	8 / 8	0 / 0	0 / 0	0	0	0 / 0	4 / 3	79 / 82	9 / 6	0 / 0
UT 1.390.30-SA1	101.2	1.2	119.0	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	4 / 3	78 / 76	18 / 21	0 / 0
UT 1.390.40-SA1	102.4	1.1	116.1	0	0	3 / 5	0 / 0	34 / 23	0	0	0 / 0	0 / 0	55 / 64	7 / 7	0 / 0
2007 UT 1.390 TOTAL	4254.0	2.6	3175.1	3	0	0 / 0	0 / 0	52 / 9	NA	NA	NA	12 / 20	28 / 62	7 / 9	NA
2008 UT 1.390 TOTAL	14783.1	3.0	42838.1	3	0	1 / 1	1 / 6	38 / 35	0	2	0 / 0	1 / 1	48 / 52	8 / 3	1 / 3
UT 1.400-SA1 / TOTAL	163.7	1.4	19.0	0	0	0 / 0	0 / 0	0 / 0	0	92	0 / 0	2 / 20	0 / 0	6 / 80	0 / 0

Table B.17-3. Continued

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a,c]	Total Wetted Area (m^2)[a,c]	Side Channel (% of Total Wetted Area)[c]	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b,c]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT 1.410-SA1	748.1	2.9	2134.5	4	0	15 / 13	0 / 0	0 / 0	0	0	0 / 0	23 / 32	50 / 44	11 / 11	0 / 0
UT 1.410-SA2	1121.1	5.5	6211.1	1	0	3 / 1	19 / 62	0 / 0	0	0	0 / 0	8 / 6	36 / 14	34 / 18	0 / 0
UT 1.410-SA3	396.9	1.6	646.2	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	1 / 2	69 / 65	30 / 33	0 / 0
UT 1.410-SA4	1138.1	3.0	3341.9	0	0	0 / 0	0 / 0	0 / 0	0	1	6 / 72	1 / 0	76 / 20	11 / 4	5 / 3
UT 1.410.10-SA1	1780.2	2.2	3836.1	0	0	0 / 0	0 / 0	7 / 6	0	0	0 / 0	1 / 1	92 / 93	0 / 0	0 / 0
UT 1.410.10-SA2	1296.1	1.5	1965.1	1	0	0 / 0	0 / 0	9 / 10	0	0	0 / 0	0 / 6	91 / 84	0 / 0	0 / 0
UT 1.410.10-SA3	426.0	0.7	298.2	3	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
UT 1.410.10.10-SA1	1278.9	1.5	1910.4	1	0	0 / 0	3 / 12	0 / 0	0	0	0 / 0	1 / 1	60 / 50	33 / 19	3 / 18
UT 1.410.30-SA1	1296.9	1.3	1684.8	4	0	0 / 0	0 / 0	1 / 0	0	0	0 / 0	4 / 5	91 / 90	4 / 5	0 / 0
UT 1.410.30-SA2	389.4	1.6	612.3	0	0	0 / 0	0 / 0	75 / 73	0	0	0 / 0	3 / 4	20 / 21	1 / 2	0 / 0
UT 1.410.40-SA1	161.8	1.0	162.0	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	3 / 5	70 / 69	27 / 26	0 / 0
UT 1.410.40-SA2	279.2	0.8	203.4	0	0	1 / 1	0 / 0	1 / 1	0	6	0 / 0	3 / 5	60 / 63	29 / 30	0 / 0
UT 1.410.40.10-SA1	181.4	0.7	113.0	0	0	0 / 0	0 / 0	0 / 0	0	15	0 / 0	5 / 6	55 / 68	24 / 26	0 / 0
UT 1.410 Total	10494.1	2.2	23118.9	1	0	2 / 1	2 / 18	9 / 5	0	1	1 / 10	4 / 6	68 / 48	13 / 10	1 / 2
UT 1.420-SA1	1762.7	1.2	2129.3	0	0	3 / 5	0 / 0	0 / 1	0	0	0 / 0	5 / 6	53 / 47	38 / 41	0 / 0
UT 1.420-SA2	17.0	1.3	22.5	0	0	0 / 0	0 / 0	100 / 100	0	0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
UT 1.420.10-SA1	31.4	0.7	17.0	0	0	0 / 0	0 / 0	0 / 0	0	26	0 / 0	0 / 0	48 / 64	26 / 36	0 / 0
UT 1.420 TOTAL	1811.1	1.2	2168.9	0	0	3 / 5	0 / 0	1 / 2	0	0	0 / 0	5 / 6	52 / 47	38 / 41	0 / 0
UT 1.430-SA1 / TOTAL	1779.2	1.0	1657.1	0	0	0 / 0	0 / 0	0 / 0	0	5	0 / 0	2 / 2	63 / 61	30 / 30	1 / 6
UT 1.440-SA1 / TOTAL	347.6	2.1	735.7	0	0	9 / 4	0 / 0	0 / 0	0	0	0 / 0	18 / 12	4 / 1	69 / 84	0 / 0
UT 1.450-SA1 / TOTAL	16.5	14.6	240.9	0	0	0 / 0	0 / 0	0 / 0	0	0	100 / 100	0 / 0	0 / 0	0 / 0	0 / 0
UT 1.460-SA1[e]	404.1	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	7 / NA	22 / NA	70 / NA	NA
UT 1.460-SA1	1035.7	1.9	1917.2	1	0	2 / 2	0 / 0	0 / 0	0	0	0 / 0	9 / 9	67 / 68	22 / 21	0 / 0
UT 1.460-SA2	1651.9	9.5	15714.1	1	0	0 / 0	47 / 89	0 / 0	0	0	0 / 0	20 / 5	19 / 4	14 / 2	0 / 0
2004 UT 1.460 TOTAL	404.1	NA	NA	NA	0	0 / NA	0 / NA	0 / NA	NA	NA	NA	7 / NA	22 / NA	70 / NA	NA
2008 UT 1.460 TOTAL	2687.6	6.6	17631.2	1	0	1 / 0	29 / 80	0 / 0	0	0	0 / 0	15 / 6	37 / 11	17 / 4	0 / 0
UT 1.470-SA1 / TOTAL	162.5	1.7	273.7	7	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	13 / 13	40 / 30	39 / 32	8 / 25

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

[c] NA=data not available.

[d] Data were recorded in 2005.

[e] Data were recorded in 2004.

[f] Data were recorded in 2007.

[g] UT 1.380-SA1/2 (2007) was comprised of 18% SA1 and 82% SA2.

[h] UT 1.390-SA1/2 (2007) was comprised of 71% SA1 and 29% SA2.

[i] UT 1.390-SA2/3/4 (2007) was comprised of 5% SA2, 40% SA3, and 55% SA4.

Table B.17-4.
Descriptive characteristics of primary habitat units from areas sampled within UT-F and tributaries 1.360, 1.370, 1.380, 1.390, 1.400, 1.410, 1.420, 1.430, 1.440, 1.450, 1.460, and 1.470. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)[a]	Dominant Riparian Vegetation[a]
UT-F-SA1[b]	gravel	Sand/silt	NA	1	willow shrub
UT-F-SA2[b]	gravel	Sand/silt	NA	0	willow shrub
UT-F-SA3[b]	gravel	Sand/silt	NA	0	willow shrub
UT-F-SA4[b]	gravel	NA	NA	1	willow shrub
UT-F-SA5[b]	gravel	Sand/silt	NA	8	willow shrub
UT-F-SA6[c]	gravel	NA	NA	0	alder shrub/willow shrub
UT-F-SA7[c]	gravel	NA	NA	4	NA
2004 UT-F TOTAL	gravel	NA	NA	2	alder shrub/willow shrub
2005 UT-F TOTAL	gravel	Sand/silt	NA	2	willow shrub
UT 1.360-SA1	gravel	cobble	0	1	willow shrub/other herbaceous
UT 1.360-SA2	cobble	gravel	0	1	alder shrub
UT 1.360-SA3	cobble	gravel	0	0	willow shrub
UT 1.360.10-SA1	sand/silt	organics	0	0	alder shrub
UT 1.360.20-SA1	gravel	Sand/silt	0	1	alder shrub
UT 1.360.50-SA1	cobble	gravel	0	0	alder shrub
UT 1.360 TOTAL	cobble	gravel	0	1	willow shrub
UT 1.370-SA1[d]	gravel	cobble	NA	0	willow shrub
UT 1.370-SA1	gravel	cobble	0	4	willow shrub
UT 1.370-SA2	gravel	cobble	0	6	willow shrub
UT 1.370-SA3	sand/silt	gravel	0	7	willow shrub
UT 1.370-SA4	sand/silt	organics	1	11	tundra
UT 1.370-SA5	organics	Sand/silt	0	6	other herbaceous
UT 1.370-SA6	sand/silt	boulder	0	19	willow shrub
UT 1.370-SA6A	sand/silt	boulder	0	46	willow shrub
UT 1.370-SA7	gravel	Sand/silt	0	6	alder shrub
UT 1.370.13-SA1	sand/silt	organics	1	15	other herbaceous
UT 1.370.15-SA1	gravel	Sand/silt	22	5	willow shrub
UT 1.370.30-SA1	organics	Sand/silt	0	12	willow shrub
2007 UT 1.370 TOTAL	gravel	cobble	NA	0	willow shrub
2008 UT 1.370 TOTAL	organics	Sand/silt	0	11	willow shrub
UT 1.380-SA1	gravel	cobble	8	10	other herbaceous
UT 1.380-SA1/2[d,e]	gravel	cobble	NA	0	willow shrub
UT 1.380-SA2	gravel	cobble	1	14	willow shrub
UT 1.380-SA3	boulder	cobble	0	3	willow shrub
UT 1.380-SA4	boulder	cobble	0	0	willow shrub
UT 1.380-SA5	gravel	cobble	0	0	willow shrub/other herbaceous
UT 1.380-SA6	sand/silt	organics	0	0	willow shrub/other herbaceous
UT 1.380-SA7	gravel	cobble	0	0	willow shrub
UT 1.380-SA8	sand/silt	organics	0	0	willow shrub
UT 1.380-SA9	sand/silt	gravel	20	5	other herbaceous
UT 1.380.10-SA1	gravel	Sand/silt	3	29	willow shrub/other herbaceous
UT 1.380.10-SA2	sand/silt	organics	30	12	other herbaceous

Table B.17-4. Continued

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)[a]	Dominant Riparian Vegetation[a]
UT 1.380.10-SA3	gravel	Sand/silt	0	33	willow shrub
UT 1.380.10-SA4	sand/silt	boulder	0	11	willow shrub
UT 1.380.10-SA5	gravel	Sand/silt	0	20	other herbaceous
UT 1.380.10-SA6	sand/silt	organics	0	6	other herbaceous
UT 1.380.10.20-SA1	sand/silt	gravel	6	1	other herbaceous
UT 1.380.20-SA1	sand/silt	gravel	4	0	other herbaceous
UT 1.380.25-SA1	sand/silt	organics	0	4	other herbaceous
UT 1.380.30-SA1	cobble	gravel	0	0	tundra
2007 UT 1.380 TOTAL	gravel	cobble	NA	0	willow shrub
2008 UT 1.380 TOTAL	sand/silt	organics	4	7	willow shrub
UT 1.390-SA1	gravel	cobble	0	2	willow shrub
UT 1.390-SA1/2[d,f]	cobble	gravel	NA	0	willow shrub
UT 1.390-SA2	cobble	gravel	2	1	willow shrub
UT 1.390-SA2/3/4[d,g]	boulder	cobble	NA	0	willow shrub
UT 1.390-SA3	cobble	boulder	0	1	willow shrub
UT 1.390-SA4	boulder	cobble	0	1	willow shrub
UT 1.390-SA5	cobble	boulder	0	3	other herbaceous
UT 1.390-SA6	cobble	boulder	0	4	tundra
UT 1.390.05-SA1	sand/silt	organics	0	17	other herbaceous
UT 1.390.10-SA1	boulder	gravel	0	0	alder shrub/willow shrub/other shrub
UT 1.390.10-SA2	sand/silt	gravel	0	1	other shrub
UT 1.390.10-SA3	boulder	gravel	0	0	alder shrub/willow shrub/other shrub
UT 1.390.10.05-SA1	gravel	cobble	0	0	willow shrub
UT 1.390.10.10-SA1	sand/silt	organics	0	0	willow shrub/other herbaceous
UT 1.390.13-SA1	sand/silt	gravel	0	0	alder shrub/willow shrub/other shrub
UT 1.390.17-SA1	sand/silt	gravel	0	1	alder shrub/willow shrub/other shrub
UT 1.390.19-SA1	boulder	cobble	0	3	willow shrub/other shrub
UT 1.390.19-SA2	cobble	gravel	0	1	other shrub
UT 1.390.30-SA1	gravel	cobble	0	3	willow shrub/other shrub
UT 1.390.40-SA1	cobble	gravel	0	1	willow shrub/other herbaceous
2007 UT 1.390 TOTAL	boulder	cobble	NA	0	willow shrub
2008 UT 1.390 TOTAL	cobble	boulder	0	3	willow shrub
UT 1.400-SA1 / TOTAL	sand/silt	gravel	0	80	willow shrub/other shrub
UT 1.410-SA1	gravel	sand/silt	7	8	other herbaceous
UT 1.410-SA2	sand/silt	organics	18	5	other shrub
UT 1.410-SA3	gravel	sand/silt	0	23	other shrub
UT 1.410-SA4	sand/silt	organics	0	9	willow shrub
UT 1.410.10-SA1	gravel	cobble	1	22	alder shrub/willow shrub
UT 1.410.10-SA2	gravel	cobble	0	11	alder shrub/willow shrub
UT 1.410.10-SA3	boulder	cobble	0	0	alder shrub/willow shrub/other shrub/tundra
UT 1.410.10.10-SA1	sand/silt	organics	0	0	willow shrub

Table B.17-4. Continued

Sample Area (SA)	Dominant Substrate	Subdominant Substrate[a]	Eroding Bank (% of Length)[a]	Undercut Bank (% of Length)[a]	Dominant Riparian Vegetation[a]
UT 1.410.30-SA1	gravel	sand/silt	0	10	other shrub
UT 1.410.30-SA2	boulder	cobble	0	1	alder shrub/willow shrub/other shrub
UT 1.410.40-SA1	gravel	sand/silt	0	43	tundra
UT 1.410.40-SA2	sand/silt	gravel	0	51	tundra
UT 1.410.40.10-SA1	sand/silt	gravel	0	55	tundra
UT 1.410 TOTAL	sand/silt	gravel	3	12	willow shrub
UT 1.420-SA1	sand/silt	gravel	0	29	other shrub
UT 1.420-SA2	boulder	cobble, sand/silt	0	0	alder shrub/willow shrub/other shrub
UT 1.420.10-SA1	sand/silt	gravel	0	0	willow shrub/other shrub
UT 1.420 TOTAL	sand/silt	gravel	0	28	other shrub
UT 1.430-SA1 / TOTAL	sand/silt	gravel	0	54	other herbaceous
UT 1.440-SA1 / TOTAL	sand/silt	organics	0	22	other herbaceous
UT 1.450-SA1 / TOTAL	organics	sand/silt	NA	NA	NA
UT 1.460-SA1[c]	gravel	NA	NA	12	NA
UT 1.460-SA1	gravel	sand/silt	1	16	other herbaceous
UT 1.460-SA2	sand/silt	organics	15	5	other herbaceous
2004 UT 1.460 TOTAL	gravel	NA	NA	12	NA
2008 UT 1.460 TOTAL	sand/silt	organics	9	9	other herbaceous
UT 1.470-SA1 / TOTAL	sand/silt	gravel	0	6	willow shrub

[a] NA=data not available.
[b] Data were recorded in 2005.
[c] Data were recorded in 2004.
[d] Data were recorded in 2007.
[e] UT 1.380-SA1/2 was comprised of 18% SA1 and 82% SA2.
[f] UT 1.390-SA1/2 was comprised of 71 % SA1 and 29% SA2.
[g] UT 1.390-SA2/3/4 was comprised of 5% SA2, 40% SA3, and 55% SA4.

Table B.17-5.
Summary of pool habitat data from areas sampled in UT-F and tributaries 1.360, 1.370, 1.380, 1.390, 1.400, 1.410, 1.420, 1.430, 1.440, 1.450, 1.460, and 1.470. All data were collected in 2008 unless otherwise noted.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT-F-SA1[c]	8.35	10	63	73	0.1	0.8	0.9	1075.5	4291.0	5366.5	73.5	0.7	0.4
UT-F-SA2[c]	0.31	1	5	6	0.3	1.6	2.0	104.4	237.7	342.1	57.0	0.8	1.0
UT-F-SA3[c]	0.32	0	6	6	0.0	1.9	1.9	0.0	218.6	218.6	36.4	0.7	0.6
UT-F-SA4[c]	1.34	3	21	24	0.2	1.6	1.8	155.6		974.6	40.6	0.6	0.1
UT-F-SA5[c]	1.20	2	23	25	0.2	1.9	2.1	67.6	754.1	821.7	32.9	0.5	0.2
UT-F-SA6[d]	0.20	0	3	3	0.0	1.5	1.5	0.0	59.7	59.7	19.9	0.4	0.0
UT-F-SA7[d]	0.20	0	4	4	0.0	2.0	2.0	0.0	57.9	57.9	14.5	0.5	0.0
2004 UT-F TOTAL	0.40	0	7	7	0.0	1.7	1.7	0.0	117.6	117.6	16.8	0.4	0.0
2005 UT-F TOTAL	11.52	16	118	134	0.1	1.0	1.2	1403.1	6320.5	7723.5	57.6	0.6	0.4
UT 1.360-SA1	1.65	11	2	13	0.7	0.1	0.8	108.7	7.3	116.1	8.9	0.4	0.8
UT 1.360-SA2	2.84	15	3	18	0.5	0.1	0.6	157.6	16.4	174	9.7	0.3	0.6
UT 1.360-SA3	0.95	2	0	2	0.2	0	0.2	3.5	0	3.5	1.8	0.2	0.2
UT 1.360.10-SA1	0.06	1	0	1	1.7	0	1.7	30.8	0	30.8	30.8	0.2	1.7
UT 1.360.20-SA1	0.05	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.360.50-SA1	0.11	1	0	1	0.9	0	0.9	2.4	0	2.4	2.4	0.4	0.9
UT 1.360 TOTAL	5.66	30	5	35	0.5	0.1	0.6	303	23.7	326.8	9.3	0.3	0.6
UT 1.370-SA1[e]	1.56	55	17	72	3.5	1.1	4.6	1513.5	291.3	1804.8	25.1	0.3	0.0
UT 1.370-SA1	1.26	11	0	11	0.9	0	0.9	214.7	0	214.7	19.5	0.4	0.9
UT 1.370-SA2	0.58	1	0	1	0.2	0	0.2	13.5	0	13.5	13.5	0.6	0.2
UT 1.370-SA3	1.14	7	0	7	0.6	0	0.6	109.5	0	109.5	15.6	0.4	0.6
UT 1.370-SA4	0.7	4	0	4	0.6	0	0.6	72.9	0	72.9	18.2	0.8	0.6
UT 1.370-SA5	2.79	13	0	13	0.5	0	0.5	262.9	0	262.9	20.2	0.5	0.5
UT 1.370-SA6	0.92	3	0	3	0.3	0	0.3	46.4	0	46.4	15.5	0.5	0.3
UT 1.370-SA6A	0.77	1	0	1	0.1	0	0.1	12.5	0	12.5	12.5	0.3	0.1
UT 1.370-SA7	0.65	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.370.13-SA1	0.16	3	0	3	1.9	0	1.9	20.5	0	20.5	6.8	0.4	1.9
UT 1.370.15-SA1	0.17	0	0	0	0	0	0	0	0	0	0	0	0

Table B.17-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT 1.370.30-SA1	0.46	0	0	0	0	0	0	0	0	0	0	0	0
2007 UT 1.370 TOTAL	1.56	55	17	72	3.5	1.1	4.6	1513.5	291.3	1804.8	25.1	0.3	0.0
2008 UT 1.370 TOTAL	9.6	43	0	43	0.4	0	0.4	752.9	0	752.9	17.5	0.5	0.4
UT 1.380-SA1	0.49	3	3	6	0.6	0.6	1.2	82.5	45.1	127.6	21.3	0.4	1.2
UT 1.380-SA1/2[e,f]	2.28	76	18	94	3.3	0.8	4.1	1499.5	216.6	1716.1	18.3	0.3	0.0
UT 1.380-SA2	1.81	2	2	4	0.1	0.1	0.2	23.5	14.5	38	9.5	0.4	0.2
UT 1.380-SA3	1.11	3	0	3	0.3	0	0.3	38.2	0	38.2	12.7	0.4	0.3
UT 1.380-SA4	1.11	6	0	6	0.5	0	0.5	106.4	0	106.4	17.7	0.4	0.5
UT 1.380-SA5	0.14	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.380-SA6	0.16	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.380-SA7	0.53	3	0	3	0.6	0	0.6	39.4	0	39.4	13.1	0.2	0.6
UT 1.380-SA8	0.96	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.380-SA9	0.61	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.380.10-SA1	0.32	5	1	6	1.6	0.3	1.9	72.5	4.3	76.9	12.8	0.4	1.9
UT 1.380.10-SA2	0.69	2	1	3	0.3	0.1	0.4	30	11.5	41.5	13.8	0.6	0.4
UT 1.380.10-SA3	0.49	5	0	5	1	0	1	68.8	0	68.8	13.8	0.5	1
UT 1.380.10-SA4	0.39	1	0	1	0.3	0	0.3	67.2	0	67.2	67.2	0.9	0.3
UT 1.380.10-SA5	0.94	8	0	8	0.9	0	0.9	172.6	0	172.6	21.6	0.6	0.9
UT 1.380.10-SA6	1.24	1	1	1	0.1	0	0.1	26.6	0	26.6	26.6	0.7	0.1
UT 1.380.10.20-SA1	0.26	2	0	2	0.8	0	0.8	14.1	0	14.1	7.1	0.4	0.8
UT 1.380.20-SA1	2.09	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.380.25-SA1	0.57	1	0	1	0.2	0	0.2	2.1	0	2.1	2.1	0.2	0.2
UT 1.380.30-SA1	0.19	0	0	0	0	0	0	0	0	0	0	0	0
2007 UT 1.380 TOTAL	2.28	76	18	94	3.3	0.8	4.1	1499.5	216.6	1716.1	18.3	0.3	0.0
2008 UT 1.380 TOTAL	14.09	42	7	49	0.3	0	0.3	744	75.4	819.4	16.7	0.4	0.3
UT 1.390-SA1	0.92	1	0	1	0.1	0	0.1	105.6	0	105.6	105.6	0.5	0.1
UT 1.390-SA1/2[e,g]	1.15	22	2	24	1.9	0.2	2.1	646.3	26.6	672.9	28.0	0.3	0.0
UT 1.390-SA2	0.57	4	0	4	0.7	0	0.7	60	0	60	15	0.3	0.7
UT 1.390-SA2/3/4[e,h]	3.10	43	7	50	1.4	0.2	1.6	1152.9	125.7	1278.6	26.1	0.3	0.0

Table B.17-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT 1.390-SA3	1.62	1	0	1	0.1	0	0.1	51.8	0	51.8	51.8	0.5	0.1
UT 1.390-SA4	2.19	2	1	3	0.1	0	0.1	69.9	8.4	78.3	26.1	0.5	0.1
UT 1.390-SA5	1.14	2	1	3	0.2	0.1	0.3	39.2	7.9	47.1	15.7	0.5	0.3
UT 1.390-SA6	1.9	2	0	2	0.1	0	0.1	15.4	0	15.4	7.7	0.3	0.1
UT 1.390.05-SA1	1.56	6	0	6	0.4	0	0.4	66.9	0	66.9	11.2	0.4	0.4
UT 1.390.10-SA1	0.99	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.390.10-SA2	1.55	1	0	1	0.1	0	0.1	7.4	0	7.4	7.4	0.5	0.1
UT 1.390.10-SA3	0.39	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.390.10.05-SA1	0.58	1	0	1	0.2	0	0.2	8.9	0	8.9	8.9	0.4	0.2
UT 1.390.10.10-SA1	0.15	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.390.13-SA1	0.1	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.390.17-SA1	0.18	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.390.19-SA1	0.61	4	0	4	0.7	0	0.7	15.9	0	15.9	4	0.2	0.7
UT 1.390.19-SA2	0.14	1	0	1	0.7	0	0.7	8.4	0	8.4	8.4	0.3	0.7
UT 1.390.30-SA1	0.1	1	0	1	1.0	0	1.0	3.7	0	3.7	3.7	0	1.0
UT 1.390.40-SA1	0.1	0	0	0	0	0	0	0	0	0	0	0	0
2007 UT 1.390 TOTAL	4.25	65	9	74	1.5	0.2	1.7	1799.2	152.3	1951.5	26.7	0.3	0.0
2008 UT 1.390 TOTAL	14.78	26	2	28	0.2	0	0.2	452.9	16.3	469.2	16.8	0.4	0.2
UT 1.400-SA1 / TOTAL	0.16	1	0	1	0.6	0	0.6	3.8	0	3.8	3.8	0.3	0.6
UT 1.410-SA1	0.75	12	0	12	1.6	0	1.6	693.5	0	693.5	57.8	0.6	1.6
UT 1.410-SA2	1.12	12	0	12	1.1	0	1.1	354.9	0	354.9	29.6	0.8	1.1
UT 1.410-SA3	0.4	1	0	1	0.3	0	0.3	10.2	0	10.2	10.2	0.8	0.3
UT 1.410-SA4	1.14	3	0	3	0.3	0	0.3	11.3	0	11.3	3.8	0.4	0.3
UT 1.410.10-SA1	1.78	5	1	6	0.3	0.1	0.3	31.4	5	36.4	6.1	0.4	0.3
UT 1.410.10-SA2	1.3	1	0	1	0.1	0	0.1	110.7	0	110.7	110.7	0.3	0.1
UT 1.410.10-SA3	0.43	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.410.10.10-SA1	1.28	3	0	3	0.2	0	0.2	14.2	0	14.2	4.7	0.8	0.2
UT 1.410.30-SA1	1.3	13	0	13	1.0	0	1.0	82.3	0	82.3	6.3	0.4	1.0
UT 1.410.30-SA2	0.39	5	0	5	1.3	0	1.3	26.8	0	26.8	5.4	0.3	1.3

Table B.17-5. Continued

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Pri-mary[a]	Second-ary[b]	Total	Pri-mary	Second-ary	Total	Pri-mary	Second-ary	Total			
UT 1.410.40-SA1	0.16	2	0	2	1.3	0	1.3	7.3	0	7.3	3.7	0.2	1.3
UT 1.410.40-SA2	0.28	3	0	3	1.1	0	1.1	10.0	0	10.0	3.3	0.2	1.1
UT 1.410.40.10-SA1	0.18	3	0	3	1.7	0	1.7	7.3	0	7.3	2.4	0.3	1.7
UT 1.410 TOTAL	10.49	63	1	64	0.6	0	0.6	1360	5	1364.9	21.3	0.5	0.6
UT 1.420-SA1	1.76	21	0	21	1.2	0	1.2	130.7	0	130.7	6.2	0.3	1.2
UT 1.420-SA2	0.02	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.420.10-SA1	0.03	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.420 TOTAL	1.81	21	0	21	1.2	0	1.2	130.7	0	130.7	6.2	0.3	1.2
UT 1.430-SA1 / TOTAL	1.78	10	0	10	0.6	0	0.6	39.2	0	39.2	3.9	0.3	0.6
UT 1.440-SA1 / TOTAL	0.35	10	0	10	2.9	0	2.9	85.0	0	85.0	8.5	0.5	2.9
UT 1.450-SA1 / TOTAL	0.02	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.460-SA1[d]	0.40	4	4	8	1.0	1.0	2.0	71.0	34.0	105.0	13.1	0.5	0.3
UT 1.460-SA1	1.04	14	0	14	1.3	0	1.3	178.1	0	178.1	12.7	0.6	1.3
UT 1.460-SA2	1.65	21	0	21	1.3	0	1.3	813.6	0	813.6	38.7	0.7	1.3
2004 UT 1.460 TOTAL	0.40	4	4	8	1.0	1.0	2.0	71.0	34.0	105.0	13.1	0.5	0.3
2008 UT 1.460 TOTAL	2.69	35	0	35	1.3	0	1.3	991.7	0	991.7	28.3	0.7	1.3
UT 1.470-SA1 / TOTAL	0.16	4	0	4	2.5	0	2.5	35.0	0	35.0	8.8	0.3	2.5

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.
[c] Data were recorded in 2005.
[d] Data were recorded in 2004.
[e] Data were recorded in 2007.
[f] UT 1.380-SA1/2 (2007) was comprised of 18% SA1 and 82% SA2.
[g] UT 1.390-SA1/2 (2007) was comprised of 71% SA1 and 29% SA2.
[h] UT 1.390-SA2/3/4 (2007) was comprised of 5% SA2, 40% SA3, and 55% SA4.

Table B.17-6.
Special habitat features within UT-F tributaries 1.360, 1.370, 1.380, 1.390, 1.400, 1.410, 1.420, 1.430, 1.440, 1.450, 1.460, and 1.470, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.360-SA1	59.88297	-155.17708	seep					
	59.88276	-155.17721	seep					
	59.88322	-155.17969	seep					
UT 1.360-SA2	59.88333	-155.18696	seep					
	59.88333	-155.18696	seep					
	59.88318	-155.18740	seep					
	59.88311	-155.18641	tributary	UT 1.360.10				
	59.88313	-155.18812	tributary	UT 1.360.20				
	59.88263	-155.19053	tributary	UT 1.360.23				
	59.88224	-155.19077	barrier		falls	temporary	0.45	0.6
	59.88220	-155.19096	seep					
	59.88217	-155.19165	seep					
	59.88138	-155.19185	seep					
	59.88226	-155.19100	tributary	UT 1.360.27				
	59.88064	-155.19203	seep					
	59.87547	-155.19753	tributary	UT 1.360.30				
	59.87653	-155.19581	seep					
	59.87616	-155.19673	seep					
	59.87576	-155.19687	seep					
	59.87551	-155.19640	seep					
	59.87526	-155.19768	seep					
	59.87478	-155.19845	seep					
	59.87330	-155.19894	seep					
	59.87436	-155.19952	seep					
	59.87421	-155.19925	tributary	UT 1.360.35				
	59.87352	-155.19998	seep					
	59.87350	-155.20358	tributary	UT 1.360.40				
	59.87329	-155.20411	seep					
	59.87317	-155.20416	spring					

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.360-SA2 (cont)	59.87342	-155.20456	seep					
	59.87331	-155.20518	seep					
	59.87321	-155.20486	seep					
	59.87272	-155.21035	seep					
	59.87192	-155.21230	tributary	UT 1.360.55				
	59.87214	-155.21218	tributary	UT 1.360.50				
	59.87265	-155.21125	seep					
	59.87110	-155.21274	seep					
	59.87102	-155.21298	seep					
	59.87151	-155.21250	spring					
UT 1.360-SA3	59.86945	-155.21644	barrier		falls	temporary	0.42	0.7
	59.86772	-155.22241	tributary	UT 1.360.60				
	59.86741	-155.22321	seep					
	59.86655	-155.22502	barrier		falls	permanent	0.62	0.2
UT 1.360.10-SA1			none present					
UT 1.360.20-SA1	59.88318	-155.18860	seep					
	59.88307	-155.18896	seep					
UT 1.360.50-SA1	59.87272	-155.21331	seep					
UT 1.370-SA1			none present					
UT 1.370-SA2	59.89767	-155.16065	seep					
	59.89774	-155.16051	seep					
UT 1.370-SA3	59.89904	-155.15892	barrier		beaver dam	temporary	0.6	0.68
	59.89993	-155.15822	seep					
	59.90260	-155.15582	seep					
	59.90296	-155.15506	spring					
	59.90317	-155.15427	spring					
	59.90303	-155.15251	barrier		beaver dam	temporary	0.46	0.64
	59.90321	-155.15158	barrier		beaver dam	temporary	0.64	1.64
	59.90312	-155.15171	seep					

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.370-SA3 (cont)	59.90332	-155.15111	seep					
	59.90388	-155.14952	barrier		falls	temporary	0.69	1.8
	59.90388	-155.14952	barrier		beaver dam	temporary	1.64	1.93
	59.90390	-155.14965	barrier		falls	temporary	0.71	1.5
UT 1.370-SA4	59.90447	-155.14754	barrier		beaver dam	temporary	0.63	0.9
	59.90467	-155.14706	barrier		beaver dam	temporary	0.52	0.81
	59.90527	-155.14567	barrier		falls	temporary	0.9	2.81
	59.90545	-155.14526	spring					
	59.90746	-155.14237	barrier		falls	temporary	0.86	1.51
UT 1.370-SA5	59.90808	-155.14007	tributary	UT 1.370.13				
	59.90836	-155.13932	spring					
	59.90888	-155.13974	spring					
	59.90879	-155.13942	barrier		beaver dam	temporary	0.7	1.46
	59.90894	-155.13885	barrier		beaver dam	temporary	1.3	1.58
	59.90951	-155.13920	tributary	UT 1.370.15				
	59.90930	-155.13740	barrier		beaver dam	temporary	0.56	1.27
	59.90945	-155.13662	barrier		beaver dam	temporary	0.8	1.53
	59.90932	-155.13601	barrier		beaver dam	temporary	0.85	1.13
	59.90960	-155.13531	barrier		beaver dam	temporary	1.08	3.12
	59.90980	-155.13229	spring					
	59.90974	-155.13211	spring					
	59.90978	-155.13202	spring					
	59.90993	-155.13142	spring					
	59.91011	-155.13126	barrier		beaver dam	temporary	0.81	1.9
	59.91014	-155.13016	barrier		falls	temporary	1.23	3.22
	59.91046	-155.12938	barrier		falls	temporary	0.68	4.36
	59.91105	-155.12838	barrier		beaver dam	temporary	0.97	3.44
	59.91208	-155.12784	barrier		beaver dam	temporary	0.78	1.69

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.370-SA5 (cont)	59.91165	-155.12587	tributary	unnamed				
	59.91300	-155.12731	barrier		beaver dam	temporary	1.06	1.57
	59.91345	-155.12608	barrier		beaver dam	temporary	1.15	1.87
	59.91368	-155.12606	barrier		beaver dam	temporary	0.46	1.05
	59.91391	-155.12577	barrier		beaver dam	temporary	0.71	0.7
	59.91412	-155.12540	barrier		beaver dam	temporary	0.59	1.2
	59.91429	-155.12582	seep					
	59.91450	-155.12544	seep					
	59.91487	-155.12433	barrier		beaver dam	temporary	0.95	1.72
	59.91495	-155.12430	barrier		beaver dam	temporary	0.72	0.97
	59.91507	-155.12440	seep					
	59.91500	-155.12371	barrier		beaver dam	temporary	1.16	2.47
	59.91531	-155.12444	seep					
	59.91569	-155.12382	seep					
	59.91571	-155.12376	spring					
	59.91600	-155.12325	barrier		beaver dam	temporary	0.59	0.97
	59.91611	-155.12292	barrier		beaver dam	temporary	0.8	1.35
	59.91635	-155.12279	barrier		beaver dam	temporary	0.77	1.0
	59.91643	-155.12225	seep					
	59.91682	-155.12210	barrier		beaver dam	temporary	0.96	1.61
	59.91681	-155.12200	barrier		beaver dam	temporary	1.72	2.15
	59.91795	-155.11995	barrier		beaver dam	temporary	1.45	1.28
	59.91809	-155.11938	barrier		beaver dam	temporary	0.71	1.02
	59.91841	-155.11893	seep					
	59.91859	-155.11883	seep					
	59.91859	-155.11883	seep					
	59.91859	-155.11883	seep					
	59.91906	-155.11824	barrier		falls	temporary	0.68	1.1
	59.91918	-155.11827	seep					
	59.91918	-155.11827	seep					

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.370-SA5 (cont)	59.91932	-155.11812	seep					
	59.91941	-155.11810	seep					
	59.91953	-155.11793	tributary	unnamed				
	59.91970	-155.11722	seep					
	59.91992	-155.11704	tributary	UT 1.370.17				
UT 1.370-SA6	59.92066	-155.11591	barrier		beaver dam	temporary	1.35	2.48
	59.92076	-155.11594	seep					
	59.92135	-155.11569	seep					
	59.92175	-155.11569	tributary	UT 1.370.20				
	59.92348	-155.11553	seep					
	59.92448	-155.11503	seep					
	59.92540	-155.11349	tributary	UT 1.370.30				
UT 1.370-SA6A	59.92210	-155.11586	seep					
	59.92354	-155.11569	seep					
UT 1.370-SA7			none present					
UT 1.370.13-SA1	59.90799	-155.13910	barrier		falls	temporary	0.7	0.3
	59.90804	-155.13869	seep					
	59.90805	-155.13871	seep					
	59.90816	-155.13875	seep					
	59.90808	-155.13776	seep					
UT 1.370.15-SA1	59.91007	-155.14055	seep					
UT 1.370.30-SA1	59.92632	-155.11207	seep					
UT 1.380-SA1	59.90699	-155.19412	seep					
	59.90710	-155.19326	seep					
	59.90763	-155.19196	tributary	UT 1.380.10				
UT 1.380-SA2	59.91145	-155.18970	seep					
	59.91230	-155.18749	tributary	unnamed				
	59.91357	-155.18329	seep					
	59.91642	-155.17612	seep					
UT 1.380-SA3	59.91759	-155.17258	seep					
	59.91834	-155.17008	spring					
	59.92010	-155.16400	tributary	unnamed				

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.380-SA4			none present					
UT 1.380-SA5	59.92924	-155.15132	seep					
UT 1.380-SA6	59.92948	-155.14891	barrier		beaver dam	temporary	0.58	3.2
	59.92969	-155.14882	barrier		beaver dam	temporary	0.94	1.8
	59.92986	-155.14897	tributary	unnamed				
	59.92976	-155.14762	tributary	UT 1.380.20				
	59.93031	-155.14883	barrier			temporary	1.15	0.47
	59.93051	-155.14868	barrier		beaver dam	temporary	0.4	0.7
UT 1.380-SA7	59.93126	-155.14796	tributary	UT 1.380.25				
	59.93508	-155.14491	barrier		cascade	permanent	0.76	2.43
UT 1.380-SA8	59.93838	-155.13808	seep					
	59.93861	-155.13768	barrier		barrier chute	temporary	0.38	0.3
	59.93960	-155.13628	barrier		barrier chute	temporary	0.28	0.46
	59.93898	-155.13756	barrier		barrier chute	temporary	0.4	0.34
	59.93975	-155.13602	barrier		beaver dam	temporary	0.52	1.25
	59.94021	-155.13521	barrier		beaver dam	temporary	0.72	1.58
	59.94051	-155.13432	barrier		beaver dam	temporary	0.7	1.07
	59.94117	-155.13472	tributary	UT 1.380.30				
UT 1.380-SA9	59.94221	-155.13283	seep					
	59.94198	-155.13270	seep					
	59.94361	-155.13194	barrier		beaver dam	temporary	0.6	1.24
	59.94371	-155.13182	barrier		beaver dam	temporary	0.4	1.59
UT 1.380.10-SA1	59.90782	-155.19148	seep					
	59.90792	-155.18876	barrier		barrier chute	temporary	0.5	0.5

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.380.10-SA2	59.90781	-155.18685	barrier		beaver dam	temporary	0.85	0.8
	59.90782	-155.18560	barrier		beaver dam	temporary	1.3	1.5
	59.90806	-155.18409	barrier		beaver dam	temporary	0.8	1.4
	59.90814	-155.18331	seep					
	59.90810	-155.18366	seep					
	59.90817	-155.18303	seep					
	59.90783	-155.18164	barrier		beaver dam	temporary	1.3	1.4
	59.90752	-155.18069	barrier		beaver dam	temporary	0.9	1.8
	59.90729	-155.17903	barrier		beaver dam	temporary	1.3	2.5
UT 1.380.10-SA3	59.90789	-155.17618	seep					
UT 1.380.10-SA4	59.91123	-155.17024	barrier		falls	temporary	0.8	1.0
	59.91148	-155.16814	tributary	UT 1.380.10.20				
UT 1.380.10-SA5	59.91160	-155.16768	seep					
	59.91147	-155.16786	seep					
	59.91225	-155.16572	seep					
	59.91233	-155.16539	seep					
	59.91269	-155.16391	seep					
	59.91434	-155.15664	seep					
UT 1.380.10-SA6	59.91449	-155.15622	barrier		beaver dam	temporary	1.2	2.0
	59.91538	-155.15360	barrier		beaver dam	temporary	0.9	1.3
	59.91665	-155.14948	barrier		beaver dam	temporary	2.1	3.1
	59.91719	-155.14867	seep					
	59.91699	-155.14731	barrier		beaver dam	temporary	1.3	2.0
	59.91706	-155.14642	barrier		beaver dam	temporary	0.85	1.5
	59.91736	-155.14575	seep					
	59.91840	-155.14419	barrier		beaver dam	temporary	1.85	2.0
	59.91910	-155.14250	barrier		beaver dam	temporary	0.85	1.3
	59.91980	-155.14077	barrier		beaver dam	temporary	1.2	1.6
UT 1.380.10.20-SA1	59.91161	-155.16792	barrier		falls	permanent	1.6	1.0

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.380.20-SA1	59.92984	-155.14555	barrier		beaver dam	temporary	1.8	2.5
	59.92969	-155.14309	barrier		beaver dam	temporary	0.66	1.13
	59.92969	-155.14285	barrier		beaver dam	temporary	0.4	0.69
	59.92975	-155.14246	barrier		beaver dam	temporary	0.63	1.15
	59.92990	-155.14190	barrier		beaver dam	temporary	0.57	0.9
	59.92992	-155.14108	barrier		beaver dam	temporary	0.75	0.92
	59.93127	-155.13849	seep					
	59.93205	-155.13409	barrier		beaver dam	temporary	0.4	1.35
	59.93429	-155.12896	barrier		beaver dam	temporary	0.9	0.86
	59.93530	-155.12721	barrier		beaver dam	temporary	1.06	1.22
	59.93627	-155.12475	barrier		beaver dam	temporary	0.75	1.12
UT 1.380.25-SA1	59.93131	-155.14767	seep					
	59.93149	-155.14720	seep					
	59.93225	-155.14608	barrier		beaver dam	temporary	1.1	1.3
	59.93359	-155.14342	tributary	unnamed				
UT 1.380.30-SA1			none present					
UT 1.390-SA1			none present					
UT 1.390-SA2			none present					
UT 1.390-SA3	59.92227	-155.19646	tributary	UT 1.390.05				
	59.92372	-155.19927	tributary	unnamed				
	59.92484	-155.19981	tributary	UT 1.390.10				
UT 1.390-SA4	59.92986	-155.20436	barrier		cascade	permanent	0.81	2.5
	59.93045	-155.20439	barrier		cascade	permanent	0.94	2.7
	59.93211	-155.20511	seep					
	59.93425	-155.20740	seep					
	59.93455	-155.20790	tributary	unnamed				
	59.93514	-155.20737	tributary	UT 1.390.13				
	59.93553	-155.20820	tributary	UT 1.390.17				
	59.93638	-155.20737	seep					
	59.93684	-155.20734	tributary	unnamed				
	59.93852	-155.20546	tributary	UT 1.390.19				

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.390-SA5	59.94226	-155.20350	seep					
	59.94395	-155.19732	seep					
	59.94398	-155.19715	seep					
	59.94450	-155.19667	seep					
	59.94434	-155.19616	seep					
	59.94444	-155.19581	seep					
	59.94543	-155.19443	seep					
	59.94406	-155.19692	tributary	UT 1.390.30				
UT 1.390-SA6	59.94559	-155.19369	seep					
	59.94608	-155.19347	seep					
	59.94631	-155.19316	seep					
	59.94630	-155.19342	tributary	UT 1.390.40				
	59.94685	-155.19138	tributary	unnamed				
	59.94683	-155.19215	tributary	unnamed				
	59.94884	-155.18644	tributary	unnamed				
	59.95341	-155.17975	tributary	unnamed				
	59.95438	-155.17675	tributary	unnamed				
	59.95467	-155.17157	seep					
UT 1.390.05-SA1	59.92500	-155.19377	barrier		beaver dam	temporary	0.56	0.9
	59.92503	-155.19341	barrier		beaver dam	temporary	0.42	0.8
	59.92508	-155.19312	seep					
	59.92513	-155.19302	barrier		falls	temporary	0.57	1.0
	59.92471	-155.19132	barrier		beaver dam	temporary	0.55	2.4
	59.92461	-155.19058	tributary	unnamed				
	59.92445	-155.18948	seep					
	59.92424	-155.18541	tributary	unnamed				
	59.92437	-155.18477	barrier		beaver dam	temporary	0.4	0.5
	59.92441	-155.18449	barrier		beaver dam	temporary	0.9	2.3
	59.92442	-155.18350	barrier		beaver dam	temporary	0.75	0.83
	59.92445	-155.18308	barrier		beaver dam	temporary	0.65	0.52
	59.92448	-155.18295	barrier		beaver dam	temporary	1.04	1.6
	59.92454	-155.18245	barrier		beaver dam	temporary	2.5	3.0

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.390.05-SA1 (cont)	59.92494	-155.18096	barrier		falls	temporary	0.38	0.38
	59.92498	-155.18076	barrier		falls	temporary	0.5	0.5
	59.92520	-155.18036	barrier		falls	temporary	0.7	0.45
	59.92528	-155.17989	barrier		falls	temporary	0.76	0.54
	59.92549	-155.17932	tributary	UT 1.390.05.10				
	59.92538	-155.17938	barrier		falls	temporary	1.0	1.2
	59.92546	-155.17826	barrier		falls	temporary	0.6	0.3
	59.92549	-155.17810	barrier		falls	temporary	0.6	0.35
	59.92548	-155.17691	seep					
	59.92540	-155.17672	barrier		falls	temporary	1.14	1.7
	59.92529	-155.17625	barrier		falls	temporary	0.45	0.45
	59.92536	-155.17580	barrier		falls	temporary	0.25	0.28
UT 1.390.10-SA1	59.92549	-155.20078	seep					
	59.92500	-155.20020	tributary	unnamed				
	59.92915	-155.19491	barrier		falls	permanent	0.44	0.4
	59.92939	-155.19464	seep					
	59.93030	-155.19366	tributary	unnamed				
UT 1.390.10-SA2	59.93020	-155.19274	seep					
	59.93020	-155.19253	seep					
	59.93049	-155.19023	barrier		cascade	permanent	0.6	0.9
	59.93105	-155.18943	tributary	unnamed				
	59.93141	-155.18313	tributary	UT 1.390.10.10				
UT 1.390.10-SA3	59.93597	-155.17424	barrier		falls	permanent	0.7	0.9
	59.93461	-155.17682	seep					
	59.93598	-155.17406	seep					
	59.93519	-155.17589	tributary	unnamed				
	59.93617	-155.17420	seep					
UT 1.390.10.05-SA1	59.92983	-155.19893	seep					
UT 1.390.10.10-SA1			none present					
UT 1.390.13-SA1	59.93535	-155.20732	seep					

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.390.17-SA1	59.93525	-155.20809	seep					
	59.93589	-155.20803	seep					
	59.93585	-155.20819	seep					
UT 1.390.19-SA1	59.93877	-155.20438	seep					
	59.94026	-155.20047	seep					
	59.94078	-155.19965	seep					
	59.94133	-155.19839	seep					
UT 1.390.19-SA2	59.94148	-155.19745	seep					
	59.94162	-155.19703	seep					
	59.94170	-155.19657	seep					
UT 1.390.30-SA1	59.94411	-155.19670	seep					
	59.94416	-155.19639	seep					
UT 1.390.40-SA1	59.94668	-155.19385	barrier		falls	permanent	0.85	0.4
	59.94641	-155.19358	tributary	unnamed				
UT 1.400-SA1	59.91054	-155.21545	tributary	UT 1.400.10				
UT 1.410-SA1	59.90891	-155.22776	tributary	unnamed				
	59.90886	-155.22777	tributary	unnamed				
	59.90883	-155.22776	tributary	unnamed				
	59.90868	-155.22763	seep					
	59.90864	-155.22787	seep					
	59.90761	-155.22976	seep					
	59.90754	-155.22989	seep					
	59.90749	-155.22969	seep					
	59.90750	-155.22964	seep					
	59.90699	-155.22913	tributary	UT 1.410.10				
UT 1.410-SA2	59.90688	-155.23015	barrier		beaver dam	temporary	1.06	1.37
	59.90568	-155.22995	seep					
	59.90482	-155.23175	seep					
	59.90405	-155.23336	seep					
	59.90627	-155.22965	seep					
	59.90622	-155.22986	seep					
	59.90354	-155.23404	seep					

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.410-SA2 (cont)	59.90187	-155.23815	seep					
	59.90164	-155.23868	barrier		beaver dam	temporary	0.8	1.25
	59.90127	-155.23880	tributary	unnamed				
	59.90079	-155.24111	seep					
	59.90079	-155.24210	tributary	UT 1.410.30				
UT 1.410-SA3	59.90108	-155.24251	seep					
	59.89646	-155.23984	seep					
	59.90039	-155.24316	seep					
	59.89972	-155.24573	seep					
	59.89956	-155.24609	tributary	unnamed				
	59.89961	-155.24652	seep					
	59.89921	-155.24829	tributary	UT 1.410.40				
UT 1.410-SA4	59.89464	-155.25704	seep					
	59.89117	-155.26054	seep					
	59.89111	-155.26057	barrier		falls	temporary	1.6	0.55
UT 1.410.10-SA1	59.90688	-155.22901	seep					
	59.90478	-155.22764	seep					
	59.89741	-155.22327	tributary	UT 1.410.10.10				
UT 1.410.10-SA2	59.89709	-155.22335	seep					
	59.89626	-155.22274	seep					
	59.89354	-155.22281	seep					
	59.89695	-155.22353	tributary	unnamed				
	59.89198	-155.22114	barrier		falls	temporary	0.65	0.7
	59.89161	-155.22102	seep					
	59.89111	-155.22158	seep					
	59.88999	-155.22024	seep					
	59.88963	-155.22009	seep					
	59.88947	-155.21994	seep					
UT 1.410.10-SA3	59.88555	-155.21735	seep					

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.410.10.10-SA1	59.89420	-155.21758	barrier		beaver dam	temporary	1.2	1.0
	59.89733	-155.22260	seep					
	59.89712	-155.22110	seep					
	59.89350	-155.21463	seep					
	59.89290	-155.21229	barrier		falls	temporary	0.9	0.4
	59.89281	-155.21196	barrier		barrier chute	temporary	0.5	1.1
	59.89249	-155.21126	barrier		barrier chute	temporary	0.82	1.65
	59.89259	-155.21154	seep					
	59.89180	-155.20881	seep					
	59.89150	-155.20863	seep					
	59.89157	-155.20819	seep					
	59.89145	-155.20792	seep					
	59.89135	-155.20757	seep					
	59.89137	-155.20786	seep					
UT 1.410.30-SA1	59.89703	-155.23989	seep					
	59.89693	-155.23942	seep					
	59.89679	-155.23779	seep					
	59.89706	-155.23506	tributary	unnamed				
UT 1.410.30-SA2	59.89575	-155.23449	barrier		falls	permanent	0.72	2.47
	59.89542	-155.23439	barrier		falls	permanent	0.8	1.2
	59.89402	-155.23297	barrier		falls	permanent	0.74	2.27
UT 1.410.40-SA1	59.89841	-155.24852	seep					
	59.89828	-155.24867	seep					
	59.89820	-155.24887	tributary	UT 1.410.40.05				
	59.89837	-155.24890	tributary	UT 1.410.40.10				
UT 1.410.40-SA2	59.89774	-155.24940	barrier		falls	temporary	0.6	0.7
	59.89767	-155.24947	barrier		falls	temporary	0.5	0.6
	59.89752	-155.24947	barrier		falls	temporary	0.4	0.5
	59.89749	-155.24946	barrier		falls	temporary	0.7	0.6
	59.89727	-155.24941	barrier		falls	temporary	0.6	0.8

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.410.40.10-SA1	59.89811	-155.24881	tributary	UT 1.410.40.10.05				
	59.89798	-155.24883	seep					
	59.89793	-155.24900	seep					
	59.89714	-155.24835	barrier		falls	temporary	0.6	0.85
UT 1.420-SA1	59.91442	-155.23276	tributary	UT 1.420.10				
	59.91513	-155.23170	barrier		falls	temporary	0.64	0.4
	59.91901	-155.23005	seep					
	59.92028	-155.22930	seep					
	59.92028	-155.22913	seep					
	59.92162	-155.22851	barrier		falls	temporary	0.71	0.75
	59.92092	-155.22842	seep					
UT 1.420-SA2	59.92187	-155.22866	barrier		falls	permanent	1.61	3.8
UT 1.420.10-SA1			none present					
UT 1.430-SA1	59.91035	-155.23592	tributary	unnamed				
	59.91364	-155.24341	barrier		dry channel	temporary		
	59.91397	-155.24499	barrier		falls	temporary	0.6	0.5
	59.91405	-155.24519	barrier		falls	temporary	0.3	0.25
	59.91421	-155.24581	barrier		falls	temporary	0.47	0.5
	59.91427	-155.24574	barrier		falls	temporary	0.4	0.5
	59.91513	-155.24843	barrier		falls	temporary	0.55	0.52
	59.91525	-155.24904	barrier		falls	temporary	0.5	0.4
	59.91523	-155.24981	barrier		falls	temporary	0.5	0.35
	59.91564	-155.25168	seep					
	59.91589	-155.25233	seep					
UT 1.440-SA1	59.90468	-155.24769	barrier		dry channel	temporary		1.1
	59.90460	-155.24769	barrier		dry channel	temporary		0.54
	59.90452	-155.24808	barrier		falls	temporary	0.34	0.4
	59.90453	-155.24802	barrier		beaver dam	temporary	1.2	3.0

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.440-SA1 (cont)	59.90450	-155.24801	barrier		falls	temporary	1.05	0.6
	59.90419	-155.24892	barrier		beaver dam	temporary	1.1	1.72
	59.90395	-155.24904	barrier		falls	temporary	0.46	0.41
	59.90378	-155.24920	barrier		falls	temporary	0.87	0.4
	59.90378	-155.24920	tributary	unnamed				
UT 1.450-SA1			none present					
UT 1.460-SA1	59.91078	-155.26277	seep					
	59.91023	-155.26582	spring					
	59.91004	-155.26634	seep					
	59.90797	-155.26985	barrier		falls	temporary	0.8	1.0
	59.90780	-155.27165	barrier		falls	temporary	0.5	0.9
	59.90791	-155.27207	seep					
	59.90786	-155.27212	barrier		falls	temporary	0.3	0.35
UT 1.460-SA2	59.90658	-155.27588	barrier		falls	temporary	1.2	1.0
	59.90675	-155.27486	seep					
	59.90665	-155.27707	barrier		beaver dam	temporary	3.5	1.6
	59.90670	-155.27815	barrier		beaver dam	temporary	1.0	2.0
	59.90667	-155.27832	barrier		beaver dam	temporary	3.5	3.5
	59.90667	-155.27911	barrier		beaver dam	temporary	0.85	1.1
	59.90674	-155.27960	barrier		beaver dam	temporary	0.85	1.2
	59.90667	-155.27984	barrier		beaver dam	temporary	1.1	2.6
	59.90621	-155.28157	barrier		beaver dam	temporary	1.1	1.1
	59.90619	-155.28204	barrier		beaver dam	temporary	1.4	1.75
	59.90612	-155.28316	barrier		beaver dam	temporary	1.1	0.75
	59.90579	-155.28351	barrier		beaver dam	temporary	0.5	0.9
	59.90651	-155.28044	barrier		beaver dam	temporary	1.0	1.8
	59.90622	-155.28147	seep					
	59.90617	-155.28327	seep					
	59.90559	-155.28442	spring					
	59.90552	-155.28433	seep					
	59.90507	-155.28464	barrier		falls	temporary	0.65	0.35
	59.90486	-155.28512	barrier		falls	temporary	0.45	0.64

Table B.17-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.460-SA2 (cont)	59.90459	-155.28542	barrier		falls	temporary	1.1	1.6
	59.90453	-155.28628	barrier		falls	temporary	1.5	0.8
	59.90472	-155.28679	barrier		falls	temporary	1.0	1.2
	59.90516	-155.28750	barrier		falls	temporary	0.6	0.9
	59.90535	-155.28746	barrier		falls	temporary	0.45	0.9
	59.90588	-155.28813	seep					
	59.90732	-155.28941	seep					
	59.90740	-155.28951	seep					
UT 1.470-SA1	59.91413	-155.26364	seep					
	59.91455	-155.26437	barrier		falls	permanent	0.85	0.42

Note: Blank cells indicate no data were collected for that record.

Table B.17-7.
2004-2008 number of fish observations by lifestage within UT-F mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult							Juvenile								Juvenile/Adult[a]							Total
			Apr	May	Jun	Jul	Aug	Sep	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Subtotal	
Chinook salmon	2004	Electrofishing					1		1																1
	2005	Electrofishing										64		13			77								77
		Minnow Trap										16					16								16
		Snorkel										374	5				379								379
	2006	Snorkel												8			8								8
	2007	Minnow Trap													6		6								6
		Snorkel											2				2								2
	2008	Snorkel											1				1								1
chum salmon	2008	Snorkel				1			1																1
coho salmon	2004	Electrofishing											572	13			585								585
		Minnow Trap								1				204			205								205
		Visual Observation											200				200								200
	2005	Electrofishing										1827	9	25			1861								1861
		Minnow Trap										11		143			154								154
		Snorkel										4072	469				4541								4541
	2006	Electrofishing								2				67			69								69
		Minnow Trap								1						17	18								18
		Snorkel												753			753								753
	2007	Electrofishing								8			44	110	64		226								226
		Minnow Trap								103					73		176								176
		Snorkel											2705				2705								2705
	2008	Electrofishing											428	362			790								790
		Minnow Trap											73				73								73
		Seine												130			130								130
		Snorkel											3697	513			4210								4210
		Visual Observation											73				73								73
sockeye salmon	2005	Electrofishing										27					27								27
	2006	Snorkel					1		1																1
	2008	Snorkel				66			66				23				23								89
		Visual Observation				1			1																1
arctic grayling	2004	Angling			3				3																3
		Electrofishing					9		9																9
		Visual Observation																				1		1	1
	2005	Electrofishing												1			1								1
		Snorkel			8				8																8
	2007	Angling		2					2		2						2								4
		Snorkel											10				10								10
		Visual Observation		2					2										2					2	4
	2008	Seine												1			1								1

Table B.17-7. Continued

Species	Year	Method	Adult							Juvenile								Juvenile/Adult[a]							Total
			Apr	May	Jun	Jul	Aug	Sep	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Nov	Subtotal	Apr	May	Jun	Jul	Aug	Sep	Subtotal	
Dolly Varden	2004	Electrofishing				2	1		3				3	15			18								21
		Minnow Trap					2		2					41			41								43
	2005	Electrofishing										17					17								17
		Minnow Trap					1		1					9			9								10
		Snorkel										1	1				2				1			1	3
	2006	Minnow Trap														2	2								2
		Snorkel												1			1								1
	2007	Electrofishing					9		9					63	11		74					1		1	84
	2008	Electrofishing					16		16				87	381	8		476				1	1		2	494
		Seine					3		3					13			13								16
		Snorkel				44	11		55				121	1			122				88	17		105	282
		Visual Observation												3			3					1		1	4
rainbow trout	2004	Electrofishing											3	1			4								4
	2005	Electrofishing					1		1			19		1			20								21
		Minnow Trap										1					1								1
		Snorkel										127					127								127
	2006	Snorkel												3			3								3
	2007	Electrofishing											2				2								2
		Minnow Trap													1		1								1
		Snorkel											18				18								18
Salmonid sp.	2005	Electrofishing										6					6								6
	2006	Snorkel												3			3								3
	2007	Snorkel											5				5								5
	2008	Visual Observation											1	1			2					38		38	40
sculpin sp.	2004	Electrofishing				15			15				163				163				200			200	378
		Minnow Trap	1				2		3	2							2					7		7	12
	2005	Electrofishing																		922				922	922
		Minnow Trap																		17		14		31	31
	2006	Electrofishing																18						18	18
	2007	Electrofishing					3	2	5	5				10	1		16				57	29		86	107
		Minnow Trap	1						1									1						1	2
		Snorkel				1			1												1			1	2
	2008	Electrofishing				32	37		69				164	62			226					1		1	296
		Minnow Trap				24			24				7				7								31
		Seine					2		2					10			10								12
		Snorkel																			82	12		94	94
ninespine stickleback	2004	Minnow Trap								1							1								1
	2005	Electrofishing										7					7								7
	2007	Minnow Trap																					14	14	14
		Seine																					37	37	37
stickleback sp.	2008	Electrofishing													7		7								7
		Snorkel																			1			1	1
unidentified sp.	2007	Snorkel																			2			2	2
	2008	Visual Observation																			102	6		108	108

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

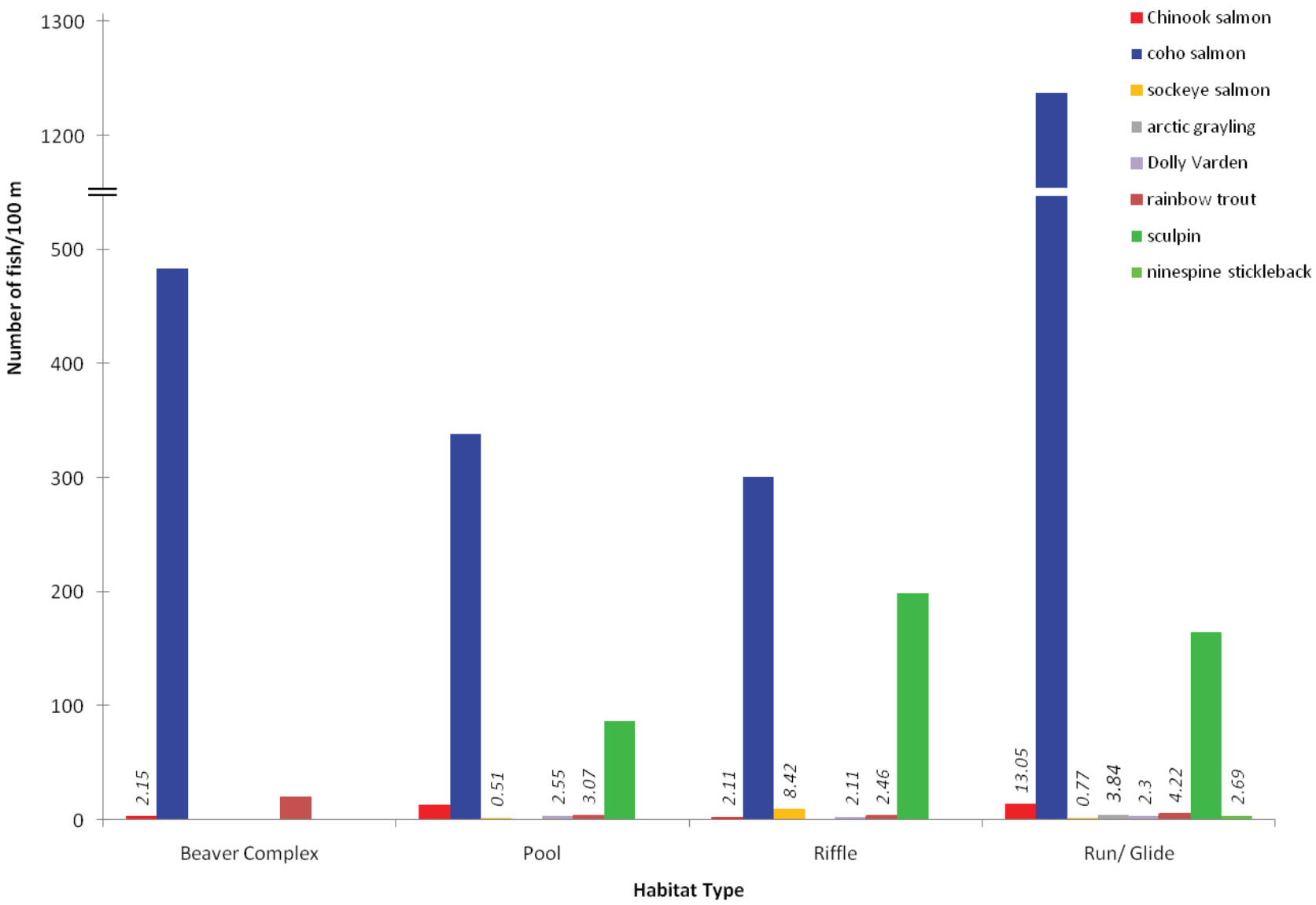


Figure B.17-8a.
2004-2007 fish abundance by habitat type within mainstem UT-F.

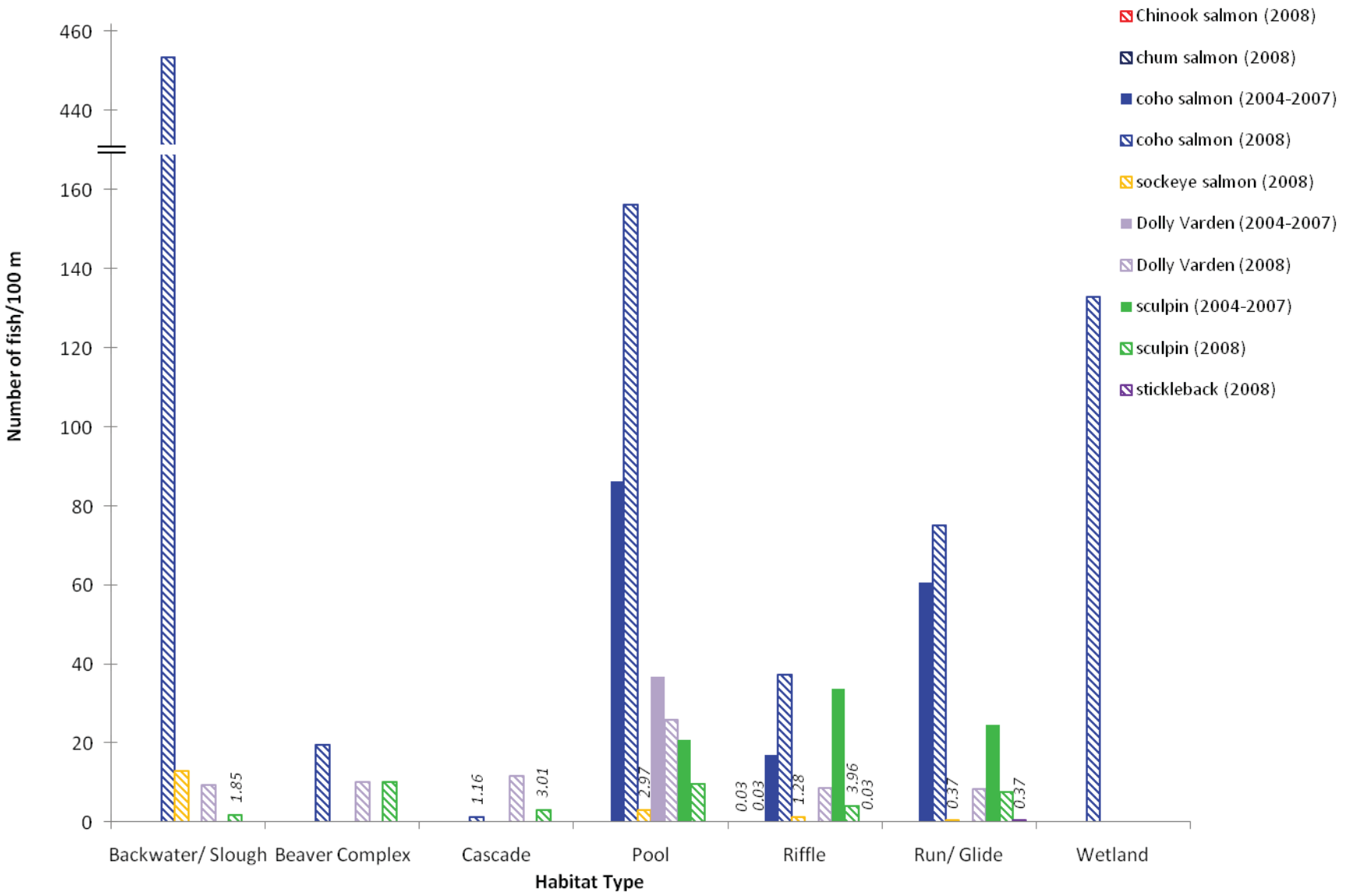


Figure B.17-8b.
2004-2008 fish abundance by habitat type within UT-F tributaries.

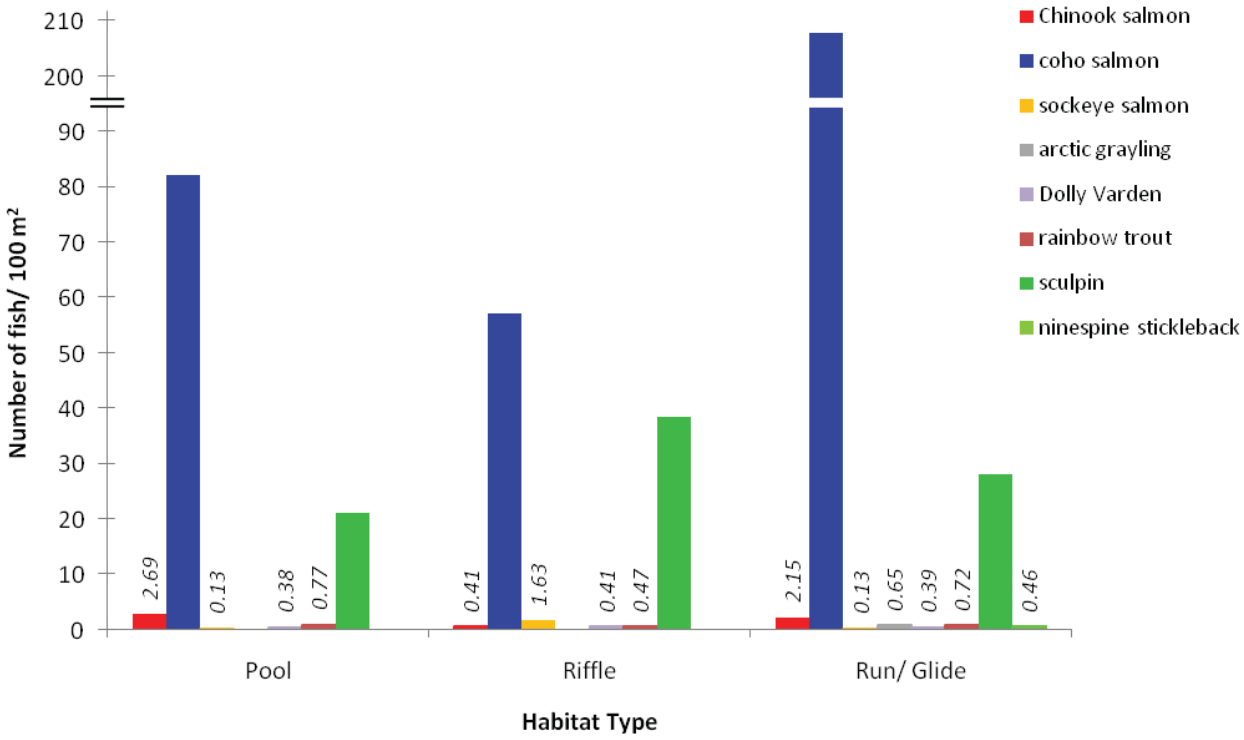


Figure B.17-9a.
2004-2007 fish density by habitat type within mainstem UT-F.

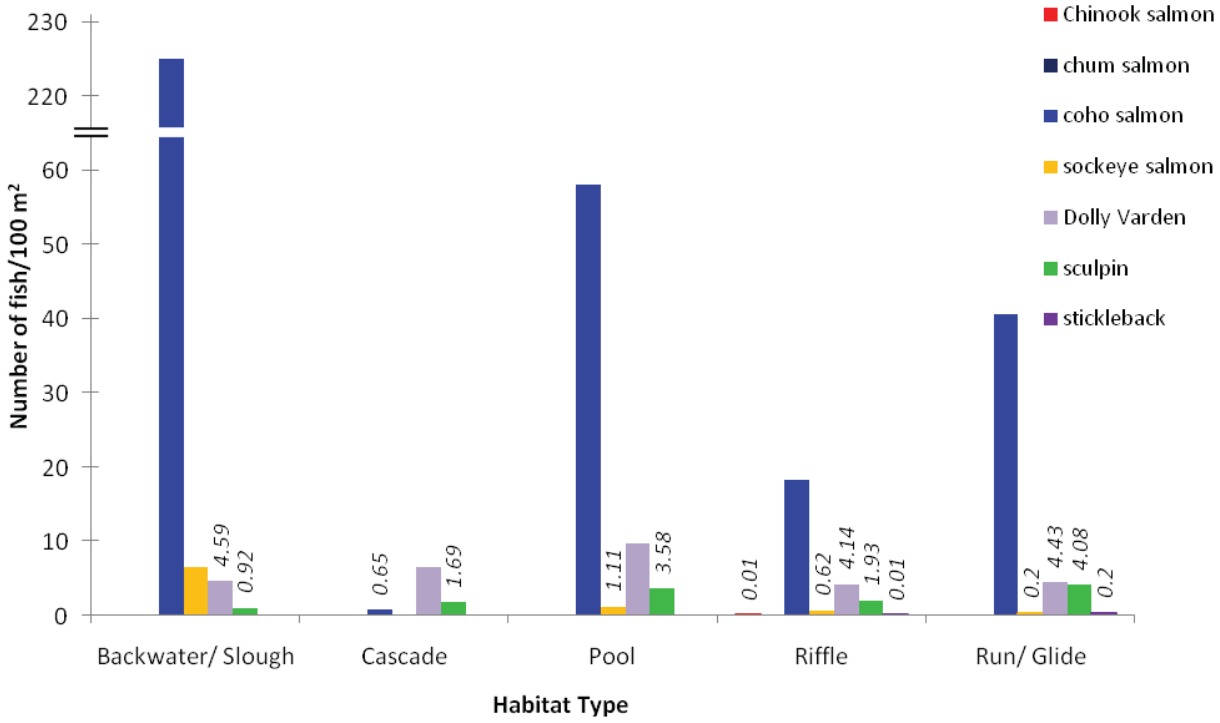


Figure B.17-9b.
2008 fish density by habitat type within UT-F tributaries.

Table B.17-8.
Densities of fish species by habitat type in UT-F tributaries 1.360, 1.370, 1.380, 1.390, 1.400, 1.410, 1.420, 1.430, 1.440, 1.460, and 1.470 in 2008.

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Chum Salmon	Coho Salmon	Sockeye Salmon			Dolly Varden				Sculpin				Stickleback		
				Juvenile	Adult	Juvenile	Adult	Juvenile	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Juvenile/ Adult[a]	Total
UT 1.360	Backwater/Slough	7.3	0																	
	Cascade	202.5	3.46							0.99	2.47		3.46							
	Pool	153.0	24.18							2.61	17.65	0.65	20.92	2.61	0.65		3.27			
	Riffle	1691.0	9.52			0.47					7.57		7.57	0.95	0.53		1.48			
	Run/Glide	72.8	23.35			1.37					13.74		13.74	6.87	1.37		8.24			
	All Habitats	2126.6	10.44			0.42				0.28	7.99	0.05	8.32	1.18	0.52		1.69			
UT 1.360.10	Pool	31.2	0																	
	Riffle	38.0	0																	
	Run/Glide	16.8	5.95								5.95		5.95							
	All Habitats	86.0	1.16								1.16		1.16							
UT 1.360.20	Riffle	3.6	111.11								111.11		111.11							
	Run/Glide	4.5	22.22								22.22		22.22							
	All Habitats	8.1	61.73								61.73		61.73							
UT 1.360.50	Cascade	15.0	0																	
	Pool	2.4	0																	
	Riffle	2.5	0																	
	All Habitats	19.9	0																	
UT 1.370	Beaver Complex	111.6	7.17								0.90		0.90		6.27		6.27			
	Pool	169.2	115.84			100.47					4.14		4.14	3.55	7.68		11.23			
	Riffle	1101.7	48.29			42.21					1.00		1.00	0.64	3.72	0.73	5.08			
	Run/Glide	1330.1	46.16			38.34					0.15		0.15	1.13	6.39	0.15	7.67			
	All Habitats	2712.6	49.77			42.21					0.77		0.77	1.03	5.38	0.37	6.78			
UT 1.370.30	Run/Glide	5.6	53.57								53.57		53.57							
	All Habitats	5.6	53.57								53.57		53.57							
UT 1.380	Backwater/Slough	3.8	184.21								184.21		184.21							
	Beaver Complex	205.0	14.63								14.63		14.63							
	Cascade	200.8	8.96			2.49										6.47	6.47			
	Pool	79.7	134.25			95.36					38.90		38.90							
	Riffle	1241.0	57.45	0.08		52.30		0.48	0.48		2.34		2.34			2.26	2.26			
	Run/Glide	571.8	116.65			113.15		1.22	1.22		1.57		1.57			0.70	0.70			
	All Habitats	2302.1	66.98	0.04		59.81		0.56	0.56		4.60		4.60			1.95	1.95			
UT 1.380.10	Backwater/Slough	54.6	0																	
	Beaver Complex	721.4	0																	
	Pool	155.3	46.36			31.55					0.64		0.64			14.17	14.17			
	Riffle	400.7	41.43			39.43					0.50		0.50		0.50	1.00	1.50			
	Run/Glide	183.9	29.91			28.82				0.54	0.54		1.09							
	All Habitats	1515.9	19.33			17.15				0.07	0.26		0.33		0.13	1.72	1.85			
UT 1.380.10.20	Pool	7.5	0																	
	Riffle	16.2	0																	
	Run/Glide	24.0	0																	
	All Habitats	47.7	0																	

Table B.17-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Chum Salmon	Coho Salmon	Sockeye Salmon			Dolly Varden				Sculpin				Stickleback		
				Juvenile	Adult	Juvenile	Adult	Juvenile	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Juvenile/ Adult[a]	Total
UT 1.380.20	Riffle	14.0	0																	
	Run/Glide	89.6	0																	
	All Habitats	103.6	0																	
UT 1.380.25	Riffle	69.4	0																	
	Run/Glide	36.0	0																	
	All Habitats	105.4	0																	
UT 1.380.30	Riffle	108.8	9.19								9.19		9.19							
	All Habitats	108.8	9.19								9.19		9.19							
UT 1.390	Backwater/Slough	1.2	0																	
	Cascade	107.2	1.87								1.87		1.87							
	Pool	193.5	46.51			36.18	1.03	5.17	6.20		4.13		4.13							
	Riffle	1272.6	4.87			0.94	3.06		3.06	0.24	0.63		0.86							
	Run/Glide	10.4	0																	
	All Habitats	1584.9	9.72			5.17	2.59	0.63	3.22	0.19	1.14		1.33							
UT 1.390.05	Beaver Complex	161.4	0.62								0.62		0.62							
	Pool	5.3	0																	
	Riffle	86.1	2.32								2.32		2.32							
	Run/Glide	89.6	1.12								1.12		1.12							
	All Habitats	342.4	1.17								1.17		1.17							
UT 1.390.10	Cascade	76.0	34.21								34.21		34.21							
	Pool	7.3	13.70								13.70		13.70							
	Riffle	191.2	17.26							0.52	16.74		17.26							
	Run/Glide	65.0	4.62								4.62		4.62							
	All Habitats	339.5	18.56							0.29	18.26		18.56							
UT 1.390.10.05	Cascade	2.8	0																	
	Pool	9.0	66.67								66.67		66.67							
	Riffle	139.9	15.73							0.71	15.01		15.73							
	Run/Glide	12.8	23.44								23.44		23.44							
	All Habitats	164.5	18.84							0.61	18.24		18.84							
UT 1.390.10.10	Riffle	1.4	0																	
	Run/Glide	36.0	0																	
	All Habitats	37.4	0																	
UT 1.390.13	Riffle	23.0	4.35								4.35		4.35							
	Run/Glide	78.0	1.28								1.28		1.28							
	All Habitats	101.0	1.98								1.98		1.98							
UT 1.390.17	Cascade	2.4	0																	
	Riffle	51.5	0																	
	Run/Glide	9.4	21.28								21.28		21.28							
	All Habitats	63.3	3.16								3.16		3.16							

Table B.17-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Chum Salmon	Coho Salmon	Sockeye Salmon			Dolly Varden				Sculpin				Stickleback		
				Juvenile	Adult	Juvenile	Adult	Juvenile	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Juvenile/ Adult[a]	Total
UT 1.390.19	Backwater/Slough	22.3	0																	
	Cascade	59.1	5.08								5.08		5.08							
	Pool	12.9	7.75								7.75		7.75							
	Riffle	52.7	7.59								7.59		7.59							
	Run/Glide	5.5	72.73								72.73		72.73							
	All Habitats	152.5	7.87								7.87		7.87							
UT 1.390.30	Pool	3.7	54.05							54.05			54.05							
	Riffle	16.8	23.81								23.81		23.81							
	Run/Glide	5.5	0																	
	All Habitats	26.0	23.08							7.69	15.38		23.08							
UT 1.390.40	Backwater/Slough	5.8	51.72								51.72		51.72							
	Cascade	24.0	33.33								33.33		33.33							
	Riffle	64.1	0																	
	Run/Glide	8.9	0																	
	All Habitats	102.8	10.70								10.70		10.70							
UT 1.400	Run/Glide	14.0	0																	
	All Habitats	14.0	0																	
UT 1.410	Backwater/Slough	54.1	829.94			804.07	25.88		25.88											
	Beaver Complex	172.0	3.49							3.49			3.49							
	Pool	444.7	111.31			102.32	1.12		1.12	0.45		7.42	7.87							
	Riffle	381.2	39.09		0.26	36.73	1.57		1.57		0.26		0.26						0.26	0.26
	Run/Glide	194.8	49.79			1.03				16.43		28.23	44.66			0.51	0.51	3.59		3.59
	All Habitats	1246.8	95.93		0.08	82.77	2.01		2.01	3.21	0.08	7.06	10.35			0.08	0.08	0.56	0.08	0.64
UT 1.410.10	Cascade	56.5	5.31								5.31		5.31							
	Pool	49.9	14.03								14.03		14.03							
	Riffle	185.9	17.75								17.75		17.75							
	All Habitats	292.3	14.71								14.71		14.71							
UT 1.410.10.10	Backwater/Slough	7.2	0																	
	Beaver Complex	191.4	0																	
	Pool	3.5	0																	
	Riffle	53.4	0																	
	Run/Glide	115.9	0.86								0.86		0.86							
	All Habitats	371.4	0.27								0.27		0.27							
UT 1.410.30	Cascade	22.6	4.42								4.42		4.42							
	Pool	40.7	36.86							4.91	31.94		36.86							
	Riffle	246.5	6.09							0.41	4.87		5.27	0.41	0.41		0.81			
	Run/Glide	35.6	39.33								39.33		39.33							
	All Habitats	345.4	13.03							0.87	11.58		12.45	0.29	0.29		0.58			
UT 1.410.40	Backwater/Slough	1.8	0																	
	Cascade	2.2	0																	
	Pool	3.2	0																	
	Riffle	64.0	23.44							1.56	6.25		7.81	3.13	12.50		15.63			
	Run/Glide	30.5	6.56								3.28		3.28		3.28		3.28			
	All Habitats	101.7	16.72							0.98	4.92		5.90	1.97	8.85		10.82			

Table B.17-8. Continued

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Chinook Salmon	Chum Salmon	Coho Salmon	Sockeye Salmon			Dolly Varden				Sculpin				Stickleback		
				Juvenile	Adult	Juvenile	Adult	Juvenile	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Adult	Juvenile	Juvenile/ Adult[a]	Total	Juvenile	Juvenile/ Adult[a]	Total
UT 1.410.40.10	Pool	2.2	0																	
	Riffle	7.1	0																	
	Run/Glide	8.3	0																	
	All Habitats	17.6	0																	
UT 1.420	Backwater/Slough	45.4	125.55			121.15								2.20	2.20		4.41			
	Pool	17.7	158.19			141.24					11.30		11.30		5.65		5.65			
	Riffle	143.7	32.71			7.65				1.39	15.31		16.70	2.09	6.26		8.35			
	Run/Glide	53.9	66.79			50.09					7.42		7.42		9.28		9.28			
	All Habitats	260.7	64.44			45.26				0.77	10.74		11.51	1.53	6.14		7.67			
UT 1.430	Pool	18.6	91.40			69.89									21.51		21.51			
	Riffle	83.8	5.97			1.19					1.19		1.19	1.19	2.39		3.58			
	Run/Glide	132.0	30.30			18.18					2.27		2.27	0.76	9.09		9.85			
	All Habitats	234.4	26.45			16.21					1.71		1.71	0.85	7.68		8.53			
UT 1.440	Backwater/Slough	10.1	0																	
	Pool	37.1	0																	
	Riffle	3.8	0																	
	Run/Glide	8.7	22.99								22.99		22.99							
	All Habitats	59.7	3.35								3.35		3.35							
UT 1.460	Backwater/Slough	4.2	0																	
	Pool	68.1	13.22			13.22														
	Riffle	382.8	9.40			6.79								0.78	1.83		2.61			
	Run/Glide	196.9	18.28			17.27								0.51	0.51		1.02			
	All Habitats	652.0	12.42			10.58								0.61	1.23		1.84			
UT 1.470	Pool	22.7	132.16			114.54								4.41	13.22		17.62			
	Riffle	28.6	83.92			62.94								6.99	13.99		20.98			
	Run/Glide	29.4	408.16			380.95									27.21		27.21			
	Wetland	69.1	24.60			24.60														
	All Habitats	149.8	127.50			115.49								2.00	10.01		12.02			

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

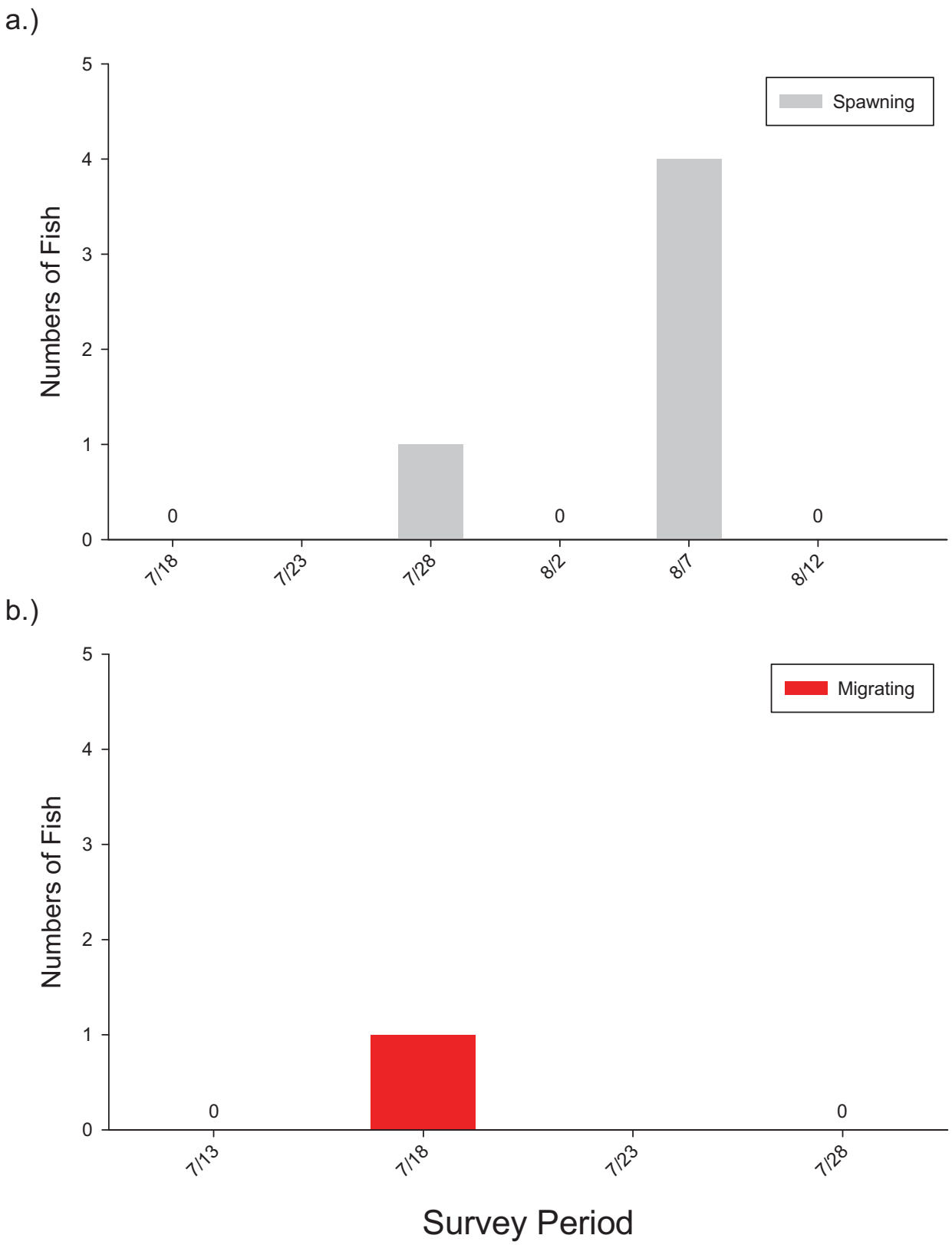


Figure B.17-14.
Observations of Chinook salmon during 2008 aerial surveys in UT-F. a.) Number of Chinook salmon spawning. b.) Number of Chinook salmon observed migrating.

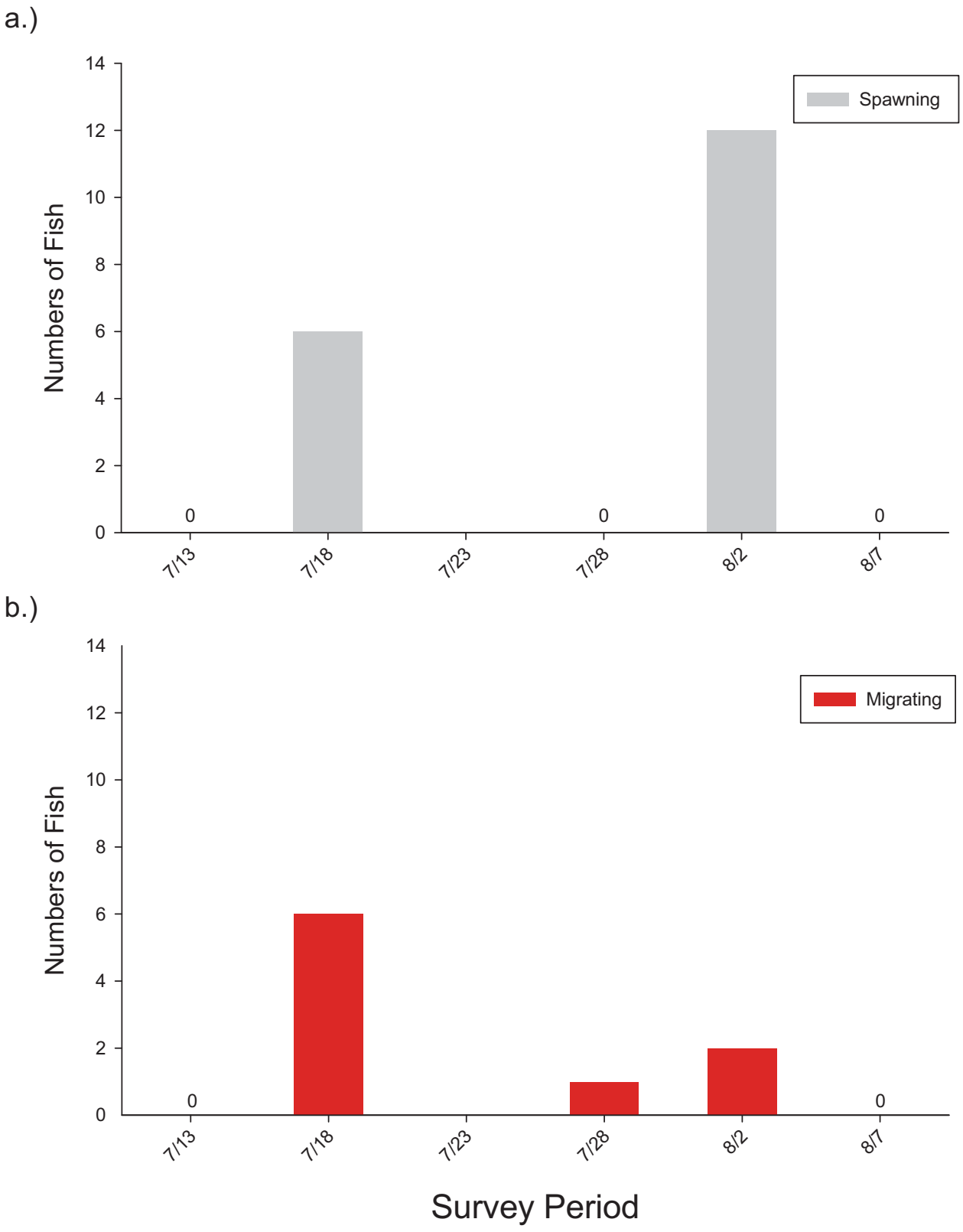


Figure B.17-15.
Observations of chum salmon during 2008 aerial surveys in UT-F. a.) Number of chum salmon spawning. b.) Number of chum salmon observed migrating.

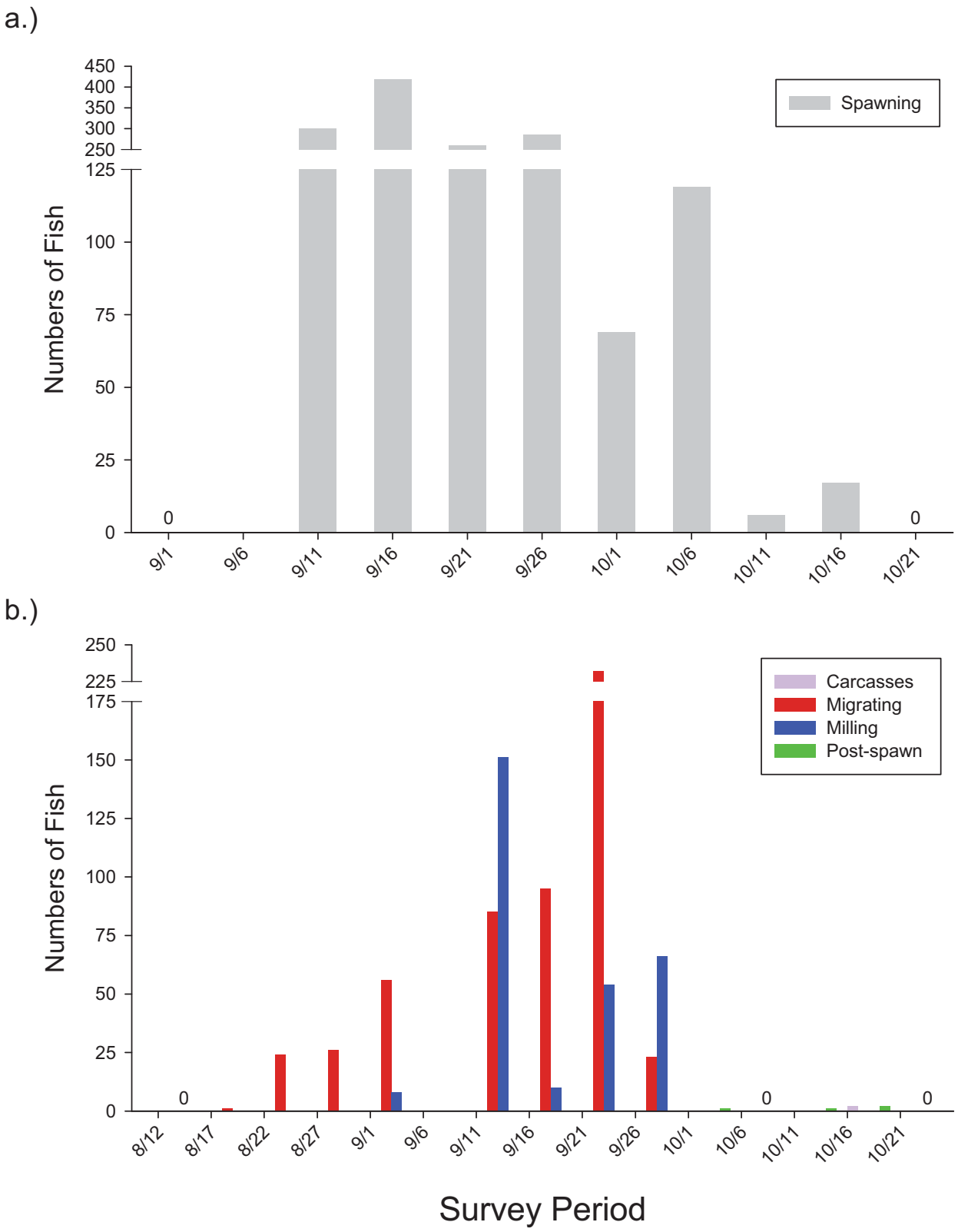


Figure B.17-16.
Observations of coho salmon during 2008 aerial surveys in UT-F. a.) Number of coho salmon spawning. b.) Number of coho salmon observed in spawning related behaviors.

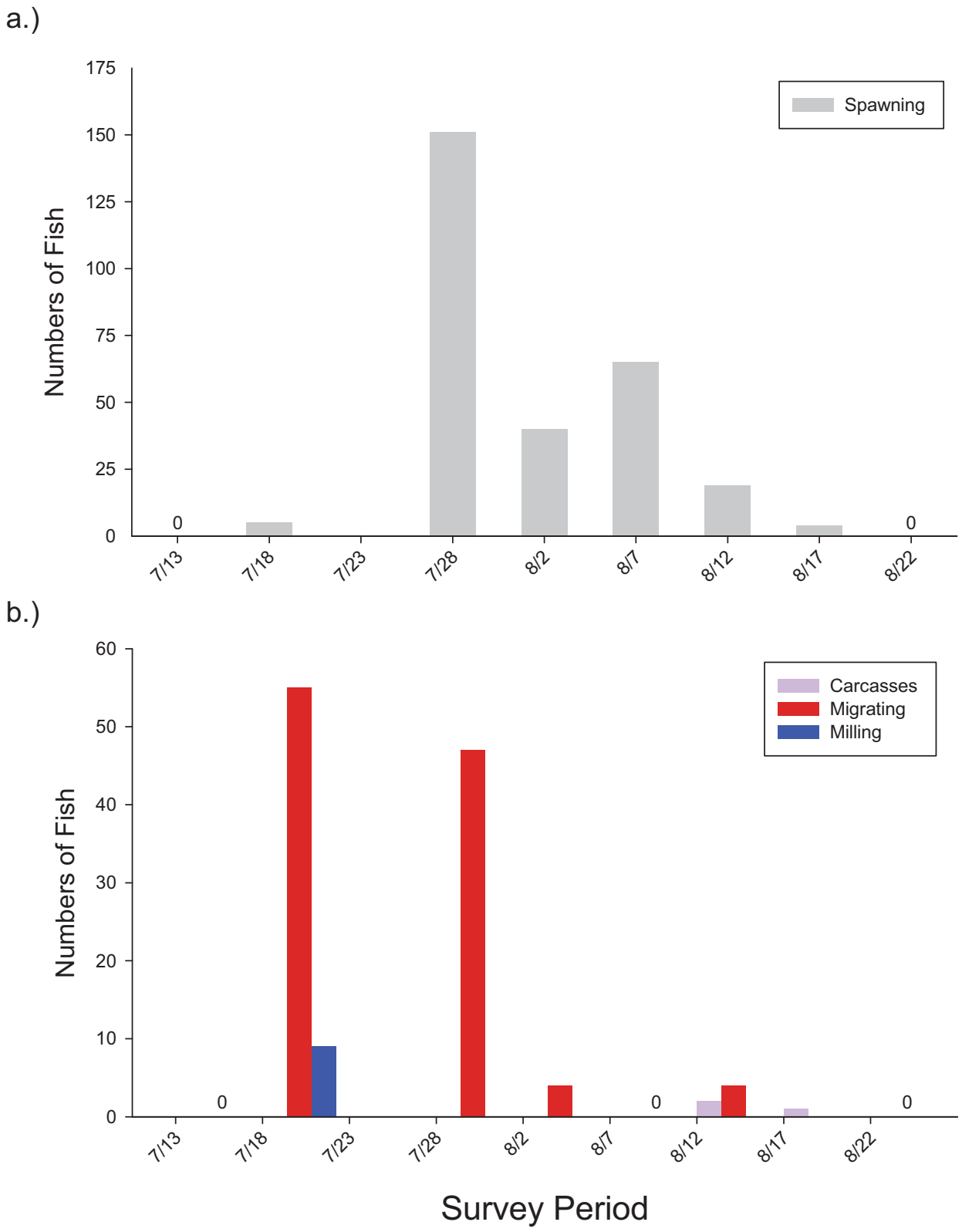


Figure B.17-17.
Observations of sockeye salmon during 2008 aerial surveys in UT-F. a.) Number of sockeye salmon spawning. b.) Number of sockeye salmon observed in spawning related behaviors.

Table B.17-9.
UT-F fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Sample Length (m)	Trap Set Time (Hours)	Adult	Lifestage Juveniles	Juvenile/ Adult[a]	Total Fish Count	Fish Abundance (number/100 m)
4/12/2004	UT-04WT-08	sculpin sp.	minnow trap		24		1		1	
	UT-04WT-10	coho salmon	minnow trap		24		1		1	
4/15/2004	UT-04WT-17	sculpin sp.	minnow trap		24	1	1		2	
		ninespine stickleback	minnow trap		24		1		1	
4/5/2006	UT-06-WT-02	coho salmon	electrofishing	30			2		2	6.7
		sculpin sp.	electrofishing	30				8	8	26.7
	UT06WT-03	coho salmon	minnow trap		24		1		1	
	UT06WT-04	sculpin sp.	electrofishing					10	10	20.0
11/1/2006	UT-06-WT-02	coho salmon	minnow trap		24		10		10	
		Dolly Varden	minnow trap		24		2		2	
	UT-Beaver	coho salmon	minnow trap		24		7		7	
4/3/2007	UT07-01	coho salmon	minnow trap		23		7		7	
		sculpin sp.	minnow trap		23			1	1	
	UT07-03	sculpin sp.	minnow trap		23	1			1	
	UT07-04	coho salmon	minnow trap		24		68		68	
	UT07-05	coho salmon	minnow trap		24		28		28	
4/4/2007	UT07-01	coho salmon	electrofishing				8		8	
		sculpin sp.	electrofishing				3		3	
	UT07-03	sculpin sp.	electrofishing				1		1	
	UT07-06	sculpin sp.	electrofishing				1		1	

[b] This life stage category includes subadult fish and fish whose lifestage was not, or could not, be determined.
Note: Blank cells indicate no data were collected for that record.

Table B.17-10.
2008 fish observations by method at mainstem index sites located within UT-F.

Index Site	Species	Method	Adult	Juvenile	Juvenile/ Adult[a]	Total
UTC47.63	coho salmon	beach seine		2		2
		snorkel		99		99
	sculpin sp.	beach seine		1		1
		snorkel			5	5
UTC47.63 Total				**102**	**5**	**107**
UTC51.96	coho salmon	beach seine		78		78
		snorkel		239		239
	Dolly Varden	beach seine		1		1
	sculpin sp.	beach seine	1	4		5
		snorkel			4	4
UTC51.96 Total			**1**	**322**	**4**	**327**
UTC56.29	coho salmon	beach seine		50		50
		snorkel		140		140
	arctic grayling	beach seine		1		1
	Dolly Varden	beach seine	3	12		15
		snorkel	11		9	20
	sculpin sp.	beach seine	1	5		6
		snorkel			3	3
UTC56.29 Total			**15**	**208**	**12**	**235**

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

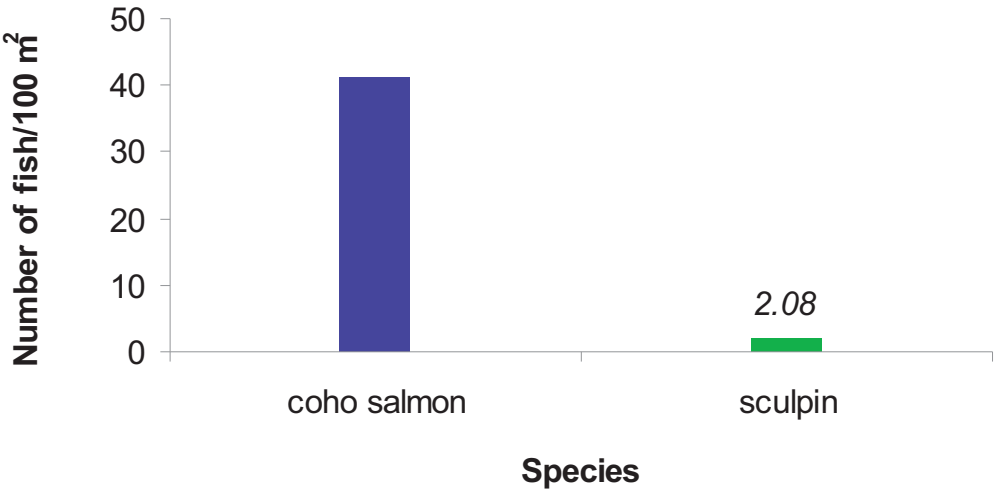


Figure B.17-19a.
2008 fish density in glide habitat at mainstem index site (RKm 47.63) within UT-F. Densities were calculated from the method that generated the greatest count of fish at this location.

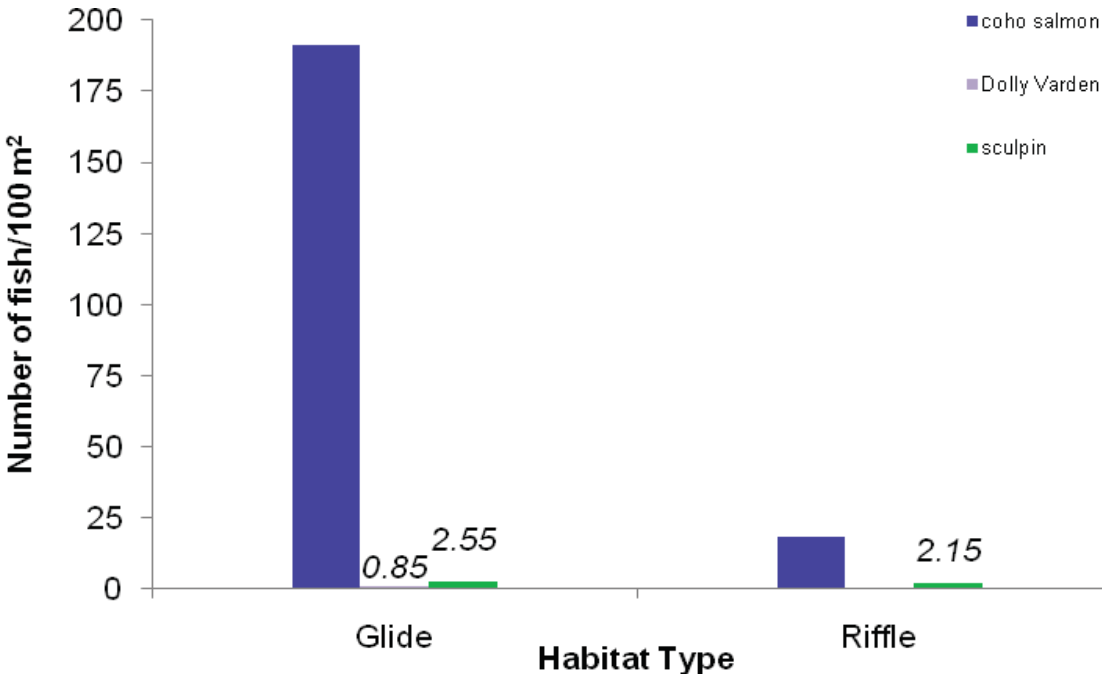


Figure B.17-19b.
2008 fish density by habitat type at mainstem index site (RKm 51.96) within UT-F. Densities were calculated from the method that generated the greatest count of fish at this location.

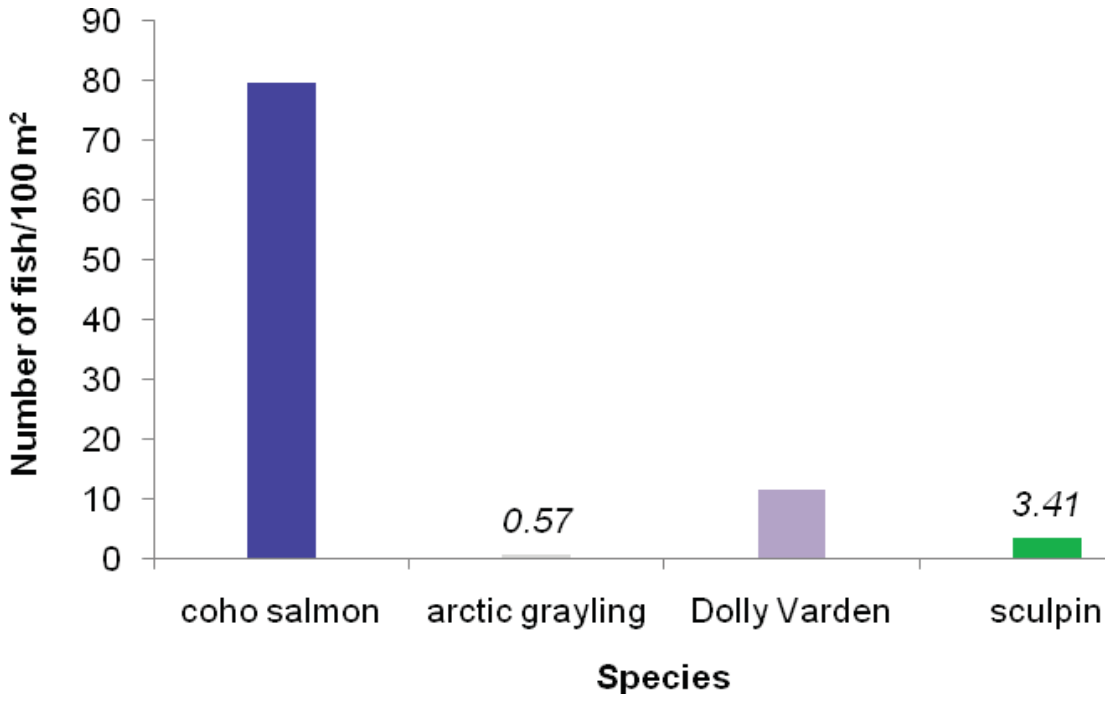
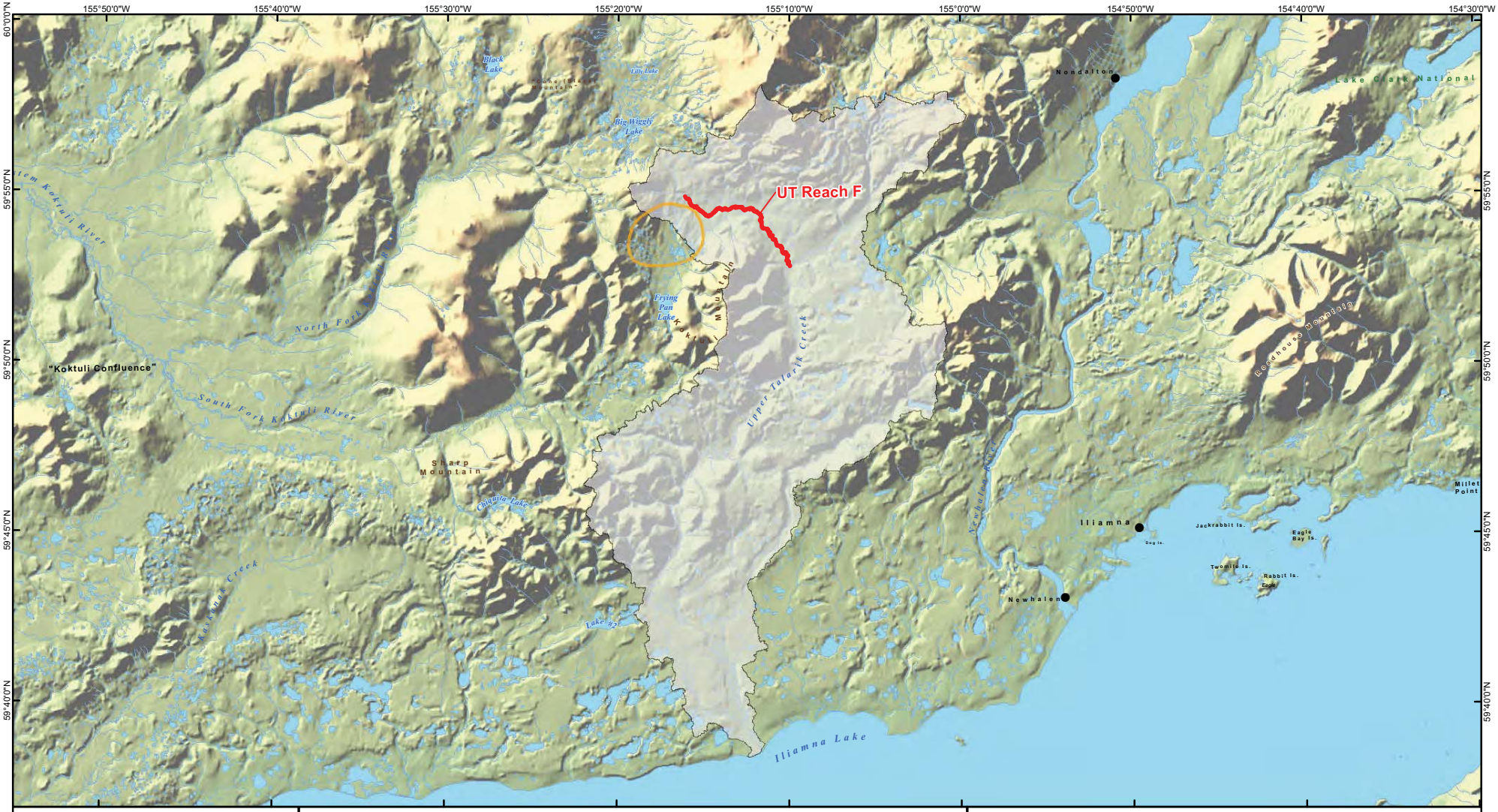
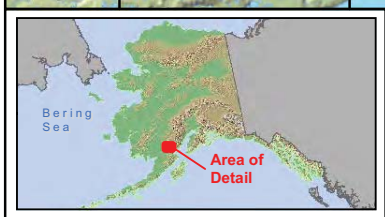


Figure B.17-19c.
2008 cumulative fish density in glide, riffle, and pool habitat types at mainstem index site (RKm 56.29) within UT-F. Densities were calculated from the method that generated the greatest count of fish at this location.





Legend

- General Deposit Location
- Watershed Boundary
- Mainstem Stream Reach UT Reach F

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 5 10

Kilometers: 0 5 10

THE pebble PARTNERSHIP

Figure B.17-1a
Reach UT-F

RDI_R2_OverviewLocator_UT-F_Fig-B.17-1a_11x17L_17of19_D03.mxd

February 5, 2011

Author: RDI - MRA

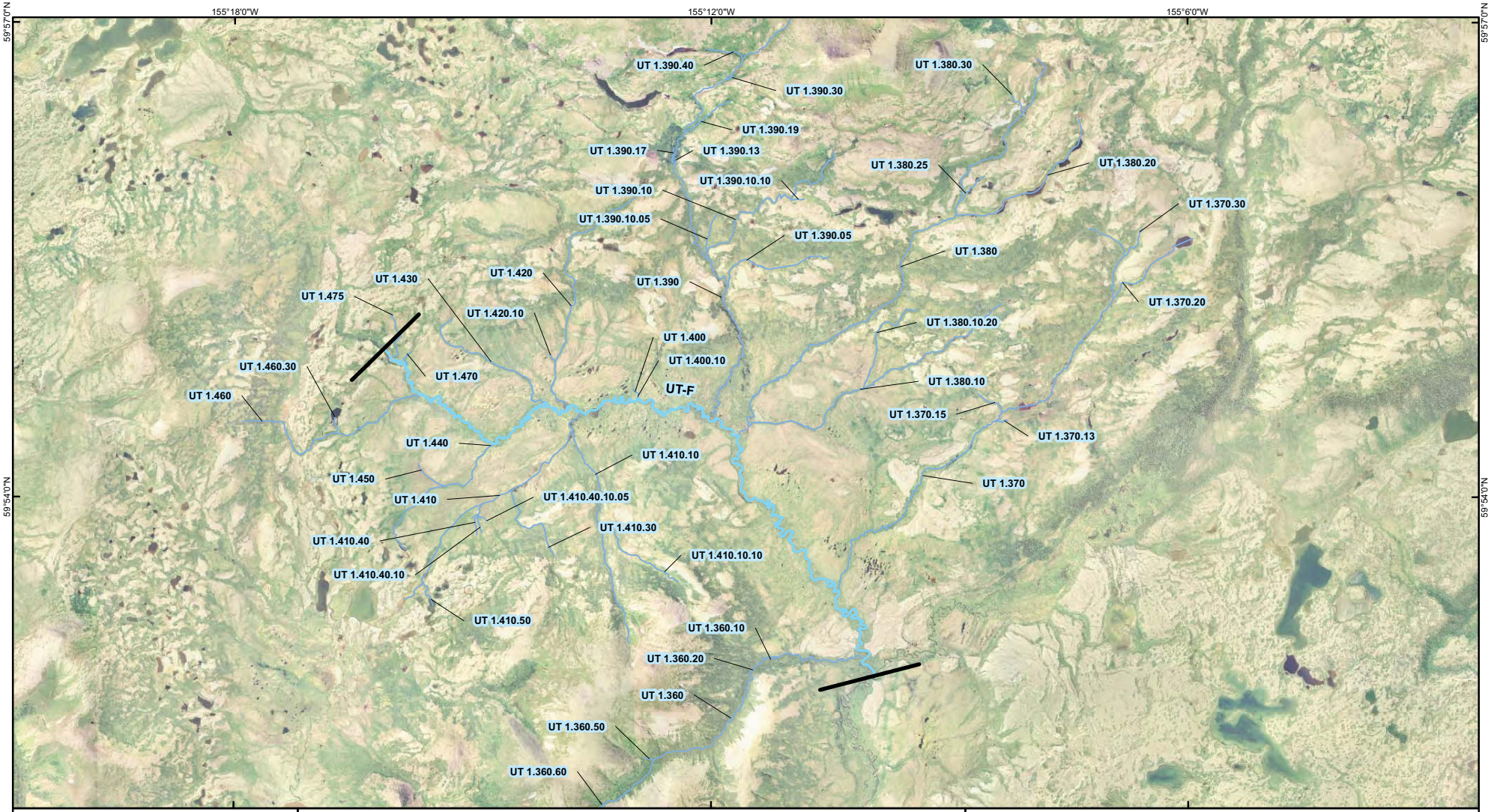
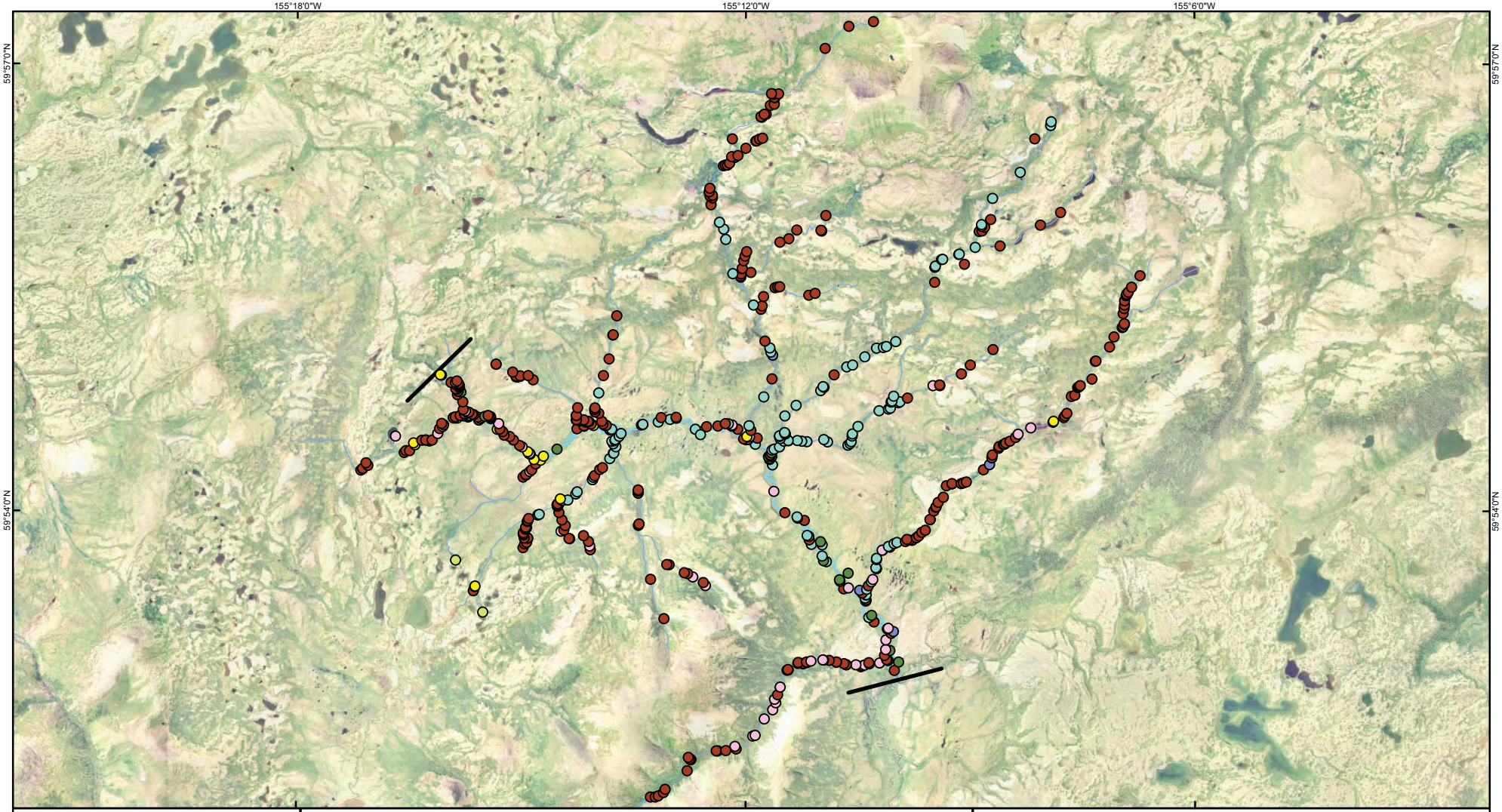
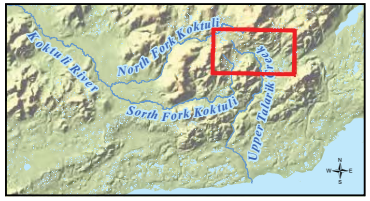


Figure B.17-1b
UT-F
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-F_Fig-B.17-1b_11x17L_17of19_D01.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

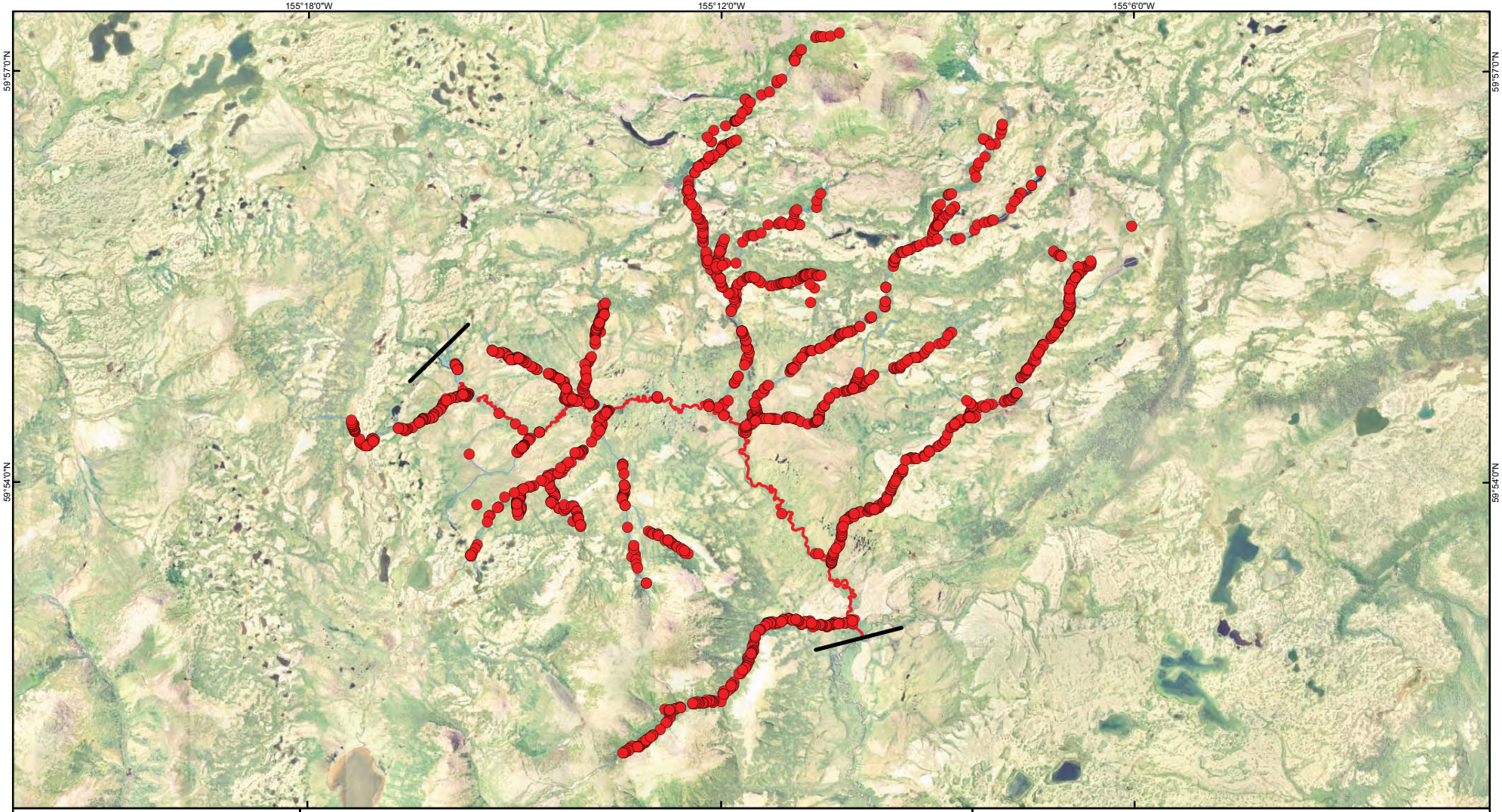
Miles
0 0.9 1.8

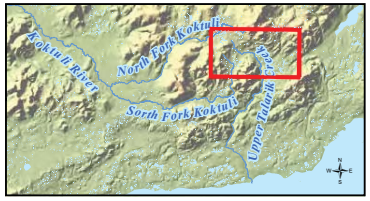
Kilometers
0 0.9 1.8

THE pebble PARTNERSHIP

Figure B.17-2
UT-F
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_UT-F_Fig-B.17-2_11x17L_17of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

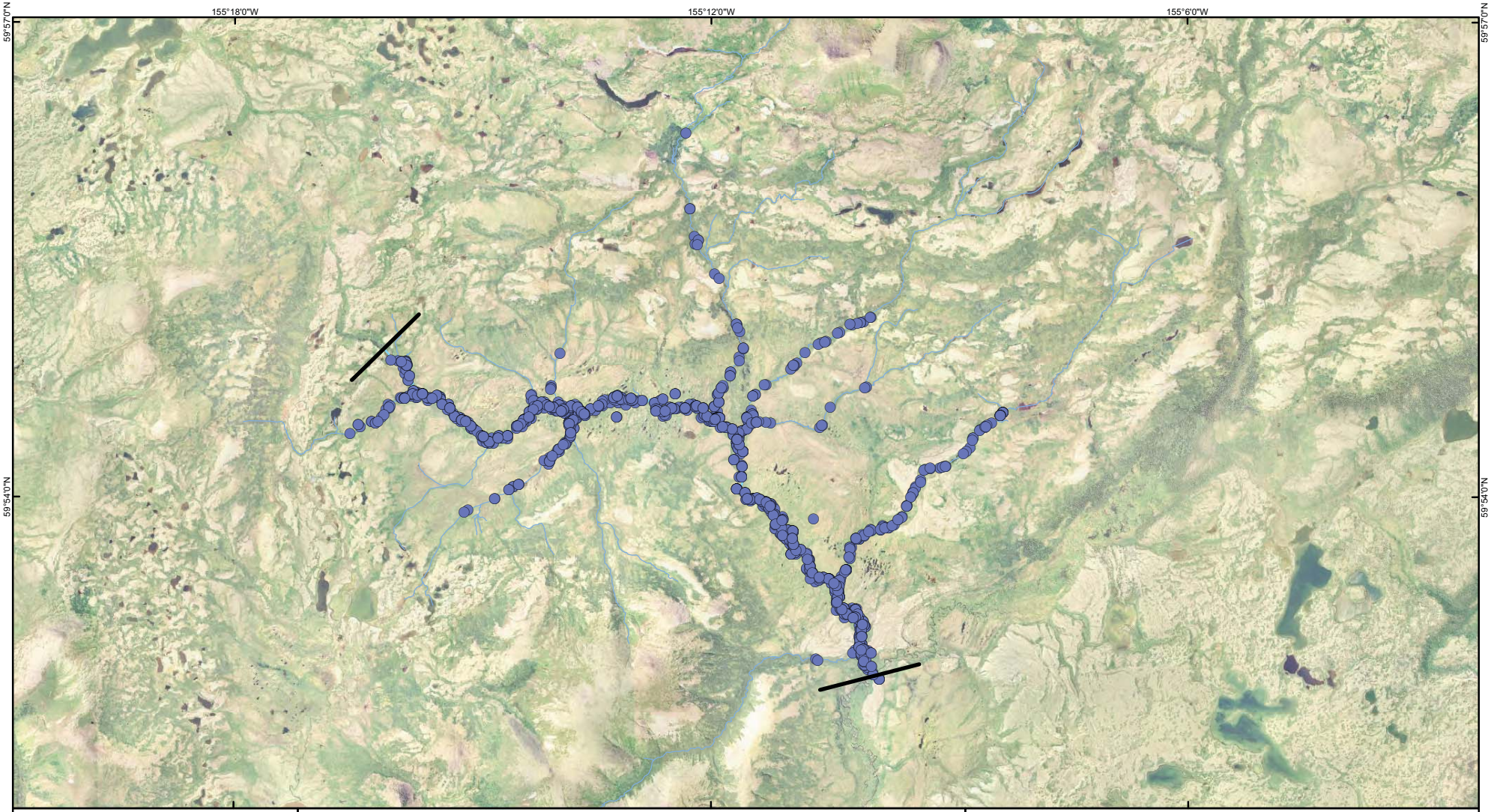
Miles: 0 1 2

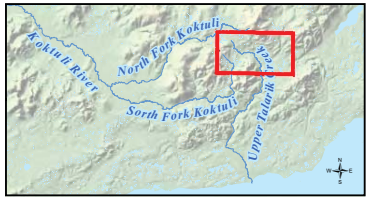
Kilometers: 0 1 2

THE pebble PARTNERSHIP

Figure B.17-3
UT-F
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-F_Fig-B.17-3_11x17L_17of19_D02.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

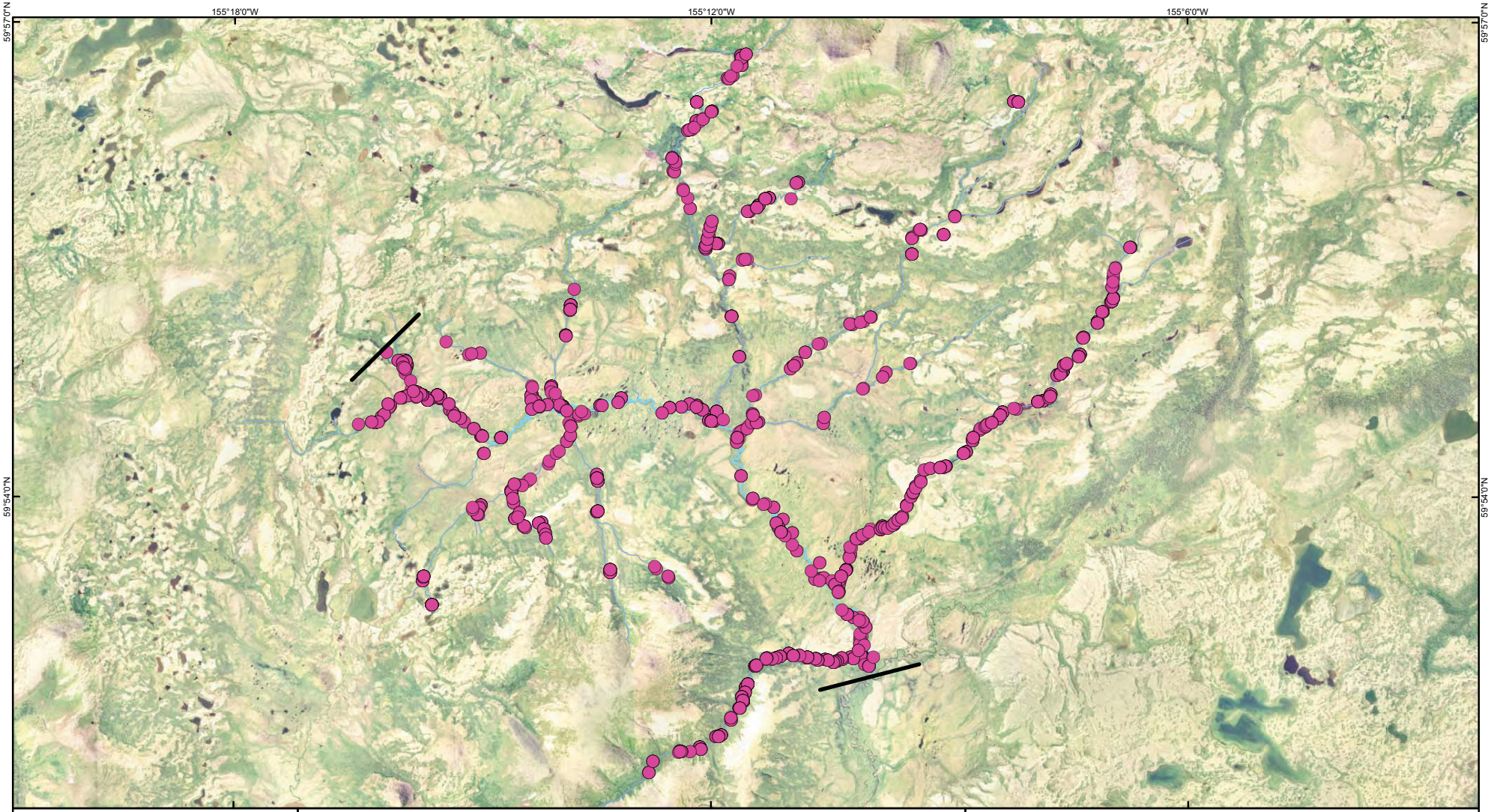
Miles
0 0.8 1.6

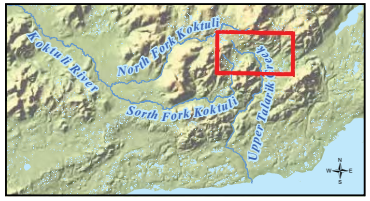
Kilometers
0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.17-4
UT-F
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-F_Fig-B.17-4_11x17L_17of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

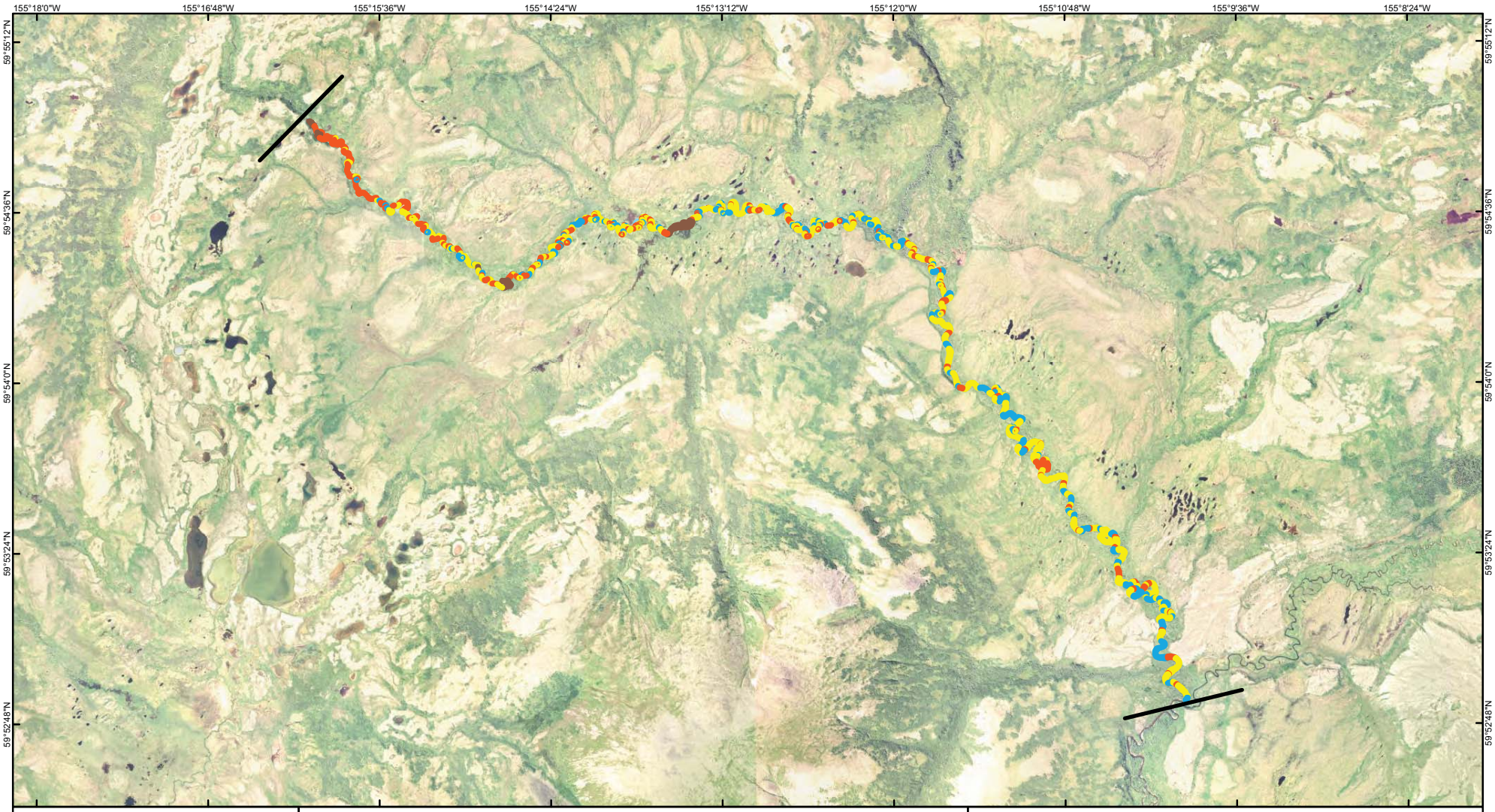
Miles: 0 0.8 1.6

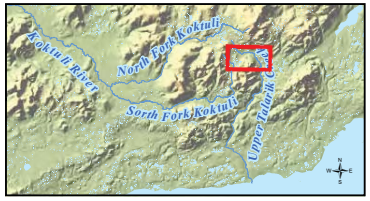
Kilometers: 0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.17-5
UT-F
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-F_Fig-B.17-5_11x17L_17of19_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

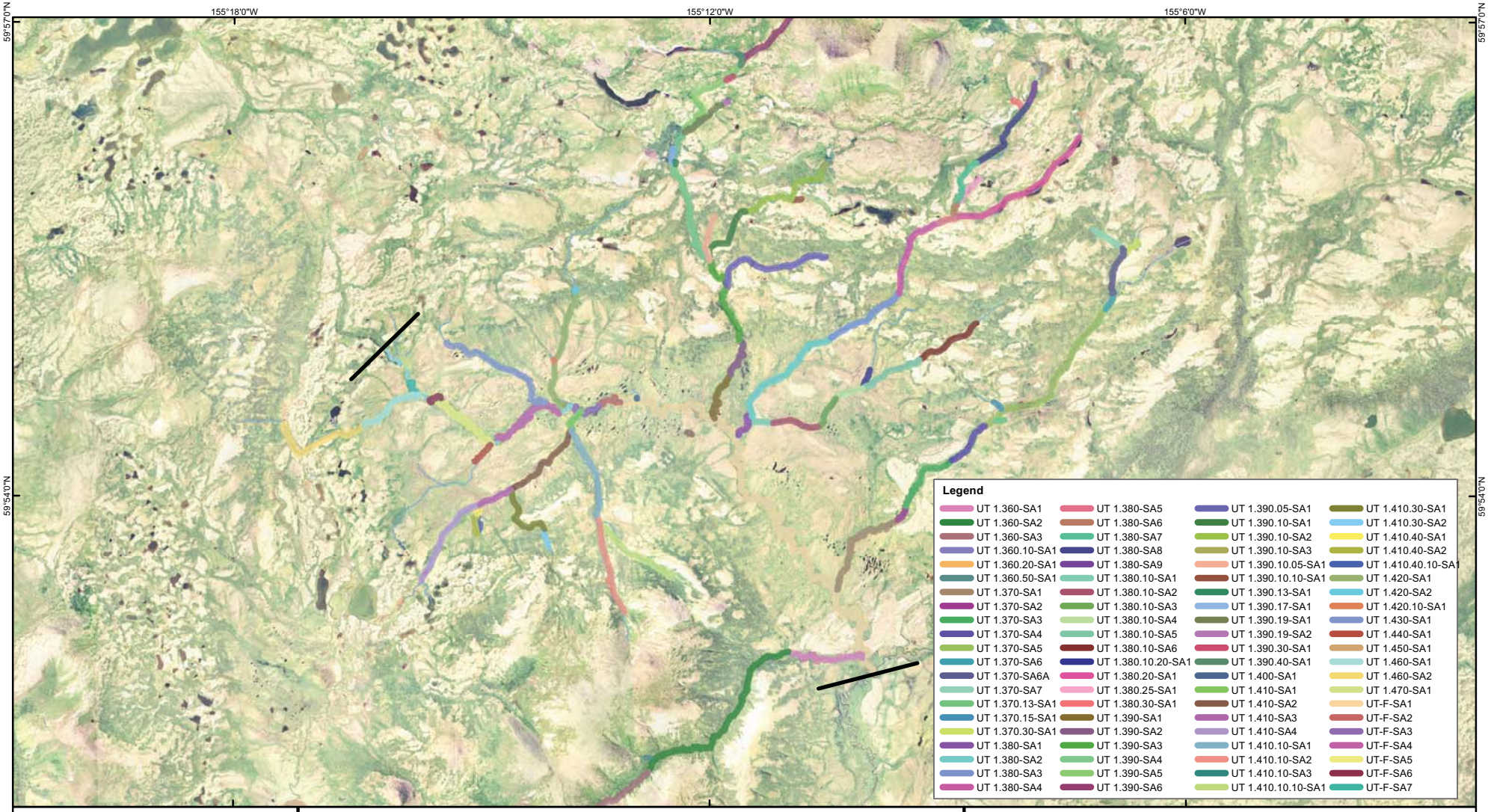
Miles: 0 0.5 1

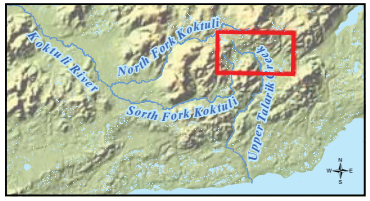
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.17-6
UT-F
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_UT-F_Fig-B.17-6_11x17L_17of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mainstem Stream Reach

Tributary Streams

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

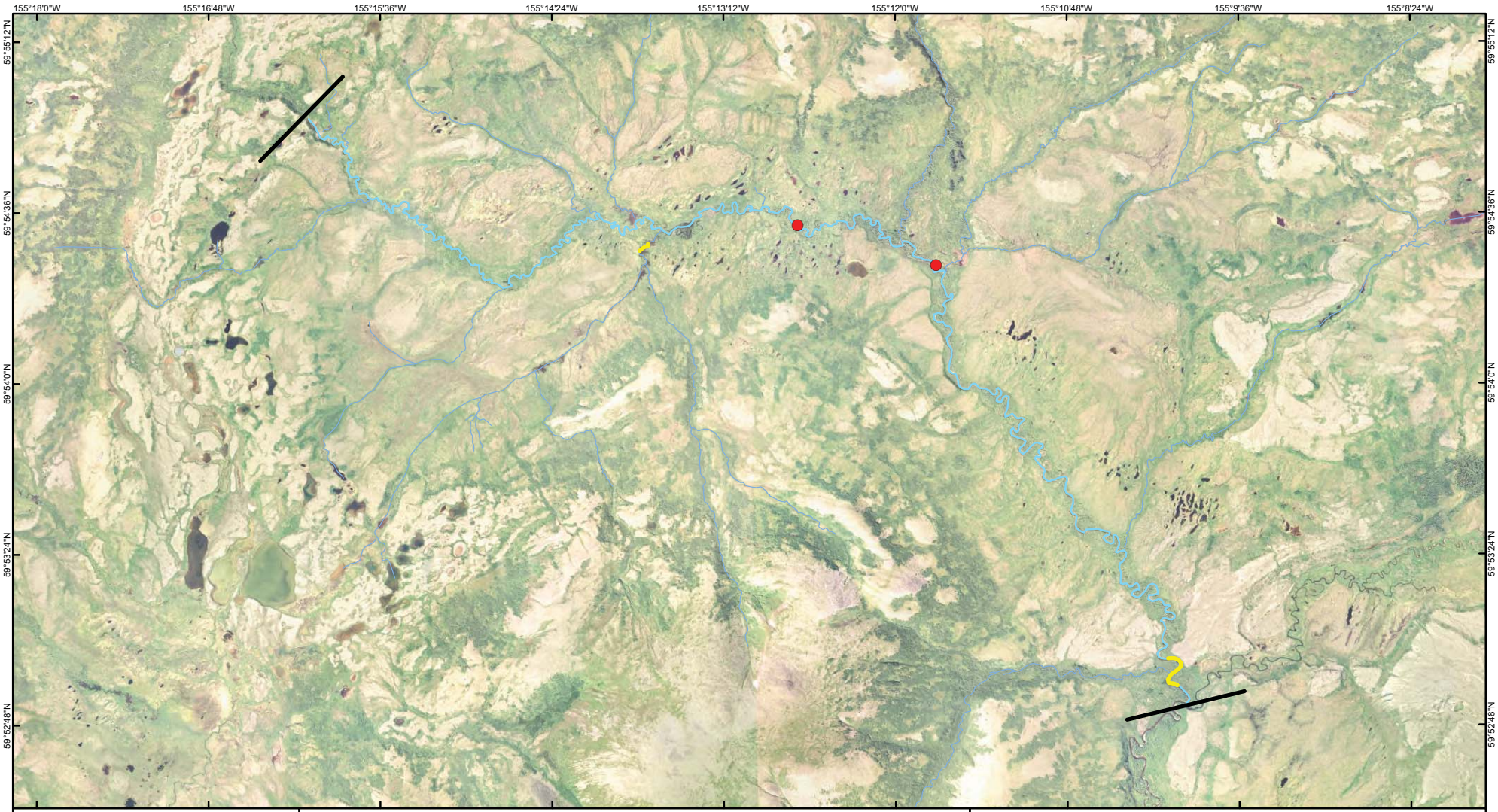
Miles
0 0.8 1.6

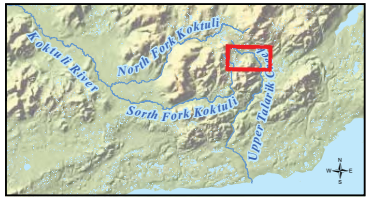
Kilometers
0 0.8 1.6

THE pebble PARTNERSHIP

Figure B.17-7
UT-F
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_UT-F_Fig-B.17-7_11x17L_17of19_D02.mxd	January 14, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

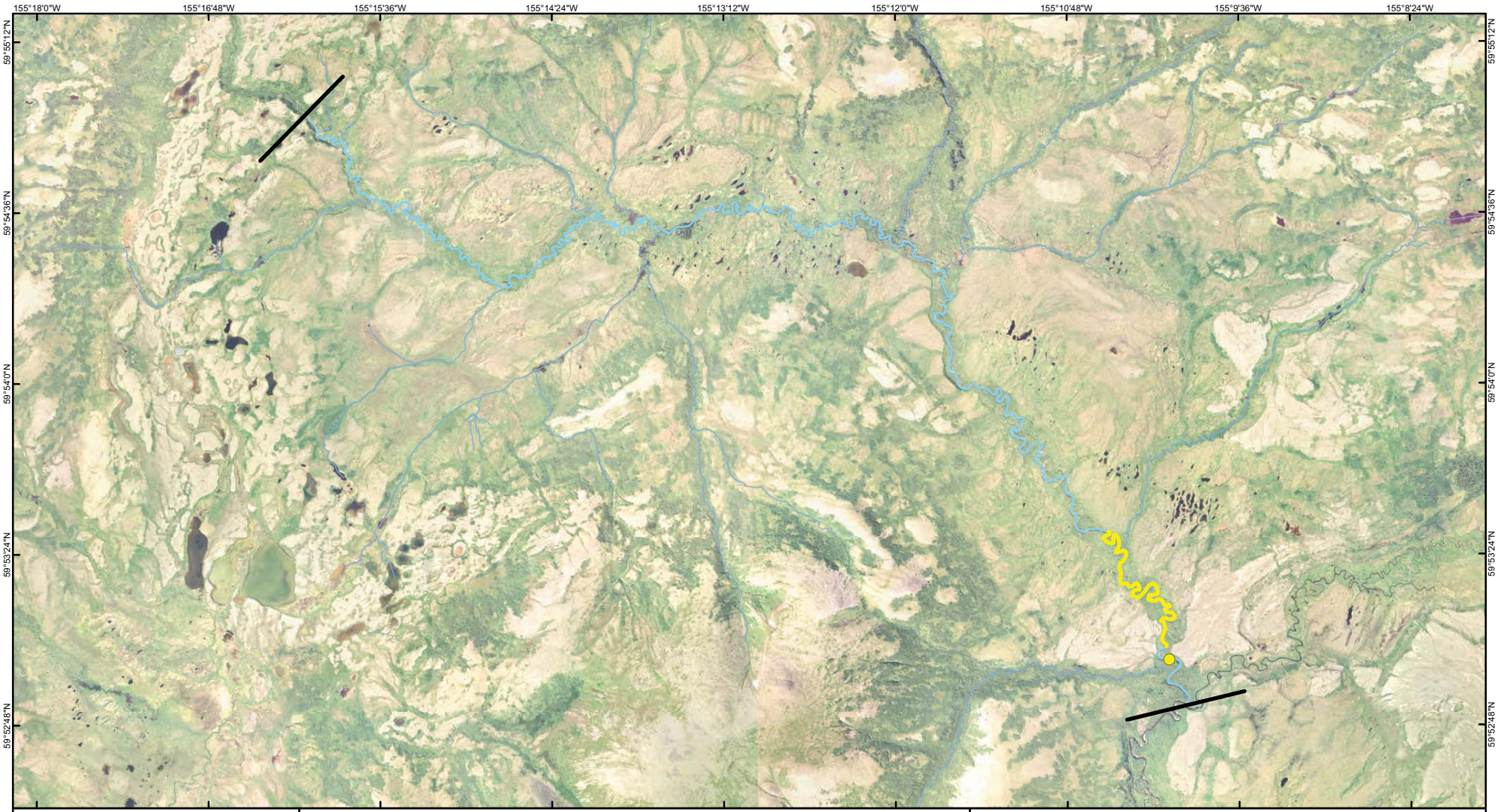
Miles: 0 0.5 1

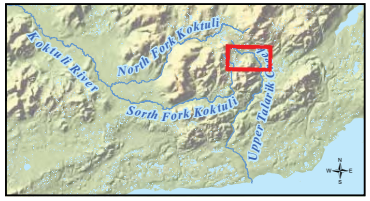
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.17-10
UT-F
Chinook Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-F_Fig-B.17-10_KS_11x17L_20of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

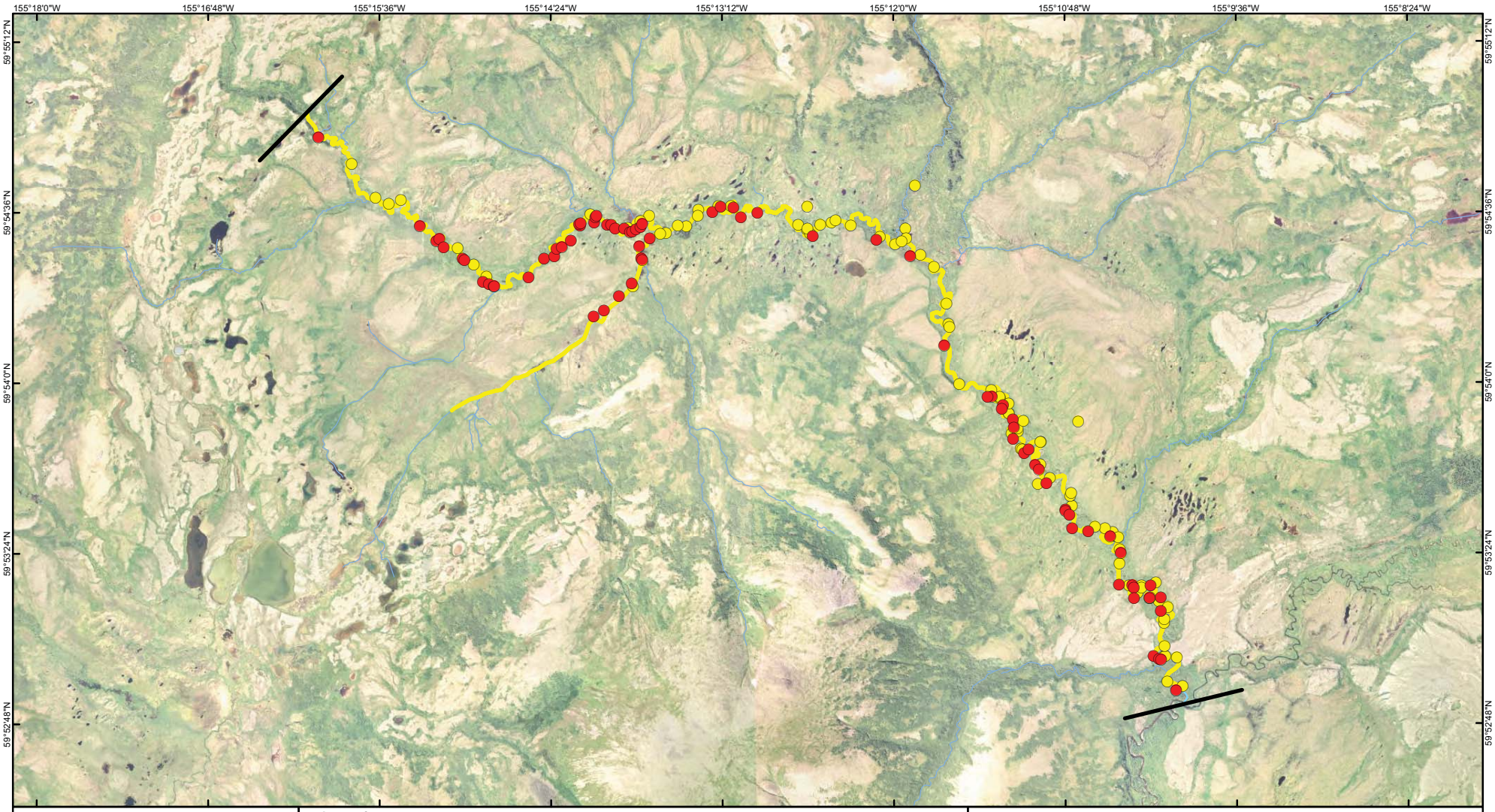
Miles: 0 0.5 1

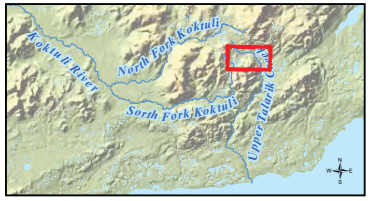
Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.17-11
UT-F
Chum Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-F_Fig-B.17-11_CH_11x17L_20of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

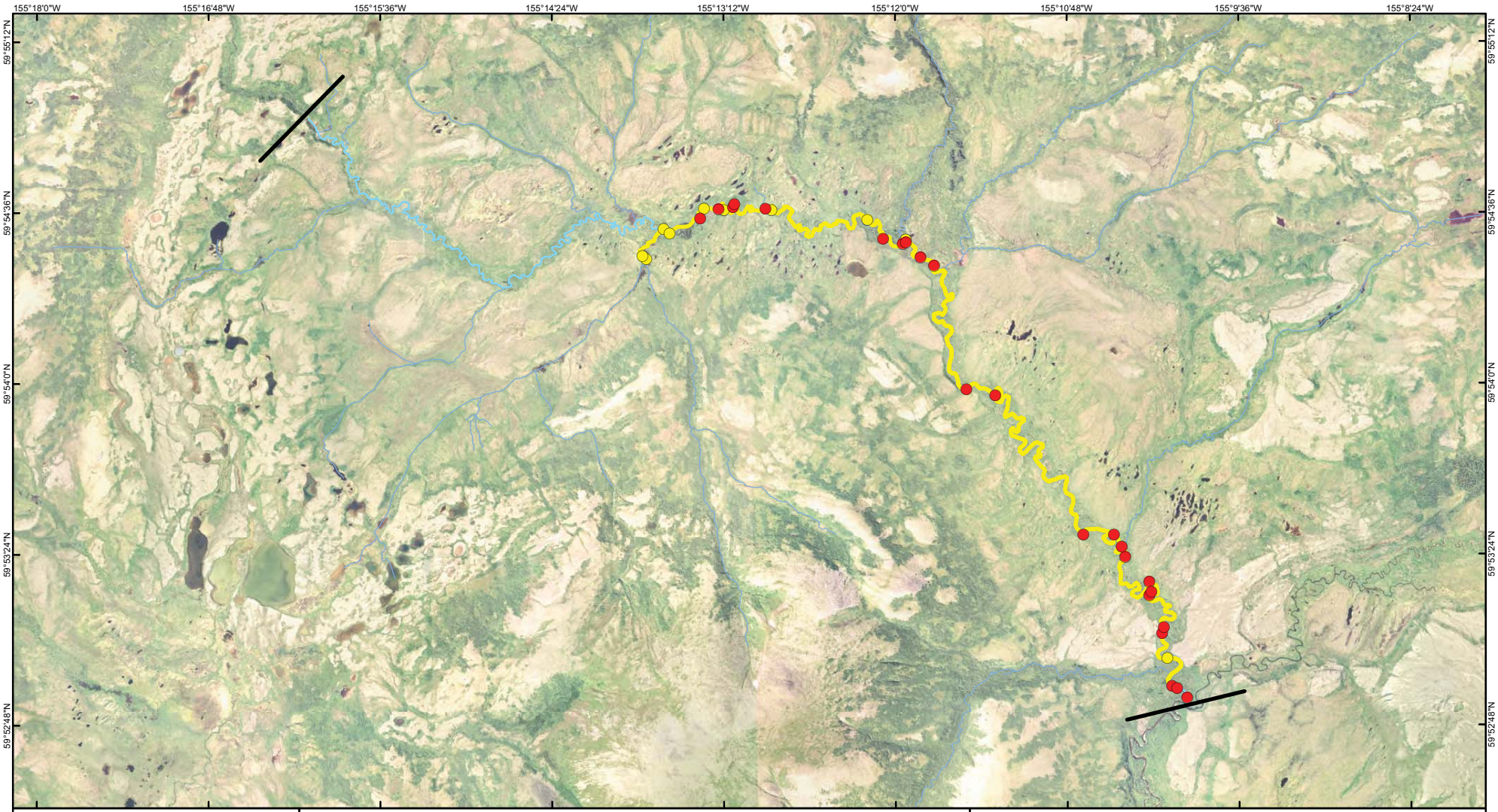
Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.17-12
UT-F
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-F_Fig-B.17-12_CS_11x17L_20of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

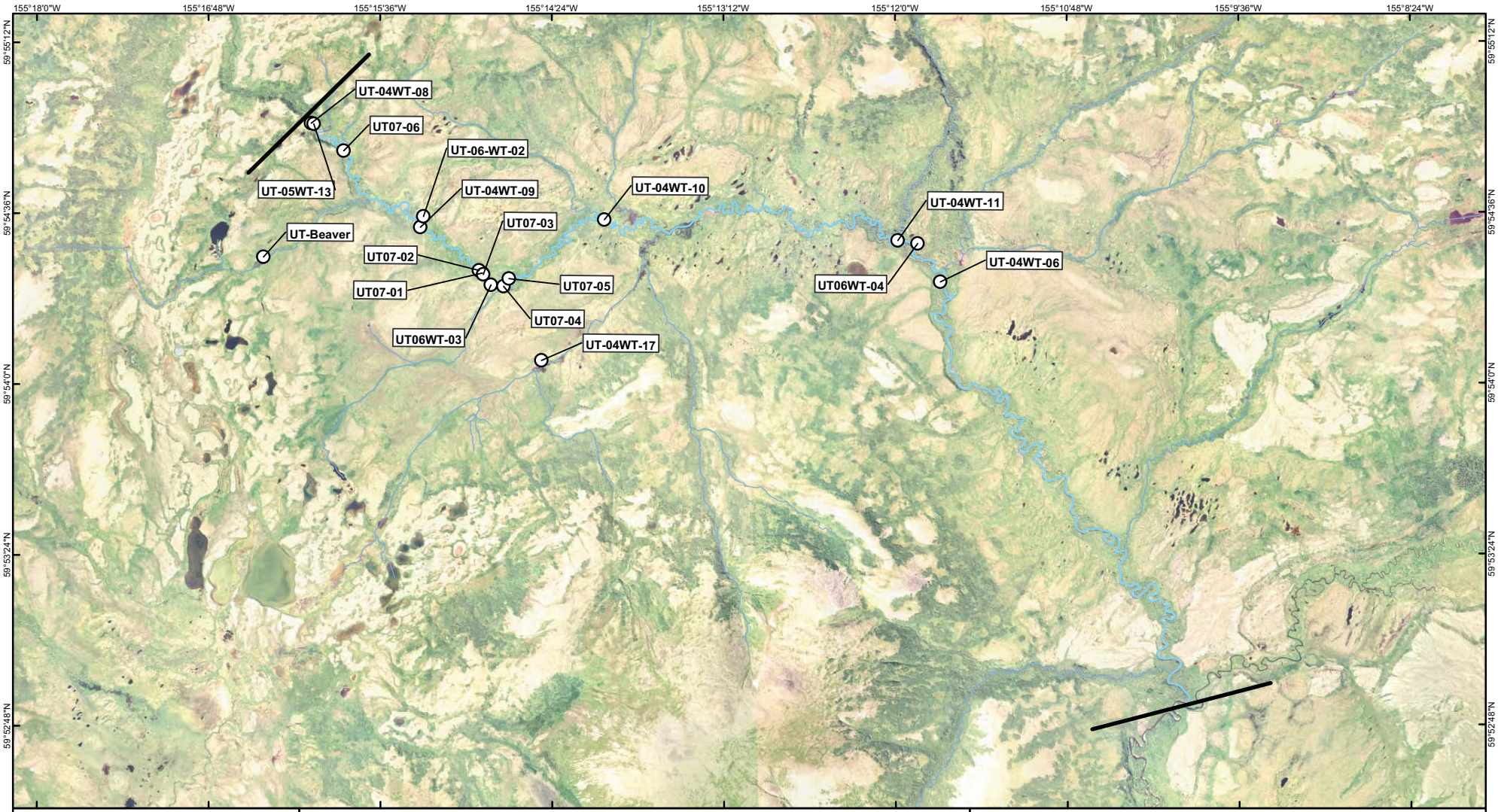
THE pebble PARTNERSHIP

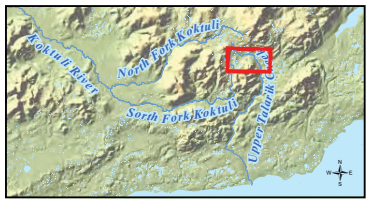
Figure B.17-13
UT-F
Sockeye Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-F_Fig-B.17-13_SS_11x17L_20of22_D04.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.5 1

Kilometers: 0 0.5 1

THE pebble PARTNERSHIP

Figure B.17-18
UT-F
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_UT-F_Fig-B.17-18_11x17L_17of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.18
UPPER TALARIK CREEK RIVER REACH G (UT-G)

Table B.18-1.
List of species found in UT-G.

Common Name	Scientific Name
coho salmon	*Oncorhynchus kisutch*
Dolly Varden	*Salvelinus malma*
sculpin [a]	*Cottus* sp.

[a] identified to genus, may include slimy sculpin and coastrange sculpin

Table B.18-2.
Channel morphology data from areas sampled within UT-G and tributaries 1.490 and 1.500.

Sample Area (SA)[a]	Survey Date[b]	USFS Channel Type[c]	Gradient (%)	Average Wetted Width (m)	Average Bankfull Width (m)	Maximum Bankfull Depth (m)
UT-G-SA1 / TOTAL	7/27/08	narrow placid flow channel	1.7	1.2	1.7	0.7
UT 1.490-SA1 / TOTAL	7/29/08	narrow mixed control channel	2.7	0.8	1.3	0.4
UT 1.500-SA1	7/30/08	narrow placid flow channel	0.5	1.3	3.5	0.7
UT 1.500-SA2	7/31/08	narrow shallow contained channel	1.3	1.6	2.7	0.7
UT 1.500-SA3	8/1/08	beaver dam/pond channel	1.3	0.8	2.6	0.6
UT 1.500.10-SA1	8/3/08	narrow mixed control channel	1.0	1.4	3.2	0.4
UT 1.500.20-SA1	7/31/08	shallowly incised muskeg channel	6.5	1.2	2.4	0.5
UT 1.500 TOTAL			1.7	1.3	2.9	0.6

[a] Sample areas were contiguous stream reaches defined by consistent channel types and discharge.

[b] Survey date indicates the first date of survey if Sample Area was surveyed over multiple days.

[c] USFS channel type based on Paustian et al. 1992 classification.

Table B.18-3.
Percent composition of primary habitat types from areas sampled within UT-G and tributaries 1.490 and 1.500 in 2008.

Sample Area (SA)	Length (m)	Average Wetted Width (m)[a]	Total Wetted Area (m^2)[a]	Side Channel (% of Total Wetted Area)	Distributary (% of Total Wetted Area)	Primary Habitat Types (% survey length) / (% wetted area)[b]									
						Backwater/ Slough	Beaver Complex	Cascade	Dry[a]	Obscured[a]	Pond/Lake	Pool	Riffle	Run/Glide	Wetland
UT-G-SA1 / TOTAL	700.9	4.8	3330.6	43	0	0 / 0	9 / 28	0 / 0	0	0	0 / 0	24 / 9	31 / 10	24 / 8	12 / 46
UT 1.490-SA1 / TOTAL	754.6	1.0	726.0	0	0	3 / 14	0 / 0	0 / 0	0	3	0 / 0	3 / 4	21 / 19	64 / 37	5 / 26
UT 1.500-SA1	2275.4	2.3	5326.8	1	0	1 / 2	2 / 31	0 / 0	0	0	0 / 0	1 / 1	45 / 26	50 / 40	0 / 0
UT 1.500-SA2	1456.0	1.6	2332.7	2	0	2 / 9	0 / 0	0 / 0	0	0	0 / 0	2 / 2	57 / 50	40 / 39	0 / 0
UT 1.500-SA3	804.4	9.7	7830.5	0	0	0 / 0	43 / 92	3 / 1	0	0	0 / 0	2 / 0	26 / 3	25 / 3	0 / 0
UT 1.500.10-SA1	81.3	1.5	117.9	0	0	0 / 0	0 / 0	0 / 0	0	0	0 / 0	0 / 0	47 / 41	53 / 59	0 / 0
UT 1.500.20-SA1	415.0	1.2	516.3	0	0	2 / 12	0 / 0	33 / 22	0	0	0 / 0	1 / 1	64 / 64	1 / 1	0 / 0
UT 1.500 TOTAL	5032.1	3.2	16124.1	1	0	1 / 2	8 / 55	3 / 1	0	0	0 / 0	1 / 1	47 / 20	39 / 21	0 / 0

[a] Dry and obscured habitat units were not included in Average Wetted Width, Total Wetted Area or Percent Wetted Area calculations.

[b] Pond, wetland, dry and obscured habitat types were included in 2008 sampling only.

Table B.18-4.
Descriptive characteristics of primary habitat units from areas sampled within UT-G and tributaries 1.490 and 1.500 in 2008.

Sample Area (SA)	Dominant Substrate	Subdominant Substrate	Eroding Bank (% of Length)	Undercut Bank (% of Length)	Dominant Riparian Vegetation
UT-G-SA1 / TOTAL	organics	sand/silt	0	19	willow shrub
UT 1.490-SA1 / TOTAL	sand/silt	organics	0	15	willow shrub
UT 1.500-SA1	sand/silt	organics	0	1	alder shrub
UT 1.500-SA2	sand/silt	gravel	0	0	alder shrub
UT 1.500-SA3	sand/silt	organics	0	9	other herbaceous
UT 1.500.10-SA1	cobble	sand/silt	0	0	willow shrub/other herbaceous
UT 1.500.20-SA1	gravel	cobble	0	0	alder shrub
UT 1.500 TOTAL	sand/silt	organics	0	2	alder shrub

Table B.18-5.
Summary of 2008 pool habitat data from areas sampled in UT-G and tributaries 1.490 and 1.500.

Sample Area (SA)	Length (km)	Number of Pools			Pool Frequency (# pools/100m)			Pool Area (m^2)			Average Pool Area (m^2)	Average Residual Pool Depth (m)	Number of Holding Pools (≥1m deep; #/100m)
		Primary[a]	Second-ary[b]	Total	Primary	Second-ary	Total	Primary	Second-ary	Total			
UT-G-SA1 / TOTAL	0.7	16	0	16	2.3	0	2.3	305.3	0	305.3	19.1	0.5	2.3
UT 1.490-SA1 / TOTAL	0.75	3	0	3	0.4	0	0.4	28.8	0	28.8	9.6	0.4	0.4
UT 1.500-SA1	2.28	1	0	1	0	0	0	34.6	0	34.6	34.6	0.5	0
UT 1.500-SA2	1.46	6	0	6	0.4	0	0.4	48.5	0	48.5	8.1	0.4	0.4
UT 1.500-SA3	0.8	4	0	4	0.5	0	0.5	22.9	0	22.9	5.7	0.3	0.5
UT 1.500.10-SA1	0.08	0	0	0	0	0	0	0	0	0	0	0	0
UT 1.500.20-SA1	0.42	1	0	1	0.2	0	0.2	4.2	0	4.2	4.2	0.5	0.2
UT 1.500 TOTAL	5.03	12	0	12	0.2	0	0.2	110.1	0	110.1	9.2	0.4	0.2

[a] A primary pool was defined as one that occupied 50% or more of the channel width.
[b] A secondary pool was defined as one that occupied less than 50% of the channel width.

Table B.18-6.
Special habitat features within UT-G and tributaries 1.490 and 1.500, surveyed in 2008. Special features were documented in the field; there are known tributaries that were not documented during the 2008 surveys, including tributaries that were dry, obscured by vegetation, or not connected at the time of the survey.

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.490-SA1	59.92160	-155.27959	barrier		dry channel	temporary		1.3
	59.92144	-155.28051	barrier		dry channel	temporary	0.44	2.1
	59.92171	-155.28296	tributary	unnamed				
UT 1.500-SA1			none present					
UT 1.500-SA2	59.93081	-155.25689	seep					
	59.93059	-155.25942	tributary	UT 1.500.10				
	59.93157	-155.25608	seep					
	59.93256	-155.25456	barrier		falls	temporary	0.44	0.4
	59.93338	-155.24881	seep					
	59.93333	-155.24775	tributary	UT 1.500.20				
UT 1.500-SA3	59.93324	-155.24702	seep					
	59.93339	-155.24668	seep					
	59.93332	-155.24647	seep					
	59.93321	-155.24348	seep					
	59.93307	-155.24325	barrier		beaver dam	temporary	0.65	0.7
	59.93308	-155.24298	seep					
	59.93301	-155.24273	seep					
	59.93305	-155.24259	barrier		beaver dam	temporary	1.1	1.3
	59.93304	-155.24236	barrier		beaver dam	temporary	1.2	0.7
	59.93284	-155.24225	seep					
	59.93303	-155.24034	barrier		beaver dam	temporary	0.6	0.9
	59.93287	-155.24004	barrier		beaver dam	temporary	0.4	0.8
	59.93310	-155.23983	seep					
	59.93285	-155.23933	seep					
	59.93273	-155.23891	barrier		beaver dam	temporary	0.45	1.0

Table B.18-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT 1.500-SA3 (cont)	59.93274	-155.23875	barrier		beaver dam	temporary	0.63	0.9
	59.93258	-155.23829	barrier		beaver dam	temporary	0.7	0.8
	59.93261	-155.23778	barrier		beaver dam	temporary	0.4	1.2
	59.93258	-155.23754	barrier		beaver dam	temporary	0.5	0.8
	59.93245	-155.23713	barrier		beaver dam	temporary	0.9	1.0
	59.93235	-155.23673	barrier		beaver dam	temporary	1.25	1.4
	59.93245	-155.23701	barrier		beaver dam	temporary	0.8	1.0
UT 1.500.10-SA1	59.93081	-155.25904	seep					
	59.93101	-155.25912	seep					
	59.93103	-155.25906	seep					
	59.93118	-155.25884	seep					
UT 1.500.20-SA1	59.93539	-155.24576	tributary	unnamed				
UT-G-SA1	59.92861	-155.28113	seep					
	59.92857	-155.28127	seep					
	59.92856	-155.28119	tributary	unnamed				
	59.92844	-155.28153	spring					
	59.92855	-155.28139	tributary	unnamed				
	59.92840	-155.28162	seep					
	59.92838	-155.28219	spring					
	59.92834	-155.28260	spring					
	59.92838	-155.28278	seep					
	59.92838	-155.28278	seep					
	59.92848	-155.28288	seep					
	59.92856	-155.28290	seep					
	59.92918	-155.28413	seep					
	59.92939	-155.28436	seep					
	59.92956	-155.28448	seep					
	59.92994	-155.28495	barrier		falls	temporary	0.65	0.1
	59.92999	-155.28508	barrier		falls	temporary	0.75	0.1
	59.92982	-155.28470	barrier		falls	temporary	0.63	0.1

Table B.18-6. Continued

Sample Area (SA)	Feature Location		Feature Type	Tributary Stream Code	Barrier Characteristics			
	Latitude (WGS84)	Longitude (WGS84)			Type	Status	Height (m)	Length (m)
UT-G-SA1 (cont)	59.93037	-155.28550	barrier		beaver dam	temporary	1.2	2.1

Note: Blank cells indicate no data were collected for that record.

Table B.18-7.
2004-2008 number of fish observations by lifestage within UT-G mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult		Juvenile					Juvenile/Adult[a]			Total
			Aug	Subtotal	Apr	Jul	Aug	Nov	Subtotal	Jul	Aug	Subtotal	
coho salmon	2008	Electrofishing					95		95				95
		Snorkel					9		9				9
Dolly Varden	2004	Electrofishing	1	1		9	7		16				17
		Minnow Trap					5		5				5
	2005	Electrofishing	5	5			5		5				10
	2006	Minnow Trap			1			1	2				2
	2008	Electrofishing					18		18				18
Salmonid sp.	2008	Visual Observation					60		60		1	1	61
sculpin sp.	2004	Electrofishing								32		32	32
	2008	Electrofishing	56	56			141		141				197
		Visual Observation									2	2	2
unidentified sp.	2008	Electrofishing									1	1	1

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

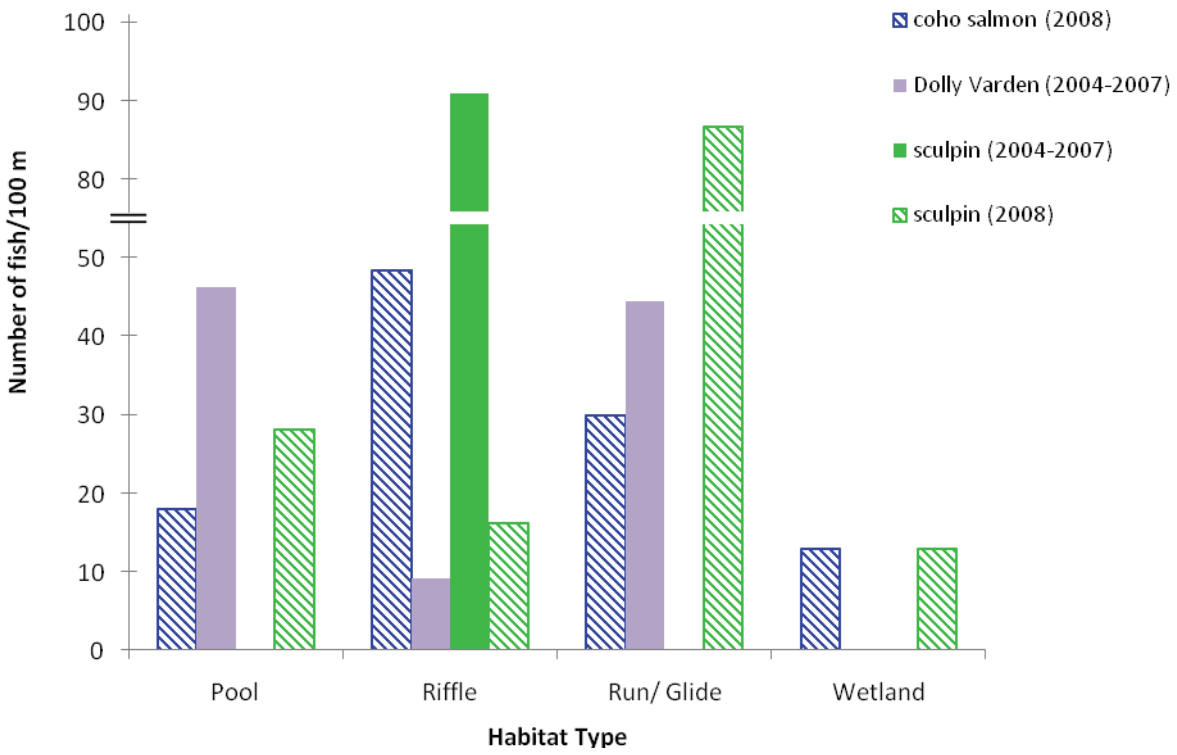


Figure B.18-8a.
2004-2008 fish abundance by habitat type within mainstem UT-G.

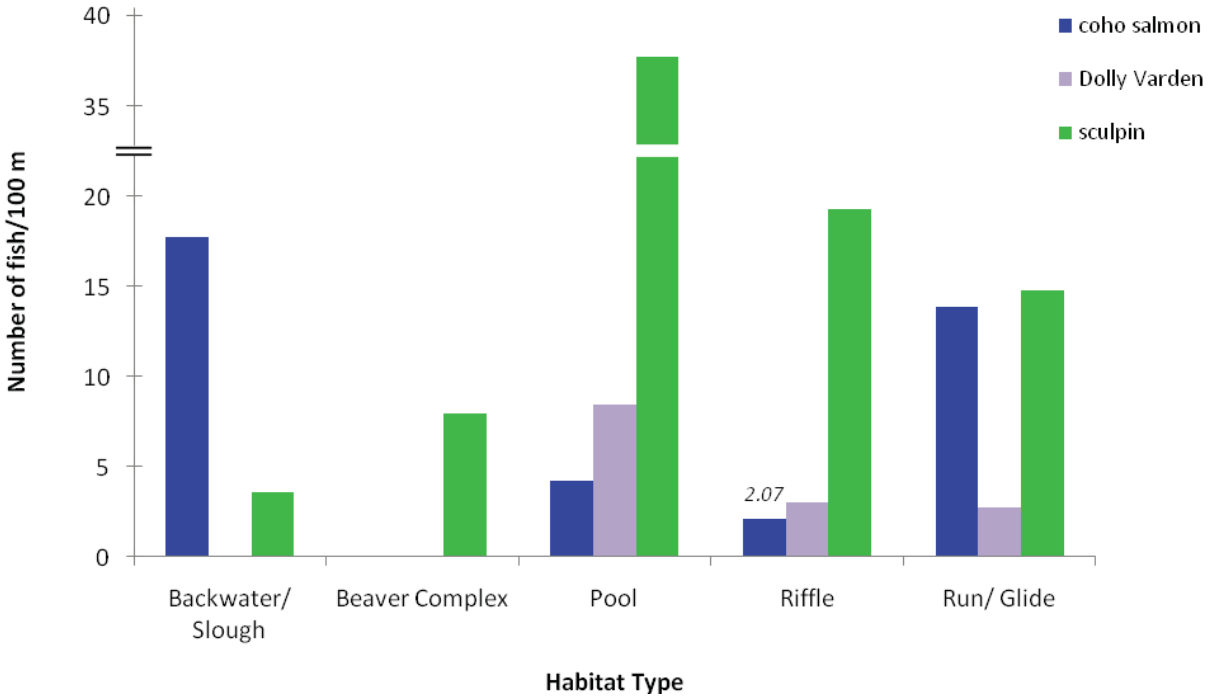


Figure B.18-8b.
2008 fish abundance by habitat type within UT-G tributaries.

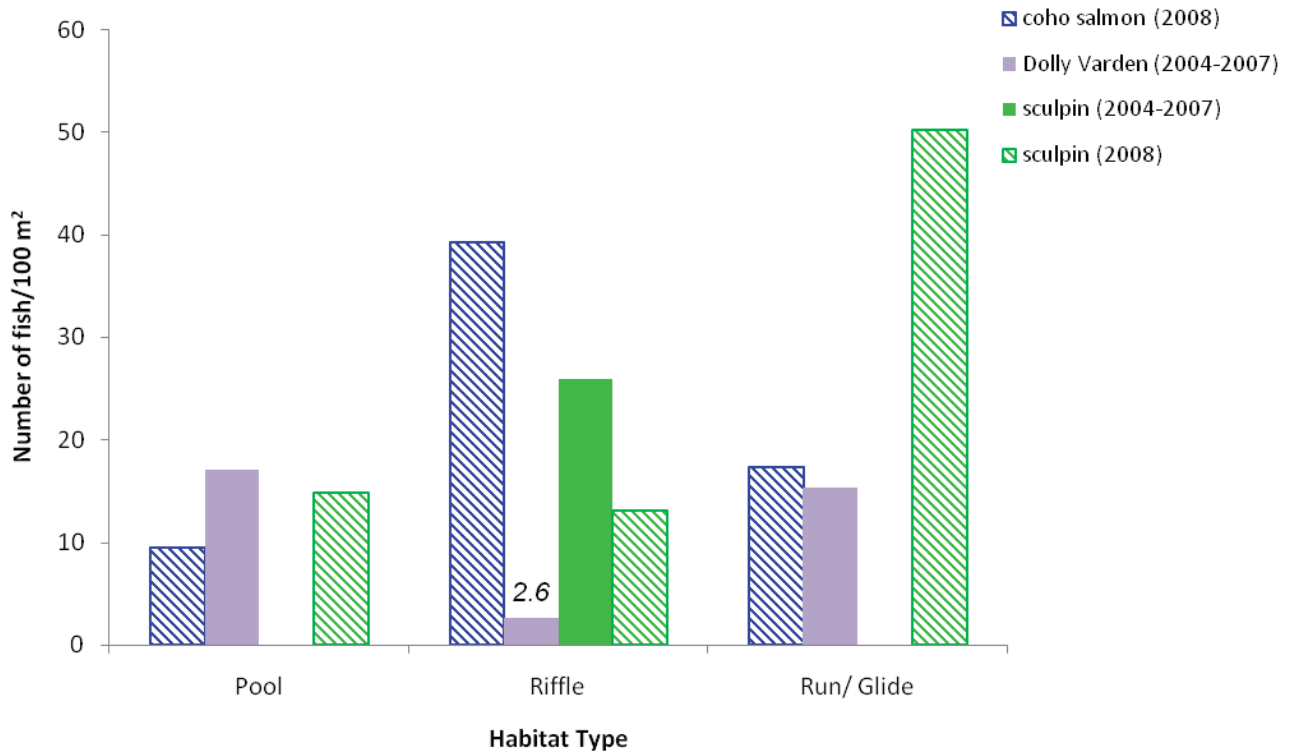


Figure B.18-9a.
2004-2008 fish density by habitat type within mainstem UT-G.

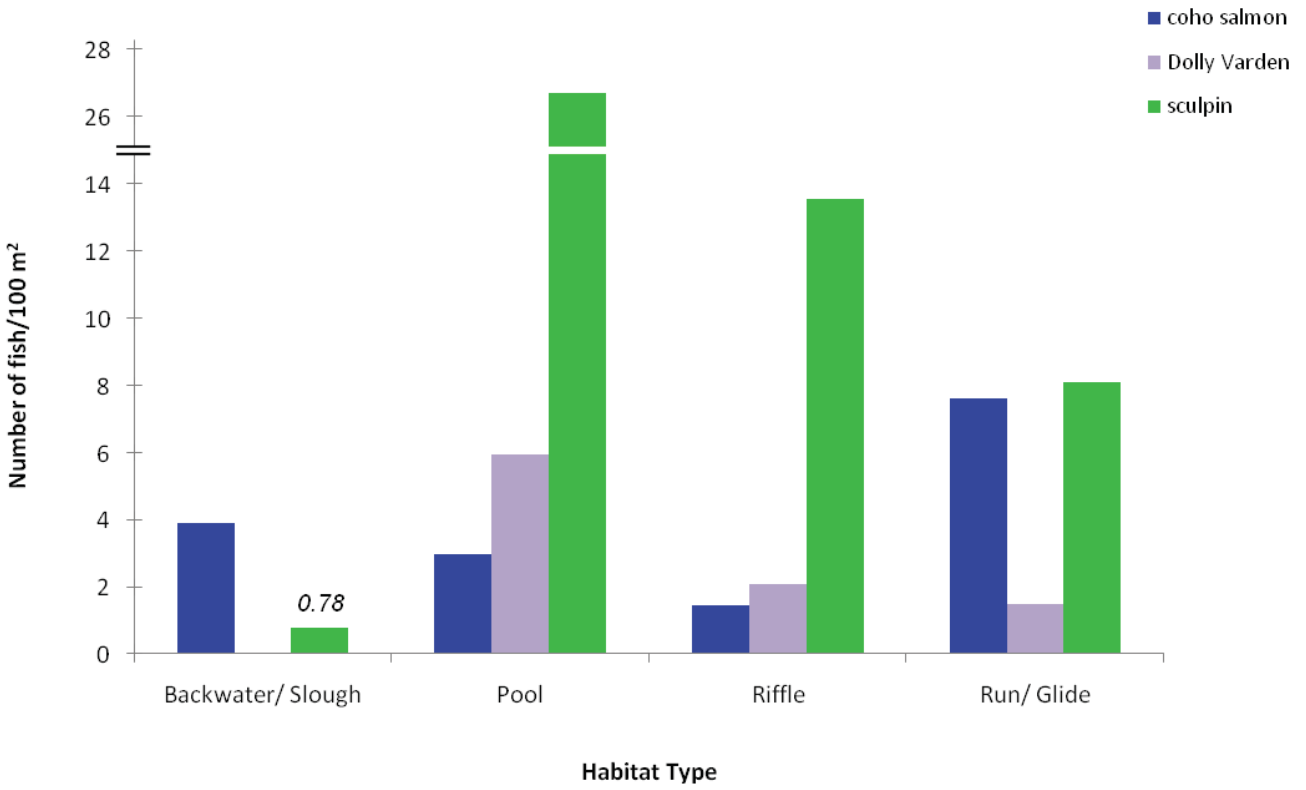


Figure B.18-9b.
2008 fish density by habitat type within UT-G tributaries.

Table B.18-8.
Densities of fish species by habitat type in UT-G and tributaries 1.490 and 1.500 in 2008.

Stream	Habitat Type	Total Area Surveyed (m^2)	Total Fish Density (fish/100 m^2)	Coho Salmon	Dolly Varden	Sculpin		
				Juvenile	Juvenile	Adult	Juvenile	Total
UT 1.0	Pool	147.5	24.41	9.49		6.10	8.81	14.92
	Riffle	38.1	52.49	39.37			13.12	13.12
	Run/Glide	109.4	67.64	17.37		5.48	44.79	50.27
	Wetland	123.0	4.88	2.44			2.44	2.44
	All Habitats	418.0	32.54	12.20		3.59	16.75	20.33
UT 1.490	Pool	9.0	11.11	11.11				
	Riffle	36.0	75.00	2.78	8.33	22.22	41.67	63.89
	Run/Glide	11.0	190.91	145.45	18.18		27.27	27.27
	All Habitats	56.0	87.50	32.14	8.93	14.29	32.14	46.43
UT 1.500	Backwater/Slough	67.6	8.88	7.40			1.48	1.48
	Beaver Complex	108.2	0.92			0.92		0.92
	Pool	20.6	43.69			4.85	38.83	43.69
	Riffle	443.3	12.41	1.35	1.58	5.41	4.06	9.47
	Run/Glide	380.9	12.60	3.94	1.05	1.31	6.30	7.61
	All Habitats	1020.6	11.66	2.55	1.08	3.04	5.00	8.03
UT 1.500.20	Backwater/Slough	60.4	0					
	Cascade	21.7	0					
	Pool	4.1	48.78		48.78			
	All Habitats	86.2	2.32		2.32			
UT 1.500.30	Beaver Complex	1098.9	0.27			0.18	0.09	0.27
	Run/Glide	16.2	6.17				6.17	6.17
	All Habitats	1115.1	0.36			0.18	0.18	0.36

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not be, determined.
Note: Blank cells indicate no data were collected for that record.

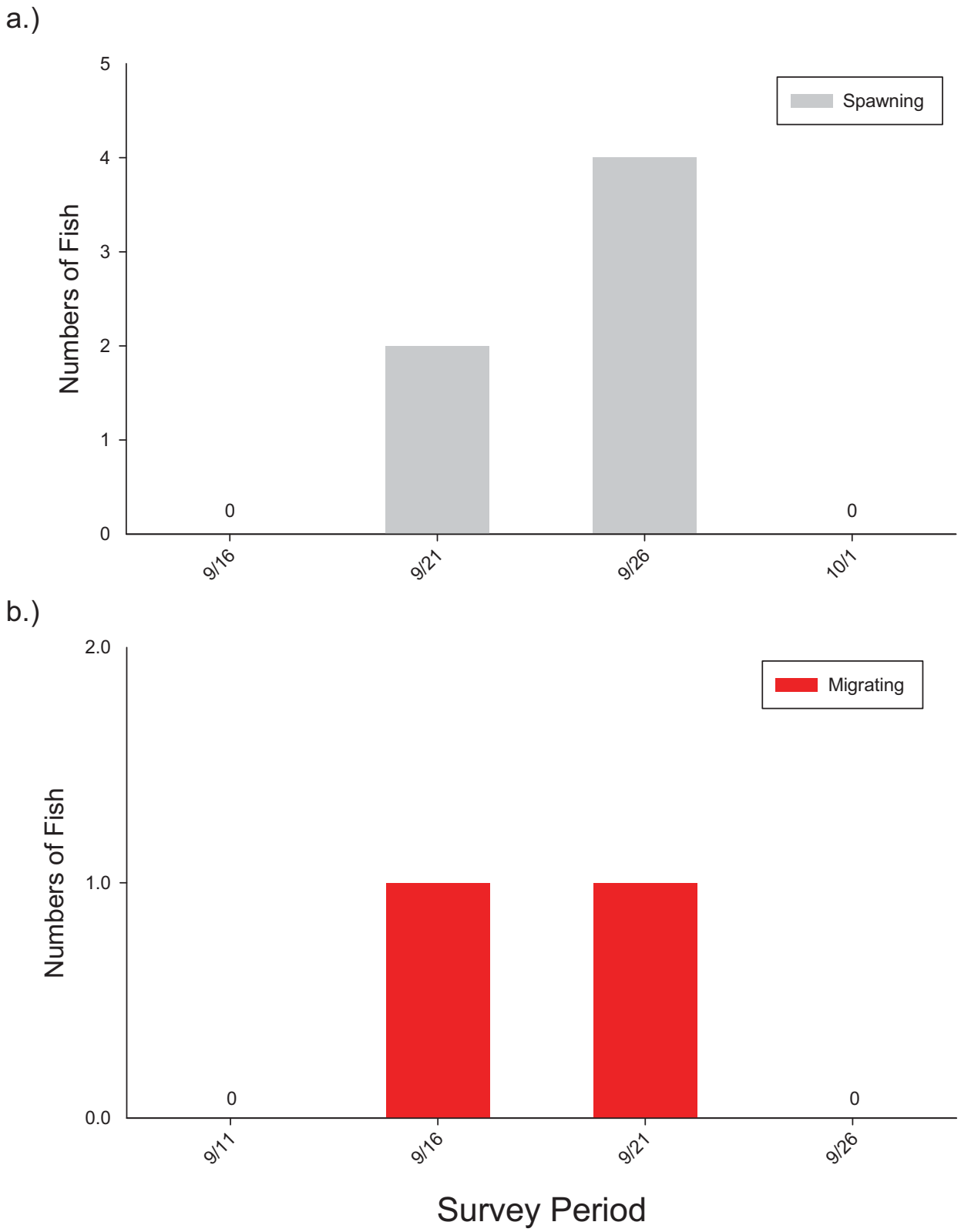


Figure B.18-11.
Observations of coho salmon during 2008 aerial surveys in UT-G. a.) Number of coho salmon spawning. b.) Number of coho salmon observed migrating.

Table B.18-9.
UT-G fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Trap Set Time (Hours)	Juveniles	Total Fish Count
4/5/2006	UT-05WT-14	Dolly Varden	minnow trap	25	1	1
11/1/2006	UT-05WT-14	Dolly Varden	minnow trap	24	1	1

Table B.18-10.
2008 fish observations by method at mainstem index sites located within UT-G.

Index Site	Species	Method	Juvenile	Total
UTC60.62	coho salmon	snorkel	9	9
UTC60.62 Total			**9**	**9**

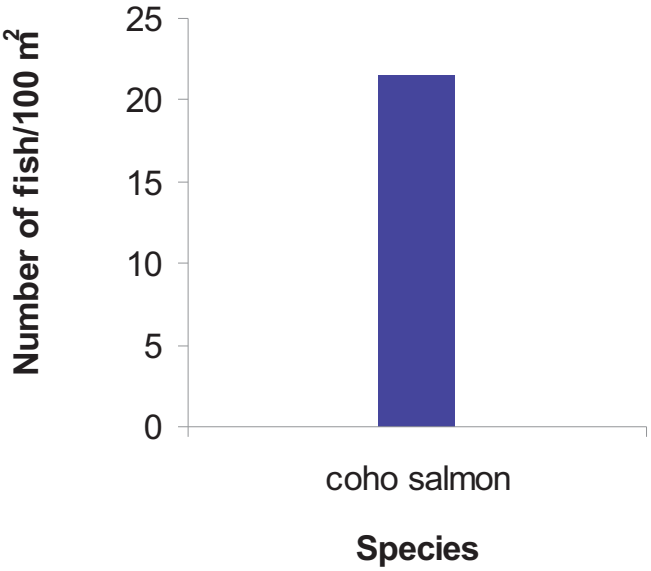


Figure B.18-13.
2008 fish density in riffle habitat at mainstem index site (RKm 60.62) within UT-G. Densities were calculated from the method that generated the greatest count of fish at this location.

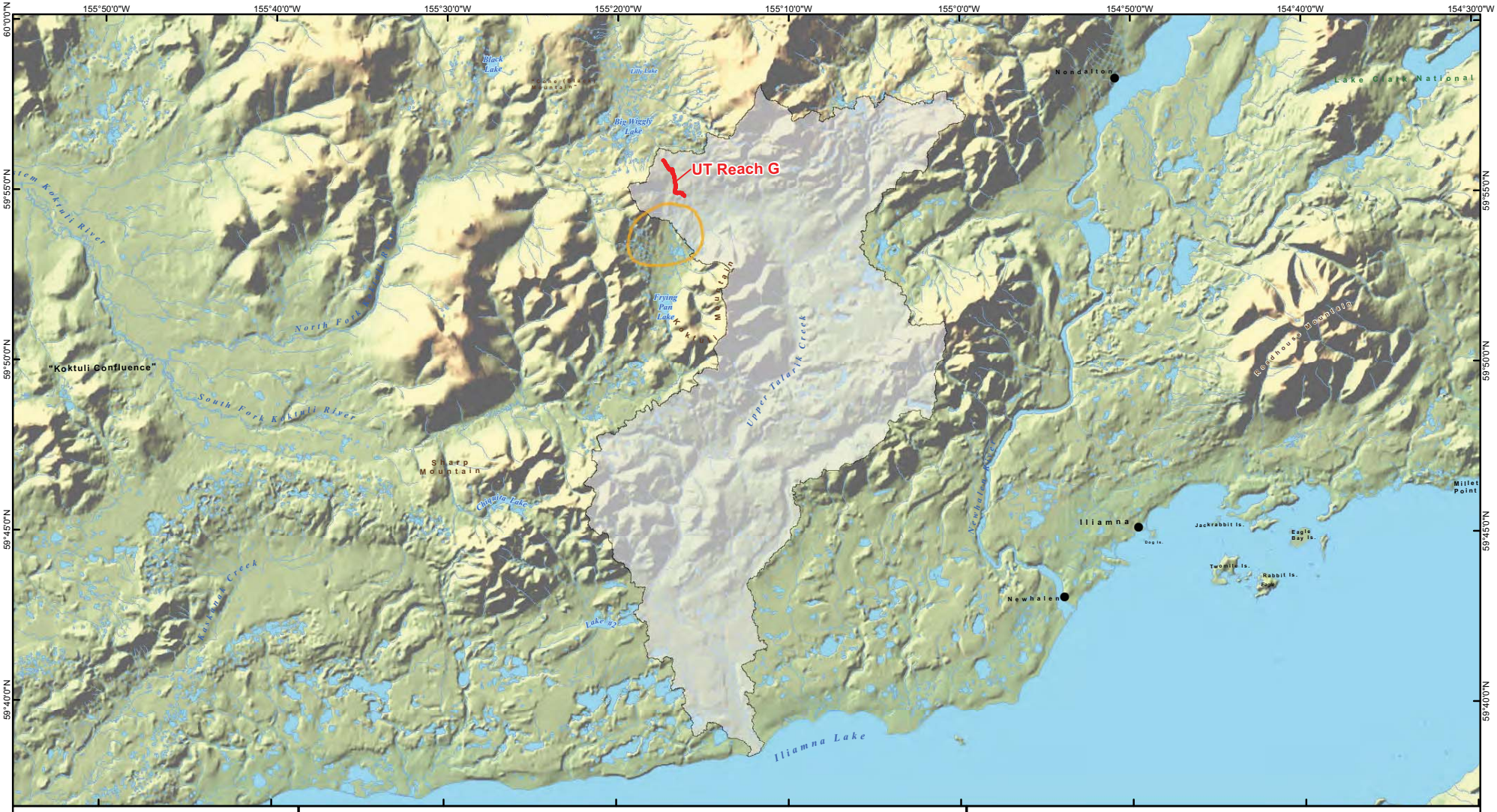
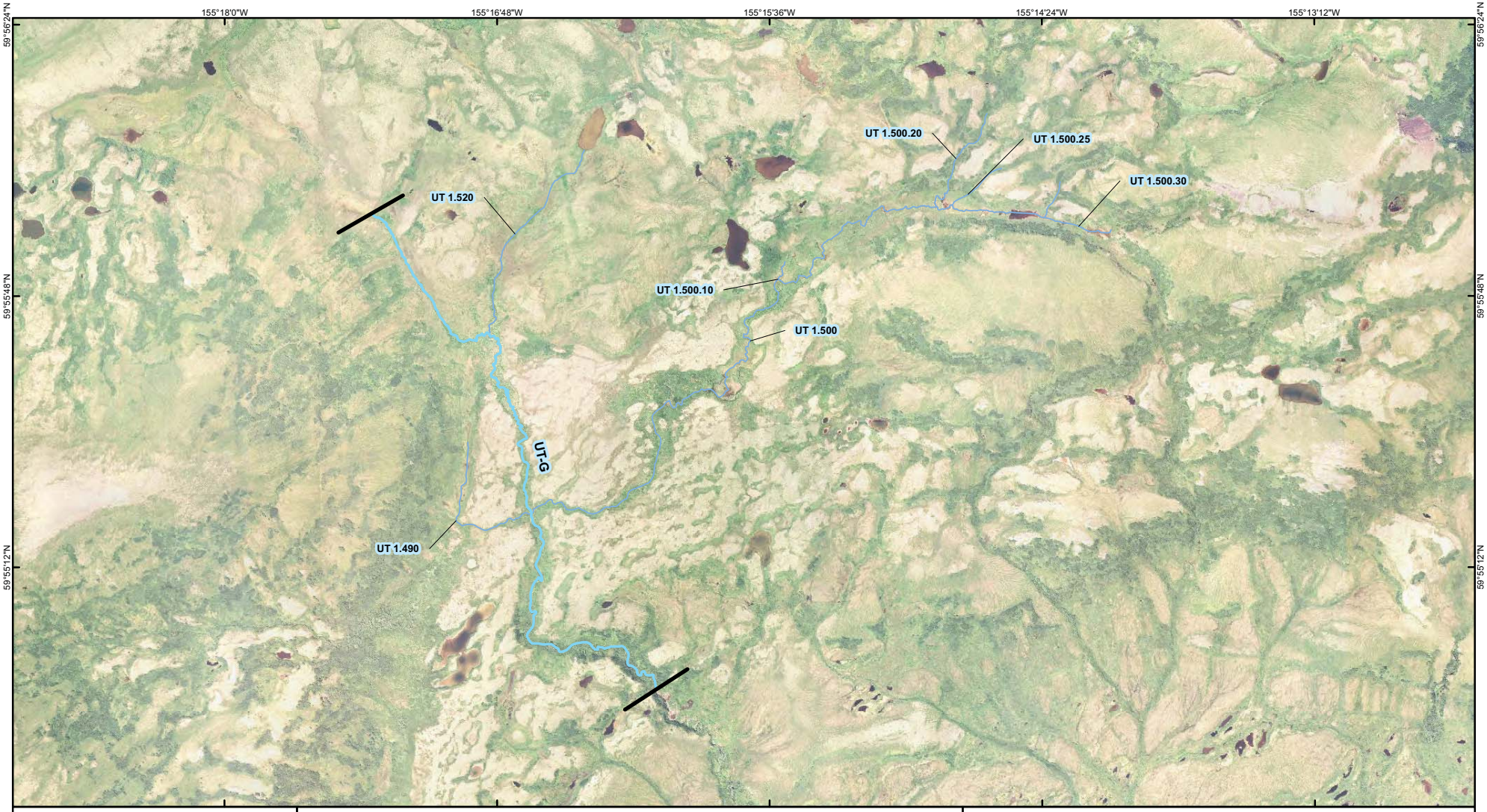
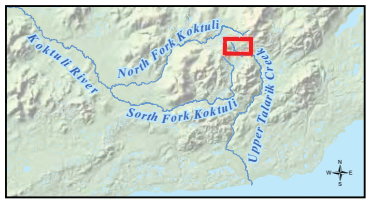


Figure B.18-1a
Reach UT-G

RDI_R2_OverviewLocator_UT-G_Fig-B.18-1a_11x17L_18of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

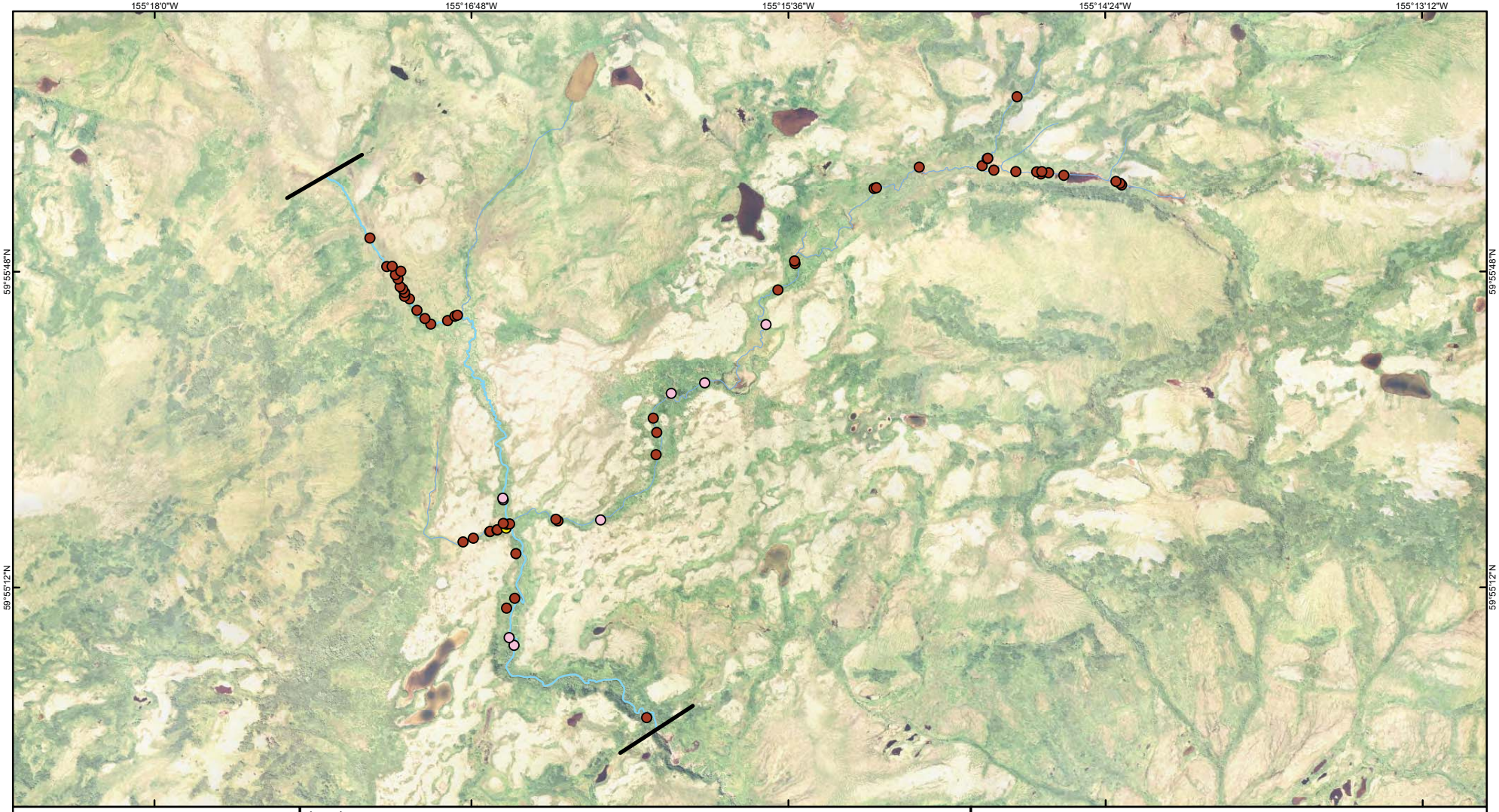
Miles
0 0.3 0.6

Kilometers
0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.18-1b
UT-G
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_UT-G_Fig-B.18-1b_11x17L_18of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach

Tributary Streams

Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles
0 0.3 0.6

Kilometers
0 0.3 0.6

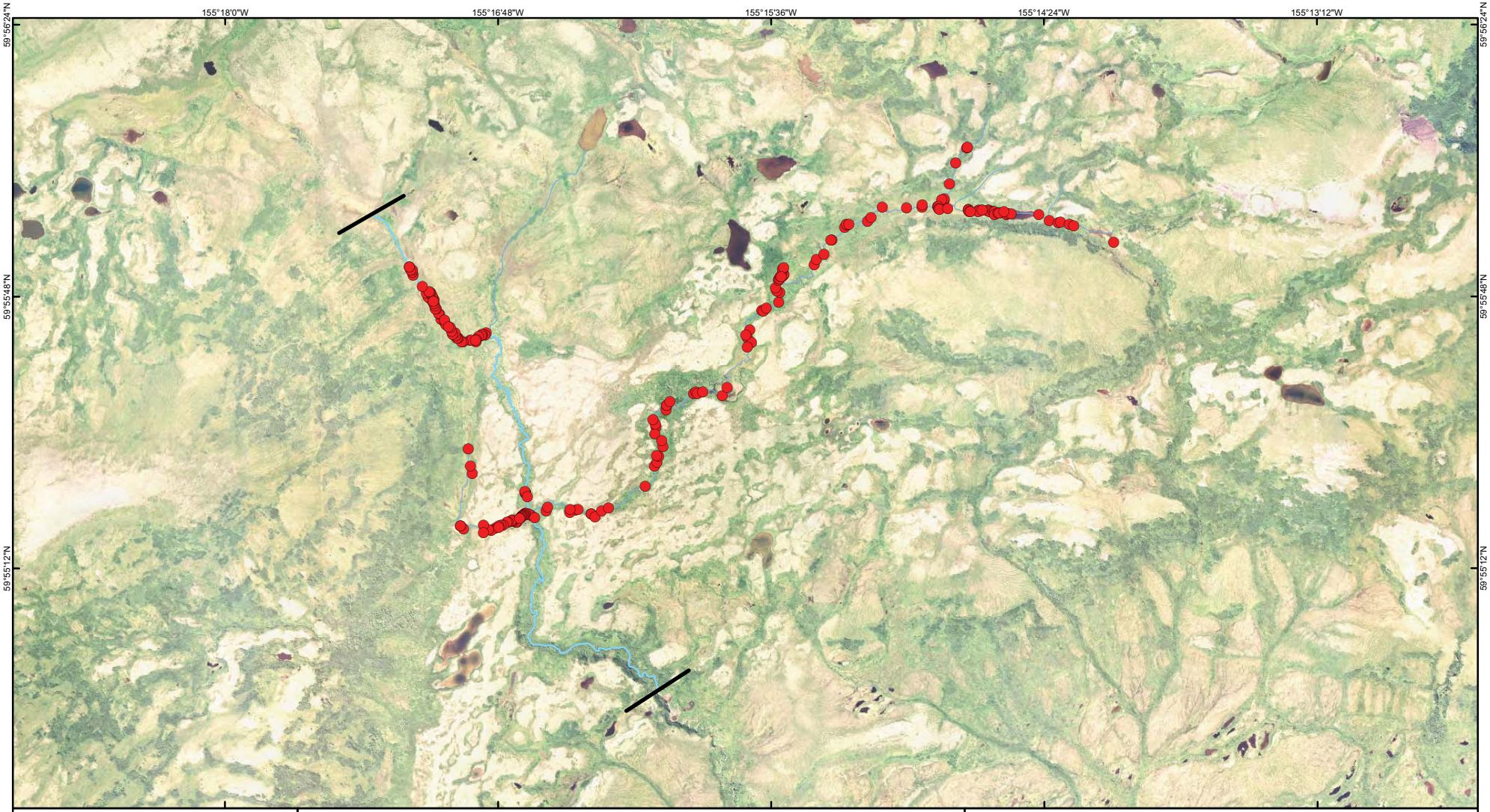
THE pebble PARTNERSHIP

Figure B.18-2
UT-G
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_UT-G_Fig-B.18-2_11x17L_18of19_D03.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

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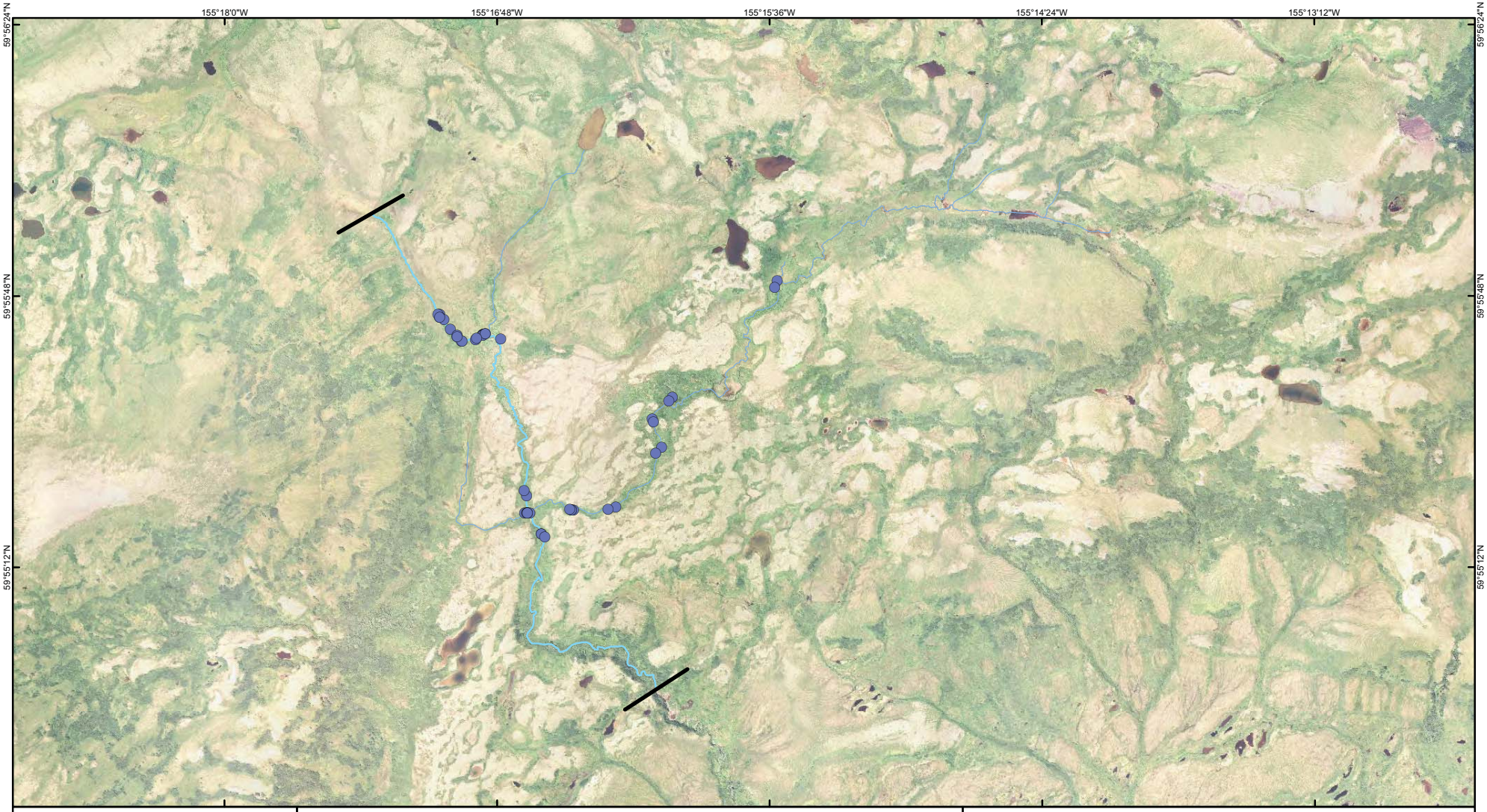
Figure B.18-3
UT-G
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_UT-G_Fig-B.18-3_11x17L_18of19_D02.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

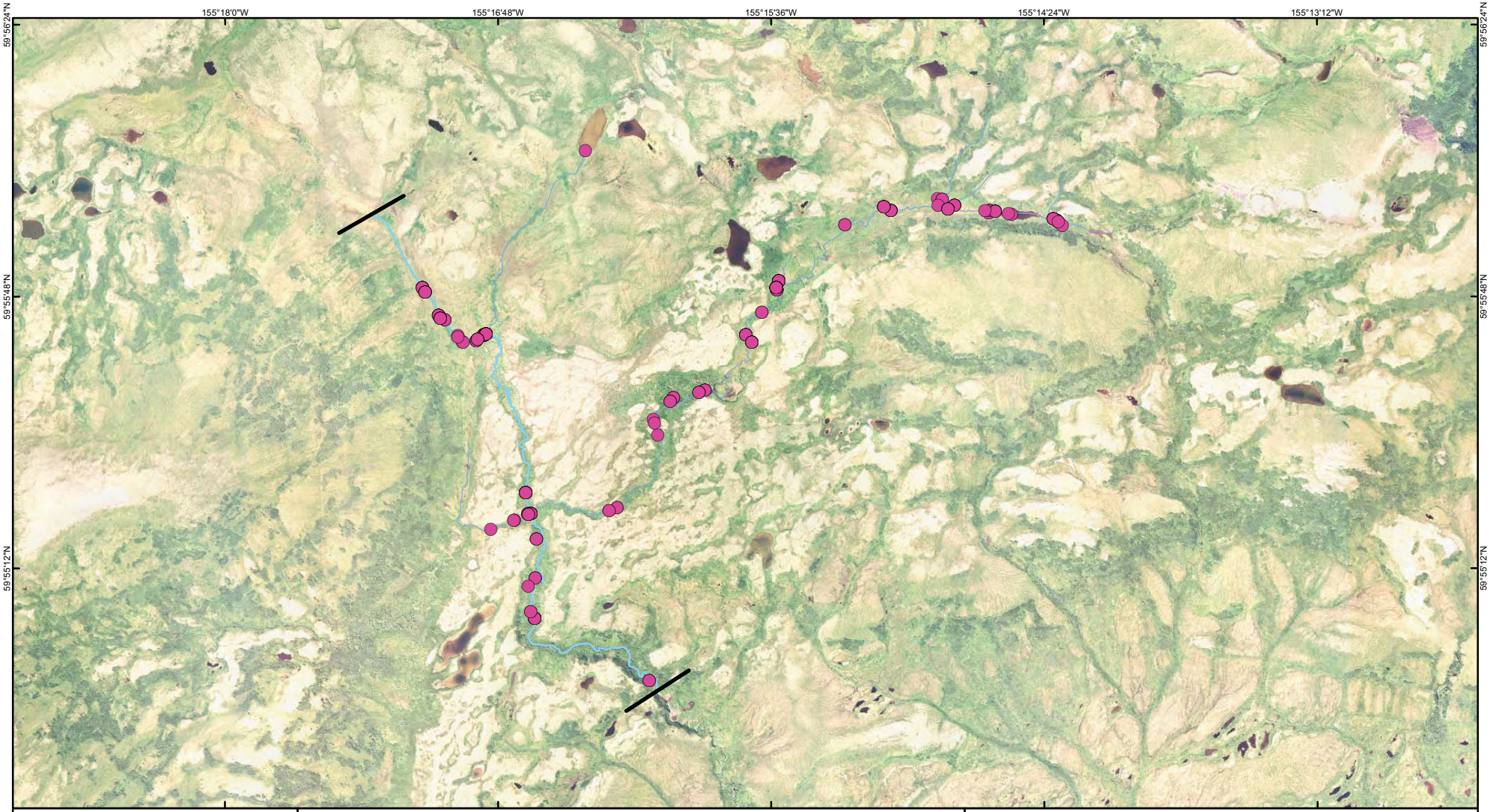
Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.18-4
UT-G
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_UT-G_Fig-B.18-4_11x17L_18of19_D03.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

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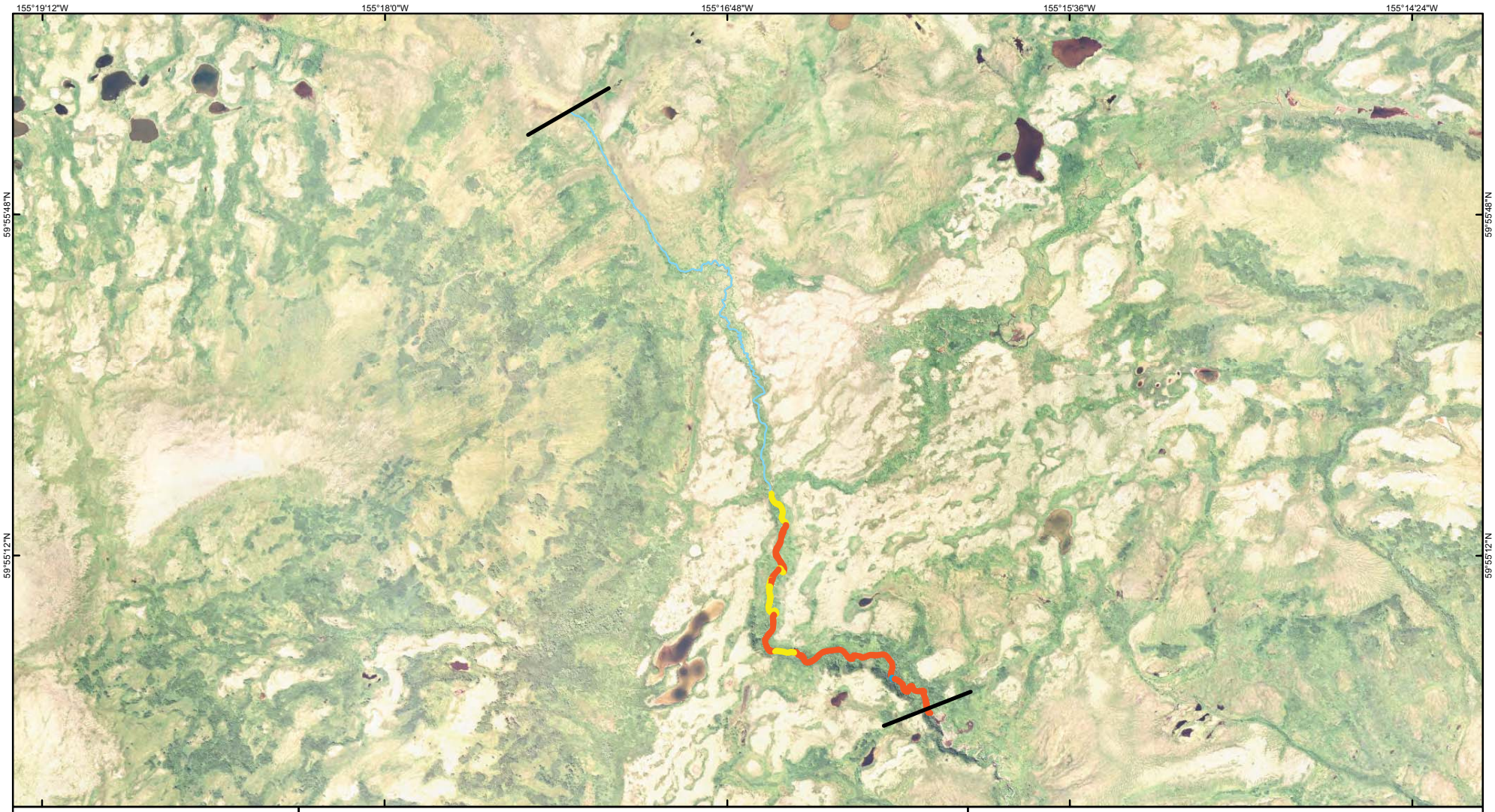
Figure B.18-5
UT-G
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_UT-G_Fig-B.18-5_11x17L_18of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Mesohabitat Types

- Pool (when present)
- Run/Glide
- Riffle
- Beaver Complex (when present)

Mainstem Stream Reach

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.2 0.4

Kilometers: 0 0.2 0.4

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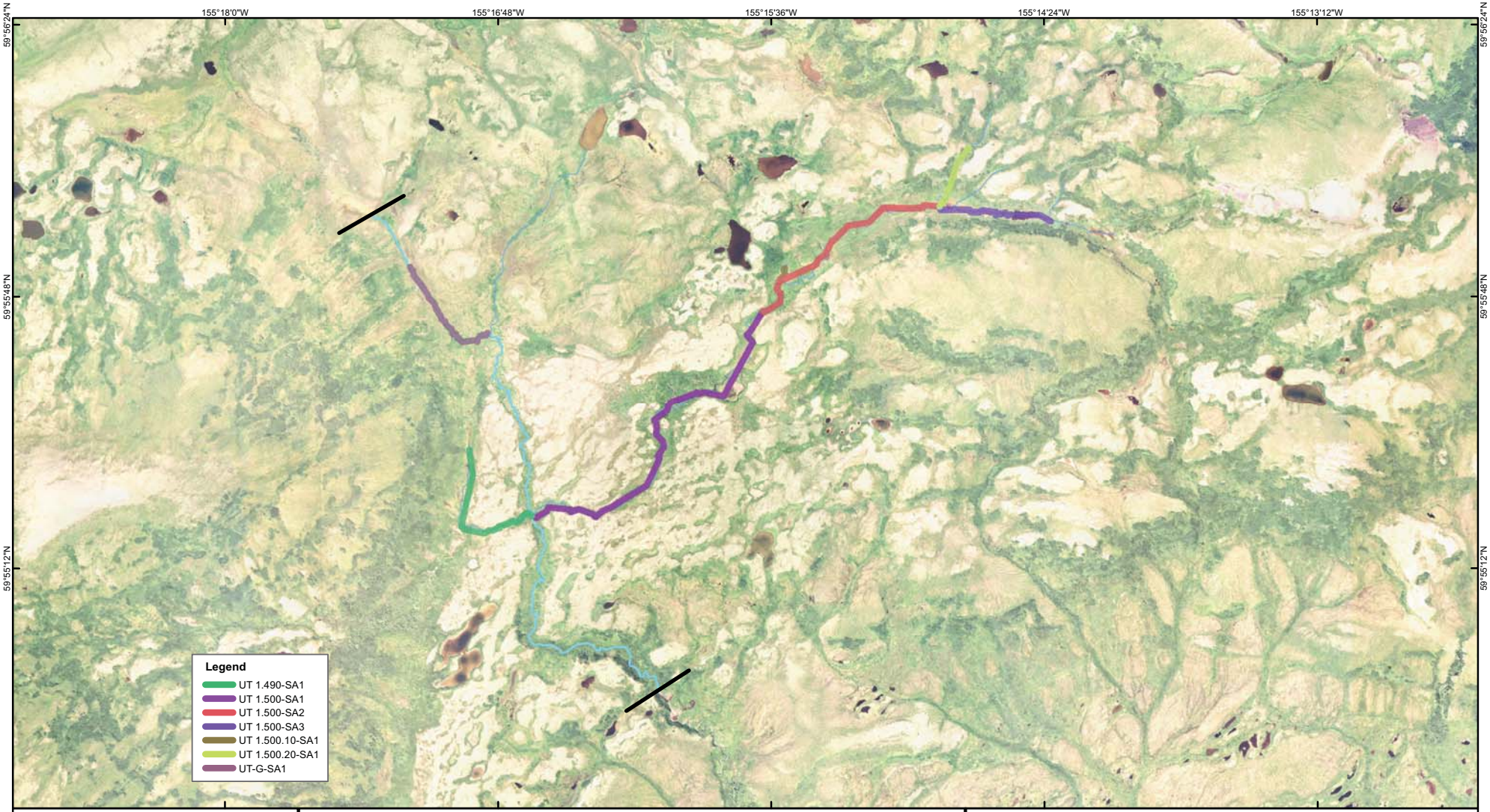
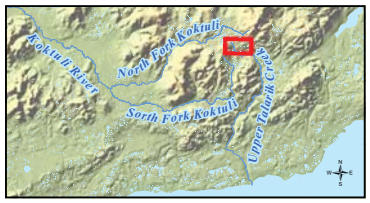
Figure B.18-6
UT-G
Mainstem Mesohabitat Types
Delineated From Aerial Imagery

RDI_R2_MesoHabitatTypes_UT-G_Fig-B.18-6_11x17L_18of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

Mainstem Stream Reach

Tributary Streams

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

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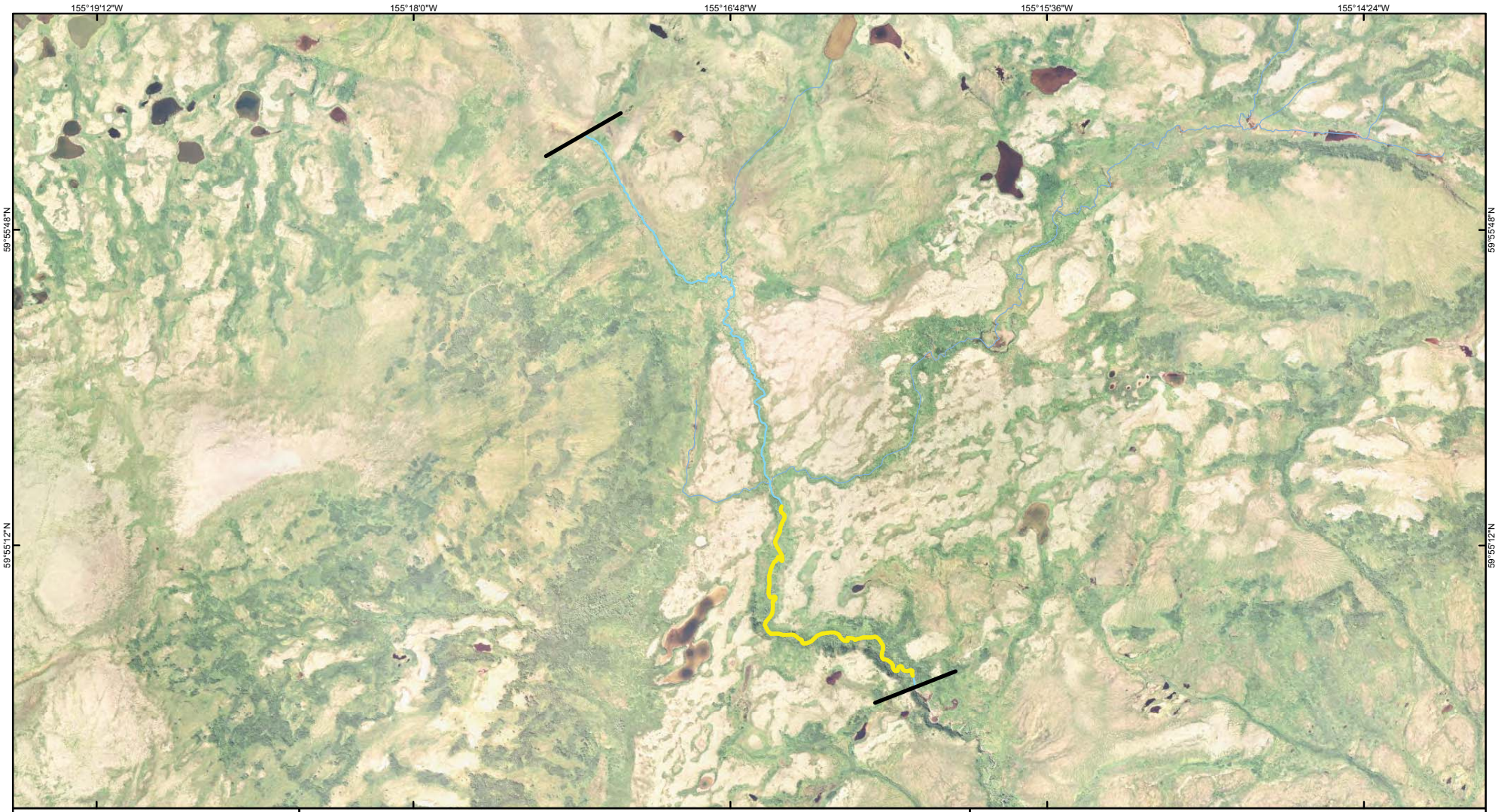
Figure B.18-7
UT-G
USFS Aquatic Habitat
Protocol Tier 3 Sample Areas

RDI_R2_AquaticHabitatT3_UT-G_Fig-B.18-7_11x17L_18of19_D02.mxd

January 14, 2011

Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

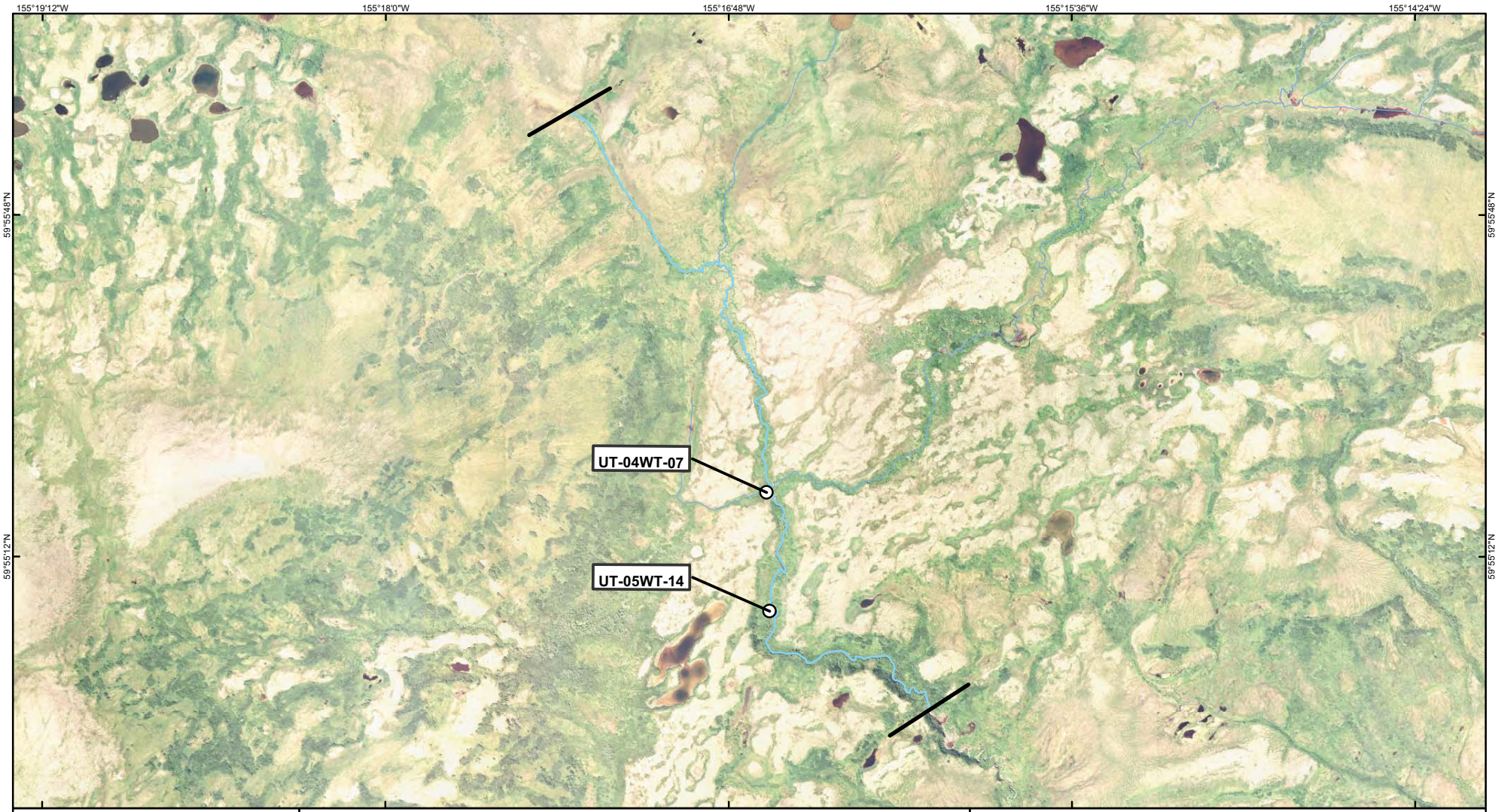
Miles: 0 0.3 0.6

Kilometers: 0 0.3 0.6

THE pebble PARTNERSHIP

Figure B.18-10
UT-G
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_UT-G_Fig-B.18-10_CS_11x17L_21of22_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 0.2 0.4

Kilometers: 0 0.2 0.4

THE pebble PARTNERSHIP

Figure B.18-12
UT-G
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_UT-G_Fig-B.18-12_11x17L_18of19_D03.mxd

February 5, 2011

Author: RDI - MRA

PEBBLE PROJECT
ENVIRONMENTAL BASELINE STUDIES

APPENDIX B
REACH ANALYSIS

KOKTULI RIVER BASIN

JANUARY 2011

Maps

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Figure B.19-1b Reach KR-A Mainstem and Tributaries Reference Map
Figure B.19-2 KR-A Fish Sampling Sites by Method
Figure B.19-3 KR-A All Aquatic Habitat Data Collection Sites
Figure B.19-4 KR-A Anadromous Fish Distribution, 2004-2008 Observations
Figure B.19-5 KR-A Resident Fish Distribution, 2004-2008 Observations
Figure B.19-7 KR-A Coho Salmon Spawning Locations
Figure B.19-8 KR-A Winter Fish Sampling Sites

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CHAPTER 15, APPENDIX B
REACH ANALYSIS

SECTION B.19
KOKTULI RIVER REACH A (KR-A)

Table B.19-1.
List of species found in KR.

Common Name	Scientific Name
Chinook salmon	*Oncorhynchus tshawytscha*
chum salmon	*Oncorhynchus keta*
coho salmon	*Oncorhynchus kisutch*
sockeye salmon	*Oncorhynchus nerka*
arctic grayling	*Thymallus arcticus*
Dolly Varden	*Salvelinus malma*
rainbow trout	*Oncorhynchus mykiss*
whitefish [a]	*Coregoninae*
sculpin [b]	*Cottus* sp.
threespine stickleback	*Gasterosteus aculeatus*
stickleback [c]	*Gasterosteidae*

[a] identified to subfamily, may include round whitefish, humpback whitefish, and least cisco

[b] identified to genus, may include slimy sculpin and coastrange sculpin

[c] identified to family, may include ninespine and threespine stickleback

Table B.19-2.
2004-2008 number of fish observations by lifestage within KR mainstem and associated tributaries from all sampling methods excluding aerial surveys. For all Pacific salmon species, fish that were not recorded as adults were assumed to be juveniles.

Species	Year	Method	Adult				Juvenile				Juvenile/Adult[a]		Total
			Jul	Aug	Sep	Subtotal	Apr	Jul	Aug	Subtotal	Jul	Subtotal	
Chinook salmon	2005	Snorkel	5			5		45		45			50
	2006	Snorkel		1		1		3925	608	4533			4534
		Visual Observation		2		2							2
	2007	Snorkel						7115		7115			7115
chum salmon	2005	Snorkel	18			18							18
	2006	Snorkel	67	1		68							68
		Visual Observation		3		3							3
	2007	Snorkel	28			28							28
coho salmon	2005	Snorkel						2198		2198			2198
	2006	Snorkel	5			5		1	654	655			660
	2007	Snorkel						1962		1962			1962
sockeye salmon	2005	Snorkel						22		22			22
	2006	Snorkel	7	11		18		18	3	21			39
		Visual Observation		6		6							6
	2007	Snorkel	4			4		477		477			481
arctic grayling	2005	Snorkel	13			13		10		10			23
	2006	Snorkel		1		1		7		7			8
	2007	Snorkel	24			24		2		2			26
	2008	Angling			18	18							18
Dolly Varden	2004	Minnow Trap					1			1			1
	2005	Snorkel	1			1					2	2	3
	2006	Snorkel	1			1		2	1	3			4
	2007	Snorkel	1			1		19		19			20

Table B.19-2. Continued

Species	Year	Method	Adult				Juvenile				Juvenile/Adult[a]		Total
			Jul	Aug	Sep	Subtotal	Apr	Jul	Aug	Subtotal	Jul	Subtotal	
rainbow trout	2005	Snorkel	4			4		13		13	2	2	19
	2006	Snorkel						2		2			2
	2007	Snorkel	3			3		2		2			5
	2008	Angling			1	1							1
whitefish sp.	2006	Snorkel		3		3							3
	2007	Snorkel	35			35							35
Salmonid sp.	2004	Minnow Trap					1			1			1
	2007	Snorkel						5		5			5
sculpin sp.	2007	Snorkel						1		1	4	4	5
threespine stickleback	2004	Minnow Trap					8			8			8
stickleback sp.	2006	Snorkel						2		2			2
	2007	Snorkel									3	3	3
unidentified sp.	2005	Snorkel									2	2	2

[a] This lifestage category includes subadult fish and fish whose lifestage was not, or could not, be determined.

Note: Blank cells indicate no data were collected for that record.

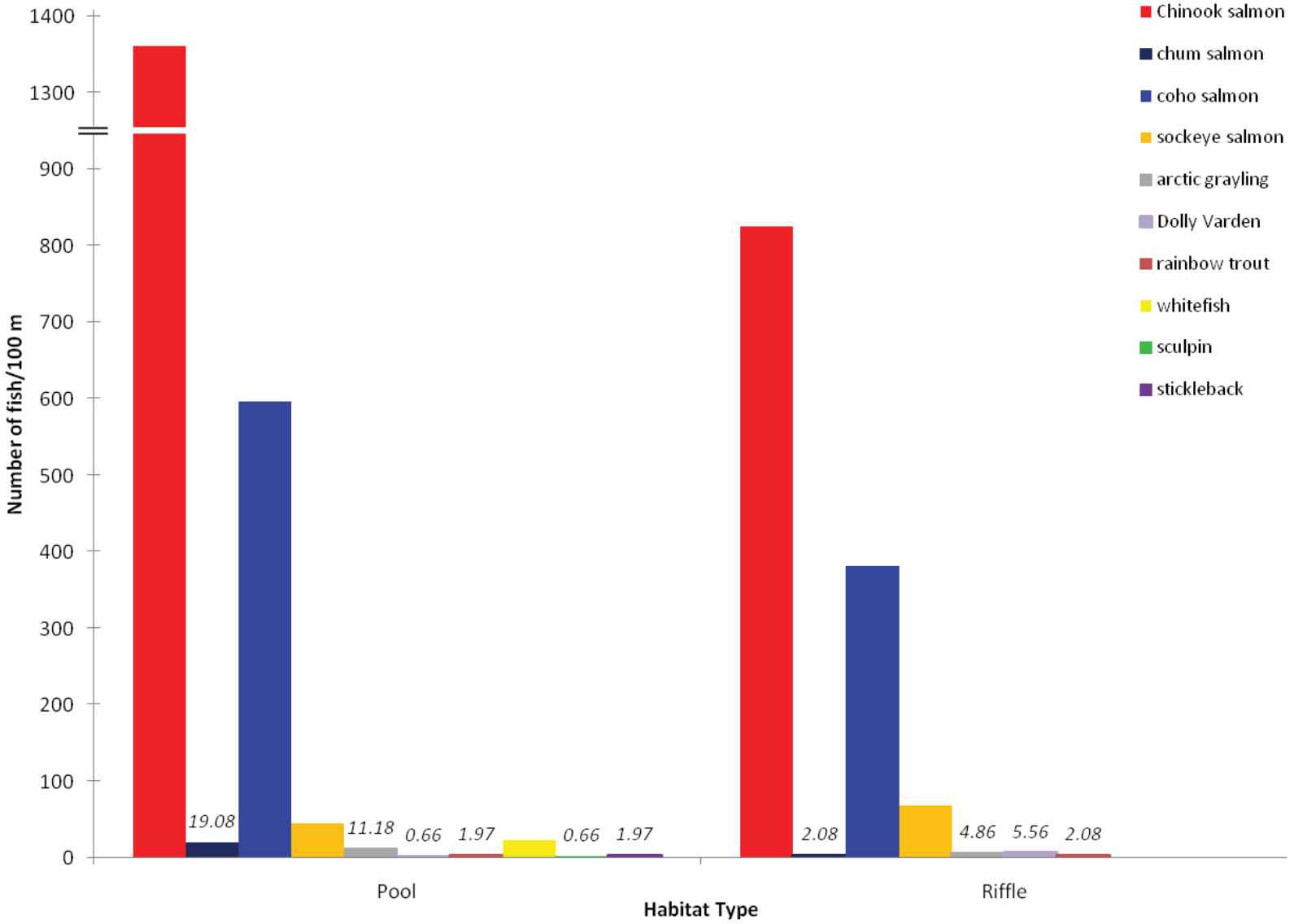
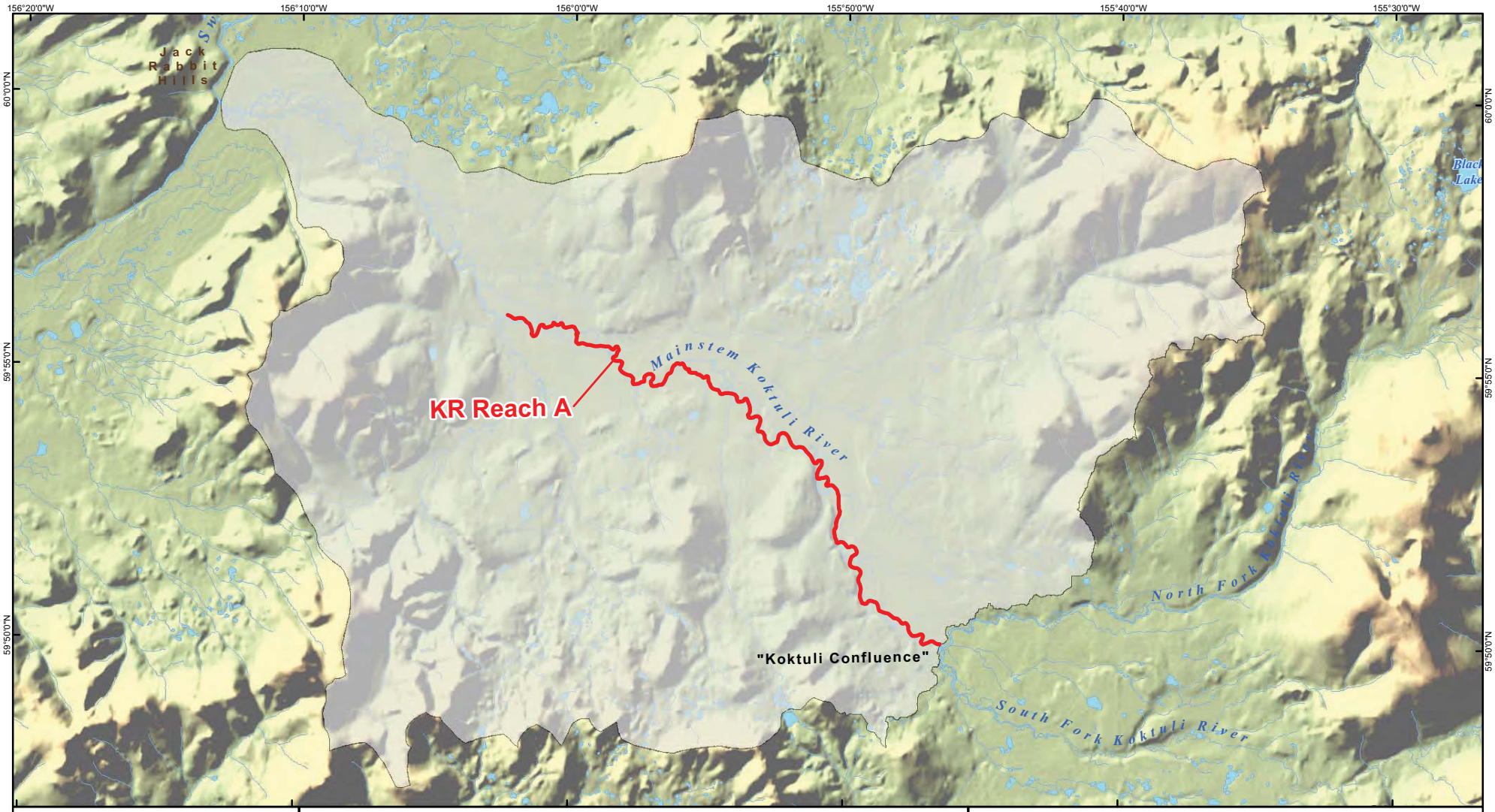
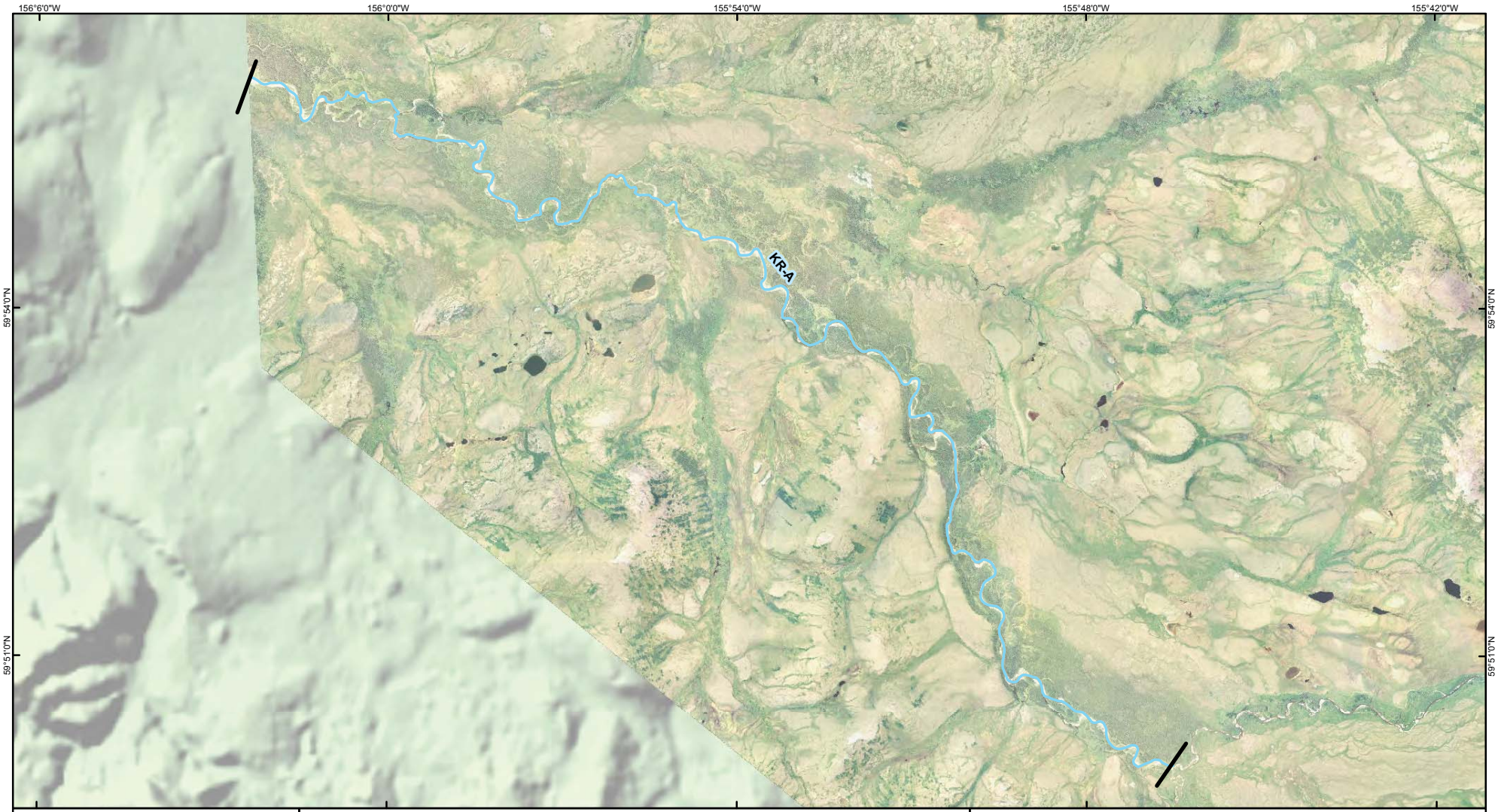


Figure B.19-6.
2004-2007 fish abundance by habitat type within mainstem KR.

Table B.19-3.
KR fish observation data collected during winter sampling, 2004-2007.

Observation Date	Site	Species	Method	Trap Set Time (Hours)	Juveniles	Total Fish Count
4/13/2004	SFK04WT-11	Dolly Varden	minnow trap	24	1	1
		Salmonid sp.	minnow trap	24	1	1
		threespine stickleback	minnow trap	24	8	8


156°20'0"W
156°10'0"W
156°0'0"W
155°50'0"W
155°40'0"W
155°30'0"W
60°0'0"N
59°55'0"N
59°50'0"N
Jack Rabbit Hills
KR Reach A
Mainstem Koktuli River
"Koktuli Confluence"
North Fork Koktuli River
South Fork Koktuli River
Black Lake
Bering Sea
Area of Detail
Legend
General Deposit Location
Watershed Boundary
Mainstem Stream Reach
KR Reach A
Alaska State Plane Zone 5 (units feet)
1983 North American Datum
N
W
E
S
Miles
0
3
6
Kilometers
0
3
6
THE pebble PARTNERSHIP
Figure B.19-1a
Reach KR-A
RDI_R2_OverviewLocator_KR-A_Fig-B.19-1a_11x17L_19of19_D03.mxd
February 5, 2011
Author: RDI - MRA



Legend

- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

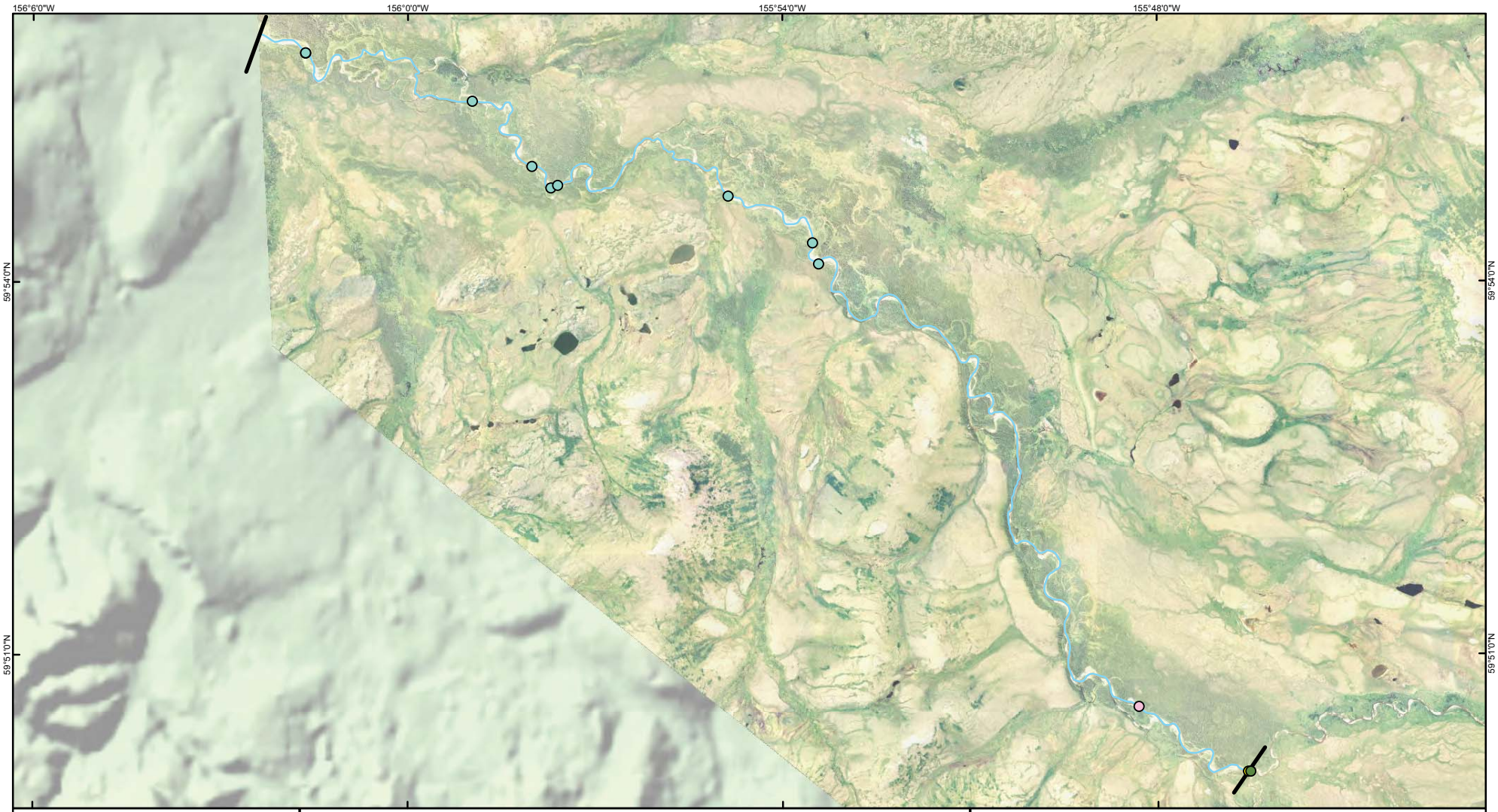
Miles: 0 1.2 2.4

Kilometers: 0 1.2 2.4

THE pebble PARTNERSHIP

Figure B.19-1b
KR-A
Mainstem and Tributaries
Reference Map

RDI_R2_MainstemTrib_KR-A_Fig-B.19-1b_11x17L_19of19_D01.mxd	February 5, 2011
	Author: RDI - MRA



Legend

Method (when present)

- Multiple Methods
- Angling
- Aquascope
- Dip Net
- Electrofishing
- Gill/Tangle Net
- Minnow Trap
- Not Recorded
- Seine
- Snorkel
- Visual Observation

Mainstem Stream Reach
Tributary Streams
Reach Boundaries

Note:
Multiple Methods indicates that more than one method of fish sampling was used at that location.

Some sampling sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.1 — 2.2

Kilometers: 0 — 1.1 — 2.2

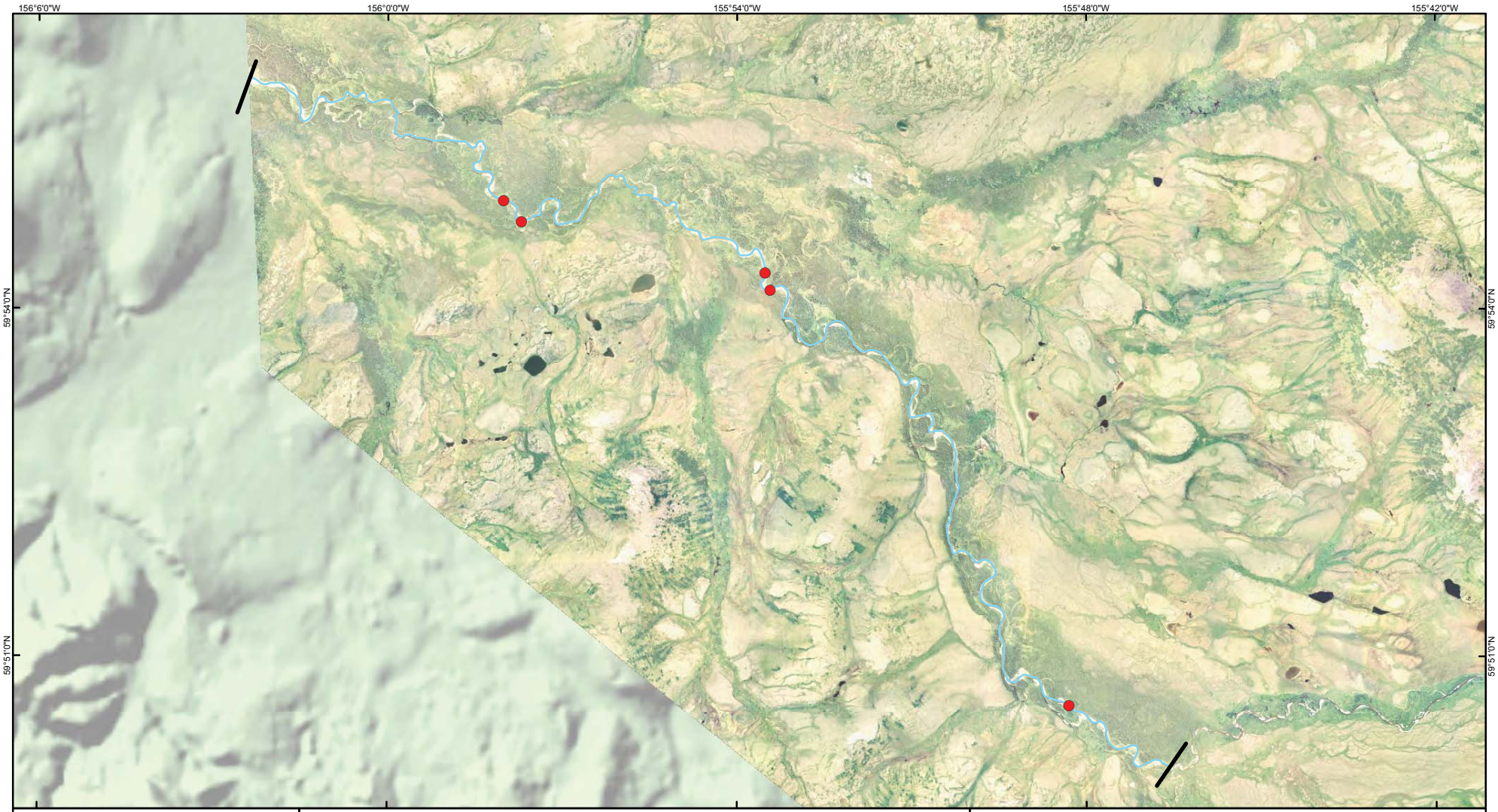
THE pebble PARTNERSHIP

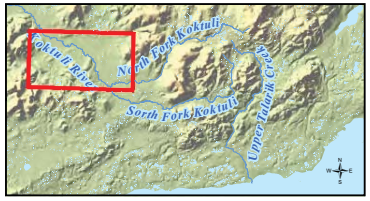
Figure B.19-2
KR-A
Fish Sampling Sites
By Method

RDI_R2_AllFishSites_ByMethod_KR-A_Fig-B.19-2_11x17L_19of19_D03.mxd

February 5, 2011

Author: RDI - MRA





Legend

- Sample Site
- Sample Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale.

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.2 — 2.4

Kilometers: 0 — 1.2 — 2.4

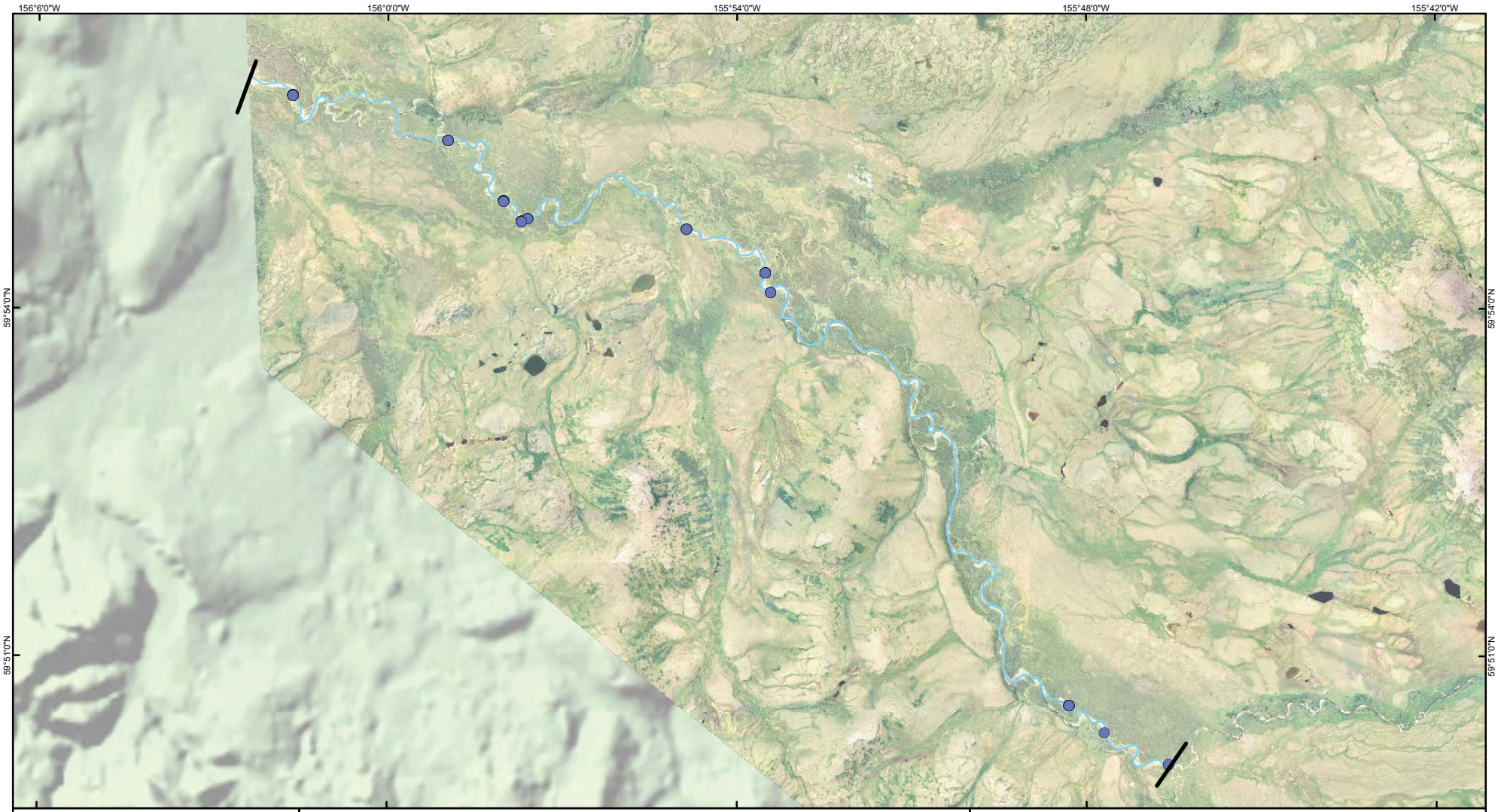
THE pebble PARTNERSHIP

Figure B.19-3
KR-A
All Aquatic Habitat
Data Collection Sites

RDI_R2_AquaticHabitatALL_KR-A_Fig-B.19-3_11x17L_19of19_D02.mxd

February 5, 2011

Author: RDI - MRA



Legend

- Anadromous Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

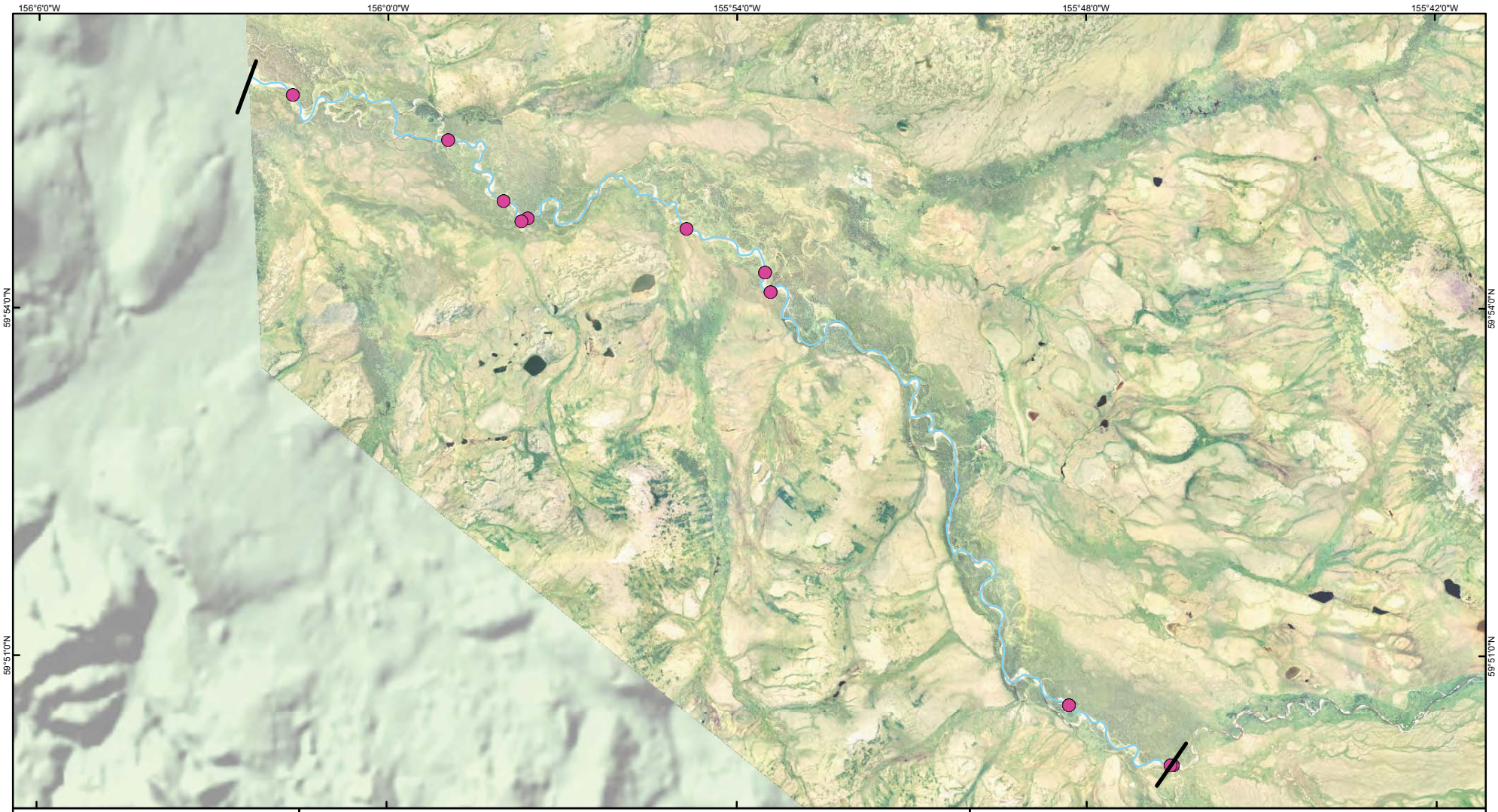
Miles: 0 1.2 2.4

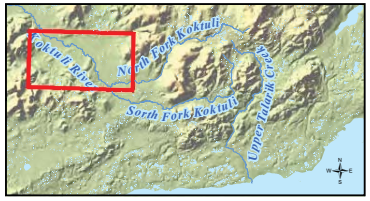
Kilometers: 0 1.2 2.4

THE pebble PARTNERSHIP

Figure B.19-4
KR-A
Anadromous Fish Distribution
2004-2008 Observations

RDI_R2_AnadFishDist_KR-A_Fig-B.19-4_11x17L_19of19_D03.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Resident Fish Distribution
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

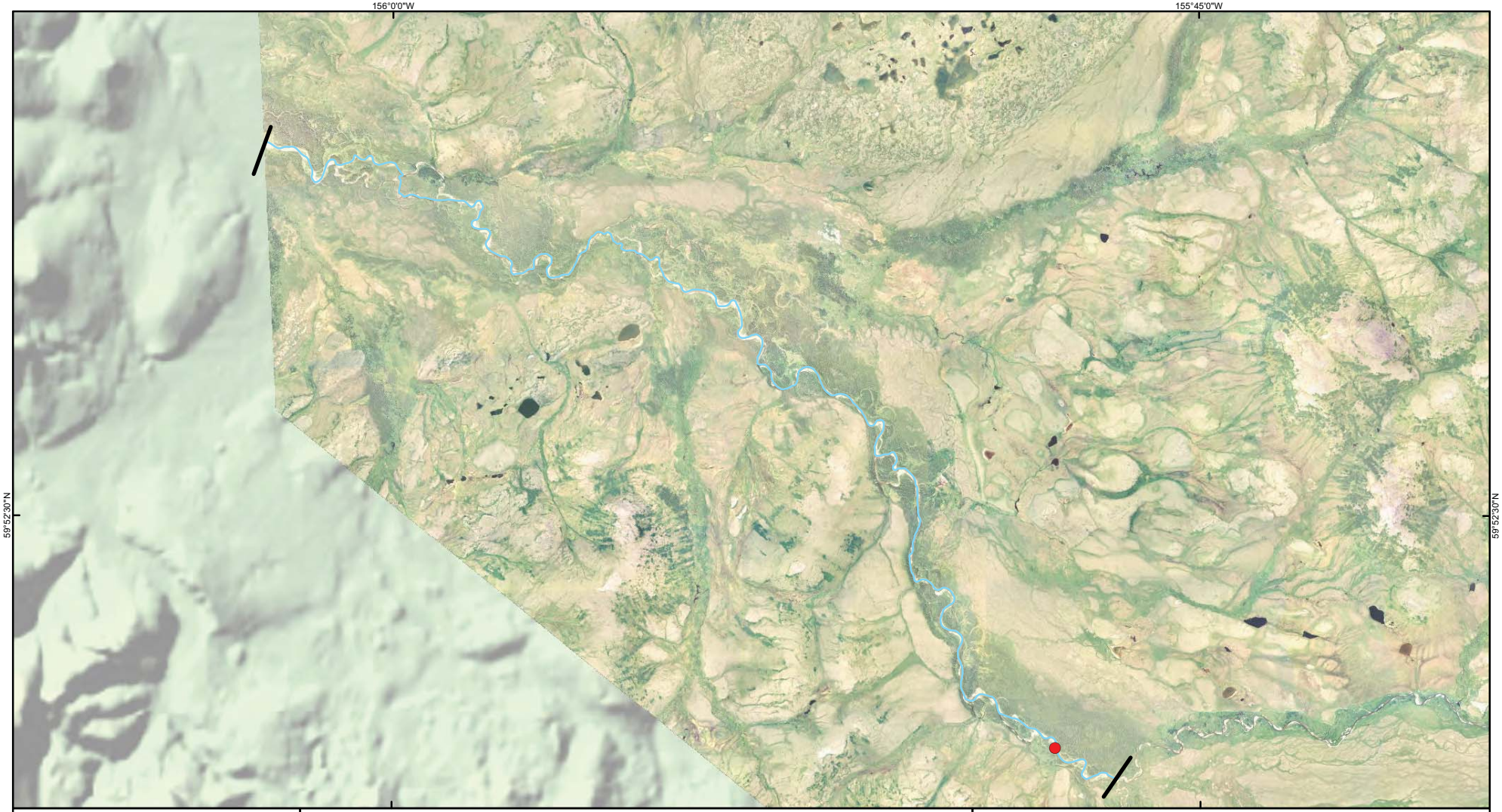
Miles: 0 1.2 2.4

Kilometers: 0 1.2 2.4

THE pebble PARTNERSHIP

Figure B.19-5
KR-A
Resident Fish Distribution
2004-2008 Observations

RDI_R2_ResidentFishDist_KR-A_Fig-B.19-5_11x17L_19of19_D04.mxd	February 5, 2011
	Author: RDI - MRA



Legend

- 2004 - 2007 Spawning Site
- 2008 Spawning Site
- 2008 Spawning Area
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

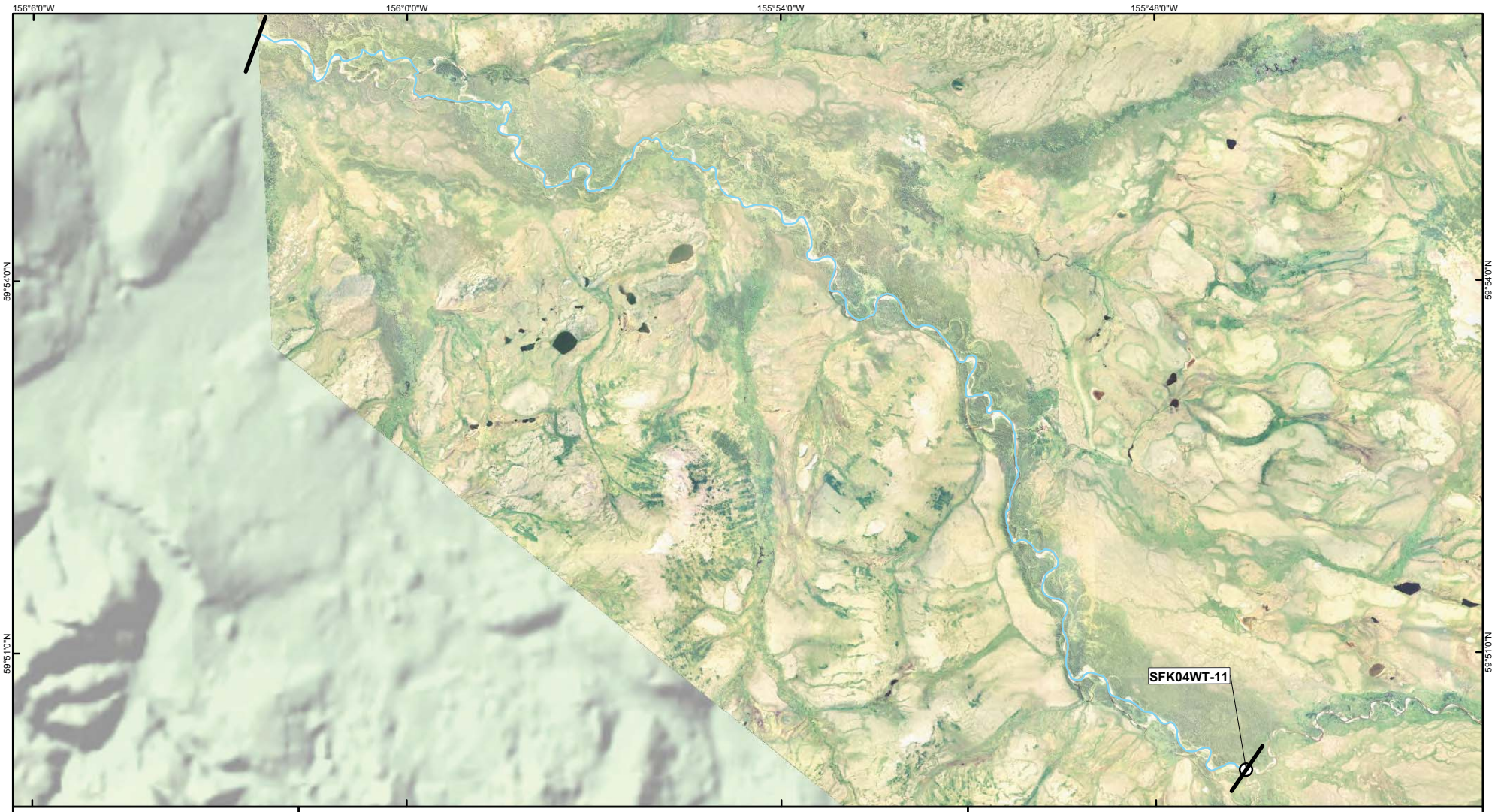
Miles: 0 1.3 2.6

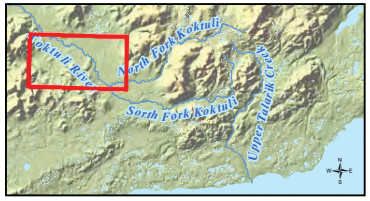
Kilometers: 0 1.3 2.6

THE pebble PARTNERSHIP

Figure B.19-7
KR-A
Coho Salmon
Spawning Locations

RDI_R2_SpawningSites_KR-A_Fig-B.19-7_CS_11x17L_22of22_D04.mxd	February 5, 2011
	Author: RDI - MRA





Legend

- Winter Fish Sampling Site
- Mainstem Stream Reach
- Tributary Streams
- Reach Boundaries

Note: Some sample sites are visible only when viewing maps electronically at a finer scale

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

Miles: 0 — 1.1 — 2.2

Kilometers: 0 — 1.1 — 2.2

THE pebble PARTNERSHIP

Figure B.19-8
KR-A
Winter Fish Sampling Sites

RDI_R2_WinterFishSites_KR-A_Fig-B.19-8_11x17L_19of19_D03.mxd	February 5, 2011
	Author: RDI - MRA

APPENDIX 15.1C

INSTREAM FLOW: MAIN CHANNEL HABITAT STUDY

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ACRONYMS AND ABBREVIATIONS

≈	approximately
%	percent
cfs	cubic feet per second
EBD	Environmental Baseline Document
GIS	Geographic Information System
GPS	Global Positioning System
HSC	Habitat Suitability Criteria
IFIM	Instream Flow Incremental Methodology
kg	kilogram(s)
km	kilometer(s)
KR	Koktuli River mainstem
NFK	North Fork Koktuli River
PHABSIM	Physical Habitat Simulation
QA	quality assurance
QC	quality control
RK	river kilometer
RM	river mile
SFK	South Fork Koktuli River
SNTEMP	Stream Network Temperature Model
USGS	U.S. Geological Survey
UT	Upper Talarik Creek
WUA	weighted usable area

INSTREAM FLOW: MAIN CHANNEL HABITAT STUDY

1. INTRODUCTION

This report presents the results of the Instream Flow: Main Channel Habitat Study (study), one of several studies that are discussed in Chapter 15, of the Environmental Baseline Document (EBD). Chapter 15 describes baseline environmental conditions associated with fish resources near the Pebble Deposit. The Instream Flow: Main Channel Habitat Study is one component of a suite of interrelated instream flow studies undertaken to characterize existing relationships between stream flow and fish habitat features that include mainstem and off-channel habitat, water temperature, and channel-forming processes. This report (Appendix 15.1C) focuses entirely on habitat-flow relationships in mainstem reaches. The results of the off-channel habitat instream flow study, temperature monitoring/modeling, and fluvial geomorphology studies are provided in Appendix 15.1D, Appendix 15.1E, and Appendix 15.1F, respectively. Unless otherwise stated, the hydrological data discussed in this appendix were obtained during the hydrology studies for Pebble Project, which are described in detail in Chapter 7, for surface hydrology, and Chapter 8, for groundwater hydrology.

The Instream Flow: Main Channel Habitat Study was initiated in 2004, with additional field studies completed in 2005, 2006, 2007, and 2008. The studies completed from 2004 to 2007 were conducted jointly by Ecofish Research Ltd. and HDR; the work in 2008 was completed by R2 Resource Consultants Inc. Work completed in 2004 served to accomplish the following:

- Define the spatial extent of the instream flow studies (consisting of the North Fork Koktuli River (NFK), the South Fork Koktuli River (SFK), Upper Talarik Creek (UT), and a portion of the mainstem Koktuli River (KR).
- Define the general methodological approach best suited for defining habitat-flow relationships.
- Provide the initial establishment of transects that were subsequently sampled in 2005, along with supplemental transects again sampled in 2006 and 2007.

Collectively, the 2004 to 2007 field studies resulted in the establishment of 92 sites, each consisting of single cross-channel transects from which physical and hydraulic data were collected. The 2008 study resulted in the selection and measurement of 46 additional transects that were concentrated in selected areas of each of three river systems (NFK, SFK, and UT) to capture specific habitat features. Since 2008, the focus of the study has been on the analysis of data collected from all five years, hydraulic and habitat model development and calibration, and the derivation of species and lifestage specific habitat-flow relationships for each river system. This report describes the methods used and results from all 5 years of investigation.

This study is closely linked to a number of other studies that have been completed and will collectively contribute to a greater understanding of streamflow and salmonid habitat/population interactions in the

NFK, SFK, UT, and KR systems. The results of these studies are provided as the following series of technical appendices to Chapter 15, of the EBD:

- Appendix 15.1B, Reach Analysis
- Appendix 15.1D, Off-Channel Habitat
- Appendix 15.1E, Open Water River Temperature Model
- Appendix 15.1F, Fluvial Geomorphology Studies

1.1 General Description of Pebble Project

1.1.1 Potentially Affected Watersheds

The study area specific to this report encompasses three watersheds originating near the general Pebble Deposit location: the NFK, SFK, and UT, as well as a portion of the mainstem KR downstream of the NFK and SFK confluence (Figure 9). To place the study area in a regional context, the KR flows for about 39 miles (63 kilometers [km]) before entering the Mulchatna River, which runs 44 miles (70 km) to the Nushagak River. The Nushagak River flows for a distance of about 109 miles (175 km) before discharging into Bristol Bay. The UT drains to Iliamna Lake and from there to Bristol Bay via the Kvichak River, a distance of about 56 miles (90 km). More detailed descriptions of the study watersheds can be found below in Section 2.1.

While a diversity of fish species inhabit the study area, this report focuses primarily on various salmonid species native to the study streams due to their importance to commercial, subsistence, and recreational fisheries, as well as their general ecological importance to the four systems. These species, hereafter referred to as "target species," include the following:

- Four anadromous salmonids—Chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), coho salmon (*O. kisutch*), and sockeye salmon (*O. nerka*).
- Three non-anadromous salmonids—arctic grayling (*Thymallus arcticus*), Dolly Varden (*Salvelinus malma*), and rainbow trout (*O. mykiss*).

These species inhabit, to varying degrees, all four of the study area streams. Additional information regarding habitat requirements and life histories for each of these species is provided in Section 2.2.

Adult pink salmon (*O. gorbuscha*) were observed in Upper Talarik Creek (EBD Chapter 15) in low numbers during two out of six survey years, 336 salmon in 2006 and 3 salmon in 2007. No fish have been seen subsequently although the number of spawner surveys conducted annually increased and the survey interval decreased for 2007 to 2009. For this study, no established runs of pink salmon were assumed to currently exist in any of the study basins. Therefore, pink salmon was not considered a target fish species for purposes of this study.

1.1.2 Flow Related Effects on Fish Resources

In general, the hydrology of each of the three watersheds in the study area could experience change in one or more of the following ways:

- No change—watershed hydrology is not affected as it relates to fish habitat.
- Temporal changes—the frequency or timing of various flow metrics (e.g., timing of peak flows, timing and duration of base flows, etc.) are altered.
- Spatial changes—hydrologic conditions within the watershed may be altered at specific locations.
- Flow magnitude changes—the overall magnitude of flows may be modified (reduced, increased).
- Rates of flow change—changes in flow may occur more rapidly or more slowly.

Such changes in flow can influence the function of various salmonid lifestages (upstream migration, spawning and egg incubation, fry and juvenile rearing, and juvenile/smolt downstream migration) via alterations in both the quantity and quality of associated habitats.

For example, successful upstream migration of adult salmon depends on sufficient water depths and suitable velocities to allow passage through shallow riffle areas (achieved via swimming) and above cascades and falls (achieved via jumping). Studies have shown that flows that are too low or too high can influence the ability of adult salmonids to migrate upstream to locate suitable spawning areas (Bjornn and Reiser, 1991; Powers and Orsborn, 1985; Stuart, 1964; Thompson, 1972). However, other than beaver dams that are generally located in side channel and off-channel habitats, and temporary ice dams that can occur during ice-out, the mainstem NFK, SFK, and UT systems do not contain any known physical impediments (e.g., falls or cascades) that would preclude or delay upstream movements of adult anadromous salmonids, In contrast, Tributary 1.190 of the UT (hereafter referred to as Tributary UT 1.190) has a series of bedrock cascades and chutes through which successful adult passage could be flow sensitive. A number of other smaller tributaries contain steep cascades and falls that likely limit the extent of anadromous salmonid use in those systems.

The NFK, SFK, and UT systems contain numerous relatively wide riffles and island complexes that could become problematic to upstream passage (via shallow water depths) if flows were severely reduced. Such passage problem conditions occur naturally during certain times of most years in one of the reaches (SFK-C) of the SFK just above Tributary 1.190 (hereafter referred to as Tributary SFK 1.190). From mid-February to late April, flows within this reach typically go subsurface and portions of the stream become dry. This naturally occurring process limits the majority of anadromous salmonid production to downstream reaches. The extent to which low-flow conditions can influence upstream passage in the mainstem NFK and UT and other reaches of the SFK depends on the timing, magnitude, and duration of flow reductions.

Streamflow also plays a direct role in determining the areal extent (i.e., quantity) of habitats that can be used for spawning and rearing. Changes in flow magnitude will change the amount of spawning and rearing habitats in a stream. In general, the amounts of habitat will increase with flow up to a certain point, and then begin to decrease as velocities exceed those used by adults for spawning and juveniles and fry for rearing. Thus, the amounts of available spawning and rearing habitat in the NFK, SFK, and UT systems will vary temporally and spatially in concert with the inter-annual variability in the natural flow regime depending on the timing, magnitude, and duration of flow alterations.

The magnitude of streamflow also has an influence on the quality of the spawning gravels and on maintaining suitable conditions for incubating eggs within the gravels. For the three study streams, this typically occurs as part of the runoff cycle in association with high flows resulting from ice-out and

snowmelt, as well as early fall precipitation events. These flows serve, among other things, to mobilize and transport fine sediments from spawning gravels that are important for increasing gravel permeability and facilitating the interchange of surface and intragravel flows.

The intragravel environment that contains the developing embryos is part of what is termed the hyporheic zone, which can generally be defined as the saturated area beneath the streambed that contains a combination of surface and groundwater flow (Edwards, 1999; Harvey and Wagner,2000), To a large extent, the development and survival of embryos is highly dependent on the environmental conditions existing within this zone (Malcolm et al., 2008), including the concentrations of dissolved oxygen and other water quality constituents, as well as rates of flow. Thus, flows sufficient to maintain the interchange of surface and groundwater flows within the hyporheic zone are important for the successful incubation of deposited eggs, because the flows result in the transport of oxygen to and removal of metabolic wastes from the embryos. The significance of the interchange (i.e. downwelling) of surface with intragravel flows has been demonstrated by Sheridan (1962) and Wells and McNeil (1970). Chapman et al. (1982), Reiser and White (1981), and Wickett (1954) noted relationships between surface flows and intragravel water velocities, suggesting that reductions in the former could reduce the latter.

Areas of groundwater upwelling are also important and are often sought-out for spawning, especially by certain species of anadromous salmonids — including sockeye (Foerster, 1968; Lorenz and Eiler, 1989) and chum salmon (Helle, 1980; Groot and Margolis, 1991). Because groundwater inflow contributes substantially to the streamflows in the three study area streams, any changes to the quantity of groundwater inflow to the streams may alter the quantity of upwelling habitats used for spawning. This could also affect the overall amount of surface flow down gradient from groundwater inflows. Both anadromous and non-anadromous salmonid fry and juveniles rear in freshwater; anadromous salmonids for varying periods of time before out-migrating to the ocean (saltwater). The habitats that constitute rearing areas are diverse and include both main channel and off-channel areas. In the case of the NFK, SFK, UT, and KR systems in the study area, there are extensive mosaics of off-channel habitats that parallel and have physical connections with the mainstem channels. These areas likely provide important fry and juvenile rearing habitats for certain salmonid species.

As in spawning, streamflow is the primary determinant of a number of specific factors that contribute to defining the quality and quantity of suitable rearing habitat. These factors include, but are not limited to: water depth, water velocity, pool volume, water temperature, dissolved oxygen, substrate quality, and in many instances, physical structure and habitat such as large woody debris. Relevant to the first two factors, streamflow has a direct influence on the distribution and quantity of water depths and associated velocities that are most often utilized by fry and juvenile salmonids.

Chapman (1966) considered velocity to be perhaps the most important of the two factors, noting that without suitable velocities, no fish will be present. Studies have shown that fry of salmon and trout typically utilize velocities less than 0.3 feet per second (Chapman and Bjornn, 1969; Everest and Chapman, 1972; Griffith, 1972). As fish grow, they become stronger and are often associated with higher water velocities (Smith and Li, 1983). Shifts in velocity usage by fish have been observed seasonally, presumably in response to water temperature changes. The shifts are generally from higher velocities in the summer feeding periods to lower velocities during the winter holding periods (Chisholm et al., 1987; Tschaplinski and Hartman, 1983).

Water depths used by fry and juveniles can be quite variable, depending on the factors associated with such depths (e.g., substrates, cover, food, velocity, predator density). Newly hatched fry often utilize the extreme edge habitats of a stream where velocities are low and there are few predators. As fish grow, they are capable of using deeper waters with limits of use generally related to some other interrelated parameter—such as water velocity. Bjornn and Reiser (1991) noted that some salmonids are found in higher densities in pools than other habitat types as a result of space availability. This suggests other factors may be acting to regulate such densities; e.g., presence of large woody debris, undercut banks, or overhanging vegetation.

The amount of mainstem flow also dictates the extent to which side channel and off-channel habitats are connected to the mainstem (see Appendix 15.1D). Thus, anything that reduces mainstem flows in the NFK, SFK, and UT systems could not only influence the amount of mainstem rearing habitats, but also the quantity and quality of off-channel habitat areas.

Streamflow can also influence the timing and travel rate at which juvenile/smolt anadromous salmonids move downstream as they progress toward saltwater. In many populations of salmon, the timing of the seaward migration of juvenile/smolts has evolved in concert with the cycle of runoff from adjoining mountains and hills, and has likely done so as a means to increase the survival rates of the fish. As noted earlier, the high flows that occur during this period likely benefit the survival of smolts in both a direct and indirect manner. The high flows allow the smolts to conserve energy since most of the work is done by the stream in the form of kinetic energy. This can have a direct influence on the smolt travel time, ultimate condition when reaching the ocean, and ability to survive the transition to saltwater. The increased turbidities that are generally associated with high flows also afford the smolts protection from predators during downstream passage.

The NFK, SFK, and UT systems generally experience two periods of peak flow: the first related to snowmelt and runoff in the spring, and the second related to periods of increased precipitation during the fall. It is likely, but as yet unverified, that the anadromous salmonid fry/juveniles/smolts within these systems capitalize on these high flow events both in the spring, to facilitate outmigrations to the ocean, and in the fall, to facilitate shorter-distance migrations from the NFK and SFK to the mainstem KR, and from the UT to Iliamna Lake. Thus, if there are any reductions to the peak flows, the effects on survival would depend largely on the magnitude, timing, and duration of flow reductions.

In addition to the direct influence on habitat quantity and quality, and the migratory ability of anadromous salmonids, streamflow provides the necessary energy and forces to create, restore, and maintain the physical characteristics and ecological function of the habitat in and along the channel, This includes the creation of a variety of habitat types (e.g., pools, riffles, runs, etc.) that in combination with local geologies and flora serve to create high quality spawning, nursery, and rearing habitats. High flows are especially important for the following:

- Flushing fine sediments from pools (maintain rearing space) and riffle habitats (maintain food production and spawning areas).
- Moving and recruiting new structure into the channel (e.g., large woody debris and boulders).
- Inundating important riparian and floodplain vegetation that serve to increase bank stability, provide shade, and contribute allochthonous (out of stream) materials/nutrients to the stream.

Streamflow also plays a role in the location, timing, magnitude, and duration of ice formation, and in the process of ice decay, breakup and ice-out. The extent to which any change in streamflow could influence one or more of these processes depends largely on whether and the extent to which flows governing these processes are altered.

1.2 Study Objectives

The brief review above clearly demonstrates the multi-faceted importance of streamflow on the ecology and sustainability of salmonid populations generally. In the context of the Pebble Project, the above review demonstrates the need to understand the relationships and interactions between the existing (baseline) hydrology of the NFK, SFK, UT, and KR and the resulting quantity and quality of salmonid habitat. This understanding, when coupled with species life history, abundance, and distribution information, is useful for characterizing overall baseline conditions.

As noted in Section 1.1, this study is one of several conducted that are focused on understanding the current relationships and dynamics between streamflow and habitat form and function in the three study watersheds. This study centered on defining how streamflow influences the quantity of habitats of different lifestages of target fish species over space and time. The primary objective of the study was to establish relationships between fish habitat and stream surface flow in each of the study streams and selected tributaries. The relationships were developed under current (baseline) conditions and, therefore, reflect how habitats within these streams vary spatially and temporally under current hydrologic regimes.

These relationships can then be used to do the following:

- Characterize existing fish habitats (by target species and lifestage) in each of the systems under baseline conditions.
- Provide environmental data input to the project design process.
- Assess potential changes in physical habitat conditions that could occur from changes in flow regimes.
- Assess temporal and spatial flow change effects on target fish species within the three study area systems, as well as a portion of the mainstem KR downstream of the NFK and SFK confluence.

This report is limited to describing the methods used in developing the habitat-flow relationships and presenting results that describe habitats under baseline flow conditions. Discussion of the results is largely confined to a brief assessment of the trends observed relative to the habitat-flow relationships of the target species for spawning and juvenile rearing lifestages.

2. BACKGROUND INFORMATION

2.1 Description of Study Area and Study Reaches

The study area for the Instream Flow: Mainstem Habitat Study encompasses three watersheds: NFK, SFK, and UT, as well as a portion of the mainstem KR downstream of the confluence of the NFK and SFK (Figure 1). The total distance from the Pebble Deposit to Bristol Bay along the three major river

pathways is 228, 232, and 150 miles (including the 33 miles to transit Iliamna Lake) for the NFK, SFK, and UT drainages, respectively.

In order to present the results of the Pebble Project fish resource studies in an ecologically meaningful framework, a reach-analysis approach has been used to assess spatial trends throughout each of the major watersheds. Specifically, 18 distinct hydrological reaches within the NFK, SFK, and UT watersheds were delineated by R2 Resource Consultants, Inc. (R2), and Buell & Associates, Inc. based on a review of maps and existing data associated with multidisciplinary parameters influencing channel function. Parameters considered included: channel and valley morphology, geology, stream discharge, and surface water temperature. The review resulted in the delineation of six, five, and seven mainstem EBD reaches within the NFK, SFK, and UT, respectively (Figure 1). While no formal reach delineation occurred for the mainstem KR, the portion of the KR in which fish resource studies were conducted during the 2004 through 2008 study period has been treated in the same manner as the other 18 delineated reaches for purposes of results analysis and presentation. See Chapter 15 and Appendix 15.1B for additional details regarding the reach-analysis approach.

The following sections provide brief descriptions of each watershed related to the characteristics and processes influencing the nature and condition of fish habitat, especially as it relates to this study. Additional details are summarized in Chapter 15, Section 15.1. In addition, details on specific watershed physical characteristics in the study area, including climate, geology, physiography, soils, surface water hydrology, groundwater hydrology, and vegetation are provided in Chapters 2, 3, 4, 5, 7, 8, and 13, respectively.

2.1.1 Study Streams

2.1.1.1 North Fork Koktuli River

The NFK is a relatively small drainage within the Nushagak-Mulchatna River system, which is one of eight river basins draining southwest Alaska into Bristol Bay. The NFK basin is situated in the immediate vicinity of the Pebble Deposit, and drains an area that is approximately 113 square miles (292 square km). This drainage area represents 0.9 percent (%) of the Nushagak-Mulchatna River system and 0.3% of the entire Bristol Bay drainage basin. The NFK includes an overall mainstem river length of 36 miles (58 km). The NFK originates on the north slope of Groundhog Mountain, and generally flows west then southwest before joining the SFK to form the Koktuli River. The highest elevation in the NFK drainage is Groundhog Mountain (elevation 3,074 feet; 937 meters); the lowest elevation is at the confluence with the SFK at 580 feet (177 meters; the details and results of the physiography study for Pebble Project are discussed in EBD Chapter 4). The watershed is bounded by a series of low, isolated mountain blocks with Kaskanak Peak to the south, Groundhog and Pig mountains to the east, and Cone Mountain to the north. The northern surface water drainage divide of the NFK is largely undefined.

The mainstem channel network of the NFK has been divided into six stream reaches with similar hydrology, geology, and channel characteristics (Figure 2). The six reach designations, NFK-A through NFK-F, progress from the lowermost to the uppermost sections of the stream network. While other EBD studies related to fish resources have been conducted throughout the NFK, this study focused on establishing transects within the three lowermost reaches.(NFK-A, NFK-B, and NFK-C) that collectively represent the section of stream that contains the majority of mainstem anadromous fish habitat and

supports the highest anadromous salmonid fish use. Additional transects were established in Tributary 1.190 of the NFK (hereafter referred to as Tributary NFK 1.190), which is located at the upstream end of NFK-C (Figure 2). Descriptions of the transect selection process and locations of transects are provided in Section 1.3 of this report. Representative channel characteristics of NFK-A, NFK-B, and NFK-C are depicted in Photos 1, 2, and 3, respectively.

The NFK is primarily a single-thread (i.e. containing a single channel), gravel-bedded river that is relatively straight in high gradient segments and meandering in low gradient segments. Channel slopes range from 0.09% to 0.8%, and average 0.4% (Appendix 15.1F). Tributaries are comprised of both high and moderate gradient, as well as alluvial fan channels. Large woody debris is scarce throughout the NFK due to a general lack of forest vegetation within the riparian zone. Large boulders deposited by retreating glaciers are sporadically located within the NFK channel and provide some instream cover, feeding station, and velocity shelter habitat for fish. Additional instream cover for fish is provided by undercut banks and overhanging vegetation. The primary sources of sediment in the channel are likely from undercut banks and lateral erosion that occurs during high flows and ice break-up processes. The quality of spawning gravels in the NFK is good based on grain size analysis of bulk samples collected from three locations (Appendix 15.1F). The levels of fine sediments in gravels collected from the NFK were lower than levels found in both the SFK and UT. Overall, the concentrations of size fractions that have been related to embryo survival (size fraction less than 0.84 millimeters) and fry emergence (size fraction less than 6.4 millimeters) were well below levels considered harmful (less than 10% and 20%, respectively).

The three lowermost reaches of the NFK (NFK-A, NFK-B, and NFK-C) flow through primarily alluvial valley bottom deposits, consisting predominantly of abandoned stream terraces and deposits composed of re-worked glacial outwash. The stream channels within all three reaches are, overall, considered low gradient. High flows within NFK-A often overflow the channel banks and extend into adjoining floodplains. Associated riparian zones, wetland complexes, and off-channel habitats extend well beyond the stream banks. For most of NFK-B, the channel flows through a relatively narrow (approximately 1,525-foot; 465 meter wide) valley bottom bordered by low hills. NFK-C flows across glacial outwash and moraine deposits.

Based on mesohabitat mapping reported in Appendix 15.1B, riffles are the predominant habitat type in NFK-A, NFK-B, and NFK-C, with runs a subdominant habitat feature (Figure 3). Pool habitats are relatively sparse in all mainstem NFK reaches. NFK 1.190 is also dominated by riffle habitat and, to a lesser extent, runs –with small amounts of pool, cascade, and backwater slough habitat. The mesohabitat data in the mainstem reaches were further analyzed to identify and assign habitat types associated with island complexes, since these represented a prominent feature of the system. The resulting habitat composition shows that riffles, runs, and island complexes are the primary habitat types in NFK-A, NFK-B, and NFK-C (Figure 3).

Seasonal flows in the NFK generally have two peaks, similar to other streams in Southwestern Alaska, and similar to the adjoining watersheds in the study area. The first peak occurs during the spring snowmelt season (early to late May), while the second peak occurs during the fall rainy season (late August to early October). These peaks are separated by two low flow seasons: a summer low flow (during the first half of August), and a winter low flow (late March to late April). The average annual flow in the NFK was 270 cubic feet per second (cfs) during calendar years 2005 through 2008 at Hydrology Gage NK100A (U.S. Geological Survey [USGS] Gage No. 15302250). This discharge is equivalent to an

average annual unit runoff of 31 inches (78 centimeters) from the 106-square-mile (274-square-km) basin area at the gage.

Runoff is flashy in steep tributaries draining the isolated mountain blocks where groundwater storage is limited. In contrast, the mainstem NFK shows a pronounced groundwater influence. Upstream from the upper two-thirds of NFK-C, the river is a "losing" stream. In this area, the NFK flows across unconsolidated outwash fan sediments with a high infiltration capacity, and water generated by stream flow, precipitation, and snowmelt rapidly infiltrates into a shallow aquifer (Chapter 7). The groundwater flows down valley, emerging at the downstream end of the glacial outwash deposits. The downstream third of NFK-C and a short stretch of NFK-B are "gaining" reaches that exhibit evidence of substantial groundwater upwelling (Chapter 7 and Chapter 8). Similarly, the downstream portion of NFK-A (downstream from Hydrology Gage NK100A) receives groundwater inflow, increasing the local surface water discharges at these locations. Hydrologic investigations also suggest there may be a small amount of cross-basin transfer of groundwater from the NFK to UT across the low drainage divides southeast of Groundhog Mountain upstream of Gaging Station UT100E (Chapter 7). The hydrologic regime of the NFK has a major influence on the functionality and usability of fish habitat and, in turn, the distribution and abundance of fish that utilize the watershed.

2.1.1.2 South Fork Koktuli River

The SFK (Figure 4) is another relatively small drainage of the Nushagak-Mulchatna River system. Like the NFK, the headwaters of the SFK are situated in the immediate vicinity of the Pebble Deposit area. The SFK drainage area comprises 107 square miles (277 square km), which represents about 0.8% of the Nushagak-Mulchatna River system and 0.3% of the entire Bristol Bay drainage basin. The SFK includes an overall mainstem stream length of approximately 40 miles (64 km). The SFK originates on the east flank of Kaskanak Mountain, northwest of Frying Pan Lake. The SFK flows south then west before joining the NFK to form the Koktuli River. The highest elevation in the SFK drainage is Kaskanak Mountain (elevation 2,760 feet or 841 meters). The lowest elevation in the basin is at the confluence with the NFK at 580 feet (177 meters; details and results of the physiography for the study area are discussed in EBD Chapter 4). The watershed is bounded by a series of low, isolated mountain blocks with Kaskanak Peak to the west, Koktuli Peak to the east, and Sharp Mountain to the south. Like the NFK, the northern surface water drainage divide is not well defined.

The mainstem channel network of the SFK has been divided into five stream reaches with similar hydrology, geology, and channel characteristics (Figure 4). The five reach designations (SFK-A through SFK-E) progress from the lowermost to the uppermost section of the stream network; SFK-E includes an impounded segment near the headwaters formed by Frying Pan Lake. Like the NFK, this study focused on the three lowermost reaches of the SFK (containing the greatest amount of useable anadromous fish habitat) by establishing instream flow transects in SFK-A, SFK-B, and SFK-C. Additional transects were established in SFK 1.190, a major tributary joining the SFK at the upstream end of SFK-B. Representative channel characteristics of SFK-A, SFK-B, and SFK-C are depicted in Photos 4, 5, and 6, respectively.

A large and variable portion of SFK-C has at times exhibited intermittent flow conditions during summer and winter months. However, the severity and duration of these events has varied by year. For example, based on flow records from Gaging Station SK100C during 2007, there was no surface flow in SFK-C for a period of 40 days between early July and early September 2007. Conversely, the reach did not

completely dry-up in 2006. When these channels dewater, fish must either move upstream or downstream to areas of ponded or flowing water, or become stranded within the influenced reach.

The SFK is primarily a single-thread, gravel-bedded channel with a geomorphic tendency toward a meandering pattern. Channel slopes in the SFK are the lowest of the three basins, ranging from 0.03 to 0.6% and averaging 0.2% (Appendix 15.1F). Large woody debris is scarce throughout the SFK because of a general lack of forest vegetation within the riparian zone. Large boulders deposited by retreating glaciers are sporadically located in the channel and provide instream cover, feeding station, and velocity shelter habitat for fish. Additional instream cover for fish is provided by undercut banks and overhanging vegetation.

Like the NFK, the primary sources of sediment in the channel are from undercut banks and lateral erosion that occurs during high flows and ice break-up processes. The quality of spawning gravels is good, based on grain size analysis of bulk samples collected from three locations in the SFK (Appendix 15.1F). Although the levels of fine sediments in gravels collected from the SFK were higher than levels found in samples from the NFK and UT, the concentrations of size fractions that have been related to embryo survival (size fraction less than 0.84 millimeters) and fry emergence (less than 6.4 millimeters) were all below levels considered harmful (less than 12% and 20%, respectively, after Chapman and McLeod, 1987; Kondolf, 2000; Lotspeich and Everest, 1981 Shirazi et al., 1981).

Valley bottom deposits in the two lowermost reaches (SFK-A and SFK-B, i.e., downstream of SFK1.190) consist of reworked glacial outwash material, including abandoned stream terraces and recent alluvial deposits. These reaches are flanked by glacial moraine and drift deposits. High flows typically overflow the banks, and large channels are bordered by floodplains and former stream terraces. Associated riparian zones, wetland complexes, and off-channel habitat can extend well beyond the stream banks. Sediment sources consist primarily of fluvial transport from upstream reaches and bank erosion. SFK-A and SFK-B generally possess an alluvial channel morphology that appears to reflect adjustment to the post-glacial flow regime (Appendix 15.1F). SFK-C, located upstream of Tributary SFK 1.190, flows through glacial lacustrine (related to a lake environment) deposits. SFK-C is relatively low gradient compared to the rest of the mainstem, with channel slopes on the order of 0.03% to 0.07%.

Results of mesohabitat data mapping indicate that riffle and run/glide habitats are the predominant habitat types in SFK-A, SFK-B, and SFK-C, whereas pools are relatively sparse (Appendix 15.1B). SFK 1.190 is dominated by riffle habitat with lesser amounts of run, pool, and backwater slough habitat. As for the NFK, the aforementioned mesohabitat data were further analyzed to identify and assign habitat types associated with island complexes. The resulting habitat composition shows that riffles, runs, and island complexes are the primary habitat types in SFK-A and SFK-B (Figure 5). However, island complexes were less common in SFK-C, where run and riffle habitat dominated.

Seasonal flows in the SFK generally have two peaks, the first occurring during the spring snowmelt season (early to late May), the second during the fall rainy season (late August to early October). These peaks are separated by two low flow seasons: a summer low flow (during the first half of August), and a winter low flow (late March to early May). The average annual flow in the SFK was 191 cfs during calendar years 2005 through 2008 at Hydrology Gage SK100B (USGS Gage No. 15302200). This discharge is equivalent to an average annual unit runoff of 33 inches (84 cm) from the 69–square-mile (180-square-km) basin area at the gage. The lowermost gage in the SFK watershed (SK 100A), located

prior to the confluence with the NFK, recorded a mean annual discharge of 269 cfs between 2005 and 2008.

The mainstem SFK exhibits a pronounced groundwater influence. From the outlet of Frying Pan Lake downstream through the upstream third of SFK-B, the river flows generally decrease in a downstream direction as water infiltrates into permeable glacial outwash sediments. As noted above, portions of this section of the SFK have gone dry in the late summer and early fall, and have also exhibited subsurface flows during the winter baseflow period. For example, in March 2005, flows were 7.7 cfs at the SK100F gage (River Kilometer [RK] 54.7) and 0 cfs at the SK100C gage (RK 35.8), despite the contributing drainage area more than tripling between the two gage sites from 11.9 square miles (31 square km) to over 37.5 square miles (96 square km). In addition, approximately 25 cfs of groundwater, flows out of the SFK basin and emerges in Tributary UT 1.190.

Stream flow in SFK is augmented by groundwater in the lower portions of SFK-B and SFK-A, where the river flows across the western end of the terminal moraine and enters the relatively narrow valley between Kaskanak Mountain and Sharp Mountain. Springs, seeps, and upwelling groundwater are common in the upstream end of this reach, and baseflows can increase from 0.3 to almost 27 cfs over a distance of 2.5 miles (4 km), with less than a 10% increase in contributing surface area (Chapter 7). Groundwater contributions influence conditions in this portion of the river year round. Ice-free (open water) conditions reflect the warming influence of groundwater observed throughout the winter. Like the NFK, the hydrologic regime of the SFK has a substantial influence on the functionality and usability of fish habitat, and in turn, the distribution and abundance of fish that utilize the watershed.

2.1.1.3 Upper Talarik Creek

The UT watershed (Figure 6) drains an area of about 135 square miles (350 square km) and is part of the Kvichak River system, one of eight river basins draining SW Alaska into Bristol Bay. From its headwaters, which are located in the immediate vicinity of the Pebble Deposit area, the stream flows in a south-southwesterly direction for about 39 miles (62 km) to where it enters Iliamna Lake. The UT represents about 1.7% of the Kvichak River system and 0.3% of the entire Bristol Bay drainage basin. The highest elevation in the UT drainage is Pig Mountain (elevation 2,809 feet; 856 meters), while the lowest elevation is at the stream outlet to Iliamna Lake (elevation about 46 feet; 14 meters). The watershed is bounded by a series of low, isolated mountain blocks: Koktuli Peak to the west, the Pig Mountains to the northwest, Dalton Mountain to the northeast, and a long unnamed ridge that separates the UT drainage from the Newhalen River to the east. The northwestern surface water drainage divide between the NFK and UT is inconspicuous.

The mainstem channel network of the UT basin has been divided into seven stream reaches with similar broad-scale hydrologic, geologic, and channel characteristics (Figure 6). These reach designations (UT-A through UT-G) progress from the lowermost to uppermost section of the stream network. This study focused on all reaches of the UT, except the lowermost (UT-A) and uppermost (UT-G), by establishing instream flow transects in UT-B through UT-F. The uppermost reach is located above the majority of spawning habitat and is also proximal to the Pebble Deposit. The lowermost reach is below First Creek which contributes substantial flow to UT. Additional transects were established in Tributary UT 1.190, which joins the UT at the upstream end of UT-C. Representative channel characteristics of UT-B through UT-F are depicted in Photos 7 through 11, respectively.

The UT is primarily a single-thread, gravel-bedded channel that is relatively straight along much of its length, except where the river valley and floodplain widens and multiple channels have formed. The channel slopes of the UT are generally steeper than those of the NFK and SFK, ranging from 0.1 to 2.0% and averaging 0.5% (Appendix 15.1F). As in the NFK and SFK, large woody debris is scarce in the upper portion of the basin due to a general lack of forest vegetation in the riparian zone. The lower reaches, however, are associated with larger trees and large woody debris is more prevalent.

Alluvial transport and deposition are prevalent within most of UT-B and the entire length of UT-A. Within these areas, high flows typically overflow the banks, and channels are bordered by relatively wide floodplains. Associated riparian zones (some supporting large trees), wetland complexes, and off-channel habitat extend well beyond the stream banks. Large woody debris is present within these sections of the river and serves to create and maintain habitat diversity. In the upper third of UT-B and in UT-C, the river channel is low gradient, contained, and flows through a relatively narrow (1,300- to 2,600-foot; 400- to 800-meter) valley bottom, bordered by low hills to the west and carved glacial deposits to the east. UT-D, UT-E, and the lower half of UT-F are classified as alluvial floodplain channels that have formed by re-working glacial outwash deposits. Multiple former stream terraces and colluvial slopes occur where the present stream channel has downcut through glacial outwash and lacustrine deposits. Large woody debris is relatively sparse within these reaches due to a lack of source trees from the riparian zone. In the upper half of UT-F and UT-G, the channel flows across deep glacial lacustrine deposits.

Based on mesohabitat mapping reported in Appendix 15.1B, riffles are the predominant and run/glide the subdominant habitat features in UT-A, UT-B, and UT-G. Conversely, run/glide is dominant, and riffles subdominant in UT-C through UT-F. Pool habitats represented a substantial proportion of the habitat composition only within UT-E and UT-F. The frequency of pool habitats remained low in all other UT reaches. UT 1.190 is also dominated by riffle habitat, with only a small amount of cascade habitat. The mesohabitat data were analyzed to identify and assign habitat types associated with island complexes. The resulting habitat composition shows that riffles, runs, and island complexes are the primary habitat types in UT-B through UT-E, although pools were also substantial in UT-D and UT-E (Figure 7). Island complexes were less common in UT-F.

Like the NFK and SFK watersheds, stream flows in the UT are driven by runoff from spring snowmelt and summer/fall rains. Available data suggest surface water flows generally decline from October through April, are highest in late April to late May as a result of snowmelt, then reach a secondary peak in the late summer/early fall (late August to early) as a result of rainfall. Flows are lowest in the early spring (March to April) and during mid-summer (July and early August). Base flows tend to remain high in both winter and late summer due to groundwater storage. The average annual flow in UT was 232 cfs during calendar years 2005 through 2008 at Hydrology Gage UT100B (USGS Gage No. 15300250). This discharge is equivalent to an average annual unit runoff of 32 inches (82 centimeters) from the 86.2-square-mile (223-square-km) basin area at the gage. The lowermost gage in the UT watershed (UT 100A_PC3) recorded a mean annual discharge of 382 cfs during 2008.

Streamflows in the UT are also influenced by groundwater inflow. Approximately 25 cfs of flow enters the UT basin through the cross-basin transfer of groundwater from the SFK. The groundwater flows eastward from the SFK, likely along flow paths formed by former glacial meltwater channels, and emerges in Tributary UT 1.190. Tributary UT 1.190 exhibits a much higher unit runoff (i.e., flow per unit watershed area) and a much more stable hydrograph than other streams in the UT watershed, reflecting

the groundwater influence. Flow records indicate the downstream portion of UT-F (downstream from Hydrology Gage UT100D) and UT-D also receive groundwater inflow, portions of which remain ice-free during winter months.

2.1.1.4 Mainstem Koktuli River

The KR encompasses a moderate-sized drainage (Figure 8) of the Nushagak-Mulchatna River system that drains a 218-square-mile (565-square-km; 140,000-acre) area, or 1.7% of the Nushagak-Mulchatna River system and 0.6% of the entire Bristol Bay drainage basin. The KR has an overall mainstem river length of approximately 39 miles (63 km). The KR originates at the confluence of the North Fork and South Fork Koktuli rivers and flows northwesterly for about 29 miles (46 km) until it exits the study area at the confluence with the Swan River. The highest elevation in the KR drainage is Cone Mountain (elevation 2,760 feet; 841 meters); the lowest elevation in the basin is at the confluence with the Swan River at 580 feet (177 meters). The watershed is bounded by a series of low, isolated mountain blocks with Cone Mountain to the northeast.

The upper reach of the mainstem KR is more than 31 miles (50 km) downstream from the Pebble Deposit, and the study efforts in the KR were less intense than in the other three watersheds. Consequently, less is known regarding fish habitat and channel characteristics in this part of the study area. Habitat composition in this basin was determined during the transect selection process that occurred in the uppermost section of the river. Habitats within the section were composed mostly of riffle and run habitat, with lesser amounts of island complexes (Figure 8). Field crews also noted some pools present in this reach of the Koktuli River, although the pools were not associated with designated transects.

2.1.2 Fish of the Study Streams

The fish resources within the study area include five species of anadromous Pacific salmon, at least four species of non-anadromous salmonids, as well as numerous non-salmonid fishes. The term anadromous refers to the group of fish that spend the majority of their life cycle in the ocean where they grow and mature, but the reproductive and initial juvenile rearing stages of their life cycle are spent in freshwater. The freshwater existence commences with the adults entering rivers and streams and migrating upstream until they find their natal stream (i.e., the stream of their origin), where, when conditions are right, the fish spawn. Pacific salmon are semelparous, meaning that all adults die after spawning. Depending on the species of Pacific salmon, the resulting progeny may spend from a relatively short time (months) upwards to several years rearing in freshwater before migrating back downstream to the ocean. It is during this period of outmigration that the juvenile salmon are exposed to and imprint on the bouquet of odors inherent to the waters they encounter that enables them, as adults via olfactory cues, to retrace the path back to their stream of origin. For purposes of this document, non-anadromous fish are those that spend their entire life cycle in freshwater. Detailed information regarding each species is provided in Appendix 15.1A and Appendix 15.1B. Summary information of each species is provided in the specific watershed descriptions below.

The runs of Pacific salmon inhabiting the study area fall within the Bristol Bay management area. This area provides the largest commercial sockeye salmon fishery in the world, as well as important fisheries for Chinook, chum, coho, and pink salmon (Jones et al., 2009). The Bristol Bay management area includes nine major river systems and is divided into five management districts. As a tributary to the

Mulchatna and Nushagak rivers, the Koktuli River is a component of the Nushagak District. Upper Talarik Creek, as a tributary to Iliamna Lake and the Kvichak River, is a component of the Naknek-Kvichak District.

Non-salmon fishes also represent important components of subsistence and recreational fisheries in the Bristol Bay area. For example, species present in the study area that are used for subsistence purposes in the Kvichak River and Iliamna Lake area include arctic grayling, Dolly Varden, rainbow trout, whitefish species, burbot, and northern pike (Krieg et al., 2005). Several of these species are also targeted for sport harvest in the Bristol Bay sport fish management area, including arctic grayling, Dolly Varden, rainbow trout, and northern pike (Dye et al., 2006).

The general life history of Pacific salmon species involves adults constructing nests (redds) in gravel beds in which spawning occurs, emergence of fry from the gravels, a period of freshwater rearing of fry and juveniles, followed by the downstream migration of juveniles/smolts (smolts are juvenile fish that have undergone physiological changes preparatory to transitioning to saltwater) to the ocean for feeding and maturation, and subsequent return of adults to natal sites for spawning and completion of their life cycle. There are many variations on the timing and duration of these lifecycles (termed periodicity) both among species, and from year-to-year for the same species. However, all salmonids share a need for the following habitat conditions: sufficient food supply; cool, high quality flowing water; high dissolved oxygen concentrations; and unimpeded migratory access to and from spawning and rearing areas (Spence et al., 1996).

The general periodicities of the different life history stages of the target species are shown in Table 1. The specific times noted were in part based on a general understanding of the local populations as described in the published literature, as well as site specific data collected as part of fish studies. The periodicities are subject to revision pending acquisition of new data and information and may not correspond exactly with the largely literature derived life history descriptions presented below. The distribution of the target species in the study area by reach is presented in Table 2. Species information specific to individual basins in the study area can be found in Chapter 15, Section 15.1.

2.1.2.1 Chinook Salmon

Chinook salmon is the largest species of Pacific salmon, typically weighing around 20 pounds (9 kilograms [kg]) at maturity, although some may exceed 100 pounds (45 kg). Their range extends from northern Hokkaido, Japan, to the Anadyr River in Siberia and from the San Joaquin River in Central California to the Coppermine River in the Canadian Arctic (Healey, 1991). In Alaska, Chinook salmon occur in large coastal rivers from the southern tip of Alaska's panhandle northward to Point Hope (Mecklenburg et al., 2002). Chinook salmon have been documented in several Bristol Bay tributaries, including the Kvichak and Nushagak River basins (Johnson and Weiss, 2007) and are present in the NFK, SFK, UT, and KR within the study area (Chapter 15).

Chinook salmon mature and begin their spawning migration between 3 and 6 years of age, but most spawning adults are ages 4 or 5 (Healey, 1991). In northwestern Canada and Alaska, adult Chinook salmon migrate to freshwater spawning grounds between late May and July, although this period may extend from April to September in some locations (Healey, 1991). While spawning generally takes place from July to November, timing varies regionally and depends on the distance and duration of upriver migration (Morrow, 1980; Scott and Crossman, 1973). Northern populations, such as those in Alaska,

tend to spawn from July through September (Healey, 1991). Based on aerial surveys in the NFK, SFK, and UT from 2004 to 2008, peak adult counts in the study area typically occur in late July or early August (Chapter 15).

Chinook salmon require deep holding water and sufficient discharge to successfully complete their upstream migration. They typically spawn in mainstem reaches where hydraulic and substrate requirements are met, often at the head of a riffle upstream of its crest. As the largest of the Pacific salmon species, Chinook salmon tend to spawn in higher water velocities (1 to 3 feet per second) and in larger substrates (up to 6 inches) than other salmon (Burner, 1951; Raleigh et al., 1986). Spawning depths vary widely, from 2 to 180 inches (5 to 457 centimeters), with average spawning depths of at least 12 inches (30 centimeters; Healey, 1991). Adults die following reproduction and egg deposition into one or more redds.

Chinook salmon egg incubation varies with temperature, resulting in an increased time to hatching at lower temperatures. Successful incubation requires clean water percolating through spawning gravels at temperatures less than 16 degrees Celsius (°C; Healey, 1991). Chinook salmon eggs require 882 to 991 temperature units on average before hatching (1 temperature unit = 1 °C above freezing for 24 hours; Beauchamp et al., 1983). After hatching, the young remain in the gravel for 2 to 3 weeks before emerging as free-swimming, feeding fry (Morrow, 1980; Wydoski and Whitney, 2003). While some juvenile Chinook salmon may rapidly disperse to sea, this life history pattern tends to be absent in locations over 56 degrees north latitude, such as Alaska (Quinn, 2005). In these northern locations, most juvenile Chinook salmon remain in freshwater streams for 1 year before beginning their outmigration to sea, and some will remain in freshwater for 2 years (Morrow, 1980; Quinn, 2005).

Juvenile Chinook salmon occupy a variety of habitats in freshwater. Younger, smaller fry inhabit stream margins, eddies, backwaters, and side channels and are often associated with fallen trees, root wads, and areas with bank cover. As they increase in size, juvenile Chinook salmon move into stream and river habitats with increasing velocities. This movement is associated with a shift from predominantly sandy substrates to those with larger-sized gravel and boulders (Healey, 1991).

2.1.2.2 Coho Salmon

Coho salmon is moderate sized relative to other Pacific salmon, typically weighing 8 to 10 pounds (4 to 5 kg). This species is widely distributed throughout the North Pacific basin, from the Sea of Japan north to Point Hope, Alaska, and south to the Sacramento River in California (Sandercock, 1991). Along the Pacific coast of Alaska, coho salmon inhabit coastal rivers and streams including the Kvichak and Nushagak River basins. Coho salmon are present in the NFK, SFK, UT, and KR within the study area (Chapter 15).

Coho salmon typically return to their natal streams to spawn at age 3 after spending 18 to 24 months (up to 3 years) in the marine environment. However, precocious males that reach maturity during their first (referred to as “jacks”) or second year are a natural component of many Alaska coho salmon populations (Sandercock, 1991). North American coho salmon typically spawn from October to March, although entry into freshwater and, consequently, spawning time varies in different populations and environmental conditions (Morrow, 1980; Sandercock, 1991). In northwestern Canada and Alaska, adult coho salmon may begin their upstream migrations as early as late June or July with most spawning occurring in November. In the Bristol Bay area, runs peak in August and September (McPhail and Lindsey, 1970).

Based on aerial surveys from 2004 to 2008 in the NFK, SFK, and UT, peak adult counts in the study area typically occur during the month of September (Chapter 15).

Adult coho salmon require deep holding cover for resting during upstream migration, and sufficient discharge for upstream movement into tributaries. The minimum upstream passage depth criteria for adult coho salmon is 7 to 8 inches (18 to 20 centimeters; Thompson, 1974; Laufle et al., 1986). For spawning and incubation, coho salmon require clean gravel and cool water temperatures (11°C to 15°C preferred; Reiser and Bjornn, 1979). The length of incubation for coho salmon ranges from 35 to 101 days (Laufle et al., 1986). In Alaska, the incubation period for coho salmon ranges from 42 to 56 days (McPhail and Lindsey, 1970). After hatching, larval fish typically spend several weeks in the gravel before emerging (Laufle et al., 1986; McMahon, 1983). Newly emerged fry usually congregate along stream margins and in backwater pools.

During their first winter, juveniles use a variety of slower water habitats including alcoves, beaver ponds (also referred to as beaver complexes), and side channels (Nickelson et al., 1992). In the winter, these habitats provide deep water rearing and holding areas that are less vulnerable to freezing, as well as low-velocity refuge areas that are protected from high flows and impacts resulting from ice out. Complex, large woody structures and side channels are also important habitats for coho salmon during summer low-flow periods, inasmuch as they tend to create and provide pool habitats (Grette and Salo, 1986). As juveniles grow, they typically disperse into more riffle-type habitats and aggressively defend their territory, which results in displacement of excess juveniles downstream to potentially less favorable areas (Sandercock, 1991). Once territories are established, individuals typically rear in selected areas of the stream, feeding on drifting benthic organisms and terrestrial insects until the following spring (Hart, 1973). Juvenile coho salmon rearing time in freshwater is typically about 15 months, although some juveniles will remain in freshwater for up to 2 years (Sandercock, 1991). Smolt outmigration begins in February and may continue into June; however, in more northern populations, outmigration is likely to occur later and extend into July or August.

2.1.2.3 Chum Salmon

Among Pacific salmon, the chum salmon is second only to Chinook salmon in size. Adult chum salmon can weigh up to 45 pounds (20 kg), but are typically around 10 to 15 pounds (5 to 7 kg). This species has the widest distribution among Pacific salmon, ranging from Korea to the Lena River in Russia and from the Mackenzie River in the Canadian Arctic down to Monterey, California (Salo, 1991). On the Pacific coast of North America, major chum salmon runs occur from the Kotzebue Sound of northwestern Alaska southward to Tillamook Bay, Oregon. Major runs in Bristol Bay tributaries include the Togiak, Nushagak, and Kvichak River basins (Salo, 1991). This species is also present in the NFK, SFK, UT, and KR within the study area (Chapter 15).

Chum salmon mature between 2 and 6 years of age (Salo, 1991). Chum salmon spend comparatively little time in freshwater and generally spawn soon after migrating into the lower reaches of streams (Quinn, 2005). While chum salmon do not typically migrate long distances in freshwater reaches, spawning occurs up to 1,736 miles (2,800 km) from the sea in the Yukon River, Alaska (Salo, 1991). Upstream migration can be rapid, with rates of 30 miles per day recorded (Groot and Margolis, 1991). In Alaska and northwestern Canada, adults tend to begin their spawning migration in early June (McPhail and Lindsey, 1970). Major chum salmon runs in the tributaries of Bristol Bay tend to peak in early July and subside by

the end of the month (Salo, 1991). Based on aerial surveys from 2004 to 2008 in the NFK, SFK, and UT, peak adult counts of chum salmon in the study area typically occur from mid to late July (Chapter 15).

Preferred spawning areas of chum salmon include groundwater-fed streams or at the heads of riffles (Grette and Salo, 1986). Upwelling is important in the selection of redd sites and spawning often takes place in shallow, slower velocity streams and side channels (Johnson et al., 1997). However, chum salmon will also utilize spawning areas within mainstem rivers and side channels. Chum salmon die within a few days after spawning, with females often attending to their redds during this period (Morrow, 1980).

Incubation times are largely based on water temperature. For example, eggs incubating at 15ºC hatch approximately 100 days earlier than eggs incubating at 4ºC. The general fitness and quality of emergent fry depends, in part, on the: concentration of dissolved oxygen in the water, gravel composition, spawner density, stream discharge, and genetic characteristics (Salo, 1991). Since chum salmon embryos typically hatch during periods of ice-cover, the actual timing of hatching in Alaska is largely unknown, but it is expected to be later than in southern populations. In British Columbia, hatching occurs between December and February (McPhail and Lindsey, 1970; Morrow, 1980). Juvenile chum salmon remain in the gravel for several weeks after hatching. Following emergence from the gravel, juveniles then rear in freshwater for a period of a few days to several weeks before migrating downstream toward estuarine waters (Grette and Salo, 1986). During this period of migration, the juveniles actively feed on aquatic invertebrates (Salo, 1991). Generally, chum salmon outmigration occurs between mid-spring and late summer, but tends to occur later in the season in more northern latitudes and takes longer in larger river systems (Salo, 1991).

Juvenile chum salmon spend more time rearing in estuaries than other anadromous salmon, often remaining for several months before dispersing into saltwater in late July or August (Johnson et al., 1997; Scott and Crossman, 1973). Juveniles may remain near the mouths of their natal rivers after entering the estuary or may disperse rapidly throughout the estuarine system into tidal creeks and sloughs. Because of their increased rearing time in estuaries, estuarine habitat is thought to play a major role in determining subsequent adult returns to freshwater (Johnson et al., 1997). A variety of microhabitats and food sources within the estuary may be used by chum salmon. Microhabitat selection may vary with fish size and environmental conditions, such as food, availability refuge habitats, predator presence, and salinity (Quinn, 2005).

2.1.2.4 Sockeye Salmon

Sockeye salmon are generally smaller than the aforementioned species of Pacific salmon, averaging 5 to 8 pounds (2 to 4 kg), but reaching up to 15 pounds (7kg). Sockeye salmon populations occur in Asia from the Kuril Islands north to the Gulf of Anadyr and in North America from the Sacramento River, California, to Point Hope, Alaska (Burgner, 1991). In North America, sockeye salmon are primarily distributed from the Columbia River north to the Kuskokwim River in Alaska (Quinn, 2005). Among populations in Alaska and northwestern Canada, one of the largest spawning sockeye salmon complexes occurs in Alaska's Bristol Bay basin (McPhail and Lindsey, 1970). Within the study area, sockeye salmon are present in the NFK, SFK, UT, and KR (Chapter 15).

Sockeye salmon are unique among *Oncorhynchus* species in that the rearing of juveniles largely takes place in lakes. The Bristol Bay basin contains a large number of lakes and, consequently, large spawning

complexes of sockeye salmon. Life history characteristics of these populations have been well studied (Burgner, 1991). In the Bristol Bay basin, adult sockeye salmon runs occur from early June to August, with 80% of the run occurring within a 12- to 14-day period (Burgner, 1991). Spawning typically takes place in August and September (McPhail and Lindsey, 1970). Within the study area, peak adult counts typically occur from late July to early August, based on aerial surveys from 2004 to 2008 in the NFK, SFK, and UT (Chapter 15).

Because juvenile sockeye salmon typically rear in freshwater lakes, adults tend to spawn in systems associated with lakes. Habitats used for sockeye salmon spawning are diverse and include lake tributaries, outlet rivers, lake beaches, and spring-fed ponds and side channels (Burgner, 1991; Quinn, 2005). Redds may be constructed in a variety of substrates, ranging from fine gravels in side channels to coarse lake shore gravels and rocky beaches (Burgner, 1991).

Egg incubation takes between 6 and 9 weeks and, as is the case with other salmonid species, incubation time depends on temperature (McPhail and Lindsey, 1970). After spending 2 to 3 weeks in the gravel, sockeye salmon fry move, either upstream or downstream, from the area around the redd into a lake associated with the spawning stream. Sockeye salmon juveniles spend 1 to 2 years in a lake, growing and beginning to smolt (McPhail and Lindsey, 1970; Quinn, 2005). The seaward outmigration of sockeye salmon smolts begins after ice break-up, and in the Bristol Bay basin, peak outmigrations occur in June when water temperatures are around 4°C (McPhail and Lindsey, 1970; Morrow, 1980). Adults return to their natal stream to spawn after spending 1 to 4 years in the ocean (Mecklenburg et al., 2002).

2.1.2.5 Arctic Grayling

Arctic grayling occur in mainland Asia and North America. In Asia, they are distributed east of the Ob and Kara rivers in Siberia and north of the Eroo River in northern Mongolia. The North American distribution of arctic grayling includes Alaska and northern Canada eastward to the Hudson Bay; and this species has also been documented in the Missouri River headwaters of Montana (Mecklenburg et al., 2002). Arctic grayling occur naturally throughout most of Alaska and are also found in the St. Lawrence and Nunivak islands (Mecklenburg et al., 2002; Morrow, 1980). Within the study area, arctic grayling are present in the NFK, SFK, UT, and KR systems (Chapter 15).

Arctic grayling occupy freshwater habitats, preferring clear, cold water in lakes, large rivers, and rocky streams (Mecklenburg et al., 2002). While inhabiting lakes, they tend to remain near rocky shores and stream mouths. While swimming in streams, arctic grayling can often be found midstream at a short distance below the surface (McPhail and Lindsey, 1970). Some arctic grayling use upstream pools as summer feeding habitat, and most overwinter in the deep waters of lakes and mainstem channels. Juveniles are thought to occupy similar seasonal habitats as adults, but the territorial behaviors of larger fish and prey item availability are likely to limit juvenile fish distribution and create habitat partitioning (Morrow, 1980).

Prior to spawning, arctic grayling migrate upstream from overwintering sites in the deep waters of lakes or mainstem channels to spawning sites located in smaller tributaries (Morrow, 1980; Scott and Crossman, 1973). Prior to their spawning migration, arctic grayling typically stage at tributary mouths and may begin their migration via channels cut in the ice by surface runoff. Little is known about arctic grayling migration distances, but movements of up to 99 miles (160 km) have been documented (Morrow, 1980). In Alaska and northwestern Canada, spawning reportedly takes place from May through June

(McPhail and Lindsey, 1970; Morrow 1980). While no formal redd is constructed by the female, tail-quivering behavior associated with reproduction creates a shallow depression in the substrate. Eggs and milt are released over this depression (Morrow, 1980). After spawning, adults may return to lakes or rivers, or they may migrate further upstream to occupy stream pools for a summer feeding season (Morrow, 1980; Scott and Crossman, 1973). For those that migrate further upstream, a downstream return migration to overwintering sites takes place in mid-September (Morrow, 1980). Arctic grayling spawn multiple times over their lifespan and may live up to 11 or 12 years (Scott and Crossman, 1973).

Arctic grayling eggs hatch after 11 to 21 days and active feeding begins 3 to 8 days after hatching (Morrow, 1980; Scott and Crossman, 1973). Information regarding the movement of juveniles subsequent to hatching is lacking, but presumably they occupy seasonal habitats similar to those occupied by adults. Sexual maturity can occur as early as 4 years of age, although maturity is more commonly reached at 6 to 9 years of age (Scott and Crossman, 1973).

2.1.2.6 Dolly Varden

Dolly Varden are distributed in Asia from Japan and North Korea north to the Kamchatka and Chukchi peninsulas. In North America, Dolly Varden are found from northern Washington along the Pacific and Arctic coasts to the Mackenzie River in Canada (Mecklenburg et al., 2002; Quinn, 2005). Two forms of Dolly Varden exist that can be distinguished by the number of gill-rakers and vertebrae (Mecklenburg et al., 2002). These two forms, a southern and a northern, are geographically separated by the Alaska Peninsula. Alaskan populations of the northern form range from drainages of Bristol Bay north to the Arctic coast (Mecklenburg et al., 2002). Both anadromous and non-anadromous populations are thought to occur in Bristol Bay drainages (McPhail and Lindsey, 1970). Within the study area, Dolly Varden are present in the NFK, SFK, UT, and KR systems (Chapter 15).

Dolly Varden exhibit a wide variety of life history, migration, and habitat utilization patterns, but some consistencies are found among populations along the Pacific coast of Alaska. All Dolly Varden are iteroparous (spawn multiple times) fall spawners, although northern forms only spawn every 2 to 3 years while southern forms spawn annually (Morrow, 1980; Quinn, 2005). Northern forms reach maturity at 7 to 9 years of age while southern forms reach maturity at 4 to 6 years of age. Spawning occurs from late August through November and redds are usually located in streams with moderately strong currents and water depths greater than 12 inches (30 centimeters). The incubation time for Dolly Varden eggs is approximately 130 days at 8.5°C, and fry emergence takes place 60 to 70 days after hatching (Morrow, 1980).

Following emergence, the behavior of Dolly Varden fry depends largely upon whether the population is anadromous or non-anadromous. In anadromous populations, juveniles remain in rivers or lakes for 3 to 4 years before migrating seaward. Smolt outmigration occurs from early spring through July and, in some systems, a second fall outmigration occurs. Because anadromous adult Dolly Varden overwinter in freshwater habitats after spawning, these adults outmigrate in the spring with the smolts. Time spent at sea is highly variable, ranging from 2 weeks to 7 months. Returns to freshwater may be solely for overwintering or for both overwintering and spawning purposes. Little is known about the migratory patterns of stream-resident (i.e., non-anadromous) populations, but it has been suggested that these fish occupy deep pools in the winter and larger stream reaches in the summer (Morrow, 1980).

The types of habitat used by Dolly Varden can be difficult to characterize because of the diversity of life history and migration patterns exhibited by this species. Stream systems with and without lakes are used by both juveniles and adults for various purposes (Morrow, 1980). For example, Dolly Varden may spawn in streams not associated with a lake, yet overwintering may occur in a stream-lake system. Juveniles also tend to migrate into several different streams after returning to freshwater (Morrow, 1980). Dolly Varden spawn in streams with water temperatures ranging from 5.5°C to 6.5°C and with clean gravel ranging in size from 0.2 to 2 inches (0.6 to 5 centimeters) in diameter. Recently emerged fry occupy the bottoms of pools and eddies (Morrow, 1980).

The freshwater prey of juveniles and adults include many types of insects, spiders, and annelids, in addition to snails, clams, fish eggs, and small fish. Fry consume various items including mayfly and midge larvae, winged insects, and small crustaceans (Morrow, 1980).

2.1.2.7 Rainbow Trout

Rainbow trout are native to the Kamchatka Peninsula in Asia and from northwest Mexico to the Kuskokwim River, Alaska, in North America (Mecklenburg et al., 2002). This species has also been widely introduced throughout the world, including in interior Alaska near Fairbanks, Big Delta, and Summit Lake (Morrow, 1980). The distribution of native populations in Alaska extends along the coast from the Alaska panhandle north to the Kuskokwim River and west to the Port Moller region of the Alaska Peninsula (Mecklenburg et al., 2002). Within the study area, rainbow trout are present in the NFK, SFK, UT, and KR systems (Chapter 15).

While both anadromous and non-anadromous populations occur throughout most of their range, only non-anadromous rainbow trout populations occur in the Bristol Bay region (Quinn, 2005). Accordingly, the life history of non-anadromous rainbow trout is described herein. Adult rainbow trout typically stay relatively close to their natal streams and, consequently, spawning migration distances are usually short (only a few miles; Morrow, 1980). Spawning occurs in the spring and generally takes place in May and June when eggs and milt are deposited into redds. Unlike most Pacific salmon, rainbow trout are iteroparous, meaning they may survive to spawn in subsequent years. Repeat spawning is common in resident rainbow trout (Quinn, 2005) and annual spawning may occur for up to 5 consecutive years for some fish (Morrow, 1980). Rainbow trout mature at an age of 3 to 5 years and may live as long as 9 years (Morrow, 1980). Rainbow trout incubation times typically range from 4 to 7 weeks, depending on water temperature. Fry emergence usually occurs between mid-June and mid-August (Morrow, 1980).

Non-anadromous rainbow trout can often be characterized as exhibiting either stream-resident or lake-resident life histories. Lake-resident fish (referred to as adfluvial) enter streams to spawn, but spend much of their life cycle rearing in lake habitats. This is characteristic of the adfluvial rainbow trout of Iliamna Lake that utilize a variety of tributary streams, including the UT, for spawning. Lake-resident fry may quickly disperse to lake habitats after emergence in the stream, or they may remain in the stream for up to 3 years (McPhail and Lindsey, 1970; Scott and Crossman, 1973). Stream-resident fish remain in stream habitats for the duration of their life cycle.

When in rivers and streams, rainbow trout can be commonly found near lake outlets or below waterfalls and rapids (McPhail and Lindsey, 1970). Tributary streams are used as spawning habitat by both stream- and lake-resident populations (Morrow, 1980). Redds are often constructed in fine gravel substrates of riffles adjacent to pools. Preferred spawning and incubation water temperatures are between 10°C and

13°C, and groundwater upwelling and dissolved oxygen concentrations are important in determining egg survival rates (McPhail and Lindsey, 1970; Morrow, 1980). Juveniles from stream-resident populations occupy riffles during the summer months and tend to shift into pools for the autumn and winter months (McPhail and Lindsey, 1970).

2.1.2.8 Other Species

Additional fish species inhabiting at least some portion of the study area include burbot (*Lota lota*), northern pike (*Esox lucius*), sculpin (*Cottus* sp.), stickleback (*Gasterosteidae*), and lamprey (*Lampetra* sp.). While these species are of ecological importance, for purposes of this study they were not considered target species. This study focused on the aforementioned salmonid species, primarily because of their commercial, subsistence, and/or recreational fisheries importance. Northern pike can also represent an important component of subsistence and recreational fisheries, but they typically inhabit low velocity environments such as clear vegetated lakes and quiet pools and backwaters of streams and rivers (Mecklenburg et al., 2002). These lacustrine-like habitats are not as influenced by flow modifications as riverine systems and, therefore, northern pike were not considered as part of the instream flow study.

3. METHODS

The Instream Flow: Main Channel Habitat Study was initiated in 2004, with additional work completed in 2005, 2006, 2007, and 2008. The studies were designed to:

- Describe existing main channel habitats with regard to channel profiles, hydrology, and habitat conditions (e.g., habitat types, substrate, and cover).
- Define species and lifestage specific relationships between stream flow and fish habitat.
- Based on the latter information, estimate the total amounts of available habitat by species and lifestage under baseline flow conditions in the NFK, SFK, UT, and upper portion of the KR.

Chronologically, the study involved completion of the following six steps:

1. Study Planning and Methodology Selection
2. Transect Selection
3. Field Data Collection
4. Habitat Suitability Criteria Curve Development
5. Data Analysis and Modeling
6. Time Series Analysis

3.1 Study Planning and Methodology Selection

As noted above, this study was initiated in 2004, with additional work completed in 2005 through 2008. During this period, the study has evolved from a reconnaissance level analysis completed in 2004, to a more directed analysis completed during 2005 through 2007 (focused on identifying and modeling representative habitat types within each stream system), to a more detailed analysis of specific areas in

2008. Planning activities have varied by year, but generally all involved identifying transect sites to be measured, reviewing available hydrology and selecting target flows to be measured, and scheduling field data collection.

Because the total distance from the Pebble Deposit to Bristol Bay along the three major river pathways is 228, 232, and 150 miles (including the 33 miles to transit Iliamna Lake) for the NFK, SFK and UT drainages, respectively, one of the initial planning tasks focused on determining the lower boundary of the instream flow study area. This involved reviewing existing hydrology for each basin and defining the approximate points in each system below which flow effects are expected to comprise less than 10% of the base flow for that reach. This approach is essentially the reciprocal of that suggested by Bovee (1982) of placing segment boundaries wherever depletion or accretion changes the average base flow by more than 10%. The analysis indicated that the point of low impact would occur in the lower reaches (Reach A respectively) of all three systems and would be even less in the mainstem KR. As a result, the boundary of the instream flow study area was conservatively set to include the entire lengths of the NFK (36 miles), SFK (40 miles) and UT (39 miles) systems, and a 10-mile segment of the upper KR.

In terms of the selection of an instream flow methodology, there are many different methods and models that have been developed and used for quantifying fish habitat and formulating instream flow recommendations for aquatic biota. Wesche and Rechard (1980), Morhardt (1986), Stalnaker and Arnette (1976), the proceedings of the Symposium on Instream Flow Needs (Orsborn and Allman eds., 1976), Lewis et al. (2004), and the Instream Flow Council (Annear et al., 2004; Locke et al., 2008) describe and review most of the instream flow methods commonly applied today. Each of the methods has specific strengths and weaknesses that must be considered when selecting a particular instream flow methodology for application on a project. For the Pebble Project, the selection of a specific instream flow methodology was based on consideration of the following criteria that were deemed important in defining baseline conditions and evaluating potential project effects:

- The predictive capability of the method or model to extrapolate results over a range of flows.
- The ability of the method to depict flow and habitat changes incrementally.
- The applicability of the methodology to different fish species, including anadromous and resident salmonids.
- The number of lifestages considered in the method (e.g., spawning, fry, juvenile, and passage).
- The biological soundness of the methodology results (i.e., habitat-flow relationship curves and criteria that relate directly to the fish species present in the NFK, SFK, UT and KR systems).
- The sensitivity of the method/model output to the individual user (i.e., ability to control bias).
- The reproducibility of results, both field data collection and modeling.
- The acceptability of the method/model by state and federal agencies in Alaska.

Consideration of the above criteria and the size and complexity of the project resulted in the selection and use of the U.S. Fish and Wildlife Service's Instream Flow Incremental Methodology (IFIM) and its associated Physical Habitat Simulation (PHABSIM) computer programs (Bovee, 1982; Milhous et al., 1984; Bovee et al., 1998; and Stalnaker et al., 1995) for collecting and analyzing habitat and flow data and developing habitat-flow relationships. This was because the IFIM/PHABSIM methodology allows for

the derivation of species and lifestage specific habitat-flow relationships and provides a mechanism for evaluating the effects of incremental changes in flow. Application of the IFIM/PHABSIM method is described below and followed the general procedures outlined in Bovee (1982), Bovee et al. (1998) and Milhous et al. (1984); field work was completed based on methods patterned after those presented in Trihey and Wegner (1983).

3.2 Transect Selection

Field studies first centered around establishing a series of transects (lines extending across the channel) within each stream located at different habitat types, such as riffle, run, pool, glide, cascade, and island complexes (Bain and Stevenson, 1999). Then habitat characteristics (consisting of depth, mean column velocity, substrate type and/or cover) were measured at intervals across the transects at different flows.

Transect locations were based, in part, on the results of field reconnaissance surveys, habitat mapping surveys of selected stream segments completed in 2005 and 2007 that defined habitat types within those segments, and reviews of topographic maps and remote sensing data and imaging. A more detailed habitat mapping exercise was completed for each of the three project streams in 2009, in which mesohabitat types were defined and spatially located on Geographic Information System (GIS) layers. However, that habitat mapping was not used for transect selection but rather for transect weighting purposes (see Section 3.5.3.1).

Over the 5 years of study, two strategies were applied in selecting transects: an extensive approach used during the studies conducted from 2004 to 2007, and an intensive approach during the 2008 study. The two approaches resulted in the establishment of a total of 138 transects, as described below.

Transect placement during the 2004 to 2007 studies was designed to capture representative habitat types within reaches spanning the entire lengths of the mainstem NFK, SFK, and UT, the upper segment of KR, and one of the major tributaries (UT 1.190) of the UT, as follows:

- The 2004 transects were selected based on professional judgment to represent various habitat types within typical reach habitats, resulting in 36 transects—10 (NFK), 10 (SFK), 11 (UT), and 5 (KR).
- The 2005 transects were selected based on a stratified- random selection process that focused on sampling habitat types within different reaches, resulting in 48 transects—10 (NFK), 17 (SFK), 15 (UT), and 6 (Tributary UT 1.190).
- The 2007 transects were also selected based on a stratified-random selection process, resulting in eight transects—1 (NFK), 1 (SFK), and 6 (UT).

In 2008, multiple transects were established within targeted areas of each stream (identified during an aerial helicopter survey) that contained important habitat features such as areas of known spawning. Transect placement at these sites was based on capturing representative habitat types (e.g., pool, riffle, run, etc.) that comprised such features. There were 46 transects established in 2008:14 (NFK), 3 (Tributary NFK 1.190), 12 (SFK), 6 (Tributary SFK 1.190), and 11 (UT).

During the data review process, several issues were identified on a subset of the transects that would potentially complicate the model calibration process. The issues included, primarily, changes in

streambed elevations and profiles over time and between field surveys, and development of inconsistent flow (Q) versus water surface elevation (WSE) rating curves. A total of 21 transects distributed as follows: eight transects in the NFK, three transects in the SFK, nine transects in UT (including one on UT 1.190), and one transect on KR, had one or both of these issues. As a result, the 21 transects were re-established in early June 2010 and will be surveyed under three flow conditions. Hydraulic models will be developed during the fall of 2010. Therefore, the analysis presented in this report pertains to 71 of the 92 transects established in 2004, 2005, and 2007 and the 46 transects established in 2008, for a total of 117 transects (Table 3). The distribution of these transects consisted of: 30 transects in the NFK (including three transects on NFK 1.190; Figure 2); 43 transects in the SFK (including six transects in SFK 1.190; Figure 4); 40 transects in the UT (including five transects in UT 1.190; Figure 6), and four transects in the KR (Figure 6).

3.3 Field Data Collection

The surveying and collection of field data for the project followed the general procedures described in Bovee (1982) and Trihey and Wegner (1983). During all years of the study, field data were recorded in waterproof survey books or on field data forms. All data were reviewed prior to departing the sample site to check for accuracy and completeness, and to ensure that all measurements had been properly recorded and were legible prior to departure. Each field book or data sheet was dated and initialed by the field reviewer. After each field effort, all data books were photocopied.

Three distinct flow levels were targeted, corresponding to a high-flow (representing approximately 20 percent exceedence flow), mid-flow (representing the 50 percent exceedence flow), and low-flow (representing approximately the 80 percent exceedence flow). These flow levels typically occurred in June, July, and August, respectively, but varied by year and associated runoff and precipitation patterns. In some years, it was not possible to measure three distinctly different flows, in which case supplemental measurements were made the following year to capture the needed flow condition. The collection of transect hydraulic and habitat data at the respective transects occurred from 2005 to 2008. Although 36 transects were established in 2004, hydraulic data were not collected at these transects until 2005.

A crew of two or three individuals, experienced in IFIM/PHABSIM field surveying, data collection, and modeling, conducted the fieldwork. The following data were recorded at each transect:

- Site name, transect number, crew members, and sampling date.
- Velocity meter serial number, propeller assembly, and calibration number.
- Water surface elevations (WSEs)—measured to the nearest 0.01 ft at three locations in the channel: near left water edge, center of channel, and near right water edge (note: in some high flow conditions, only one side of the channel was surveyed due to high velocities and safety concerns).
- Photographs—representative photographs were taken of each transect under most of the sampled flow conditions (Attachment 5).

The transect numbering convention adopted for the study followed the format: Year-Stream Name/Reach-Habitat Type—Transect No/habitat type. For example, Transect 07-NFK1-RF1was a transect that was

established in 20(07) within the North Fork Koktuli River (NFK) in Reach (1), within Riffle Habitat (RF) and represented the first (1) riffle transect in that reach.

3.3.1 Transect Setup

The establishment of transects at each sampling location was completed as follows:

- Survey Preparation—All field equipment used for collecting transect data was checked and assembled for use. This included a spin test of calibrated velocity meters, assembly of the top setting wading rod, calibration of Global Positioning System (GPS) unit, and peg testing of the survey level. Stream discharge data for the reach sampled was obtained from nearby flow monitoring gages or direct measurement on the day of the survey.
- Locations of Transects—Transect locations were recorded and mapped in a field book and location coordinates determined using a handheld GPS unit. A wooden lathe containing the number of each transect was positioned on at least one side of the stream and colored survey flagging placed on the lathe and neighboring vegetation to mark the position of each transect.
- Establishment of Site Benchmarks—Permanent surveying benchmarks were established at each site. The benchmarks (e.g., bedrock or boulder point, nail in tree trunk, or rebar pounded firmly into the ground) were placed above the floodplain of the river, and marked with survey flagging. All survey measurements within a site, including headpin and water surface elevations, were referenced to an arbitrary (primary) benchmark elevation of 100.00 feet.
- Establishment of Head Pins, Tail Pins and Working Pins—During the 2004 through 2007 studies, head pins and tail pins were established on both sides of the river (head pins on the left side of the channel and tail pins on the right, looking downstream) so that a line connecting these points would be perpendicular to the main flow of the stream channel. Head pins and tail pins were typically established by driving a 30-inch length of steel rebar into the bank at an elevation above the estimated bank-full flow stage. A survey tape was attached directly to the head pin and tail pin during the collection of instream flow data.

  For the 2008 studies, head pins were established on one side of the river near the start or end point of each transect; these were identified as the left head pin or the right head pin looking downstream. The head pins served as vertical reference for water surface and bed elevation measurements only, and were not used to anchor the survey tape. For this, working pins, consisting of wood stakes, a tree stem, or branch were established directly in line with the head pins (usually within 1 foot) on both sides of the river. The working pins were positioned so that a line connecting these points was perpendicular to the main flow of the stream channel. A survey tape was stretched across the stream channel and connected to the working pins during the collection of instream flow data. Transects that crossed an island often included an intermediate pin, or angle point, on the island—around which the survey tape pivoted. These were installed so that the tape was positioned perpendicular to the main flow of each channel along the transect.
- Survey of Headpin Elevations and Completion of Level Loop—Following the installation of the head and tail pins, a level loop survey was completed to establish pin elevations. The elevation data were obtained using an Automatic Level and stadia rod (0.01-foot accuracy). The level loop was considered accurate if closed to within 0.02 feet of the (primary) benchmark elevation.

Figure 9 presents a schematic illustrating survey techniques and locations of depth, velocity, and substrate measurements for a hypothetical transect.

3.3.2 Hydraulic and Habitat Measurements

Transect depth and velocity measurements were collected at set intervals across each transect under at least three flow conditions (Photo 12). All current meters were calibrated according to the manufacturers' instructions prior to the first field trip and field calibrated during each subsequent trip. The velocity meter serial number, propeller assembly code, and calibration number were noted for each transect surveyed.

Intervals were established so that the flow between any two intervals (cells) did not exceed 10% of the total flow in the channel or a minimum of 20 cells. The following data were collected at vertical stations (intervals) across each transect:

- Water Depth (to nearest 0.10-feet in 2005 through 2007 studies; and nearest 0.05 feet in 2008)—depths were measured using either a 4-foot or 6-foot top setting rod, depending on water depth;
- Mean Column Water Velocity (to nearest 0.01 feet per second)—velocities were measured using a calibrated Swoffer Model 2100, Marsh McBirney Model 2000, or Price AA velocity meter. For depths less than 2.5 feet, velocities were measured at 6/10ths depth in the water column. For depths greater than 2.5 feet, velocities were measured at 2/10ths and 8/10ths depth in the water column.
- Substrate—visual classification of substrate characteristics was made for each cell, based on a modified Wentworth Scale (Table 4). The identification of substrate composition was completed during the mid-flow sampling dates; however, when new interval locations were added during subsequent sampling periods (as was necessary for maintaining the interval location criteria given changing flow conditions), substrate data were collected at the same time the interval point was added.
- Cover—visual assessment of the presence of bank cover, object cover (e.g., overhanging boulders), and woody debris cover was recorded for each cell (Table 5).

All data were reviewed prior to departing the sample site to ensure that all necessary data were collected and legible. After each field effort, field notes were photocopied, checked, and entered into computer data files.

3.4 Habitat Suitability Criteria Curve Development

HSC curves are a required element for defining habitat-flow relationships. HSC reflect species and lifestage use and preference for selected habitat parameters (depth, velocity, and substrate; Bovee, 1982, 1986). Depending on the extent of data available, HSC curves can be developed from the literature (Category 1 curves), or from physical and hydraulic measurements made in the field over species microhabitats (Category 2 curves). When adjusted for the availability of habitat, the curves may more accurately reflect species preference (Category 3 curves) as described in Bovee (1986).

3.4.1 HSC Data Collection Methods

For the Pebble Project, a combination of methods were used for deriving HSC criteria including both literature information and HSC curves from other studies, as well as collecting and analyzing site-specific data for various target species and lifestages. The collection of site-specific data focused on collecting data related to spawning habitat use, and juvenile (and adult—for resident salmonids) rearing habitat use. The HSC data collected included microhabitat data (depth, velocity, and substrate data) over redds and at observed locations of juvenile and adult habitat use (Photo 13). Site-specific microhabitat use data were collected at redd locations in 2005, 2006, and 2008, and at observed fish locations in 2007 and 2008.

The dates of both the redd and juvenile/adult surveys were based, in part, on a generalized periodicity chart that depicts the timing of habitat use of anadromous and resident salmonid species for different lifestages within the three drainages (Table 1). The periodicity information was based on available data at the time of its development and was used to assist in determining approximate dates of field surveys. The periodicity chart will be updated as new information is obtained. Additional details concerning the development of HSC curves for the project are presented in Attachment 1.

The survey methods used for collecting the HSC field data are briefly summarized below; additional details are provided in Attachment 1.

3.4.1.1 Redd Surveys

Redd (spawning nest) surveys were completed in 2005, 2006, and 2008 in the NFK, SFK, and UT watersheds (Photo 14). These surveys were used to locate and collect physical and hydraulic measurements over active redds of target fish species. To maximize the number of redds found, sample site selection was based on redd abundance and distribution information obtained from aerial observations, including those made as part of salmon escapement studies. For 2005 and 2006, sampling was timed with Chinook and sockeye salmon spawning, such that sampling occurred in late July 2005, and in early August 2005 and 2006. All 2005 redd sampling occurred in the NFK and SFK, while sampling efforts for 2006 included the NFK, SFK, and UT. In early August 2008, redds were measured opportunistically in the NFK, SFK, and UT in conjunction with the low-flow sampling period. Surveys during this period targeted Chinook, chum, and sockeye salmon. Additional surveys were completed in mid-September 2008 and targeted coho salmon spawning in the NFK, SFK, and UT.

All redd surveys were conducted by walking the stream channel in an upstream direction, and identifying the location of newly constructed redds. Several parameters were recorded at each redd location (Table 6). Species, depth, velocity, and substrate were recorded for all sampled redds in all years, as follows:

- Species was determined by direct observation of fish use of a redd, or by direct observation of fish presence in the vicinity of a redd.
- In 2005 and 2006, water depth and velocity were measured at the upper edge, left and right edges, and center of each redd. In 2008, depth and velocities were measured at the upstream edge of each redd, an area reflective of conditions existing prior to redd construction. Depth measurements were recorded to the nearest 0.1-foot using a top-setting rod. Mean velocity measurements were made to the nearest 0.01 feet per second using a Swoffer Model 2100, Marsh McBirney, or Price AA current meter.

- In 2005 and 2006, substrate data were collected at a subset of the redds sampled. In 2005, primary (i.e., dominant), secondary, and tertiary substrates were recorded. Substrate data for 2006 followed the same ordination, but extended to the quaternary and quinary levels. Substrate classifications were made using a modified Wentworth Scale (Wentworth, 1922).
- In 2008, the dominant and subdominant substrate types, and percent composition of the dominant type, were recorded. Redd dimensions (i.e., pit depth, tail depth, length, upper width, middle width, and lower width) were recorded using procedures described in Reiser and White (1981).

3.4.1.2 Juvenile/Adult Snorkel Surveys

Snorkel surveys were completed by a team of two or three fish biologists to obtain observations of juvenile and adult habitat use (Photo 15). The surveys were conducted in an upstream direction and consisted of visually locating and marking (with a colored weight) positions of juvenile or adult fish, and subsequently collecting measurements of water depth (top setting rod), mean column velocity (Swoffer Model 2100, Marsh McBirney, or Price AA current meter), and substrate/cover associations. Only fish holding over a fixed position were included in the microhabitat survey. The snorkel surveys were completed from June 21 to July 19 in 2007, and from August 18 to August 22 in 2008.

3.4.2 Developing HSC Curves

The HSC data from each stream were organized by species and lifestage, entered into commercially-available spreadsheets, and subsequently checked for data entry accuracy. Frequency distributions were then generated for mean velocity, depth, and substrate type for each species and then normalized. For species/lifestages for which 20 or more observations were collected, the frequency distribution of the field observations was then converted to suitability by scaling the distribution between 0 and 1 (utilization values divided by the maximum value observed). The resulting curves were inspected and visually adjusted, in part to smooth out sharp breakpoints, and in the case of depth, extend the range of the curve to reflect a non-limiting condition.

3.5 Data Analysis and Modeling

The data from all 5 years of study were subjected to a quality assurance/quality control review, and were then used in developing hydraulic models for each of the transects that were linked with HSC criteria for the different target species and lifestages to generate habitat-flow relationships. These individual transect specific habitat-flow relationships are presented in Attachment 2. These relationships were used, in combination with results from habitat mapping and reach-specific hydrology, to generate habitat area versus flow relationships on a reach basis, as well as habitat time series and habitat duration curves.

3.5.1 Data Entry and Quality Assurance/Quality Control

Data from all 5 years of study were compiled and subjected to a rigorous quality control review relative to their adequacy for use in developing valid, reliable hydraulic models. The review included an evaluation of field notes and survey data including checks of level loops, cross-sectional data entries (i.e., water depth, velocity, substrate), and water survey elevation data. A line-by-line comparison was made of field data measurements with the computer data file entries. Cross-sectional profiles were plotted and reviewed to determine whether bed elevations had changed between survey dates (see Attachment 3). In addition,

transect photographs were assembled, labeled, and reviewed to provide a visual comparison of flow conditions (Attachment 5). The review process resulted in the development of transect-specific data sets that were used in the development and calibration of hydraulic models.

3.5.2 Hydraulic Modeling

The data resulting from the review process were analyzed using the U.S. Fish and Wildlife Service (USFWS) microcomputer software PHABSIM (DOS Version 2.1). Based on channel morphology, the most appropriate computer simulation model (i.e., IFG4, MANSQ, and WSP) was selected to develop stage-discharge relationships for the various transects. Details of all calibration steps were documented and are provided in Attachment 4. Hydraulic modeling generally included the following steps:

- Raw field data were entered into Excel spreadsheets, reviewed, and reduced into a form ready for creation of hydraulic data decks. Data entry errors were identified, noted in a copy of the field notebook, and corrected. These computer spreadsheets were then used to generate hydraulic data input files for the PHABSIM hydraulic simulation program, IFG4.
- The IFG4 data files were checked for any errors and erroneous field measurements using the REVI4 and CKI4 computer programs.
- Stage:discharge relationships were developed using one or more simulation models. An initial stage:discharge calibration was conducted using the IFG4 model. Depending upon the hydraulic characteristics of a given transect, the final stage:discharge relationship was developed using one of three methods:
  - A log-log regression method (i.e., IFG4, rating curve developed using the program STGQS4).
  - A channel geometry and roughness method (rating curve developed using the Manning's Equation based program MANSQ).
  - A step-backwater method (rating curve developed using the program WSP).
- Velocities across each transect were calibrated to provide a realistic distribution of mean column velocities across the channel for the entire range of flows employed in habitat simulations.

During the hydraulic model calibration process, it was found that for 21 of the original 92 transects additional data would be useful for refining the calibrations. Therefore, the analyses presented in this report pertain to 71 of the 92 transects established in 2004, 2005, and 2007 and the 46 transects established in 2008.

3.5.3 Habitat Modeling, Habitat Mapping, and Habitat Time Series

Output from the hydraulic modeling was used in conjunction with the draft HSC criteria to simulate habitat conditions over a range of flows. The range nominally represented about 0.4 of the lowest field measured flow and 2.5 times the highest measured flow. Habitat simulations were conducted using the HABTAV habitat simulation modeling program, which uses velocities obtained from the hydraulic model output files for habitat area calculations (Milhous et al., 1989).

Weighted usable area (WUA) versus discharge curves were calculated for each target fish species and lifestage for all transects and sites. Individual WUA – flow graphs for each transect by target species and

lifestage are presented in Attachment 2. WUA is a habitat index that combines the quantity and quality of habitat of a given species and lifestage provided over a range of flows. WUA is expressed in units of square feet of habitat area per 1,000 linear feet of stream (Bovee, 1982; Milhous et al., 1989). The WUA versus habitat curves, in combination with the results of habitat mapping for each site and reach hydrology were then used to estimate total habitat areas for each reach (Bovee, 1982) over a range of flow conditions.

Habitat mapping analysis was completed in 2009 to estimate the overall quantity of aquatic habitats available in the NFK, SFK, and UT systems. The mapping effort was completed based on combined field and remote-sensing information and analysis. The field surveys conducted in the mainstem NFK, SFK, and UT in 2005 and 2007 were used to identify and delineate mesohabitat types within selected sample areas. Mesohabitat type definitions were based on Moore et al. (2006) and included run, riffle, pool, backwater, and beaver ponds. These data were used to construct a map of mesohabitat types described during the field surveys.

GIS polygons were subsequently overlaid on and calibrated to a set of 2004 ortho-rectified digital imagery taken of the NFK, SFK, and UT. The polygons were used to expand the habitat maps to unsurveyed portions of each mainstem river. Other available digital data sources included 2004 geo-referenced videography obtained from a low-flying helicopter of the SFK and UT, and 2008 ortho-rectified digital imagery of the UT. These data sources were reviewed to confirm and refine the photo-derived habitat classifications for the SFK and UT. Final mesohabitat types were quantified and detailed habitat maps prepared and used for weighting transects by habitat types, and computing total habitat area versus flow relationships for each study reach.

Habitat area is used to express the total habitat area provided by a specified flow for a given river or segment, and is typically expressed in square feet, acres, or hectares. Habitat area combines the amount of WUA provided among the different instream flow transects in a river reach. The WUA values for each transect were weighted according to the total length of habitat represented by habitat type which the transect(s) represents.

Habitat time series and plots of habitat duration were computed first on an individual transect basis and then based on the plots of habitat area versus flow. Habitat time series are generated by linking the WUA-flow relationships with the biologically relevant period of the reach hydrology. For the Pebble Project, three hydrologic conditions were considered, corresponding to a representative Wet, Average, and Dry water year type. The determination of reach hydrology was based on stream gage data collected within each reach.

The specific process used in developing habitat time series and duration plots for each stream, including transect weighting and habitat mapping, and the determination of baseline hydrology, are described below.

3.5.3.1 North Fork Koktuli River

Transect Weighting and Habitat Mapping

As noted above, the standard output from the PHABSIM model consists of a relationship between WUA of fish habitat and flow for a given species and lifestage. The WUA for a single transect is expressed as

area of fish habitat per 1,000 feet of stream length. To convert this to an actual area, a portion of the stream length must be assigned to the transect. Results of the habitat mapping were used as a guide for assigning stream length to each transect in each of the reaches of the NFK.

Because transect locations had been selected prior to habitat mapping and reach delineations, the habitat composition suggested by the number of transects and their respective habitat types may not exactly match the habitat composition determined from the habitat mapping process noted above. Therefore, a two-step process was used to adjust for this and to determine an appropriate stream length to assign to each transect, as shown in Tables 7 and 8.

For example, in NFK-C, habitat mapping indicated that this reach consists of 41.0% run, 42.7% riffle, 1.8% pool, and 14.5% island complex. Within this reach, at least one or more transects were selected for run, riffle, and island complex habitat, but no transects were selected for pool habitat. Therefore, for transect weighting purposes, habitat percentages were rescaled in proportion to their relative abundance for habitat types represented by transects (Table 7). The adjusted habitat composition for transect weighting was: 41.8% run, 43.4% riffle, and 14.8% island complex.

For each habitat type represented by transects in a given reach, the total adjusted habitat length was shared equally by the transects with the same habitat type (Table 8). For example, the total adjusted habitat represented by riffle habitat in NFK-B was 10,484 feet (3,196 meters). There were four riffle transects in NFK-B: 07-NFK1-RF1, 05-NFK1-RF2, 05-NFK1-RF1, and 04-NFK-RF1. Each of these four transects was assigned a stream length of 2,621 feet (799 meters).

The anadromous portion of Tributary NFK 1.190 was determined to have a length of 26,250 feet (8,001 meters). However, all of the transects on this reach were located near the mouth, where the stream is wider than the upstream end of the anadromous reach. If the WUA were extrapolated to the entire length of the anadromous reach, the habitat area would be overestimated because the stream is narrower at the upstream end. To account for the reduction in width through this reach, the effective reach length was reduced to 25,397 feet (7,741 meters).

Habitat mapping indicated that the anadromous reach of Tributary NFK 1.190 consisted of 26.7% run, 67.2% riffle, and 6.1% pool (total = 100%). Within this reach, there were a total of three transects: one run transect, one riffle transect, and one pool transect; therefore, it was not necessary to rescale the habitat percentages (Table 9). The stream lengths assigned to each of these three transects matched to total stream length assigned to run, pool, and riffle habitat shown in Table 10.

Baseline Hydrology

Baseline hydrology for the NFK for habitat time series analyses was based on daily flows from Water Years 2005 through 2008 (October 1, 2004, through September 30, 2008). Measured and synthesized daily flows for this 4-year period were obtained for the following locations within the NFK Basin:

- Hydrology Gage NK100A—NFK at RM 3.27 (RK 5.27) in NFK-A. This gage is maintained by the USGS (USGS Gage No. 15302250).
- Hydrology Gage NK100A1—NFK at RM 8.5 (RK 13.70) in NFK-B.
- Hydrology Gage NK100B—NFK at RM 22.2 (RK 35.75) in NFK -C.

- Hydrology Gage NK119A—West Fork of Tributary NFK 1.190. Confluence with the NFK at RM 22.7 (RK 36.52) in NFK-C.
- Hydrology Gage NK119B—East Fork of Tributary NFK 1.190. Confluence with the NFK at RM 22.7 (RK 36.52) in NFK-C.
- Hydrology Gage NK100C—NFK at RM 22.8 (RK 36.76) in NFK-D.

Daily flows at these hydrology gages were used to estimate daily flows at IFIM transects on the NFK. Daily flows at IFIM transects were determined from the daily flows at the hydrology gages using drainage area to interpolate.

The range of daily flows in NFK-A, NFK-B, and NFK-C is shown on Figure 10 for the 4-year period extending from October 1, 2004, to September 30, 2008. The ranges of daily flows during this period in each of these reaches were as follows:

- NFK-A—30 to 1,863 cfs.
- NFK-B—25 to 1,273 cfs.
- NFK-C—10 to 1,088 cfs.

Interpolated daily flows at Transect 04-NFK-IC2 are also shown on Figure 10. This transect is located in the NFK at RM 20.9 (RK 33.65) in NFK-C.

Daily flows at Hydrology Gage NK100A (USGS Gage No. 15302250) were used to determine a wet, average, and dry condition for each species and lifestage evaluated in the habitat time series analyses. Results of these analyses are summarized in Table 11 for various lifestages of: Chinook, coho, chum, and sockeye salmon; rainbow trout; Dolly Varden; and arctic grayling. For example, Chinook salmon typically spawn during July and August. Wet, average, and dry conditions for Chinook salmon spawning were determined to be in 2006, 2008, and 2007, respectively, as shown on Figure 11.

Daily flows in Tributary NFK 1.190 were determined from flows measured at Hydrology Gage NK119A. The range of daily flows in Tributary NFK 1.190 between the mouth and Hydrology Gage NK119A (RM 1.18; RK 1.90) is shown on Figure 12 from October 1, 2004, through September 30, 2008.

Analyses were performed to determine a wet, average, and dry condition for each species and lifestage. Results of these analyses are summarized in Table 12 for various lifestages of: Chinook, coho, chum, and sockeye salmon; rainbow trout; Dolly Varden; and arctic grayling. Wet, average, and dry conditions for Chinook salmon spawning in NFK 1.190 were determined to be in 2006, 2005, and 2007, respectively, as shown on Figure 13.

Habitat Time Series and Duration Analysis

Habitat time series and duration were analyzed for each reach of the NFK and for Tributary NFK 1.190 for each target species and lifestage. To illustrate the steps involved in these calculations, Chinook salmon spawning at Transect 05-NFK1-IC1 in NFK-B (RM 9.5; RK 15.33) was selected (Figure 14). There were four steps involved in the process for each transect consisting of the following:

1. Daily flows at the transect location were determined for the period associated with the target species and lifestage under wet, average, and dry conditions.
2. Output from the HABTAV program were converted to a habitat-flow relationship for the transect by applying a stream length.
3. Daily flows from Step 1 were combined with the habitat-flow relationship in Step 2 to determine a daily time series of habitat area under wet, average, and dry conditions.
4. Habitat duration under wet, dry, and average conditions was determined from the daily time series of habitat from Step 3.

The four steps were repeated for each transect in a reach. Daily time series of total habitat area in a reach were determined by summing the habitat areas from all of the weighted transects in the reach. Habitat duration under wet, dry, and average conditions was determined for the reach from the daily time series of total habitat area.

3.5.3.2 South Fork Koktuli River

Transect Weighting and Habitat Mapping

The transect weighting and habitat mapping process for the SFK followed that described for the NFK. As in the NFK, transect locations in the SFK had been selected prior to habitat mapping and reach delineation. Thus, within a given reach, the habitat composition suggested by the number of transects and their habitat type may not exactly match habitat composition from habitat mapping. In this case, the same two-step process described for the NFK was used to determine an appropriate stream length to assign to each transect (Tables 13 and 14). For example, in SFK-A, habitat mapping indicated that this reach consists of 27.2% run, 54.2% riffle, 2.4% pool, and 16.2% island complex. Within this reach, at least one or more transects were selected for run, riffle, and island complex habitat, but no pool transects were selected. Habitat percentages were, therefore, rescaled in proportion to their relative abundance for habitat types represented by transects. The adjusted habitat composition for transect weighting was 27.8% run, 55.6% riffle, and 16.6% island complex.

As in the NFK, for each habitat type represented by transects in a given reach of SFK, the total adjusted habitat length was shared equally by the transects with the same habitat type. For example, the total adjusted habitat represented by island complex habitat in SFK-B was 5,336 feet (1,626 meters; Table 13). There were two island complex transects in SFK-B (04-SFK-IC2 and 05-SFK2-IC1). Each of these two transects was assigned a stream length of 2,668 feet (813 meters; Table 14).

The anadromous portion of Tributary SFK 1.190 was determined to have a length of 22,444 feet (6,841 meters). However, all transects in this reach were located relatively close to the mouth, where the stream is slightly wider than at the upstream end. Therefore, the reach length was adjusted to 19,708 feet (6,007 meters). Habitat mapping indicates that the anadromous reach of Tributary SFK 1.190 consists of 21.7% run, 66.4% riffle, and 11.9% pool. Within this reach, at least one or more transects were selected for run and riffle habitat, but no pool transects were selected. For transect weighting, habitat percentages were rescaled and the adjusted habitat compositions were 24.7% run and 75.3% riffle (Table 15). Each habitat type represented by transects in Tributary SFK 1.190 was shared equally by transects with the same habitat type (Table 16).

Baseline Hydrology

Baseline hydrology for the SFK for the habitat time series analyses was based on daily flows from Water Years 2005 through 2008 (October 1, 2004, through September 30, 2008). Measured and synthesized daily flows for this 4-year period were obtained for the following locations:

- Hydrology Gage SK100A—SFK at RM 0.07(RK 0.11) in SFK-A.
- Hydrology Gage SK100B—SFK at RM 15.5 (RK 24.90) in SFK-B. This gage is maintained by the USGS (USGS Gage No. 15302200).
- Hydrology Gage SK100B1—SFK at RM 18.2 (RK 29.26) in SFK-C.
- Hydrology Gage SK119A—Tributary SFK 1.190. Confluence with the SFK at RM 21.3 (RK 34.28) in SFK-B.
- Hydrology Gage SK100C—SFK at RM 22.3 (RK 35.81 in SFK-C.
- Hydrology Gage SK100F—SFK at RM 34 (RK 54.67 in SFK-D.

Daily flows at these hydrology gages were used to estimate daily flows at each of the SFK transects via drainage area interpolation.

The range of daily flows (for the 4-year period extending from October 1, 2004, to September 30, 2008) in SFK-A, SFK-B, and SFK-C is shown on Figure 15. These ranges were as follows:

- SFK-A—9 to 1,619 cfs.
- SFK-B—zero to 1,260 cfs.
- SFK-C—zero to 548 cfs.

Interpolated daily flows at IFIM Transect 05-SFK2-RN3 are also shown on Figure 15. This transect is located in SFK at RM 18.8 (RK 30.19 in SFK-B.

The daily flows at Hydrology Gage SK100B (USGS Gage No. 15302200) were used to determine a wet, average, and dry condition for each species and lifestage evaluated in the habitat time series analyses for the SFK. Results of these analyses are summarized in Table 17 for various lifestages of: Chinook, coho, chum, and sockeye salmon; rainbow trout; Dolly Varden; and arctic grayling. For example, Chinook salmon typically spawn during July and August. Wet, average, and dry conditions for Chinook salmon spawning were determined to be in 2006, 2008, and 2007, respectively, as shown on Figure 16.

Daily flows in Tributary SFK 1.190 were determined from flows measured at Hydrology Gage SK119A. The range of daily flows in Tributary SFK 1.190 between the mouth and Hydrology Gage SK119A (RM 1.12; RK 1.80) is shown on Figure 17 from October 1, 2004, through September 30, 2008. Analyses were subsequently performed to determine a wet, average, and dry condition (based on Hydrology Gage SK119A) for each species and lifestage evaluated in the habitat time series analyses of Tributary SFK 1.190. Results of these analyses are summarized in Table 18 for various lifestages of: Chinook, coho, chum, and sockeye salmon; rainbow trout; Dolly Varden; and arctic grayling. For example, wet, average, and dry conditions for Chinook salmon spawning in SFK 1.190 were determined to be in 2006, 2005, and 2007, respectively, as shown on Figure 18.

Habitat Time Series and Duration Analysis

Habitat time series and duration were analyzed for the SFK using the same process described for the NFK. There were essentially four steps involved in this process, exemplified for Chinook salmon spawning at Transect 08-SFK1-MS1-TR5 in SFK-A (RM 4.4; RK 7.05), was selected (Figure 19). The four steps consisted of the following:

1. Daily flows at the transect location were determined for the period associated with the target species and lifestage under wet, average, and dry conditions.
2. Output from the HABTAV program were converted to a habitat-flow relationship for the transect by applying a stream length.
3. Daily flows from Step 1 were combined with the habitat-flow relationship in Step 2 to determine a daily time series of habitat area under wet, average, and dry conditions.
4. Habitat duration under wet, dry, and average conditions was determined from the daily time series of habitat from Step 3.

As in the NFK, the four steps were repeated for each transect in a reach. Daily time series of total habitat area in a reach were determined by summing the habitat areas from all of the weighted transects in the reach. Habitat duration under wet, dry, and average conditions was determined for the reach from the daily time series of total habitat area.

3.5.3.3 Upper Talarik Creek

Transect Weighting and Habitat Mapping

As in the NFK, transect locations in the UT had been selected prior to habitat mapping and reach delineation and were therefore adjusted (Tables 19 and 20). For example, in UT-C, habitat mapping indicated that the reach consisted of 64.6% run, 20.4% riffle, 1.5% pool, and 13.5% island complex. Within this reach, at least one or more transects were selected for run, riffle, and island complex habitat, but no pool transects were selected. For transect weighting purposes, habitat percentages were rescaled and adjusted to 65.6% run, 20.7% riffle, and 13.7% island complex (Table 19).

As in the NFK and SFK, the total adjusted habitat length was shared equally by the transects with the same habitat type. For example, the total adjusted habitat represented by island complex in Reach UT-C was 3,570 feet (1,088 meters). There were two island complex transects in Reach UT-C (05-UTC1-IC1 and 04-UTC-IC2) and therefore each transect was assigned a stream length of 1,785 feet (544 meters; Table 20).

A slightly different approach was used for transects for Tributary UT 1.190. The anadromous portion of this reach was determined to have a total length of 10,653 feet (3,247 meters). Although habitat mapping indicated that the reach was entirely riffle habitat, as shown in Table 21, the six transects initially selected in this reach were comprised of five representing riffle and one run habitat. Therefore, the adjusted habitat composition was determined to be 16.7% run and 83.3% riffle. However, of the five riffle transects initially selected, one was omitted during the quality assurance/quality control (QA/QC) process and is undergoing further field data collection. The entire adjusted run habitat stream length (1,776 feet/ 541

meters) was, therefore, assigned to the single run transect, and the entire adjusted riffle habitat stream length (8,878 feet/ 2,706 meters) was shared equally by the remaining four riffle transects, (Table 22).

Baseline Hydrology

Baseline hydrology for UT for habitat time series analyses was based on daily flows from Water Years 2005 through 2008 (October 1, 2004, through September 30, 2008). Measured and synthesized daily flows for this 4-year period were obtained from the following locations within the UT Basin:

- Hydrology Gage UT100APC3—UT at RM 1.4 (RK 2.24) in UT-A.
- Hydrology Gage UT100APC2—UT at RM 6.1 (RK 9.85) in UT-B.
- Hydrology Gage UT100APC1—UT at RM 6.1(RK 9.85) in UT-B.
- Hydrology Gage UT100B—UT at RM 15.2 (RK 24.50) in UT-C. This gage is maintained by the USGS (USGS Gage No. 15300250).
- Hydrology Gage UT119A—Tributary UT 1. Confluence with the UT at RM 15.4 (RK 24.74) in UT-C.
- Hydrology Gage UT100C—UT at RM 18.2 (RK 29.31) in UT-D.
- Hydrology Gage UT100C1—UT at RM 23.4 (RK 37.64) in UT-E.
- Hydrology Gage UT100C2—UT at RM 27.7 (RK 44.63) in UT-E.
- Hydrology Gage UT135A—Tributary UT 1.350. Confluence with the UT at RM 28 (RK 45.05) in UT-E.
- Hydrology Gage UT100D—UT at RM 32.1 (RK 51.62) in UT-F.
- Hydrology Gage UT100E—UT at RM 37.3 (RK 59.97) in UT-G.

Daily flows at these hydrology gages were used to estimate daily flows at specific transects as determined via interpolation of drainage area.

The range of daily flows in UT-B through UT-F are shown on Figure 20 (for the 4-year period extending from October 1, 2004, to September 30, 2008) and were as follows:

- UT-B—98 to 1,506 cfs.
- UT-C—62 to 1,202 cfs.
- UT-D—39 to 1,025 cfs.
- UT-E—13 to 609 cfs.
- UT-F—4 to 325 cfs.

Interpolated daily flows at IFIM Transect 05-UTC3-RN2 are also shown on Figure 20. This transect was located on the UT at RM 32.3 (RK 52.01) in UT-F.

Daily flows at Hydrology Gage UT100B (USGS Gage No. 15300250) were used to determine a wet, average, and dry condition for each species and lifestage evaluated in the habitat time series analyses of

UT. Results are summarized in Table 23 for various lifestages of: Chinook, coho, chum, and sockeye salmon; rainbow trout; Dolly Varden; and arctic grayling. For example, sockeye salmon typically spawn from July through September. Wet, average, and dry conditions for sockeye salmon spawning were determined to be in 2006, 2005, and 2007, respectively (Figure 21).

Daily flows in Tributary UT 1.190 were determined from flows measured at Hydrology Gage UT119A. Drainage area was used to calculate flows from the mouth to RM 1.54 (RK 2.48), where the most upstream transect (Transect 05-UT190-RF5) was located. The range of daily flows in this reach is shown on Figure 22 from October 1, 2004, through September 30, 2008. Interpolated daily flows at Transect 05-UT190-RN1 are also shown on Figure 22. This transect is located on Tributary UT 1.190 at RM 0.8 (RK 1.35).

Analyses were performed to determine a wet, average, and dry condition for each species and lifestage evaluated in the habitat time series analyses of Tributary UT 1.190. Results of these analyses are summarized in Table 24 for various lifestages of: Chinook, coho, chum, and sockeye salmon; rainbow trout; Dolly Varden; and arctic grayling. For example, wet, average, and dry conditions for sockeye salmon spawning in Tributary UT 1.190 were determined to be in 2005, 2008, and 2007, respectively, as shown on Figure 23.

Habitat Time Series and Duration Analysis

Habitat time series and duration were analyzed for the UT using the same process described for the NFK and SFK. There were essentially four steps involved in this process, exemplified for sockeye salmon spawning at Transect 04-UTC-RN1 in UT-C (RM 14.8; RK 23.75) (Figure 24). These four steps consisted of the following:

1. Daily flows at the transect location were determined for the period associated with the target species and lifestage under wet, average, and dry conditions.
2. Output from the HABTAV program were converted to a habitat-flow relationship for the transect by applying a stream length.
3. Daily flows from Step 1 were combined with the habitat-flow relationship in Step 2 to determine a daily time series of habitat area under wet, average, and dry conditions.
4. Habitat duration under wet, dry, and average conditions was determined from the daily time series of habitat from Step 3.

The four steps were repeated for each transect in a reach. Daily time series of total habitat area in a reach were determined by summing the habitat areas from all of the weighted transects in the reach. Habitat duration under wet, dry, and average conditions was subsequently determined for the reach from the daily time series of total habitat area.

3.5.3.4 Mainstem Koktuli River

Transect Weighting and Habitat Mapping.

The standard output from the PHABSIM model consists of a relationship between WUA and flow for a given species and lifestage. The WUA for a single transect is expressed as area of fish habitat per 1,000

feet of stream length. To convert this to an actual area, a portion of the stream length must be assigned to the transect. The total length of the KR that was analyzed extended from the most downstream transect (RM 15.4; RK 24.85) to the confluence of the North Fork Koktuli River and South Fork Koktuli River (RM 28.8; RK 46.42), a total length of 70,768 feet (21,570 meters).

Habitat mapping was not performed for the KR. Therefore, the habitat composition, reflected by the number and habitat types of the transects selected in this reach, was used to determine stream lengths to assign to each transect. Ten transects were initially (2004) selected in this reach. These 10 transects consisted of three runs, three riffles, two pools, and two island complexes. Thus, the habitat compositions were initially classified as 30.0% run, 30.0% riffle, 20.0% pool, and 20.0% island complex. Of the 10 transects that were initially selected, six were omitted during the QA/QC process. The remaining four transects included one run, two riffles, and one island complex. The adjusted habitat composition was 37.5% run, 37.5% riffle, and 25.0% island complex (Table 25).

For each habitat type represented by the transects in the KR, the total adjusted habitat length was shared equally by the transects with the same habitat type. For example, the total adjusted habitat represented by riffle habitat in this reach was 26,538 ft (8,089 meters). There were two riffle transects in this reach (04-MSK-RF2 and 04-MSK-RF1); therefore, each of these was assigned a stream length of 13,269 feet (4,044.5 meters; Table 26).

Baseline Hydrology

Baseline hydrology for the Koktuli River for habitat time series analyses was based on daily flows from Water Years 2005 through 2008 (October 1, 2004, through September 30, 2008). Synthesized daily flows were based on data provided for the following locations:

- Confluence of the North and South Forks of the Koktuli River.—KR at RM 28.8 (RK 46.42).
- Transect 04-MSK-RF2—The most downstream transect on the KR at RM 15.4 (RK 24.85).

Daily flows at these hydrology gages were used to estimate daily flows at transects on the KR. Daily flows at each transect were determined via interpolation of drainage area.

The range of daily flows in the KR (4-year period extending from October 1, 2004, to September 30, 2008) is shown on Figure 25. The range of daily flows during this period extended from 103 to 4,350 cfs. Interpolated daily flows at Transect 04-MSK-RF1 (located at RM 19.9 / RK 31.98) are shown on Figure 25.

Synthesized daily flows in the KR at the confluence of the NFK and SFK were used to determine a wet, average, and dry condition for each species and lifestage evaluated in the habitat time series analyses (Table 27). For example, Chinook salmon typically spawn during July and August. Wet, average, and dry conditions for Chinook salmon spawning in the KR were determined to be in 2006, 2008, and 2007, respectively, as shown on Figure 26.

Habitat Time Series and Duration Analysis

Habitat time series and duration were analyzed for the KR using the same process described for the NFK, SFK, and UT. There were essentially four steps involved in this process, exemplified for Chinook salmon

spawning at Transect 04-MSK-RF2 in the KR (RM 15.4; RK 24.85), was selected (Figure 27). These four steps consisted of the following:

1. Daily flows at the transect location were determined for the period associated with the target species and lifestage under wet, average, and dry conditions.
2. Output from the HABTAV program were converted to a habitat-flow relationship for the transect by applying a stream length.
3. Daily flows from Step 1 were combined with the habitat-flow relationship in Step 2 to determine a daily time series of habitat area under wet, average, and dry conditions.
4. Habitat duration under wet, dry, and average conditions was determined from the daily time series of habitat from Step 3.

The four steps listed above were repeated for each transect in a reach. Daily time series of total habitat area in a reach were determined by summing the habitat areas from all of the weighted transects in the reach. Habitat duration under wet, dry, and average conditions was determined for the KR reach from the daily time series of total habitat area.

4. HABITAT MODELING

This section presents the results of the habitat modeling and time series analysis completed for each of the four study basins, and organizationally begins with the NFK, followed by the SFK, UT, and KR. Within each basin, results are presented from the lower (e.g., NFK-A) to upper (e.g., NFK-C) modeled mainstem reaches; tributary reaches (e.g., NFK 1.190) are presented last. The results focus on the total habitat area versus flow relationships, because these provide reach-scale estimates of the total amount of habitat for a given species and lifestage available under different flow conditions (see Attachment 2 for individual transect results). For convenience, the results are presented graphically—both as numerical estimates of habitat (expressed in acres), as well as normalized estimates (expressed as a percent of maximum habitat area). The former are useful for comparing the relative amounts of habitat provided for a given species and lifestage under different flow conditions, while the latter are useful for comparing overall habitat-flow response dynamics. The percent of maximum habitat corresponding to specific flows are also presented in tabular format.

In addition, results of the time series analysis are presented graphically by reach in terms of the total habitat area that would occur on a daily basis during the individual species and lifestage periodicities identified in Table 1. Also presented graphically as part of the time series analysis, are habitat duration curves that depict the availability (presented as a # exceedence value) of habitat for a given species and lifestage. Lastly, to compare the amounts of habitat that would occur under a Wet, Average , and Dry year, the average habitat area available on a daily basis in each reach is presented in tabular format for each water year type by species and lifestage. The time series and habitat duration results serve to characterize the baseline conditions of the main channel habitats on a temporal basis relative to specific biologically relevant periods of time, e.g. spawning, juvenile rearing, adult rearing, etc. The results will be especially useful for evaluating potential project induced changes to the existing hydrology of each system and how such changes may affect the amounts of habitat under different water year types (i.e., Wet, Average and Dry).

Results of the habitat area versus flow relationships and time series analysis are presented for each reach and for each of the following species: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. Organizationally, results for anadromous salmonids are presented separately from those for non-anadromous salmonids. Habitat area versus flow relationships are provided for both spawning and juvenile rearing habitat for all species, whereas relationships for adult rearing are only provided for the non-anadromous salmonid species. One exception is that habitat area versus flow relationships were not derived for juvenile chum salmon rearing, because of the short residence time of juvenile chum salmon in the study area.

4.1 North Fork Koktuli River

4.1.1 Reach NFK-A

Modeling results for NFK-A are presented for Chinook, chum, coho, and sockeye salmon, as well as arctic grayling, Dolly Varden, and rainbow trout. All of these species have been documented in this reach (Table 2).

4.1.1.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for NFK-A indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (240 cfs provides approximately [≈] 25 acres), followed by Chinook salmon (460 cfs provides ≈ 13 acres) and coho salmon (380 cfs provides ≈ 13 acres), and then sockeye salmon (270 cfs provides ≈ 12 acres) (Table 28; Figure 28). Habitat amounts remain relatively high (≈ 90% of maximum) for all four anadromous salmonid species even at flows as low as 290 cfs for Chinook salmon, 140 cfs for chum salmon, 270 cfs for coho salmon, and 170 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for Chinook and coho salmon are generally similar—with coho salmon being slightly higher on the ascending limb of the curve and Chinook salmon slightly higher on the descending limb. Likewise, the relationships for chum and sockeye salmon are similar, although greater for chum salmon on the ascending limb of the curve.

The habitat - flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for NFK-A peak at flows of 420 cfs (provides ≈ 25 acres), 320 cfs (provides ≈ 28 acres), and 270 cfs (provides ≈ 22 acres) respectively (Table 29; Figure 28). However, flows as low as 290 cfs for arctic grayling, 210 cfs for Dolly Varden, and 190 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

For anadromous salmonids, the amount of juvenile rearing habitat provided for NFK-A across the range of modeled flows was greatest for coho salmon, followed by Chinook salmon, and then sockeye salmon (Figure 29). For non-anadromous salmonids, the amount of habitat provided at most flows (i.e., greater than 150 cfs) was greatest for arctic grayling, followed by rainbow trout, and then Dolly Varden. Unlike spawning habitat, the habitat-flow relationship for juvenile anadromous and non-anadromous rearing habitat was generally not clearly defined by an ascending limb, peak, and descending limb. Rather, for

most species, there was a broad range of flows at which 70% or more of the maximum spawning habitat would be provided (Table 28; Table 29; Figure 29).

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for NFK-A indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (153 cfs provides ≈ 14 acres), followed by Dolly Varden (45 cfs provides ≈ 10 acres) and then arctic grayling (460 cfs provides ≈ 6 acres) (Table 29; Figure 30). These relationships show three different trends. Habitat area for arctic grayling generally increases as flows increase, but the curve flattens out beyond 200 cfs. For Dolly Varden, habitat area is maximized at the lowest modeled flow and decreases at higher flows, before flattening out around 200 cfs. In contrast, the curve for rainbow trout is characterized by a steep ascending limb with a distinct maximum and slowly descending limb at higher flows.

4.1.1.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for NFK-A, as determined under an average water year type, are presented for all target species on Figure 31 (spawning habitat) and Figure 32 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 33. In addition, Table 30 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types. The habitat time series depicts how the amounts of habitat can change on a daily basis given representative changes in hydrology that have occurred in the NFK-A under wet, average and dry conditions.

4.1.2 Reach NFK-B

Modeling results for NFK-B are presented for Chinook, chum, coho, and sockeye salmon, and as well as arctic grayling, Dolly Varden, and rainbow trout. With the exception of rainbow trout, all of these species have been documented in NFK-B (Table 2). However, because rainbow trout have been observed in reaches upstream and downstream of NFK-B, this species also likely inhabits NFK-B and is included in the results.

4.1.2.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for NFK-B indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (150 cfs provides ≈ 18 acres), followed by coho salmon (220 cfs provides ≈ 11 acres), and then Chinook salmon (260 cfs provides ≈ 10 acres) and sockeye salmon (110 cfs provides ≈ 10 acres) (Table 31; Figure 34). Habitat amounts remain relatively high (≈ 90% of maximum) for all four anadromous salmonid species, even at flows as low as 220 cfs for Chinook salmon, 80 cfs for chum salmon, 150 cfs for coho salmon, and 80 cfs for sockeye salmon. When habitats are expressed as percentage of maximum, the relationships for Chinook and coho salmon are generally similar, with coho salmon being slightly higher on the ascending limb of the curve and Chinook salmon slightly higher on the descending limb. Likewise, the relationships for chum and sockeye salmon are generally similar.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for NFK-B peak at flows of 240 cfs (provides ≈ 13acres), 180 cfs (provides ≈ 15 acres), and 90 cfs (provides ≈ 9.2 acres), respectively (Table 32; Figure 34). However, flows as low as 129.4 cfs for arctic grayling, 110 cfs for Dolly Varden, and 61.8 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for NFK-B indicate that the amount juvenile rearing habitat provided at the habitat maximizing flow would be highest for coho salmon (420 cfs provides ≈ 14 acres), followed by sockeye salmon (420 cfs provides ≈ 12 acres) and Chinook salmon (420 cfs provides ≈ 12 acres). For each of these species, the maximum amount of juvenile rearing habitat was provided at the highest modeled flow (Table 31; Figure 35).

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for NFK-B at the habitat maximizing flow would be highest for arctic grayling (420 cfs provides ≈ 18 acres), followed by Dolly Varden (420 cfs provides ≈ 14 acres), and then rainbow trout (420 cfs provides ≈ 8 acres). Like anadromous salmonids, the maximum amount of juvenile rearing habitat in NFK-B for all three non-anadromous species was provided at the highest modeled flow (Table 32; Figure 35).

In general, the habitat - flow relationships for juvenile rearing of all species in NFK-B showed a similar trend, in which habitat area increased asymptotically with flow (Figure 35).

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for NFK-B indicate that the amount of habitat provided at the habitat maximizing flow would be highest for Dolly Varden (420 cfs provides ≈ 15 acres), followed by rainbow trout (160 cfs provides ≈ 11 acres), and then arctic grayling (280 cfs provides ≈ 6 acres; Table 32; Figure 36). Habitat amounts remain relatively high (≈ 90% of maximum) for all three species even at flows as low as 200 cfs for arctic grayling, 340 cfs for Dolly Varden, and 129.4 cfs for rainbow trout. When habitats are expressed as percentage of maximum, the relationships for arctic grayling and rainbow trout are generally similar, increasing with flow until reaching a maximum and then leveling. In contrast, the relationship for Dolly Varden can be characterized as continually increasing with flow up to the maximum modeled flow.

4.1.2.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for NFK-B, as determined under an average water year type, are presented for all species on Figure 37 (spawning habitat) and Figure 38 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 39. In addition, Table 33 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types. The habitat time series depicts how the amounts of habitat can change on a daily basis given representative changes in hydrology that have occurred in the NFK-B under wet, average and dry conditions.

4.1.3 Reach NFK-C

Modeling results for NFK-C are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.1.3.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for NFK-C indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (160 cfs provides ≈ 24 acres), followed by sockeye salmon (150 cfs provides ≈ 16 acres) and coho salmon (200 cfs provides ≈ 16 acres), and then Chinook salmon (225 cfs provides ≈ 13 acres; Table 34; Figure 40). Habitat amounts remain relatively high (≈ 90% of maximum) for all four anadromous salmonid species at flows as low as 180 cfs for Chinook salmon, 90 cfs for chum salmon, 150 cfs for coho salmon, and 110 cfs for sockeye salmon. When habitats are expressed as percentage of maximum, the relationships for anadromous salmonids are generally similar in shape. The habitat area increases at a moderate rate with increasing flow and, after reaching a maximum, gradually decreases. However, this shape is shifted towards lower flows for chum and sockeye salmon and towards higher flows for coho salmon and, in particular, Chinook salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout peak in NFK-C at flows of 225 cfs (provides ≈ 23 acres), 160 cfs (provides ≈ 25 acres), and 170 cfs (provides ≈ 14 acres), respectively (Table 35; Figure 40). However, flows as low as 150 cfs for arctic grayling and 110 cfs for Dolly Varden and rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for NFK-C indicate that the amount juvenile rearing habitat provided at the habitat maximizing flow would be highest for coho salmon (100 cfs provides ≈ 11 acres), followed by Chinook salmon (100 cfs provides ≈ 8 acres), and then sockeye salmon (70 cfs provides ≈ 7 acres; Table 34; Figure 41). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 70 cfs for Chinook salmon, 60 cfs for coho salmon, and 60 cfs for sockeye salmon. At flows beyond roughly 100 cfs, habitat area gradually decreases for Chinook and coho salmon but decreases more rapidly for sockeye salmon.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for NFK-C at the habitat maximizing flow would be highest for arctic grayling (70 cfs provides ≈ 17 acres), followed by Dolly Varden (70 cfs provides ≈ 10 acres), and then rainbow trout (340 cfs provides ≈ 9 acres) (Table 35; Figure 41). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 40 cfs for arctic grayling, 30 cfs or less for Dolly Varden, and 120 cfs for rainbow trout. Habitat-flow relationships for both arctic grayling and Dolly Varden in NFK-C showed similar trends, with habitat area quickly increasing with flow to a maximum and then gradually decreasing at higher flows. In contrast, habitat area for rainbow trout generally increased asymptotically with flow over the modeled range.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for NFK-C indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (140 cfs provides ≈ 14 acres), followed by Dolly Varden (30 cfs provides ≈ 10 acres) and then arctic grayling (240 cfs provides ≈ 8 acres) (Table 35; Figure 42). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 160 cfs for arctic grayling, 110 cfs for Dolly Varden, and 70 cfs for rainbow trout. When habitats are expressed as percentage of maximum, the relationships for arctic grayling and rainbow trout are generally similar in shape, with habitat area increasing with flow until reaching a maximum and then gradually decreasing. In contrast, habitat area for Dolly Varden generally decreases at flows beyond the lowest modeled flow.

4.1.3.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for NFK-C, as determined under an average water year type, are presented for all species on Figure 43 (spawning habitat) and Figure 44 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 42. In addition, Table 36 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types. The habitat time series depicts how the amounts of habitat can change on a daily basis given representative changes in hydrology that have occurred in the NFK-C under wet, average and dry conditions.

4.1.4 Tributary NFK 1.190

Modeling results for Tributary NFK 1.190 are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. Only Chinook salmon, coho salmon, Dolly Varden, and rainbow trout were observed in Tributary NFK 1.190 (Appendix 15.1B). However, because all of the above species have been documented (Table 2) in NFK-C (the reach into which NFK 1.190 flows), they may also inhabit NFK 1.190. Therefore, modeling results for all species are presented.

4.1.4.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for NFK 1.190 indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (70 cfs provides ≈ 1.7 acres), followed by sockeye salmon (85 cfs provides ≈ 0.9 acres) and coho salmon (110 cfs provides ≈ 0.9 acres), and then Chinook salmon (130 cfs provides ≈ 0.8 acres) (Table 37; Figure 46). Habitat amounts remain relatively high (≈ 90% of maximum) for all four anadromous salmonid species at flows as low as 120 cfs for Chinook salmon, 55 cfs for chum salmon, 90 cfs for coho salmon, and 73.9 cfs for sockeye salmon. When habitats are expressed as percentage of maximum, trends are generally similar across species. Habitat increases with flow until a maximum is reached and then, except for Chinook salmon, gradually decreases at higher flows.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for NFK 1.190 peak at flows of 180 cfs (provides ≈ 1.3 acres), 140 cfs (provides ≈ 1.2 acres), and 73.9 cfs (provides ≈ 1.3 acres), respectively (Table 38; Figure 46). However, flows as low as 130 cfs for arctic

grayling, 70 cfs for Dolly Varden, and 65 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for NFK 1.190 indicate that the amount of juvenile rearing habitat provided for anadromous salmonids at the habitat maximizing flow would be highest for coho salmon (55 cfs provides ≈ 1.4 acres), followed by Chinook salmon (73.9 cfs provides ≈ 1.3 acres), and then sockeye salmon (12.6 cfs provides ≈ 0.9 acres) (Table 37; Figure 47). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 60 cfs for Chinook salmon, 40 cfs for coho salmon, and 10 cfs for sockeye salmon. Unlike results for other lifestages in this reach, the habitat - flow relationships for juvenile rearing do not show clearly defined patterns. Rather, the patterns fluctuate considerably, showing multiple peaks.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for NFK 1.190 at the habitat maximizing flow would be highest for arctic grayling (20 cfs provides ≈ 2.7 acres), followed by rainbow trout (90 cfs provides ≈ 1.5 acres), and then Dolly Varden (5 cfs provides ≈ 1.3 acres) (Table 38; Figure 47). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 12.6 cfs for arctic grayling, 5 cfs or less for Dolly Varden, and 60 cfs for rainbow trout. As with anadromous salmonids, the habitat-flow relationships for non-anadromous salmonids in NFK 1.190 fluctuate considerably, showing multiple peaks.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for NFK 1.190 indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (70 cfs provides ≈ 1.9 acres), followed by Dolly Varden (12.6 cfs provides ≈ 1.5 acres) and then arctic grayling (80 cfs provides ≈ 1.3 acres) (Table 38; Figure 48). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 70 cfs for arctic grayling, 7 cfs for Dolly Varden, and 40 cfs for rainbow trout. When habitats are expressed as percentage of maximum, the relationships for arctic grayling and rainbow trout in NFK 1.190 are roughly similar, with habitat increasing with flow until reaching a maximum and then gradually decreasing. In contrast, habitat for Dolly Varden rapidly reaches a peak at only 12.6 cfs then rapidly decreases at moderate flows before increasing again at flows near the upper end of the modeled range.

4.1.4.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for NFK 1.190, as determined under an average water year type, are presented for all species on Figure 49 (spawning habitat) and Figure 50 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 51. In addition, Table 39 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types. The habitat time series depicts how the amounts of habitat can change on a daily basis given representative changes in hydrology that have occurred in the NFK 1.190 under wet, average and dry conditions.

4.2 South Fork Koktuli River

4.2.1 Reach SFK-A

Modeling results for SFK-A are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.2.1.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for SFK-A indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (130 cfs provides ≈ 41 acres), followed by sockeye salmon (150 cfs provides ≈ 31 acres), Chinook salmon (240 cfs provides ≈ 23 acres), and coho salmon (220 cfs provides ≈ 20 acres) (Table 40; Figure 52). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 160 cfs for Chinook salmon, 90 cfs for chum salmon, 150 cfs for coho salmon, and 120 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in SFK-A are generally similar in shape, where habitat area increases at a moderate rate with increasing flow and, after reaching a maximum, gradually decreases. However, this shape is shifted towards lower flows for chum and sockeye salmon and towards higher flows for coho and Chinook salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for SFK-A peak at flows of 170 cfs (provides ≈ 34 acres), 140 cfs (provides ≈ 41 acres), and 120 cfs (provides ≈ 28 acres), respectively (Table 41; Figure 52). However, flows as low as 130 cfs for arctic grayling, 100 cfs for Dolly Varden, and 70 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for SFK-A indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for Chinook salmon (170 cfs provides ≈ 9.6 acres), followed by sockeye salmon (80 cfs provides ≈ 7.4 acres), and then coho salmon (120 cfs provides ≈ 6.2 acres) (Table 40; Figure 53). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 110 cfs for Chinook salmon, 80 cfs for coho salmon, and 30 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for coho and sockeye salmon in SFK-A are generally similar, with habitat area initially high at low flows and decreasing to a moderate level at most higher flows. In contrast, habitat area for Chinook salmon is initially moderate at low flows, increases to a maximum as flows increase, and remains at a relatively high level as flows continue to increase.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for SFK-A at the habitat maximizing flow would be highest for arctic grayling (80 cfs provides ≈ 18 acres), followed by rainbow trout (410 cfs provides ≈ 11 acres), and then Dolly Varden (80 cfs provides ≈ 10 acres) (Table 41; Figure 53). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 40 cfs for arctic grayling, 30 cfs or less for Dolly Varden, and 180 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and Dolly Varden in SFK-A are generally

similar, with habitat area initially high at low flows and decreasing to a moderate level at most higher flows. In contrast, habitat area for rainbow trout is initially moderate at low flows, increases to a maximum as flows increase, and remains at a relatively high level as flows continue to increase.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for SFK-A indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (180 cfs provides ≈ 15 acres), followed by Dolly Varden (120 cfs provides ≈ 9.4 acres) and arctic grayling (410 cfs provides ≈ 9.2 acres) (Table 41; Figure 54). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 260 cfs for arctic grayling, 30 cfs or less for Dolly Varden, and 110 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in SFK-A are generally similar, gradually increasing with flow until reaching a maximum and then remaining at a relatively high level over the remaining range of modeled flows. The relationship for Dolly Varden can be characterized as initially high at low flows but also remaining at a relatively high level over the remaining range of modeled flows.

4.2.1.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for SFK-A, as determined under an average water year type, are presented for all species on Figure 55 (spawning habitat) and Figure 56 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 57. In addition, Table 42 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.2.2 Reach SFK-B

Modeling results for SFK-B are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.2.2.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for SFK-B indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (120 cfs provides ≈ 14 acres), followed by sockeye salmon (160 cfs provides ≈ 11 acres), Chinook salmon (200 cfs provides ≈ 7.8 acres), and then coho salmon (160 cfs provides ≈ 5.5 acres) (Table 43; Figure 58). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 160 cfs for Chinook salmon, 100 cfs for chum salmon, 130 cfs for coho salmon, and 100 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in SFK-B are generally similar in shape. The habitat area increases at a moderate rate with increasing flow and, after reaching a maximum, gradually decreases. However, this shape occurs at progressively lower flows for Chinook, coho, sockeye, and chum salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for SFK-B peak at flows of 150 cfs (provides ≈ 13 acres), 110 cfs , (provides ≈ 14 acres) and 120 cfs (provides ≈ 11 acres), respectively (Table 44; Figure 58). However, flows as low as 100 cfs for arctic grayling and 90 cfs for Dolly Varden and rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for SFK-B indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for Chinook salmon (120 cfs provides ≈ 6.2 acres), followed by coho salmon (380 cfs provides ≈ 4.2 acres) and sockeye salmon (400 cfs provides ≈ 4.1 acres) (Table 43; Figure 59). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 90 cfs for Chinook salmon, 240 cfs for coho salmon, and 220 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for coho and sockeye salmon in SFK-B are generally similar, exhibiting a decrease in habitat area at moderate flows. In contrast, habitat area for Chinook salmon is moderate at low flows, increases to a maximum as flows increase, and decreases to a moderate level at higher flows.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for SFK-Bat the habitat maximizing flow would be highest for arctic grayling (35 cfs provides ≈ 8.5 acres), followed by rainbow trout (140 cfs provides ≈ 5.7 acres), and then Dolly Varden (90 cfs provides ≈ 5.1 acres) (Table 44; Figure 59). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 30 cfs or less for arctic grayling, 40 cfs for Dolly Varden, and 90 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and Dolly Varden in SFK-B are generally similar, with habitat area initially high at low flows and remaining at moderate to high levels as flows increase. In contrast, habitat area for rainbow trout is initially moderate at low flows, increases to a maximum as flows increase, and remains at a relatively high level as flows continue to increase.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for SFK-B indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (110 cfs provides ≈ 9.3 acres), followed by Dolly Varden (400 cfs provides ≈ 5.8 acres) and then arctic grayling (160 cfs provides ≈ 4.4 acres) (Table 44; Figure 60). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 110 cfs for arctic grayling, 45 cfs for Dolly Varden, and 80 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in SFK-B are generally similar, increasing with flow until reaching a maximum and then gradually decreasing over the remaining range of modeled flows. The relationship for Dolly Varden can be characterized as initially high at low flows, decreasing at moderate flows, and then increasing again over the remaining range of modeled flows.

4.2.2.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for SFK-B, as determined under an average water year type, are presented for all species on Figure 61 (spawning habitat) and Figure 62 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 63. In addition, Table 45 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.2.3 Reach SFK-C

Modeling results for SFK-C are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with SFK-C, except rainbow trout (Table 2). However, because rainbow trout have been observed in reaches upstream and downstream of SFK-C, this species may also inhabit SFK-C. Therefore, modeling results are presented for all species.

4.2.3.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for SFK-C indicate that the amount of habitat provided at the habitat maximizing flow would be highest for sockeye salmon (72 cfs provides ≈ 12 acres), followed by chum salmon (39 cfs provides ≈ 11 acres), coho salmon (64 cfs provides ≈ 7.4 acres), and Chinook salmon (72 cfs provides ≈ 5.0 acres) (Table 46; Figure 64). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 56 cfs for Chinook salmon, 30 cfs for chum salmon, 45 cfs for coho salmon, and 36 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in SFK-C are generally similar in shape. The habitat area increases at a moderate rate with increasing flow and, after reaching a maximum, gradually decreases. However, this shape occurs at progressively lower flows for Chinook, coho, sockeye, and chum salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for SFK-C peak at flows of 72 cfs (provides ≈ 17 acres), 42 cfs (provides ≈ 13 acres), and 39 cfs (provides ≈ 7.8 acres), respectively (Table 47; Figure 64). However, flows as low as 48 cfs for arctic grayling, and 30 cfs for Dolly Varden and for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for SFK-C indicate that the amount of anadromous salmonid juvenile rearing habitat provided at the habitat maximizing flow would be highest for sockeye salmon (18 cfs provides ≈ 8.9 acres), followed by Chinook salmon (42 cfs provides ≈ 8.2 acres) and coho salmon (18 cfs provides ≈ 8.0 acres) (Table 46; Figure 65). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 24 cfs for Chinook salmon and 7 cfs for coho and sockeye salmon. When habitats are expressed as a percent of maximum, the relationships for coho and sockeye salmon in SFK-C are generally similar, with habitat area increasing to a maximum at relatively low flows and then decreasing at higher flows. The relationship for Chinook salmon is also similar, although the maximum habitat area is reached at higher flows.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for SFK-C at the habitat maximizing flow would be highest for arctic grayling (13 cfs provides ≈ 14 acres), followed by Dolly Varden (21 cfs provides ≈ 9.9 acres), and then rainbow trout (90 cfs provides ≈ 5.9 acres) (Table 47; Figure 65). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 5 cfs for arctic grayling, 7 cfs for Dolly Varden, and 48 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and Dolly Varden in SFK-C are generally similar, with habitat area increasing to a maximum at low flows and then decreasing as flows continue to

increase. In contrast, habitat area for rainbow trout generally increases asymptotically as flows increase over the modeled range.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for SFK-C indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (64 cfs provides ≈ 10 acres), followed by Dolly Varden (16 cfs provides ≈ 9.9 acres) and then arctic grayling (100 cfs provides ≈ 5.4 acres) (Table 47; Figure 66). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 72 cfs for arctic grayling, 7 cfs for Dolly Varden, and 42 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in SFK-C are generally similar, gradually increasing with flow until reaching a maximum and then remaining at a moderate to high level over the remaining range of modeled flows. In contrast, the relationship for Dolly Varden can be characterized as initially increasing rapidly to a maximum at low flows and then gradually decreasing to a low to moderate level over the remaining range of modeled flows.

4.2.3.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for SFK-C, as determined under an average water year type, are presented for all species on Figure 67 (spawning habitat) and Figure 68 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 69. In addition, Table 48 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.2.4 Tributary SFK 1.190

Modeling results for Tributary SFK 1.190 are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. Only Chinook salmon, coho salmon, arctic grayling, Dolly Varden, and rainbow trout were observed in SFK 1.190 (Appendix 15.1B). However, because all of the above species have been documented (Table 2) in SFK-B (the reach into which SFK 1.190 flows) they are likely to inhabit SFK 1.190. Therefore, modeling results for all species are presented

4.2.4.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for SFK 1.190 indicate that the amount of habitat provided at the habitat maximizing flow would be highest for sockeye salmon (80 cfs provides ≈ 7.7 acres), followed by chum salmon (60 cfs provides ≈ 7.5 acres), coho salmon (110 cfs provides ≈ 5.9 acres), and Chinook salmon (95 cfs provides ≈ 3.6 acres) (Table 49; Figure 70). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 70 cfs for Chinook salmon, 39 cfs for chum salmon, 80 cfs for coho salmon, and 50 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in SFK 1.190 are generally similar in shape. The habitat area increases at a moderate rate with increasing flow and, after reaching a maximum, decreases more gradually. However, this shape occurs at progressively lower flows for coho, Chinook, sockeye, and chum salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for SFK 1.190 peak at flows of 70 cfs (provides ≈ 8.5 acres), 45 cfs, (provides ≈ 8.1 acres) and 50 cfs (provides ≈ 7.1 acres), respectively (Table 50; Figure 70). However, flows as low as 50 cfs for arctic grayling, 30 cfs for Dolly Varden, and 39 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for SFK 1.190 indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for Chinook salmon (80 cfs provides ≈ 2.9 acres), followed by coho salmon (50 cfs provides ≈ 1.7 acres) and sockeye salmon (25 cfs provides ≈ 1.7 acres) (Table 49; Figure 71). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 60 cfs for Chinook salmon, 25 cfs for coho salmon, and 15 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the ascending limb for each species in SFK 1.190 is generally similar, with habitat area increasing to a maximum at flows between 25 and 80 cfs. However, habitat area for sockeye salmon rapidly decreases as flows increase further; whereas, habitat for Chinook salmon decreases more gradually and habitat for coho salmon remains at a high level.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for SFK 1.190 at the habitat maximizing flow would be highest for arctic grayling (20 cfs provides ≈ 4.6 acres), followed by Dolly Varden (30 cfs provides ≈ 2.7 acres) and rainbow trout (240 cfs provides ≈ 2.7 acres) (Table 50; Figure 71). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 13 cfs for arctic grayling, 20 cfs for Dolly Varden, and 90 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in SFK 1.190 are generally similar, with habitat area gradually increasing to a maximum and then gradually decreasing to a moderate level at higher flows. In contrast, habitat area for rainbow trout increases rapidly at low flows and then continues to increase gradually as flows increase over the modeled range.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for SFK 1.190 indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (95 cfs provides ≈ 3.3 acres), followed by Dolly Varden (240 cfs provides ≈ 3.0 acres) and then arctic grayling (130 cfs provides ≈ 1.8 acres) (Table 50; Figure 72). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 100 cfs for arctic grayling, 160 cfs for Dolly Varden, and 70 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in SFK 1.190 are generally similar, gradually increasing with flow until reaching a maximum and then remaining at a relatively high level over the remaining range of modeled flows. The relationship for Dolly Varden can be characterized as rapidly increasing at low flows and then gradually increasing over remaining range of modeled flows to reach a maximum at the highest modeled flow.

4.2.4.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for Tributary SFK 1.190, as determined under an average water year type, are presented for all species on Figure 73 (spawning habitat) and Figure 74 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on

Figure 75. In addition, Table 51 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.3 Upper Talarik Creek

4.3.1 Reach UT-B

Modeling results for UT-B are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.3.1.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for UT-B indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (90 cfs provides ≈ 19 acres), followed by Chinook salmon (135 cfs provides ≈ 12 acres), sockeye salmon (150 cfs provides ≈ 11 acres), and coho salmon (150 cfs provides ≈ 8.5 acres) (Table 52; Figure 76). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 120 cfs for Chinook salmon, 80 cfs or less for chum salmon, 120 cfs for coho salmon, and 105 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the habitat-flow relationships for anadromous salmonids in UT-B are generally similar in shape, where habitat area increases rapidly at low flows and, after reaching a maximum, decreases continually over the remaining range of modeled flows. The habitat-flow relationship for chum salmon is slightly different than other anadromous salmonids in that the habitat area is maximized at approximately the lowest modeled flow.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for UT-B peak at flows of 180 cfs, (provides ≈ 10 acres) 105 cfs (provides ≈ 14 acres), and 120 cfs (provides ≈ 7.7 acres), respectively (Table 53; Figure 76). However, flows as low as 135 cfs for arctic grayling, 80 cfs or less for Dolly Varden, and 90 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for UT-B indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for Chinook salmon (80 cfs provides ≈ 4.4 acres), followed by coho salmon (90 cfs provides ≈ 1.7 acres), and then sockeye salmon (80 cfs provides ≈ 1.1 acres) (Table 52; Figure 77). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 80 cfs or less for Chinook, coho, and sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in UT-B are similar in shape, generally decreasing from a maximum as flows increase.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for UT-B at the habitat maximizing flow would be highest for rainbow trout (80 cfs provides ≈ 4.2 acres), followed by arctic grayling (80 cfs provides ≈ 3.9 acres), and then Dolly Varden (80 cfs provides ≈ 1.9 acres) (Table 53;

Figure 77). For all three species, the lowest modeled flow provides the maximum amount of habitat and, in general, habitat area decreases as flows increase over the remaining range of modeled flows.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for UT-B indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (80 cfs provides ≈ 11 acres), followed by arctic grayling (135 cfs provides ≈ 4.8 acres), and then Dolly Varden (80 cfs provides ≈ 1.8 acres) (Table 53; Figure 78). When habitats are expressed as a percentage of maximum, the relationships for Dolly Varden and rainbow trout in UT-B are generally similar. The habitat amounts rapidly decreasing from a maximum as flows increase to around 100 to 200 cfs, and then remaining at a low to moderate level over the remaining range of modeled flows. The relationship for arctic grayling exhibits a similar pattern, although habitat amounts initially increase as flows increase from 80 to 135 cfs.

4.3.1.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for UT-B, as determined under an average water year type, are presented for all species on Figure 79 (spawning habitat) and Figure 80 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 81. In addition, Table 54 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.3.2 Reach UT-C

Modeling results for UT-C are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.3.2.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for UT-C indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (140 cfs provides ≈ 12 acres), followed by sockeye salmon (190 cfs provides ≈ 8.1 acres), coho salmon (180 cfs provides ≈ 6.6 acres), and Chinook salmon (180 cfs provides ≈ 4.5 acres) (Table 55; Figure 82). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 160 cfs for Chinook salmon, 70 cfs or less for chum salmon, and 130 cfs for coho and sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in UT-C are generally similar in shape. The habitat area increases rapidly at low flows and, after reaching a maximum, decreases continually over the remaining range of modeled flows. The relationship for chum salmon is slightly different in that habitat area is maximized closer to the lowest modeled flow.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for UT-C peak at flows of 190 cfs (provides ≈ 8.0 acres), 150 cfs (provides ≈ 10 acres), and 140 cfs (provides ≈ 6.6

acres), respectively (Table 56; Figure 82). However, flows as low as 160 cfs for arctic grayling and 100 cfs for Dolly Varden and rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for UT-C indicate that the amount of anadromous salmonid juvenile rearing habitat provided at the habitat maximizing flow would be highest for coho salmon (680 cfs provides ≈ 5.3 acres), followed by sockeye salmon (680 cfs provides ≈ 5.0 acres), and then Chinook salmon (680 cfs provides ≈ 4.2 acres) (Table 55; Figure 83). Although the highest modeled flow (680 cfs) would provide the greatest amount of habitat for all three species, the habitat area provided at the lowest modeled flow (70 cfs) would still provide from 65% (for sockeye salmon) to 97% (for Chinook salmon) of the maximum habitat area. In general, moderate flows within the modeled range would provide lesser amounts of habitat. When habitats are expressed as percentage of maximum, the relationships for anadromous salmonids in UT-C are generally similar in shape. The habitat is initially high at low flows, decreases over moderate flows, and then increases again approaching the highest modeled flow.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for UT-C at the habitat maximizing flow would be highest for arctic grayling (680 cfs provides ≈ 11 acres), followed by Dolly Varden (680 cfs provides ≈ 6.2 acres), and then rainbow trout (90 cfs provides ≈ 3.6 acres) (Table 56; Figure 83). Relationships for these species exhibit a trend similar to that for anadromous salmonids, in which habitat area is initially high at low flows, decreases over moderate flows, and then increases again approaching the highest modeled flow.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for UT-C indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (80 cfs provides ≈ 6.7 acres), followed by Dolly Varden (680 cfs provides ≈ 6.1 acres), and then arctic grayling (160 cfs provides ≈ 2.8 acres) (Table 56; Figure 84). When habitats are expressed as a percentage of maximum, the relationships for all three species in UT-C exhibit a generally similar trend in which habitat amounts are relatively high at low flows and decrease to moderate levels as flows increase. One exception is at flows greater than 240 cfs Dolly Varden habitat increases over the remaining range of modeled flows.

4.3.2.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for UT-C, as determined under an average water year type, are presented for all species on Figure 85 (spawning habitat) and Figure 86 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 87. In addition, Table 57 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.3.3 Reach UT-D

Modeling results for UT-D are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.3.3.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for UT-D indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (110 cfs provides ≈ 19 acres), followed by sockeye salmon (130 cfs provides ≈ 16 acres), coho salmon (140 cfs provides ≈ 13 acres), and Chinook salmon (170 cfs provides ≈ 7.6 acres) (Table 58; Figure 88). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 130 cfs for Chinook salmon, 80 cfs for chum salmon, 110 cfs for coho salmon, and 100 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in UT-D are generally similar in shape. The habitat area increases at a moderate rate with increasing flow and, after reaching a maximum, decreases at a moderate rate. However, this shape is shifted towards progressively lower flows for Chinook, coho, sockeye, and chum salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for UT-D peak at flows of 150 cfs (provides ≈ 19 acres), 120 cfs (provides ≈ 20 acres), and 90 cfs (provides ≈ 14 acres), respectively (Table 59; Figure 88). However, flows as low as 100 cfs for arctic grayling, 80 cfs for Dolly Varden, and 65 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for UT-D indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for Chinook salmon (110 cfs provides ≈ 4.2 acres), followed by coho salmon (40 cfs provides ≈ 3.4 acres), and then sockeye salmon (40 cfs provides ≈ 2.2 acres) (Table 58; Figure 89). For both coho and sockeye salmon, habitat is maximized at the lowest modeled flow (40 cfs) and initially decreases at a rapid rate as flows increase before leveling. In contrast, habitat for Chinook salmon is initially high (greater than 90% of maximum) at low flows (40 to 110 cfs) and then gradually decreases as flows increase.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for UT-D at the habitat maximizing flow would be highest for arctic grayling (40 cfs provides ≈ 6.4 acres), followed by rainbow trout (140 cfs provides ≈ 4.7 acres), and then Dolly Varden (40 cfs provides ≈ 4.3 acres) (Table 59; Figure 89). Habitat amounts remain relatively high (≈ 90% of maximum) at flows between 100 and 200 cfs for rainbow trout. However, habitat for arctic grayling and Dolly Varden in UT-D is maximized at the lowest modeled flow (40 cfs), and generally decreases at a relatively rapid rate as flows increase.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for UT-D indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (65 cfs provides ≈ 8.4 acres), followed by Dolly Varden (40 cfs provides ≈ 4.4 acres) and then arctic grayling (150 cfs provides ≈ 4.3 acres) (Table 59; Figure 90). When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in UT-D are generally similar in shape. The habitat area increases with flow until reaching a maximum, and then gradually decreases over the remaining range of modeled flows. However, the curve for arctic grayling is shifted

towards higher flows. In contrast, the habitat area for Dolly Varden is maximized at the lowest modeled flow and decreases asymptotically over the remaining range of modeled flows.

4.3.3.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for UT-D, as determined under an average water year type, are presented for all species on Figure 91 (spawning habitat) and Figure 92 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 93. In addition, Table 60 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.3.4 Reach UT-E

Modeling results for UT-E are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.3.4.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for UT-E indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (120 cfs provides ≈ 13 acres), followed by coho salmon (160 cfs provides ≈ 12 acres), sockeye salmon (150 cfs provides ≈ 11 acres), and Chinook salmon (260 cfs provides ≈ 5.7 acres) (Table 61; Figure 94). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 200 cfs for Chinook salmon, 80 cfs for chum salmon, 110 cfs for coho salmon, and 90 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in UT-E are generally similar in shape. The habitat area rapidly increases with increasing flow and, after reaching a maximum, gradually decreases to a moderate level. However, this shape is shifted towards lower flows for chum and sockeye salmon and towards higher flows for coho salmon and, in particular, Chinook salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for UT-E peak at flows of 150 cfs (provides ≈ 17 acres), 120 cfs (provides ≈ 16 acres), and 90 cfs (provides ≈ 12 acres), respectively (Table 62; Figure 94). However, flows as low as 90 cfs for arctic grayling and 70 cfs for Dolly Varden and rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for UT-E indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for coho salmon (550 cfs provides ≈ 6.1 acres), followed by Chinook salmon (170 cfs provides ≈ 5.9 acres) and sockeye salmon (550 cfs provides ≈ 5.8 acres) (Table 61; Figure 95). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 100 cfs for Chinook salmon and 90 cfs for coho salmon. However, for sockeye salmon, habitat is maximized at the highest modeled flow (550 cfs) and is generally less than 70% of maximum at flows less than 430 cfs.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for UT-E at the habitat maximizing flow would be highest for arctic grayling (550 cfs provides ≈ 12 acres), followed by Dolly Varden (550 cfs provides ≈ 6.6 acres), and rainbow trout (320 cfs provides ≈ 6.5 acres) (Table 62; Figure 95). Habitat amount remain relatively high (≈ 90% of maximum) at flows from 180 to 550 cfs for rainbow trout. However, for arctic grayling and Dolly Varden in UT-E, habitat is maximized at the highest modeled flow (550 cfs) is less than 90% of maximum at flows less than 510 cfs.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for UT-E indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (200 cfs provides ≈ 8.2 acres), followed by Dolly Varden (550 cfs provides ≈ 7.0 acres), and then arctic grayling (320 cfs provides ≈ 5.5 acres) (Table 62; Figure 96). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 240 cfs for arctic grayling and 150 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in UT-E are generally similar. The habitat area increases with flow until reaching a maximum and then gradually decreases to a moderate level over the remaining range of modeled flows. The relationship for Dolly Varden can be characterized as rapidly increasing to an initial peak at 100 cfs (≈ 85% of maximum), decreasing at moderate flows (up to around 350 cfs), and then continuing to increase over the remaining range of modeled flows to reach a maximum at the highest modeled flow (550 cfs).

4.3.4.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for UT-E, as determined under an average water year type, are presented for all species on Figure 97 (spawning habitat) and Figure 98 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 99. In addition, Table 63 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.3.5 Reach UT-F

Modeling results for UT-F are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.3.5.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for UT-F indicate that the amount of habitat provided at the habitat maximizing flow would be highest for chum salmon (20 cfs provides ≈ 5.1 acres), followed by coho salmon (45 cfs provides ≈ 5.0 acres), sockeye salmon (42 cfs provides ≈ 4.9 acres), and Chinook salmon (60 cfs provides ≈ 1.4 acres) (Table 64; Figure 100). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 45 cfs for Chinook salmon, 16 cfs for chum salmon, 24 cfs for coho salmon, and 20 cfs for sockeye salmon. When habitats are expressed as percentage of maximum, the relationships for chum, coho, and sockeye salmon in UT-F are generally

similar in shape. The habitat area increases at a moderate rate with increasing flow and remains at a relatively high level as flows continue to increase. In contrast, habitat area for Chinook salmon increases more slowly with increasing flows.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for UT-F peak at flows of 32 cfs (provides ≈ 8.4 acres), 22 cfs (provides ≈ 7.9 acres), and 24 cfs (provides ≈ 5.3 acres), respectively (Table 65; Figure 100). However, flows as low as 22 cfs for arctic grayling and 16 cfs for Dolly Varden and rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for UT-F indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for coho salmon (8 cfs provides ≈ 4.0 acres), followed by sockeye salmon (8 cfs provides ≈ 2.8 acres) and Chinook salmon (8 cfs provides ≈ 2.4 acres) (Table 64; Figure 101). At flows greater than 8 cfs, the habitat area for coho and sockeye salmon would gradually decrease, whereas the habitat area for Chinook salmon would be high (> 90% of maximum) as flows increase over the remaining range of modeled flows.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for UT-F at the habitat maximizing flow would be highest for arctic grayling (8 cfs provides ≈ 6.0 acres), followed by Dolly Varden (8 cfs provides ≈ 4.0 acres), and rainbow trout (54 cfs provides ≈ 2.3 acres) (Table 65; Figure 101). For both arctic grayling and rainbow trout, habitat amounts rapidly increase as flows approach 8 cfs and then gradually decrease over the remaining range of modeled flows. In contrast, habit amounts for rainbow trout increase as flows increase and then remain relatively high (≈ 90% of maximum) at flows of 16 cfs or more.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for UT-F indicate that the amount of habitat provided at the habitat maximizing flow would be highest for Dolly Varden (10 cfs provides ≈ 4.8 acres), followed by rainbow trout (24 cfs provides ≈ 4.2 acres), and then arctic grayling (60 cfs provides ≈ 1.9 acres) (Table 65; Figure 102). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 45 cfs for arctic grayling, 7 cfs for Dolly Varden, and 16 cfs for rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and rainbow trout in UT-F are generally similar, gradually increasing with flow until reaching a maximum and then remaining at a relatively high level over the remaining range of modeled flows. The relationship for Dolly Varden can be characterized as rapidly increasing to a maximum at low flows (10 cfs), and then gradually decreasing over remaining range of modeled flows.

4.3.5.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for UT-F, as determined under an average water year type, are presented for all species on Figure 103 (spawning habitat) and Figure 104 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 105. In addition, Table 66 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.3.6 Tributary UT 1.190

Modeling results for Tributary UT 1.190 are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. While it is unclear whether all of these species inhabit UT 1.190, they have all been documented in UT-C, the reach into which UT 1.190 flows (Table 2). Therefore, modeling results are presented for all species.

4.3.6.1 PHABSIM Analysis

Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for UT 1.190 indicate that the amount of habitat provided at the habitat maximizing flow would be highest for sockeye salmon (24 cfs provides ≈ 1.1 acres), followed by chum salmon (18 cfs provides ≈ 0.6 acres), coho salmon (24 cfs provides ≈ 0.3 acres), and Chinook salmon (24 cfs provides less than 1 acre) (Table 67; Figure 106). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 21 cfs for Chinook salmon, 12 cfs for chum salmon, 21 cfs for coho salmon, and 18 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in UT 1.190 are generally similar in shape, where habitat area increases rapidly with increasing flow and, after reaching a maximum, gradually decreases over the remaining range of modeled flows. However, for Chinook and coho salmon, habitat area remains at a somewhat higher level and fluctuates compared to chum and sockeye salmon as flows increase.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for UT 1.190 peak at flows of 39 cfs (provides ≈ 0.6 acres), 24 cfs (provides ≈ 1.2 acres), and 18 cfs (provides ≈ 1.1 acres), respectively (Table 68; Figure 106). However, flows as low as 24 cfs for arctic grayling, 18 cfs for Dolly Varden, and 12 cfs for rainbow trout would still provide ≈ 90% of maximum spawning habitat.

Juvenile Rearing Habitat

Habitat-flow relationships generated for UT-1.190 indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for sockeye salmon (120 cfs provides ≈ 0.4 acres), followed by coho salmon (120 cfs provides ≈ 0.3 acres) and Chinook salmon (120 cfs provides ≈ 0.2 acres) (Table 67; Figure 107). Habitat amounts for all three species generally increase at a relatively constant rate before reaching a maximum at the highest modeled flow (120 cfs).

For non-anadromous salmonids, the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for arctic grayling (120 cfs provides ≈ 0.6 acres), followed by Dolly Varden (120 cfs provides ≈ 0.3 acres), and then rainbow trout (120 cfs provides ≈ 0.1 acres) (Table 68; Figure 107). Like the anadromous salmonid species, habitat amounts for these three species generally increase at a relatively constant rate before reaching a maximum at the highest modeled flow (120 cfs). However, over the range of flows from 12 to 24 cfs, habitat amounts for arctic grayling initially decrease before following a trend similar to the other species and increasing as flows increase.

Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for UT-1.190 indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (12 cfs provides ≈ 0.25 acres) and Dolly Varden (120 cfs provides ≈ 0.3 acres), followed by arctic grayling (120 cfs provides ≈ 0.03 acres) (Table 68; Figure 108). When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and Dolly Varden in UT 1.190 are similar, generally increasing gradually with flow until reaching a maximum at the highest modeled flow. In contrast, the habitat area for rainbow trout decreases rapidly from a maximum at the lowest modeled flow (12 cfs) and then remains at a low level over the remaining range of modeled flows.

4.3.6.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for Tributary UT-1.190, as determined under an average water year type, are presented or all species on Figure 109 (spawning habitat) and Figure 110 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 111. In addition, Table 69 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

4.4 Mainstem Koktuli River

Modeling results for the KR are presented for: Chinook, chum, coho, and sockeye salmon; arctic grayling; Dolly Varden; and rainbow trout. All of these species have been documented in habitat associated with this reach (Table 2).

4.4.1 PHABSIM Analysis

4.4.1.1 Spawning Habitat

For anadromous salmonid species, spawning habitat - flow relationships generated for the KR indicate that the amount of habitat provided at the habitat maximizing flow would be highest for sockeye salmon (200 cfs provides ≈ 58 acres), followed by chum salmon (160 cfs provides ≈ 50 acres) and coho salmon (510 cfs provides ≈ 50 acres), and then Chinook salmon (510 cfs provides ≈ 18 acres) (Table 70; Figure 112). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 370 cfs for Chinook salmon, ≤ 140 cfs for chum salmon, 260 cfs for coho salmon, and 140 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids are generally similar in shape. The habitat area increases rapidly with increasing flow and, after reaching a maximum, gradually decreases over the remaining range of modeled flows. However, for chum and sockeye salmon, habitat area is maximized at considerably lower flows than for Chinook and coho salmon.

The habitat-flow relationships for spawning arctic grayling, Dolly Varden, and rainbow trout for KR peak at flows of 340 cfs (provides ≈ 83 acres), 200 cfs (provides ≈ 82 acres), and 160 cfs (provides ≈ 62 acres), respectively (Table 71; Figure 112). However, flows as low as 200 cfs for arctic grayling, and 140 cfs or less for Dolly Varden and rainbow trout would still provide ≈ 90% of maximum spawning habitat.

4.4.1.2 Juvenile Rearing Habitat

Habitat-flow relationships generated for the KR indicate that the amount of juvenile rearing habitat provided at the habitat maximizing flow would be highest for Chinook salmon (480 cfs provides ≈ 24 acres), followed by coho salmon (1,100 cfs provides ≈ 20 acres) and sockeye salmon (1,100 cfs provides ≈ 20 acres) (Table 70; Figure 113). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 370 cfs for Chinook salmon, 370 cfs for coho salmon, and 340 cfs for sockeye salmon. When habitats are expressed as a percentage of maximum, the relationships for anadromous salmonids in the KR are generally similar in shape. The habitat area increases rapidly as flows increase to around 340 cfs and then remains at a relatively high level over the remaining range of modeled flows.

For non-anadromous salmonids, the amount of juvenile rearing habitat provided for the KR at the habitat maximizing flow would be highest for arctic grayling (430 cfs provides ≈ 32 acres), followed by Dolly Varden (430 cfs provides ≈ 23 acres), and rainbow trout (510 cfs provides ≈ 22 acres) (Table 71; Figure 113). Habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 340 cfs for arctic grayling and 370 cfs for Dolly Varden and rainbow trout. When habitats are expressed as a percentage of maximum, the relationships for non-anadromous salmonids are generally similar in shape. The habitat area increases as flows increase to around 400 cfs and then remains at a relatively high level over the remaining range of modeled flows.

4.4.1.3 Adult Rearing Habitat

For non-anadromous salmonid species, adult rearing habitat - flow relationships generated for the KR indicate that the amount of habitat provided at the habitat maximizing flow would be highest for rainbow trout (510 cfs provides ≈ 25 acres), followed by Dolly Varden (1,100 cfs provides ≈ 24 acres), and then arctic grayling (660 cfs provides ≈ 14 acres) (Table 71; Figure 114). When habitats are expressed as a percentage of maximum, the relationships for arctic grayling and Dolly Varden in the KR are generally similar, increasing with flow until reaching a maximum and then remaining at a relatively high level over the remaining range of modeled flows. In contrast, habitat area for rainbow trout remains at greater than 90% of maximum over the full range of modeled flows. For arctic grayling and Dolly Varden, habitat amounts remain relatively high (≈ 90% of maximum) at flows as low as 310 cfs and 400 cfs, respectively.

4.4.2 Habitat Time Series

Habitat time series and corresponding habitat duration curves for the KR, as determined under an average water year type, are presented for all species on Figure 115 (spawning habitat) and Figure 116 (juvenile rearing habitat). Results for non-anadromous salmonid adult rearing habitat are presented on Figure 117. In addition, Table 72 summarizes the average daily habitat area provided for all species and lifestages during wet, average, and dry water year types.

5. DISCUSSION

This study is one of several studies focused on understanding the current relationships and dynamics between streamflow and habitat form and function in the NFK, SFK, UT, and KR systems of the Pebble Project. This study resulted in the derivation of habitat (as indexed by WUA) – flow relationships for 117 transects established in selected reaches of these systems for various target fish species and lifestages.

These relationships (see Attachment 2) were subsequently used in developing time series and habitat duration analysis (see for example Figure 14) for each transect. These describe how habitats for a particular species and lifestage vary throughout the period of the salient lifestage (e.g., spawning periods vary by species and only occur for several months; rearing periods vary by species, etc.) under different water year types (wet, average, dry). A reach-specific habitat area versus flow relationship was computed for various reaches of each system via the weighting of transects in a reach based on habitat types and results of habitat mapping (see, for example, Figure 28). These were subsequently used for completing a habitat time series and habitat duration analysis on a reach basis under average flow conditions (see, for example, Figure 31). In addition, the average habitat area available on a daily basis in each reach was summarized and presented in tabular format for each water year type by species and lifestage (see, for example, Table 30).

These analytical results can be used in a variety of ways in helping to understand the baseline conditions in the Pebble Project area and specifically how, when, and where the existing hydrology of the Pebble Project area influences the amounts of habitat of the target fish species. The range of analyses can extend from an extremely localized assessment using the individual transect habitat-flow relationships (Attachment 2), to a broader reach-scale assessment provided in the habitat area summary tables by reach (e.g., Table 30). For example, Figure 1 in Attachment 2, Supplement 1 is for an individual transect (Transect 05-NFK1-IC3) and clearly shows a pattern of increasing spawning habitat as flow increases up to a peak (representing the flow that provides the greatest amount of habitat) and then habitat begins to decrease as flows continue to increase. The figures on the left side represent habitat amounts, while those on the right represent normalized values. The figures allow for spatial comparisons of habitat-versus-flow relationships both within and between streams.

On a broader scale, the habitat area by reach results tables (e.g., Table 30) indicate that, in general, the amounts of spawning habitat area are more sensitive to water year types than rearing habitats; i.e., more habitat is provided during wet years than is available during dry years. For example, Table 30 shows that spawning habitat areas (see Chinook, coho, and sockeye salmon) are highest under wet year conditions, and the areas progressively decrease under average and low flow water year conditions. In contrast, the amount of rearing habitat tends to remain relatively constant over all water year types.

Non-anadromous salmonid rearing habitat amounts likewise follow this same trend of being relatively insensitive to water year types. However, the patterns of spawning habitat for grayling and rainbow trout (in NFK-A) differ from the anadromous salmonids in that the maximum amount of habitat would be provided under dry water year conditions rather than wet. This is likely a result of differences in the HSC criteria, with both of these species having lower velocities associated with spawning habitats.

The above patterns occur for many, but not all of the other reaches. For example, the pattern of spawning habitat for anadromous salmonid spawning in UT-B (Table 54) shows the exact opposite trend, i.e., spawning habitat area is highest under dry year conditions and lowest under wet year conditions. These types of differences may reflect difference in channel- and reach-specific hydrologic characteristics.

Table 73 extends the analysis even further and provides a comparative summary of habitat area estimated in each stream (for reaches containing transect information) under average flow conditions by species and lifestage. The table indicates that the amounts of habitat area by species and lifestage provided under average flow conditions vary by stream system. In general, the greatest amount of Chinook and sockeye salmon spawning habitats are found in the SFK, while the UT and NFK contain the greatest amounts of

coho and chum salmon habitats, respectively. The NFK is estimated to contain more juvenile Chinook, coho, chum, and sockeye salmon rearing habitats than both the SFK and UT.

Overall, the analysis resulting from this study, in combination with the results from other flow-related studies (Appendix 15.1D, Appendix 15.1E, and Appendix 15.1F), provides a solid framework of information from which to characterize baseline habitat conditions in the NFK, SFK, UT, and KR systems.

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7. GLOSSARY

Accretion—A gradual increase in flow within a river, resulting from tributary inputs or upwelling groundwater.

Adfluvial—Fish that spend a part of their life cycle in lakes and return to rivers and streams to spawn.

Anadromous—Fish that spend a part of their life cycle in the sea and return to freshwater streams to spawn.

Backwater—A small, generally shallow body of water attached to the main channel with little or no current of its own pushed back by a dam or current.

Bank—The sloping land bordering a stream channel that forms the usual boundaries of a channel. The bank has a steeper slope than the bottom of the channel and is usually steeper than the land surrounding the channel.

Base flow—The component of a flow regime that represents normal flow conditions sustained by groundwater between precipitation events.

Calibration—The validation of specific measurement techniques and equipment, or the comparison between measurements. In the context of PHABSIM, calibration is the process of adjusting input variables to minimize the error between predicted and observed water surface elevations.

Cascade—The steepest of riverine habitat types. Unlike rapids, which have an even gradient, cascades consist of a series of small steps of alternating small waterfalls and shallow pools.

Channel—A watercourse that continuously or intermittently contains water, with definite bed and banks that confine all but overbank streamflows.

Channel morphology—The planform, pattern, shape, and structure of a stream channel.

Confluence—The junction of two or more streams.

Cover—Protective shelter, objects within or immediately overhanging a stream that fish use to hide from predators.

Drainage area—An area of land upstream of a particular point where all runoff from rain or snow melt drains downhill to the same outlet such as a river, lake, reservoir, estuary, wetland, sea, or ocean. Also known as a catchment area, or drainage basin.

Fluvial—Of or pertaining to the processes associated with rivers and streams and the deposits and landforms created by them.

Glide—Section of stream that has a smooth water surface, laminar flow path, and generally greater depth, but no clear scour feature.

Gradient—The slope of the stream channel expressed as a percent of rise per unit length.

Habitat Suitability Curve (HSC) —A graph/mathematical equation describing the suitability for use by various species/lifestages of fish of areas within a stream channel related to water depth, velocity, and substrate.

Hyporheic Zone —The saturated area beneath the streambed that contains a combination of surface and groundwater flow.

Iteroparous—Fish species that can reproduce repeatedly during their lifetime.

Large Woody Debris (LWD)—Pieces of wood larger than 10 feet long and 6 inches in diameter, in a stream channel.

Mesohabitat—Basic structural elements of a river or stream such as pools, backwaters, runs, glides, and riffles.

PHABSIM (Physical Habitat Simulation)—PHABSIM is a set of computer programs that provides predictive relationships between flow changes and various physical and hydraulic characteristics that relate to the amounts of habitat of different fish species and lifestages. The results of a PHABSIM analysis are generally reported in terms of Weighted Useable Area (WUA) versus flow. PHABSIM represents the computer programs associated with the Instream Flow Incremental Methodology process.

Pool—Relatively deep area in a natural stream channel with low velocity and smooth water surface as compared to other portions of the stream.

Rearing—Rearing is the term used by fish biologists that considers the period of time in which juvenile fish feed and grow. In the case of anadromous fish, the end of the juvenile rearing period culminates when the fish undergo smoltification, a process that results in physiological changes to the fish that readies it for transitioning to saltwater.

Rearing habitat—Areas in rivers or streams where fry, juvenile, and adult fish find food and shelter to live and grow.

Redd—A depression in the stream bottom created by spawning activities of salmon or trout. Sometimes called an egg nest, a redd consists of an upper depression or pit in the substrate that is followed by a small mound of gravel within which are buried the fertilized ova of salmon or trout.

Riffle—Shallow rapids in an open stream where the water surface is broken into waves by obstructions wholly or partly submerged.

Riparian zone—Vegetation along the banks of a stream or river that is influenced by the presence of water flow within the stream, including surface flow and hyporheic flow.

Run—A section of stream characterized by deep, fast, low turbulence water.

Semelparous—Fish species that reproduce only once during their lifetime.

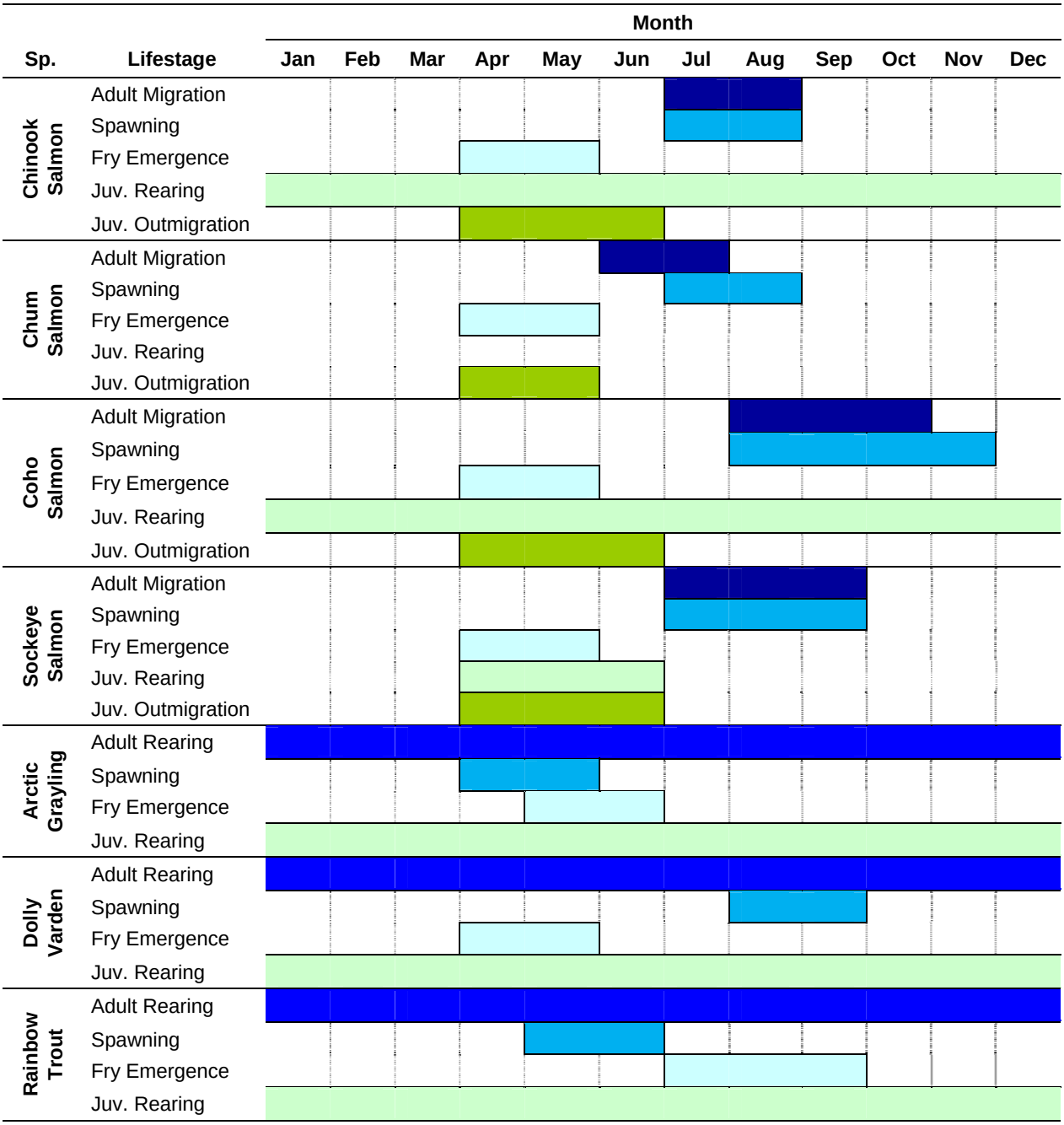
Substrate—The material composing the streambed, including either mineral or organic matter.

Transect—A predetermined line along which depth, velocity, or other characteristics such as substrate or cover are measured as partial input into the PHABSIM model.

Weighted Usable Area (WUA) —An index of fish habitat within a stream or river. WUA is weighted by its suitability as habitat, as defined by Habitat Suitability Criteria for different fish species and lifestages (see PHABSIM).

TABLES

TABLE 1
Life-history Stage Periodicity for Target Species in the Fish Resource Study Area



Note:

Based on general understanding of local populations (developed from R2 Resource Consultants, Inc., 2009) (Subject to revision). Note that information regarding adult rearing periodicity for non-anadromous salmonids is limited in the study area and was, therefore, assumed to extend throughout the year for the purposes of the instream flow analysis.

TABLE 2
Distribution of Target Species in the Study Area Based on Observations from 2004 to 2008

Basin-Reach	Chinook Salmon	Chum Salmon	Coho Salmon	Sockeye Salmon	Arctic Grayling	Dolly Varden	Rainbow Trout	Whitefish spp.
North Fork Koktuli River (NFK)								
NFK-A	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
NFK-B	**X**	**X**	**X**	**X**	**X**	**X**		**X**
NFK-C	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
NFK-D	X		X	X	X	X		X
NFK-E			X			X		
NFK-F	X		X			X		
South Fork Koktuli River (SFK)								
SFK-A	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
SFK-B	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
SFK-C	**X**	**X**	**X**	**X**	**X**	**X**		**X**
SFK-D	X		X		X	X		
SFK-E			X	X	X	X	X	
Upper Talarik Creek (UT)								
UT-A	X	X	X	X	X		X	X
UT-B	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
UT-C	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
UT-D	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
UT-E	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
UT-F	**X**	**X**	**X**	**X**	**X**	**X**	**X**	
UT-G			X		X	X		
Mainstem Koktuli River (KR)								
KR	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

Note :

Bold text indicates reaches in which instream flow transects were established. Not bolded “X” indicates that species presence was documented in mainstem, tributary, or off-channel habitat assigned to the corresponding reach. Transects were also established in Tributaries NFK 1.190, SFK 1.190, and UT 1.190.

Source: Appendix 15.1B.

TABLE 3
Instream Flow Transects by Reach, Habitat Type, River Kilometer, and River Mile for 117 PHABSIM Transects Established in the Study Area, 2004 through 2008

Reach	Transect	Habitat Type	River Kilometer	River Mile
NFK-A	05-NFK1-IC3	Island Complex	3.37	2.09
NFK-A	08-NFK1-MS1-TR1	Island Complex	9.88	6.14
NFK-A	08-NFK1-MS1-TR2	Run	9.91	6.16
NFK-A	08-NFK1-MS1-TR3	Run	9.94	6.18
NFK-A	08-NFK1-MS1-TR4	Riffle	10.04	6.24
NFK-A	08-NFK1-MS1-TR5	Riffle	10.06	6.25
NFK-A	08-NFK1-MS1-TR6	Island Complex	10.10	6.28
NFK-A	08-NFK1-MS2-TR1	Island Complex	12.87	7.99
NFK-A	08-NFK1-MS2-TR2	Island Complex	12.89	8.01
NFK-A	08-NFK1-MS2-TR3	Island Complex	12.96	8.05
NFK-A	08-NFK1-MS2-TR4	Island Complex	13.06	8.11
NFK-A	08-NFK1-MS2-TR5	Island Complex	13.08	8.13
NFK-A	05-NFK1-RN1	Island Complex	13.23	8.22
NFK-B	07-NFK1-RF1	Riffle	14.29	8.88
NFK-B	05-NFK1-IC1	Island Complex	15.33	9.52
NFK-B	05-NFK1-RF2	Riffle	15.97	9.92
NFK-B	05-NFK1-RF1	Riffle	18.29	11.36
NFK-B	04-NFK-RF1	Riffle	20.94	13.01
NFK-C	04-NFK-RN1	Run	21.10	13.11
NFK-C	04-NFK-IC1	Island Complex	22.26	13.83
NFK-C	04-NFK-RN2	Run	22.67	14.09
NFK-C	04-NFK-RF2	Riffle	22.81	14.17
NFK-C	08-NFK2-MS1-TR1	Run	24.65	15.32
NFK-C	08-NFK2-MS1-TR2	Island Complex	26.21	16.28
NFK-C	08-NFK2-MS1-TR3	Riffle	26.96	16.75
NFK-C	04-NFK-RN3	Run	30.63	19.03
NFK-C	04-NFK-IC2	Island Complex	33.65	20.91
NFK-C	08-NFK-190-TR1 [a]	Pool	0.15	0.09
NFK-C	08-NFK-190-TR2 [a]	Run	0.17	0.10
NFK-C	08-NFK-190-TR3 [a]	Riffle	0.18	0.11
SFK-A	05-SFK1-IC1	Island Complex	2.39	1.48
SFK-A	05-SFK1-RF1	Riffle	4.91	3.05

Reach	Transect	Habitat Type	River Kilometer	River Mile
SFK-A	08-SFK1-MS1-TR1	Run	6.91	4.30
SFK-A	08-SFK1-MS1-TR2	Island Complex	6.96	4.32
SFK-A	08-SFK1-MS1-TR3	Island Complex	7.02	4.37
SFK-A	08-SFK1-MS1-TR4	Island Complex	7.04	4.37
SFK-A	08-SFK1-MS1-TR5	Riffle	7.05	4.38
SFK-A	08-SFK1-MS1-TR6	Run	7.14	4.44
SFK-A	04-SFK-IC1	Island Complex	12.36	7.68
SFK-A	08-SFK1-MS2-TR1	Riffle	19.21	11.94
SFK-A	08-SFK1-MS2-TR2	Riffle	19.29	11.99
SFK-A	08-SFK1-MS2-TR3	Island Complex	19.42	12.07
SFK-A	08-SFK1-MS2-TR4	Island Complex	19.47	12.10
SFK-A	08-SFK1-MS2-TR5	Island Complex	19.55	12.15
SFK-A	08-SFK1-MS2-TR6	Run	19.60	12.18
SFK-A	04-SFK-RF3	Riffle	19.80	12.30
SFK-A	04-SFK-RN3	Run	20.10	12.49
SFK-A	07-SFK1-RF1	Riffle	24.21	15.05
SFK-A	04-SFK-RF2	Riffle	24.68	15.34
SFK-B	04-SFK-RN2	Run	24.91	15.48
SFK-B	04-SFK-IC2	Island Complex	25.67	15.95
SFK-B	05-SFK2-RF1	Riffle	26.22	16.29
SFK-B	05-SFK2-RN4	Run	27.03	16.80
SFK-B	05-SFK2-IC1	Island Complex	27.42	17.04
SFK-B	05-SFK2-RN7	Run	28.07	17.44
SFK-B	05-SFK2-RN6	Run	29.24	18.17
SFK-B	05-SFK2-RN3	Run	30.19	18.76
SFK-B	05-SFK2-RN5	Run	31.37	19.49
SFK-B	05-SFK2-RN2	Run	31.75	19.73
SFK-B	05-SFK2-PL1	Pool	33.16	20.61
SFK-B	05-SFK2-RN1	Run	33.80	21.00
SFK-B	08-SFK-190-TR1 [b]	Run	0.64	0.40
SFK-B	08-SFK-190-TR2 [b]	Run	0.66	0.41
SFK-B	08-SFK-190-TR3 [b]	Riffle	0.67	0.42
SFK-B	08-SFK-190-TR4 [b]	Riffle	0.70	0.43
SFK-B	08-SFK-190-TR5 [b]	Run	0.71	0.44

Reach	Transect	Habitat Type	River Kilometer	River Mile
SFK-B	08-SFK-190-TR6 [b]	Run	0.73	0.45
SFK-C	05-SFK3-RN1	Run	34.81	21.63
SFK-C	04-SFK-RF1	Riffle	36.54	22.71
SFK-C	04-SFK-PL1	Pool	36.58	22.73
SFK-C	04-SFK-RN1	Run	36.62	22.75
SFK-C	05-SFK3-PL1	Pool	39.83	24.75
SFK-C	05-SFK3-PL2	Pool	40.93	25.43
UT-B	08-UTC1-MS1-TR1	Pool	6.08	3.78
UT-B	08-UTC1-MS1-TR2	Pool	6.14	3.81
UT-B	08-UTC1-MS1-TR3	Pool	6.16	3.83
UT-B	08-UTC1-MS1-TR4	Run	6.18	3.84
UT-B	08-UTC1-MS1-TR5	Run	6.21	3.86
UT-C	05-UTC1-IC1	Island Complex	16.84	10.46
UT-C	05-UTC1-RF2	Riffle	17.36	10.79
UT-C	05-UTC1-RN1	Run	19.34	12.02
UT-C	04-UTC-IC2	Island Complex	19.82	12.32
UT-C	04-UTC-RN1	Run	23.75	14.76
UT-C	04-UTC-RN2	Run	24.36	15.14
UT-C	04-UTC-RF2	Riffle	24.59	15.28
UT-C	05UT190-RF1 [c]	Riffle	0.50	0.31
UT-C	05UT190-RF3 [c]	Riffle	0.91	0.57
UT-C	05UT190-RF4 [c]	Riffle	1.12	0.70
UT-C	05UT190-RN1 [c]	Run	1.35	0.84
UT-C	05UT190-RF5 [c]	Riffle	2.48	1.54
UT-D	07-UTC2-RN3	Run	26.02	16.17
UT-D	07-UTC2-RN1	Run	29.31	18.21
UT-D	07-UTC2-RN2	Run	30.04	18.67
UT-D	05-UTC2-RF1	Riffle	32.36	20.11
UT-D	04-UTC-RF3	Riffle	34.62	21.51
UT-D	04-UTC-RN3	Run	34.76	21.60
UT-D	05-UTC2-RN2	Run	35.64	22.14
UT-E	05-UTC2-RF2	Riffle	36.70	22.81
UT-E	04-UTC-IC1	Island Complex	37.91	23.56
UT-E	08-UTC2-MS1-TR1	Run	41.66	25.89

Reach	Transect	Habitat Type	River Kilometer	River Mile
UT-E	08-UTC2-MS1-TR2	Island Complex	41.73	25.93
UT-E	08-UTC2-MS1-TR3	Island Complex	41.76	25.95
UT-E	08-UTC2-MS1-TR4	Island Complex	41.83	25.99
UT-E	08-UTC2-MS1-TR5	Island Complex	41.88	26.02
UT-E	08-UTC2-MS1-TR6	Island Complex	41.90	26.04
UT-E	07-UTC2-RN5	Run	42.71	26.54
UT-E	07-UTC2-RN4	Run	44.63	27.73
UT-F	05-UTC3-RN3	Run	48.86	30.36
UT-F	05-UTC3-RN2	Run	52.01	32.32
UT-F	05-UTC3-PL1	Pool	56.65	35.20
UT-F	05-UTC3-RF1	Riffle	56.83	35.31
UT-F	05-UTC3-RF2	Riffle	57.25	35.58
UT-F	05-UTC3-RN1	Run	58.24	36.19
KR	04-MSK-RF2	Riffle	24.85	15.44
KR	04-MSK-IC2	Island Complex	25.37	15.77
KR	04-MSK-RF1	Riffle	31.98	19.87
KR	04-MSK-RN3	Run	43.96	27.31

Notes:

a. Transect located in Tributary NFK 1.190.

b. Transect located in Tributary SFK 1.190.

c. Transect located in Tributary UT 1.190.

River Kilometer and River Mile in the NFK and SFK basins are measured from the confluence of the North and South Forks of the Koktuli River; River Kilometer and River Mile in the UT basin are measured from Iliamna Lake; River Kilometer and River Mile in the KR basin are measured from the Swan River; River Kilometer and River Mile of each tributary are measured from the mainstem river in each respective basin (i.e., NFK, SFK, and UT).

TABLE 4
Modified Wentworth Scale for Substrate Size Classification, Instream Flow Study

Description	Size Class (metric/English)	Code
Fines	< 2 mm/< 0.1 in.	FI
Small Gravel	2-16 mm/0.1-0.6 in.	SG
Large Gravel	16-64 mm/0.6-2.5 in.	LG
Small Cobble	64-128 mm/2.5-5.0 in.	SC
Large Cobble	128-256 mm/5.0-10.0 in.	LC
Boulder	> 256 mm/> 10.0 in.	BO
Bedrock	Bedrock	BR

Key:
> = greater than
< = less than
in. = inch(es)
mm = millimeter(s)

TABLE 5
Cover Codes, Instream Flow Study

Description	Code
Boulder	BO
Large Woody/Organic Debris	LWD
Instream Vegetation	IV
Overhanging Vegetation	OV
Undercut Bank	UCB

TABLE 6
Microhabitat Data Collected at Redd Locations in the NFK, SFK, and UT Watersheds, 2005, 2006, and 2008

	Percent of Total Redds Sampled for which Each Parameter Was Recorded		
Parameter	**2005**	**2006**	**2008**
Species	100	100	100
Depth	100	100	100
Velocity	100	100	100
Substrate	60	50	100
Habitat type	100	0	0
Water temperature	30	66	0
Substrate temperature	0	66	0
Redd measurements	0	0	100
Total Number of Redds Sampled	**60**	**171**	**509**

TABLE 7
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in NFK-A, NFK-B, and NFK-C

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
NFK-A	Run	18.9%	2,587	8,486	Yes	19.0%	2,598	8,525
	Riffle	36.0%	4,933	16,183	Yes	36.2%	4,955	16,258
	Pool	0.5%	63	206	No	0.0%	0	0
	Island Complex	44.6%	6,107	20,040	Yes	44.8%	6,137	20,132
	TOTAL	**100.0%**	**13,690**	**44,915**		**100.0%**	**13,690**	**44,915**
NFK-B	Run	23.2%	1,714	5,623	No	0.0%	0	0
	Riffle	33.1%	2,440	8,004	Yes	43.3%	3,196	10,484
	Pool	0.4%	32	105	No	0.0%	0	0
	Island Complex	43.3%	3,194	10,481	Yes	56.7%	4,184	13,729
	TOTAL	**100.0%**	**7,380**	**24,213**		**100.0%**	**7,380**	**24,213**
NFK-C	Run	41.0%	6,384	20,944	Yes	41.8%	6,502	21,332
	Riffle	42.7%	6,638	21,779	Yes	43.4%	6,761	22,182
	Pool	1.8%	283	929	No	0.0%	0	0
	Island Complex	14.5%	2,265	7,431	Yes	14.8%	2,307	7,569
	TOTAL	**100.0%**	**15,570**	**51,083**		**100.0%**	**15,570**	**51,083**

Note:

Data derived from habitat mapping. Adjusted composition to reflect habitat types represented by transects in NFK-A, NFK-B, and NFK-C in the North Fork Koktuli River.

TABLE 8
Stream Lengths Assigned to Each Transect of NFK-A, NFK-B, and NFK-C

Reach	Transect	River Kilometer	Habitat Type	Stream Length	
				Meters	Feet
NFK-A	05-NFK1-IC3	3.37	Island Complex	682	2,237
	08-NFK1-MS1-TR1	9.88	Island Complex	682	2,237
	08-NFK1-MS1-TR2	9.91	Run	1,299	4,263
	08-NFK1-MS1-TR3	9.94	Run	1,299	4,263
	08-NFK1-MS1-TR4	10.04	Riffle	2,478	8,129
	08-NFK1-MS1-TR5	10.06	Riffle	2,478	8,129
	08-NFK1-MS1-TR6	10.10	Island Complex	682	2,237
	08-NFK1-MS2-TR1	12.87	Island Complex	682	2,237
	08-NFK1-MS2-TR2	12.89	Island Complex	682	2,237
	08-NFK1-MS2-TR3	12.96	Island Complex	682	2,237
	08-NFK1-MS2-TR4	13.06	Island Complex	682	2,237
	08-NFK1-MS2-TR5	13.08	Island Complex	682	2,237
	05-NFK1-RN1	13.23	Island Complex	682	2,237
	TOTAL			**13,690**	**44,915**
NFK-B	07-NFK1-RF1	14.29	Riffle	799	2,621
	05-NFK1-IC1	15.33	Island Complex	4,184	13,729
	05-NFK1-RF2	15.97	Riffle	799	2,621
	05-NFK1-RF1	18.29	Riffle	799	2,621
	04-NFK-RF1	20.94	Riffle	799	2,621
	TOTAL			**7,380**	**24,213**
NFK-C	04-NFK-RN1	21.10	Run	1,626	5,333
	04-NFK-IC1	22.26	Island Complex	769	2,523
	04-NFK-RN2	22.67	Run	1,626	5,333
	04-NFK-RF2	22.81	Riffle	3,381	11,091
	08-NFK2-MS1-TR1	24.65	Run	1,626	5,333
	08-NFK2-MS1-TR2	26.21	Island Complex	769	2,523
	08-NFK2-MS1-TR3	26.96	Riffle	3,381	11,091
	04-NFK-RN3	30.63	Run	1,626	5,333
	04-NFK-IC2	33.65	Island Complex	769	2,523
	TOTAL			**15,570**	**51,083**

Note:

Data derived from habitat mapping in NFK-A, NFK-B, and NFK-C of the North Fork Koktuli River.

TABLE 9
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in Tributary NFK 1.190

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
Tributary NFK 1.190	Run	26.7%	2,065	6,774	Yes	26.7%	2,065	6,774
	Riffle	67.2%	5,205	17,079	Yes	67.2%	5,205	17,079
	Pool	6.1%	471	1,544	Yes	6.1%	471	1,544
	Island Complex	0.0%	0	0	No	0.0%	0	0
	TOTAL	**100.0%**	**7,741**	**25,397**		**100.0%**	**7,741**	**25,397**

Note:

Data derived from habitat mapping. Adjusted composition to reflect habitat types represented by transects in Tributary NFK 1.190 of the North Fork Koktuli River.

TABLE 10
Stream Lengths Assigned to Each Transect of Tributary NFK 1.190

				Stream Length	
Reach	**Transect**	**River Kilometer**	**Habitat Type**	**Meters**	**Feet**
Tributary NFK 1.190	08-NFK-190-TR1	0.15	Pool	471	1,544
	08-NFK-190-TR2	0.17	Run	2,065	6,774
	08-NFK-190-TR3	0.18	Riffle	5,205	17,079
	TOTAL			**7,741**	**25,397**

Note:

Data derived from habitat mapping in Tributary NFK 1.190 of the North Fork Koktuli River.

TABLE 11
Wet, Average, and Dry Conditions for Various Lifestages of the Target Species at Hydrology Gage NK100A

		Wet Condition			Average Condition			Dry Condition		
Species	**Lifestage**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**
Chinook Salmon	Adult Migration	Jul-06	Aug-06	339	Jul-08	Aug-08	215	Jul-07	Aug-07	139
	Spawning	Jul-06	Aug-06	339	Jul-08	Aug-08	215	Jul-07	Aug-07	139
	Fry Emergence	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
	Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202
	Juvenile Outmigration	Apr-05	Jun-05	556	Apr-06	Jun-06	387	Apr-07	Jun-07	244
Coho Salmon	Adult Migration	Aug-06	Oct-06	490	Aug-05	Oct-05	350	Aug-07	Oct-07	334
	Spawning	Aug-06	Nov-06	403	Aug-07	Nov-07	338	Aug-05	Nov-05	305
	Fry Emergence	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
	Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202
	Juvenile Outmigration	Apr-05	Jun-05	556	Apr-06	Jun-06	387	Apr-07	Jun-07	244
Chum Salmon	Adult Migration	Jun-08	Jul-08	494	Jun-06	Jul-06	293	Jun-07	Jul-07	182
	Spawning	Jul-06	Aug-06	339	Jul-08	Aug-08	215	Jul-07	Aug-07	139
	Fry Emergence	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
	Juvenile Outmigration	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
Sockeye Salmon	Adult Migration	Jul-06	Sep-06	363	Jul-05	Sep-05	304	Jul-07	Sep-07	243
	Spawning	Jul-06	Sep-06	363	Jul-05	Sep-05	304	Jul-07	Sep-07	243
	Fry Emergence	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
	Rearing	Apr-05	Jun-05	556	Apr-06	Jun-06	387	Apr-07	Jun-07	244
	Juvenile Outmigration	Apr-05	Jun-05	556	Apr-06	Jun-06	387	Apr-07	Jun-07	244
Rainbow Trout	Adult Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202
	Spawning	May-08	Jun-08	742	May-06	Jun-06	554	May-07	Jun-07	311
	Fry Emergence	Jul-06	Sep-06	363	Jul-05	Sep-05	304	Jul-07	Sep-07	243
	Juvenile Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Dolly Varden	Adult Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202
	Spawning	Aug-06	Sep-06	443	Aug-05	Sep-05	361	Aug-08	Sep-08	239
	Fry Emergence	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
	Juvenile Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202
Arctic Grayling	Adult Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202
	Spawning	Apr-05	May-05	650	Apr-08	May-08	426	Apr-07	May-07	257
	Fry Emergence	May-08	Jun-08	742	May-06	Jun-06	554	May-07	Jun-07	311
	Juvenile Rearing	Oct-04	Sep-05	316	Oct-05	Sep-06	263	Oct-06	Sep-07	202

Note:

Data derived from daily flows measured at Hydrology Gage NK100A (USGS Gage No. 15302250) from October 1, 2004, through September 30, 2008.

TABLE 12
Wet, Average, and Dry Conditions for Various Lifestages of the Target Fish Species at Hydrology Gage NK119A

		Wet Condition			Average Condition			Dry Condition		
Species	**Lifestage**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**
Chinook Salmon	Adult Migration	Jul-06	Aug-06	30	Jul-05	Aug-05	23	Jul-07	Aug-07	13
	Spawning	Jul-06	Aug-06	30	Jul-05	Aug-05	23	Jul-07	Aug-07	13
	Fry Emergence	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
	Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20
	Juvenile Outmigration	Apr-05	Jun-05	62	Apr-08	Jun-08	51	Apr-07	Jun-07	26
Coho Salmon	Adult Migration	Aug-06	Oct-06	45	Aug-05	Oct-05	42	Aug-07	Oct-07	35
	Spawning	Aug-06	Nov-06	35	Aug-05	Nov-05	34	Aug-07	Nov-07	30
	Fry Emergence	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
	Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20
	Juvenile Outmigration	Apr-05	Jun-05	62	Apr-08	Jun-08	51	Apr-07	Jun-07	26
Chum Salmon	Adult Migration	Jun-08	Jul-08	47	Jun-05	Jul-05	28	Jun-07	Jul-07	19
	Spawning	Jul-06	Aug-06	30	Jul-05	Aug-05	23	Jul-07	Aug-07	13
	Fry Emergence	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
	Juvenile Outmigration	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
Sockeye Salmon	Adult Migration	Jul-05	Sep-05	39	Jul-06	Sep-06	32	Jul-08	Sep-08	22
	Spawning	Jul-05	Sep-05	39	Jul-06	Sep-06	32	Jul-08	Sep-08	22
	Fry Emergence	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
	Rearing	Apr-05	Jun-05	62	Apr-08	Jun-08	51	Apr-07	Jun-07	26
	Juvenile Outmigration	Apr-05	Jun-05	62	Apr-08	Jun-08	51	Apr-07	Jun-07	26
Rainbow Trout	Adult Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20
	Spawning	May-05	Jun-05	80	May-06	Jun-06	52	May-07	Jun-07	35
	Fry Emergence	Jul-05	Sep-05	39	Jul-06	Sep-06	32	Jul-08	Sep-08	22
	Juvenile Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Dolly Varden	Adult Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20
	Spawning	Aug-05	Sep-05	48	Aug-07	Sep-07	37	Aug-08	Sep-08	21
	Fry Emergence	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
	Juvenile Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20
Arctic Grayling	Adult Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20
	Spawning	Apr-05	May-05	74	Apr-08	May-08	42	Apr-07	May-07	27
	Fry Emergence	May-05	Jun-05	80	May-06	Jun-06	52	May-07	Jun-07	35
	Juvenile Rearing	Oct-04	Sep-05	32	Oct-07	Sep-08	24	Oct-06	Sep-07	20

Note:

Data derived from daily flows measured at Hydrology Gage NK119A from October 1, 2004, through September 30, 2008.

TABLE 13
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in SFK-A, SFK-B, and SFK-C

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
SFK-A	Run	27.2%	6,759	22,176	Yes	27.8%	6,923	22,714
	Riffle	54.2%	13,503	44,299	Yes	55.6%	13,830	45,373
	Pool	2.4%	589	1,932	No	0.0%	0	0
	Island Complex	16.2%	4,019	13,187	Yes	16.6%	4,117	13,507
	TOTAL	**100.0%**	**24,870**	**81,594**		**100.0%**	**24,870**	**81,594**
SFK-B	Run	45.4%	4,283	14,050	Yes	45.4%	4,283	14,050
	Riffle	36.2%	3,406	11,175	Yes	36.2%	3,406	11,175
	Pool	1.1%	105	344	Yes	1.1%	105	344
	Island Complex	17.3%	1,626	5,336	Yes	17.3%	1,626	5,336
	TOTAL	**100.0%**	**9,420**	**30,905**		**100.0%**	**9,420**	**30,905**
SFK-C	Run	63.6%	11,062	36,292	Yes	65.0%	11,312	37,114
	Riffle	29.9%	5,203	17,071	Yes	30.6%	5,321	17,458
	Pool	4.3%	740	2,427	Yes	4.4%	757	2,482
	Island Complex	2.2%	385	1,264	No	0.0%	0	0
	TOTAL	**100.0%**	**17,390**	**57,054**		**100.0%**	**17,390**	**57,054**

Note:

Relative composition of run, riffle, pool, and island complex habitat derived from habitat mapping, and adjusted composition to reflect habitat types represented by transects in SFK-A, SFK-B, and SFK-C in the South Fork Koktuli River.

TABLE 14
Stream Lengths Assigned to Each Transect in SFK-A, SFK-B, and SFK-C

Reach	Transect	River Kilometer	Habitat Type	Stream Length	
				Meters	Feet
SFK-A	05-SFK1-IC1	2.39	Island Complex	515	1,688
	05-SFK1-RF1	4.91	Riffle	1,976	6,482
	08-SFK1-MS1-TR1	6.91	Run	1,731	5,679
	08-SFK1-MS1-TR2	6.96	Island Complex	515	1,688
	08-SFK1-MS1-TR3	7.02	Island Complex	515	1,688
	08-SFK1-MS1-TR4	7.04	Island Complex	515	1,688
	08-SFK1-MS1-TR5	7.05	Riffle	1,976	6,482
	08-SFK1-MS1-TR6	7.14	Run	1,731	5,679
	04-SFK-IC1	12.36	Island Complex	515	1,688
	08-SFK1-MS2-TR1	19.21	Riffle	1,976	6,482
	08-SFK1-MS2-TR2	19.29	Riffle	1,976	6,482
	08-SFK1-MS2-TR3	19.42	Island Complex	515	1,688
	08-SFK1-MS2-TR4	19.47	Island Complex	515	1,688
	08-SFK1-MS2-TR5	19.55	Island Complex	515	1,688
	08-SFK1-MS2-TR6	19.60	Run	1,731	5,679
	04-SFK-RF3	19.80	Riffle	1,976	6,482
	04-SFK-RN3	20.10	Run	1,731	5,679
	07-SFK1-RF1	24.21	Riffle	1,976	6,482
	04-SFK-RF2	24.68	Riffle	1,976	6,482
	TOTAL			**24,870**	**81,594**
SFK-B	04-SFK-RN2	24.91	Run	535	1,756
	04-SFK-IC2	25.67	Island Complex	813	2,668
	05-SFK2-RF1	26.22	Riffle	3,406	11,175
	05-SFK2-RN4	27.03	Run	535	1,756
	05-SFK2-IC1	27.42	Island Complex	813	2,668
	05-SFK2-RN7	28.07	Run	535	1,756
	05-SFK2-RN6	29.24	Run	535	1,756
	05-SFK2-RN3	30.19	Run	535	1,756
	05-SFK2-RN5	31.37	Run	535	1,756
	05-SFK2-RN2	31.75	Run	535	1,756
	05-SFK2-PL1	33.16	Pool	105	344
	05-SFK2-RN1	33.80	Run	535	1,756
	TOTAL			**9,420**	**30,905**
SFK-C	05-SFK3-RN1	34.81	Run	5,656	18,557
	04-SFK-RF1	36.54	Riffle	5,321	17,458
	04-SFK-PL1	36.58	Pool	252	827
	04-SFK-RN1	36.62	Run	5,656	18,557
	05-SFK3-PL1	39.83	Pool	252	827
	05-SFK3-PL2	40.93	Pool	252	827
	TOTAL			**17,390**	**57,054**

Note:

Data derived from habitat mapping in SFK-A, SFK-B, and SFK-C of the South Fork Koktuli River.

TABLE 15
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in Tributary SFK 1.190

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
Tributary SFK 1.190	Run	21.7%	1,306	4,285	Yes	24.7%	1,483	4,864
	Riffle	66.4%	3,986	13,078	Yes	75.3%	4,524	14,844
	Pool	11.9%	715	2,345	No	0.0%	0	0
	Island Complex	0.0%	0	0	No	0.0%	0	0
	TOTAL	**100.0%**	**6,007**	**19,708**		**100.0%**	**6,007**	**19,708**

Note:

Data derived from habitat mapping, and adjusted composition to reflect habitat types represented by transects in Tributary SFK 1.190 of the South Fork Koktuli River.

TABLE 16
Stream Lengths Assigned to Each Transect in Tributary SFK 1.190

				Stream Length	
Reach	**Transect**	**River Kilometer**	**Habitat Type**	**Meters**	**Feet**
Tributary SFK 1.190	08-SFK-190-TR1	0.64	Run	371	1,216
	08-SFK-190-TR2	0.66	Run	371	1,216
	08-SFK-190-TR3	0.67	Riffle	2,262	7,422
	08-SFK-190-TR4	0.70	Riffle	2,262	7,422
	08-SFK-190-TR5	0.71	Run	371	1,216
	08-SFK-190-TR6	0.73	Run	371	1,216
	TOTAL			**6,007**	**19,708**

Note:

Data derived from habitat mapping in Tributary SFK 1.190 of the South Fork Koktuli River.

TABLE 17
Wet, Average, and Dry Conditions for Various Lifestages of the Target Species at Hydrology Gage SK100B

		Wet Condition			Average Condition			Dry Condition		
Species	Lifestage	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Chinook Salmon	Adult Migration	Jul-06	Aug-06	240	Jul-08	Aug-08	145	Jul-07	Aug-07	73
	Spawning	Jul-06	Aug-06	240	Jul-08	Aug-08	145	Jul-07	Aug-07	73
	Fry Emergence	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
	Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145
	Juvenile Outmigration	Apr-05	Jun-05	335	Apr-06	Jun-06	249	Apr-07	Jun-07	146
Coho Salmon	Adult Migration	Aug-06	Oct-06	386	Aug-05	Oct-05	307	Aug-07	Oct-07	273
	Spawning	Aug-06	Nov-06	321	Aug-05	Nov-05	266	Aug-07	Nov-07	261
	Fry Emergence	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
	Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145
	Juvenile Outmigration	Apr-05	Jun-05	335	Apr-06	Jun-06	249	Apr-07	Jun-07	146
Chum Salmon	Adult Migration	Jun-08	Jul-08	375	Jun-06	Jul-06	191	Jun-07	Jul-07	100
	Spawning	Jul-06	Aug-06	240	Jul-08	Aug-08	145	Jul-07	Aug-07	73
	Fry Emergence	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
	Juvenile Outmigration	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
Sockeye Salmon	Adult Migration	Jul-06	Sep-06	271	Jul-05	Sep-05	252	Jul-08	Sep-08	166
	Spawning	Jul-06	Sep-06	271	Jul-05	Sep-05	252	Jul-08	Sep-08	166
	Fry Emergence	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
	Rearing	Apr-05	Jun-05	335	Apr-06	Jun-06	249	Apr-07	Jun-07	146
	Juvenile Outmigration	Apr-05	Jun-05	335	Apr-06	Jun-06	249	Apr-07	Jun-07	146
Rainbow Trout	Adult Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145
	Spawning	May-05	Jun-05	458	May-06	Jun-06	355	May-07	Jun-07	186
	Fry Emergence	Jul-06	Sep-06	271	Jul-05	Sep-05	252	Jul-08	Sep-08	166
	Juvenile Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Dolly Varden	Adult Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145
	Spawning	Aug-06	Sep-06	350	Aug-07	Sep-07	222	Aug-08	Sep-08	150
	Fry Emergence	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
	Juvenile Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145
Arctic Grayling	Adult Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145
	Spawning	Apr-05	May-05	383	Apr-06	May-06	238	Apr-07	May-07	157
	Fry Emergence	May-05	Jun-05	458	May-06	Jun-06	355	May-07	Jun-07	186
	Juvenile Rearing	Oct-04	Sep-05	229	Oct-05	Sep-06	190	Oct-06	Sep-07	145

Note:

Data derived from daily flows measured at Hydrology Gage SK100A (USGS Gage No. 15302250) from October 1, 2004, through September 30, 2008.

TABLE 18
Wet, Average, and Dry Conditions for Various Lifestages of the Target Species at Hydrology Gage SK119A

		Wet Condition			Average Condition			Dry Condition		
Species	Lifestage	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Chinook Salmon	Adult Migration	Jul-06	Aug-06	50	Jul-05	Aug-05	29	Jul-07	Aug-07	16
	Spawning	Jul-06	Aug-06	50	Jul-05	Aug-05	29	Jul-07	Aug-07	16
	Fry Emergence	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
	Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27
	Juvenile Outmigration	Apr-05	Jun-05	86	Apr-06	Jun-06	57	Apr-07	Jun-07	31
Coho Salmon	Adult Migration	Aug-06	Oct-06	72	Aug-05	Oct-05	67	Aug-07	Oct-07	50
	Spawning	Aug-06	Nov-06	58	Aug-05	Nov-05	55	Aug-07	Nov-07	44
	Fry Emergence	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
	Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27
	Juvenile Outmigration	Apr-05	Jun-05	86	Apr-06	Jun-06	57	Apr-07	Jun-07	31
Chum Salmon	Adult Migration	Jun-08	Jul-08	83	Jun-06	Jul-06	38	Jun-07	Jul-07	19
	Spawning	Jul-06	Aug-06	50	Jul-05	Aug-05	29	Jul-07	Aug-07	16
	Fry Emergence	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
	Juvenile Outmigration	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
Sockeye Salmon	Adult Migration	Jul-05	Sep-05	60	Jul-06	Sep-06	53	Jul-08	Sep-08	38
	Spawning	Jul-05	Sep-05	60	Jul-06	Sep-06	53	Jul-08	Sep-08	38
	Fry Emergence	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
	Rearing	Apr-05	Jun-05	86	Apr-06	Jun-06	57	Apr-07	Jun-07	31
	Juvenile Outmigration	Apr-05	Jun-05	86	Apr-06	Jun-06	57	Apr-07	Jun-07	31
Rainbow Trout	Adult Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27
	Spawning	May-05	Jun-05	119	May-06	Jun-06	84	May-07	Jun-07	42
	Fry Emergence	Jul-05	Sep-05	60	Jul-06	Sep-06	53	Jul-08	Sep-08	38
	Juvenile Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Dolly Varden	Adult Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27
	Spawning	Aug-05	Sep-05	79	Aug-07	Sep-07	50	Aug-08	Sep-08	37
	Fry Emergence	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
	Juvenile Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27
Arctic Grayling	Adult Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27
	Spawning	Apr-05	May-05	107	Apr-06	May-06	56	Apr-07	May-07	34
	Fry Emergence	May-05	Jun-05	119	May-06	Jun-06	84	May-07	Jun-07	42
	Juvenile Rearing	Oct-04	Sep-05	49	Oct-07	Sep-08	37	Oct-06	Sep-07	27

Note:

Data derived from daily flows measured at Hydrology Gage SK119A from October 1, 2004, through September 30, 2008.

TABLE 19
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in UT-B through UT-F

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
UT-B	Run	34.9%	3,800	12,466	Yes	95.3%	10,366	34,009
	Riffle	42.4%	4,602	15,098	No	0.0%	0	0
	Pool	1.7%	188	618	Yes	4.7%	514	1,686
	Island Complex	21.0%	2,290	7,513	No	0.0%	0	0
	TOTAL	**100.0%**	**10,880**	**35,695**		**100.0%**	**10,880**	**35,695**
UT-C	Run	64.6%	5,132	16,839	Yes	65.6%	5,209	17,091
	Riffle	20.4%	1,619	5,310	Yes	20.7%	1,643	5,389
	Pool	1.5%	117	384	No	0.0%	0	0
	Island Complex	13.5%	1,072	3,517	Yes	13.7%	1,088	3,570
	TOTAL	**100.0%**	**7,940**	**26,050**		**100.0%**	**7,940**	**26,050**
UT-D	Run	69.8%	8,046	26,396	Yes	83.3%	9,601	31,500
	Riffle	14.0%	1,616	5,303	Yes	16.7%	1,929	6,328
	Pool	5.9%	686	2,251	No	0.0%	0	0
	Island Complex	10.3%	1,182	3,878	No	0.0%	0	0
	TOTAL	**100.0%**	**11,530**	**37,828**		**100.0%**	**11,530**	**37,828**
UT-E	Run	56.9%	4,999	16,399	Yes	64.1%	5,629	18,469
	Riffle	11.8%	1,033	3,390	Yes	13.3%	1,164	3,818
	Pool	11.2%	984	3,229	No	0.0%	0	0
	Island Complex	20.1%	1,764	5,788	Yes	22.6%	1,987	6,519
	TOTAL	**100.0%**	**8,780**	**28,806**		**100.0%**	**8,780**	**28,806**
UT-E	Run	56.9%	7,413	24,320	Yes	54.6%	7,673	25,174
	Riffle	11.8%	3,142	10,309	Yes	23.1%	3,253	10,671
	Pool	11.2%	3,038	9,966	Yes	22.3%	3,144	10,316
	Island Complex	20.1%	477	1,566	No	0.0%	0	0
	TOTAL	**100.0%**	**14,070**	**46,161**		**100.0%**	**14,070**	**46,161**

Note:

Data derived from habitat mapping. Adjusted composition to reflect habitat types represented by transects in UT-B, UT-C, UT-D, UT-E, and UT-F in Upper Talarik Creek.

TABLE 20
Stream Lengths Assigned to Each Transect in UT-B through UT-F

Reach	Transect	River Kilometer	Habitat Type	Stream Length	
				Meters	Feet
UT-B	08-UTC1-MS1-TR1	6.08	Pool	171	562
	08-UTC1-MS1-TR2	6.14	Pool	171	562
	08-UTC1-MS1-TR3	6.16	Pool	171	562
	08-UTC1-MS1-TR4	6.18	Run	5,183	17,005
	08-UTC1-MS1-TR5	6.21	Run	5,183	17,005
	TOTAL			**10,880**	**35,695**
UT-C	05-UTC1-IC1	16.84	Island Complex	544	1,785
	05-UTC1-RF2	17.36	Riffle	822	2,695
	05-UTC1-RN1	19.34	Run	1,736	5,697
	04-UTC-IC2	19.82	Island Complex	544	1,785
	04-UTC-RN1	23.75	Run	1,736	5,697
	04-UTC-RN2	24.36	Run	1,736	5,697
	04-UTC-RF2	24.59	Riffle	822	2,695
	TOTAL			**7,940**	**26,050**
UT-D	07-UTC2-RN3	26.02	Run	1,920	6,300
	07-UTC2-RN1	29.31	Run	1,920	6,300
	07-UTC2-RN2	30.04	Run	1,920	6,300
	05-UTC2-RF1	32.36	Riffle	965	3,164
	04-UTC-RF3	34.62	Riffle	965	3,164
	04-UTC-RN3	34.76	Run	1,920	6,300
	05-UTC2-RN2	35.64	Run	1,920	6,300
	TOTAL			**11,530**	**37,828**
UT-E	05-UTC2-RF2	36.70	Riffle	1,164	3,818
	04-UTC-IC1	37.91	Island Complex	331	1,087
	08-UTC2-MS1-TR1	41.66	Run	1,876	6,156
	08-UTC2-MS1-TR2	41.73	Island Complex	331	1,087
	08-UTC2-MS1-TR3	41.76	Island Complex	331	1,087
	08-UTC2-MS1-TR4	41.83	Island Complex	331	1,087
	08-UTC2-MS1-TR5	41.88	Island Complex	331	1,087
	08-UTC2-MS1-TR6	41.90	Island Complex	331	1,087
	07-UTC2-RN5	42.71	Run	1,876	6,156
	07-UTC2-RN4	44.63	Run	1,876	6,156
	TOTAL			**8,780**	**28,806**
UT-F	05-UTC3-RN3	48.86	Run	2,558	8,391
	05-UTC3-RN2	52.01	Run	2,558	8,391
	05-UTC3-PL1	56.65	Pool	3,144	10,316
	05-UTC3-RF1	56.83	Riffle	1,627	5,336
	05-UTC3-RF2	57.25	Riffle	1,627	5,336
	05-UTC3-RN1	58.24	Run	2,558	8,391
	TOTAL			**14,070**	**46,161**

Note:

Data derived from habitat mapping in UT-B, UT-C, UT-D, UT-E, and UT-F of Upper Talarik Creek.

TABLE 21
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in Tributary UT 1.190

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
Tributary UT 1.190	Run	0.0%	0	0	Yes	16.7%	541	1,776
	Riffle	100.0%	3,247	10,653	Yes	83.3%	2,706	8,878
	Pool	0.0%	0	0	No	0.0%	0	0
	Island Complex	0.0%	0	0	No	0.0%	0	0
	TOTAL	**100.0%**	**3,247**	**10,653**		**100.0%**	**3,247**	**10,653**

Note:

Data derived from habitat mapping. Adjusted composition to reflect habitat types represented by transects in Tributary UT 1.190 of Upper Talarik Creek.

TABLE 22
Stream Lengths Assigned to Each Transect in Tributary UT 1.190

				Stream Length	
Reach	**Transect**	**River Kilometer**	**Habitat Type**	**Meters**	**Feet**
Tributary UT 1.190	05-UT190-RF1	0.50	Riffle	676	2,219
	05-UT190-RF3	0.91	Riffle	676	2,219
	05-UT190-RF4	1.12	Riffle	676	2,219
	05-UT190-RN1	1.35	Run	541	1,776
	05-UT190-RF5	2.48	Riffle	676	2,219
	TOTAL			**3,247**	**10,653**

Note:

Data derived from habitat mapping in Tributary UT 1.190 of Upper Talarik Creek.

TABLE 23
Wet, Average, and Dry Conditions for Various Lifestages of the Target Species at Hydrology Gage UT100B

		Wet Condition			Average Condition			Dry Condition		
Species	**Lifestage**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**
Chinook Salmon	Adult Migration	Jul-06	Aug-06	260	Jul-08	Aug-08	186	Jul-07	Aug-07	131
	Spawning	Jul-06	Aug-06	260	Jul-08	Aug-08	186	Jul-07	Aug-07	131
	Fry Emergence	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
	Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190
	Juvenile Outmigration	Apr-08	Jun-08	375	Apr-06	Jun-06	312	Apr-07	Jun-07	199
Coho Salmon	Adult Migration	Aug-06	Oct-06	364	Aug-05	Oct-05	293	Aug-07	Oct-07	273
	Spawning	Aug-06	Nov-06	317	Aug-07	Nov-07	281	Aug-05	Nov-05	275
	Fry Emergence	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
	Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190
	Juvenile Outmigration	Apr-08	Jun-08	375	Apr-06	Jun-06	312	Apr-07	Jun-07	199
Chum Salmon	Adult Migration	Jun-08	Jul-08	298	Jun-06	Jul-06	219	Jun-07	Jul-07	142
	Spawning	Jul-06	Aug-06	260	Jul-08	Aug-08	186	Jul-07	Aug-07	131
	Fry Emergence	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
	Juvenile Outmigration	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
Sockeye Salmon	Adult Migration	Jul-06	Sep-06	278	Jul-05	Sep-05	246	Jul-07	Sep-07	200
	Spawning	Jul-06	Sep-06	278	Jul-05	Sep-05	246	Jul-07	Sep-07	200
	Fry Emergence	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
	Rearing	Apr-08	Jun-08	375	Apr-06	Jun-06	312	Apr-07	Jun-07	199
	Juvenile Outmigration	Apr-08	Jun-08	375	Apr-06	Jun-06	312	Apr-07	Jun-07	199
Rainbow Trout	Adult Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190
	Spawning	May-08	Jun-08	498	May-05	Jun-05	335	May-07	Jun-07	190
	Fry Emergence	Jul-06	Sep-06	278	Jul-05	Sep-05	246	Jul-07	Sep-07	200
	Juvenile Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Dolly Varden	Adult Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190
	Spawning	Aug-06	Sep-06	331	Aug-05	Sep-05	283	Aug-08	Sep-08	227
	Fry Emergence	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
	Juvenile Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190
Arctic Grayling	Adult Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190
	Spawning	Apr-08	May-08	367	Apr-06	May-06	334	Apr-07	May-07	220
	Fry Emergence	May-08	Jun-08	498	May-05	Jun-05	335	May-07	Jun-07	190
	Juvenile Rearing	Oct-07	Sep-08	251	Oct-04	Sep-05	243	Oct-06	Sep-07	190

Note:

Data derived from daily flows measured at Hydrology Gage UT100B (USGS Gage No. 15300250) from October 1, 2004, through September 30, 2008.

TABLE 24
Wet, Average, and Dry Conditions for Various Lifestages of the Target Species at Hydrology Gage UT119A

		Wet Condition			Average Condition			Dry Condition		
Species	**Lifestage**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**
Chinook Salmon	Adult Migration	Jul-05	Aug-05	31	Jul-06	Aug-06	27	Jul-07	Aug-07	23
	Spawning	Jul-05	Aug-05	31	Jul-06	Aug-06	27	Jul-07	Aug-07	23
	Fry Emergence	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
	Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25
	Juvenile Outmigration	Apr-05	Jun-05	31	Apr-08	Jun-08	28	Apr-07	Jun-07	24
Coho Salmon	Adult Migration	Aug-05	Oct-05	34	Aug-06	Oct-06	32	Aug-07	Oct-07	25
	Spawning	Aug-05	Nov-05	32	Aug-06	Nov-06	31	Aug-07	Nov-07	26
	Fry Emergence	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
	Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25
	Juvenile Outmigration	Apr-05	Jun-05	31	Apr-08	Jun-08	28	Apr-07	Jun-07	24
Chum Salmon	Adult Migration	Jun-05	Jul-05	31	Jun-08	Jul-08	28	Jun-07	Jul-07	23
	Spawning	Jul-05	Aug-05	31	Jul-06	Aug-06	27	Jul-07	Aug-07	23
	Fry Emergence	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
	Juvenile Outmigration	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
Sockeye Salmon	Adult Migration	Jul-05	Sep-05	32	Jul-08	Sep-08	28	Jul-07	Sep-07	24
	Spawning	Jul-05	Sep-05	32	Jul-08	Sep-08	28	Jul-07	Sep-07	24
	Fry Emergence	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
	Rearing	Apr-05	Jun-05	31	Apr-08	Jun-08	28	Apr-07	Jun-07	24
	Juvenile Outmigration	Apr-05	Jun-05	31	Apr-08	Jun-08	28	Apr-07	Jun-07	24
Rainbow Trout	Adult Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25
	Spawning	May-05	Jun-05	33	May-08	Jun-08	29	May-07	Jun-07	23
	Fry Emergence	Jul-05	Sep-05	32	Jul-08	Sep-08	28	Jul-07	Sep-07	24
	Juvenile Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25
Dolly Varden	Adult Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
	Spawning	Aug-05	Sep-05	33	Aug-08	Sep-08	28	Aug-07	Sep-07	24
	Fry Emergence	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
	Juvenile Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25
Arctic Grayling	Adult Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25
	Spawning	Apr-05	May-05	31	Apr-08	May-08	27	Apr-07	May-07	25
	Fry Emergence	May-05	Jun-05	33	May-08	Jun-08	29	May-07	Jun-07	23
	Juvenile Rearing	Oct-04	Sep-05	29	Oct-07	Sep-08	27	Oct-06	Sep-07	25

Note:

Data derived from daily flows measured at Hydrology Gage UT119A from October 1, 2004, through September 30, 2008.

TABLE 25
Relative and Adjusted Composition of Run, Riffle, Pool, and Island Complex Habitat in the KR

		Habitat Mapping			Transect Weighting			
Reach	**Habitat**	**Percent**	**Length (meters)**	**Length (feet)**	**Transects Selected?**	**Percent**	**Length (meters)**	**Length (feet)**
Koktuli River	Run	30.0%	6,471	21,230	Yes	37.5%	8,089	26,538
	Riffle	30.0%	6,471	21,230	Yes	37.5%	8,089	26,538
	Pool	20.0%	4,314	14,154	No	0.0%	0	0
	Island Complex	20.0%	4,314	14,154	Yes	25.0%	5,392	17,692
	TOTAL	**100.0%**	**21,570**	**70,768**		**100.0%**	**21,570**	**70,768**

Note:

Data derived from habitat mapping. Adjusted composition to reflect habitat types represented by transects in the Koktuli River.

TABLE 26
Stream Lengths Assigned to Each Transect in the KR

				Stream Length	
Reach	**Transect**	**River Kilometer**	**Habitat Type**	**Meters**	**Feet**
Koktuli River	04-MSK-RF2	24.85	Riffle	4,045	13,269
	04-MSK-IC2	25.37	Island Complex	5,392	17,692
	04-MSK-RF1	31.98	Riffle	4,045	13,269
	04-MSK-RN3	43.96	Run	8,089	26,538
TOTAL				**21,570**	**70,768**

Note:

Data derived from habitat mapping in the Koktuli River.

TABLE 27
Wet, Average, and Dry Conditions for Various Lifestages of the Target Species in the KR

		Wet Condition			Average Condition			Dry Condition		
Species	**Lifestage**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**	**Begins**	**Ends**	**Average Flow (cfs)**
Chinook Salmon	Adult Migration	Jul-06	Aug-06	699	Jul-08	Aug-08	446	Jul-07	Aug-07	276
	Spawning	Jul-06	Aug-06	699	Jul-08	Aug-08	446	Jul-07	Aug-07	276
	Fry Emergence	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
	Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
	Juvenile Outmigration	Apr-05	Jun-05	1002	Apr-06	Jun-06	795	Apr-07	Jun-07	489
Coho Salmon	Adult Migration	Aug-06	Oct-06	1022	Aug-05	Oct-05	748	Aug-07	Oct-07	709
	Spawning	Aug-06	Nov-06	854	Aug-07	Nov-07	721	Aug-05	Nov-05	661
	Fry Emergence	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
	Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
	Juvenile Outmigration	Apr-05	Jun-05	1002	Apr-06	Jun-06	795	Apr-07	Jun-07	489
Chum Salmon	Adult Migration	Jun-08	Jul-08	998	Jun-06	Jul-06	597	Jun-07	Jul-07	357
	Spawning	Jul-06	Aug-06	699	Jul-08	Aug-08	446	Jul-07	Aug-07	276
	Fry Emergence	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
	Juvenile Outmigration	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
Sockeye Salmon	Adult Migration	Jul-06	Sep-06	757	Jul-05	Sep-05	640	Jul-07	Sep-07	490
	Spawning	Jul-06	Sep-06	757	Jul-05	Sep-05	640	Jul-07	Sep-07	490
	Fry Emergence	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
	Rearing	Apr-05	Jun-05	1002	Apr-06	Jun-06	795	Apr-07	Jun-07	489
	Juvenile Outmigration	Apr-05	Jun-05	1002	Apr-06	Jun-06	795	Apr-07	Jun-07	489

Species	Lifestage	Wet Condition			Average Condition			Dry Condition		
		Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)	Begins	Ends	Average Flow (cfs)
Rainbow Trout	Adult Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
	Spawning	May-08	Jun-08	1350	May-06	Jun-06	1116	May-07	Jun-07	588
	Fry Emergence	Jul-06	Sep-06	757	Jul-05	Sep-05	640	Jul-07	Sep-07	490
	Juvenile Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
Dolly Varden	Adult Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
	Spawning	Aug-06	Sep-06	927	Aug-05	Sep-05	766	Aug-08	Sep-08	470
	Fry Emergence	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
	Juvenile Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
Arctic Grayling	Adult Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435
	Spawning	Apr-05	May-05	1161	Apr-06	May-06	803	Apr-07	May-07	520
	Fry Emergence	May-08	Jun-08	1350	May-06	Jun-06	1116	May-07	Jun-07	588
	Juvenile Rearing	Oct-04	Sep-05	637	Oct-05	Sep-06	562	Oct-06	Sep-07	435

Note:

Data derived from synthesized daily flows in the Koktuli River at the confluence of the North and South Forks of the Koktuli River from October 1, 2004, through September 30, 2008.

TABLE 28
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in NFK-A

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
45	2.8	74.1	55.7	18.6	100.0	35.2	94.9
50	3.7	76.9	58.2	21.4	98.2	38.3	94.6
60	5.7	82.2	62.4	26.1	95.4	44.2	94.9
70	8.9	85.7	66.3	28.9	92.0	50.4	96.3
80	12.1	***89.2***	70.2	31.9	***88.5***	56.5	97.7
90	16.1	90.9	74.2	35.2	87.6	60.0	98.8
100	20.1	92.8	78.3	39.0	86.9	64.0	98.7
110	24.4	94.7	82.0	42.5	87.8	66.9	99.0
120	29.1	95.2	84.8	45.9	87.5	69.1	97.8
130	34.7	96.2	87.7	49.6	88.6	73.6	97.7
140	40.6	97.5	***91.0***	53.8	***90.0***	78.4	96.8
153.2	48.3	99.3	94.9	60.0	92.4	84.4	94.5
170	57.4	100.0	98.4	66.3	94.3	***90.1***	93.4
190	65.3	98.0	99.4	69.6	93.3	93.0	92.8
210	72.2	95.4	99.8	72.9	90.7	94.9	91.9
240	80.2	93.5	100.0	81.3	***90.1***	96.7	92.3
270	86.8	95.9	98.4	***90.9***	92.4	100.0	91.0
290	***90.2***	97.2	96.8	95.3	92.7	99.6	***89.4***
320	94.0	99.0	93.6	98.6	90.9	95.8	87.1
350	95.6	99.3	***90.0***	99.6	***90.4***	92.6	84.8
380	96.7	98.6	86.0	100.0	89.2	***87.7***	81.9
420	98.3	96.6	79.5	99.4	87.5	80.7	78.0
460	100.0	94.2	73.6	97.0	86.4	74.4	75.3
500	99.4	91.2	67.6	93.5	85.6	68.9	74.8
550	97.8	91.0	62.6	***89.6***	87.7	64.3	76.9
600	96.2	***89.8***	59.5	82.7	89.4	60.0	81.0
650	93.7	89.1	56.7	76.7	***90.3***	55.8	85.6
700	***89.9***	89.6	54.4	73.4	91.3	52.3	***90.3***
750	86.2	89.4	52.9	70.3	91.5	48.9	95.3
800	83.8	89.1	50.9	67.3	91.4	47.8	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 29
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in NFK-A

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
45	17.6	100.0	17.0	30.0	100.0	100.0	35.8	51.9	57.4
50	19.7	97.6	20.8	32.8	96.6	95.8	39.2	54.4	61.4
60	23.3	93.3	28.6	37.6	***89.9***	***88.0***	45.2	59.0	68.9
70	26.6	***90.2***	37.1	43.3	85.2	81.0	48.4	61.7	73.5
80	29.7	87.0	45.6	48.9	80.6	74.0	51.8	64.3	77.9
90	32.7	87.4	52.7	52.9	79.3	71.3	55.4	66.6	80.6
100	36.1	87.3	60.9	57.4	78.0	68.3	59.0	69.2	84.2
110	39.7	***90.3***	64.5	60.6	78.1	67.1	63.4	71.4	87.4
120	43.1	92.5	66.7	63.4	76.9	64.7	67.3	72.6	***89.1***
130	47.4	93.8	69.2	67.6	76.4	63.7	71.9	74.7	92.6
140	52.1	94.8	71.7	72.1	75.8	62.8	76.7	77.0	96.1
153.2	57.9	95.0	75.3	77.6	74.9	61.8	82.3	80.0	100.0
170	63.9	95.4	78.3	83.2	74.2	60.9	87.8	82.9	98.8
190	69.1	94.8	79.3	87.5	72.2	58.9	***91.4***	84.2	94.3
210	74.2	92.9	80.7	***90.9***	69.9	56.7	93.8	85.0	***88.4***
240	79.9	***89.7***	82.4	95.1	69.7	56.3	97.0	87.1	81.0
270	86.8	88.4	86.3	96.4	71.2	57.7	100.0	***90.9***	78.5
290	***90.8***	86.9	***88.9***	97.7	71.6	58.4	99.8	92.9	76.3
320	95.8	83.5	92.5	100.0	71.5	59.4	95.9	95.2	72.5
350	98.6	80.7	94.3	98.6	71.1	59.8	***89.1***	97.0	71.1
380	99.9	78.4	96.3	95.1	70.3	59.6	82.4	98.3	69.5
420	100.0	74.9	98.4	***89.6***	68.1	58.7	74.8	99.1	67.4
460	98.8	72.8	100.0	84.3	66.9	58.6	67.1	100.0	67.4
500	96.1	72.4	97.9	78.1	66.5	58.8	59.8	99.3	65.9
550	***91.9***	72.8	97.1	71.4	67.5	60.5	52.3	99.6	64.0
600	84.6	75.6	96.9	65.5	69.1	62.6	46.7	99.8	62.0
650	76.9	80.2	95.6	60.3	71.4	65.2	41.4	99.7	60.8
700	71.1	85.9	93.1	56.3	74.3	68.2	37.0	98.4	60.2
750	65.5	***91.0***	***90.0***	52.8	78.3	72.1	33.3	96.9	59.5
800	60.8	95.3	87.8	50.4	82.1	75.9	30.6	96.4	59.2

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 30
Average Daily Habitat Area for Target Species and Lifestages in NFK-A

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	9.04	7.21	4.09
	Juvenile	5.90	5.87	5.63
Chum Salmon	Spawning	22.65	23.44	21.64
Coho Salmon	Spawning	9.76	9.45	9.36
	Juvenile	7.50	7.55	7.42
Sockeye Salmon	Spawning	10.35	9.73	8.73
	Juvenile	4.46	4.40	4.25
Arctic Grayling	Spawning	12.74	11.38	16.16
	Juvenile	12.01	12.16	12.00
	Adult	4.18	4.00	3.48
Dolly Varden	Spawning	23.85	21.72	21.16
	Juvenile	6.63	6.72	6.81
	Adult	6.80	6.89	7.12
Rainbow Trout	Spawning	11.97	15.34	19.59
	Juvenile	6.48	6.30	5.81
	Adult	10.30	10.39	9.93

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for NFK-A, North Fork Koktuli River, Alaska.

TABLE 31
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in-NFK-B

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
40	1.9	21.4	64.7	27.3	34.4	57.3	48.8
45	2.7	26.8	69.3	31.7	39.0	63.3	49.9
50	3.4	32.1	74.0	36.1	43.5	69.3	50.9
55	4.4	36.5	77.7	40.2	46.7	73.8	52.3
61.8	5.9	42.2	82.3	45.7	50.6	79.5	54.4
70	8.1	47.8	86.1	53.1	53.4	85.5	57.1
80	10.9	54.5	***90.3***	62.2	56.7	***92.8***	60.4
86	13.3	56.9	91.5	67.0	57.2	96.1	62.3
86.9	13.7	57.2	91.6	67.7	57.3	96.5	62.6
90	15.0	58.6	92.4	70.1	57.7	98.0	63.6
100	25.1	58.8	92.9	68.7	65.9	99.1	84.0
110	30.5	62.7	95.5	74.9	67.0	100.0	86.5
120	37.6	66.0	97.9	80.3	67.2	98.5	88.3
129.4	44.2	68.5	98.9	84.2	67.7	97.7	***90.9***
140	52.0	71.3	99.7	87.5	69.5	98.0	94.6
150	59.3	73.3	100.0	***89.7***	71.0	99.6	97.3
160	65.7	74.2	99.6	91.6	72.7	98.8	97.5
169.2	70.7	74.6	99.2	92.4	73.4	96.8	97.1
180	76.5	75.2	98.6	93.7	74.3	94.5	96.5
200	85.0	75.5	96.5	96.5	75.3	***89.9***	94.9
220	***93.9***	78.0	94.5	100.0	77.5	85.5	94.5
240	99.7	81.4	***86.7***	99.2	79.1	78.7	94.5
260	100.0	86.4	77.5	94.2	81.1	73.8	95.5
280	95.7	***89.7***	69.7	***88.1***	83.2	70.3	96.4
300	***90.0***	91.7	64.4	81.7	85.2	68.1	97.1
320	85.5	94.9	60.4	76.5	***88.7***	67.0	98.4
340	81.8	96.9	57.6	73.2	91.6	66.3	98.1
360	78.4	98.0	55.6	70.3	94.0	64.6	98.0
390	75.2	98.5	54.1	66.8	96.7	60.0	99.1
420	71.9	100.0	52.2	64.6	100.0	54.7	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 32
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in NFK-B

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
40	43.1	66.1	8.7	69.0	55.7	47.2	66.8	27.2	36.7
45	49.0	65.7	11.0	72.0	57.4	49.6	73.9	31.4	39.1
50	54.9	65.3	13.2	75.1	59.1	52.1	81.1	35.5	41.6
55	59.4	66.8	15.0	77.4	59.6	53.2	85.6	38.9	43.9
61.8	65.1	69.0	17.5	80.4	60.2	54.7	***90.8***	43.3	47.3
70	70.9	72.1	20.8	83.3	60.3	55.5	94.1	47.4	52.0
80	77.6	75.3	24.7	86.3	60.0	56.3	97.9	52.3	57.6
86	79.7	76.7	27.7	87.5	60.0	57.1	99.5	54.4	60.4
86.9	80.0	76.9	28.1	87.7	60.0	57.2	99.7	54.7	60.7
90	81.0	77.7	29.8	88.4	60.2	57.7	100.0	56.0	62.3
100	76.6	***92.2***	36.0	88.4	71.7	66.4	93.8	61.4	80.2
110	81.3	92.1	43.2	***91.2***	72.8	66.3	92.7	64.4	84.4
120	85.5	93.0	51.2	93.9	74.0	65.6	91.8	67.1	87.5
129.4	***88.6***	94.8	59.2	95.3	75.4	65.2	***88.6***	69.2	***91.0***
140	91.8	95.7	67.5	97.2	77.3	64.9	86.7	71.4	95.5
150	94.0	96.3	74.5	98.4	78.5	64.7	85.5	73.1	98.9
160	95.6	96.9	78.7	99.3	80.2	66.2	85.5	75.6	100.0
169.2	96.6	95.7	81.2	99.7	81.2	67.2	85.1	77.5	99.8
180	97.8	94.4	84.3	100.0	82.4	68.3	84.3	79.8	99.7
200	98.8	91.9	***90.2***	99.6	83.3	69.3	81.8	83.2	98.6
220	99.8	90.9	99.2	98.2	84.9	71.3	78.2	87.3	97.4
240	100.0	92.0	99.6	93.8	86.7	73.6	72.1	88.7	94.1
260	98.9	93.5	99.8	***88.0***	***89.4***	77.0	65.1	***89.8***	91.3
280	96.7	94.1	100.0	82.1	91.3	80.2	57.6	90.7	***89.0***
300	92.5	94.9	98.0	76.1	92.9	82.5	50.4	91.4	88.5
320	***88.2***	96.2	96.6	70.4	94.4	85.8	45.1	93.4	88.6
340	82.9	96.3	93.4	64.7	95.1	***88.7***	41.8	94.5	87.6
360	77.0	96.2	***89.9***	59.1	95.7	91.6	39.3	95.1	86.9
390	68.0	97.9	85.0	51.6	97.7	96.2	36.1	97.4	87.1
420	60.6	100.0	79.7	45.5	100.0	100.0	33.4	100.0	89.3

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 33
Average Daily Habitat Area for Target Species and Lifestages in NFK-B

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	6.68	5.77	2.92
	Juvenile	8.4	7.96	7.00
Chum Salmon	Spawning	15.08	16.90	16.68
Coho Salmon	Spawning	8.25	8.59	8.82
	Juvenile	10.54	10.00	9.06
Sockeye Salmon	Spawning	7.96	8.40	8.73
	Juvenile	10.81	9.79	10.12
Arctic Grayling	Spawning	7.28	8.03	9.31
	Juvenile	16.37	16.07	15.19
	Adult	3.35	3.27	2.59
Dolly Varden	Spawning	10.93	11.22	13.10
	Juvenile	11.25	10.94	10.20
	Adult	10.93	10.43	9.76
Rainbow Trout	Spawning	3.60	4.94	6.23
	Juvenile	5.67	5.40	4.75
	Adult	8.14	8.05	7.16

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for NFK-B, North Fork Koktuli River, Alaska.

TABLE 34
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in NFK-C

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
30	1.5	57.6	57.8	31.4	74.8	42.5	82.4
40	4.1	67.5	67.8	38.2	76.4	54.4	81.0
50	8.3	74.7	76.9	44.2	79.2	63.5	84.8
60	14.4	82.2	82.5	50.9	***86.2***	70.3	***92.2***
70	21.4	***90.2***	85.5	58.0	93.9	76.0	100.0
80	27.9	93.3	86.8	63.9	94.8	80.3	98.1
90	35.8	98.9	***92.0***	71.1	98.7	85.5	***92.4***
100	42.8	100.0	93.4	74.8	100.0	86.9	85.0
110	49.3	99.8	94.3	79.0	99.6	***89.2***	78.2
120	55.3	98.8	94.8	82.5	97.5	92.4	73.3
130	61.4	98.6	95.9	85.1	93.7	97.0	71.5
140	67.1	98.1	97.6	88.3	***90.9***	99.8	67.8
150	72.9	96.8	99.3	***91.6***	87.5	100.0	62.3
160	79.2	95.0	100.0	94.8	85.6	98.4	56.8
170	85.0	93.3	99.7	97.0	85.0	94.9	54.1
180	***89.4***	91.1	98.3	98.2	84.1	***90.5***	53.8
190	93.0	***89.0***	96.2	99.4	82.4	86.0	53.7
200	95.8	87.5	93.9	100.0	81.1	81.7	53.3
210	98.0	86.7	**90.8**	99.3	79.2	78.0	52.3
225	100.0	85.6	86.9	97.4	77.6	73.4	50.6
240	99.9	84.2	82.4	94.2	75.9	70.1	49.1
255	99.0	82.5	78.7	***90.4***	74.1	67.5	48.2
270	98.0	81.4	75.1	86.7	73.1	64.9	47.3
285	97.4	81.7	72.3	84.1	72.9	63.3	46.4
300	95.8	81.7	69.4	81.4	72.8	62.3	45.5
320	92.9	81.7	66.4	78.4	72.7	61.1	44.7
340	***89.2***	80.8	63.9	75.6	71.6	59.6	43.9
360	86.2	79.6	62.8	73.4	69.8	57.9	43.3
380	83.0	79.0	61.4	71.9	69.7	57.1	43.1
400	80.0	78.6	59.7	70.7	70.0	56.2	43.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 35
Percent of Maximum Habitat Area at Specified Flows (for Spawning, Juvenile, and Adult Non-anadromous Salmonids in NFK-C

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
30	31.4	89.6	16.5	48.0	94.0	100.0	41.4	48.5	55.0
40	41.3	***90.0***	27.3	59.6	94.0	96.6	49.4	56.6	66.3
50	49.1	91.4	38.1	66.9	93.9	93.0	58.3	62.9	75.5
60	55.1	93.6	48.0	70.8	95.2	91.8	66.4	68.4	84.3
70	60.1	100.0	54.2	74.3	100.0	96.7	72.4	72.7	***89.8***
80	65.1	99.9	57.4	76.8	99.8	97.9	77.4	76.0	91.7
90	69.9	95.6	63.2	81.1	97.8	97.8	81.6	81.4	96.3
100	73.6	***89.3***	69.2	84.7	***92.6***	94.7	85.0	84.8	97.6
110	77.4	84.2	72.1	***88.7***	86.9	***90.6***	***89.9***	87.7	98.0
120	81.2	80.3	73.9	92.6	81.4	85.7	94.2	***89.5***	99.1
130	84.3	77.7	77.4	95.7	76.9	80.9	95.8	91.0	99.2
140	87.1	73.8	82.0	97.9	73.0	76.3	97.4	93.0	100.0
150	***89.5***	68.8	86.3	99.2	68.2	70.7	98.8	93.9	99.3
160	92.1	64.4	***90.3***	100.0	64.7	66.9	99.8	95.1	98.0
170	94.3	61.6	93.1	99.9	63.2	65.3	100.0	96.5	97.4
180	95.7	59.9	95.2	98.7	62.6	64.3	98.9	97.3	95.1
190	97.0	58.3	96.7	97.5	62.0	63.7	97.8	97.7	92.7
200	98.2	57.0	97.5	95.9	61.7	63.2	96.2	98.0	***89.7***
210	99.1	55.5	98.2	94.1	61.2	62.5	94.3	98.1	86.6
225	100.0	53.4	99.6	***91.0***	60.1	61.3	***91.0***	98.8	83.5
240	99.9	51.2	100.0	87.6	58.8	59.9	87.1	99.2	80.6
255	98.6	49.0	99.1	84.1	57.5	58.4	83.7	99.1	77.9
270	96.8	46.7	97.4	80.8	56.1	56.7	80.6	98.7	74.9
285	95.5	45.2	96.7	77.9	55.8	56.3	77.7	98.9	72.4
300	93.7	44.4	96.6	75.0	55.4	56.0	74.9	99.4	70.3
320	***90.9***	43.6	96.6	72.0	54.6	56.1	71.5	99.8	67.8
340	87.6	42.9	96.1	68.9	53.9	56.1	68.6	100.0	65.8
360	84.5	42.4	95.0	66.2	53.5	56.4	66.2	99.8	63.8
380	81.9	42.1	93.1	64.0	53.2	56.7	63.2	98.9	62.6
400	79.6	41.9	91.2	62.0	52.8	56.7	60.8	98.0	61.9

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 36
Average Daily Habitat Area for Target Species and Lifestages in NFK-C

Species	Lifestage	Avg. Daily Habitat Area (acres) by Water Year Type		
		Wet	Average	Dry
Chinook Salmon	Spawning	7.88	6.20	2.46
	Juvenile	6.83	6.77	6.32
Chum Salmon	Spawning	21.09	22.23	20.22
Coho Salmon	Spawning	12.61	12.54	12.64
	Juvenile	8.72	8.83	8.61
Sockeye Salmon	Spawning	13.27	12.85	11.93
	Juvenile	4.27	4.65	5.07
Arctic Grayling	Spawning	15.02	13.61	16.25
	Juvenile	12.37	12.82	13.31
	Adult	4.96	4.72	3.88
Dolly Varden	Spawning	21.38	20.16	20.69
	Juvenile	7.75	7.95	8.27
	Adult	8.17	8.39	8.77
Rainbow Trout	Spawning	10.03	11.06	12.72
	Juvenile	7.06	6.86	6.22
	Adult	11.20	11.25	10.38

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for NFK-C, South Fork Koktuli River, Alaska.

TABLE 37
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in Tributary NFK 1.190

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
5	0.0	43.9	6.6	0.6	68.7	0.8	76.8
7	0.0	51.3	9.6	1.1	80.1	1.4	76.7
10	0.0	58.1	14.2	1.8	83.4	2.5	***88.3***
12.6	0.4	63.6	18.9	2.5	86.3	4.1	100.0
16	1.3	65.9	26.1	3.5	81.6	7.1	97.8
20	2.5	65.1	34.8	5.2	75.8	10.7	***93.1***
24	4.2	64.6	41.2	6.6	78.1	14.0	86.5
28	6.3	61.7	41.1	6.8	77.3	15.3	74.0
31.6	8.5	56.8	42.0	6.8	73.5	15.7	62.6
35	11.6	61.7	50.6	9.5	81.1	20.2	65.2
40	17.6	65.6	59.5	13.2	***86.7***	23.2	65.1
45	24.9	72.1	68.0	16.9	93.6	30.2	61.3
50	32.6	77.7	76.8	19.8	96.8	40.6	55.2
55	42.1	85.1	***87.3***	22.9	100.0	51.6	50.1
60	50.2	***90.2***	95.7	26.4	97.4	62.1	44.4
65	57.3	94.6	98.1	30.6	92.5	71.9	39.8
70	67.8	99.5	100.0	37.7	***88.5***	83.6	37.2
73.9	74.4	100.0	97.4	46.4	83.1	***93.4***	36.2
80	74.3	97.9	91.9	58.7	81.4	98.1	41.3
85	72.9	92.5	***90.3***	69.6	79.2	100.0	44.3
90	72.8	***90.3***	89.8	***82.8***	79.3	***95.0***	47.1
100	79.2	83.8	90.5	97.3	78.7	77.9	50.5
110	86.7	78.3	87.5	100.0	77.4	72.5	52.3
120	***93.1***	74.7	84.0	95.8	76.0	72.8	51.0
130	100.0	75.7	81.9	***91.5***	78.7	71.2	51.2
140	99.7	74.0	81.9	85.6	80.7	61.0	51.5
150	97.1	74.0	83.4	80.3	86.0	55.4	52.6
160	91.2	73.2	81.7	75.0	92.0	54.5	52.2
170	94.2	75.0	80.9	75.3	96.2	54.1	48.8
180	97.0	75.9	78.8	71.8	95.2	54.1	46.6

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 38
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in Tributary NFK 1.190

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
5	0.0	70.2	0.6	2.5	100.0	83.5	1.4	20.0	33.0
7	0.0	72.0	3.0	3.8	99.5	***91.7***	2.5	27.2	43.1
10	0.0	80.6	7.9	6.3	96.3	96.3	4.8	36.7	58.8
12.6	0.0	***91.3***	13.6	10.5	97.2	100.0	10.3	43.5	70.9
16	0.0	96.9	20.3	18.1	96.3	94.9	18.1	46.7	77.4
20	0.9	100.0	27.7	27.6	95.6	***88.3***	30.2	48.9	85.4
24	3.1	96.7	34.5	32.9	96.3	87.4	32.4	51.6	91.7
28	3.6	***89.8***	36.4	35.8	***89.9***	83.3	32.4	51.8	89.2
31.6	1.7	78.7	32.8	32.4	80.6	78.3	33.6	49.7	85.0
35	4.8	74.2	38.3	39.1	85.0	80.9	44.5	55.6	88.3
40	10.5	65.9	45.6	47.9	85.1	78.8	52.1	63.3	***90.2***
45	16.6	59.8	53.1	63.9	84.5	76.9	53.7	71.9	93.3
50	23.1	55.5	59.6	74.2	81.2	72.1	58.0	78.6	94.5
55	30.2	53.3	67.4	78.7	76.7	66.8	70.0	84.8	97.0
60	36.5	52.0	75.3	82.9	68.8	58.8	78.8	***88.6***	97.8
65	43.5	49.1	83.2	86.7	59.3	50.4	***87.4***	91.5	96.2
70	52.5	46.8	***92.8***	***92.0***	51.4	44.2	95.0	96.2	100.0
73.9	59.5	45.4	98.2	97.1	44.6	38.4	100.0	98.2	98.5
80	65.8	48.8	100.0	96.2	45.1	38.7	***92.2***	99.9	97.0
85	68.8	50.0	99.5	94.8	45.2	38.7	85.8	99.1	94.9
90	71.4	53.2	99.7	93.9	46.6	39.7	81.0	100.0	99.5
100	74.3	56.3	97.7	93.3	50.0	42.0	74.6	98.6	96.4
110	78.4	61.3	96.8	92.0	56.8	48.1	61.8	99.1	94.6
120	84.6	65.5	95.7	92.0	64.0	53.5	53.3	98.8	95.3
130	***91.7***	66.7	95.6	97.3	71.8	60.1	52.6	98.4	93.9
140	95.0	64.0	***90.2***	100.0	76.4	63.8	54.4	95.2	***88.2***
150	97.1	61.6	87.4	99.1	81.4	67.9	54.8	94.3	87.0
160	98.4	58.7	84.6	95.4	85.0	70.8	52.9	92.7	84.8
170	99.6	57.4	84.4	***92.4***	86.9	73.8	51.6	93.4	83.3
180	100.0	55.6	80.3	88.6	86.5	74.4	50.2	91.5	80.4

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 39
Average Daily Habitat Area for Target Species and Lifestages in Tributary NFK 1.190

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	0.14	0.07	0.01
	Juvenile	0.77	0.76	0.68
Chum Salmon	Spawning	0.71	0.58	0.34
Coho Salmon	Spawning	0.19	0.15	0.14
	Juvenile	1.09	1.10	1.00
Sockeye Salmon	Spawning	0.24	0.23	0.13
	Juvenile	0.55	0.53	0.62
Arctic Grayling	Spawning	0.67	0.41	0.18
	Juvenile	1.96	2.05	1.83
	Adult	0.42	0.36	0.30
Dolly Varden	Spawning	0.63	0.47	0.30
	Juvenile	1.13	1.17	1.08
	Adult	1.20	1.26	1.14
Rainbow Trout	Spawning	0.68	0.58	0.61
	Juvenile	0.76	0.72	0.62
	Adult	1.27	1.25	1.08

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for Tributary NKF-1.190, North Fork Koktuli River, Alaska.

TABLE 40
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in SFK-A

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
30	6.8	39.4	47.9	12.1	91.8	26.9	***87.4***
40	11.9	49.8	59.2	18.7	92.4	38.3	93.0
50	17.8	60.8	67.4	26.2	90.4	47.1	95.3
60	24.4	70.0	75.2	33.4	89.8	54.2	97.8
70	31.1	77.5	80.7	39.8	88.5	59.6	99.8
80	38.3	82.0	86.5	46.2	***90.8***	65.8	100.0
90	45.7	85.2	***90.6***	53.3	95.3	72.1	99.8
100	52.9	86.9	93.7	59.3	99.1	78.0	98.5
110	60.4	***90.2***	96.8	66.3	99.8	84.8	96.2
120	67.8	92.8	99.7	73.3	100.0	***91.3***	94.5
130	74.8	95.0	100.0	79.6	97.2	95.4	92.1
140	81.1	97.1	99.4	85.2	94.7	98.1	***89.7***
150	86.3	98.5	97.4	***89.8***	91.4	100.0	86.6
160	***90.1***	99.7	94.9	93.0	***89.5***	100.0	85.3
170	92.9	100.0	92.9	95.5	87.5	98.4	83.8
180	95.0	99.3	91.2	97.1	84.6	96.8	82.0
200	98.1	97.4	***89.6***	99.9	79.7	***92.2***	78.7
220	99.7	95.2	87.8	100.0	74.1	87.7	74.9
240	100.0	93.3	85.0	97.8	69.4	85.0	70.6
260	99.2	92.2	82.6	96.1	66.8	84.0	69.0
280	98.2	92.1	80.3	94.1	68.8	83.1	69.9
300	96.8	91.9	78.1	92.5	70.7	82.3	70.7
320	95.5	92.1	76.1	92.0	74.4	81.9	70.5
350	92.8	91.4	73.8	91.7	79.9	81.3	69.1
380	***90.9***	92.6	72.1	92.0	81.4	81.2	66.6
410	88.0	93.5	70.3	91.9	80.9	80.2	65.5
440	84.3	94.8	69.0	***90.1***	80.3	78.0	64.6
470	81.9	95.9	67.8	87.4	80.2	76.9	64.7
510	79.2	96.9	65.0	84.8	80.6	76.3	64.9
550	76.1	97.3	62.2	82.8	81.2	75.9	66.3

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 41
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in SFK-A

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
30	28.2	85.5	9.5	48.5	92.6	91.5	50.0	28.3	49.1
40	37.8	***91.2***	16.2	61.1	97.4	93.5	65.2	35.4	59.5
50	45.9	93.9	22.3	67.8	98.7	94.0	76.3	41.9	66.8
60	52.6	97.0	29.6	73.4	99.8	94.5	85.4	47.0	74.1
70	57.7	99.0	36.0	78.3	99.8	94.6	***91.4***	51.2	79.7
80	63.2	100.0	40.5	84.0	100.0	96.2	96.9	55.1	83.2
90	68.8	99.0	43.8	88.2	99.9	97.8	98.0	59.4	85.2
100	73.9	97.2	46.4	***91.4***	99.2	98.7	98.9	63.2	86.5
110	80.3	95.3	50.4	94.2	99.3	99.9	99.9	68.3	***89.4***
120	86.7	93.2	54.4	96.9	98.9	100.0	100.0	72.8	91.6
130	***91.8***	91.4	59.0	98.6	97.2	98.7	98.9	76.9	93.8
140	95.7	***89.6***	63.6	100.0	95.6	97.3	96.8	80.6	96.0
150	98.1	86.8	67.6	100.0	93.3	95.4	94.2	83.5	97.8
160	99.6	85.5	71.0	99.8	92.8	95.3	***91.4***	86.0	99.2
170	100.0	83.9	73.8	98.9	91.9	94.7	88.6	88.1	99.9
180	99.9	81.9	76.4	97.9	***89.6***	92.8	86.3	***89.6***	100.0
200	98.7	78.4	79.6	97.0	86.1	***89.8***	84.1	92.0	99.9
220	97.0	75.9	83.0	95.0	82.2	86.7	82.4	93.3	97.8
240	94.9	73.7	85.7	92.7	78.7	83.3	80.2	93.8	95.6
260	94.1	73.9	***88.9***	91.0	77.0	80.9	78.5	94.7	94.7
280	93.9	75.8	91.7	***90.2***	78.8	81.6	78.2	95.4	93.5
300	93.8	77.4	94.1	89.1	80.3	82.4	78.0	95.8	92.1
320	94.1	76.5	96.1	88.6	81.7	83.0	77.2	96.7	91.8
350	94.9	75.1	97.5	88.8	83.9	83.9	76.0	97.7	91.2
380	95.8	73.3	99.9	86.6	84.6	84.2	75.1	99.4	91.2
410	95.6	72.2	100.0	83.9	84.8	84.5	73.7	100.0	90.6
440	93.3	71.9	97.5	80.6	85.0	85.7	72.6	99.9	***89.7***
470	***90.9***	71.5	94.6	77.8	85.2	86.6	71.3	99.3	88.2
510	87.9	70.8	92.1	74.4	84.6	87.4	68.6	98.5	85.8
550	85.4	70.8	91.1	71.6	83.6	88.2	65.4	98.0	84.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 42
Average Daily Habitat Area for Target Species and Lifestages in SFK-A

Species	Lifestage	Avg. Daily Habitat Area (acres) by Water Year Type		
		Wet	Average	Dry
Chinook Salmon	Spawning	15.73	15.92	8.27
	Juvenile	8.25	7.63	7.20
Chum Salmon	Spawning	33.72	35.74	33.13
Coho Salmon	Spawning	16.80	16.22	15.23
	Juvenile	5.43	5.40	5.34
Sockeye Salmon	Spawning	24.72	23.63	24.42
	Juvenile	5.78	5.77	6.17
Arctic Grayling	Spawning	23.16	18.34	23.78
	Juvenile	15.28	15.27	15.50
	Adult	5.70	5.12	4.28
Dolly Varden	Spawning	35.10	32.43	35.79
	Juvenile	8.77	8.74	8.72
	Adult	8.75	8.65	8.52
Rainbow Trout	Spawning	19.67	20.59	24.05
	Juvenile	8.57	7.86	6.95
	Adult	12.99	12.32	11.58

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for SFK-A, South Fork Koktuli River, Alaska.

TABLE 43
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in SFK-B

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
30	2.3	47.5	33.3	13.9	77.4	22.3	87.1
35	4.3	50.0	38.0	17.6	77.0	26.7	87.1
40	6.4	52.1	42.6	21.2	75.2	31.2	85.9
45	9.0	53.4	46.9	24.7	72.9	35.5	83.8
50	11.5	55.2	51.2	28.1	71.7	39.7	83.0
60	16.4	59.3	59.1	34.5	71.8	47.7	83.5
70	21.8	65.0	66.2	41.8	75.3	56.7	87.4
80	29.4	74.9	76.3	50.9	76.6	67.7	89.3
90	38.8	***85.3***	85.1	60.4	76.6	78.4	89.1
100	49.4	95.0	***92.0***	70.2	75.6	***87.6***	86.6
110	62.4	99.5	98.4	80.0	71.7	93.6	82.8
120	71.1	100.0	100.0	86.5	67.4	96.3	80.1
130	77.6	97.1	99.3	***91.1***	65.0	97.7	78.1
140	83.0	94.4	97.7	95.2	62.9	99.3	76.3
150	86.6	***90.7***	92.9	97.3	61.8	99.9	75.6
160	***91.3***	88.1	***88.9***	100.0	63.0	100.0	76.9
170	93.8	84.2	82.7	99.5	66.6	97.3	79.0
180	96.2	80.5	76.5	99.2	70.8	94.7	81.5
190	97.4	77.4	70.5	98.6	76.6	91.3	85.1
200	100.0	77.0	67.0	100.0	81.1	***89.9***	87.9
220	99.8	74.9	59.9	99.1	86.5	82.4	***90.9***
240	100.0	75.4	55.9	98.0	***89.7***	76.4	92.6
260	97.2	76.7	50.3	94.5	92.2	70.6	93.6
280	93.2	79.0	44.8	***89.8***	94.1	66.6	94.3
300	***88.7***	80.5	40.3	84.1	95.4	63.0	95.2
320	83.3	81.0	36.4	77.4	96.2	59.3	95.8
340	76.2	80.4	33.9	68.9	97.7	54.6	96.7
360	71.1	80.2	31.5	64.0	99.1	50.2	97.9
380	65.9	79.7	29.0	59.3	100.0	45.2	99.5
400	61.2	78.8	26.7	54.8	99.9	40.6	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows is referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 44
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in SFK-B

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
30	29.8	99.9	12.5	41.3	91.5	96.2	38.5	40.8	51.7
35	34.7	100.0	17.6	47.1	91.1	94.5	45.0	44.7	57.0
40	39.6	99.7	22.7	52.4	***90.2***	92.1	51.5	48.4	62.4
45	43.8	99.1	27.7	57.4	88.6	***89.2***	57.8	51.0	65.7
50	47.7	99.0	32.4	62.2	88.1	87.4	63.9	53.8	68.9
60	55.6	99.0	42.1	70.1	***88.7***	87.1	72.1	60.3	74.5
70	63.9	98.8	50.6	77.4	92.6	88.6	77.7	68.1	79.9
80	72.8	99.5	61.1	87.0	97.2	***90.9***	85.2	77.8	***87.1***
90	81.6	98.4	72.7	***92.6***	100.0	92.0	***92.2***	***86.3***	92.9
100	***89.5***	95.3	81.7	97.2	98.4	***90.7***	97.0	93.7	98.2
110	95.1	93.2	***87.8***	100.0	93.2	86.4	99.6	97.6	100.0
120	97.7	***89.6***	92.5	99.6	***87.2***	81.5	100.0	99.4	99.2
130	98.8	87.0	95.1	98.8	82.2	77.1	99.2	99.6	96.3
140	99.9	85.4	97.6	97.6	78.3	73.3	97.6	100.0	93.7
150	100.0	85.1	98.6	95.6	76.0	70.8	94.3	99.2	***89.6***
160	99.9	86.1	100.0	93.5	75.2	69.7	***90.8***	98.8	86.5
170	98.6	86.1	99.9	***90.5***	75.2	69.1	86.4	97.2	80.7
180	97.7	86.1	99.9	87.7	75.5	68.9	82.3	95.9	75.0
190	96.2	85.8	98.2	84.7	77.1	69.8	77.6	94.7	69.7
200	95.8	85.5	99.0	83.1	79.0	71.6	73.7	95.4	67.4
220	93.2	85.3	98.6	78.7	82.6	75.4	64.5	95.2	63.2
240	***90.4***	83.7	98.0	75.0	86.3	79.9	57.7	95.8	58.9
260	87.2	83.4	95.7	69.7	***89.9***	84.4	51.4	95.4	55.2
280	83.8	82.7	93.4	64.5	91.9	***88.4***	47.5	94.4	51.6
300	80.2	81.9	***90.5***	59.7	93.3	91.7	44.4	93.5	49.2
320	76.7	81.2	87.3	55.0	94.1	94.4	41.1	92.5	48.0
340	71.9	80.4	83.8	50.2	94.5	96.5	37.5	90.9	46.8
360	68.6	79.9	80.8	46.6	94.9	98.2	34.0	***89.5***	45.5
380	65.0	80.0	76.0	43.1	95.1	99.6	30.7	87.5	44.4
400	61.5	79.9	71.1	40.0	95.0	100.0	27.7	85.4	43.5

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 45
Average Daily Habitat Area for Target Species and Lifestages in SFK-B

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	4.04	4.65	1.11
	Juvenile	4.60	4.33	3.91
Chum Salmon	Spawning	9.67	10.98	8.34
Coho Salmon	Spawning	3.83	3.82	3.63
	Juvenile	3.41	3.36	3.29
Sockeye Salmon	Spawning	7.51	6.78	8.38
	Juvenile	3.84	3.61	3.50
Arctic Grayling	Spawning	5.58	4.54	8.85
	Juvenile	7.90	7.89	7.97
	Adult	2.74	2.50	1.97
Dolly Varden	Spawning	9.01	8.51	11.12
	Juvenile	5.07	4.99	4.92
	Adult	5.25	5.14	5.13
Rainbow Trout	Spawning	5.06	6.01	9.26
	Juvenile	4.44	4.11	3.59
	Adult	6.39	6.03	5.78

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for SFK-B, South Fork Koktuli River, Alaska.

TABLE 46
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in SFK-C

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
5	0.1	48.8	18.2	10.3	85.7	17.5	84.4
7	0.1	54.4	28.5	13.7	***92.8***	21.0	***89.0***
10	1.2	61.6	43.1	19.0	95.4	28.5	94.1
13	3.7	68.7	54.4	25.4	97.6	35.9	96.9
16	7.2	74.5	62.2	31.6	99.4	44.5	99.2
18	9.7	77.8	66.8	35.8	100.0	50.3	100.0
21	14.0	83.8	74.5	42.7	99.5	58.2	98.9
24	19.9	***89.2***	81.0	49.5	97.5	64.9	95.0
27	27.4	93.2	86.0	55.5	93.8	72.0	***90.5***
30	35.2	96.0	***90.1***	61.2	***88.7***	79.0	85.5
33	44.4	98.0	94.8	68.1	82.0	84.9	79.3
36	53.3	99.0	99.2	74.9	76.0	***89.7***	73.2
39	61.9	99.8	100.0	81.1	72.4	92.5	69.1
42	69.7	100.0	99.3	85.7	69.5	95.2	65.4
45	76.0	100.0	97.1	***89.7***	67.6	97.3	62.1
48	81.2	98.8	95.0	92.8	65.0	98.9	58.4
52	86.4	96.5	91.9	95.9	61.2	99.8	53.6
56	***90.6***	93.5	***88.4***	98.1	57.3	99.8	48.9
60	94.2	***90.1***	84.8	99.5	53.3	99.1	44.3
64	96.5	86.5	81.4	100.0	49.1	98.9	39.2
68	98.4	82.5	77.8	99.7	45.1	99.3	34.5
72	100.0	78.5	73.9	98.6	41.5	100.0	30.2
76	99.2	76.6	68.2	97.0	41.3	98.1	29.1
80	98.0	74.8	63.3	94.9	41.1	95.9	28.2
85	95.9	72.5	58.2	***91.6***	40.9	92.6	27.3
90	92.9	69.5	53.8	88.1	40.6	***88.5***	26.5
95	***89.4***	67.0	51.3	84.6	40.4	83.5	25.6
100	85.8	64.8	48.8	80.4	39.8	78.5	24.9
110	79.5	61.0	43.6	71.1	38.4	69.9	23.6
120	73.7	57.3	40.0	62.2	37.0	64.0	22.6

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 47
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in SFK-C

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
5	10.5	***87.5***	1.4	17.4	80.4	73.2	20.7	24.4	18.0
7	16.5	95.6	2.6	29.2	***88.6***	***86.7***	31.5	33.4	25.4
10	25.3	98.7	9.1	43.8	93.4	93.4	51.3	43.4	35.3
13	34.0	100.0	11.7	57.5	97.6	98.4	60.3	51.1	45.3
16	42.1	99.7	15.9	68.2	99.5	100.0	66.5	57.2	53.9
18	46.7	97.6	20.7	73.2	99.7	99.5	69.3	61.2	58.4
21	53.5	93.7	29.6	78.7	100.0	99.2	74.0	67.3	63.7
24	59.6	***89.6***	36.0	83.1	98.7	97.9	79.1	71.8	67.8
27	65.2	86.3	40.6	87.0	96.2	95.6	85.0	75.8	71.7
30	70.5	82.7	48.0	***90.7***	93.0	92.9	***90.3***	79.3	75.3
33	76.0	78.3	56.0	94.2	***88.9***	***89.5***	95.5	82.0	79.3
36	81.3	73.8	61.1	97.6	84.9	86.2	99.8	84.4	83.3
39	84.4	71.1	62.9	99.2	81.9	84.0	100.0	86.0	87.8
42	86.7	69.2	63.7	100.0	78.6	81.5	100.0	87.2	***90.4***
45	88.2	67.3	65.4	99.9	75.6	79.3	99.4	88.7	93.0
48	***89.6***	65.0	68.0	99.7	72.0	76.2	98.1	***90.0***	94.8
52	91.2	61.5	72.2	99.2	67.3	71.9	94.1	91.7	96.7
56	92.9	57.9	76.6	98.6	62.7	67.5	***88.9***	93.4	98.2
60	94.8	54.2	80.0	98.1	58.2	63.0	84.1	95.0	99.6
64	96.6	50.1	83.9	97.6	54.0	58.8	83.1	96.0	100.0
68	98.5	46.5	87.7	97.0	49.9	54.6	82.9	97.0	99.0
72	100.0	43.4	***91.4***	95.9	46.2	50.6	83.1	97.8	97.3
76	99.4	42.5	93.0	92.6	45.1	49.4	80.9	98.8	93.8
80	98.4	41.5	94.1	***89.4***	43.8	48.3	78.4	99.4	***89.7***
85	96.8	40.0	95.7	85.4	42.4	47.1	74.8	99.7	86.0
90	94.8	38.5	97.1	81.2	41.3	46.5	70.8	100.0	81.4
95	92.5	37.1	98.7	77.1	40.5	46.1	65.9	100.0	78.6
100	***90.1***	35.9	100.0	72.9	39.7	45.5	60.8	100.0	75.1
110	84.9	33.6	99.8	64.5	38.2	44.7	51.6	98.9	68.1
120	79.5	31.8	96.4	56.9	37.0	44.4	45.1	96.7	61.8

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text. When three flows are indicated, the middle flow was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage

TABLE 48
Average Daily Habitat Area for Target Species and Lifestages in SFK-C

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	1.67	2.34	0.01
	Juvenile	5.16	4.40	3.40
Chum Salmon	Spawning	5.10	7.10	0.51
Coho Salmon	Spawning	4.82	4.70	4.16
	Juvenile	4.67	3.95	3.62
Sockeye Salmon	Spawning	7.13	6.38	7.99
	Juvenile	2.41	1.99	4.32
Arctic Grayling	Spawning	6.98	4.21	9.78
	Juvenile	7.82	6.67	6.36
	Adult	2.70	2.31	1.51
Dolly Varden	Spawning	8.80	3.82	7.99
	Juvenile	5.89	4.98	4.49
	Adult	5.99	5.05	4.41
Rainbow Trout	Spawning	3.96	4.24	6.00
	Juvenile	3.98	3.35	2.43
	Adult	5.88	5.08	3.59

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for SFK-C, South Fork Koktuli River, Alaska.

TABLE 49
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in Tributary SFK 1.190

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
3	0.0	8.5	3.9	0.2	36.1	1.3	47.4
5	0.0	9.3	8.8	0.5	42.1	2.3	51.5
8	0.1	11.0	18.7	1.1	45.9	4.4	62.0
10	0.3	13.6	26.7	1.7	49.7	6.9	74.5
13	0.7	17.5	35.4	3.3	58.7	11.6	83.9
15	1.1	19.7	39.6	4.4	65.3	14.6	***88.0***
17	2.2	23.6	47.0	6.3	75.4	20.2	95.1
20	4.7	29.0	54.9	9.1	82.5	27.5	99.4
25	10.7	39.3	66.2	14.5	***90.6***	40.4	100.0
30	18.5	49.1	76.0	21.2	99.8	54.5	96.2
35	27.9	57.4	83.5	29.5	98.6	66.2	***86.8***
39	37.3	65.4	***89.1***	37.3	98.5	75.2	80.7
45	49.4	76.8	94.0	47.9	99.2	84.4	74.0
50	58.4	83.5	97.1	55.3	100.0	***89.4***	70.9
60	75.6	***94.4***	100.0	70.4	99.8	96.2	63.8
70	***88.6***	99.6	98.9	83.0	98.2	99.4	59.1
80	95.4	100.0	***92.1***	***92.1***	94.7	100.0	55.2
90	98.9	98.2	82.7	97.8	92.9	99.7	52.9
95	100.0	96.5	77.4	99.3	92.1	99.4	51.9
100	99.7	94.4	70.4	99.5	91.4	97.5	50.9
110	96.8	***90.4***	61.2	100.0	91.7	93.5	48.8
120	***92.6***	85.4	54.3	98.6	94.3	***88.0***	47.9
130	86.9	79.8	46.2	***94.2***	96.9	81.2	47.5
145	77.4	74.2	34.0	85.4	96.8	70.2	47.5
160	68.6	70.2	23.2	76.3	94.8	61.7	48.2
175	59.9	67.1	15.7	66.9	93.7	53.3	48.2
190	50.8	64.1	11.1	57.0	92.6	43.6	49.0
205	41.8	61.9	8.9	48.9	91.2	34.8	50.1
220	33.9	59.5	8.2	42.8	92.5	27.7	52.5
240	25.0	57.1	7.4	33.6	90.9	20.2	55.9

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 50
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in Tributary SFK 1.190

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
3	0.5	50.2	0.1	3.6	30.4	26.6	2.2	3.3	13.2
5	2.3	58.1	0.4	9.9	37.1	35.0	5.3	6.2	20.1
8	5.3	71.3	1.2	19.6	47.6	46.7	10.9	10.2	28.9
10	8.6	83.9	2.9	28.6	57.9	55.6	16.5	13.6	35.7
13	14.2	***91.3***	5.1	42.6	67.7	64.0	24.3	18.0	43.0
15	17.4	93.8	6.1	49.7	72.7	67.7	28.5	20.6	46.1
17	23.6	98.0	7.7	59.2	81.4	73.5	35.7	24.9	50.7
20	31.1	100.0	10.7	68.7	***88.5***	76.6	44.6	29.1	55.7
25	44.0	97.6	18.7	81.0	95.7	78.6	58.7	35.2	62.8
30	56.8	92.6	28.4	***91.9***	100.0	80.0	71.2	41.7	68.6
35	68.3	***88.4***	35.1	97.5	98.8	78.2	82.7	46.6	71.9
39	77.1	85.9	39.2	99.8	97.7	77.9	***90.9***	50.5	73.9
45	85.3	83.6	45.4	100.0	96.6	79.7	97.3	57.6	78.1
50	***90.6***	81.5	49.2	100.0	94.0	79.7	100.0	62.4	81.0
60	97.6	74.3	56.6	99.5	***87.5***	79.4	***90.8***	71.0	87.1
70	100.0	70.1	66.2	98.5	82.4	79.1	81.8	78.7	***91.0***
80	99.9	64.0	74.2	96.4	78.6	79.2	72.7	85.0	91.6
90	99.4	61.4	83.4	93.5	77.1	81.4	58.6	***90.4***	97.8
95	99.2	61.6	88.2	91.8	76.8	82.6	52.1	92.7	100.0
100	99.0	61.9	***90.7***	***89.3***	76.4	83.0	47.0	93.7	98.6
110	97.2	61.6	95.9	84.8	75.6	84.1	40.9	96.5	98.4
120	94.6	59.8	98.9	79.9	74.8	85.1	35.9	97.8	96.4
130	***90.9***	58.0	100.0	74.2	74.4	86.3	31.4	97.7	94.5
145	84.6	57.5	99.3	65.1	74.6	88.7	25.4	95.9	***89.6***
160	77.8	58.3	96.6	56.1	75.4	***90.8***	20.6	93.7	83.0
175	70.1	57.9	93.2	47.2	75.5	92.2	16.9	92.2	77.3
190	61.9	57.5	***89.8***	39.1	75.7	93.7	13.4	92.3	74.7
205	54.5	58.3	86.1	32.6	76.1	95.8	10.6	93.8	73.7
220	48.5	59.2	83.6	27.4	76.2	97.7	8.5	95.9	72.9
240	40.6	61.9	78.1	21.1	76.7	100.0	6.5	100.0	71.9

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 51
Average Daily Habitat Area for Target Species and Lifestages in Tributary SFK 1.190

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	1.01	0.56	0.10
	Juvenile	1.25	1.16	0.96
Chum Salmon	Spawning	4.25	4.08	3.26
Coho Salmon	Spawning	2.71	2.16	2.05
	Juvenile	1.27	1.23	1.06
Sockeye Salmon	Spawning	3.77	4.36	4.35
	Juvenile	1.03	0.89	1.14
Arctic Grayling	Spawning	3.76	1.96	4.45
	Juvenile	3.56	3.50	3.26
	Adult	0.56	0.47	0.35
Dolly Varden	Spawning	5.51	5.69	6.15
	Juvenile	2.00	1.94	1.69
	Adult	2.09	1.96	1.72
Rainbow Trout	Spawning	3.37	3.66	5.01
	Juvenile	1.13	0.98	0.78
	Adult	1.93	1.79	1.53

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for Tributary SFK 1.190, South Fork Koktuli River, Alaska.

TABLE 52
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in UT-B

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
80	52.1	100.0	98.8	78.7	99.6	61.9	100.0
90	64.0	***90.9***	100.0	82.6	100.0	73.7	96.1
105	81.2	78.4	96.8	87.6	***92.3***	***87.2***	***89.0***
120	***94.2***	69.4	***88.1***	***92.1***	82.5	95.0	72.5
135	100.0	61.3	77.3	95.9	81.8	96.4	66.0
150	96.3	53.9	66.3	100.0	73.8	100.0	56.6
165	***88.9***	44.6	53.1	99.0	68.1	***92.1***	55.8
180	79.0	39.9	42.6	93.4	66.8	82.4	56.4
195	70.7	34.2	35.7	***87.3***	64.9	77.3	56.3
201.7	67.4	32.3	34.5	84.5	64.7	76.2	56.4
215	60.0	28.5	32.1	77.9	60.8	73.9	55.2
230	53.8	26.2	28.9	69.3	57.6	68.5	53.5
250	47.1	25.3	26.1	60.4	55.1	62.0	49.1
270	41.2	23.8	25.8	56.3	51.0	61.0	49.4
290	36.2	22.9	24.2	55.7	44.1	58.3	47.5
310	34.0	22.8	22.4	55.1	40.0	55.1	45.5
325	31.6	21.9	21.5	51.6	37.1	52.7	44.0
350	26.5	19.4	19.9	48.8	34.1	50.0	44.7
380	21.4	18.6	18.2	45.9	31.0	49.4	41.2
410	17.9	17.7	15.4	40.6	27.6	44.3	35.0
440	15.7	16.2	14.3	35.6	28.4	41.0	30.3
480	11.6	15.5	14.0	30.8	30.9	39.6	28.0
520	8.8	15.4	13.1	28.7	33.5	36.0	27.3
560	8.1	15.7	10.9	27.1	34.7	31.4	27.9
600	7.2	15.6	9.7	25.8	39.2	26.4	27.7
640	6.3	15.2	8.4	25.3	42.2	23.4	29.0
680	5.9	14.5	6.5	23.5	43.8	19.7	30.2
720	5.6	15.4	4.1	19.8	43.6	16.3	29.8
760	5.2	16.3	2.9	17.3	43.5	13.2	29.5
800	4.5	17.5	2.6	15.8	41.4	11.7	27.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 53
Percent of Maximum Habitat Area at Specified Flows (for Spawning, Juvenile, and Adult Non-anadromous Salmonids in UT-B

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
80	71.0	100.0	94.0	94.4	100.0	100.0	80.6	100.0	100.0
90	75.4	***89.2***	93.6	96.7	***84.3***	***82.3***	***89.1***	98.7	***91.4***
105	80.8	78.2	96.1	100.0	70.0	65.2	97.6	98.9	76.4
120	86.1	70.2	99.2	98.9	64.2	57.9	100.0	99.0	61.8
135	***91.4***	60.3	100.0	98.7	61.4	54.0	99.8	97.6	47.6
150	95.7	60.7	96.9	96.4	61.6	55.6	***93.6***	95.5	36.8
165	99.2	53.1	***88.1***	***89.6***	60.0	54.6	85.2	***88.2***	28.0
180	100.0	49.1	75.0	82.4	57.9	55.3	77.5	79.6	22.1
195	97.0	50.3	60.1	76.2	56.8	57.2	71.0	72.0	19.0
201.7	94.9	51.4	56.1	74.6	56.1	57.4	69.8	70.1	18.4
215	***89.1***	51.0	47.3	70.9	53.0	56.4	67.5	66.7	18.3
230	82.0	49.4	38.3	65.7	50.3	56.3	66.6	62.0	17.9
250	74.1	50.7	31.0	61.0	47.3	55.5	67.3	57.9	18.0
270	69.2	47.6	28.4	58.4	43.9	53.1	69.1	55.1	18.6
290	68.2	43.0	28.7	56.8	41.0	49.0	73.3	53.2	18.3
310	72.4	38.9	30.3	58.7	38.6	43.7	78.8	52.0	18.1
325	72.7	35.5	31.4	59.0	36.8	38.9	76.7	50.2	18.5
350	69.3	36.8	29.9	55.6	37.0	37.1	66.1	45.9	18.0
380	68.2	39.0	27.7	52.5	36.3	34.9	56.6	42.6	17.3
410	61.4	39.8	24.4	46.6	35.3	34.2	52.6	37.4	16.4
440	52.8	40.4	21.9	41.7	35.0	34.9	50.9	34.8	15.8
480	45.7	38.6	17.0	37.2	33.4	34.3	50.4	31.5	15.3
520	41.6	38.0	13.6	34.3	33.4	37.2	51.2	29.1	14.8
560	40.2	36.2	12.6	30.9	35.0	40.0	48.9	27.8	14.2
600	41.3	36.3	13.0	29.6	35.2	40.7	45.1	26.9	13.8
640	41.6	34.0	12.9	28.2	34.9	40.7	40.5	26.4	13.8
680	40.4	29.8	13.1	25.5	35.0	40.7	36.0	26.2	13.7
720	38.4	26.8	13.7	23.0	35.3	40.8	34.8	26.3	13.7
760	36.6	24.2	14.6	20.9	36.0	43.2	34.3	26.9	13.7
800	35.3	24.6	15.7	19.2	37.3	46.3	31.9	27.9	14.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 54
Average Daily Habitat Area for Target Species and Lifestages in UT-B

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	5.03	6.33	8.96
	Juvenile	1.27	1.23	1.51
Chum Salmon	Spawning	4.75	5.57	7.73
Coho Salmon	Spawning	3.84	4.42	4.32
	Juvenile	0.89	0.89	1.02
Sockeye Salmon	Spawning	6.21	6.78	7.80
	Juvenile	0.45	0.50	0.58
Arctic Grayling	Spawning	6.99	7.20	7.60
	Juvenile	1.77	1.75	1.92
	Adult	2.11	2.19	2.74
Dolly Varden	Spawning	6.43	7.29	8.03
	Juvenile	0.90	0.91	0.99
	Adult	0.87	0.88	0.93
Rainbow Trout	Spawning	3.42	4.53	5.35
	Juvenile	2.45	2.49	2.89
	Adult	2.32	2.09	2.58

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for UT-B, Upper Talarik Creek, Alaska.

TABLE 55
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in UT-C

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
70	25.0	97.4	91.9	63.3	***90.1***	47.9	64.8
80	34.0	98.2	95.2	72.3	84.0	55.0	62.0
90	41.2	98.1	97.7	78.4	77.4	62.5	57.8
100	47.6	97.2	99.0	83.0	72.3	70.1	55.3
110	53.4	96.2	99.6	86.2	69.8	78.0	54.1
120	58.4	93.9	99.1	88.0	67.2	84.6	53.0
130	64.8	88.6	99.6	***90.1***	63.8	***91.0***	51.8
140	71.4	83.7	100.0	92.5	59.8	95.8	50.0
150	80.5	83.2	98.8	94.3	57.2	97.7	50.2
160	***90.5***	83.6	96.2	95.5	55.3	98.0	51.0
170	95.1	82.3	92.3	96.7	54.0	98.1	51.2
180	100.0	81.1	***88.3***	100.0	53.0	99.4	51.5
190	99.1	80.2	85.2	99.9	53.0	100.0	52.0
200	97.7	78.9	82.4	99.2	52.8	99.8	52.6
210	96.3	77.0	80.2	97.4	52.7	98.4	53.0
220	95.6	75.4	78.3	96.0	52.8	97.6	53.6
240	95.3	74.4	75.6	95.1	52.5	95.6	54.0
260	***92.2***	73.2	73.9	93.8	53.2	***91.4***	54.5
290	85.8	71.9	71.4	92.2	55.7	87.1	56.5
320	79.9	73.5	67.8	90.9	57.4	84.4	58.8
350	76.9	75.9	65.3	90.6	59.7	80.7	61.5
380	74.8	78.4	63.0	***89.6***	63.1	76.5	65.1
410	72.3	79.9	62.1	88.6	67.6	74.1	69.2
440	70.2	81.3	62.0	87.4	73.1	73.3	73.7
480	67.9	83.2	62.6	86.3	79.9	72.4	81.1
520	67.9	86.4	61.3	86.7	84.7	70.5	85.7
560	68.1	***90.6***	59.6	86.2	86.9	69.4	***89.8***
600	69.2	94.4	58.7	84.2	***90.0***	67.5	94.5
640	70.2	98.3	57.4	82.0	96.1	66.0	98.3
680	70.7	100.0	56.6	81.0	100.0	65.6	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 56
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in UT-C

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
70	55.4	70.1	65.7	75.3	84.5	***94.2***	66.1	97.8	98.6
80	62.2	65.1	90.6	81.6	78.7	84.3	75.1	99.6	100.0
90	68.4	62.6	99.3	86.8	73.5	77.3	82.8	100.0	98.3
100	73.3	59.9	89.5	***90.8***	68.4	71.7	***88.7***	99.2	95.3
110	77.5	57.9	88.5	94.6	64.3	67.2	93.4	99.6	92.8
120	80.3	55.3	***90.8***	96.4	59.7	61.7	96.4	99.5	***90.0***
130	82.7	50.8	91.4	98.2	55.4	57.0	99.2	97.9	85.7
140	85.3	47.3	93.1	99.5	52.0	53.1	100.0	97.2	80.8
150	88.1	47.0	98.5	100.0	51.8	52.0	97.9	98.7	77.8
160	***90.7***	47.8	100.0	99.8	52.3	51.4	95.0	99.8	75.0
170	93.8	48.2	99.2	99.6	51.8	50.5	92.5	99.4	72.0
180	99.0	48.7	98.0	100.0	51.7	49.9	***89.4***	98.9	69.0
190	100.0	48.3	95.6	98.9	51.2	49.0	86.4	98.4	66.9
200	99.6	47.9	92.3	97.5	50.8	48.1	83.3	97.2	64.6
210	97.7	47.5	***90.0***	95.4	50.2	47.3	80.9	95.7	62.3
220	96.1	47.7	88.6	93.5	50.1	46.9	79.1	94.7	60.4
240	93.1	48.2	87.7	***89.7***	50.6	46.5	77.3	92.3	57.4
260	***90.7***	48.8	84.5	86.4	50.9	46.8	76.1	***89.6***	54.5
290	87.5	51.4	80.4	81.7	52.8	48.5	73.1	87.5	52.4
320	87.1	53.5	76.4	78.1	54.3	50.6	69.4	85.8	49.5
350	87.5	56.8	74.1	75.0	57.0	53.9	66.0	84.2	47.3
380	87.0	59.8	72.3	72.7	60.4	57.3	63.8	83.0	45.8
410	85.3	62.6	69.0	70.8	63.9	60.5	61.8	82.2	45.4
440	83.5	66.1	67.5	68.9	67.5	64.2	58.1	83.3	46.6
480	80.8	73.8	67.3	67.1	73.6	71.2	54.3	84.6	48.5
520	79.2	79.1	67.1	65.7	78.1	76.3	50.1	85.9	50.0
560	77.5	85.2	67.9	64.4	83.5	82.1	47.3	87.6	51.4
600	75.8	***93.0***	68.5	63.3	***90.7***	***89.2***	44.9	88.9	52.5
640	74.3	97.6	69.3	62.4	96.5	95.5	42.9	90.4	53.7
680	73.2	100.0	69.3	62.0	100.0	100.0	41.9	92.1	54.9

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 57
Average Daily Habitat Area for Target Species and Lifestages in UT-C

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	3.98	4.31	3.26
	Juvenile	3.53	3.54	3.63
Chum Salmon	Spawning	9.26	9.97	11.66
Coho Salmon	Spawning	6.00	5.98	6.03
	Juvenile	3.38	3.36	3.35
Sockeye Salmon	Spawning	7.10	7.26	7.19
	Juvenile	3.61	3.26	2.70
Arctic Grayling	Spawning	6.43	6.61	7.33
	Juvenile	6.30	6.22	6.06
	Adult	2.37	2.39	2.46
Dolly Varden	Spawning	8.06	8.70	9.17
	Juvenile	3.68	3.61	3.58
	Adult	3.52	3.44	3.47
Rainbow Trout	Spawning	3.67	4.55	5.78
	Juvenile	3.40	3.41	3.48
	Adult	4.39	4.43	4.94

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for UT-C, Upper Talarik Creek, Alaska.

TABLE 58
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in UT-D

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
40	9.2	90.1	65.2	45.9	100.0	36.1	100.0
45	12.1	92.2	68.9	49.8	***91.3***	41.6	***91.8***
50	15.0	94.2	72.5	53.8	82.6	47.1	83.6
55	18.6	95.1	75.5	57.2	77.4	53.5	79.6
60	22.2	95.6	78.7	60.8	71.8	60.3	74.8
65	26.2	95.7	81.6	64.0	70.8	66.2	74.3
70	30.1	95.7	84.6	67.0	70.3	72.2	73.3
80	38.6	95.0	***89.6***	72.2	70.1	81.8	69.0
90	47.9	94.8	93.8	78.4	71.4	87.0	67.6
100	57.5	97.1	97.2	85.6	71.5	***91.4***	70.3
110	66.9	100.0	100.0	***92.8***	72.5	94.2	71.4
120	76.5	98.4	100.0	97.1	70.5	98.5	67.6
130	***86.1***	94.8	97.5	99.8	68.1	100.0	62.0
140	94.0	***89.8***	***91.6***	100.0	63.1	98.5	56.8
150	98.3	85.7	84.3	99.5	58.1	95.4	54.6
160	99.6	80.0	76.8	97.4	52.5	***91.7***	50.9
170	100.0	75.1	70.3	94.9	49.6	87.9	48.5
180	98.8	69.9	63.2	***91.5***	46.6	83.9	46.9
190	95.2	65.0	56.5	87.3	42.7	80.3	44.1
200	***92.1***	61.2	51.3	83.4	41.5	75.8	44.7
220	84.7	51.3	43.0	74.4	39.2	66.4	45.1
240	78.9	46.0	37.2	67.0	38.3	59.8	43.4
260	73.0	43.2	32.2	59.1	38.2	53.2	43.4
280	68.9	41.3	27.7	52.0	38.3	47.3	44.9
300	62.7	38.7	23.2	44.1	38.2	39.9	46.2
320	57.8	39.5	21.7	40.1	38.1	36.1	48.5
340	52.1	40.9	20.7	36.9	38.1	33.1	51.2
360	47.7	41.3	20.2	34.5	38.5	30.6	53.6
380	44.7	41.5	19.8	32.4	40.3	28.6	56.0
400	42.6	42.1	19.5	30.3	42.6	27.1	59.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 59
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in UT-D

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
40	49.9	100.0	46.8	66.2	100.0	100.0	62.0	71.1	***89.4***
45	53.6	98.0	52.7	70.8	***92.3***	***90.4***	69.3	72.1	93.2
50	57.2	96.1	58.6	75.5	84.6	80.7	76.6	73.2	97.0
55	60.4	94.4	59.8	78.5	78.3	74.0	81.5	73.7	98.7
60	63.6	92.7	59.3	81.7	71.4	67.2	86.3	73.8	99.9
65	66.8	***89.6***	59.3	84.5	67.0	62.8	***89.7***	75.0	100.0
70	70.1	86.7	59.2	87.4	62.8	59.1	93.1	76.3	100.0
80	76.2	79.0	64.8	***92.2***	56.2	54.2	98.0	80.9	99.1
90	82.3	73.3	71.6	95.8	54.5	52.8	100.0	86.4	97.2
100	***88.0***	74.7	79.9	98.1	53.9	50.4	99.1	***91.2***	94.0
110	92.9	75.9	***87.8***	99.6	53.1	48.4	98.6	95.8	92.4
120	95.9	73.1	92.5	100.0	49.1	44.9	97.7	98.2	***88.6***
130	98.1	70.0	96.8	99.8	46.4	43.2	95.6	99.7	83.0
140	99.4	67.7	98.9	98.0	44.7	42.8	***91.3***	100.0	75.6
150	100.0	64.6	100.0	95.1	43.9	42.7	86.0	100.0	69.7
160	99.2	59.8	99.1	***91.5***	41.4	40.9	81.2	98.5	63.0
170	97.5	55.1	97.9	87.5	39.1	38.8	76.3	97.0	58.1
180	95.1	50.7	95.8	83.3	36.7	36.5	71.2	95.1	53.2
190	92.1	46.7	***91.5***	78.5	33.7	33.3	66.3	92.9	50.0
200	***89.1***	45.4	87.5	73.8	33.2	32.1	61.7	***91.4***	47.2
220	80.7	42.5	76.8	64.0	31.9	30.2	51.6	86.5	41.4
240	72.8	41.6	68.8	56.0	31.7	29.6	43.4	82.6	37.6
260	63.9	40.6	59.0	48.5	31.2	29.0	36.5	77.3	34.4
280	56.2	40.9	52.9	41.9	31.5	29.3	31.6	73.4	32.3
300	48.4	41.3	48.0	35.6	31.0	28.6	27.5	68.9	30.4
320	43.5	41.4	45.4	32.1	31.3	28.9	25.0	66.9	29.7
340	40.1	41.7	44.1	29.4	32.0	29.6	22.9	66.0	29.7
360	37.5	41.8	42.2	27.6	33.0	30.5	21.4	64.3	28.9
380	35.4	42.6	40.7	26.4	34.6	31.9	20.4	62.7	27.9
400	33.6	43.8	40.1	25.1	36.3	33.4	20.2	61.1	27.2

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 60
Average Daily Habitat Area for Target Species and Lifestages in UT-D

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	5.49	5.84	3.61
	Juvenile	3.33	3.35	3.67
Chum Salmon	Spawning	13.39	16.54	16.75
Coho Salmon	Spawning	8.84	9.36	9.70
	Juvenile	2.10	2.06	2.28
Sockeye Salmon	Spawning	11.56	11.95	11.73
	Juvenile	1.47	1.39	1.39
Arctic Grayling	Spawning	10.77	11.36	16.51
	Juvenile	4.31	4.27	4.77
	Adult	3.14	3.13	3.12
Dolly Varden	Spawning	11.86	13.42	15.76
	Juvenile	2.17	2.11	2.40
	Adult	2.12	2.04	2.34
Rainbow Trout	Spawning	4.36	7.42	11.95
	Juvenile	4.02	4.02	4.04
	Adult	6.01	6.07	6.89

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for UT-D, Upper Talarik Creek, Alaska.

TABLE 61
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in UT-E

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
30	4.2	37.5	38.1	23.2	46.2	30.5	44.1
40	6.5	44.3	49.6	29.4	61.0	42.2	59.7
50	11.2	50.6	61.9	37.2	69.6	54.8	65.2
60	15.6	57.7	72.9	45.3	78.1	66.9	67.5
70	20.7	67.3	82.4	54.7	83.7	77.8	66.3
80	27.2	77.6	***90.0***	64.8	88.5	85.6	65.8
90	34.6	86.3	95.4	74.9	***90.7***	***90.3***	64.8
100	41.3	***91.3***	98.4	82.7	91.7	94.2	61.9
110	47.5	93.6	99.7	***89.0***	91.5	97.7	59.7
120	54.2	96.0	100.0	94.1	90.3	98.9	58.4
130	59.5	98.0	98.7	97.0	***89.9***	99.4	58.0
140	64.3	98.6	95.7	98.6	88.7	99.9	57.7
150	69.5	99.7	93.3	99.8	88.1	100.0	58.0
160	74.2	99.8	***89.9***	100.0	87.1	99.3	58.2
170	78.7	100.0	87.1	99.8	86.7	97.8	58.7
180	83.2	100.0	84.4	99.2	86.4	95.7	58.9
200	***89.9***	98.8	79.0	97.8	84.7	93.4	58.8
220	94.8	97.2	74.0	95.4	83.1	***89.7***	58.6
240	98.4	95.0	68.5	91.9	81.1	85.6	57.8
260	100.0	93.0	63.9	***88.3***	79.6	82.5	56.8
280	100.0	***90.6***	60.0	84.4	77.9	78.8	55.7
300	97.9	87.7	57.5	80.4	76.3	75.3	55.1
320	94.9	85.7	55.1	76.7	75.0	72.7	55.4
340	***91.6***	83.9	53.0	73.5	73.7	70.0	56.0
370	87.4	83.4	50.1	68.9	73.9	65.0	59.0
400	82.9	83.5	47.5	64.7	75.9	60.5	63.5
430	78.6	83.1	45.5	61.0	79.7	57.0	69.5
470	74.7	82.3	43.7	56.8	***87.7***	53.3	79.6
510	70.5	82.6	42.3	52.4	94.6	49.9	***89.6***
550	66.1	84.5	41.0	49.8	100.0	47.4	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 62
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in UT-E

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
30	38.6	56.8	15.4	53.9	53.8	51.2	54.6	26.3	47.9
40	46.3	71.6	17.7	66.4	67.8	64.5	66.2	32.6	57.6
50	56.3	74.4	23.1	77.8	74.8	70.2	77.9	39.4	63.9
60	66.4	75.1	29.3	86.0	80.7	75.0	86.3	46.2	69.6
70	75.0	72.7	35.2	***92.4***	84.6	78.8	***92.9***	52.7	75.7
80	82.7	70.8	39.5	96.1	87.9	82.5	97.4	58.5	78.5
90	***88.9***	69.0	44.1	98.4	88.6	84.8	100.0	63.3	78.6
100	93.3	65.8	48.2	99.5	87.6	85.6	99.8	68.1	80.1
110	95.9	63.1	51.8	99.9	85.3	85.8	96.2	72.2	80.8
120	98.1	61.0	55.1	100.0	83.4	85.7	***92.5***	75.7	82.0
130	99.2	60.3	58.5	99.1	82.8	86.2	87.2	78.9	84.5
140	99.7	59.7	61.1	97.6	81.9	86.1	82.5	81.2	85.7
150	100.0	59.7	64.0	96.4	81.3	86.5	77.0	83.8	***88.3***
160	99.8	59.9	67.1	94.6	80.7	86.2	72.9	85.9	93.1
170	99.6	60.2	70.4	93.1	80.3	85.8	70.6	88.2	95.9
180	99.4	60.2	73.5	***91.7***	79.7	85.5	68.3	***90.2***	98.8
200	98.4	58.1	79.8	87.6	77.7	82.7	62.9	93.5	100.0
220	96.3	56.3	86.4	83.2	76.1	80.6	57.6	96.0	99.6
240	93.8	55.1	***91.1***	78.5	74.5	78.7	52.9	96.8	96.4
260	***91.3***	54.3	93.8	73.9	73.0	77.2	48.8	97.3	92.8
280	87.9	53.7	96.5	69.5	71.5	75.7	44.9	97.9	***89.9***
300	84.1	53.6	98.4	65.2	70.3	74.1	41.4	98.9	87.2
320	80.6	55.0	100.0	61.2	70.3	73.6	38.5	100.0	84.8
340	76.8	56.8	99.2	57.4	70.5	73.4	35.6	99.8	82.0
370	71.3	61.1	94.6	52.6	72.8	75.2	32.3	99.3	79.5
400	65.8	66.6	***90.2***	48.3	76.0	78.3	29.9	99.0	78.3
430	60.2	72.3	85.6	44.5	79.6	81.7	27.7	98.7	77.7
470	53.8	79.8	81.6	40.6	85.1	86.3	25.3	99.6	77.4
510	48.9	***88.5***	79.2	37.5	***90.9***	***92.2***	23.9	99.5	77.8
550	44.9	100.0	75.3	35.1	100.0	100.0	23.0	97.9	79.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 63
Average Daily Habitat Area for Target Species and Lifestages in UT-E

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	3.15	2.18	1.11
	Juvenile	4.58	4.58	4.09
Chum Salmon	Spawning	11.63	12.42	10.26
Coho Salmon	Spawning	10.02	9.47	9.98
	Juvenile	4.84	4.90	4.67
Sockeye Salmon	Spawning	10.42	9.68	8.54
	Juvenile	3.41	3.47	3.52
Arctic Grayling	Spawning	11.85	12.26	15.58
	Juvenile	7.57	7.75	7.86
	Adult	2.80	2.79	2.24
Dolly Varden	Spawning	13.78	13.43	14.36
	Juvenile	5.10	5.16	5.05
	Adult	5.40	5.46	5.23
Rainbow Trout	Spawning	5.65	8.04	10.53
	Juvenile	4.28	4.27	3.66
	Adult	6.35	6.44	5.95

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for UT-E, Upper Talarik Creek, Alaska.

TABLE 64
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in UT-F

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
5	0.0	71.2	33.5	12.6	72.6	19.5	72.2
6	0.0	80.0	42.0	15.8	82.2	25.8	80.8
7	0.0	***89.8***	50.0	19.6	***91.5***	30.8	***89.9***
8	0.0	100.0	56.7	23.4	100.0	36.6	100.0
9	0.2	99.3	61.9	26.6	99.0	43.1	99.4
10	0.5	98.4	67.3	30.1	97.9	50.1	98.8
11	0.8	97.7	72.6	34.2	96.3	56.1	98.3
12	1.6	97.4	76.6	39.4	94.2	62.0	98.3
13	2.6	97.0	80.0	44.0	91.9	66.3	97.8
14	4.0	96.3	84.1	48.9	***90.4***	71.3	96.9
15	5.8	96.0	87.6	55.0	89.2	75.8	96.5
16	7.7	96.1	***91.2***	61.6	87.9	80.6	96.0
18	12.9	96.9	97.3	72.3	85.3	87.2	95.4
20	19.1	97.8	100.0	78.9	81.5	***90.9***	93.8
22	25.4	98.2	99.7	83.8	77.2	93.2	***90.5***
24	32.8	97.9	99.3	***88.2***	73.0	94.4	87.5
26	39.5	97.6	97.4	91.9	69.2	94.4	84.4
28	44.8	97.6	95.3	94.5	66.1	94.7	81.5
30	49.9	97.3	93.6	96.1	63.5	94.3	78.8
32	55.8	96.3	92.5	97.6	61.2	94.8	76.4
34	61.5	94.9	91.5	98.3	59.0	96.4	74.3
36	67.1	93.5	91.2	98.8	56.8	98.0	72.4
39	75.4	91.4	91.0	99.1	53.3	99.7	69.7
42	83.7	90.6	90.6	99.6	52.6	100.0	67.2
45	***92.0***	90.7	***89.7***	100.0	53.6	99.1	66.0
48	94.4	92.4	88.4	99.5	53.8	96.5	62.8
51	96.0	93.5	86.8	98.6	53.6	94.3	59.2
54	96.0	94.2	85.4	97.6	53.1	93.7	55.5
57	97.3	94.3	84.7	96.9	52.6	95.0	53.0
60	100.0	93.6	84.1	96.2	52.1	97.7	52.1

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 65
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in UT-F

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
5	3.7	76.2	0.7	22.5	73.3	70.3	24.4	35.8	38.4
6	6.5	84.2	1.7	29.9	82.5	80.0	32.6	42.2	42.8
7	10.0	***92.1***	2.8	36.8	***91.6***	***89.4***	39.8	48.9	47.1
8	14.6	100.0	4.1	42.7	100.0	98.2	47.3	55.7	51.5
9	20.7	98.6	6.0	48.9	98.8	99.4	53.3	61.0	57.0
10	26.9	97.3	7.9	55.5	97.7	100.0	59.8	66.2	62.2
11	33.2	95.5	10.1	62.3	96.2	99.6	65.2	70.4	67.5
12	39.6	93.7	12.7	69.2	94.6	97.9	70.8	74.5	72.3
13	45.4	91.5	15.6	74.7	92.6	95.8	75.7	78.2	76.8
14	50.9	***89.8***	20.2	79.9	91.3	95.0	80.9	82.6	81.1
15	56.5	88.6	26.9	84.5	***90.2***	92.8	84.9	86.1	84.5
16	62.5	87.1	34.1	***88.7***	89.2	***90.8***	***89.4***	***89.2***	***87.8***
18	73.8	84.7	48.2	95.6	87.7	87.1	95.4	94.5	93.8
20	82.4	82.8	60.4	99.4	85.5	82.5	99.1	96.7	97.3
22	***87.9***	80.4	69.2	100.0	82.5	77.7	99.8	97.4	99.2
24	92.6	78.2	74.2	99.9	79.3	73.1	100.0	97.3	100.0
26	95.8	76.5	75.7	98.3	76.5	69.1	97.6	96.5	99.9
28	97.9	75.3	75.8	96.2	74.3	66.1	95.3	95.6	99.4
30	99.1	73.7	77.3	94.1	71.9	62.8	92.8	95.1	99.3
32	100.0	71.7	77.5	92.1	69.1	59.6	***90.2***	94.2	98.5
34	100.0	69.6	78.7	***90.0***	66.3	56.5	87.2	93.7	97.3
36	99.5	67.4	79.4	87.9	63.7	53.8	84.7	93.5	95.9
39	98.3	64.4	79.5	84.6	60.3	50.2	82.2	93.4	93.2
42	97.4	61.2	83.6	82.0	58.5	48.2	79.4	95.2	92.4
45	96.1	59.3	***89.4***	79.6	57.9	47.4	75.7	97.5	92.5
48	94.7	57.2	94.6	77.5	57.1	46.6	72.4	99.0	93.8
51	92.8	55.0	98.2	75.4	56.0	45.6	69.0	99.7	94.9
54	91.3	52.9	99.0	73.7	54.7	44.6	66.4	100.0	96.0
57	***90.2***	51.2	99.5	72.5	53.5	43.5	64.7	99.9	95.8
60	89.1	49.9	100.0	71.3	52.2	42.5	63.4	99.4	94.3

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 66
Average Daily Habitat Area for Target Species and Lifestages in UT-F

Species	Lifestage	Avg. Daily Habitat Area (acres) by Water Year Type		
		Wet	Average	Dry
Chinook Salmon	Spawning	0.72	0.31	0.17
	Juvenile	2.14	2.12	2.15
Chum Salmon	Spawning	4.28	4.40	3.98
Coho Salmon	Spawning	4.16	3.95	3.87
	Juvenile	2.78	2.83	3.05
Sockeye Salmon	Spawning	4.83	3.81	3.60
	Juvenile	1.77	1.88	2.14
Arctic Grayling	Spawning	4.24	4.75	6.58
	Juvenile	4.39	4.47	4.80
	Adult	1.07	1.01	0.82
Dolly Varden	Spawning	7.19	6.12	6.61
	Juvenile	2.96	2.99	3.21
	Adult	3.34	3.45	3.75
Rainbow Trout	Spawning	3.61	4.54	5.15
	Juvenile	1.92	1.92	1.84
	Adult	3.60	3.64	3.55

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for UT-F, Upper Talarik Creek, Alaska.

TABLE 67
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in Tributary UT 1.190

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
12	14.4	4.5	***88.6***	58.6	24.6	65.2	40.4
15	27.1	6.2	97.9	71.2	31.0	83.6	39.4
18	48.8	8.8	100.0	82.6	33.7	***92.2***	39.9
21	***73.2***	11.7	95.9	***90.9***	35.9	97.1	39.4
24	100.0	15.0	***90.5***	100.0	38.9	100.0	40.7
27	96.3	15.4	78.5	96.1	40.3	95.7	43.8
30	***96.5***	17.8	67.0	96.6	42.2	***86.0***	47.8
33	64.0	20.0	60.3	92.5	45.1	80.7	50.3
36	60.2	23.2	58.1	91.8	48.5	75.9	52.6
39	53.0	25.8	53.8	***89.2***	51.1	69.5	54.5
42	52.4	28.7	49.2	83.7	53.4	63.5	56.2
45	57.4	31.7	44.4	76.7	55.8	57.2	57.5
48	61.7	33.9	39.8	68.9	57.5	50.9	58.1
51	65.0	36.6	36.6	64.0	59.5	45.5	58.9
54	65.4	39.7	35.4	63.0	62.1	40.6	60.0
57	58.6	41.9	33.6	62.2	64.3	35.3	61.4
60	52.6	44.1	31.8	62.4	67.1	30.3	63.4
63	54.8	47.2	30.6	61.0	70.3	26.4	65.5
66	58.3	50.4	29.4	58.4	73.0	23.9	67.4
69	61.3	53.0	27.7	52.3	75.0	21.9	68.8
72	62.5	55.7	26.6	49.2	77.1	20.3	70.2
75	62.9	58.6	25.7	47.7	79.2	18.8	71.6
80	63.9	63.3	25.0	47.0	83.0	16.2	74.1
85	58.8	67.7	24.1	46.7	85.7	14.3	76.2
90	52.1	72.3	24.9	46.2	88.1	12.6	78.5
95	46.9	75.9	25.4	45.5	***90.0***	10.8	80.4
100	42.1	80.7	26.1	44.4	92.9	9.7	83.7
105	36.5	85.6	26.7	44.0	95.7	9.0	87.6
110	32.1	***90.2***	26.9	43.0	97.1	8.3	***91.0***
120	28.4	100.0	27.5	40.7	100.0	7.6	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 68
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in Tributary UT 1.190

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
12	45.1	69.6	13.4	75.2	34.7	29.7	***84.7***	22.3	100.0
15	59.9	63.8	23.0	83.6	35.2	29.5	96.6	29.6	***90.4***
18	73.8	58.6	37.1	***90.6***	35.8	29.3	100.0	36.9	78.4
21	85.0	53.8	49.9	95.3	36.5	29.5	100.0	43.2	65.5
24	***94.4***	52.5	62.0	100.0	39.5	31.9	***93.6***	51.4	56.4
27	93.9	56.6	47.9	98.3	42.7	35.6	82.2	52.0	49.5
30	99.7	57.7	41.8	94.9	47.1	40.7	73.4	56.0	42.4
33	99.5	56.0	30.7	***90.1***	50.5	44.7	64.5	57.6	38.4
36	99.8	57.2	35.3	83.8	53.3	47.0	58.5	63.3	36.5
39	100.0	58.8	40.2	76.6	55.8	49.0	52.3	66.3	34.9
42	97.8	60.2	45.1	69.2	58.0	50.6	48.0	68.7	33.5
45	94.0	61.0	51.2	61.7	59.7	51.7	44.1	70.2	32.0
48	***86.4***	61.0	56.1	53.7	60.7	52.4	40.4	70.3	31.0
51	81.2	61.3	62.1	47.2	62.0	53.5	37.0	71.4	30.2
54	78.9	62.1	68.8	42.9	63.8	55.1	34.4	73.3	29.6
57	75.7	62.7	72.8	39.0	65.2	56.3	31.5	73.0	28.6
60	73.2	63.5	77.8	35.5	67.0	58.0	28.6	73.4	27.8
63	70.7	64.6	82.2	32.5	69.4	60.7	26.2	74.2	27.7
66	68.5	65.8	85.8	30.1	71.5	63.3	24.2	75.2	27.7
69	65.3	66.9	86.1	27.8	72.9	65.5	22.4	75.3	27.9
72	62.2	67.9	87.4	25.9	74.5	67.7	21.0	76.0	28.4
75	59.1	68.9	***89.2***	24.2	76.1	69.9	19.9	77.0	29.0
80	53.9	70.9	92.6	22.1	79.3	73.7	18.9	79.0	30.2
85	50.2	73.2	92.2	21.0	82.0	76.8	18.2	81.6	31.5
90	46.8	75.9	91.5	20.2	84.5	79.8	17.9	84.7	32.8
95	43.6	77.8	91.2	19.3	86.4	81.9	17.7	86.9	34.1
100	41.9	80.6	91.1	18.8	88.4	85.0	16.8	***90.7***	35.9
105	41.2	84.3	93.1	18.3	***90.7***	88.4	16.2	93.8	37.1
110	40.2	**88.3**	95.3	17.7	92.6	***91.8***	15.6	95.5	38.5
120	39.4	100.0	100.0	17.1	100.0	100.0	14.3	100.0	41.8

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 69
Average Daily Habitat Area for Target Species and Lifestages in Tributary UT 1.190

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	0.04	0.03	0.02
	Juvenile	0.04	0.04	0.03
Chum Salmon	Spawning	0.47	0.56	0.62
Coho Salmon	Spawning	0.30	0.30	0.29
	Juvenile	0.11	0.11	0.11
Sockeye Salmon	Spawning	1.01	1.10	1.08
	Juvenile	0.18	0.17	0.16
Arctic Grayling	Spawning	0.64	0.61	0.56
	Juvenile	0.32	0.32	0.33
	Adult	0.01	0.02	0.01
Dolly Varden	Spawning	1.21	1.26	1.21
	Juvenile	0.14	0.13	0.13
	Adult	0.10	0.09	0.09
Rainbow Trout	Spawning	0.84	0.98	1.10
	Juvenile	0.05	0.05	0.04
	Adult	0.14	0.15	0.17

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for Tributary UT 1.190, Upper Talarik Creek, Alaska.

TABLE 70
Percent of Maximum Habitat Area at Specified Flows for Spawning and Juvenile Anadromous Salmonids in the KR

Flow	Chinook Salmon		Chum Salmon	Coho Salmon		Sockeye Salmon	
(cfs)	Spawning	Juvenile	Spawning	Spawning	Juvenile	Spawning	Juvenile
140	24.0	59.0	96.3	64.10	51.0	***89.6***	50.8
160	32.1	62.8	100.0	73.8	52.5	95.0	51.8
180	39.5	65.6	97.7	81.1	52.8	98.0	52.2
200	46.1	68.5	93.8	86.6	52.9	100.0	54.1
220	50.4	70.2	***89.0***	87.6	52.9	99.2	55.8
240	54.3	71.1	86.3	88.9	54.1	97.7	57.6
260	57.8	71.3	85.8	***90.4***	56.3	95.5	59.6
282.7	59.8	71.1	83.9	91.7	60.6	93.7	64.4
310	69.6	76.6	84.7	94.7	71.0	91.8	73.6
340	81.6	83.7	84.7	98.0	82.9	***89.5***	***88.4***
370	***90.1***	***90.1***	85.6	99.7	***91.5***	87.7	96.2
400	95.4	93.6	85.9	98.3	95.3	85.5	97.6
429.8	97.5	97.9	85.9	98.1	99.0	84.1	98.8
449.7	97.3	98.9	85.2	98.9	98.3	83.2	97.0
480	98.1	100.0	83.9	99.8	96.5	81.9	93.4
510	100.0	99.4	83.1	100.0	92.9	81.0	***88.8***
540	99.7	98.0	82.5	98.7	90.6	79.8	83.8
580	97.6	98.2	79.8	96.2	91.6	77.4	84.7
620	94.8	97.9	77.7	92.1	93.2	75.1	86.6
660	91.9	97.0	75.7	***89.2***	94.4	72.5	***88.9***
700	***89.1***	96.6	73.2	86.1	94.5	70.1	91.1
740	85.9	96.3	68.6	83.4	94.6	67.6	92.1
780	85.3	96.6	64.3	81.2	95.1	65.6	93.7
820	86.1	96.3	59.7	78.8	95.3	63.7	95.1
860	86.0	95.6	55.5	76.2	96.1	61.9	96.3
900	84.3	95.1	52.2	74.0	97.1	60.1	97.3
950	81.5	94.5	50.3	71.6	98.0	58.4	98.7
1000	78.6	93.7	47.9	68.7	98.8	56.6	99.3
1050	74.7	93.1	45.0	65.9	99.4	54.7	99.5
1100	71.2	93.2	42.6	63.6	100.0	52.8	100.0

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 71
Percent of Maximum Habitat Area at Specified Flows for Spawning, Juvenile, and Adult Non-anadromous Salmonids in the KR

Flow	Arctic Grayling			Dolly Varden			Rainbow Trout		
(cfs)	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult	Spawning	Juvenile	Adult
140	72.1	73.6	62.8	91.6	62.8	54.1	97.4	49.3	93.9
160	78.6	73.4	64.0	96.7	62.0	54.3	100.0	52.8	94.8
180	84.1	72.3	64.4	99.0	60.0	53.3	98.5	56.8	93.5
200	***89.8***	72.3	69.6	100.0	60.0	54.2	95.9	61.4	92.9
220	93.8	74.9	74.9	98.1	60.5	54.9	***91.6***	64.8	92.8
240	96.4	75.8	79.6	96.1	61.0	55.8	87.5	68.0	93.1
260	97.6	75.1	83.7	93.8	61.5	56.7	83.6	71.0	93.8
282.7	98.1	76.6	87.4	92.1	63.7	59.1	80.7	74.2	95.6
310	98.8	80.3	***91.2***	***90.0***	70.6	66.1	77.2	79.5	96.6
340	100.0	***90.4***	93.3	88.0	81.0	75.8	73.9	86.9	96.4
370	99.4	96.8	93.1	86.7	***90.5***	85.8	70.8	***91.3***	94.6
400	98.4	98.6	93.2	85.4	95.6	***92.9***	67.8	93.7	92.1
429.8	97.6	100.0	92.9	83.8	100.0	99.3	65.7	96.5	92.0
449.7	97.3	98.7	93.7	82.5	99.6	99.6	64.6	97.8	93.9
480	96.8	95.6	95.6	80.8	97.4	98.9	62.7	99.5	98.2
510	95.5	***92.0***	97.1	79.3	94.4	97.3	60.7	100.0	100.0
540	92.3	87.5	97.6	77.4	91.5	95.4	58.7	99.1	98.7
580	***87.8***	86.1	98.6	74.3	91.1	95.0	56.0	98.2	97.3
620	83.7	85.6	99.6	71.0	91.8	95.5	53.4	98.1	97.0
660	80.7	85.9	100.0	68.2	92.4	95.9	50.1	97.7	96.6
700	78.6	87.0	99.6	65.7	93.0	96.3	46.8	97.2	96.8
740	76.0	87.5	98.9	62.6	93.1	96.4	43.7	96.0	96.9
780	74.1	88.5	99.5	59.9	94.1	97.3	41.5	95.6	97.0
820	72.2	***89.6***	100.0	57.6	94.7	97.9	39.7	94.8	96.2
860	69.9	90.6	99.0	55.5	95.2	98.5	37.8	93.9	94.8
900	67.6	91.5	98.3	53.5	96.1	99.1	35.6	94.1	93.9
950	65.0	93.3	99.2	50.7	97.5	99.5	32.6	95.0	94.6
1000	62.0	94.2	99.8	47.8	97.8	99.7	30.2	94.5	94.4
1050	59.3	93.4	99.4	45.8	98.2	99.6	29.3	93.4	93.1
1100	56.9	93.1	99.0	43.5	99.1	100.0	28.3	93.2	94.2

Notes:

Boxed values indicate the flow (as indicated in the far left column) that provides the maximum (100 percent) amount of habitat within the reach for a given species and lifestage. When two flows are indicated as providing 100 percent of habitat, the lower of the two flows was referenced in the text.

Bold italicized values indicate the flow (as indicated in the far left column) that provides approximately 90 percent of the maximum amount of habitat within the reach for a given species and lifestage.

TABLE 72
Average Daily Habitat Area for Target Species and Lifestages in the KR

		Avg. Daily Habitat Area (acres) by Water Year Type		
Species	**Lifestage**	**Wet**	**Average**	**Dry**
Chinook Salmon	Spawning	16.86	16.71	14.07
	Juvenile	20.92	20.66	19.74
Chum Salmon	Spawning	35.36	40.13	45.27
Coho Salmon	Spawning	39.04	39.45	43.21
	Juvenile	16.94	16.29	15.33
Sockeye Salmon	Spawning	40.33	44.53	49.49
	Juvenile	17.71	16.48	16.29
Arctic Grayling	Spawning	58.12	64.07	62.35
	Juvenile	28.21	28.07	27.60
	Adult	14.54	14.18	13.83
Dolly Varden	Spawning	42.95	52.24	65.60
	Juvenile	19.60	19.15	18.16
	Adult	20.58	20.06	18.59
Rainbow Trout	Spawning	19.17	23.19	31.80
	Juvenile	20.59	20.02	19.13
	Adult	24.47	24.77	25.17

Note:

Provided during wet, average, and dry water year types, as determined from habitat duration analysis for the KR, Mainstem Koktuli River, Alaska.

TABLE 73
Sum of Average Daily Habitat Area in Modeled Reaches of the NFK, SFK, UT, and KR

Species	Lifestage	Sum of Average Daily Habitat Area (acres)			
		NFK	SFK	UT	KR
Chinook Salmon	Spawning	19.3	23.5	17.9	16.7
	Juvenile	21.4	17.5	14.4	20.7
Chum Salmon	Spawning	63.1	57.9	47.3	40.1
Coho Salmon	Spawning	30.7	26.9	34.0	39.5
	Juvenile	27.5	13.9	13.9	16.3
Sockeye Salmon	Spawning	31.2	41.2	39.4	44.5
	Juvenile	19.4	12.3	10.7	16.5
Arctic Grayling	Spawning	33.4	29.1	46.1	64.1
	Juvenile	43.1	33.3	24.9	28.1
	Adult	12.3	10.4	11.0	14.2
Dolly Varden	Spawning	53.6	50.5	51.1	52.2
	Juvenile	26.8	20.6	14.8	19.2
	Adult	27.0	20.8	15.1	20.1
Rainbow Trout	Spawning	31.9	34.5	32.6	23.2
	Juvenile	19.3	16.3	15.6	20.0
	Adult	31.0	25.2	22.3	24.8

Note:

Provided for target species and lifestages in modeled reaches of each basin during average water year type, as determined from habitat duration analysis for the NFK, SFK, UT, and KR, Alaska.

FIGURES

Legend

UT-A Mainstem Reach Example

Watershed Boundary

General Deposit Location

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Figure 1
Instream Flow Study Area

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

60°0'0"N 59°55'0"N 59°50'0"N

Black Lake

"Cone (Black) Mountain"

Groundhog Mountain

NFK 1.120 NFK 1.140 NFK 1.170 NFK 1.180 NFK 1.190 NFK 1.240 NFK 1.260 NFK 1.270 NFK 1.300

NFK-D NFK-E NFK-F

Big Wiggly Lake (NFK 1.240.P1)

04-NFK-RN3 04-NFK-IC2 08-NFK2-MS1 08-NFK-190

NFK-C

Kokhuli River

04-NFK-RF2
04-NFK-RN2
04-NFK-IC1
04-NFK-RN1
04-NFK-RF1

NFK-B

05-NFK1-RF1

North Fork Koktuli River

Kaskanak Mountain

Frying Pan Lake

Koktuli Mountain

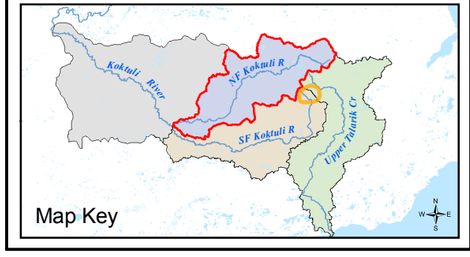
Upper Talarik Creek

05-NFK1-RN1 08-NFK1-MS2 05-NFK1-RF2 05-NFK1-IC1 07-NFK1-RF1 08-NFK1-MS1 05-NFK1-IC3

NFK-A

Koktuli River

South Fork Koktuli River



Legend

- Instream Flow Study Site and Name (05-NFK1-IC3)*
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Study site may include multiple transects.

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Figure 2
North Fork Koktuli River Basin, Reaches, and Instream Flow Study Sites

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

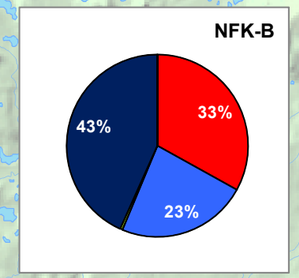
Kilometers 0 1 2

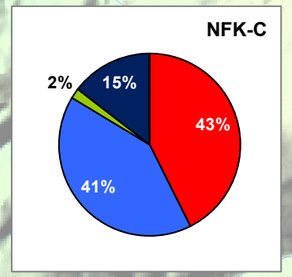
Miles 0 1 2

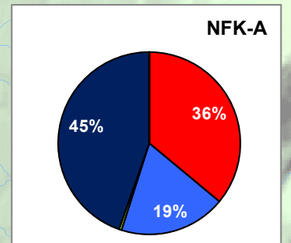
April 2011

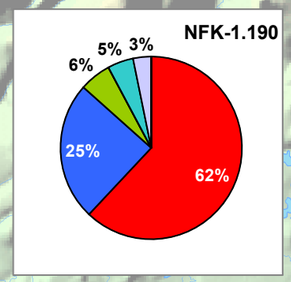
Author: R2 - JJZ

155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N







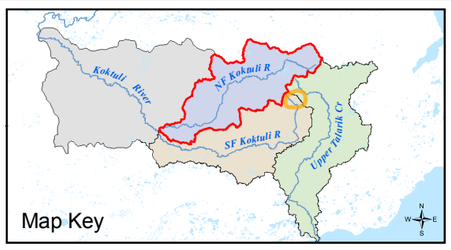


Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
Kaskanak Mountain
Big Wiggly Lake
(NFK 1.240.P1)
Frying Pan Lake
Koktuli Mountain

NFK 1.120
NFK 1.140
NFK 1.170
NFK 1.180
NFK 1.190
NFK 1.240
NFK 1.260
NFK 1.270
NFK 1.300

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F

Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek



Legend

Habitat Types

- Pool
- Run/Glide
- Riffle
- Cascade
- Island Complex
- Backwater/Slough

NFK-A Mainstem Reach Example

NFK 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

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Figure 3
North Fork Koktuli River
Habitat Composition

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

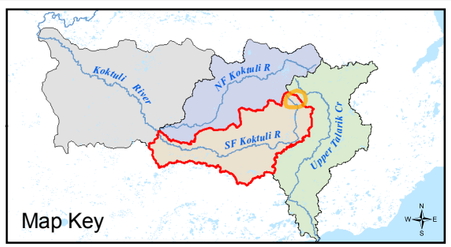
59°55'0"N 59°50'0"N 59°45'0"N

Koktuli River
North Fork Koktuli River
Kaskanak Mountain
SFK 1.340
SFK 1.240
SFK 1.310
SFK 1.190
SFK 1.20
SFK 1.130
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek
Sharp Mountain
Chiquita Lake
Kaskanak Creek

SFK-E
SFK-D
SFK-C
SFK-B
SFK-A

South Fork Koktuli River

05-SFK1-IC1
05-SFK1-RF1
08-SFK1-MS1
04-SFK-IC1
04-SFK-RF3
08-SFK1-MS2
04-SFK-RN3
05-SFK2-RN7
05-SFK2-IC1
05-SFK2-RN4
05-SFK2-RF1
04-SFK-IC2
04-SFK-RN2
04-SFK-RF2
07-SFK1-RF1
05-SFK3-RN1
05-SFK2-RN1
05-SFK2-PL1
05-SFK2-RN2
05-SFK2-RN5
05-SFK2-RN3
05-SFK2-RN6
08-SFK-190
04-SFK-RN1
04-SFK-PL1
04-SFK-RF1
05-SFK3-PL1
05-SFK3-PL2



Legend

- △ Instream Flow Study Site and Name (05-SFK1-IC1)*
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Study site may include multiple transects.

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Figure 4
South Fork Koktuli River Basin,
Reaches, and Instream Flow Study Sites

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

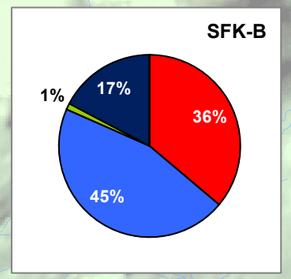
April 2011

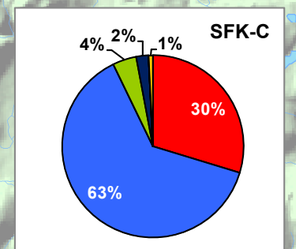
Author: R2 - JJZ

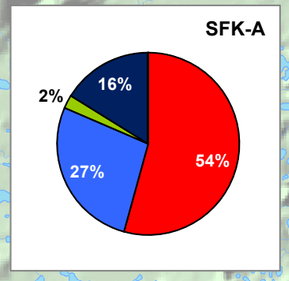
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

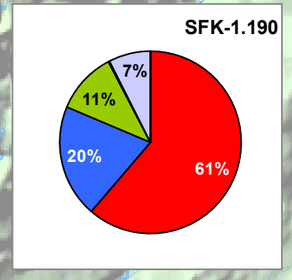
59°55'0"N 59°50'0"N 59°45'0"N

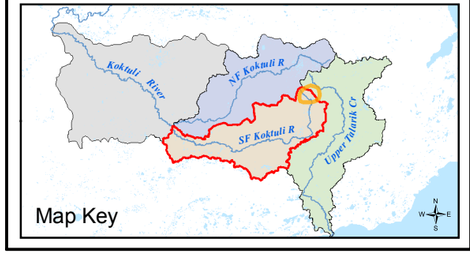
Kokhuli River
North Fork Koktuli River
Kaskanak Mountain
SFK 1.240
SFK 1.340
SFK-E
Frying Pan Lake
SFK 1.310
Koktuli Mountain
SFK-D
Upper Talarik Creek
SFK 1.190
River
SFK-C
Fork Koktuli
SFK-B
South Fork
SFK-A
SFK 1.20
Sharp Mountain
SFK 1.130
Chiquita Lake
Kaskanak Creek











Legend

Habitat Types
- Pool
- Run/Glide
- Riffle
- Island Complex
- Backwater/Slough
- Beaver Pond

SFK-A Mainstem Reach Example
SFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

N W E S

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Figure 5
South Fork Koktuli River
Habitat Composition

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

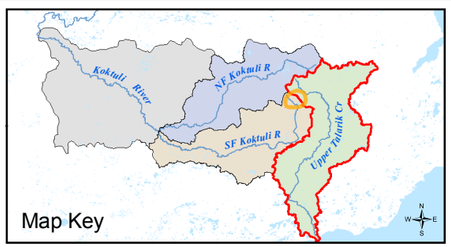
155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain
Nondalton
Big Wiggly Lake
Kokhuli River
North Fork Kokhuli River
Kaskanak Mountain
Frying Pan Lake
Kokhuli Mountain
Roadhouse Mountain
South Fork Kokhuli River
Sharp Mountain
Talarik Creek
Upper Talarik Creek
Chiquita Lake
Kaskanak Creek
First Creek
Lake #2
Newhalen River
Iliamna
Newhalen
Iliamna Lake

UT 1.390
UT 1.410
UT 1.350
UT 1.190
UT 1.60

UT-G
05-UTC3-RN1
05-UTC3-RF2
05-UTC3-RF1
05-UTC3-PL1
05-UTC3-RN2
05-UTC3-RN3
UT-F
07-UTC2-RN4
07-UTC2-RN5
08-UTC2-MS1
UT-E
04-UTC-IC1
05-UTC2-RF2
UT-D
05-UTC2-RN2
04-UTC-RN3
04-UTC-RF3
05-UTC2-RF1
07-UTC2-RN2
07-UTC2-RN1
05-UT190-RF5
05-UT190-RN1
05-UT190-RF4
05-UT190-RF3
05-UT190-RF1
07-UTC2-RN3
04-UTC-RF2
04-UTC-RN2
04-UTC-RN1
04-UTC-IC2
UT-C
05-UTC1-RN1
05-UTC1-RF2
05-UTC1-IC1
UT-B
08-UTC1-MS1
UT-A



Legend

- △ Instream Flow Study Site and Name (08-UTC1-MS1)*
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

* Study site may include multiple transects.

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Figure 6
Upper Talarik Creek Basin, Reaches, and Instream Flow Study Sites

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011
Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Frying Pan Lake

Koktuli Mountain

Talarik Creek

Upper Talarik Creek

Sharp Mountain

Chiquita Lake

Lake #2

First Creek

Newhalen

Roadhouse Mountain

Iliamna

Newhalen

Iliamna Lake

UT 1.390

UT 1.410

UT 1.350

UT 1.190

UT 1.60

UT-G

UT-F

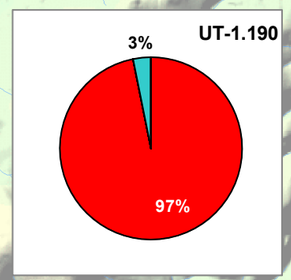
UT-E

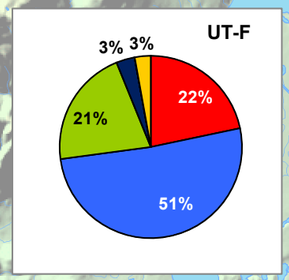
UT-D

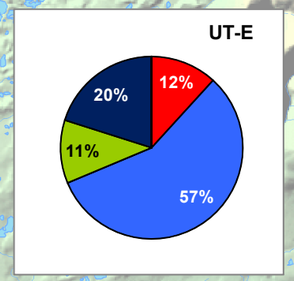
UT-C

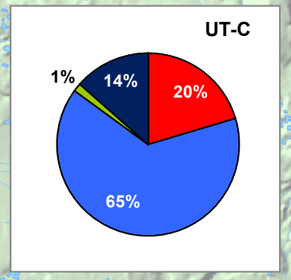
UT-B

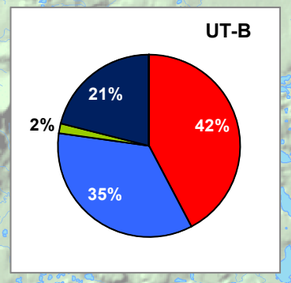
UT-A

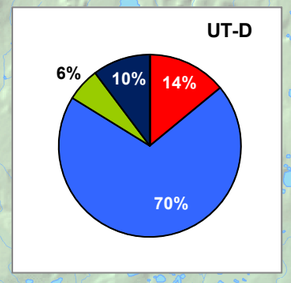


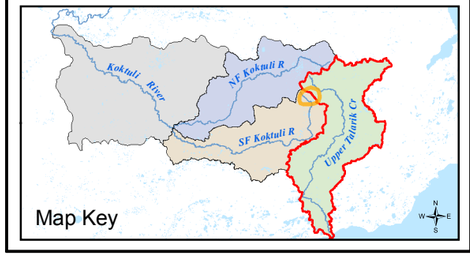












Legend

Habitat Types

- Pool
- Run/Glide
- Riffle
- Cascade
- Island Complex
- Beaver Pond

UT-A Mainstem Reach Example

UT 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

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Figure 7
Upper Talarik Creek
Habitat Composition

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

156°20'0"W 156°10'0"W 156°0'0"W 155°50'0"W 155°40'0"W 155°30'0"W

60°0'0"N

59°55'0"N

59°50'0"N

Swan River

Koktuli River

Koktuli

04-MSK-RF2
(Riffle)

04-MSK-IC2
(Island Complex)

04-MSK-RF1
(Riffle)

River

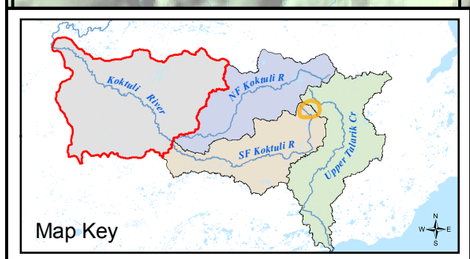
04-MSK-RN3
(Run)

Black
Lake

Koktuli River

North Fork

South Fork Koktuli River



Legend

- Instream Flow Study Site*
- Watershed Boundary
- General Deposit Location

* Study site may include multiple transects.

THE pebble PARTNERSHIP

Figure 8
Mainstem Koktuli River Basin, Instream Flow Study Sites, and Transect Habitat Composition

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

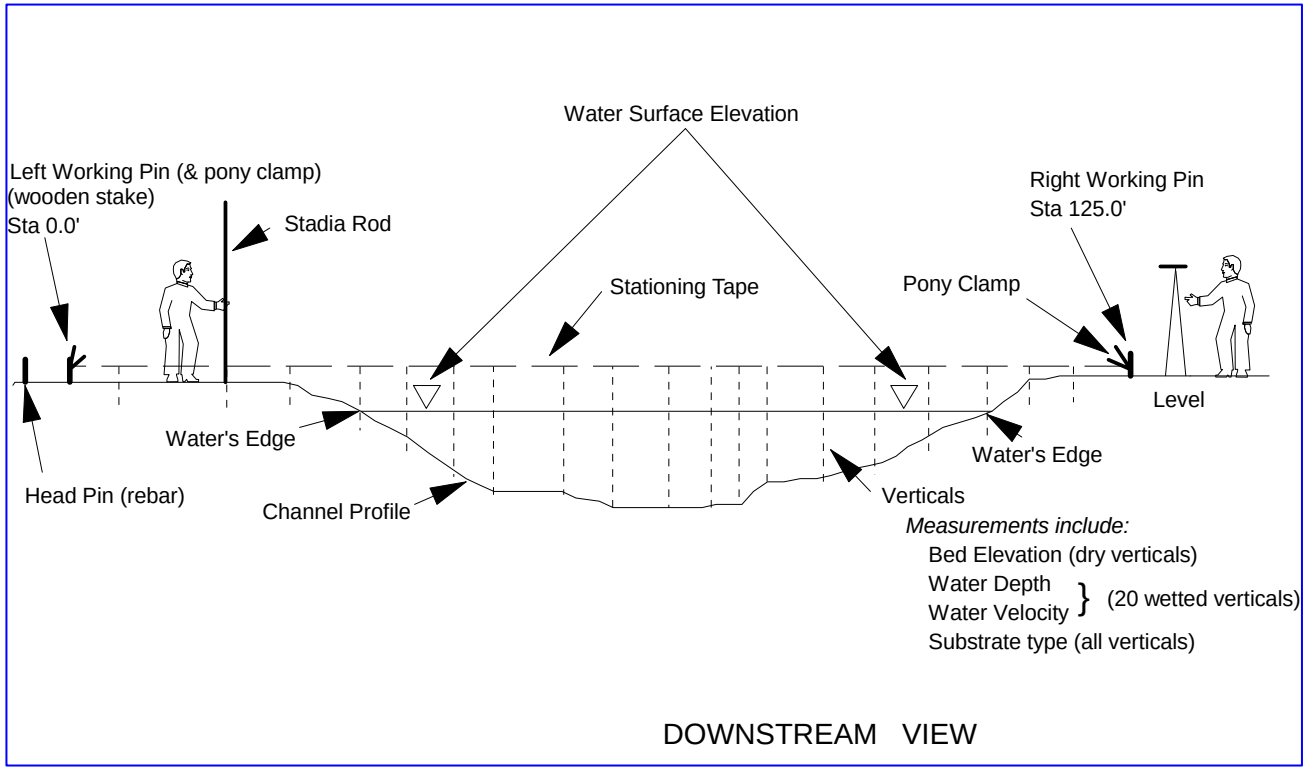


FIGURE 9
Example PHABSIM Cross-channel Transect

Note:
Illustrates representative transect setup and data-collection points across each transect. Head pins and/or tail pins were established on one or both sides of the river (head pins on the left side of the channel and tail pins on the right, looking downstream). The figure above only depicts head pins on the left bank; tail pins, if present, would be located to the right of the right working pin.

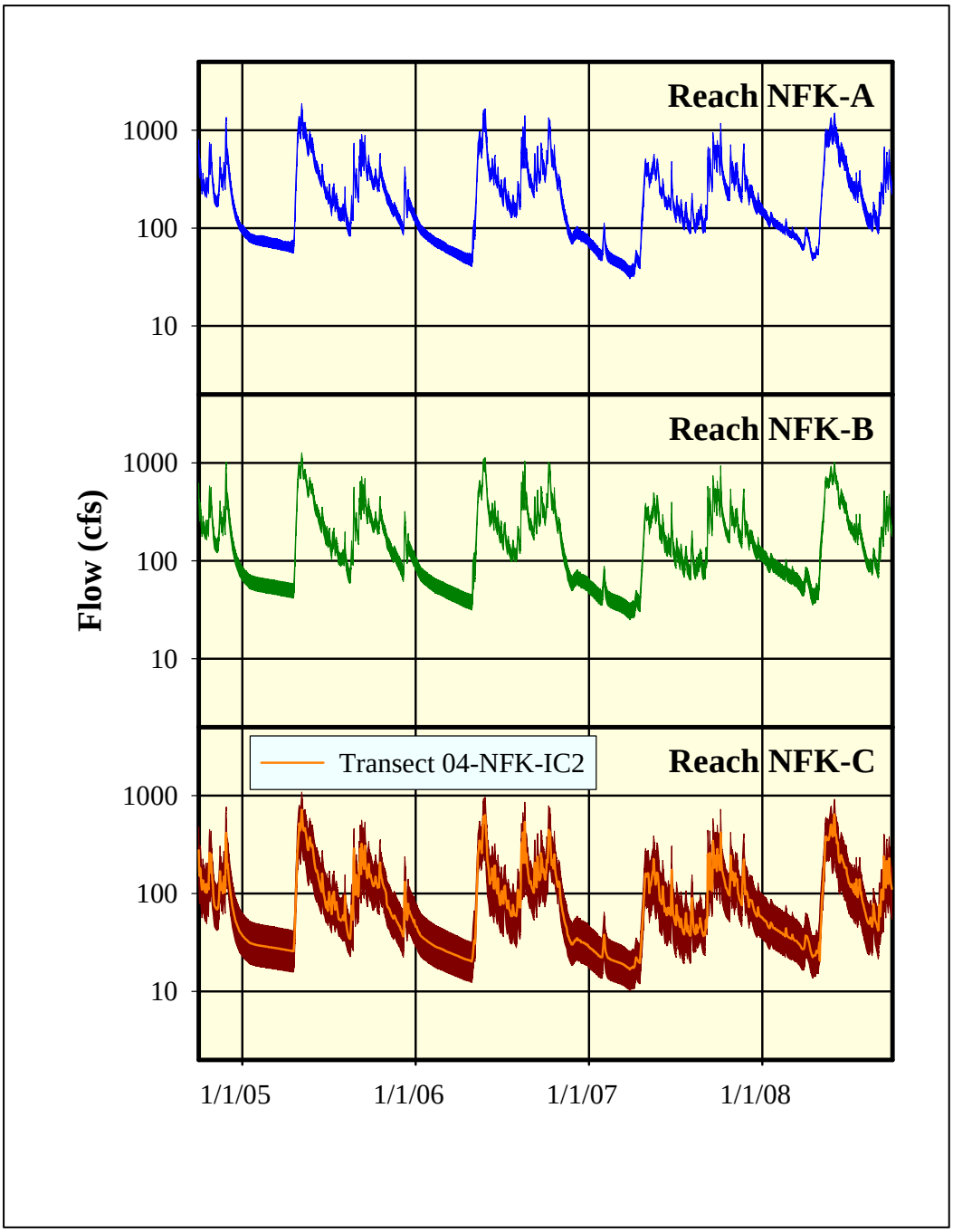


FIGURE 10
Range of Daily Flows and Interpolated Daily Flows in the NFK, October 2004 through September 2008

Note:

Range of daily measured flows NFK-A, NFK-B, and NFK-C and interpolated daily flows at IFIM Transect 04-NFK-IC2 at River Kilometer 33.65 in NFK-C, October 1, 2004, to September 30, 2008.

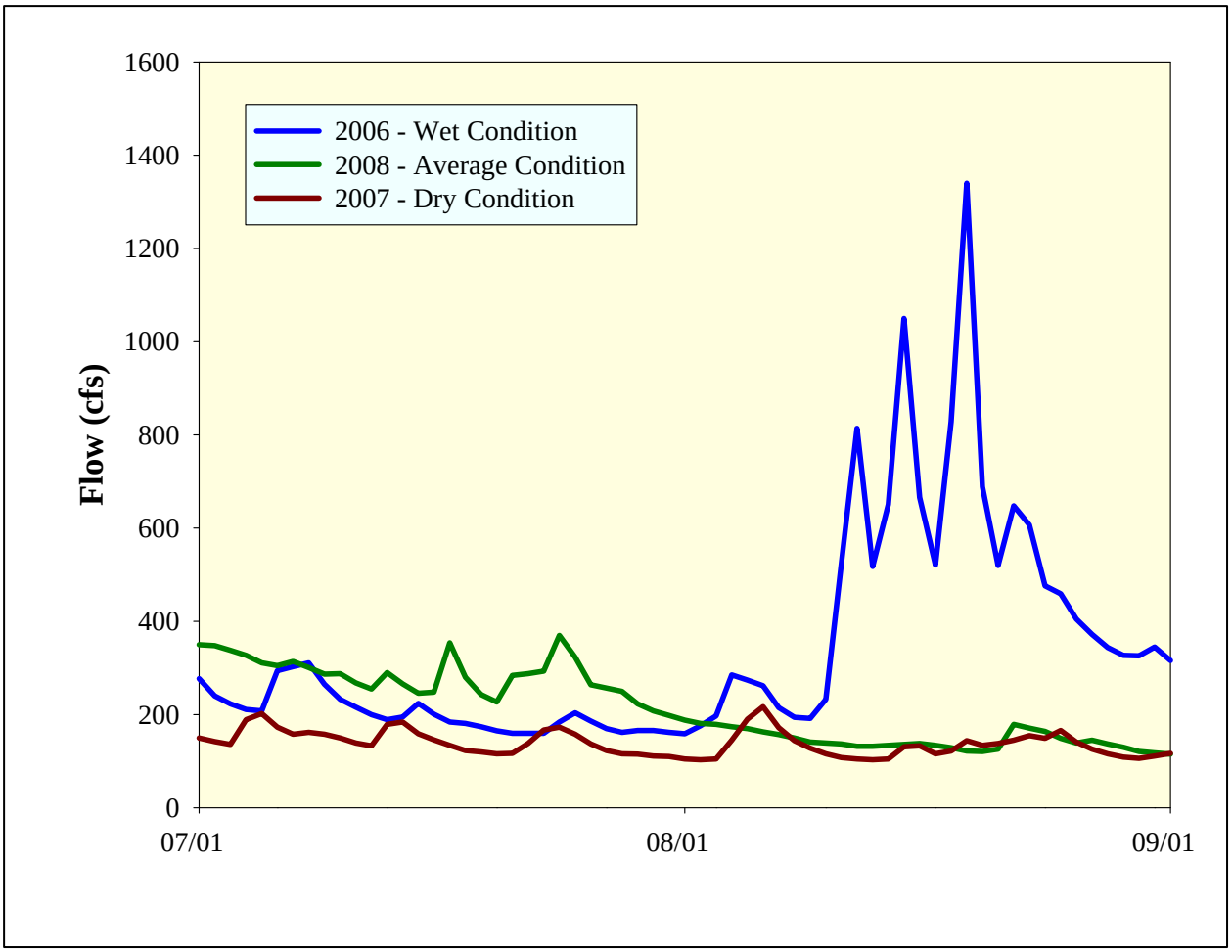


FIGURE 11
Wet, Average, and Dry Conditions in the NFK for Chinook Salmon Spawning from July to September, 2006 through 2008

Note:

Derived from daily flows measured at Hydrology Gage NK100A (USGS Gage No. 15302250) from October 1, 2004, through September 30, 2008.

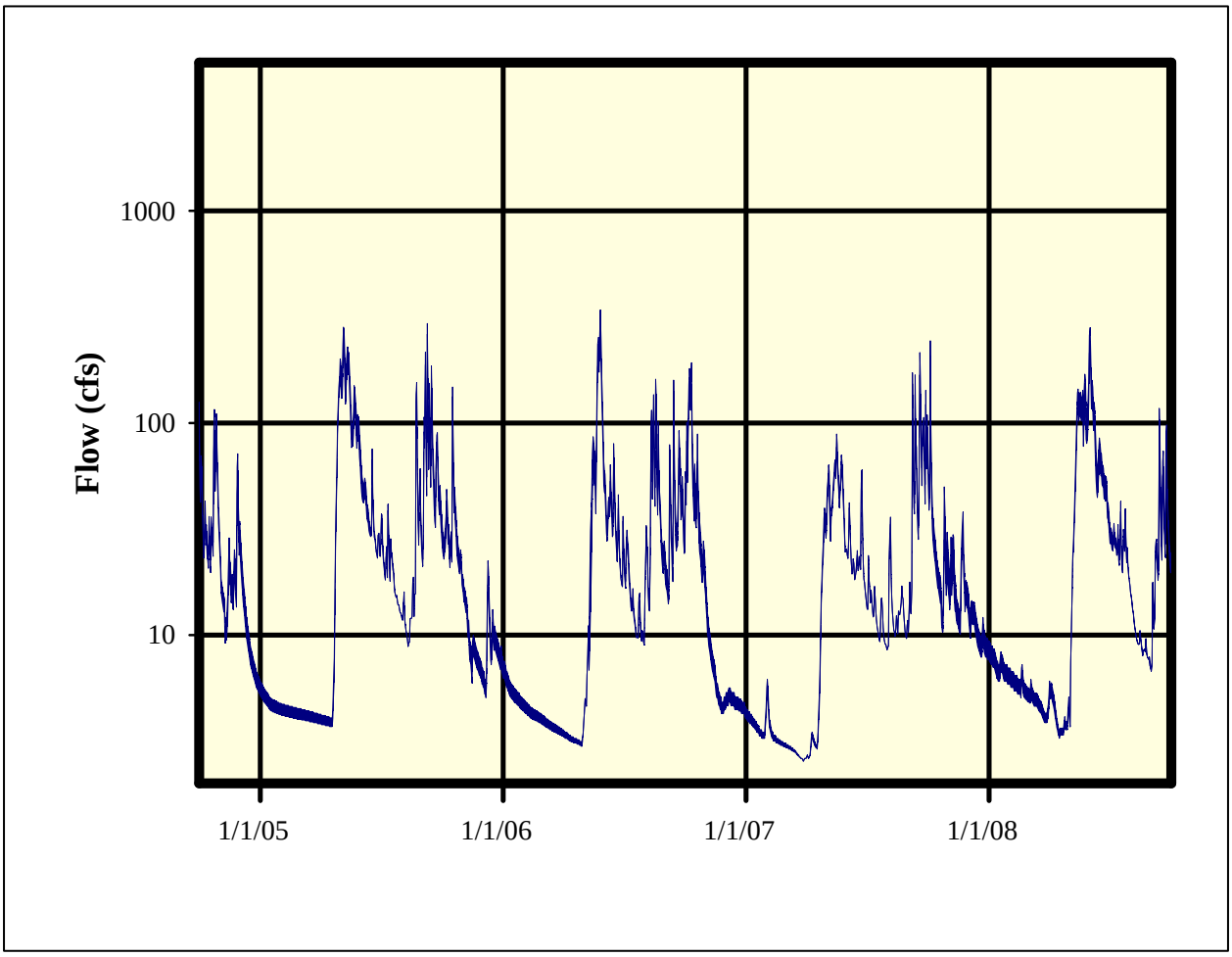


FIGURE 12
Range of Daily Flows in Tributary NFK 1.190, October 2004 through September 2008

Note:

Flows measured between the mouth of Tributary NFK 1.190 and Hydrology Gage NK119A (RK 1.90) from October 1, 2004, to September 30, 2008.

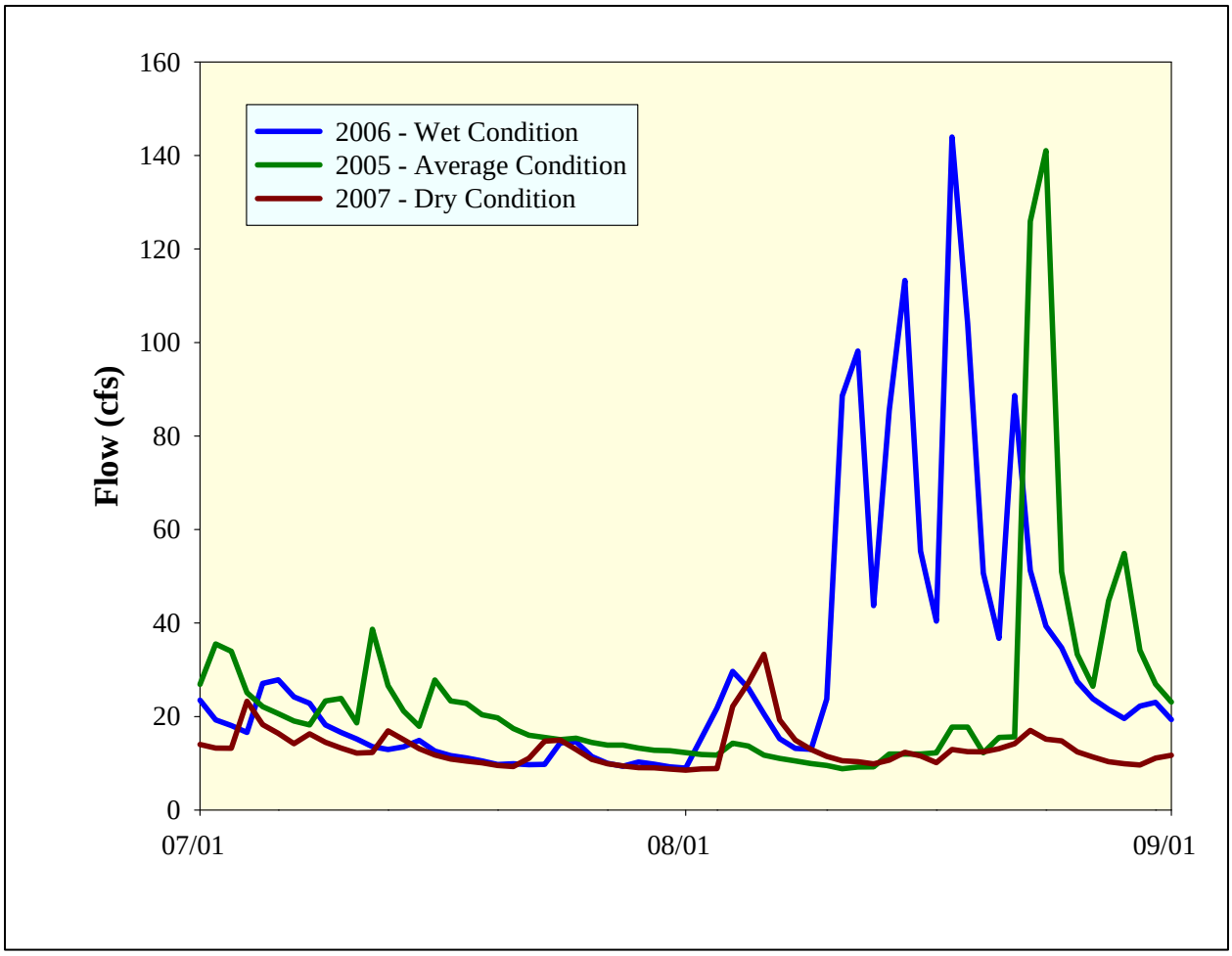


FIGURE 13
Wet, Average, and Dry Conditions in Tributary NFK 1.190 for Chinook Salmon Spawning from July to September, 2005 through 2007

Note:
Derived from daily flows measured at Hydrology Gage NK119A from October 1, 2004, through September 30, 2008.

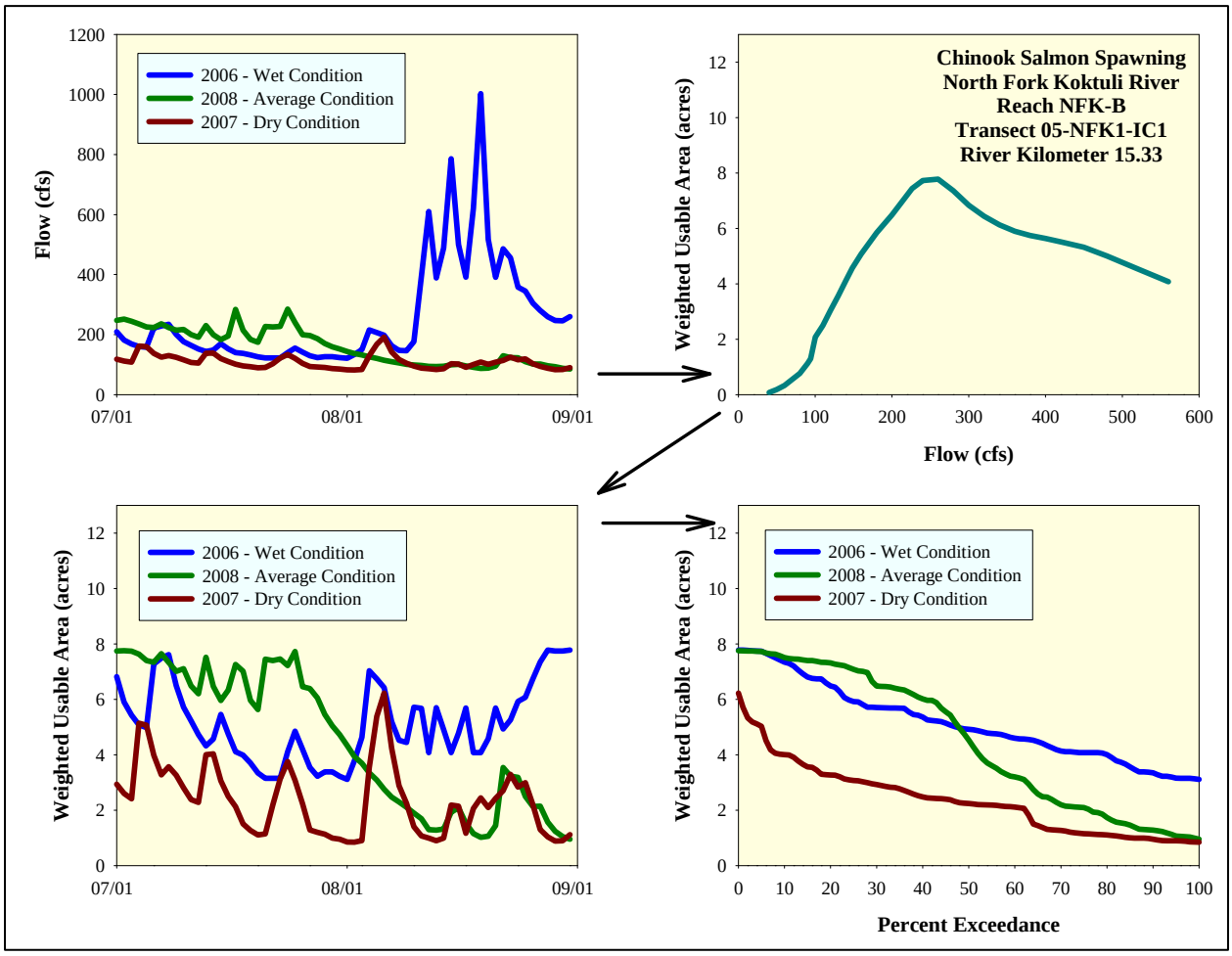


FIGURE 14
Daily Flows, Habitat Area Versus Flow, Daily Habitat Area, and Habitat Duration for Chinook Salmon Spawning in NFK-B Under Wet, Average, and Dry Conditions, 2006 through 2008

Note:
Data taken in NFK-B at Transect 05-NFK1-IC1 (River Kilometer 15.33).

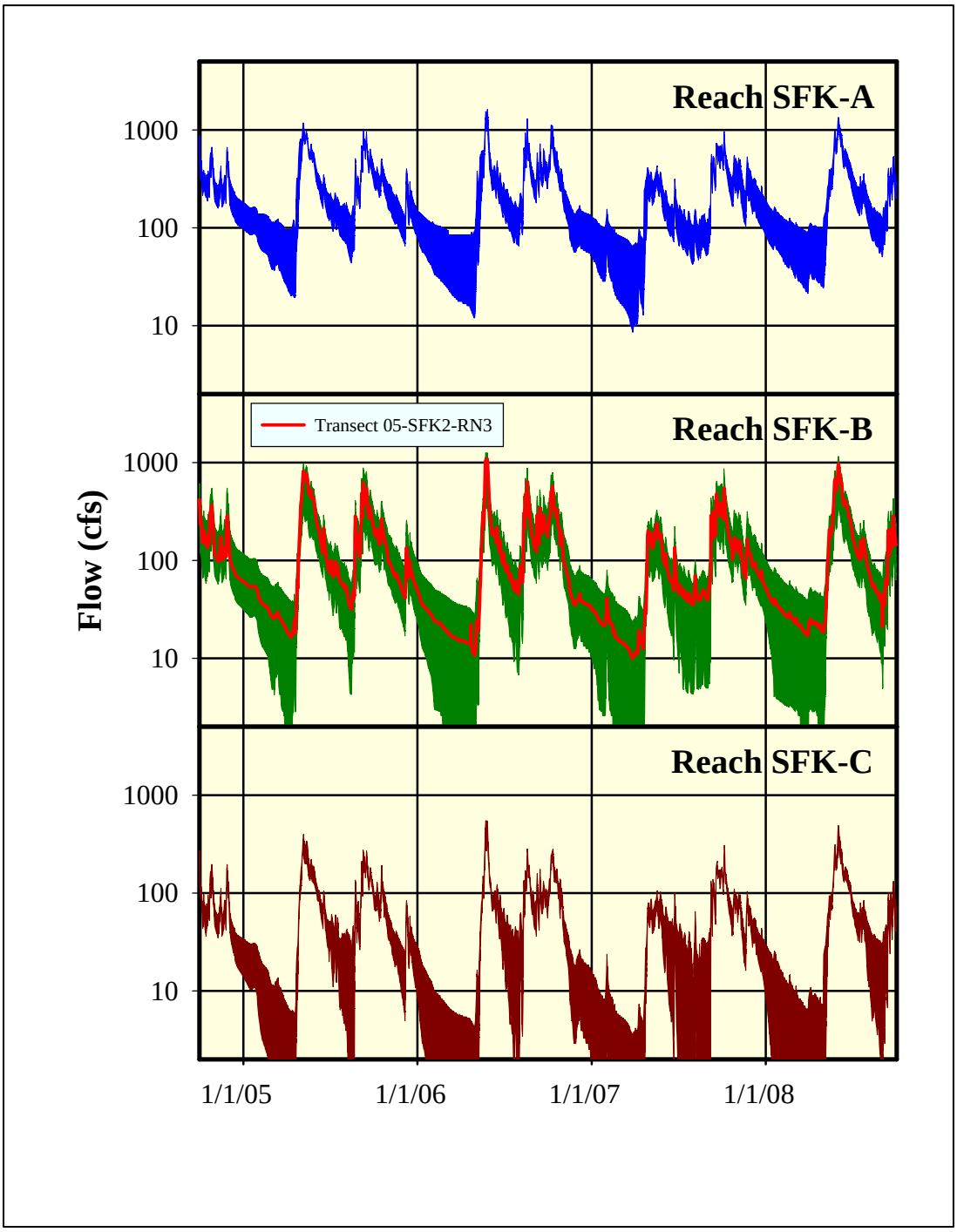


FIGURE 15
Range of Daily Flows and Interpolated Daily Flows in the SFK, October 2004 through September 2008

Note:

Range of daily measured flows in SFK-A, SFK-B, and SFK-C and interpolated daily flows at IFIM Transect 05-SFK2-RN3 at River Kilometer 30.19 in SFK-B, October 1, 2004, to September 30, 2008.

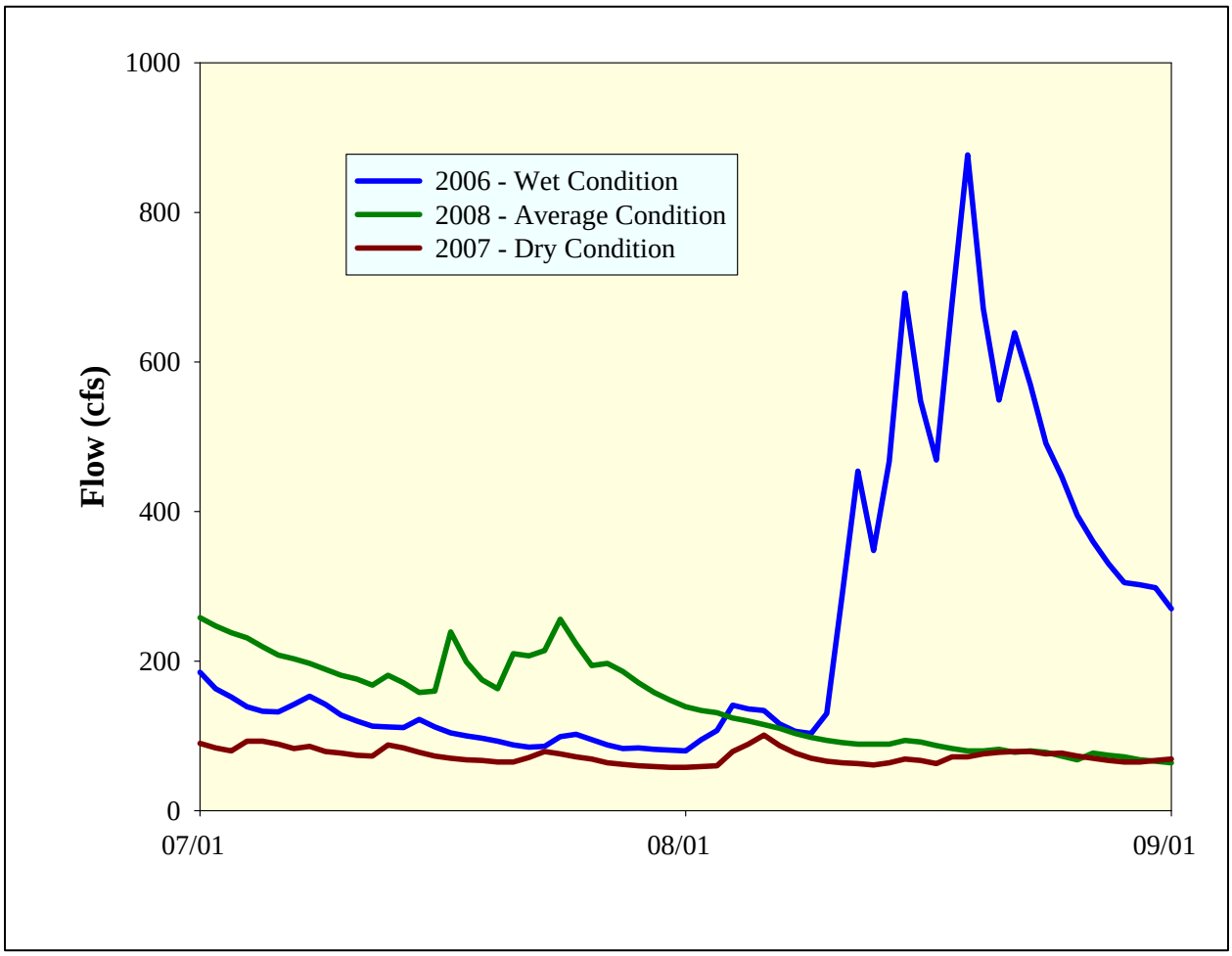


FIGURE 16
Wet, Average, and Dry Conditions in the SFK for Chinook Salmon Spawning from July to September, 2006 through 2008

Note:

Derived from daily flows measured at Hydrology Gage SK100B (USGS Gage No. 15302200) from October 1, 2004, through September 30, 2008.

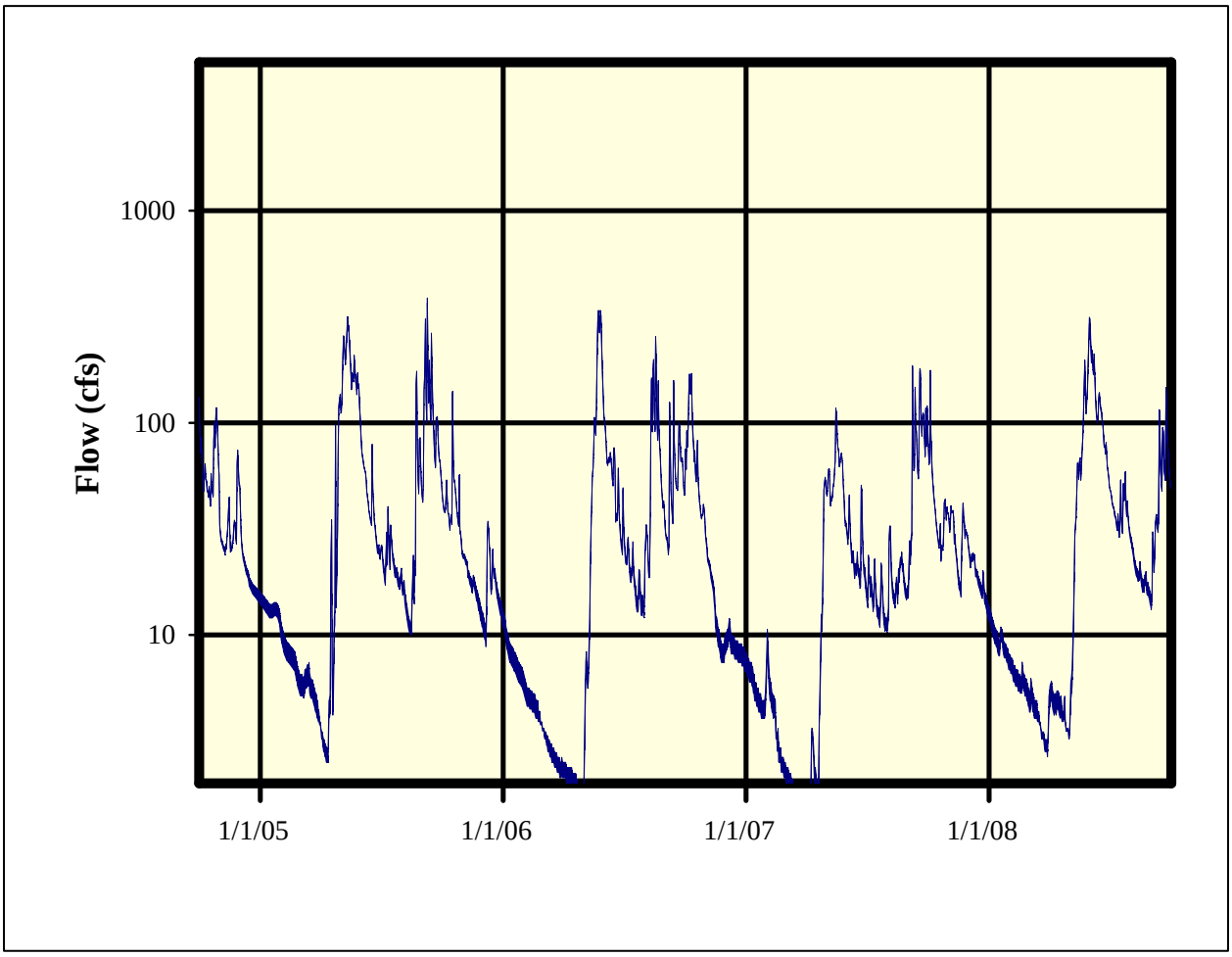


FIGURE 17
Range of Daily Flows in Tributary SFK 1.190, October 2004 through September 2008

Note:

Flows measured between the mouth of Tributary SFK 1.190 and Hydrology Gage SK119A from October 1, 2004, through September 30, 2008.

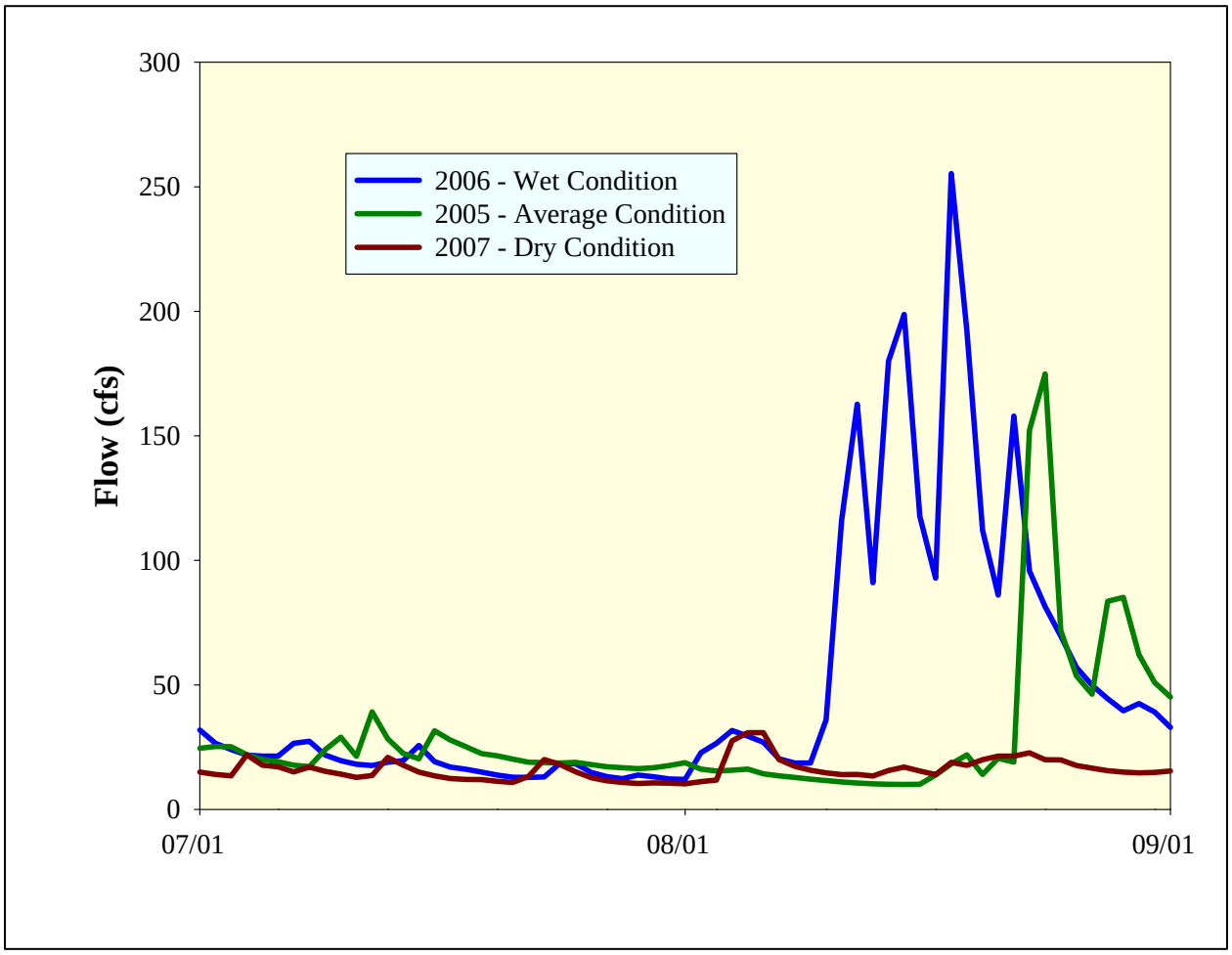


FIGURE 18
Wet, Average, and Dry Conditions in Tributary SFK 1.190 for Chinook Salmon Spawning from July through September, 2005 through 2007

Note:
Derived from daily flows measured at Hydrology Gage SK119A from October 1, 2004, through September 30, 2008.

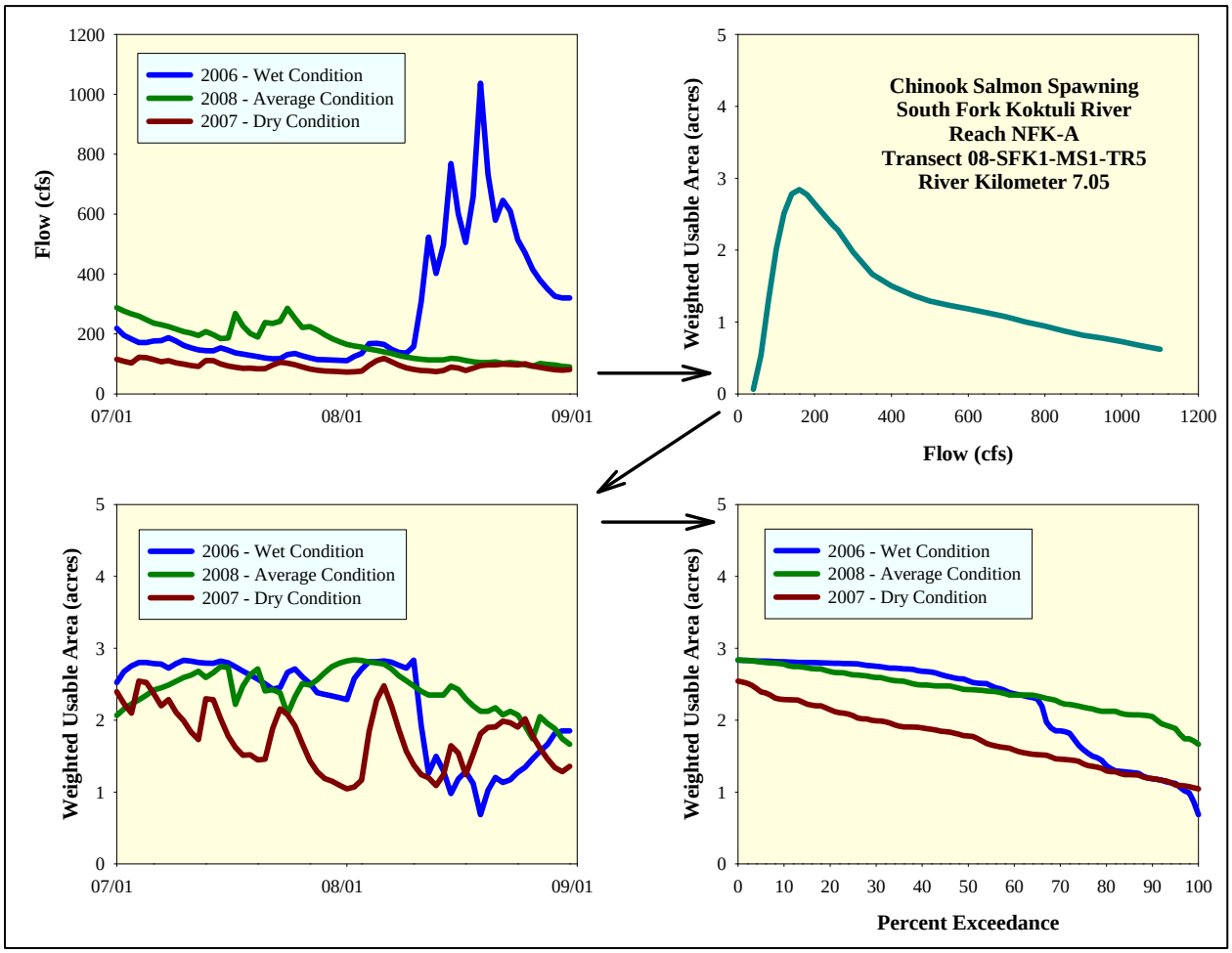


FIGURE 19
Daily Flows, Habitat Area Versus Flow, Daily Habitat Area, and Habitat Duration for Chinook Salmon Spawning in SFK-A Under Wet, Average, and Dry Conditions, 2006 through 2008

Note:
Data taken in SFK-A at Transect 08-SFK1-MS1-TR5 (River Kilometer 7.05).

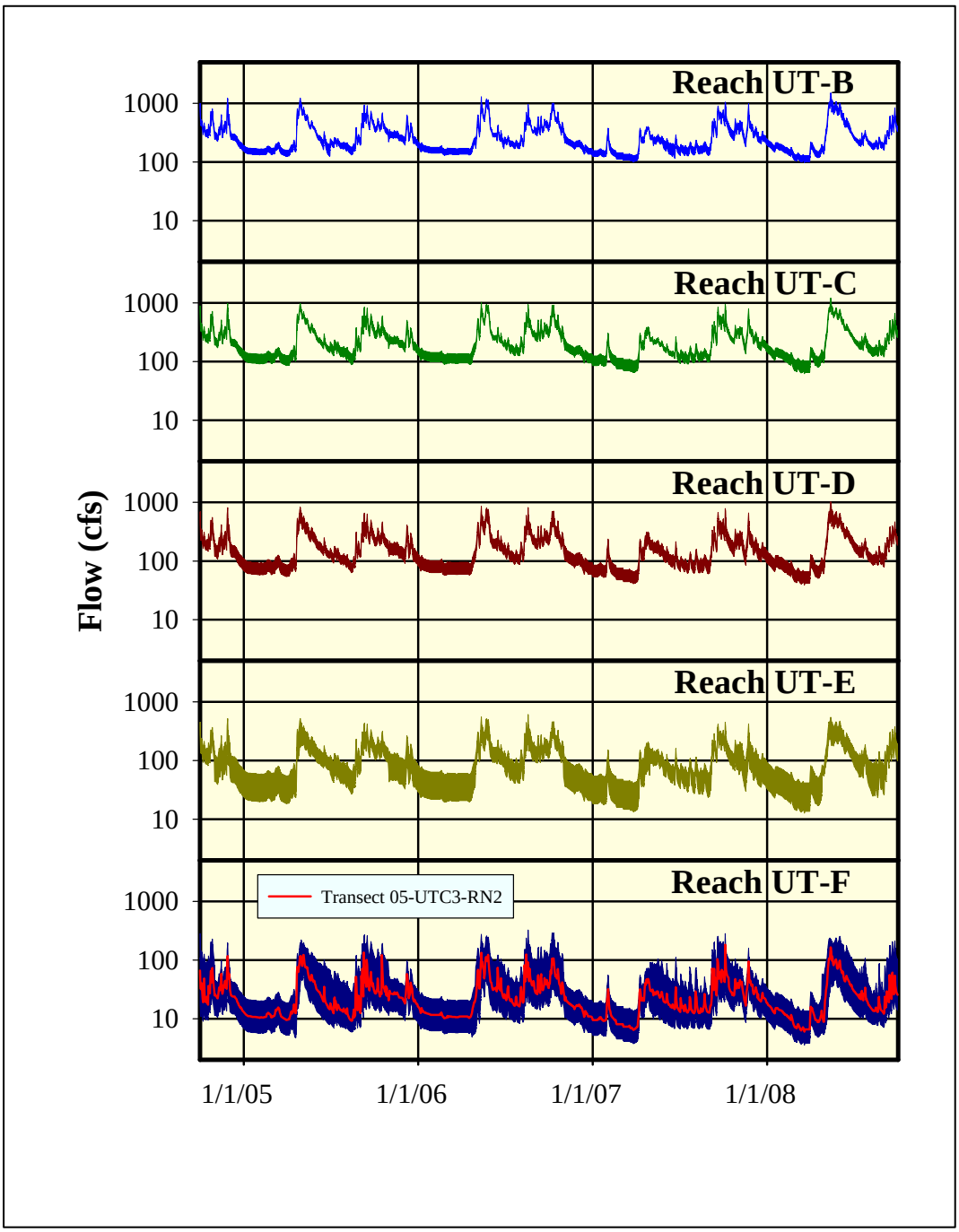


FIGURE 20
Range of Daily Flows and Interpolated Daily Flows in the UT, October 2004 through September 2008

Note:

Range of daily measured flows in UT-B through UT-F and interpolated daily flows at IFIM Transect 05-UTC3-RN2 at River Kilometer 52.01 in UT-F, October 1, 2004, through September 30, 2008.

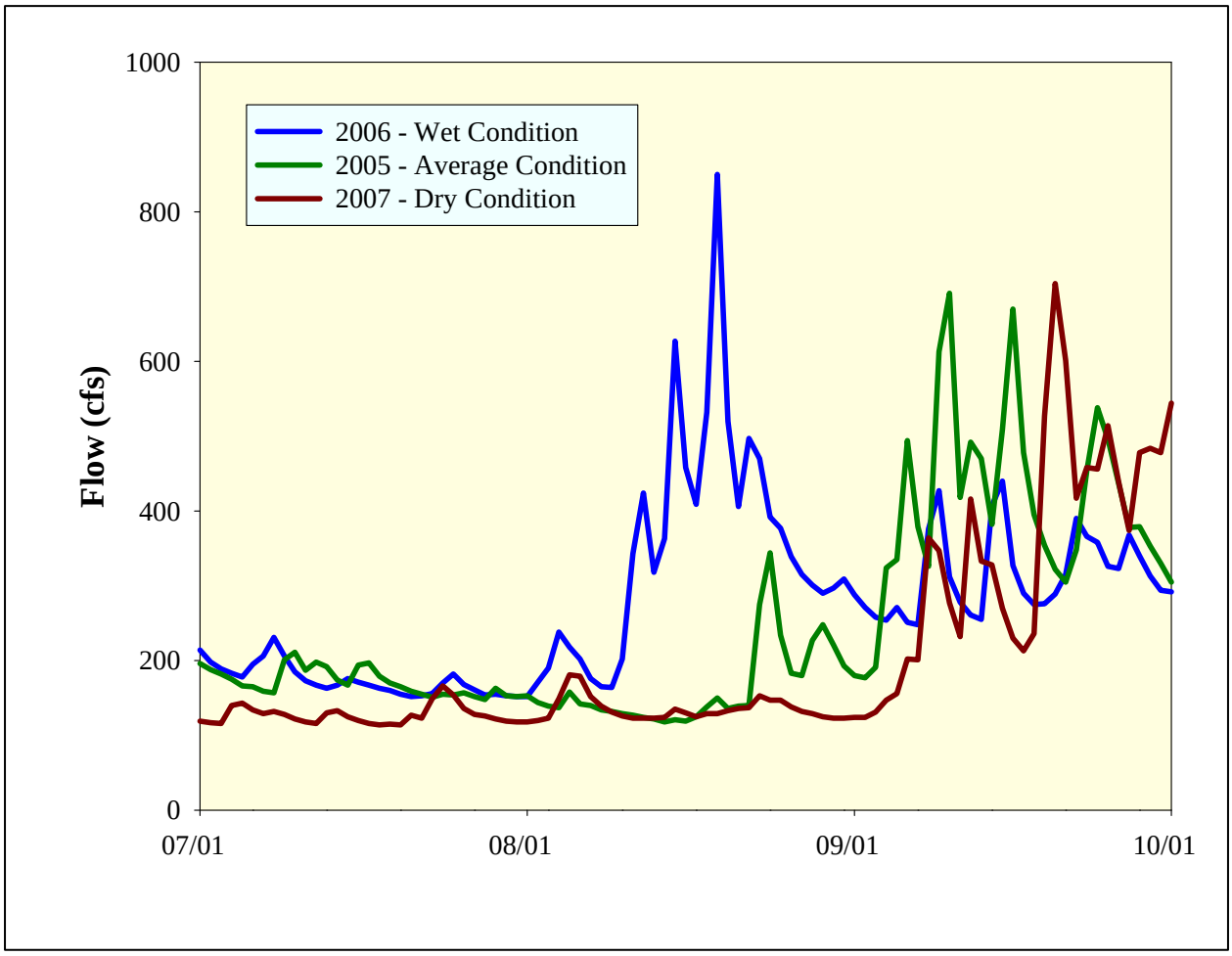


FIGURE 21
Wet, Average, and Dry Conditions in the UT for Sockeye Salmon Spawning from July through September, 2005 through 2007

Note:

Derived from daily flows measured at Hydrology Gage UT100B (USGS Gage No. 15300250) from October 1, 2004, through September 30, 2008.

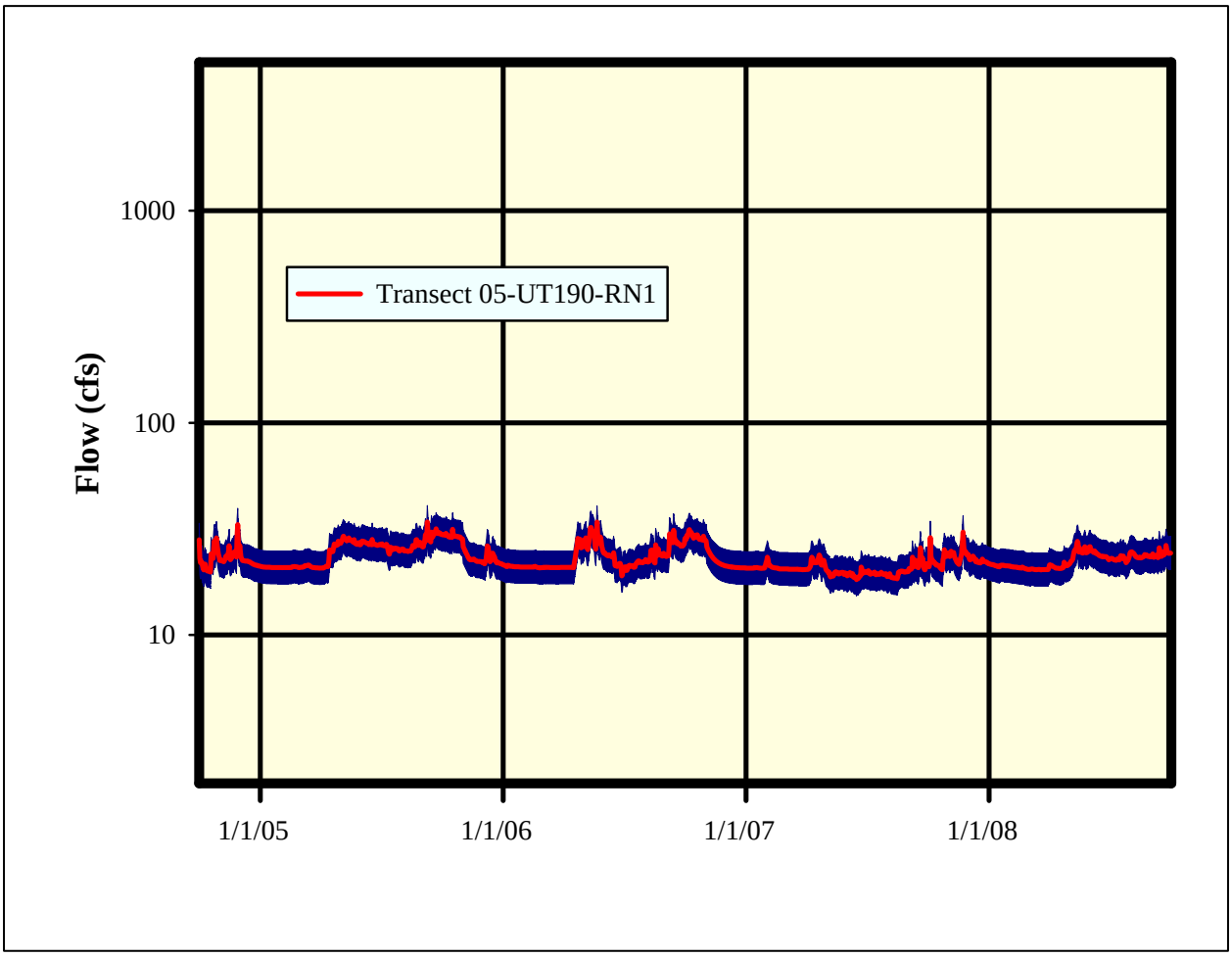


FIGURE 22
Range of Daily Flows and Interpolated Daily Flows in Tributary UT 1.190, October 2004 through September 2008

Note:

Flows measured between the mouth of Tributary UT 1.190 and River Kilometer 2.48 and interpolated daily flows at IFIM Transect 05-UT190-RN1 at River Kilometer 1.35, October 1, 2004, through September 30, 2008.

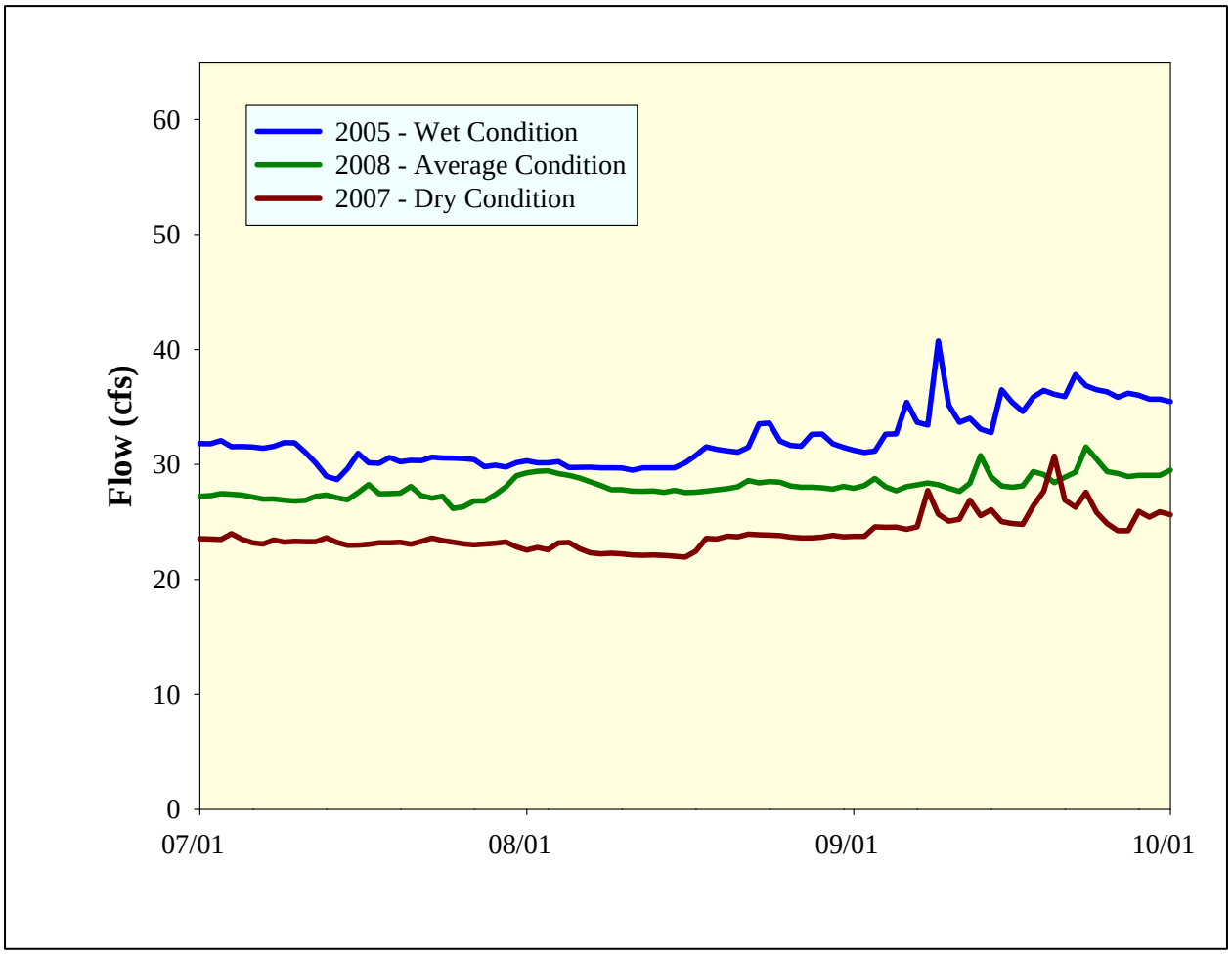


FIGURE 23
Wet, Average, and Dry Conditions in Tributary UT 1.190 for Sockeye Salmon Spawning from July through September, 2005 through 2007

Note:
Derived from daily flows measured at Hydrology Gage UT119A from October 1, 2004, through September 30, 2008.

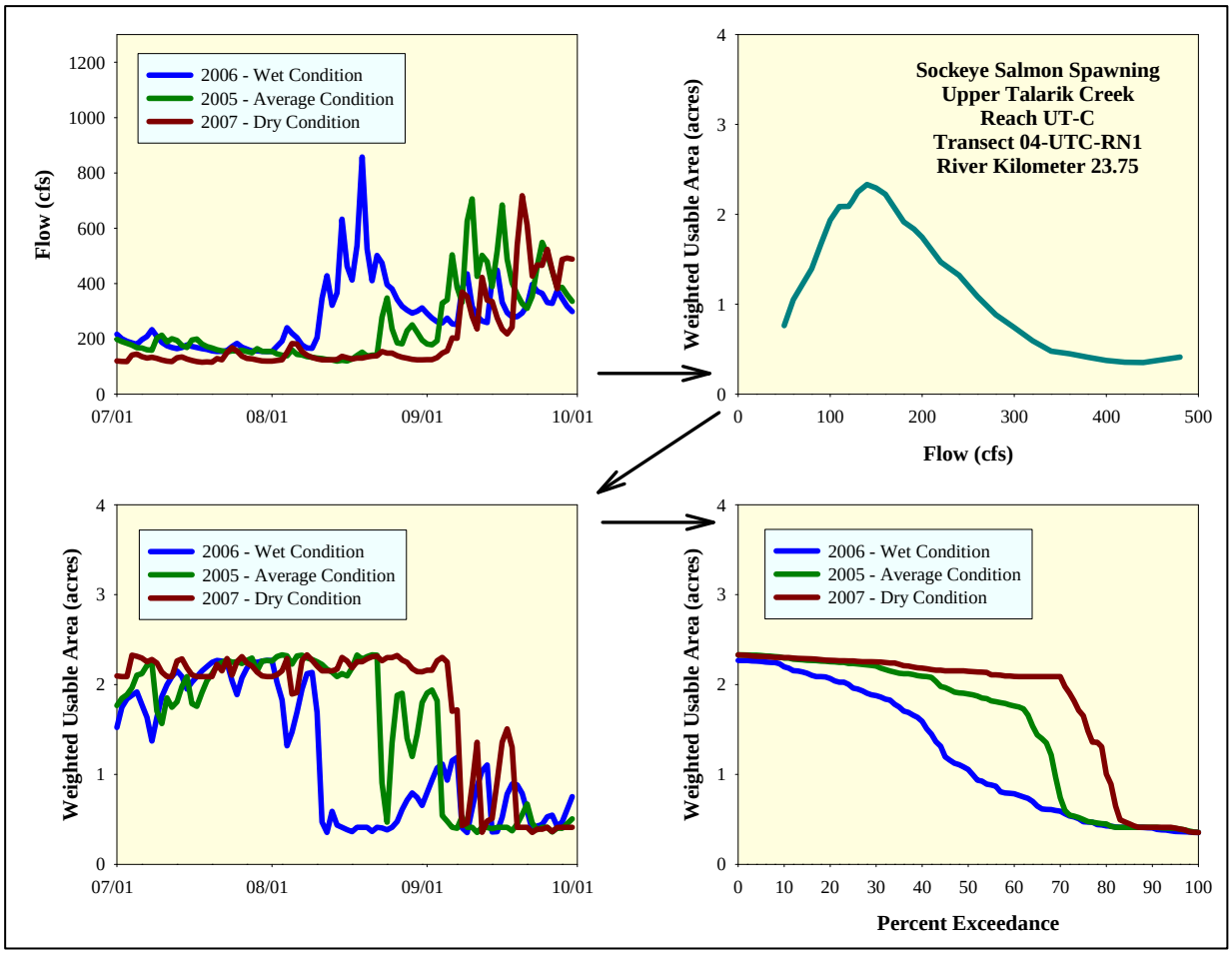


FIGURE 24
Daily Flows, Habitat Area Versus Flow, Daily Habitat Area, and Habitat Duration For Sockeye Salmon Spawning in UT-C Under Wet, Average, and Dry Conditions, 2005 through 2007

Note:
Data taken in UT-C at Transect 04-UTC-RN1 (River Kilometer 23.75).

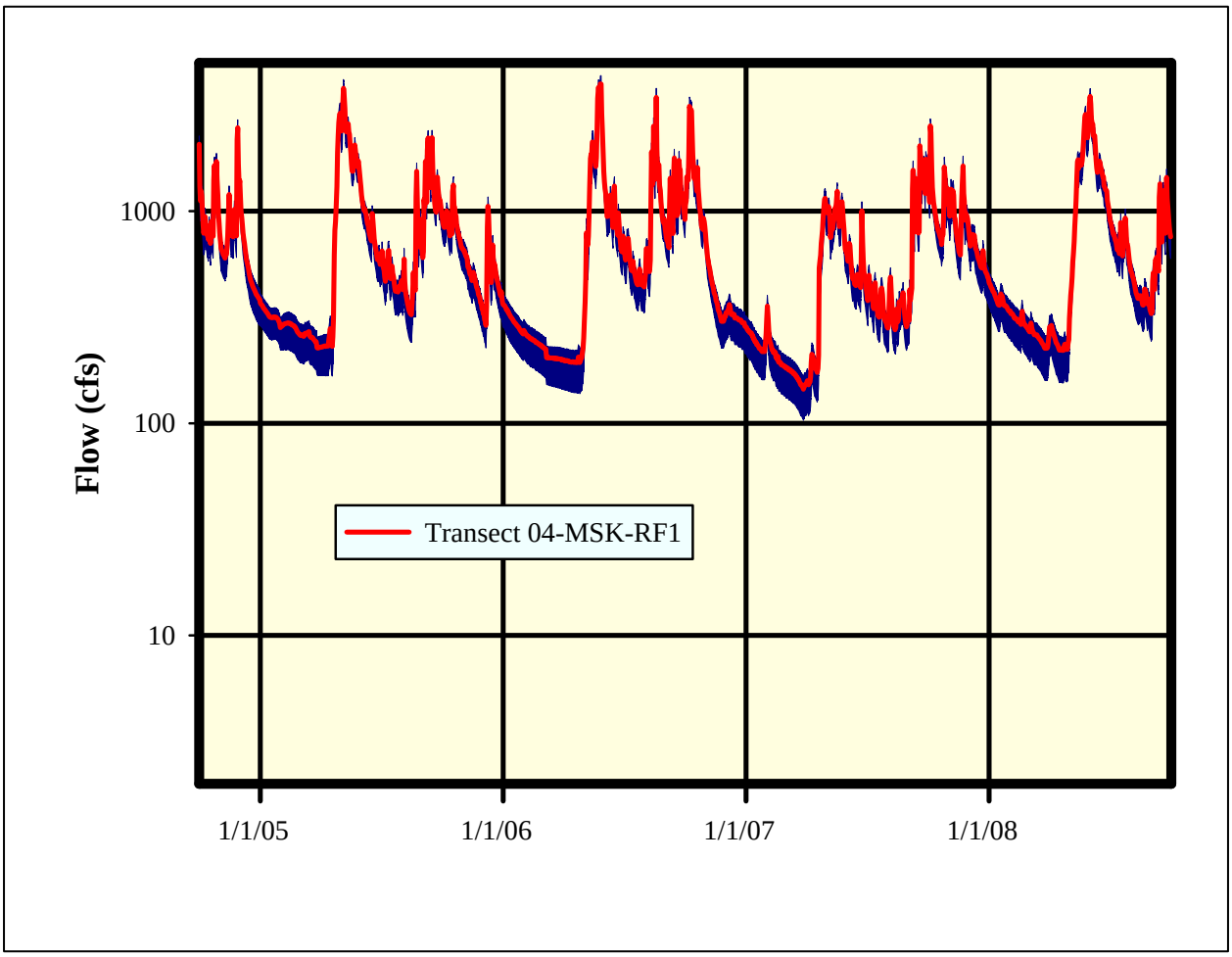


FIGURE 25
Range of Daily Flows and Interpolated Daily Flows in the KR, October 2004 through September 2008

Note:

Range of daily flows in a reach extending from the confluence of the NFK and SFK (RK 46.42) to IFIM Transect 04-MSK-RF2 (RK 24.85) and interpolated daily flows at IFIM Transect 04-MSK-RF1 at River Kilometer 31.98, October 1, 2004, through September 30, 2008.

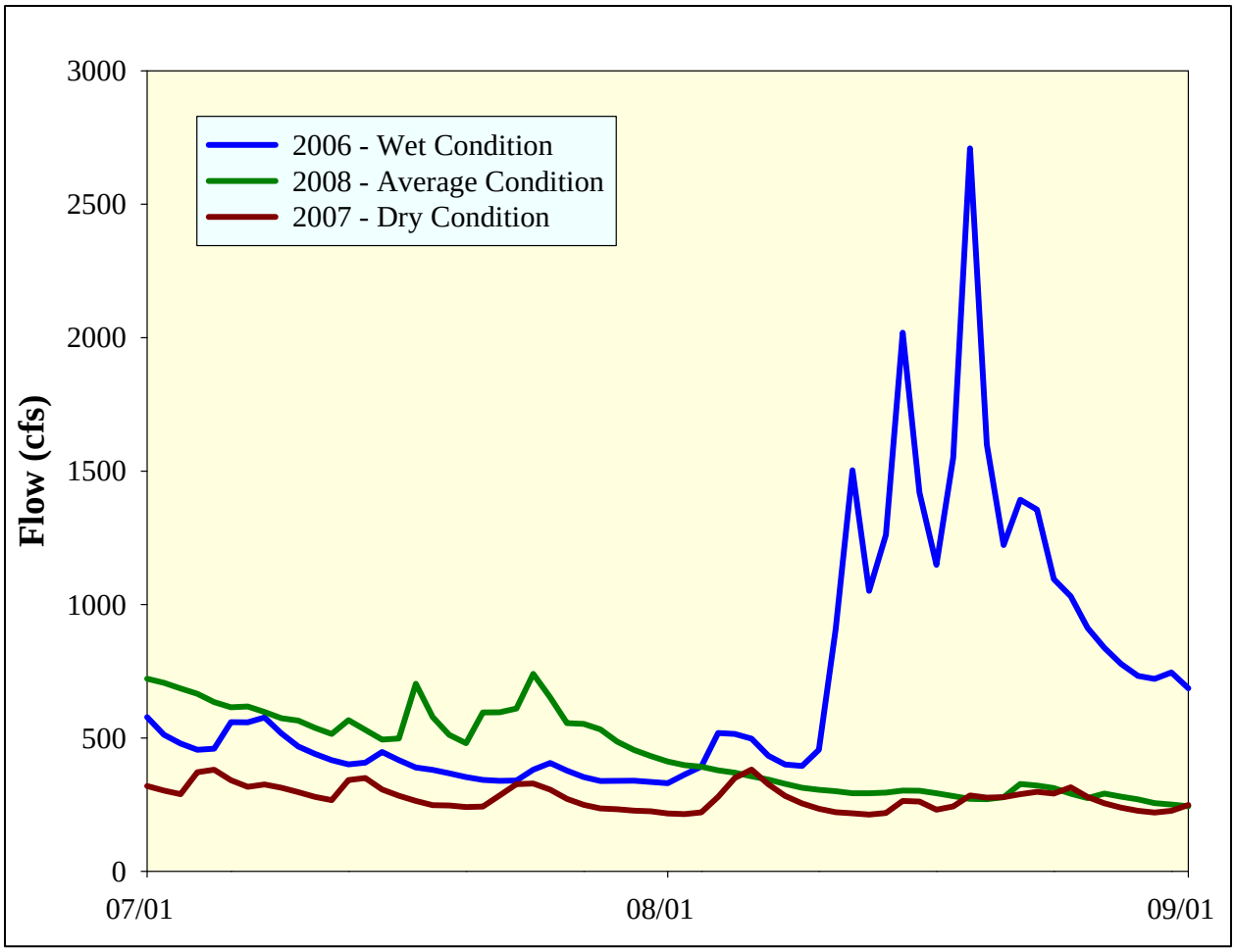


FIGURE 26
Wet, Average, and Dry Conditions in the KR for Chinook Salmon Spawning from July through September, 2006 through 2008

Note:

Derived from synthesized daily flows in the KR at the confluence of the NFK and SFK from October 1, 2004, through September 30, 2008.

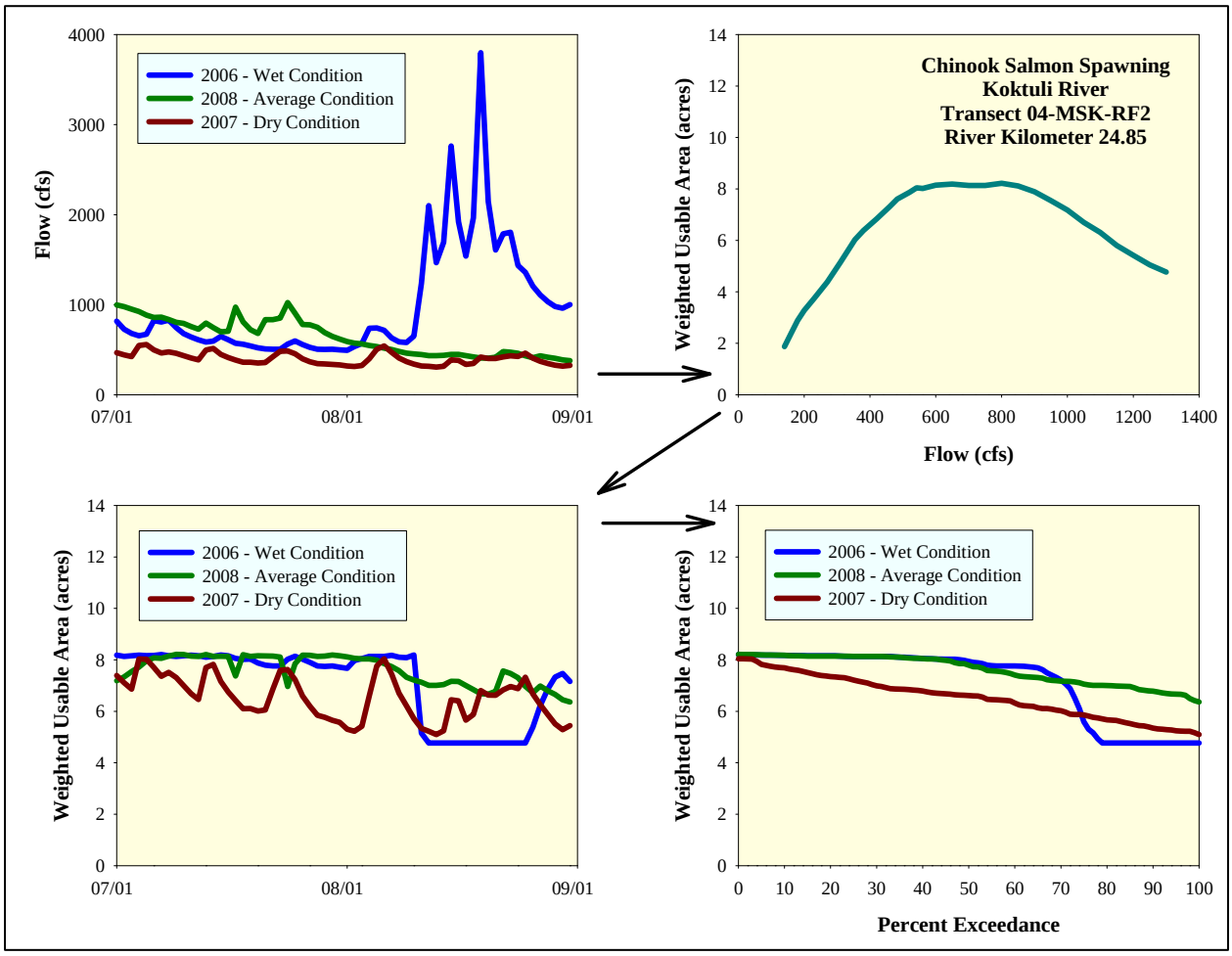


FIGURE 27
Daily Flows, Habitat Area versus Flow, Daily Habitat Area, and Habitat Duration for Chinook Salmon Spawning in the KR Under Wet, Average, and Dry Conditions, 2006 through 2008

Note:
Data taken in the KR at Transect 04-MSK-RF2 (River Kilometer 24.85).

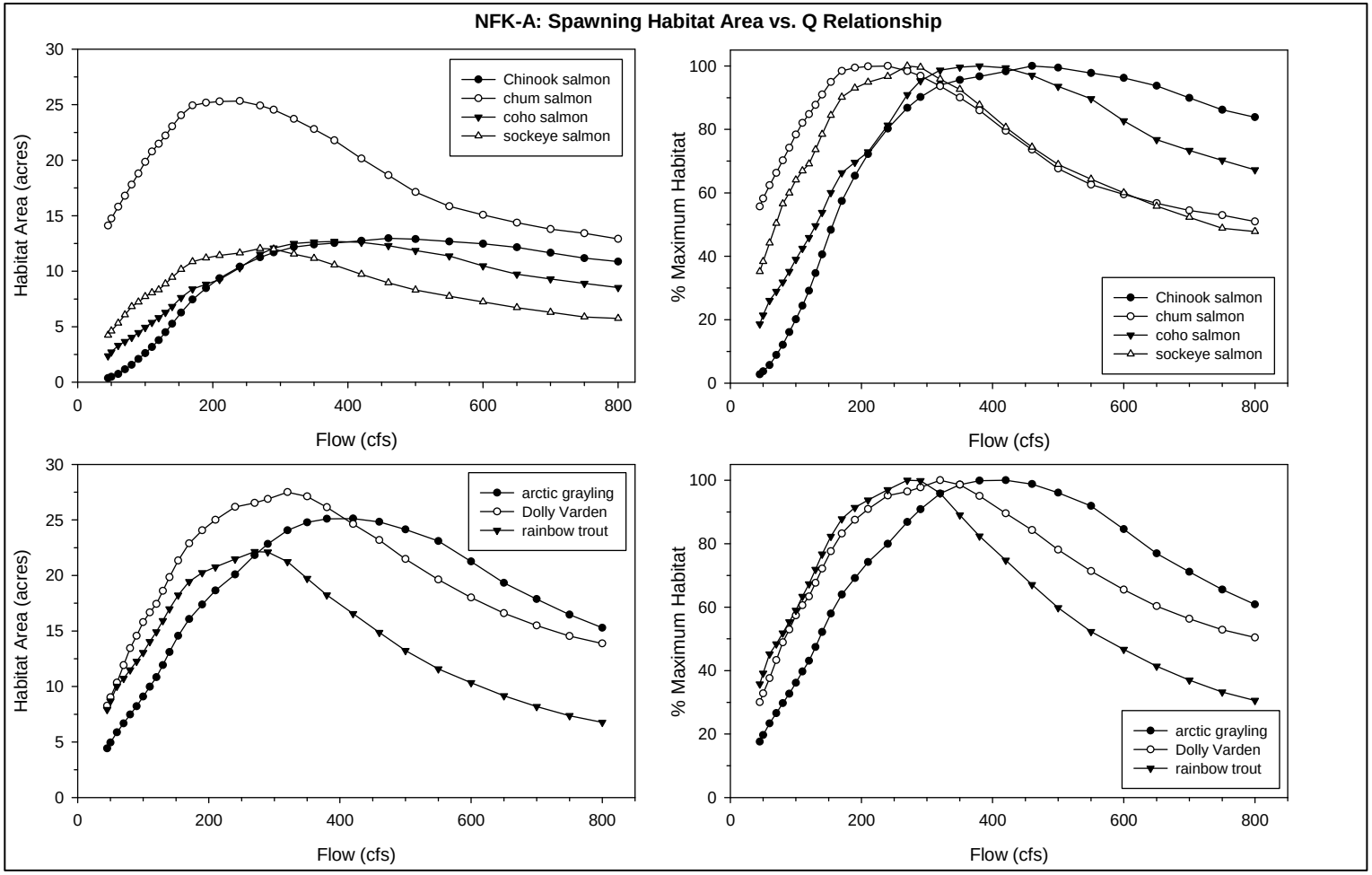


FIGURE 28
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in NFK-A

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in NFK-A.

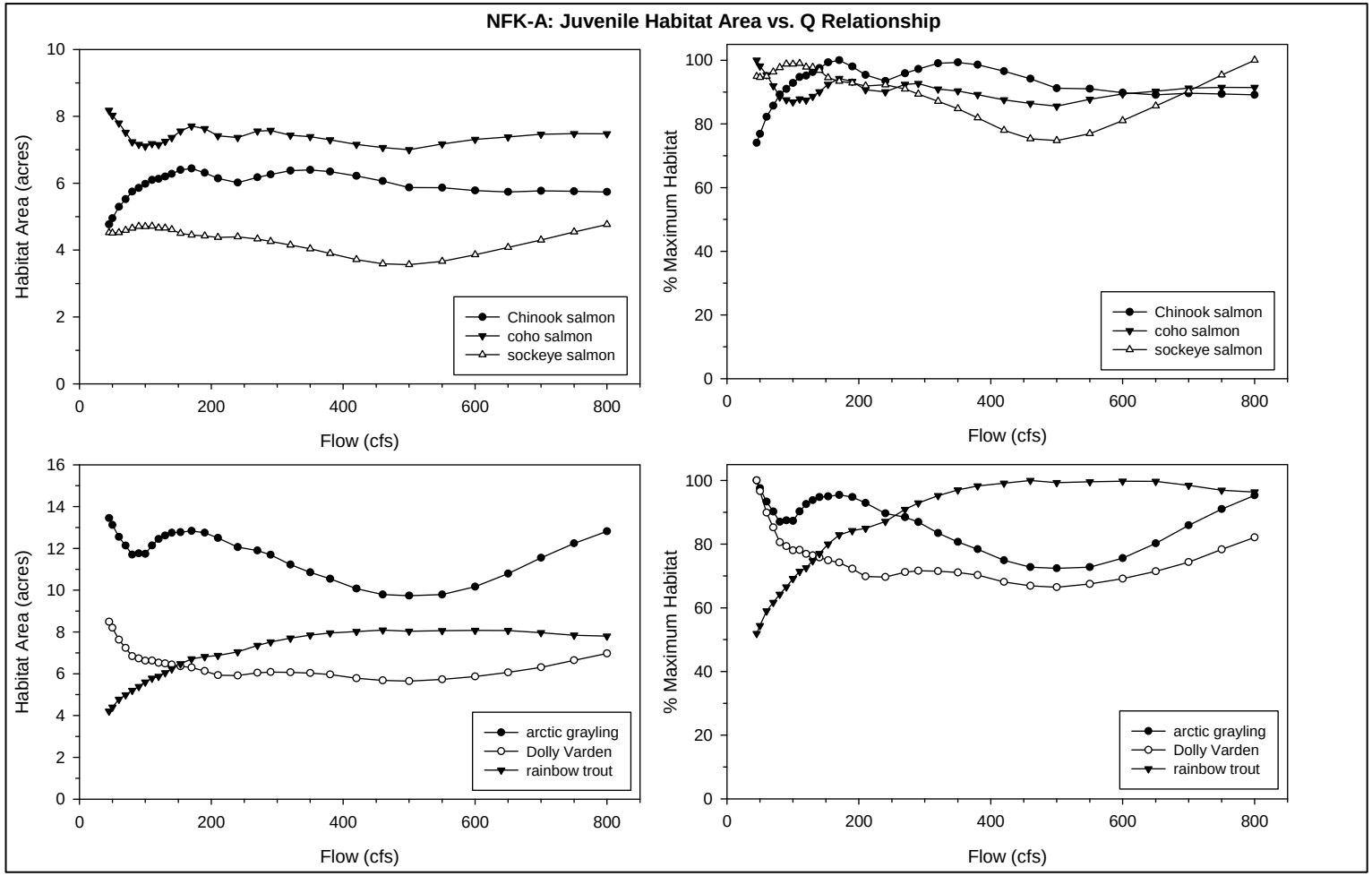


FIGURE 29
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in NFK-A

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in NFK-A.

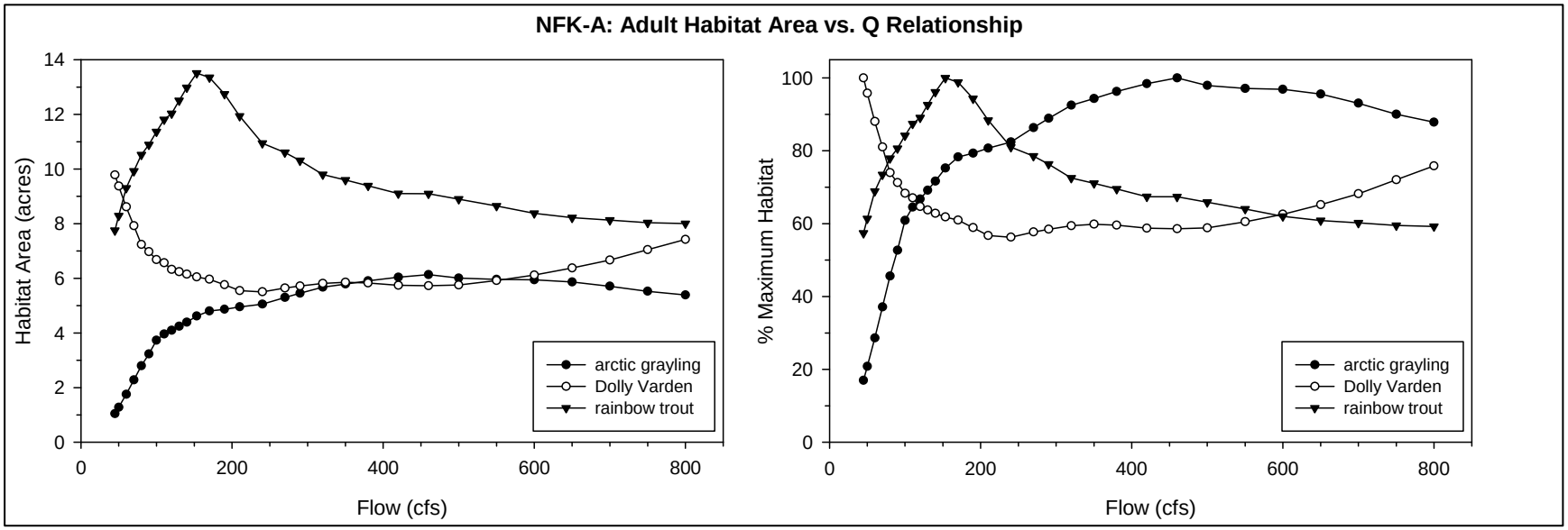


FIGURE 30
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in NFK-A

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in NFK-A.

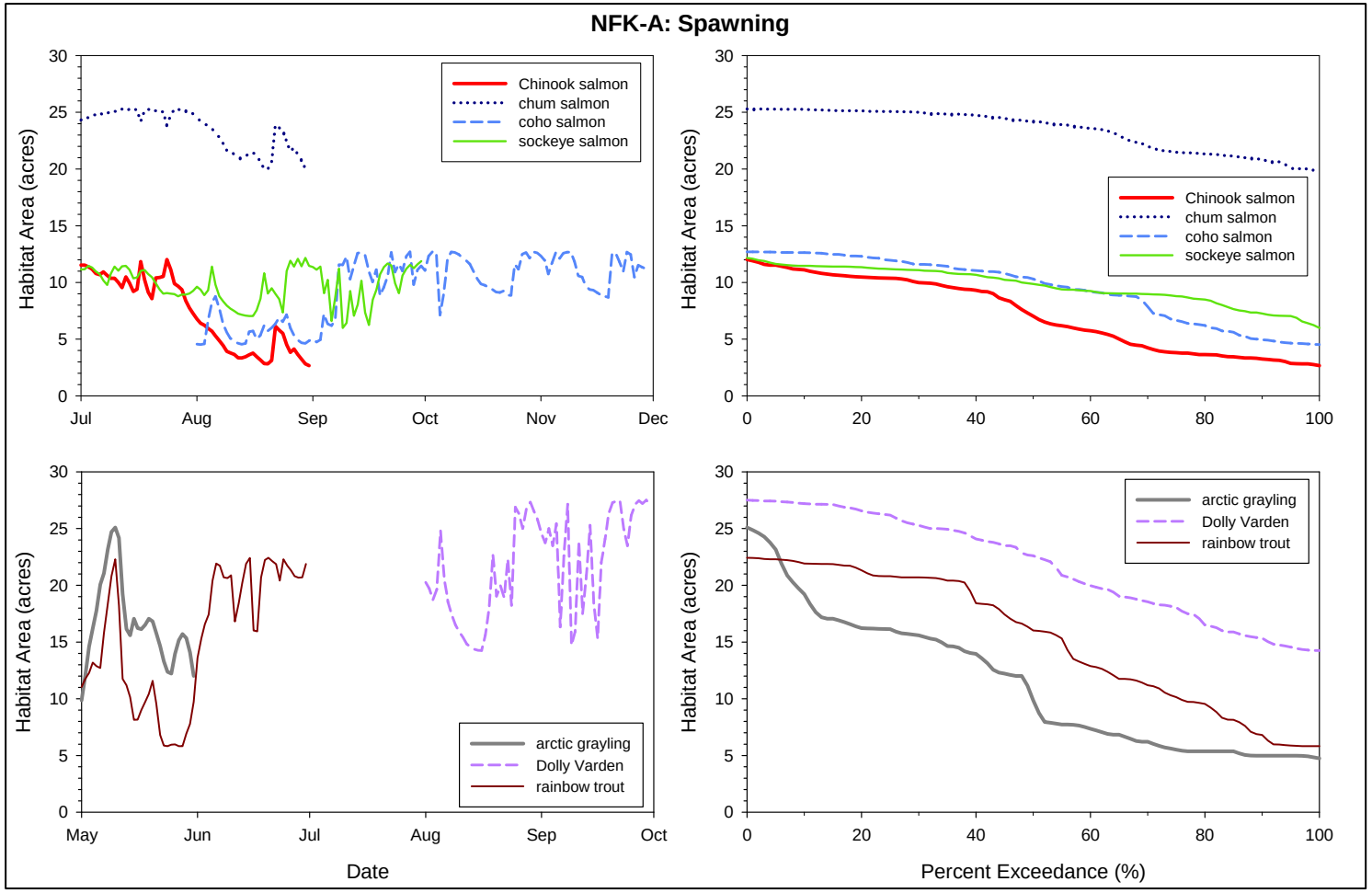


FIGURE 31
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in NFK-A

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in NFK-A.

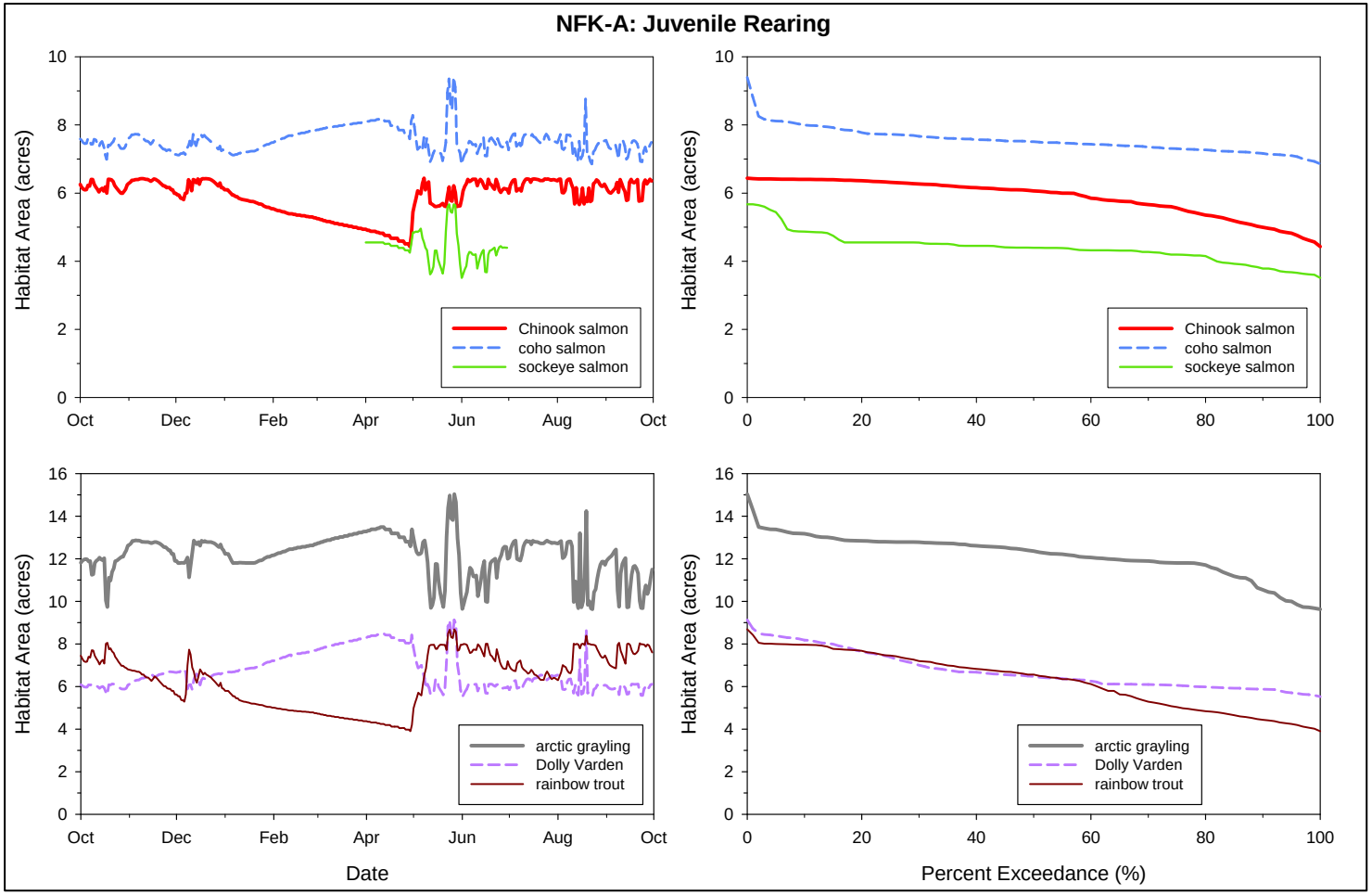


FIGURE 32
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in NFK-A

Note:

Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in NFK-A.

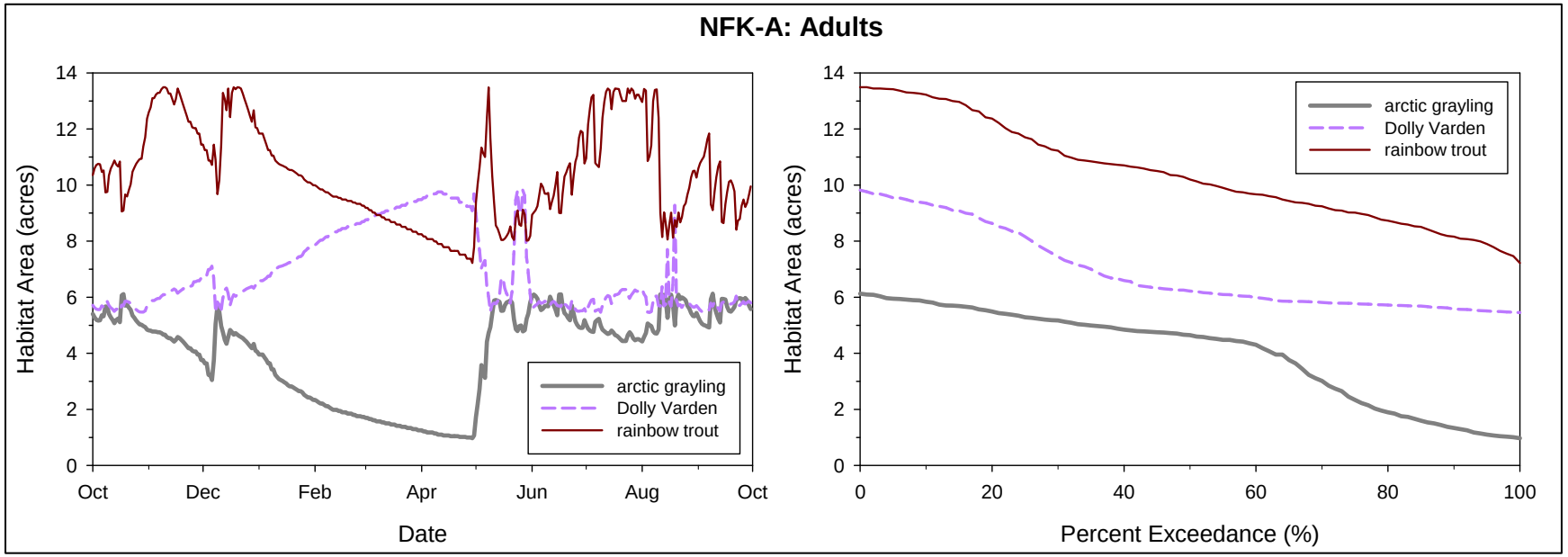


FIGURE 33
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in NFK-A

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in NFK-A.

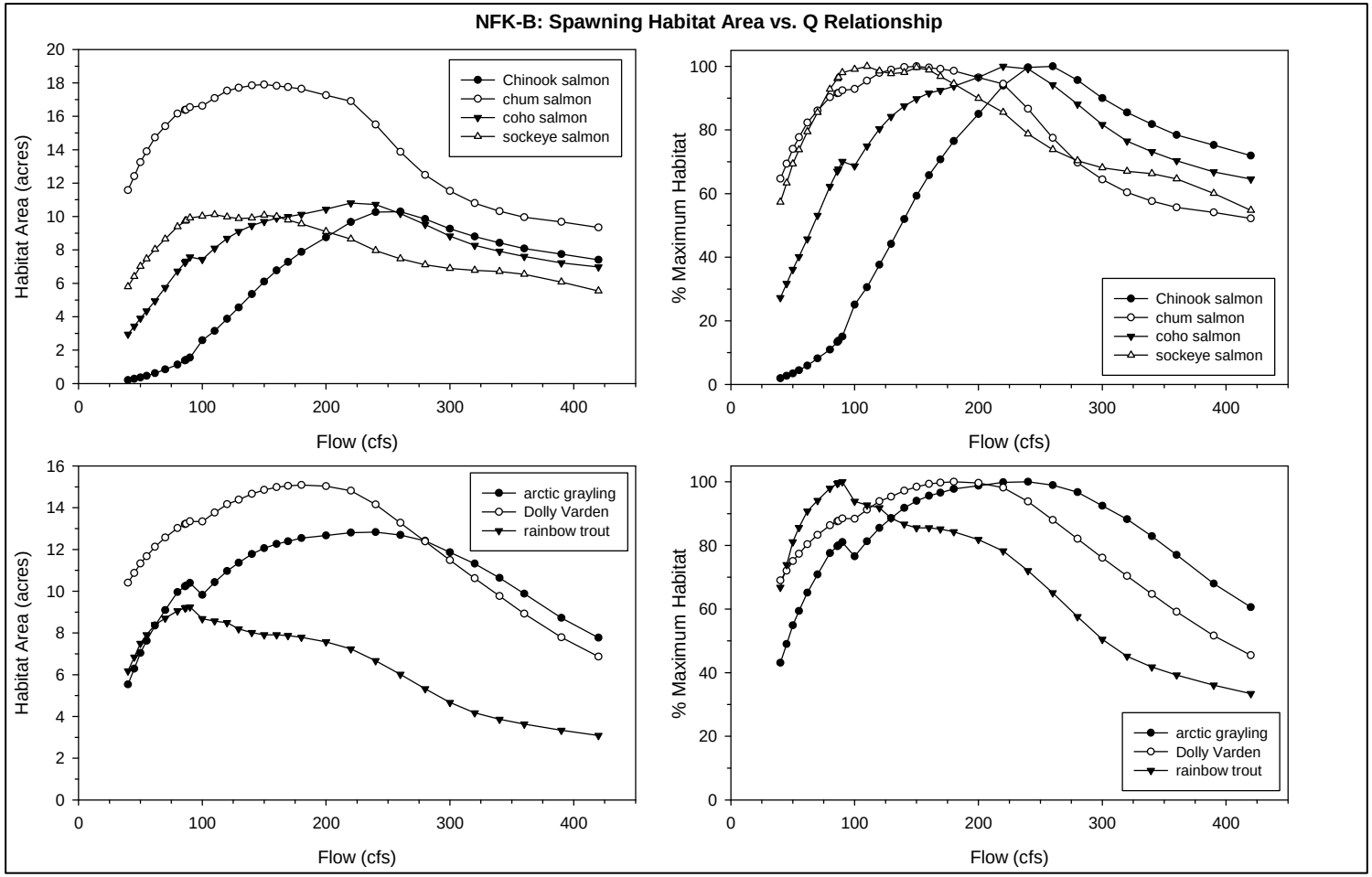


FIGURE 34
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in NFK-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in NFK-B.

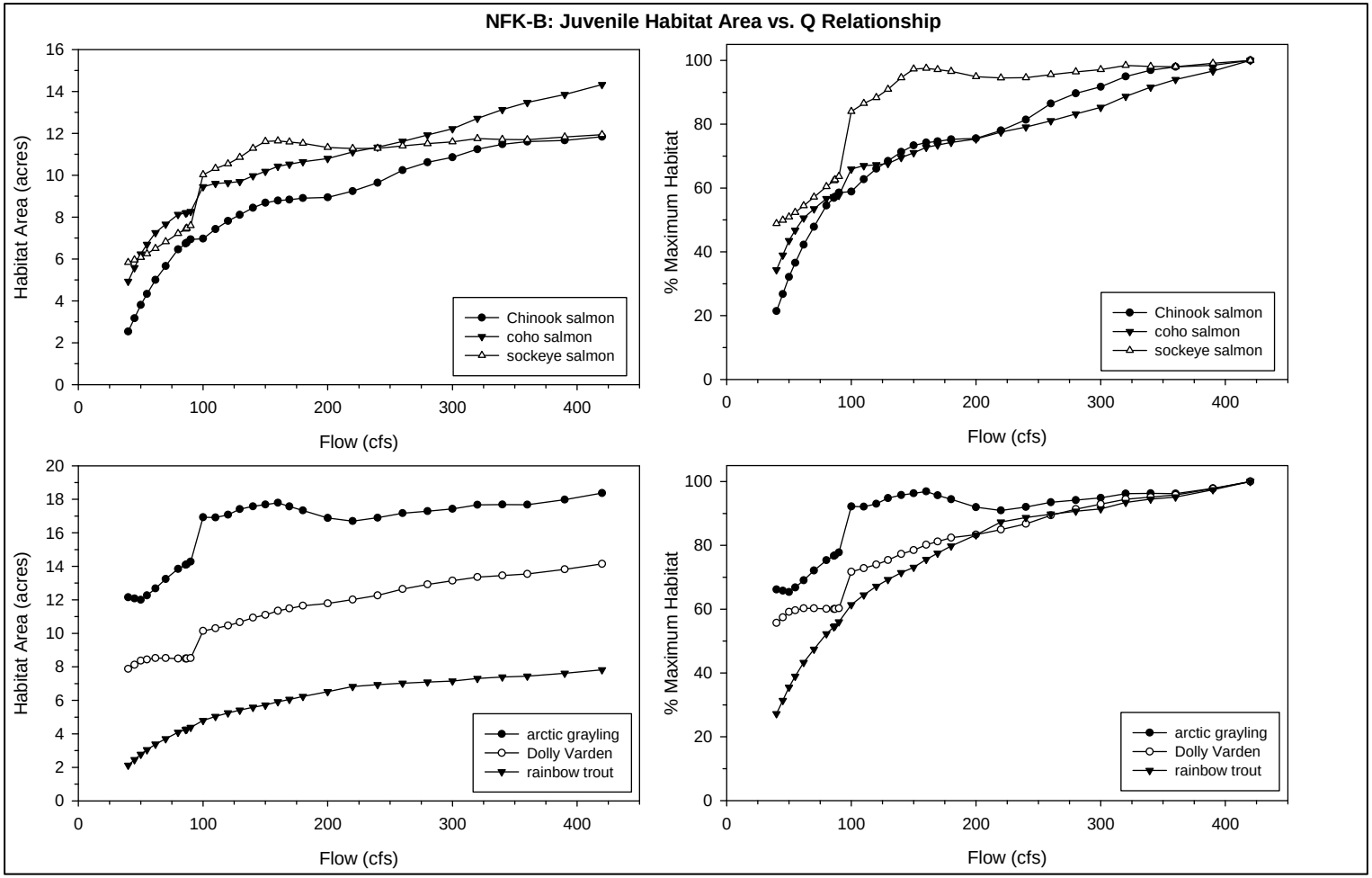


FIGURE 35
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in NFK-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in NFK-B.

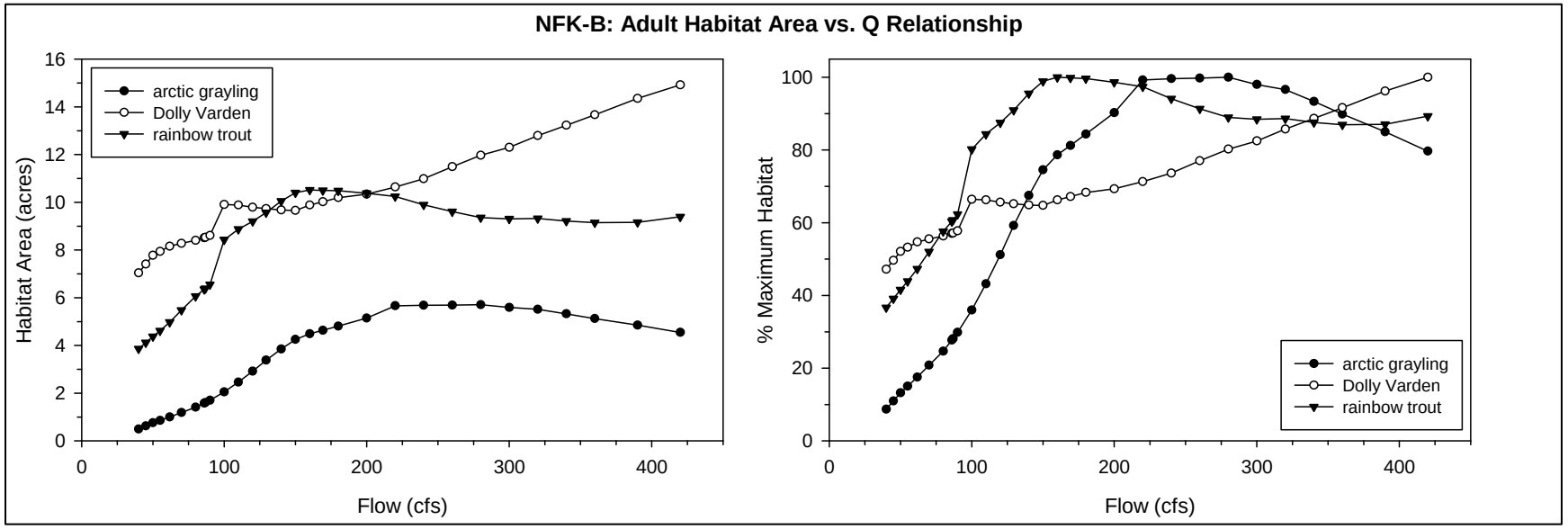


FIGURE 36
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in NFK-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in NFK-B.

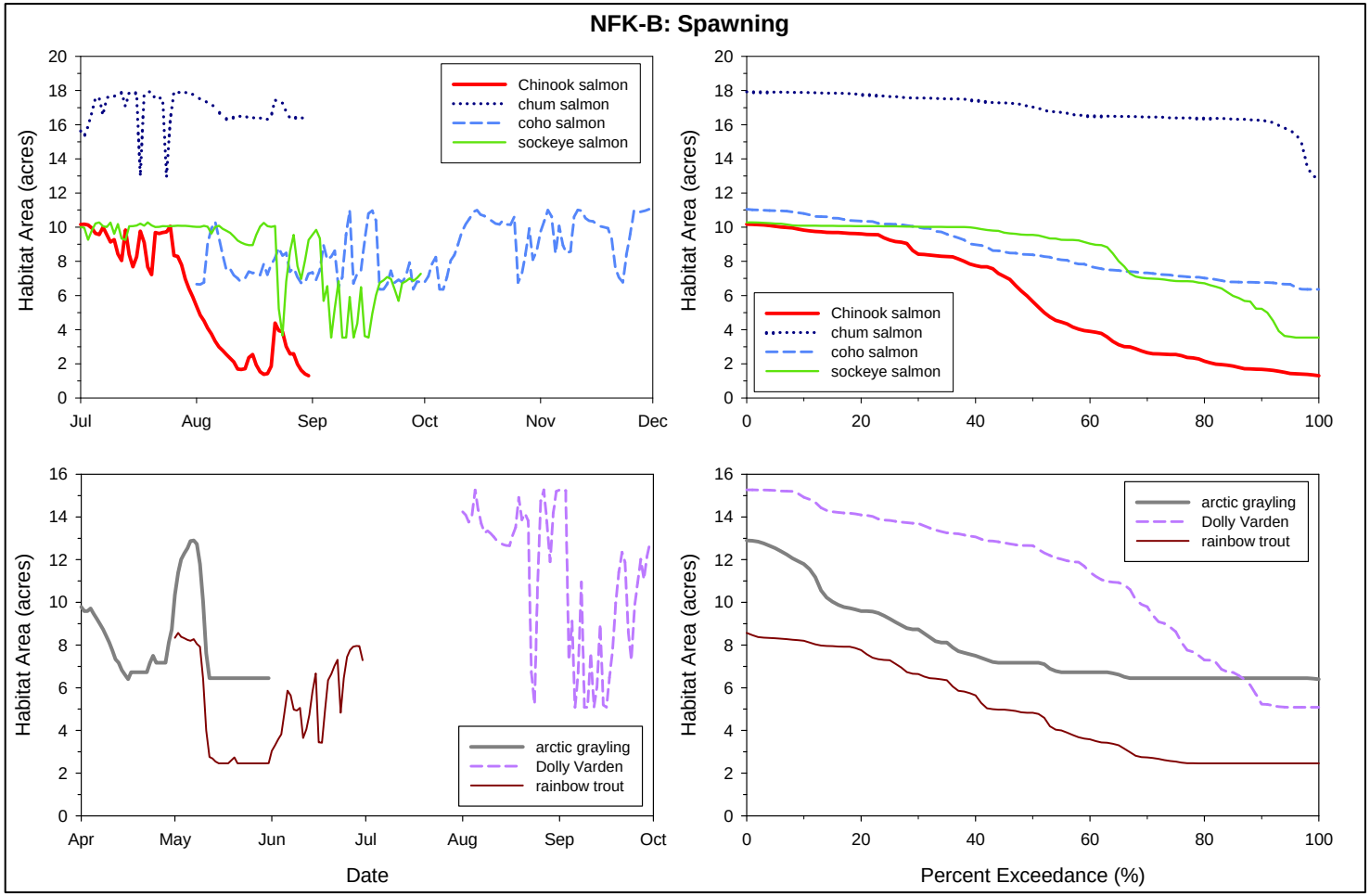


FIGURE 37
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in NFK-B

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in NFK-B.

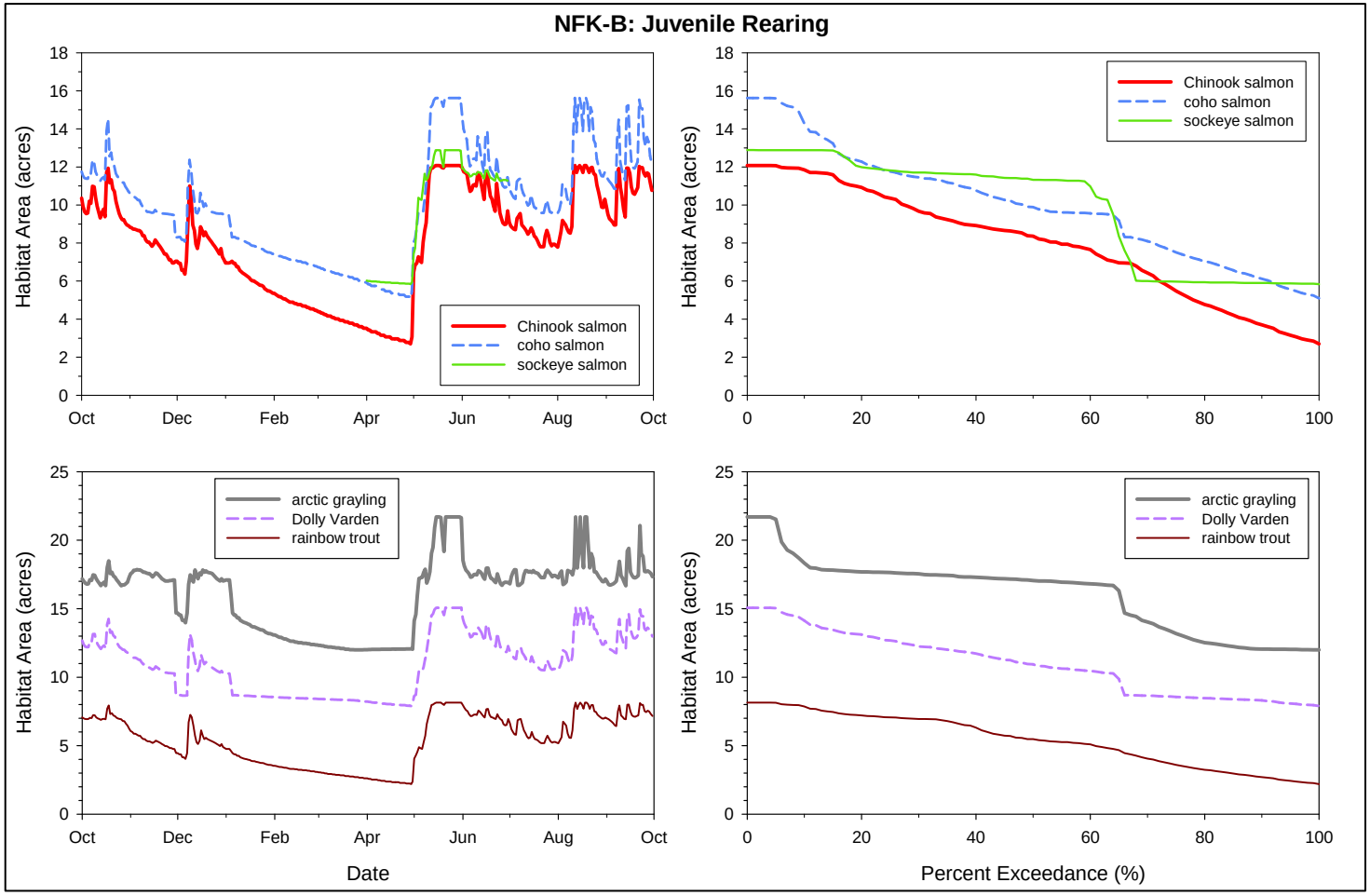


FIGURE 38
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in NFK-B

Note:

Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in NFK-B.

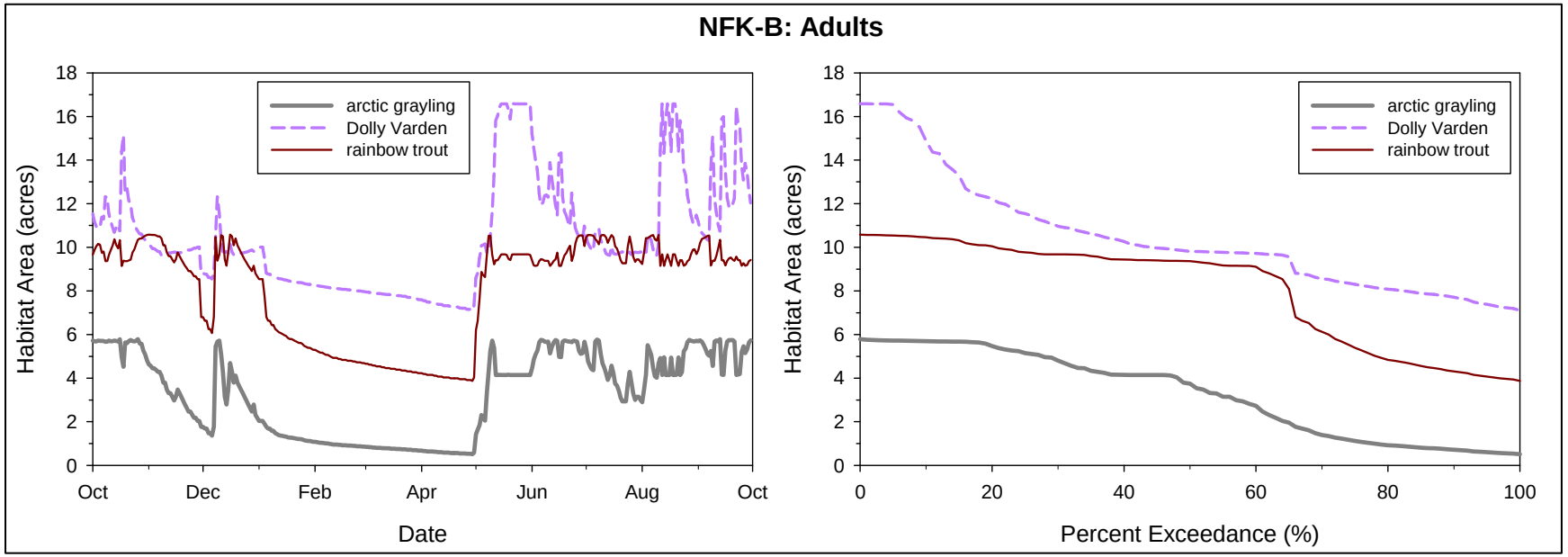


FIGURE 39
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in NFK-B

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in NFK-B.

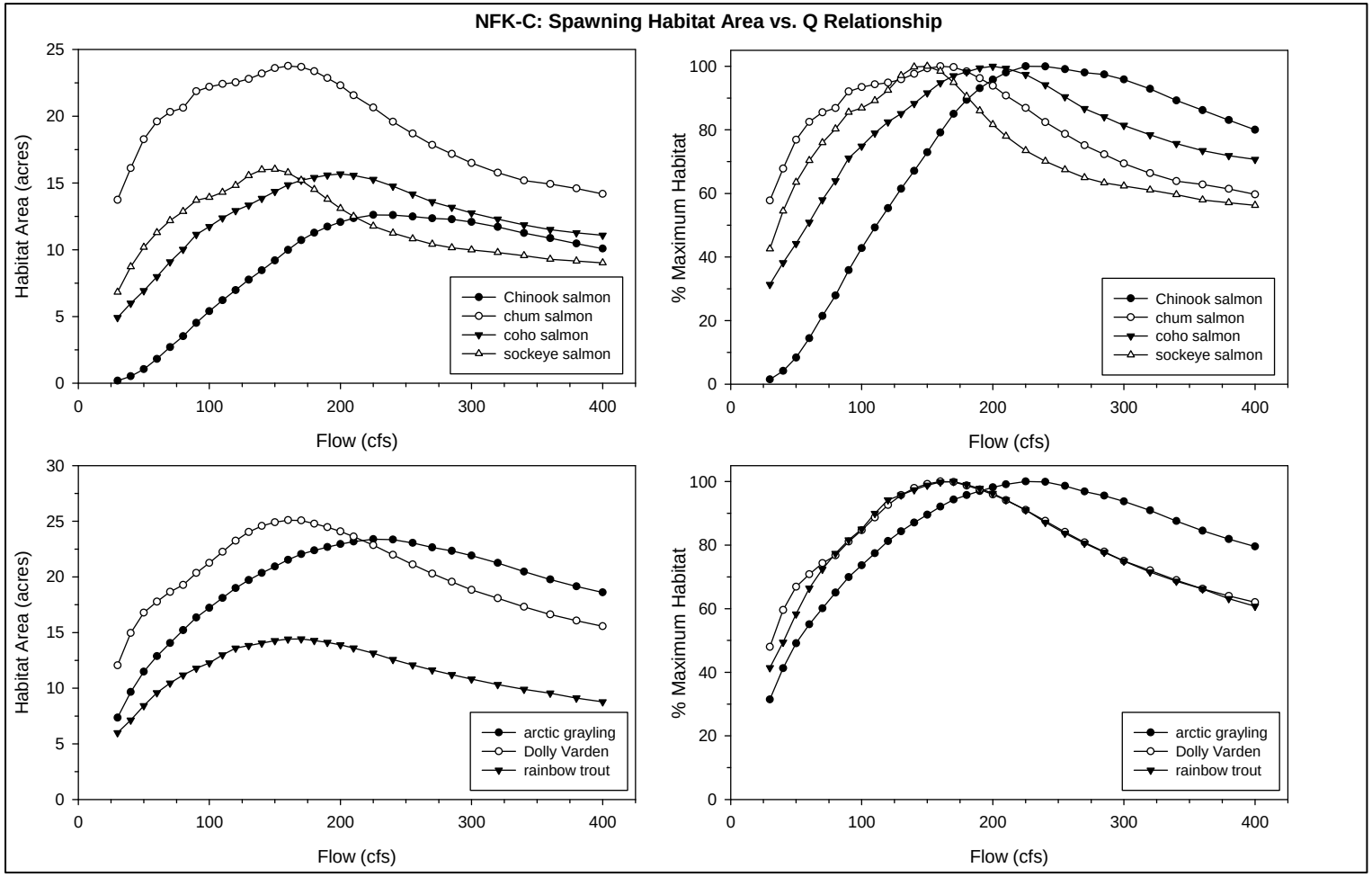


FIGURE 40
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in NFK-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in NFK-C.

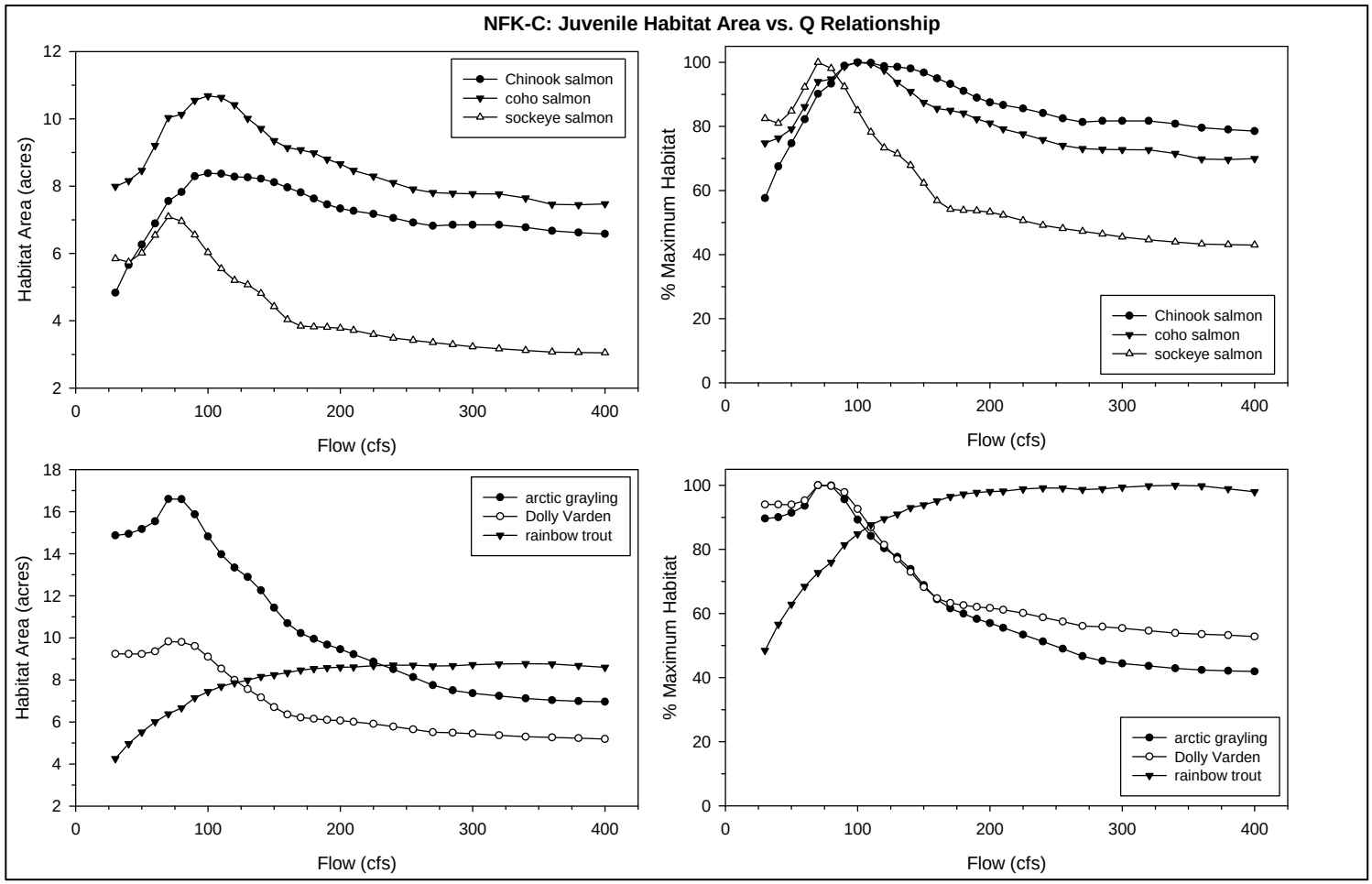


FIGURE 41
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in NFK-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in NFK-C.

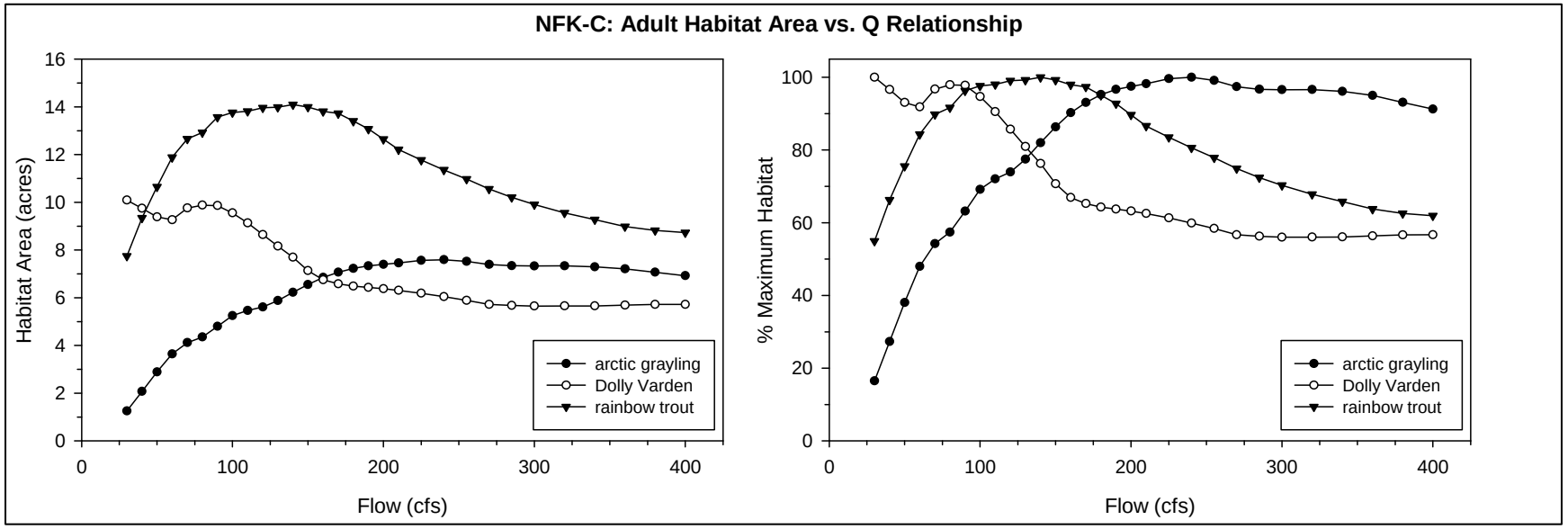


FIGURE 42
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in NFK-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in NFK-C.

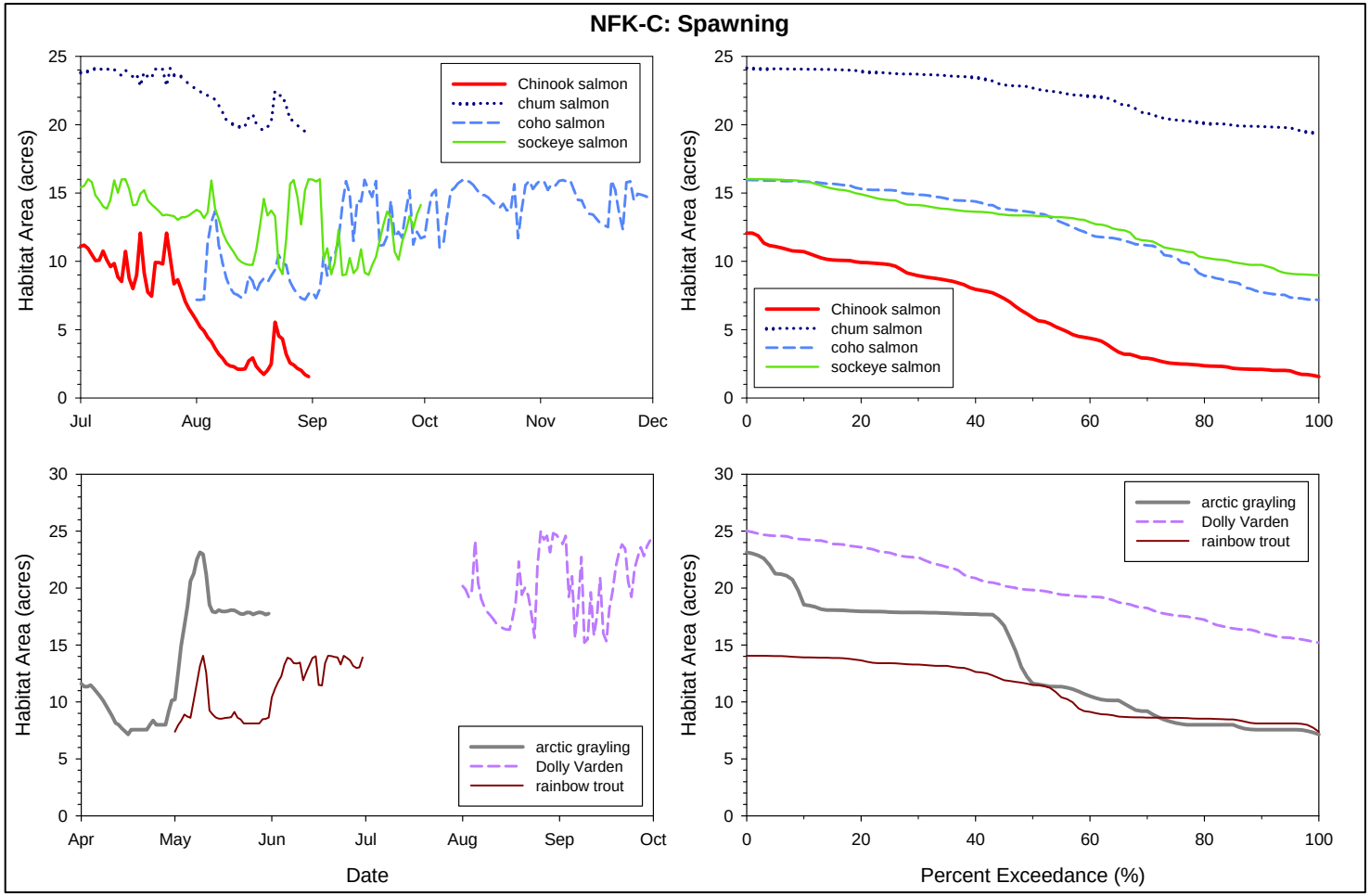


FIGURE 43
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in NFK-C

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in NFK-C.

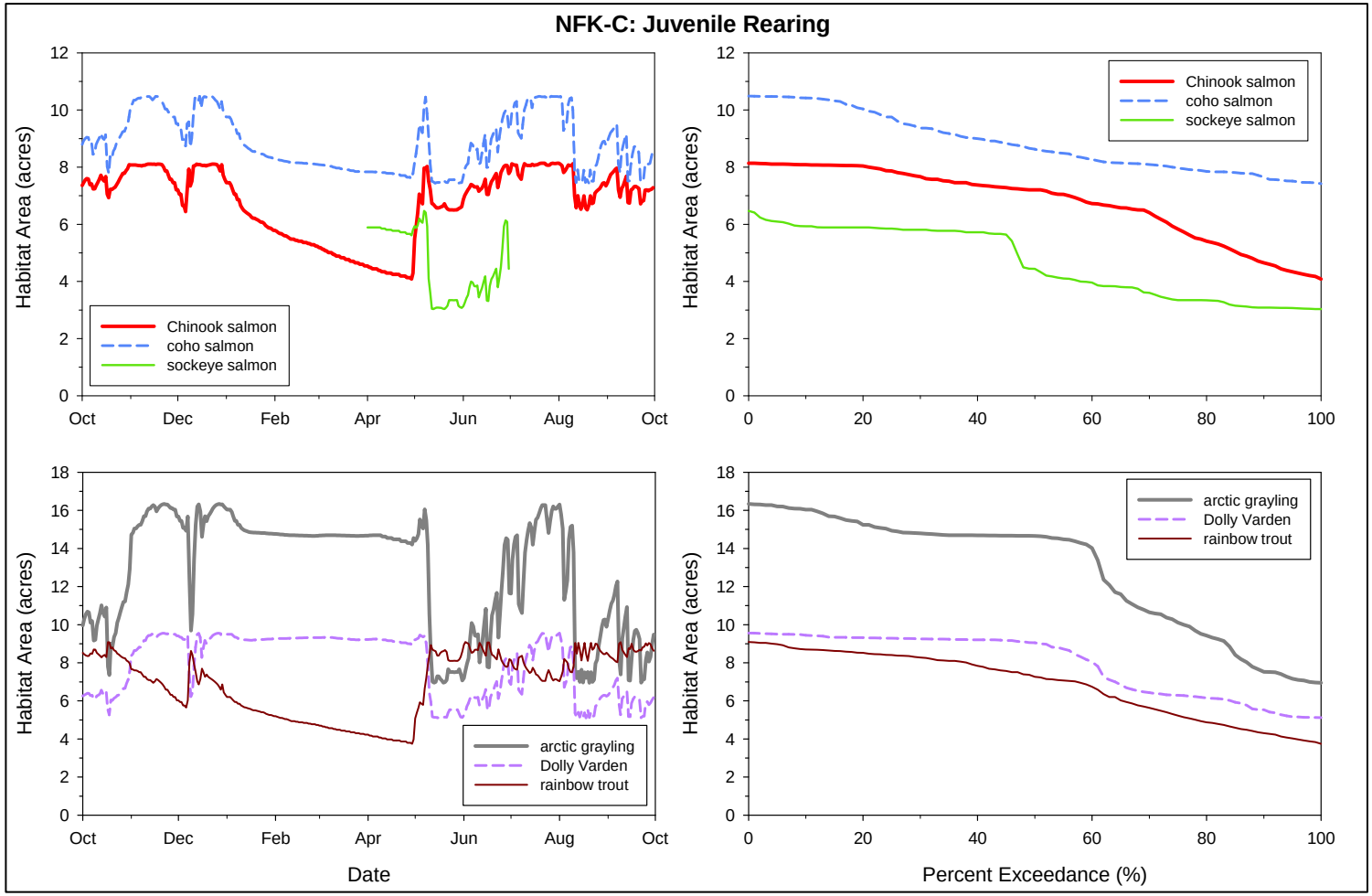


FIGURE 44
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in NFK-C

Note:

Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in NFK-C.

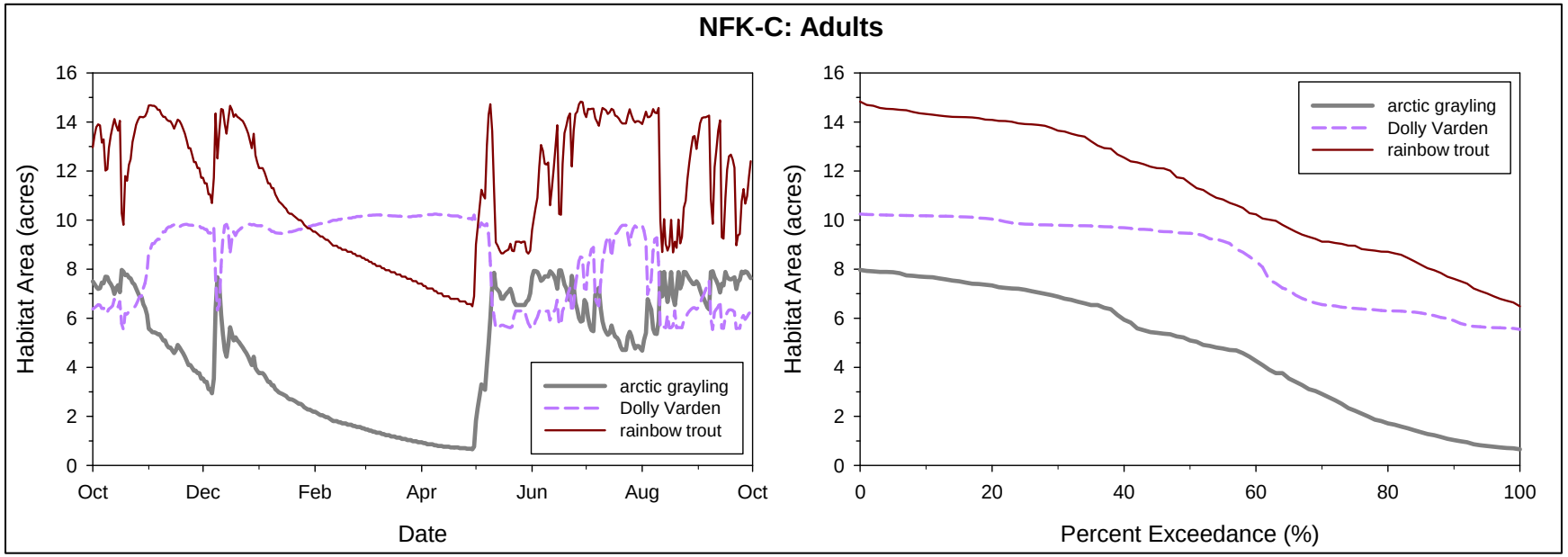


FIGURE 45
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in NFK-C

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in NFK-C.

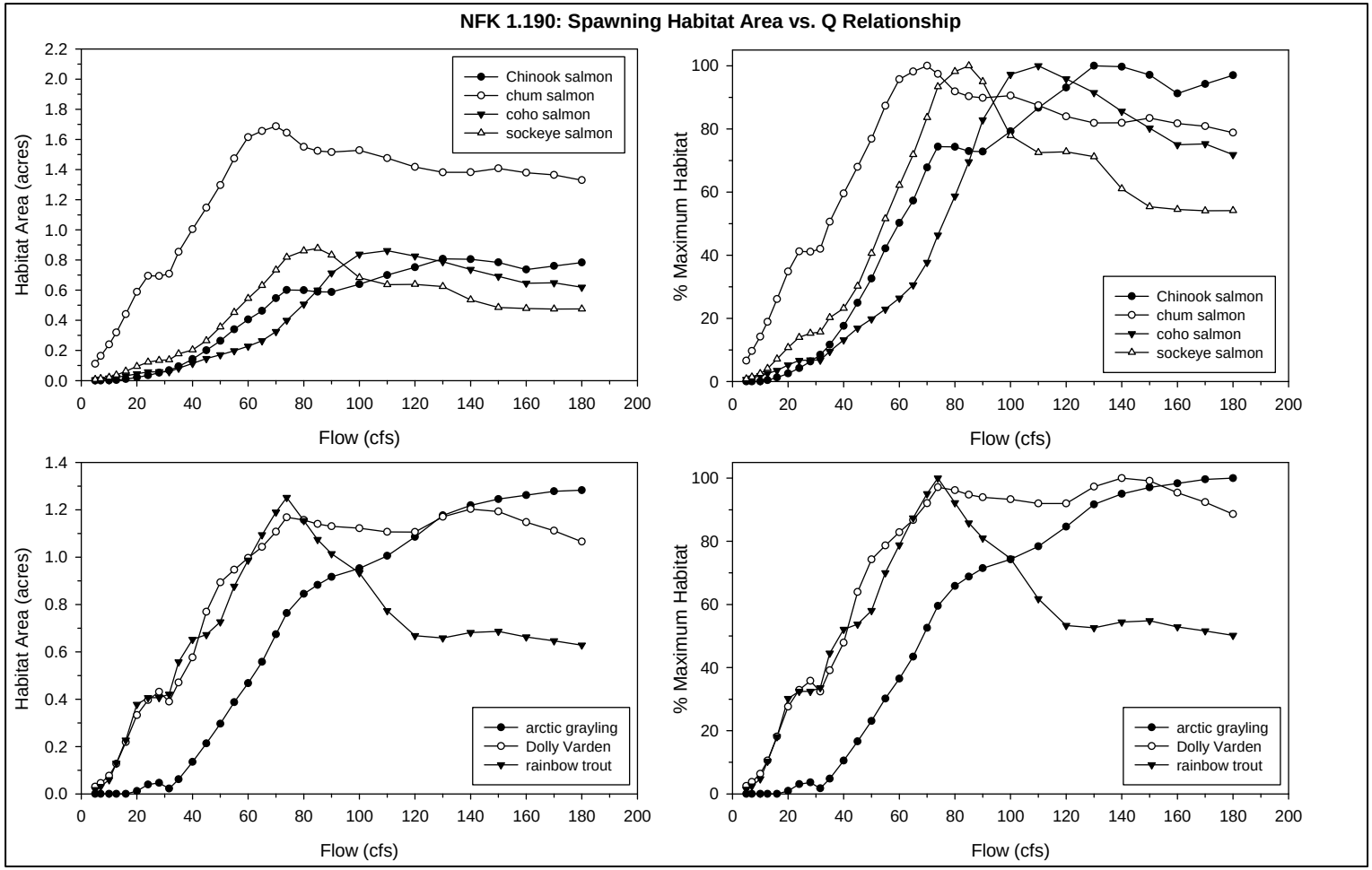


FIGURE 46
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in Tributary NFK 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in Tributary NFK 1.190.

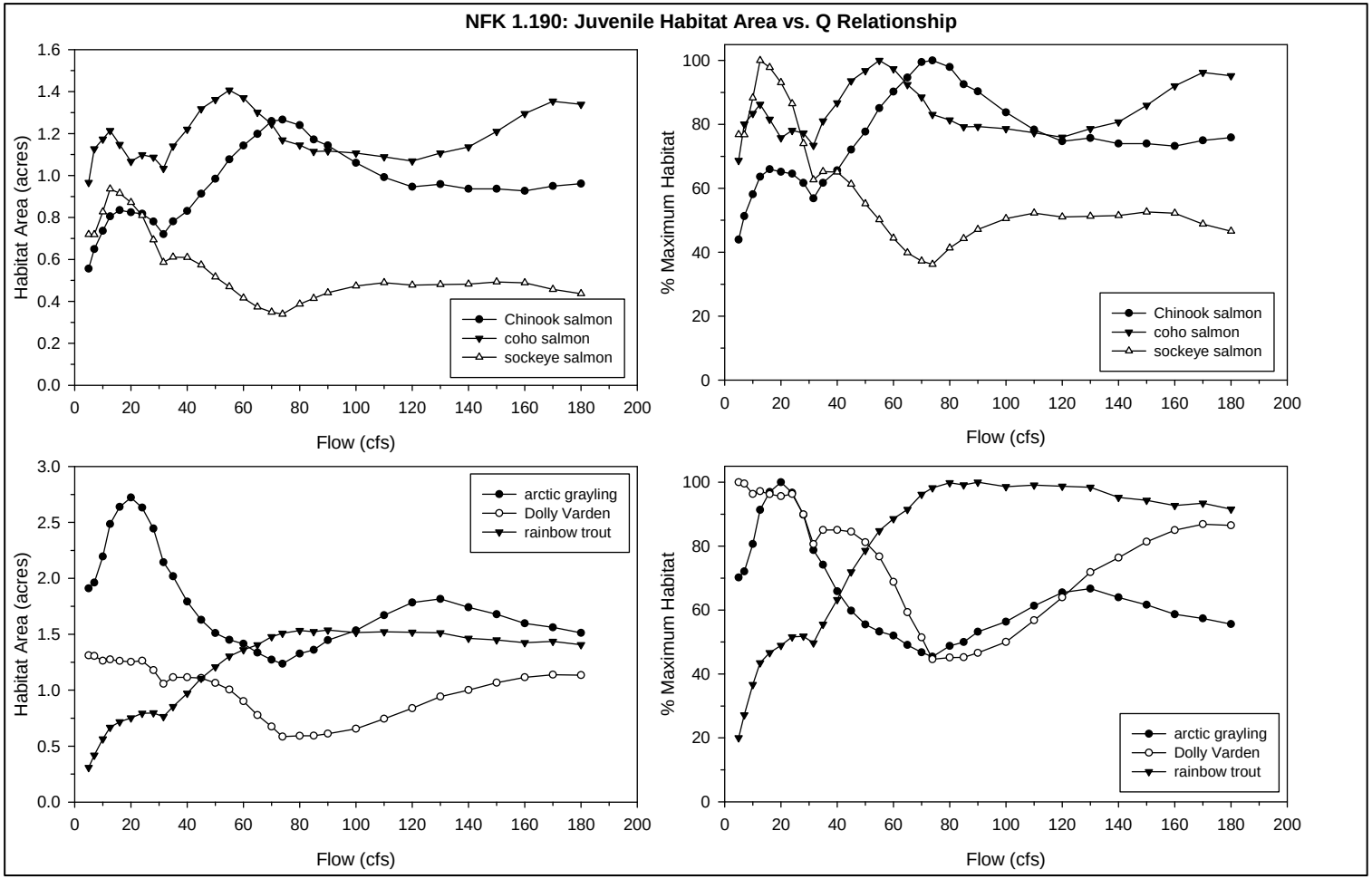


FIGURE 47
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in Tributary NFK 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in Tributary NFK 1.190.

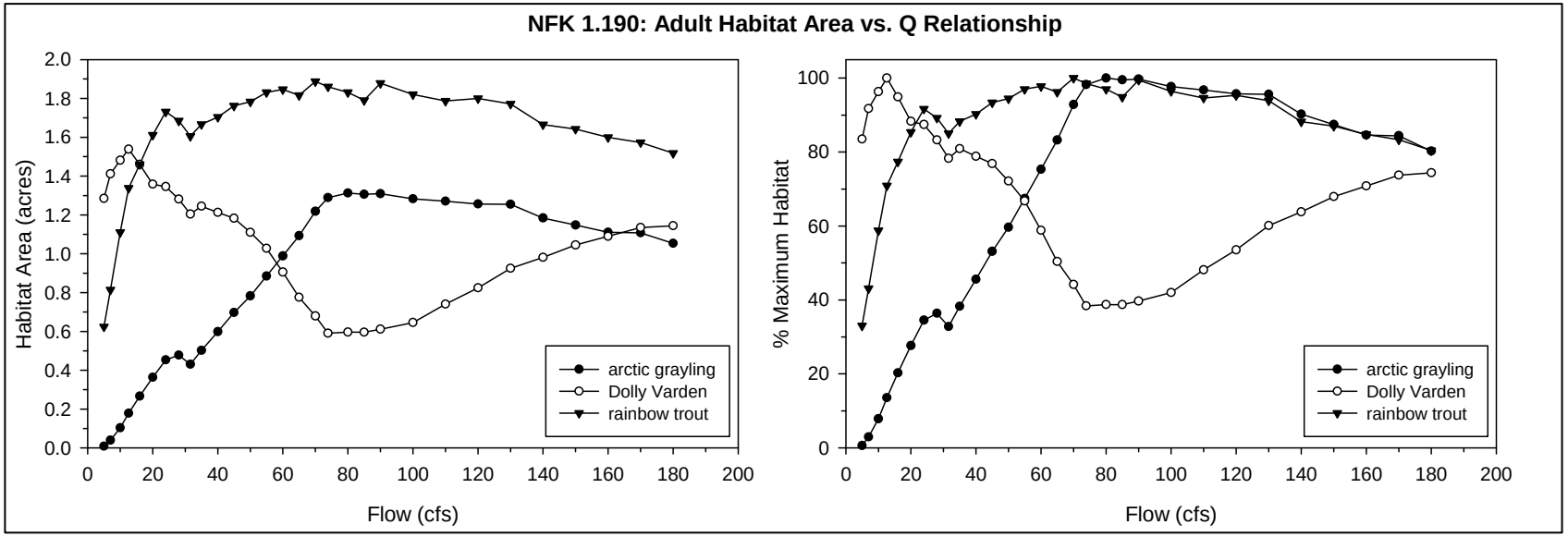


FIGURE 48
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in Tributary NFK 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in Tributary NFK 1.190.

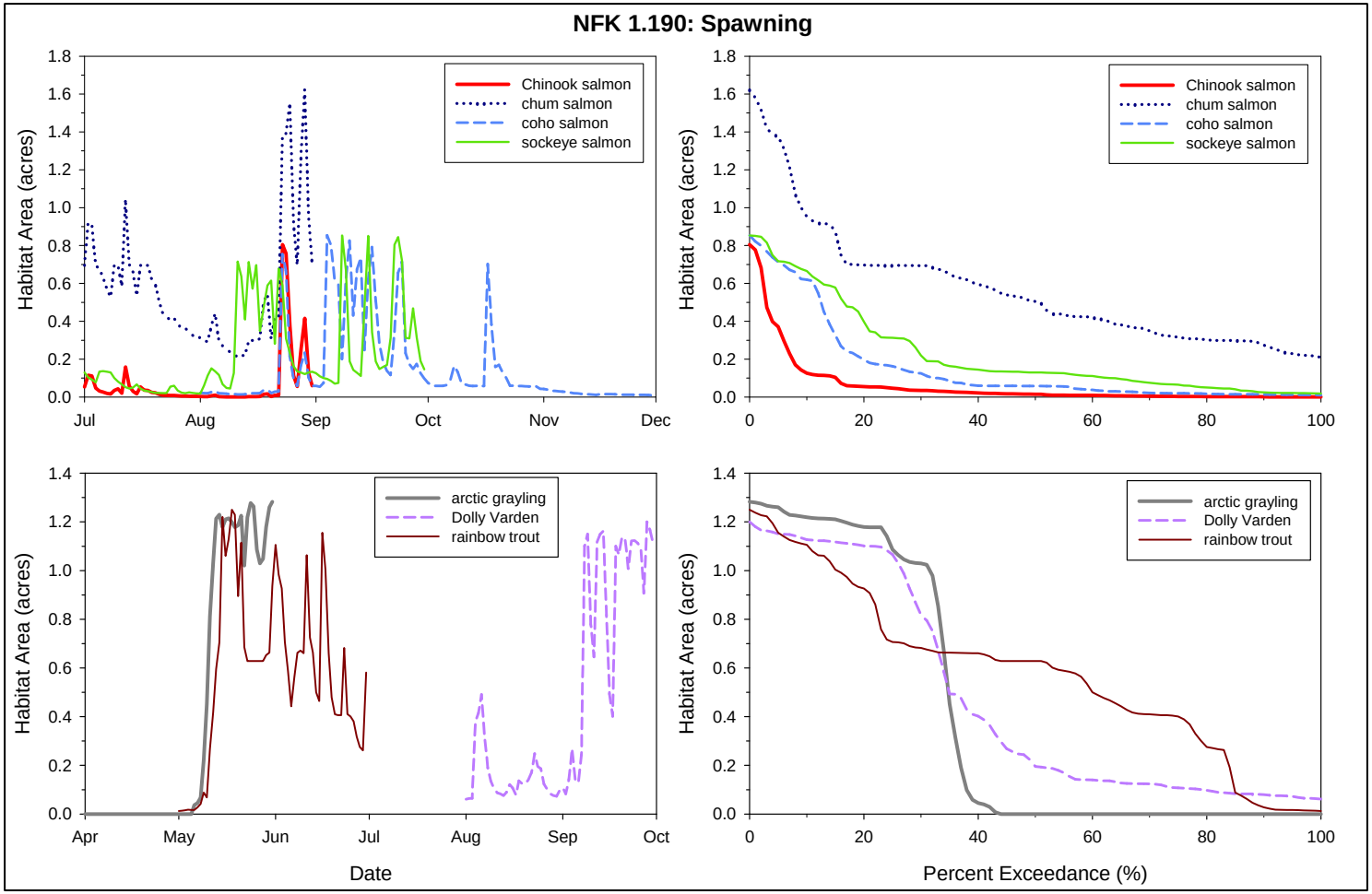


FIGURE 49
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in Tributary NFK 1.190

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in Tributary NFK 1.190.

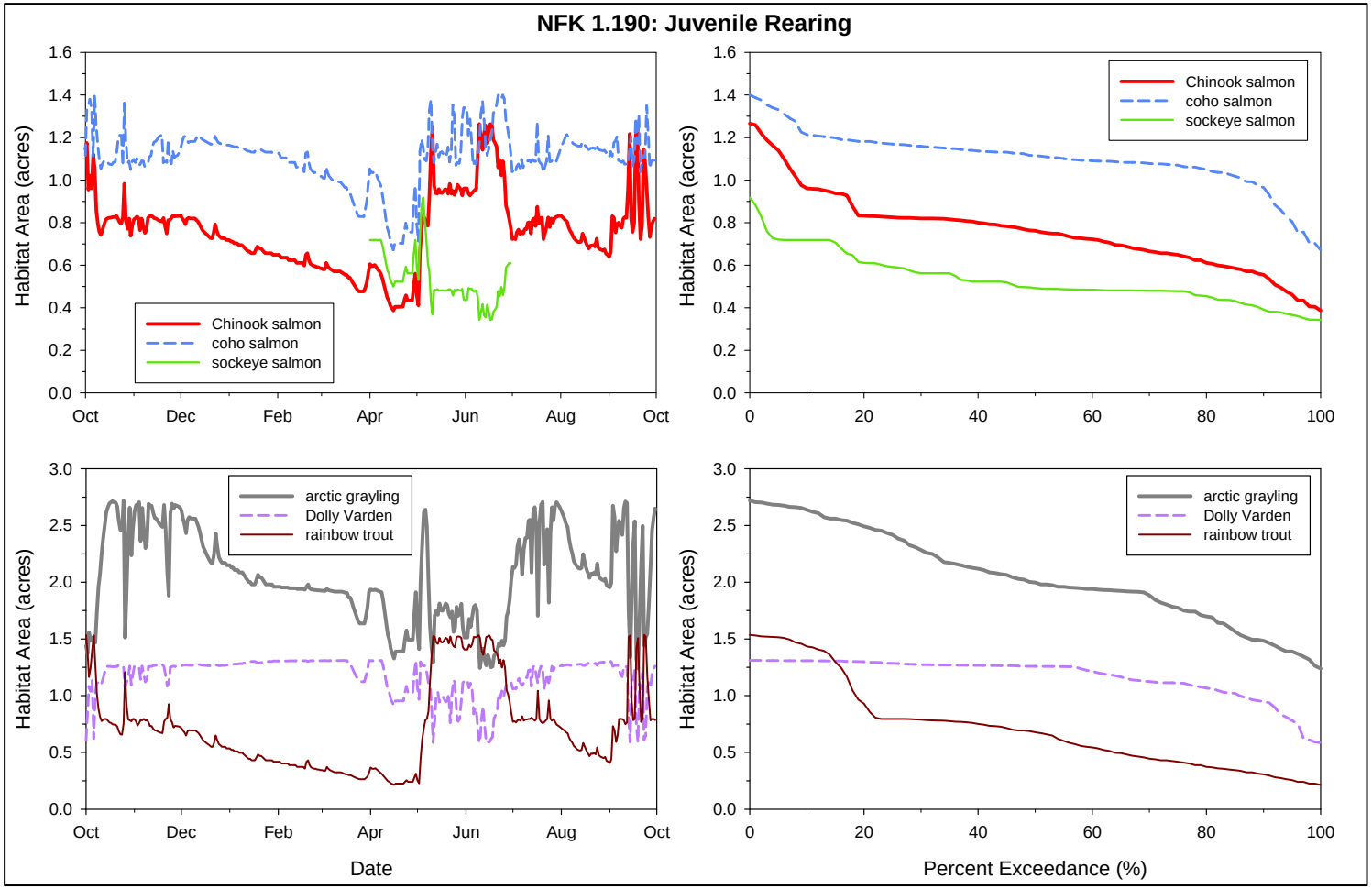


FIGURE 50
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in Tributary NFK 1.190

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in Tributary NFK 1.190.

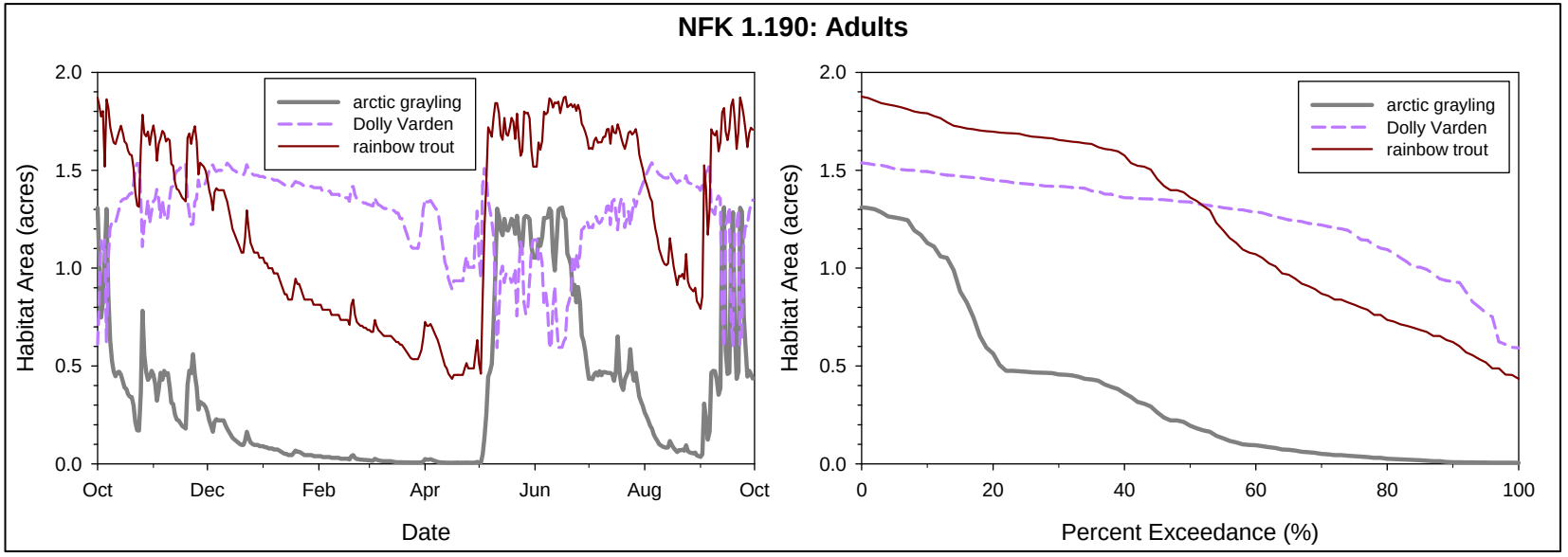


FIGURE 51
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in Tributary NFK 1.190

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in Tributary NFK 1.190.

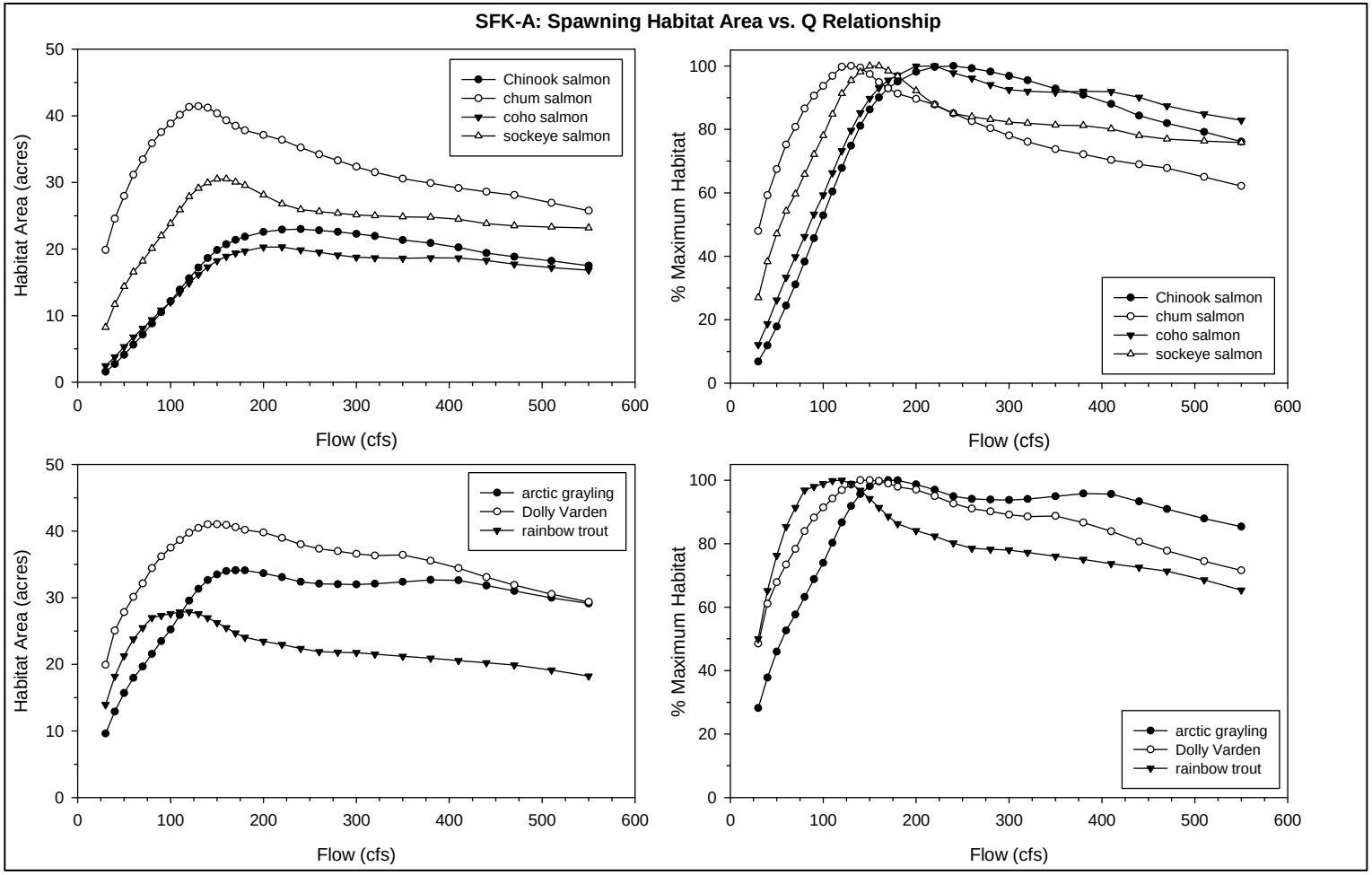


FIGURE 52
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in SFK-A

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in SFK-A.

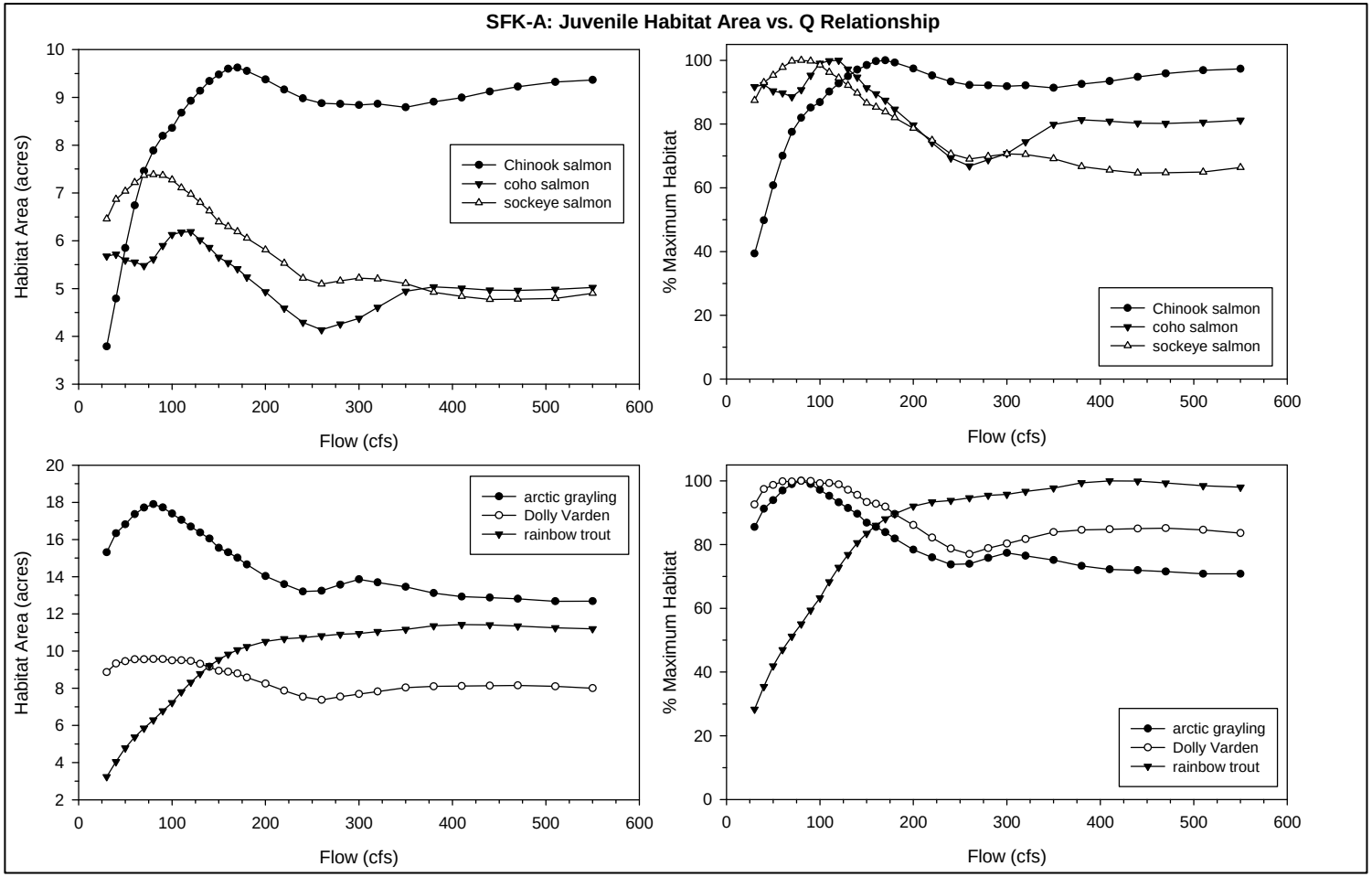


FIGURE 53
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in SFK-A

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-A.

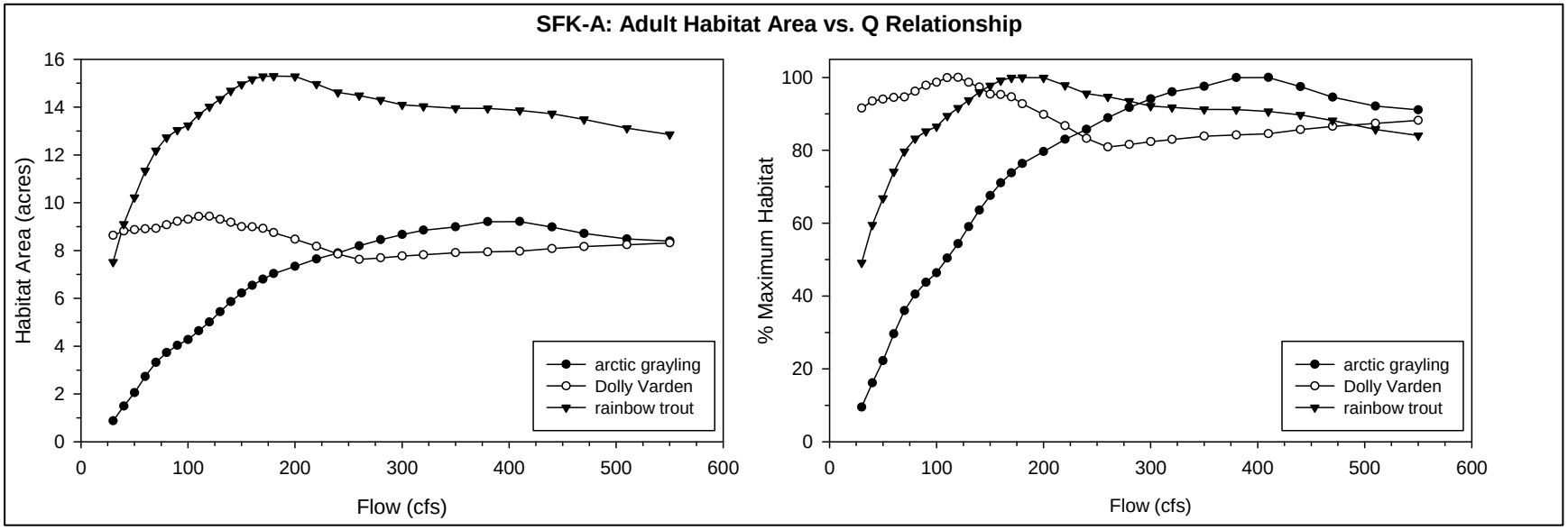


FIGURE 54
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in SFK-A

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in SFK-A.

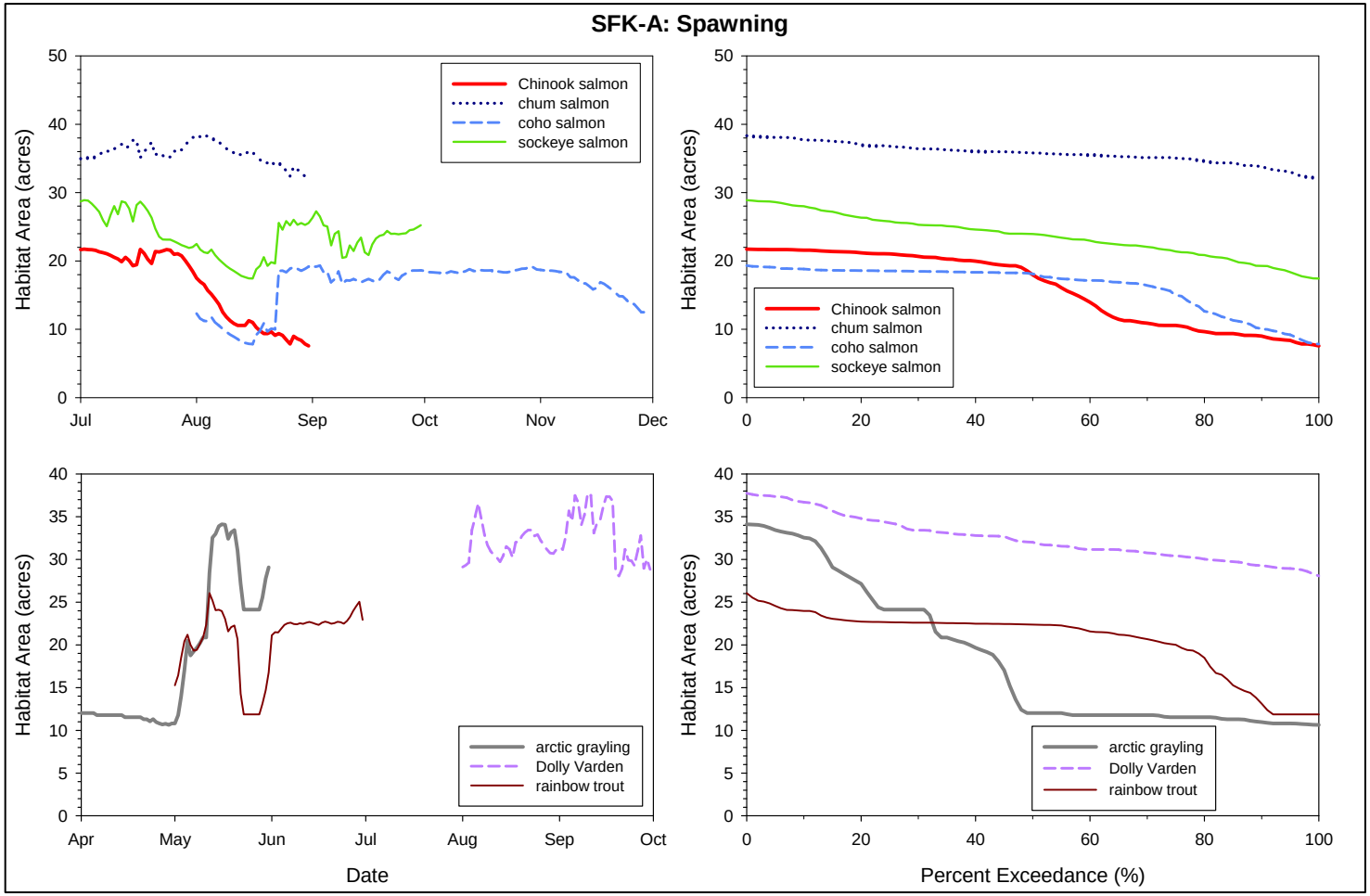


FIGURE 55
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in SFK-A

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in SFK-A.

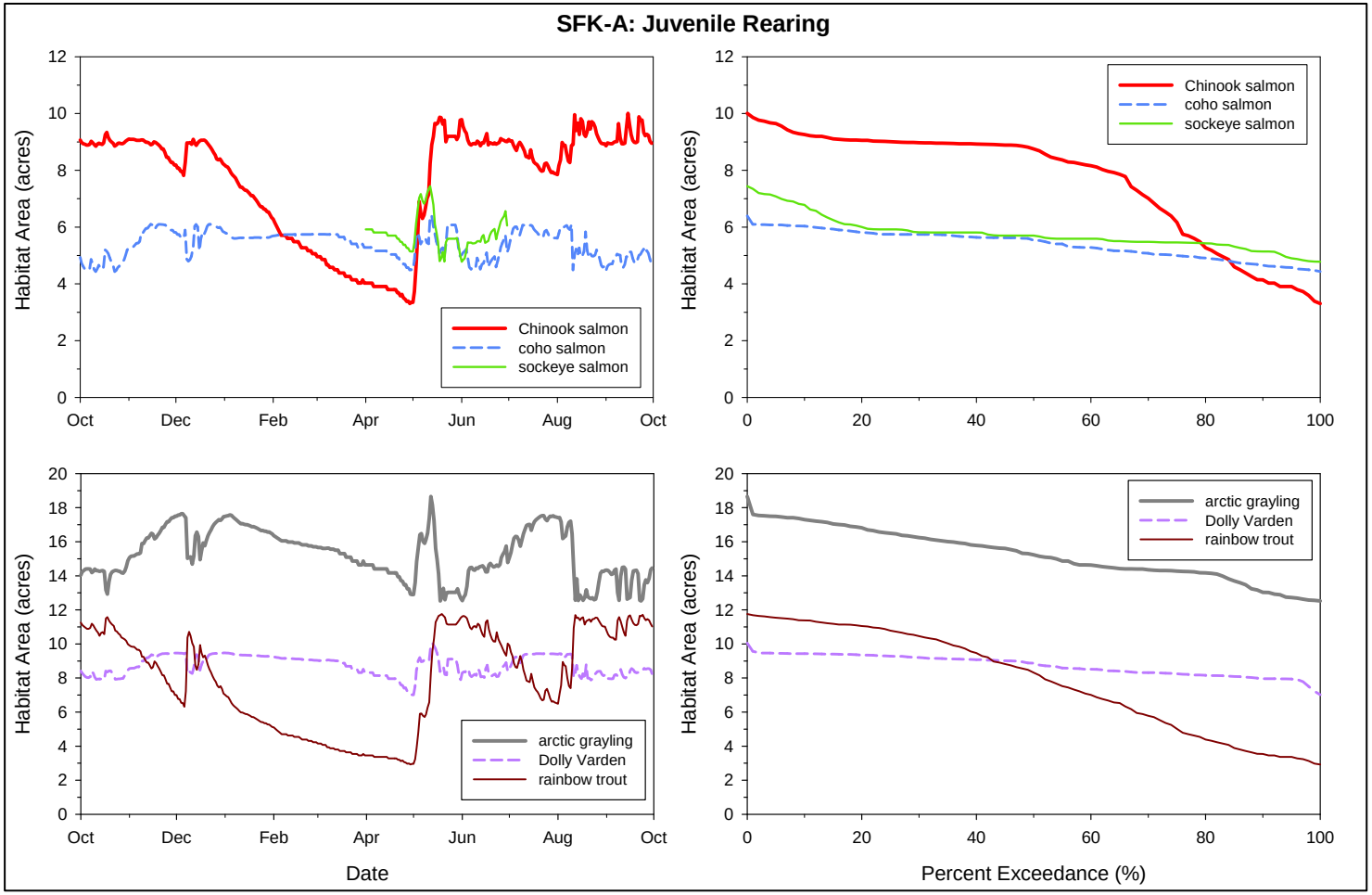


FIGURE 56
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in SFK-A

Note:

Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-A.

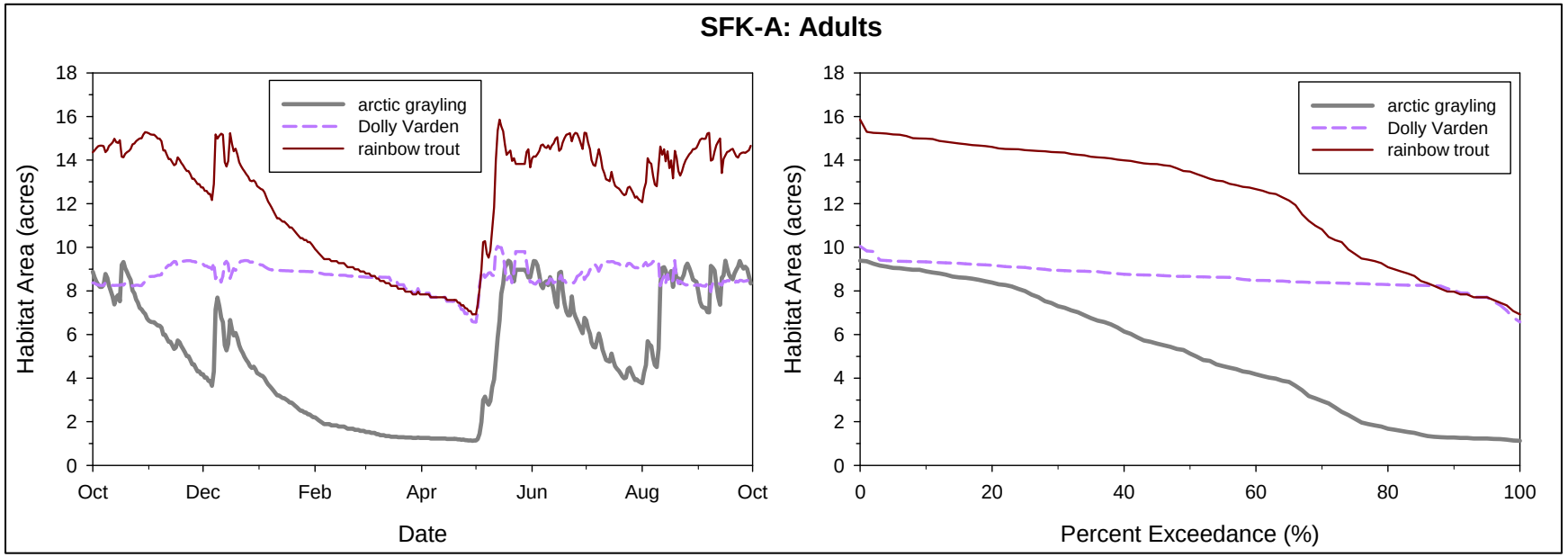


FIGURE 57
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in SFK-A

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in SFK-A.

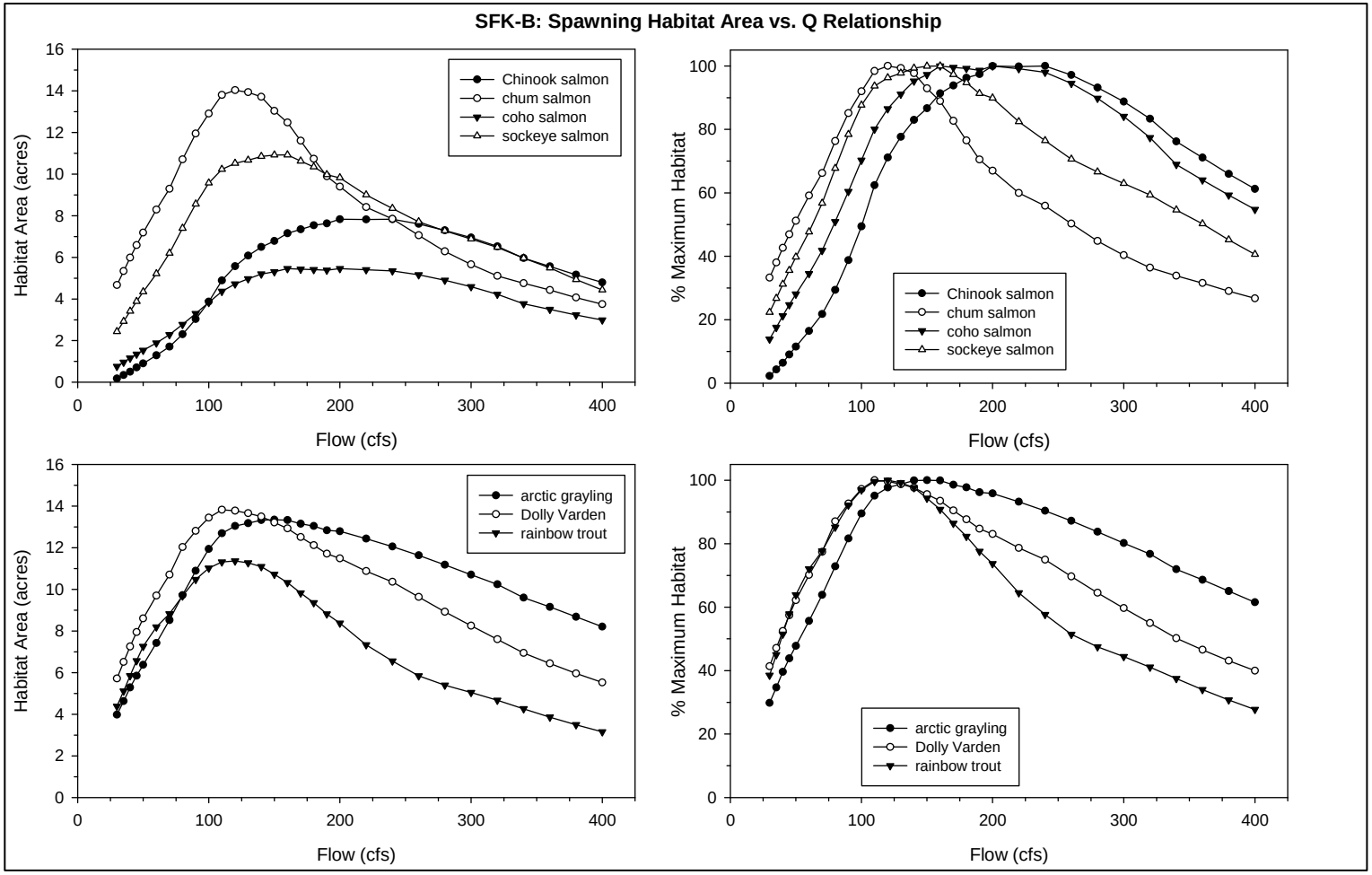


FIGURE 58
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in SFK-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in SFK-B.

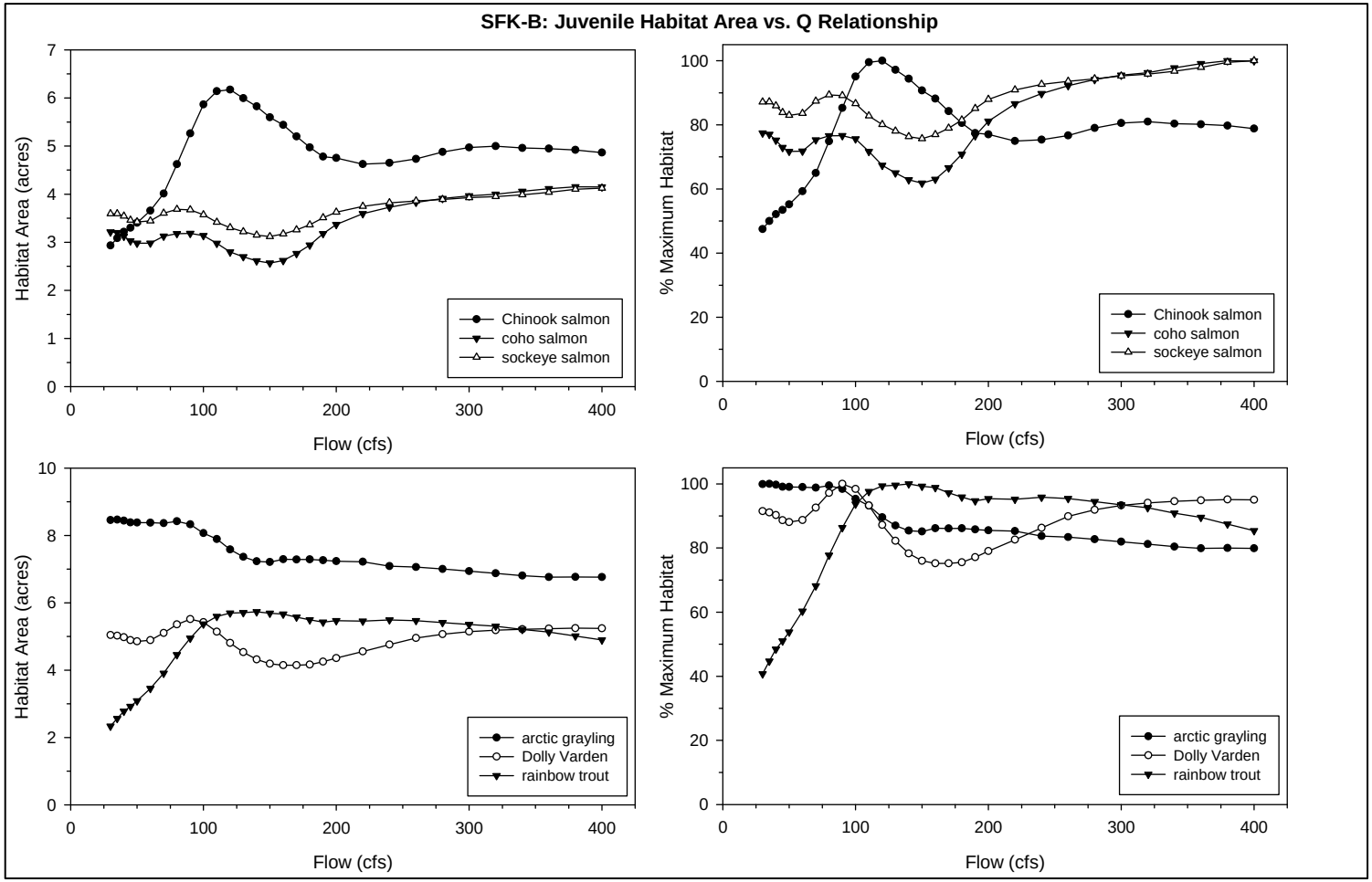


FIGURE 59
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in SFK-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-B.

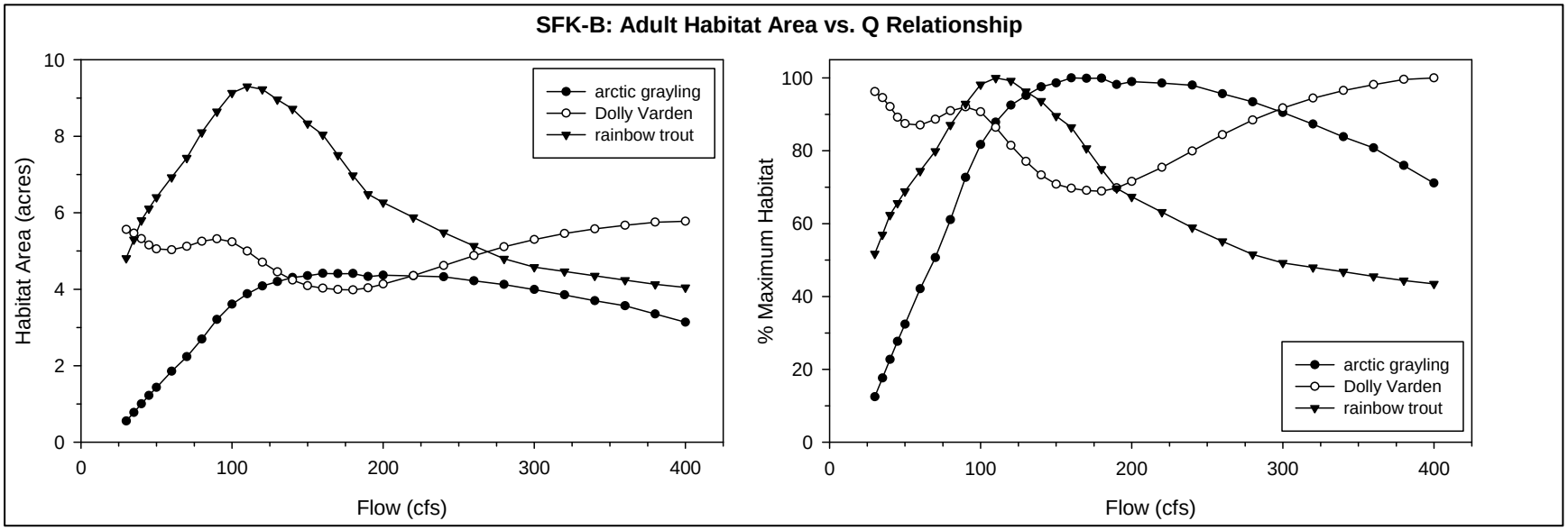


FIGURE 60
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in SFK-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in SFK-B.

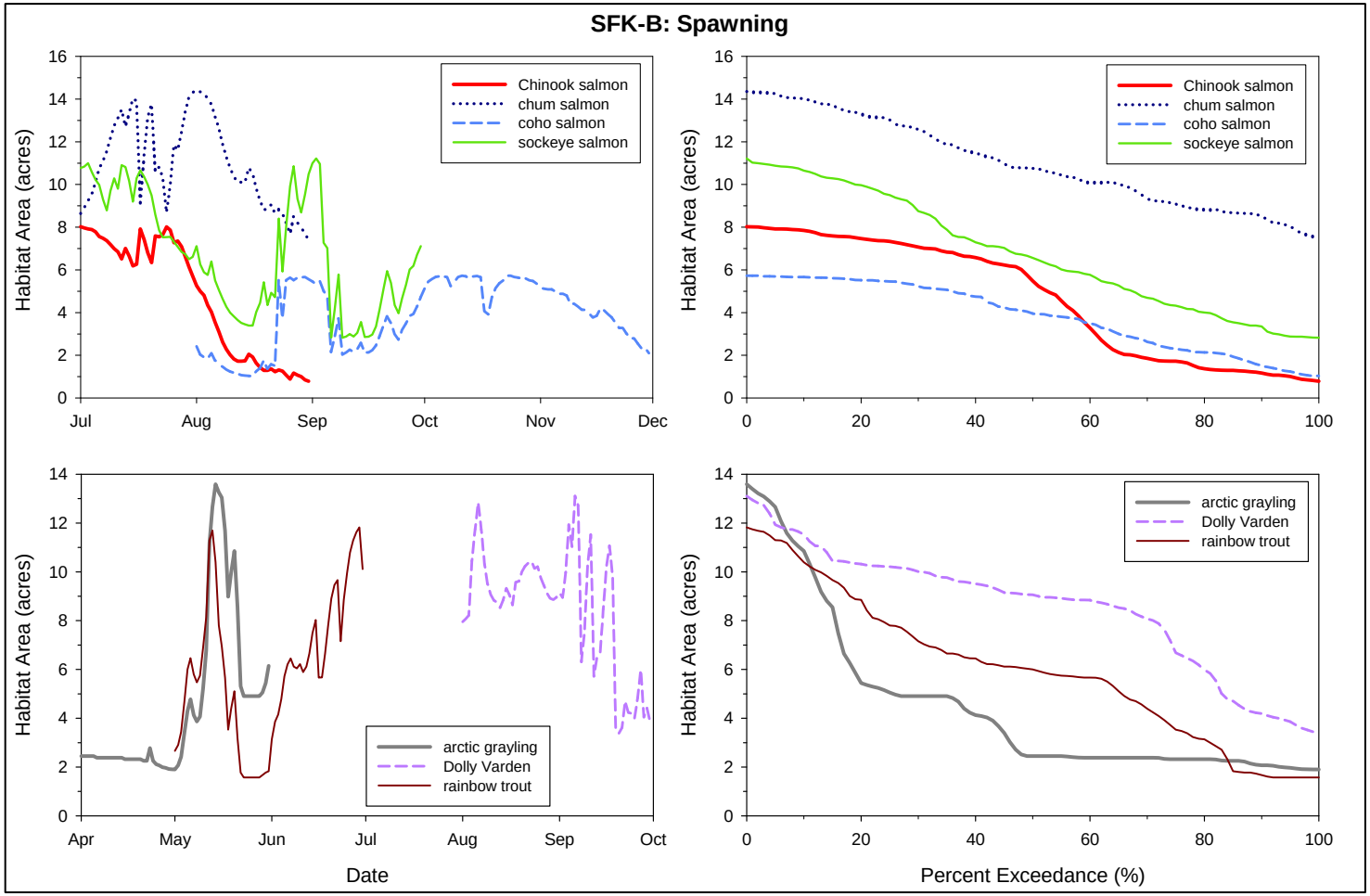


FIGURE 61
Time Series and Duration for Spawning Anadromous and Non-anadromous Salmonids in SFK-B

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-B.

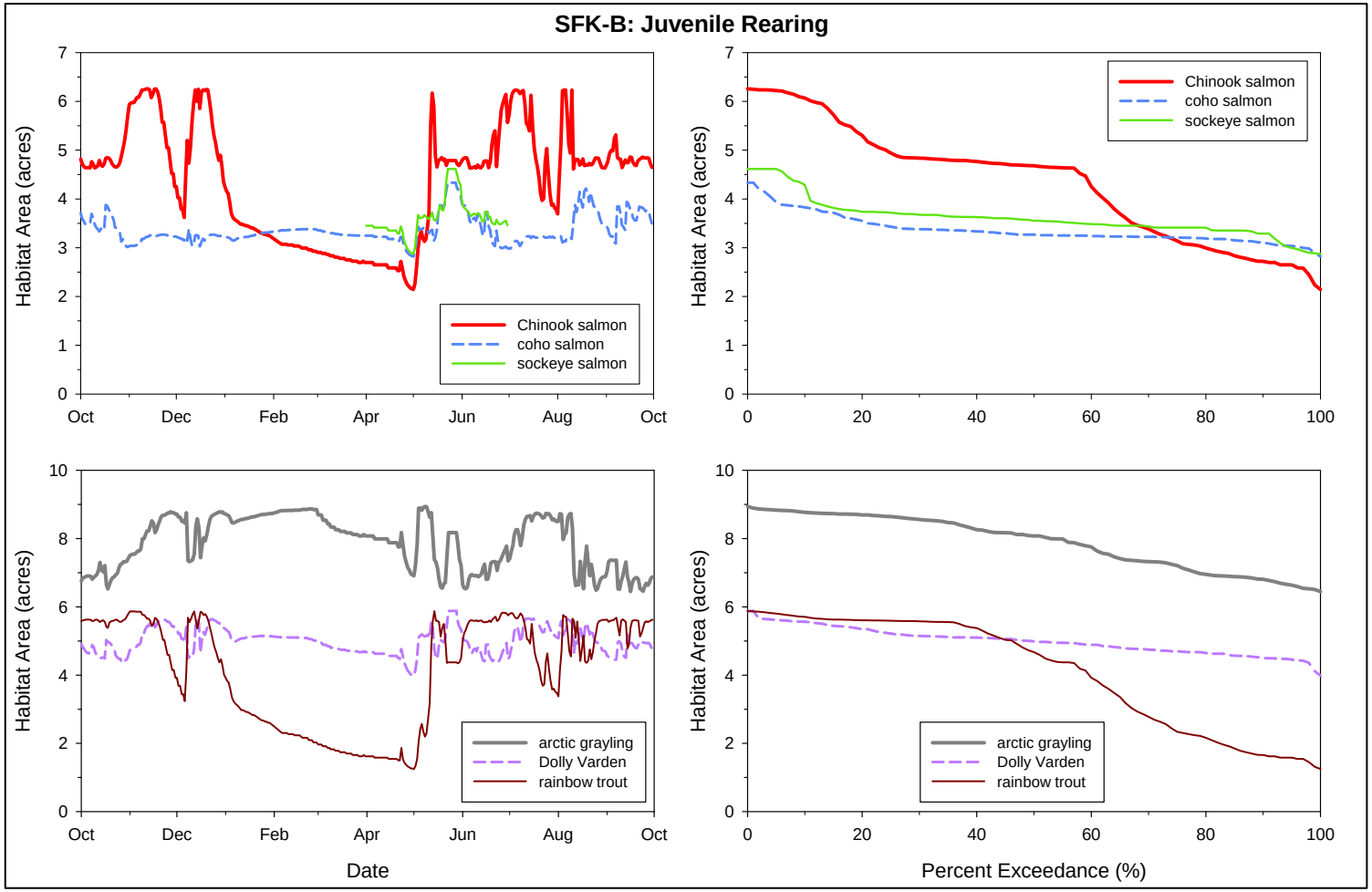


FIGURE 62
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in SFK-B

Note:

Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-B.

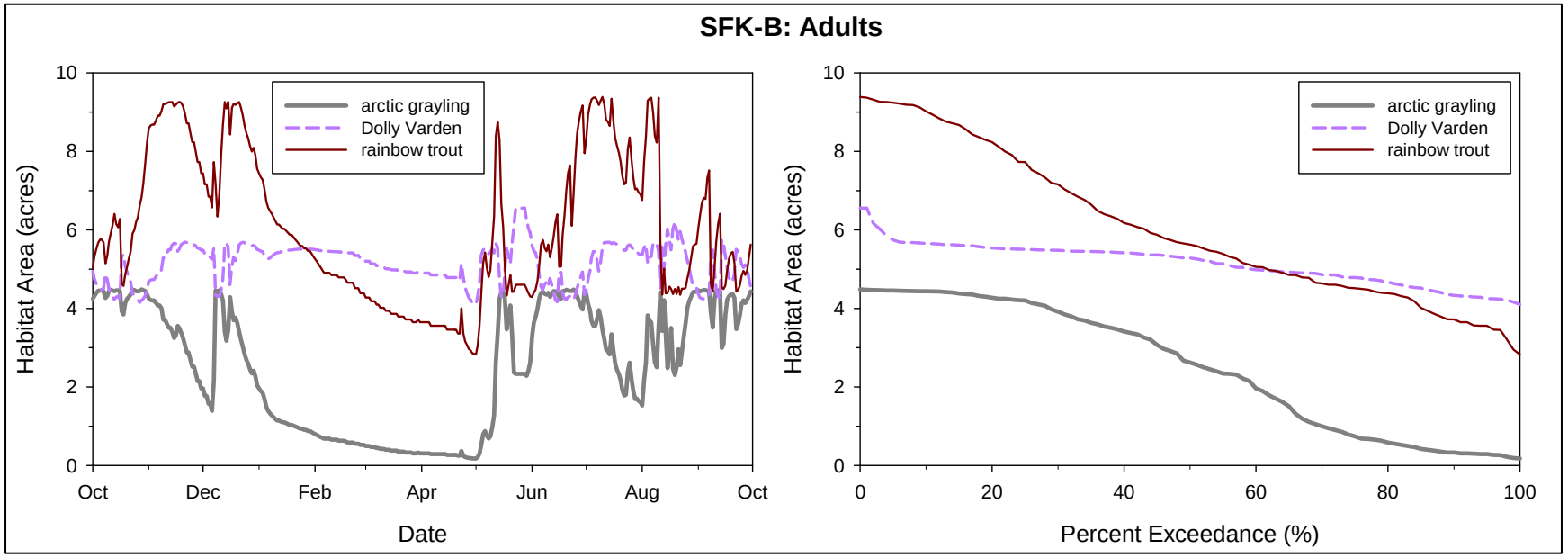


FIGURE 63
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in SFK-B

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in SFK-B.

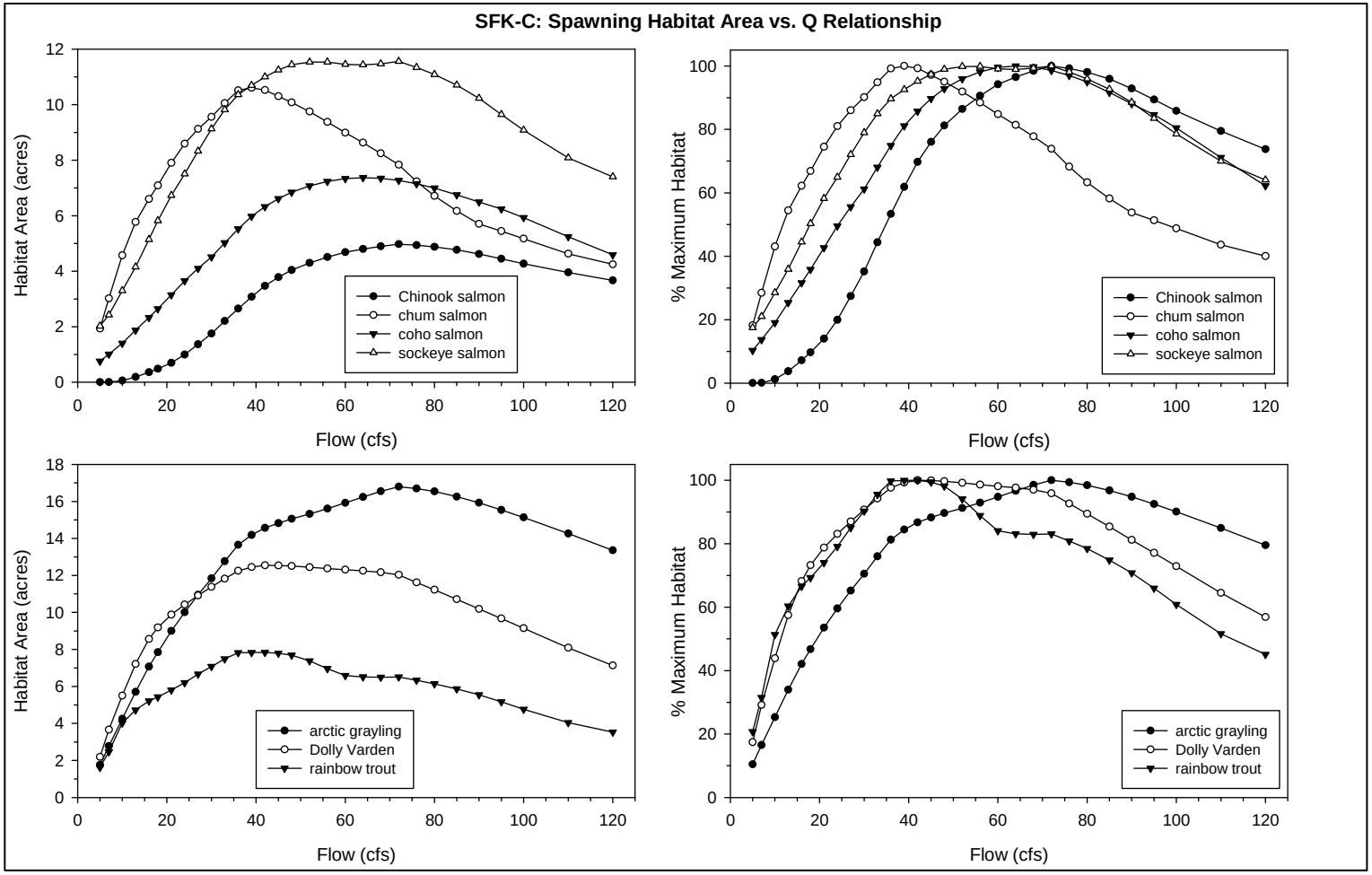


FIGURE 64
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in SFK-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in SFK-C.

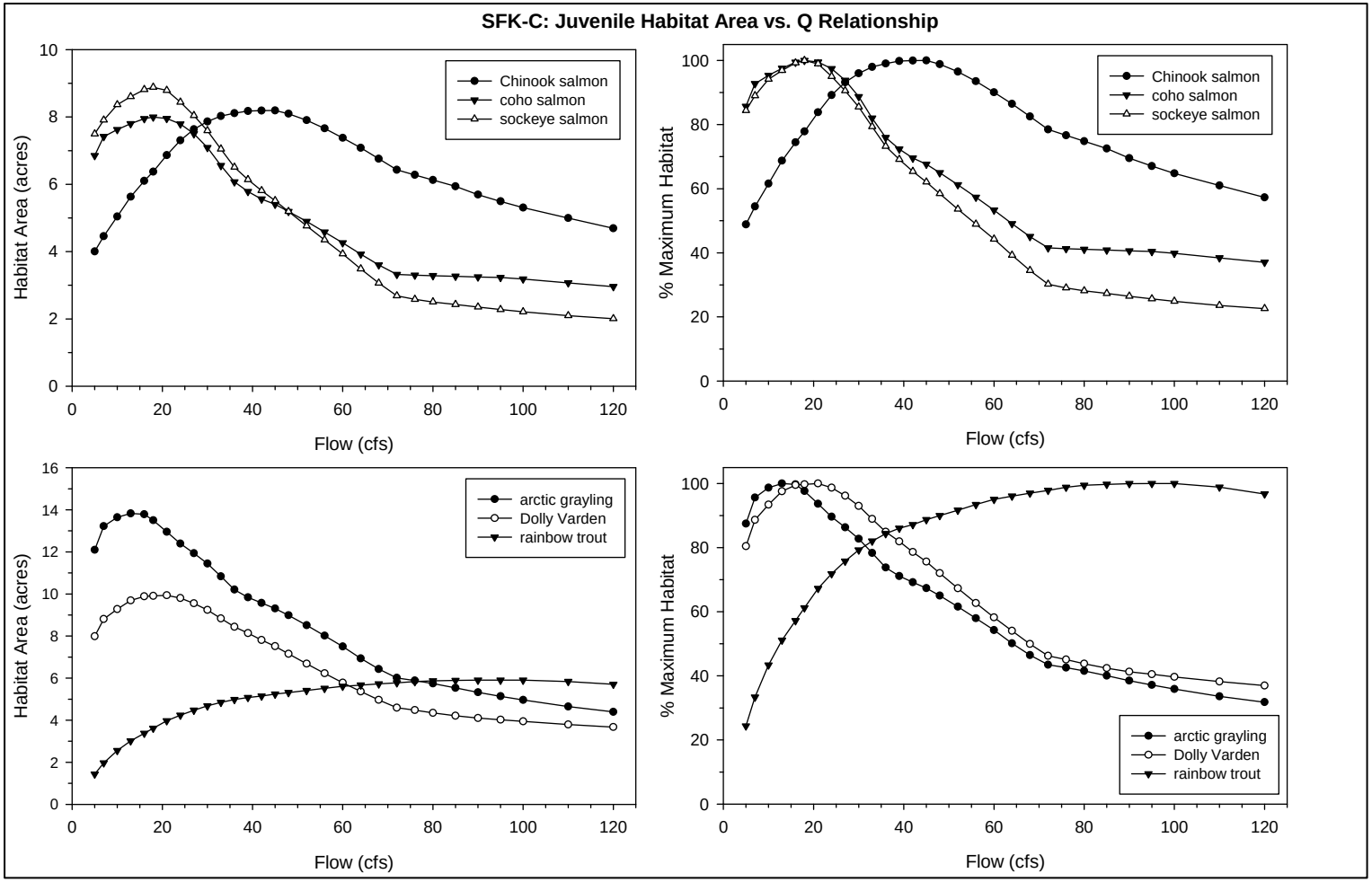


FIGURE 65
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in SFK-C

Note: Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-C.

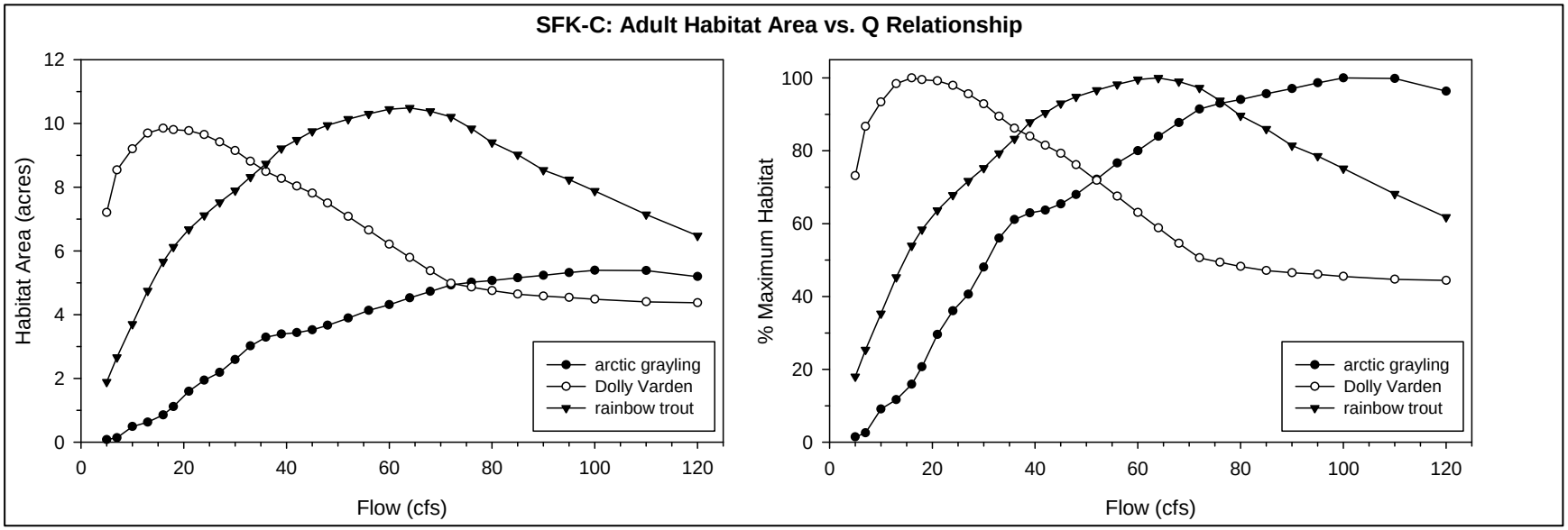


FIGURE 66
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in SFK-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in SFK-B.

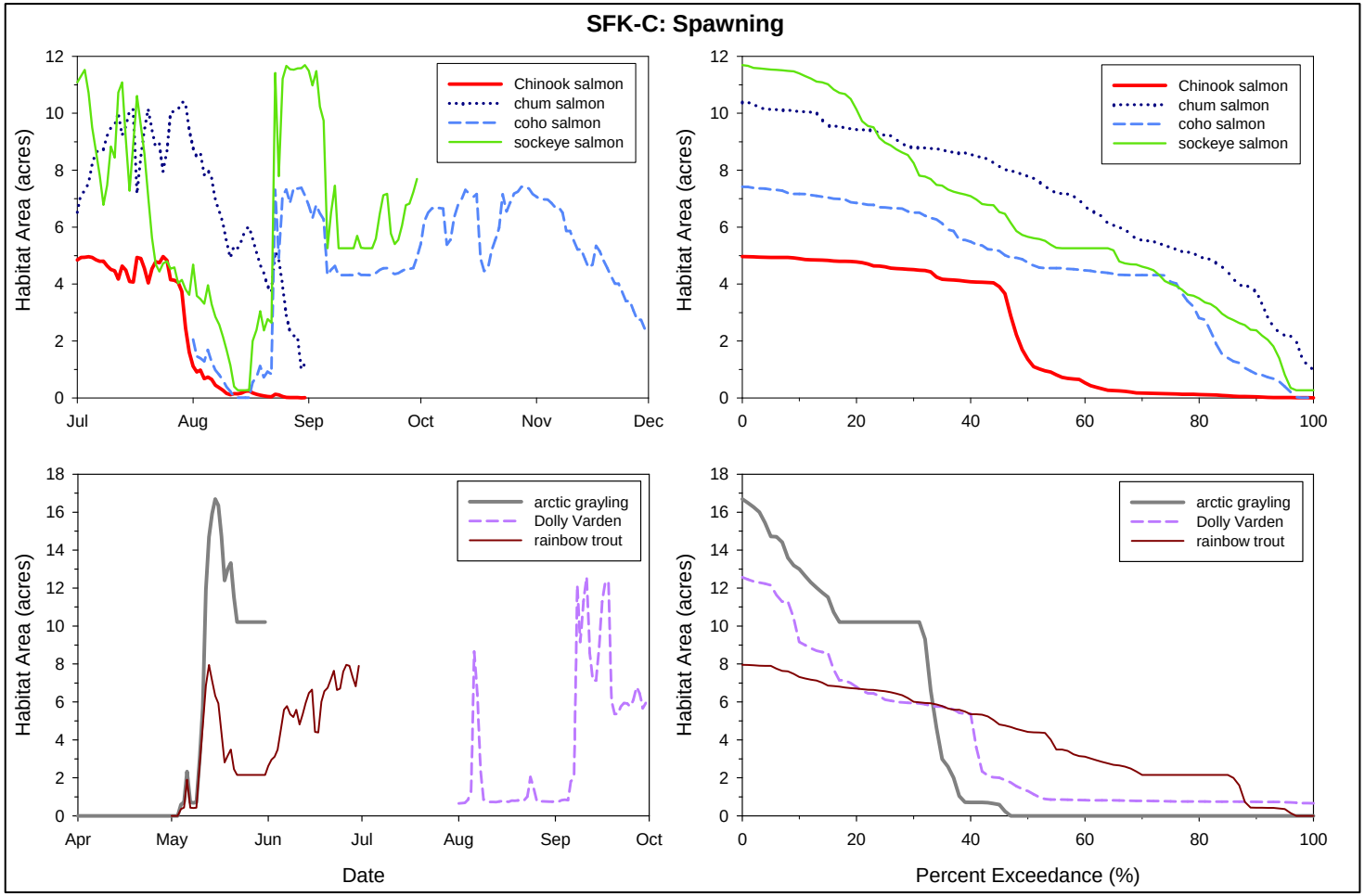


FIGURE 67
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in SFK-C

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in SFK-C.

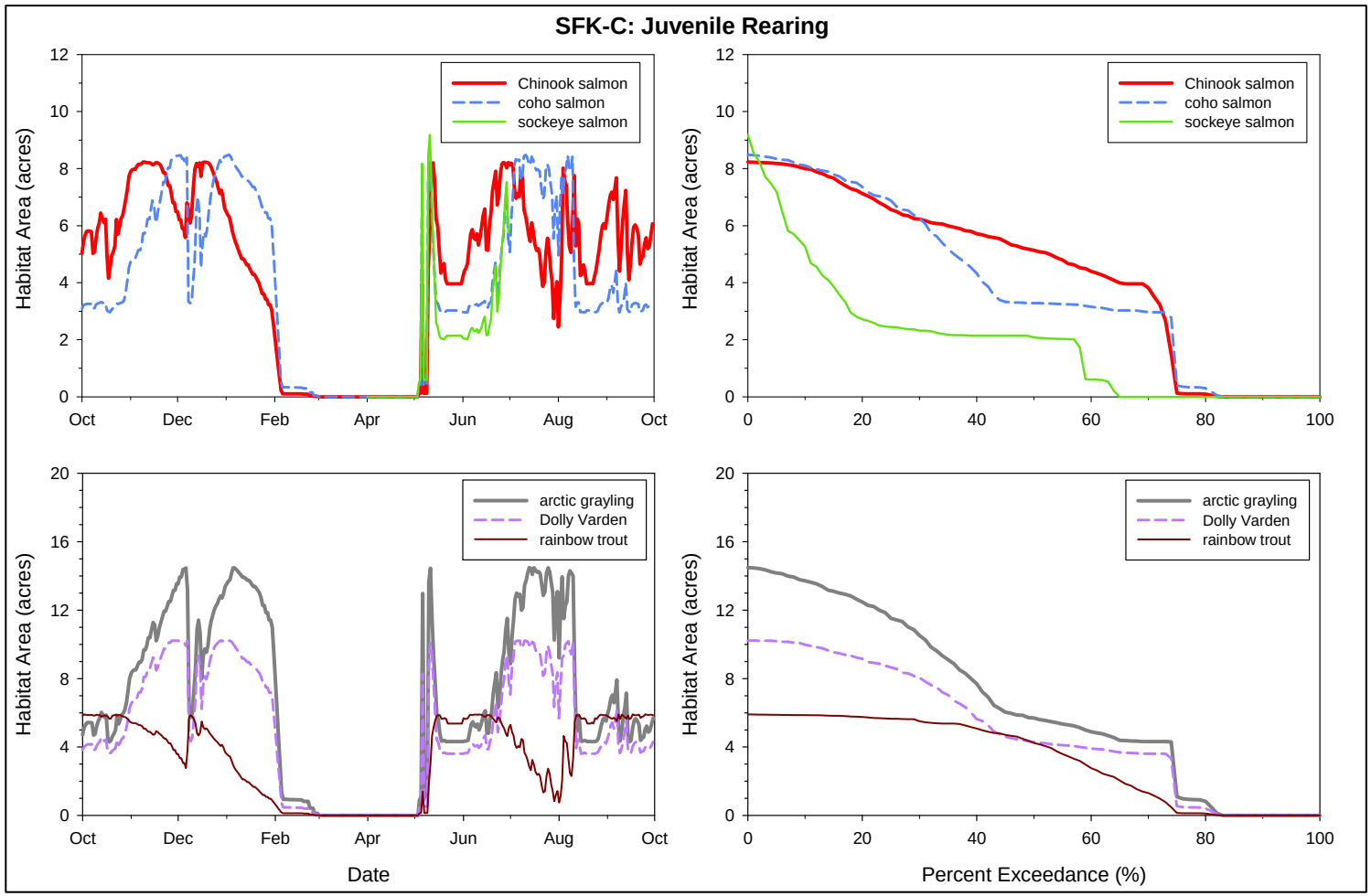


FIGURE 68
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in SFK-C

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in SFK-C.

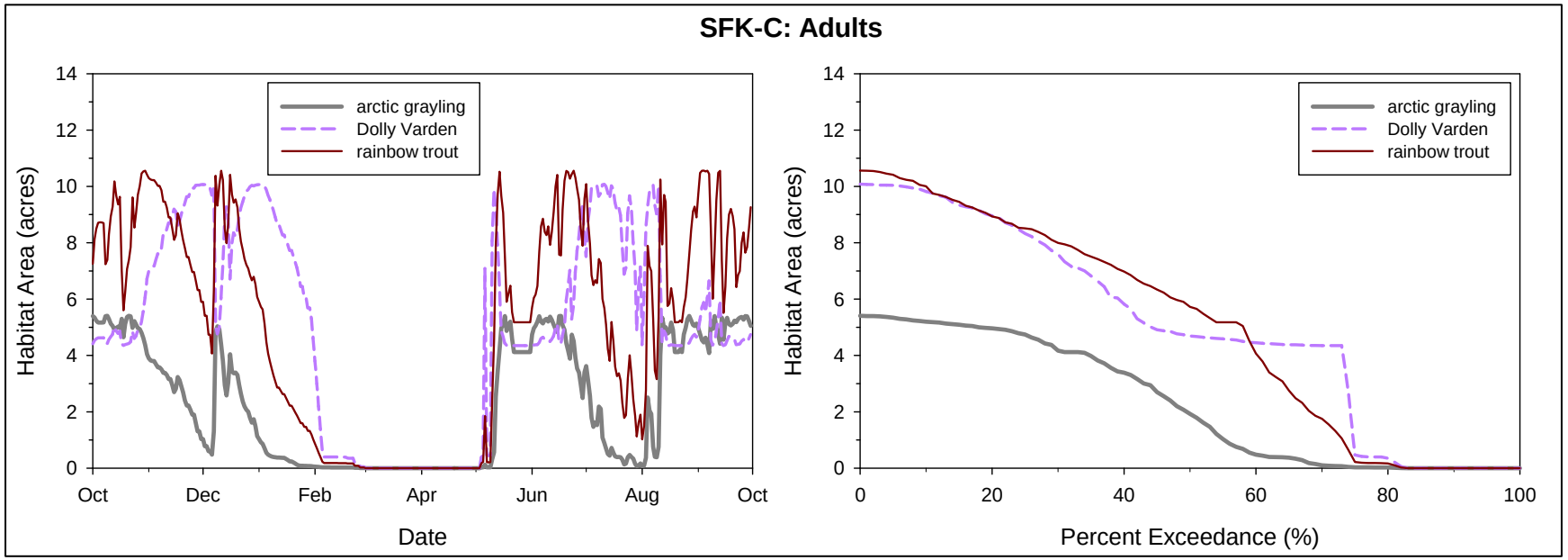


FIGURE 69
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in SFK-C

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in SFK-C.

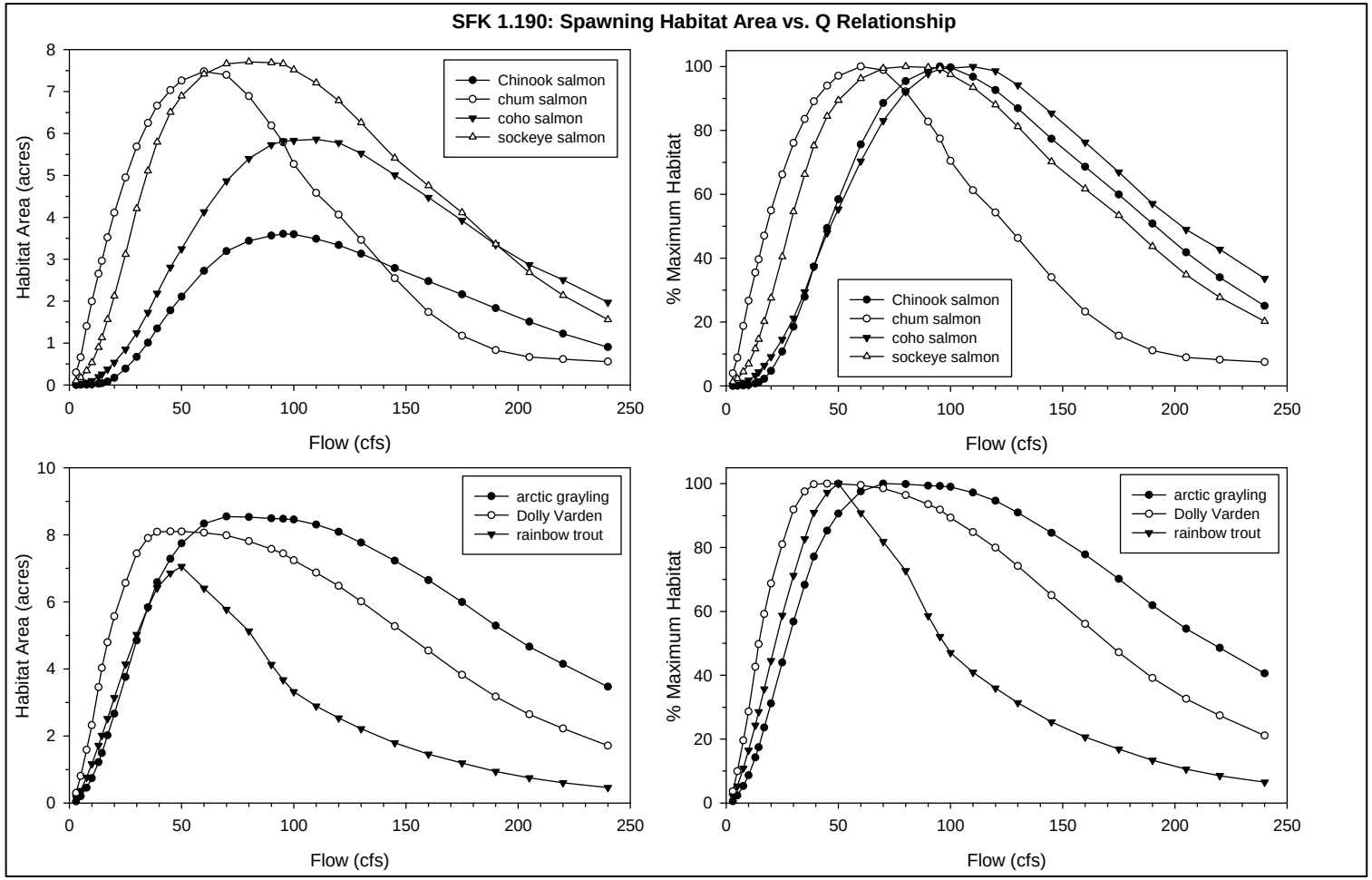


FIGURE 70
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in Tributary SFK 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in Tributary SFK 1.190.

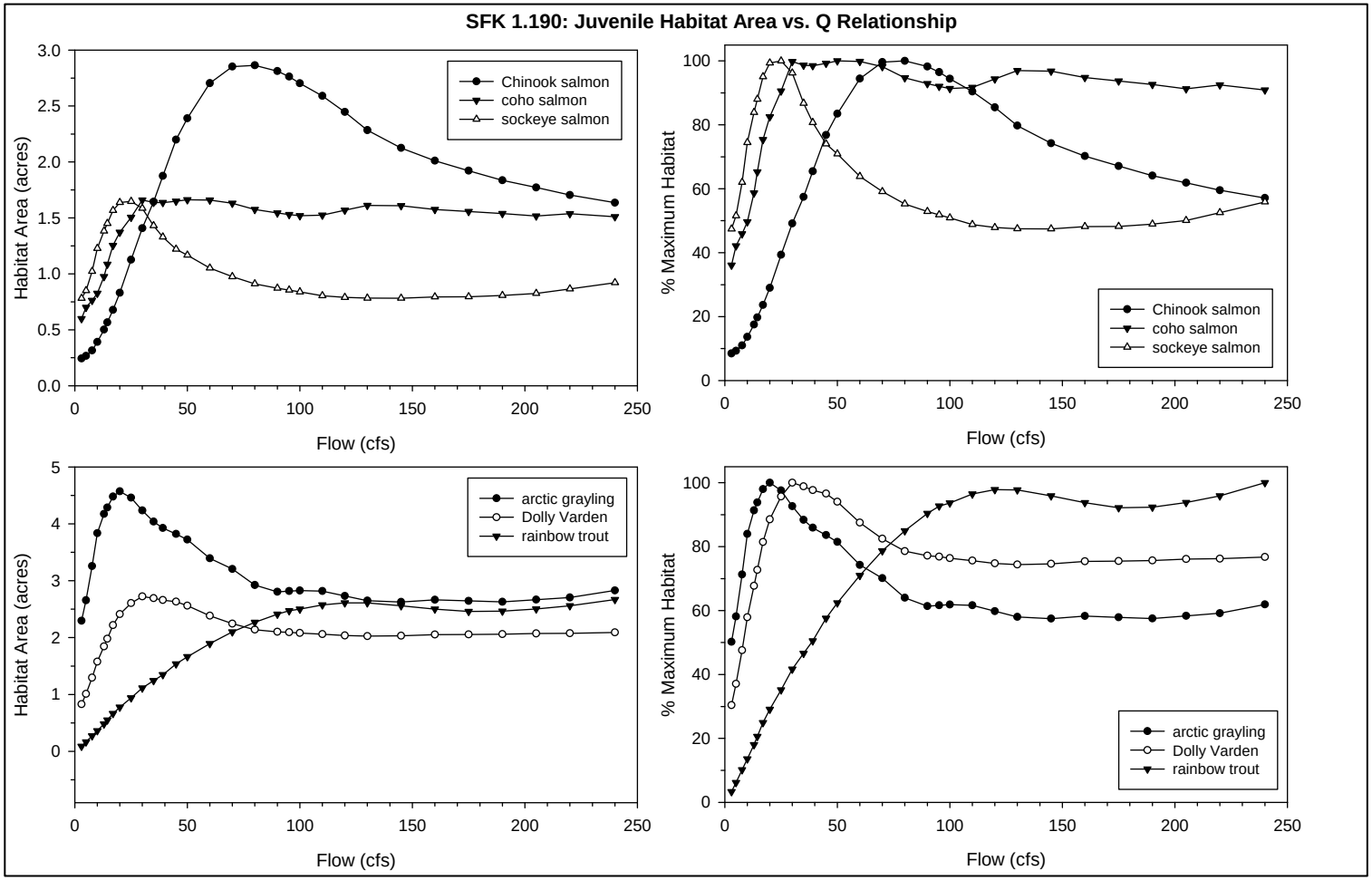


FIGURE 71
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in Tributary SFK 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in Tributary SFK 1.190.

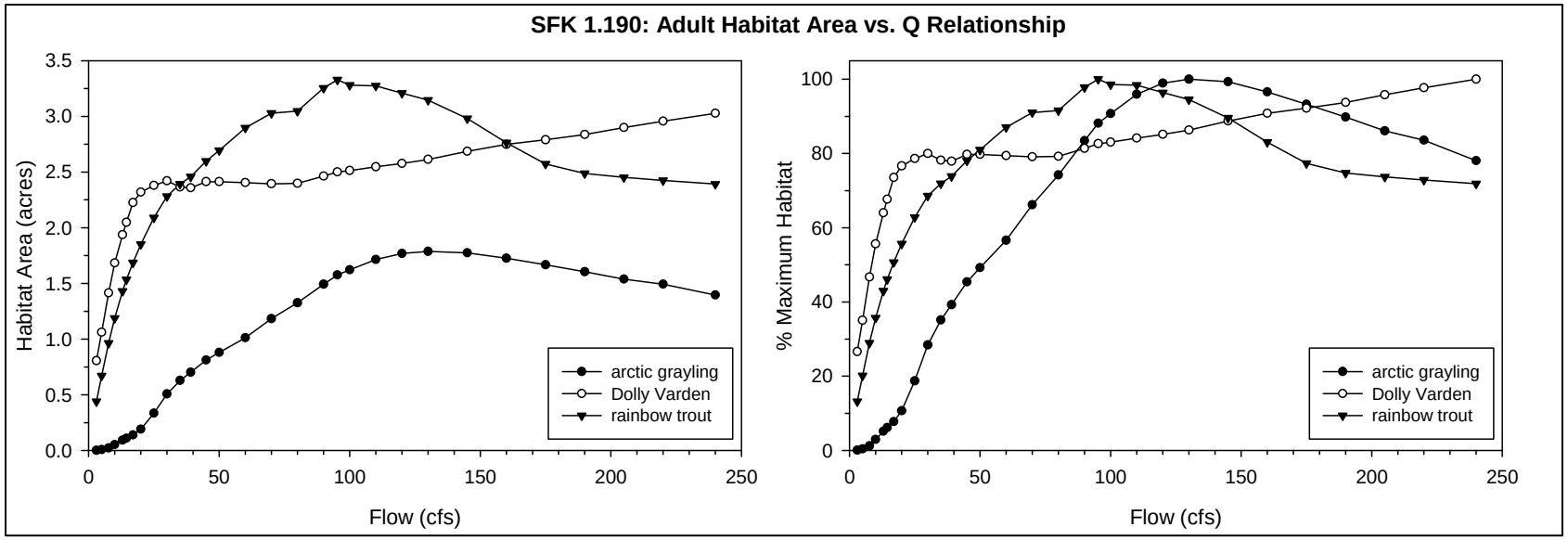


FIGURE 72
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in Tributary SFK 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in Tributary SFK 1.190.

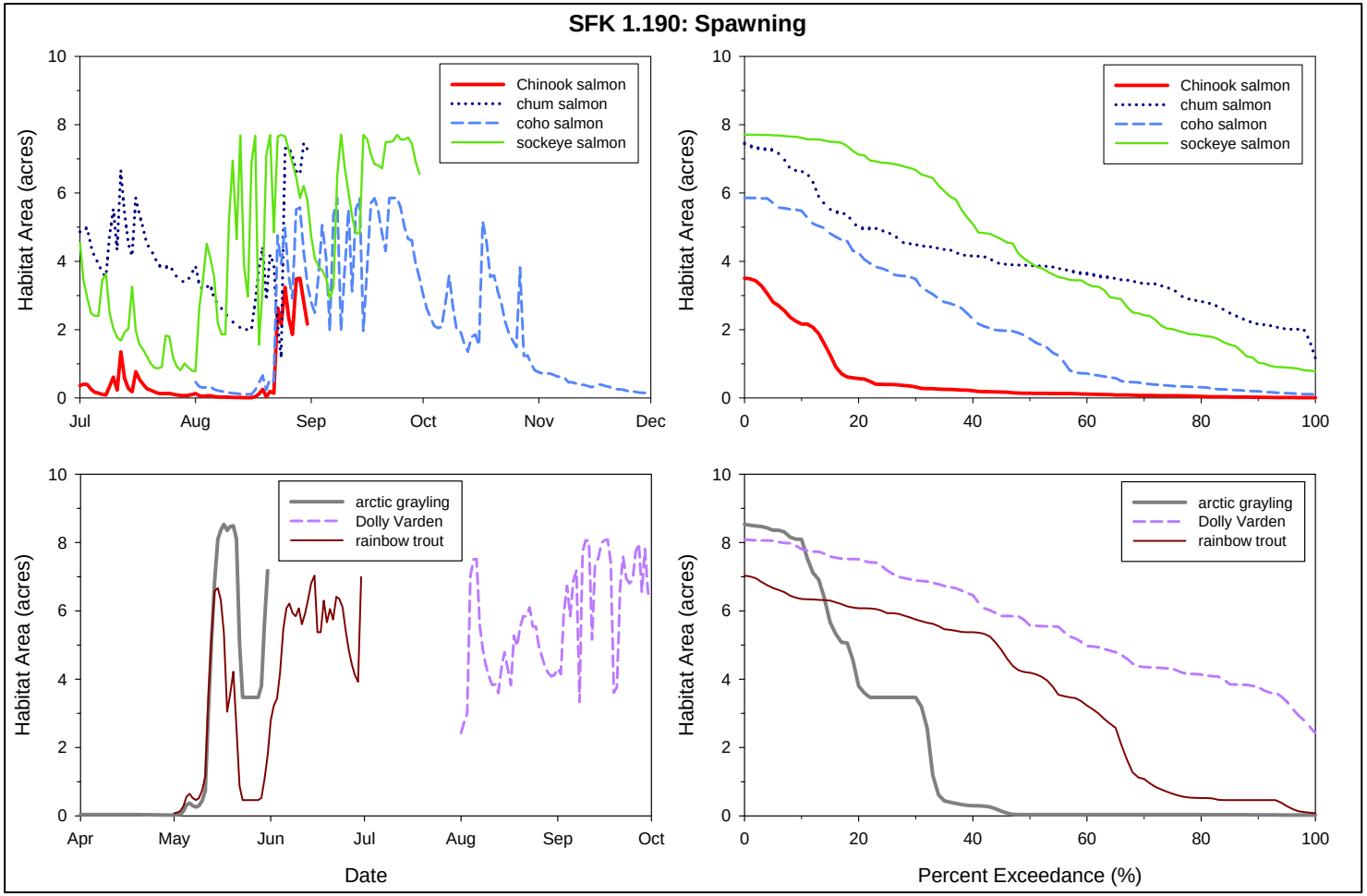


FIGURE 73
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in Tributary SFK 1.190

Note:

Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in Tributary SFK 1.190.

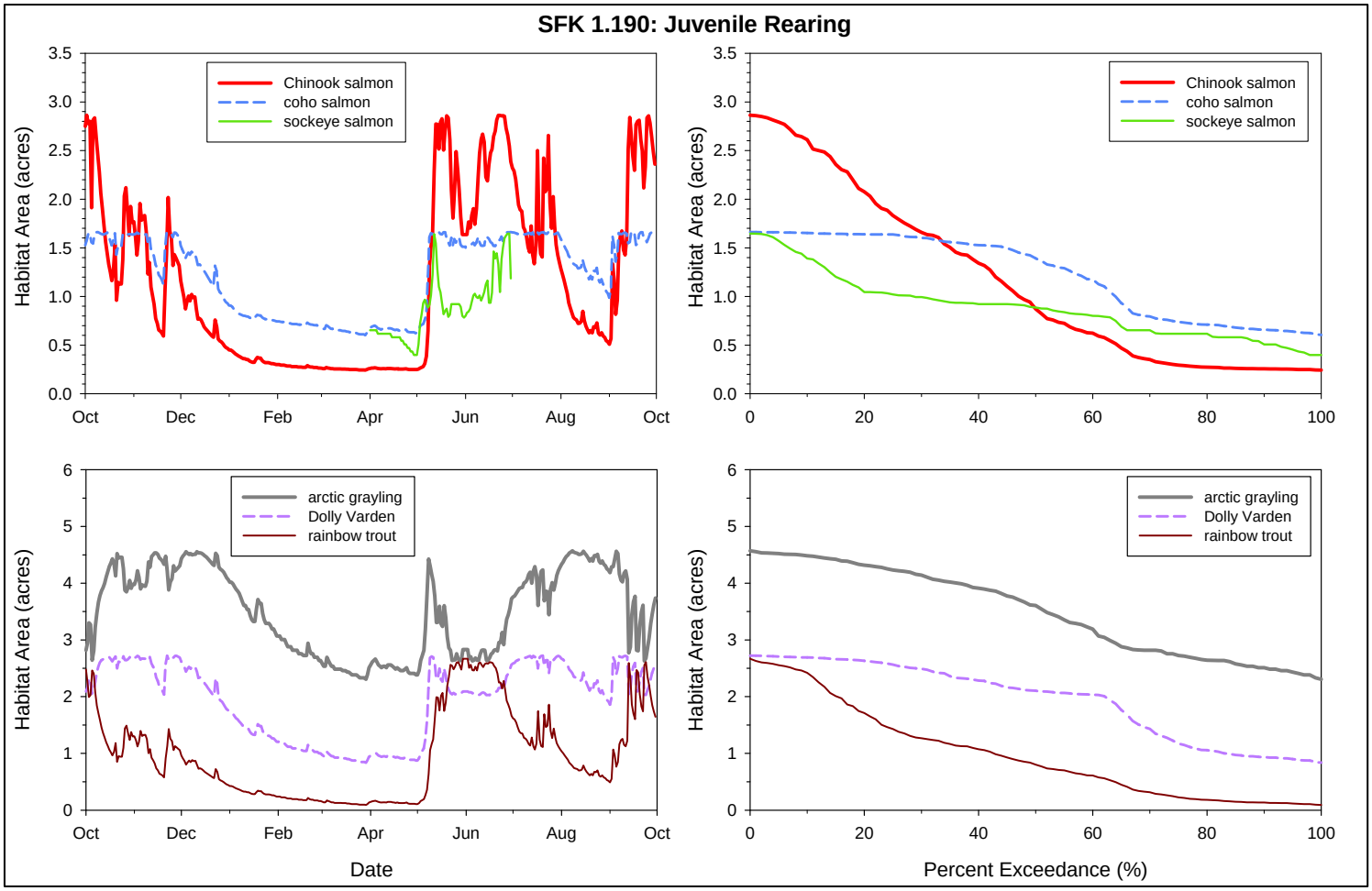


FIGURE 74
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in Tributary SFK 1.190

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in Tributary SFK 1.190.

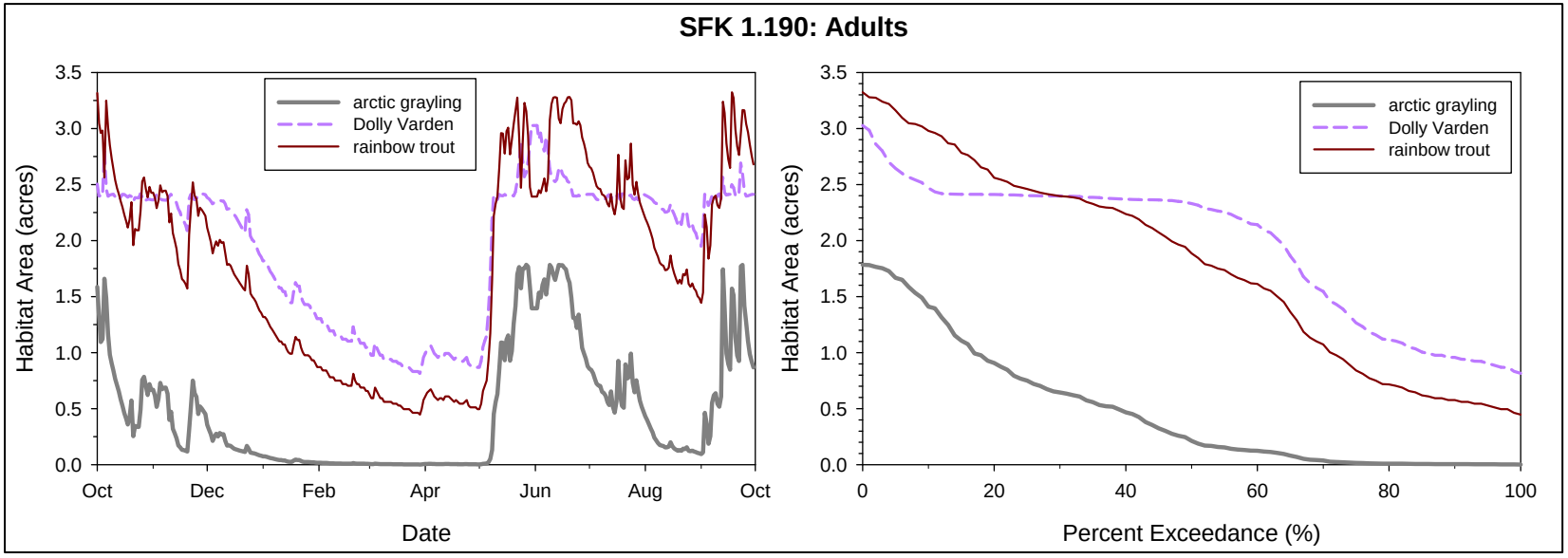


FIGURE 75
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in Tributary SFK 1.190

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in Tributary SFK 1.190.

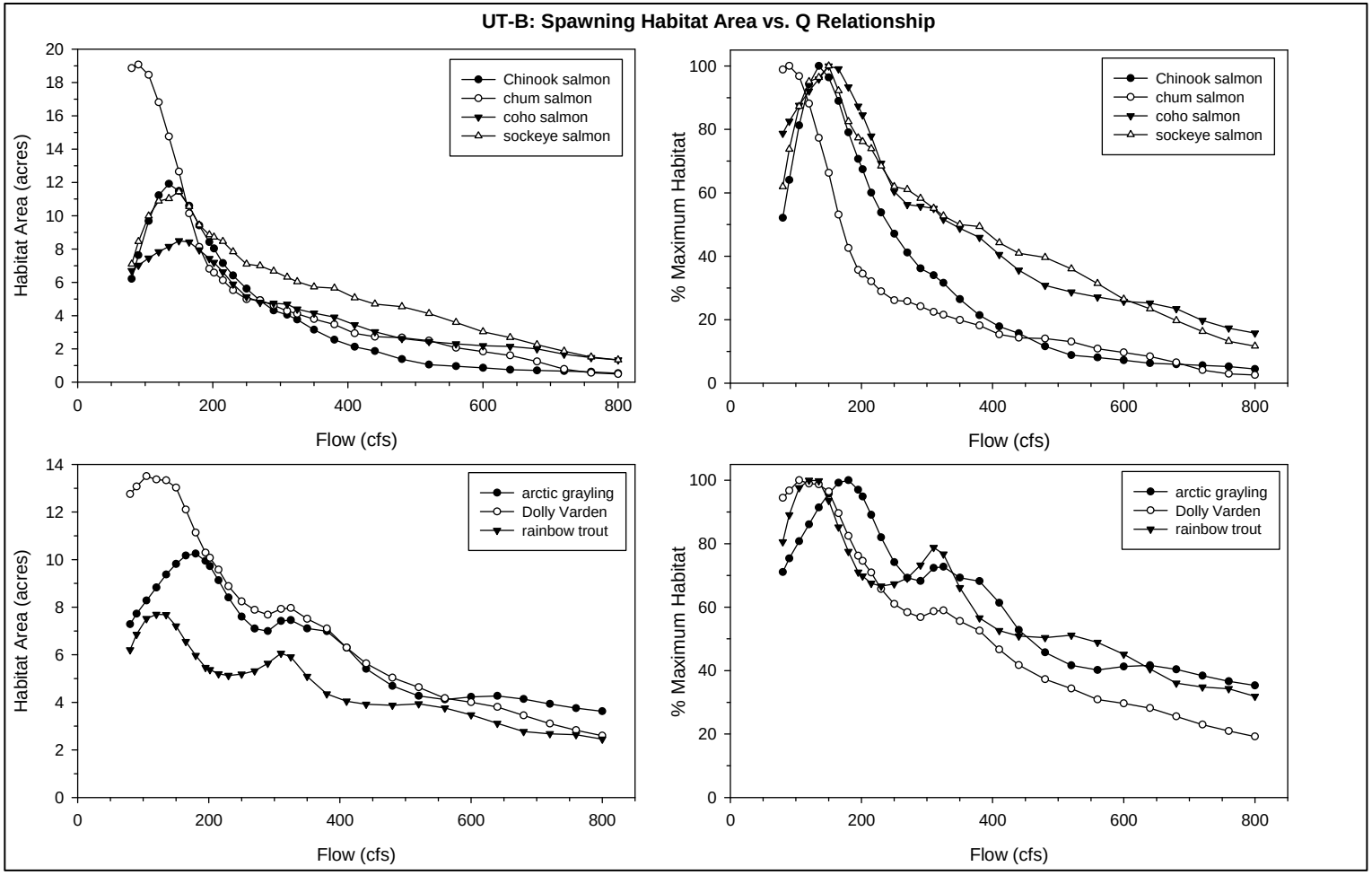


FIGURE 76
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in UT-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-B.

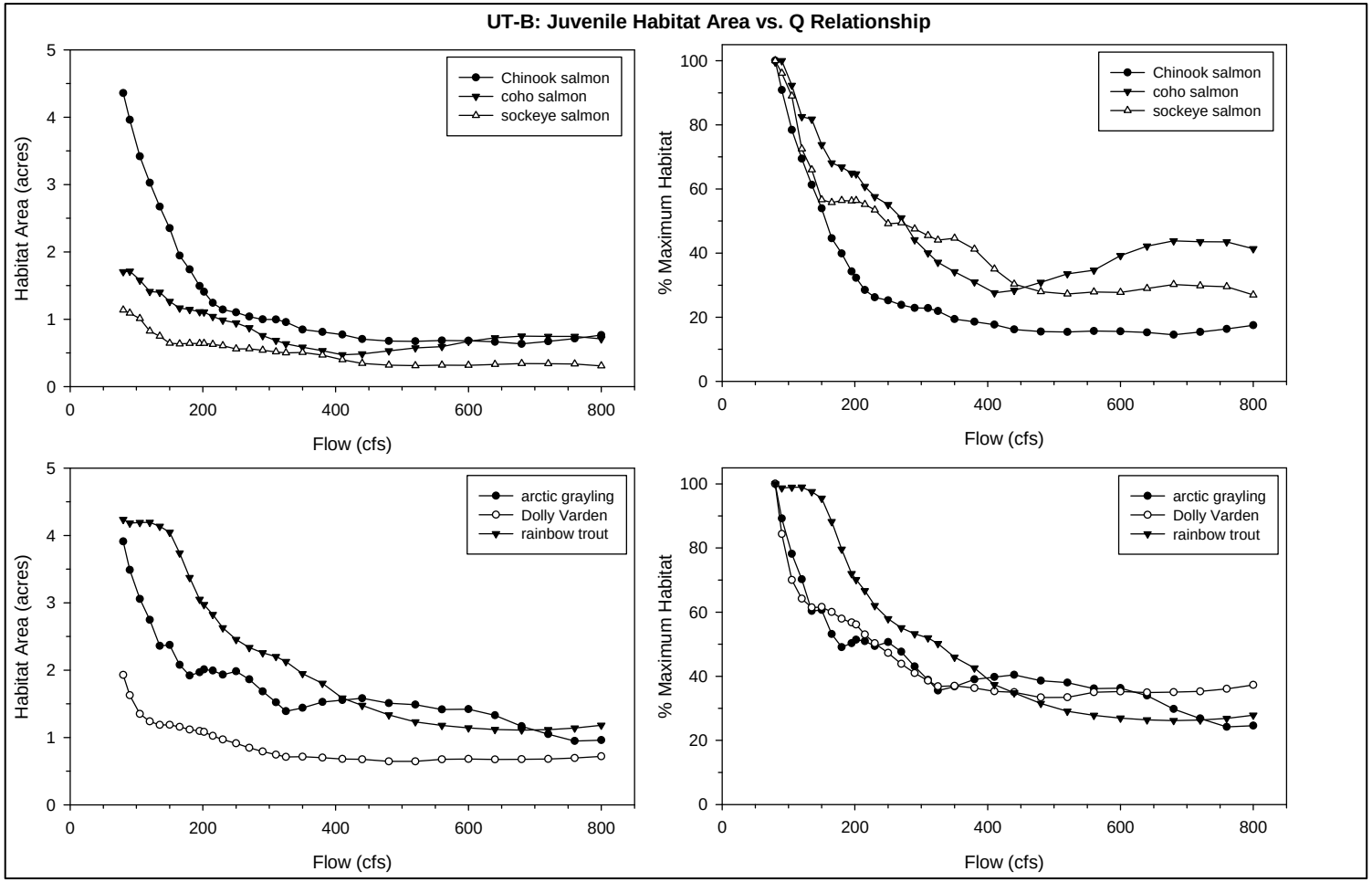


FIGURE 77
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in UT-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-B

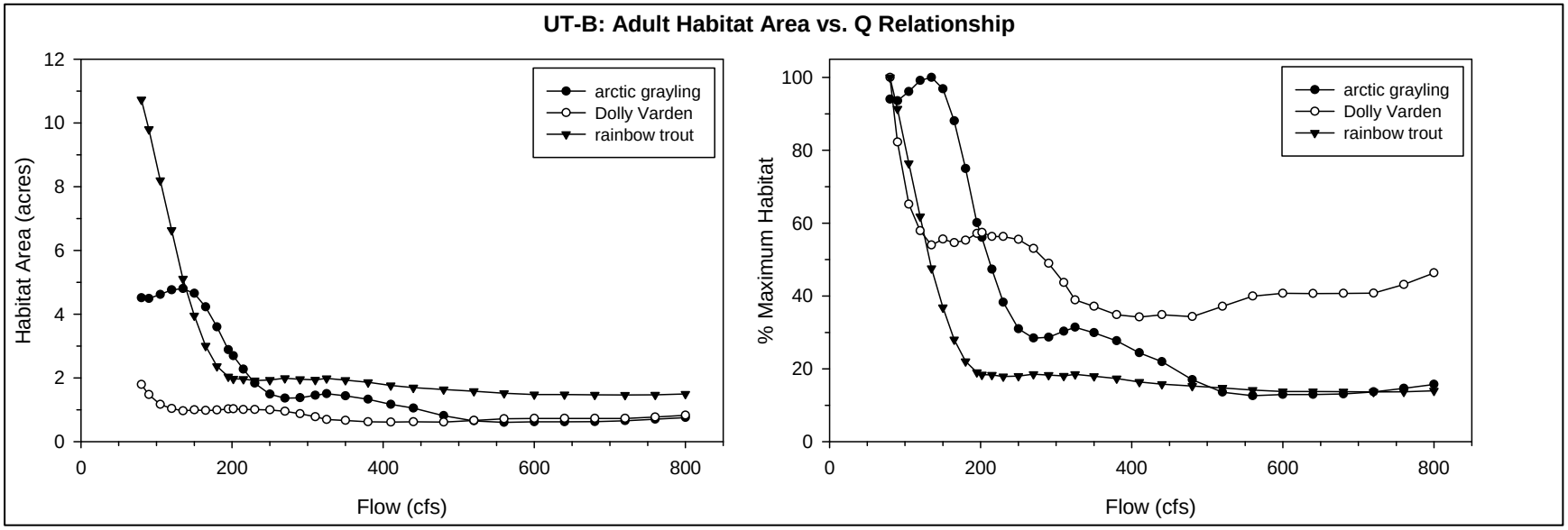


FIGURE 78
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in UT-B

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) adult non-anadromous salmonids in UT-B.

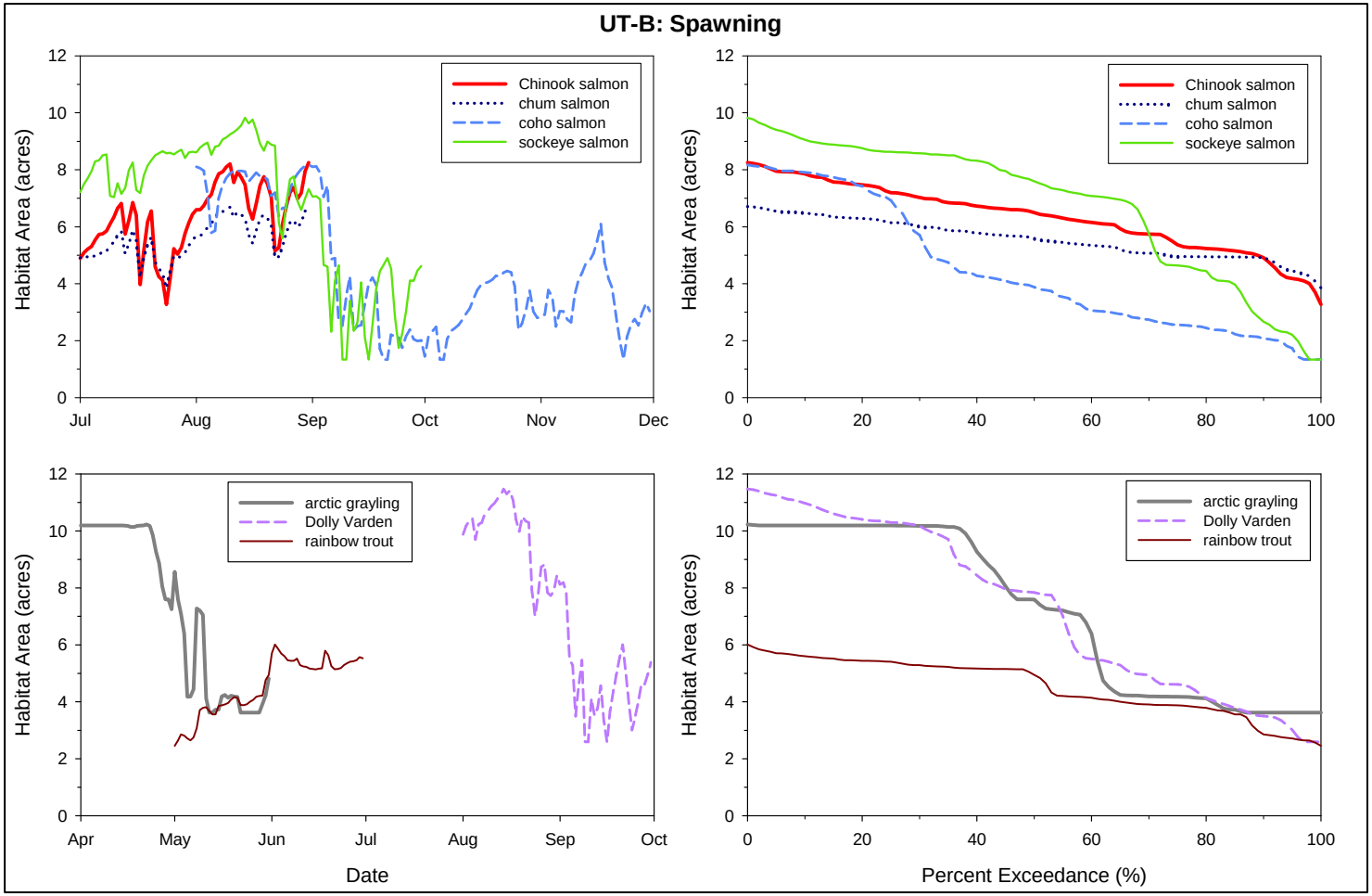


FIGURE 79
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in UT-B

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-B.

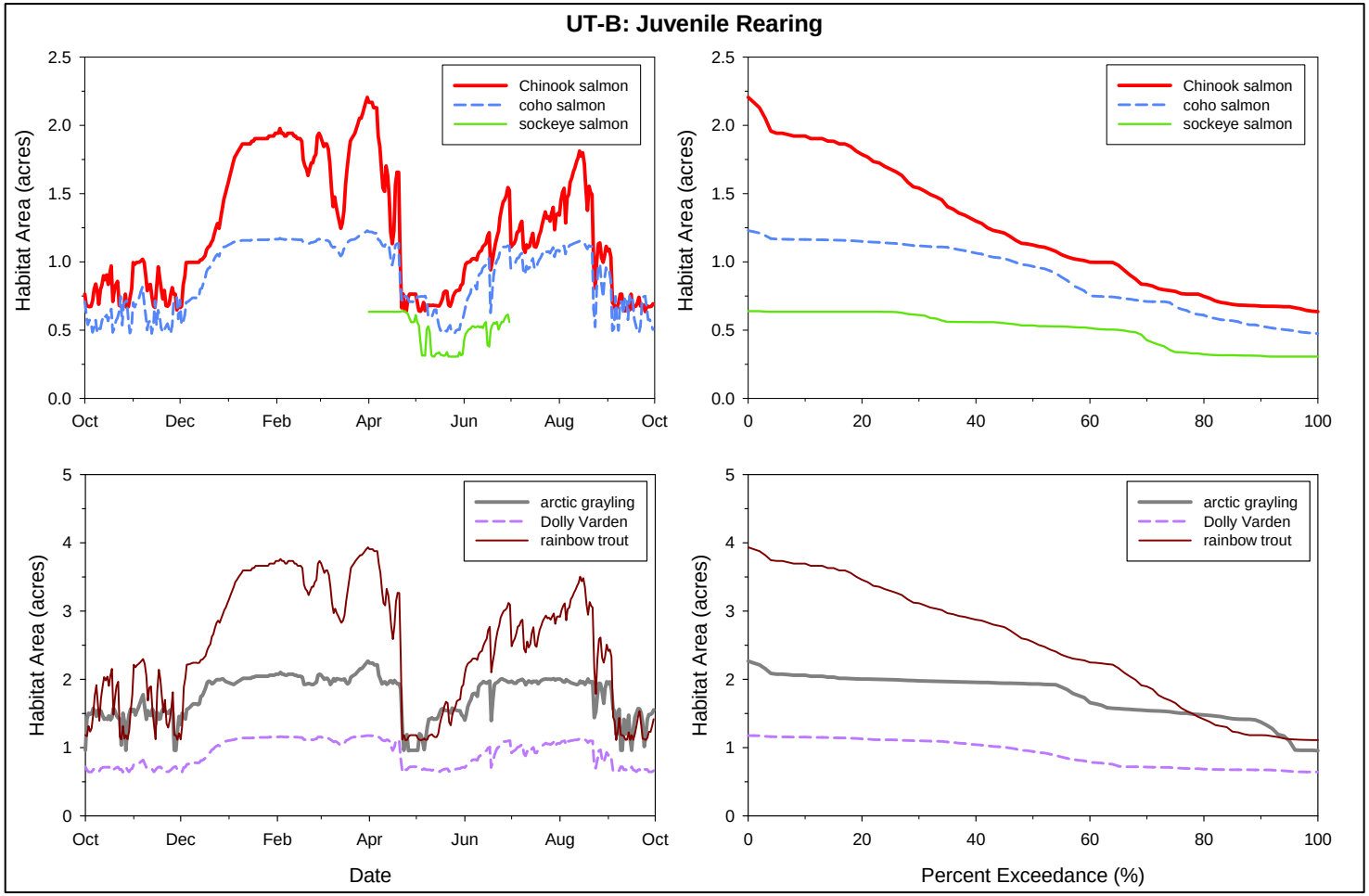


FIGURE 80
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in UT-B

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-B.

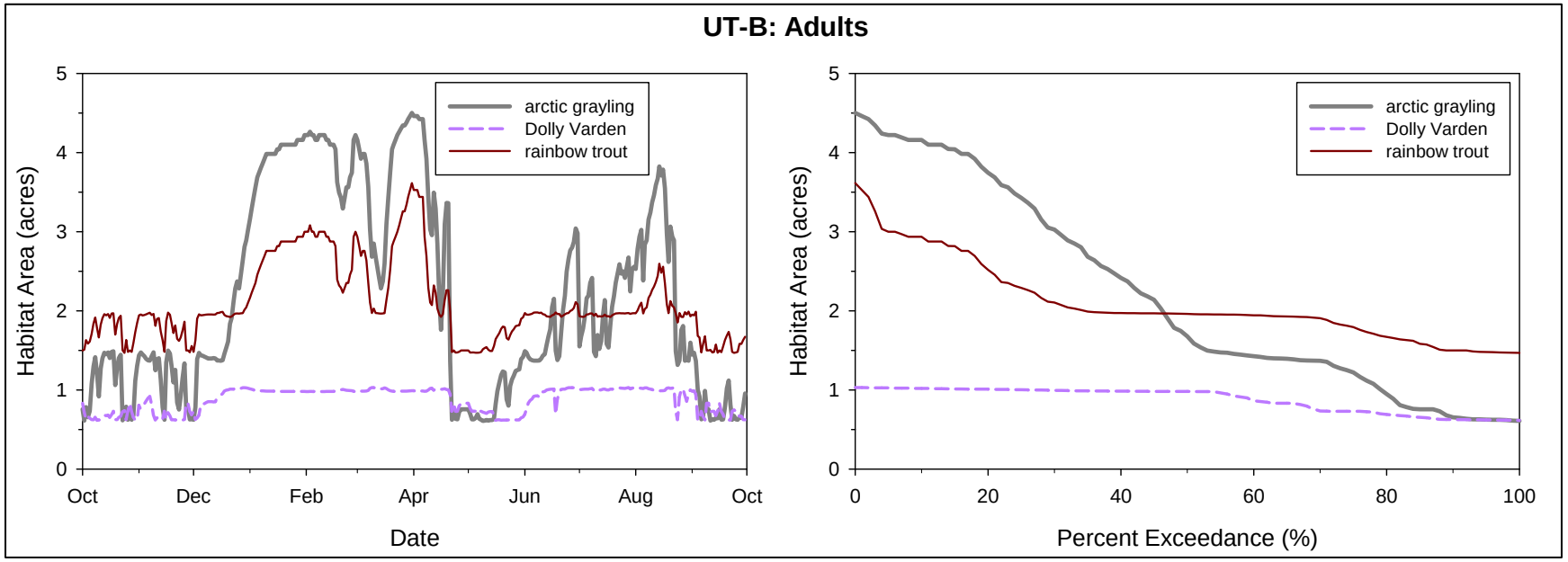


FIGURE 81
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in UT-B

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in UT-B.

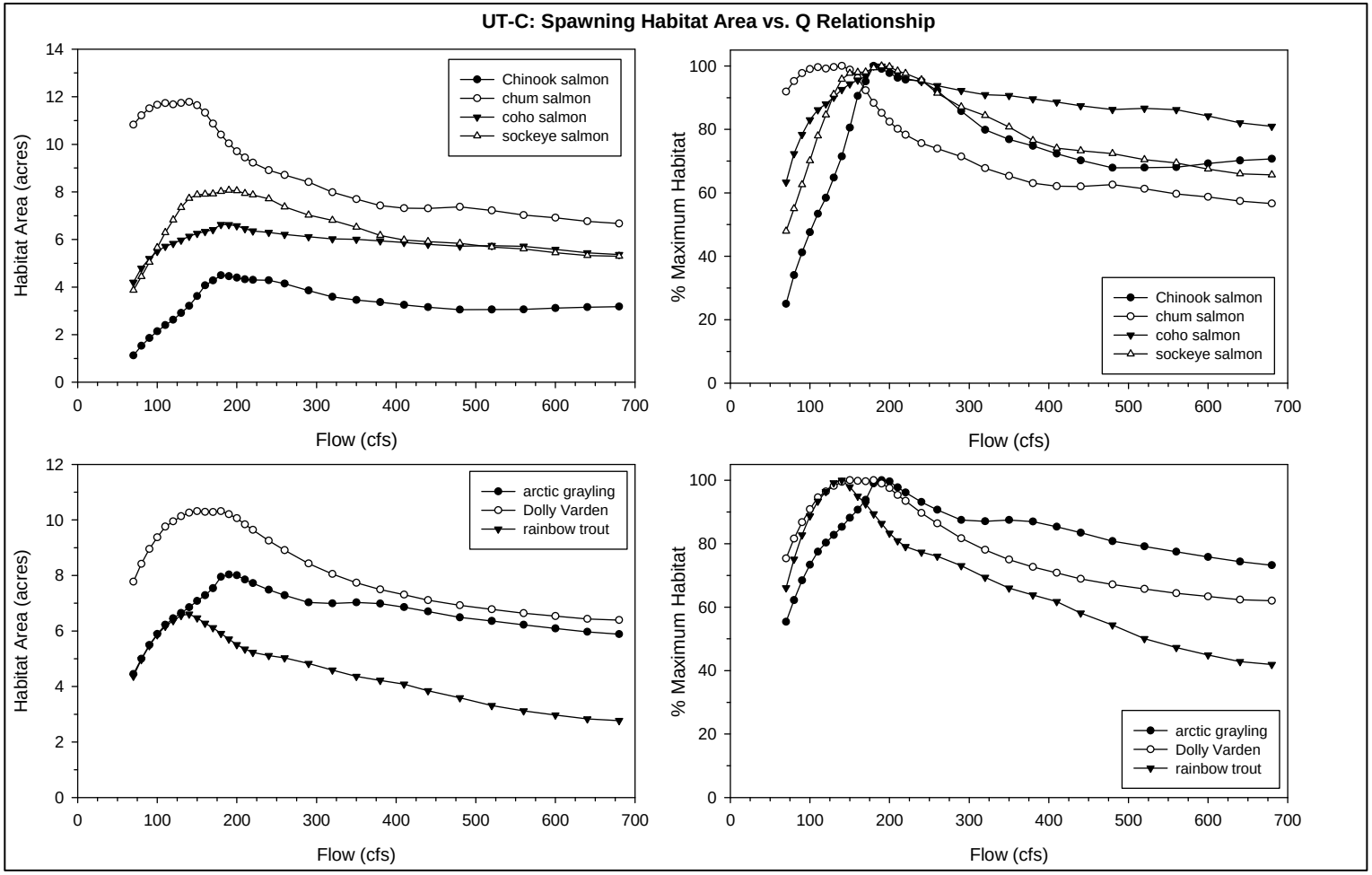


FIGURE 82
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in UT-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-C.

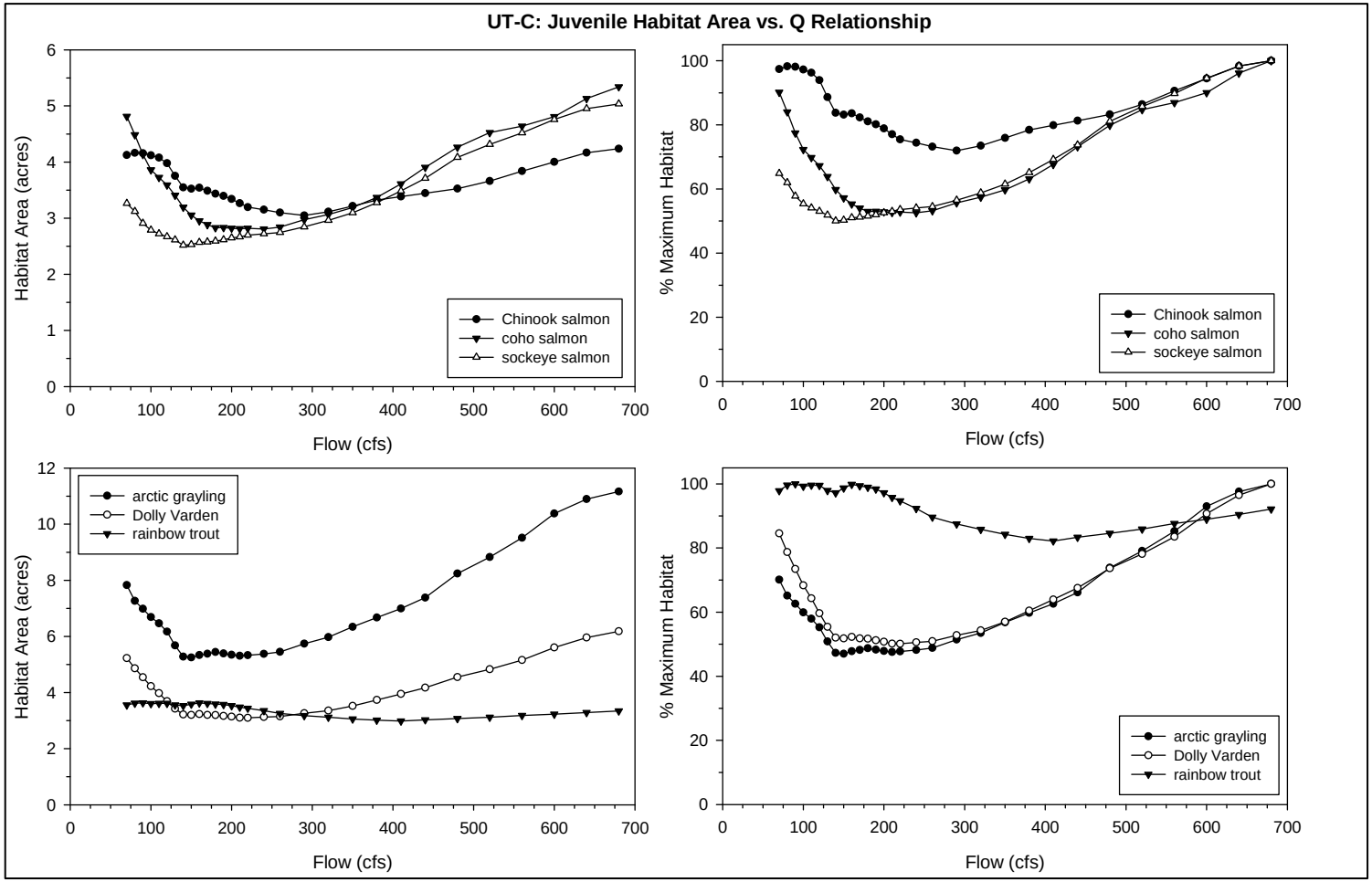


FIGURE 83
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in UT-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-C.

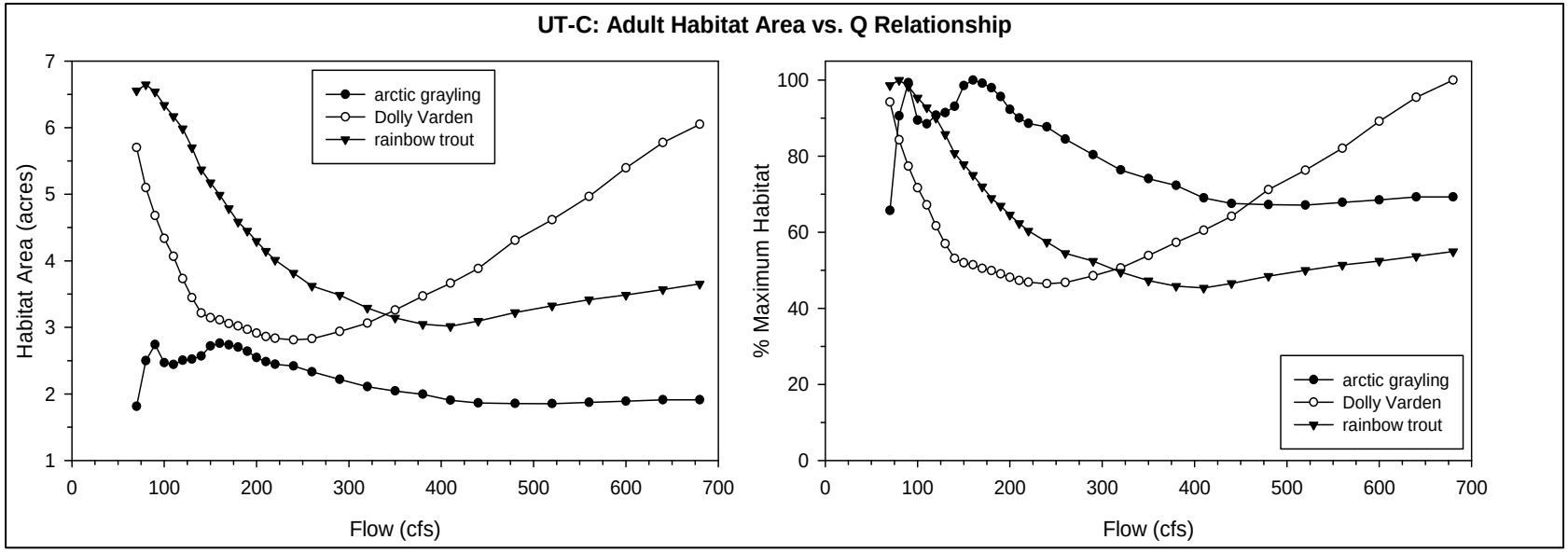


FIGURE 84
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in UT-C

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in UT-C.

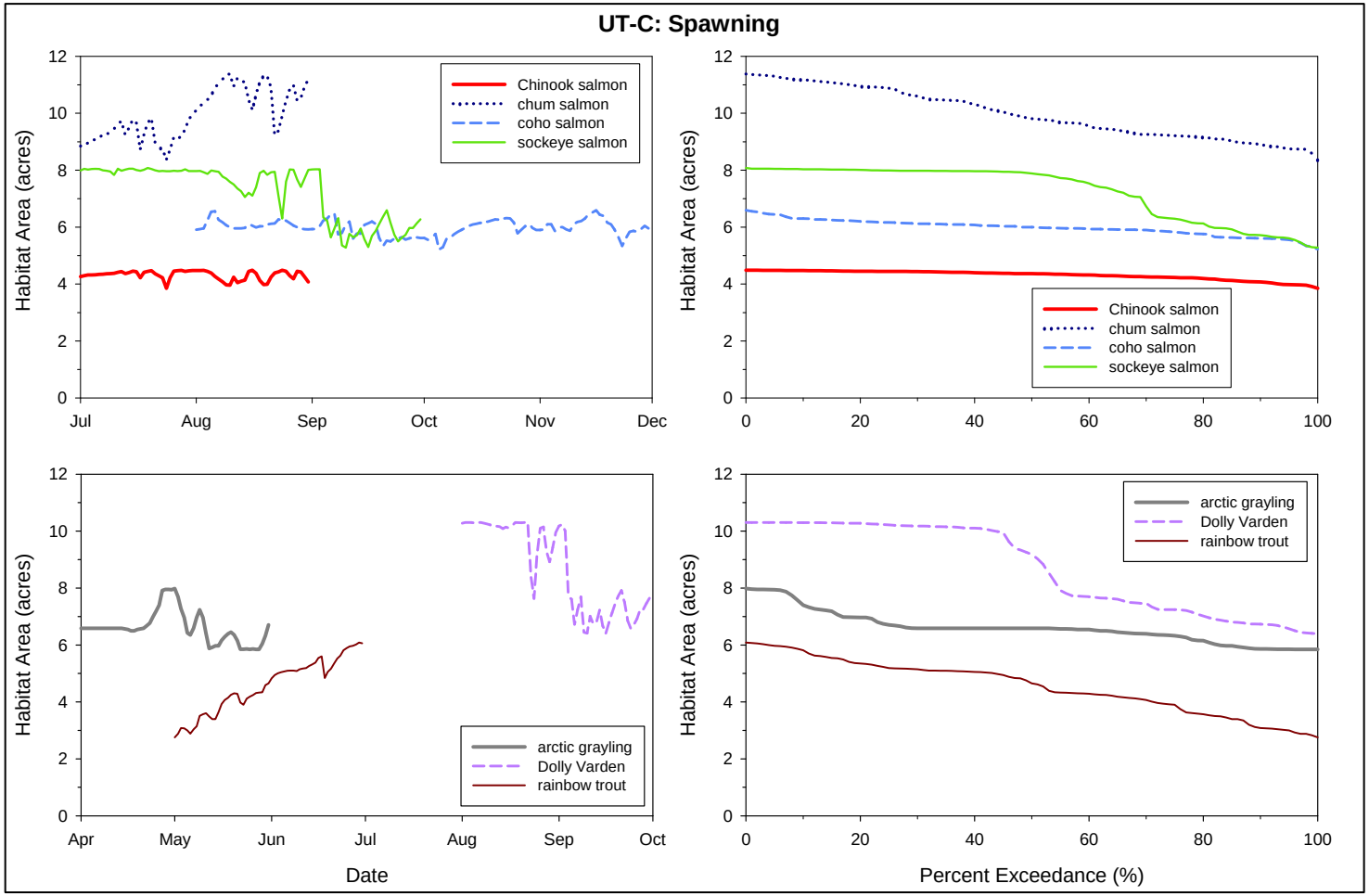


FIGURE 85
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in UT-C

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-C.

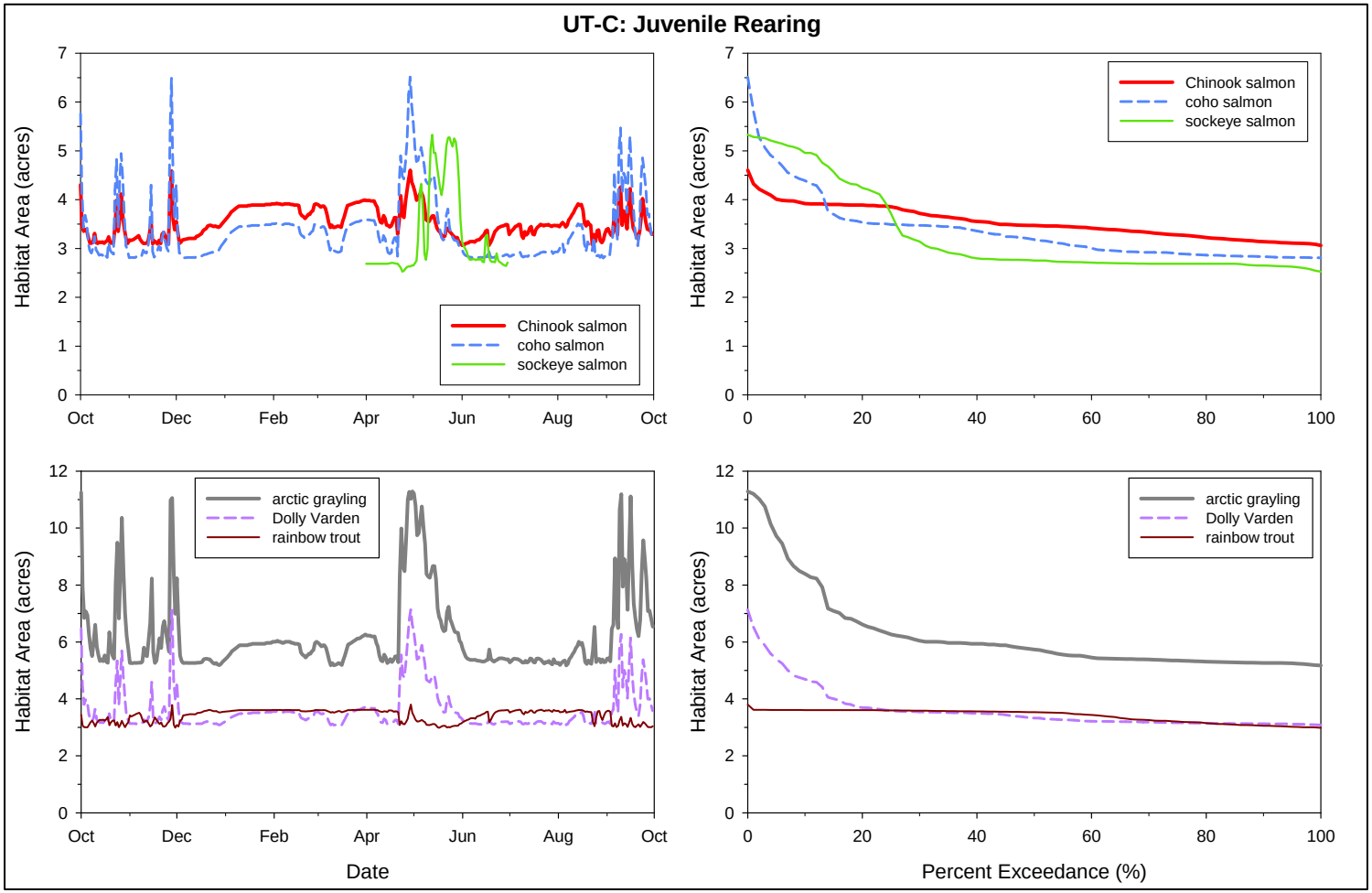


FIGURE 86
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in UT-C

Note:

Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-C.

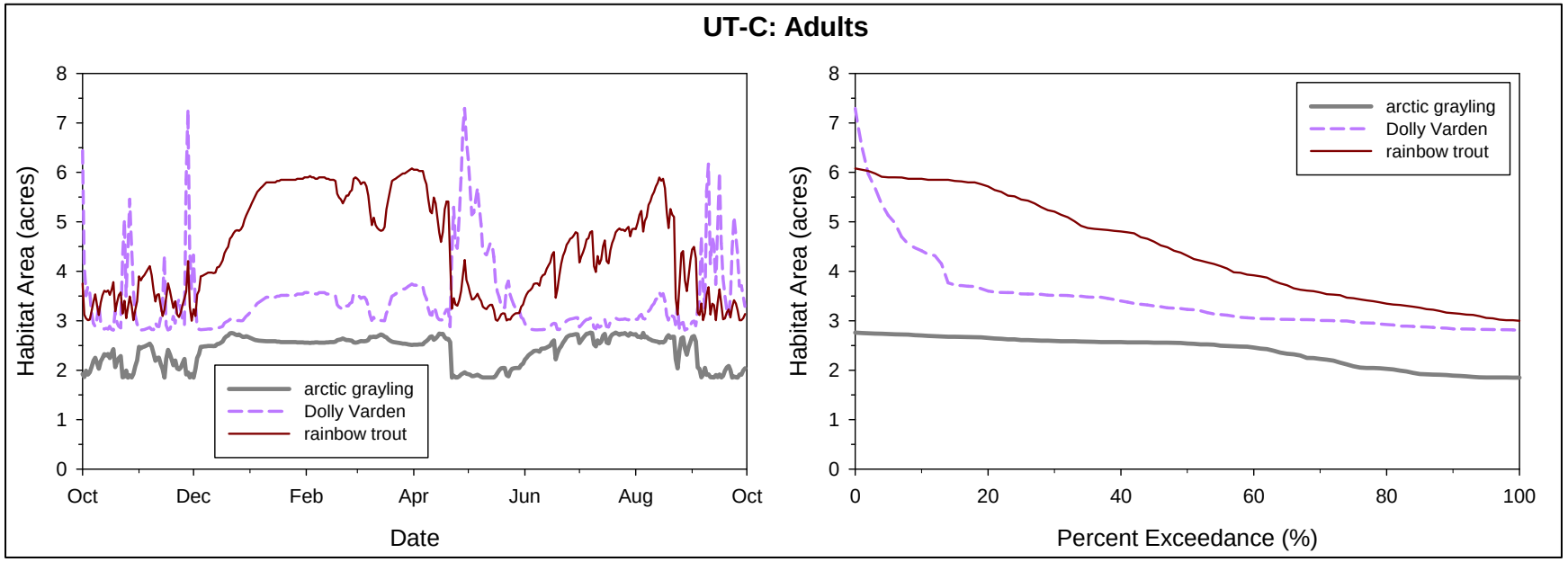


FIGURE 87
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in UT-C

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in UT-C.

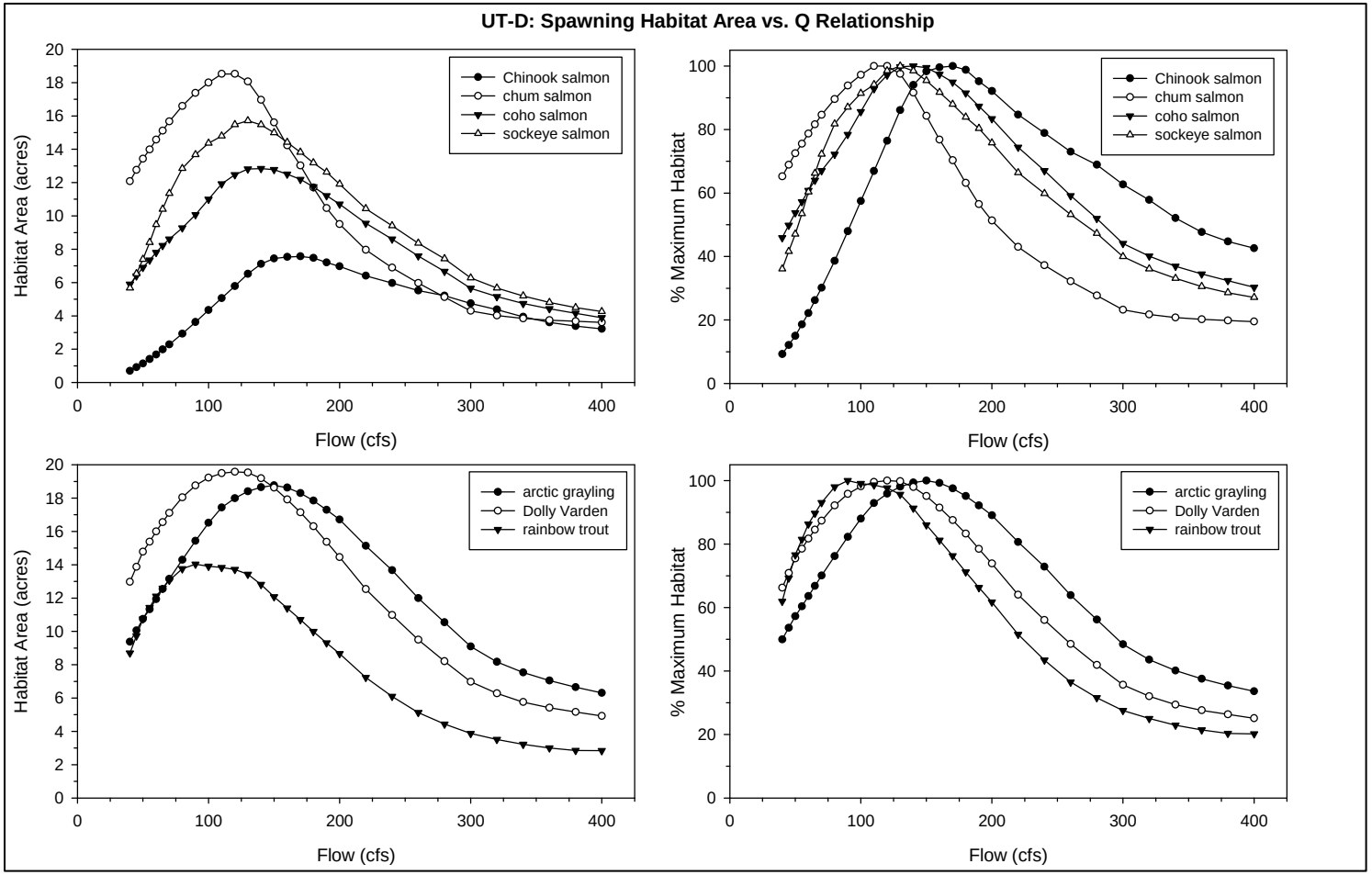


FIGURE 88
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in UT-D

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-D.

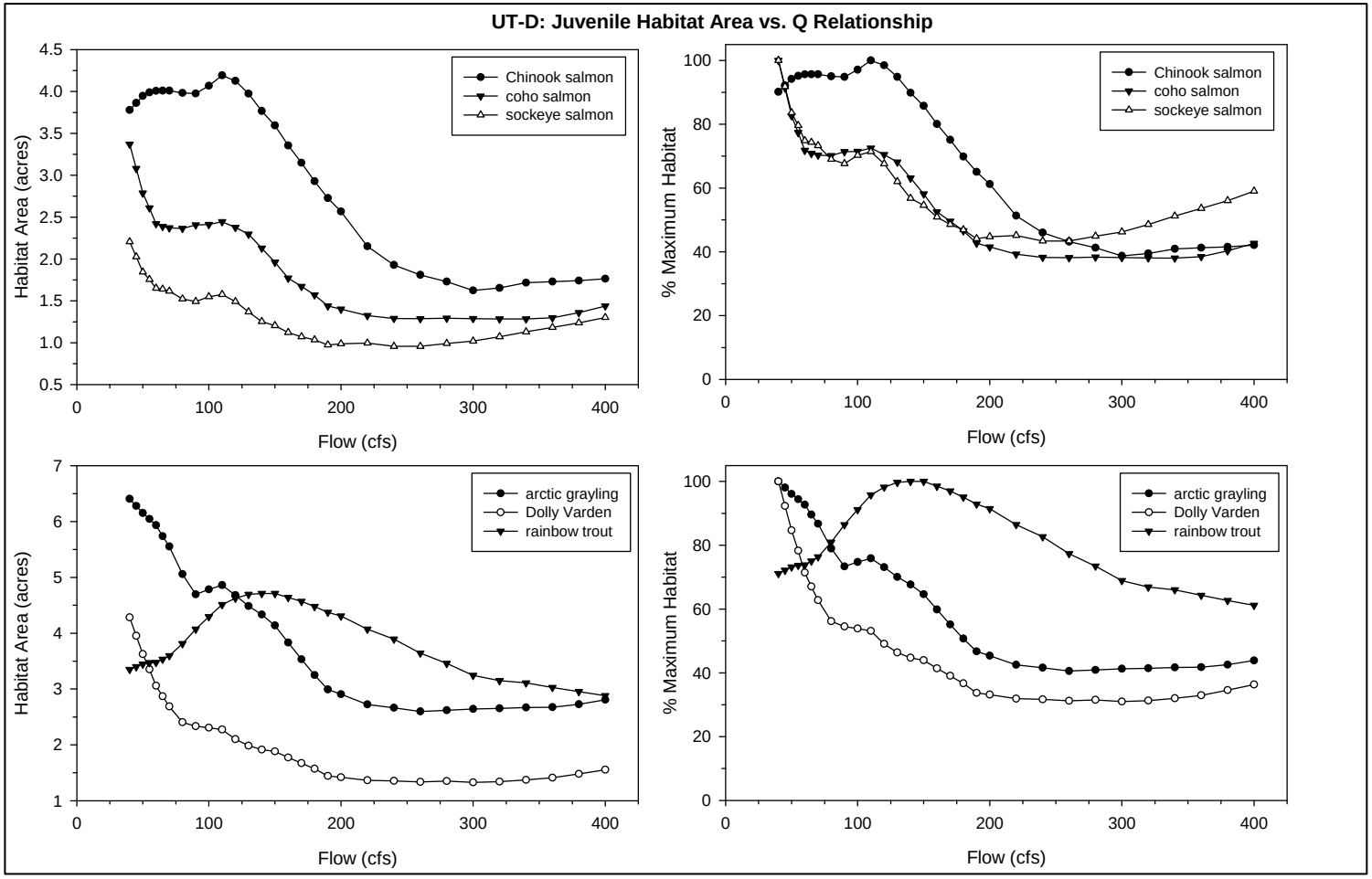


FIGURE 89
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in UT-D

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-D.

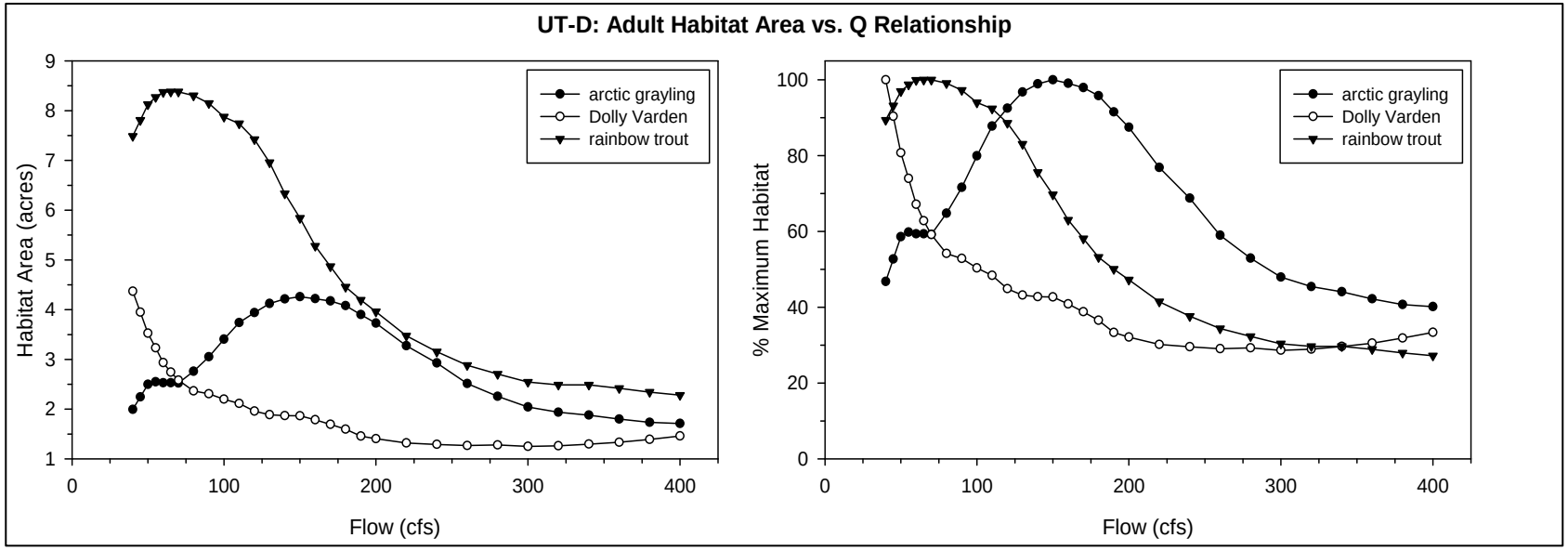


FIGURE 90
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in UT-D

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in UT-D.

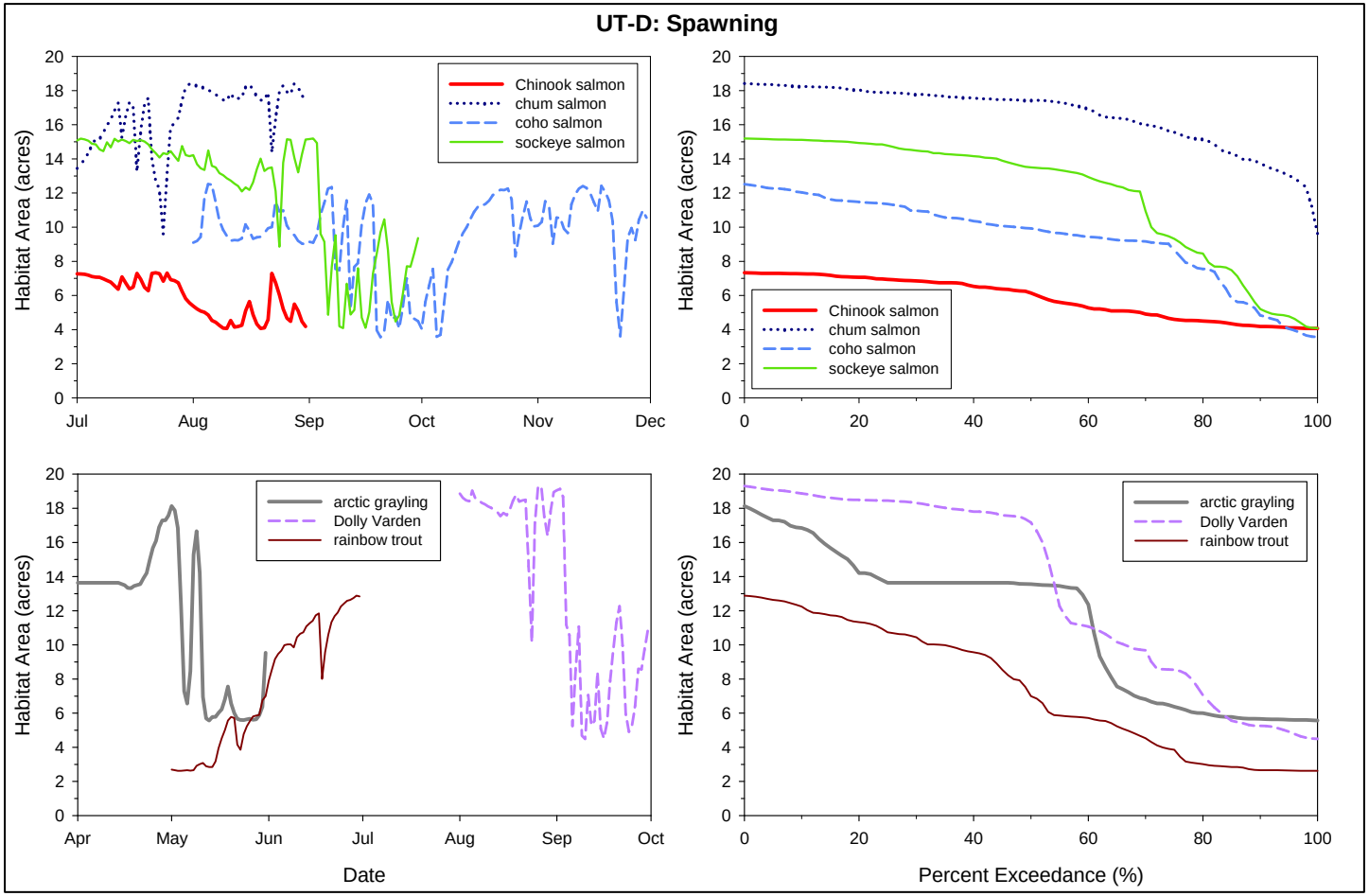


FIGURE 91
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in UT-D

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-D.

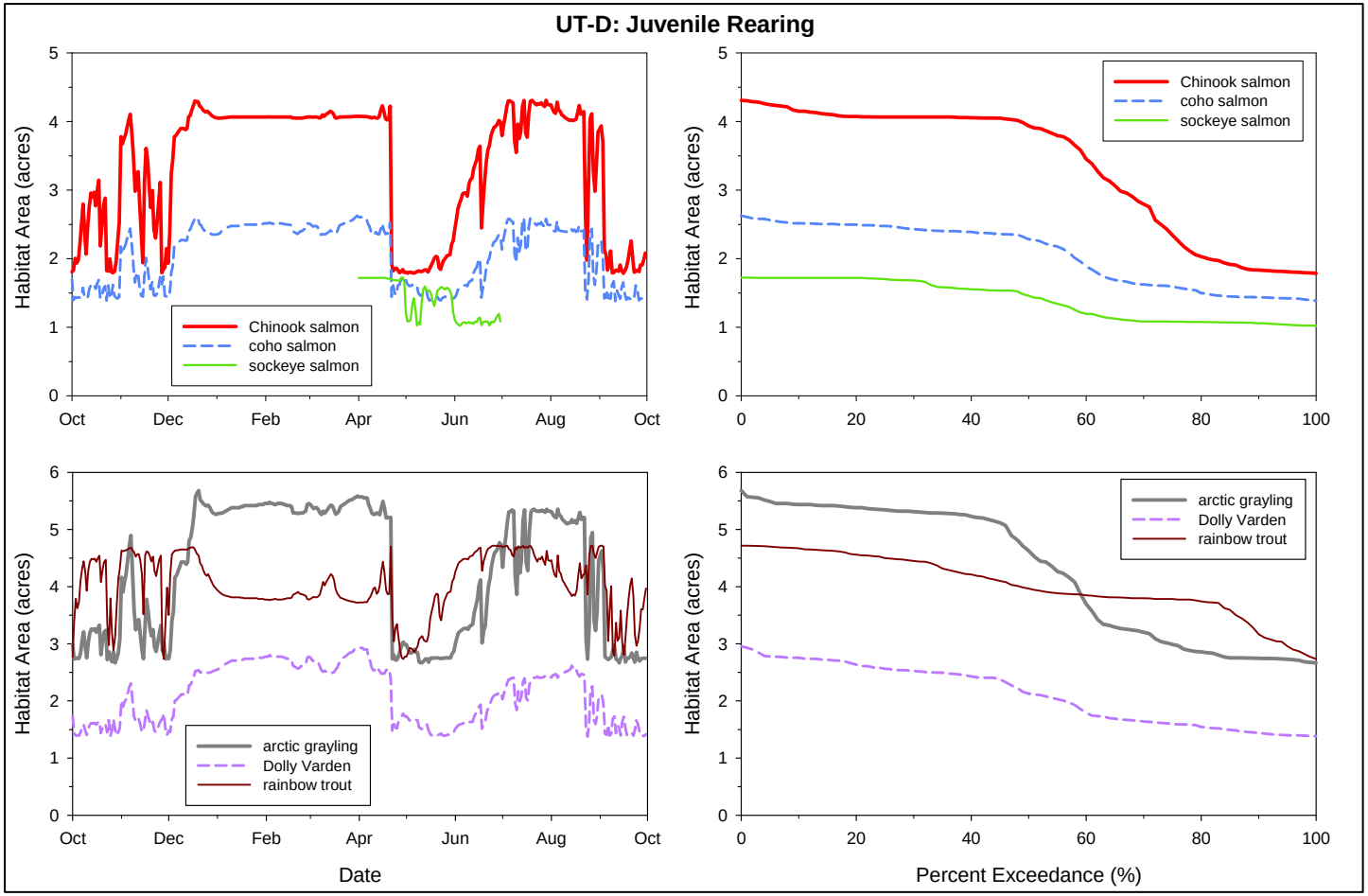


FIGURE 92
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in UT-D

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-D.

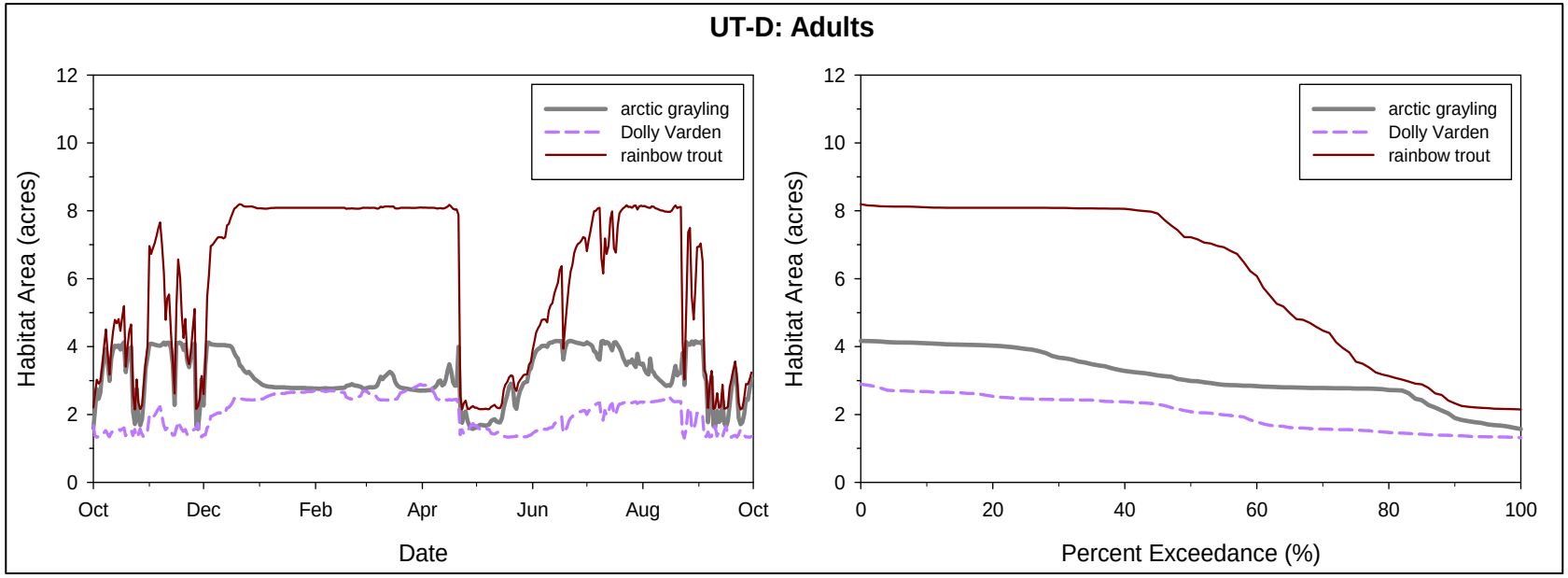


FIGURE 93
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in UT-D

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in UT-D.

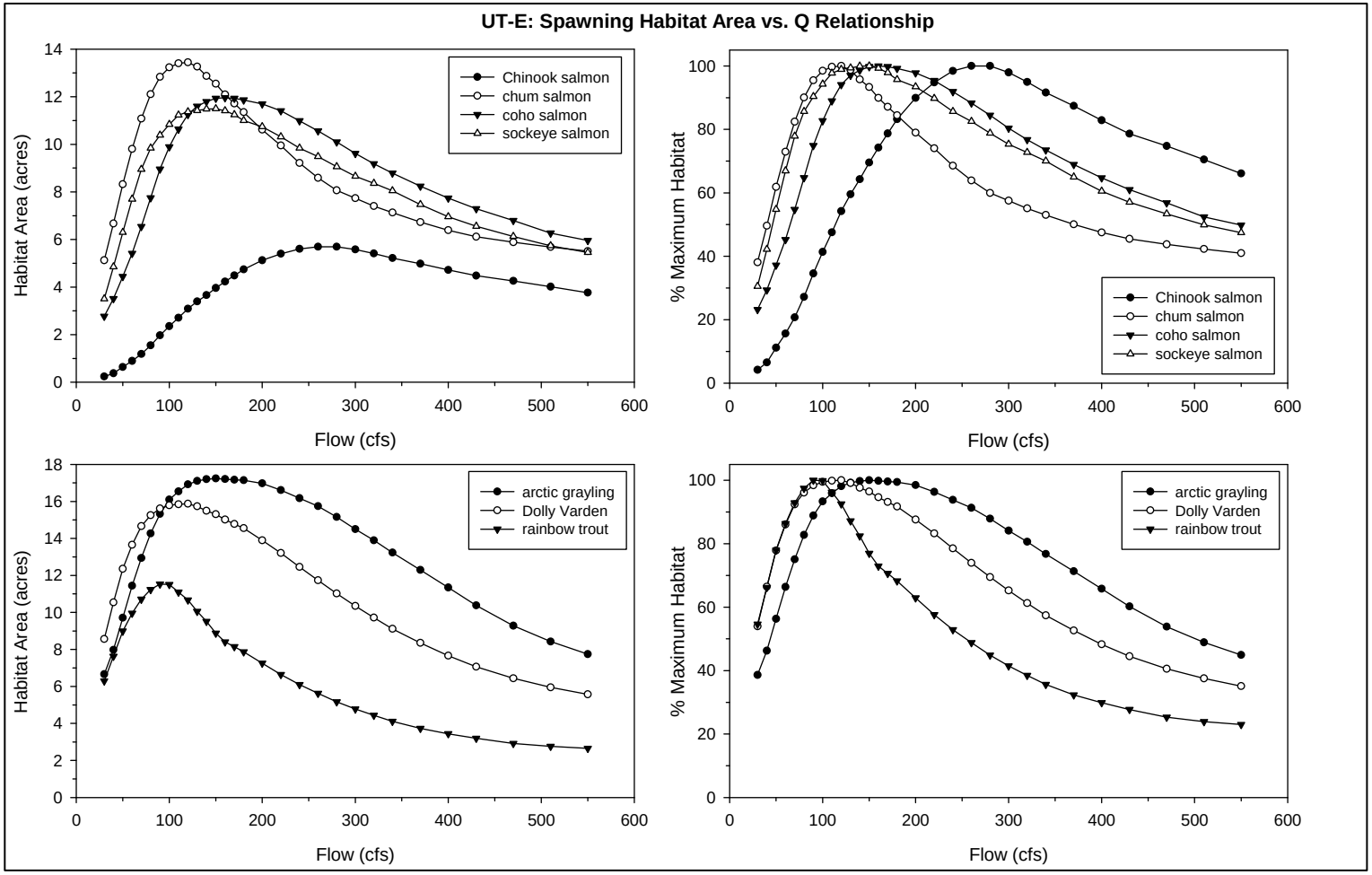


FIGURE 94
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in UT-E

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-E.

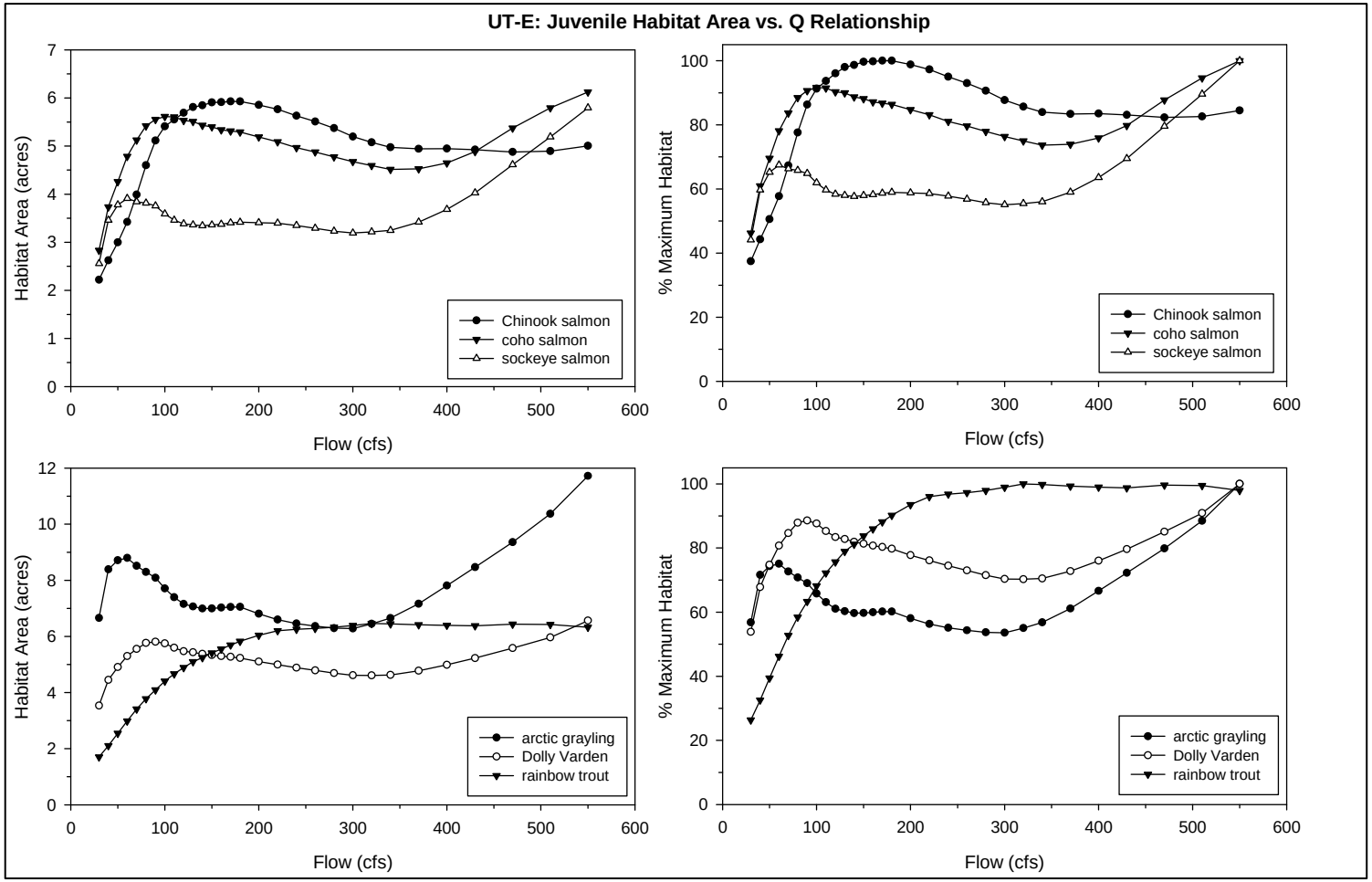


FIGURE 95
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in UT-E

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-E.

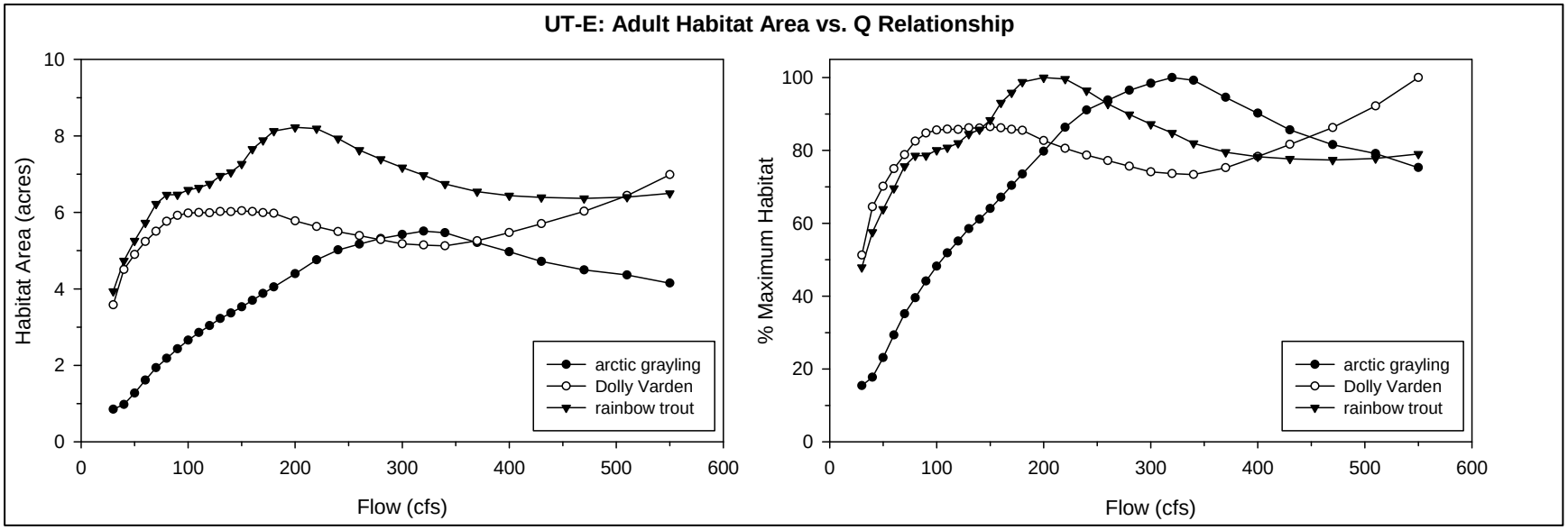


FIGURE 96
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in UT-E

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in UT-E.

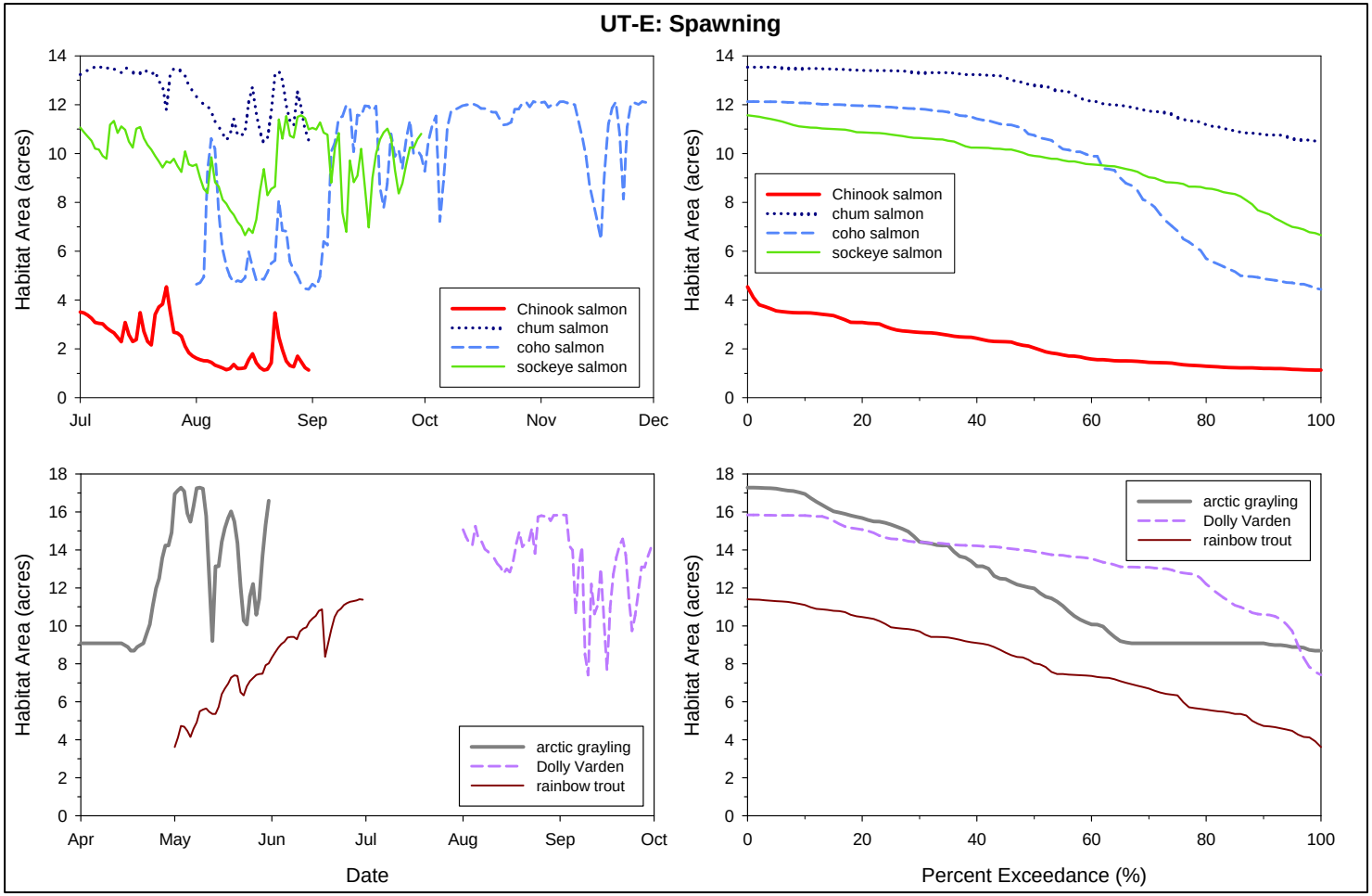


FIGURE 97
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in UT-E

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-E.

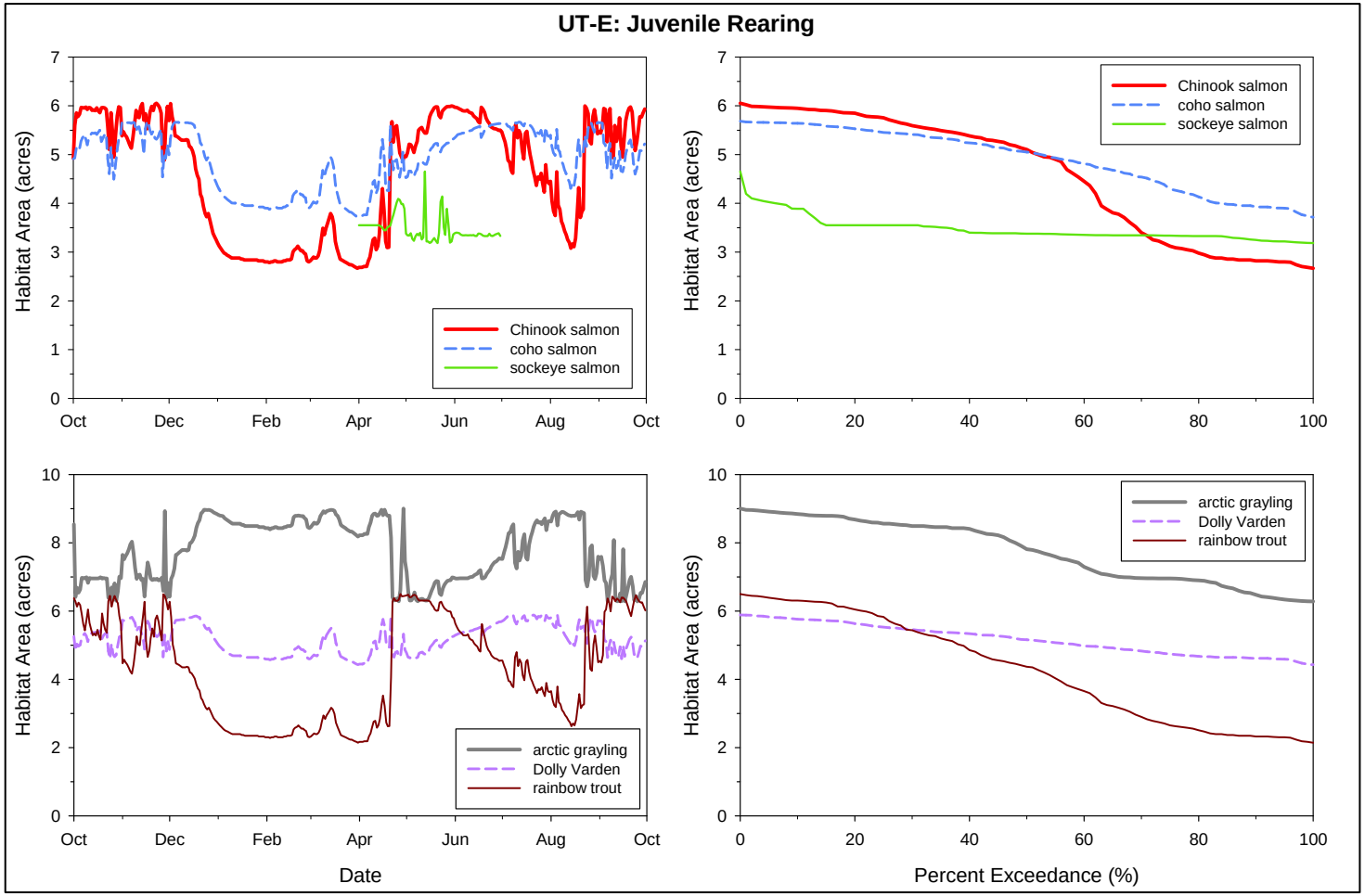


FIGURE 98
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in UT-E

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-E

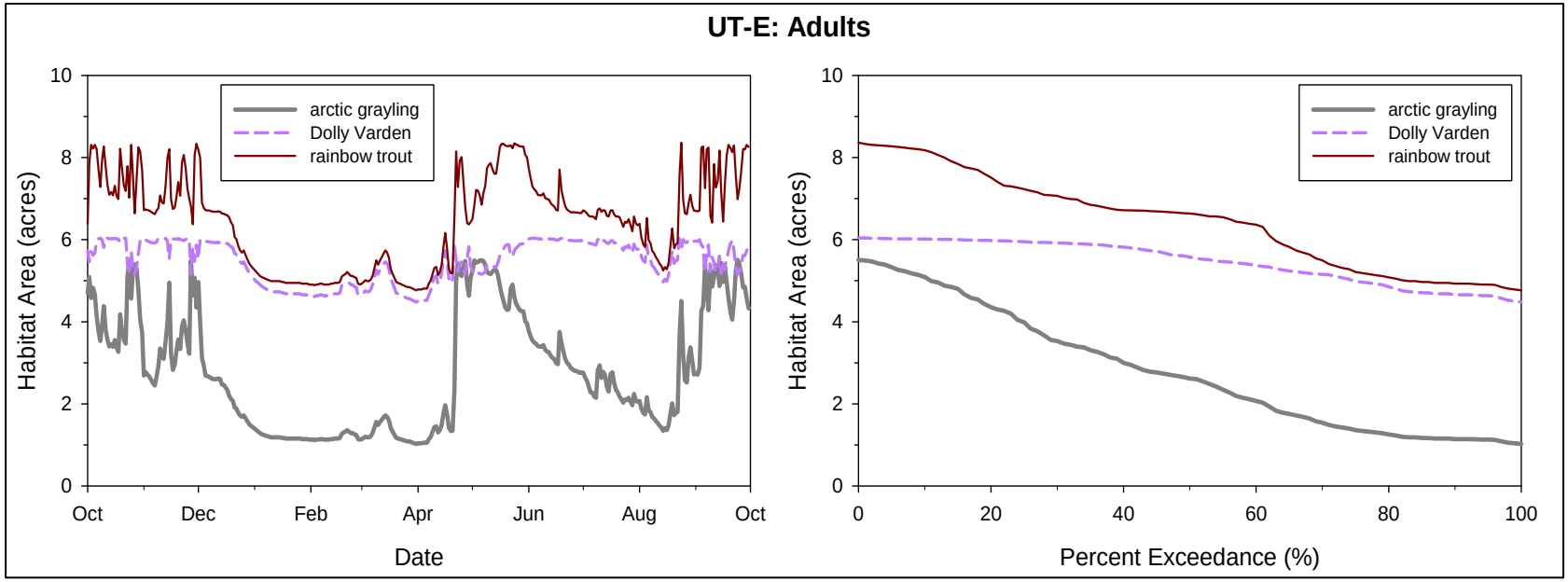


FIGURE 99
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in UT-E

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in UT-E.

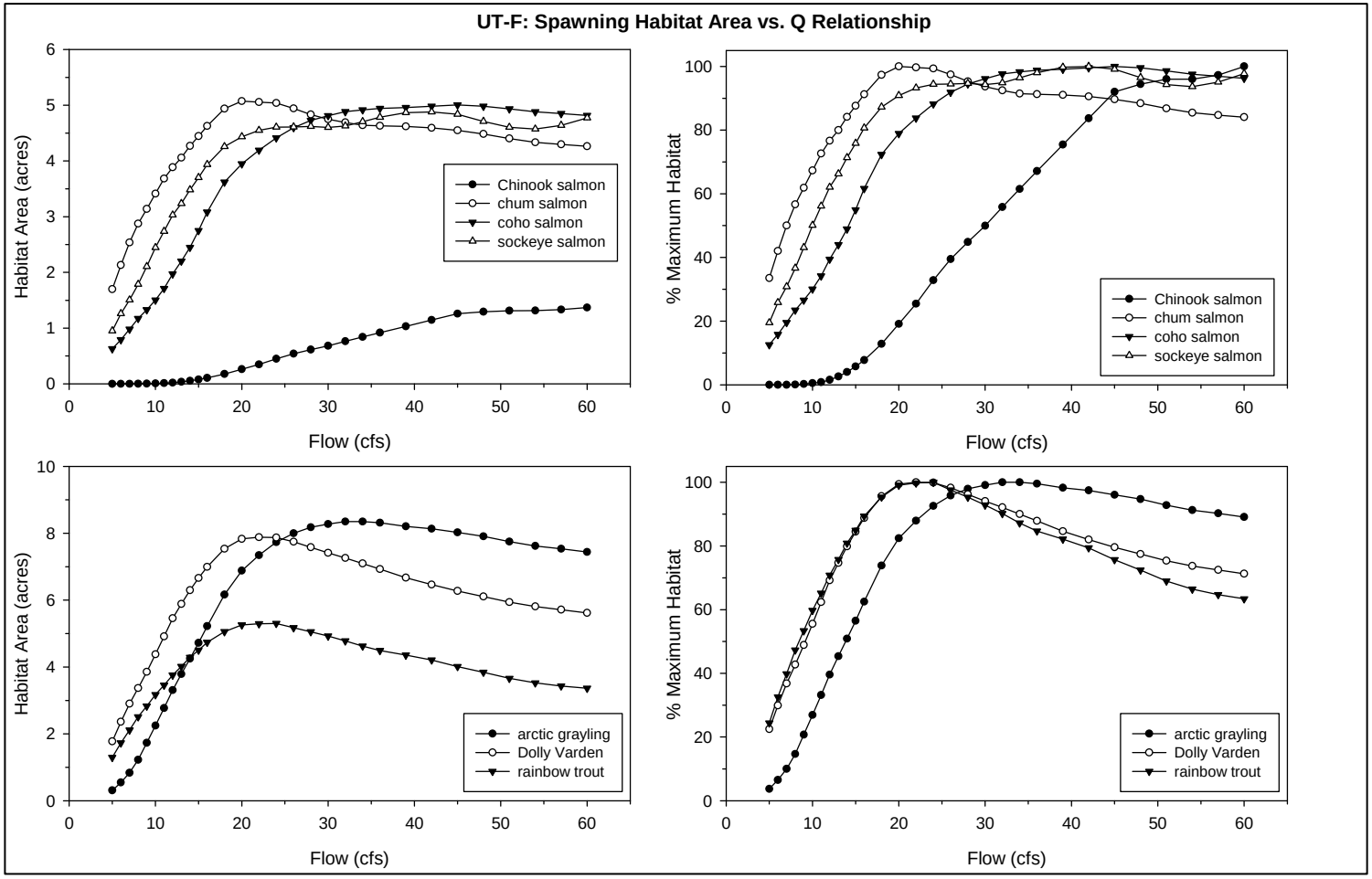


FIGURE 100
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in UT-F

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-F.

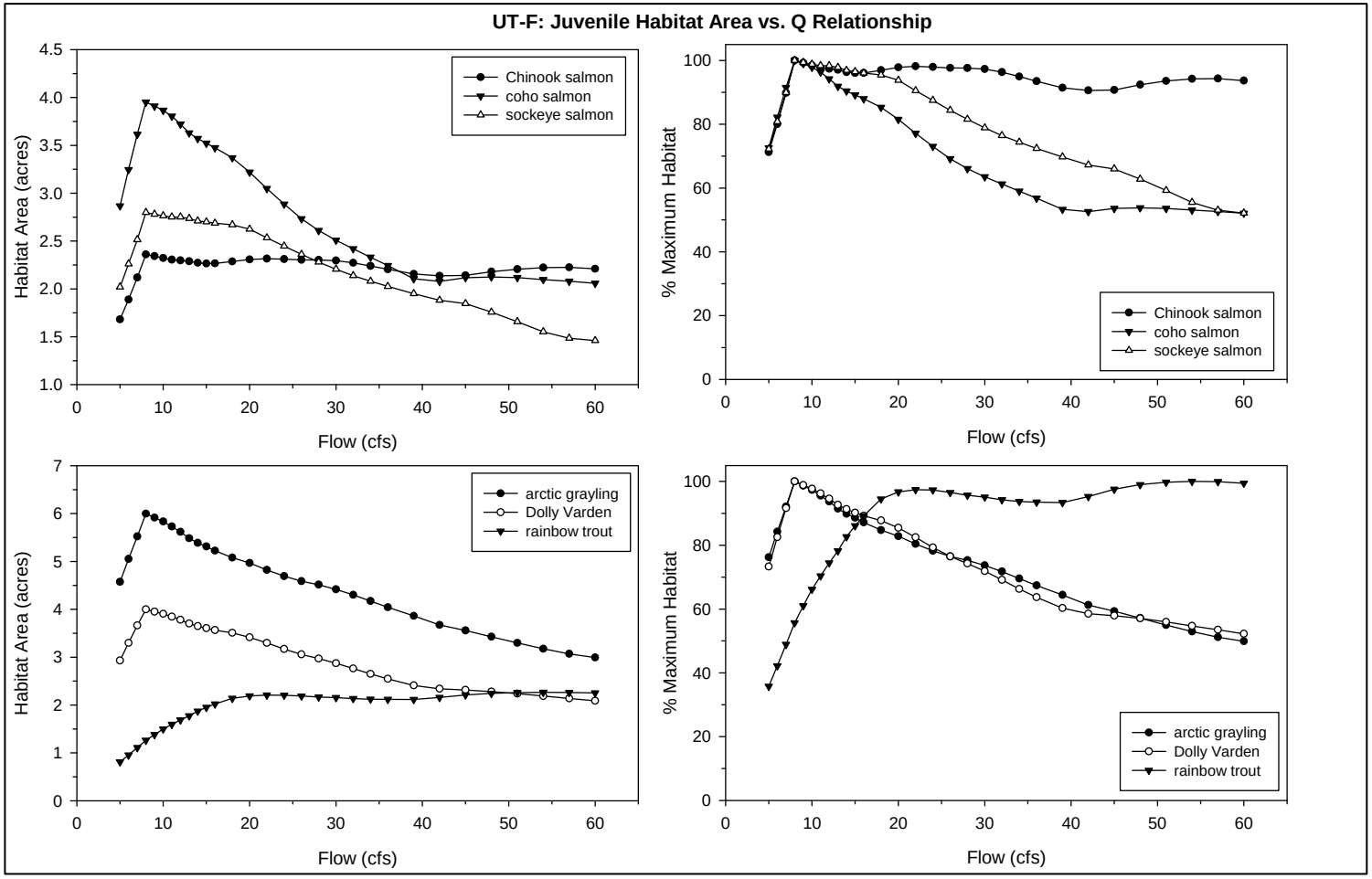


FIGURE 101
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in UT-F

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-F.

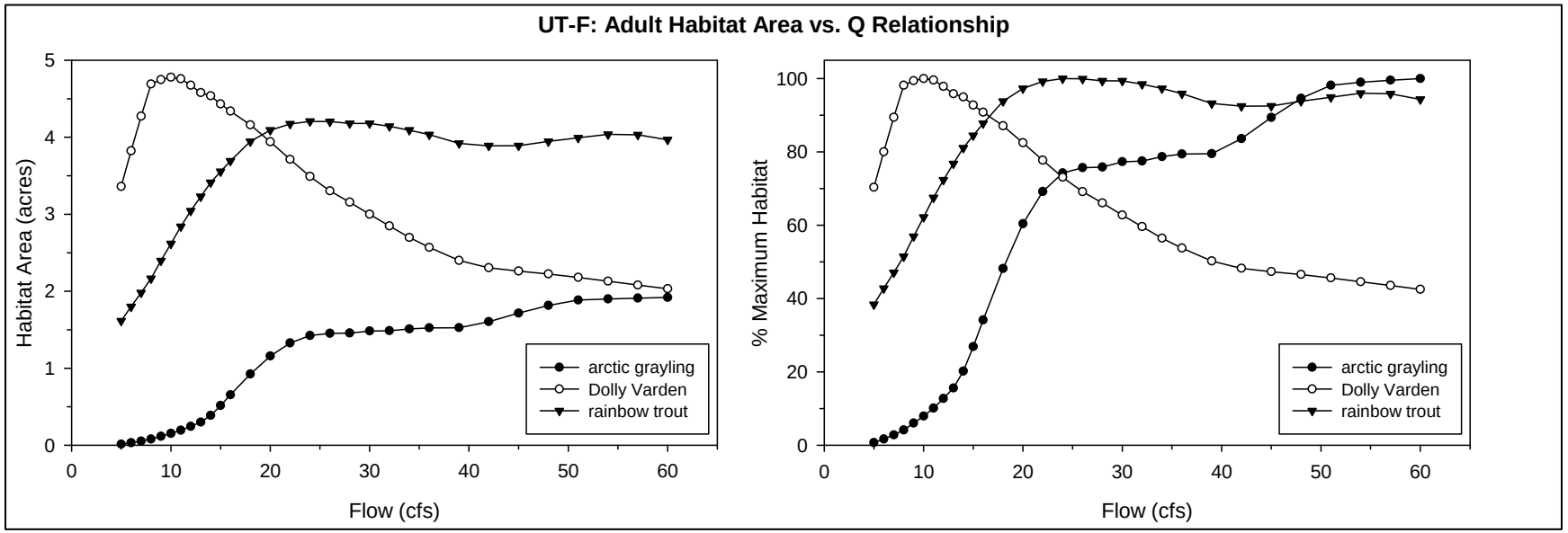


FIGURE 102
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in UT-F

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in UT-F.

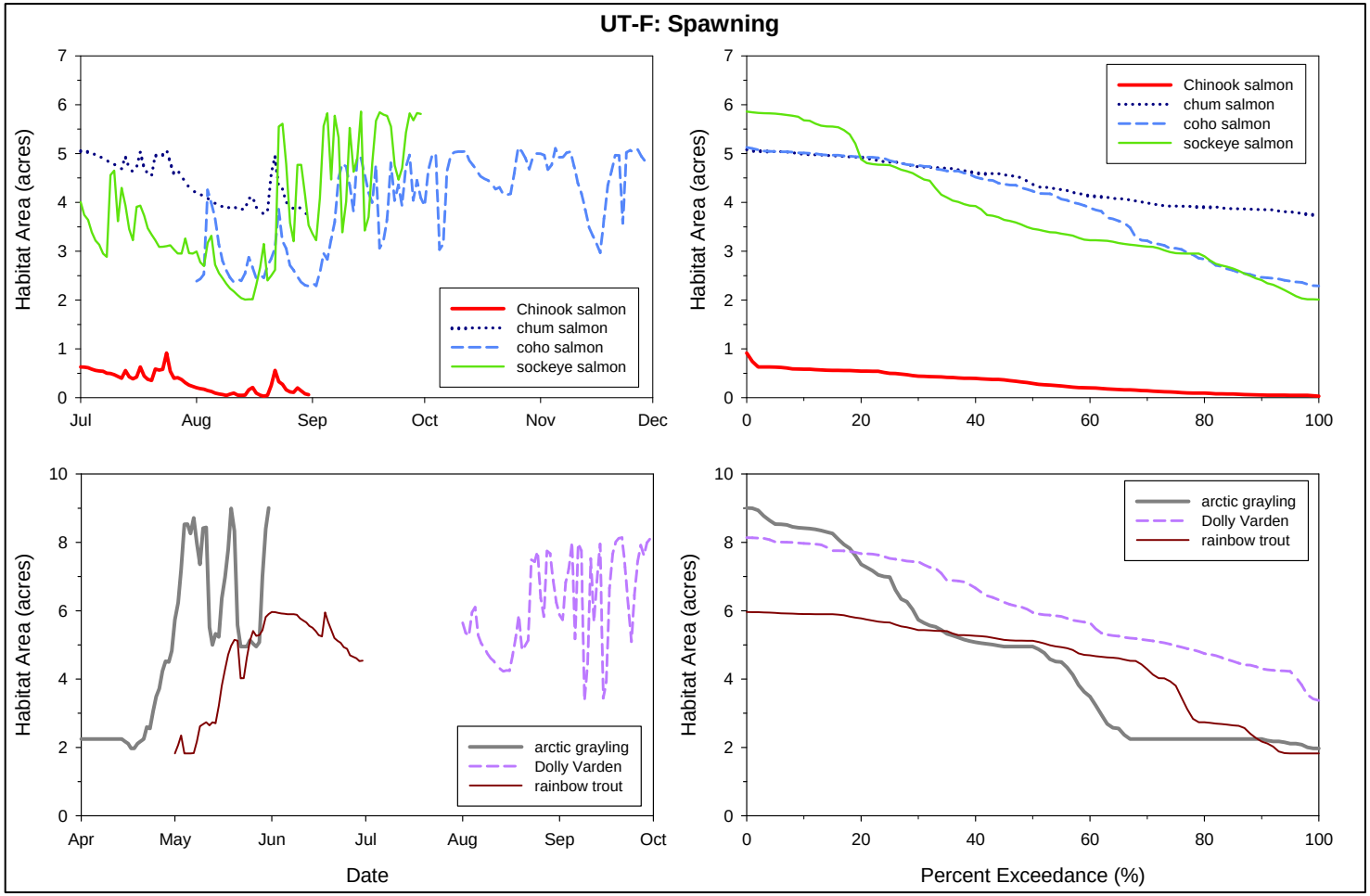


FIGURE 103
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in UT-F

Note:

Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in UT-F.

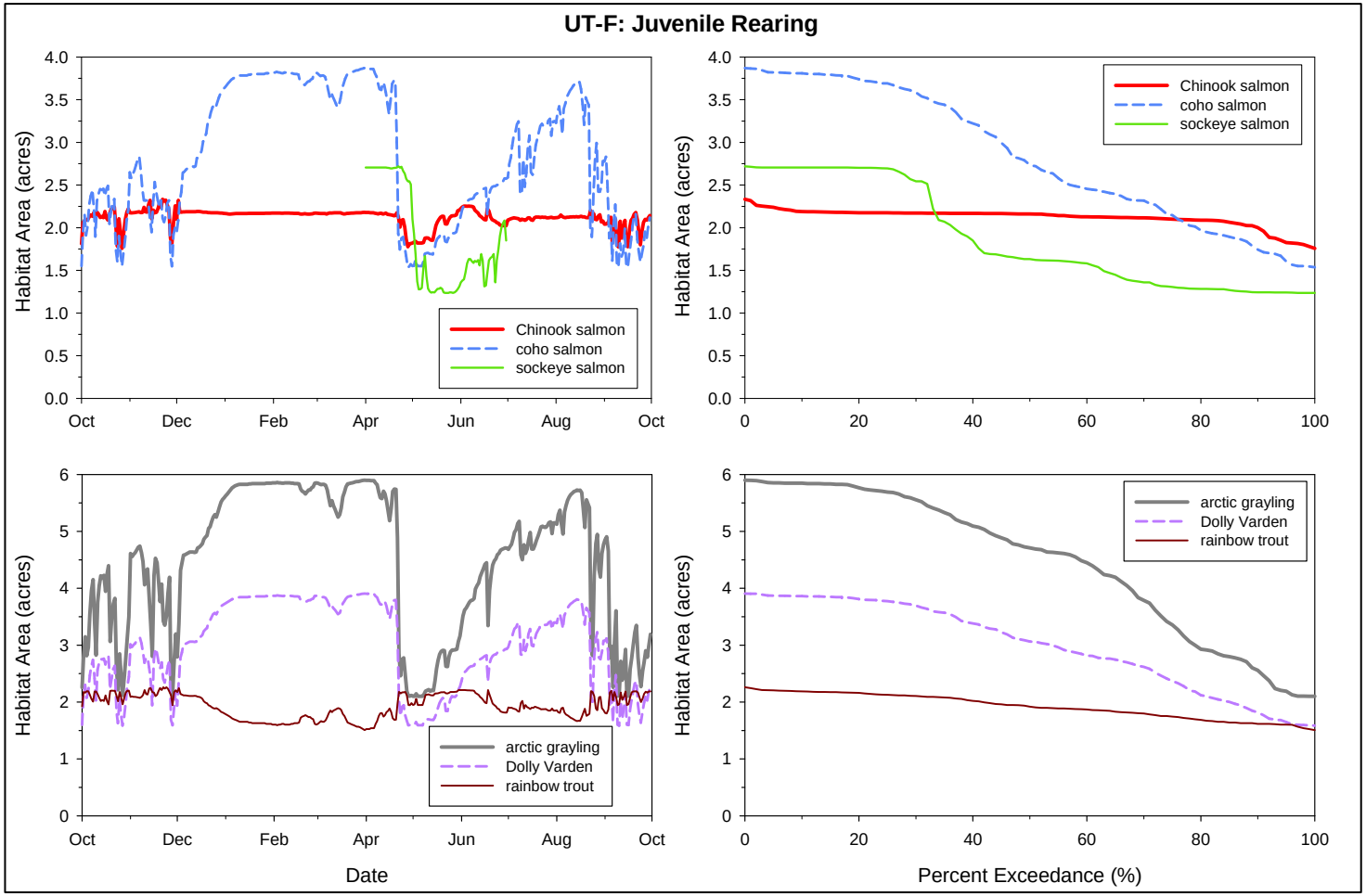


FIGURE 104
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in UT-F

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in UT-F.

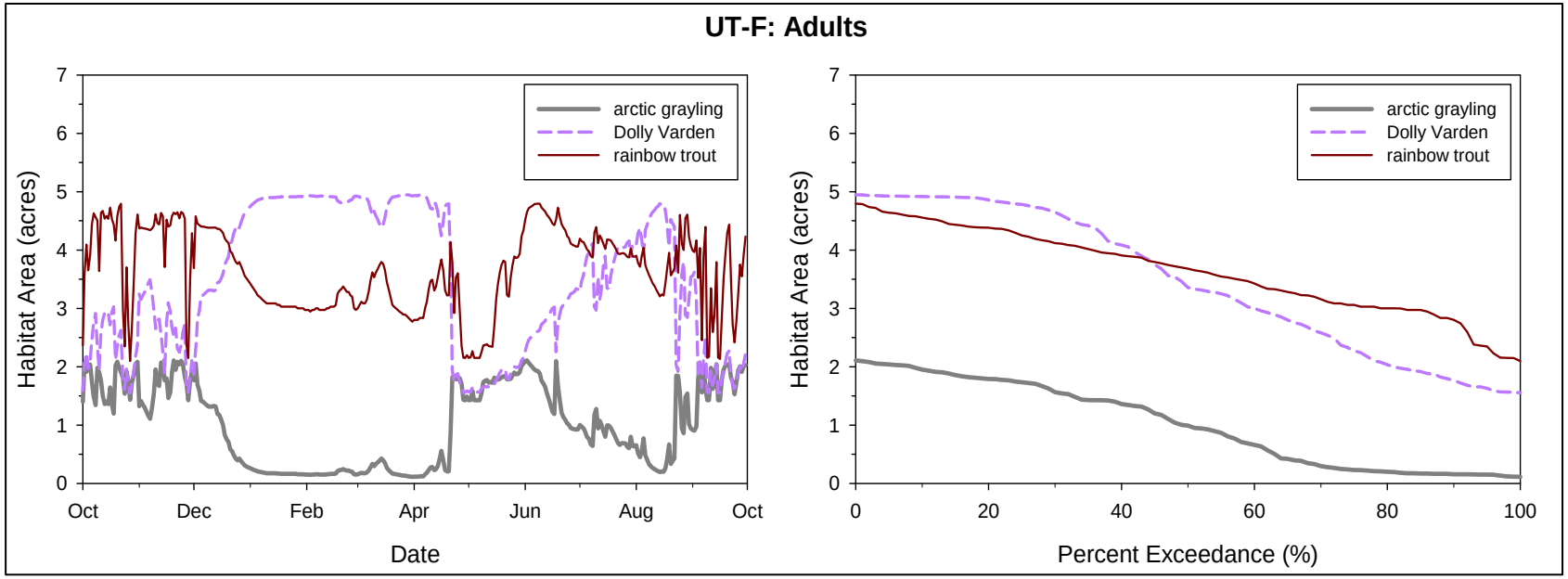


FIGURE 105
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in UT-F

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in UT-F.

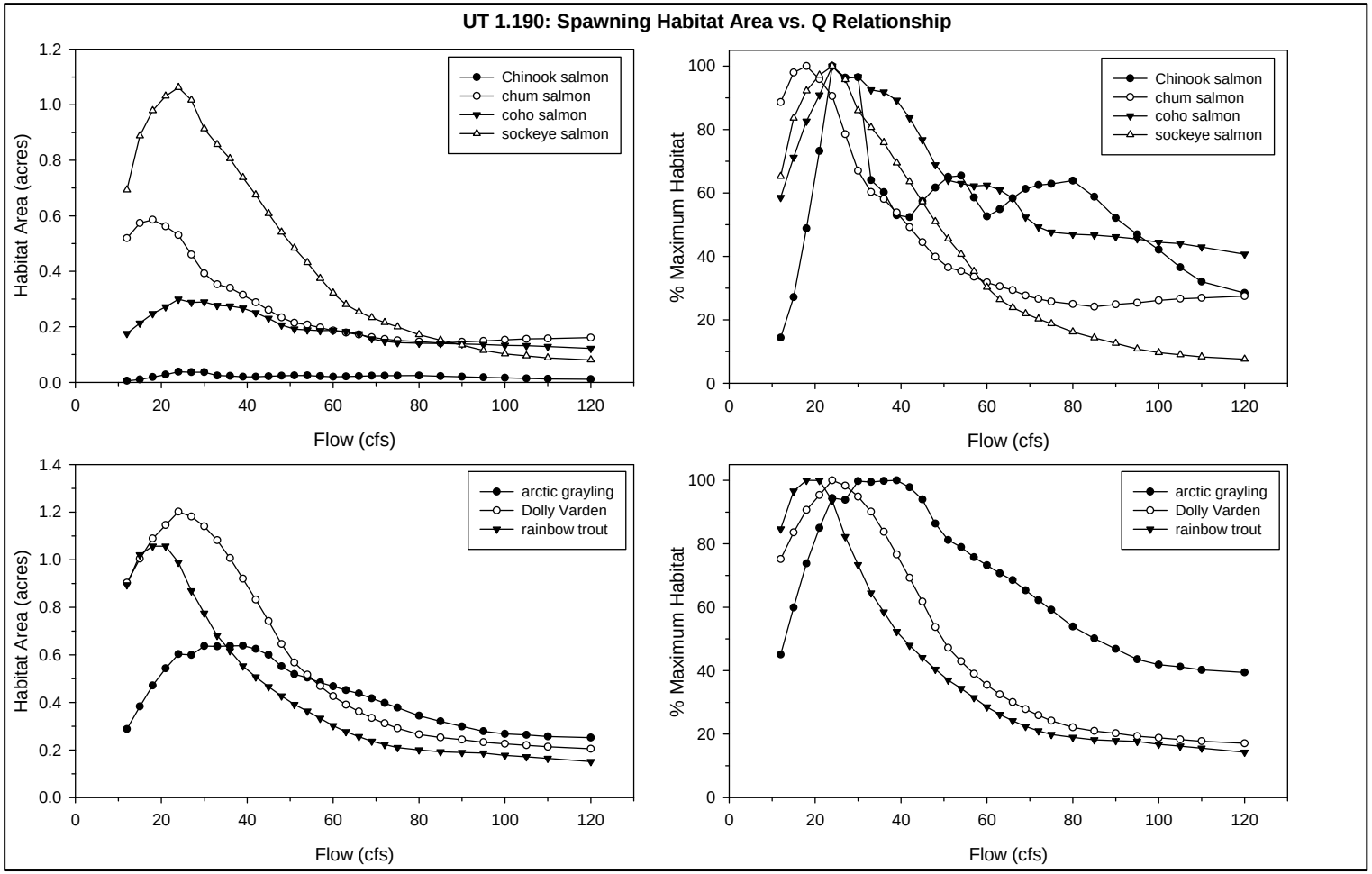


FIGURE 106
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in Tributary UT 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in Tributary UT 1.190.

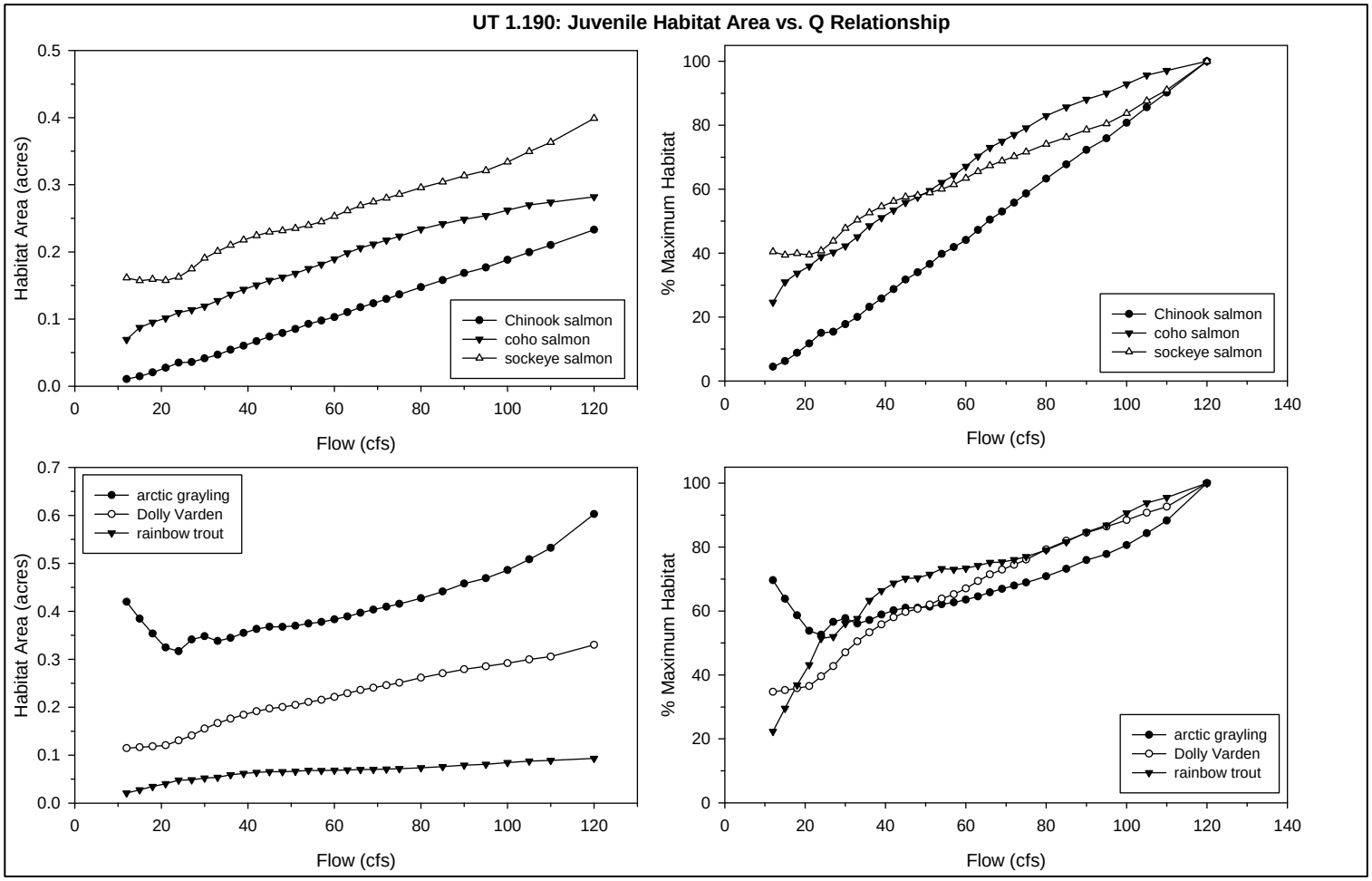


FIGURE 107
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in Tributary UT 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in Tributary UT 1.190.

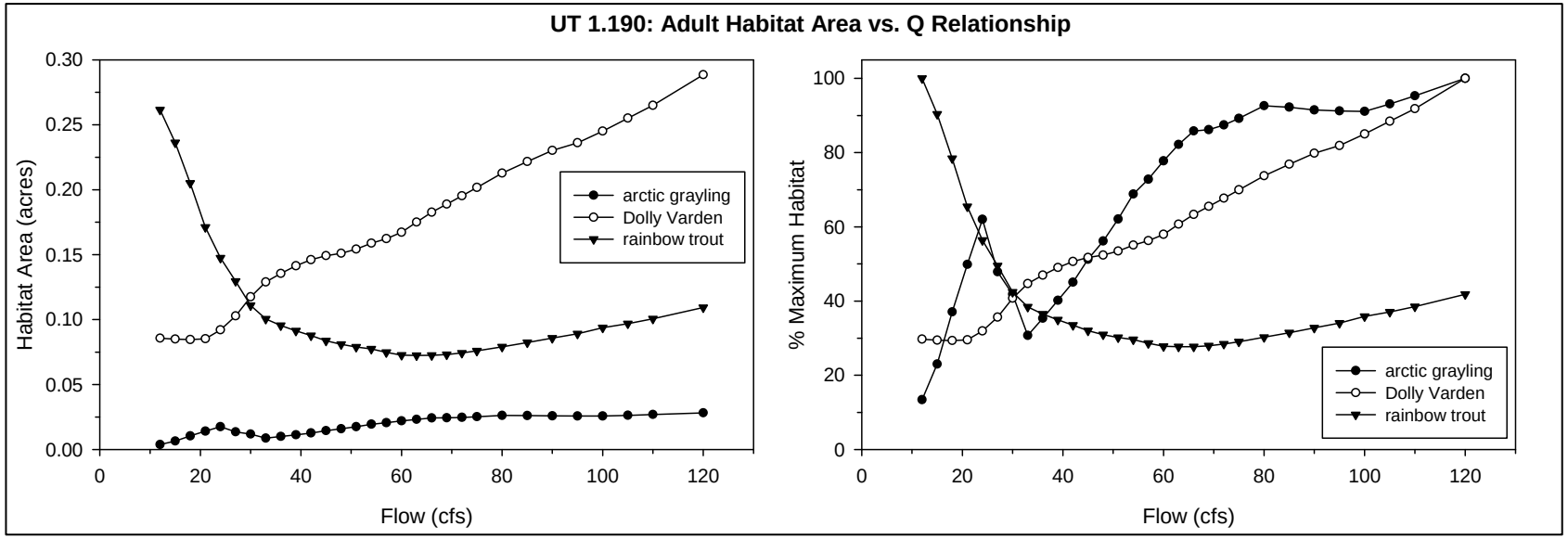


FIGURE 108
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in Tributary UT 1.190

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in Tributary UT 1.190.

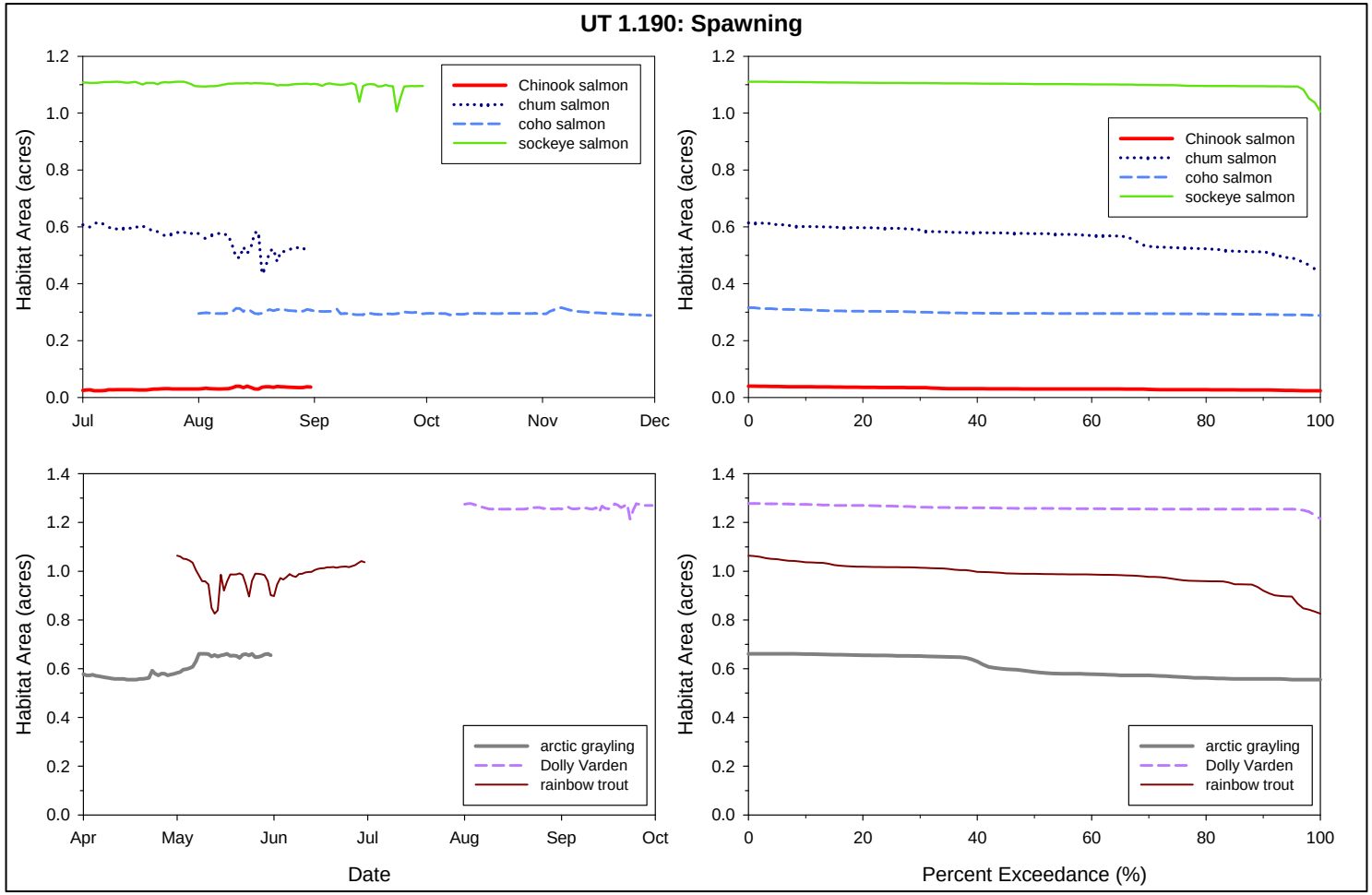


FIGURE 109
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in Tributary UT 1.190

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in Tributary UT 1.190.

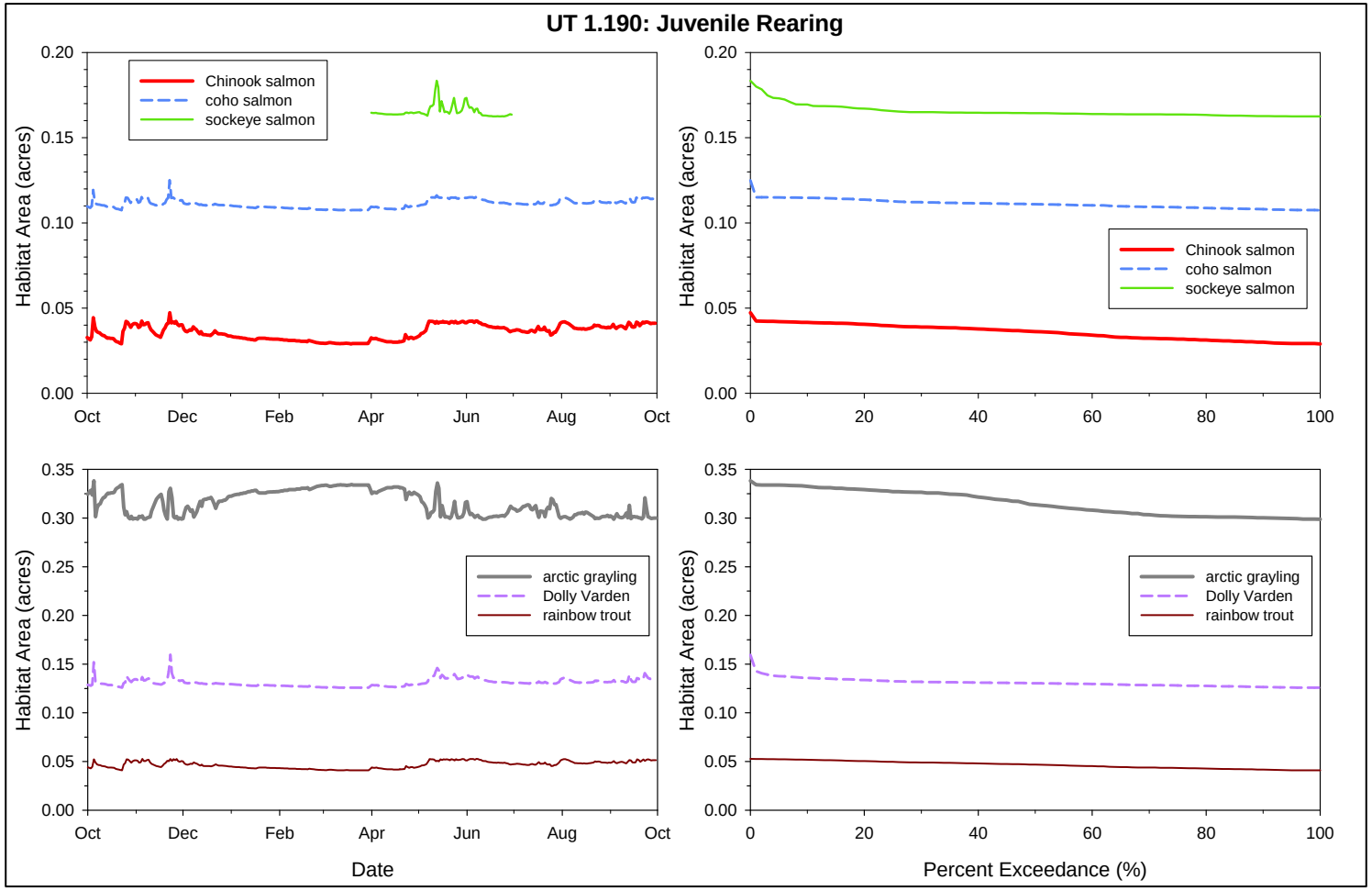


FIGURE 110
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in Tributary UT 1.190

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in Tributary UT 1.190.

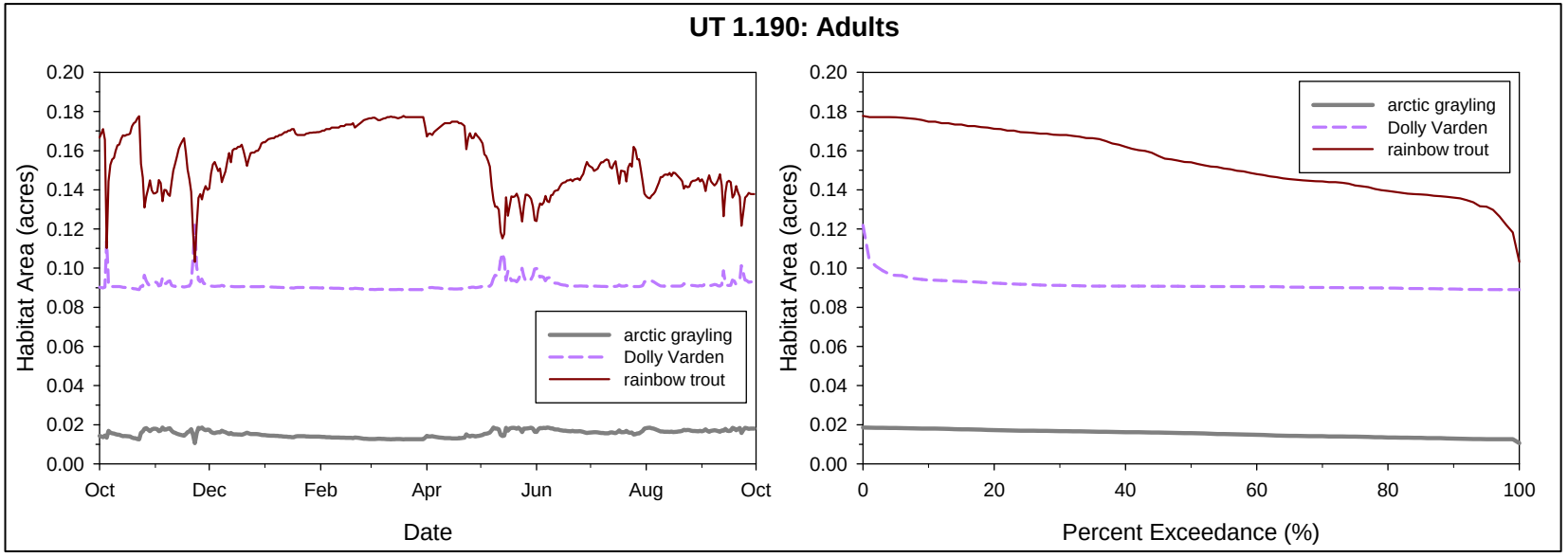


FIGURE 111
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in Tributary UT 1.190

Note:

Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in Tributary UT 1.190.

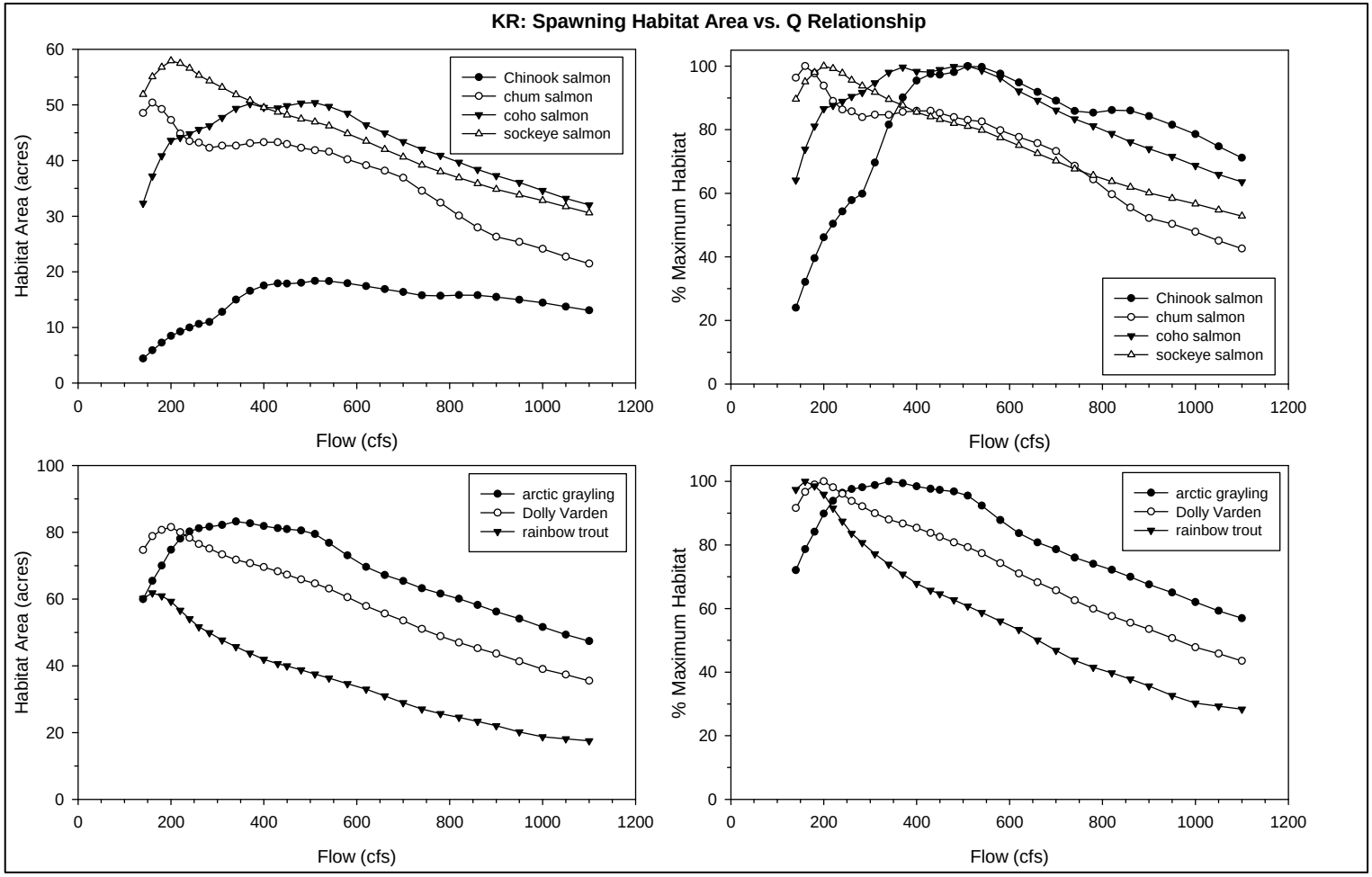


FIGURE 112
Total Habitat Area versus Flow for Spawning Anadromous and Non-anadromous Salmonids in the KR

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for spawning anadromous (top) and non-anadromous (bottom) salmonids in the KR.

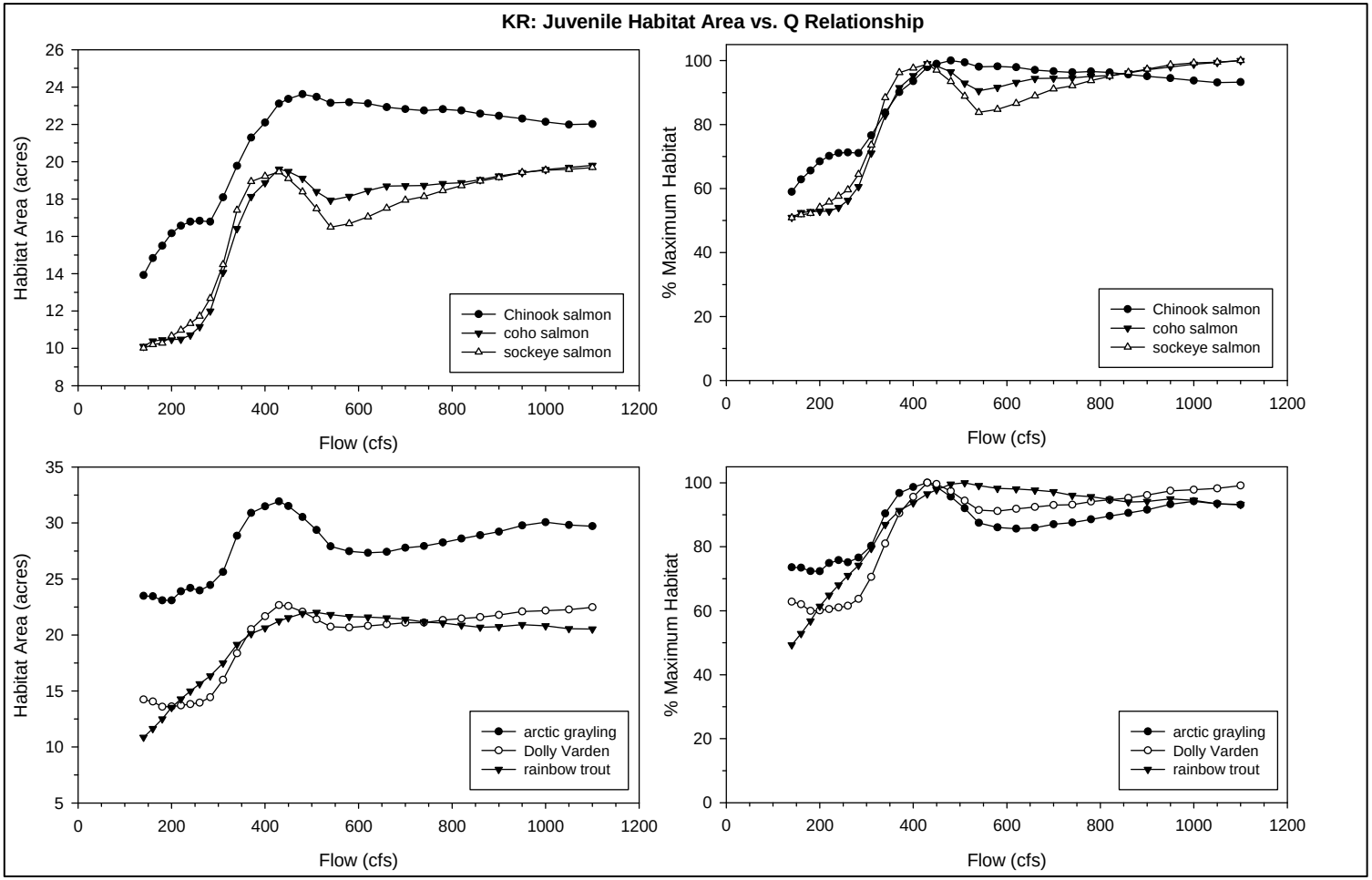


FIGURE 113
Total Habitat Area versus Flow for Juvenile Anadromous and Non-anadromous Salmonids in the KR

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in the KR.

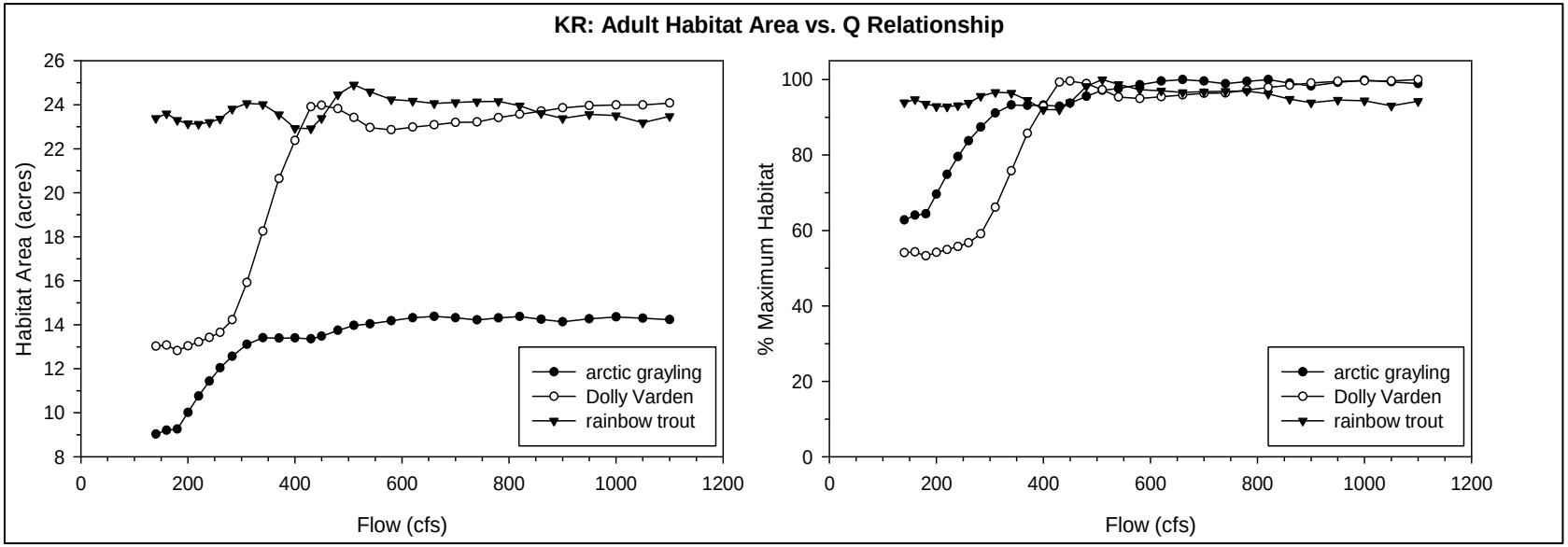


FIGURE 114
Total Habitat Area versus Flow for Adult Non-anadromous Salmonids in the KR

Note:

Total habitat area (based on weighted usable area) in acres (left) and percent of maximum habitat area (right) versus flow (cfs) for adult non-anadromous salmonids in the KR.

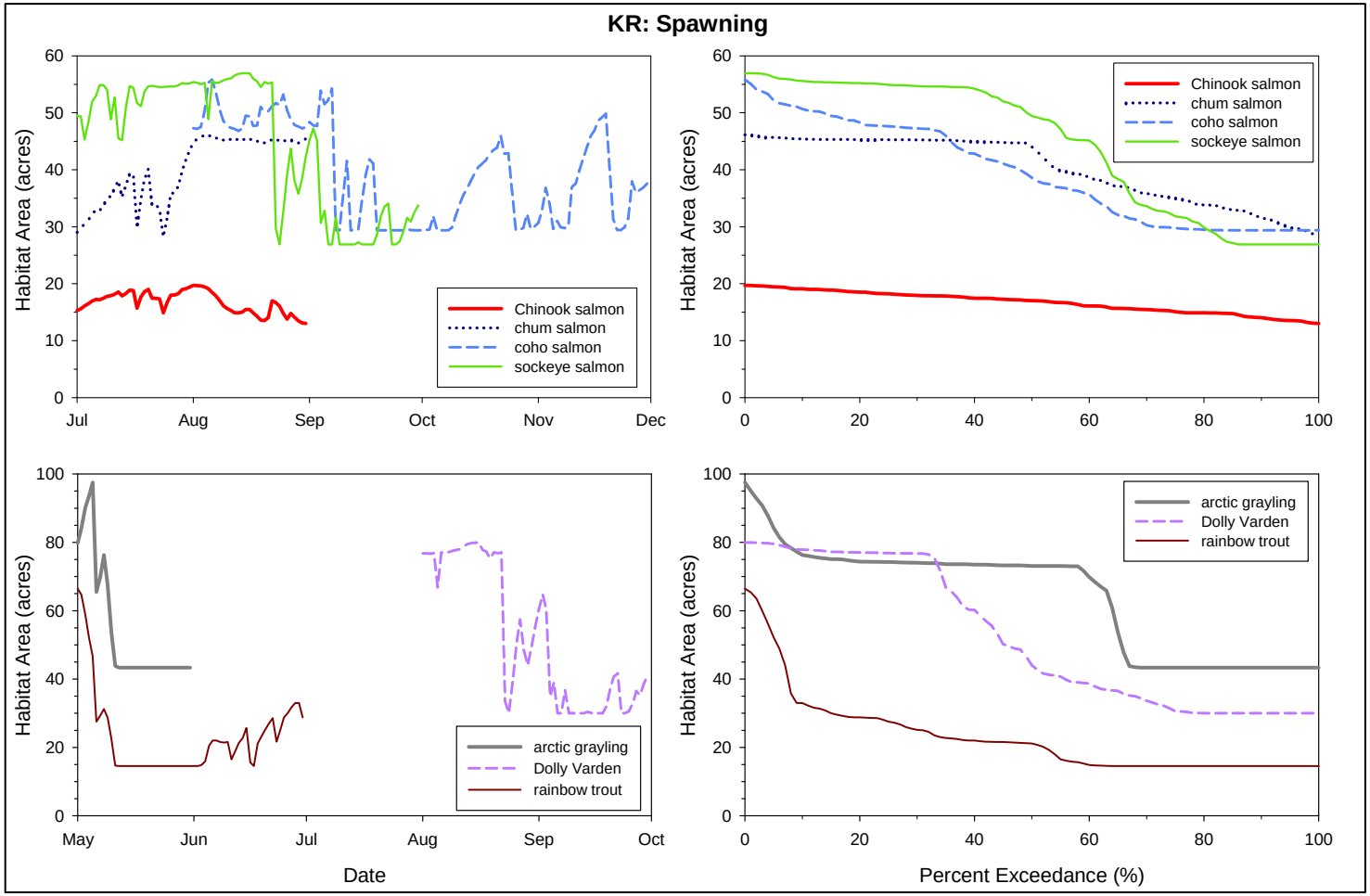


FIGURE 115
Time Series and Duration of Habitat Area for Spawning Anadromous and Non-Anadromous Salmonids in the KR

Note:
Time series (left) and duration (right) of habitat area (acres) for spawning anadromous (top) and non-anadromous (bottom) salmonids in the KR.

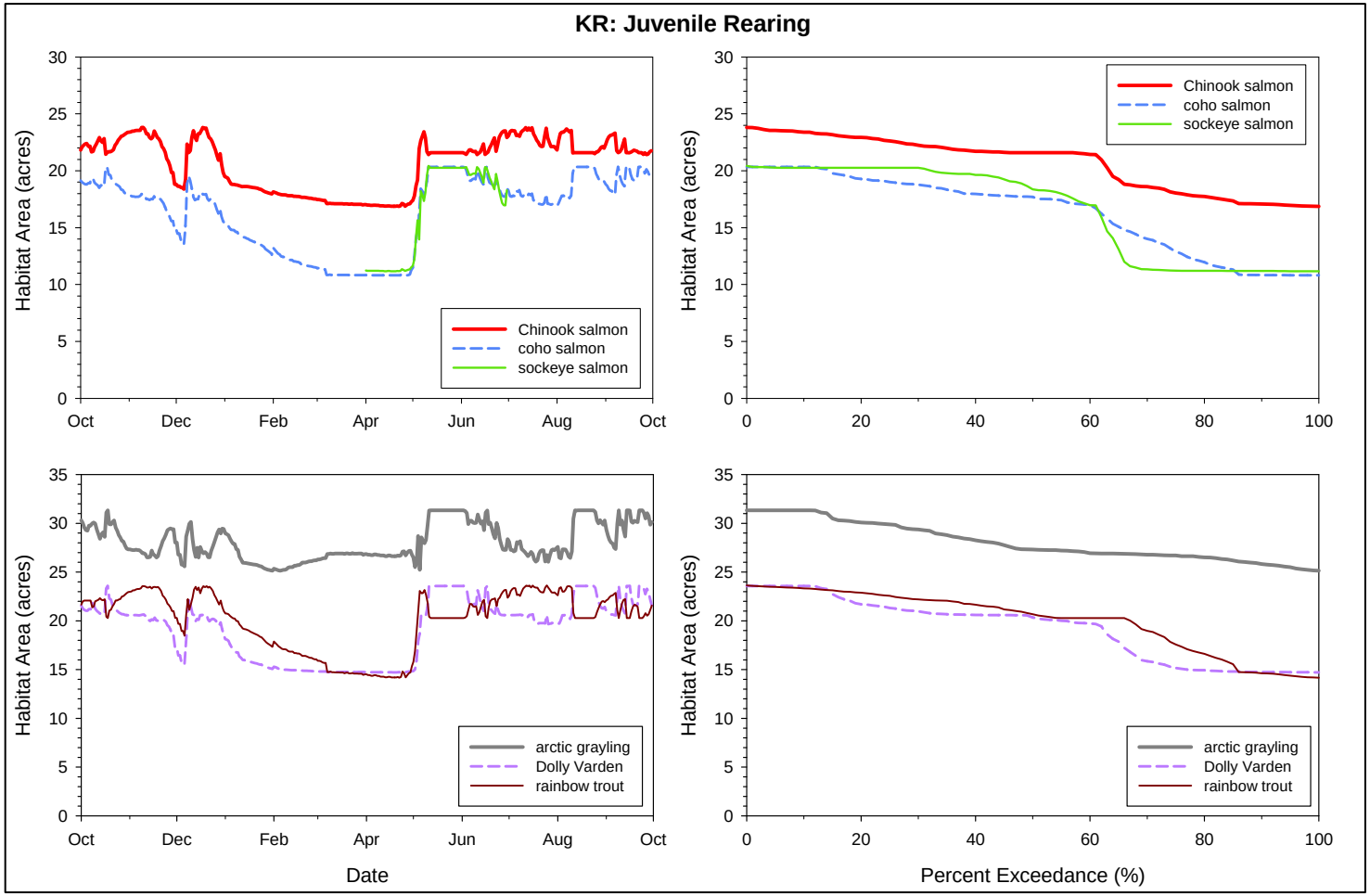


FIGURE 116
Time Series and Duration of Habitat Area for Juvenile Anadromous and Non-Anadromous Salmonids in the KR

Note:
Time series (left) and duration (right) of habitat area (acres) for juvenile anadromous (top) and non-anadromous (bottom) salmonids in the KR.

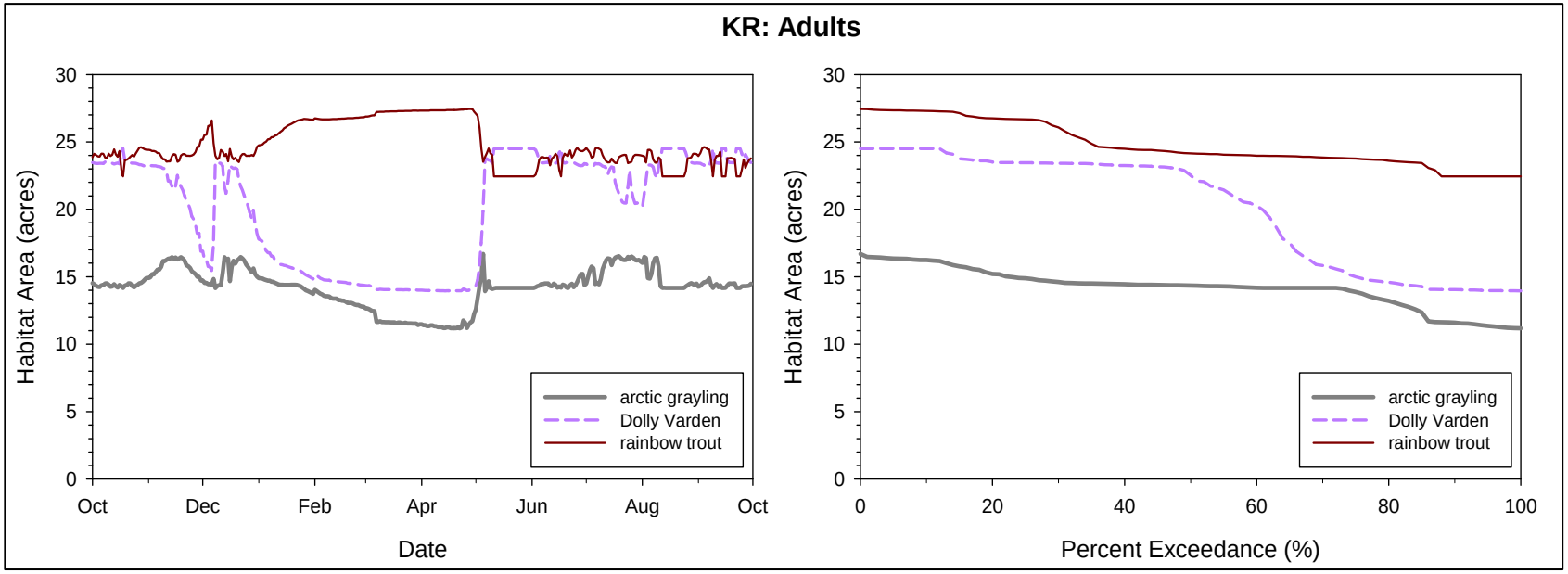


FIGURE 117
Time Series and Duration of Habitat Area for Adult Non-Anadromous Salmonids in the KR

Note:
Time series (left) and duration (right) of habitat area (acres) for adult non-anadromous salmonids in the KR.

PHOTOGRAPHS

PHOTO 1: Representative photos of NFK-A, North Fork Koktuli River, Alaska.

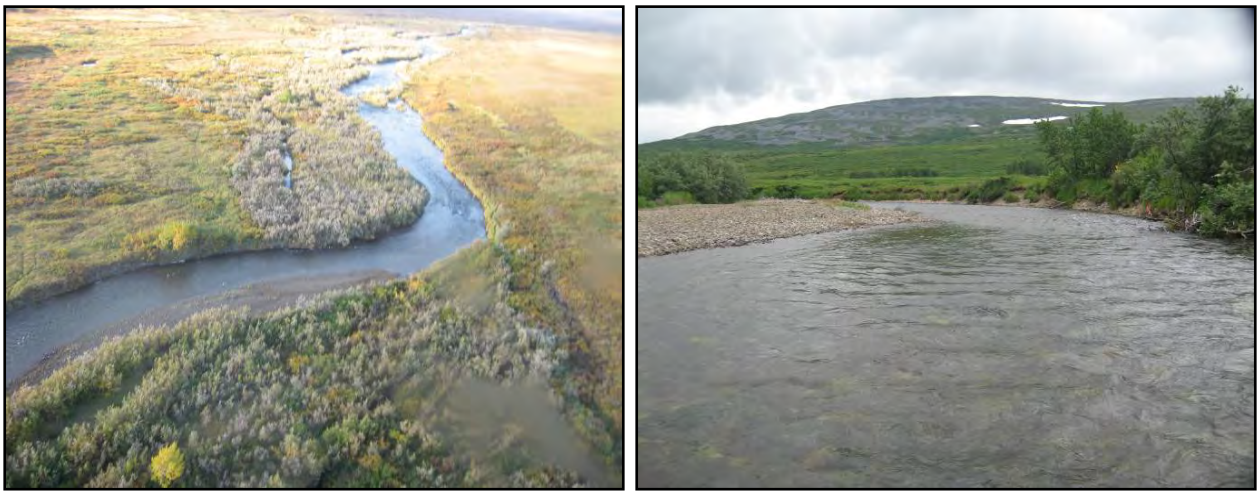


PHOTO 2: Representative photos of NFK-B, North Fork Koktuli River, Alaska.

PHOTO 3: Representative photos of NFK-C, North Fork Koktuli River, Alaska.

PHOTO 4: Representative photos of SFK-A, South Fork Koktuli River, Alaska.

PHOTO 5: Representative photos of SFK-B, South Fork Koktuli River, Alaska.

PHOTO 6: Representative photos of SFK-C, South Fork Koktuli River, Alaska.

PHOTO 7: Representative photos of UT-B, Upper Talarik Creek, Alaska.

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PHOTO 15: Snorkel surveys were used to obtain observations of habitat use by juvenile and adult salmonid species.

ATTACHMENTS

ATTACHMENT 1

Candidate Habitat Suitability Criteria Curves for Application in Habitat – Flow Modeling for the Pebble Instream Flow Study

Candidate Habitat Suitability Criteria Curves For Application in Habitat – Flow Modeling For the Pebble Instream Flow Study

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ACRONYMS AND ABBREVIATIONS

cfs	cubic feet per second
ft	feet
ft/s	feet/sec
HDR	HDR Alaska, Inc.
HSC	Habitat Suitability Criteria
in.	inch(es)
n	number of samples
PHABSIM	Physical Habitat Simulation (model)
R2	R2 Resource Consultants, Inc.

1. INTRODUCTION AND BACKGROUND

The instream flow study for the Pebble Project was initiated in 2004 as part of environmental baseline studies. The area specific to the instream flow study includes the upper portion of the mainstem Koktuli River and the full lengths of the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek. The basins represented by these streams are depicted in Figure 1. Studies completed in 2004, 2005 and 2007 resulted in the establishment and measurement of 92 transects for use in developing hydraulic models that can be linked to habitat models for deriving habitat:flow relationships. The distribution of these transects was respectfully, 5, 21, 28, 38 for the mainstem Koktuli River, North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek. In 2008, an additional 46 transects were established and measured, consisting of 17 transects on the North Fork Koktuli watershed, 18 in the South Fork Koktuli system, and 11 in Upper Talarik Creek. Collectively, these 138 transects will be used in developing habitat:flow relationships (based on **P**hysical **Hab**itat **Sim**ulation modeling – **PHABSIM;** Bovee 1982) that can then be applied in evaluating the effects related to changes in flow regimes. A more detailed discussion of the overall objectives of and methods used in conducting the instream flow study is found in the 2008 Instream Flow Study Plan (R2 2008). It should be noted that while the focus of the instream flow study is on the mainstem and major tributaries of each of the three drainages, separate studies are also underway designed to evaluate flow-habitat relationships in off-channel areas, flow-temperature relationships for each of the mainstem rivers, and fluvial geomorphologic considerations.

One of the major components in completion of the Pebble Project Instream Flow Study is the selection and use of species and lifestage Habitat Suitability Criteria (HSC) curves. HSC curves reflect species and lifestage use of selected habitat parameters (depth, velocity, substrate, and cover) (Bovee 1986). Depending on the extent of data available, HSC curves can be developed from the literature (Category 1 curves), or from physical and hydraulic measurements made in the field (i.e., site specific) over microhabitats utilized by the species (Category 2 curves – Utilization Curves). Site specific data most closely represent the conditions experienced by species directly within the streams of interest and therefore, to the extent possible, should be collected and used in developing HSC curves. When adjusted for availability, these latter curves may reflect species preference (Category 3 curves – Preference Curves) (Bovee 1986).

Since no HSC curves had been previously developed for fish species in the three rivers, site specific microhabitat data were collected by R2 Resource Consultants (R2) in 2008 and, previously, by HDR from 2005 to 2007. The intent was to focus data collection efforts on certain fish species because of their commercial, recreational, subsistence and ceremonial value.

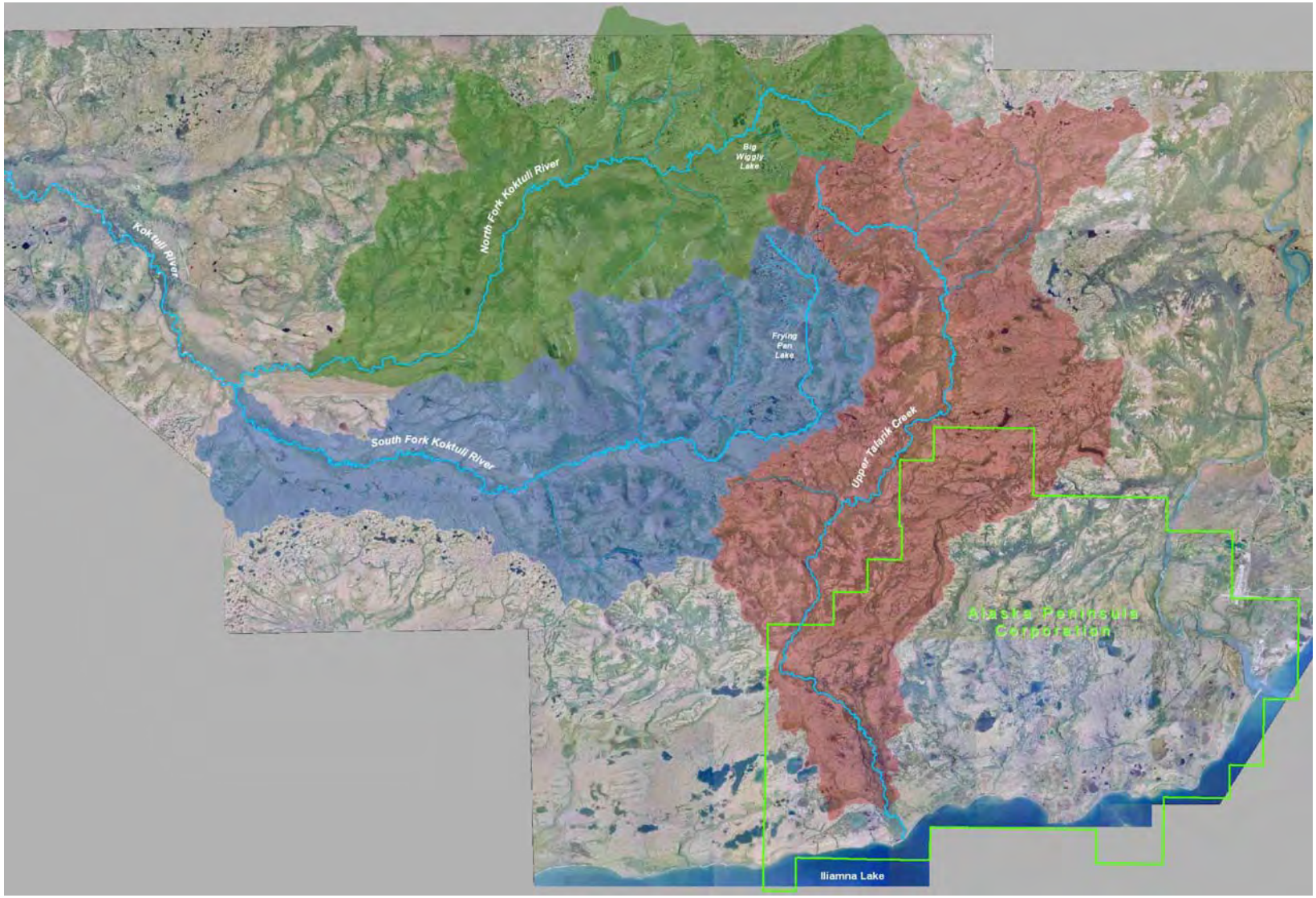

Figure 1. Site map showing primary basins within the Pebble Project: North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek.

These species are collectively termed target fish species and include:

- Sockeye salmon *(O. nerka*)
- Coho salmon *(Oncorhynchus kisutch)*
- Chinook salmon (*O. tshawytscha*)
- Chum salmon (*O. keta*)
- Rainbow trout (*O. mykiss*)
- Grayling (*Thymallus arcticus*)
- Dolly Varden (*Salvelinus malma*), and
- Round whitefish (*Prosopium cylindraceum).*

However, not all of these species are readily observable (given flow characteristics) or sufficiently abundant to allow collection of site specific data. Therefore, while the derivation of HSC curves for some of the target species will likely be based on site specific data, HSC curves for others may be based on a combination of site specific data and literature information.

1.1 OBJECTIVES AND PURPOSE OF THIS DOCUMENT

The main objective of this document is to provide HSC curves for each target species and lifestage for use in calculating the relationship between flow and potential habitat. The document is organized into the following 5 sections:

- **Section 1** – INTRODUCTION (this section): provides general background information of the instream flow study, the need for HSC curves, and the rationale for developing site-specific HSC curves for the Pebble Project.
- **Section 2** – METHODS: describes the general procedures used in both collecting and analyzing the site specific microhabitat data and developing candidate HSC curves;
- **Section 3** – RESULTS: summarizes the results of the HSC curve development process by species and lifestage;
- **Section 4** – CANDIDATE HSC CURVES: presents a set of candidate HSC curves for each of the target fish species and lifestages; and
- **Section 5** – REFERENCES.

2. METHODS

The Pebble Project HSC study focused on collecting data related to spawning habitat use, and juvenile (and adult – *for resident salmonids*) rearing habitat use. This section first describes the considerations that went into selection of study sites, and the timing of specific surveys, and then describes field data collection and analytical methods used in developing the HSC curves.

2.1 STUDY SITE SELECTION

Both the spawning and juvenile/resident surveys were conducted in all three basins associated with the Pebble Instream Flow Study, the North Fork Koktuli River, the South Fork Koktuli River, and Upper Talarik Creek (Figure 1). The North Fork Koktuli River and South Fork Koktuli River flow together into the Mainstem Koktuli River, a tributary to the Mulchatna River, which in turn is a tributary to the Nushagak River. Upper Talarik Creek flows directly into Lake Iliamna, which in turn flows into the Kvichak River.

The selection of study sites for collecting HSC microhabitat data was based on several factors, including:

- Representativeness of habitat types relative to other areas not sampled – wanted to sample areas that contained habitat features similar to other areas;
- Diversity of habitat types;
- Longitudinal location – spatial representation;
- Proximity of areas sampled to instream flow transects;
- Linkages with other fish studies; e.g., mainstem index site surveys and off-channel surveys;
- Flow conditions/visibility; and
- Accessibility and safe sampling conditions

2.2 SURVEY DATES

In 2008, R2 conducted surveys for targeted species/lifestages within the following range of dates:

- Coho salmon spawning – September 17-23, 2008
- Sockeye salmon spawning – August 5-9, 2008
- Chinook salmon spawning – August 5-7, 2008

- Chum salmon spawning – August 5-6, 2008
- Juvenile/resident rearing – August 18-22, 2008

HDR conducted surveys from 2005 to 2007 for various species lifestages during the following range of dates:

- Sockeye salmon spawning – July 24 – August 6, 2005 and August 3-8, 2006,
- Chinook salmon spawning – July 24 – August 6, 2005 and August 3-8, 2006,
- Juvenile/resident rearing – June 21 – July 19, 2007

The dates of these surveys were based in part on a generalized periodicity chart that depicts the timing of habitat use of anadromous and resident salmonid species for different lifestages within the three drainages (Figure 2). The periodicity information as presented in Figure 2 was based on available data at the time of its development and will be updated based on results of ongoing fish studies. The periodicity information was used for planning purposes to assist in determining approximate dates when field surveys should be conducted that would allow the best opportunity to observe target fish species and lifestage activity.

2.3 ANADROMOUS SPAWNING SURVEYS

The timing and location of spawning surveys were based in part on the periodicity data as well as information obtained during aerial (helicopter) spawner escapement surveys conducted by R2. Active spawning locations were identified by R2 staff during helicopter surveys of each stream. This information was used to identify areas with the highest concentration of spawning activity for the four main salmon species (sockeye, coho, Chinook, and chum salmon).

Figure 2. General periodicity chart for target fish species in the North Fork Koktuli River, South Fork Koktuli River and Upper Talarik Creek.

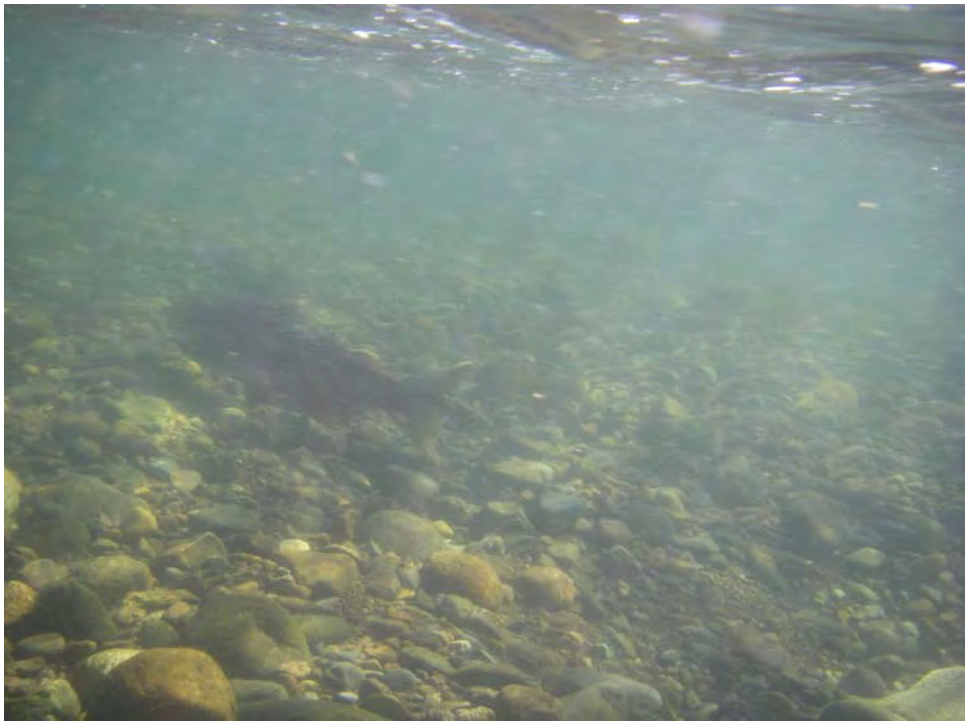

Figure 3. Example of a typical redd observed during spawning surveys. Depth, velocity, substrate, and redd dimensions were measured at each redd.

2.4 SNORKEL SURVEYS – JUVENILE AND RESIDENT REARING

Snorkel surveys were conducted by a team of two or three fish biologists with extensive experience in salmonid species identification. These surveys were conducted in conjunction with mainstem index surveys that were designed to systematically sample fish assemblages within representative sections of each stream. In general, the steps used in completing these surveys included:

1. ***Survey Preparation*** – All field equipment used for collecting microhabitat data was checked and assembled for use. This included completing a test of calibrated velocity meters, and assembling/gathering the top setting rod, marking weights and/or flagging, underwater lights, and dry suits. Stream flows were monitored on the day of the survey to ensure stable flow conditions during sampling.
2. ***Sampling Conditions/Visibility Assessment*** – Prior to each survey, a secchi disk reading was taken to determine the visibility corridor for sampling. For this, a secchi disk was held underwater by the data recorder, and a tape measure extended by the snorkeler from the secchi disk outward to a point where the disk is no longer clearly visible (Figure 4). As a rule, when visibility conditions were less than four feet, no sampling occurred. Water temperature was also recorded at the beginning of each survey.

To ensure accurate estimation of fish size underwater, the snorkelers calibrated their sight to a ruler prior to beginning each survey. Rulers and objects of known length (e.g., fingers, marks on diving gloves) were used during the survey to maintain accuracy in the estimation of fish length.

3. ***Snorkel Survey/Fish Observations*** – Starting at the lower/downstream point within a study site, the snorkelers proceeded in an upstream direction making observations of all microhabitat types within their line of sight (Figure 5). When two divers were working together, both sides of the river were covered, with the midpoint of the river serving as the delineation point of coverage for each diver. When only a single diver was conducting the survey, the diver surveyed one or both sides of the river, depending on the range of microhabitats present. When a fish was observed the snorkeler verbally transmitted the following information to the data recorder:
    - Fish species
    - Fish length (mm)
    - Location in water column (distance from the bottom)
    - Substrate use classification
    - Proximity/affinity to habitat structure/cover features (e.g., boulder, undercut bank, overhanging vegetation, large woody debris)
    - Relevant comments pertaining to cover associations and/or behavioral characteristics of the fish observed

Only fish holding over a fixed position were included in the microhabitat survey. Moving fish were not enumerated in order to minimize inaccurate habitat measurements, and to prevent double-counting of fish. Locations of observed fish were marked with a weight or flagging.

4. ***Microhabitat Measurements*** – Subsequent to locating a fish observation, the data recorder proceeded to the fish location and collected the following information:
    - Water depth – measured to the nearest 0.1 feet using a top setting rod
    - Mean column velocity (fps) – measured using a Swoffer Model 2100 or Marsh McBirney FlowMate 2000 current meter (Figure 6)
    - Substrate classification – dominant/sub-dominant

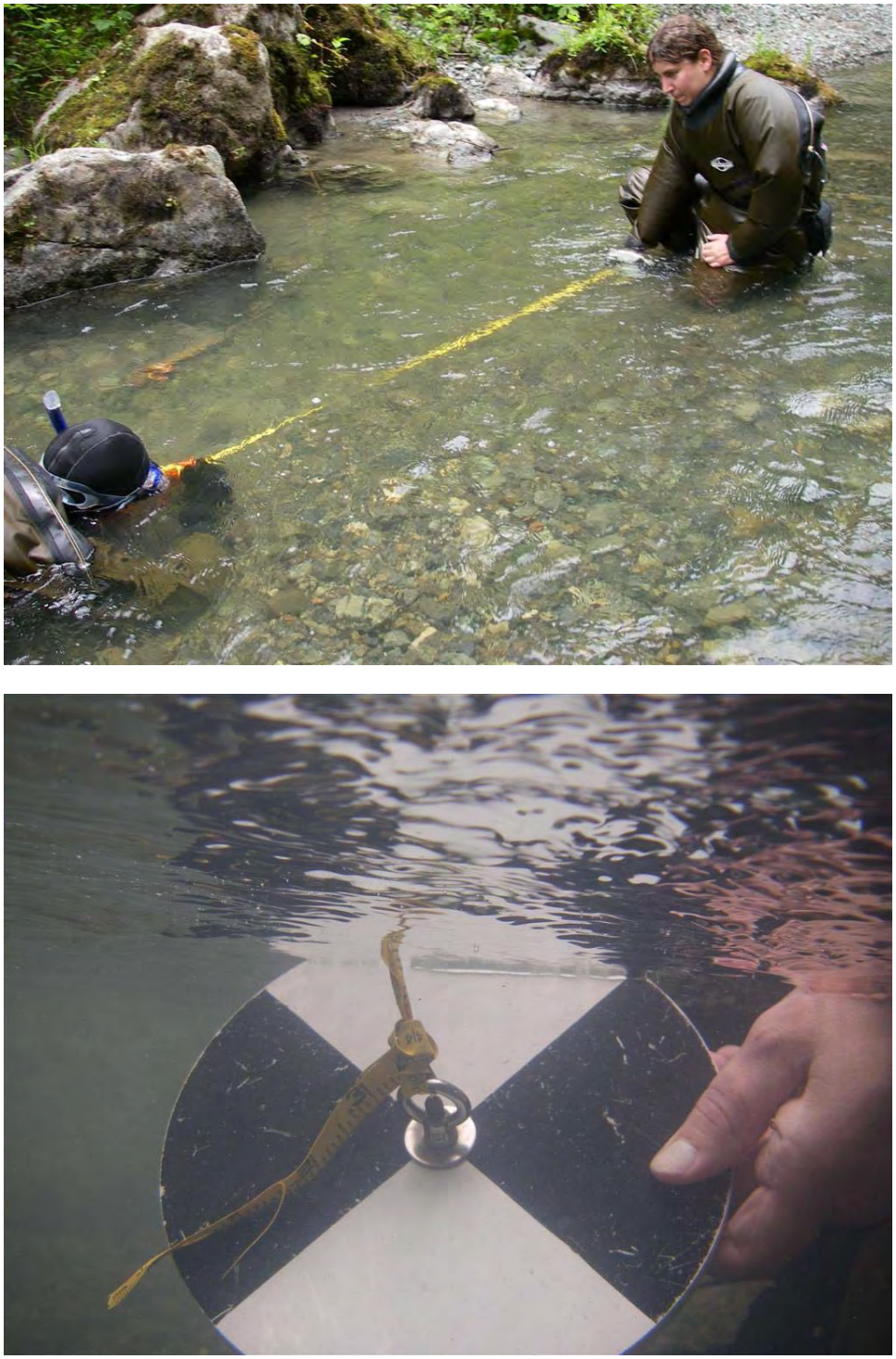

Figure 4. Visibility conditions were assessed using a secchi disk prior to conducting microhabitat snorkel surveys.

Figure 5. Photograph of snorkeler making fish observations along streambank. Locations where fish were observed were marked with a weight or flagging.

Figure 6. Depth and velocity measurements were taken at locations where fish were observed.

All data were recorded on waterproof data sheets; the data were reviewed in the field to ensure that all measurements were properly recorded and were legible prior to departure. Digital photographs were taken of representative habitat types where fish of different species and size classes were observed.

2.5 FLOW CONDITIONS

The quantity and rate (cubic feet per second) of flow within each stream during the time of fish use, to a large degree, determines the distribution of microhabitat (depth and velocity) combinations that are available to fish. Stream flow records for each basin are available from USGS continuous flow monitoring stations. These are depicted below for the North Fork Koktuli River – (USGS Gage 15302250) (Figure 7), South Fork Koktuli River – (USGS Gage 1530220) (Figure 8), and Upper Talarik Creek – USGS Gage 15300250) (Figure 9).

Dates of the microhabitat surveys completed by R2 in 2008 for spawning and rearing were superimposed on the flow records as a means to assess the relative stability of flows during the surveys. In general, the surveys in August (Chinook and sockeye salmon spawning, and juvenile and fry rearing) were completed under relatively stable flow conditions, while those in September (coho salmon spawning) were completed under more variable conditions. No comparison of flow conditions and survey dates was completed for the HDR data sets since data were collected during three separate years.

2.6 DATA ANALYSIS

Prior to calculation of the HSC curves, the habitat data from each stream were organized by species and lifestage, entered into commercially available spreadsheets, and subsequently checked for data entry accuracy. Frequency distributions were then generated for mean velocity, depth, and substrate type for each species and then normalized. Histogram plots of depth and mean column velocity utilization were produced using a 0.2 bin width. For species/lifestages for which sufficient observations were collected ($n \geq 20$), the frequency distribution of the field observations was then converted to suitability by scaling the distribution between 0 and 1 (utilization values divided by the maximum value observed). The resulting curves were inspected and visually adjusted, in part to smooth out sharp breakpoints, and in the case of depth, extend the range of the curve to reflect a non-limiting condition.

For comparative purposes, HSC curves for each species and lifestage were first developed using pooled data from all three streams, and then separate curves were developed based on stream-specific data. Thus, for certain species and lifestages (e.g., sockeye and coho salmon spawning) four separate HSC curves were generated, one based on combined data, one based on data for North Fork Koktuli, one for South Fork Koktuli, and one for Upper Talarik Creek.

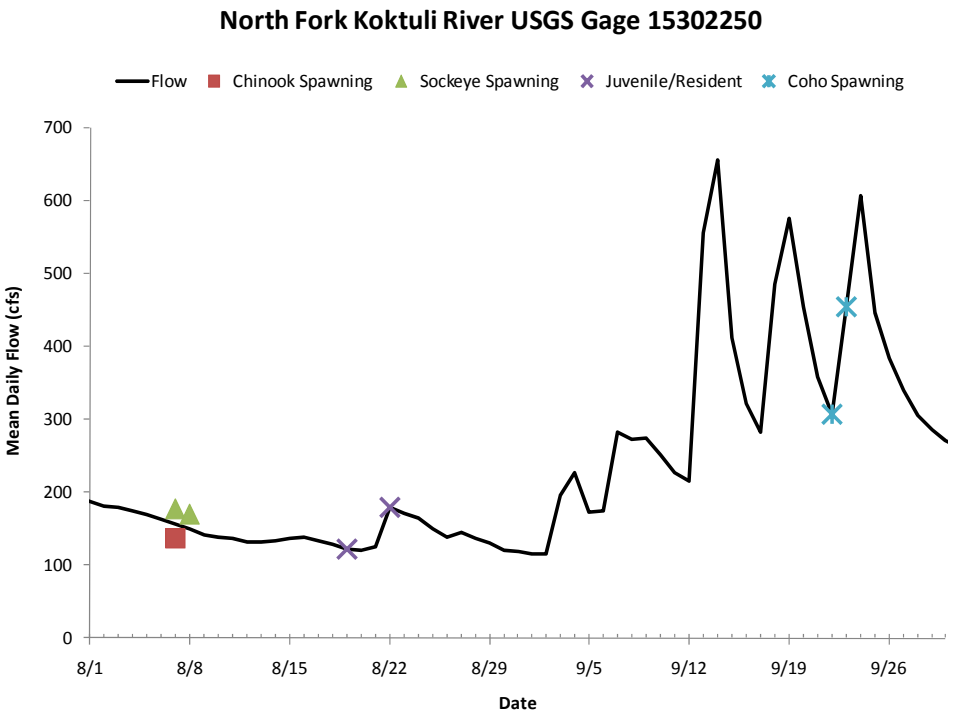

Figure 7. Average daily flows in the North Fork Koktuli River from August 1 – September 30, 2008 during microhabitat surveys. Points indicate the first and last survey date for each species/lifestage.

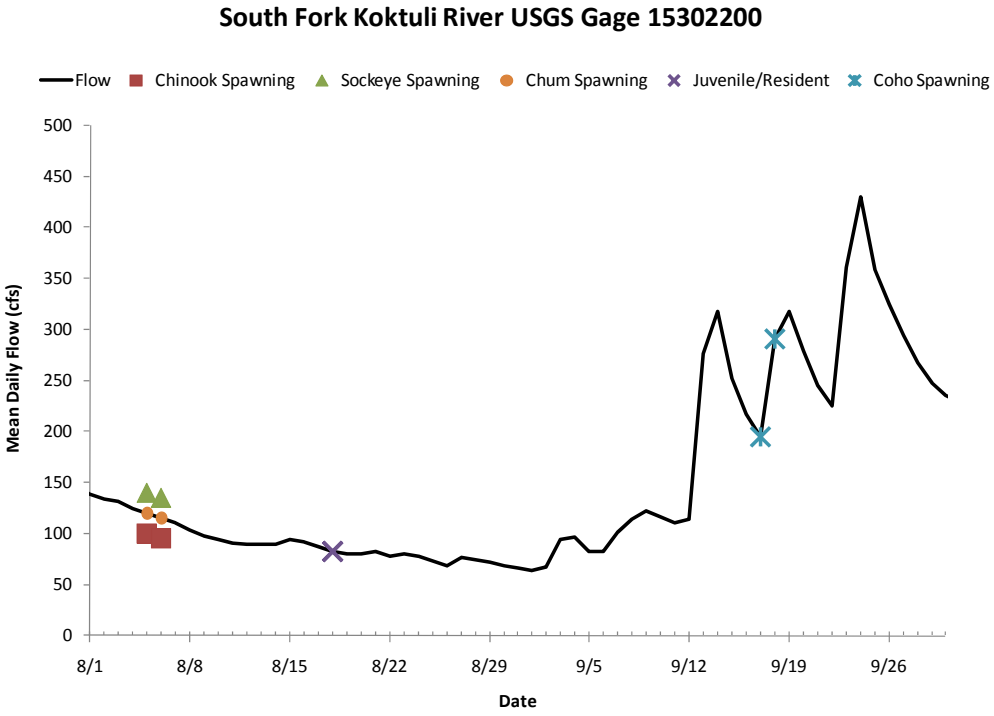

Figure 8. Average daily flows in the South Fork Koktuli River from August 1 – September 30, 2008 during microhabitat surveys. Points indicate the first and last survey date for each species/lifestage.

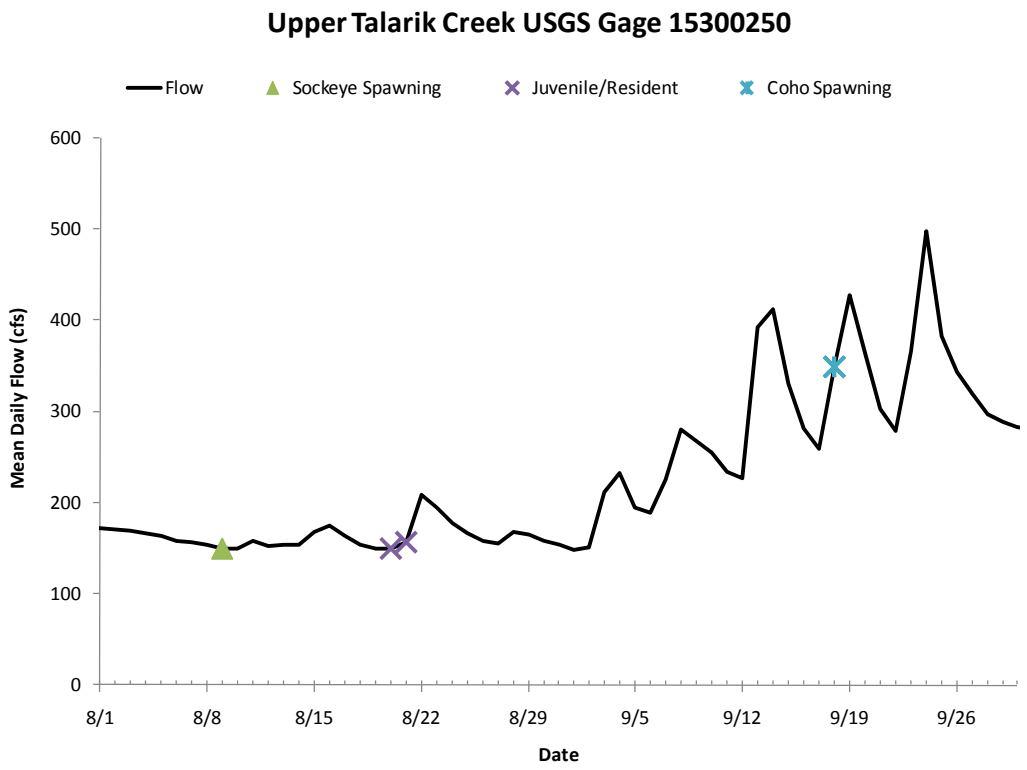

Figure 9. Average daily flows in the Upper Talarik Creek from August 1 – September 30, 2008 during microhabitat surveys. Points indicate the first and last survey date for each species/lifestage.

3. RESULTS

This section presents the results of the microhabitat surveys completed on each of the three basins from 2005 to 2008 which are summarized in Table 1 by species, lifestage, basin, and source (R2 or HDR). Overall, a total of 1,329 distinct measurements of habitat utilization were made on eight of the target fish species; sockeye, coho, Chinook, and chum salmon, rainbow trout, Dolly Varden, grayling, and round whitefish. The largest number of observations was made for sockeye salmon (n=494) (spawning and juvenile), followed by coho salmon (n=407) (spawning, fry, and juvenile), and Chinook salmon (n=286) (spawning, fry, and juvenile). The spatial distribution of these measurements is depicted in Figures 10 through 12.

The results provided below are organized by lifestage and provide a brief summary of the habitat characteristics (depth, velocity, and substrate) observed for various target species.

3.1 SALMON SPAWNING SURVEYS

From 2005 to 2008, R2 and HDR collected measurements from 753 redds. Of these, 509 observations were made by R2 in 2008. The following are brief summaries of the redd measurements made for each species.

For coho salmon, 98 redds were observed. Nearly all of these observations (n = 95) were made in the North Fork Koktuli River and South Fork Koktul River (Figure 10). Water depths, as measured at the upstream end of each redd, ranged from 0.50 to 3.00 ft with a median of 1.30 ft and an average of 1.45 ft. Mean column water velocities, again as measured at the upstream end of each redd, ranged from 0.04 to 4.75 ft/s with a median of 2.11 ft/s and an average of 2.08 ft/s. Redd substrate size ranged from small gravel to small cobble, but large gravel was the dominant size for the majority (94%) of redds.

For sockeye salmon, 475 redds were observed. Approximately equal numbers of observations were made in each of the three basins (Figure 11). Water depths ranged from 0.30 to 2.50 ft with a median of 1.00 ft and an average of 1.06 ft. Water velocities ranged from 0.00 to 4.25 ft/s with a median of 1.91 ft/s and an average of 1.84 ft/s. The dominant redd substrate size ranged from fine material to large cobble, but large gravel was the dominant substrate size for the majority (77%) of redds.

Table 1. Summary of microhabitat measurements made by R2 and HDR in the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek by species and lifestage. Data collected from 2004 to 2008.

	North Fork Koktuli			South Fork Koktuli			Upper Talarik			All Basins		
Species/Lifestage	**HDR**	**R2**	**Subtotal**	**HDR**	**R2**	**Subtotal**	**HDR**	**R2**	**Subtotal**	**HDR**	**R2**	**Total**
Coho salmon	16	114	130	21	83	104	48	125	173	85	322	407
Spawning		52	52		43	43		3	3		98	98
Fry		31	31		16	16		41	41		88	88
Juvenile	16	31	47	21	24	45	48	81	129	85	136	221
Sockeye salmon	41	122	163	90	82	172	41	118	159	172	322	494
Spawning	40	122	162	85	79	164	32	117	149	157	318	475
Juvenile	1		1	5	3	8	9	1	10	15	4	19
Chinook salmon	58	66	124	51	50	101	24	35	59	133	151	286*
Spawning	47	49	96	40	35	75				87	84	173*
Fry		9	9		4	4		6	6		19	19
Juvenile	11	8	19	11	11	22	24	29	53	46	48	94
Chum salmon					7	7					7	7
Spawning					7	7					7	7
Rainbow		7	7				8	25	33	8	32	40
Fry								23	23		23	23
Juvenile							7	2	9	7	2	9
Adult		7	7				1		1	1	7	8
Grayling	2	22	24	14	2	16	14	10	24	30	34	64
Juvenile	1		1	11		11	12		12	24		24
Adult	1	22	23	3	2	5	2	10	12	6	34	40
Dolly Varden	2	1	3	7	4	11	4	2	6	13	7	20

Table 1. Summary of microhabitat measurements made by R2 and HDR in the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek by species and lifestage. Data collected from 2004 to 2008.

	North Fork Koktuli			**South Fork Koktuli**			**Upper Talarik**			**All Basins**		
Species/Lifestage	**HDR**	**R2**	**Subtotal**	**HDR**	**R2**	**Subtotal**	**HDR**	**R2**	**Subtotal**	**HDR**	**R2**	**Total**
Fry		1	1		2	2					3	3
Juvenile	2		2	7	2	9	4	1	5	13	3	16
Adult								1	1		1	1
Whitefish	1	8	9		1	1				1	9	10
Adult	1	8	9		1	1				1	9	10
Lamprey				1		1				1		1
Total	120	340	460	184	229	413	139	315	454	443	884	1329*

* includes two redds from mainstem Koktuli River

For Chinook salmon, 173 redds were observed. Two redds were observed in the mainstem Koktuli River just downstream of the confluence, and the remainder were observed in the North Fork Koktuli River (n = 96) and South Fork Koktuli River (n = 75) (Figure 12). Water depths ranged from 0.85 to 3.50 ft with a median of 1.60 ft and an average of 1.63 ft. Water velocities ranged from 1.11 to 4.22 ft/s with a median of 2.67 ft/s and an average of 2.65 ft/s. The dominant redd substrate size ranged from small gravel to large cobble, but small cobble (59%) and large gravel (35%) were the dominant sizes for the majority of redds.

For chum salmon, only seven redds were observed, all in the South Fork Koktuli River. Water depths ranged from 0.90 to 1.80 ft with a median of 1.05 ft and an average of 1.17 ft. Water velocities ranged from 0.97 to 2.56 ft/s with a median of 1.57 ft/s and an average of 1.65 ft/s. The dominant redd substrate size included small gravel (57%) and large gravel (43%).

3.2 SALMON JUVENILE/FRY SNORKEL SURVEYS

From 2005 to 2008, R2 and HDR collected measurements from 441 juvenile salmon and resident fish observations. Of these, 295 observations were made by R2 in 2008. For juvenile fish, R2 made a distinction between fry and "juveniles" based on lengths estimated during snorkel surveys and using site-specific length/age class determinations. HDR did not distinguish between fry and "juveniles." Thus, juvenile data collected by R2 and discussed below excludes fry, whereas juvenile data collected by HDR may include fry observations.

For coho salmon, 221 juvenile (≥55 mm) observations were made. The water depth at each observation ranged from 0.30 to 3.30 ft with a median of 1.20 ft and an average of 1.33 ft. Mean column water velocities measured at each observation ranged from 0.00 to 2.67 ft/s with a median of 0.26 ft/s and an average of 0.42 ft/s. Eighty-eight coho salmon fry (<55 mm) observations were also made; water depths ranged from 0.40 to 4.5 ft with a median of 1.40 ft and an average of 1.6 ft. Water velocities for coho salmon fry observations ranged from 0.00 to 2.37 ft/s with a median of 0.29 ft/s and an average of 0.48 ft/s.

For sockeye salmon, 19 juvenile (>60 mm) observations were made. The water depth at each observation ranged from 0.30 to 1.60 ft with a median of 0.80 ft and an average of 0.88 ft. Mean column water velocities measured at each observation ranged from 0.00 to 1.35 ft/s with a median of 0.07 ft/s and an average of 0.26 ft/s. No sockeye salmon fry (≤60 mm) were observed.

For Chinook salmon, 94 juvenile (≥65 mm) observations were made. The water depth at each observation ranged from 0.20 to 3.6 ft with a median of 1.20 ft and an average of 1.34 ft. Mean column water velocities measured at each observation ranged from 0.00 to 3.01 ft/s with a median of 0.30 ft/s and an average of 0.52 ft/s. Nineteen Chinook salmon fry (<65 mm) observations were also made; water depths ranged from 0.50 to 3.5 ft with a median of 1.30 ft

and an average of 1.53 ft. Water velocities for Chinook salmon fry observations ranged from 0.00 to 2.61 ft/s with a median of 0.32 ft/s and an average of 0.57 ft/s.

3.3 RESIDENT SALMONID ADULT/JUVENILE/FRY SNORKEL SURVEYS

Microhabitat measurements of resident species were sparse compared to anadromous species. For rainbow trout, only eight adult (≥143 mm) observations of habitat use were made. The water depth at each adult observation ranged from 0.60 to 4.50 ft with a median of 3.90 ft and an average of 3.40 ft. Mean column water velocities ranged from 0.78 to 2.52 ft/s with a median of 2.09 ft/s and an average of 1.96 ft/s. Only nine juvenile rainbow trout (56 to 142 mm) observations were made; water depths ranged from 0.50 to 1.8 ft with a median of 0.90 ft and an average of 1.09 ft. Water velocities for rainbow trout juvenile observations ranged from 0.24 to 1.34 ft/s with a median of 0.32 ft/s and an average of 0.57 ft/s. Twenty-three rainbow trout fry (≤55 mm) observations were made; water depths ranged from 0.30 to 1.70 ft with a median of 0.70 ft and an average of 0.82 ft. Water velocities for rainbow trout fry ranged from 0.04 to 2.01 ft/s with a median of 0.44 ft/s and an average of 0.48 ft/s.

For grayling, 40 adult (> 160 mm) observations were made. The water depth at each adult observation ranged from 0.80 to 4.50 ft with a median of 3.35 ft and an average of 3.16 ft. Mean column water velocities ranged from 0.60 to 3.47 ft/s with a median of 1.56 ft/s and an average of 1.80 ft/s. Twenty-four juvenile grayling (56 to 160 mm) observations were also made; water depths ranged from 0.25 to 2.35 ft with a median of 0.70 ft and an average of 1.05 ft. Water velocities for juvenile grayling observations ranged from 0.02 to 1.90 ft/s with a median of 0.39 ft/s and an average of 0.50 ft/s. No grayling fry (≤55 mm) were observed.

For Dolly Varden, 16 juvenile (60 to 154 mm) observations were made. The water depth at each juvenile observation ranged from 0.60 to 4.50 ft with a median of 3.90 ft and an average of 3.40 ft. Mean column water velocities ranged from 0.78 to 2.52 ft/s with a median of 2.09 ft/s and an average of 1.96 ft/s. Only three Dolly Varden fry (<60 mm) and one adult (≥155 mm) were observed.

For whitefish (presumably round whitefish), 10 adult observations were made. No length/age-class determinations were available for whitefish. However, all observed fish were at least 225 mm in length and were therefore presumed to be adults. The water depth at each adult observation ranged from 2.25 to 4.20 ft with a median of 3.40 ft and an average of 3.46 ft. Mean column water velocities ranged from 1.15 to 2.83 ft/s with a median of 1.47 ft/s and an average of 1.71 ft/s. No whitefish juvenile or fry were observed.

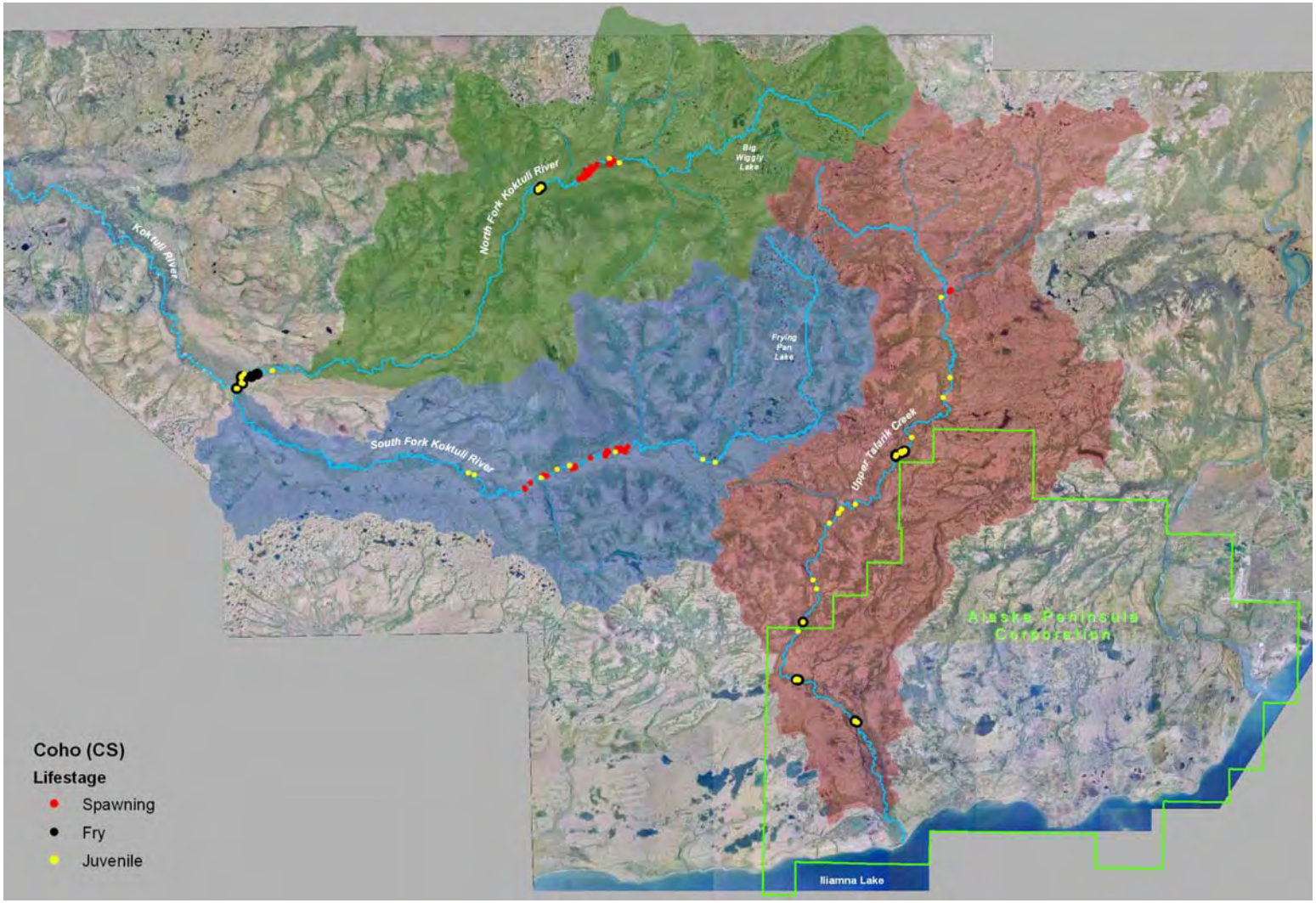

Figure 10. Site map showing the location of coho salmon spawning, fry, and juvenile observations in the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek.

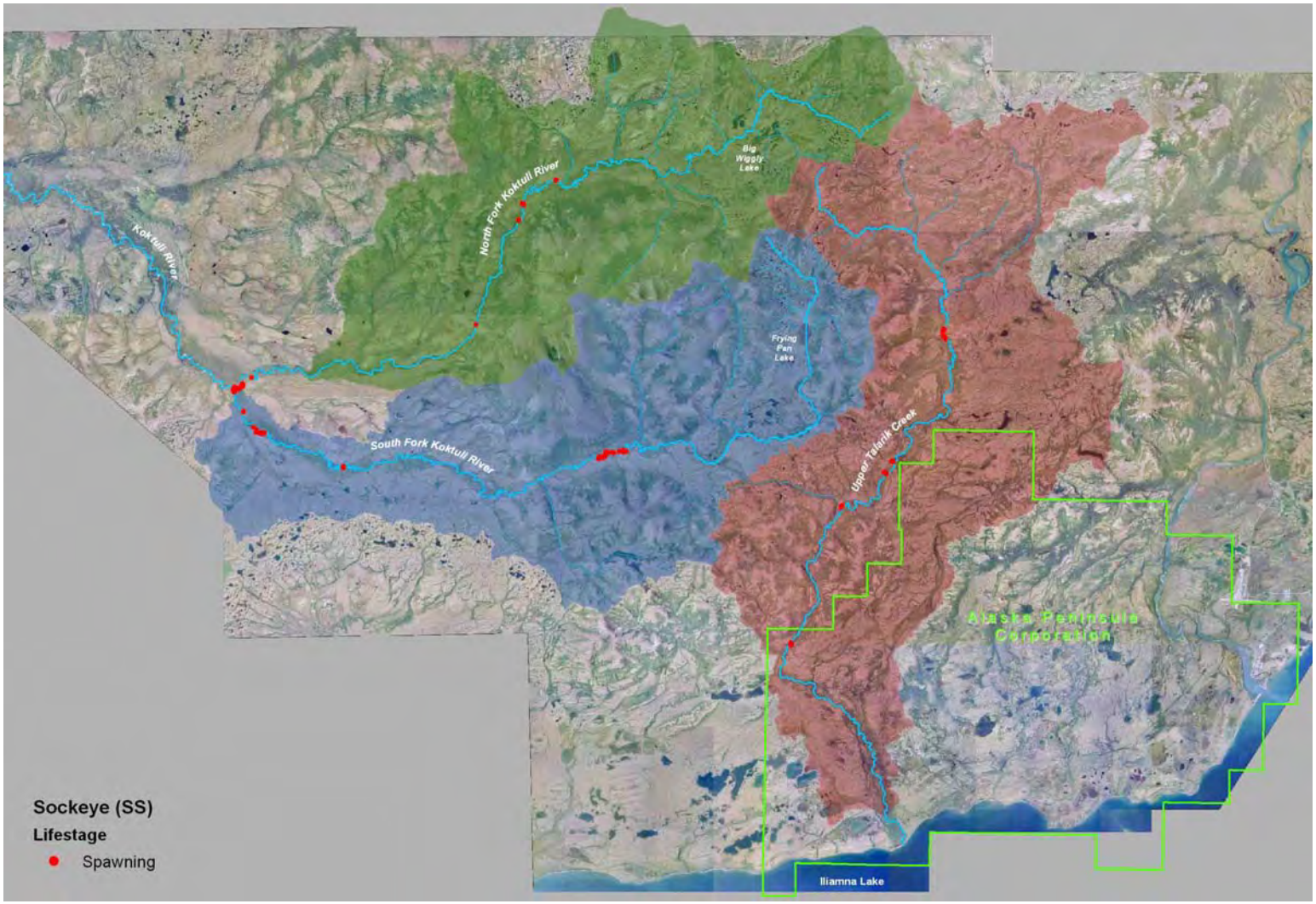

Figure 11. Site map showing the location of sockeye salmon spawning observations in the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek.

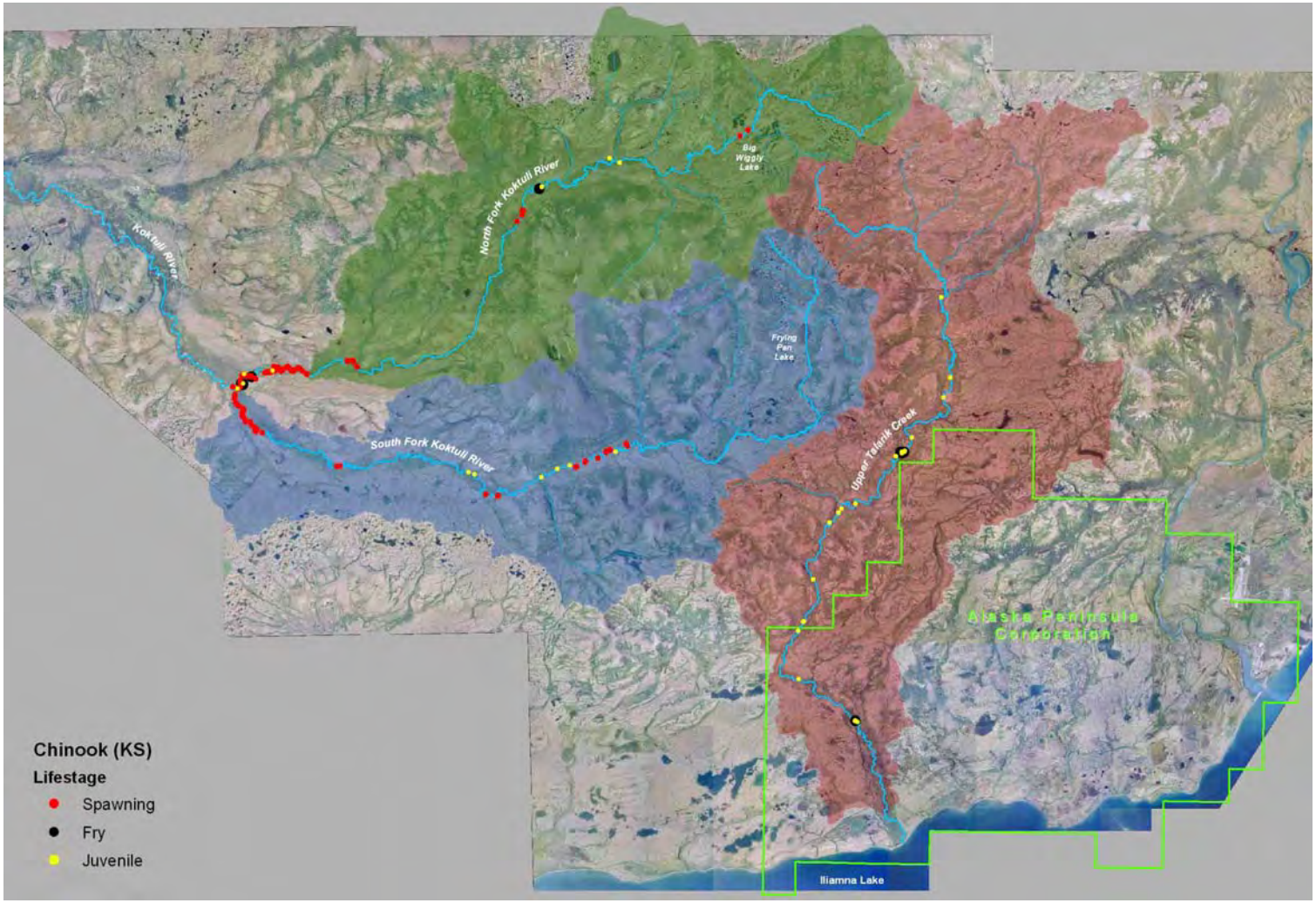

Figure 12. Site map showing the location of Chinook salmon spawning, fry, and juvenile observations in the North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek.

4. CANDIDATE HSC CURVES

From 2004 to 2008, 1,328 site specific microhabitat utilization measurements were collected for the eight target fish species. The overall objective of the surveys was to collect sufficient numbers of data points from which to generate site specific HSC curves for use in PHABSIM modeling. In general, the greater the number of observations, the more reliable the data set from which to derive the HSC curves. Researchers often use the rule of thumb of having 75-150 observations from which to base curves, but fewer observations can also be used provided they are representative of a range of habitat types. For example, the Washington Department of Fish and Wildlife (WDFW) has developed HSC curves using as few as 25 observations (WDFW and WDOE 2008). Curves developed using fewer than 75 observations can also be used for making comparisons with literature derived curves to see if utilization trends are similar and for making suggested modifications.

In this study, species and lifestages for which ≥ 75 observations were made based on combined measurements and individual stream measurements included:

- Combined Measurements (all three basins):
  - Spawning – coho salmon (n=98), sockeye salmon (n=475), Chinook salmon (n=173)
  - Juvenile – coho salmon (n=221), Chinook salmon (n=94)
  - Fry – coho salmon (n=88)
- North Fork Koktuli River:
  - Spawning – sockeye salmon (n=162), Chinook salmon (n=96)
- South Fork Koktuli River:
  - Spawning – sockeye salmon (n=164), Chinook salmon (n=75)
- Upper Talarik Creek:
  - Spawning – sockeye salmon (n=149)
  - Juvenile – coho salmon (n=129)

Candidate HSC curves for each of the above species and lifestages are presented below. The curves include normalized frequency distributions of each parameter overlaid with the candidate HSC curve. The HSC curves generally track the shapes of the histograms. Maximum depth is not generally considered a limiting factor for fish habitat use. Therefore, in the HSC depth curves, depth was considered non-limiting and there is no descending limb on the HSC depth curves.

For discussion purposes and to aid in the selection of final HSC curves, curves were also developed and are presented below for certain species and lifestages for which < 75 observations were made. These included both anadromous and resident target fish species and included:

- Combined Measurements (all three basins):
  - Juvenile – sockeye salmon (n=19), grayling (n=24)
  - Fry – Chinook salmon (n=19), rainbow (n=23),
  - Adult – grayling (n=40)
- North Fork Koktuli River:
  - Spawning – coho salmon (n=52)
- South Fork Koktuli River:
  - Spawning – coho salmon (n=43)

The candidate HSC curves are presented below in Figures 13 through 36 with anadromous salmonids presented first, organized by lifestage – spawning → juvenile→ fry. In all cases, the curves for a given species and lifestage based on all data combined are presented first, followed by stream-specific curves.

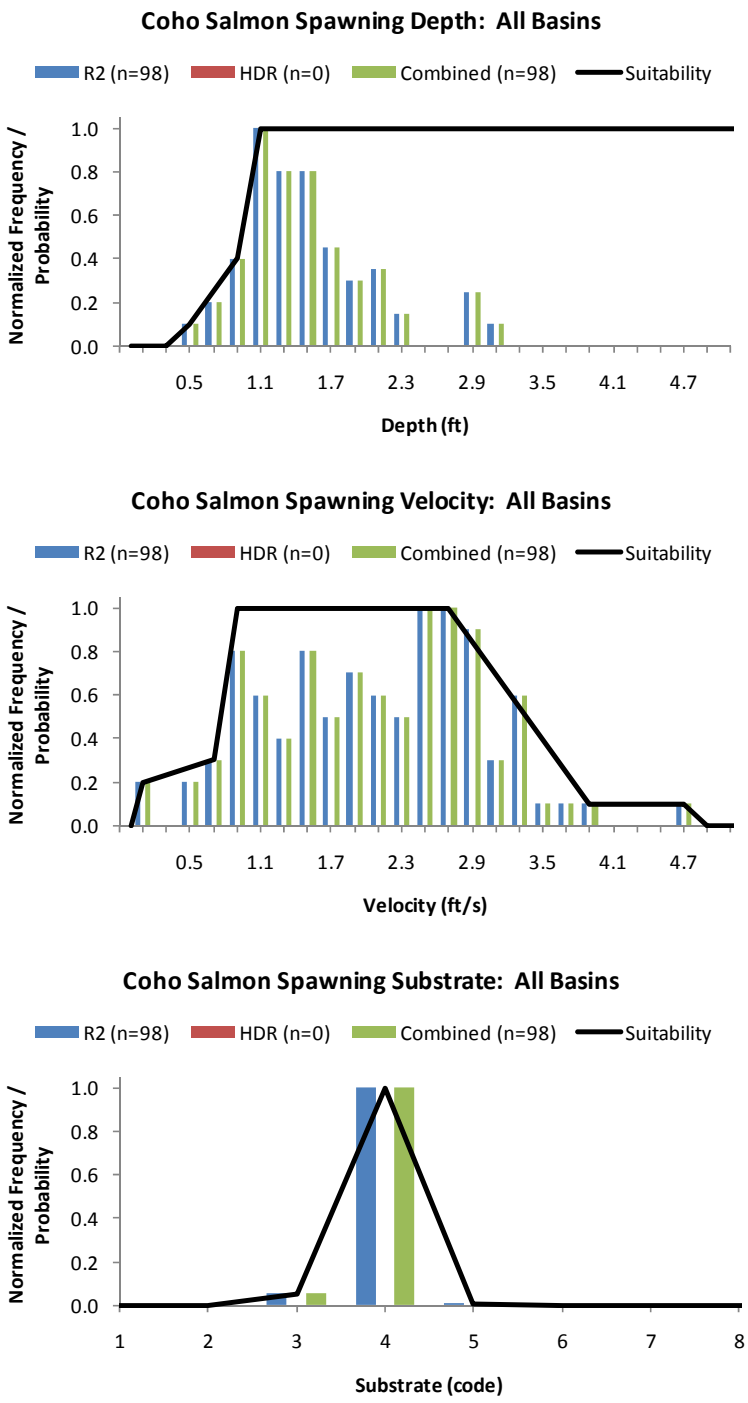

Figure 13. All Basins: Coho salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

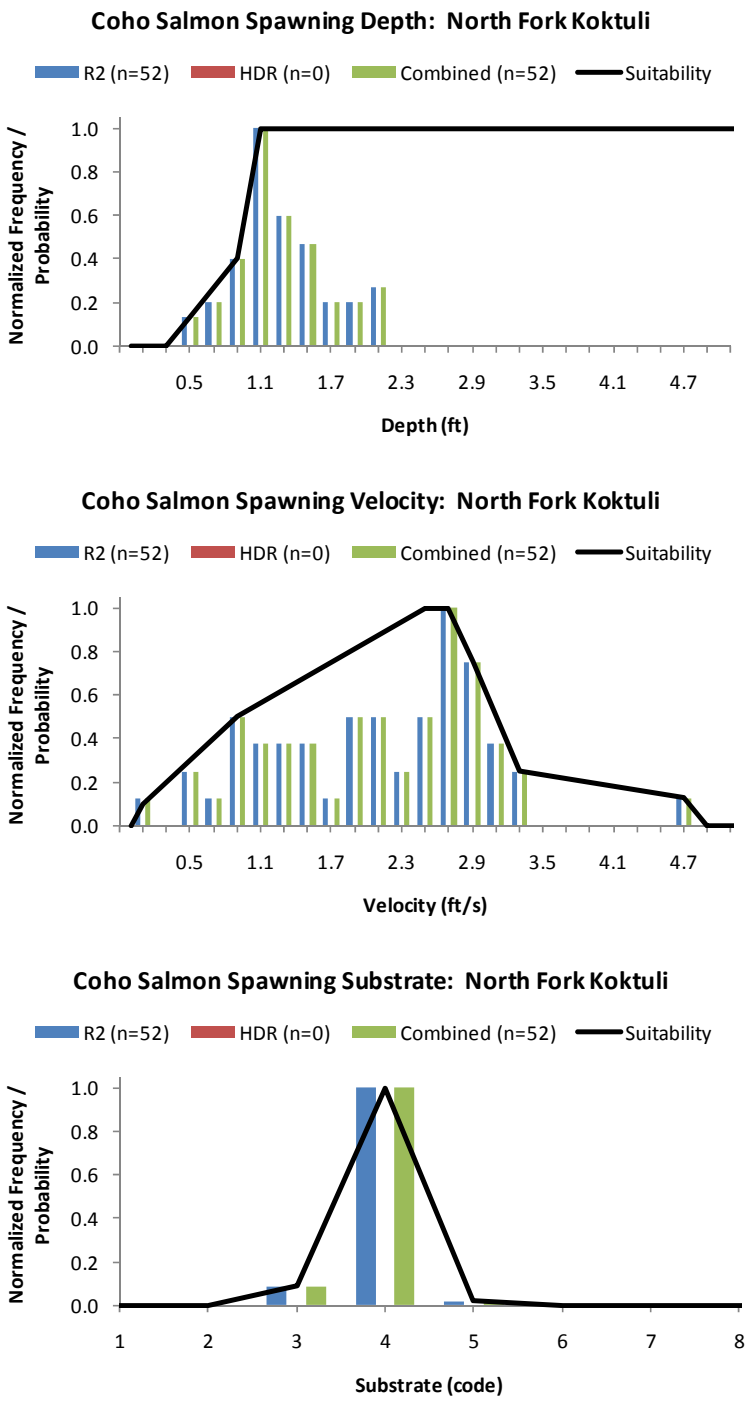

Figure 14. North Fork Koktuli River: Coho salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

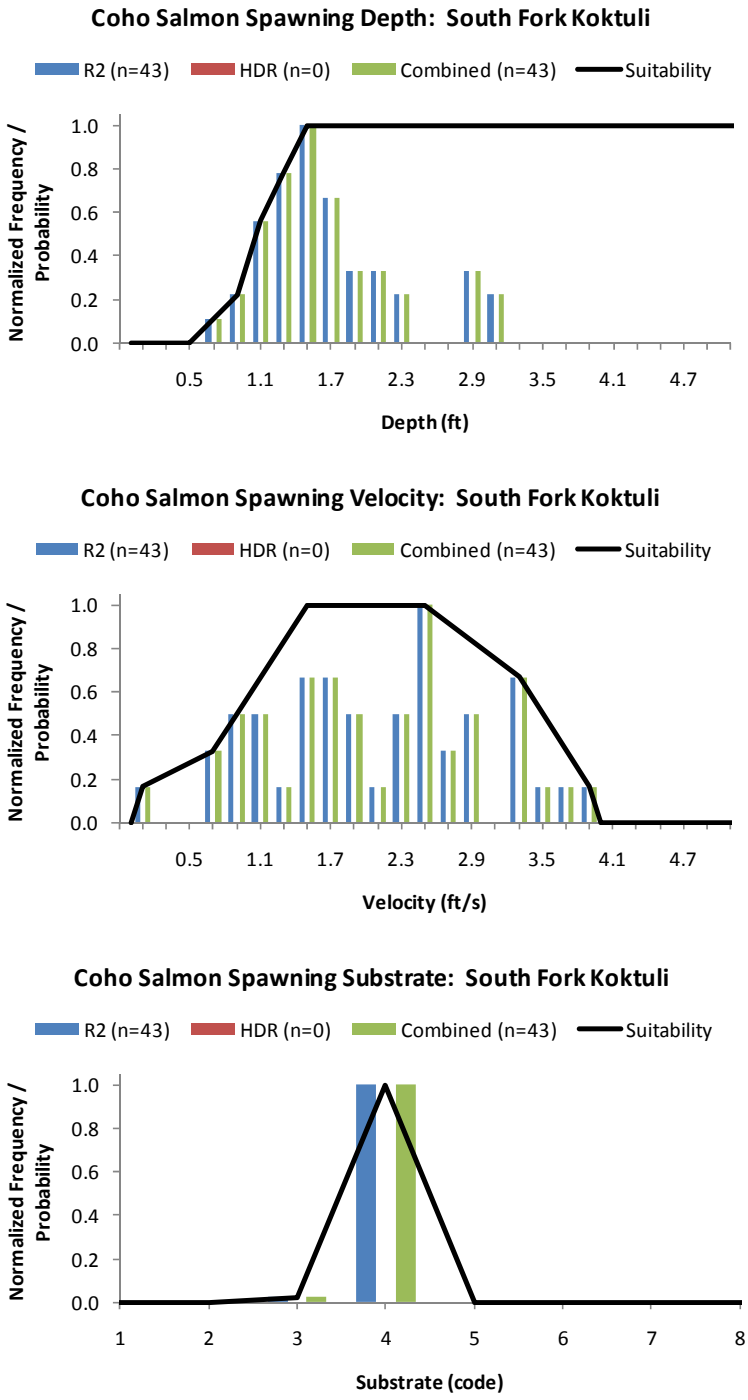

Figure 15. South Fork Koktuli River: Coho salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

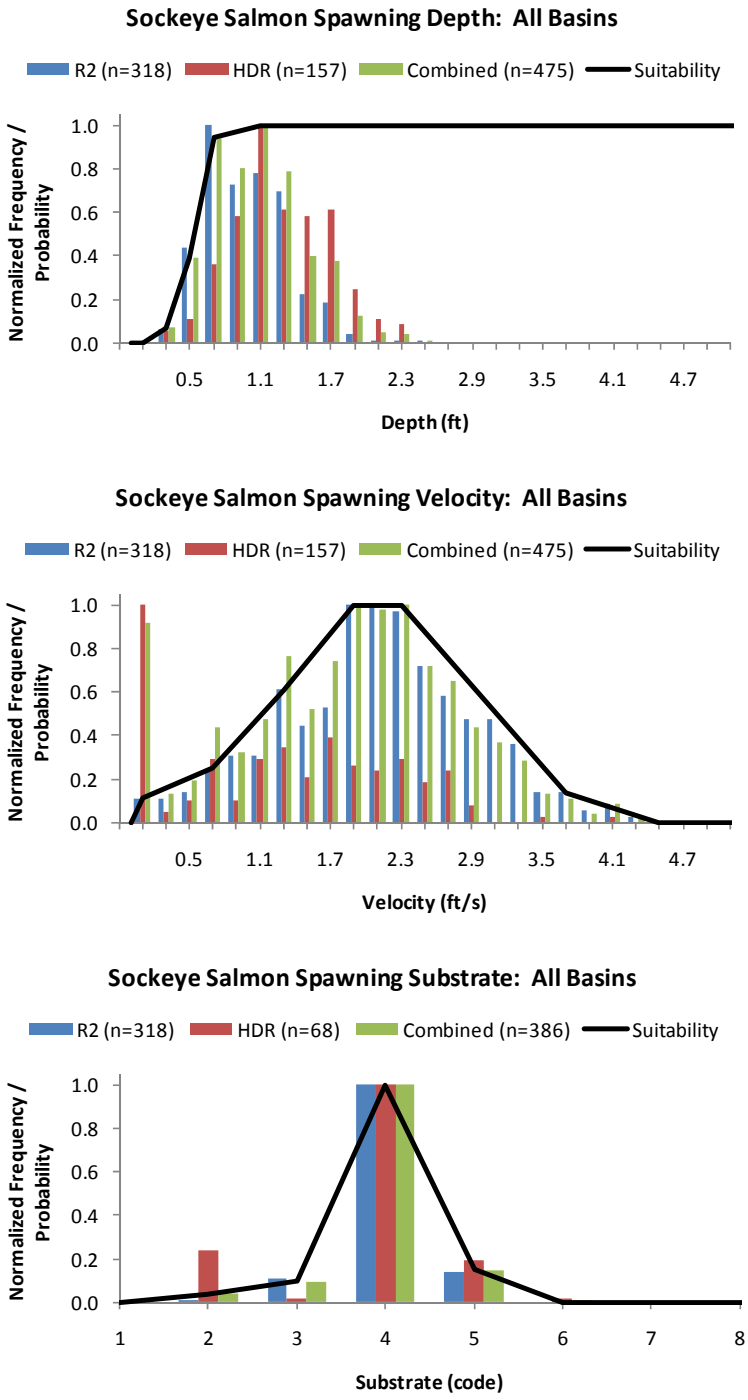

Figure 16. All Basins: Sockeye salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

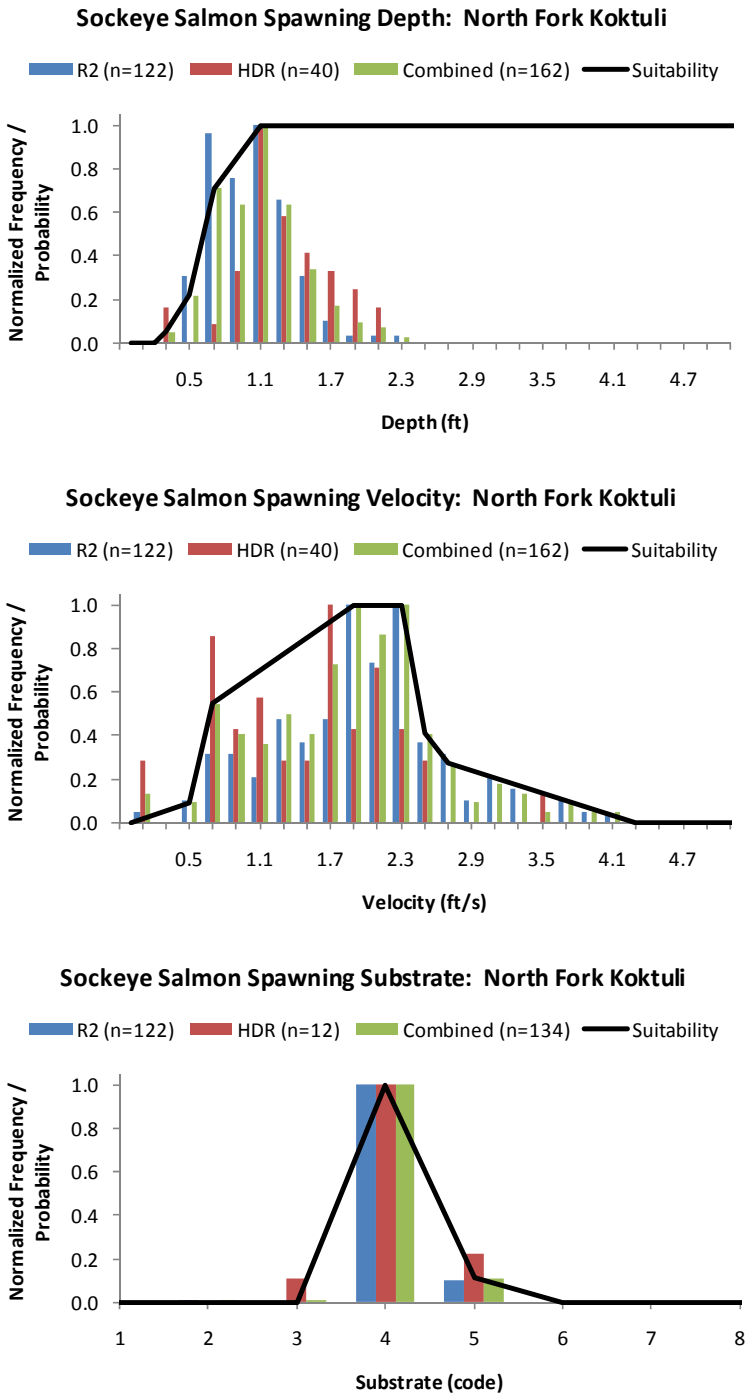

Figure 17. North Fork Koktuli River: Sockeye salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

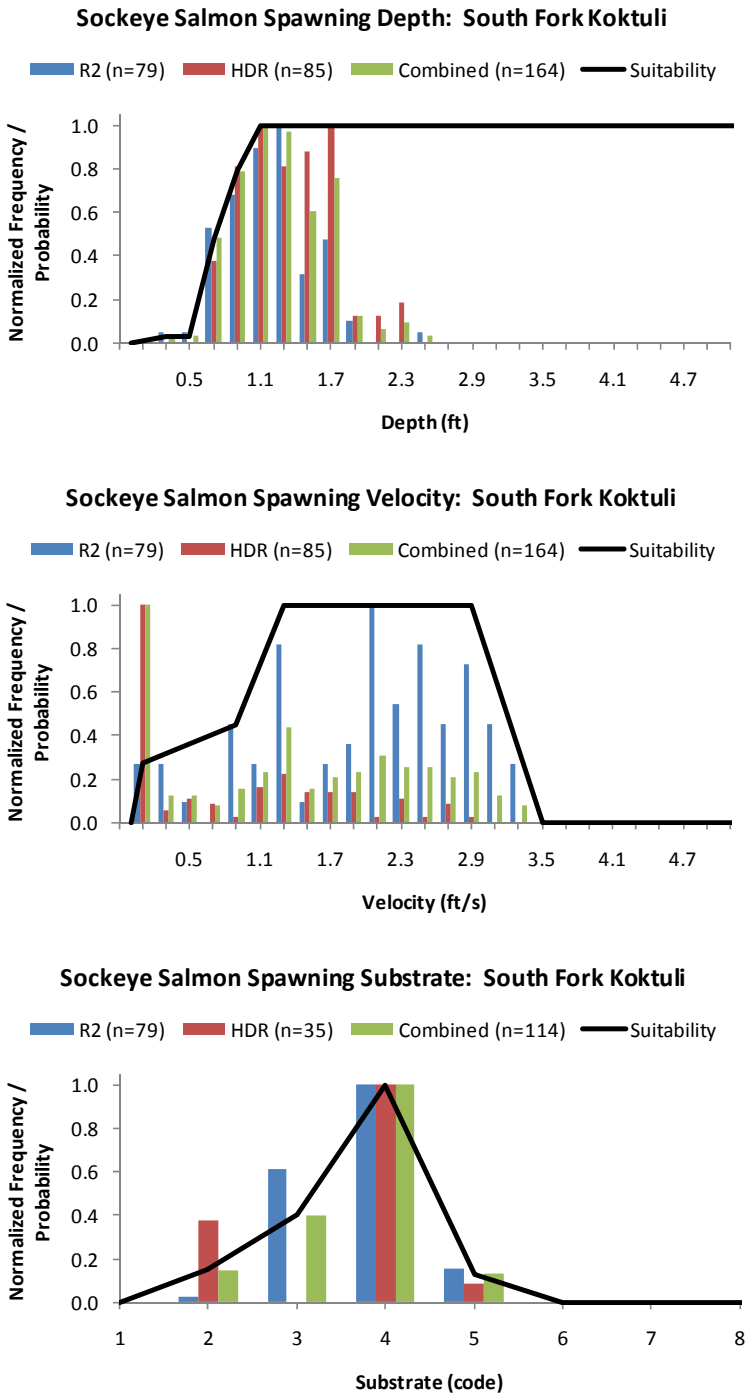

Figure 18. South Fork Koktuli River: Sockeye salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

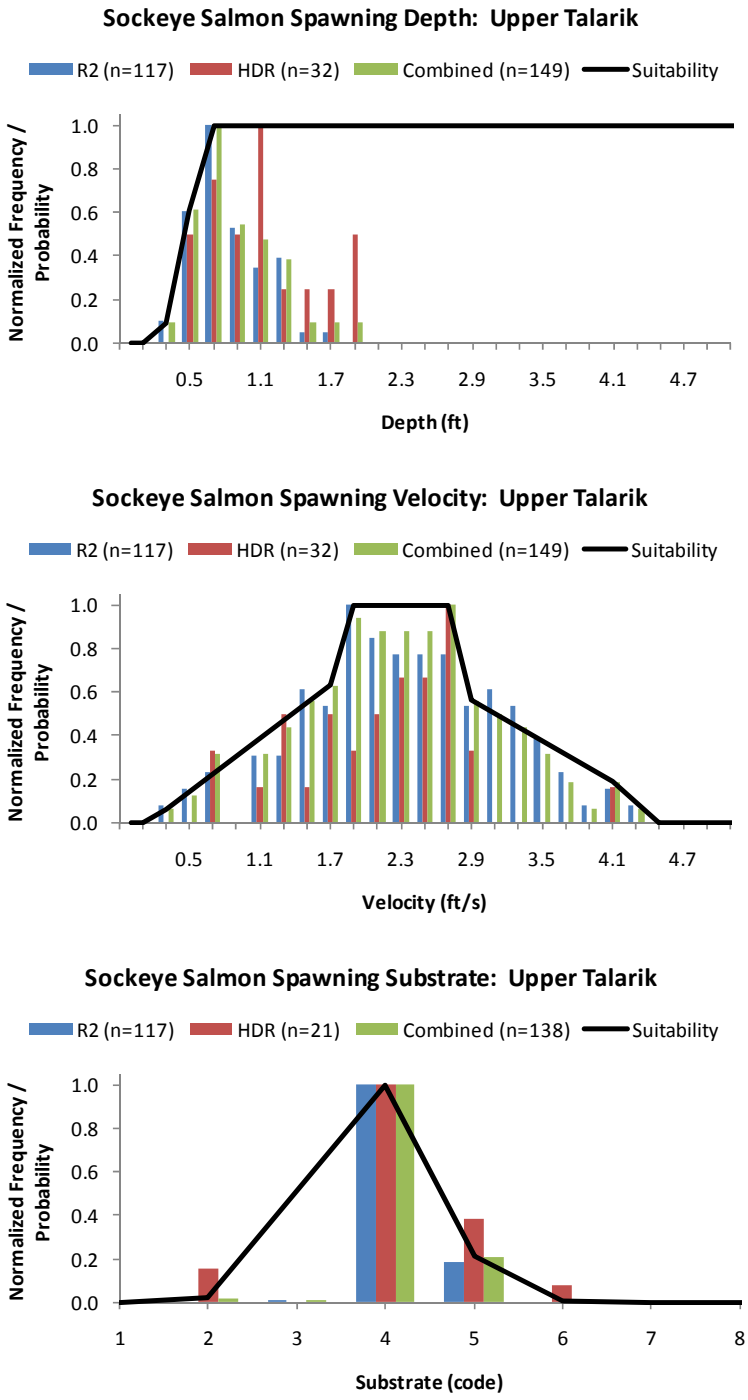

Figure 19. Upper Talarik Creek: Sockeye salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

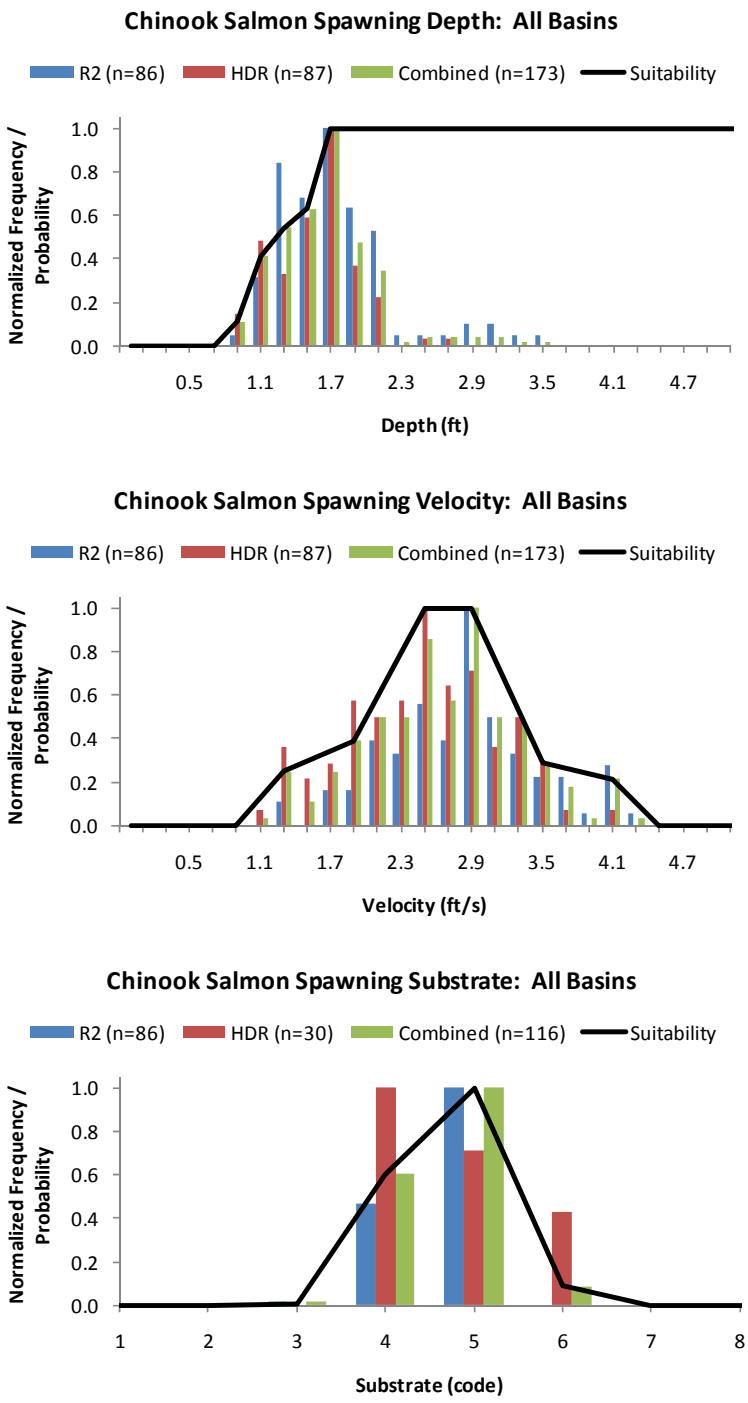

Figure 20. All Basins: Chinook salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

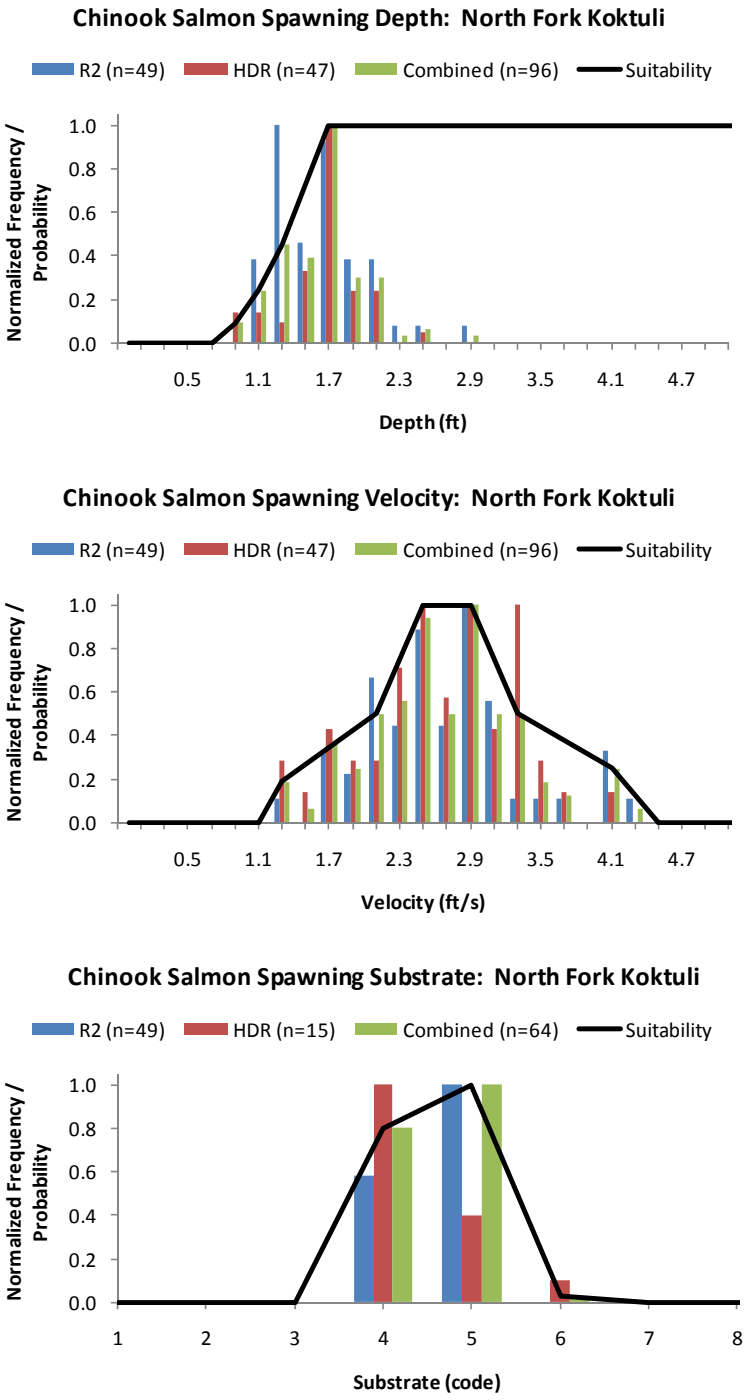

Figure 21. North Fork Koktuli River: Chinook salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

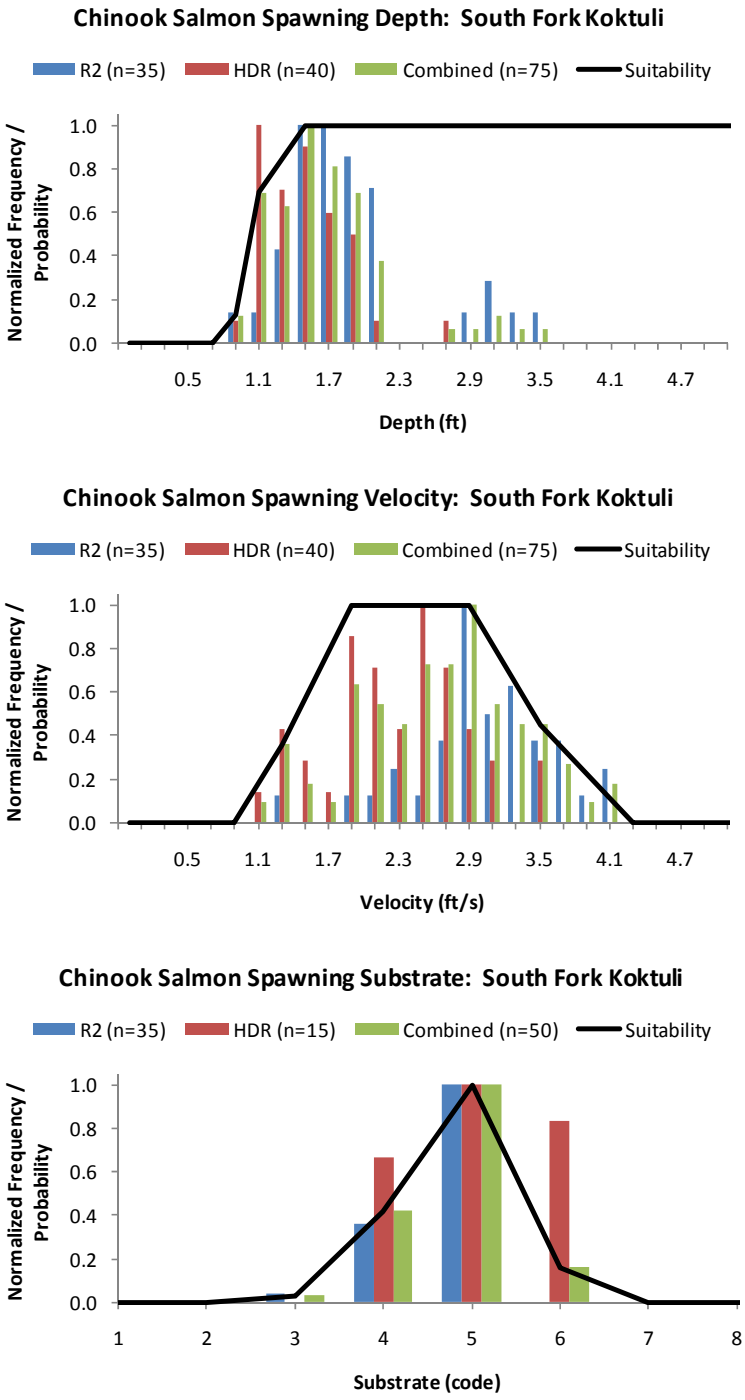

Figure 22. South Fork Koktuli River: Chinook salmon spawning candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Notes:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C. Substrate codes: 1 = vegetation; 2 = fines (< 0.1 in.); 3 = small gravel (0.1-0.6 in.); 4 = large gravel (0.6-2.5 in.); 5 = small cobble (2.5-5.0 in.); 6 = large cobble (5.0-10.0 in.); 7 = boulder (> 10.0 in.); 8 = bedrock.

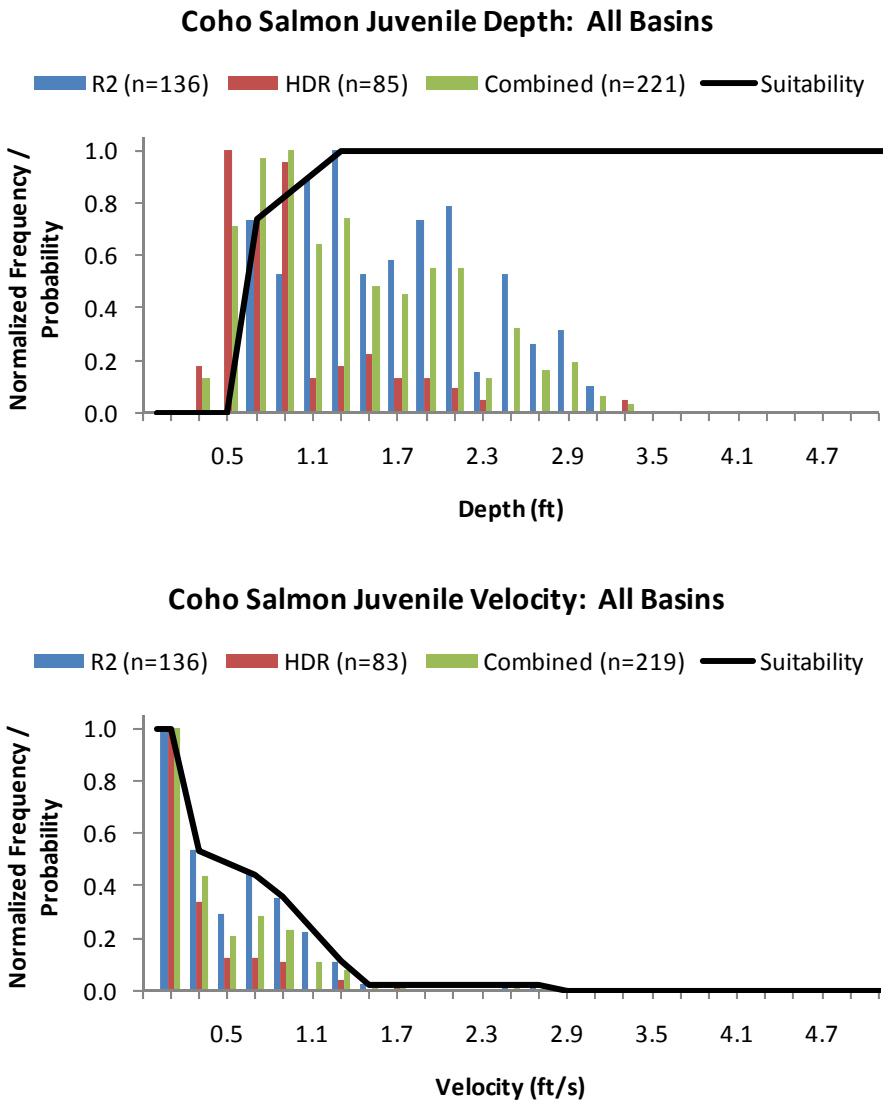

Figure 23. All Basins: Coho salmon juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

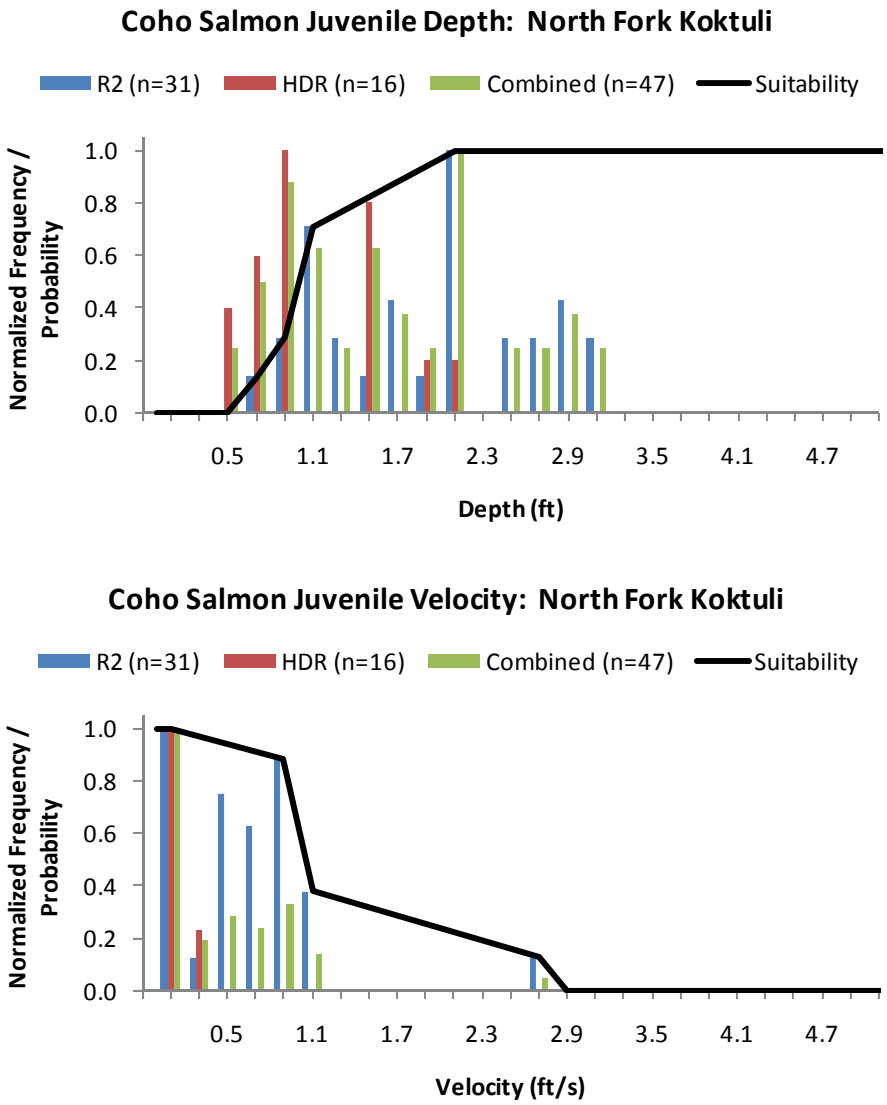

Figure 24. North Fork Koktuli River: Coho salmon juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

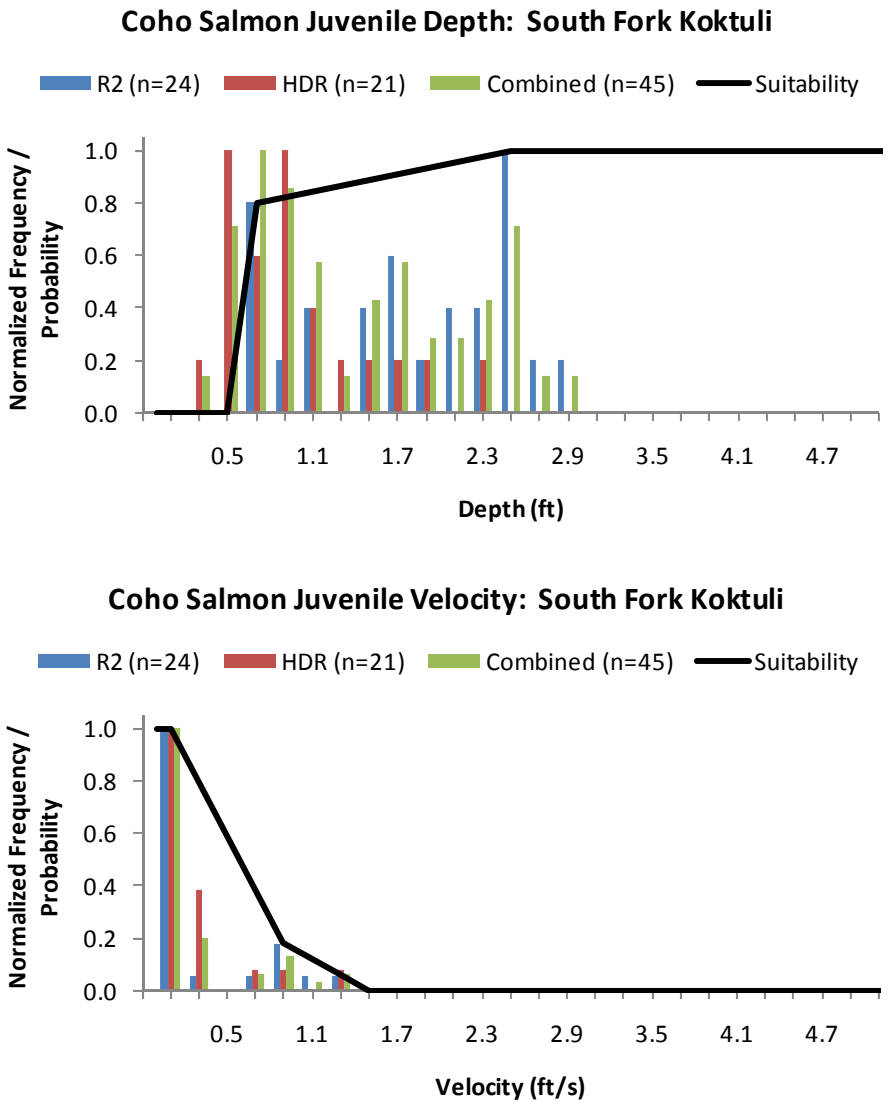

Figure 25. South Fork Koktuli River: Coho salmon juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

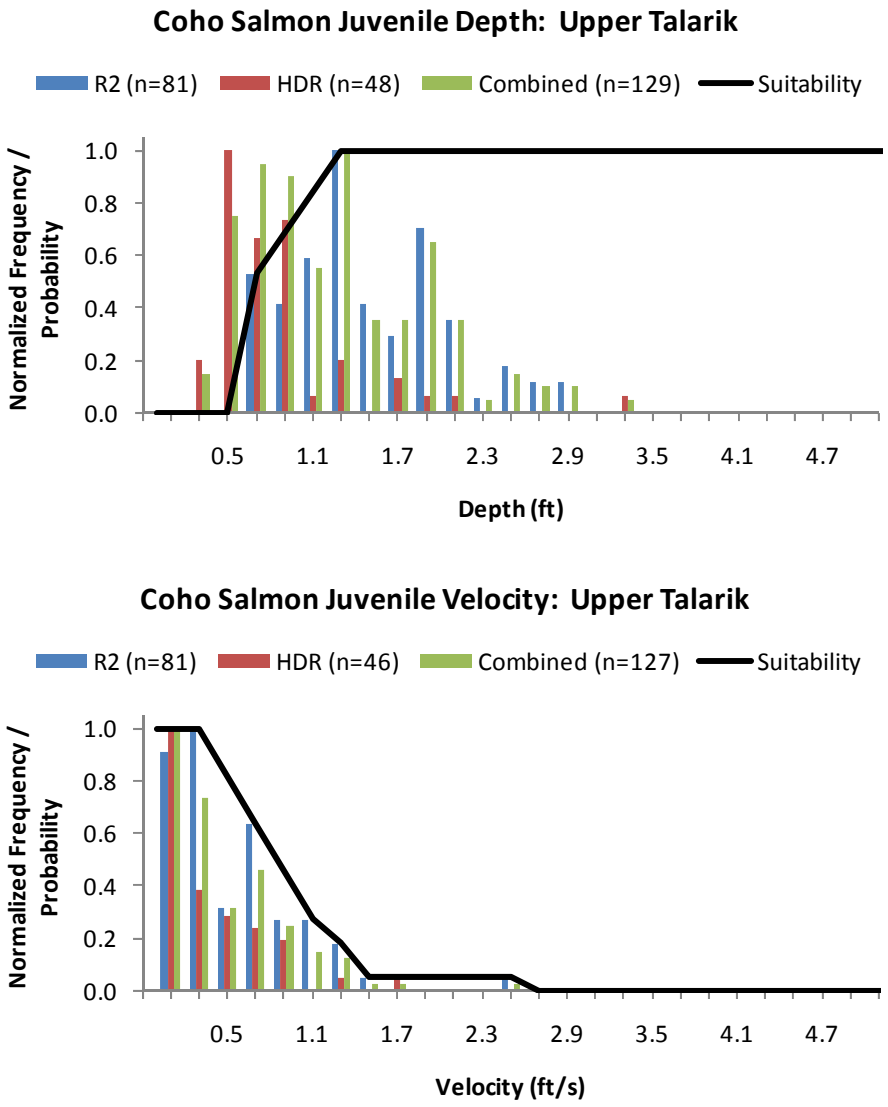

Figure 26. Upper Talarik Creek: Coho salmon juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

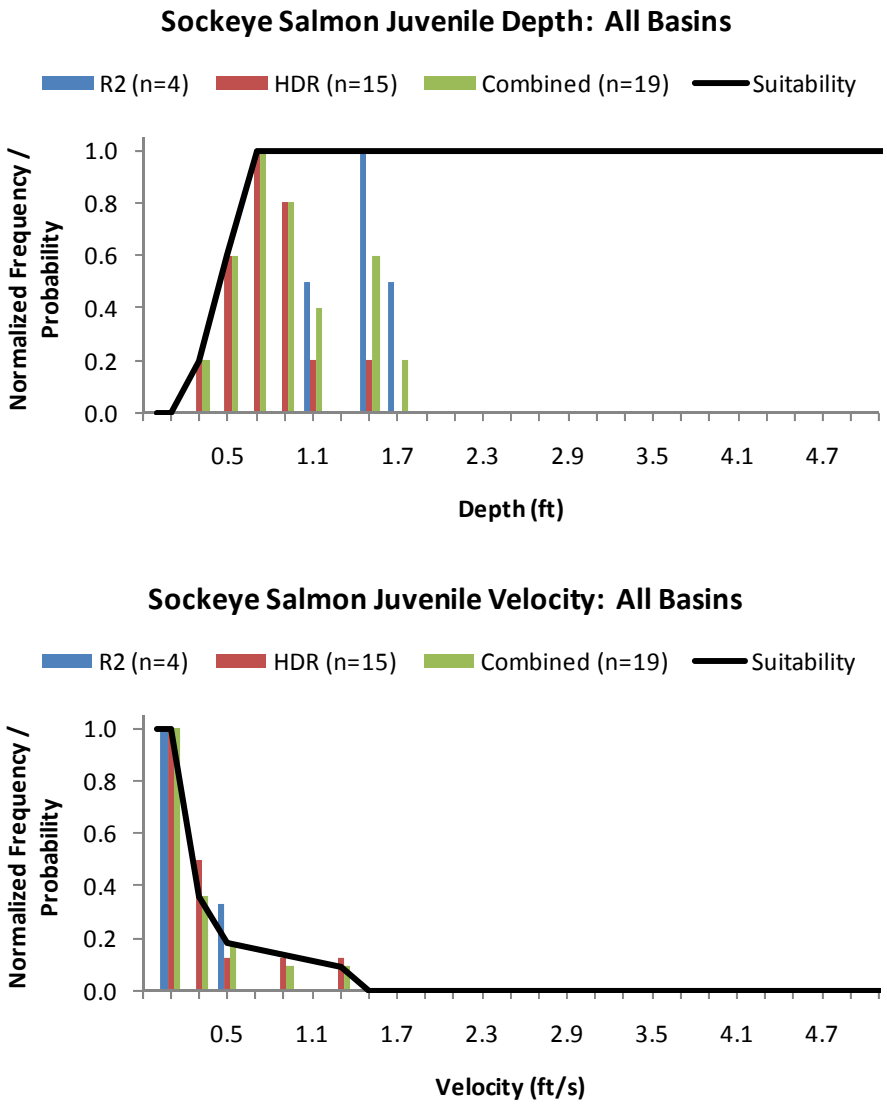

Figure 27. All Basins: Sockeye salmon juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

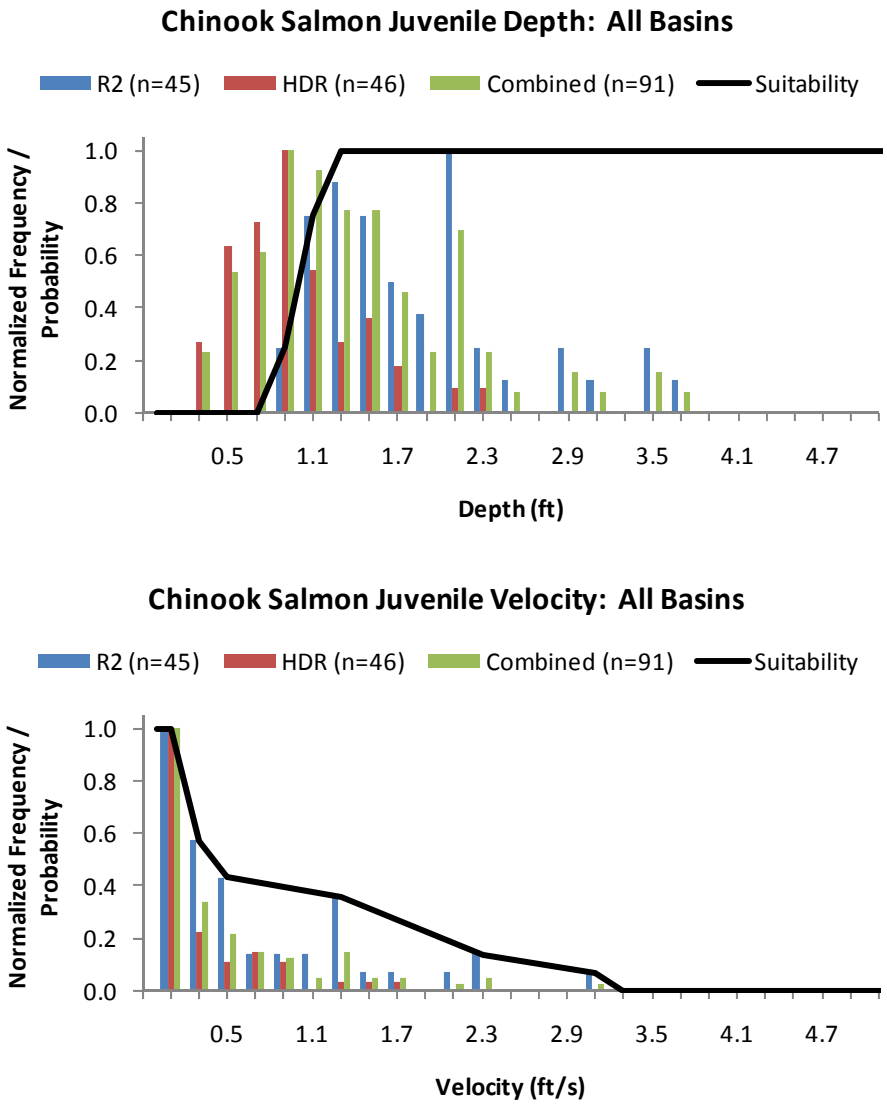

Figure 28. All Basins: Chinook salmon juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

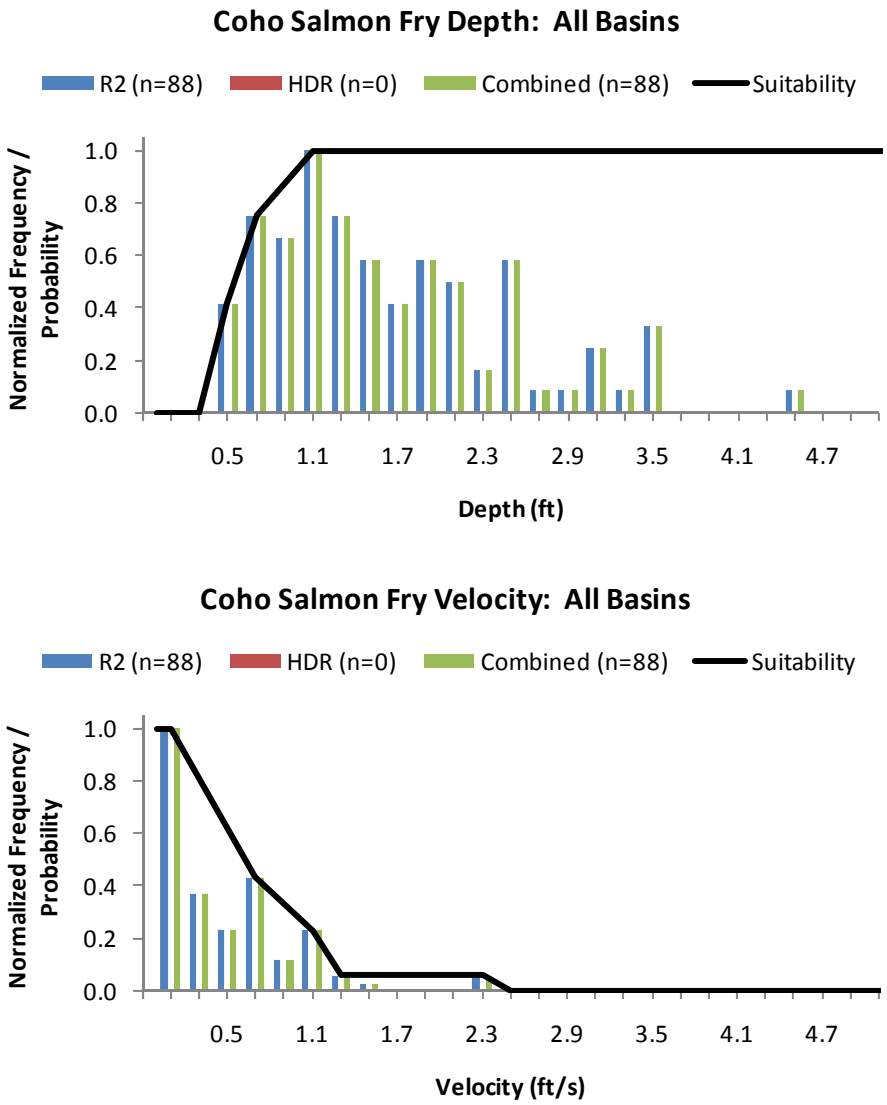

Figure 29. All Basins: Coho salmon fry candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

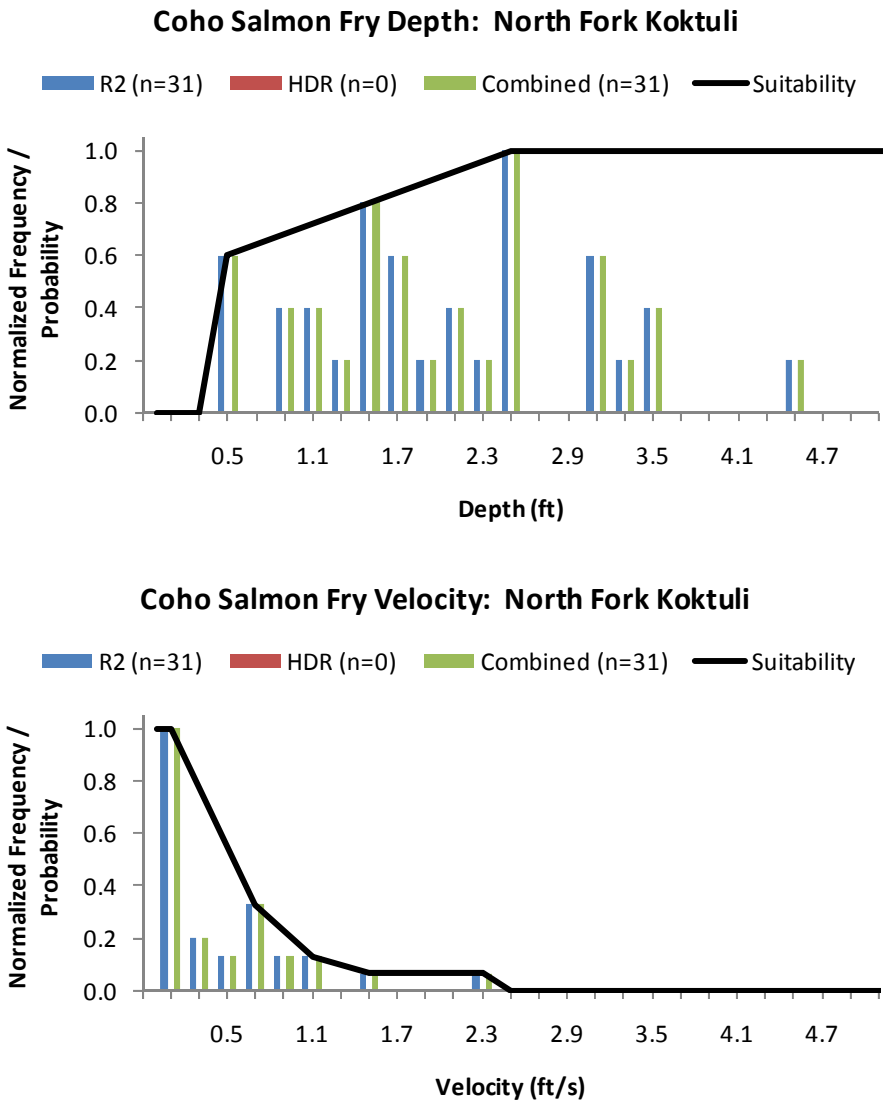

Figure 30. North Fork Koktuli River: Coho salmon fry candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

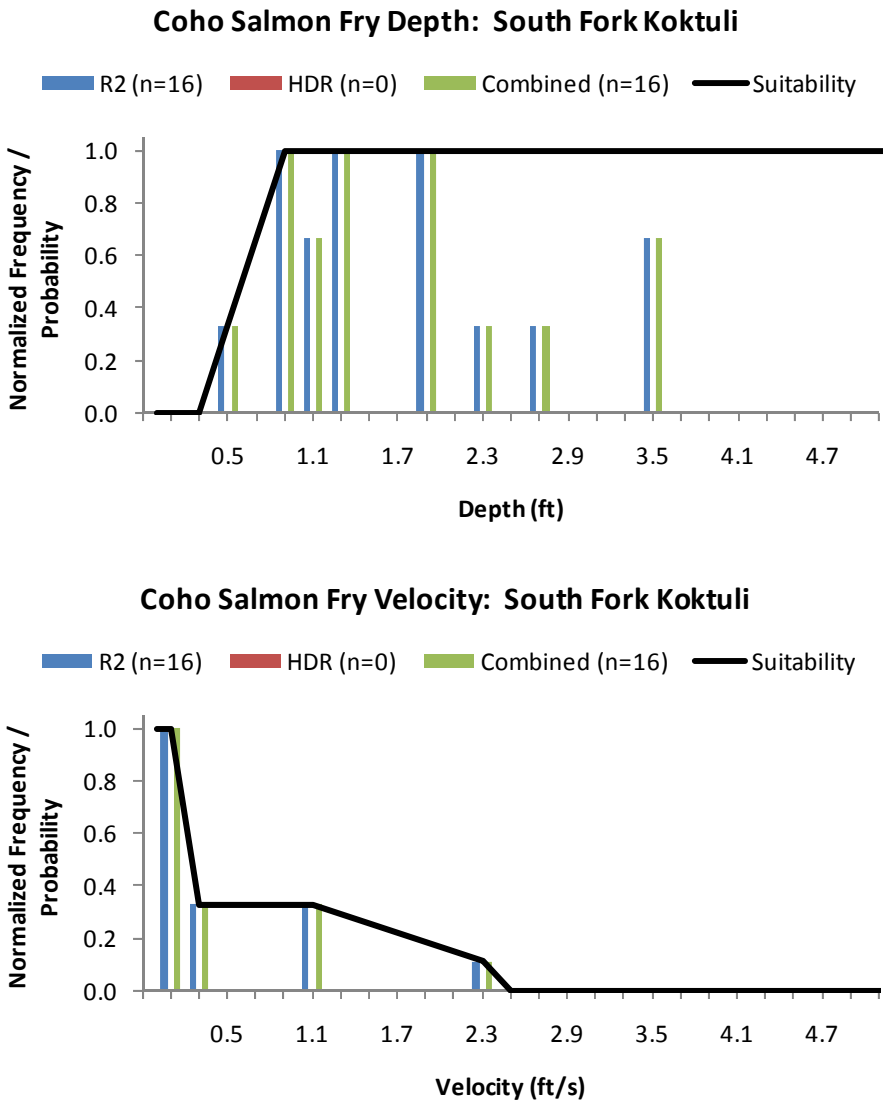

Figure 31. South Fork Koktuli River: Coho salmon fry candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

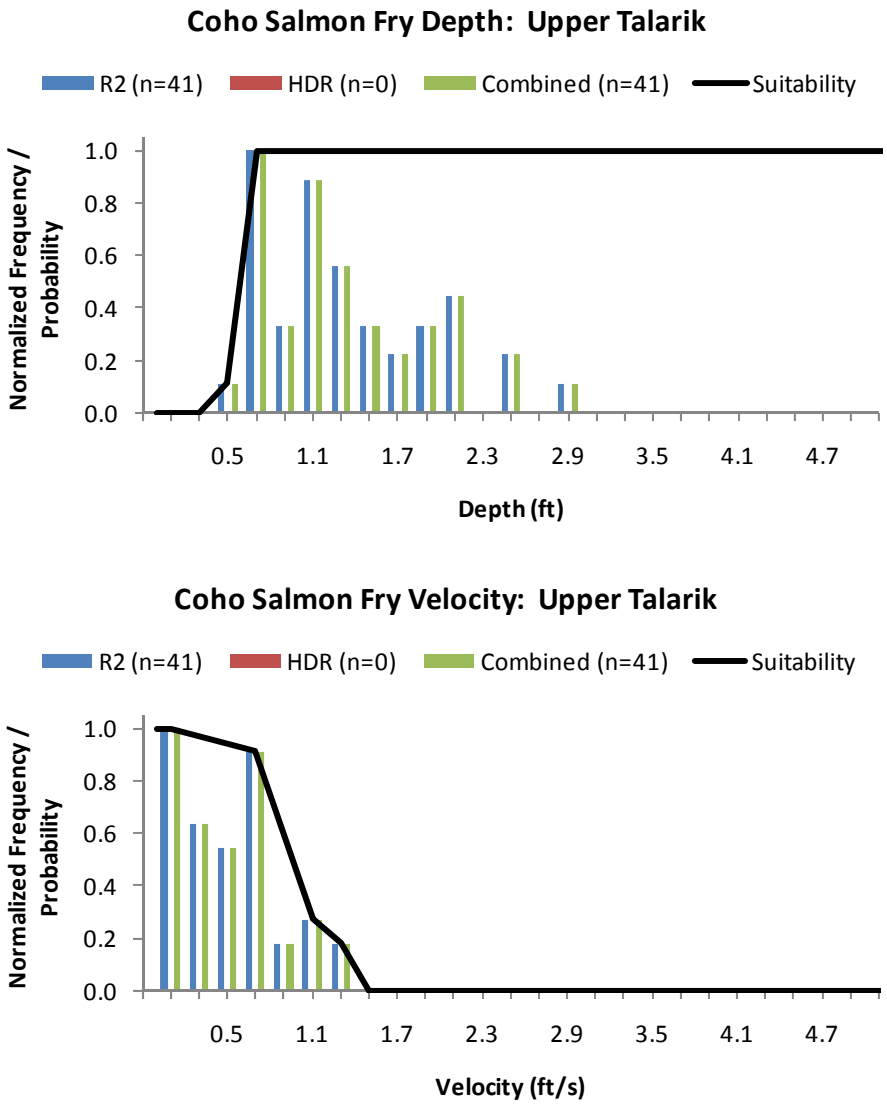

Figure 32. Upper Talarik Creek: Coho salmon fry candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

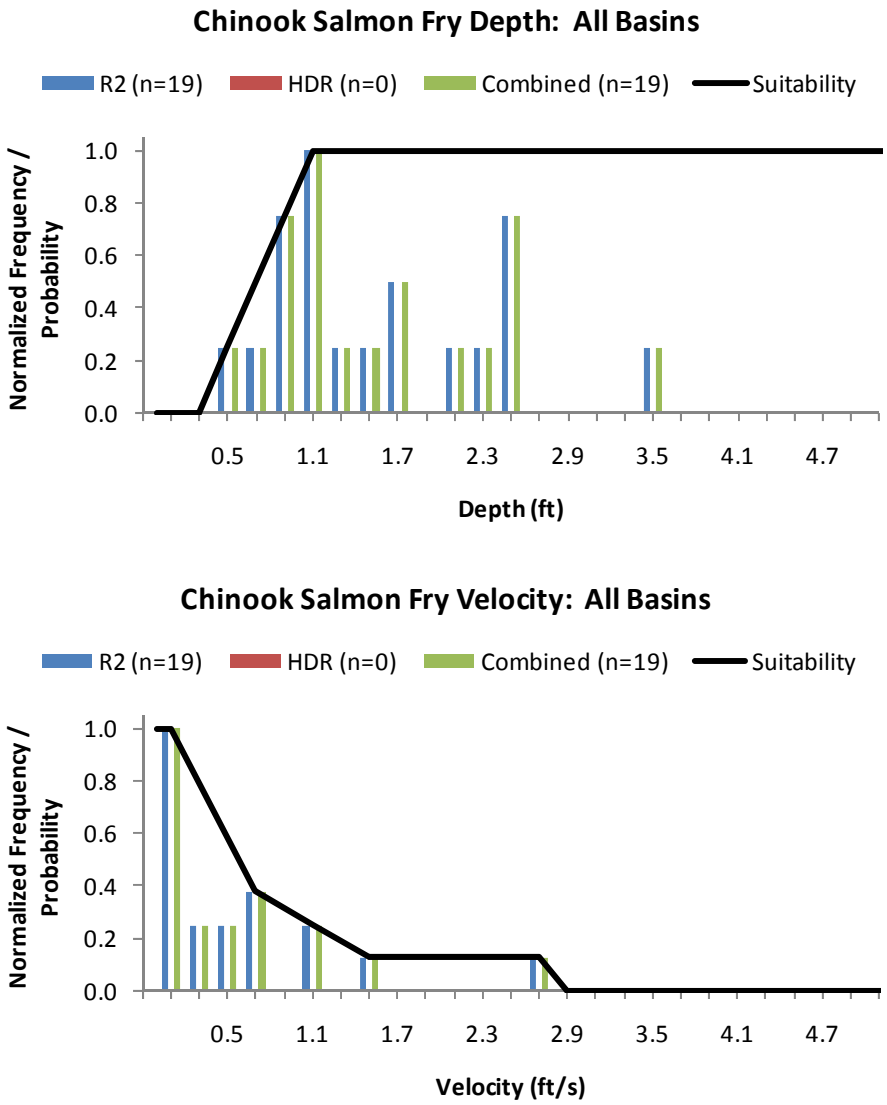

Figure 33. All Basins: Chinook salmon fry candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

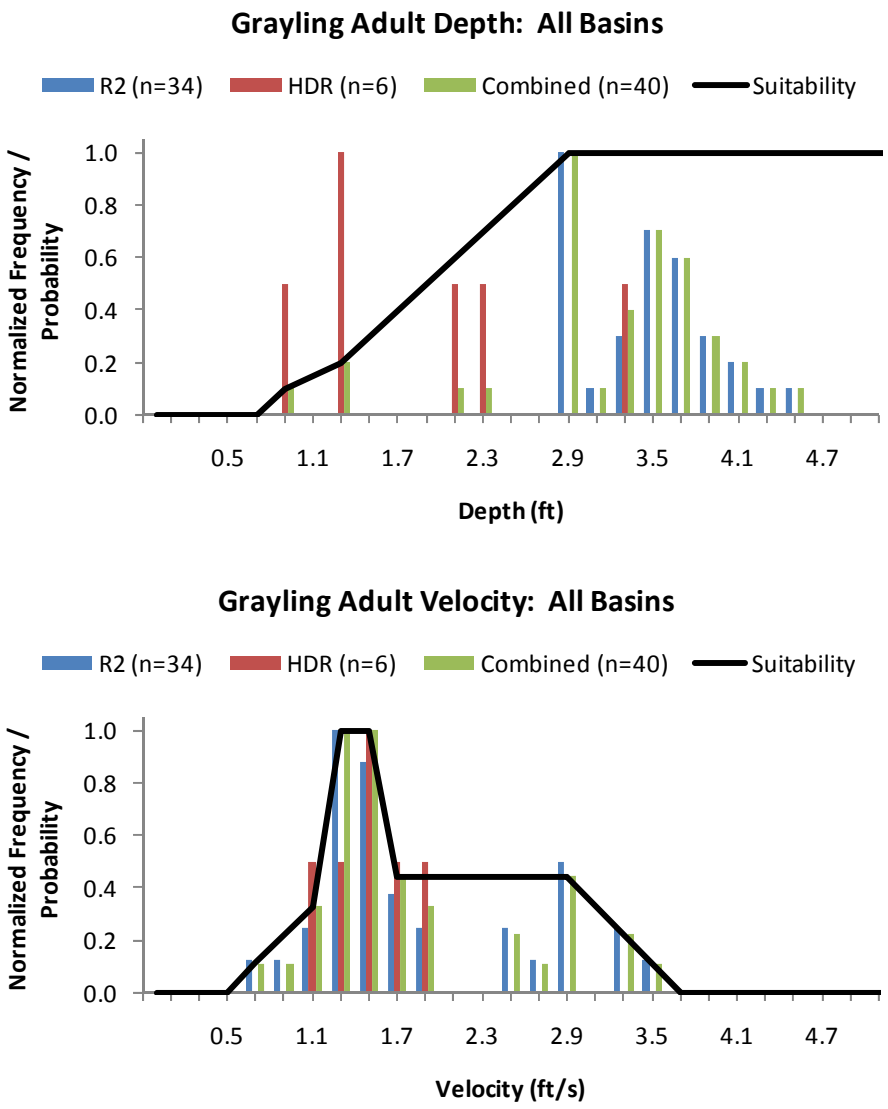

Figure 34. All Basins: Grayling adult candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

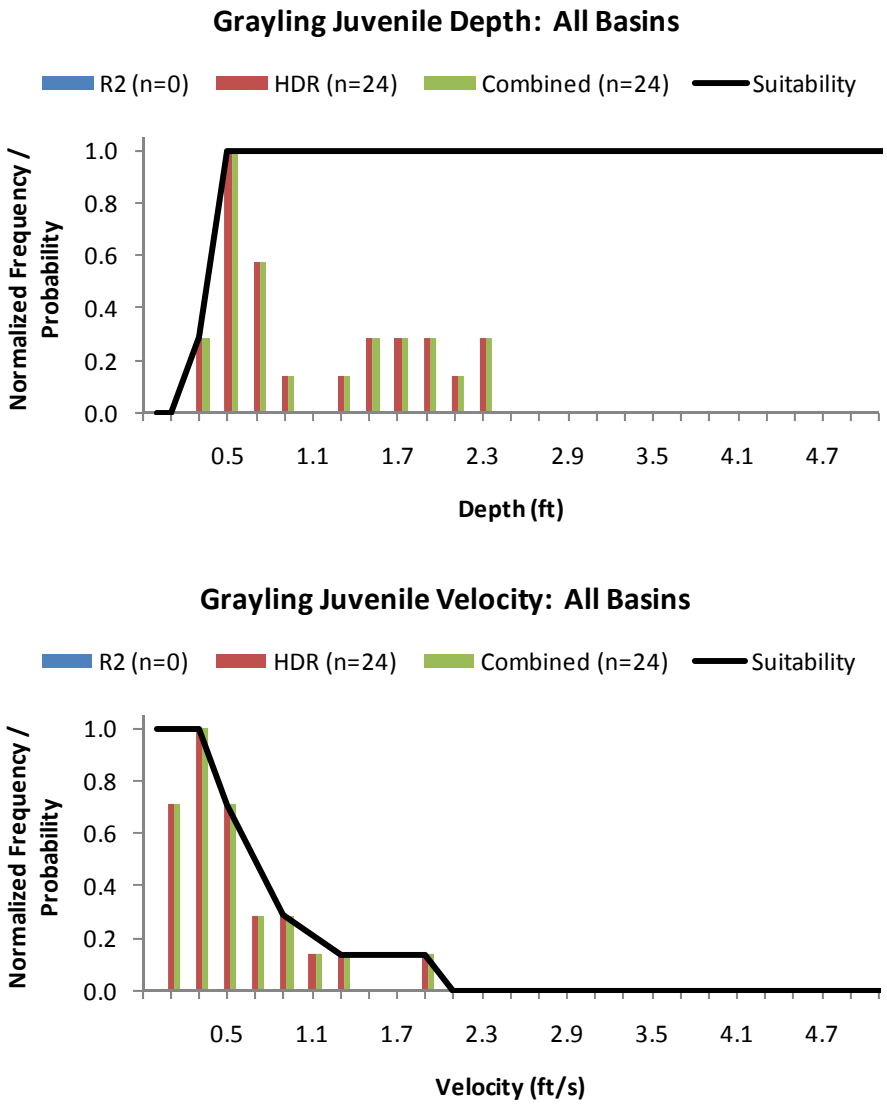

Figure 35. All Basins: Grayling juvenile candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

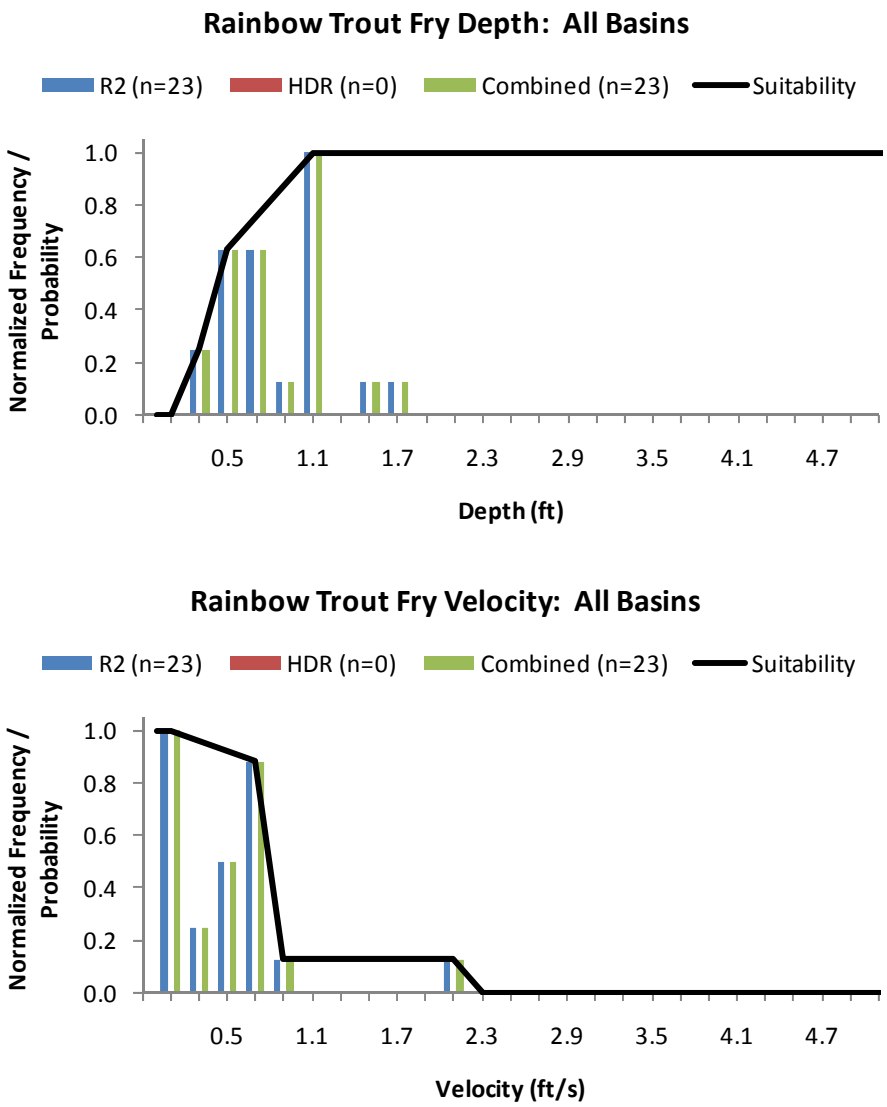

Figure 36. All Basins: Rainbow Trout fry candidate Habitat Suitability Criteria curves (probability of species habitat use) including site-specific observations (frequency of use is normalized as a proportion of total observations).

Note:

Solid line depicts suitability curve used in PHABSIM modeling presented in EBD Appendix 15.1C.

5. REFERENCES

Bovee, K. 1982. A guide to stream habitat analysis using the instream flow incremental methodology. U.S. Fish and Wildlife Service. FWS/OBS - 82/26.

Bovee, K. D. 1986. Development and evaluation of habitat suitability criteria for use in Instream Flow Incremental Methodology. Instream Flow Information Paper 21. U.S. Fish and Wildlife Service, Biological Report 86(7). 235 pp.

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ATTACHMENT 2

Habitat - Flow Relationships

Attachment 2

Habitat:Flow Relationships

(Weighted Usable Area curves)

This document presents the habitat:flow relationships (i.e., Weighted Usable Area or WUA curves) for all PHABSIM (a physical habitat simulation software computer program) transects in the four study area basins: North Fork Koktuli (NFK), South Fork Koktuli (SFK), Upper Talarik Creek (UT), and Mainstem Koktuli River (KR). The WUA curves are plotted for adult rearing, spawning, and juvenile rearing of seven target species (Chinook, chum, coho, and sockeye salmon, and arctic grayling, Dolly Varden, and rainbow trout) for 30 transects on NFK, 43 transects on SFK, 40 transects on UT, and four transects on KR. These curves are provided Attachment 2, Supplement 1.

(A) WUA Development

Habitat modeling was completed using the HABTAV habitat simulation program of DOS PHABSIM Version 2.1. The HABTAV program uses velocities and depths from the hydraulic modeling output (IFG4) in conjunction with the habitat suitability criteria (HSC) to calculate the habitat area for each target species and lifestage over a range of flows (Milhous et al. 1989).

Habitat quantity from the HABTAV model is expressed as an index called Weighted Useable Area (WUA) and is given in square feet of habitat per 1,000 feet of stream length. Figure 1 illustrates the technique used in HBATAV for calculating habitat area. The habitat program uses the two midway points (the dashed lines) between measurement verticals (solid lines) to represent a cell. A measurement vertical is where the velocity, depth, and substrate code are measured. The same definition of a cell is used by the USGS (U.S. Geological Survey) for flow measurement and calculation (Rantz, 1982).

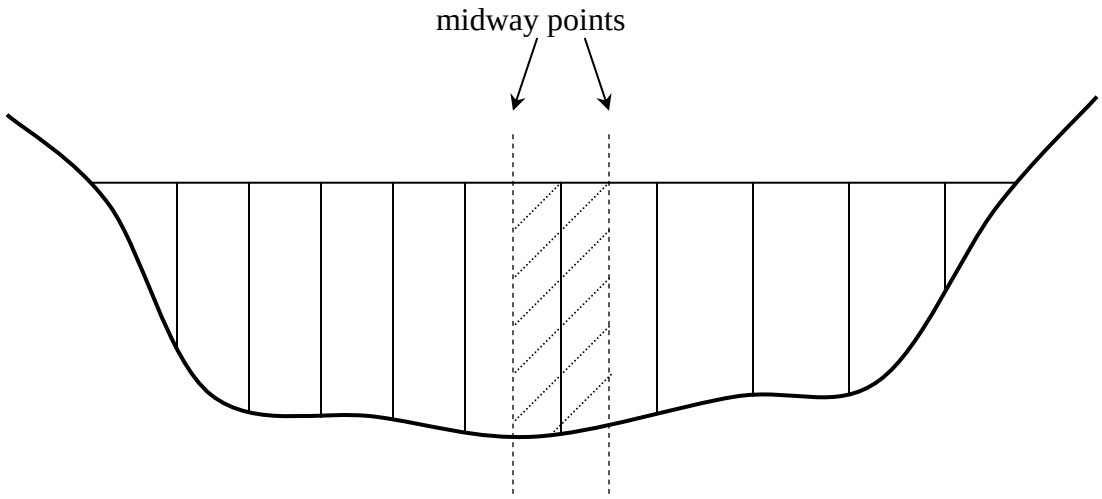

Figure 1.
The HABTAV habitat model cell boundary. The solid vertical lines are locations where velocity, depth, and substrate code are measured. The width of the hatched rectangle is the portion of the wetted width represented by the velocity/depth at the measurement vertical.

Prior to the habitat modeling, a Water Surface Elevation – Discharge (WSE~Q) rating curve is developed from the hydraulic modeling, as described in Appendix 15.1C, Attachment 4. The rating curve consists of 30 flows, and for each flow the habitat model was used to calculate a WUA value. The range of the 30 flows is designed to extend from minimum extrapolated flow (0.4 * lowest measured flow) to maximum extrapolated flow (2.5 * highest measured flow) Figure 2.

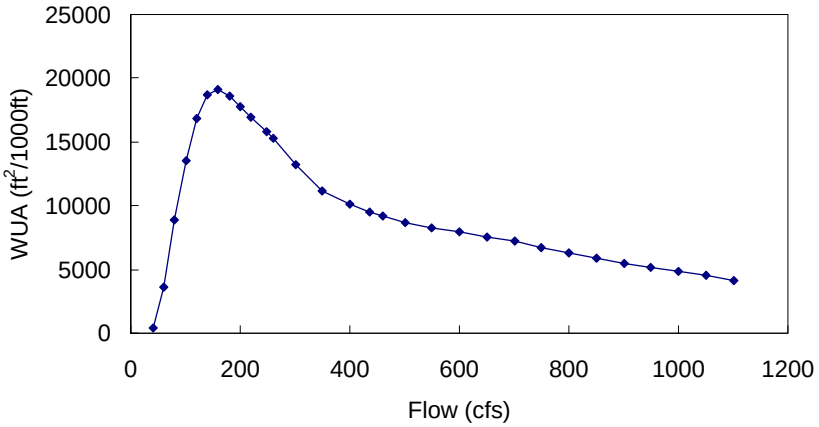

Figure 2.
A typical WUA~Q relationship consists of 30 flows, extending from minimum extrapolated flow to maximum extrapolated flow.

(B) Transect Composite WUA

In this study, each transect had multiple measured velocity profiles recorded at different flow conditions (e.g., low, mid, high flows). Each measured velocity profile is associated with a calibrated velocity profile from hydraulic modeling (see Appendix 15.1C, Attachment 4 for more details of velocity calibration), and the calibrated velocity profile is used by the habitat program to develop the WUA curve.

The shape of the velocity distribution across the transect may be significantly different under different flow conditions, and therefore each calibrated velocity profile can only be used to simulate the velocity profiles for flows near the measured flow. The velocity distributions are generally more uniform across the transect at higher flows. When flows are low, the velocities are affected more by the stream morphology and bed substrate, resulting in less uniform and spikier velocity profiles.

Due to different flow conditions of each measured flow, the WUA curve developed from each calibrated velocity profile may be different depending on which measured flow condition was used to calculate the WUA curve. Therefore, a composite curve is required to blend the multiple WUA curves to become a single habitat:flow curve for the transect.

Figure 3 is an example illustrating the process used to blend two WUA curves together to develop a single composite WUA curve for the transect. In this example there are only two flows used to develop the composite WUA curve, a low flow (Q_{low}) and a high flow (Q_{high}). While most transects typically have three or more measured velocity profiles available, only two flows are used here to illustrate the process.

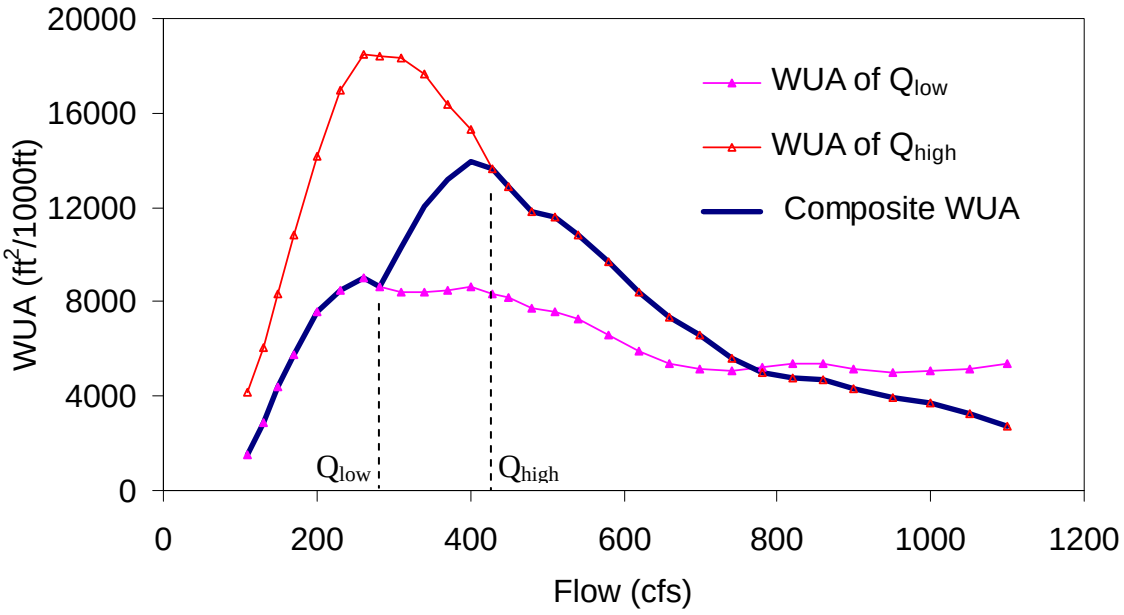

Figure 3.
Composite WUA for a transect with two measured flows. The line with solid triangles represents WUA calculated from low flow measurement. The line with hollow triangles line represents WUA calculated from high flow measurement. The thick blue line is the composite WUA curve for the transect. The maximum habitat value of the composite curve and the flow at which maximum habitat occurs may be different from the original WUA curves.

The line with solid triangles represents the weighted usable area for Q_{low} (i.e., the WUA curve developed from the calibrated velocity profile of Q_{low}), the line with hollow triangles represents the weighted usable area for Q_{high}, and the thick blue line is the composite WUA curve. For flows lower than Q_{low}, the line with solid triangles is used for the composite curve, and for flows greater than Q_{high}, the line with hollow triangles is used. For flows between the two measured flows, a weighting factor is used to blend the two curves together. The weighting factor, F, is determined using the flows, and it is defined as follow:

$$F = 1 - \frac{Q_s - Q_{low}}{Q_{high} - Q_{low}} \qquad \text{Eq(1)}$$

where Q_s is the simulation flow. The composite WUA~Q curve can be summarized as follows for the full range of simulation flows:

$$WUA = WUA_{low} \qquad \text{for } Q_s \le Q_{low} \qquad \text{Eq(2)}$$

$$WUA = F \times WUA_{low} + (1 - F) \times WUA_{high} \qquad \text{for } Q_{low} \le Q_s \le Q_{high} \qquad \text{Eq(3)}$$

$$WUA = WUA_{high} \qquad \text{for } Q_s \ge Q_{high} \qquad \text{Eq(4)}$$

Those equations can be applied to calculate the composite WUA curves for transects with more than two calibrated velocity profiles. For example: A transect may have three calibrated velocity profiles from Q_{low}, Q_{mid}, and Q_{high} measurements. The subscript "high" in Eq(1) and Eq(3) should be replaced by "mid" to calculate the WUA for flows between Q_{low} and Q_{mid}. When calculating the WUA for flows between Q_{mid} and Q_{high}, the subscript "low" should be replaced by "mid".

Numerical values of the WUA curves in Figure3 are listed in Table 1. Columns 2 and 3 are the WUA curves for Q_{low} and Q_{high}, respectively. Column 4 is the weighting factor, F, calculated from Eq(1), for each simulation flow. Column 5 is the composite WUA, computed using Eq(3) and it reads Column 5 =F * Column 2 + (1-F)*Column 3.

(C) Application to all PHABSIM transects

The algorithm described previously was applied to calculated composite curves for all species and lifestages of all 117 transects in the four basins. The composite WUA curves are shown in Attachment 2, Supplement 1 for the transects on NFK, SFK, UT, and KR. Also shown on the graphs of each transect are the plots of percentage of maximum WUA, which is the ratio of a WUA value to the maximum value on the WUA curve.

Table 1.
A numerical example illustrating the algorithm for developing the composite WUA curve

(1)	(2)	(3)	(4)	(5)
Simulation Flow (cfs)	WUA for Q_{low} (WUA_{low})	WUA for Q_{high} (WUA_{high})	Weighting Factor (F)	Composite WUA
(cfs)	(ft^2/1000ft)	(ft^2/1000ft)		(ft^2/1000ft)
110	1549	4165	1	1549
130	2858	6030	1	2858
150	4414	8343	1	4414
170	5725	10849	1	5725
200	7552	14130	1	7552
230	8510	16968	1	8510
260	9010	18477	1	9010
282.7	8660	18414	1	8660
310	8427	18335	0.81	10265
340	8395	17681	0.61	12012
370	8487	16359	0.41	13159
400	8618	15271	0.20	13923
429.8	8326	13633	0	13633
449.7	8194	12856	0	12856
480	7737	11855	0	11855
510	7607	11627	0	11627
540	7255	10803	0	10803
580	6604	9669	0	9669
620	5915	8438	0	8438
660	5393	7361	0	7361
700	5167	6587	0	6587
740	5050	5643	0	5643
780	5252	4994	0	4994
820	5397	4806	0	4806
860	5349	4684	0	4684
900	5189	4324	0	4324
950	4965	3974	0	3974
1000	5086	3691	0	3691
1050	5188	3260	0	3260
1100	5388	2745	0	2745

Notes:

cfs = cubic feet per second

Q = flow (as measured by discharge)

Q_{low} = low flow

Q_{high} = high flow

WUA_{low} = Weighted Usable Area at low flow

WUA_{high} = Weighted Usable Area at high flow

WUA = Weighted Usable Area

References

Milhous, R.T., M.A. Updike, D.M. Schneider. 1989. Computer reference manual for the Physical Habitat Simulation System (PHAB SIM) – Version II. In stream Flow Information Paper No. 26. U.S. Fish and Wildlife Serv. Biological Report. 89(16).

Rantz, S.E. 1982. Measurement and Computation of Streamflow: Volume 1. Measurement of Stage and Discharge, U.S. Geological Survey Water-Supply Paper 2175.

Supplement 1

Weighted Usable Area Curves

FIGURES

Figure 1 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC3 (River Kilometer 3.37) in NFK-A, North Fork Koktuli River, Alaska. 1

Figure 2 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC3 (River Kilometer 3.37) in NFK-A, North Fork Koktuli River, Alaska. 2

Figure 3 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-IC3 (River Kilometer 3.37) in NFK-A, North Fork Koktuli River, Alaska.....3

Figure 4 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR1 (River Kilometer 9.88) in NFK-A, North Fork Koktuli River, Alaska. 4

Figure 5 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR1 (River Kilometer 9.88) in NFK-A, North Fork Koktuli River, Alaska. 5

Figure 6 Weighted Usable Area (WUA) curves for adult non-anadromous at Transect 08-NFK1-MS1-TR1 (River Kilometer 9.88) in Reach NFK-A, North Fork Koktuli River, Alaska. 6

Figure 7 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR2 (River Kilometer 9.91) in NFK-A, North Fork Koktuli River, Alaska. 7

Figure 8 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR2 (River Kilometer 9.91) in NFK-A, North Fork Koktuli River, Alaska. 8

Figure 9 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR2 (River Kilometer 9.91) in NFK-A, North Fork Koktuli River, Alaska. 9

Figure 10 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR3 (River Kilometer 9.94) in NFK-A, North Fork Koktuli River, Alaska. 10

Figure 11 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR3 (River Kilometer 9.94) in NFK-A, North Fork Koktuli River, Alaska. 11

Figure 12 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR3 (River Kilometer 9.94) in NFK-A, North Fork Koktuli River, Alaska. 12

Figure 13 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR4 (River Kilometer 10.04) in NFK-A, North Fork Koktuli River, Alaska. 13

Figure 14 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR4 (River Kilometer 10.04) in NFK-A, North Fork Koktuli River, Alaska. 14

Figure 15 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR4 (River Kilometer 10.04) in NFK-A, North Fork Koktuli River, Alaska. 15

Figure 16 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR5 (River Kilometer 10.06) in NFK-A, North Fork Koktuli River, Alaska. 16

Figure 17 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR5 (River Kilometer 10.06) in NFK-A, North Fork Koktuli River, Alaska. 17

Figure 18 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR5 (River Kilometer 10.06) in NFK-A, North Fork Koktuli River, Alaska. 18

Figure 19 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR6 (River Kilometer 10.10) in NFK-A, North Fork Koktuli River, Alaska. 19

Figure 20 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR6 (River Kilometer 10.10) in NFK-A, North Fork Koktuli River, Alaska. 20

Figure 21 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR6 (River Kilometer 10.10) in NFK-A, North Fork Koktuli River, Alaska. 21

Figure 22 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR1 (River Kilometer 12.87) in NFK-A, North Fork Koktuli River, Alaska. 22

Figure 23 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR1 (River Kilometer 12.87) in NFK-A, North Fork Koktuli River, Alaska. 23

Figure 24 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR1 (River Kilometer 12.87) in NFK-A, North Fork Koktuli River, Alaska. 24

Figure 25 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR2 (River Kilometer 12.89) in NFK-A, North Fork Koktuli River, Alaska. 25

Figure 26 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR2 (River Kilometer 12.89) in NFK-A, North Fork Koktuli River, Alaska. 26

Figure 27 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR2 (River Kilometer 12.89) in NFK-A, North Fork Koktuli River, Alaska. 27

Figure 28 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR3 (River Kilometer 12.96) in NFK-A, North Fork Koktuli River, Alaska. 28

Figure 29 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR3 (River Kilometer 12.96) in NFK-A, North Fork Koktuli River, Alaska. 29

Figure 30 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR3 (River Kilometer 12.96) in NFK-A, North Fork Koktuli River, Alaska. 30

Figure 31 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR4 (River Kilometer 13.06) in NFK-A, North Fork Koktuli River, Alaska. 31

Figure 32 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR4 (River Kilometer 13.06) in NFK-A, North Fork Koktuli River, Alaska. 32

Figure 33 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR4 (River Kilometer 13.06) in NFK-A, North Fork Koktuli River, Alaska. 33

Figure 34 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR5 (River Kilometer 13.08) in NFK-A, North Fork Koktuli River, Alaska. 34

Figure 35 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR5 (River Kilometer 13.08) in NFK-A, North Fork Koktuli River, Alaska. 35

Figure 36 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR5 (River Kilometer 13.08) in NFK-A, North Fork Koktuli River, Alaska. 36

Figure 37 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RN1 (River Kilometer 13.23) in NFK-A, North Fork Koktuli River, Alaska. 37

Figure 38 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RN1 (River Kilometer 13.23) in NFK-A, North Fork Koktuli River, Alaska. 38

Figure 39 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-RN1 (River Kilometer 13.23) in NFK-A, North Fork Koktuli River, Alaska. 39

Figure 40 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-NFK1-RF1 (River Kilometer 14.29) in NFK-B, North Fork Koktuli River, Alaska. 40

Figure 41 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-NFK1-RF1 (River Kilometer 14.29) in NFK-B, North Fork Koktuli River, Alaska. 41

Figure 42 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-NFK1-RF1 (River Kilometer 14.29) in NFK-B, North Fork Koktuli River, Alaska. 42

Figure 43 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC1 (River Kilometer 15.33) in NFK-B, North Fork Koktuli River, Alaska. 43

Figure 44 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC1 (River Kilometer 15.33) in NFK-B, North Fork Koktuli River, Alaska. 44

Figure 45 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-IC1 (River Kilometer 15.33) in NFK-B, North Fork Koktuli River, Alaska. 45

Figure 46 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF2 (River Kilometer 15.97) in NFK-B, North Fork Koktuli River, Alaska. 46

Figure 47 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF2 (River Kilometer 15.97) in NFK-B, North Fork Koktuli River, Alaska. 47

Figure 48 Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-RF2 (River Kilometer 15.97) in NFK-B, North Fork Koktuli River, Alaska. 48

Figure 49 Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF1 (River Kilometer 18.29) in NFK-B, North Fork Koktuli River, Alaska. 49

Figure 50 Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF1 (River Kilometer 18.29) in NFK-B, North Fork Koktuli River, Alaska. 50

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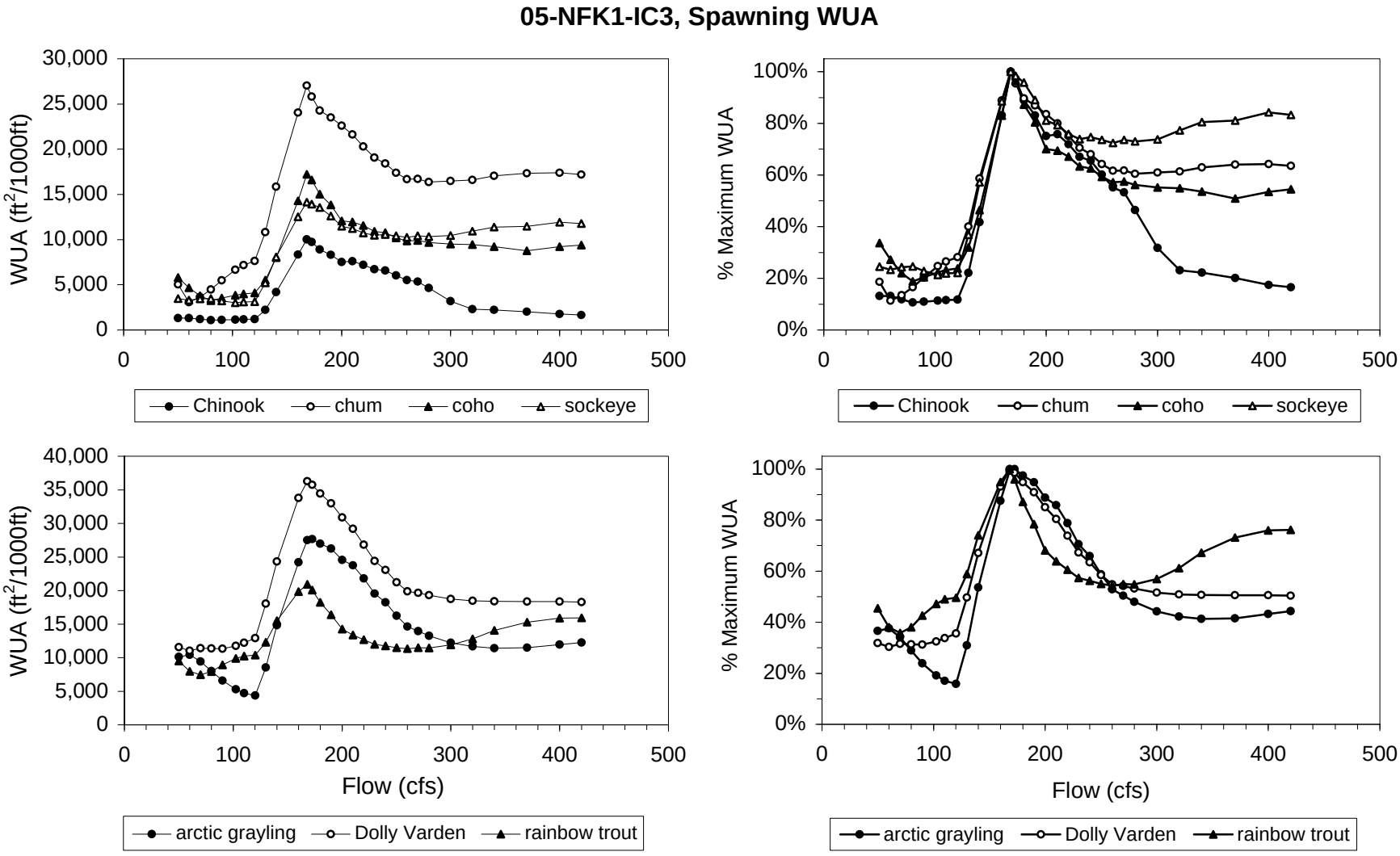
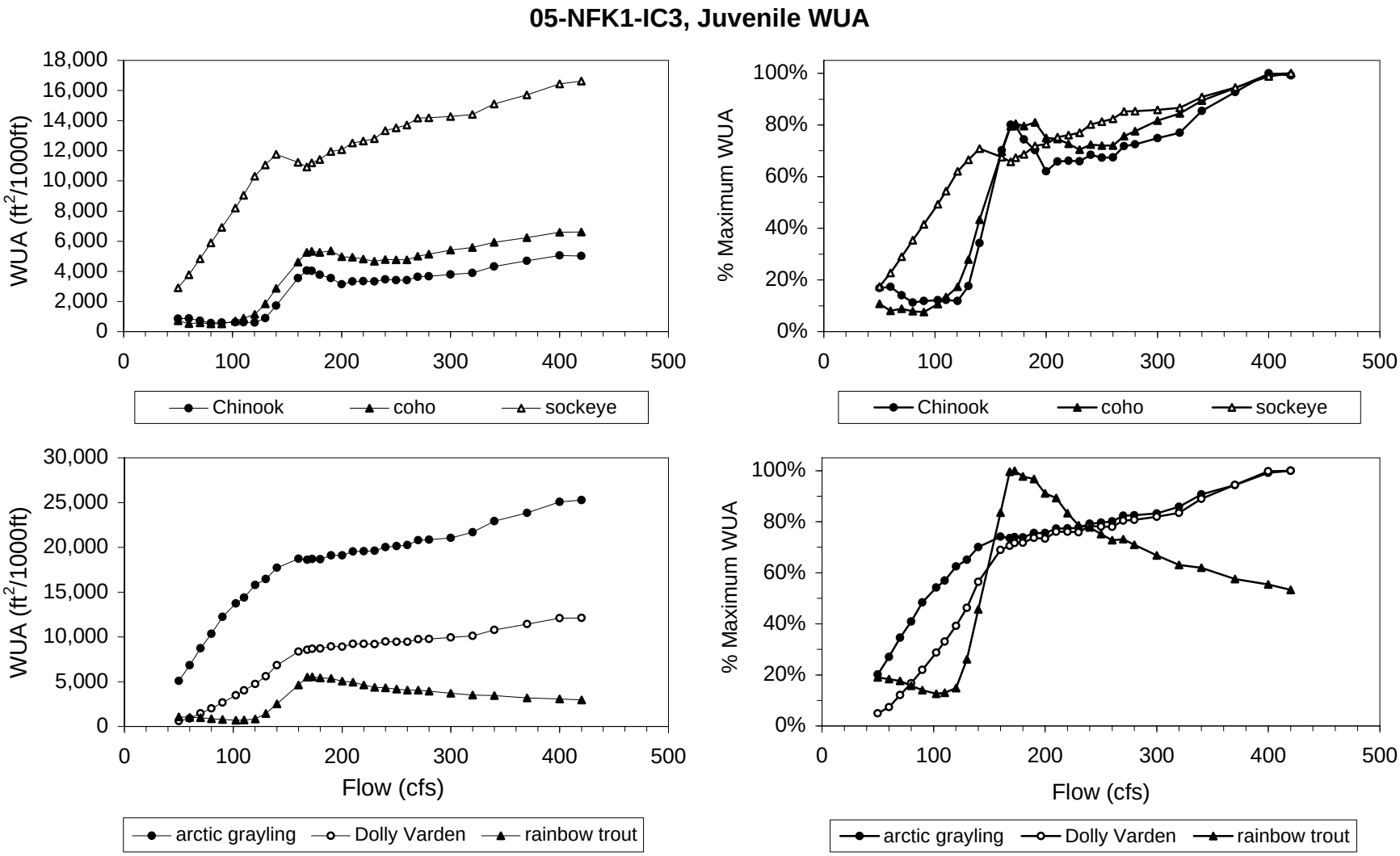


Figure 1
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC3 (River Kilometer 3.37) in NFK-A, North Fork Koktuli River, Alaska.



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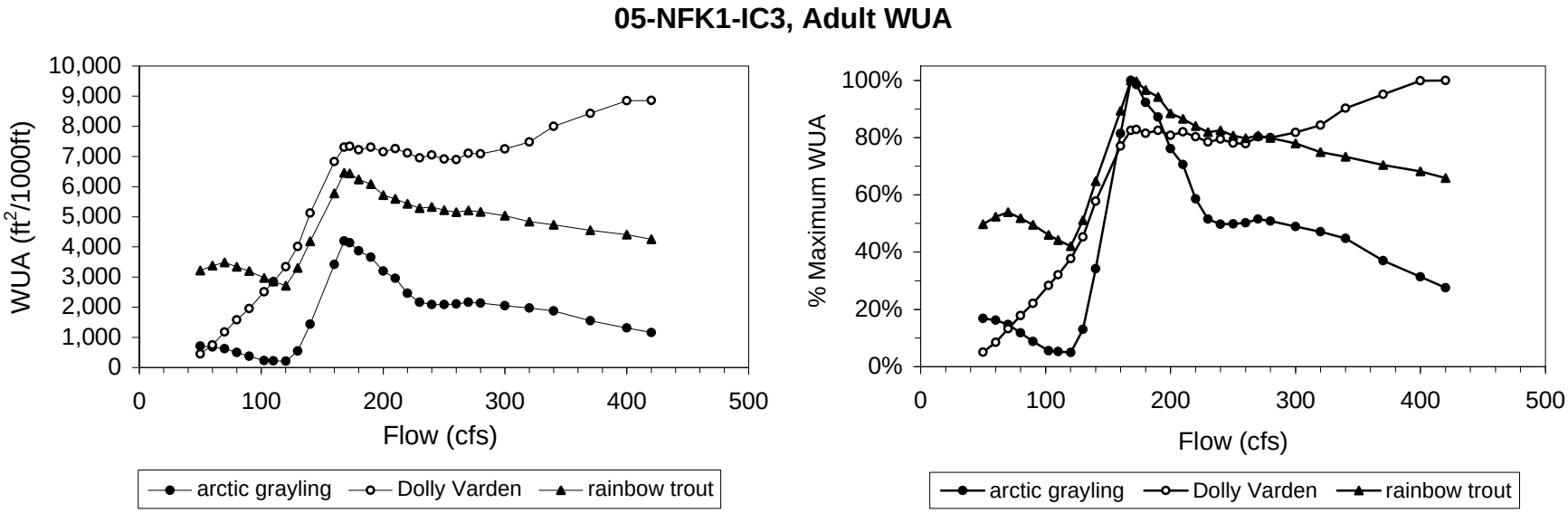
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC3 (River Kilometer 3.37) in NFK-A, North Fork Koktuli River, Alaska.



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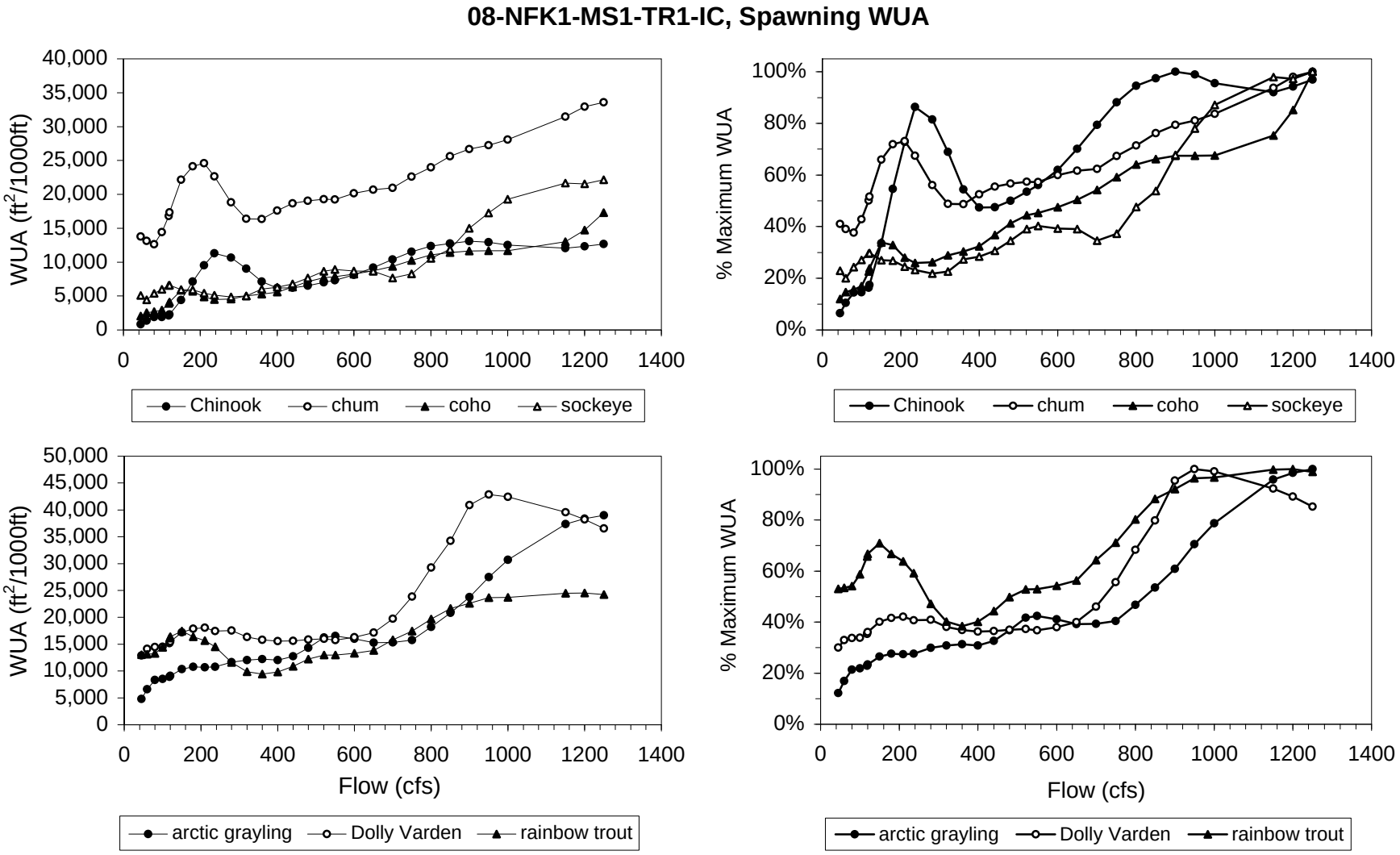
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-IC3 (River Kilometer 3.37) in NFK-A, North Fork Koktuli River, Alaska.



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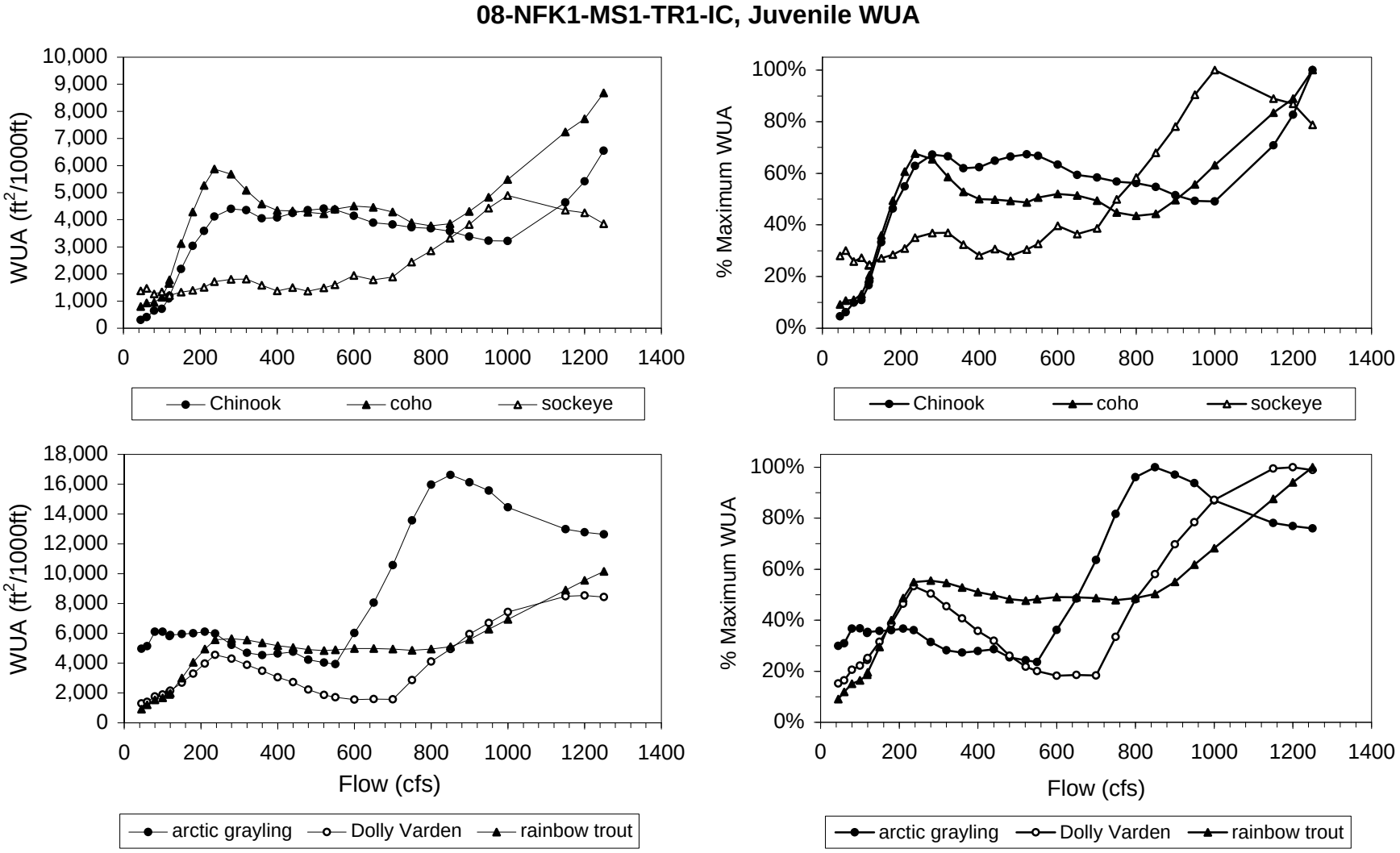

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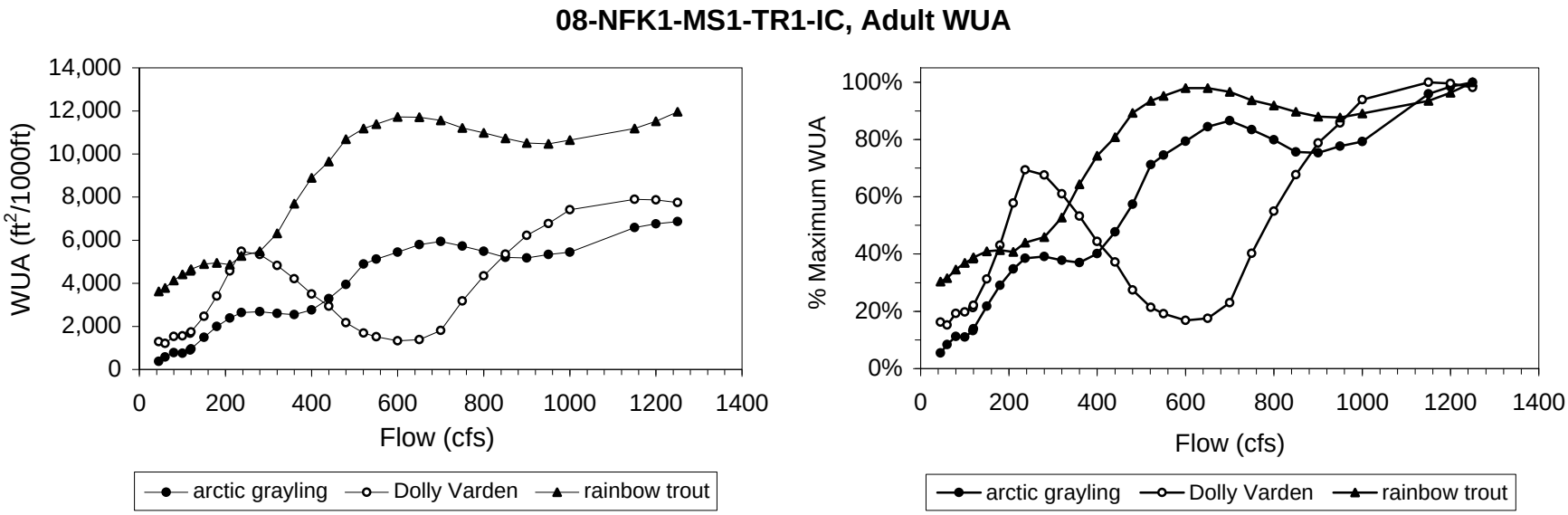

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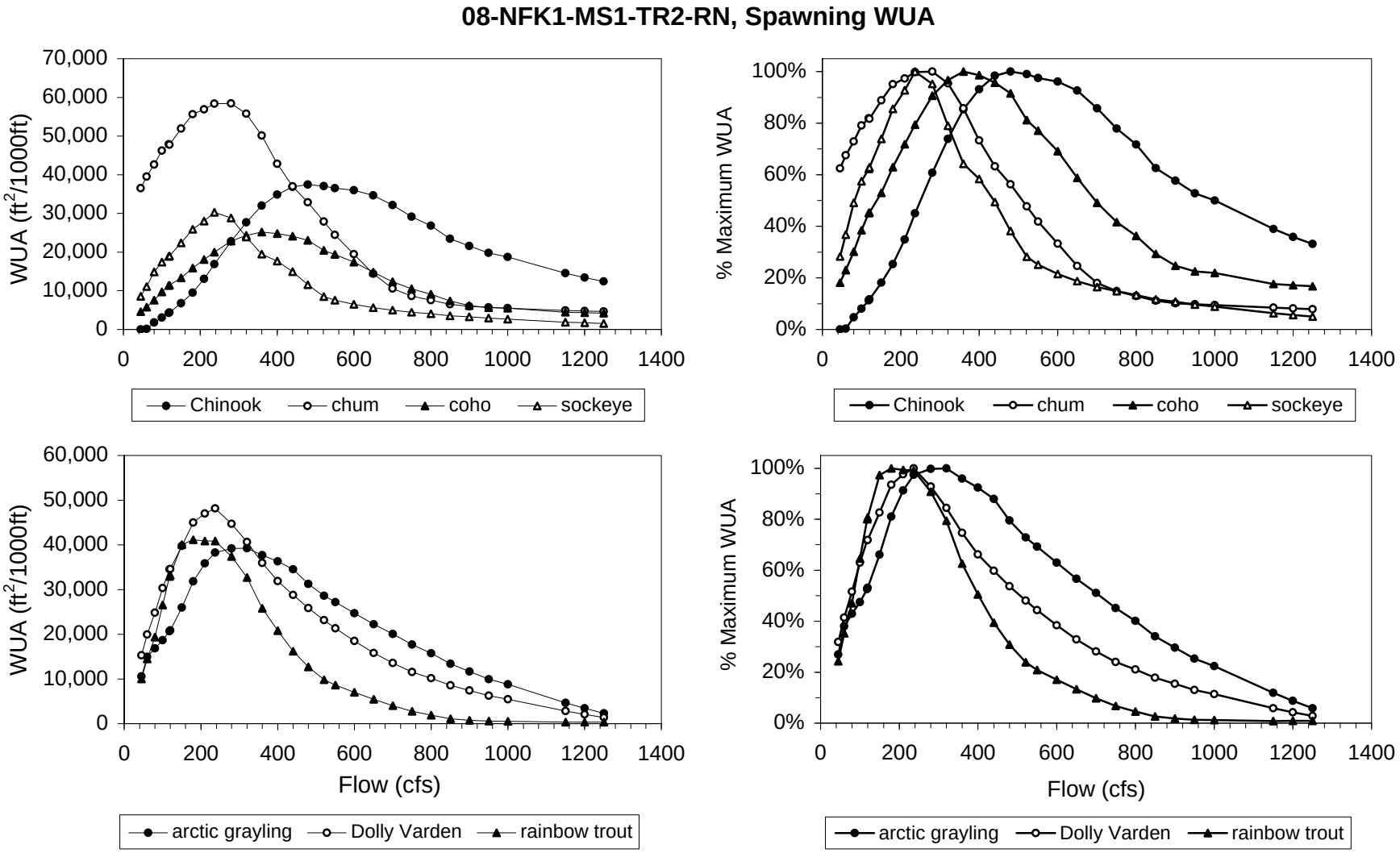

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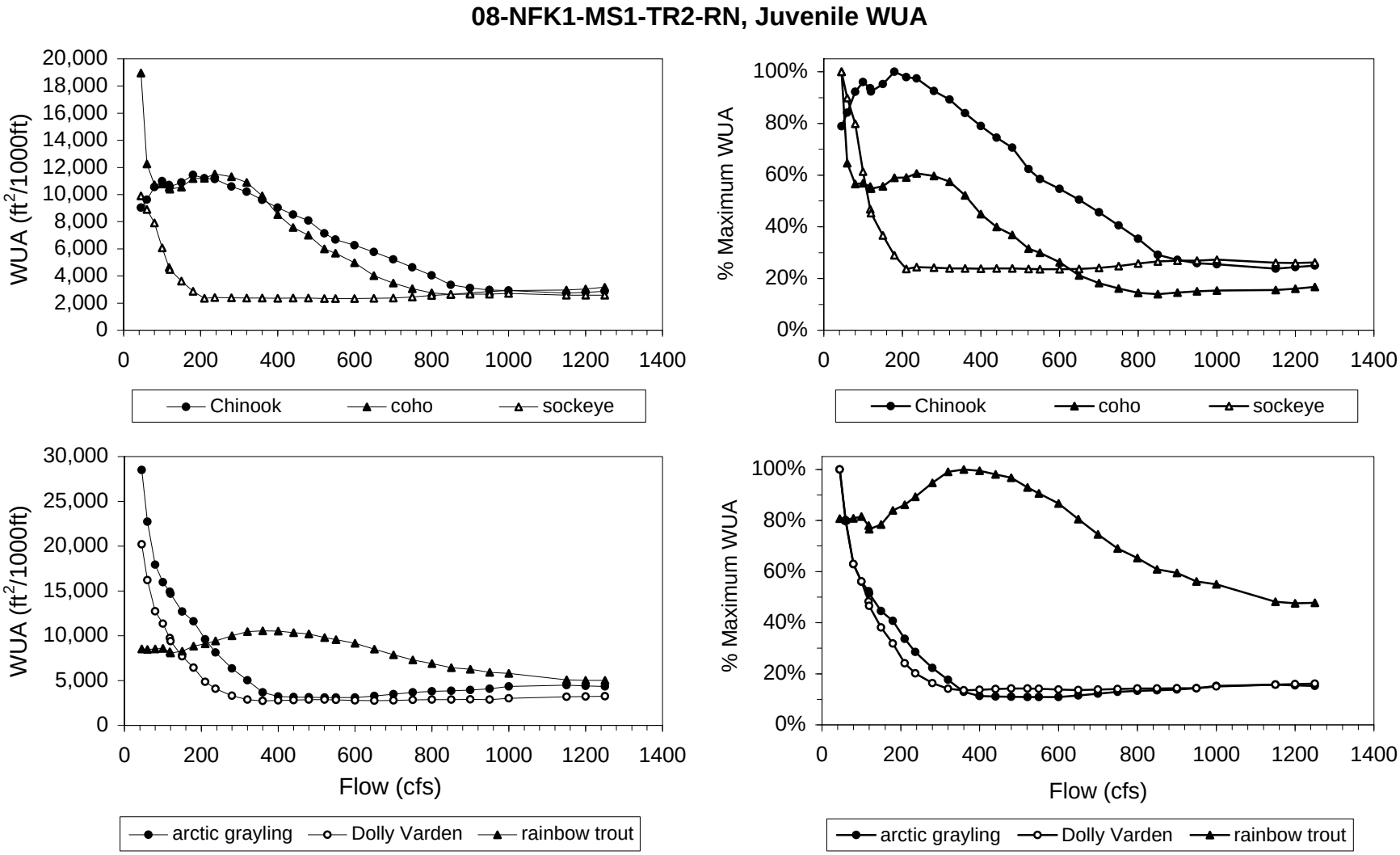

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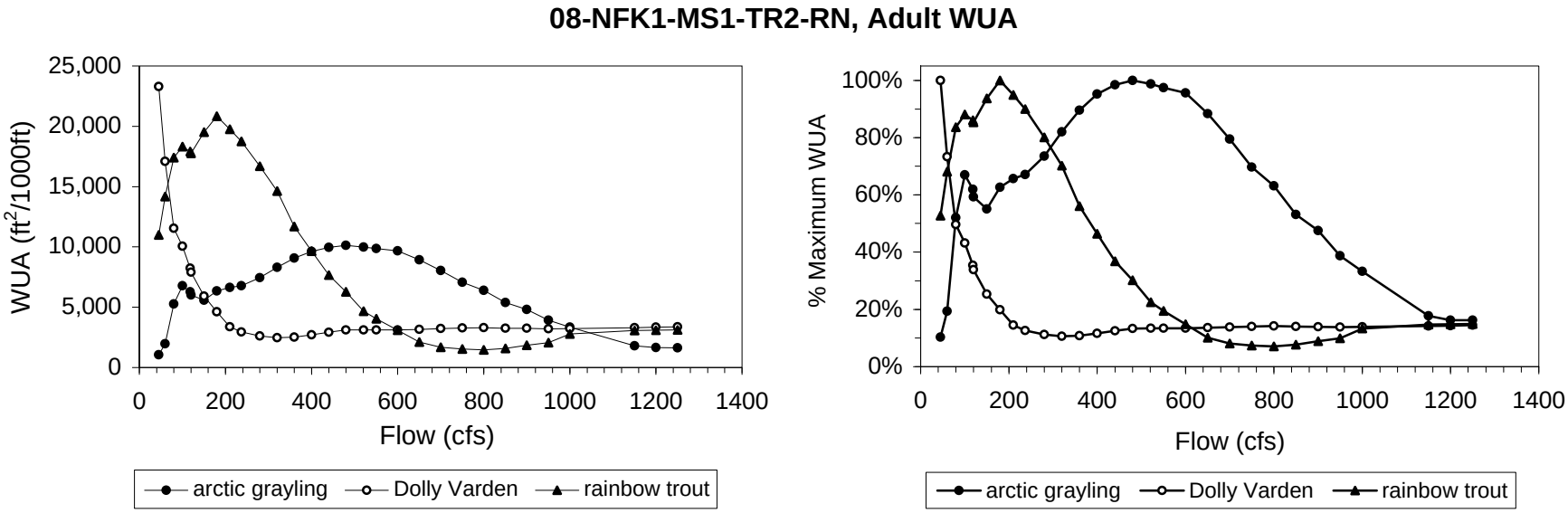

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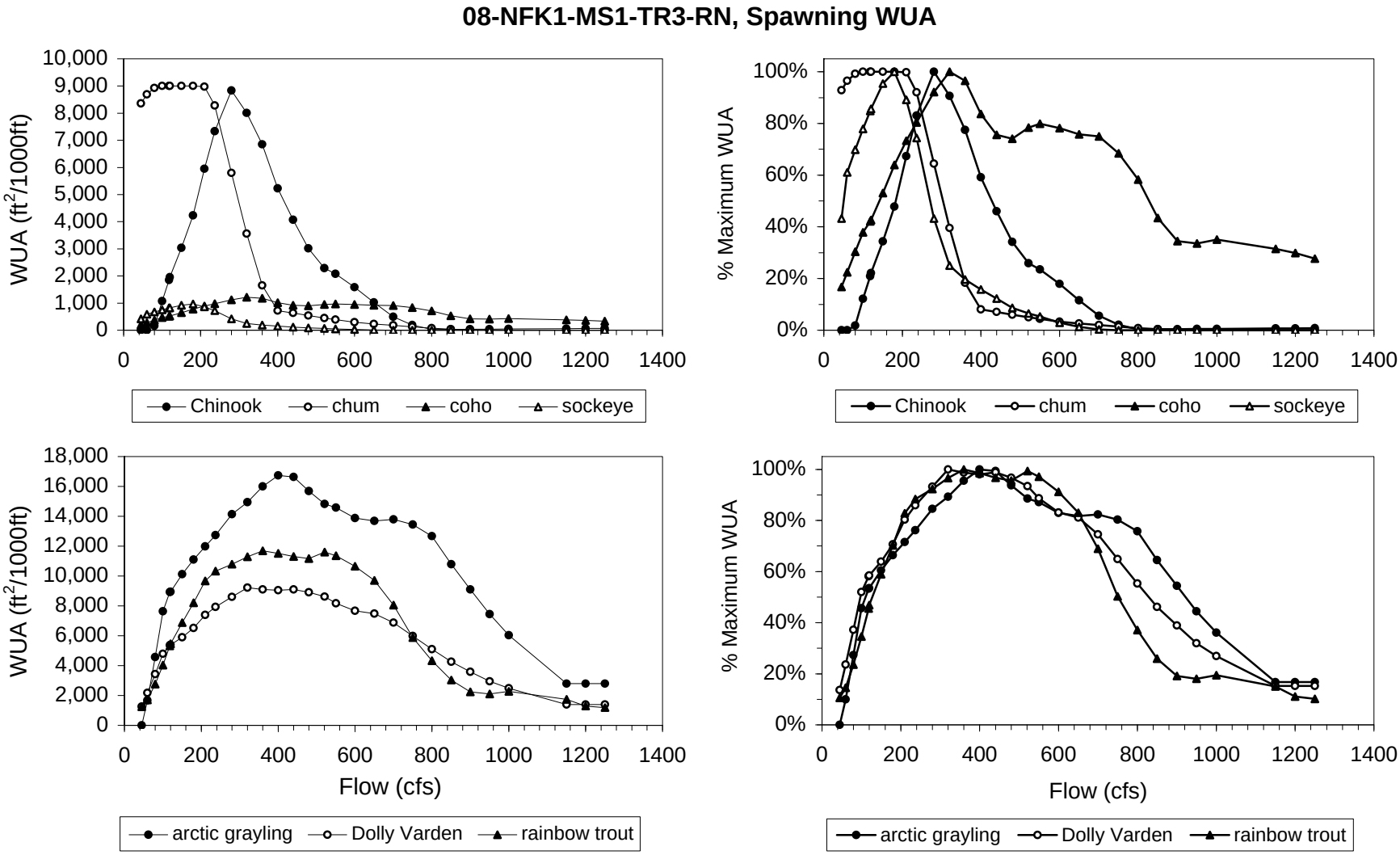

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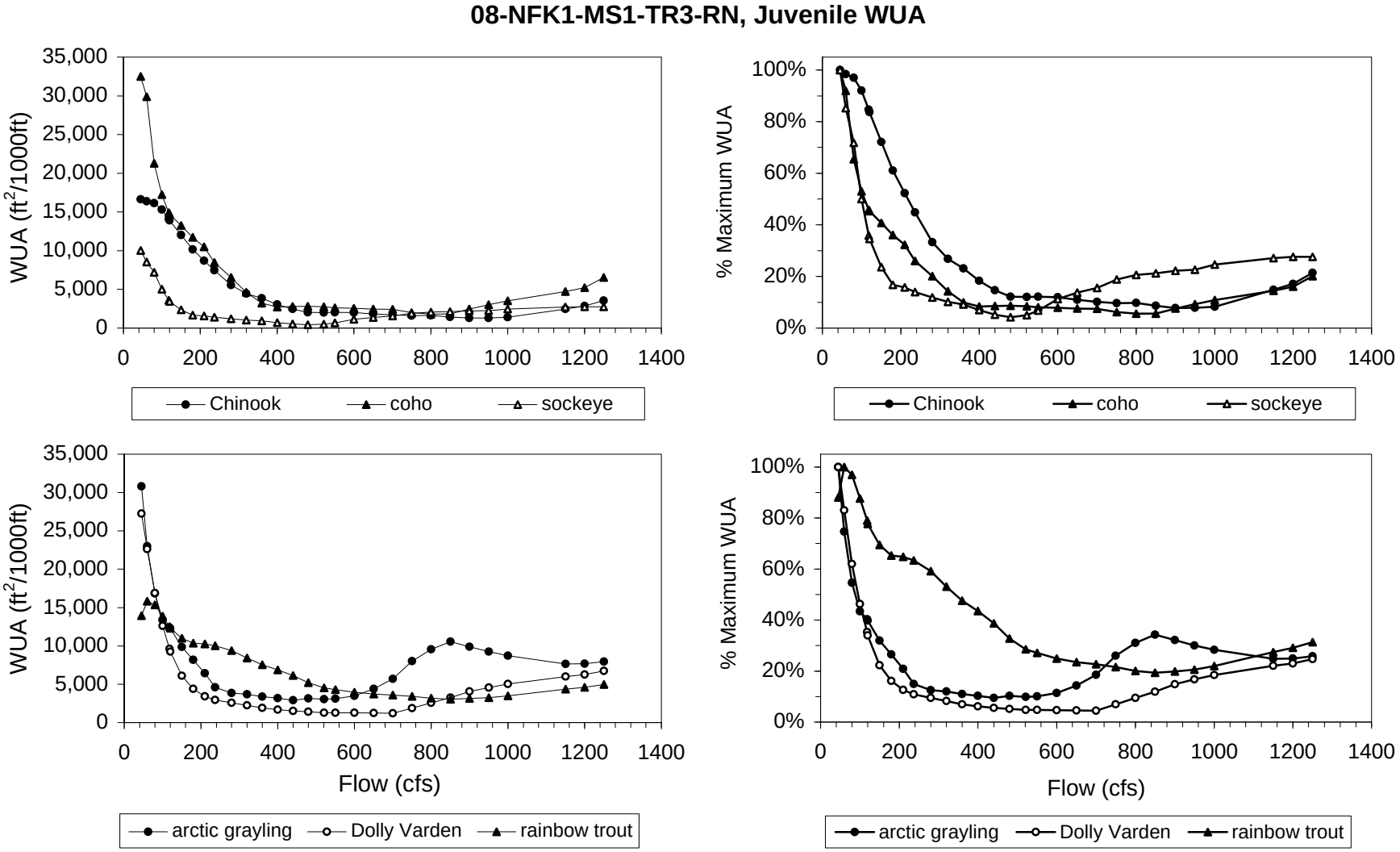

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Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR3 (River Kilometer 9.94) in NFK-A, North Fork Koktuli River, Alaska.

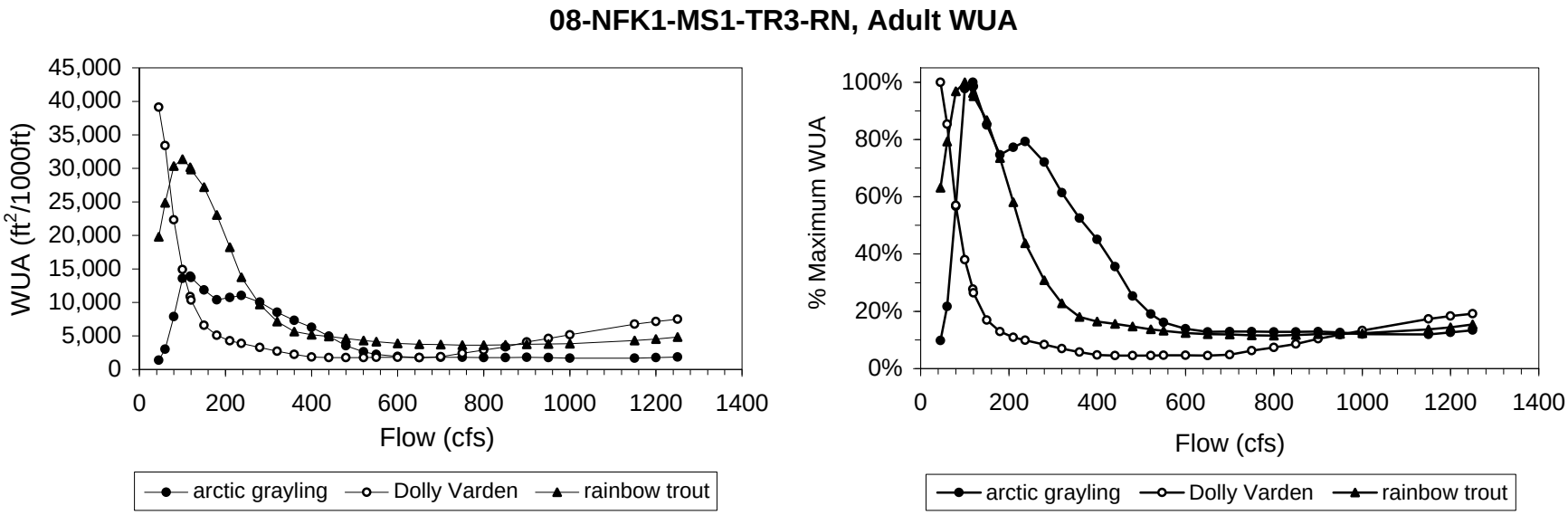

Figure 12
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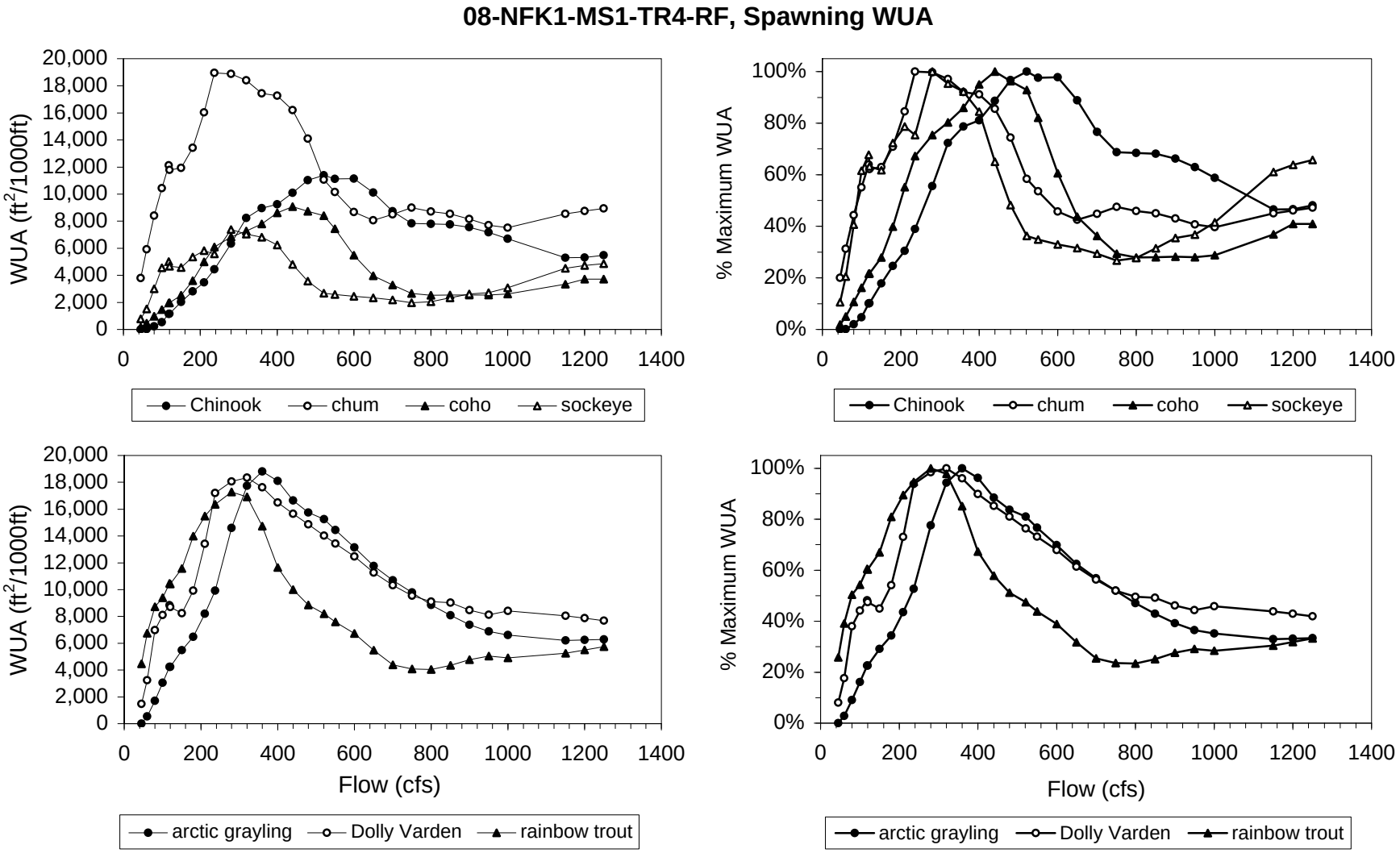

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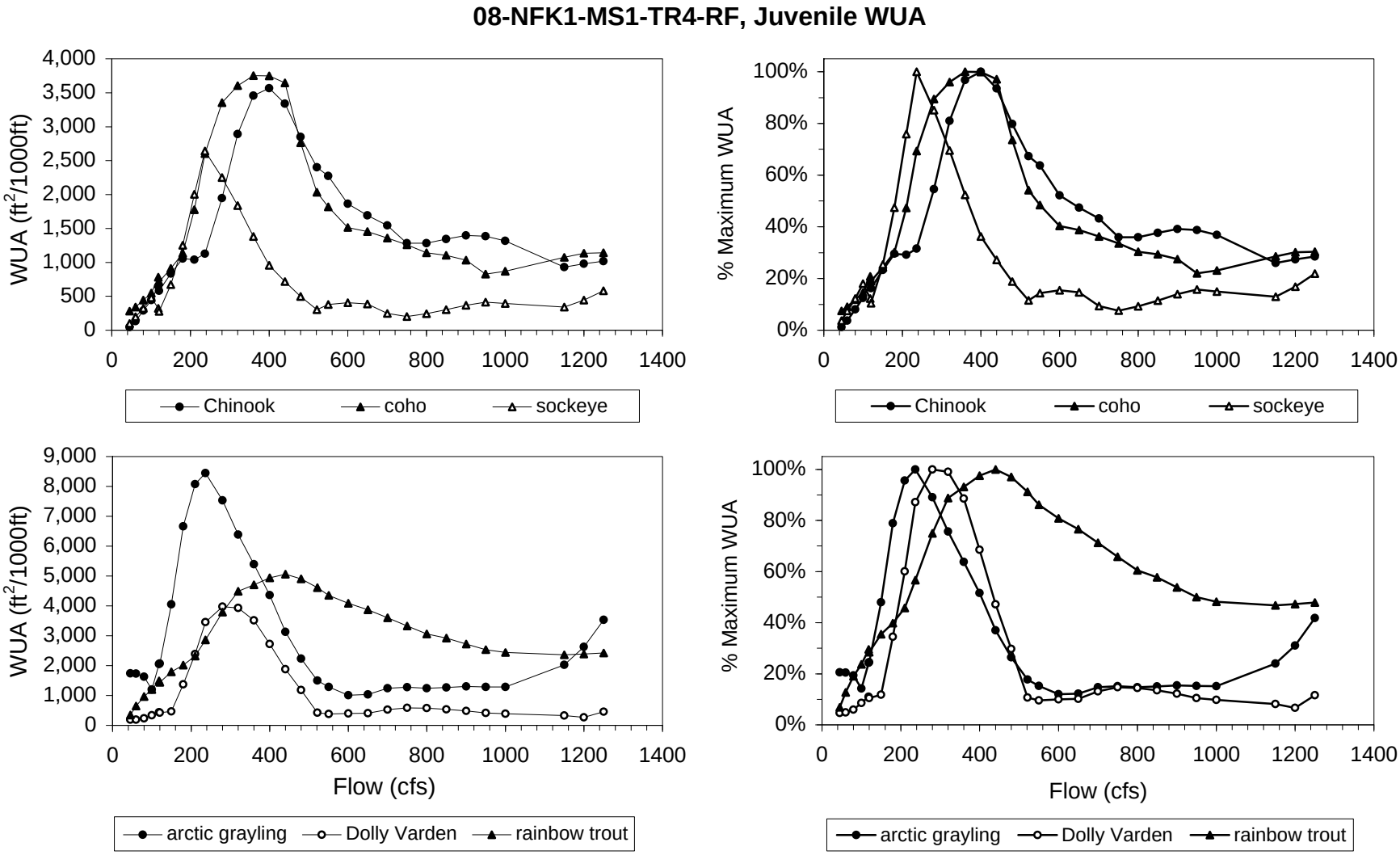

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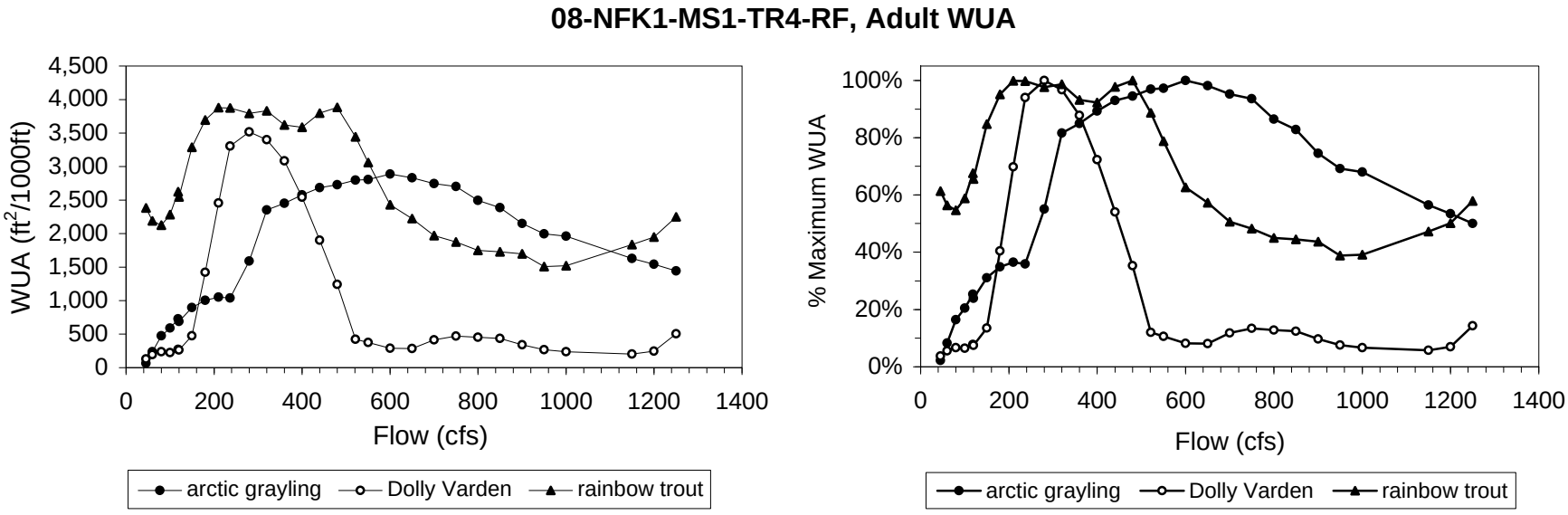

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Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR4 (River Kilometer 10.04) in NFK-A, North Fork Koktuli River, Alaska.

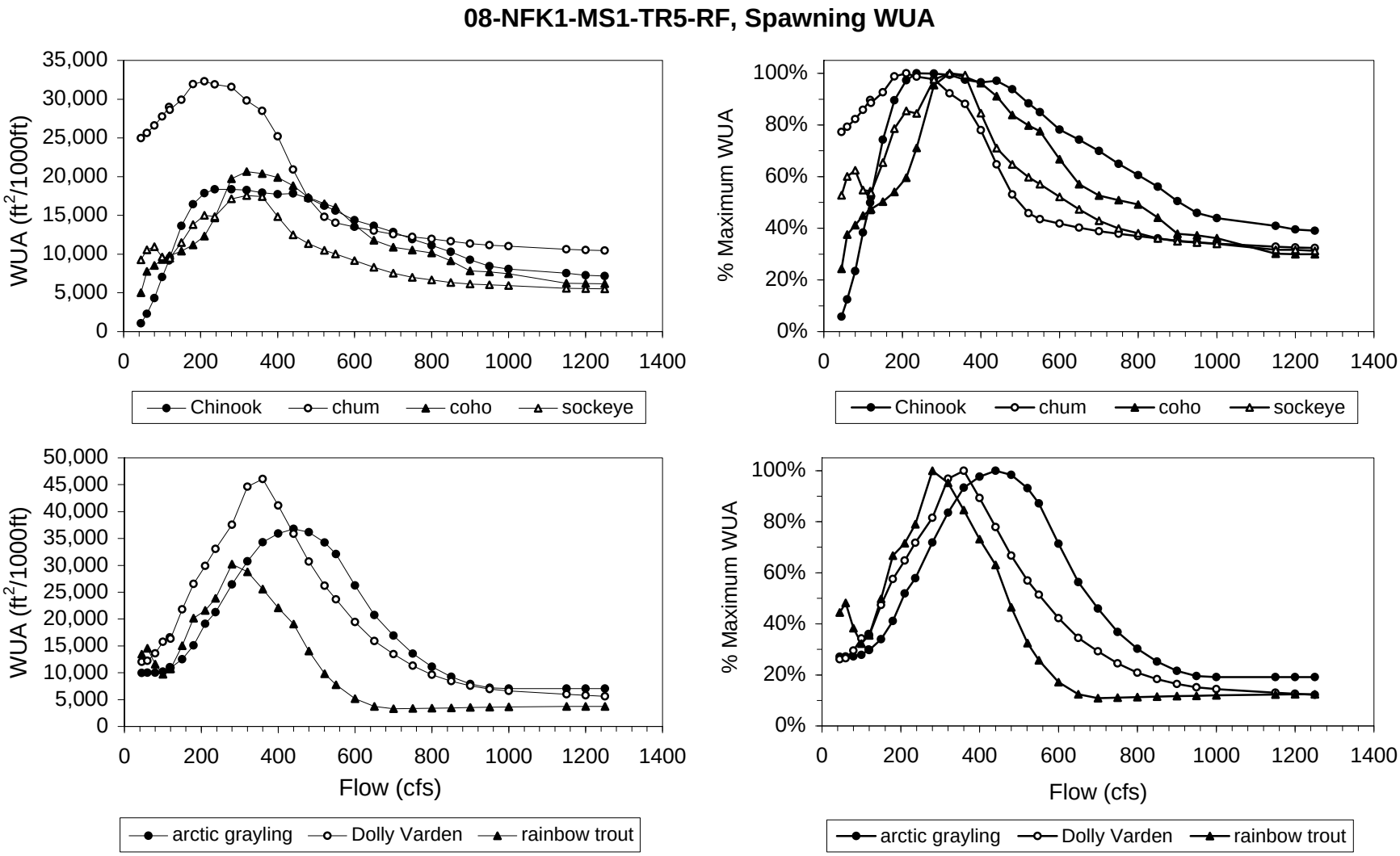

Figure 16
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR5 (River Kilometer 10.06) in NFK-A, North Fork Koktuli River, Alaska.

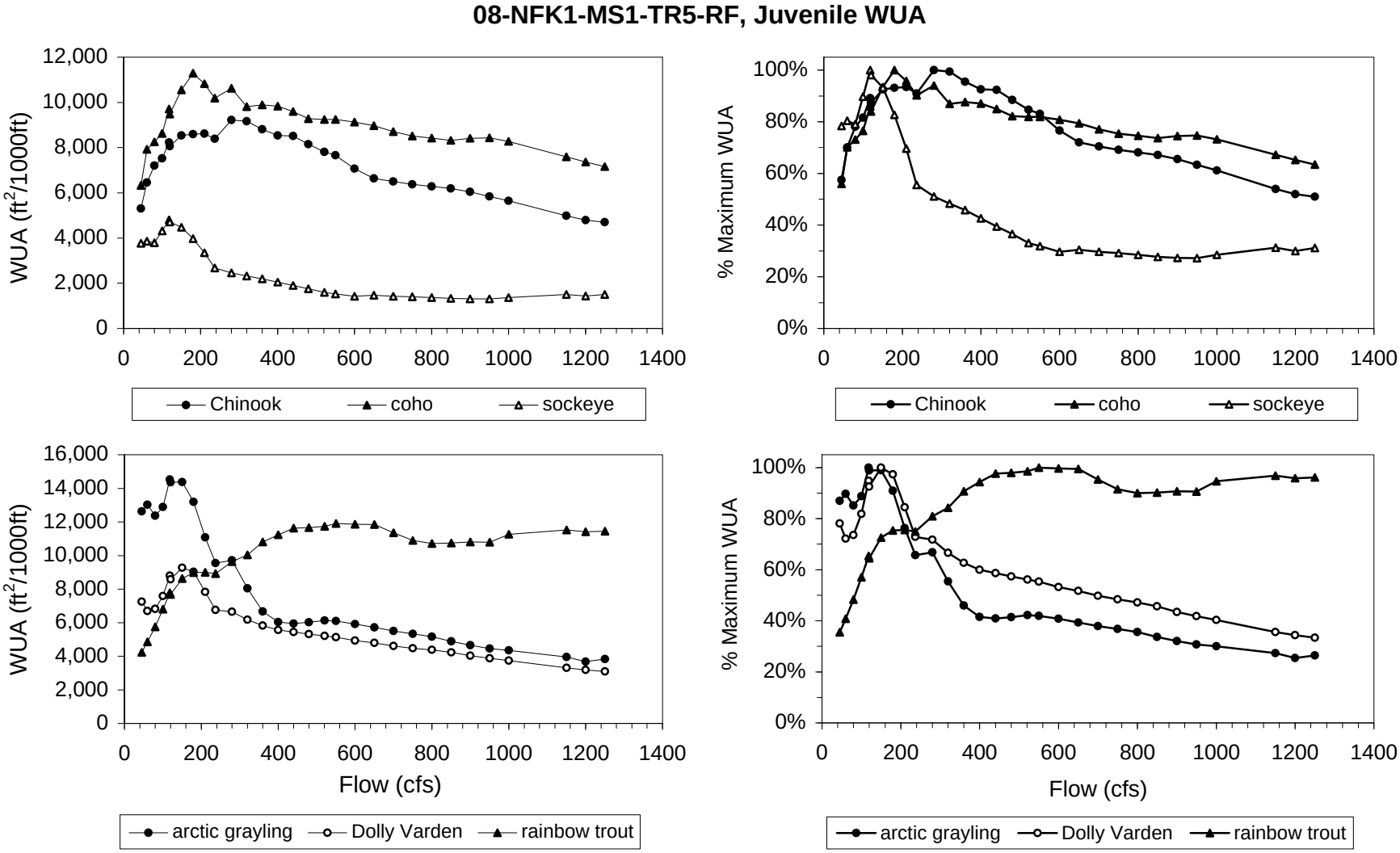

Figure 17
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR5 (River Kilometer 10.06) in NFK-A, North Fork Koktuli River, Alaska.

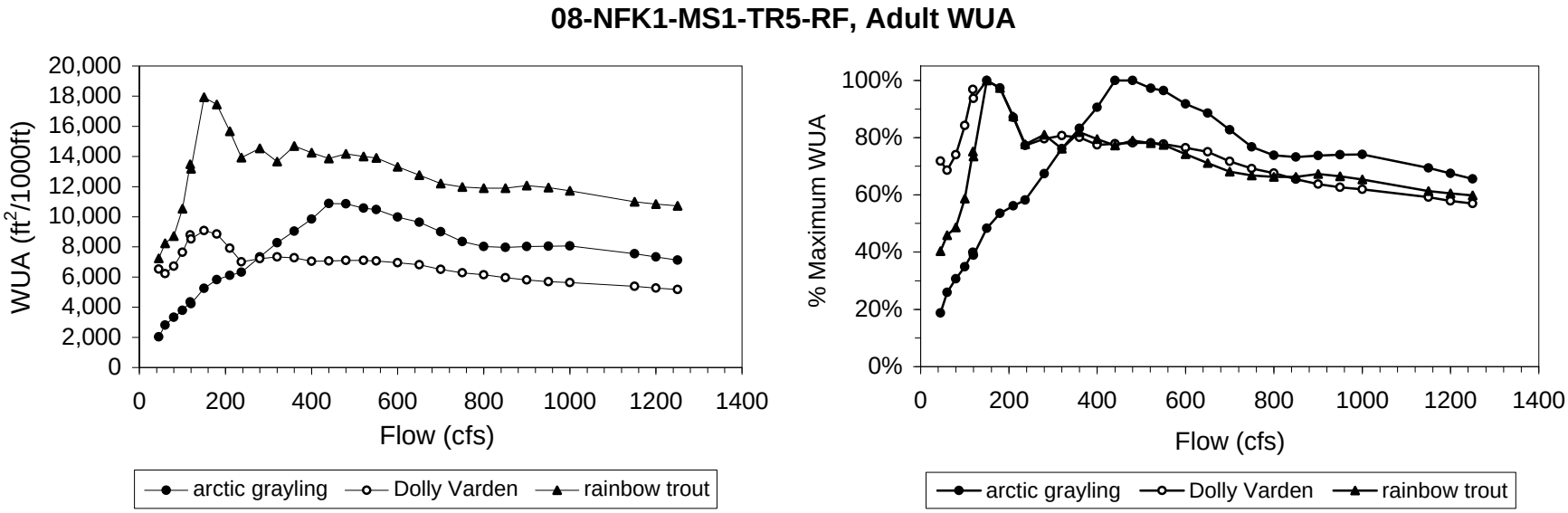

Figure 18
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR5 (River Kilometer 10.06) in NFK-A, North Fork Koktuli River, Alaska.

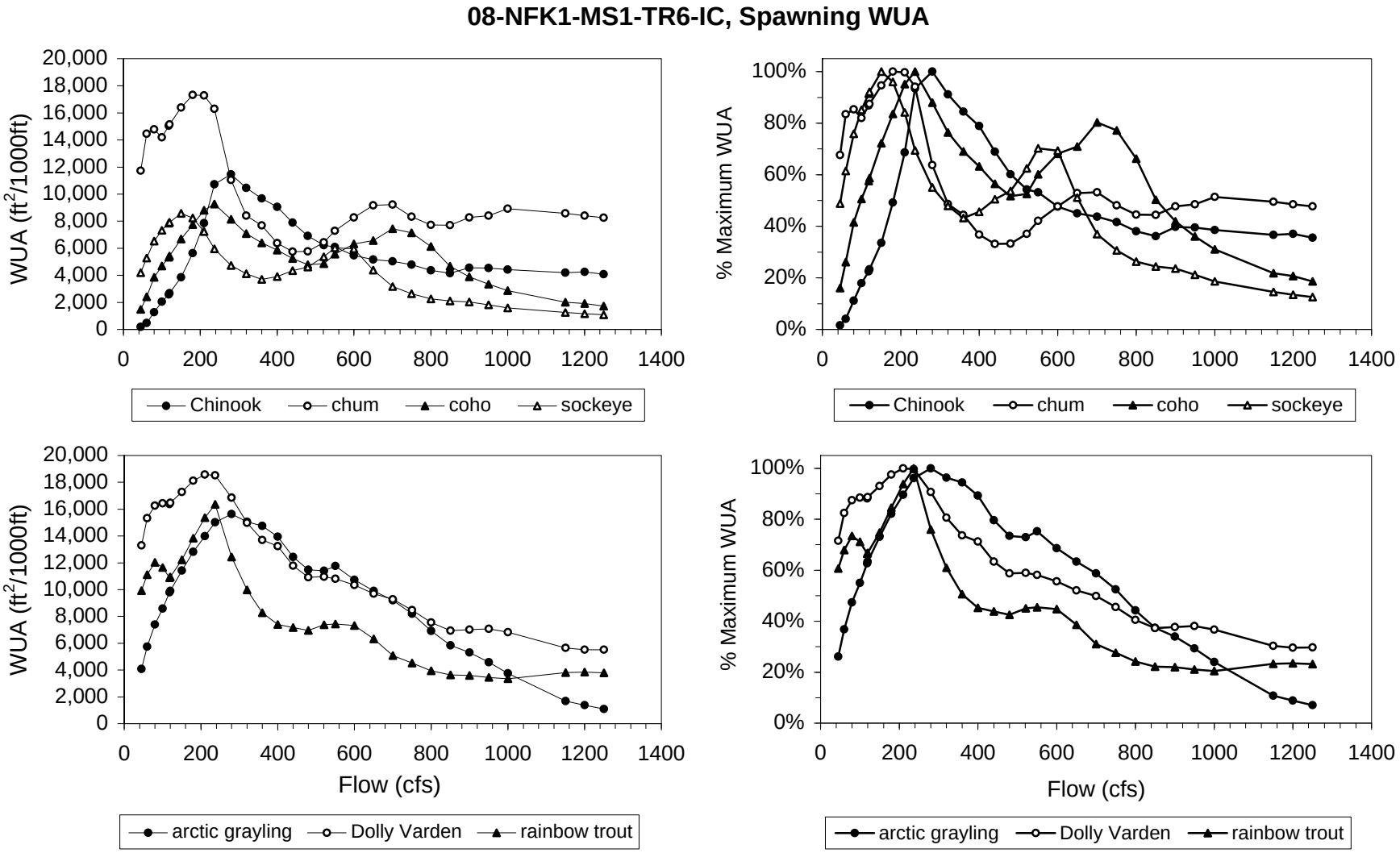

Figure 19
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR6 (River Kilometer 10.10) in NFK-A, North Fork Koktuli River, Alaska.

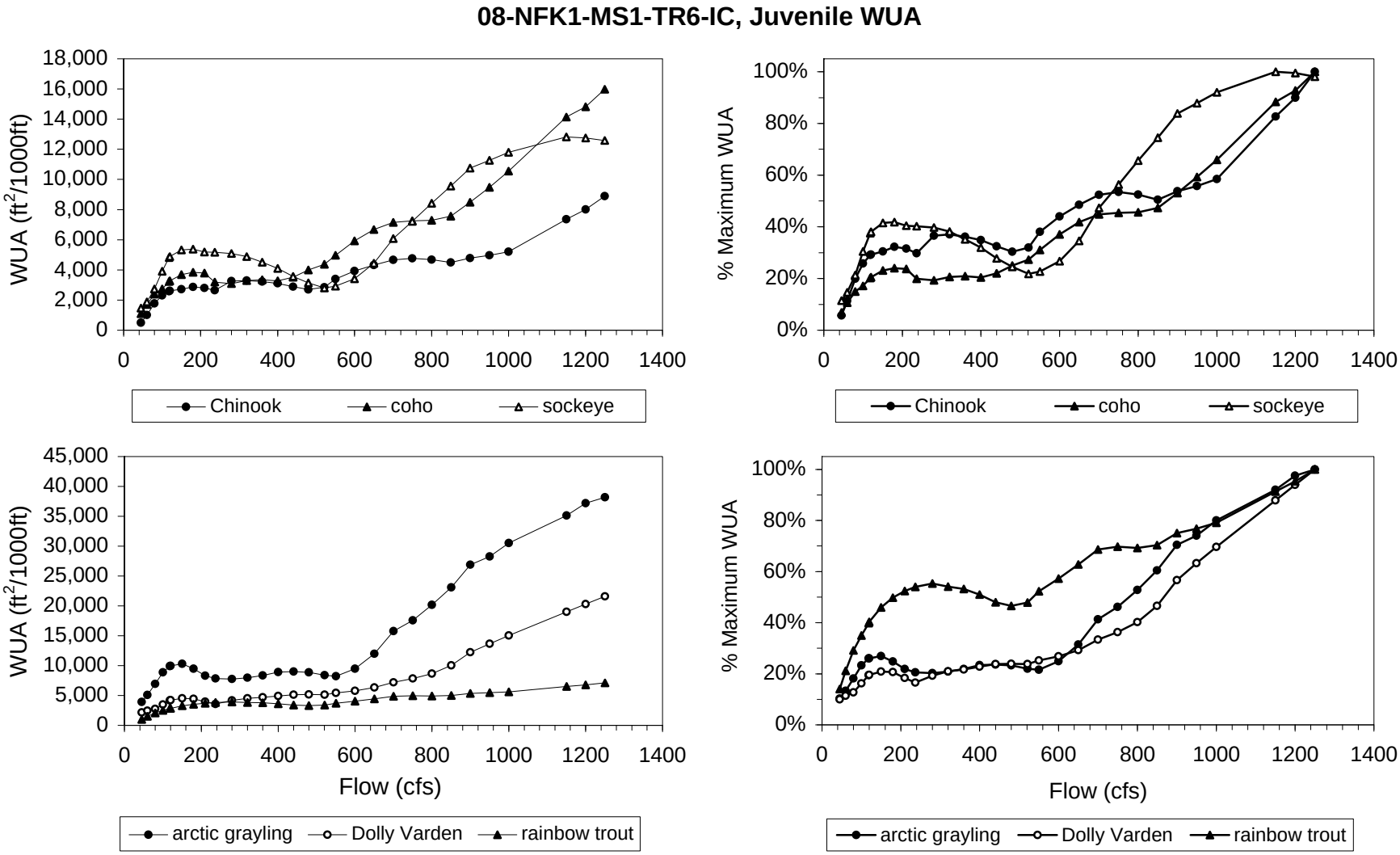

Figure 20
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS1-TR6 (River Kilometer 10.10) in NFK-A, North Fork Koktuli River, Alaska.

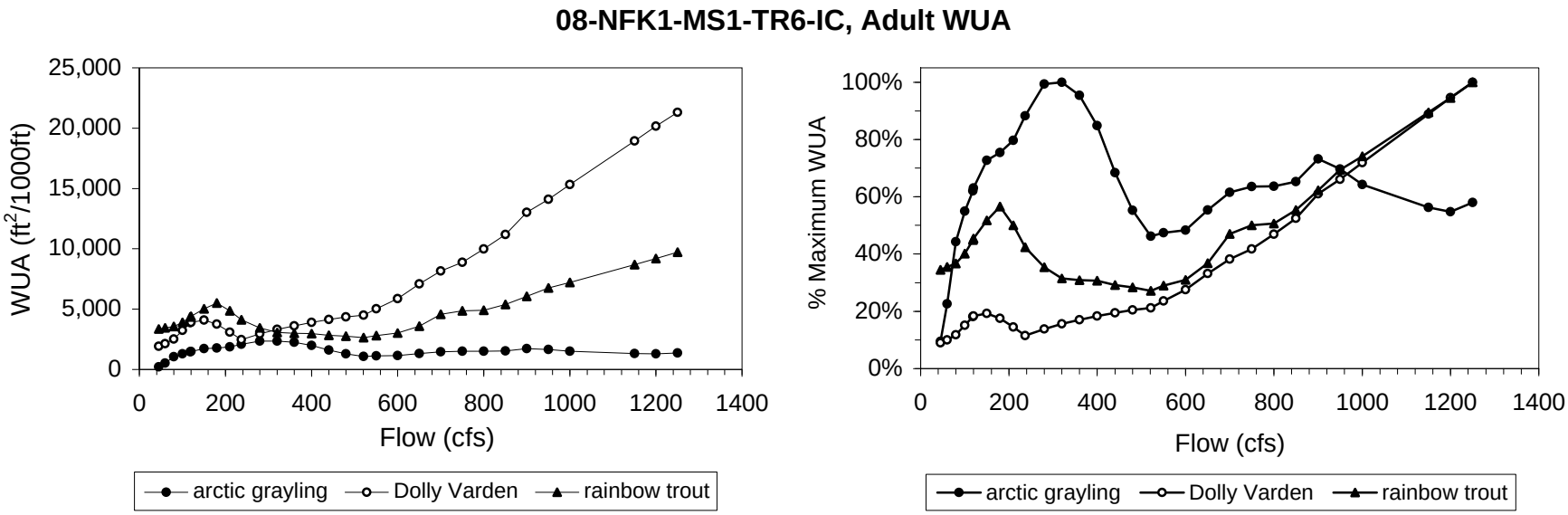

Figure 21
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS1-TR6 (River Kilometer 10.10) in NFK-A, North Fork Koktuli River, Alaska.

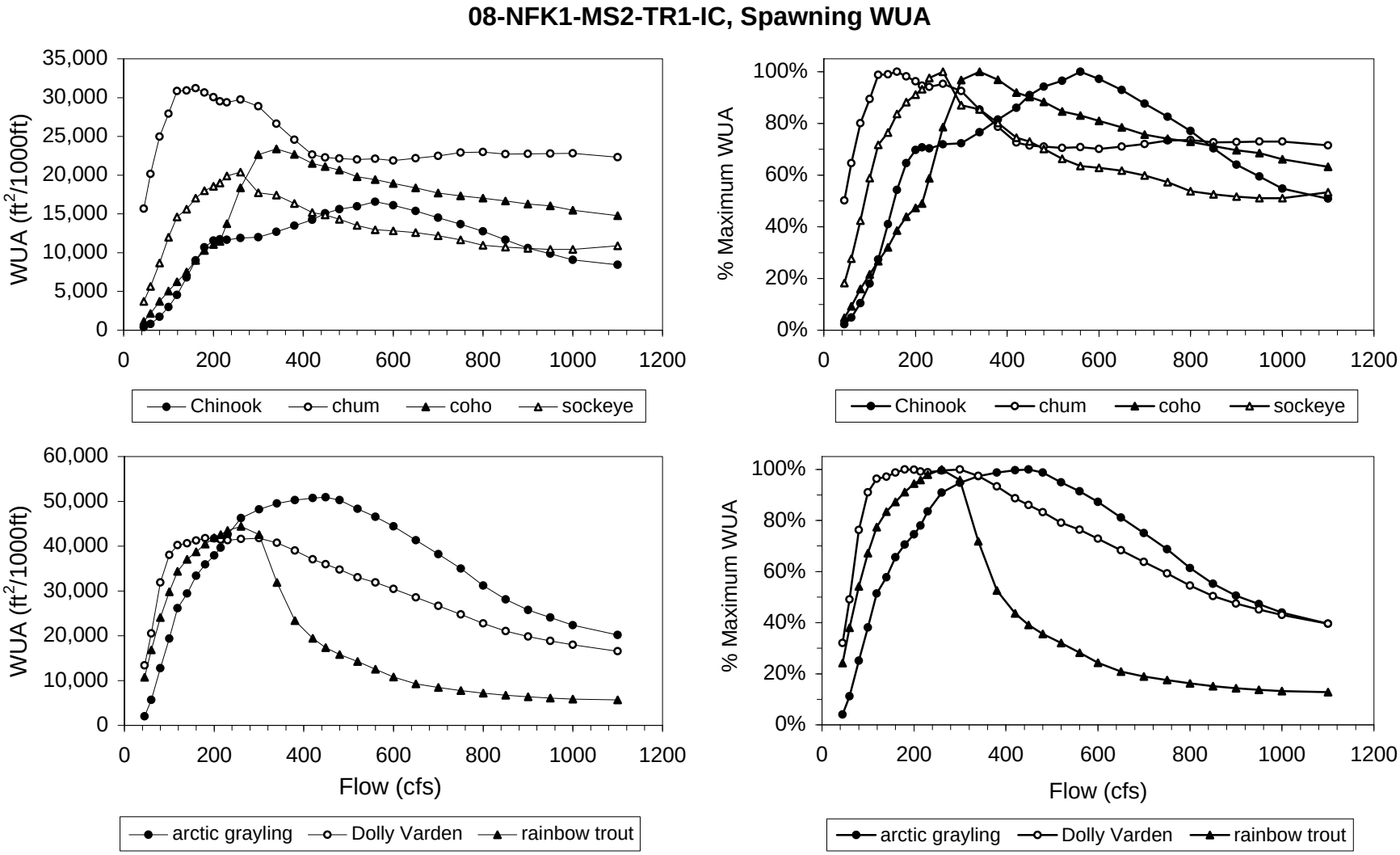

Figure 22
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR1 (River Kilometer 12.87) in NFK-A, North Fork Koktuli River, Alaska.

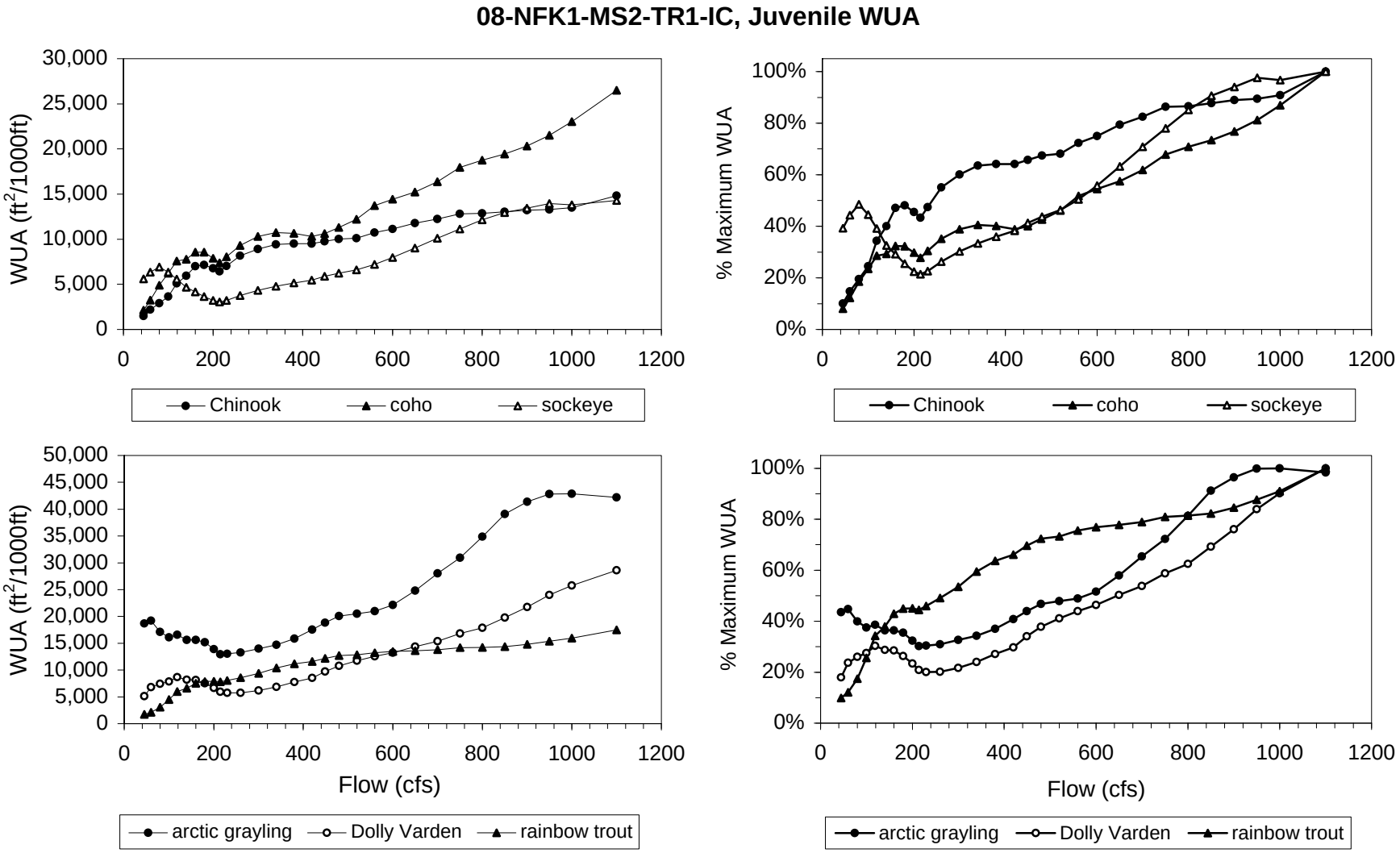

Figure 23
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR1 (River Kilometer 12.87) in NFK-A, North Fork Koktuli River, Alaska.

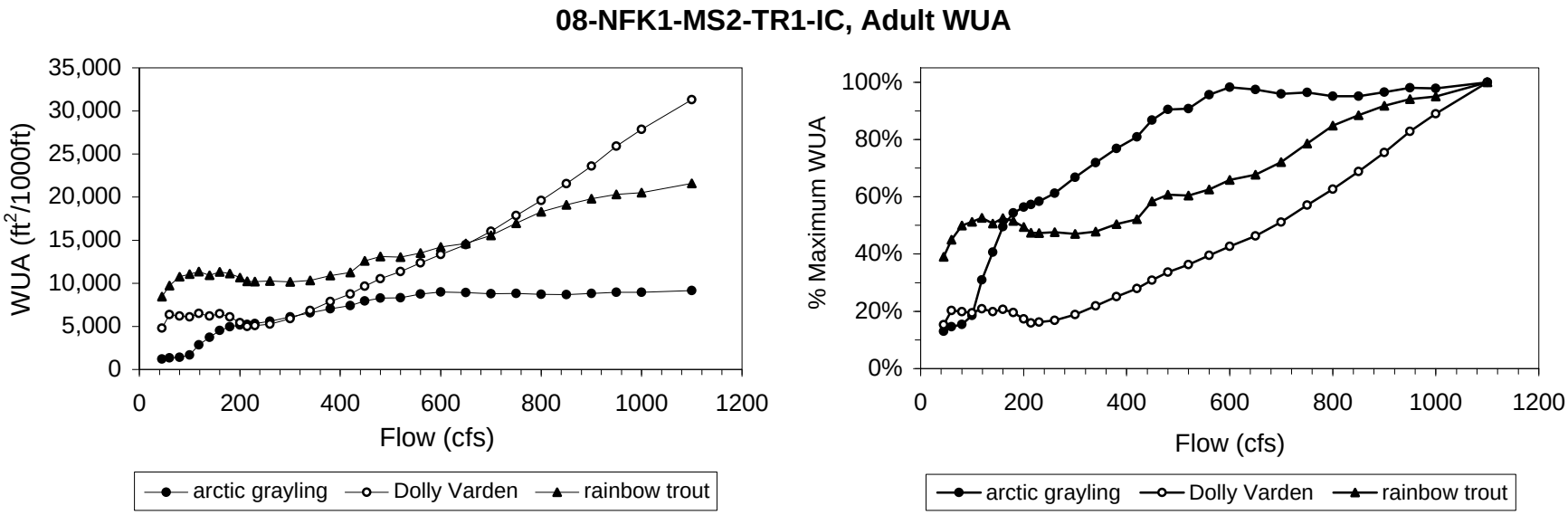

Figure 24
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR1 (River Kilometer 12.87) in NFK-A, North Fork Koktuli River, Alaska.

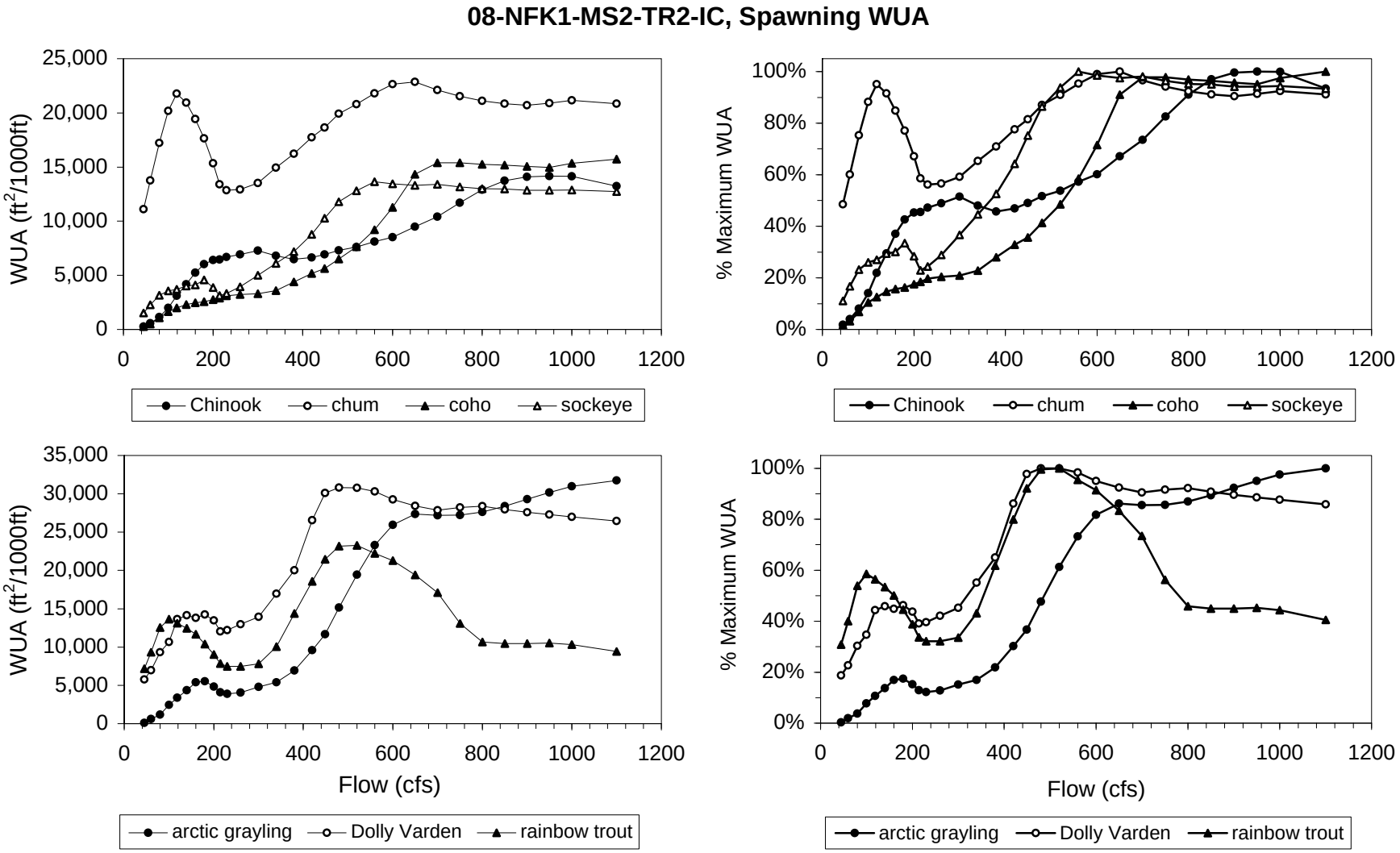

Figure 25
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR2 (River Kilometer 12.89) in NFK-A, North Fork Koktuli River, Alaska.

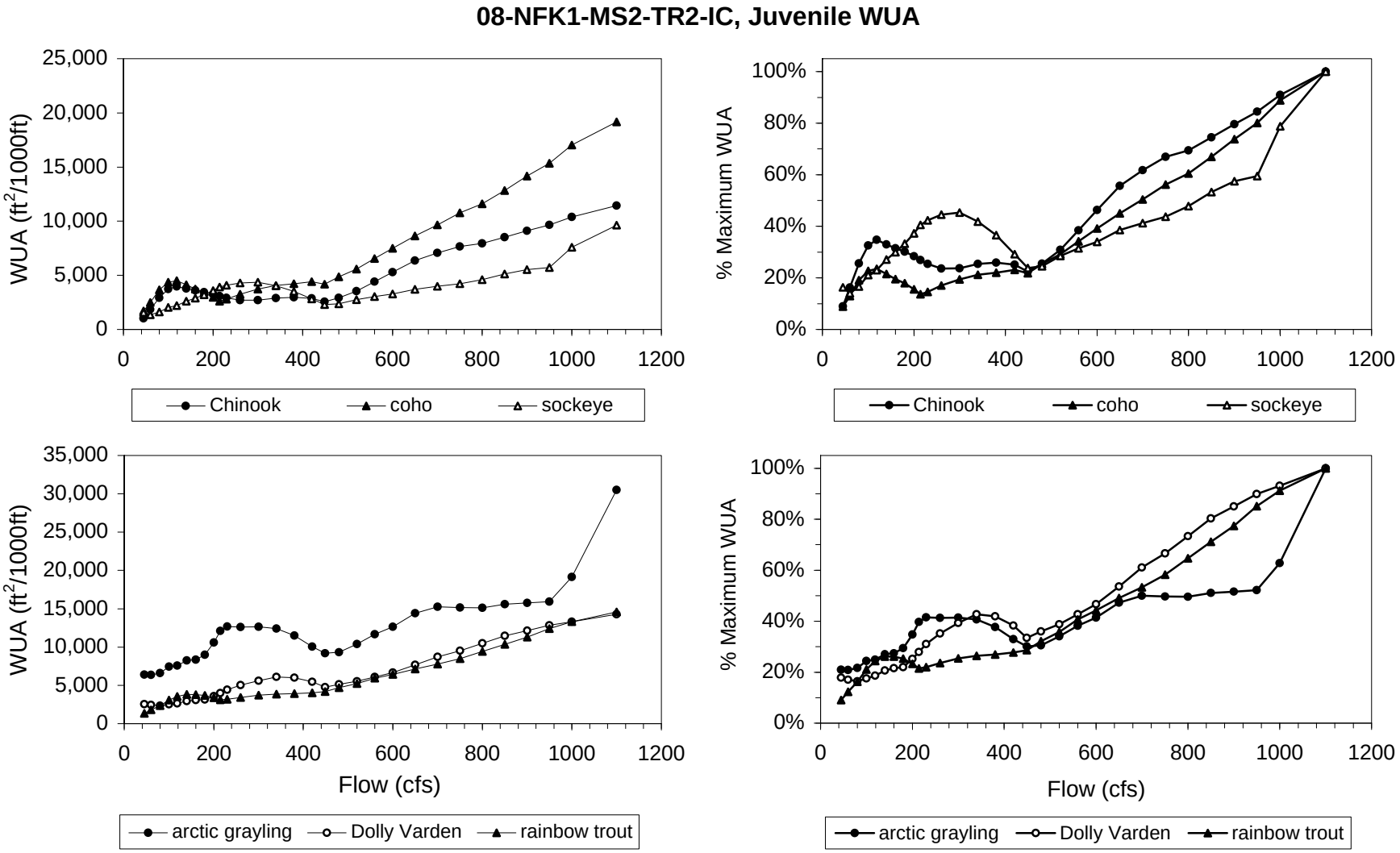

Figure 26
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR2 (River Kilometer 12.89) in NFK-A, North Fork Koktuli River, Alaska.

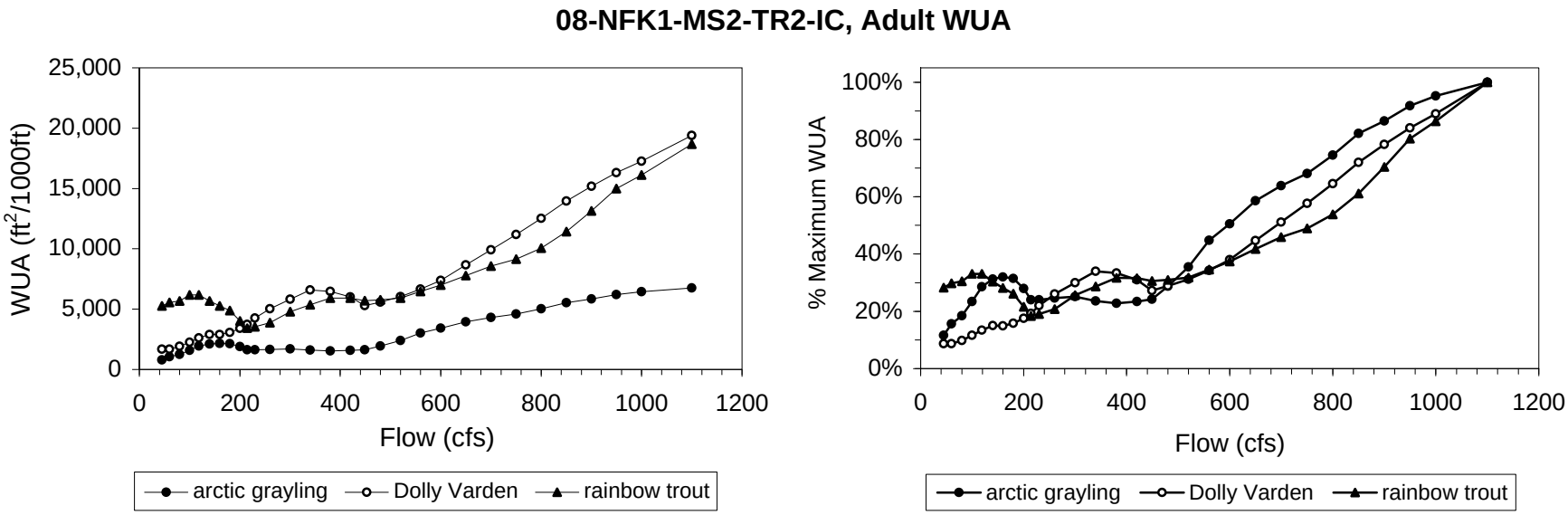

Figure 27
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR2 (River Kilometer 12.89) in NFK-A, North Fork Koktuli River, Alaska.

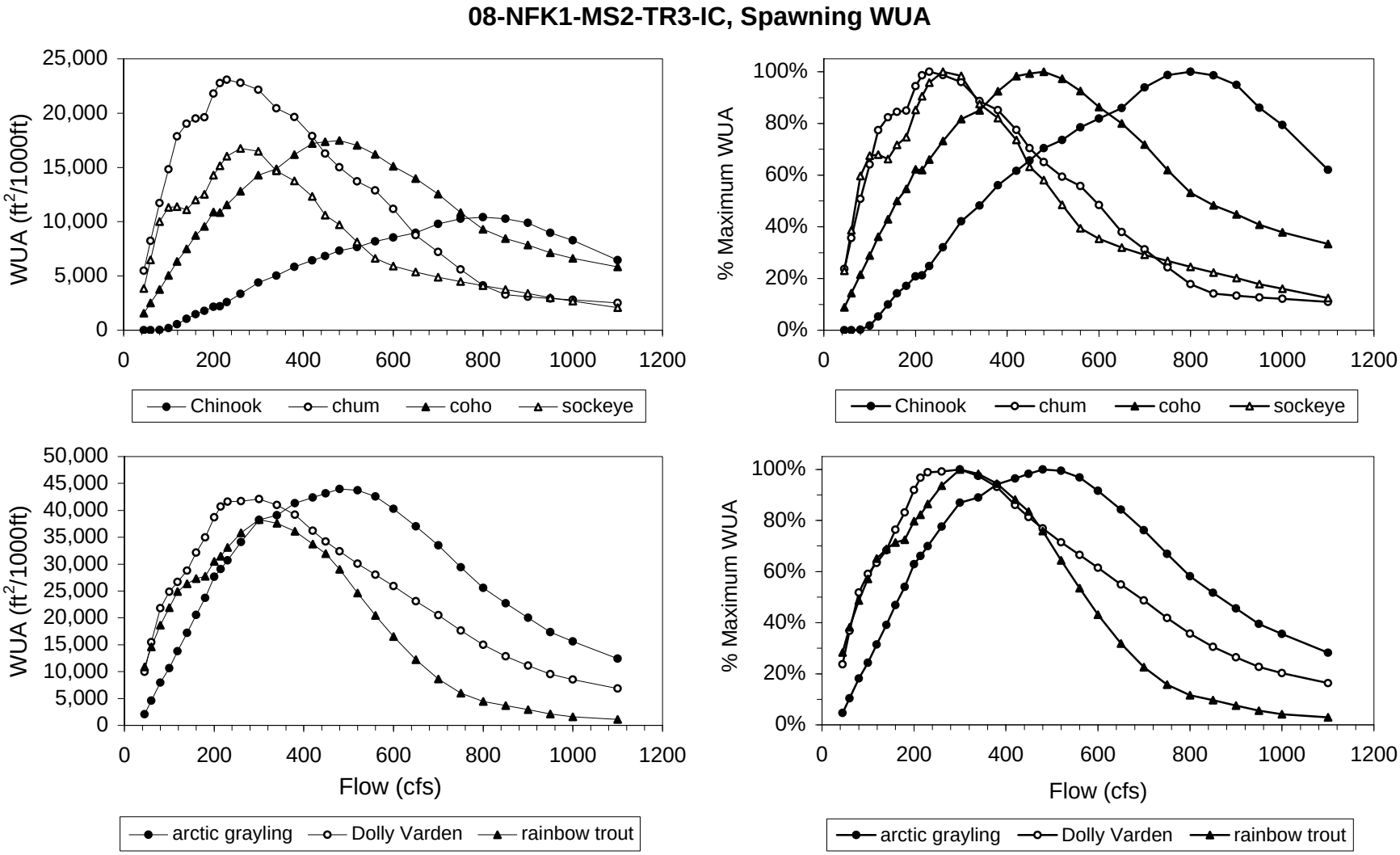

Figure 28
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR3 (River Kilometer 12.96) in NFK-A, North Fork Koktuli River, Alaska.

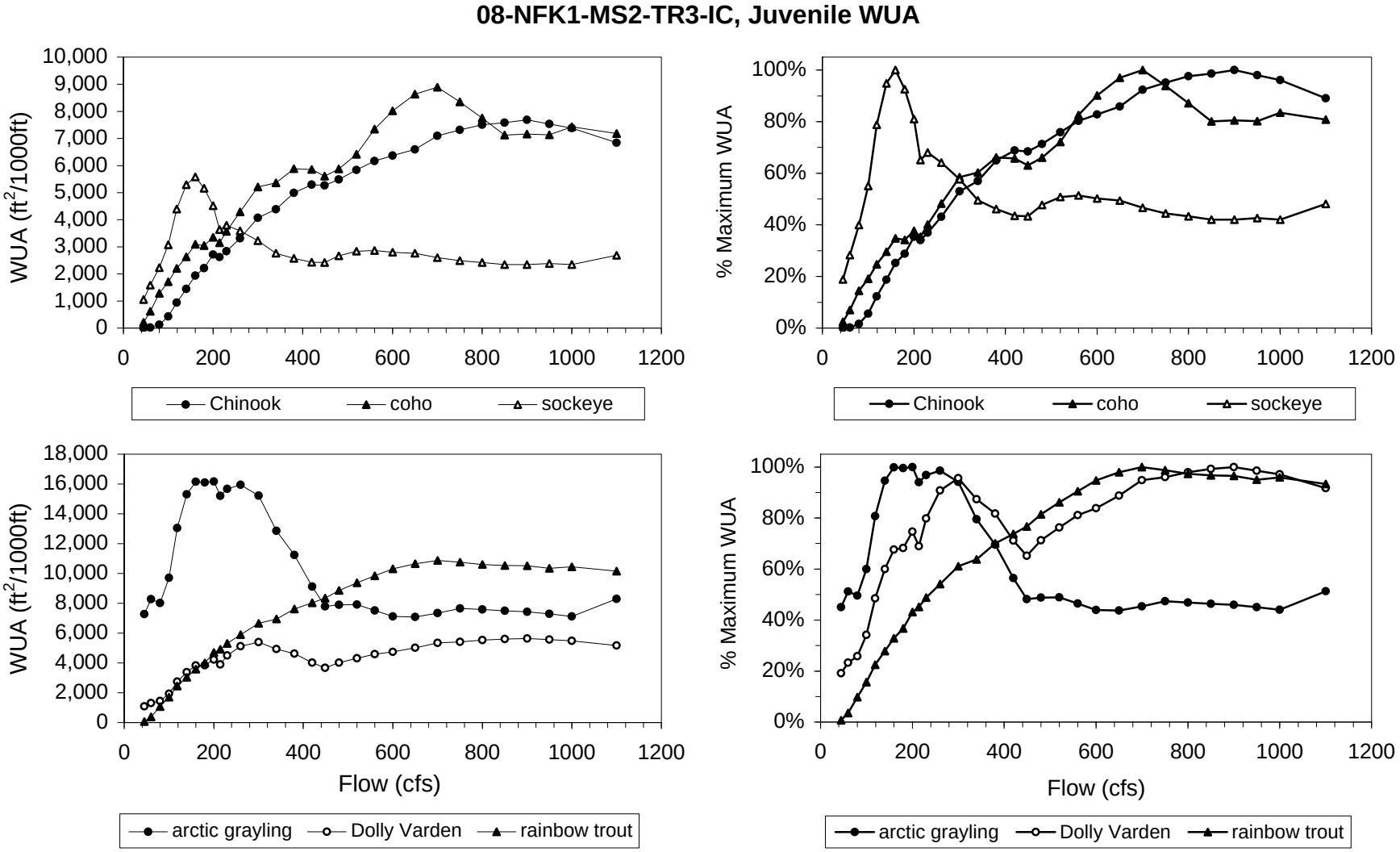

Figure 29
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR3 (River Kilometer 12.96) in NFK-A, North Fork Koktuli River, Alaska.

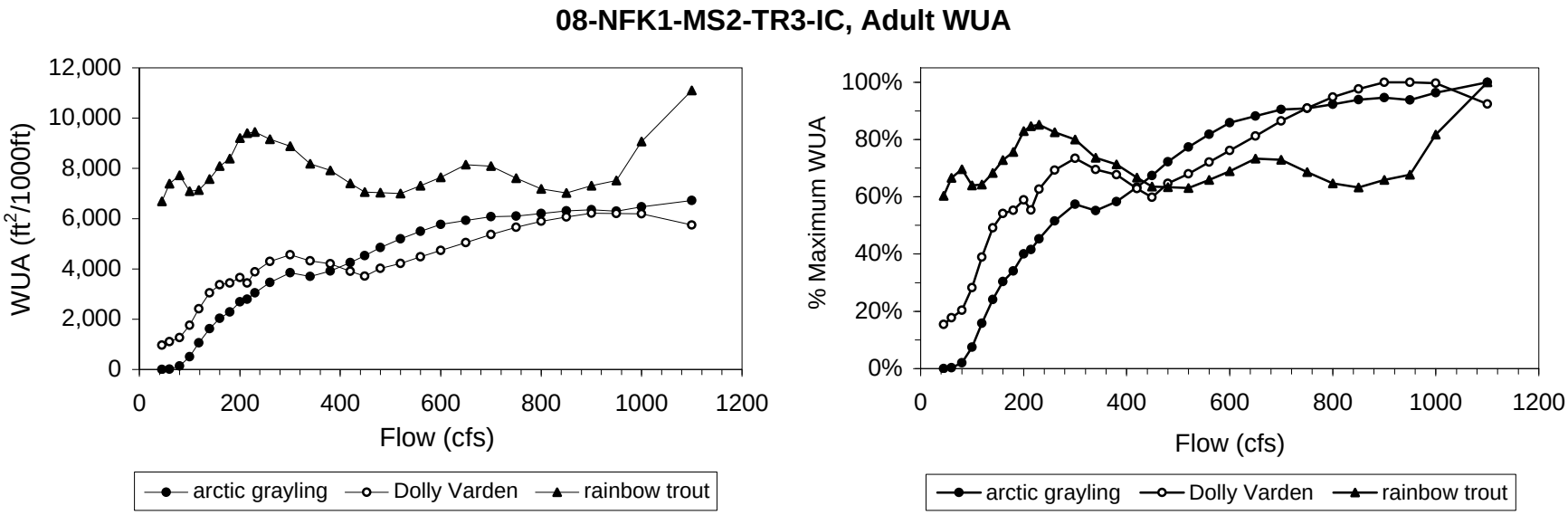

Figure 30
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR3 (River Kilometer 12.96) in NFK-A, North Fork Koktuli River, Alaska.

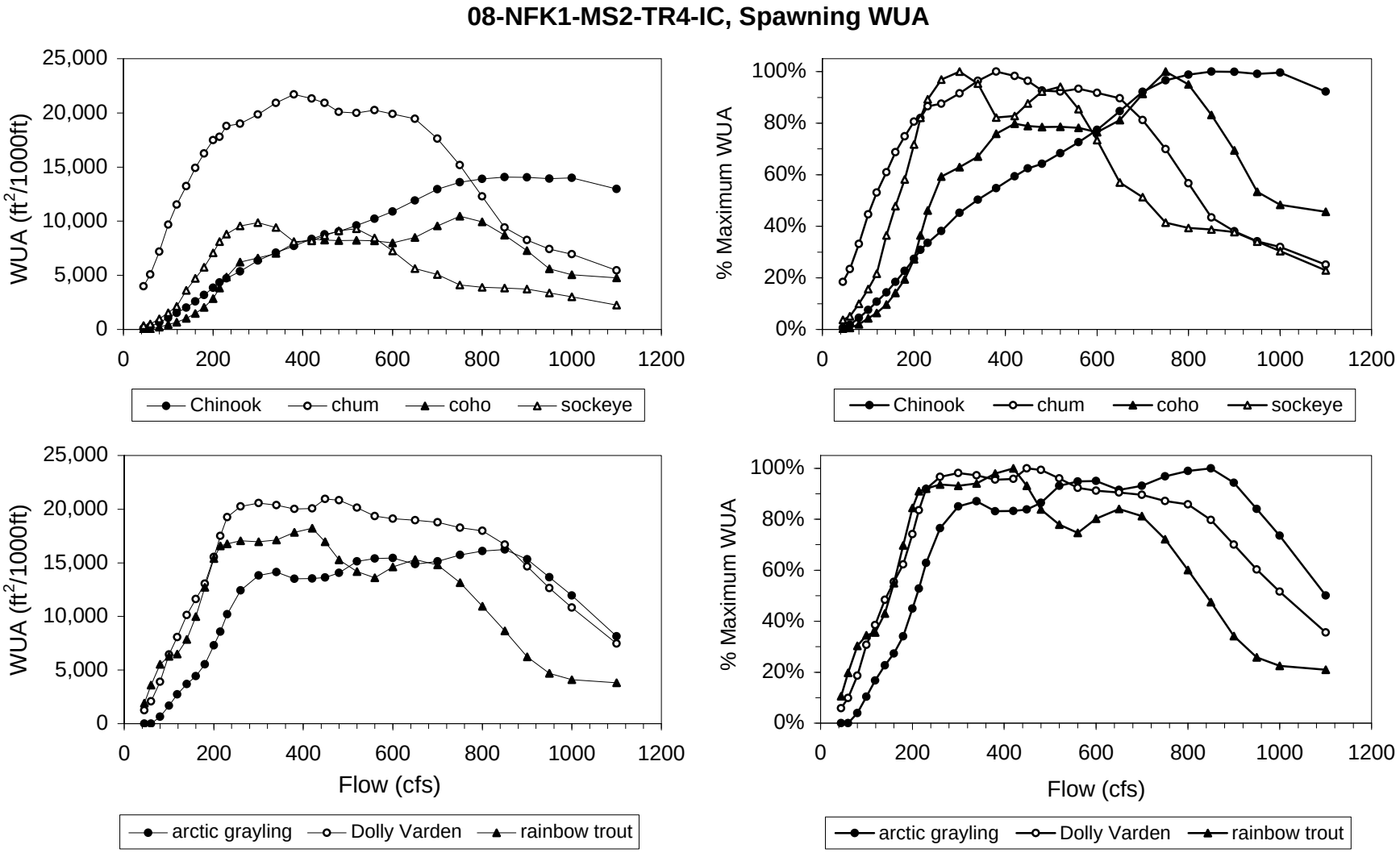

Figure 31
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR4 (River Kilometer 13.06) in NFK-A, North Fork Koktuli River, Alaska.

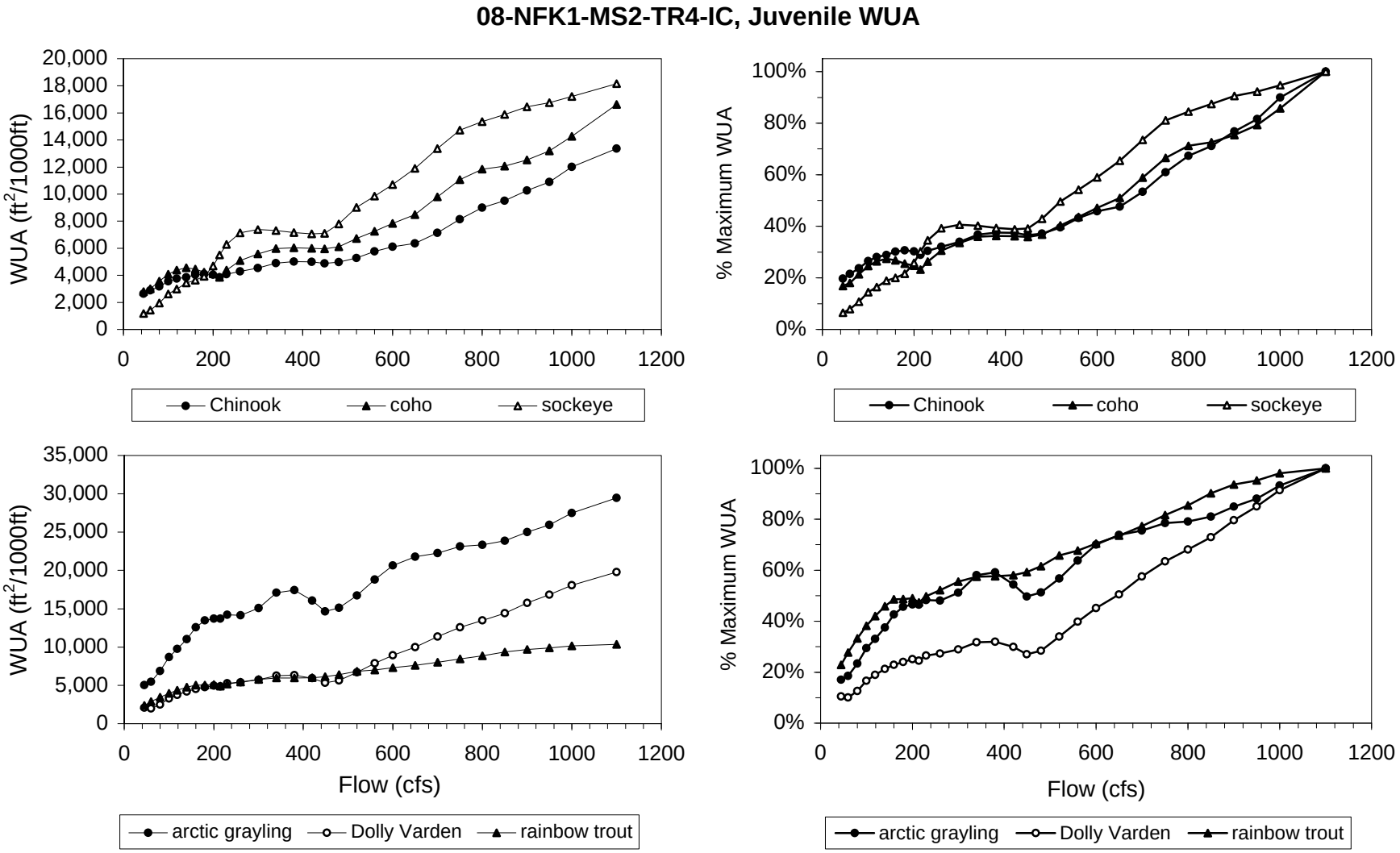

Figure 32
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR4 (River Kilometer 13.06) in NFK-A, North Fork Koktuli River, Alaska.

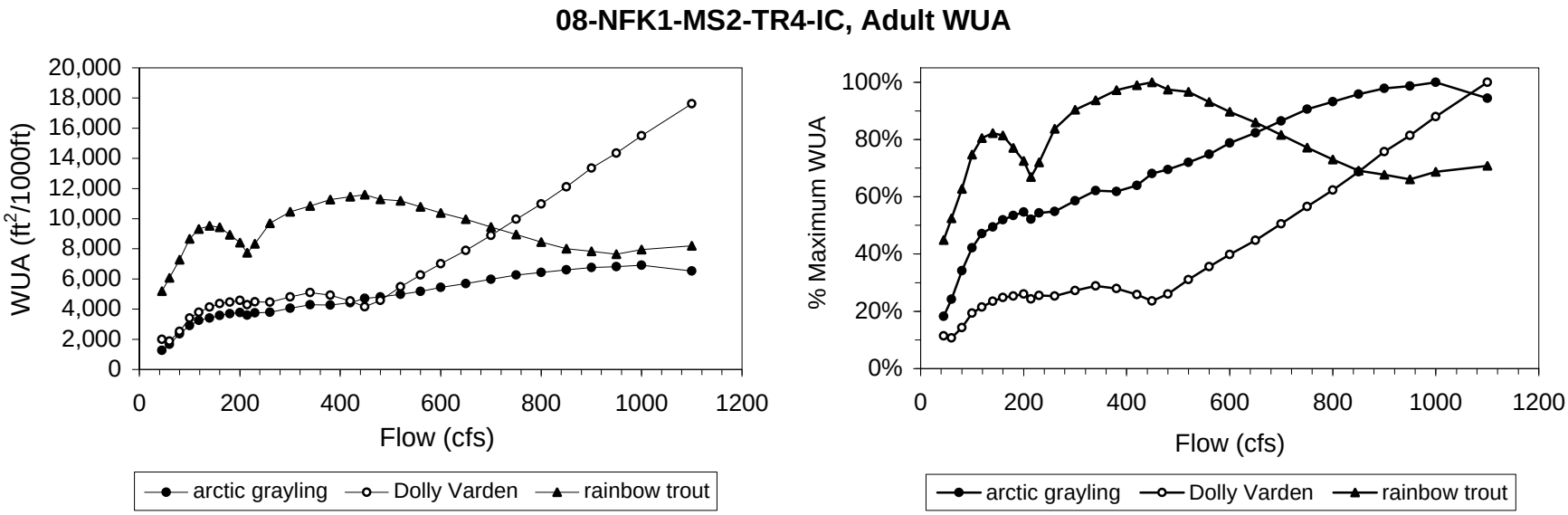

Figure 33
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR4 (River Kilometer 13.06) in NFK-A, North Fork Koktuli River, Alaska.

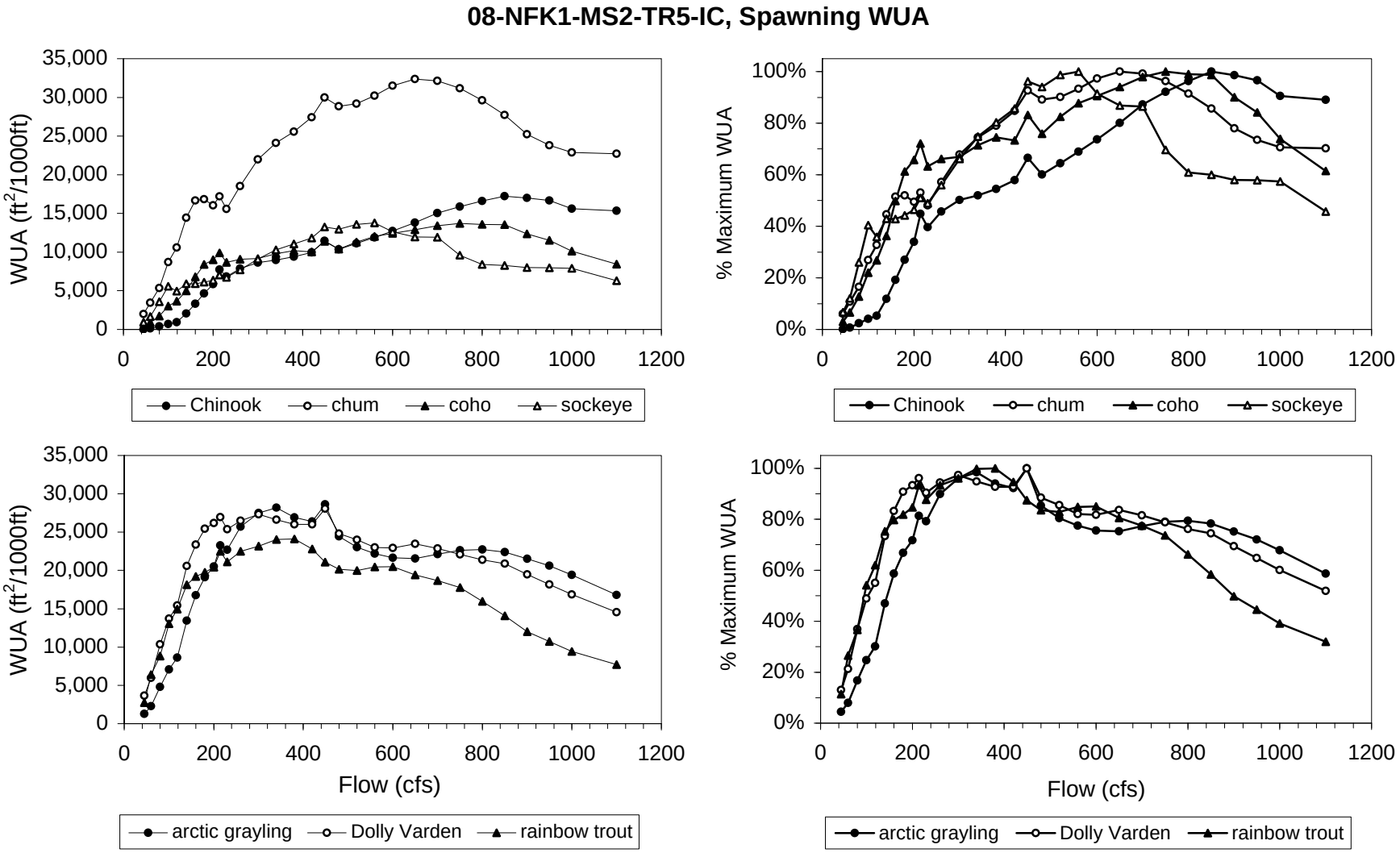

Figure 34
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR5 (River Kilometer 13.08) in NFK-A, North Fork Koktuli River, Alaska.

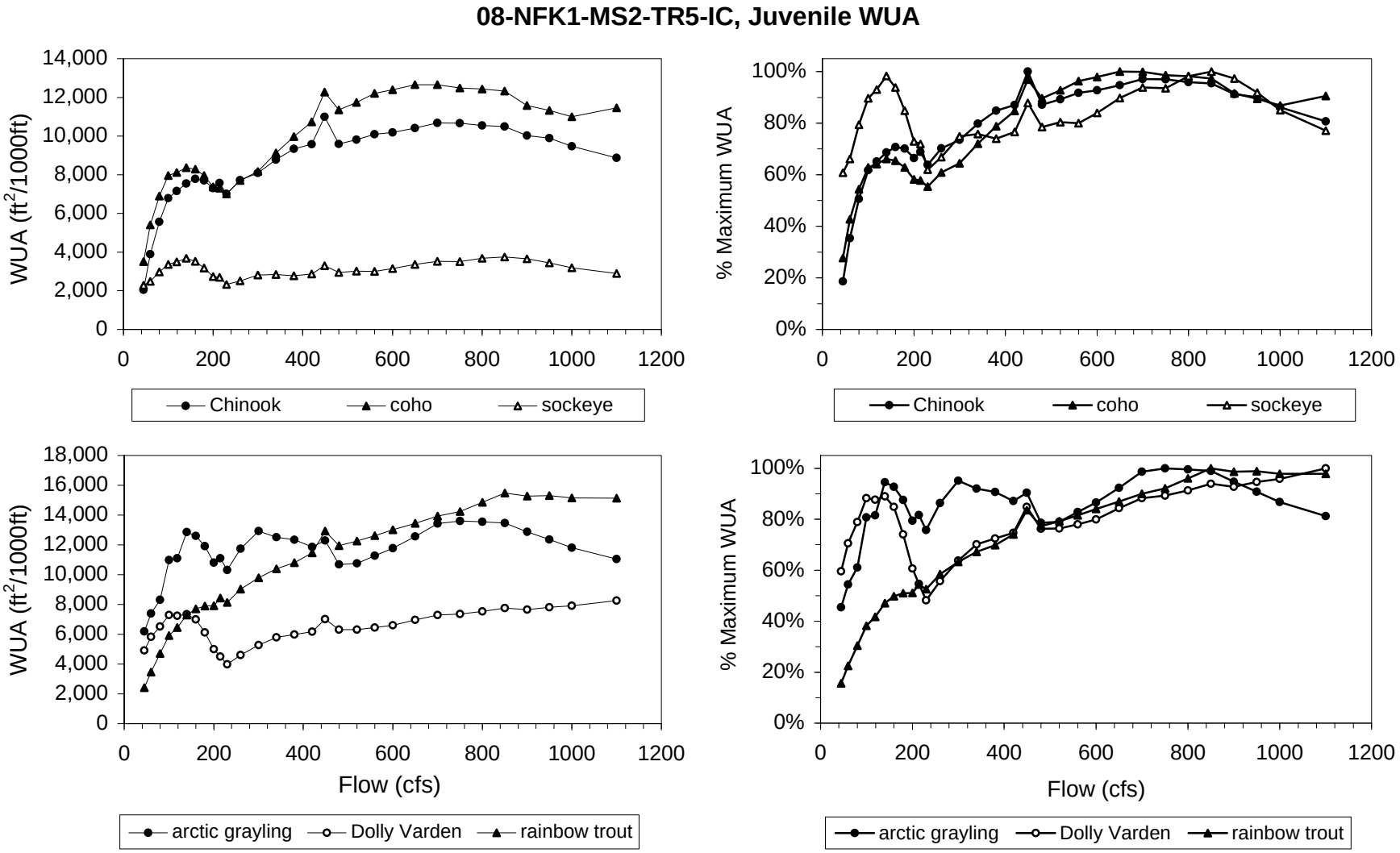

Figure 35
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK1-MS2-TR5 (River Kilometer 13.08) in NFK-A, North Fork Koktuli River, Alaska.

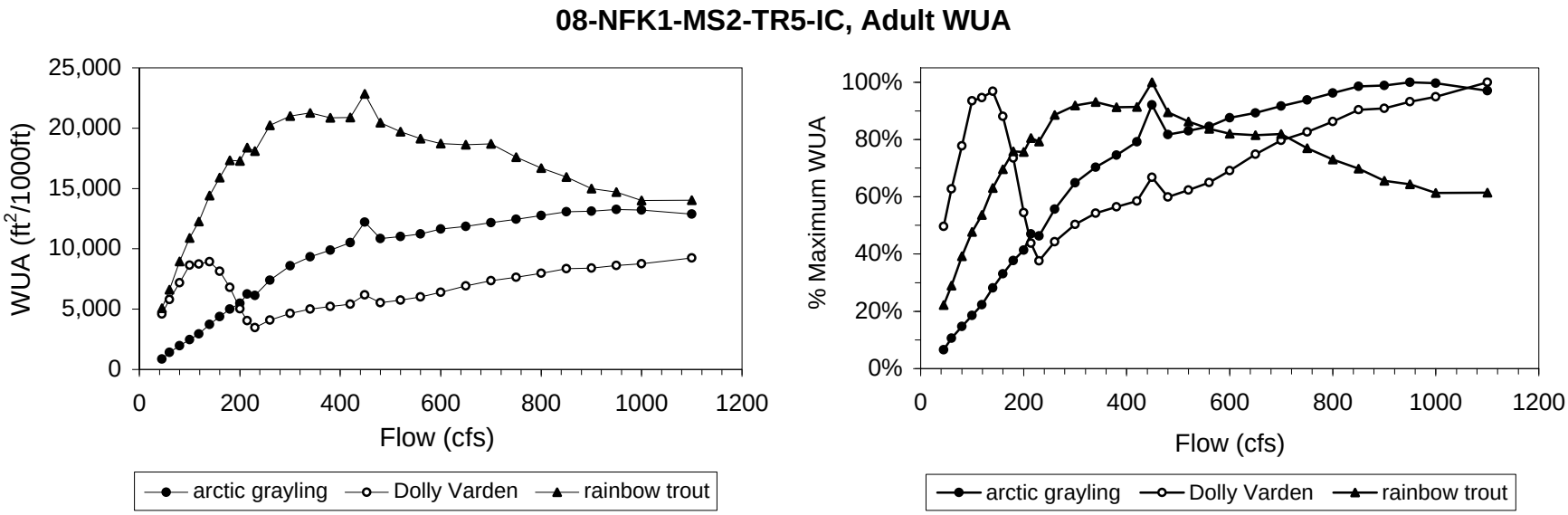

Figure 36
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK1-MS2-TR5 (River Kilometer 13.08) in NFK-A, North Fork Koktuli River, Alaska.

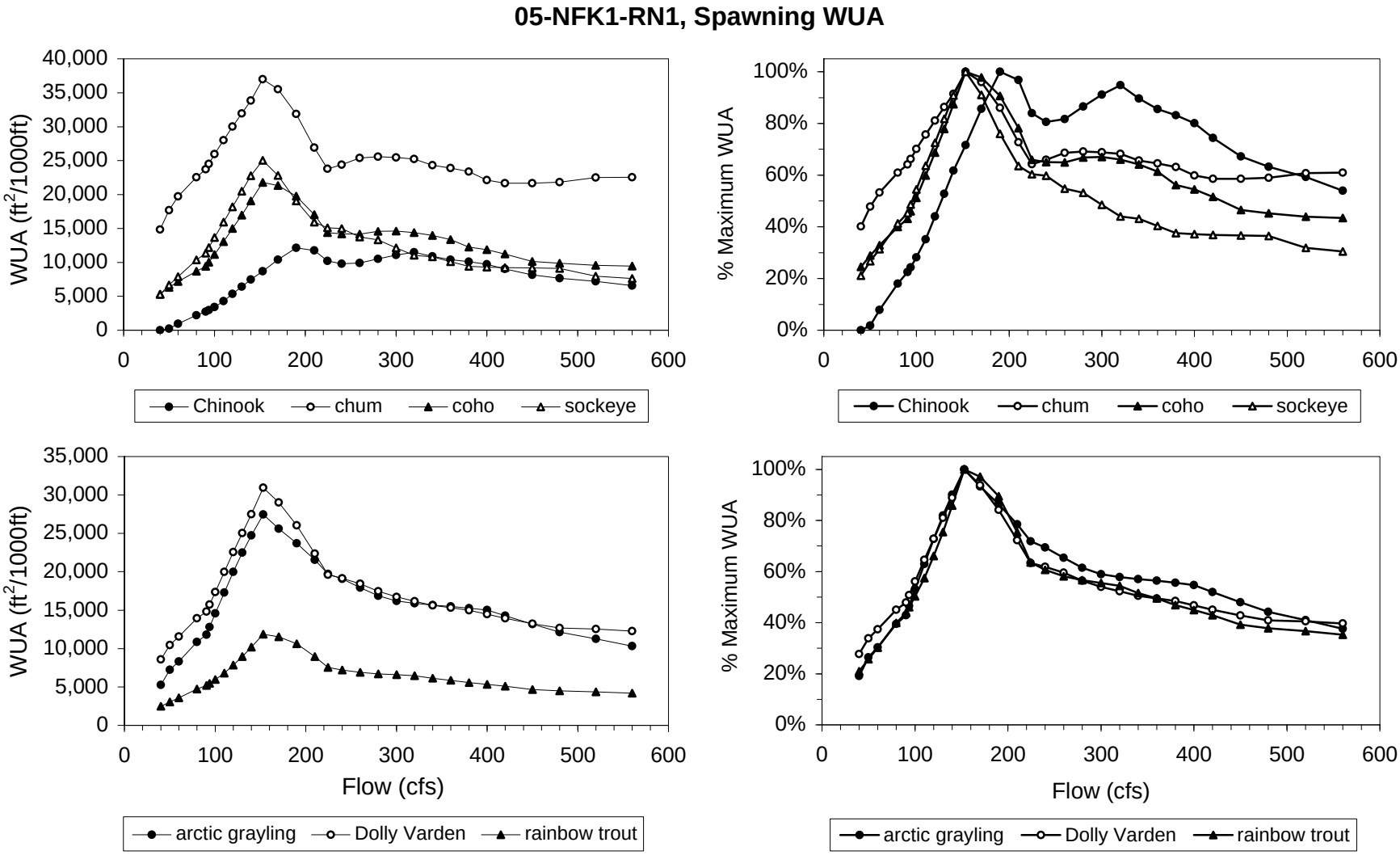

Figure 37
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RN1 (River Kilometer 13.23) in NFK-A, North Fork Koktuli River, Alaska.

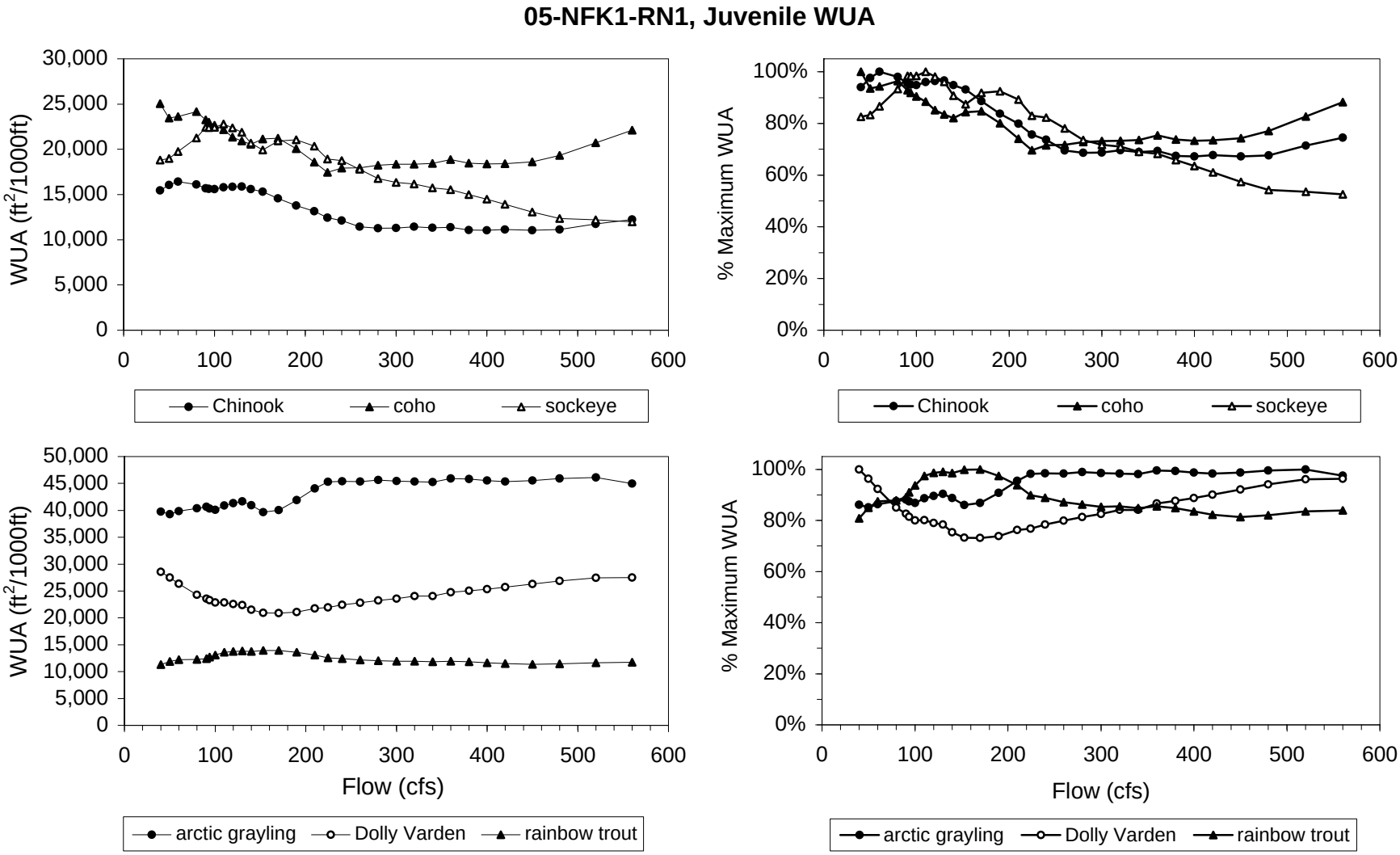

Figure 38
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RN1 (River Kilometer 13.23) in NFK-A, North Fork Koktuli River, Alaska.

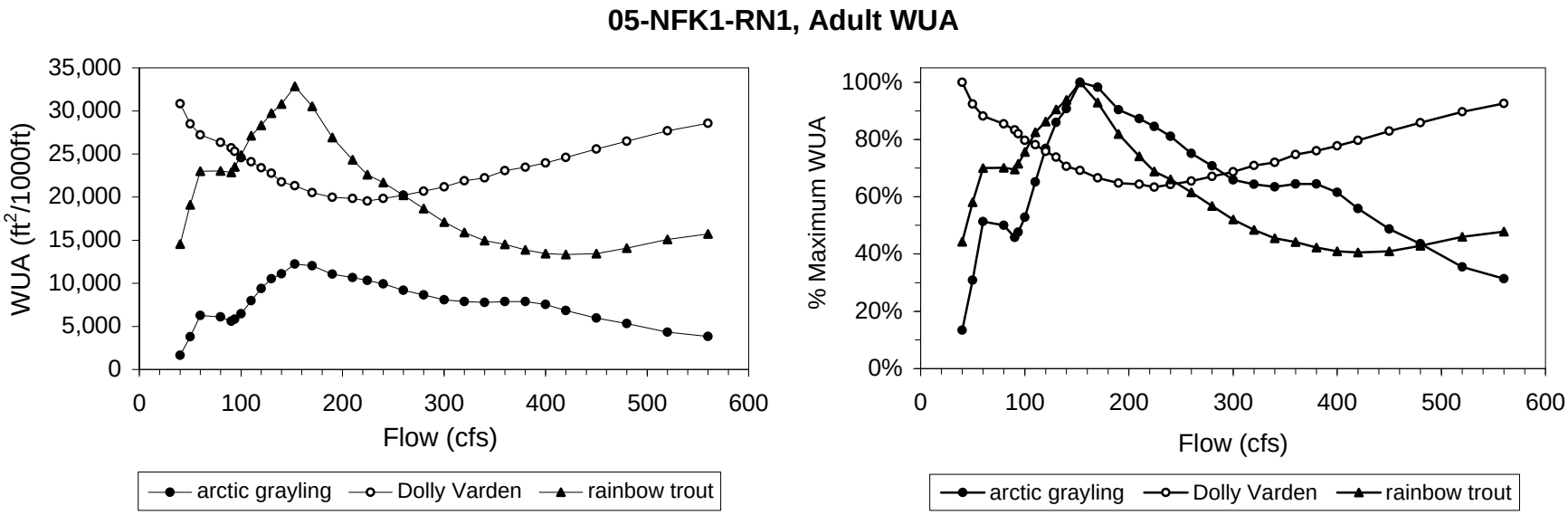

Figure 39
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-RN1 (River Kilometer 13.23) in NFK-A, North Fork Koktuli River, Alaska.

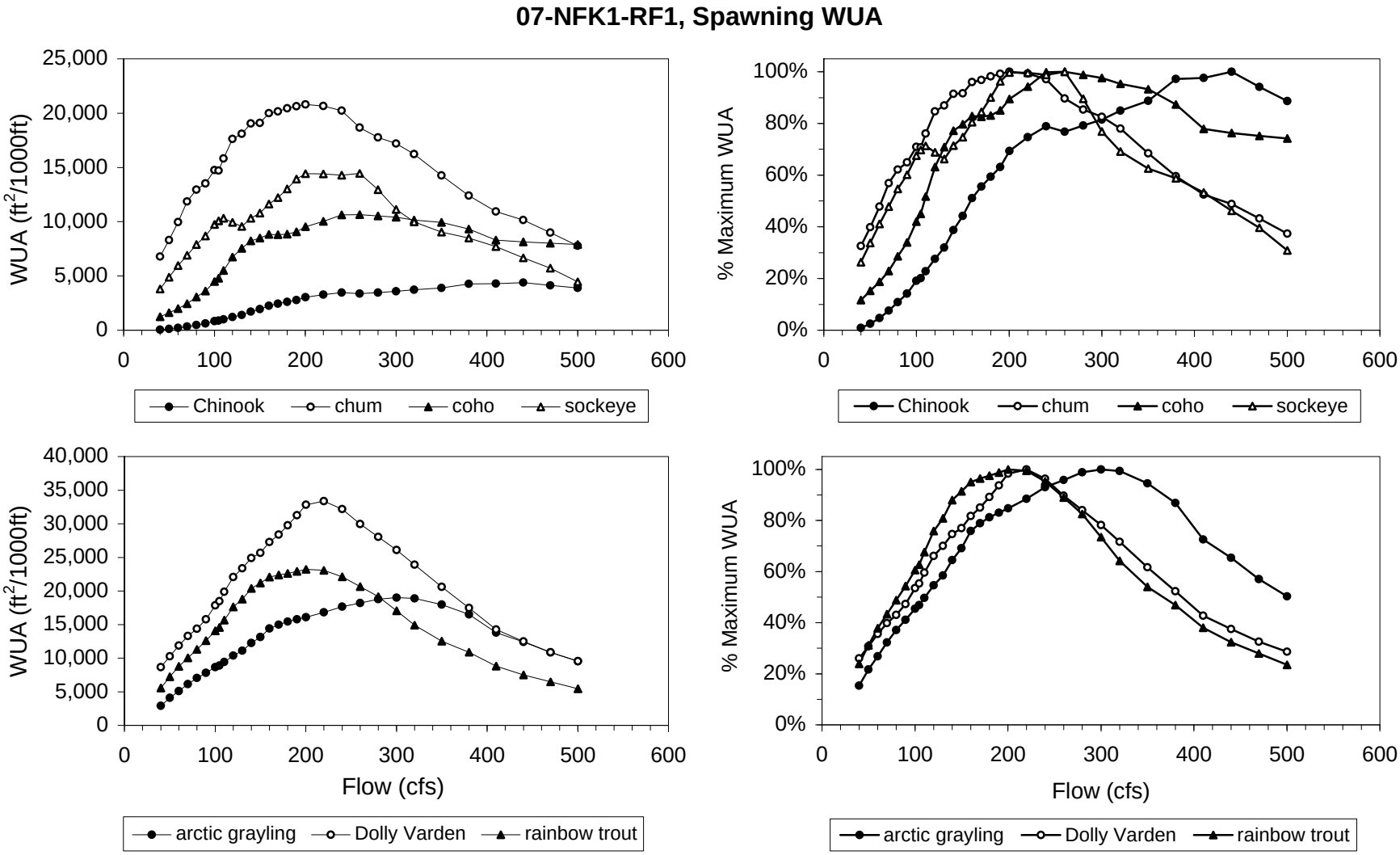

Figure 40
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-NFK1-RF1 (River Kilometer 14.29) in NFK-B, North Fork Koktuli River, Alaska.

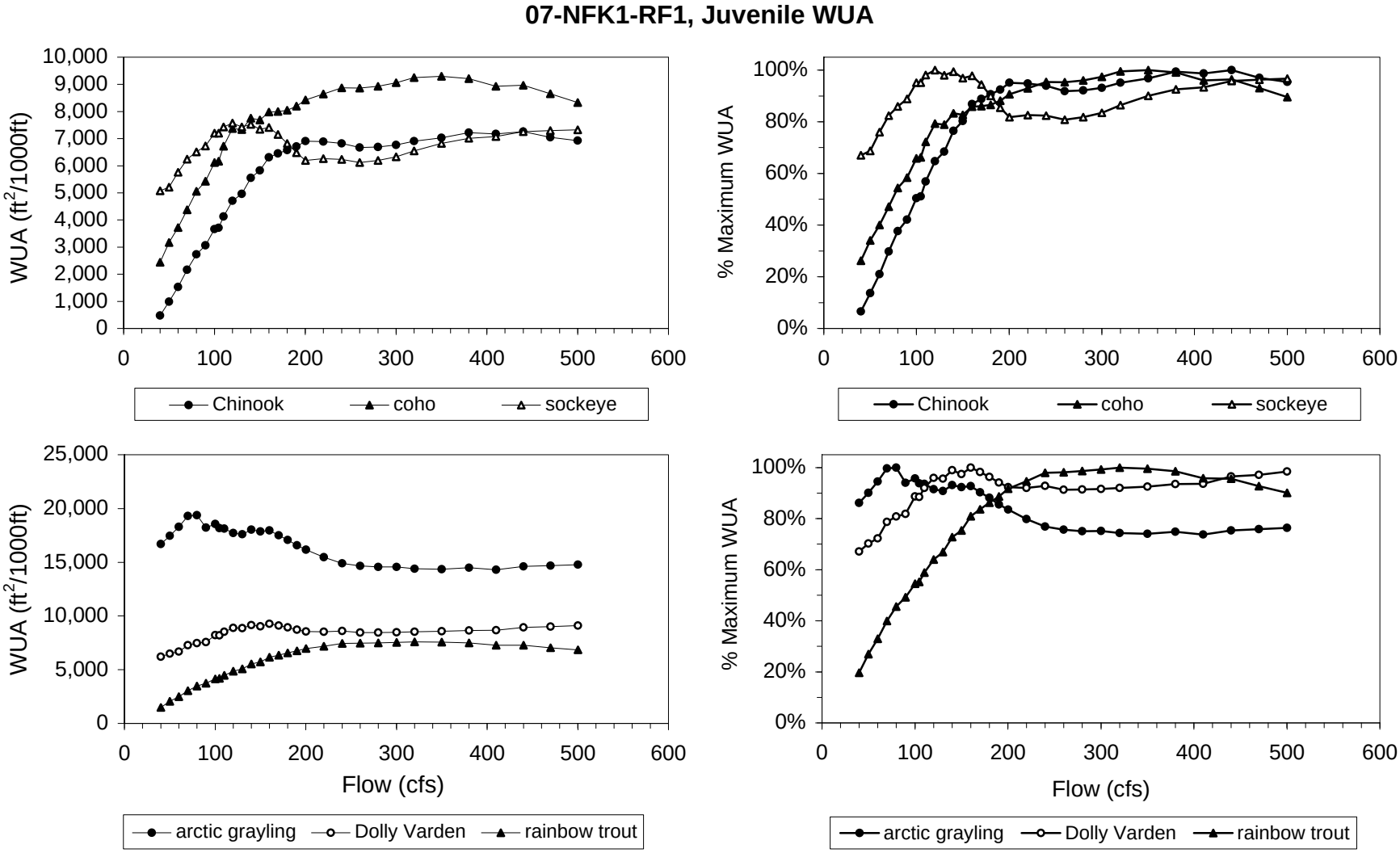

Figure 41
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-NFK1-RF1 (River Kilometer 14.29) in NFK-B, North Fork Koktuli River, Alaska.

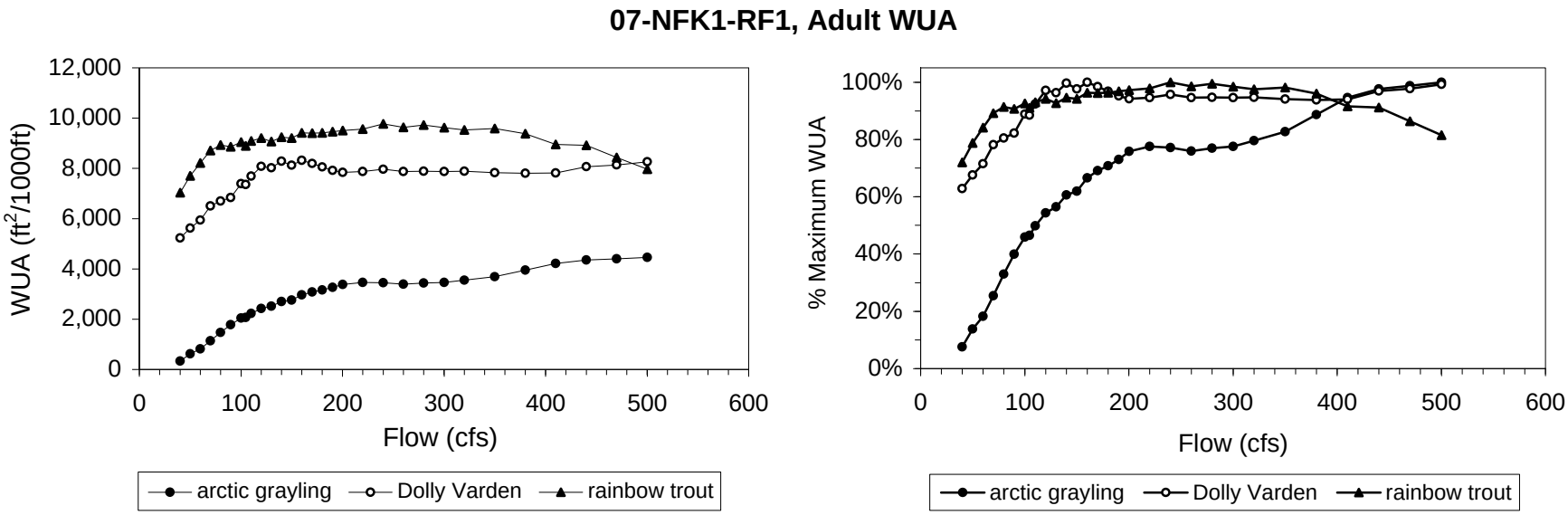

Figure 42
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-NFK1-RF1 (River Kilometer 14.29) in NFK-B, North Fork Koktuli River, Alaska.

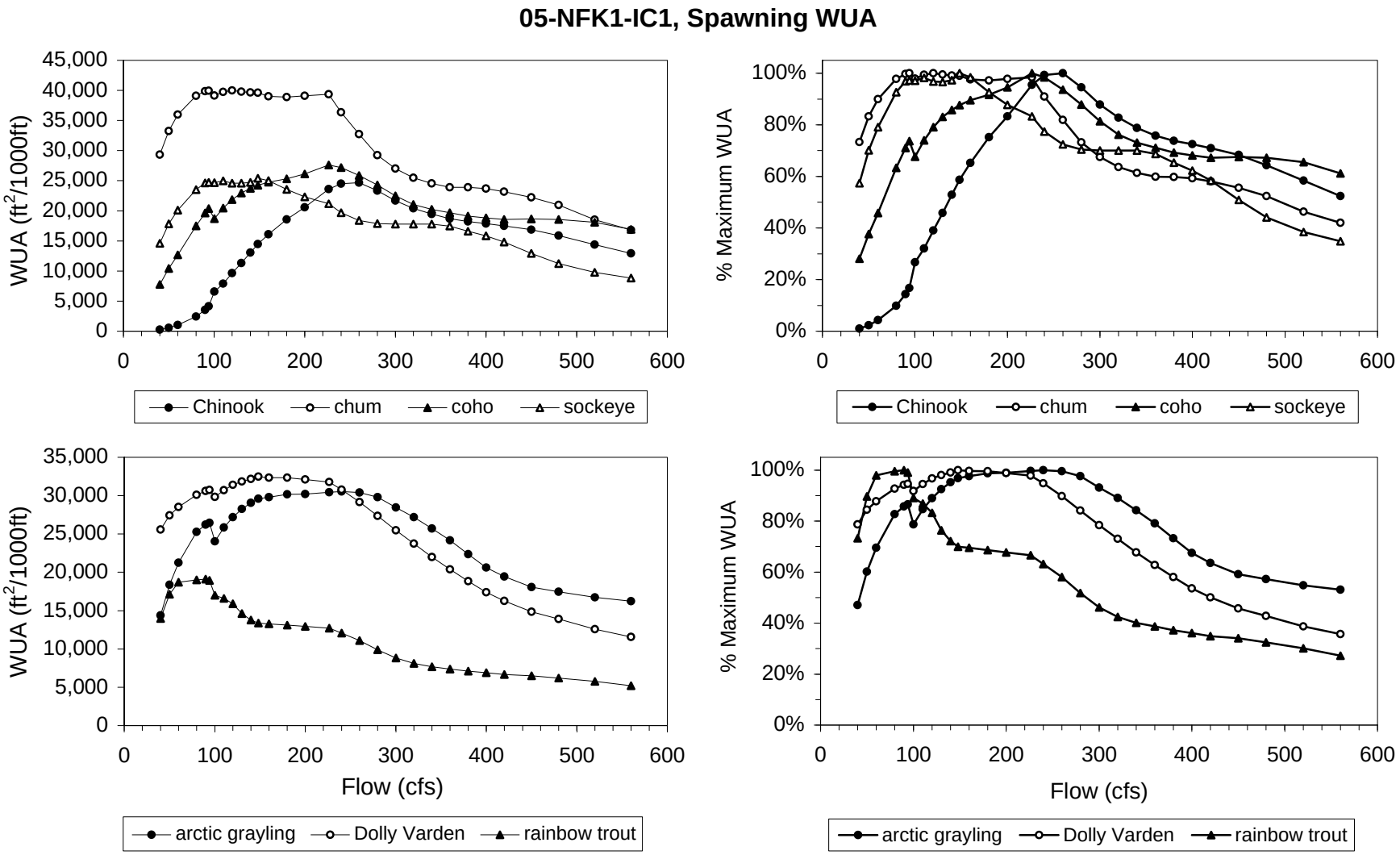

Figure 43
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC1 (River Kilometer 15.33) in NFK-B, North Fork Koktuli River, Alaska.

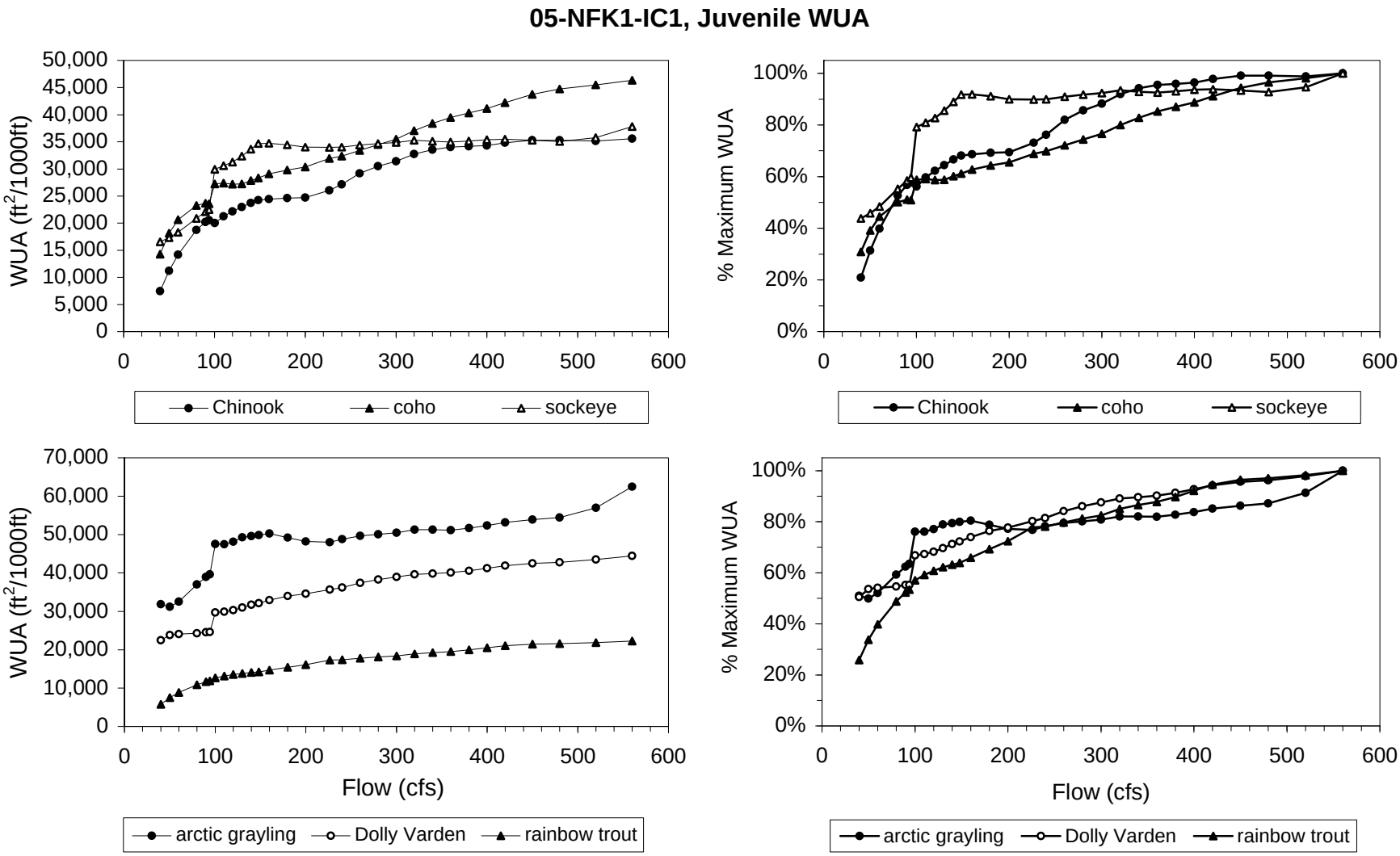

Figure 44
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-IC1 (River Kilometer 15.33) in NFK-B, North Fork Koktuli River, Alaska.

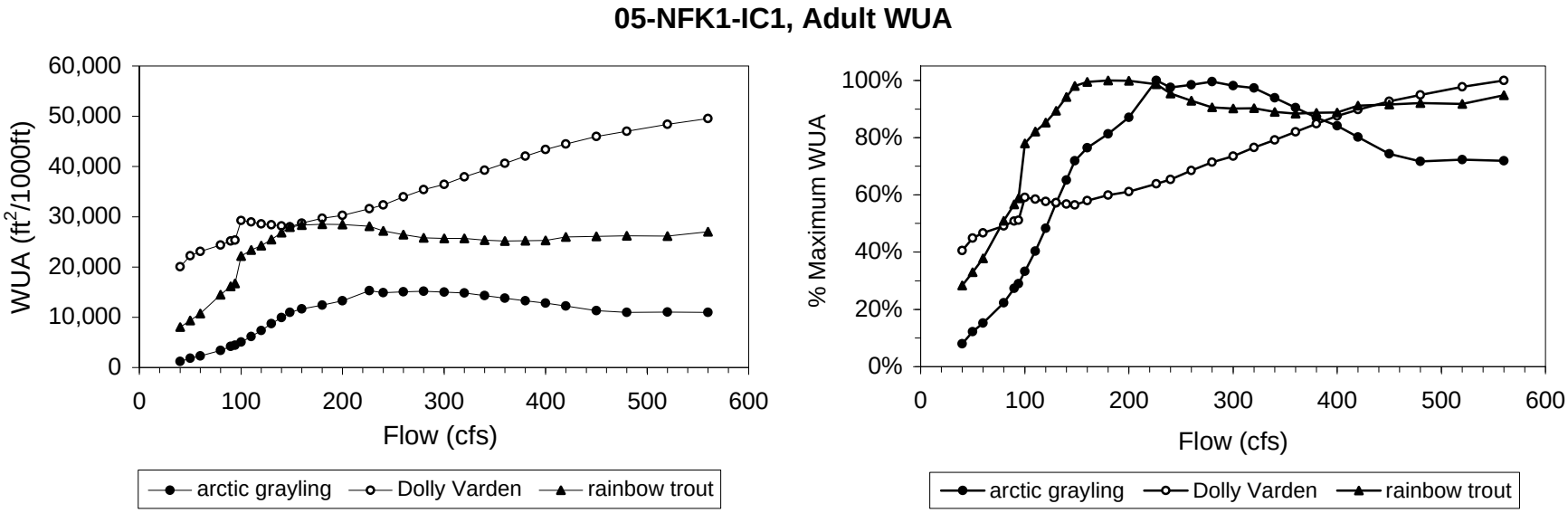

Figure 45
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-IC1 (River Kilometer 15.33) in NFK-B, North Fork Koktuli River, Alaska.

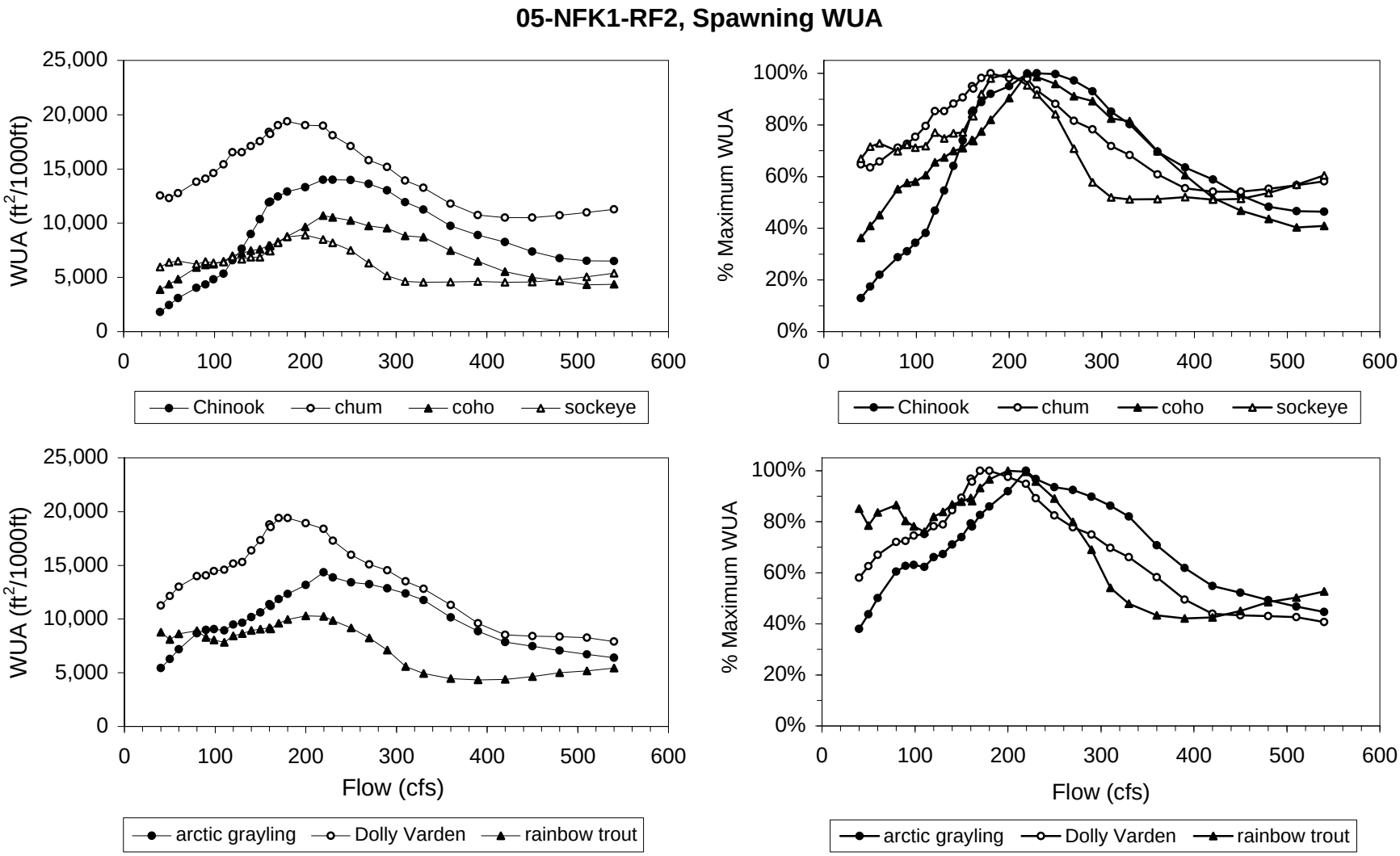

Figure 46
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF2 (River Kilometer 15.97) in NFK-B, North Fork Koktuli River, Alaska.

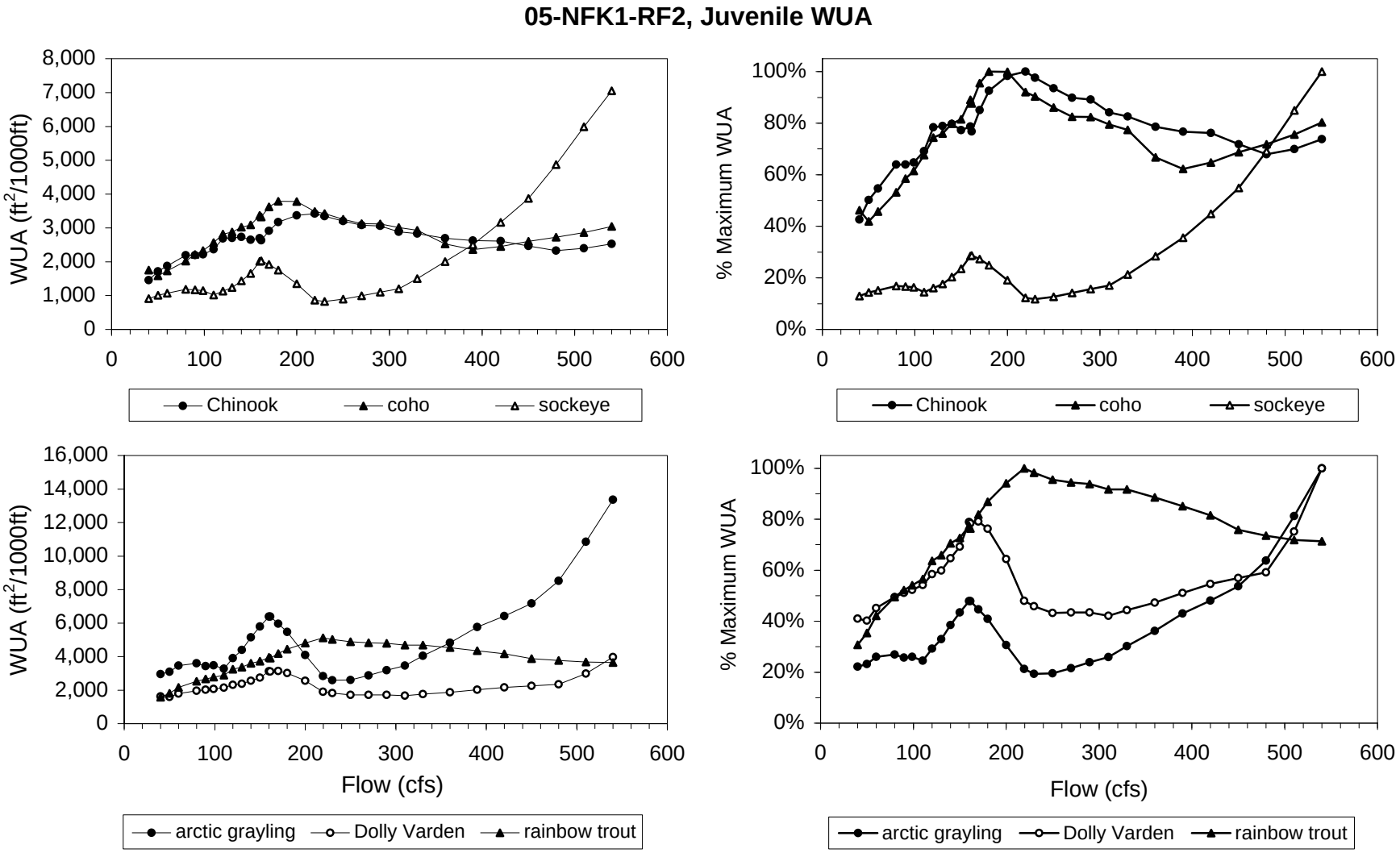

Figure 47
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF2 (River Kilometer 15.97) in NFK-B, North Fork Koktuli River, Alaska.

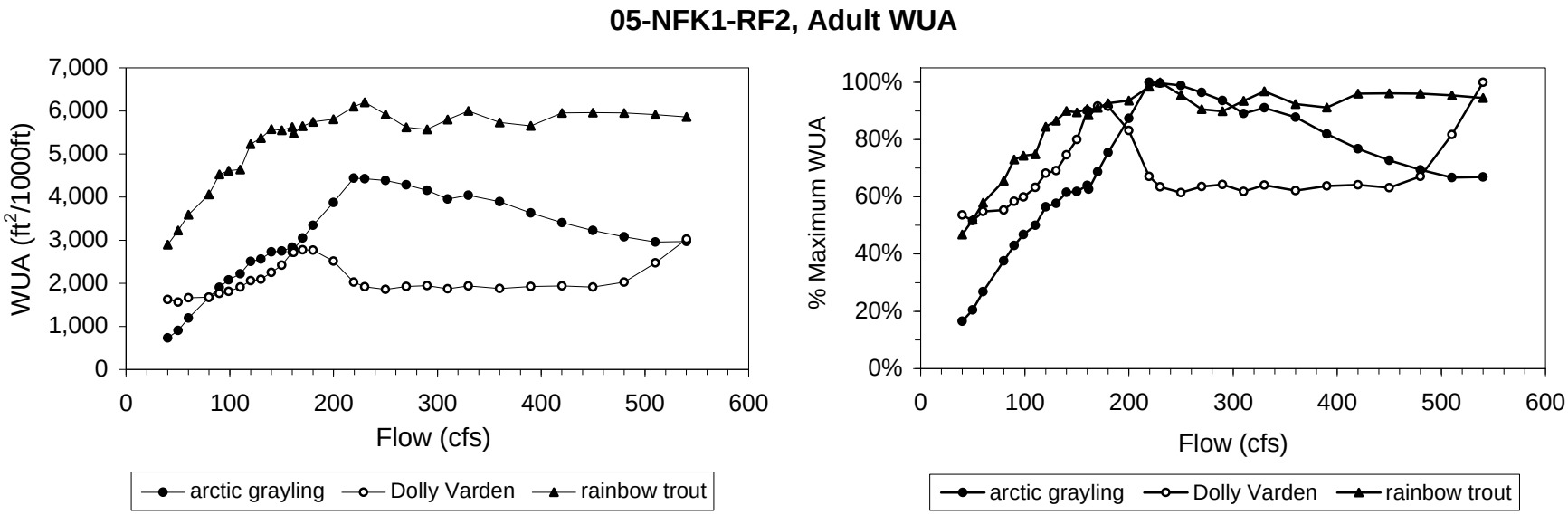

Figure 48
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-RF2 (River Kilometer 15.97) in NFK-B, North Fork Koktuli River, Alaska.

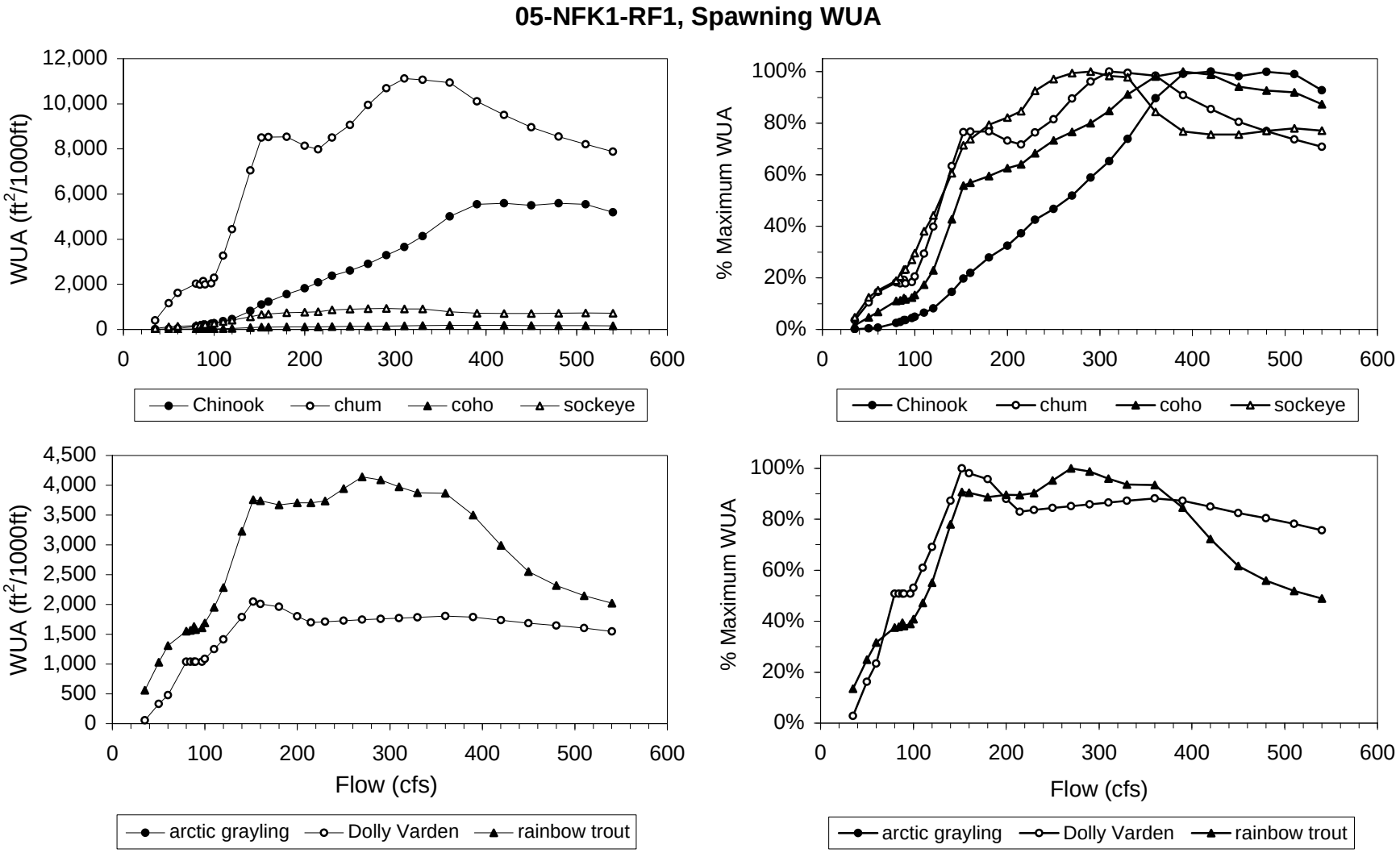

Figure 49
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF1 (River Kilometer 18.29) in NFK-B, North Fork Koktuli River, Alaska.

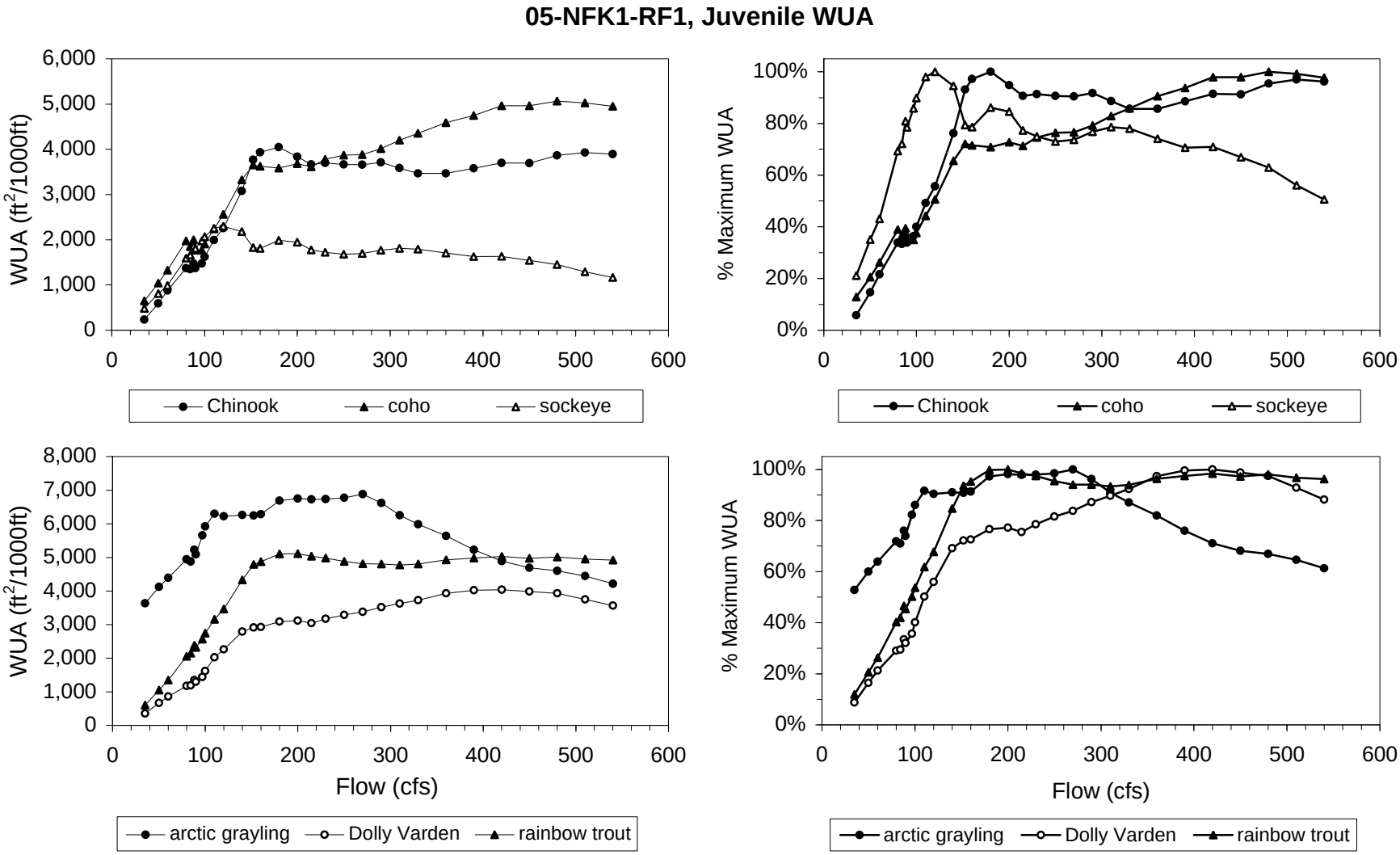

Figure 50
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-NFK1-RF1 (River Kilometer 18.29) in NFK-B, North Fork Koktuli River, Alaska.

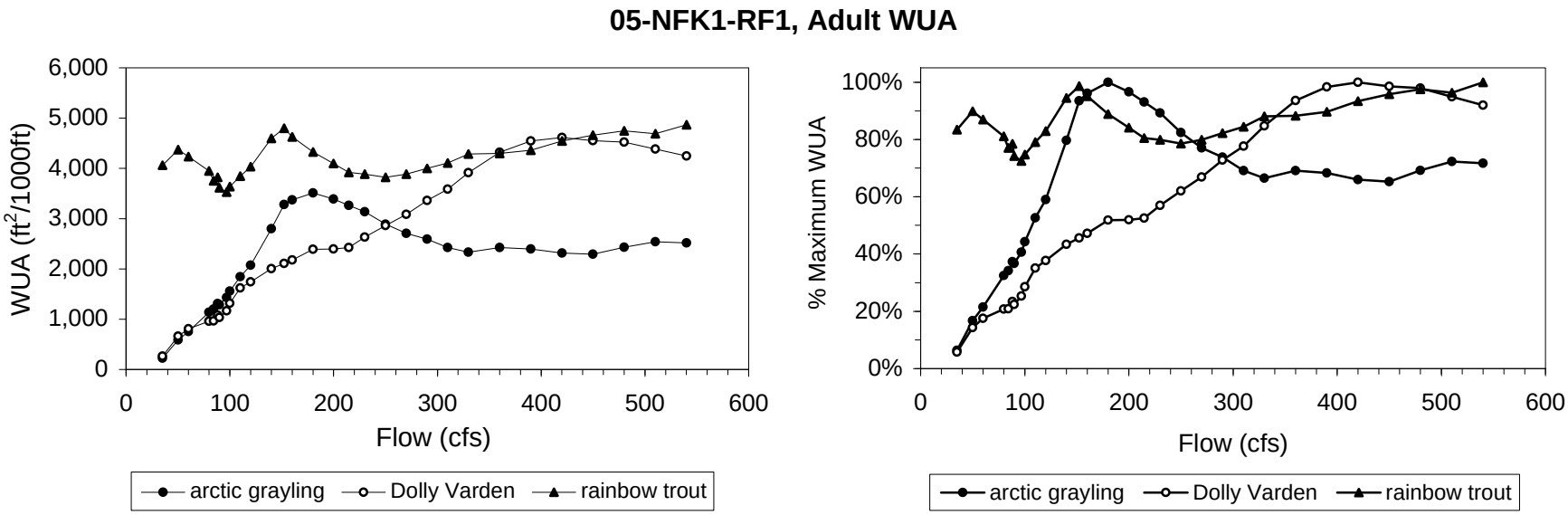

Figure 51
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-NFK1-RF1 (River Kilometer 18.29) in NFK-B, North Fork Koktuli River, Alaska.

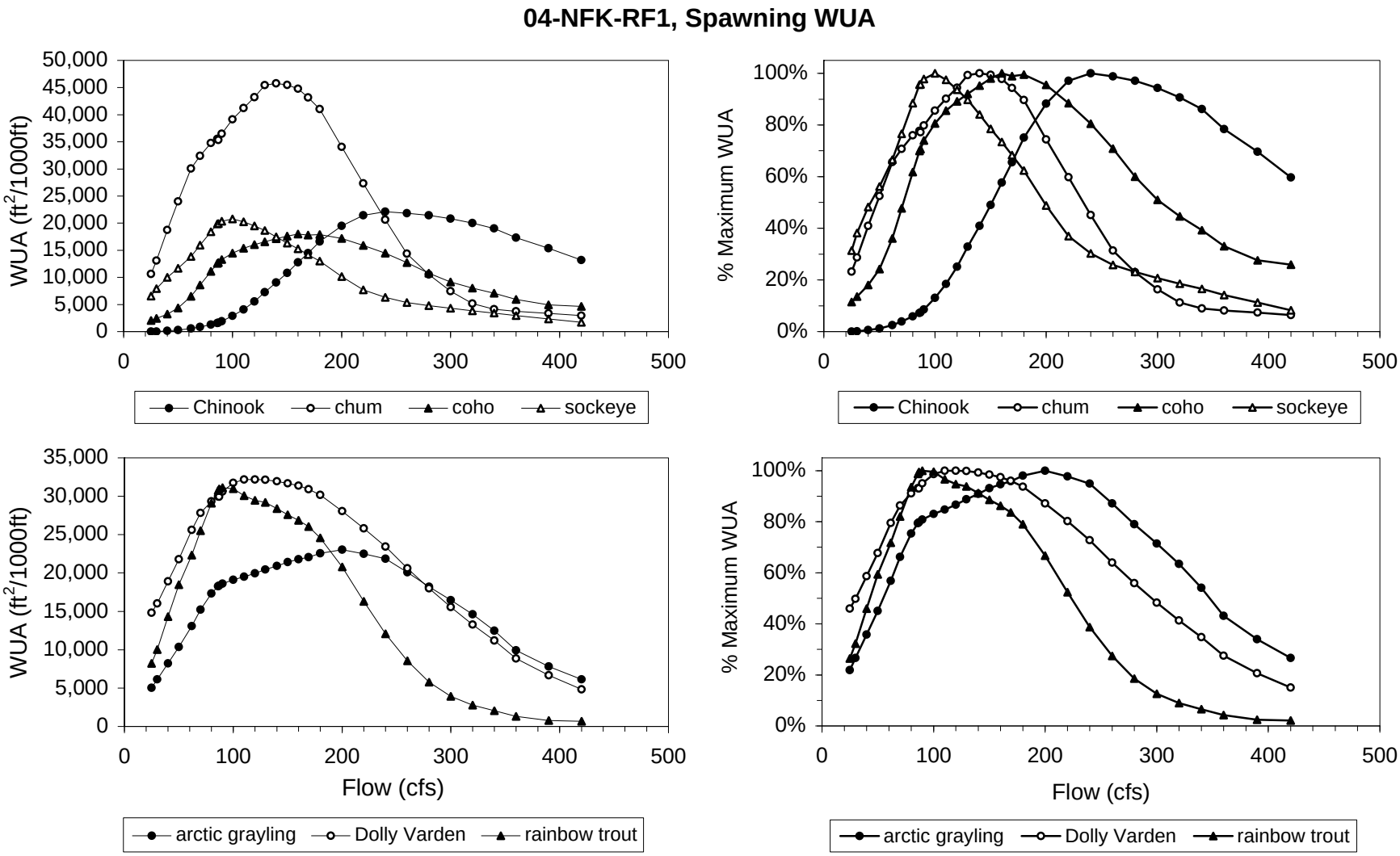

Figure 52
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RF1 (River Kilometer 20.94) in NFK-B, North Fork Koktuli River, Alaska.

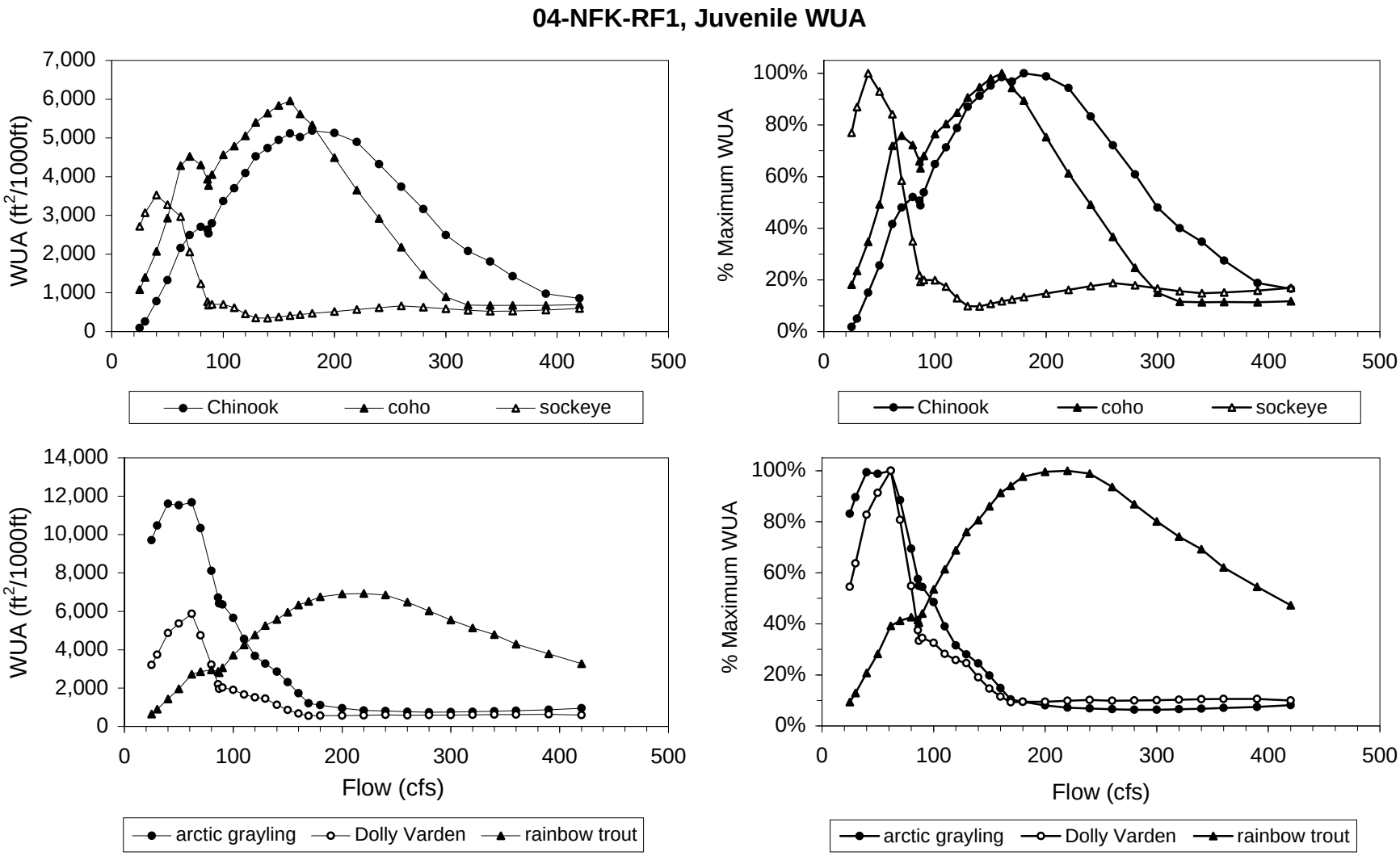

Figure 53
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RF1 (River Kilometer 20.94) in NFK-B, North Fork Koktuli River, Alaska.

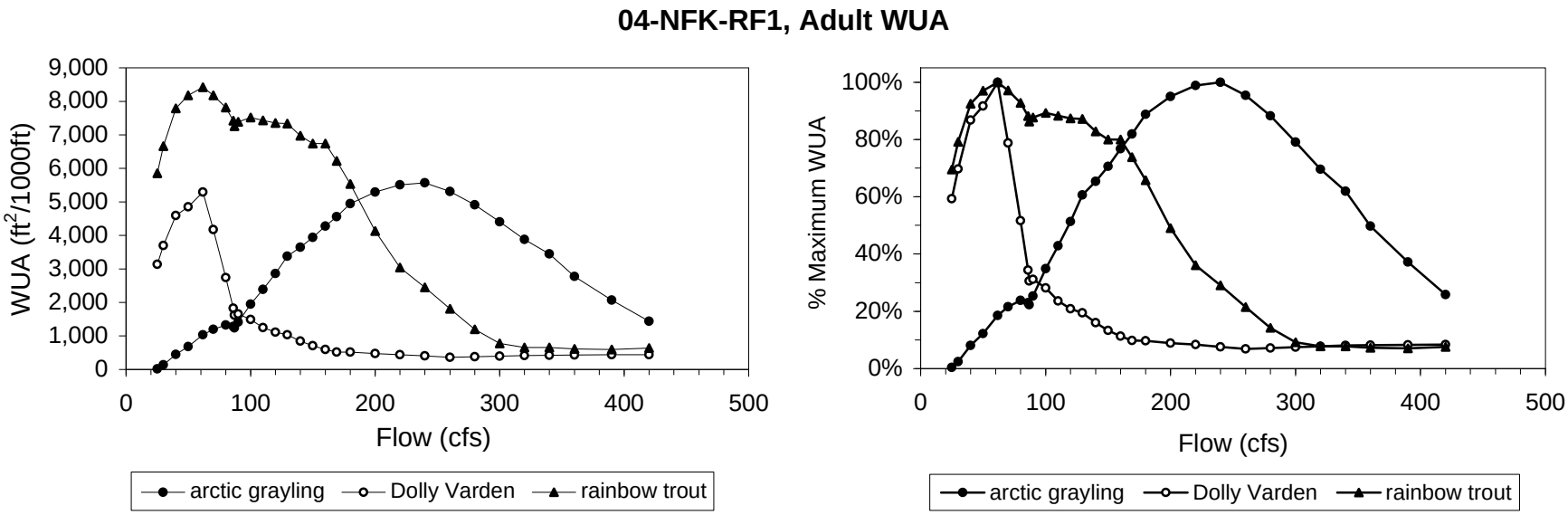

Figure 54
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-RF1 (River Kilometer 20.94) in NFK-B, North Fork Koktuli River, Alaska.

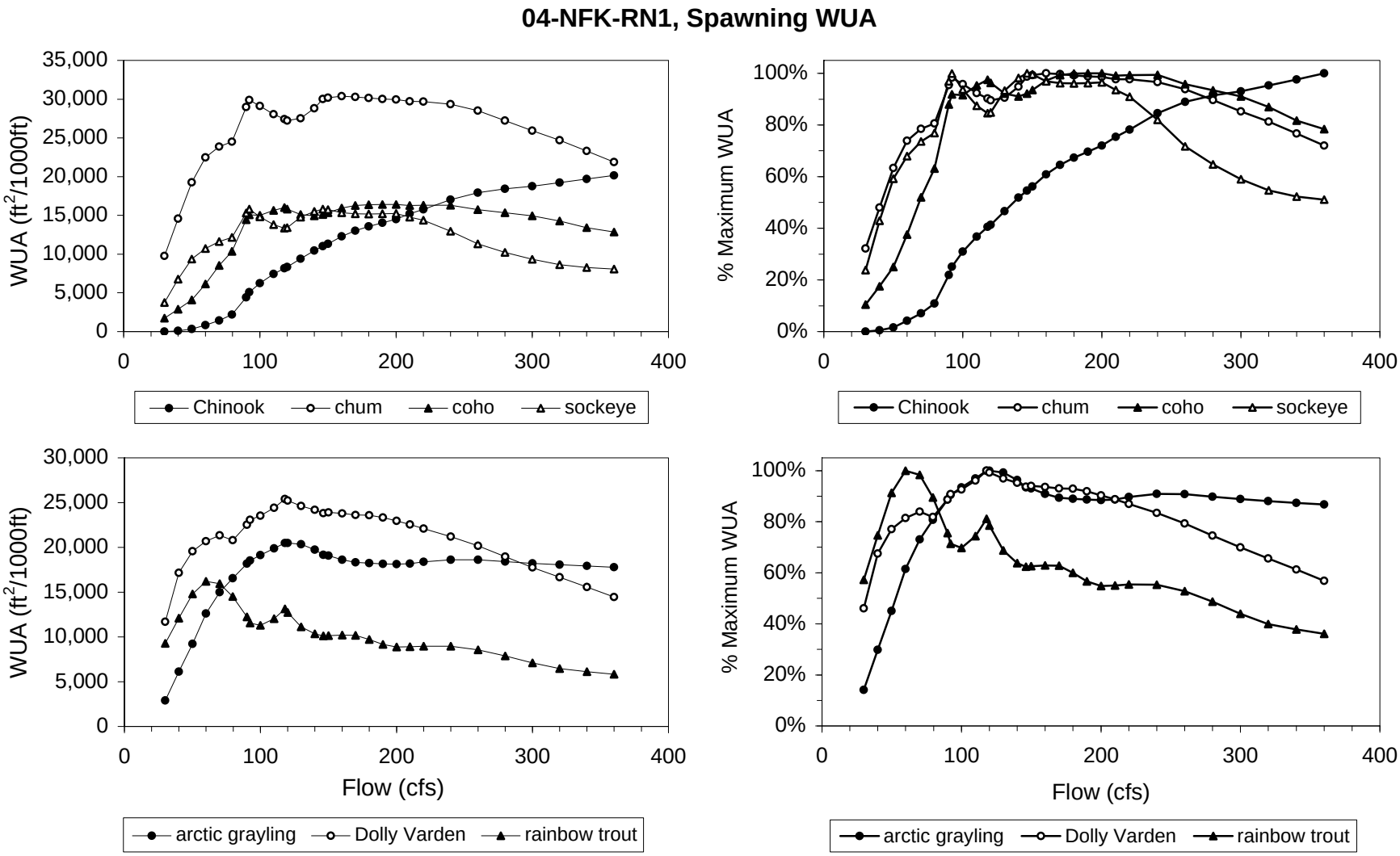

Figure 55
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RN1 (River Kilometer 21.10) in NFK-C, North Fork Koktuli River, Alaska.

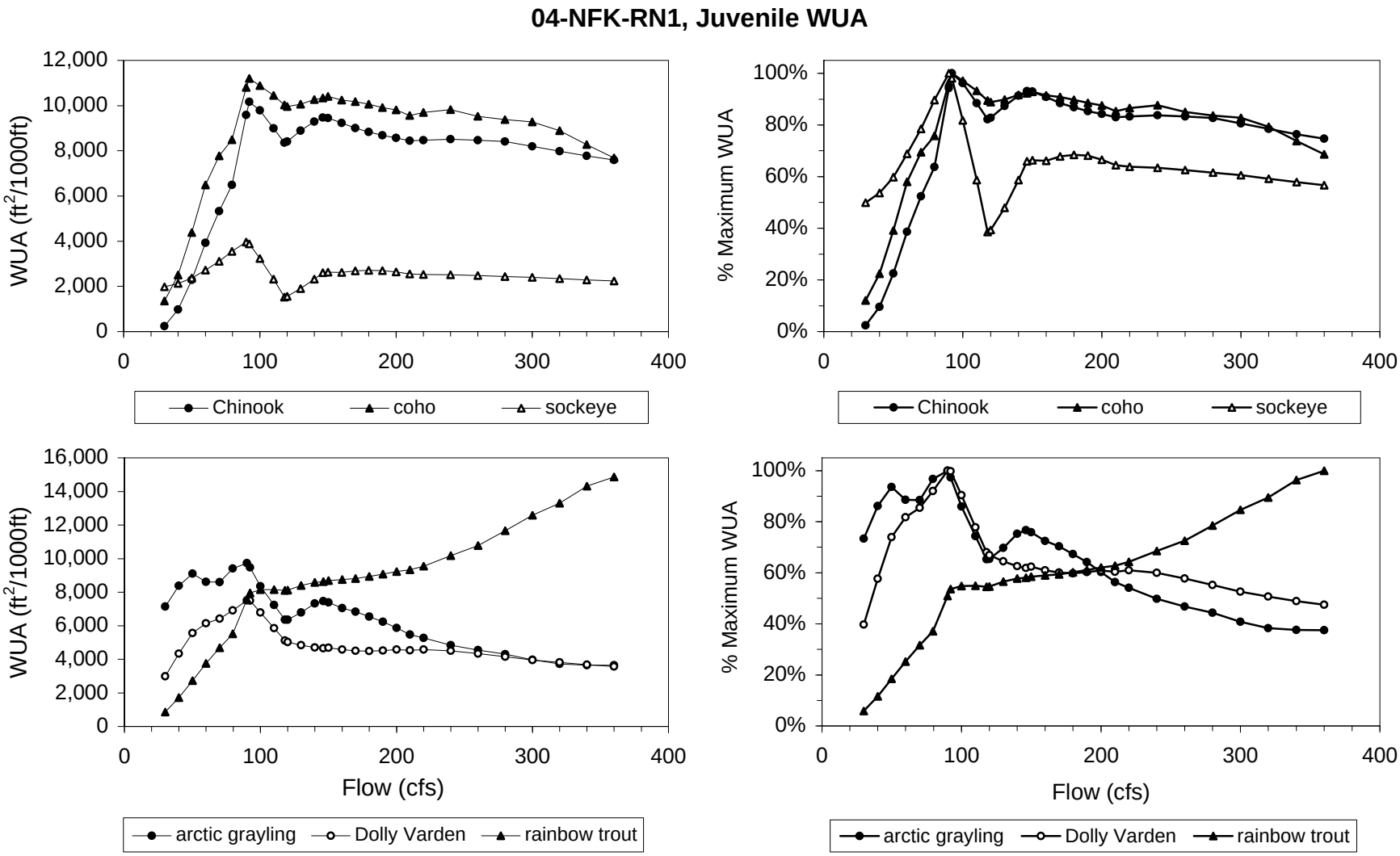

Figure 56
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RN1 (River Kilometer 21.10) in NFK-C, North Fork Koktuli River, Alaska.

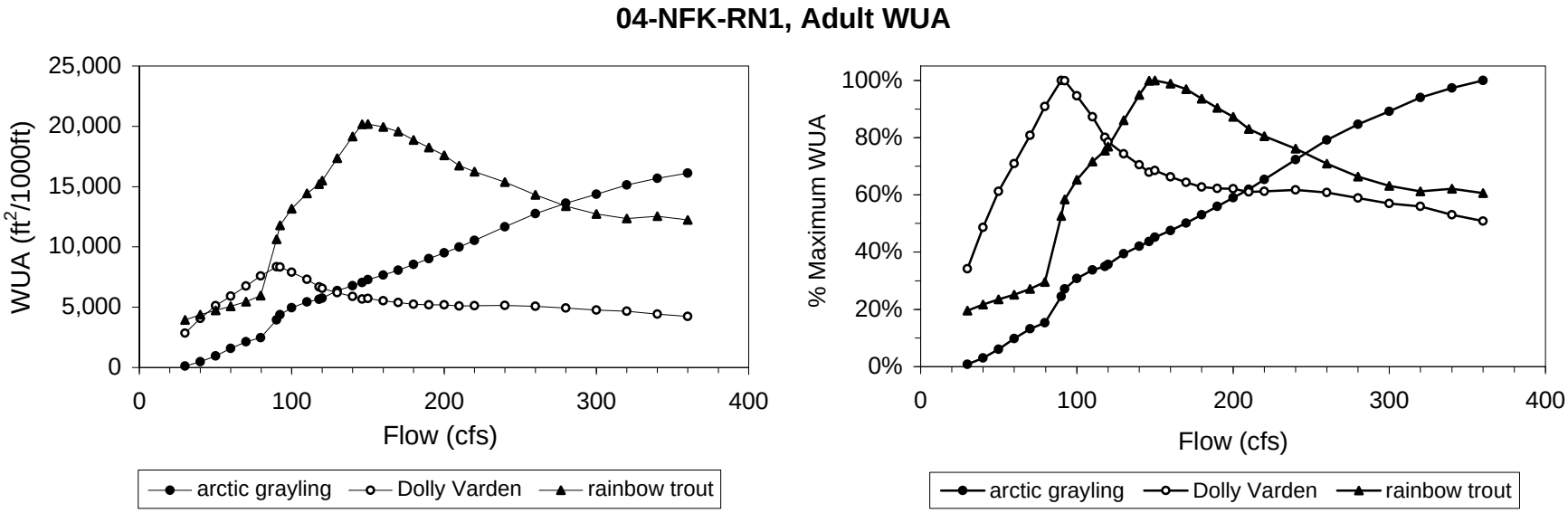

Figure 57
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-RN1 (River Kilometer 21.10) in NFK-C, North Fork Koktuli River, Alaska.

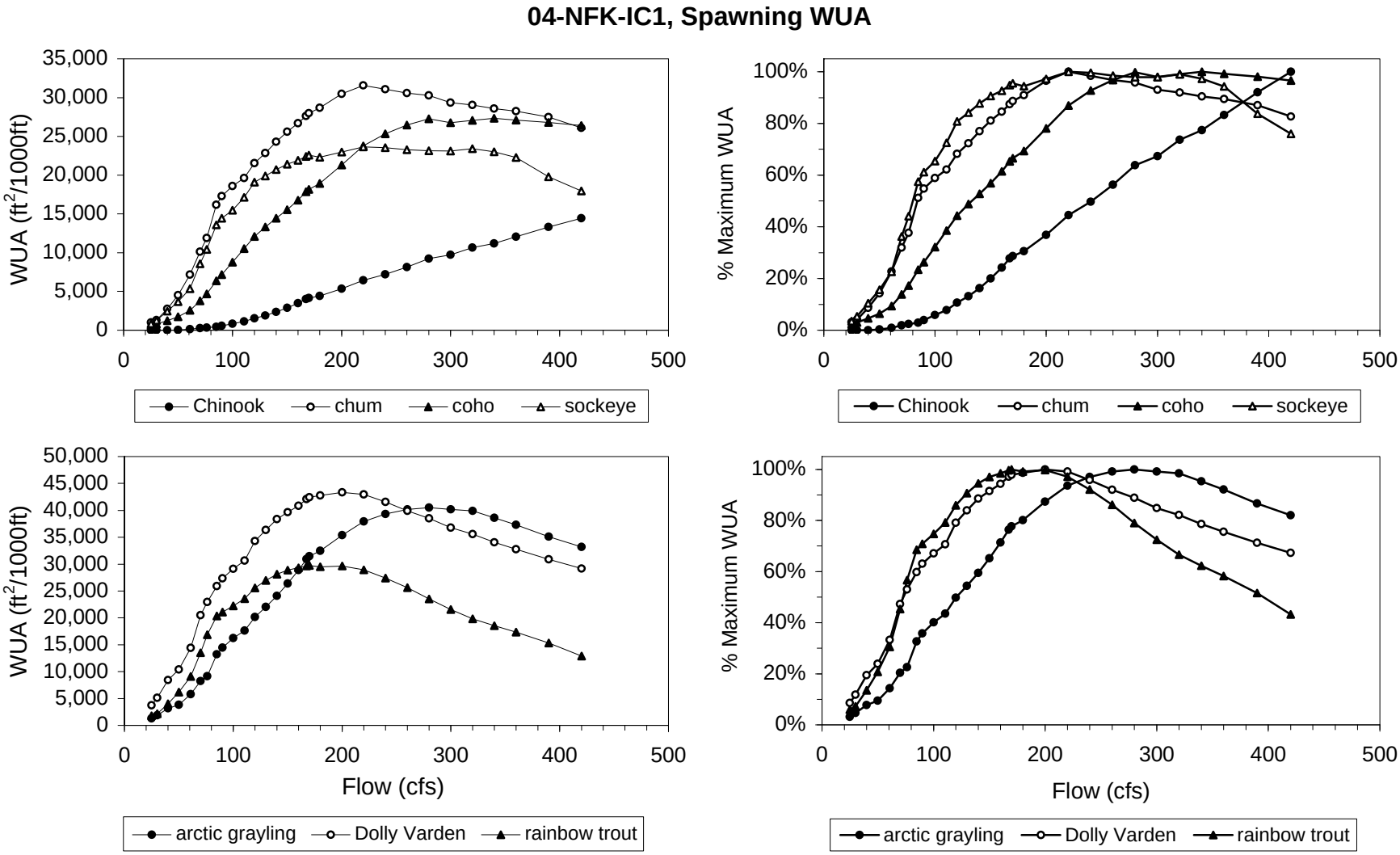

Figure 58
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-IC1 (River Kilometer 22.26) in NFK-C, North Fork Koktuli River, Alaska.

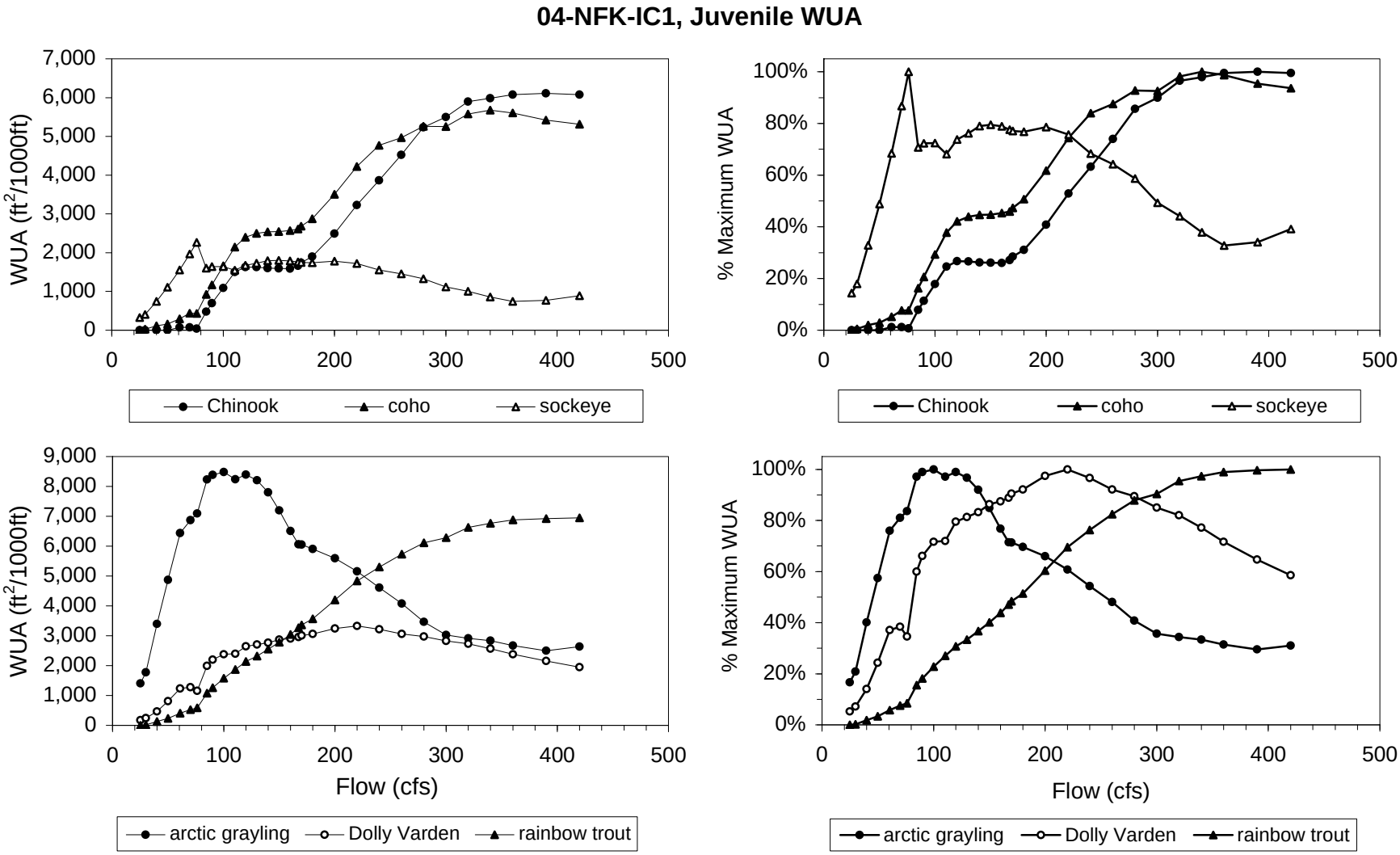

Figure 59
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-IC1 (River Kilometer 22.26) in NFK-C, North Fork Koktuli River, Alaska.

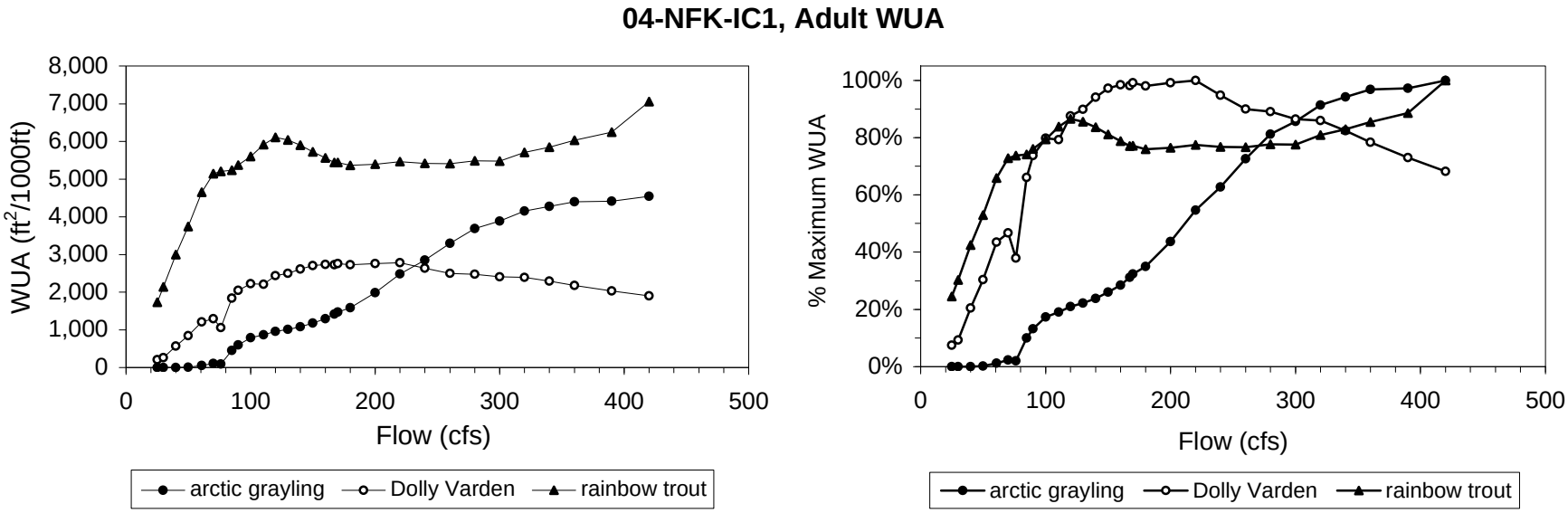

Figure 60
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-IC1 (River Kilometer 22.26) in NFK-C, North Fork Koktuli River, Alaska.

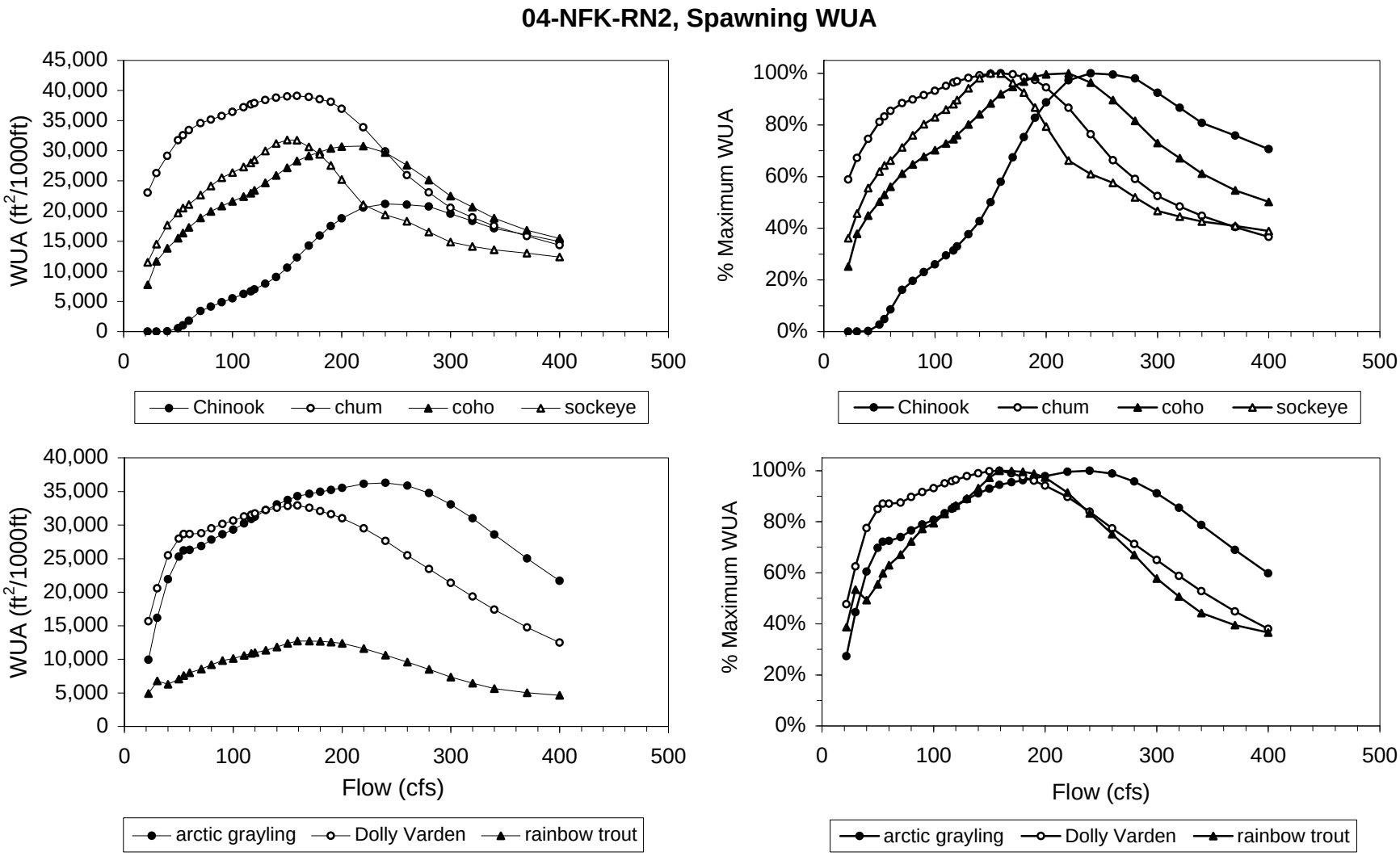

Figure 61
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RN2 (River Kilometer 22.67) in NFK-C, North Fork Koktuli River, Alaska.

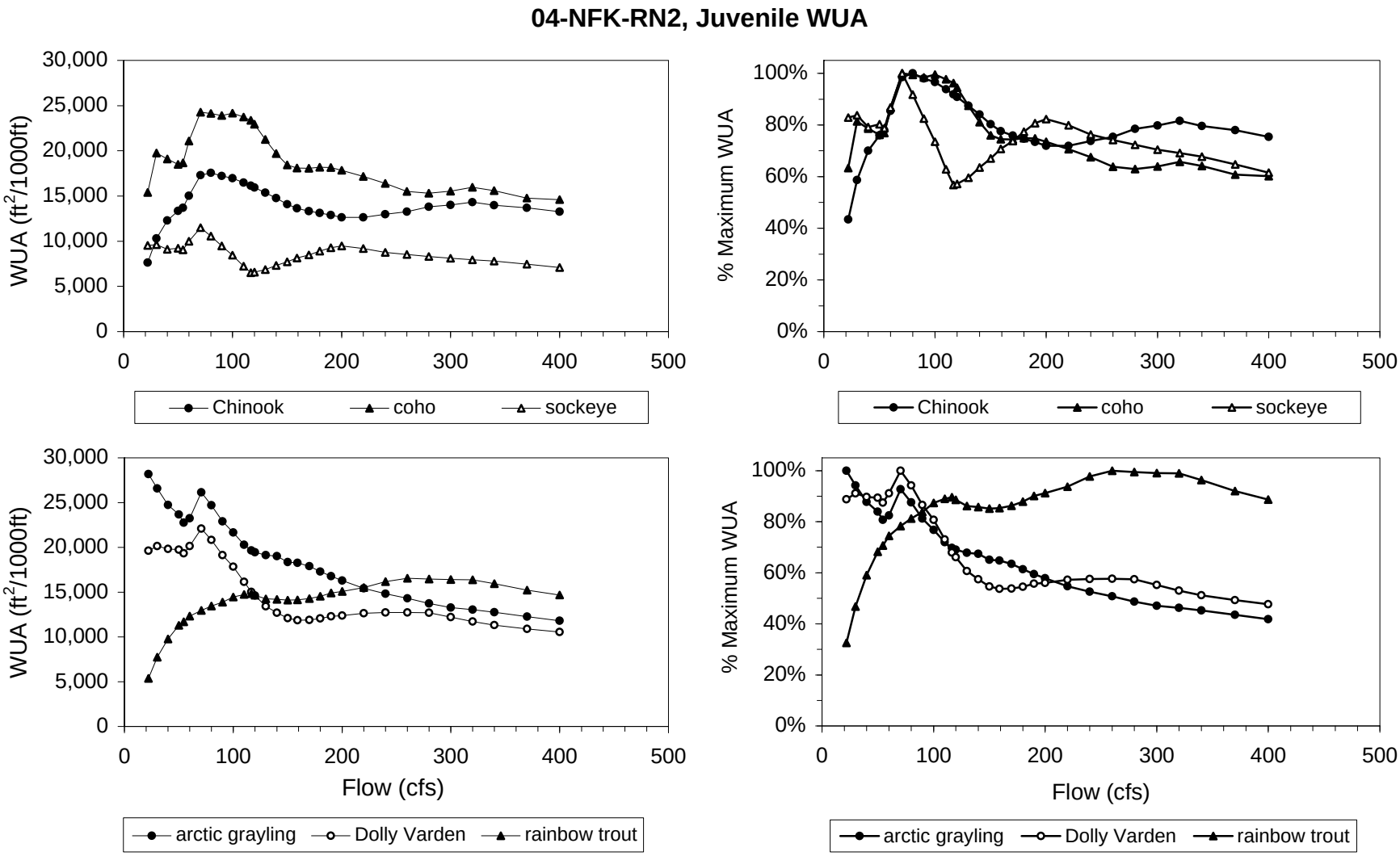

Figure 62
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RN2 (River Kilometer 22.67) in NFK-C, North Fork Koktuli River, Alaska.

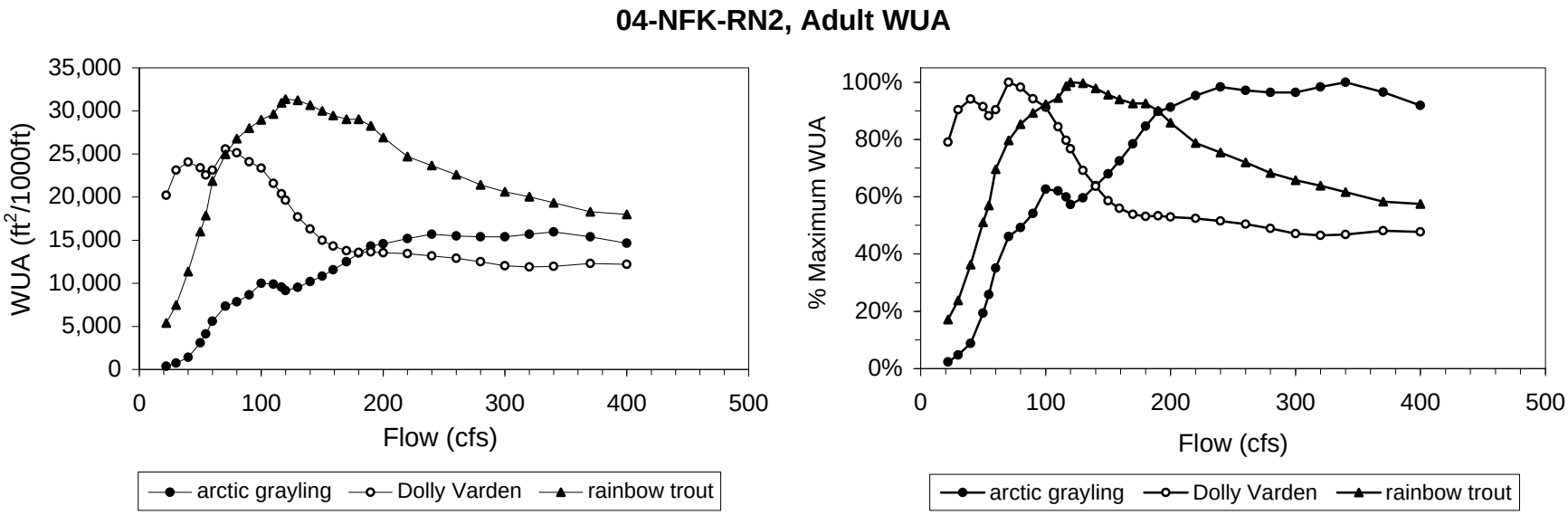

Figure 63
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-RN2 (River Kilometer 22.67) in NFK-C, North Fork Koktuli River, Alaska.

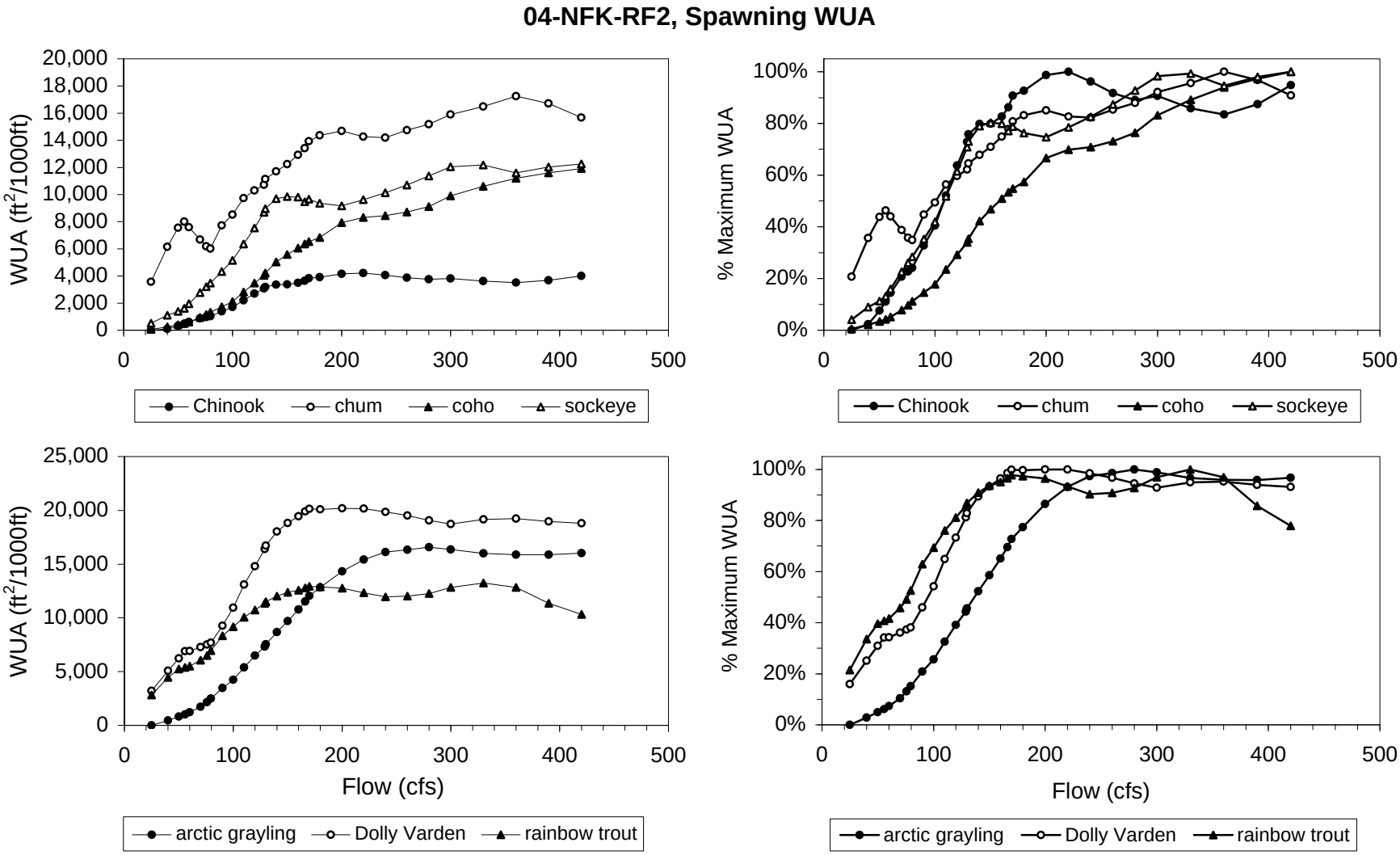

Figure 64
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RF2 (River Kilometer 22.81) in NFK-C, North Fork Koktuli River, Alaska.

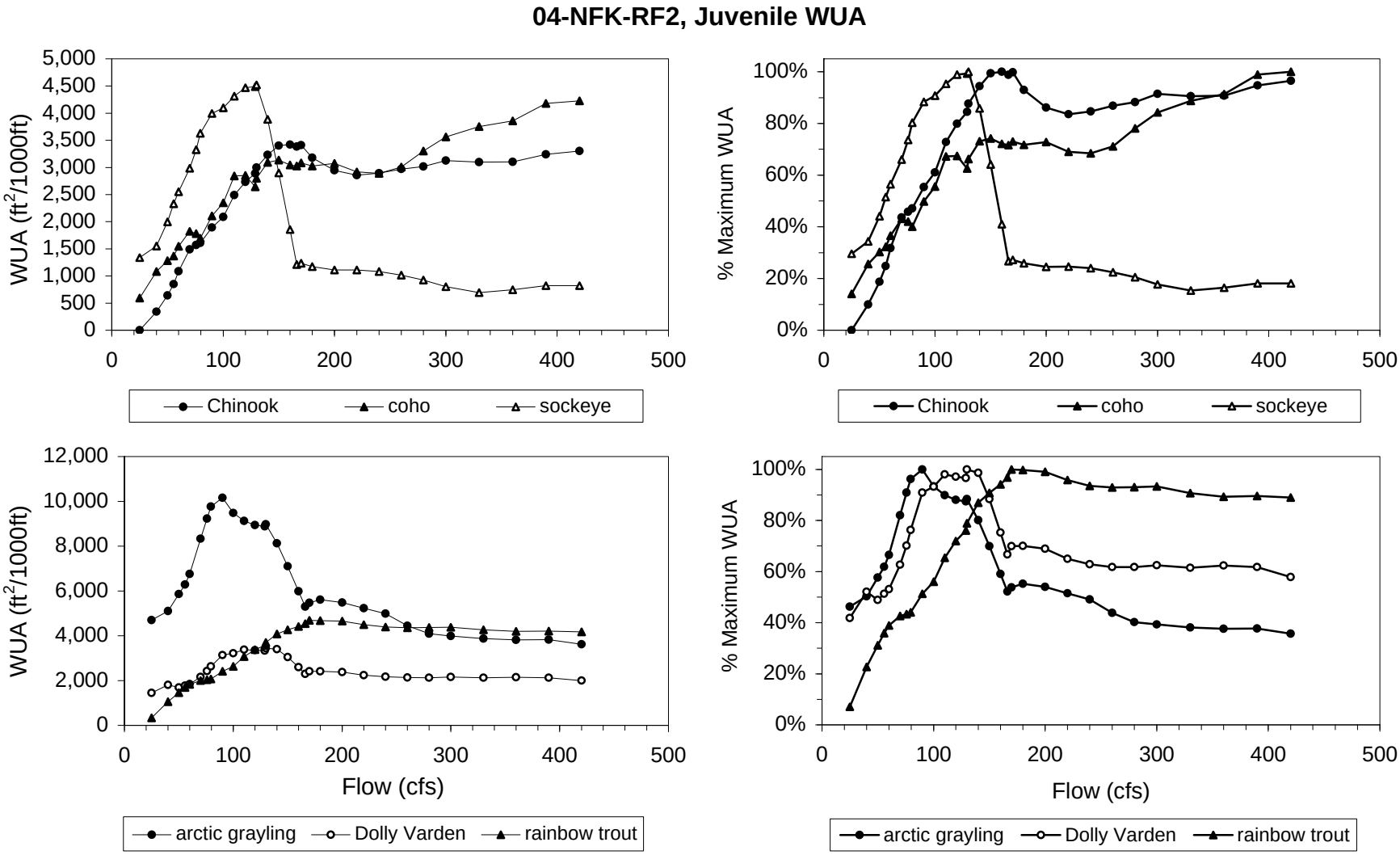

Figure 65
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RF2 (River Kilometer 22.81) in NFK-C, North Fork Koktuli River, Alaska.

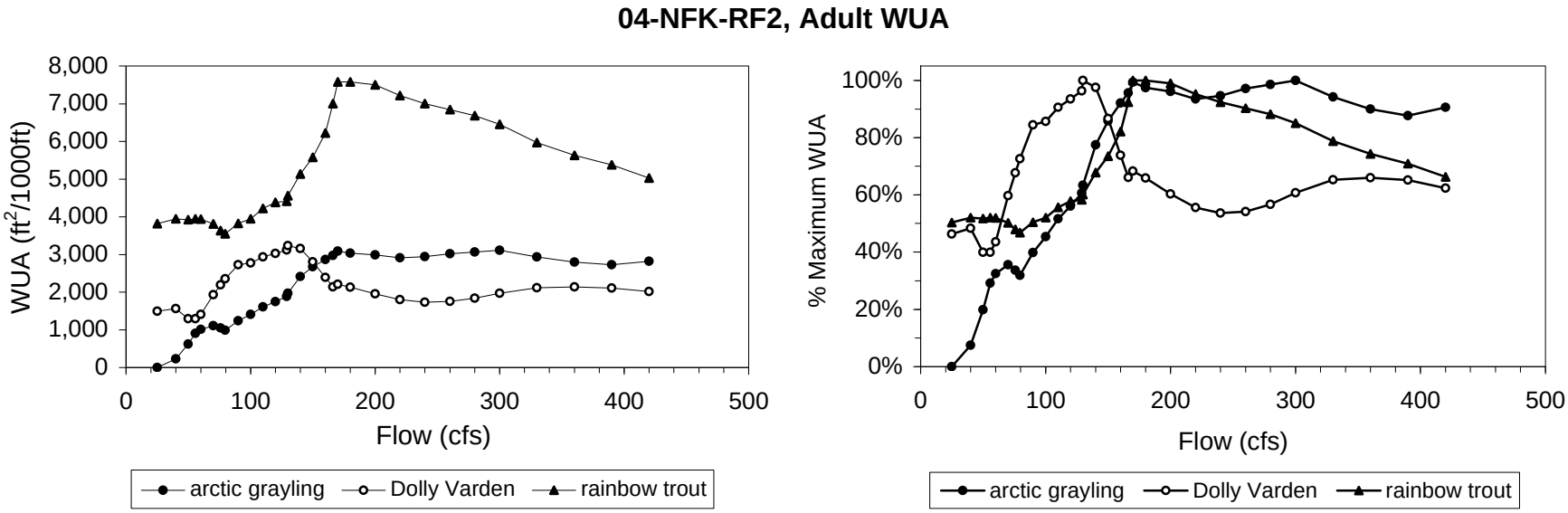

Figure 66
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-RF2 (River Kilometer 22.81) in NFK-C, North Fork Koktuli River, Alaska.

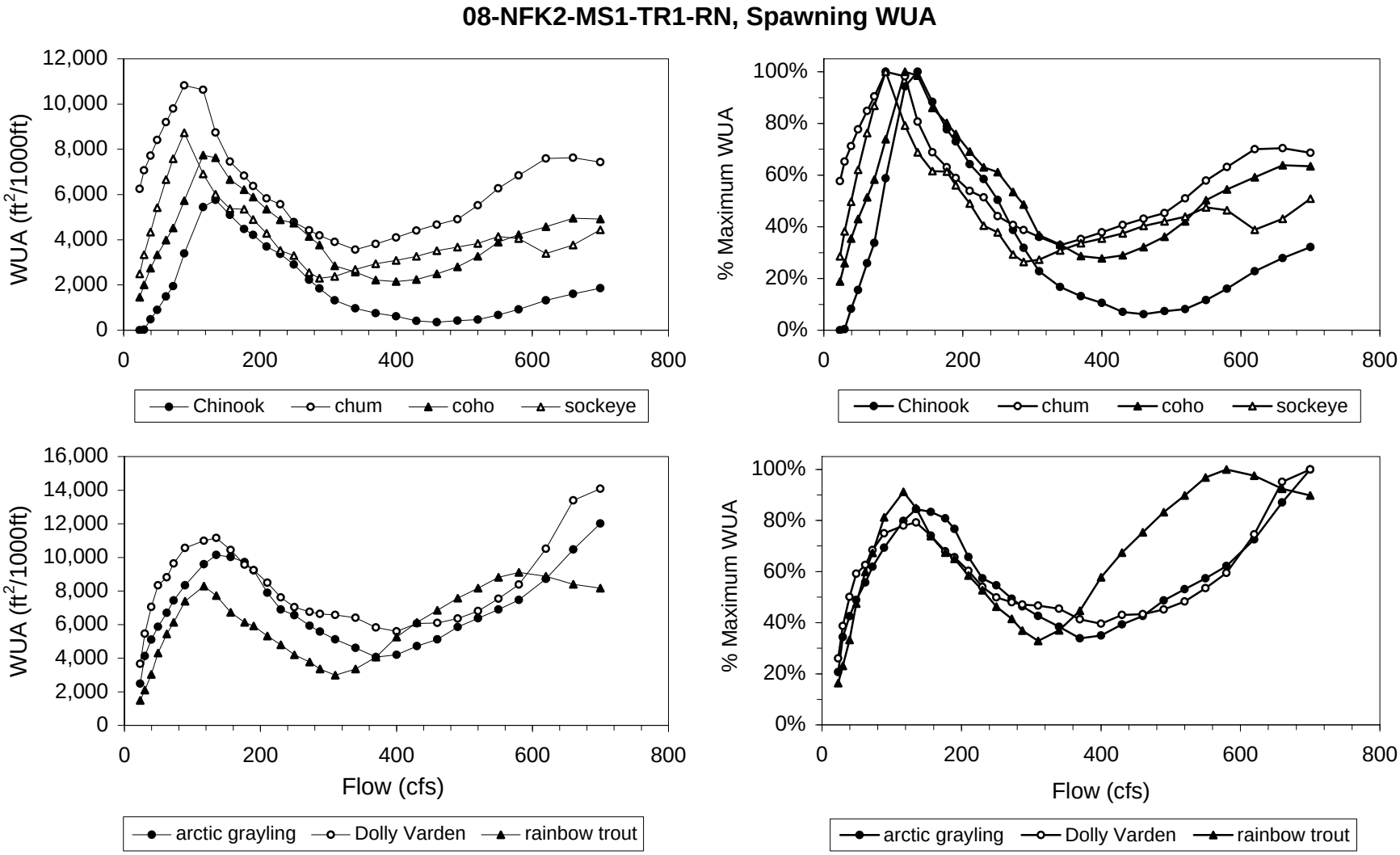

Figure 67
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK2-MS1-TR1 (River Kilometer 24.65) in NFK-C, North Fork Koktuli River, Alaska.

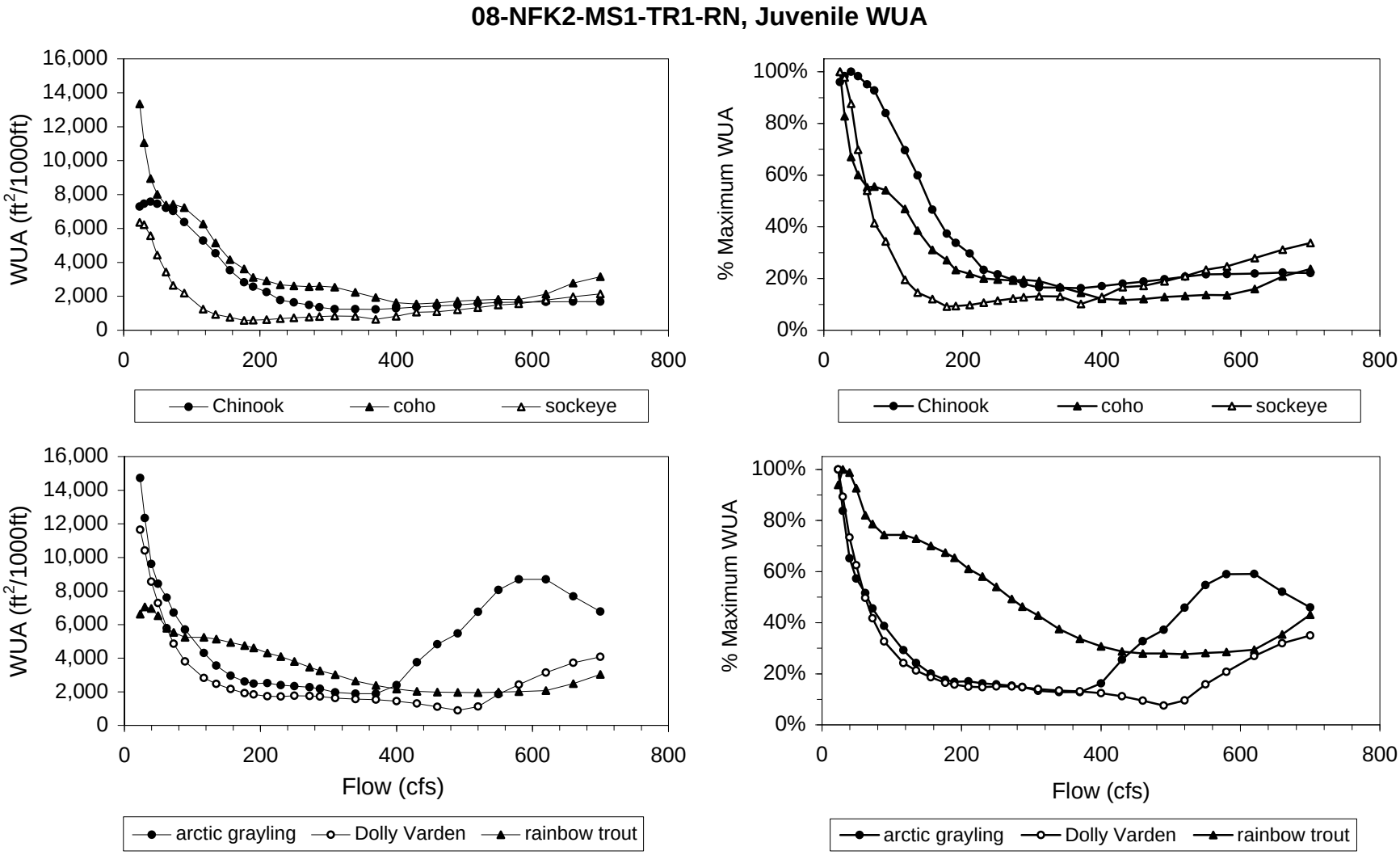

Figure 68
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK2-MS1-TR1 (River Kilometer 24.65) in NFK-C, North Fork Koktuli River, Alaska.

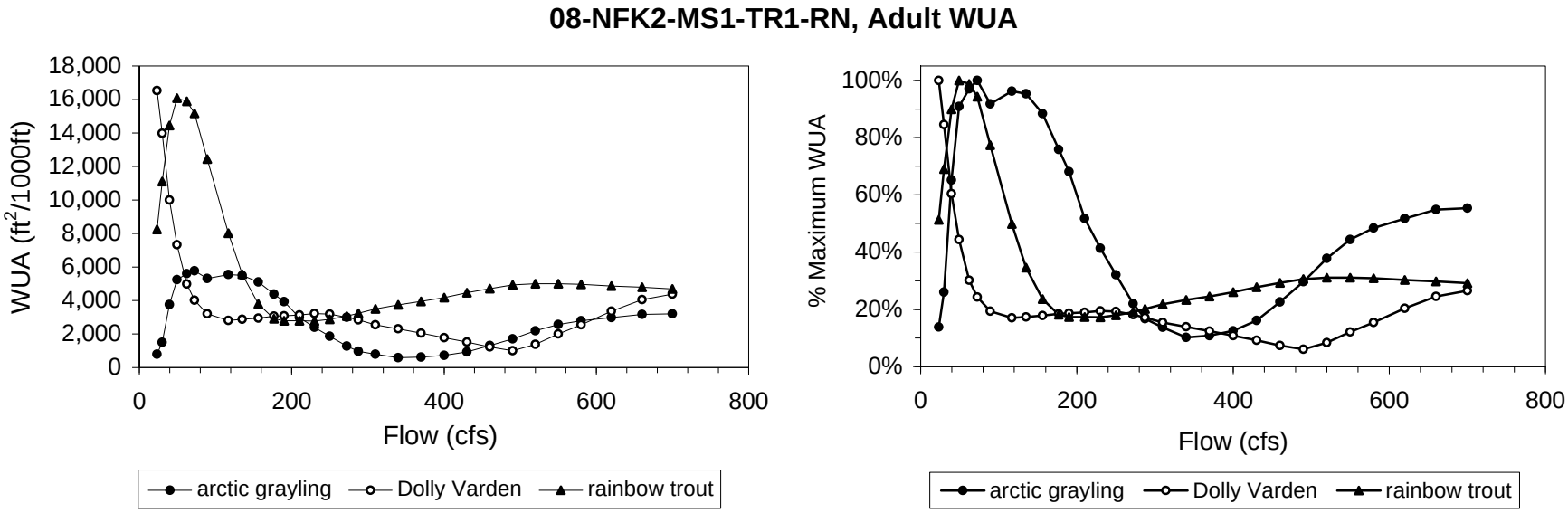

Figure 69
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK2-MS1-TR1 (River Kilometer 24.65) in NFK-C, North Fork Koktuli River, Alaska.

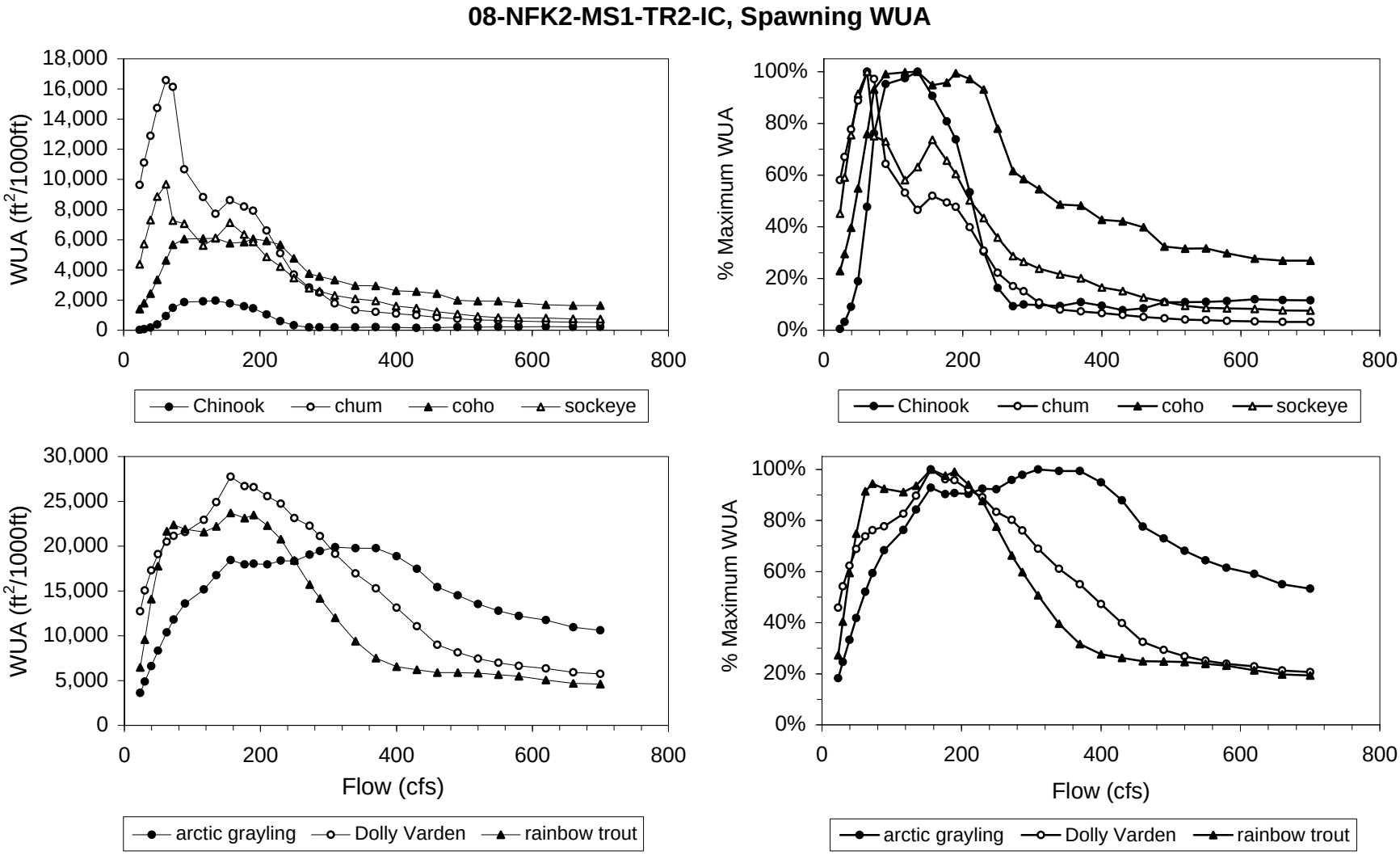

Figure 70
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK2-MS1-TR2 (River Kilometer 26.21) in NFK-C, North Fork Koktuli River, Alaska.

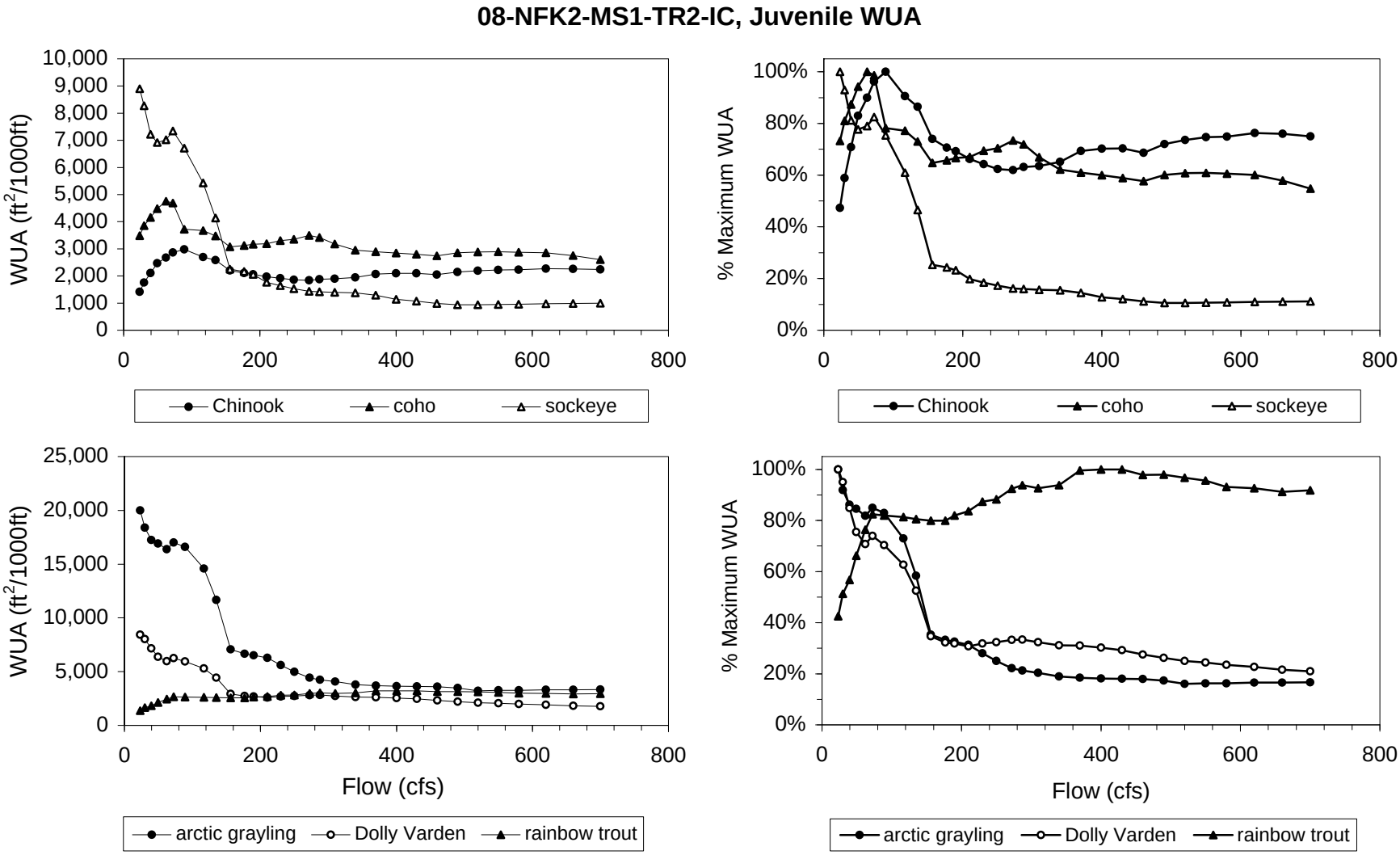

Figure 71
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK2-MS1-TR2 (River Kilometer 26.21) in NFK-C, North Fork Koktuli River, Alaska.

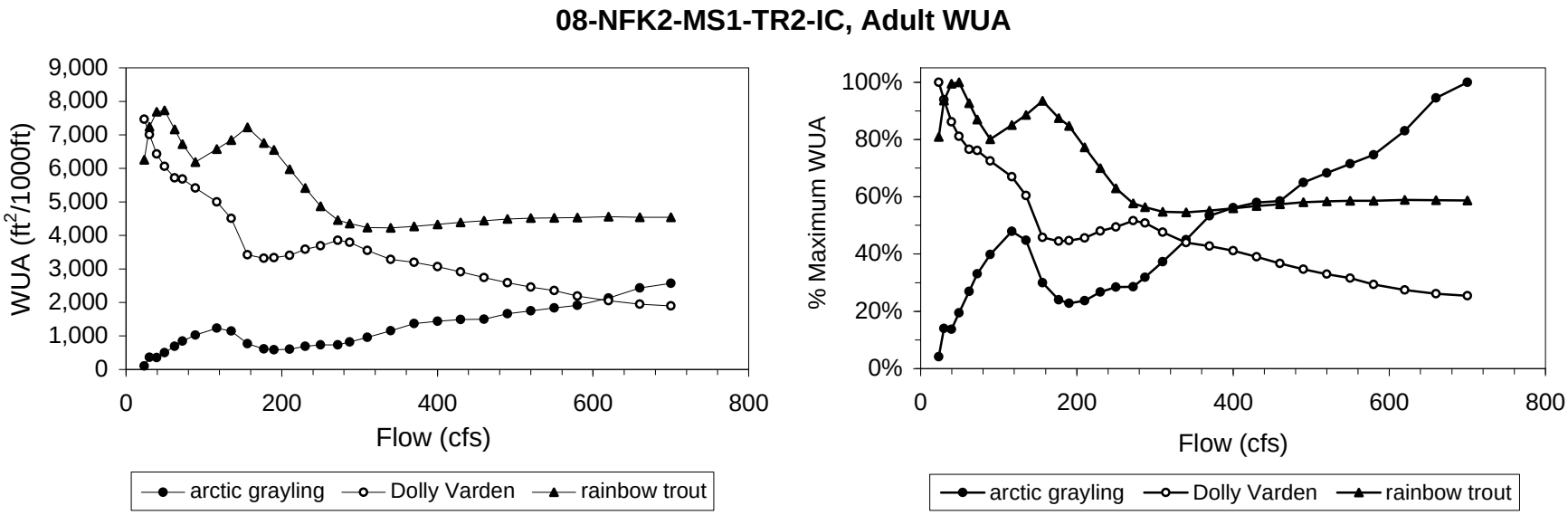

Figure 72
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK2-MS1-TR2 (River Kilometer 26.21) in NFK-C, North Fork Koktuli River, Alaska.

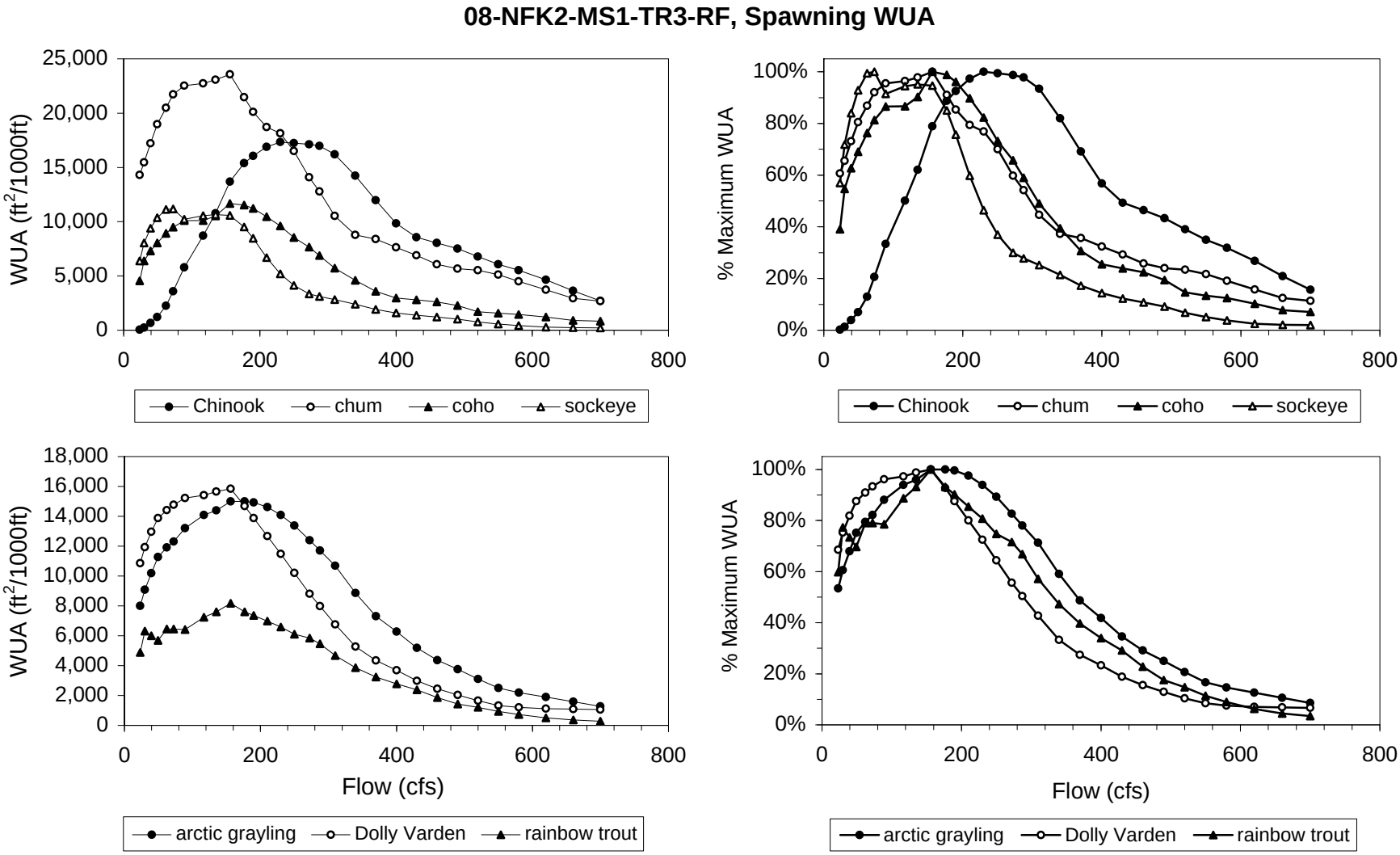

Figure 73
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK2-MS1-TR3 (River Kilometer 26.96) in NFK-C, North Fork Koktuli River, Alaska.

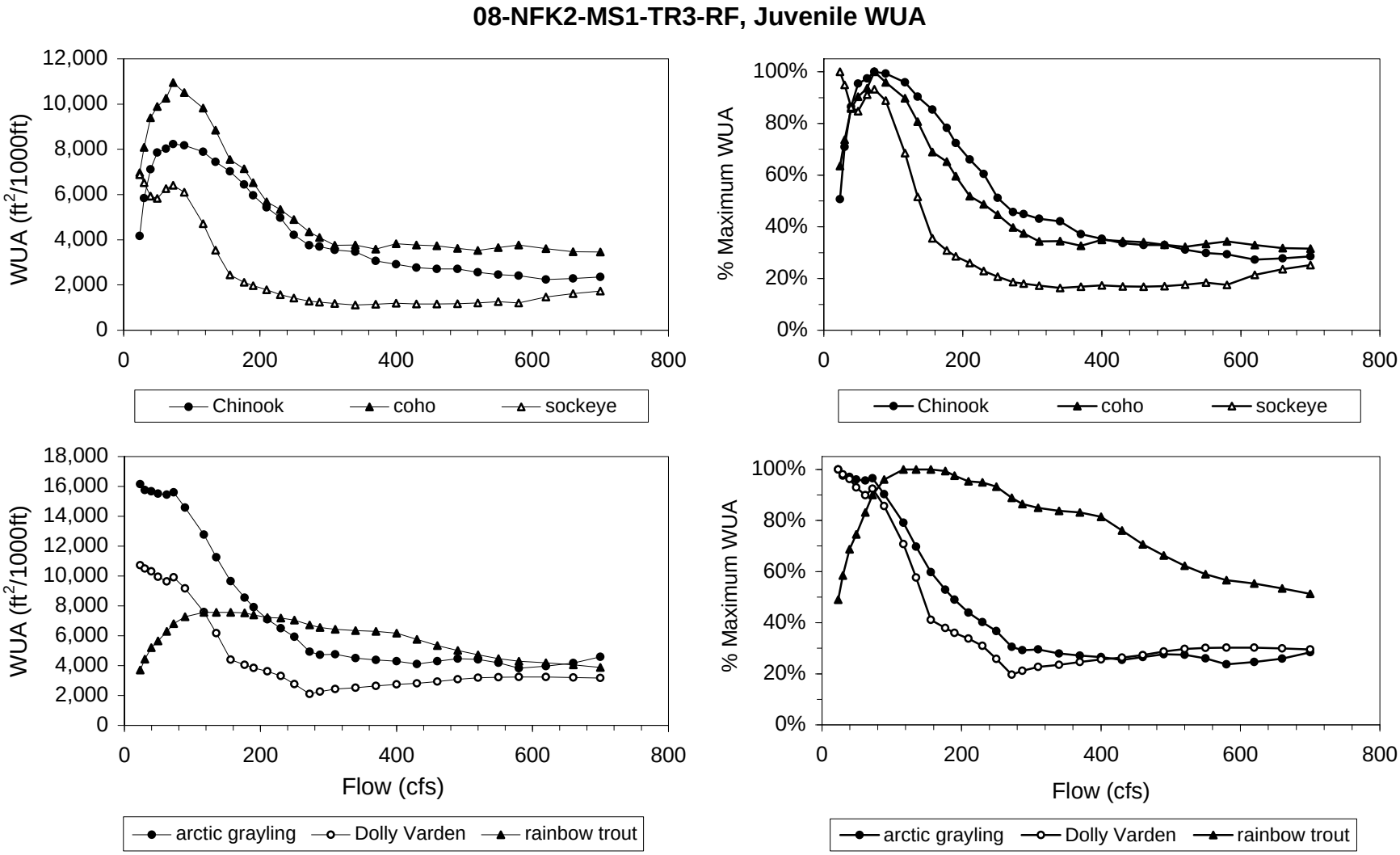

Figure 74
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK2-MS1-TR3 (River Kilometer 26.96) in NFK-C, North Fork Koktuli River, Alaska.

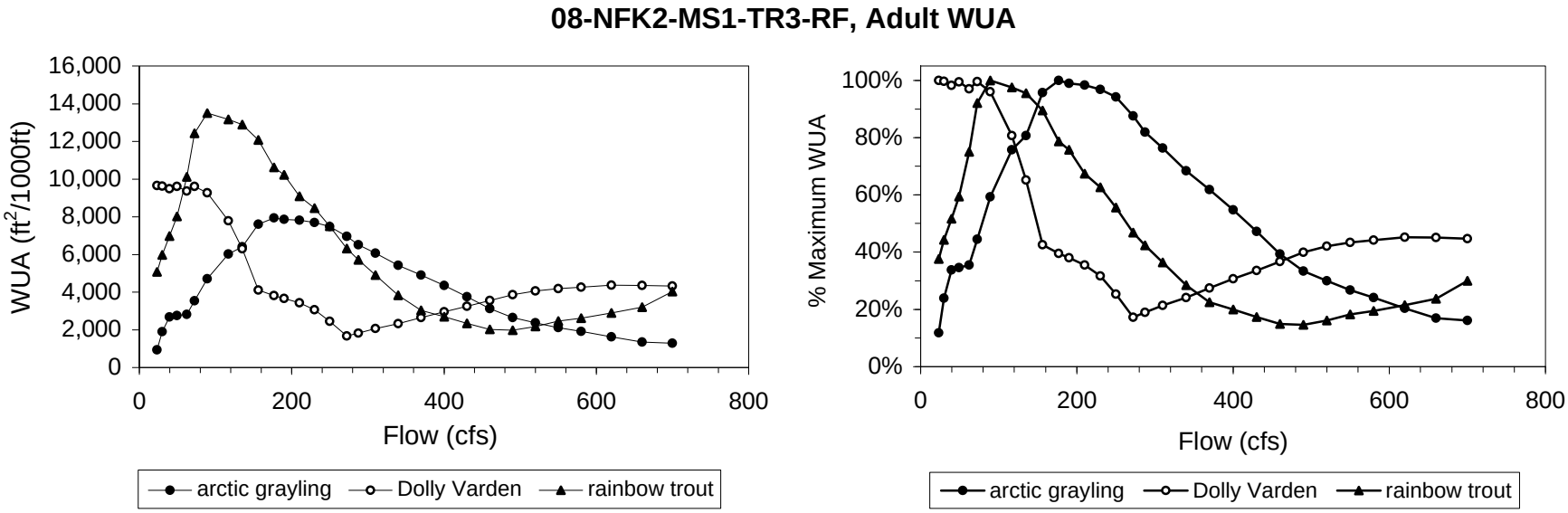

Figure 75
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK2-MS1-TR3 (River Kilometer 26.96) in NFK-C, North Fork Koktuli River, Alaska.

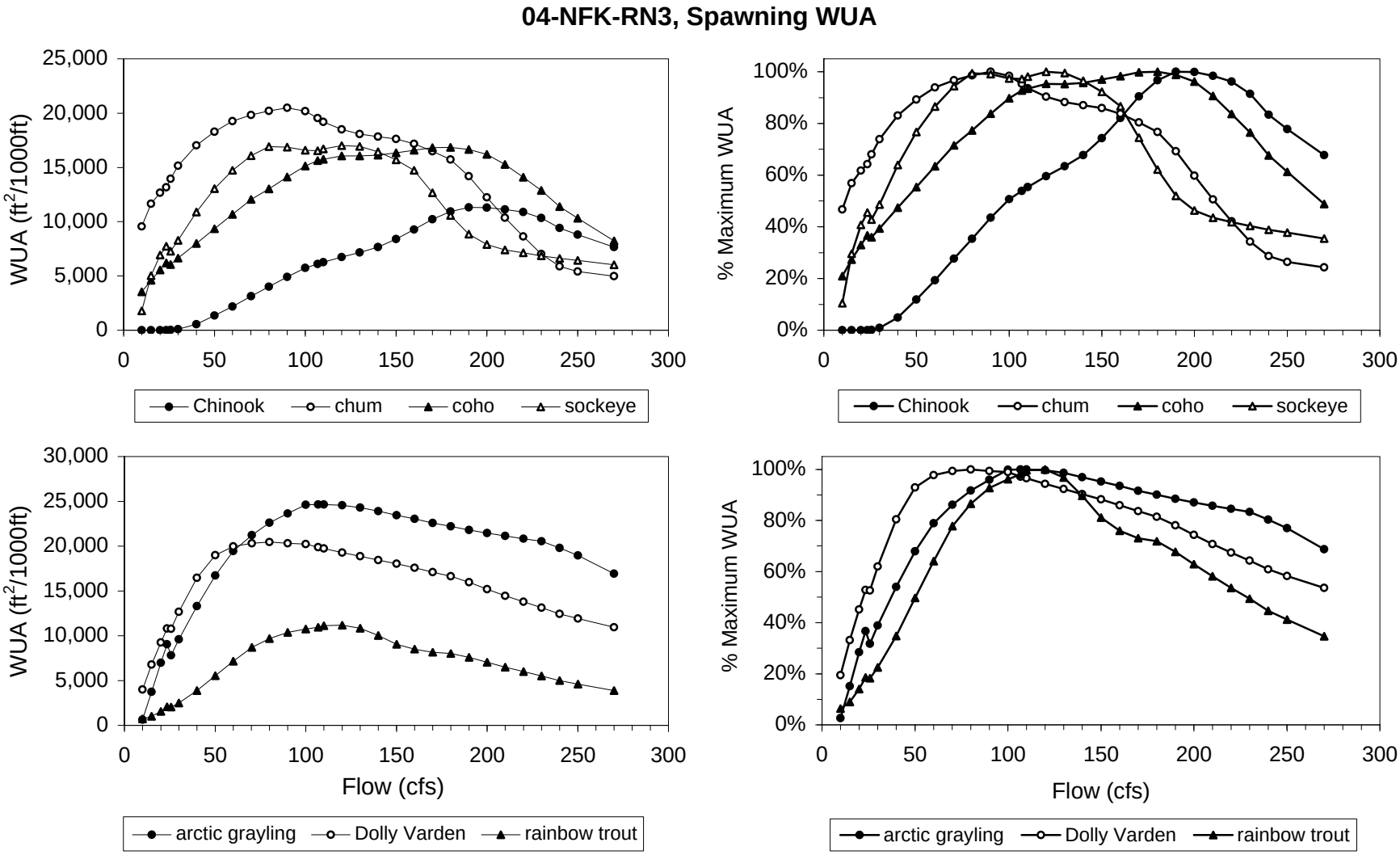

Figure 76
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RN3 (River Kilometer 30.63) in NFK-C, North Fork Koktuli River, Alaska.

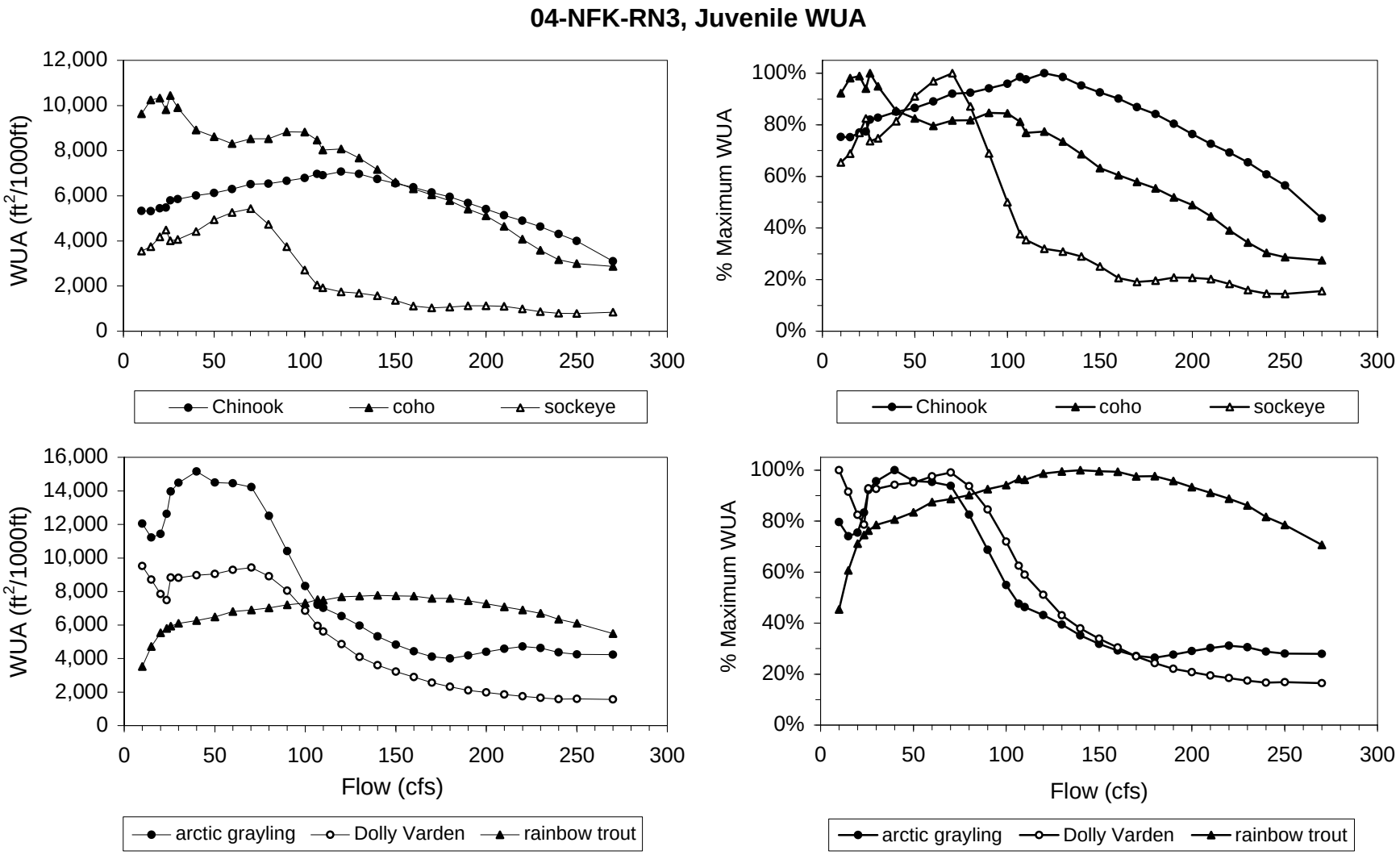

Figure 77
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-RN3 (River Kilometer 30.63) in NFK-C, North Fork Koktuli River, Alaska.

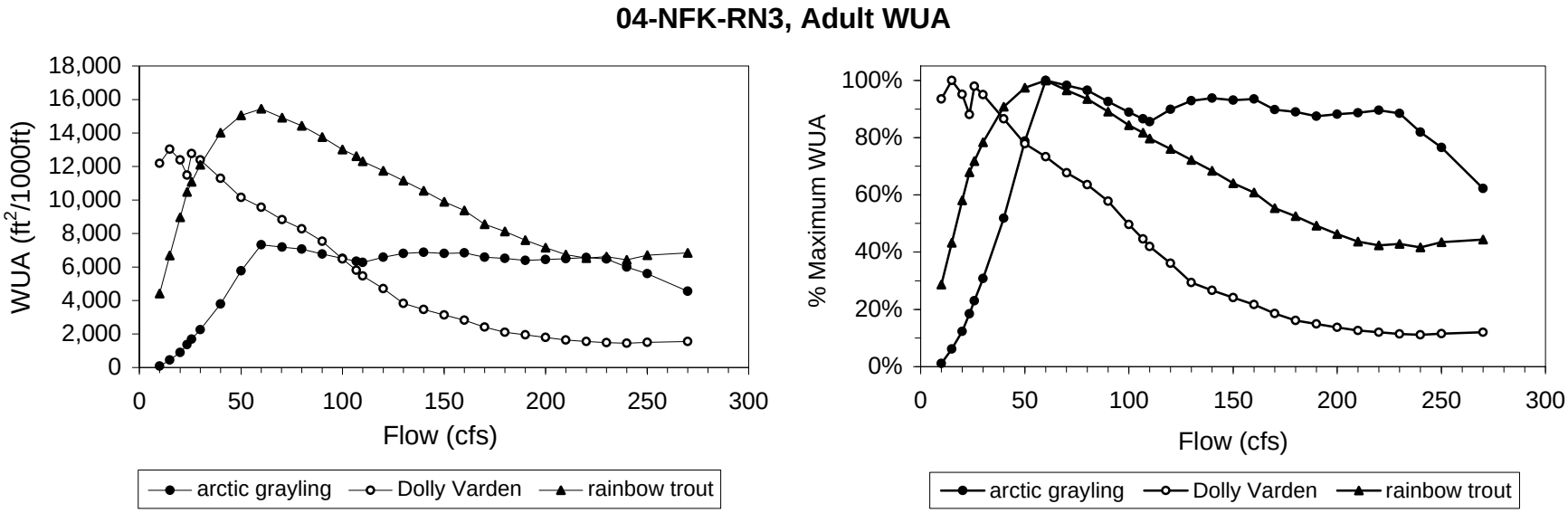

Figure 78
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-RN3 (River Kilometer 30.63) in NFK-C, North Fork Koktuli River, Alaska.

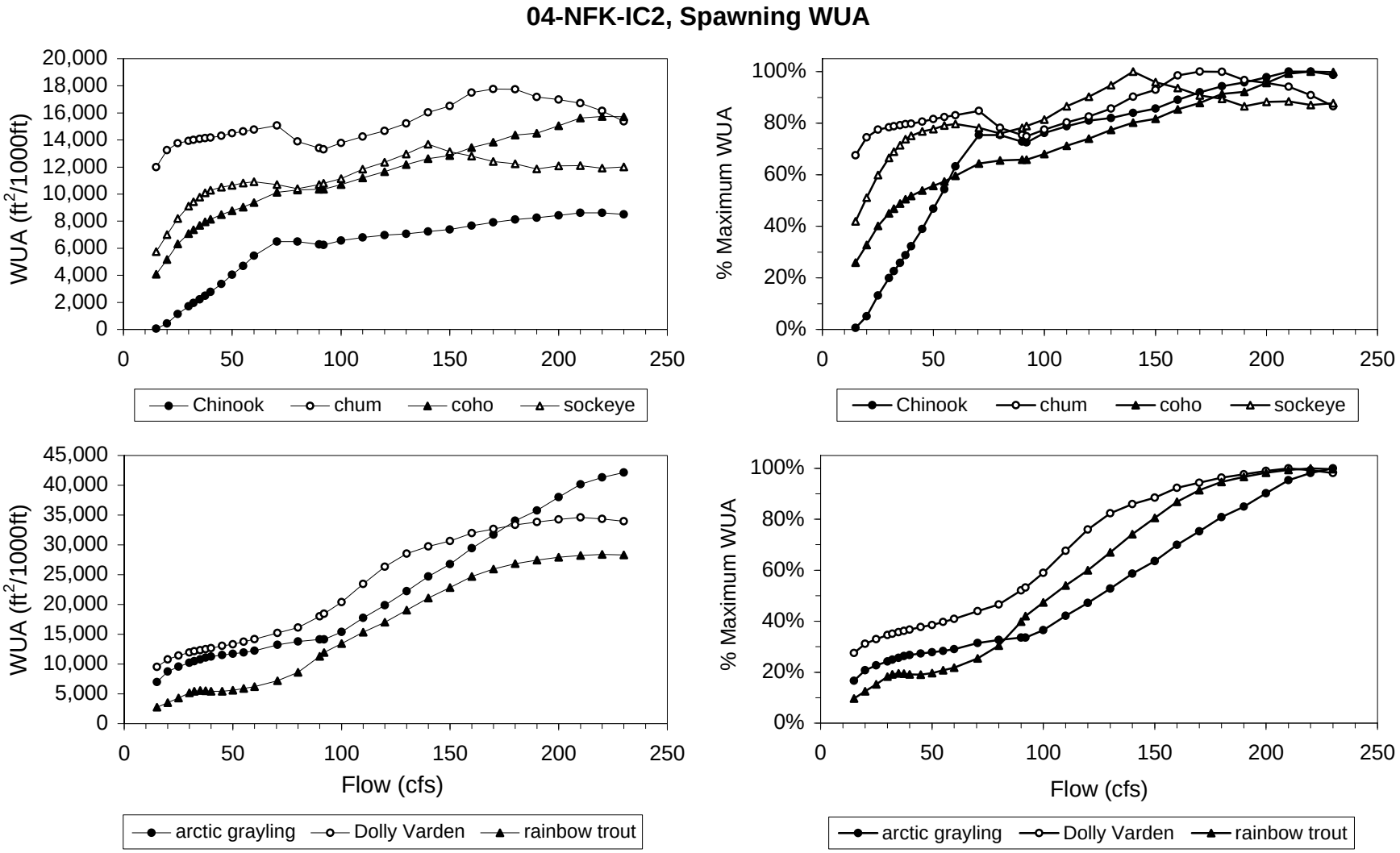

Figure 79
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-IC2 (River Kilometer 33.65) in NFK-C, North Fork Koktuli River, Alaska.

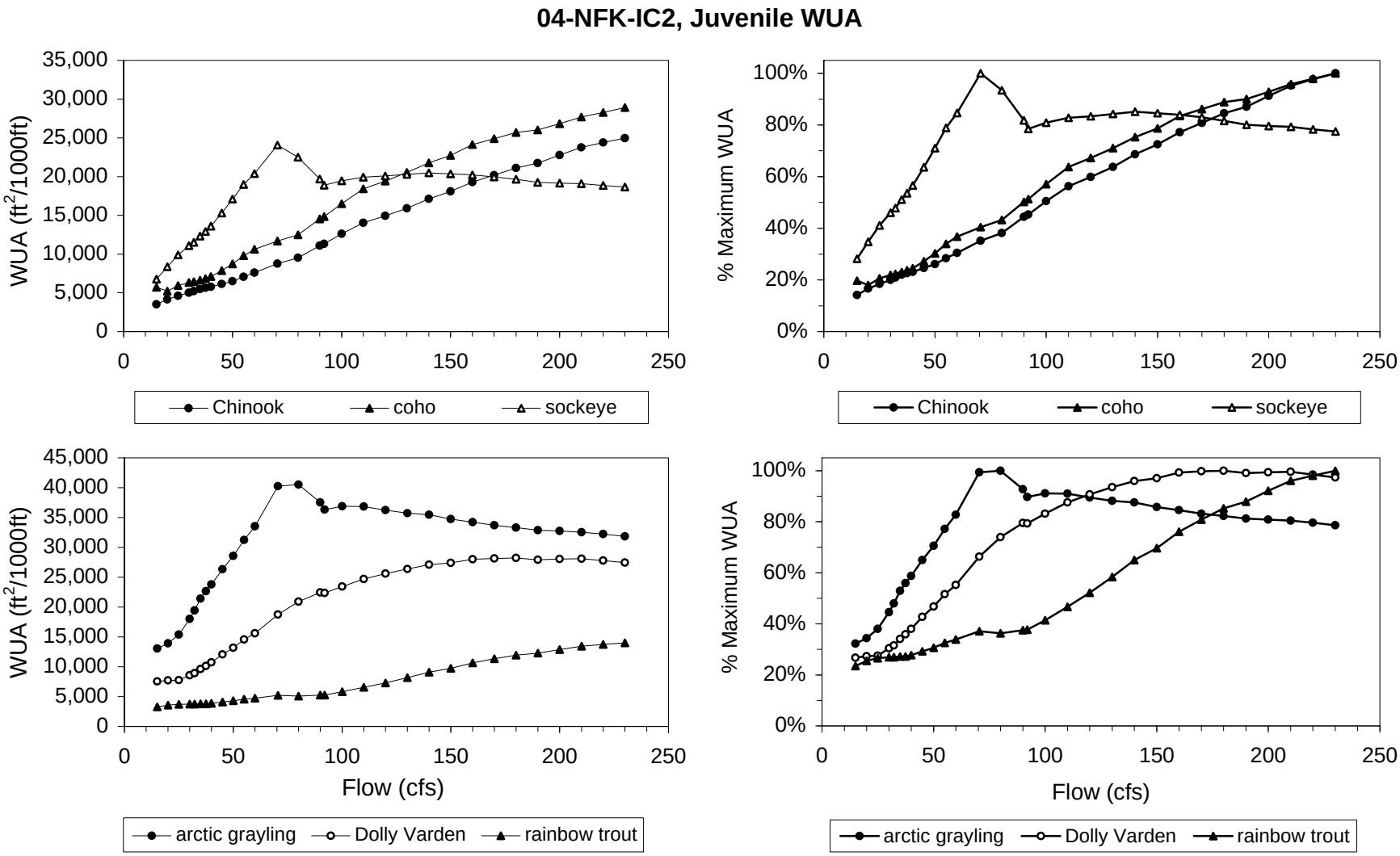

Figure 80
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-NFK-IC2 (River Kilometer 33.65) in NFK-C, North Fork Koktuli River, Alaska.

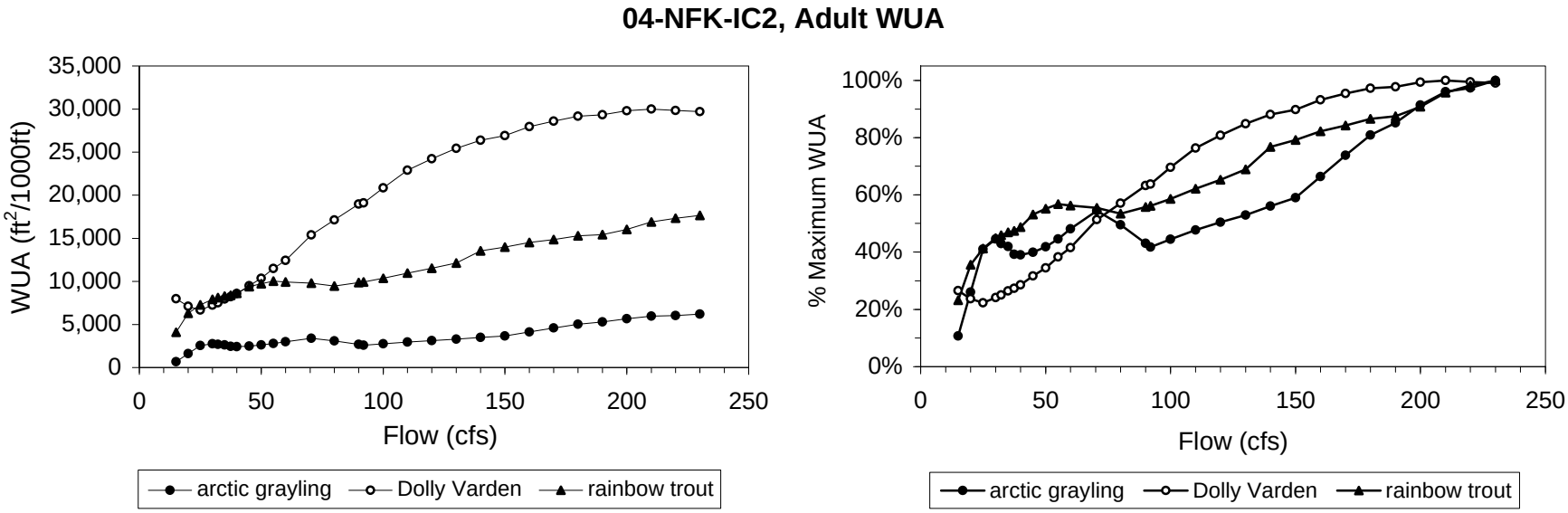

Figure 81
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-NFK-IC2 (River Kilometer 33.65) in NFK-C, North Fork Koktuli River, Alaska.

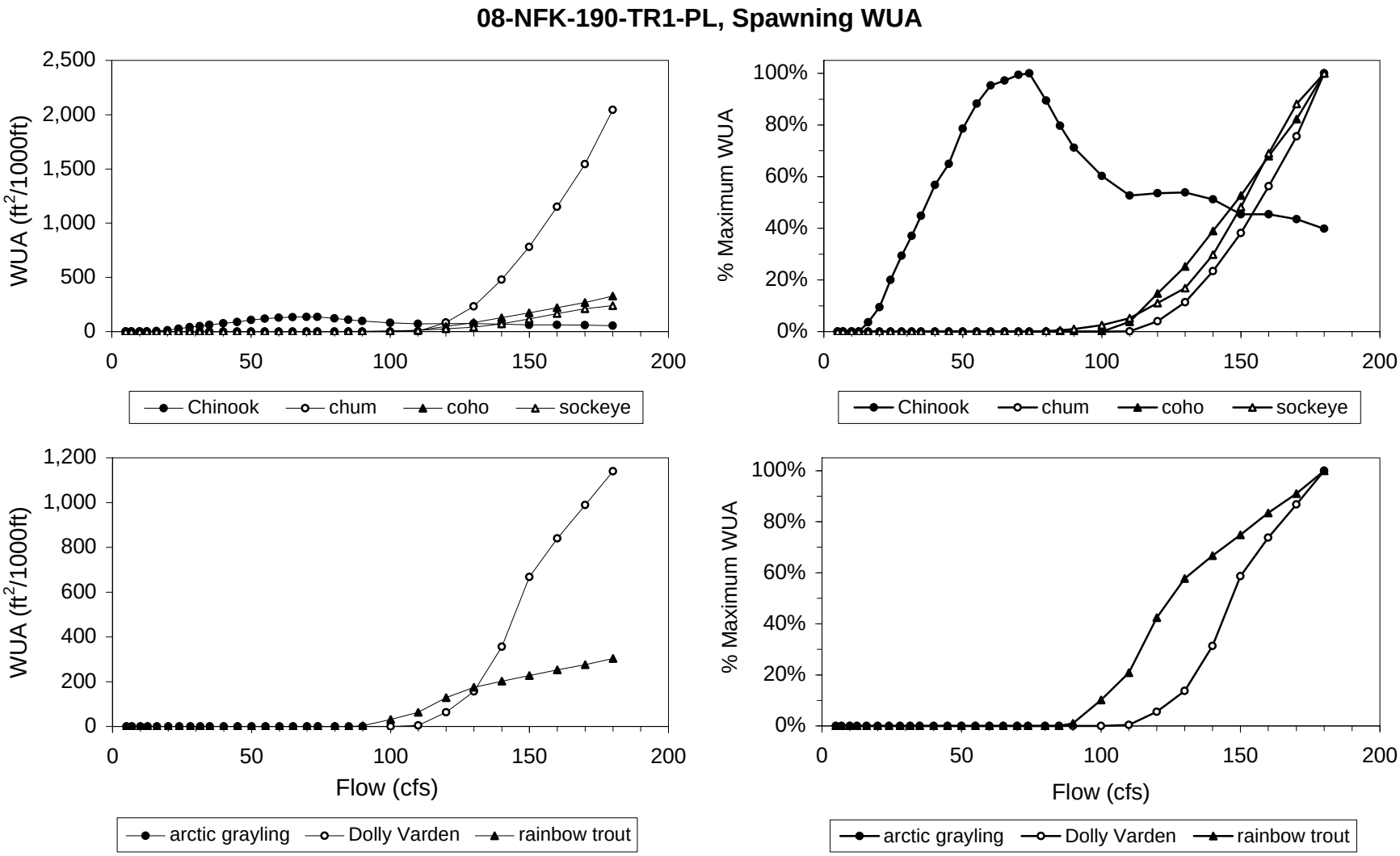

Figure 82
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK-190-TR1 (River Kilometer 0.151) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

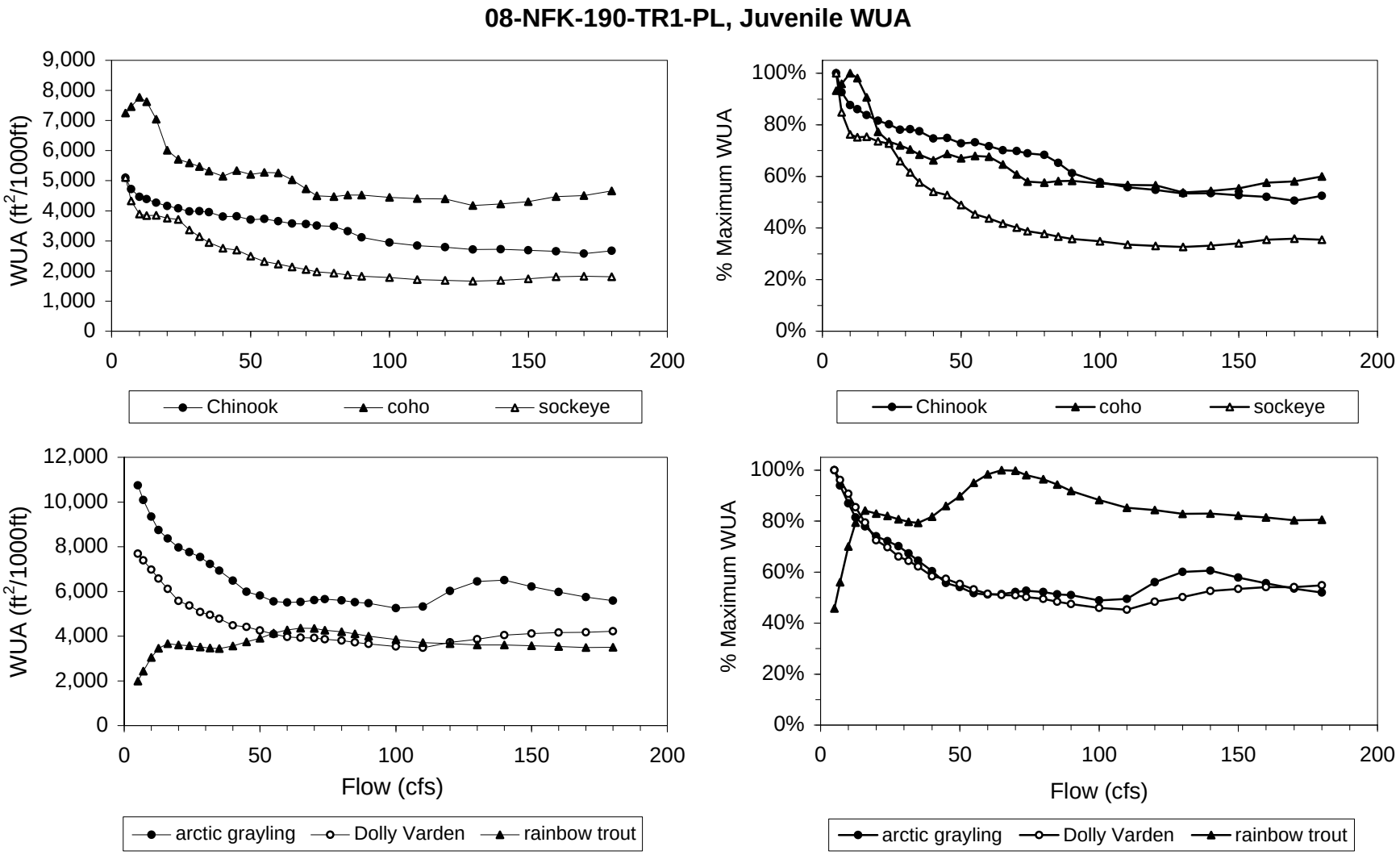

Figure 83
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK-190-TR1 (River Kilometer 0.151) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

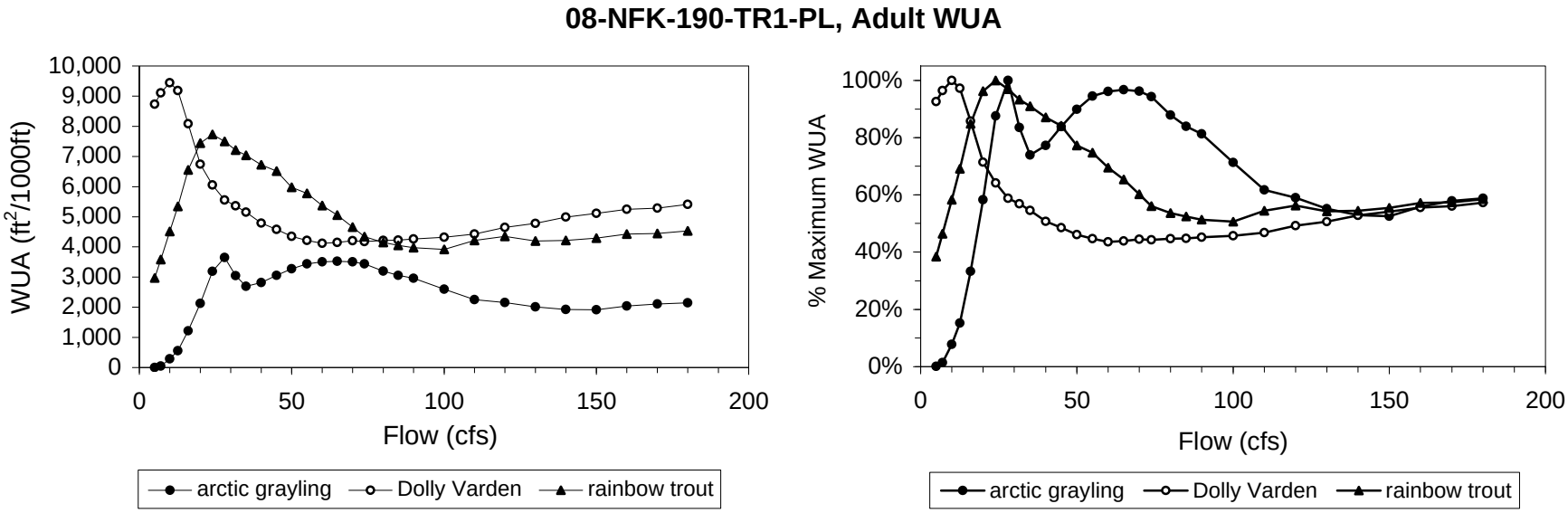

Figure 84
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK-190-TR1 (River Kilometer 0.151) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

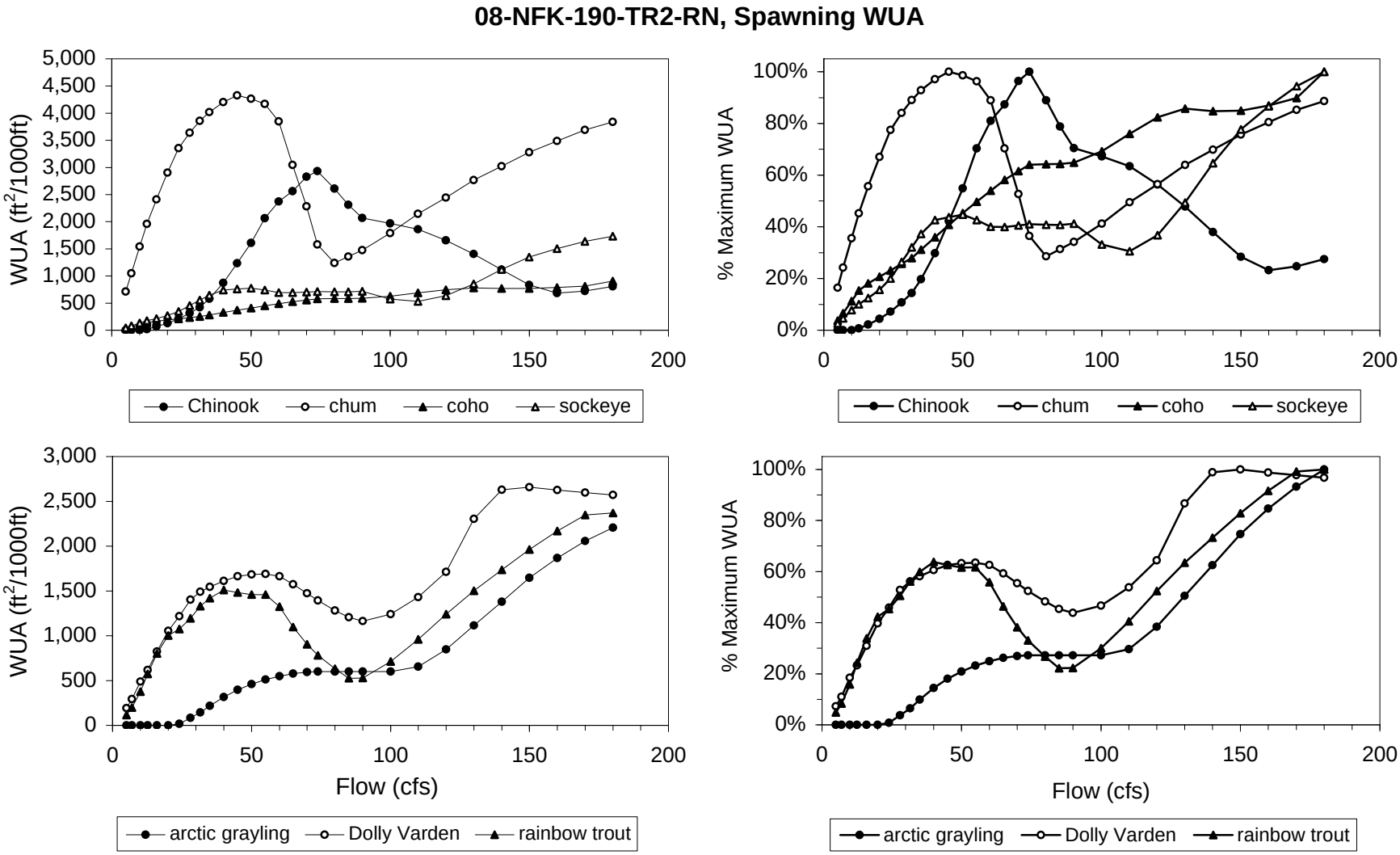

Figure 85
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK-190-TR2 (River Kilometer 0.167) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

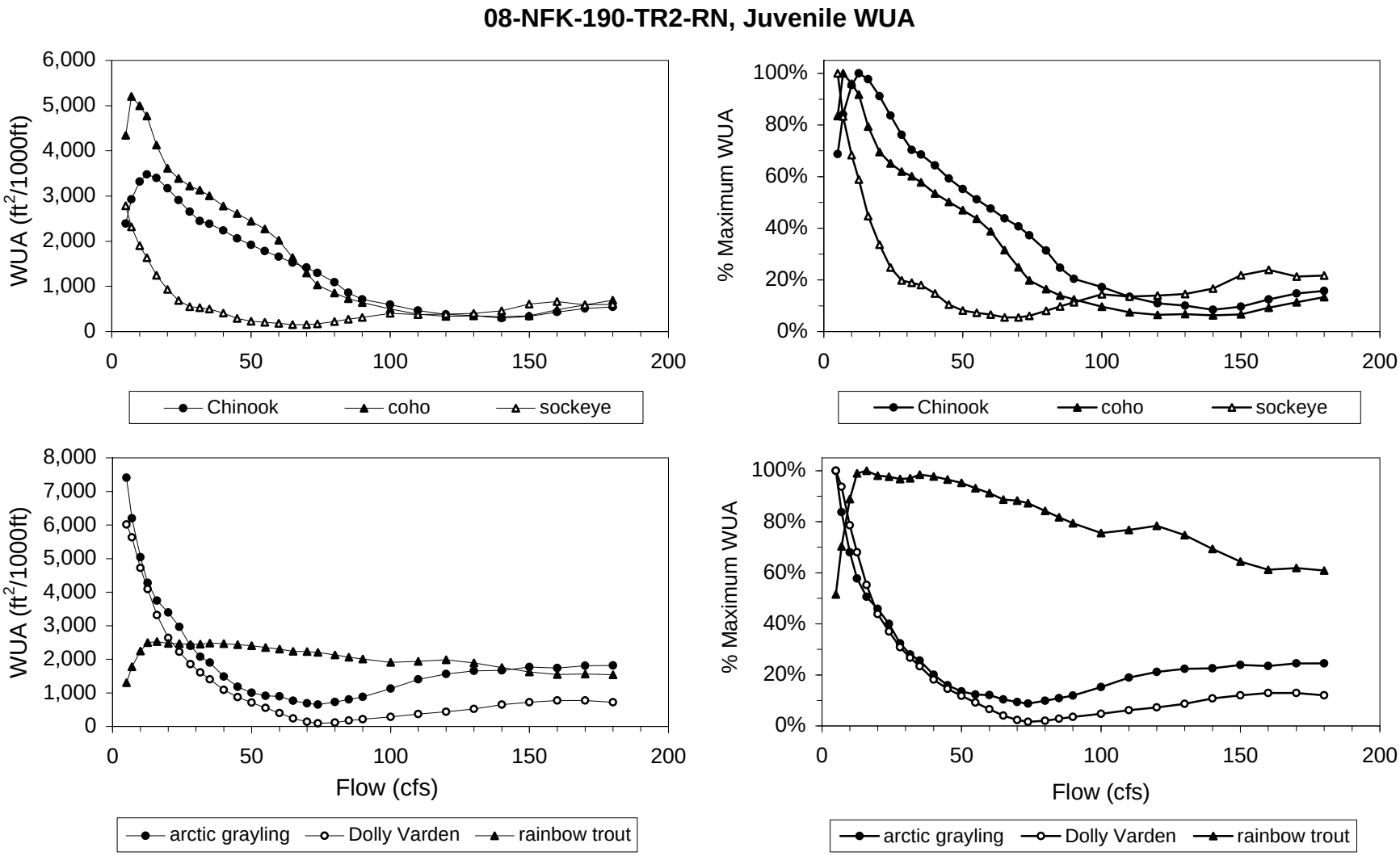

Figure 86
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK-190-TR2 (River Kilometer 0.167) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

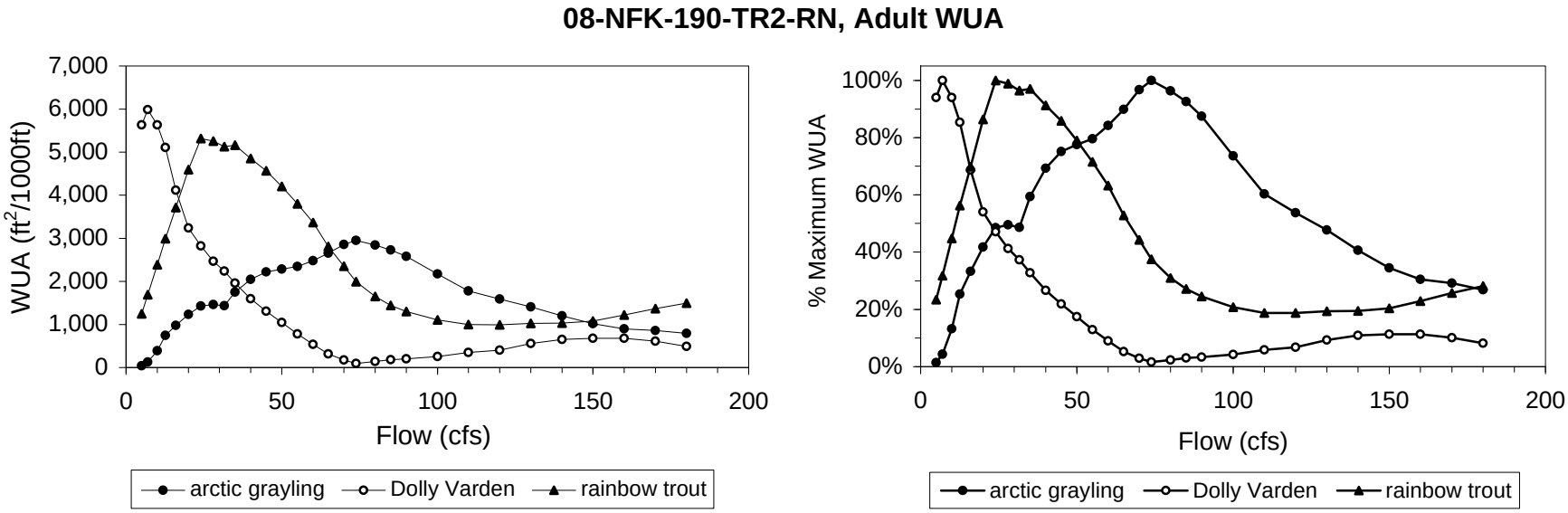

Figure 87
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK-190-TR2 (River Kilometer 0.167) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

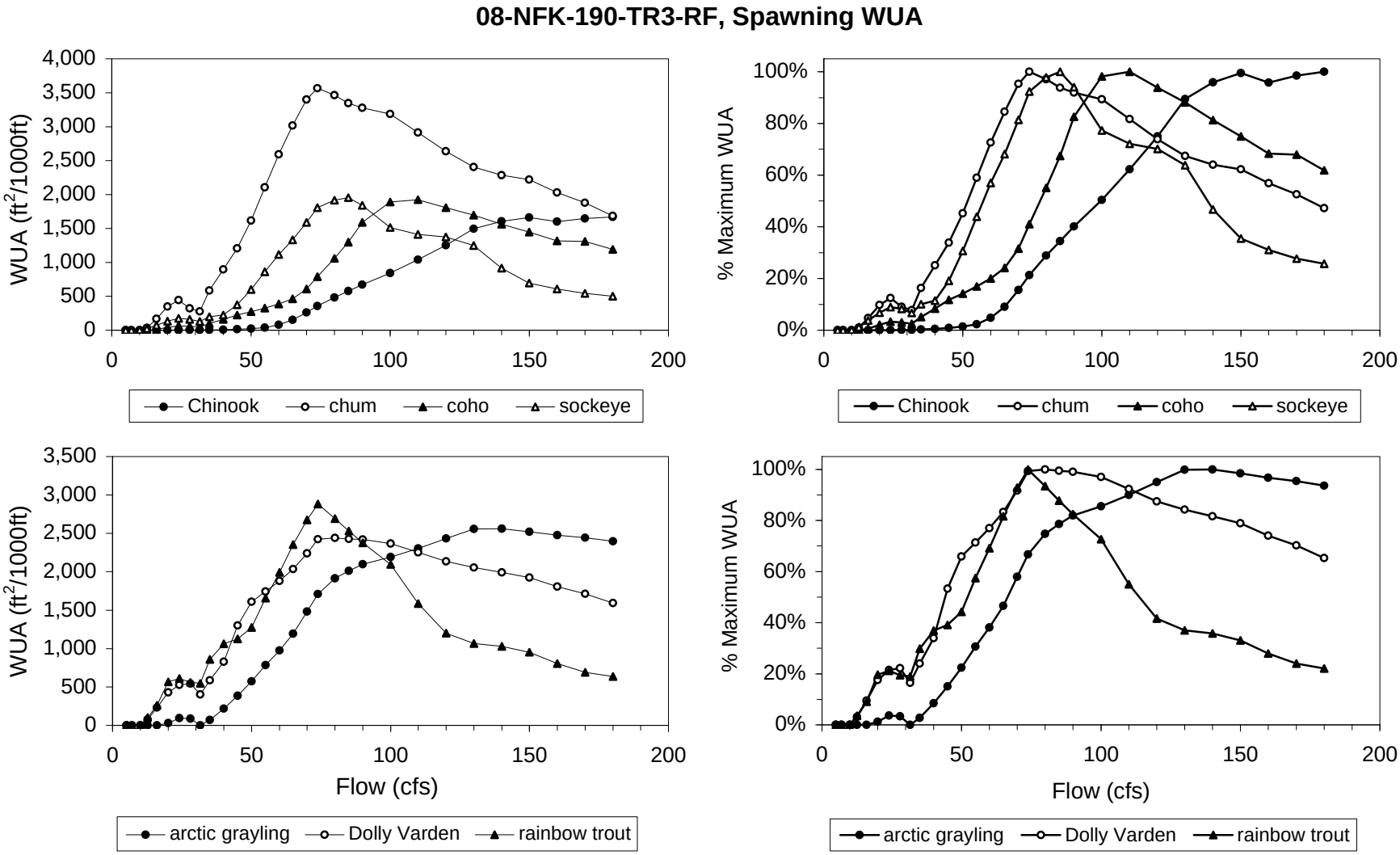

Figure 88
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK-190-TR3 (River Kilometer 0.181) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

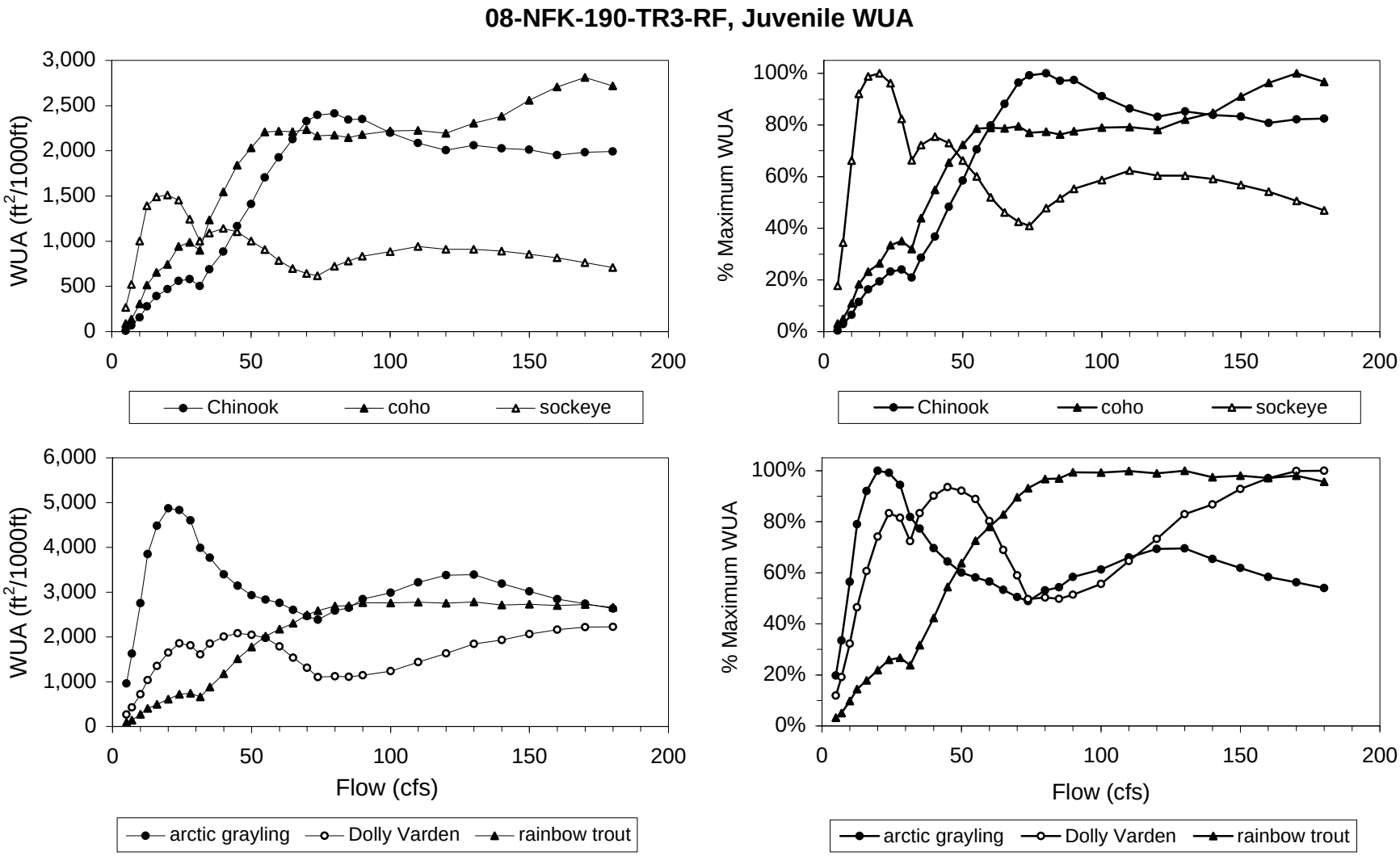

Figure 89
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-NFK-190-TR3 (River Kilometer 0.181) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

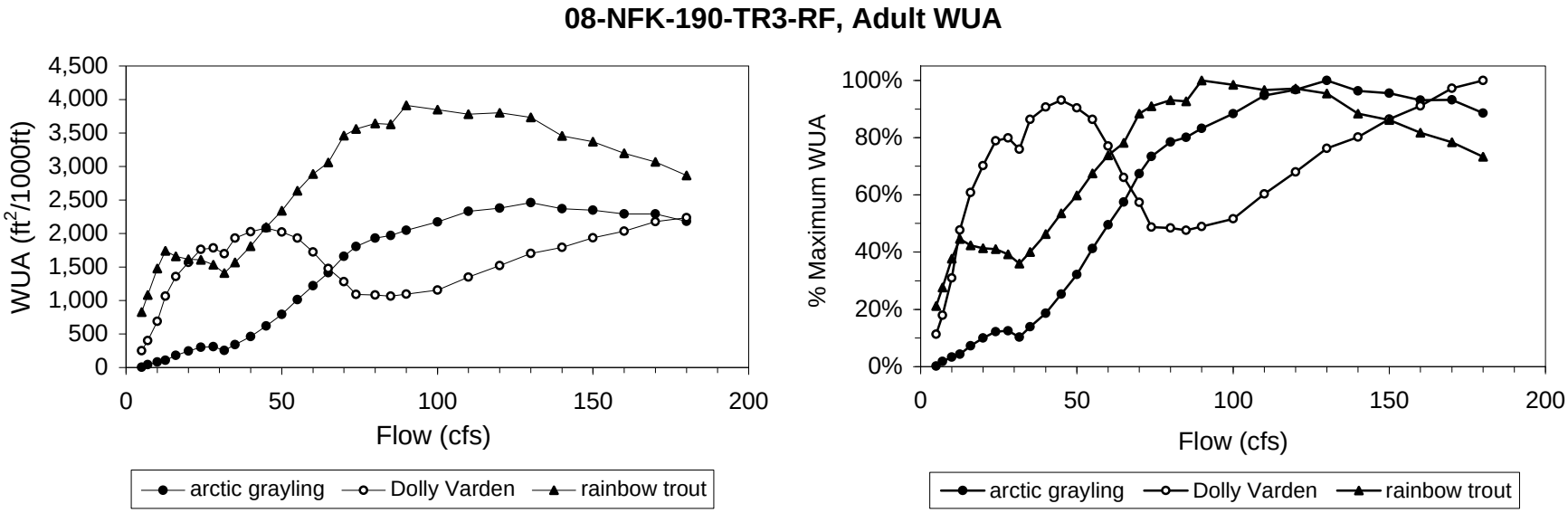

Figure 90
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-NFK-190-TR3 (River Kilometer 0.181) in tributary NFK-1.190, North Fork Koktuli River, Alaska.

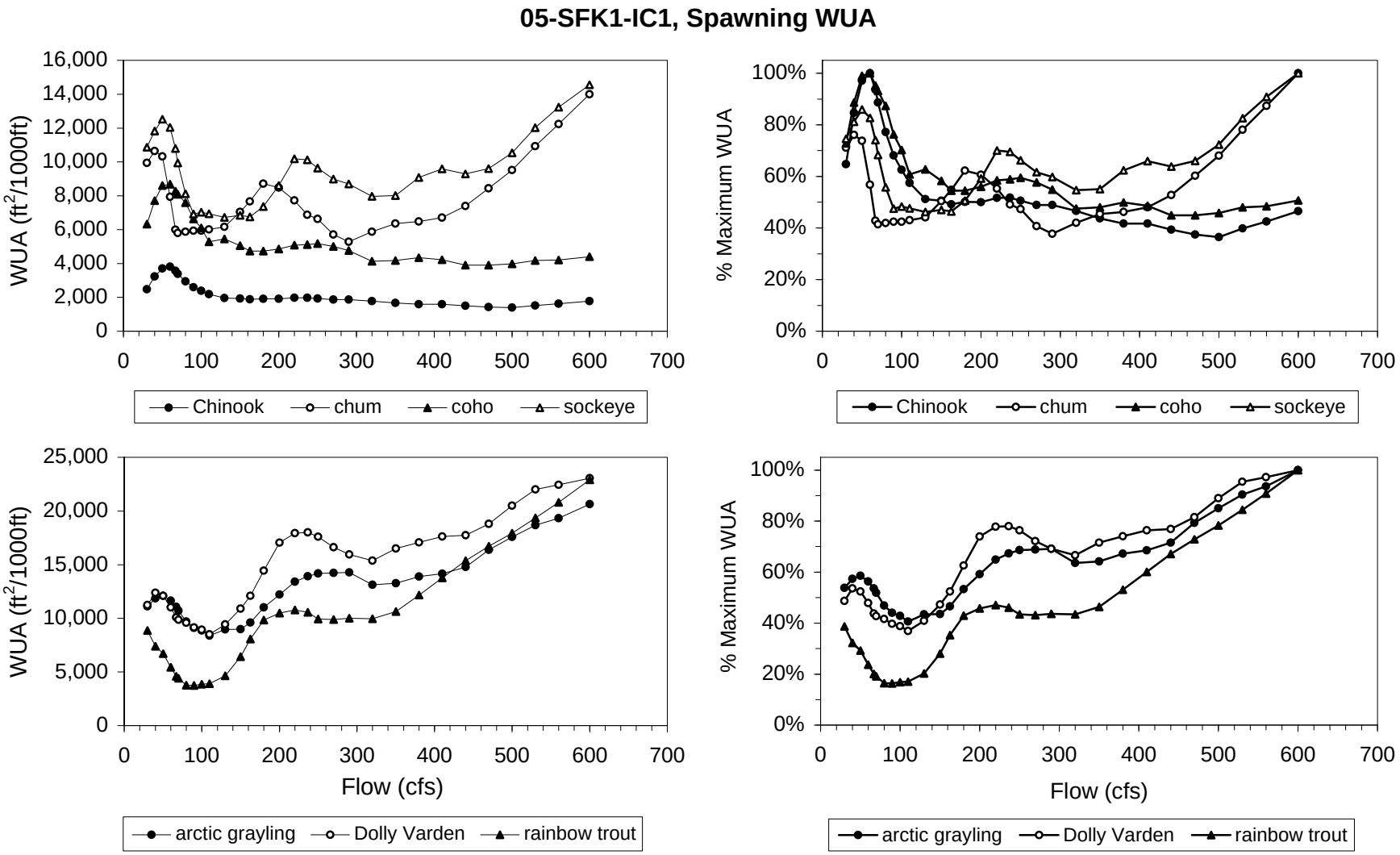

Figure 91
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK1-IC1 (River Kilometer 2.39) in SFK-A, South Fork Koktuli River, Alaska.

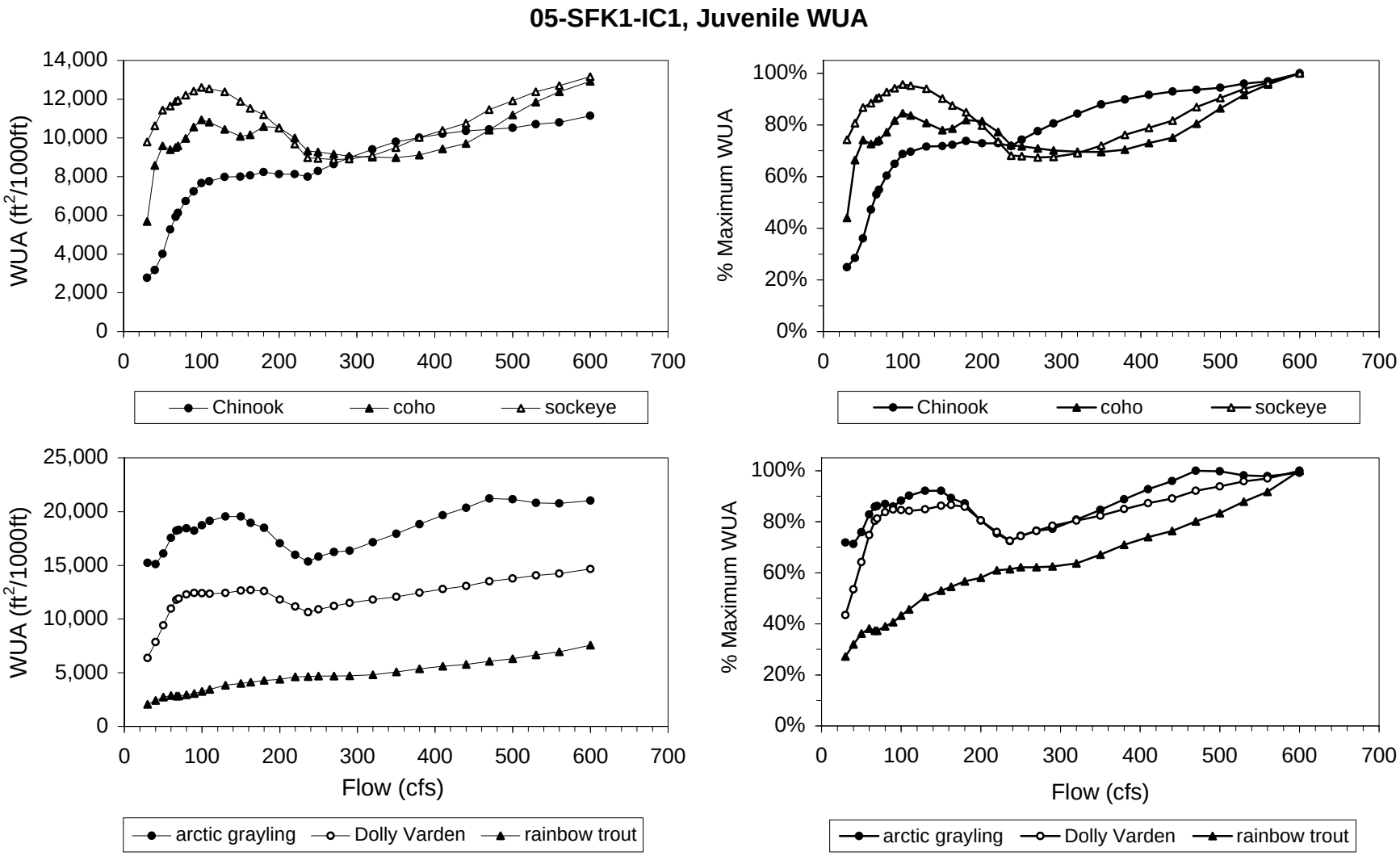

Figure 92
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK1-IC1 (River Kilometer 2.39) in SFK-A, South Fork Koktuli River, Alaska.

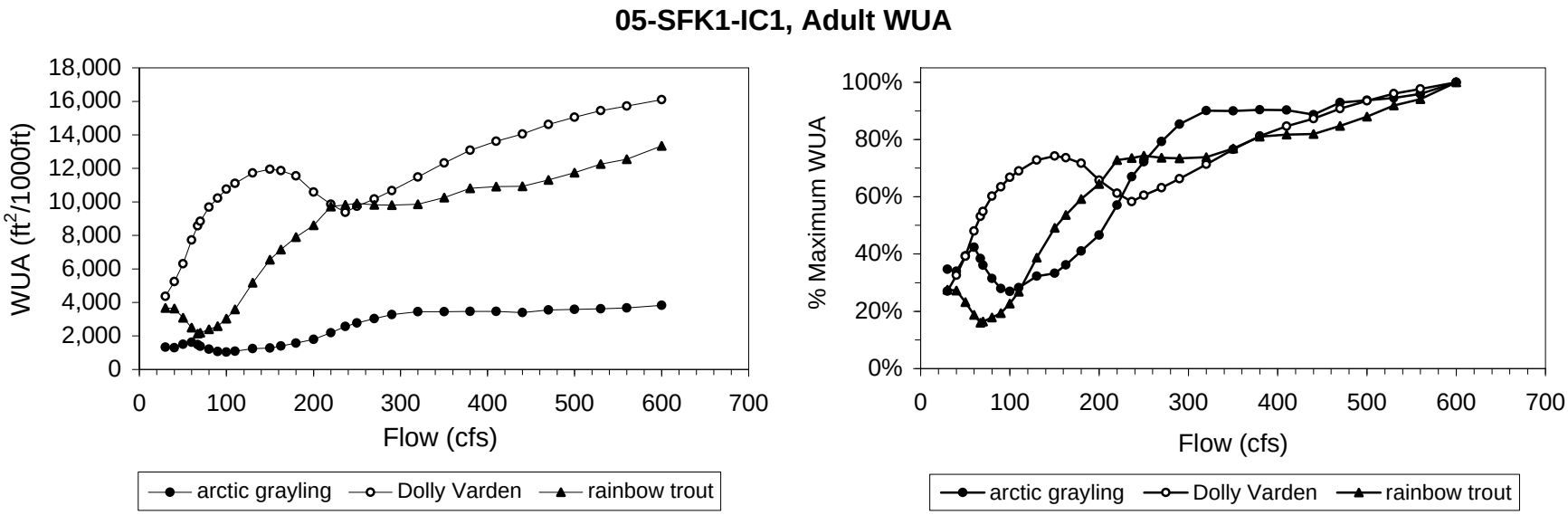

Figure 93
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK1-IC1 (River Kilometer 2.39) in SFK-A, South Fork Koktuli River, Alaska.

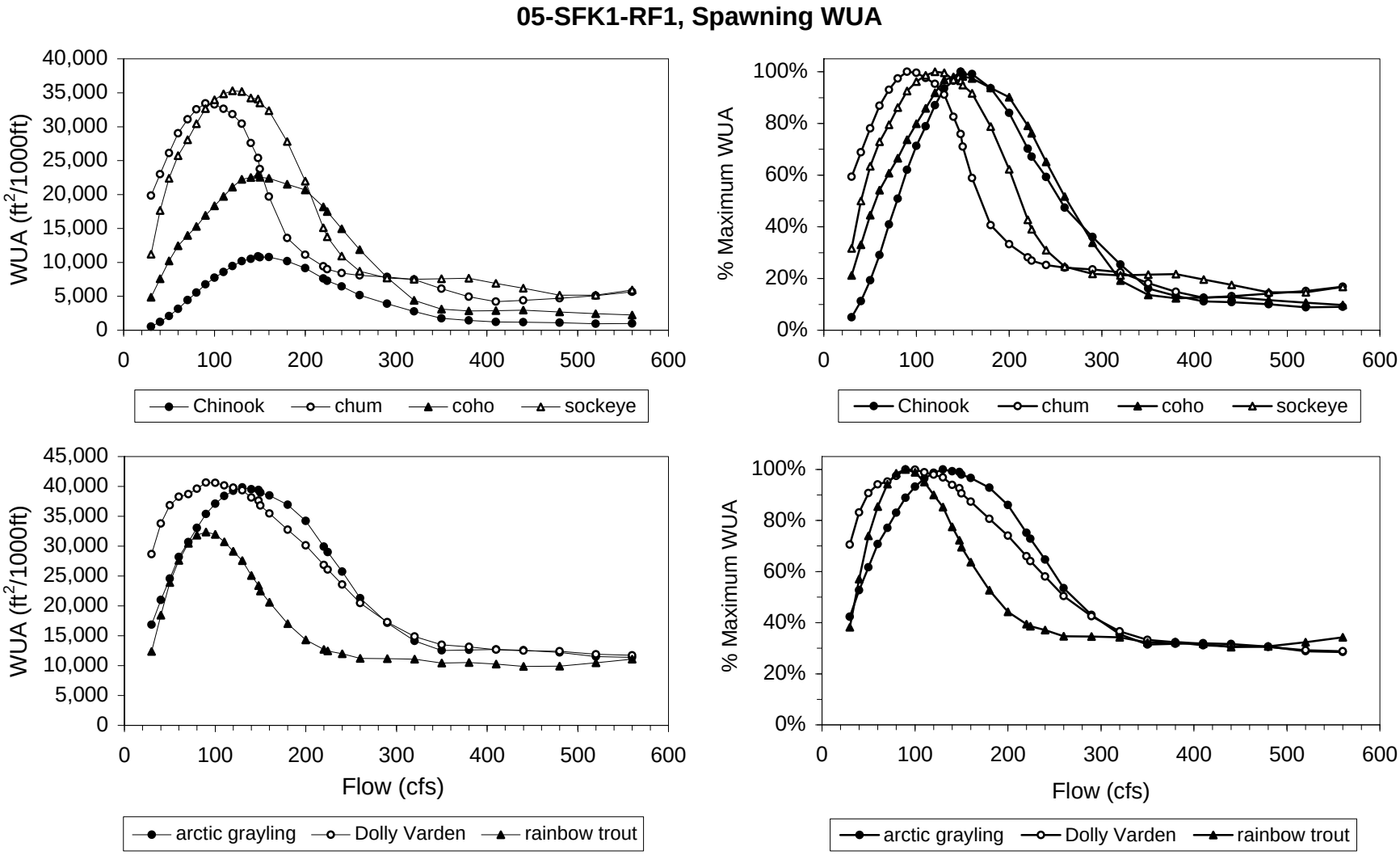

Figure 94
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK1-RF1 (River Kilometer 4.91) in SFK-A, South Fork Koktuli River, Alaska.

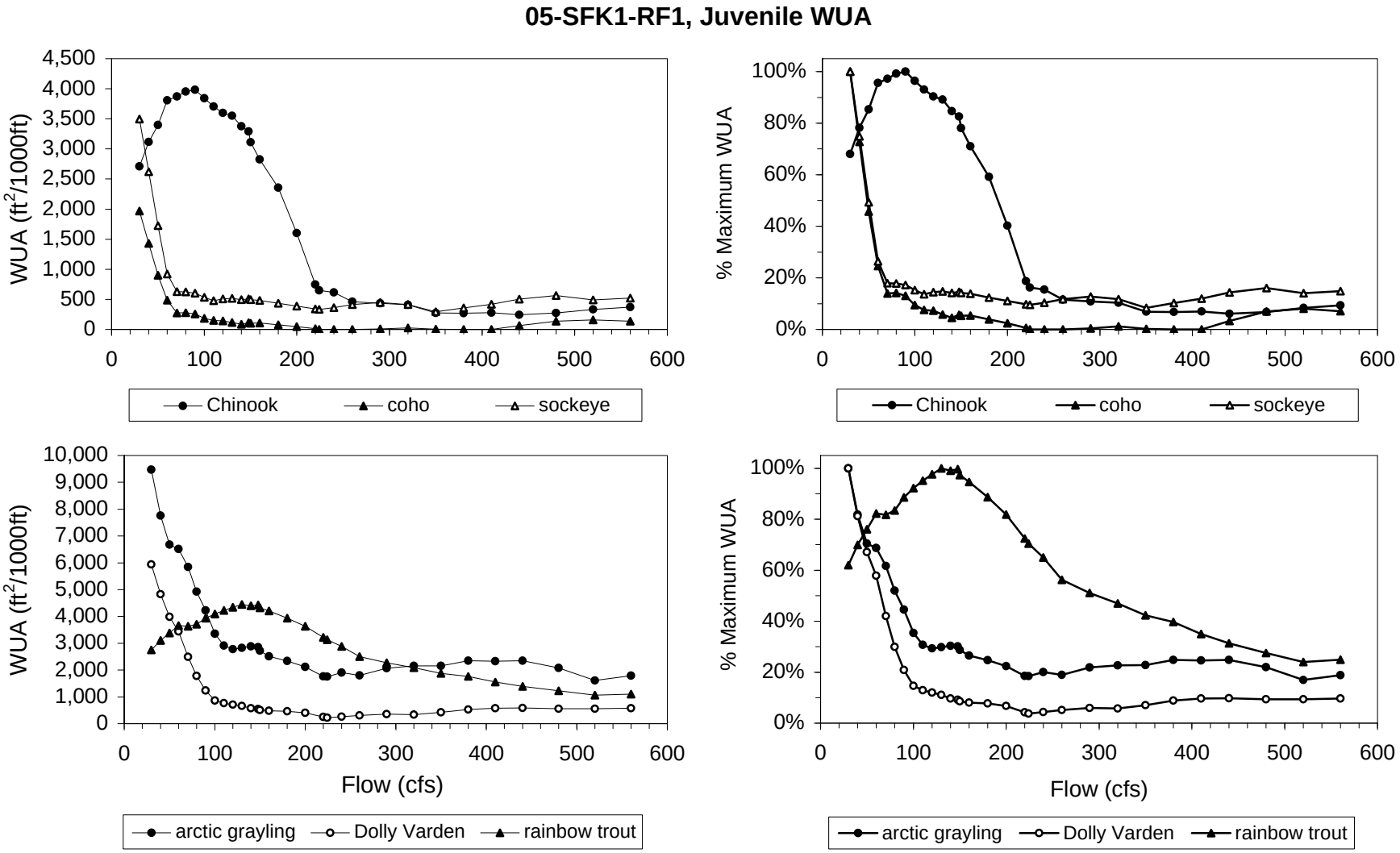

Figure 95
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK1-RF1 (River Kilometer 4.91) in SFK-A, South Fork Koktuli River, Alaska.

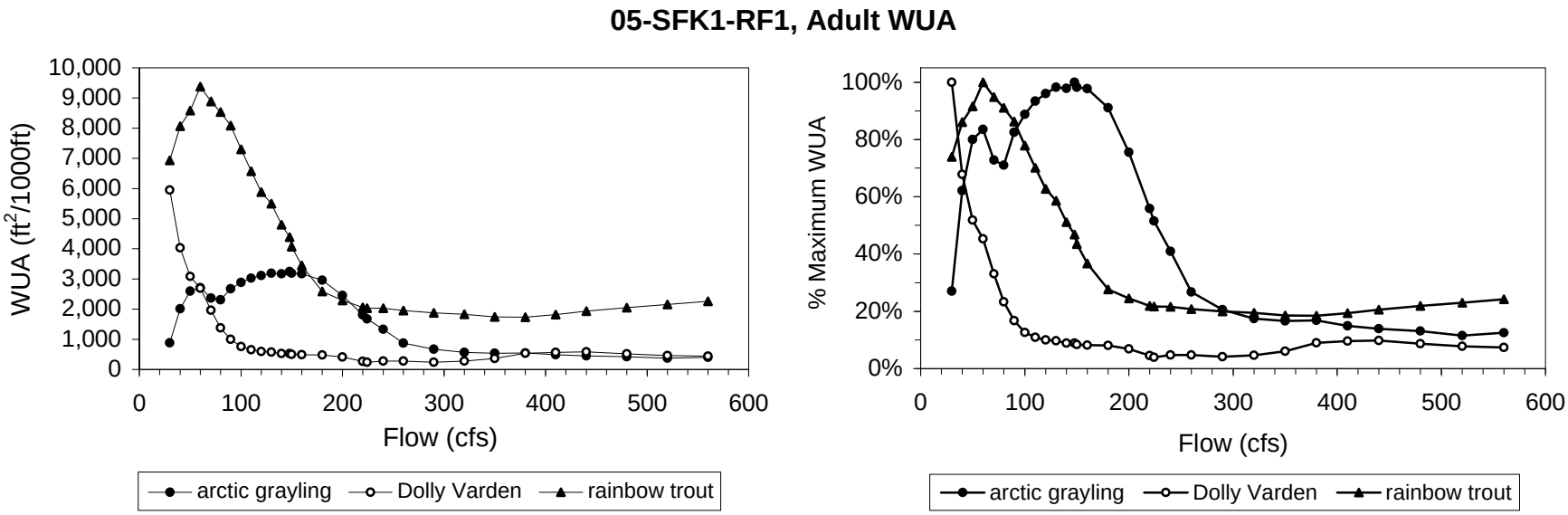

Figure 96
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK1-RF1 (River Kilometer 4.91) in SFK-A, South Fork Koktuli River, Alaska.

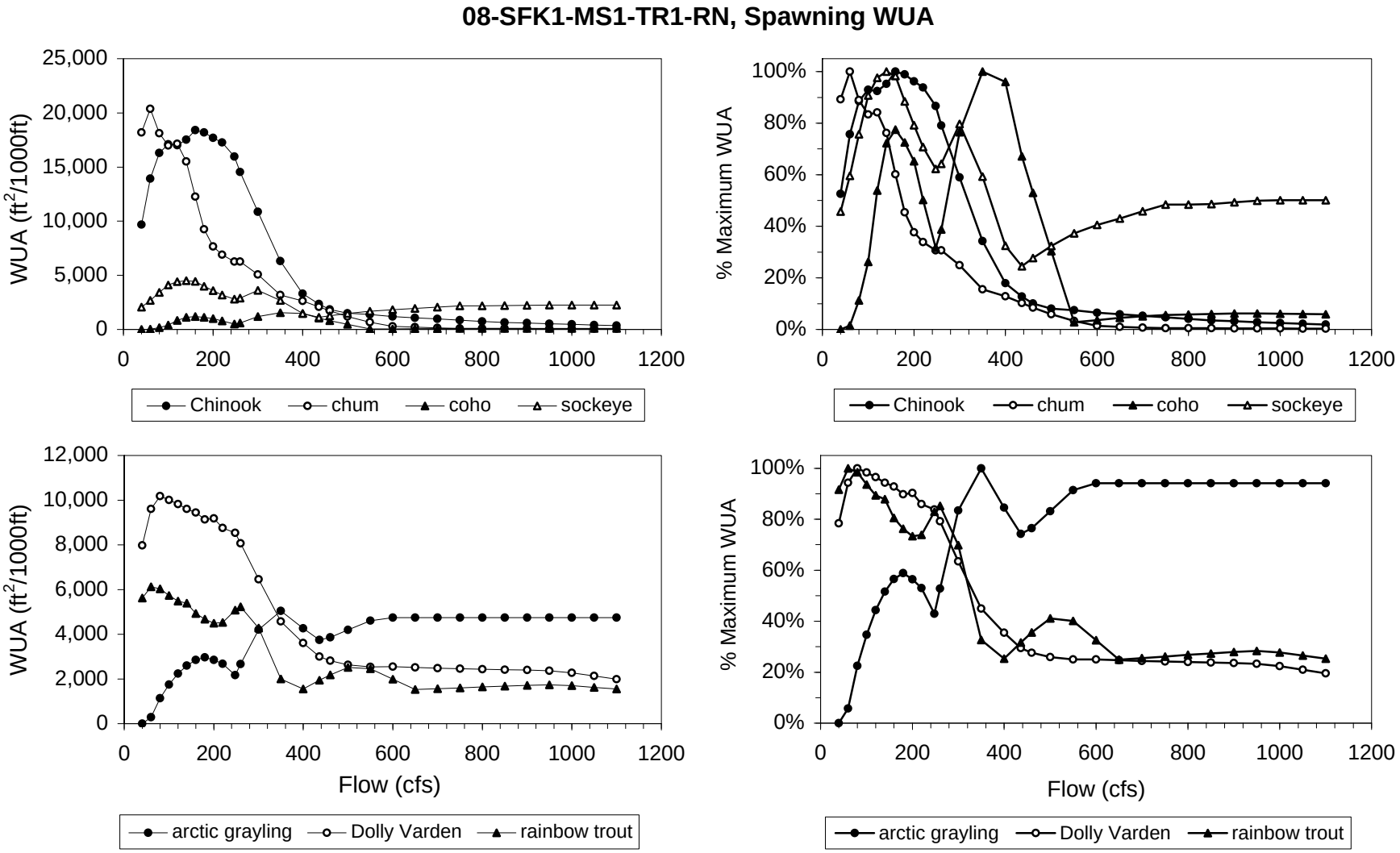

Figure 97
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR1 (River Kilometer 6.91) in SFK-A, South Fork Koktuli River, Alaska.

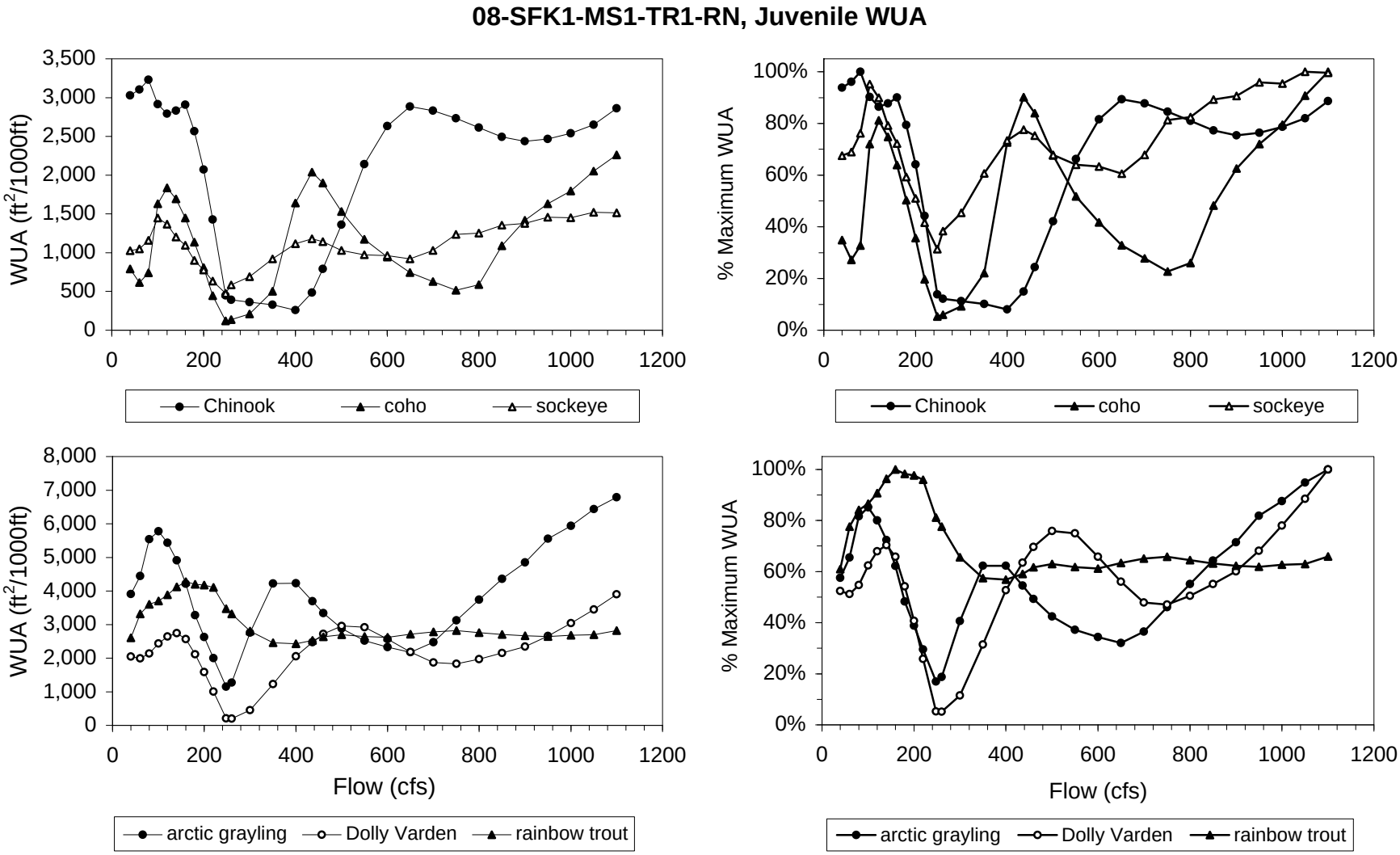

Figure 98
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR1 (River Kilometer 6.91) in SFK-A, South Fork Koktuli River, Alaska.

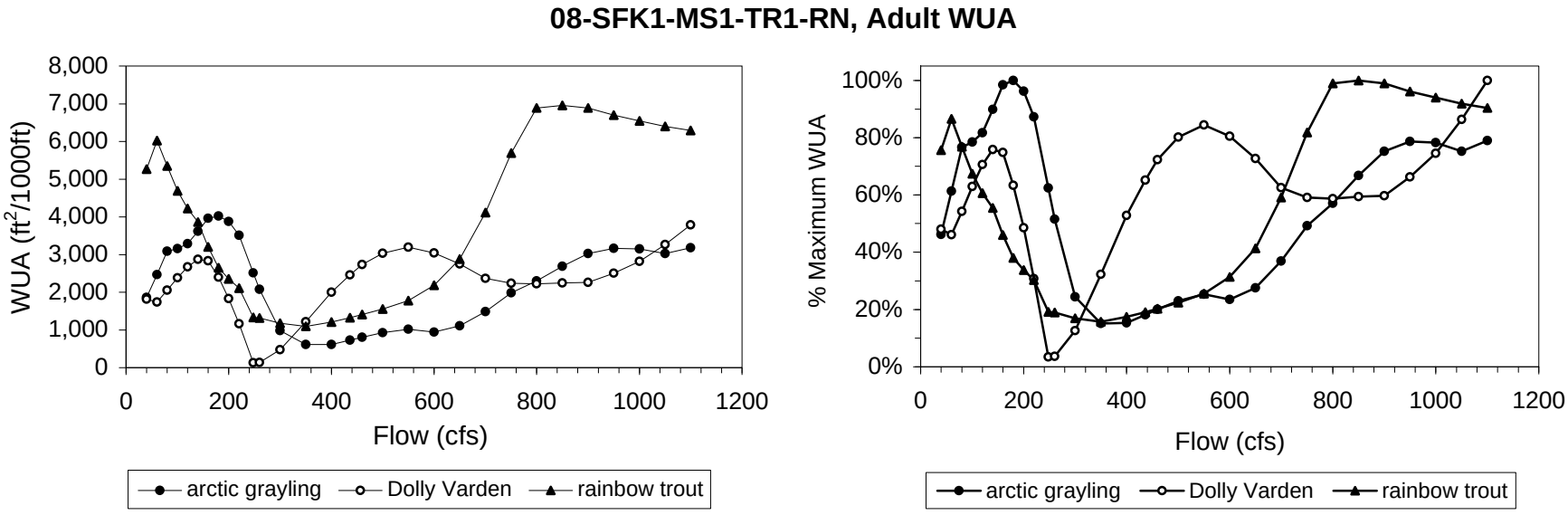

Figure 99
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS1-TR1 (River Kilometer 6.91) in SFK-A, South Fork Koktuli River, Alaska.

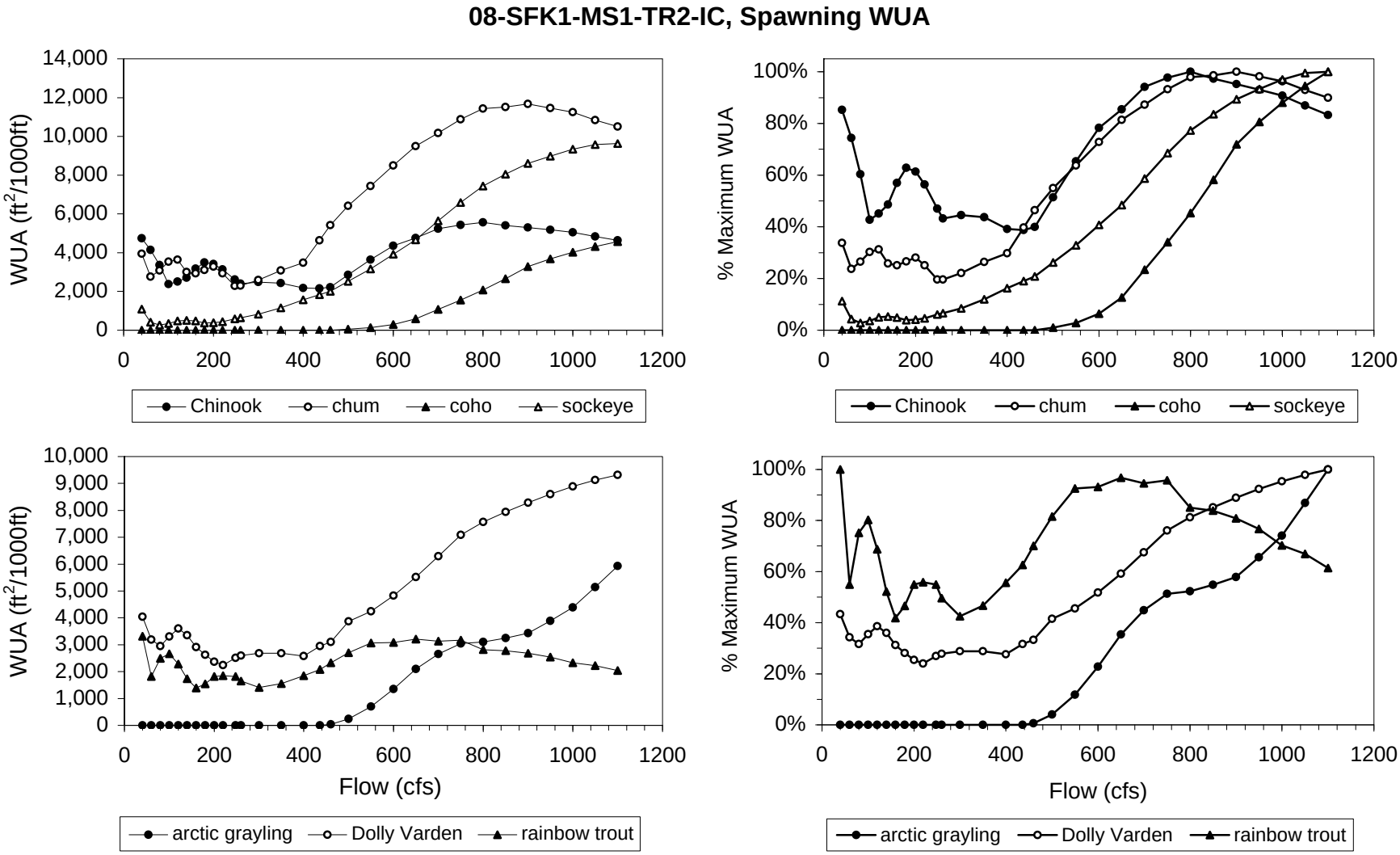

Figure 100
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR2 (River Kilometer 6.96) in SFK-A, South Fork Koktuli River, Alaska.

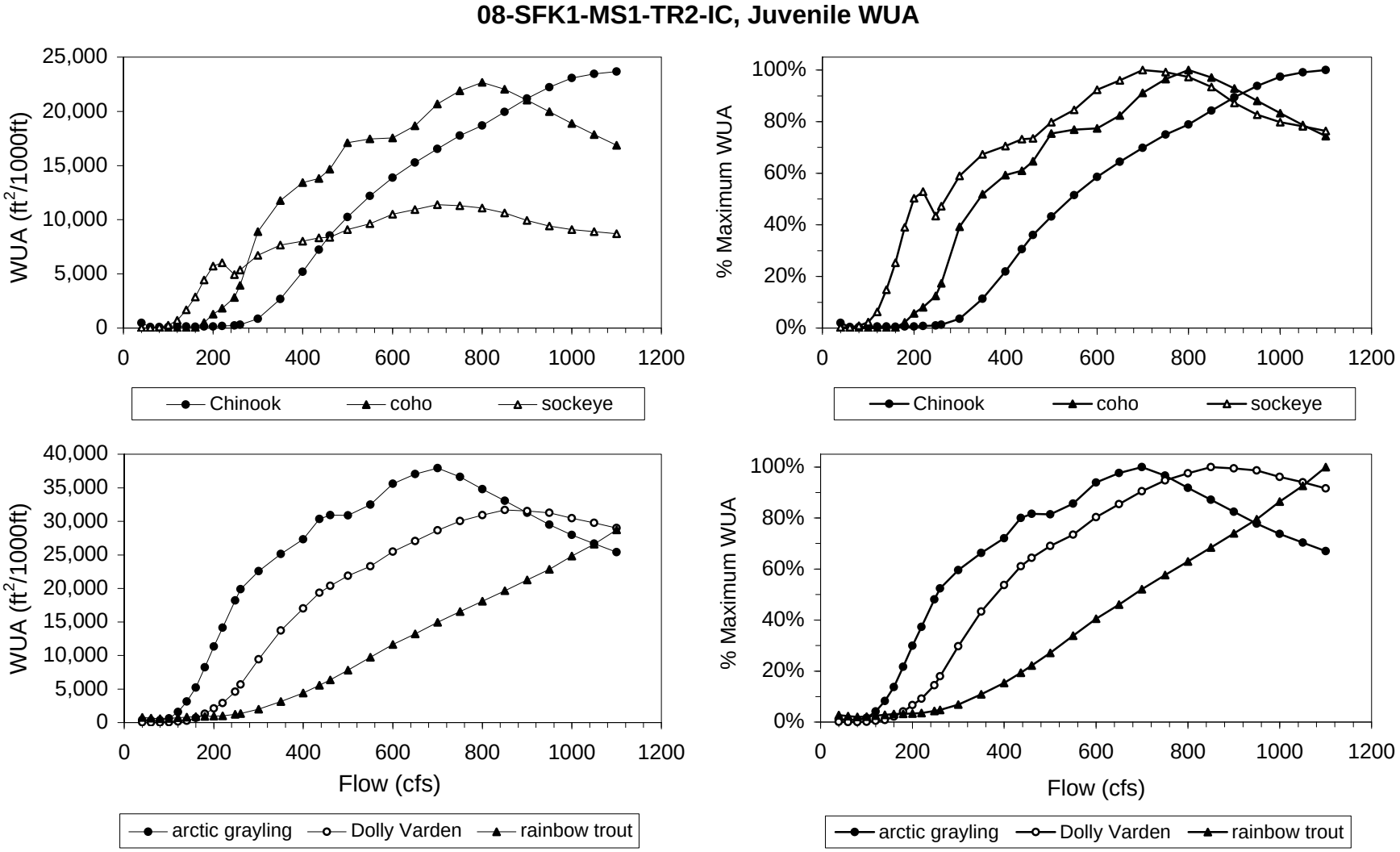

Figure 101
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR2 (River Kilometer 6.96) in SFK-A, South Fork Koktuli River, Alaska.

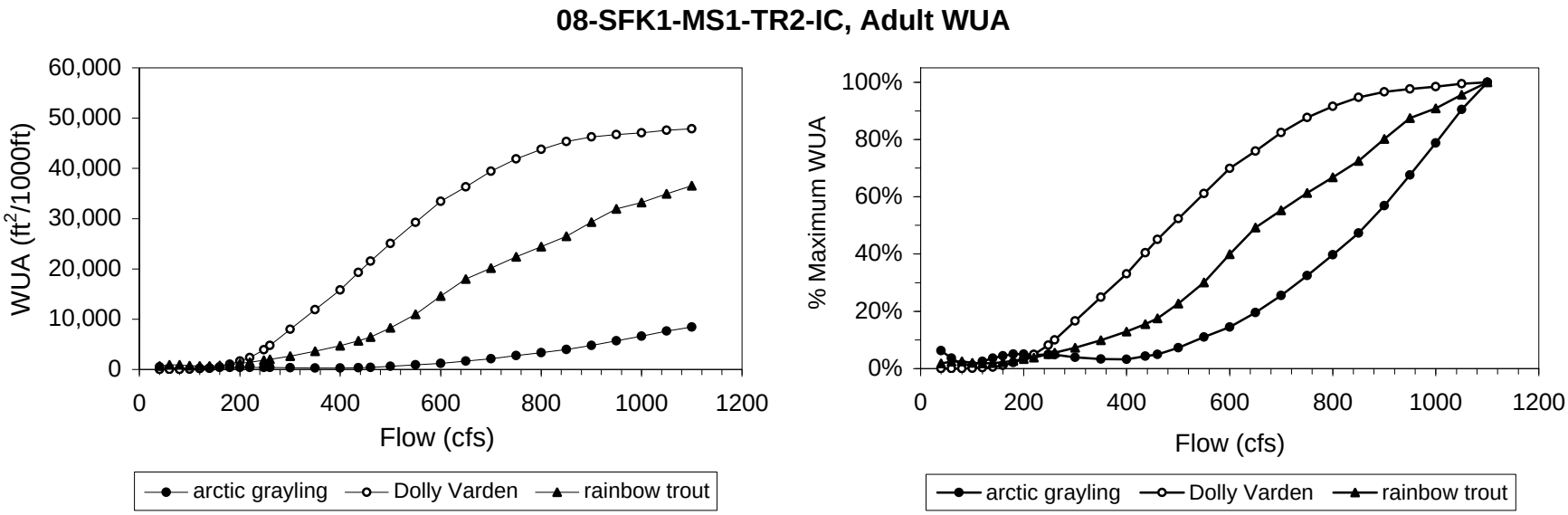

Figure 102
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS1-TR2 (River Kilometer 6.96) in SFK-A, South Fork Koktuli River, Alaska.

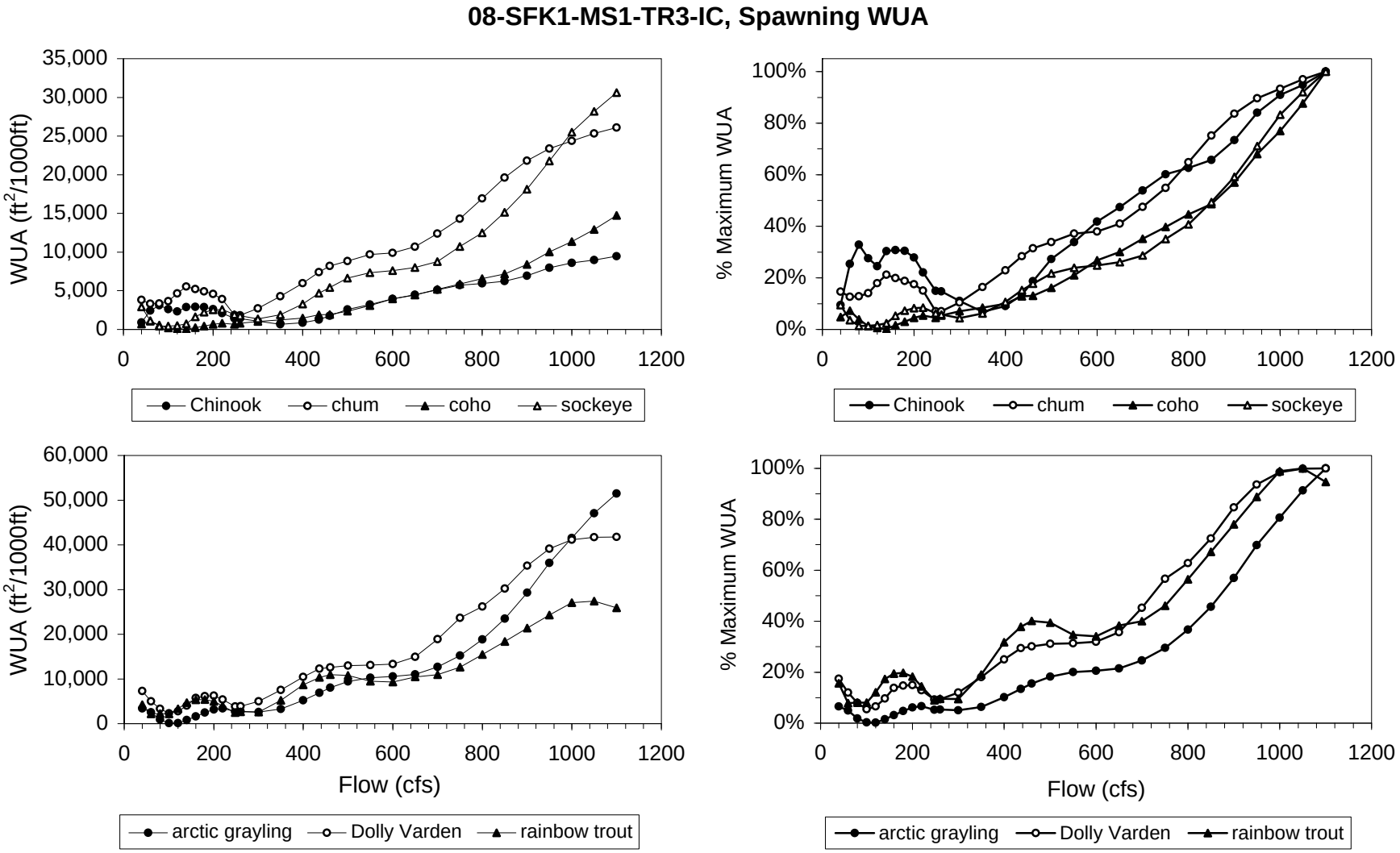

Figure 103
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR3 (River Kilometer 7.02) in SFK-A, South Fork Koktuli River, Alaska.

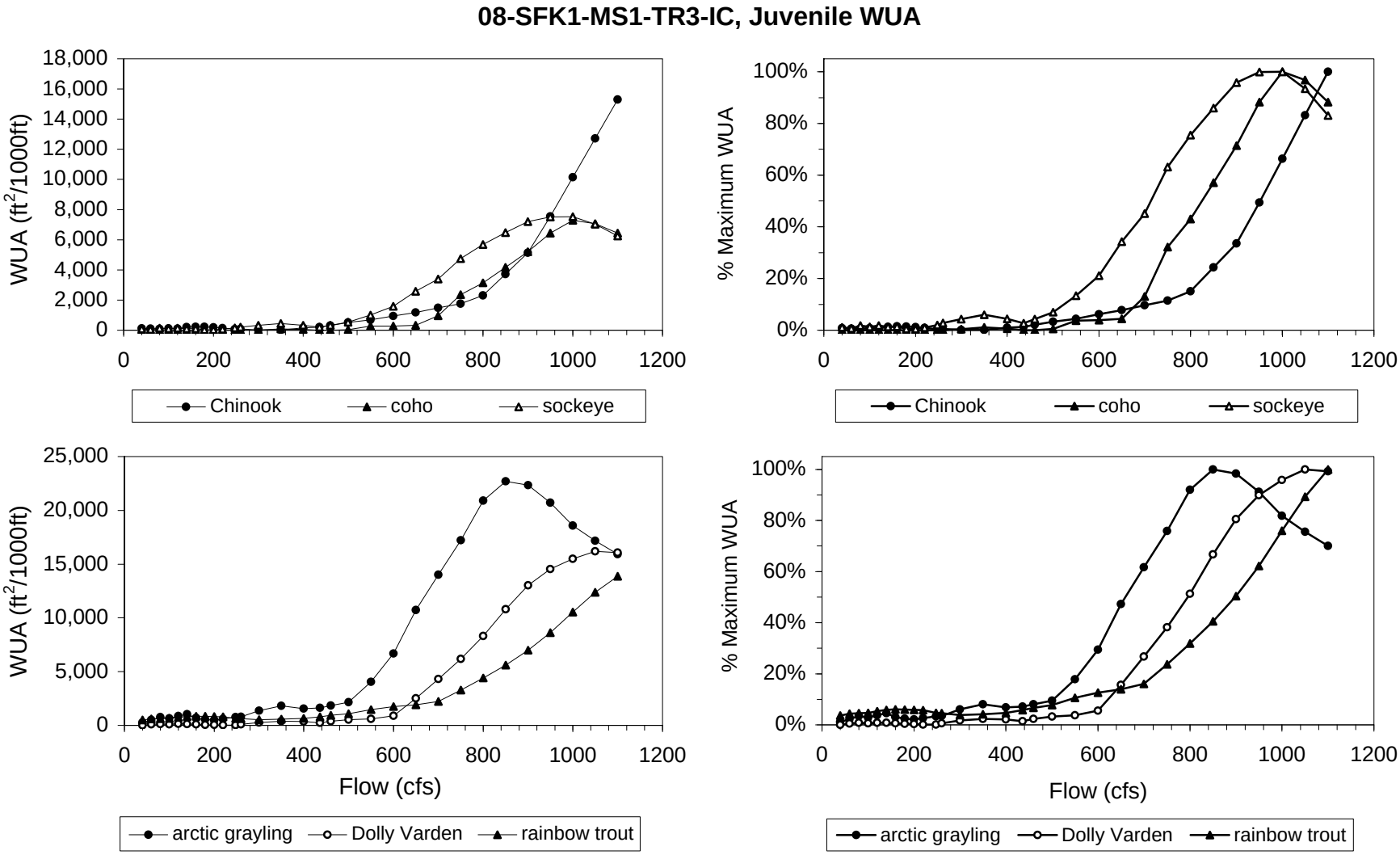

Figure 104
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR3 (River Kilometer 7.02) in SFK-A, South Fork Koktuli River, Alaska.

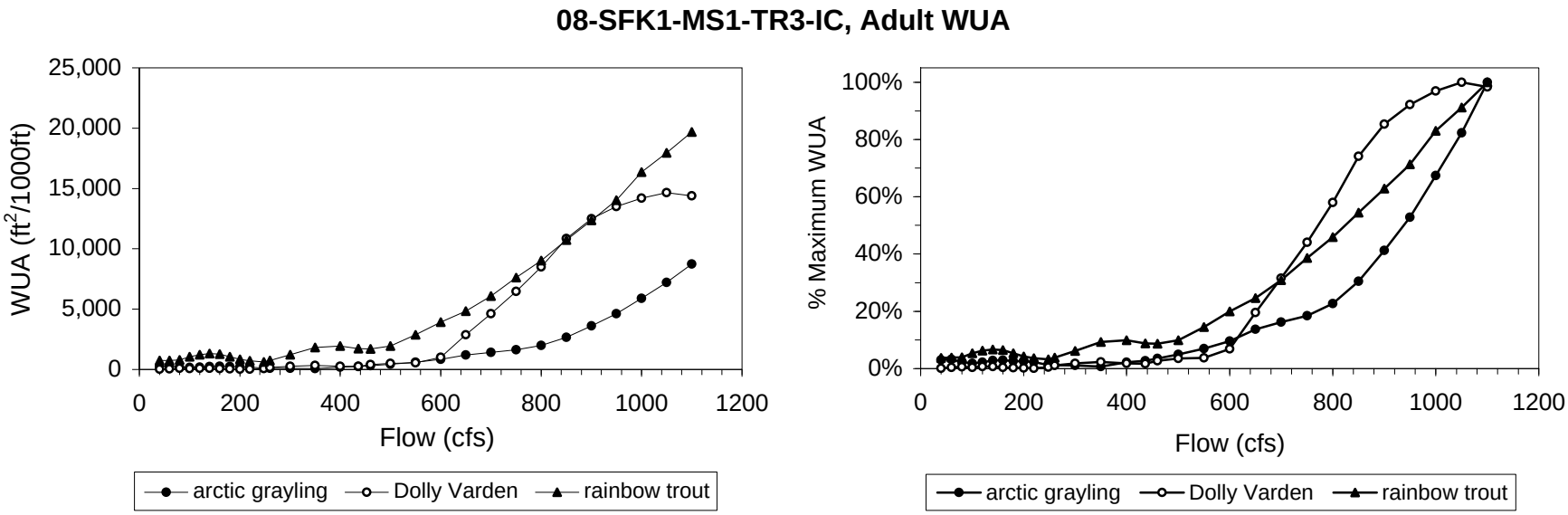

Figure 105
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS1-TR3 (River Kilometer 7.02) in SFK-A, South Fork Koktuli River, Alaska.

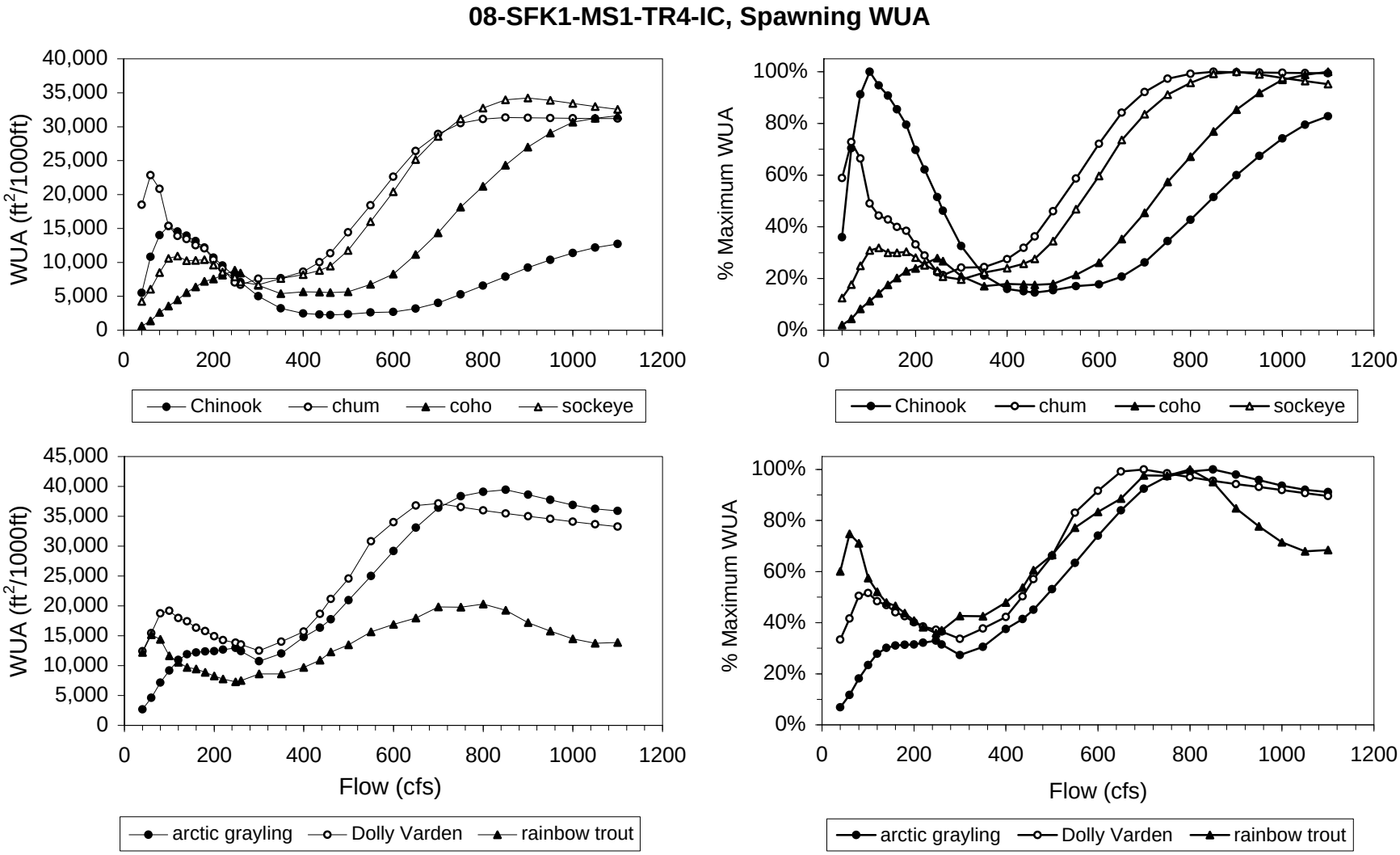

Figure 106
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR4 (River Kilometer 7.04) in SFK-A, South Fork Koktuli River, Alaska.

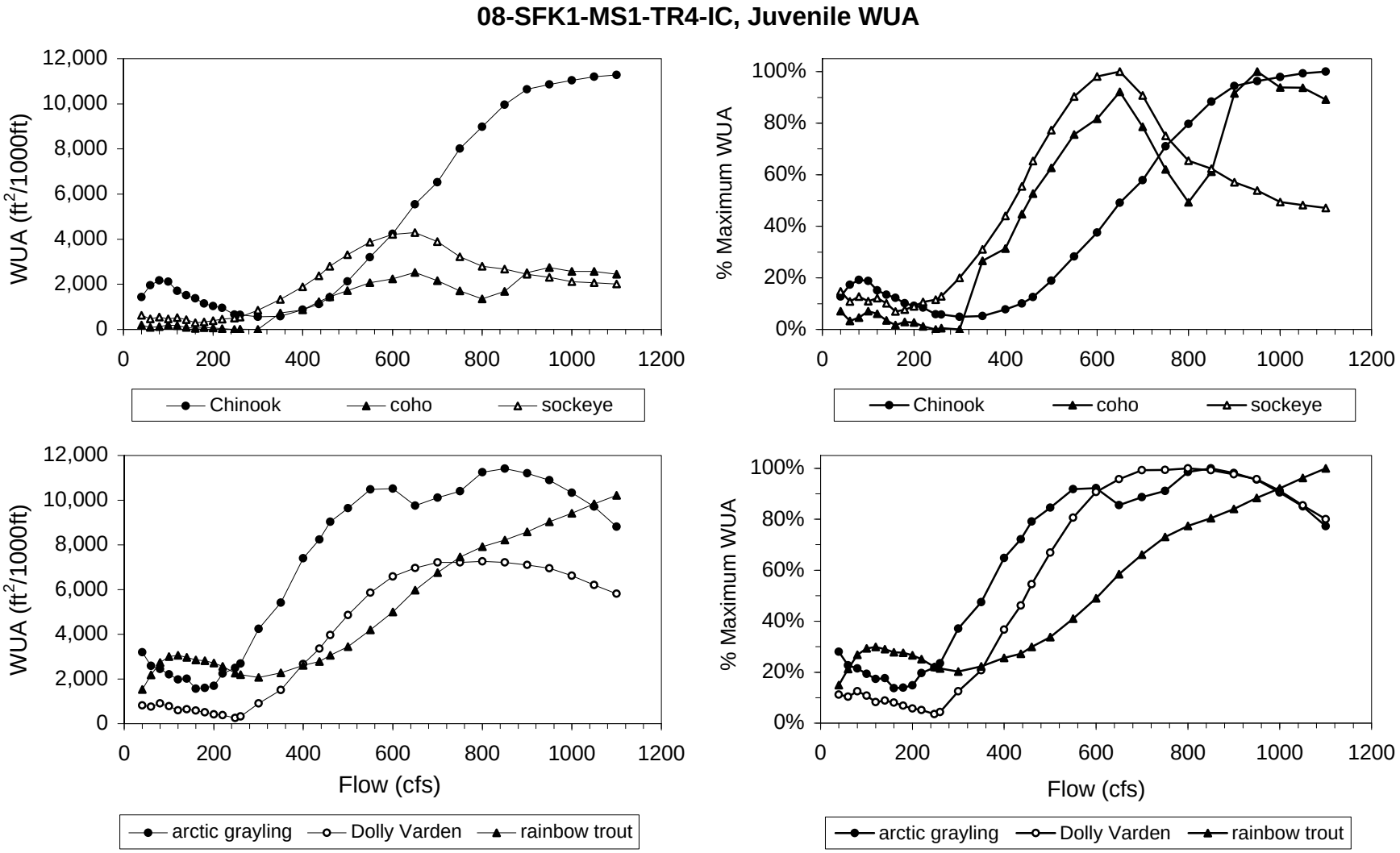

Figure 107
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR4 (River Kilometer 7.04) in SFK-A, South Fork Koktuli River, Alaska.

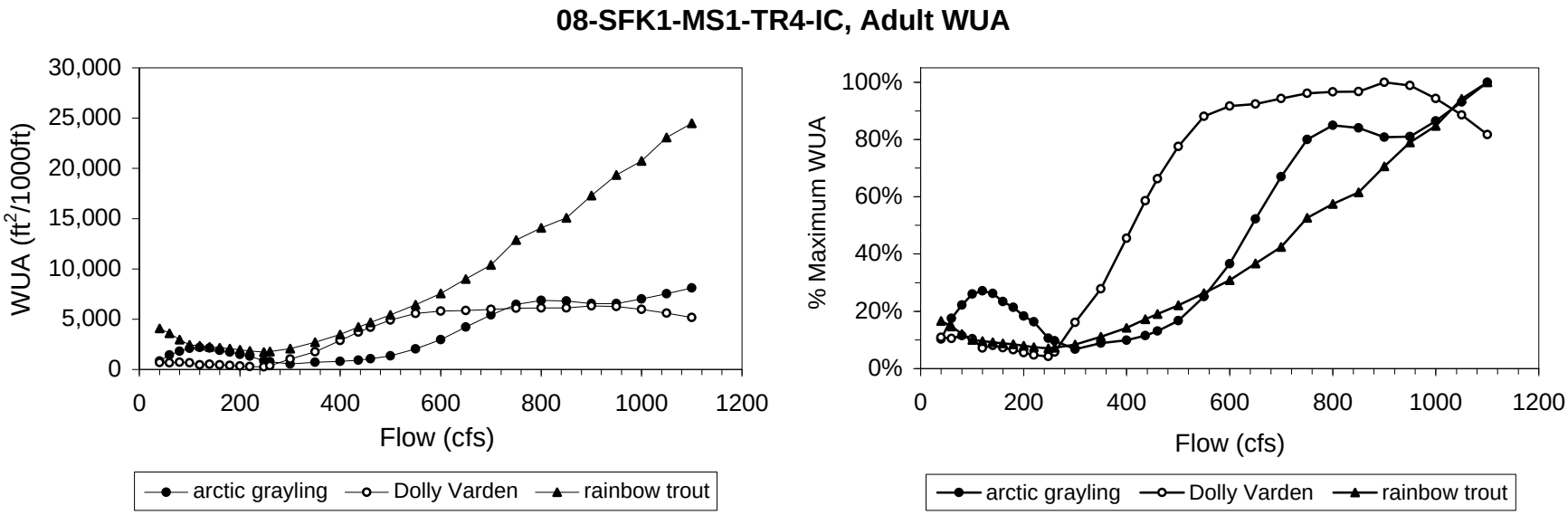

Figure 108
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS1-TR4 (River Kilometer 7.04) in SFK-A, South Fork Koktuli River, Alaska.

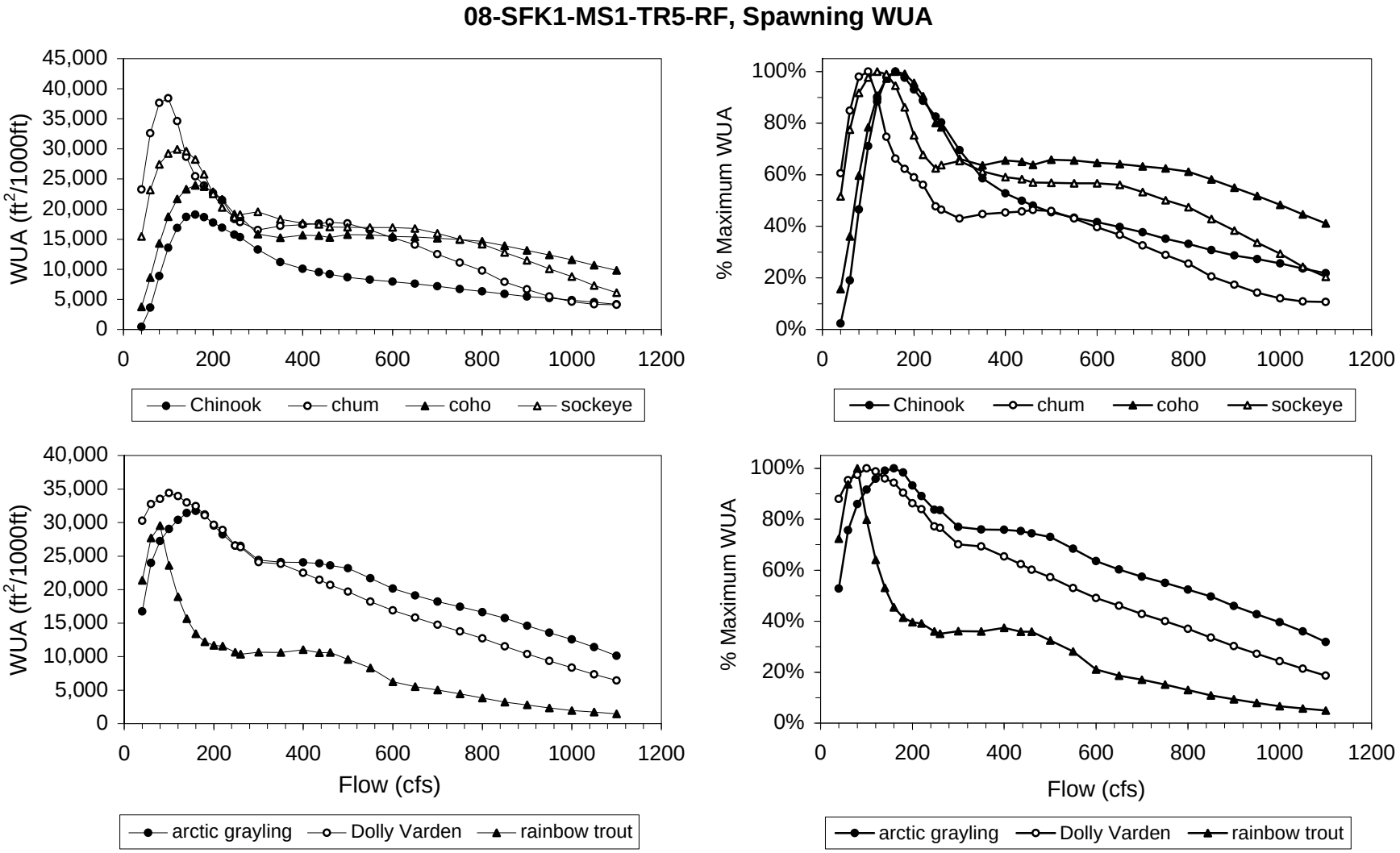

Figure 109
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR5 (River Kilometer 7.05) in SFK-A, South Fork Koktuli River, Alaska.

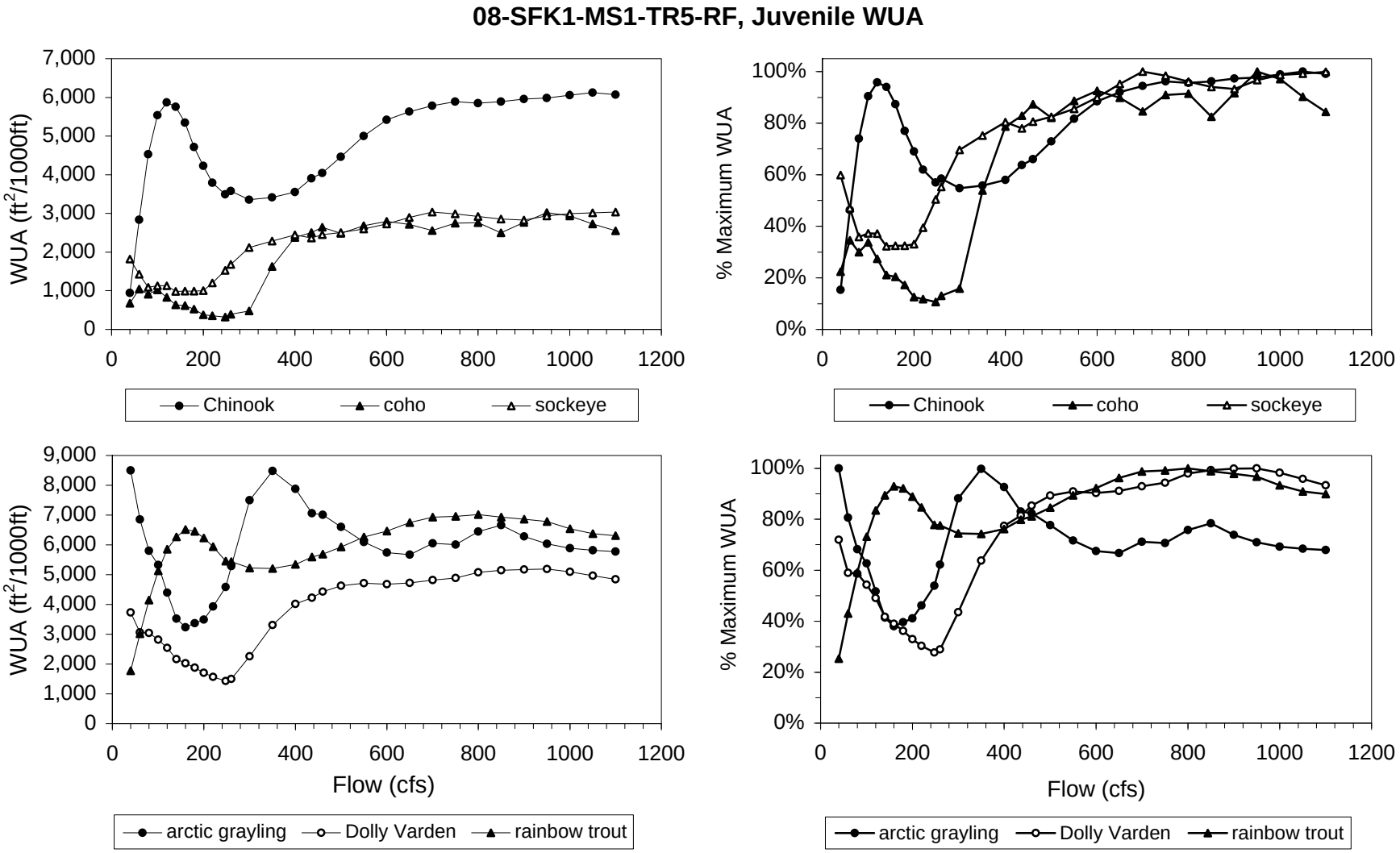

Figure 110
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR5 (River Kilometer 7.05) in SFK-A, South Fork Koktuli River, Alaska.

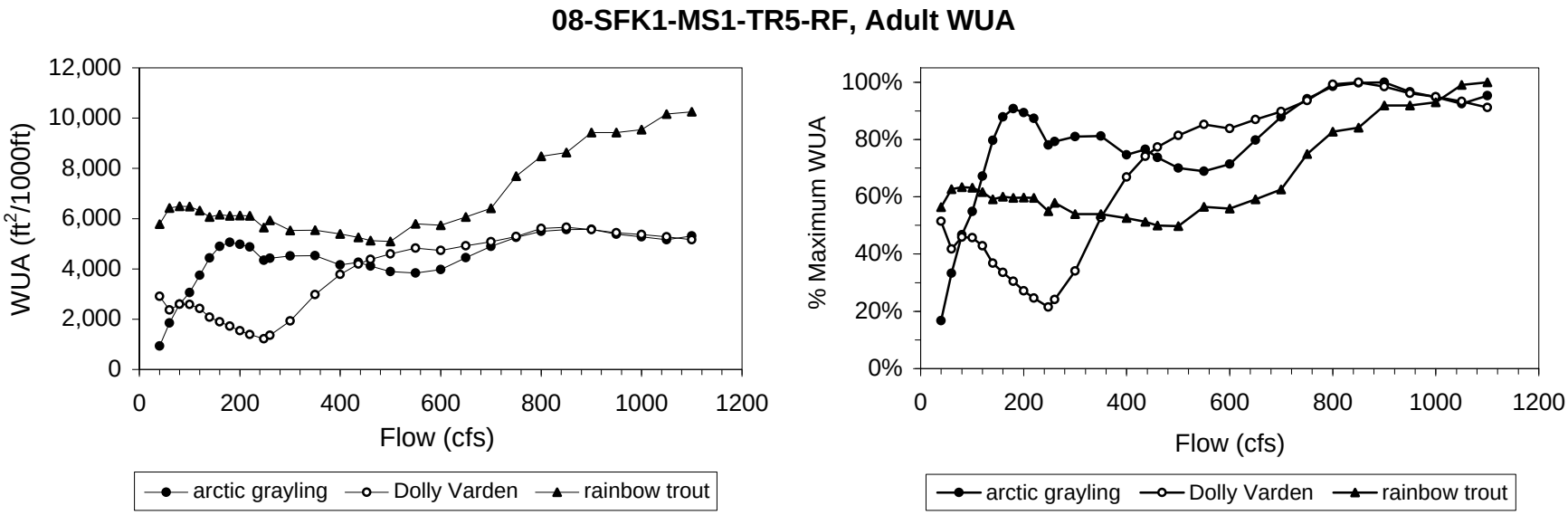

Figure 111
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS1-TR5 (River Kilometer 7.05) in SFK-A, South Fork Koktuli River, Alaska.

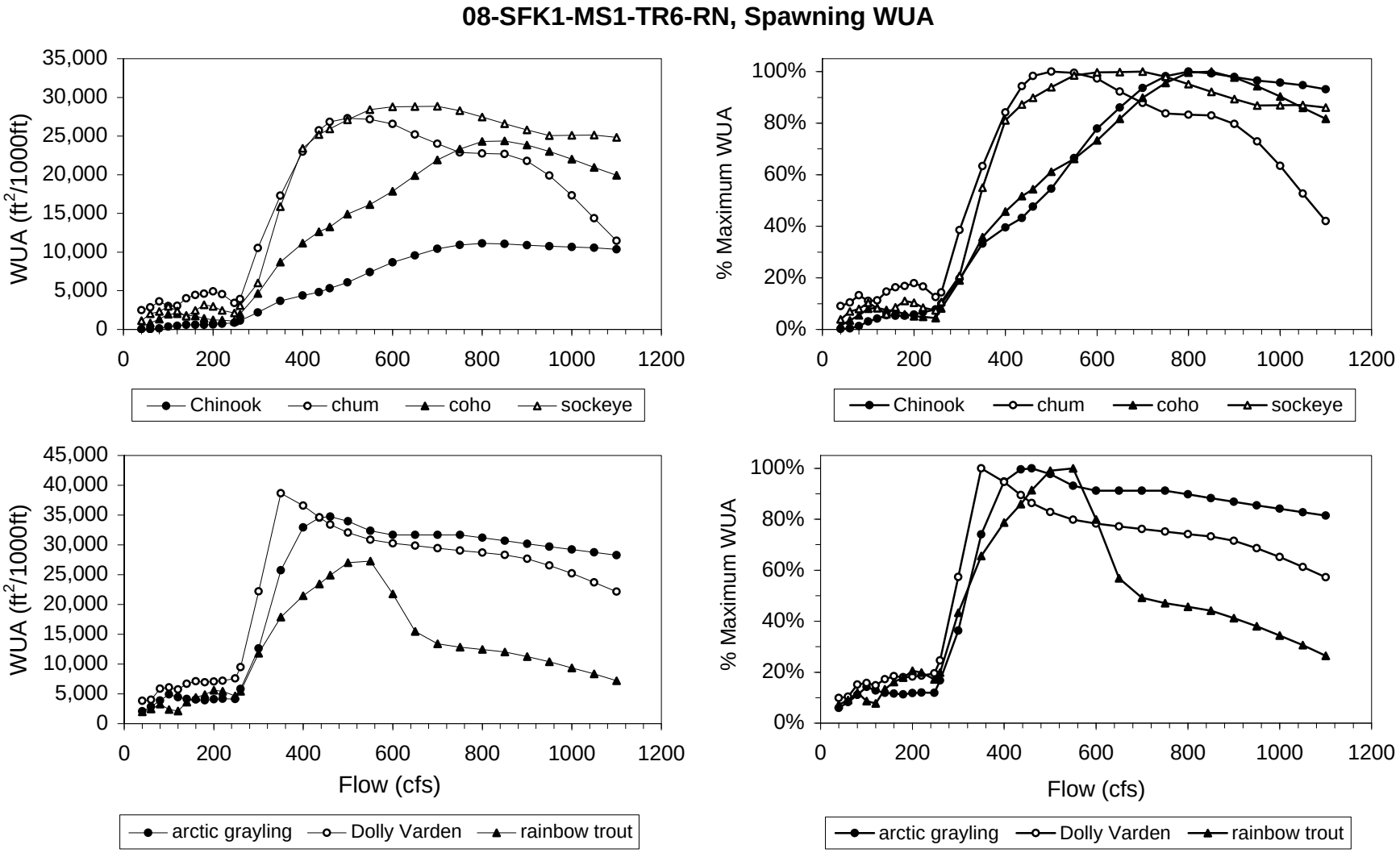

Figure 112
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR6 (River Kilometer 7.14) in SFK-A, South Fork Koktuli River, Alaska.

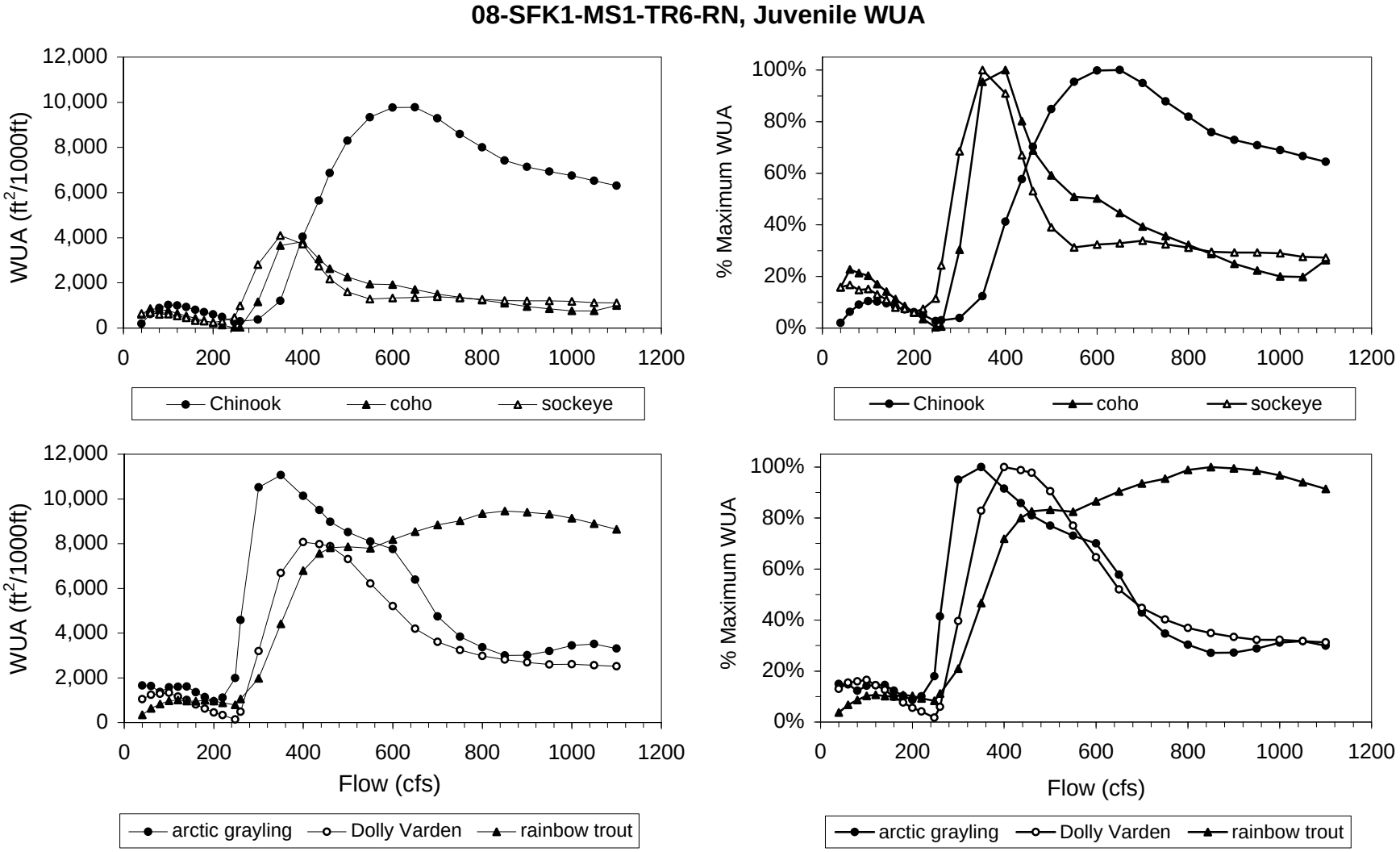

Figure 113
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS1-TR6 (River Kilometer 7.14) in SFK-A, South Fork Koktuli River, Alaska.

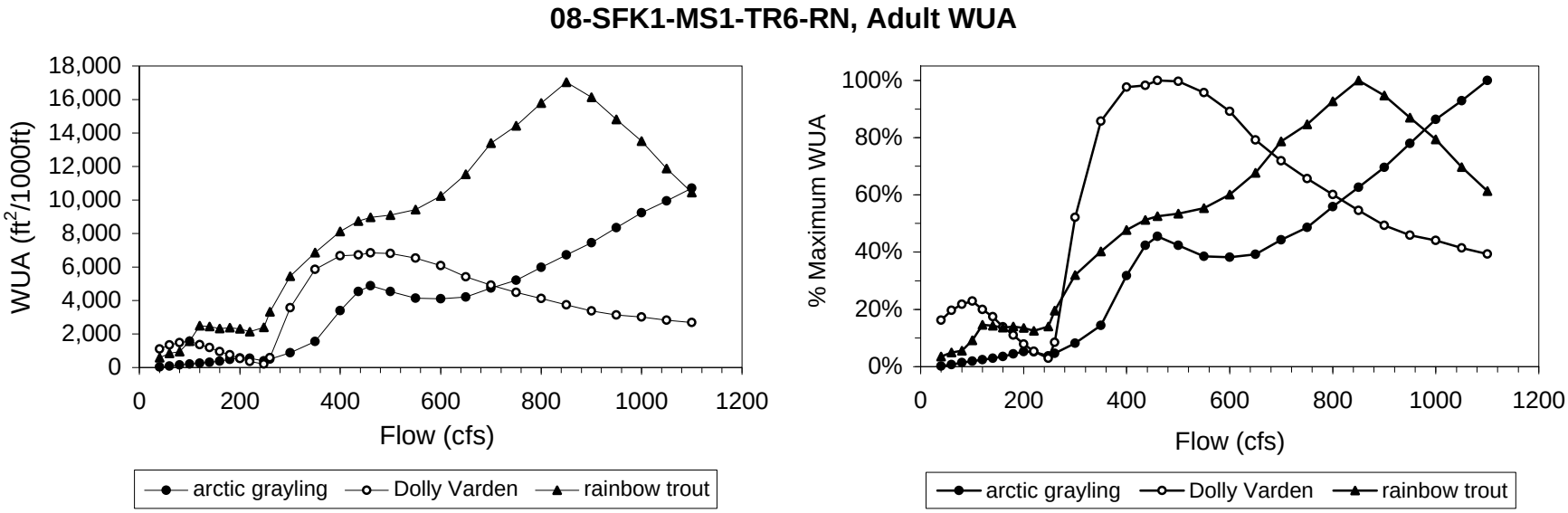

Figure 114
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS1-TR6 (River Kilometer 7.14) in SFK-A, South Fork Koktuli River, Alaska.

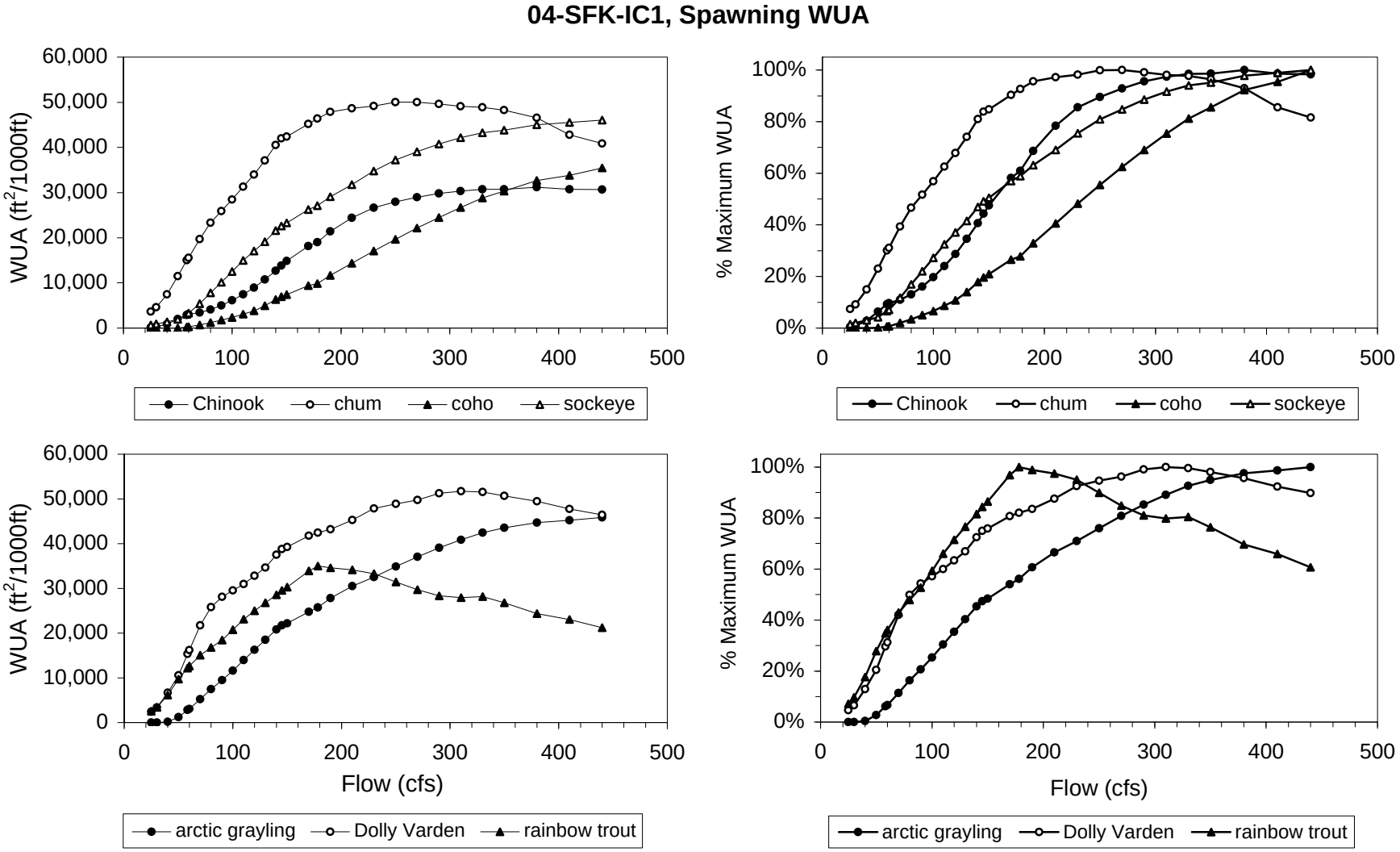

Figure 115
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-IC1 (River Kilometer 12.36) in SFK-A, South Fork Koktuli River, Alaska.

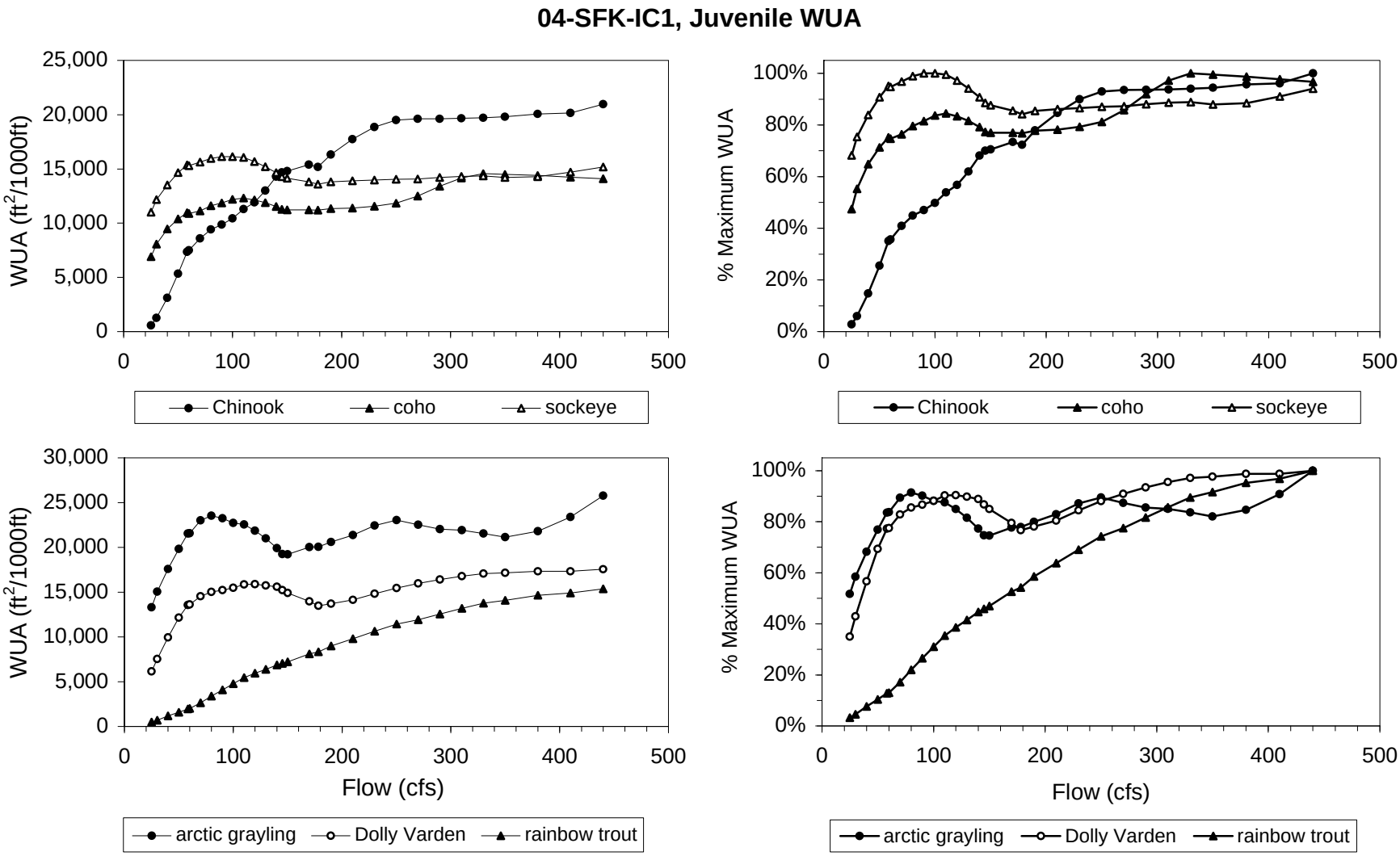

Figure 116
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-IC1 (River Kilometer 12.36) in SFK-A, South Fork Koktuli River, Alaska.

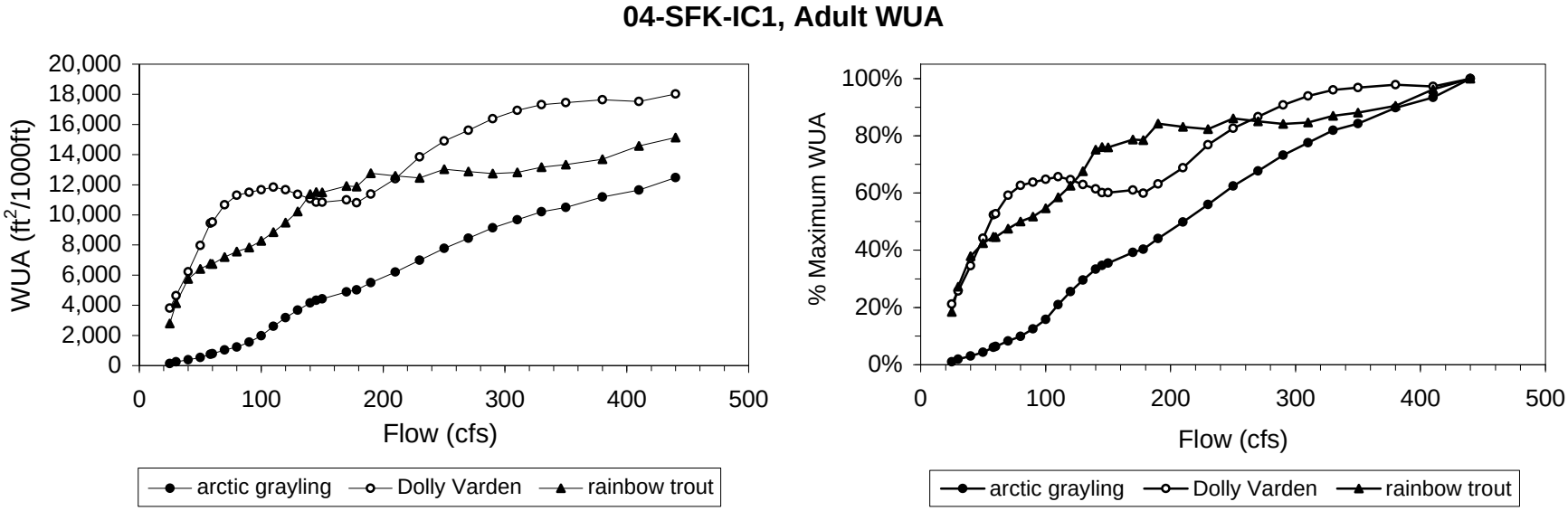

Figure 117
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-IC1 (River Kilometer 12.36) in SFK-A, South Fork Koktuli River, Alaska.

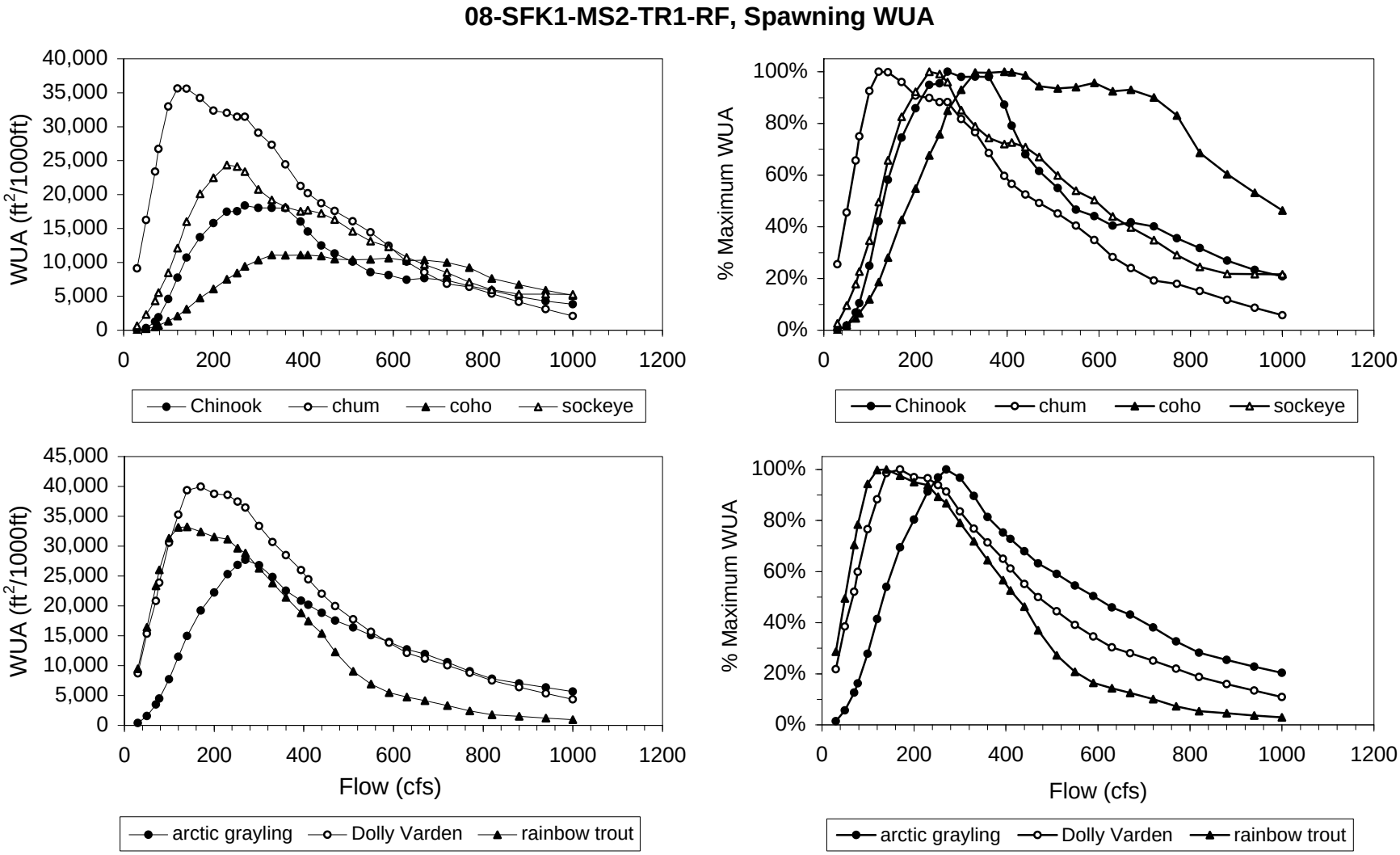

Figure 118
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR1 (River Kilometer 19.21) in SFK-A, South Fork Koktuli River, Alaska.

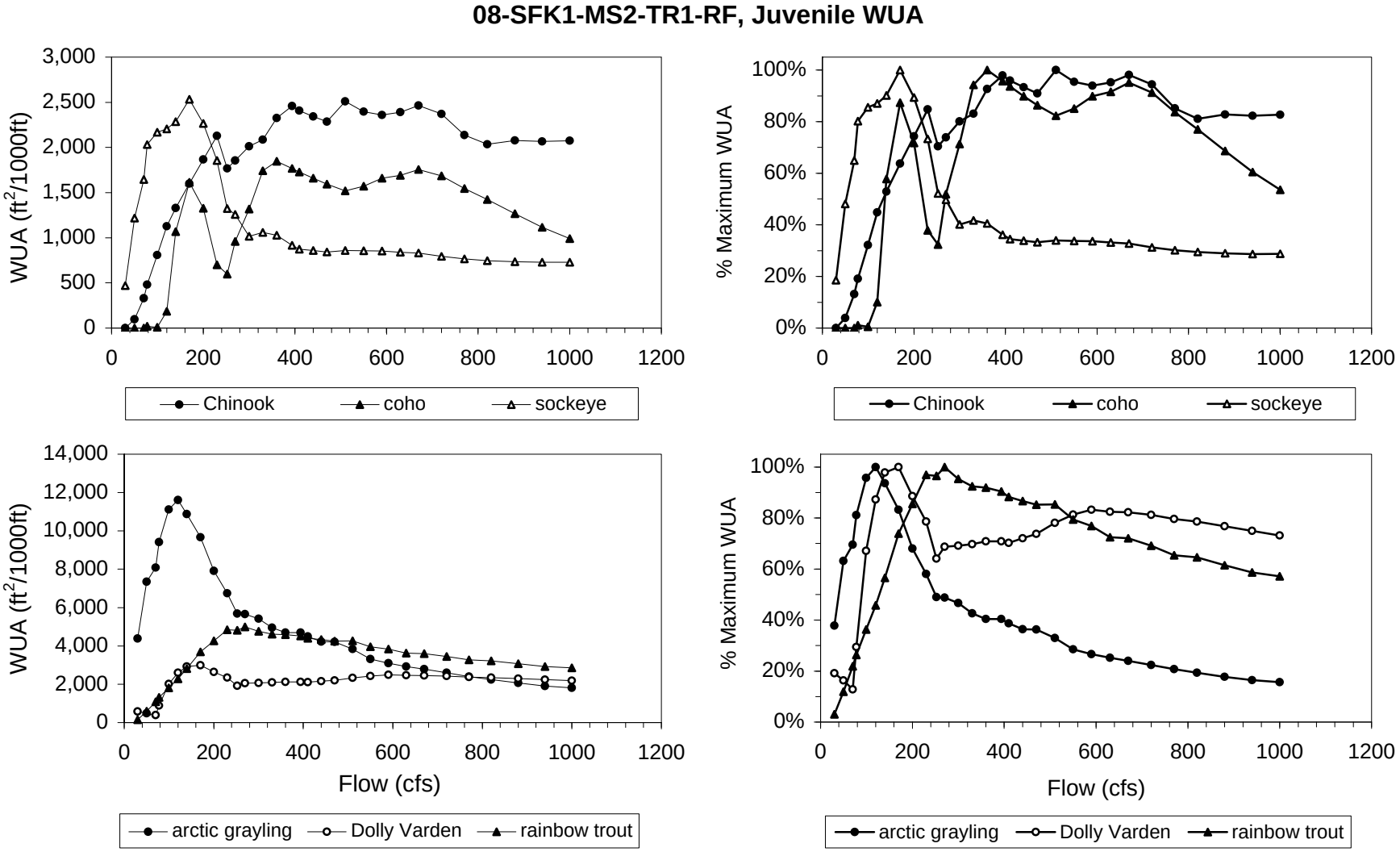

Figure 119
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR1 (River Kilometer 19.21) in SFK-A, South Fork Koktuli River, Alaska.

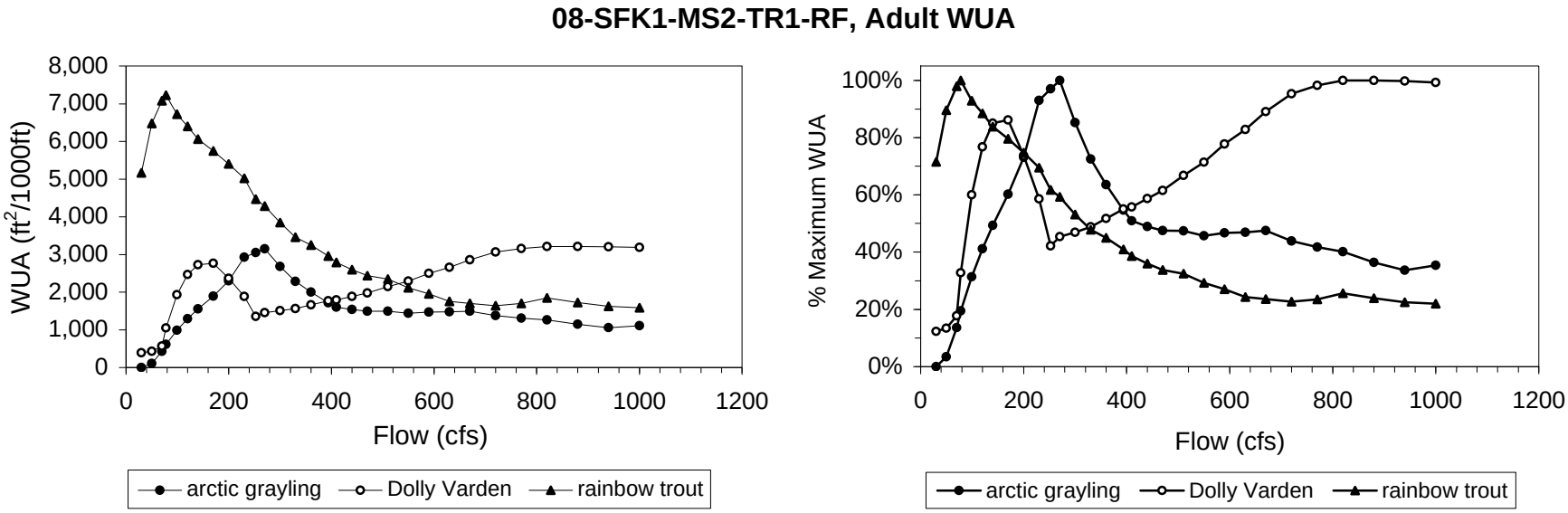

Figure 120
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS2-TR1 (River Kilometer 19.21) in SFK-A, South Fork Koktuli River, Alaska.

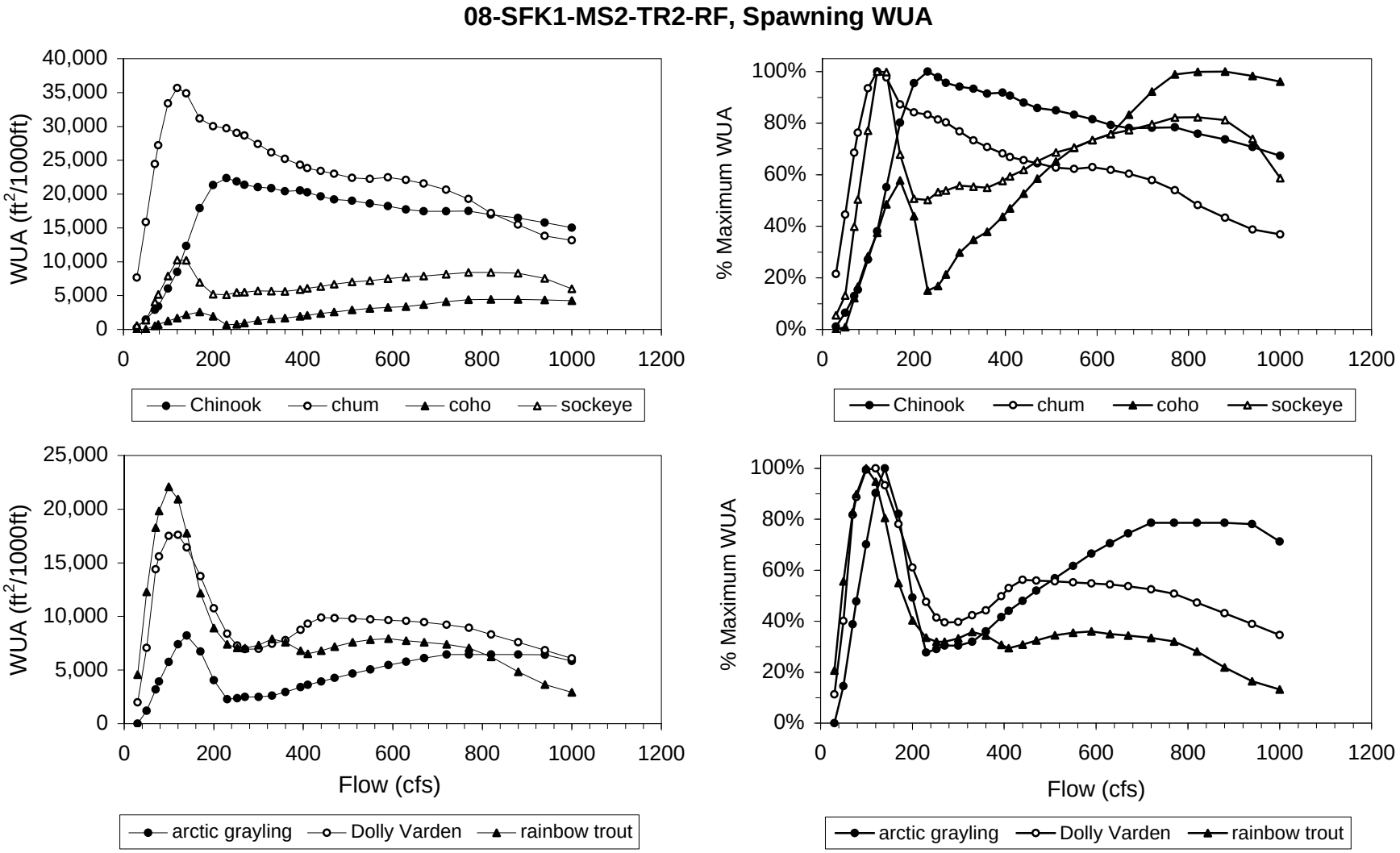

Figure 121
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR2 (River Kilometer 19.29) in SFK-A, South Fork Koktuli River, Alaska.

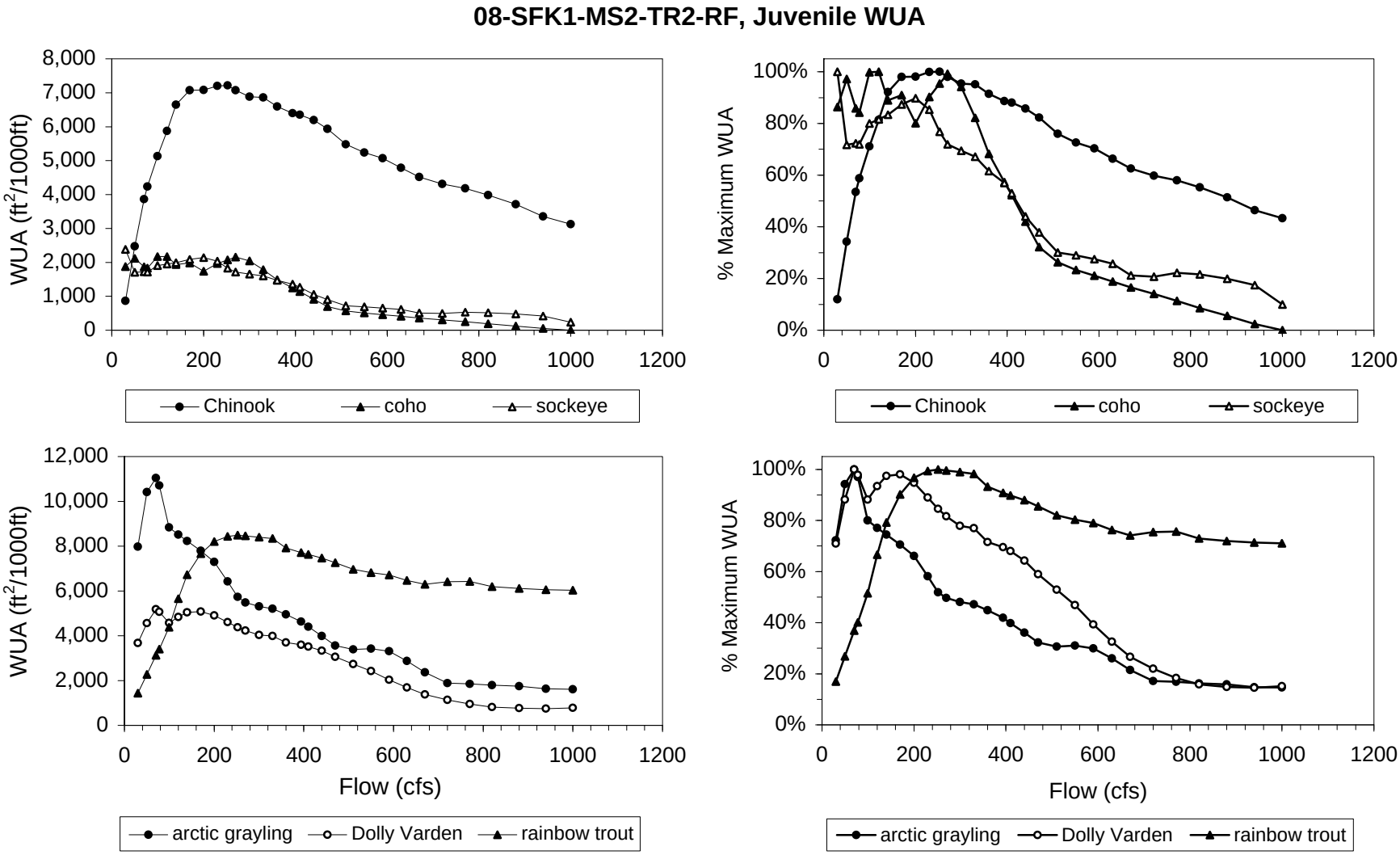

Figure 122
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR2 (River Kilometer 19.29) in SFK-A, South Fork Koktuli River, Alaska.

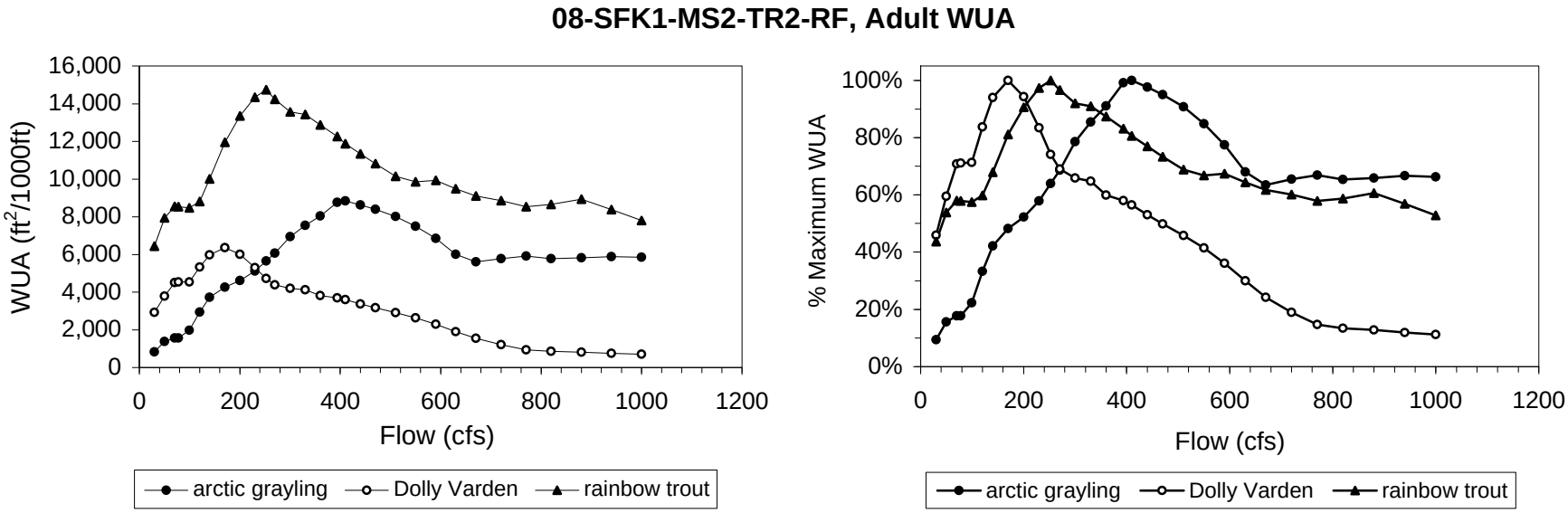

Figure 123
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS2-TR2 (River Kilometer 19.29) in SFK-A, South Fork Koktuli River, Alaska.

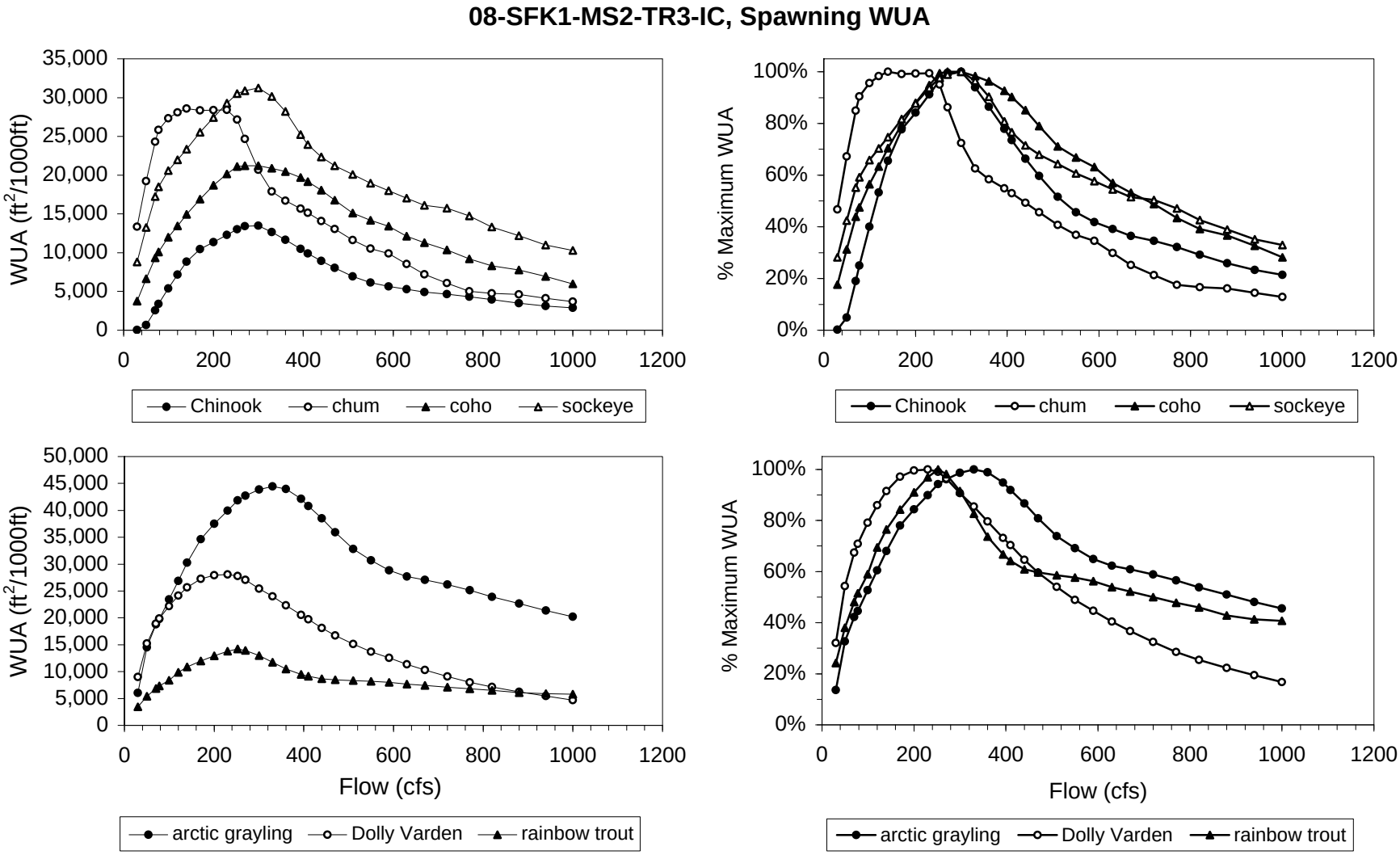

Figure 124
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR3 (River Kilometer 19.42) in SFK-A, South Fork Koktuli River, Alaska.

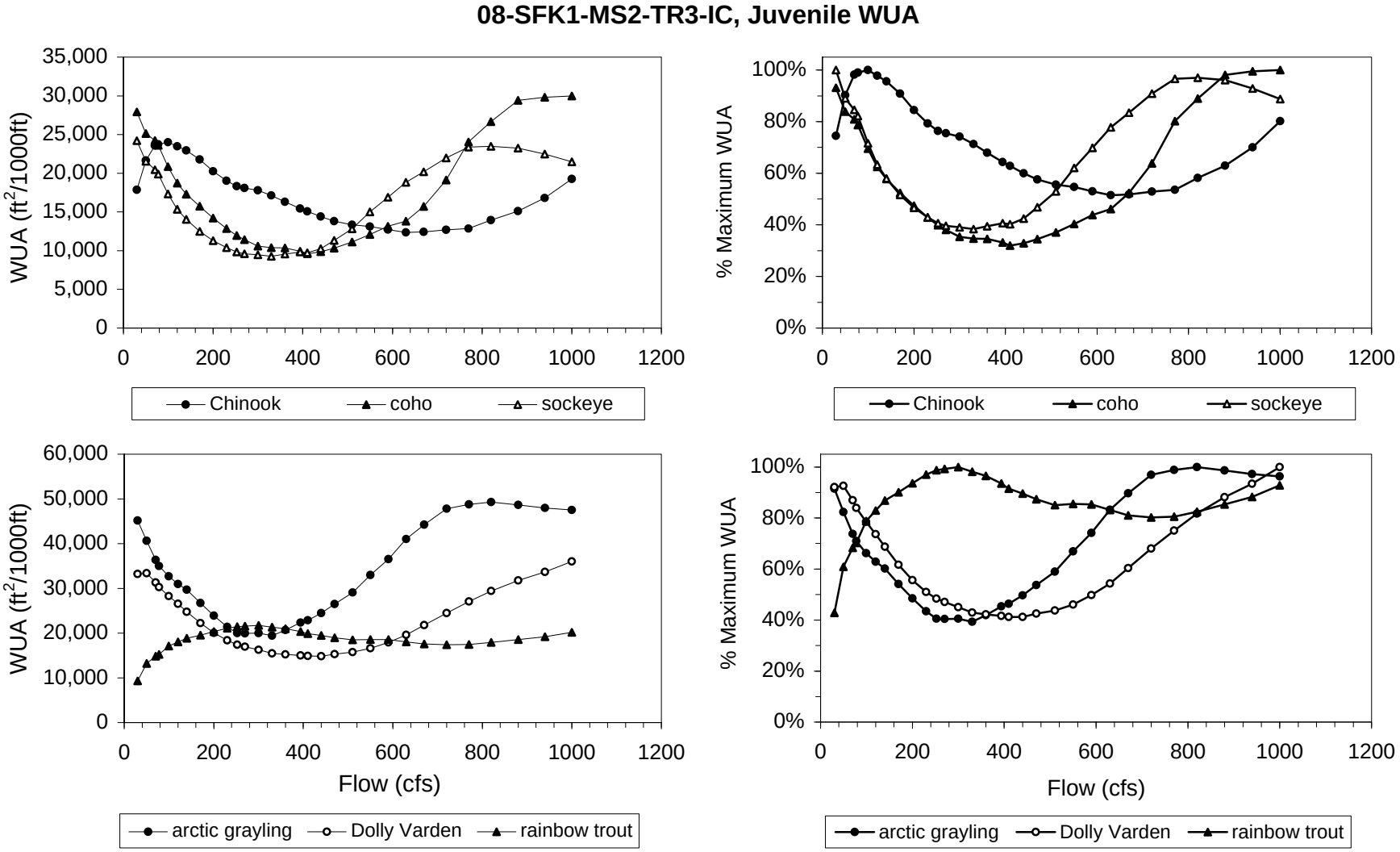

Figure 125
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR3 (River Kilometer 19.42) in SFK-A, South Fork Koktuli River, Alaska.

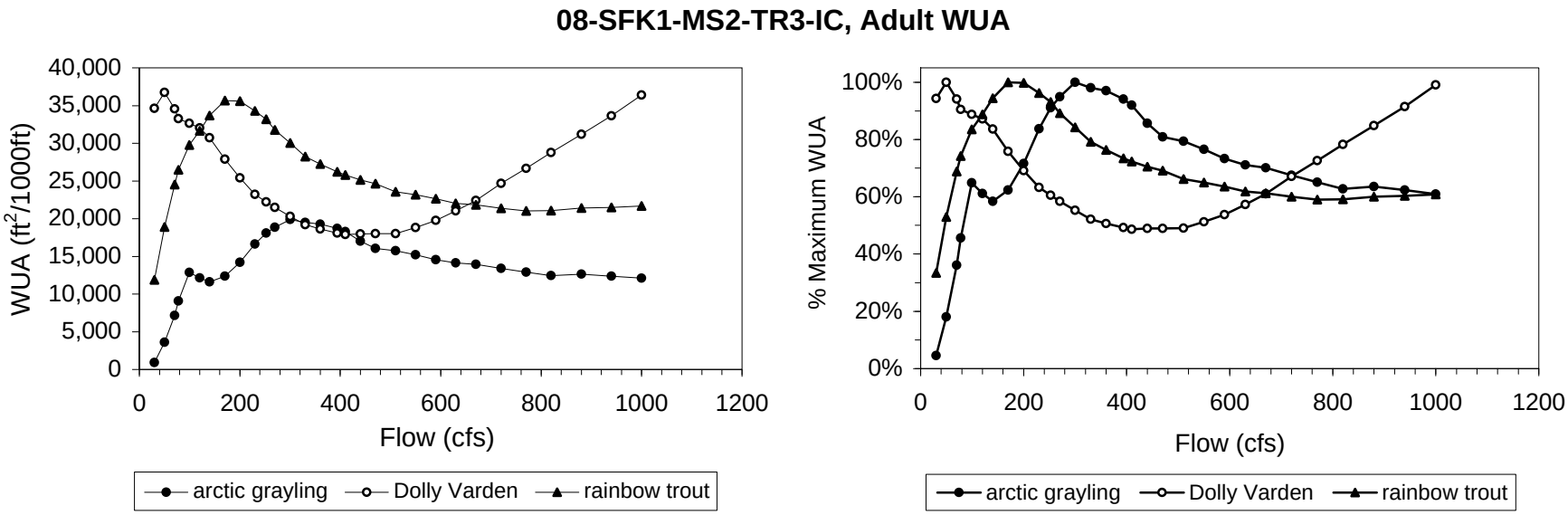

Figure 126
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS2-TR3 (River Kilometer 19.42) in SFK-A, South Fork Koktuli River, Alaska.

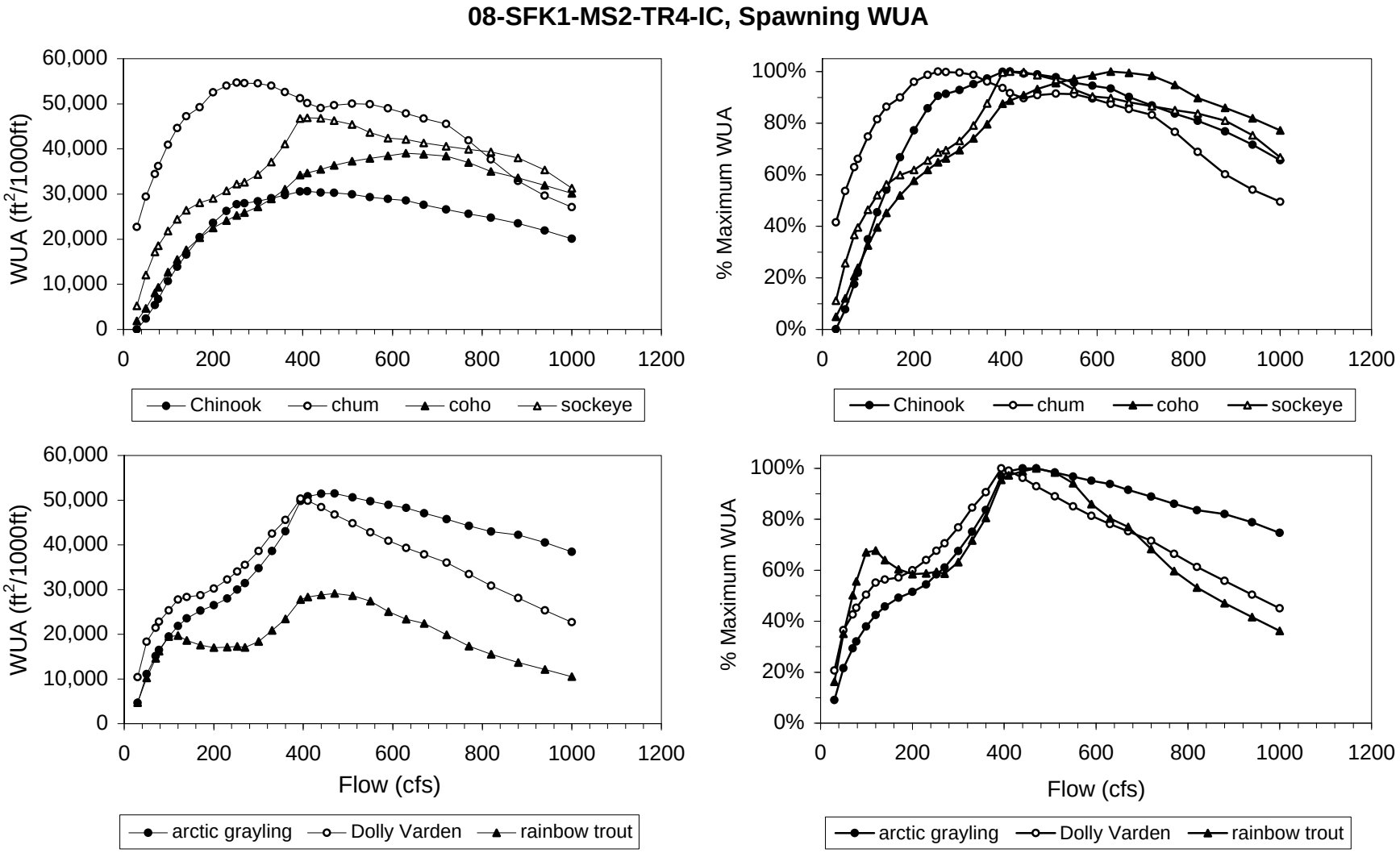

Figure 127
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR4 (River Kilometer 19.47) in SFK-A, South Fork Koktuli River, Alaska.

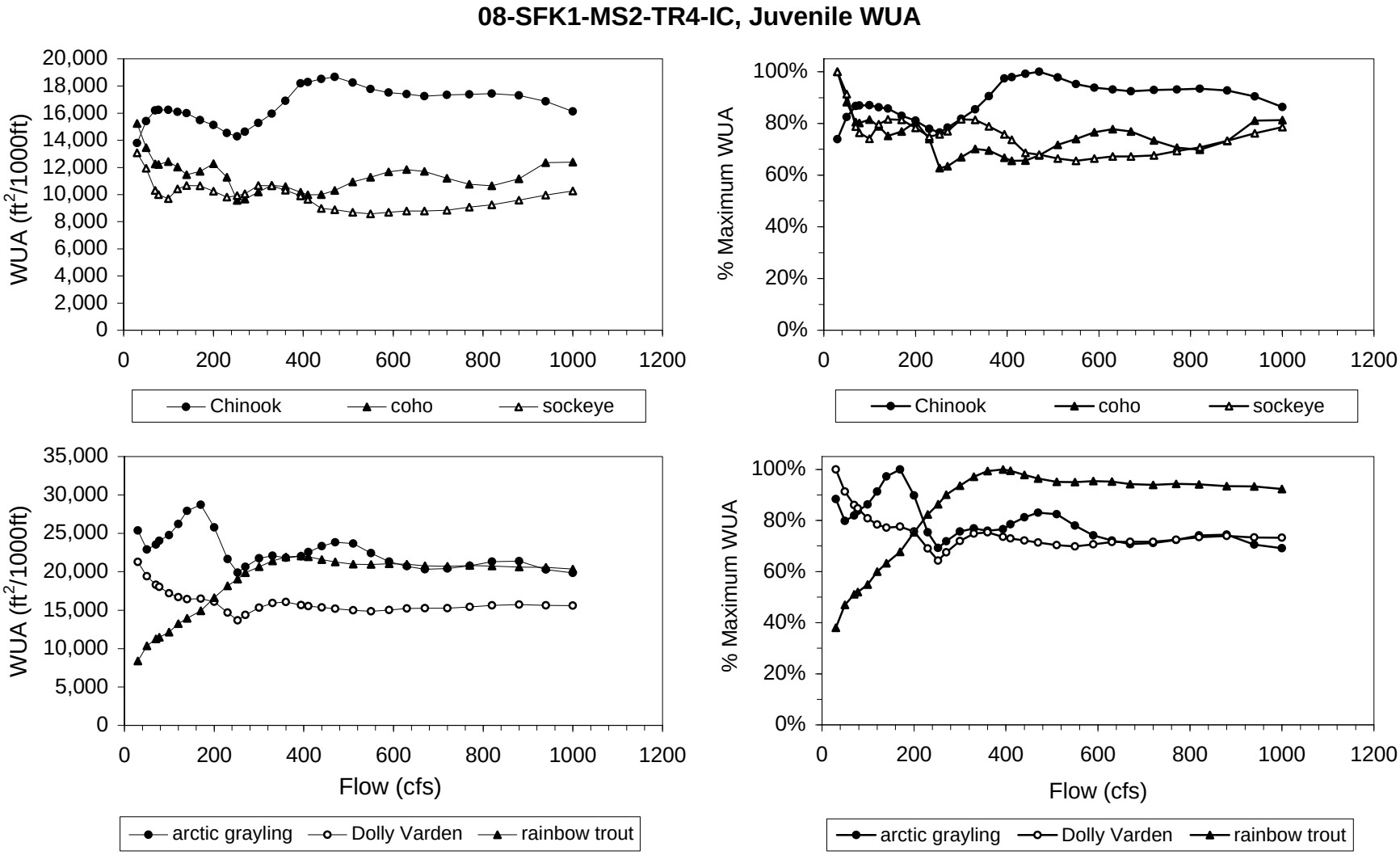

Figure 128
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR4 (River Kilometer 19.47) in SFK-A, South Fork Koktuli River, Alaska.

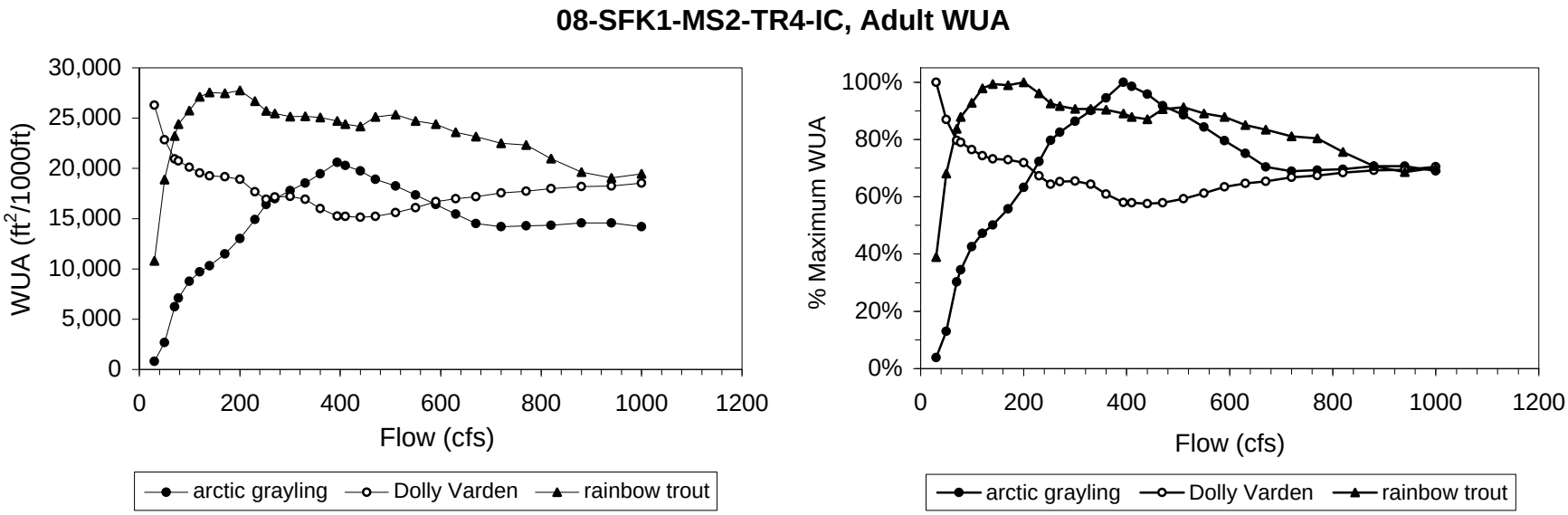

Figure 129
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS2-TR4 (River Kilometer 19.47) in SFK-A, South Fork Koktuli River, Alaska.

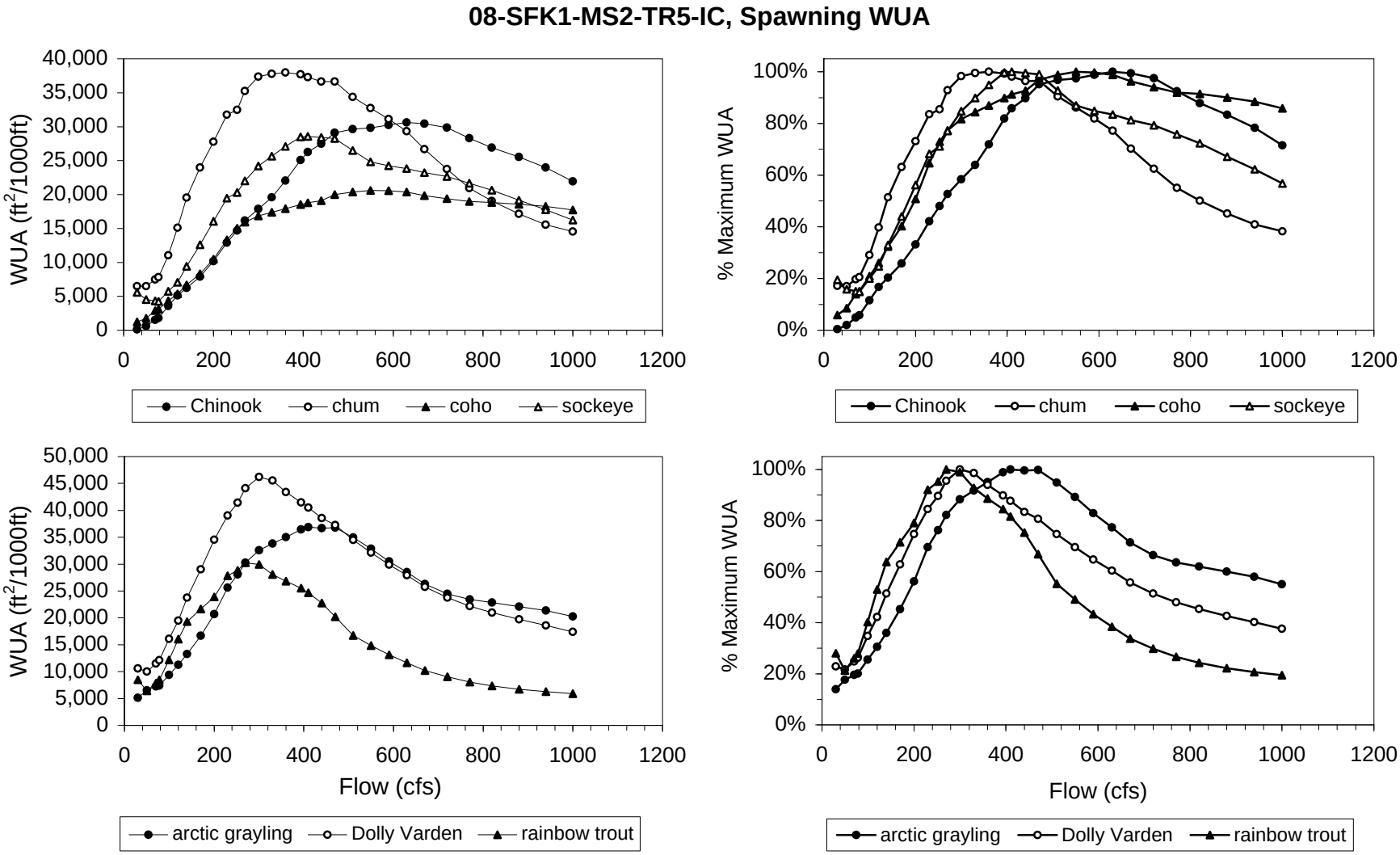

Figure 130
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR5 (River Kilometer 19.55) in SFK-A, South Fork Koktuli River, Alaska.

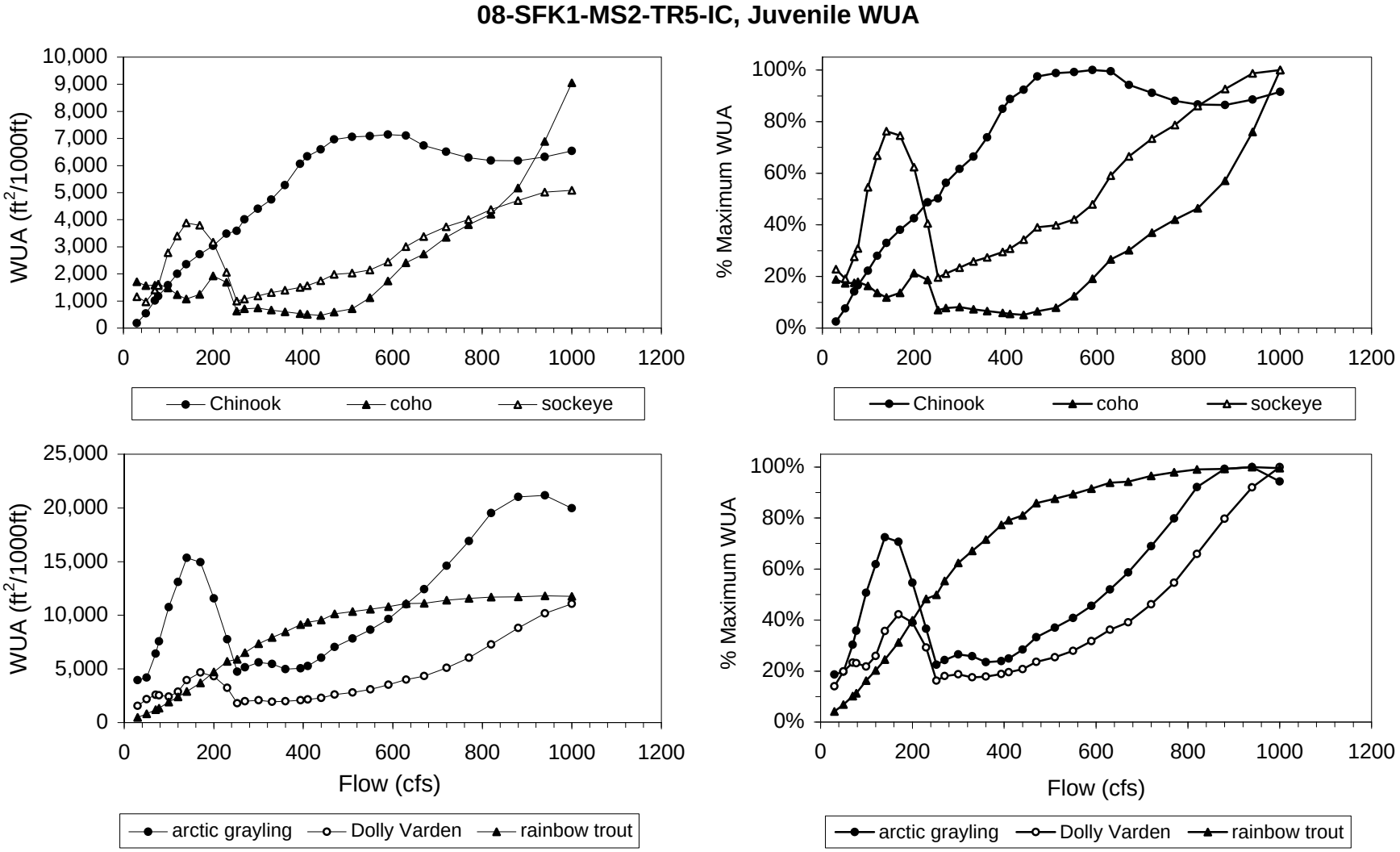

Figure 131
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR5 (River Kilometer 19.55) in SFK-A, South Fork Koktuli River, Alaska.

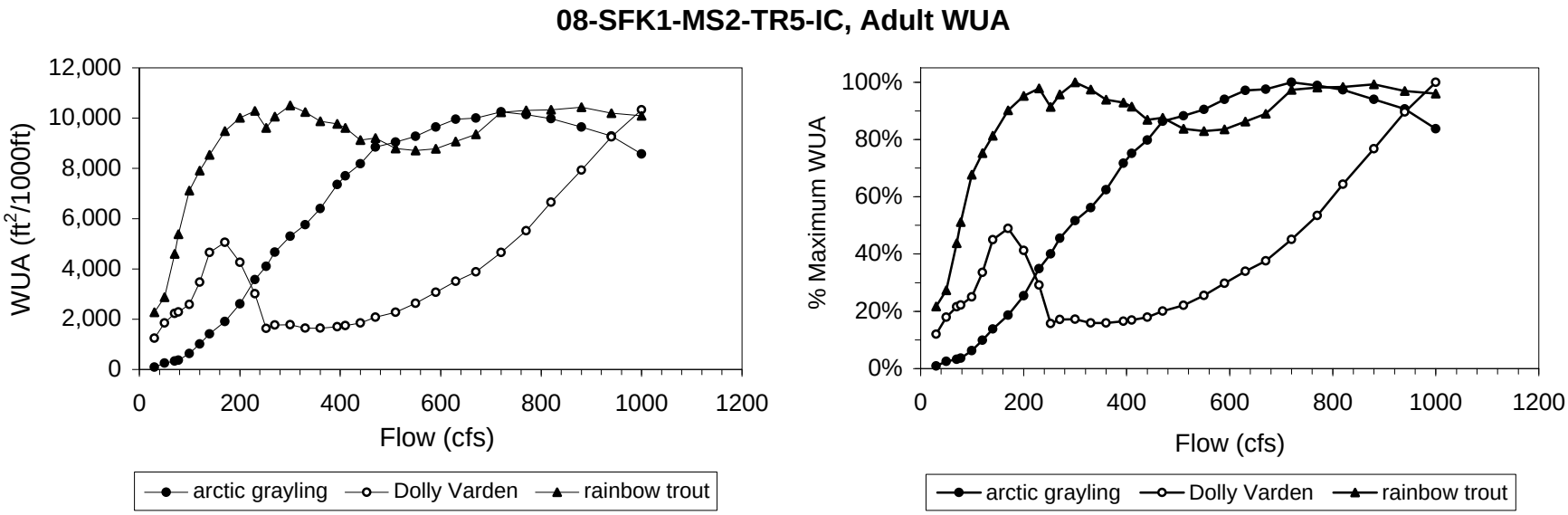

Figure 132
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS2-TR5 (River Kilometer 19.55) in SFK-A, South Fork Koktuli River, Alaska.

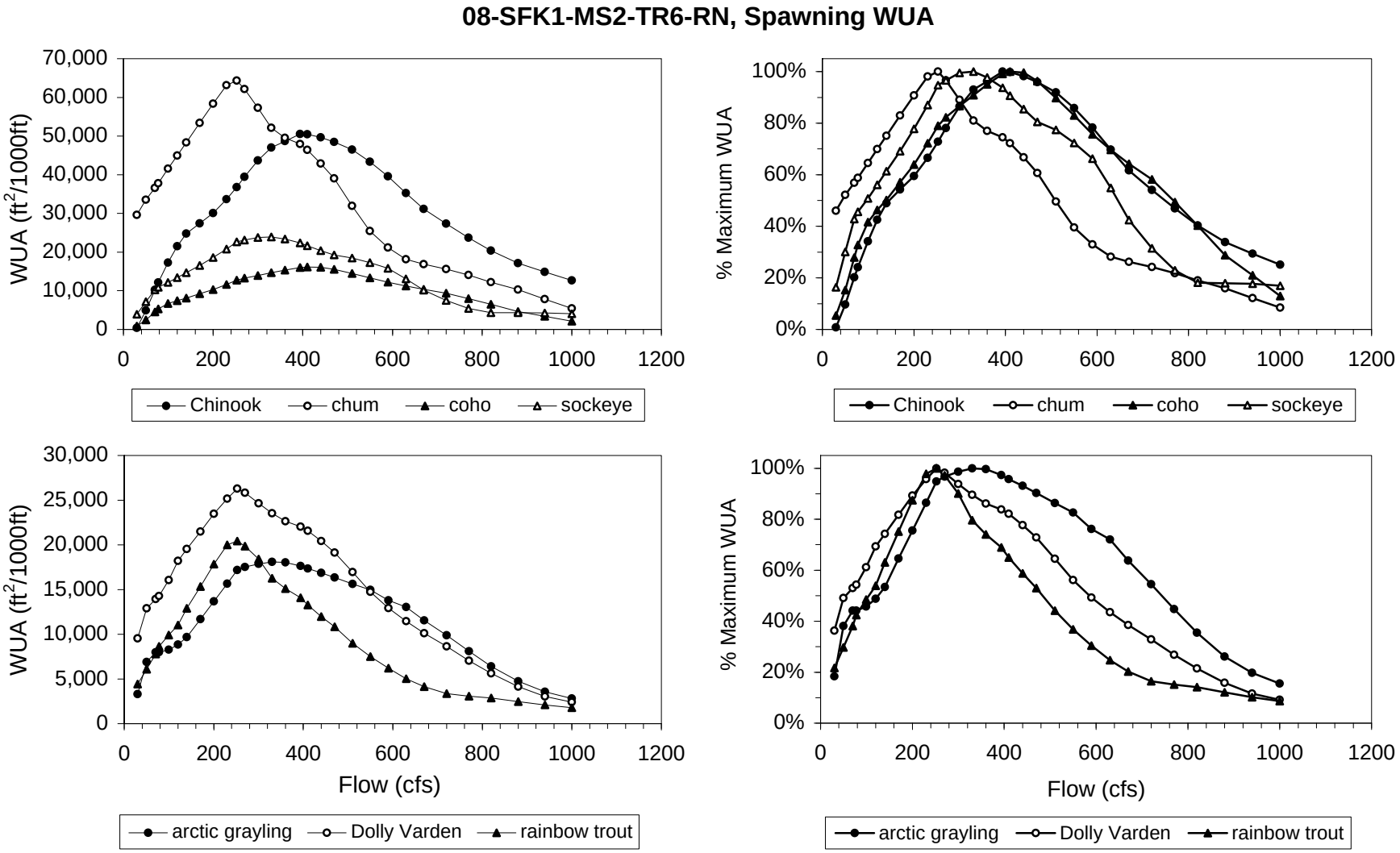

Figure 133
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR6 (River Kilometer 19.60) in SFK-A, South Fork Koktuli River, Alaska.

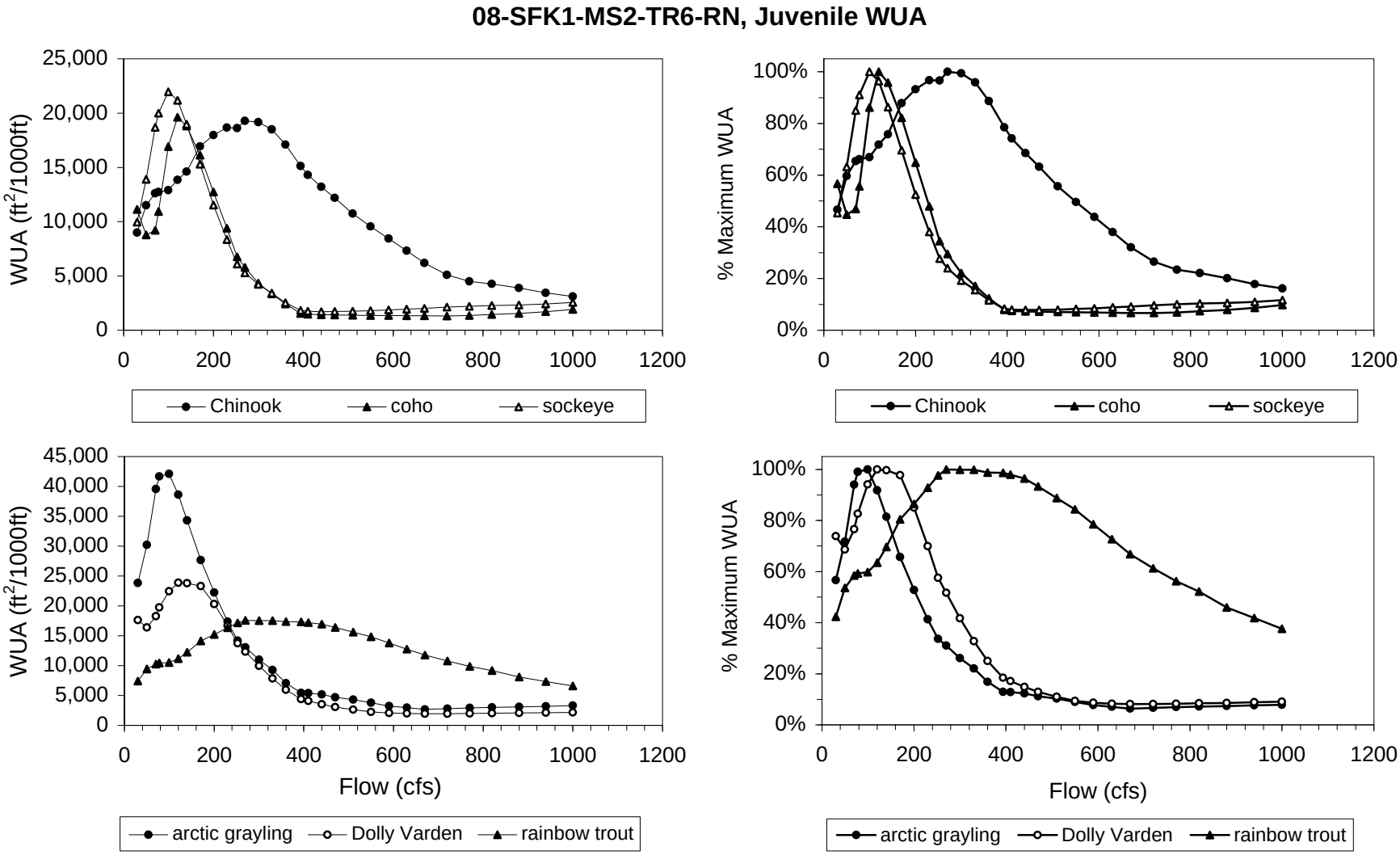

Figure 134
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK1-MS2-TR6 (River Kilometer 19.60) in SFK-A, South Fork Koktuli River, Alaska.

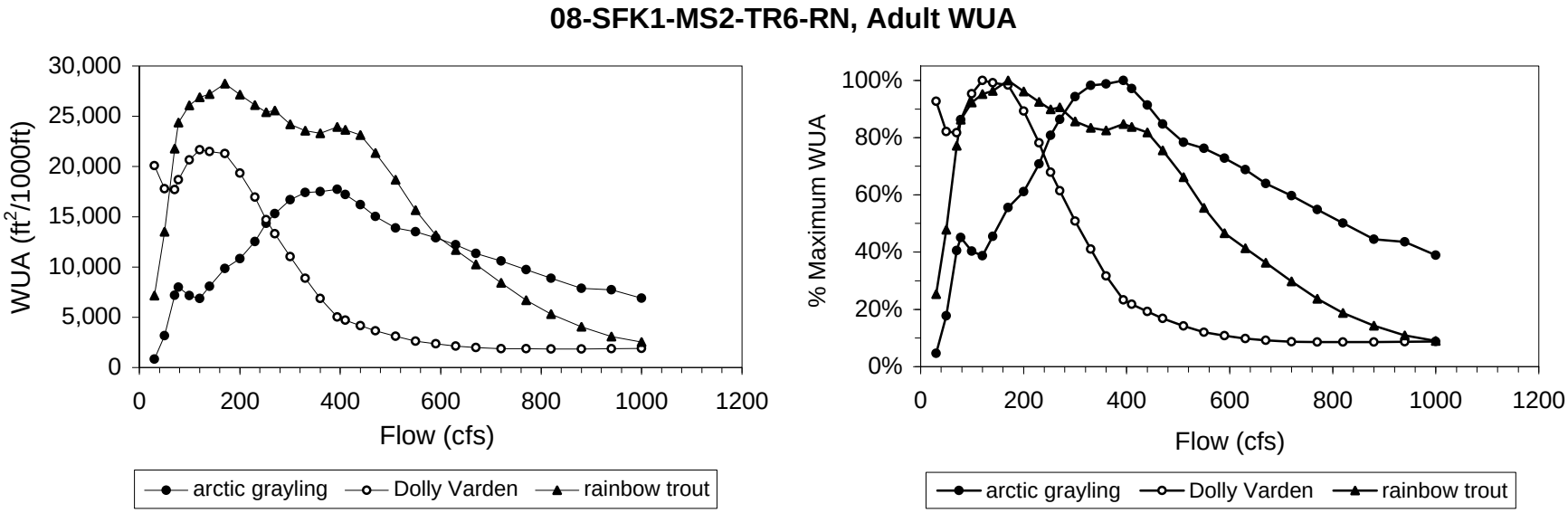

Figure 135
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK1-MS2-TR6 (River Kilometer 19.60) in SFK-A, South Fork Koktuli River, Alaska.

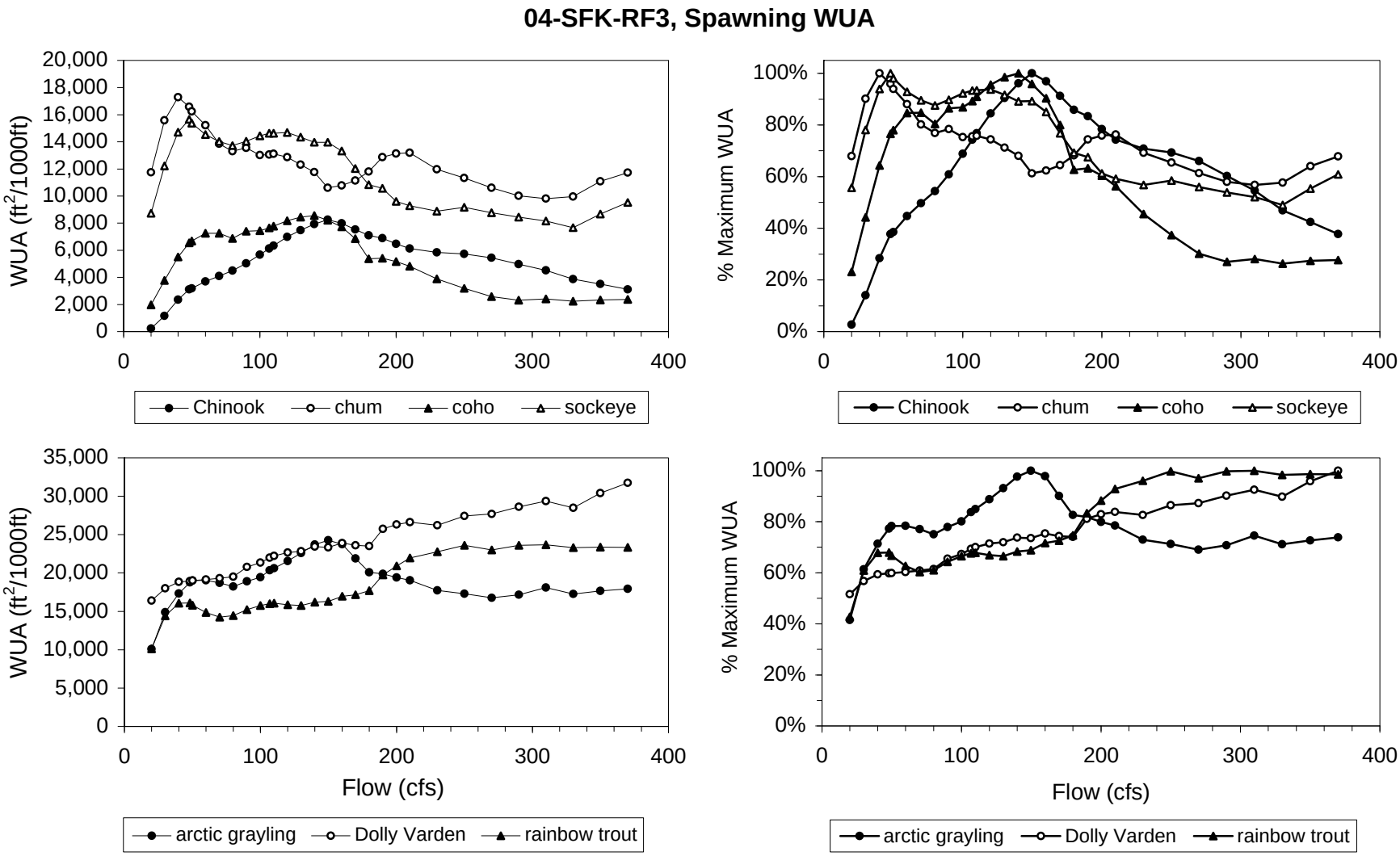

Figure 136
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RF3 (River Kilometer 19.80) in SFK-A, South Fork Koktuli River, Alaska.

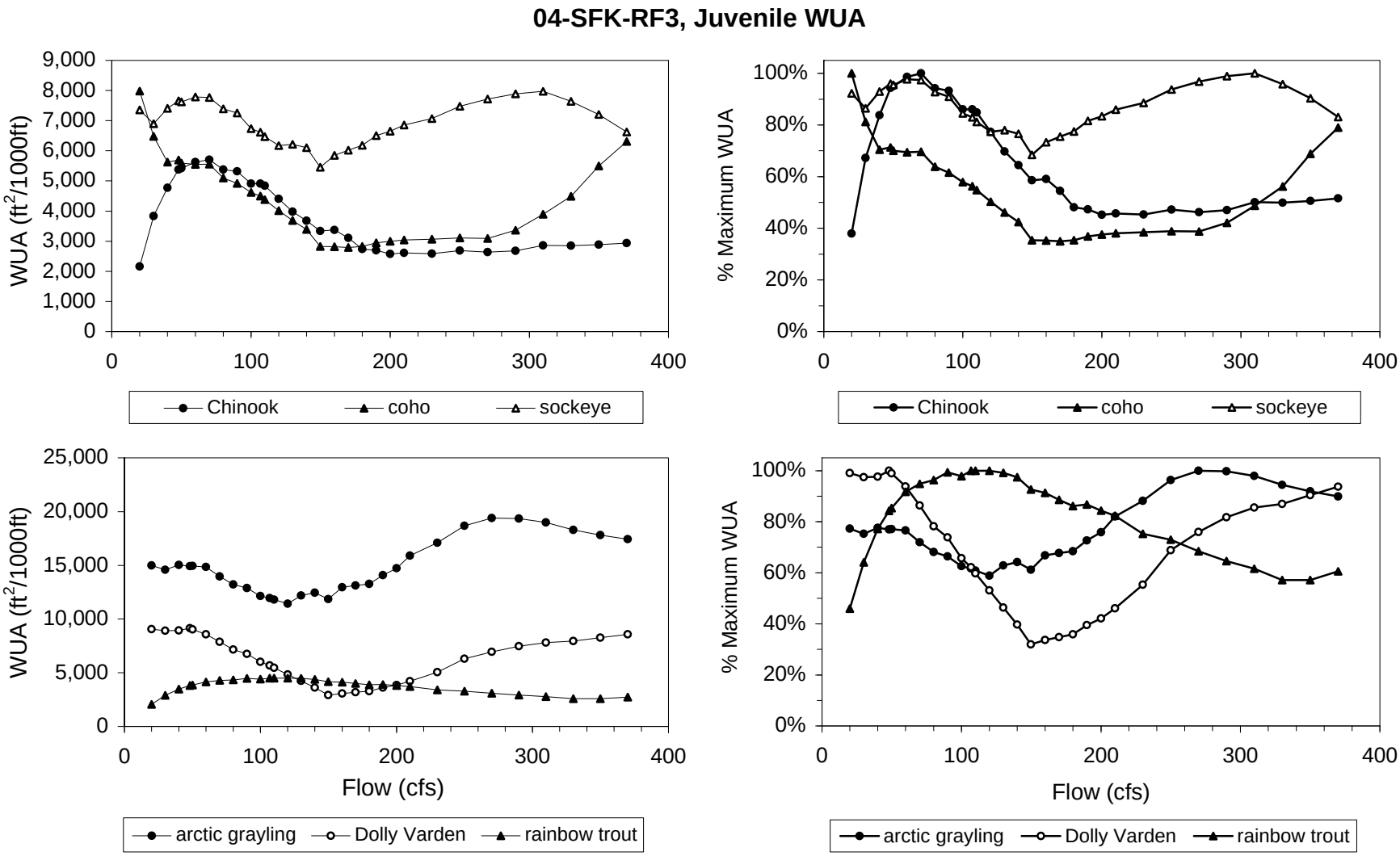

Figure 137
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RF3 (River Kilometer 19.80) in SFK-A, South Fork Koktuli River, Alaska.

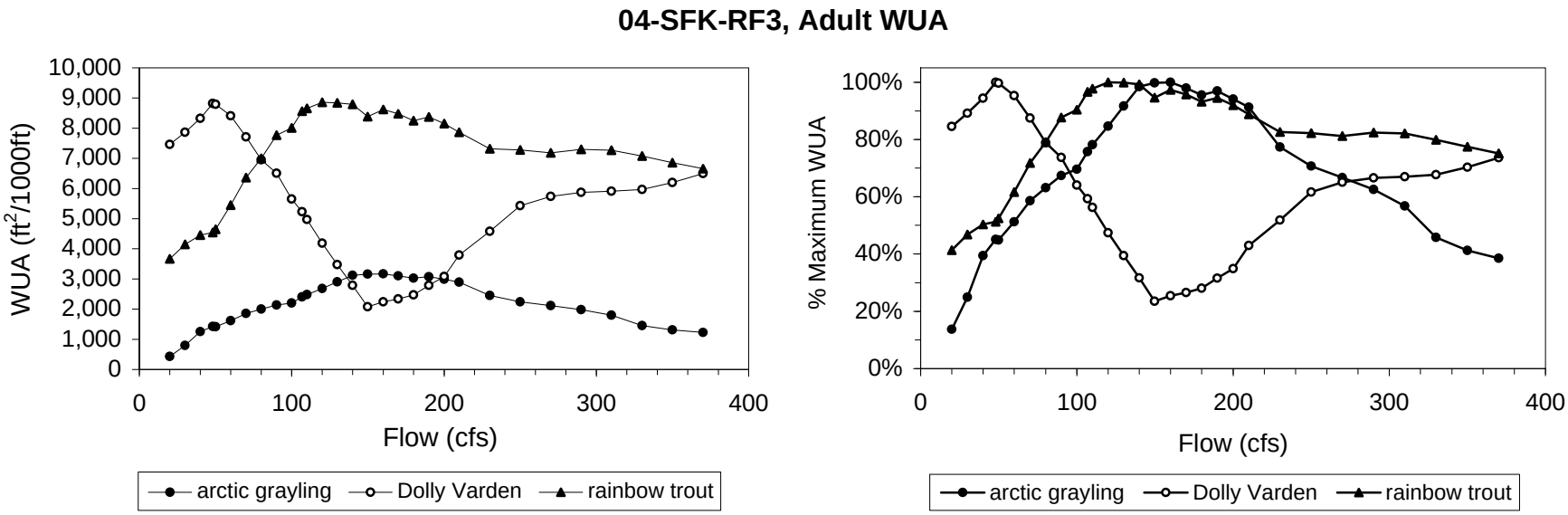

Figure 138
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-RF3 (River Kilometer 19.80) in SFK-A, South Fork Koktuli River, Alaska.

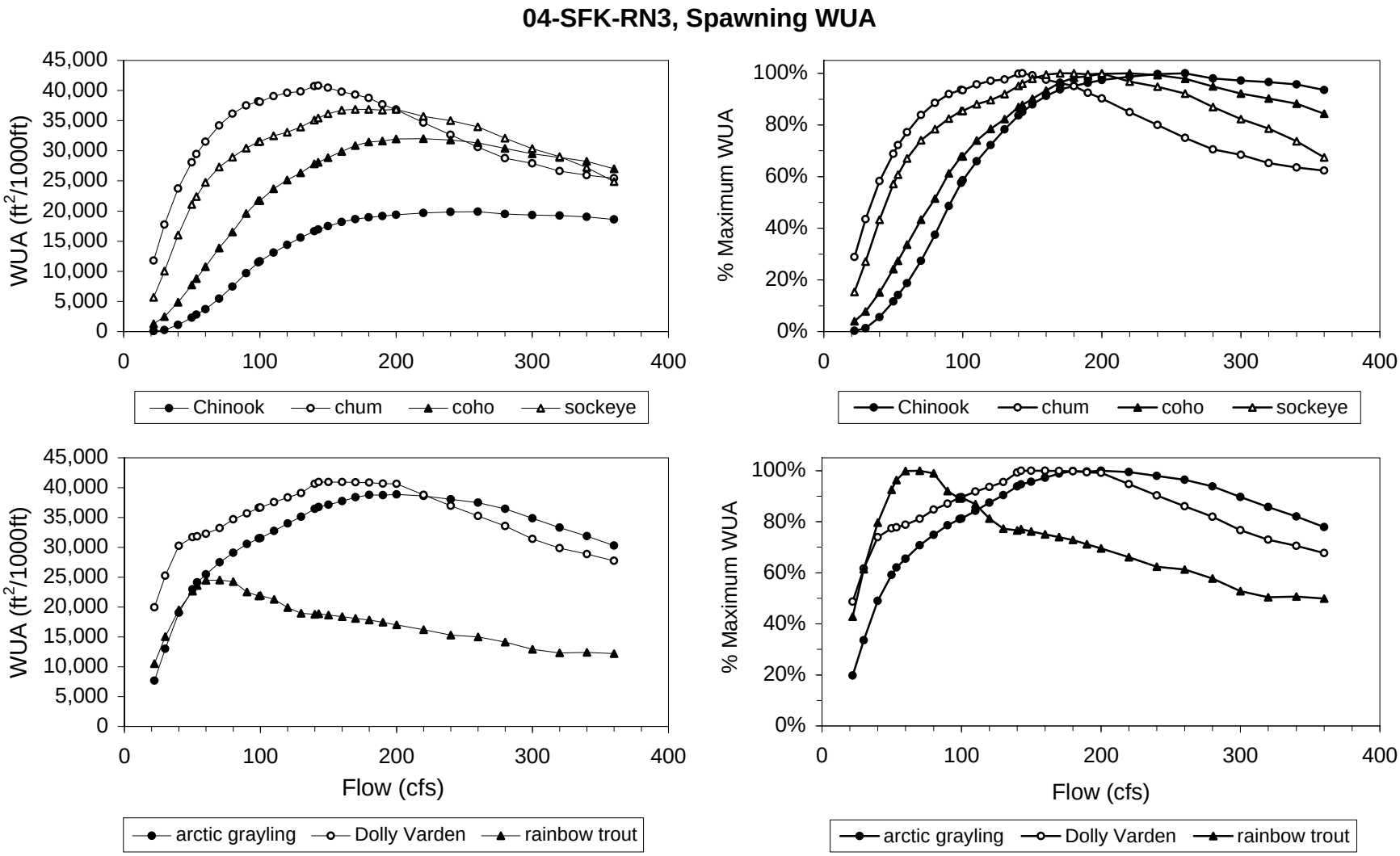

Figure 139
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RN3 (River Kilometer 20.10) in SFK-A, South Fork Koktuli River, Alaska.

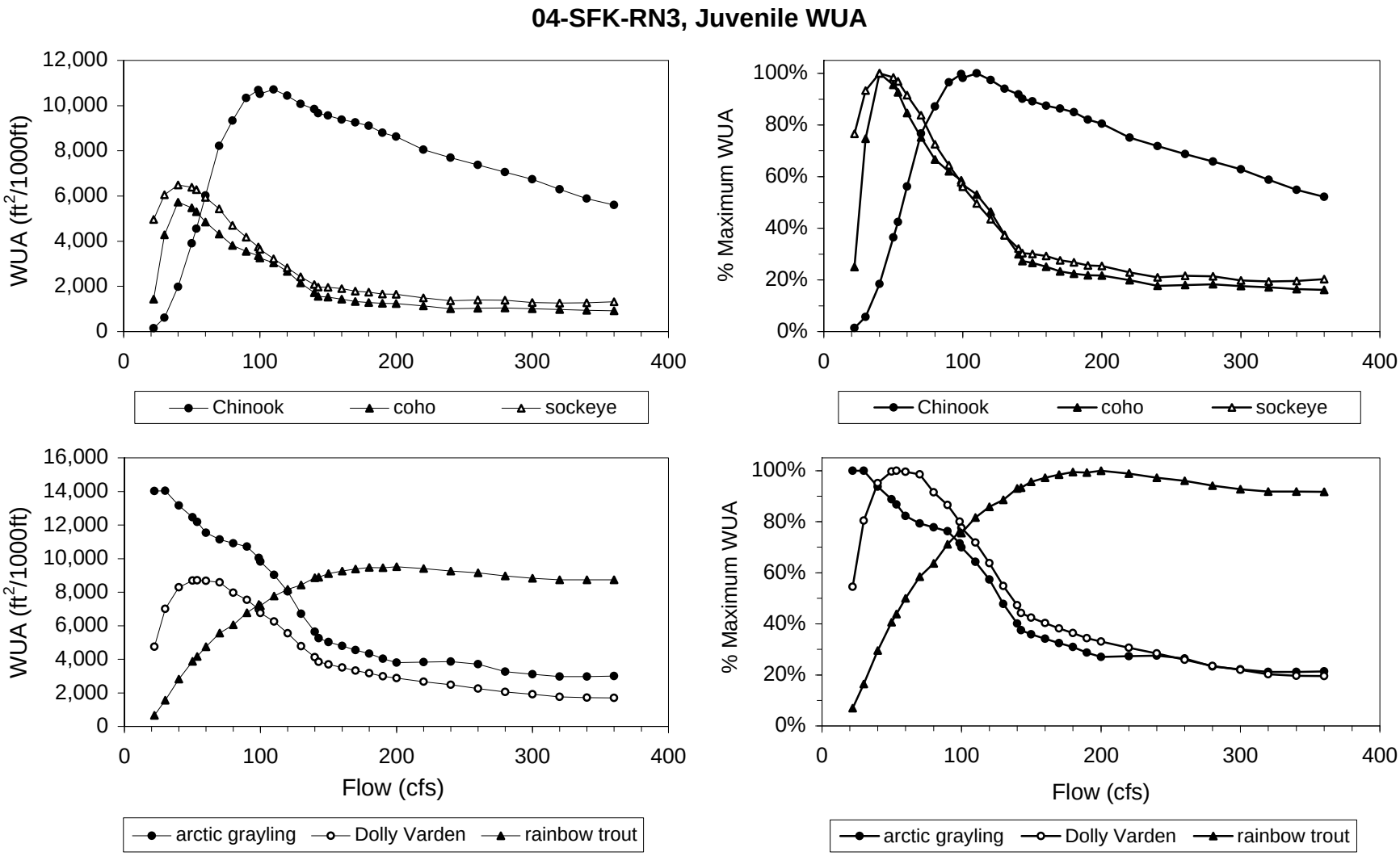

Figure 140
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RN3 (River Kilometer 20.10) in SFK-A, South Fork Koktuli River, Alaska.

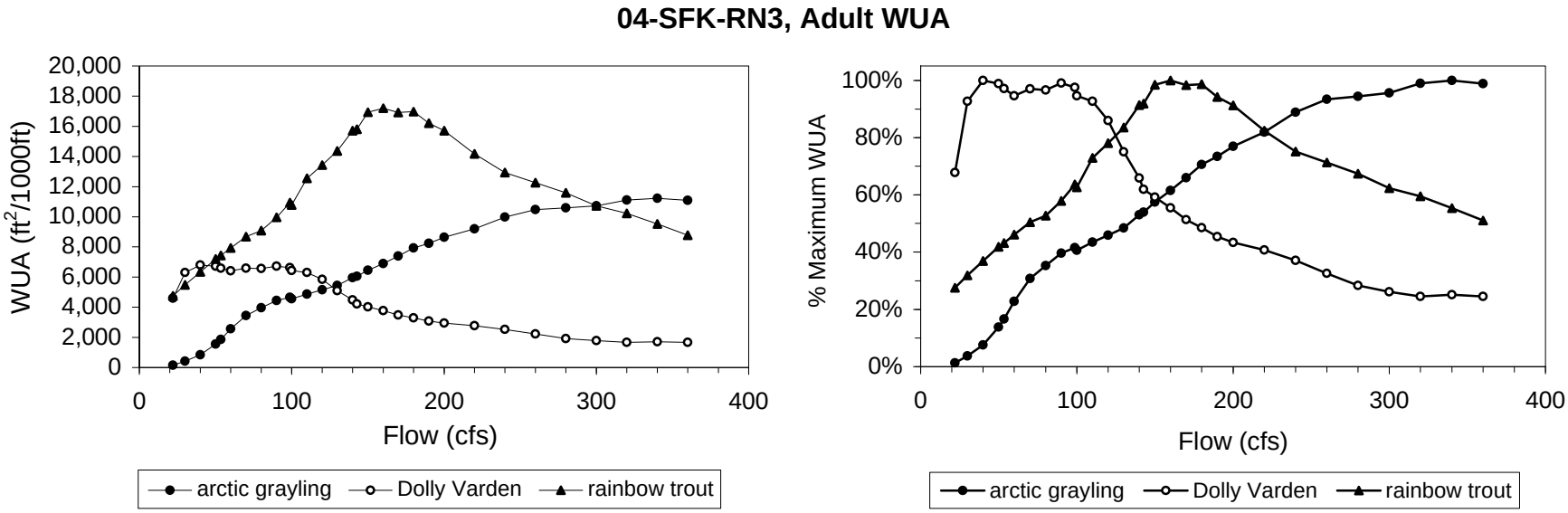

Figure 141
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-RN3 (River Kilometer 20.10) in SFK-A, South Fork Koktuli River, Alaska.

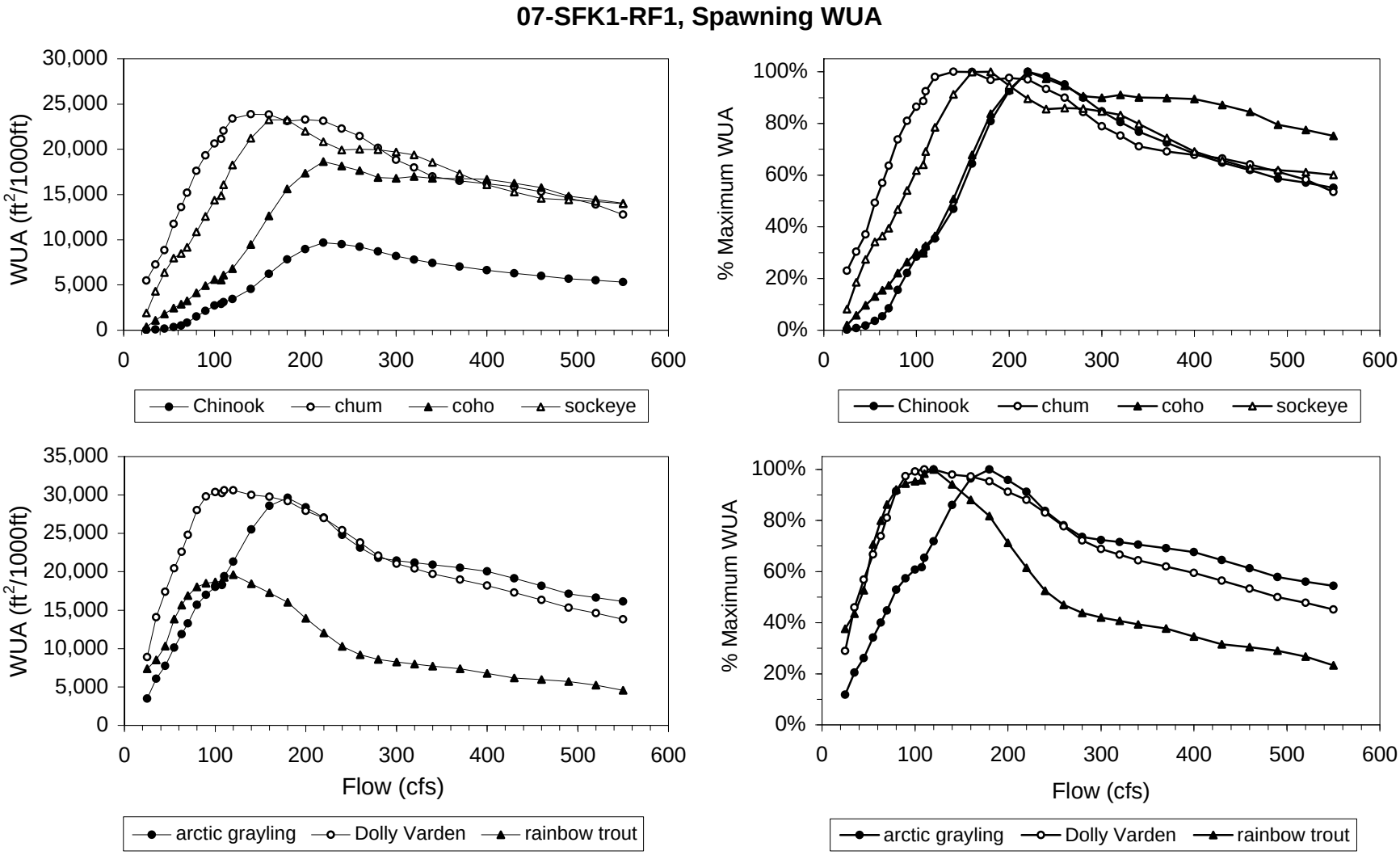

Figure 142
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-SFK1-RF1 (River Kilometer 24.21) in SFK-A, South Fork Koktuli River, Alaska.

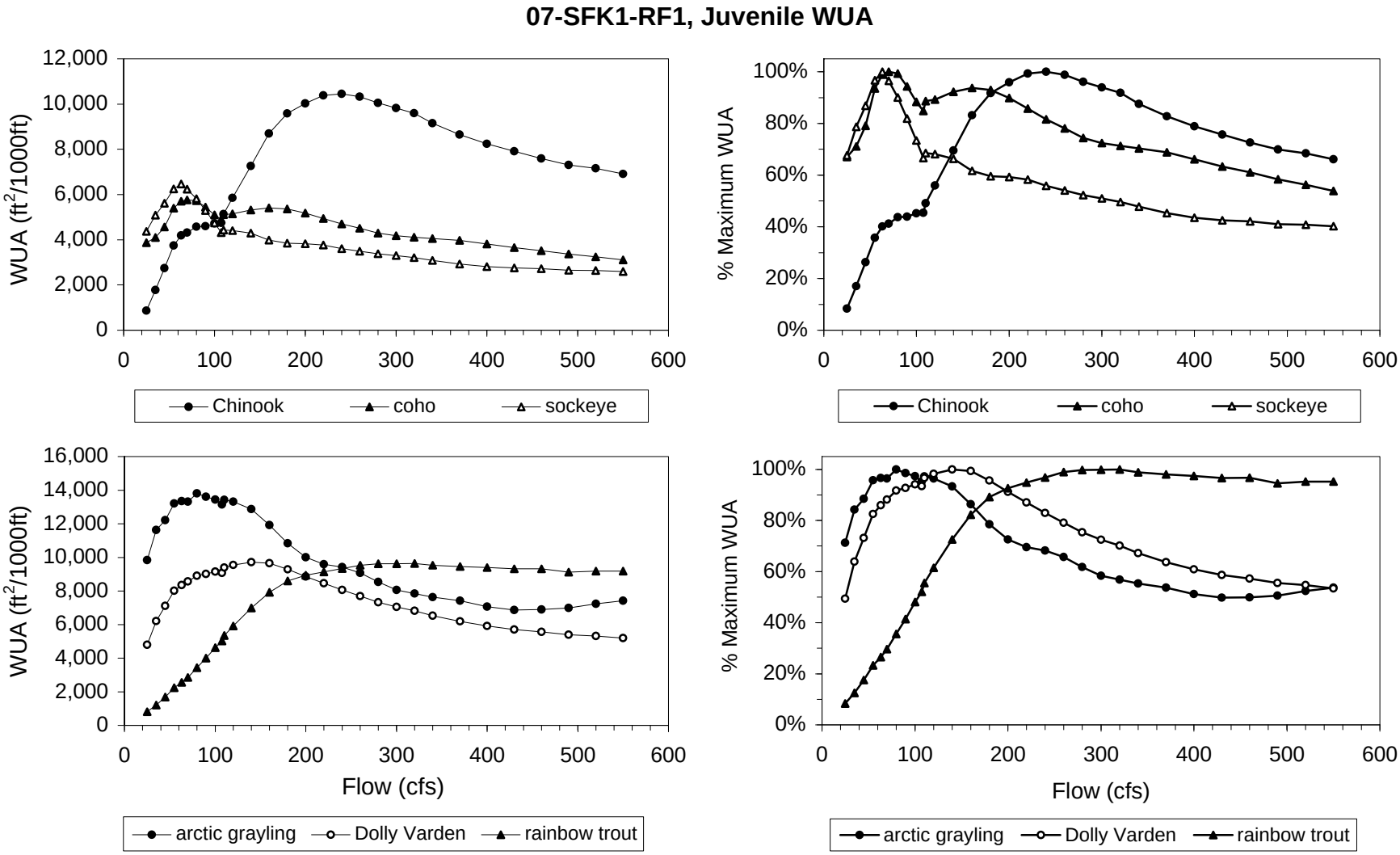

Figure 143
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-SFK1-RF1 (River Kilometer 24.21) in SFK-A, South Fork Koktuli River, Alaska.

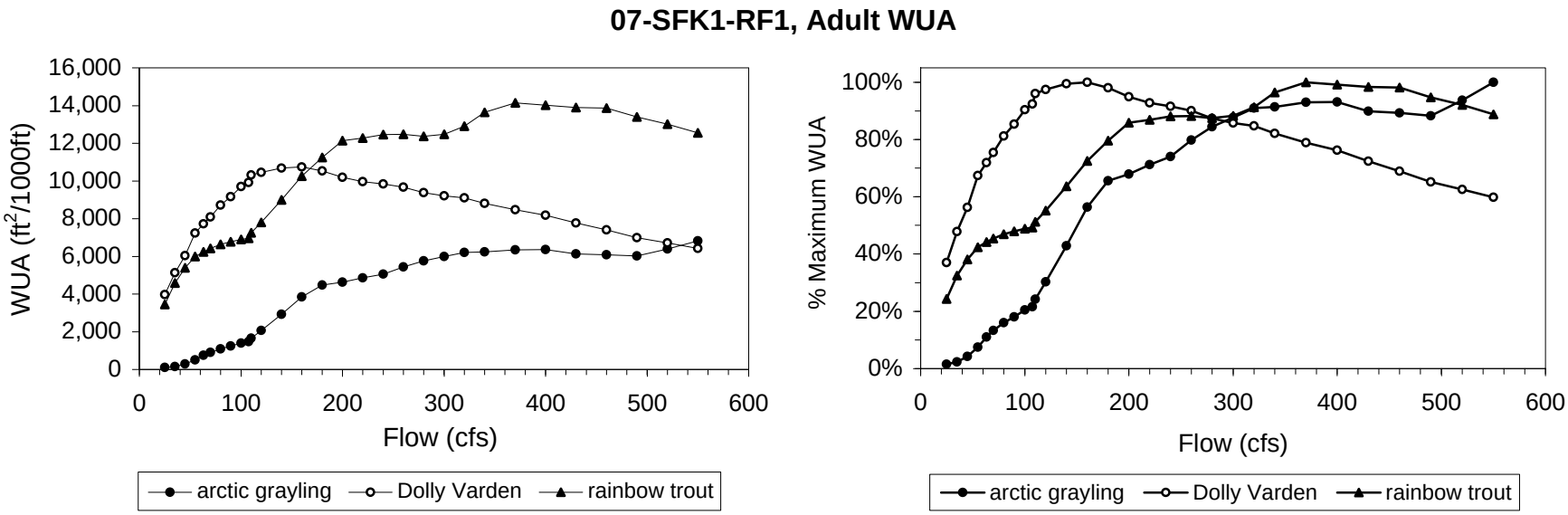

Figure 144
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-SFK1-RF1 (River Kilometer 24.21) in SFK-A, South Fork Koktuli River, Alaska.

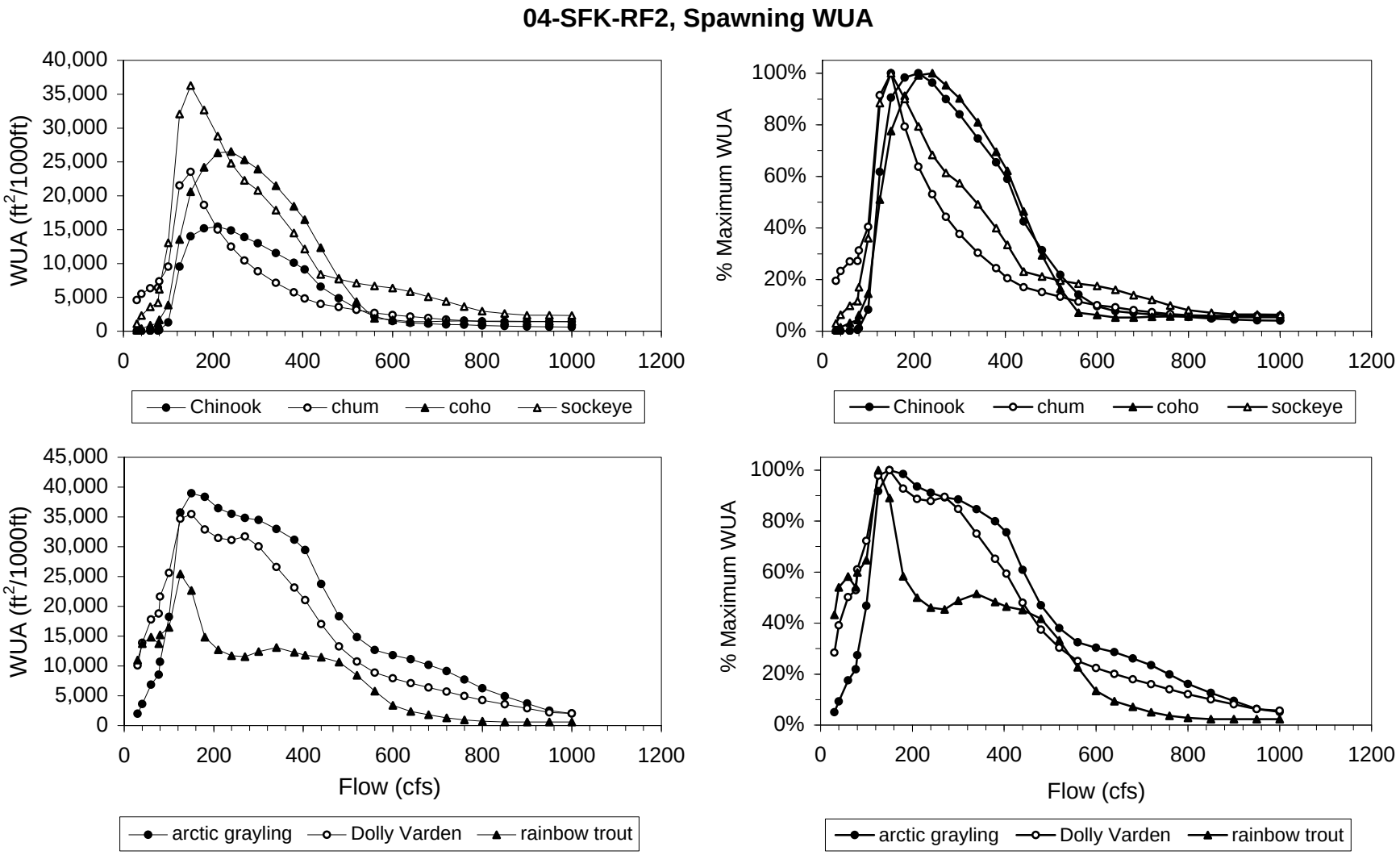

Figure 145
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RF2 (River Kilometer 24.68) in SFK-A, South Fork Koktuli River, Alaska.

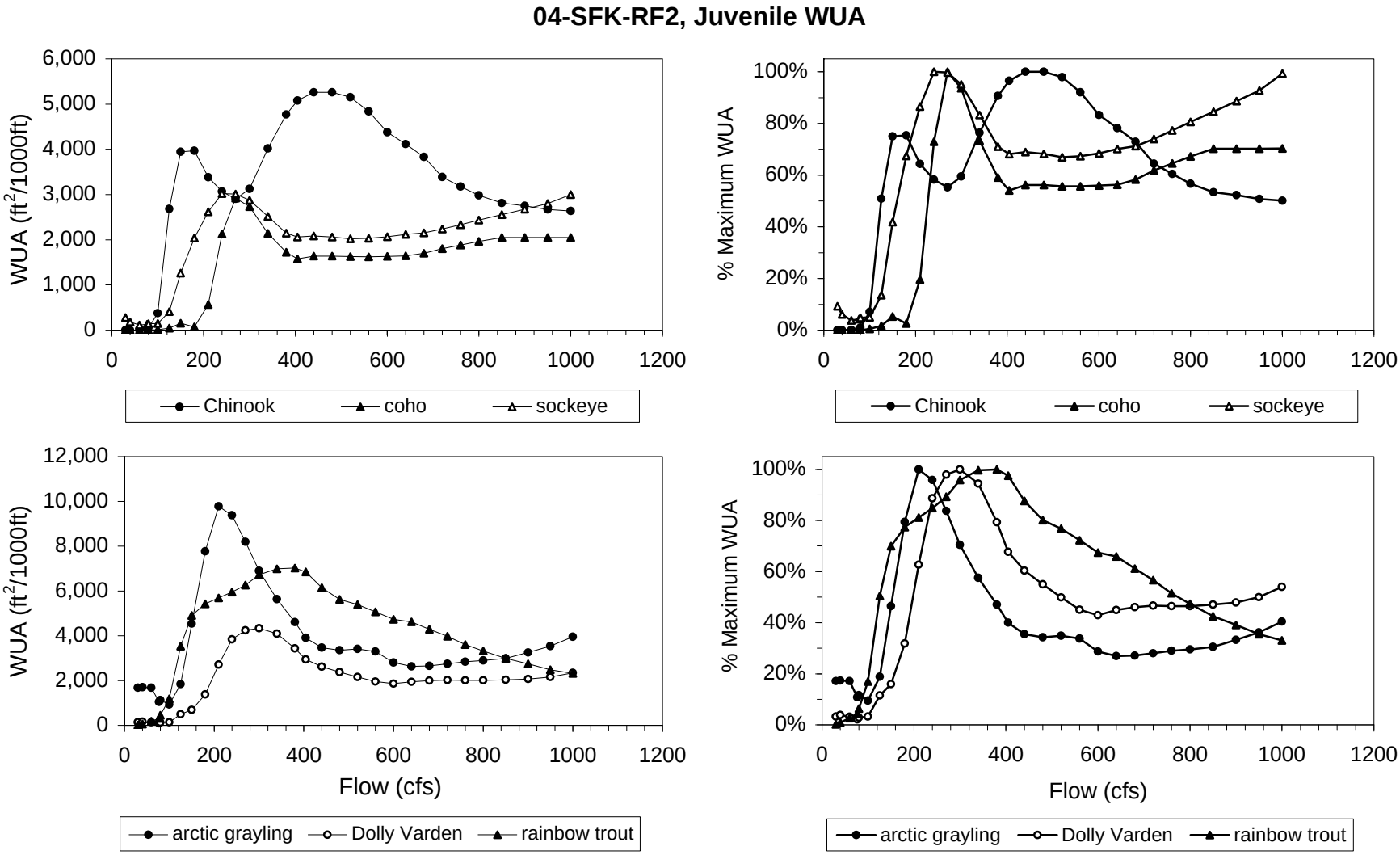

Figure 146
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RF2 (River Kilometer 24.68) in SFK-A, South Fork Koktuli River, Alaska.

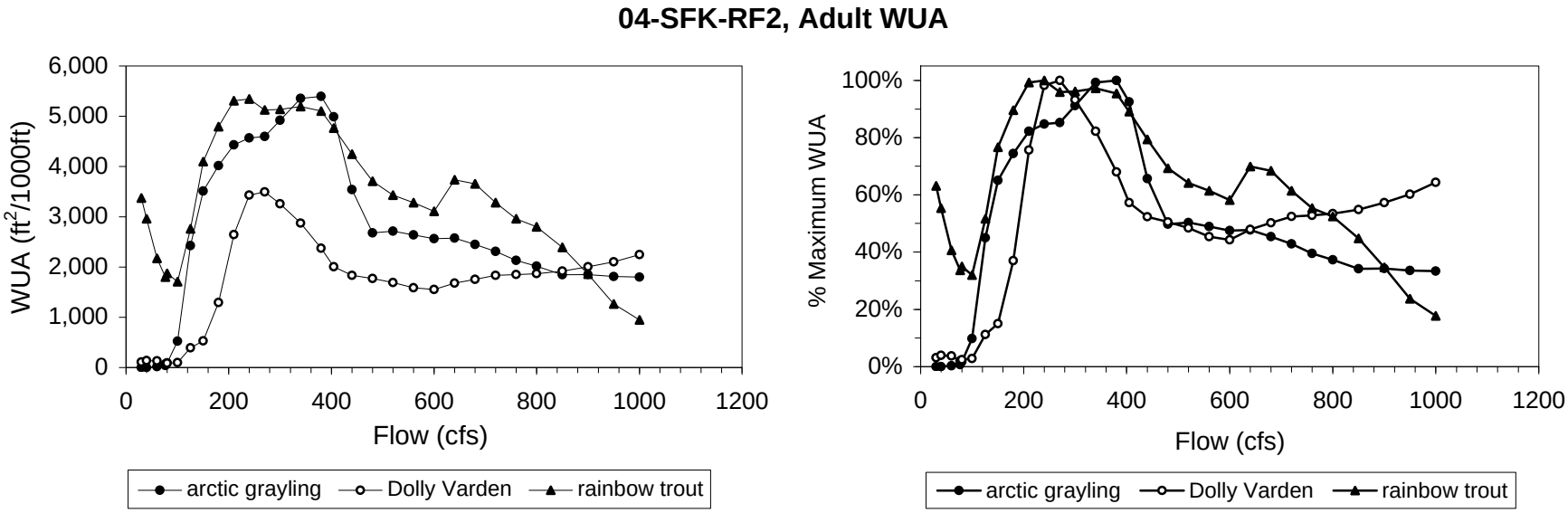

Figure 147
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-RF2 (River Kilometer 24.68) in SFK-A, South Fork Koktuli River, Alaska.

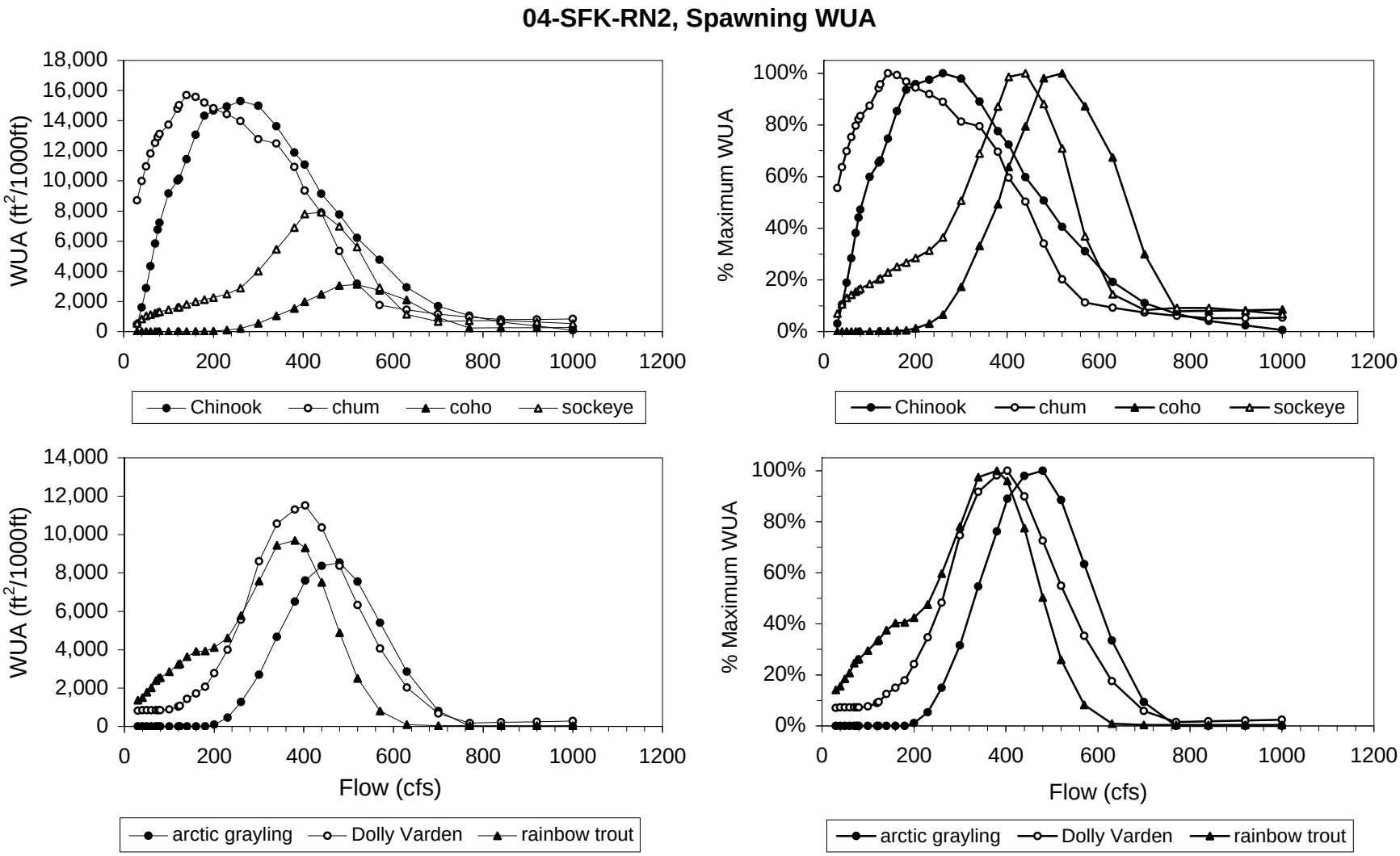

Figure 148
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RN2 (River Kilometer 24.91) in SFK-B, South Fork Koktuli River, Alaska.

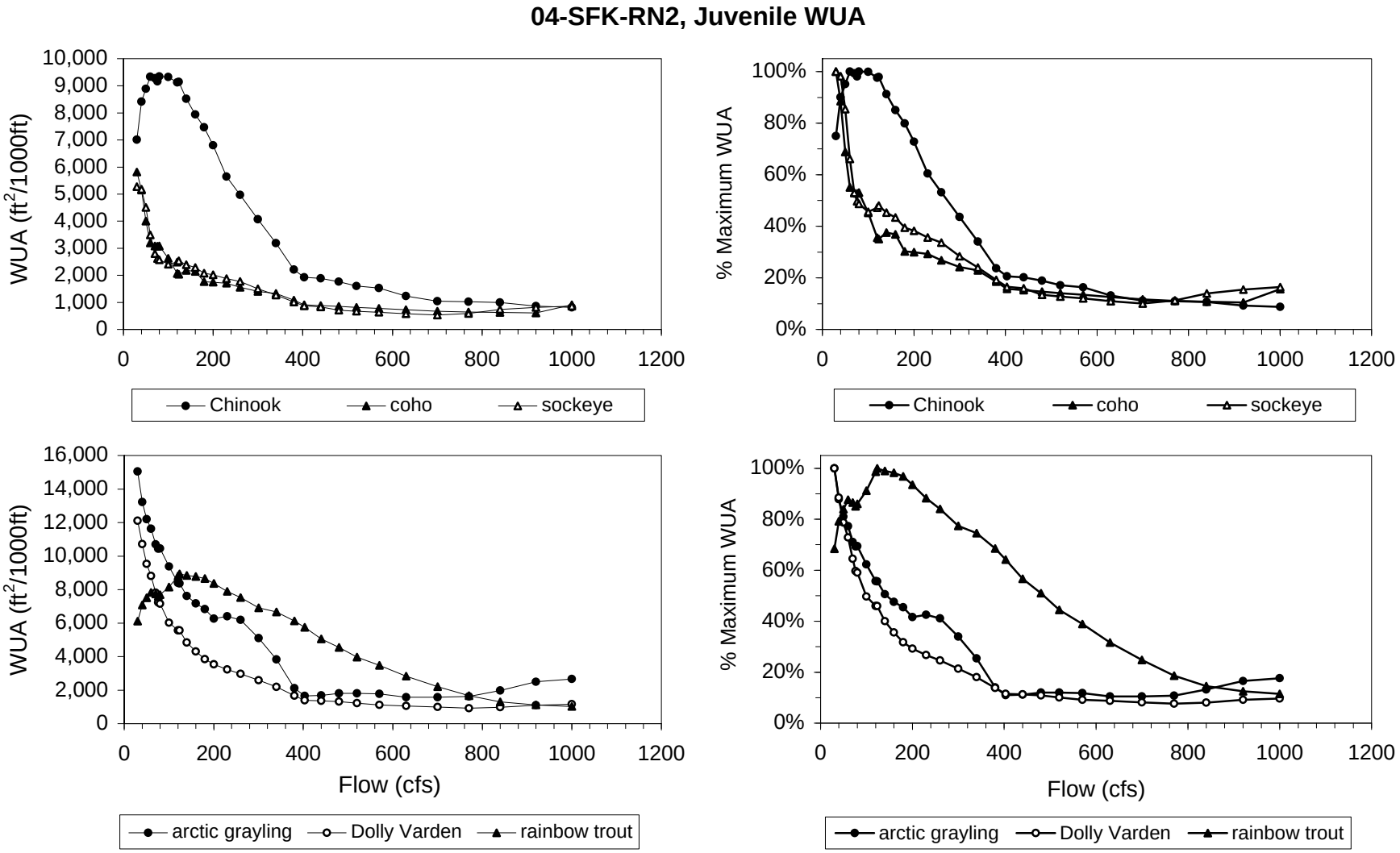

Figure 149
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RN2 (River Kilometer 24.91) in SFK-B, South Fork Koktuli River, Alaska.

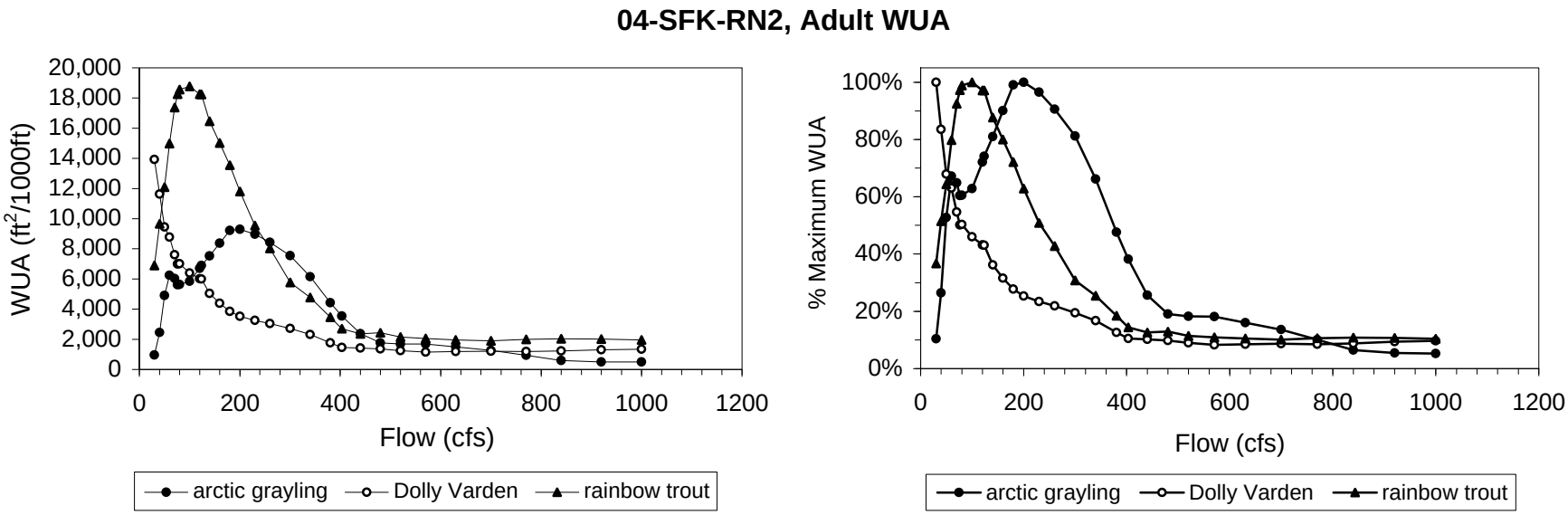

Figure 150
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-RN2 (River Kilometer 24.91) in SFK-B, South Fork Koktuli River, Alaska.

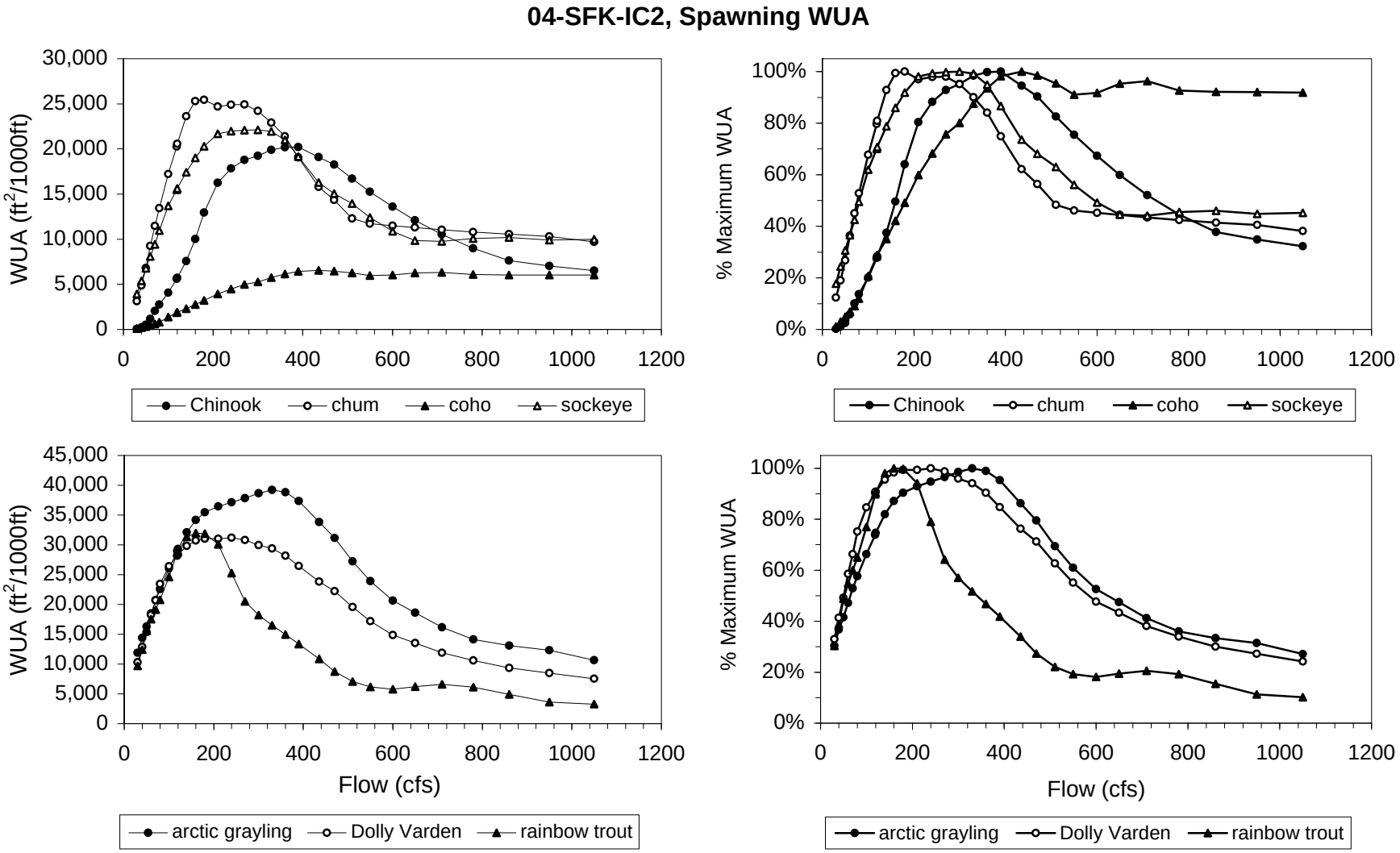

Figure 151
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-IC2 (River Kilometer 25.67) in SFK-B, South Fork Koktuli River, Alaska.

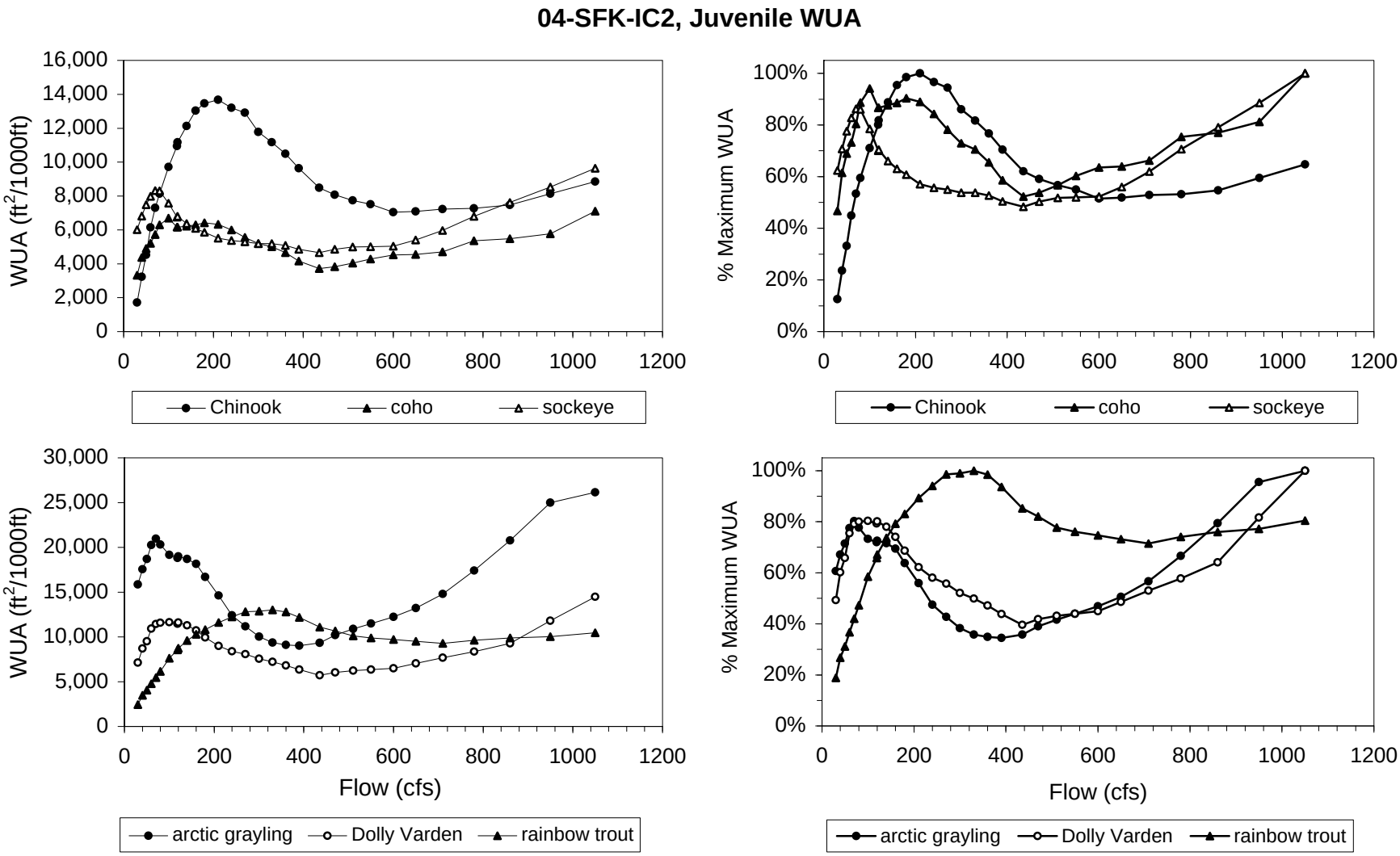

Figure 152
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-IC2 (River Kilometer 25.67) in SFK-B, South Fork Koktuli River, Alaska.

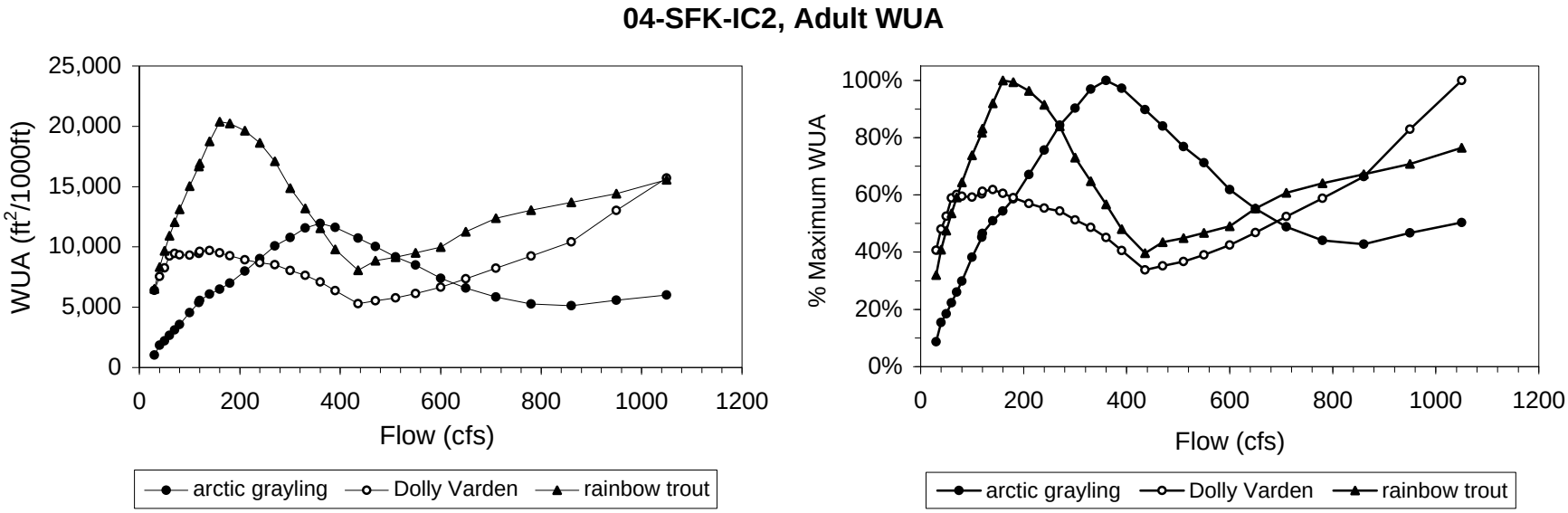

Figure 153
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-IC2 (River Kilometer 25.67) in SFK-B, South Fork Koktuli River, Alaska.

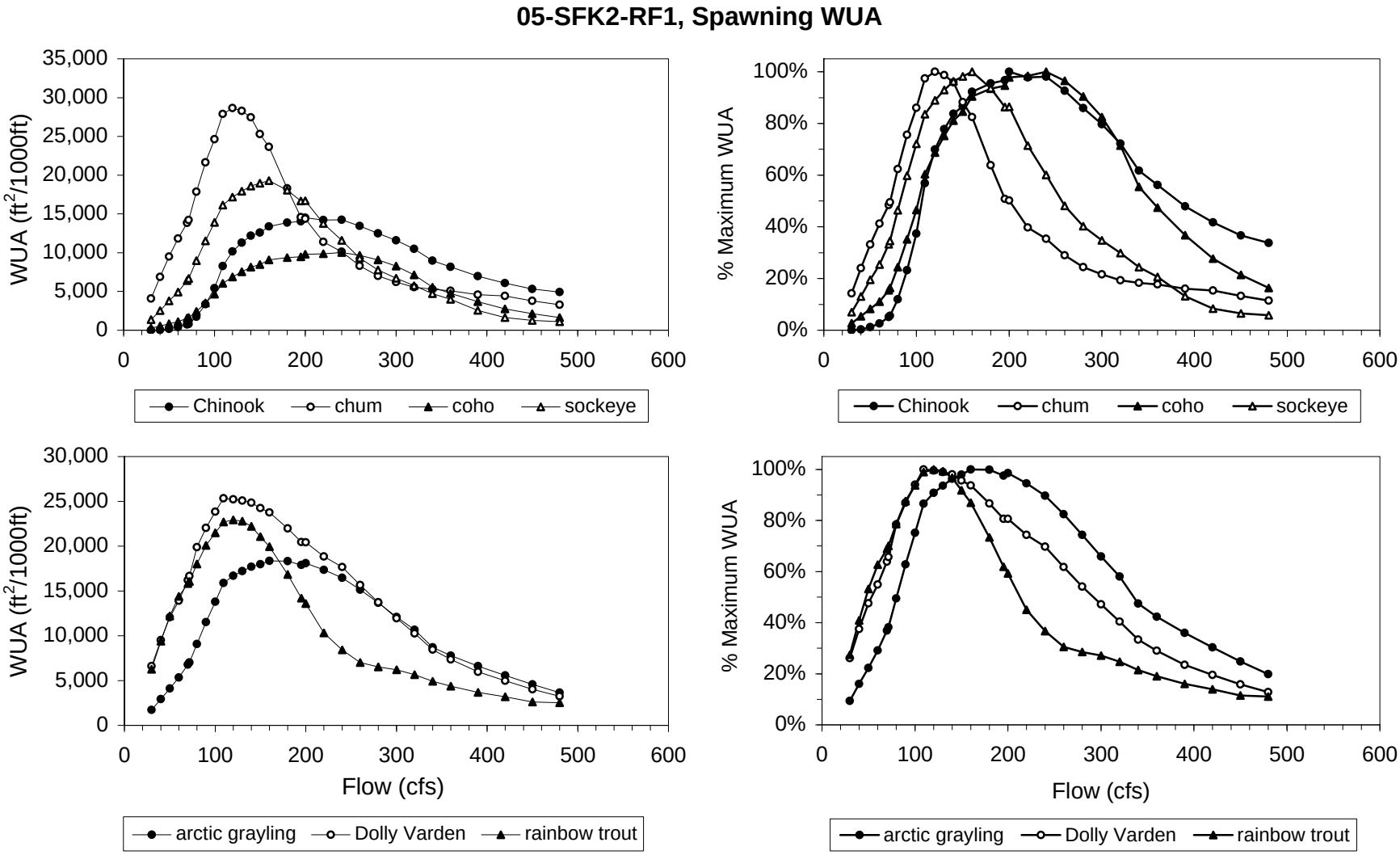

Figure 154
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RF1 (River Kilometer 26.22) in SFK-B, South Fork Koktuli River, Alaska.

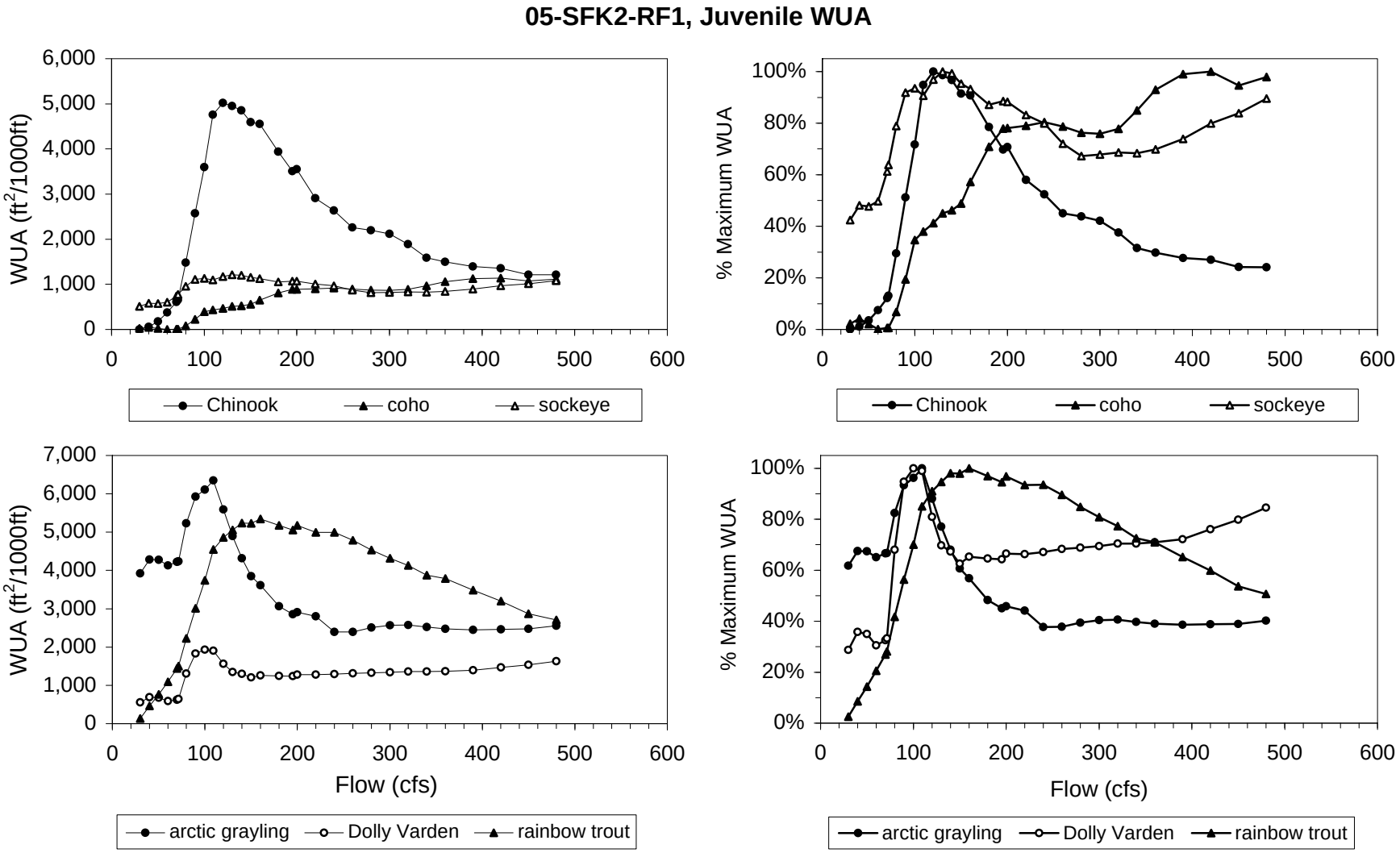

Figure 155
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RF1 (River Kilometer 26.22) in SFK-B, South Fork Koktuli River, Alaska.

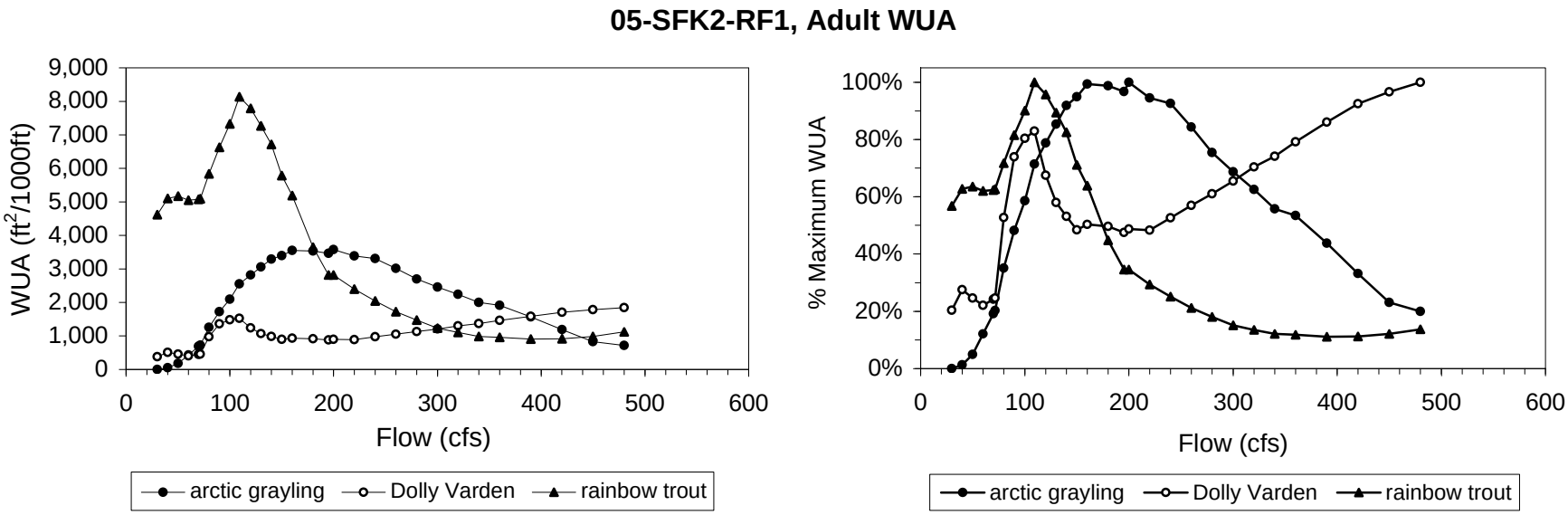

Figure 156
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RF1 (River Kilometer 26.22) in SFK-B, South Fork Koktuli River, Alaska.

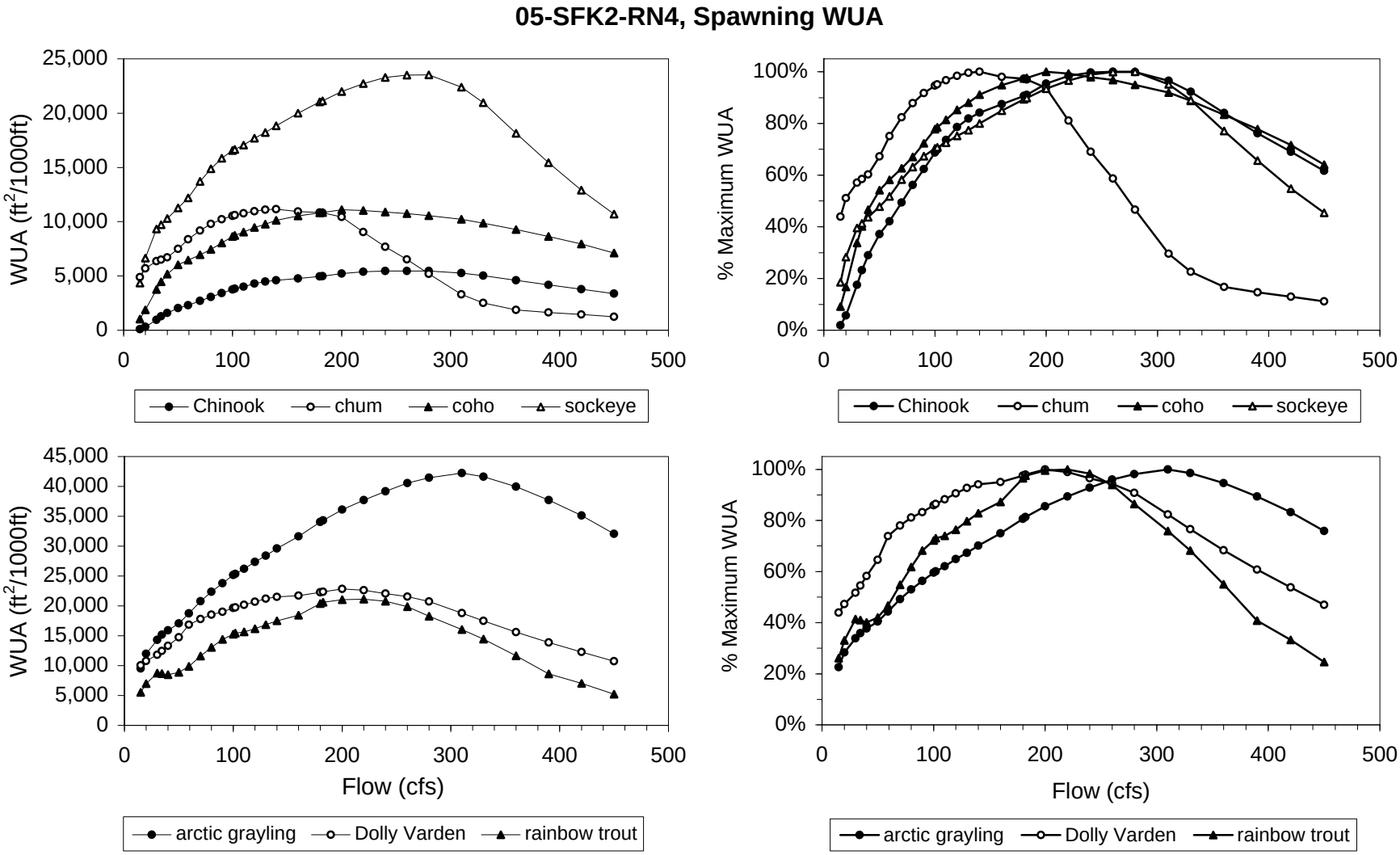

Figure 157
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN4 (River Kilometer 27.03) in SFK-B, South Fork Koktuli River, Alaska.

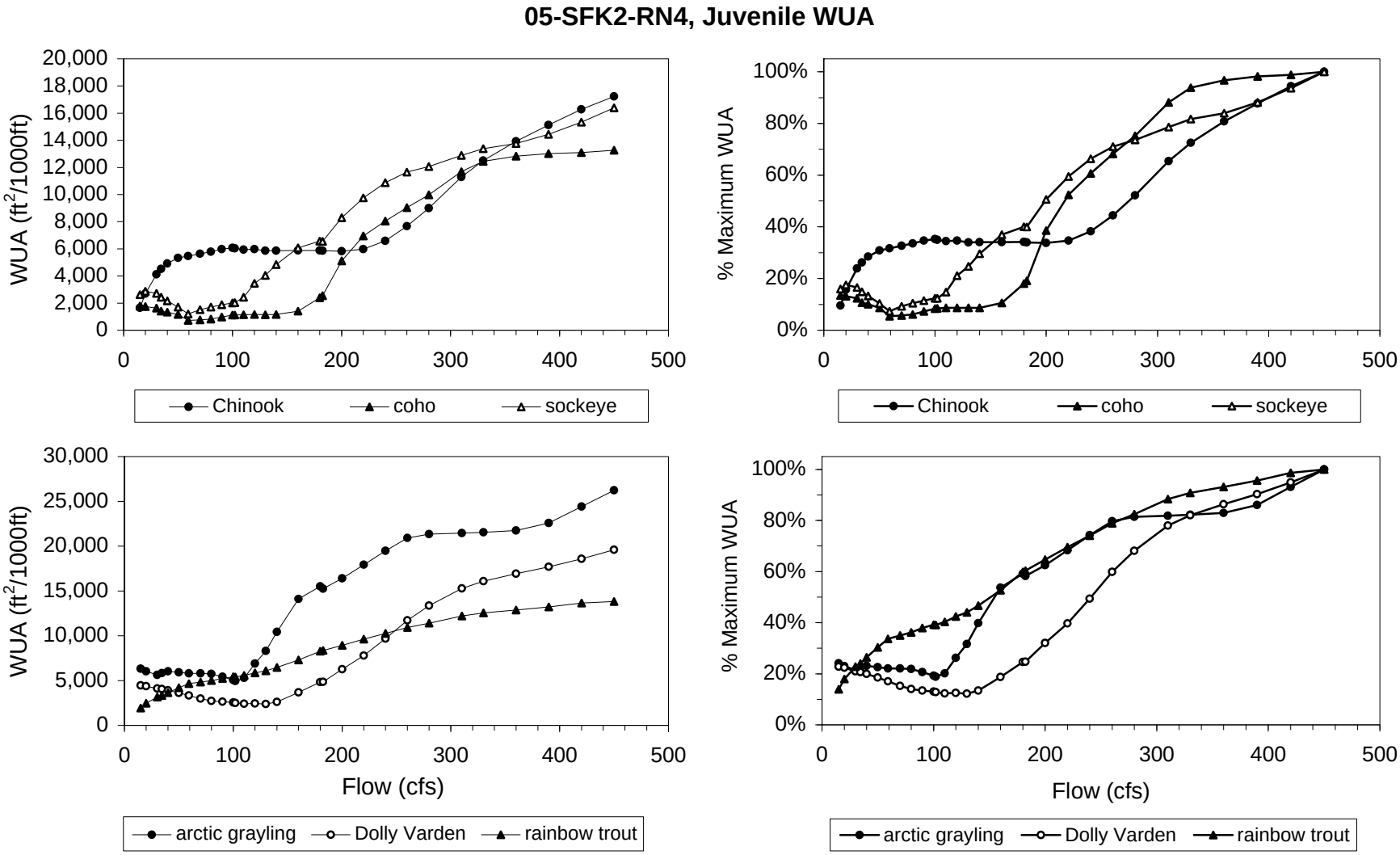

Figure 158
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN4 (River Kilometer 27.03) in SFK-B, South Fork Koktuli River, Alaska.

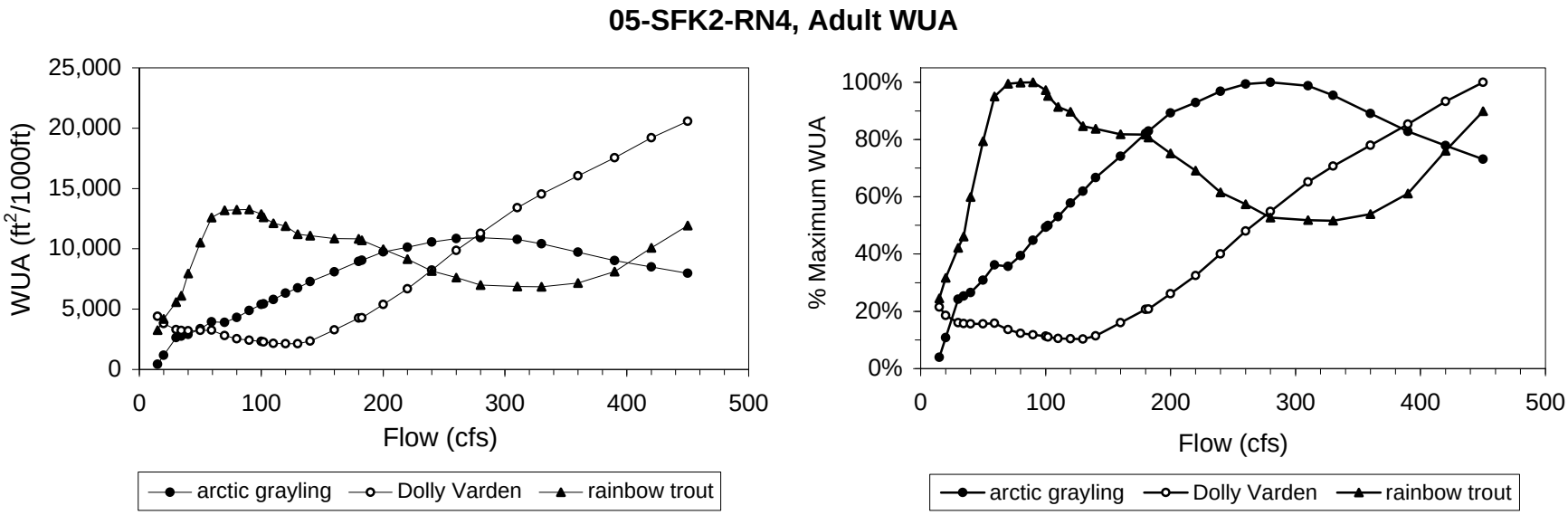

Figure 159
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN4 (River Kilometer 27.03) in SFK-B, South Fork Koktuli River, Alaska.

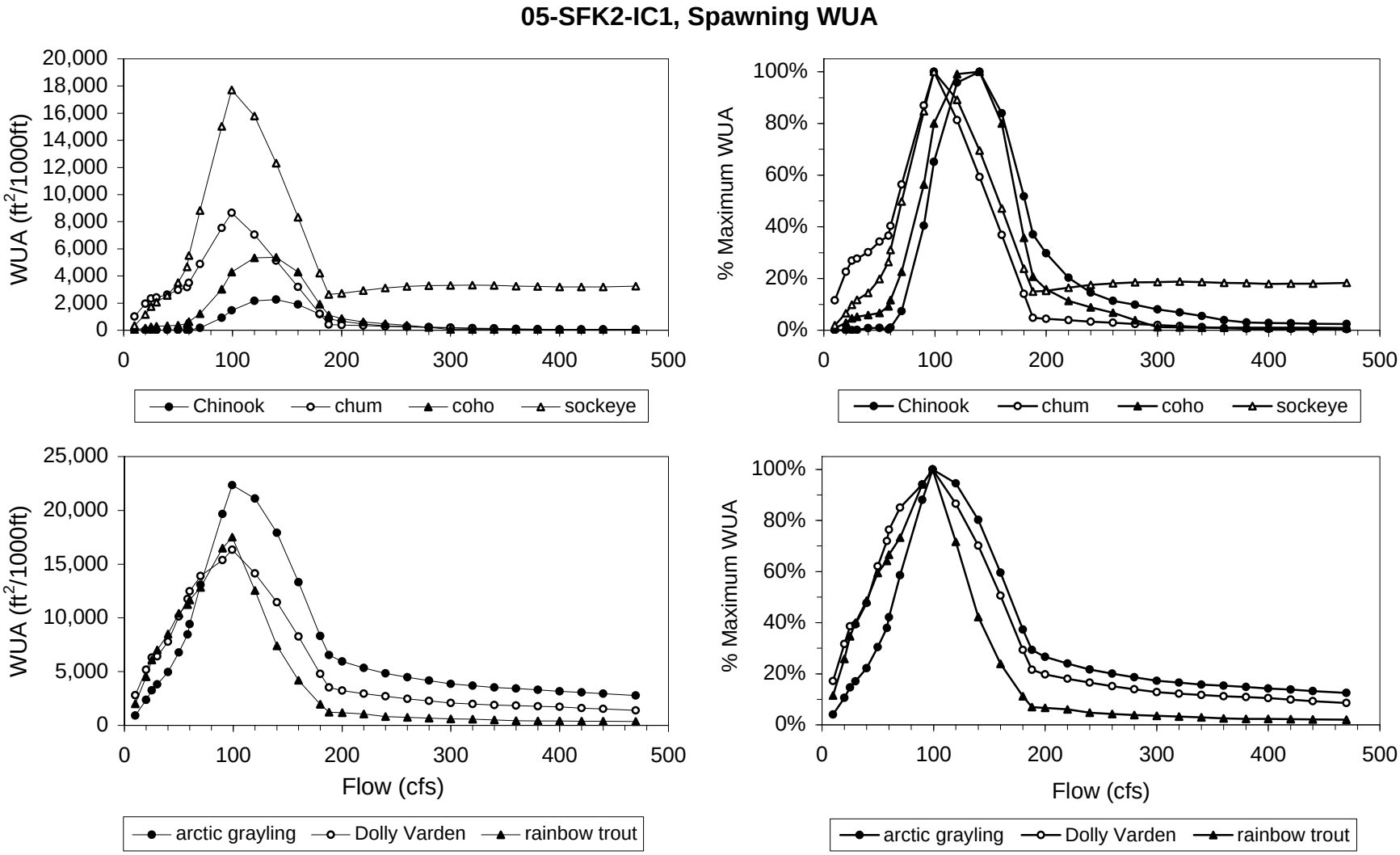

Figure 160
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-IC1 (River Kilometer 27.42) in SFK-B, South Fork Koktuli River, Alaska.

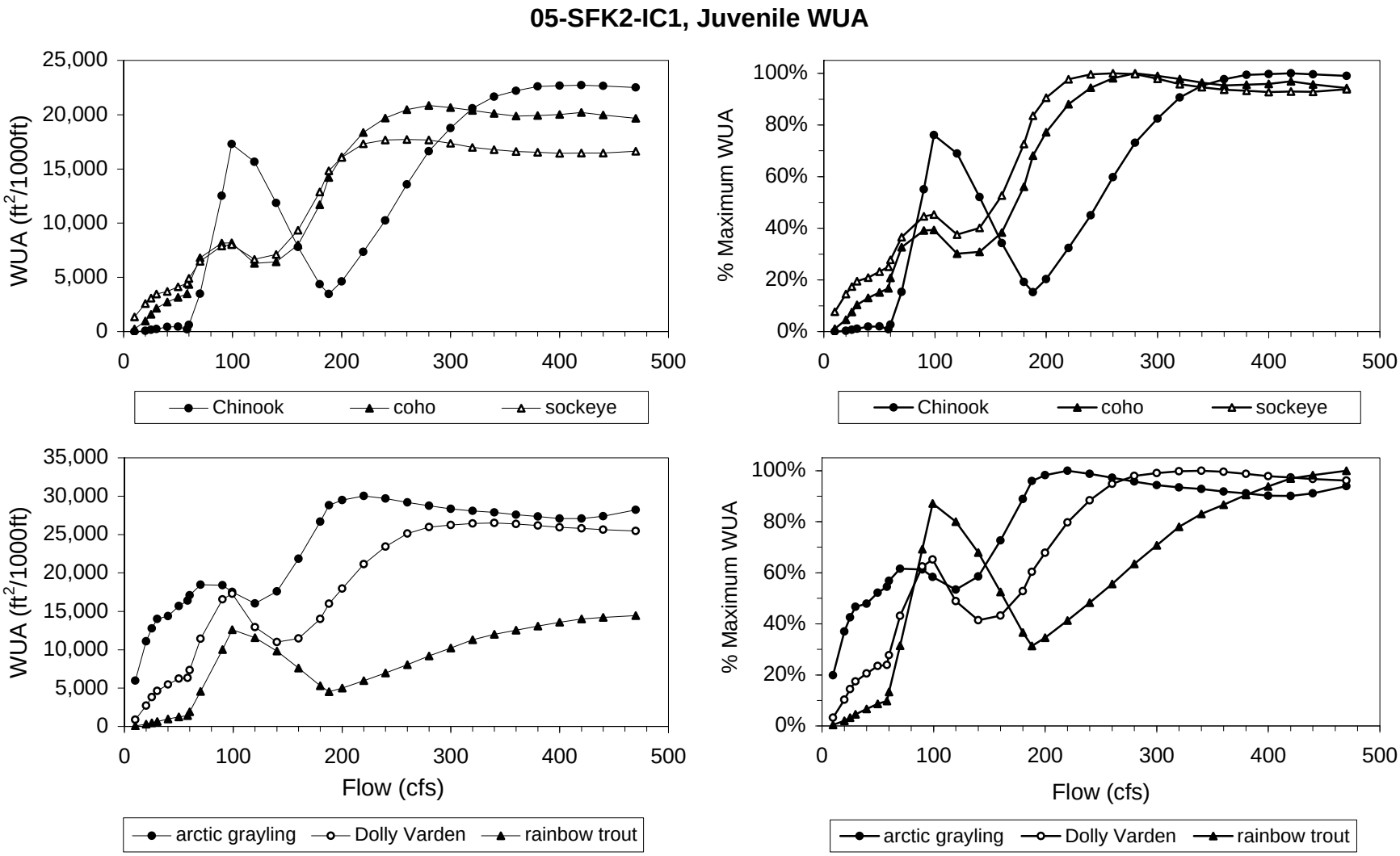

Figure 161
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-IC1 (River Kilometer 27.42) in SFK-B, South Fork Koktuli River, Alaska.

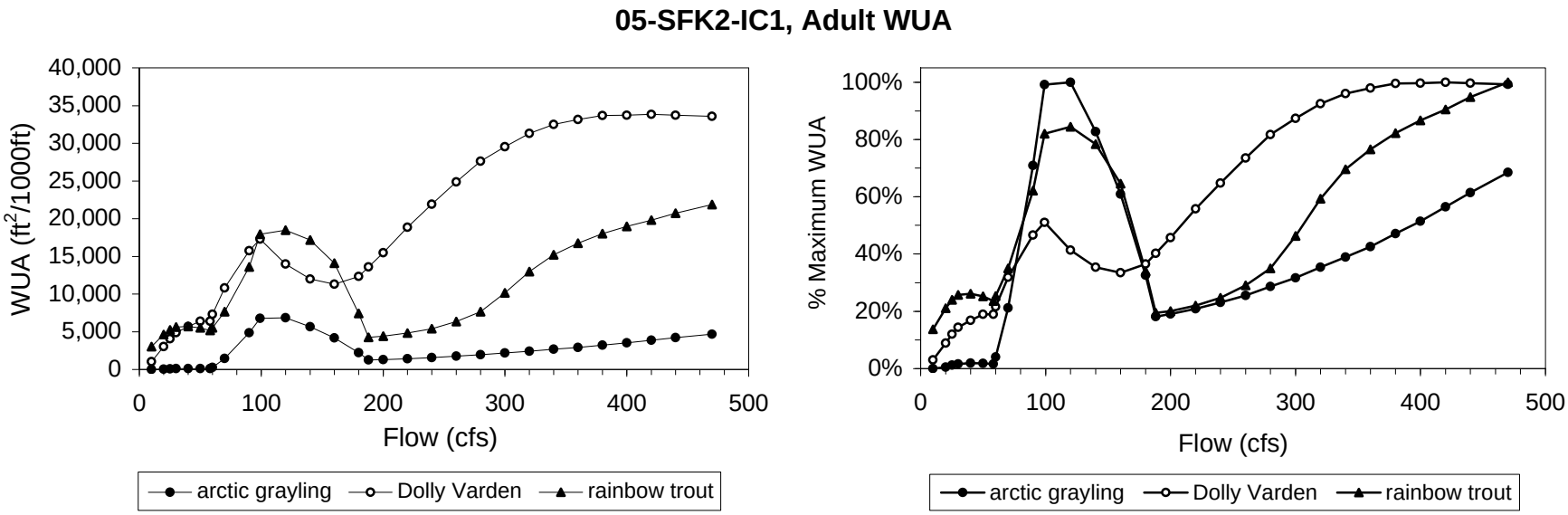

Figure 162
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-IC1 (River Kilometer 27.42) in SFK-B, South Fork Koktuli River, Alaska.

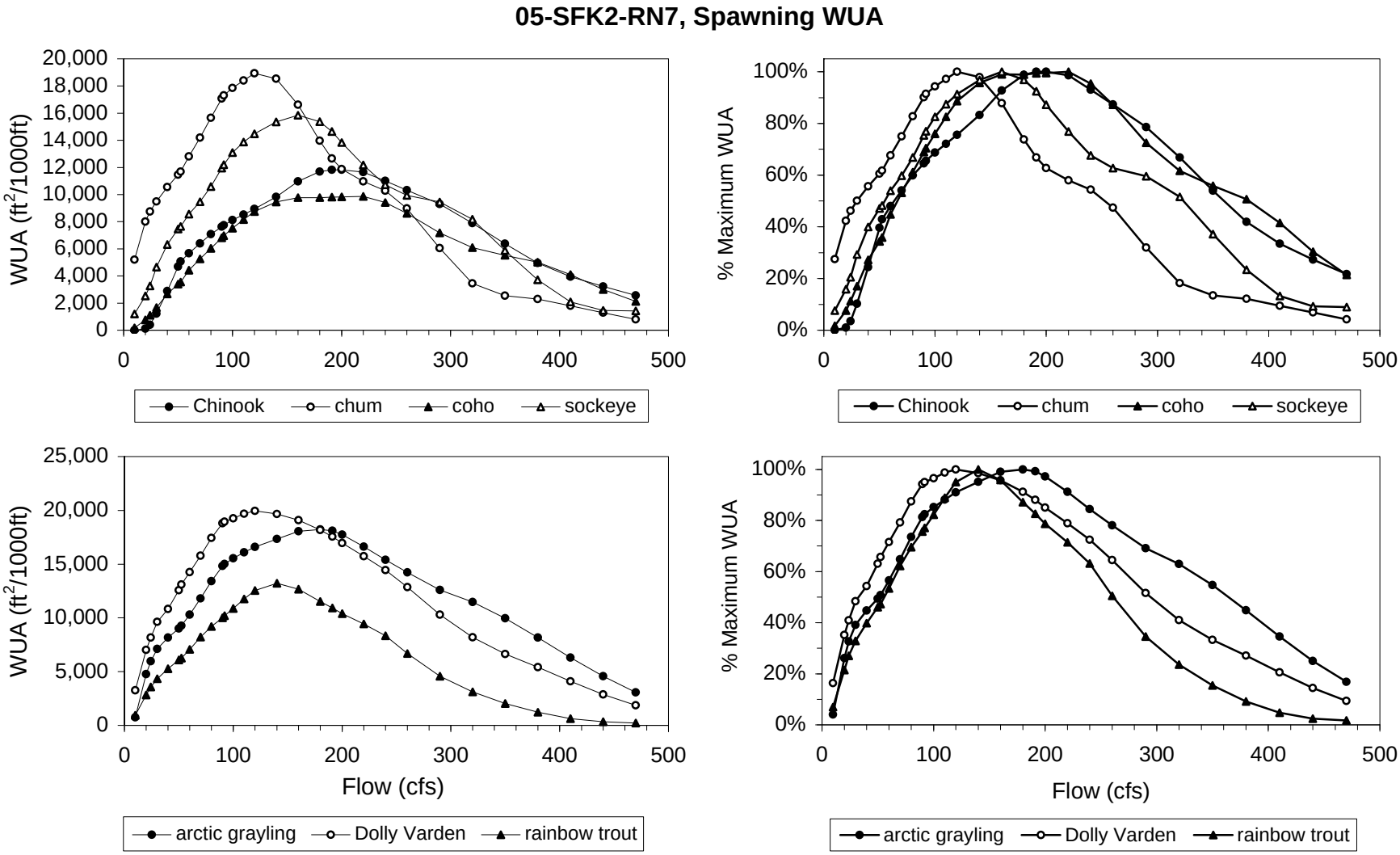

Figure 163
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN7 (River Kilometer 28.07) in SFK-B, South Fork Koktuli River, Alaska.

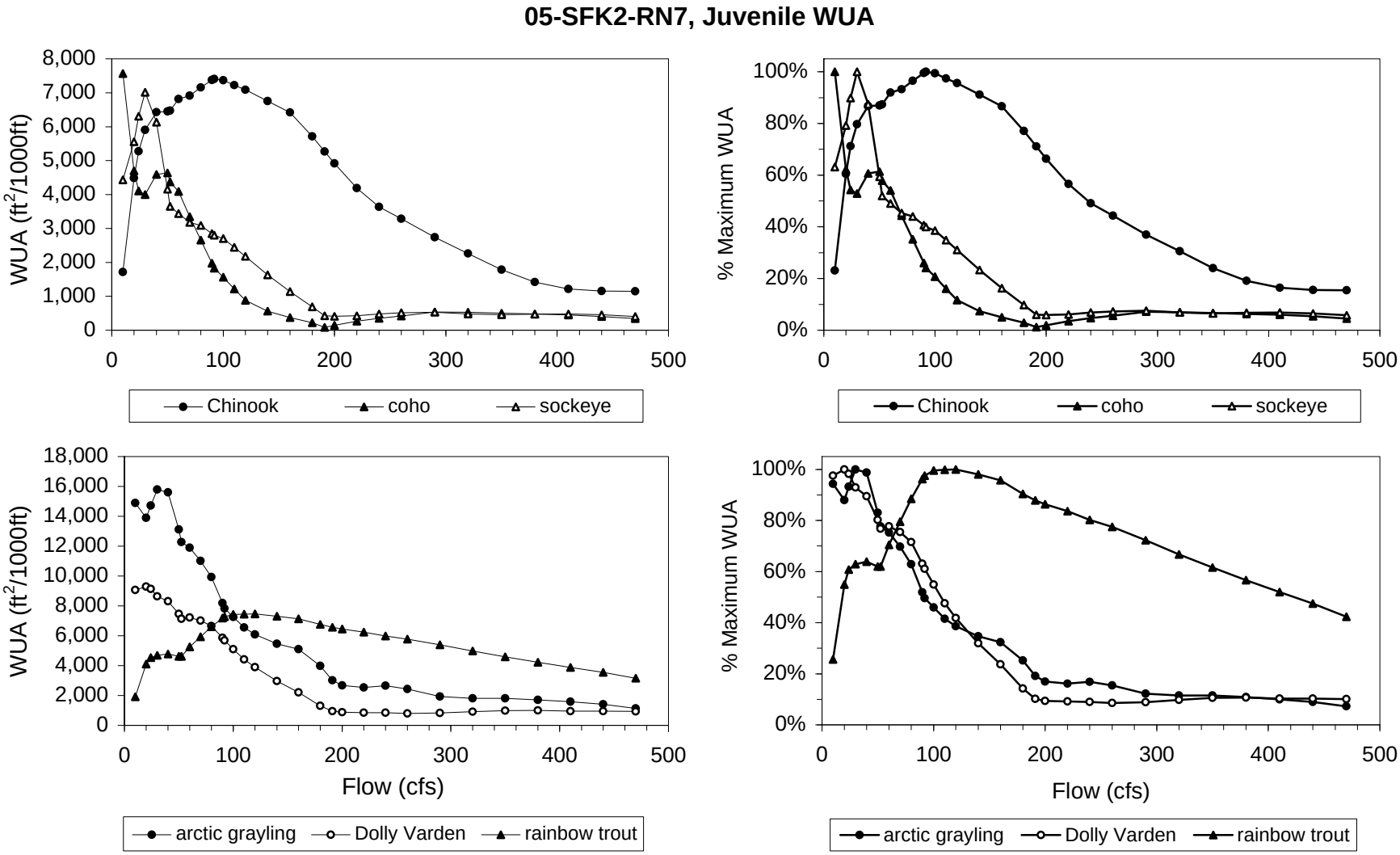

Figure 164
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN7 (River Kilometer 28.07) in SFK-B, South Fork Koktuli River, Alaska.

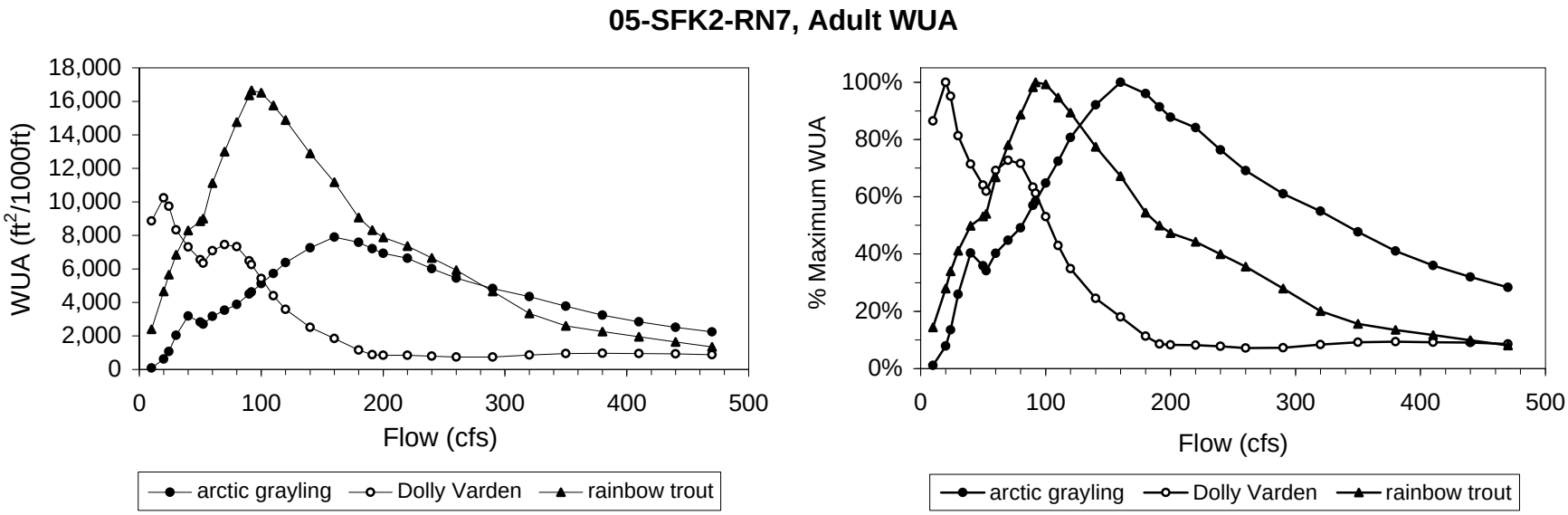

Figure 165
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN7 (River Kilometer 28.07) in SFK-B, South Fork Koktuli River, Alaska.

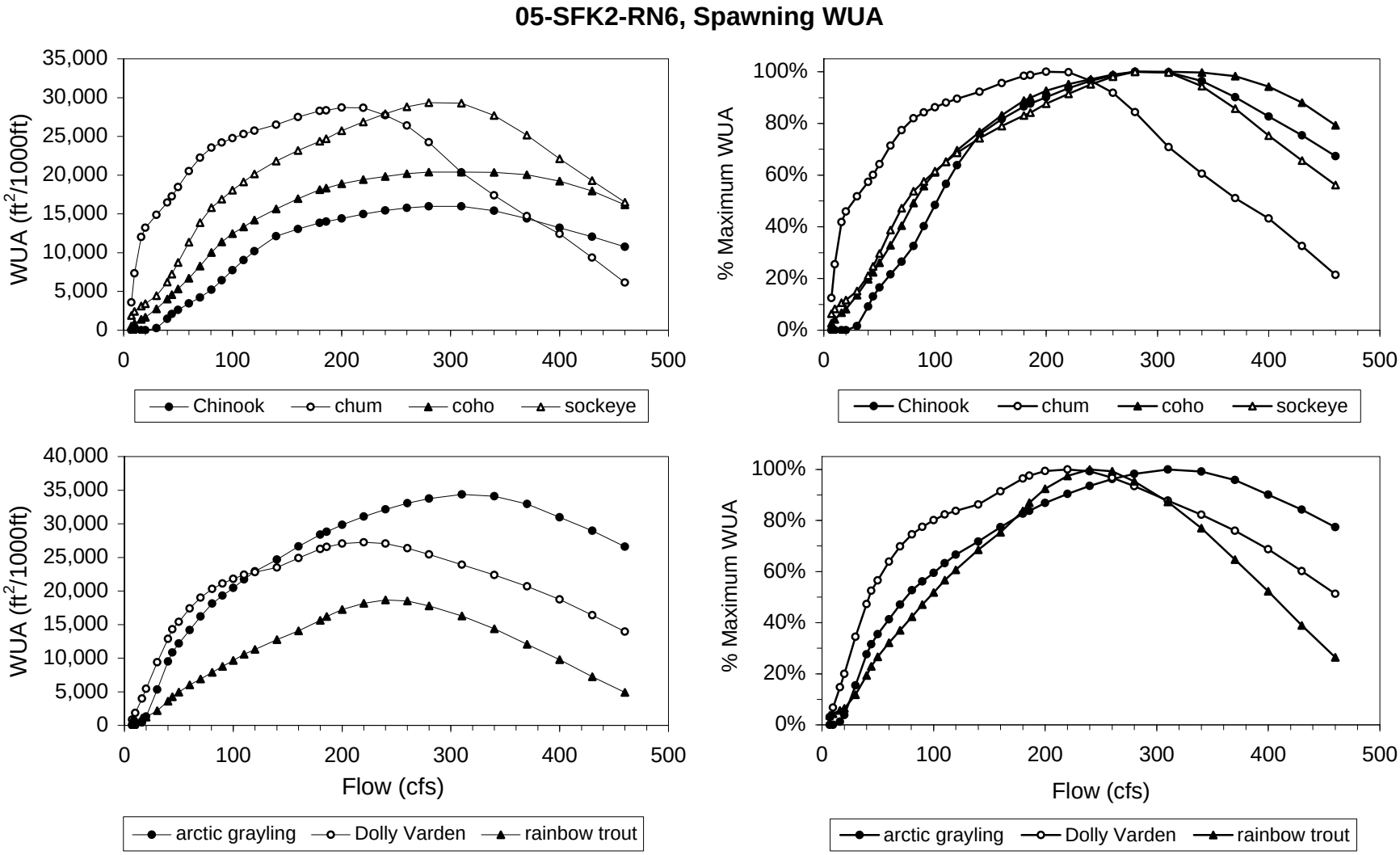

Figure 166
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN6 (River Kilometer 29.24) in SFK-B, South Fork Koktuli River, Alaska.

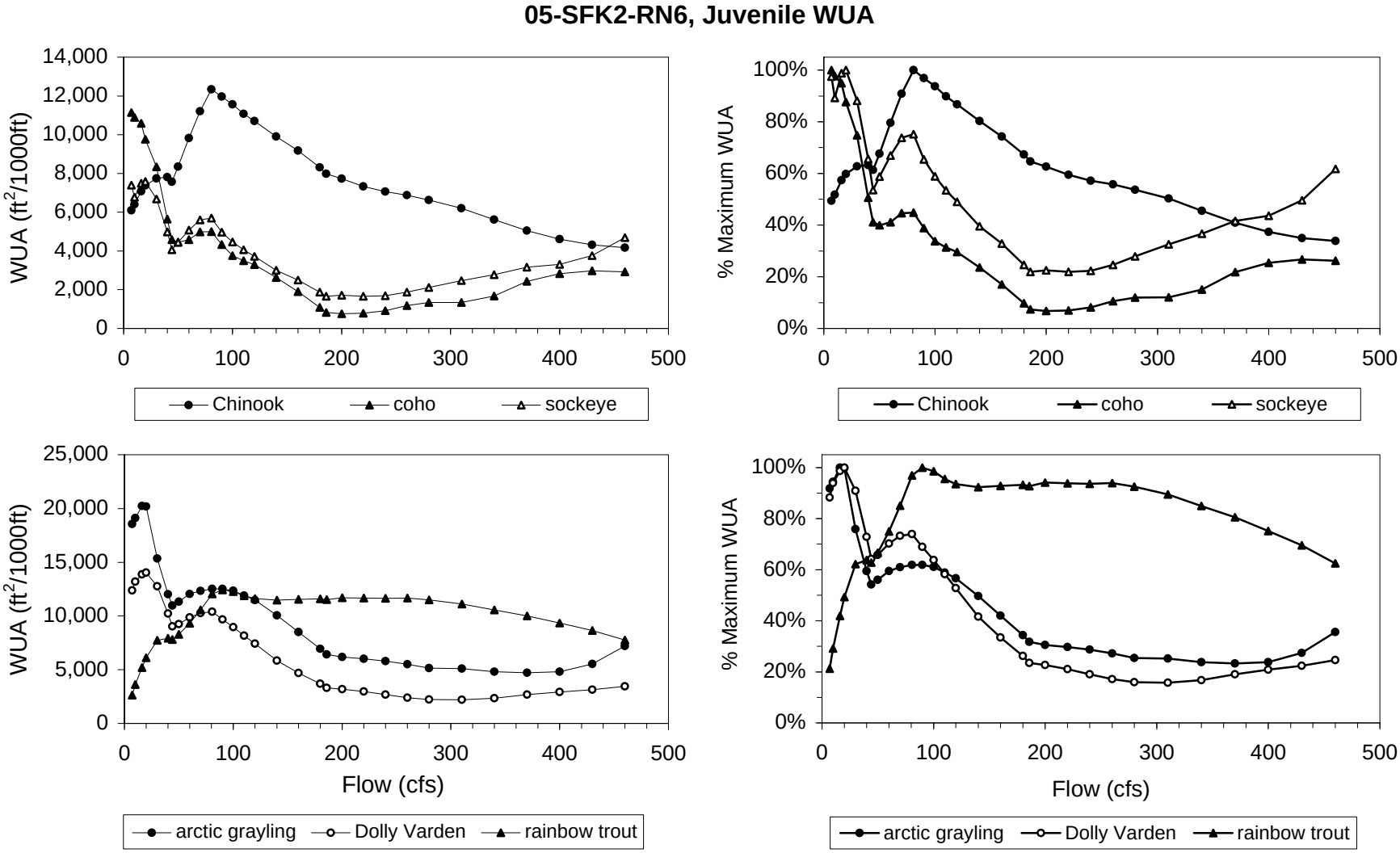

Figure 167
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN6 (River Kilometer 29.24) in SFK-B, South Fork Koktuli River, Alaska.

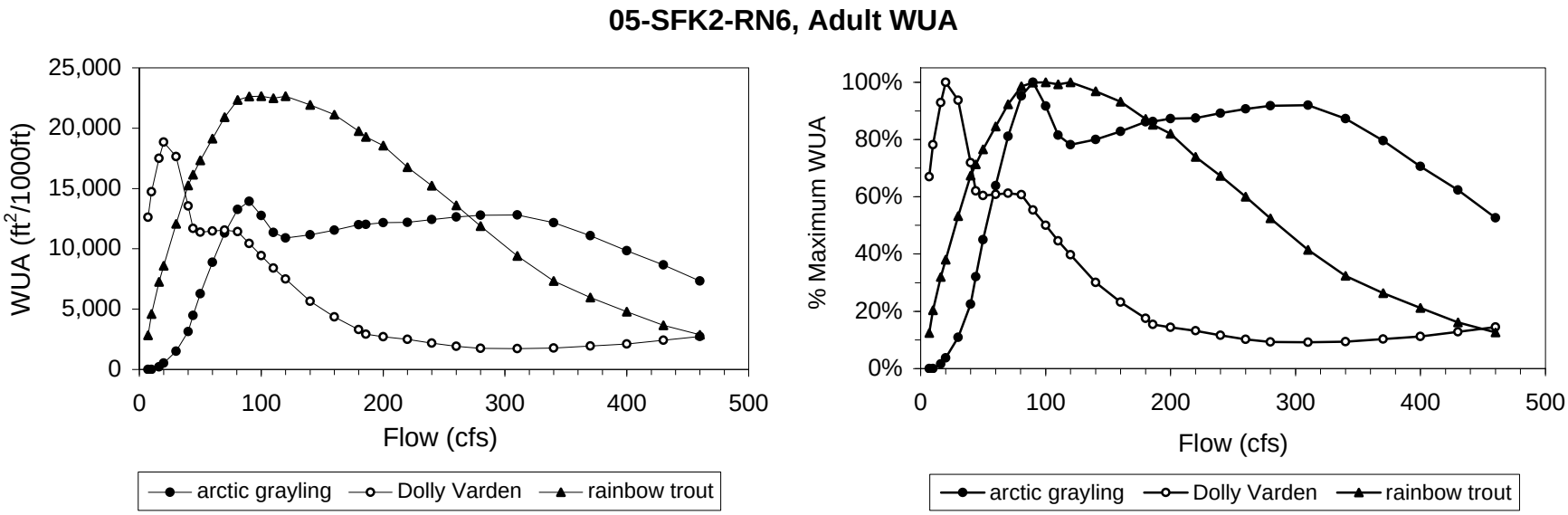

Figure 168
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN6 (River Kilometer 29.24) in SFK-B, South Fork Koktuli River, Alaska.

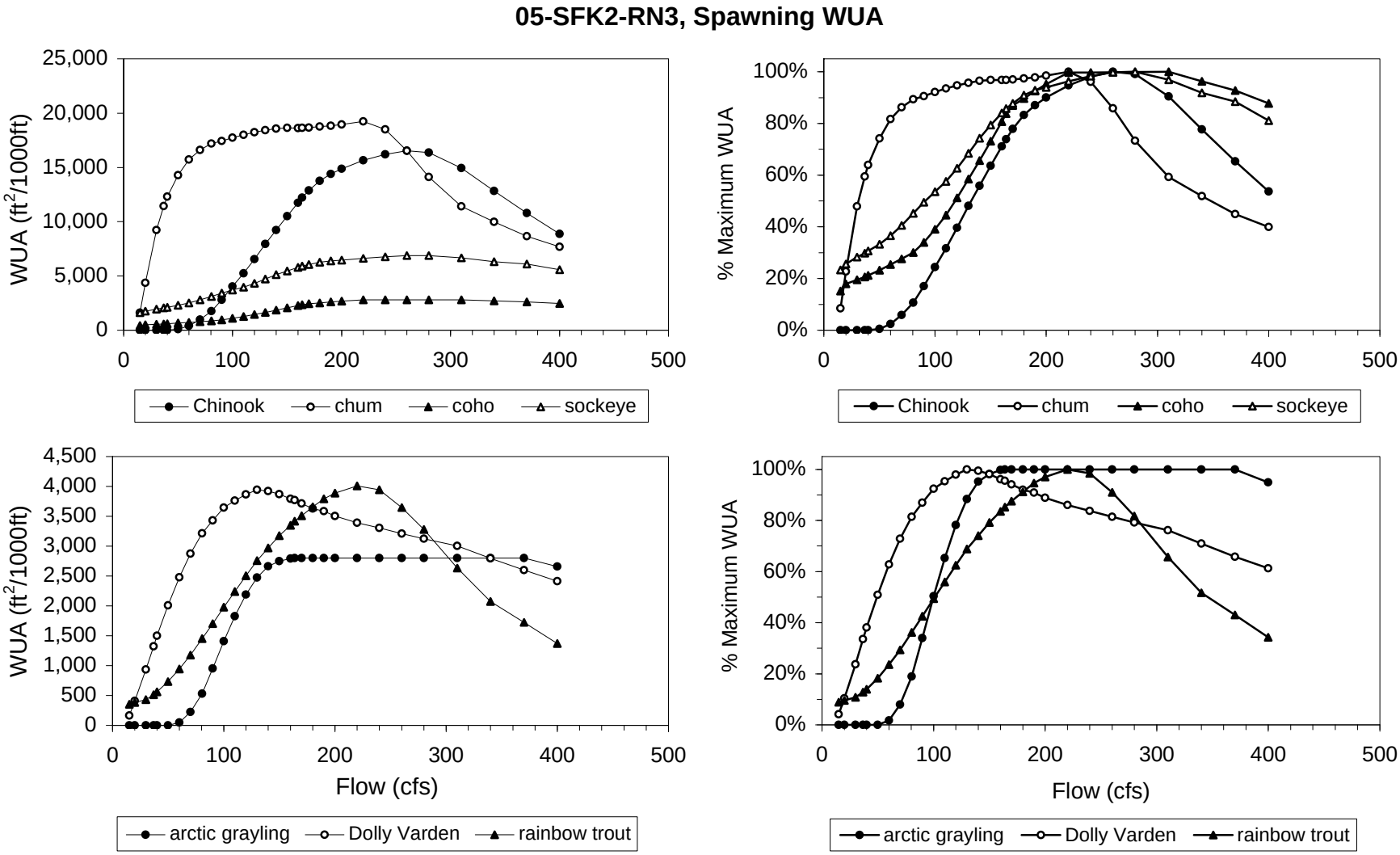

Figure 169
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN3 (River Kilometer 30.19) in SFK-B, South Fork Koktuli River, Alaska.

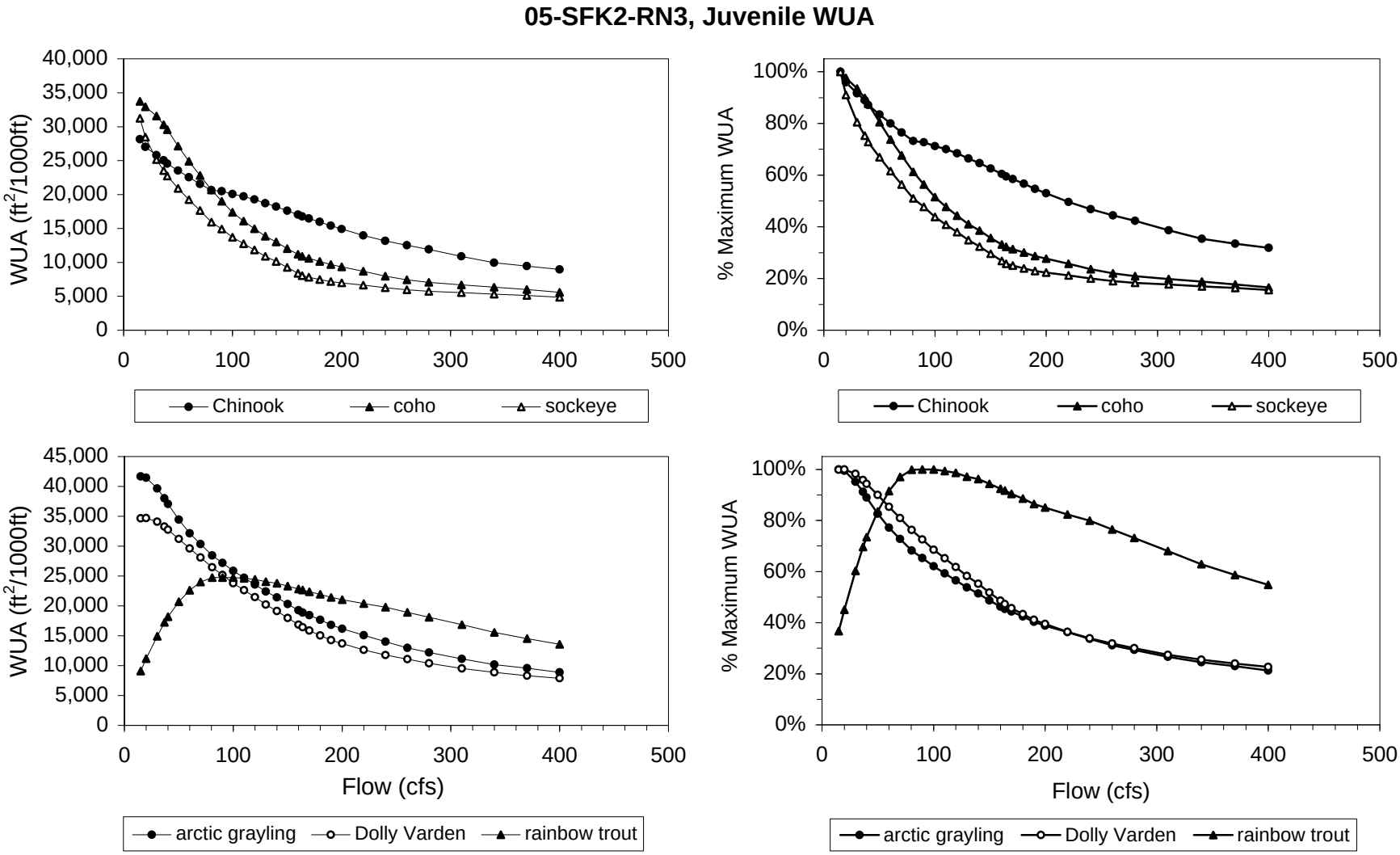

Figure 170
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN3 (River Kilometer 30.19) in SFK-B, South Fork Koktuli River, Alaska.

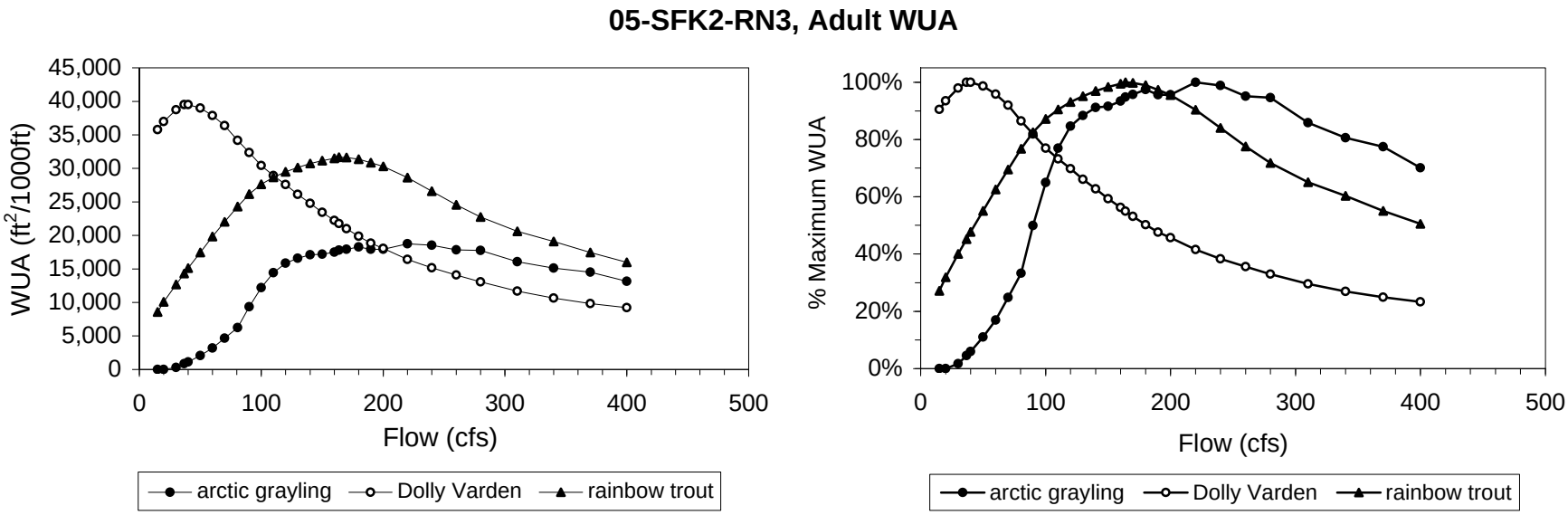

Figure 171
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN3 (River Kilometer 30.19) in SFK-B, South Fork Koktuli River, Alaska.

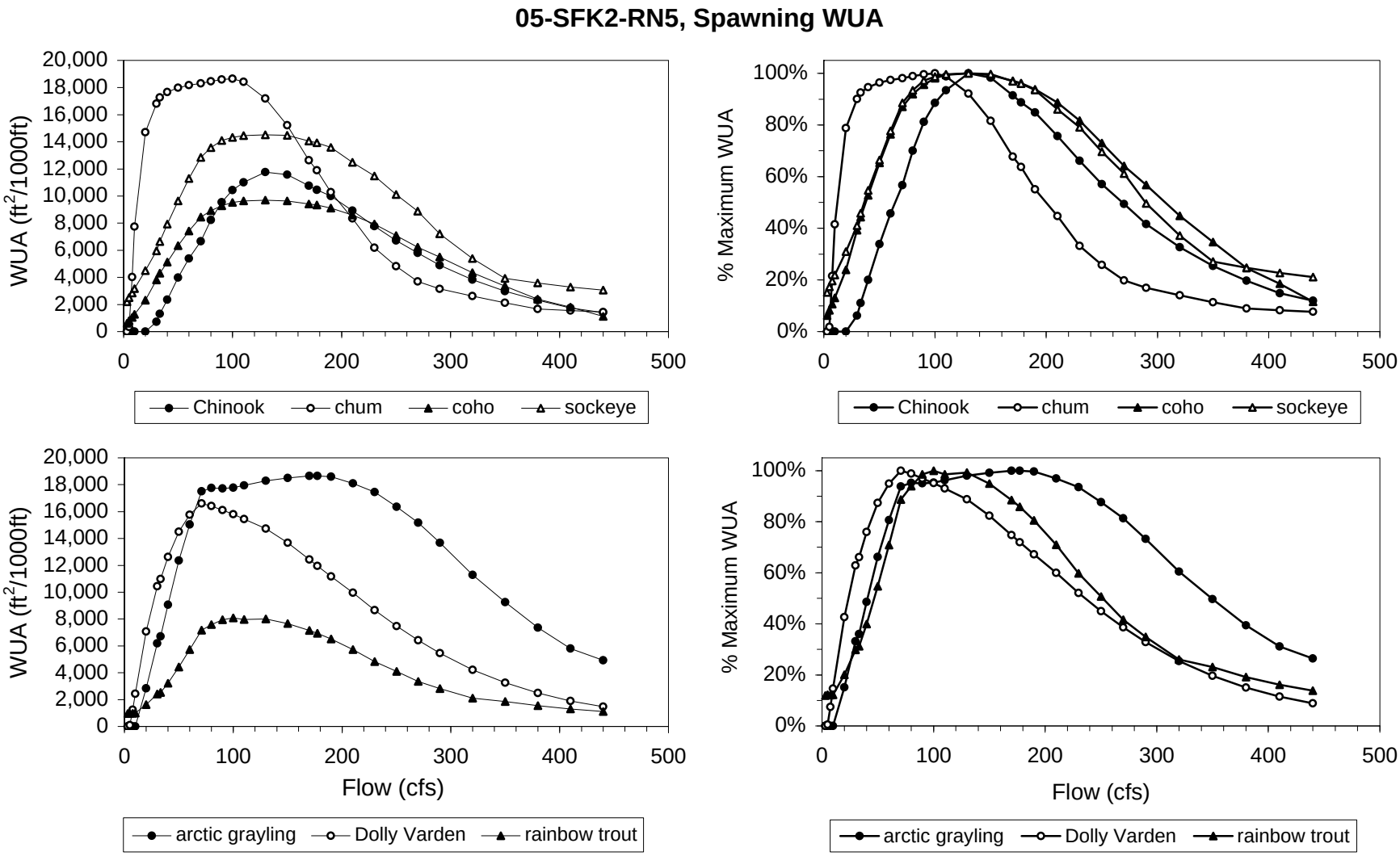

Figure 172
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN5 (River Kilometer 31.37) in SFK-B, South Fork Koktuli River, Alaska.

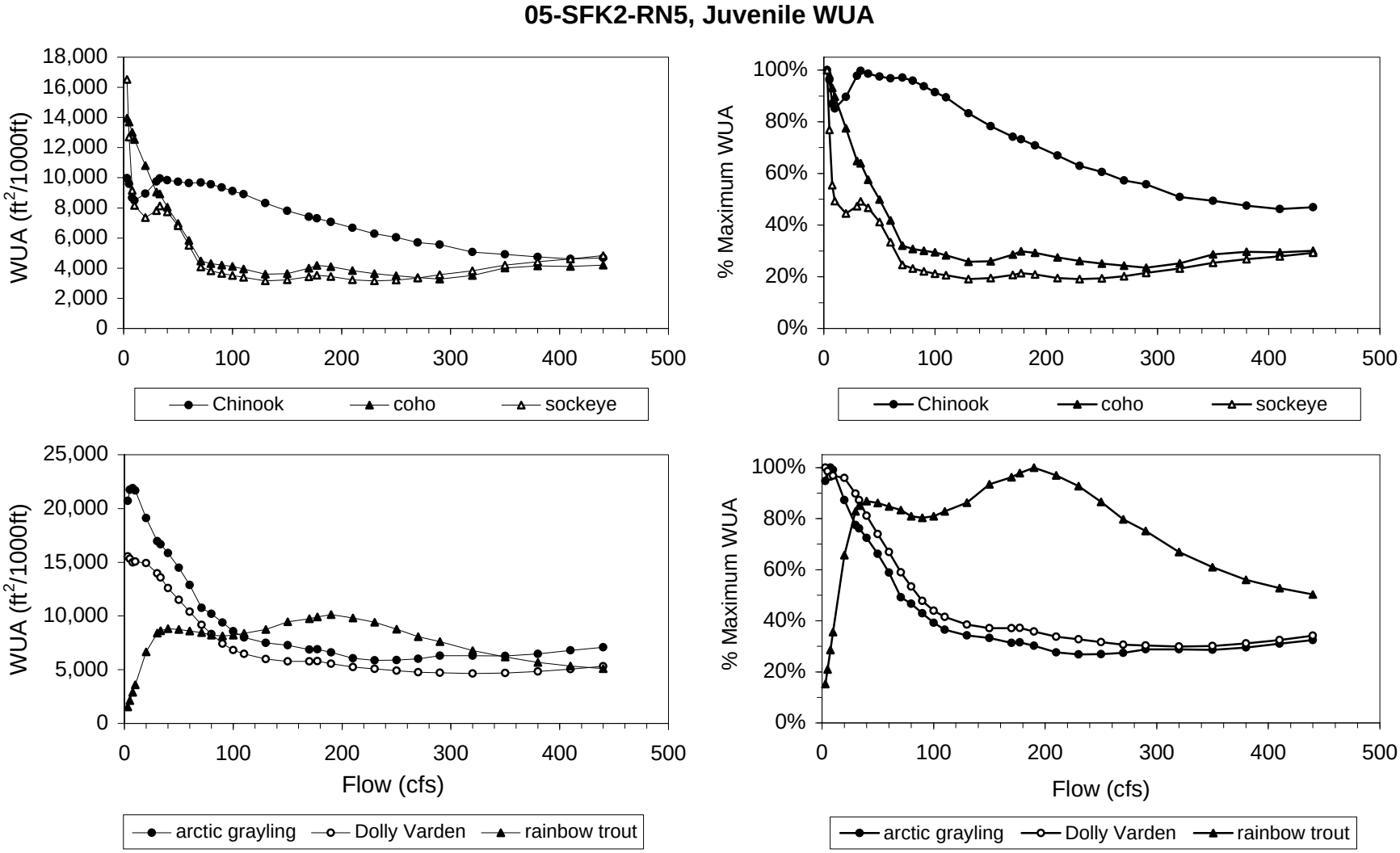

Figure 173
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN5 (River Kilometer 31.37) in SFK-B, South Fork Koktuli River, Alaska.

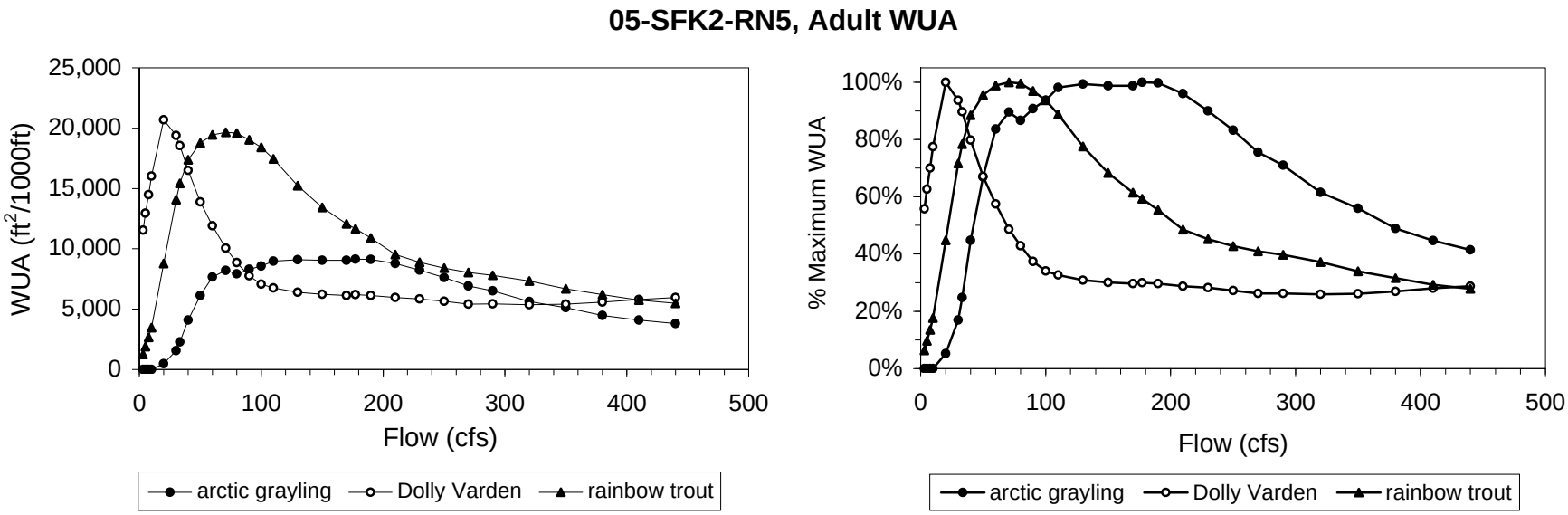

Figure 174
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN5 (River Kilometer 31.37) in SFK-B, South Fork Koktuli River, Alaska.

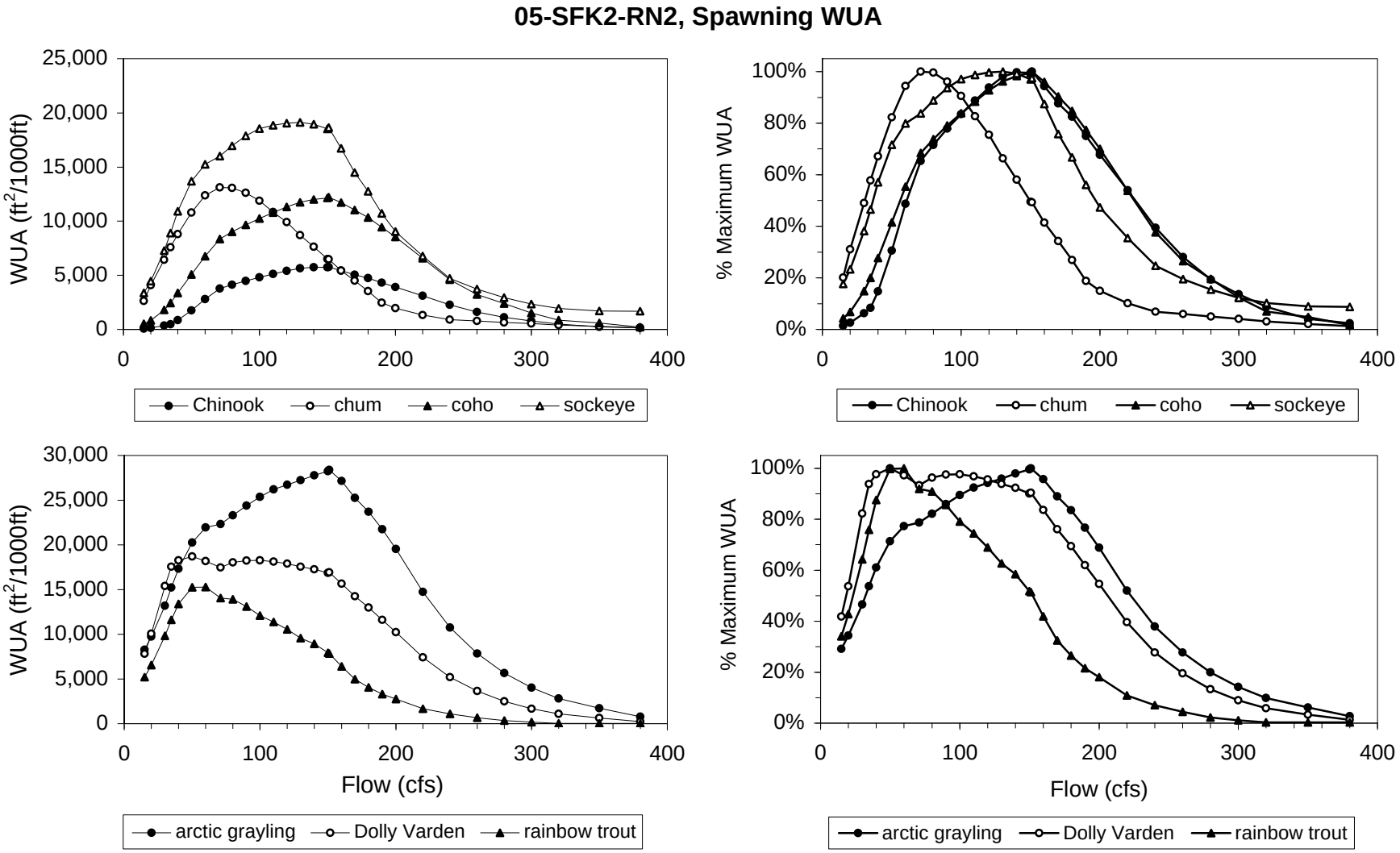

Figure 175
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN2 (River Kilometer 31.75) in SFK-B, South Fork Koktuli River, Alaska.

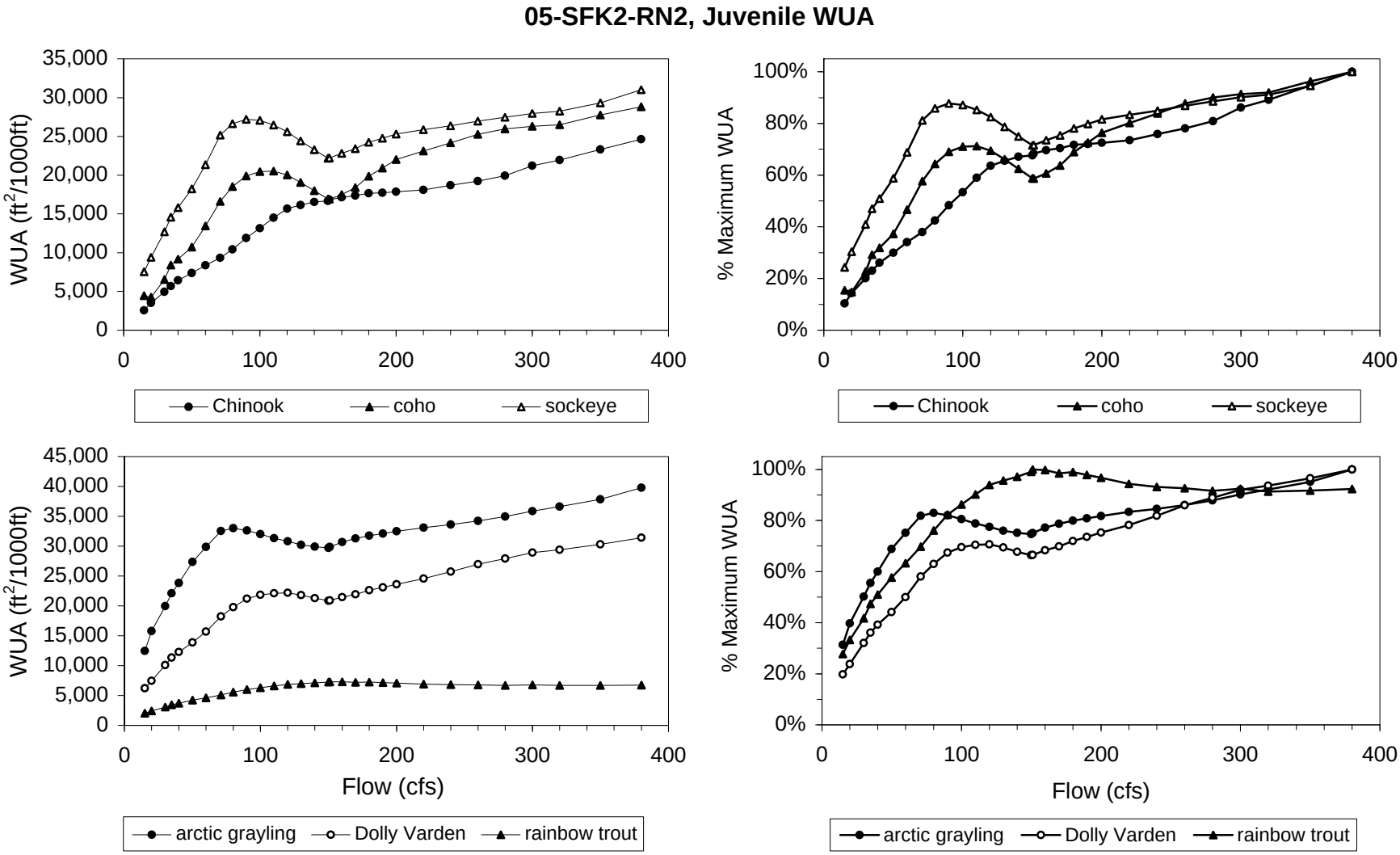

Figure 176
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN2 (River Kilometer 31.75) in SFK-B, South Fork Koktuli River, Alaska.

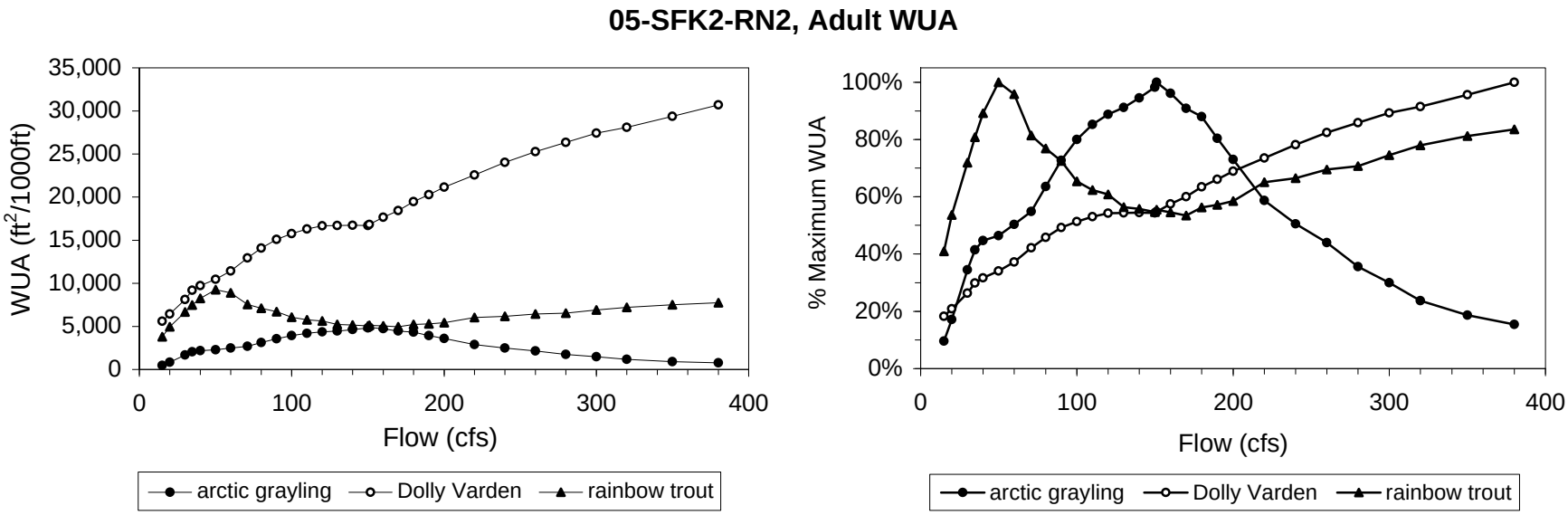

Figure 177
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN2 (River Kilometer 31.75) in SFK-B, South Fork Koktuli River, Alaska.

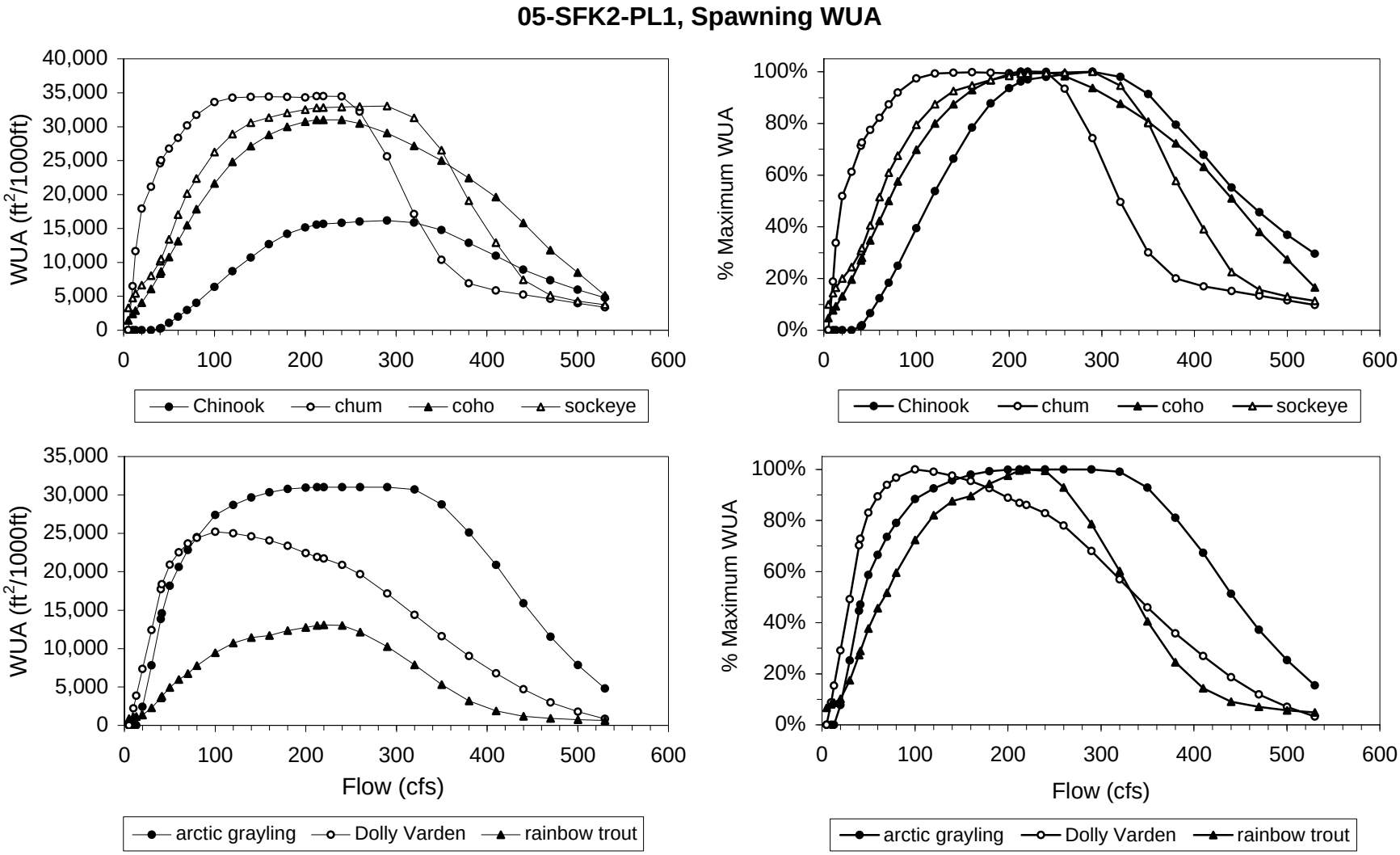

Figure 178
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-PL1 (River Kilometer 33.16) in SFK-B, South Fork Koktuli River, Alaska.

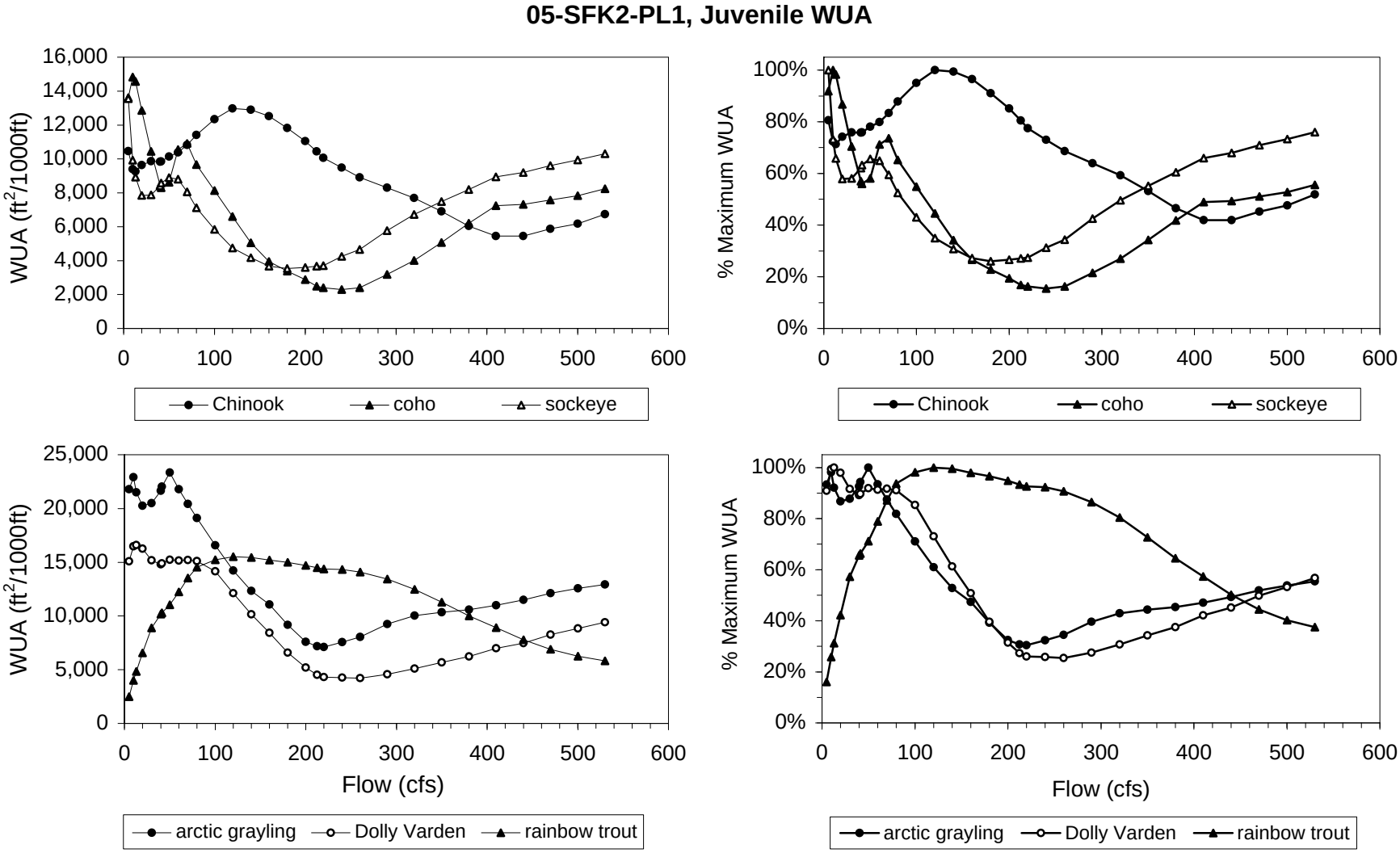

Figure 179
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-PL1 (River Kilometer 33.16) in SFK-B, South Fork Koktuli River, Alaska.

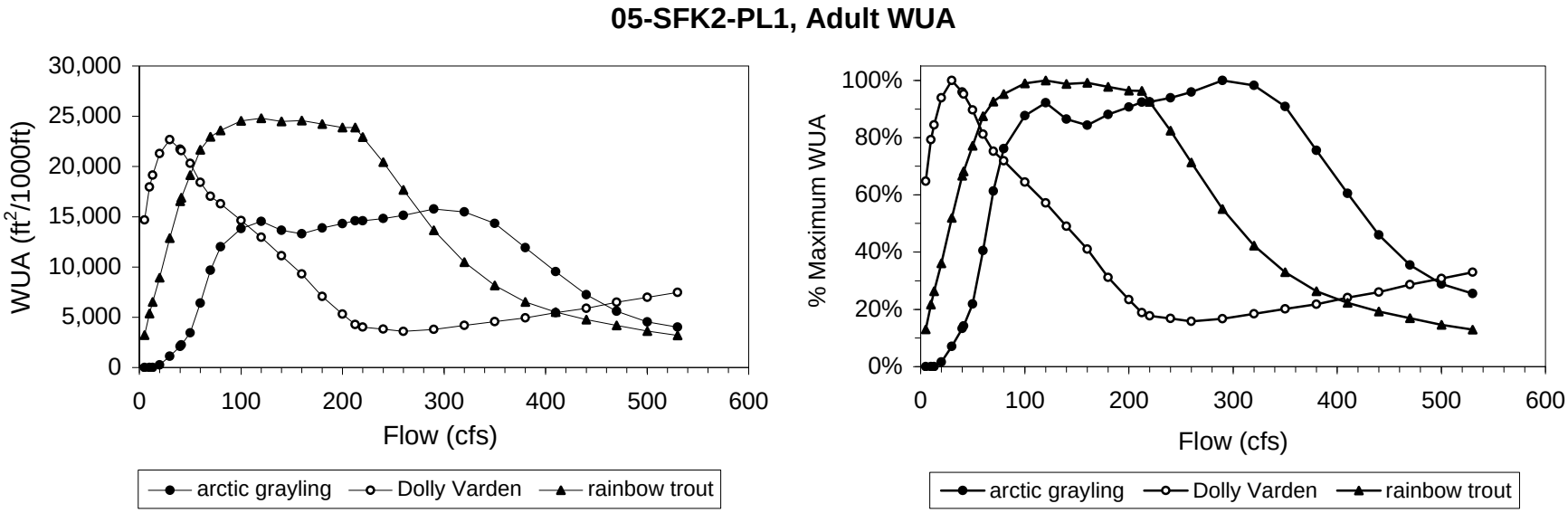

Figure 180
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-PL1 (River Kilometer 33.16) in SFK-B, South Fork Koktuli River, Alaska.

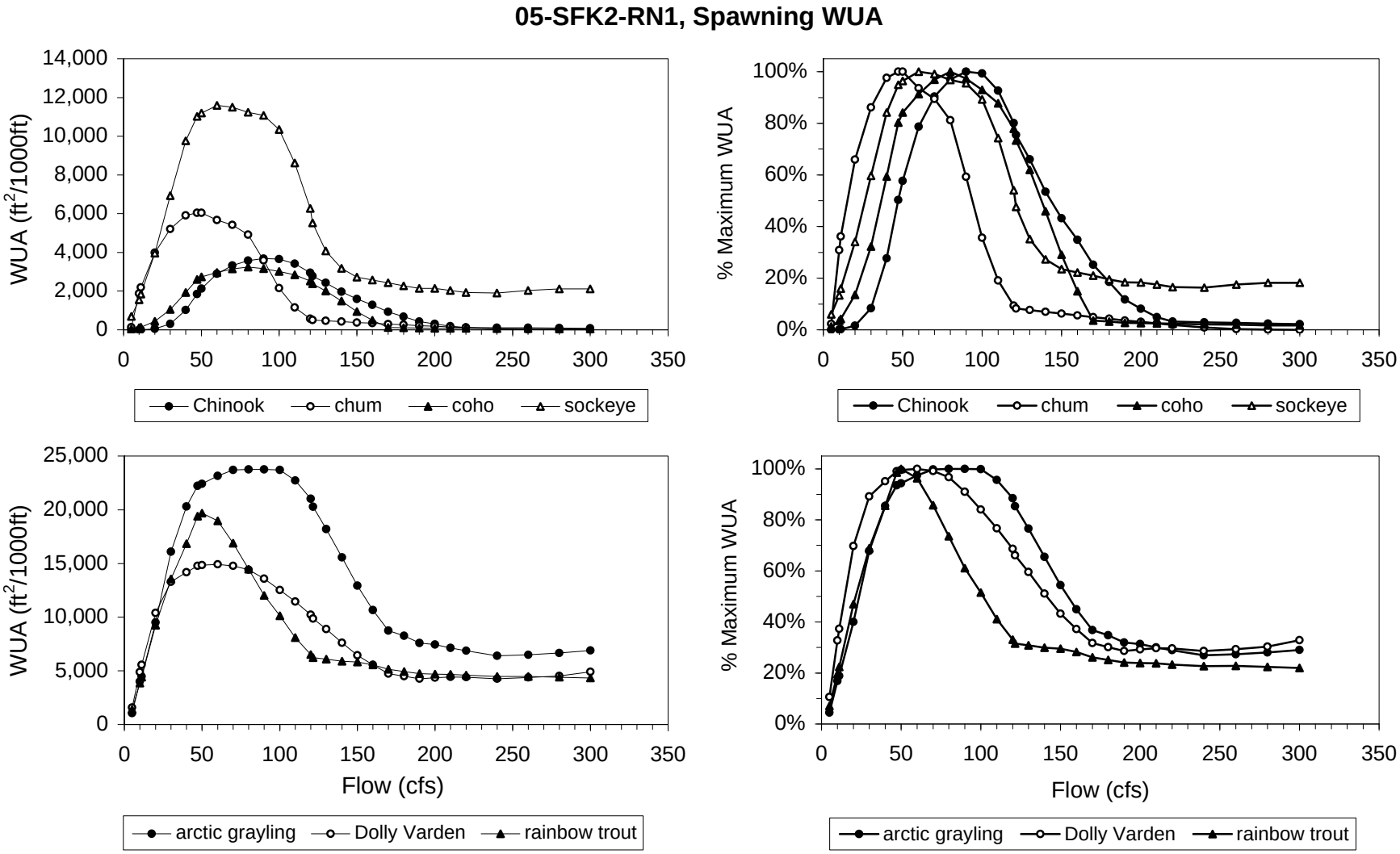

Figure 181
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN1 (River Kilometer 33.80) in SFK-B, South Fork Koktuli River, Alaska.

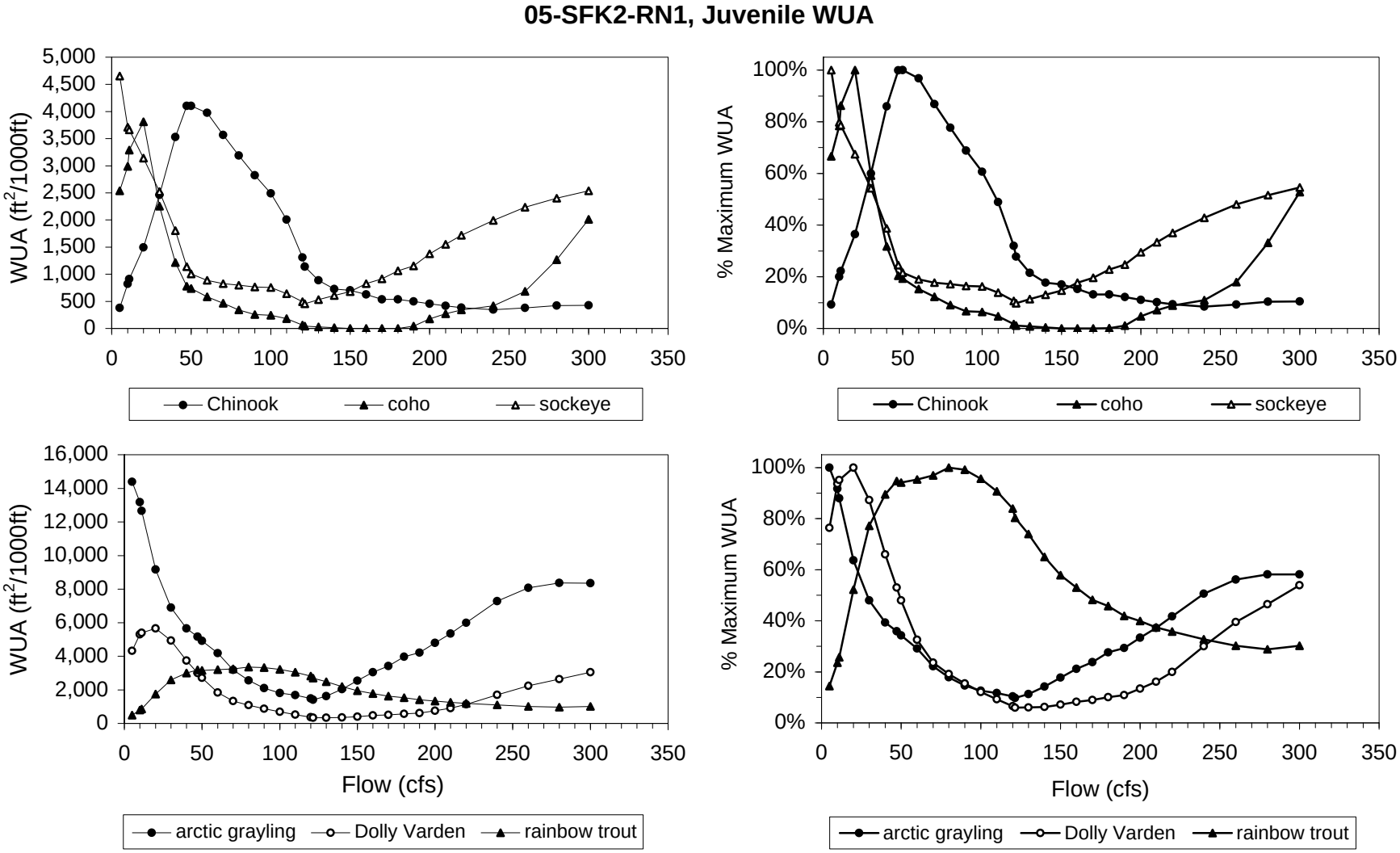

Figure 182
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK2-RN1 (River Kilometer 33.80) in SFK-B, South Fork Koktuli River, Alaska.

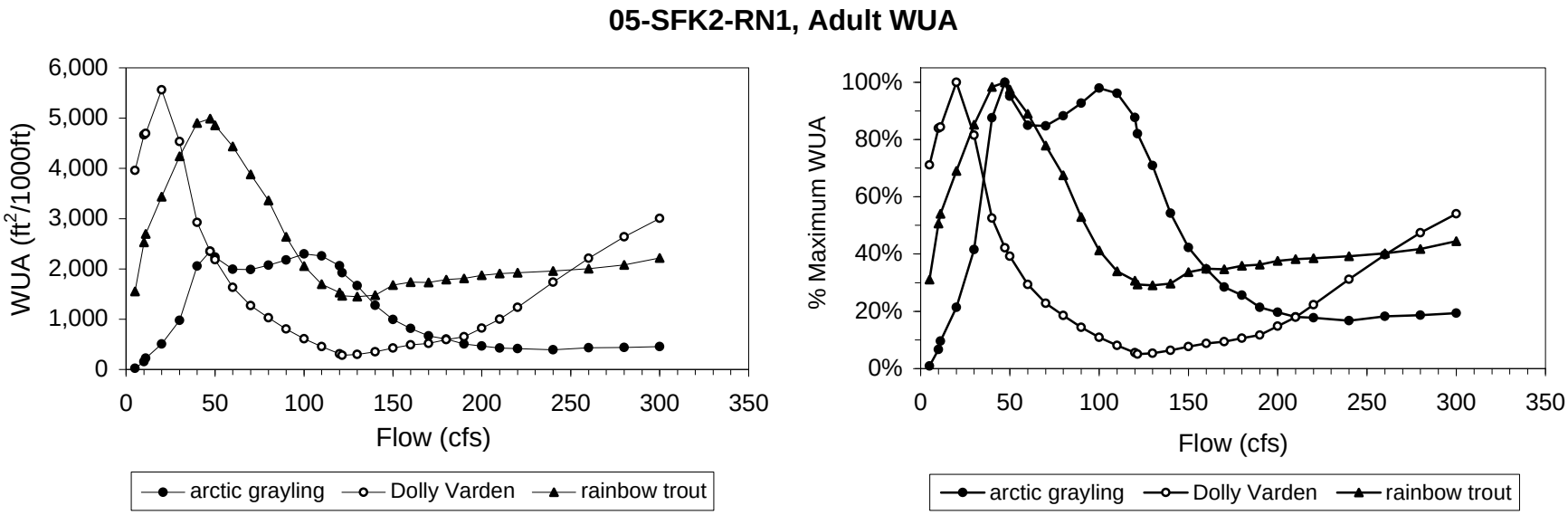

Figure 183
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK2-RN1 (River Kilometer 33.80) in SFK-B, South Fork Koktuli River, Alaska.

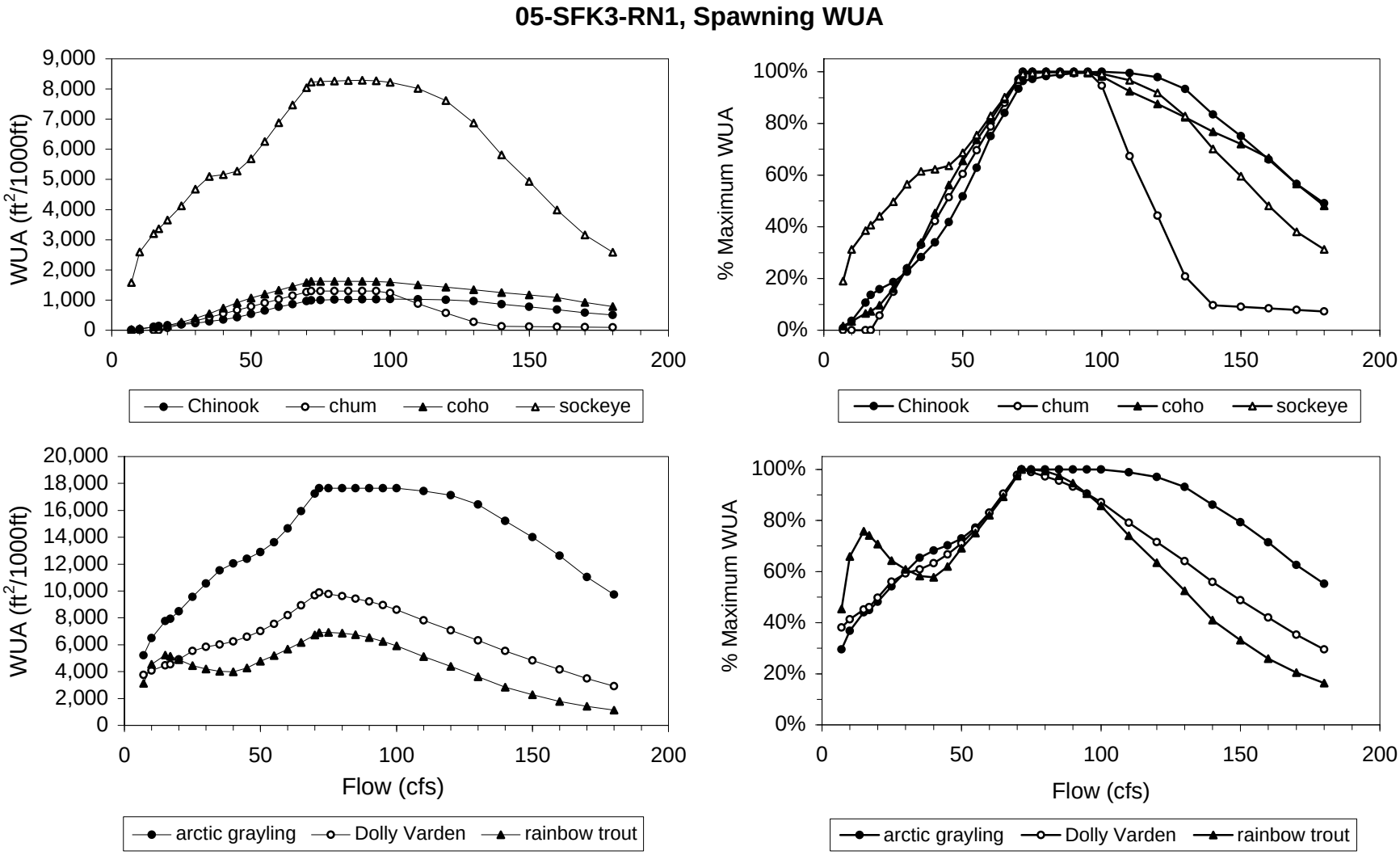

Figure 184
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK3-RN1 (River Kilometer 34.81) in SFK-C, South Fork Koktuli River, Alaska.

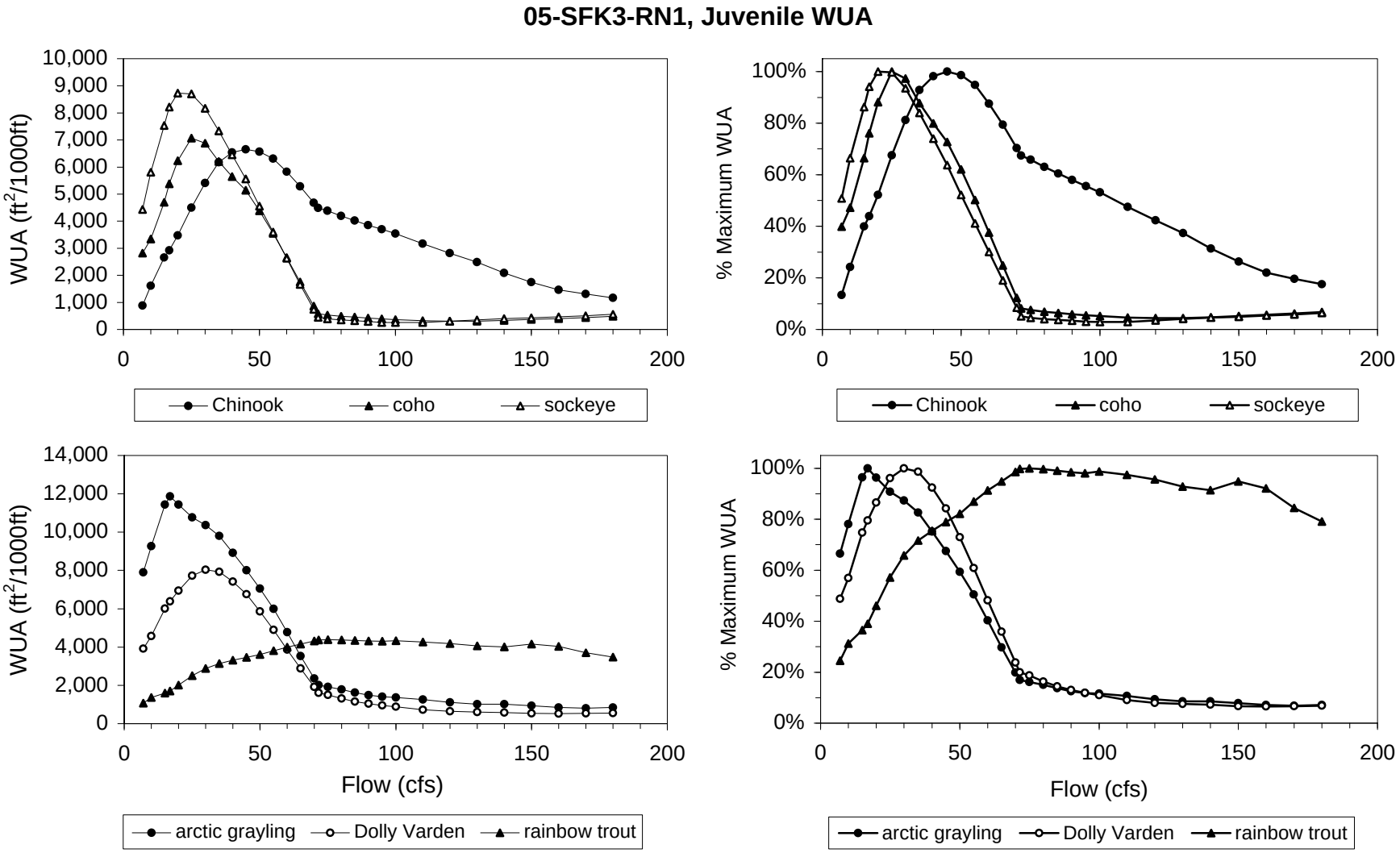

Figure 185
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK3-RN1 (River Kilometer 34.81) in SFK-C, South Fork Koktuli River, Alaska.

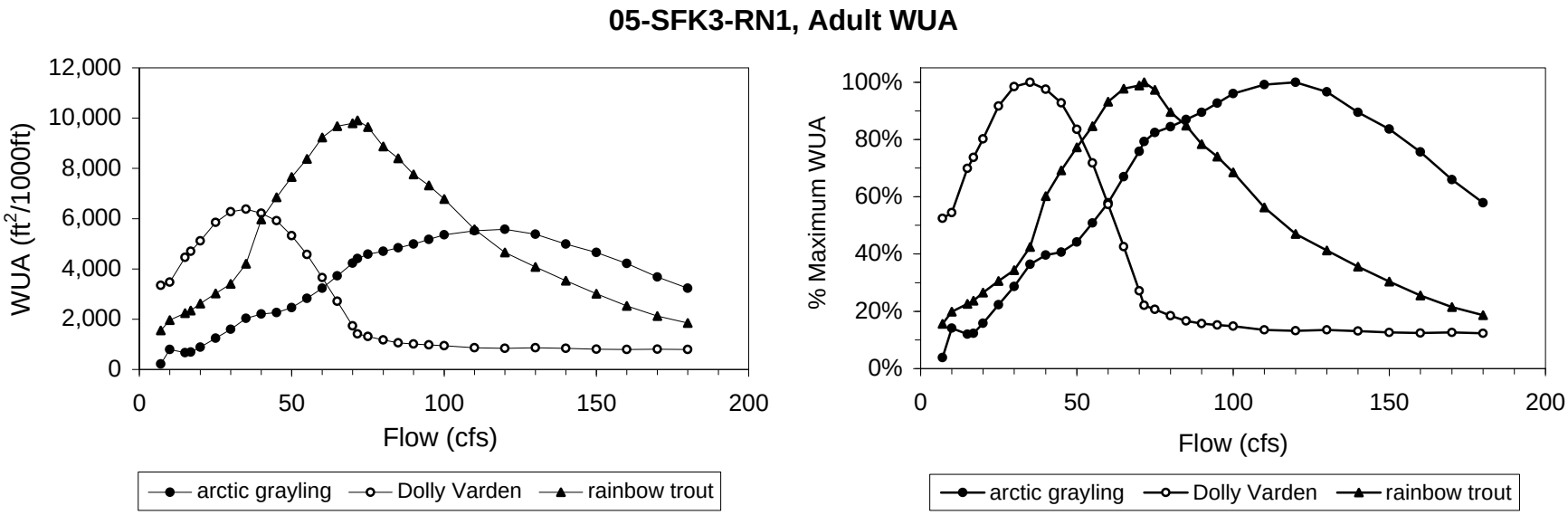

Figure 186
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK3-RN1 (River Kilometer 34.81) in SFK-C, South Fork Koktuli River, Alaska.

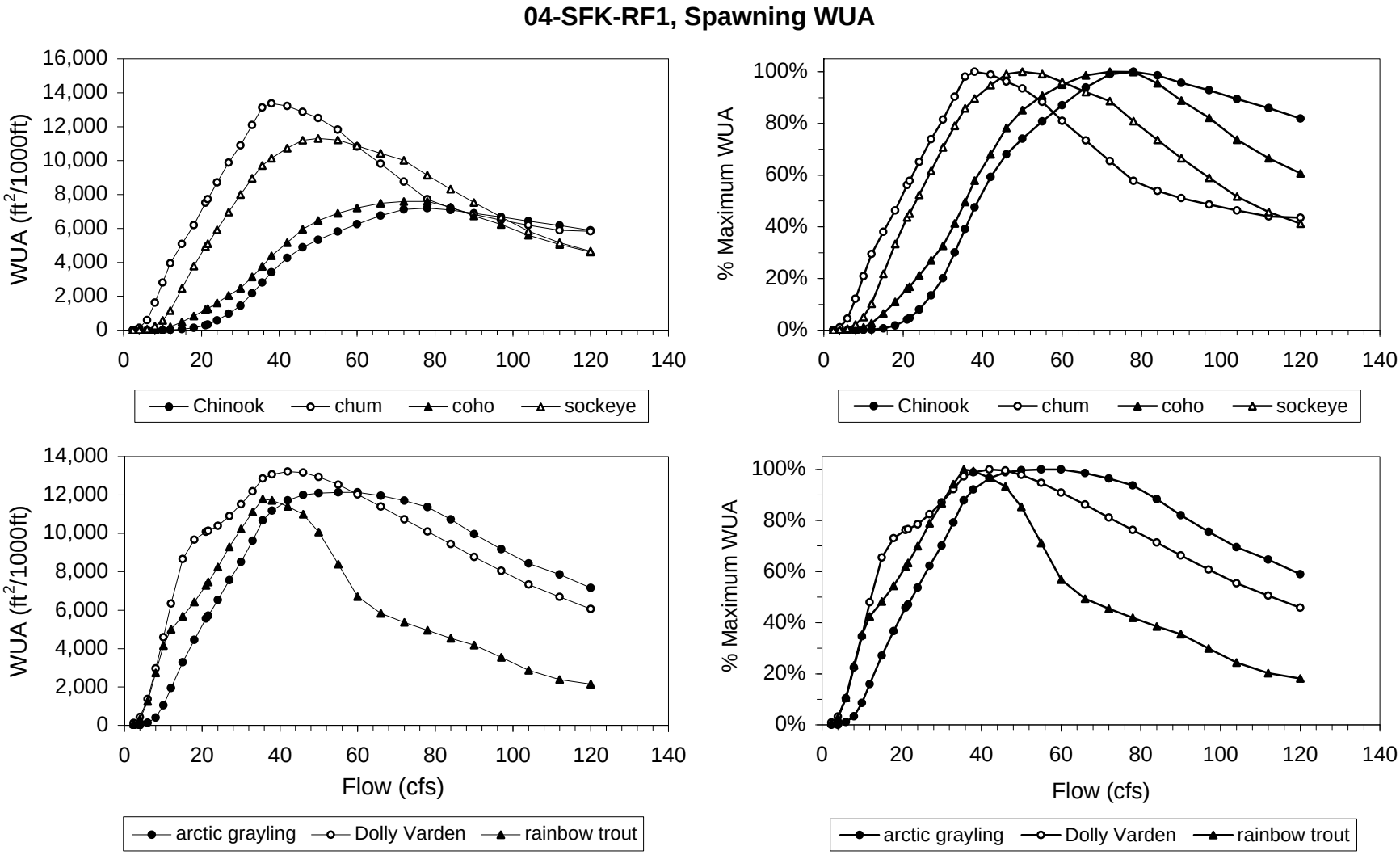

Figure 187
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RF1 (River Kilometer 36.54) in SFK-C, South Fork Koktuli River, Alaska.

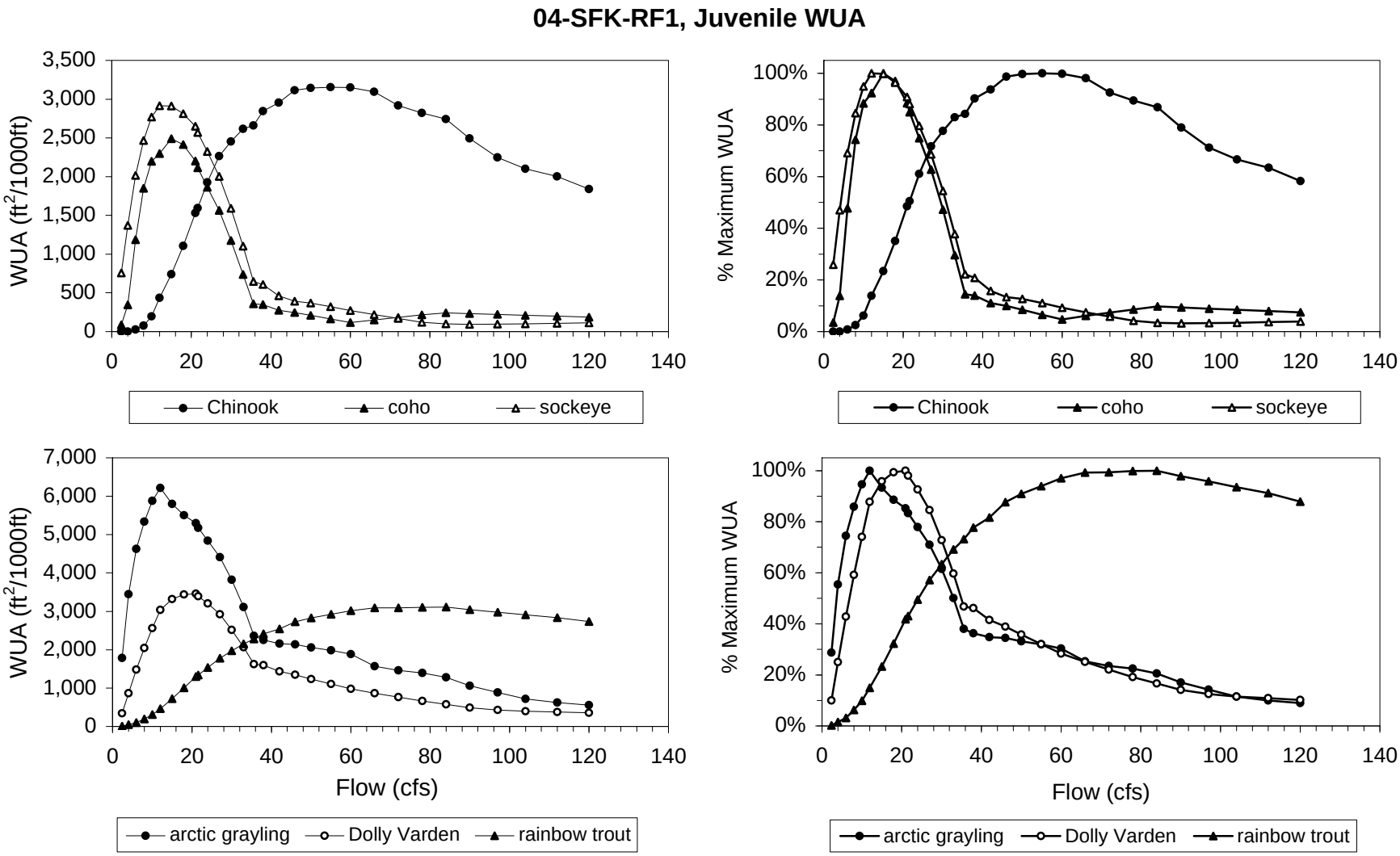

Figure 188
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RF1 (River Kilometer 36.54) in SFK-C, South Fork Koktuli River, Alaska.

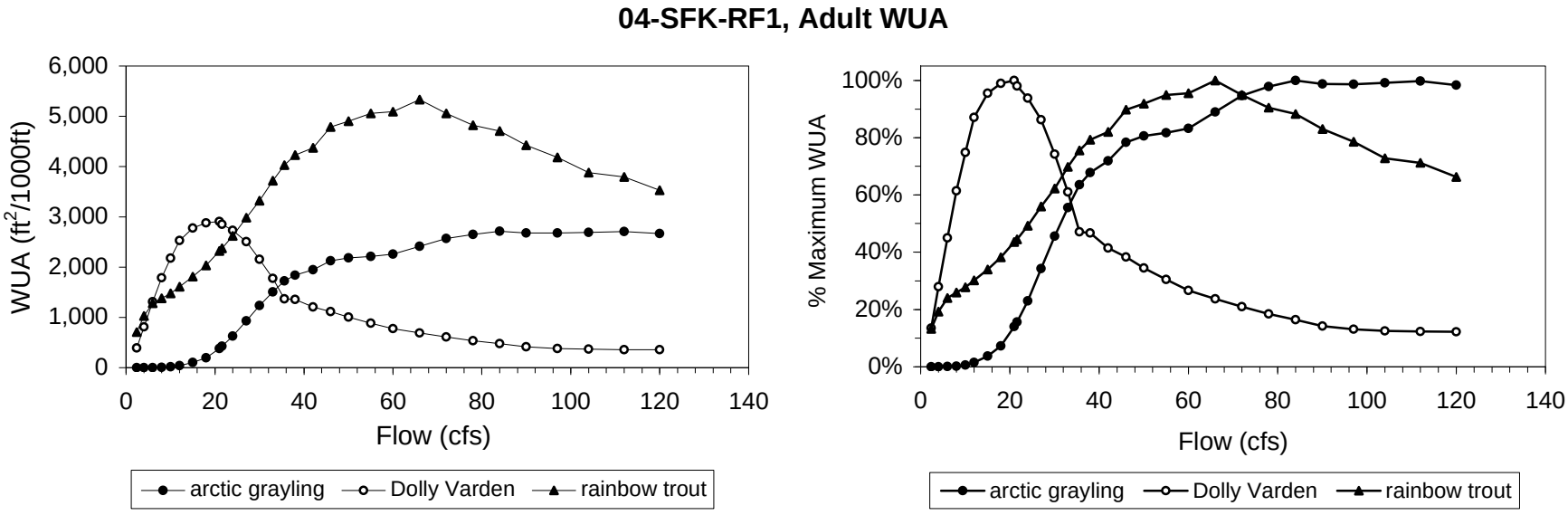

Figure 189
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-RF1 (River Kilometer 36.54) in SFK-C, South Fork Koktuli River, Alaska.

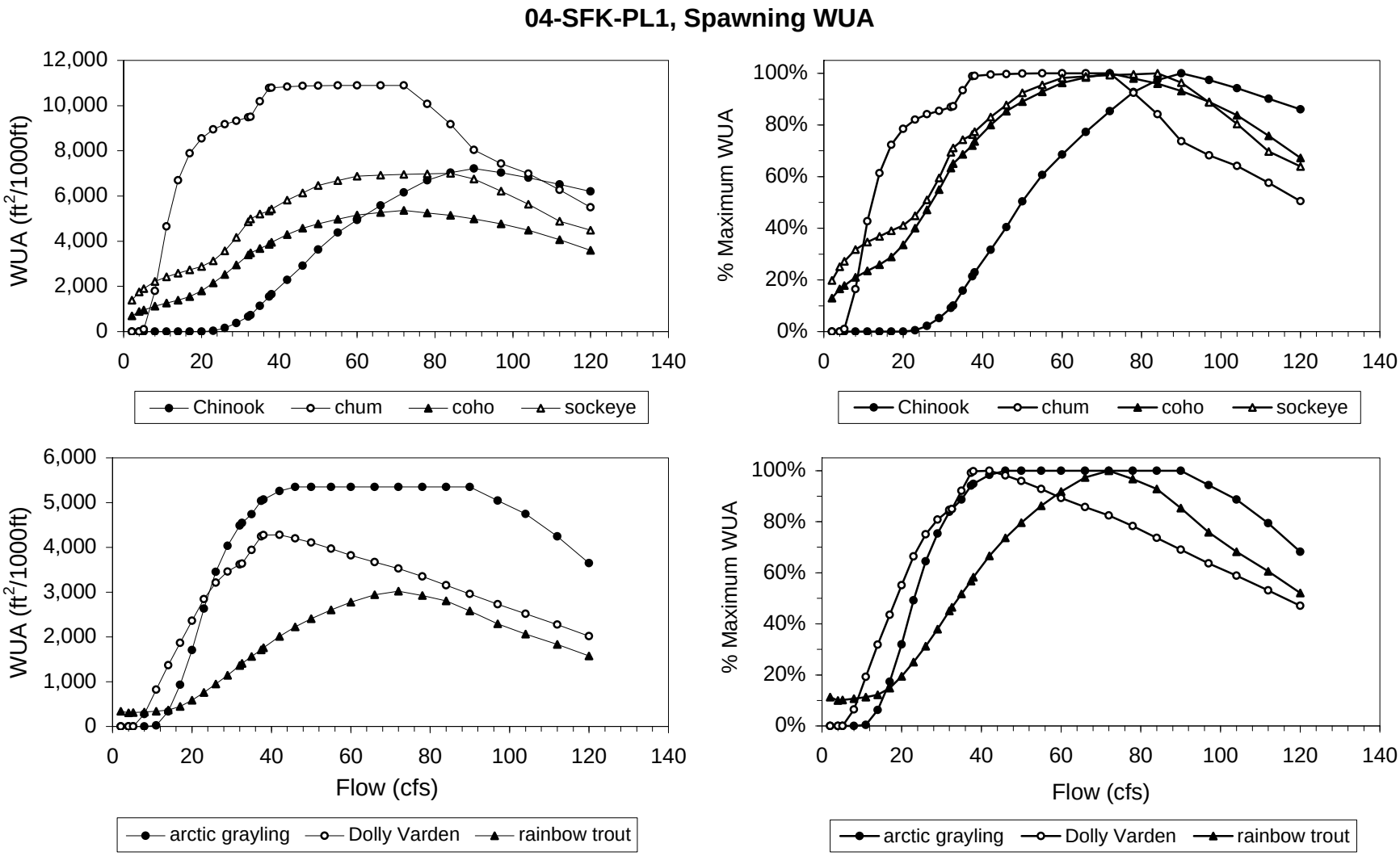

Figure 190
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-PL1 (River Kilometer 36.58) in SFK-C, South Fork Koktuli River, Alaska.

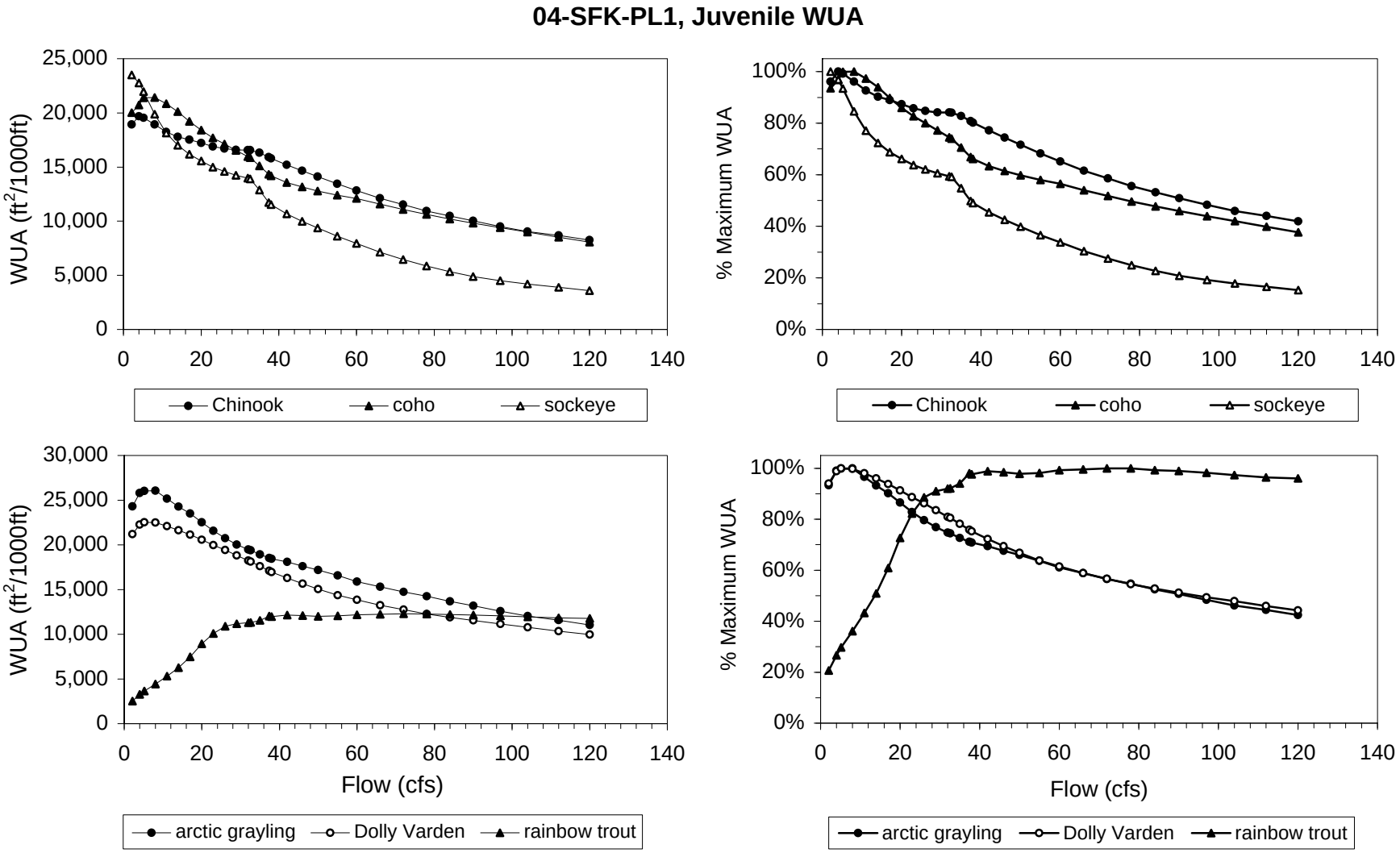

Figure 191
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-PL1 (River Kilometer 36.58) in SFK-C, South Fork Koktuli River, Alaska.

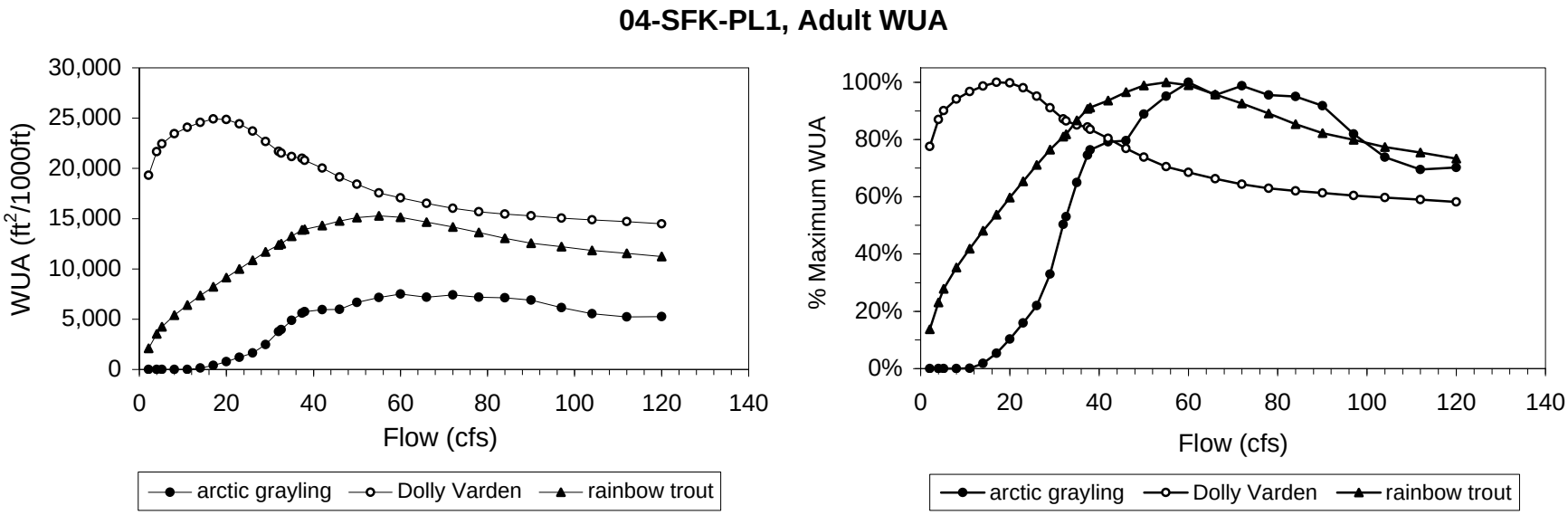

Figure 192
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-PL1 (River Kilometer 36.58) in SFK-C, South Fork Koktuli River, Alaska.

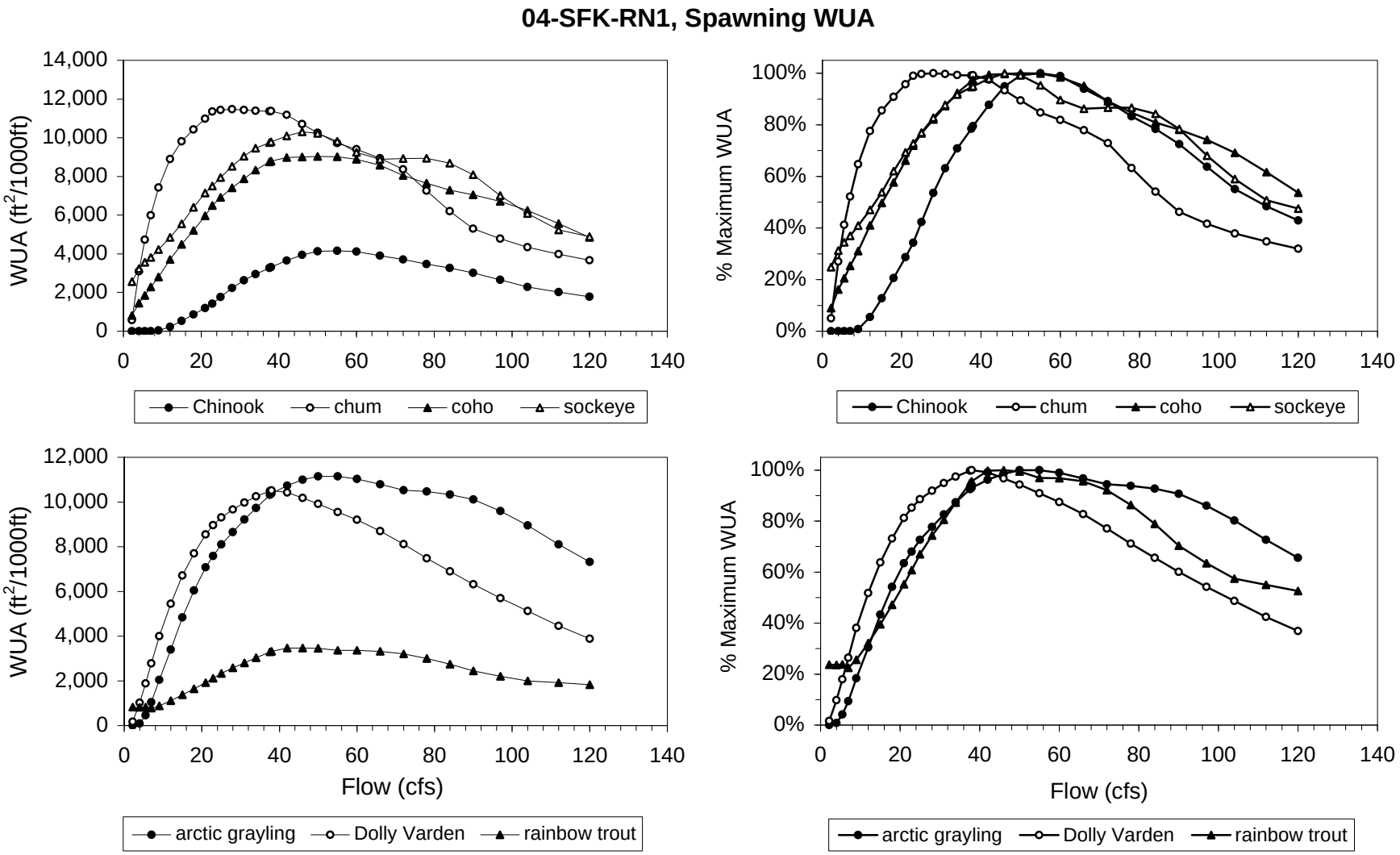

Figure 193
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RN1 (River Kilometer 36.62) in SFK-C, South Fork Koktuli River, Alaska.

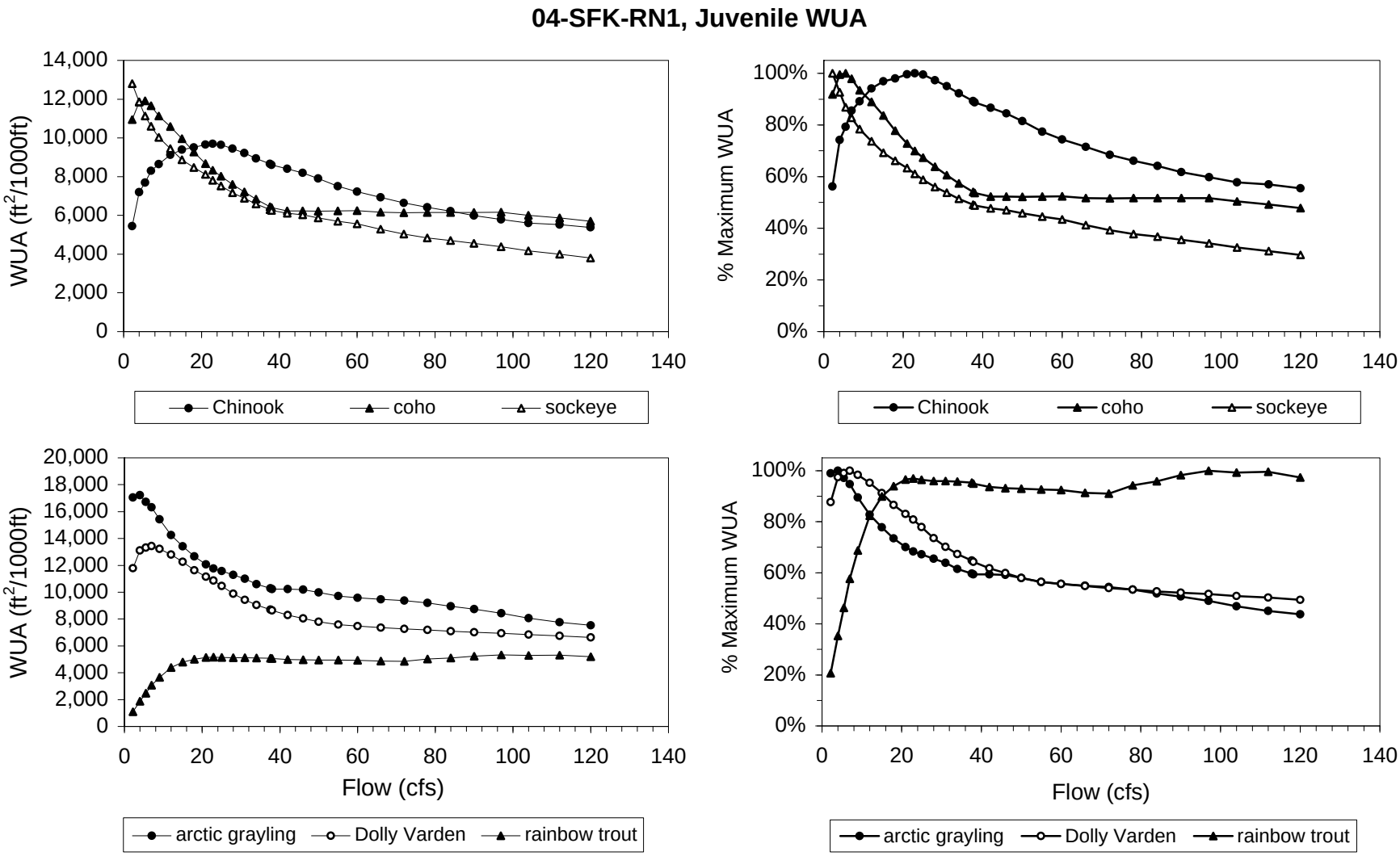

Figure 194
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-SFK-RN1 (River Kilometer 36.62) in SFK-C, South Fork Koktuli River, Alaska.

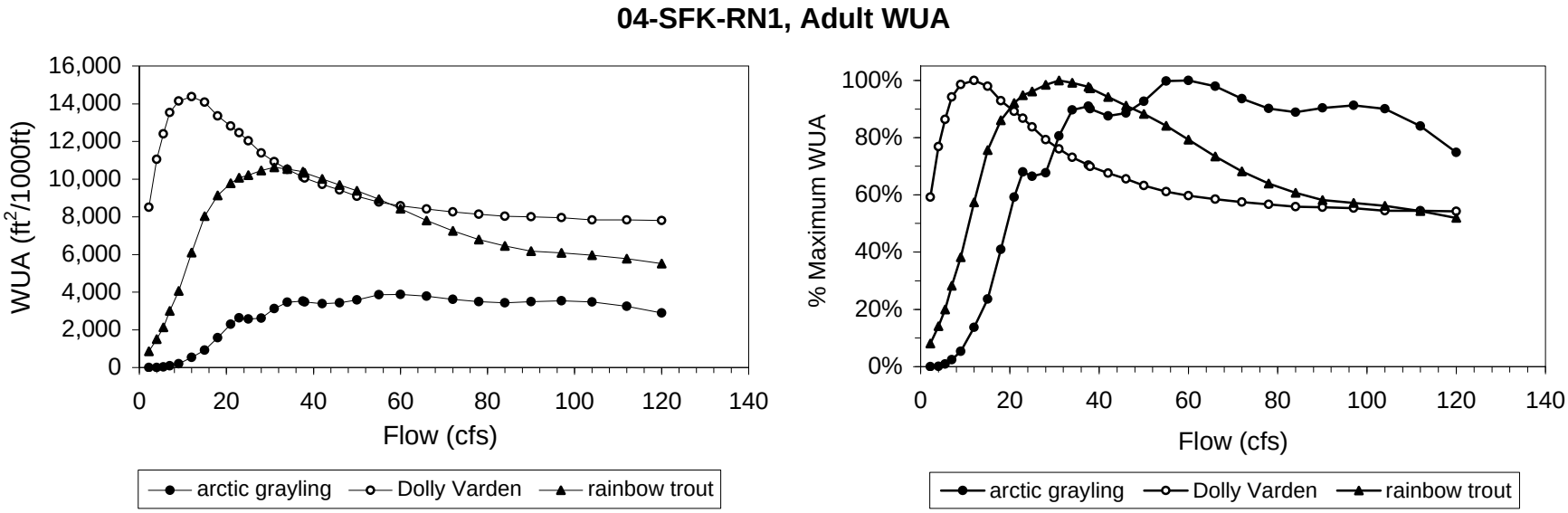

Figure 195
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-SFK-RN1 (River Kilometer 36.62) in SFK-C, South Fork Koktuli River, Alaska.

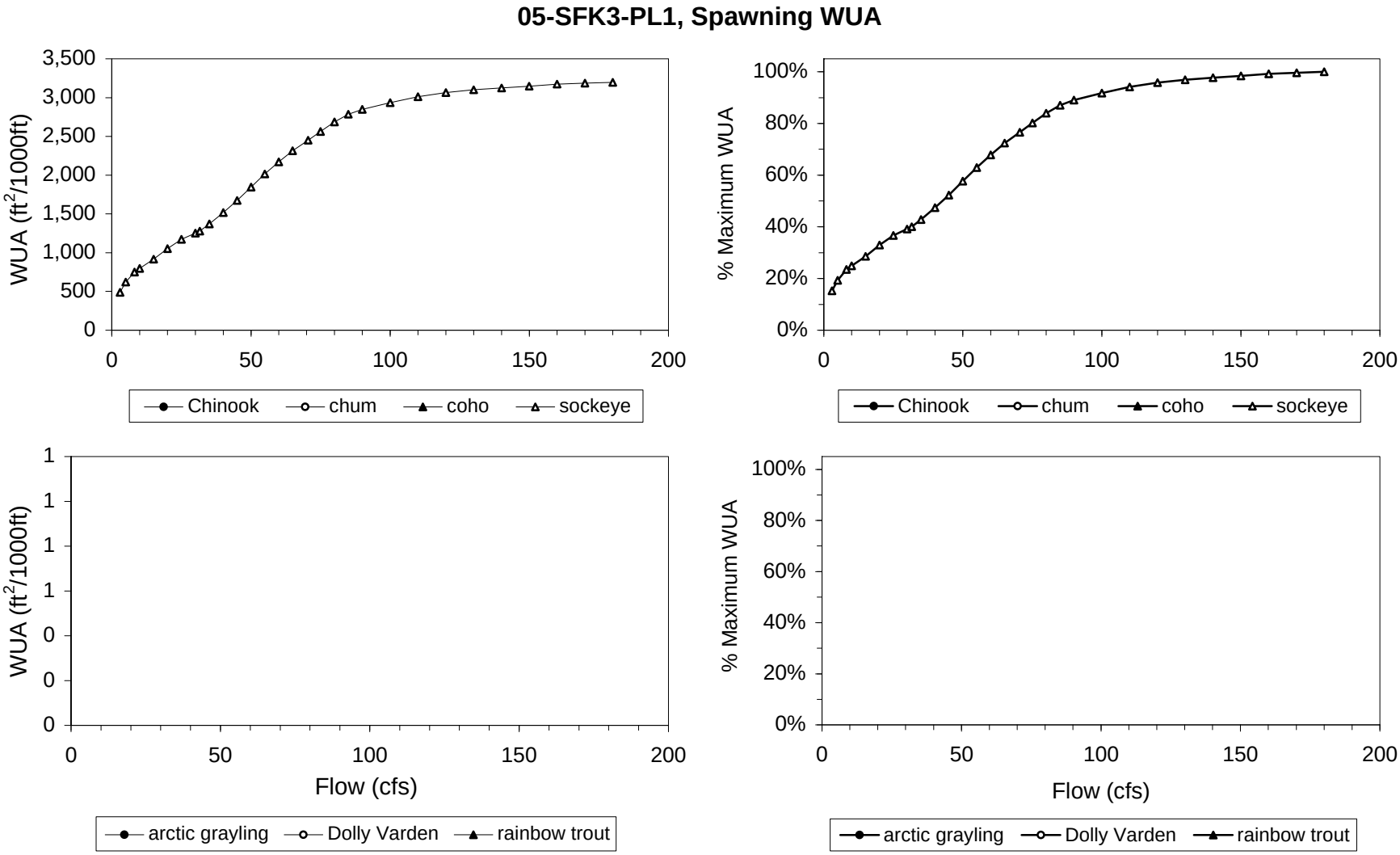

Figure 196
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK3-PL1 (River Kilometer 39.83) in SFK-C, South Fork Koktuli River, Alaska.

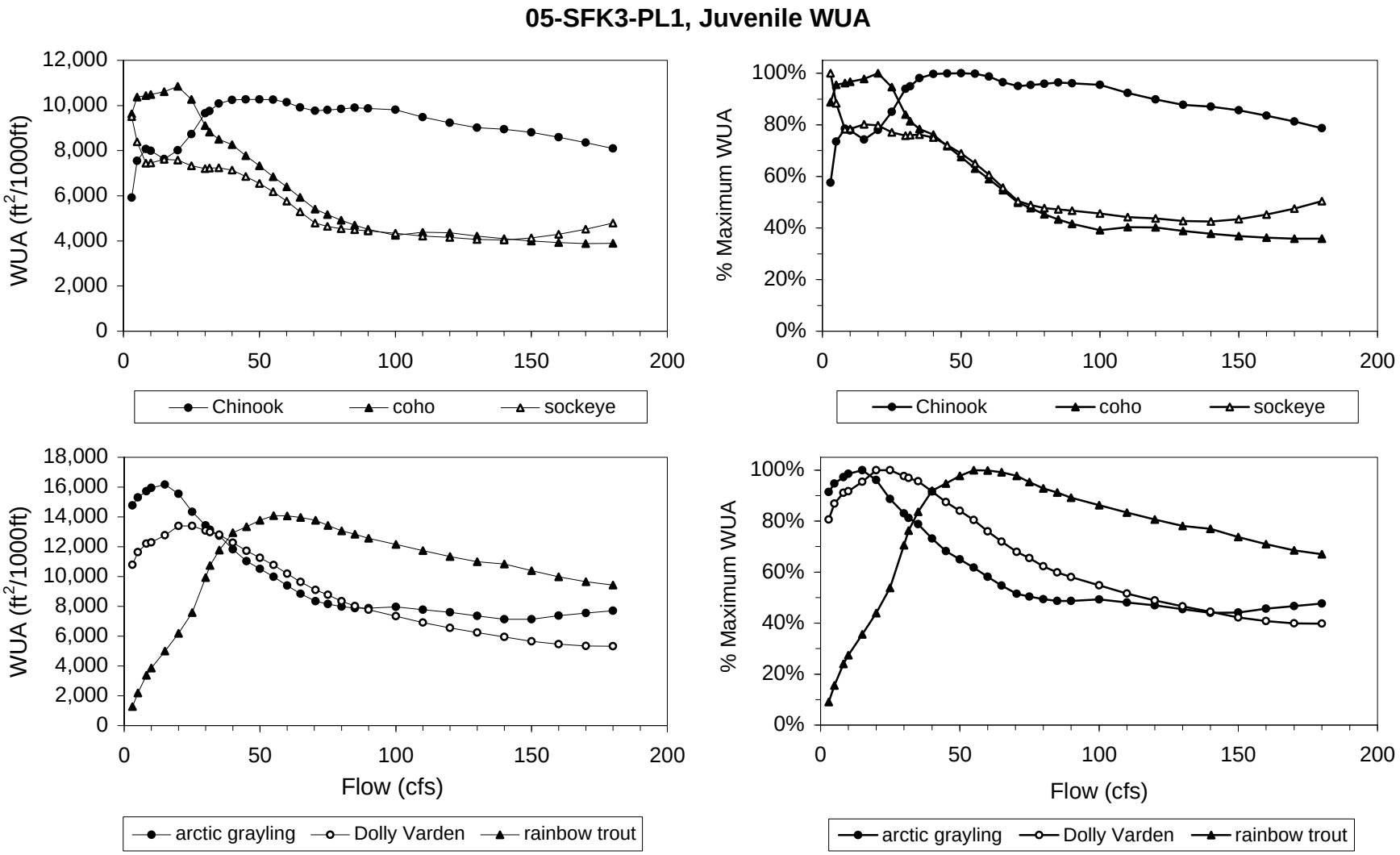

Figure 197
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK3-PL1 (River Kilometer 39.83) in SFK-C, South Fork Koktuli River, Alaska.

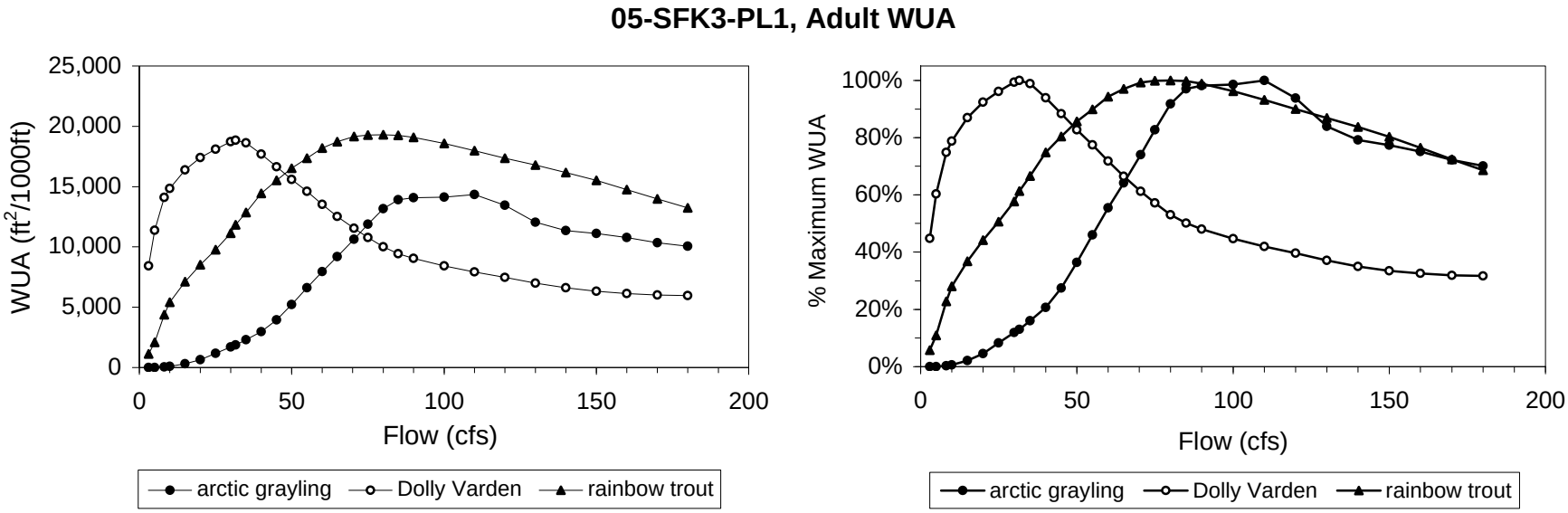

Figure 198
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK3-PL1 (River Kilometer 39.83) in SFK-C, South Fork Koktuli River, Alaska.

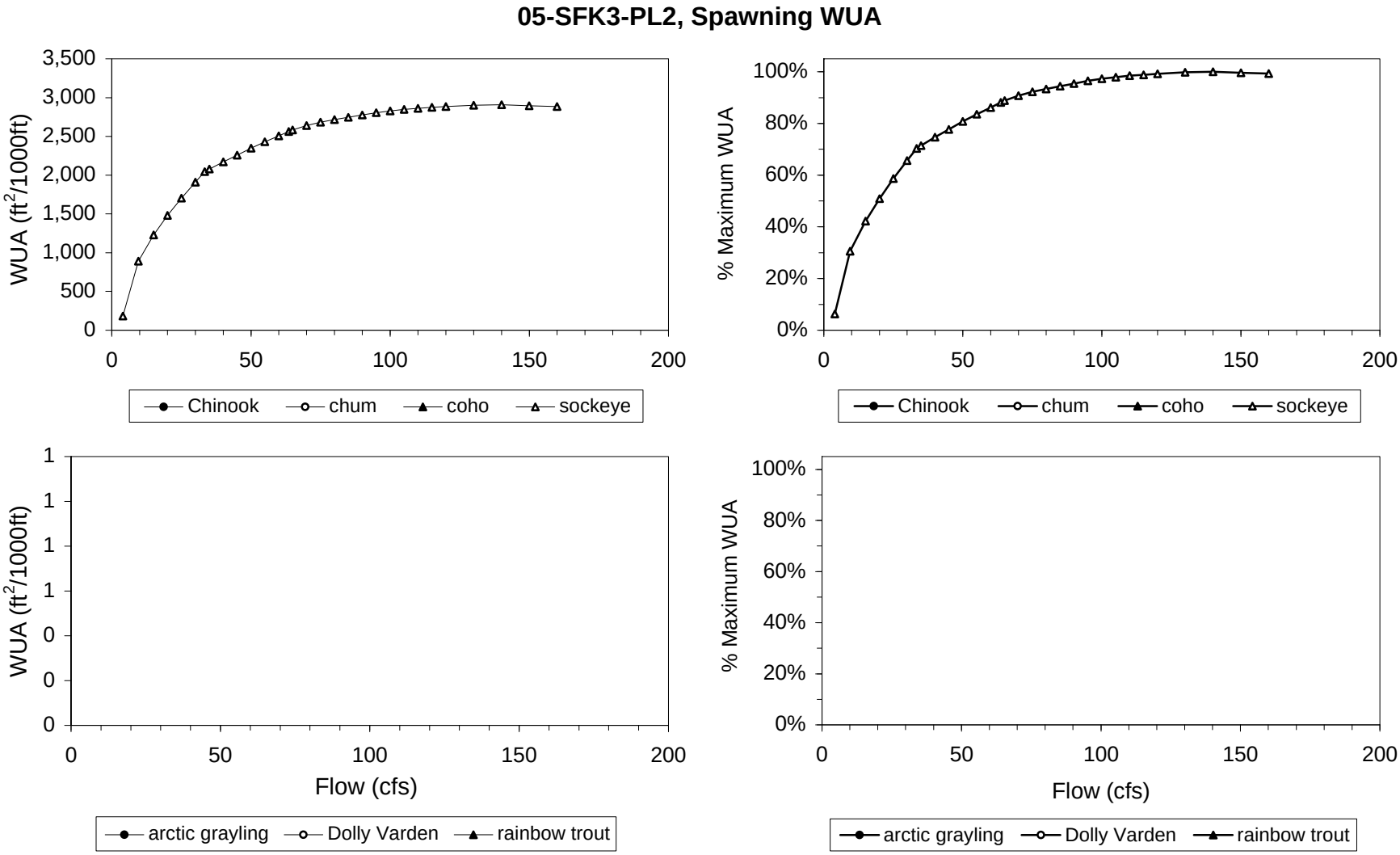

Figure 199
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK3-PL2 (River Kilometer 40.93) in SFK-C, South Fork Koktuli River, Alaska.

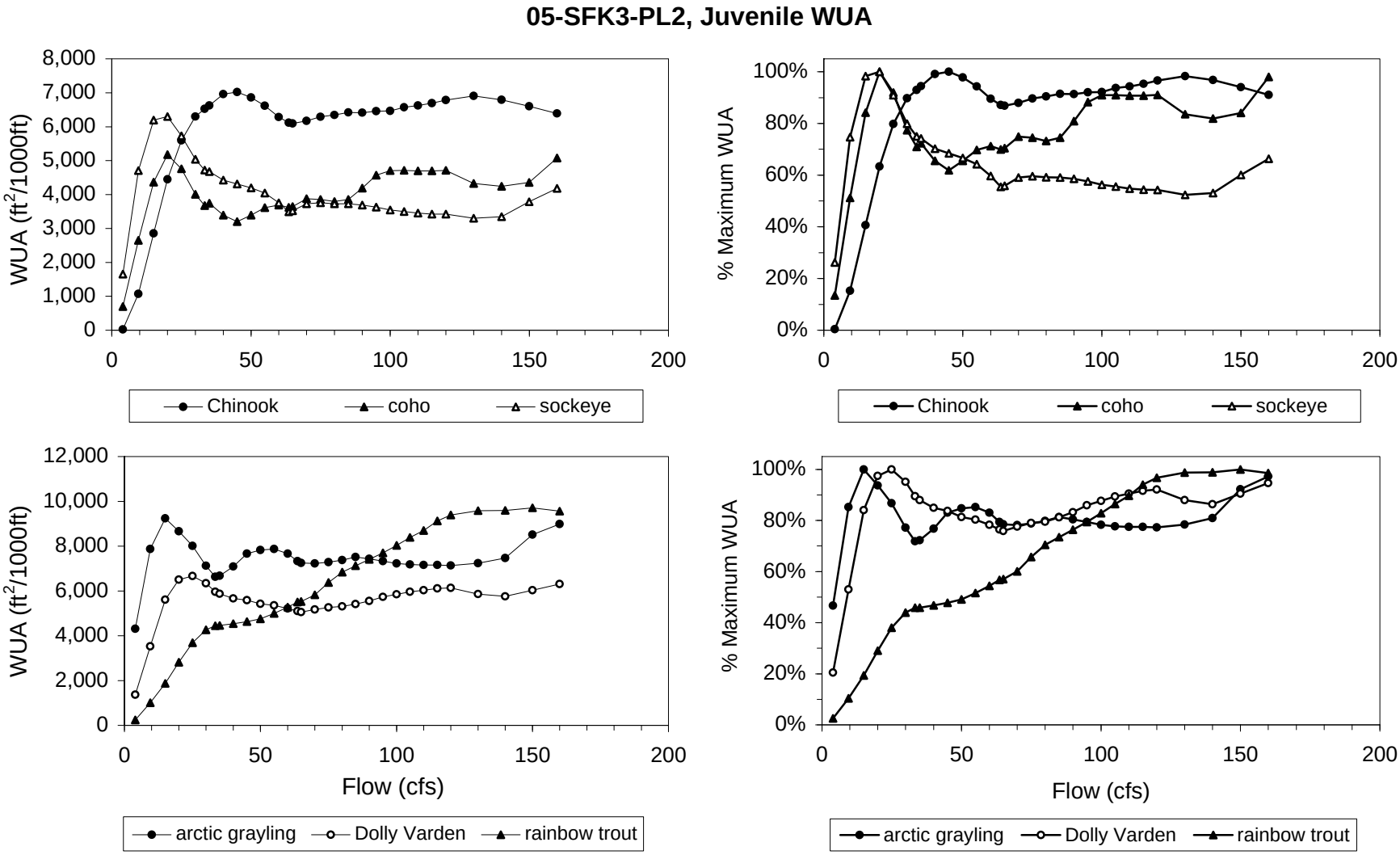

Figure 200
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-SFK3-PL2 (River Kilometer 40.93) in SFK-C, South Fork Koktuli River, Alaska.

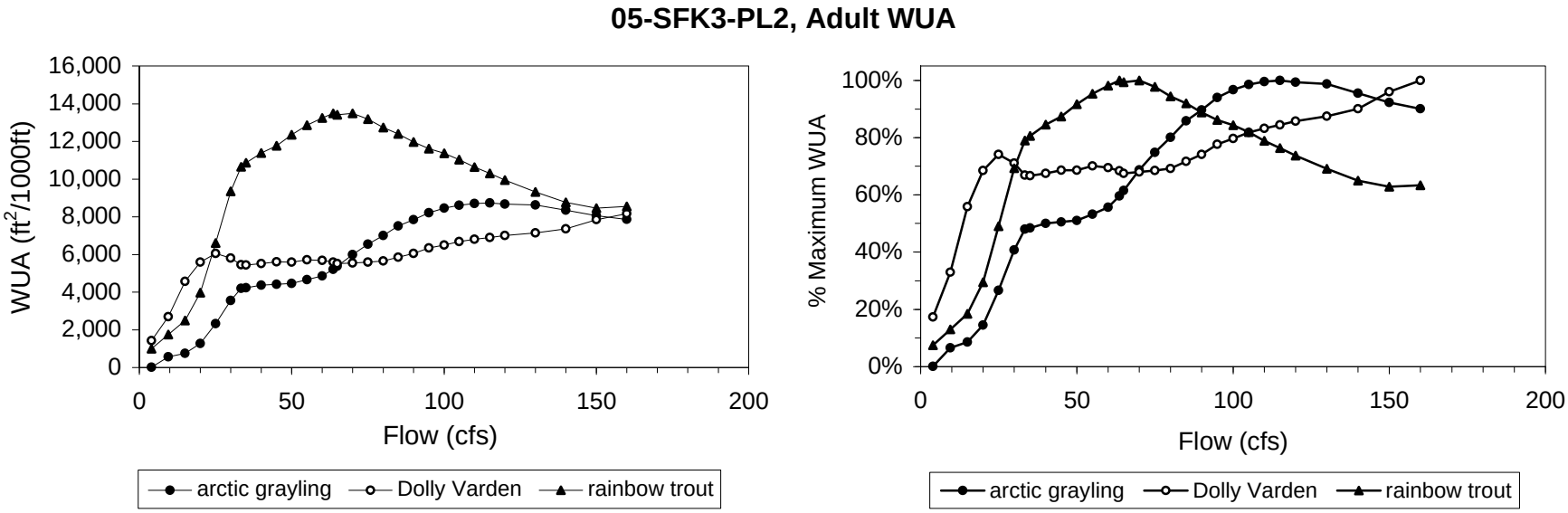

Figure 201
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-SFK3-PL2 (River Kilometer 40.93) in SFK-C, South Fork Koktuli River, Alaska.

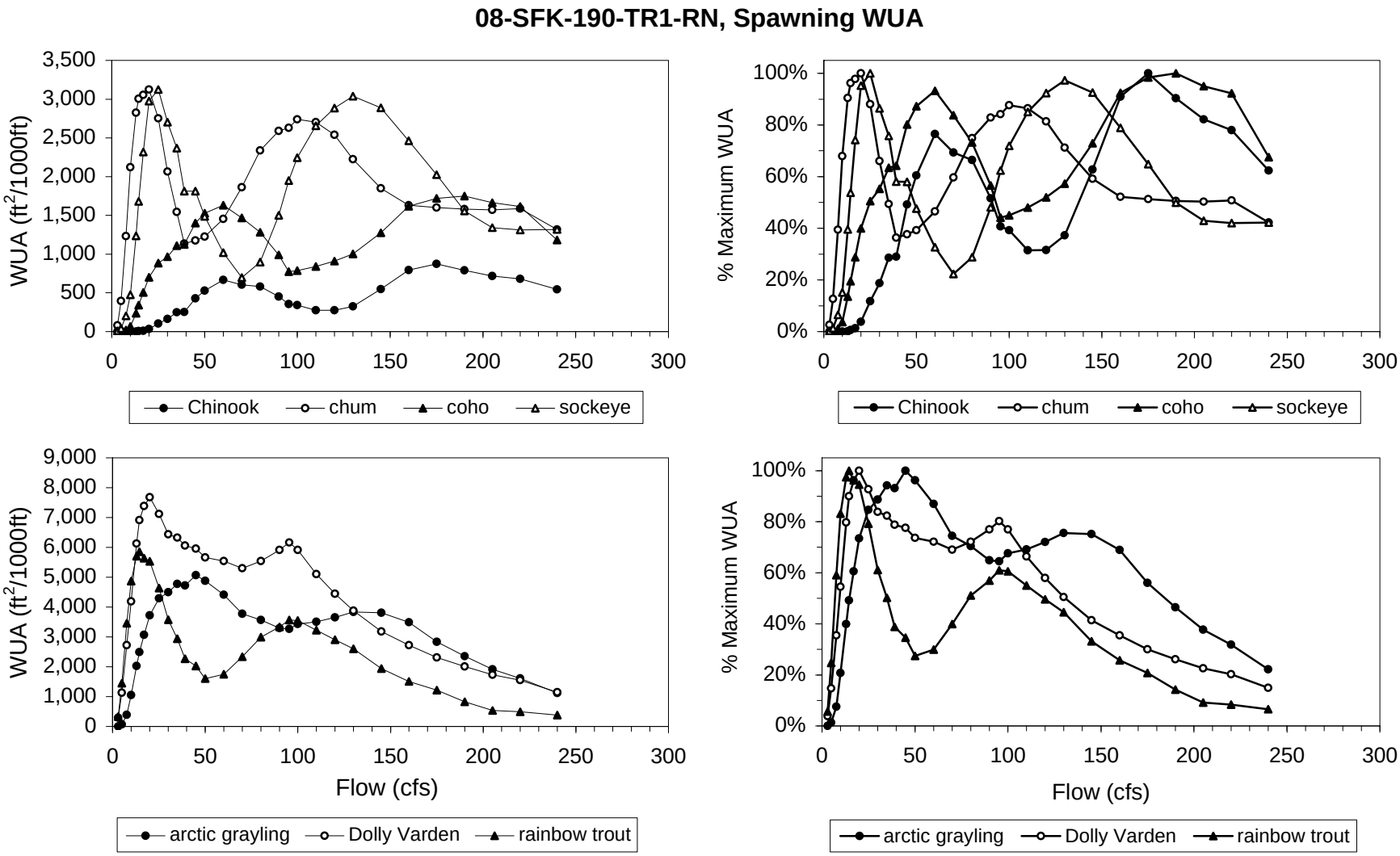

Figure 202
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR1 (River Kilometer 0.64) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

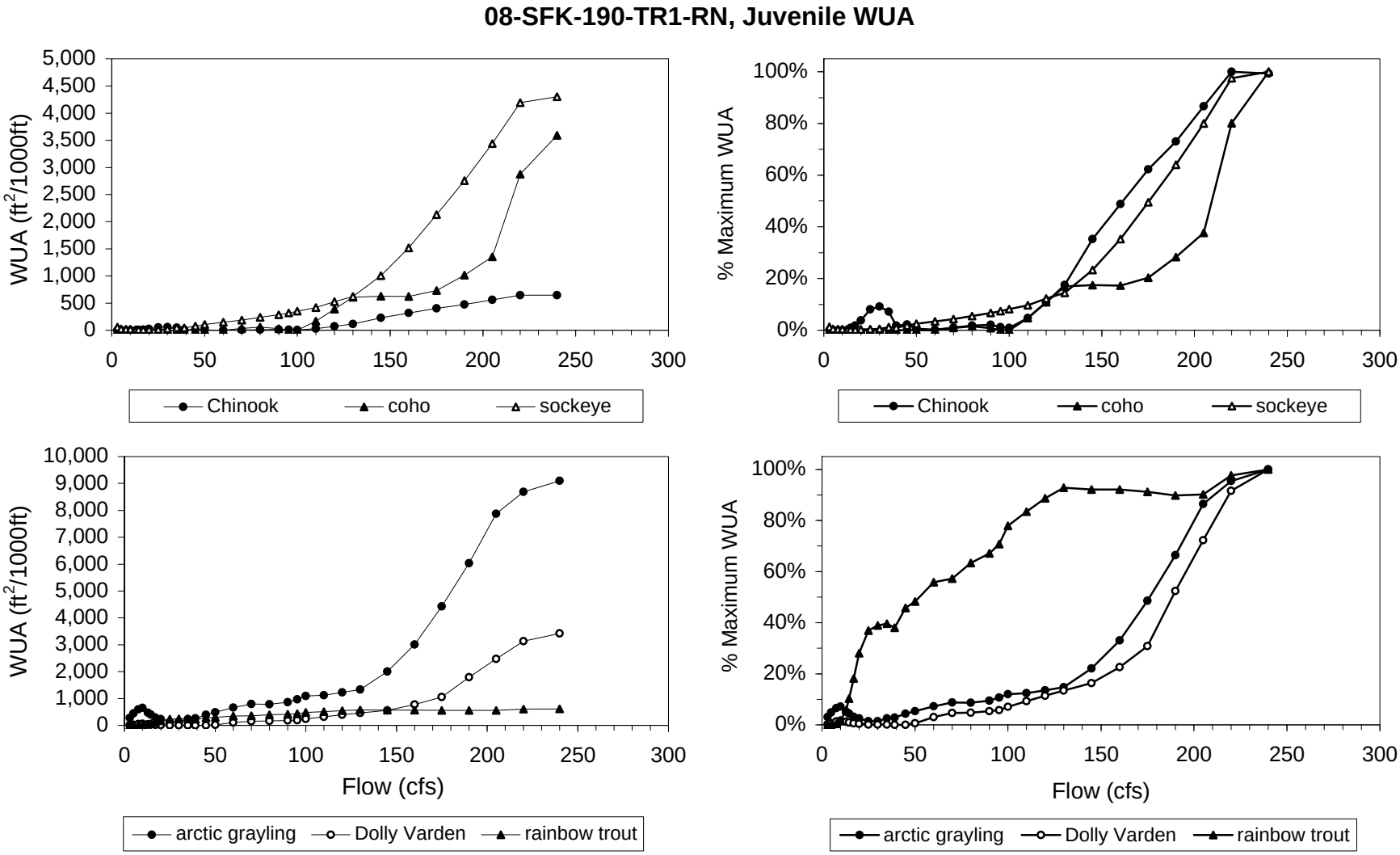

Figure 203
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR1 (River Kilometer 0.64) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

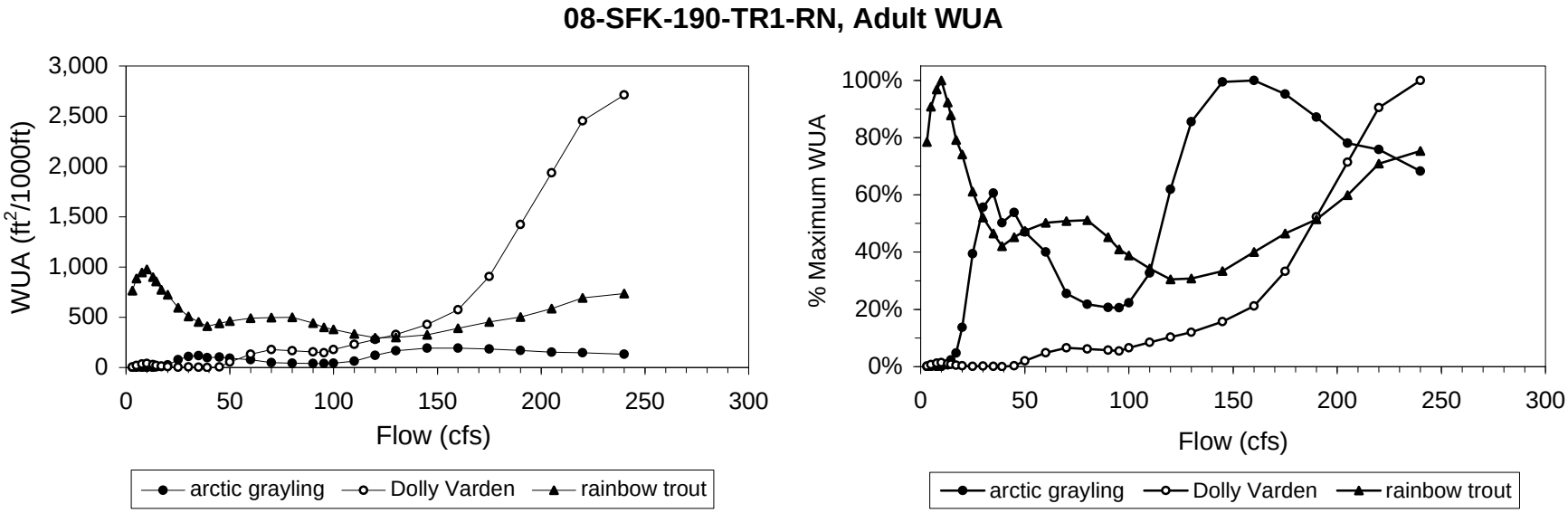

Figure 204
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK-190-TR1 (River Kilometer 0.64) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

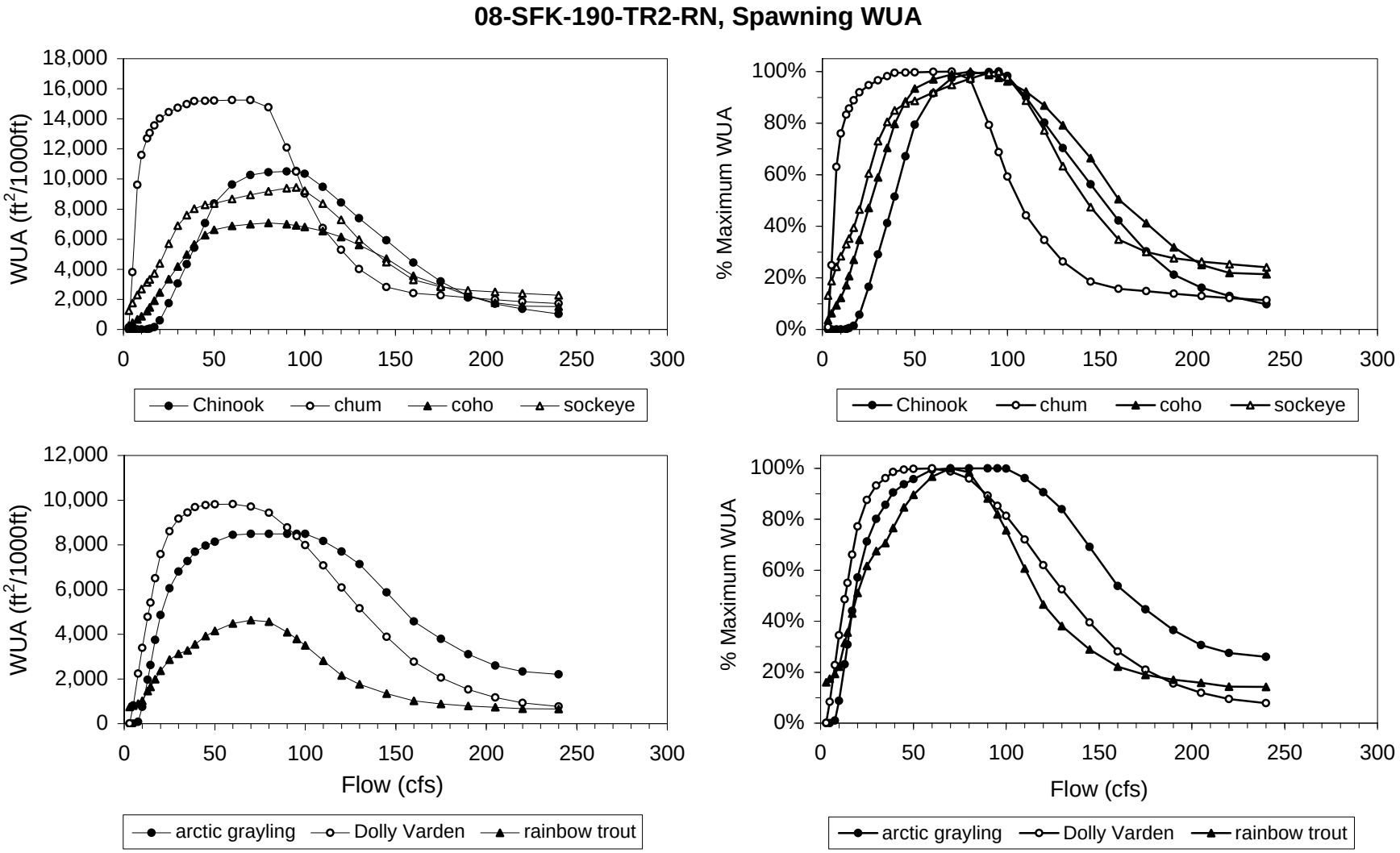

Figure 205
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR2 (River Kilometer 0.66) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

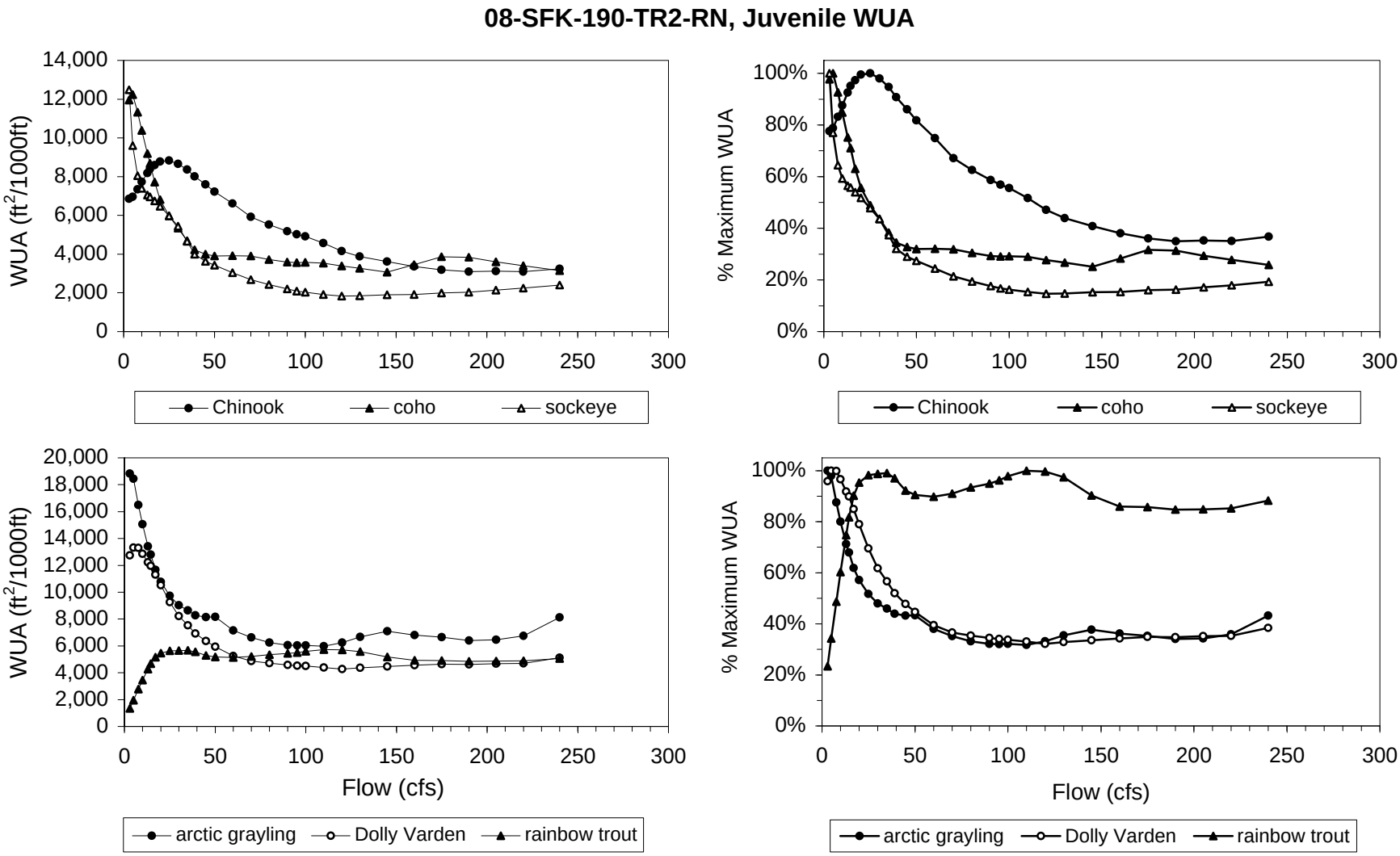

Figure 206
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR2 (River Kilometer 0.66) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

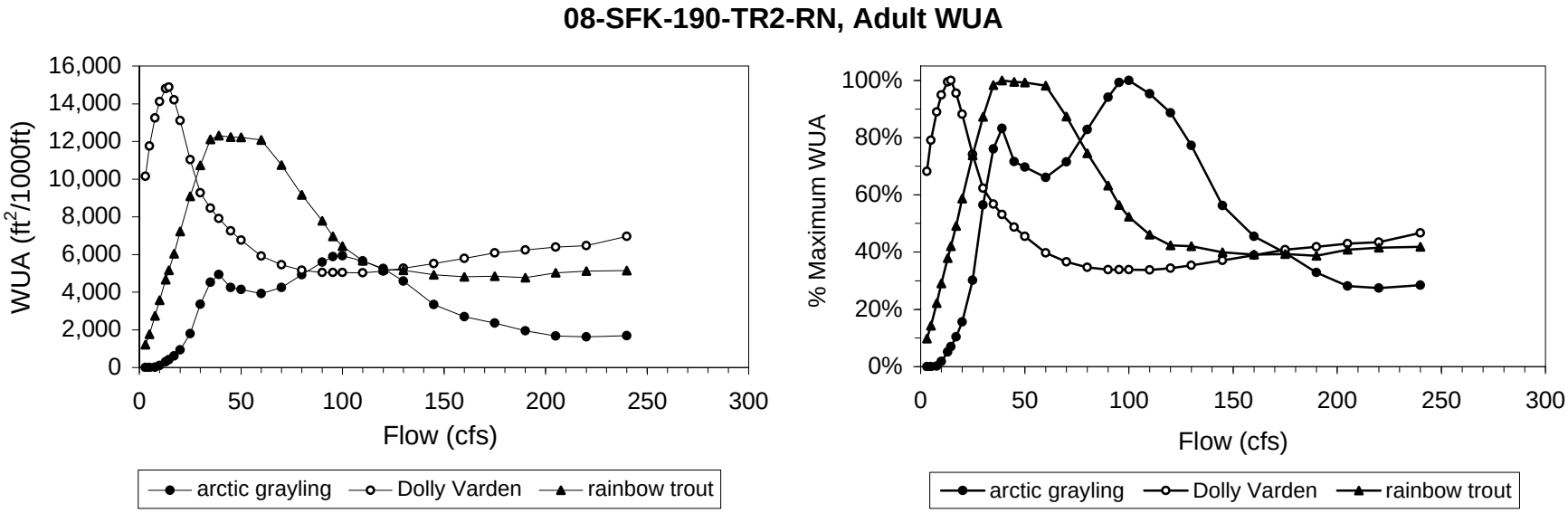

Figure 207
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK-190-TR2 (River Kilometer 0.66) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

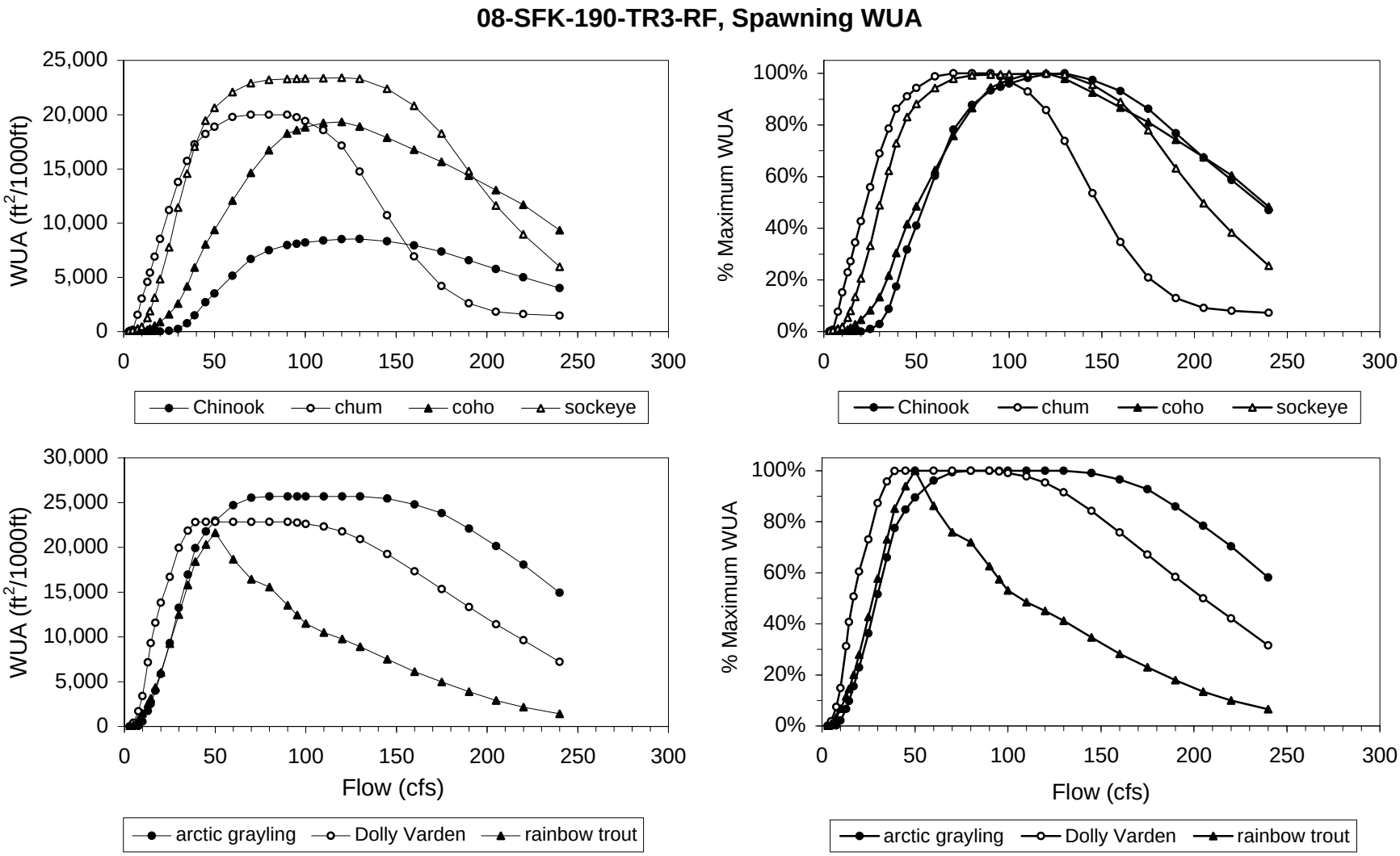

Figure 208
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR3 (River Kilometer 0.67) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

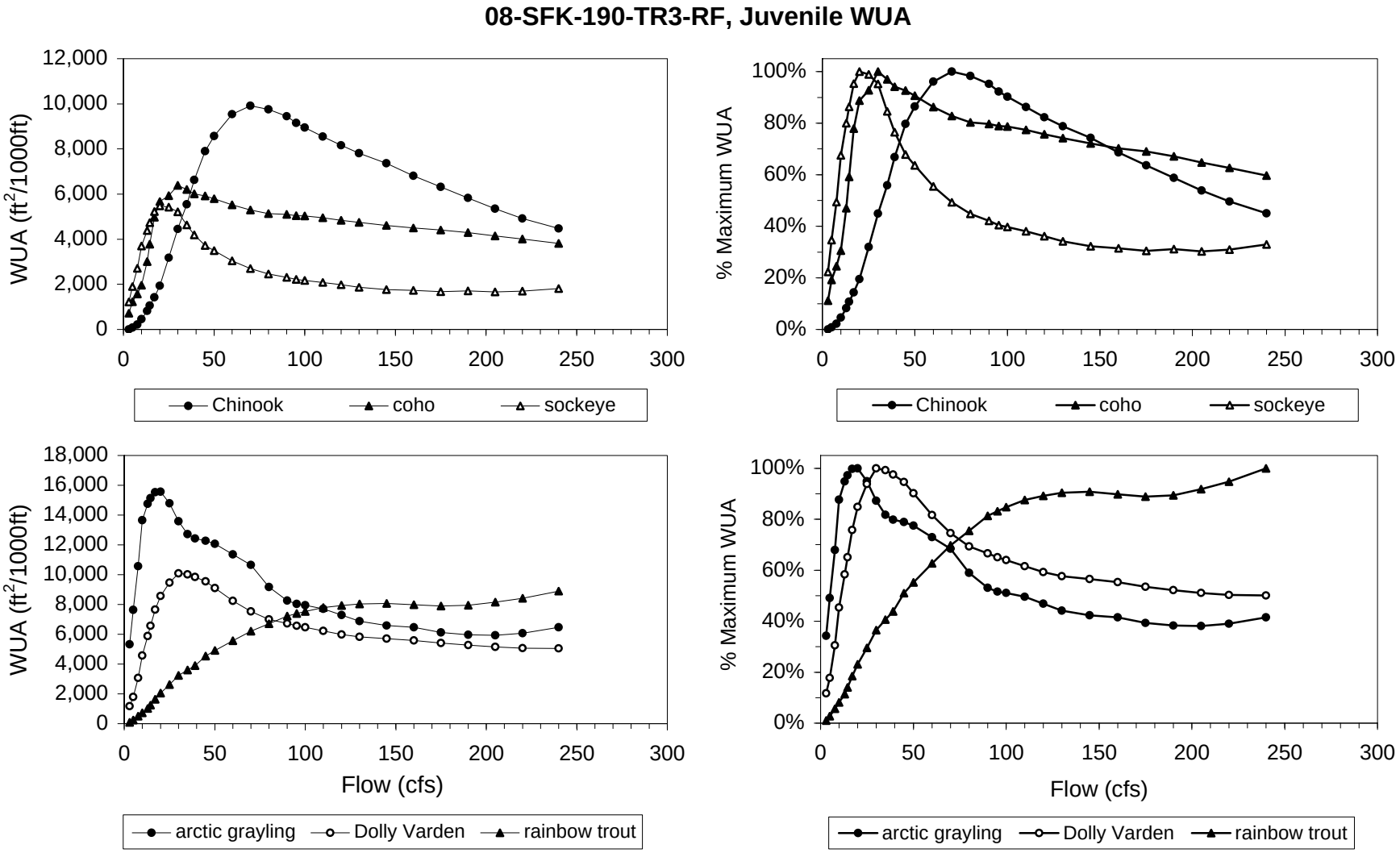

Figure 209
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR3 (River Kilometer 0.67) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

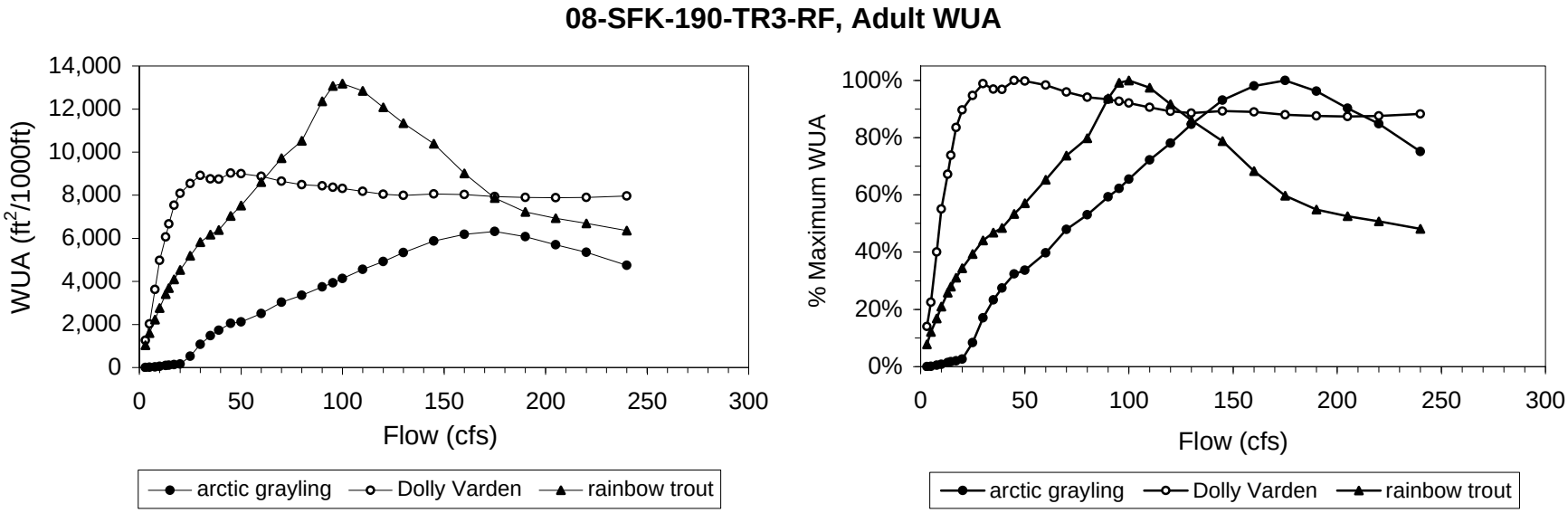

Figure 210
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK-190-TR3 (River Kilometer 0.67) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

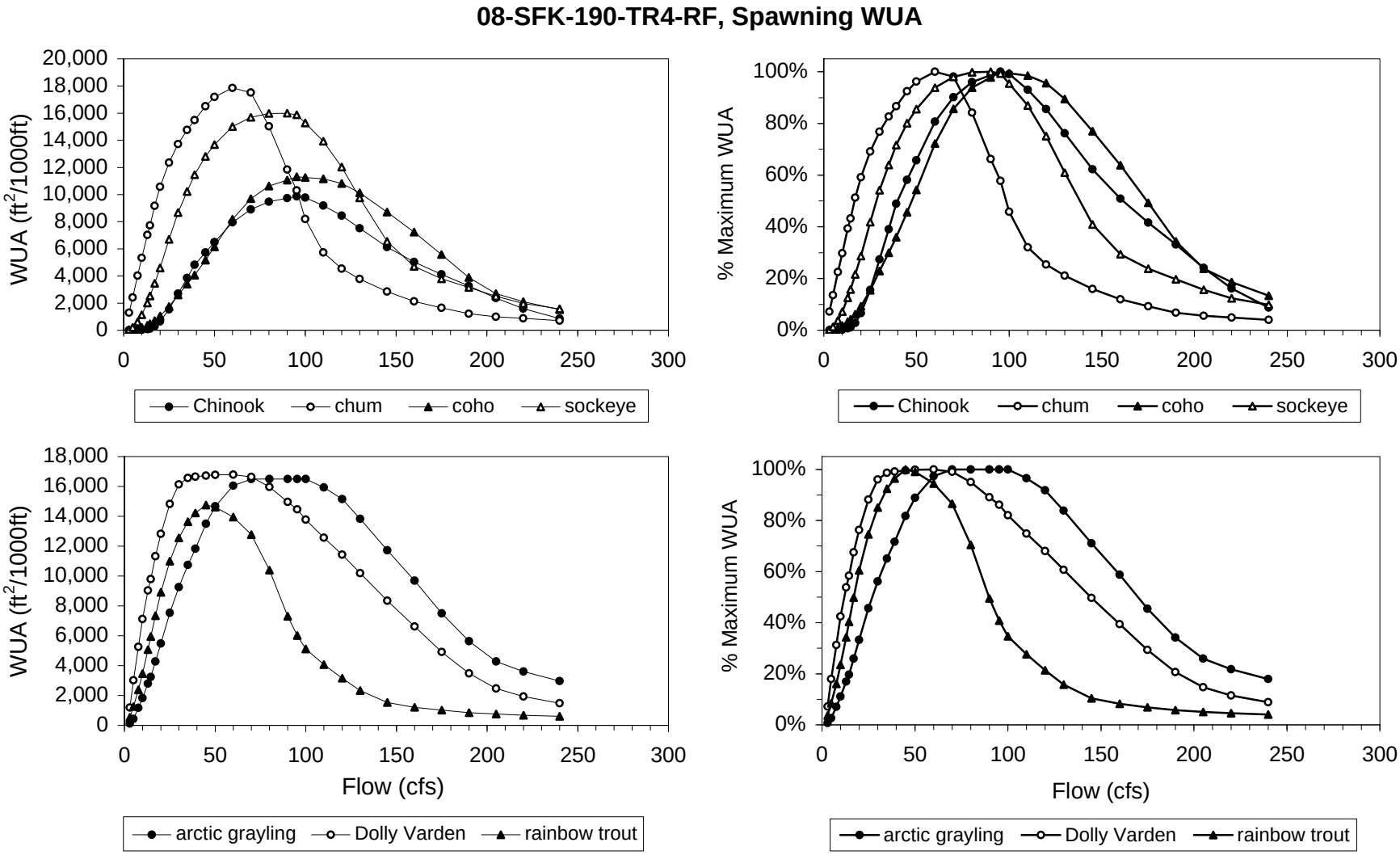

Figure 211
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR4 (River Kilometer 0.70) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

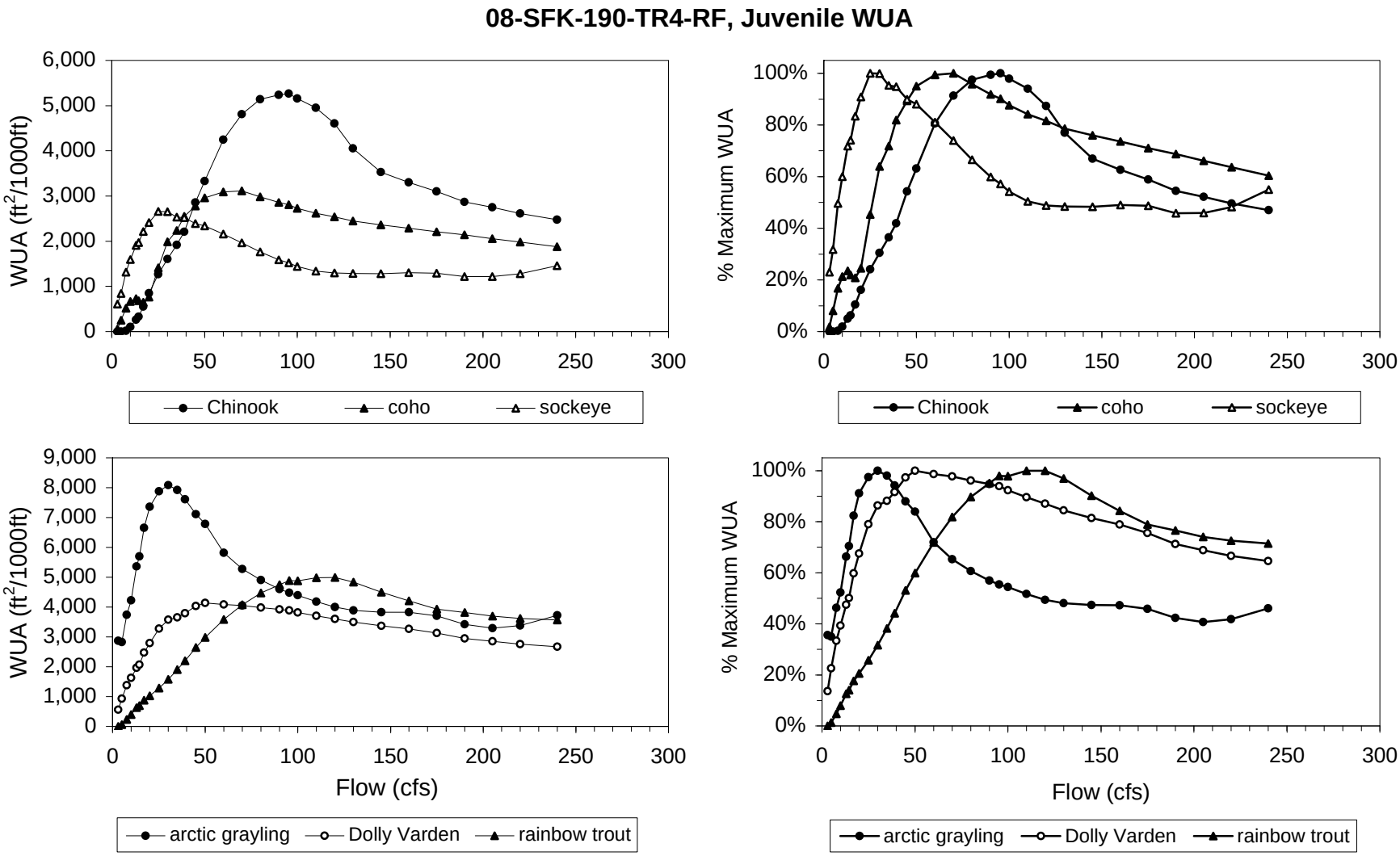

Figure 212
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR4 (River Kilometer 0.70) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

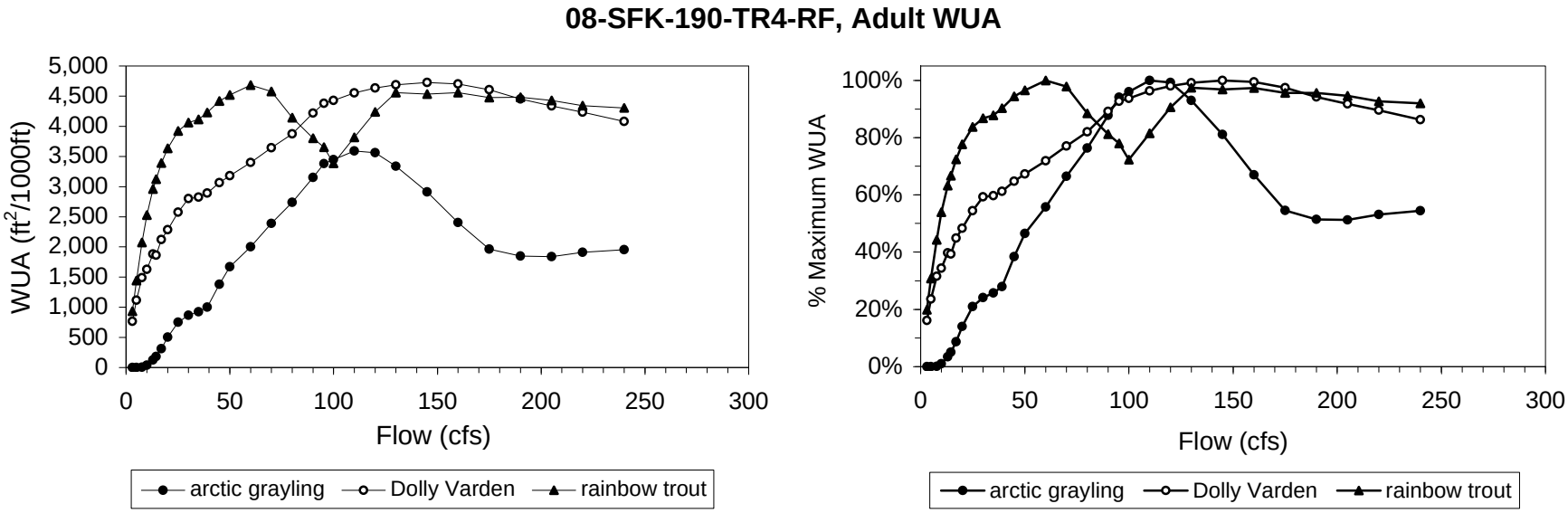

Figure 213
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK-190-TR4 (River Kilometer 0.70) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

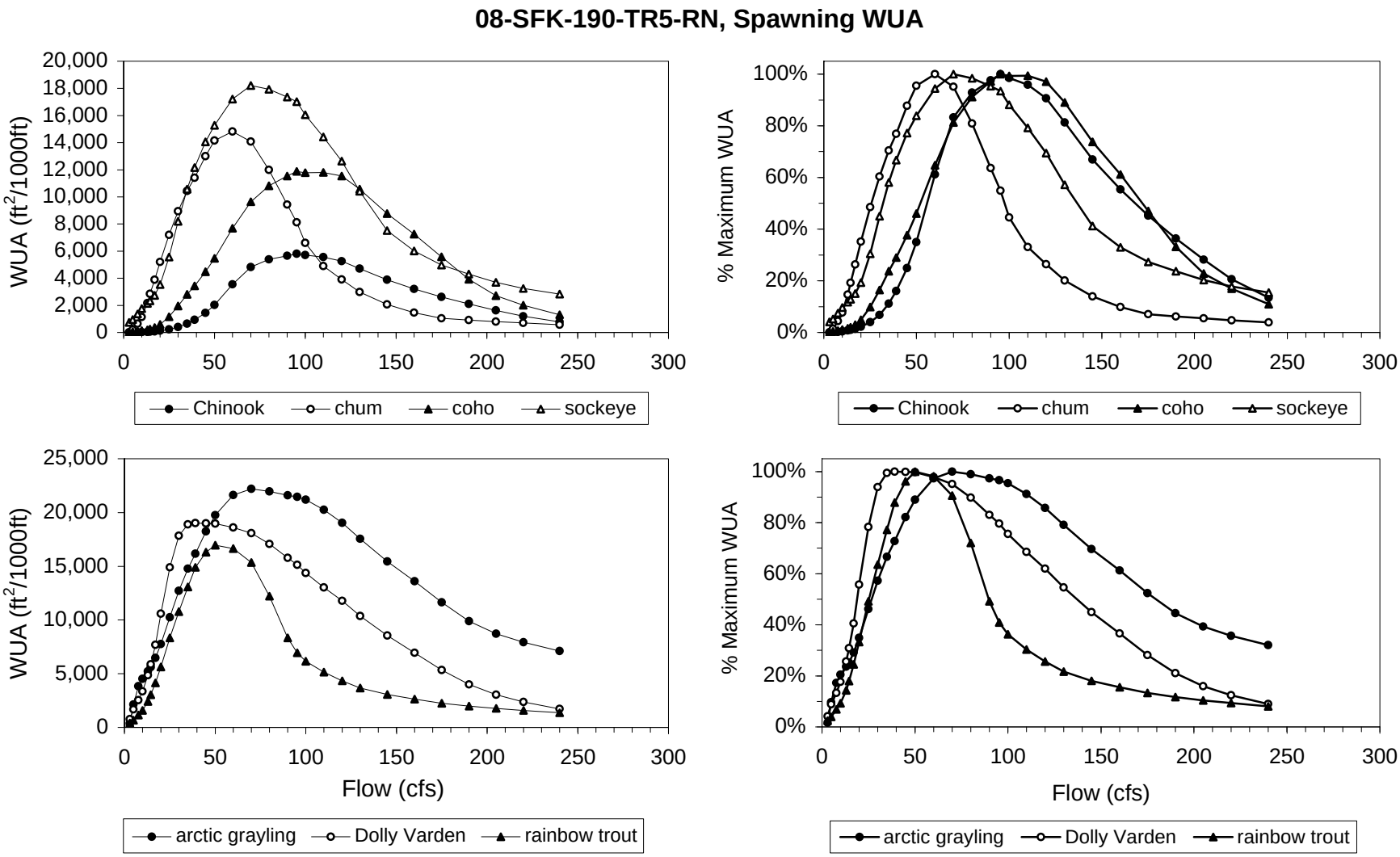

Figure 214
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR5 (River Kilometer 0.71) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

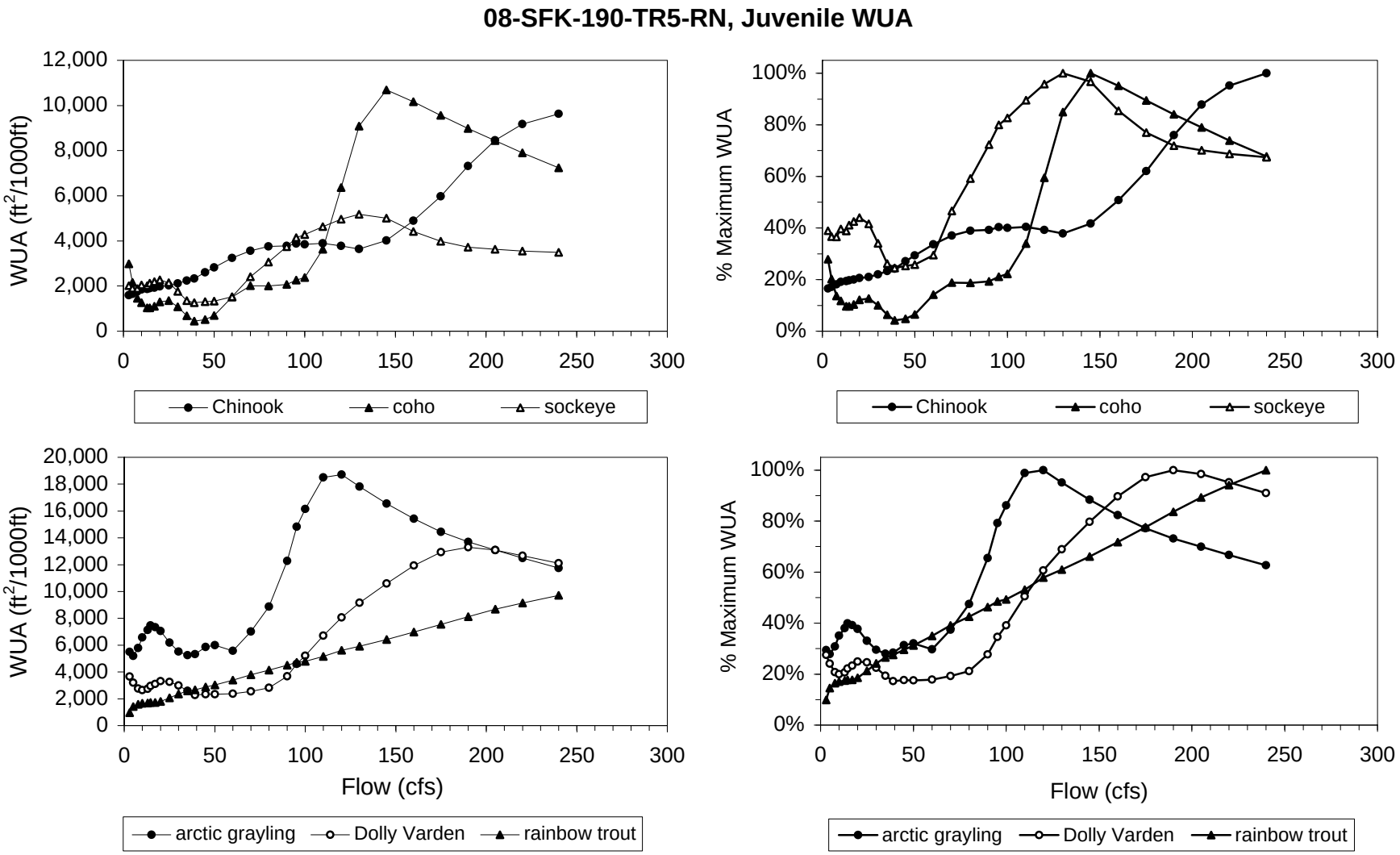

Figure 215
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR5 (River Kilometer 0.71) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

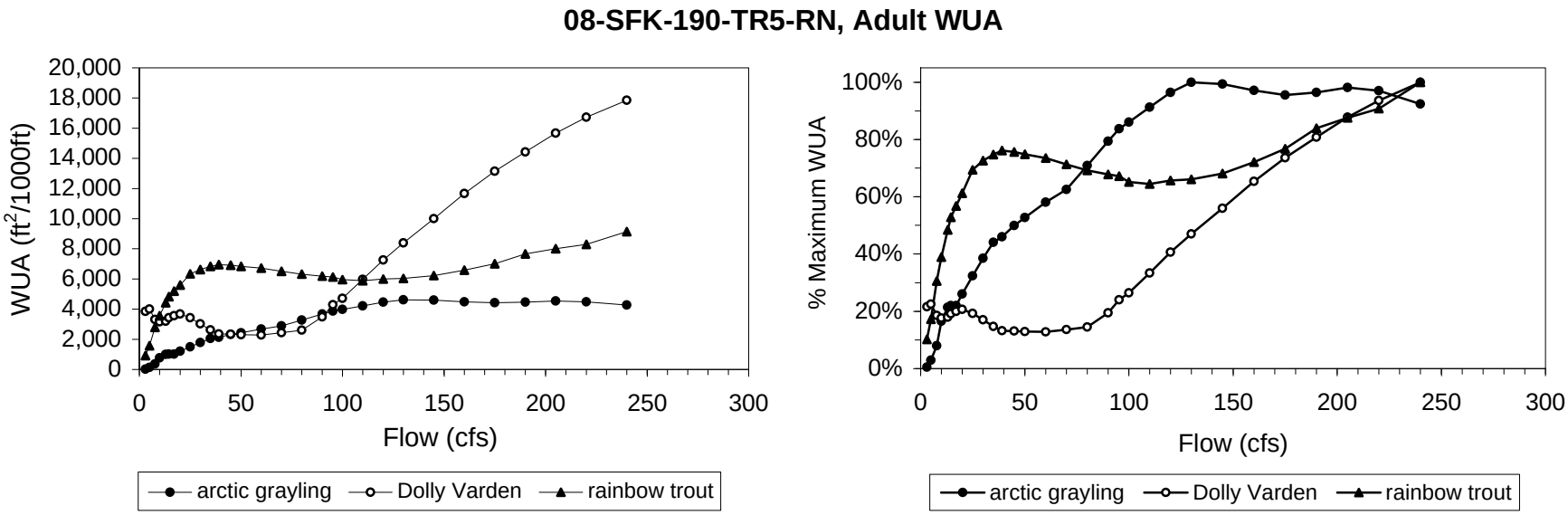

Figure 216
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK-190-TR5 (River Kilometer 0.71) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

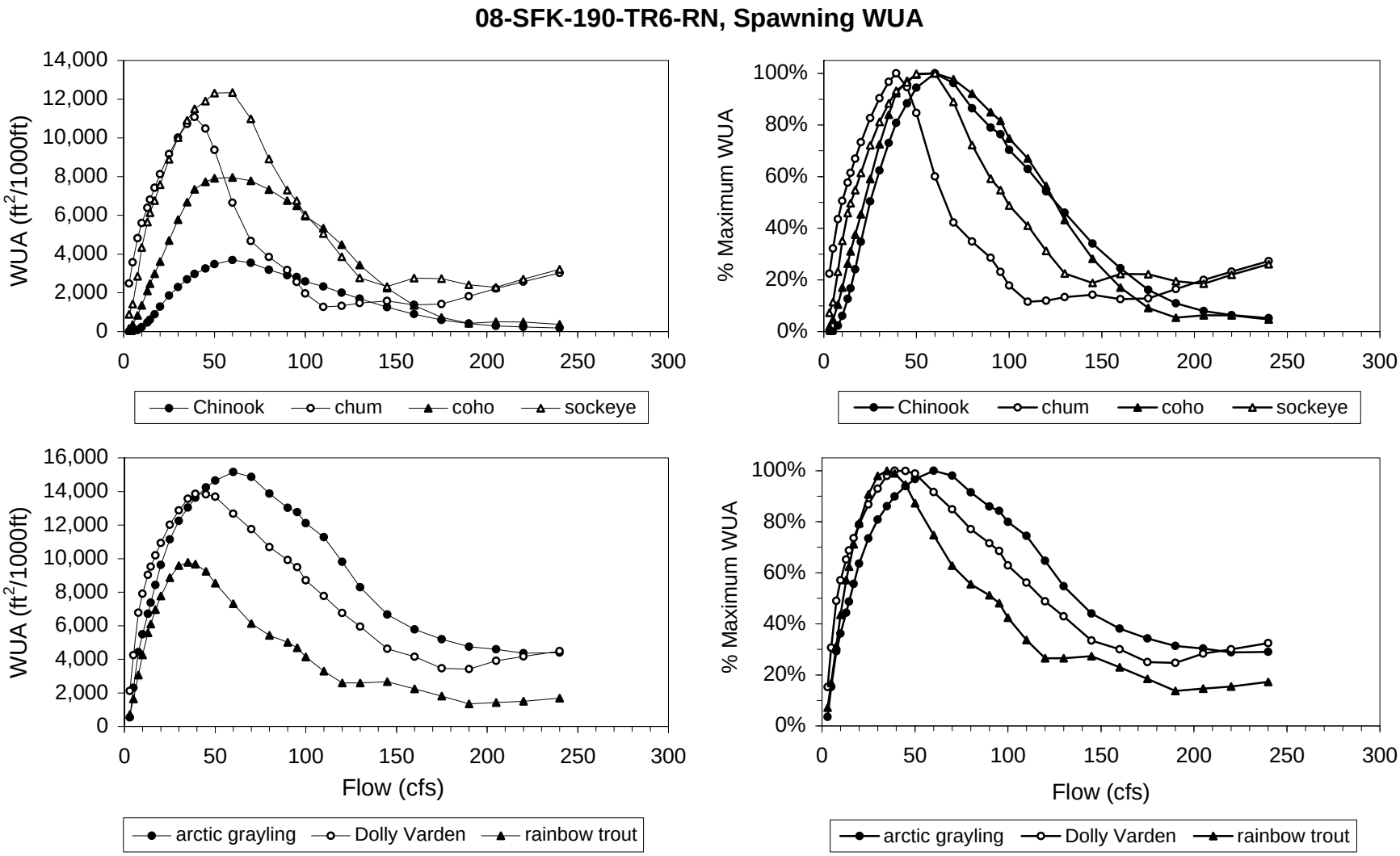

Figure 217
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR6 (River Kilometer 0.73) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

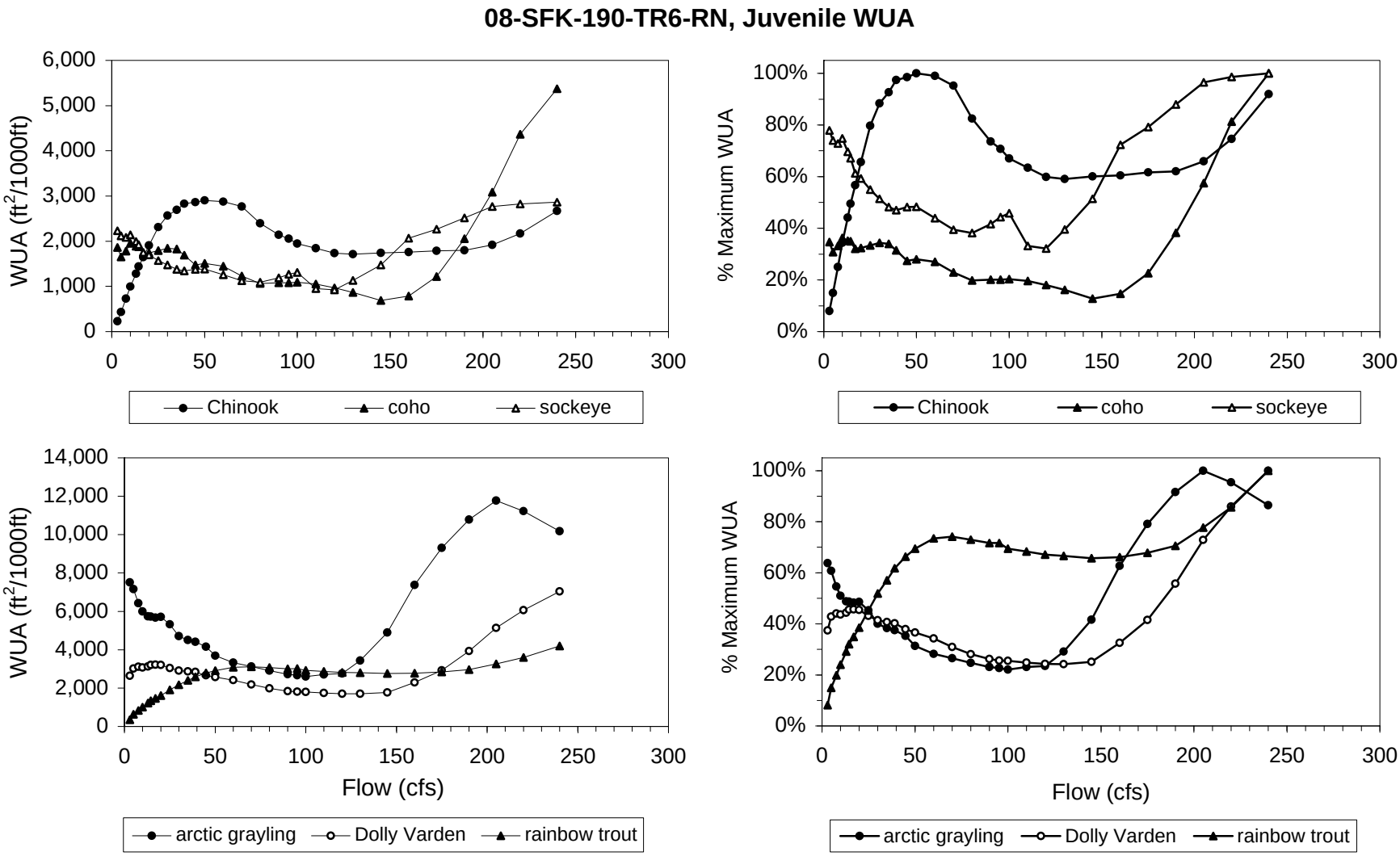

Figure 218
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-SFK-190-TR6 (River Kilometer 0.73) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

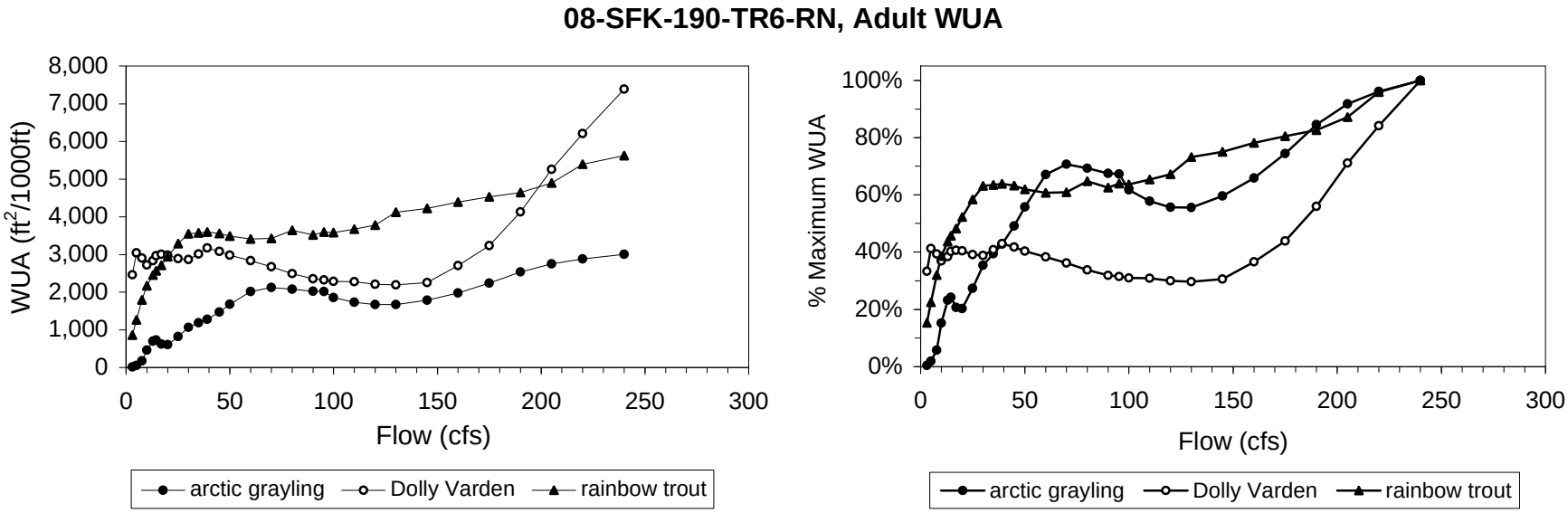

Figure 219
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-SFK-190-TR6 (River Kilometer 0.73) in tributary SFK-1.190, South Fork Koktuli River, Alaska.

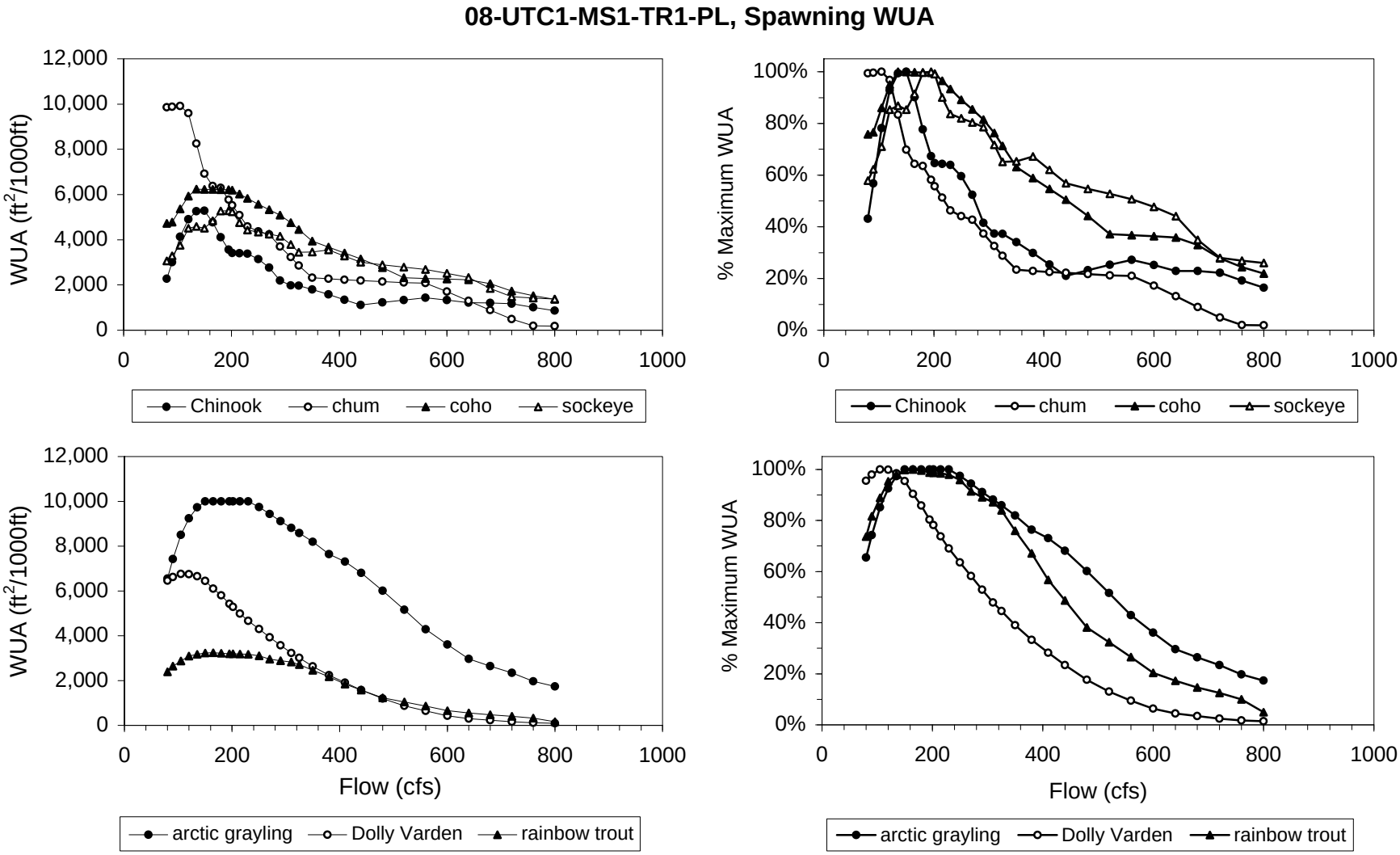

Figure 220
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR1 (River Kilometer 6.08) in UTC-B, Upper Talarik Creek, Alaska.

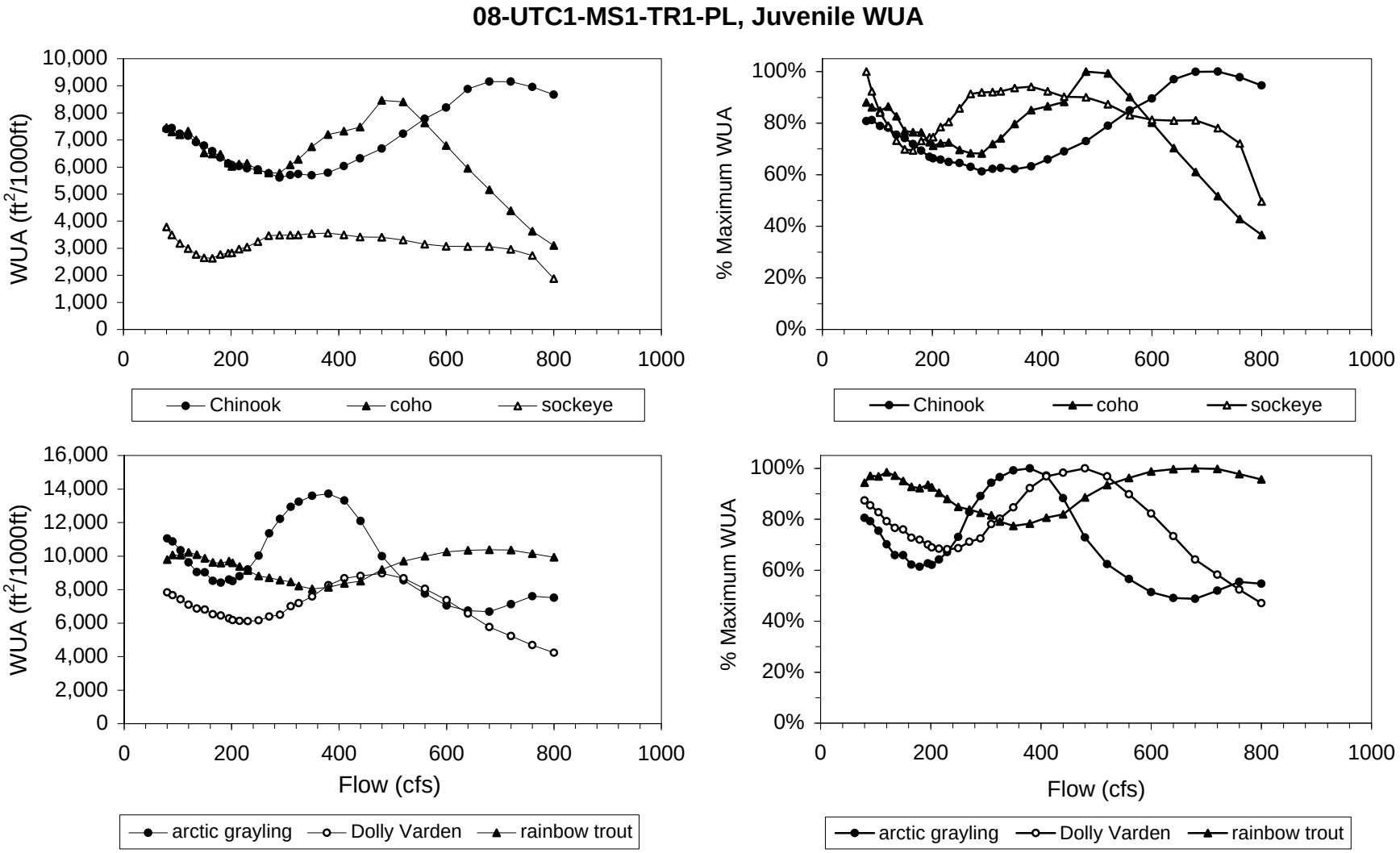

Figure 221
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR1 (River Kilometer 6.08) in UTC-B, Upper Talarik Creek, Alaska.

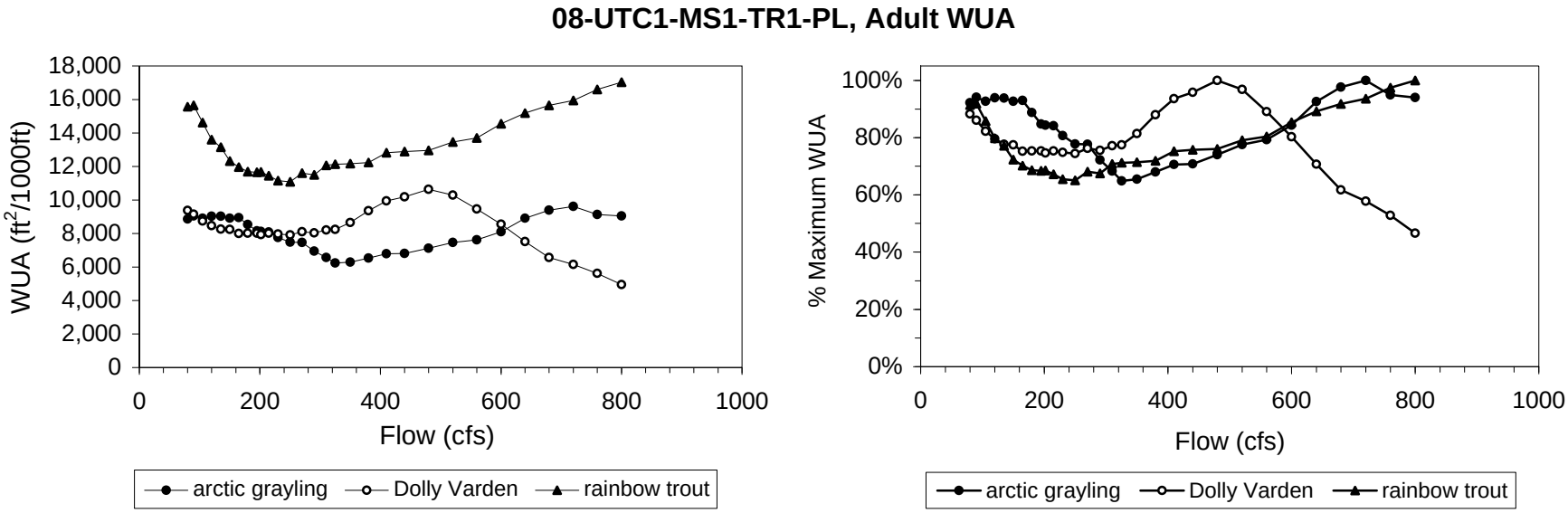

Figure 222
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC1-MS1-TR1 (River Kilometer 6.08) in UTC-B, Upper Talarik Creek, Alaska.

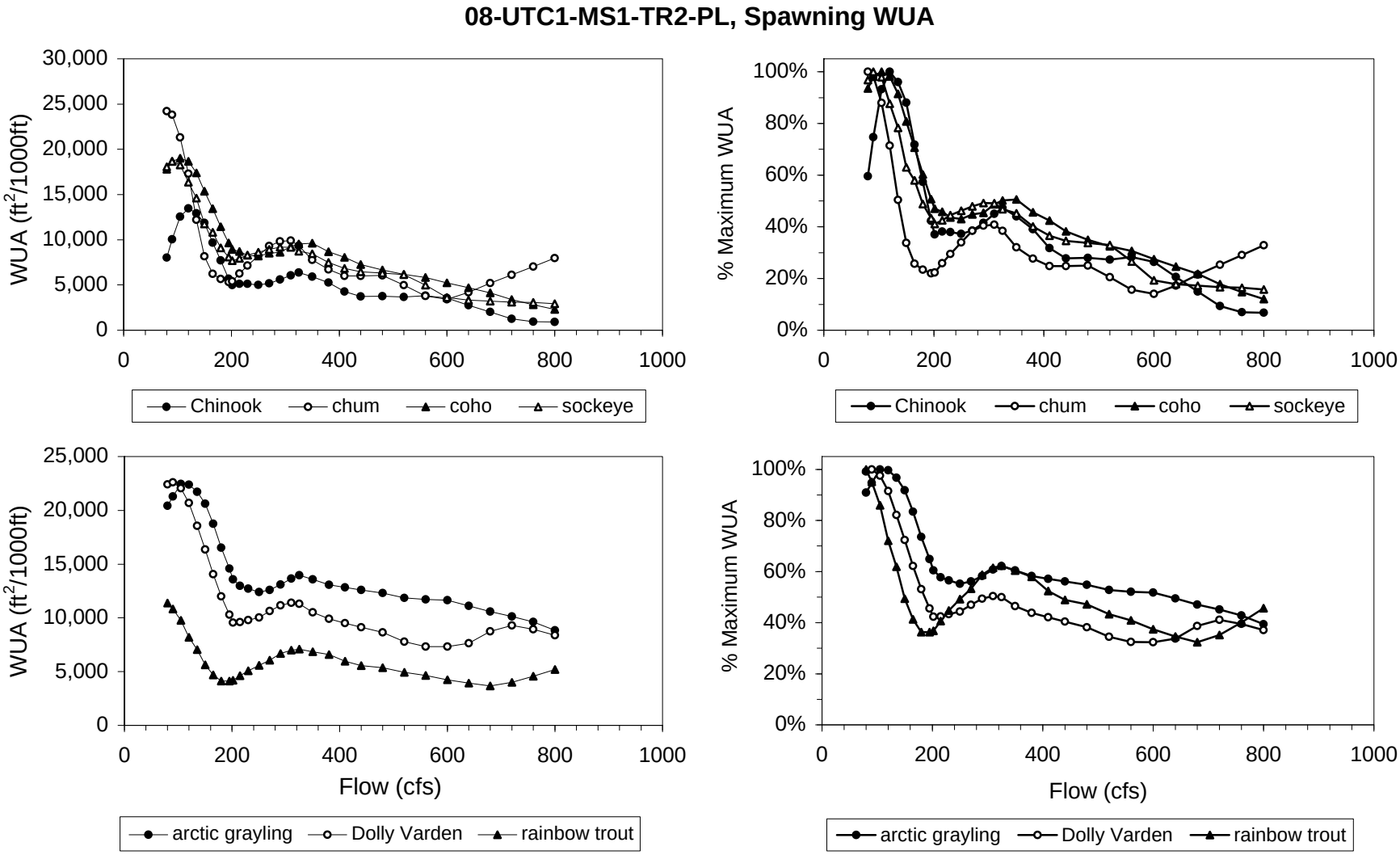

Figure 223
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR2 (River Kilometer 6.14) in UTC-B, Upper Talarik Creek, Alaska.

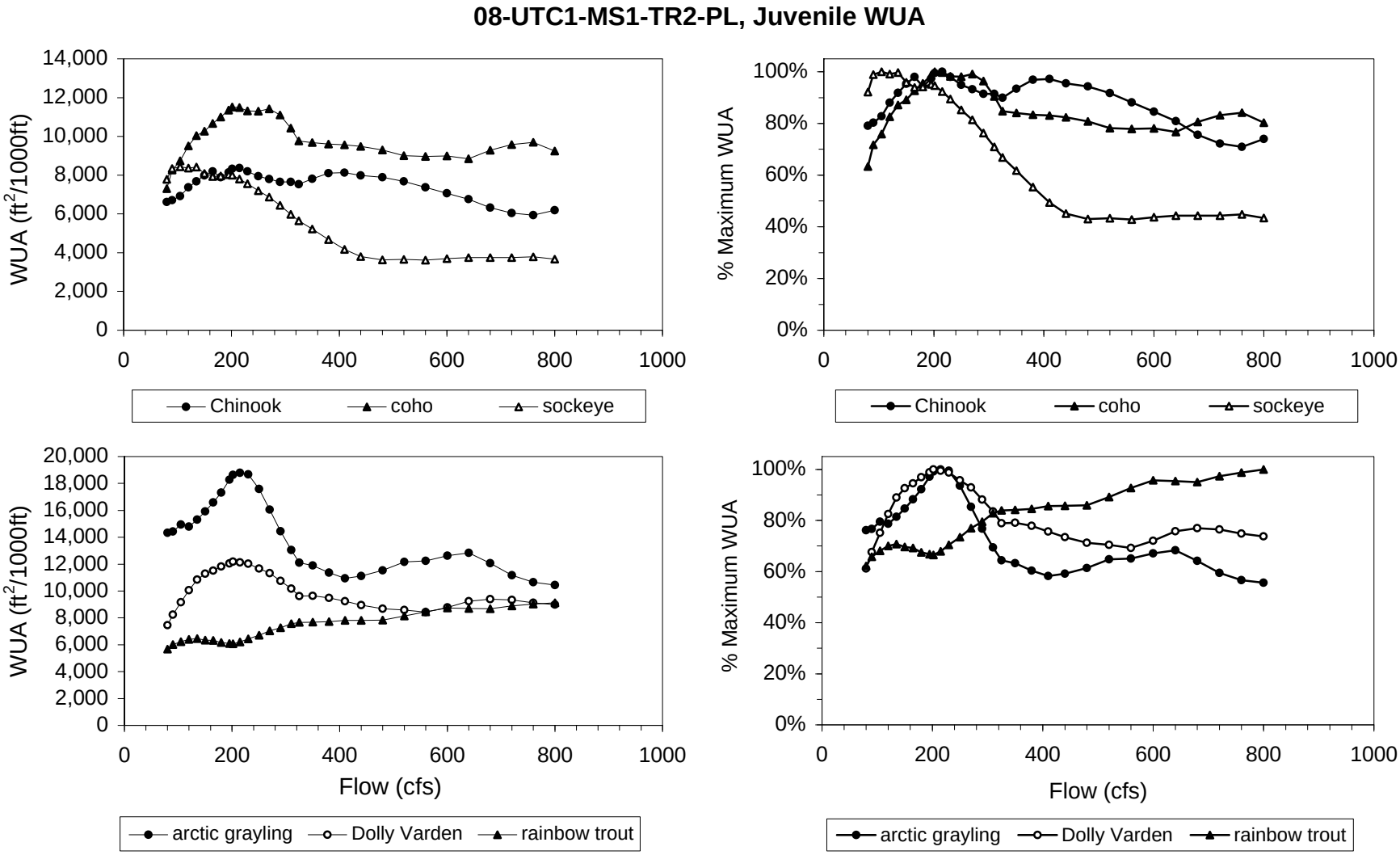

Figure 224
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR2 (River Kilometer 6.14) in UTC-B, Upper Talarik Creek, Alaska.

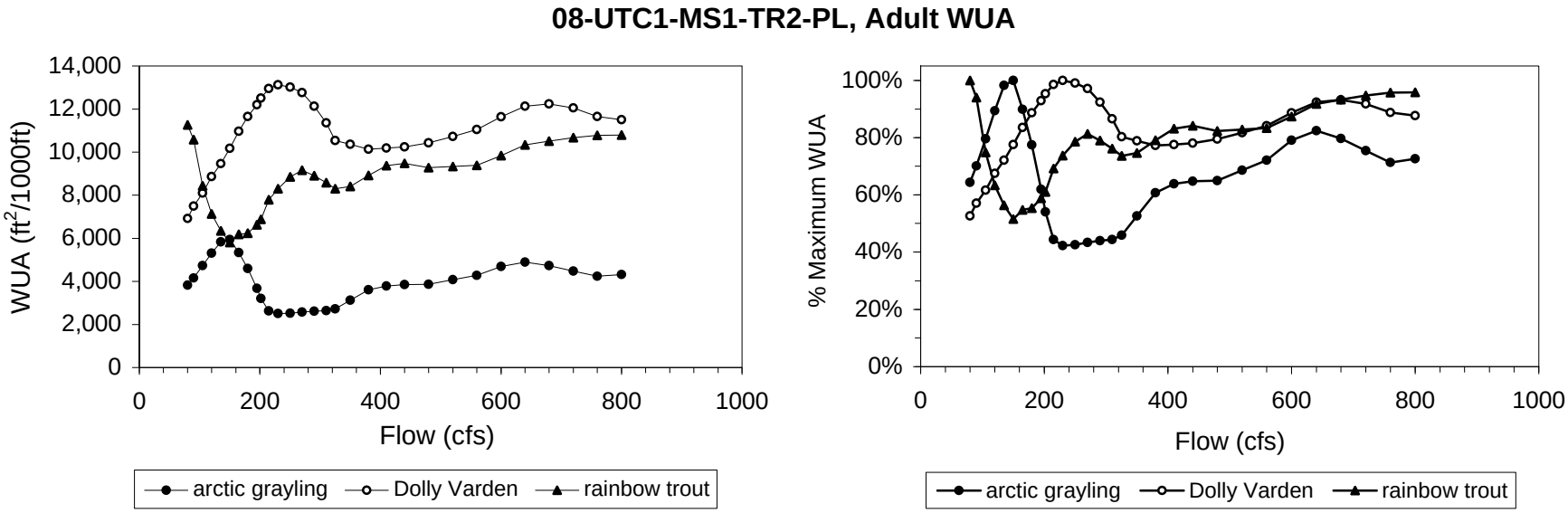

Figure 225
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC1-MS1-TR2 (River Kilometer 6.14) in UTC-B, Upper Talarik Creek, Alaska.

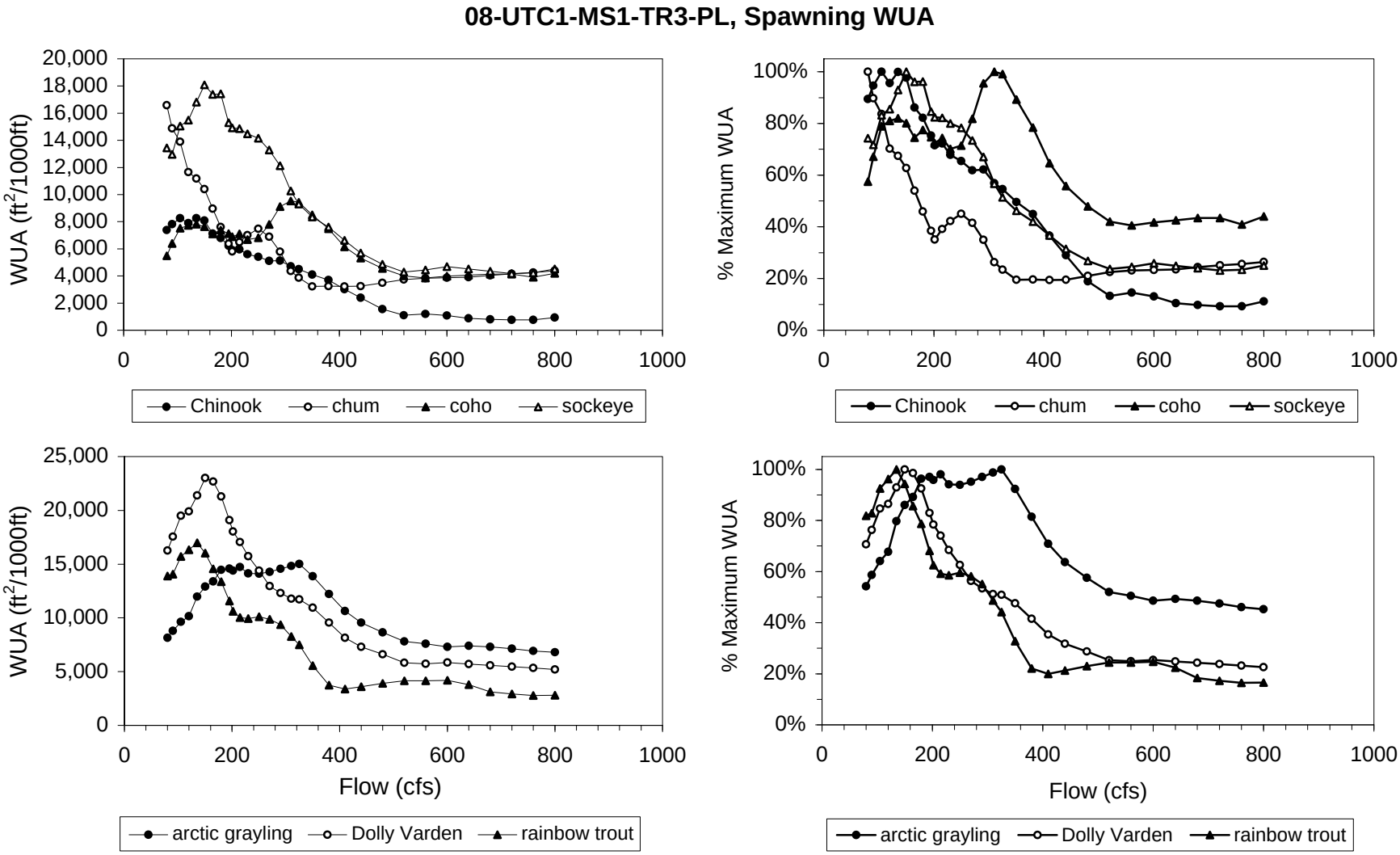

Figure 226
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR3 (River Kilometer 6.16) in UTC-B, Upper Talarik Creek, Alaska.

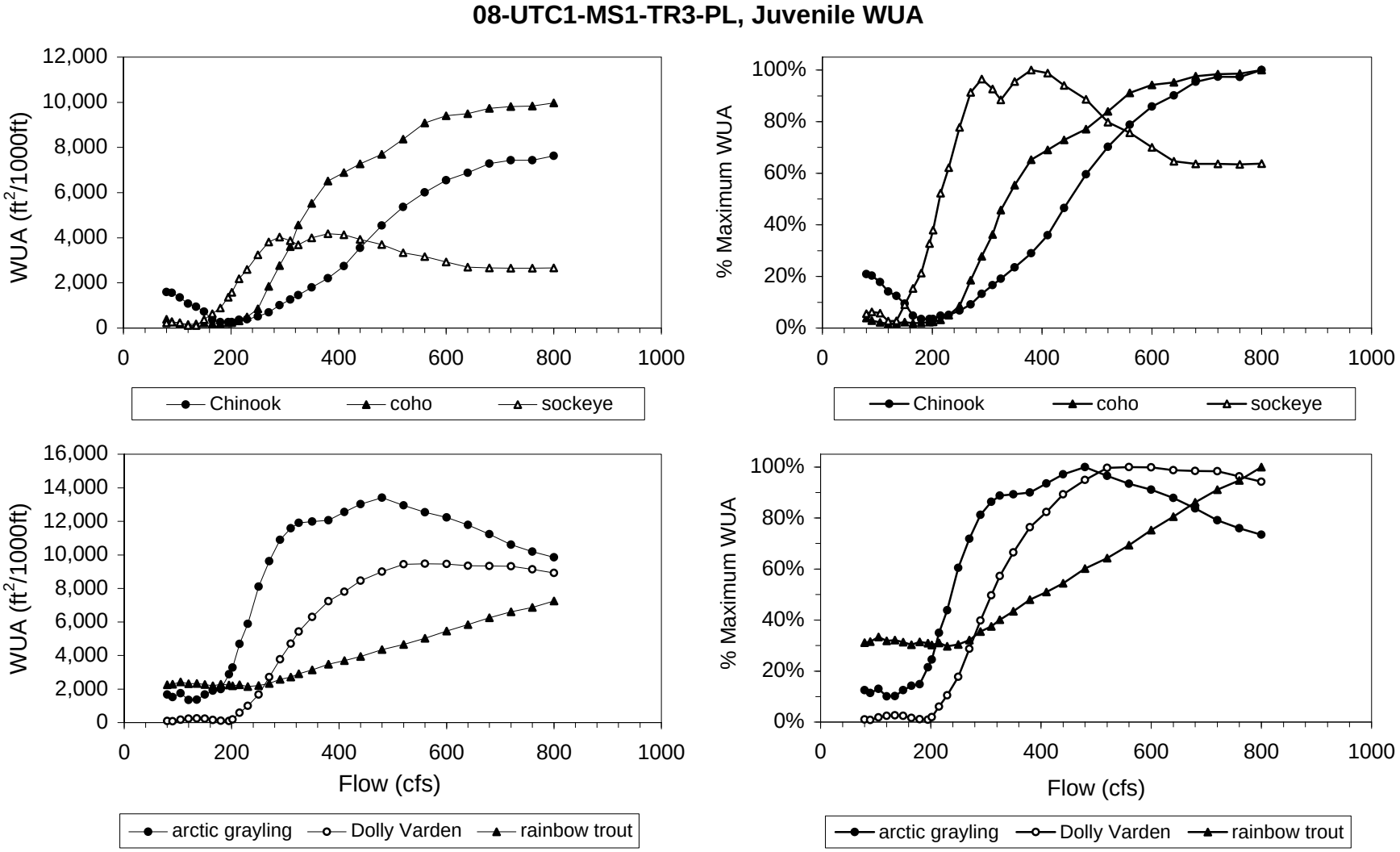

Figure 227
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR3 (River Kilometer 6.16) in UTC-B, Upper Talarik Creek, Alaska.

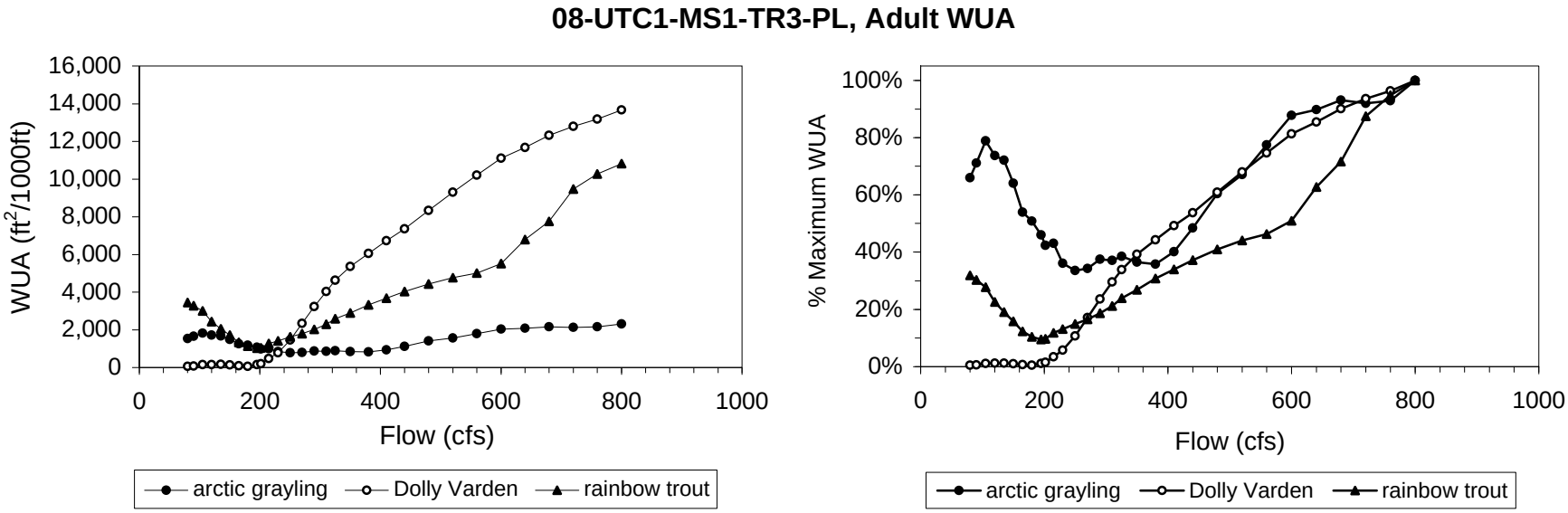

Figure 228
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC1-MS1-TR3 (River Kilometer 6.16) in UTC-B, Upper Talarik Creek, Alaska.

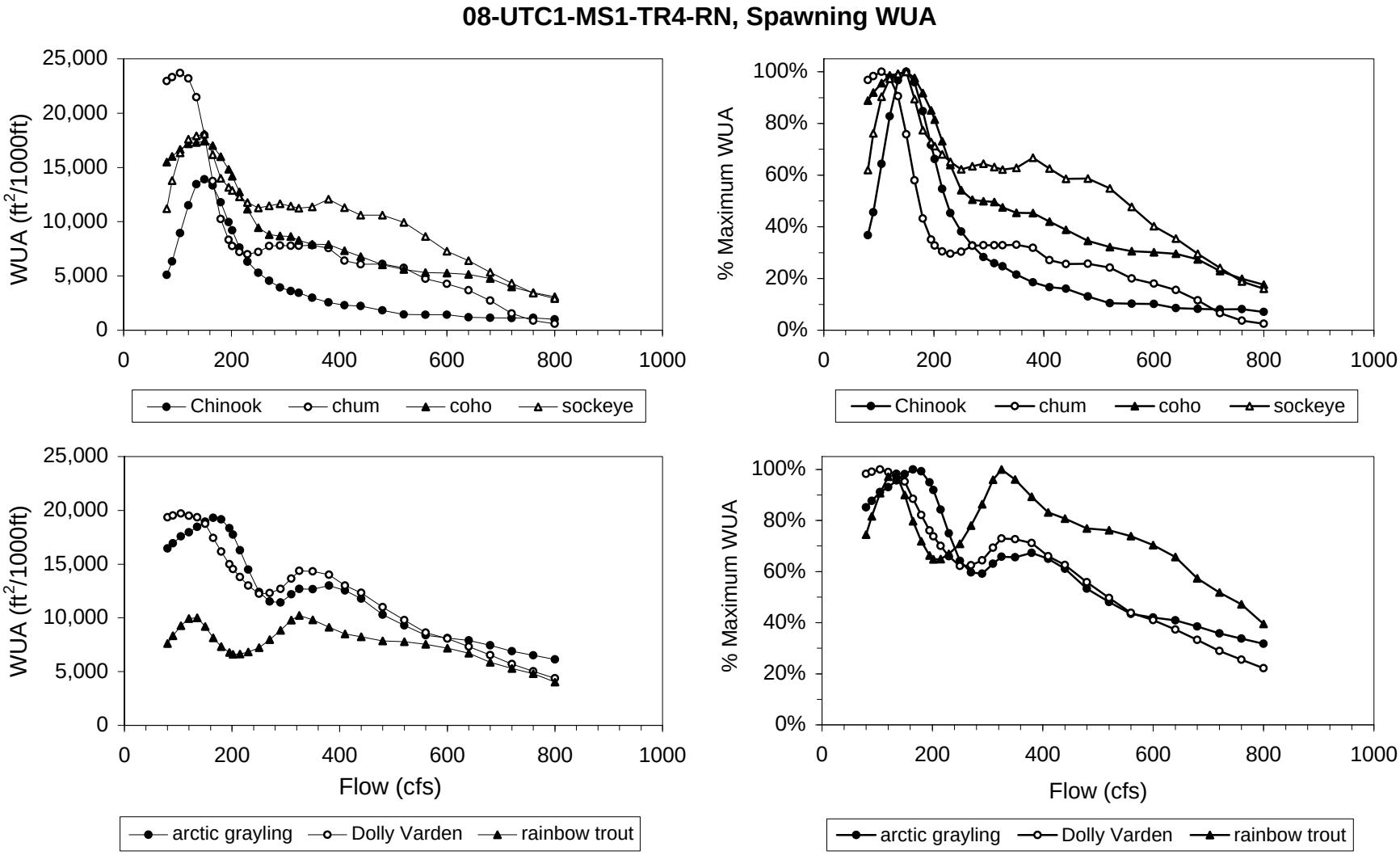

Figure 229
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR4 (River Kilometer 6.18) in UTC-B, Upper Talarik Creek, Alaska.

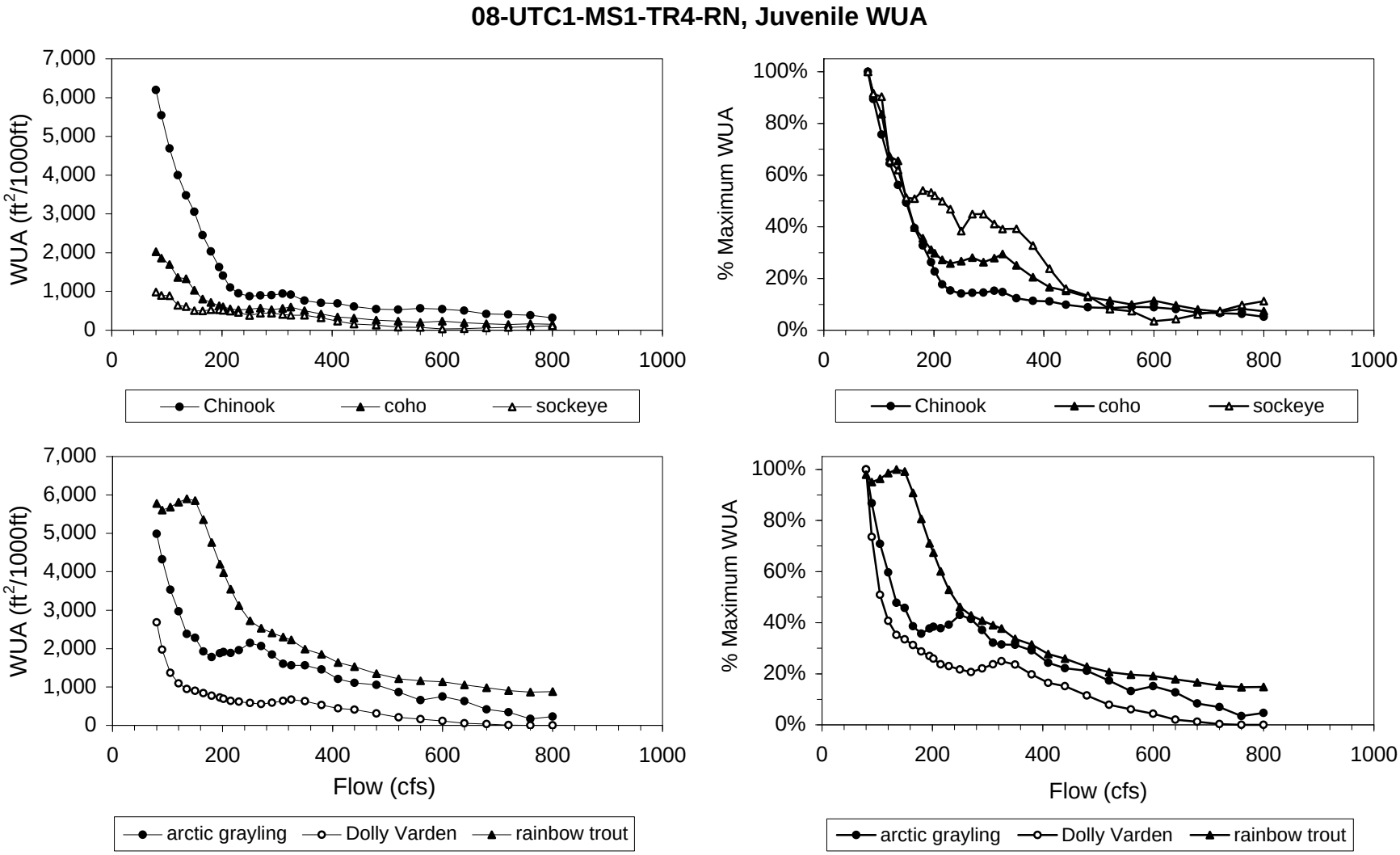

Figure 230
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR4 (River Kilometer 6.18) in UTC-B, Upper Talarik Creek, Alaska.

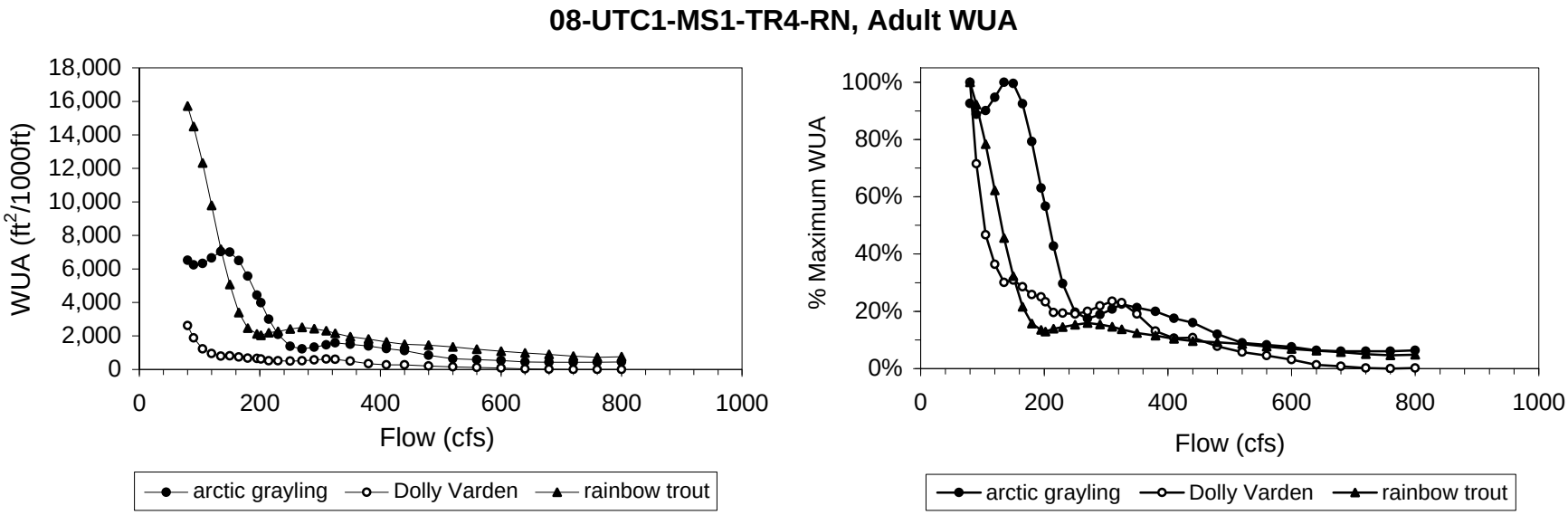

Figure 231
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC1-MS1-TR4 (River Kilometer 6.18) in UTC-B, Upper Talarik Creek, Alaska.

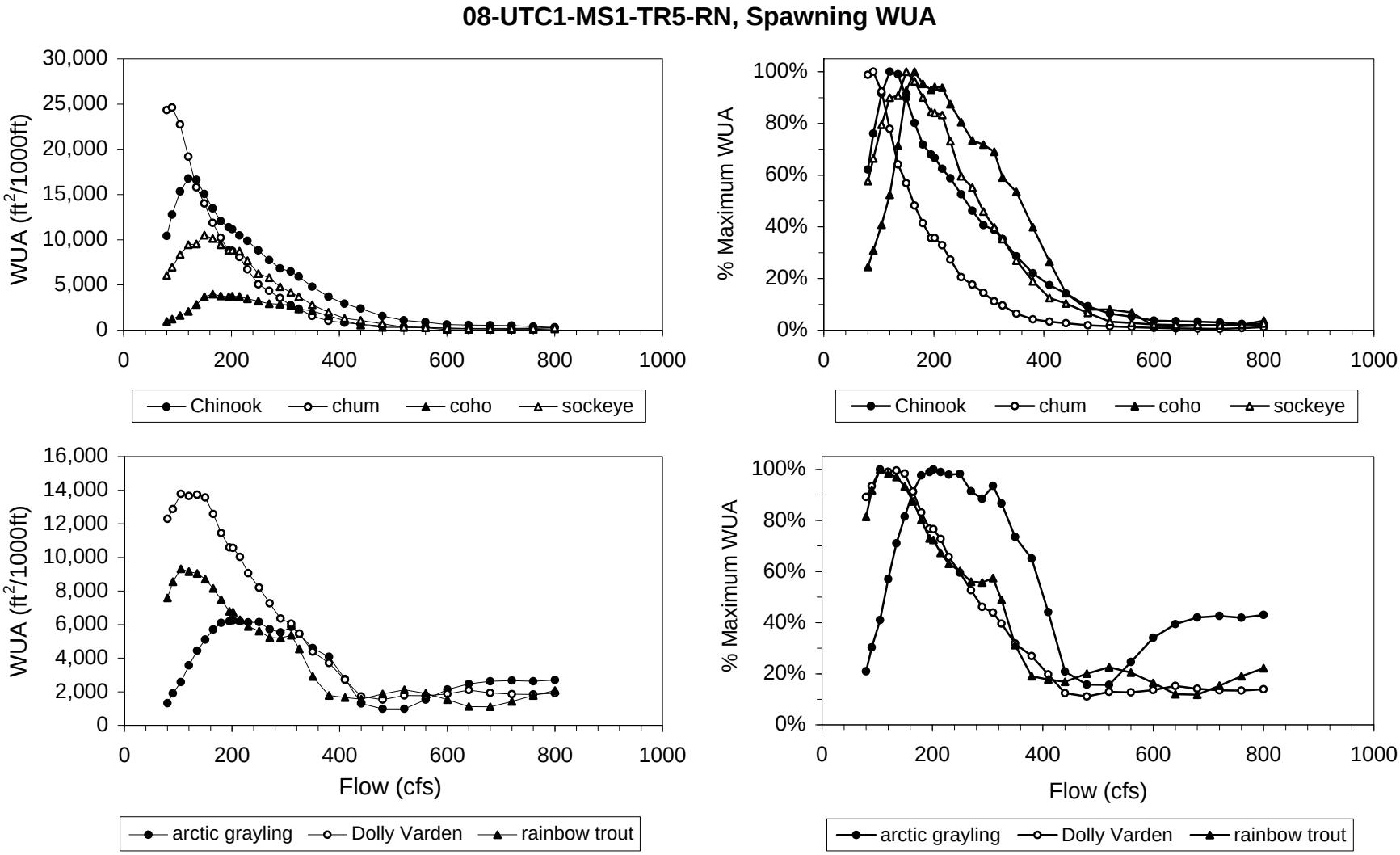

Figure 232
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR5 (River Kilometer 6.21) in UTC-B, Upper Talarik Creek, Alaska.

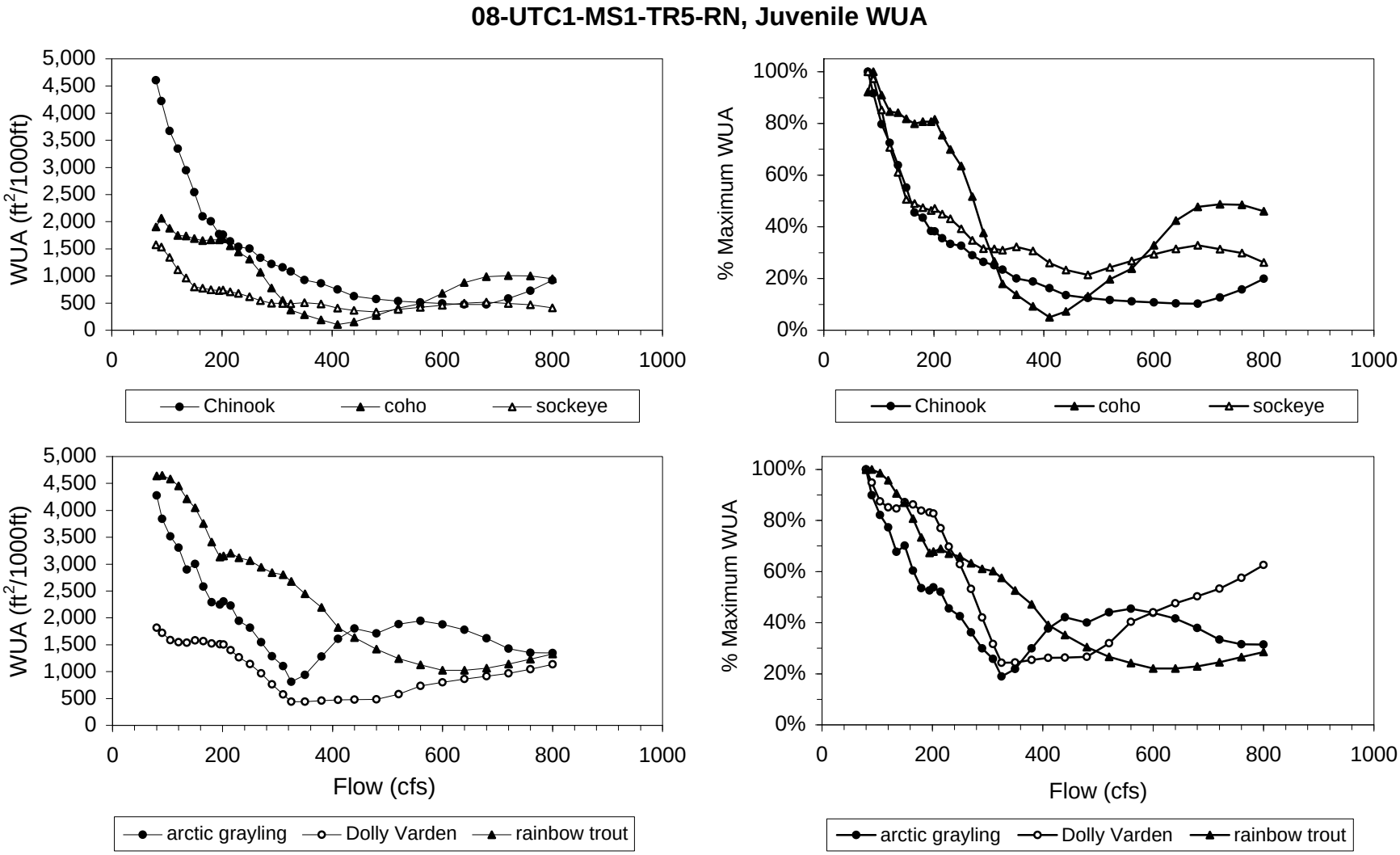

Figure 233
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC1-MS1-TR5 (River Kilometer 6.21) in UTC-B, Upper Talarik Creek, Alaska.

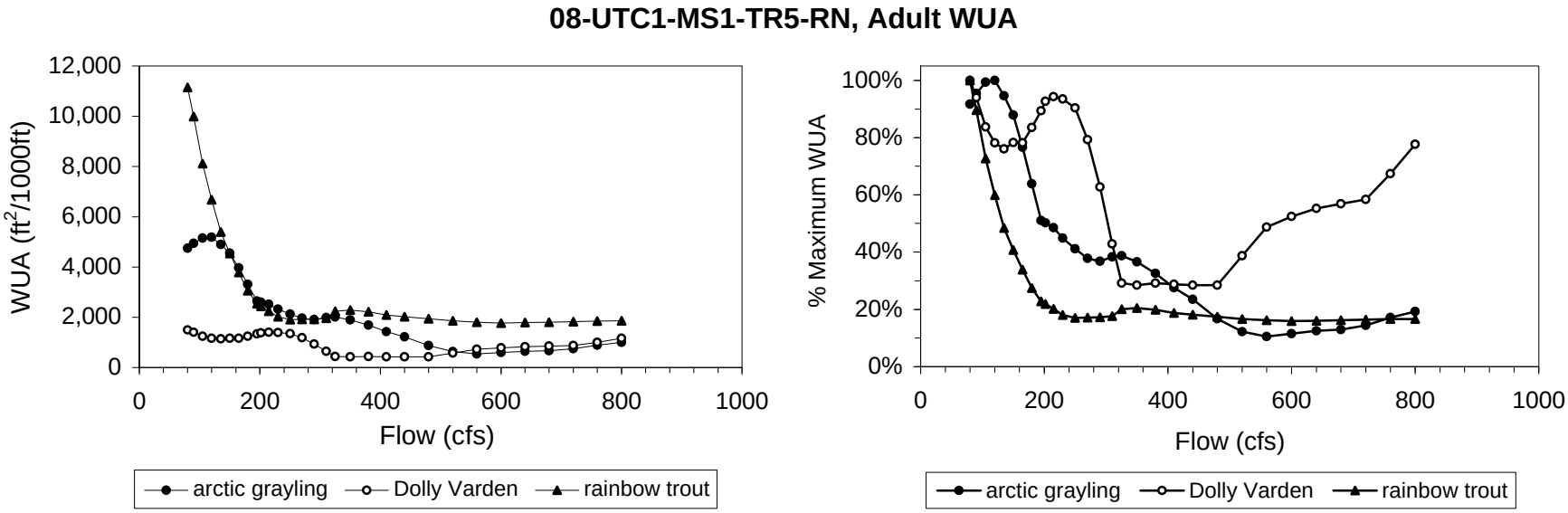

Figure 234
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC1-MS1-TR5 (River Kilometer 6.21) in UTC-B, Upper Talarik Creek, Alaska.

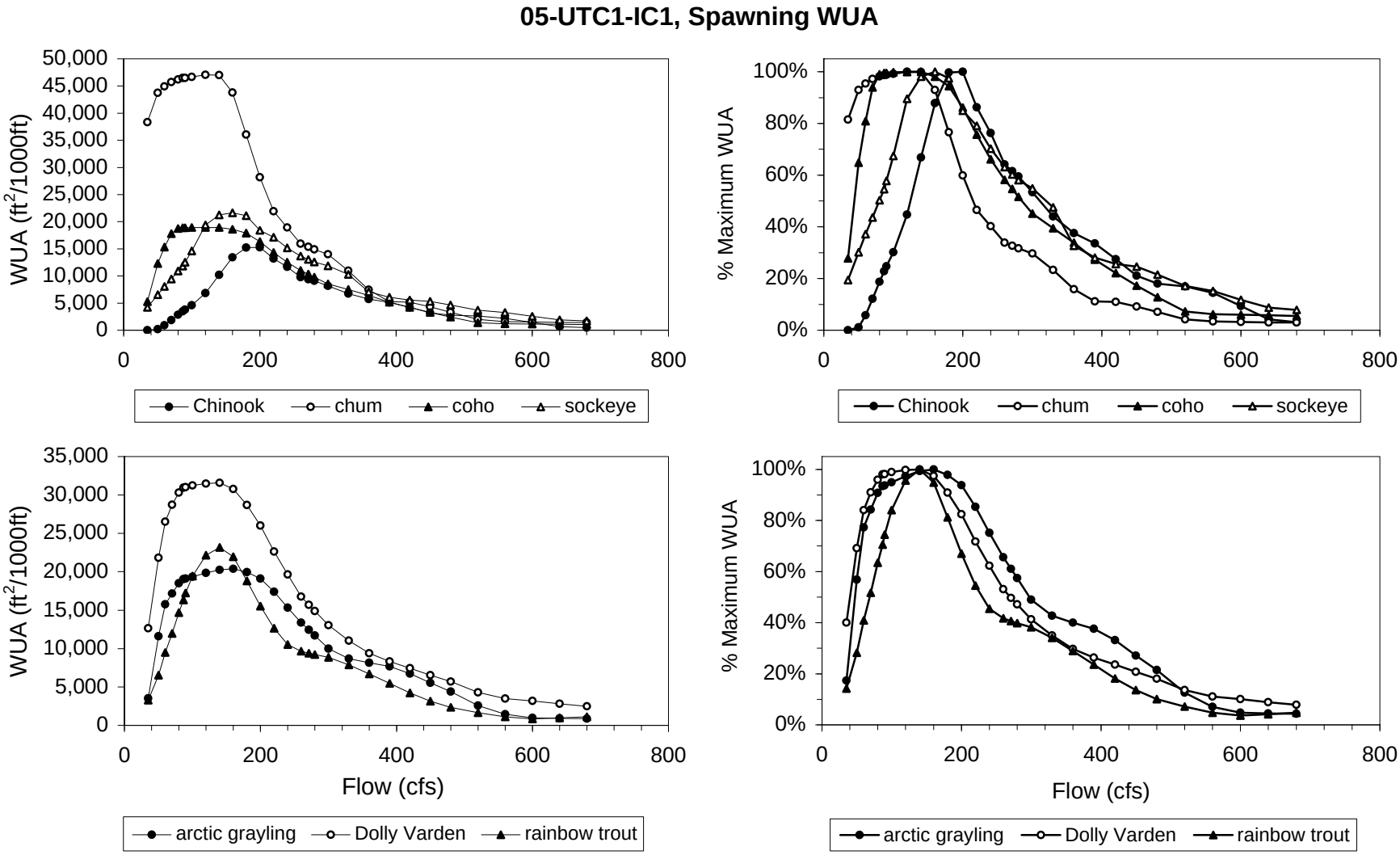

Figure 235
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC1-IC1 (River Kilometer 16.84) in UTC-C, Upper Talarik Creek, Alaska.

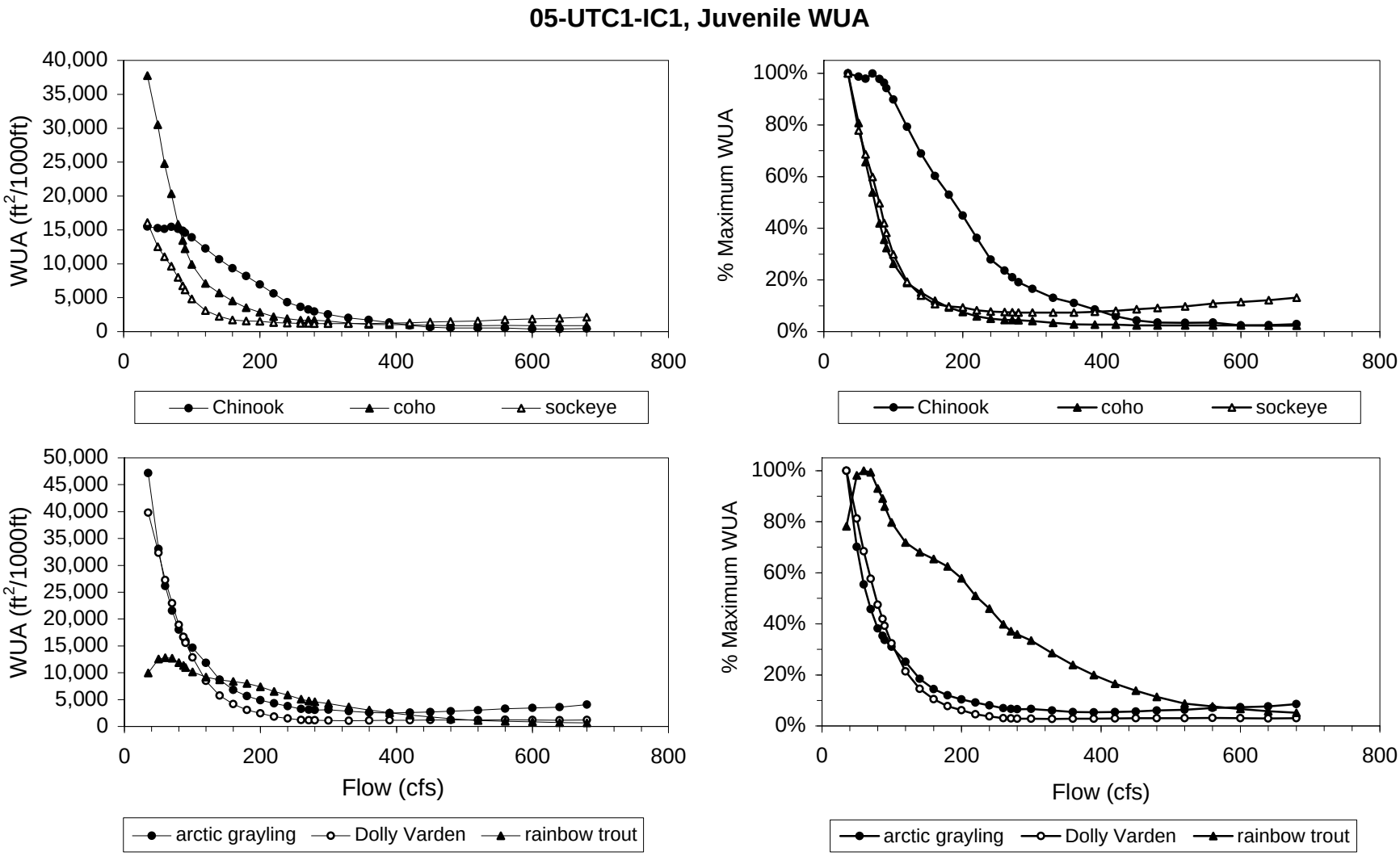

Figure 236
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC1-IC1 (River Kilometer 16.84) in UTC-C, Upper Talarik Creek, Alaska.

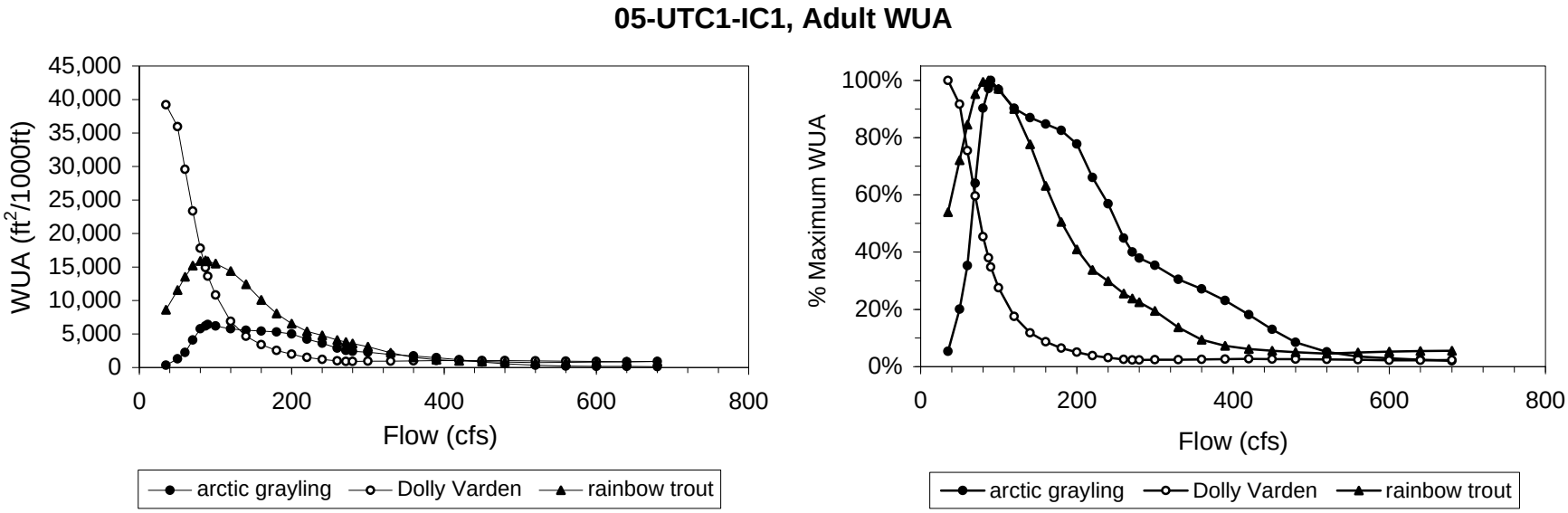

Figure 237
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC1-IC1 (River Kilometer 16.84) in UTC-C, Upper Talarik Creek, Alaska.

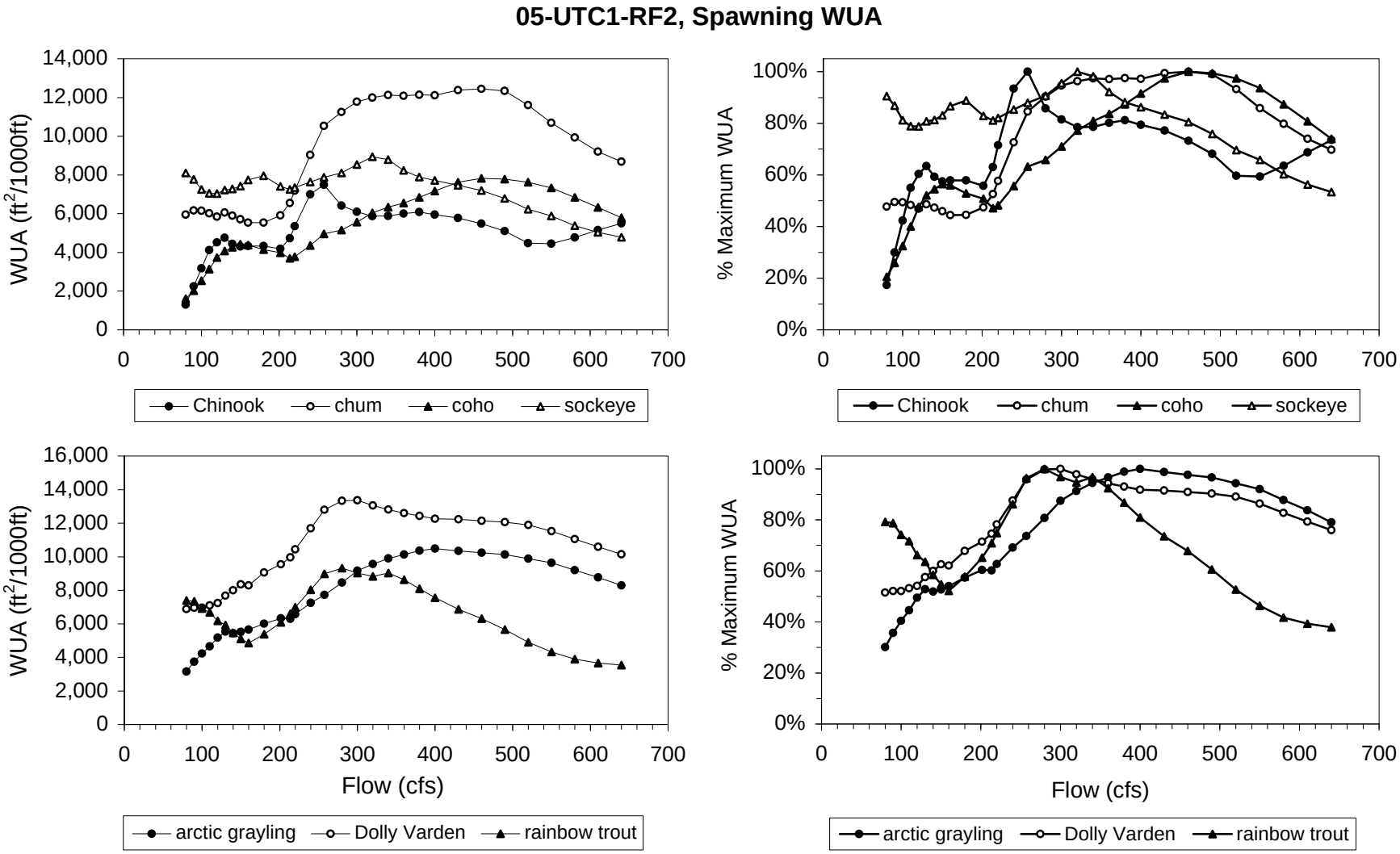

Figure 238
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC1-RF2 (River Kilometer 17.36) in UTC-C, Upper Talarik Creek, Alaska.

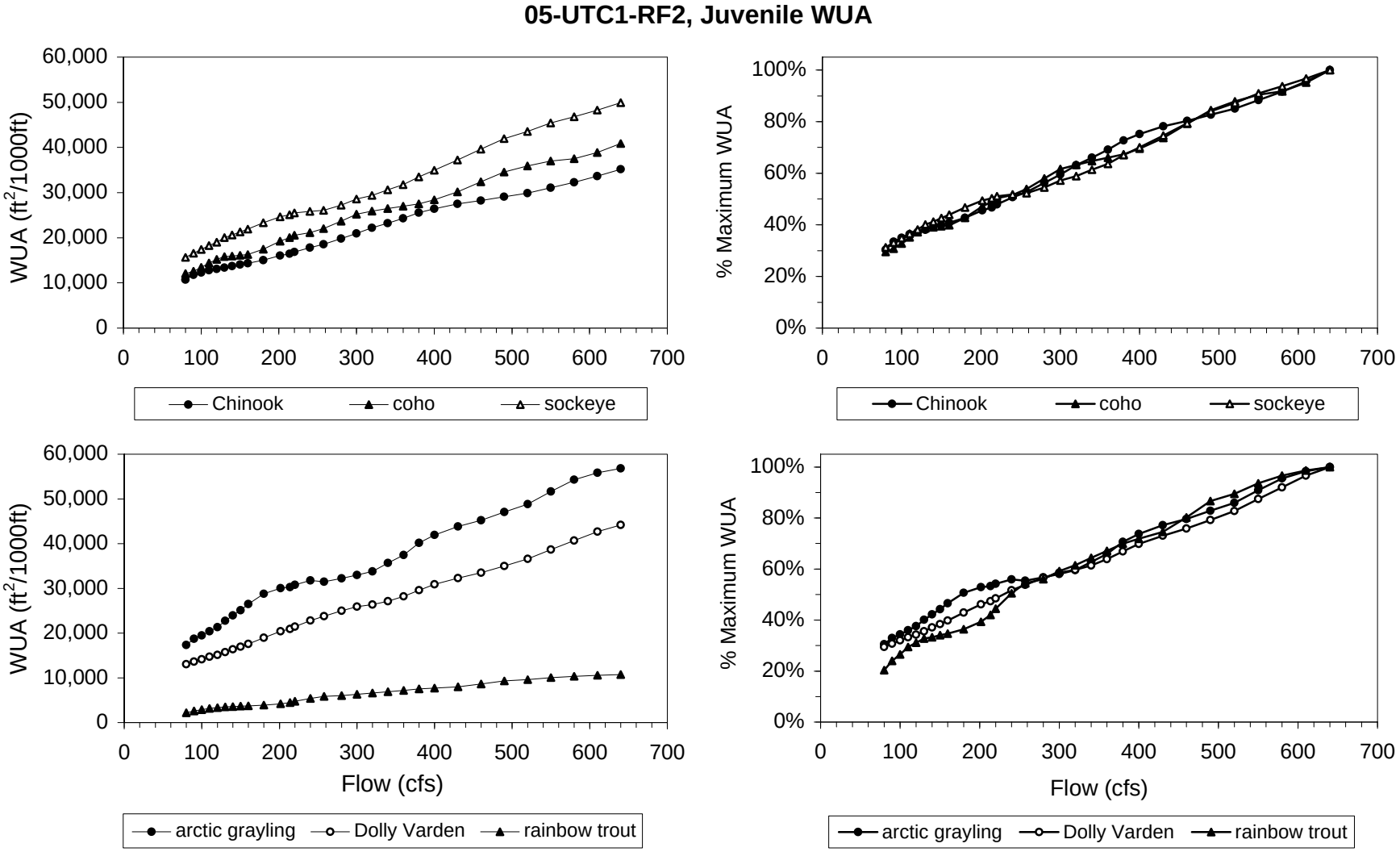

Figure 239
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC1-RF2 (River Kilometer 17.36) in UTC-C, Upper Talarik Creek, Alaska.

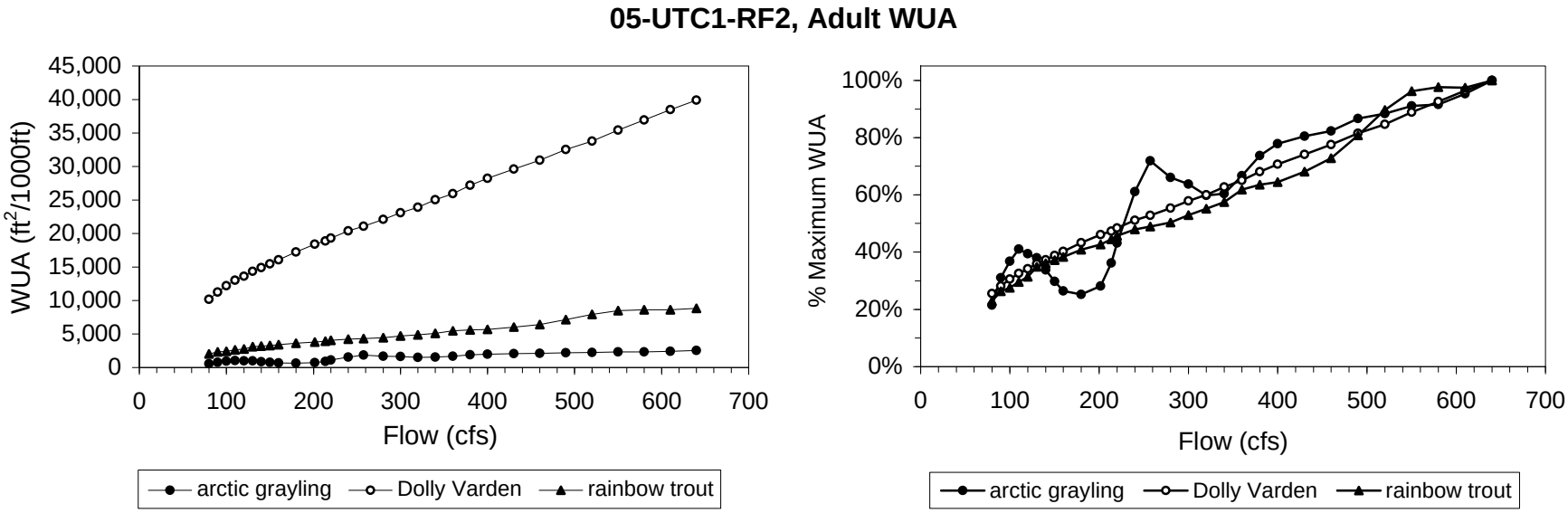

Figure 240
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC1-RF2 (River Kilometer 17.36) in UTC-C, Upper Talarik Creek, Alaska.

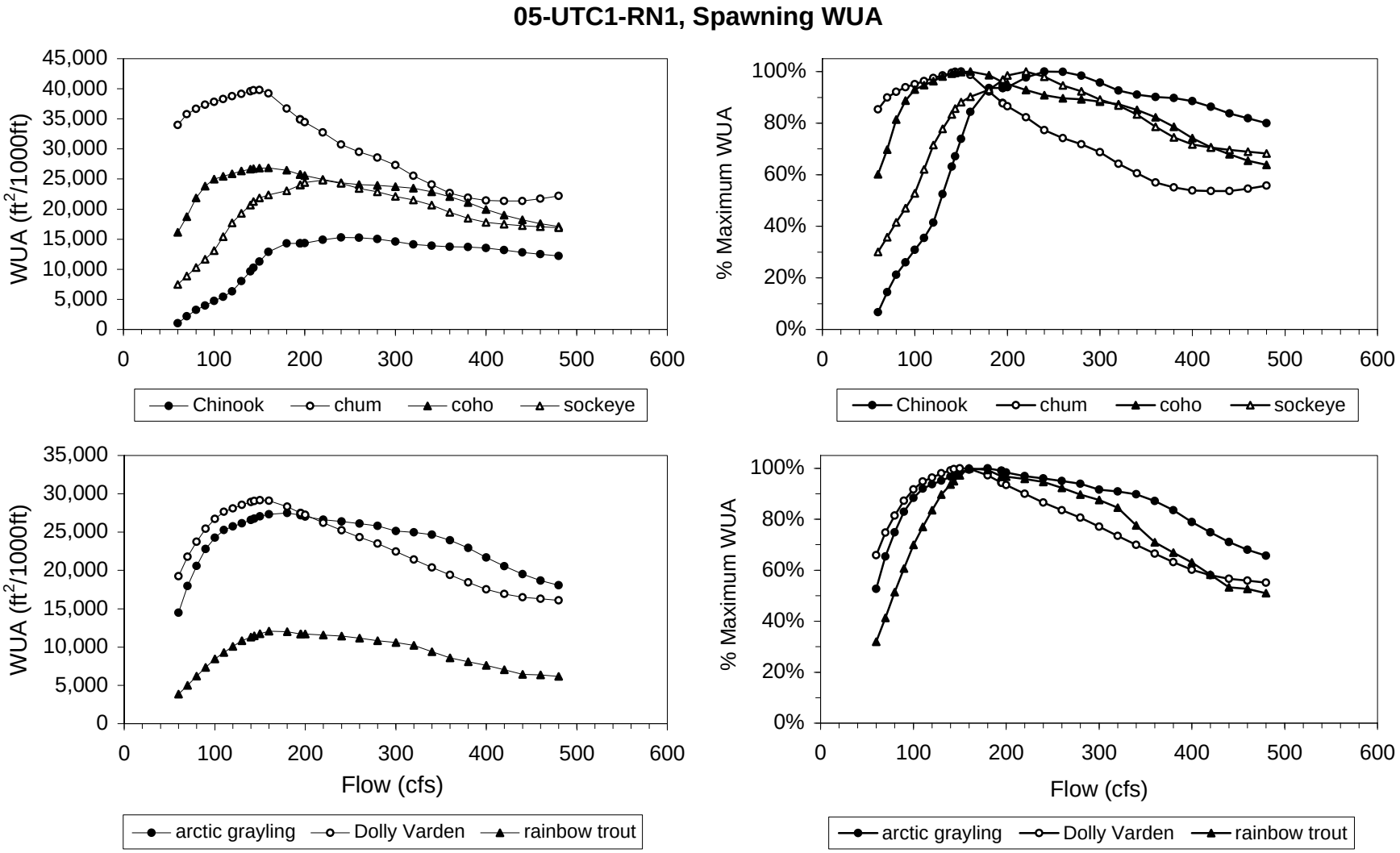

Figure 241
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC1-RN1 (River Kilometer 19.34) in UTC-C, Upper Talarik Creek, Alaska.

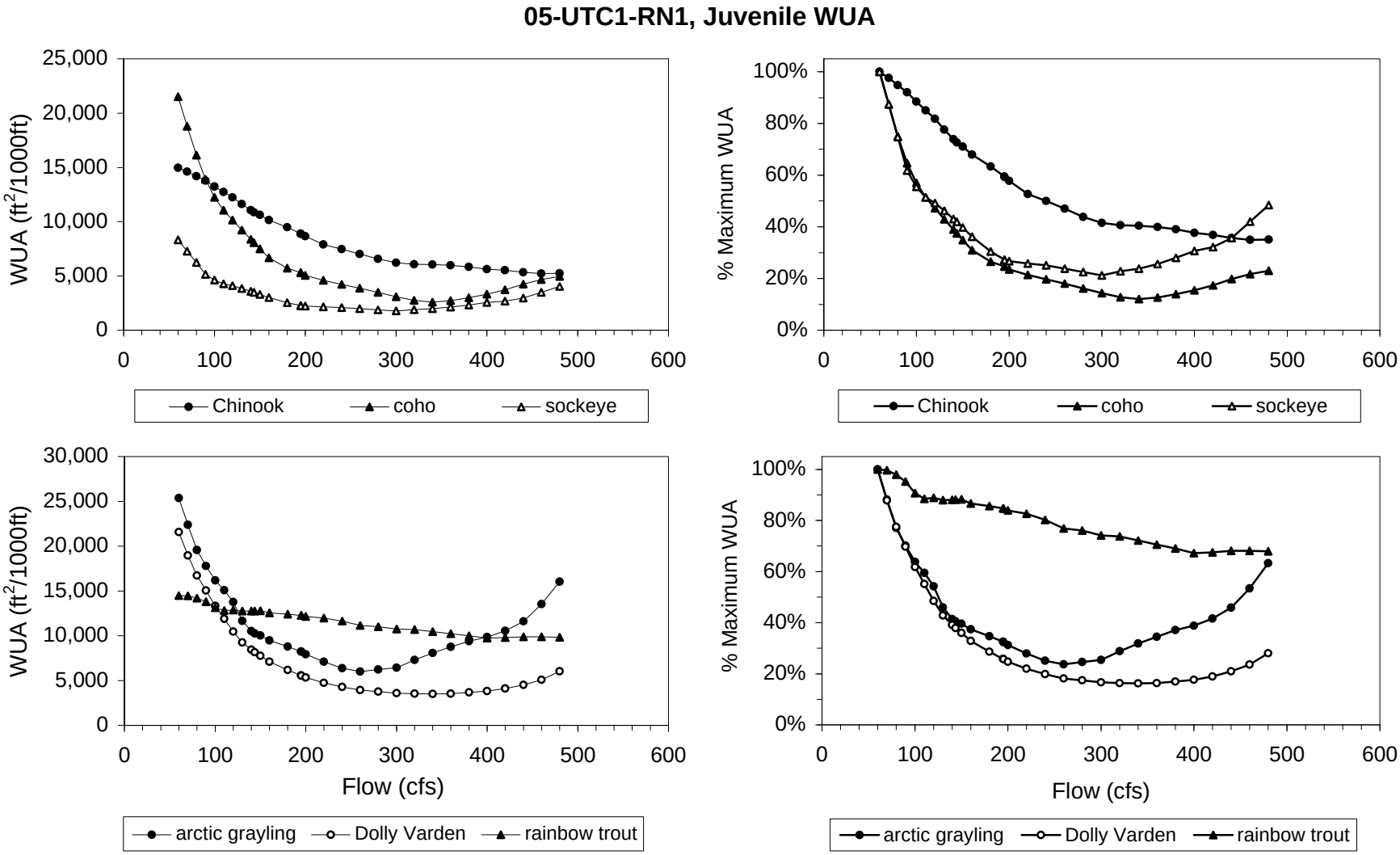

Figure 242
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC1-RN1 (River Kilometer 19.34) in UTC-C, Upper Talarik Creek, Alaska.

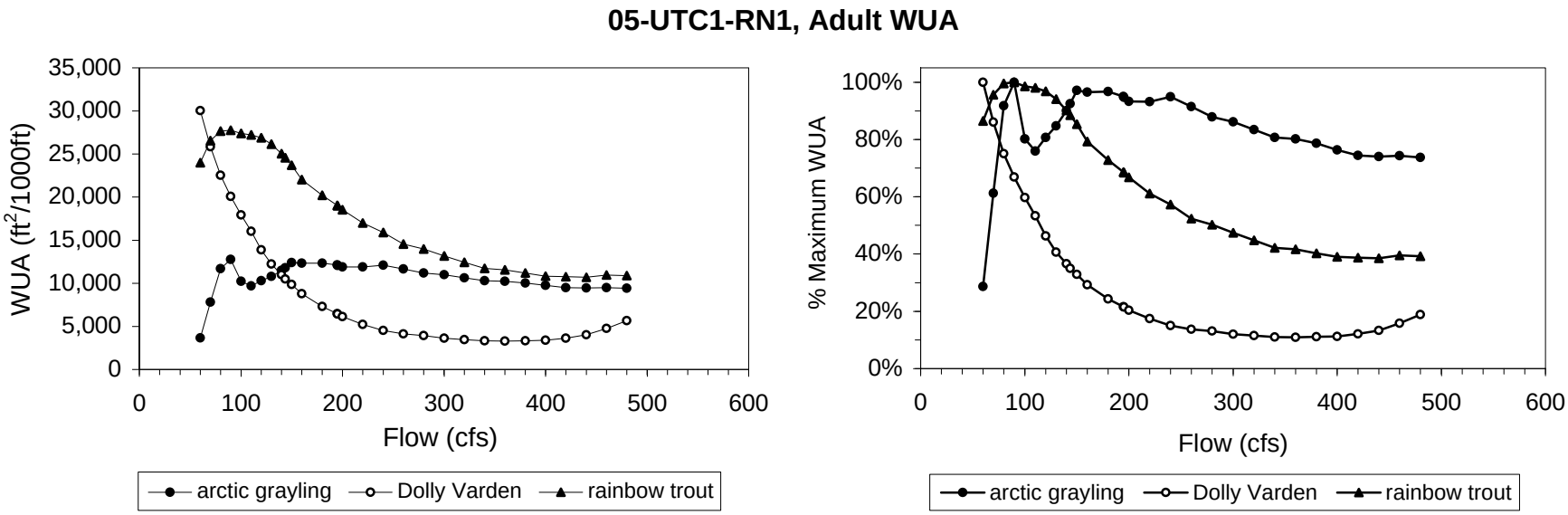

Figure 243
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC1-RN1 (River Kilometer 19.34) in UTC-C, Upper Talarik Creek, Alaska.

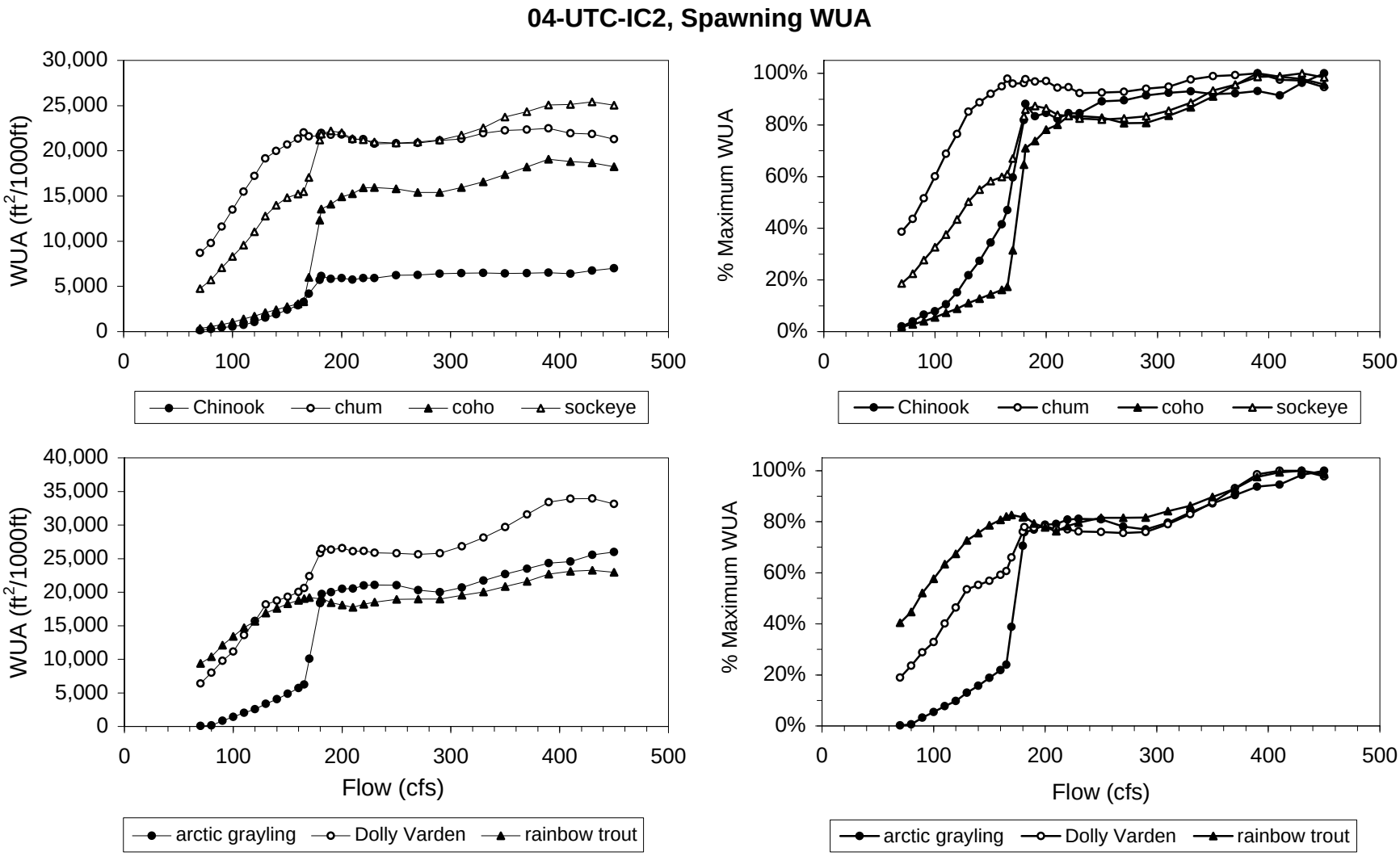

Figure 244
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-IC2 (River Kilometer 19.82) in UTC-C, Upper Talarik Creek, Alaska.

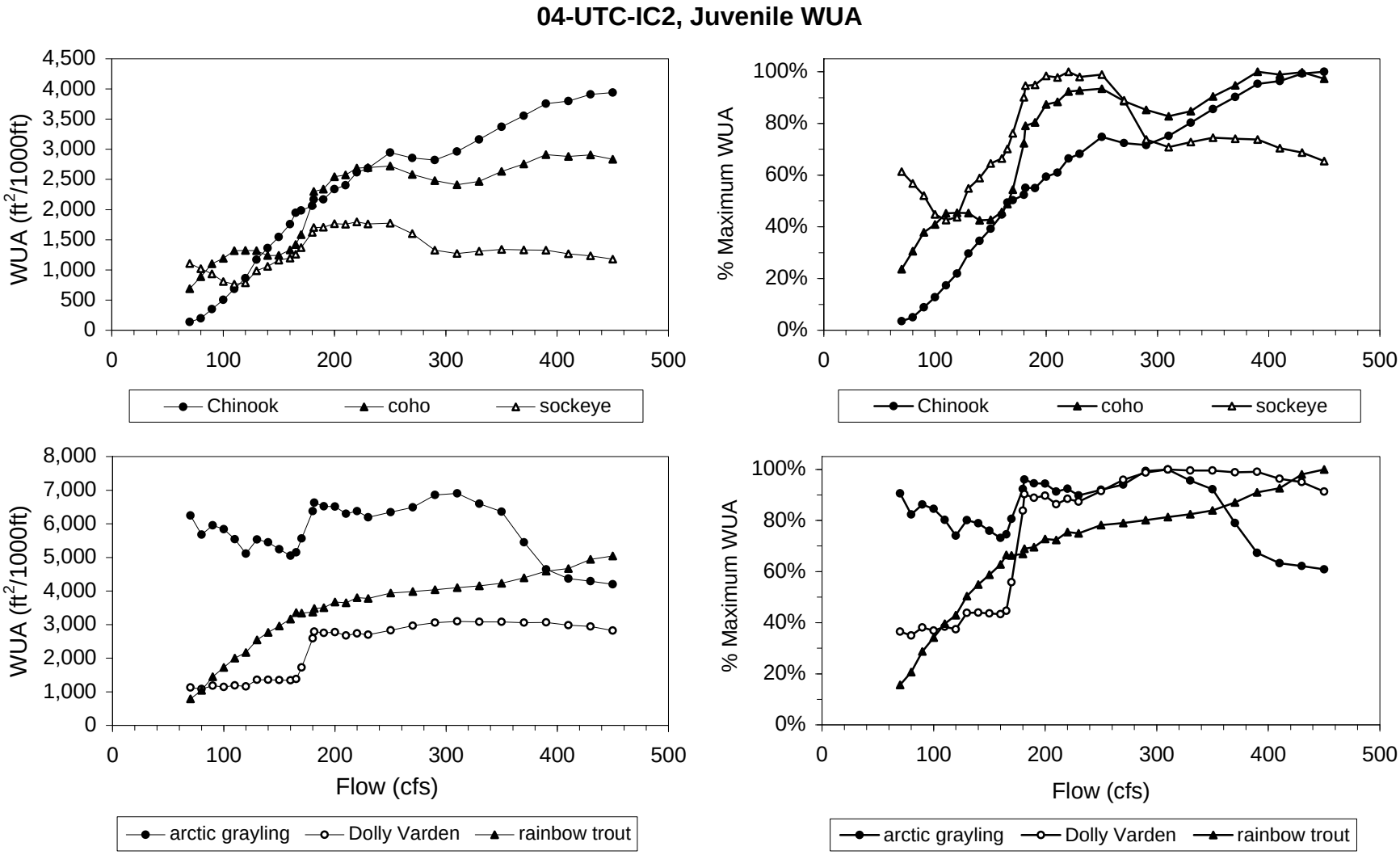

Figure 245
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-IC2 (River Kilometer 19.82) in UTC-C, Upper Talarik Creek, Alaska.

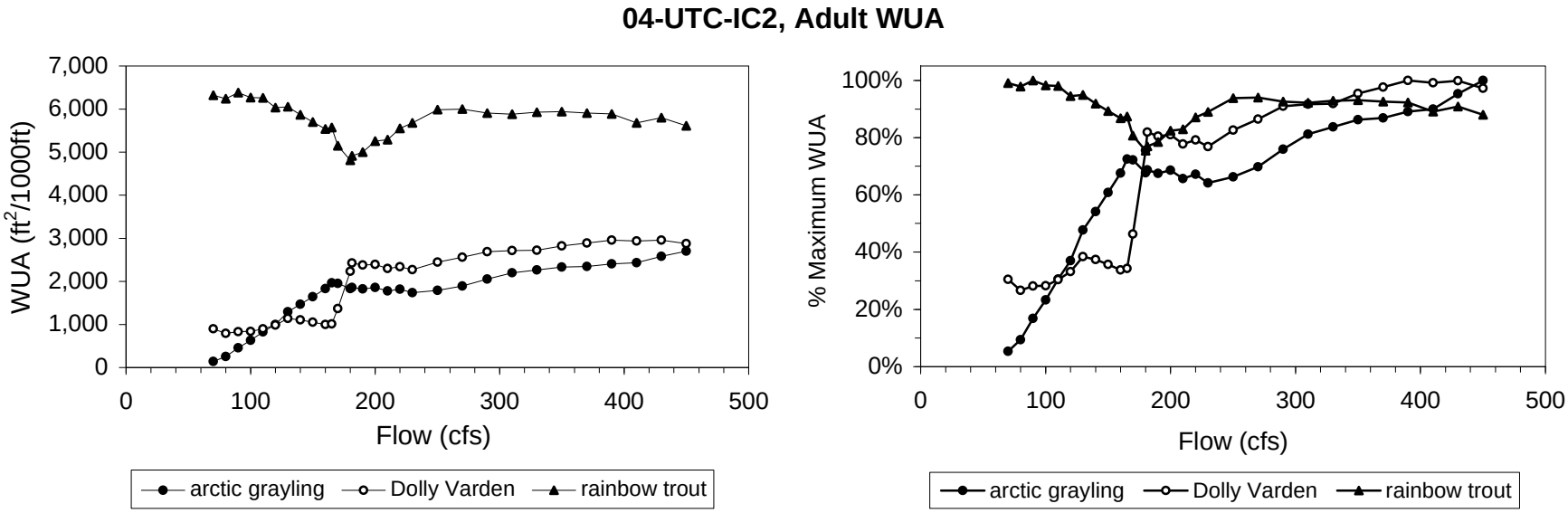

Figure 246
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-IC2 (River Kilometer 19.82) in UTC-C, Upper Talarik Creek, Alaska.

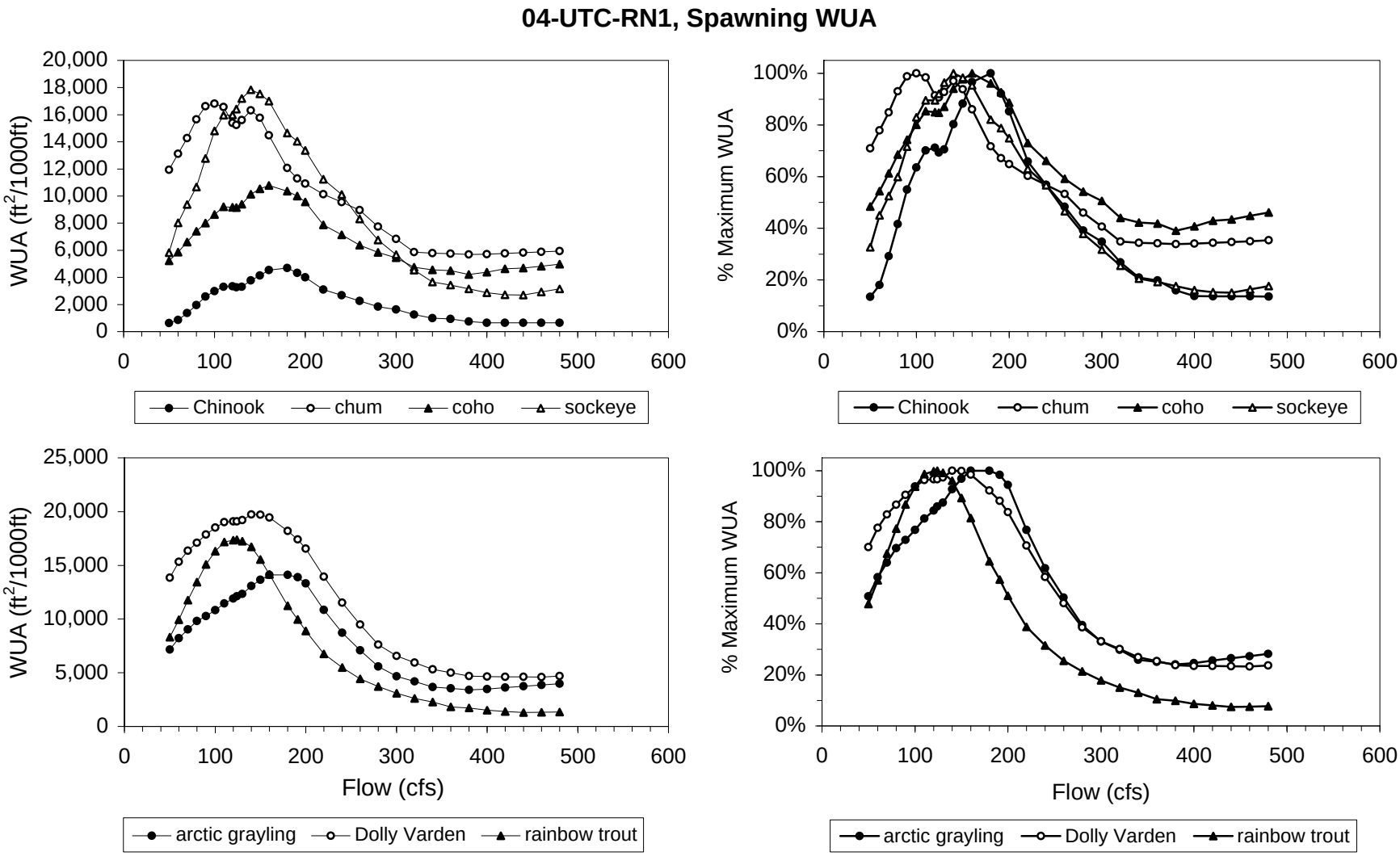

Figure 247
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RN1 (River Kilometer 23.75) in UTC-C, Upper Talarik Creek, Alaska.

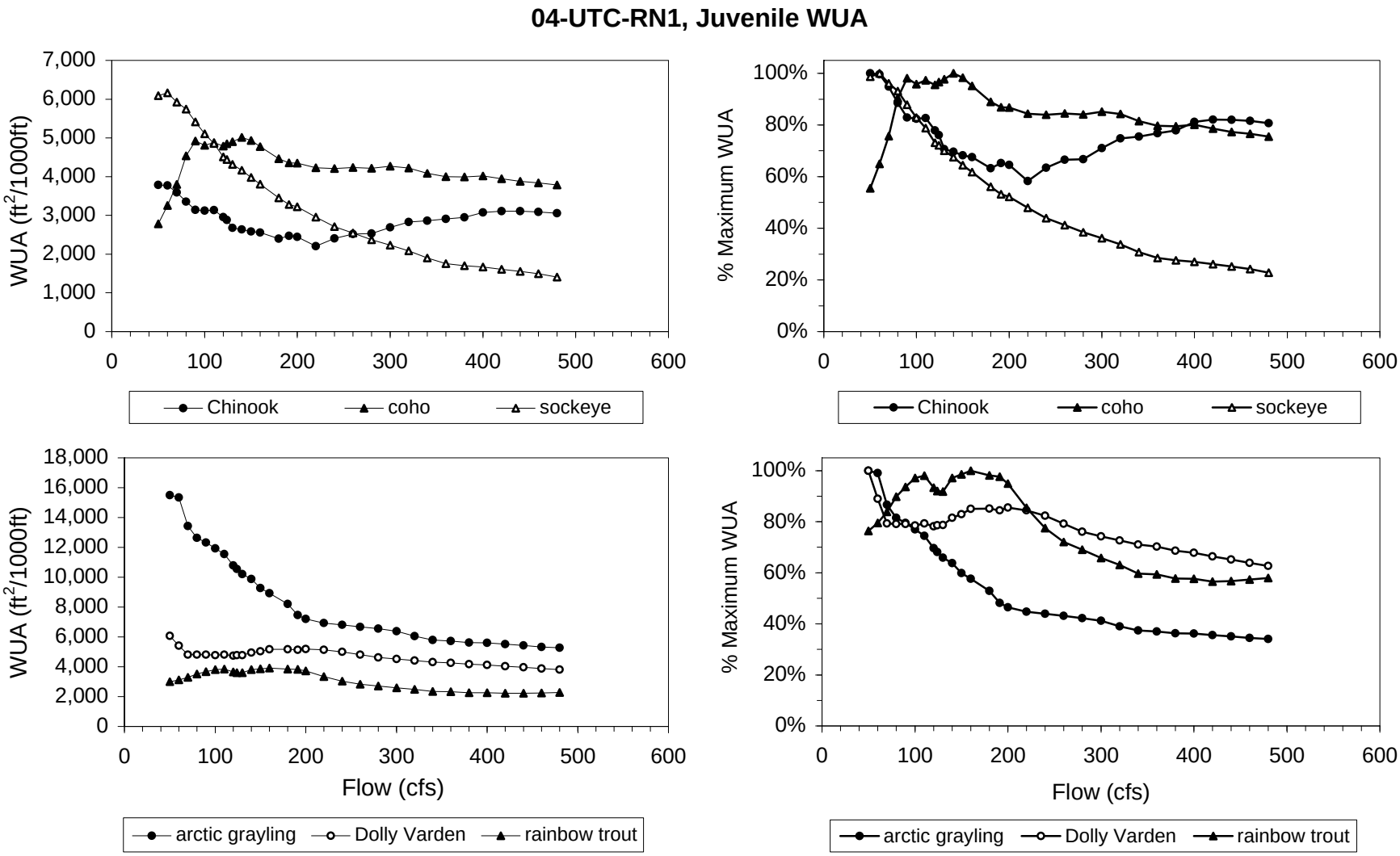

Figure 248
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RN1 (River Kilometer 23.75) in UTC-C, Upper Talarik Creek, Alaska.

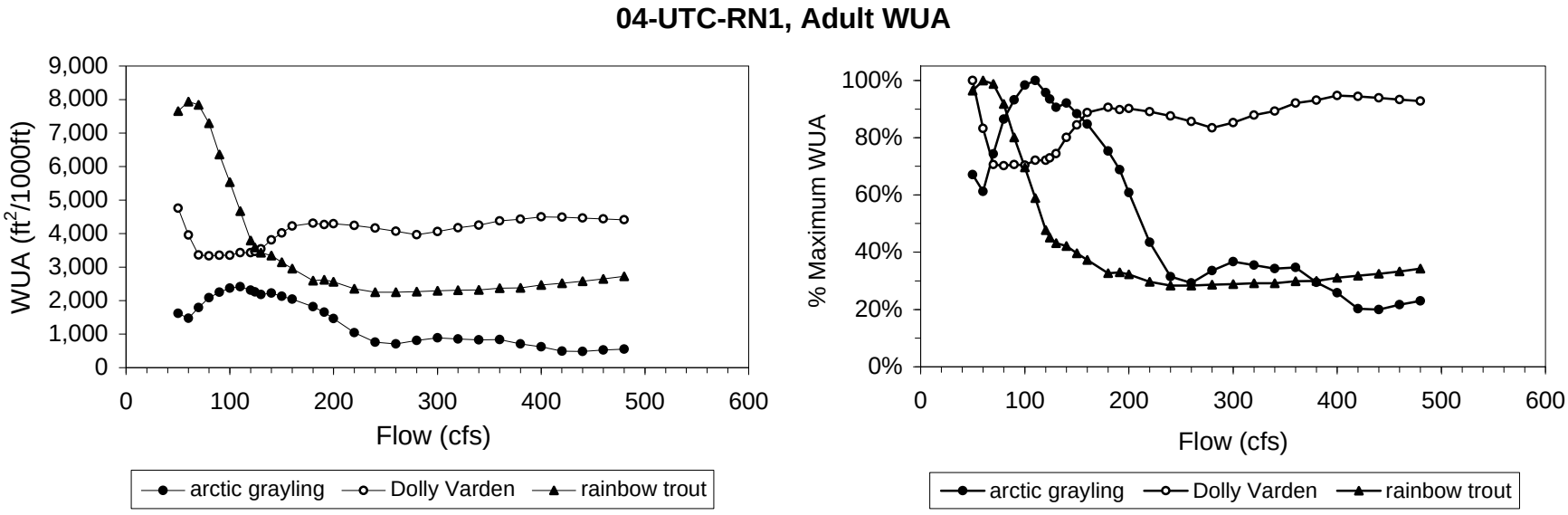

Figure 249
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-RN1 (River Kilometer 23.75) in UTC-C, Upper Talarik Creek, Alaska.

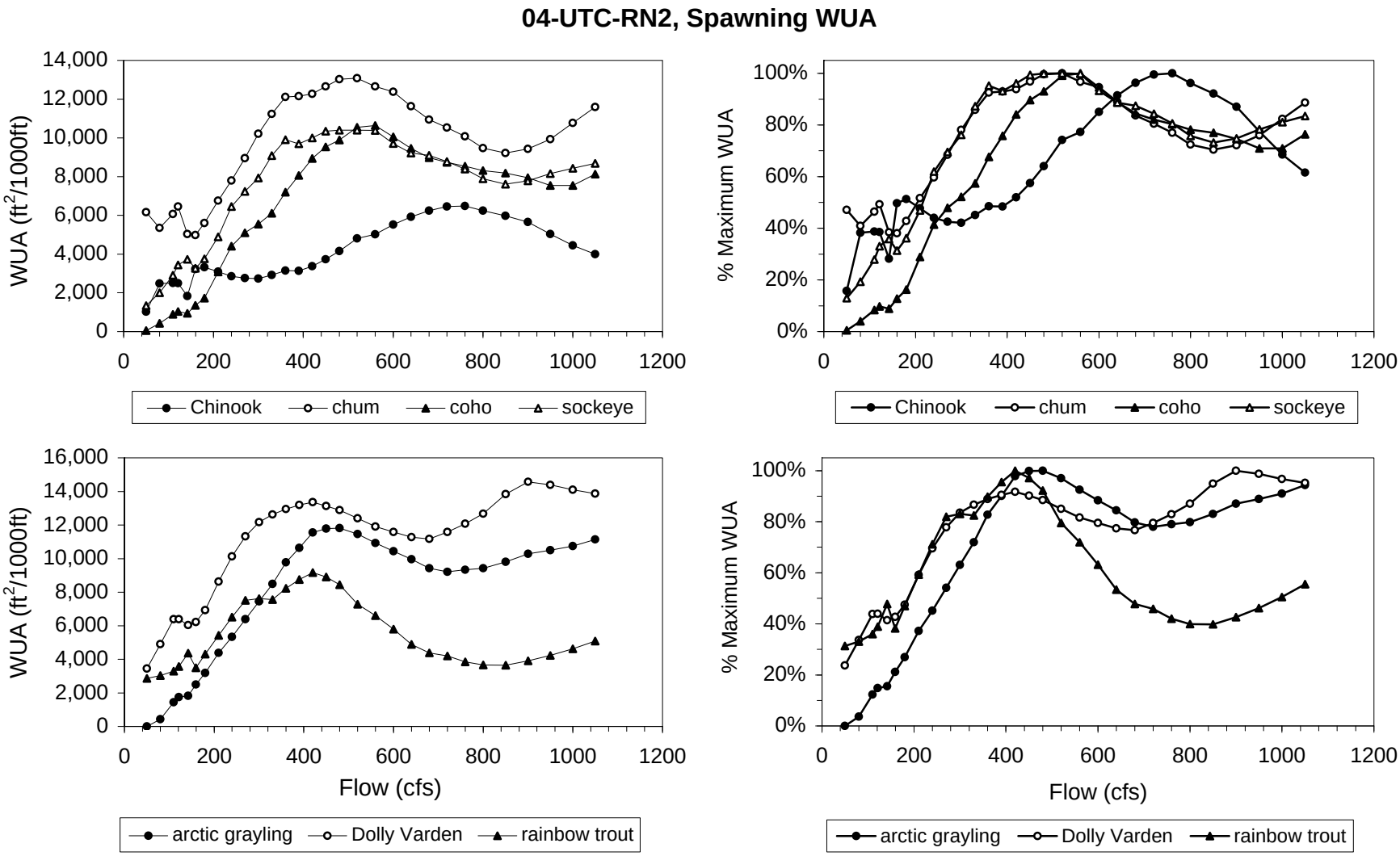

Figure 250
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RN2 (River Kilometer 24.36) in UTC-C, Upper Talarik Creek, Alaska.

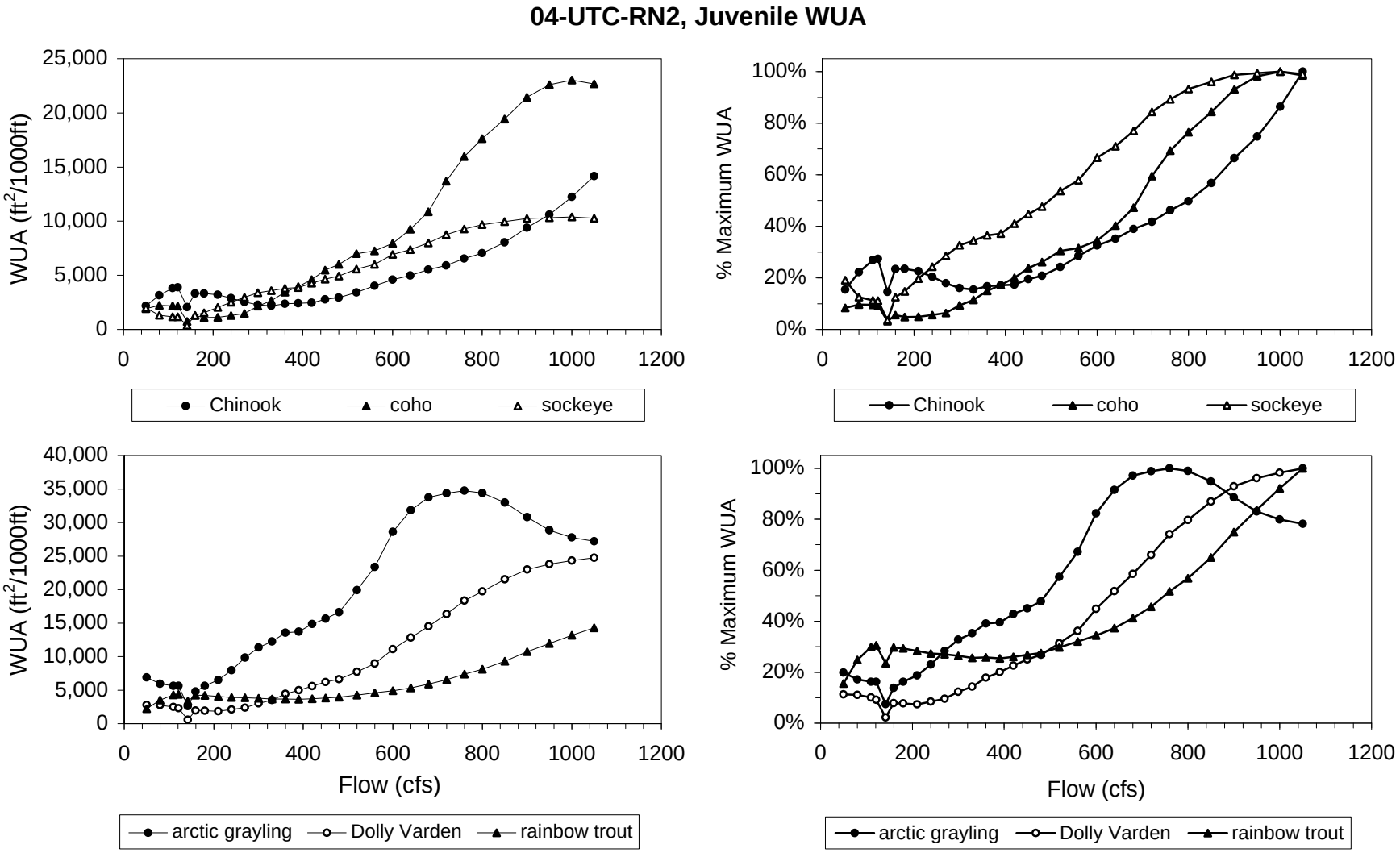

Figure 251
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RN2 (River Kilometer 24.36) in UTC-C, Upper Talarik Creek, Alaska.

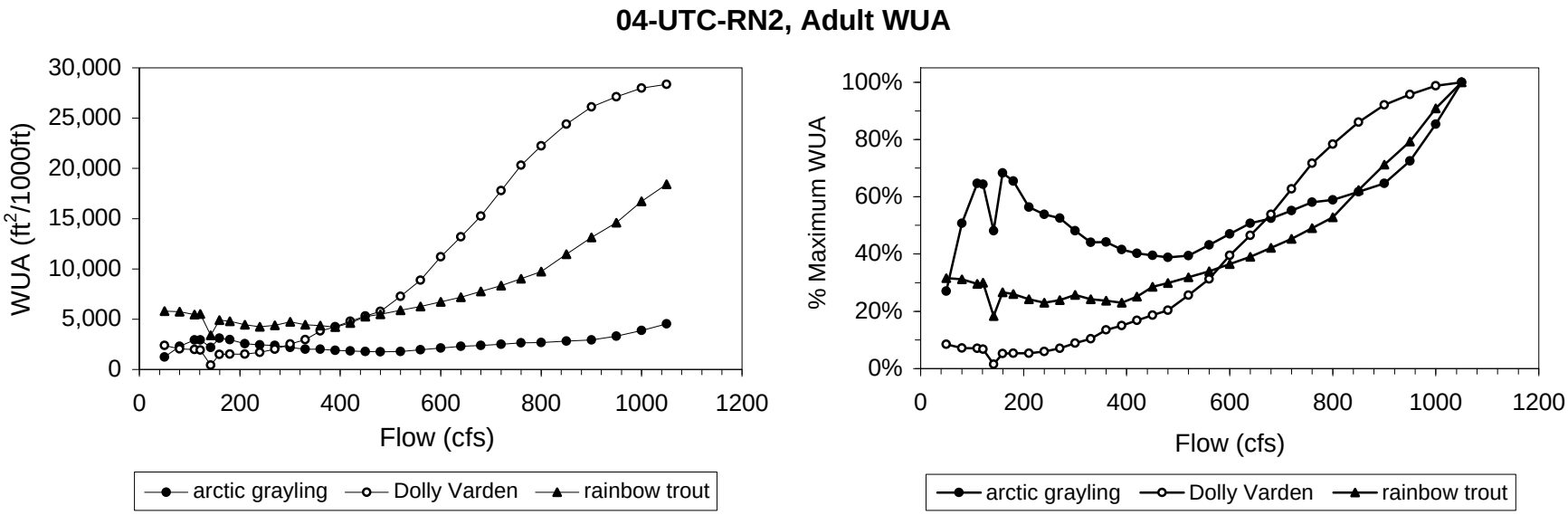

Figure 252
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-RN2 (River Kilometer 24.36) in UTC-C, Upper Talarik Creek, Alaska.

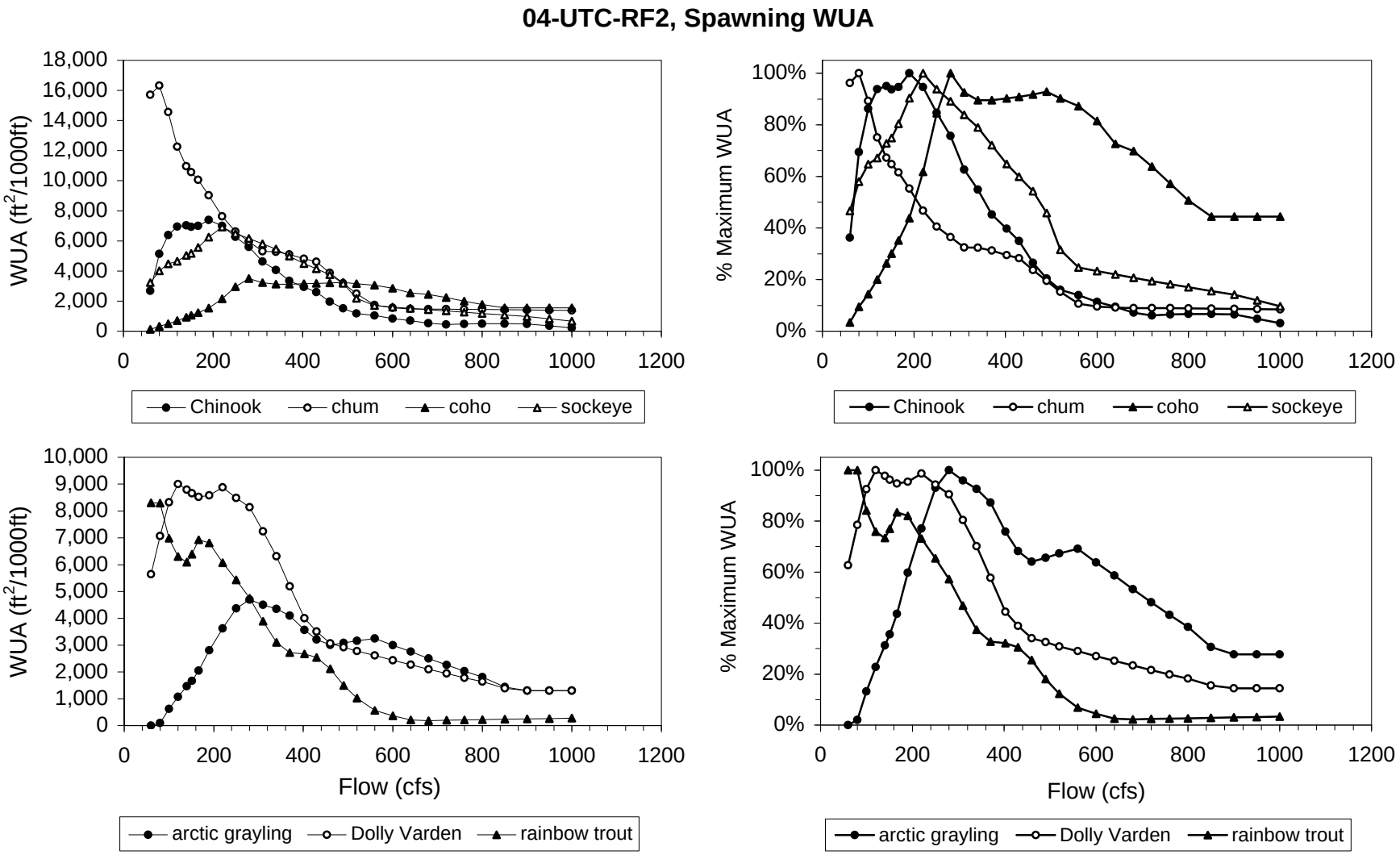

Figure 253
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RF2 (River Kilometer 24.59) in UTC-C, Upper Talarik Creek, Alaska.

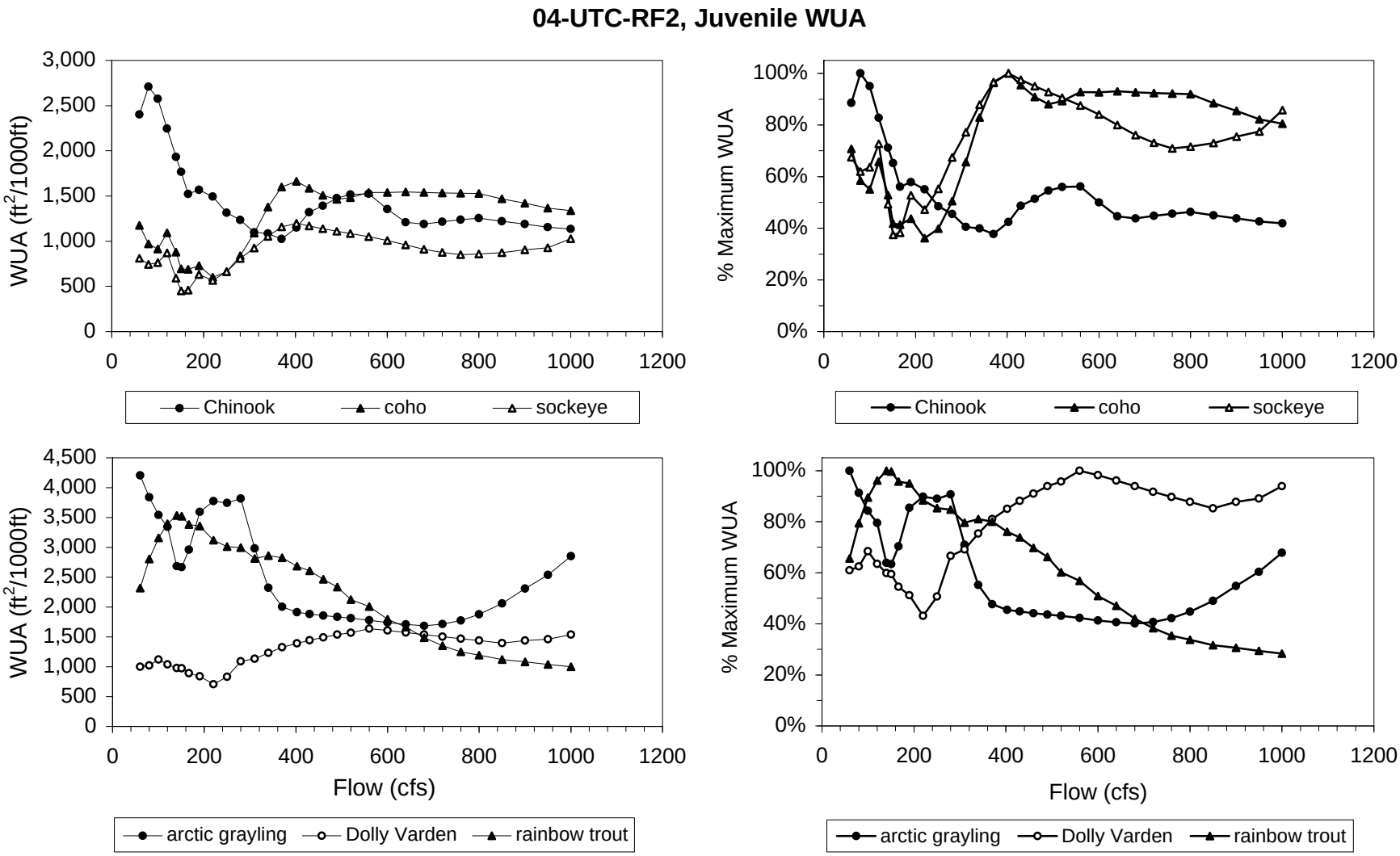

Figure 254
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RF2 (River Kilometer 24.59) in UTC-C, Upper Talarik Creek, Alaska.

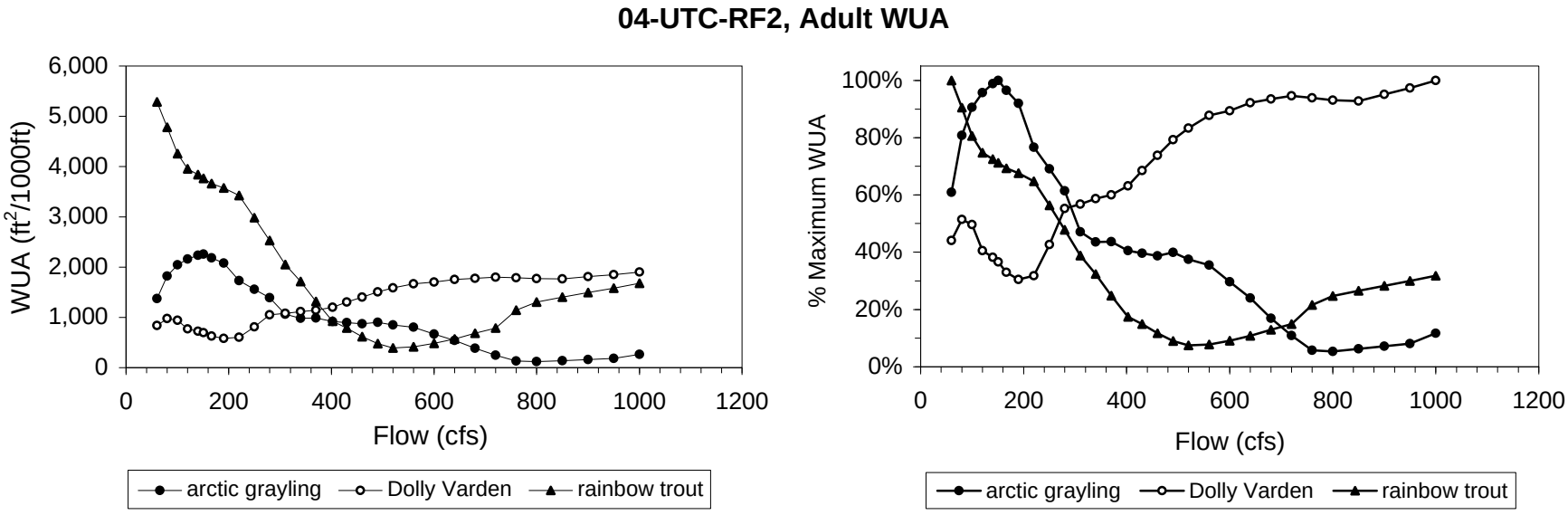

Figure 255
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-RF2 (River Kilometer 24.59) in UTC-C, Upper Talarik Creek, Alaska.

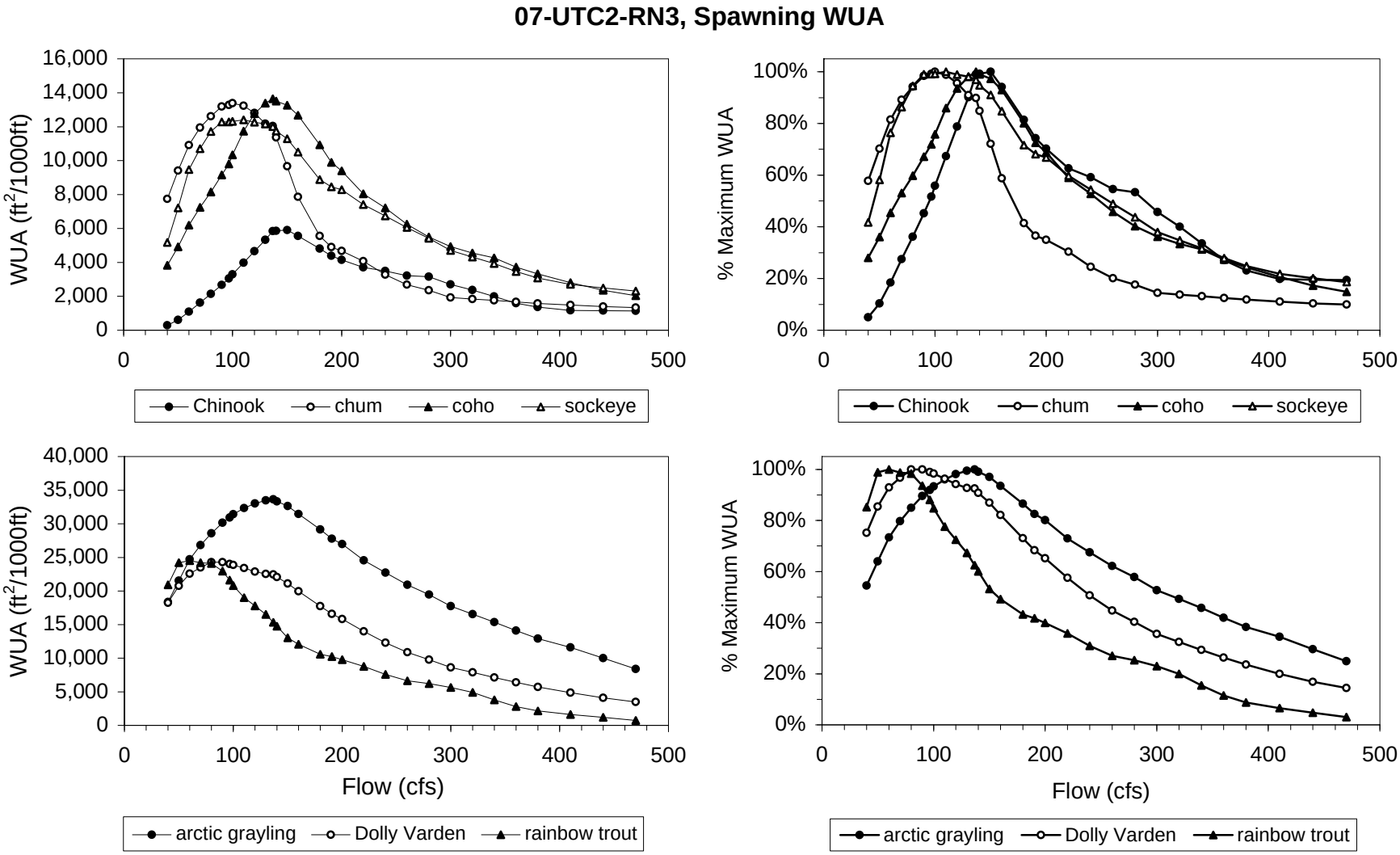

Figure 256
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN3 (River Kilometer 26.02) in UTC-D, Upper Talarik Creek, Alaska.

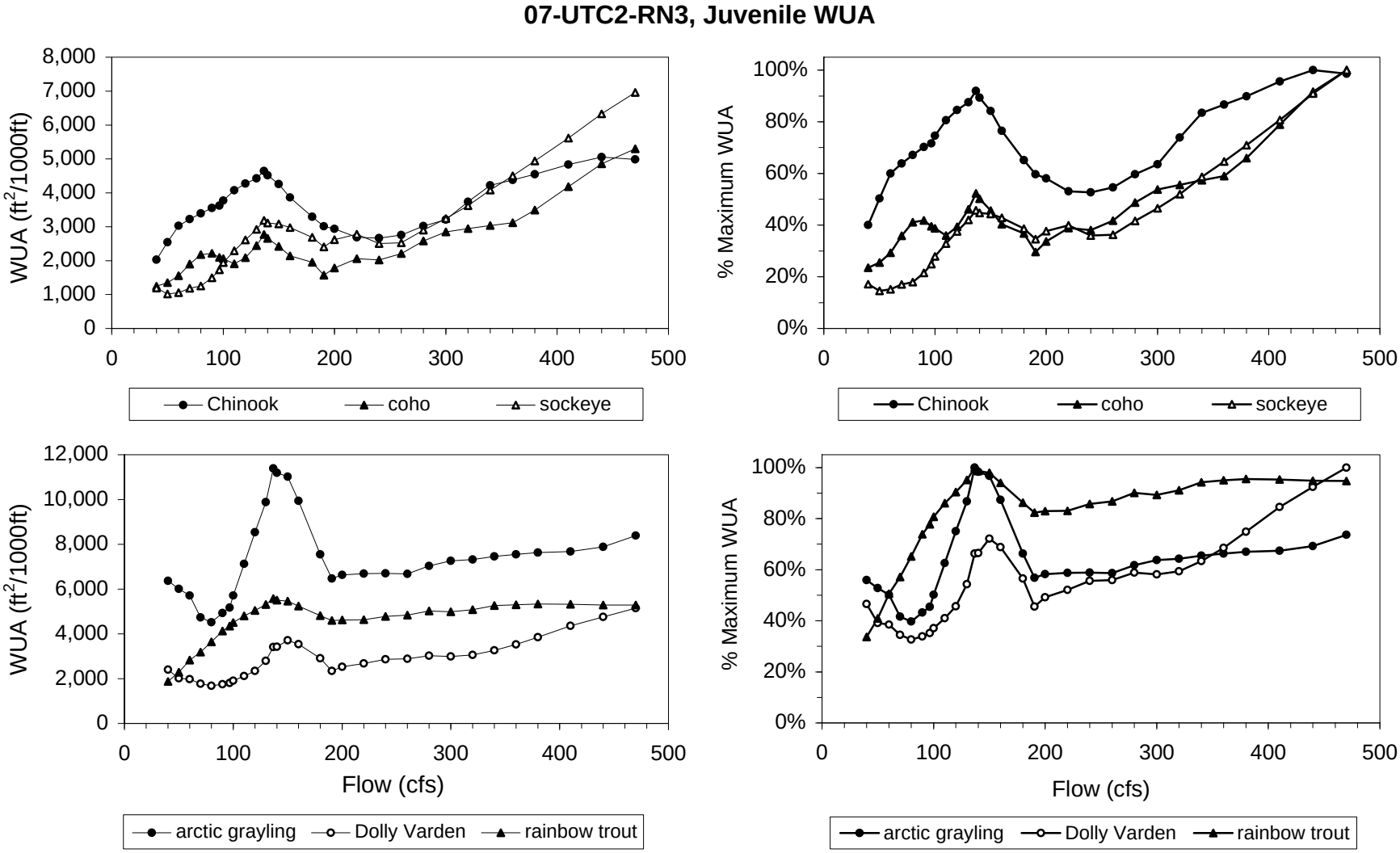

Figure 257
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN3 (River Kilometer 26.02) in UTC-D, Upper Talarik Creek, Alaska.

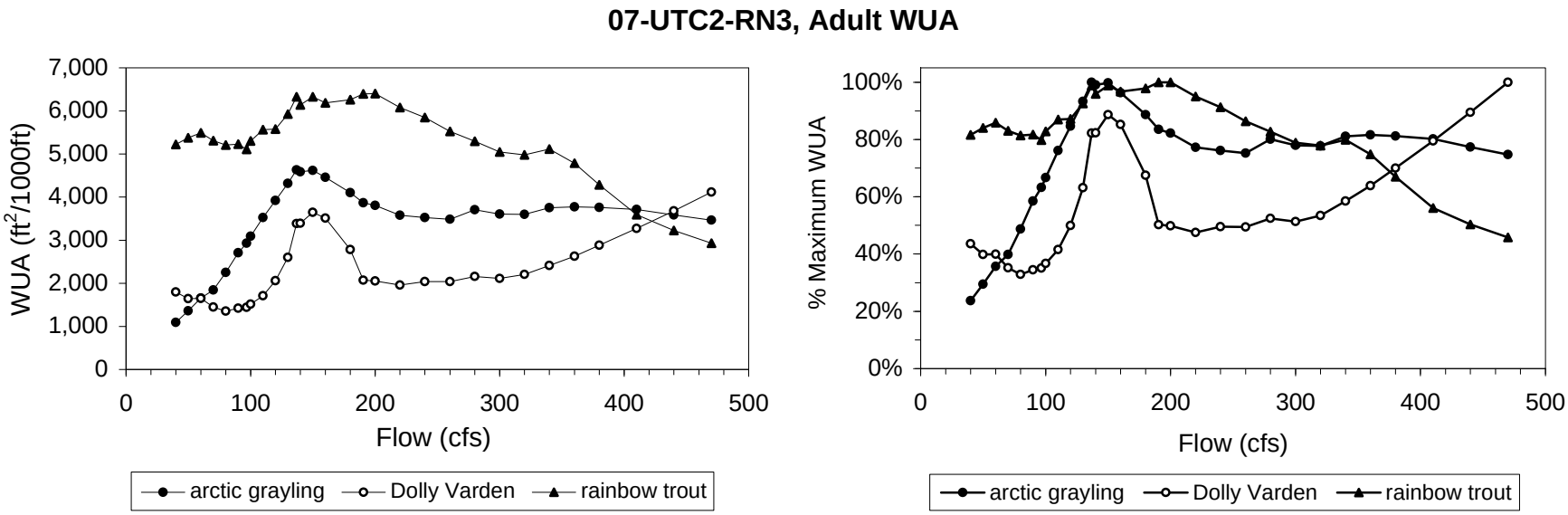

Figure 258
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-UTC2-RN3 (River Kilometer 26.02) in UTC-D, Upper Talarik Creek, Alaska.

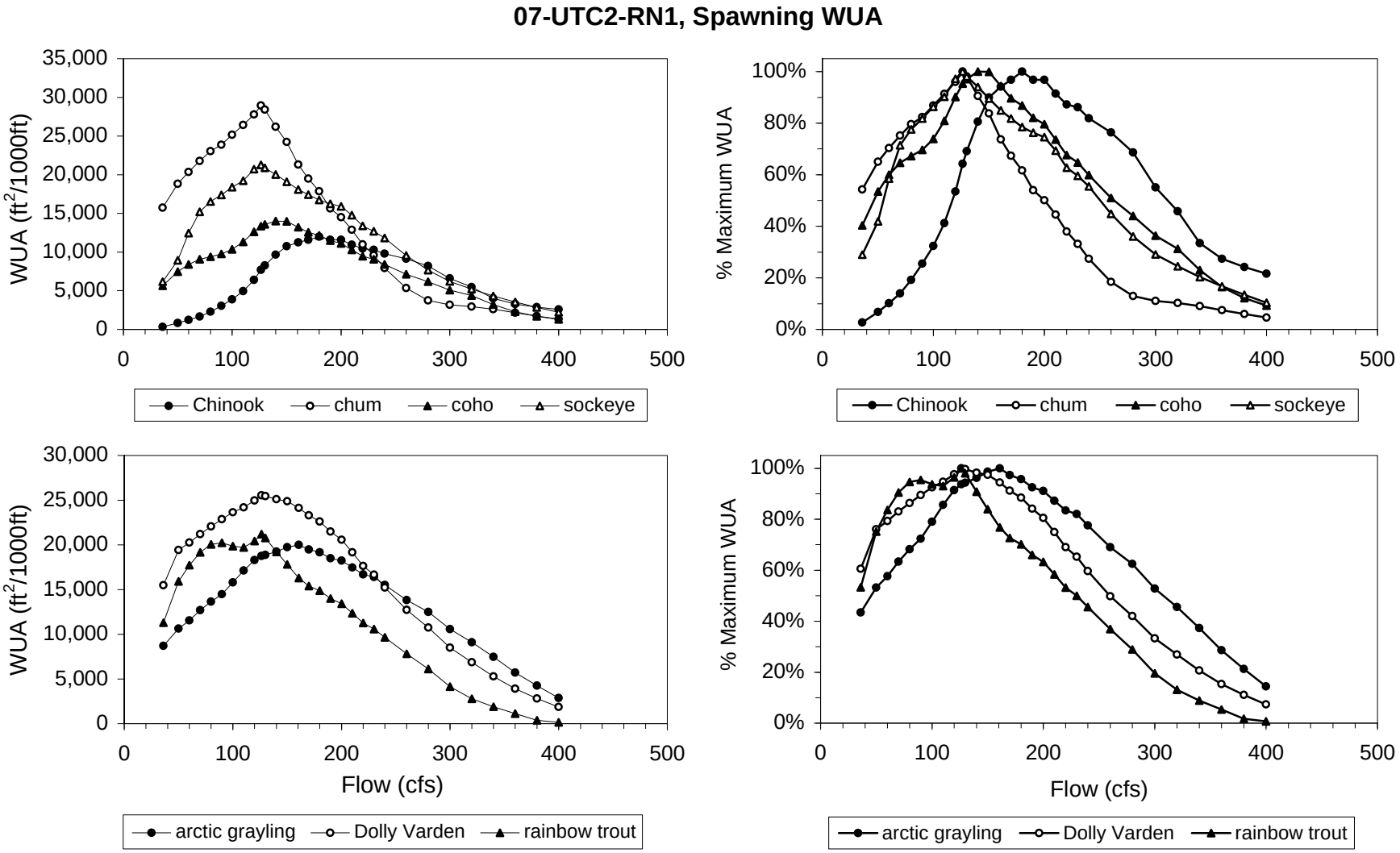

Figure 259
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN1 (River Kilometer 29.31) in UTC-D, Upper Talarik Creek, Alaska.

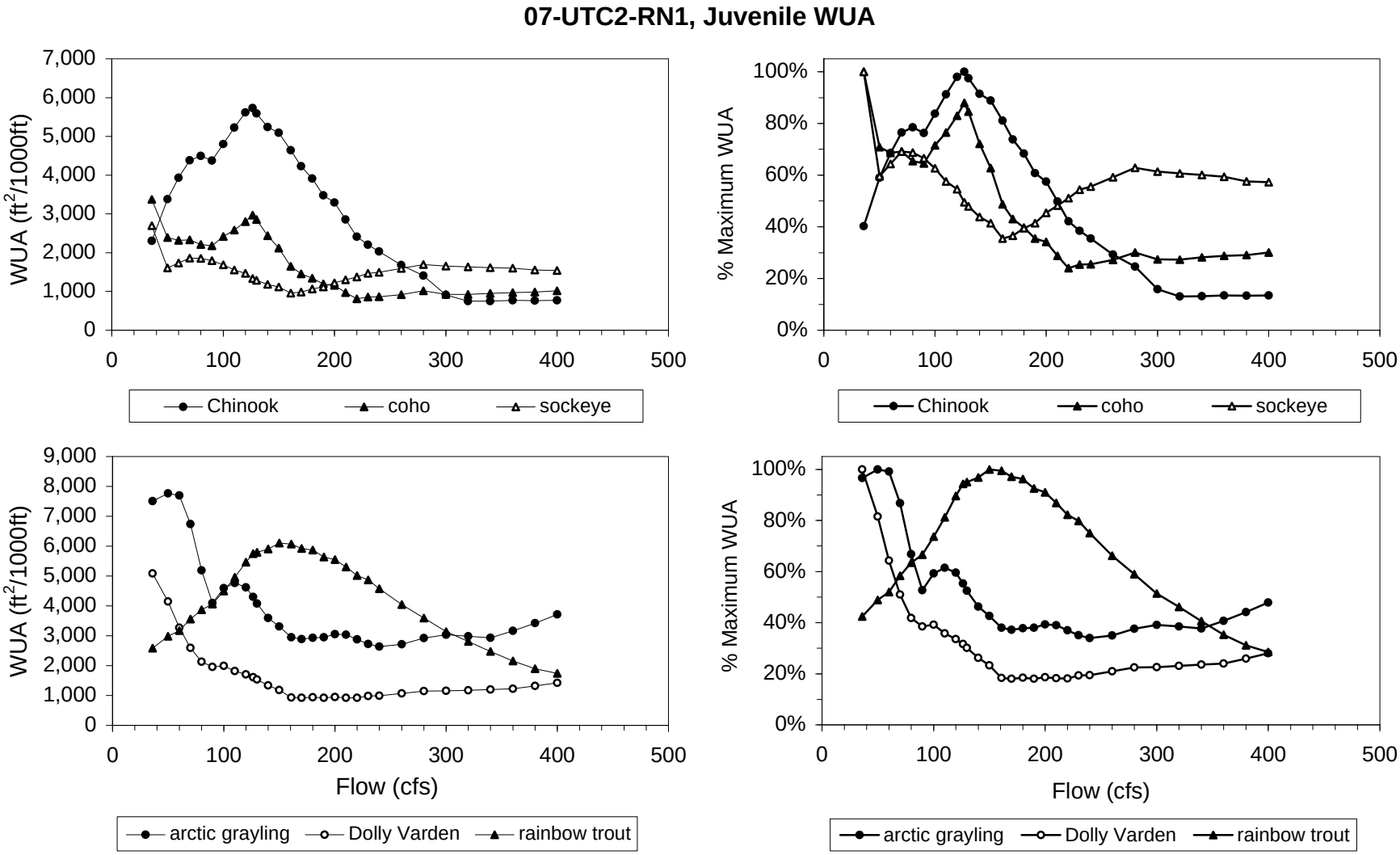

Figure 260
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN1 (River Kilometer 29.31) in UTC-D, Upper Talarik Creek, Alaska.

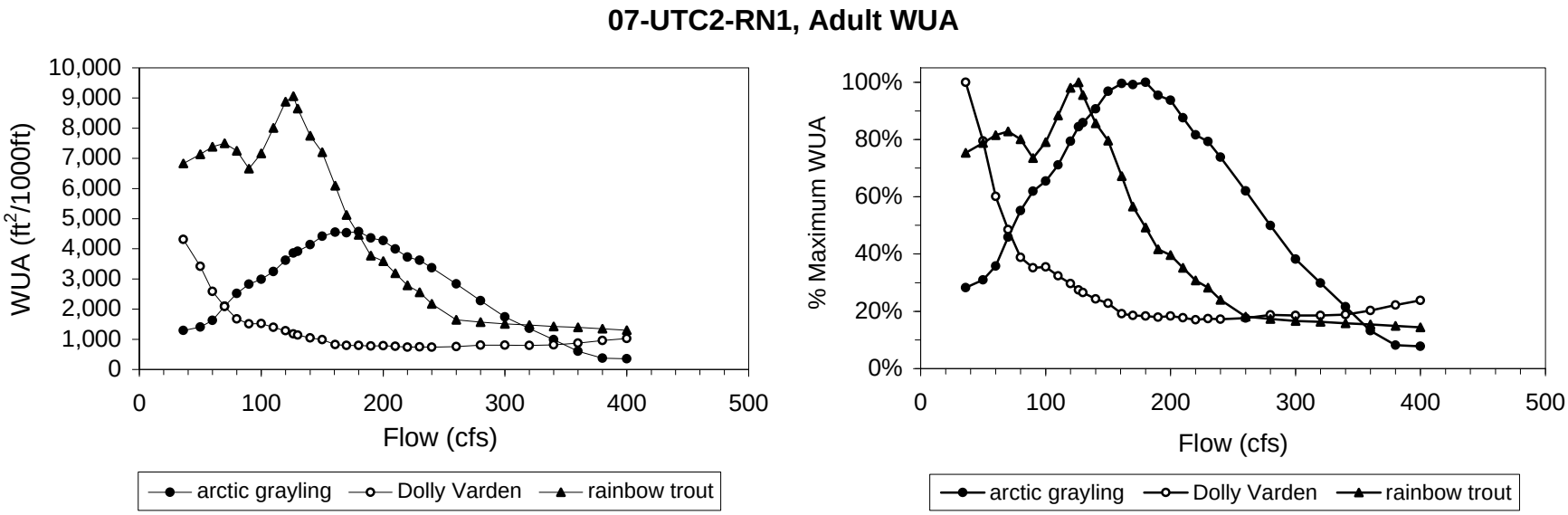

Figure 261
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-UTC2-RN1 (River Kilometer 29.31) in UTC-D, Upper Talarik Creek, Alaska.

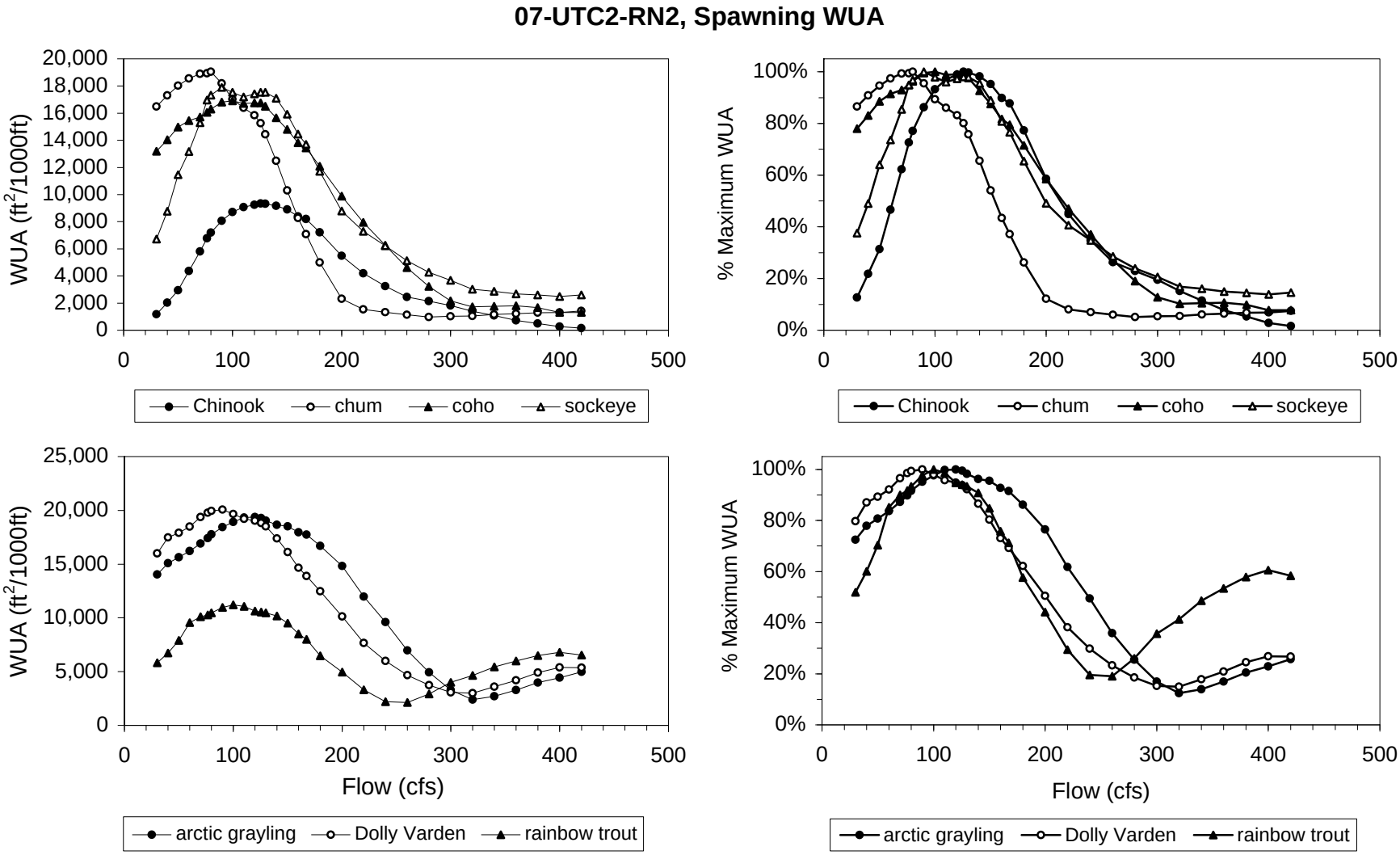

Figure 262
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN2 (River Kilometer 30.04) in UTC-D, Upper Talarik Creek, Alaska.

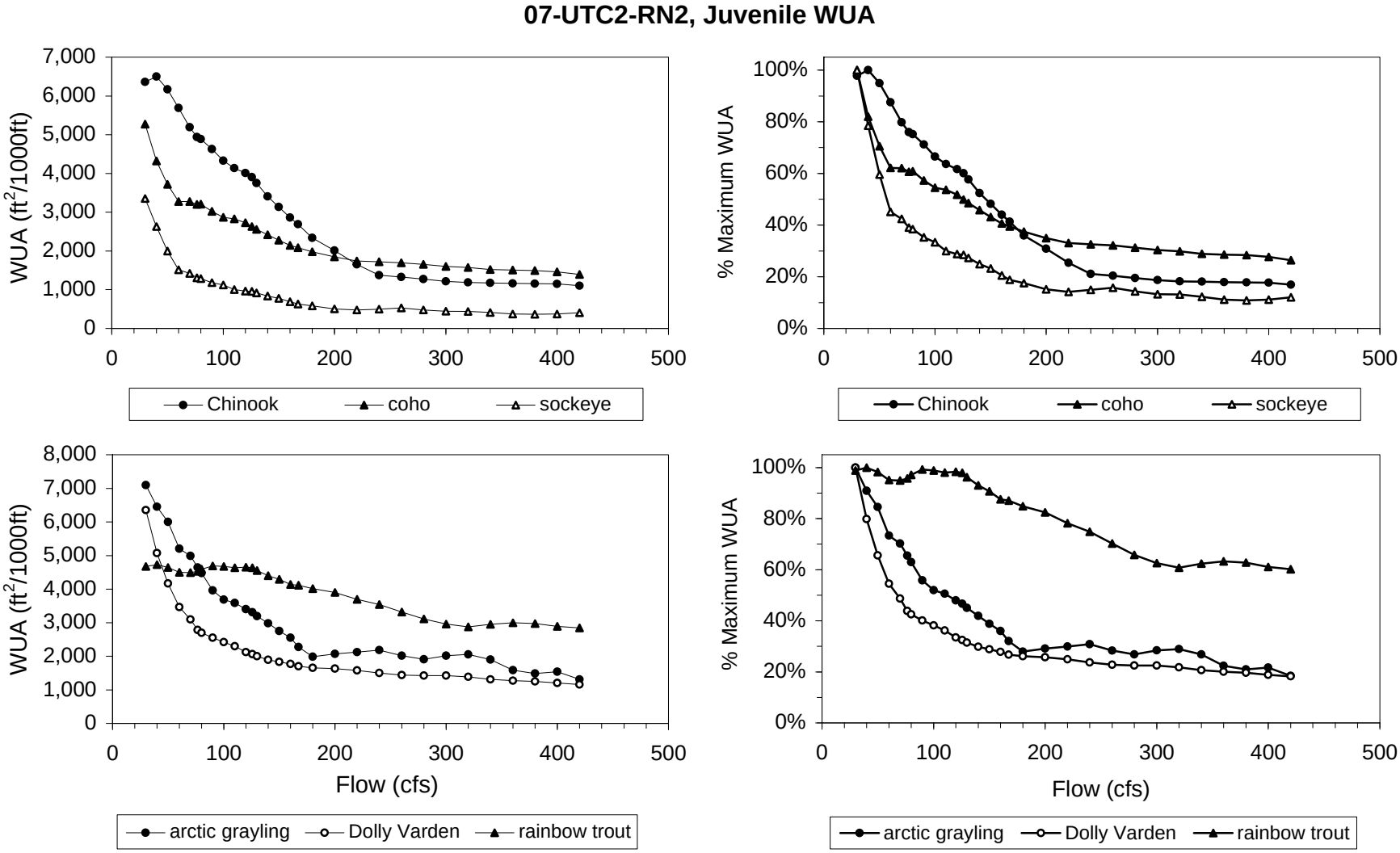

Figure 263
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN2 (River Kilometer 30.04) in UTC-D, Upper Talarik Creek, Alaska.

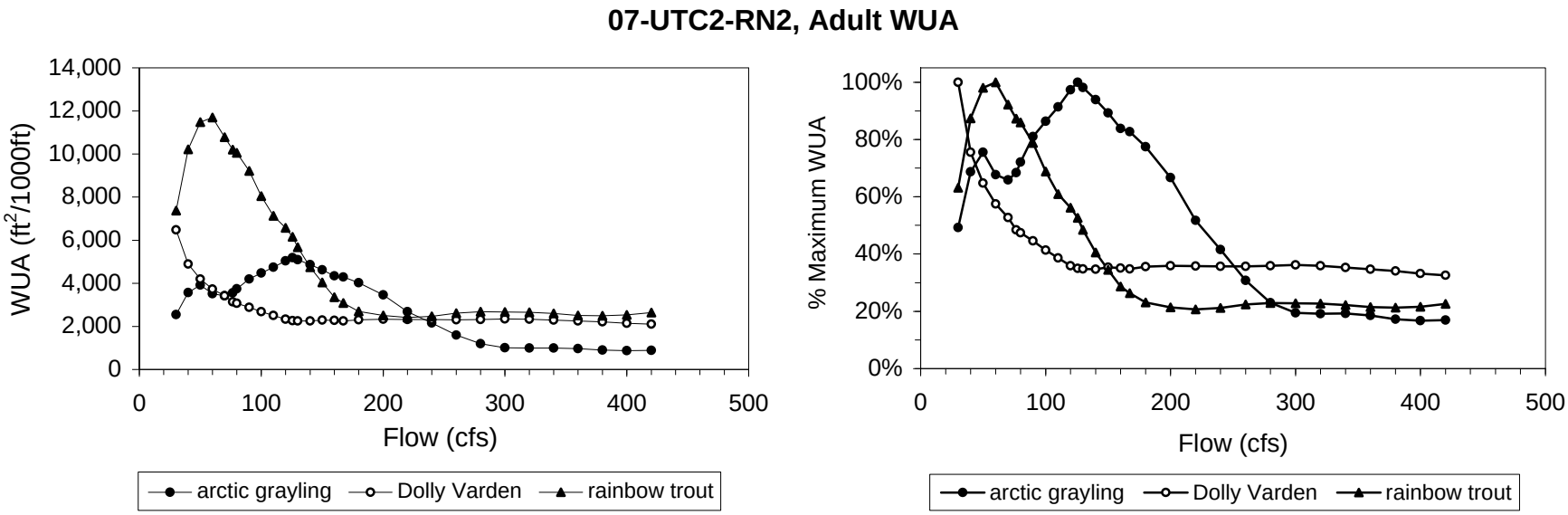

Figure 264
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-UTC2-RN2 (River Kilometer 30.04) in UTC-D, Upper Talarik Creek, Alaska.

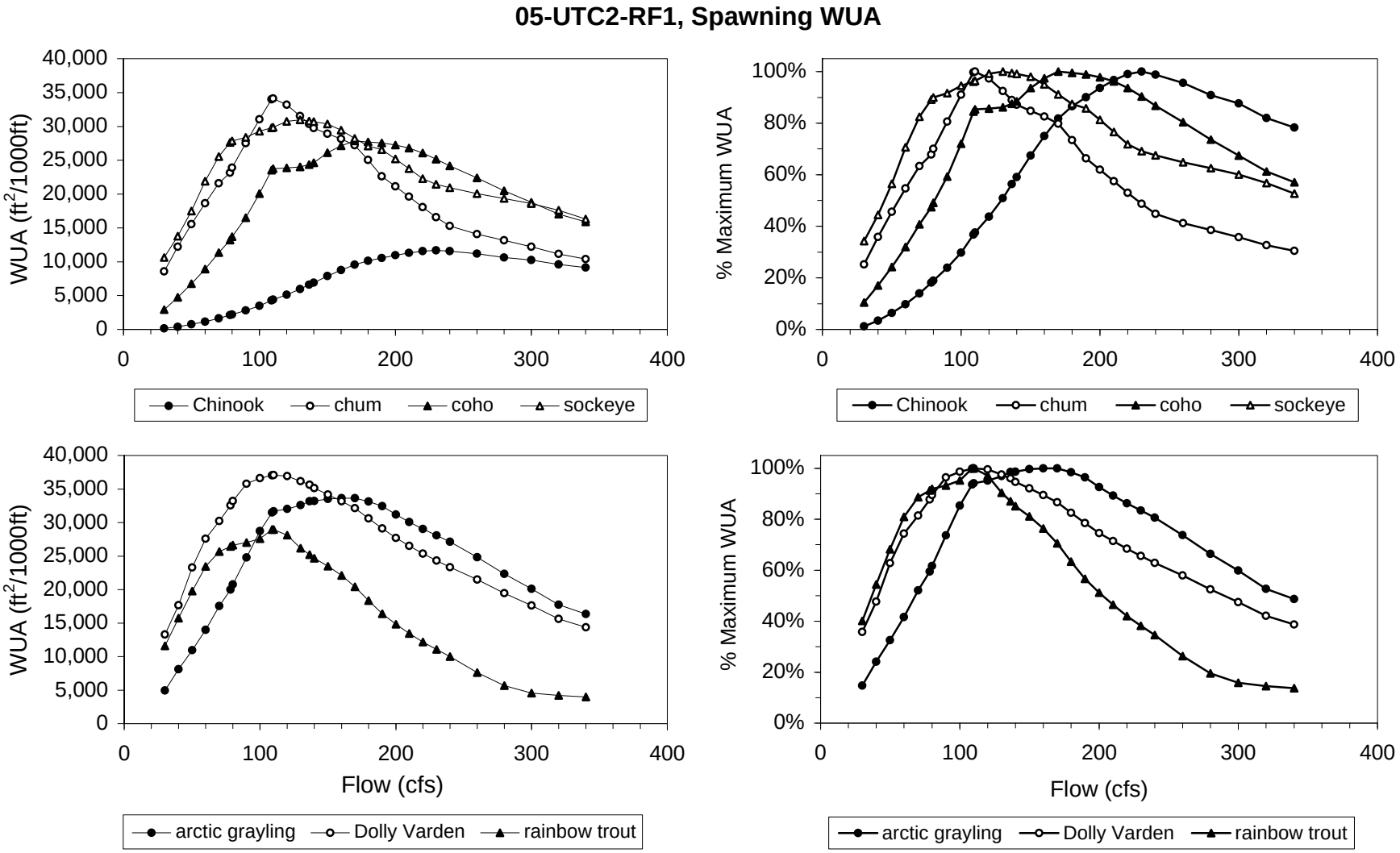

Figure 265
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC2-RF1 (River Kilometer 32.36) in UTC-D, Upper Talarik Creek, Alaska.

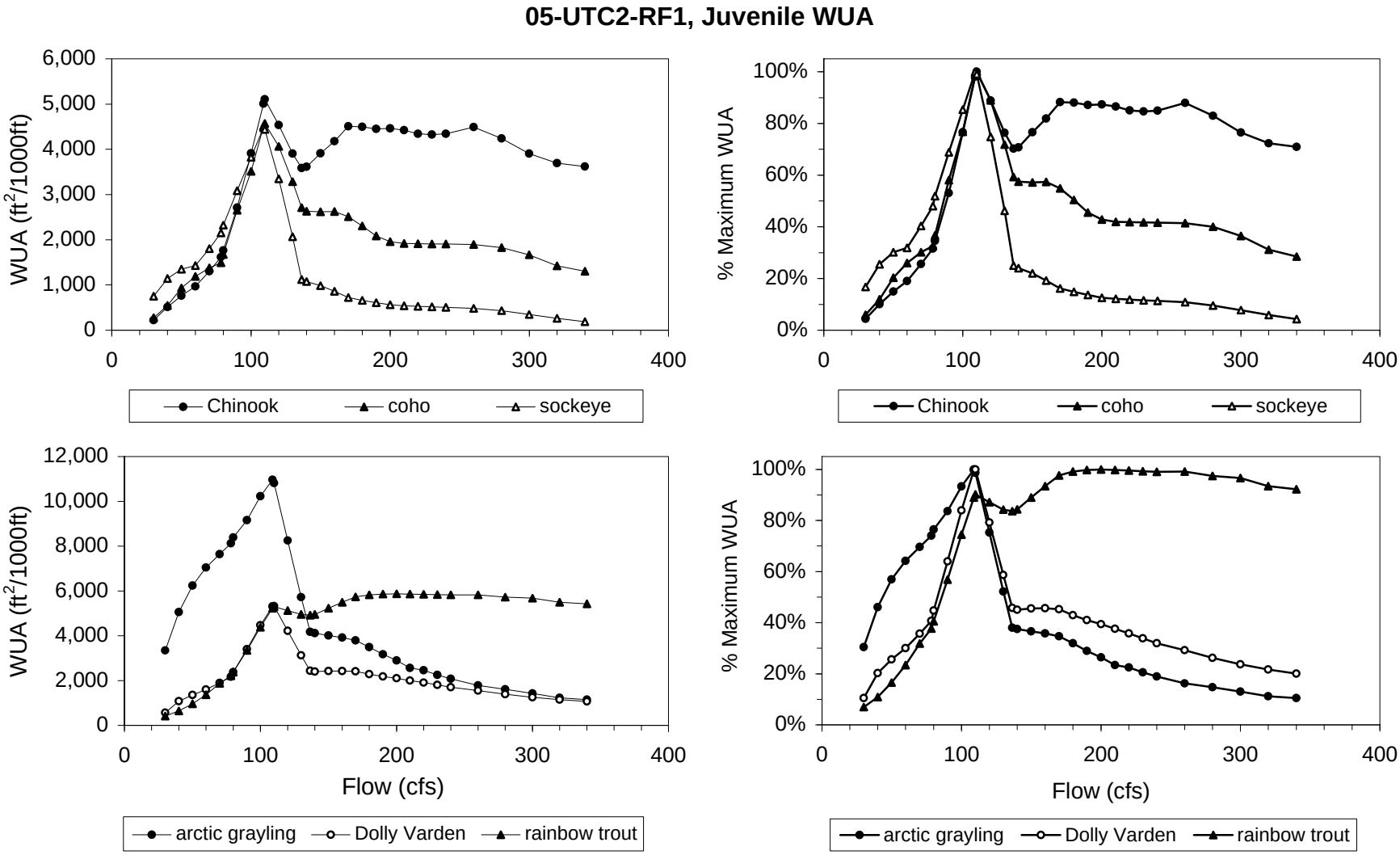

Figure 266
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC2-RF1 (River Kilometer 32.36) in UTC-D, Upper Talarik Creek, Alaska.

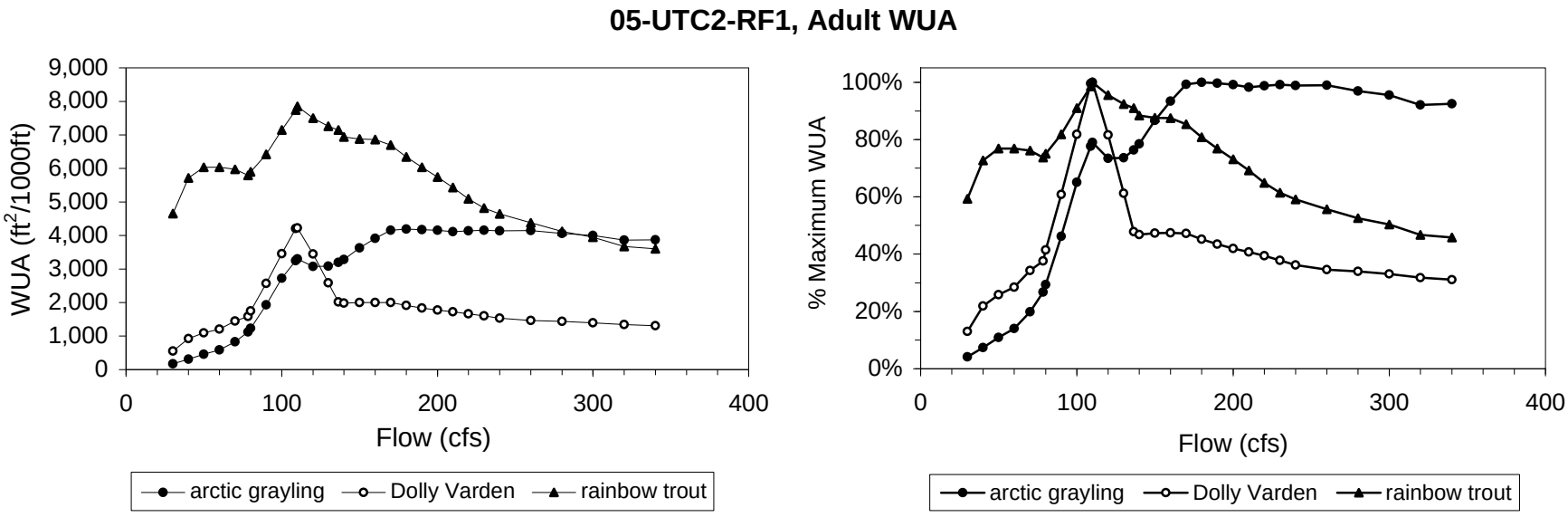

Figure 267
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC2-RF1 (River Kilometer 32.36) in UTC-D, Upper Talarik Creek, Alaska.

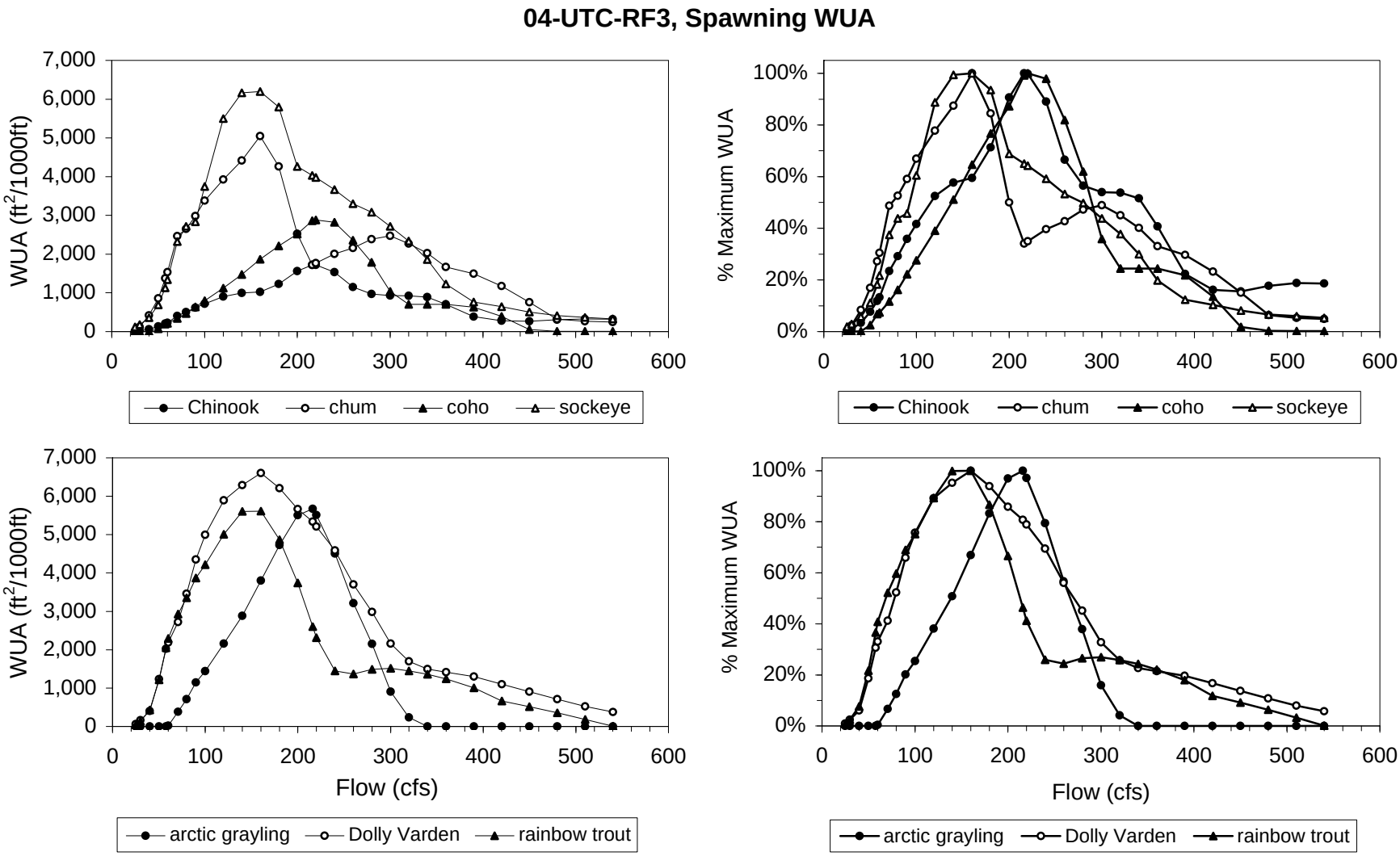

Figure 268
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RF3 (River Kilometer 34.62) in UTC-D, Upper Talarik Creek, Alaska.

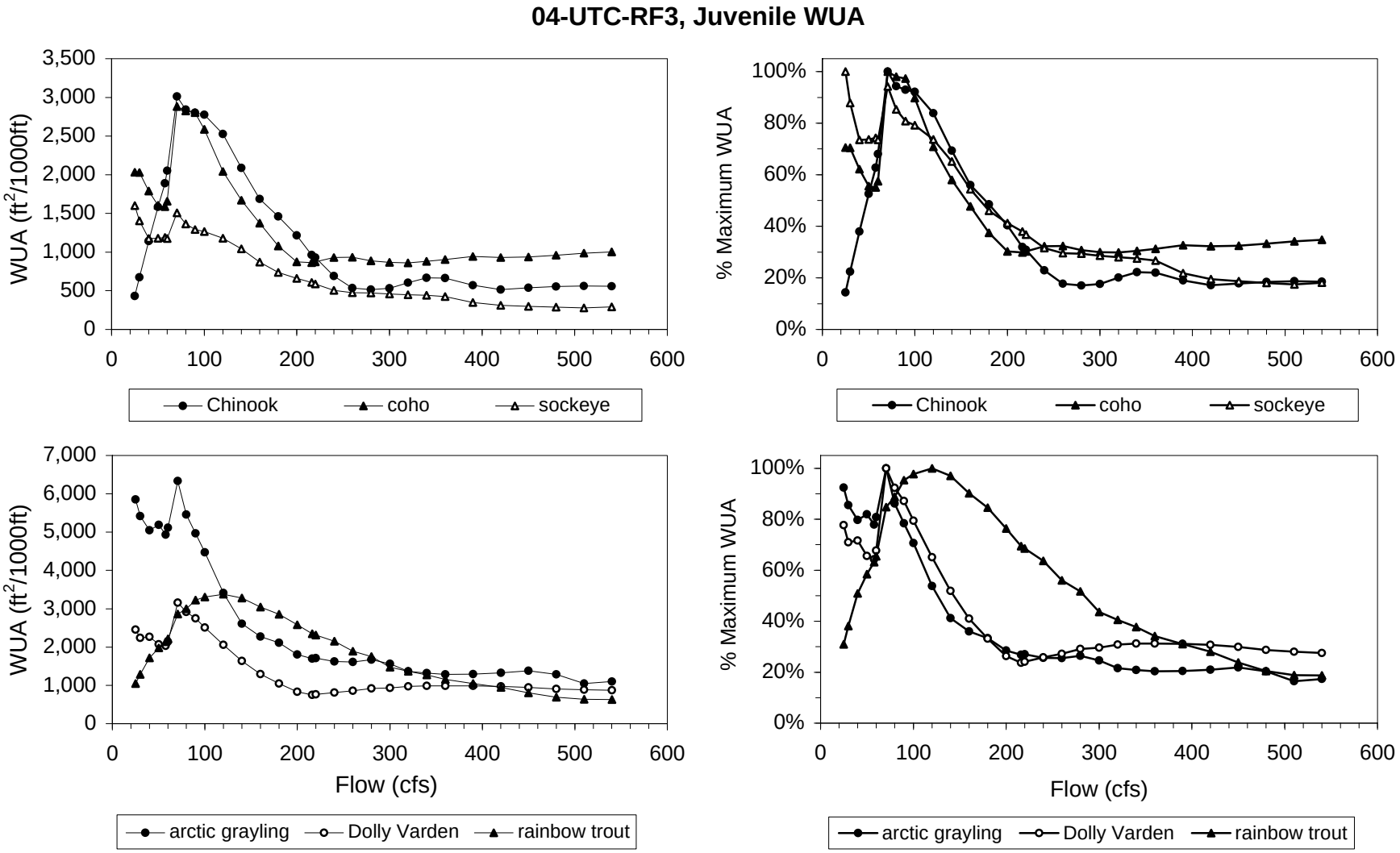

Figure 269
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RF3 (River Kilometer 34.62) in UTC-D, Upper Talarik Creek, Alaska.

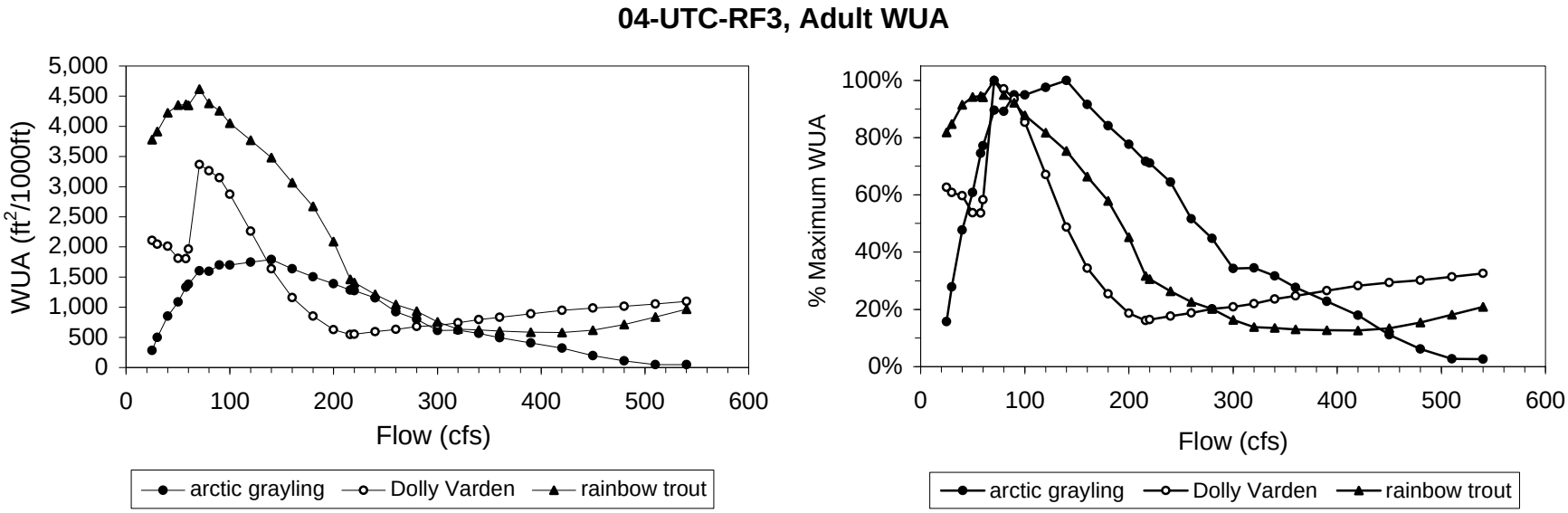

Figure 270
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-RF3 (River Kilometer 34.62) in UTC-D, Upper Talarik Creek, Alaska.

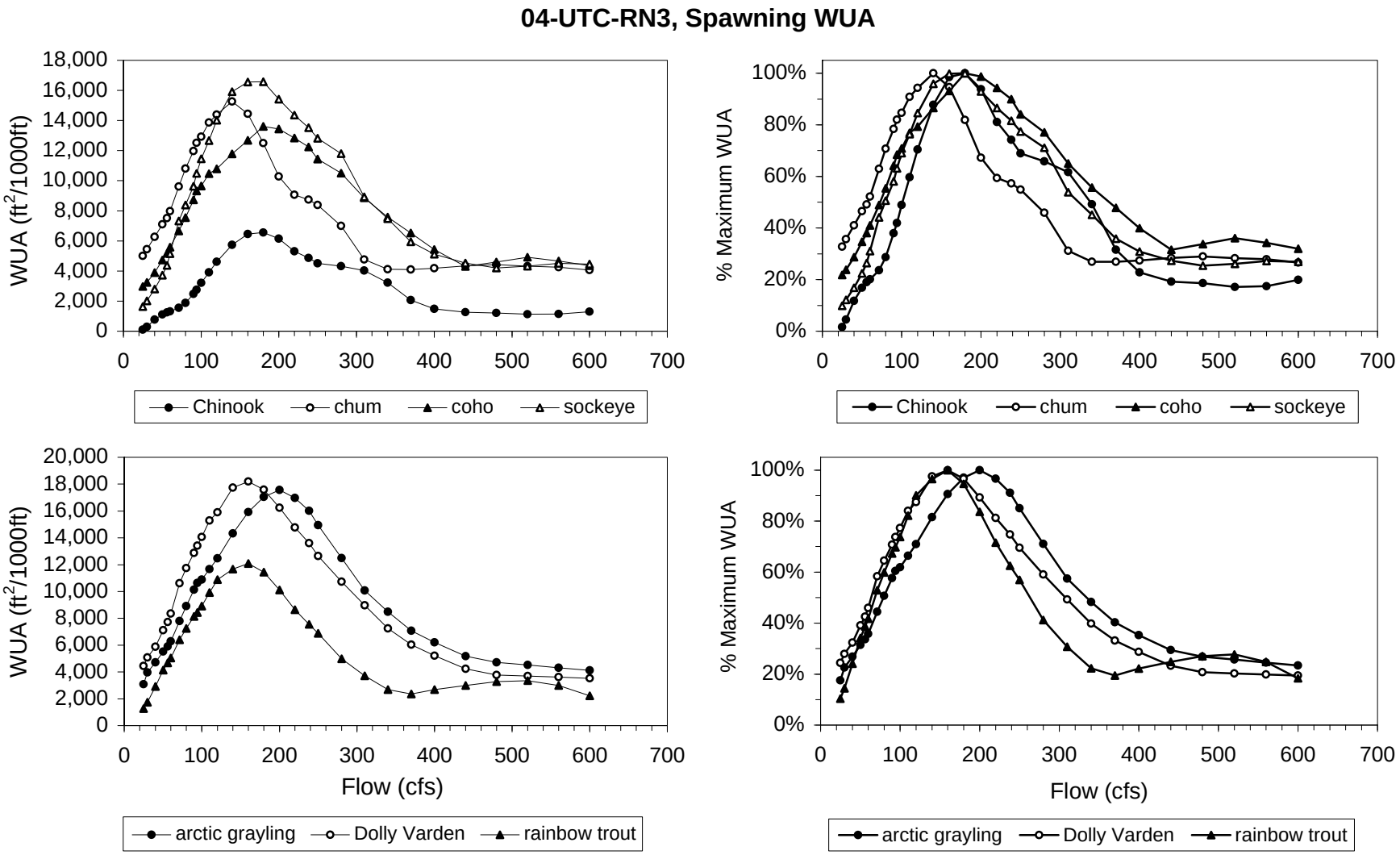

Figure 271
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RN3 (River Kilometer 34.76) in UTC-D, Upper Talarik Creek, Alaska.

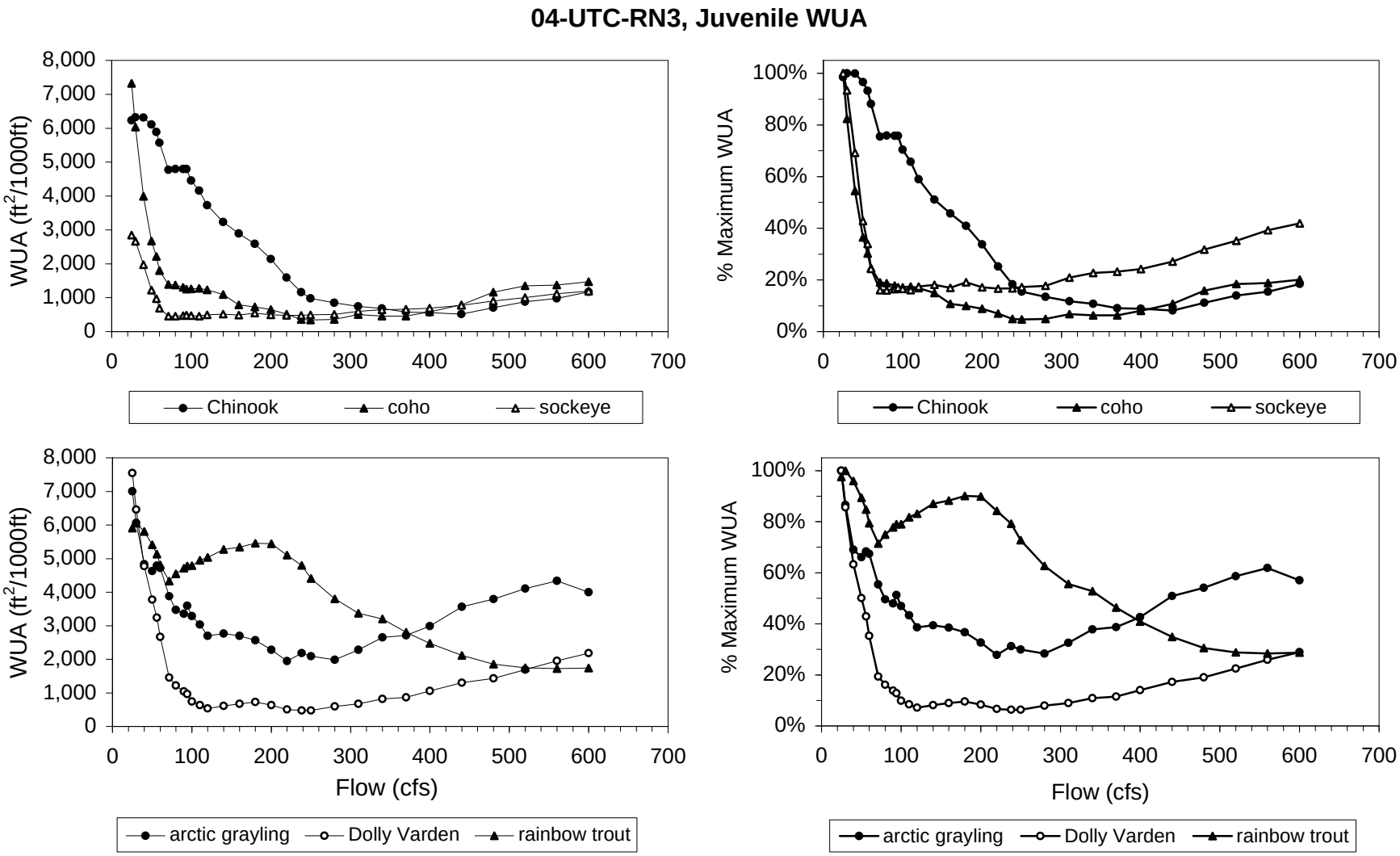

Figure 272
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-RN3 (River Kilometer 34.76) in UTC-D, Upper Talarik Creek, Alaska.

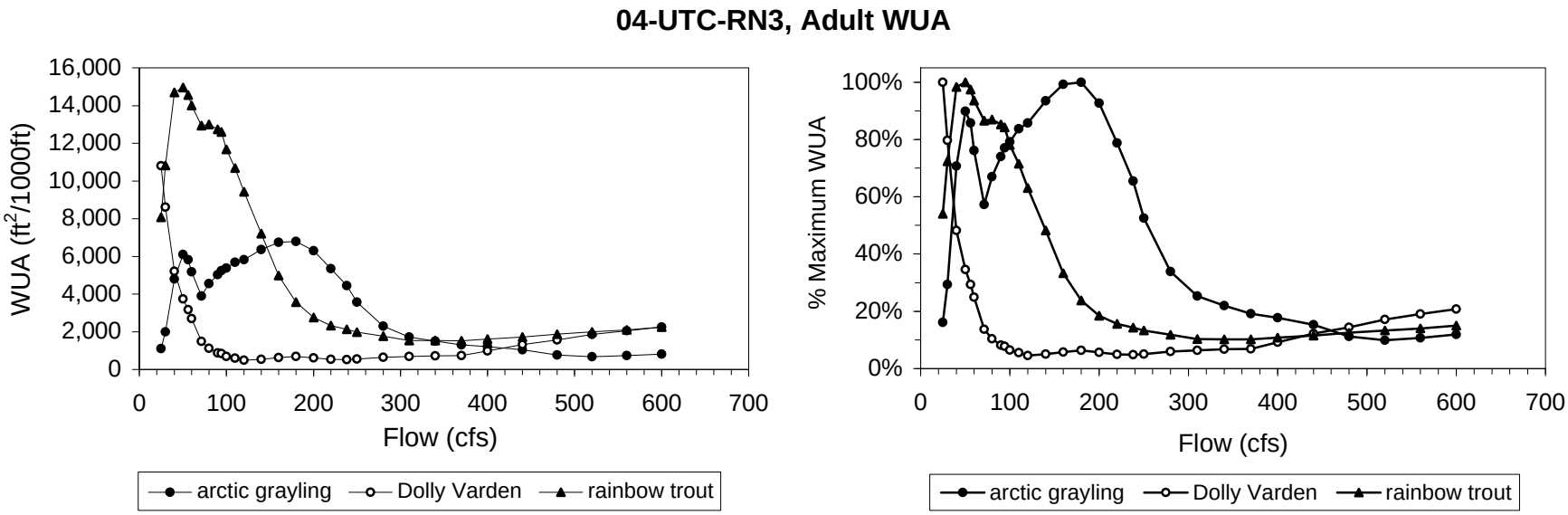

Figure 273
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-RN3 (River Kilometer 34.76) in UTC-D, Upper Talarik Creek, Alaska.

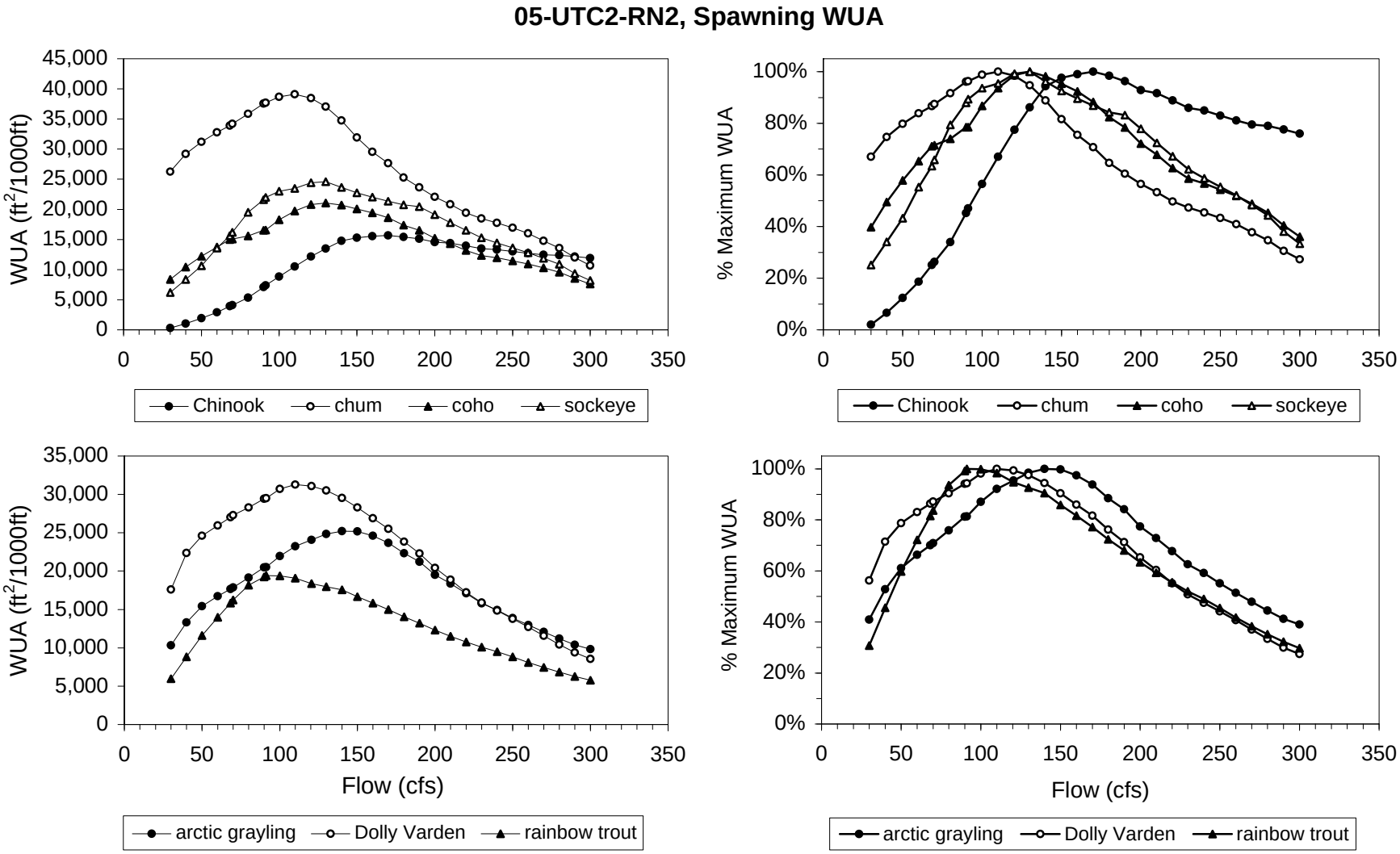

Figure 274
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC2-RN2 (River Kilometer 35.64) in UTC-D, Upper Talarik Creek, Alaska.

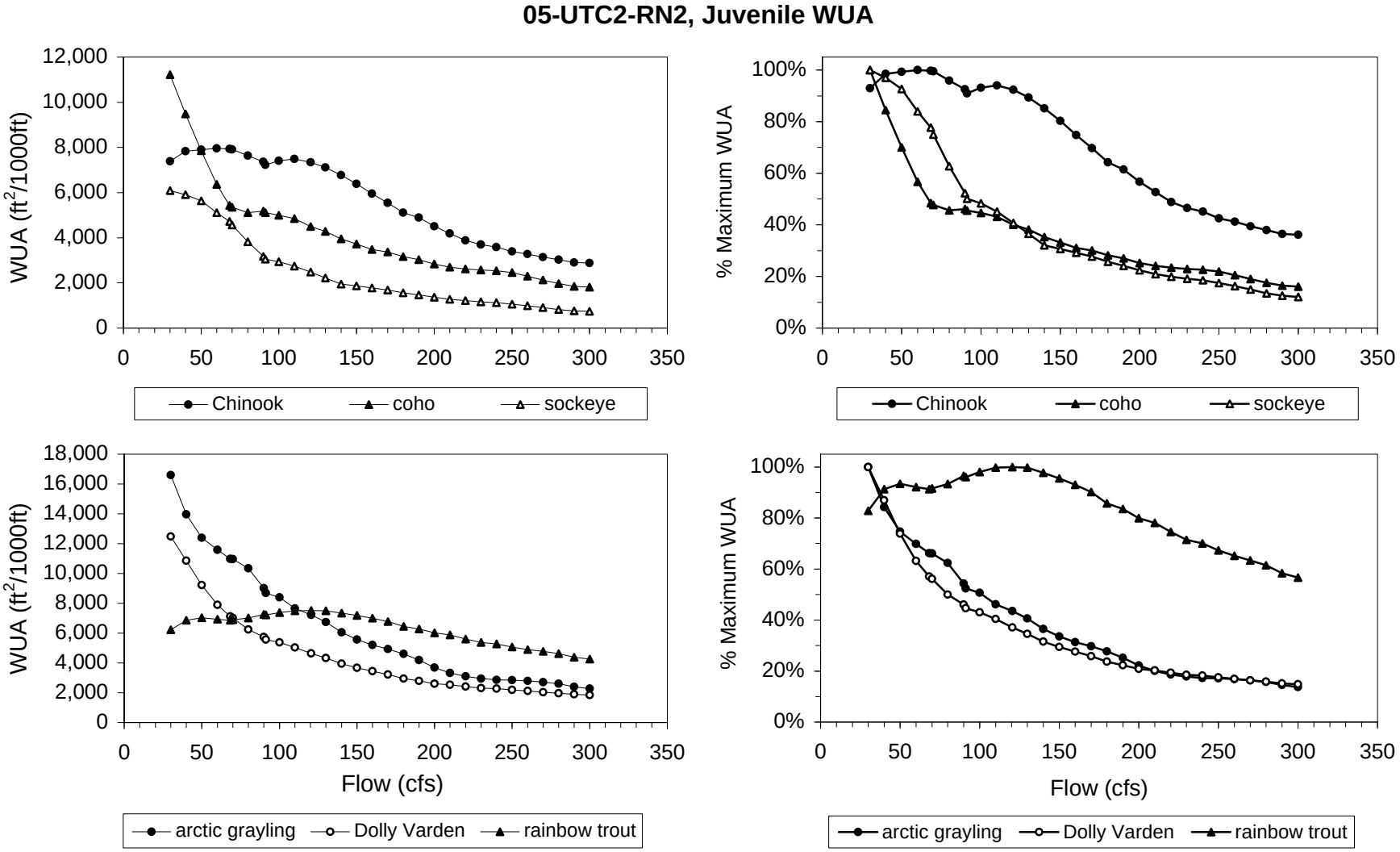

Figure 275
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC2-RN2 (River Kilometer 35.64) in UTC-D, Upper Talarik Creek, Alaska.

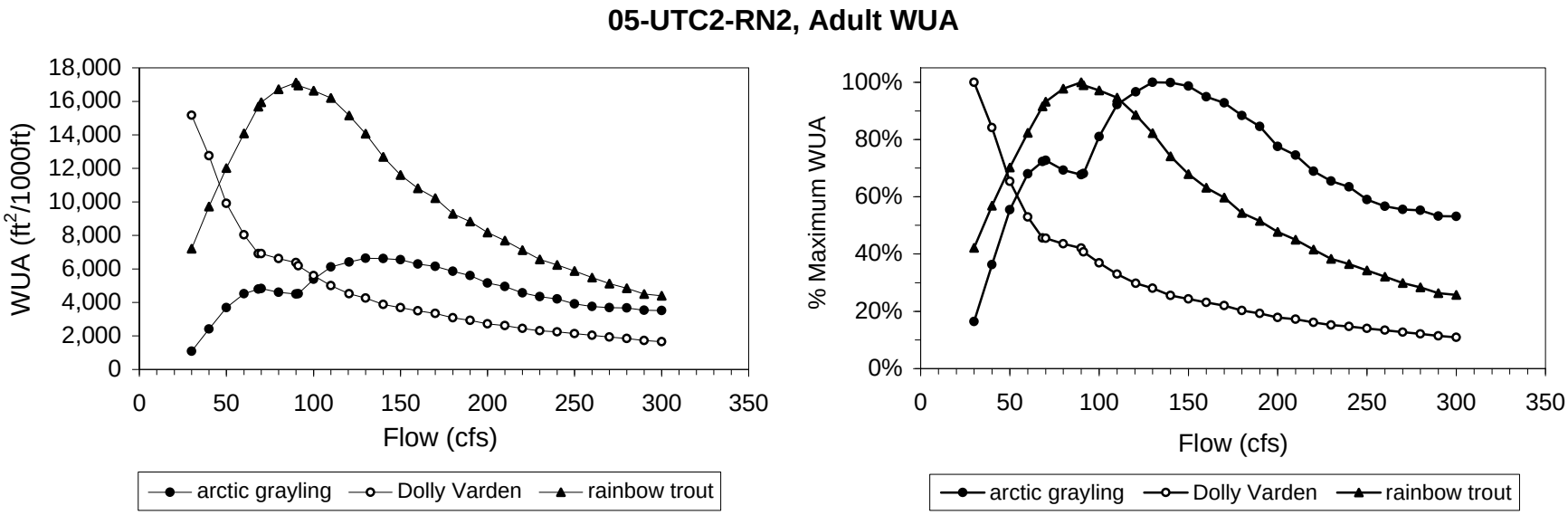

Figure 276
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC2-RN2 (River Kilometer 35.64) in UTC-D, Upper Talarik Creek, Alaska.

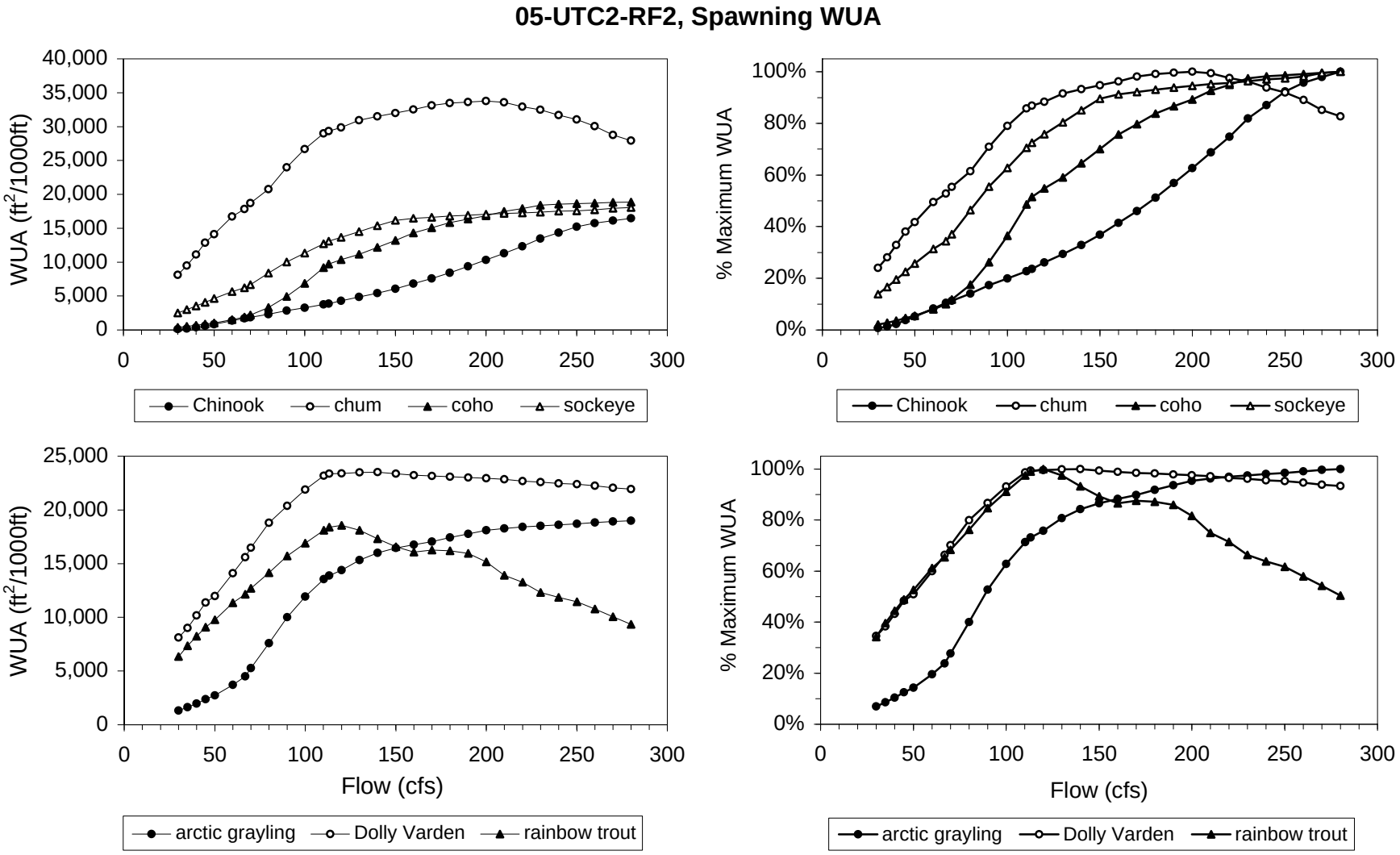

Figure 277
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC2-RF2 (River Kilometer 36.70) in UTC-E, Upper Talarik Creek, Alaska.

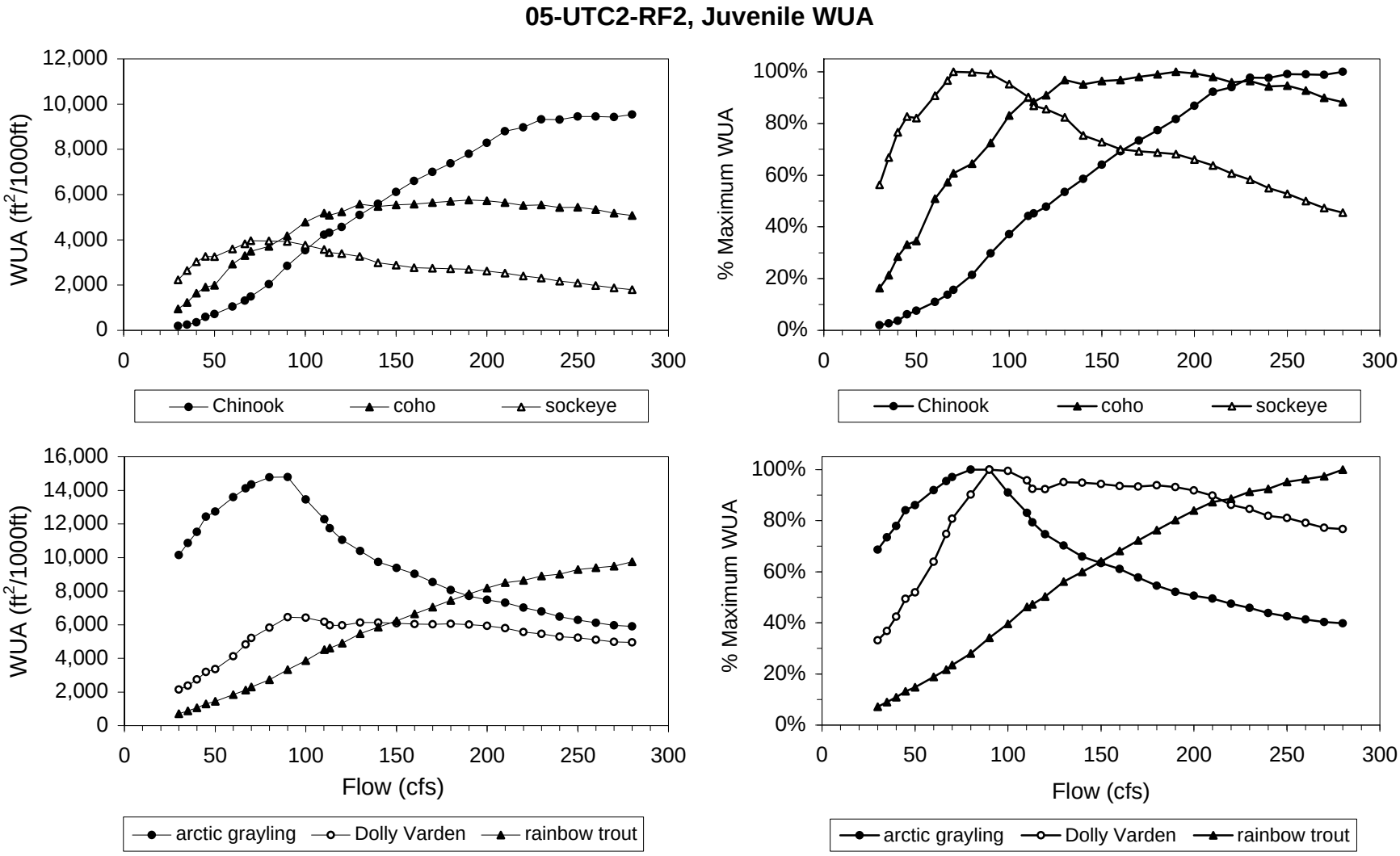

Figure 278
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC2-RF2 (River Kilometer 36.70) in UTC-E, Upper Talarik Creek, Alaska.

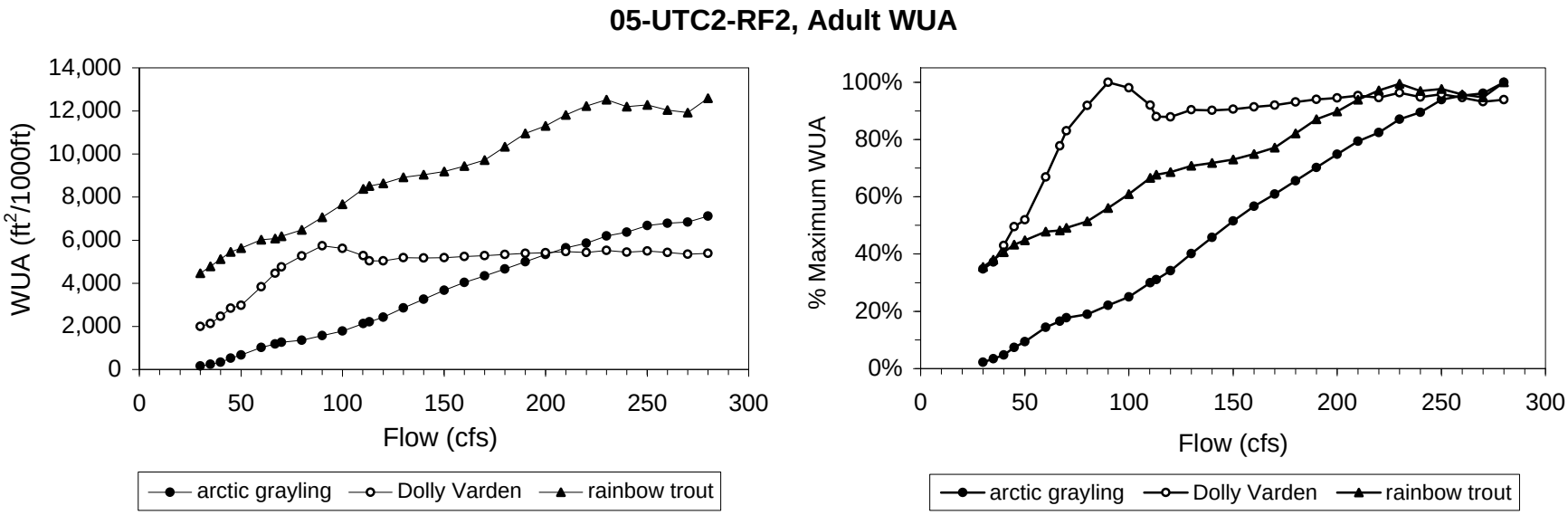

Figure 279
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC2-RF2 (River Kilometer 36.70) in UTC-E, Upper Talarik Creek, Alaska.

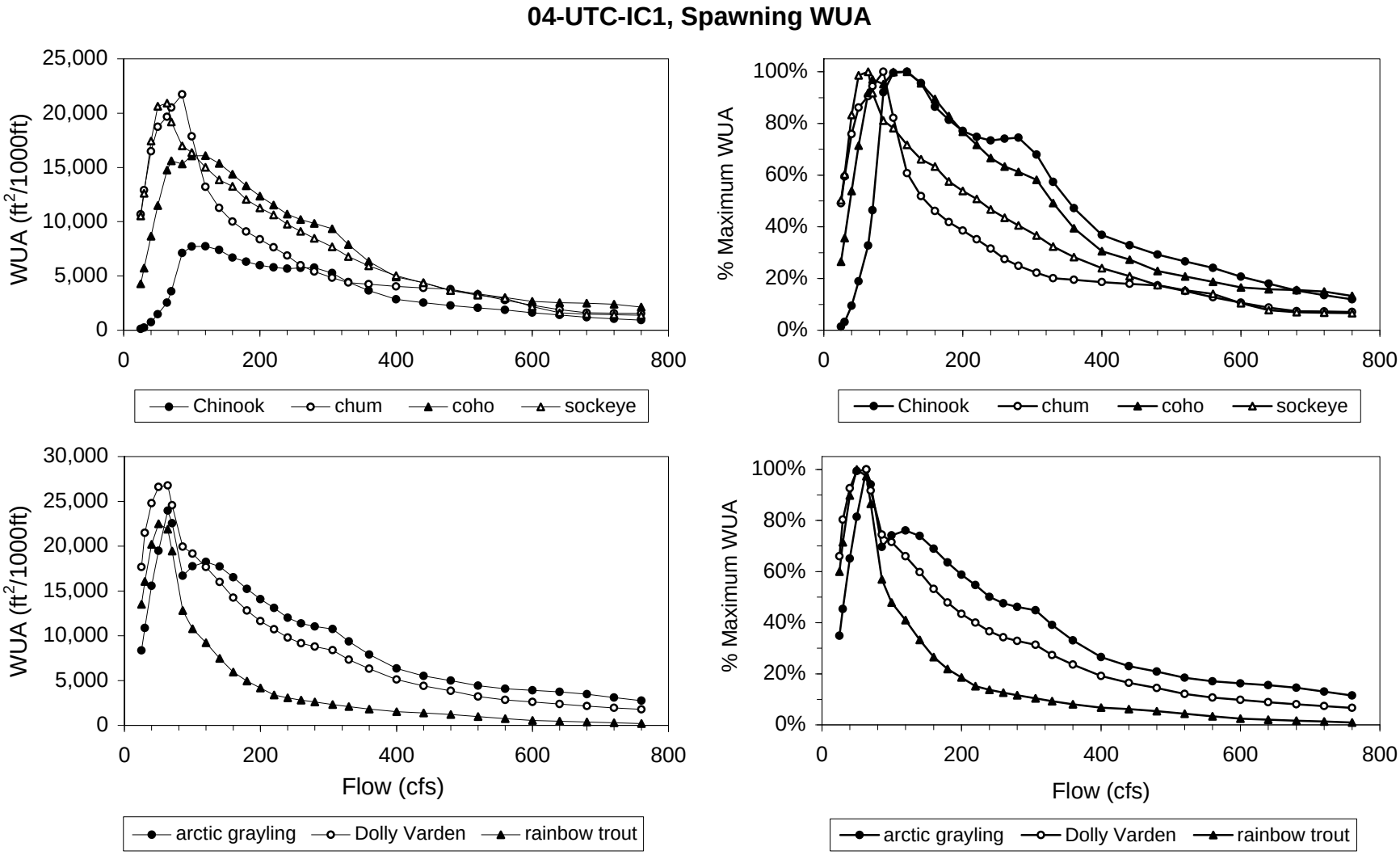

Figure 280
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-IC1 (River Kilometer 37.91) in UTC-E, Upper Talarik Creek, Alaska.

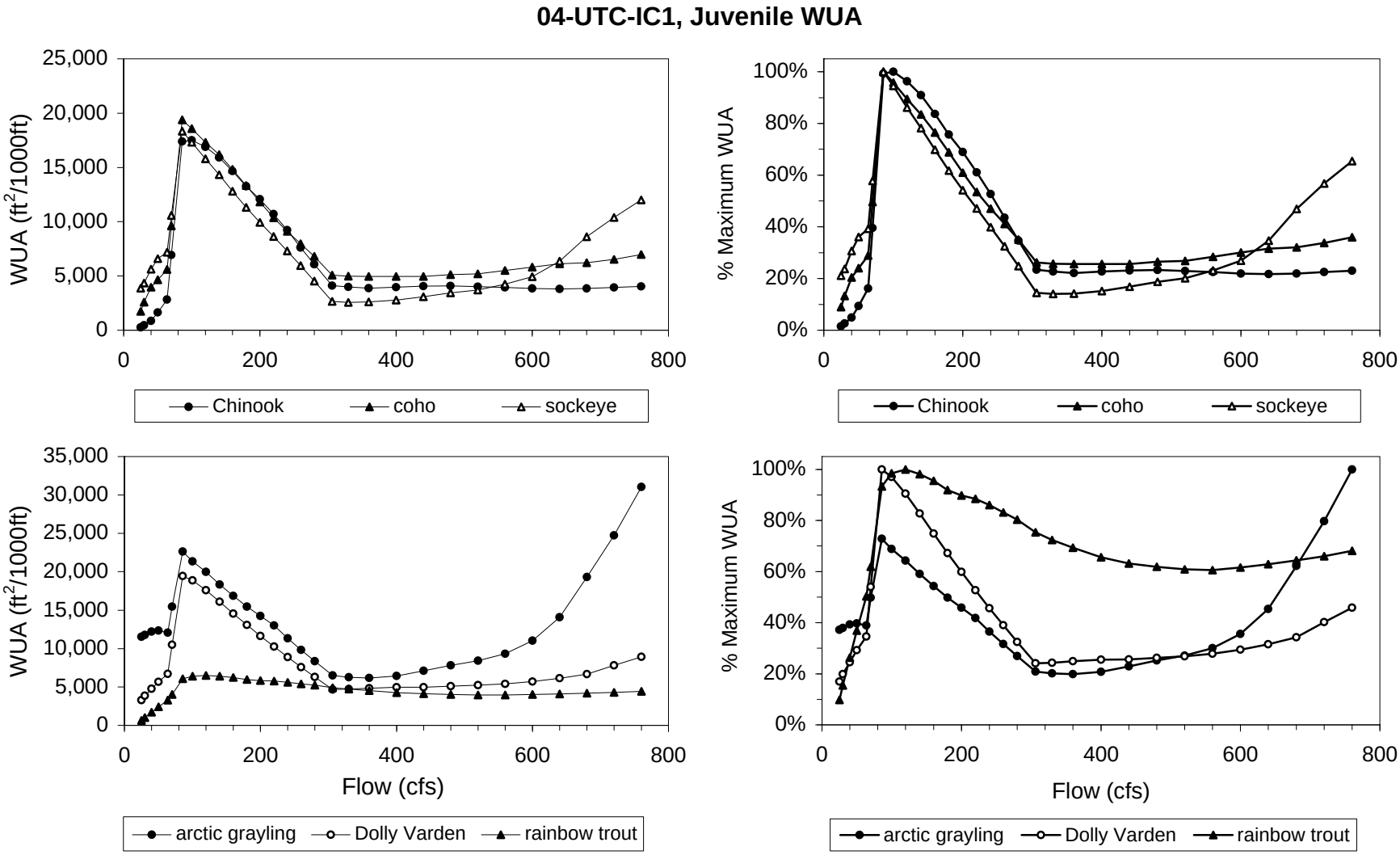

Figure 281
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-UTC-IC1 (River Kilometer 37.91) in UTC-E, Upper Talarik Creek, Alaska.

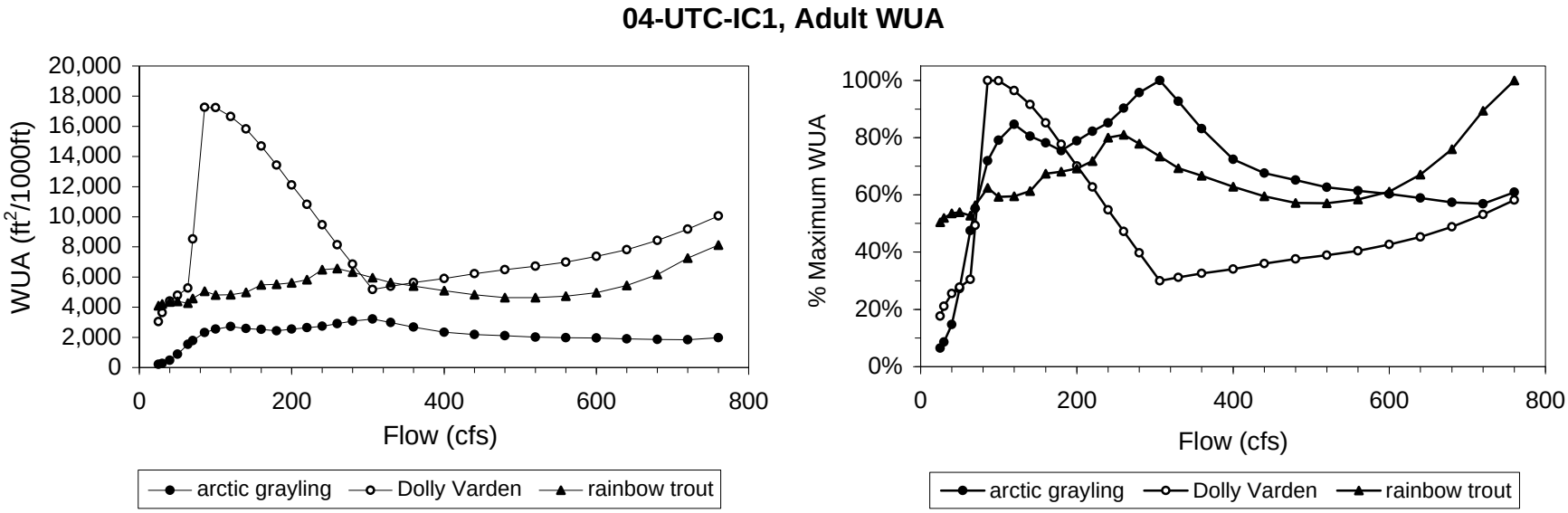

Figure 282
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-UTC-IC1 (River Kilometer 37.91) in UTC-E, Upper Talarik Creek, Alaska.

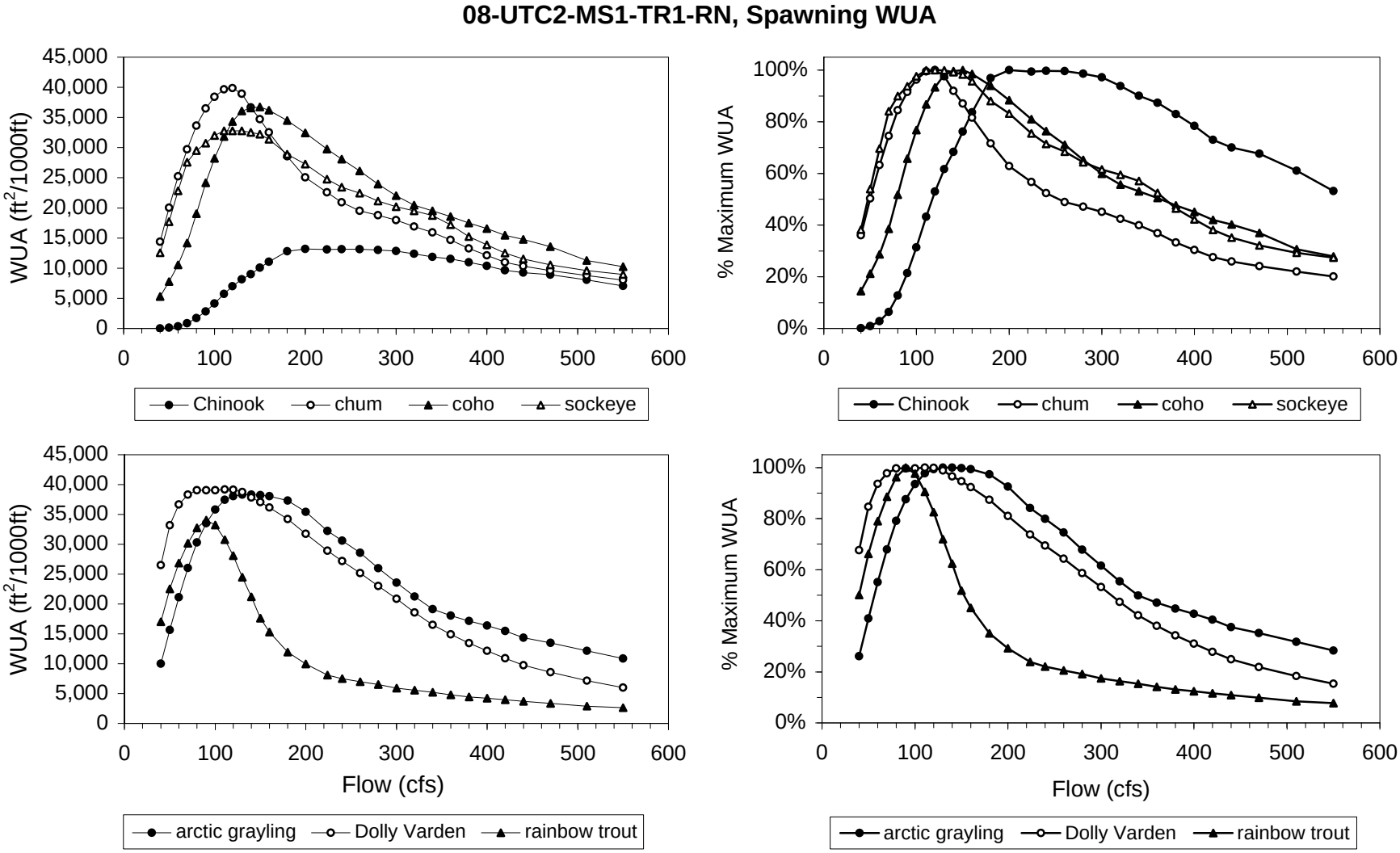

Figure 283
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR1 (River Kilometer 41.66) in UTC-E, Upper Talarik Creek, Alaska.

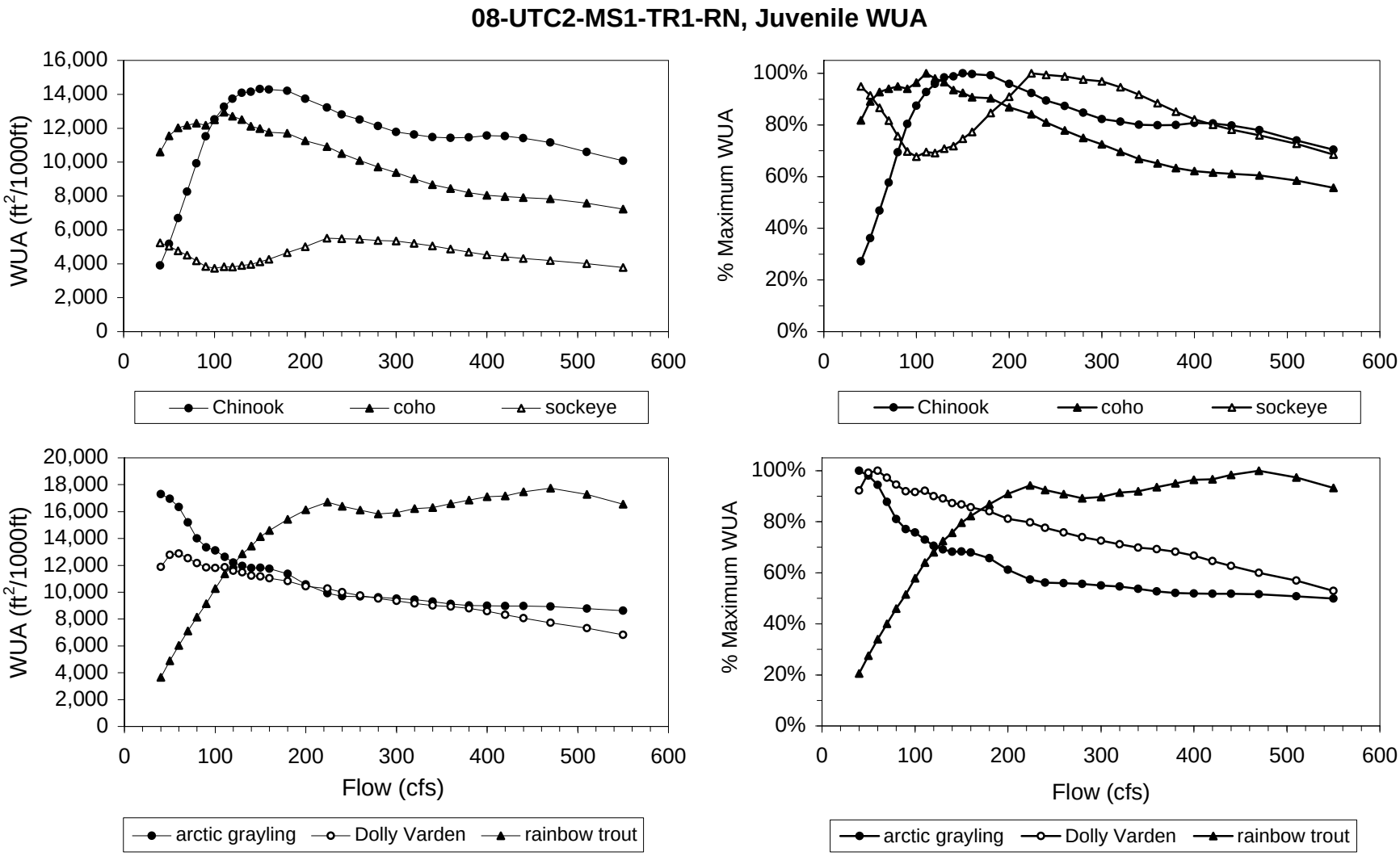

Figure 284
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR1 (River Kilometer 41.66) in UTC-E, Upper Talarik Creek, Alaska.

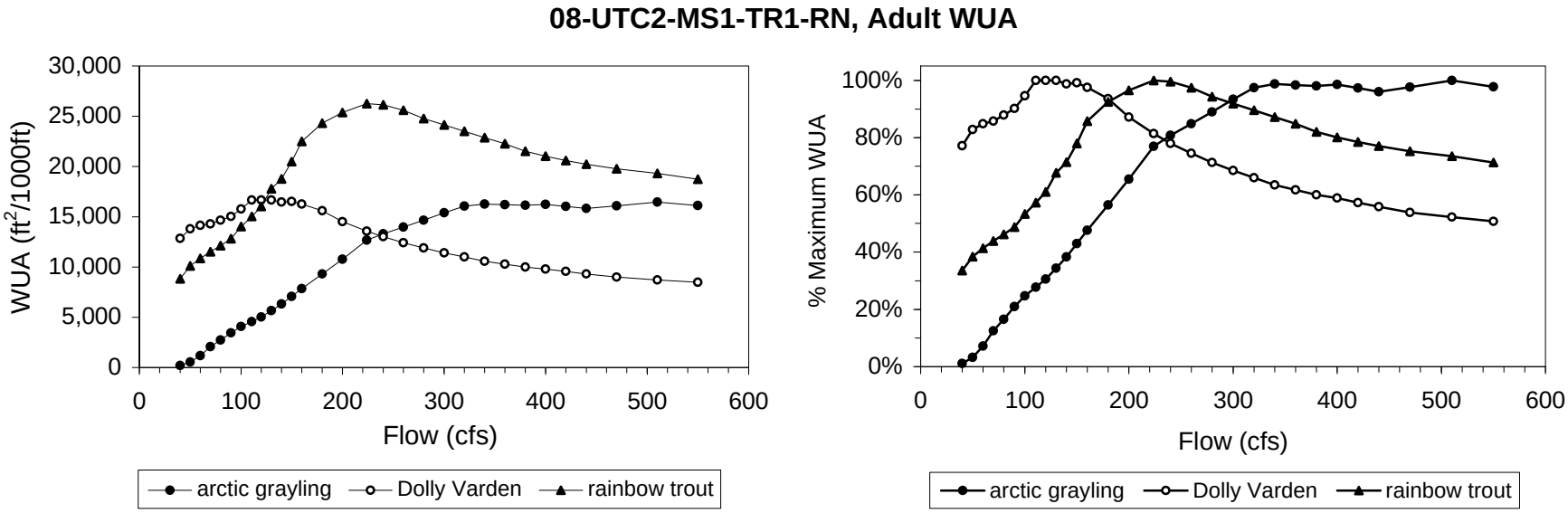

Figure 285
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC2-MS1-TR1 (River Kilometer 41.66) in UTC-E, Upper Talarik Creek, Alaska.

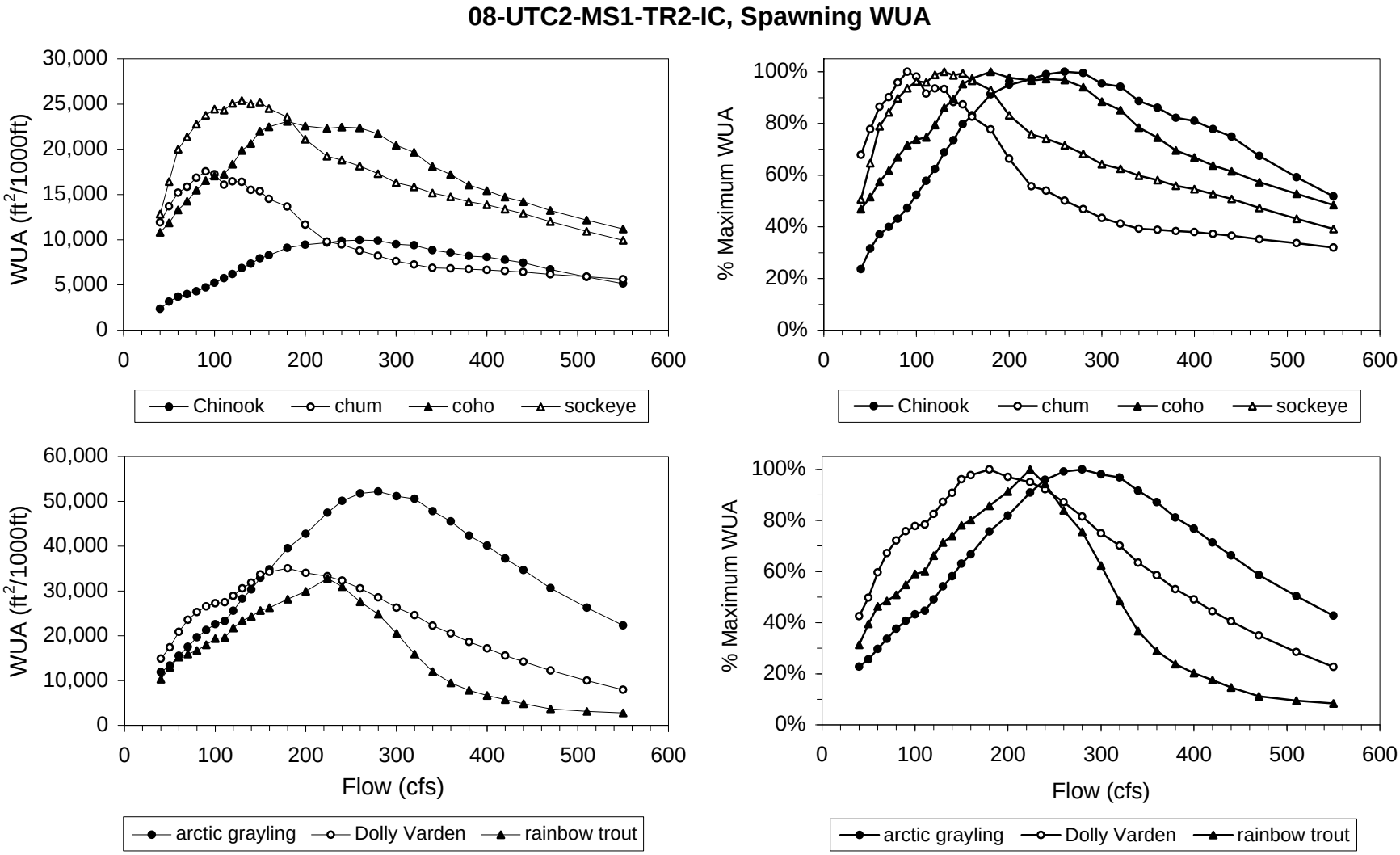

Figure 286
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR2 (River Kilometer 41.73) in UTC-E, Upper Talarik Creek, Alaska.

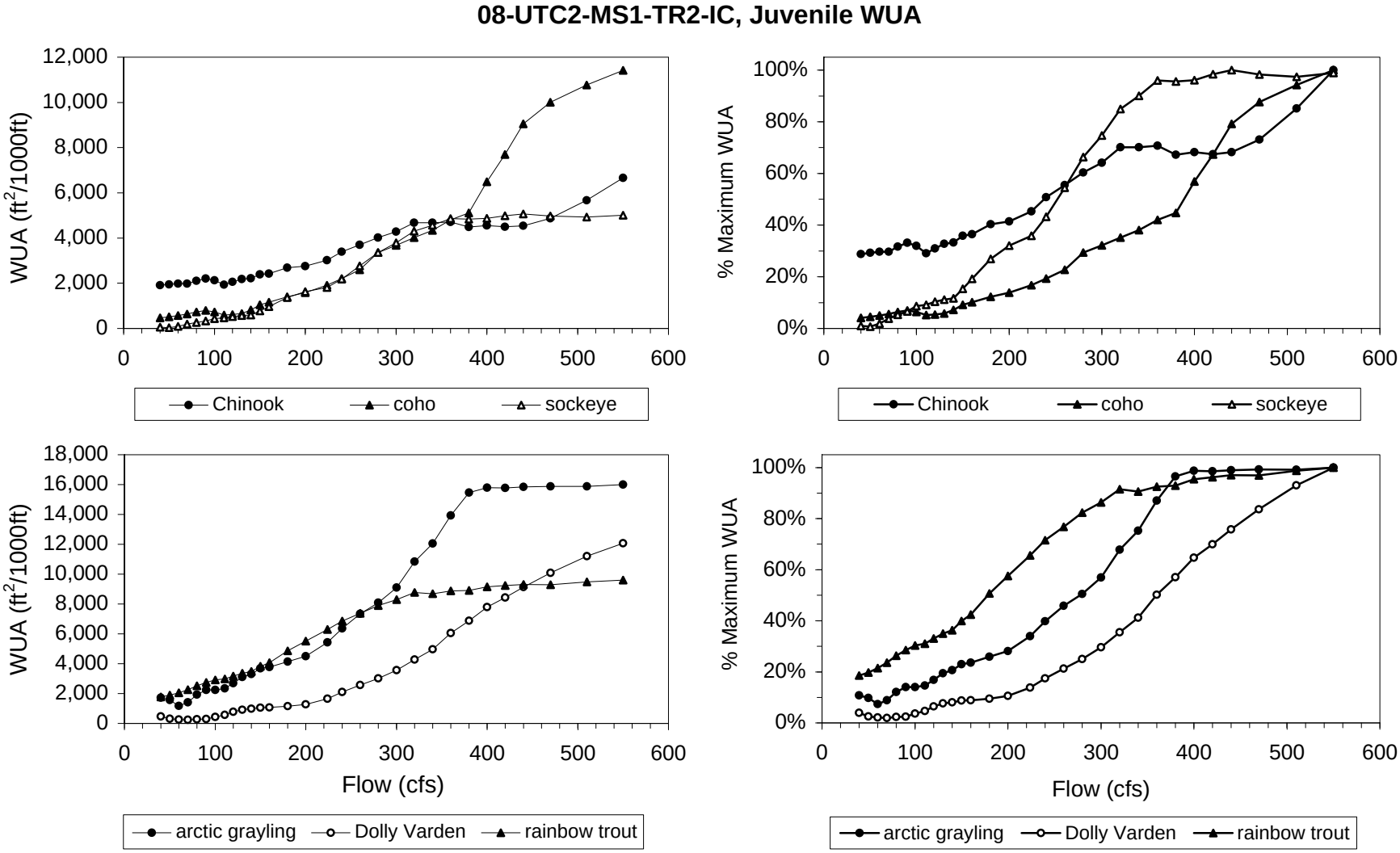

Figure 287
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR2 (River Kilometer 41.73) in UTC-E, Upper Talarik Creek, Alaska.

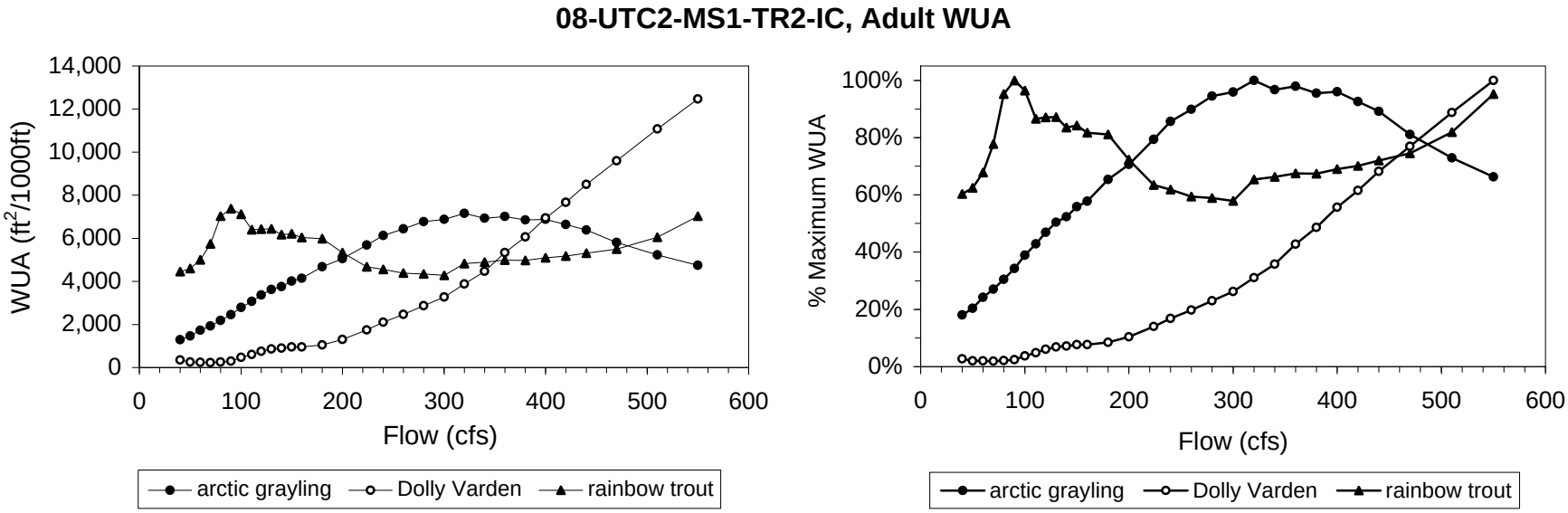

Figure 288
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC2-MS1-TR2 (River Kilometer 41.73) in UTC-E, Upper Talarik Creek, Alaska.

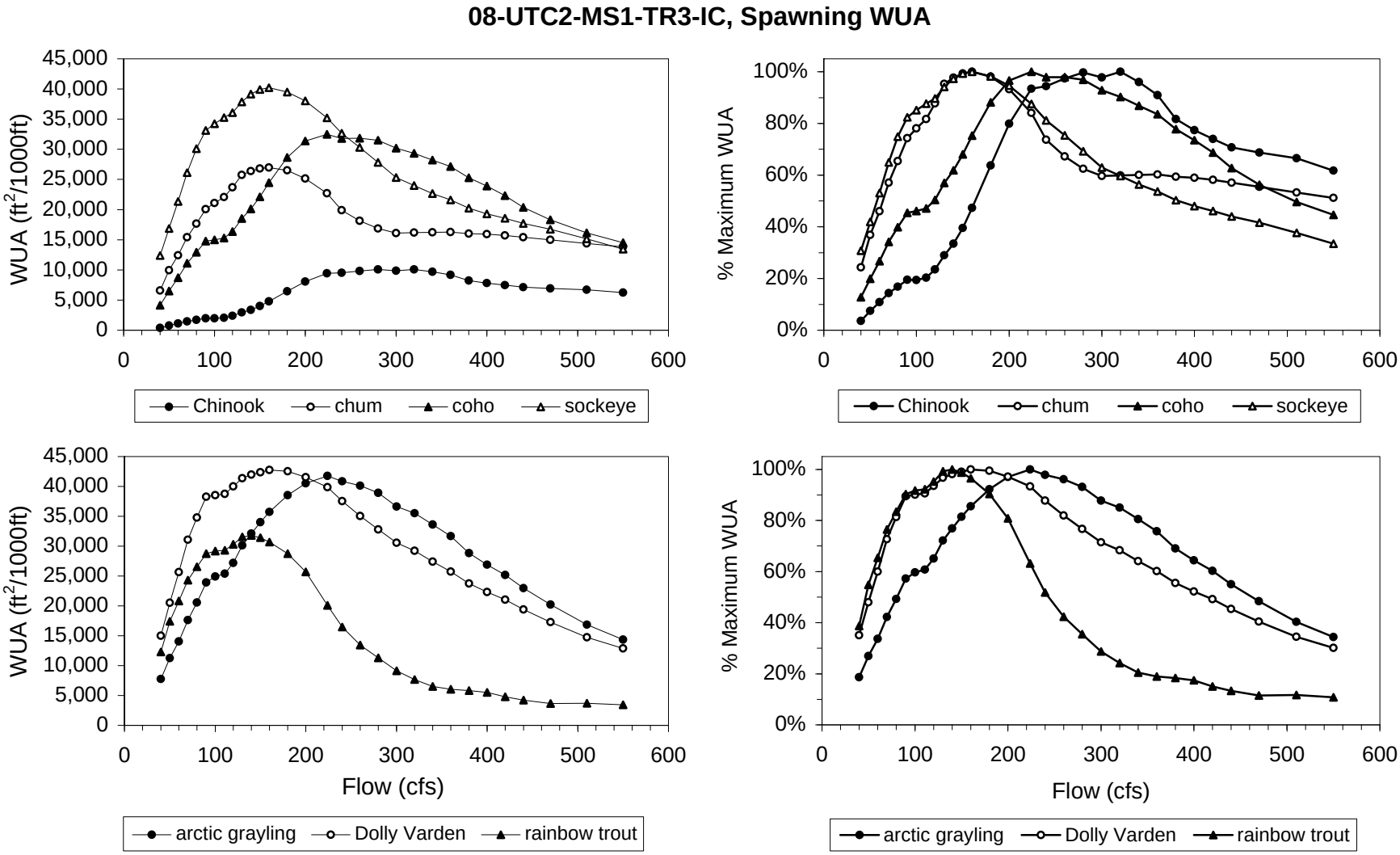

Figure 289
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR3 (River Kilometer 41.76) in UTC-E, Upper Talarik Creek, Alaska.

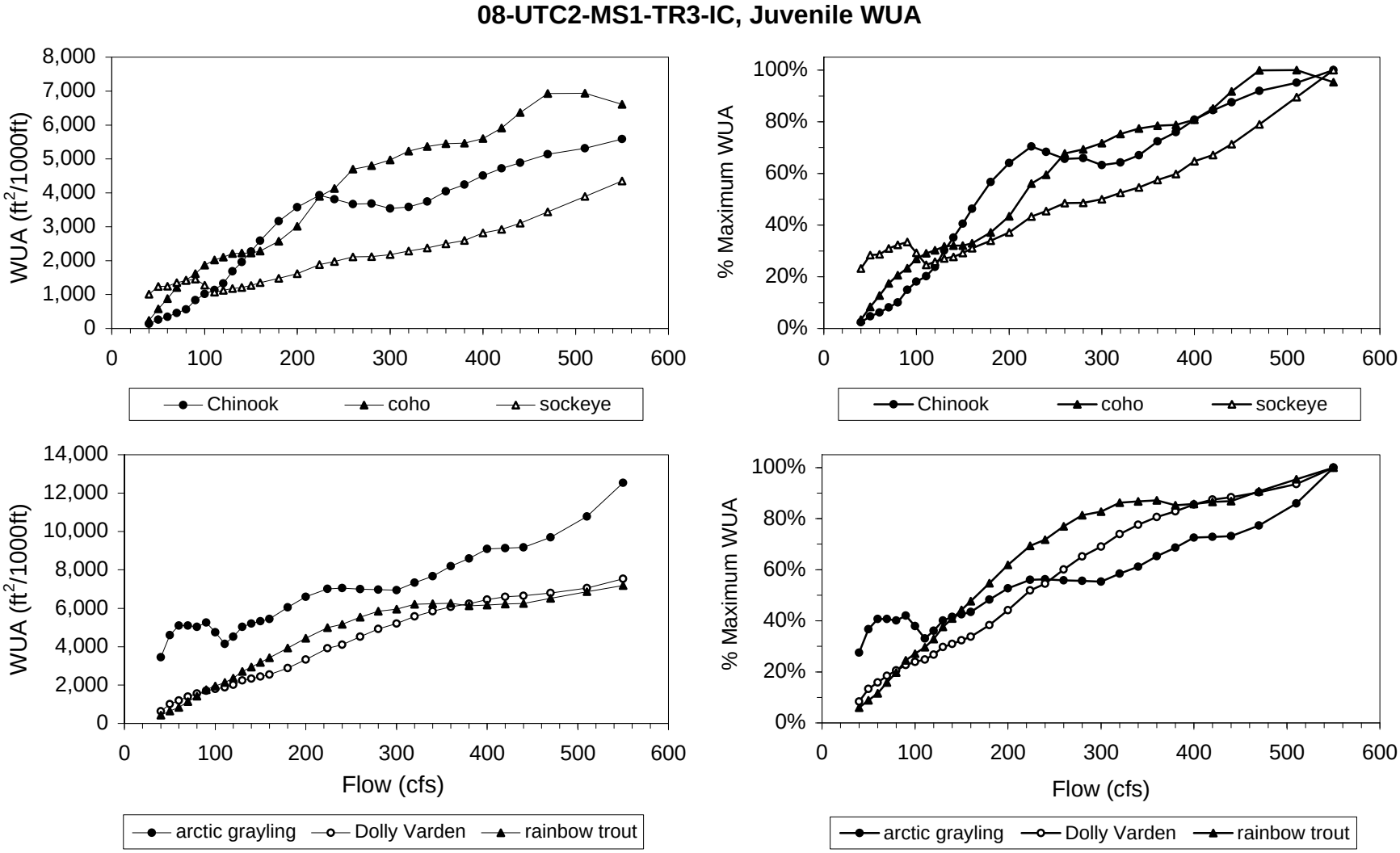

Figure 290
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR3 (River Kilometer 41.76) in UTC-E, Upper Talarik Creek, Alaska.

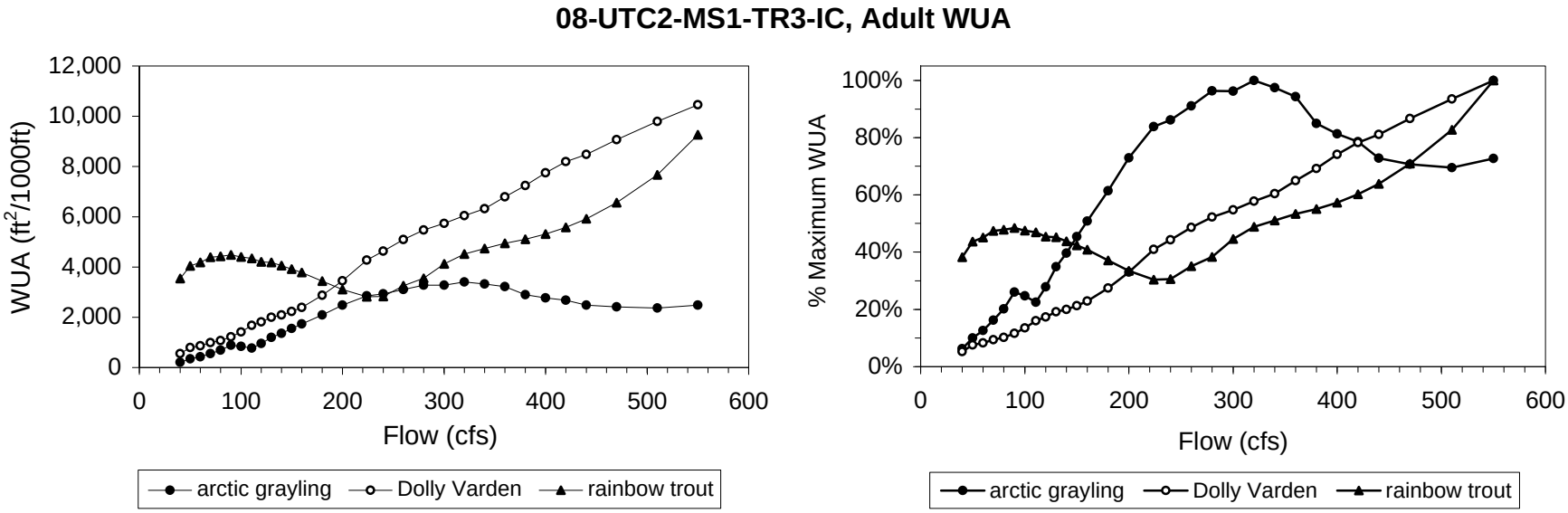

Figure 291
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC2-MS1-TR3 (River Kilometer 41.76) in UTC-E, Upper Talarik Creek, Alaska.

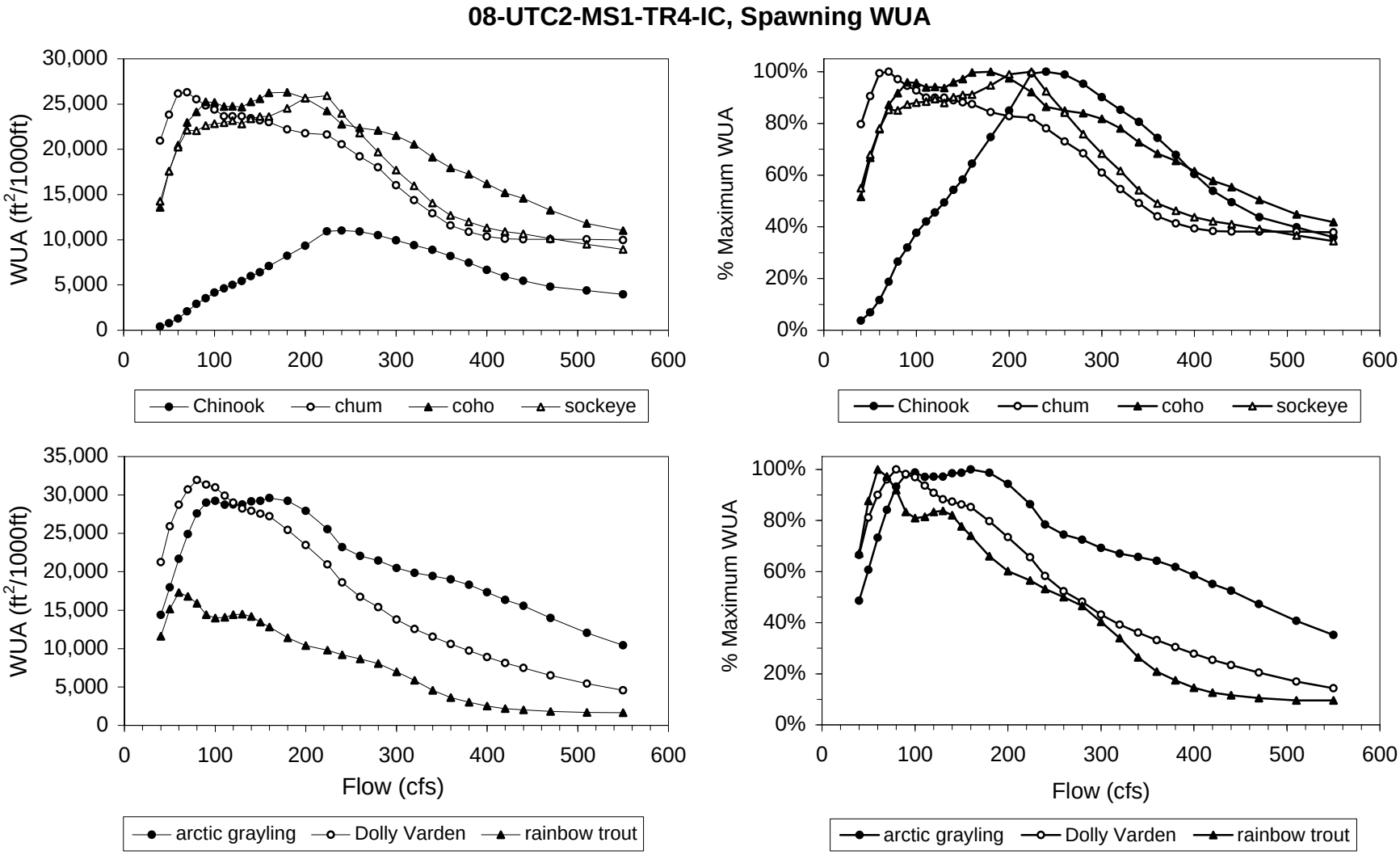

Figure 292
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR4 (River Kilometer 41.83) in UTC-E, Upper Talarik Creek, Alaska.

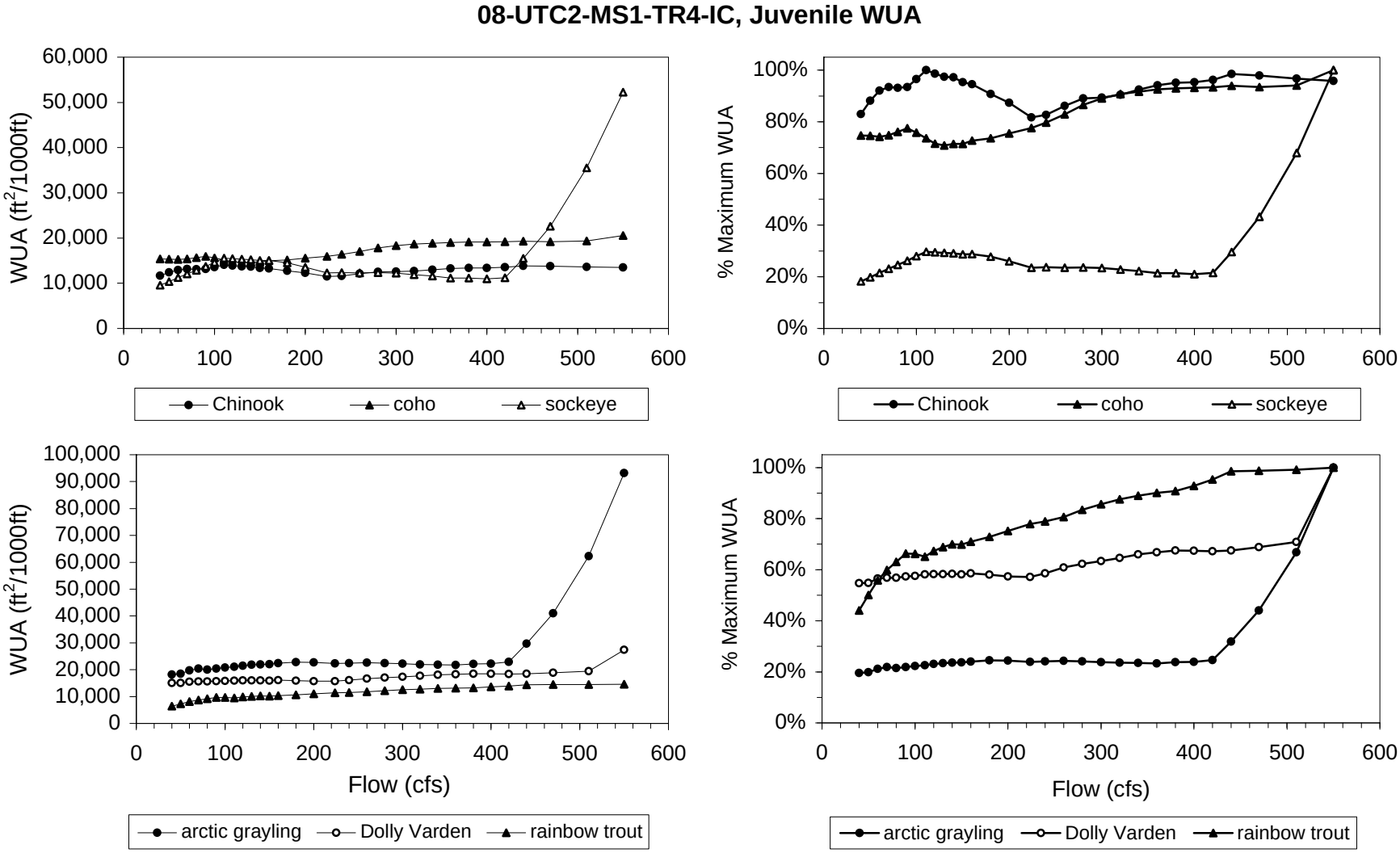

Figure 293
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR4 (River Kilometer 41.83) in UTC-E, Upper Talarik Creek, Alaska.

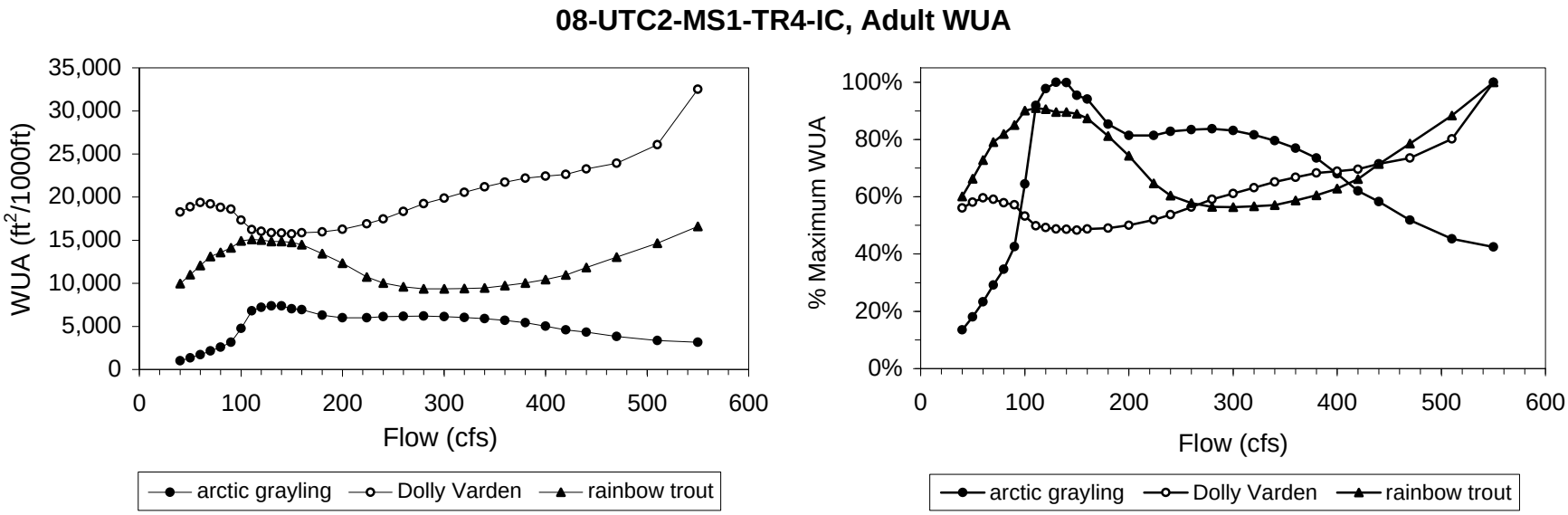

Figure 294
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC2-MS1-TR4 (River Kilometer 41.83) in UTC-E, Upper Talarik Creek, Alaska.

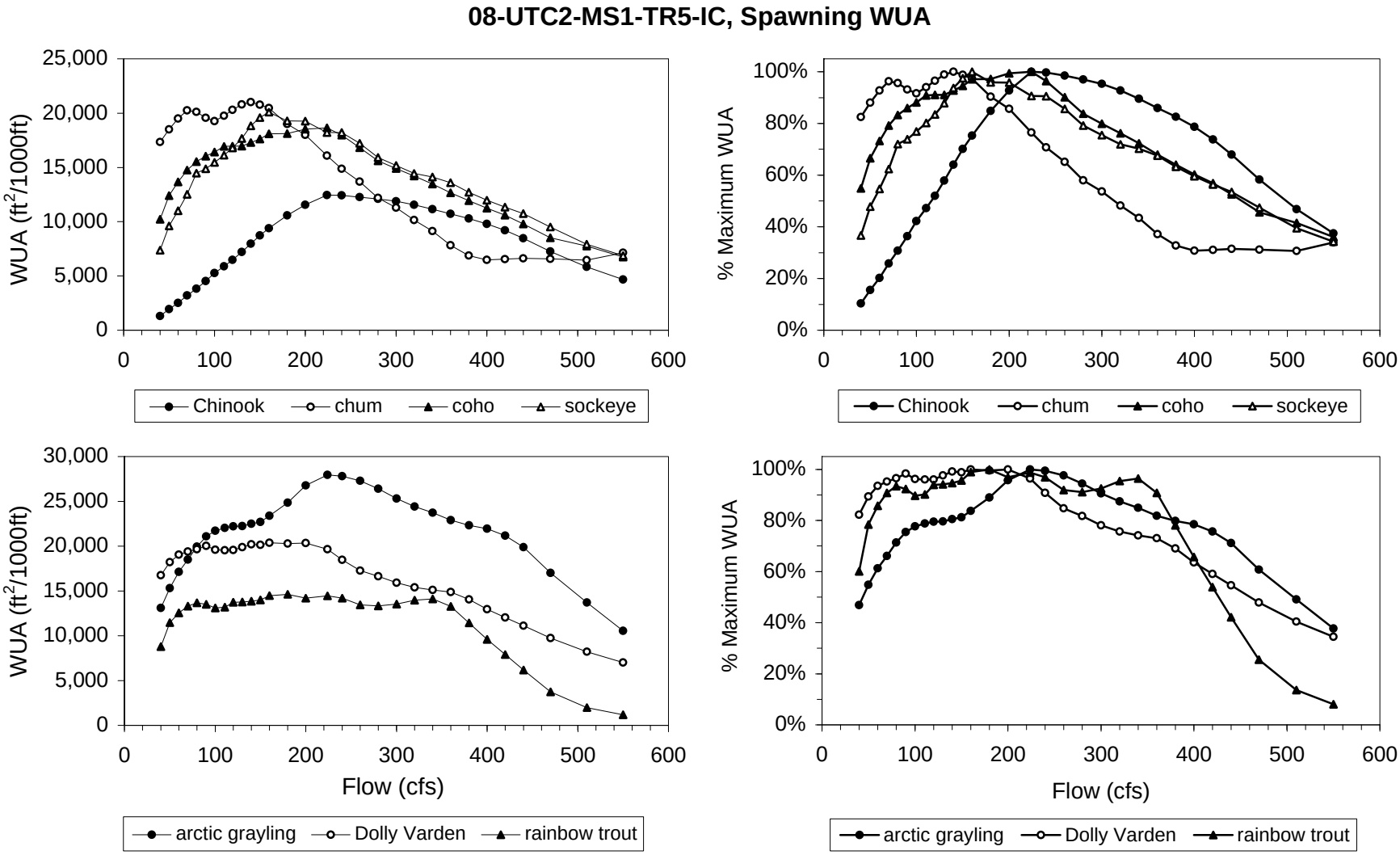

Figure 295
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR5 (River Kilometer 41.88) in UTC-E, Upper Talarik Creek, Alaska.

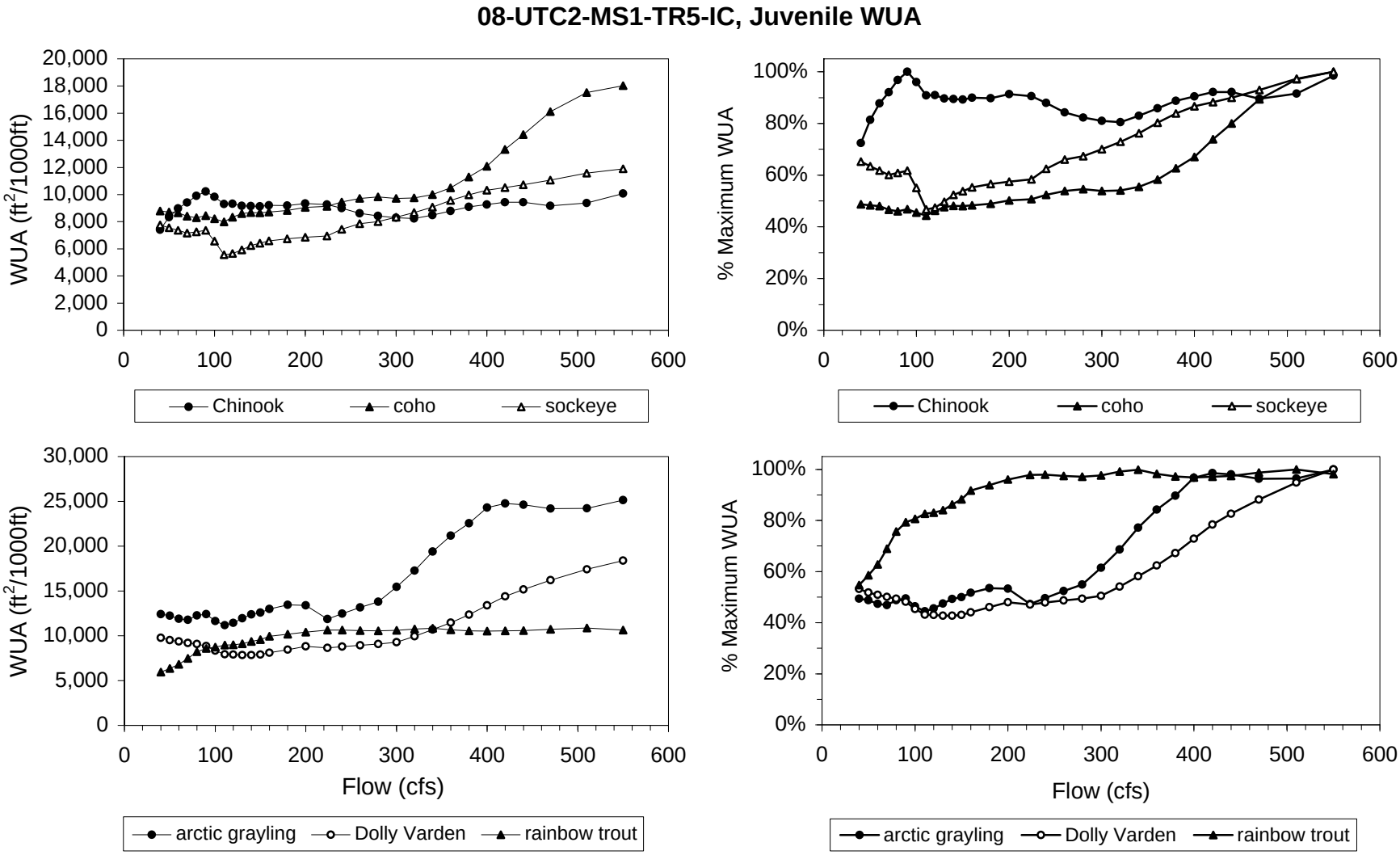

Figure 296
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR5 (River Kilometer 41.88) in UTC-E, Upper Talarik Creek, Alaska.

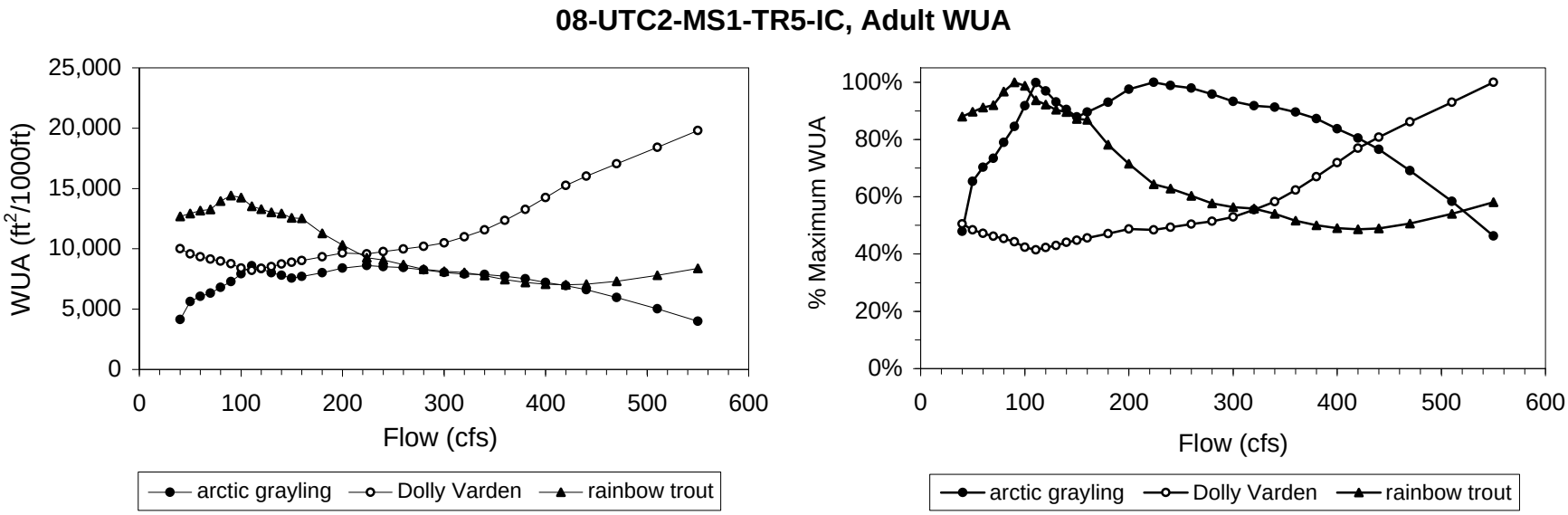

Figure 297
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC2-MS1-TR5 (River Kilometer 41.88) in UTC-E, Upper Talarik Creek, Alaska.

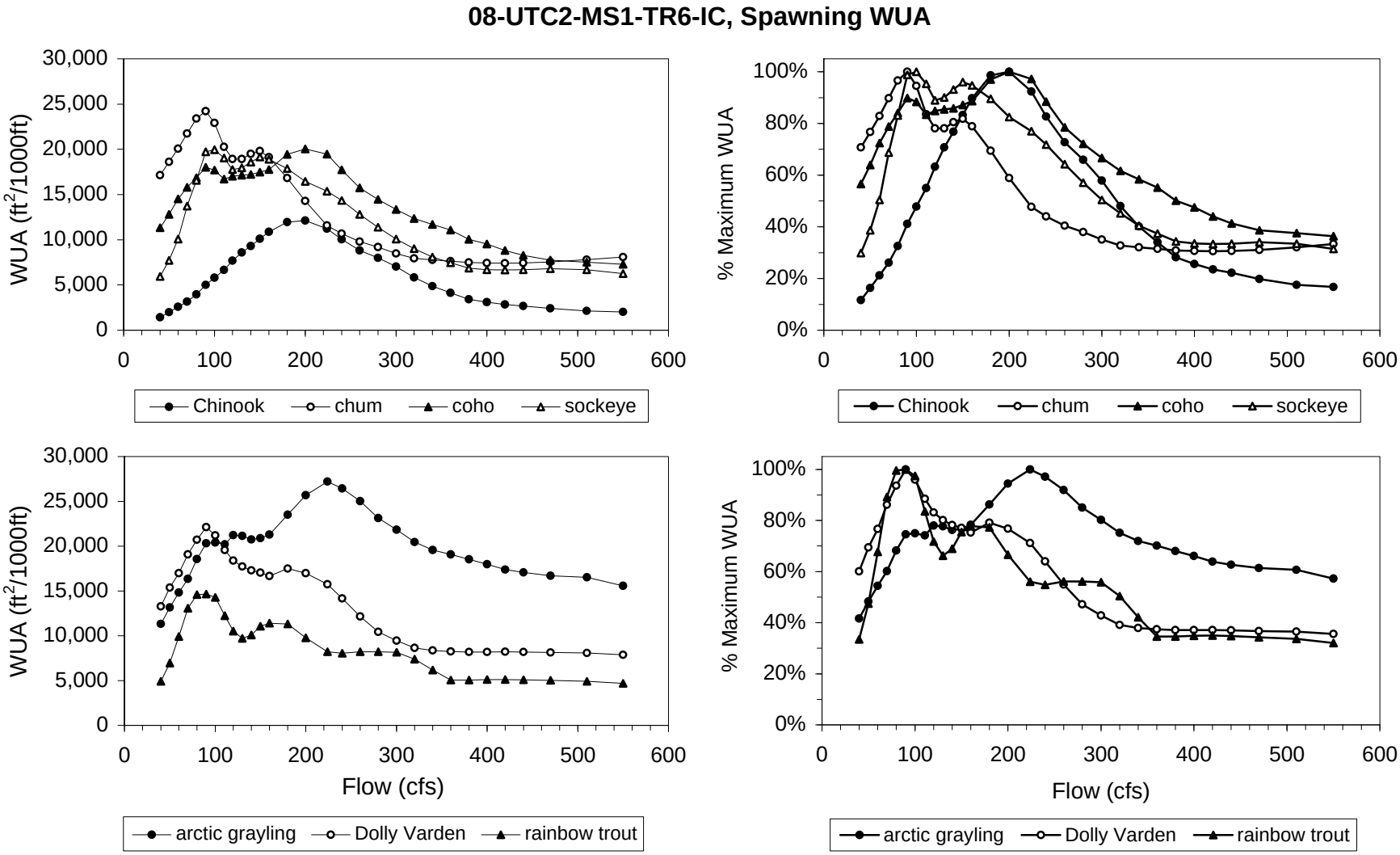

Figure 298
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR6 (River Kilometer 41.90) in UTC-E, Upper Talarik Creek, Alaska.

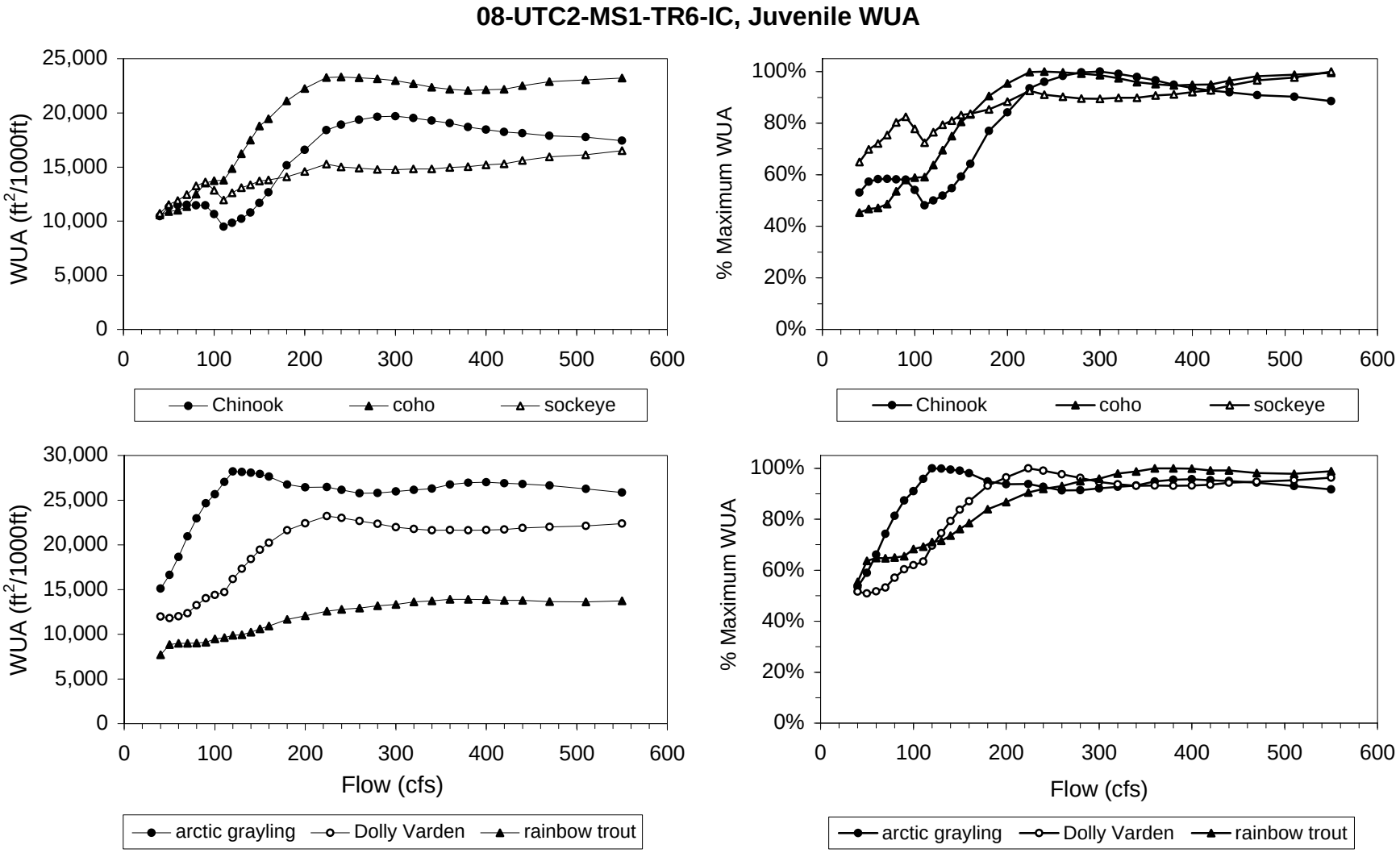

Figure 299
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 08-UTC2-MS1-TR6 (River Kilometer 41.90) in UTC-E, Upper Talarik Creek, Alaska.

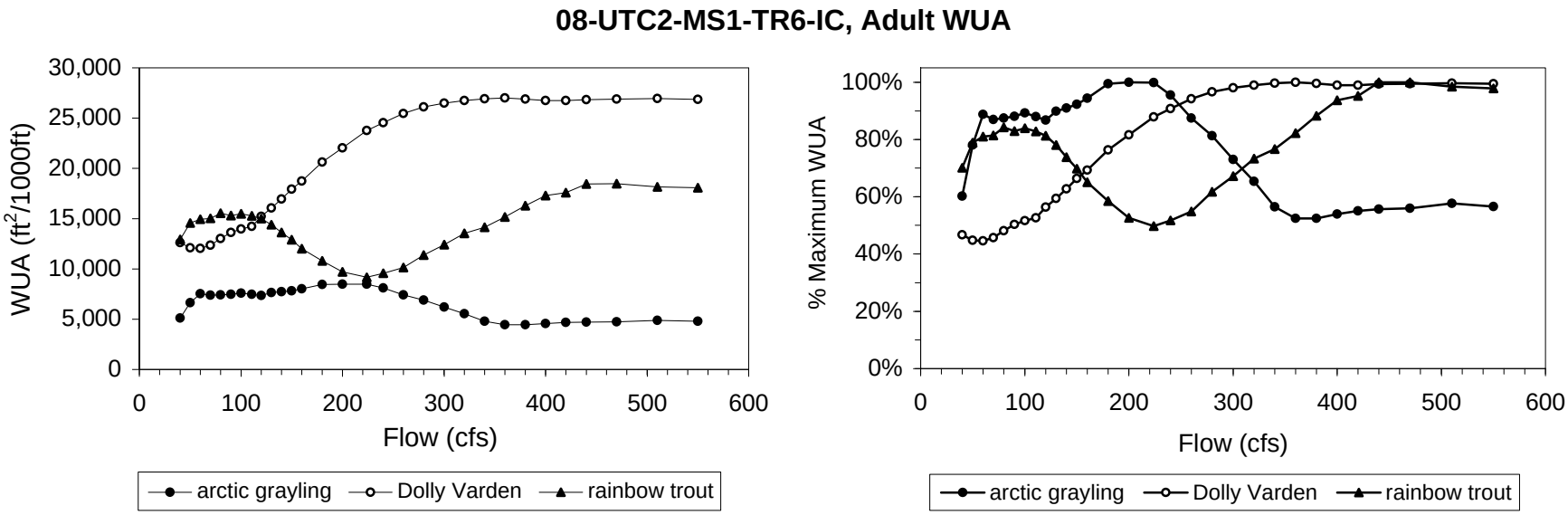

Figure 300
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 08-UTC2-MS1-TR6 (River Kilometer 41.90) in UTC-E, Upper Talarik Creek, Alaska.

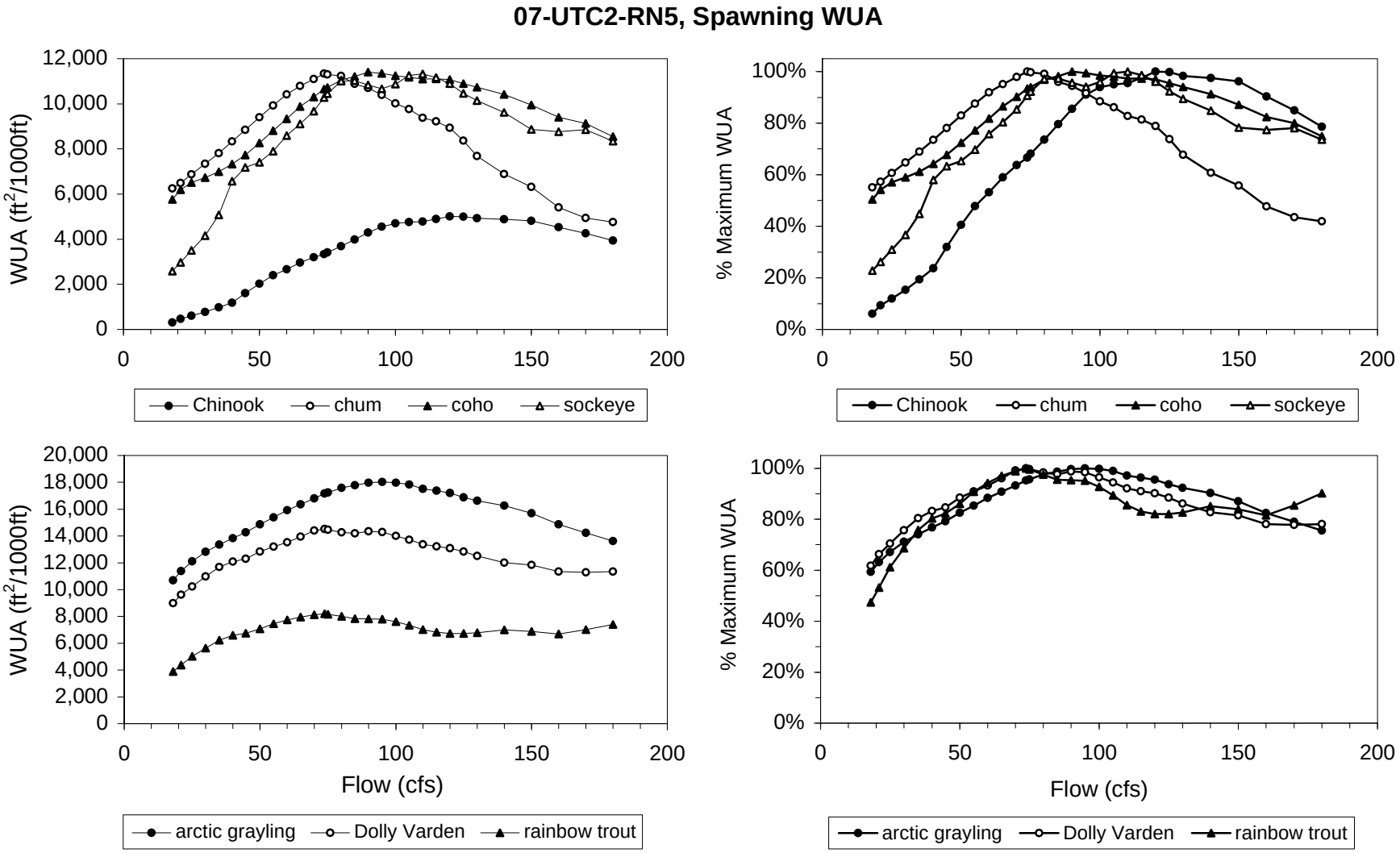

Figure 301
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN5 (River Kilometer 42.71) in UTC-E, Upper Talarik Creek, Alaska.

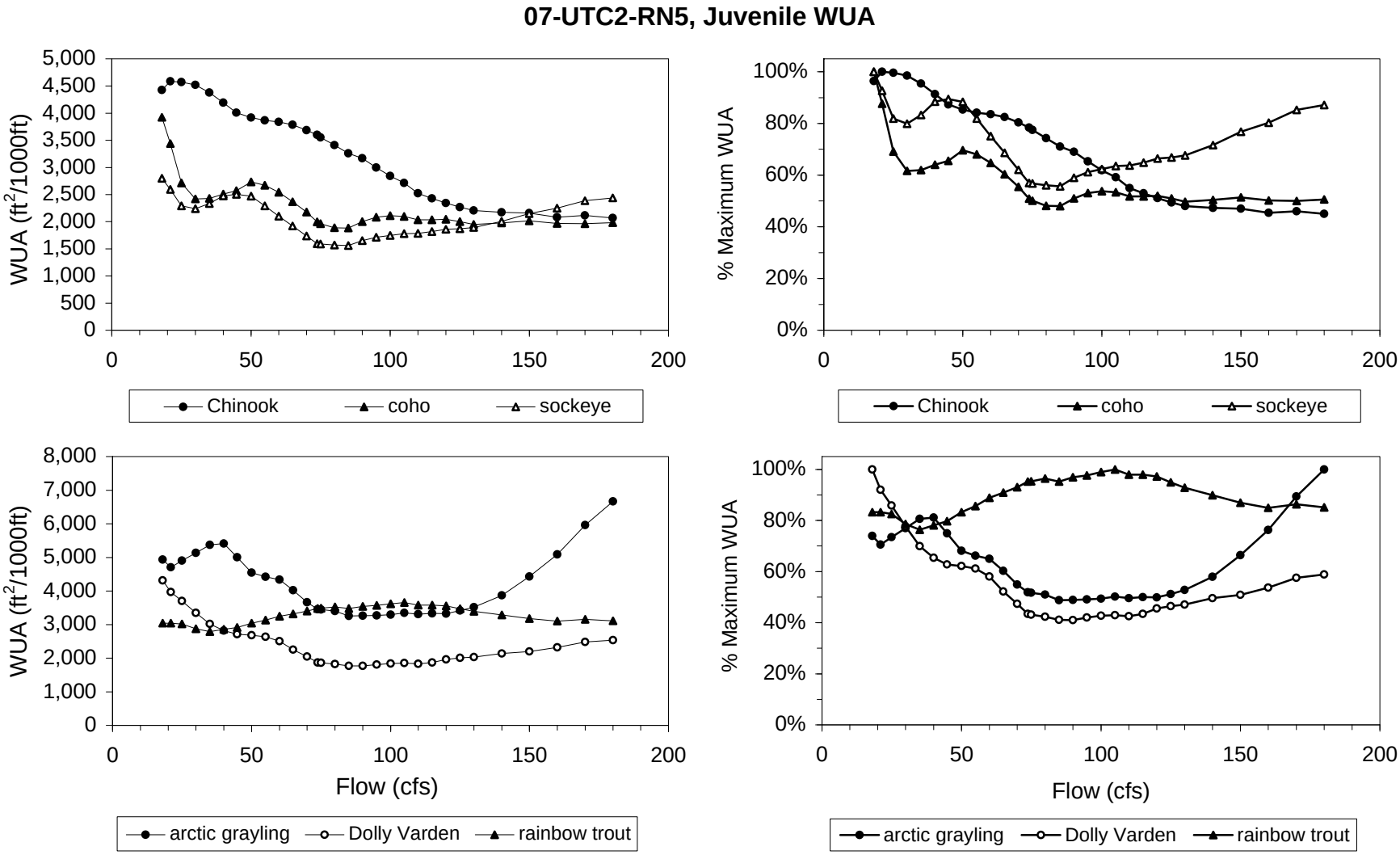

Figure 302
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN5 (River Kilometer 42.71) in UTC-E, Upper Talarik Creek, Alaska.

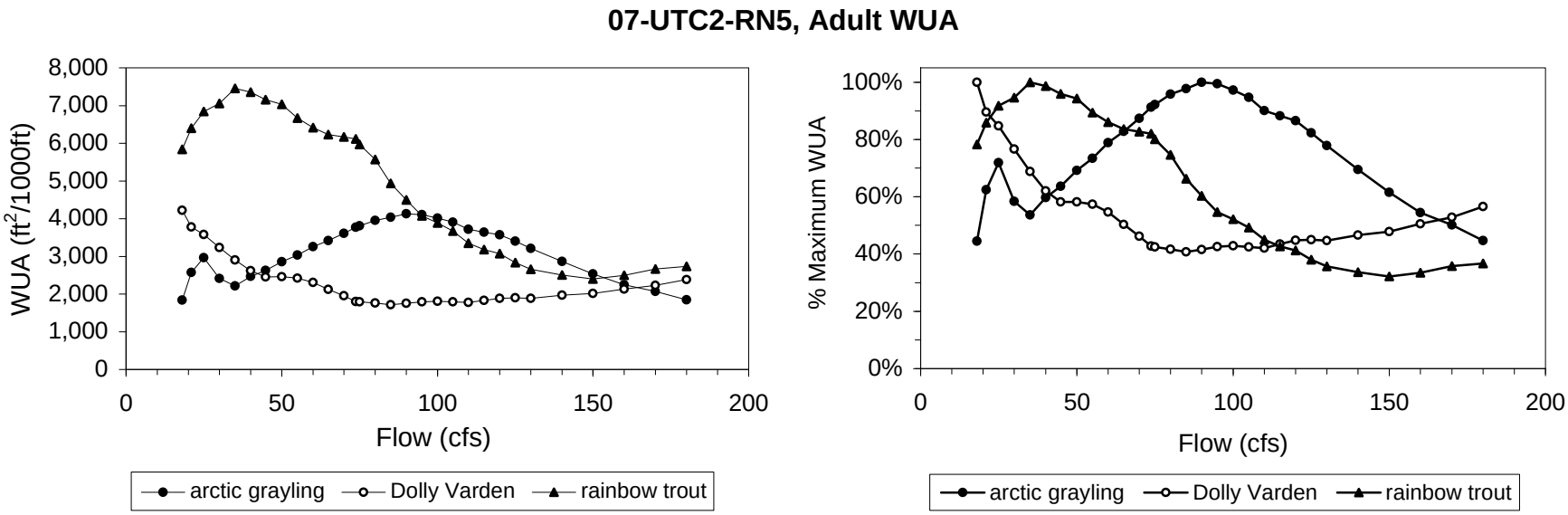

Figure 303
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-UTC2-RN5 (River Kilometer 42.71) in UTC-E, Upper Talarik Creek, Alaska.

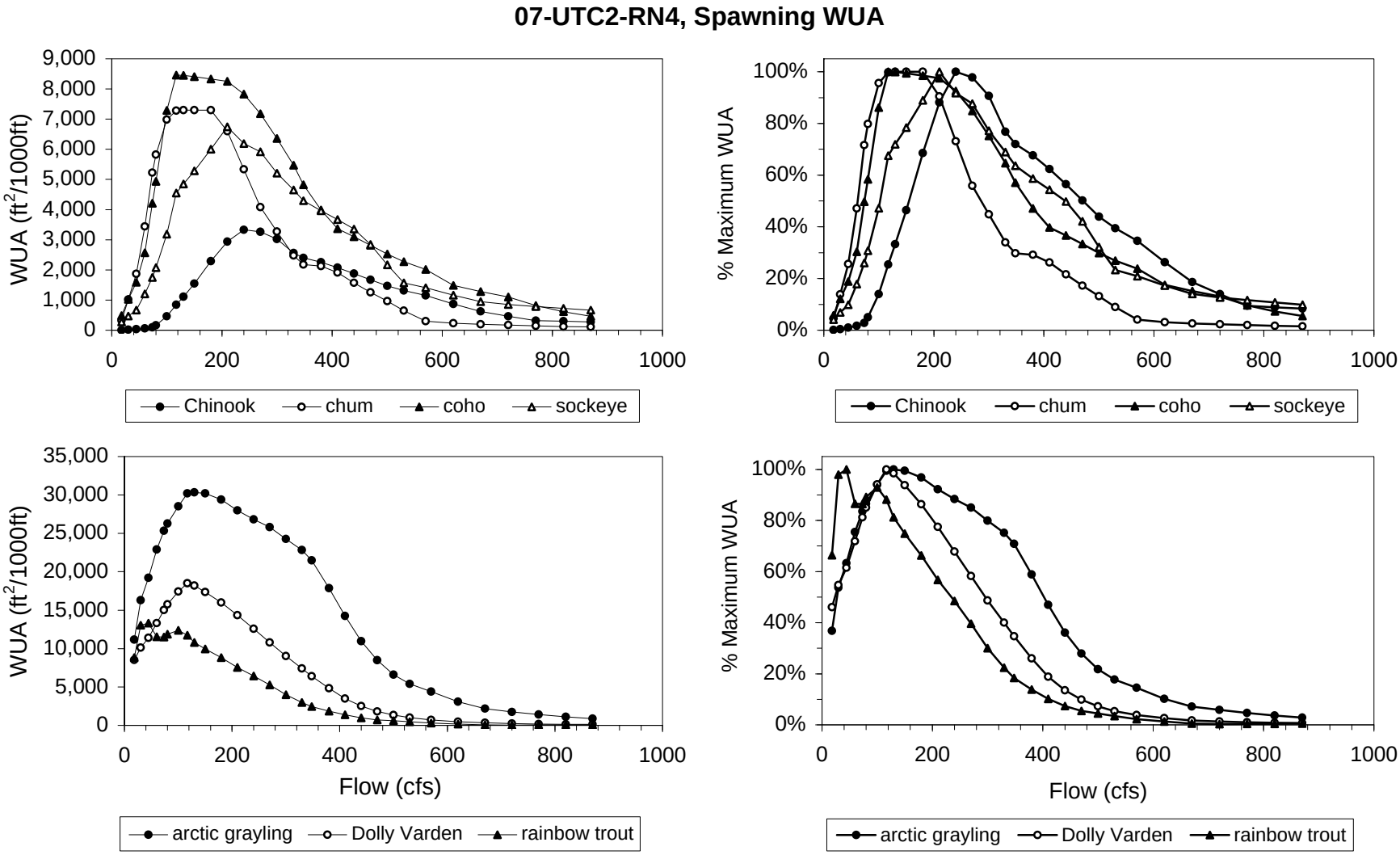

Figure 304
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN4 (River Kilometer 44.63) in UTC-E, Upper Talarik Creek, Alaska.

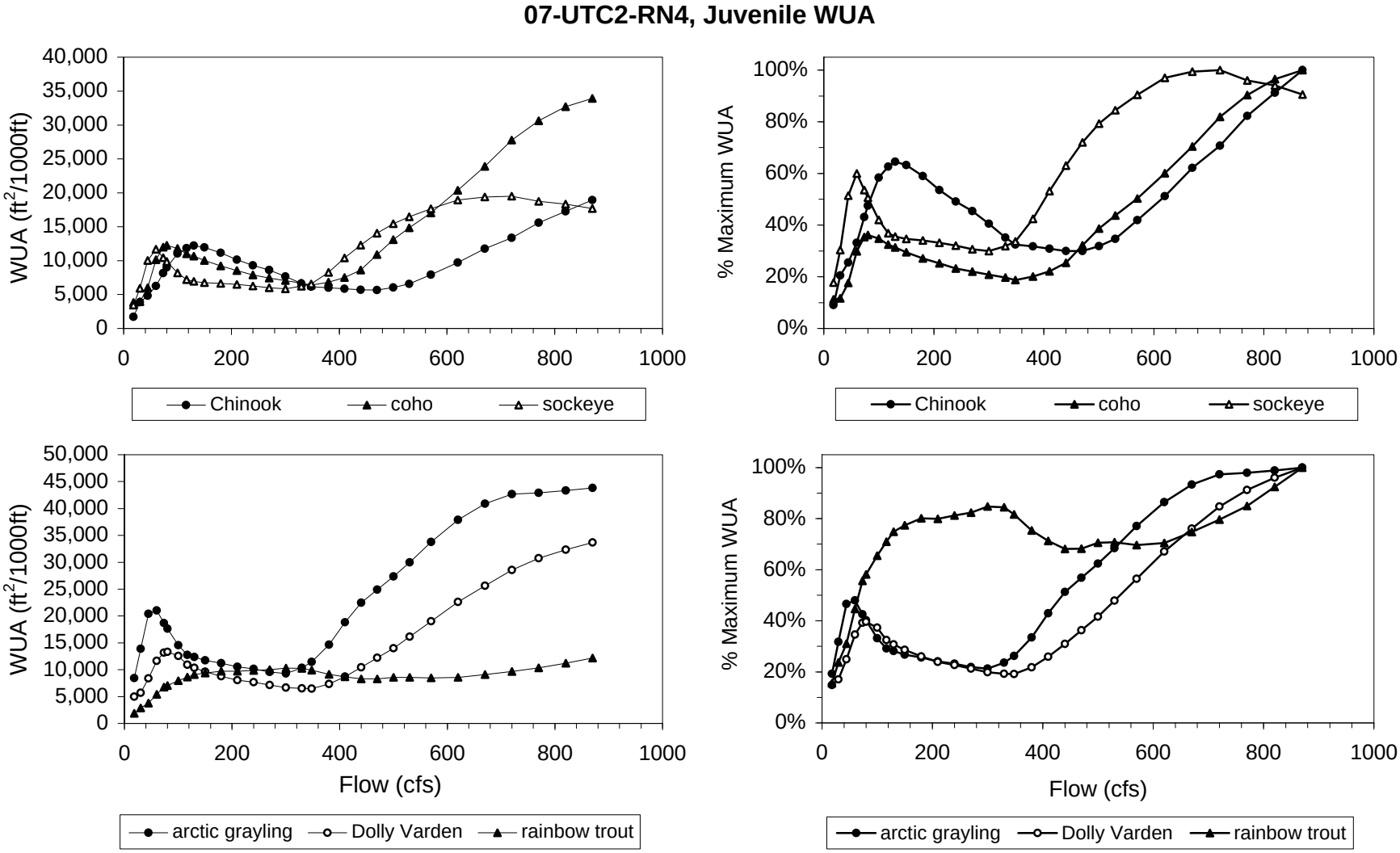

Figure 305
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 07-UTC2-RN4 (River Kilometer 44.63) in UTC-E, Upper Talarik Creek, Alaska.

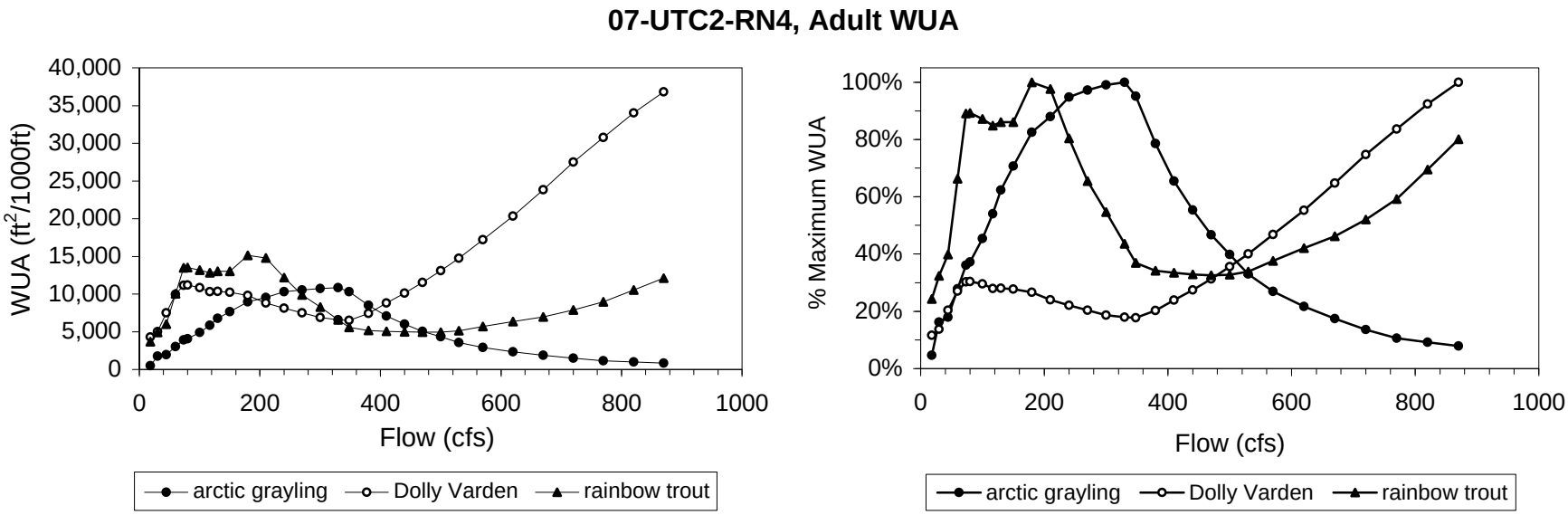

Figure 306
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 07-UTC2-RN4 (River Kilometer 44.63) in UTC-E, Upper Talarik Creek, Alaska.

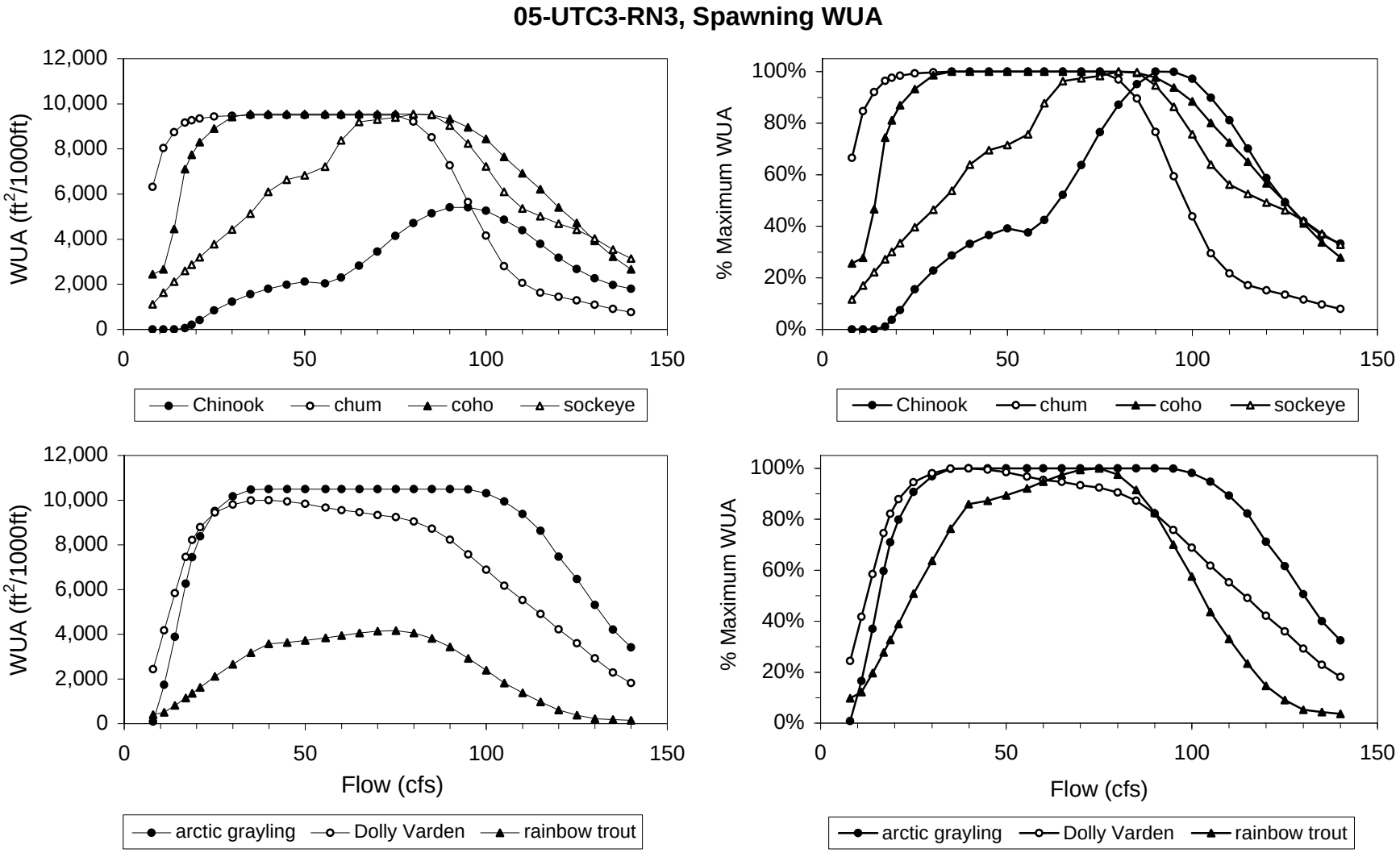

Figure 307
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RN3 (River Kilometer 48.86) in UTC-F, Upper Talarik Creek, Alaska.

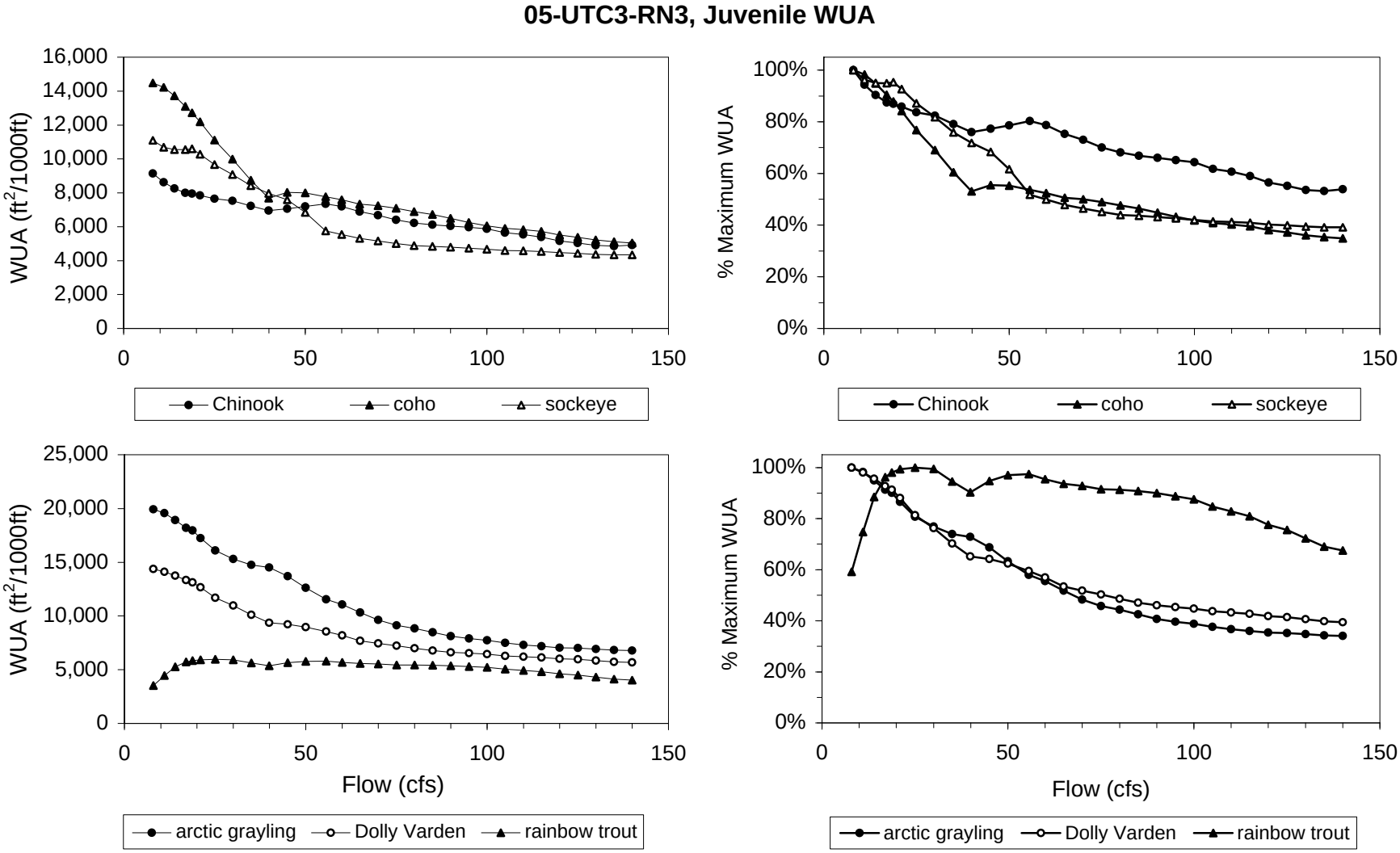

Figure 308
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RN3 (River Kilometer 48.86) in UTC-F, Upper Talarik Creek, Alaska.

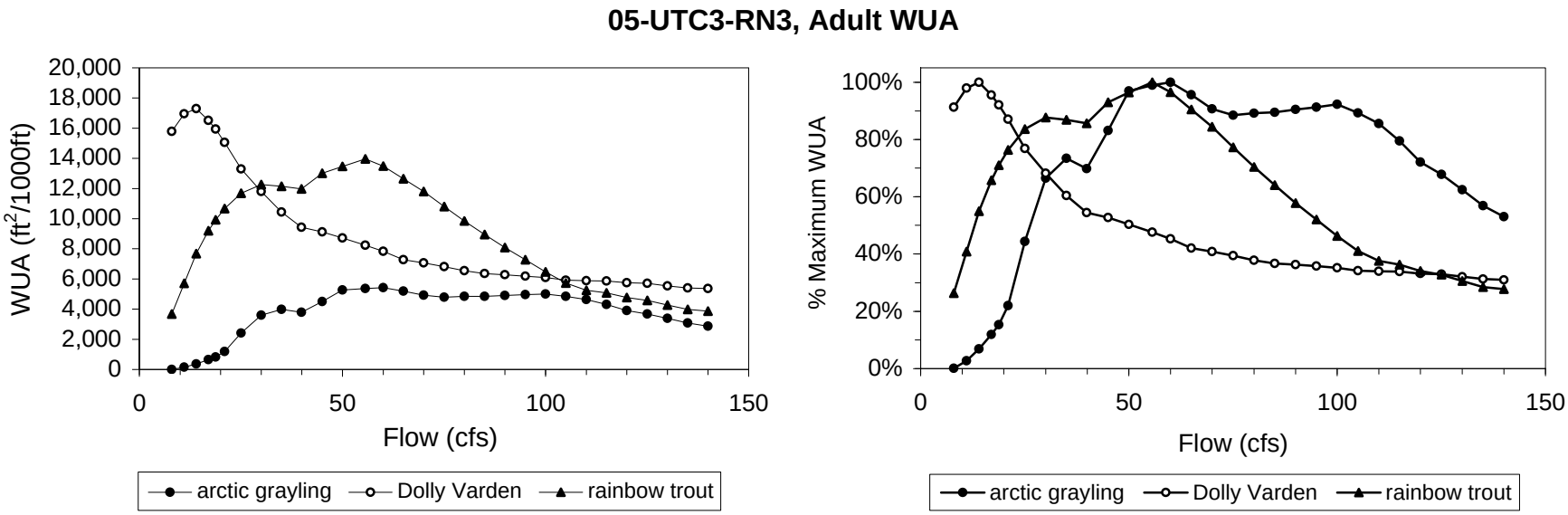

Figure 309
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC3-RN3 (River Kilometer 48.86) in UTC-F, Upper Talarik Creek, Alaska.

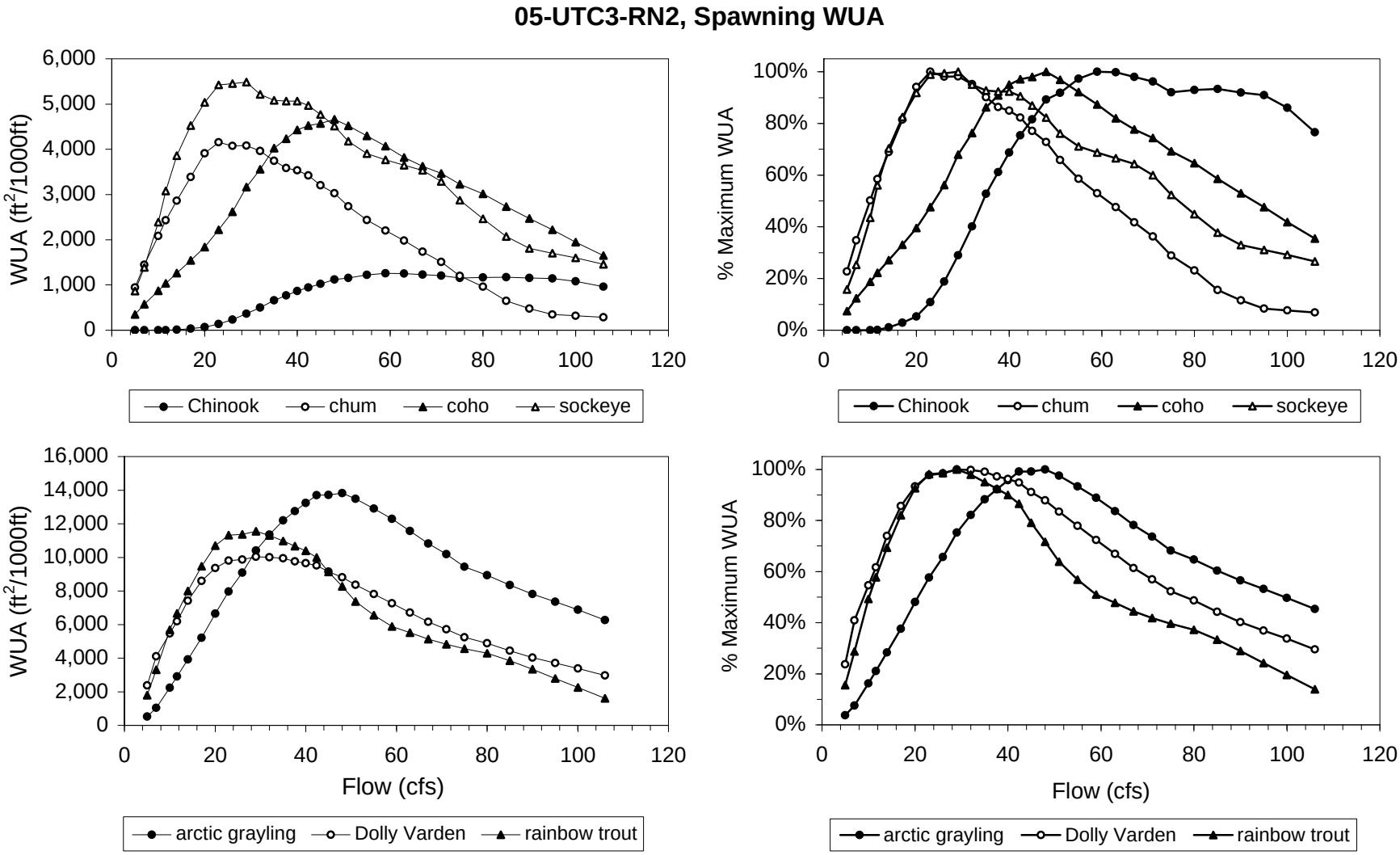

Figure 310
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RN2 (River Kilometer 52.01) in UTC-F, Upper Talarik Creek, Alaska.

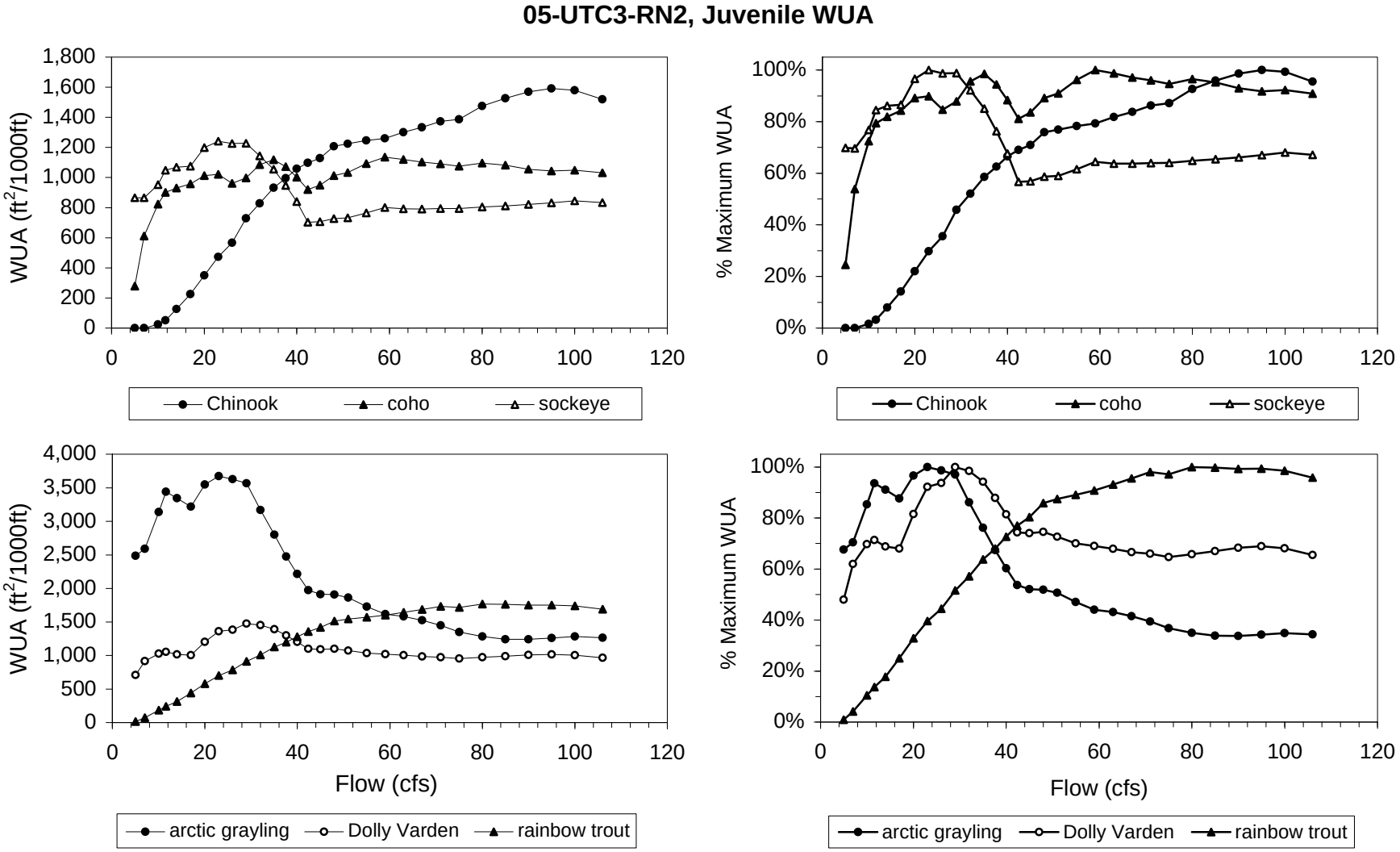

Figure 311
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RN2 (River Kilometer 52.01) in UTC-F, Upper Talarik Creek, Alaska.

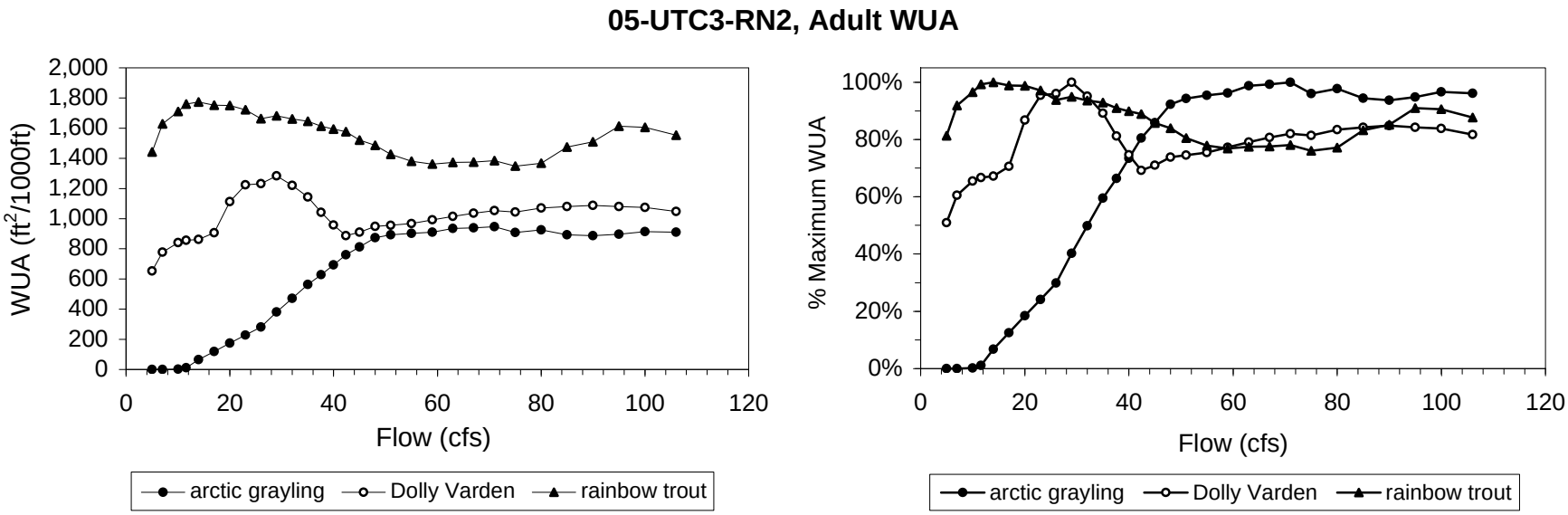

Figure 312
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC3-RN2 (River Kilometer 52.01) in UTC-F, Upper Talarik Creek, Alaska.

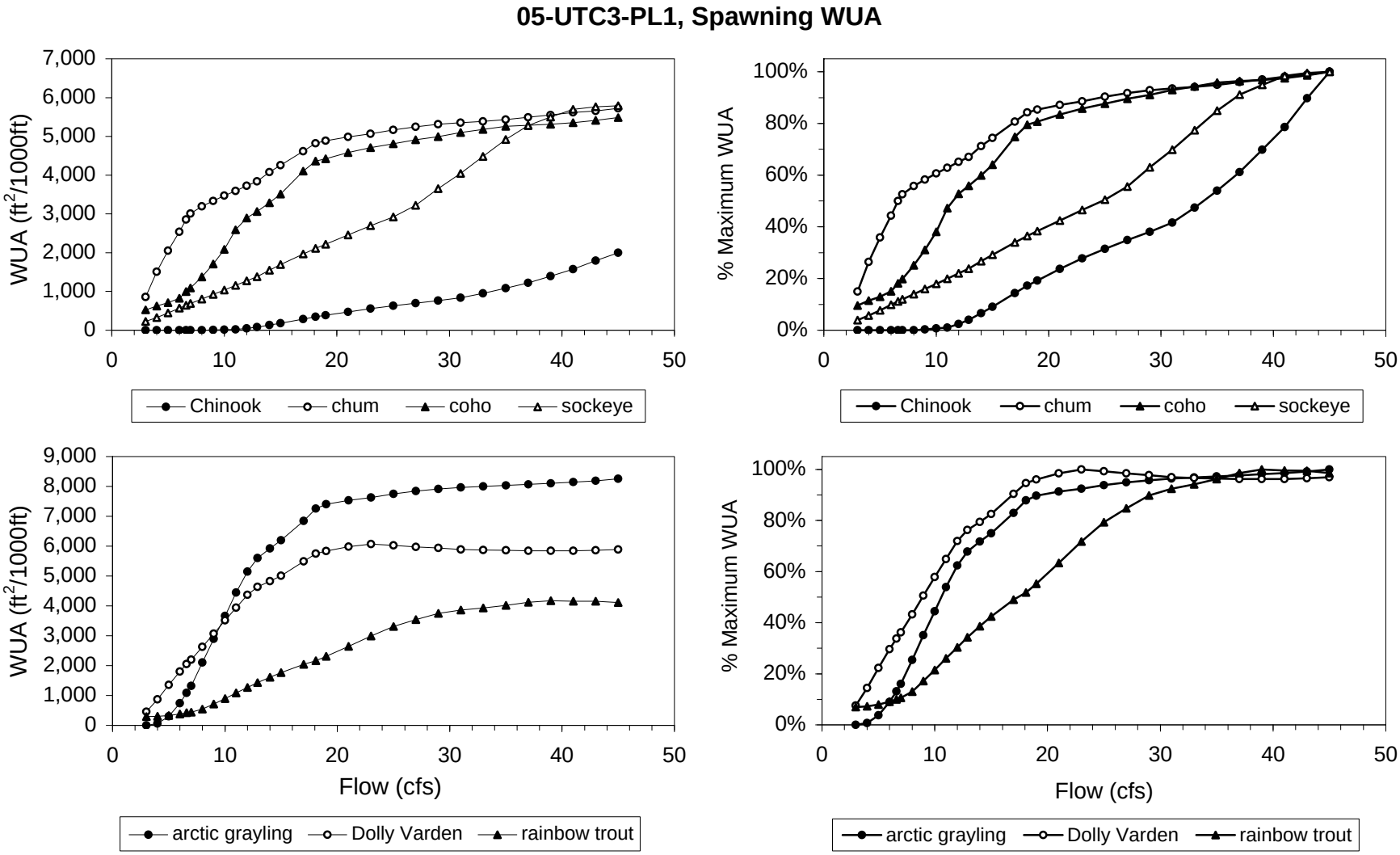

Figure 313
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-PL1 (River Kilometer 56.65) in UTC-F, Upper Talarik Creek, Alaska.

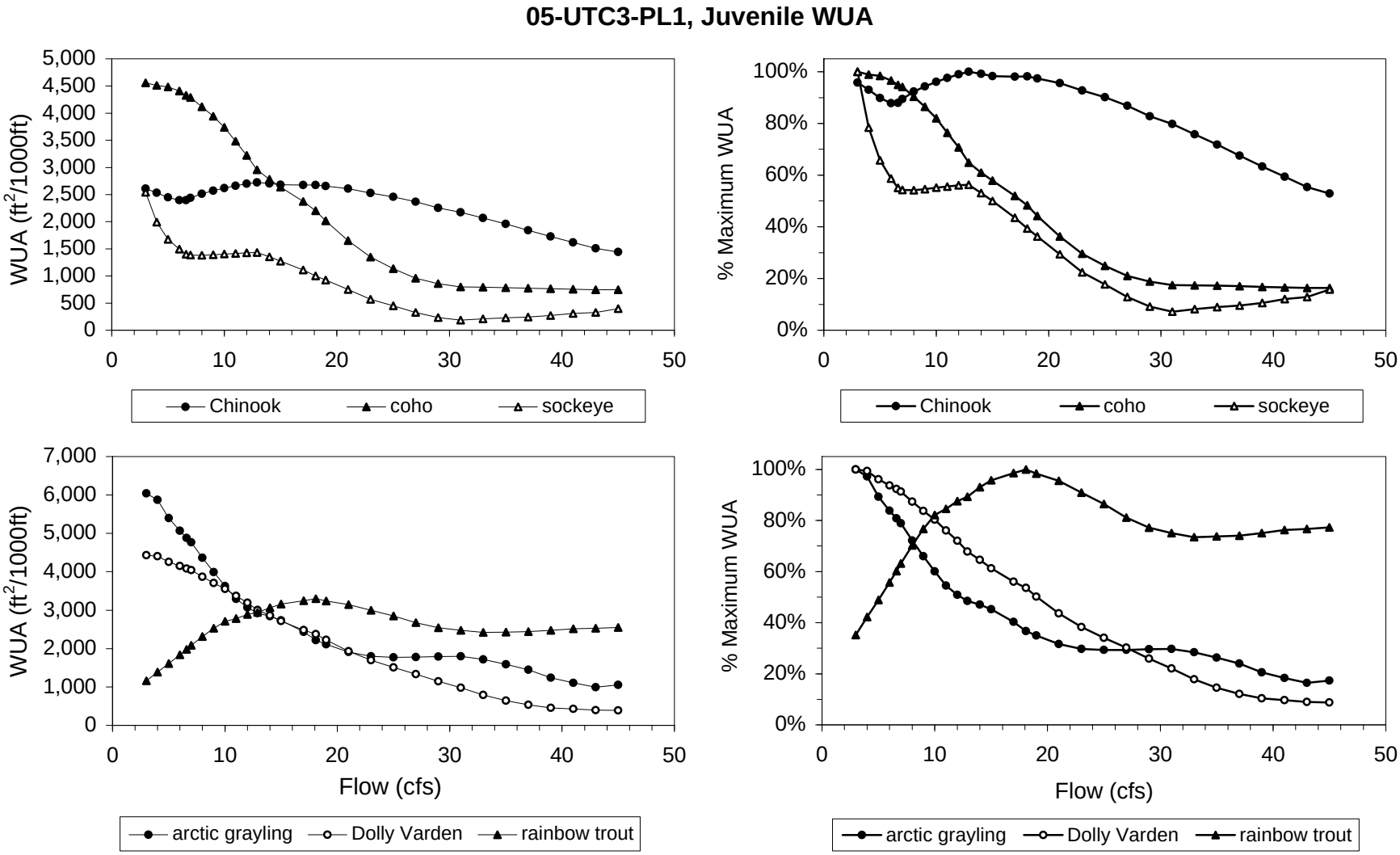

Figure 314
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-PL1 (River Kilometer 56.65) in UTC-F, Upper Talarik Creek, Alaska.

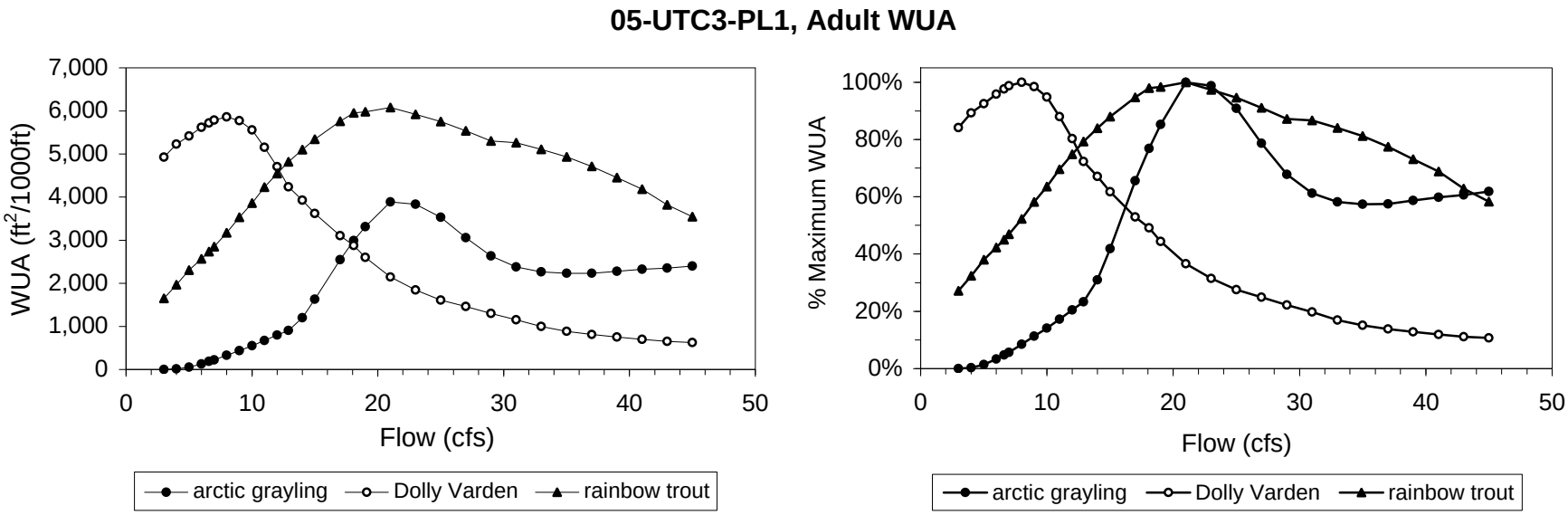

Figure 315
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC3-PL1 (River Kilometer 56.65) in UTC-F, Upper Talarik Creek, Alaska.

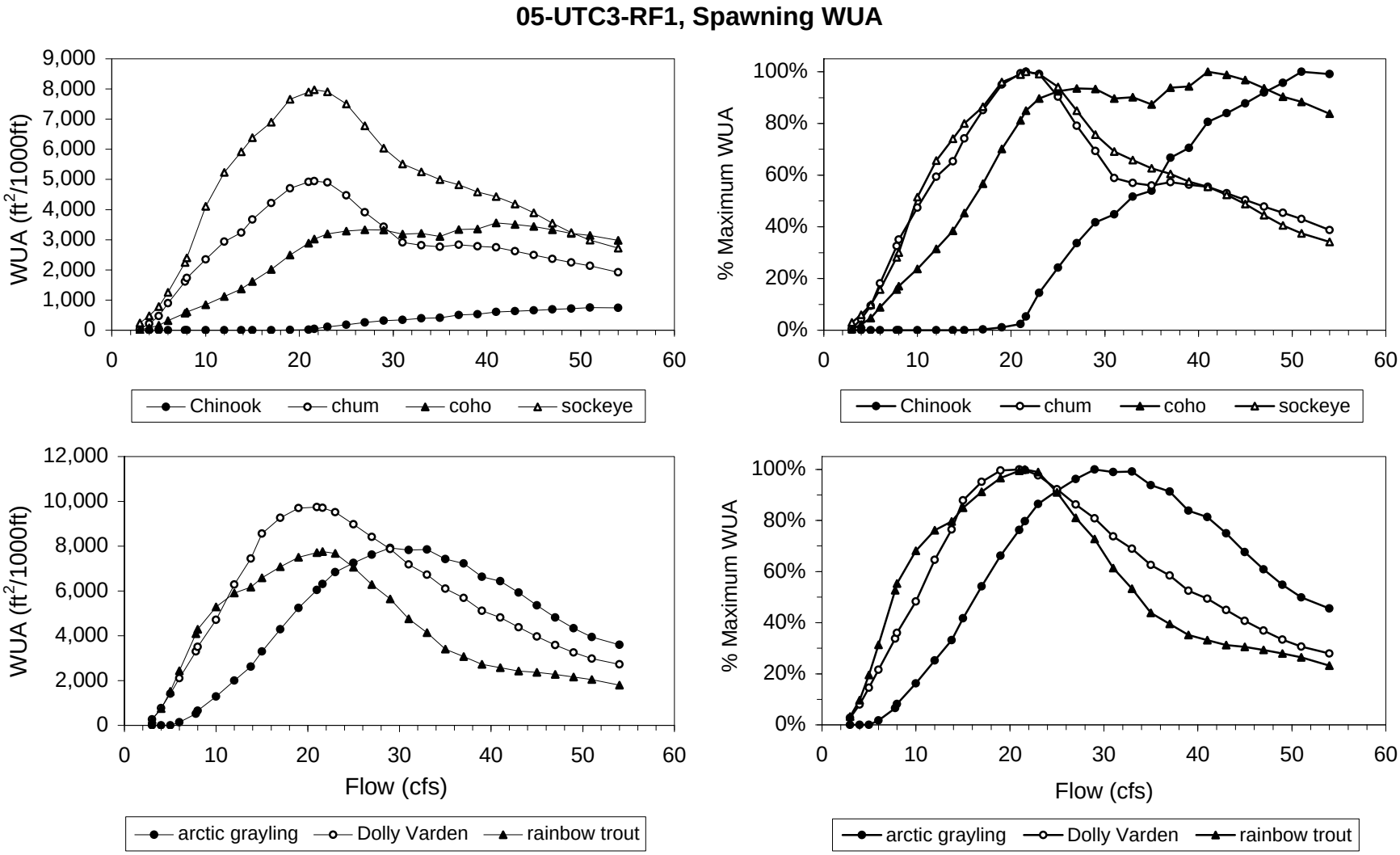

Figure 316
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RF1 (River Kilometer 56.83) in UTC-F, Upper Talarik Creek, Alaska.

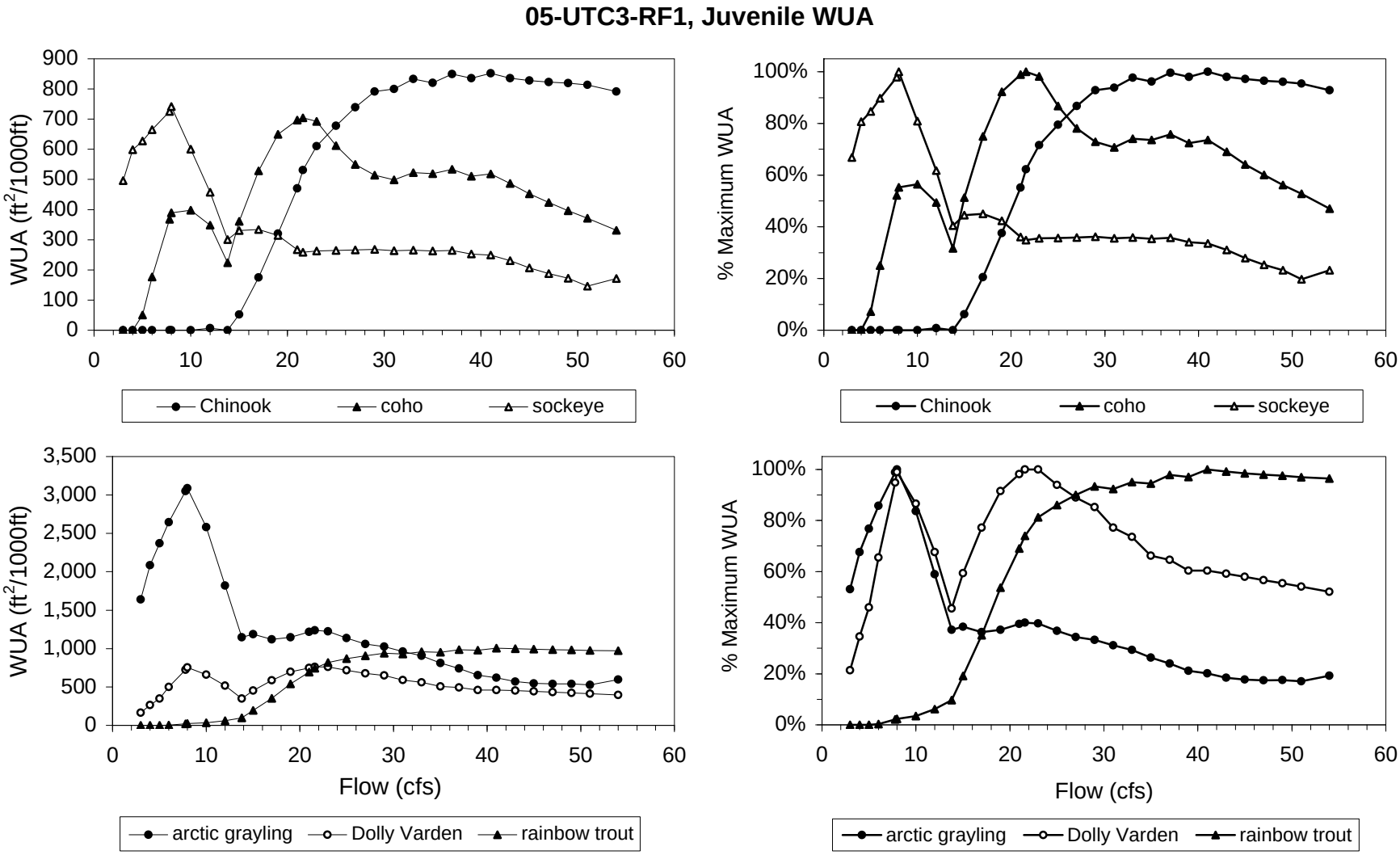

Figure 317
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RF1 (River Kilometer 56.83) in UTC-F, Upper Talarik Creek, Alaska.

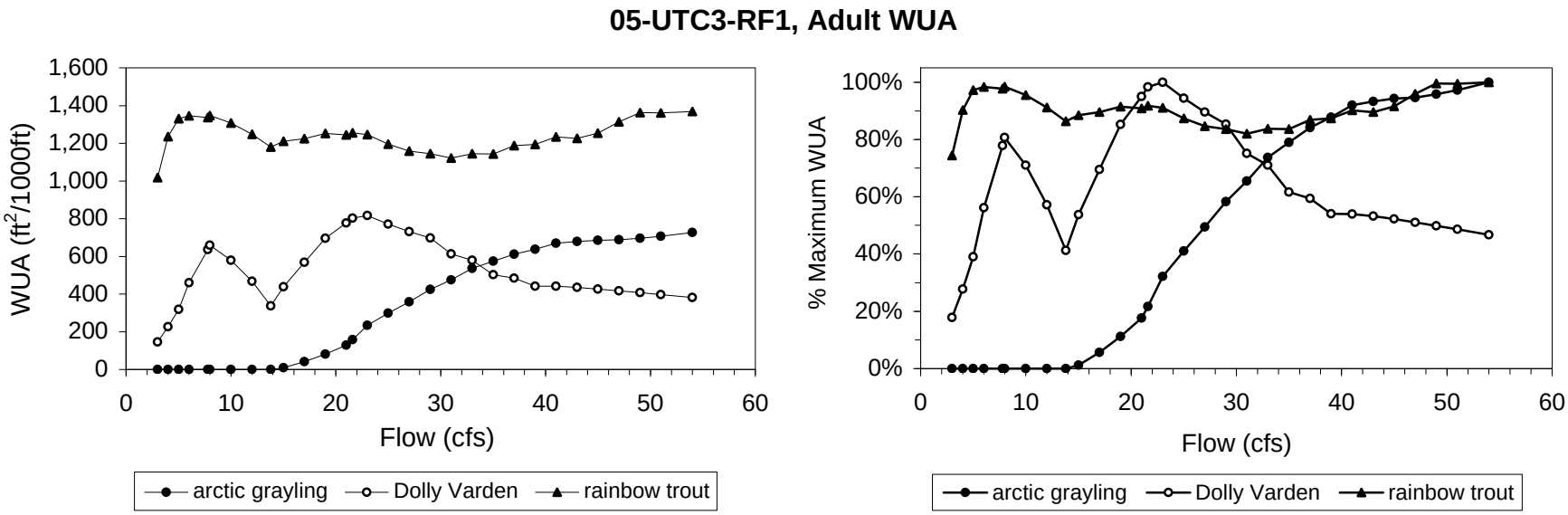

Figure 318
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC3-RF1 (River Kilometer 56.83) in UTC-F, Upper Talarik Creek, Alaska.

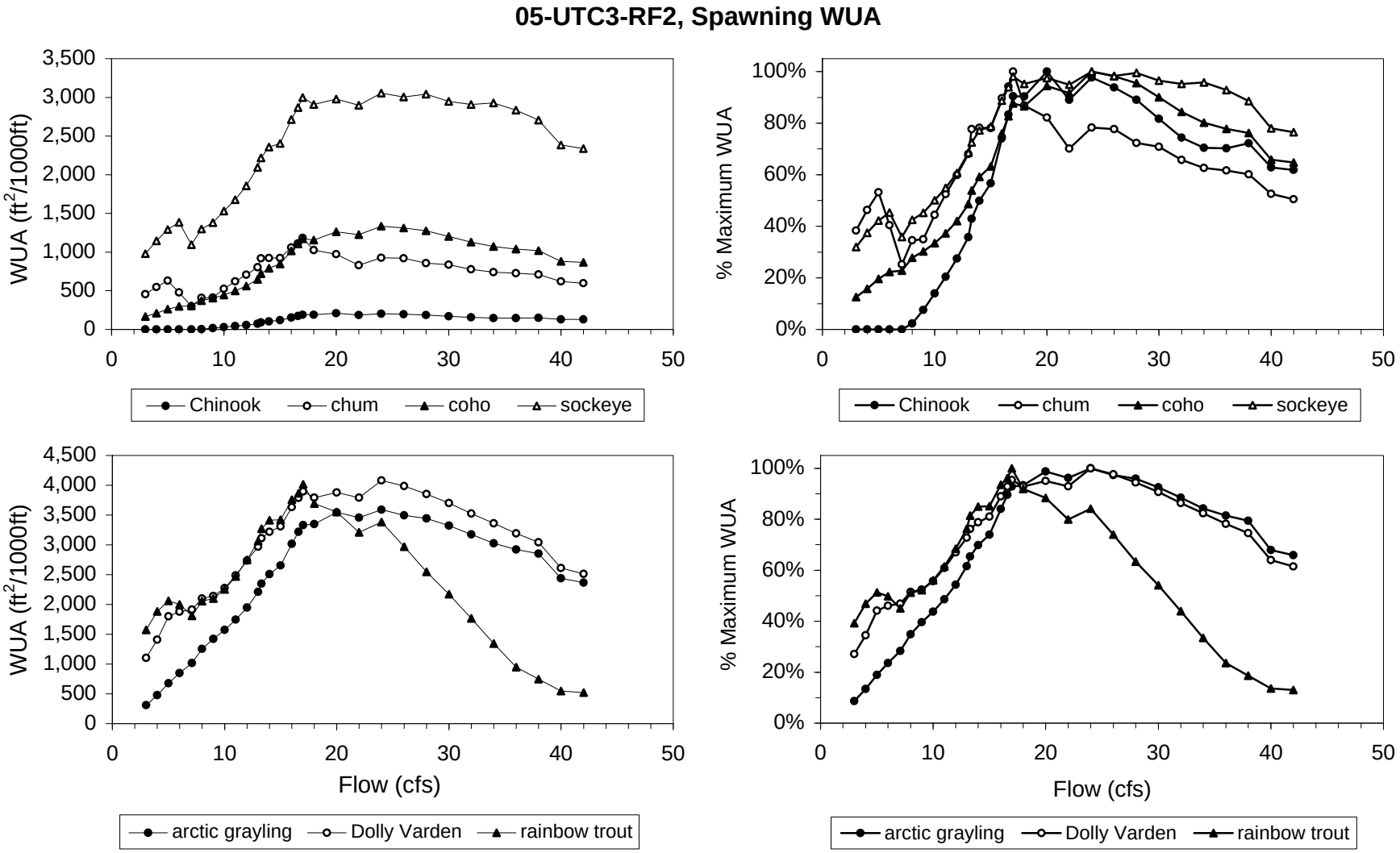

Figure 319
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RF2 (River Kilometer 57.25) in UTC-F, Upper Talarik Creek, Alaska.

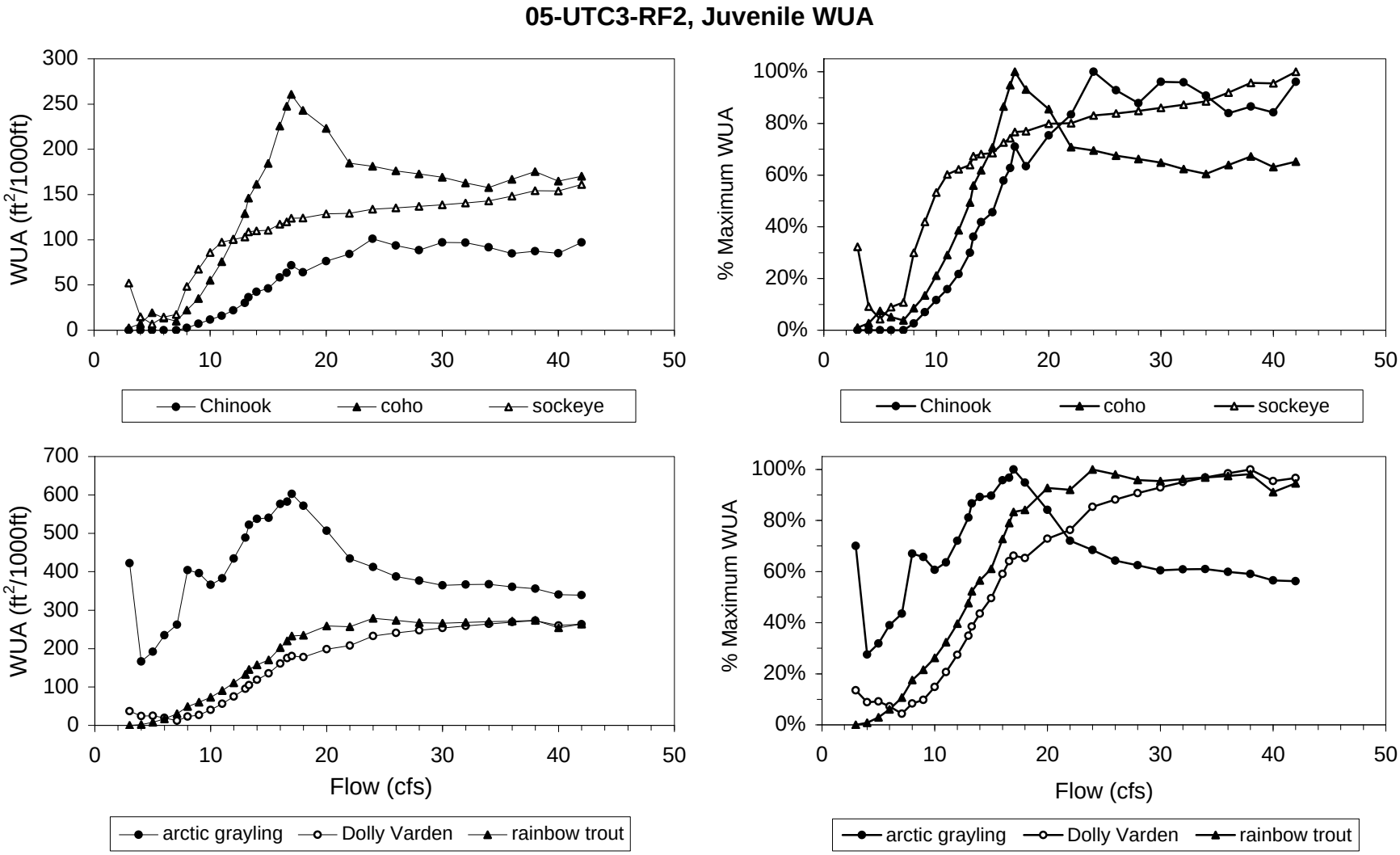

Figure 320
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RF2 (River Kilometer 57.25) in UTC-F, Upper Talarik Creek, Alaska.

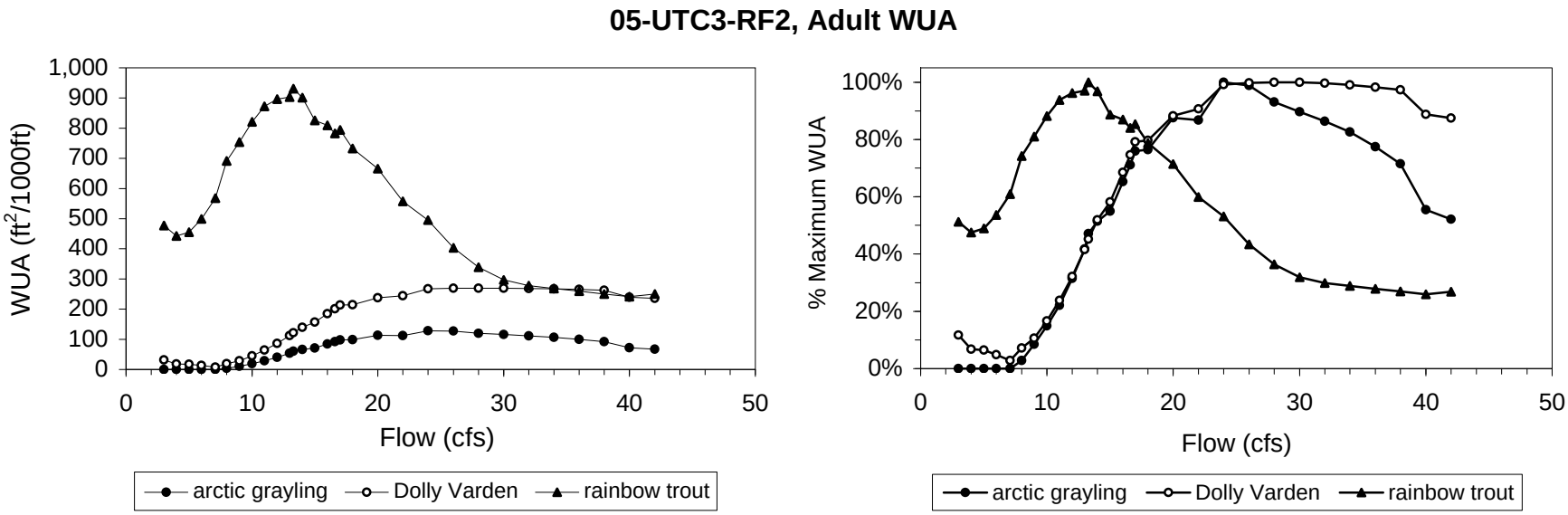

Figure 321
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC3-RF2 (River Kilometer 57.25) in UTC-F, Upper Talarik Creek, Alaska.

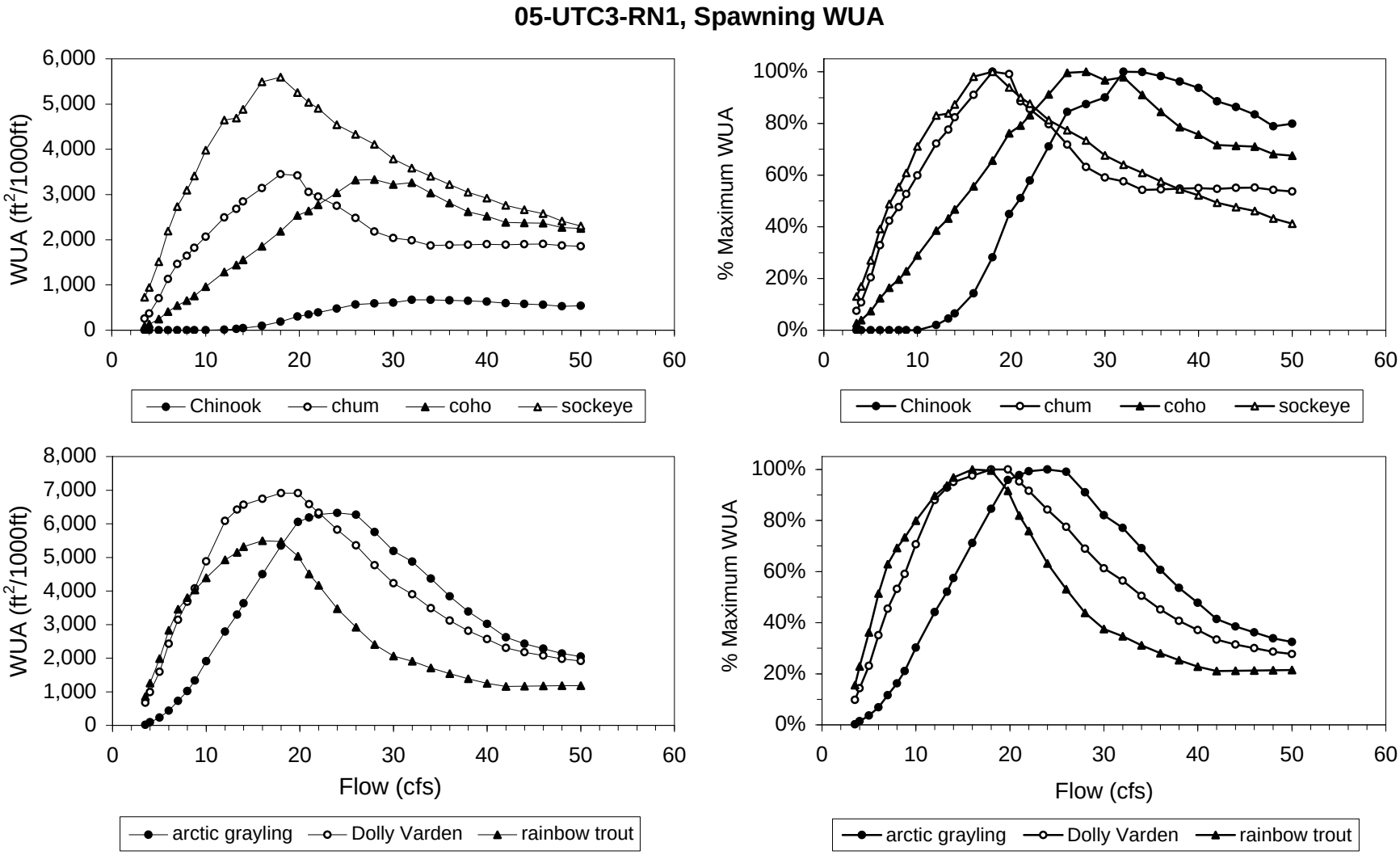

Figure 322
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RN1 (River Kilometer 58.24) in UTC-F, Upper Talarik Creek, Alaska.

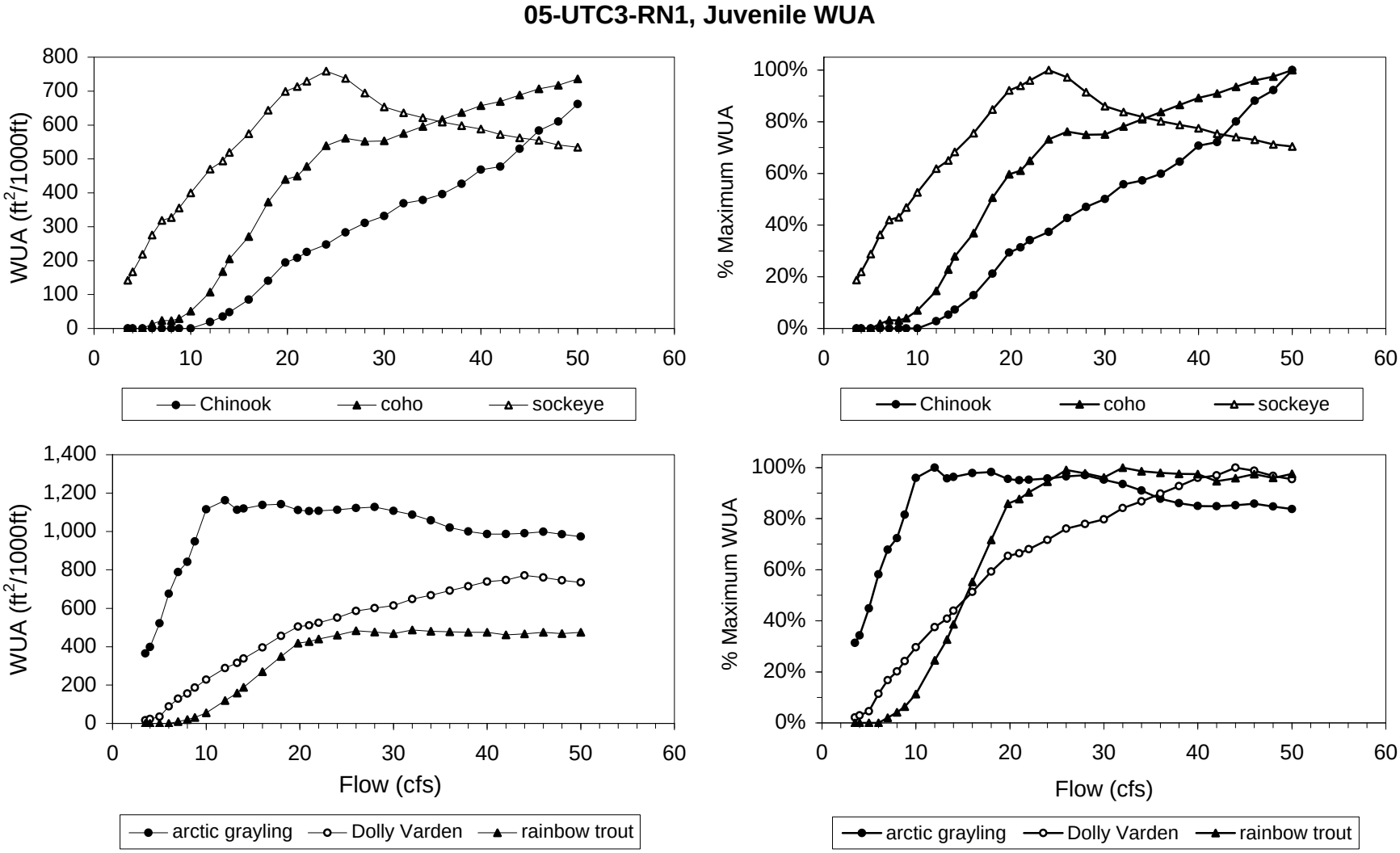

Figure 323
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05-UTC3-RN1 (River Kilometer 58.24) in UTC-F, Upper Talarik Creek, Alaska.

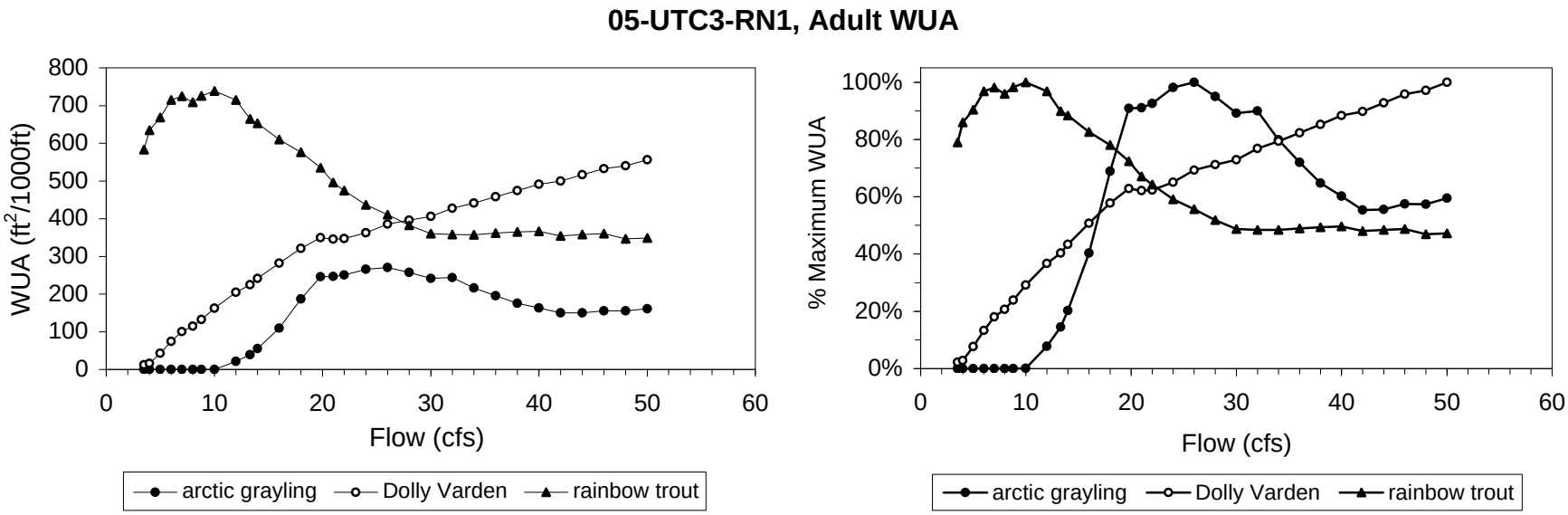

Figure 324
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05-UTC3-RN1 (River Kilometer 58.24) in UTC-F, Upper Talarik Creek, Alaska.

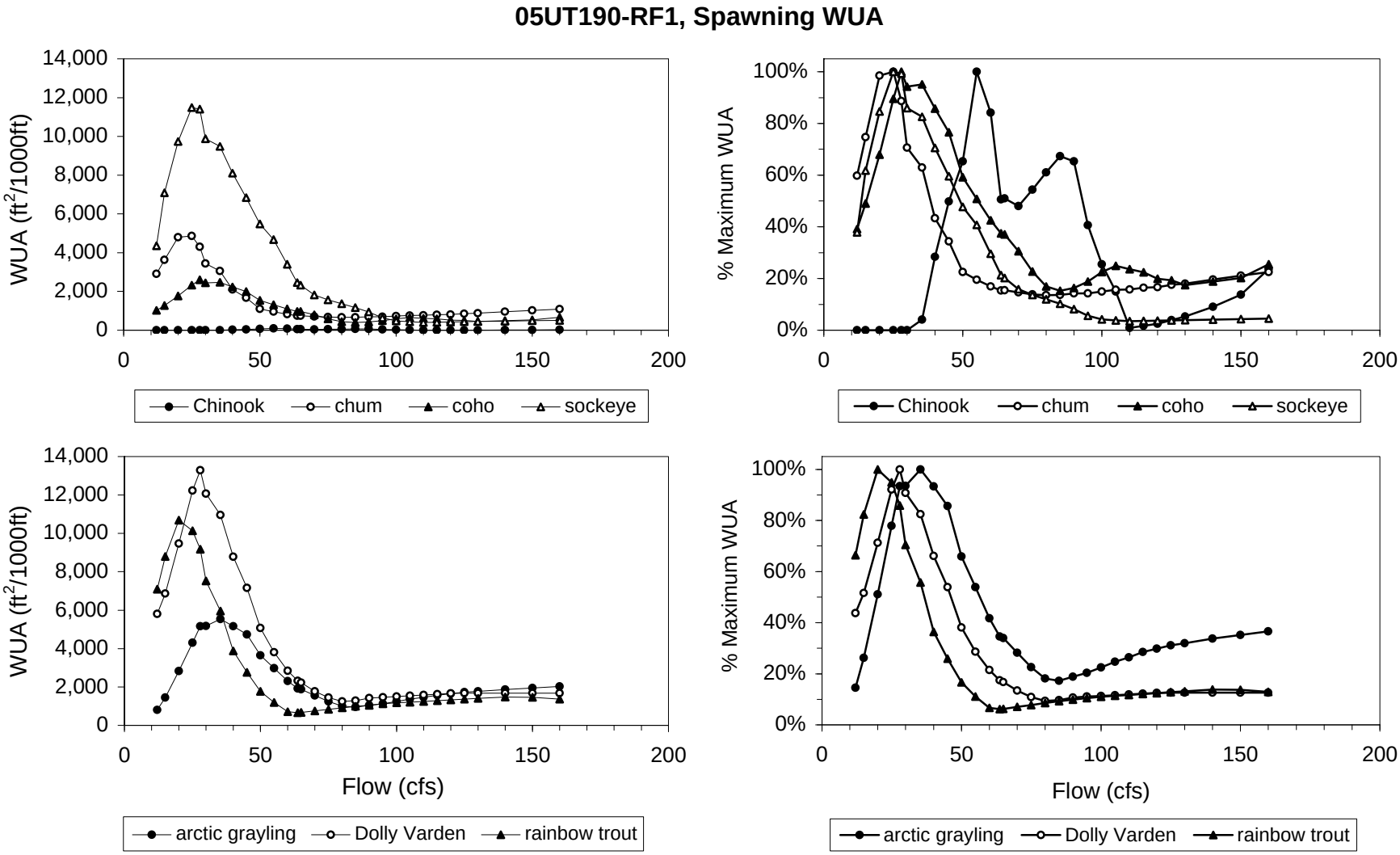

Figure 325
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF1 (River Kilometer 0.50) in tributary UT-1.190, Upper Talarik Creek, Alaska.

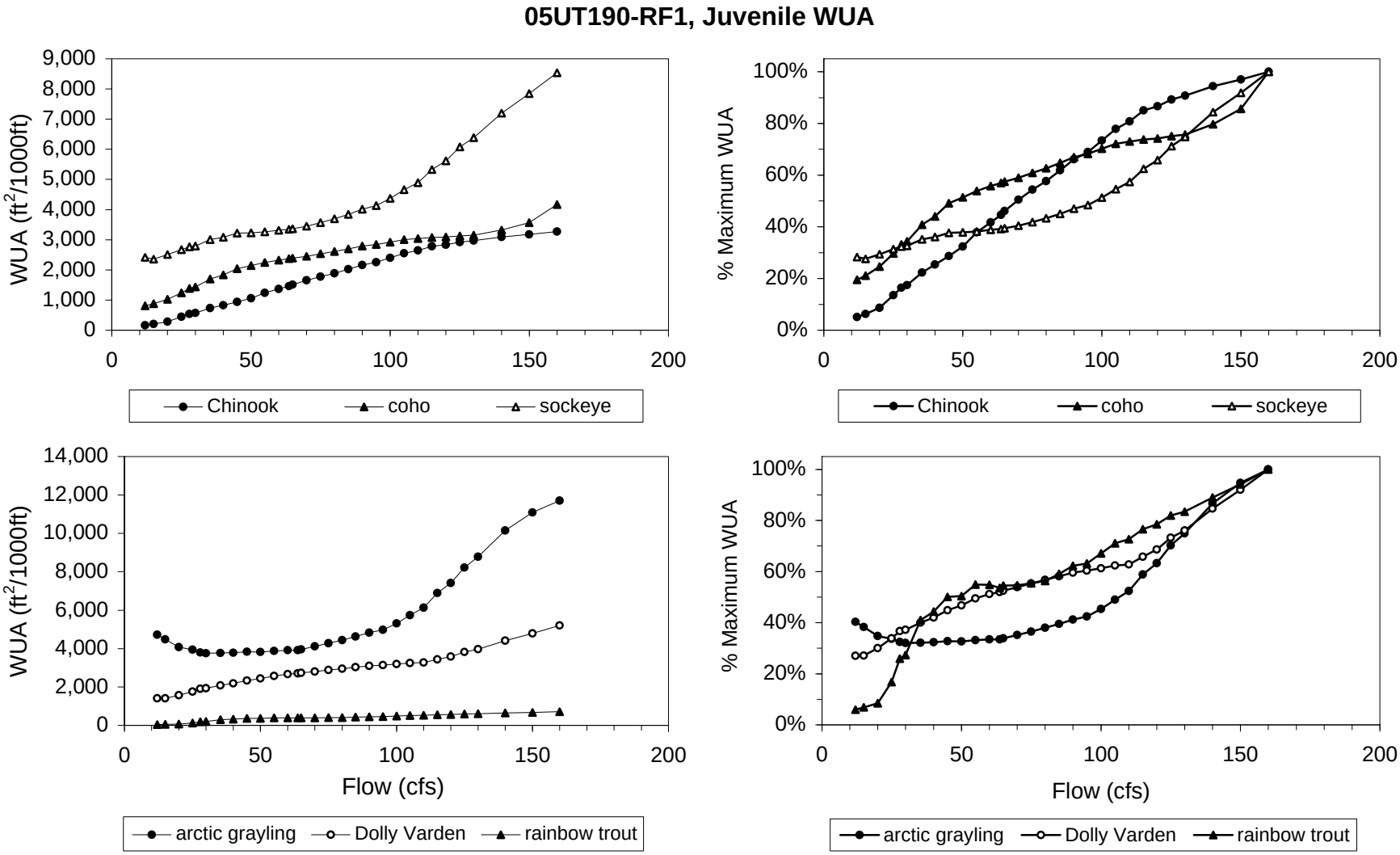

Figure 326
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF1 (River Kilometer 0.50) in tributary UT-1.190, Upper Talarik Creek, Alaska.

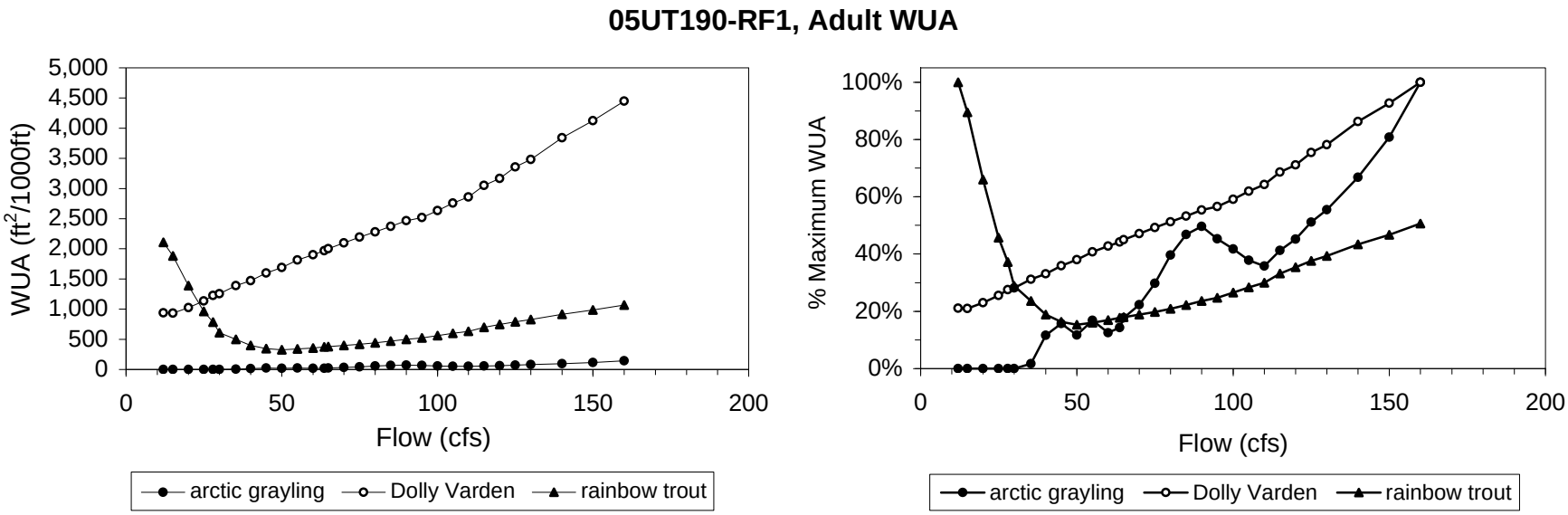

Figure 327
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05UT190-RF1 (River Kilometer 0.50) in tributary UT-1.190, Upper Talarik Creek, Alaska.

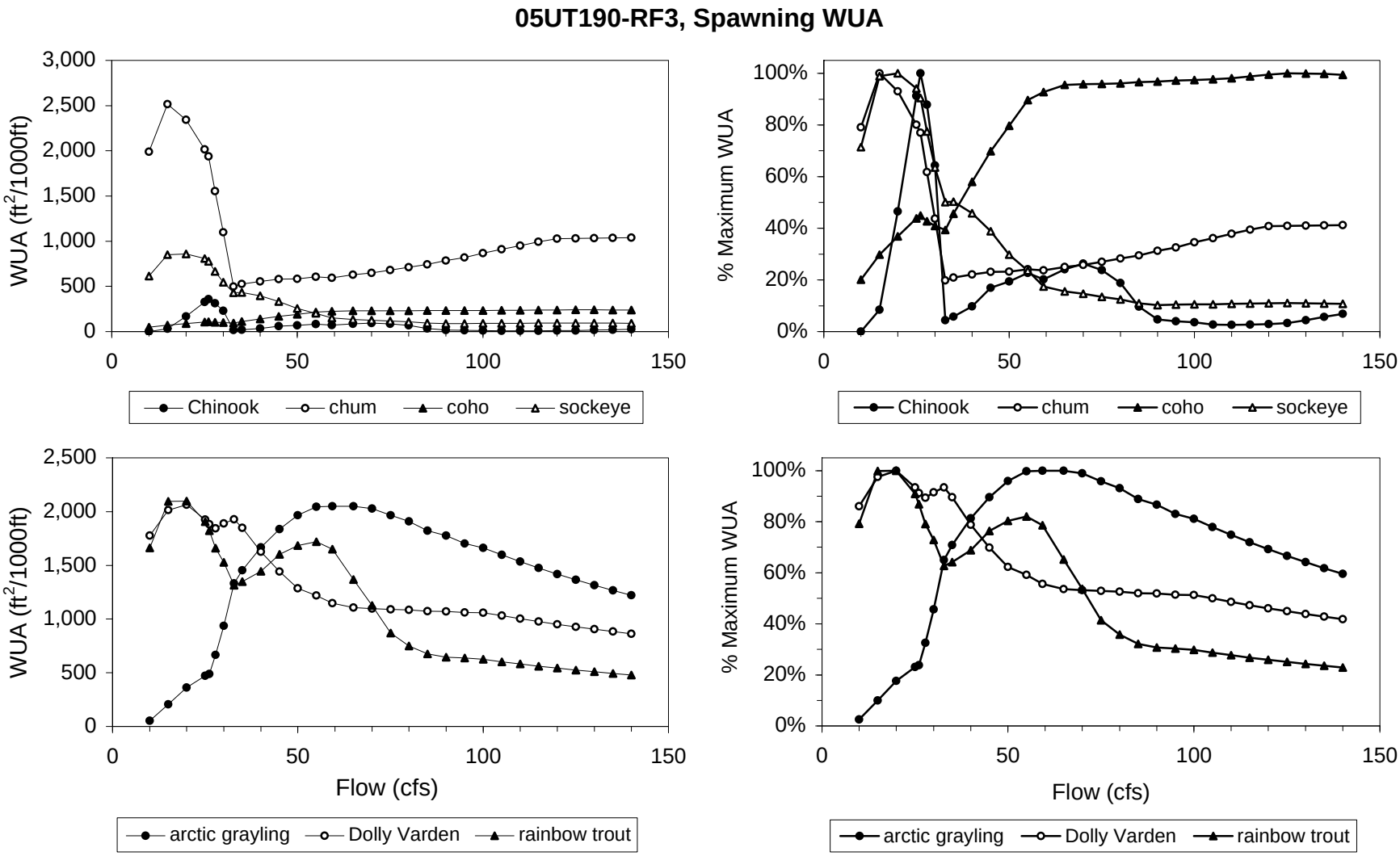

Figure 328
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF3 (River Kilometer 0.91) in tributary UT-1.190, Upper Talarik Creek, Alaska.

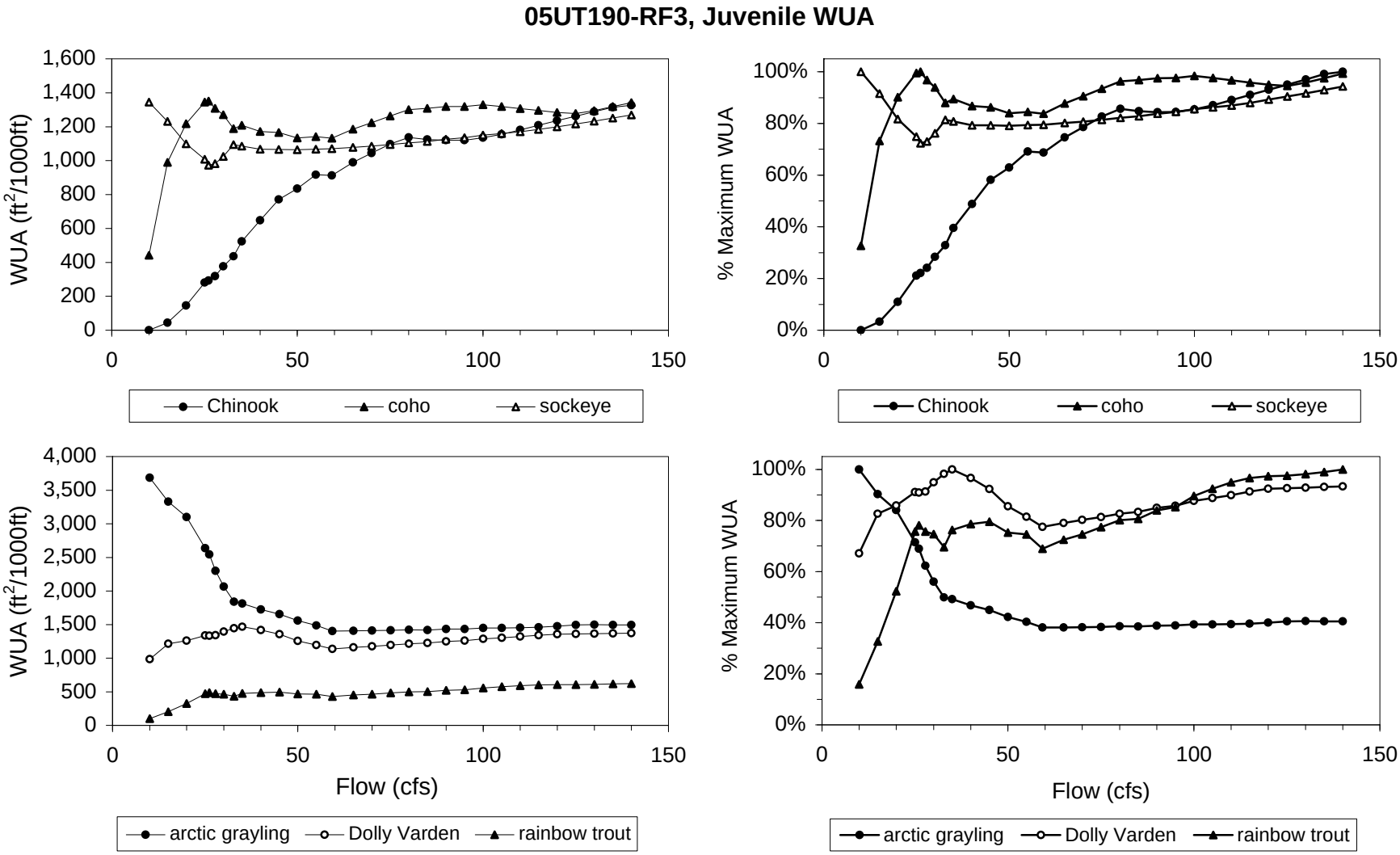

Figure 329
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF3 (River Kilometer 0.91) in tributary UT-1.190, Upper Talarik Creek, Alaska.

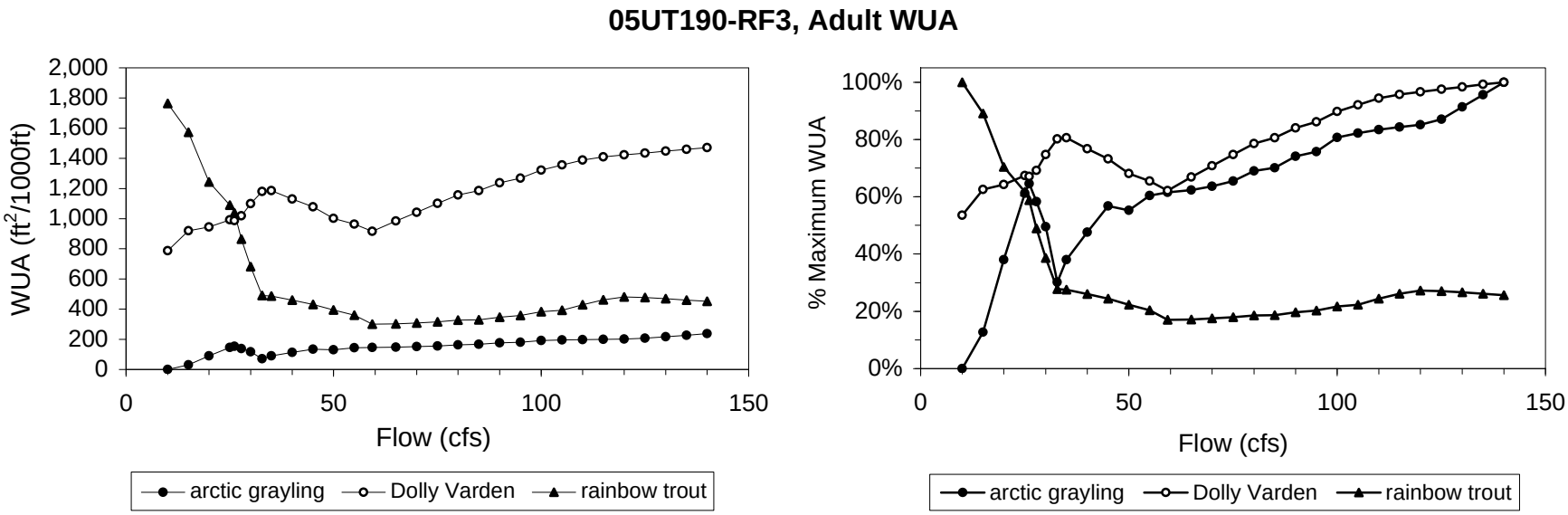

Figure 330
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05UT190-RF3 (River Kilometer 0.91) in tributary UT-1.190, Upper Talarik Creek, Alaska.

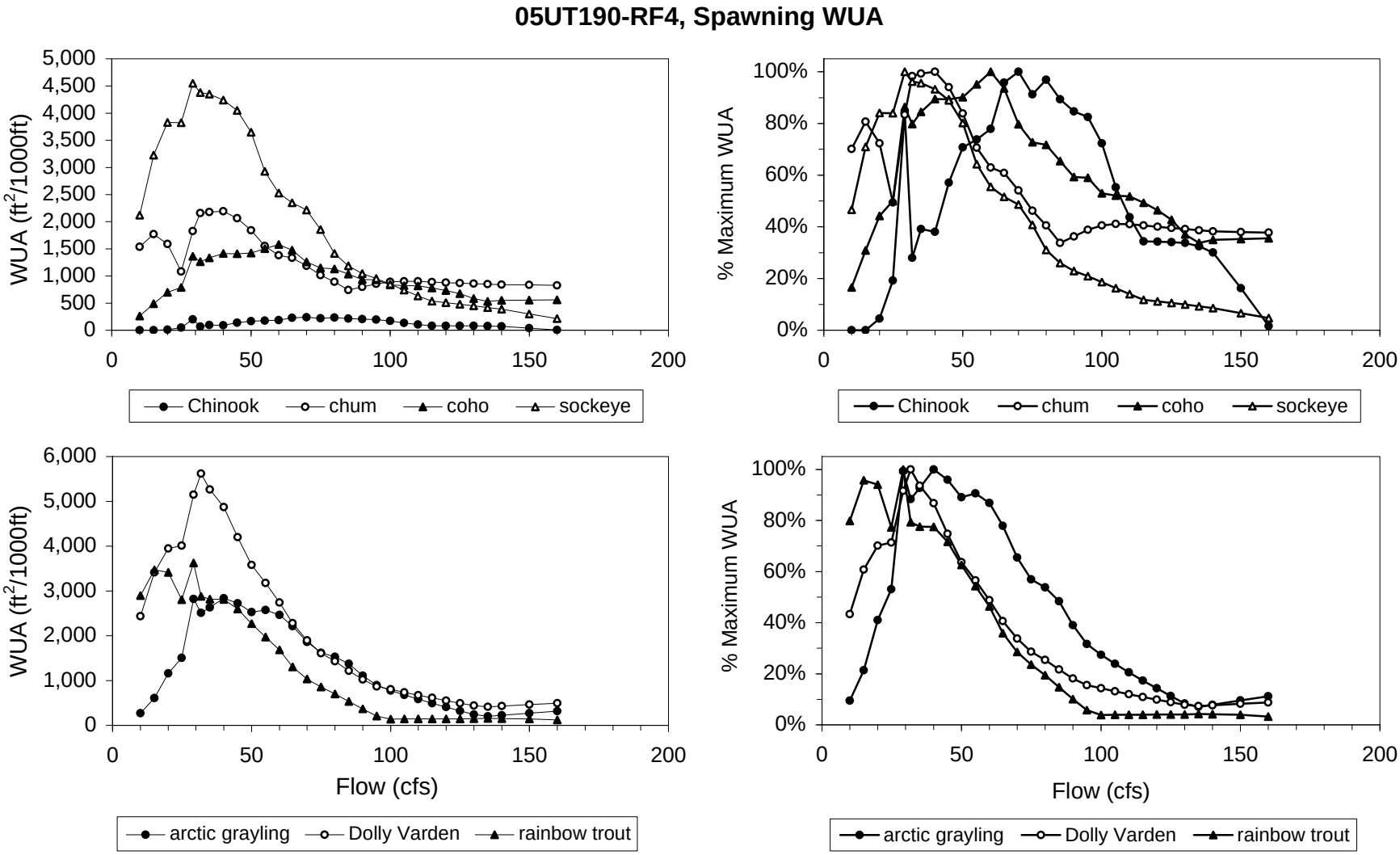

Figure 331
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF4 (River Kilometer 1.12) in tributary UT-1.190, Upper Talarik Creek, Alaska.

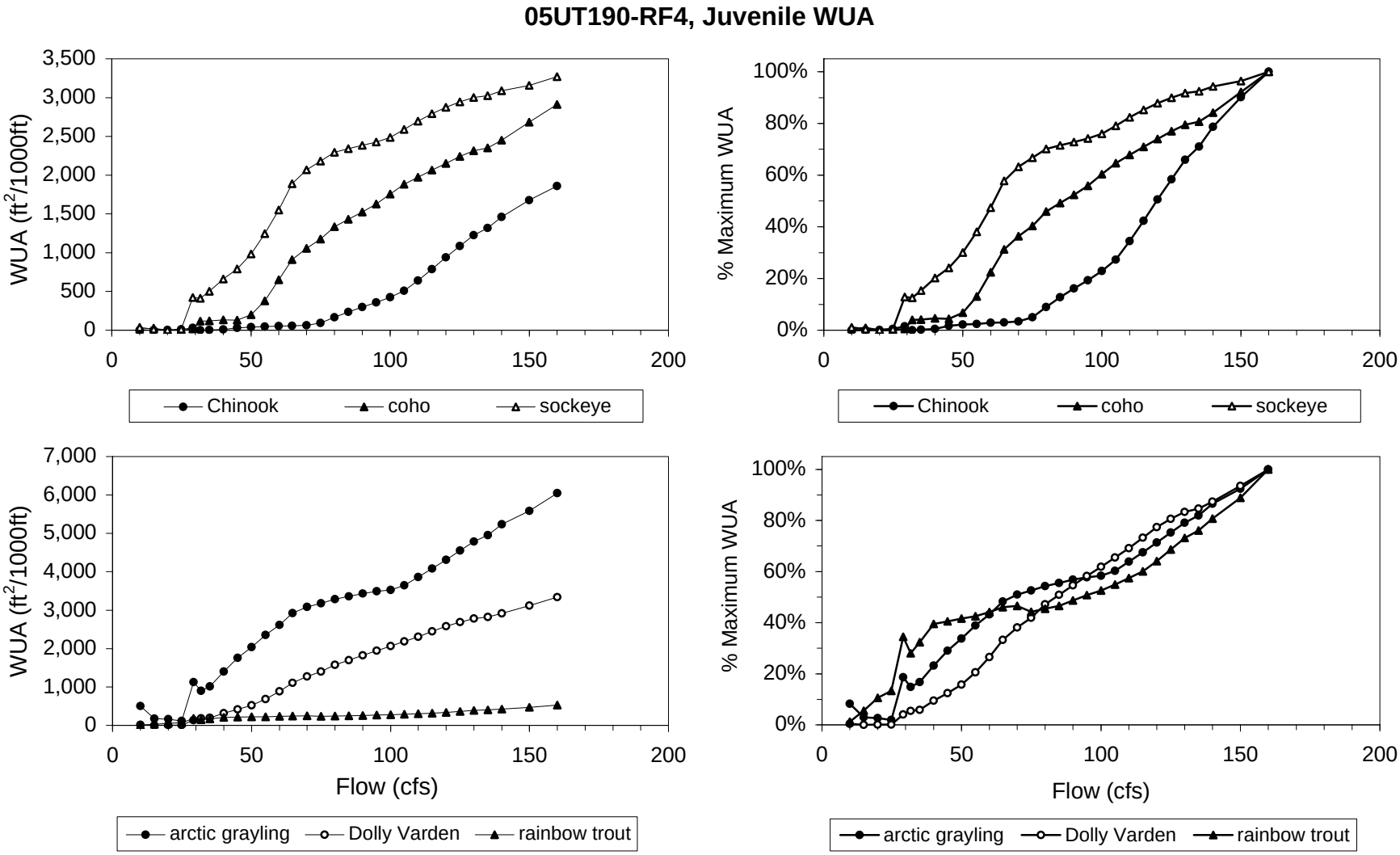

Figure 332
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF4 (River Kilometer 1.12) in tributary UT-1.190, Upper Talarik Creek, Alaska.

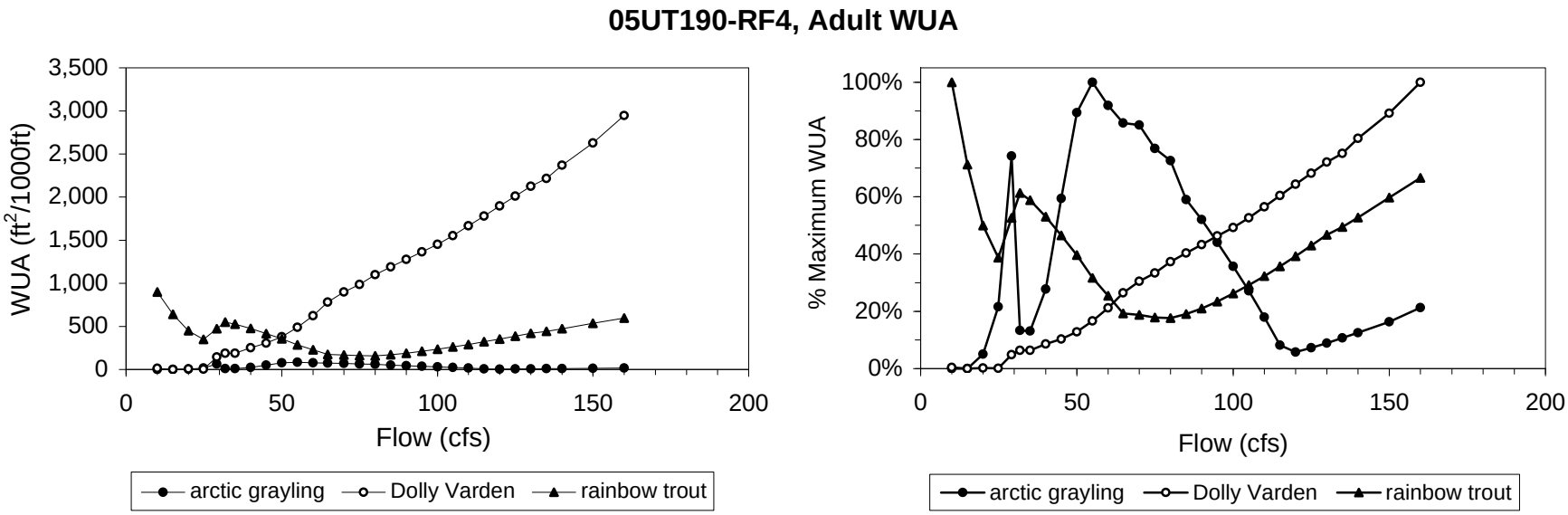

Figure 333
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05UT190-RF4 (River Kilometer 1.12) in tributary UT-1.190, Upper Talarik Creek, Alaska.

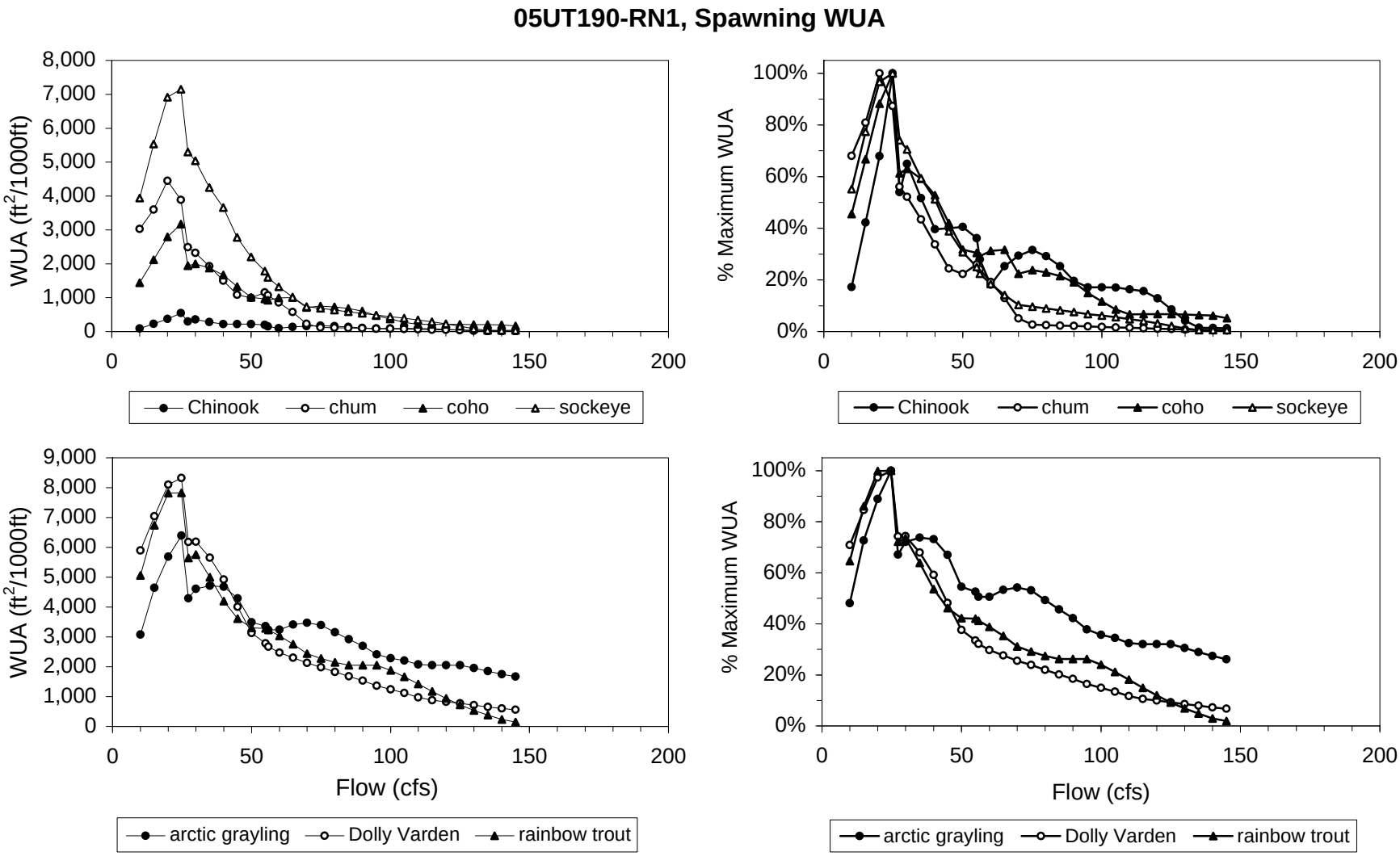

Figure 334
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RN1 (River Kilometer 1.35) in tributary UT-1.190, Upper Talarik Creek, Alaska.

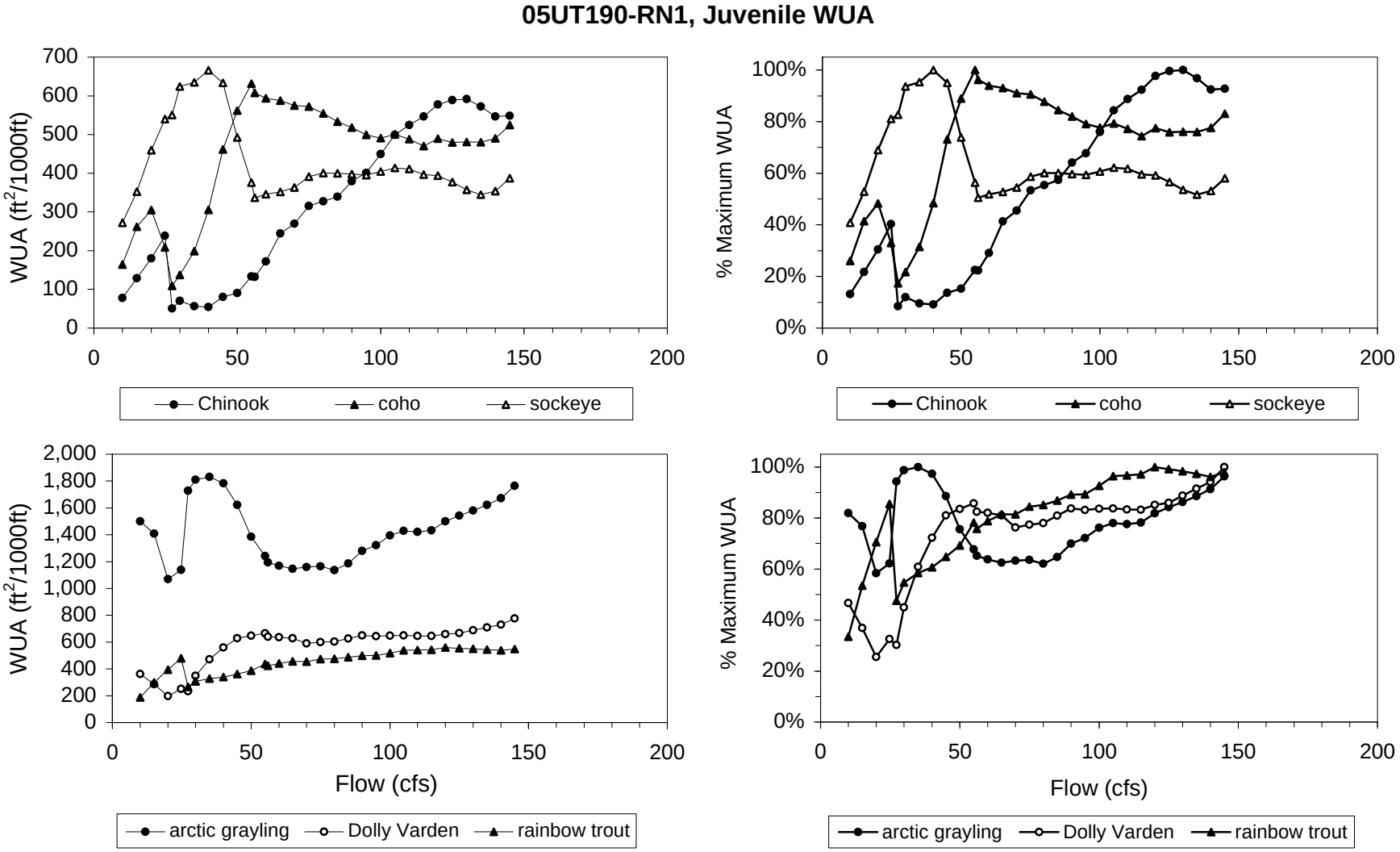

Figure 335
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RN1 (River Kilometer 1.35) in tributary UT-1.190, Upper Talarik Creek, Alaska.

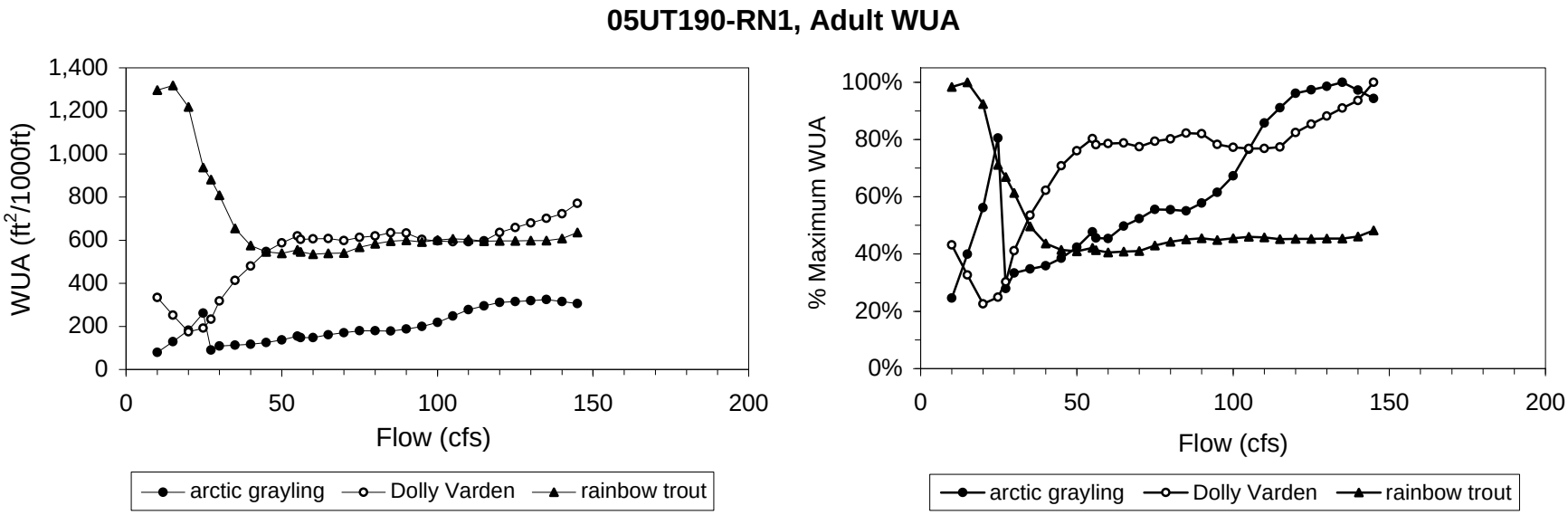

Figure 336
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05UT190-RN1 (River Kilometer 1.35) in tributary UT-1.190, Upper Talarik Creek, Alaska.

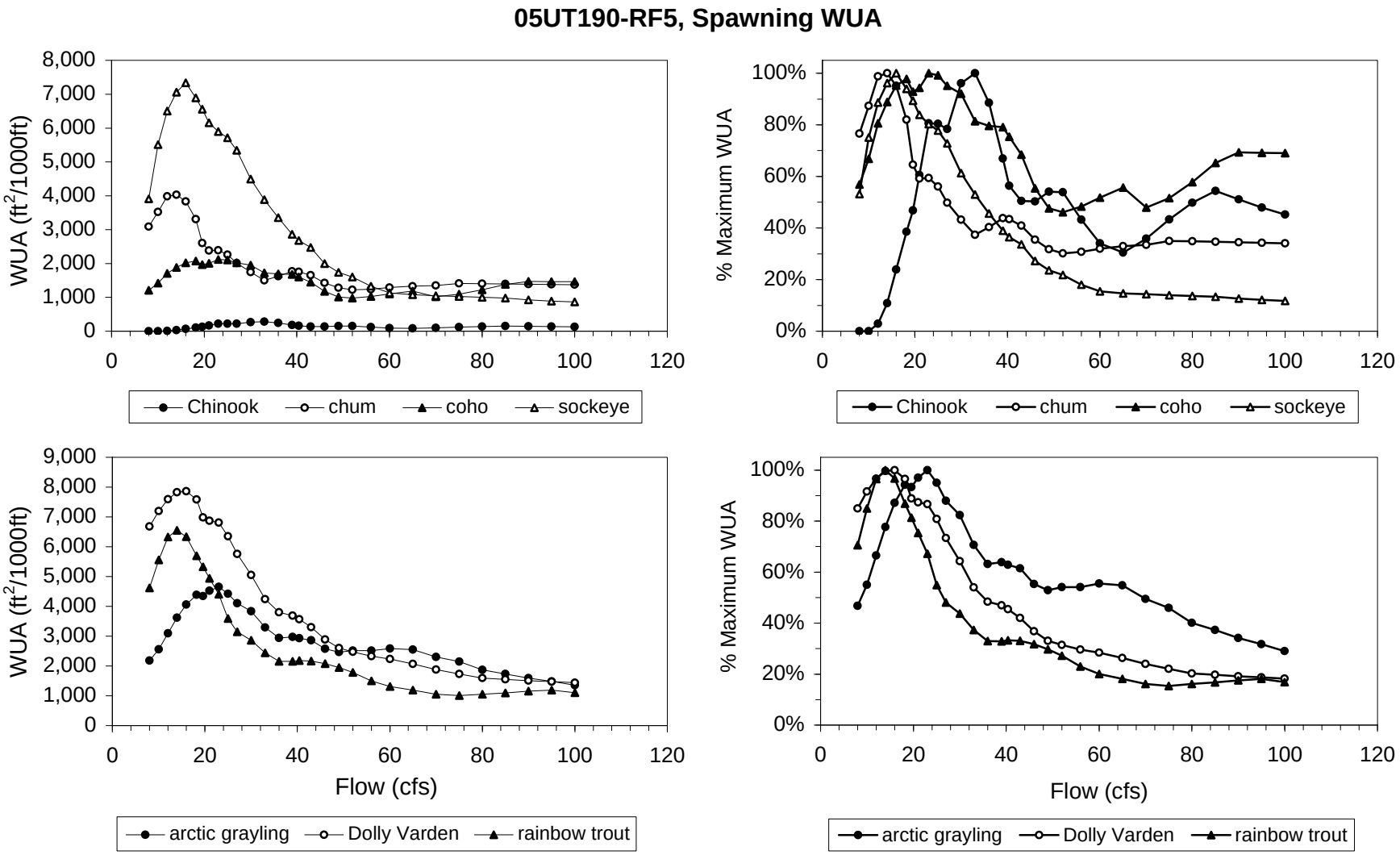

Figure 337
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF5 (River Kilometer 2.48) in tributary UT-1.190, Upper Talarik Creek, Alaska.

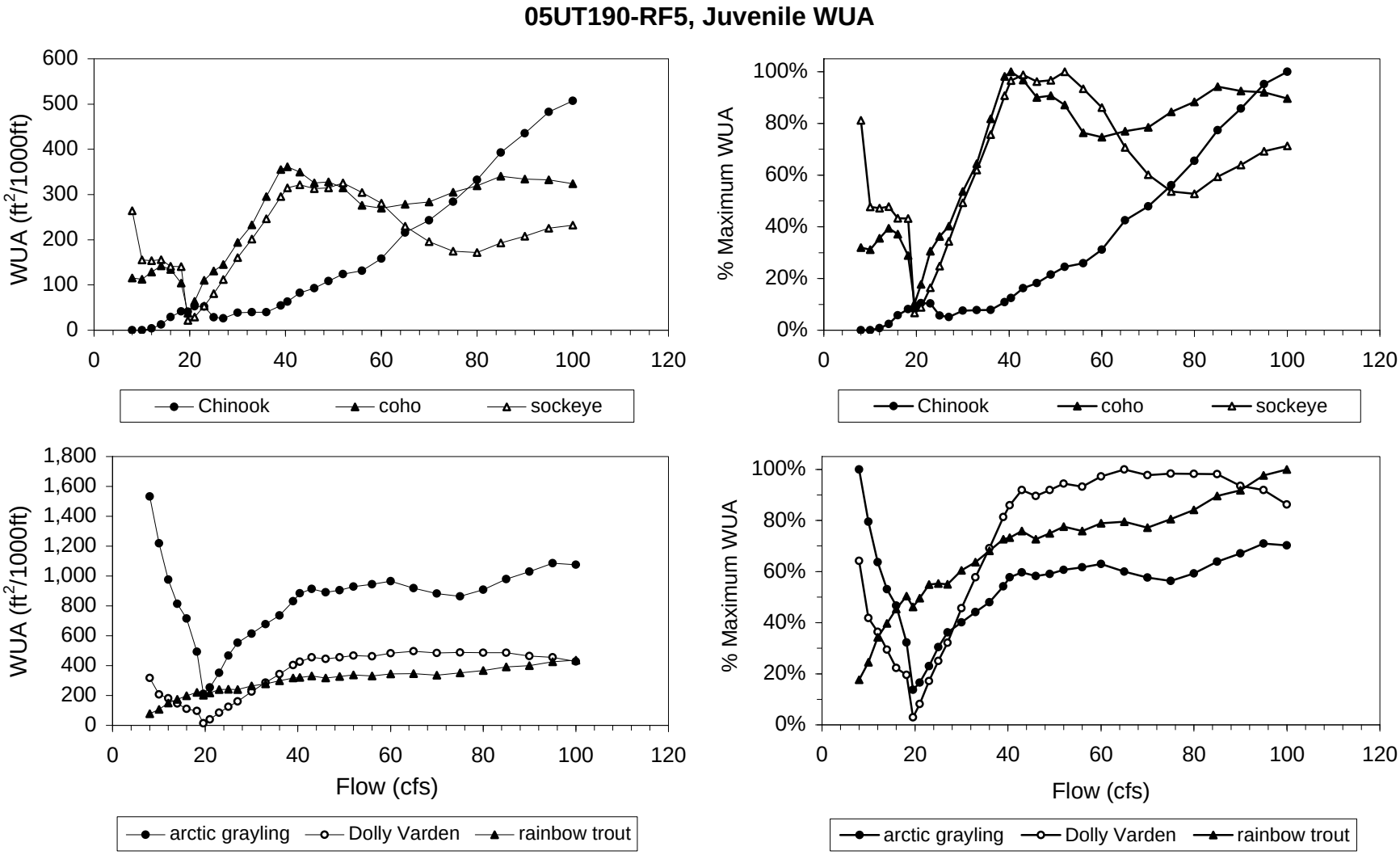

Figure 338
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 05UT190-RF5 (River Kilometer 2.48) in tributary UT-1.190, Upper Talarik Creek, Alaska.

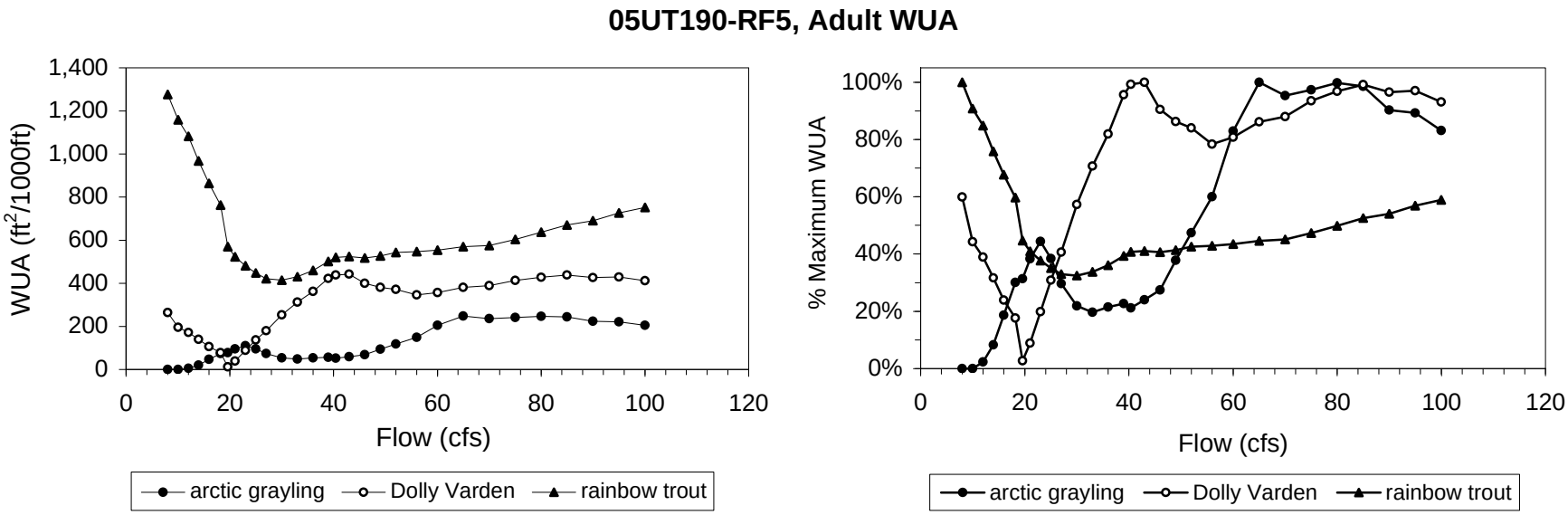

Figure 339
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 05UT190-RF5 (River Kilometer 2.48) in tributary UT-1.190, Upper Talarik Creek, Alaska.

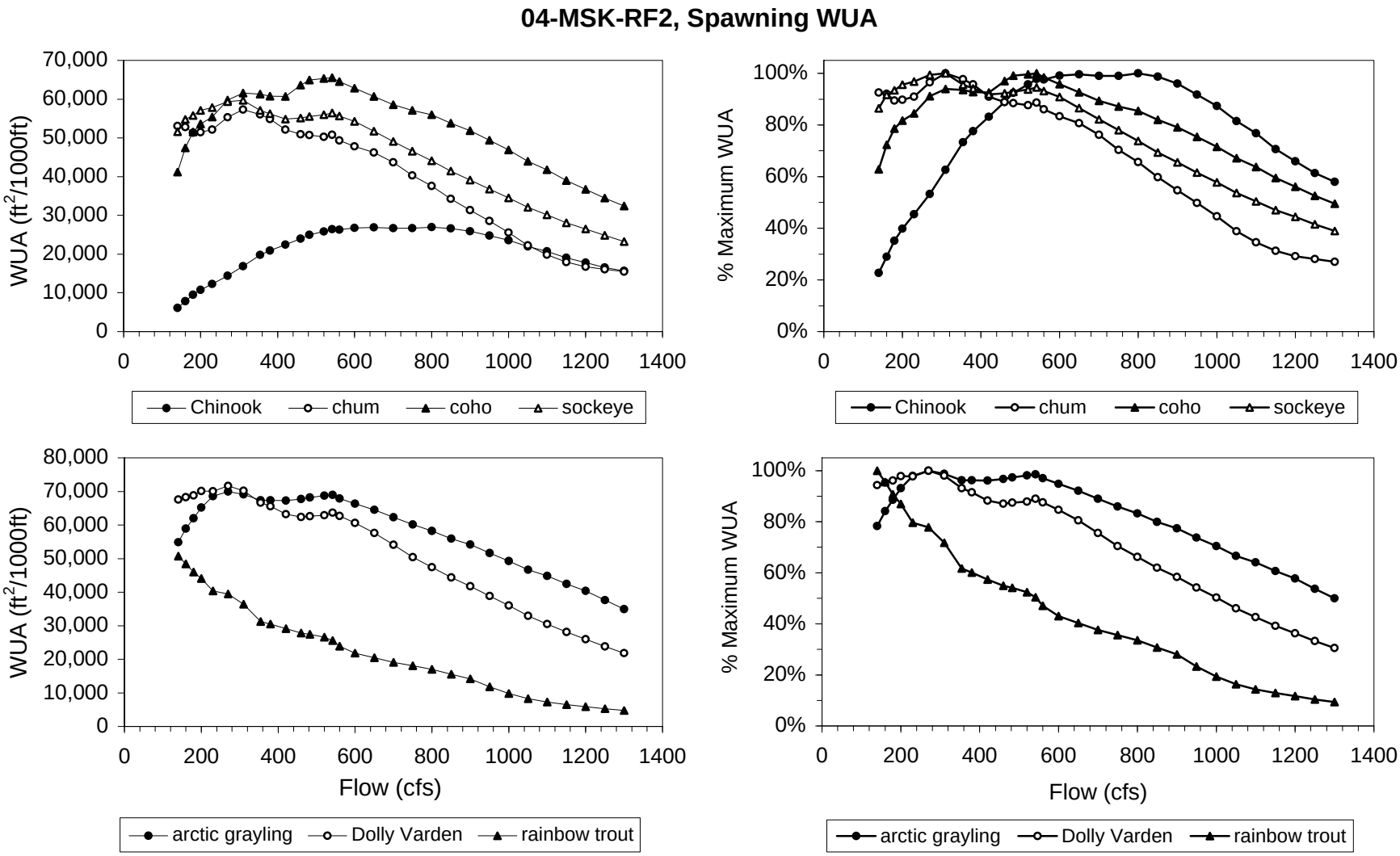

Figure 340
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-RF2 (River Kilometer 24.85) in KR, mainstem Koktuli River, Alaska.

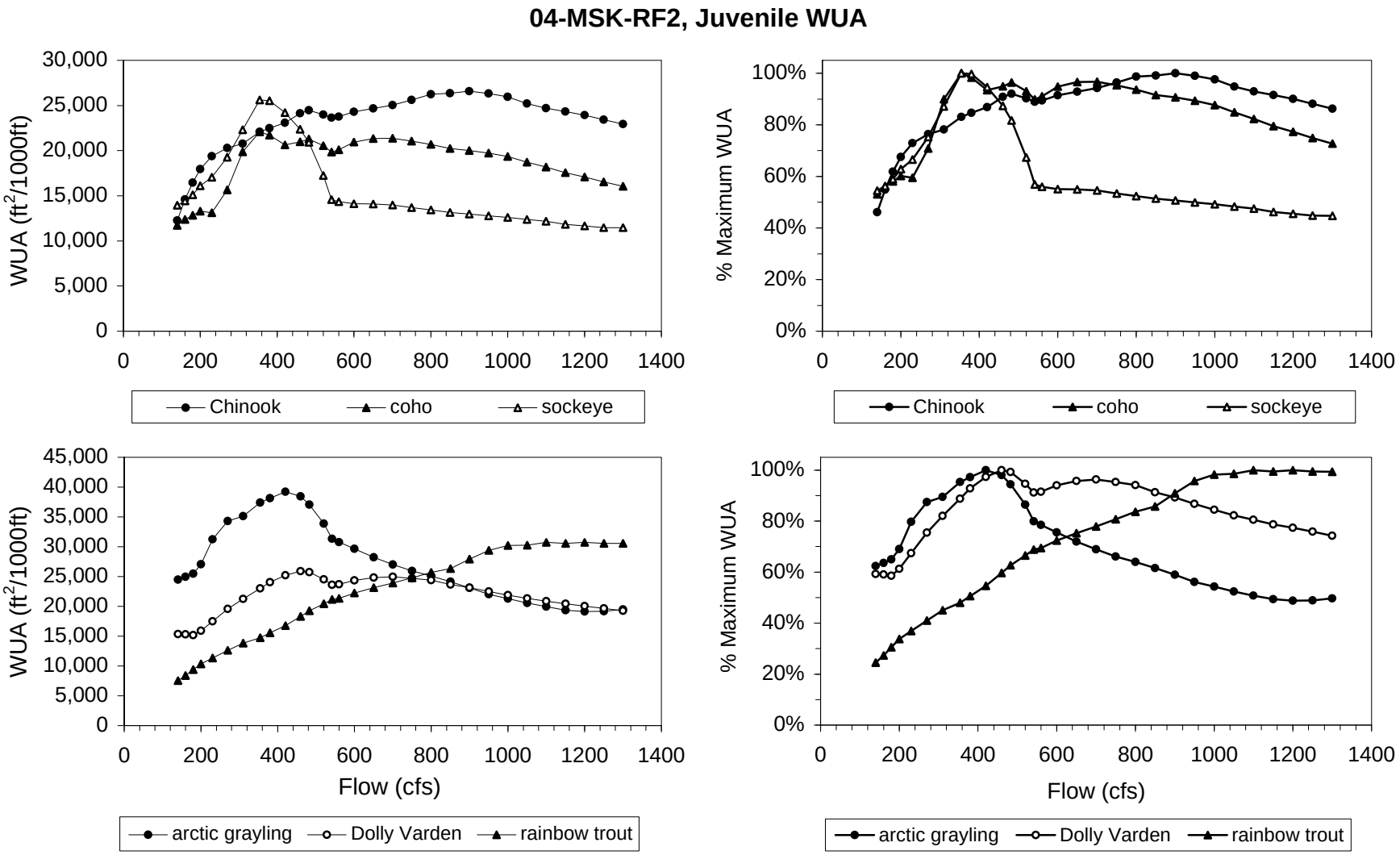

Figure 341
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-RF2 (River Kilometer 24.85) in KR, mainstem Koktuli River, Alaska.

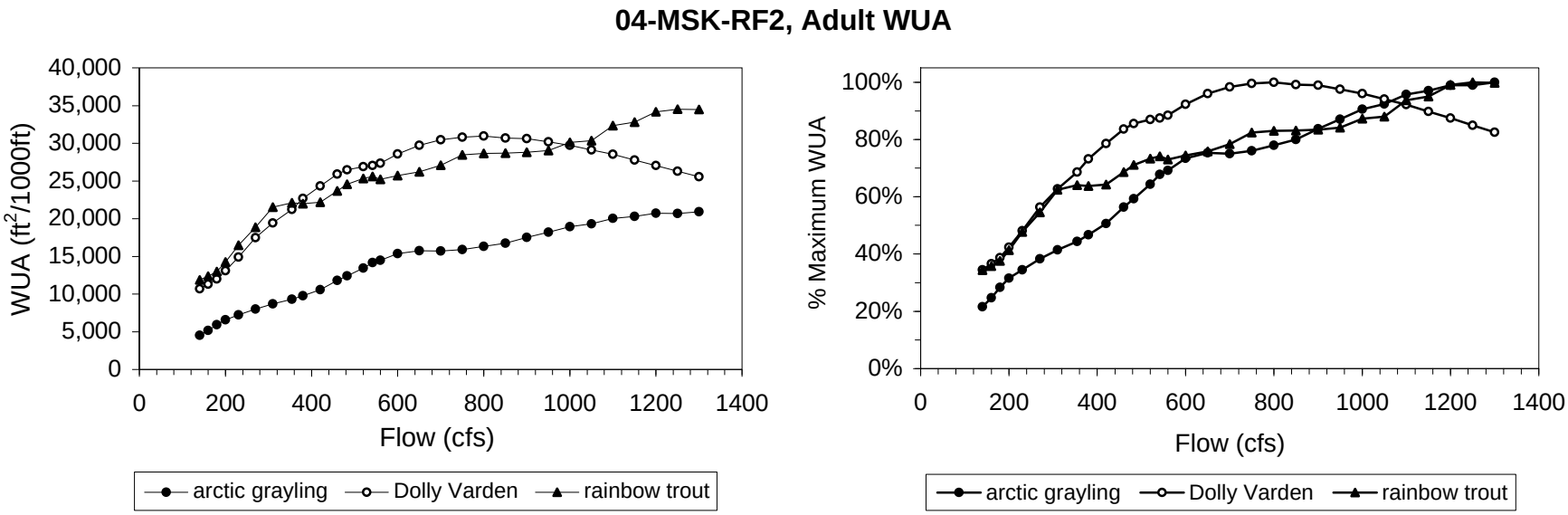

Figure 342
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-MSK-RF2 (River Kilometer 24.85) in KR, mainstem Koktuli River, Alaska.

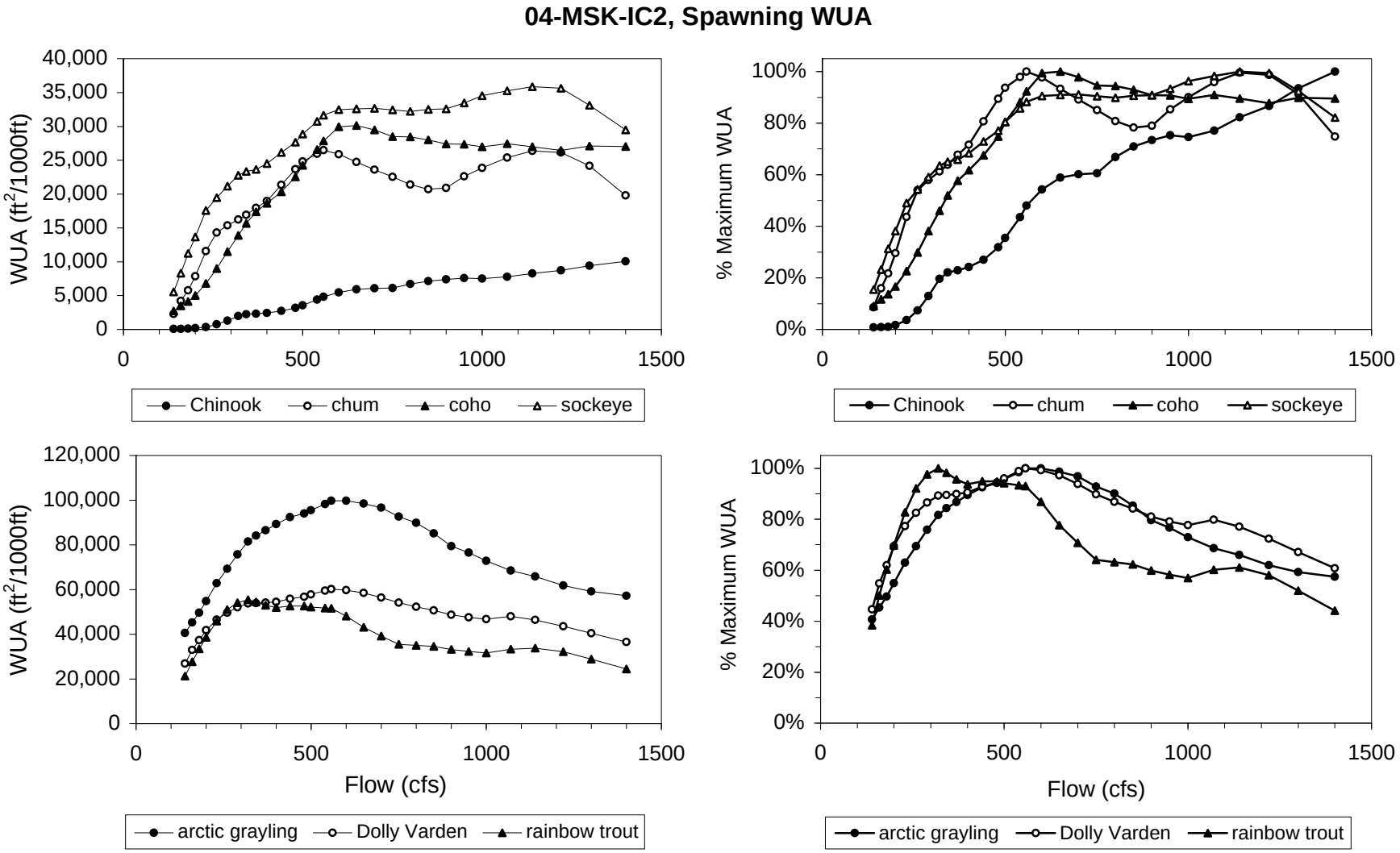

Figure 343
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-CI2 (River Kilometer 25.37) in KR, mainstem Koktuli River, Alaska.

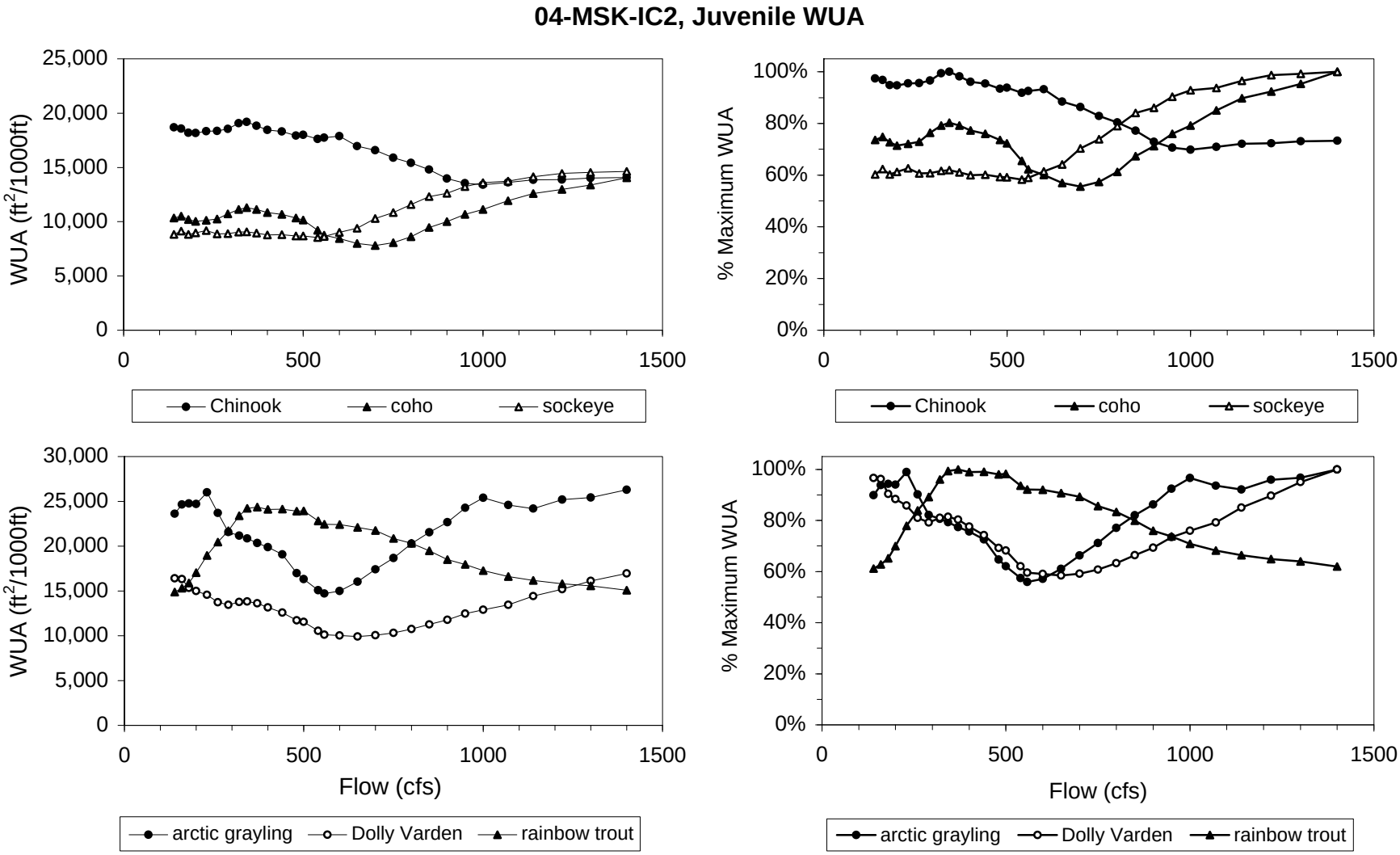

Figure 344
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-CI2 (River Kilometer 25.37) in KR, mainstem Koktuli River, Alaska.

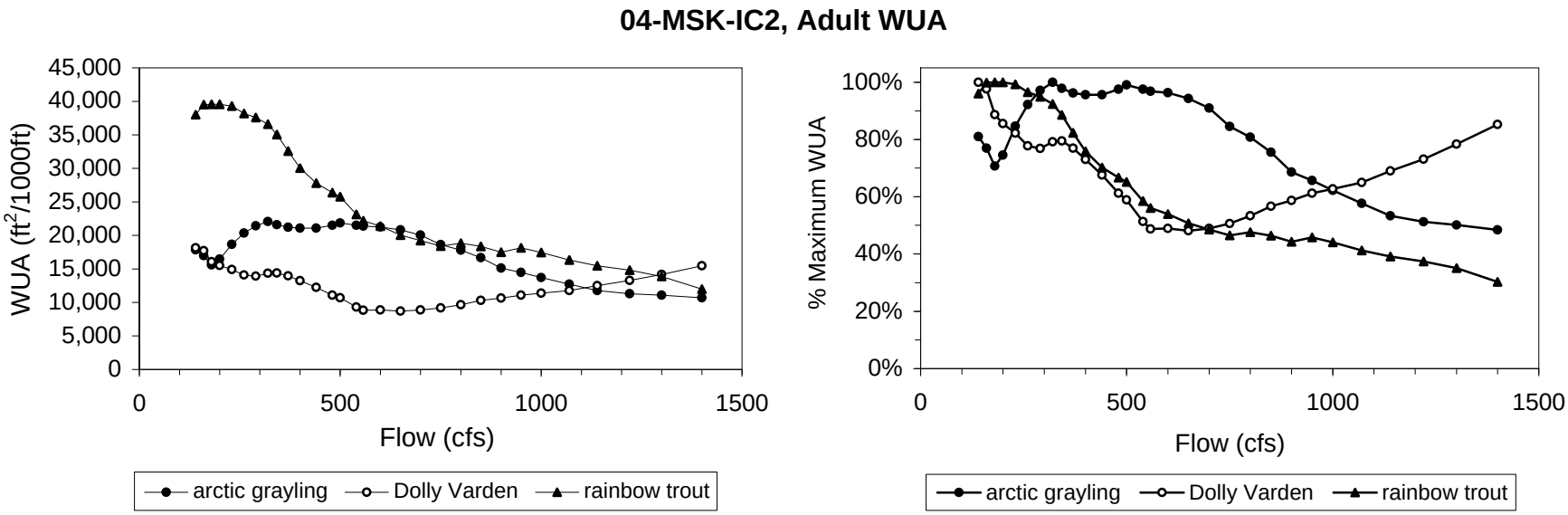

Figure 345
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-MSK-CI2 (River Kilometer 25.37) in KR, mainstem Koktuli River, Alaska.

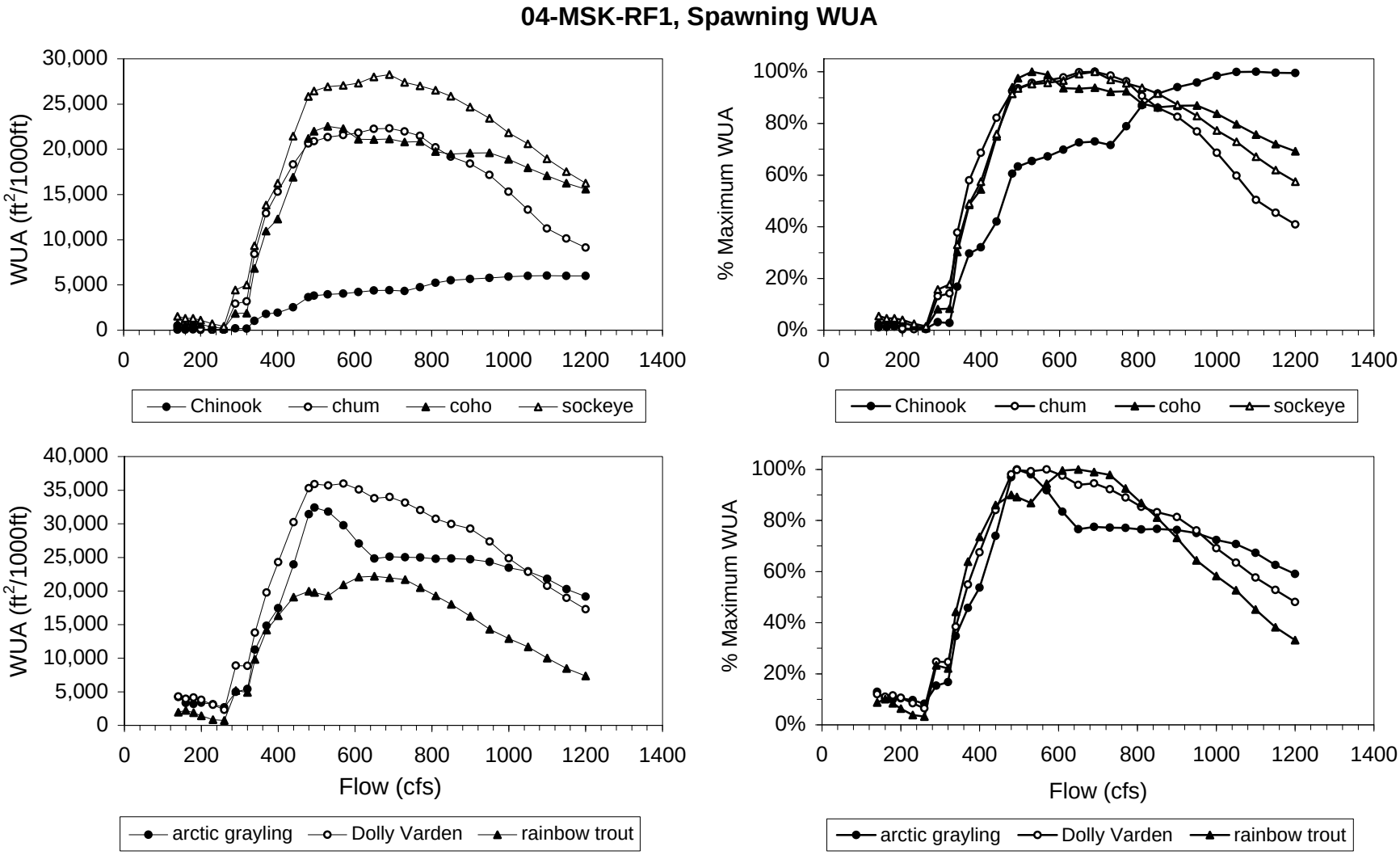

Figure 346
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-RF1 (River Kilometer 31.98) in KR, mainstem Koktuli River, Alaska.

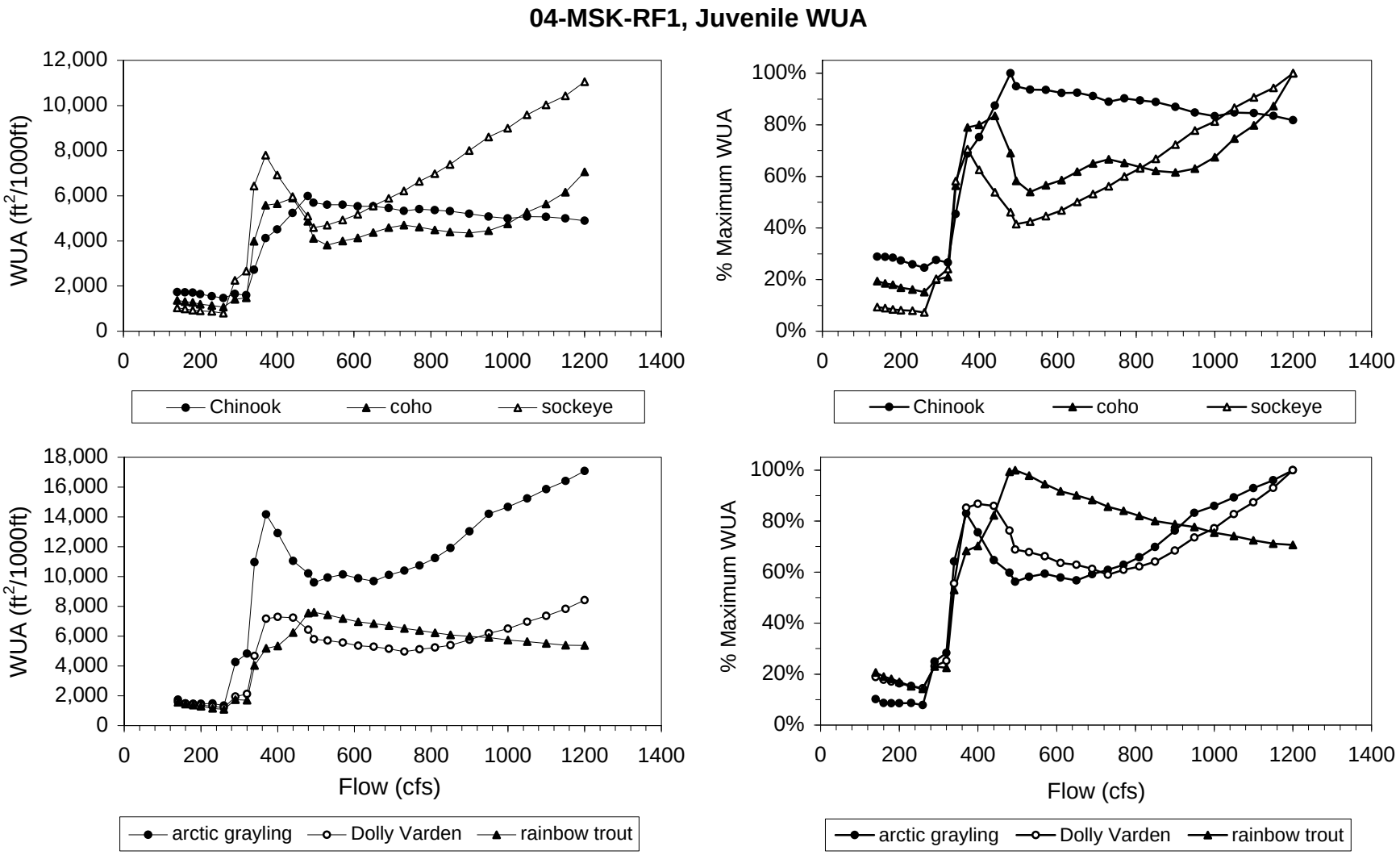

Figure 347
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-RF1 (River Kilometer 31.98) in KR, mainstem Koktuli River, Alaska.

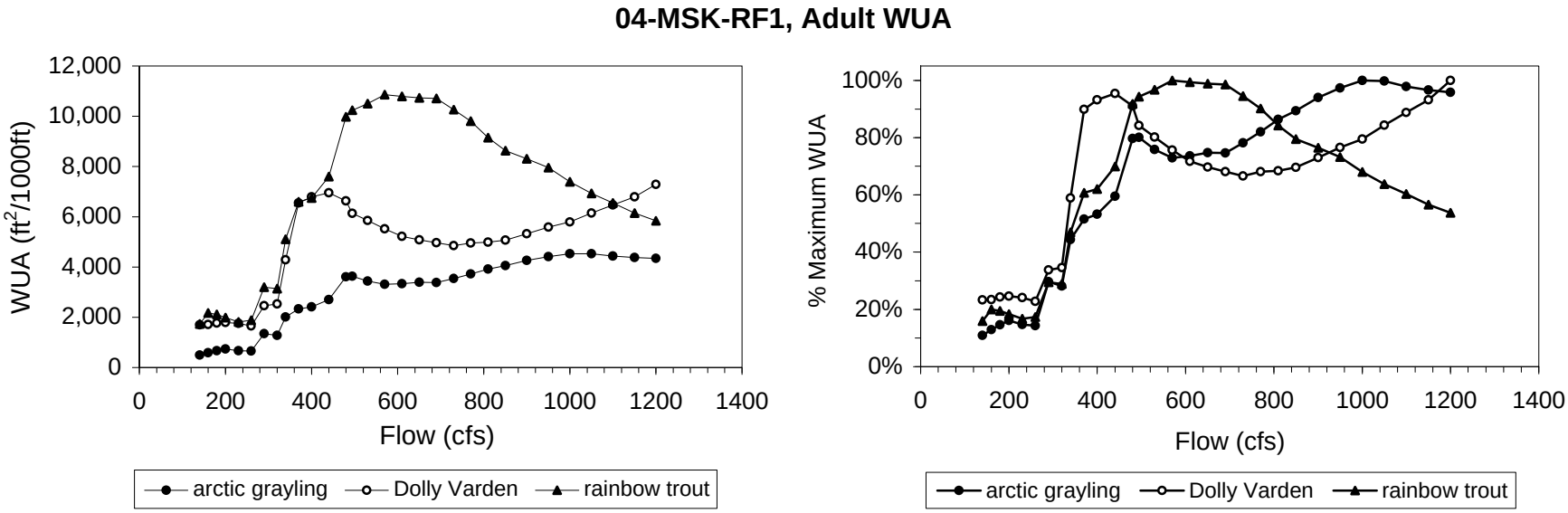

Figure 348
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-MSK-RF1 (River Kilometer 31.98) in KR, mainstem Koktuli River, Alaska.

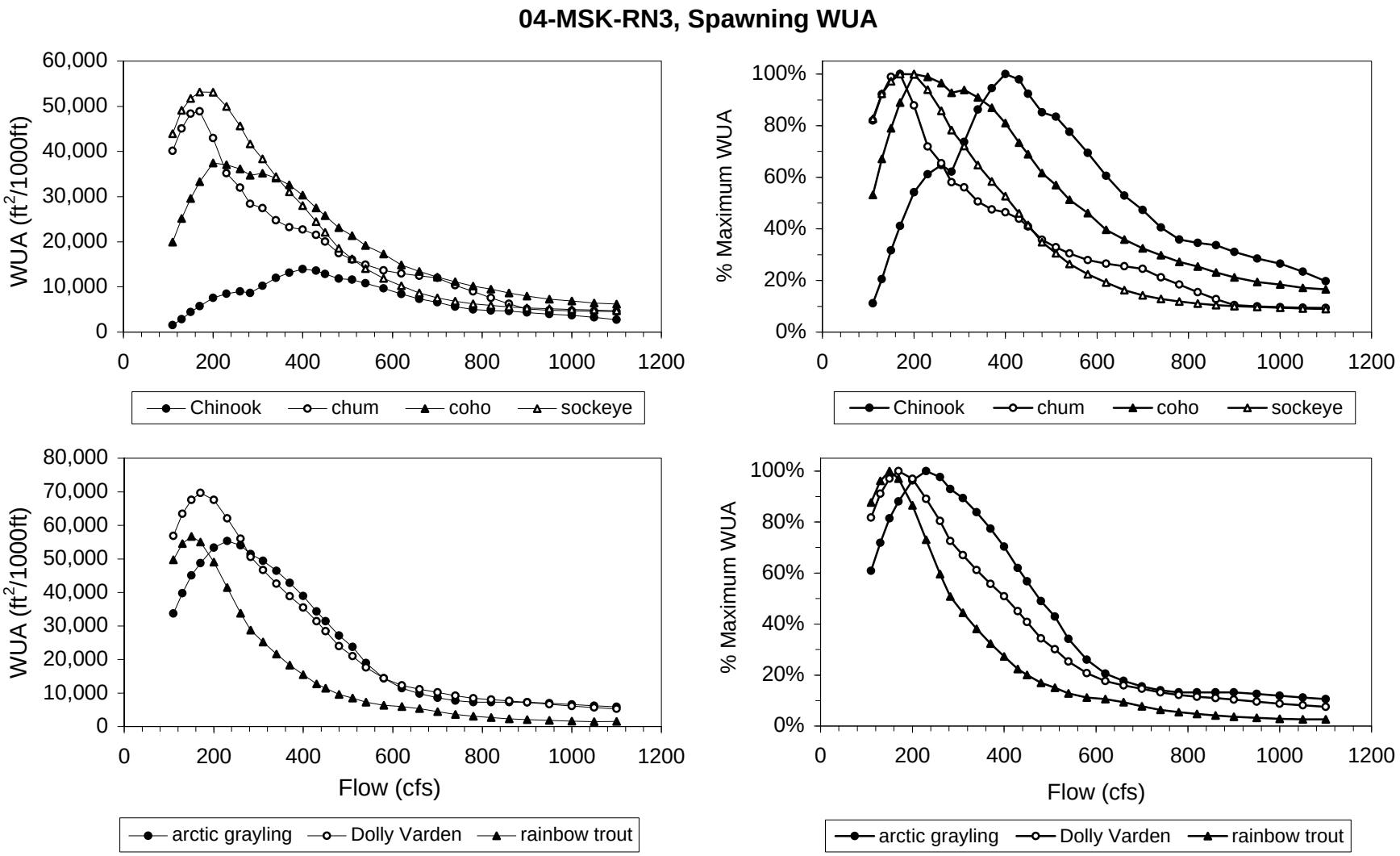

Figure 349
Weighted Usable Area (WUA) curves for spawning anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-RN3 (River Kilometer 43.96) in KR, mainstem Koktuli River, Alaska.

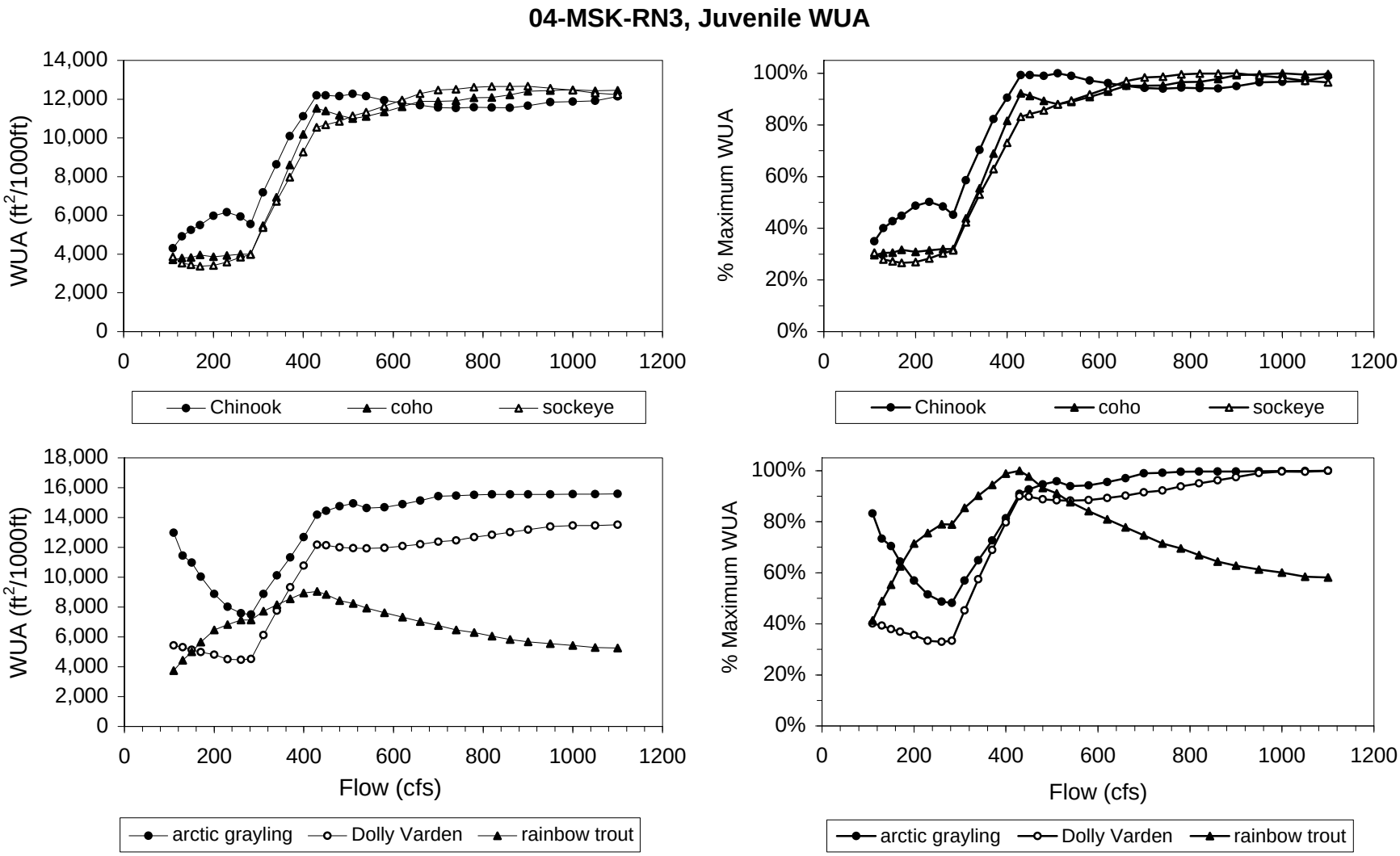

Figure 350
Weighted Usable Area (WUA) curves for juvenile anadromous (top) and non-anadromous (bottom) salmonids at Transect 04-MSK-RN3 (River Kilometer 43.96) in KR, mainstem Koktuli River, Alaska.

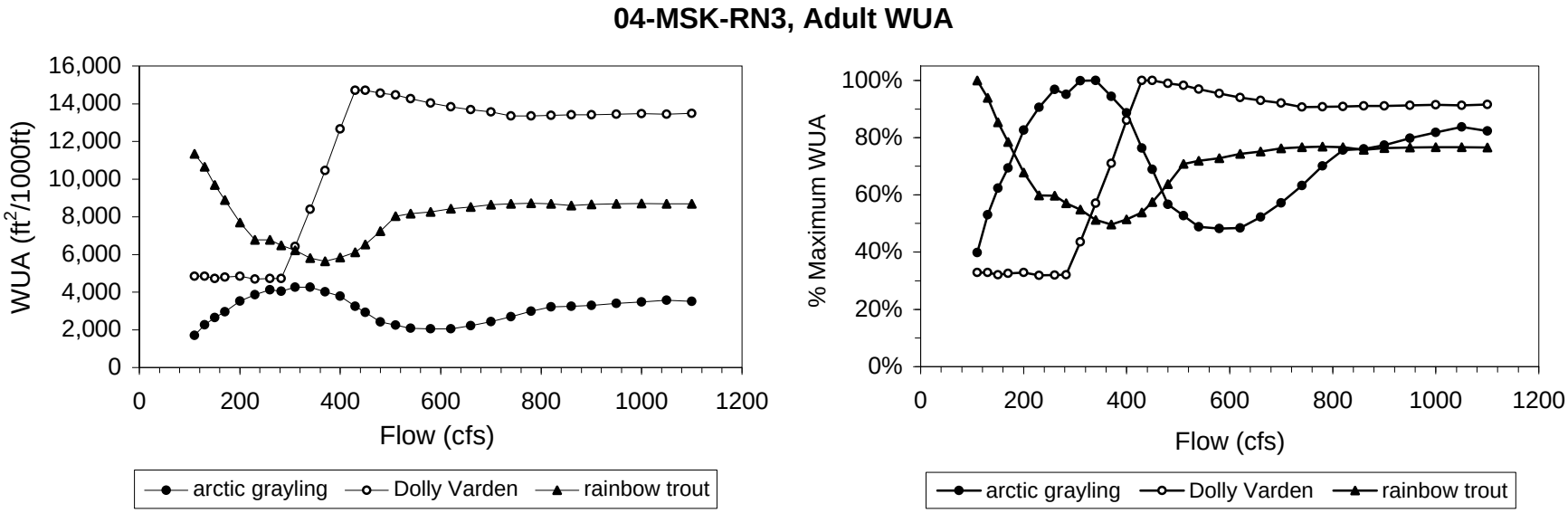

Figure 351
Weighted Usable Area (WUA) curves for adult non-anadromous salmonids at Transect 04-MSK-RN3 (River Kilometer 43.96) in KR, mainstem Koktuli River, Alaska.

ATTACHMENT 3

Transect Cross-sectional Profiles

Attachment 3

Transect Cross-Sectional Profiles

FIGURES

Figure 1. North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-IC3 Measured Transect Profiles (River Kilometer 3.37). 2

Figure 2. North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR1 Measured Transect Profiles (River Kilometer 9.88). 3

Figure 3. North Fork Kvoktuli River, Reach A, 08-NFK1-MS1, TR2 Measured Transect Profiles (River Kilometer 9.91). 4

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Introduction

This document contains the surveyed cross-sectional profiles of all PHABSIM (physical habitat simulation software computer program) transects. There are 117 transects in the four study area basins, including 30 transects on North Fork Koktuli River (NFK), 43 transects on South Fork Koktuli River (SFK), 40 transects on Upper Talarik Creek (UT), and four transects on Mainstem Koktuli River (KR). One transect (i.e., 08-NFK2-MS1-TR2) is represented by two separate transect profiles: one for the left channel and one for the right channel. The transect cross-sectional profiles are organized by basin (NFK, SFK, UT, and KR), then by reach/tributary (e.g., NFK-A, NFK-B, NFK-C, NFK 1.190), followed by River Kilometer (RK) in ascending order (from the downstream most transect to the upstream most transect). The RK in the NFK and SFK basins is measured from the confluence of the NFK and SFK; RK in the UT basin is measured from Iliamna Lake; RK in the KR basin is measured from the Swan River; and RK in each tributary is measured from the mainstem river in each respective basin (i.e., NFK, SFK, and UT).

Each transect was visited multiple times, and during each visit, a full transect profile or a portion of the transect profile was surveyed. The transect profile plots include the measured bathymetry from all of the surveys, except the ones impacted by ice during the 2007 survey.

A winter low flow survey was conducted in April of 2007. During the site visit, many transects were still covered in ice, under deep snow, had anchor ice in the channel, or had fallen ice on waters edge. The hydraulics of those transects impacted by ice were significantly different from the ice-free flow conditions. Due to the ice effect, most transects from the winter low flow survey were not included in the hydraulic modeling and, as the result, the profiles of those transects are not presented in the transect cross-sectional plots.

Figure 79. Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR5
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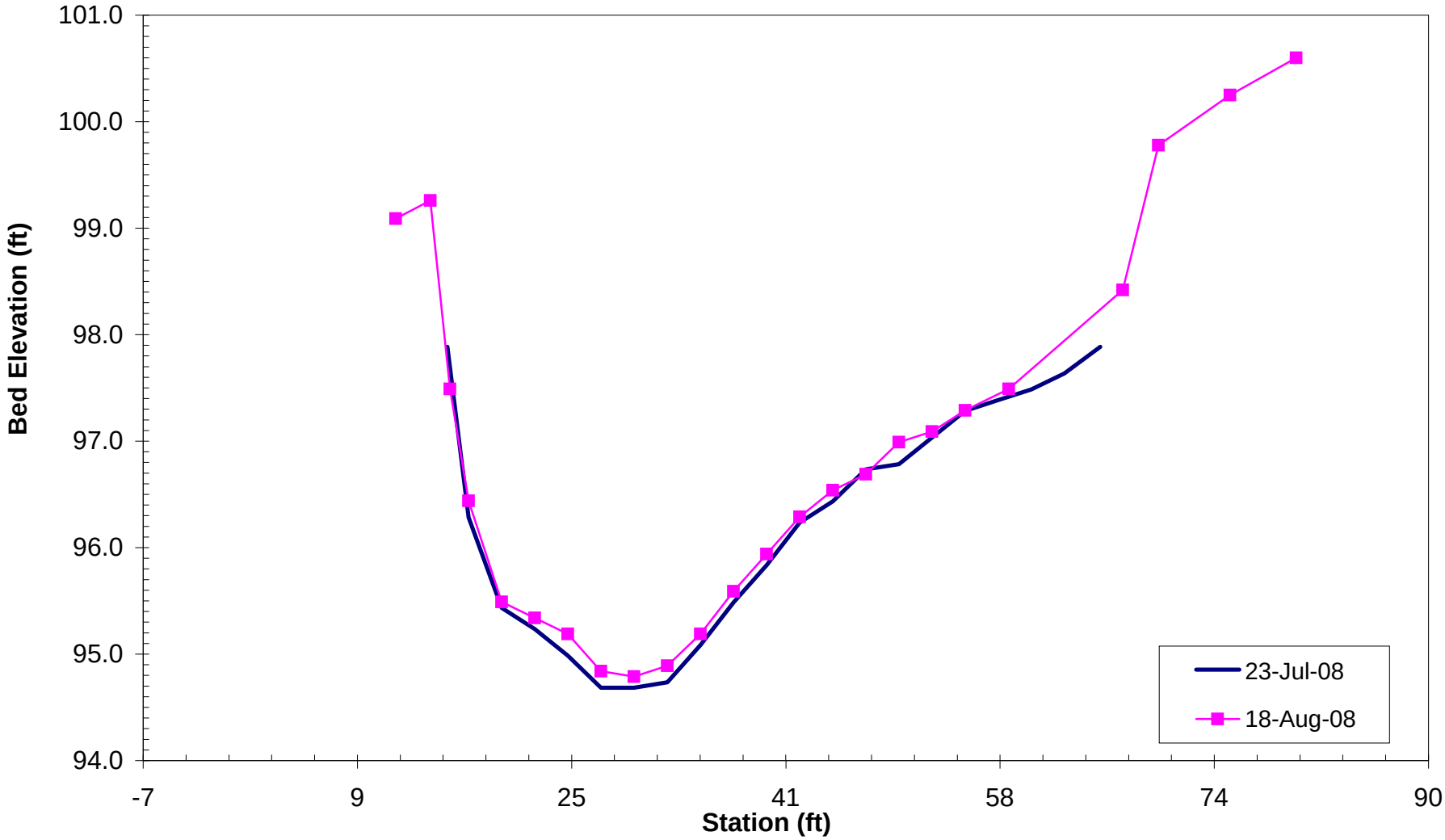

Figure 80. Upper Talarik Creek, Reach C, Island Complex, 05-UTC1-IC1
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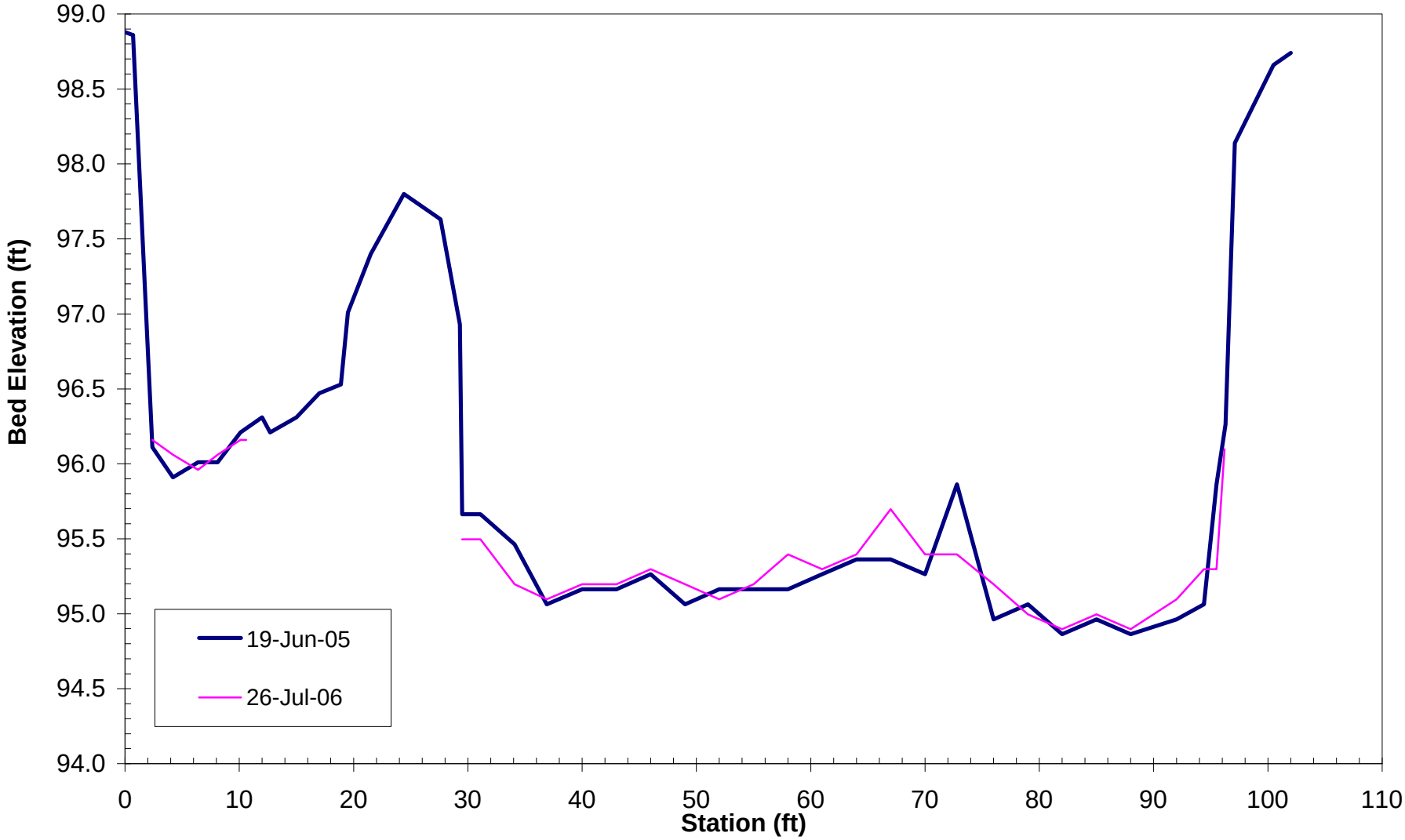

Figure 81. Upper Talarik Creek, Reach C, Riffle, 05-UTC1-RF2
Measured Transect Profiles (River Kilometer 17.36)

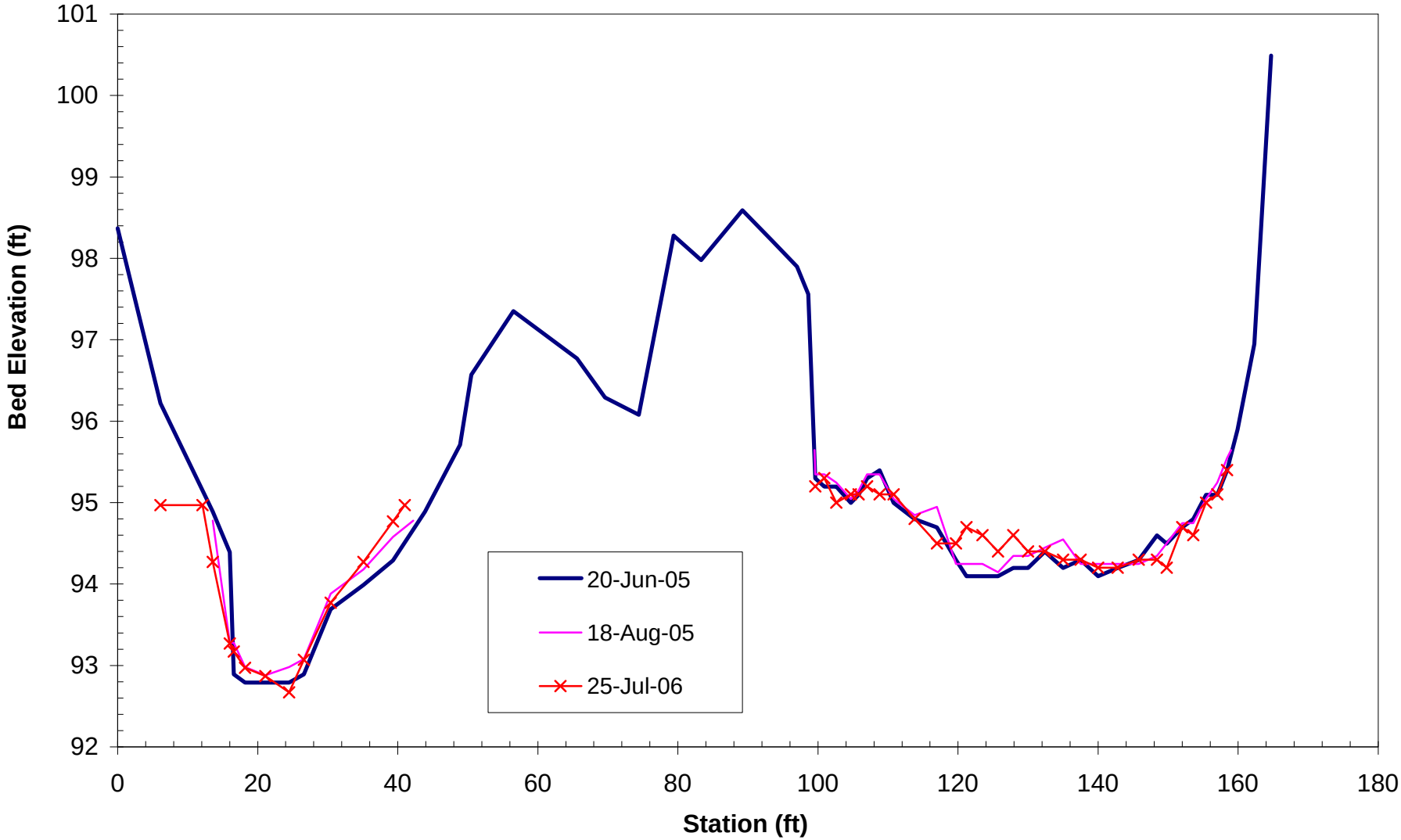

Figure 82. Upper Talarik Creek, Reach C, Run, 05-UTC1-RN1
Measured Transect Profiles (River Kilometer 19.34)

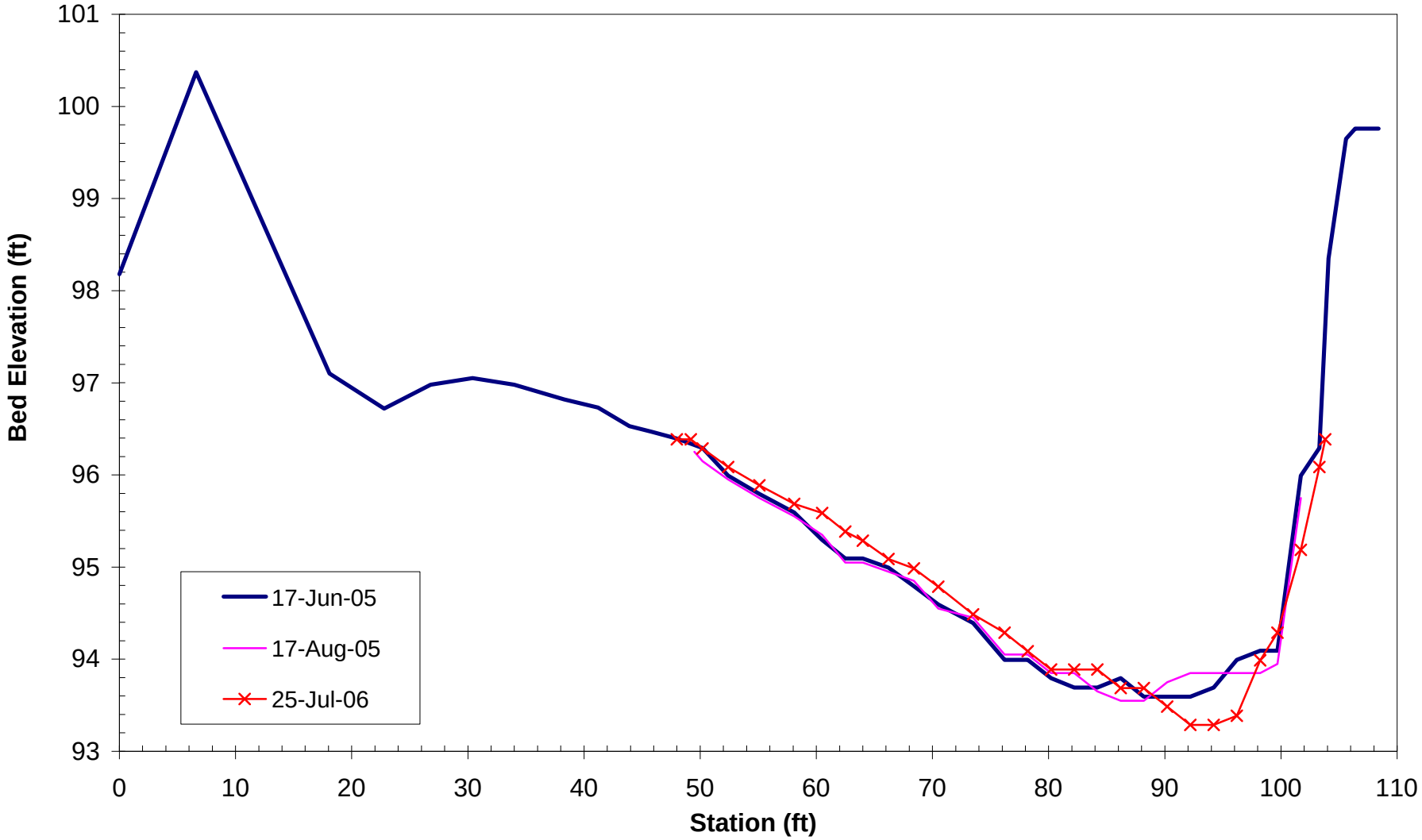

Figure 83. Upper Talarik Creek, Reach C, Island Complex, 04-UTC-IC2
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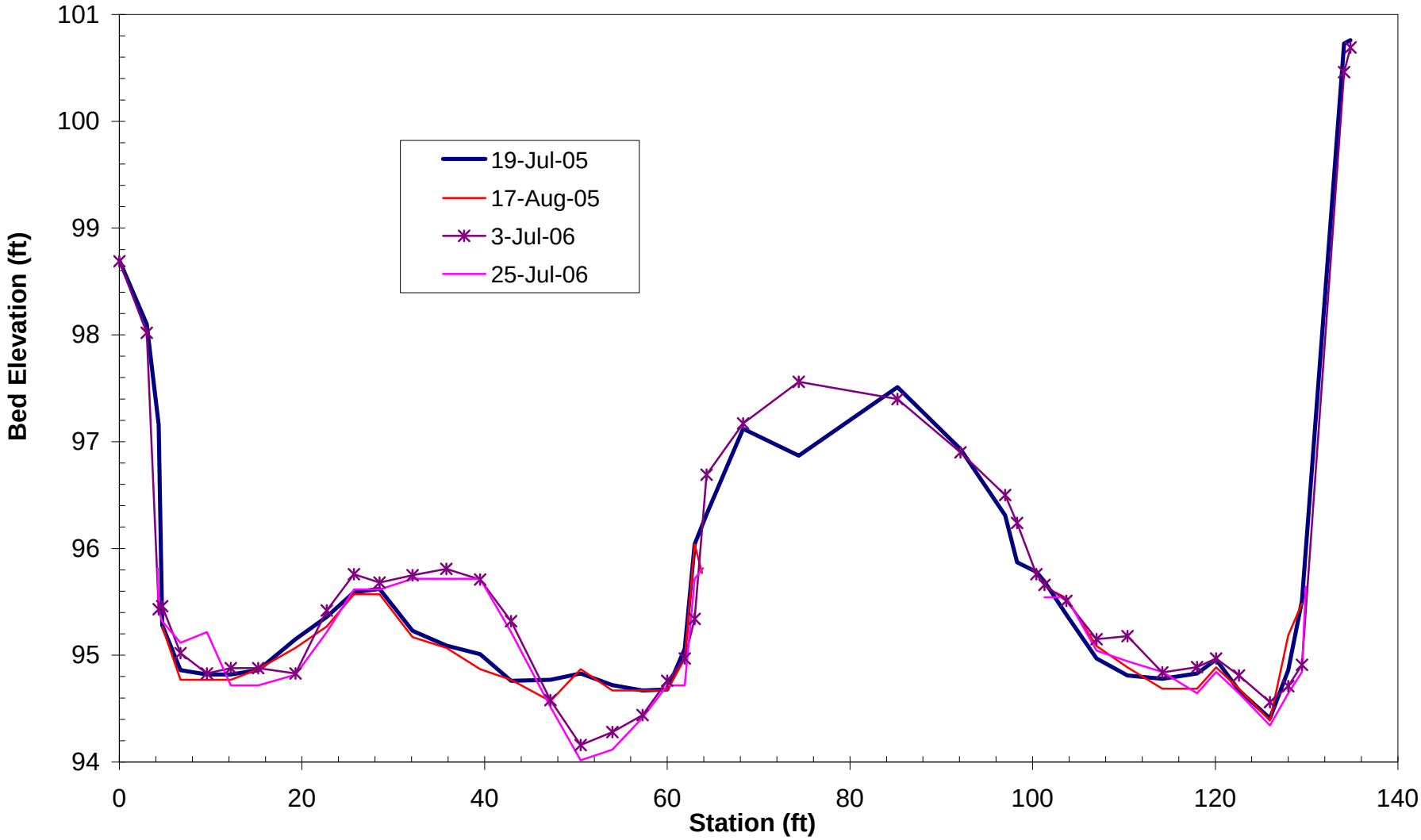

Figure 84. Upper Talarik River, Reach C, Run, 04-UTC-RN1
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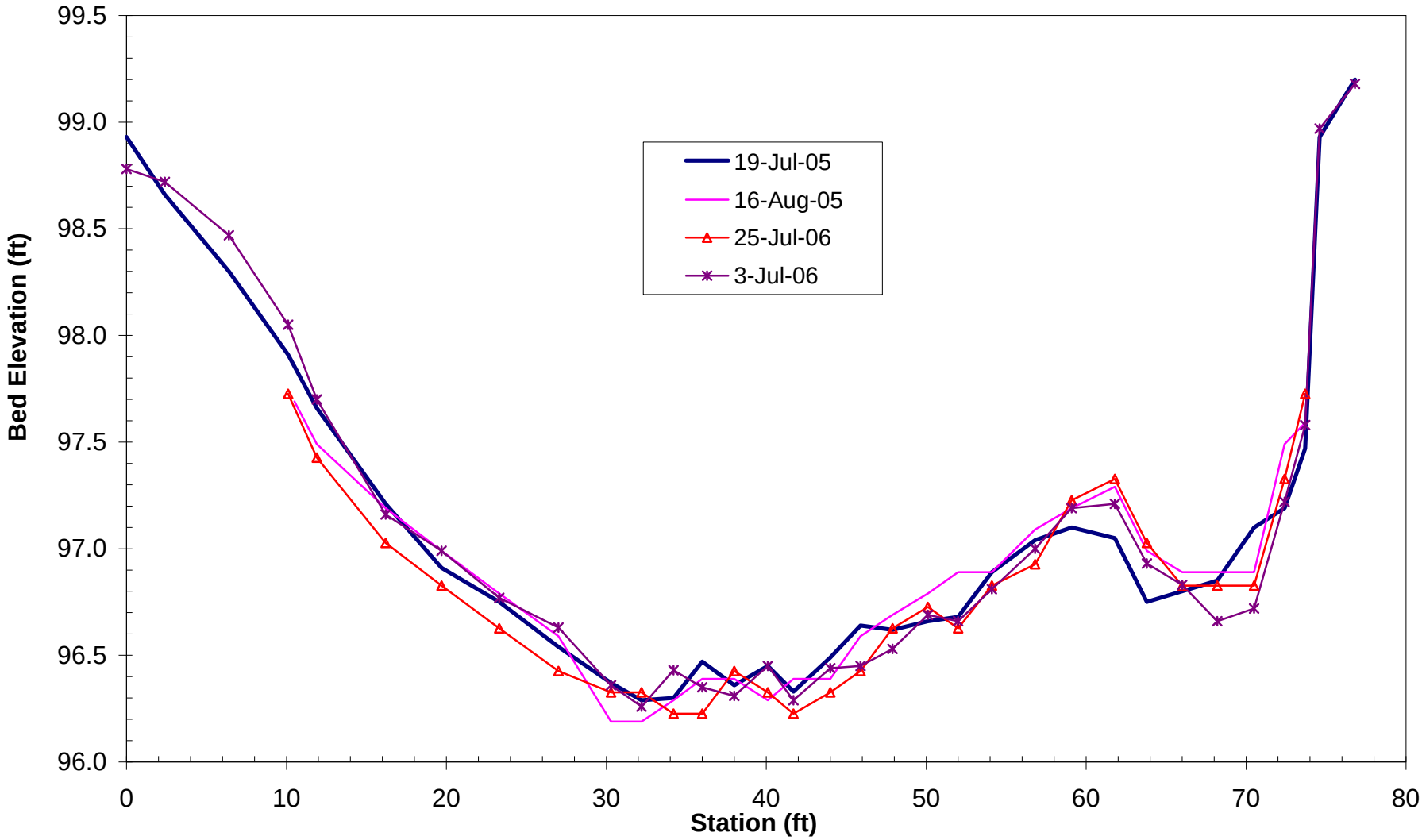

Figure 85. Upper Talarik Creek, Reach C, Run, 04-UTC-RN2
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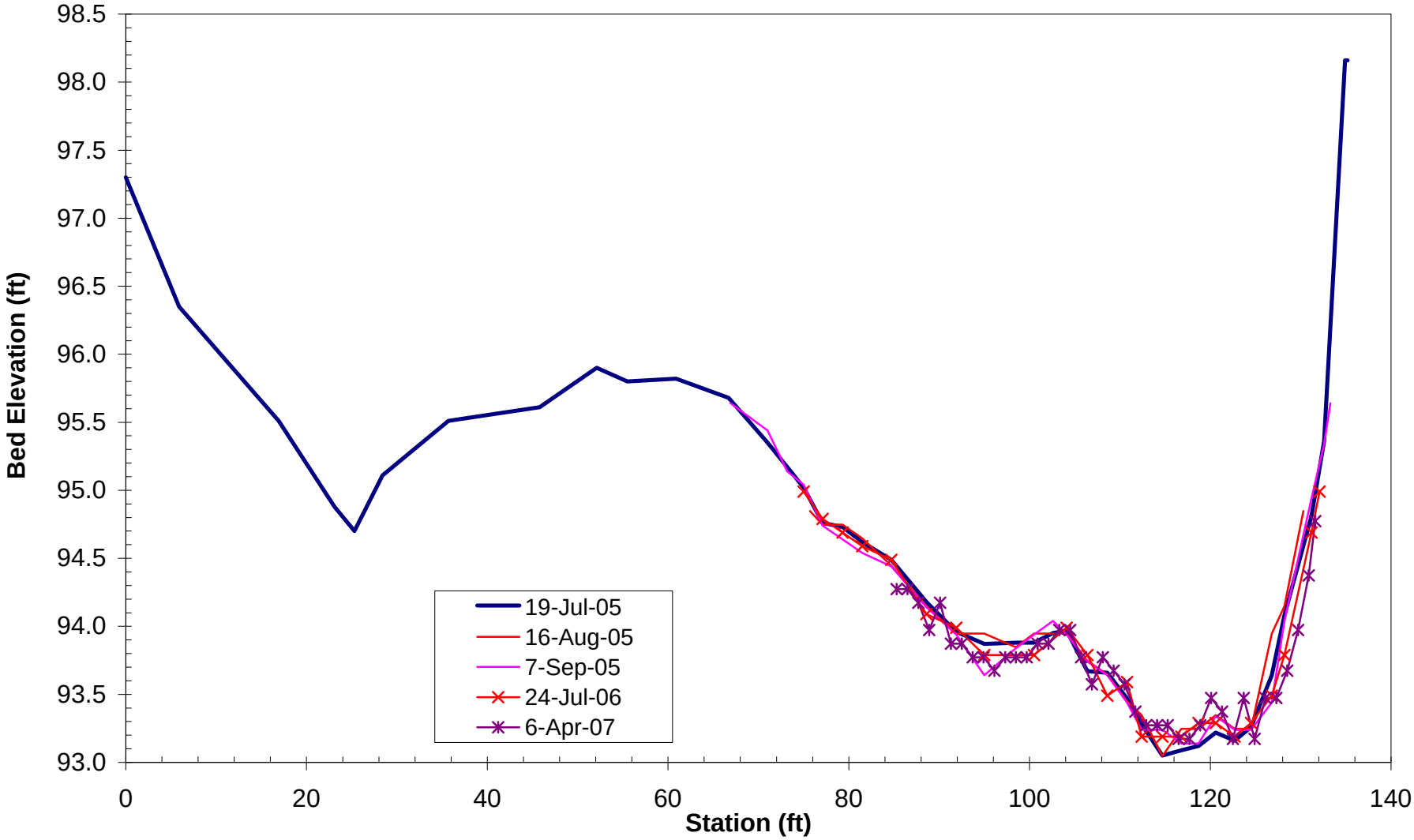

Figure 86. Upper Talarik Creek, Reach C, Riffle, 04-UTC-RF2
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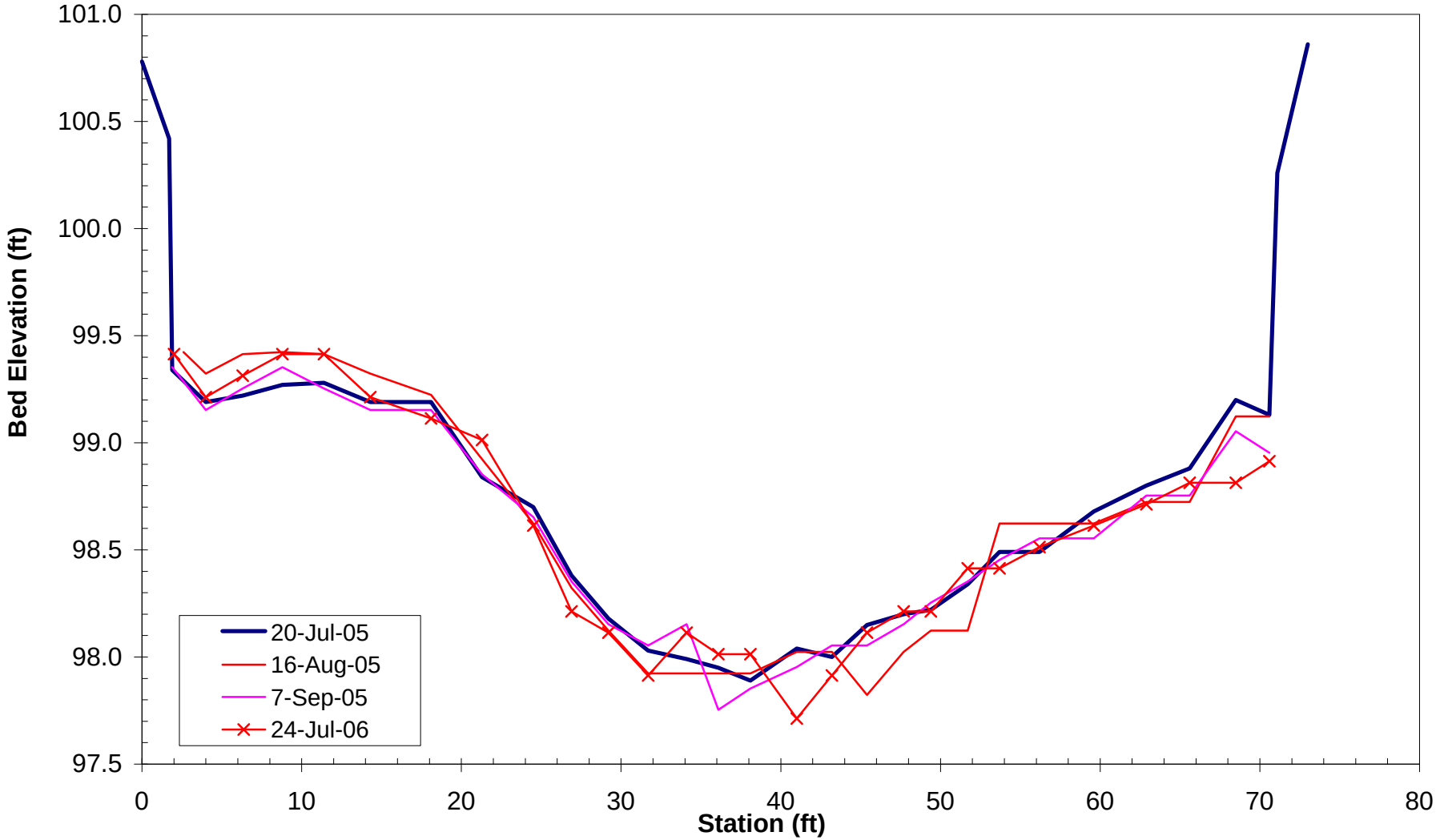

Figure 87. Upper Talarik Creek, Reach D, Run, 07-UTC2-RN3
Measured Transect Profiles (River Kilometer 26.02)

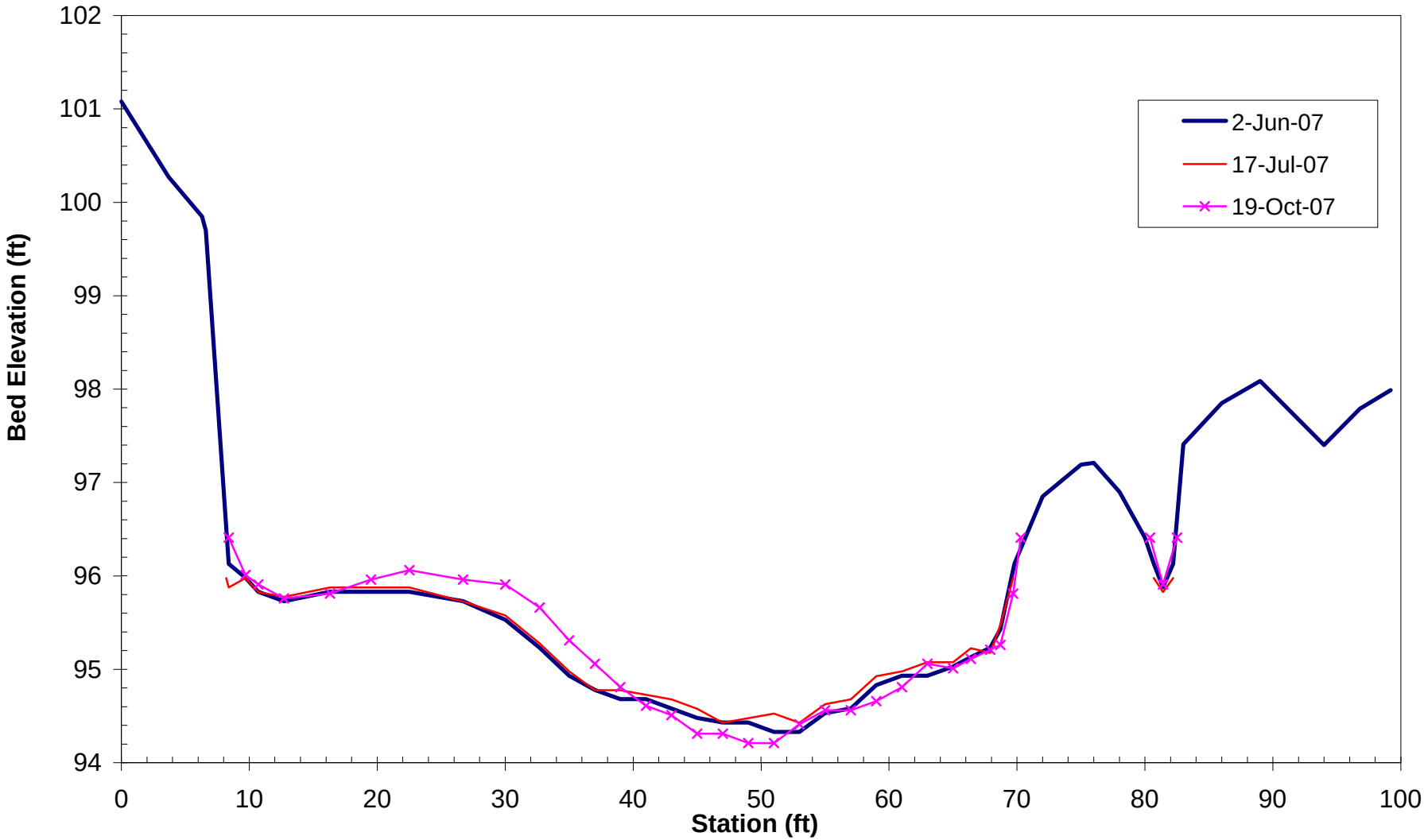

Figure 88. Upper Talarik River, Reach D, Run, 07-UTC2-RN1
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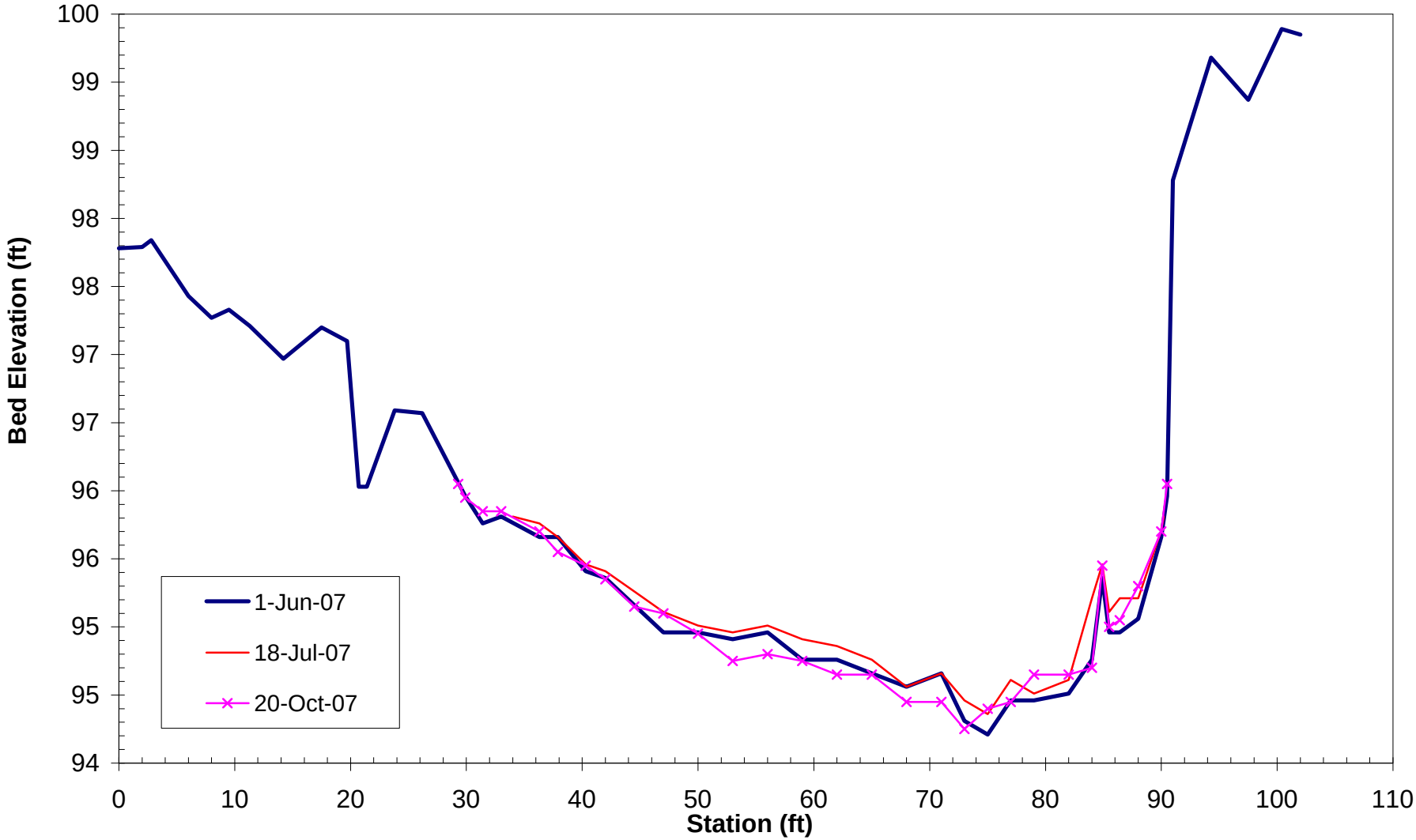

Figure 89. Upper Talarik Creek, Reach D, Run, 07-UTC2-RN2
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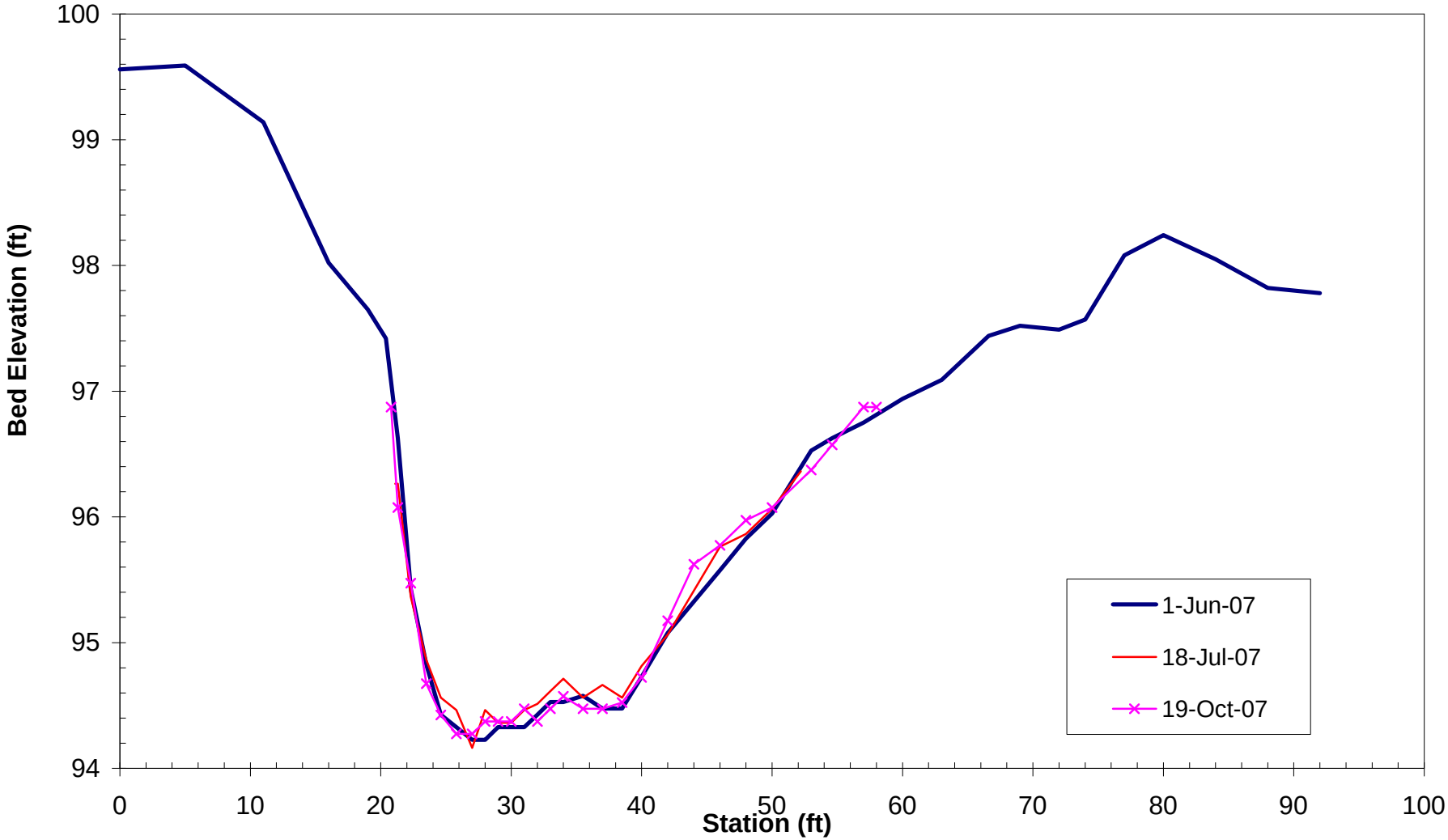

Figure 90. Upper Talarik Creek, Reach D, Riffle, 05-UTC2-RF1
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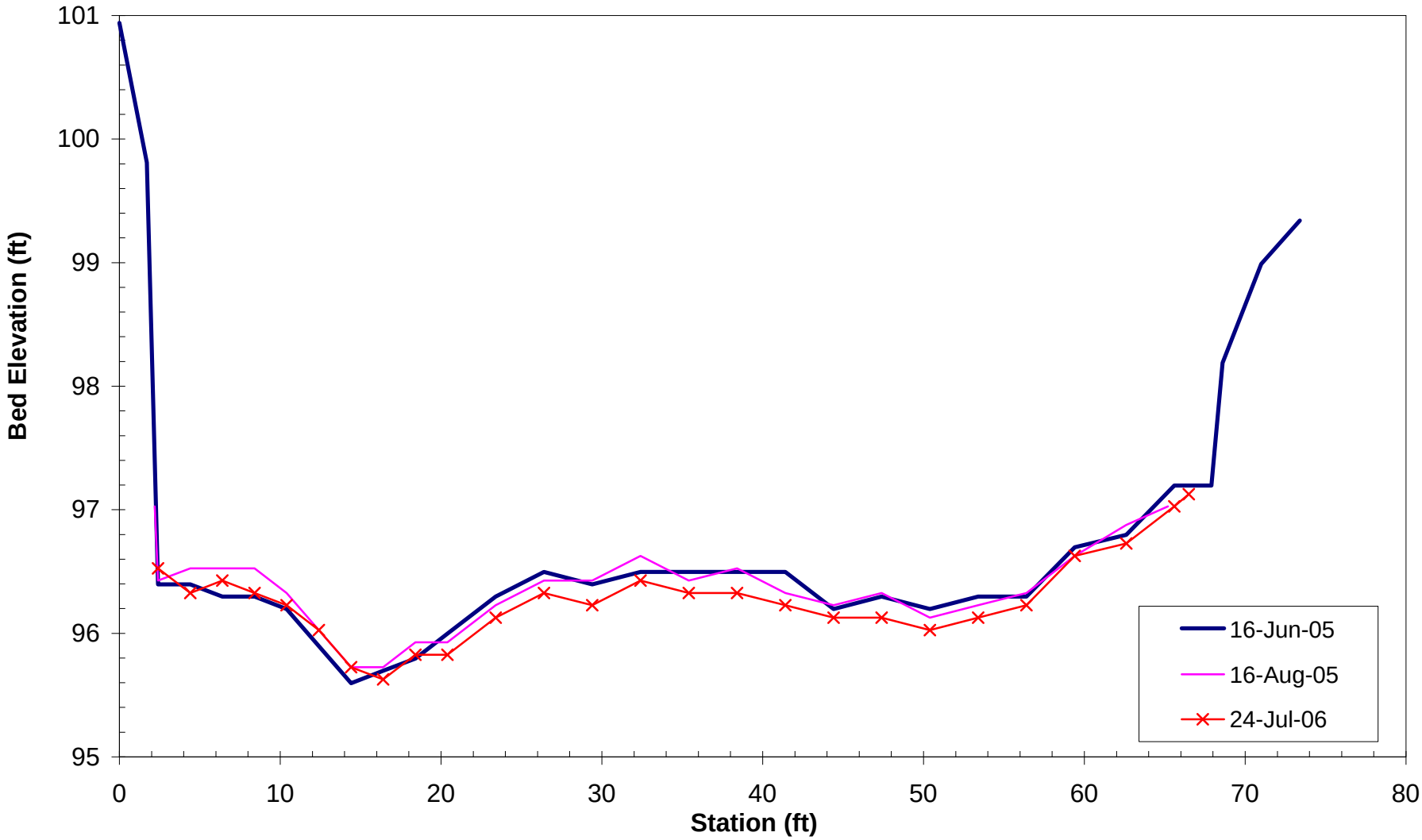

Figure 91. Upper Talarik Creek, Reach D, Riffle, 04-UTC-RF3
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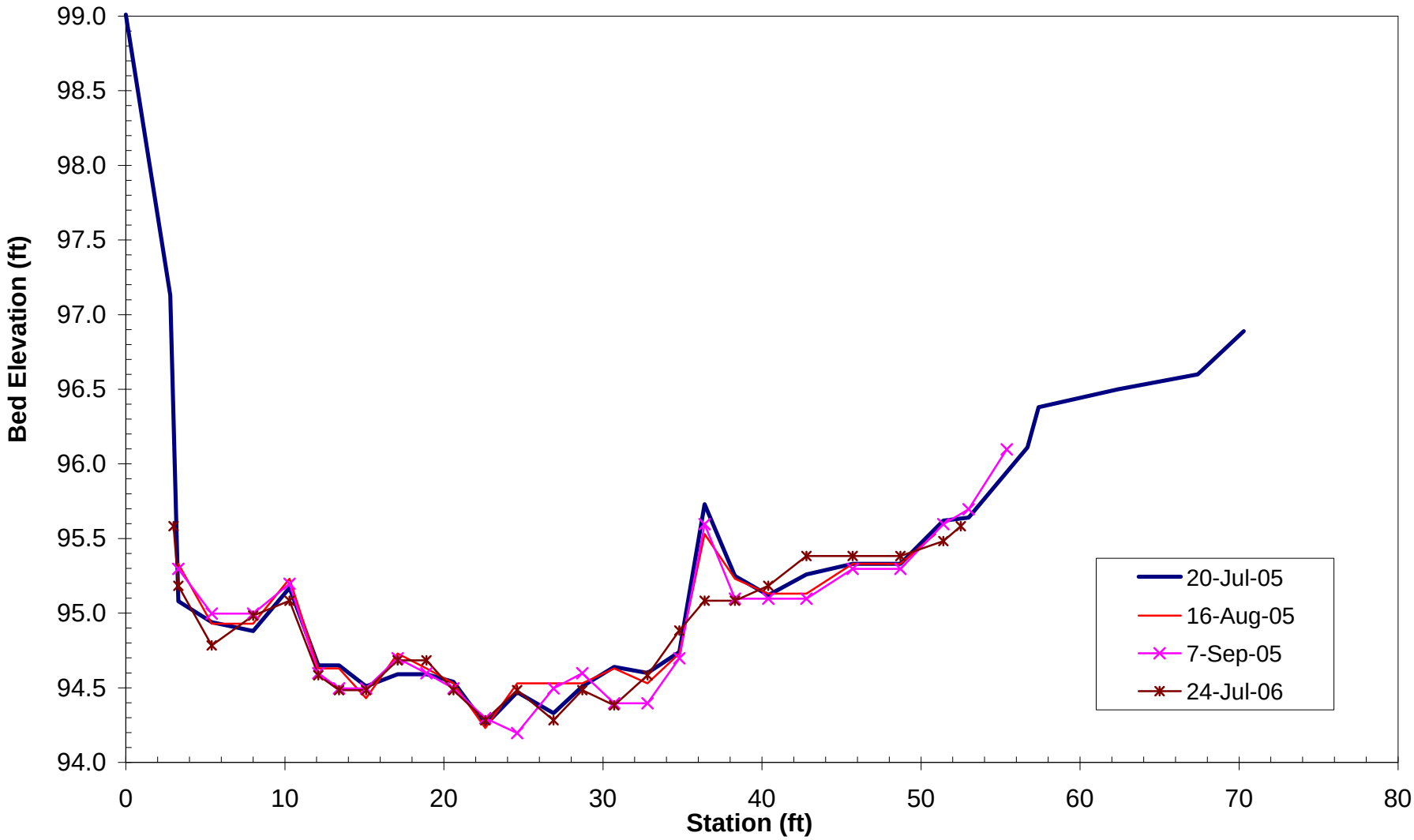

Figure 92. Upper Talarik Creek, Reach D, Run, 04-UTC-RN3
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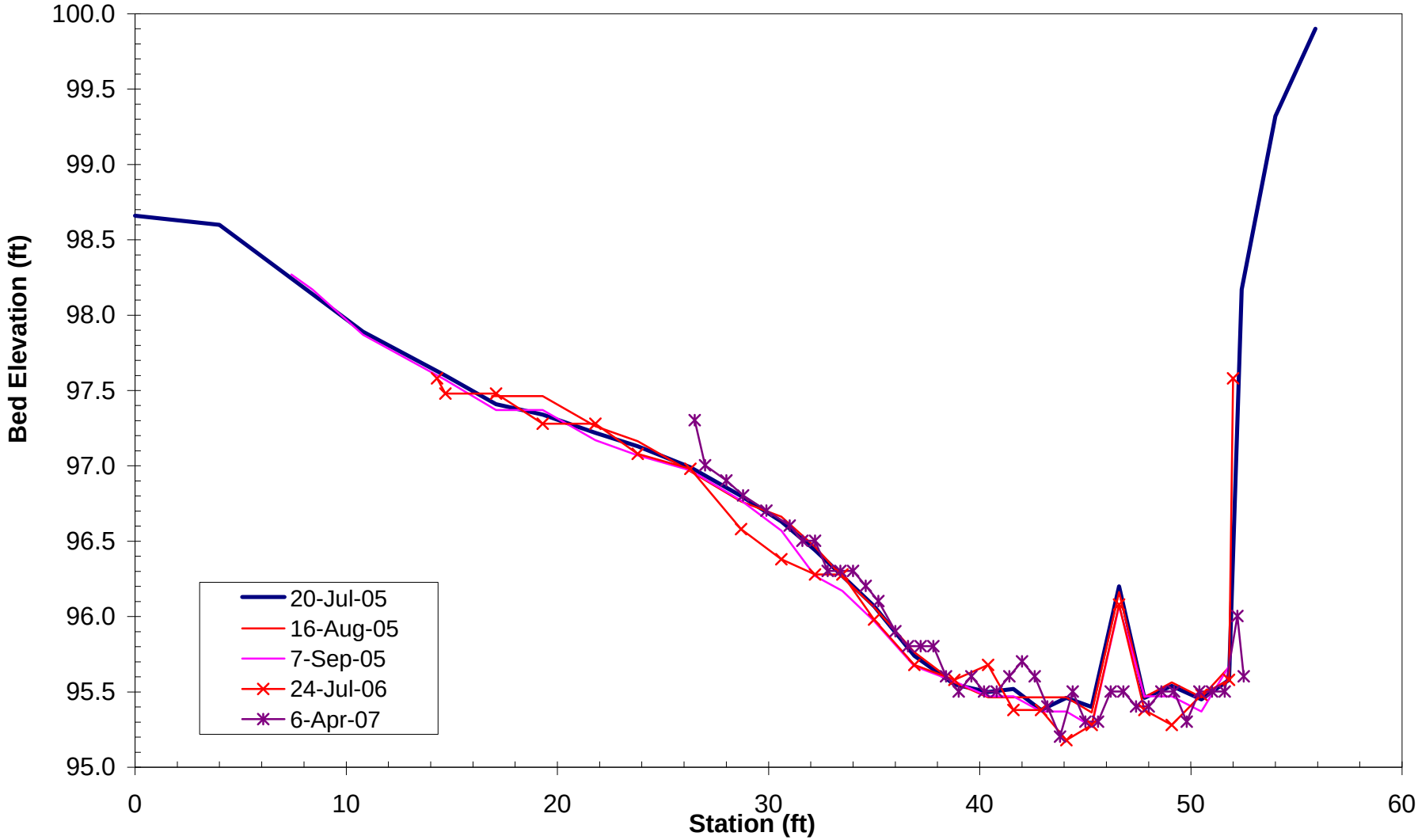


Figure 93. Upper Talarik Creek, Reach D, Run, 05-UTC2-RN2
Measured Transect Profiles (River Kilometer 35.64)

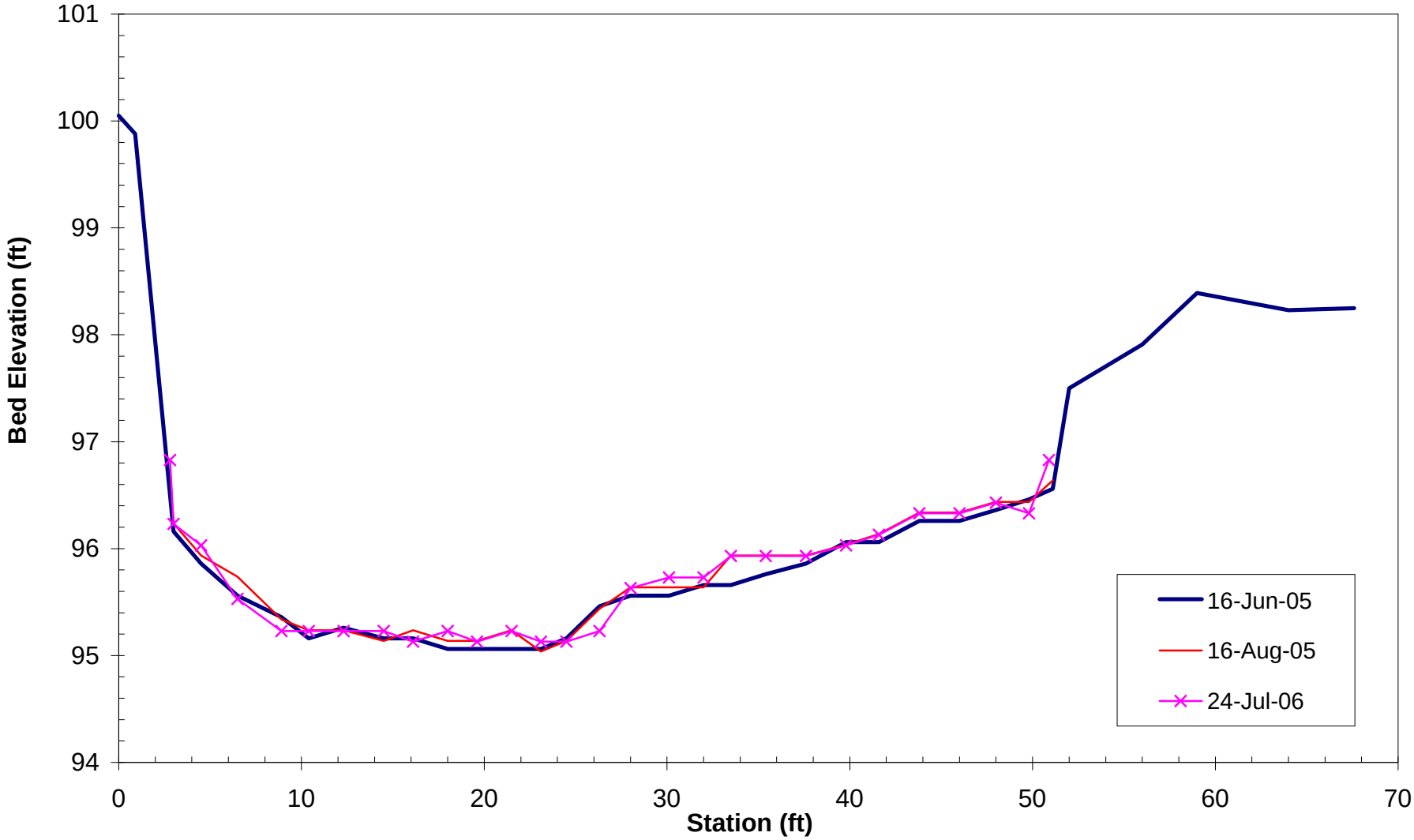


Figure 94. Upper Talarik Creek, Reach E, Riffle, 05-UTC2-RF2
Measured Transect Profiles (River Kilometer 36.70)

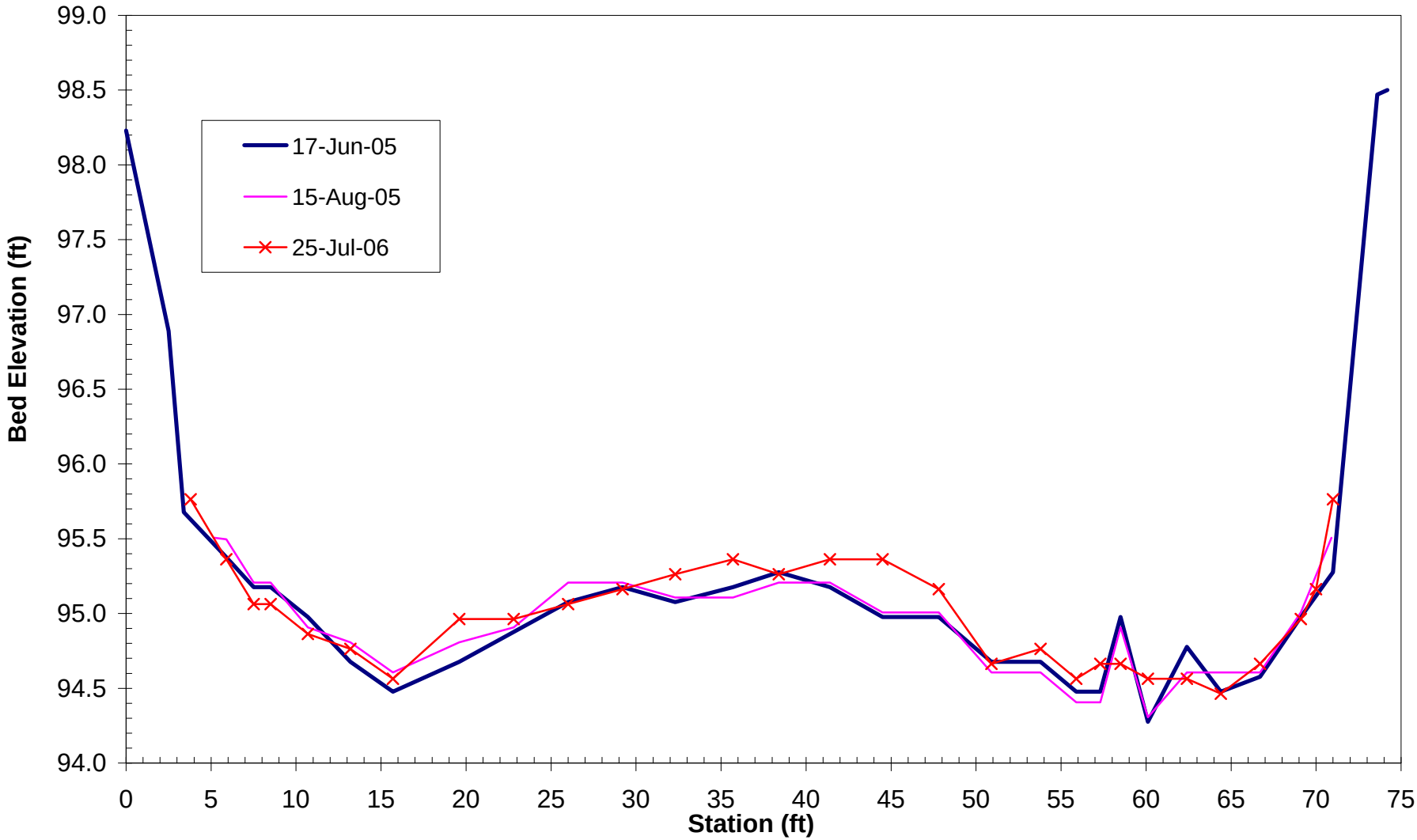


Figure 95. Upper Talarik Creek, Reach E, Island Complex, 04-UTC-IC1
Measured Transect Profiles (River Kilometer 37.91)

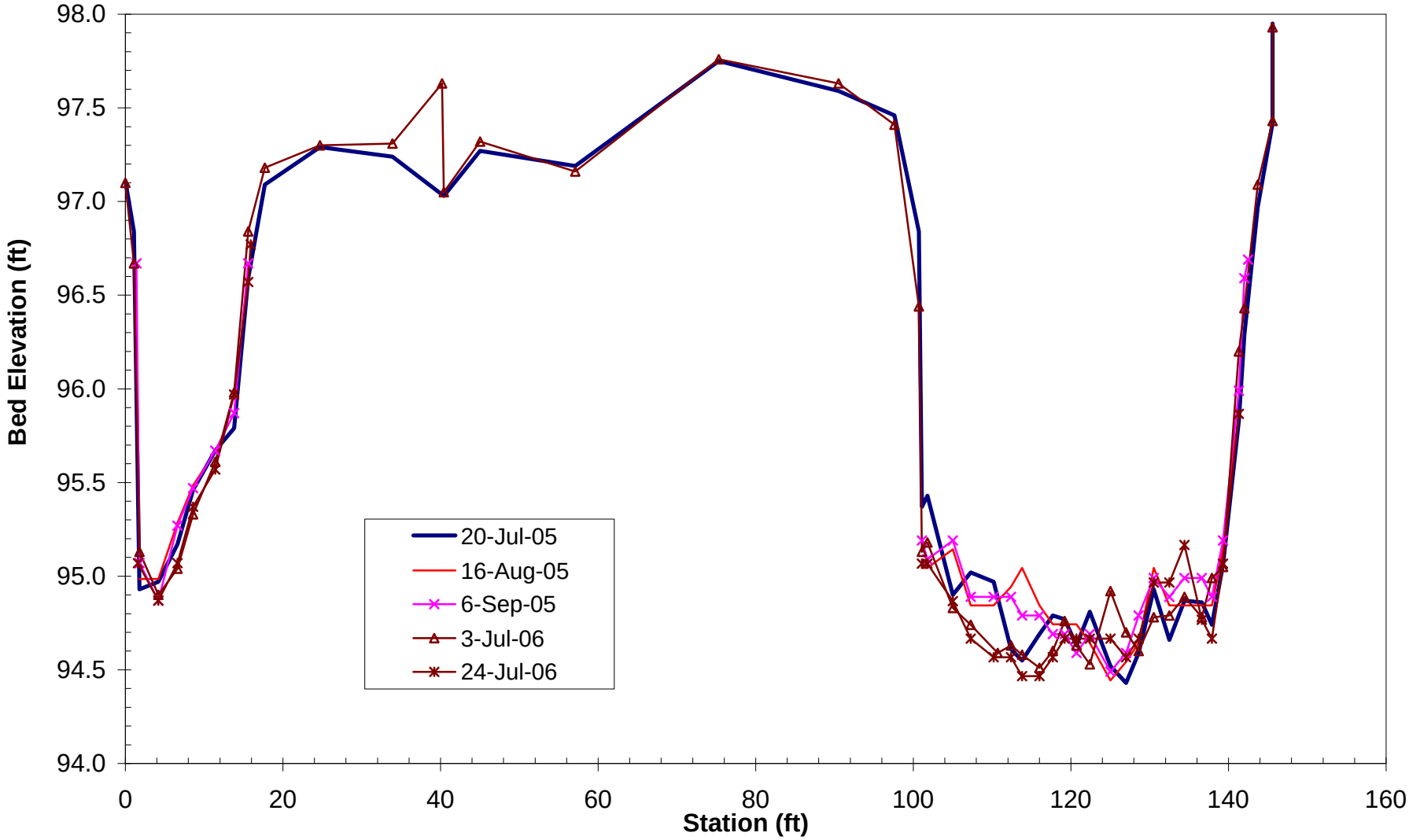


Figure 97. Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR2
Measured Transect Profiles (River Kilometer 41.73)

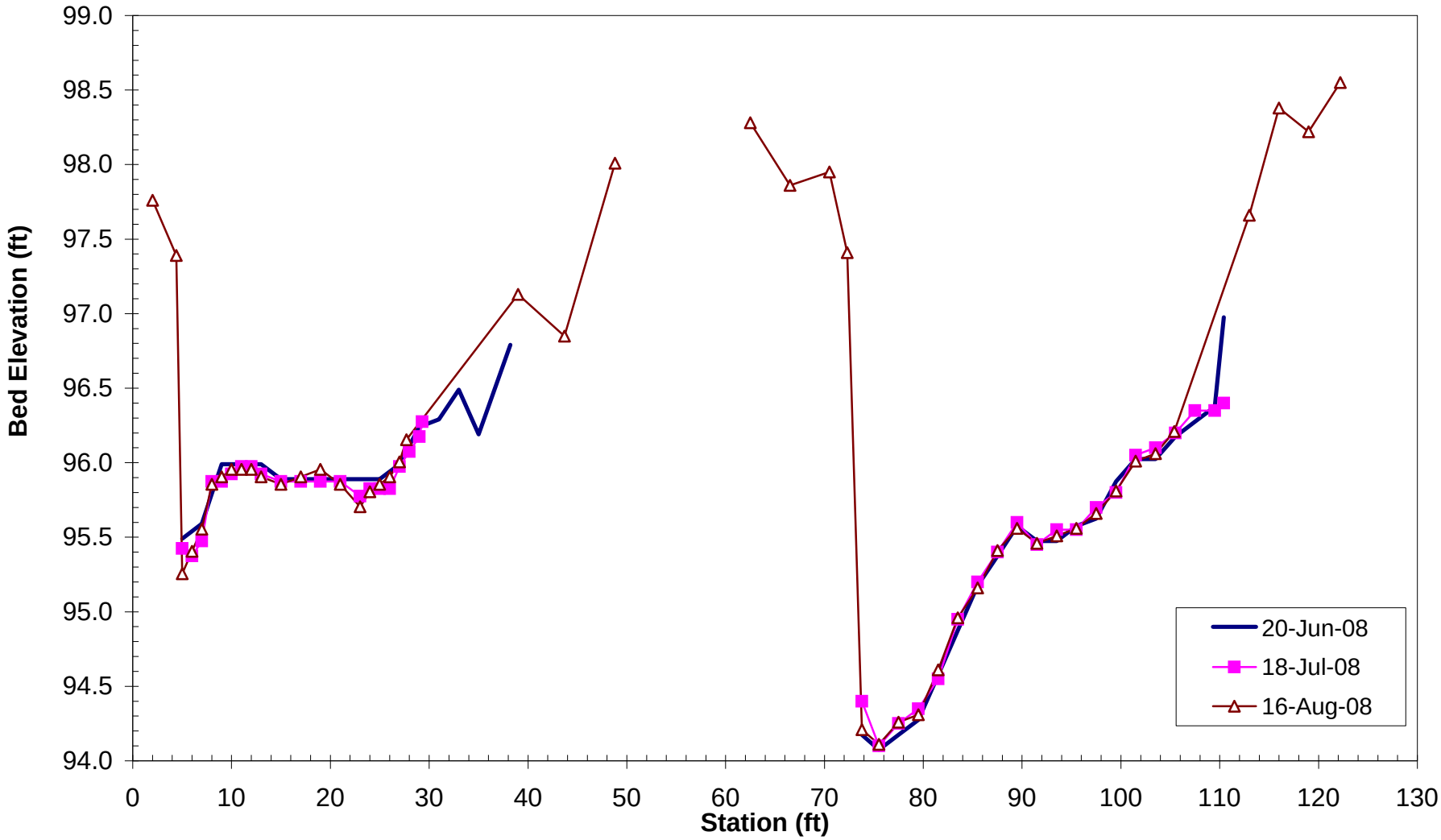


Figure 96. Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR1
Measured Transect Profiles (River Kilometer 41.66)

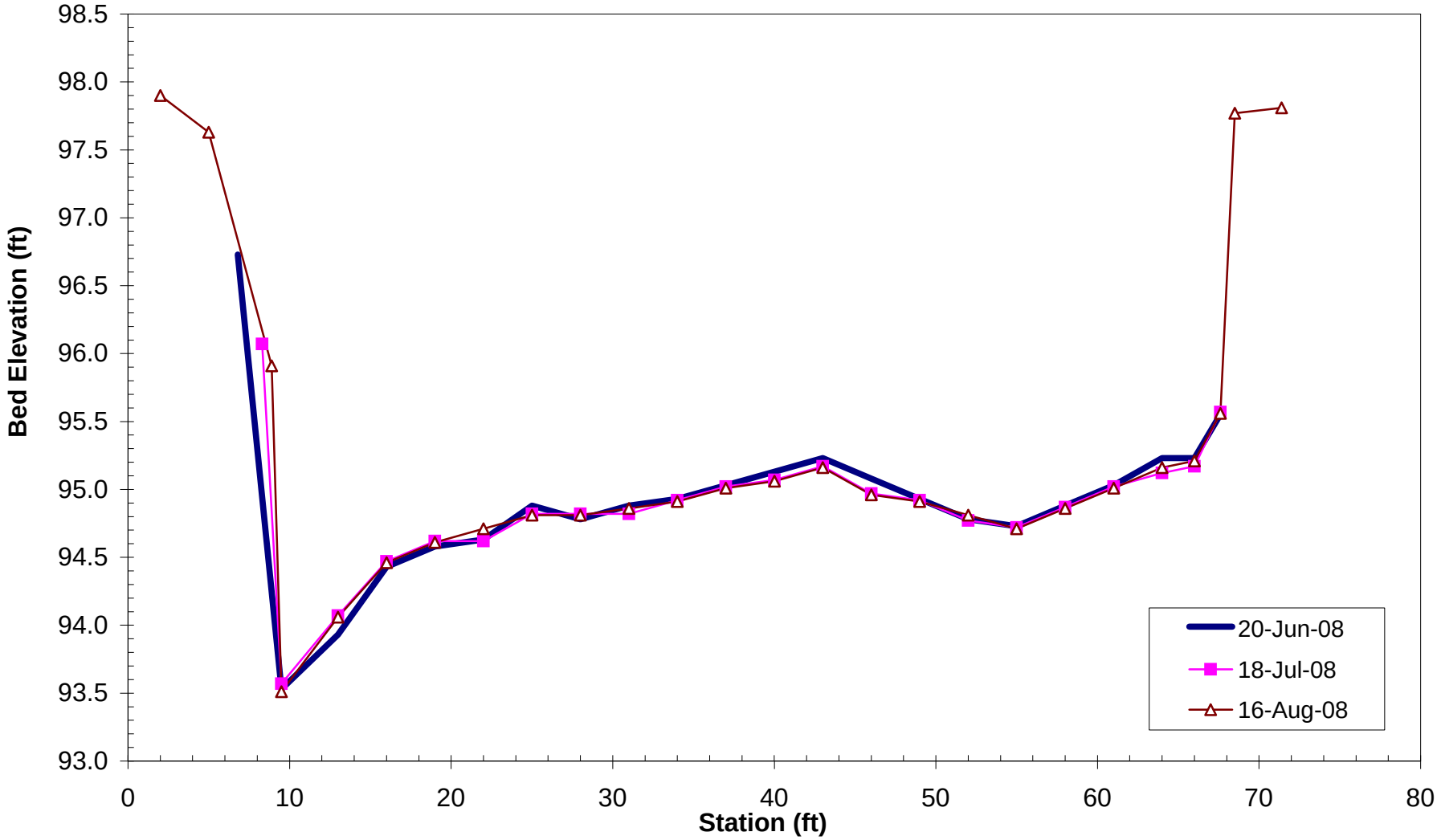


Figure 98. Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR3
Measured Transect Profiles (River Kilometer 41.76)

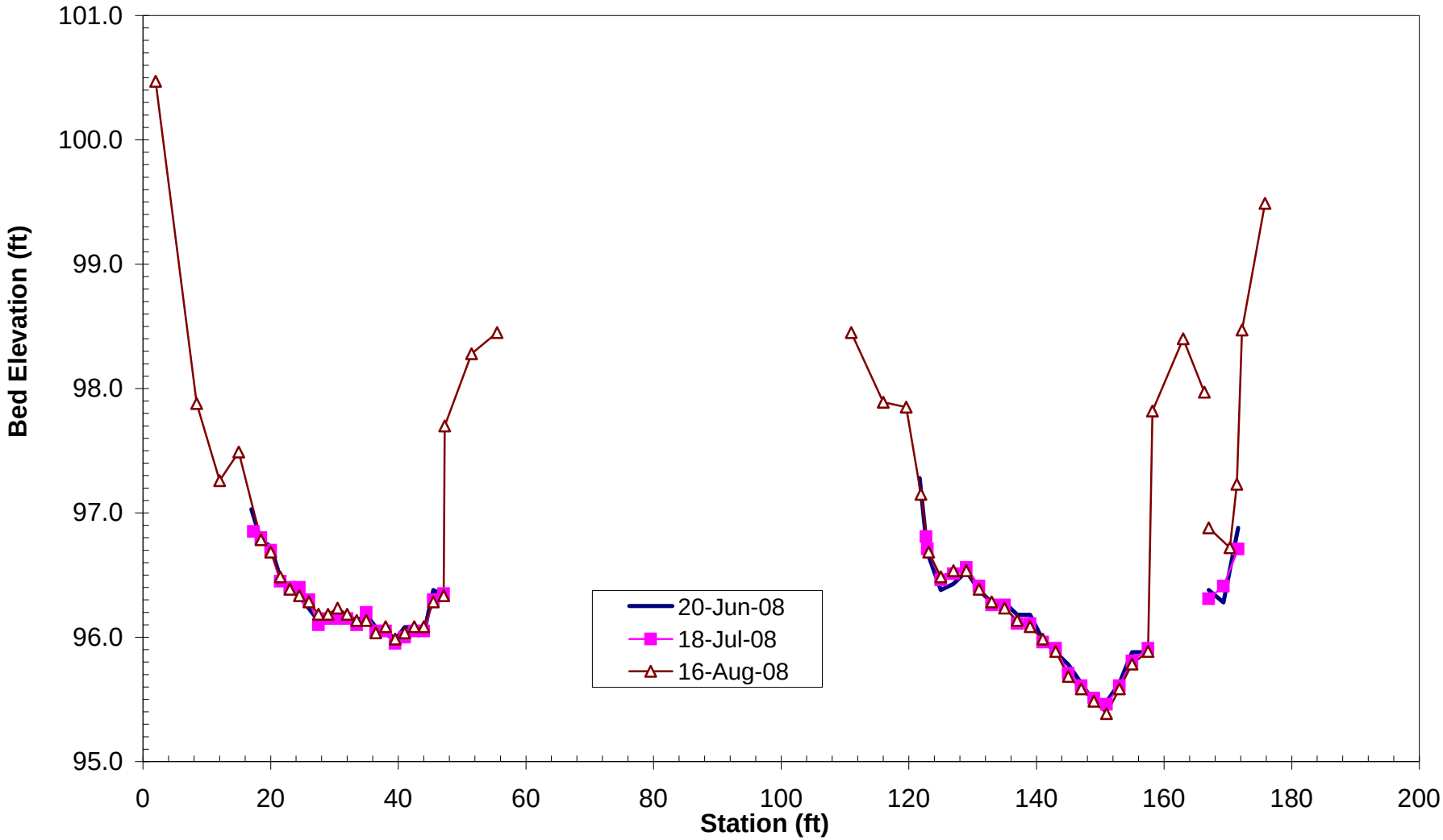


Figure 99. Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR4
Measured Transect Profiles (River Kilometer 41.83)

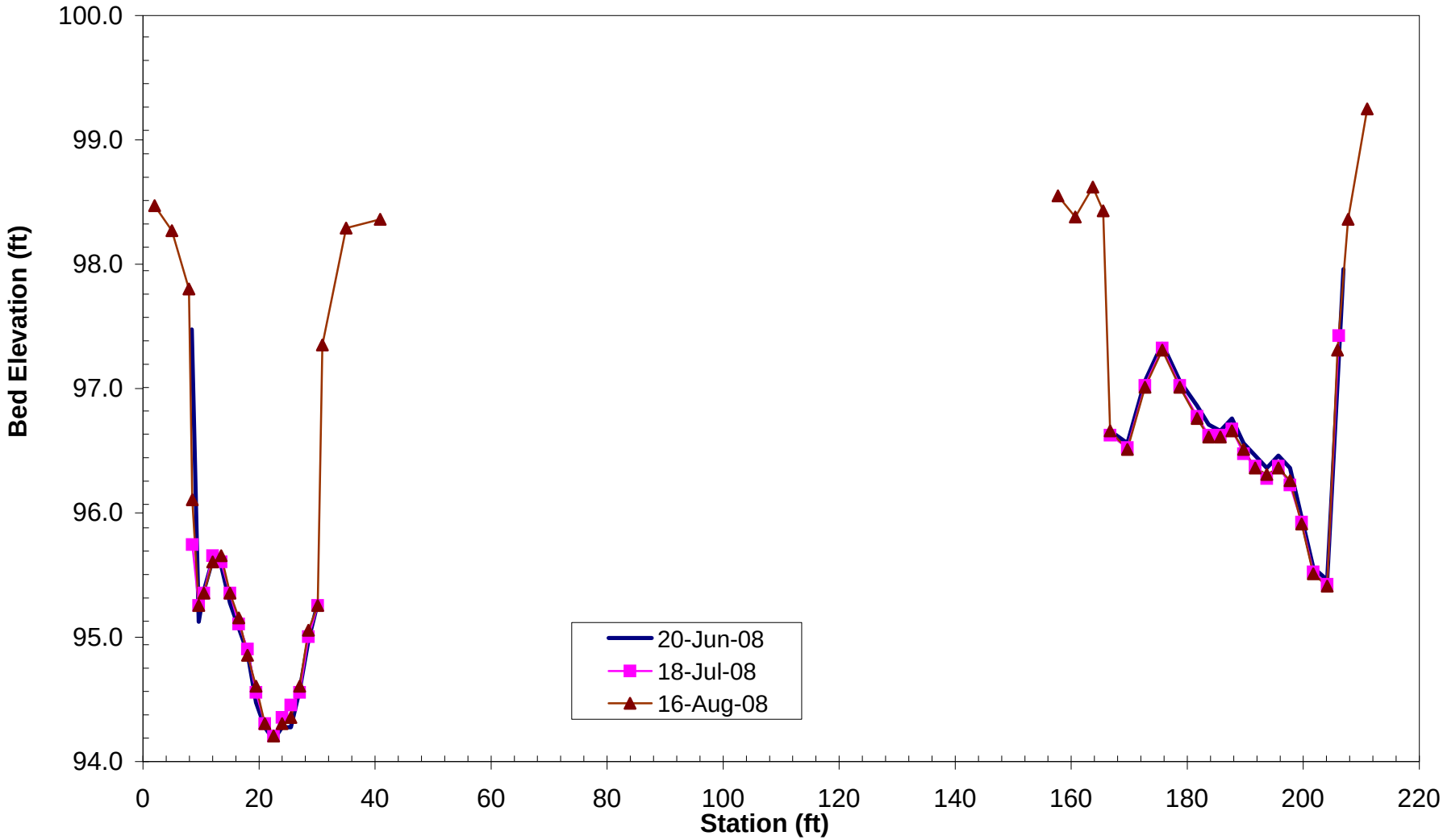


Figure 100. Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR5
Measured Transect Profiles (River Kilometer 41.88)

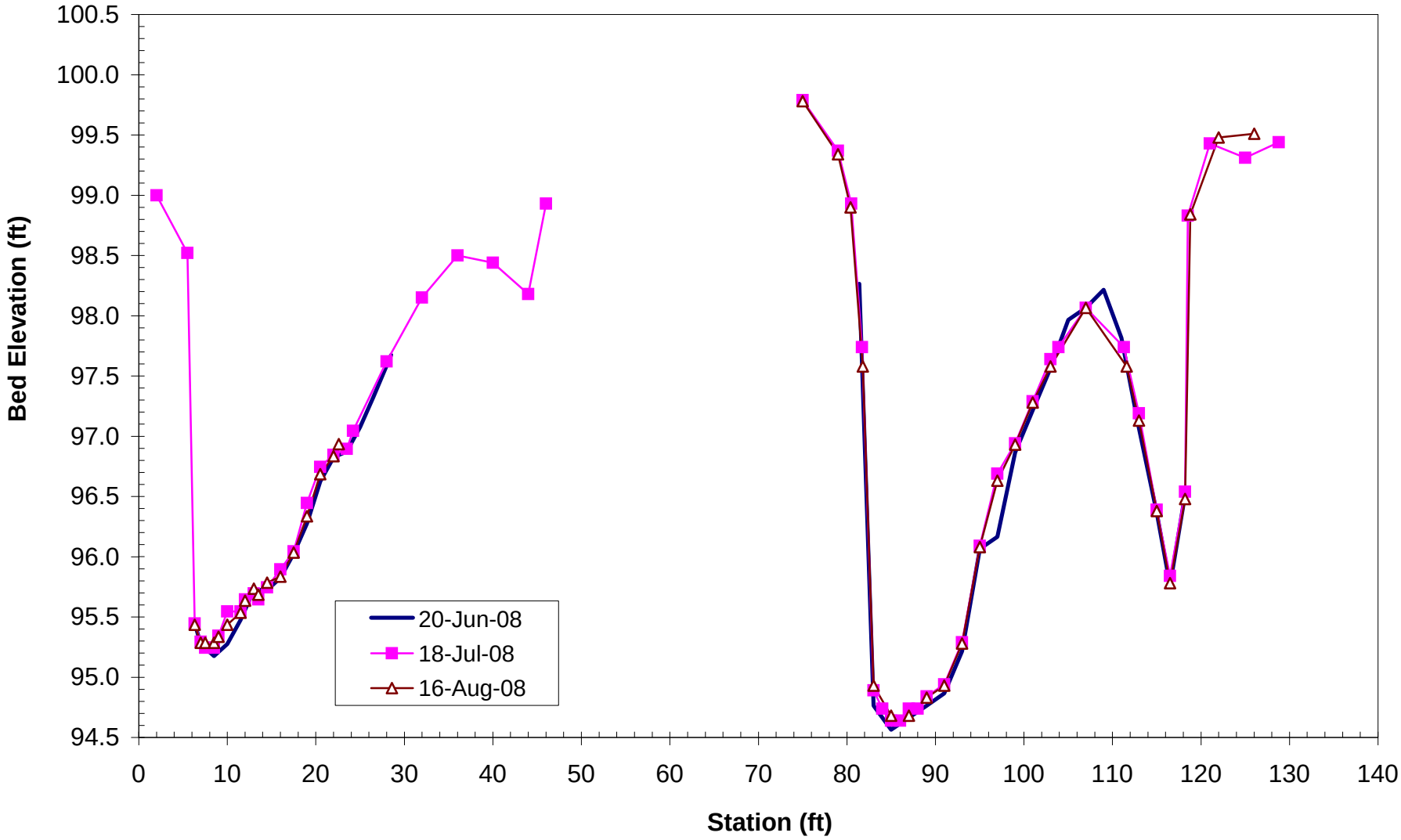


Figure 101. Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR6 Measured Transect Profiles (River Kilometer 41.90)

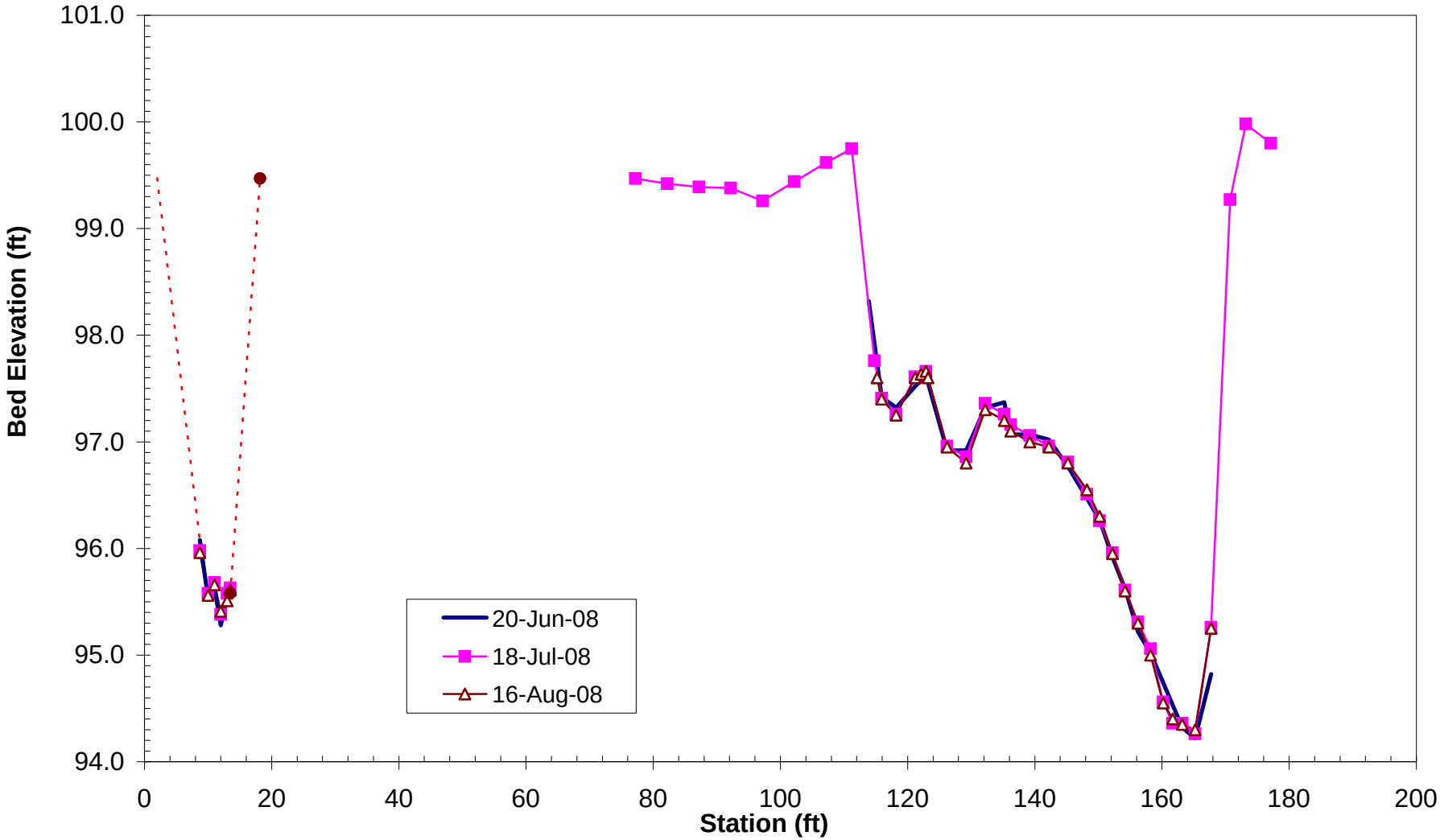


Figure 102. Upper Talarik Creek, Reach E, Run, 07-UTC2-RN5
Measured Transect Profiles (River Kilometer 42.71)

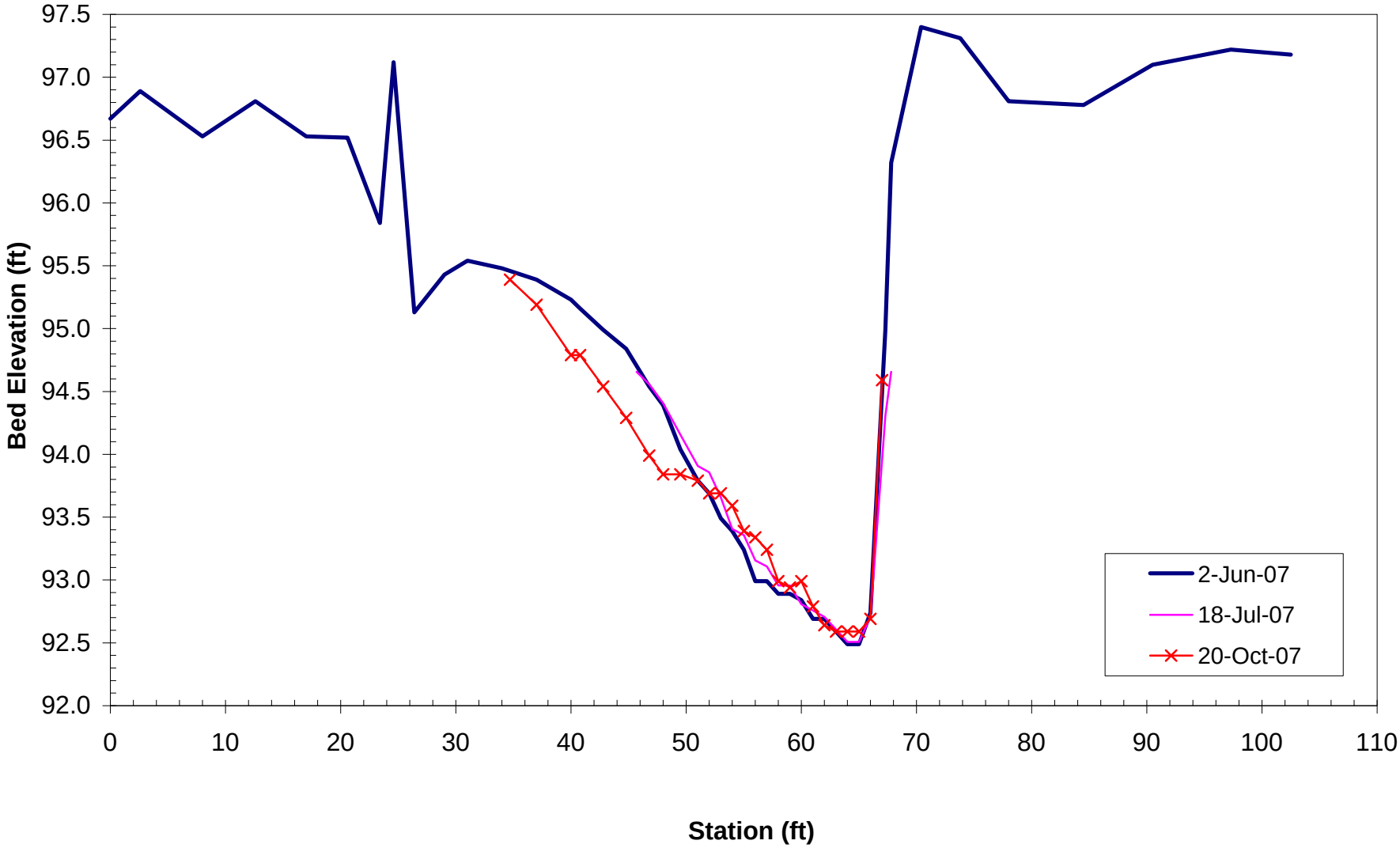


Figure 103. Upper Talarik Creek, Reach E, Run, 07-UTC2-RN4
Measured Transect Profiles (River Kilometer 44.63)

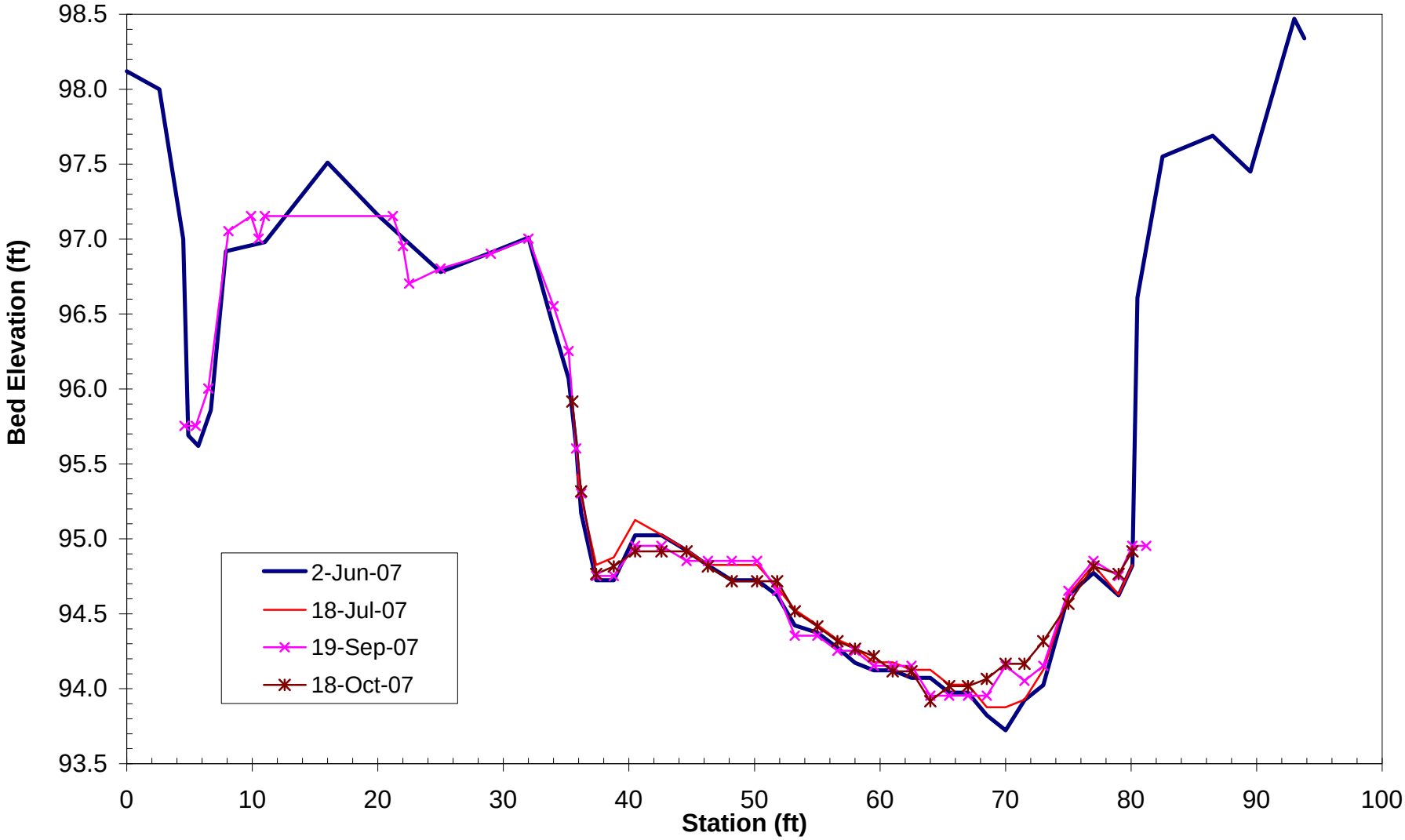


Figure 104. Upper Talarik Creek, Reach F, Run, 05-UTC3-RN3
Measured Transect Profiles (River Kilometer 48.86)

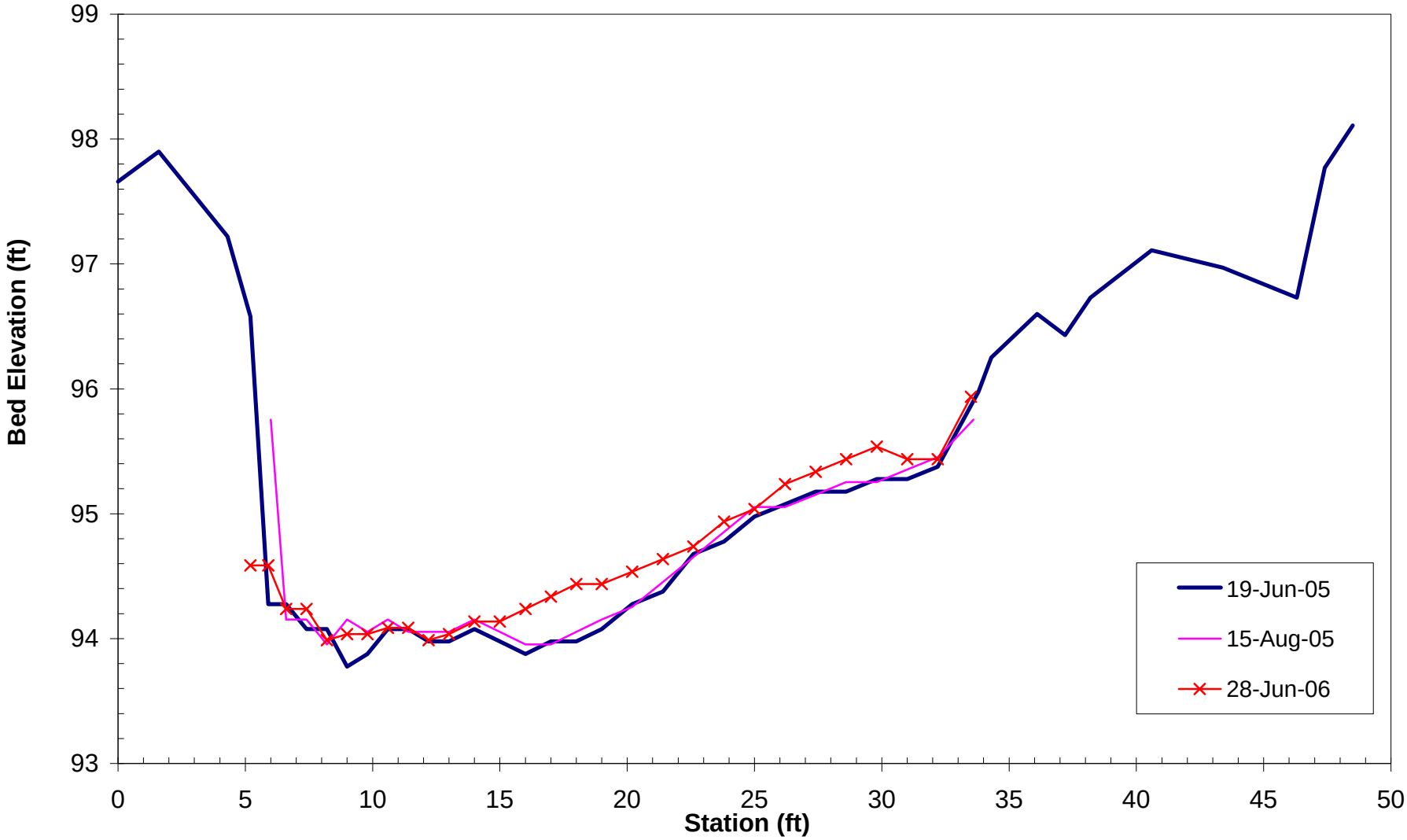


Figure 105. Upper Talarik Creek, Reach F, Run, 05-UTC3-RN2
Measured Transect Profiles (River Kilometer 52.01)

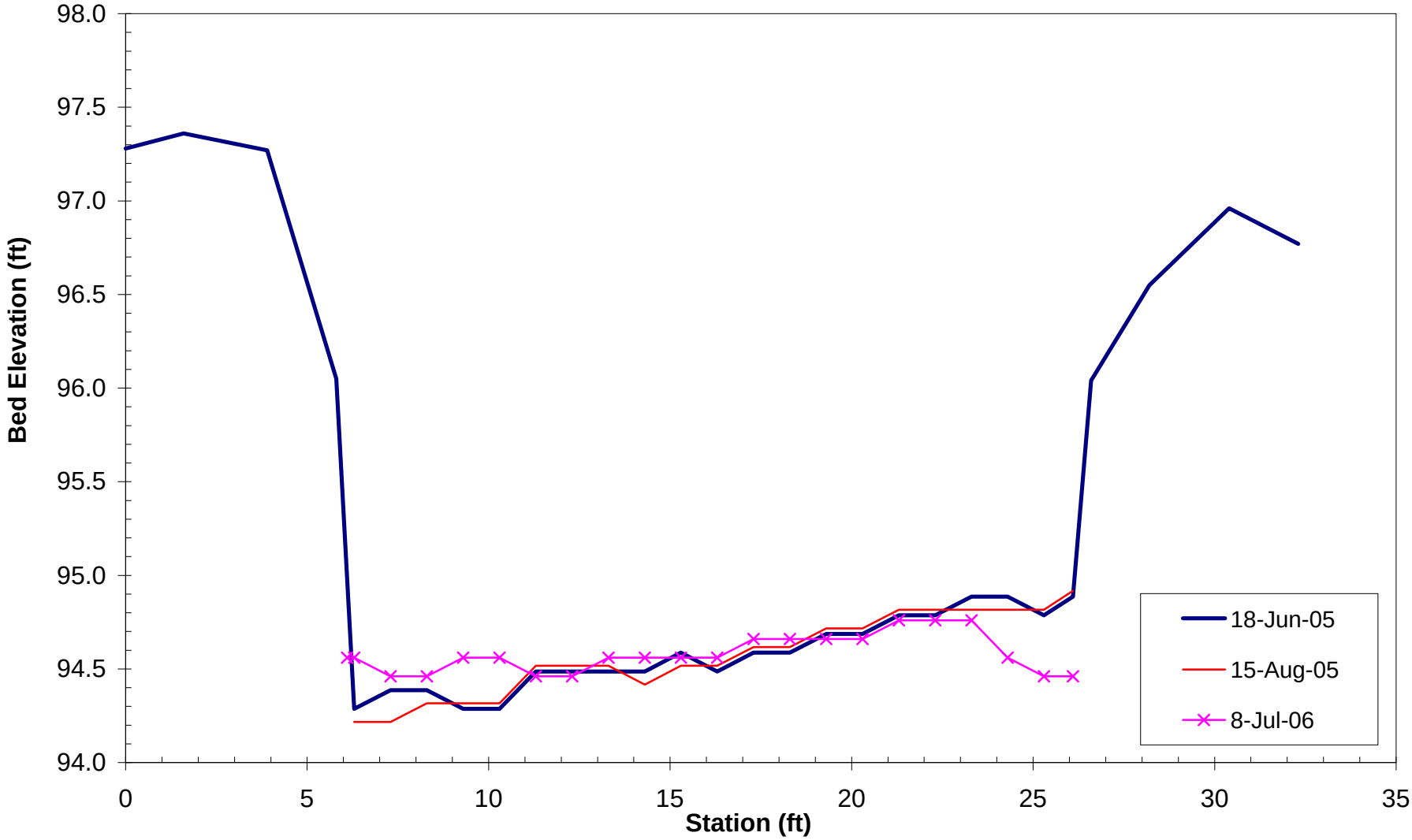


Figure 106. Upper Talarik Creek, Reach F, Pool, 05-UTC3-PL1
Measured Transect Profiles (River Kilometer 56.65)

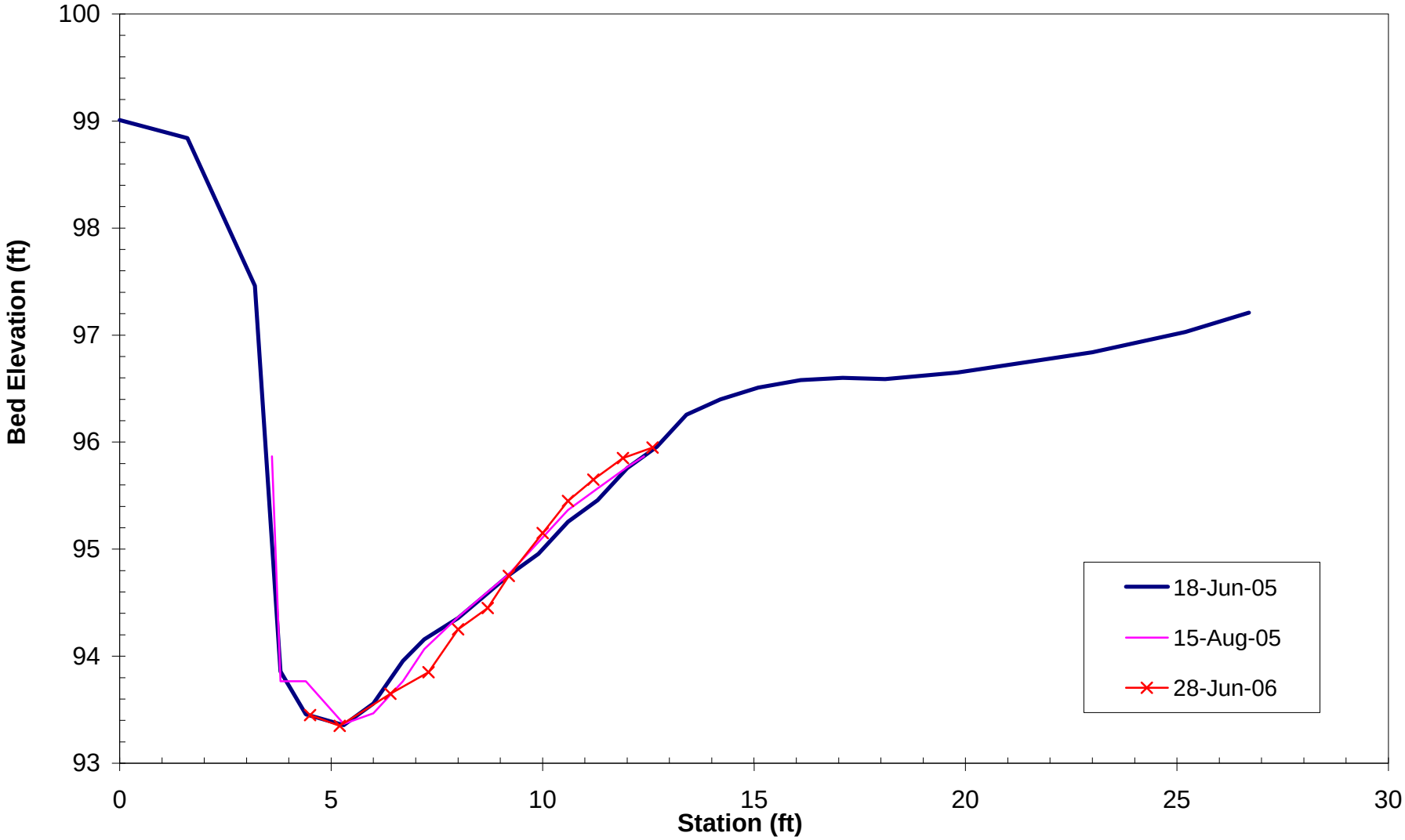


Figure 107. Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF1
Measured Transect Profiles (River Kilometer 56.83)

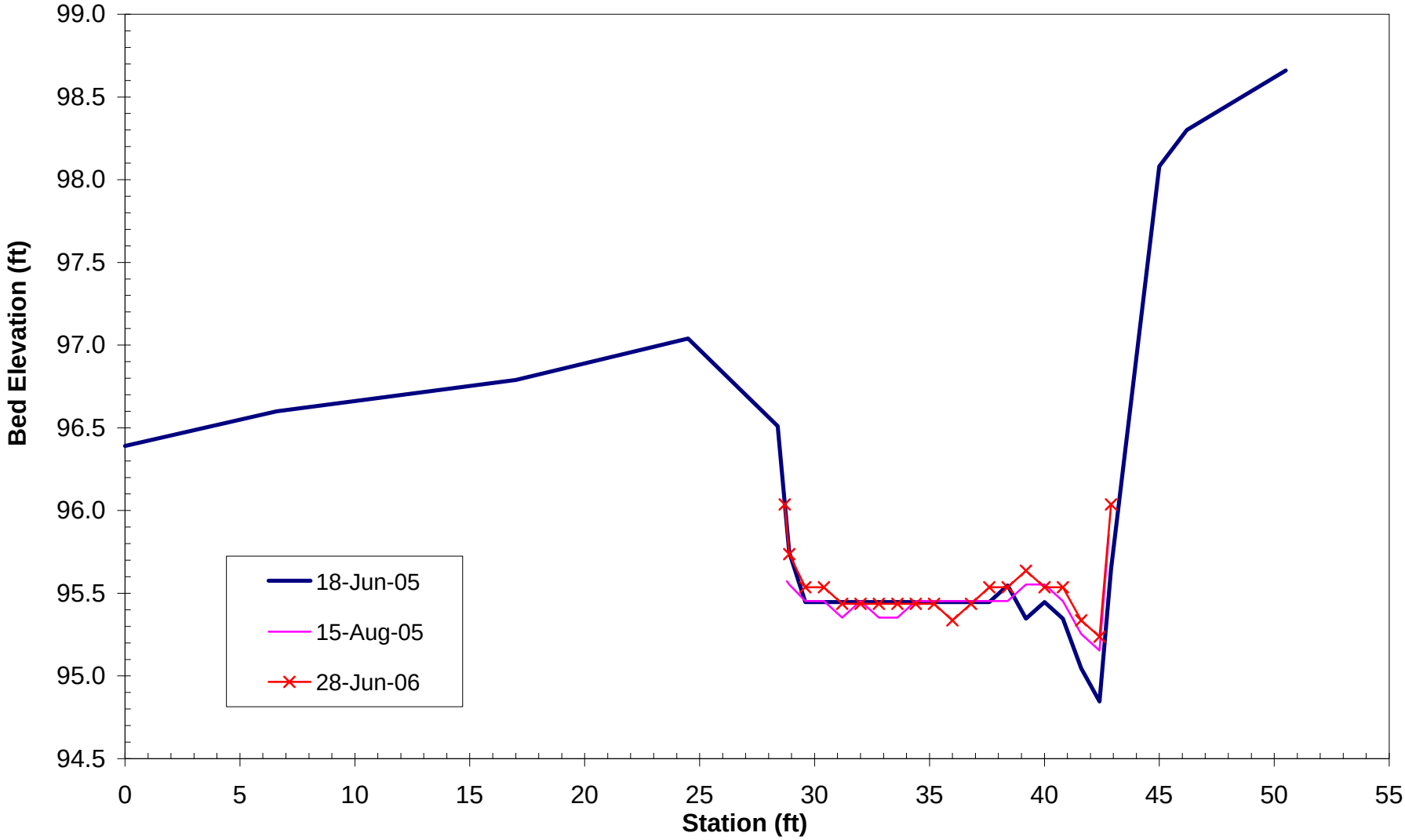


Figure 108. Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF2
Measured Transect Profiles (River Kilometer 57.25)

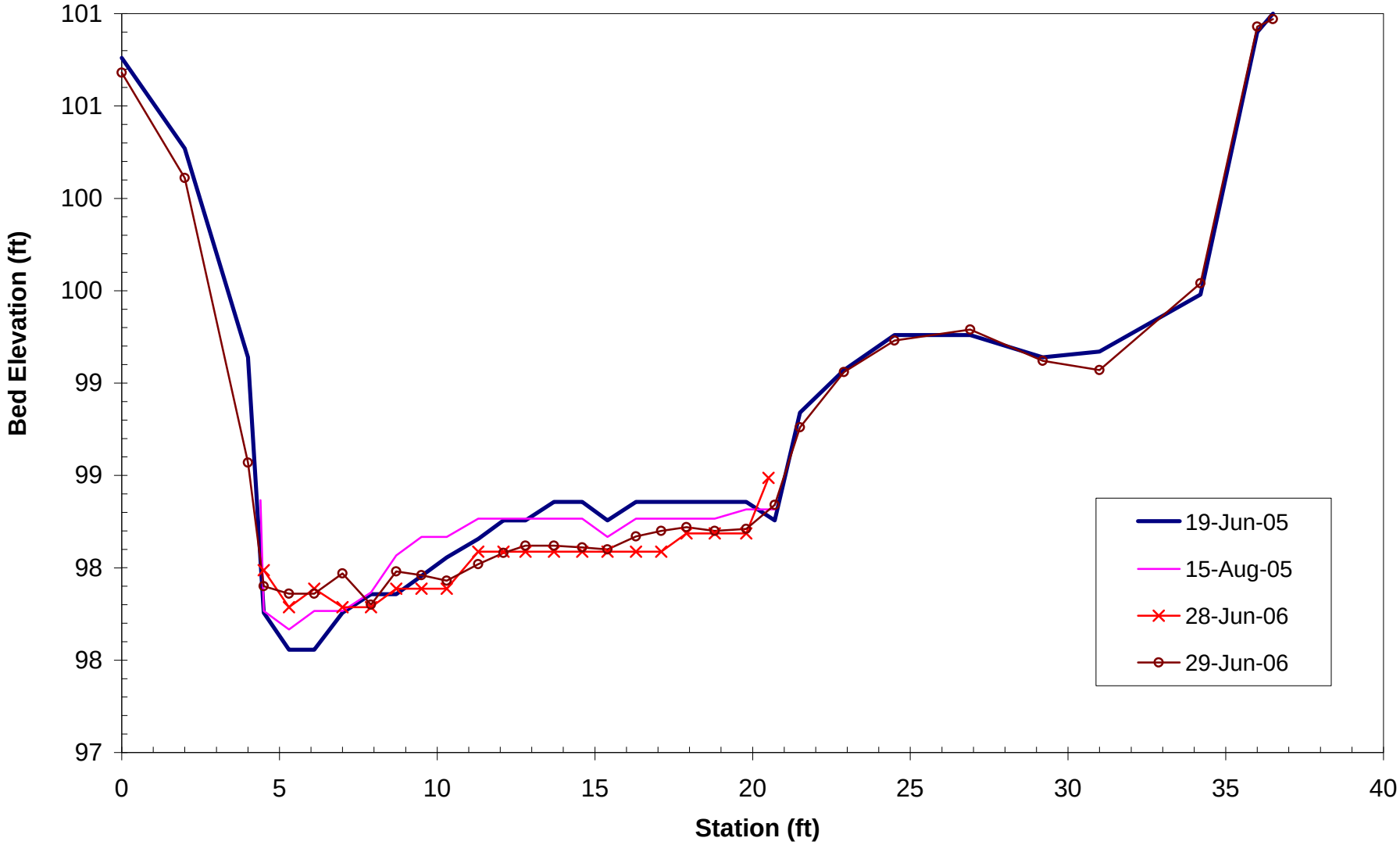


Figure 109. Upper Talarik Creek, Reach F, Run, 05-UTC3-RN1
Measured Transect Profiles (River Kilometer 58.24)

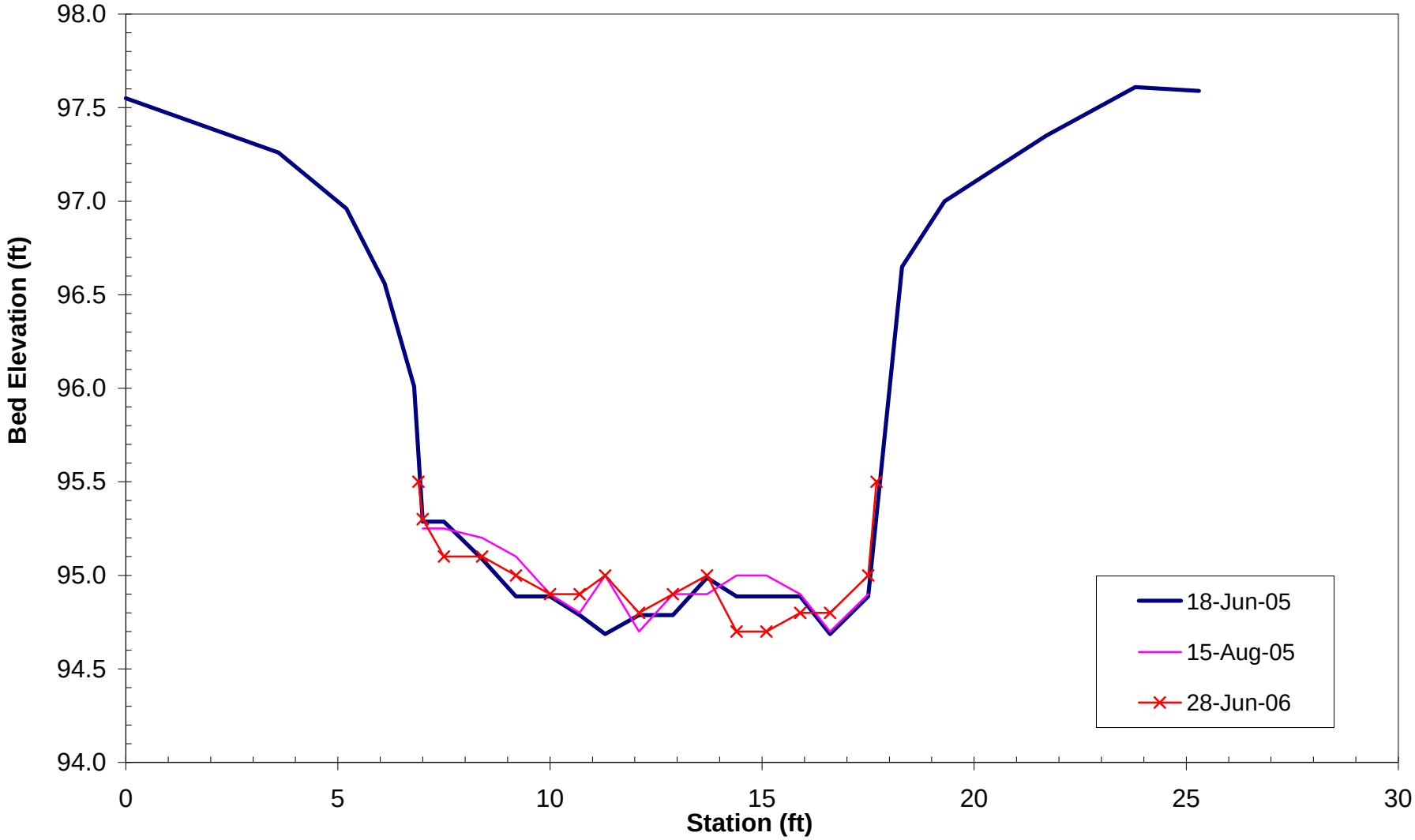


Figure 110. Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF1
Measured Transect Profiles (River Kilometer 0.50)

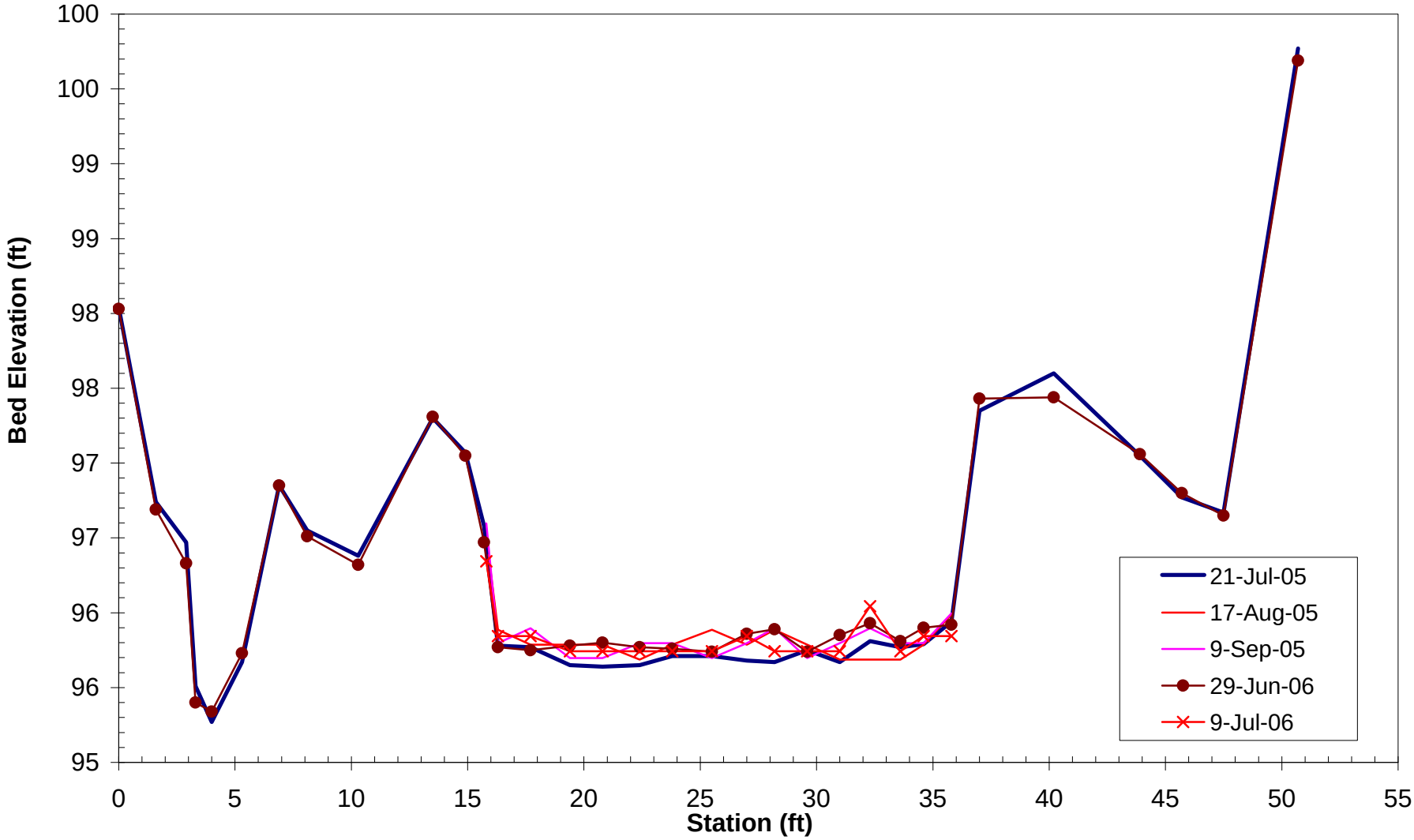


Figure 111. Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF3
Measured Transect Profiles (River Kilometer 0.91)

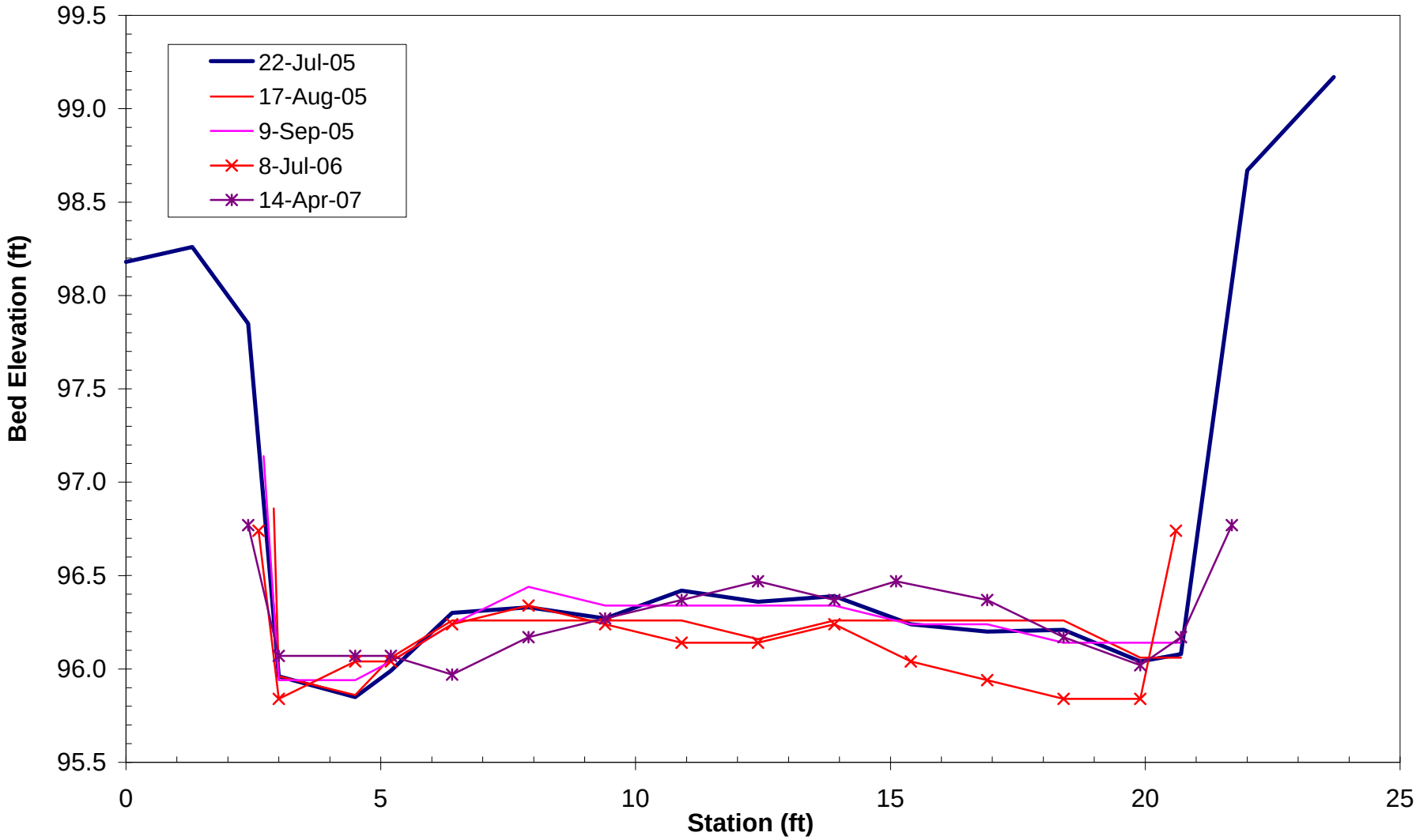


Figure 112. Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF4
Measured Transect Profiles (River Kilometer 1.12)

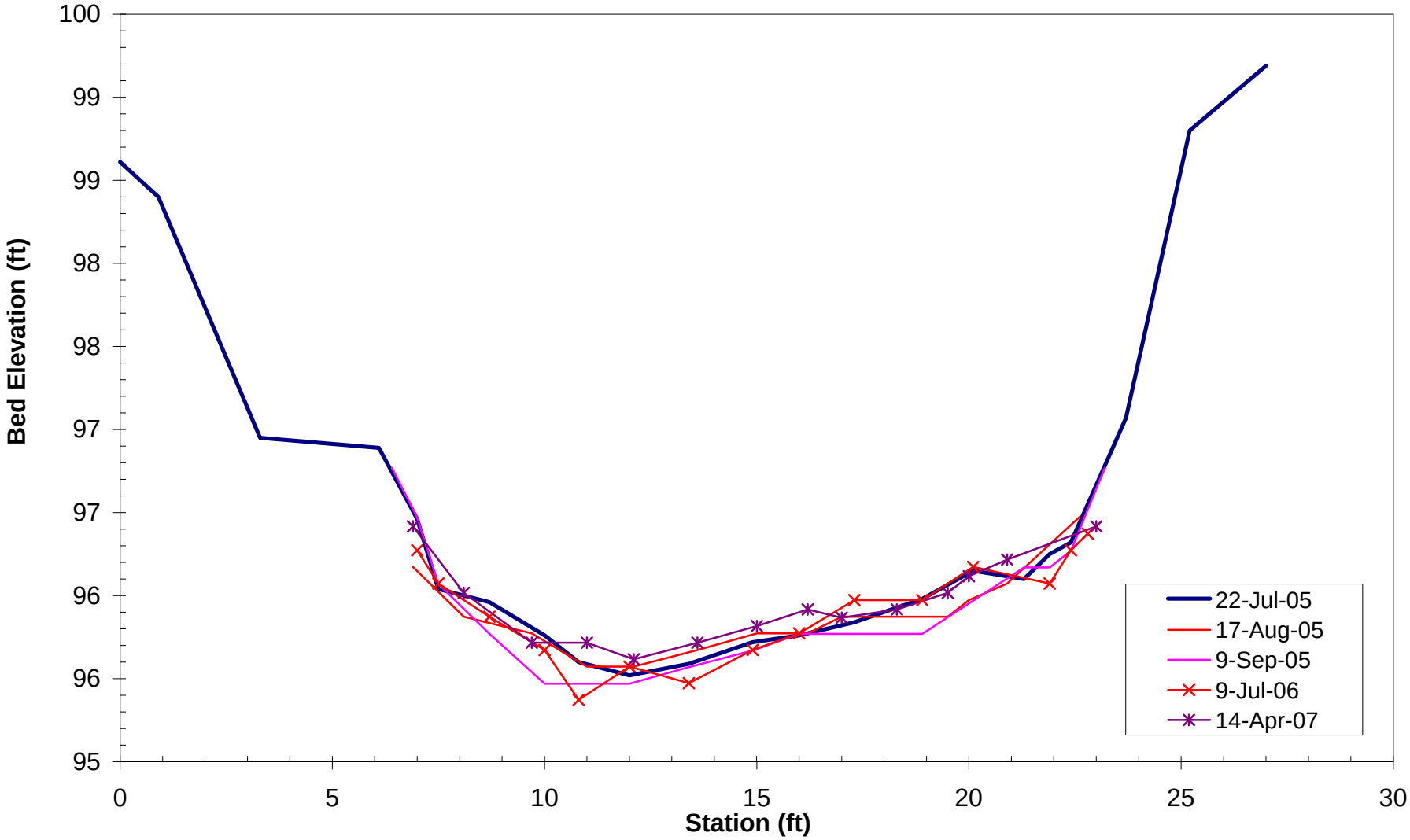


Figure 113. Upper Talarik Creek, Tributary 1.190, Run, 05UT190-RN1
Measured Transect Profiles (River Kilometer 1.35)

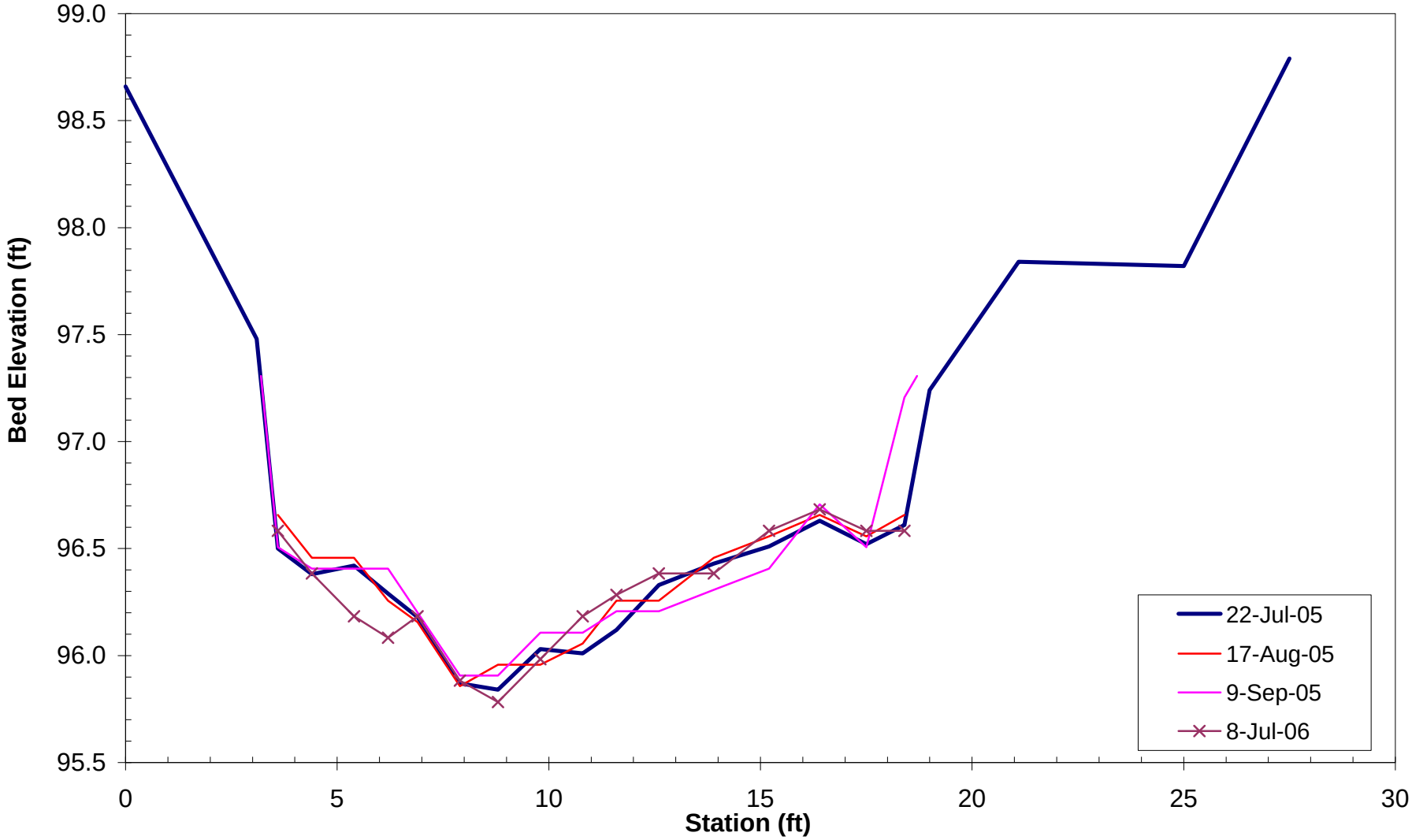


Figure 114. Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF5
Measured Transect Profiles (River Kilometer 2.48)

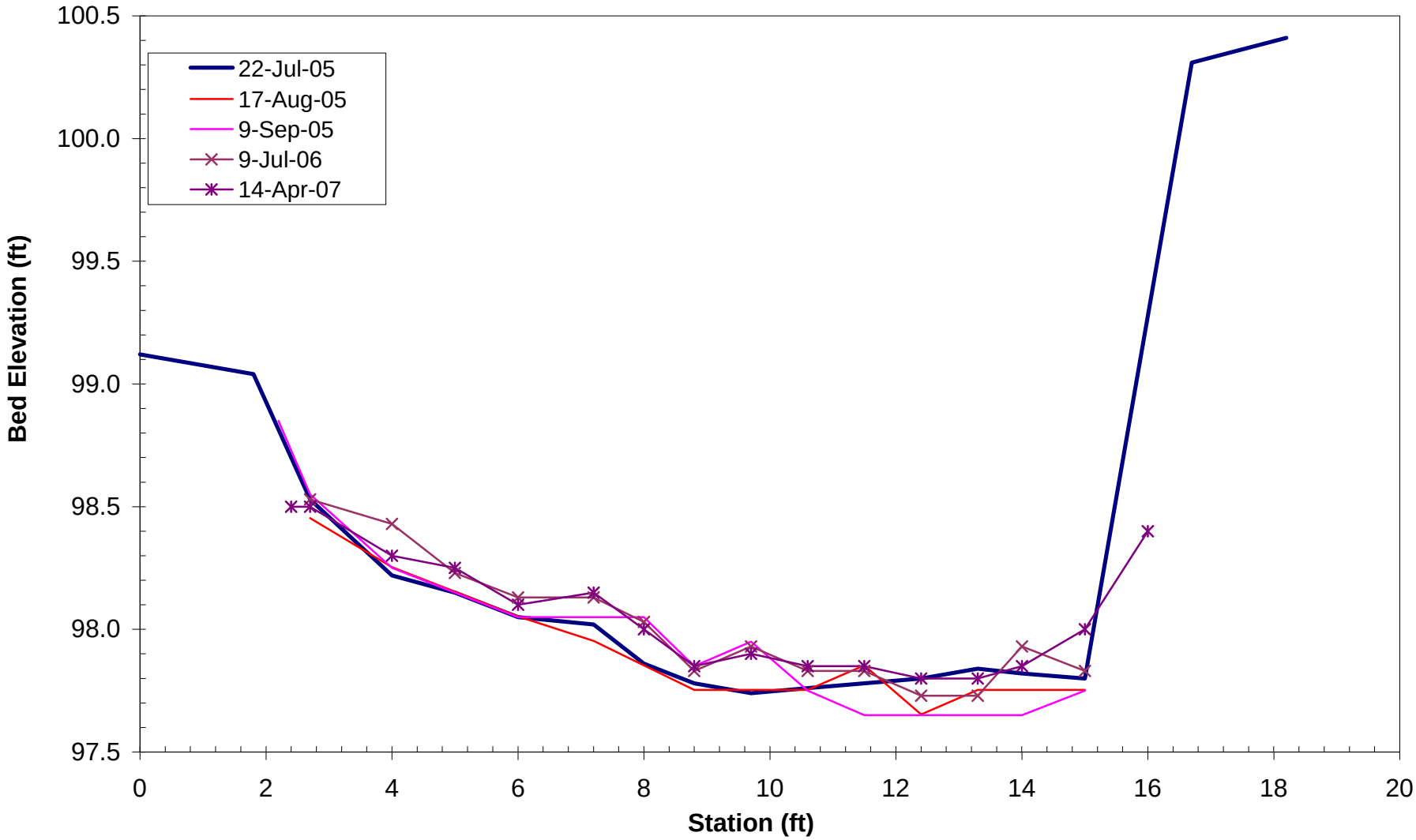


Figure 115. Koktuli River, Riffle, 04-MSK-RF2
Measured Transect Profiles (River Kilometer 24.85)

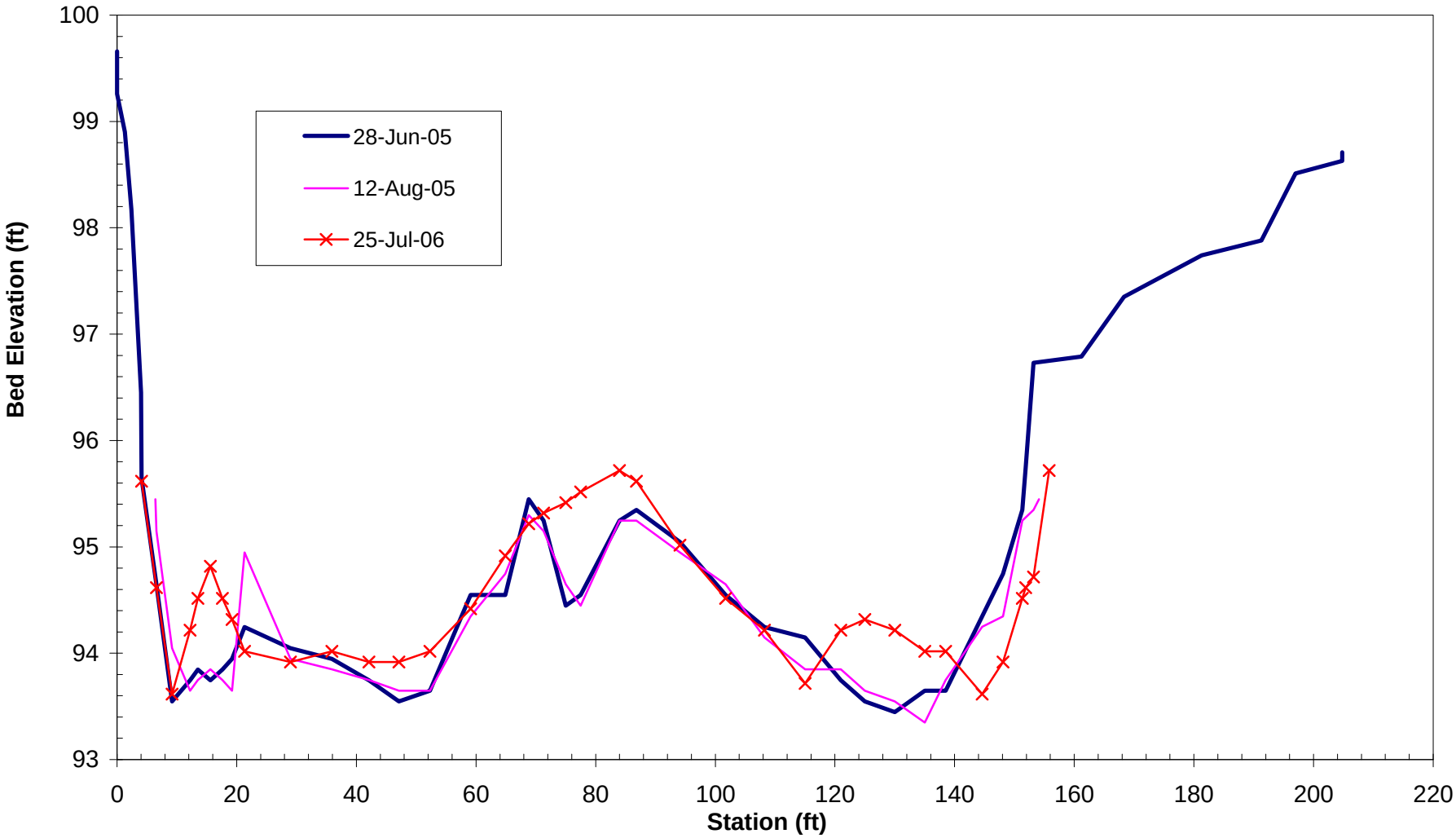


Figure 116. Koktuli River, Island Complex, 04-MSK-IC2
Measured Transect Profiles (River Kilometer 25.37)

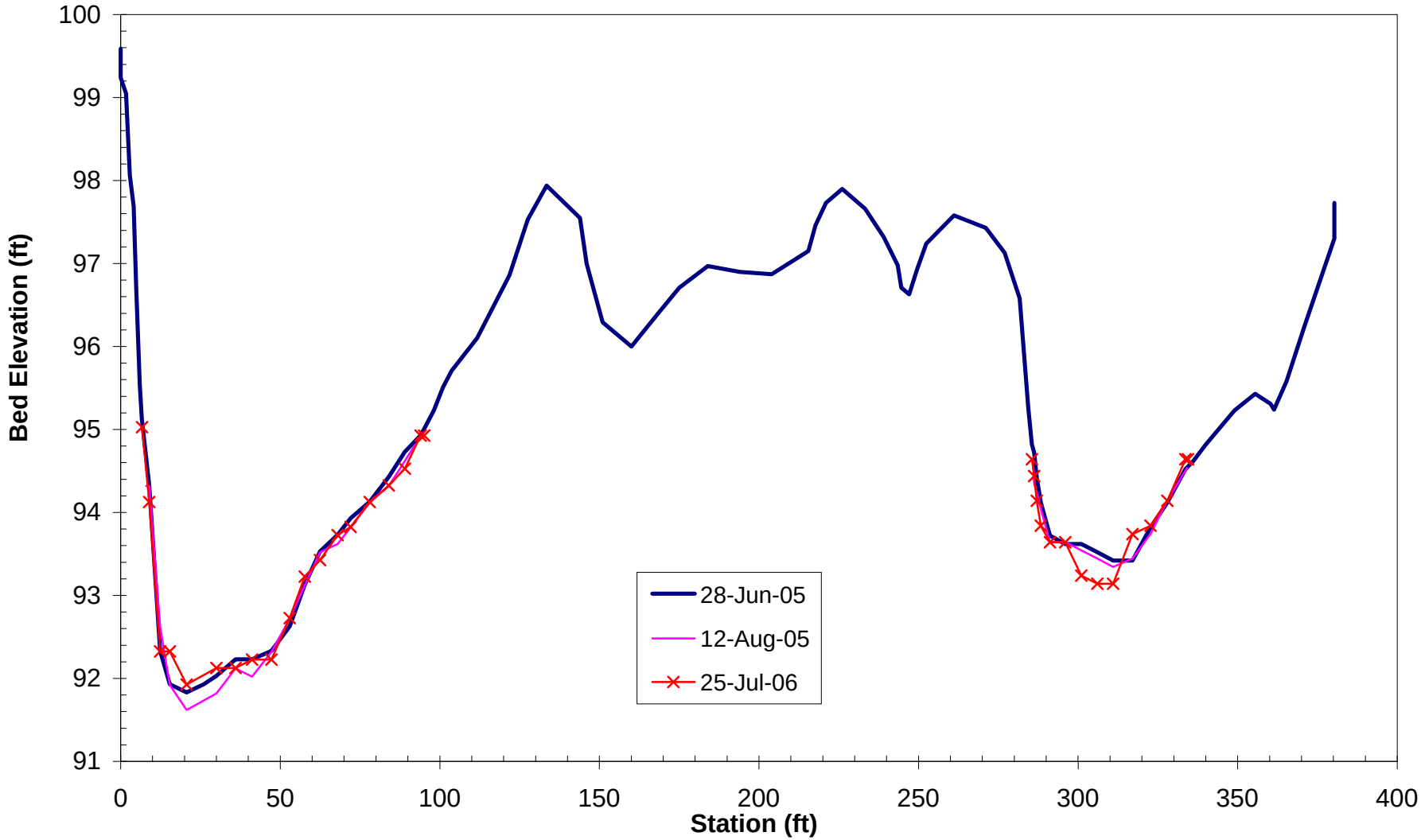


Figure 117. Koktuli River, Riffle, 04-MSK-RF1
Measured Transect Profiles (River Kilometer 31.98)

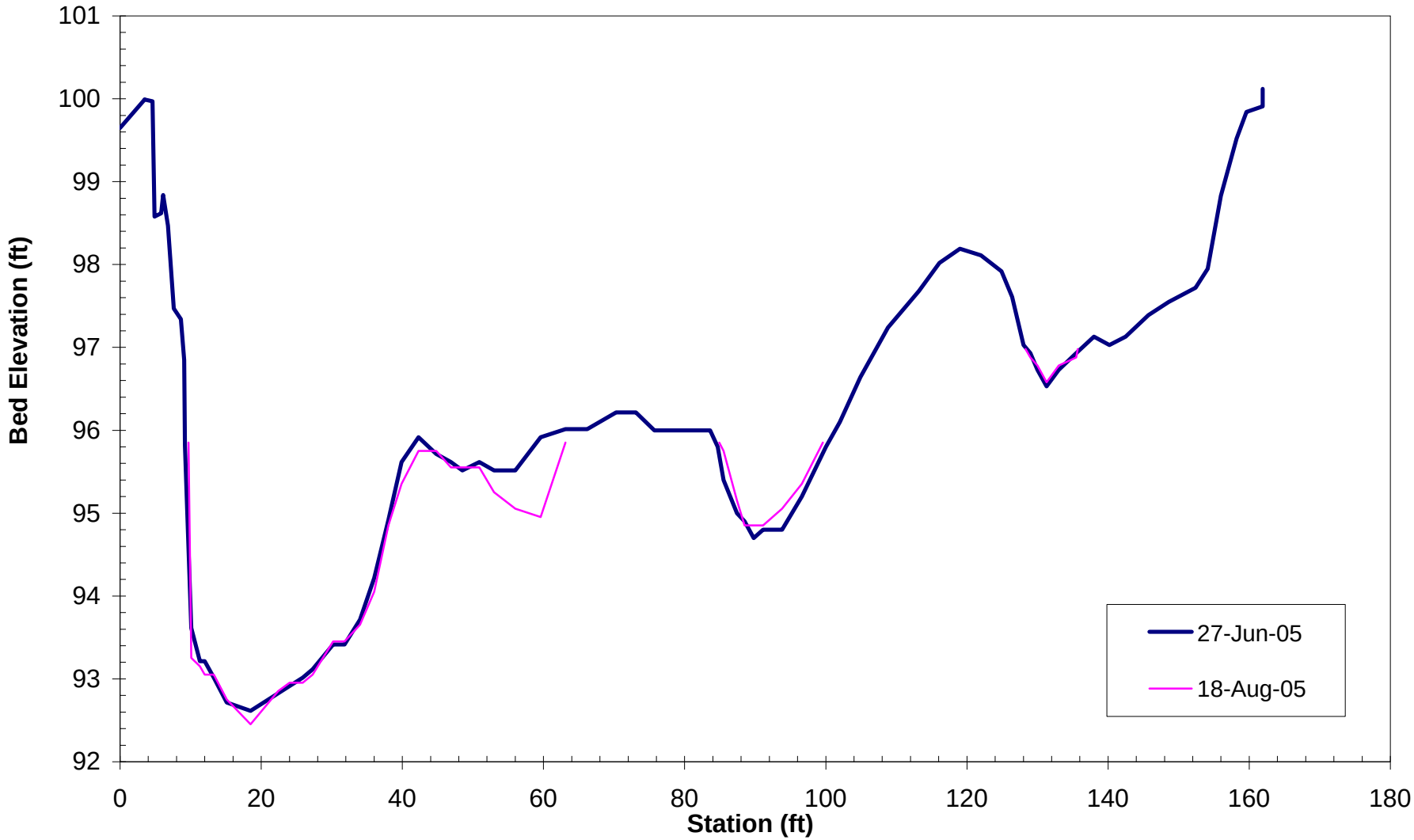
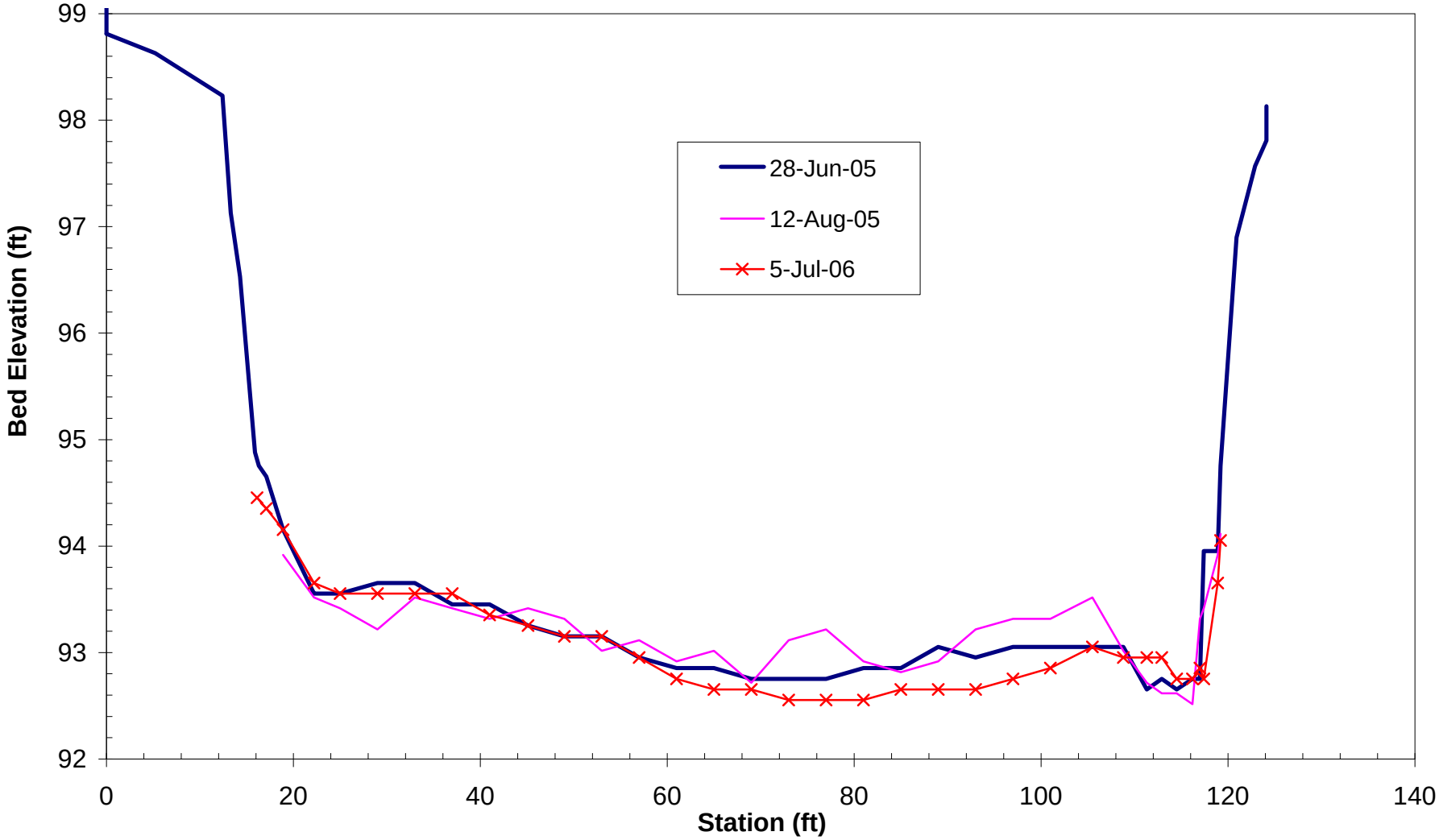


Figure 118. Koktuli River, Run, 04-MSK-RN3
Measured Transect Profiles (River Kilometer 43.96)



Attachment 4

Hydraulic Model Calibration Details

ACRONYMS AND ABBREVIATIONS

%	percent
A	flow area
AP	angle point or angle pin
Ave	average
BM	benchmark
cfs	cubic feet per second
EBD	Environmental Baseline Document
Fr	Froude number
ft	feet
g	gravity acceleration
GPS	global positioning system
HP	head pin
HP-x	head pin elevation for transect x, where x is the transect number
KR	Koktuli River mainstem
LC	left channel, looking downstream
NFK	North Fork Koktuli River
PHABSIM	Physical Habitat Simulation
Q	flow
QA	quality assurance
QC	quality control
Qmeasured	measured flow
Qmodel	modeled flow
Qlow	measured low flow
Qmid	measured mid flow
Qhigh	measured high flow
RC	right channel, looking downstream
RK	river kilometer
RMOD	roughness modifier
SFK	South Fork Koktuli River
SQRT	square root
Sta	station
SZF	stage of zero flow
T	wetted width
TP	turning point or tail pin
TR	transect
TR-x	transect x, where x is the transect number

UT	Upper Talarik Creek
VAF	velocity adjustment factor
V	velocity
V_ave	transect average velocity
WSE	water surface elevation
WP	wetted perimeter
WUA	weighted usable area
XS	cross-section

Introduction

This attachment describes the PHABSIM (physical habitat simulation software computer model) model calibration procedures and details pertaining to the instream flow transects established in the Pebble Project study area from 2004 through 2008. There were 138 PHABSIM transects originally set up over the 2004 through 2008 data collection period in the four study area basins: North Fork Koktuli River (NFK), South Fork Koktuli River (SFK), Upper Talarik Creek (UT), and Mainstem Koktuli River (KR). These transects included 38 transects on the NFK and the Tributary 1.190 (NFK 1.190), 46 transects on the SFK and the Tributary 1.190 (SFK 1.190), 49 transects on the UT and the Tributary 1.190 (UT 1.190), and five transects on the KR. Each stream was further divided into multiple reaches based on basin characteristics, channel morphology, water temperature, and hydrologic considerations, as described in the Pebble Project Environmental Baseline Document, Appendix 15.1B. Table 1 summarizes the number of PHABSIM transects in each reach/basin and the calendar year in which each transect was initially established.

During a multi-level rigorous data QA/QC process of all transect data, 21 of the 138 transects were identified as having significant bed profile changes over the data collection period. Thus, these 21 transects (Table 2) were removed from the PHABSIM analysis to ensure the reliability of hydraulic modeling for the remaining 117 transects (Table 3). Of these 117 transects, 30 were located on the mainstem NFK and NFK 1.190, 43 were located on the mainstem SFK and SFK 1.190, 40 were located on the mainstem UT and UT 1.190, and four were located on the mainstem KR, as depicted in Table 3.

This document contains two primary components:

- Hydraulic calibration methods (a description of the calibrations methods used, following procedures outlined in the PHABSIM reference manual [Milhous et al., 1989] and the "Tutorials for the Physical Habitat Simulation System" [Milhous et al., 1990]); and

- Hydraulic calibration details specific to each of the 117 transects for which hydraulic modeling was conducted (this component also includes a description of the types of data/details that are presented for each modeled transect).

Hydraulic Calibration Method

The calibration process followed the procedures outlined in the PHABSIM reference manual (Milhous et al., 1989) and the "Tutorials for the Physical Habitat Simulation System" (Milhous et al., 1990). The hydraulic calibration included two steps: water surface elevation (WSE) calibration and velocity calibration. The former step was used to ensure that calibration errors (i.e., the difference between measured and calibrated WSEs) were within an acceptable range and that the calibrated WSE~Q rating curve was reliable. The latter step was used to ensure that the calibrated velocity profile accurately reflected the hydraulic condition of the measured flow.

Water Surface Elevation Calibration

There are four methods suggested in the PHABSIM reference manual (Milhous et al., 1989) for hydraulic modeling to calibrate WSE, including IFG4, MANSQ, WSP, and HEC-2 (superseded by HEC-RAS, both developed by U.S. Army Corps of Engineers). The PHABSIM reference manual indicated the techniques used to simulate the hydraulic condition can have a significant impact on habitat vs. flow relationships.

Therefore, the calibration results from any of the four methods were examined carefully to ensure the simulation results were hydraulically correct.

Table 1.
Total number of PHABSIM transects in each basin. There were 138 transects established during the 2004-2008 data collection period, including 117 transects used in hydraulic modeling and 21 transects removed from the modeling due to significant bed profile change.

Basin Name	Reach	2004	2005	2006	2007	2008	All Years	Basin
Koktuli River	KR	5					5	5
North Fork Koktuli River	NFK-A		6			11	17	38
	NFK-B	1	4		1		6	
	NFK-C	9				3	12	
	NFK-C [a]					3	3	
South Fork Koktuli River	SFK-A	5	4		1	12	22	46
	SFK-B	2	10				12	
	SFK-C	3	3				6	
	SFK-B [a]					6	6	
Upper Talarik Creek	UT-B	1				5	6	49
	UT-C	5	4				9	
	UT-D	4	3		3		10	
	UT-E	1	2		3	6	12	
	UT-F		6				6	
	UT-C [a]		6				6	
Total Transect Count		36	48		8	46	138	138

Note:

a. Transects located in tributaries NFK 1.190, SFK 1.190, and UT 1.190 are within reaches NFK-C, SFK-B, and UT-C, respectively.

Table 2.
Number of transects identified with significant bed profile changes and removed from PHABSIM hydraulic modeling.

Basin Name	Reach	2004	2005	2006	2007	2008	All Years	Basin
Koktuli River	KR	1					1	1
North Fork Koktuli River	NFK-A		4				4	8
	NFK-B		1				1	
	NFK-C	3					3	
	NFK-C [a]							
South Fork Koktuli River	SFK-A	1	2				3	3
	SFK-B							
	SFK-C							
	SFK-B [a]							
Upper Talarik Creek	UT-B	1					1	9
	UT-C	1	1				2	
	UT-D	2	1				3	
	UT-E		1		1		2	
	UT-F							
	UT-C [a]		1				1	
Total Transect Count		9	11		1		21	21

Note:

a. Transects located in tributaries NFK 1.190, SFK 1.190, and UT 1.190 are within reaches NFK-C, SFK-B, and UT-C, respectively.

Table 3.
Number of transects in each stream reach and river basin used in PHABSIM hydraulic modeling. There are 117 transects in the four basins and the calibration details are provided for each transect.

Basin Name	Reach	2004	2005	2006	2007	2008	All Years	Basin
Koktuli River	KR	4					4	4
North Fork Koktuli River	NFK-A		2			11	13	30
	NFK-B	1	3		1		5	
	NFK-C	6				3	9	
	NFK-C [a]					3	3	
South Fork Koktuli River	SFK-A	4	2		1	12	19	43
	SFK-B	2	10				12	
	SFK-C	3	3				6	
	SFK-B [a]					6	6	
Upper Talarik Creek	UT-B					5	5	40
	UT-C	4	3				7	
	UT-D	2	2		3		7	
	UT-E	1	1		2	6	10	
	UT-F		6				6	
	UT-C [a]		5				5	
Total Transect Count		27	37		7	46	117	117

Note:

a. Transects located in tributaries NFK 1.190, SFK 1.190, and UT 1.190 are within reaches NFK-C, SFK-B, and UT-C, respectively.

Of the 117 PHABSIM transects in the four basins, all but eight transects had three or more pairs of measured water surface elevations (WSEs) and flows available for calibration. The other eight transects had only two pairs each. The IFG4 model was always selected first for WSE calibration for the transects with three or more pairs of measured WSE~Q, and the MANSQ model was first selected for the other eight transects. If the initial model calibration failed to produce reasonable hydraulics, then other models were tried until reasonable modeled hydraulic conditions were achieved.

There were 30 simulation flows selected in the hydraulic modeling for developing a WSE~Q rating curve, as illustrated in Figure 1. The flows selected were designed to capture the variation of the habitat:flow relationship including the maximum habitat value. All measured flows were included in the 30 simulation flows in order to make a direct comparison of measured and calibrated WSEs. The lowest and highest simulation flows selected were 0.4 times the lowest measured flow and 2.5 times the highest measured flow, respectively.

After the WSE~Q rating curve was obtained, six hydraulic parameters (see below) associated with each flow on the rating curve were calculated to determine if the hydraulic calibrations were acceptable:

1. **WSE calibration errors.** These are the differences between calibrated WSEs and measured WSEs. The goal of calibration was to minimize the differences. The acceptable range for the errors was considered to be less than 0.10 ft. Calibration was considered to be only marginally acceptable if the errors were between 0.10 ft and 0.15 ft. Errors greater than 0.15 ft were considered to be unacceptable.

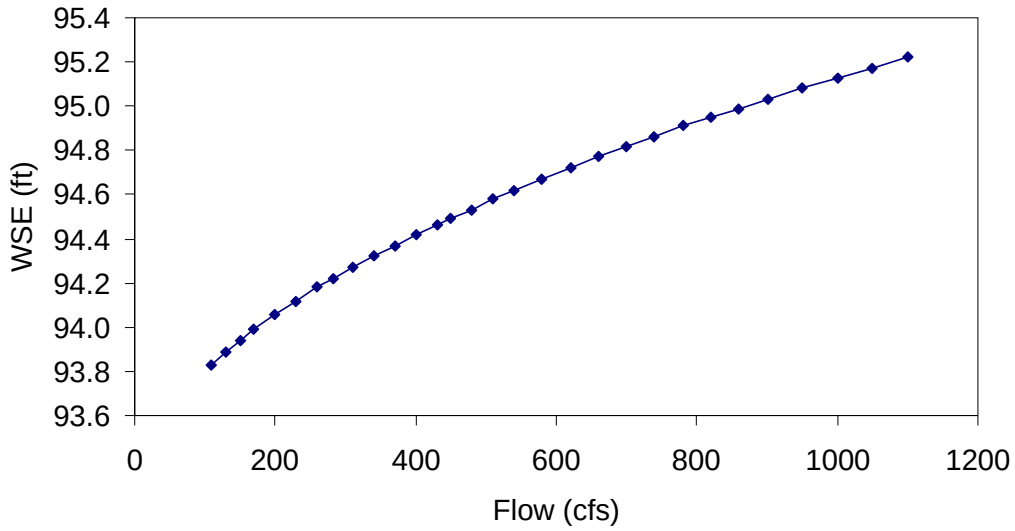


Figure 1.
WSE~Q rating curve developed from WSE calibration hydraulic modeling. There are 30 flows on the rating curve.

Among the 117 PHABSIM transects, there were 105 transects with calibration errors less than 0.05 ft, seven transects with calibration errors within 0.10 ft, and only five transects with marginally acceptable errors. None of the transects had calibration errors in the unacceptable range. Table 4 summarizes the number of transects in each river reach for each range of calibration error.

2. **Froude number (Fr).** The Froude number (Fr=V_ave/Sqrt(g*A/T), where g is gravity acceleration, A is flow area, T is wetted width; Chow, 1959) is expected to increase with increasing flows and should be below 1.0 for a natural stream with mild channel slope. All 117 transects, with the exception of the five on Tributary UT 1.190, had gentle channel slopes, and sub-critical flow conditions (i.e., Froude number less than 1.0) were expected from the hydraulic modeling results. The channel slopes of Tributary UT 1.190 were relatively steep, at about 1.2% to 1.4%, and super-critical flow conditions (i.e., Froude number greater than 1.0) were considered to be possible at higher flows.

3. **Manning's n values**. Manning's n values were calculated for each simulation flow using the IFG4 output and an utility program that accounted for flow, channel slope, wetted perimeter, hydraulic radius, and flow conveyance area. Manning's n values reflect the roughness of the channel. At lower flows when water surface elevation is low, the wetted channel boundary is relatively rough and higher Manning's n values would be expected. As flow increases and water surface elevation rises, the wetted channel boundary becomes smoother and Manning's n decreases. In general, Manning's n values should decrease with increasing flows. However, exceptions may occur under complex flow conditions.

4. **Velocity Adjustment Factor (VAF).** The VAF is an index of the ratio of simulation flow to the flow calculated by the IFG4 model. The index usually mirrors the trend of Manning's n values vs. flows, and therefore, VAFs are expected to increase with increasing flows. However, exceptions may occur under complex flow conditions.

5. **Average velocity (V_ave).** As flows increase, the average velocity, V_ave, of the transect should also increase.

Table 4.
Number of transects in each river reach for each range of calibration error. The majority of transects had calibration errors of 0.05ft or lower. No transects had errors greater than 0.15ft.

Basin	River Reach	WSE calibration error (ft)			
		≤ 0.05	0.06 - 0.10	0.11 - 0.15	> 0.15
North Fork Koktuli River	NFK-A	12	1	0	0
	NFK-B	4	0	1	0
	NFK-C	7	1	1	0
	NFK-C [a]	3	0	0	0
South Fork Koktuli River	SFK-A	18	1	0	0
	SFK-B	10	1	1	0
	SFK-C	4	1	1	0
	SFK-B [a]	6	0	0	0
Upper Talarik Creek	UT-B	5	0	0	0
	UT-C	7	0	0	0
	UT-D	7	0	0	0
	UT-E	9	1	0	0
	UT-F	5	0	1	0
	UT-C [a]	5	0	0	0
Koktuli River	KR	3	1	0	0
Total		105	7	5	0

Note:

a. Transects located in tributaries NFK 1.190, SFK 1.190, and UT 1.190 are within reaches NFK-C, SFK-B, and UT-C, respectively.

6. **Wetted perimeter (WP).** Wetted perimeter is the cumulative length along the wetted portion of the transect boundary, as illustrated in Figure 2. Because water level always increases with increasing flows, the wetted perimeter also increases with flows.

Each of the six hydraulic parameters was plotted against the simulation flows, as illustrated in Figure 3. All six parameters were checked carefully to ensure the quality of the calibration, and justifications were provided if any exceptions were found.

The programs IFG4 or MANSQ alone, however, may not be able to adequately model the hydraulic behavior for the entire range of simulation flows under certain hydraulic conditions. Such flow conditions may occur for a transect with simple or complex bathymetry. Depending on the nature of the issues associated from the IFG4/MANSQ modeling results, different measures can be taken to resolve the issues.

A channel with a floodplain which is dry at lower flow but inundated at higher flow may need a two-stage calibration. The first stage is to model the hydraulics below the floodplain and the second above the floodplain. A composite rating curve developed using the calibration results of the two stages is used to represent the entire range of simulation flows.

For a site with multiple transects and with elevations tied to the same vertical datum, the step backwater method, such as WSP and HEC-RAS, should be applied if the IFG4/MANSQ models fail to produce reasonable hydraulics.

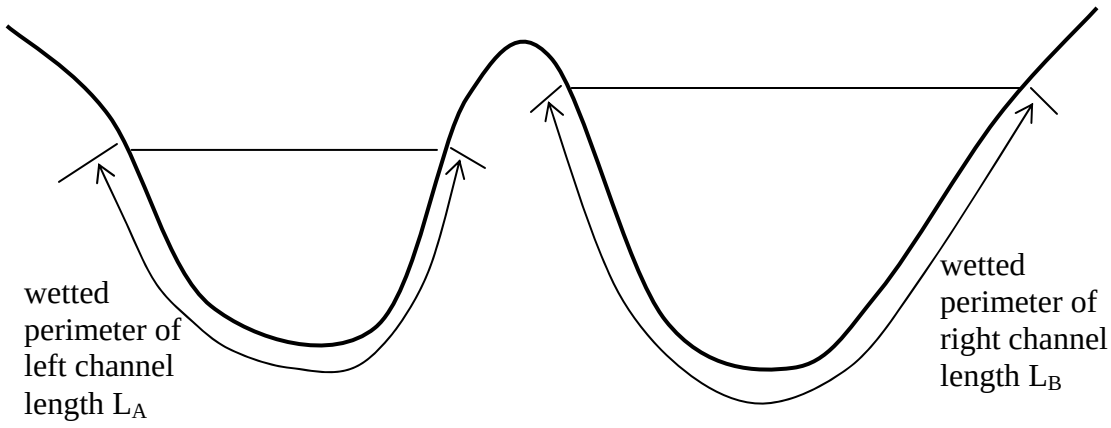


Figure 2.
Illustration of the wetted perimeter of a transect. The wetted perimeter of the transect is L_A+L_B.

Island complex habitat transect WSE modeling

An island complex transect has two or more channels: a main channel that conveys the majority of the flow and a side channel(s) that conveys less water. The water surface elevation of each channel may be significantly different, as illustrated in Figure 2. In this study, some island complex transects have more than 0.4 ft of WSE difference between main and side channels. All of the four hydraulic models (i.e., IFG4, MANSQ, WSP, HEC-RAS), however, are one-dimensional and require a single WSE in all channels across the transect. One of the goals of doing hydraulic calibration is to maintain the accuracy of the measured hydraulics, such as flow conveyance area, wetted perimeter, and Manning's n for the calibration flow. To meet this goal and the one-dimensional requirement, the bathymetry of side channel needs to be adjusted: the wetted portion of side channel is elevated (or lowered) by the WSE difference between the main channel and the side channel if the side channel has a lower (or higher) WSE. After elevating (or lowering) the bed, as illustrated in Figure 4, the WSEs in all channels across the transect become the same. The IFG4 model is usually used for WSE calibration for island complex transects. This is because IFG4 is simply an empirical equation that does not account for the complex processes associated with flow around islands.

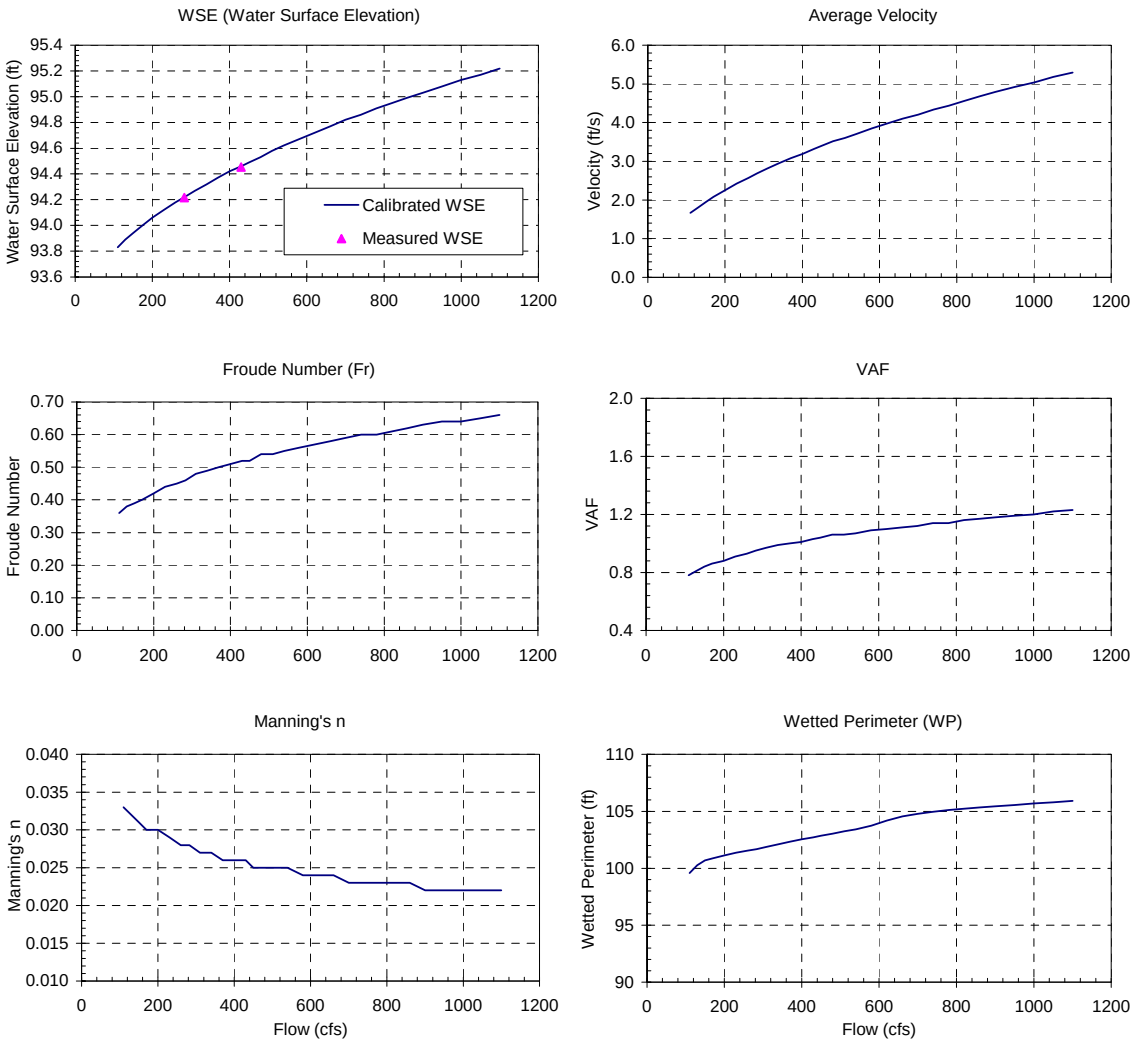


Figure 3.
Hydraulic parameters from hydraulic modeling. All six parameters are checked to ensure the calibration results are hydraulically correct.

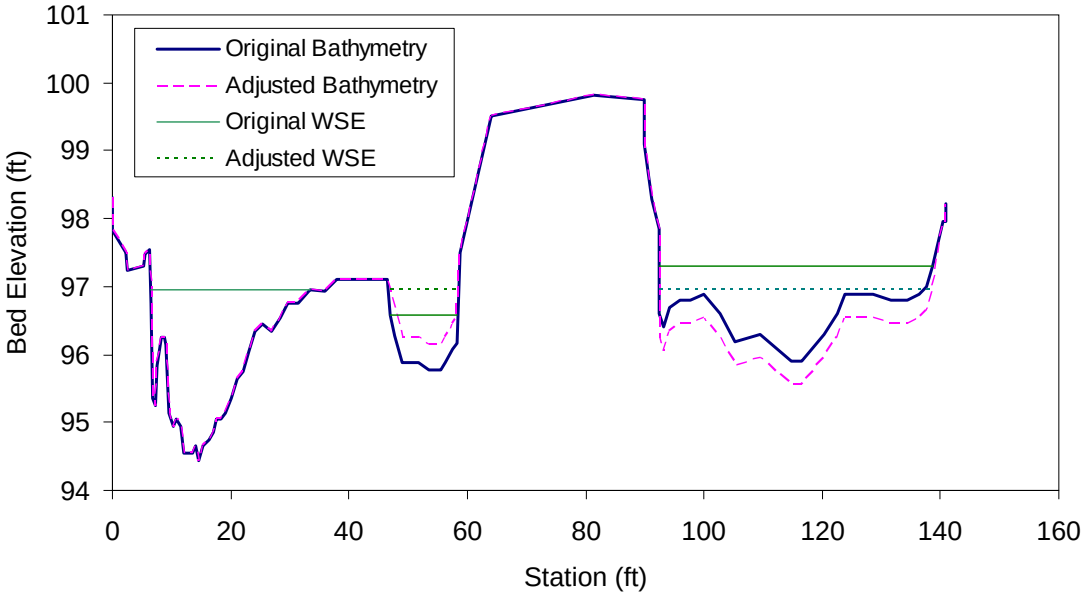


Figure 4.
An illustration showing the adjustment of bathymetry for the transect with multiple channels to meet the requirement of same water surface elevation in each channel across the transect. The thick solid line is the measured bed profile, and the dashed line is the adjusted bed profile. The thin horizontal lines are the measured WSEs in each channel, and the dotted horizontal lines are the WSEs after the bed profile adjustment is made and they are at the same elevation in all three channels.

Velocity Calibration

Velocity calibration is used to ensure the calibrated velocity profile resembles the measured profile with similar velocity distribution. This is generally done by making adjustments to the "cell roughness" calculated by the IFG4 model. The simulation velocity profiles of all measured flows were calibrated, and each of the calibrated velocity profiles was used as a velocity template by the habitat model to calculate habitat area for a range of flows in the vicinity of each measured flow.

It should be noted that each calibrated velocity profile is used by the habitat model to calculate habitat area for only a portion (i.e., sub-range) of the 30 simulation flows on the rating curve. As a result, the simulation velocity profile of each measured flow is only calibrated to predict the velocities for the portion of simulation flows that the habitat model will use for habitat area calculation.

For example: A transect has two velocity profiles measured at Q_{low}=280 cfs and Q_{high}=430 cfs, and the simulation flows range from 112 cfs to 1100 cfs. The Q_{low} velocity profile is calibrated to predict velocities for flows between 112 cfs and 430 cfs, and the Q_{high} velocity profile for flows between 280 cfs and 1100 cfs. The two calibrated velocity profiles are individually used for habitat area simulation. Then the two habitat area:flow relationships are blended to become a composite curve. Please refer to Appendix 15.1C, Attachment 2 for more details about the development of the transect composite WUA (weighted usable area).

Hydraulic Calibration Details

The PHABSIM model calibration details for each of the 117 transects are presented in the pages that follow. There was a large amount of detailed hydraulic information resulting from the model calibration for each transect. These details were critical for assessing the quality of the model and thus, are summarized in a series of tables, figures, and notes specific to each transect. The transects are organized by reach/tributary (e.g., NFK-A, NFK-B, NFK-C, NFK 1.190), followed by River Kilometer (RK) in ascending order (from the downstream most transect to the upstream most transect).

The details provided for each transect are as follows.

Field Data

1. Level loop survey results: The accuracy of ground and water surface elevation surveys depends on the stability of vertical and horizontal control pins. Elevation control points used during the level loop surveys included: benchmarks (BM), head pins (HP), tail pins or turning points (TP), and angle pins or angle points (AP). BM elevations were arbitrarily established at 100 feet, and elevations of all other control pins/points (HP, TP, and AP) were measured to the nearest hundredth of a foot relative to the BM elevation. Level loop surveys results from all site visits were summarized. The surveyed ground and water surface elevations were adjusted if the BM datum was disturbed and the disturbance could be quantified.
2. Measured WSE: Surveyed water surface elevations from all site visits were summarized in this section. For an island complex transect, the water surface elevation of each channel was listed in the WSE summary table and a note was given to indicate which water surface elevation was used in hydraulic modeling. Usually the main channel WSE was used for hydraulic modeling.
3. Discharge: Measured discharges of the transects from all site visits were summarized in this section. For an island complex transect with multiple channels, the measured flows of each channel were listed in the discharge summary table. Total discharge of the transect was also included and was used for hydraulic modeling.
4. Longitudinal WSE slope: Longitudinal WSE slope surveys were summarized in this section. The sites established prior to 2008 had only one transect, and the WSEs were surveyed at three locations in the vicinity of the transect, including at the transect and upstream and downstream of the transect. The longitudinal slope was surveyed during each of the site visits and the slopes from the multiple surveys were generally similar. For hydraulic modeling, the slope from the first flow measurement was used. Each of the sites established in 2008 all had multiple transects and the distances between adjacent transects were generally less than 200 ft or 60 m. Due to the proximity of the transects (except for Site 08-NFK2-MS1), the slope of each transect within the site was assumed the same and was equal to the average slope between TR-1 and the last transect of the site. Site 08-NFK2-MS1 had three transects which were far apart, with 1.5 kilometers between TR-1 and TR 2 and 3/4 kilometer between TR-2 and TR-3. No longitudinal slope was surveyed due to the long distance between transects, and, as the result, the model default slope S=0.25% was assumed for this site for hydraulic modeling.
5. Stage of Zero Flow (SZF): SZF is the lowest water elevation for a transect to have flowing water and it is a physical parameter used in the empirical equation of IFG4 model. The SZF can not be

lower than the thalweg, the lowest elevation of the transect. For a site with multiple transects, the SZF of an upstream transect must be no less than the SZF of a transect located downstream.

WSE Calibration Data

A table was used to summarize the measured water surface elevations, calibrated water surface elevations, calibration errors, and the hydraulic models used for the hydraulic calibration of each transect. Additional information was sometimes presented in this section to show the process of developing composite WSE~Q rating curve for a transect with complex bathymetry.

Velocity Calibration Data

The number of measured velocity profiles used for velocity calibration for each transect and the steps needed to calibrate the simulated velocity profile to resemble the measured velocity profile were discussed in this section. Also a table was included to indicate which calibrated velocity profile was used to develop the habitat:flow relationship.

Hydraulic Calibration Results

Each of the six hydraulic parameters calculated from the modeling were discussed in this section. Justifications were given to explain any hydraulic anomalies. Specific model details are included in the sections that follow.

Transect Profile

Each transect profile was surveyed multiple times, and the bathymetry may have changed each time slightly due to survey technique, accuracy, errors, and/or stream dynamics. A representative measured transect profile was presented to show the morphology of the stream, such as stream width, number of channels (for island complex transect), and the bank slope. Station represents the distance, in feet, across the length of the transect.

Longitudinal WSE Profiles

Measured WSEs vs. river stations were plotted in this figure. For the sites and transects established prior to 2008, a positive Station value indicates the distance (in feet) upstream of the transect, and a negative Station value indicates the distance downstream of the transect; the location of the transect is indicated as Station=0. For sites set up in 2008, there were multiple transects at each site, and WSEs were surveyed at each transect. Thus, the Station value represents the distance (in feet) from the most downstream transect (TR-1).

Measured Flow (Q) vs. Measured WSE

Measured WSEs vs. flows were plotted in this figure. Each site/TR had multiple measurements of WSE~Q. The WSE~Q data in this figure only included the ones that were used in the final hydraulic modeling. Measured WSE~Q data with obvious errors were not used for the modeling and thus were not included in the plot.

Comparison of Calibrated and Measured WSEs

Measured WSEs and calibrated WSEs were plotted in this figure to aid in determining the hydraulic calibration quality.

Transect Hydraulic Parameters

The six hydraulic parameters from model calibration (as described in the Hydraulic Calibration Method section above) are summarized in tables and figures, including: (1) calibrated vs. measured WSEs or calibration errors, (2) Froude number, (3) Manning's n, (4) Vel_ave, (5) VAF, and (6) WP. Each of the six parameters was examined carefully to ensure the modeling results are hydraulically correct.

Transect Hydraulic Summary Plots

There were three graphs plotted for the transect hydraulics summary. Most of the information shown in these three graphs could be found from various sources depicted previously; nevertheless, they are presented here in a more compact format to summarize the hydraulic modeling. The top graph included Manning's n, Froude number, and wetted perimeter plots. The middle graph showed the transect profile along with the surveyed WSEs of each measured flow. The highest WSE in the middle graph was the simulated WSE of the highest simulation flow. The bottom graph showed the measured velocity profile of the calibration flow (thick line) along with the simulation profiles of other measured flows and the highest simulation flow. The calibrated velocity profile was the simulation profile of the calibration flow. All the other simulation velocity profiles were modeled after this calibrated profile. The calibration flow was the measured flow whose simulation velocity profile was calibrated to resemble the measured velocity profile.

IFG4/MANSQ/WSP Data Deck

An IFG4 data deck is the input text file used for hydraulic modeling. It includes measured hydraulics and stream characteristics of a transect, such as simulation flows, SZF, bathymetry, velocity profile, WSE~Q rating curve, bed substrates, and measured flows. The data deck can be directly used in DOS version 2.1 PHABSIM model or be imported into other models such as RHABSIM (Payne & Associates, 1998), PHABWin (Hardy, 2002), or PHABSIM for Windows (USGS, 2001) for direct use. A MANSQ data deck and/or WSP data deck may be included in this section if the IFG4 model was not used for WSE calibration. (Note: IFG4 is a computer model that uses the regression method to estimate stage-discharge rating curve and simulates velocity profiles for various flows. MANSQ is a computer model that calculates WSEs for various flows using surveyed transect profile and one pair of measured WSE and flow. WSP is a computer model that utilizes a standard step-backwater method to simulate WSEs of various flows for multiple cross-sections with the same elevation datum.)

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PHABSIM Hydraulic Model Calibration Details

Stream: North Fork Koktuli River

PHABSIM Hydraulic Model Calibration Details

Stream: North Fork Koktuli River

Reach: NFK-A

NFK-A Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
05-NFK1-IC3	3.37	168.24	120.32	172.58	102.55	95.41	95.06	95.38	94.99	0.00	0.00	0.04	0.00	MANSQ
08-NFK1-MS1-TR1	9.88	521.10	236.62	118.24		95.08	94.38	94.13		-0.04	0.08	-0.04		IFG4
08-NFK1-MS1-TR2	9.91	521.10	236.62	118.24		95.85	95.44	95.18		0.01	-0.02	0.01		IFG4
08-NFK1-MS1-TR3	9.94	521.10	236.62	118.24		96.00	95.53	95.24		0.00	-0.02	0.01		IFG4
08-NFK1-MS1-TR4	10.04	521.10	236.62	118.24		97.05	96.34	95.97		-0.02	0.03	-0.01		IFG4
08-NFK1-MS1-TR5	10.06	521.10	236.62	118.24		97.31	96.58	96.20		-0.03	0.03	-0.01		IFG4
08-NFK1-MS1-TR6	10.10	521.10	236.62	118.24		97.56	96.74	96.28		0.00	0.02	-0.01		MANSQ
08-NFK1-MS2-TR1	12.87	448.90	214.36	118.71		99.38	98.79	98.41		-0.03	0.01	0.05		MANSQ
08-NFK1-MS2-TR2	12.89	448.90	214.36	118.71		99.72	99.09	98.71		0.00	-0.01	0.00		IFG4
08-NFK1-MS2-TR3	12.96	448.90	214.36	118.71		101.00	100.54	100.26		0.01	-0.01	0.00		IFG4
08-NFK1-MS2-TR4	13.06	448.90	214.36	118.71		101.94	101.40	101.06		0.00	0.01	-0.01		IFG4
08-NFK1-MS2-TR5	13.08	448.90	214.36	118.71		102.50	101.89	101.53		-0.03	0.03	0.02		WSP
05-NFK1-RN1	13.23	224.45	90.41	153.18	93.84	98.25	97.91	98.05	97.92	-0.02	-0.01	0.04	-0.01	IFG4

* RK is an abbreviation for River Kilometer

Stream: North Fork Koktuli River

Reach: NFK-A

Site/TR: 05-NFK1-IC3

Habitat Type: Island Complex

River Kilometer: 3.37

Stream: North Fork Koktuli River
Reach: A
Site: 05-NFK1-IC3
Habitat Type: Island Complex

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	AP
1st	6/26/2005	100.00	98.88	97.75
2nd	7/24/2005	100.00	98.89	97.76
3rd	8/13/2005	100.00	98.89	97.76
4th	7/5/2006	100.00	98.90	97.43
5th	4/13/2007	100.00	98.87	97.79
6th	7/21/2007	100.00	98.87	97.75

(a) Control pin (BM, HP, AP) elevations are taken from the first half of each level loop survey
(b) Relative elevation changes between BM and HP were within ± 0.02ft. The small relative elevation changes suggested the BM was stable over the 2005-2007 survey period.

Measured WSE:

There are three WSEs measured across the main (Right) channel for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)		
	Left	Center	Right (main)
6/26/2005	94.28	94.67	95.41
7/24/2005	99.36	99.55	95.26
8/13/2005	94.11	94.59	95.06
7/5/2006	94.28	94.72	95.38
4/13/2007	95.58		97.09
7/21/2007	94.31	94.62	94.99

Hydraulics of 4/13/07 survey was affected by ice.

calibration notes

Discharge:

All the measured discharges are listed in the following table.

Date	WSE (ft)			
	Left	Center	Right (main)	Total
6/26/2005	7.9	0.4	159.9	168.2
7/24/2005				
8/13/2005	0.5	-0.1	119.9	120.3
7/5/2006	0.8	0.0	171.8	172.6
4/13/2007				
7/21/2007	0.5	0.1	101.9	102.5

(1) No discharge was measured in 7/24/05 trip.

(2) 4/13/07: Field notes indicated water flowing on ice. Discharge was not measured.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Left Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/26/2005	NA	NA
7/24/2005	NA	NA
8/13/2005	NA	NA
7/5/2006	0.052%	97
4/13/2007	NA	NA
7/21/2007	0.069%	58.00

calibration notes

Right (main) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/26/2005	0.537%	126.6
7/24/2005	0.680%	103
8/13/2005	0.526%	150.2
7/5/2006	0.680%	103
4/13/2007	0.556%	117.00
7/21/2007	1.258%	66.00

The slope S=0.537% of 6/26/05 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/26/2005	92.91
7/24/2005	
8/13/2005	93.46
7/5/2006	93.18
4/13/2007	
7/21/2007	93.29
Invert	93.46
SZF	93.46

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profiles were surveyed on 7/24/05 and 4/13/06

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/26/2005	168.2	95.41	95.41	0.00	MANSQ
2nd	7/24/2005		95.26			
3rd	8/13/2005	120.3	95.06	95.06	0.00	MANSQ
4th	7/5/2006	172.6	95.38	95.42	0.04	MANSQ
5th	4/13/2007		97.09			
6th	7/21/2007	102.5	94.99	94.99	0.00	MANSQ

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharge was measured on 7/24/05 when substrate was surveyed.
(d) No discharge measured in 4/13/07 trip due to ice in the channel.

8/7/08: Initial WSE calibration using IFG4 showed Fr did not increase with increasing flows.
The final WSE~Q rating curve was calibrated in multiple steps using MANSQ model.
A MANSQ model was first applied to calibrate flows from the lowest simulation flow (40cfs) to the second highest measured flow (168.2cfs). A second MANSQ model was then applied to calibrate flows from the second lowest flow (120.3fs) to the highest simulation flow (430cfs). The two rating curves were developed between 120.3cfs and 168.2cfs. The WSEs between the two flows are linearly interpolated using the difference between a flow and 120.3cfs or 168.2cfs as the weighting factor.
The following table lists the calculation procedures to derive the composite rating curve.

calibration notes

Simulation Flow (cfs)	(120.3) WSE (β=0.0)	(168.2) WSE (β=-1.5)	Composite WSE (ft)
50	94.76		94.76
60	94.81		94.81
70	94.86		94.86
80	94.90		94.90
90	94.94		94.94
102.5	94.99		94.99
110	95.02		95.02
120.3	95.06	95.28	95.06
130	95.09	95.31	95.13
140	95.13	95.34	95.22
160	95.19	95.39	95.36
168.2	95.21	95.41	95.41
172.6		95.42	95.42
180		95.43	95.43
190		95.45	95.45
200		95.46	95.46
210		95.48	95.48
220		95.49	95.49
230		95.50	95.50
240		95.52	95.52
250		95.53	95.53
260		95.54	95.54
270		95.56	95.56
280		95.57	95.57
300		95.59	95.59
320		95.61	95.61
340		95.64	95.64
370		95.67	95.67
400		95.70	95.70
420		95.71	95.71

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 102.5cfs to 172.6cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the four calibrated velocity profiles, no adjustment to the model-calculated n values was needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

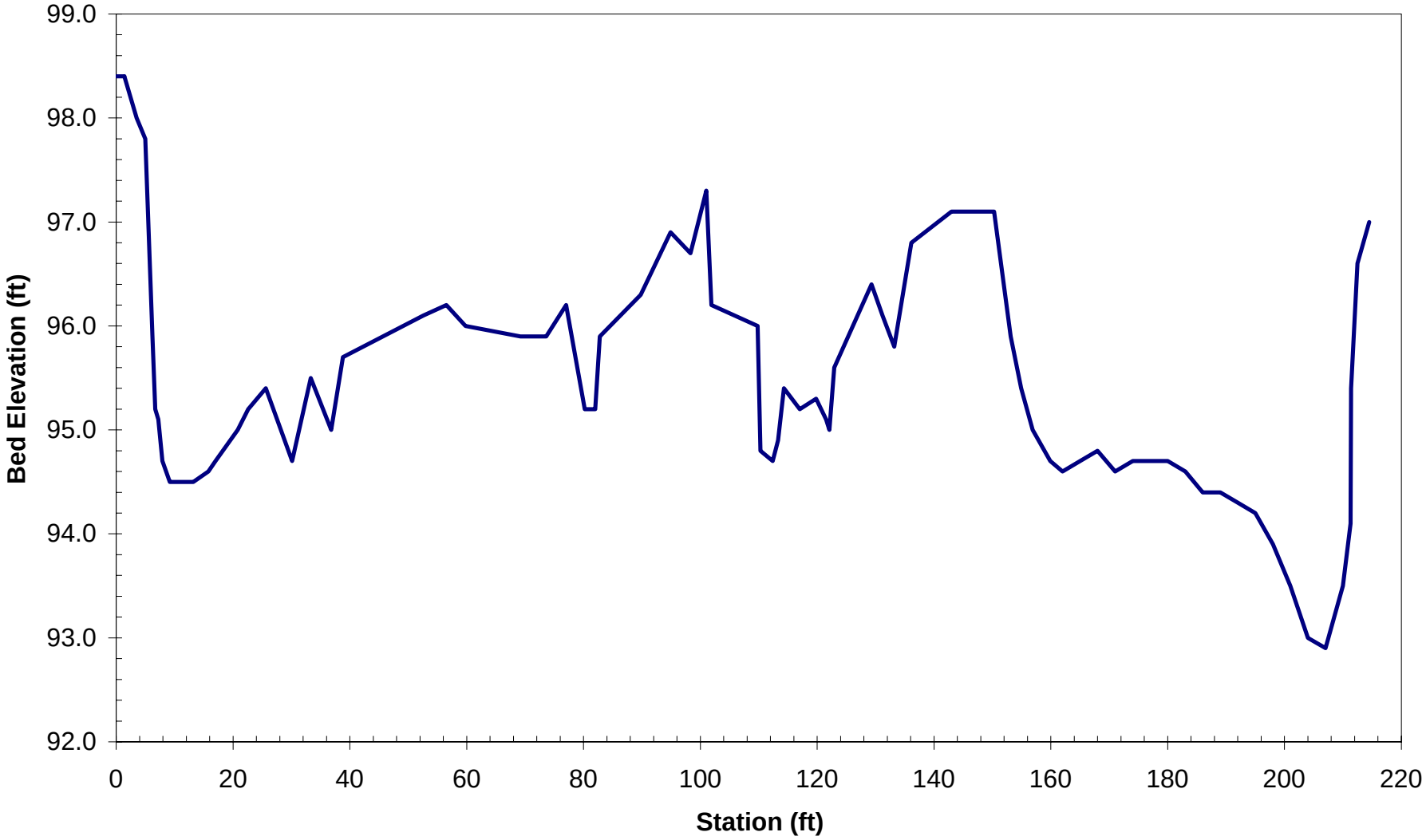
Survey Date	Q (cfs)	WUA (Y/N)
6/26/2005	168.2	Y
7/24/2005		
8/13/2005	120.3	Y
7/5/2006	172.6	
4/13/2007		
7/21/2007	102.5	

(4) Hydraulic Calibration Results:

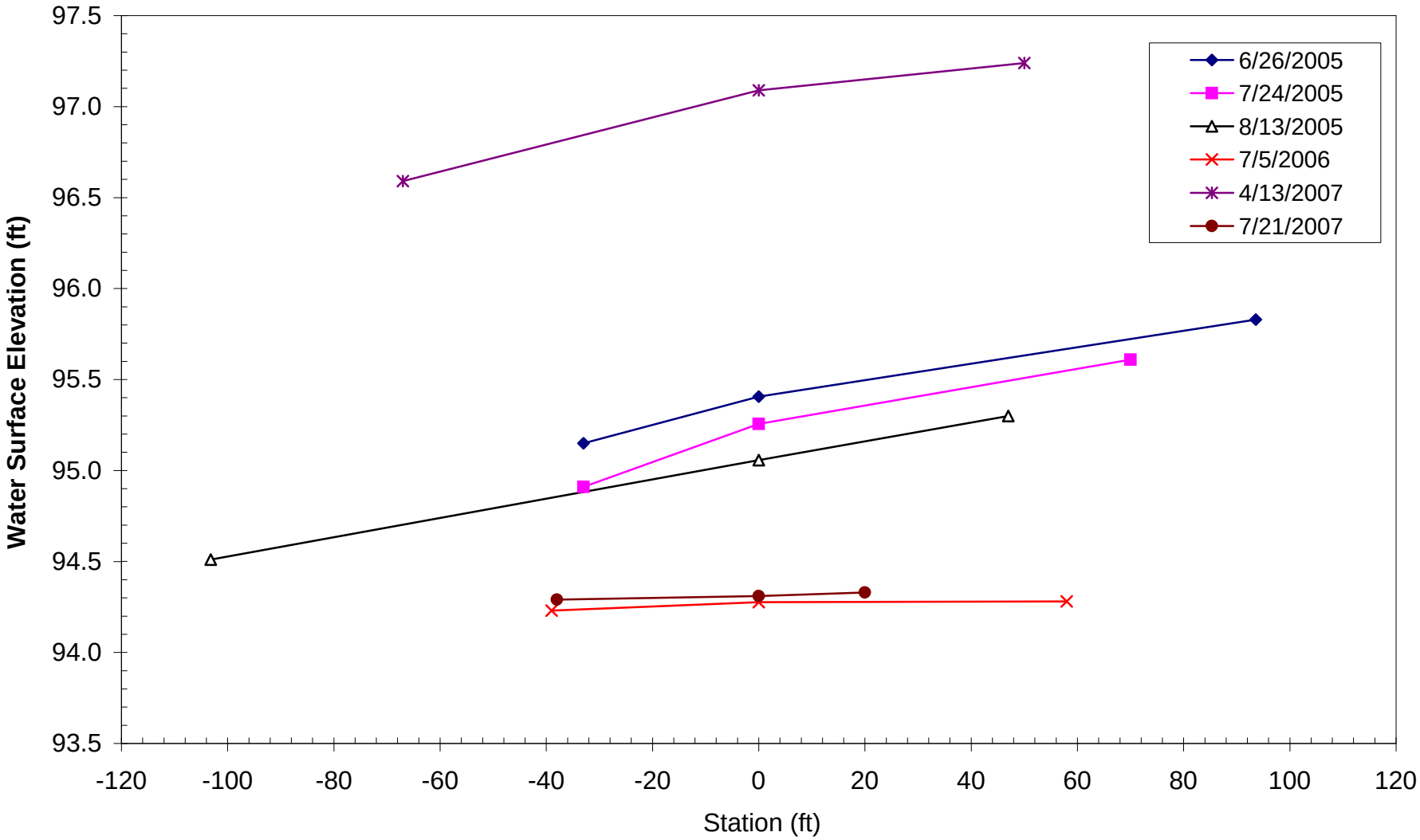
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges.
Manning's n and Fr are generally varying in normal trends with increasing flows, but within the range of the the four measured flows between 102cfs and 172cfs, the trends vary in the opposite direction. It is determined this is ok, because the transect has very complex bathymetry with islands separating the cross-section into multiple channels. The hydraulics (velocity and WSE) were generally different in each channel such that the flow did not meet the definition of uniform flow across a transect, a hydraulic condition required when applying Manning's equation. In addition, the Froude number was originally developed for single-channel transects and may not be applicable to multiple-channel transects. As the result, the Manning's n value and Fr calculated for the transect with multiple channels may not realistically reflect the bed roughness of each channel or adequately indicate the quality of hydraulic calibration for the multiple-channel transect.

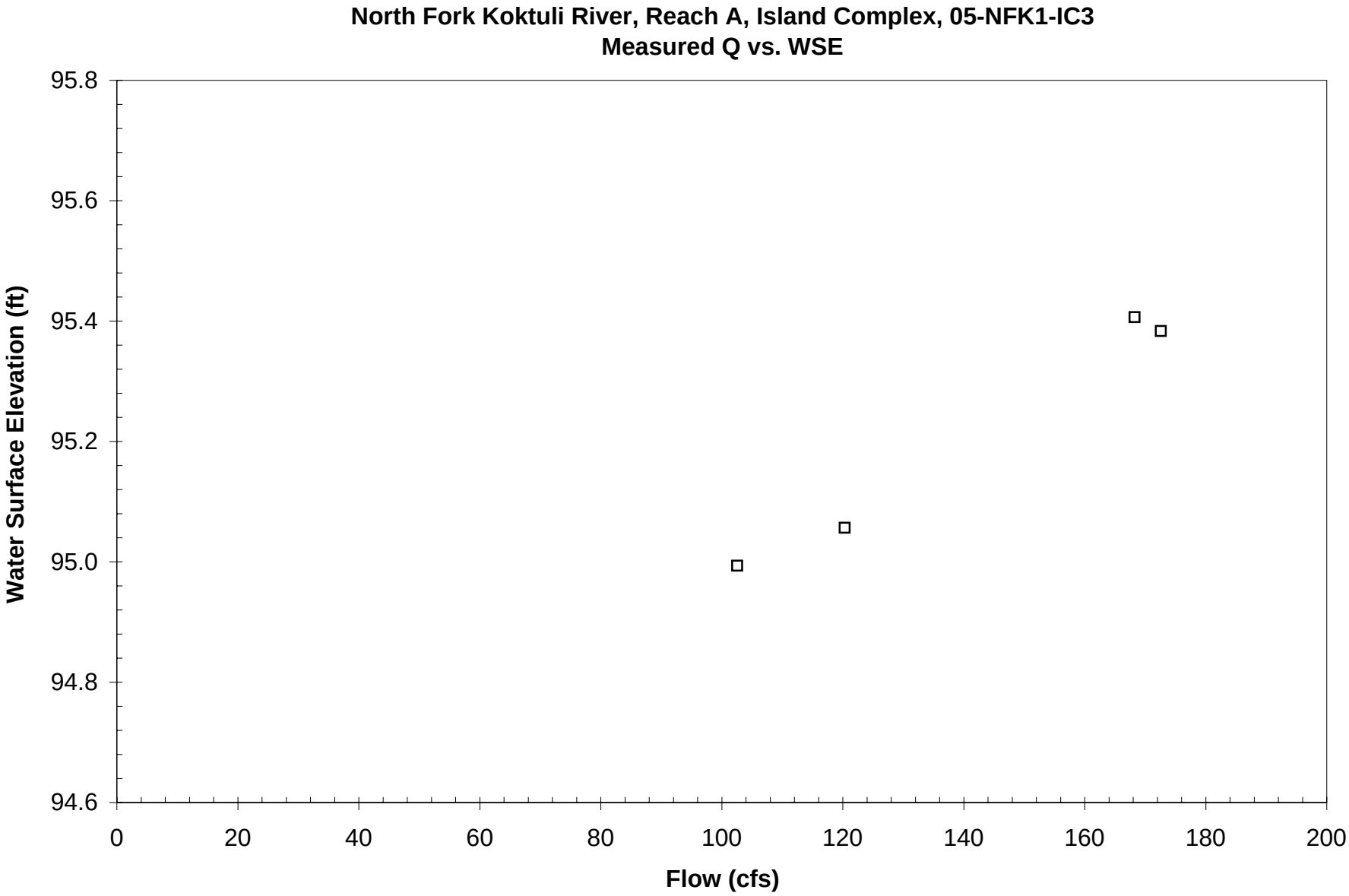
calibration notes

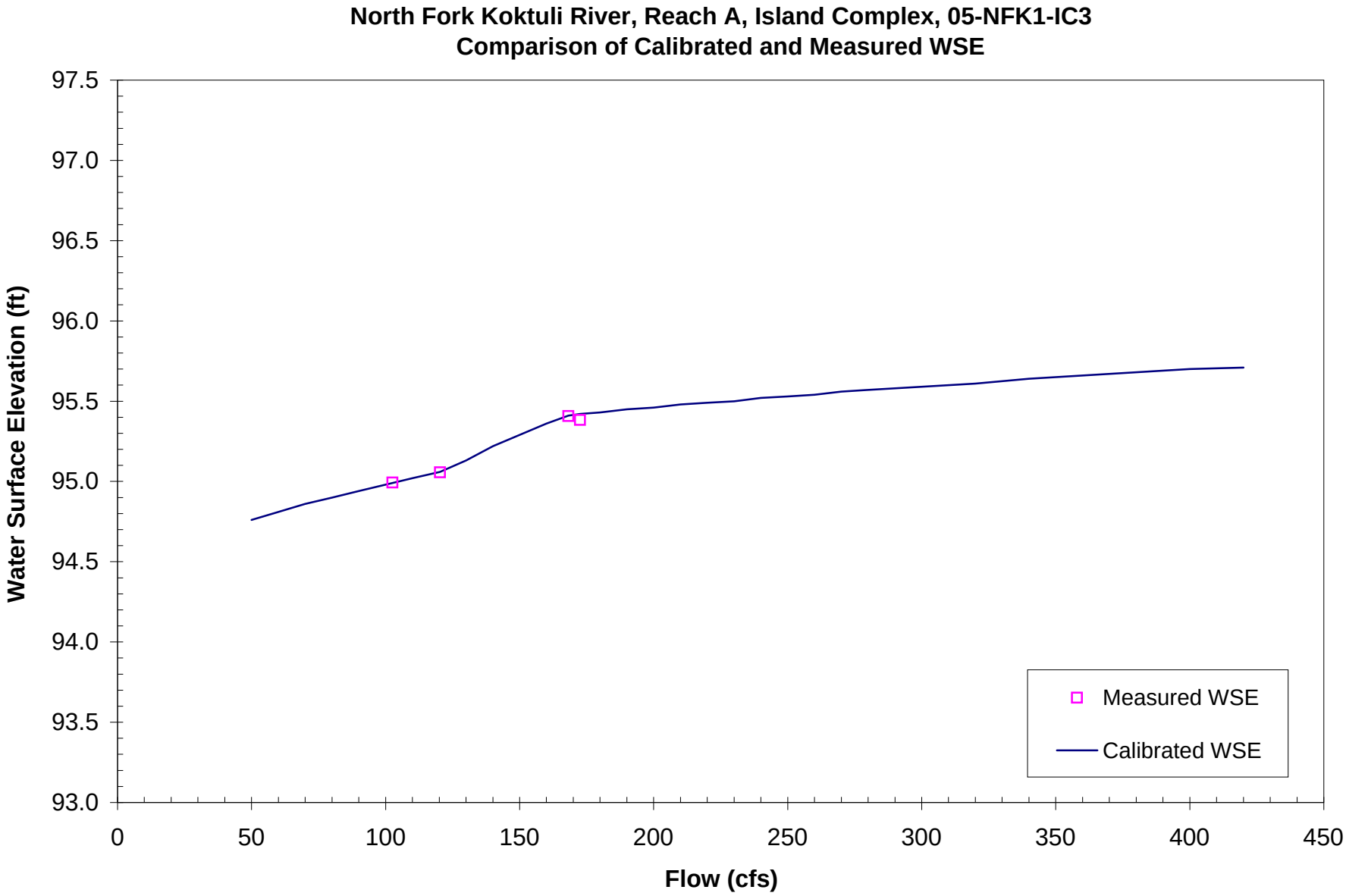
North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-IC3
Measured Transect Profile



North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-IC3
Longitudinal Water Surface Elevation Profiles

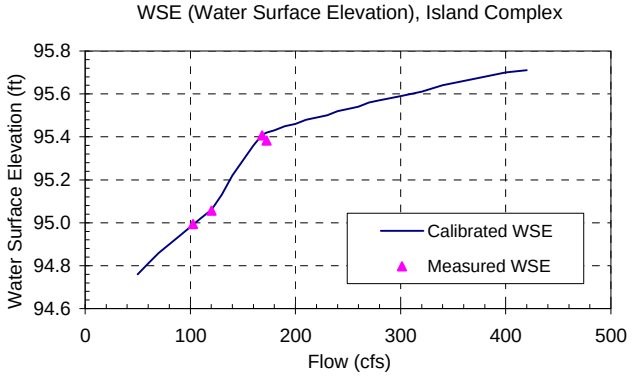


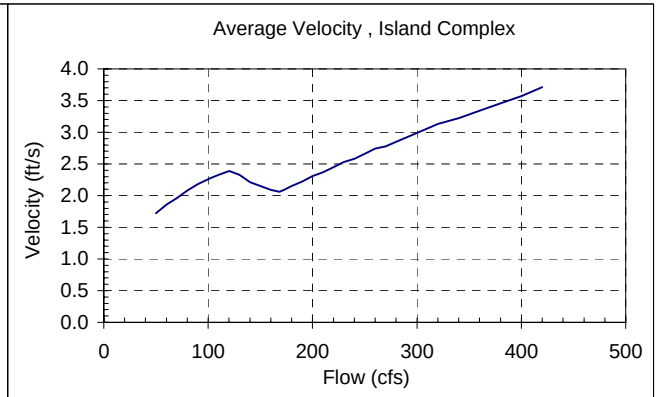

North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-IC3
Measured Q vs. WSE
Water Surface Elevation (ft)
95.8
95.6
95.4
95.2
95.0
94.8
94.6
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)

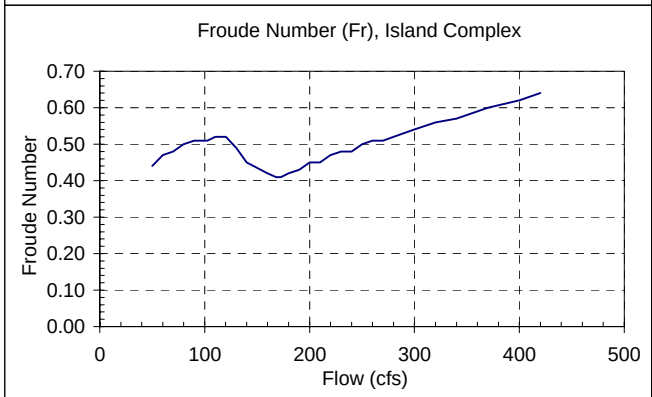

North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-IC3
Comparison of Calibrated and Measured WSE
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

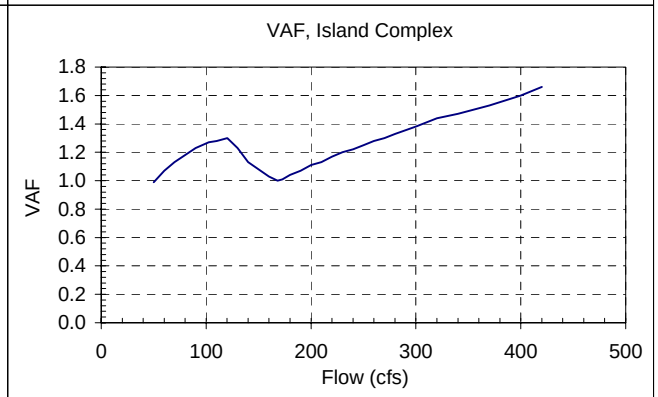
Stream: North Fork Koktuli River **Reach:** A
Site Name: A **Site #:** 3
Date: 6/26/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Island Complex

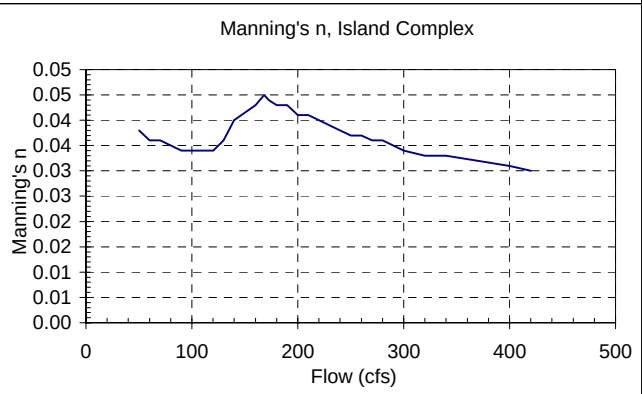
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
50	94.76	0.44	1.72	0.99	0.038	62.7
60	94.81	0.47	1.86	1.07	0.04	68.0
70	94.86	0.48	1.96	1.13	0.04	70.1
80	94.90	0.50	2.08	1.18	0.04	71.8
90	94.94	0.51	2.18	1.23	0.03	73.4
102.5	94.99	0.51	2.28	1.27	0.03	75.4
110	95.02	0.52	2.33	1.28	0.03	76.8
120.3	95.06	0.52	2.39	1.30	0.03	79.2
130	95.13	0.49	2.33	1.23	0.04	82.7
140	95.22	0.45	2.21	1.13	0.04	87.8
160	95.36	0.42	2.09	1.03	0.04	101.9
168.2	95.41	0.41	2.06	1.00	0.05	105.3
172.6	95.42	0.41	2.09	1.01	0.04	105.6
180	95.43	0.42	2.15	1.04	0.04	105.8
190	95.45	0.43	2.22	1.07	0.04	106.4
200	95.46	0.45	2.31	1.11	0.04	106.7
210	95.48	0.45	2.37	1.13	0.04	107.1
220	95.49	0.47	2.45	1.17	0.04	107.3
230	95.50	0.48	2.53	1.20	0.04	107.5
240	95.52	0.48	2.58	1.22	0.04	107.8
250	95.53	0.50	2.66	1.25	0.04	108.0
260	95.54	0.51	2.74	1.28	0.04	108.2
270	95.56	0.51	2.78	1.30	0.04	108.5
280	95.57	0.52	2.85	1.33	0.04	108.7
300	95.59	0.54	2.99	1.38	0.03	109.2
320	95.61	0.56	3.13	1.44	0.03	109.7
340	95.64	0.57	3.22	1.47	0.03	110.4
370	95.67	0.60	3.40	1.53	0.03	111.0
400	95.70	0.62	3.57	1.60	0.03	111.7
420.0	95.71	0.64	3.71	1.66	0.030	112.0

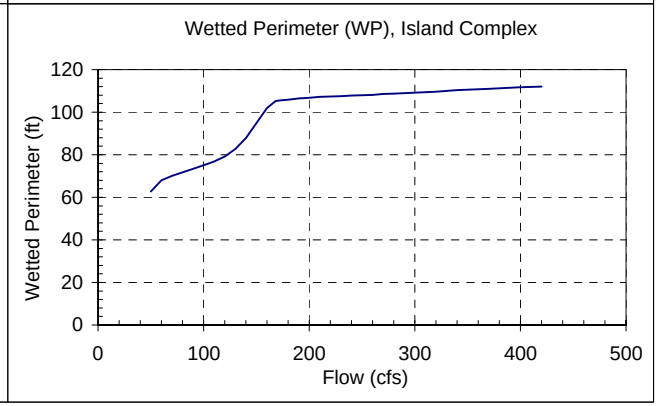




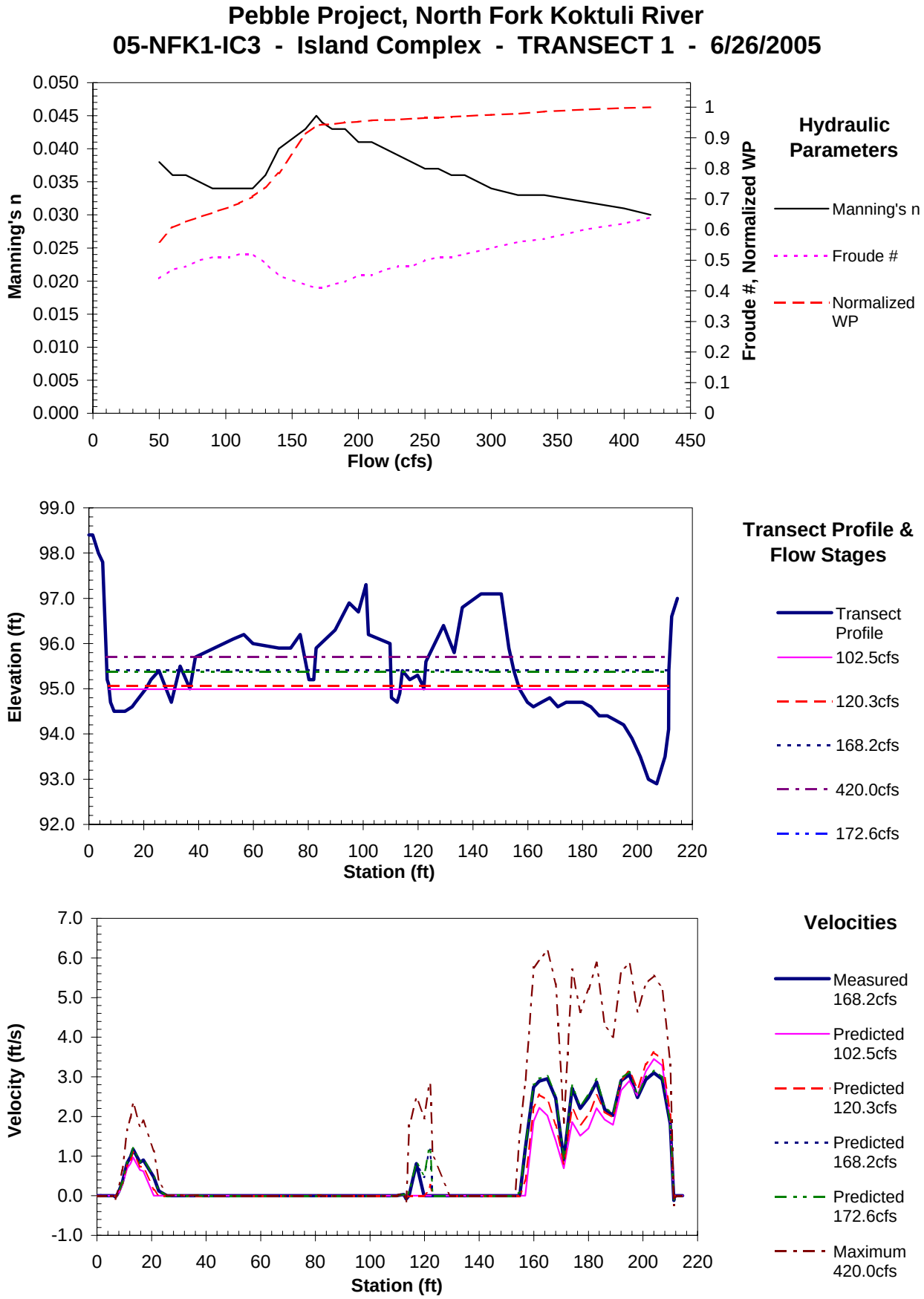








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-NFK1-IC3  06/26/05
ISLAND           A
IOC       1101100100001000101000
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 102.5
QARD 110.0
QARD 120.3
QARD 130.0
QARD 140.0
QARD 160.0
QARD 168.2
QARD 172.6
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 260.0
QARD 270.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 420.0
XSEC  1000     1000. 1.0     93.46    .00537
      1000   .098.41  1.498.41  3.598.02  5.097.76  6.295.93  6.795.21
      1000  7.295.11  7.994.71  9.294.51 11.194.51 12.394.51 13.294.51
      1000 15.894.61 17.094.71 20.895.01 22.695.21 25.695.41 30.194.67
      1000 33.395.47 36.894.98 38.895.74 52.696.14 56.596.24 59.895.99
      1000 69.295.86 73.695.90 77.096.18 80.295.25 82.095.22 82.895.91
      1000 89.896.31 94.996.91 98.396.72101.097.28101.996.20109.895.96
      1000110.394.81112.494.71113.394.91114.395.41117.095.21119.895.31
      1000121.595.05122.195.03122.995.56129.396.39131.296.07133.295.84
      1000136.196.79143.097.07150.397.10153.195.92154.995.41156.995.01
      1000159.994.71162.094.61165.094.71168.094.81171.094.61174.094.71
      1000177.094.71180.094.71183.094.61186.094.41189.094.41192.094.31
      1000195.094.21198.093.91201.093.51204.093.01207.092.91210.093.51
      1000211.394.11211.495.41212.596.64214.597.01
```

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      25.9      24.8      42.6      43.8      43.8      43.8
NS    1000      43.8      43.8      42.8      42.8      34.6      34.7
NS    1000      43.7      43.7      43.6      23.7      32.9      23.9
NS    1000      23.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      23.7
NS    1000      23.7      24.7      24.6      43.6      43.7      43.6
NS    1000      23.6      23.6      22.9      22.9      23.9      54.6
NS    1000      43.7      43.9      45.8      43.8      45.7      45.8
NS    1000      45.6      54.6      54.8      45.9      54.7      54.8
NS    1000      54.6      64.6      54.6      45.7      54.6      45.6
NS    1000      43.8      43.6      43.6      43.9      43.8      23.6
NS    1000      25.9      25.9      22.9      22.9
WSL   1000     94.76     94.81     94.86     94.90     94.94     94.99
WSL   1000     95.02     95.06     95.13     95.22     95.36     95.41
WSL   1000     95.42     95.43     95.45     95.46     95.48     95.49
WSL   1000     95.50     95.52     95.53     95.54     95.56     95.57
WSL   1000     95.59     95.61     95.64     95.67     95.70     95.71
CAL1  1000     95.41     168.2
VEL1  1000                         -0.03 0.01 0.10 0.32 0.83 0.98 1.17
VEL1  1000 0.84 0.90 0.47 0.12 0.00
VEL1  1000
VEL1  1000 0.01 0.03-0.08 0.00 0.81 0.00
VEL1  1000                      0.00 1.19 2.74 2.89 2.95 2.46 0.90 2.71
VEL1  1000 2.20 2.48 2.87 2.18 2.03 2.90 3.06 2.48 2.93 3.10 2.94 1.81
VEL1  1000-0.12 0.00
CAL2  1000     95.06     120.3
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.38     172.6
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     94.99     102.5
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
```

IFG4 Data Deck (continued)

```
VEL4  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble     05-NFK1-IC3  06/26/05
ISLAND           A
IOC       0110000000000000000000
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 102.5
QARD 110.0
QARD 120.3
QARD 130.0
QARD 140.0
QARD 160.0
QARD 168.2
QARD 172.6
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 260.0
QARD 270.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 420.0
XSEC  1000     1000. 1.0     93.46    .00537
      1000   .098.41  1.498.41  3.598.02  5.097.76  6.295.93  6.795.21
      1000  7.295.11  7.994.71  9.294.51 11.194.51 12.394.51 13.294.51
      1000 15.894.61 17.094.71 20.895.01 22.695.21 25.695.41 30.194.67
      1000 33.395.47 36.894.98 38.895.74 52.696.14 56.596.24 59.895.99
      1000 69.295.86 73.695.90 77.096.18 80.295.25 82.095.22 82.895.91
      1000 89.896.31 94.996.91 98.396.72101.097.28101.996.20109.895.96
      1000110.394.81112.494.71113.394.91114.395.41117.095.21119.895.31
      1000121.595.05122.195.03122.995.56129.396.39131.296.07133.295.84
      1000136.196.79143.097.07150.397.10153.195.92154.995.41156.995.01
      1000159.994.71162.094.61165.094.71168.094.81171.094.61174.094.71
      1000177.094.71180.094.71183.094.61186.094.41189.094.41192.094.31
      1000195.094.21198.093.91201.093.51204.093.01207.092.91210.093.51
      1000211.394.11211.495.41212.596.64214.597.01
```

MANSQ Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      25.9      24.8      42.6      43.8      43.8      43.8
NS    1000      43.8      43.8      42.8      42.8      34.6      34.7
NS    1000      43.7      43.7      43.6      23.7      32.9      23.9
NS    1000      23.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      23.7
NS    1000      23.7      24.7      24.6      43.6      43.7      43.6
NS    1000      23.6      23.6      22.9      22.9      23.9      54.6
NS    1000      43.7      43.9      45.8      43.8      45.7      45.8
NS    1000      45.6      54.6      54.8      45.9      54.7      54.8
NS    1000      54.6      64.6      54.6      45.7      54.6      45.6
NS    1000      43.8      43.6      43.6      43.9      43.8      23.6
NS    1000      25.9      25.9      22.9      22.9
CALQ  1000     95.41     168.2     -1.50
ENDJ
```

MANSQ Data Deck

```
     Pebble     05-NFK1-IC3  08/13/05
ISLAND           A
IOC       0110000000000000000000
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 102.5
QARD 110.0
QARD 120.3
QARD 130.0
QARD 140.0
QARD 160.0
QARD 168.2
QARD 172.6
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 260.0
QARD 270.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 420.0
XSEC  1000     1000. 1.0     93.46    .00537
      1000   .098.41  1.498.41  3.598.02  5.097.76  6.295.93  6.795.21
      1000  7.195.06  7.294.96  7.994.66  9.294.36 11.194.46 12.394.46
      1000 13.294.46 15.894.56 17.094.66 20.894.96 22.095.06 22.695.21
      1000 25.695.41 30.194.67 33.395.47 36.894.98 38.895.74 52.696.14
      1000 56.596.24 59.895.99 69.295.86 73.695.90 77.096.18 80.295.25
      1000 82.095.22 82.895.91 89.896.31 94.996.91 98.396.72101.097.28
      1000101.996.20109.895.96110.394.56112.494.46113.394.76114.394.96
      1000117.094.96117.695.06119.895.31121.595.05122.195.03122.995.56
      1000129.396.39131.296.07133.295.84136.196.79143.097.07150.397.10
      1000153.195.92154.995.41156.495.06156.994.86159.994.56162.094.56
      1000165.094.56168.094.56171.094.46174.094.66177.094.66180.094.56
      1000183.094.46186.094.46189.094.46192.094.46195.094.36198.093.96
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```

MANSQ Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      25.9      25.9      24.8      42.6      43.8      43.8
NS    1000      43.8      43.8      43.8      42.8      42.8      42.8
NS    1000      34.6      34.7      43.7      43.7      43.6      23.7
NS    1000      32.9      23.9      23.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      23.7      23.7      24.7      24.6      43.6
NS    1000      43.7      43.7      43.6      23.6      23.6      22.9
NS    1000      22.9      23.9      54.6      43.7      43.9      45.8
NS    1000      43.8      45.7      45.8      45.8      45.6      54.6
NS    1000      54.8      45.9      54.7      54.8      54.6      64.6
NS    1000      54.6      45.7      54.6      45.6      43.8      43.6
NS    1000      43.6      43.9      43.8      23.6      25.9      25.9
NS    1000      22.9      22.9
CALQ  1000     95.06     120.3     -0.00
ENDJ
```

MANSQ Data Deck

Stream: North Fork Koktuli River

Reach: NFK-A

Site: 08-NFK1-MS1

TR1:	08-NFK1-MS1-TR1	**Habitat Type:**	Island Complex	**River Kilometer:**	9.88
TR2:	08-NFK1-MS1-TR2	**Habitat Type:**	Run	**River Kilometer:**	9.91
TR3:	08-NFK1-MS1-TR3	**Habitat Type:**	Run	**River Kilometer:**	9.94
TR4:	08-NFK1-MS1-TR4	**Habitat Type:**	Riffle	**River Kilometer:**	10.04
TR5:	08-NFK1-MS1-TR5	**Habitat Type:**	Riffle	**River Kilometer:**	10.06
TR6:	08-NFK1-MS1-TR6	**Habitat Type:**	Island Complex	**River Kilometer:**	10.10

Stream: NF Koktuli River
Reach: A
Site: 08-NFK1-MS1
Habitat Type:

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3	BM4	BM5
6/21/2008	100.00	98.94	97.41		
7/19/2008	100.00	98.92	97.39	98.02	
8/19/2008	100.00	98.92	97.39	98.01	99.56

(a) Elevations of control pins (BM's) are taken from the first half of each level loop survey
(b) Relative elevation changes between surveys were within ±0.01ft
(c) Elevation control pins were stable for their small relative elevation changes during the survey period
(d) The level loops of all three surveys closed with errors no more than 0.01ft

Measured WSE:

There are multiple WSEs measured across the transect for each flow, and the average of the measured WSE is used as transect representative WSE for modeling.

	WSE (ft)							
	TR-1		TR-2	TR-3	TR-4	TR-5	TR-6	
Date	LC	RC					LC	RC
6/21/2008	94.78	95.08	95.85	96.00	97.05	97.31	97.56	97.95
7/19/2008	94.04	94.38	95.44	95.53	96.34	96.58	96.74	97.40
8/19/2008	93.59	94.13	95.18	95.24	95.97	96.20	96.28	97.18

Right WSEs of TR1 are used for hydraulic calibration because the right channel carries the majority of flow.
Right WSEs of TR6 are used for hydraulic calibration because the right channel carries the majority of flow.
TR5 WSEs of July and August surveys: Only left WSEs are used for calibration because the majority of water flowing through the left portion of the channel.

calibration notes

Discharge:

All measured discharges are summarized in the following table.

Date	Discharge (cfs)						
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	**Average**
6/21/2008	510.4			486.7		566.1	**521.1**
7/19/2008	245.5	252.9	229.4	227.0	235.8	229.0	**236.6**
8/19/2008	114.7	111.7	106.0	133.7	125.6	117.8	**118.2**

Average of measured flows of all transects is used as the representatve flow of the site for hydraulic calibration.
The flows shown above are the total flow of each transect that may include multiple channels.

Longitudinal WSE Slope:

Slopes are calculated using the measured WSEs and longitudinal distances. Distances between transects are estimated using GIS with the transect locations QC/QC'd in Dec, 2009.

TR	Distance between Transects(ft)					
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
LB	0.0	89.0	97.0	225.0	84.0	116.0
RB	0.0	119.0	78.0	363.0	92.0	110.0
Ave	0.0	104.0	87.5	294.0	88.0	113.0
Bank Dist.	0.0	104.0	191.5	485.5	573.5	686.5
Ch. Dist.	0.0	123.8	212.0	528.7	616.9	739.3

Bank Dist. (Bank Distance) is the average length between the headpin/tailpins (HP/TPs) of two transects.
Ch. Dist. (Channel Distance) is the length along the channel canterline between transects.
Use Channel Distance for longitudinal WSE slope estimate.

Date	Longitudinal WSE Slope (%) between TR-1 and					
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	-	0.622%	0.432%	0.373%	0.361%	0.335%
7/19/2008	-	0.861%	0.542%	0.372%	0.357%	0.320%
8/19/2008	-	0.848%	0.524%	0.349%	0.336%	0.291%
GPS	-	-	-	-	-	-

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.
The TR-5 slope S=0.361% of 6/21/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Discharge (cfs)					
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	92.48			94.60		95.11
7/19/2008	92.58	93.54	92.88	94.69	94.58	94.99
8/19/2008	92.63	93.63	92.89	94.77	94.65	94.88
Invert	92.63	93.63	92.89	94.77	94.65	95.11
SZF	92.93	94.73	94.73	94.77	94.95	95.11

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
SZF of the upstream transect must be no less than that of its downstream transect.

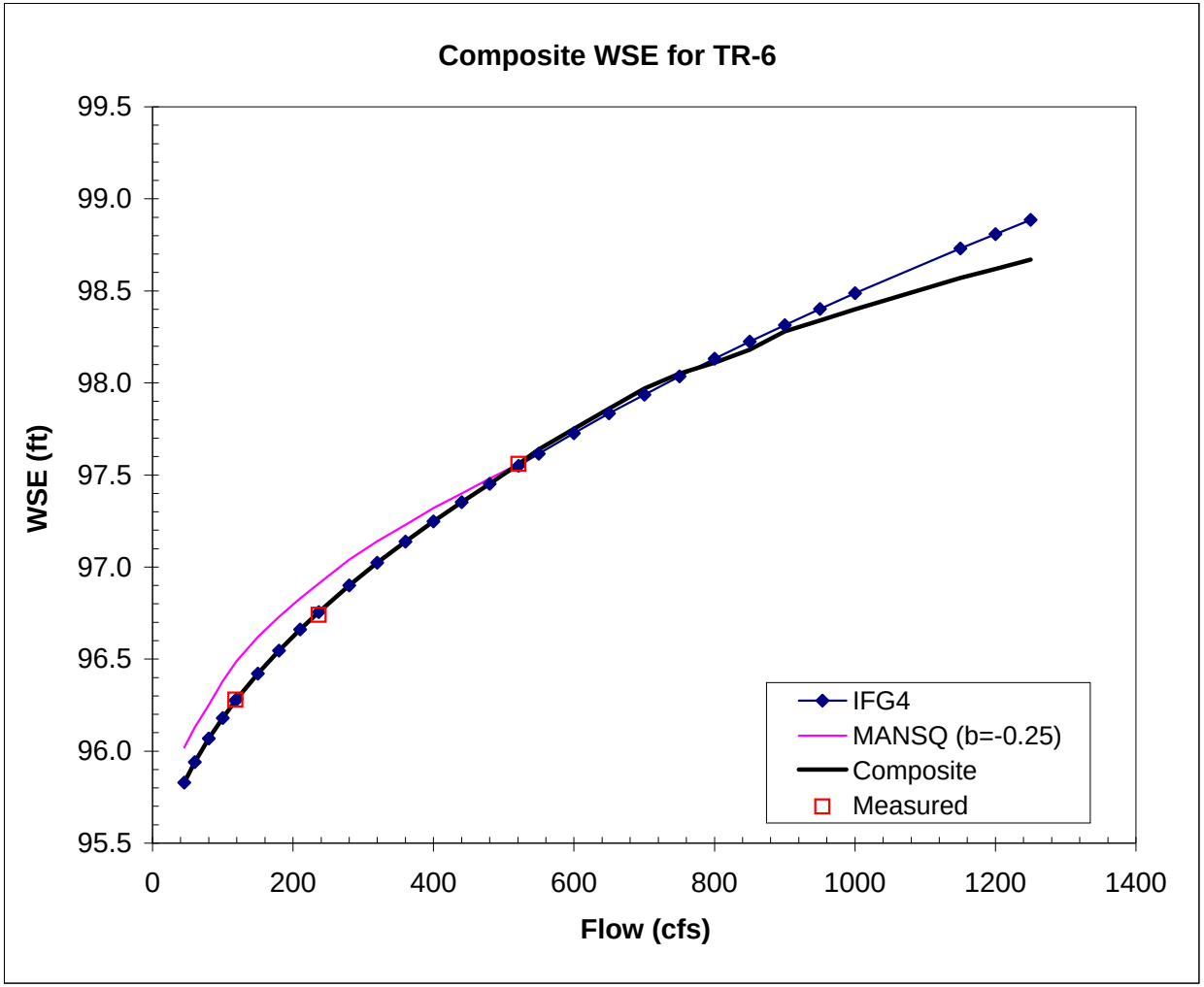
(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

(1) IFG4 was used for TR-1 through TR-5. For TR-6, a composite method was used to develop the WSE~Q rating curve.
(2) For TR-6 WSE calibration: WSEs simulated by IFG4 were higher than expected at flows greater than 750cfs, resulting in steep WSE slope between TR-5 and TR-6. To make the hydraulics more reasonable at higher Qs, it was decided to use MANSQ to simulate the WSE for flows greater than 750cfs. The final WSE~Q rating curve of TR-6 would be a composite one using the results from both IFG4 and MANSQ. Flows Q<=750cfs, the WSEs on the composite curve were from IFG4 results, and for Q>=750cfs, the WSEs on the composite curve were from MANSQ results. Details are shown in the following table.
(3) For MANSQ method, β=-0.25 was used.

calibration notes

Simulation Q (cfs)	TR-6 WSE(ft)		
	IFG4	MANSQ β=-0.25	compo-site
45	95.83	96.02	95.83
60	95.94	96.13	95.94
80	96.07	96.25	96.07
100	96.18	96.38	96.18
118.2	96.27	96.48	96.27
120	96.28	96.49	96.28
150	96.42	96.62	96.42
180	96.55	96.73	96.55
210	96.66	96.83	96.66
236.6	96.76	96.91	96.76
280	96.90	97.04	96.90
320	97.02	97.14	97.02
360	97.14	97.23	97.14
400	97.25	97.32	97.25
440	97.35	97.4	97.35
480	97.45	97.48	97.45
521.1	97.55	97.56	97.56
550	97.62	97.64	97.64
600	97.73	97.75	97.75
650	97.83	97.86	97.86
700	97.94	97.97	97.97
750	98.04	98.05	98.05
800	98.13	98.11	98.11
850	98.22	98.18	98.18
900	98.31	98.28	98.28
950	98.40	98.34	98.34
1000	98.49	98.4	98.40
1150	98.73	98.57	98.57
1200	98.81	98.62	98.62
1250	98.89	98.67	98.67



calibration notes

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)						Calibrated WSE(ft)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	521.1	95.08	95.85	96.00	97.05	97.31	97.56	95.04	95.86	96.00	97.03	97.28	97.56
7/19/2008	236.6	94.38	95.44	95.53	96.34	96.58	96.74	94.46	95.42	95.51	96.37	96.61	96.76
8/19/2008	118.2	94.13	95.18	95.24	95.97	96.20	96.28	94.08	95.18	95.24	95.96	96.19	96.27

Survey Date	Q (cfs)	WSE calibration error (ft)						WSE Calibration Method					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	521.1	-0.04	0.01	0.00	-0.02	-0.03	0.00	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ
7/19/2008	236.6	**0.08**	-0.02	-0.02	0.03	0.03	0.02	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ
8/19/2008	118.2	-0.04	0.01	0.01	-0.01	-0.01	-0.01	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ

(a) WSE calibration error = calibrated WSE - measured WSE

(b) All calibration errors are less than 0.05ft, except the mid flow of TR-1.

(c) TR-1 is a complex islands with multiple channels. Water surface elevations are uneven across the transect due to fast-moving currents and surface waves which may have contributed errors to the surveyed WSEs.

(3) Velocity Calibration

This site has six transects with each transect having 2 or 3 velocity/discharge measurements.
TR-1, TR-4, TR-6 each has three complete velocity measurements and TR-2, TR-3, and TR-5 each has two measurements.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	521.1	Y			Y		Y
7/19/2008	236.6	Y	Y	Y	Y	Y	Y
8/19/2008	118.2	Y	Y	Y	Y	Y	Y

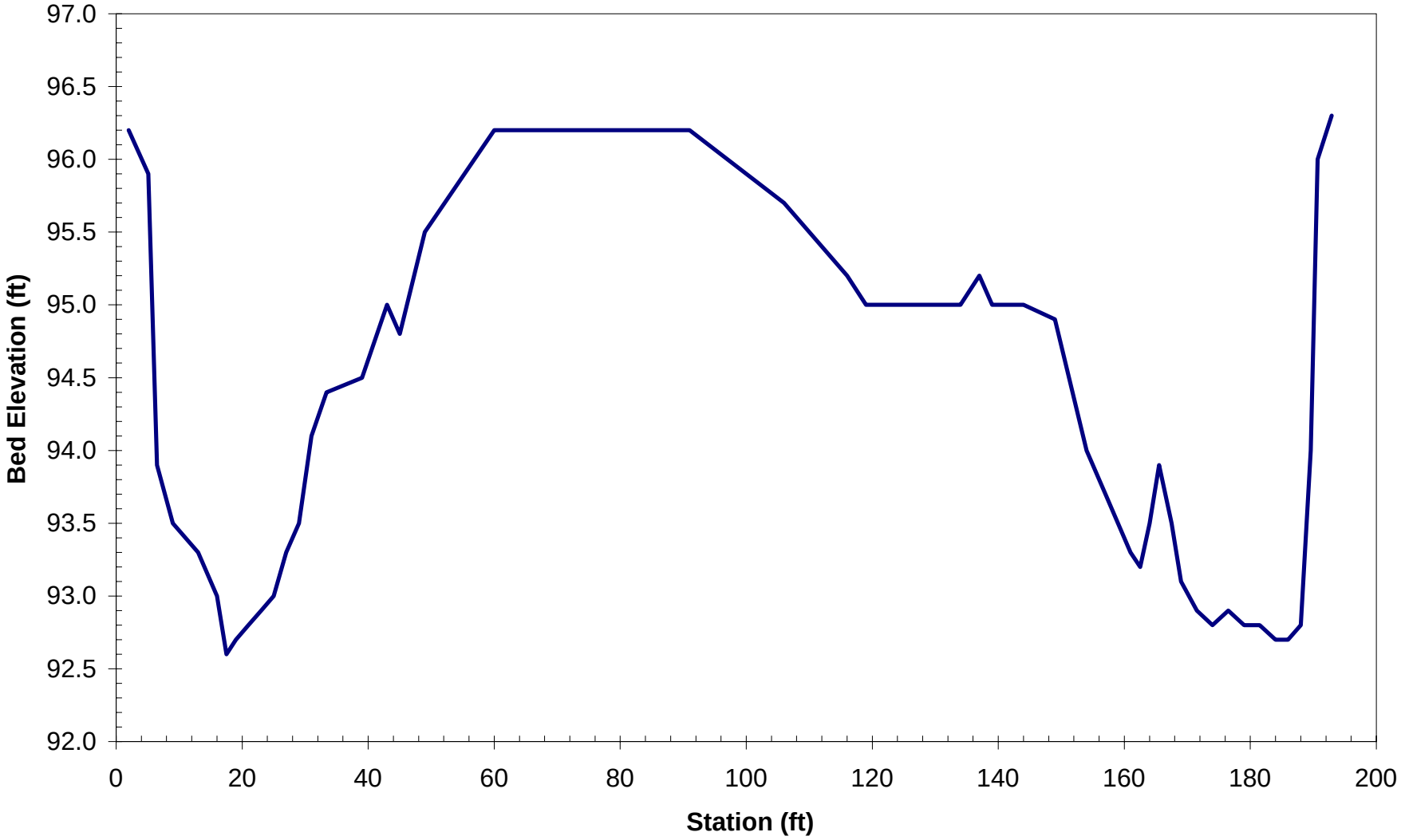
calibration notes

(4) Hydraulic Calibration Results:

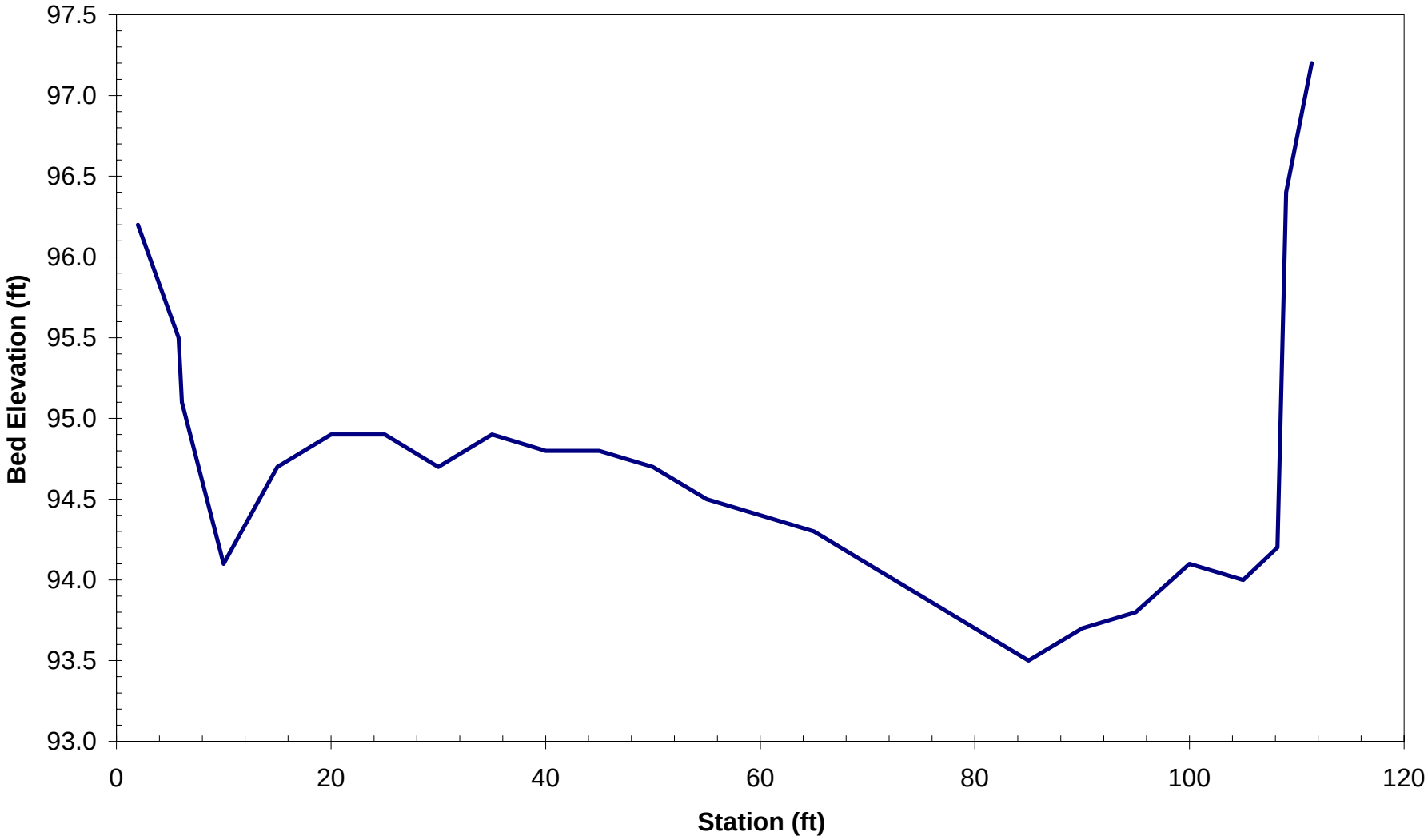
Hydraulic simulation results are summarized in the tables and figures that follow.
The results of TR-1, TR2, TR-3, and TR-5 show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all reasonable.
TR-4 and TR-6 have increasing Manning's n values with increasing flows at lower flow range.
Hydraulics of both transects are ok for the following reasons:
For TR-4: there is a small plateau on the right side of channel that has significant effect on the wetted perimeter as flow is less than 100cfs.
For TR-6: The transect has complex bathymetry with islands splitting the cross-section into multiple channels where standard Fr formula may not be applicable.

calibration notes

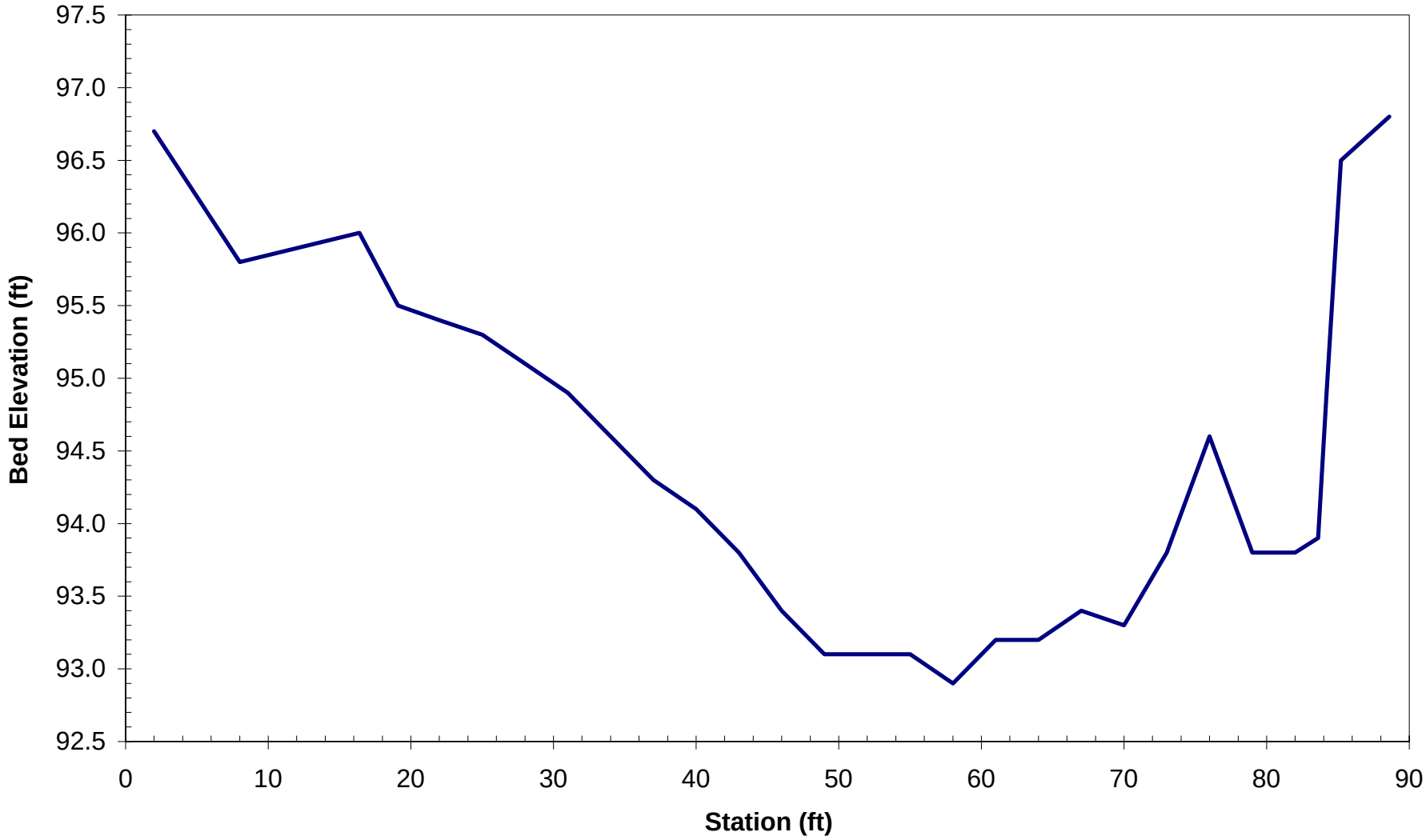
North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR1
Measured Transect Profile



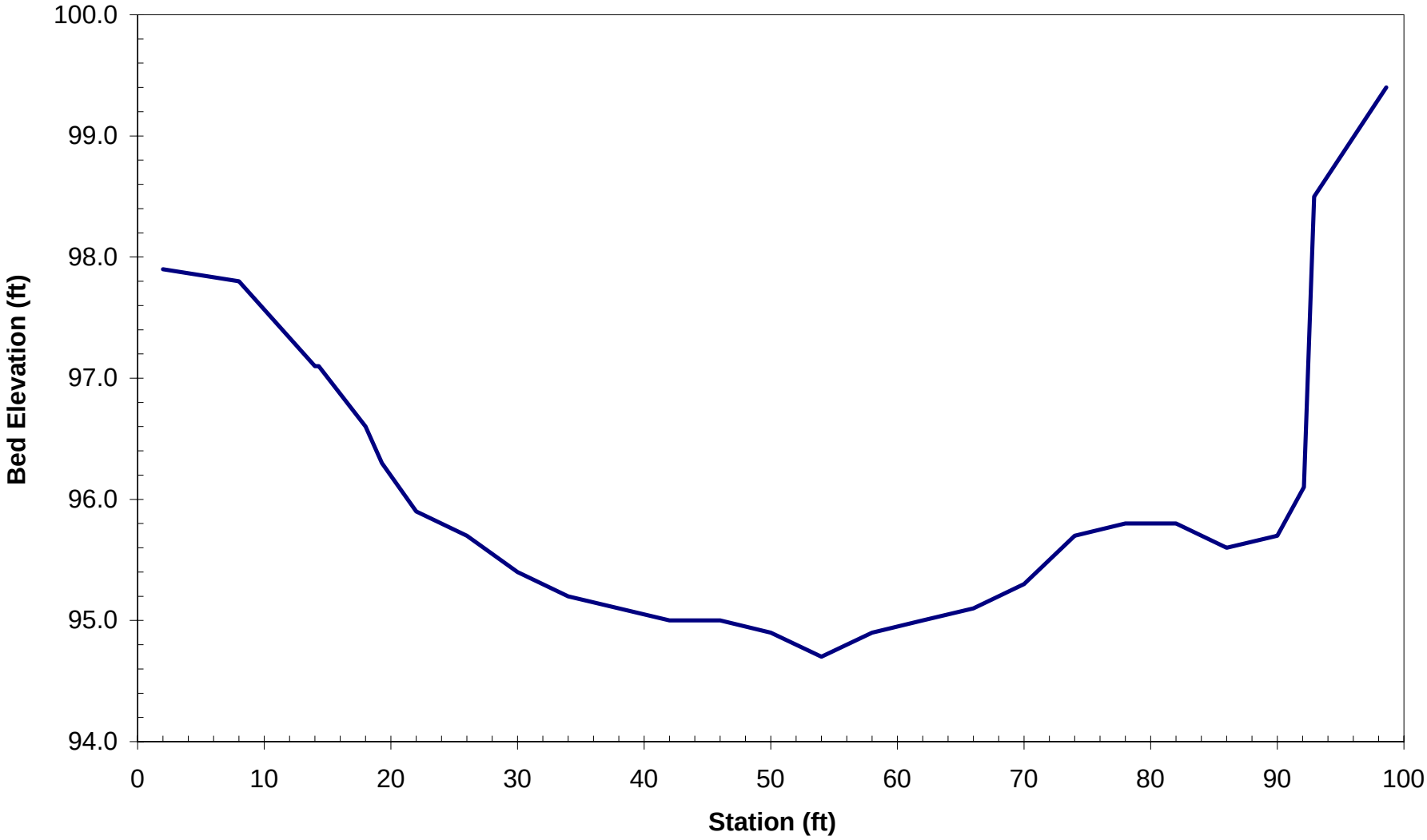
North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR2
Measured Transect Profile



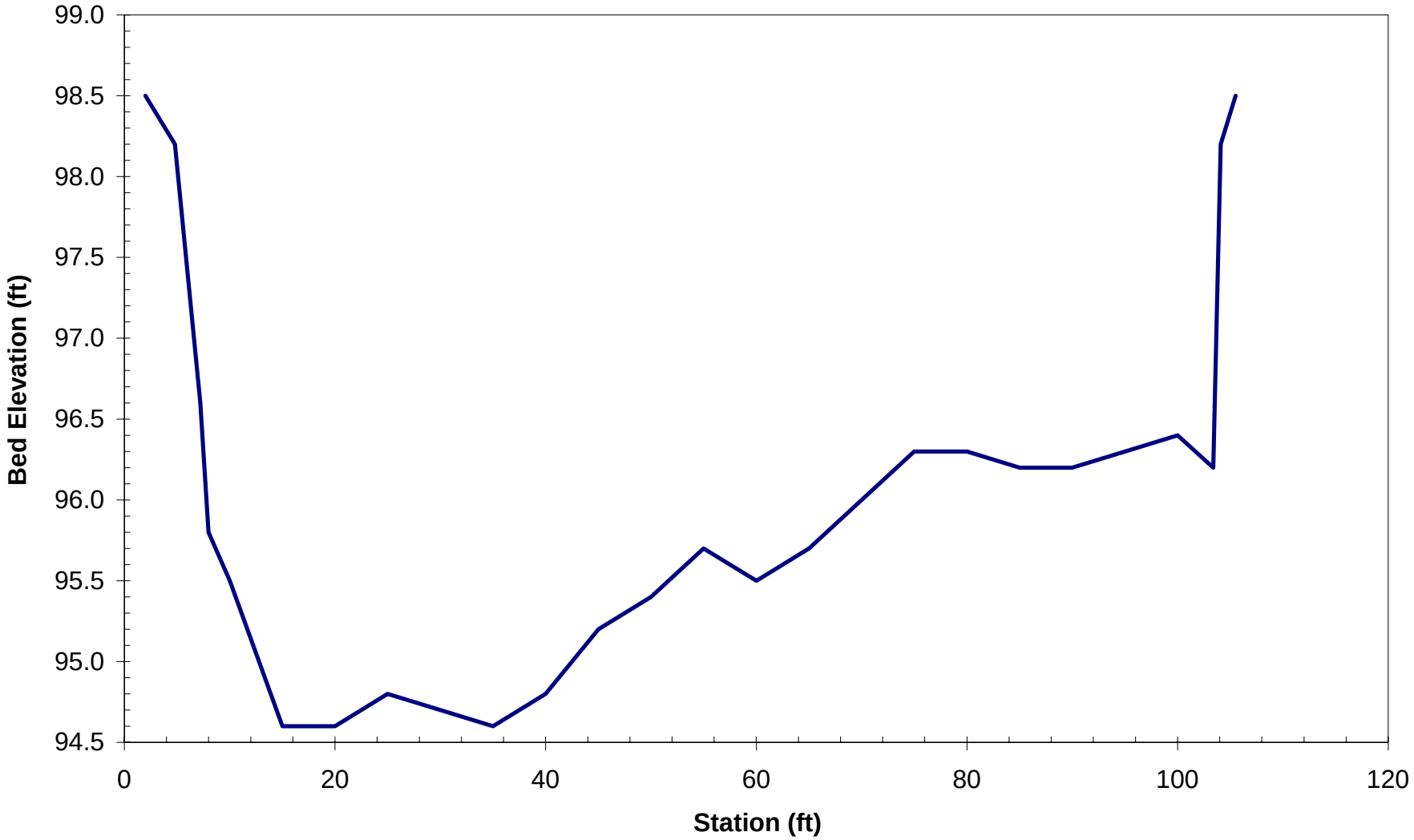
North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR3
Measured Transect Profile



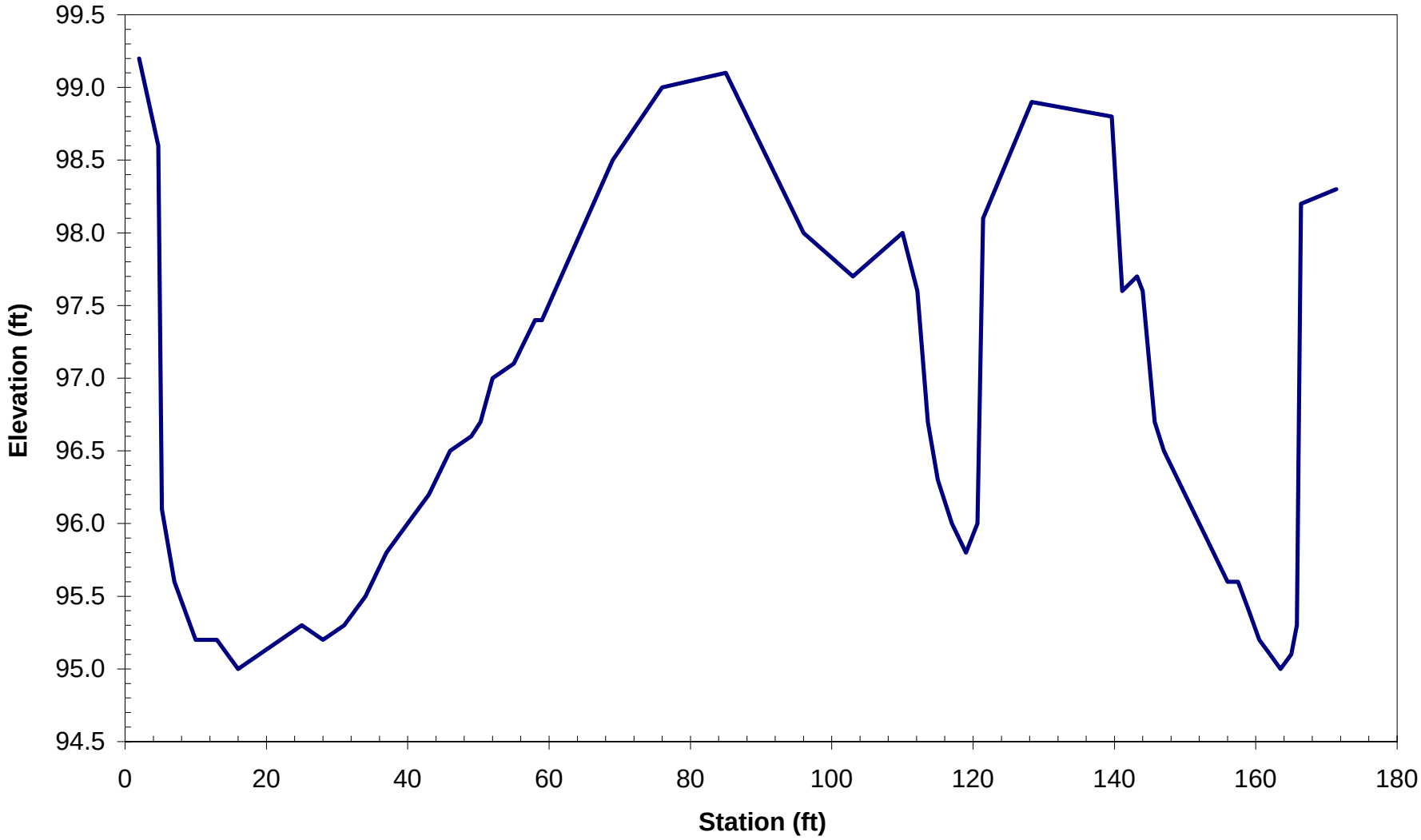
North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR4
Measured Transect Profile



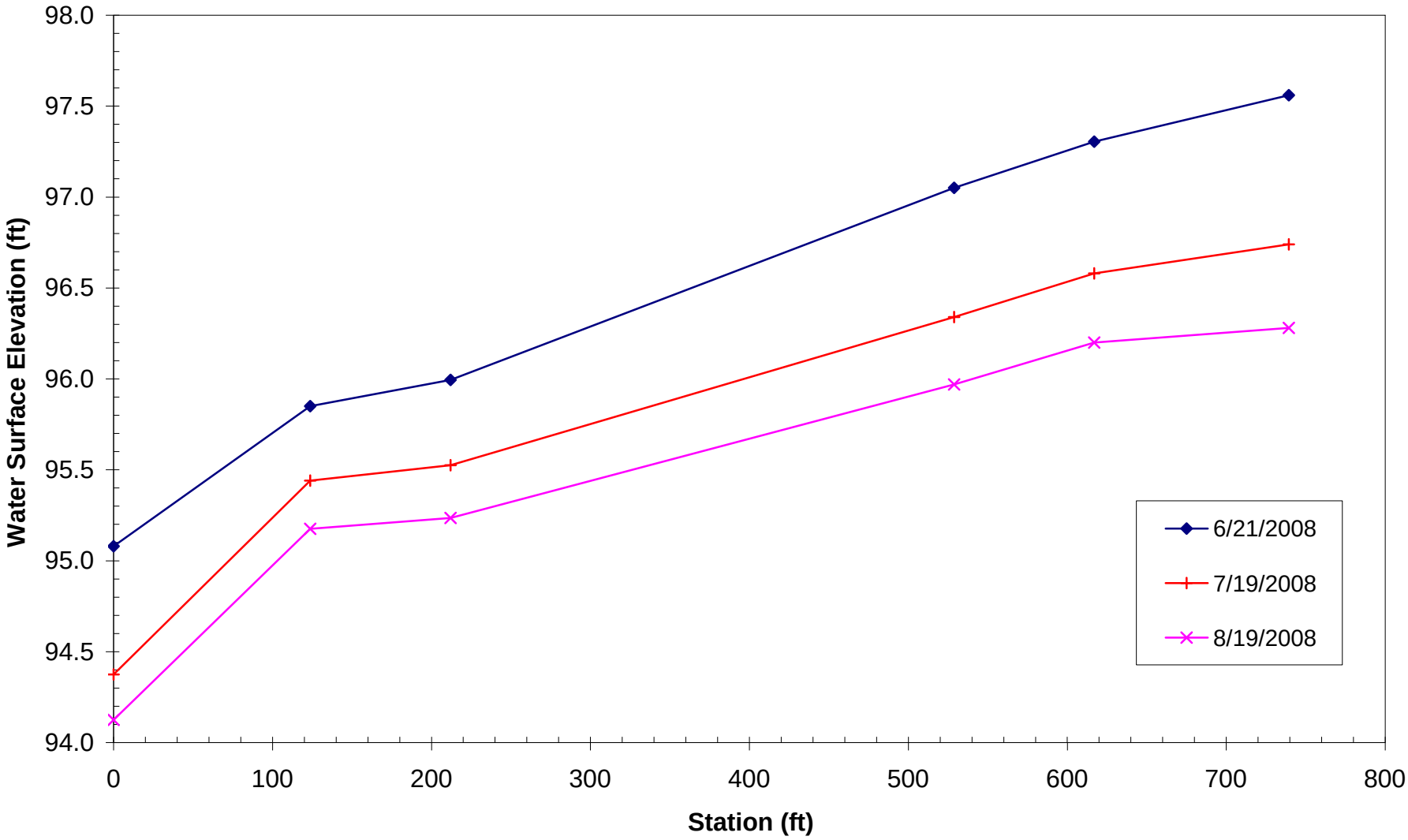
North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR5
Measured Transect Profile

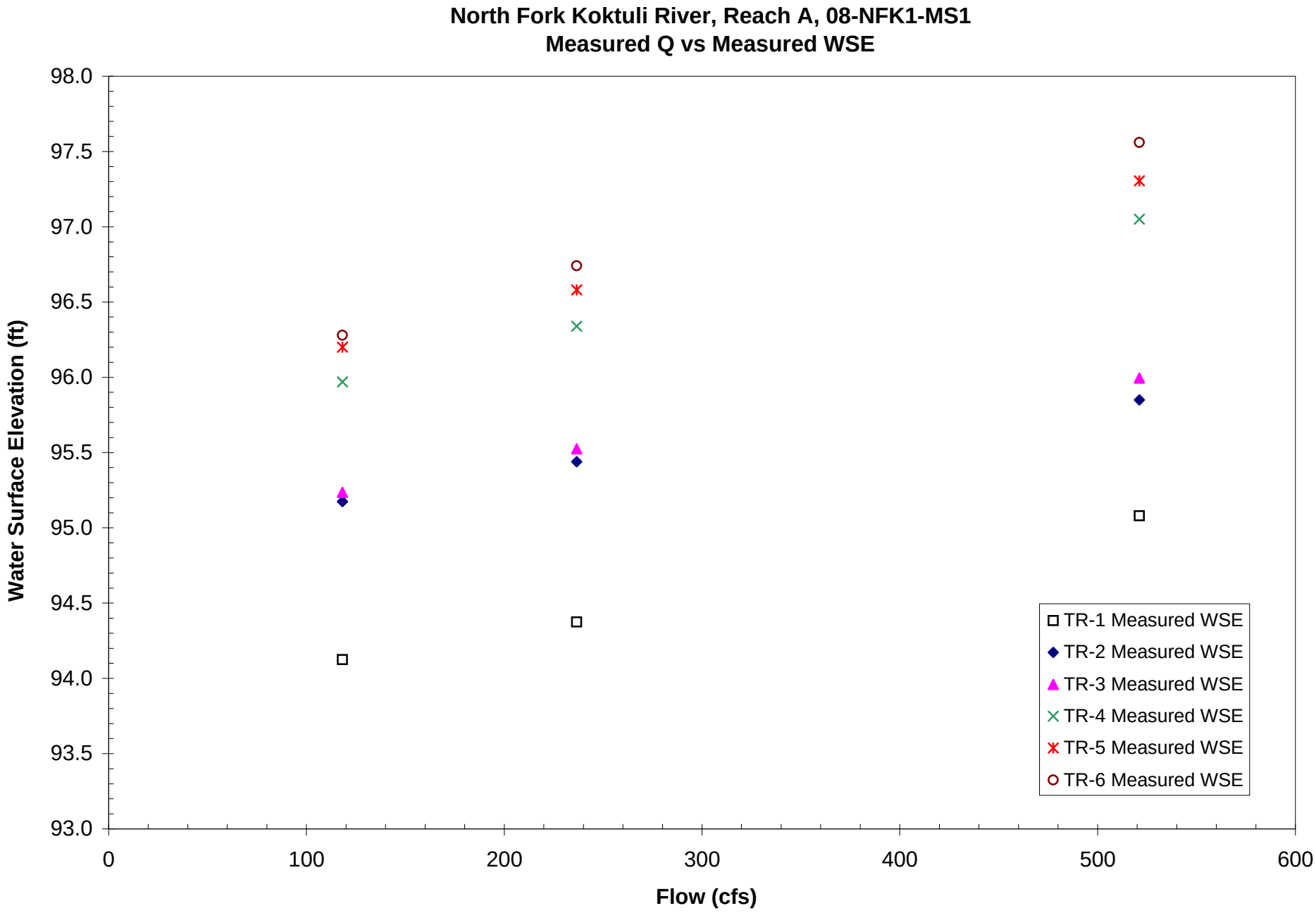


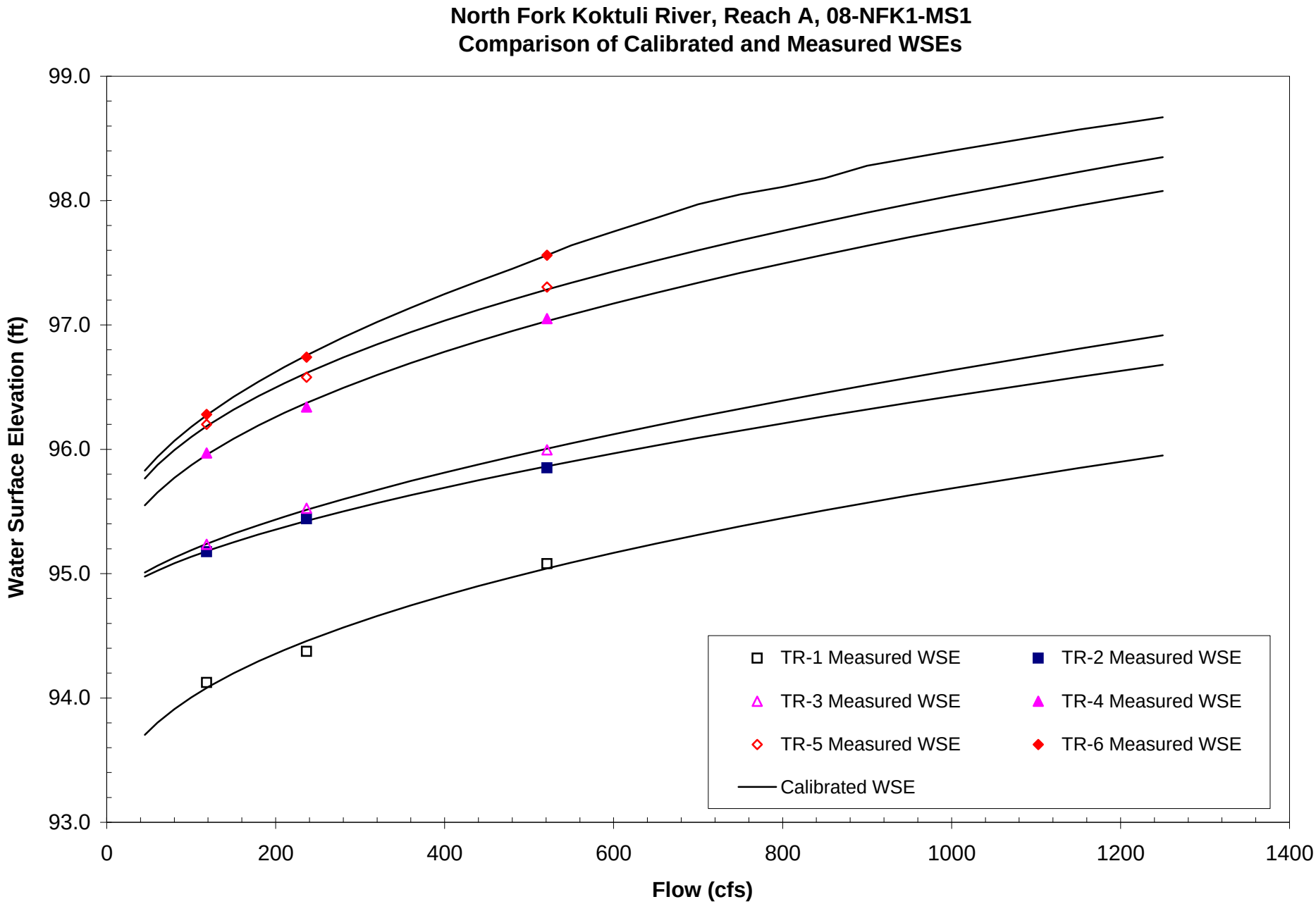
North Fork Koktuli River, Reach A, 08-NFK1-MS1, TR6
Measured Transect Profile



North Fork Koktuli River, Reach A, 08-NFK1-MS1
Longitudinal Measured Water Surface Elevation Profiles

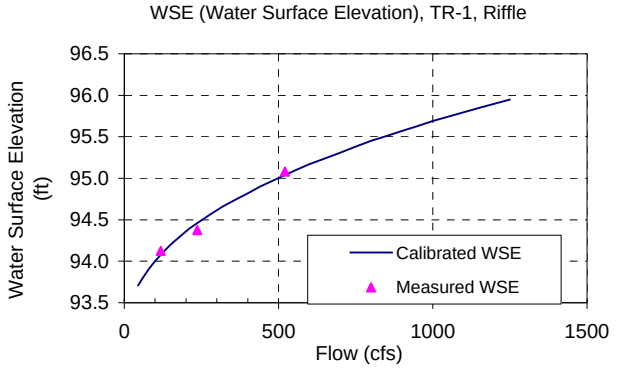


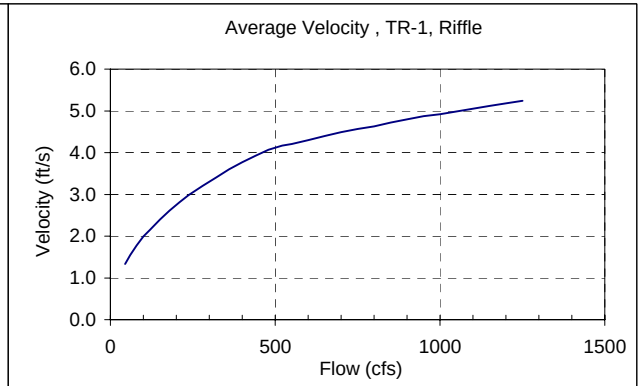

North Fork Koktuli River, Reach A, 08-NFK1-MS1
Measured Q vs Measured WSE
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
0
100
200
300
400
500
600
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE

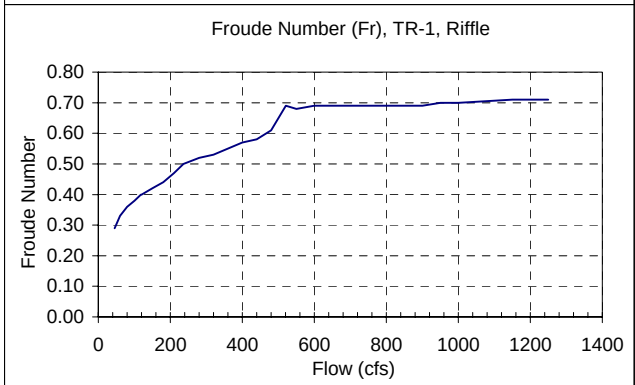

North Fork Koktuli River, Reach A, 08-NFK1-MS1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.0
98.0
97.0
96.0
95.0
94.0
93.0
0
200
400
600
800
1000
1200
1400
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE
Calibrated WSE

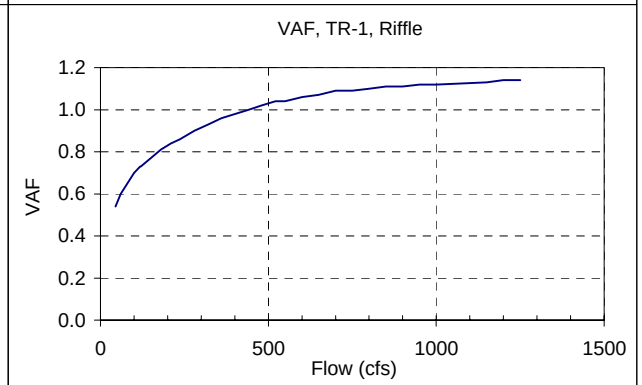
Stream: NF Koktuli River
Site: 08-NFK1-MS1
Habitat: Island Complex
Transect: 1
Date: 7/19/2008
Calibration Flow: Mid

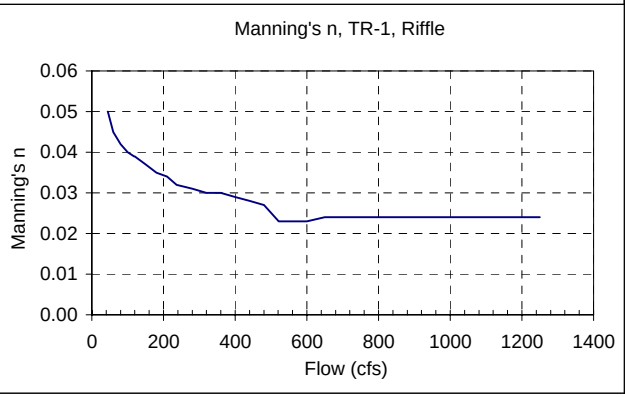
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	93.71	0.29	1.33	0.54	0.050	53.5
60	93.80	0.33	1.55	0.60	0.05	56.2
80	93.91	0.36	1.78	0.65	0.04	59.3
100	94.00	0.38	1.99	0.70	0.04	60.8
118.2	94.08	0.40	2.14	0.73	0.04	61.8
120	94.09	0.40	2.15	0.73	0.04	61.9
150	94.20	0.42	2.40	0.77	0.04	63.7
180	94.30	0.44	2.61	0.81	0.04	65.3
210	94.39	0.47	2.81	0.84	0.03	67.3
236.6	94.46	0.50	2.98	0.86	0.03	72.2
280	94.57	0.52	3.20	0.90	0.03	74.4
320	94.66	0.53	3.40	0.93	0.03	75.8
360	94.74	0.55	3.60	0.96	0.03	77.1
400	94.82	0.57	3.77	0.98	0.03	79.0
440	94.90	0.58	3.92	1.00	0.03	81.5
480	94.97	0.61	4.07	1.02	0.03	87.4
521.1	95.04	0.69	4.17	1.04	0.02	111.1
550	95.09	0.68	4.21	1.04	0.02	113.2
600	95.17	0.69	4.30	1.06	0.02	116.5
650	95.24	0.69	4.40	1.07	0.02	118.5
700	95.31	0.69	4.49	1.09	0.02	120.7
750	95.38	0.69	4.57	1.09	0.02	123.0
800	95.45	0.69	4.63	1.10	0.02	125.3
850	95.51	0.69	4.72	1.11	0.02	127.2
900	95.57	0.69	4.80	1.11	0.02	129.5
950	95.63	0.70	4.87	1.12	0.02	132.1
1000	95.69	0.70	4.92	1.12	0.02	134.7
1150	95.85	0.71	5.12	1.13	0.02	141.6
1200	95.90	0.71	5.18	1.14	0.02	143.8
1250.0	95.95	0.71	5.24	1.14	0.024	146.4

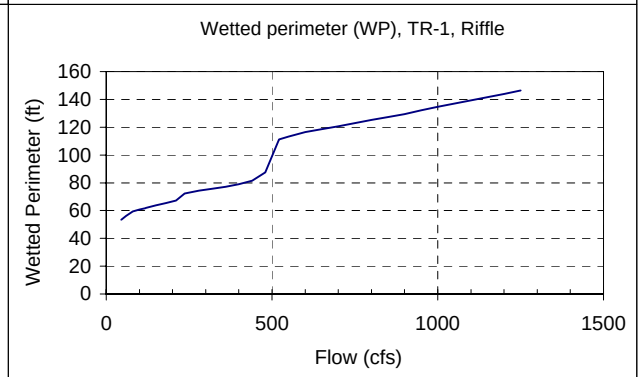








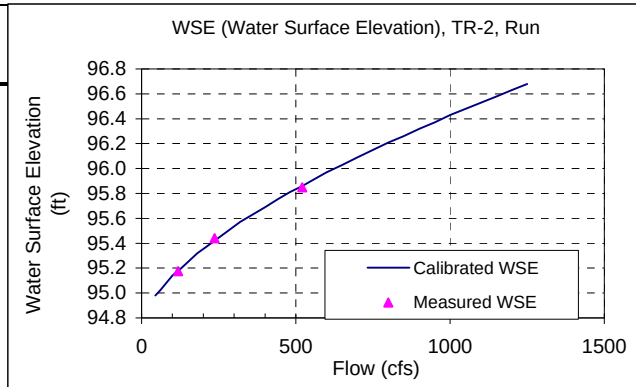


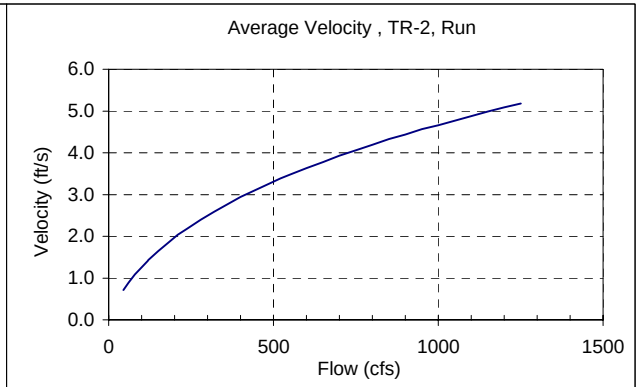


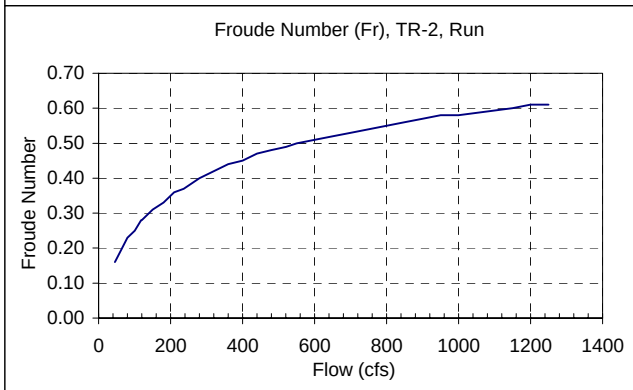
cTR1 - Transect hydraulic parameters

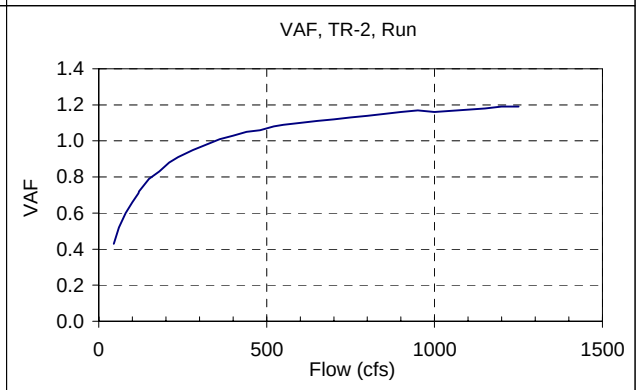
Stream: NF Koktuli River
Site: 08-NFK1-MS1
Habitat: Run
Transect: 2
Date: 7/19/2008
Calibration Flow: Mid

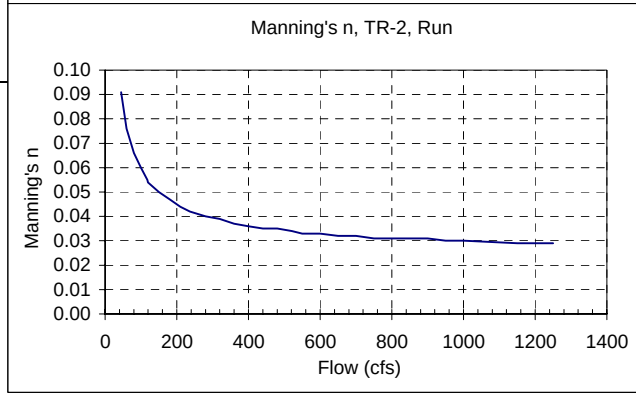
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	94.98	0.16	0.71	0.43	0.091	102.6
60	95.02	0.19	0.89	0.52	0.08	102.8
80	95.08	0.23	1.09	0.60	0.07	103.2
100	95.14	0.25	1.26	0.66	0.06	103.3
118.2	95.18	0.28	1.41	0.71	0.06	103.4
120	95.18	0.28	1.43	0.72	0.05	103.4
150	95.25	0.31	1.65	0.79	0.05	103.6
180	95.32	0.33	1.84	0.83	0.05	103.7
210	95.37	0.36	2.04	0.88	0.04	103.8
236.6	95.42	0.37	2.18	0.91	0.04	104.0
280	95.50	0.40	2.40	0.95	0.04	104.1
320	95.57	0.42	2.59	0.98	0.04	104.5
360	95.63	0.44	2.77	1.01	0.04	104.9
400	95.69	0.45	2.94	1.03	0.04	105.3
440	95.75	0.47	3.09	1.05	0.04	105.7
480	95.81	0.48	3.23	1.06	0.04	106.1
521.1	95.86	0.49	3.39	1.08	0.03	106.4
550	95.90	0.50	3.48	1.09	0.03	106.7
600	95.97	0.51	3.63	1.10	0.03	107.2
650	96.03	0.52	3.78	1.11	0.03	107.6
700	96.09	0.53	3.93	1.12	0.03	108.0
750	96.15	0.54	4.06	1.13	0.03	108.4
800	96.21	0.55	4.19	1.14	0.03	108.8
850	96.26	0.56	4.33	1.15	0.03	108.8
900	96.32	0.57	4.44	1.16	0.03	108.9
950	96.37	0.58	4.57	1.17	0.03	109.0
1000	96.43	0.58	4.66	1.16	0.03	109.0
1150	96.58	0.60	4.99	1.18	0.03	109.5
1200	96.63	0.61	5.09	1.19	0.03	109.7
1250.0	96.68	0.61	5.18	1.19	0.029	109.8

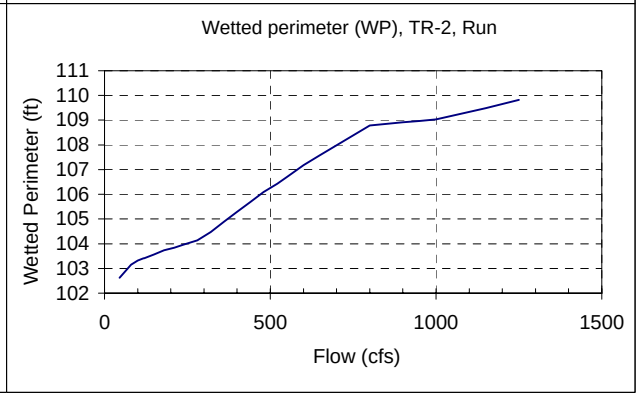








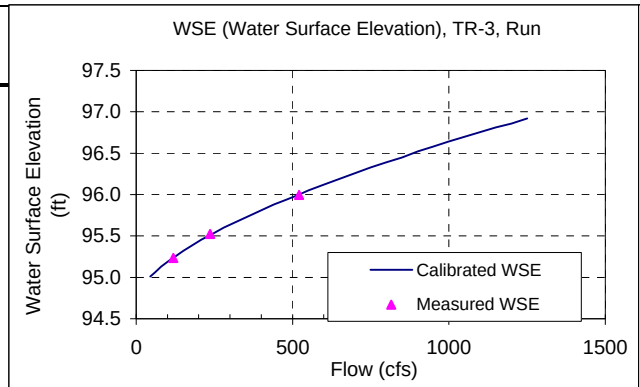


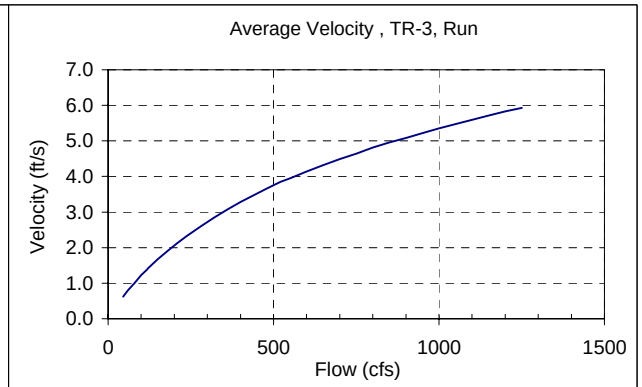


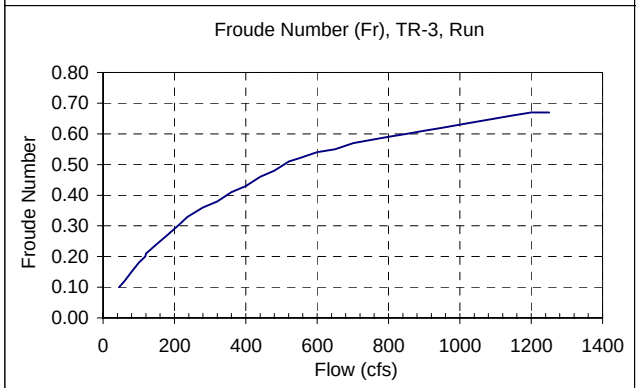
cTR2 - Transect hydraulic parameters

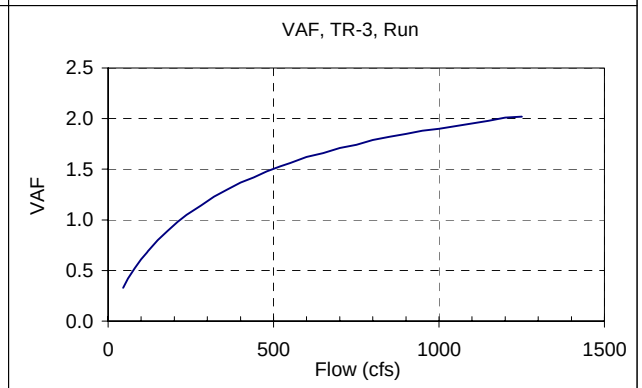
Stream: NF Koktuli River
Site: 08-NFK1-MS1
Habitat: Run
Transect: 3
Date: 7/19/2008
Calibration Flow: Mid

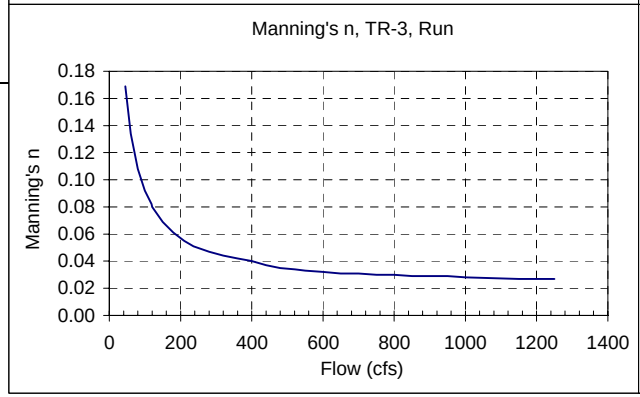
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	95.01	0.10	0.62	0.33	0.169	56.2
60	95.06	0.12	0.80	0.42	0.13	57.0
80	95.13	0.15	1.01	0.52	0.11	58.1
100	95.19	0.18	1.22	0.61	0.09	59.1
118.2	95.24	0.20	1.39	0.68	0.08	59.9
120	95.24	0.21	1.41	0.69	0.08	59.9
150	95.32	0.24	1.67	0.80	0.07	61.8
180	95.39	0.27	1.91	0.89	0.06	63.9
210	95.46	0.30	2.13	0.98	0.06	65.3
236.6	95.51	0.33	2.32	1.05	0.05	66.4
280	95.60	0.36	2.60	1.14	0.05	67.2
320	95.67	0.38	2.84	1.23	0.04	67.7
360	95.74	0.41	3.07	1.30	0.04	68.2
400	95.81	0.43	3.28	1.37	0.04	68.6
440	95.88	0.46	3.47	1.42	0.04	72.2
480	95.94	0.48	3.66	1.48	0.04	75.3
521.1	96.00	0.51	3.85	1.53	0.03	78.4
550	96.05	0.52	3.95	1.56	0.03	80.1
600	96.12	0.54	4.14	1.62	0.03	80.6
650	96.19	0.55	4.32	1.66	0.03	81.1
700	96.26	0.57	4.49	1.71	0.03	81.7
750	96.33	0.58	4.64	1.74	0.03	82.2
800	96.39	0.59	4.81	1.79	0.03	82.7
850	96.45	0.60	4.96	1.82	0.03	83.1
900	96.52	0.61	5.08	1.85	0.03	83.7
950	96.58	0.62	5.22	1.88	0.03	84.5
1000	96.64	0.63	5.35	1.90	0.03	85.6
1150	96.81	0.66	5.71	1.98	0.03	88.2
1200	96.86	0.67	5.83	2.01	0.03	88.6
1250.0	96.92	0.67	5.93	2.02	0.027	88.6

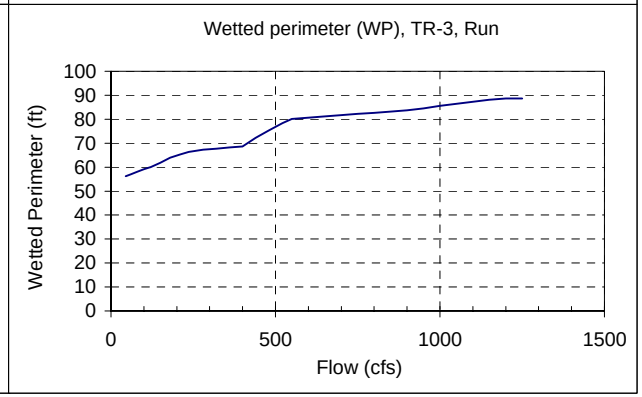








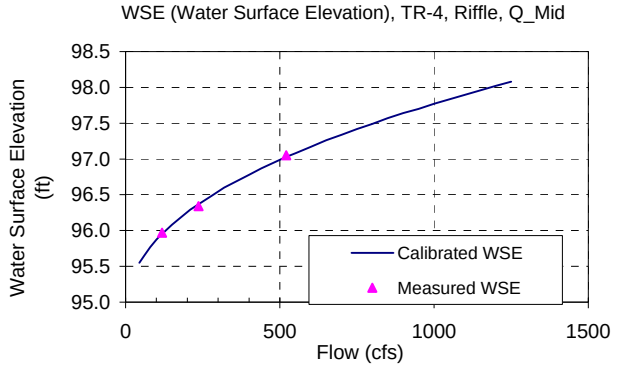


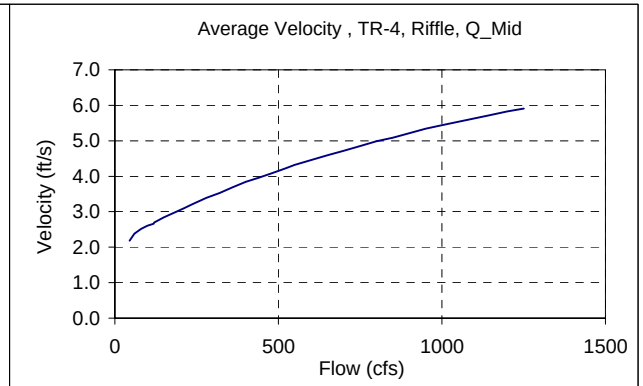


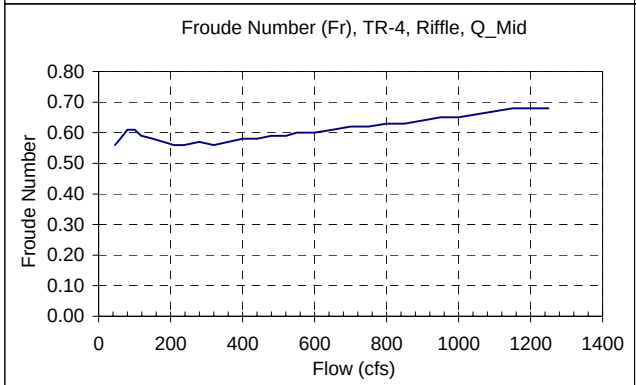
cTR3 - Transect hydraulic parameters

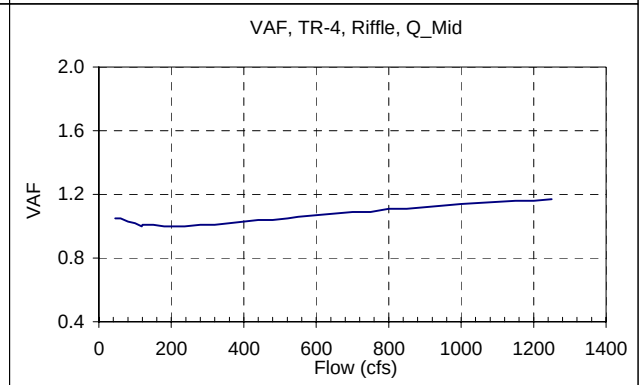
Stream: NF Koktuli River
Site: 08-NFK1-MS1
Habitat: Riffle
Transect: 4
Date: 7/19/2008
Calibration Flow: Mid

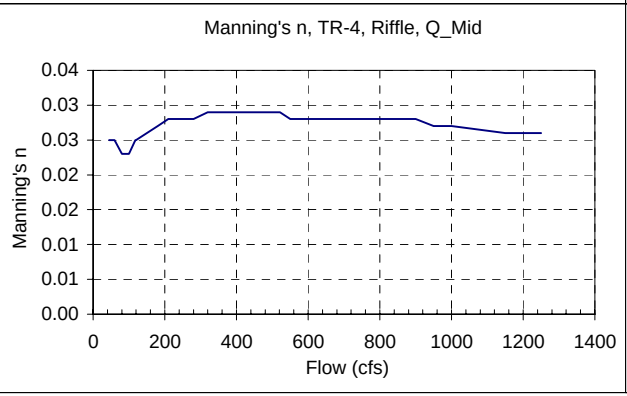
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	95.55	0.56	2.18	1.05	0.025	44.5
60	95.65	0.58	2.38	1.05	0.03	47.7
80	95.77	0.61	2.52	1.03	0.02	59.7
100	95.87	0.61	2.61	1.02	0.02	67.5
118.2	95.96	0.59	2.66	1.00	0.03	69.5
120	95.96	0.59	2.70	1.01	0.03	69.5
150	96.08	0.58	2.84	1.01	0.03	70.9
180	96.19	0.57	2.97	1.00	0.03	72.0
210	96.29	0.56	3.09	1.00	0.03	72.8
236.6	96.37	0.56	3.21	1.00	0.03	73.4
280	96.49	0.57	3.39	1.01	0.03	74.3
320	96.60	0.56	3.53	1.01	0.03	75.1
360	96.69	0.57	3.69	1.02	0.03	75.9
400	96.78	0.58	3.84	1.03	0.03	76.7
440	96.87	0.58	3.96	1.04	0.03	77.4
480	96.95	0.59	4.09	1.04	0.03	78.1
521.1	97.03	0.59	4.22	1.05	0.03	78.8
550	97.08	0.60	4.32	1.06	0.03	79.5
600	97.17	0.60	4.46	1.07	0.03	80.4
650	97.26	0.61	4.59	1.08	0.03	81.2
700	97.34	0.62	4.72	1.09	0.03	82.0
750	97.42	0.62	4.85	1.09	0.03	82.7
800	97.49	0.63	4.99	1.11	0.03	83.4
850	97.57	0.63	5.09	1.11	0.03	84.1
900	97.64	0.64	5.21	1.12	0.03	84.8
950	97.70	0.65	5.34	1.13	0.03	85.3
1000	97.77	0.65	5.44	1.14	0.03	86.0
1150	97.96	0.68	5.73	1.16	0.03	92.3
1200	98.02	0.68	5.83	1.16	0.03	92.3
1250.0	98.08	0.68	5.91	1.17	0.026	92.4

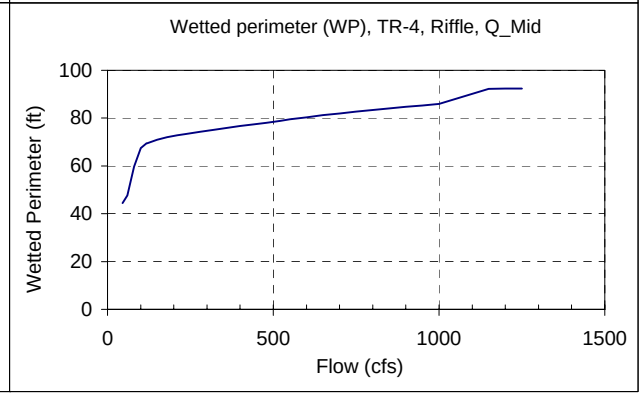








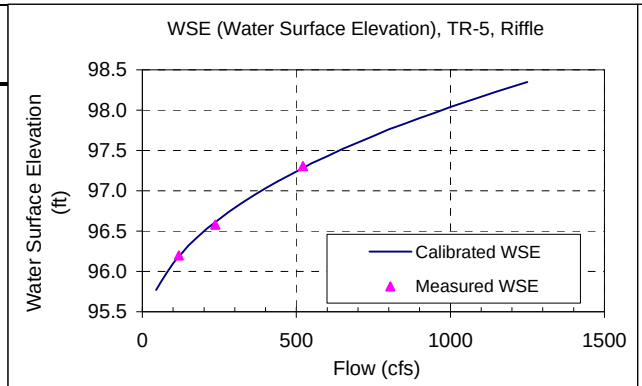


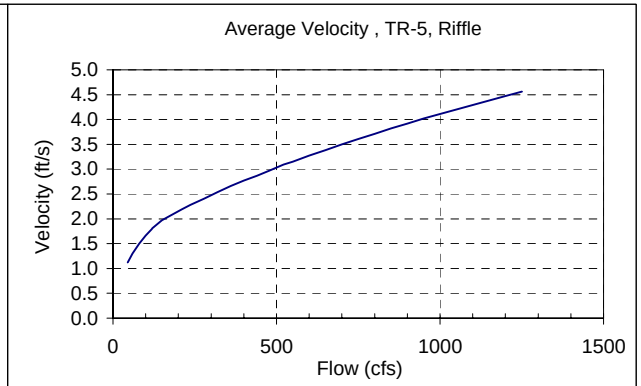


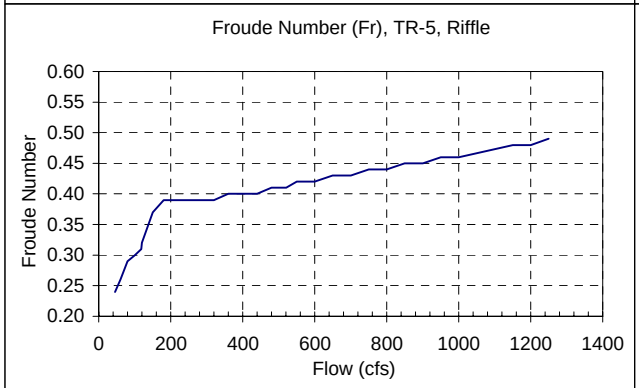
cTR4 - Transect hydraulic parameters

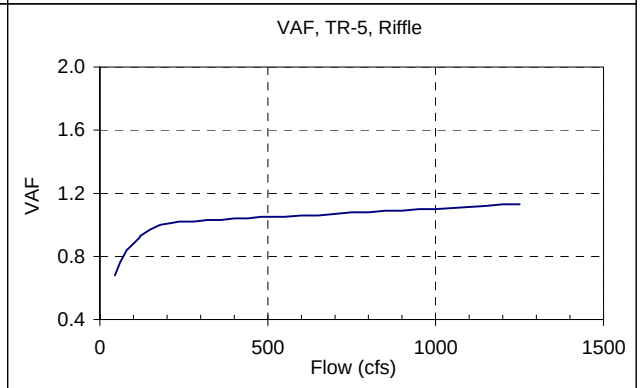
Stream: NF Koktuli River
Site: 08-NFK1-MS1
Habitat: Riffle
Transect: 5
Date: 7/19/2008
Calibration Flow: Mid

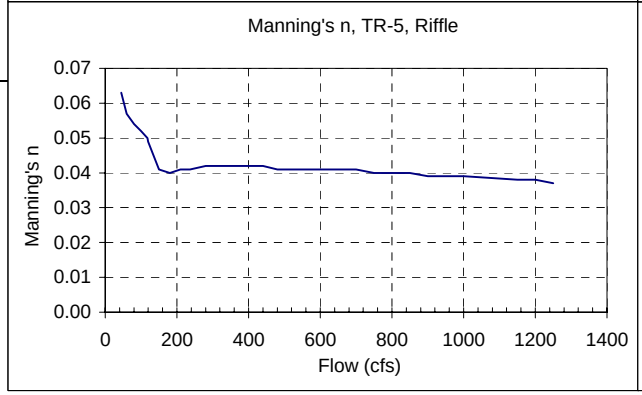
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	95.77	0.24	1.12	0.68	0.063	57.9
60	95.87	0.26	1.30	0.76	0.06	60.1
80	95.99	0.29	1.50	0.84	0.05	62.6
100	96.10	0.30	1.66	0.88	0.05	64.6
118.2	96.19	0.31	1.79	0.92	0.05	66.4
120	96.19	0.32	1.81	0.93	0.05	66.4
150	96.32	0.37	1.97	0.97	0.04	88.5
180	96.43	0.39	2.08	1.00	0.04	96.8
210	96.53	0.39	2.19	1.01	0.04	97.0
236.6	96.61	0.39	2.28	1.02	0.04	97.2
280	96.74	0.39	2.41	1.02	0.04	97.6
320	96.84	0.39	2.54	1.03	0.04	97.9
360	96.94	0.40	2.66	1.03	0.04	98.2
400	97.03	0.40	2.77	1.04	0.04	98.4
440	97.12	0.40	2.87	1.04	0.04	98.7
480	97.20	0.41	2.98	1.05	0.04	98.9
521.1	97.28	0.41	3.09	1.05	0.04	99.1
550	97.34	0.42	3.15	1.05	0.04	99.3
600	97.43	0.42	3.27	1.06	0.04	99.5
650	97.52	0.43	3.38	1.06	0.04	99.8
700	97.60	0.43	3.50	1.07	0.04	100.0
750	97.68	0.44	3.61	1.08	0.04	100.3
800	97.76	0.44	3.71	1.08	0.04	100.5
850	97.83	0.45	3.82	1.09	0.04	100.7
900	97.90	0.45	3.92	1.09	0.04	100.9
950	97.97	0.46	4.02	1.10	0.04	101.1
1000	98.04	0.46	4.11	1.10	0.04	101.3
1150	98.23	0.48	4.38	1.12	0.04	102.4
1200	98.29	0.48	4.47	1.13	0.04	103.2
1250.0	98.35	0.49	4.56	1.13	0.037	104.0

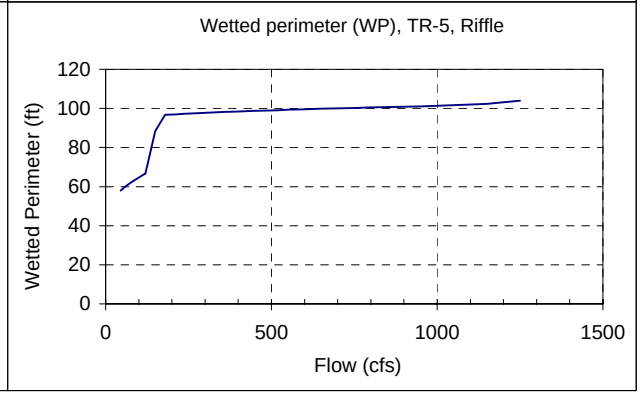








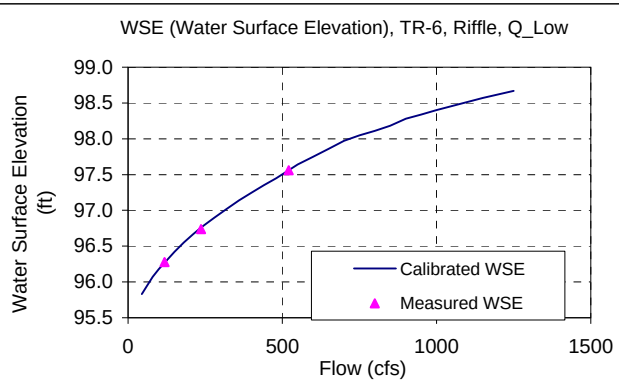


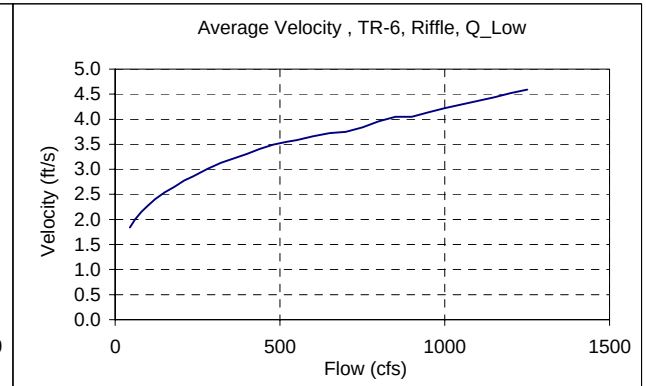


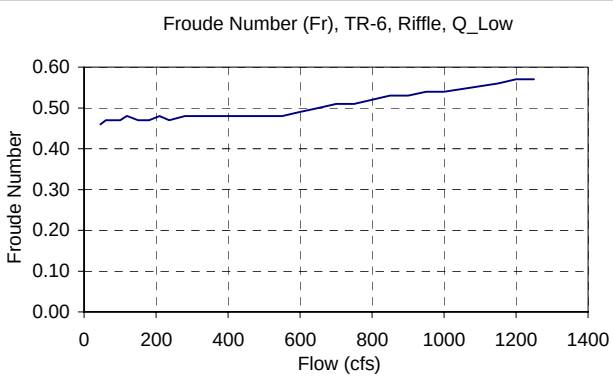
cTR5 - Transect hydraulic parameters

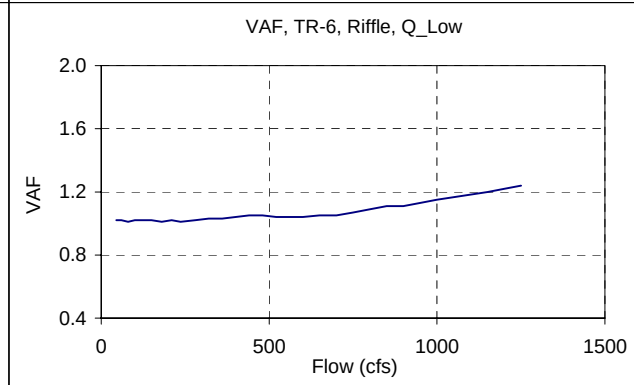
Stream: NF Koktuli River
Site: 08-NFK1-MS1
Habitat: Island Complex
Transect: 6
Date: 7/19/2008
Calibration Flow: Mid

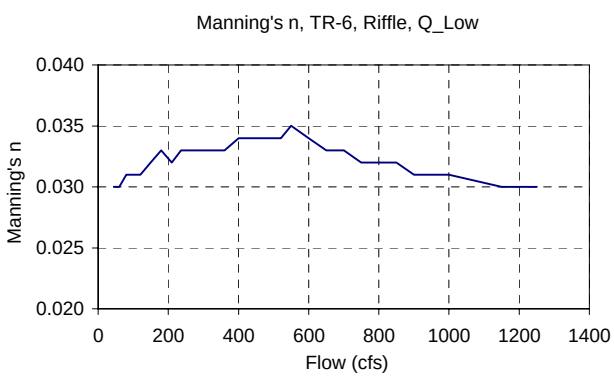
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	95.83	0.46	1.84	1.02	0.030	49.5
60	95.94	0.47	2.00	1.02	0.03	54.2
80	96.07	0.47	2.15	1.01	0.03	59.0
100	96.18	0.47	2.28	1.02	0.03	62.5
118.2	96.27	0.48	2.39	1.02	0.03	65.4
120	96.28	0.48	2.40	1.02	0.03	65.8
150	96.42	0.47	2.54	1.02	0.03	68.2
180	96.55	0.47	2.65	1.01	0.03	70.7
210	96.66	0.48	2.78	1.02	0.03	74.6
236.6	96.76	0.47	2.86	1.01	0.03	76.6
280	96.90	0.48	3.01	1.02	0.03	78.7
320	97.02	0.48	3.13	1.03	0.03	81.8
360	97.14	0.48	3.22	1.03	0.03	84.6
400	97.25	0.48	3.31	1.04	0.03	86.4
440	97.35	0.48	3.41	1.05	0.03	88.0
480	97.45	0.48	3.49	1.05	0.03	90.2
521.1	97.56	0.48	3.55	1.04	0.03	92.1
550	97.64	0.48	3.58	1.04	0.04	95.0
600	97.75	0.49	3.66	1.04	0.03	102.1
650	97.86	0.50	3.72	1.05	0.03	108.9
700	97.97	0.51	3.75	1.05	0.03	115.7
750	98.05	0.51	3.84	1.07	0.03	118.7
800	98.11	0.52	3.96	1.09	0.03	120.2
850	98.18	0.53	4.05	1.11	0.03	122.2
900	98.28	0.53	4.05	1.11	0.03	130.4
950	98.34	0.54	4.14	1.13	0.03	132.3
1000	98.40	0.54	4.22	1.15	0.03	134.2
1150	98.57	0.56	4.44	1.20	0.03	140.0
1200	98.62	0.57	4.52	1.22	0.03	142.0
1250.0	98.67	0.57	4.59	1.24	0.030	143.9

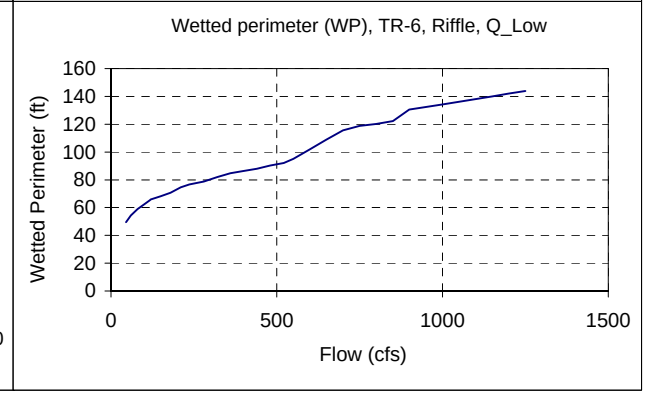




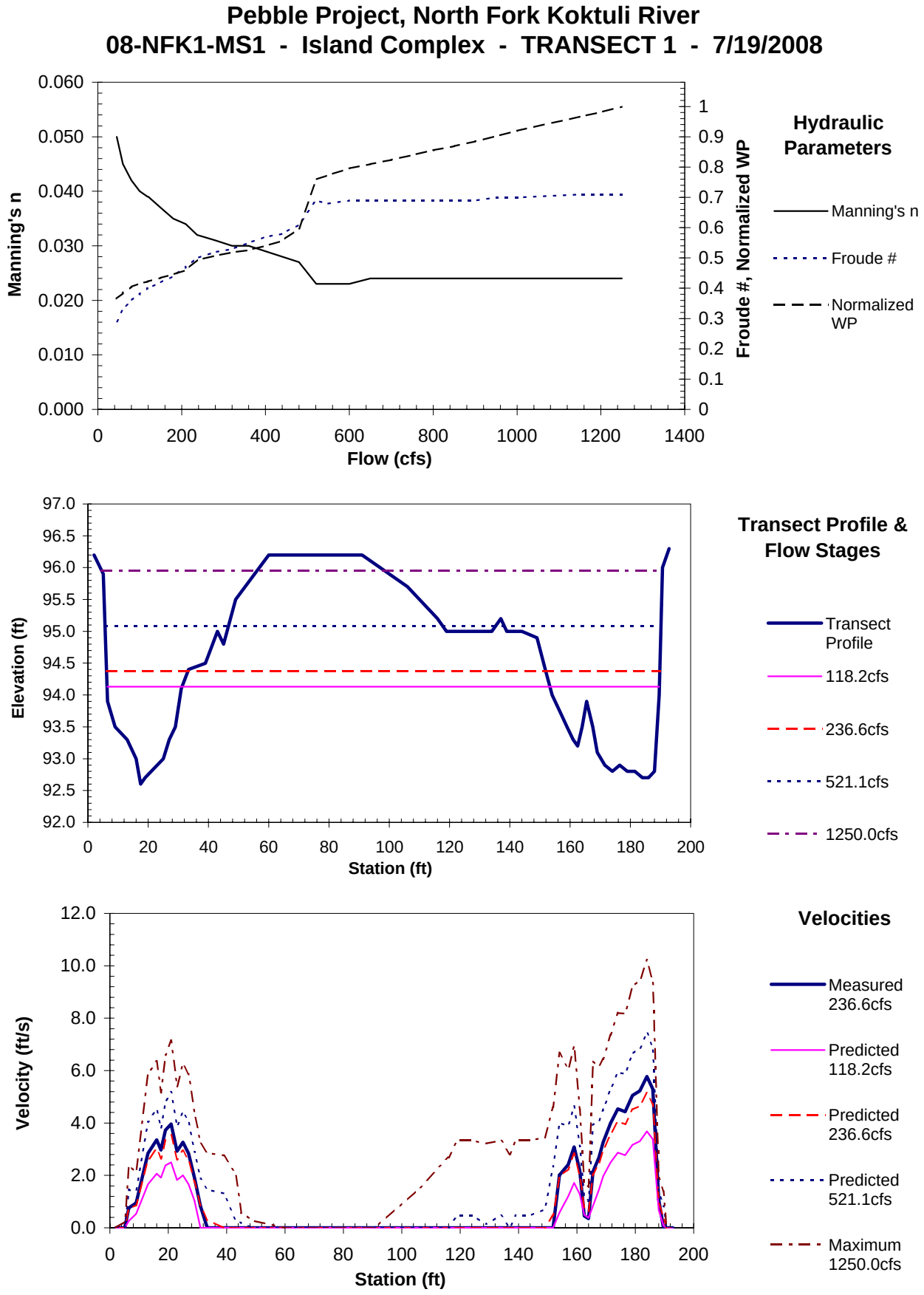




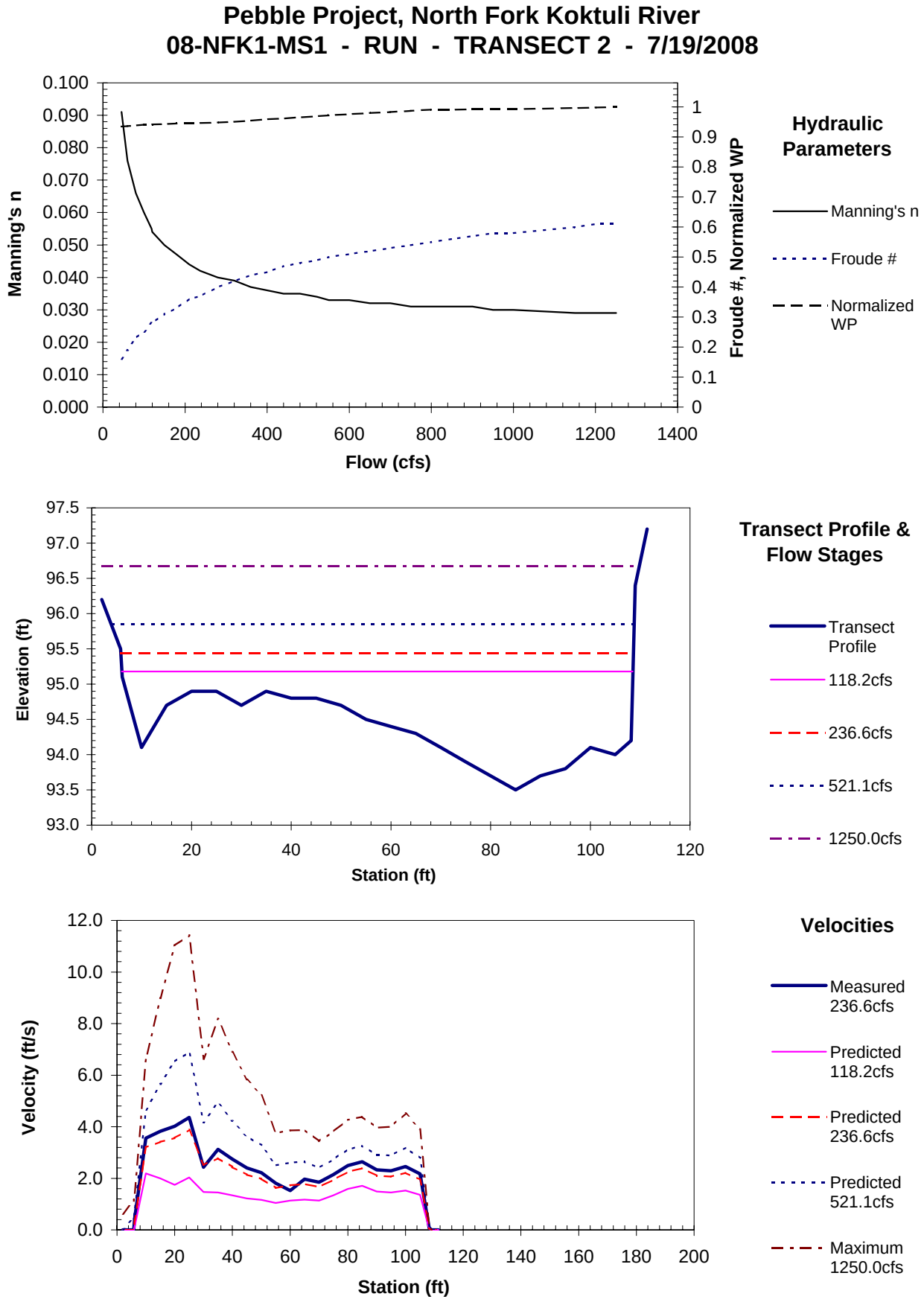




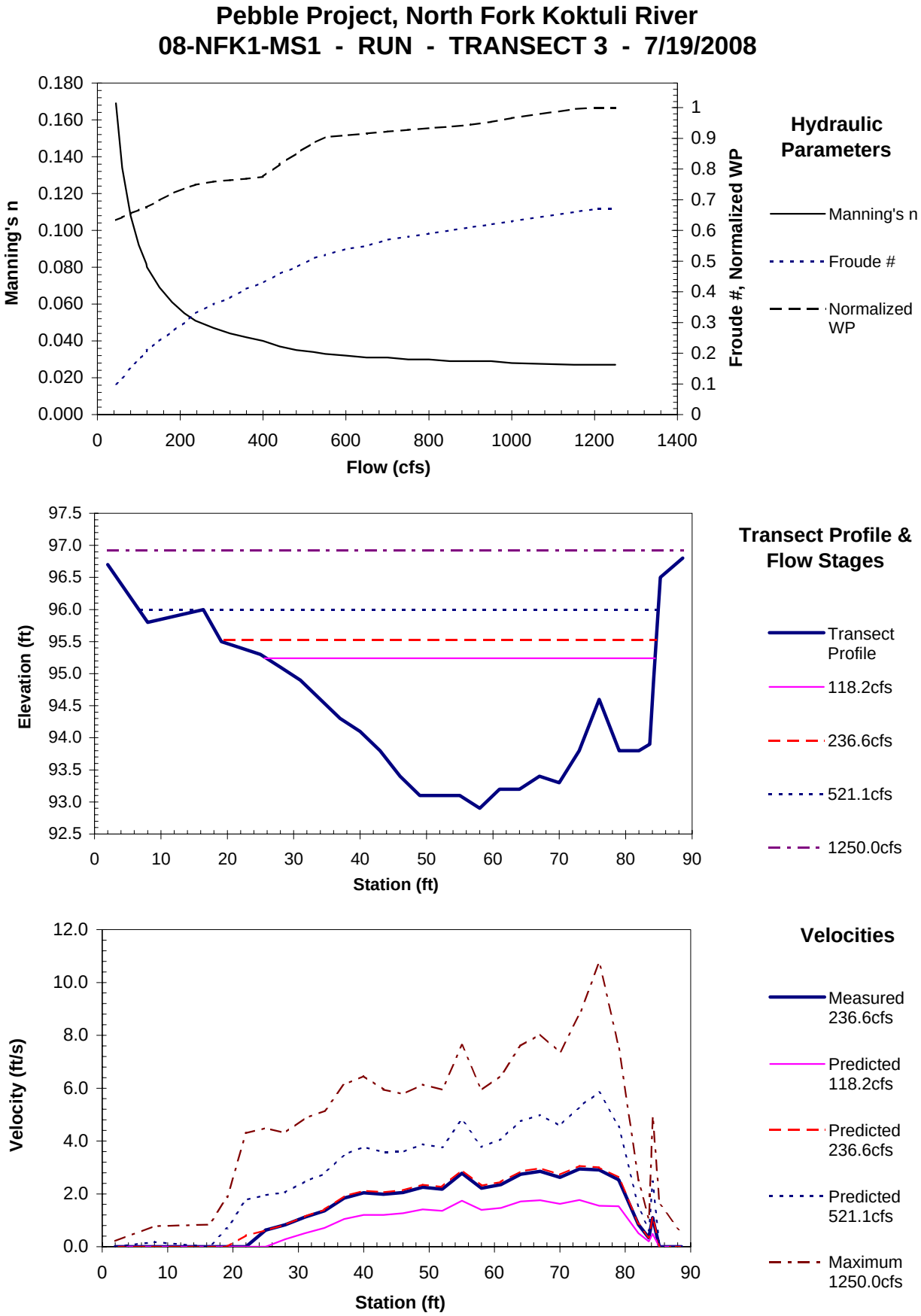
cTR6 - Transect hydraulic parameters



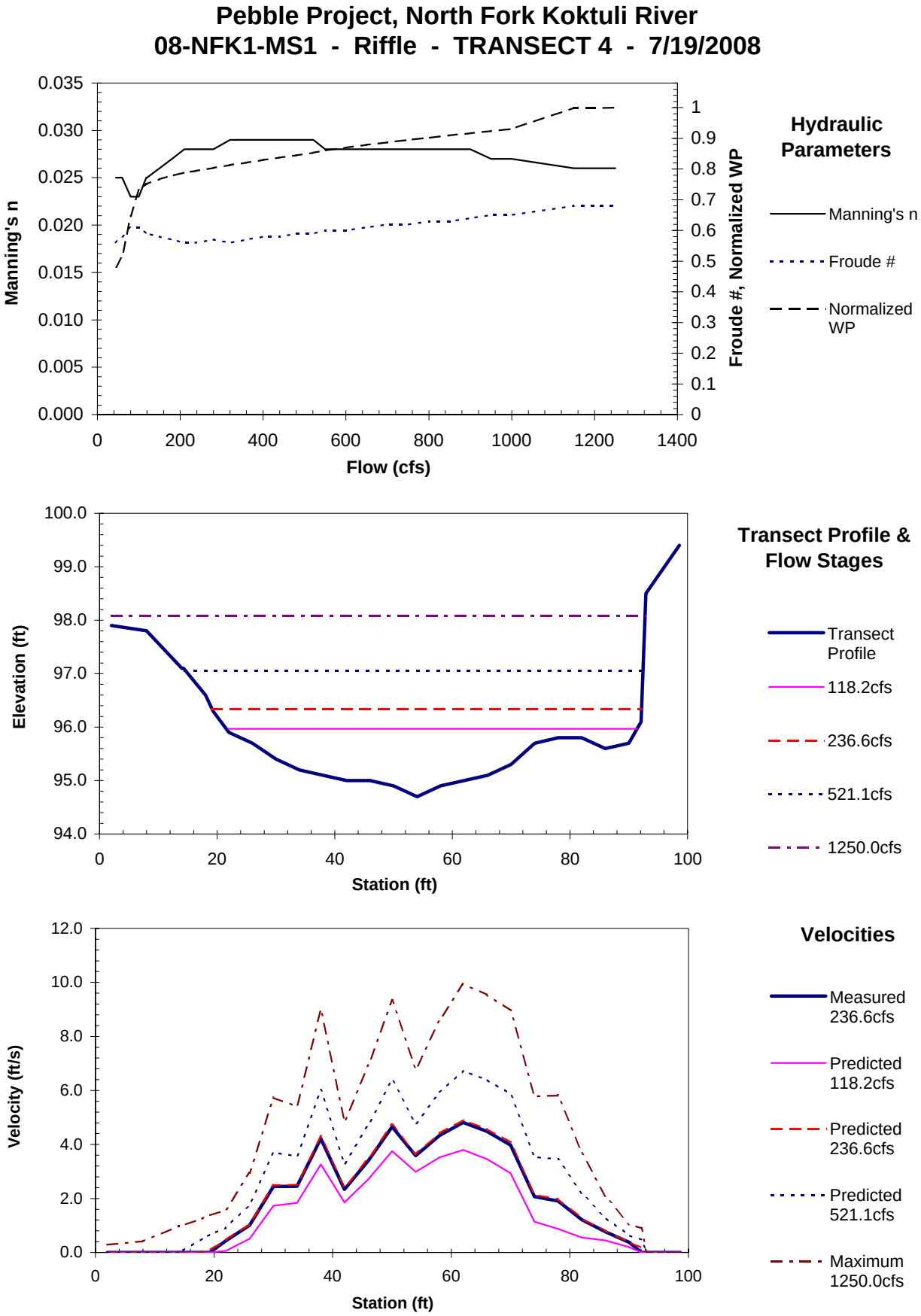
Transect hydraulic summary plots



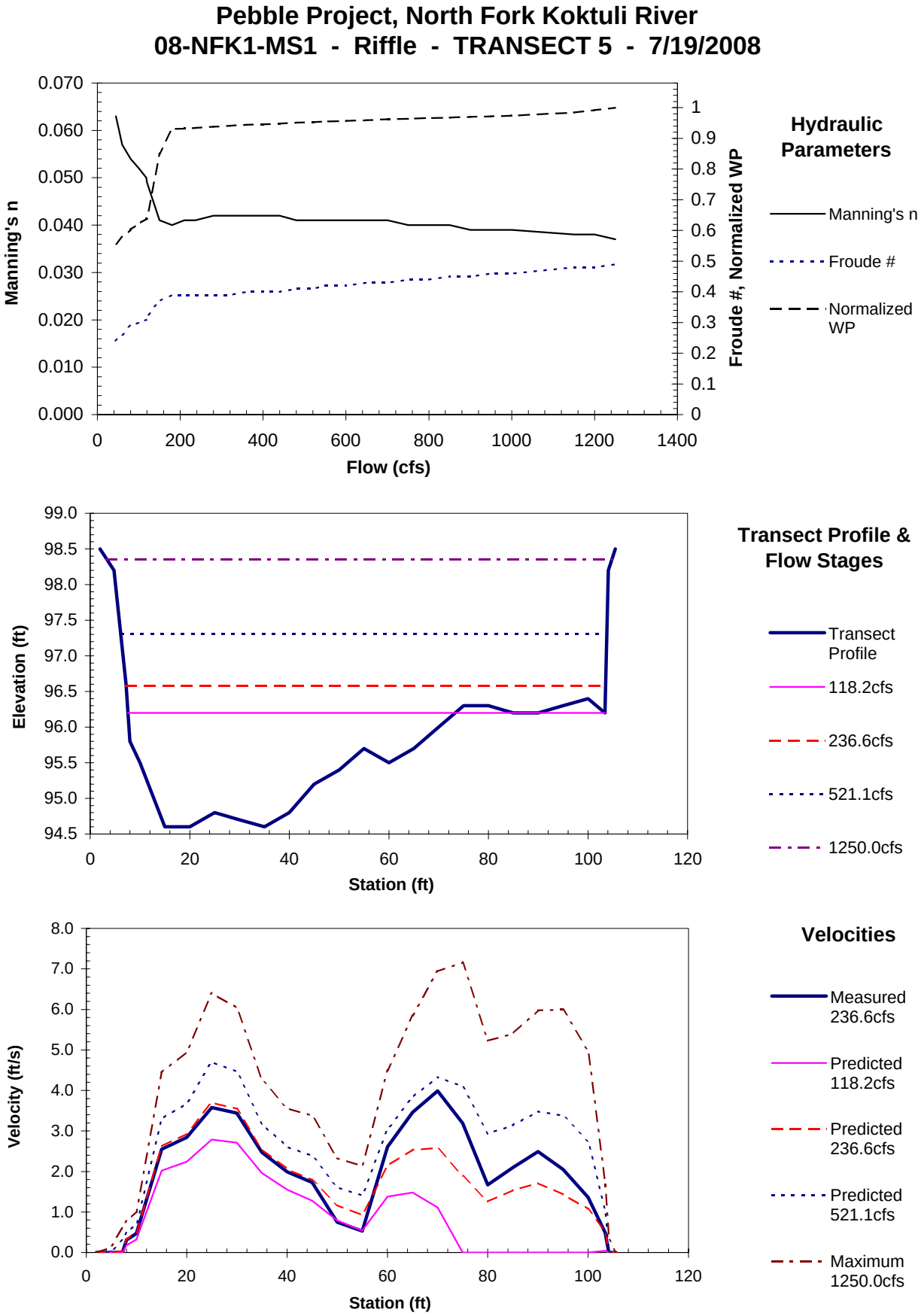
Transect hydraulic summary plots



Transect hydraulic summary plots

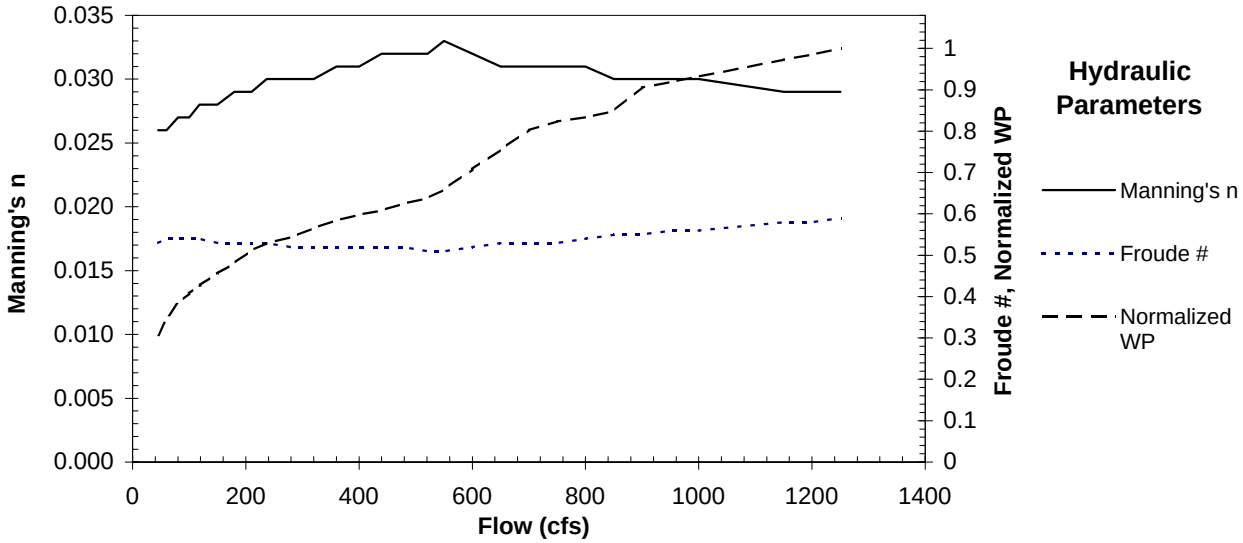


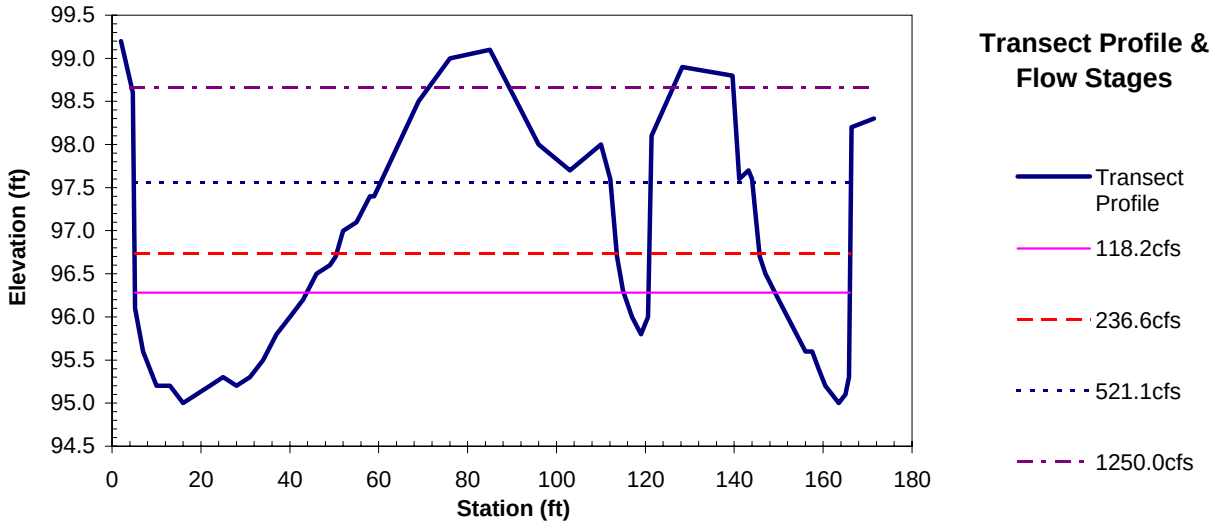
Transect hydraulic summary plots

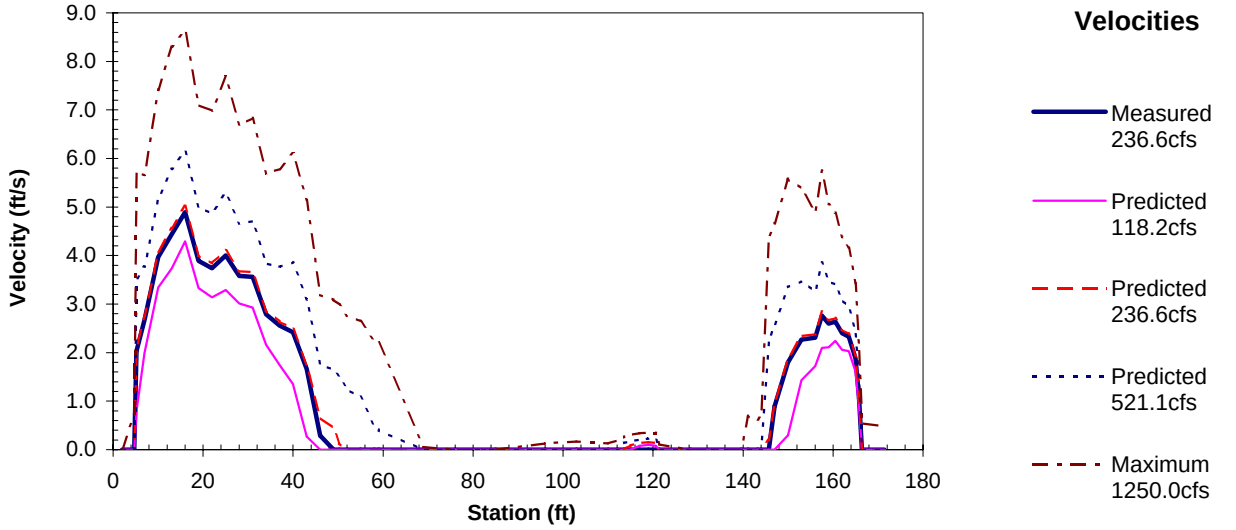


Transect hydraulic summary plots

Pebble Project, North Fork Koktuli River
08-NFK1-MS1 - Island Complex - TRANSECT 6 - 7/19/2008







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-NFK1-MS1  07/19/08
Island                      0708Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.2
QARD 120.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 236.6
QARD 280.0
QARD 320.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 521.1
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1150.0
QARD1200.0
QARD1250.0
XSEC  1000     1000. 1.0     92.94    .00361
      1000  2.096.21  5.195.89  6.593.93  9.093.48 13.093.28 16.092.98
      1000 17.592.58 19.092.68 21.092.78 23.092.88 25.093.03 27.093.28
      1000 29.093.53 31.094.08 33.494.38 39.094.47 43.094.98 45.094.77
      1000 49.095.54 60.096.24 70.096.20 91.096.25106.095.65116.095.25
      1000119.094.98124.094.98129.095.03134.094.98137.095.20139.094.98
      1000144.094.98149.094.93151.894.38154.093.98157.093.68159.093.48
      1000161.093.28162.593.18164.093.48165.593.88167.593.53169.093.13
      1000171.592.88174.092.78176.592.88179.092.83181.592.78184.092.68
      1000186.092.68188.092.78189.694.03190.796.04192.996.30
NS    1000      11.9      11.9      43.6      54.6      54.6      54.6
NS    1000      54.6      43.6      43.6      54.6      56.6      56.6
NS    1000      54.6      54.6      56.6      45.6      41.6 .2   41.6
NS    1000      14.6 .048 14.6 .03  12.6      41.6      14.6      15.6
NS    1000      15.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6      43.6      43.6      45.6      45.6      45.6
```

IFG4 Data Deck (continued)

```
NS    1000      54.6 .12  54.6 .12  32.6      32.6      32.6      35.6
NS    1000      56.6      45.6      54.6      45.6      56.6      56.6
NS    1000      56.6      56.6      11.9      12.6      11.9
WSL   1000     93.71     93.80     93.91     94.00     94.08     94.09
WSL   1000     94.20     94.30     94.39     94.46     94.57     94.66
WSL   1000     94.74     94.82     94.90     94.97     95.04     95.09
WSL   1000     95.17     95.24     95.31     95.38     95.45     95.51
WSL   1000     95.57     95.63     95.69     95.85     95.90     95.95
CAL1  1000     94.38     236.6
VEL1  1000           0.76 0.95 2.84 3.36 2.97 3.73 3.96 2.92 3.27 2.83
VEL1  1000 1.90 0.83 0.00
VEL1  1000                                        0.00 2.01 2.41 3.09
VEL1  1000 2.18 0.45 0.35 2.15 2.68 3.27 3.99 4.54 4.43 5.05 5.22 5.77
VEL1  1000 5.30 1.08 0.00
CAL2  1000     95.08     521.1
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     94.13     118.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS1  07/19/08
RUN                        0708Q                                  TRANSECT 2
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.2
QARD 120.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 236.6
QARD 280.0
QARD 320.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 521.1
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1150.0
QARD1200.0
QARD1250.0
XSEC  1000     1000. 1.0     94.73    .00361
      1000  2.096.21  5.895.53  6.195.09 10.094.14 15.094.74 20.094.94
      1000 25.094.89 30.094.74 35.094.89 40.094.84 45.094.79 50.094.74
      1000 55.094.49 60.094.39 65.094.34 70.094.14 75.093.94 80.093.74
      1000 85.093.54 90.093.69 95.093.84100.094.09105.093.99108.294.24
      1000109.096.45111.497.20
NS    1000      11.9      11.9      56.6      43.6      34.6      34.6
NS    1000      43.6 .025 34.6      45.6      45.6      45.6      45.6
NS    1000      45.6 .048 45.6      54.6      56.6      56.6      56.6
NS    1000      56.6      56.6      45.6      43.6      34.6      45.6
NS    1000      11.9      11.9
WSL   1000     94.98     95.02     95.08     95.14     95.18     95.18
WSL   1000     95.25     95.32     95.37     95.42     95.50     95.57
WSL   1000     95.63     95.69     95.75     95.81     95.86     95.90
WSL   1000     95.97     96.03     96.09     96.15     96.21     96.26
WSL   1000     96.32     96.37     96.43     96.58     96.63     96.68
```

IFG4 Data Deck - TR2

IFG4 Data Deck (continued)

```
CAL1  1000     95.44     236.6
VEL1  1000           0.43 3.56 3.82 4.02 4.36 2.43 3.12 2.74 2.40 2.22
VEL1  1000 1.81 1.52 1.97 1.85 2.14 2.49 2.64 2.33 2.29 2.46 2.17 0.08
VEL1  1000
CAL2  1000     95.85     521.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.18     118.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS1  07/19/08
RUN                        0708Q                                  TRANSECT 3
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.2
QARD 120.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 236.6
QARD 280.0
QARD 320.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 521.1
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1150.0
QARD1200.0
QARD1250.0
XSEC  1000     1000. 1.0     94.73    .00361
      1000  2.096.75  8.095.81 16.496.03 19.195.53 22.095.38 25.095.28
      1000 28.095.08 31.094.88 34.094.63 37.094.28 40.094.08 43.093.78
      1000 46.093.38 49.093.08 52.093.08 55.093.13 58.092.88 61.093.18
      1000 64.093.23 67.093.38 70.093.33 73.093.78 76.094.58 79.093.78
      1000 82.093.78 83.693.93 84.294.93 85.296.54 88.696.85
NS    1000      12.6 .25  12.6 .20  21.6 0.12 32.6      32.6      34.6
NS    1000      34.6      34.6      34.6      34.6      34.6      34.6
NS    1000      56.6      56.6      67.6      65.6      65.6      67.6
NS    1000      67.6      67.6      67.6      76.6      77.9      56.6
NS    1000      65.6      65.6      12.6      11.9      11.9
WSL   1000     95.01     95.06     95.13     95.19     95.24     95.24
WSL   1000     95.32     95.39     95.46     95.51     95.60     95.67
WSL   1000     95.74     95.81     95.88     95.94     96.00     96.05
WSL   1000     96.12     96.19     96.26     96.33     96.39     96.45
WSL   1000     96.52     96.58     96.64     96.81     96.86     96.92
```

IFG4 Data Deck - TR3

IFG4 Data Deck (continued)

```
CAL1  1000     95.53     236.6
VEL1  1000                0.00 0.00 0.63 0.83 1.12 1.36 1.84 2.04 1.99
VEL1  1000 2.05 2.25 2.18 2.78 2.21 2.35 2.74 2.85 2.62 2.94 2.91 2.53
VEL1  1000 0.84 0.34 1.09
CAL2  1000     96.00     521.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.24     118.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR3

IFG4 Data Deck

```
     Pebble     08-NFK1-MS1  07/19/08
RIFFLE                     0708Q                                    TRANSECT 4
IOC       11011001000010001010000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.2
QARD 120.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 236.6
QARD 280.0
QARD 320.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 521.1
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1150.0
QARD1200.0
QARD1250.0
XSEC  1000     1000. 1.0     94.77    .00361
      1000  2.097.91  8.097.78 14.097.05 14.397.05 18.096.55 19.396.34
      1000 22.095.94 26.095.74 30.095.39 34.095.24 38.095.14 42.095.04
      1000 46.094.99 50.094.94 54.094.69 58.094.89 62.095.04 66.095.14
      1000 70.095.29 74.095.69 78.095.79 82.095.79 86.095.64 90.095.69
      1000 92.196.14 92.998.50 98.699.38
NS    1000      22.9      21.6      42.6      42.6      52.6      52.6
NS    1000      52.6      54.6      56.6      46.6      46.6      56.6
NS    1000      56.6      65.6      65.6      65.6      65.6      54.6
NS    1000      54.6      34.6      45.6      43.6      32.6      52.6
NS    1000      32.6      11.9      11.9
WSL   1000     95.55     95.65     95.77     95.87     95.96     95.96
WSL   1000     96.08     96.19     96.29     96.37     96.49     96.60
WSL   1000     96.69     96.78     96.87     96.95     97.03     97.08
WSL   1000     97.17     97.26     97.34     97.42     97.49     97.57
WSL   1000     97.64     97.70     97.77     97.96     98.02     98.08
```

IFG4 Data Deck (continued)

```
CAL1  1000     96.34     236.6
VEL1  1000                          0.00 0.44 1.01 2.44 2.45 4.22 2.34
VEL1  1000 3.40 4.65 3.58 4.33 4.81 4.48 3.98 2.07 1.91 1.21 0.77 0.37
VEL1  1000 0.00
CAL2  1000     97.05     521.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.97     118.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS1  07/19/08
RIFFLE                     0708Q                                TRANSECT 5
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.2
QARD 120.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 236.6
QARD 280.0
QARD 320.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 521.1
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1150.0
QARD1200.0
QARD1250.0
XSEC  1000     1000. 1.0     94.95    .00361
      1000  2.098.48  4.898.19  7.296.58  8.095.78 10.095.48 15.094.63
      1000 20.094.63 25.094.78 30.094.68 35.094.58 40.094.78 45.095.18
      1000 50.095.38 55.095.73 60.095.53 65.095.73 70.095.98 75.096.28
      1000 80.096.33 85.096.23 90.096.23 95.096.33100.096.38103.496.18
      1000104.198.16105.598.51
NS    1000      11.9      11.9      22.9      23.6      22.9      45.6
NS    1000      56.6      45.6      56.6      54.6      65.6      65.6
NS    1000 .09  54.6 .09  43.6 .045 43.6 .033 45.6 .026 43.6 .023 43.6
NS    1000 .031 43.6 .031 43.6 .028 43.6 .027 43.6 .032 34.6      32.6
NS    1000      11.9      11.9
WSL   1000     95.77     95.87     95.99     96.10     96.19     96.19
WSL   1000     96.32     96.43     96.53     96.61     96.74     96.84
WSL   1000     96.94     97.03     97.12     97.20     97.28     97.34
WSL   1000     97.43     97.52     97.60     97.68     97.76     97.83
WSL   1000     97.90     97.97     98.04     98.23     98.29     98.35
```

IFG4 Data Deck - TR5

IFG4 Data Deck (continued)

```
CAL1  1000     96.58     236.6
VEL1  1000           0.00 0.31 0.47 2.55 2.84 3.58 3.44 2.47 1.99 1.73
VEL1  1000 0.75 0.53 2.61 3.46 3.99 3.19 1.67 2.10 2.49 2.05 1.36 0.49
VEL1  1000
CAL2  1000     97.31     521.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.20     118.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS1  07/19/08
Island                      0708Q                                    TRANSECT 6
IOC       11011001000010001010000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.2
QARD 120.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 236.6
QARD 280.0
QARD 320.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 521.1
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1150.0
QARD1200.0
QARD1250.0
XSEC  1000     1000. 1.0     95.11    .00361
      1000  2.099.18  4.798.55  5.296.14  7.095.64 10.095.24 13.095.24
      1000 16.094.99 19.095.14 22.095.24 25.095.34 28.095.24 31.095.34
      1000 34.095.54 37.095.79 40.095.99 43.096.24 46.096.54 49.096.64
      1000 50.396.74 52.096.96 55.097.06 58.097.41 59.097.45 69.098.48
      1000 76.098.99 85.099.12 96.098.00103.097.67110.098.00112.197.56
      1000113.696.74115.096.34117.095.99119.095.84120.695.99121.498.14
      1000128.398.88139.698.79141.197.56143.297.73144.097.56145.796.74
      1000147.096.54150.096.24153.095.89156.095.64157.595.59159.095.39
      1000160.595.19162.095.14163.595.04165.095.14165.895.34166.498.20
      1000171.498.27
NS    1000      11.9      11.9      45.6      54.6      54.6      54.6
NS    1000      56.6      54.6      54.6      54.6      54.6      54.6
NS    1000      54.6      54.6      54.6      54.6 .05  64.6      45.6
NS    1000      45.6      45.6      54.6      54.6 .05  54.6 .55  41.6
NS    1000 0.55 43.6      34.6      32.6      32.6      32.6      22.9
```

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      11.9
NS    1000      11.9 0.15 11.9      11.9      12.6      12.6 .034 22.9
NS    1000      23.6      34.6      34.6      34.6      45.6      45.6
NS    1000      45.6      45.6      45.6      45.6      45.6      11.9
NS    1000      11.9
WSL   1000     95.83     95.94     96.07     96.18     96.27     96.28
WSL   1000     96.42     96.55     96.66     96.76     96.90     97.02
WSL   1000     97.14     97.25     97.35     97.45     97.56     97.64
WSL   1000     97.75     97.86     97.97     98.05     98.11     98.18
WSL   1000     98.28     98.34     98.40     98.57     98.62     98.67
CAL1  1000     96.74     236.6
VEL1  1000           2.03 2.67 3.97 4.44 4.89 3.89 3.74 4.00 3.58 3.56
VEL1  1000 2.79 2.56 2.42 1.66 0.29 0.00 0.00
VEL1  1000                              0.00 0.00 0.00 0.00 0.00
VEL1  1000                         0.00 0.89 1.80 2.27 2.31 2.76 2.60
VEL1  1000 2.64 2.40 2.33 1.88 1.06
CAL2  1000     97.56     521.1
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.28     118.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR6

Stream: North Fork Koktuli River

Reach: NFK-A

Site: 08-NFK1-MS2

TR1:	08-NFK1-MS2-TR1	**Habitat Type:**	Island Complex	**River Kilometer:**	12.87
TR2:	08-NFK1-MS2-TR2	**Habitat Type:**	Island Complex	**River Kilometer:**	12.89
TR3:	08-NFK1-MS2-TR3	**Habitat Type:**	Island Complex	**River Kilometer:**	12.96
TR4:	08-NFK1-MS2-TR4	**Habitat Type:**	Island Complex	**River Kilometer:**	13.06
TR5:	08-NFK1-MS2-TR5	**Habitat Type:**	Island Complex	**River Kilometer:**	13.08

Stream: NF Koktuli River
Reach: A
Site: 08-NFK1-MS2

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3	BM4
6/22/2008	100.00	103.69	106.20	
7/20/2008	100.00	103.69	106.20	
8/20/2008	100.00	103.70	106.19	103.95

(a) Elevations of control pins (BMs) are taken from the first half of each level loop survey
(b) Relative elevation changes of the control pins were within 0.01ft.
(c) Elevation control pins were stable for their small relative elevation changes over the survey period
(d) The level loops of all three surveys closed with errors no more than 0.01ft

Measured WSE:

This is an island complex site with each transect having a right channel and a left channel.
There are multiple WSEs measured across each channel for each flow, and the average of the measured WSEs is used as transect representative WSE for modeling.

	Measured WSE (ft)									
	TR-1		TR-2		TR-3		TR-4		TR-5	
Date	LC	RC	LC	RC	LC	RC	LC	RC	LC	RC
6/22/2008	99.38	98.92	99.72	99.04	101.00	100.14	101.94	102.50	102.50	102.91
7/20/2008	98.79	98.65	99.09	98.75	100.54	99.83	101.40	102.18	101.89	102.60
8/20/2008	98.41	98.51	98.71	98.61	100.26	99.63	101.06	101.95	101.53	102.40

Left WSEs are used for hydraulic calibration modeling because left channels carry more water.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Flow Discharge (cfs)					Ave Q (cfs)
	TR-1	TR-2	TR-3	TR-4	TR-5	
6/22/2008		436.4	472.0	438.3		**448.9**
7/20/2008	205.0	207.9	227.9	204.2	226.8	**214.4**
8/20/2008	107.5	118.4	113.2	121.6	132.8	**118.7**

Average of measured flows is used as the site representative flow for hydraulic modeling.
The flows shown above are the total flow of each transect that includes right and left channels.

Longitudinal WSE Slope:

Slopes are calculated using the measured WSEs and longitudinal distances. Distances between transects are the actual lengths measured using a tape measure.

TR	Distances between Transects (ft)				
	TR-1	TR-2	TR-3	TR-4	TR-5
LB	0.00	76	202	323	90
RB	0.00	84	199	341	106.5
Ave	0.00	80	200.5	332	98.25
Station	0.00	80	281	613	711

Date	Average Slope (%) from TR-1				
	TR-1	TR-2	TR-3	TR-4	TR-5
6/22/2008	-	0.425%	0.578%	0.419%	0.439%
7/20/2008	-	0.375%	0.627%	0.426%	0.437%
8/20/2008	-	0.381%	0.660%	0.433%	0.440%

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.
The TR-5 slope S=0.439% of 6/22/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

	TR-1	TR-2	TR-3	TR-4	TR-5
6/22/2008		97.67	99.40	99.14	
7/20/2008	96.99	97.59	99.14	99.20	100.14
8/20/2008	97.06	97.36	99.21	99.26	100.03
Invert	97.06	97.67	99.40	99.26	100.14
SZF	97.06	97.67	99.40	99.40	100.14

(1) Transect invert is the lowest elevation of the cross-section

(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process. SZF of the upstream transect must be no less than that of its downstream transect.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

TR1:
IFG4 method resulted in Manning's n values increasing with increasing flows when Q <= Qhigh
MANSQ method with β=-0.00 resulted in more reasonable hydraulics.

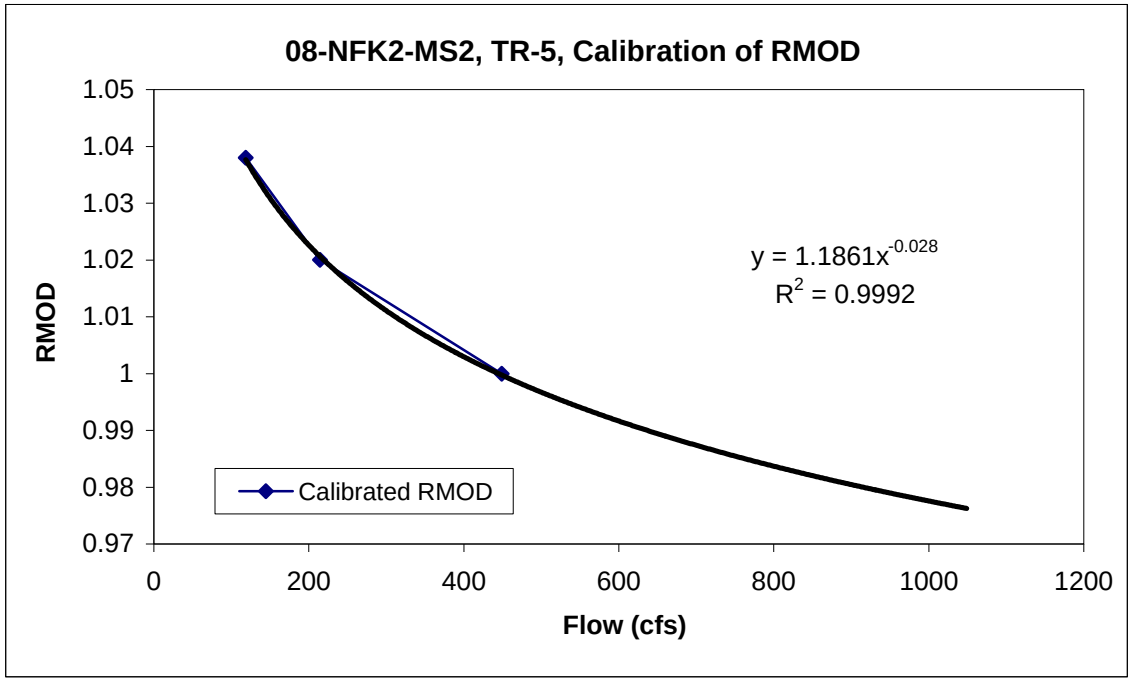
TR2 & TR3:
IFG4 method resulted in increasing Manning's n values with increasing flows.
MANSQ method with positive β value would result in a more reasonable trend for Manning's n values, but the positive β would also result in Froude numbers decreasing with increasing flows.
WSP method was also employed to calibrate WSE using TR-1 WSE as the boundary condition.
The results showed Manning's n values increased with increasing flows.
Since all three methods resulted in the same conclusion that Manning's n values increased with increasing flows, it was decided IFG4 method results to be used for the hydraulic analysis for TR-2 and TR-3 due to the relatively easier application of the method.

TR4:
IFG4, MANSQ, and WSP were all used to compare the simulation results, and IFG4 produced the most reasonable trends of Fr and Manning's n values.

TR5:
IFG4 method resulted in increasing Manning's n values with increasing flows.
MANSQ method with positive β value would result in more reasonable trend for Manning's n values, but the positive β value would also result in Froude numbers decreasing with increasing flows.
WSP method was used to calibrate WSE using TR-4 WSE as the boundary condition. The results showed Manning's n values decreased with increasing flows.
The following table and graph show the relationship between the flows and the calibrated roughness modifiers (RMOD)

calibration notes

Q(cfs)	RMOD
45	1.066
60	1.058
80	1.049
100	1.043
118.7	**1.038**
140	1.033
160	1.029
180	1.026
200	1.023
214.4	**1.020**
230	1.019
260	1.015
300	1.011
340	1.007
380	1.004
420	1.002
448.9	**1.000**
480	0.998
520	0.996
560	0.994
600	0.992
650	0.989
700	0.987
750	0.985
800	0.984
850	0.982
900	0.980
950	0.979
1000	0.978
1100	0.975

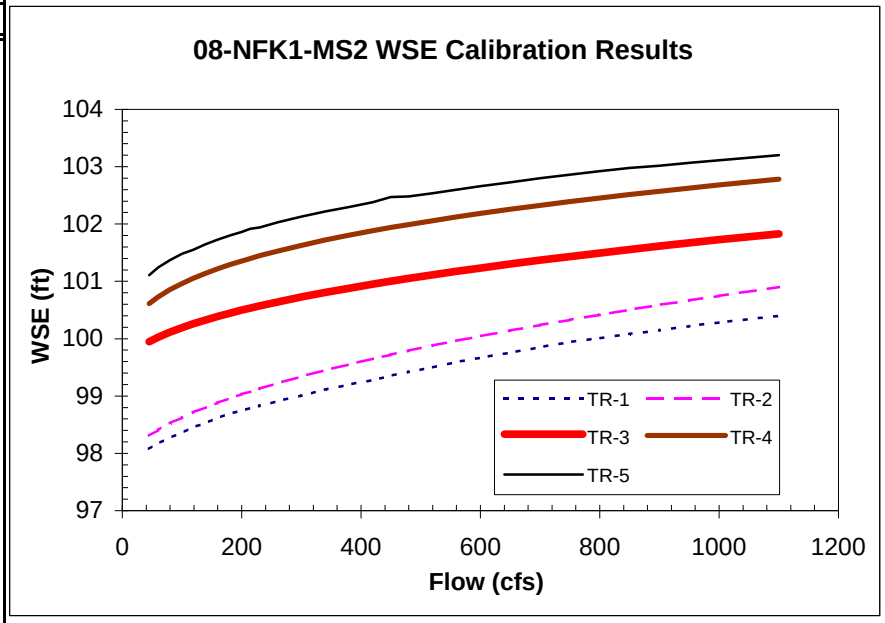


Note: Bolded numbers are the calibrated RMODs and the flows

calibration notes

TR-1 to TR-5: The following table summarizes the WSE calibration results for the five transects.

Method	MANSQ	IFG4	IFG4	IFG4	WSP
b/SZF	β=-0.00	97.67	99.40	99.40	
Sim Q(cfs)	TR-1	TR-2	TR-3	TR-4	TR-5
45	98.08	98.31	99.95	100.61	101.11
60	98.17	98.41	100.03	100.73	101.24
80	98.27	98.52	100.12	100.86	101.37
100	98.36	98.63	100.19	100.97	101.48
118.7	98.45	98.71	100.26	101.05	101.55
140	98.53	98.80	100.33	101.14	101.65
160	98.62	98.88	100.39	101.22	101.73
180	98.69	98.96	100.45	101.29	101.80
200	98.75	99.03	100.50	101.36	101.86
214.4	98.79	99.08	100.53	101.40	101.92
230	98.83	99.13	100.57	101.45	101.94
260	98.91	99.22	100.64	101.53	102.03
300	99.01	99.34	100.73	101.63	102.13
340	99.11	99.45	100.81	101.72	102.22
380	99.20	99.55	100.88	101.80	102.30
420	99.28	99.65	100.95	101.88	102.38
449.4	99.35	99.72	101.00	101.94	102.47
480	99.42	99.79	101.05	101.99	102.48
520	99.50	99.88	101.11	102.06	102.54
560	99.59	99.96	101.17	102.12	102.60
600	99.67	100.04	101.23	102.18	102.66
650	99.76	100.14	101.30	102.26	102.73
700	99.85	100.24	101.37	102.33	102.80
750	99.94	100.33	101.43	102.39	102.86
800	100.01	100.42	101.50	102.45	102.92
850	100.08	100.50	101.56	102.51	102.98
900	100.15	100.59	101.61	102.57	103.02
950	100.22	100.67	101.67	102.63	103.07
1000	100.28	100.75	101.73	102.68	103.11
1100	100.40	100.90	101.83	102.78	103.20



calibration notes

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)					Calibrated WSE(ft)				
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-1	TR-2	TR-3	TR-4	TR-5
6/22/2008	448.9	99.38	99.72	101.00	101.94	102.50	99.35	99.72	101.00	101.94	102.47
7/20/2008	214.4	98.79	99.09	100.54	101.40	101.89	98.79	99.08	100.53	101.40	101.92
8/20/2008	118.7	98.41	98.71	100.26	101.06	101.53	98.45	98.71	100.26	101.05	101.55

Survey Date	Q (cfs)	WSE calibration error (ft)					WSE Calibration Method				
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-1	TR-2	TR-3	TR-4	TR-5
6/22/2008	448.9	-0.03	0.00	0.01	0.00	-0.03	MANSQ	IFG4	IFG4	IFG4	IFG4
7/20/2008	214.4	0.01	-0.01	-0.01	0.01	0.03	MANSQ	IFG4	IFG4	IFG4	IFG4
8/20/2008	118.7	0.05	0.00	0.00	-0.01	0.02	MANSQ	IFG4	IFG4	IFG4	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum calibration error 0.05ft is within the acceptable range

(3) Velocity calibration

This site has five transects and each transect has 2 or 3 velocity/discharge measurements.
TR-1 and TR-5 each has two discharge measurements and TR-2, TR-3, and TR-4 each has three discharge measurements.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model.
Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)				
		TR-1	TR-2	TR-3	TR-4	TR-5
6/22/2008	448.9		Y	Y	Y	
7/20/2008	214.4	Y	Y	Y	Y	Y
8/20/2008	118.7	Y	Y	Y	Y	Y

calibration notes

(4) Hydraulic Calibration Results:

Hydraulic simulation results are summarized in the tables and figures that follow.

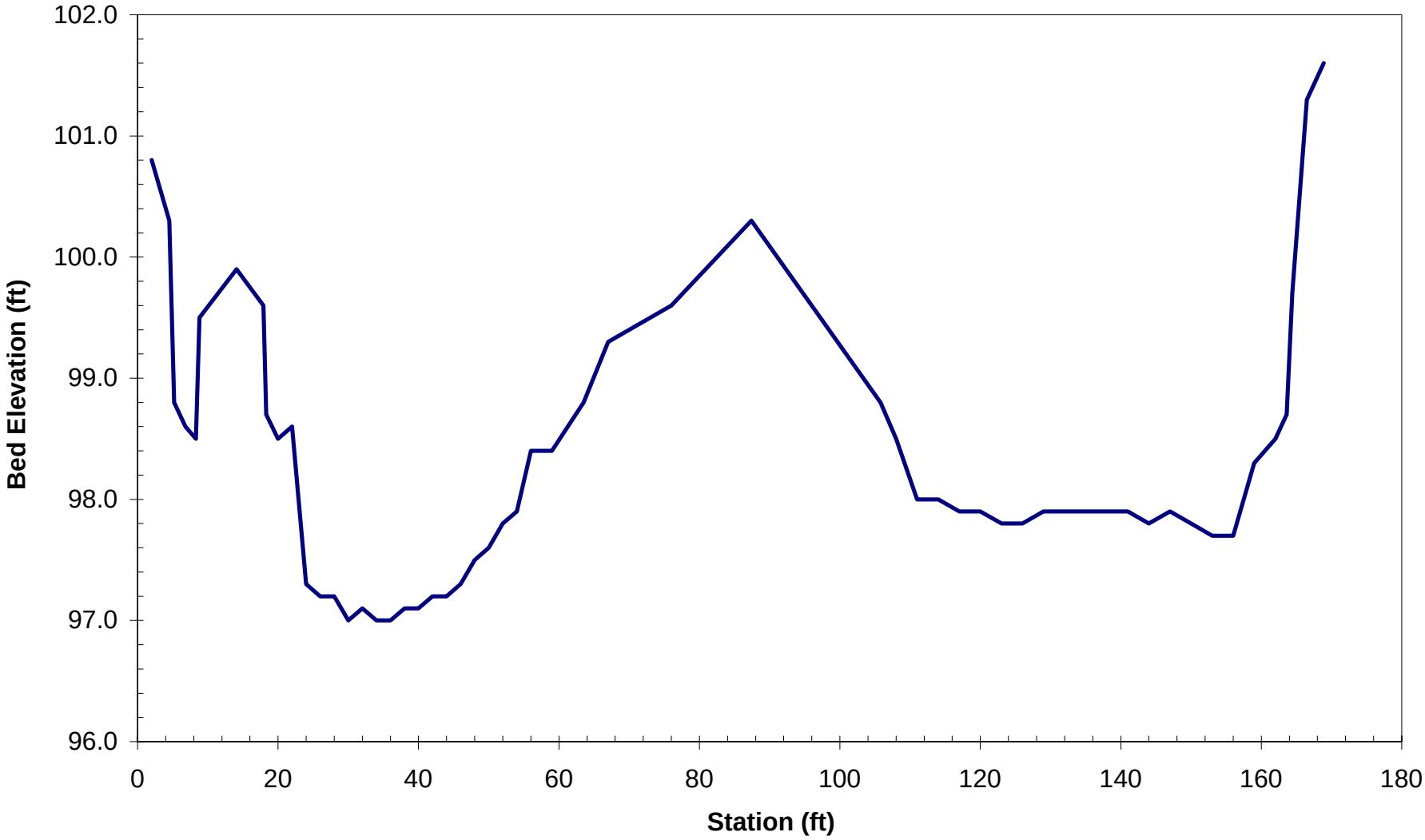
The simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable range. V_ave (Average velocity) and WP (wetted perimeter) both increase with increasing flows, but Manning's n value, VAF, and Froude number of all five transects each show the opposite trends for at least a part of the simulation flow range.

Backwater program WSP was also employed for hydraulic calibration but produced the similar results for Froude Numbers and n values as IFG4 and MANSQ did. Hydraulic parameter, such as Froude Number, is generally defined for a single channel and may not be applicable to a complex bathymetry with islands dividing the cross-section into multiple channels.

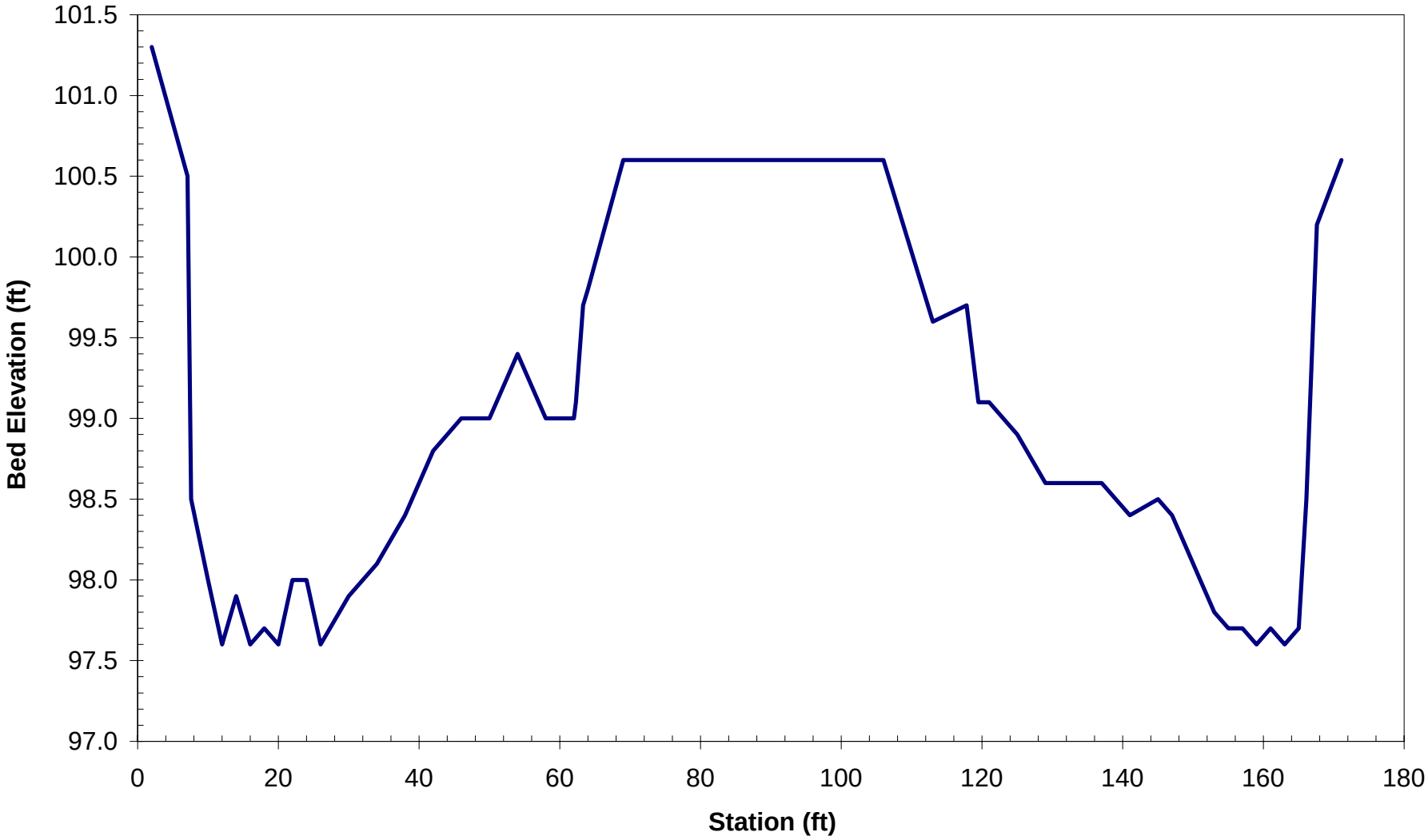
The calibrated WSEs of the all five transects are summarized in the comparison of the calibrated and measured WSE figure, and they appear parallel to each other within the entire range of simulation flows, as expected for the transects separated by short distance without any hydraulic discontinuity, such as falls or structure, between any two transects.

calibration notes

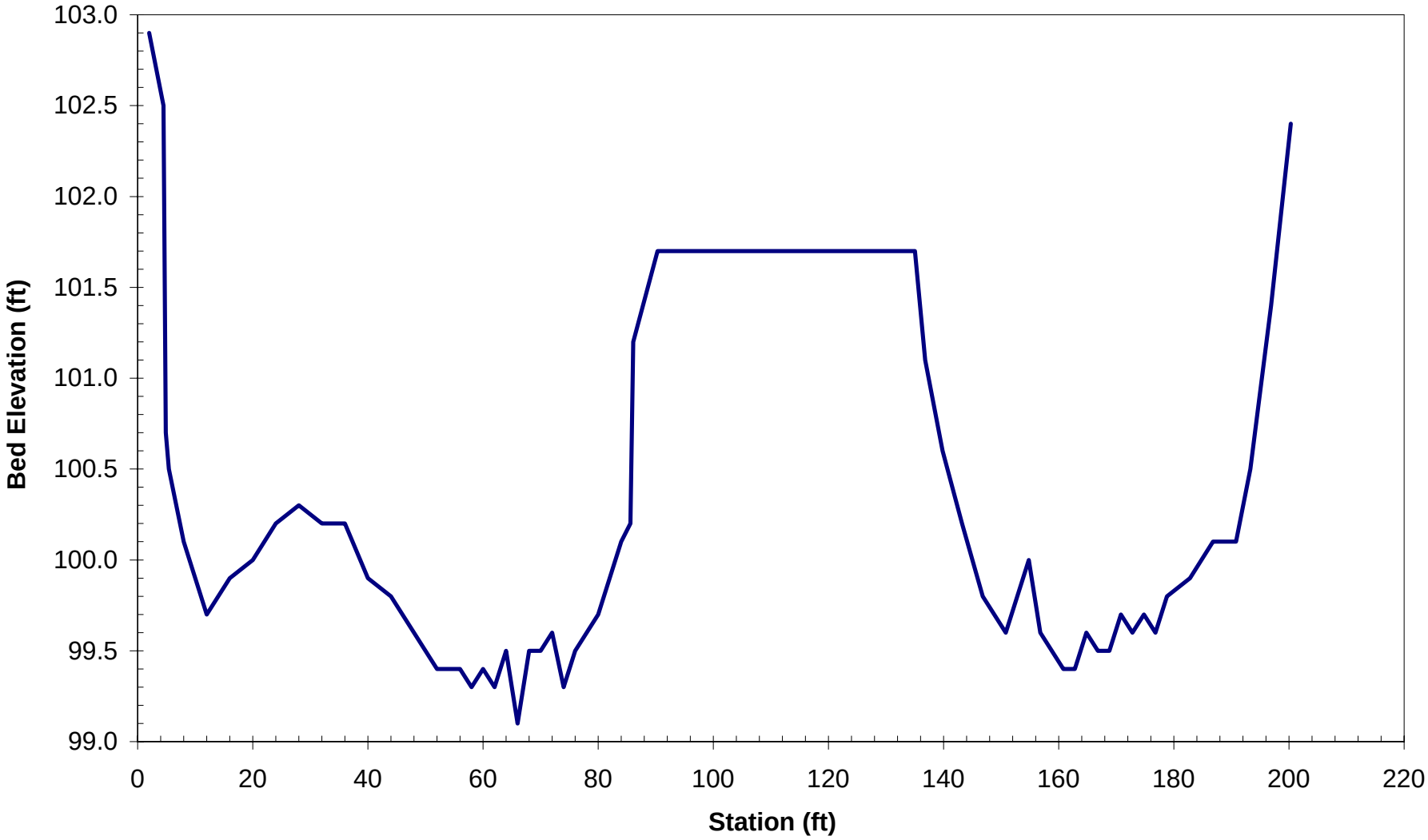
North Fork Koktuli River, Reach A, 08-NFK1-MS2, TR1
Measured Transect Profile



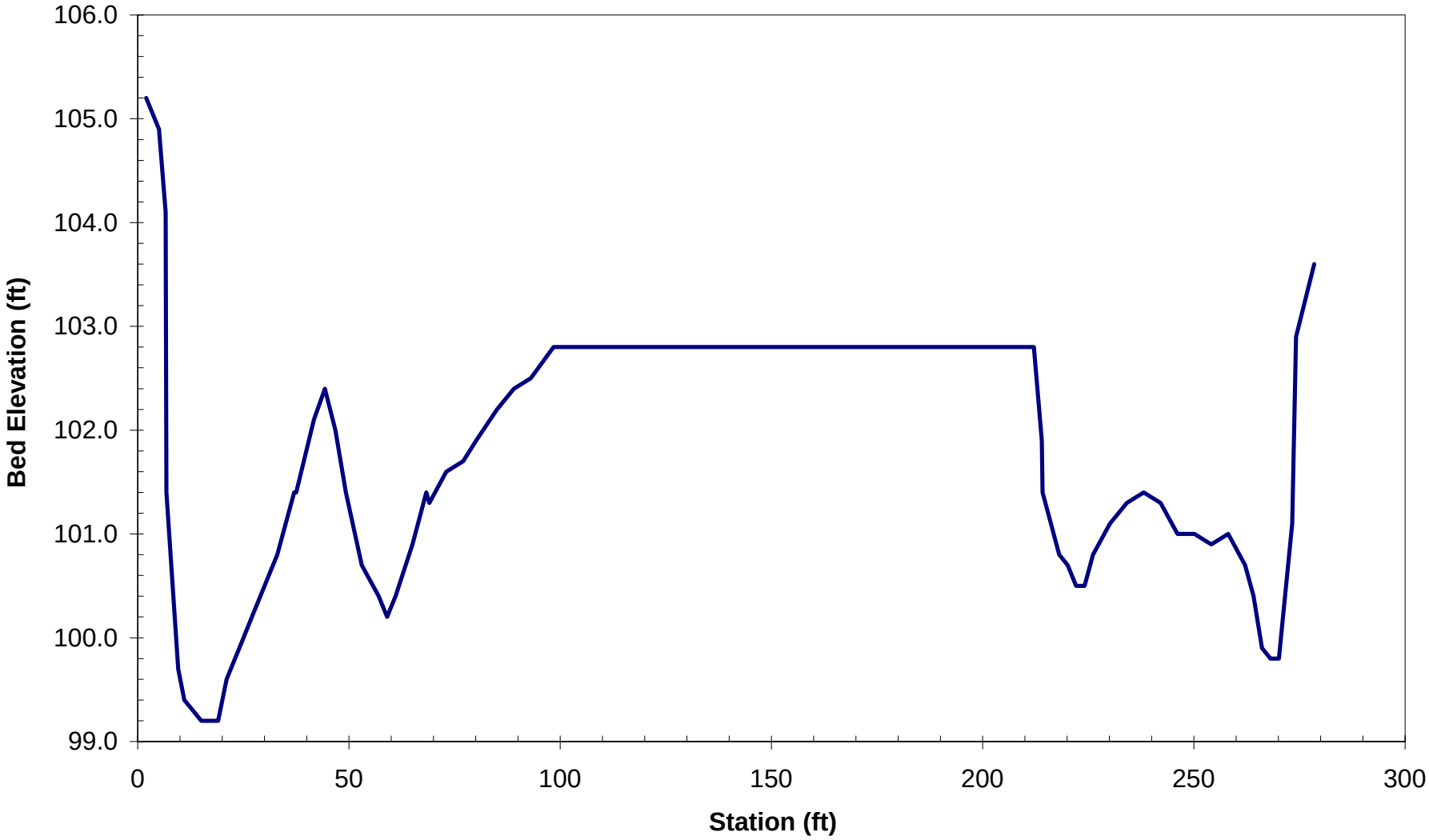
North Fork Koktuli River, Reach A, 08-NFK1-MS2, TR2
Measured Transect Profile



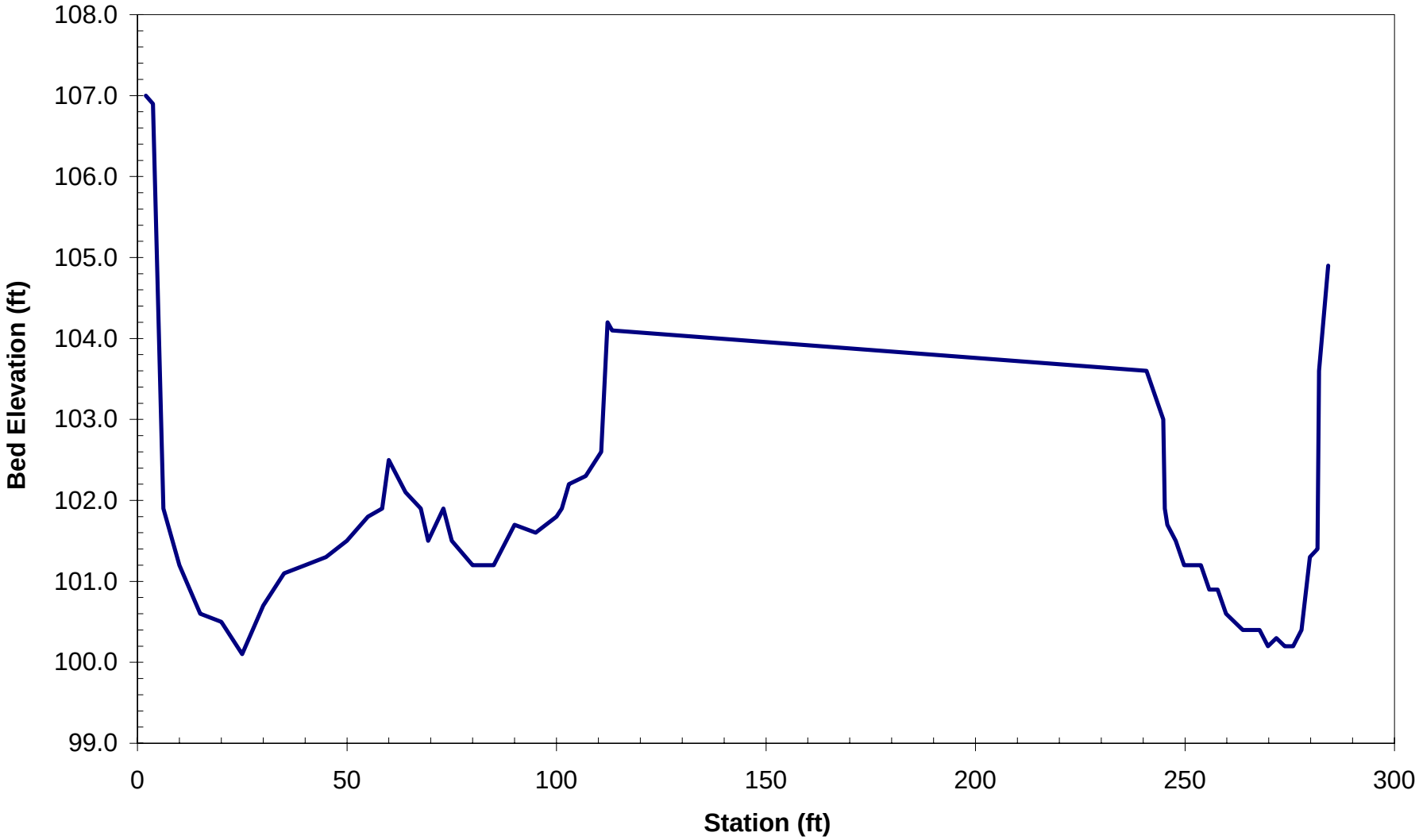
North Fork Koktuli River, Reach A, 08-NFK1-MS2, TR3
Measured Transect Profile

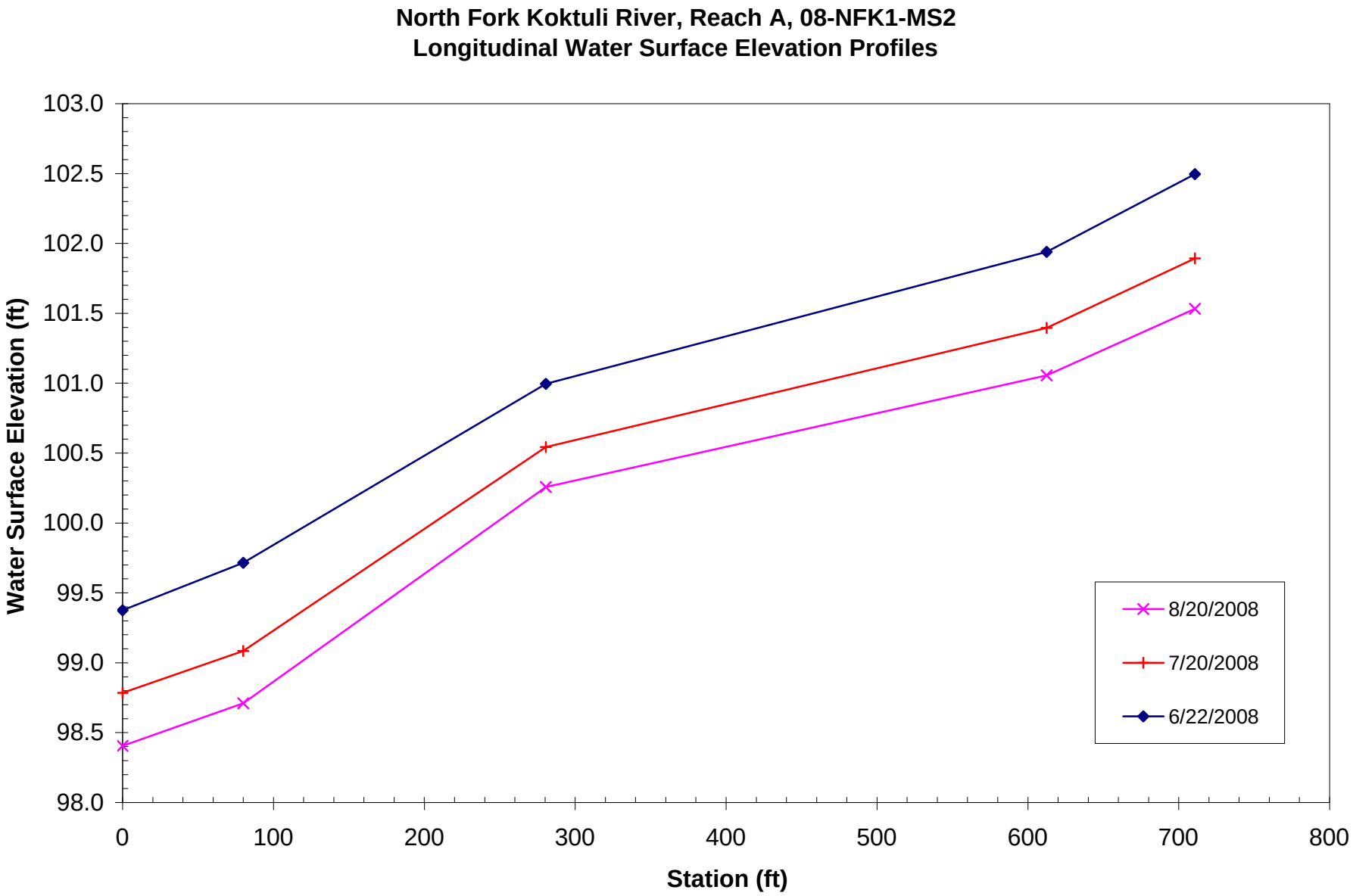


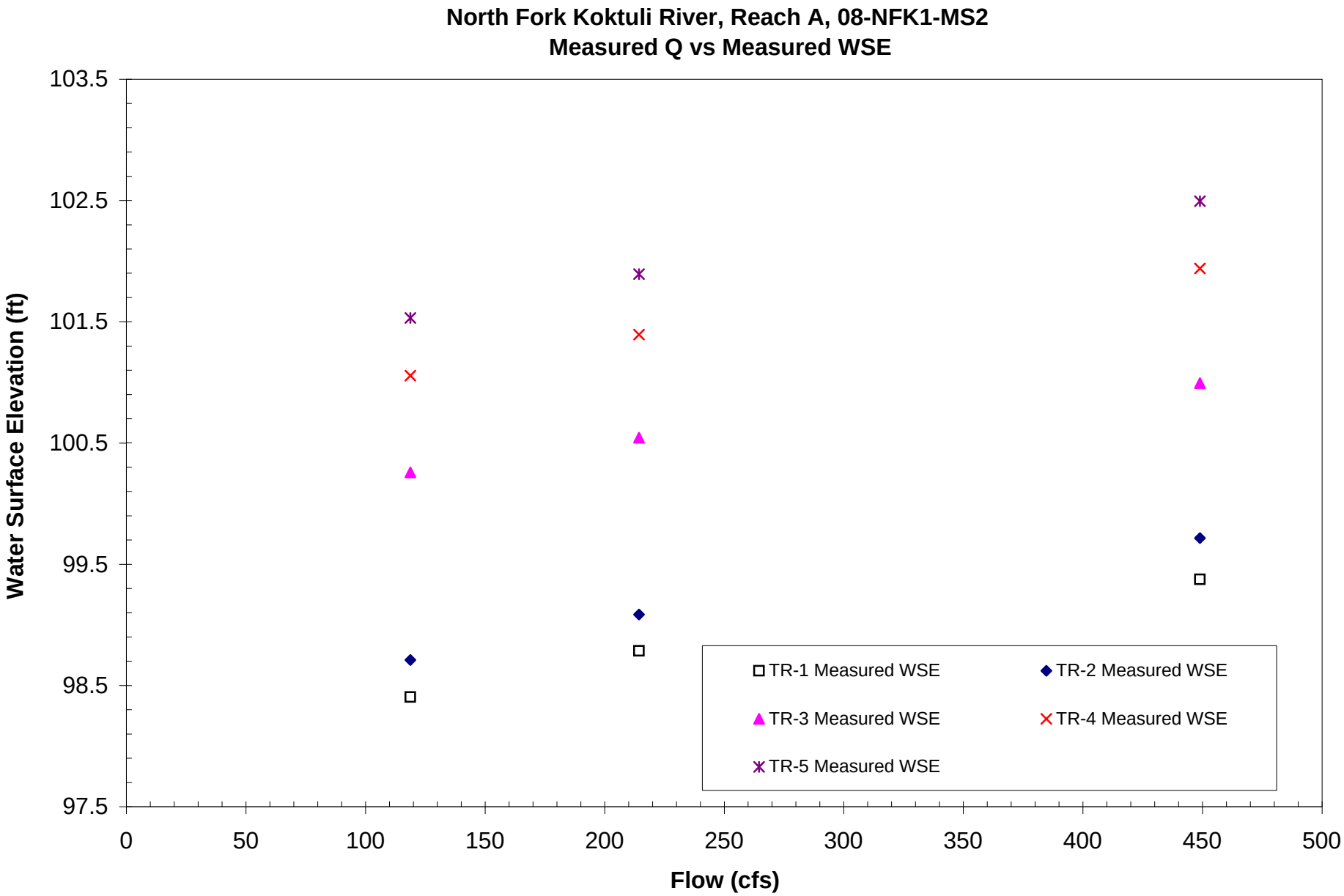
North Fork Koktuli River, Reach A, 08-NFK1-MS2, TR4
Measured Transect Profile

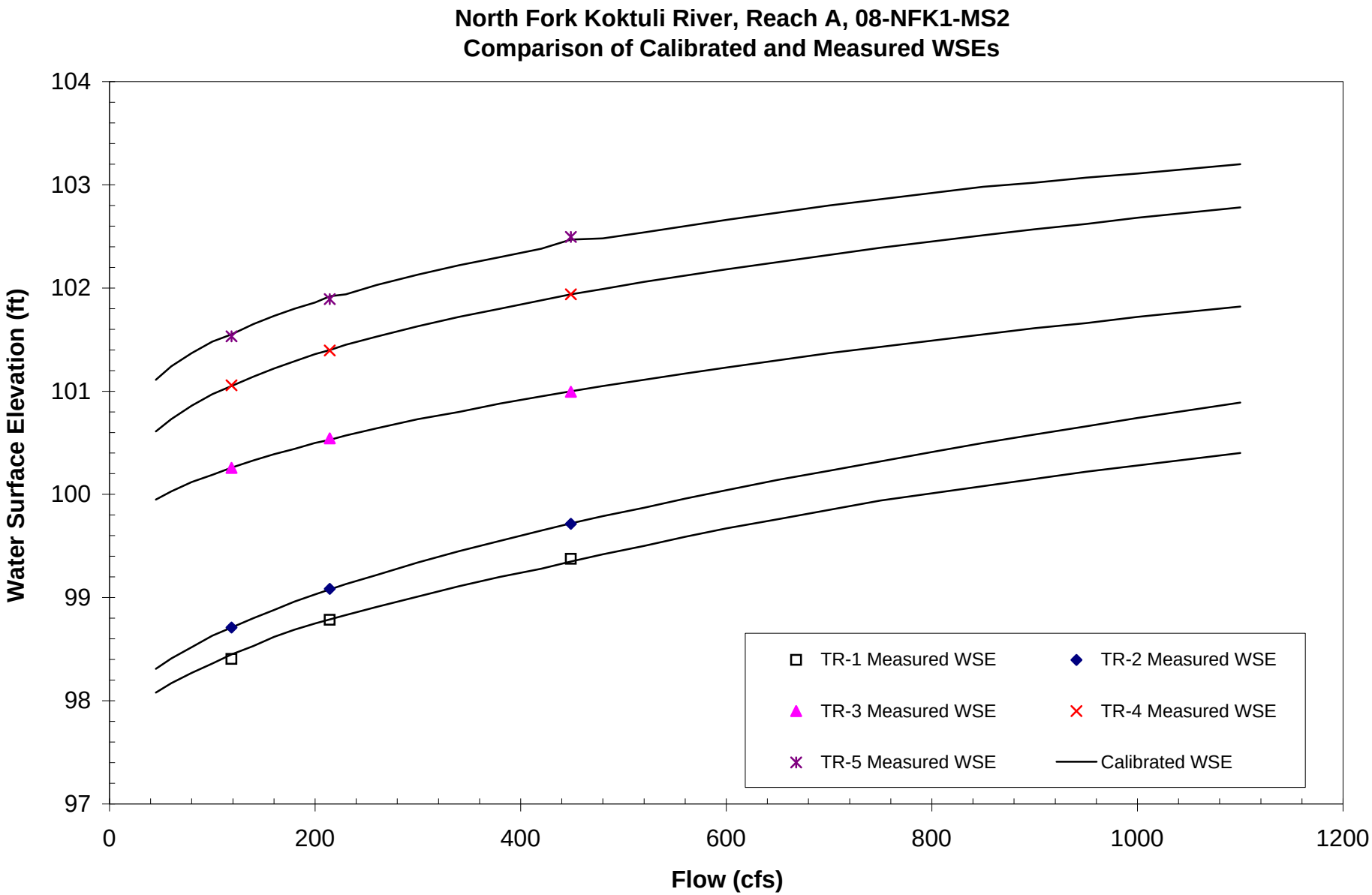


North Fork Koktuli River, Reach A, 08-NFK1-MS2, TR5
Measured Transect Profile



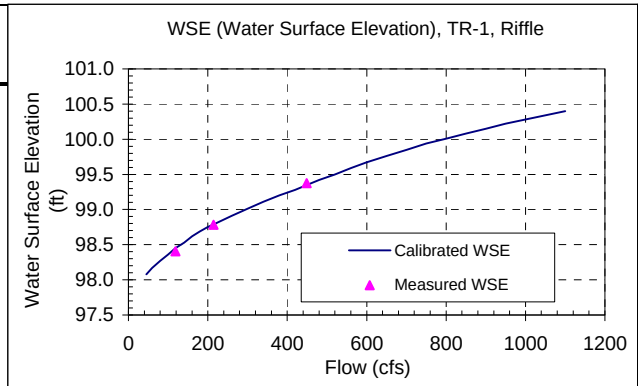

North Fork Koktuli River, Reach A, 08-NFK1-MS2
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
103.0
102.5
102.0
101.5
101.0
100.5
100.0
99.5
99.0
98.5
98.0
0
100
200
300
400
500
600
700
800
Station (ft)
8/20/2008
7/20/2008
6/22/2008

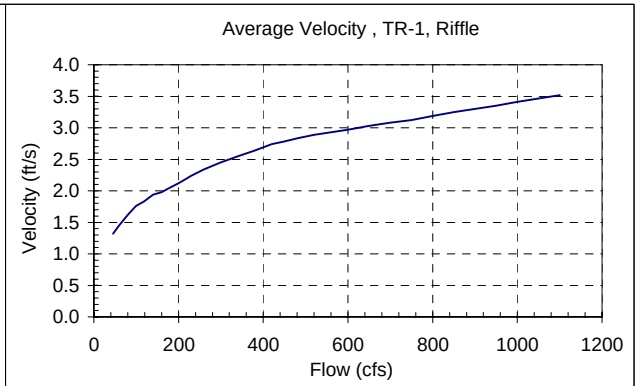

North Fork Koktuli River, Reach A, 08-NFK1-MS2
Measured Q vs Measured WSE
Water Surface Elevation (ft)
103.5
102.5
101.5
100.5
99.5
98.5
97.5
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE

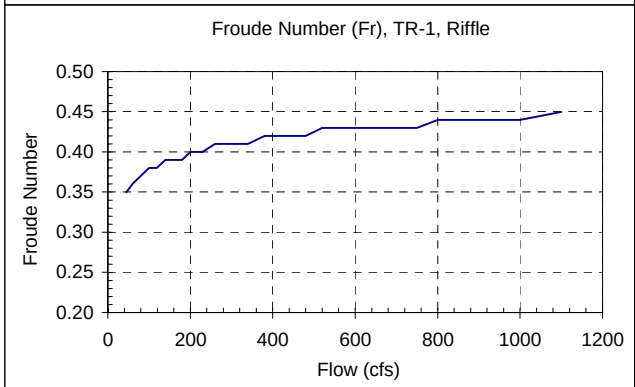

North Fork Koktuli River, Reach A, 08-NFK1-MS2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
104
103
102
101
100
99
98
97
0
200
400
600
800
1000
1200
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
Calibrated WSE

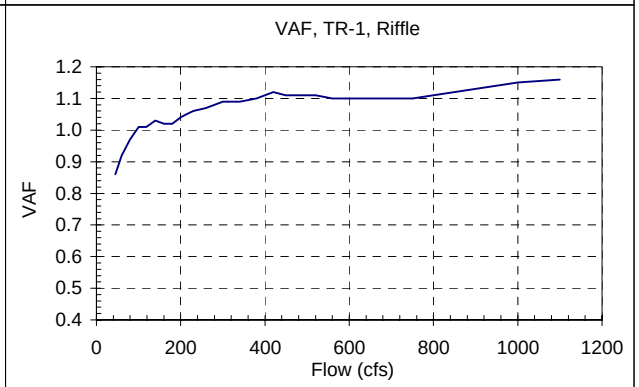
Stream: NF Koktuli River
Site: 08-NFK1-MS2
Habitat: Island Complex
Transect: 1
Date: 7/20/2008
Calibration Flow: Mid

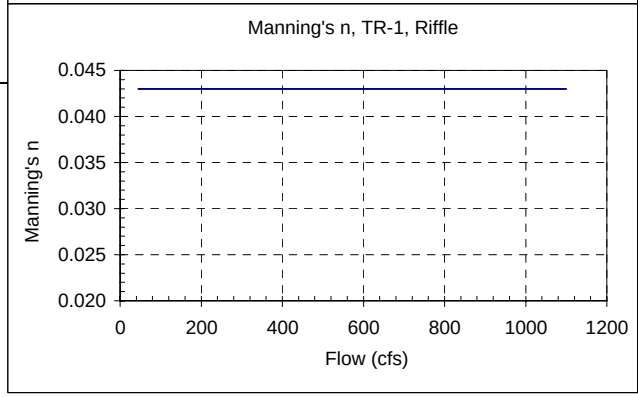
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	98.08	0.35	1.32	0.86	0.043	79.4
60	98.17	0.36	1.45	0.92	0.04	81.0
80	98.27	0.37	1.62	0.97	0.04	82.8
100	98.36	0.38	1.76	1.01	0.04	85.2
118.7	98.45	0.38	1.83	1.01	0.04	90.5
140	98.53	0.39	1.94	1.03	0.04	94.1
160	98.62	0.39	1.98	1.02	0.04	100.6
180	98.69	0.39	2.05	1.02	0.04	104.1
200	98.75	0.40	2.12	1.04	0.04	106.0
214.4	98.79	0.40	2.18	1.05	0.04	107.3
230	98.83	0.40	2.24	1.06	0.04	108.3
260	98.91	0.41	2.34	1.07	0.04	110.2
300	99.01	0.41	2.45	1.09	0.04	112.6
340	99.11	0.41	2.55	1.09	0.04	115.0
380	99.20	0.42	2.64	1.10	0.04	117.1
420	99.28	0.42	2.74	1.12	0.04	119.1
448.9	99.35	0.42	2.78	1.11	0.04	121.8
480	99.42	0.42	2.83	1.11	0.04	124.9
520	99.50	0.43	2.89	1.11	0.04	128.6
560	99.59	0.43	2.93	1.10	0.04	133.6
600	99.67	0.43	2.97	1.10	0.04	138.3
650	99.76	0.43	3.03	1.10	0.04	143.3
700	99.85	0.43	3.08	1.10	0.04	148.2
750	99.94	0.43	3.12	1.10	0.04	152.9
800	100.01	0.44	3.19	1.11	0.04	155.1
850	100.08	0.44	3.25	1.12	0.04	157.3
900	100.15	0.44	3.30	1.13	0.04	159.6
950	100.22	0.44	3.35	1.14	0.04	161.8
1000	100.28	0.44	3.41	1.15	0.04	163.7
1100.0	100.40	0.45	3.52	1.16	0.043	165.0

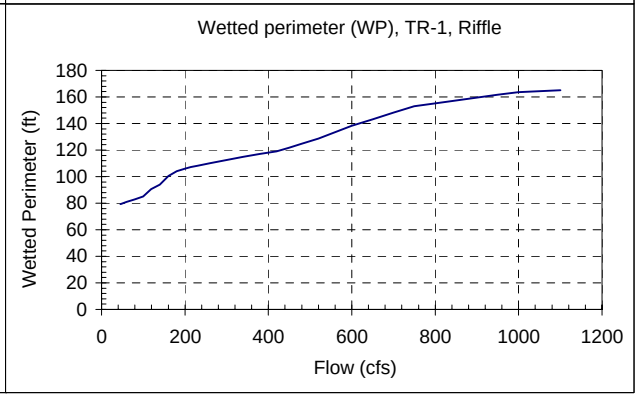








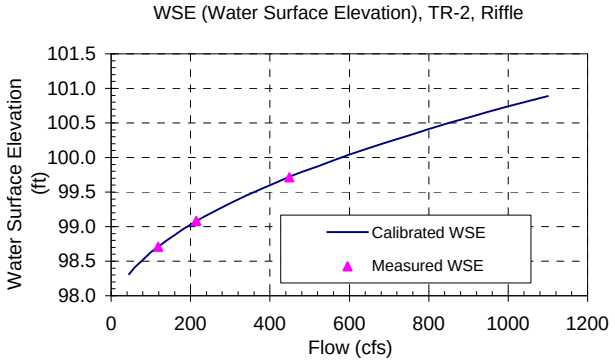


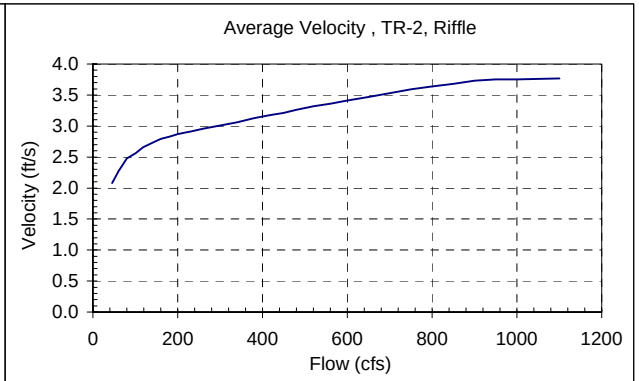


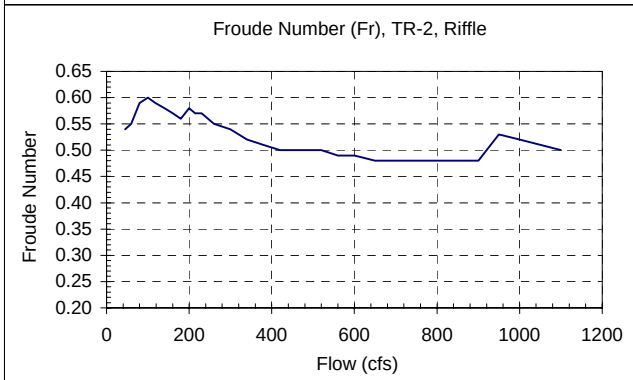
cTR1 - Transect hydraulic parameters

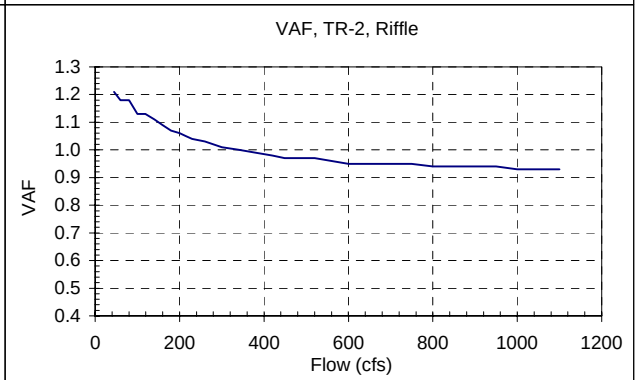
Stream: NF Koktuli River
Site: 08-NFK1-MS2
Habitat: Island Complex
Transect: 2
Date: 7/20/2008
Calibration Flow: Mid

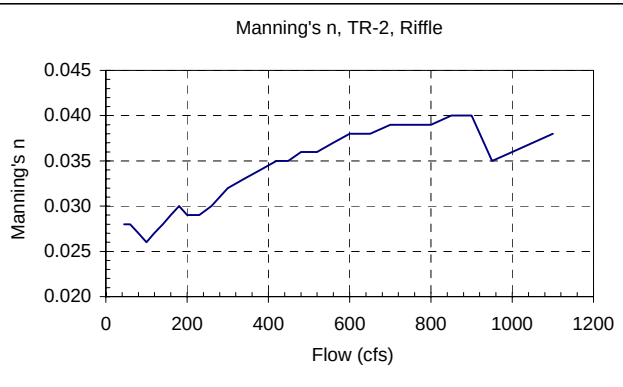
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	98.31	0.54	2.08	1.21	0.028	46.9
60	98.41	0.55	2.27	1.18	0.03	49.9
80	98.52	0.59	2.48	1.18	0.03	58.3
100	98.63	0.60	2.56	1.13	0.03	69.4
118.7	98.71	0.59	2.66	1.13	0.03	73.0
140	98.80	0.58	2.73	1.11	0.03	75.2
160	98.88	0.57	2.79	1.09	0.03	77.9
180	98.96	0.56	2.83	1.07	0.03	81.8
200	99.03	0.58	2.87	1.06	0.03	91.8
214.4	99.08	0.57	2.89	1.05	0.03	94.8
230	99.13	0.57	2.91	1.04	0.03	97.8
260	99.22	0.55	2.96	1.03	0.03	100.3
300	99.34	0.54	3.01	1.01	0.03	103.5
340	99.45	0.52	3.06	1.00	0.03	105.9
380	99.55	0.51	3.13	0.99	0.03	106.6
420	99.65	0.50	3.18	0.98	0.04	109.4
448.9	99.72	0.50	3.21	0.97	0.04	113.4
480	99.79	0.50	3.26	0.97	0.04	114.6
520	99.87	0.50	3.32	0.97	0.04	115.9
560	99.96	0.49	3.36	0.96	0.04	117.4
600	100.04	0.49	3.41	0.95	0.04	118.6
650	100.14	0.48	3.47	0.95	0.04	120.2
700	100.23	0.48	3.53	0.95	0.04	121.9
750	100.32	0.48	3.59	0.95	0.04	124.0
800	100.41	0.48	3.64	0.94	0.04	126.1
850	100.50	0.48	3.68	0.94	0.04	128.2
900	100.58	0.48	3.73	0.94	0.04	130.5
950	100.66	0.53	3.75	0.94	0.04	168.5
1000	100.74	0.52	3.75	0.93	0.04	169.0
1100.0	100.89	0.5	3.77	0.93	0.038	170.0

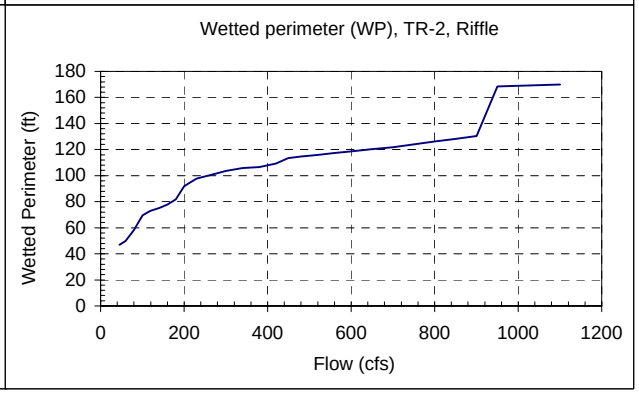






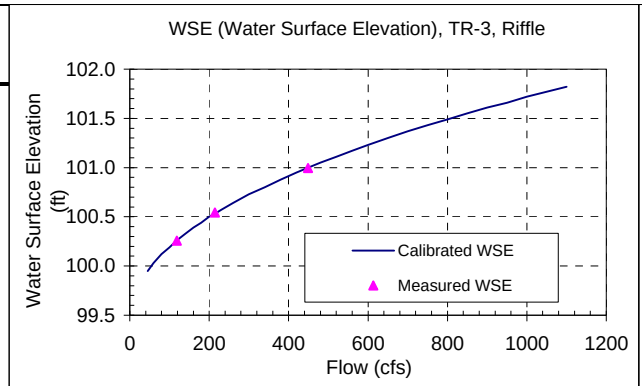


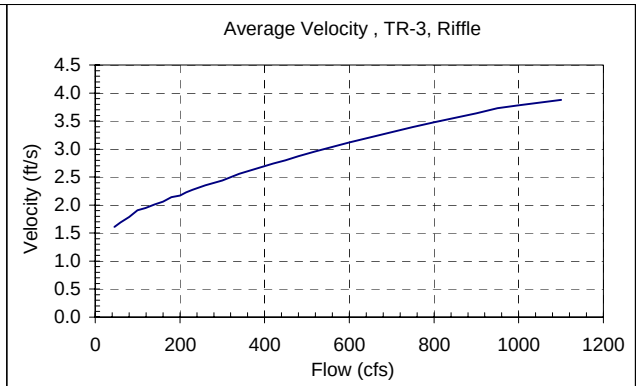


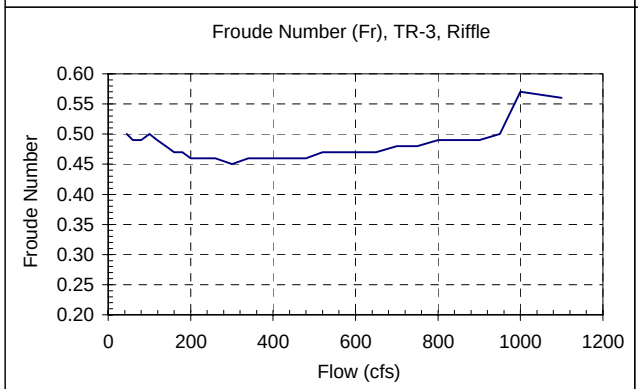


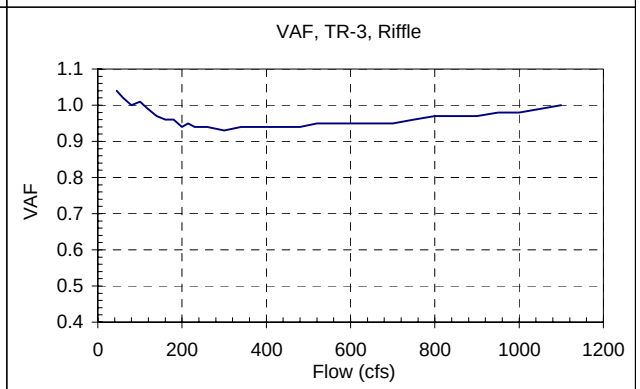
Stream: NF Koktuli River
Site: 08-NFK1-MS2
Habitat: Island Complex
Transect: 3
Date: 7/20/2008
Calibration Flow: Mid

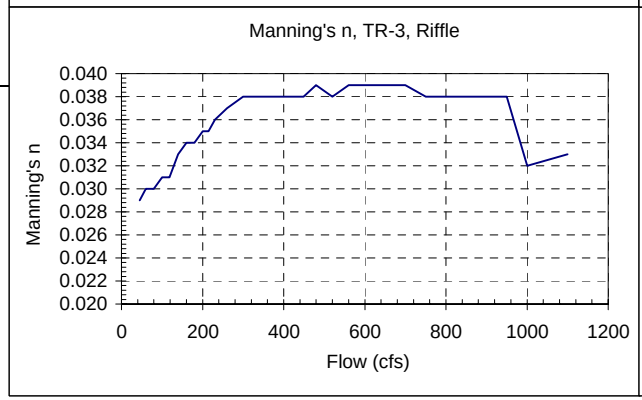
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	99.95	0.50	1.61	1.04	0.029	88.4
60	100.03	0.49	1.69	1.02	0.03	97.2
80	100.12	0.49	1.79	1.00	0.03	108.9
100	100.19	0.50	1.91	1.01	0.03	114.1
118.7	100.26	0.49	1.95	0.99	0.03	125.0
140	100.33	0.48	2.01	0.97	0.03	129.7
160	100.39	0.47	2.06	0.96	0.03	131.1
180	100.44	0.47	2.14	0.96	0.03	132.2
200	100.50	0.46	2.17	0.94	0.04	133.6
214.4	100.53	0.46	2.23	0.95	0.04	134.1
230	100.57	0.46	2.27	0.94	0.04	134.7
260	100.64	0.46	2.35	0.94	0.04	135.8
300	100.73	0.45	2.44	0.93	0.04	137.0
340	100.80	0.46	2.56	0.94	0.04	137.9
380	100.88	0.46	2.65	0.94	0.04	138.9
420	100.95	0.46	2.74	0.94	0.04	139.7
448.9	101.00	0.46	2.80	0.94	0.04	140.3
480	101.05	0.46	2.87	0.94	0.04	141.0
520	101.11	0.47	2.96	0.95	0.04	141.7
560	101.17	0.47	3.04	0.95	0.04	142.2
600	101.23	0.47	3.12	0.95	0.04	143.0
650	101.30	0.47	3.21	0.95	0.04	144.2
700	101.37	0.48	3.30	0.95	0.04	145.4
750	101.43	0.48	3.39	0.96	0.04	146.4
800	101.49	0.49	3.48	0.97	0.04	147.3
850	101.55	0.49	3.56	0.97	0.04	148.3
900	101.61	0.49	3.64	0.97	0.04	149.3
950	101.66	0.50	3.73	0.98	0.04	150.1
1000	101.72	0.57	3.78	0.98	0.03	195.5
1100.0	101.82	0.56	3.88	1.00	0.033	196.0

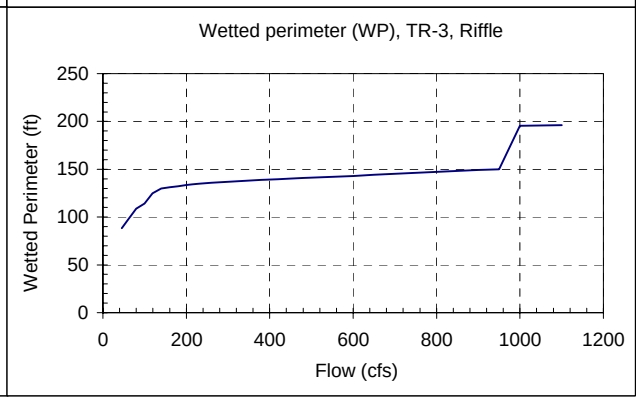








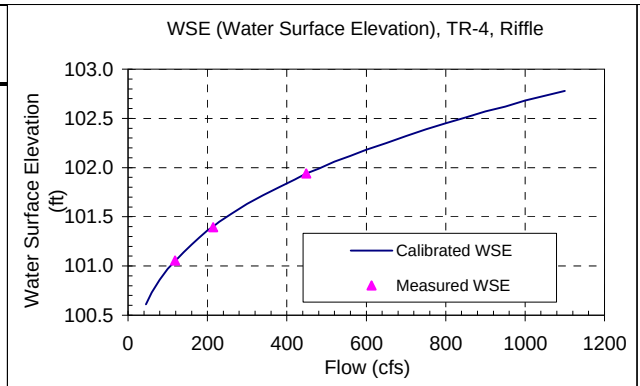


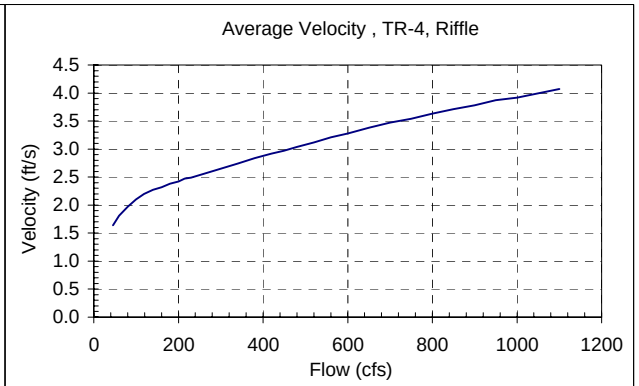


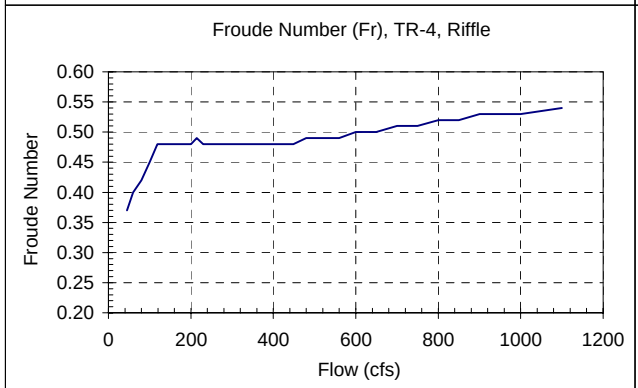
cTR3 - Transect hydraulic parameters

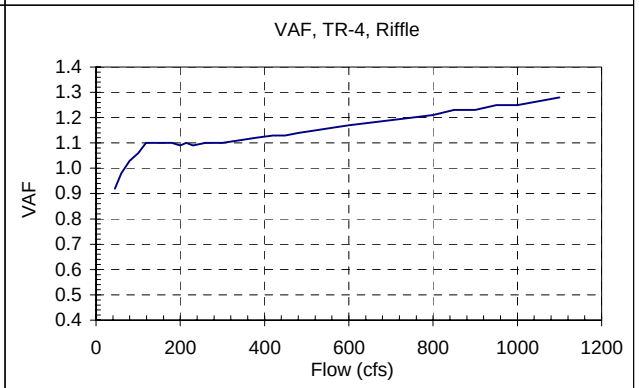
Stream: NF Koktuli River
Site: 08-NFK1-MS2
Habitat: Island Complex
Transect: 4
Date: 7/20/2008
Calibration Flow: Mid

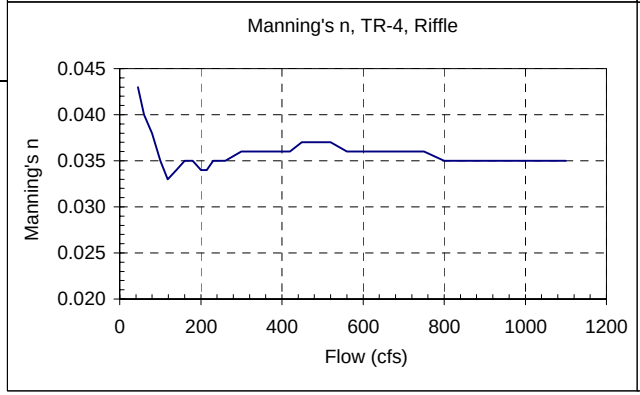
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	100.61	0.37	1.64	0.92	0.043	45.4
60	100.73	0.40	1.81	0.98	0.04	52.8
80	100.86	0.42	1.97	1.03	0.04	61.0
100	100.97	0.45	2.10	1.06	0.04	72.9
118.7	101.05	0.48	2.20	1.10	0.03	83.9
140	101.14	0.48	2.27	1.10	0.03	89.2
160	101.22	0.48	2.32	1.10	0.04	94.1
180	101.29	0.48	2.38	1.10	0.04	98.5
200	101.36	0.48	2.42	1.09	0.03	106.8
214.4	101.40	0.49	2.47	1.10	0.03	112.0
230	101.45	0.48	2.49	1.09	0.04	113.8
260	101.53	0.48	2.56	1.10	0.04	116.0
300	101.63	0.48	2.65	1.10	0.04	119.5
340	101.72	0.48	2.74	1.11	0.04	123.8
380	101.80	0.48	2.84	1.12	0.04	126.1
420	101.88	0.48	2.92	1.13	0.04	128.4
448.9	101.94	0.48	2.97	1.13	0.04	130.3
480	101.99	0.49	3.04	1.14	0.04	131.8
520	102.06	0.49	3.12	1.15	0.04	134.1
560	102.12	0.49	3.21	1.16	0.04	136.2
600	102.18	0.50	3.28	1.17	0.04	138.3
650	102.25	0.50	3.38	1.18	0.04	141.0
700	102.32	0.51	3.47	1.19	0.04	143.8
750	102.39	0.51	3.54	1.20	0.04	146.6
800	102.45	0.52	3.63	1.21	0.04	149.2
850	102.51	0.52	3.71	1.23	0.04	151.6
900	102.57	0.53	3.78	1.23	0.04	153.0
950	102.62	0.53	3.87	1.25	0.04	154.1
1000	102.68	0.53	3.92	1.25	0.04	155.5
1100.0	102.78	0.54	4.07	1.28	0.035	157.7

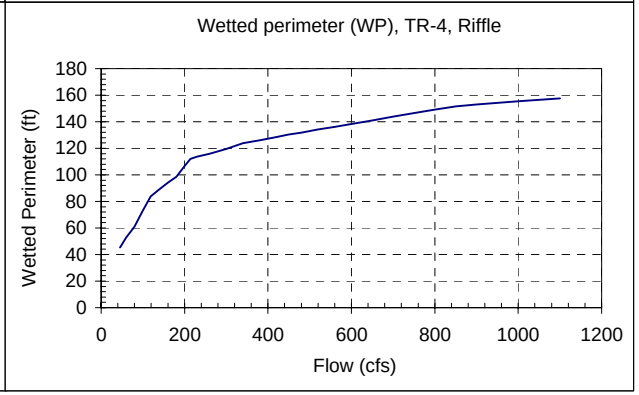








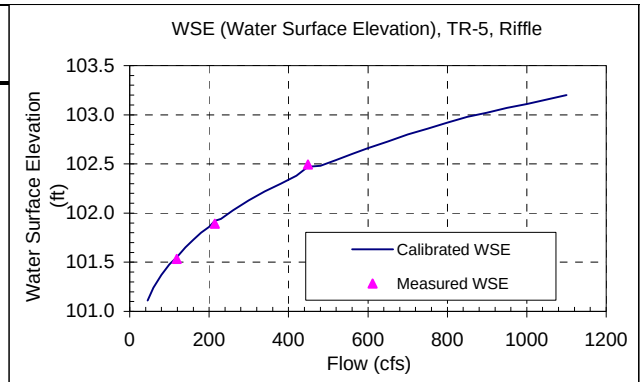


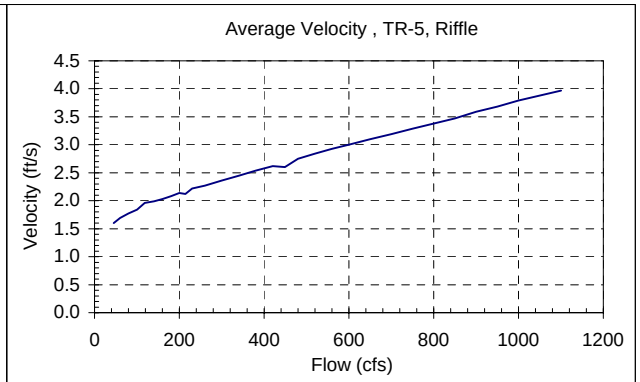


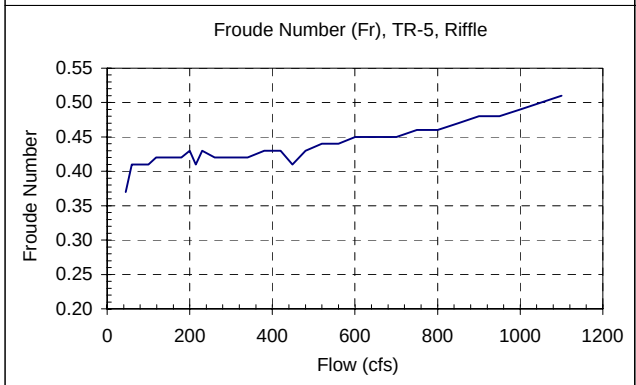
cTR4 - Transect hydraulic parameters

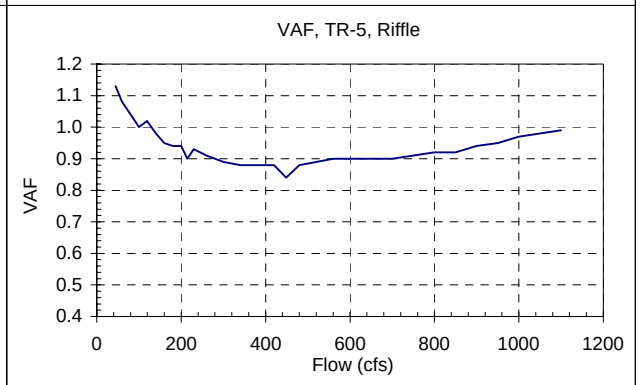
Stream: NF Koktuli River
Site: 08-NFK1-MS2
Habitat: Island Complex
Transect: 5
Date: 7/20/2008
Calibration Flow: Mid

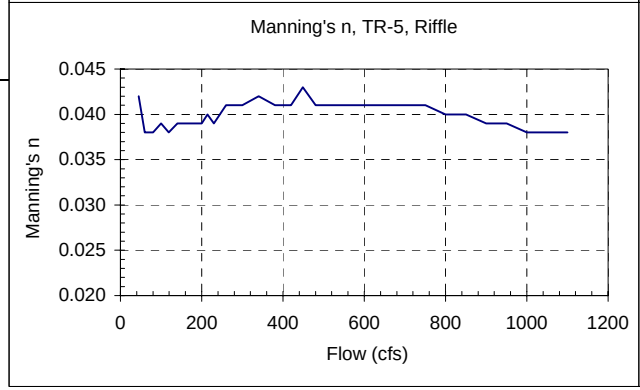
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
45	101.11	0.37	1.60	1.13	0.042	50.0
60	101.24	0.41	1.69	1.08	0.04	68.8
80	101.37	0.41	1.77	1.04	0.04	80.0
100	101.48	0.41	1.84	1.00	0.04	87.7
118.7	101.55	0.42	1.96	1.02	0.04	92.1
140	101.65	0.42	1.99	0.98	0.04	102.1
160	101.73	0.42	2.03	0.95	0.04	111.0
180	101.80	0.42	2.08	0.94	0.04	115.9
200	101.86	0.43	2.14	0.94	0.04	120.5
214.4	101.92	0.41	2.12	0.90	0.04	124.1
230	101.94	0.43	2.22	0.93	0.04	124.7
260	102.03	0.42	2.27	0.91	0.04	127.4
300	102.13	0.42	2.36	0.89	0.04	130.1
340	102.22	0.42	2.45	0.88	0.04	132.8
380	102.30	0.43	2.54	0.88	0.04	137.2
420	102.38	0.43	2.62	0.88	0.04	139.5
448.9	102.47	0.41	2.60	0.84	0.04	142.1
480	102.48	0.43	2.75	0.88	0.04	142.4
520	102.54	0.44	2.84	0.89	0.04	143.6
560	102.60	0.44	2.93	0.90	0.04	144.5
600	102.66	0.45	3.00	0.90	0.04	144.8
650	102.73	0.45	3.10	0.90	0.04	145.1
700	102.80	0.45	3.19	0.90	0.04	145.4
750	102.86	0.46	3.29	0.91	0.04	145.7
800	102.92	0.46	3.38	0.92	0.04	146.0
850	102.98	0.47	3.47	0.92	0.04	146.2
900	103.02	0.48	3.59	0.94	0.04	146.5
950	103.07	0.48	3.68	0.95	0.04	147.0
1000	103.11	0.49	3.79	0.97	0.04	147.4
1100.0	103.20	0.51	3.97	0.99	0.038	148.4

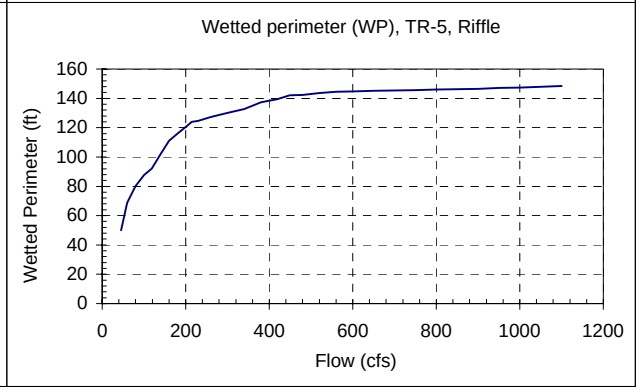




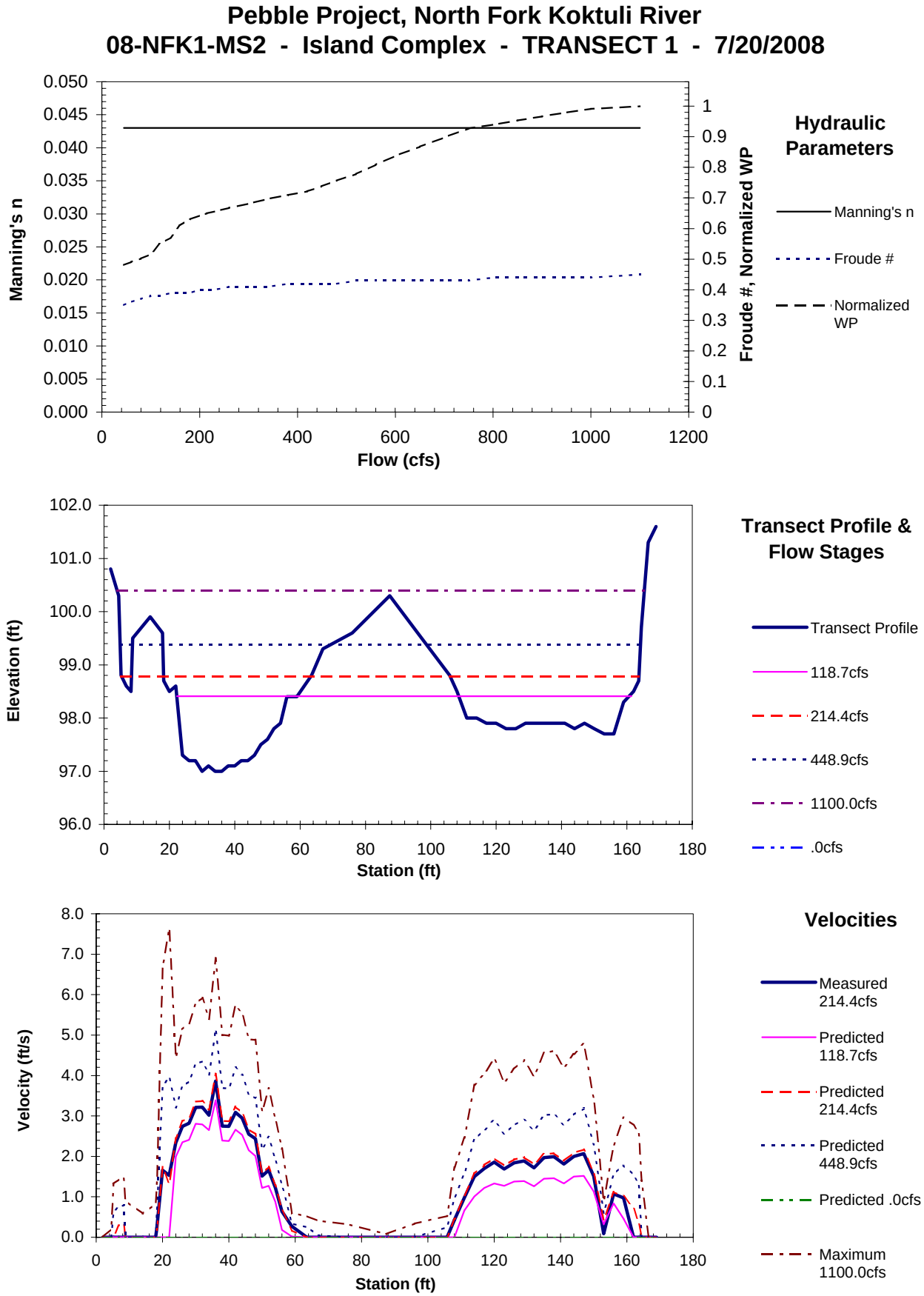




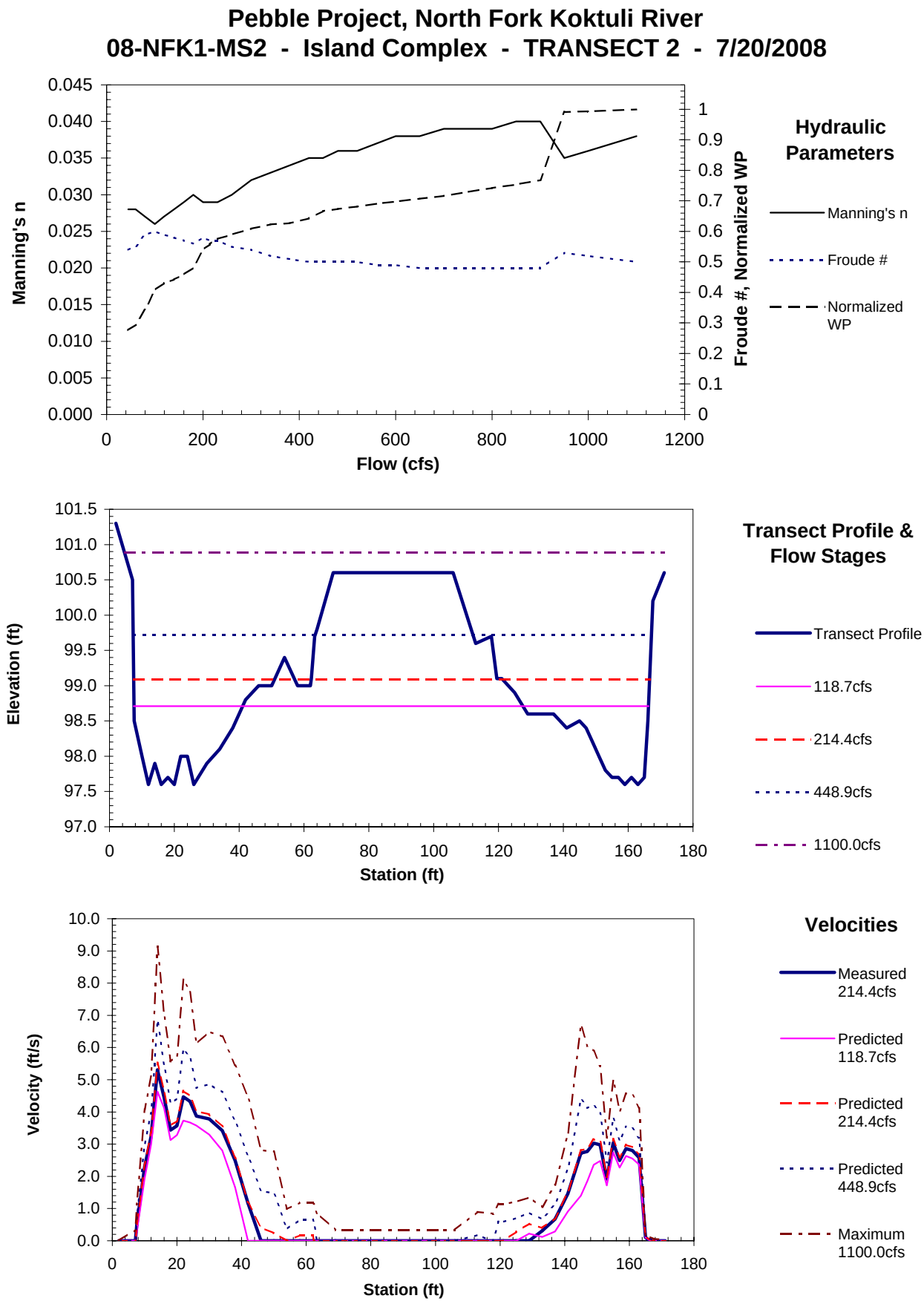




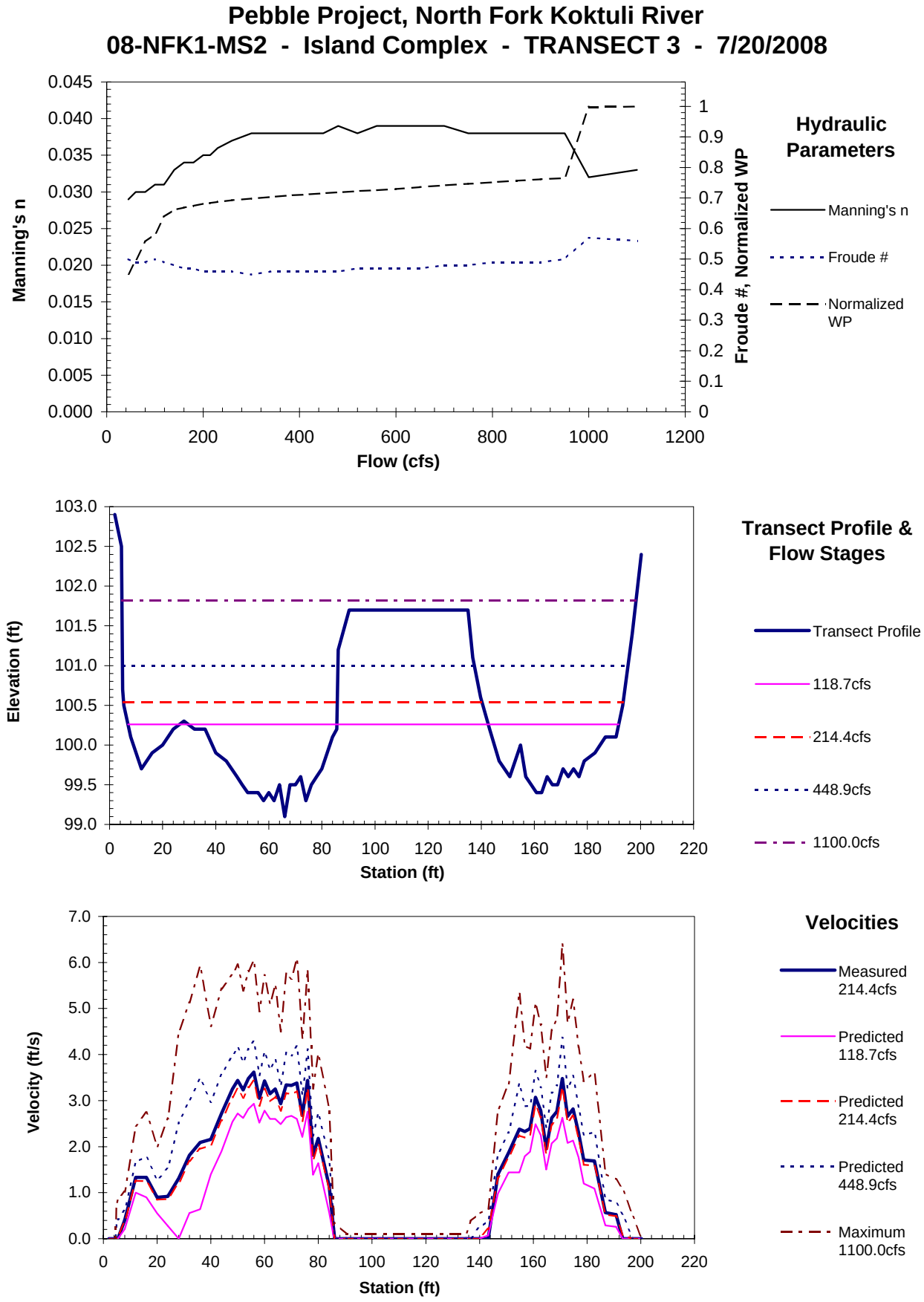
cTR5 - Transect hydraulic parameters



Transect hydraulic summary plots

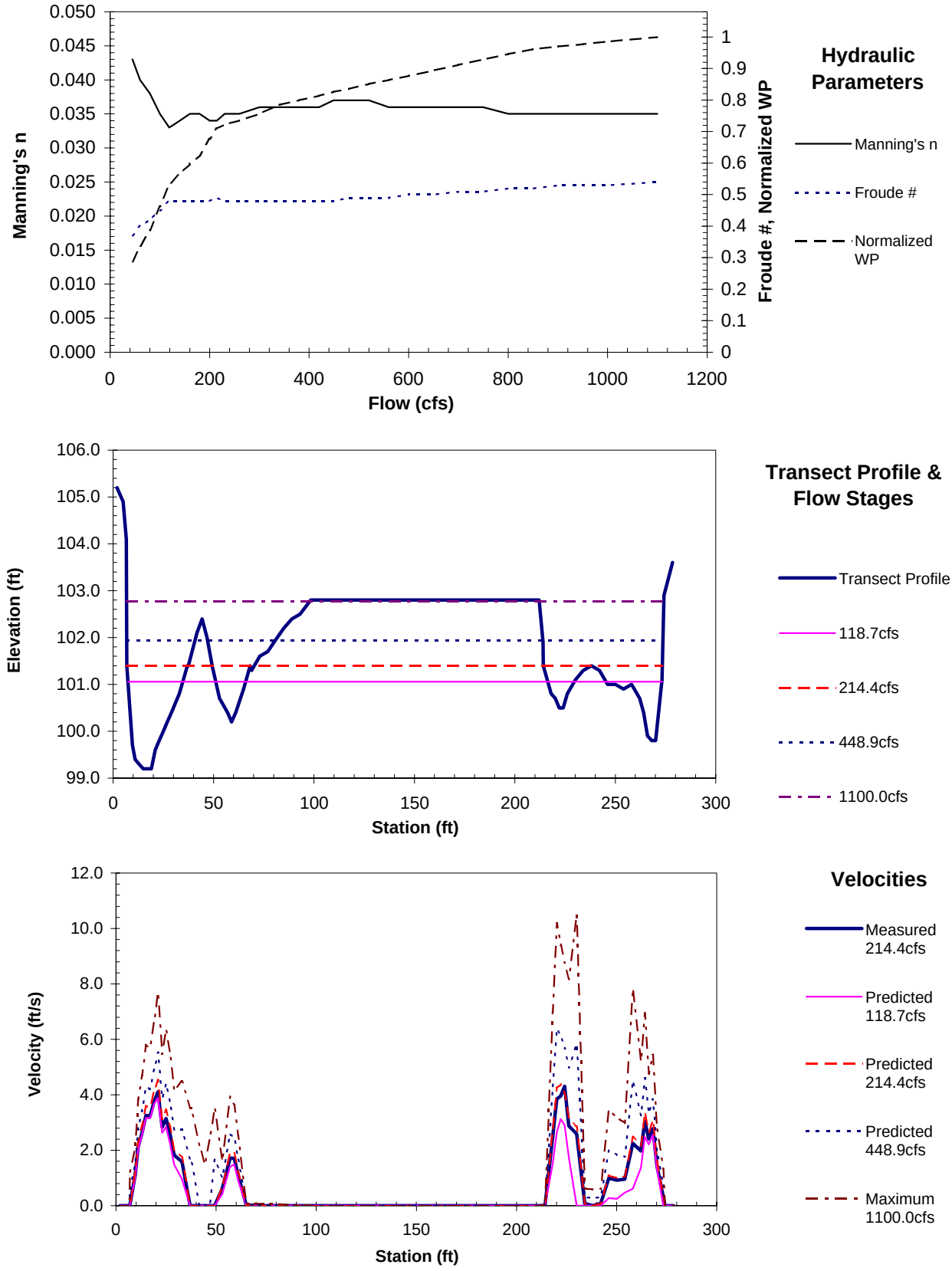


Transect hydraulic summary plots

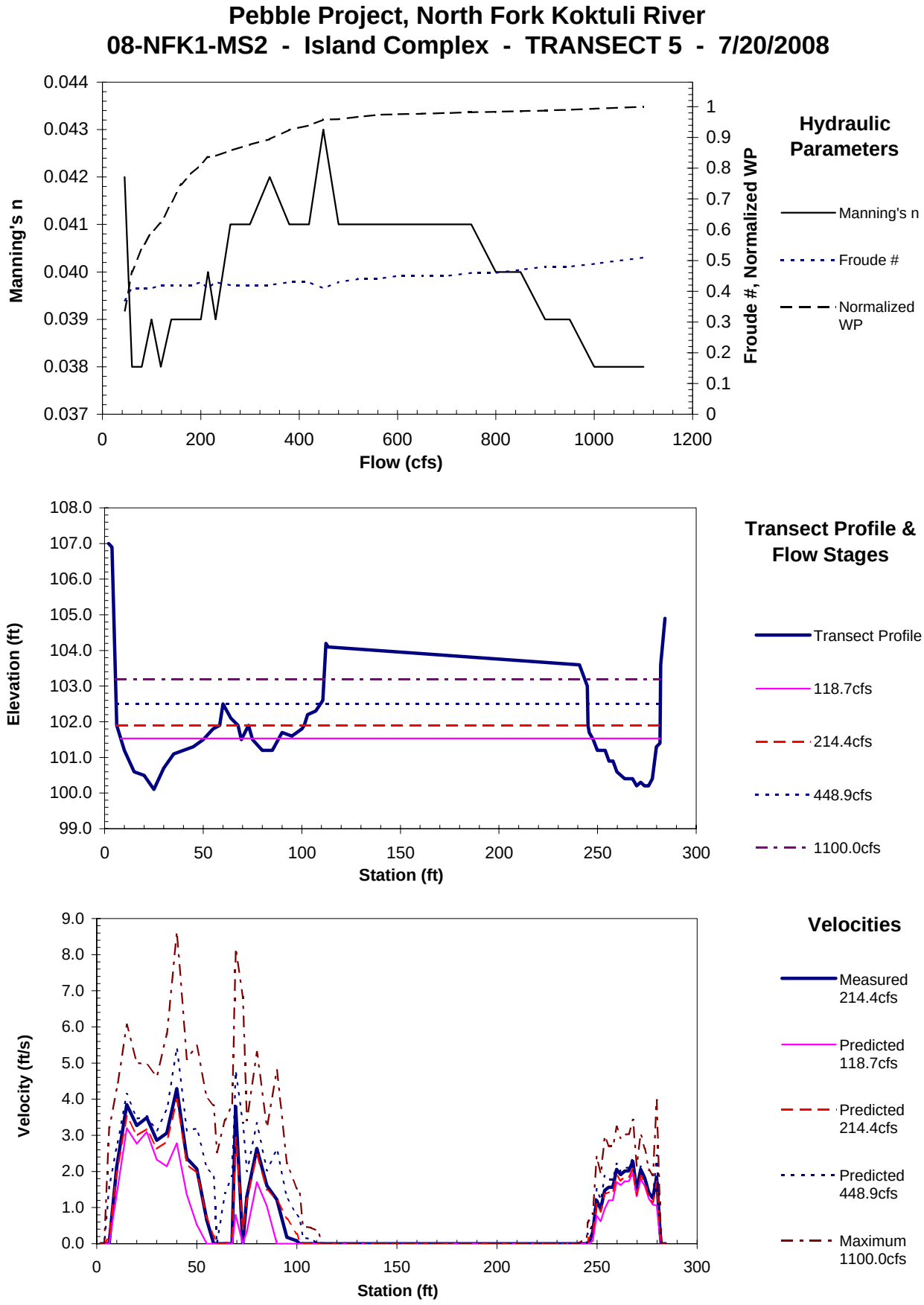


Transect hydraulic summary plots

Pebble Project, North Fork Koktuli River
08-NFK1-MS2 - Island Complex - TRANSECT 4 - 7/20/2008



Transect hydraulic summary plots



Transect hydraulic summary plots

IFG4 Data Deck

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     Pebble     08-NFK1-MS2  07/20/08
Island                      0708Q                                    TRANSECT 1
IOC       1101100100001000101000
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QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.7
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 214.4
QARD 230.0
QARD 260.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 420.0
QARD 448.9
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1100.0
XSEC  1000     1000. 1.0     97.06    .00439
      1000  2.0100.8  4.5100.3  5.298.79  6.898.59  8.398.54  8.899.48
      1000 14.199.93 17.999.59 18.398.69 20.098.49 22.098.64 24.097.29
      1000 26.097.24 28.097.24 30.097.04 32.097.14 34.096.99 36.096.99
      1000 38.097.09 40.097.09 42.097.19 44.097.24 46.097.34 48.097.49
      1000 50.097.59 52.097.79 54.097.94 56.098.39 59.098.44 63.598.79
      1000 67.099.30 76.099.63 87.4100.3 96.099.58105.898.79108.098.49
      1000111.098.04114.098.04117.097.94120.097.94123.097.84126.097.84
      1000129.097.89132.097.89135.097.89138.097.89141.097.89144.097.84
      1000147.097.89150.097.84153.097.74156.097.69159.098.29162.098.49
      1000163.698.69164.499.72166.5101.3168.9101.6
NS    1000      11.9      12.6      21.6      21.6      21.6      12.6
NS    1000      12.6      11.9 .12  12.6      12.6 .022 77.9      74.6
NS    1000      54.6      54.6      65.6      54.6      54.6      54.6
NS    1000      64.6      46.6      54.6      65.6      54.6      54.6
NS    1000      54.6      45.6      45.6      43.6 .30  45.6      54.6
```

IFG4 Data Deck - TR1

IFG4 Data Deck (continued)

```
NS    1000      64.6      64.6      11.9      11.9      45.6      34.6
NS    1000      34.6      34.6      34.6      34.6      34.6      34.6
NS    1000      34.6      43.6      43.6      43.6      74.6      34.6
NS    1000      43.6      43.6 .25  45.6      43.6      74.6      21.6
NS    1000      21.6      11.9      11.9      11.9
WSL   1000     98.08     98.17     98.27     98.36     98.45     98.53
WSL   1000     98.62     98.69     98.75     98.79     98.83     98.91
WSL   1000     99.01     99.11     99.20     99.28     99.35     99.42
WSL   1000     99.50     99.59     99.67     99.76     99.85     99.94
WSL   1000    100.01    100.08    100.15    100.22    100.28    100.40
CAL1  1000     98.79     214.4
VEL1  1000           0.00 0.00 0.00                0.23 1.66 1.53 2.34
VEL1  1000 2.74 2.82 3.21 3.22 3.02 3.86 2.75 2.74 3.09 2.95 2.55 2.44
VEL1  1000 1.51 1.66 1.23 0.64 0.27 0.00                   0.00 0.43
VEL1  1000 0.98 1.50 1.70 1.86 1.69 1.84 1.89 1.72 1.97 1.99 1.81 2.00
VEL1  1000 2.07 1.51 0.09 1.07 0.97 0.00 0.00
CAL2  1000     99.38     448.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.41     118.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS2  07/20/08
Island                      0808Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.7
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 214.4
QARD 230.0
QARD 260.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 420.0
QARD 448.9
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1100.0
XSEC  1000     1000. 1.0     97.67    .00439
      1000  2.0101.3  7.1100.5  7.698.49 10.097.99 12.097.59 14.097.89
      1000 16.097.59 18.097.69 20.097.64 22.098.04 24.097.99 26.097.59
      1000 30.097.89 34.098.09 38.098.39 42.098.84 46.098.99 50.099.04
      1000 54.099.42 58.098.99 62.098.99 62.399.09 63.399.72 64.099.81
      1000 69.0100.6101.0100.6106.0100.6113.099.61117.899.72119.599.09
      1000121.099.09125.098.89129.098.59133.098.64137.098.59141.098.44
      1000145.098.54147.098.39149.098.19151.098.04153.097.79155.097.74
      1000157.097.69159.097.64161.097.69163.097.64165.097.69166.198.54
      1000167.6100.2171.1100.6
NS    1000      11.9      11.9      11.9      72.6      76.6      76.6
NS    1000      65.6      65.6      65.6      65.6      65.6      65.6
NS    1000      45.6      45.6      45.6      46.6 .05  45.6      45.6
NS    1000 .12  35.6      35.6      32.6      21.6      32.6      12.6
NS    1000      11.9      11.9      54.6      45.6      32.6      32.6
NS    1000      32.6      32.6      42.6 .15  54.6      45.6      54.6
```

IFG4 Data Deck - TR2

IFG4 Data Deck (continued)

```
NS    1000      56.6      56.6      56.6      65.6      54.6      54.6
NS    1000      54.6      54.6      54.6      56.6      54.6      54.6
NS    1000      11.9      12.6
WSL   1000     98.31     98.41     98.52     98.63     98.71     98.80
WSL   1000     98.88     98.96     99.03     99.08     99.13     99.22
WSL   1000     99.34     99.45     99.55     99.65     99.72     99.79
WSL   1000     99.87     99.96    100.04    100.14    100.23    100.32
WSL   1000    100.41    100.50    100.58    100.66    100.74    100.89
CAL1  1000     99.09     214.4
VEL1  1000           0.49 2.29 3.23 5.31 4.45 3.44 3.57 4.47 4.33 3.87
VEL1  1000 3.78 3.42 2.49 1.17 0.00 0.00      0.00 0.00 0.00
VEL1  1000                          0.00 0.00 0.00 0.00 0.31 0.67 1.46
VEL1  1000 2.72 2.77 3.03 2.98 1.92 3.04 2.49 2.86 2.80 2.58 0.11 0.00
VEL1  1000
CAL2  1000     99.72     448.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.71     118.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS2  07/20/08
Island                      0808Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.7
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 214.4
QARD 230.0
QARD 260.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 420.0
QARD 448.9
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1100.0
XSEC  1000     1000. 1.0     99.40    .00439
      1000  2.0102.9  4.5102.5  4.9100.7  5.4100.5  8.0100.1 12.099.69
      1000 16.099.89 20.099.99 24.0100.2 28.0100.3 32.0100.2 36.0100.2
      1000 40.099.94 44.099.84 48.099.59 50.099.54 52.099.44 54.099.44
      1000 56.099.44 58.099.34 60.099.44 62.099.34 64.099.49 66.099.14
      1000 68.099.54 70.099.49 72.099.64 74.099.34 76.099.49 78.099.64
      1000 80.099.69 84.0100.1 85.6100.2 86.1101.2 90.3101.7135.0101.7
      1000136.8101.1139.8100.6143.2100.2146.899.84150.899.64154.8100.0
      1000156.899.64158.899.54160.899.44162.899.44164.899.64166.899.54
      1000168.899.54170.899.69172.899.59174.899.69176.899.64178.899.84
      1000182.899.94186.8100.1190.8100.1193.3100.5196.9101.4200.3102.4
NS    1000      11.9      11.9      23.6      23.6      32.6      34.6
NS    1000      43.6      43.6      34.6      34.6      34.6      34.6
NS    1000      34.6      43.6      34.6      43.6      45.6      45.6
NS    1000      64.6      64.6      64.6      64.6      64.6      64.6
NS    1000      47.6      64.6      64.6      64.6      64.6      64.6
```

IFG4 Data Deck - TR3

IFG4 Data Deck (continued)

```
NS    1000      64.6      74.6      45.6      11.9      11.9      11.9
NS    1000      11.9      11.9      22.9      46.6      64.6      74.6
NS    1000      45.6      64.6      74.6      46.6      45.6      54.6
NS    1000      65.6      46.6      54.6      45.6      45.6      54.6
NS    1000      46.6      64.6      74.6      21.6      11.9      11.9
WSL   1000     99.95    100.03    100.12    100.19    100.26    100.33
WSL   1000    100.39    100.44    100.50    100.53    100.57    100.64
WSL   1000    100.73    100.80    100.88    100.95    101.00    101.05
WSL   1000    101.11    101.17    101.23    101.30    101.37    101.43
WSL   1000    101.49    101.55    101.61    101.66    101.72    101.82
CAL1  1000    100.54     214.4
VEL1  1000               0.00 0.41 1.33 1.33 0.90 0.92 1.31 1.81 2.09
VEL1  1000 2.16 2.72 3.25 3.44 3.23 3.48 3.62 3.05 3.43 3.15 3.25 2.93
VEL1  1000 3.34 3.33 3.38 2.68 3.44 1.81 2.18 1.14 0.23
VEL1  1000           0.00 1.40 1.87 2.38 2.33 2.39 3.07 2.78 1.95 2.62
VEL1  1000 2.76 3.48 2.66 2.82 2.31 1.71 1.69 0.57 0.52 0.00
CAL2  1000    101.00     448.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000    100.26     118.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS2  07/20/08
Island                      0808Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.7
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 214.4
QARD 230.0
QARD 260.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 420.0
QARD 448.9
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1100.0
XSEC  1000     1000. 1.0     99.40    .00439
      1000  2.0105.2  5.0104.9  6.6104.1  6.8101.4  9.699.70 11.099.40
      1000 13.099.30 15.099.25 17.099.20 19.099.20 21.099.60 23.099.80
      1000 25.0100.0 27.0100.2 29.0100.4 33.0100.8 37.0101.4 37.5101.4
      1000 41.7102.1 44.3102.4 46.8102.0 49.3101.4 53.0100.7 57.0100.4
      1000 59.0100.2 61.0100.4 65.0100.9 68.3101.4 69.0101.3 73.0101.6
      1000 77.0101.7 80.1101.9 85.0102.2 89.0102.4 93.0102.5 98.4102.8
      1000212.1102.8214.0101.9214.2101.4218.1100.8220.1100.7222.1100.5
      1000224.1100.5226.1100.8230.1101.1234.1101.3238.1101.4242.1101.3
      1000246.1101.0250.1101.0254.1100.9258.1101.0262.1100.7264.1100.4
      1000266.199.90268.199.85270.199.80273.3101.1274.2102.9278.5103.6
NS    1000      11.9      11.9      11.9      23.6      21.6      54.6
NS    1000      65.6      65.6      65.6      65.6      65.6      65.6
NS    1000      54.6      56.6      45.6      45.6      45.6      46.6
NS    1000      43.6      43.6      43.6      34.6      34.6      43.6
NS    1000      64.6      54.6      45.6      43.6      34.6      45.6
```

IFG4 Data Deck - TR4

IFG4 Data Deck (continued)

```
NS    1000      41.6      41.6      34.6      31.6      11.9      11.9
NS    1000      11.9      34.6      34.6      35.6      35.6      34.6
NS    1000 .025 34.6      34.6      45.6      65.6      65.6      65.6
NS    1000      45.6      64.6      54.6      54.6      56.6      76.6
NS    1000      56.6      74.6      64.6      11.9      11.9      16.6
WSL   1000    100.61    100.73    100.86    100.97    101.05    101.14
WSL   1000    101.22    101.29    101.36    101.40    101.45    101.53
WSL   1000    101.63    101.72    101.80    101.88    101.94    101.99
WSL   1000    102.06    102.12    102.18    102.25    102.32    102.39
WSL   1000    102.45    102.51    102.57    102.62    102.68    102.78
CAL1  1000    101.40     214.4
VEL1  1000                0.00 1.10 2.11 2.62 3.26 3.23 3.75 4.11 2.83
VEL1  1000 3.14 2.59 1.82 1.58 0.00 0.00                0.00 0.61 1.72
VEL1  1000 1.71 1.10 0.03 0.00
VEL1  1000           0.00 2.46 3.85 3.96 4.31 2.88 2.59 0.08 0.00 0.08
VEL1  1000 0.99 0.92 0.96 2.25 1.97 3.04 2.41 2.78 1.45 0.33
CAL2  1000    101.94     448.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000    101.06     118.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-NFK1-MS2  07/20/08
Island                      0808Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  45.0
QARD  60.0
QARD  80.0
QARD 100.0
QARD 118.7
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 214.4
QARD 230.0
QARD 260.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 420.0
QARD 448.9
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1100.0
XSEC  1000     1000. 1.0    100.14    .00439
      1000  2.0107.0  3.7106.9  6.2101.9 10.0101.2 15.0100.6 20.0100.5
      1000 25.0100.1 30.0100.7 35.0101.1 40.0101.2 45.0101.3 50.0101.5
      1000 55.0101.8 58.4101.9 60.0102.5 64.0102.1 67.6101.9 69.4101.5
      1000 73.0101.9 75.0101.5 80.0101.2 85.0101.2 90.0101.7 95.0101.6
      1000100.0101.8101.3101.9103.0102.2107.0102.3110.7102.6112.2104.2
      1000113.3104.1240.8103.6244.8103.0245.2101.9245.8101.7247.8101.5
      1000249.8101.2251.8101.2253.8101.2255.8100.9257.8100.9259.8100.6
      1000261.8100.5263.8100.4265.8100.4267.8100.4269.8100.2271.8100.3
      1000273.8100.2275.8100.2277.8100.4279.8101.3281.6101.4282.0103.6
      1000284.2104.9
NS    1000      11.9      11.9      43.6      34.6      34.6      54.6
NS    1000      45.6      45.6      45.6      54.6      65.6      54.6
NS    1000      64.6      45.6      43.6      43.6      32.6 .017 34.6
NS    1000      45.6      45.6      34.6      54.6      57.6 .06  56.6
NS    1000 .08  56.6      56.6 .2   51.6      51.6      21.6      11.9
```

IFG4 Data Deck - TR5

IFG4 Data Deck (continued)

```
NS    1000      11.9      11.9      11.9      22.9      23.6      34.6
NS    1000      34.6      45.6      45.6      56.6      56.6      65.6
NS    1000      65.6      65.6      65.6      65.6      65.6      65.6
NS    1000      65.6      65.6      65.6      76.6      34.6      11.9
NS    1000      11.9
WSL   1000    101.11    101.24    101.37    101.48    101.55    101.65
WSL   1000    101.73    101.80    101.86    101.92    101.94    102.03
WSL   1000    102.13    102.22    102.30    102.38    102.47    102.48
WSL   1000    102.54    102.60    102.66    102.73    102.80    102.86
WSL   1000    102.92    102.98    103.02    103.07    103.11    103.20
CAL1  1000    101.89     214.4
VEL1  1000           0.00 2.13 3.85 3.27 3.49 2.86 3.06 4.29 2.37 2.07
VEL1  1000 0.65 0.00           0.00 3.79 0.00 1.30 2.64 1.61 1.22 0.18
VEL1  1000 0.08 0.00                                     0.00 0.00 0.32
VEL1  1000 1.20 0.96 1.48 1.56 1.56 2.06 1.91 2.01 2.02 2.28 1.49 2.06
VEL1  1000 1.82 1.42 1.26 1.84 0.29
CAL2  1000    102.50     448.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000    101.53     118.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

WSP Data Deck

```
   08-NFK1-MS2           Jun-Aug/08
Island                      Mid
PARD    30      1.00      0        1.000
QARD  45.0    100.61              1.1661    1.1661
QARD  60.0    100.73              1.1560    1.1560
QARD  80.0    100.86              1.1134    1.1134
QARD 100.0    100.97              1.0797    1.0797
QARD 118.7    101.05              1.0380    1.0380
QARD 140.0    101.14              1.0285    1.0285
QARD 160.0    101.22              1.0200    1.0200
QARD 180.0    101.29              1.0083    1.0083
QARD 200.0    101.36              1.0000    1.0000
QARD 214.4    101.40              1.0200    1.0200
QARD 230.0    101.45              0.9824    0.9824
QARD 260.0    101.53              0.9748    0.9748
QARD 300.0    101.63              0.9675    0.9675
QARD 340.0    101.72              0.9606    0.9606
QARD 380.0    101.80              0.9540    0.9540
QARD 420.0    101.88              0.9465    0.9465
QARD 448.9    101.94              1.0000    1.0000
QARD 480.0    101.99              0.9359    0.9359
QARD 520.0    102.06              0.9251    0.9251
QARD 560.0    102.12              0.9151    0.9151
QARD 600.0    102.18              0.9058    0.9058
QARD 650.0    102.26              0.9000    0.9000
QARD 700.0    102.33              0.8971    0.8971
QARD 750.0    102.39              0.8890    0.8890
QARD 800.0    102.45              0.8813    0.8813
QARD 850.0    102.51              0.8673    0.8673
QARD 900.0    102.57              0.8488    0.8488
QARD 950.0    102.63              0.8327    0.8327
QARD1000.0    102.68              0.8142    0.8142
QARD1100.0    102.78              0.7982    0.7982
FFFFTFFFF                                                                **
       613  2.0105.2  5.0104.9  6.5104.1  6.6101.9  9.699.54 13.099.14
       613 17.099.29 21.099.64 25.099.94 29.0100.5 33.0100.9 37.0101.4
       613 41.0101.8 41.7101.9 46.8101.9 49.0101.5 53.0100.4 57.0100.3
       613 61.0100.2 65.0100.7 69.0101.4 73.0101.7 77.0101.7 80.1101.9
       613 85.0102.2 89.0102.4 93.0102.5 98.4102.8212.1102.8214.0101.9
       613218.1100.9222.1100.8226.1100.9230.1101.2234.1101.4238.1101.7
       613242.1101.6246.1101.3250.1101.2254.1101.1258.1101.1262.1100.9
       613266.1100.1270.1100.1272.4101.1273.3100.9274.2102.9278.5103.6
       613 .041  5.0      .041  6.5      .041  6.6      .041  9.6             *
       613-.041 13.0      .041 17.0      .041 21.0      .041 25.0             *
       613 .041 29.0      .041 33.0      .041 37.0      .041 41.0             *
       613 .041 41.7      .041 46.8      .041 49.0      .041 53.0             *
       613 .041 57.0      .041 61.0      .041 65.0      .041 69.0             *
       613 .041 73.0      .041 77.0      .041 80.1      .041 85.0             *
       613 .041 89.0      .041 93.0      .041 98.4      .041212.1             *
```

WSP Data Deck (continued)

```
      613 .041214.0      .041218.1      .041222.1      .041226.1             *
      613 .041230.1      .041234.1      .041238.1      .041242.1             *
      613 .041246.1      .041250.1      .041254.1      .041258.1             *
      613 .041262.1      .041266.1      .041270.1      .041272.4             *
      613 .041273.3      .041274.2      .041278.5                            *
      711  2.0107.0  3.7106.9  6.2101.9 10.0101.2 15.0100.6 20.0100.5
      711 25.0100.1 30.0100.7 35.0101.1 40.0101.2 45.0101.3 50.0101.5
      711 55.0101.8 58.4101.9 60.0102.5 64.0102.1 67.6101.9 69.4101.5
      711 73.0101.9 75.0101.5 80.0101.2 85.0101.2 90.0101.7 95.0101.6
      711100.0101.8101.3101.9103.0102.2107.0102.3110.7102.6112.2104.2
      711113.3104.1240.8103.6244.8103.0245.2101.9245.8101.7247.8101.5
      711249.8101.2251.8101.2253.8101.2255.8100.9257.8100.9259.8100.6
      711261.8100.5263.8100.4265.8100.4267.8100.4269.8100.2271.8100.3
      711273.8100.2275.8100.2277.8100.4279.8101.3281.6101.4282.0103.6
      711284.2104.9
      711 .048  3.7      .048  6.2      .048 10.0      .048 15.0             *
      711 .048 20.0      .048 25.0      .048 30.0      .048 35.0             *
      711 .048 40.0      .048 45.0      .048 50.0      .048 55.0             *
      711 .048 58.4      .048 60.0      .048 64.0      .048 67.6             *
      711 .048 69.4      .048 73.0      .048 75.0      .048 80.0             *
      711 .048 85.0      .048 90.0      .048 95.0      .048100.0             *
      711 .048101.3      .048103.0      .048107.0      .048110.7             *
      711 .048112.2      .048113.3      .048240.8      .048244.8             *
      711 .048245.2      .048245.8      .048247.8      .048249.8             *
      711 .048251.8      .048253.8      .048255.8      .048257.8             *
      711 .048259.8      .048261.8      .048263.8      .048265.8             *
      711 .048267.8      .048269.8      .048271.8     -.048273.8             *
      711 .048275.8      .048277.8      .048279.8      .048281.6             *
      711 .048282.0      .048284.2                                           *
ENDJ
ENDR
```

Stream: North Fork Koktuli River

Reach: NFK-A

Site/TR: 05-NFK1-RN1

Habitat Type: Island Complex

River Kilometer: 13.23

Stream: North Fork Koktuli River
Reach: A
Site: 05-NFK1-RN1
Habitat Type: Island Complex

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	AP	HP	TP
1st	6/23/2005	100.00	100.22		102.04
2nd	7/24/2005	100.00	100.22		102.03
3rd	8/13/2005	100.00	100.22		102.05
4th	9/10/2005	100.00	100.22	101.32	
5th	7/3/2006	100.00	100.29	101.32	101.98
6th	7/5/2006		100.16	101.32	100.16
7th	4/13/2007				
8th	7/21/2007	100.00	100.02	101.30	101.91

(a) Elevations of control pins (BM, AP, HP, TP) are taken from the first half of each level loop survey
(b) 4/13/07 level loop survey had feet of snow on the control pins
(c) Relative elevation between pins indicated AP and TP were disturbed in 2006.
(d) Relative elevation change between BM and HP were within ±0.01ft from 2005 to 2007. Consistent relative elevation betwwen BM & HP suggests the BM was stable throughout the survey period.

calibration notes

Meaured WSE:

There are as many as three WSEs measured across each of main and side channels for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)			
	Left (side)	Back-water	Pool	Right (main)
6/23/2005			98.19	98.25
7/24/2005				98.07
8/13/2005			97.87	97.91
9/10/2005	98.68	98.72	98.93	99.08
7/3/2006	97.84	98.06	98.19	98.21
7/5/2006	97.85	97.89	98.01	98.05
4/13/2007				101.48
7/21/2007	97.59	97.64	97.80	97.92

A backwater channel and a left (side) channel were surveyed the first time on 9/10/05.
On 4/13/07 the site was under feet of snow, and the surveyed data were not used in modeling.

Discharge:

All measured discharges are listed in the following table.

Date	WSE (ft)				
	Left (side)	Back-water Ch	Pool	Right (main)	Total
6/23/2005	**17.4**	NM	0.0	207.1	224.5
7/24/2005					
8/13/2005	NM	NM	0.0	90.4	90.4
9/10/2005	62.8	NM	NM	NM	
7/3/2006					
7/5/2006	6.4	0.0	0.0	146.8	153.2
4/13/2007					
7/21/2007	3.2	0.0	0.0	90.6	93.8

(1) NM stands for discharge not measured
(2) No discharge measured for 7/24/05 and 7/3/06 trips when the substrate was surveyed
(3) Flow in left (side) channel of 6/23/05 survey is an estimated value from the following equation:
Q=6.4+(62.8-6.4)/(99.08-98.05)*(98.25-98.05)=6.4+10.95=17.4

calibration notes

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Left (Side) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/23/2005		
7/24/2005		
8/13/2005		
9/10/2005	0.159%	150.8
7/3/2006	0.425%	112.9
7/5/2006	0.389%	95
4/13/2007		
7/21/2007	0.584%	65.1

Right (Main) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/23/2005	0.163%	141.2
7/24/2005	0.128%	180
8/13/2005	0.150%	186.7
9/10/2005	0.253%	130.3
7/3/2006	0.131%	107
7/5/2006	0.170%	176.7
4/13/2007	0.143%	126
7/21/2007	0.082%	158.4

The slope S=0.163% of 6/23/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Right (main) Channel Invert (ft)	
6/23/2005	95.75	
7/24/2005		
8/13/2005	95.81	
9/10/2005		
7/3/2006	95.88	
7/5/2006	95.85	
4/13/2007	100.18	ice impact
7/21/2007	95.90	
Invert	95.90	
SZF	95.90	

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile surveyed in 7/24/05 and 9/10/05 trips
(4) Bed profile of April, 07 was affected by ice and not used to determine the SZF

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/23/2005	**224.5**	98.25	98.23	-0.02	IFG4
2nd	7/24/2005		98.07			
3rd	8/13/2005	90.4	97.91	97.90	-0.01	IFG4
4th	9/10/2005		99.08			
5th	7/3/2006		98.21			
6th	7/5/2006	153.2	98.05	98.09	0.04	IFG4
7th	4/13/2007		101.48			
8th	7/21/2007	93.8	97.92	97.91	-0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) Photos of 4/13/07 showed the channel was largely covered in ice. Hydraulic data not used for modeling.
(d) No discharges measured on 7/24/05 and 7/3/06. Partial discharge measureement on 9/10/05.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 93.8cfs to 224.5cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the four calibrated velocity profiles of this transect, no adjustment for model-calculated n values was needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

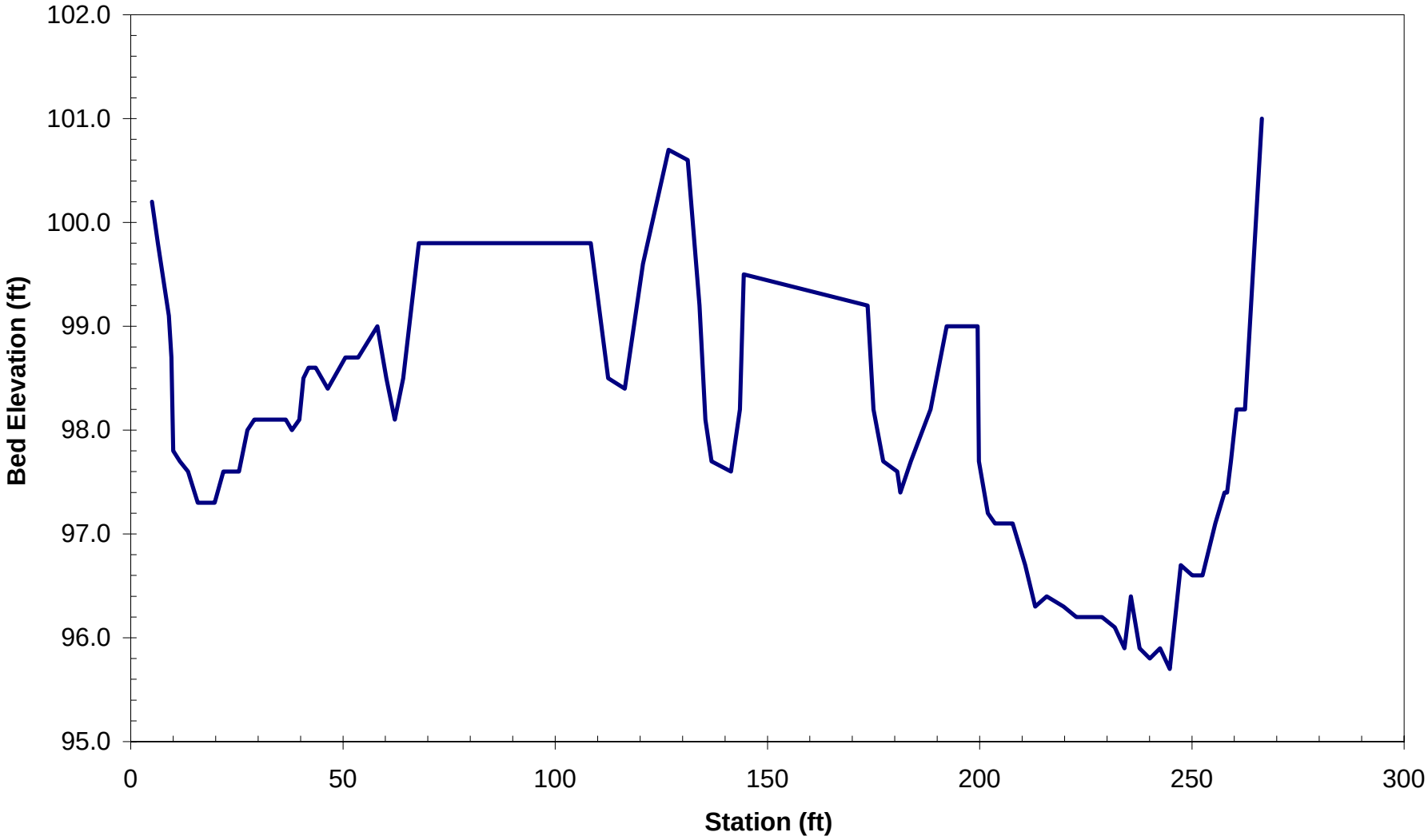
Survey Date	Q (cfs)	WUA (Y/N)
6/23/2005	224.5	Y
7/24/2005		
8/13/2005	90.4	Y
9/10/2005		
7/3/2006		
7/5/2006	153.2	Y
4/13/2007		
7/21/2007	93.8	

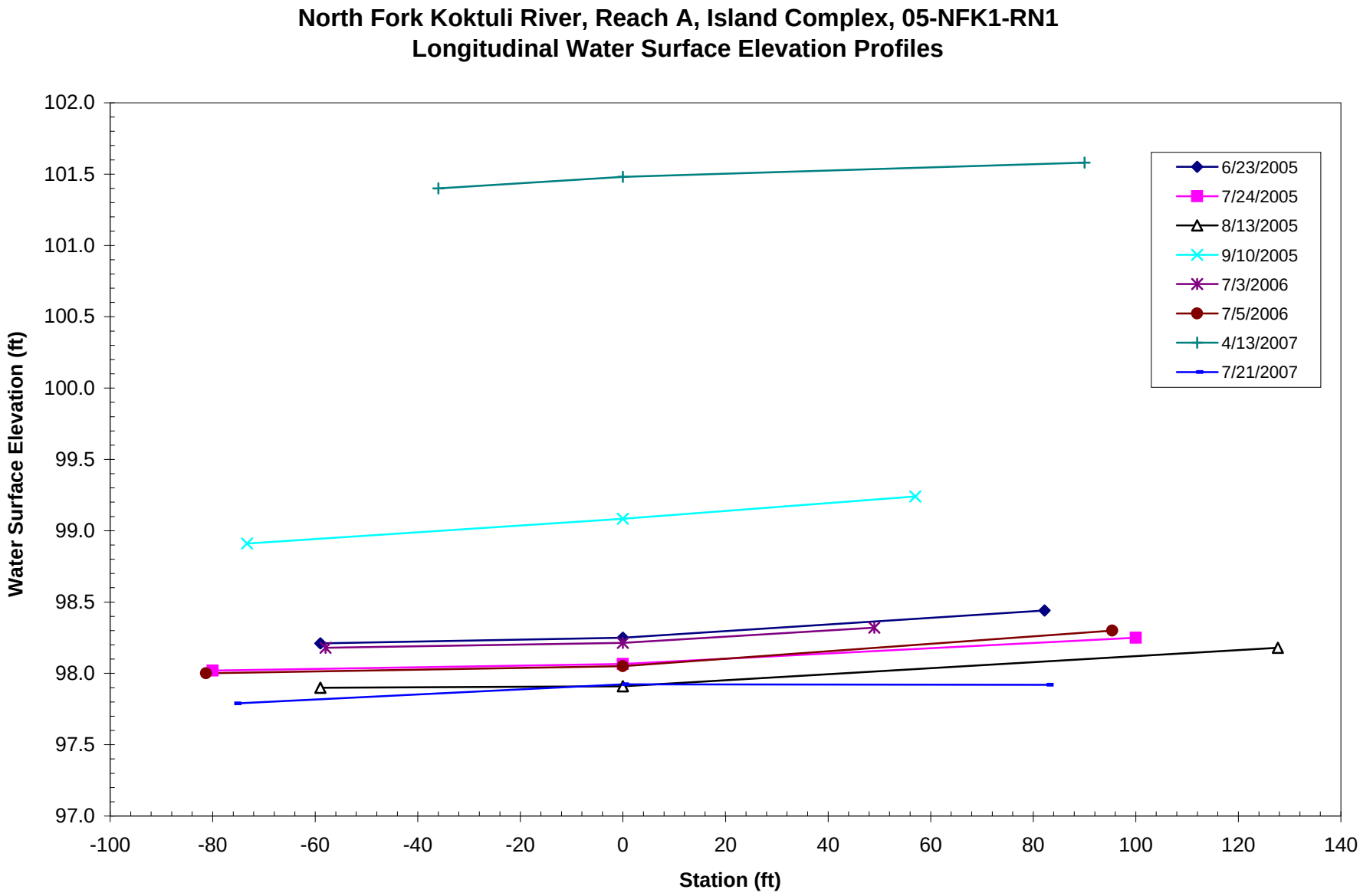
(4) Hydraulic Calibration Results:

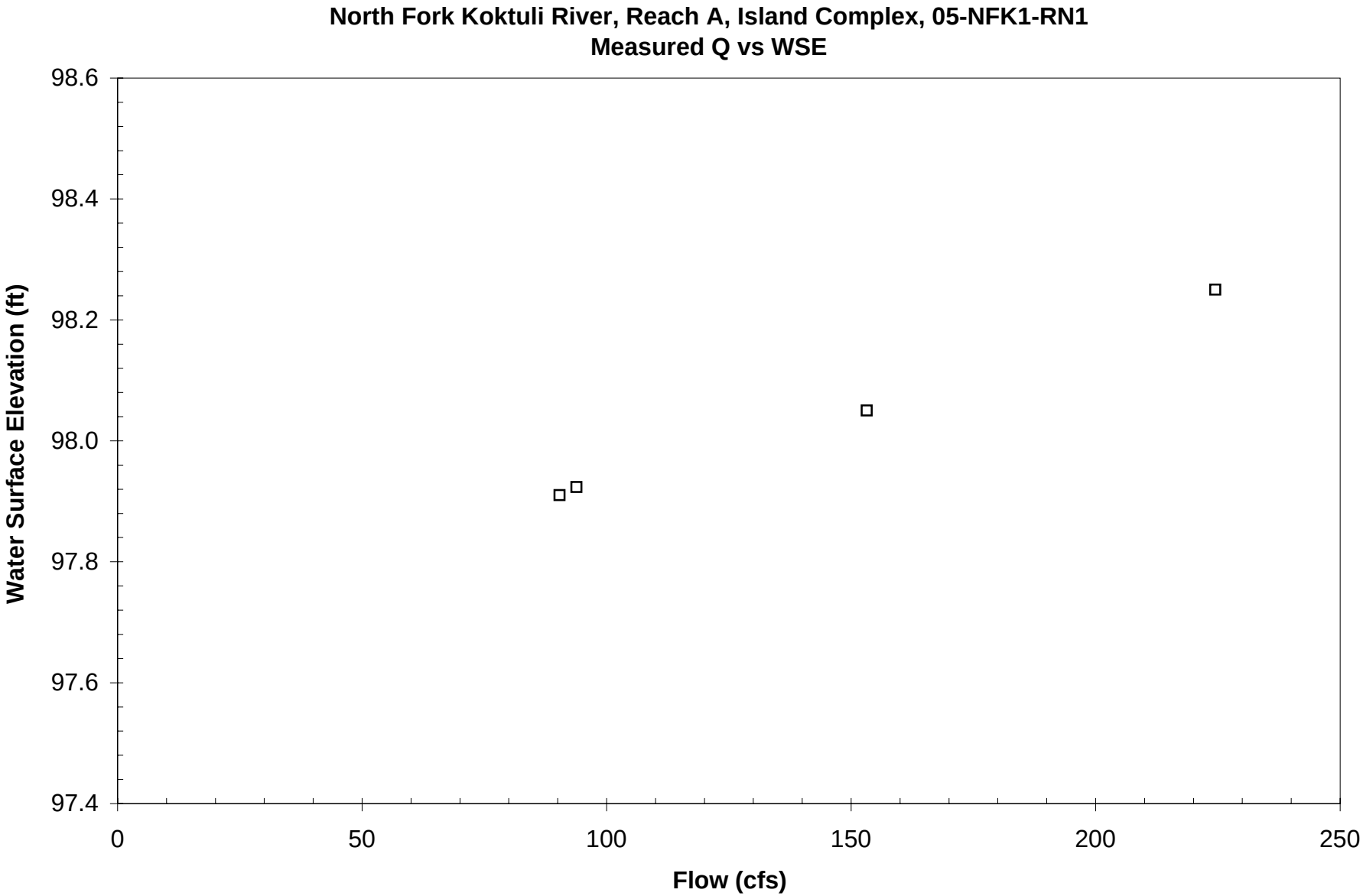
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends as flow increases.

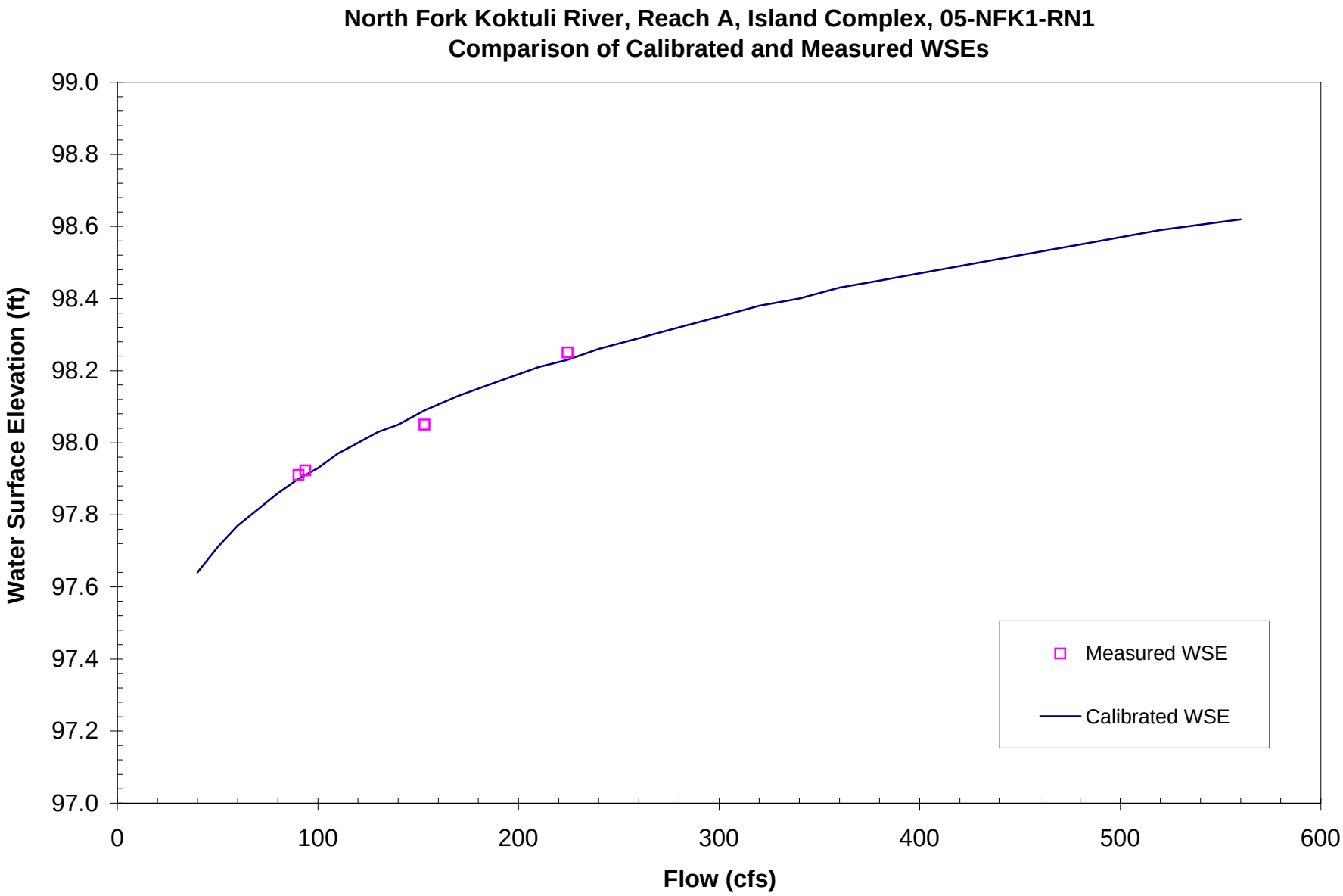
calibration notes

North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-RN1
Measured Transect Profile




North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-RN1
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
102.0
101.5
101.0
100.5
100.0
99.5
99.0
98.5
98.0
97.5
97.0
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
140
Station (ft)
6/23/2005
7/24/2005
8/13/2005
9/10/2005
7/3/2006
7/5/2006
4/13/2007
7/21/2007

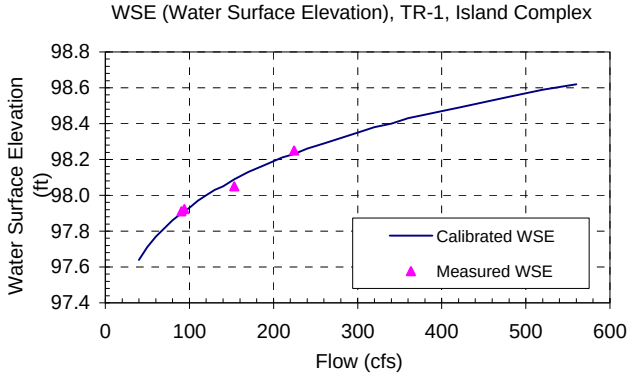

North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
0
50
100
150
200
250
Flow (cfs)

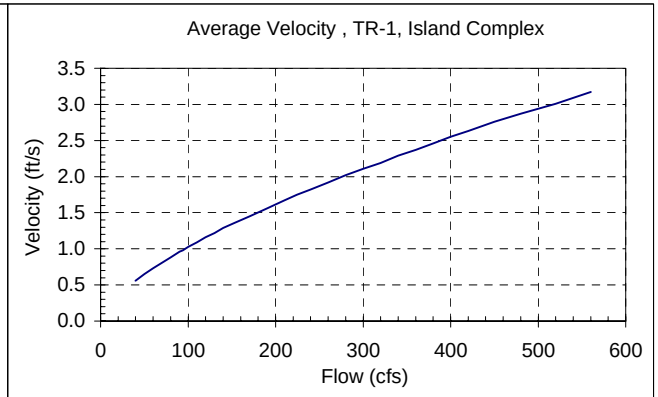

North Fork Koktuli River, Reach A, Island Complex, 05-NFK1-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.0
98.8
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

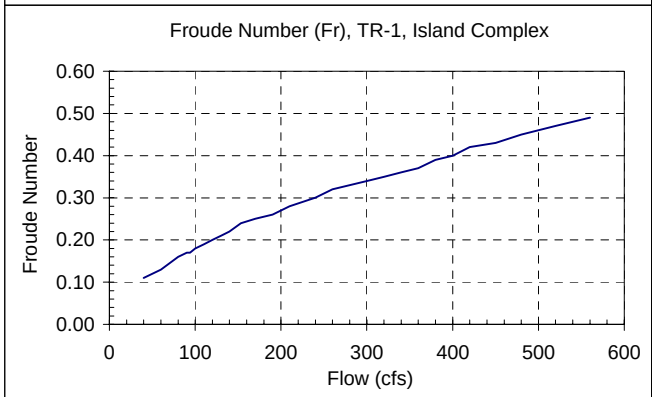
Stream: North Fork Koktuli River
Site Name: 05-NFK1-RN1
Date: 6/23/2005
Calibration Flow: NA

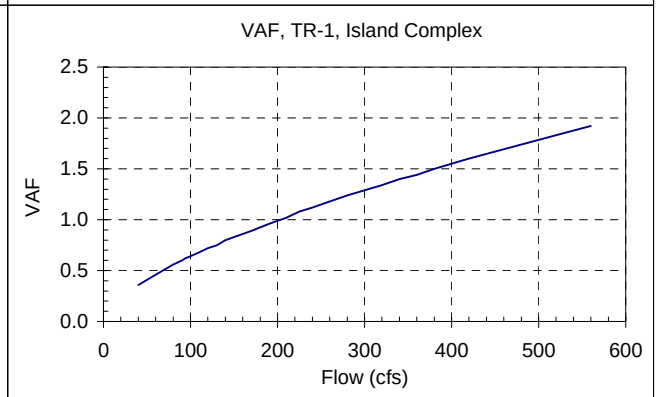
Reach: A
Site #: 1
Transect: 1
Habitat: Island Complex

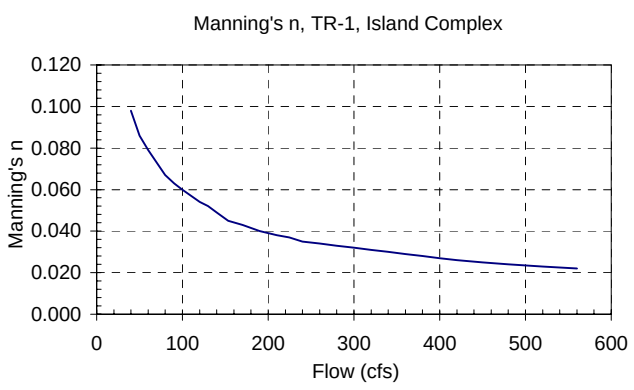
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.64	0.11	0.56	0.36	0.098	82.6
50	97.71	0.12	0.65	0.41	0.09	86.8
60	97.77	0.13	0.73	0.46	0.08	89.5
80	97.86	0.16	0.88	0.56	0.07	92.3
90.4	97.90	0.17	0.96	0.60	0.06	93.4
93.8	97.91	0.17	0.98	0.62	0.06	93.7
100	97.93	0.18	1.03	0.64	0.06	94.3
110	97.97	0.19	1.09	0.68	0.06	95.5
120	98.00	0.20	1.16	0.72	0.05	97.2
130	98.03	0.21	1.22	0.75	0.05	99.4
140	98.05	0.22	1.29	0.80	0.05	100.8
153.2	98.09	0.24	1.36	0.84	0.05	110.7
170	98.13	0.25	1.45	0.89	0.04	112.1
190	98.17	0.26	1.56	0.96	0.04	113.5
210	98.21	0.28	1.67	1.02	0.04	115.0
224.5	98.23	0.29	1.75	1.08	0.04	115.6
240	98.26	0.30	1.82	1.12	0.04	118.6
260	98.29	0.32	1.92	1.18	0.03	119.4
280	98.32	0.33	2.02	1.24	0.03	120.1
300	98.35	0.34	2.11	1.29	0.03	120.9
320	98.38	0.35	2.19	1.34	0.03	121.7
340	98.40	0.36	2.29	1.40	0.03	122.8
360	98.43	0.37	2.37	1.44	0.03	124.4
380	98.45	0.39	2.46	1.50	0.03	126.4
400	98.47	0.40	2.55	1.55	0.03	128.3
420	98.49	0.42	2.63	1.60	0.03	130.3
450	98.52	0.43	2.76	1.67	0.03	133.4
480	98.55	0.45	2.87	1.74	0.02	135.8
520	98.59	0.47	3.01	1.83	0.02	140.0
560.0	98.62	0.49	3.17	1.92	0.022	141.3

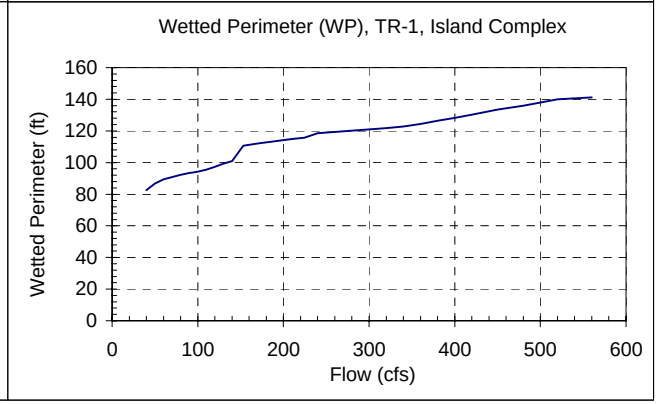




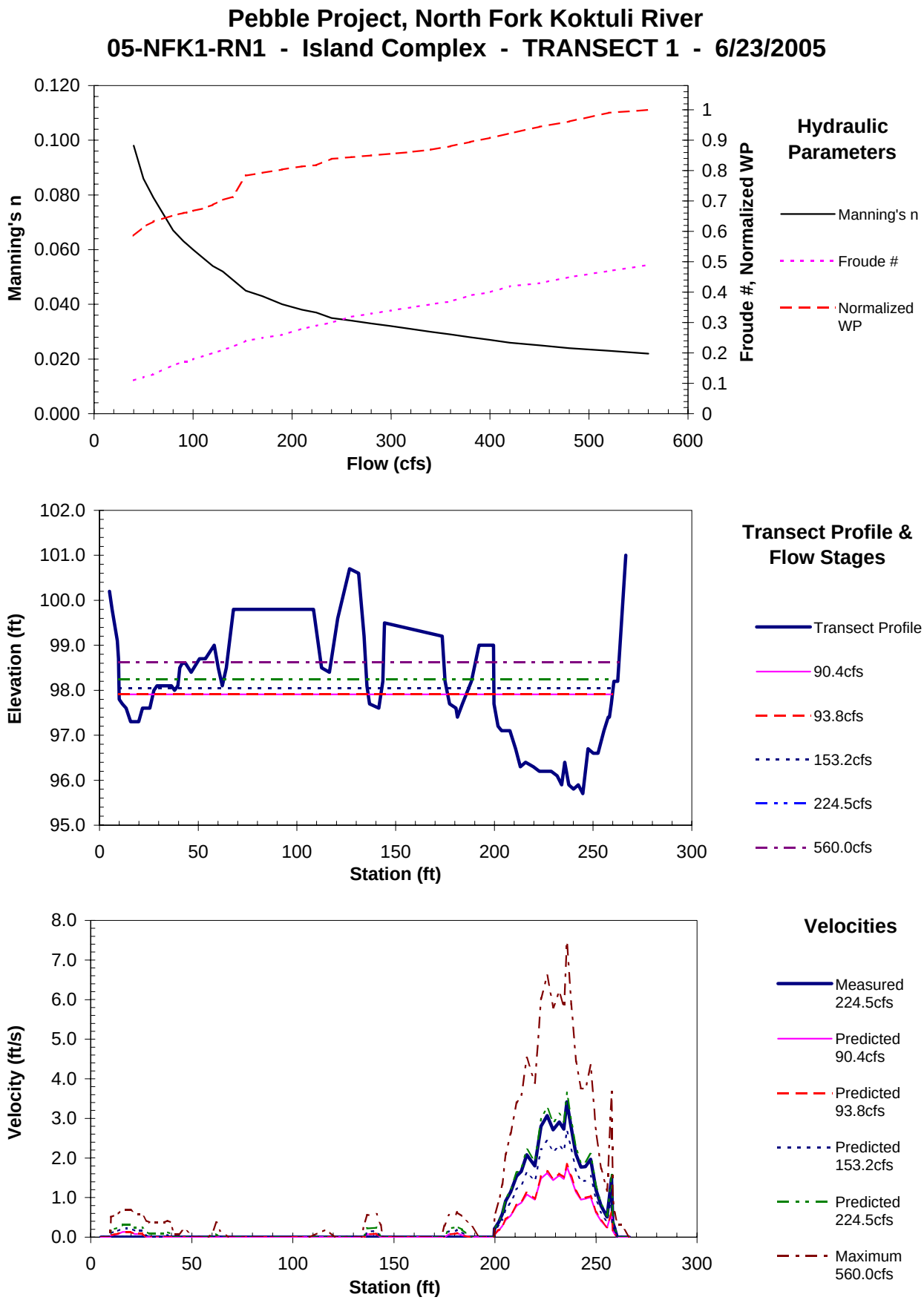








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-NFK1-RN1  06/23/05
RUN                          0605Q                                      TRANSECT 1
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  80.0
QARD  90.4
QARD  93.8
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 153.2
QARD 170.0
QARD 190.0
QARD 210.0
QARD 224.5
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 520.0
QARD 560.0
XSEC  1000     1000. 1.0     95.90    .00163
      1000  5.0100.2  6.499.79  9.099.08  9.698.68 10.097.78 11.697.68
      1000 13.597.58 15.897.28 17.897.28 19.897.28 21.897.58 23.897.58
      1000 25.597.58 27.597.98 29.198.08 31.698.08 33.998.08 36.598.08
      1000 38.097.98 39.798.08 40.798.48 41.998.58 43.698.58 46.498.38
      1000 50.698.68 53.698.74 58.199.01 60.298.53 62.298.10 64.298.47
      1000 67.999.84108.499.77112.598.53116.498.43120.799.61126.7100.7
      1000131.2100.6134.099.22135.498.14136.897.65141.497.59143.598.21
      1000144.499.54173.699.25175.098.25177.397.65180.697.55181.397.45
      1000183.897.75188.498.25192.299.03199.599.03199.897.65201.997.25
      1000203.697.05205.397.05207.897.05210.796.65213.196.35215.896.45
      1000219.896.35222.896.25225.896.25228.896.15231.896.05234.195.95
      1000235.696.45237.795.95240.195.85242.595.95244.895.75247.496.65
      1000250.196.55252.596.55255.597.05257.797.45258.397.45259.297.65
      1000260.598.25262.598.25266.5101.0
```

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      24.6      22.9
NS    1000      42.7      54.6      54.6      56.6      62.7      56.7
NS    1000      64.6      62.7      56.6      53.6      45.6      45.6
NS    1000      45.6      42.6      22.9      22.9      22.9      26.8
NS    1000      22.9      26.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      24.9      24.9
NS    1000      24.9      22.9      22.9      23.8      23.7      42.6
NS    1000      42.7      45.7      45.7      46.6      64.6      46.6
NS    1000      45.7      45.7      46.7      65.6      54.6      76.6
NS    1000      76.8      64.8      64.6      57.6      74.8      65.6
NS    1000      76.6      56.6      75.7      75.6      65.6      67.6
NS    1000      67.7      74.6      32.6
WSL   1000     97.64     97.71     97.77     97.86     97.90     97.91
WSL   1000     97.93     97.97     98.00     98.03     98.05     98.09
WSL   1000     98.13     98.17     98.21     98.23     98.26     98.29
WSL   1000     98.32     98.35     98.38     98.40     98.43     98.45
WSL   1000     98.47     98.49     98.52     98.55     98.59     98.62
CAL1  1000     98.25     224.5
VEL1  1000
VEL1  1000
VEL1  1000
VEL1  1000                                                0.00 0.00 0.00 0.00
VEL1  1000 0.00 0.00           0.21 0.38 0.58 0.91 1.14 1.54 1.66 2.08
VEL1  1000 1.80 2.80 3.07 2.71 2.91 2.73 3.42 2.77 2.10 1.77 1.78 1.97
VEL1  1000 1.19 0.79 0.51 1.48 0.39 0.23 0.00 0.00
CAL2  1000     97.91      90.4
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.05     153.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     97.92      93.8
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
VEL4  1000
VEL4  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: North Fork Koktuli River

Reach: NFK-B

NFK-B Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)					Measured WSE(ft)					WSE Calibration Error (ft)					Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_5	Q_1	Q_2	Q_3	Q_4	Q_5	Q_1	Q_2	Q_3	Q_4	Q_5	
07-NFK1-RF1	14.29	200.3	104.6	190.3			94.95	94.72	95.06			0.00	0.00	-0.13			IFG4
05-NFK1-IC1	15.33	226.4	100.2	148.2	94.1		96.93	96.39	96.68	96.38		0.02	0.02	-0.03	-0.01		IFG4
05-NFK1-RF2	15.97	219.5	110.0	161.4	98.8		93.62	93.21	93.49	93.13		0.04	-0.01	-0.05	0.01		IFG4
05-NFK1-RF1	18.29	214.8	96.9	152.4	84.4	88.2	97.20	96.74	97.01	96.65	96.73	0.02	0.00	-0.02	0.02	-0.03	IFG4
04-NFK-RF1	20.94	169.2	86.9	129.4	61.8	86.0	96.46	96.10	96.27	95.97	96.09	-0.02	0.00	0.02	-0.01	0.01	IFG4

* RK is an abbreviation for River Kilometer

Stream: North Fork Koktuli River

Reach: NFK-B

Site/TR: 07-NFK1-RF1

Habitat Type: Riffle

River Kilometer: 14.29

Stream: North Fork Koktuli River
Reach: B
Site: 07-NFK1-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Trip	Date	BM	HP	TP
1st	6/12/2007	100.00	98.83	100.09
2nd	7/20/2007	100.00	98.84	100.11
3rd	9/20/2007			
4th	10/19/2007	100.00	98.85	100.11

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) No level loop was conducted in the 9/20/07 site visit.
(c) Relative elevation changes of control pins were within ±0.01ft over the study period in 2007.
(d) Small elevation change suggests the control pins were stable during the survey period.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/12/2007	94.95
7/20/2007	94.72
9/20/2007	95.70
10/19/2007	95.06

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/12/2007	200.3
7/20/2007	104.6
9/20/2007	
10/19/2007	190.3

No discharge was surveyed during the 9/20/07 site visit.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/12/2007	0.743%	118.4
7/20/2007	0.711%	112.5
9/20/2007	0.582%	110
10/19/2007	0.727%	88

The slope S=0.743% of 6/12/07 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/12/2007	93.45
7/20/2007	93.52
9/20/2007	
10/19/2007	93.36
Invert	93.52
SZF	93.52

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in 9/20/07 trip

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/12/2007	200.3	94.95	94.95	0.00	IFG4
2nd	7/20/2007	104.6	94.72	94.72	0.00	IFG4
3rd	9/20/2007		95.70			
4th	10/19/2007	190.3	95.06			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Hydraulics of 10/19/07 were not used in WSE calibration because of too high WSE.
(c) No discharges measured in third trip on 9/20/2007

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 104.6cfs to 200.3cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/12/2007	200.3	Y
7/20/2007	104.6	Y
9/20/2007	0.0	
10/19/2007	190.3	

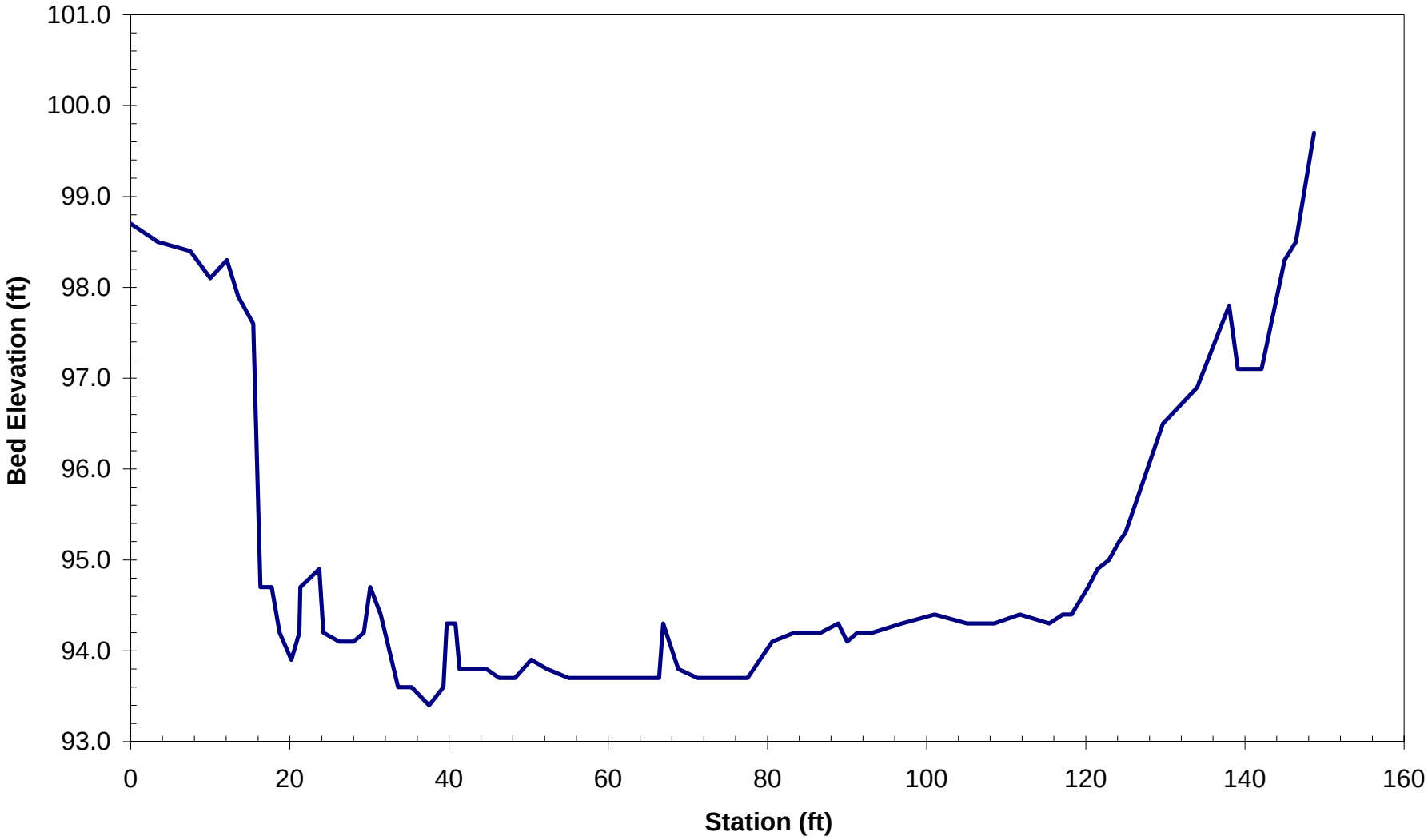
calibration notes

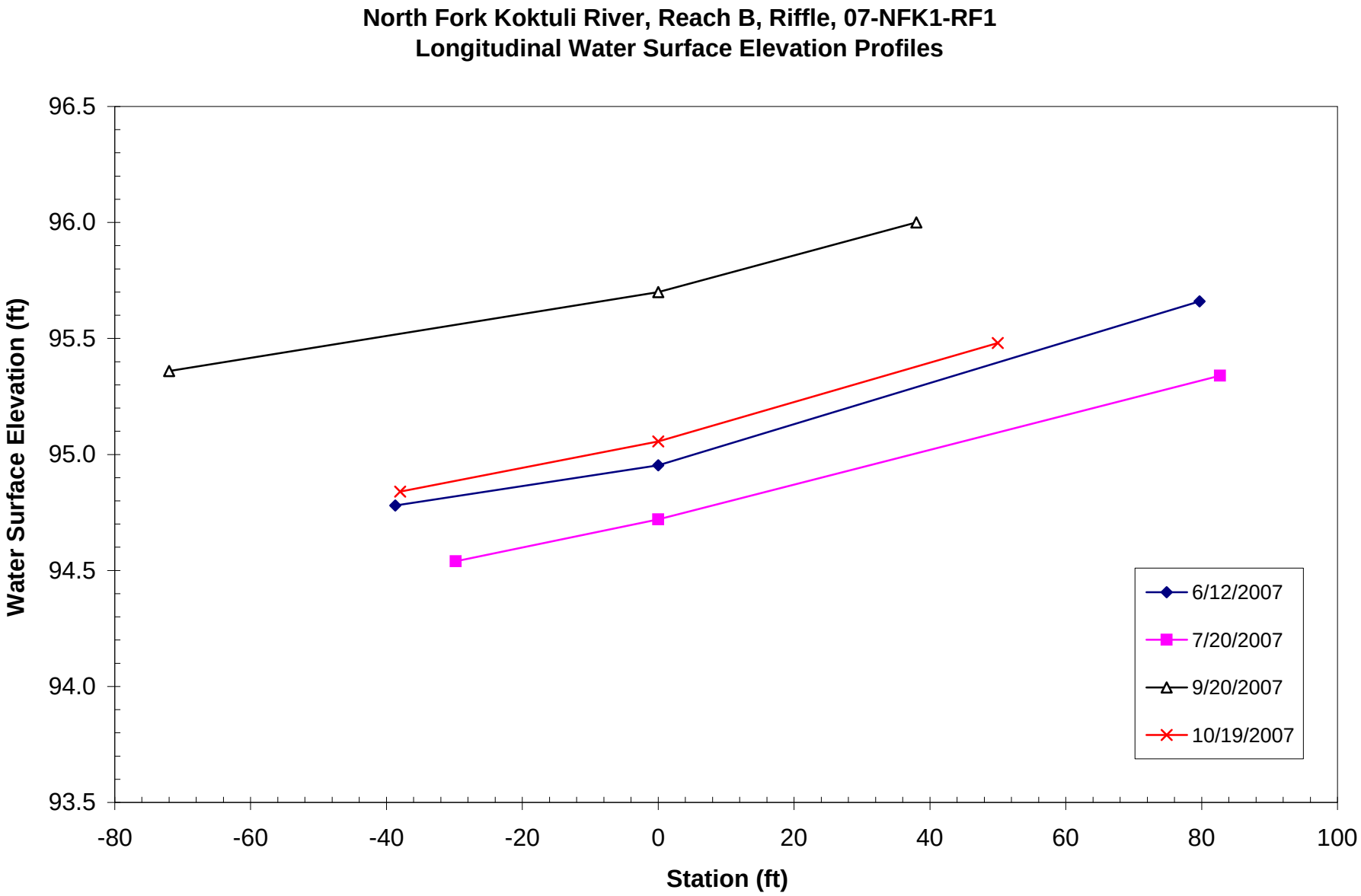
(4) Hydraulic Calibration Results:

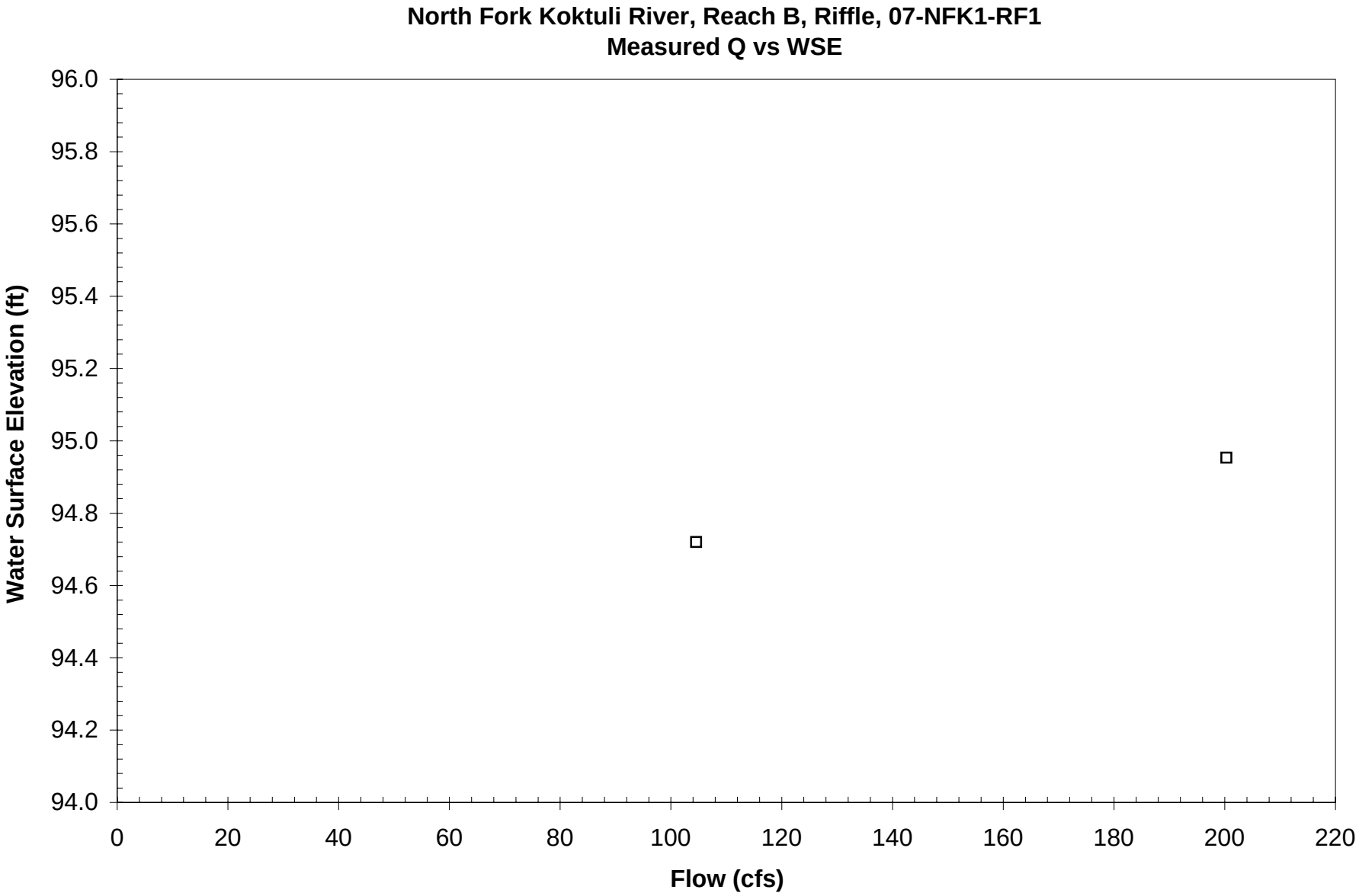
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends as flow increases.

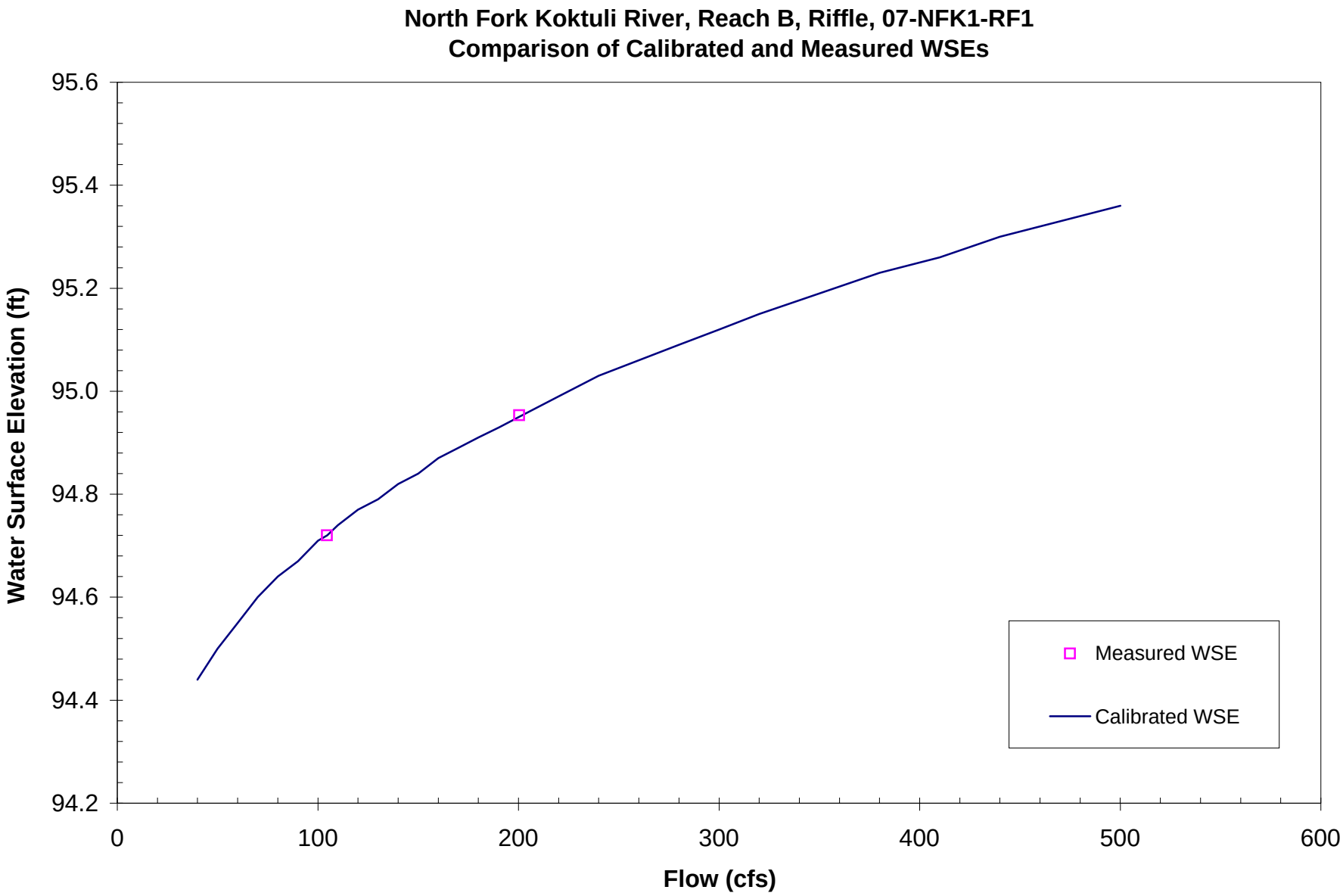
calibration notes

North Fork Koktuli River, Reach B, Riffle, 07-NFK1-RF1
Measured Transect Profile



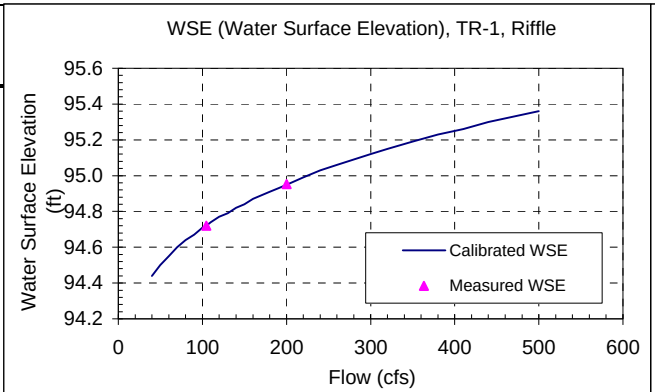

North Fork Koktuli River, Reach B, Riffle, 07-NFK1-RF1
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
93.5
-80
-60
-40
-20
0
20
40
60
80
100
Station (ft)
6/12/2007
7/20/2007
9/20/2007
10/19/2007

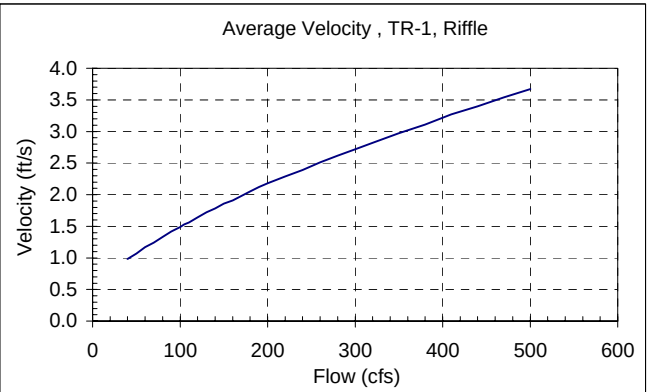

North Fork Koktuli River, Reach B, Riffle, 07-NFK1-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
96.0
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
0
20
40
60
80
100
120
140
160
180
200
220
Flow (cfs)

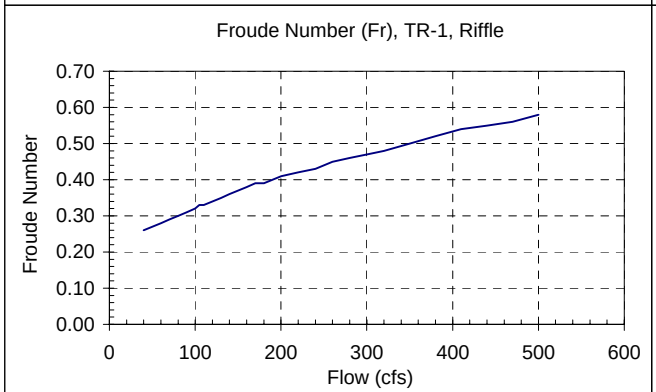

North Fork Koktuli River, Reach B, Riffle, 07-NFK1-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

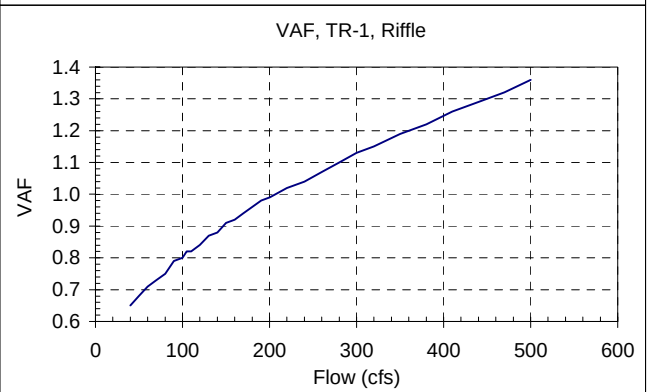
Stream: North Fork Koktuli River **Reach:** B
Site Name: 07-NFK1-RF1 **Site #:** 1
Date: 6/12/2007 **Transect:** 1
Calibration Flow: NA **Habitat:** Riffle

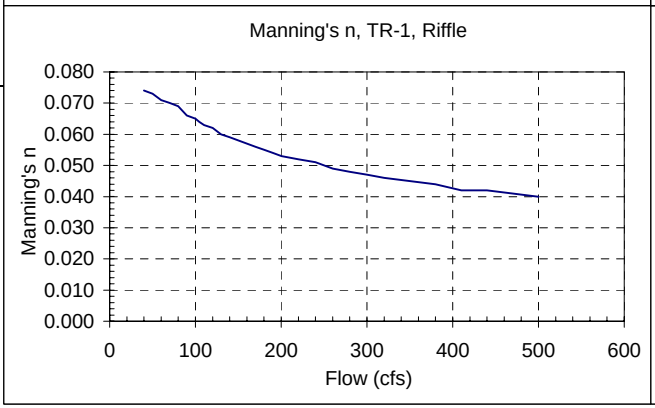
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	94.44	0.26	0.98	0.65	0.074	95.5
50	94.50	0.27	1.07	0.68	0.07	98.6
60	94.55	0.28	1.17	0.71	0.07	99.6
70	94.60	0.29	1.24	0.73	0.07	100.5
80	94.64	0.30	1.33	0.75	0.07	101.3
90	94.67	0.31	1.42	0.79	0.07	102.0
100	94.71	0.32	1.49	0.80	0.07	102.9
104.6	94.72	0.33	1.53	0.82	0.06	103.1
110	94.74	0.33	1.56	0.82	0.06	103.6
120	94.77	0.34	1.64	0.84	0.06	104.2
130	94.79	0.35	1.72	0.87	0.06	104.6
140	94.82	0.36	1.78	0.88	0.06	105.2
150	94.84	0.37	1.86	0.91	0.06	105.7
160	94.87	0.38	1.91	0.92	0.06	106.3
170	94.89	0.39	1.98	0.94	0.06	106.7
180	94.91	0.39	2.05	0.96	0.06	107.1
190.3	94.93	0.40	2.12	0.98	0.05	107.5
200.3	94.95	0.41	2.18	0.99	0.05	107.9
220	94.99	0.42	2.29	1.02	0.05	109.1
240	95.03	0.43	2.39	1.04	0.05	109.6
260	95.06	0.45	2.51	1.07	0.05	109.8
280	95.09	0.46	2.62	1.10	0.05	110.0
300	95.12	0.47	2.72	1.13	0.05	110.2
320	95.15	0.48	2.82	1.15	0.05	110.4
350	95.19	0.50	2.97	1.19	0.05	110.6
380	95.23	0.52	3.11	1.22	0.04	110.9
410	95.26	0.54	3.27	1.26	0.04	111.2
440	95.30	0.55	3.40	1.29	0.04	111.5
470	95.33	0.56	3.54	1.32	0.04	111.8
500.0	95.36	0.58	3.67	1.36	0.040	112.0

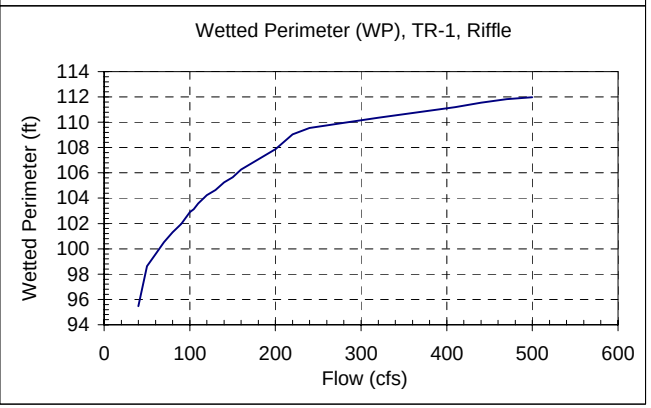






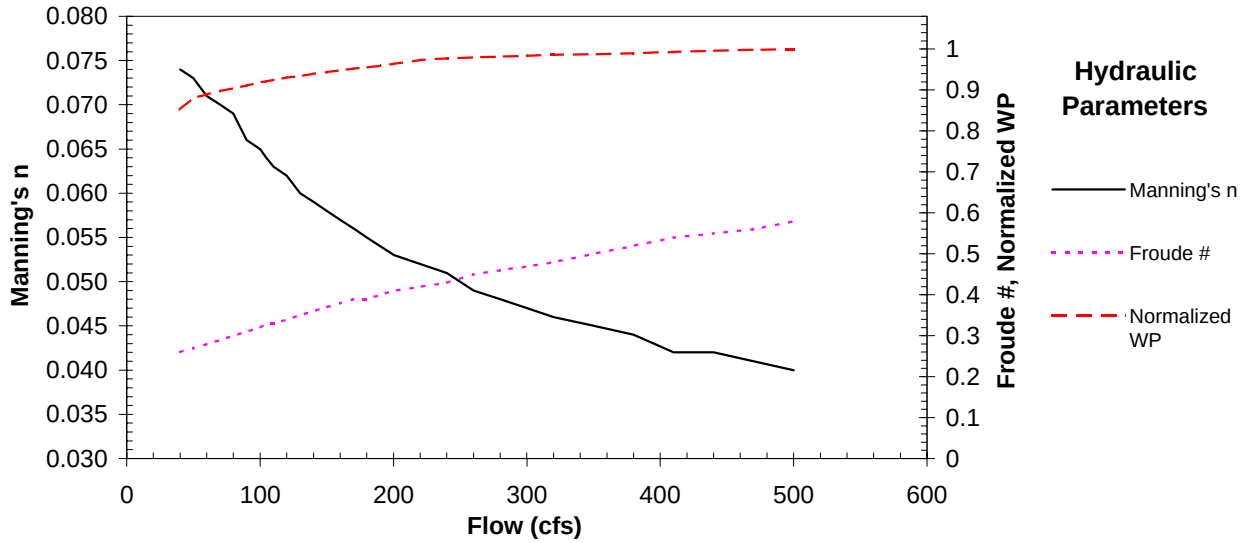


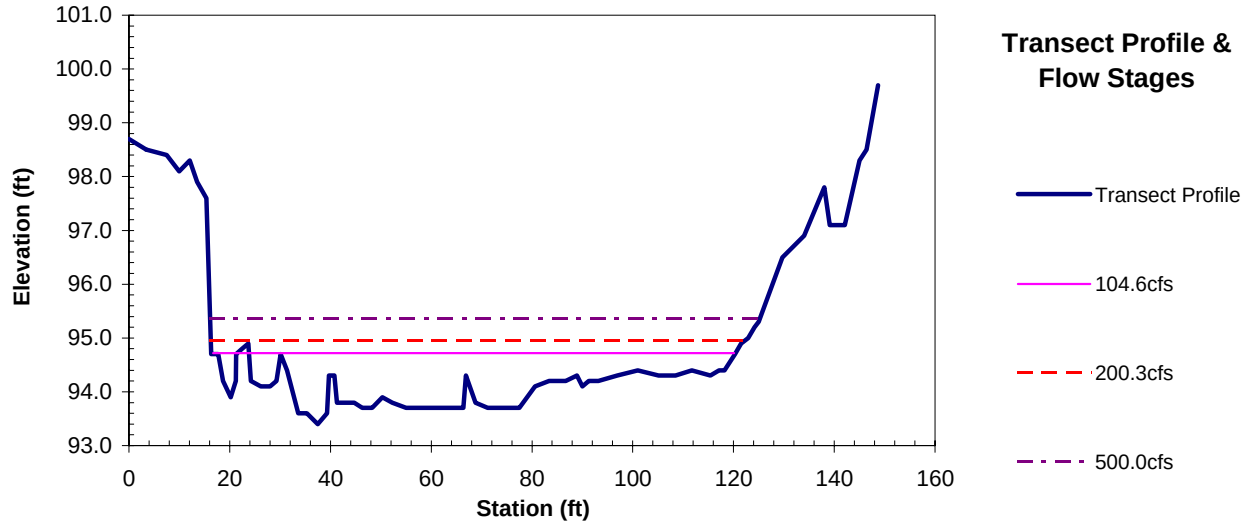


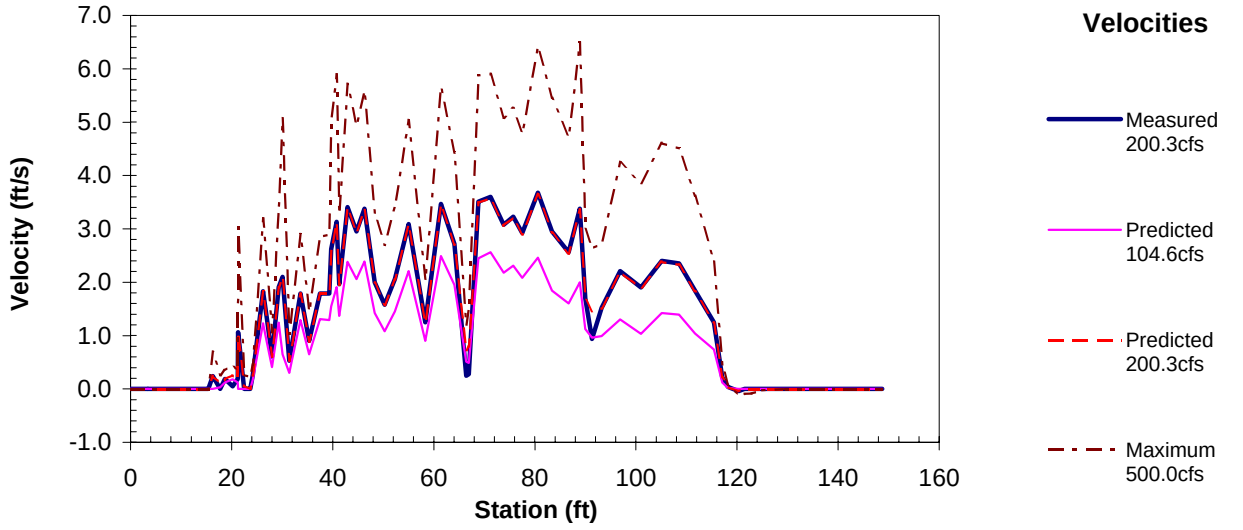


cTR1 - Transect hydraulic parameters

Pebble Project, North Fork Koktuli River
07-NFK1-RF1 - Riffle - TRANSECT 1 - 6/12/2007







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-NFK1-RF1  06/12/07
RIFFLE                     0607Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 104.6
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.3
QARD 200.3
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 470.0
QARD 500.0
XSEC  1000     1000. 1.0     93.52    .00743
      1000   .098.65  3.498.51  7.598.43 10.098.09 12.198.26 13.597.93
      1000 15.497.55 16.394.75 17.794.65 18.794.25 20.293.95 21.294.15
      1000 21.394.75 22.594.85 23.794.95 24.294.15 26.294.05 27.094.10
      1000 28.094.05 29.394.15 30.194.65 31.494.40 33.693.60 35.393.55
      1000 37.593.45 39.393.60 39.794.35 40.894.30 41.393.85 42.993.85
      1000 44.793.84 46.393.75 48.393.70 50.393.95 52.393.80 55.093.65
      1000 58.393.65 61.493.65 64.193.65 66.493.75 66.994.30 68.893.85
      1000 71.293.70 73.893.75 75.793.65 77.593.70 80.694.05 83.494.25
      1000 86.794.25 88.994.35 90.094.10 91.394.15 93.294.15 96.994.35
      1000101.094.45105.194.35108.594.35111.794.40115.494.35117.194.45
      1000118.294.45120.394.75121.594.95122.995.00124.295.23125.095.33
      1000129.796.53134.096.86138.097.76139.197.11142.197.07145.098.34
      1000146.498.47148.799.71
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      25.9      26.6 .5   65.8      76.7
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      76.7      77.9      77.9      74.8      45.8      45.7
NS    1000      74.6      74.6      74.8      74.8      74.6      74.6
NS    1000      74.6      74.6      75.6      74.9      74.9      73.6
NS    1000      75.6      54.6      45.7      76.8      65.6      65.6
NS    1000      64.6      45.6      45.6 .2   75.6 .12  76.7      74.7
NS    1000      64.6      74.6      75.6      54.6      45.6      54.6
NS    1000      54.7      65.6      54.8 .075 45.6      54.6      45.6
NS    1000      45.6      46.8      45.6      43.6      45.8      32.6
NS    1000      25.9      23.8      32.6      23.8      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9
WSL   1000     94.44     94.50     94.55     94.60     94.64     94.67
WSL   1000     94.71     94.72     94.74     94.77     94.79     94.82
WSL   1000     94.84     94.87     94.89     94.91     94.93     94.95
WSL   1000     94.99     95.03     95.06     95.09     95.12     95.15
WSL   1000     95.19     95.23     95.26     95.30     95.33     95.36
CAL1  1000     94.95     200.3
VEL1  1000                                    0.24 0.00 0.19 0.05 0.19
VEL1  1000 1.06 0.00 0.00 0.26 1.83 1.32 0.61 1.91 2.10 0.53 1.79 0.90
VEL1  1000 1.79 1.79 2.62 3.13 1.96 3.41 2.95 3.38 2.00 1.58 2.06 3.09
VEL1  1000 1.25 3.47 2.72 0.25 0.28 3.51 3.60 3.08 3.23 2.92 3.68 2.95
VEL1  1000 2.56 3.38 1.70 0.94 1.52 2.21 1.90 2.40 2.35 1.84 1.25 0.22
VEL1  1000 0.04-0.04 0.00
VEL1  1000
CAL2  1000     94.72     104.6
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: North Fork Koktuli River

Reach: NFK-B

Site/TR: 05-NFK1-IC1

Habitat Type: Island Complex

River Kilometer: 15.33

Stream: North Fork Koktuli River
Reach: B
Site: 05-NFK1-IC1
Habitat Type: Island Complex

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	AP	TP
1st	6/22/2005	100.00	98.27	98.58	100.21
2nd	7/23/2005	100.00	98.29		100.19
3rd	8/13/2005	100.00	98.28	98.59	100.20
4th	7/4/2006	100.00	98.27	98.59	100.23
5th	4/13/2007	100.00	98.25	98.56	
6th	7/20/2007	100.00	98.27	98.57	100.33

(a) Control pin (BM, HP, AP, TP) elevations are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ± 0.02ft, except TP.
The small relative elevation changes suggested the control pins were stable during the survey period.
(c) The disturbance to TP would not affect the survey results because all other three pins were stable.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the main channel for each flow,
and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)	
	Left	Right (main)
6/22/2005	95.61	96.93
7/23/2005	95.39	96.35
8/13/2005	95.31	96.39
7/4/2006	95.53	96.68
4/13/2007	96.41	97.82
7/20/2007	95.36	96.38

Hydraulics of 4/13/07 survey were affected by ice.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	WSE (ft)		
	Left	Right (main)	Total
6/22/2005	7.1	219.4	226.4
7/23/2005			
8/13/2005	-0.7	100.9	100.2
7/4/2006	0.1	148.1	148.2
4/13/2007	19.6	64.4	84.0
7/20/2007	1.0	93.2	94.1

(1) Hydraulics of 4/13/07 survey were affected by ice.
(2) No discharge was measured on 7/23/05

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope		WSE Slope	
	Left	Right (main)	Left	Right (main)
6/22/2005	0.057%	0.324%	121.8	139
7/23/2005	0.023%	0.292%	87.5	130.1
8/13/2005	0.030%	0.196%	99.9	132.7
7/4/2006	-0.01%	0.326%	85	110.4
4/13/2007				
7/20/2007	0.012%	0.243%	82	111

No WSE slope was measured in 4/13/07 trip
The slope S=0.324% of 6/22/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Main Channel Invert (ft)
6/22/2005	94.53
7/23/2005	
8/13/2005	94.49
7/4/2006	94.38
4/13/2007	94.21
7/20/2007	94.63
Invert	94.63
SZF	94.93

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profiles were surveyed on 7/23/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft)	calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR	TR	TR	
1st	6/22/2005	226.4	96.93	96.95	0.02	IFG4
2nd	7/23/2005		96.35			
3rd	8/13/2005	100.2	96.39	96.41	0.02	IFG4
4th	7/4/2006	148.2	96.68	96.65	-0.03	IFG4
5th	4/13/2007	84.0	97.82			
6th	7/20/2007	94.1	96.38	96.37	-0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) 7/23/05 data set has no discharge measurement
(d) Hydraulics of 4/13/07 survey was affected by ice in the channel. Data not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with five velocity/discharge measurements, ranging from 84cfs to 226.4cfs.
The April, 07 profile (84cfs) was impacted by ice and thus was not used for velocity calibration.
Each of the remaining four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
No adjustment for n values was needed for any of the four calibrated velocity profiles.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

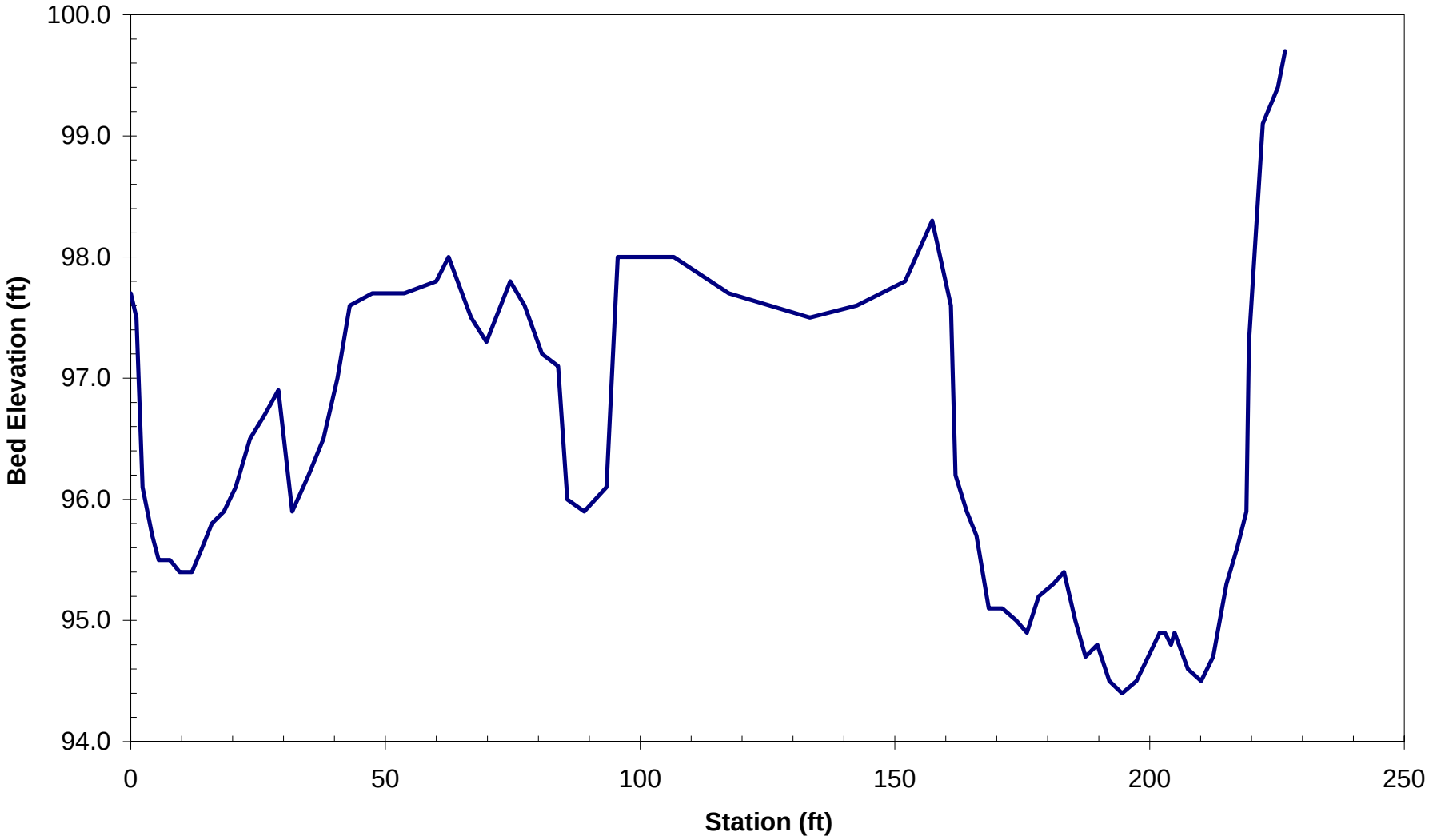
Survey Date	Q (cfs)	WUA (Y/N)
6/22/2005	226.4	Y
7/23/2005		
8/13/2005	100.2	Y
7/4/2006	148.2	Y
4/13/2007	84.0	
7/20/2007	94.1	Y

(4) Hydraulic Calibration Results:

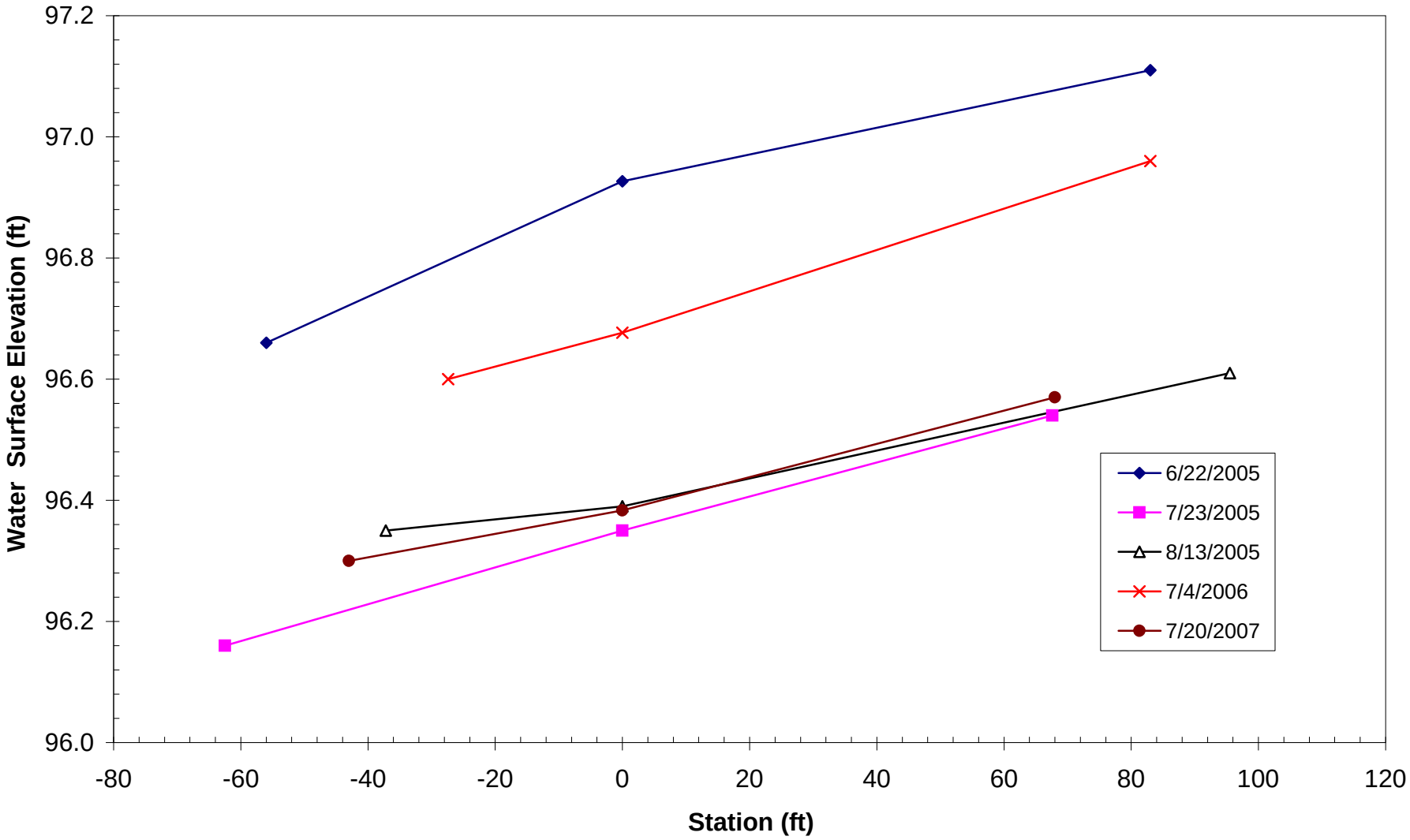
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges with normal trends.

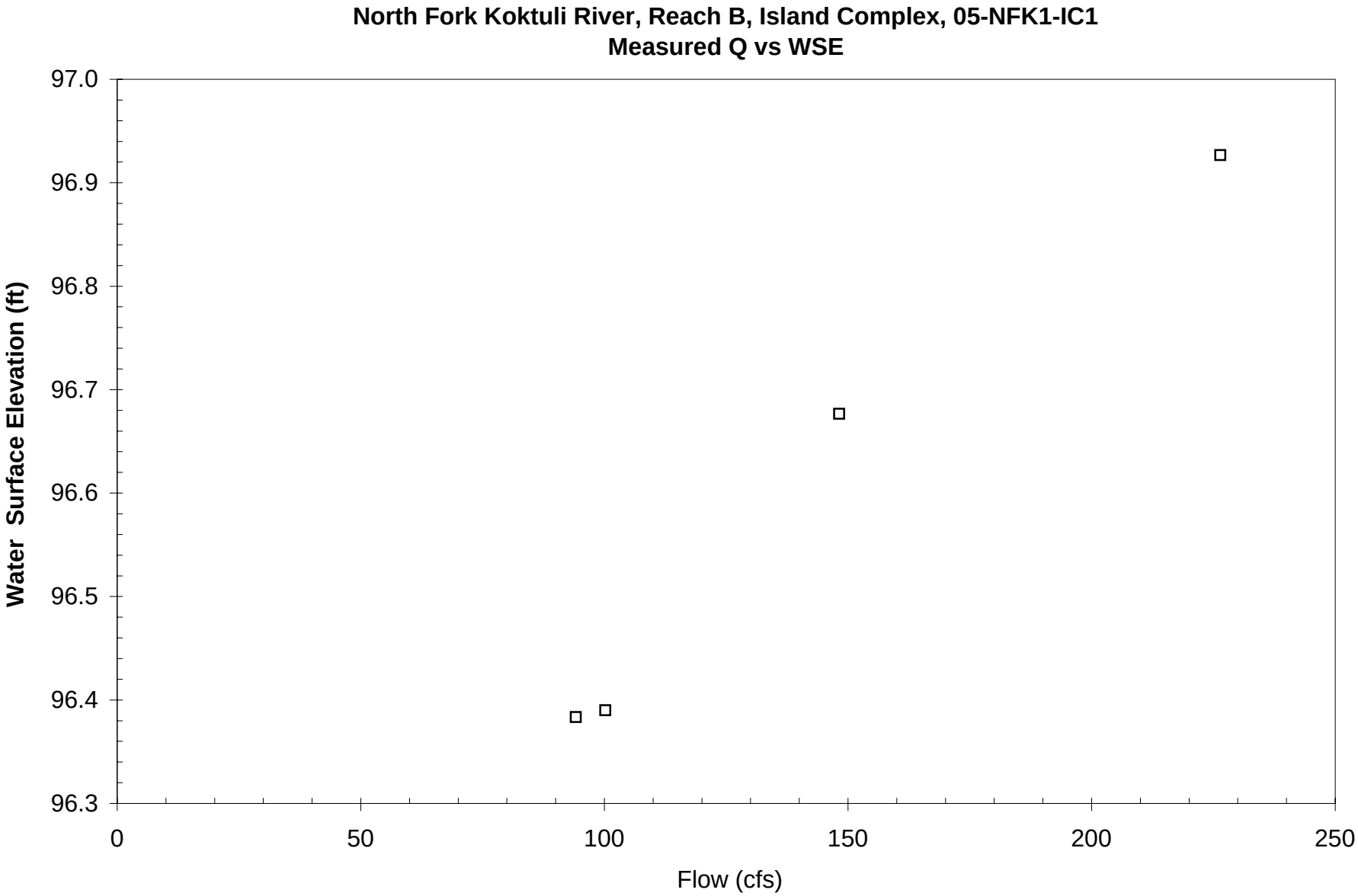
calibration notes

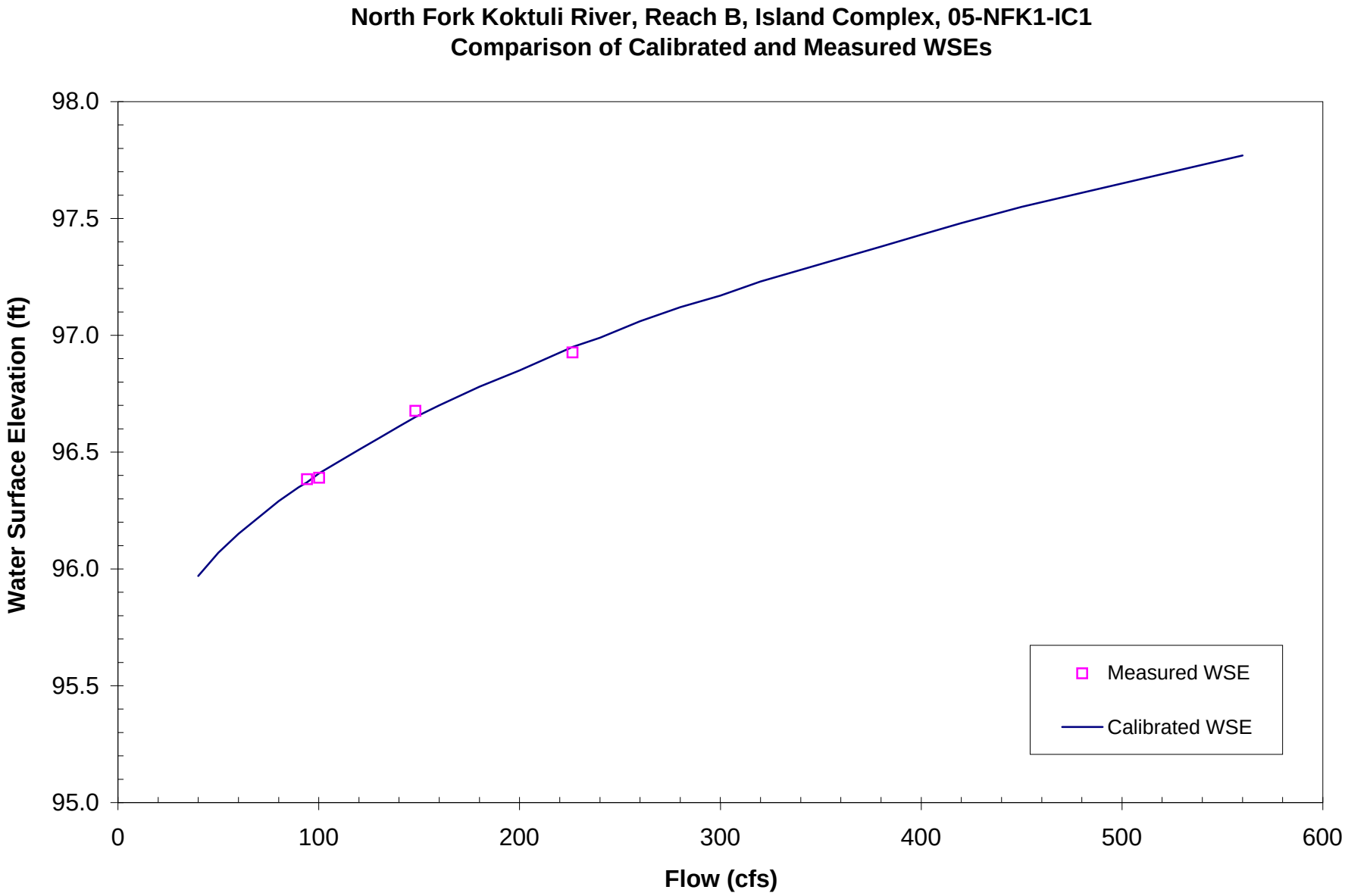
North Fork Koktuli River, Reach B, Island Complex, 05-NFK1-IC1
Measured Transect Profile



North Fork Koktuli River, Reach B, Island Complex, 05-NFK1-IC1
Longitudinal Water Surface Elevation Profiles



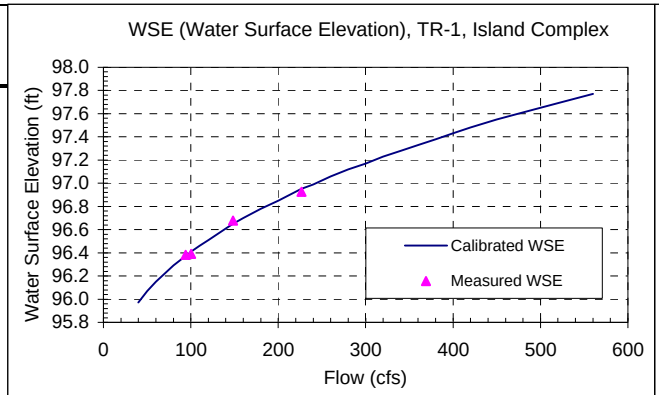

North Fork Koktuli River, Reach B, Island Complex, 05-NFK1-IC1
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.9
96.8
96.7
96.6
96.5
96.4
96.3
0
50
100
150
200
250
Flow (cfs)

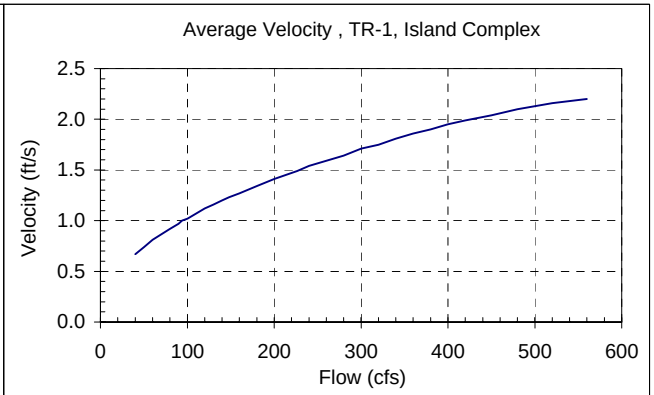

North Fork Koktuli River, Reach B, Island Complex, 05-NFK1-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

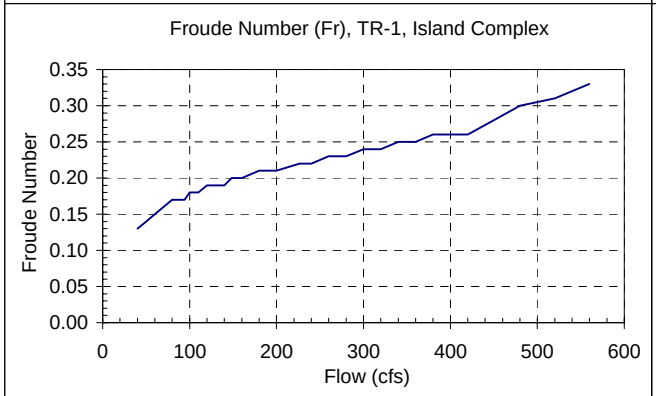
Stream: North Fork Koktuli River
Site Name: 05-NFK1-IC1
Date: 6/22/2005
Calibration Flow: NA

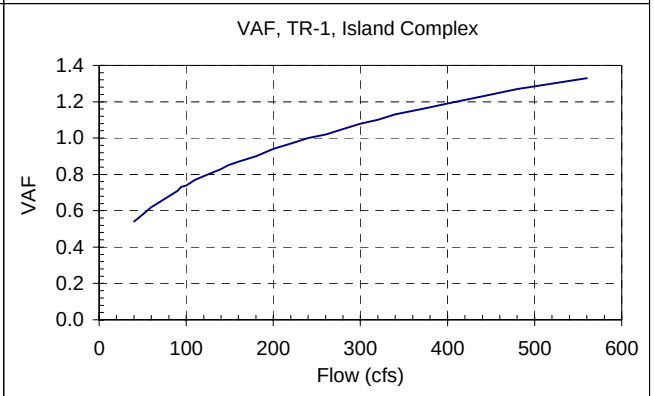
Reach: B
Site #: 1
Transect: 1
Habitat: Island Complex

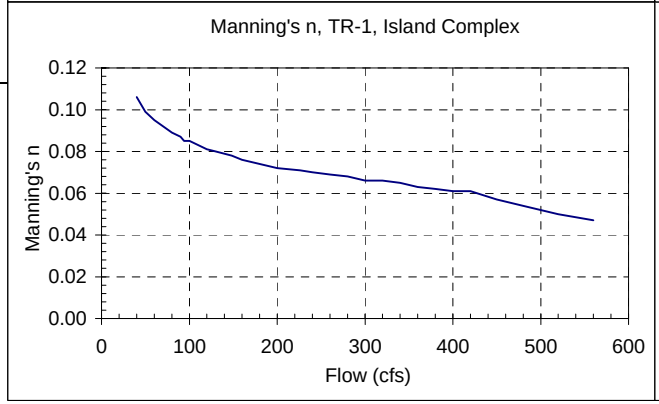
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	95.97	0.13	0.67	0.54	0.106	77.8
50	96.07	0.14	0.74	0.58	0.10	84.0
60	96.15	0.15	0.81	0.62	0.10	87.3
80	96.29	0.17	0.92	0.68	0.09	91.6
90	96.35	0.17	0.97	0.71	0.09	93.1
94.1	96.37	0.17	1.00	0.73	0.09	93.7
100.2	96.41	0.18	1.02	0.74	0.09	94.7
110	96.46	0.18	1.07	0.77	0.08	96.0
120	96.51	0.19	1.12	0.79	0.08	97.4
130	96.56	0.19	1.16	0.81	0.08	98.7
140	96.61	0.19	1.20	0.83	0.08	100.2
148.2	96.65	0.20	1.23	0.85	0.08	101.4
160	96.70	0.20	1.27	0.87	0.08	102.8
180	96.78	0.21	1.34	0.90	0.07	105.1
200	96.85	0.21	1.41	0.94	0.07	107.1
226.4	96.95	0.22	1.49	0.98	0.07	109.7
240	96.99	0.22	1.54	1.00	0.07	110.2
260	97.06	0.23	1.59	1.02	0.07	111.2
280	97.12	0.23	1.64	1.05	0.07	112.7
300	97.17	0.24	1.71	1.08	0.07	114.0
320	97.23	0.24	1.75	1.10	0.07	115.5
340	97.28	0.25	1.81	1.13	0.07	116.6
360	97.33	0.25	1.86	1.15	0.06	118.1
380	97.38	0.26	1.90	1.17	0.06	120.3
400	97.43	0.26	1.95	1.19	0.06	122.5
420	97.48	0.26	1.99	1.21	0.06	124.7
450	97.55	0.28	2.04	1.24	0.06	135.6
480	97.61	0.30	2.10	1.27	0.05	149.1
520	97.69	0.31	2.16	1.30	0.05	169.2
560.0	97.77	0.33	2.20	1.33	0.047	190.5

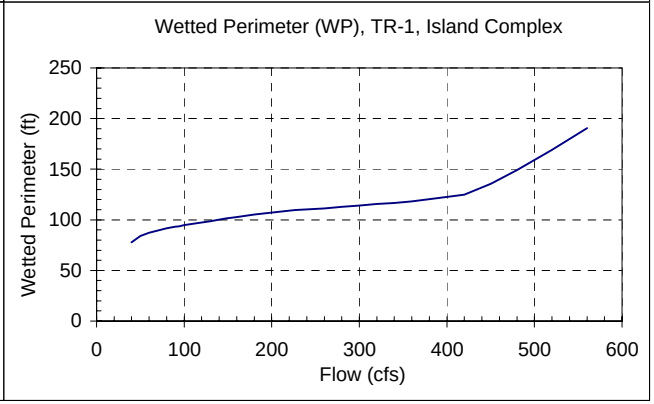


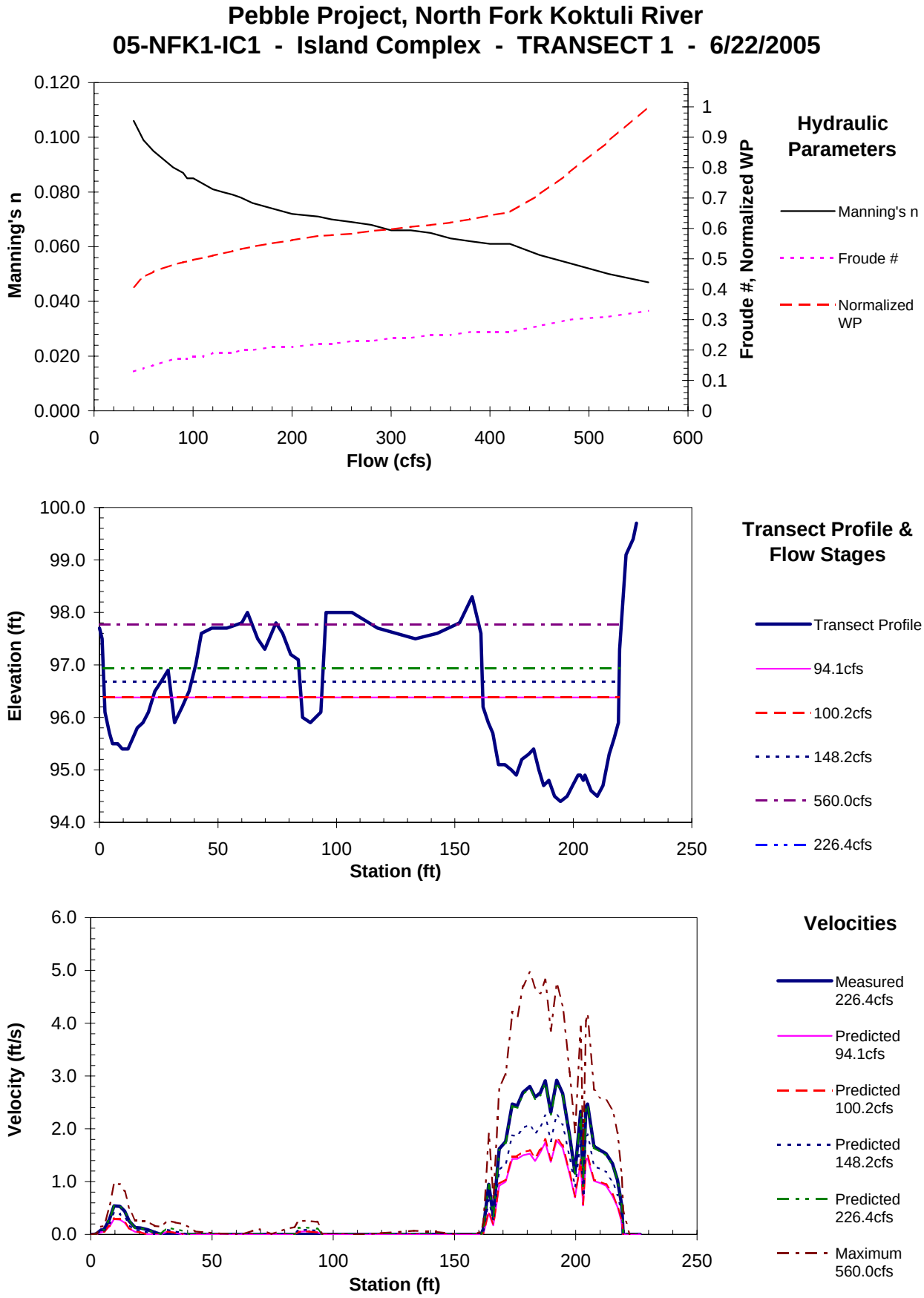












Transect hydraulic summary plots

IFG4 Data Deck

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QARD  50.0
QARD  60.0
QARD  80.0
QARD  90.0
QARD  94.1
QARD 100.2
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 148.2
QARD 160.0
QARD 180.0
QARD 200.0
QARD 226.4
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 520.0
QARD 560.0
XSEC  1000     1000. 1.0     94.93    .00324
      1000   .097.68  1.197.48  2.396.12  4.295.73  5.595.52  7.795.52
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      1000 23.496.52 26.396.73 29.096.93 31.795.90 34.996.20 37.896.51
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      1000 85.795.97 89.095.87 93.496.08 95.698.04 99.698.00106.698.01
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      1000226.699.72
NS    1000      22.9      22.9      22.9      22.9      25.9      62.6
NS    1000      54.8      45.7      45.8      45.8      46.9      43.8
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      54.6      45.6      54.6      53.7      53.7      35.7
NS    1000      24.7      42.7      43.6      43.6      34.6      43.6
NS    1000      34.6      34.8      34.7      32.6      23.9      22.9
NS    1000      23.7      23.9      24.7      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      42.6      45.6      54.6
NS    1000      43.6      43.8      43.6      43.7      45.7      45.7
NS    1000      43.8      54.6      56.6      54.6      45.6      47.7
NS    1000      74.8      74.8      74.8      45.6      74.6      46.7
NS    1000      72.7      63.6      25.6      25.7      22.9      22.9
NS    1000      22.9
WSL   1000     95.97     96.07     96.15     96.29     96.35     96.37
WSL   1000     96.41     96.46     96.51     96.56     96.61     96.65
WSL   1000     96.70     96.78     96.85     96.95     96.99     97.06
WSL   1000     97.12     97.17     97.23     97.28     97.33     97.38
WSL   1000     97.43     97.48     97.55     97.61     97.69     97.77
CAL1  1000     96.93     226.4
VEL1  1000           0.01 0.08 0.09 0.29 0.54 0.53 0.44 0.25 0.13 0.12
VEL1  1000 0.09 0.04 0.00
VEL1  1000
VEL1  1000                                0.10 0.95 0.35 1.62 1.76 2.47
VEL1  1000 2.44 2.69 2.80 2.60 2.68 2.91 2.31 2.92 2.67 1.88 1.17 2.33
VEL1  1000 0.94 2.42 2.47 1.67 1.59 1.53 1.34 1.03 0.55
VEL1  1000
CAL2  1000     96.39     100.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.68     148.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     96.38      94.1
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: North Fork Koktuli River

Reach: NFK-B

Site/TR: 05-NFK1-RF2

Habitat Type: Riffle

River Kilometer: 15.97

Stream: North Fork Koktuli River
Reach: B
Site: 05-NFK1-RF2
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/22/2005	1	100.00	100.82	95.77
2nd	7/23/2005	2	100.00	100.83	95.74
3rd	8/14/2005	3	100.00	100.80	95.76
4th	7/4/2006	4	100.00	100.77	95.72
5th	4/13/2007	5	100.00	100.79	95.74
6th	7/19/2007	6	100.00	100.81	95.72

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ±0.03ft from 2005 to 2007.
(c) The relative changes indicated there were slight disturbance to the control pins over the 2+ years period. Not able to determine if the BM or the other two pins or all three had moved. The disturbance is not too significant and is not expected to have too significant impact on hydraulic calibration.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/22/2005	93.62
7/23/2005	93.36
8/14/2005	93.21
7/4/2006	93.49
4/13/2007	94.71
7/19/2007	93.13

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/22/2005	219.5
7/23/2005	
8/14/2005	110.0
7/4/2006	161.4
4/13/2007	36.1
7/19/2007	98.8

(a) No discharge was measured on 7/23/05

(b) Hydraulics of 4/13/07 survey was significantly affected by ice

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/22/2005	0.688%	125
7/23/2005	0.482%	230.4
8/14/2005	0.647%	166.8
7/4/2006	0.681%	133.7
4/13/2007	NA	
7/19/2007	0.639%	125.1

The slope S=0.688% of 6/22/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/22/2005	91.22
7/23/2005	
8/14/2005	91.41
7/4/2006	91.49
4/13/2007	92.61
7/19/2007	91.33
Invert	91.49
SZF	91.49

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in 7/22/05 trip
(4) April, 07 bed profile was affected by ice and was not used to determine the SZF

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/22/2005	219.5	93.62	93.66	0.04	IFG4
2nd	7/23/2005		93.36			
3rd	8/14/2005	110.0	93.21	93.20	-0.01	IFG4
4th	7/4/2006	161.4	93.49	93.44	-0.05	IFG4
5th	4/13/2007	36.1	94.71			
6th	7/19/2007	98.8	93.13	93.14	0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within acceptable range.
(c) No discharge was measured on 7/23/05
(d) Photos of 4/13/07 showed the entire channel was almost completely covered in ice.
Measured hydraulics were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 98.8cfs to 219.5cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

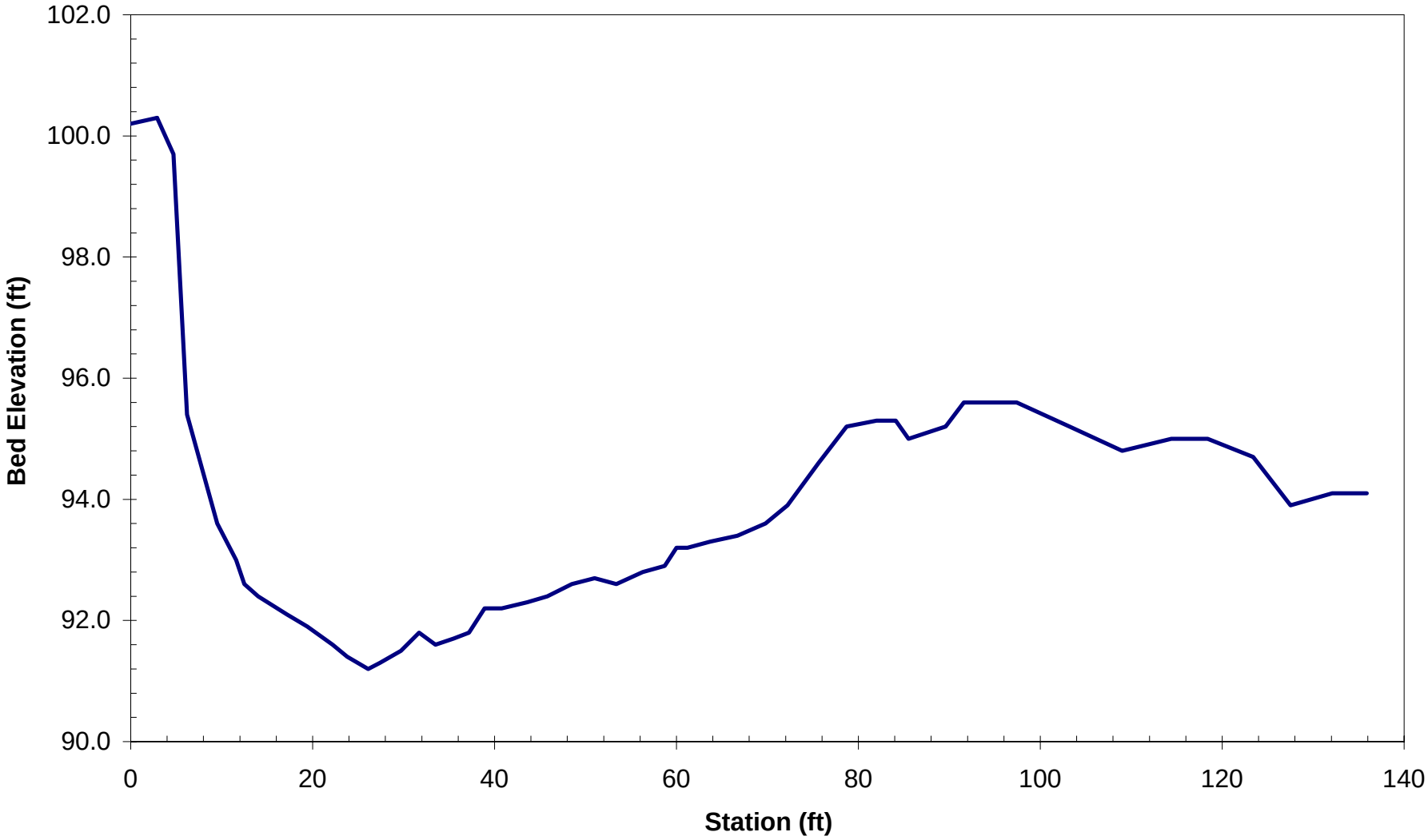
Survey Date	Q (cfs)	WUA (Y/N)
6/22/2005	219.5	Y
7/23/2005		
8/14/2005	110.0	Y
7/4/2006	161.4	Y
4/13/2007	36.1	
7/19/2007	98.8	

(4) Hydraulic Calibration Results:

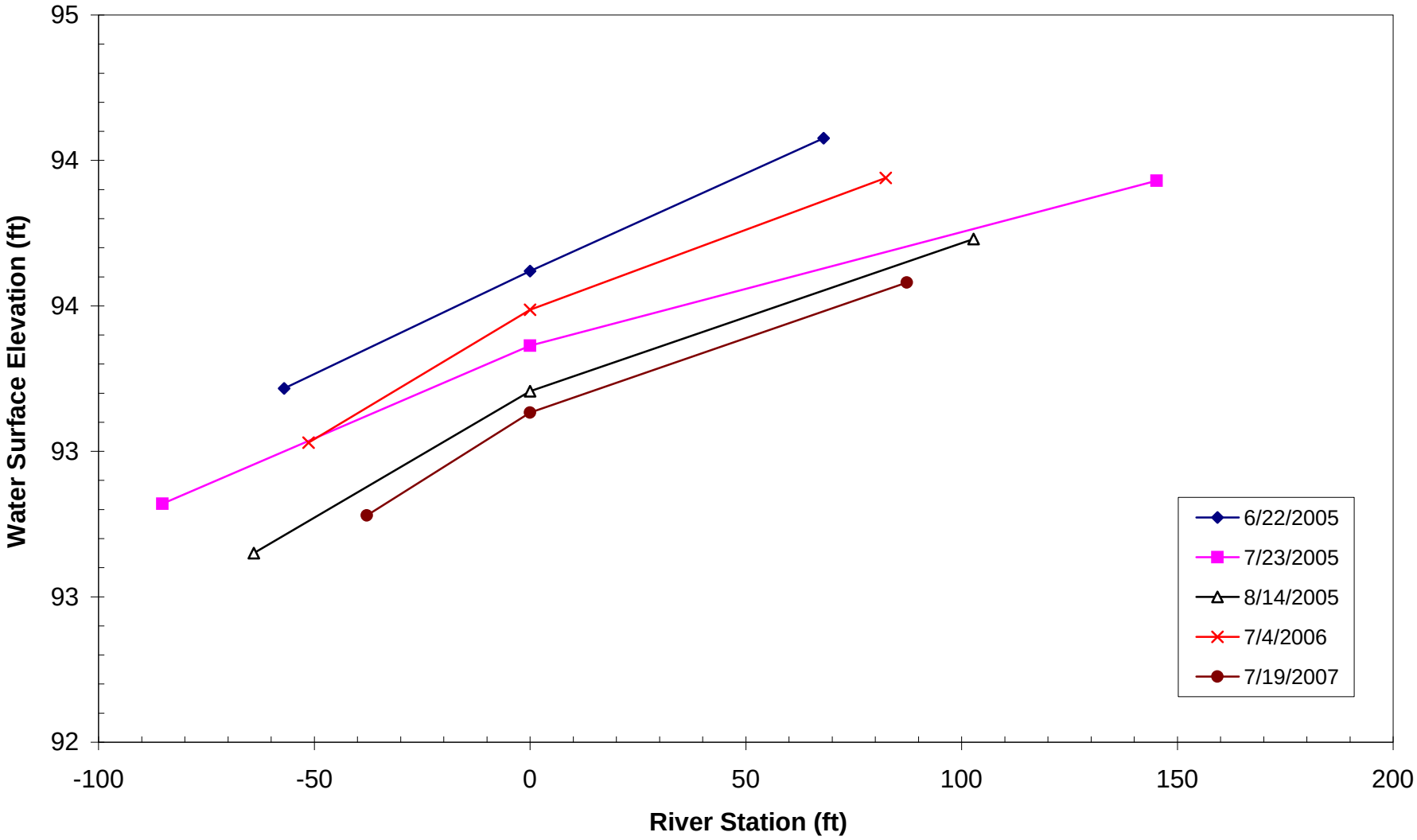
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges and appear to vary in normal trends as flow increases.

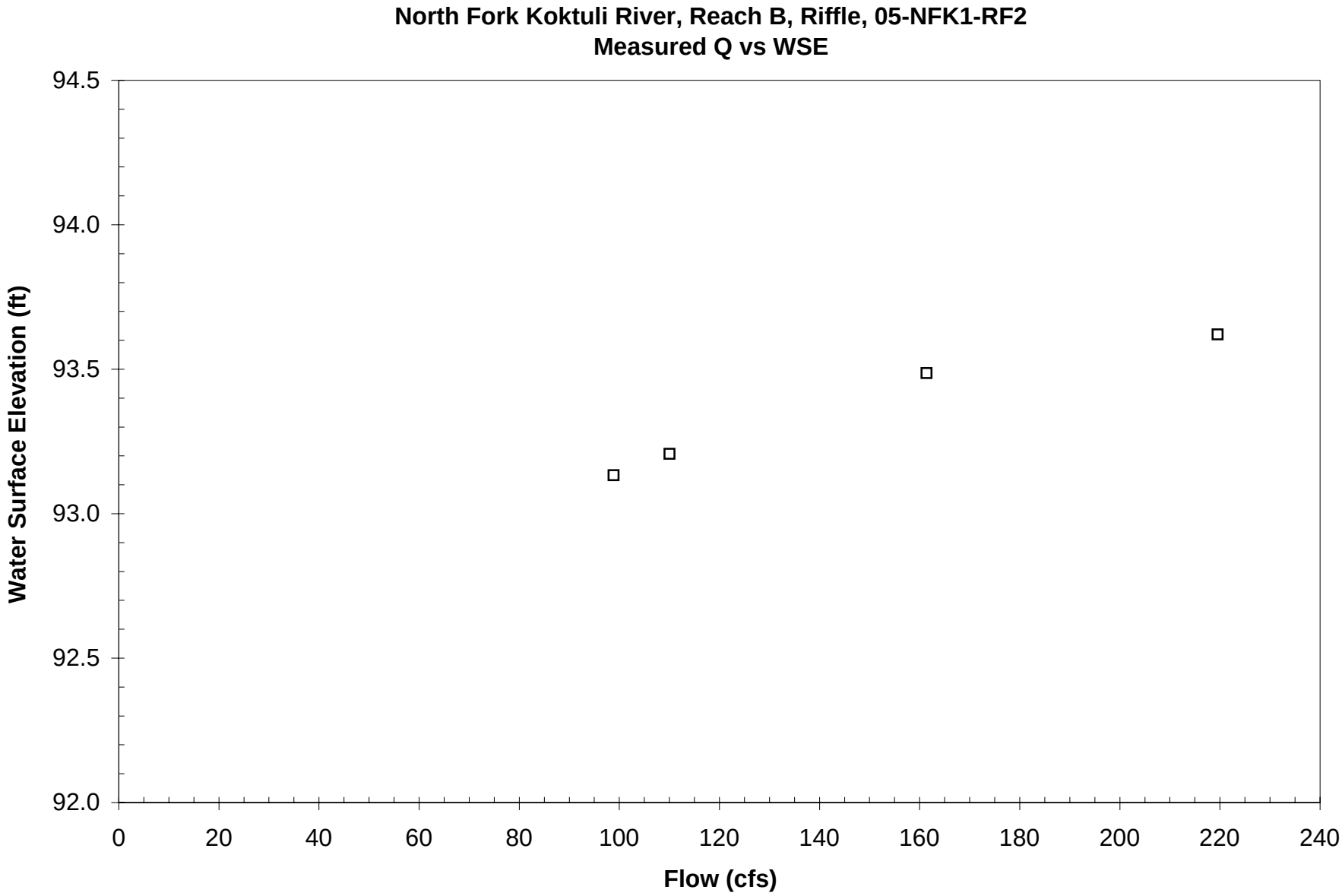
calibration notes

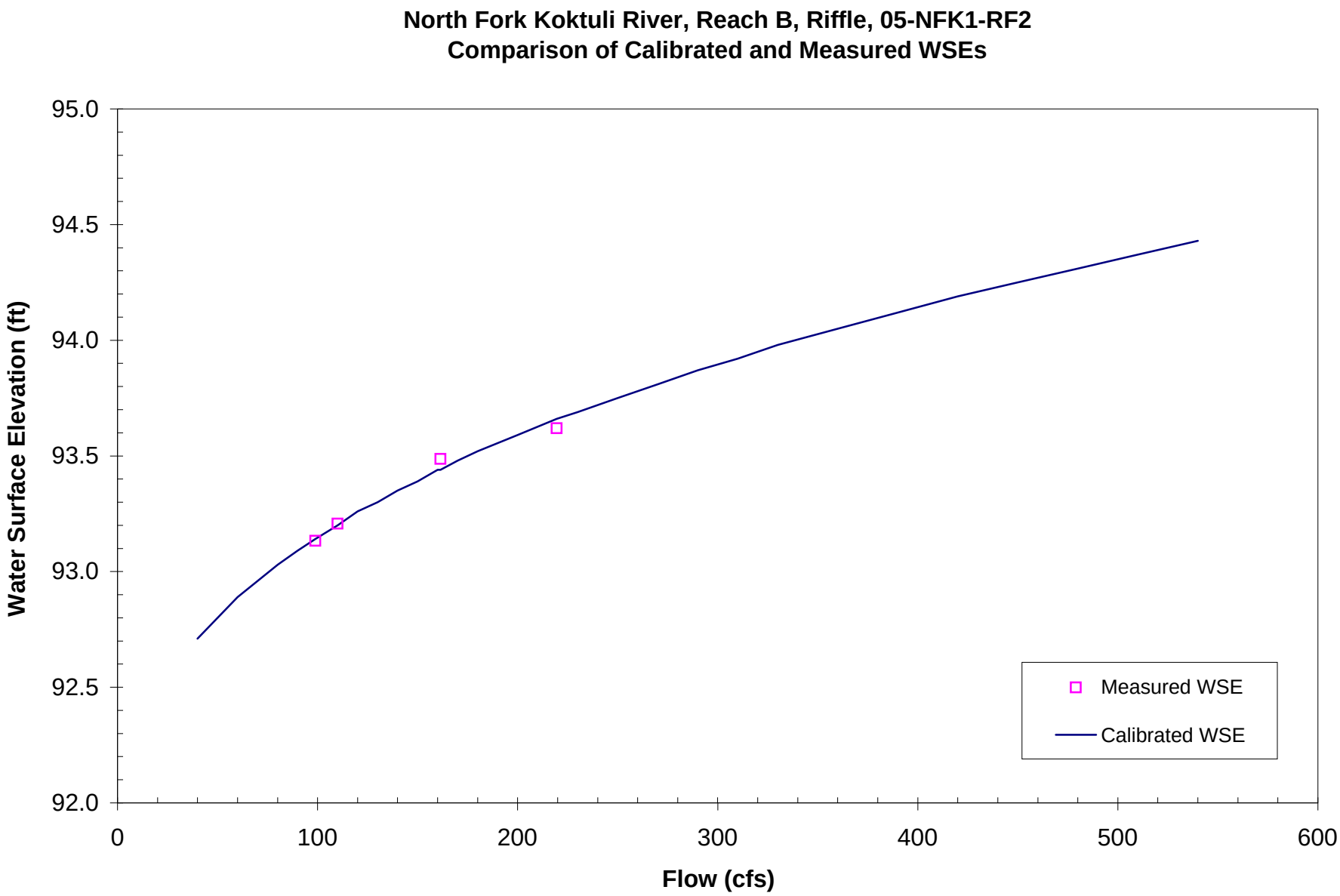
North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF2
Measured Transect Profile



North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF2
Longitudinal Water Surface Elevation Profiles

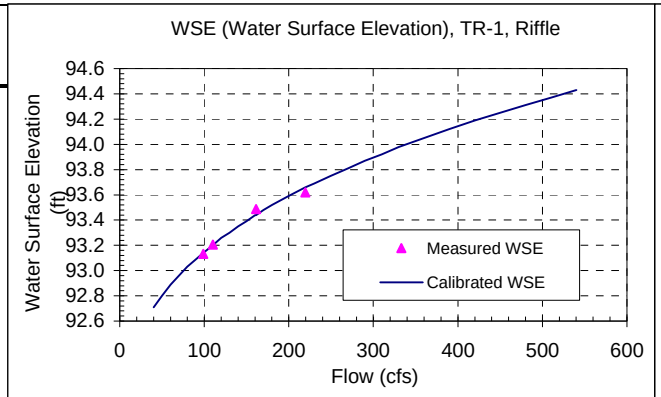


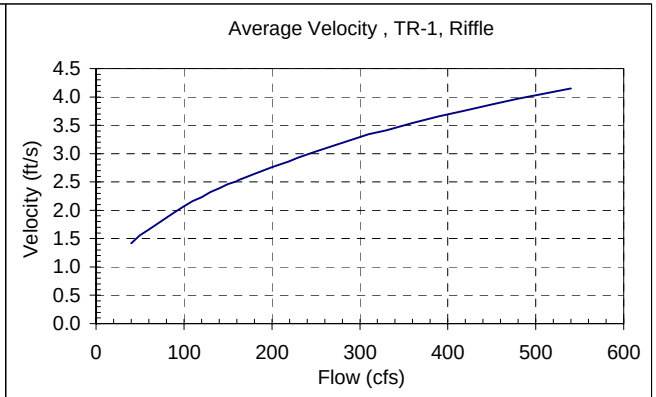

North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF2
Measured Q vs WSE
Water Surface Elevation (ft)
94.5
94.0
93.5
93.0
92.5
92.0
0
20
40
60
80
100
120
140
160
180
200
220
240
Flow (cfs)

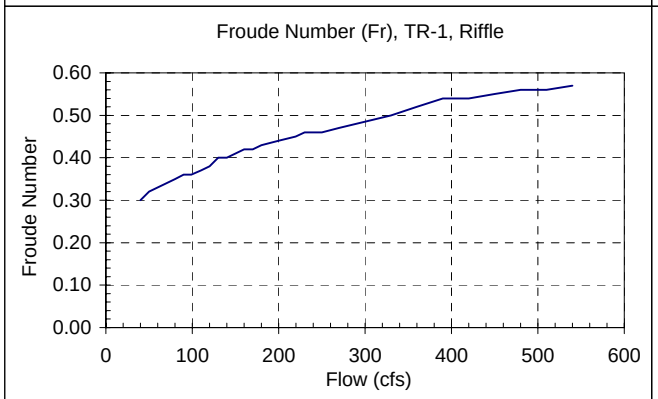

North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
95.0
94.5
94.0
93.5
93.0
92.5
92.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

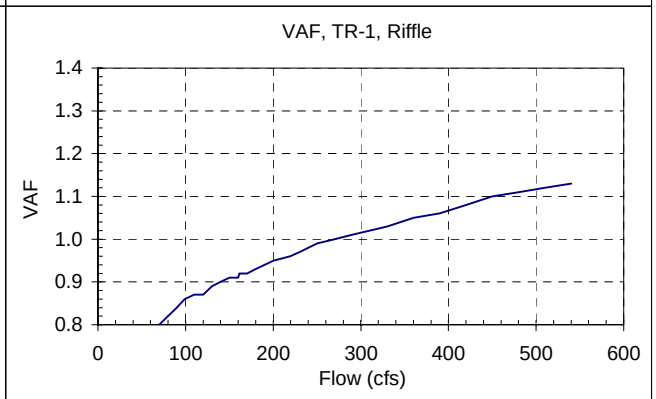
Stream: North Fork Koktuli River **Reach:** B
Site Name: 05-NFK1-RF2 **Site #:** 2
Date: 6/22/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Riffle

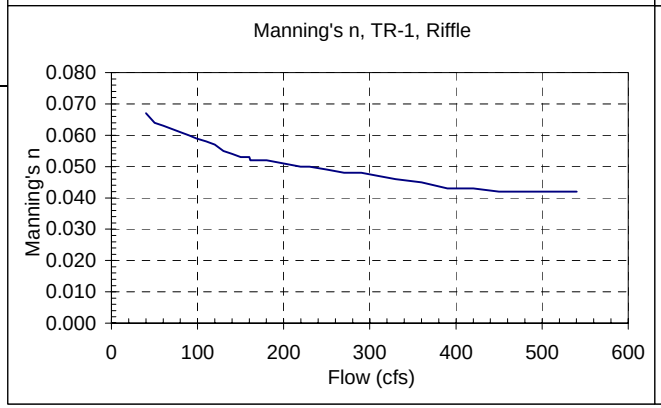
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	92.71	0.30	1.42	0.73	0.067	42.1
50	92.80	0.32	1.56	0.77	0.06	44.1
60	92.89	0.33	1.66	0.78	0.06	46.3
80	93.03	0.35	1.87	0.82	0.06	47.9
90	93.09	0.36	1.97	0.84	0.06	48.4
98.8	93.14	0.36	2.06	0.86	0.06	48.8
110	93.20	0.37	2.16	0.87	0.06	49.3
120	93.26	0.38	2.23	0.87	0.06	51.8
130	93.30	0.40	2.32	0.89	0.06	52.9
140	93.35	0.40	2.39	0.90	0.05	54.5
150	93.39	0.41	2.46	0.91	0.05	55.9
160	93.44	0.42	2.51	0.91	0.05	57.3
161.4	93.44	0.42	2.53	0.92	0.05	57.3
170	93.48	0.42	2.58	0.92	0.05	58.0
180	93.52	0.43	2.64	0.93	0.05	58.8
200	93.59	0.44	2.76	0.95	0.05	60.1
219.5	93.66	0.45	2.86	0.96	0.05	61.1
230	93.69	0.46	2.93	0.97	0.05	61.4
250	93.75	0.46	3.04	0.99	0.05	62.0
270	93.81	0.47	3.14	1.00	0.05	62.6
290	93.87	0.48	3.24	1.01	0.05	63.5
310	93.92	0.49	3.34	1.02	0.05	65.5
330	93.98	0.50	3.41	1.03	0.05	67.7
360	94.05	0.52	3.54	1.05	0.05	70.2
390	94.12	0.54	3.66	1.06	0.04	74.0
420	94.19	0.54	3.76	1.08	0.04	75.7
450	94.25	0.55	3.87	1.10	0.04	76.5
480	94.31	0.56	3.97	1.11	0.04	77.2
510	94.37	0.56	4.06	1.12	0.04	77.9
540.0	94.43	0.57	4.15	1.13	0.042	78.7

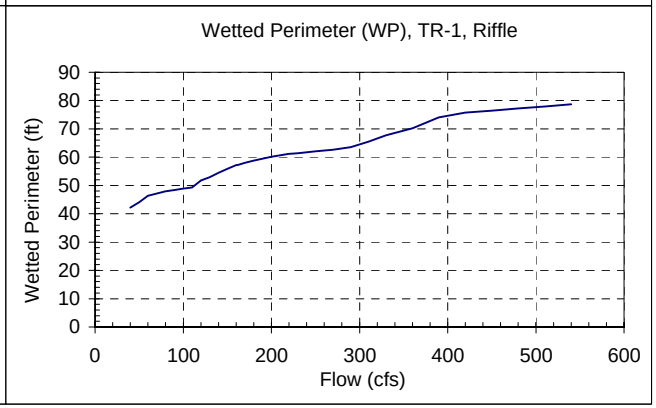




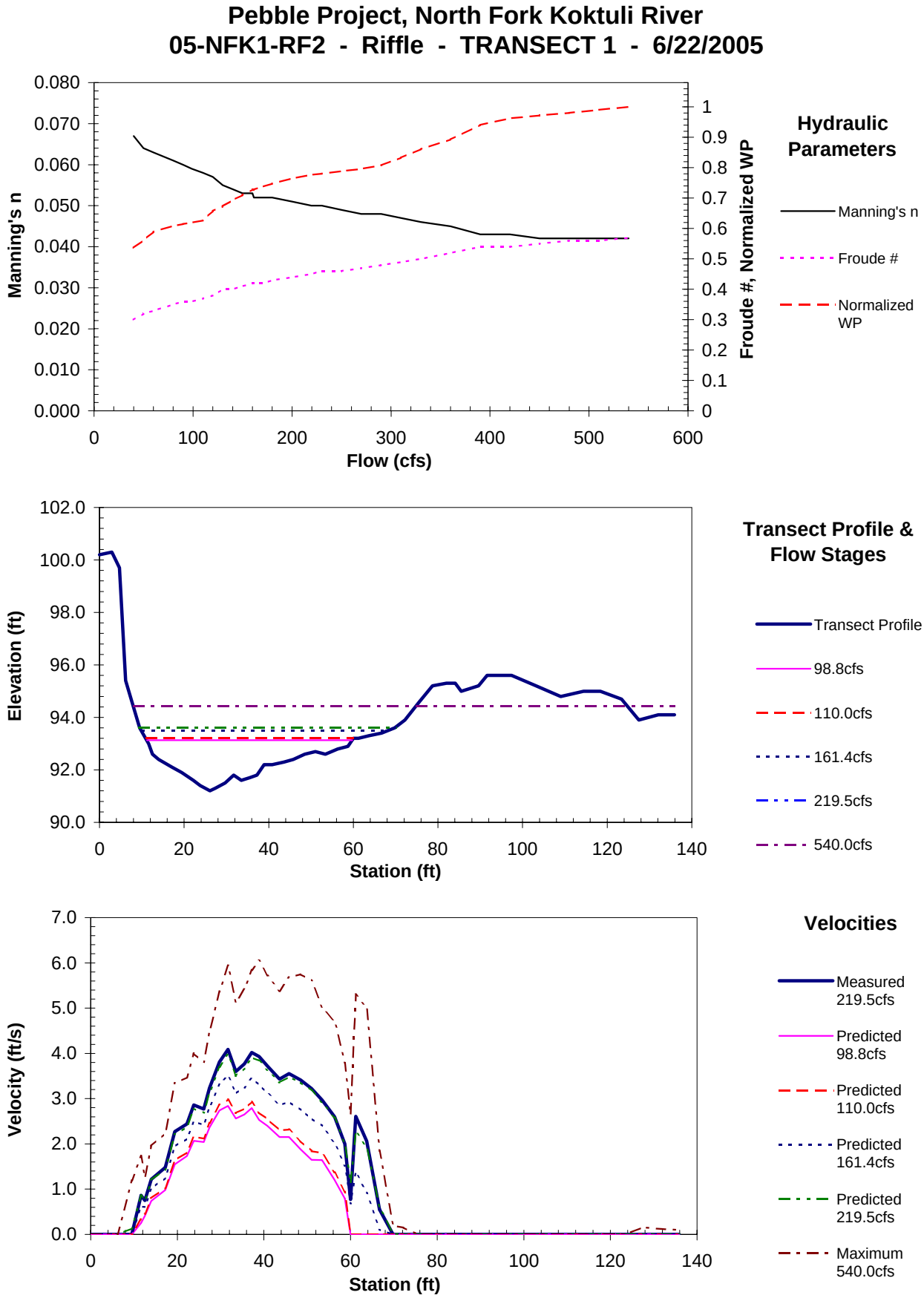








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

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     Pebble     05-NFK1-RF2  06/22/05
RIFFLE                      0605Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  80.0
QARD  90.0
QARD  98.8
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 161.4
QARD 170.0
QARD 180.0
QARD 200.0
QARD 219.5
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 510.0
QARD 540.0
XSEC  1000     1000. 1.0     91.49    .00688
      1000   .0100.2  2.9100.3  4.799.69  6.295.44  9.593.62 11.693.02
      1000 12.592.62 14.092.42 17.292.12 19.491.92 22.291.62 23.891.42
      1000 26.191.22 27.491.32 29.791.52 31.791.82 33.591.62 35.591.72
      1000 37.291.82 38.992.22 40.892.22 43.692.32 45.892.42 48.592.62
      1000 51.092.72 53.492.62 56.392.82 58.792.92 60.093.22 61.293.22
      1000 63.793.32 66.793.42 69.893.62 72.293.92 75.694.60 78.795.15
      1000 82.095.34 84.195.32 85.595.04 89.695.15 91.695.64 97.495.64
      1000103.295.22109.094.81114.494.99118.494.96123.494.70127.593.86
      1000132.194.05135.994.14
NS    1000      22.9      22.9      22.9      23.7      45.6      65.6
NS    1000      56.7      54.6      56.6      45.6      54.7      45.6
NS    1000      45.6      54.6      53.9      54.9      54.8      45.7
NS    1000      45.7      45.7      54.6      54.6      45.7      54.6
NS    1000      54.6      45.7      45.6      45.7 .06  74.6 .03  45.7
NS    1000 .03  43.7      45.7 .6   43.6      43.7      43.7      43.6
```

IFG4 Data Deck (continued)

```
NS    1000      43.6      34.7      34.6      34.6      43.6      43.7
NS    1000      43.6      43.6      43.6      34.8      23.9      23.9
NS    1000      22.9      22.9
WSL   1000     92.71     92.80     92.89     93.03     93.09     93.14
WSL   1000     93.20     93.26     93.30     93.35     93.39     93.44
WSL   1000     93.44     93.48     93.52     93.59     93.66     93.69
WSL   1000     93.75     93.81     93.87     93.92     93.98     94.05
WSL   1000     94.12     94.19     94.25     94.31     94.37     94.43
CAL1  1000     93.62     219.5
VEL1  1000                     0.00 0.86 0.75 1.22 1.48 2.27 2.44 2.86
VEL1  1000 2.77 3.23 3.81 4.09 3.60 3.77 4.02 3.93 3.72 3.43 3.55 3.41
VEL1  1000 3.22 2.97 2.60 2.00 0.77 2.61 2.06 0.55 0.00
VEL1  1000
VEL1  1000
CAL2  1000     93.21     110.0
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     93.49     161.4
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     93.13      98.8
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: North Fork Koktuli River

Reach: NFK-B

Site/TR: 05-NFK1-RF1

Habitat Type: Riffle

River Kilometer: 18.29

Stream: North Fork Koktuli River
Reach: B
Site: 05-NFK1-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/21/2005	100.00	101.50	100.20
2nd	7/22/2005	100.00	101.48	100.19
3rd	8/14/2005	100.00	101.45	100.18
4th	7/4/2006	100.00	101.42	100.19
5th	4/12/2007	100.00		100.22
6th	7/20/2007	100.00	101.40	100.20

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ±0.02ft, except HP.
Small elevation changes between BM and TP indicated BM was stable during the 2005-2007 period.
(c) The noticeable elevation change of 0.10ft in HP should not affect the accuracy of the level loops surveyed in 2007 because the elevations were referenced to BM, which was stable the entire period.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/21/2005	97.20
7/22/2005	96.97
8/14/2005	96.74
7/4/2006	97.01
4/12/2007	96.65
7/20/2007	96.73

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/21/2005	214.8
7/22/2005	
8/14/2005	96.9
7/4/2006	152.4
4/12/2007	84.4
7/20/2007	88.2

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/21/2005	0.470%	140.5
7/22/2005	0.495%	258.6
8/14/2005	0.500%	154
7/4/2006	0.475%	145.4
4/12/2007	0.493%	136
7/20/2007	0.548%	153.4

The slope S=0.470% of 6/21/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/21/2005	95.40
7/22/2005	
8/14/2005	95.44
7/4/2006	95.51
4/12/2007	95.55
7/20/2007	95.53
Invert	95.55
SZF	95.55

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/21/2005	214.8	97.20	97.22	0.02	IFG4
2nd	7/22/2005		96.97			
3rd	8/14/2005	96.9	96.74	96.74	0.00	IFG4
4th	7/4/2006	152.4	97.01	96.99	-0.02	IFG4
5th	4/12/2007	84.4	96.65	96.67	0.02	IFG4
6th	7/20/2007	88.2	96.73	96.70	-0.03	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured on 7/22/05
(d) 4/12/07 survey: photos showed hydraulics may have been slightly affected by ice in the channel. The WSE was a little higher on the regression curve. The impact was expected not too significant, so the data were still used in hydraulic calibration.

calibration notes

(3) Velocity calibration

This site has one transect with five velocity/discharge measurements, ranging from 84.4cfs to 214.8cfs.
Each of the five measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

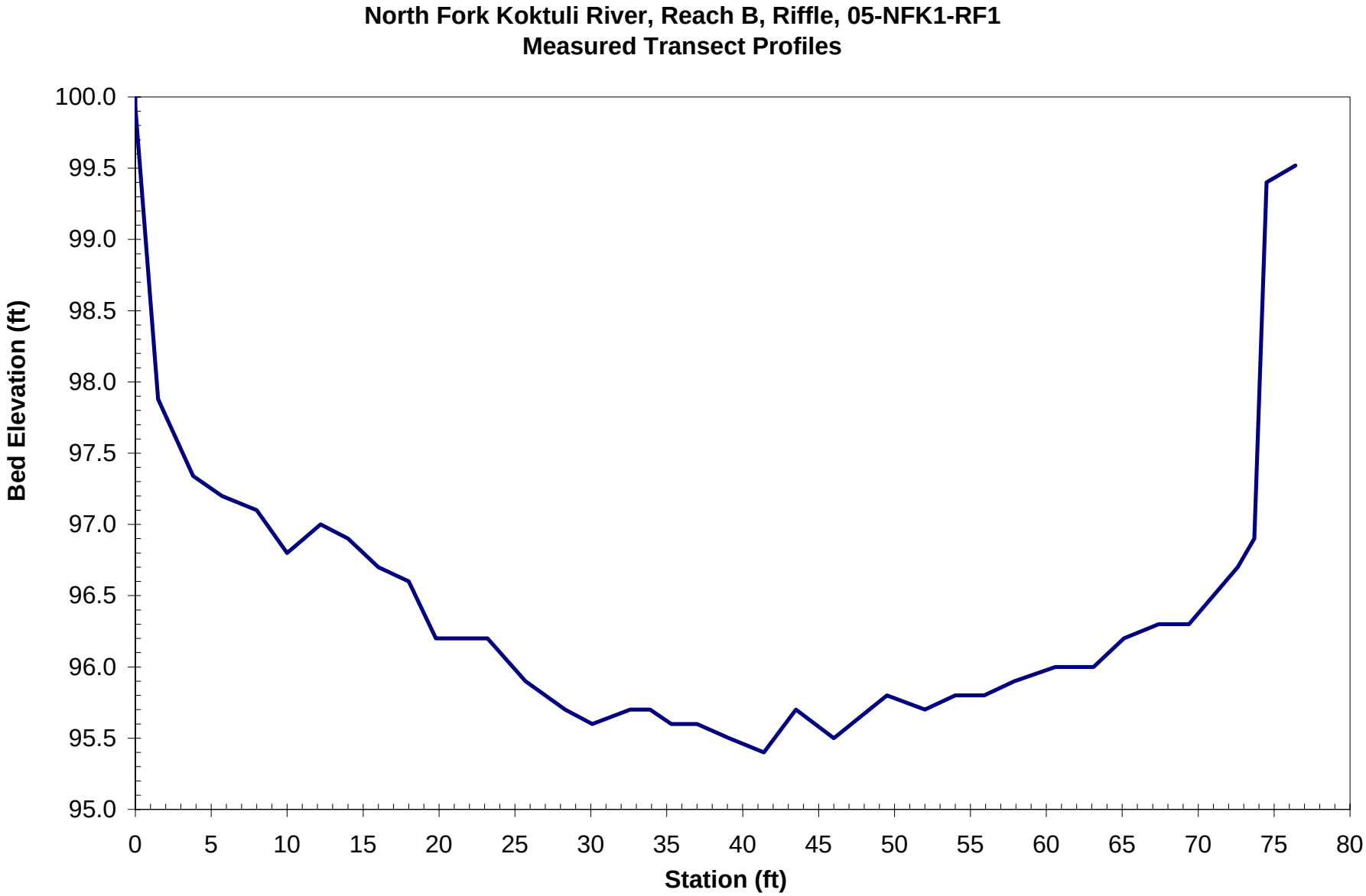
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/21/2005	214.8	Y
7/22/2005		
8/14/2005	96.9	Y
7/4/2006	152.4	Y
4/12/2007	84.4	
7/20/2007	88.2	

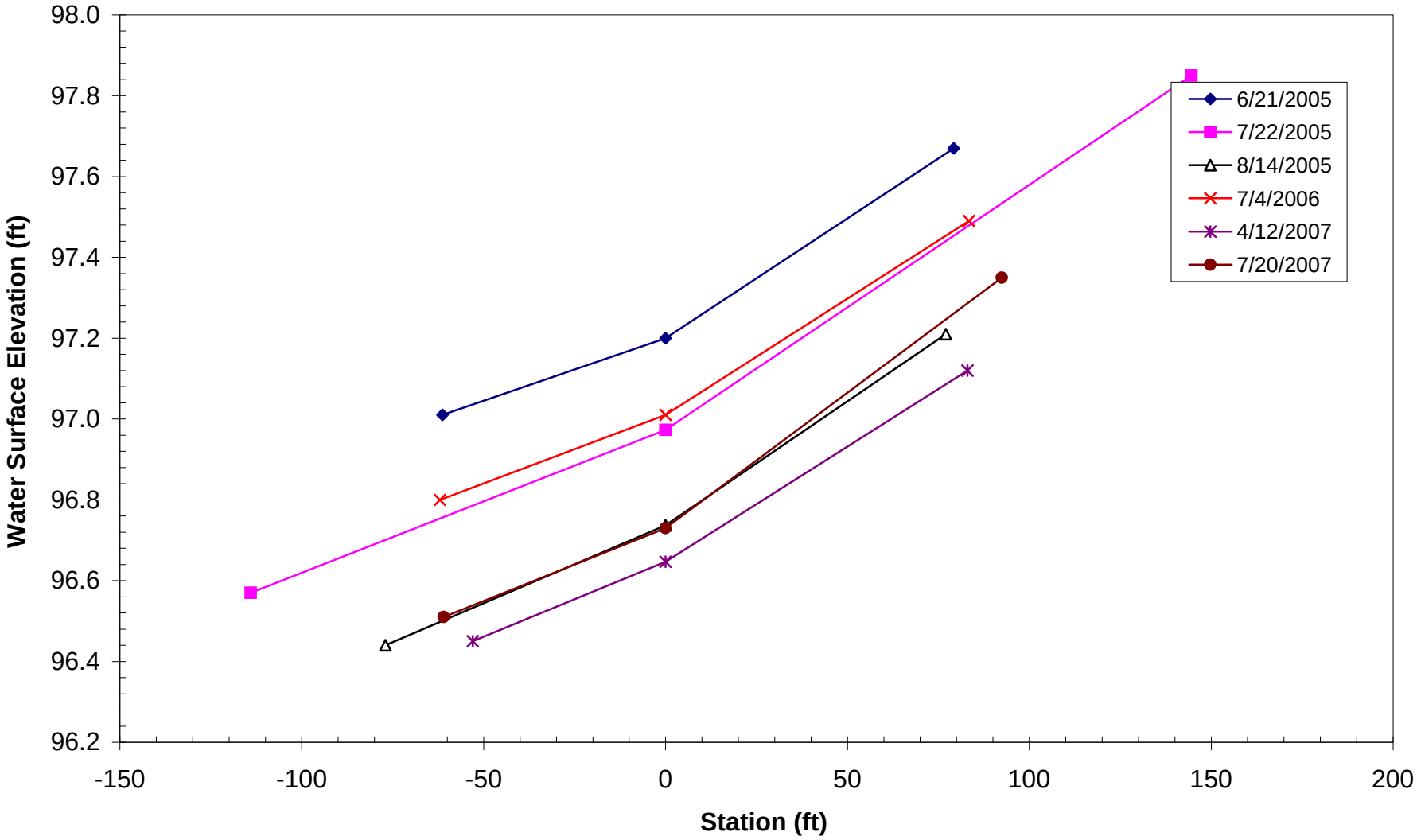
(4) Hydraulic Calibration Results:

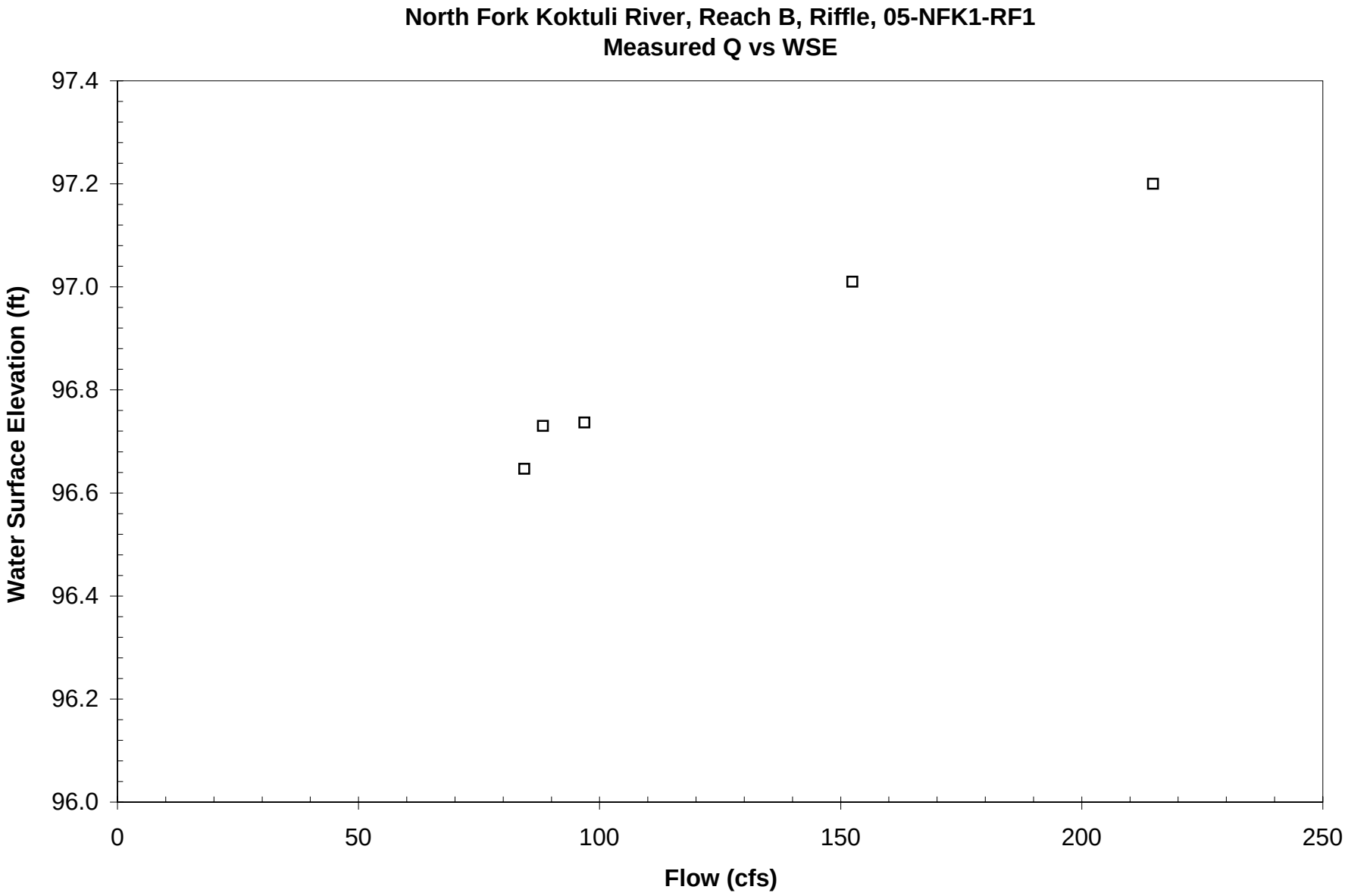
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends as flow increases.

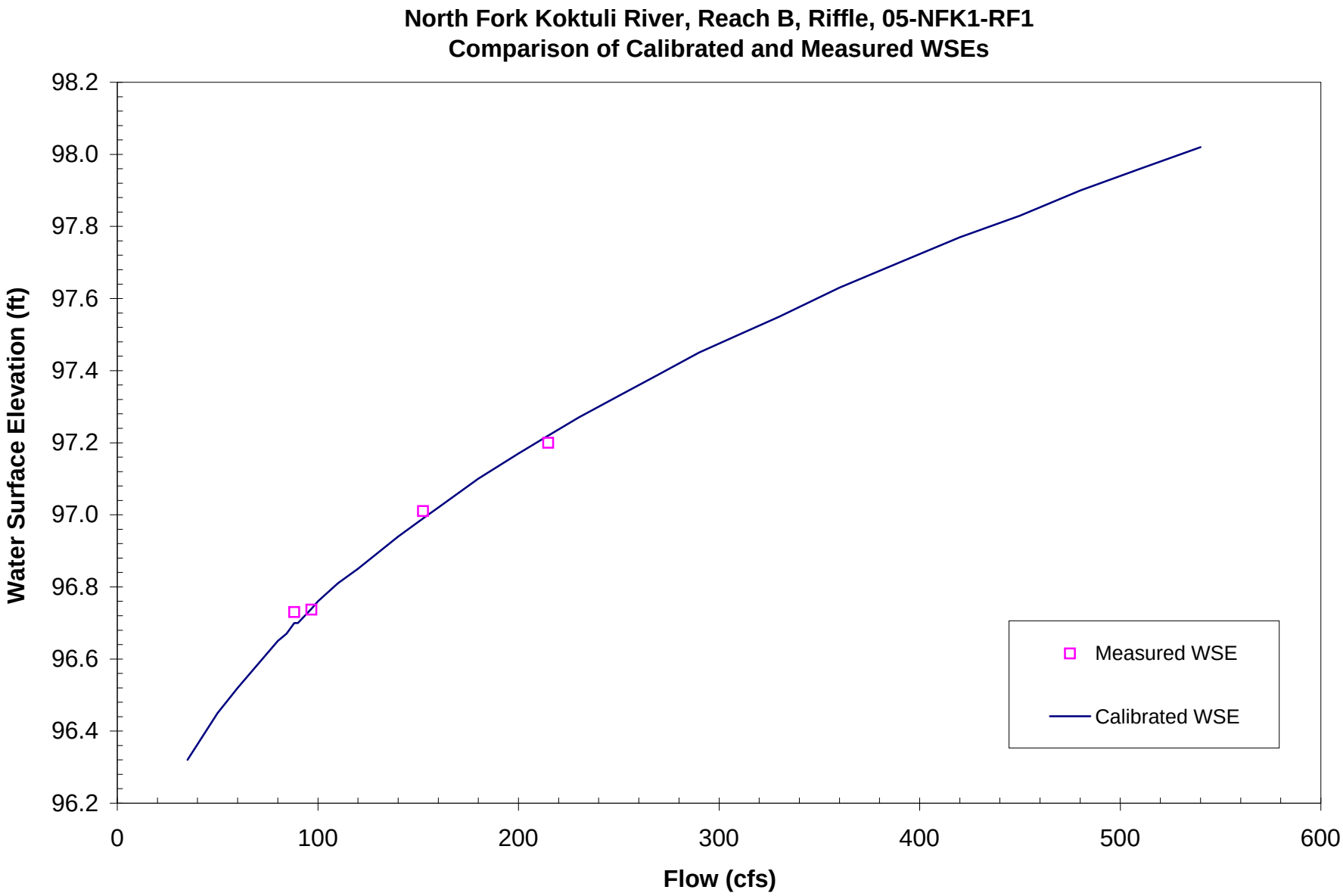
calibration notes


North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF1
Measured Transect Profiles
Bed Elevation (ft)
100.0
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
Station (ft)

North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF1
Longitudinal Water Surface Elevation Profiles

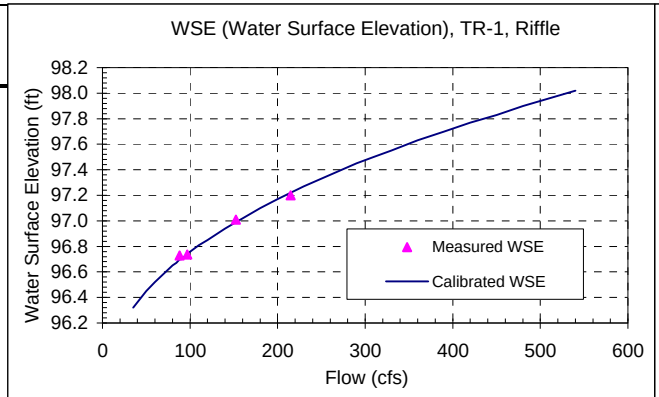


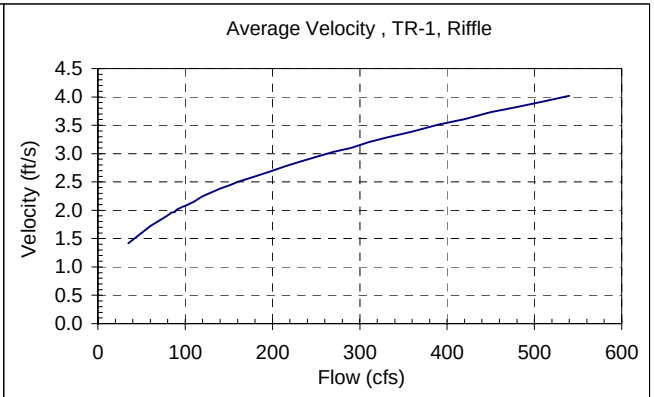

North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
50
100
150
200
250
Flow (cfs)

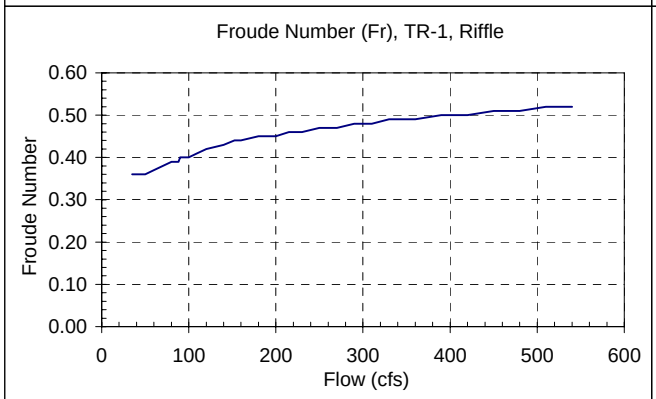

North Fork Koktuli River, Reach B, Riffle, 05-NFK1-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

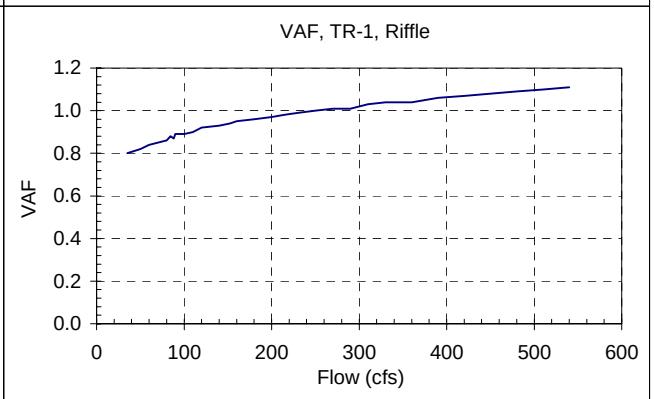
Stream: North Fork Koktuli River **Reach:** B
Site Name: 05-NFK1-RF1 **Site #:** 1
Date: 6/21/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Riffle

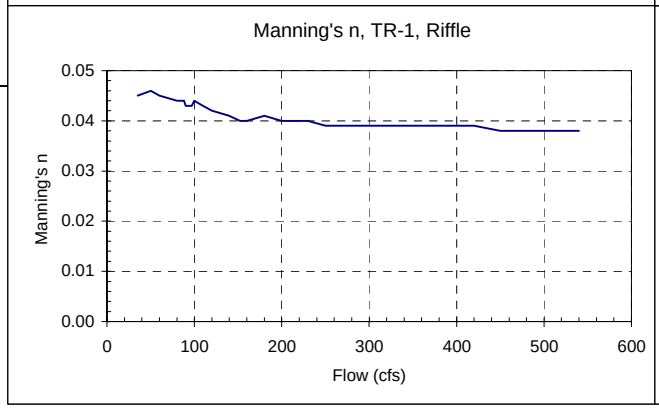
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
35	96.32	0.36	1.42	0.80	0.045	50.4
50	96.45	0.36	1.60	0.82	0.05	52.1
60	96.52	0.37	1.72	0.84	0.05	53.0
80	96.65	0.39	1.91	0.86	0.04	55.4
84.4	96.67	0.39	1.96	0.88	0.04	55.9
88.2	96.70	0.39	1.97	0.87	0.04	56.8
90	96.70	0.40	2.01	0.89	0.04	56.8
96.9	96.74	0.40	2.06	0.89	0.04	57.4
100	96.76	0.40	2.08	0.89	0.04	57.7
110	96.81	0.41	2.15	0.90	0.04	58.7
120	96.85	0.42	2.25	0.92	0.04	60.0
140	96.94	0.43	2.38	0.93	0.04	63.2
152.4	96.99	0.44	2.45	0.94	0.04	65.0
160	97.02	0.44	2.50	0.95	0.04	65.5
180	97.10	0.45	2.60	0.96	0.04	66.1
200	97.17	0.45	2.70	0.97	0.04	67.8
214.8	97.22	0.46	2.78	0.98	0.04	68.8
230	97.27	0.46	2.85	0.99	0.04	69.6
250	97.33	0.47	2.94	1.00	0.04	70.5
270	97.39	0.47	3.03	1.01	0.04	70.9
290	97.45	0.48	3.10	1.01	0.04	71.2
310	97.50	0.48	3.20	1.03	0.04	71.5
330	97.55	0.49	3.28	1.04	0.04	71.7
360	97.63	0.49	3.39	1.04	0.04	72.2
390	97.70	0.50	3.51	1.06	0.04	72.6
420	97.77	0.50	3.61	1.07	0.04	72.9
450	97.83	0.51	3.73	1.08	0.04	73.3
480	97.90	0.51	3.82	1.09	0.04	73.6
510	97.96	0.52	3.92	1.10	0.04	73.7
540.0	98.02	0.52	4.02	1.11	0.038	73.9

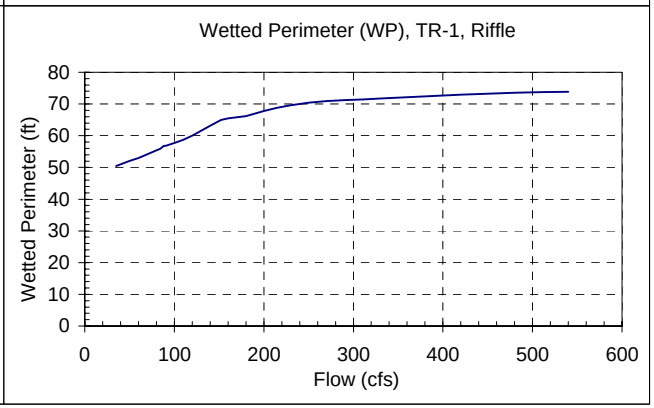




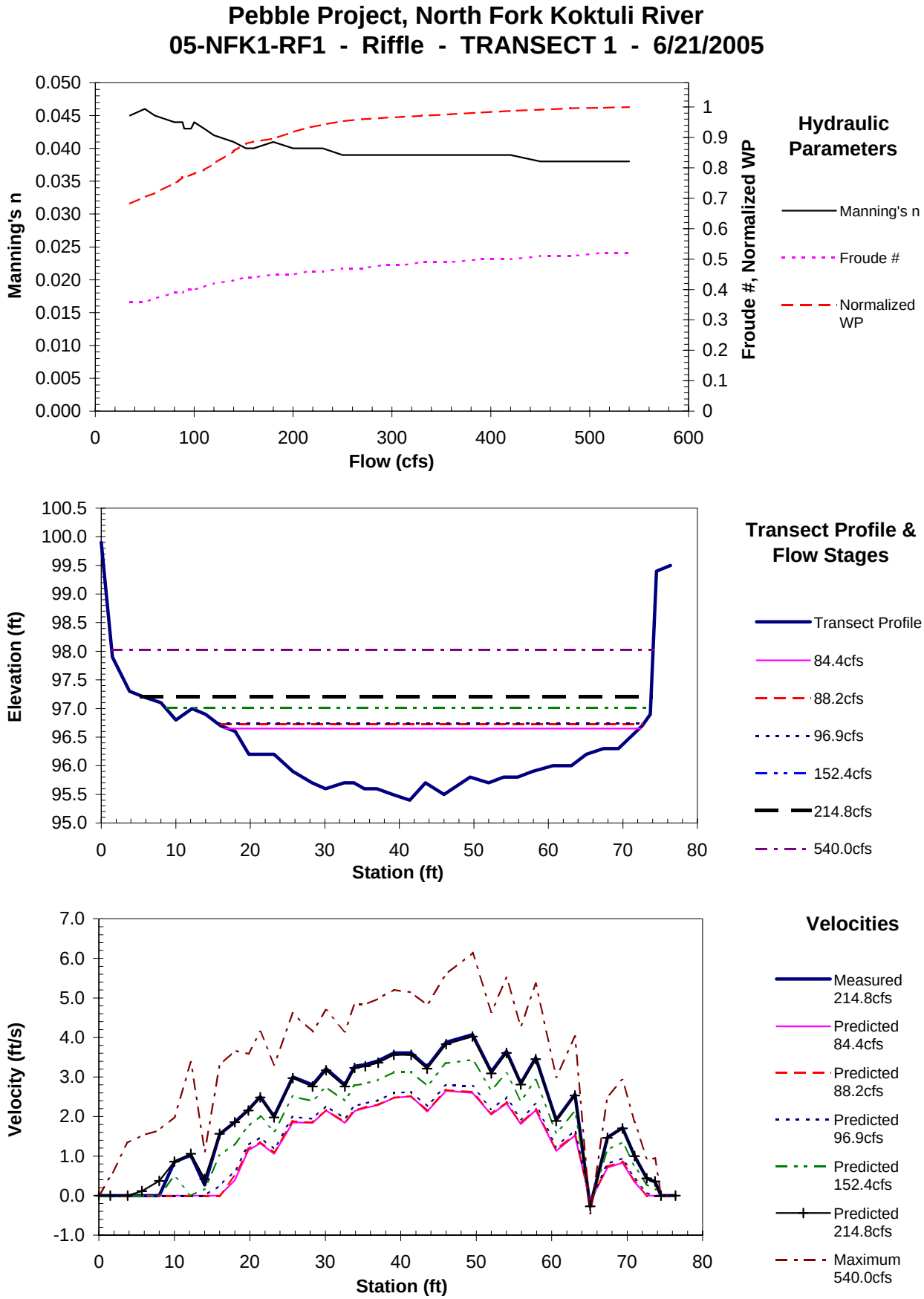








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-NFK1-RF1  06/21/05
RIFFLE                     0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  35.0
QARD  50.0
QARD  60.0
QARD  80.0
QARD  84.4
QARD  88.2
QARD  90.0
QARD  96.9
QARD 100.0
QARD 110.0
QARD 120.0
QARD 140.0
QARD 152.4
QARD 160.0
QARD 180.0
QARD 200.0
QARD 214.8
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 510.0
QARD 540.0
XSEC  1000     1000. 1.0     95.55    .00470
      1000   .099.93  1.597.88  3.897.34  5.797.20  8.097.10 10.096.80
      1000 12.297.00 14.096.90 16.096.70 18.096.60 19.896.20 21.496.20
      1000 23.296.20 25.795.90 28.395.70 30.195.60 32.695.70 33.995.70
      1000 35.395.60 37.095.60 39.195.50 41.495.40 43.595.70 46.095.50
      1000 49.595.80 52.095.70 54.095.80 55.995.80 57.995.90 60.696.00
      1000 63.196.00 65.196.20 67.496.30 69.496.30 71.096.50 72.696.70
      1000 73.796.90 74.599.40 76.499.52
NS    1000      22.9      22.9      75.8      62.6      65.8      56.6
NS    1000      65.6 .11  56.6      56.6      56.7      56.7      65.6
NS    1000      65.6      65.6      65.6      65.6      64.6      76.8
NS    1000      64.6      64.6      73.6      65.6      67.6      65.6
NS    1000      76.6      74.7      64.6      56.7      65.7      54.6
NS    1000      63.7      53.9      64.6      65.6      54.6      65.6
NS    1000      23.6      22.9      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     96.32     96.45     96.52     96.65     96.67     96.70
WSL   1000     96.70     96.74     96.76     96.81     96.85     96.94
WSL   1000     96.99     97.02     97.10     97.17     97.22     97.27
WSL   1000     97.33     97.39     97.45     97.50     97.55     97.63
WSL   1000     97.70     97.77     97.83     97.90     97.96     98.02
CAL1  1000     97.20     214.8
VEL1  1000                0.00 0.00 0.85 1.02 0.27 1.55 1.86 2.17 2.50
VEL1  1000 2.00 3.00 2.80 3.21 2.80 3.27 3.31 3.41 3.61 3.61 3.25 3.88
VEL1  1000 4.07 3.13 3.65 2.84 3.49 1.91 2.56-0.27 1.47 1.71 1.00 0.44
VEL1  1000 0.35
CAL2  1000     96.74      96.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.01     152.4
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     96.65      84.4
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
CAL5  1000     96.73      88.2
VEL5  1000
VEL5  1000
VEL5  1000
VEL5  1000
ENDJ
```

IFG4 Data Deck

Stream: North Fork Koktuli River

Reach: NFK-B

Site/TR: 04-NFK-RF1

Habitat Type: Riffle

River Kilometer: 20.94

Stream: North Fork Koktuli River
Site: 04-NFK-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Trip	Date	Trip	BM	HP	TP
1st	6/23/2005	1	100.00	98.41	98.59
2nd	7/23/2005	2	100.00	98.43	98.59
3rd	8/14/2005	3	100.00	98.40	98.59
4th	7/4/2006	4	100.00	98.45	98.62
5th	4/13/2007	5	100.00	98.39	98.65
6th	7/20/2007	6	100.00	98.49	98.65

Note : (a) Control pin elevations (BM, HP, TP) are taken from the first half of each level loop survey
(b) The maximum control pin relative elevation change was 0.09ft
(c) Control pins moved slightly from 2005 to 2006, but within ±0.02ft range.
No correction to the surveyed WSEs of 2006 was needed due to the small change..
(d) For 2007 level loops, based on the relative elevation change overtime, it is determined BM had moved lower by 0.06ft to 0.08ft since 2005. As the result, WSEs of 2007 were corrected by subtracting 0.06ft from the measured WSEs.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/23/2005	96.46
7/23/2005	96.19
8/14/2005	96.10
7/4/2006	96.27
4/13/2007	95.97
7/20/2007	96.09

The WSEs listed avove have reflected the 0.06ft correction to the 2007 WSEs.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/23/2005	169.2
7/23/2005	
8/14/2005	86.9
7/4/2006	129.4
4/13/2007	61.8
7/20/2007	86.0

No discharge was measured on 7/23/05

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/23/2005	0.645%	31
7/23/2005	0.511%	102
8/14/2005	0.607%	97
7/4/2006	0.566%	103
4/13/2007	0.361%	155
7/20/2007	0.552%	96

The slope S=0.645% of 6/23/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/23/2005	94.86
7/23/2005	
8/14/2005	94.90
7/4/2006	94.87
4/13/2007	94.87
7/20/2007	94.99
Invert	94.99
SZF	94.99

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/23/05
(4) 4/13/07 Survey: Photos showed channel was clear of ice. Though the ice on both banks was still thick, they should have no effect on hydraulics.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Trip	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/23/2005	169.2	96.46	96.44	-0.02	IFG4
2nd	7/23/2005					
3rd	8/14/2005	86.9	96.10	96.10	0.00	IFG4
4th	7/4/2006	129.4	96.27	96.29	0.02	IFG4
5th	4/13/2007	61.8	95.97	95.96	-0.01	IFG4
6th	7/20/2007	86.0	96.09	96.10	0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range.
(c) No discharge was measured during the 7/23/05 site visit.

calibration notes

(3) Velocity calibration

This site has one transect with five velocity/discharge measurements, ranging from 61.8cfs to 169.2cfs.
Each of the five measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

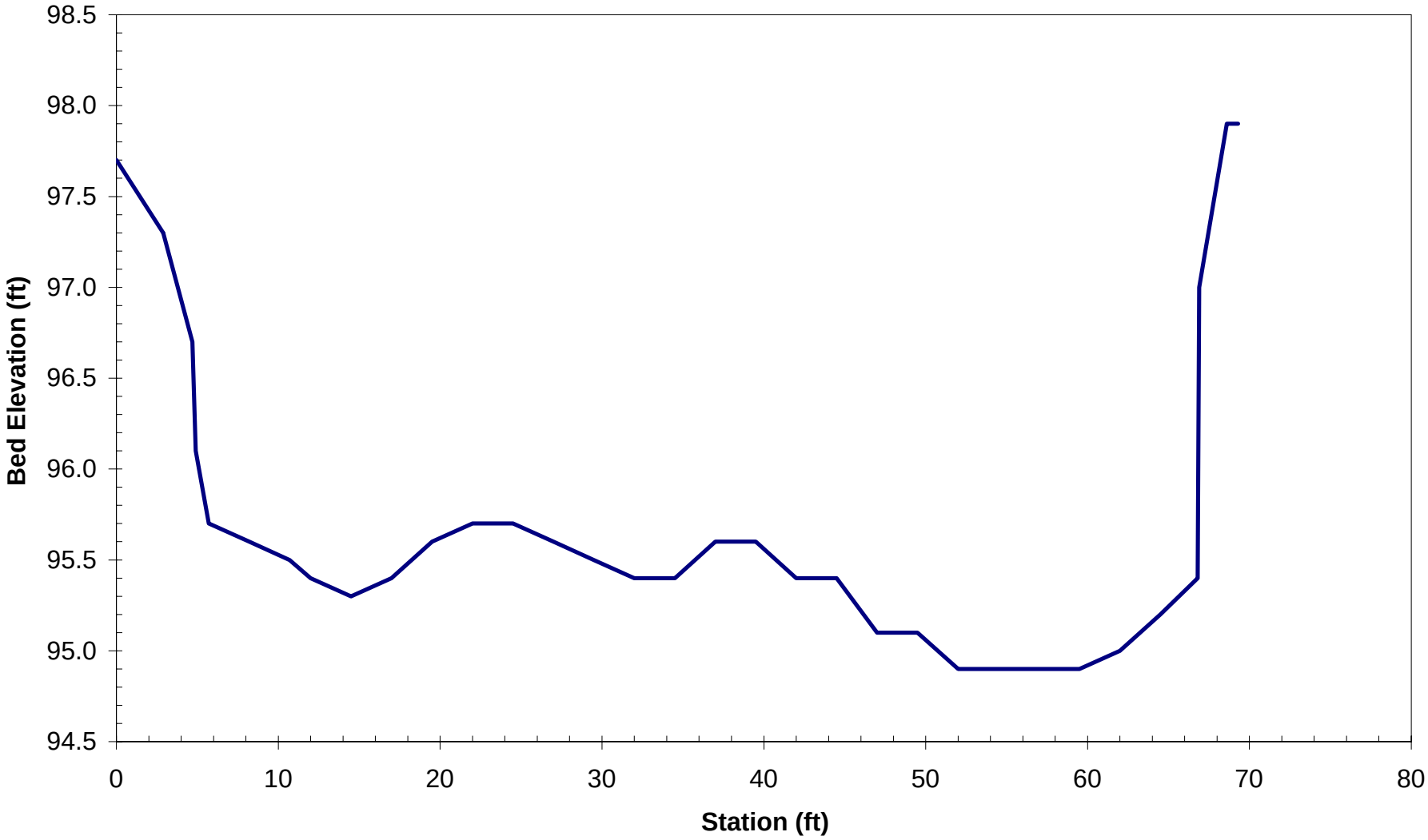
Survey Date	Q (cfs)	WUA (Y/N)
6/23/2005	169.2	Y
7/23/2005		
8/14/2005	86.9	Y
7/4/2006	129.4	Y
4/13/2007	61.8	Y
7/20/2007	86.0	

(4) Hydraulic Calibration Results:

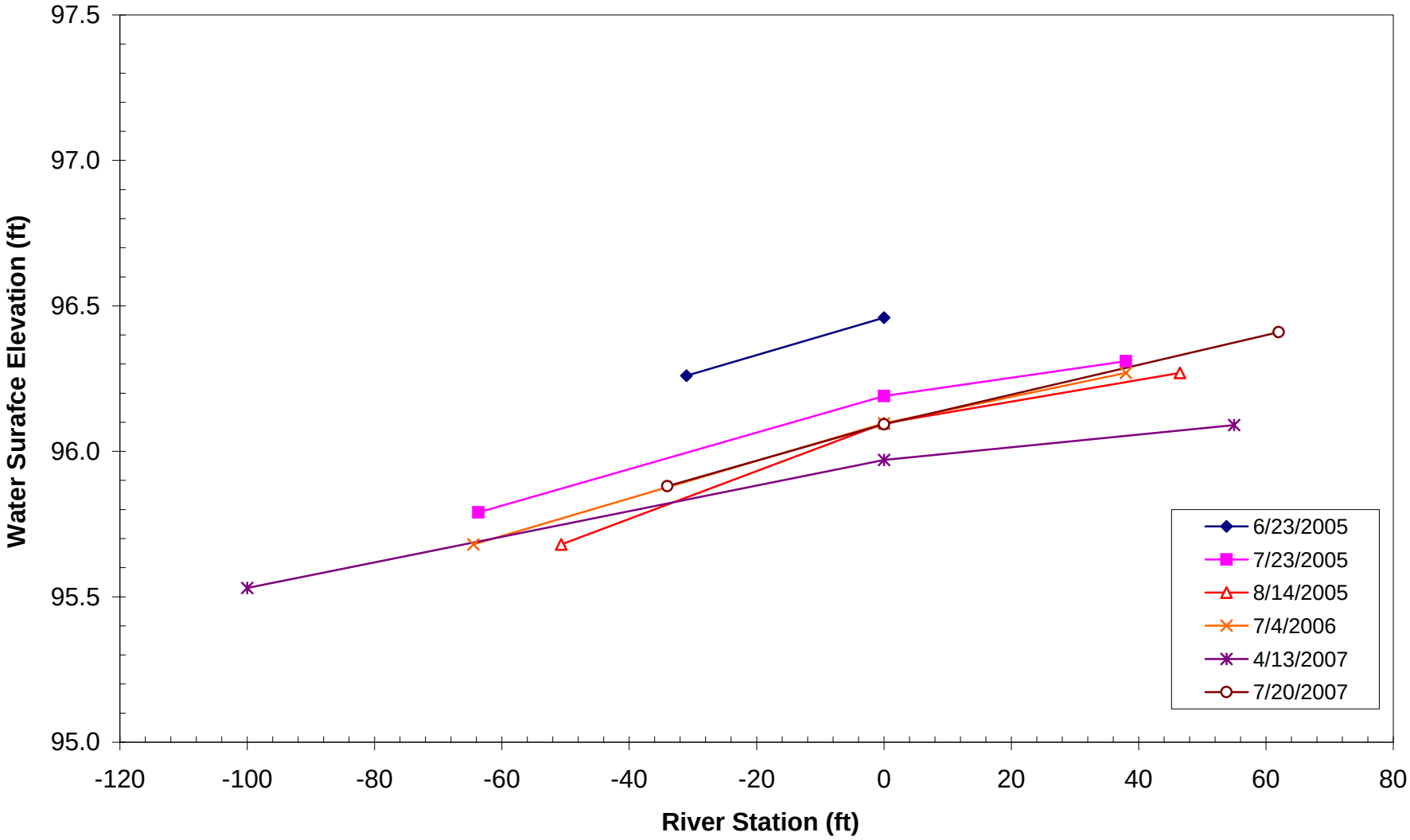
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges and appear to vary in normal trends as flow increases.

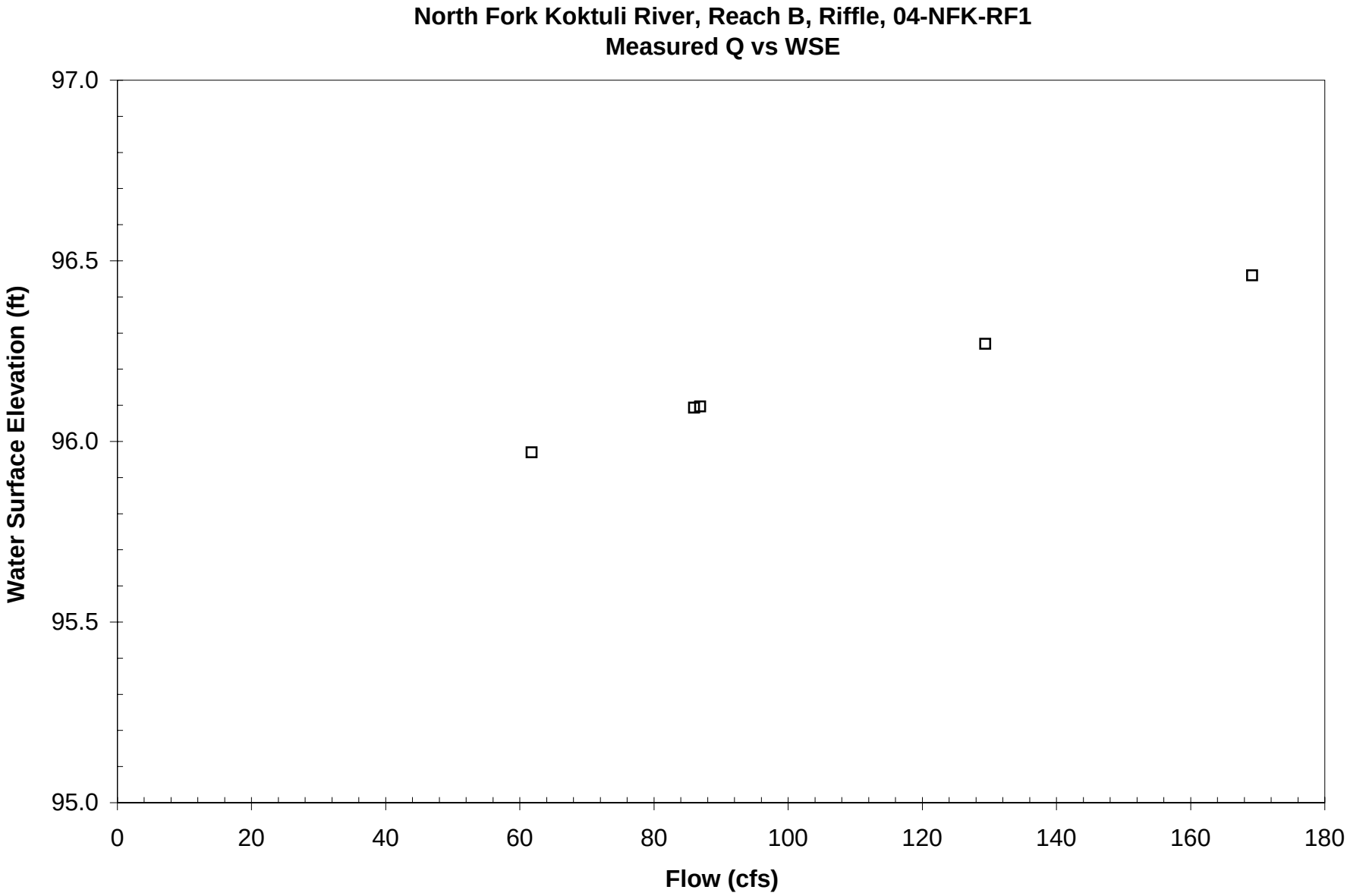
calibration notes

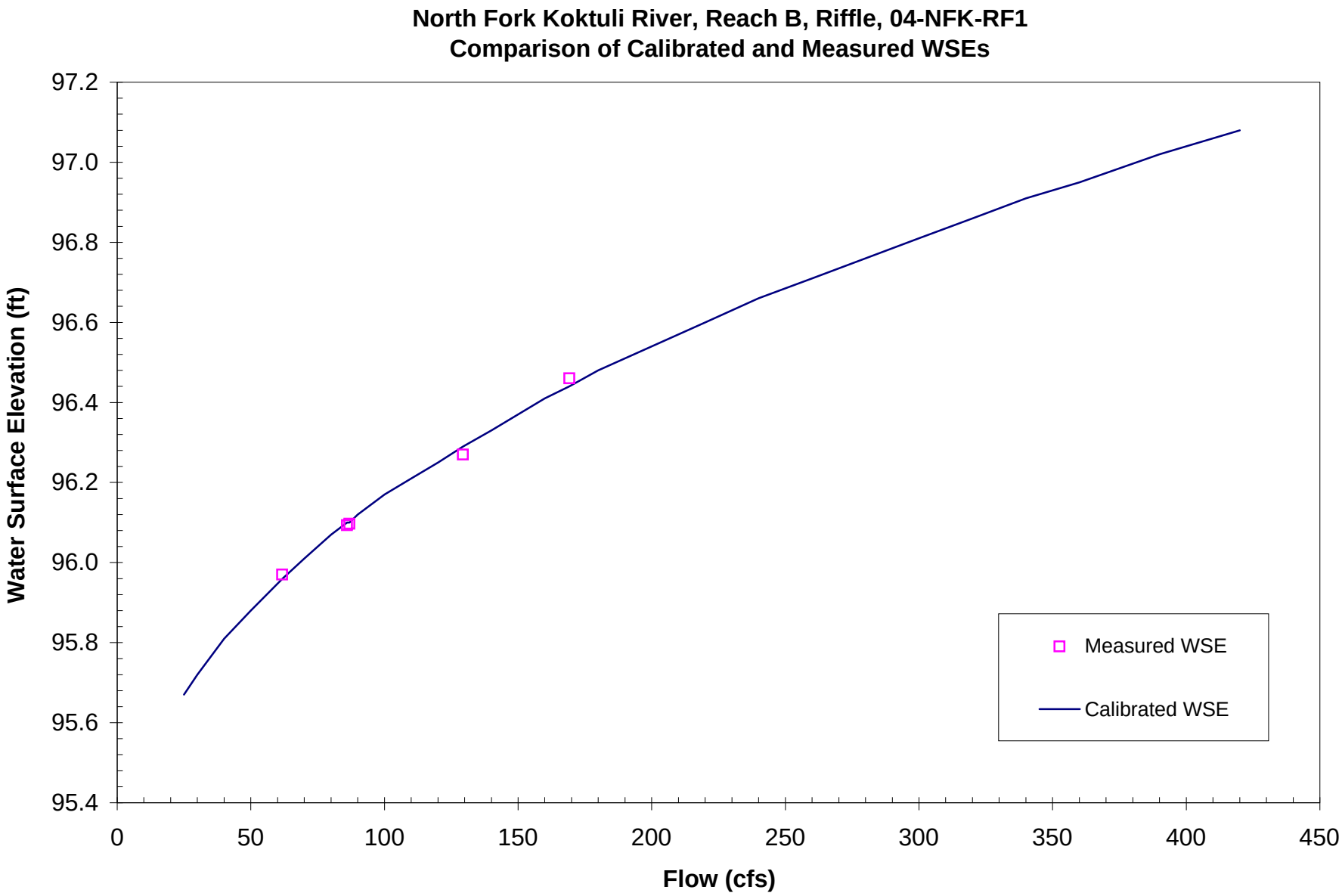
North Fork Koktuli River, Reach B, Riffle, 04-NFK-RF1
Measured Transect Profile



North Fork Koktuli River, Reach B, Riffle, 04-NFK-RF1
Longitudinal Water Surface Elevation Profiles

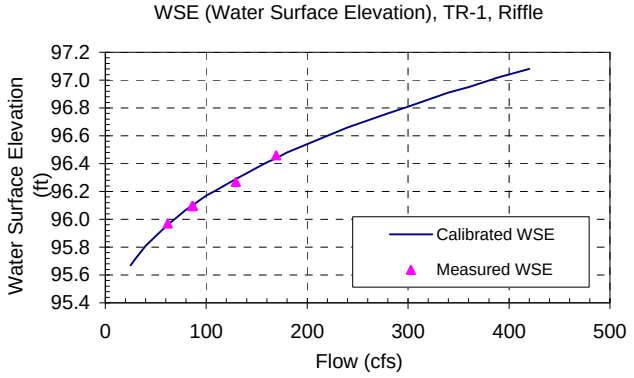


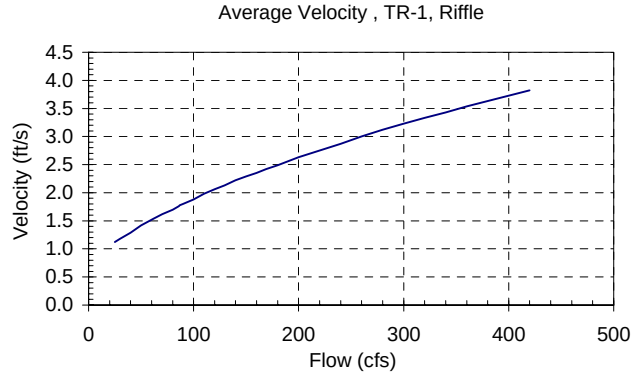

North Fork Koktuli River, Reach B, Riffle, 04-NFK-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

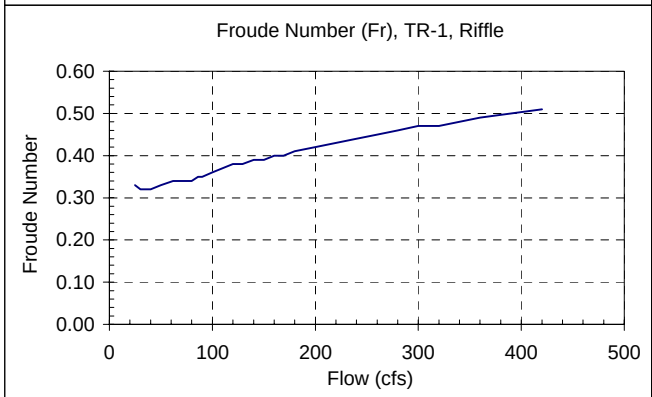

North Fork Koktuli River, Reach B, Riffle, 04-NFK-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

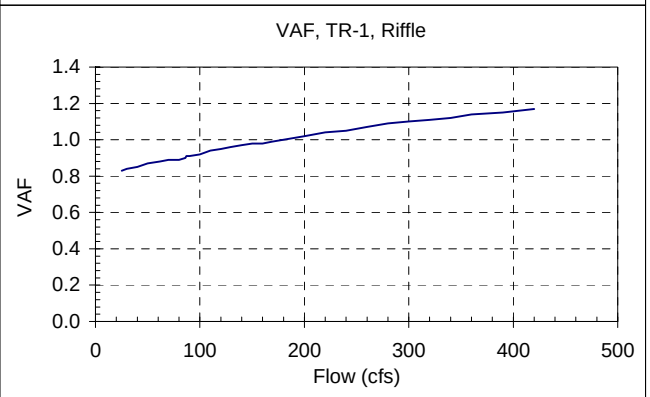
Stream: North Fork Koktuli River **Reach:** B
Site Name: 04-NFK-RF1 **Site #:** 1
Date: 6/23/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Riffle

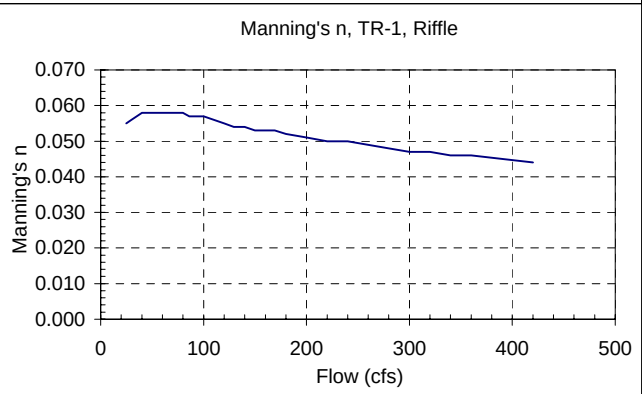
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	95.67	0.33	1.12	0.83	0.055	61.5
30	95.72	0.32	1.18	0.84	0.06	61.7
40	95.81	0.32	1.29	0.85	0.06	62.0
50	95.88	0.33	1.42	0.87	0.06	62.2
61.8	95.96	0.34	1.54	0.88	0.06	62.5
70	96.01	0.34	1.62	0.89	0.06	62.6
80	96.07	0.34	1.70	0.89	0.06	62.8
86	96.10	0.35	1.76	0.90	0.06	62.9
86.9	96.10	0.35	1.78	0.91	0.06	62.9
90	96.12	0.35	1.80	0.91	0.06	62.9
100	96.17	0.36	1.88	0.92	0.06	63.0
110	96.21	0.37	1.98	0.94	0.06	63.1
120	96.25	0.38	2.06	0.95	0.06	63.2
129.4	96.29	0.38	2.13	0.96	0.05	63.3
140	96.33	0.39	2.22	0.97	0.05	63.3
150	96.37	0.39	2.29	0.98	0.05	63.4
160	96.41	0.40	2.35	0.98	0.05	63.5
169.2	96.44	0.40	2.42	0.99	0.05	63.6
180	96.48	0.41	2.49	1.00	0.05	63.6
200	96.54	0.42	2.63	1.02	0.05	63.8
220	96.60	0.43	2.75	1.04	0.05	63.9
240	96.66	0.44	2.87	1.05	0.05	64.0
260	96.71	0.45	3.00	1.07	0.05	64.1
280	96.76	0.46	3.12	1.09	0.05	64.3
300	96.81	0.47	3.23	1.10	0.05	64.5
320	96.86	0.47	3.33	1.11	0.05	64.7
340	96.91	0.48	3.43	1.12	0.05	64.9
360	96.95	0.49	3.54	1.14	0.05	65.1
390	97.02	0.50	3.68	1.15	0.05	65.4
420.0	97.08	0.51	3.82	1.17	0.044	65.7

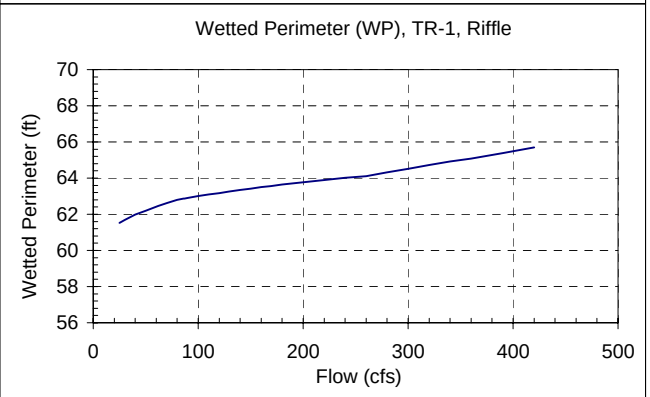






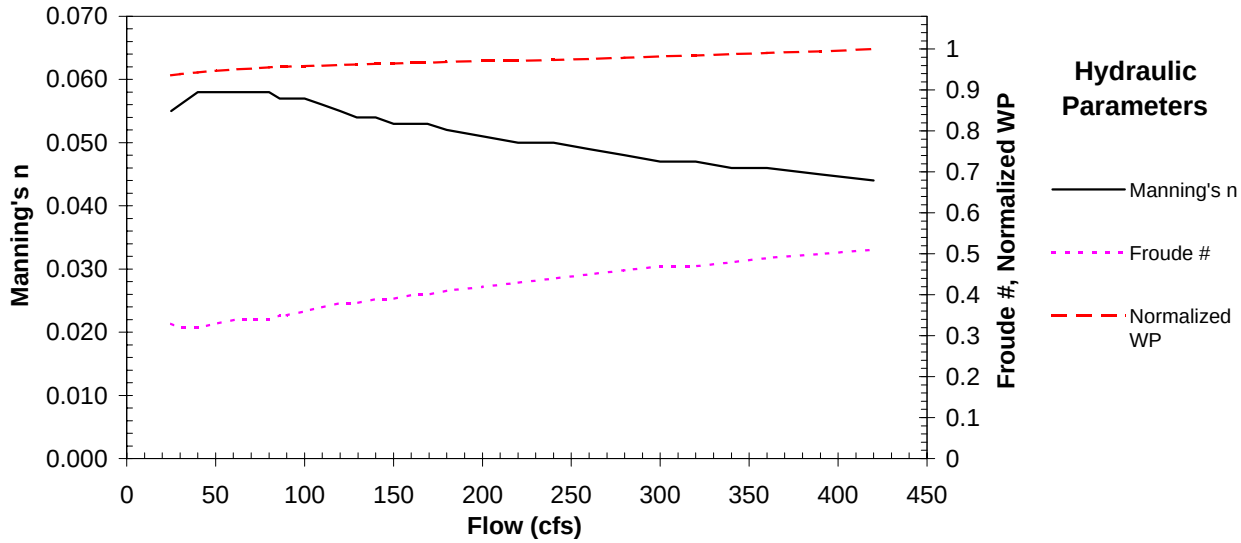


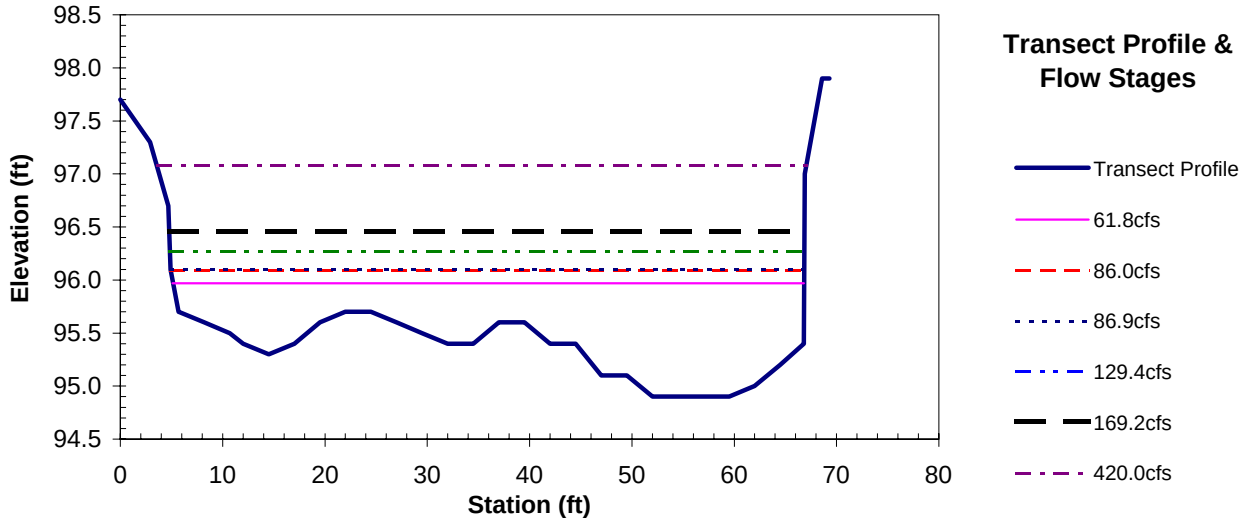


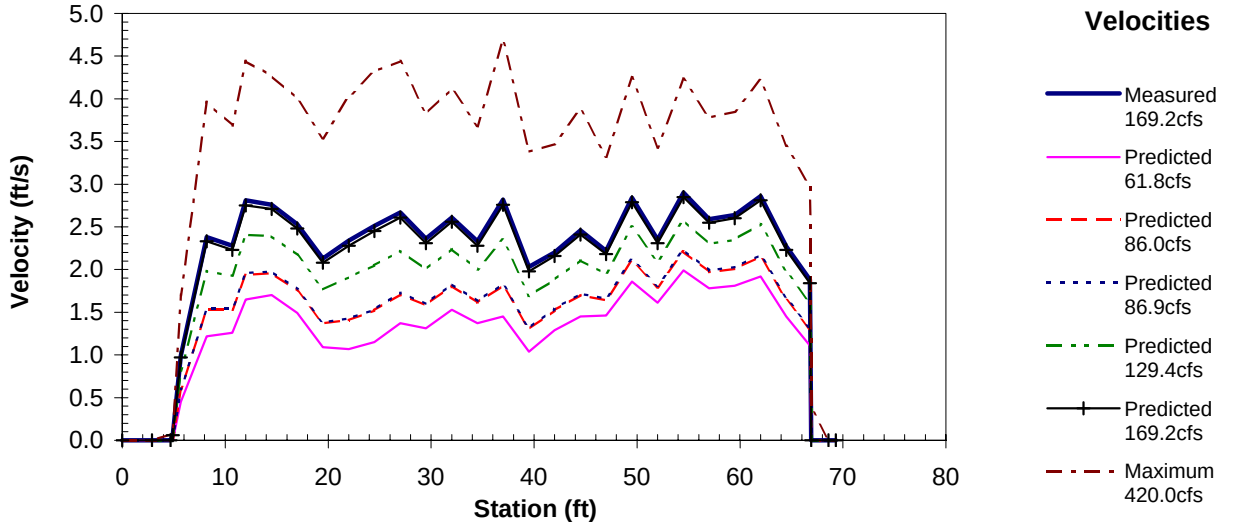


cTR1 - Transect hydraulic parameters

Pebble Project, North Fork Koktuli River
04-NFK-RF1 - Riffle - TRANSECT 1 - 6/23/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-NFK-RF1  06/23/05
RIFFLE                      0605Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  25.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  61.8
QARD  70.0
QARD  80.0
QARD  86.0
QARD  86.9
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 129.4
QARD 140.0
QARD 150.0
QARD 160.0
QARD 169.2
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 390.0
QARD 420.0
XSEC  1000     1000. 1.0     94.99    .00645
      1000   .097.67  2.997.34  4.796.71  4.996.06  5.795.66  8.295.56
      1000 10.795.46 12.095.36 14.595.26 17.095.36 19.595.56 22.095.66
      1000 24.595.66 27.095.56 29.595.46 32.095.36 34.595.36 37.095.56
      1000 39.595.56 42.095.36 44.595.36 47.095.06 49.595.06 52.094.86
      1000 54.594.86 57.094.86 59.594.86 62.094.96 64.595.16 66.895.36
      1000 66.997.00 68.697.87 69.397.95
NS    1000      22.9      22.9      23.8      23.8      32.6      53.6
NS    1000      54.6      64.6      56.6      46.6      45.6      54.6
NS    1000      45.6      54.7      56.7      54.8      64.6      54.7
NS    1000      56.6      54.7      54.6      54.6      43.6      45.6
NS    1000      43.8      43.8      52.8      45.7      45.8      24.6
NS    1000      24.6      22.9      22.9
WSL   1000     95.67     95.72     95.81     95.88     95.96     96.01
WSL   1000     96.07     96.10     96.10     96.12     96.17     96.21
WSL   1000     96.25     96.29     96.33     96.37     96.41     96.44
```

IFG4 Data Deck (continued)

```
WSL   1000     96.48     96.54     96.60     96.66     96.71     96.76
WSL   1000     96.81     96.86     96.91     96.95     97.02     97.08
CAL1  1000     96.46     169.2
VEL1  1000                0.06 0.99 2.38 2.28 2.81 2.76 2.53 2.13 2.34
VEL1  1000 2.51 2.67 2.36 2.61 2.33 2.82 2.03 2.20 2.46 2.22 2.84 2.35
VEL1  1000 2.90 2.59 2.64 2.86 2.27 1.88
CAL2  1000     96.10      86.9
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.27     129.4
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.97      61.8
VEL4  1000
VEL4  1000
VEL4  1000
CAL5  1000     96.09      86.0
VEL5  1000
VEL5  1000
VEL5  1000
ENDJ
```

IFG4 Data Deck

PHABSIM Hydraulic Model Calibration Details

Stream: North Fork Koktuli River

Reach: NFK-C

NFK-C Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)					Measured WSE(ft)					WSE Calibration Error (ft)					Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_5	Q_1	Q_2	Q_3	Q_4	Q_5	Q_1	Q_2	Q_3	Q_4	Q_5	
04-NFK-RN1	21.10	146.2	92.3	117.9	79.6		97.65	97.14	97.36	97.02		-0.11	0.00	-0.01	0.00		MANSQ
04-NFK-IC1	22.26	167.3	84.9	110.5	60.9	76.2	96.17	95.79	95.97	95.68	95.80	0.02	0.03	-0.02	0.00	-0.03	IFG4
04-NFK-RN2	22.67	159.1	116.6	54.5	70.6		98.37	98.06	97.64	97.75		-0.03	0.04	-0.03	0.02		IFG4
04-NFK-RF2	22.81	166.1	79.5	128.9	55.7	75.8	94.80	94.42	94.59	94.29	94.42	-0.03	0.00	0.05	-0.01	-0.02	IFG4
08-NFK2-MS1-TR1	24.65	287.4	176.9	89.2			98.88	98.53	98.16			0.00	0.00	0.00			IFG4
08-NFK2-MS1-TR2 (Left Channel)	26.21	210.0	116.7	49.2			97.90	97.60	97.41			-0.03	0.04	-0.02			IFG4
08-NFK2-MS1-TR2 (Right Channel)	26.21	62.2	39.4	23.3			96.22	96.08	95.99			0.00	0.01	0.00			IFG4
08-NFK2-MS1-TR3	26.96	272.2	156.1	72.6			97.95	97.49	97.01			0.00	0.01	0.00			IFG4
04-NFK-RN3	30.63	106.8	23.5	70.2	25.8		96.05	95.42	95.86	95.37		0.02	-0.05	-0.01	0.04		IFG4
04-NFK-IC2	33.65	92.0	37.5	70.5	32.2		96.95	96.46	96.69	96.38		-0.04	-0.02	0.07	-0.01		IFG4
08-NFK-190	0.15	73.9	31.6	12.6			97.21	96.75	96.38			0.00	-0.01	0.00			IFG4
08-NFK-190	0.17	73.9	31.6	12.6			97.36	96.83	96.43			0.00	-0.01	0.01			IFG4
08-NFK-190	0.18	73.9	31.6	12.6			97.56	97.07	96.60			-0.01	-0.03	0.05			WSP

* RK is an abbreviation for River Kilometer

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 04-NFK-RN1

Habitat Type: Run

River Kilometer: 21.10

Stream: North Fork Koktuli River
Site: 04-NFK-RN1
Habitat Type: Run

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1st	6/24/2005	100.00	99.16	100.66
2nd	7/22/2005	100.00	99.18	100.68
3rd	8/14/2005	100.00	99.17	100.66
4th	7/4/2006	100.00	99.09	100.58
5th	4/12/2007	100.00	98.86	100.34
6th	7/20/2007	100.00	98.88	100.21

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Both HP and TP were about 0.07ft lower in 2006 than in 2005, suggesting BM was 0.07ft higher in 2006, which may be due to frost heave. As the result, WSEs surveyed in 2006 should be corrected to the 2005 elevation datum by subtracting 0.07ft.
(c) Relative elevation changes between pins show both HP and TP were 0.28-0.30ft lower in 2007 than in 2005. This suggests BM was about 0.28ft higher in 2007 than in 2005. therefore, WSEs surveyed in 2007 should be corrected to the 2005 elevation datum by subtracting 0.28ft.

calibration notes

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/24/2005	97.65
7/22/2005	97.37
8/14/2005	97.14
7/4/2006	97.36
4/12/2007	96.92
7/20/2007	97.02

The WSEs of 2006 and 2007 in the above table have reflected the adjustments to the datum .
HI of 2006 is added 0.07ft to adjust to the datum of 2005
HI of 2007 is added 0.28ft to adjust to the datum of 2005

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/24/2005	146.2
7/22/2005	
8/14/2005	92.3
7/4/2006	117.9
4/12/2007	64.3
7/20/2007	79.6

No discharge was measured on 7/22/05 when substrate was surveyed

calibration notes

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/24/2005	0.436%	78.0
7/22/2005	0.385%	78.0
8/14/2005	0.419%	102.7
7/4/2006	0.410%	134.0
4/12/2007	0.419%	207.8
7/20/2007	0.465%	127.0

The slope S=0.436% of 6/24/05 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/24/2005	95.35
7/22/2005	
8/14/2005	95.44
7/4/2006	95.36
4/12/2007	95.47
7/20/2007	95.62
Invert	95.62
SZF	95.62

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

MANSQ was applied for WSE calibration, and β=0.0 was used in the calculation.
The calibration results are summarized in the following table.

Flow (cfs)	WSE (ft)
30.0	96.47
40.0	96.60
50.0	96.72
60.0	96.83
70.0	96.93
79.6	97.02
90.0	97.12
92.3	97.14
100.0	97.21
110.0	97.29
120.0	97.36
124.8	97.40
130.0	97.43
140.0	97.50
146.2	97.54
150.0	97.57
160.0	97.63
170.0	97.69
180.0	97.75
190.0	97.81
200.0	97.87
210.0	97.92

calibration notes

220.0	97.98
240.0	98.09
260.0	98.19
280.0	98.29
300.0	98.39
320.0	98.49
340.0	98.59
360.0	98.69

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/24/2005	146.2	97.65	97.54	-0.11	MANSQ
2nd	7/22/2005					
3rd	8/14/2005	92.3	97.14	97.14	0.00	MANSQ
4th	7/4/2006	117.9	97.36	97.35	-0.01	MANSQ
5th	4/12/2007					
6th	7/20/2007	79.6	97.02	97.02	0.00	MANSQ

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) No discharge was measured during the 7/22/05 site visit.
(c) Photos showed the 4/12/07 channel was still affected by ice, and thus the surveyed hydraulics of this date was not included in the modeling.
(d) WSE calibration error of the highest measure flow is 0.11ft, which may be the result of the disturbance to the control pins. Different WSE calibration method (IFG4) was also tried, but MANSQ resulted in the most reasonable hydraulics within the range of simulation flows.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 79.6cfs to 146.2cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

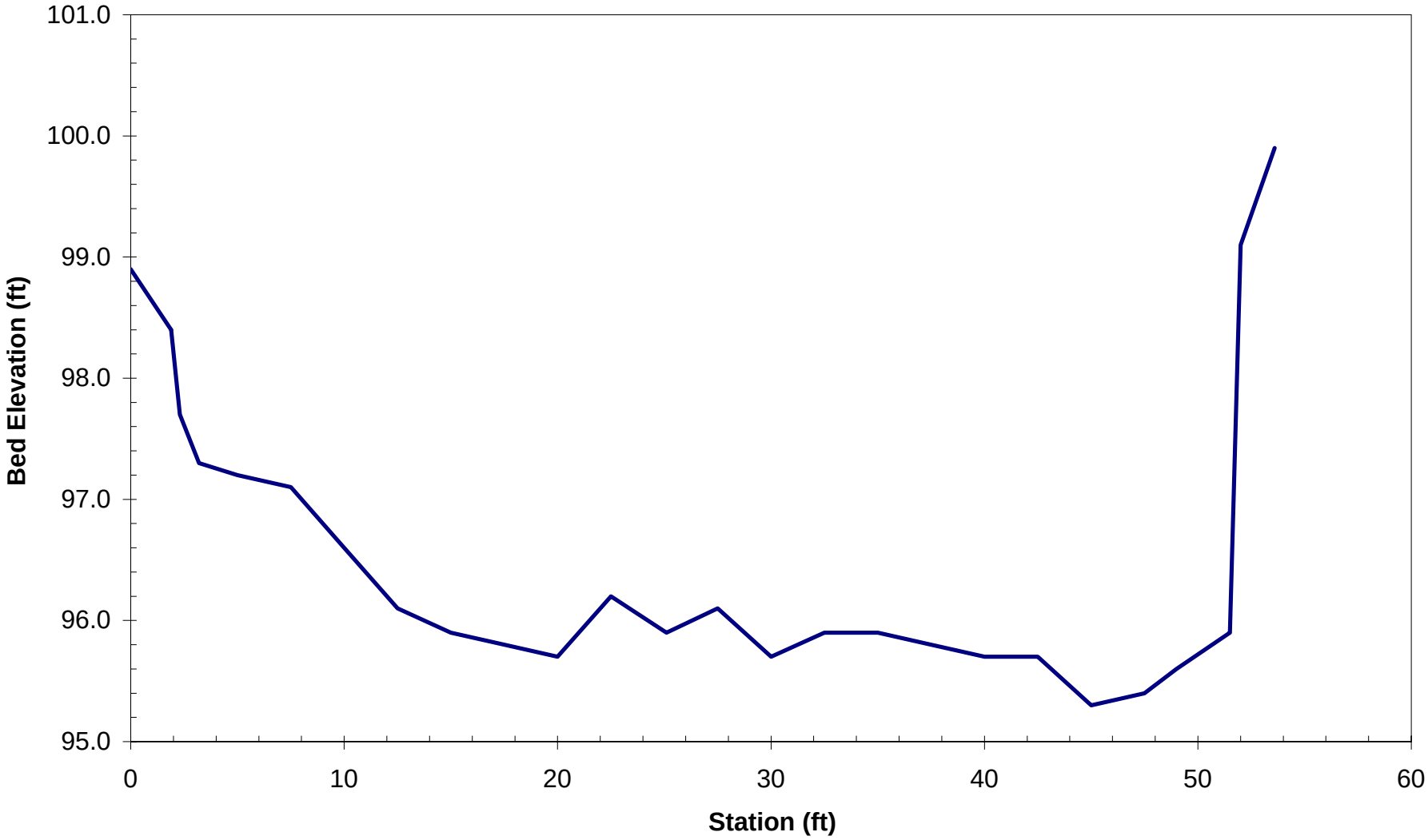
Survey Date	Q (cfs)	WUA (Y/N)
6/24/2005	146.2	Y
7/22/2005		
8/14/2005	92.3	Y
7/4/2006	117.9	Y
4/12/2007		
7/20/2007	79.6	Y

(4) Hydraulic Calibration Results:

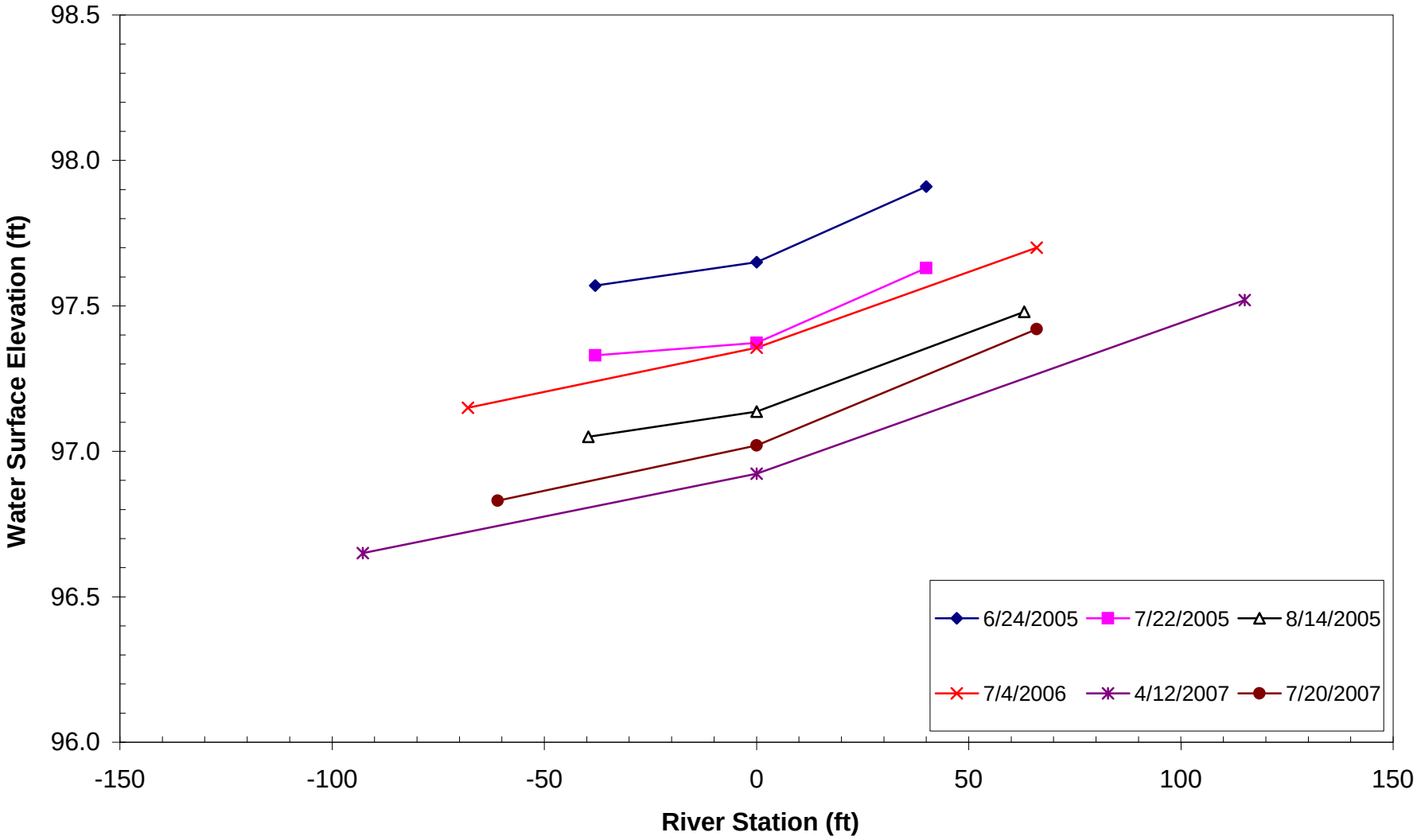
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges.
The parameters appear to vary in normal trends as flow increases for the two transect profiles surveyed in 2005.
For the two transect profiles surveyed in 2006-2007 period, the parameters vary in opposite trends when the flow is less than the highest measured flows (146.2cfs), but stay virtually flat when the flows are higher than the highest measured flows. Comparison of the transect profiles surveyed in these two period shows aggradations near the left bank in each of the two later profiles.
The opposite trends of hydraulics may have been the result of the aggradation.

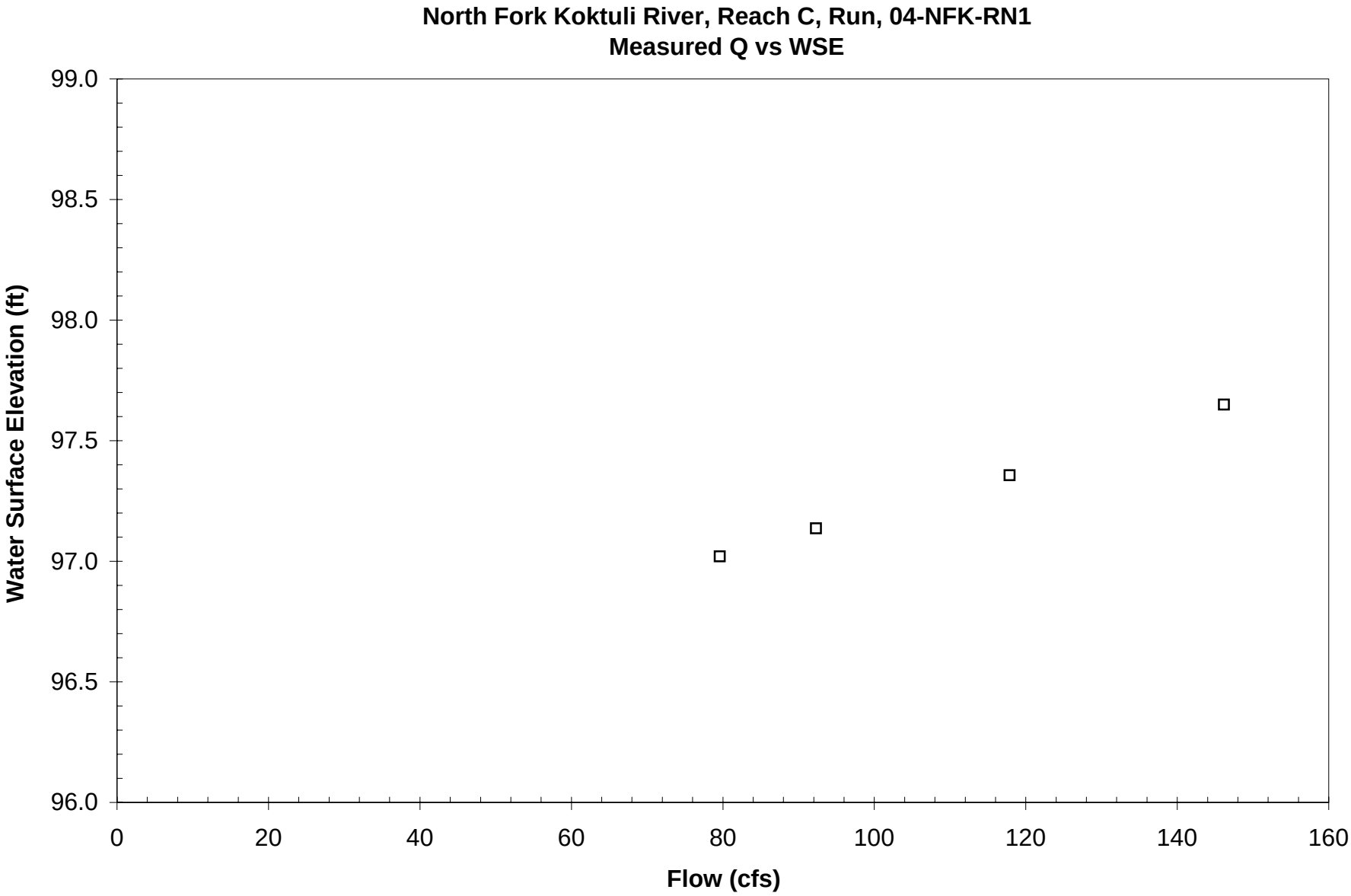
calibration notes

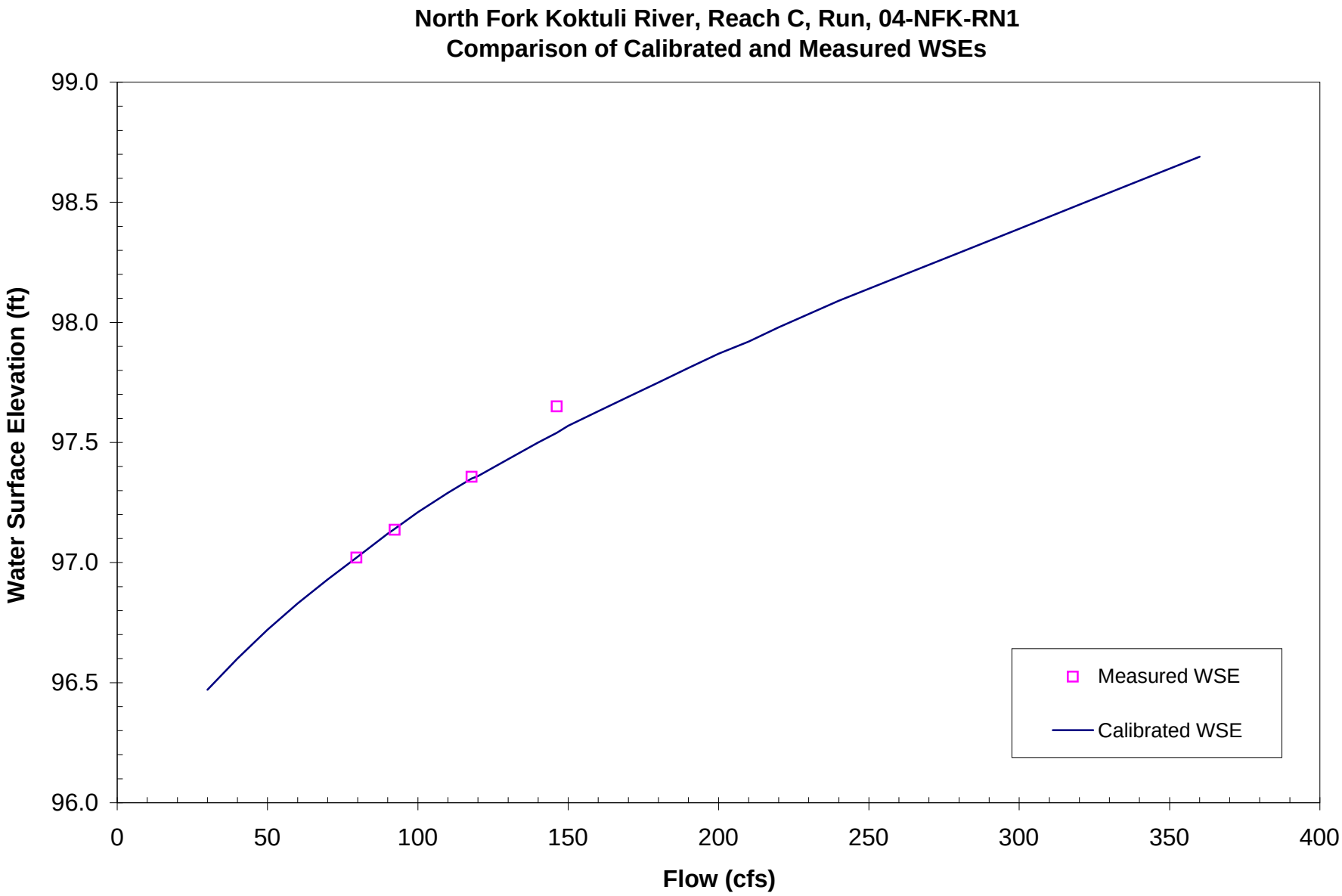
North Fork Koktuli River, Reach C, Run, 04-NFK-RN1
Measured Transect Profile



North Fork Koktuli River, Reach C, Run, 04-NFK-RN1
Longitudinal Water Surface Elevation Profiles

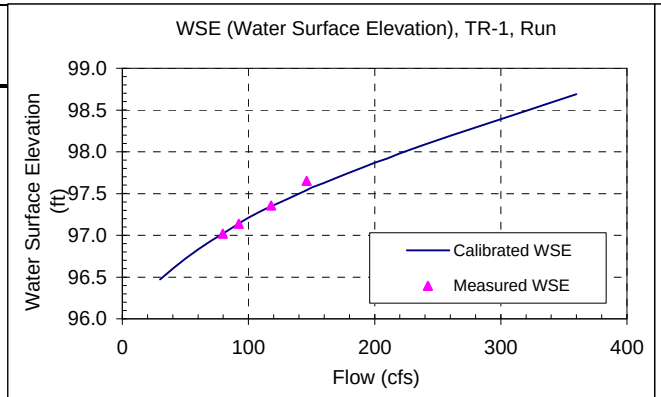


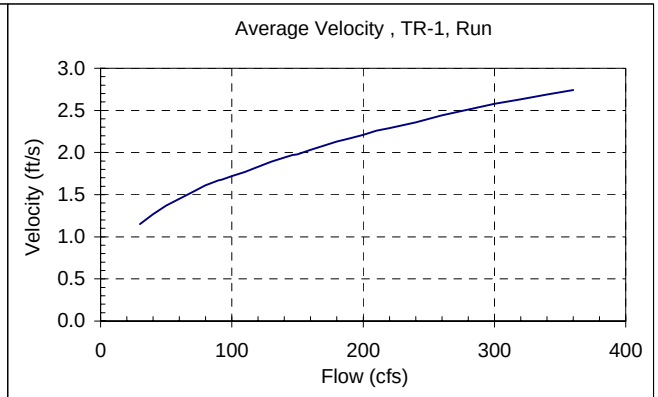

North Fork Koktuli River, Reach C, Run, 04-NFK-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
99.0
98.5
98.0
97.5
97.0
96.5
96.0
0
20
40
60
80
100
120
140
160
Flow (cfs)

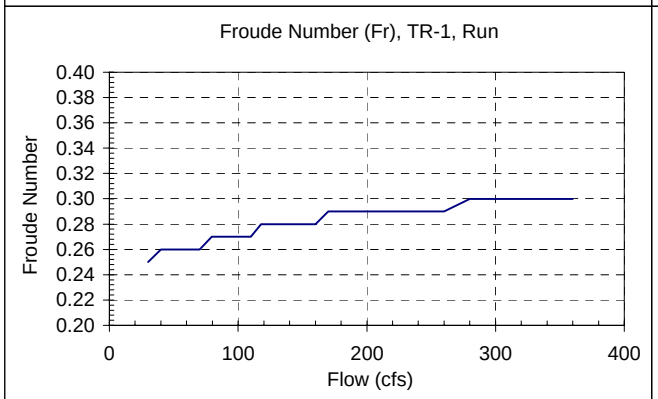

North Fork Koktuli River, Reach C, Run, 04-NFK-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.0
98.5
98.0
97.5
97.0
96.5
96.0
0
50
100
150
200
250
300
350
400
Flow (cfs)
Measured WSE
Calibrated WSE

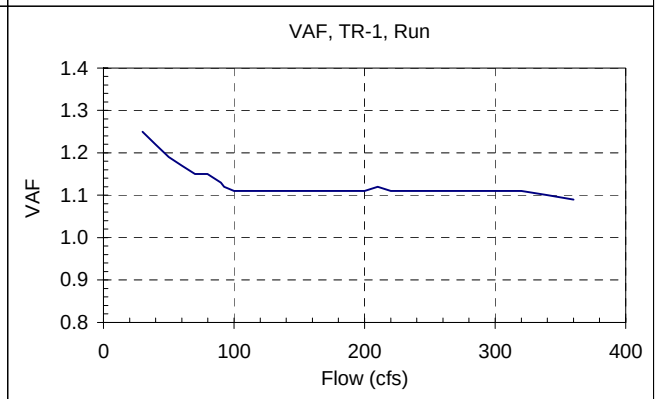
Stream: North Fork Koktuli River **Reach:** C
Site Name: 04-NFK-RN1 **Site #:** 1
Date: 6/24/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Run

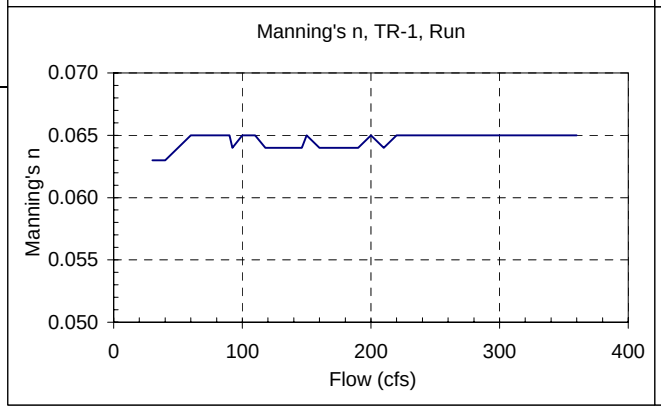
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	96.47	0.25	1.15	1.25	0.063	41.8
40	96.60	0.26	1.27	1.22	0.06	42.6
50	96.72	0.26	1.37	1.19	0.06	43.4
60	96.83	0.26	1.45	1.17	0.07	44.0
70	96.93	0.26	1.53	1.15	0.07	44.7
79.6	97.02	0.27	1.61	1.15	0.07	45.2
90	97.12	0.27	1.67	1.13	0.07	47.2
92.3	97.14	0.27	1.68	1.12	0.06	47.7
100	97.21	0.27	1.72	1.11	0.07	48.6
110	97.29	0.27	1.77	1.11	0.07	49.5
117.9	97.35	0.28	1.82	1.11	0.06	50.0
120	97.36	0.28	1.83	1.11	0.06	50.1
130	97.43	0.28	1.89	1.11	0.06	50.4
140	97.50	0.28	1.94	1.11	0.06	50.6
146.2	97.54	0.28	1.97	1.11	0.06	50.8
150	97.57	0.28	1.98	1.11	0.07	50.9
160	97.63	0.28	2.03	1.11	0.06	51.2
170	97.69	0.29	2.08	1.11	0.06	51.3
180	97.75	0.29	2.13	1.11	0.06	51.5
190	97.81	0.29	2.17	1.11	0.06	51.6
200	97.87	0.29	2.21	1.11	0.07	51.7
210	97.92	0.29	2.26	1.12	0.06	51.8
220	97.98	0.29	2.29	1.11	0.07	52.0
240	98.09	0.29	2.36	1.11	0.07	52.2
260	98.19	0.29	2.44	1.11	0.07	52.4
280	98.29	0.30	2.51	1.11	0.07	52.6
300	98.39	0.30	2.58	1.11	0.07	52.8
320	98.49	0.30	2.63	1.11	0.07	53.3
340	98.59	0.30	2.69	1.10	0.07	53.8
360	98.69	0.3	2.74	1.09	0.065	54.4

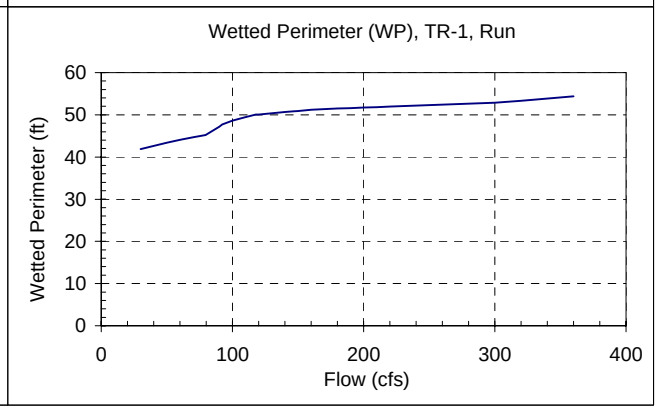




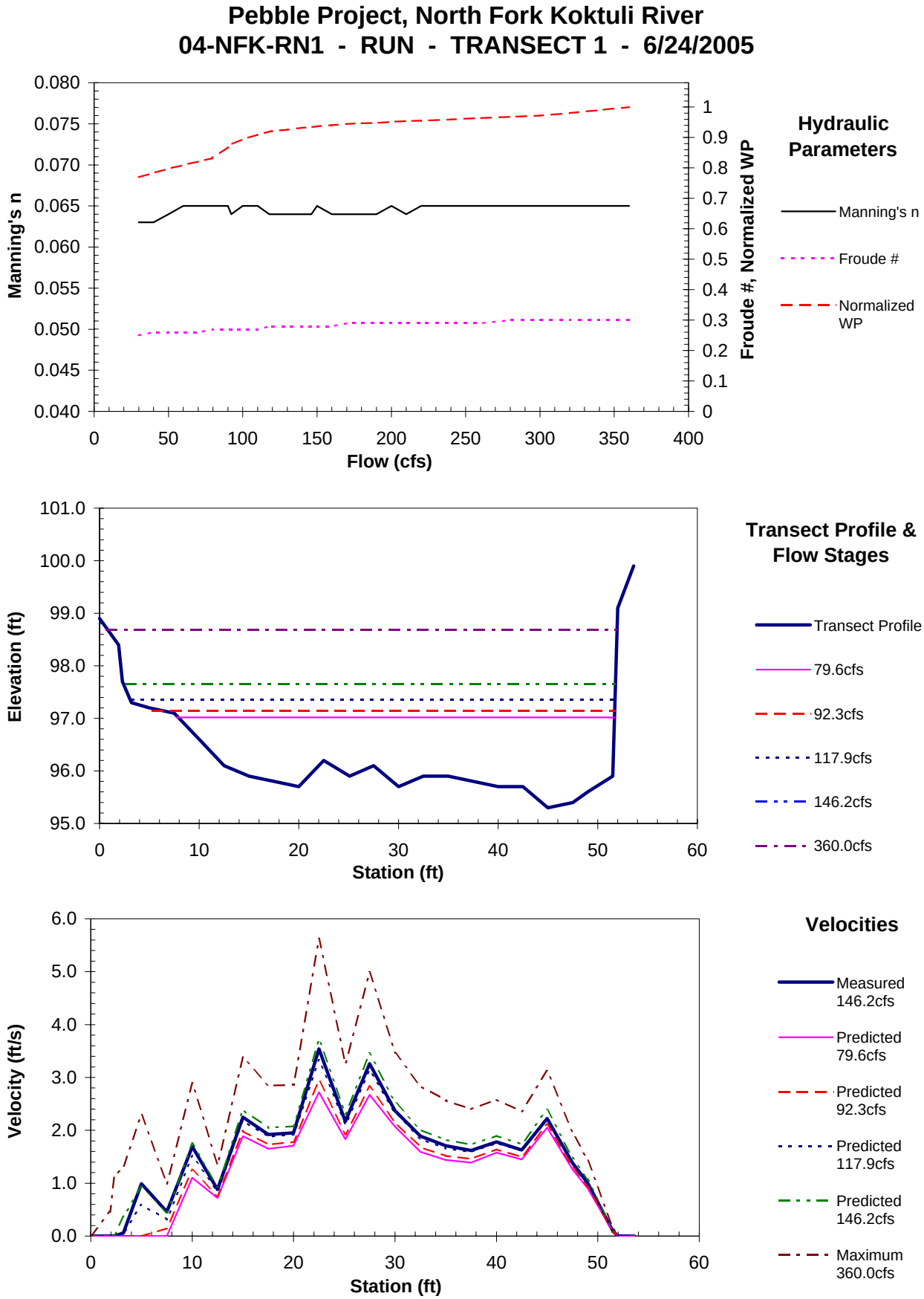








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-NFK-RN1  06/24/05
RUN                         0605Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  79.6
QARD  90.0
QARD  92.3
QARD 100.0
QARD 110.0
QARD 117.9
QARD 120.0
QARD 130.0
QARD 140.0
QARD 146.2
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
XSEC  1000     1000. 1.0     95.62    .00436
      1000   .098.87  1.998.41  2.397.65  3.297.34  5.097.15  7.597.05
      1000 10.096.55 12.596.05 15.095.94 17.595.84 20.095.75 22.596.25
      1000 25.195.94 27.596.05 30.095.75 32.595.94 35.095.94 37.595.84
      1000 40.095.65 42.595.65 45.095.34 47.595.44 49.095.55 51.595.94
      1000 52.099.05 53.699.90
NS    1000      22.9      23.9 .1   24.9 .1   24.8      54.6      45.7
NS    1000      46.7      46.6      45.7      46.6      54.6      42.6
NS    1000      64.6      45.6      45.6      45.8      46.6      54.6
NS    1000      54.6      72.6      65.6      54.7      54.7      25.6
NS    1000      25.8      22.9
WSL   1000     96.47     96.60     96.72     96.83     96.93     97.02
WSL   1000     97.12     97.14     97.21     97.29     97.35     97.36
WSL   1000     97.43     97.50     97.54     97.57     97.63     97.69
WSL   1000     97.75     97.81     97.87     97.92     97.98     98.09
WSL   1000     98.19     98.29     98.39     98.49     98.59     98.69
```

IFG4 Data Deck (continued)

```
CAL1  1000     97.65     146.2
VEL1  1000           0.00 0.06 0.99 0.46 1.69 0.88 2.25 1.92 1.95 3.54
VEL1  1000 2.17 3.26 2.37 1.89 1.71 1.62 1.78 1.63 2.22 1.38 1.00 0.09
VEL1  1000
CAL2  1000     97.14      92.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.36     117.9
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     97.02      79.6
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 04-NFK-IC1

Habitat Type: Island Complex

River Kilometer: 22.26

Stream: North Fork Koktuli River
Reach: C
Site: 04-NFK-IC1
Habitat Type: Island Complex

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	Dogleg	TP
1st	6/23/2005	100.00	98.78	98.05	98.88
2nd	7/22/2005	100.00	98.76	98.07	98.88
3rd	8/14/2005	100.00	98.74	98.06	98.88
4th	7/4/2006	100.00	98.64	98.07	98.90
5th	4/13/2007	100.00	98.65	98.06	98.95
6th	7/19/2007	100.00	98.55		98.94

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Dogleg is a control pin located on the island.
(c) Relative elevation changes from the level loops surveys indicated HP and/or TP were disturbed in 2006, as compared to the BM elevation.
(d) Relative elevation changes between BM and Dodleg were within ±0.01ft from 2005 to 2007. Small relative elevation change suggests the two pins were stable throughout the survey period.

calibration notes

Measured WSE:

This transect is an island complex with a main channel and a side channel. Each channel has three measured WSEs (i.e., Right, Mid, Left). Average of the three measured WSEs is used as the representative WSE of each channel, as summarized below.

Date	WSE (ft)	
	Left (main)	Right (side)
6/23/2005	96.17	96.42
7/22/2005	95.94	96.20
8/14/2005	95.79	96.02
7/4/2006	95.97	96.27
4/13/2007	95.68	95.95
7/19/2007	95.80	96.08

Left WSE is selected for modeling, because left channel carries more water.
Bed elevations of right channels were adjusted based on the difference between the WSEs of the two channels in order to accommodate the one-WSE requirement in modeling.

Discharge:

All measured discharges are listed in the following table.

Date	Flow (cfs)		
	Left (main)	Right (side)	Total
6/23/2005	117.5	49.8	167.3
7/22/2005			
8/14/2005	66.8	18.1	84.9
7/4/2006	83.1	27.4	110.5
4/13/2007	47.3	13.6	60.9
7/19/2007	54.1	22.0	76.2

No discharge was measured in 7/22/05 site visit.

calibration notes

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (ft/ft)	
	Left (main channel)	Right (side channel)
6/23/2005	1.000%	0.65%
7/22/2005	0.832%	0.58%
8/14/2005	0.982%	0.57%
7/4/2006	0.939%	0.50%
4/13/2007	1.106%	0.55%
7/19/2007	0.900%	0.53%

Date	WSE Slope distance (ft)	
	Left (main channel)	Right (side channel)
6/23/2005	75	80
7/22/2005	51.7	105
8/14/2005	56	103.5
7/4/2006	58.6	81.8
4/13/2007	116.6	153
7/19/2007	134.4	91.6

The slope S=1.000% of 6/23/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Main channel Invert (ft)
6/23/2005	94.67
7/22/2005	
8/14/2005	94.69
7/4/2006	94.77
4/13/2007	94.78
7/19/2007	94.70
Invert	94.78
SZF	94.78

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/23/2005	167.3	96.17	96.19	0.02	IFG4
2nd	7/22/2005		95.94			
3rd	8/14/2005	84.9	95.79	95.82	0.03	IFG4
4th	7/4/2006	110.5	95.97	95.95	-0.02	IFG4
5th	4/13/2007	60.9	95.68	95.68	0.00	IFG4
6th	7/19/2007	76.2	95.80	95.77	-0.03	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured in 7/22/05 trip
(d) Photos of 4/13/07 showed only residual snow/ice on the ground.
The impact of ice on the hydraulics should be none or minimal.

calibration notes

(3) Velocity calibration

This site has one transect with five velocity/discharge measurements, ranging from 60.9cfs to 167.3cfs.
Each of the five measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
No adjustment to n model-calculated n values was needed for any of the five calibrated velocity profiles.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

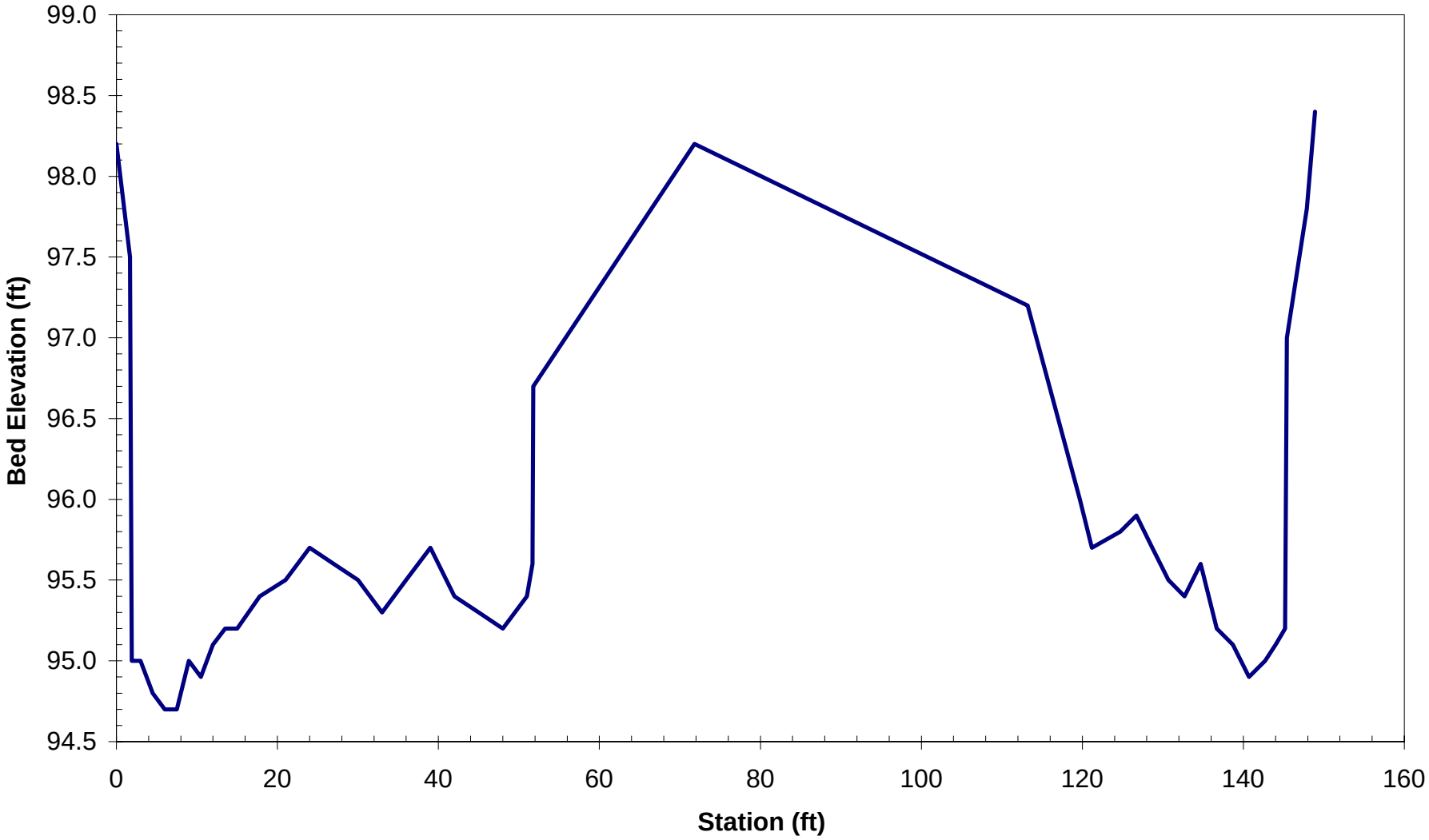
Survey Date	Q (cfs)	WUA (Y/N)
6/23/2005	167.3	Y
7/22/2005		
8/14/2005	84.9	Y
7/4/2006	110.5	Y
4/13/2007	60.9	Y
7/19/2007	76.2	Y

(4) Hydraulic Calibration Results:

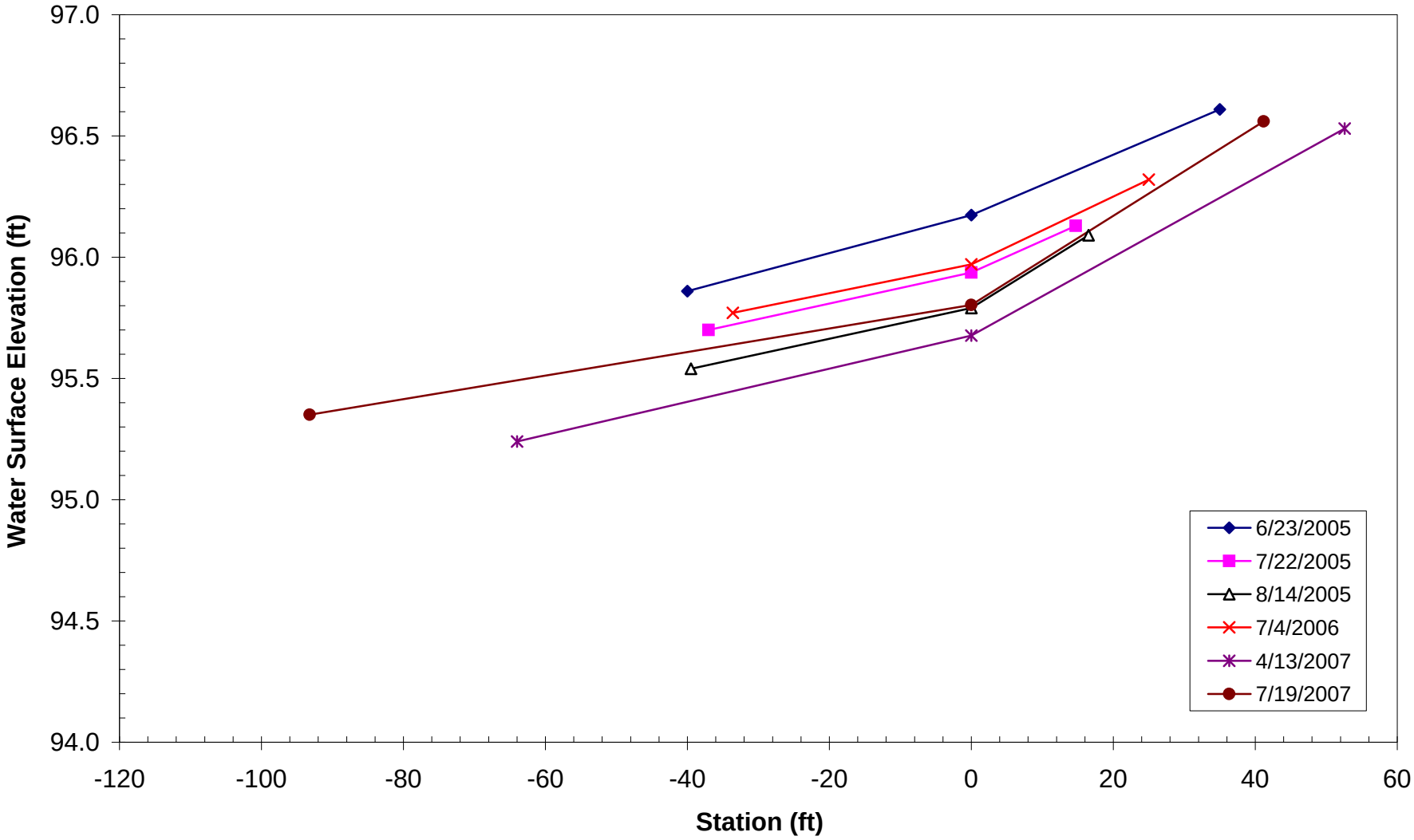
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges. Manning's n and Fr, however, are not varying in normal trends and are increasing
and decreasing, respectively, with increasing flows. It is determined this is ok, because the transect has a very
complex bathymetry with islands separating the cross-section into multiple channels. The surveyed hydraulics
showed very different velocities and WSEs in each channel (as much as 0.3ft in WSE difference) such that the
flow did not meet the definition of uniform flow across a transect, a hydraulic condition required when applying
Manning's equation. In addition, the Froude number was originally developed for single-channel transects and
may not be applicable to multiple-channel transects. As the result, the Manning's n value and Fr calculated for
the transect with multiple channels may not realistically reflect the bed roughness of each channel or
adequately indicate the quality of hydraulic calibration for the multiple-channel transect.

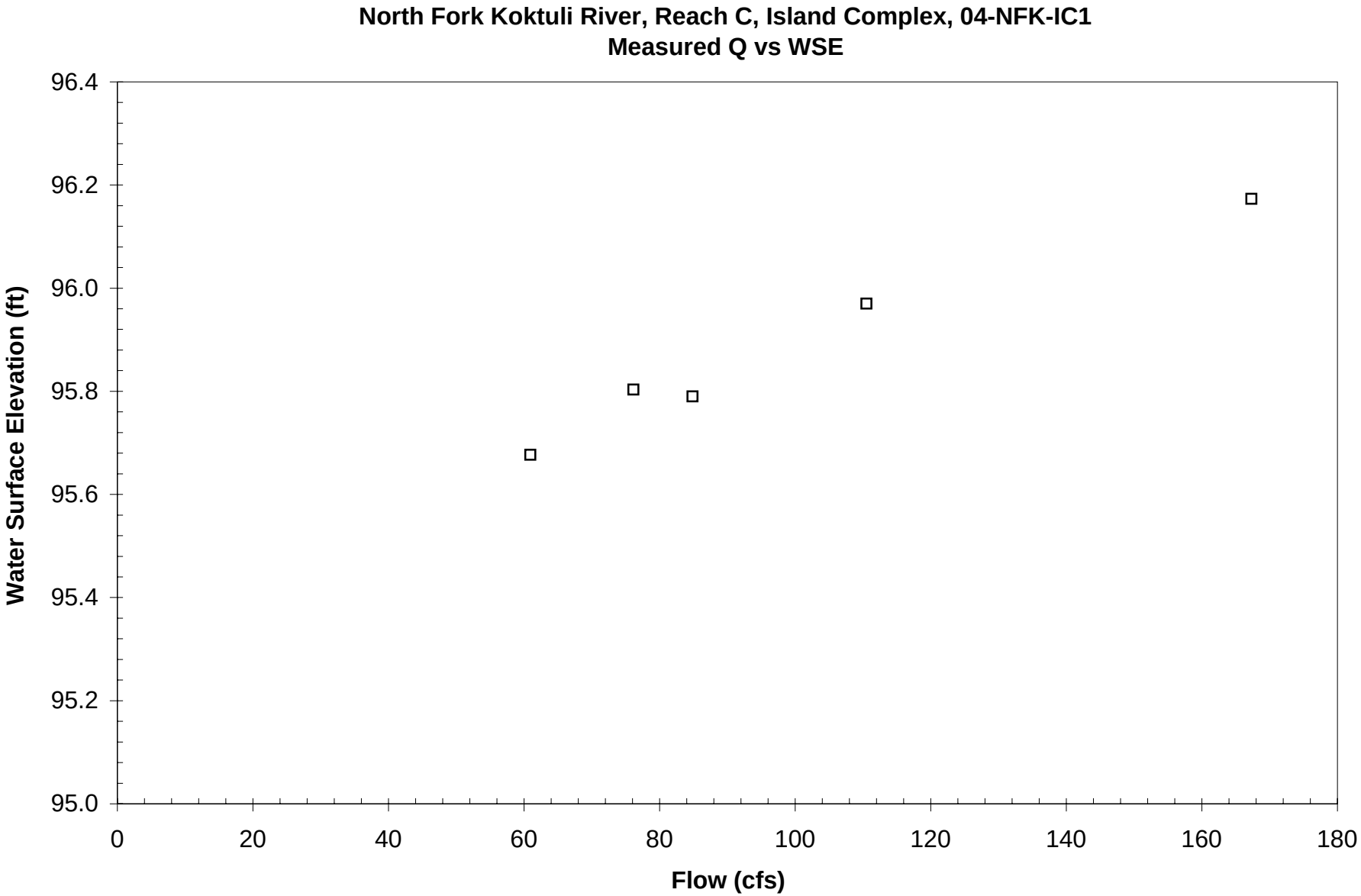
calibration notes

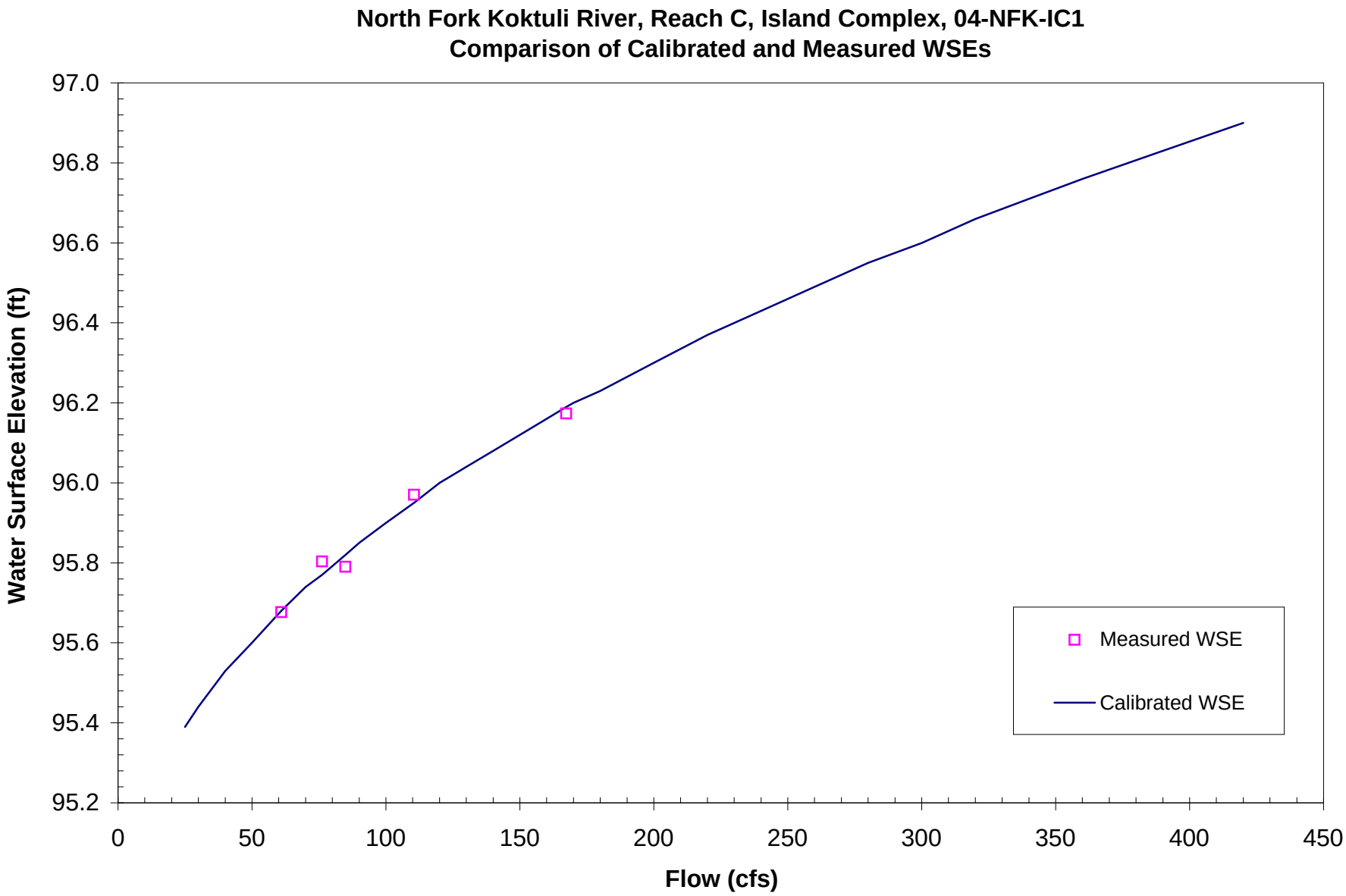
North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC1
Measured Transect Profile



North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC1
Longitudinal Water Surface Elevation Profiles



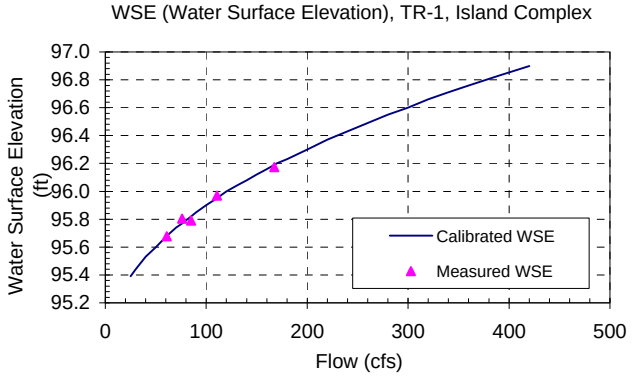

North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC1
Measured Q vs WSE
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

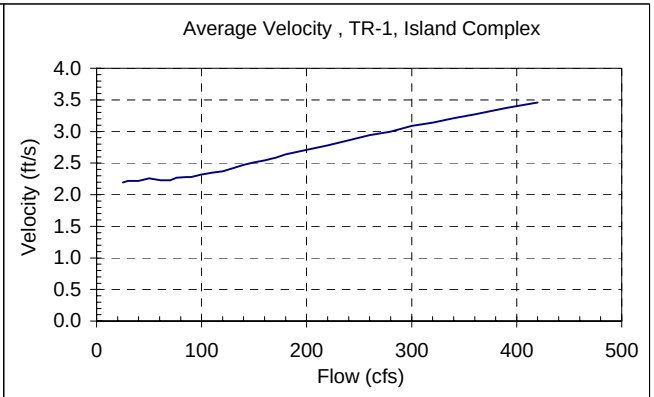

North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

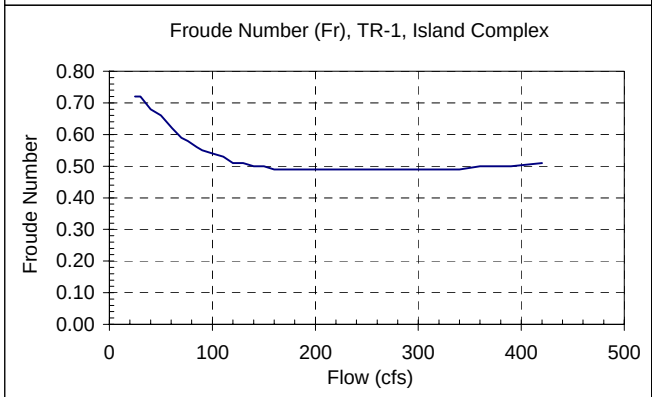
Stream: North Fork Koktuli River
Site Name: 04-NFK-IC1
Date: 6/23/2005
Calibration Flow: NA

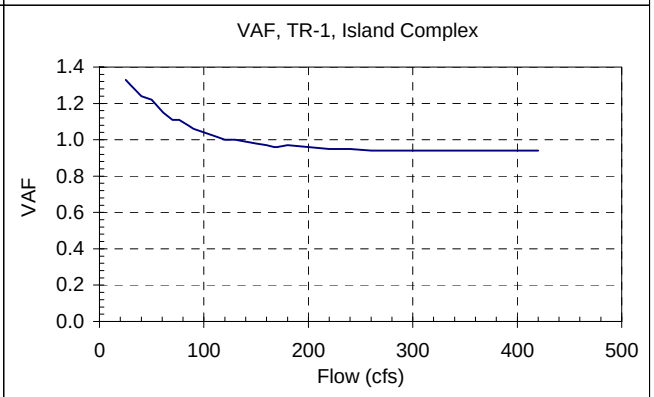
Reach: C
Site #: 1
Transect: 1
Habitat: Island Complex

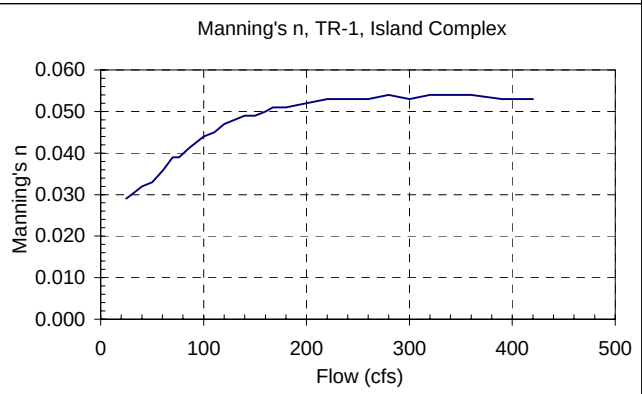
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	95.39	0.72	2.19	1.33	0.029	40.6
30	95.44	0.72	2.22	1.30	0.03	46.2
40	95.53	0.68	2.22	1.24	0.03	56.0
50	95.60	0.66	2.26	1.22	0.03	62.7
60.9	95.68	0.62	2.23	1.15	0.04	68.9
70	95.74	0.59	2.23	1.11	0.04	72.0
76.2	95.77	0.58	2.27	1.11	0.04	73.4
84.9	95.82	0.56	2.28	1.08	0.04	75.2
90	95.85	0.55	2.28	1.06	0.04	76.3
100	95.90	0.54	2.32	1.04	0.04	77.3
110.5	95.95	0.53	2.35	1.02	0.05	77.7
120	96.00	0.51	2.37	1.00	0.05	78.1
130	96.04	0.51	2.42	1.00	0.05	78.4
140	96.08	0.50	2.47	0.99	0.05	78.8
150	96.12	0.50	2.51	0.98	0.05	79.1
160	96.16	0.49	2.54	0.97	0.05	79.5
167.3	96.19	0.49	2.57	0.96	0.05	79.7
170	96.20	0.49	2.58	0.96	0.05	79.8
180	96.23	0.49	2.64	0.97	0.05	80.1
200	96.30	0.49	2.71	0.96	0.05	80.7
220	96.37	0.49	2.78	0.95	0.05	81.3
240	96.43	0.49	2.86	0.95	0.05	81.8
260	96.49	0.49	2.94	0.94	0.05	82.3
280	96.55	0.49	3.00	0.94	0.05	82.8
300	96.60	0.49	3.09	0.94	0.05	83.2
320	96.66	0.49	3.14	0.94	0.05	83.8
340	96.71	0.49	3.21	0.94	0.05	84.8
360	96.76	0.50	3.27	0.94	0.05	85.9
390	96.83	0.50	3.37	0.94	0.05	87.3
420.0	96.90	0.51	3.46	0.94	0.053	88.8

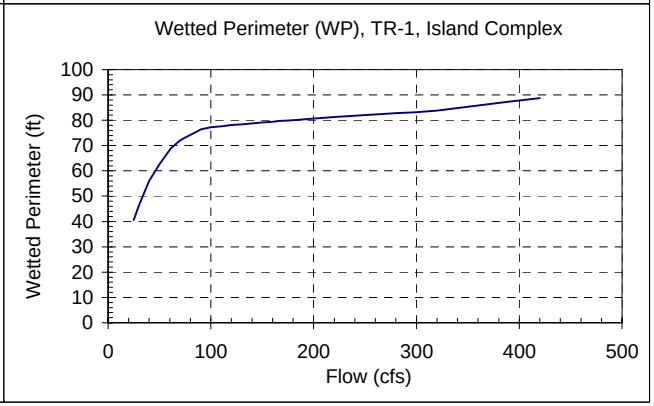




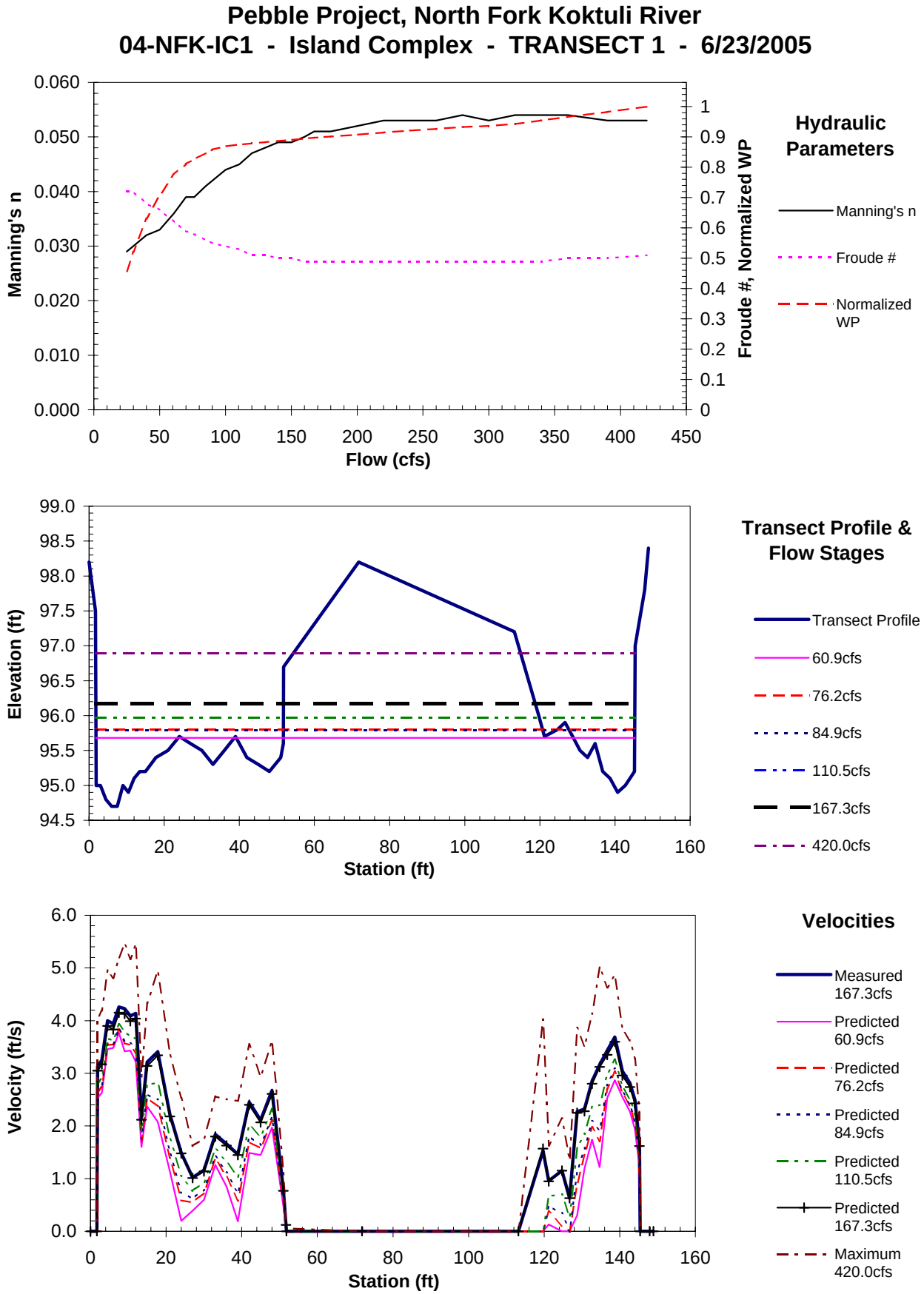








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-NFK-IC1  06/23/05
ISLAND                     Q0605                                    TRANSECT 1
IOC       11011001000010001010 00
QARD  25.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.9
QARD  70.0
QARD  76.2
QARD  84.9
QARD  90.0
QARD 100.0
QARD 110.5
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 167.3
QARD 170.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 390.0
QARD 420.0
XSEC  1000     1000. 1.0     94.78    .01000
      1000   .098.23  1.797.51  1.994.97  3.094.97  4.594.76  6.094.66
      1000  7.594.66  9.094.97 10.594.87 12.095.06 13.595.16 15.095.16
      1000 17.895.37 21.095.47 24.095.66 27.095.56 30.095.47 33.095.26
      1000 36.095.47 39.095.66 42.095.37 45.095.26 48.095.16 51.095.37
      1000 51.795.56 51.896.66 71.898.16113.297.15119.795.97121.295.66
      1000124.795.76126.795.87128.795.66130.795.47132.795.37134.795.56
      1000136.795.16138.795.06140.794.87142.794.97144.095.06145.295.16
      1000145.496.97147.997.80148.998.41
NS    1000      22.9      24.7      24.6      43.6      43.8      43.9
NS    1000      45.6      45.7      43.9      46.8      45.8      46.8
NS    1000      54.9      46.8      45.8      56.8      45.9      45.9
NS    1000      64.6      46.6      46.6      45.9      43.9      45.8
NS    1000      25.7      25.7      22.9      22.9      23.7      43.9
NS    1000      46.7      45.7      45.7      45.6      45.7      45.8
NS    1000      45.7      64.6      43.8      45.8      45.8      24.6
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      24.6      22.9      22.9
WSL   1000     95.39     95.44     95.53     95.60     95.68     95.74
WSL   1000     95.77     95.82     95.85     95.90     95.95     96.00
WSL   1000     96.04     96.08     96.12     96.16     96.19     96.20
WSL   1000     96.23     96.30     96.37     96.43     96.49     96.55
WSL   1000     96.60     96.66     96.71     96.76     96.83     96.90
CAL1  1000     96.17     167.3
VEL1  1000           3.13 3.25 4.00 3.94 4.26 4.23 4.09 4.14 2.17 3.21
VEL1  1000 3.41 2.22 1.49 1.02 1.16 1.84 1.66 1.46 2.45 2.11 2.67 0.79
VEL1  1000 0.12               1.53 0.96 1.15 0.63 2.27 2.32 2.85 3.16
VEL1  1000 3.43 3.69 3.04 2.81 2.49 1.66
CAL2  1000     95.79      84.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.97     110.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.68      60.9
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
CAL5  1000     95.80      76.2
VEL5  1000
VEL5  1000
VEL5  1000
VEL5  1000
ENDJ
```

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 04-NFK-RN2

Habitat Type: Run

River Kilometer: 22.67

Stream: North Fork Koktuli River
Reach: C
Site Name: 04-NFK-RN2
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/23/2005	100.00	101.13	99.94
2nd	7/22/2005	100.00	101.11	99.94
3rd	8/14/2005	100.00	101.12	99.94
4th	7/4/2006	100.00	101.06	99.97
5th	4/12/2007	100.00	100.97	100.02
6th	7/19/2007	100.00	100.96	99.92

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Control pins were stable in 2005 with no more than 0.02ft in relative elevation change
(c) The relative elevation changes of the control pins were irregualr in 2006 and 2007 from 2005, and, as the results, the amount of vertical movements of each control pins may not able to be accurately estimated.
(d) The maximum pin elevation change was 0.10ft or within ±0.05ft. This should be still marginally acceptable given the data were collected over two winters. Therefore, no corrections were applied to the surveyed WSEs.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/23/2005	98.37
7/22/2005	98.11
8/14/2005	97.90
7/4/2006	98.06
4/12/2007	97.64
7/19/2007	97.75

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/23/2005	159.1
7/22/2005	
8/14/2005	71.9
7/4/2006	116.6
4/12/2007	54.5
7/19/2007	70.6

Note: No discharge was measured during the 7/22/05 trip.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/23/2005	0.129%	93
7/22/2005	0.032%	93
8/14/2005	0.032%	93
7/4/2006	0.035%	144
4/12/2007	0.091%	265
7/19/2007	0.049%	164.7

The slope S=0.129% of 6/23/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/23/2005	95.77
7/22/2005	
8/14/2005	95.80
7/4/2006	95.76
4/12/2007	95.84
7/19/2007	95.75
Invert	95.84
SZF	95.84

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/23/2005	159.1	98.37	98.34	-0.03	IFG4
2nd	7/22/2005		98.11			
3rd	8/14/2005		97.90			
4th	7/4/2006	116.6	98.06	98.10	0.04	IFG4
5th	4/12/2007	54.5	97.64	97.61	-0.03	IFG4
6th	7/19/2007	70.6	97.75	97.77	0.02	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharge was measured during the 7/22/05 site visit.
(d) Flow of 8/14/05 survey is considered an outlier due to its unreasonably high WSE or low discharge, compared to the rest of the surveys.
(e) Photos of 4/12/07 showed channel was clear of ice and only residual ice/snow on banks.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 54.5cfs to 159.1cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

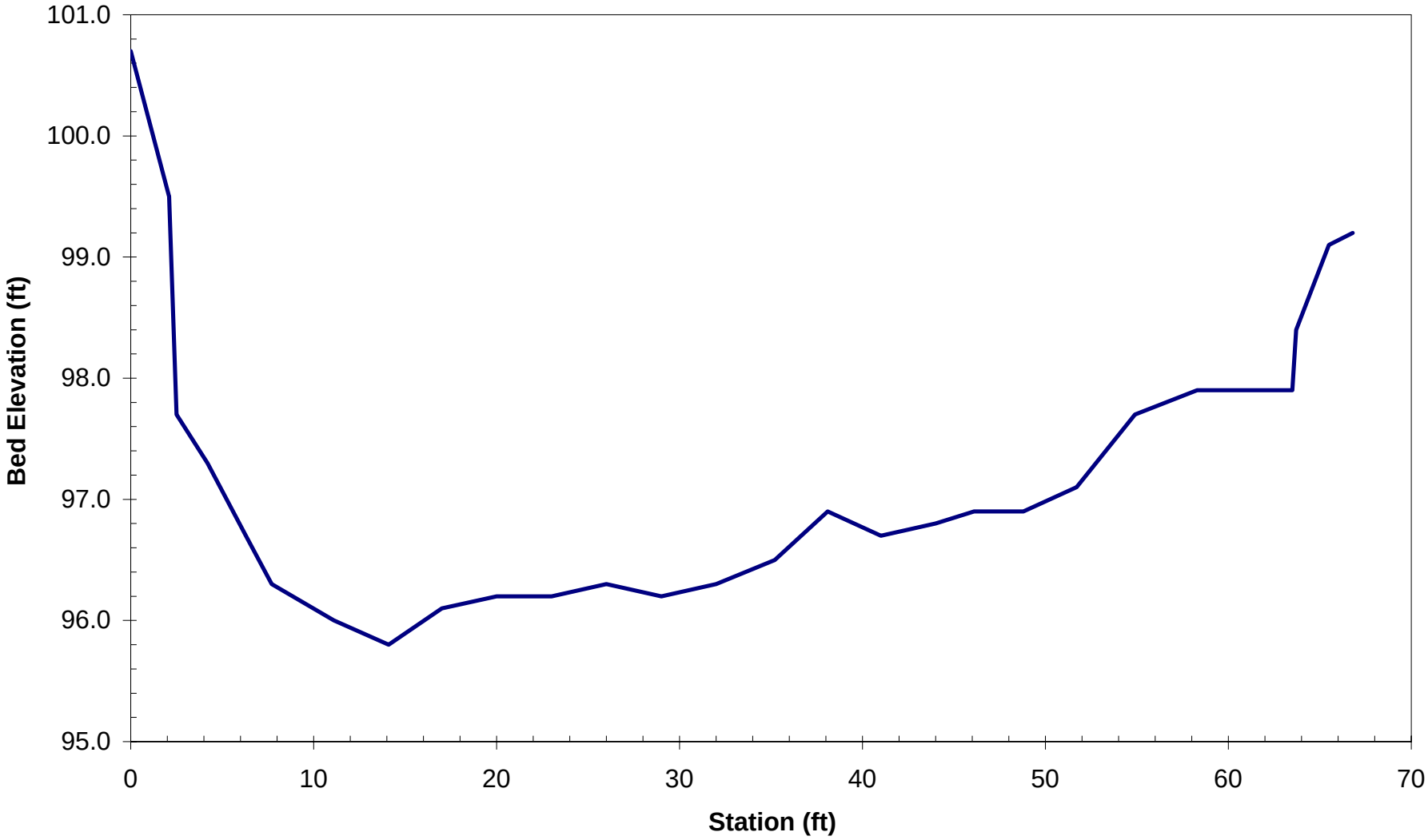
Survey Date	Q (cfs)	WUA (Y/N)
6/23/2005	159.1	Y
7/22/2005		
8/14/2005		
7/4/2006	116.6	Y
4/12/2007	54.5	Y
7/19/2007	70.6	Y

(4) Hydraulic Calibration Results:

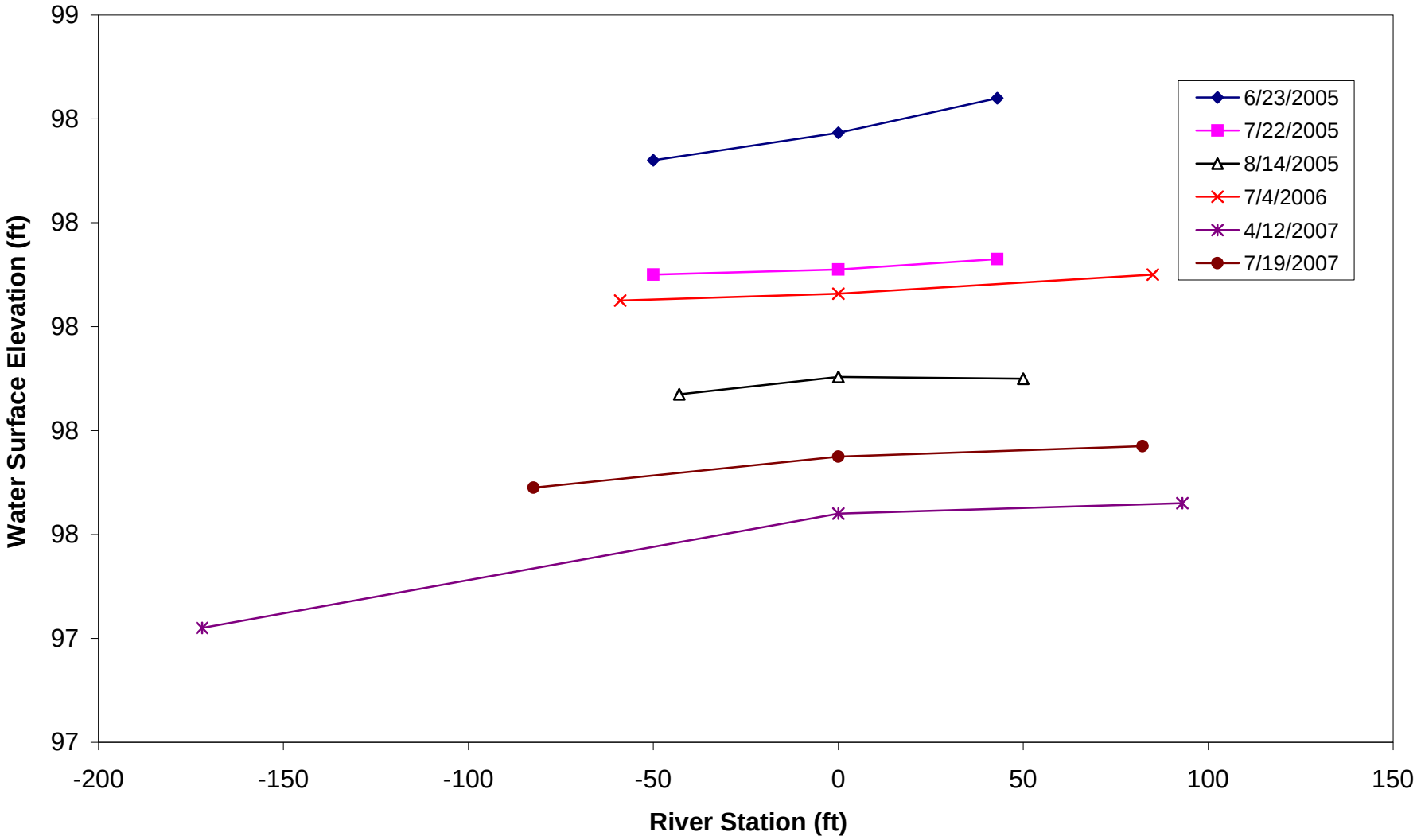
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends as flow increases.

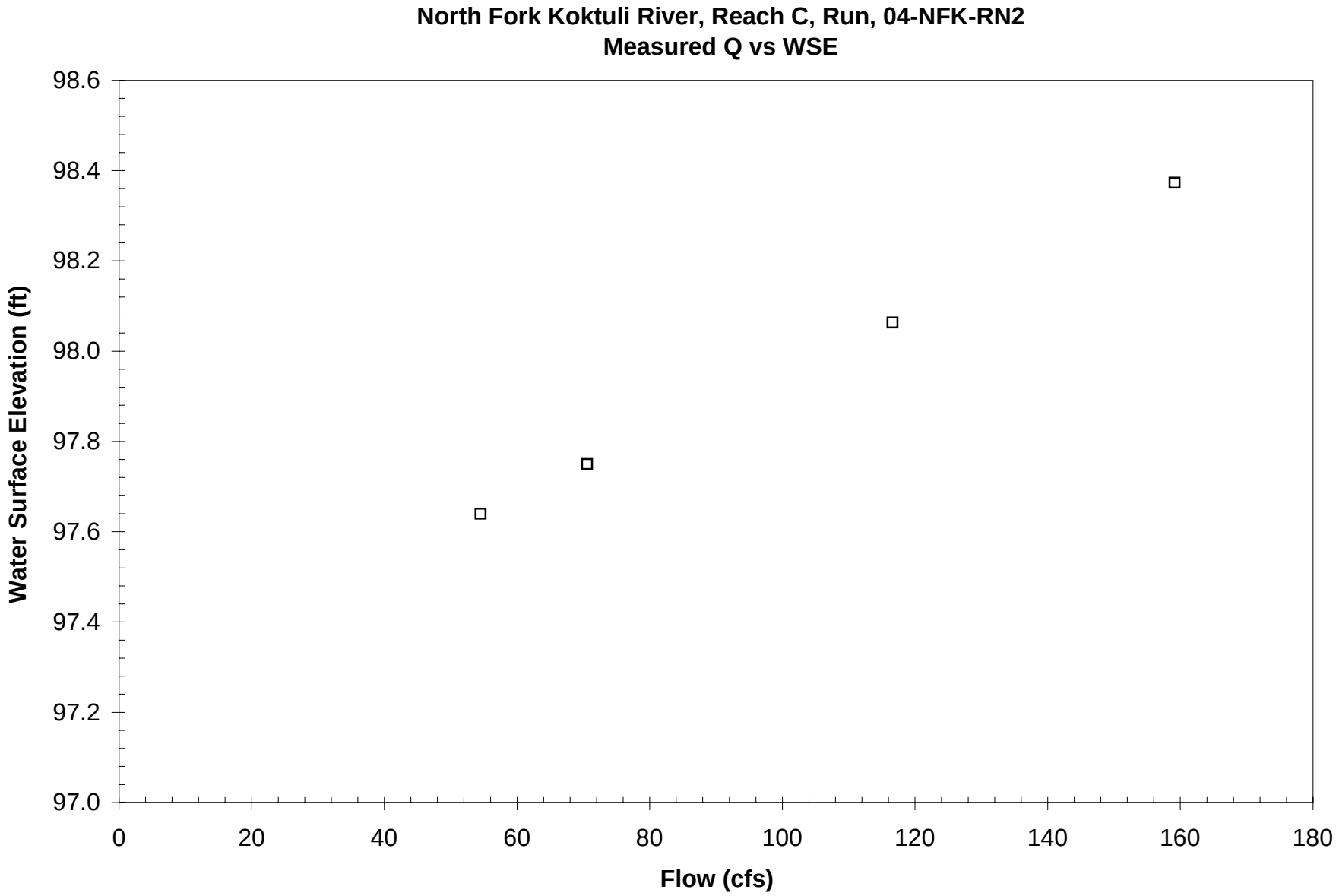
calibration notes

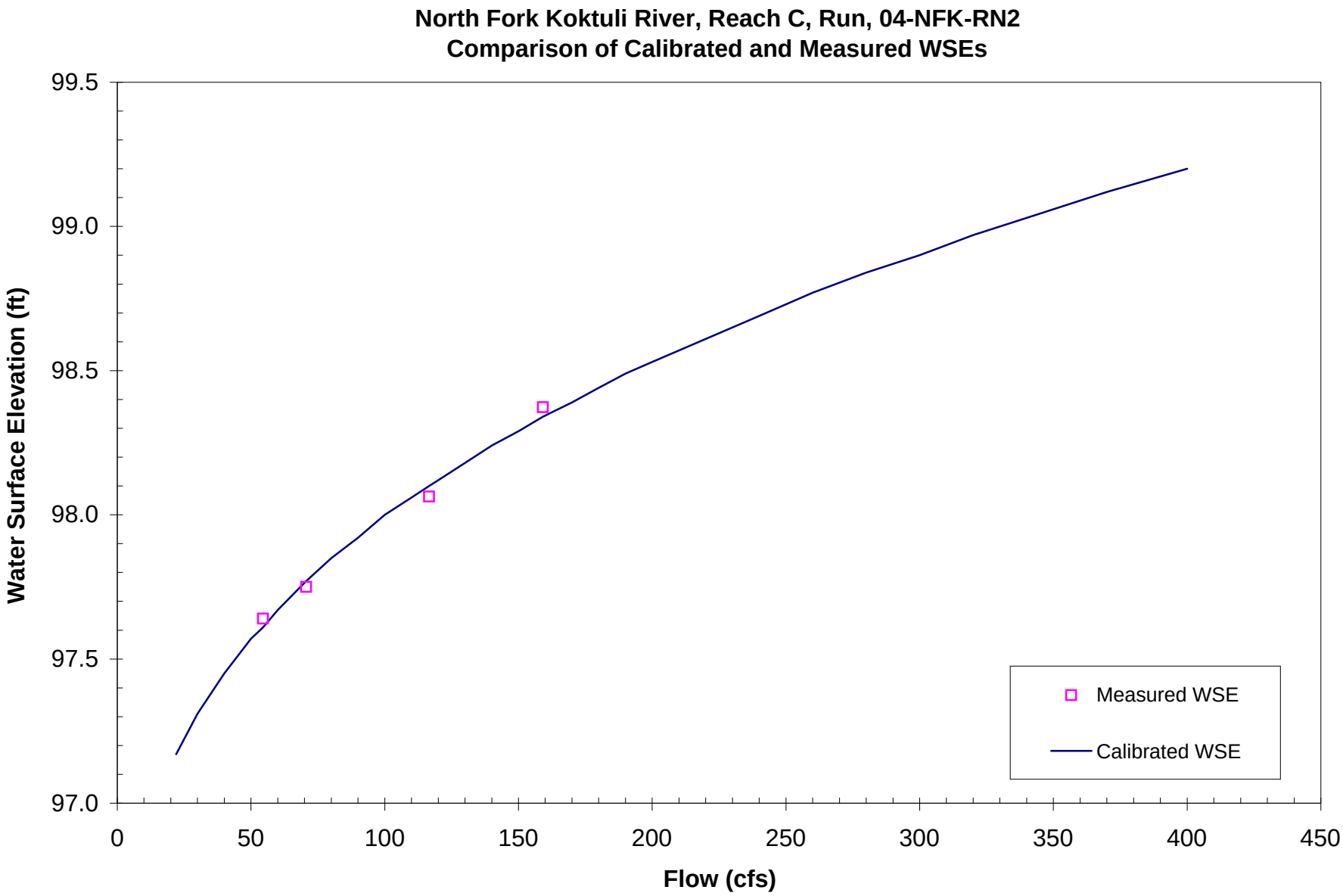
North Fork Koktuli River, Reach C, Run, 04-NFK-RN2
Measured Transect Profile



North Fork Koktuli River, Reach C, Run, 04-NFK-RN2
Longitudinal Water Surface Elevation Profiles

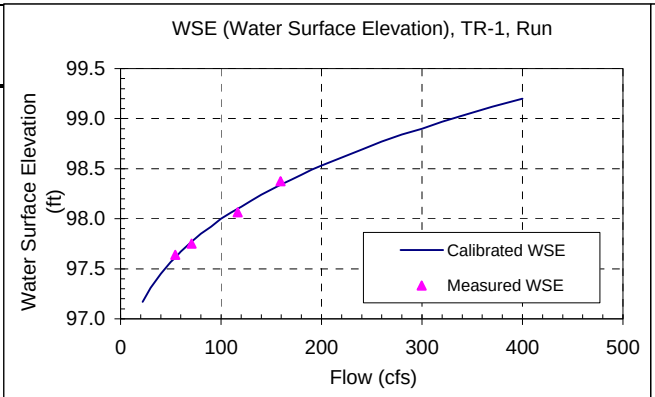


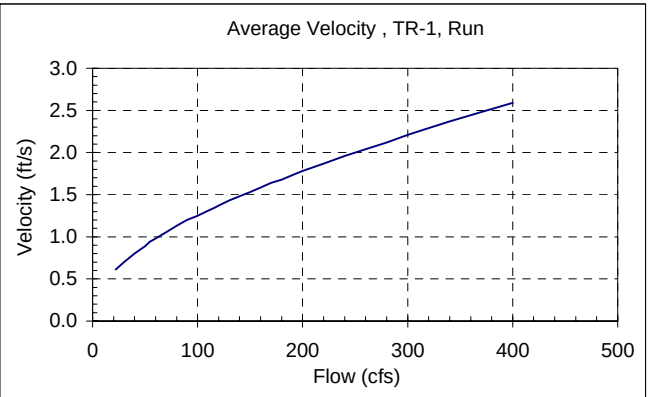

North Fork Koktuli River, Reach C, Run, 04-NFK-RN2
Measured Q vs WSE
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

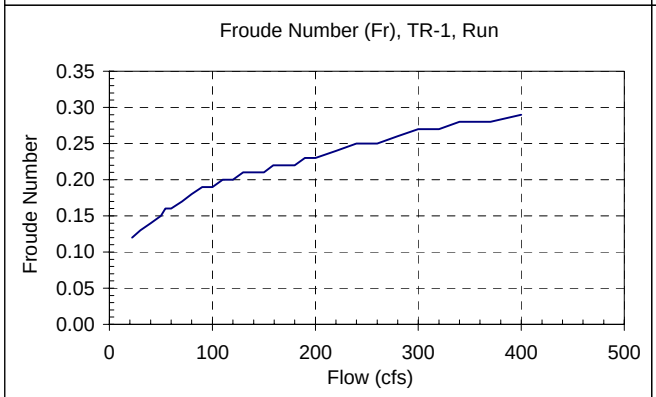

North Fork Koktuli River, Reach C, Run, 04-NFK-RN2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

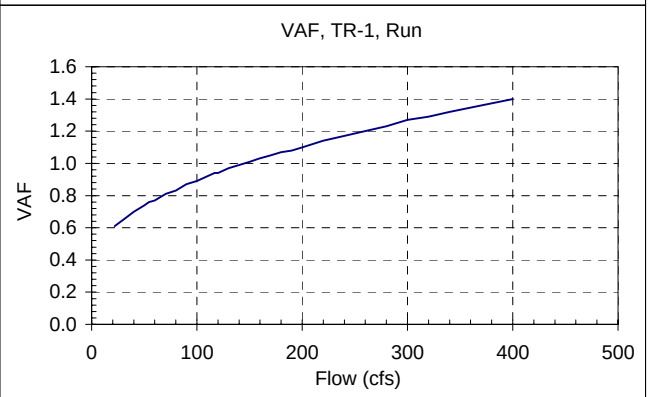
Stream: North Fork Koktuli River **Reach:** C
Site Name: 04-NFK-RN2 **Site #:** 2
Date: 6/23/2005 **Transect:** 1
Calibration Flow: Q(6/23/2005) **Habitat:** Run

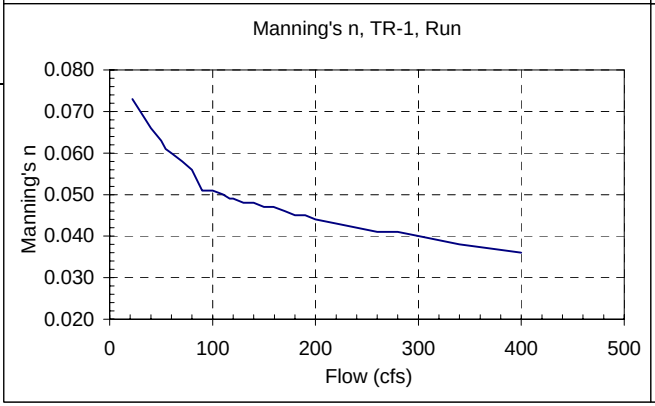
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
22	97.17	0.12	0.61	0.61	0.073	48.0
30	97.31	0.13	0.70	0.65	0.07	49.3
40	97.45	0.14	0.80	0.70	0.07	50.7
50	97.57	0.15	0.89	0.74	0.06	51.9
54.5	97.61	0.16	0.94	0.76	0.06	52.2
60	97.67	0.16	0.98	0.77	0.06	52.9
70.6	97.77	0.17	1.06	0.81	0.06	54.6
80	97.85	0.18	1.13	0.83	0.06	56.0
90	97.92	0.19	1.20	0.87	0.05	61.7
100	98.00	0.19	1.25	0.89	0.05	61.8
110	98.06	0.20	1.31	0.92	0.05	62.0
116.6	98.10	0.20	1.35	0.94	0.05	62.0
120	98.12	0.20	1.37	0.94	0.05	62.1
130	98.18	0.21	1.43	0.97	0.05	62.2
140	98.24	0.21	1.48	0.99	0.05	62.3
150	98.29	0.21	1.53	1.01	0.05	62.4
159.1	98.34	0.22	1.58	1.03	0.05	62.5
170	98.39	0.22	1.64	1.05	0.05	62.6
180	98.44	0.22	1.68	1.07	0.05	62.7
190	98.49	0.23	1.73	1.08	0.05	62.9
200	98.53	0.23	1.78	1.10	0.04	63.1
220	98.61	0.24	1.87	1.14	0.04	63.4
240	98.69	0.25	1.96	1.17	0.04	63.7
260	98.77	0.25	2.04	1.20	0.04	64.0
280	98.84	0.26	2.12	1.23	0.04	64.3
300	98.90	0.27	2.21	1.27	0.04	64.5
320	98.97	0.27	2.29	1.29	0.04	64.8
340	99.03	0.28	2.37	1.32	0.04	65.0
370	99.12	0.28	2.48	1.36	0.04	65.5
400	99.20	0.29	2.59	1.40	0.036	66.3

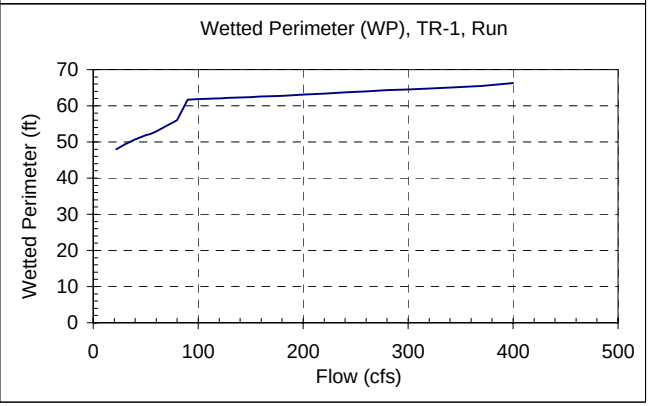




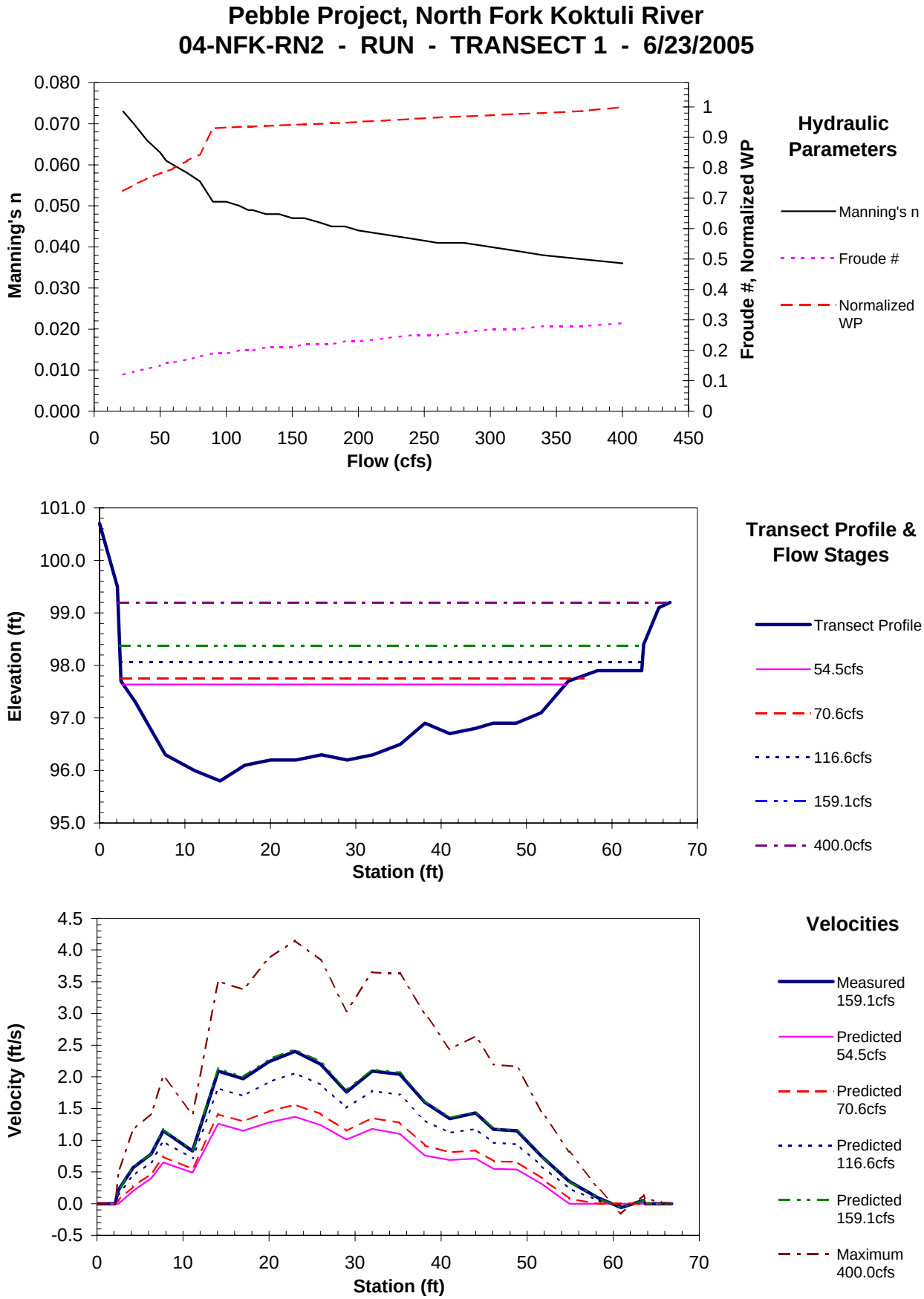








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-NFK-RN2  06/23/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  22.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  54.5
QARD  60.0
QARD  70.6
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 116.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 159.1
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 370.0
QARD 400.0
XSEC  1000     1000. 1.0     95.84    .00129
      1000   .0100.7  2.199.50  2.597.66  4.297.26  6.396.66  7.796.26
      1000 11.195.97 14.195.76 17.096.06 20.096.16 23.096.16 26.096.26
      1000 29.096.16 32.096.26 35.296.47 38.196.87 41.096.66 44.096.76
      1000 46.196.87 48.896.87 51.797.06 54.997.66 58.397.87 60.997.87
      1000 63.597.87 63.798.45 65.599.11 66.899.25
NS    1000      22.9      23.9      23.9      23.9      42.6      42.6
NS    1000      64.6      42.9      46.7      45.8      43.8      42.8
NS    1000      42.9      43.9      43.8      43.7      64.6      62.6
NS    1000      45.6      56.6      45.6      62.6      26.9      26.9
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     97.17     97.31     97.45     97.57     97.61     97.67
WSL   1000     97.77     97.85     97.92     98.00     98.06     98.10
WSL   1000     98.12     98.18     98.24     98.29     98.34     98.39
WSL   1000     98.44     98.49     98.53     98.61     98.69     98.77
WSL   1000     98.84     98.90     98.97     99.03     99.12     99.20
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
CAL1  1000     98.37     159.1
VEL1  1000           0.22 0.57 0.78 1.15 0.83 2.09 1.97 2.24 2.40 2.20
VEL1  1000 1.76 2.09 2.04 1.60 1.34 1.43 1.17 1.15 0.74 0.35 0.09-0.06
VEL1  1000 0.05
CAL2  1000     98.06     116.6
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.64      54.5
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     97.75      70.6
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 04-NFK-RF2

Habitat Type: Riffle

River Kilometer: 22.81

Stream: North Fork Koktuli River
Reach: C
Site: 04-NFK-RF2
Habitat Type: Riffle

(1) Field Data

Level Loop and Headpin Elevations:

Trip	Date	Trip	BM	HP	TP
1st	6/23/2005	1	100.00	95.78	97.37
2nd	7/22/2005	2	100.00	95.76	97.37
3rd	8/14/2005	3	100.00	95.76	97.37
4th	7/4/2006	4	100.00	95.76	97.39
5th	4/12/2007	5	100.00	95.81	97.42
6th	7/19/2007	6	100.00	95.82	97.42

Note : (a) Control pin elevations (BM, HP, TP) are from the first half of each level loop survey
(b) The relative control pin elevation changes were 0.00ft in 2005, 0.02ft in 2006 and 0.06ft in 2007
(c) Control pins only moved insignificantly from 2005 to 2006, and therefore no corrections were needed for the 2006 WSEs.
(d) For 2007 level loops, based on the relative elevation change overtime, it is determined BM had moved lower by 0.03ft - 0.06ft since 2005. As the result, WSEs of 2007 were corrected by subtracting 0.05ft from the measured WSEs.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/23/2005	94.80
8/14/2005	94.42
7/4/2006	94.59
4/12/2007	94.29
7/19/2007	94.42

The WSEs below have reflected the 0.05ft correction made to the 2007 WSEs.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/23/2005	166.1
7/22/2005	
8/14/2005	79.5
7/4/2006	128.9
4/12/2007	55.7
7/19/2007	75.8

No discharge was measured on 7/22/05

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/23/2005	1.015%	22.0
7/22/2005	0.842%	38.0
8/14/2005	0.763%	38.0
7/4/2006	0.842%	130.7
4/12/2007	1.229%	153.0
7/19/2007	1.009%	128.8

The slope S=1.015% of 6/23/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/23/2005	93.00
7/22/2005	
8/14/2005	93.12
7/4/2006	93.19
4/12/2007	93.19
7/19/2007	93.17
Invert	93.19
SZF	93.19

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR-1	calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/23/2005	166.1	94.80	94.77	-0.03	IFG4
2nd	7/22/2005					
3rd	8/14/2005	79.5	94.42	94.42	0.00	IFG4
4th	7/4/2006	128.9	94.59	94.64	0.05	IFG4
5th	4/12/2007	55.7	94.29	94.28	-0.01	IFG4
6th	7/19/2007	75.8	94.42	94.40	-0.02	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within acceptable range.
(c) No discharge was measured during the 7/22/05 site visit.

calibration notes

(3) Velocity calibration

This site has one transect with five velocity/discharge measurements, ranging from 55.7cfs to 166.1cfs.
Each of the five measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

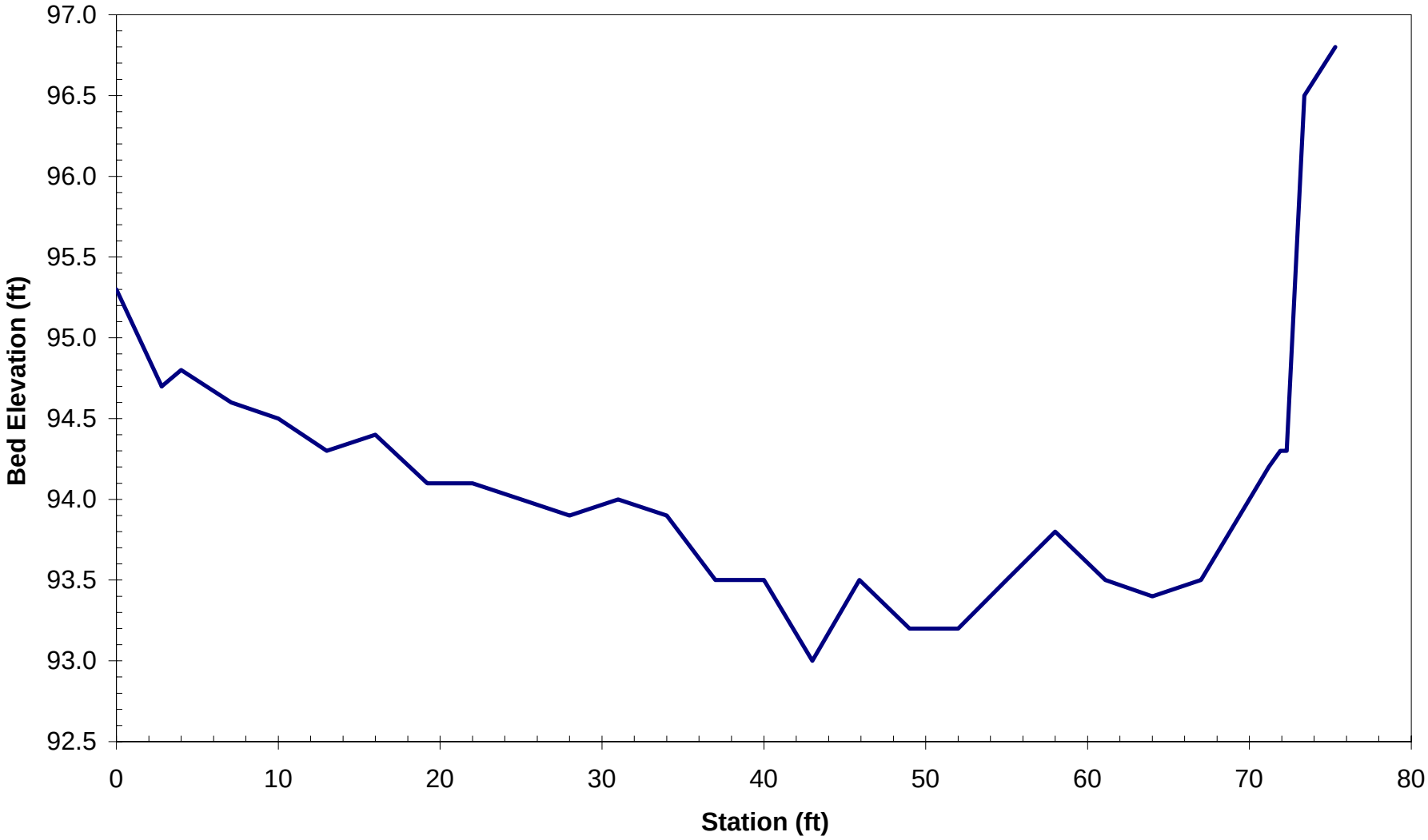
Survey Date	Q (cfs)	WUA (Y/N)
6/23/2005	166.1	Y
7/22/2005		
8/14/2005	79.5	Y
7/4/2006	128.9	Y
4/12/2007	55.7	Y
7/19/2007	75.8	

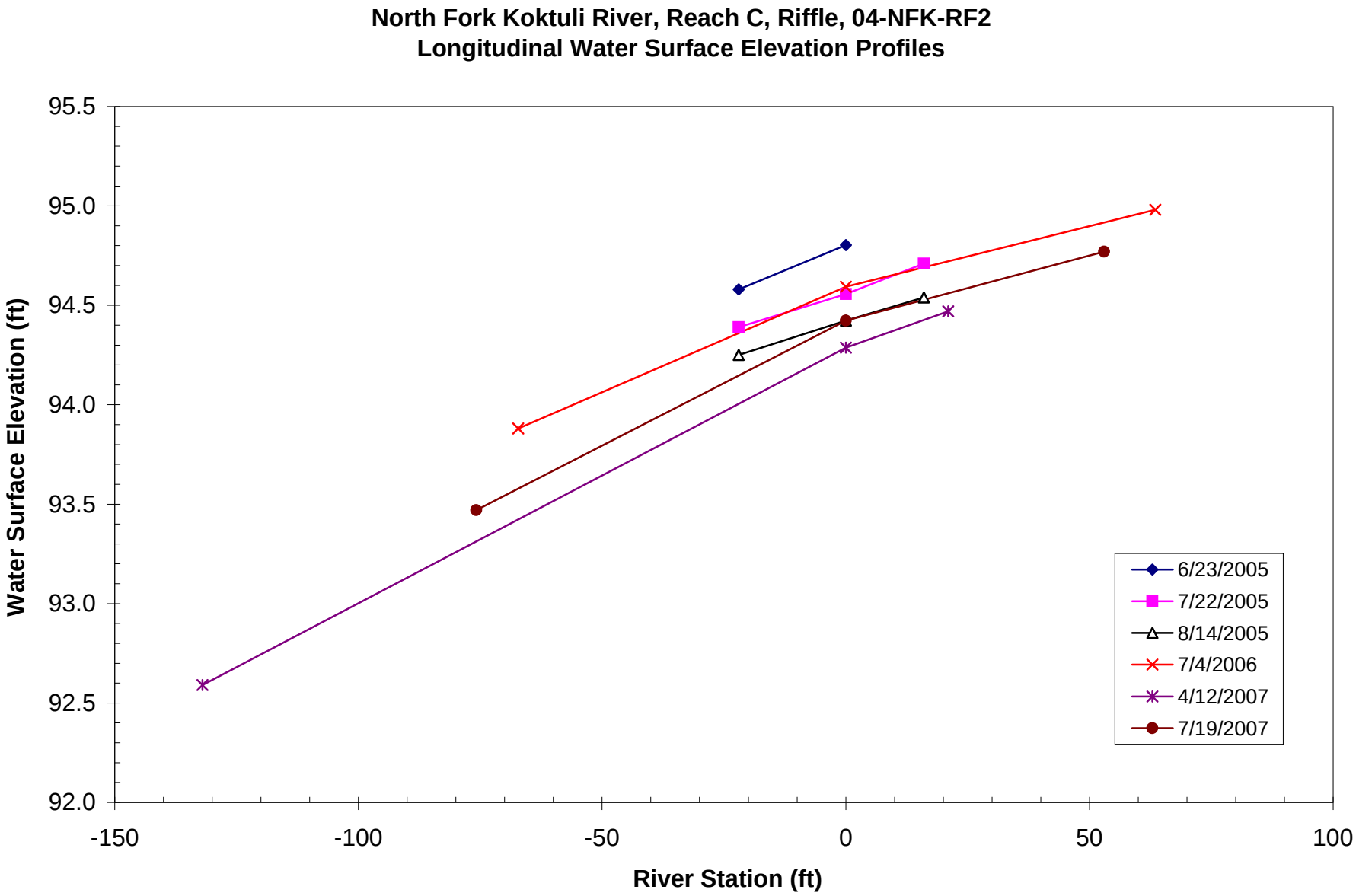
(4) Hydraulic Calibration Results:

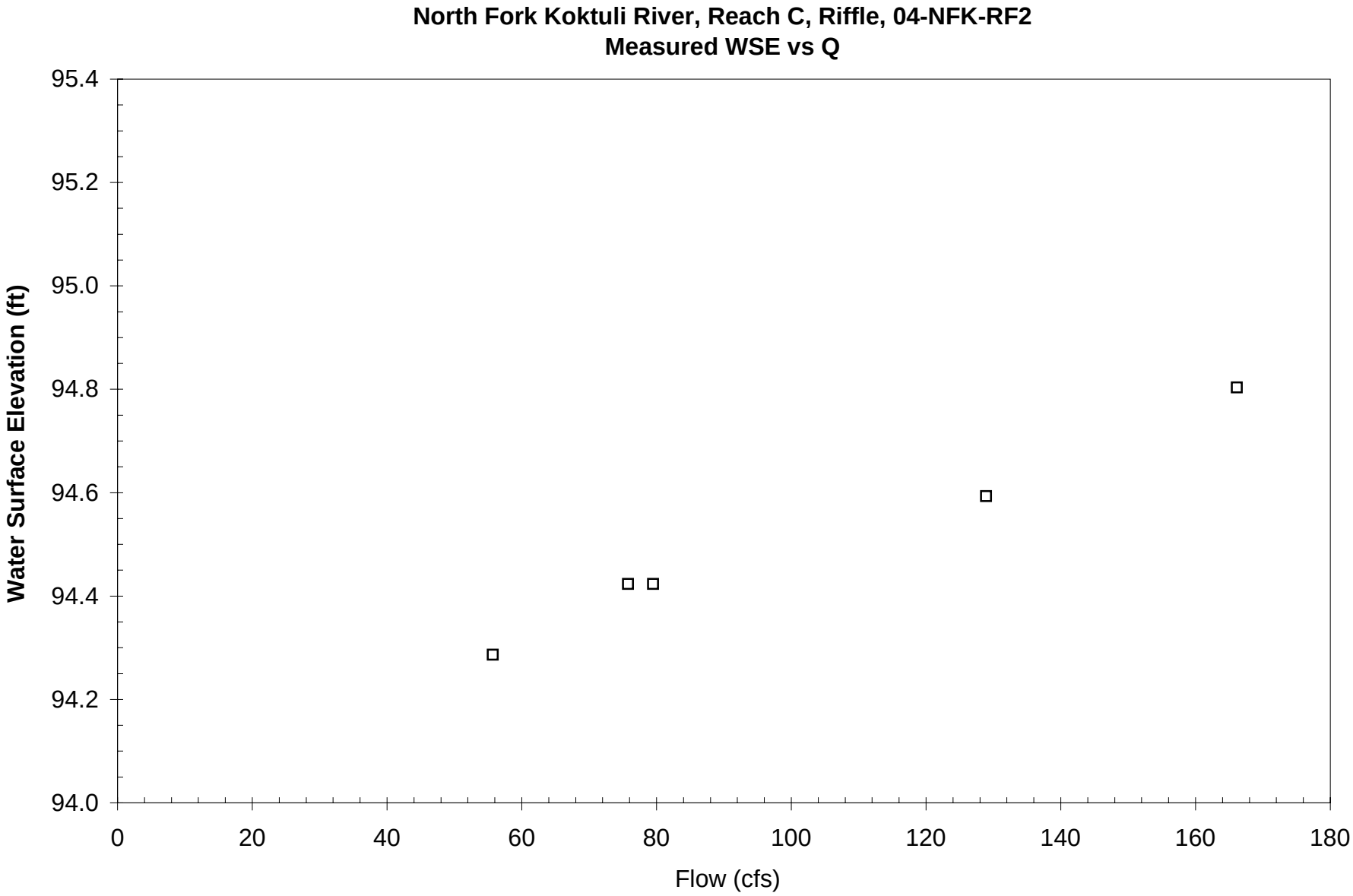
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges and appear to vary in normal trends as flow increases.

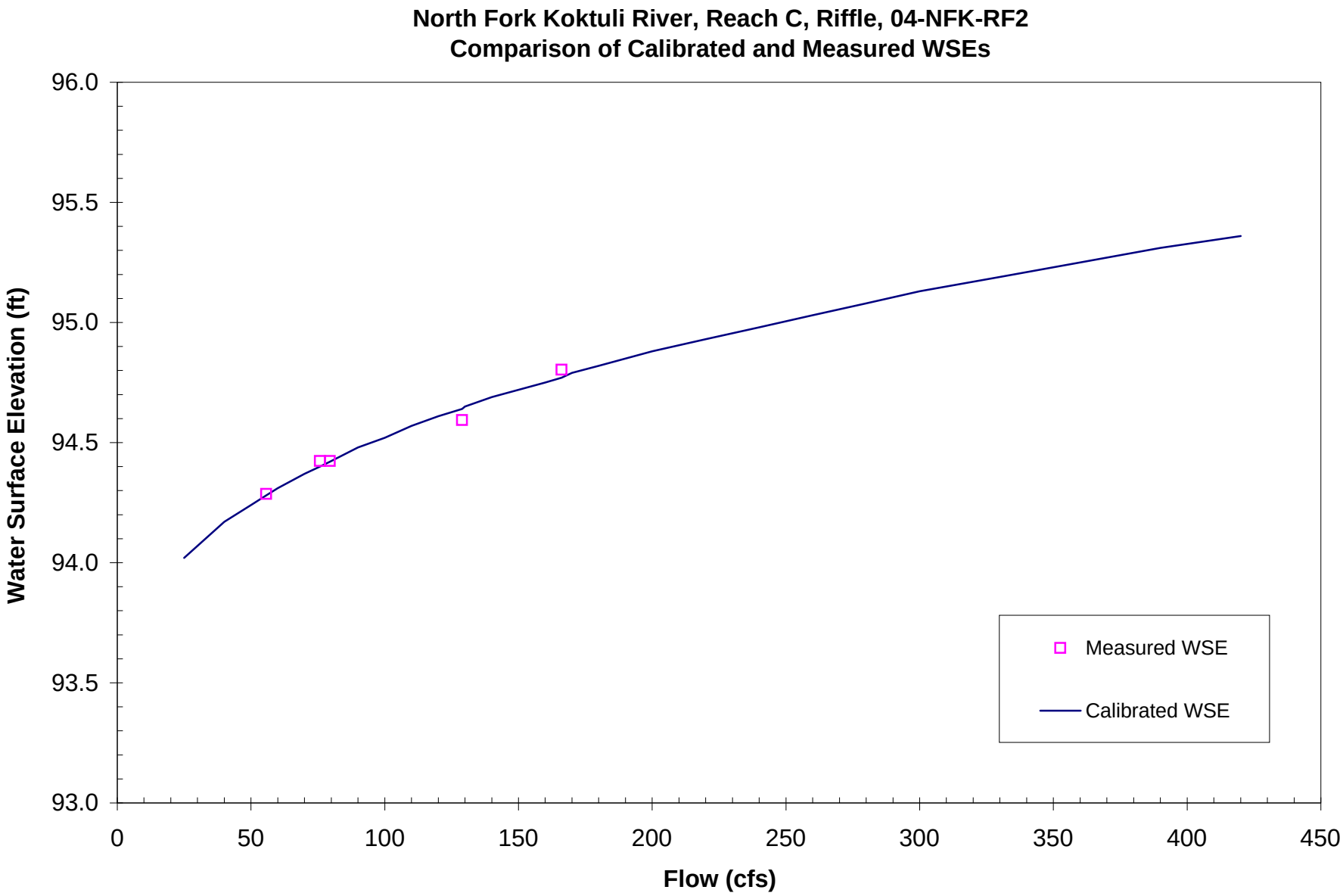
calibration notes

North Fork Koktuli River, Reach C, Riffle, 04-NFK-RF2
Measured Transect Profile



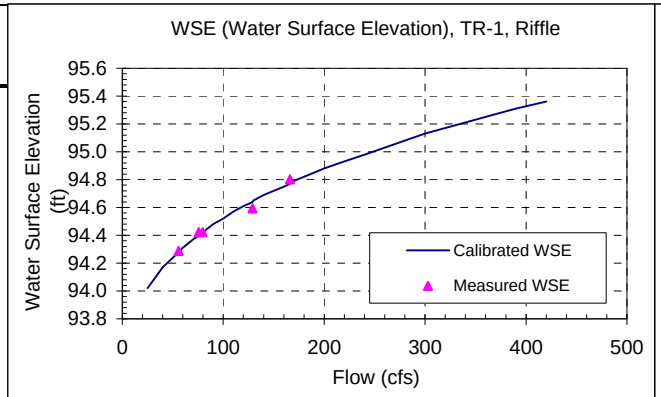

North Fork Koktuli River, Reach C, Riffle, 04-NFK-RF2
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
95.5
95.0
94.5
94.0
93.5
93.0
92.5
92.0
-150
-100
-50
0
50
100
River Station (ft)
6/23/2005
7/22/2005
8/14/2005
7/4/2006
4/12/2007
7/19/2007

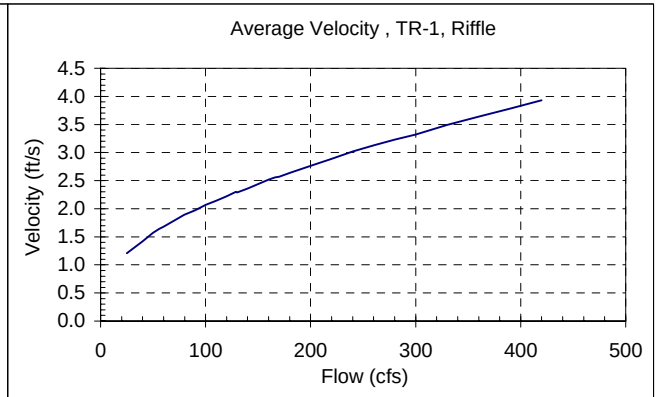

North Fork Koktuli River, Reach C, Riffle, 04-NFK-RF2
Measured WSE vs Q
Water Surface Elevation (ft)
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

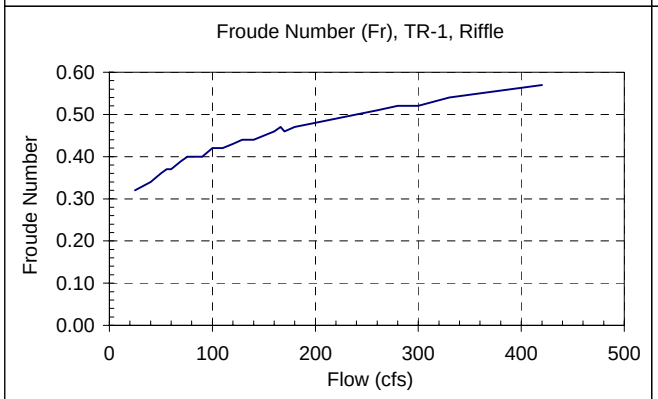

North Fork Koktuli River, Reach C, Riffle, 04-NFK-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.0
95.5
95.0
94.5
94.0
93.5
93.0
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

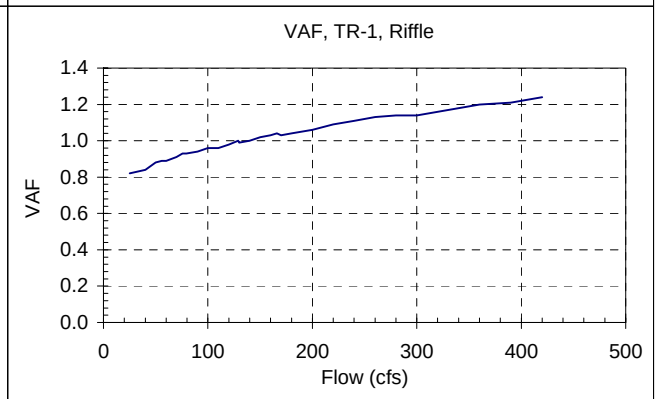
Stream: North Fork Koktuli River **Reach:** C
Site Name: 04-NFK-RF2 **Site #:** 1
Date: 6/23/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Riffle

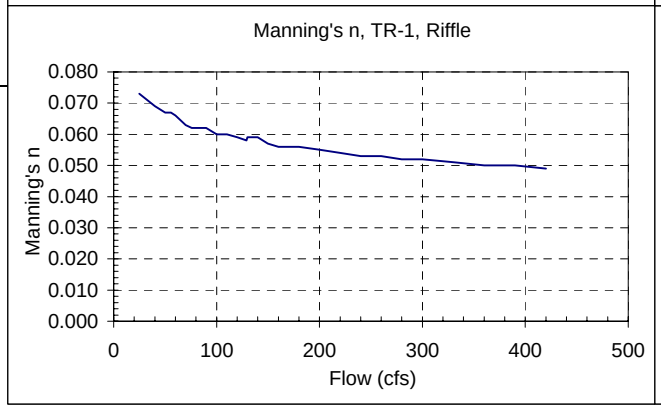
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	94.02	0.32	1.21	0.82	0.073	45.9
40	94.17	0.34	1.42	0.84	0.07	52.8
50	94.24	0.36	1.57	0.88	0.07	54.0
55.7	94.28	0.37	1.64	0.89	0.07	54.7
60	94.31	0.37	1.68	0.89	0.07	56.1
70	94.37	0.39	1.79	0.91	0.06	59.5
75.8	94.40	0.40	1.85	0.93	0.06	61.2
79.5	94.42	0.40	1.89	0.93	0.06	61.5
90	94.48	0.40	1.97	0.94	0.06	62.5
100	94.52	0.42	2.07	0.96	0.06	63.4
110	94.57	0.42	2.14	0.96	0.06	64.9
120	94.61	0.43	2.22	0.98	0.06	66.0
128.9	94.64	0.44	2.30	1.00	0.06	66.5
130	94.65	0.44	2.29	0.99	0.06	66.6
140	94.69	0.44	2.36	1.00	0.06	67.3
150	94.72	0.45	2.44	1.02	0.06	67.8
160	94.75	0.46	2.52	1.03	0.06	68.6
166.1	94.77	0.47	2.56	1.04	0.06	69.4
170	94.79	0.46	2.57	1.03	0.06	70.2
180	94.82	0.47	2.64	1.04	0.06	70.8
200	94.88	0.48	2.76	1.06	0.06	71.1
220	94.93	0.49	2.89	1.09	0.05	71.5
240	94.98	0.50	3.02	1.11	0.05	71.8
260	95.03	0.51	3.13	1.13	0.05	72.1
280	95.08	0.52	3.23	1.14	0.05	72.4
300	95.13	0.52	3.32	1.14	0.05	72.7
330	95.19	0.54	3.49	1.17	0.05	73.1
360	95.25	0.55	3.64	1.20	0.05	73.4
390	95.31	0.56	3.78	1.21	0.05	73.8
420.0	95.36	0.57	3.93	1.24	0.049	73.8

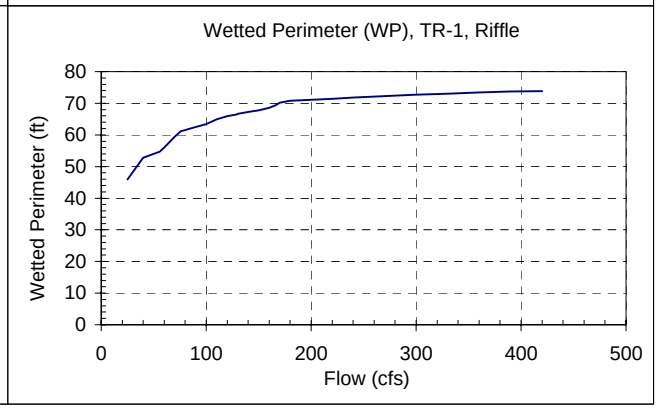




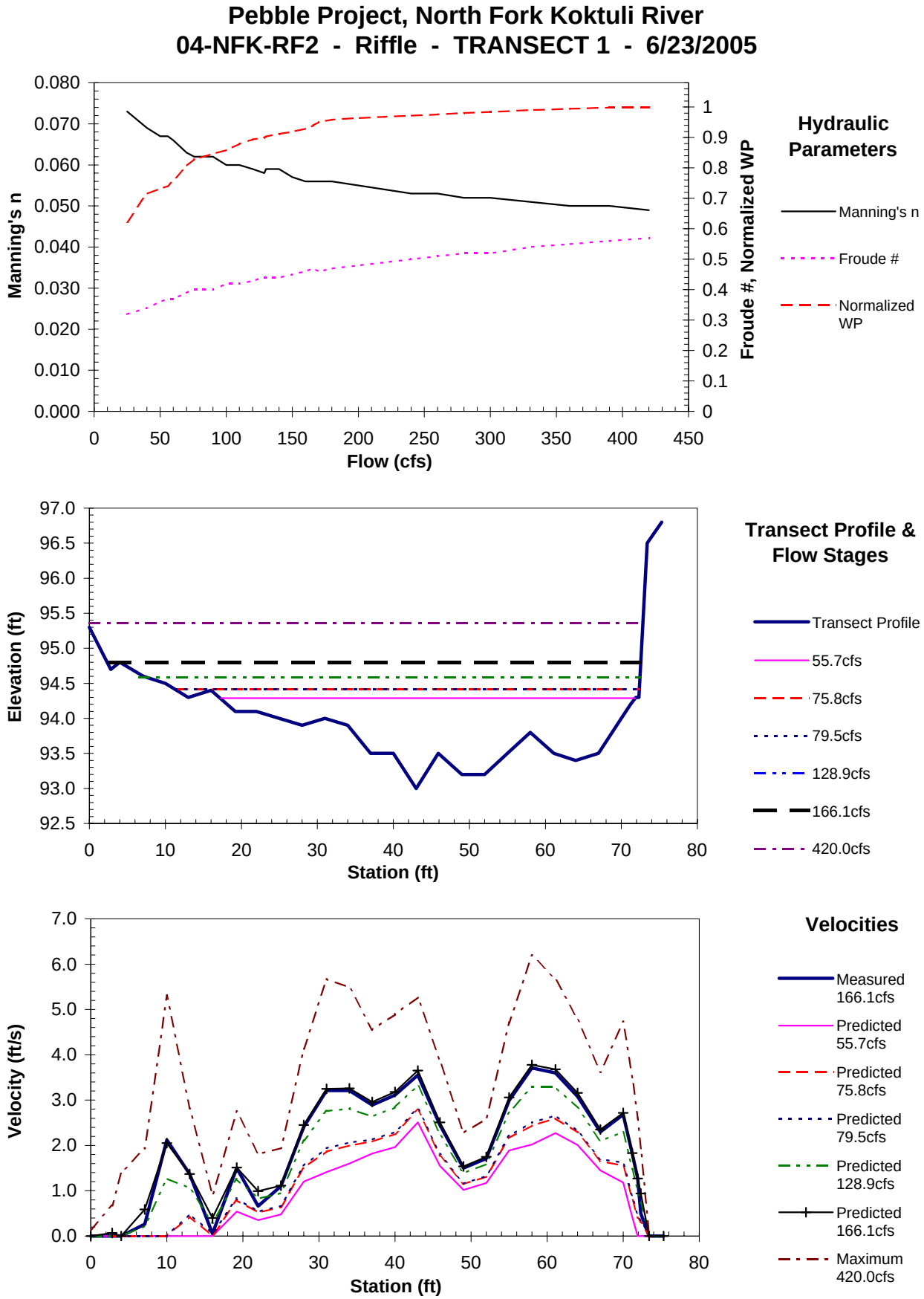








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-NFK-RF2  06/23/05
RIFFLE                      0605Q                                        TRANSECT 1
IOC       11011001000010001010 00
QARD  25.0
QARD  40.0
QARD  50.0
QARD  55.7
QARD  60.0
QARD  70.0
QARD  75.8
QARD  79.5
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 128.9
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 166.1
QARD 170.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 420.0
XSEC  1000     1000. 1.0     93.19    .01015
      1000   .095.30  2.894.74  4.094.80  7.194.60 10.094.50 13.094.30
      1000 16.094.40 19.294.10 22.094.10 25.094.00 28.093.90 31.094.00
      1000 34.093.90 37.093.50 40.093.50 43.093.00 45.993.50 49.093.20
      1000 52.093.20 55.093.50 58.093.80 61.193.50 64.093.40 67.093.50
      1000 70.094.00 71.294.20 71.994.30 72.394.30 73.496.50 75.396.84
NS    1000      22.9  .2  24.6 .09  43.6 .08  45.7      45.6      54.6
NS    1000 0.2  45.6      45.7 .12  46.8      45.6      45.7      64.7
NS    1000      65.7      65.6      65.6      54.6      75.6      75.6
NS    1000      64.6      67.6      76.7      53.8      53.9      45.7
NS    1000      45.6      43.6      43.6  .1  24.6 .15  23.9      22.9
WSL   1000     94.02     94.17     94.24     94.28     94.31     94.37
WSL   1000     94.40     94.42     94.48     94.52     94.57     94.61
WSL   1000     94.64     94.65     94.69     94.72     94.75     94.77
WSL   1000     94.79     94.82     94.88     94.93     94.98     95.03
WSL   1000     95.08     95.13     95.19     95.25     95.31     95.36
```

IFG4 Data Deck (continued)

```
CAL1  1000     94.80     166.1
VEL1  1000           0.00 0.26 2.12 1.37 0.05 1.50 0.66 1.10 2.41 3.21
VEL1  1000 3.21 2.89 3.11 3.55 2.45 1.50 1.71 2.99 3.71 3.60 3.08 2.30
VEL1  1000 2.68 1.82 1.27 0.50
CAL2  1000     94.42      79.5
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     94.59     128.9
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     94.29      55.7
VEL4  1000
VEL4  1000
VEL4  1000
CAL5  1000     94.42      75.8
VEL5  1000
VEL5  1000
VEL5  1000
ENDJ
```

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 08-NFK2-MS1 (TR-1)

Habitat Type: Run

River Kilometer: 24.65

Stream: NF Koktuli River
Reach: C
Site: 08-NFK2-MS1_TR1
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3
6/24/2008	100.00	100.30	100.77
7/21/2008	100.00	100.31	100.79
8/16/2008	100.00	100.31	100.78

(a) Elevations of control pins (BM's) are taken from the first half of each level loop survey
(b) Relative elevation changes among the control pins were within ±0.01ft.
(c) The small elevation changes indicated the control pins were stable over the survey period

Measured WSE:

There are two WSEs (Right & Left) measured across each transect for each flow, and the average of the two measured WSEs is used as transect representative WSE for modeling.

Date	WSE (ft)
6/24/2008	98.88
7/21/2008	98.53
8/16/2008	98.16

The WSE across the transect was fairly even with no more than 0.05ft difference

calibration notes

Discharge:

This site has three transects that were at least half a mile apart each between TR-1 and TR-2 and between TR-2 and TR-3. The stream system was very complex in the vicinity of the site. The aerial photo shows tributary/distributary carrying water into and out of the mainstem. In addition, there are possible groundwater discharge/recharge. Also the middle transect, TR-2, has a right channel and a left (main) channel. All the complexities contribute to the flow differences among the transects.

All the measured flows are summarized in the following table.

Date	Measured Q (cfs)			Date	Measured Q				Est'd Q of TR-3 & TR-2
	TR-1	Est'd TR-Q			TR-2			TR-3	
					LC	RC	Total		
6/24/2008	287.4	287.4		6/23/2008	205.5	60.9	266.4	278.0	272.2
7/21/2008	176.9	176.9		7/21/2008	114.8	38.7	153.5	158.7	156.1
8/16/2008	89.2	89.2		8/17/2008	51.2	24.2	75.4	69.7	72.6

Adjusted flows for TR-2

Date	Adjusted Q (cfs)		
	TR-2		
	LC	RC	Total
6/23/2008	210.0	62.2	272.2
7/21/2008	116.7	39.4	156.1
8/17/2008	49.2	23.3	72.6

Longitudinal WSE Slope:

The datums of the three transects of 08-NFK2-MS1 are not connected.
Distances between transects are more than half a mile apart.
No longitudinal WSEs in the vicinity of each transect were surveyed, and thus no slope is calculated.
Default slope value 0.025% was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

	TR-1
6/24/2008	
7/21/2008	95.73
8/16/2008	95.76
Invert	95.76
SZF	96.96

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF of the upstream transect must be no less than that of its downstream transect.
SZF is determined from the WSE calibration process.
(3) SZF must be equal to or greater than the transect invert
(4) Transect profile of TR-1 was not surveyed in the 6/24/08 trip. Only WSEs were surveyed at the transect, and flow was measured at the Q-transect located downstream of TR-1.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
		TR-1	TR-1	TR-1	
6/24/2008	287.4	98.88	98.87	0.00	IFG4
7/21/2008	176.9	98.53	98.53	0.00	IFG4
8/16/2008	89.2	98.16	98.15	0.00	IFG4

(a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum calibration error was 0.00ft

calibration notes

(3) Velocity calibration

This site has 3 transects and each one has 2 or 3 velocity/discharge measurements
The transects are about half a mile apart and their elevation datums are not connected.
TR-1 has two measured velocity profiles; Q_{mid} 176.9cfs) and Q_{low} (89.2cfs). High flow was taken at flow transect, located downstream of TR-1, due to safety concern.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow.The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

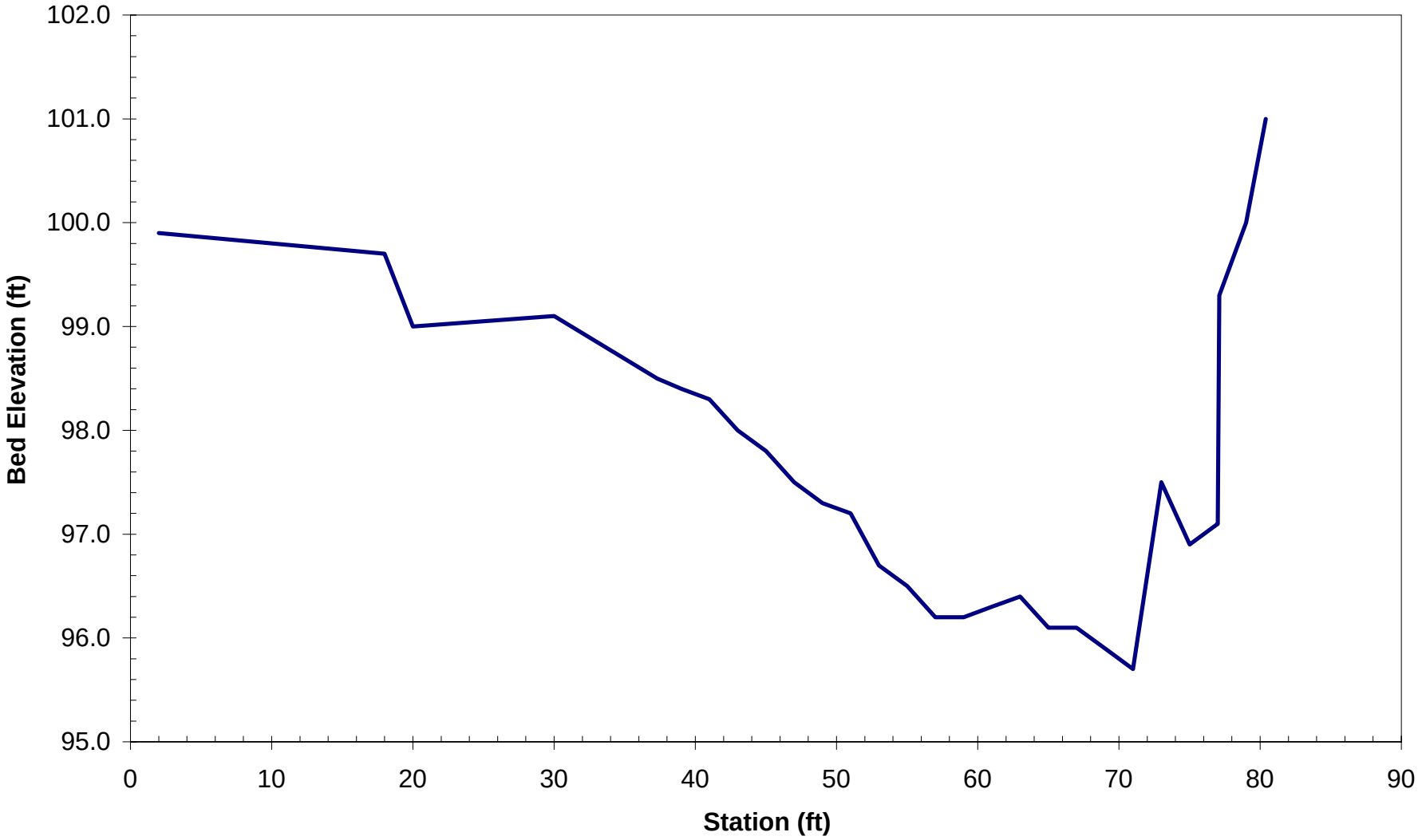
Survey Date	Q (cfs)	WUA (Y/N)
		TR-2 (Left Ch.)
6/24/2008	287.4	Y
7/21/2008	176.9	Y
8/16/2008	89.2	Y

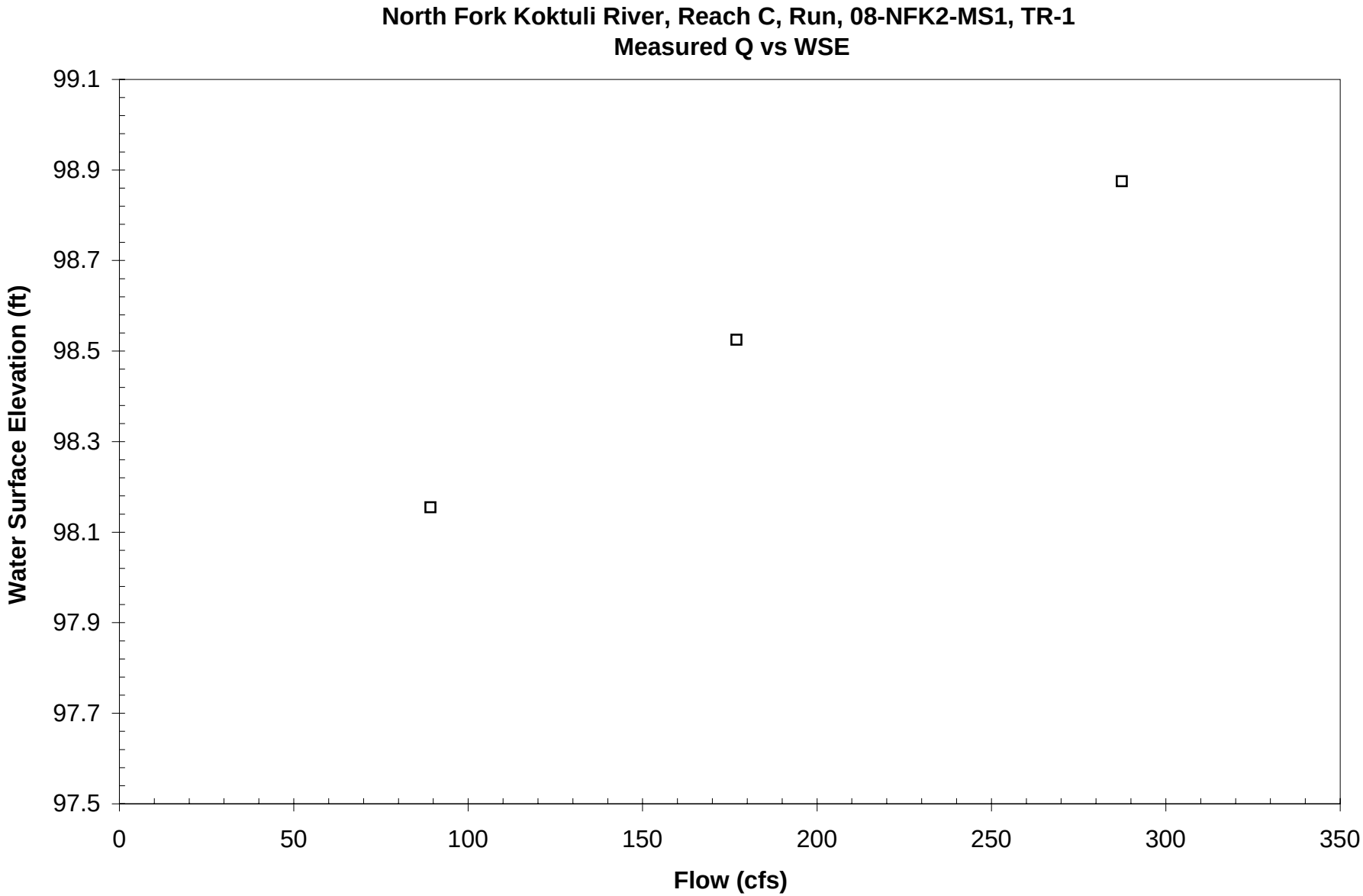
(4) Hydraulic Calibration Results:

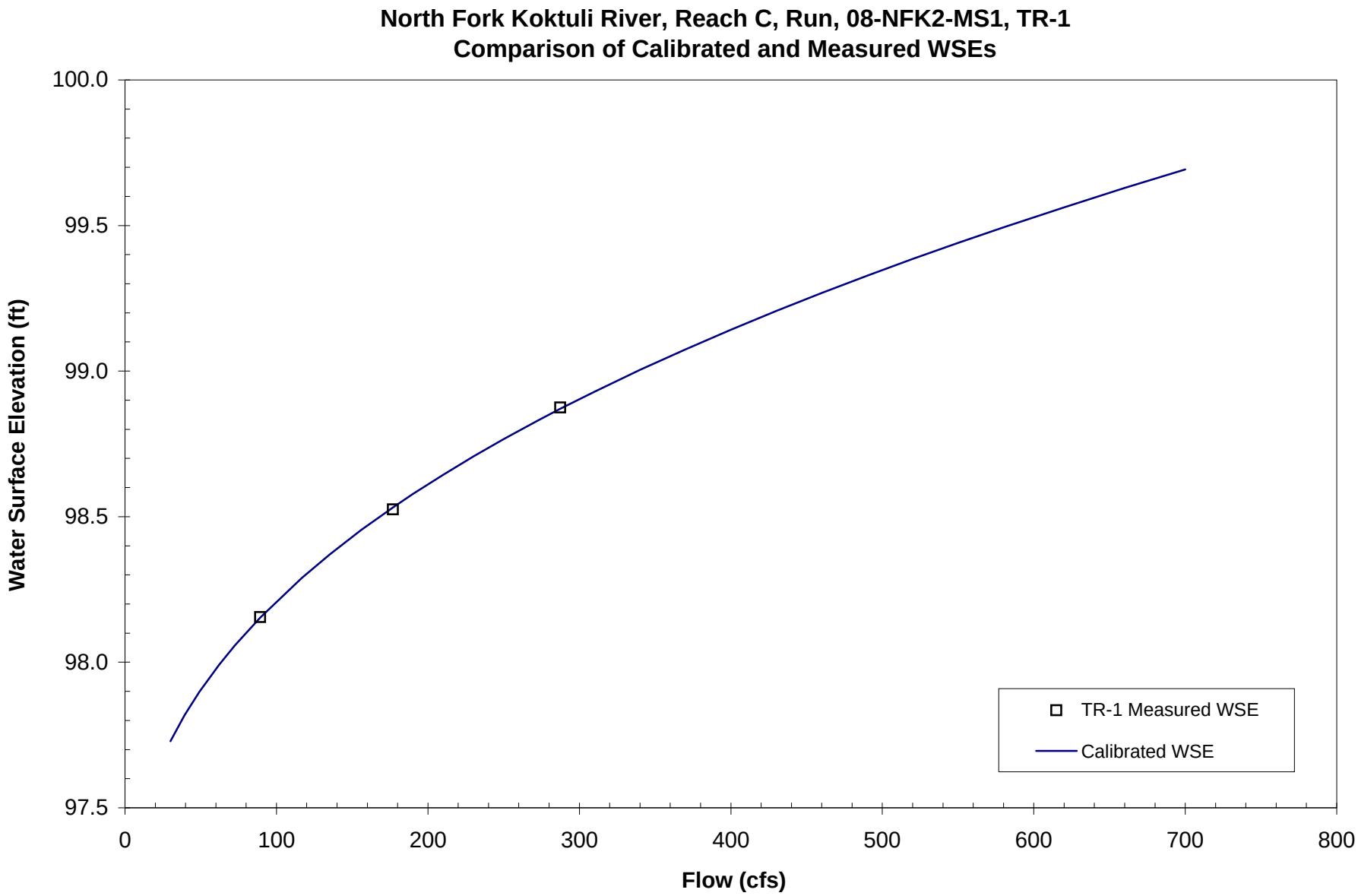
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are within reasonable ranges and have correct trends.

calibration notes

North Fork Koktuli River, Reach C, Run, 08-NFK2-MS1, TR-1
Measured Transect Profile

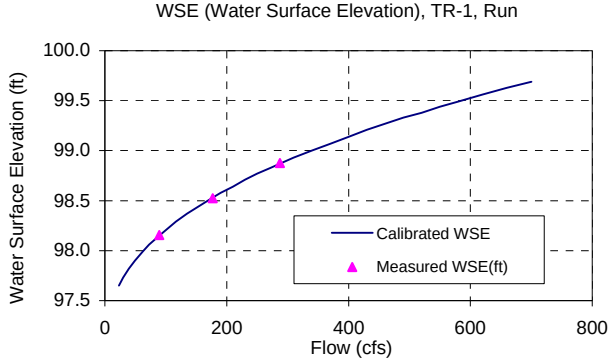


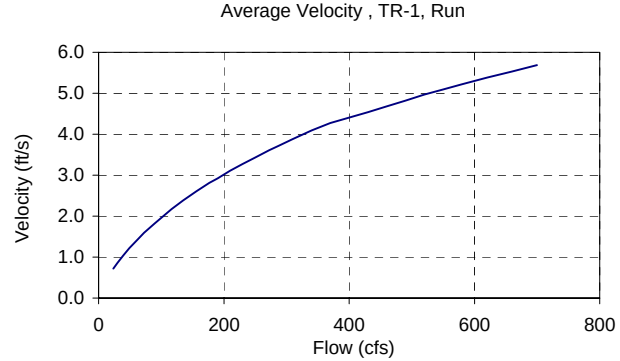

North Fork Koktuli River, Reach C, Run, 08-NFK2-MS1, TR-1
Measured Q vs WSE
Water Surface Elevation (ft)
99.1
98.9
98.7
98.5
98.3
98.1
97.9
97.7
97.5
0
50
100
150
200
250
300
350
Flow (cfs)

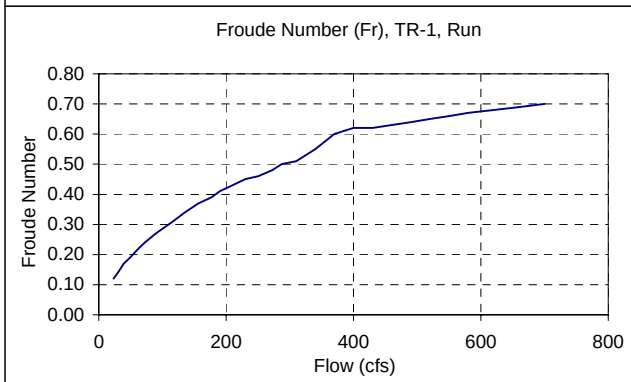

North Fork Koktuli River, Reach C, Run, 08-NFK2-MS1, TR-1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
100.0
99.5
99.0
98.5
98.0
97.5
0
100
200
300
400
500
600
700
800
Flow (cfs)
TR-1 Measured WSE
Calibrated WSE

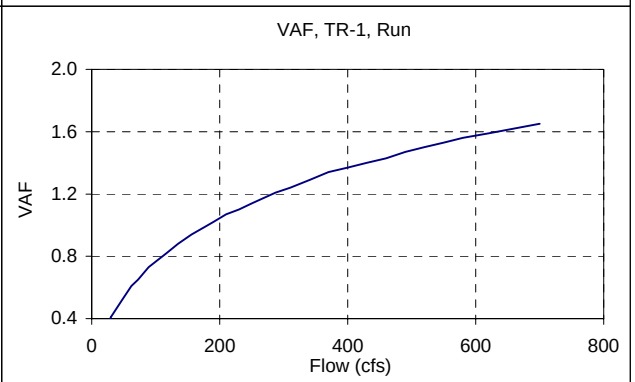
Stream: NF Koktuli River
Site: 08-NFK2-MS1_TR1
Habitat: Run
Transect: 1
Date: 7/21/2008
Calibration Flow: Mid

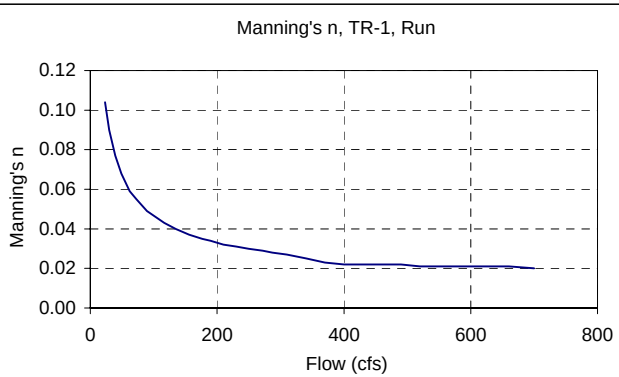
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
23.3	97.65	0.12	0.72	0.35	0.104	32.4
30	97.73	0.14	0.86	0.41	0.09	33.2
39.4	97.82	0.17	1.04	0.47	0.08	34.0
49.2	97.90	0.19	1.22	0.53	0.07	34.7
62.2	97.99	0.22	1.43	0.61	0.06	35.5
72.6	98.06	0.24	1.59	0.65	0.06	36.1
89.2	98.15	0.27	1.82	0.73	0.05	36.8
116.7	98.29	0.31	2.17	0.82	0.04	37.9
135	98.37	0.34	2.38	0.88	0.04	39.8
156.1	98.45	0.37	2.61	0.94	0.04	41.1
176.9	98.53	0.39	2.81	0.99	0.04	42.1
190	98.58	0.41	2.92	1.02	0.03	42.8
210	98.64	0.43	3.11	1.07	0.03	43.6
230	98.71	0.45	3.27	1.10	0.03	44.6
250	98.77	0.46	3.43	1.14	0.03	45.4
272.2	98.83	0.48	3.61	1.18	0.03	46.3
287.4	98.87	0.50	3.72	1.21	0.03	46.8
310	98.93	0.51	3.88	1.24	0.03	47.6
340	99.00	0.55	4.09	1.29	0.03	51.0
370	99.07	0.60	4.27	1.34	0.02	57.6
400	99.14	0.62	4.41	1.37	0.02	60.5
430	99.21	0.62	4.54	1.40	0.02	60.8
460	99.27	0.63	4.68	1.43	0.02	61.0
490	99.33	0.64	4.82	1.47	0.02	61.3
520	99.38	0.65	4.97	1.50	0.02	61.5
550	99.44	0.66	5.09	1.53	0.02	61.9
580	99.49	0.67	5.22	1.56	0.02	62.2
620	99.56	0.68	5.38	1.59	0.02	62.6
660	99.63	0.69	5.53	1.62	0.02	63.1
700.0	99.69	0.7	5.69	1.65	0.020	63.4

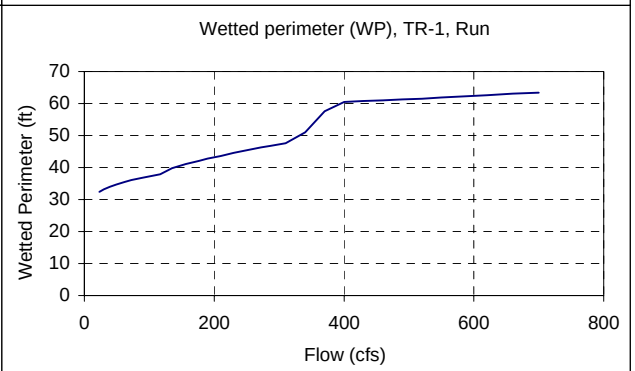




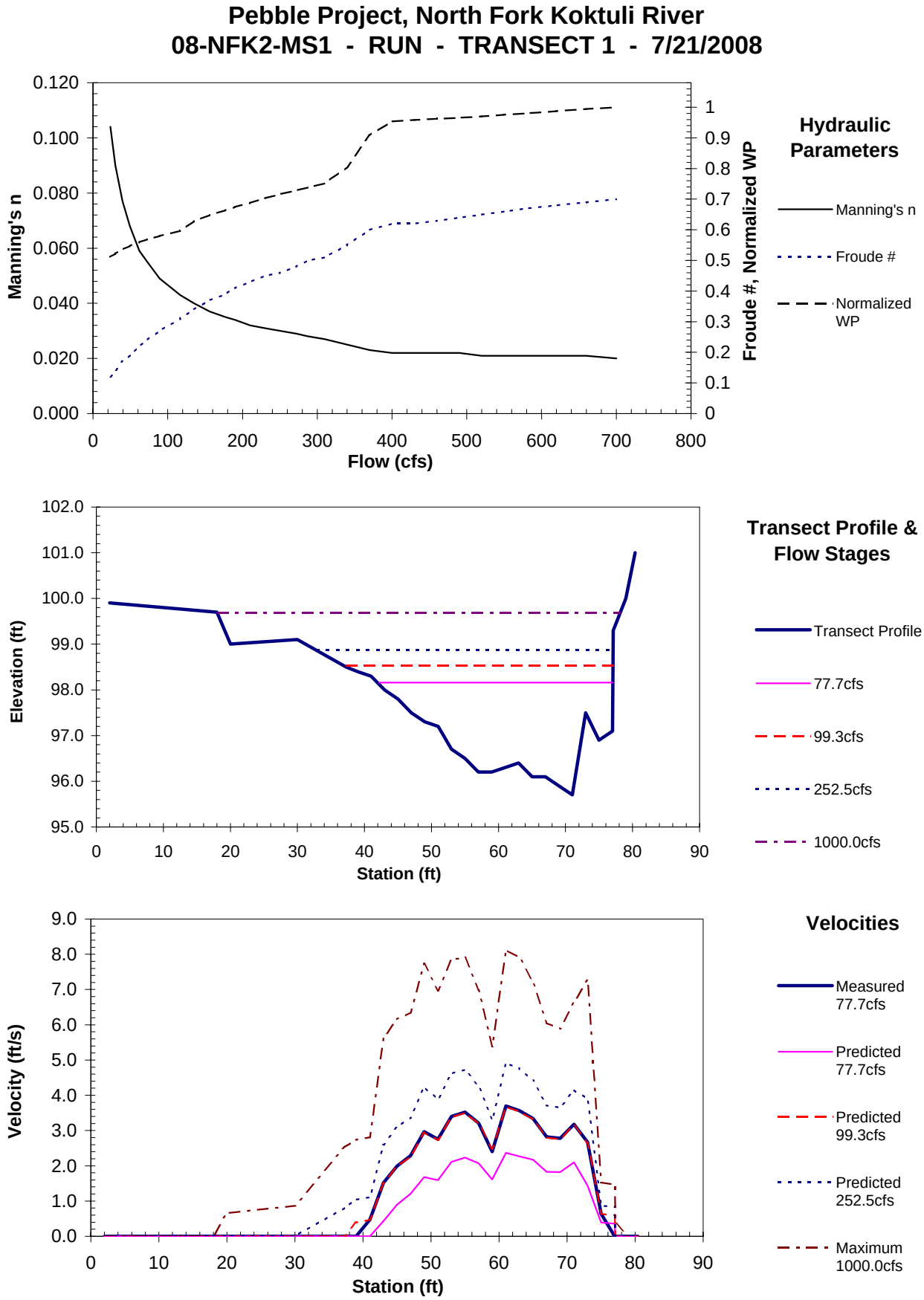








cTR1 -Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-NFK2-MS1  07/21/08
RUN                        0708Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  23.3
QARD  30.0
QARD  39.4
QARD  49.2
QARD  62.2
QARD  72.6
QARD  89.2
QARD 116.7
QARD 135.0
QARD 156.1
QARD 176.9
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 272.2
QARD 287.4
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 430.0
QARD 460.0
QARD 490.0
QARD 520.0
QARD 550.0
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
XSEC  1000     1000. 1.0     95.76    .00250
      1000  2.099.91 18.099.71 20.098.97 30.099.10 37.398.53 39.098.38
      1000 41.098.33 43.098.03 45.097.78 47.097.53 49.097.33 51.097.23
      1000 53.096.73 55.096.53 57.096.23 59.096.18 61.096.33 63.096.43
      1000 65.096.13 67.096.08 69.095.93 71.095.73 73.097.48 75.096.93
      1000 77.097.08 77.199.35 79.099.97 80.4101.0
NS    1000      11.9      11.9 .15  32.6 .1   43.6      34.6      45.6
NS    1000      45.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6      45.6      56.6 .053 65.6      76.6      76.6
NS    1000      67.6      65.6      67.6      76.6      76.6      76.6
NS    1000      56.6      11.9      11.9      11.9
WSL   1000     97.65     97.73     97.82     97.90     97.99     98.06
WSL   1000     98.15     98.29     98.37     98.45     98.53     98.58
WSL   1000     98.64     98.71     98.77     98.83     98.87     98.93
WSL   1000     99.00     99.07     99.14     99.21     99.27     99.33
WSL   1000     99.38     99.44     99.49     99.56     99.63     99.69
```

IFG4 Data Deck - TR1

IFG4 Data Deck (continued)

```
CAL1  1000     98.53     176.9
VEL1  1000                     0.00 0.00 0.47 1.52 1.99 2.29 2.97 2.75
VEL1  1000 3.40 3.52 3.21 2.40 3.70 3.56 3.34 2.82 2.78 3.18 2.67 0.64
VEL1  1000 0.00
CAL2  1000     98.88     287.4
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.16      89.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 08-NFK2-MS1 (TR2 Left Channel)

Habitat Type: Island Complex

River Kilometer: 26.21

Stream: **NF Koktuli River**
Reach: **C**
Site: **08-NFK2-MS1_TR2_LC**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3
6/23/2008	100.00	99.69	
7/21/2008	100.00	99.70	99.92
8/17/2008	100.00	99.70	99.92

(a) Elevations of control pins (BM's) are taken from the first half of each level loop survey
(b) Relative elevation changes among the control pins were within 0.01ft.
(c) Elevation control pins were stable for their small relative elevation changes over the survey period

Measured WSE:

There are multiple WSEs (Left, Mid, and Right) measured across each transect for each flow, and the average of the two measured WSEs is used as transect representative WSE for modeling.

Date	WSE (ft)
6/23/2008	97.90
7/21/2008	97.60
8/17/2008	97.41

calibration notes

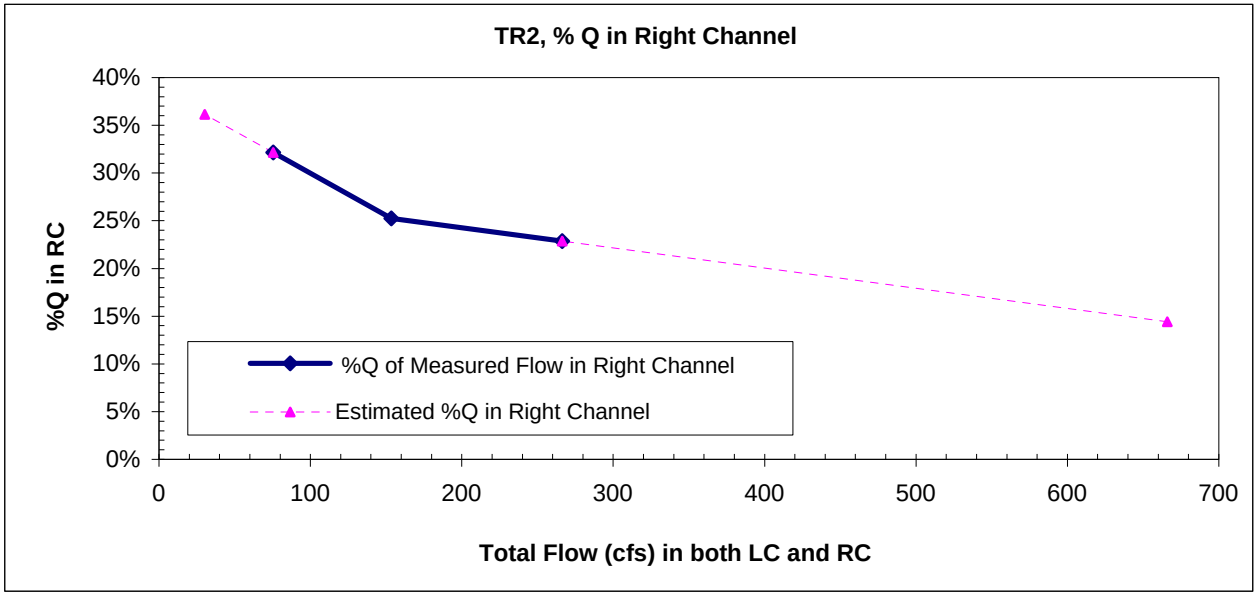
Discharge:

Flow ratio estimate for LC and RC of TR-2

Date	Measured Q in TR-2				
	LC	RC	Total	%Q in RC	
			665.96	14.4%	<--- This is max simulation Q
6/23/2008	205.5	60.9	266.4	22.9%	
7/21/2008	114.8	38.7	153.5	25.2%	
8/17/2008	51.2	24.2	75.4	32.1%	
			30.2	36.1%	<--- This is min simulation Q

Note 1: Estimated %Q in RC is based on the assumption that the relationship between %Q in RC and Total Q remains the same at flows outside the measured flow range.

Note 2: Max simulation flow is 2.5 times of the maximum measured flow.
Min simulation flow is 0.4 time of the minimum measured flow.



calibration notes

Summary for the measured flows of all three transects

Date	Measured Q (cfs)			Date	Measured Q				Est'd Q of TR-3 & TR-2
	TR-1	Est'd TR-Q			TR-2			TR-3	
					LC	RC	Total		
6/24/2008	287.4	287.4		6/23/2008	205.5	60.9	266.4	278.0	272.2
6/24/2008	176.9	176.9		7/21/2008	114.8	38.7	153.5	158.7	156.1
6/24/2008	89.2	89.2		8/17/2008	51.2	24.2	75.4	69.7	72.6

Adjusted flows for TR-2

Date	Adjusted Q (cfs)		
	TR-2		
	LC	RC	Total
6/23/2008	210.0	62.2	272.2
7/21/2008	116.7	39.4	156.1
8/17/2008	49.2	23.3	72.6

Longitudinal WSE Slope:

The datums of the three transects of 08-NFK2-MS1 are not connected.
Distances between transects are more than half a mile apart.
No longitudinal WSEs in the vicinity of each transect were surveyed, and thus no slope is calculated.
Default slope value 0.025% was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Invert
6/23/2008	95.95
7/21/2008	95.95
8/17/2008	96.31
Invert	96.31
SZF	96.76

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF of the upstream transect must be no less than that of its downstream transect.
SZF is determined from the WSE calibration process.
(3) SZF must be equal to or greater than the transect invert

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft) TR-2 (LC)	Calibrated WSE(ft) TR-2 (LC)	WSE calibration error (ft) TR-2 (LC)	Calib. Method
6/23/2008	210.0	97.90	97.87	-0.03	IFG4
7/21/2008	116.7	97.60	97.64	0.04	IFG4
8/17/2008	49.2	97.41	97.39	-0.02	IFG4

(a) WSE calibration error = calibrated WSE - measured WSE

(b) Maximum calibration error 0.04ft is within the acceptable range

(3) Velocity Calibration:

This site (08-NFK2-MS1) has 3 transects and each transect has 2 or 3 velocity/discharge measurements
The distances between transects are at lease half a mile and the elevation datums of the transects are not connected.
TR-2 has a left channel and a right channel separated by a distance longer than 15 channel widths. The elevation datums of Left and Right channels are not tied together, so the hydraulics of each channel was modeled individually.
TR-2L (left channel) has three measured velocity profiles; high flow, mid flow, and low flow.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N) TR-2 (Left Ch.)
6/23/2008	210.0	Y
7/21/2008	116.7	Y
8/17/2008	49.2	Y

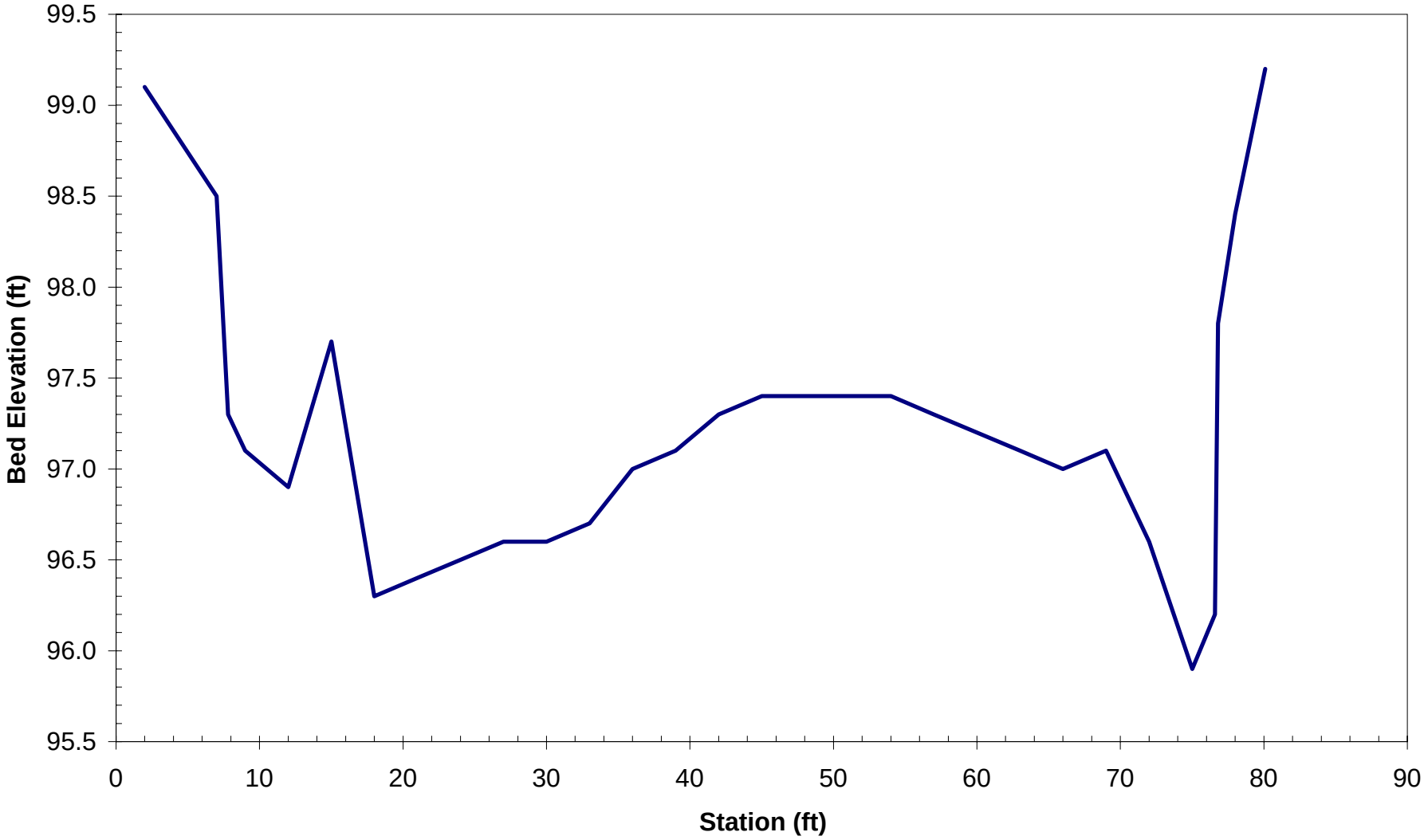
calibration notes

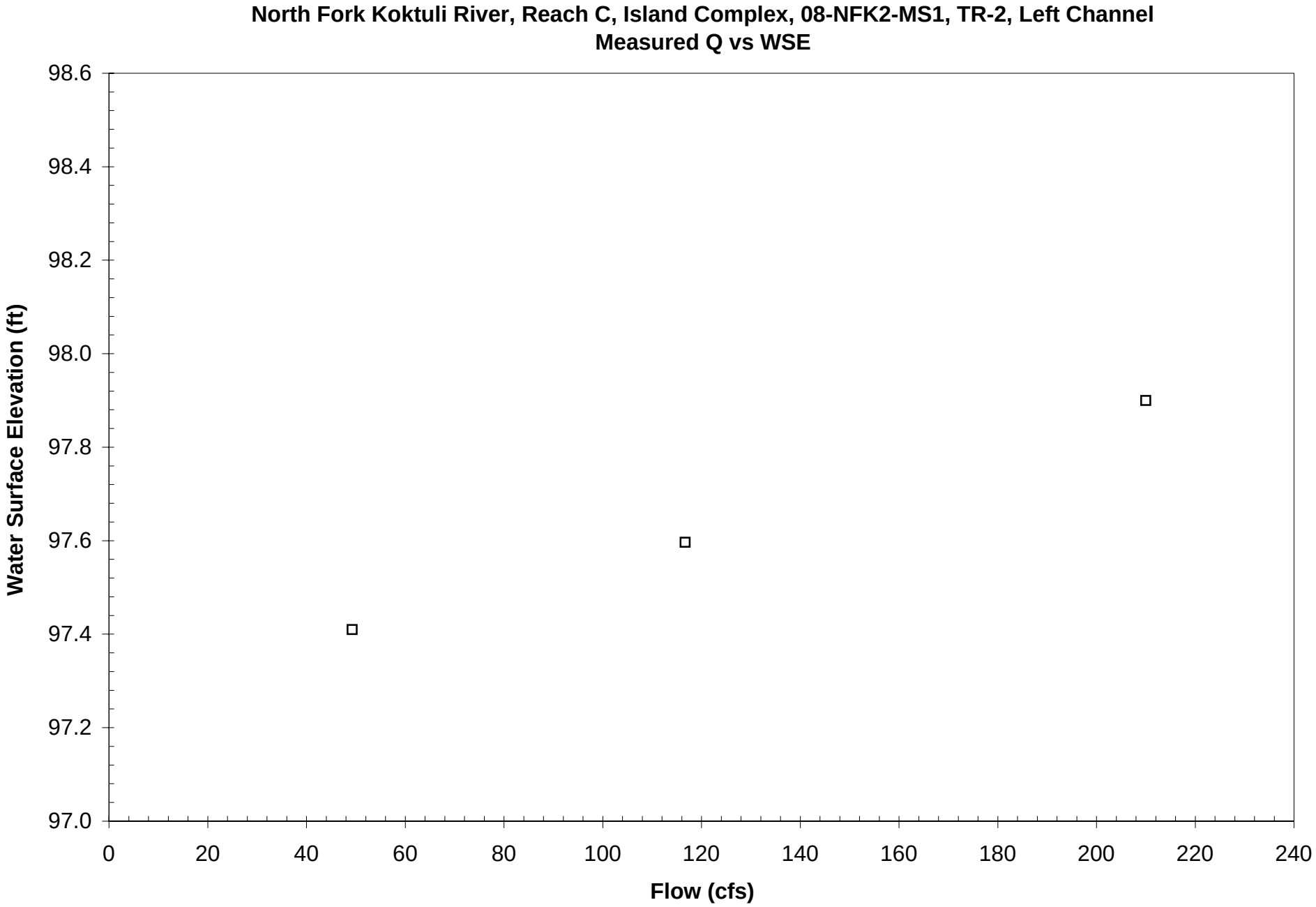
(4) Hydraulic Calibration Results:

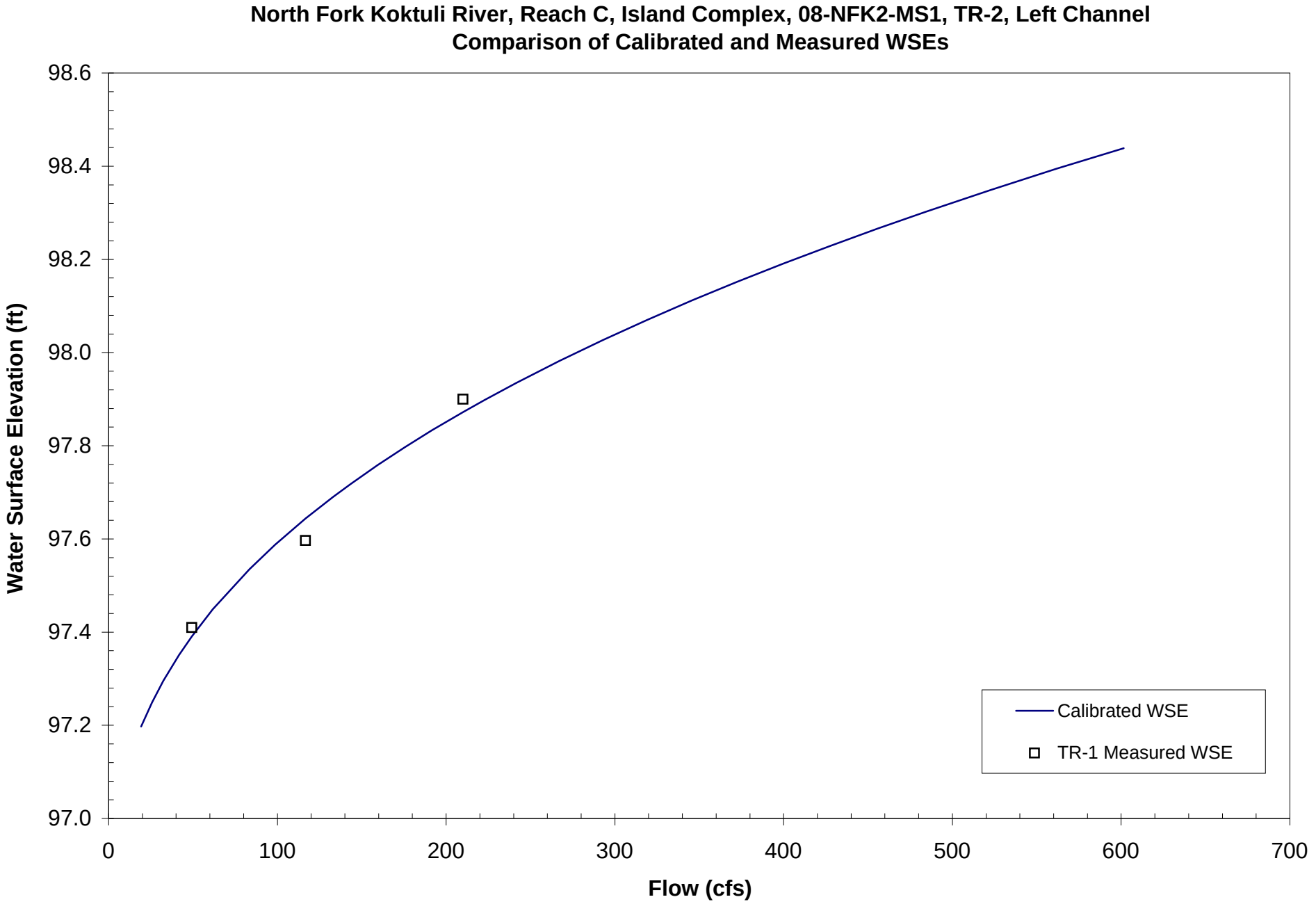
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are within reasonable ranges and have correct trends.

calibration notes

North Fork Koktuli River, Reach C, Island Complex, 08-NFK2-MS1, TR2, Left Channel
Measured Transect Profile

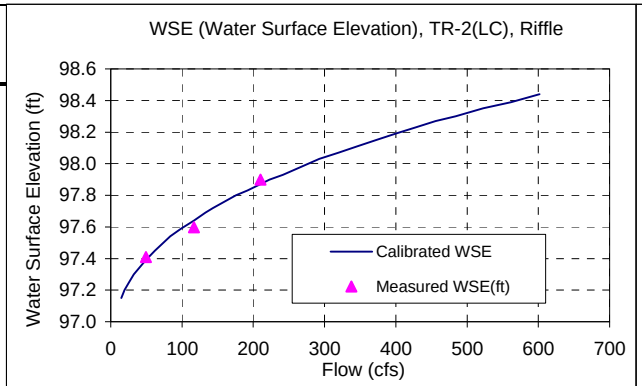


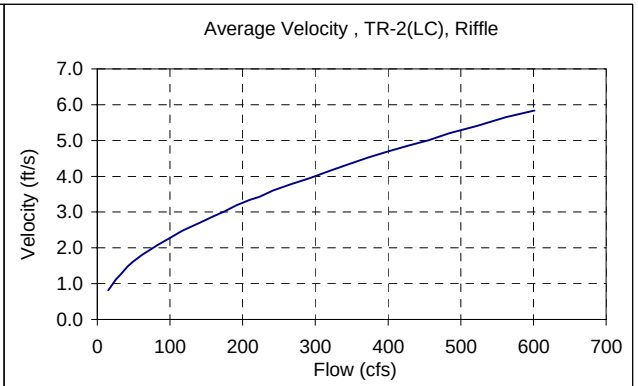

North Fork Koktuli River, Reach C, Island Complex, 08-NFK2-MS1, TR-2, Left Channel
Measured Q vs WSE
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
20
40
60
80
100
120
140
160
180
200
220
240
Flow (cfs)

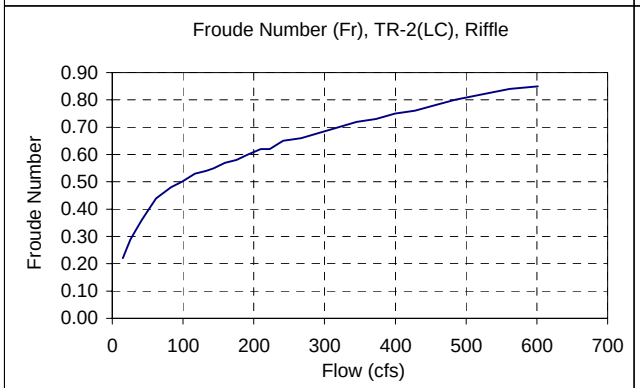

North Fork Koktuli River, Reach C, Island Complex, 08-NFK2-MS1, TR-2, Left Channel
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
100
200
300
400
500
600
700
Flow (cfs)
Calibrated WSE
TR-1 Measured WSE

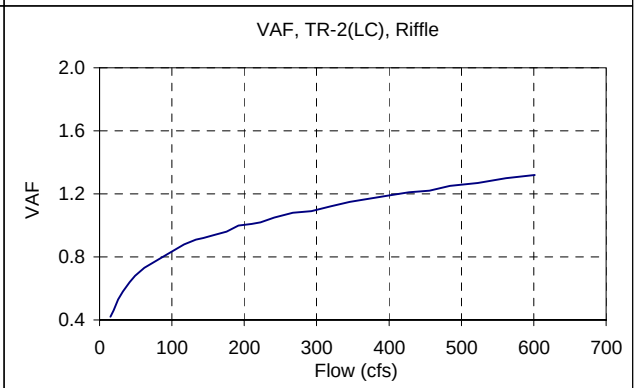
Stream: NF Koktuli River
Site: 08-NFK2-MS1_TR2_LC
Habitat: Island Complex
Transect: 2 (Left Channel)
Date: 7/21/2008
Calibration Flow: Mid

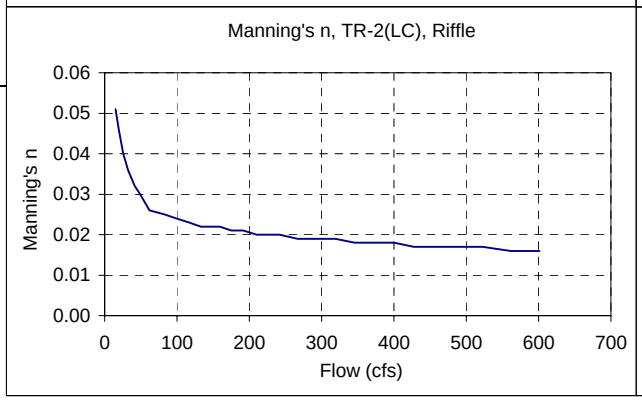
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
14.9	97.15	0.22	0.81	0.42	0.051	44.8
19.3	97.20	0.25	0.94	0.46	0.05	47.5
25.7	97.25	0.29	1.12	0.53	0.04	50.2
32.4	97.30	0.32	1.27	0.58	0.04	53.0
41.7	97.35	0.36	1.48	0.64	0.03	56.4
49.2	97.39	0.39	1.62	0.68	0.03	59.1
61.8	97.45	0.44	1.81	0.73	0.03	66.3
83.4	97.54	0.48	2.08	0.79	0.03	70.0
98.6	97.59	0.50	2.26	0.83	0.02	70.5
116.7	97.64	0.53	2.48	0.88	0.02	70.9
133	97.69	0.54	2.63	0.91	0.02	71.3
143.4	97.72	0.55	2.73	0.92	0.02	71.5
159.3	97.76	0.57	2.88	0.94	0.02	71.6
175.4	97.80	0.58	3.02	0.96	0.02	71.6
191.7	97.83	0.60	3.19	1.00	0.02	71.8
210	97.87	0.62	3.34	1.01	0.02	71.9
222.6	97.90	0.62	3.42	1.02	0.02	72.0
241.6	97.93	0.65	3.60	1.05	0.02	72.1
267	97.98	0.66	3.78	1.08	0.02	72.3
292.9	98.03	0.68	3.95	1.09	0.02	72.4
319.1	98.07	0.70	4.15	1.12	0.02	72.6
345.7	98.11	0.72	4.34	1.15	0.02	72.7
372.6	98.15	0.73	4.52	1.17	0.02	72.8
399.9	98.19	0.75	4.69	1.19	0.02	73.0
427.6	98.23	0.76	4.85	1.21	0.02	73.1
455.7	98.27	0.78	5.01	1.22	0.02	73.2
484.1	98.30	0.80	5.20	1.25	0.02	73.3
522.6	98.35	0.82	5.41	1.27	0.02	73.5
561.7	98.39	0.84	5.65	1.30	0.02	73.7
601.5	98.44	0.85	5.84	1.32	0.016	73.8

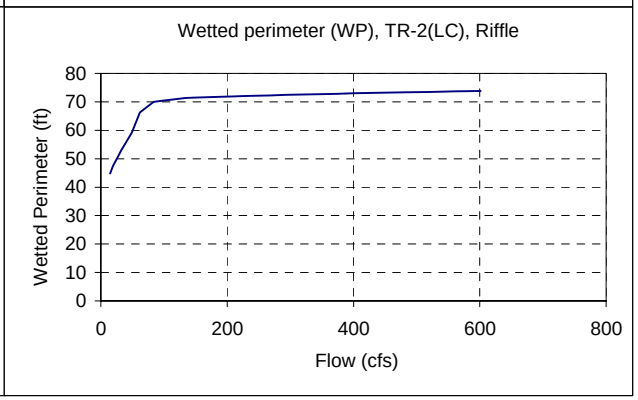






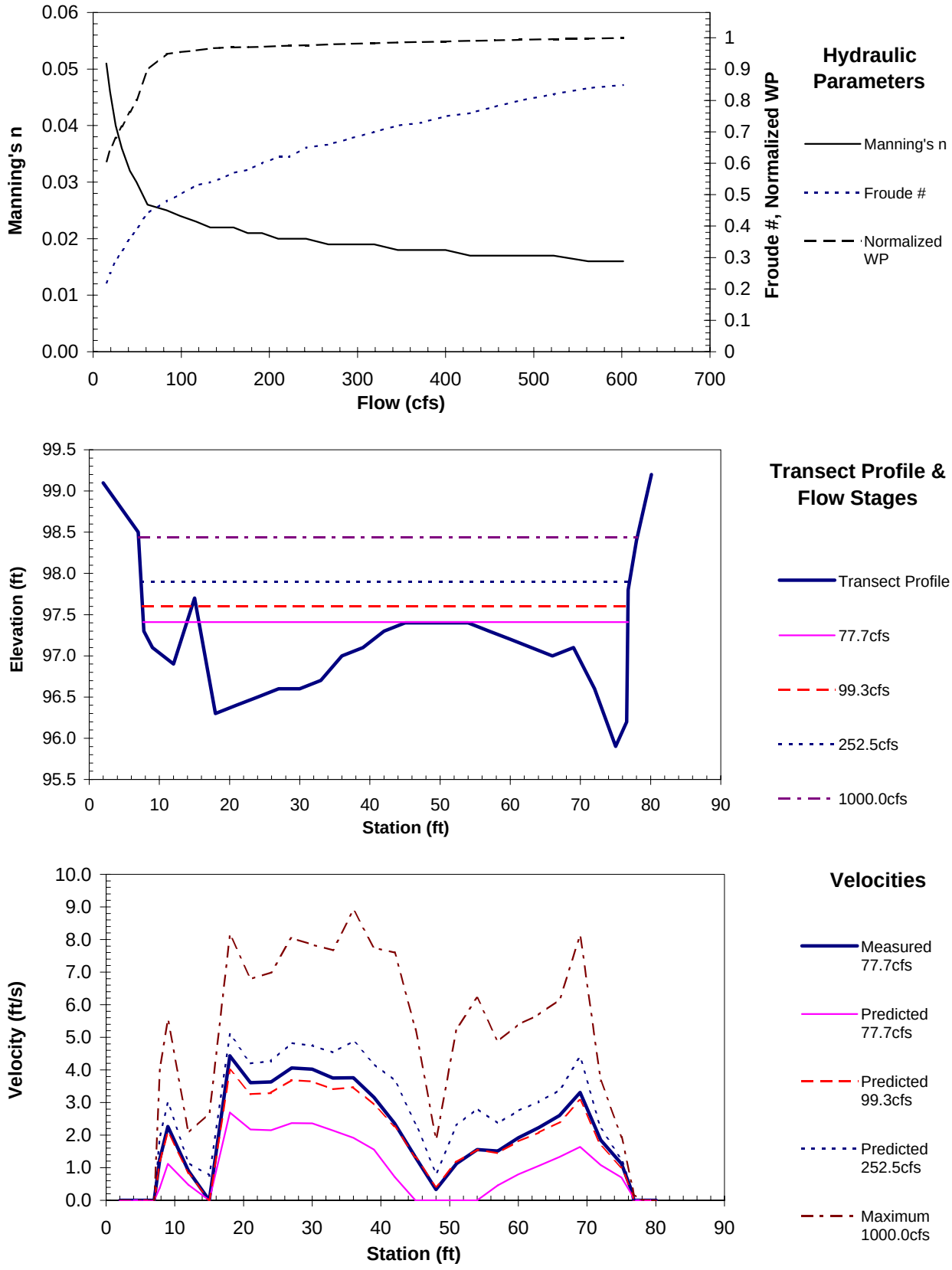






cTR2- Left Channel
Transect hydraulic parameters

Pebble Project, North Fork Koktuli River
08-NFK2-MS1 - Riffle - TRANSECT 2 (LC) - 7/21/2008



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-NFK2-MS1  07/21/08
RIFFLE                     0708Q                                    TRANSECT 2
IOC       11011001000010001010000
QARD  14.9
QARD  19.3
QARD  25.7
QARD  32.4
QARD  41.7
QARD  49.2
QARD  61.8
QARD  83.4
QARD  98.6
QARD 116.7
QARD 133.0
QARD 143.4
QARD 159.3
QARD 175.4
QARD 191.7
QARD 210.0
QARD 222.6
QARD 241.6
QARD 267.0
QARD 292.9
QARD 319.1
QARD 345.7
QARD 372.6
QARD 399.9
QARD 427.6
QARD 455.7
QARD 484.1
QARD 522.6
QARD 561.7
QARD 601.5
XSEC  1000     1000. 1.0     96.76    .00250
      1000  2.099.10  7.098.53  7.897.30  9.097.05 12.096.95 15.097.70
      1000 18.096.30 21.096.40 24.096.50 27.096.60 30.096.55 33.096.70
      1000 36.097.00 39.097.05 42.097.30 45.097.40 48.097.45 51.097.45
      1000 54.097.40 57.097.30 60.097.20 63.097.10 66.097.00 69.097.05
      1000 72.096.60 75.095.95 76.696.15 76.897.80 78.098.41 80.199.17
NS    1000      11.9      11.9      34.6      34.6      34.6 .03  11.9
NS    1000      43.6      43.6      54.6      54.6      54.6      45.6
NS    1000      45.6      54.6      54.6      45.6 .052 43.6      34.6
NS    1000      34.6      45.6      45.6      45.6      43.6      43.6
NS    1000      32.6      32.6      32.6      11.9      11.9      11.9
WSL   1000     97.15     97.20     97.25     97.30     97.35     97.39
WSL   1000     97.45     97.54     97.59     97.64     97.69     97.72
WSL   1000     97.76     97.80     97.83     97.87     97.90     97.93
WSL   1000     97.98     98.03     98.07     98.11     98.15     98.19
WSL   1000     98.23     98.27     98.30     98.35     98.39     98.44
```

IFG4 Data Deck - TR2 Left Channel

IFG4 Data Deck (continued)

```
CAL1  1000     97.60     116.7
VEL1  1000           1.26 2.26 0.90      4.43 3.61 3.63 4.06 4.02 3.75
VEL1  1000 3.76 3.16 2.36 1.32 0.33 1.13 1.56 1.51 1.92 2.23 2.60 3.31
VEL1  1000 1.85 1.12 0.24
CAL2  1000     97.90     210.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.41      49.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR2 Left Channel

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 08-NFK2-MS1 (TR2 Right Channel)

Habitat Type: Island Complex

River Kilometer: 26.21

Stream: NF Koktuli River
Reach: C
Site: 08-NFK2-MS1_TR2_RC
Habitat Type: Riffle

(1) Field Data

Level Loop and Headpin Elevations:

Date	BM1	BM2	BM3
6/23/2008	99.13	99.29	100.00
7/21/2008	99.13	99.28	99.99
8/17/2008	99.14	99.29	99.99

(a) Elevations of control pins (BM's) are taken from the first half of each level loop survey
(b) Relative elevation changes among the control pins were within 0.01ft.
(c) Elevation control pins were stable for their small relative elevation changes over the survey period

Measured WSE:

There are two WSEs (Left and Right) measured across each transect for each flow, and the average of the two measured WSEs is used as transect representative WSE for modeling.

Date	WSE (ft)
6/23/2008	96.22
7/21/2008	96.08
8/17/2008	95.99

calibration notes

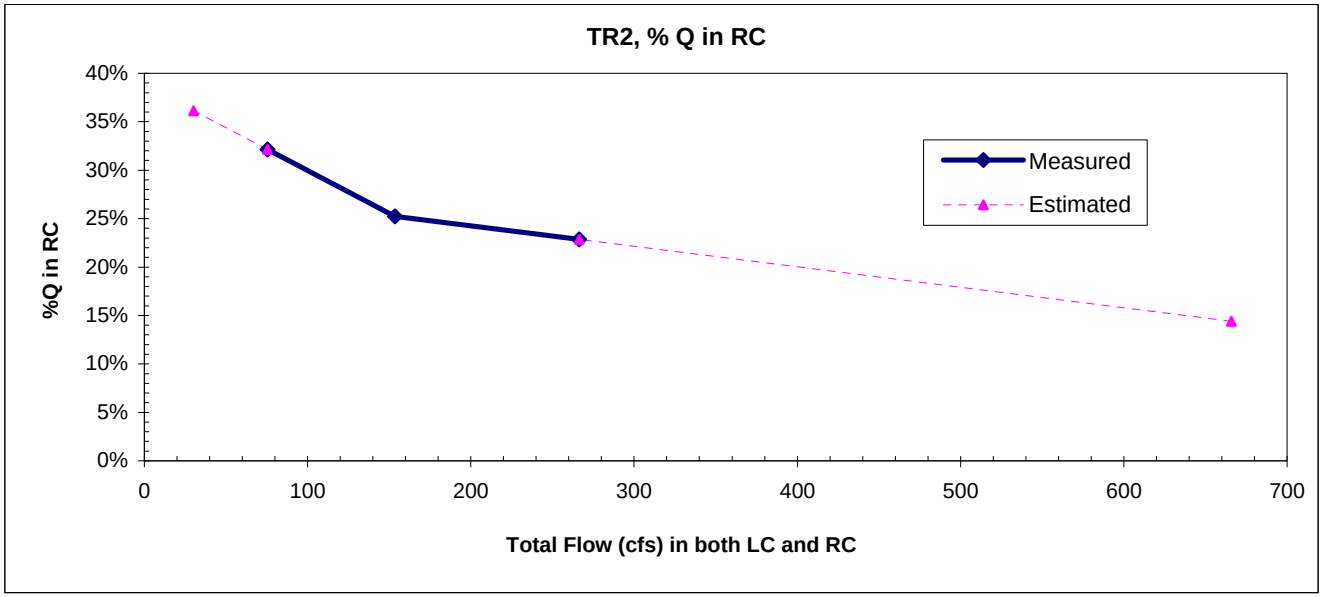
Discharge:

Flow ratio estimate for LC and RC of TR-2

Date	Measured Q in TR-2				
	LC	RC	Total	%Q in RC	
			665.96	14.4%	<--- This is max simulation Q
6/23/2008	205.5	60.9	266.4	22.9%	
7/21/2008	114.8	38.7	153.5	25.2%	
8/17/2008	51.2	24.2	75.4	32.1%	
			30.2	36.1%	<--- This is min simulation Q

Note 1: Estimated %Q in RC is based on the assumption that the relationship between %Q in RC and Total Q remains the same at flows outside the measured flow range.

Note 2: Max simulation flow is 2.5 times of the maximum measured flow.
Min simulation flow is 0.4 time of the minimum measured flow.



calibration notes

Summary for the measured flows of all three transects

Date	Measured Q (cfs)			Date	Measured Q				Est'd Q of TR-3 & TR-2
	TR-1	TR-Q			TR-2			TR-3	
					LC	RC	Total		
6/24/2008	287.4	287.4		6/23/2008	205.5	60.9	266.4	278.0	272.2
7/21/2008	176.9	176.9		7/21/2008	114.8	38.7	153.5	158.7	156.1
8/16/2008	89.2	89.2		8/17/2008	51.2	24.2	75.4	69.7	72.6

Adjusted flows for TR-2

Date	Adjusted Q (cfs)		
	TR-2		
	LC	RC	Total
6/23/2008	210.0	62.2	272.2
7/21/2008	116.7	39.4	156.1
8/17/2008	49.2	23.3	72.6

Longitudinal WSE Slope:

The datums of the three transects of 08-NFK2-MS1 are not connected.
Distances between transects are more than half a mile apart.
No longitudinal WSEs in the vicinity of each transect were surveyed, and thus no slope is calculated.
Default slope value 0.025% was used for hydraulic modeling.

SZF (Stage of Zero Flow):

	Invert
6/23/2008	95.32
7/21/2008	95.23
8/17/2008	95.29
Invert	95.32
SZF	95.82

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF of the upstream transect must be no less than that of its downstream transect.
SZF is determined from the WSE calibration process.
(3) SZF must be equal to or greater than the transect invert

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft) TR-2 (RC)	Calibrated WSE(ft) TR-2 (RC)	WSE calibration error (ft) TR-2 (RC)	Calib. Method
6/23/2008	62.2	96.22	96.22	0.00	IFG4
7/21/2008	39.4	96.08	96.09	0.01	IFG4
8/17/2008	23.3	95.99	95.99	0.00	IFG4

(a) WSE calibration error = calibrated WSE - measured WSE

(b) Maximum calibration error 0.01ft is within the acceptable range

(3) Velocity calibration

This site (08-NFK2-MS1) has 3 transects and each transect has 2 or 3 velocity/discharge measurements
The distances between transects are at lease half a mile and the elevation datums of the transects are not connected.
TR-2 has a left channel and a right channel separated by a distance longer than 15 channel widths. The elevation datums of Left and Right channels are not tied together, so the hydraulics of each channel was modeled individually.
TR-2R (right channel) has three measured velocity profiles: high flow, mid flow, and low flow.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N) TR-2 (Right Ch.)
6/23/2008	62.2	Y
7/21/2008	39.4	Y
8/17/2008	23.3	Y

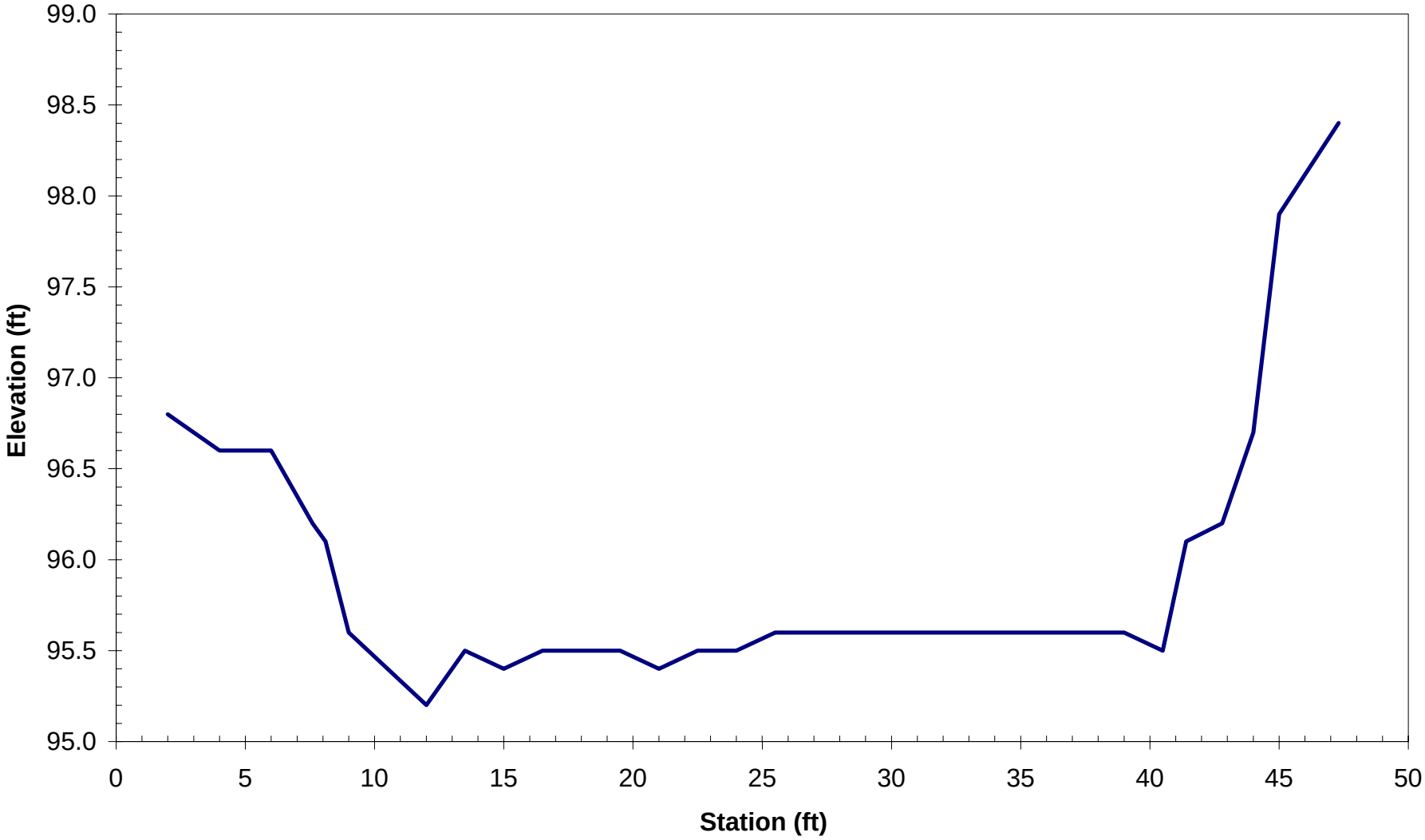
calibration notes

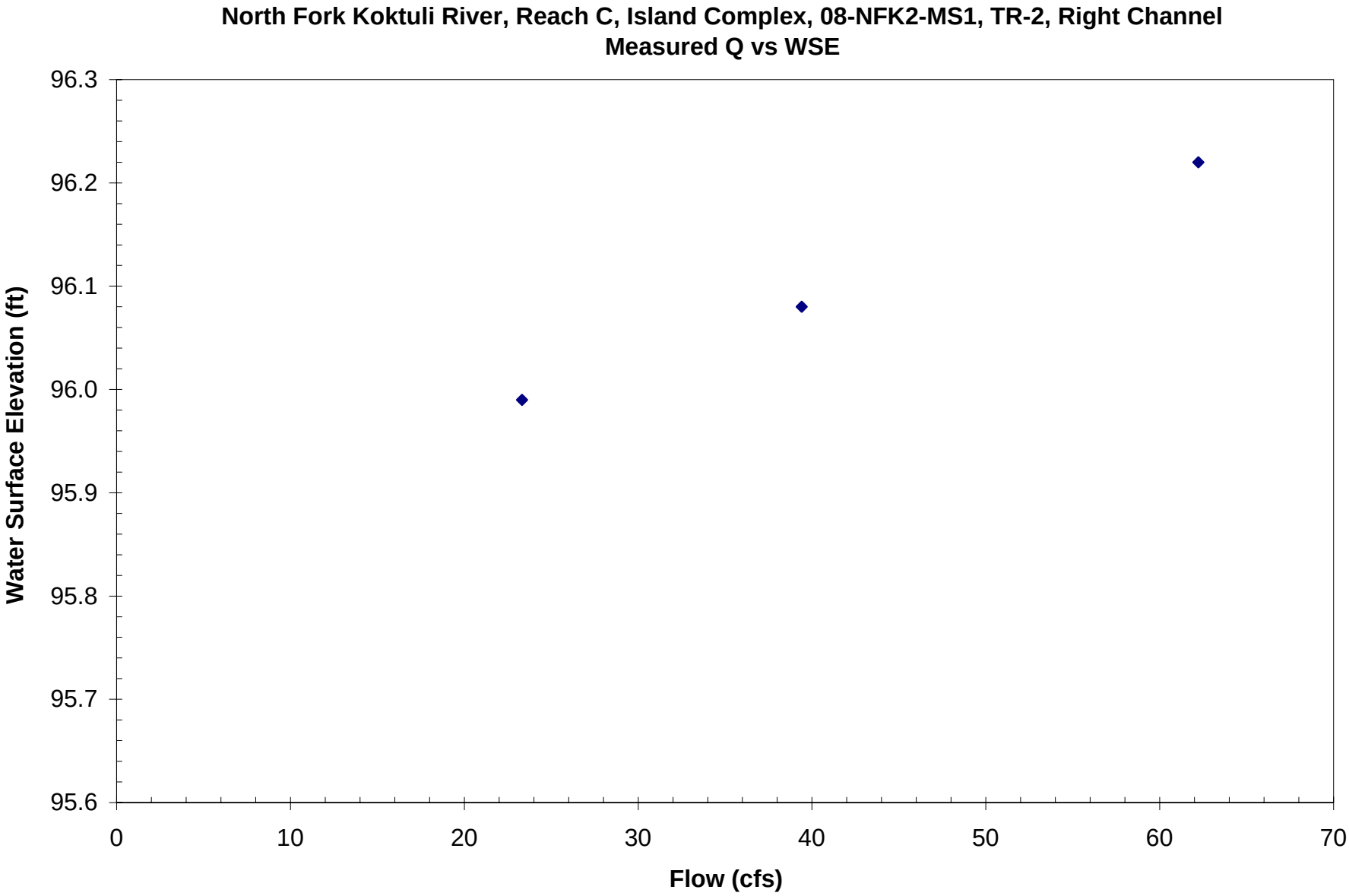
(4) Hydraulic Calibration Results:

Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are within reasonable ranges and have correct trends.

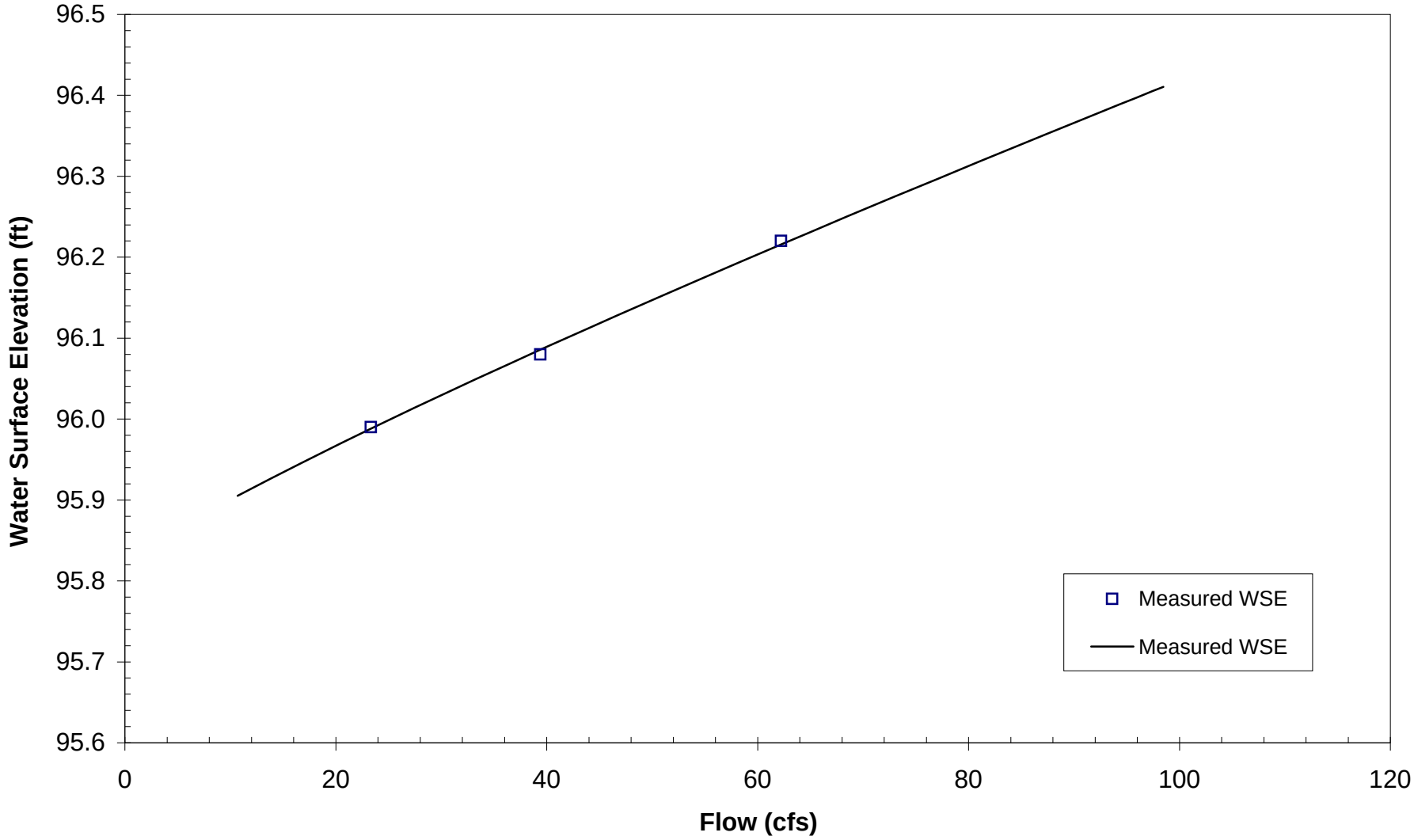
calibration notes

North Fork Koktuli River, Reach C, Island Complex, 08-NFK2-MS1, TR-2, Right Channel
Measured Transect Profile



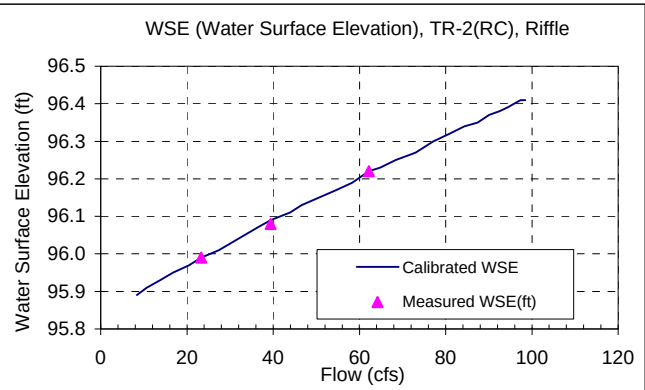

North Fork Koktuli River, Reach C, Island Complex, 08-NFK2-MS1, TR-2, Right Channel
Measured Q vs WSE
Water Surface Elevation (ft)
96.3
96.2
96.1
96.0
95.9
95.8
95.7
95.6
0
10
20
30
40
50
60
70
Flow (cfs)

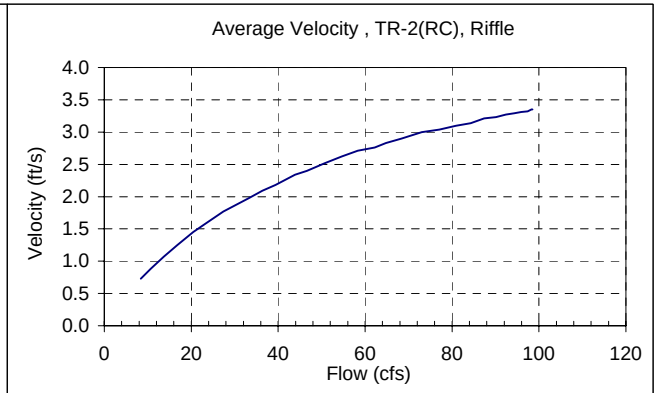
North Fork Koktuli River, Reach C, Island Complex, 08-NFK2-MS1, TR-2, Right Channel
Comparison of Calibrated and Measured WSEs

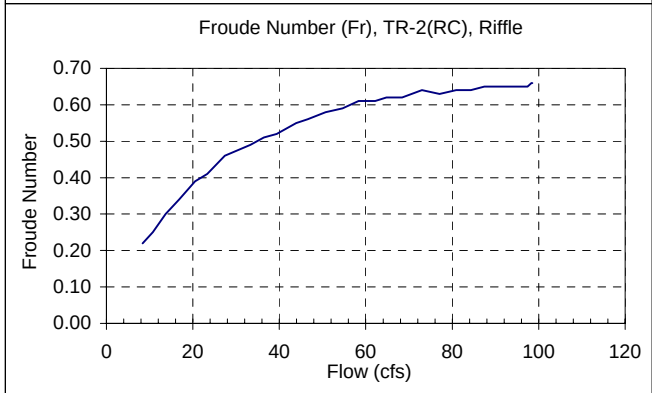


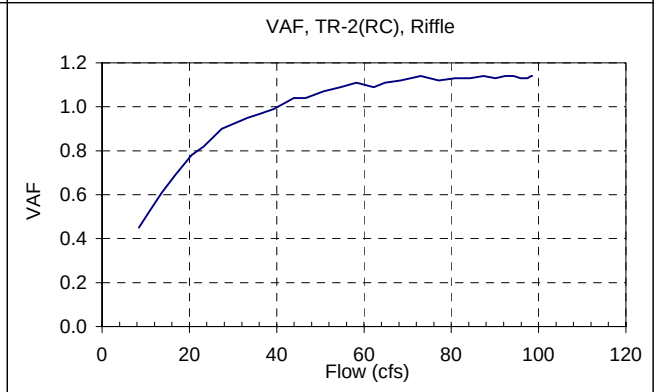
Stream: NF Koktuli River
Site: 08-NFK2-MS1_TR2_RC
Habitat: Island Complex
Transect: 2 (Right Channel)
Date: 7/21/2008
Calibration Flow: Mid

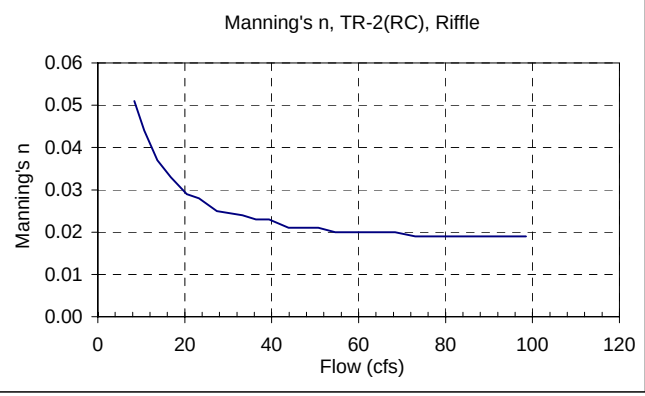
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
8.4	95.89	0.22	0.73	0.45	0.051	32.8
10.7	95.91	0.25	0.88	0.52	0.04	32.9
13.7	95.93	0.30	1.07	0.61	0.04	33.0
16.8	95.95	0.34	1.25	0.69	0.03	33.1
20.5	95.97	0.39	1.45	0.78	0.03	33.2
23.3	95.99	0.41	1.58	0.82	0.03	33.3
27.4	96.01	0.46	1.77	0.90	0.03	33.3
33.3	96.05	0.49	1.98	0.95	0.02	33.5
36.4	96.07	0.51	2.09	0.97	0.02	33.6
39.4	96.09	0.52	2.18	0.99	0.02	33.8
43.9	96.11	0.55	2.34	1.04	0.02	34.0
46.6	96.13	0.56	2.40	1.04	0.02	34.3
50.7	96.15	0.58	2.52	1.07	0.02	34.6
54.6	96.17	0.59	2.62	1.09	0.02	34.8
58.3	96.19	0.61	2.71	1.11	0.02	35.1
62.2	96.22	0.61	2.76	1.09	0.02	35.5
64.8	96.23	0.62	2.83	1.11	0.02	35.6
68.4	96.25	0.62	2.90	1.12	0.02	35.7
73	96.27	0.64	3.00	1.14	0.02	35.8
77.1	96.30	0.63	3.04	1.12	0.02	36.1
80.9	96.32	0.64	3.10	1.13	0.02	36.2
84.3	96.34	0.64	3.14	1.13	0.02	36.4
87.4	96.35	0.65	3.21	1.14	0.02	36.4
90.1	96.37	0.65	3.23	1.13	0.02	36.6
92.4	96.38	0.65	3.27	1.14	0.02	36.7
94.3	96.39	0.65	3.29	1.14	0.02	36.7
95.9	96.40	0.65	3.31	1.13	0.02	36.8
97.4	96.41	0.65	3.32	1.13	0.02	36.9
98.3	96.41	0.66	3.35	1.14	0.02	36.9
98.5	96.41	0.66	3.35	1.14	0.019	36.9

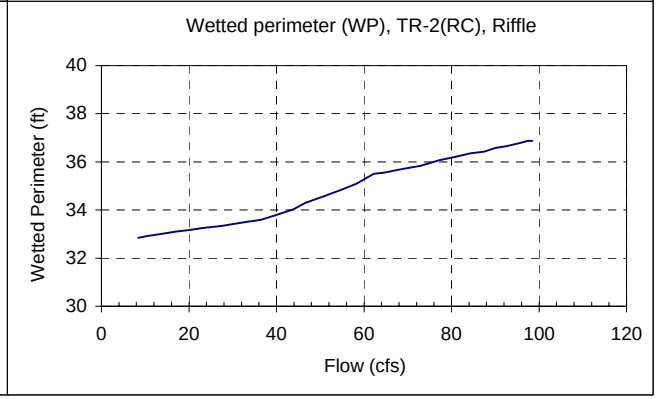




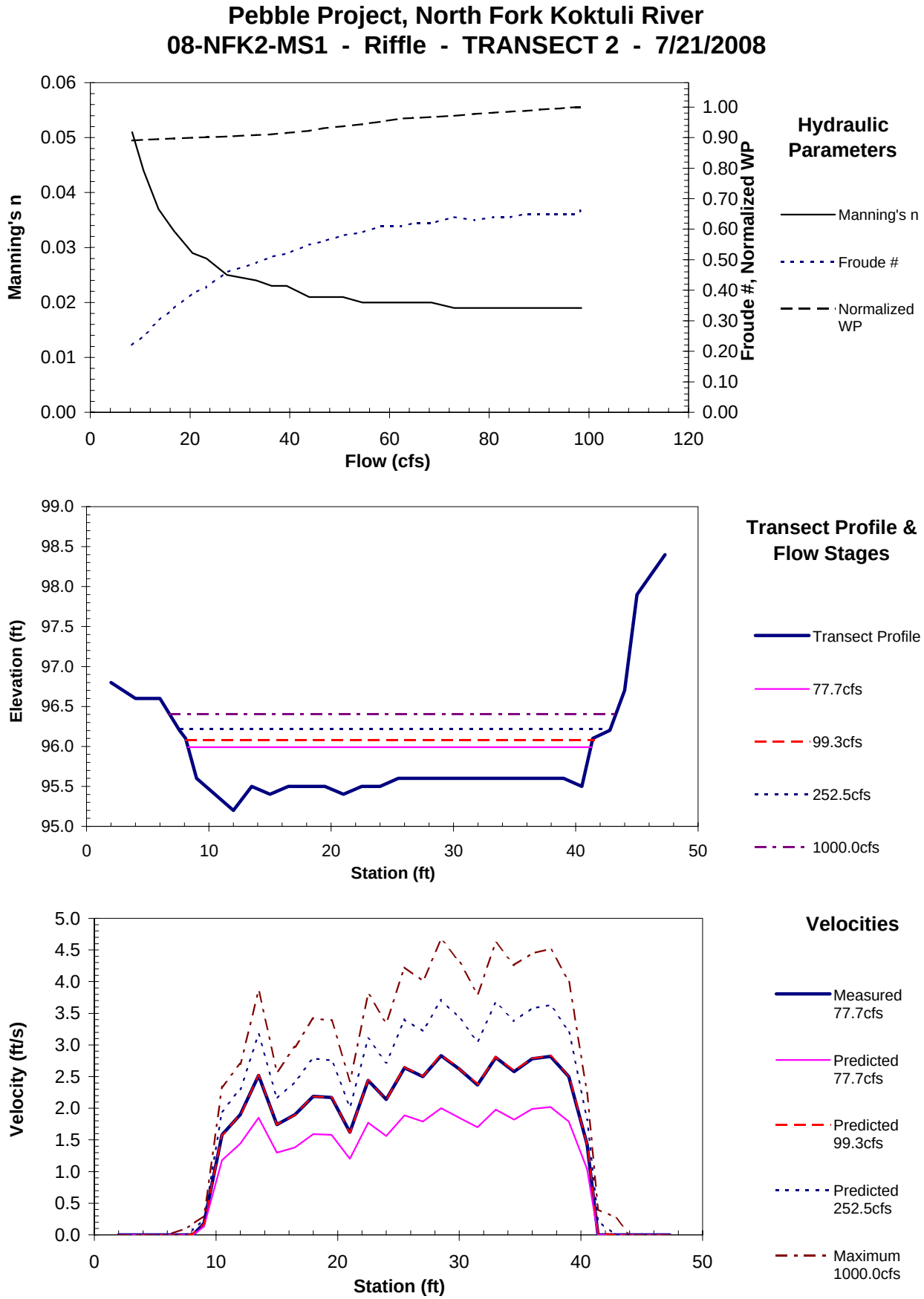








cTR2 - Right Channel
Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-NFK2-MS1  07/21/08
RIFFLE-RC                  0708Q                                    TRANSECT 2
IOC       11011001000010001010000
QARD   8.4
QARD  10.7
QARD  13.7
QARD  16.8
QARD  20.5
QARD  23.3
QARD  27.4
QARD  33.3
QARD  36.4
QARD  39.4
QARD  43.9
QARD  46.6
QARD  50.7
QARD  54.6
QARD  58.3
QARD  62.2
QARD  64.8
QARD  68.4
QARD  73.0
QARD  77.1
QARD  80.9
QARD  84.3
QARD  87.4
QARD  90.1
QARD  92.4
QARD  94.3
QARD  95.9
QARD  97.4
QARD  98.3
QARD  98.5
XSEC  1000     1000. 1.0     95.32    .00250
      1000  2.096.80  4.096.59  6.096.59  7.696.24  8.196.08  9.095.63
      1000 10.595.38 12.095.23 13.595.48 15.095.38 16.595.53 18.095.53
      1000 19.595.53 21.095.43 22.595.53 24.095.53 25.595.58 27.095.58
      1000 28.595.63 30.095.63 31.595.58 33.095.63 34.595.63 36.095.58
      1000 37.595.58 39.095.58 40.595.53 41.496.08 42.896.22 44.096.70
      1000 45.097.90 47.398.44
NS    1000      11.9      11.9      11.9      11.9      11.9      23.6
NS    1000      32.6      43.6      11.9      11.9      11.9      11.9
NS    1000      11.9      23.6      32.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      32.6      23.6
NS    1000      23.6      23.6      32.6 .1   11.9      11.9      11.9
NS    1000      11.9      11.9
WSL   1000     95.89     95.91     95.93     95.95     95.97     95.99
WSL   1000     96.01     96.05     96.07     96.09     96.11     96.13
WSL   1000     96.15     96.17     96.19     96.22     96.23     96.25
```

IFG4 Data Deck - TR2 Right Channel

IFG4 Data Deck (continued)

```
WSL   1000     96.27     96.30     96.32     96.34     96.35     96.37
WSL   1000     96.38     96.39     96.40     96.41     96.41     96.41
CAL1  1000     96.08      39.4
VEL1  1000                     0.00 0.18 1.58 1.90 2.52 1.74 1.90 2.19
VEL1  1000 2.17 1.62 2.44 2.14 2.64 2.50 2.83 2.62 2.37 2.80 2.58 2.78
VEL1  1000 2.82 2.50 1.43 0.00
CAL2  1000     96.22      62.2
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.99      23.3
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR2 Right Channel

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 08-NFK2-MS1 (TR3)

Habitat Type: Riffle

River Kilometer: 26.96

Stream: NF Koktuli River
Reach: C
Site: 08-NFK2-MS1_TR3
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3
6/23/2008	100.00	100.30	100.52
7/21/2008	100.00	100.28	100.51
8/17/2008	100.00	100.28	100.51

(a) Elevations of control pins (BM's) are taken from the first half of each level loop survey
(b) Relative elevation changes among the elevation control pins were no more than 0.02ft.
(c) Small relative elevation changes indiated control pins were stable over the survey period

Measured WSE:

There are two WSEs (Right & Left) measured across each transect for each flow, and the average of the two measured WSEs is used as transect representative WSE for modeling.

Date	WSE (ft)
6/23/2008	97.95
7/21/2008	97.49
8/17/2008	97.01

Discharge:

Summary for the measured flows of all three transects

Date	Measured Q	
	TR-1	Est'd TR-Q
6/24/2008	287.4	287.4
7/21/2008	176.9	176.9
8/16/2008	89.2	89.2

Date	Measured Q				Est'd Q of TR-3 & TR-2
	TR-2			TR-3	
	LC	RC	Total		
6/23/2008	205.5	60.9	266.4	278.0	272.2
7/21/2008	114.8	38.7	153.5	158.7	156.1
8/17/2008	51.2	24.2	75.4	69.7	72.6

calibration notes

Adjusted flows for TR-2

Date	Adjusted Q (cfs)		
	TR-2		
	LC	RC	Total
6/23/2008	210.0	62.2	272.2
7/21/2008	116.7	39.4	156.1
8/17/2008	49.2	23.3	72.6

Longitudinal WSE Slope:

The datums of the three transects of 08-NFK2-MS1 are not connected.
Distances between transects are more than half a mile.
No longitudinal WSEs in the vicinity of each transect were surveyed, and thus no slope is calculated.
Default slope value 0.025% was used for hydraulic modeling.

SZF (Stage of Zero Flow):

	TR-3 Invert
6/23/2008	95.35
7/21/2008	95.34
8/17/2008	95.31
Invert	95.35
SZF	95.35

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF of the upstream transect must be no less than that of its downstream transect.
SZF is determined from the WSE calibration process.
(3) SZF must be equal to or greater than the transect invert

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft) TR-3	Calibrated WSE(ft) TR-3	WSE calibration error (ft) TR-3	Calib. Method
6/23/2008	272.2	97.95	97.94	0.00	IFG4
7/21/2008	156.1	97.49	97.50	0.01	IFG4
8/17/2008	72.6	97.01	97.01	0.00	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum calibration error 0.01ft is within the acceptable range

(3) Velocity calibration

This site (08-NFK2-MS1) has 3 transects and each transect has 2 or 3 velocity/discharge measurements
The transects are half a mile to a mile apart and their elevation datums are not connected.
TR-3 has three measured velocity profiles; Q_{High} (272.2cfs), Q_{mid} (156.1cfs) and Q_{low} (72.6cfs).
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

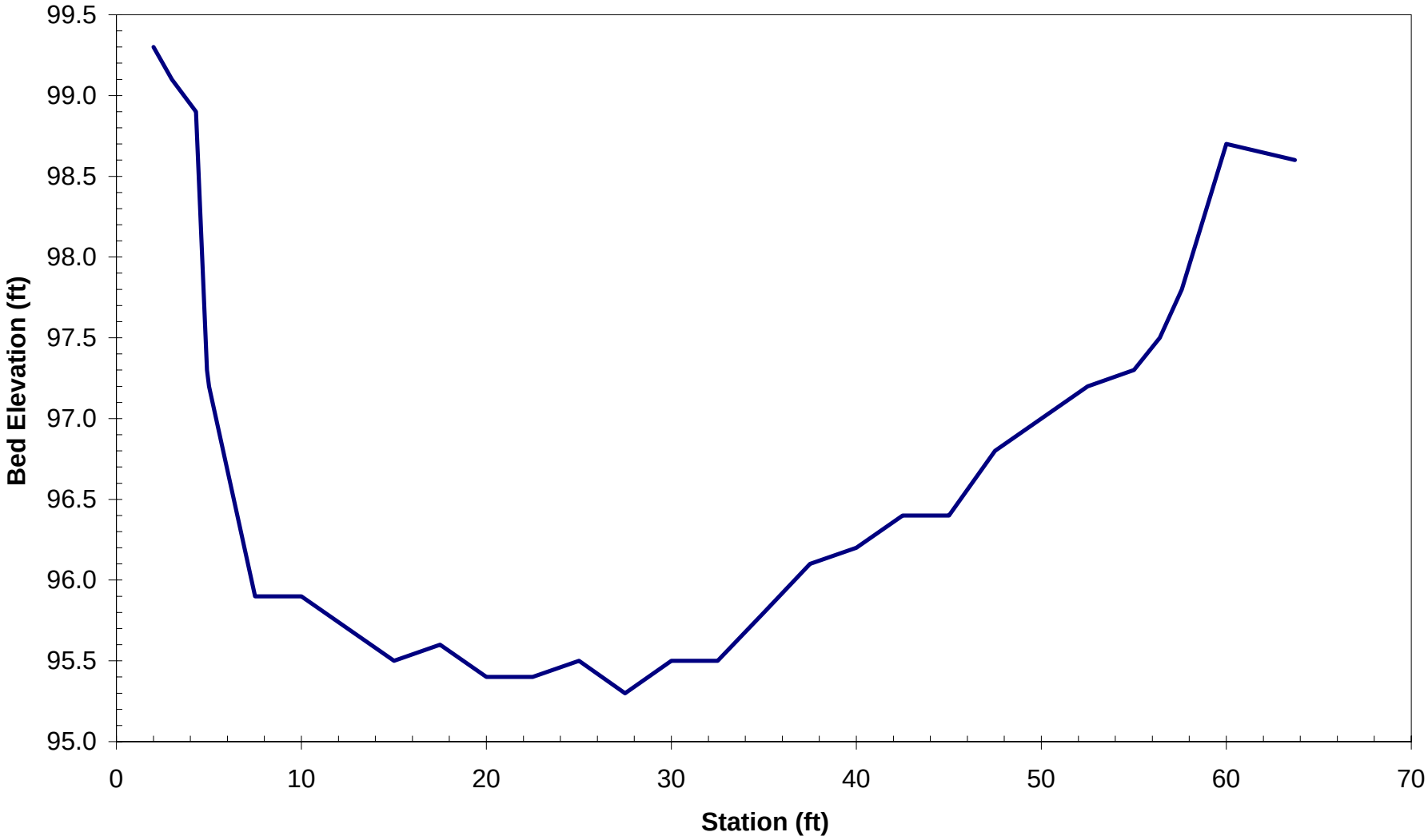
Survey Date	Q (cfs)	WUA (Y/N) TR-3
6/23/2008	272.2	Y
7/21/2008	156.1	Y
8/17/2008	72.6	Y

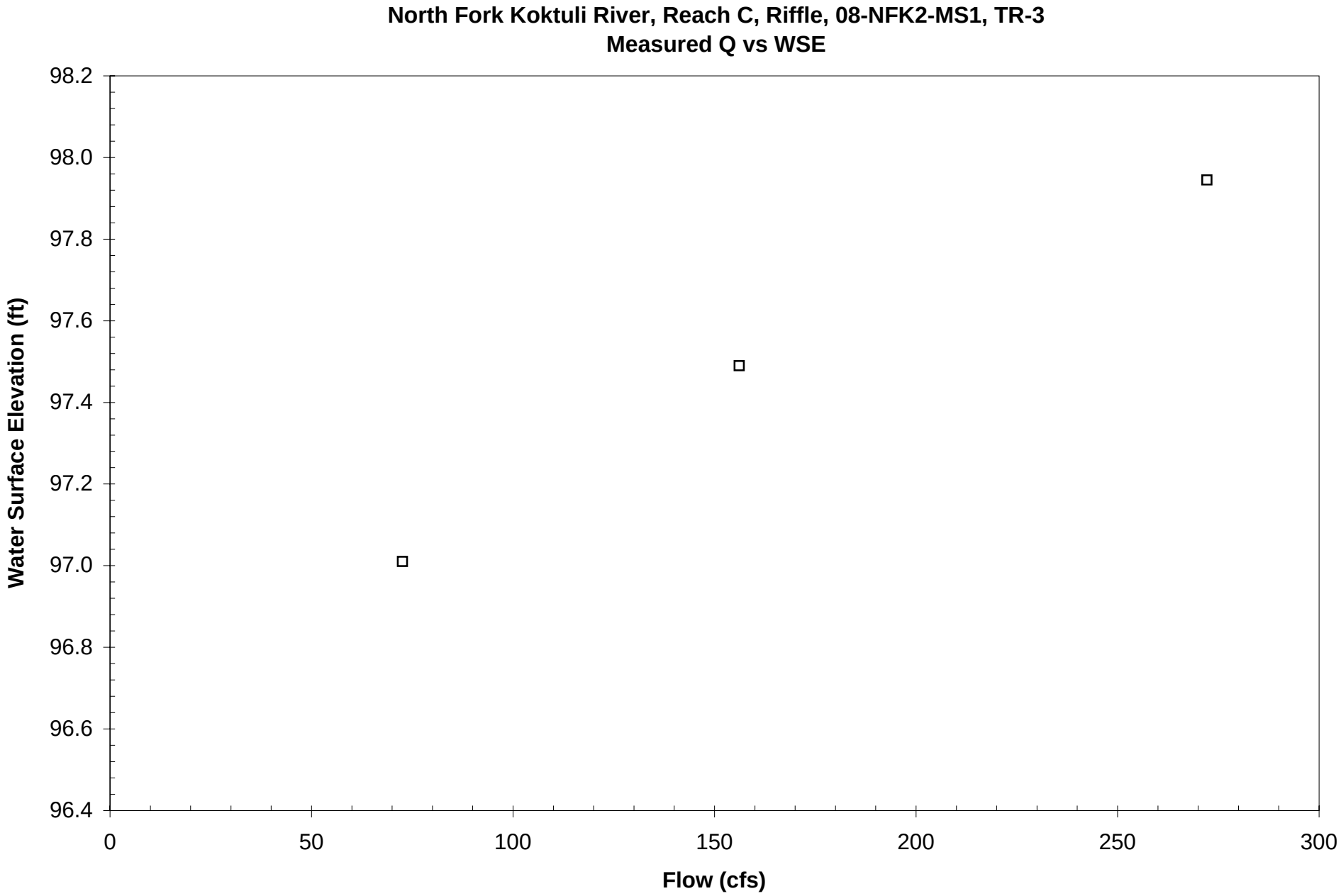
(4) Hydraulic Calibration Results:

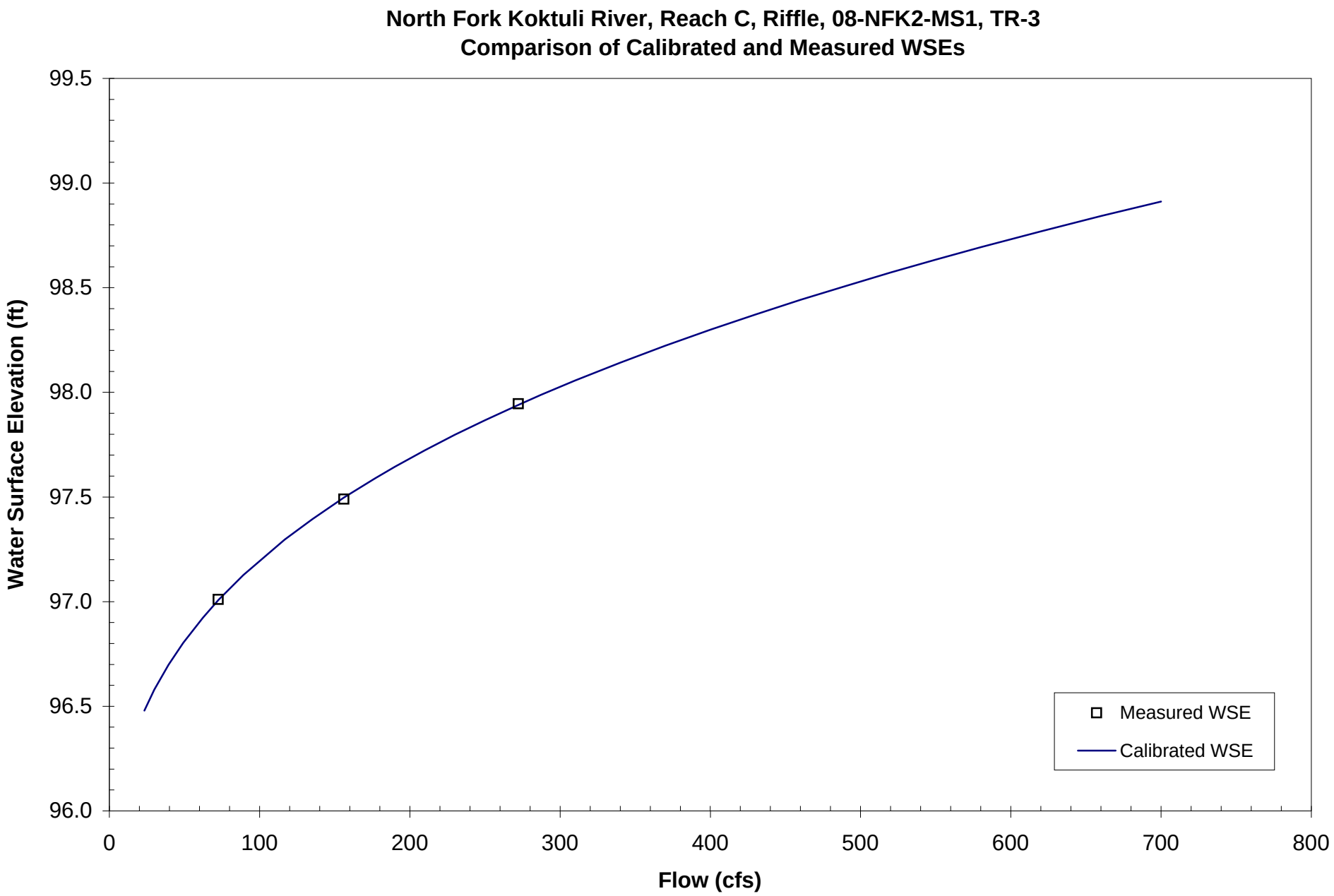
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are within reasonable ranges and have correct trends.

calibration notes

North Fork Koktuli River, Reach C, Riffle, 08-NFK2-MS1, TR-3
Measured Transect Profile

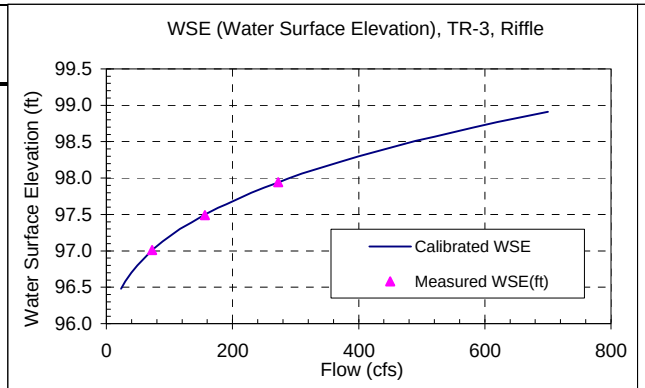


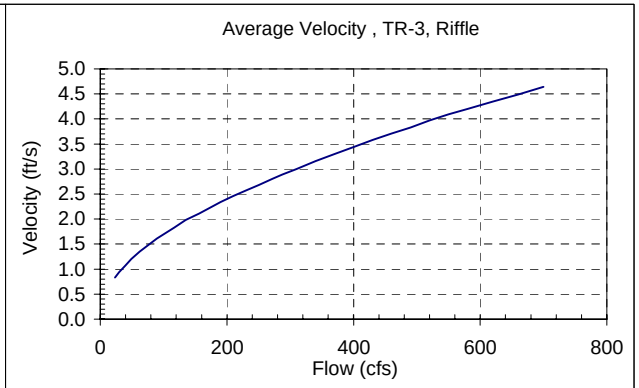

North Fork Koktuli River, Reach C, Riffle, 08-NFK2-MS1, TR-3
Measured Q vs WSE
Water Surface Elevation (ft)
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
0
50
100
150
200
250
300
Flow (cfs)

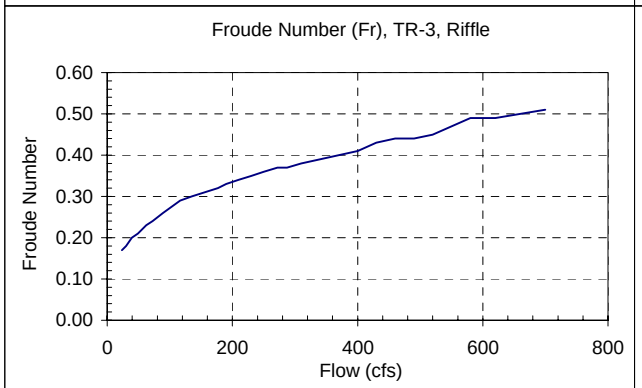

North Fork Koktuli River, Reach C, Riffle, 08-NFK2-MS1, TR-3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
0
100
200
300
400
500
600
700
800
Flow (cfs)
Measured WSE
Calibrated WSE

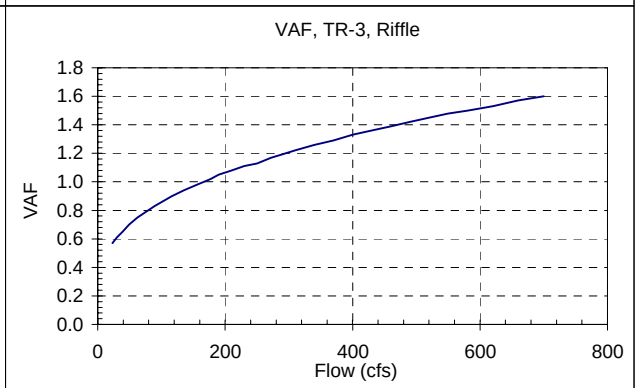
Stream: NF Koktuli River
Site: 08-NFK2-MS1_TR3
Habitat: Riffle
Transect: 3
Date: 7/21/2008
Calibration Flow: Mid

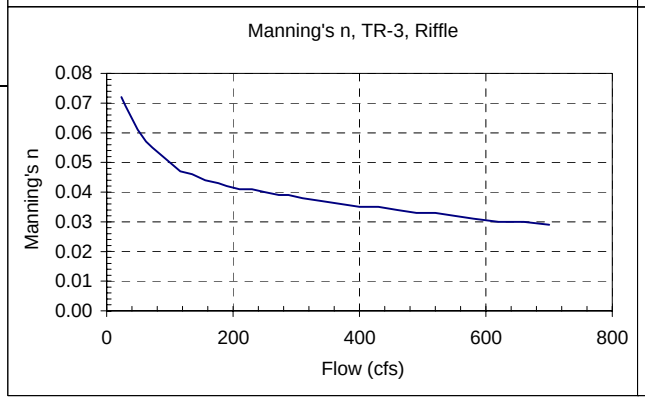
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
23.3	96.48	0.17	0.83	0.57	0.072	39.0
30	96.58	0.18	0.94	0.61	0.07	39.9
39.4	96.70	0.20	1.07	0.65	0.07	40.9
49.2	96.80	0.21	1.20	0.70	0.06	41.7
62.2	96.92	0.23	1.35	0.75	0.06	43.6
72.6	97.01	0.24	1.45	0.78	0.06	45.2
89.2	97.13	0.26	1.61	0.83	0.05	47.0
116.7	97.30	0.29	1.83	0.90	0.05	50.6
135	97.39	0.30	1.98	0.94	0.05	51.4
156.1	97.50	0.31	2.11	0.98	0.04	52.2
176.9	97.59	0.32	2.25	1.02	0.04	52.6
190	97.64	0.33	2.34	1.05	0.04	52.9
210	97.72	0.34	2.46	1.08	0.04	53.2
230	97.80	0.35	2.57	1.11	0.04	53.6
250	97.87	0.36	2.68	1.13	0.04	53.9
272.2	97.94	0.37	2.81	1.17	0.04	54.2
287.4	97.99	0.37	2.89	1.19	0.04	54.4
310	98.06	0.38	3.00	1.22	0.04	54.7
340	98.14	0.39	3.16	1.26	0.04	55.0
370	98.22	0.40	3.30	1.29	0.04	55.3
400	98.30	0.41	3.44	1.33	0.04	55.7
430	98.37	0.43	3.58	1.36	0.04	56.0
460	98.44	0.44	3.71	1.39	0.03	56.3
490	98.51	0.44	3.83	1.42	0.03	56.6
520	98.57	0.45	3.97	1.45	0.03	56.8
550	98.63	0.47	4.09	1.48	0.03	58.3
580	98.69	0.49	4.20	1.50	0.03	60.9
620	98.77	0.49	4.35	1.53	0.03	61.0
660	98.84	0.50	4.49	1.57	0.03	61.1
700.0	98.91	0.51	4.64	1.60	0.029	61.3

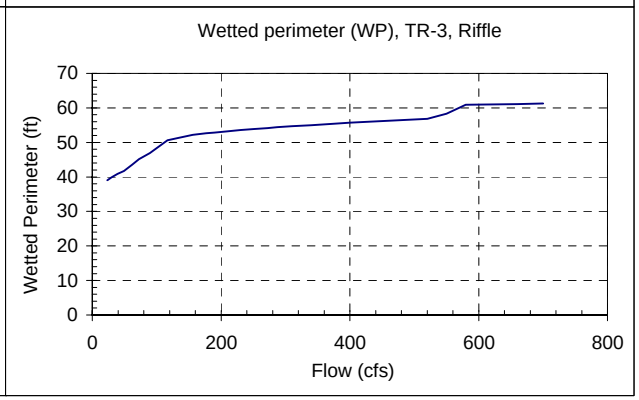






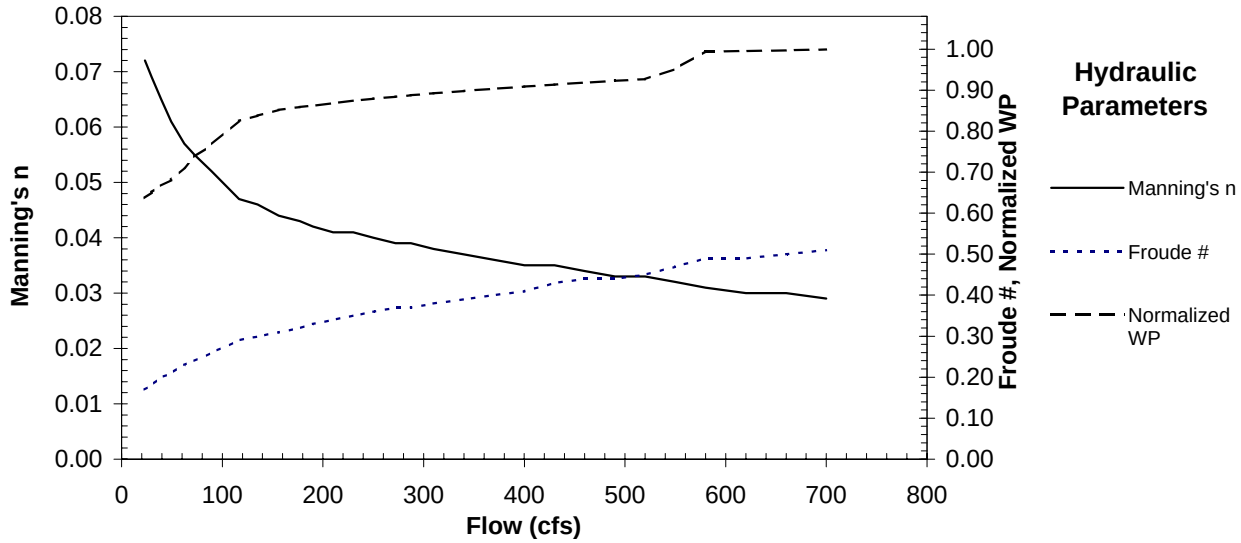


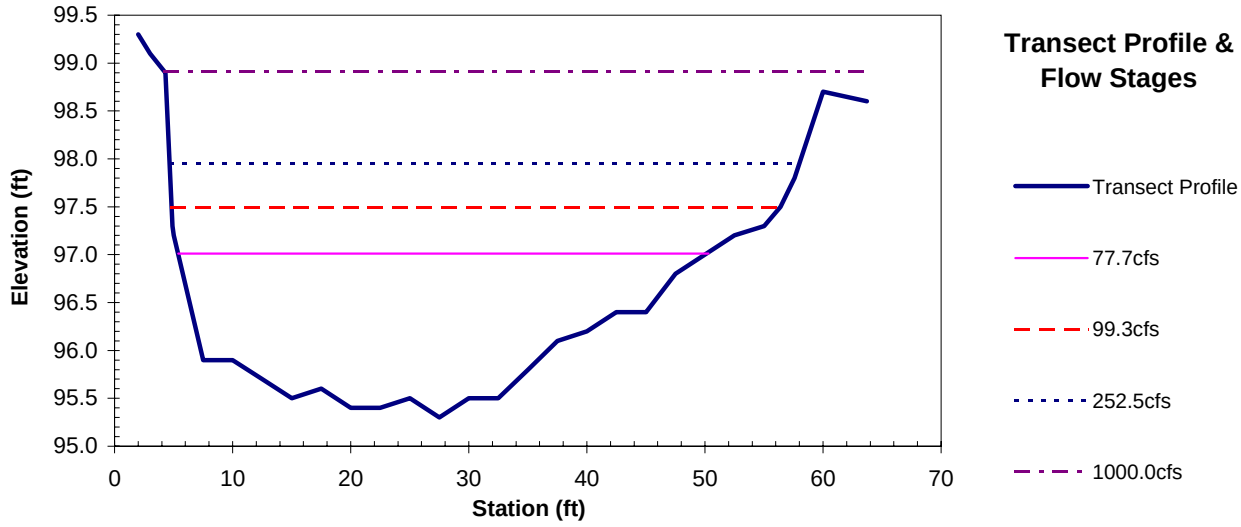


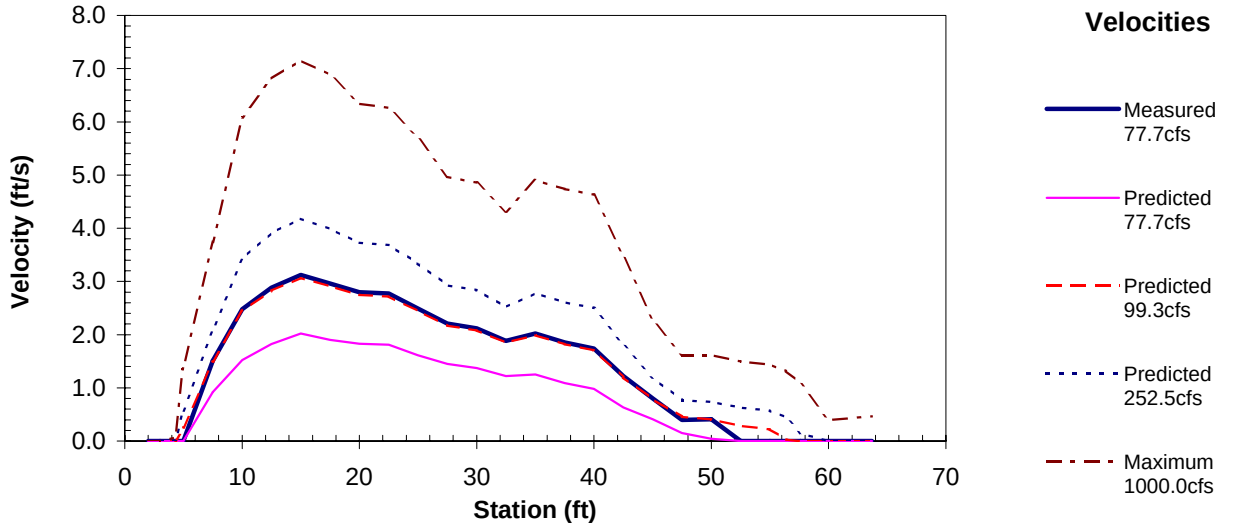


cTR3 -Transect hydraulic parameters

Pebble Project, North Fork Koktuli River
08-NFK2-MS1 - Riffle - TRANSECT 3 - 7/21/2008







Transect hydraulic summary plots

IFG4 Data Deck

```
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QARD  23.3
QARD  30.0
QARD  39.4
QARD  49.2
QARD  62.2
QARD  72.6
QARD  89.2
QARD 116.7
QARD 135.0
QARD 156.1
QARD 176.9
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 272.2
QARD 287.4
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 430.0
QARD 460.0
QARD 490.0
QARD 520.0
QARD 550.0
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
XSEC  1000     1000. 1.0     95.35    .00250
      1000  2.099.29  3.099.12  4.398.89  4.997.34  5.097.24  7.595.94
      1000 10.095.89 12.595.69 15.095.49 17.595.59 20.095.39 22.595.39
      1000 25.095.49 27.595.34 30.095.49 32.595.49 35.095.84 37.596.09
      1000 40.096.24 42.596.44 45.096.44 47.596.84 50.096.99 52.597.19
      1000 55.097.29 56.497.49 57.697.85 60.098.67 63.798.61
NS    1000      11.9      11.9      11.9      11.9 .12  11.9      34.6
NS    1000      54.6      54.6      64.6      64.6      64.6      46.6
NS    1000      46.6      45.6      46.6      46.6      57.6      56.6
NS    1000      54.6      67.6      67.6 .12  56.6      67.6      56.6
NS    1000      54.6      11.9      11.9      11.9      11.9
WSL   1000     96.48     96.58     96.70     96.80     96.92     97.01
WSL   1000     97.13     97.30     97.39     97.50     97.59     97.64
WSL   1000     97.72     97.80     97.87     97.94     97.99     98.06
WSL   1000     98.14     98.22     98.30     98.37     98.44     98.51
WSL   1000     98.57     98.63     98.69     98.77     98.84     98.91
```

IFG4 Data Deck (continued)

```
CAL1  1000     97.49     156.1
VEL1  1000                0.00 0.00 1.51 2.48 2.88 3.12 2.96 2.80 2.77
VEL1  1000 2.49 2.21 2.12 1.88 2.02 1.85 1.74 1.22 0.80 0.40 0.41 0.00
VEL1  1000 0.00 0.00
CAL2  1000     97.95     272.2
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.01      72.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR3

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 04-NFK-RN3

Habitat Type: Run

River Kilometer: 30.63

Stream: North Fork Koktuli River
Reach: C
Site: 04NFK-RN3
Habitat Type: Run

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP	new TP
1st	6/21/2005	100.00	98.19		
2nd	7/21/2005		98.18	98.54	
3rd	8/14/2005		98.18	98.53	
4th	6/28/2006	100.00	98.18	98.46	
5th	4/12/2007		98.18		
6th	7/19/2007	100.00	98.18		98.77

(a) Elevation of control pins (BM, HP, TP) are taken from the first half of each level loop.
(b) No level loop was conducted during the 4/12/07 site visit when TP was underwater.
HP elevation assumed to have no change.
(c) TP of 7/19/07 survey was a different one. The original one was lost to bank sluffing.
(d) Relative elevation changes between BM and HP were within ±0.01ft from 2005 to 2007.
Small relative elevation change suggested the two pins were stable throughout the survey period.

Measured WSE:

There are three WSEs (Left, Mid, Right) measured across the transect for each flow,
and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/21/2005	96.05
7/21/2005	95.76
8/14/2005	95.42
6/28/2006	95.86
4/12/2007	98.55
7/19/2007	95.37

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/21/2005	106.8
7/21/2005	
8/14/2005	23.5
6/28/2006	70.2
4/12/2007	
7/19/2007	25.8

(1) No discharge was measured on 7/21/05.

(2) Hydraulics of 4/12/07 was affected by ice in the channel. Data not used in modeling.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/21/2005	0.127%	110
7/21/2005	0.091%	110
8/14/2005	0.050%	181.2
6/28/2006	0.075%	147
4/12/2007	NA	NA
7/19/2007	0.042%	167

No longitudinal WSE slope was surveyed on 4/12/07

The slope S=0.127% of 6/21/05 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/21/2005	93.35
7/21/2005	
8/14/2005	93.42
6/28/2006	93.26
4/12/2007	98.05
7/19/2007	93.37
Invert	93.42
SZF	93.42

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05
(4) Invert of 4/12/07 was impacted by ice and was not used in modeling analysis.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR-1	calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/21/2005	106.8	96.05	96.07	0.02	IFG4
2nd	7/21/2005		95.76			
3rd	8/14/2005	23.5	95.42	95.37	-0.05	IFG4
4th	6/28/2006	70.2	95.86	95.85	-0.01	IFG4
5th	4/12/2007		98.55			
6th	7/19/2007	25.8	95.37	95.41	0.04	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within acceptable range.
(c) No discharge was measured during the 7/21/05 site visit.
(d) Photos showed the 4/12/07 channel was still covered by ice, and therefore the surveyed hydraulics were not included in the modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 23.5cfs to 106.8cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

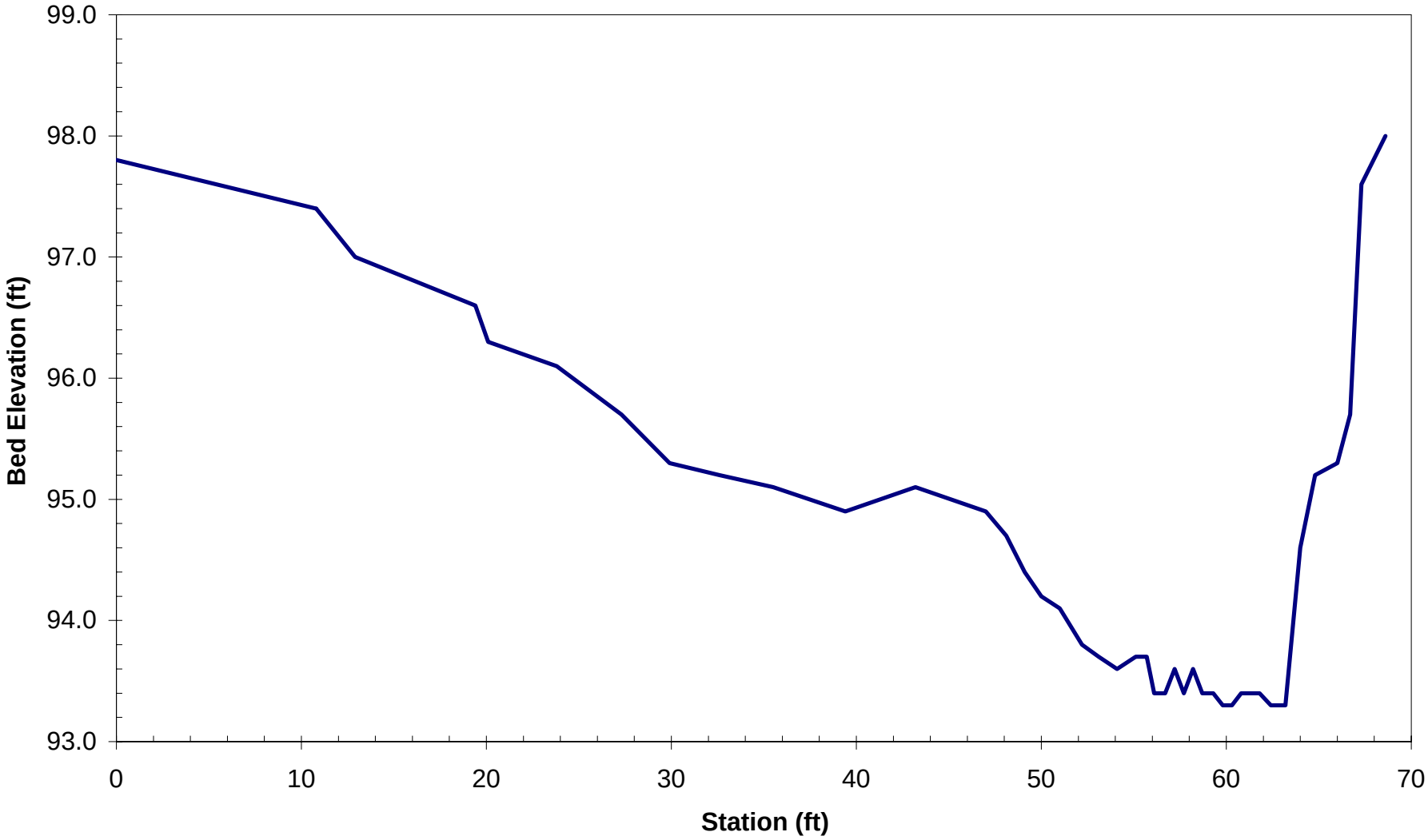
Survey Date	Q (cfs)	WUA (Y/N)
6/21/2005	106.8	Y
7/21/2005		
8/14/2005	23.5	Y
6/28/2006	70.2	Y
4/12/2007		
7/19/2007	25.8	Y

(4) Hydraulic Calibration Results:

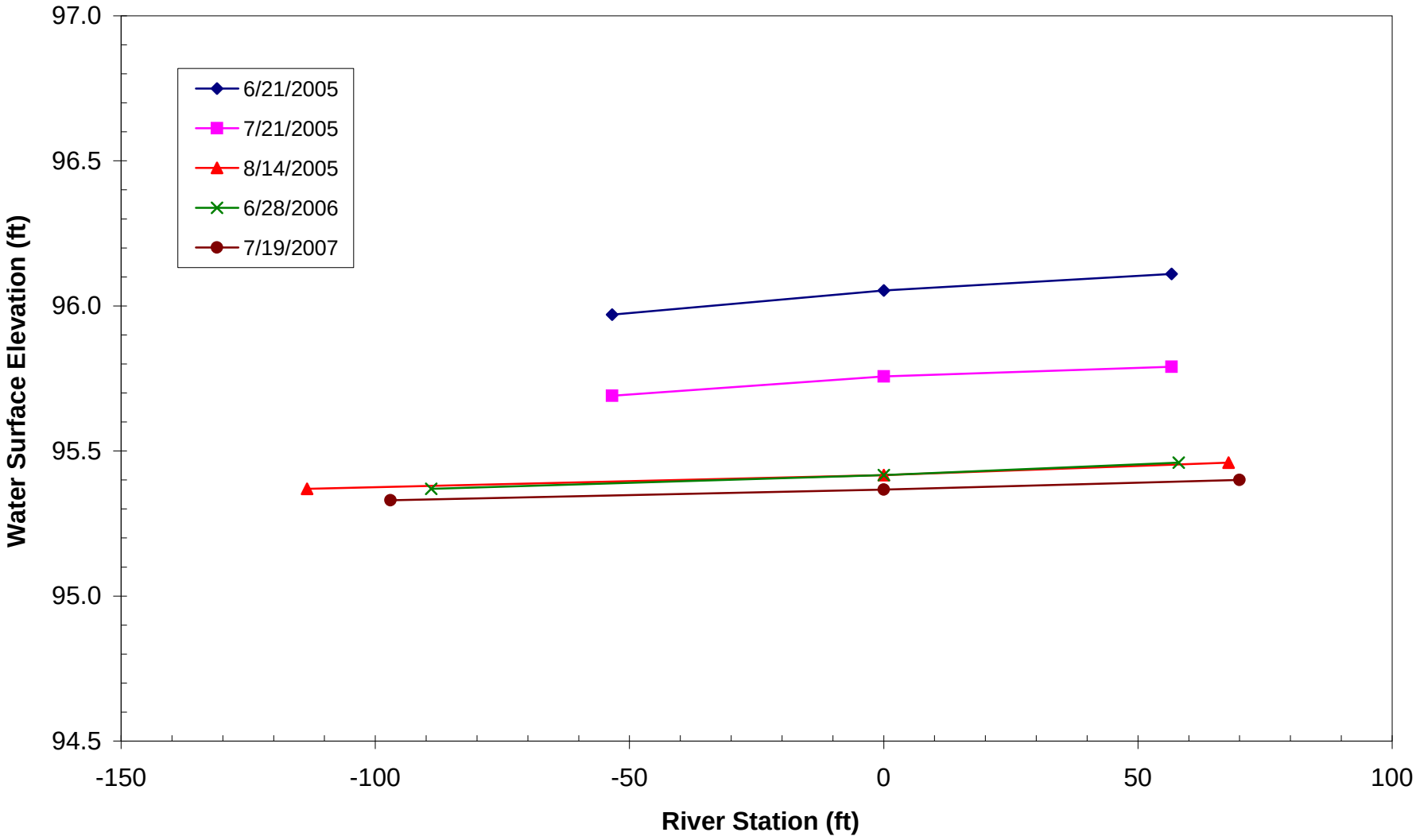
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges and appear to vary in normal trends as flow increases.

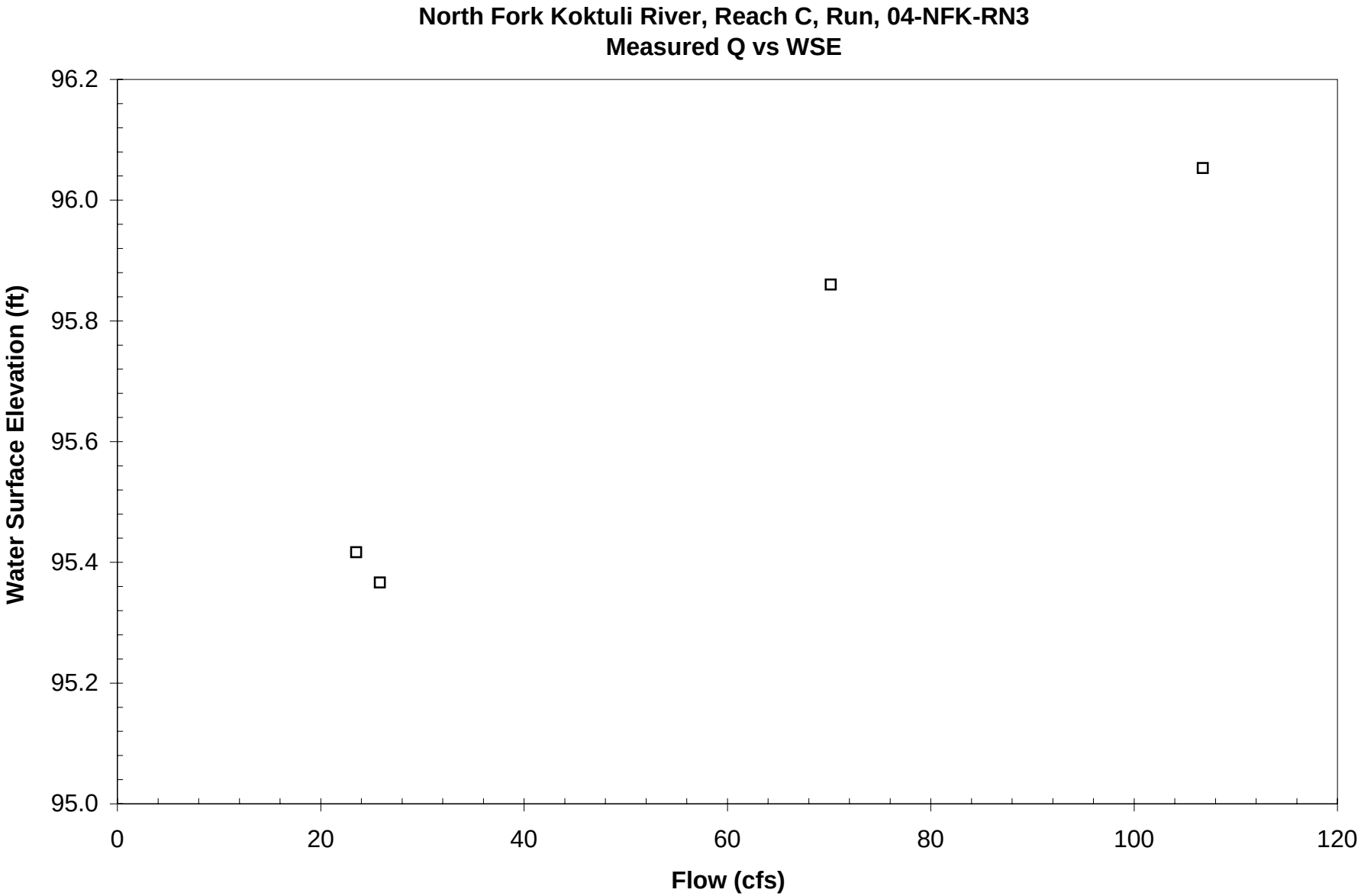
calibration notes

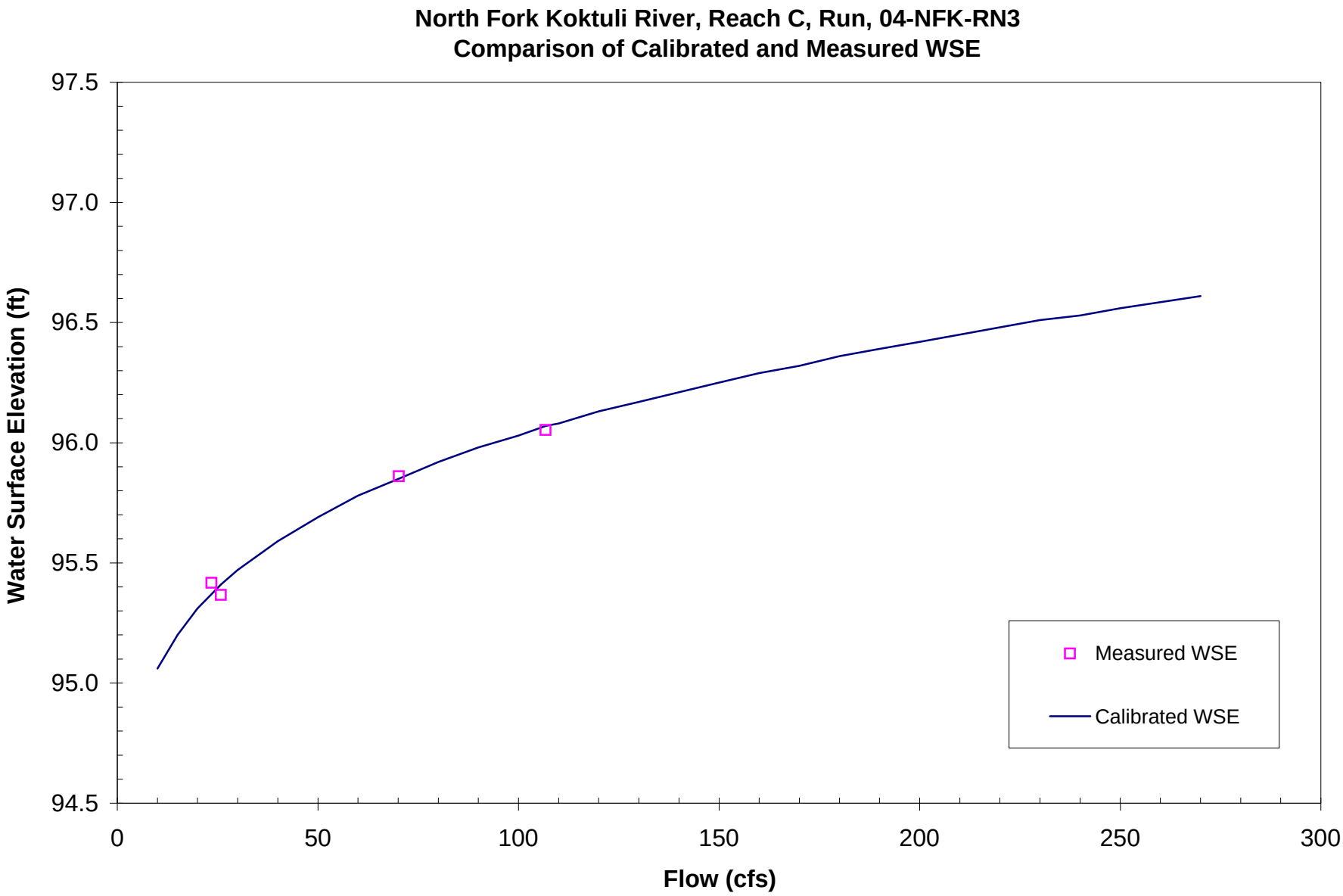
North Fork Koktuli River, Reach C, Run, 04-NFK-RN3
Measured Transect Profile



North Fork Koktuli River, Reach C, Run, 04-NFK-RN3
Longitudinal Water Surface Elevation Profiles



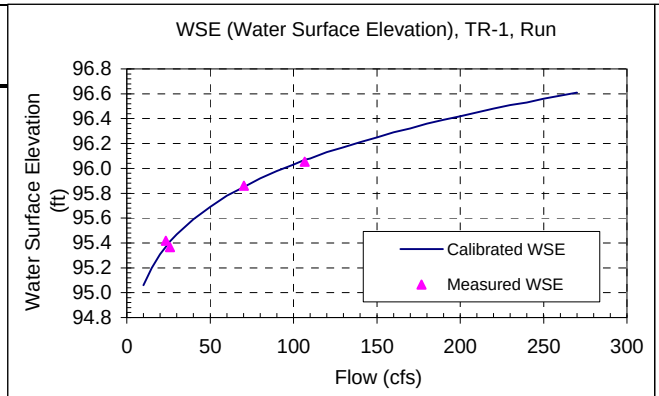

North Fork Koktuli River, Reach C, Run, 04-NFK-RN3
Measured Q vs WSE
Water Surface Elevation (ft)
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
20
40
60
80
100
120
Flow (cfs)

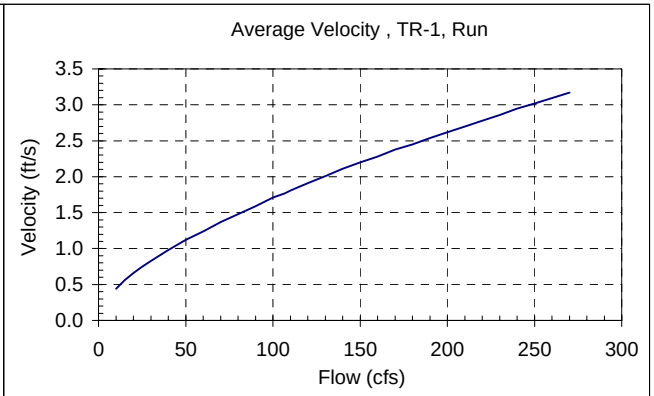

North Fork Koktuli River, Reach C, Run, 04-NFK-RN3
Comparison of Calibrated and Measured WSE
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
50
100
150
200
250
300
Flow (cfs)
Measured WSE
Calibrated WSE

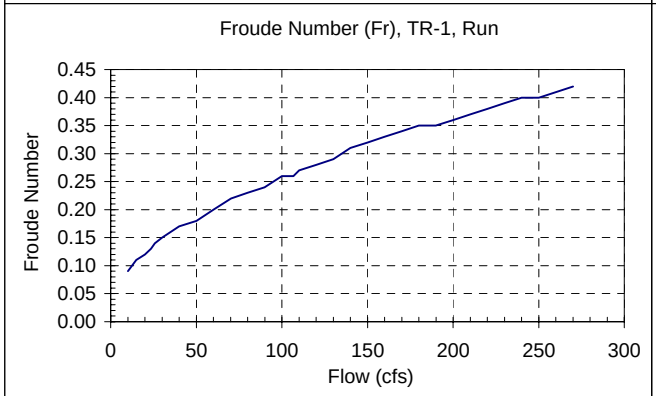
Stream: North Fork Koktuli River
Site Name: 04-NFK-RN2
Date: 6/21/2005
Calibration Flow: Q(6/21/2005)

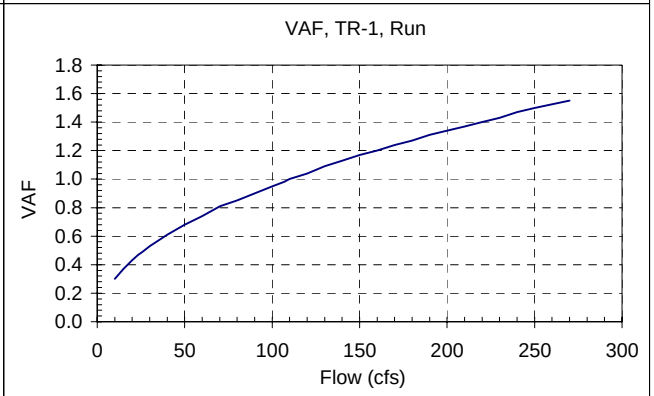
Reach: C
Site #: 3
Transect: 1
Habitat: Run

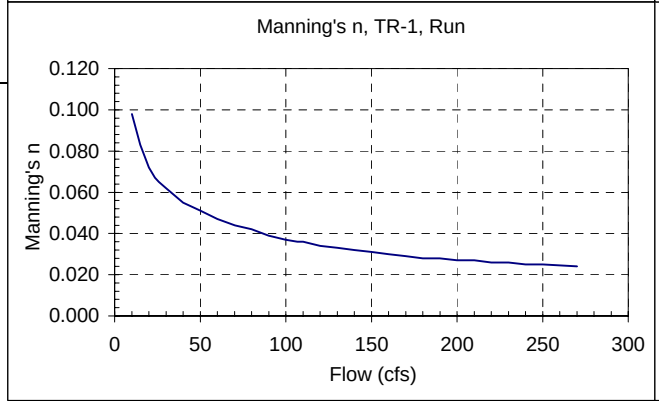
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
10	95.06	0.09	0.44	0.30	0.098	30.4
15	95.20	0.11	0.56	0.37	0.08	32.9
20	95.31	0.12	0.66	0.43	0.07	36.2
23.5	95.37	0.13	0.72	0.47	0.07	37.5
25.8	95.41	0.14	0.76	0.49	0.07	37.9
30	95.47	0.15	0.83	0.53	0.06	38.4
40	95.59	0.17	0.98	0.61	0.06	39.5
50	95.69	0.18	1.12	0.68	0.05	40.3
60	95.78	0.20	1.24	0.74	0.05	41.1
70.2	95.85	0.22	1.37	0.81	0.04	42.0
80	95.92	0.23	1.48	0.85	0.04	42.9
90	95.98	0.24	1.59	0.90	0.04	43.7
100	96.03	0.26	1.71	0.95	0.04	44.3
106.8	96.07	0.26	1.77	0.98	0.04	44.9
110	96.08	0.27	1.81	1.00	0.04	45.0
120	96.13	0.28	1.91	1.04	0.03	45.7
130	96.17	0.29	2.01	1.09	0.03	46.3
140	96.21	0.31	2.11	1.13	0.03	46.9
150	96.25	0.32	2.20	1.17	0.03	47.4
160	96.29	0.33	2.28	1.20	0.03	48.0
170	96.32	0.34	2.38	1.24	0.03	48.4
180	96.36	0.35	2.45	1.27	0.03	48.7
190	96.39	0.35	2.54	1.31	0.03	48.8
200	96.42	0.36	2.62	1.34	0.03	48.9
210	96.45	0.37	2.70	1.37	0.03	49.0
220	96.48	0.38	2.78	1.40	0.03	49.1
230	96.51	0.39	2.86	1.43	0.03	49.2
240	96.53	0.40	2.95	1.47	0.03	49.3
250	96.56	0.40	3.02	1.50	0.03	49.4
270	96.61	0.42	3.17	1.55	0.024	49.6

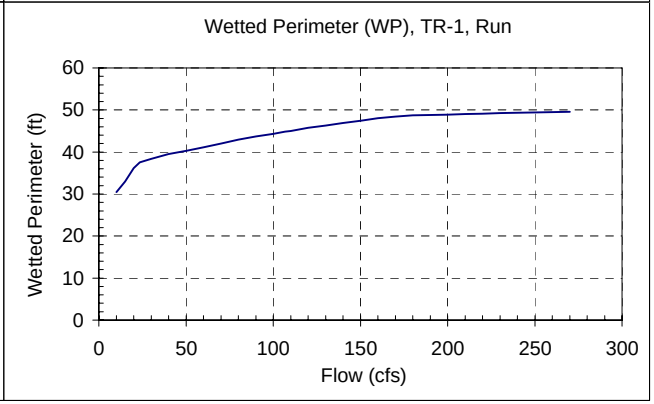




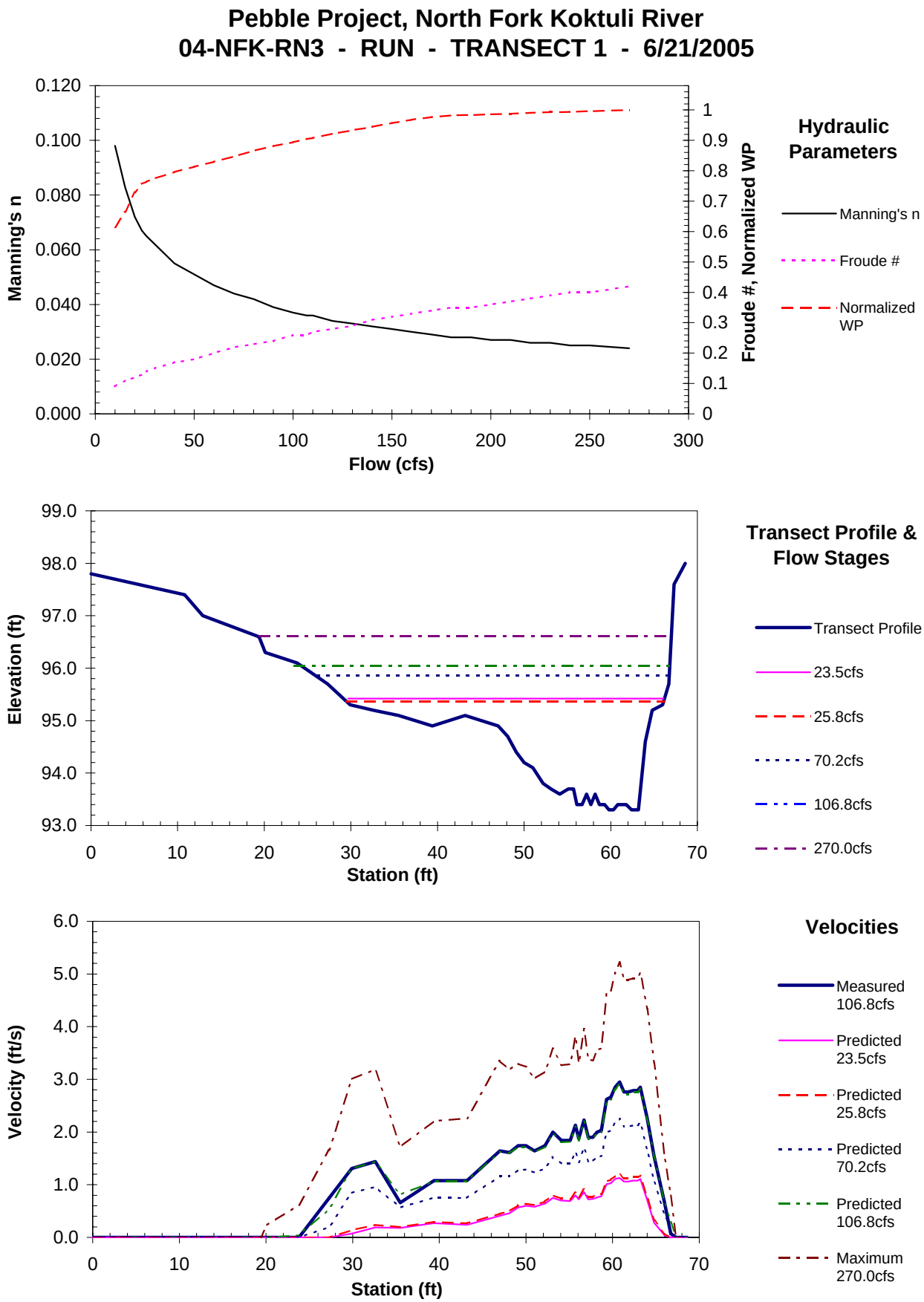








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
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QARD  15.0
QARD  20.0
QARD  23.5
QARD  25.8
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.2
QARD  80.0
QARD  90.0
QARD 100.0
QARD 106.8
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 270.0
XSEC  1000     1000. 1.0     93.42    .00127
      1000   .097.77 10.897.41 12.997.01 19.496.63 20.196.33 23.896.05
      1000 27.395.75 29.995.34 32.695.25 35.595.05 39.494.94 43.295.05
      1000 47.094.94 48.194.75 49.194.44 50.094.25 51.094.05 52.293.84
      1000 53.193.65 54.193.55 55.193.65 55.793.65 56.193.44 56.793.44
      1000 57.293.55 57.793.44 58.293.55 58.793.44 59.393.44 59.893.34
      1000 60.393.34 60.893.44 61.393.44 61.893.44 62.493.34 62.993.34
      1000 63.293.34 64.094.55 64.895.15 66.095.34 66.795.65 67.397.63
      1000 68.697.98
NS    1000      22.9      22.9      22.9      23.9 0.15 23.9 .09  32.7
NS    1000 .045 23.9      22.9      23.9 .065 23.6      32.6      42.8
NS    1000      42.9      43.8      43.8      43.8      43.8      45.9
NS    1000      42.9      42.9      45.9      45.9      45.9      42.9
NS    1000      42.9      43.9      43.9      43.8      43.8      43.9
NS    1000      43.9      42.9      43.8      42.7      23.6      23.6
NS    1000      23.7      23.6      23.7      23.9 .1   23.9 .5   22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9
WSL   1000     95.06     95.20     95.31     95.37     95.41     95.47
WSL   1000     95.59     95.69     95.78     95.85     95.92     95.98
WSL   1000     96.03     96.07     96.08     96.13     96.17     96.21
WSL   1000     96.25     96.29     96.32     96.36     96.39     96.42
WSL   1000     96.45     96.48     96.51     96.53     96.56     96.61
CAL1  1000     96.05     106.8
VEL1  1000                          0.00 0.75 1.31 1.44 0.66 1.08 1.08
VEL1  1000 1.64 1.61 1.74 1.74 1.64 1.74 2.00 1.84 1.84 2.13 1.87 2.23
VEL1  1000 1.90 1.90 2.00 2.03 2.62 2.66 2.85 2.95 2.76 2.76 2.79 2.79
VEL1  1000 2.85 2.26 1.54 0.66 0.07
CAL2  1000     95.42      23.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.86      70.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.37      25.8
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: North Fork Koktuli River

Reach: NFK-C

Site/TR: 04-NFK-IC2

Habitat Type: Island Complex

River Kilometer: 33.65

Stream North Fork Koktuli River
Site: 04-NFK-IC2
Habitat Type: Island Complex

(1) Field Data

Level Loop and Headpin Elevations:

Trip	Date	BM	HP	TP
1st	6/22/2005	100.00	98.30	98.22
2nd	7/22/2005	100.00	98.31	98.23
3rd	8/14/2005	100.00	98.29	98.22
4th	6/28/2006	100.00	98.29	98.17
5th	4/13/2007	100.00	98.41	98.26
6th	7/19/2007	100.00	98.42	98.28

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes of the control pins indicated the pins may have moved as much as 0.1ft from 2005 and 2007.
(c) It is not able to determined which pin(s) had been disturbed from the survey pin elevations. The field notes indicated BM was a nail on the tree trunk, which should be more stable than a rebar driven into the ground for TP/HP that were subject to frost heave in the winter. Therefore, the BM is assumed to be stable during the survey period of 2+ yrs.

calibration notes

Measured WSE:

This transect is an island complex with a main channel, a center channel, and a side channel.
Each channel has three measured WSEs (i.e., Right, Mid, Left). Average of the three measured WSEs is used as the representative WSE of the channel, as summarized below.

Date	WSE (ft)		
	Left (main)	Center	Right (side)
6/22/2005	96.95	96.57	97.30
7/22/2005	96.68	96.37	97.09
8/14/2005	96.46	96.20	96.88
6/28/2006	96.69	96.44	97.02
4/13/2007	99.39	Dry	99.71
7/19/2007	96.38	96.21	96.86

Left WSE is used for modeling, because left channel carries more water.
Bed elevations of the other two channels were adjusted based on the difference in WSEs between the main channel and each of the other two channels in order to meet the one-WSE requirement for modeling.

Discharge:

All measured discharges are listed in the following table.

Date	Flow (cfs)			
	Left (main)	Center	Right (side)	Total
6/22/2005	72.8	4.5	14.7	92.0
7/22/2005	NA			
8/14/2005	37.9	0.0	-0.4	37.5
6/28/2006	63.1	3.5	3.9	70.5
4/13/2007	2.4	NA	0.0	2.4
7/19/2007	31.5	0.1	0.6	32.2

(1) No discharge was measured in the 7/22/05 site visit.
(2) Ice heavily affected the hydraulics of 4/13/07 survey. Data are not used for modeling.

calibration notes

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)		
	Left (main) Channel	Center Channel	Right (side) Channel
6/22/2005	0.660%	0.448%	0.026%
7/22/2005	0.486%	0.478%	-0.026%
8/14/2005	0.378%	NA	-0.012%
6/28/2006	0.471%	NA	0.029%
4/13/2007	NA	NA	NA
7/19/2007	0.457%	NA	0.000%

The slope S=0.660% of 6/22/05 survey was used for hydraulic modeling.

Date	WSE Slope Distance (ft)		
	Left (main) Channel	Center Channel	Right (side) Channel
6/22/2005	57.6	67	76
7/22/2005	57.6	67	76
8/14/2005	140.1	NA	83.1
6/28/2006	104	NA	68.8
4/13/2007	NA	NA	NA
7/19/2007	102.90	NA	81.00

NA indicates either no slope measured or channel dry at the time of measurement.

calibration notes

SZF (Stage of Zero Flow):

Date	Left (Main) Channel Invert (ft)	
6/22/2005	94.45	
7/22/2005		
8/14/2005	94.56	
6/28/2006	94.59	
4/13/2007	97.49	ice impact, data not reliable
7/19/2007	94.63	
Invert	97.49	
SZF	94.63	

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/22/05
(4) Transect of 4/13/07 was under more than 4 feet of ice. Data not reflect the actual bed profile.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/22/2005	92.0	96.95	96.91	-0.04	IFG4
2nd	7/22/2005					
3rd	8/14/2005	37.5	96.46	96.44	-0.02	IFG4
4th	6/28/2006	70.5	96.69	96.76	0.07	IFG4
5th	4/13/2007					
6th	7/19/2007	32.2	96.38	96.37	-0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration erro 0.07ft is within acceptable range.
(c) No discharge was measured in 7/22/05 site visit.
(d) Hydraulics of 4/13/07 survey was severely affected by ice. Surveyed data not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 32.2cfs to 92.0cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

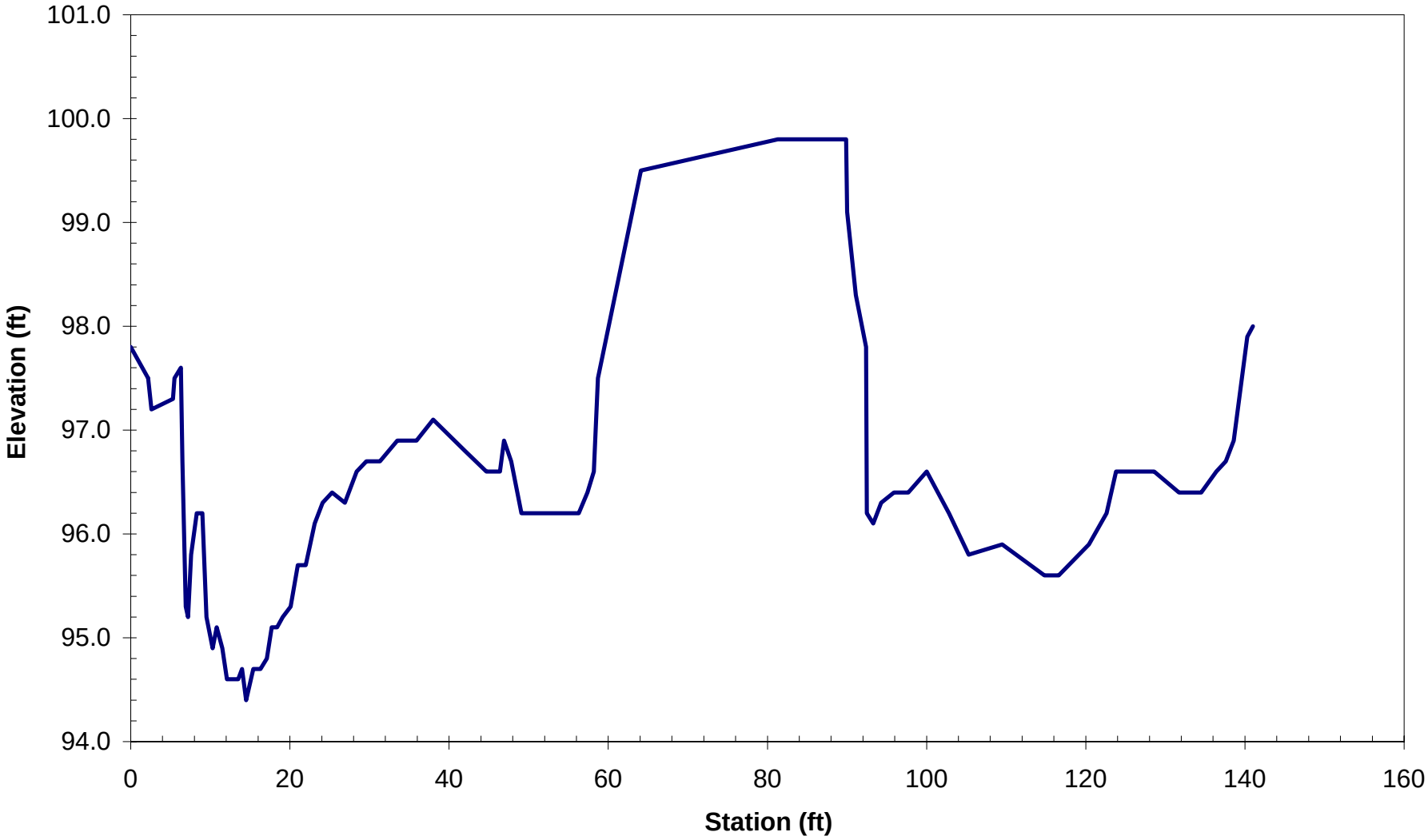
Survey Date	Q (cfs)	WUA (Y/N)
6/22/2005	92.0	Y
7/22/2005		
8/14/2005	37.5	Y
6/28/2006	70.5	Y
4/13/2007		
7/19/2007	32.2	

(4) Hydraulic Calibration Results:

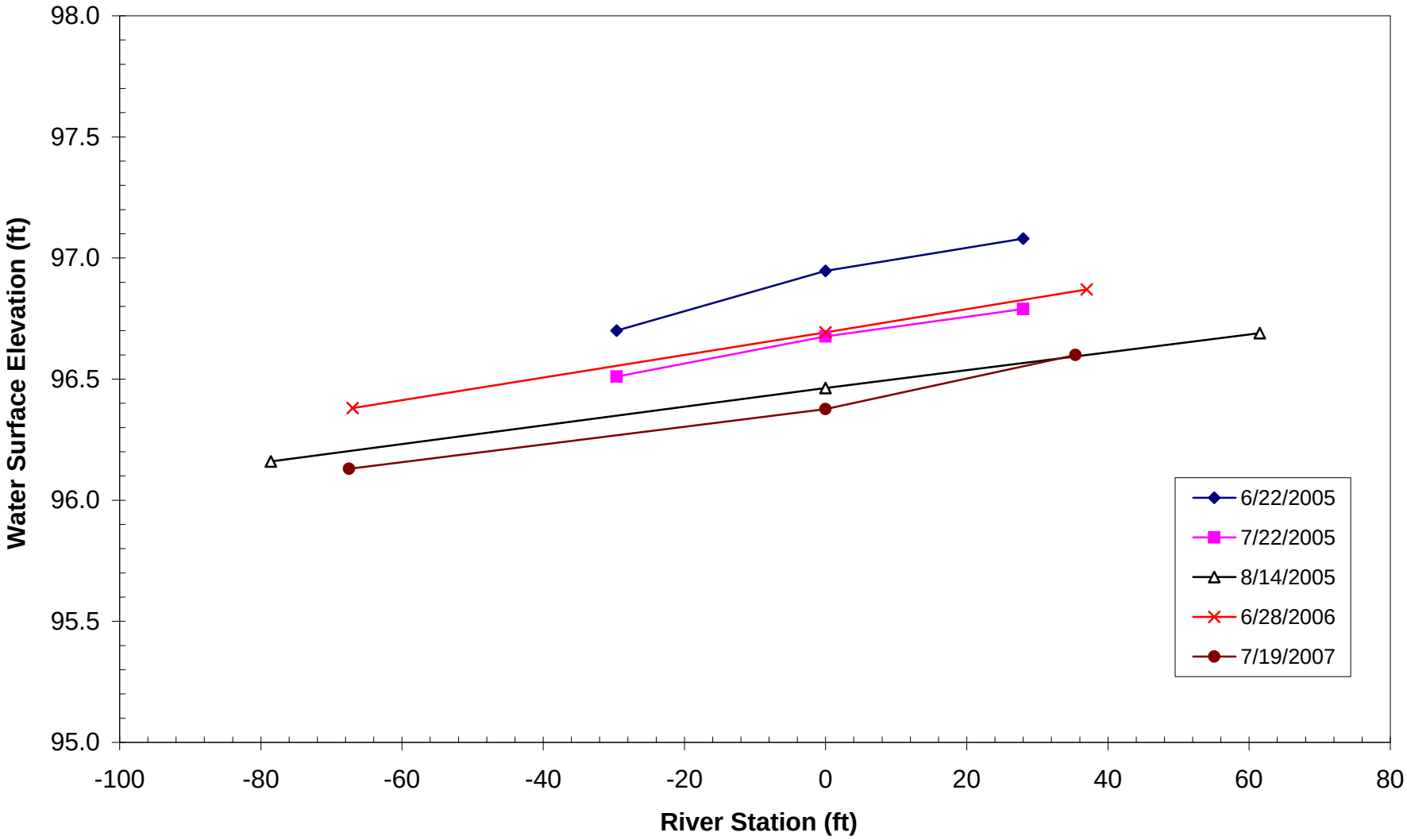
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter)
are all within reasonable ranges and appear to vary in normal trends as flow increases.

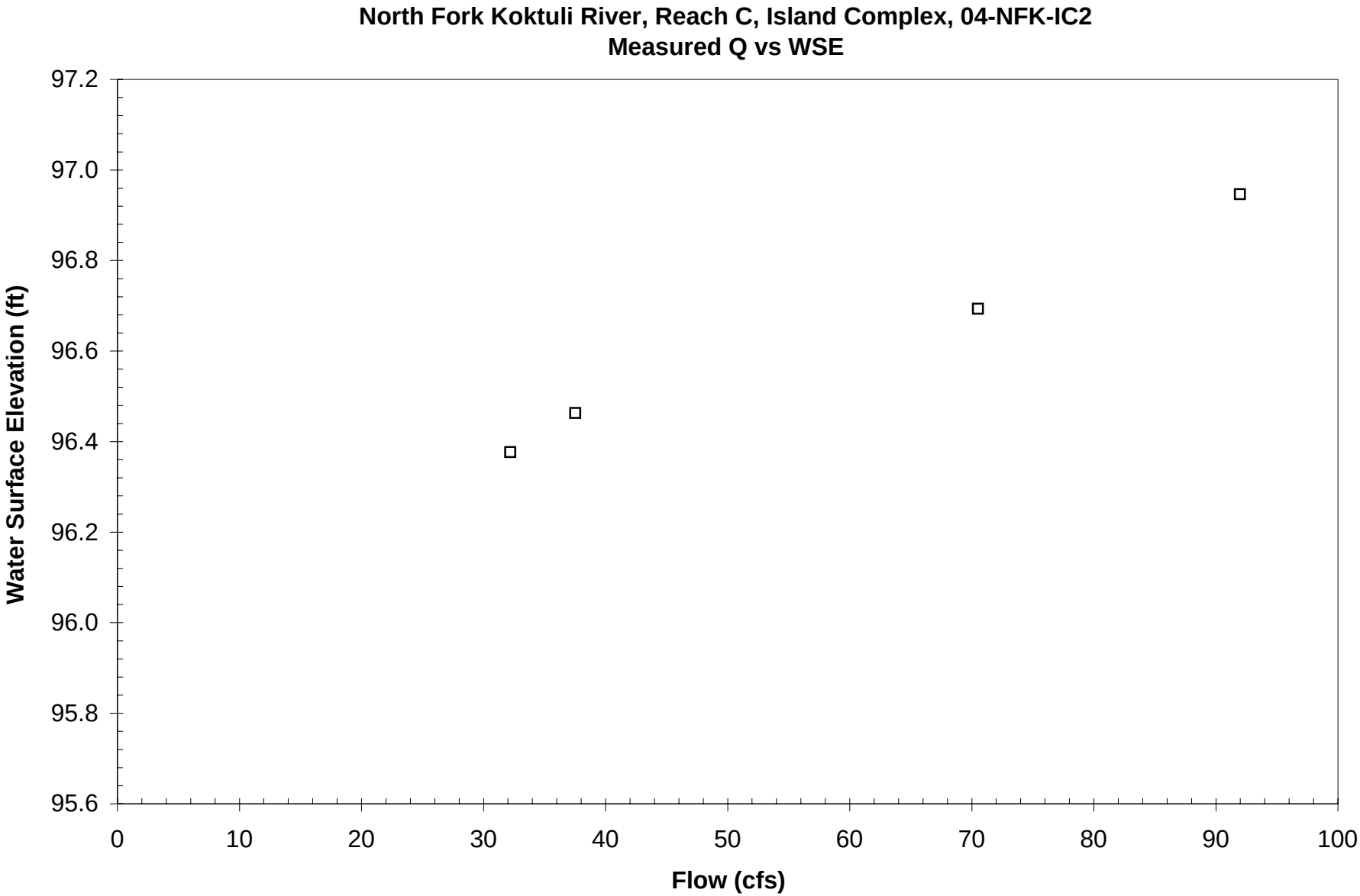
calibration notes

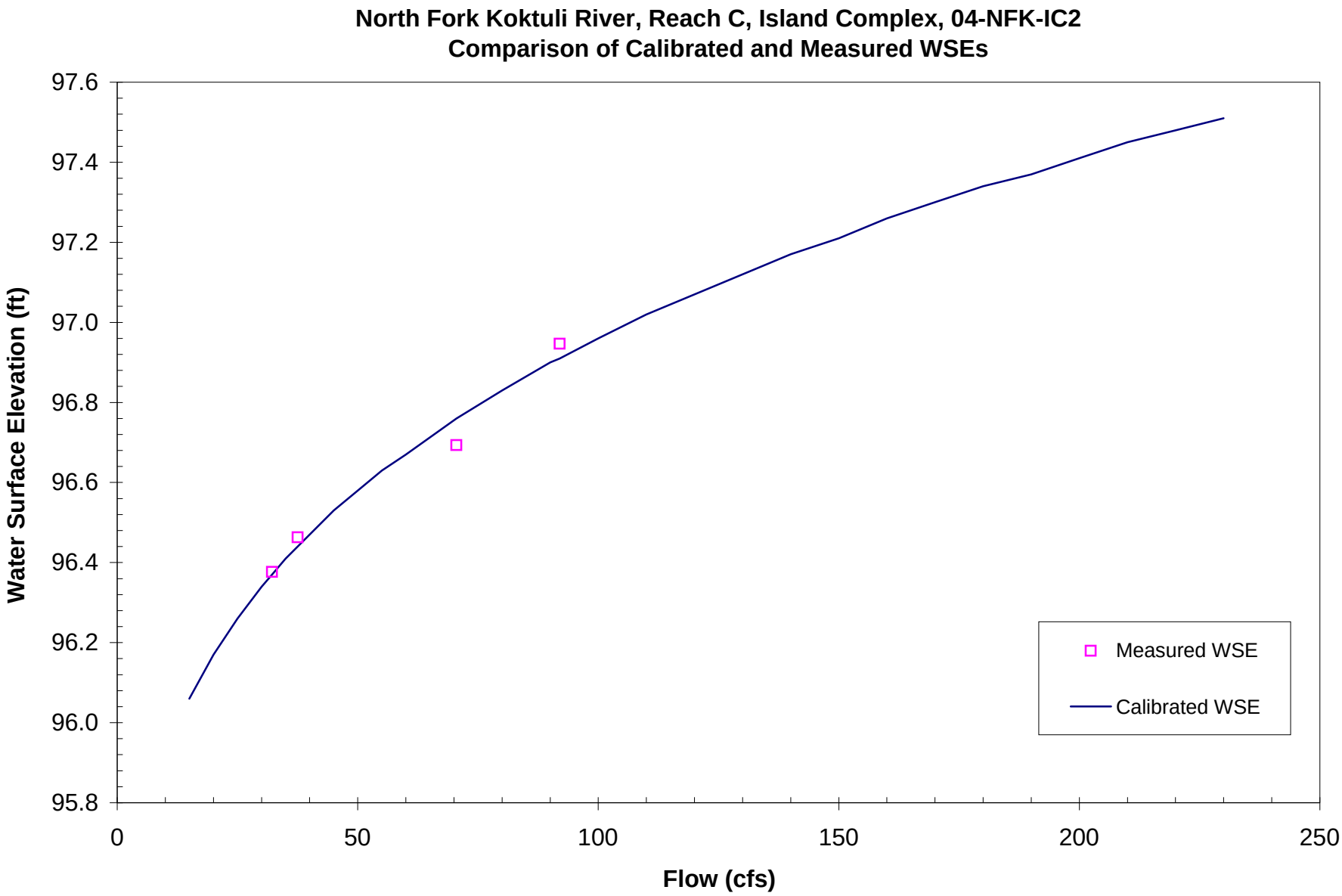
North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC2
Measured Transect Profile



North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC2 (Main Channel)
Longitudinal Water Surface Elevation Profiles



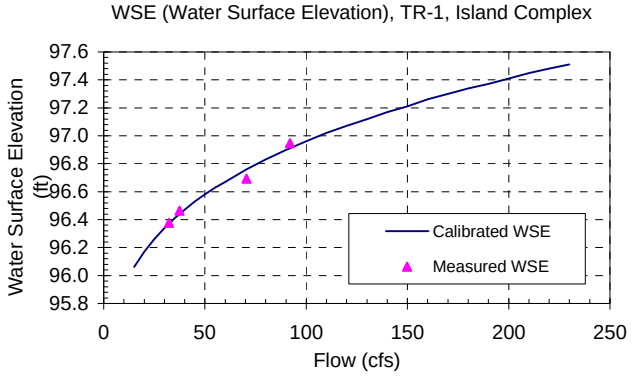

North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC2
Measured Q vs WSE
Water Surface Elevation (ft)
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
0
10
20
30
40
50
60
70
80
90
100
Flow (cfs)

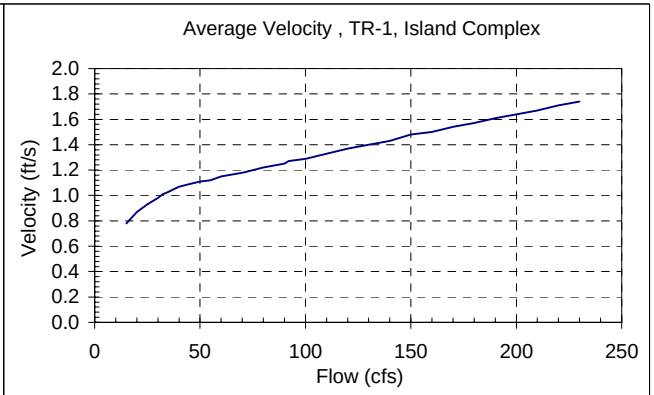

North Fork Koktuli River, Reach C, Island Complex, 04-NFK-IC2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
0
50
100
150
200
250
Flow (cfs)
Measured WSE
Calibrated WSE

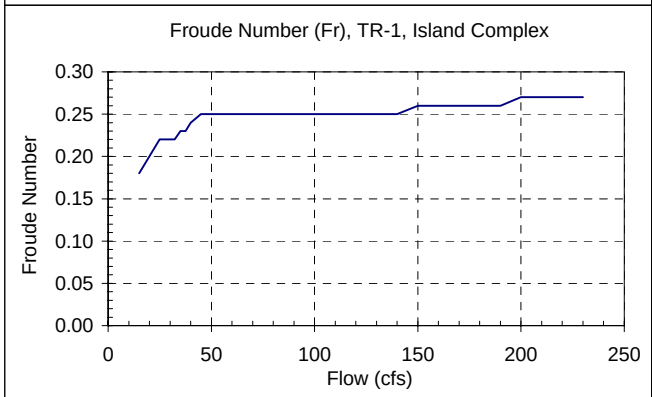
Stream: North Fork Koktuli River
Site Name: 04-NFK-IC2
Date: 6/22/2005
Calibration Flow: NA

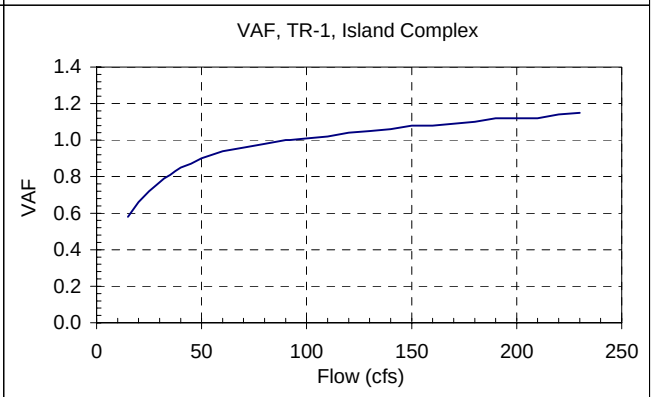
Reach: 2
Site #: 2
Transect: 1
Habitat: Island Complex

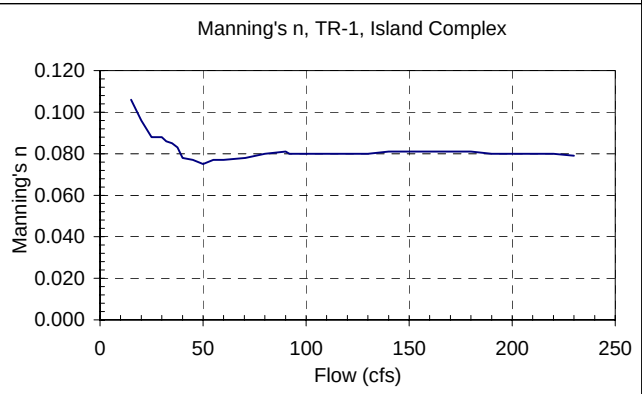
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
15	96.06	0.18	0.78	0.58	0.106	34.6
20	96.17	0.20	0.87	0.66	0.10	40.5
25	96.26	0.22	0.93	0.72	0.09	48.3
30	96.34	0.22	0.98	0.77	0.09	50.8
32.2	96.37	0.22	1.01	0.79	0.09	52.6
35	96.41	0.23	1.03	0.81	0.09	55.7
37.5	96.44	0.23	1.05	0.83	0.08	57.9
40	96.47	0.24	1.07	0.85	0.08	65.5
45	96.53	0.25	1.09	0.87	0.08	71.9
50	96.58	0.25	1.11	0.90	0.08	79.6
55	96.63	0.25	1.12	0.92	0.08	80.8
60	96.67	0.25	1.15	0.94	0.08	83.9
70.5	96.76	0.25	1.18	0.96	0.08	88.7
80	96.83	0.25	1.22	0.98	0.08	91.3
90	96.90	0.25	1.25	1.00	0.08	93.9
92	96.91	0.25	1.27	1.00	0.08	94.2
100	96.96	0.25	1.29	1.01	0.08	98.6
110	97.02	0.25	1.33	1.02	0.08	100.4
120	97.07	0.25	1.37	1.04	0.08	101.9
130	97.12	0.25	1.40	1.05	0.08	103.2
140	97.17	0.25	1.43	1.06	0.08	103.4
150	97.21	0.26	1.48	1.08	0.08	103.7
160	97.26	0.26	1.50	1.08	0.08	105.1
170	97.30	0.26	1.54	1.09	0.08	106.9
180	97.34	0.26	1.57	1.10	0.08	107.3
190	97.37	0.26	1.61	1.12	0.08	107.5
200	97.41	0.27	1.64	1.12	0.08	107.9
210	97.45	0.27	1.67	1.12	0.08	108.2
220	97.48	0.27	1.71	1.14	0.08	108.5
230.0	97.51	0.27	1.74	1.15	0.079	109.1

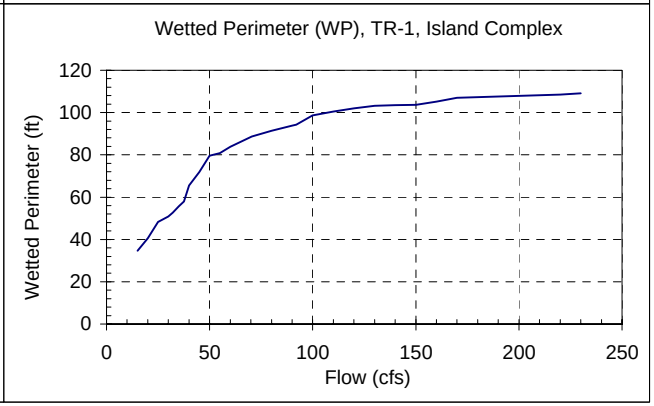




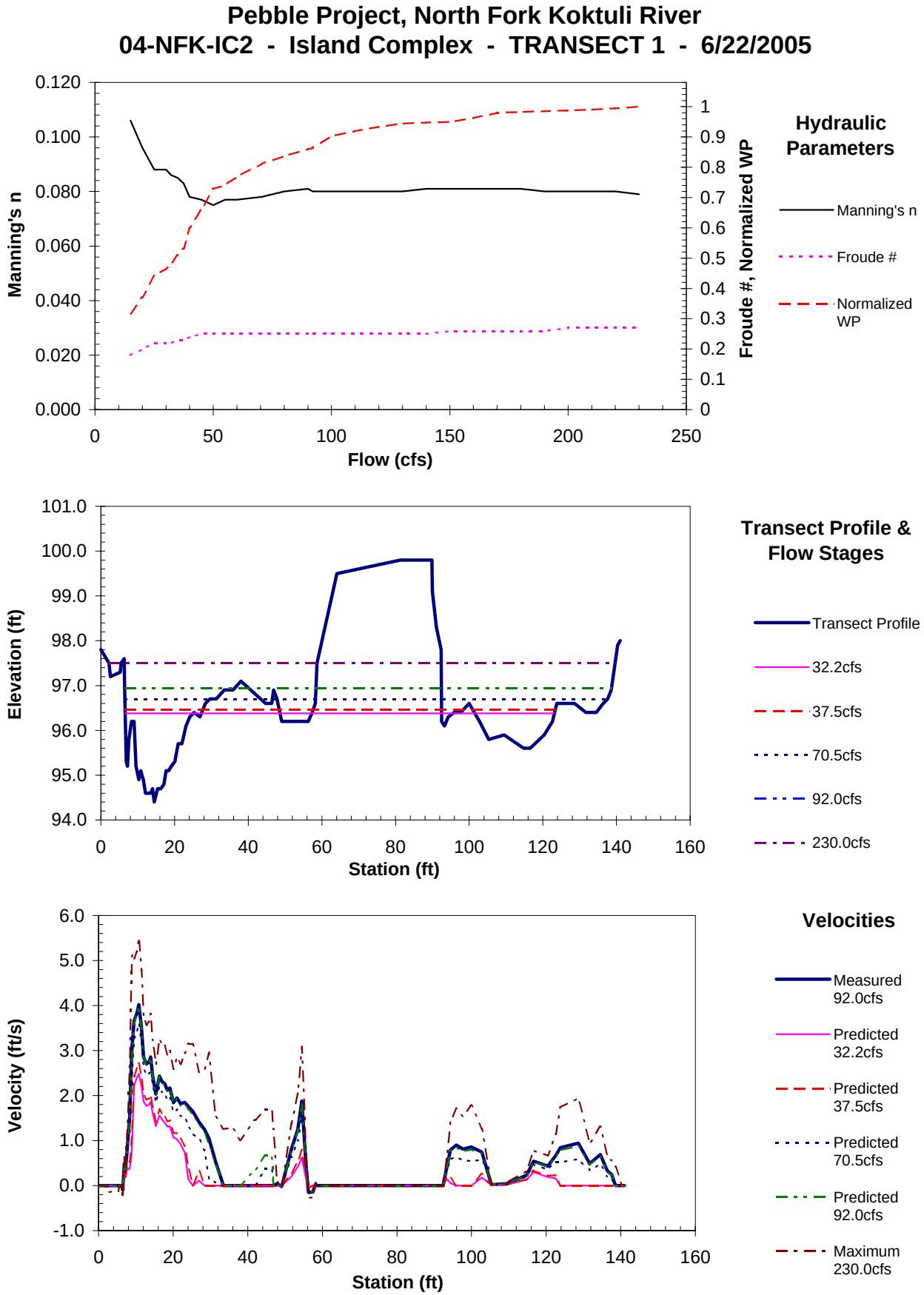








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-NFK-IC2  06/22/05
ISLAND                     0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  15.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  32.2
QARD  35.0
QARD  37.5
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  70.5
QARD  80.0
QARD  90.0
QARD  92.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
XSEC  1000     1000. 1.0     94.63    .00660
      1000   .097.82  2.297.50  2.697.23  5.397.30  5.597.47  6.397.55
      1000  6.596.75  6.995.35  7.295.25  7.695.85  8.396.25  8.896.25
      1000  9.096.15  9.595.15 10.394.95 10.895.05 11.594.95 12.194.55
      1000 12.894.55 13.594.55 14.094.65 14.594.45 15.494.65 16.394.75
      1000 17.194.85 17.795.05 18.495.05 19.195.15 20.195.35 21.095.65
      1000 22.095.75 23.196.05 24.196.35 25.396.45 26.996.35 28.496.55
      1000 29.696.75 31.396.75 33.596.95 35.996.93 38.097.11 42.096.81
      1000 44.796.64 46.496.64 46.996.95 47.896.65 49.196.25 51.796.25
      1000 53.496.15 54.596.15 55.696.15 56.396.25 57.496.45 58.296.55
      1000 58.797.49 64.199.52 81.399.81 89.999.76 90.099.09 91.198.28
      1000 92.497.84 92.596.25 93.396.05 94.396.35 95.996.45 97.796.45
      1000100.096.55102.896.25105.395.85109.595.95114.895.55116.695.55
      1000120.495.95122.696.25123.896.55128.696.55131.796.45134.596.45
      1000136.496.55137.696.65138.696.95140.397.95141.097.97
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      23.8      23.8      25.6      25.6      52.8      52.8
NS    1000      25.7      52.6      42.6      45.6      45.6      45.6
NS    1000      45.7      54.7      45.7      45.6      45.8      43.8
NS    1000      43.8      43.8      43.8      43.8      43.8      43.7
NS    1000      43.9      43.7      43.8      43.7      43.7      43.9
NS    1000      43.8      43.8      43.7      23.8      23.6      43.6
NS    1000      34.7      34.8      32.6      23.7      23.9      23.6
NS    1000      32.7      32.8      23.6      23.7      23.8      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      23.8      23.8      23.6      32.6      23.6      43.7
NS    1000      42.7      23.9      23.9      24.9      23.7      24.6
NS    1000      32.9      23.6      32.6      32.9      34.8      34.8
NS    1000      23.7      23.9      22.9      22.9      22.9
WSL   1000     96.06     96.17     96.26     96.34     96.37     96.41
WSL   1000     96.44     96.47     96.53     96.58     96.63     96.67
WSL   1000     96.76     96.83     96.90     96.91     96.96     97.02
WSL   1000     97.07     97.12     97.17     97.21     97.26     97.30
WSL   1000     97.34     97.37     97.41     97.45     97.48     97.51
CAL1  1000     96.95      92.0
VEL1  1000                                -0.10 0.49 0.30 0.75 1.51 2.79
VEL1  1000 3.13 3.66 3.83 4.02 3.52 2.86 2.70 2.75 2.86 2.45 2.03 2.43
VEL1  1000 2.30 2.27 2.12 2.17 1.84 1.95 1.82 1.85 1.76 1.65 1.41 1.25
VEL1  1000 1.05 0.55 0.00                      0.00 0.04-0.02 0.81
VEL1  1000 1.25 1.88 0.51-0.15-0.14 0.03
VEL1  1000      0.06 0.38 0.79 0.90 0.81 0.86 0.74 0.02 0.04 0.23 0.54
VEL1  1000 0.43 0.67 0.84 0.94 0.49 0.69 0.33 0.24 0.00
CAL2  1000     96.46      37.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.69      70.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     96.38      32.2
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
```

IFG4 Data Deck (continued)

```
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

PHABSIM Hydraulic Model Calibration Details

Stream: North Fork Koktuli River Tributary 1.190

Reach: NFK-1.190 (NFK-C)

NFK 1.190 Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)					Measured WSE(ft)					WSE Calibration Error (ft)					Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_5	Q_1	Q_2	Q_3	Q_4	Q_5	Q_1	Q_2	Q_3	Q_4	Q_5	
08-NFK-190	0.15	73.9	31.6	12.6			97.21	96.75	96.38			0.00	-0.01	0.00			IFG4
08-NFK-190	0.17	73.9	31.6	12.6			97.36	96.83	96.43			0.00	-0.01	0.01			IFG4
08-NFK-190	0.18	73.9	31.6	12.6			97.56	97.07	96.60			-0.01	-0.03	0.05			WSP

* RK is an abbreviation for River Kilometer

Stream: North Fork Koktuli River Tributary 1.190

Reach: NFK-1.190 (NFK-C)

Site: 08-NFK-190

TR1:	08-NFK-190-TR1	**Habitat Type:**	Pool	**River Kilometer:**	0.15
TR2:	08-NFK-190-TR2	**Habitat Type:**	Run	**River Kilometer:**	0.17
TR3:	08-NFK-190-TR3	**Habitat Type:**	Riffle	**River Kilometer:**	0.18

Stream: **NF Koktuli River Tributary 1.190**
Reach: **Trib 190**
Site: **08-NFK-190**

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3
6/23/2008	100.00	99.40	100.26
7/26/2008	99.96	99.39	100.25
8/21/2008	99.96	99.40	100.25

(a) Elevations of control pins (BM's) are taken from the first half of each level loop survey
(b) Relative elevation changes between BM2 and BM3 were within ±0.01ft
(c) The small elevation changes indicated control pins were stable over the survey period

Measured WSE:

There are multiple WSEs measured across each transect for each flow, and the average of the measured WSEs is used as transect representative WSE for modeling.

	Measured WSE (ft)		
Date	TR-1	TR-2	TR-3
6/23/2008	97.21	97.36	97.56
7/26/2008	96.75	96.83	97.07
8/21/2008	96.38	96.43	96.60

Discharge:

All measured discharges are listed in the following table.

	Measured WSE (ft)			Ave
Date	TR-1	TR-2	TR-3	Q (cfs)
6/23/2008		76.2	71.6	73.9
7/26/2008	33.3	31.6	29.9	31.6
8/21/2008	11.8	12.0	13.9	12.6

No flow measured at TR-1 during the 6/23/08 site visit.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the measured WSEs and estimated distances.
The distances were determined from the GPS points and transect locations using GIS tools.
No distances were surveyed using a tape measure.

TR	River Station (ft)		
	TR-1	TR-2	TR-3
LB	0.00		
RB	0.00		
Ave	0.00	52.4	97.6
Station	0.00	52.4	97.6

Date	Slope (%) from TR-1		
	TR-1	TR-2	TR-3
6/23/2008	-	0.286%	0.364%
7/26/2008	-	0.143%	0.323%
8/21/2008	-	0.086%	0.220%
GPS	-	-	-

The distance of 52.4ft between TR-1 and TR-2 was determined by GIS tools on 12/9/2009
The distance of 45.2ft between TR-2 and TR-3 was determined by GIS tools on 12/9/2009
Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.
The TR-3 slope S=0.364% of 6/23/2008 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Discharge (cfs)		
	TR-1	TR-2	TR-3
6/23/2008		94.96	95.66
7/26/2008	94.25	95.03	95.67
8/21/2008	94.23	94.93	95.60
Invert	94.25	95.03	95.67
SZF	94.25	95.03	95.67

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
SZF of the upstream transect must be no less than that of its downstream transect.

calibration notes

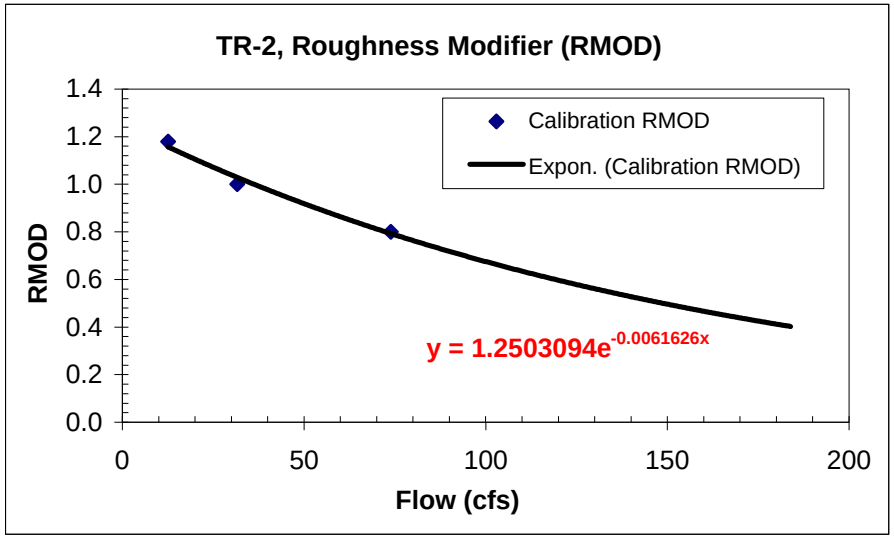
(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

TR-1 and TR-2 were calibrated using IFG4 and TR-3 was calibrated using WSP

WSP WSE calibration summary for TR-3:

Measured Flow (cfs)	Calibration RMOD
12.6	1.18
31.6	1.00
73.9	0.80



calibration notes

Simulation Q (cfs)	Estimated RMOD	Calibrated WSE (ft)
5	1.212	96.37
7	1.198	96.46
10	1.176	96.57
12.6	**1.157**	**96.65**
16	1.133	96.73
20	1.105	96.82
24	1.078	96.91
28	1.052	96.98
31.6	**1.029**	**97.03**
35	1.008	97.09
40	0.977	97.16
45	0.948	97.23
50	0.919	97.29
55	0.891	97.35
60	0.864	97.4
65	0.838	97.45
70	0.812	97.51
73.9	**0.793**	**97.55**
80	0.764	97.61
85	0.741	97.65
90	0.718	97.7
100	0.675	97.78
110	0.635	97.86
120	0.597	97.93
130	0.561	98.01
140	0.528	98.07
150	0.496	98.14
160	0.466	98.2
170	0.439	98.27
180	0.412	98.32

calibration notes

WSE Calibration Results:

Calibration results are summarized in the following table.

Survey Date	Q (cfs)	Measured WSE(ft)			Calibrated WSE(ft)		
		TR-1	TR-2	TR-3	TR-1	TR-2	TR-3
6/23/2008	73.9	97.21	97.36	97.56	97.21	97.36	97.55
7/26/2008	31.6	96.75	96.83	97.07	96.74	96.82	97.03
8/21/2008	12.6	96.38	96.43	96.60	96.38	96.43	96.65

Survey Date	Q (cfs)	WSE calibration error (ft)			WSE Calib. Method		
		TR-1	TR-2	TR-3	TR-1	TR-2	TR-3
6/23/2008	73.9	0.00	0.00	-0.01	IFG4	IFG4	WSP
7/26/2008	31.6	-0.01	-0.01	-0.03	IFG4	IFG4	WSP
8/21/2008	12.6	0.00	0.01	0.05	IFG4	IFG4	WSP

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum calibration error 0.05ft is within the acceptable range

(3) Velocity calibration

This site has three transects and each transect has 2 or 3 velocity/discharge measurements
TR-1 has two measured velocity profiles and TR-2 and TR-3 each has 3 measured profiles.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)		
		TR-1	TR-2	TR-3
6/23/2008	73.9		Y	Y
7/26/2008	31.6	Y	Y	Y
8/21/2008	12.6	Y	Y	Y

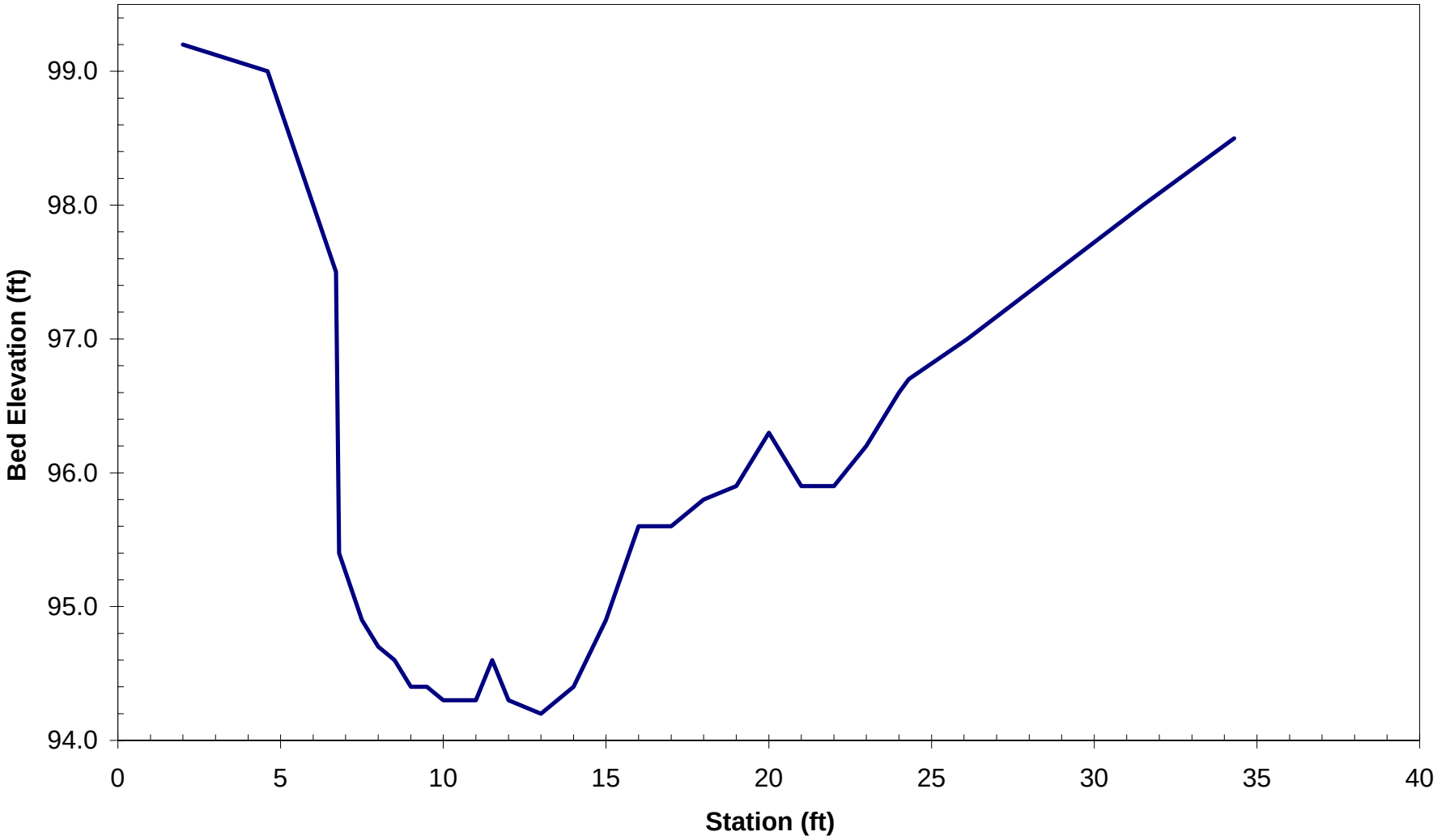
calibration notes

(4) Hydraulic Calibration Results:

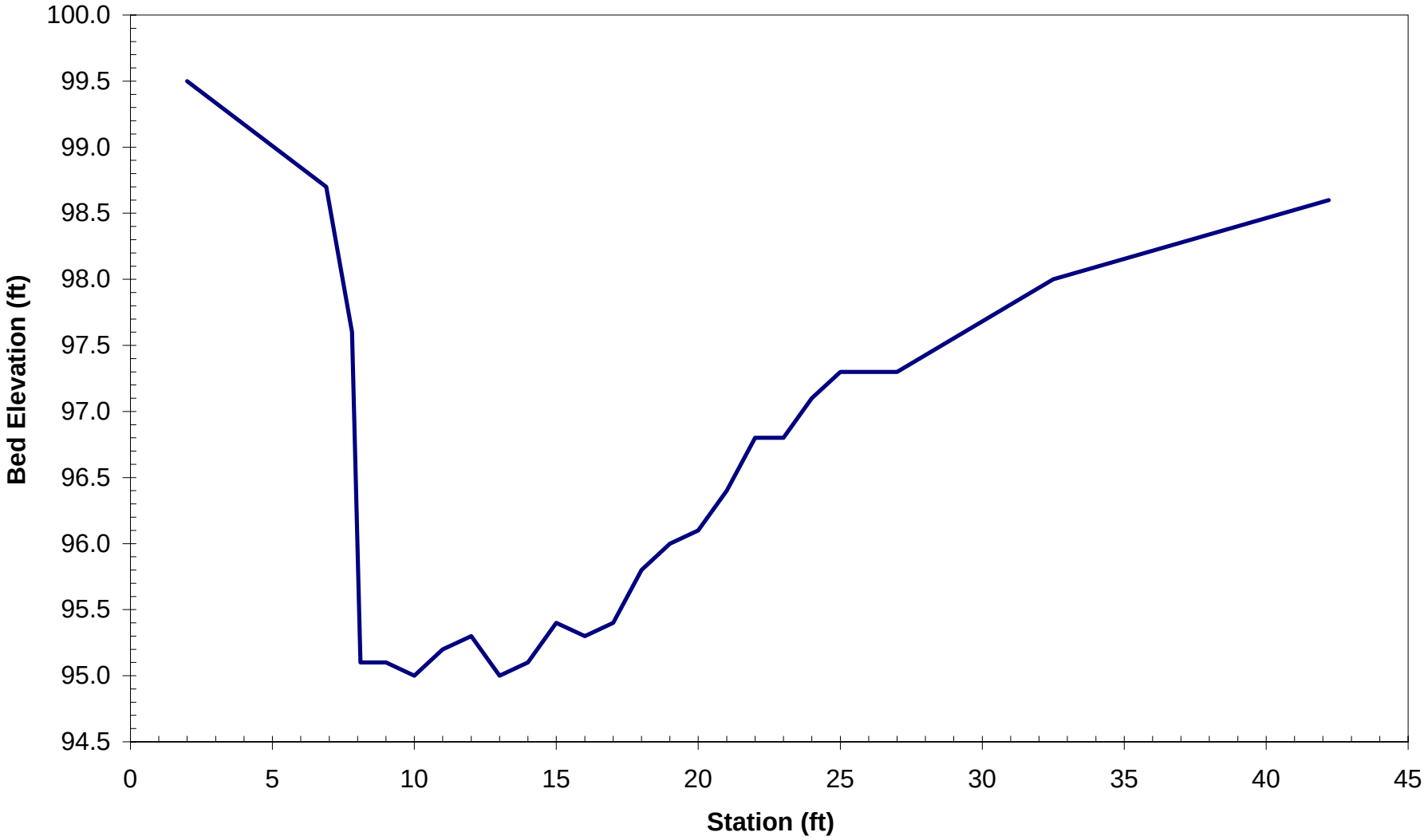
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges with correct trends except the Manning's n and Fr of TR-3. Photos show steep local bed slope just above TR-3 that creates faster flow condition at the transect as the flow is low. As the result, the Manning's n value would be relatively small (for the same assumed slope) and Fr relatively large. The local steep slope is drowned out as flows grow larger (e.g., Q>50cfs) when the Fr and Manning's n would return to the normal trend, as shown in the hydraulic model parameter figures for TR-3.

calibration notes

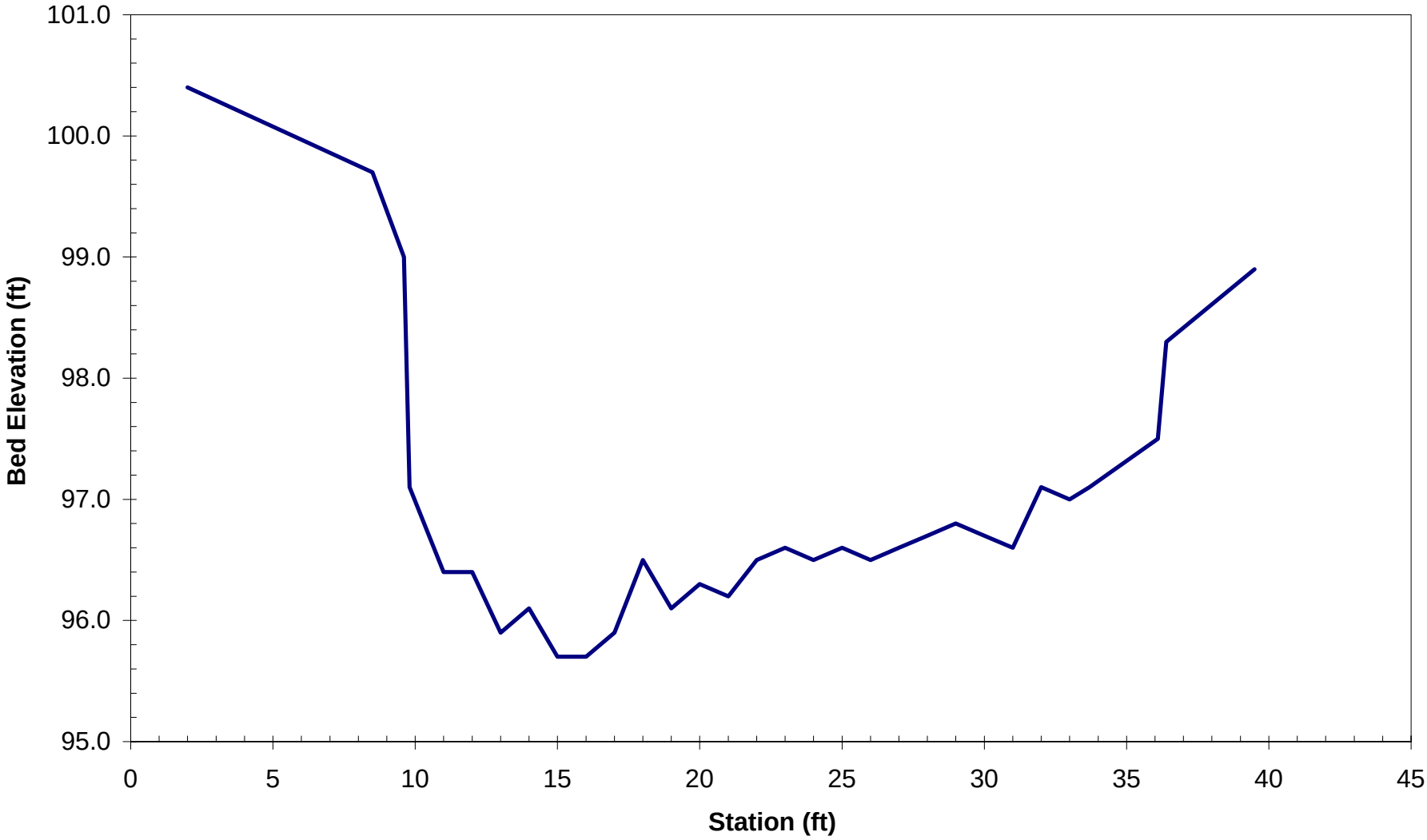
North Fork Koktuli River, Tributary 1.190, 08-NFK-190, TR1
Measured Transect Profile

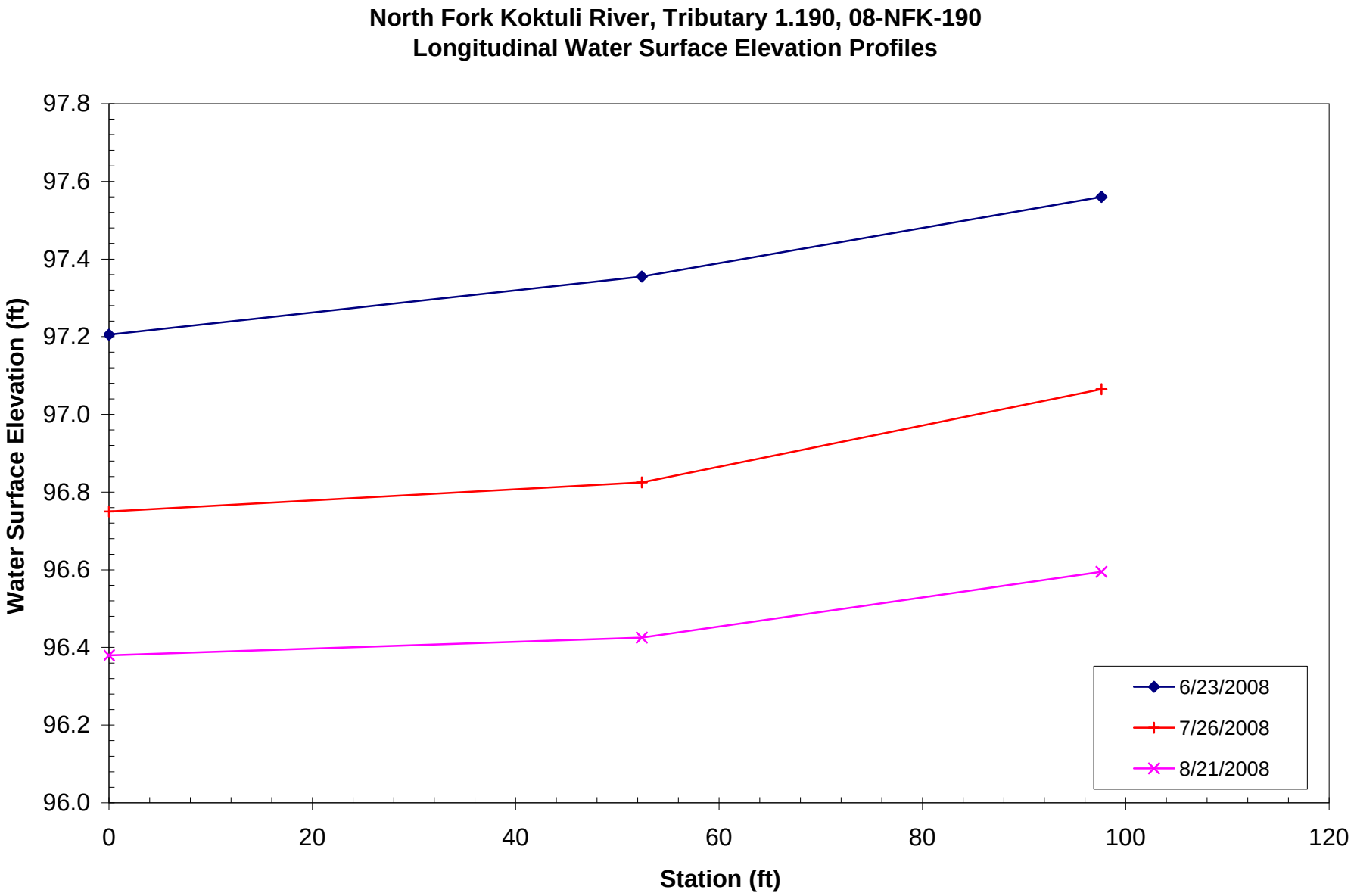


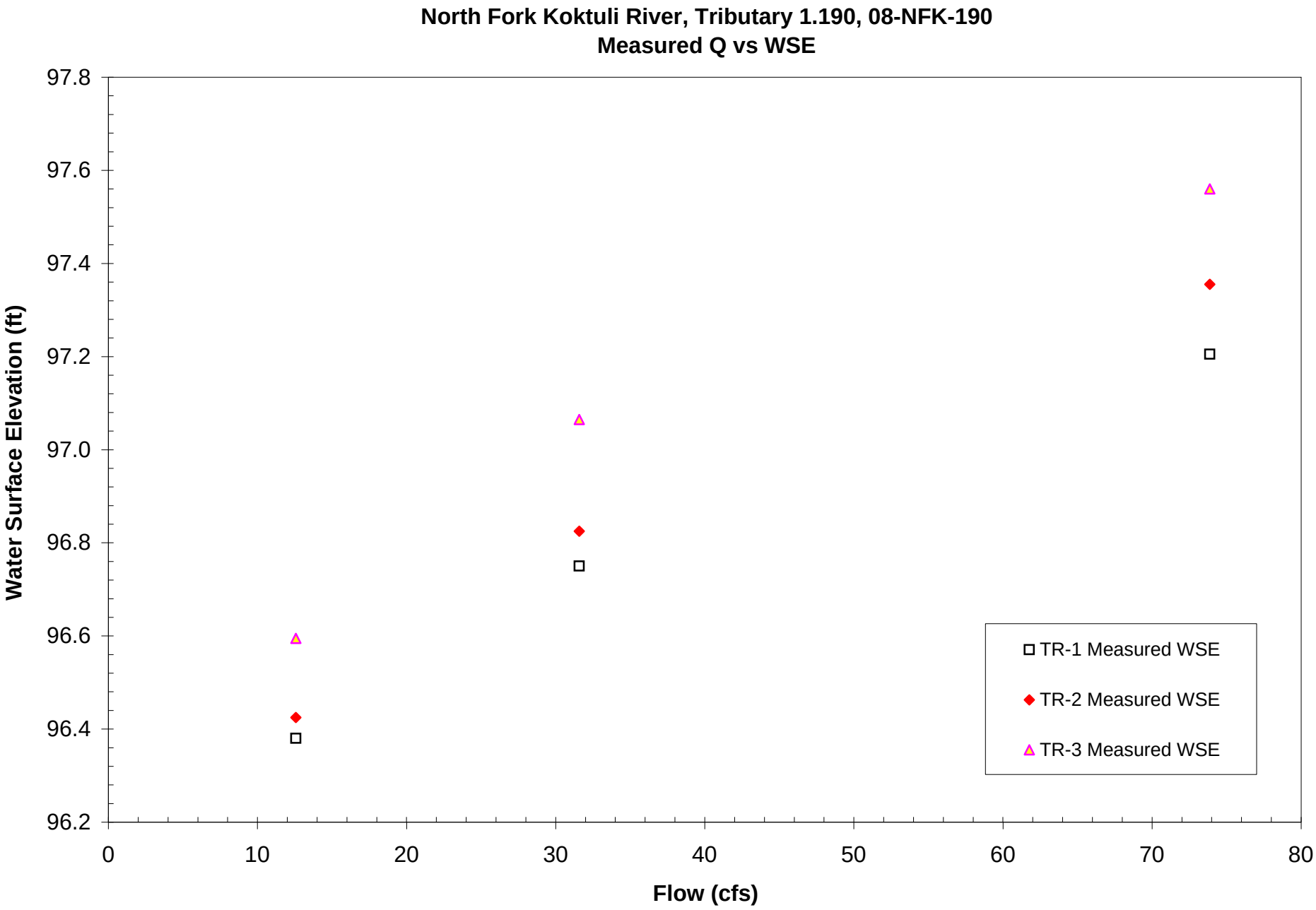
North Fork Koktuli River, Tributary 1.190, 08-NFK-190, TR2
Measured Transect Profile

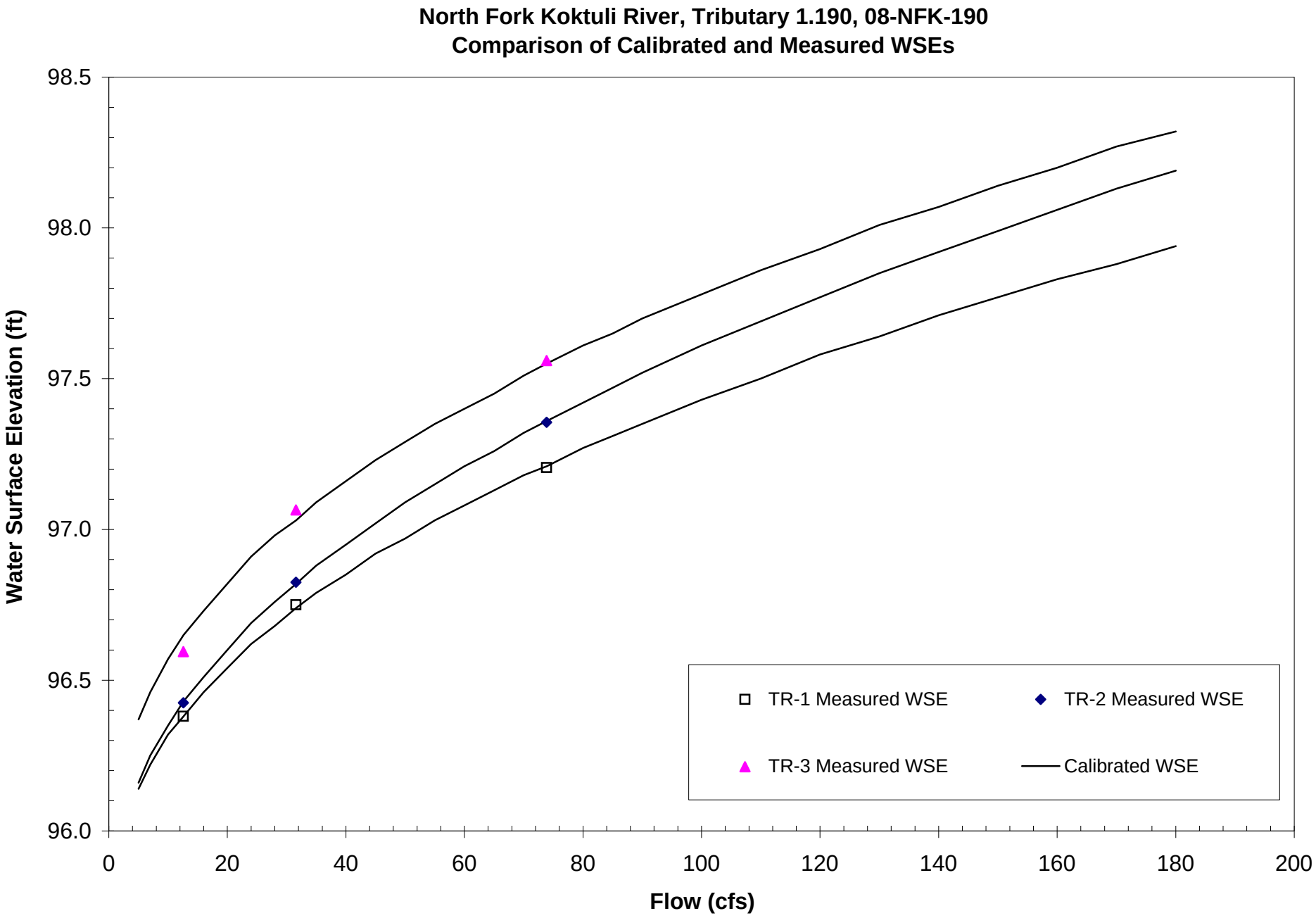


North Fork Koktuli River, Tributary 1.190, 08-NFK-190, TR3
Measured Transect Profile



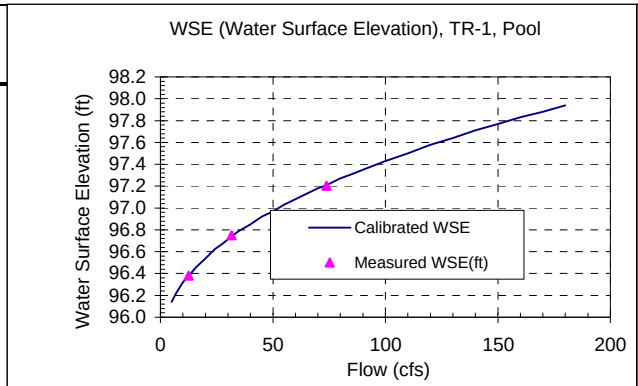

North Fork Koktuli River, Tributary 1.190, 08-NFK-190
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
20
40
60
80
100
120
Station (ft)
6/23/2008
7/26/2008
8/21/2008

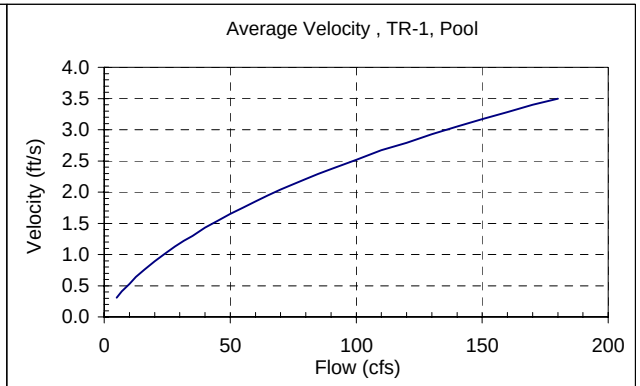

North Fork Koktuli River, Tributary 1.190, 08-NFK-190
Measured Q vs WSE
Water Surface Elevation (ft)
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
10
20
30
40
50
60
70
80
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE

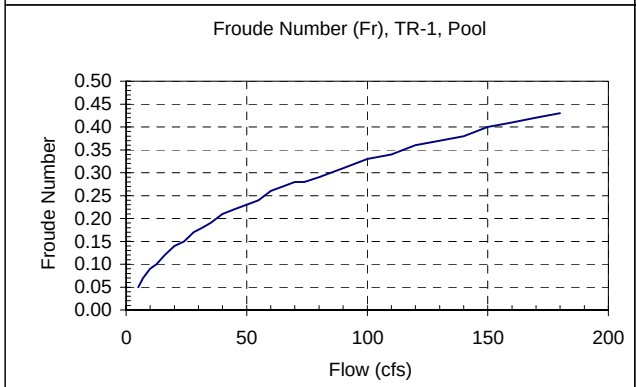

North Fork Koktuli River, Tributary 1.190, 08-NFK-190
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.5
98.0
97.5
97.0
96.5
96.0
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
Calibrated WSE

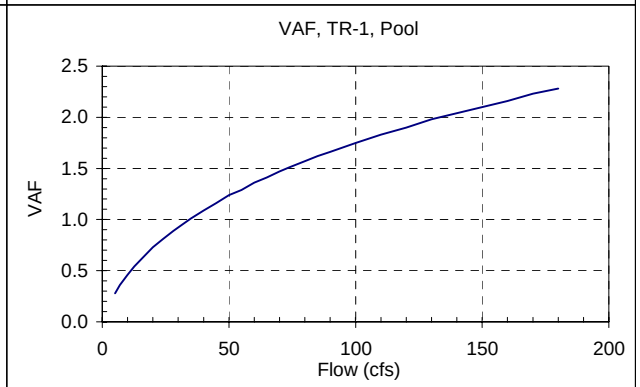
Stream: NF Koktuli River Tributary 1.190
Site: 08-NFK-190
Habitat: Pool
Transect: 1
Date: 7/26/2008
Calibration Flow: Mid

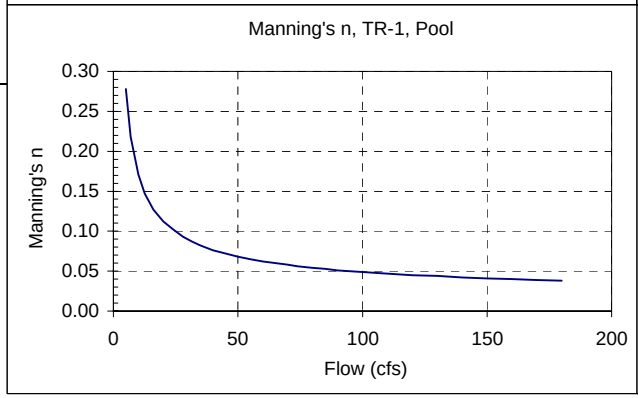
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
5	96.14	0.05	0.31	0.28	0.278	16.6
7	96.22	0.07	0.41	0.36	0.22	17.4
10	96.32	0.09	0.53	0.46	0.17	18.3
12.6	96.38	0.10	0.64	0.54	0.15	18.5
16	96.46	0.12	0.76	0.63	0.13	18.9
20	96.54	0.14	0.89	0.73	0.11	19.2
24	96.62	0.15	1.01	0.81	0.10	19.6
28	96.68	0.17	1.13	0.89	0.09	19.9
31.6	96.74	0.18	1.22	0.95	0.09	20.3
35	96.79	0.19	1.30	1.01	0.08	20.6
40	96.85	0.21	1.43	1.09	0.08	20.9
45	96.92	0.22	1.54	1.16	0.07	21.4
50	96.97	0.23	1.65	1.24	0.07	21.7
55	97.03	0.24	1.75	1.29	0.07	22.0
60	97.08	0.26	1.85	1.36	0.06	22.4
65	97.13	0.27	1.95	1.41	0.06	22.7
70	97.18	0.28	2.04	1.47	0.06	23.0
73.9	97.21	0.28	2.11	1.51	0.06	23.2
80	97.27	0.29	2.21	1.57	0.05	23.6
85	97.31	0.30	2.29	1.62	0.05	23.9
90	97.35	0.31	2.37	1.66	0.05	24.1
100	97.43	0.33	2.52	1.75	0.05	24.6
110	97.50	0.34	2.67	1.83	0.05	25.1
120	97.58	0.36	2.79	1.90	0.05	25.6
130	97.64	0.37	2.93	1.98	0.04	26.1
140	97.71	0.38	3.05	2.04	0.04	26.6
150	97.77	0.40	3.17	2.10	0.04	27.0
160	97.83	0.41	3.28	2.16	0.04	27.4
170	97.88	0.42	3.40	2.23	0.04	27.8
180.0	97.94	0.43	3.50	2.28	0.038	28.2

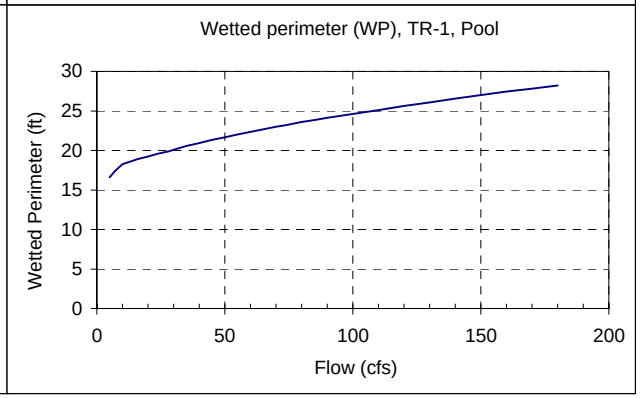








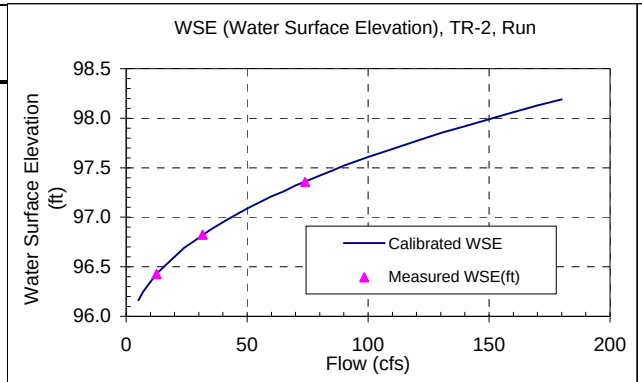


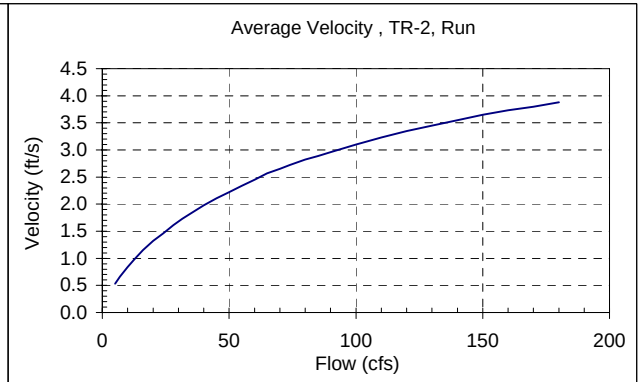


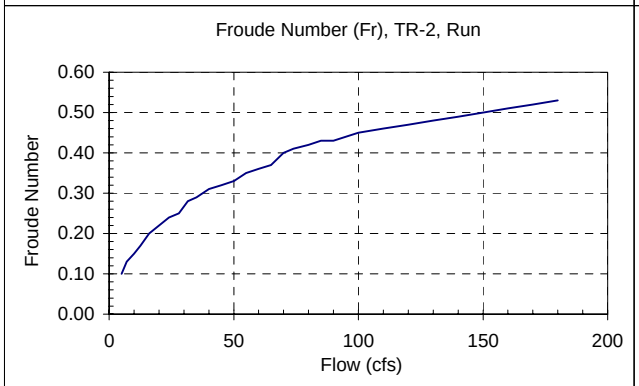
cTR1 - Transect hydraulic parameters

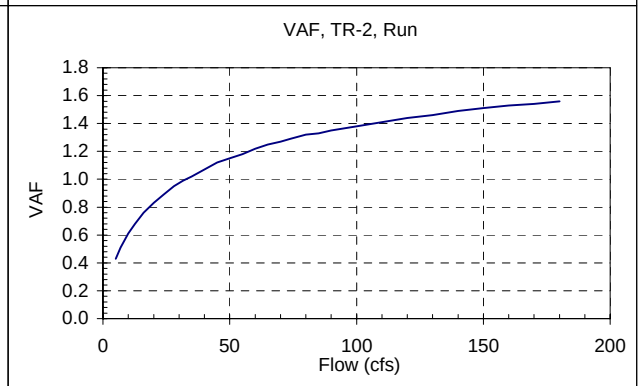
Stream: NF Koktuli River Tributary 1.190
Site: 08-NFK-190
Habitat: Run
Transect: 2
Date: 7/26/2008
Calibration Flow: Mid

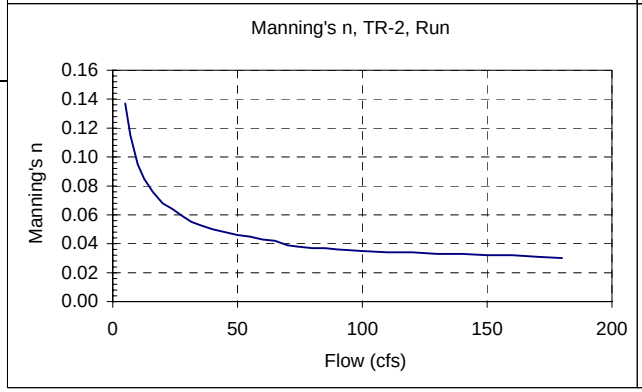
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
5	96.16	0.10	0.53	0.43	0.137	13.3
7	96.25	0.13	0.66	0.51	0.12	13.7
10	96.35	0.15	0.84	0.61	0.10	14.1
12.6	96.43	0.17	0.98	0.68	0.09	14.5
16	96.51	0.20	1.15	0.76	0.08	14.8
20	96.60	0.22	1.32	0.83	0.07	15.2
24	96.69	0.24	1.46	0.89	0.06	15.5
28	96.76	0.25	1.61	0.95	0.06	15.8
31.6	96.82	0.28	1.73	0.99	0.06	16.7
35	96.88	0.29	1.83	1.02	0.05	17.2
40	96.95	0.31	1.98	1.07	0.05	17.6
45	97.02	0.32	2.11	1.12	0.05	18.0
50	97.09	0.33	2.22	1.15	0.05	18.4
55	97.15	0.35	2.34	1.18	0.05	18.8
60	97.21	0.36	2.45	1.22	0.04	19.1
65	97.26	0.37	2.57	1.25	0.04	19.4
70	97.32	0.40	2.65	1.27	0.04	21.6
73.9	97.36	0.41	2.72	1.29	0.04	21.9
80	97.42	0.42	2.82	1.32	0.04	22.4
85	97.47	0.43	2.89	1.33	0.04	22.9
90	97.52	0.43	2.96	1.35	0.04	23.3
100	97.61	0.45	3.10	1.38	0.04	24.1
110	97.69	0.46	3.23	1.41	0.03	24.8
120	97.77	0.47	3.35	1.44	0.03	25.6
130	97.85	0.48	3.45	1.46	0.03	26.3
140	97.92	0.49	3.55	1.49	0.03	26.9
150	97.99	0.50	3.65	1.51	0.03	27.6
160	98.06	0.51	3.73	1.53	0.03	28.6
170	98.13	0.52	3.80	1.54	0.03	30.0
180.0	98.19	0.53	3.88	1.56	0.030	31.1

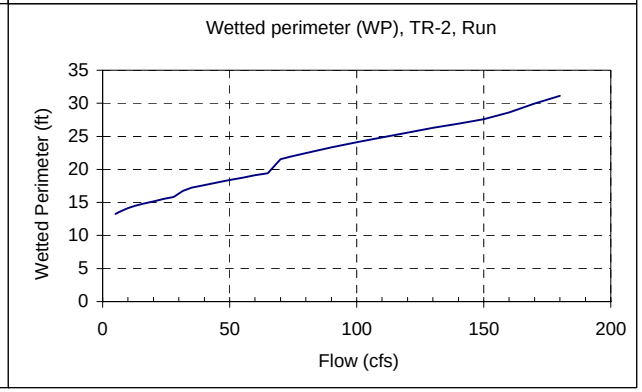








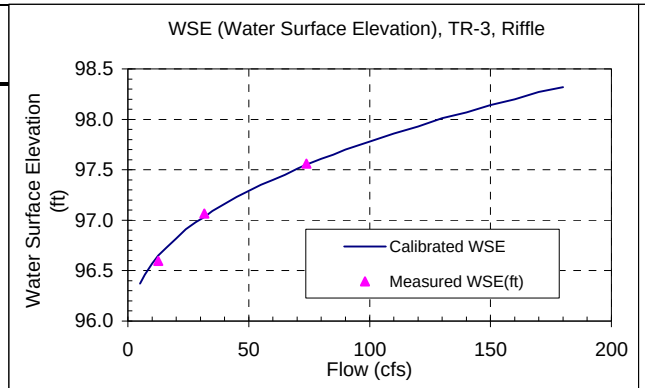


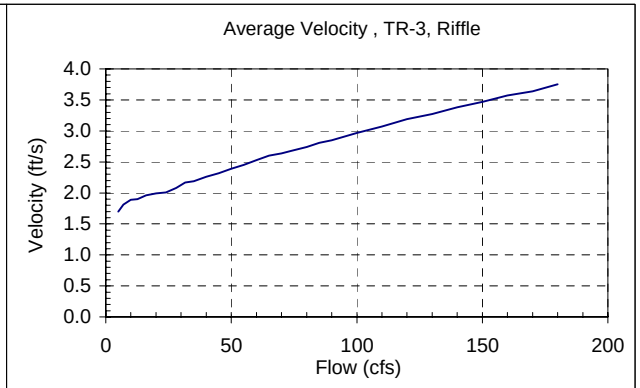


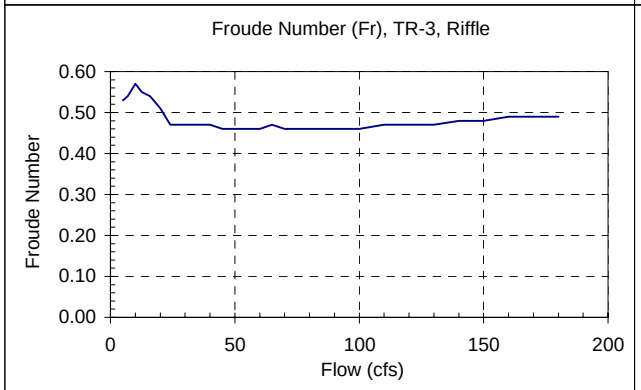
cTR2 - Transect hydraulic parameters

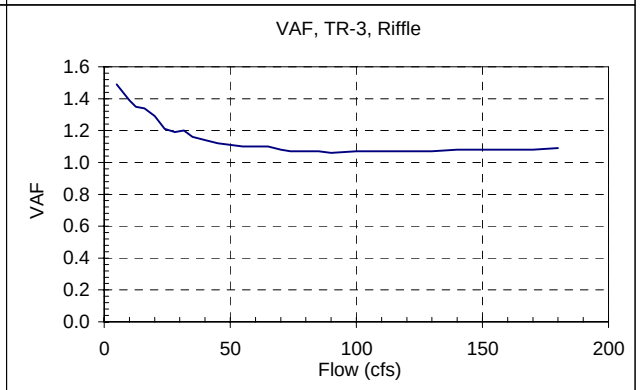
Stream: NF Koktuli River Tributary 1.190
Site: 08-NFK-190
Habitat: Riffle
Transect: 3
Date: 7/26/2008
Calibration Flow: Mid

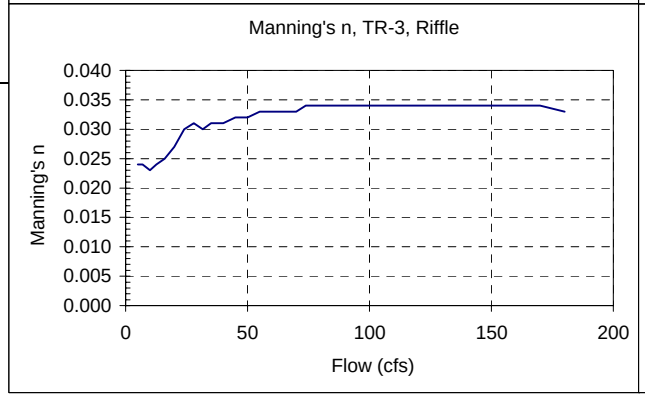
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
5	96.37	0.53	1.70	1.49	0.024	9.6
7	96.46	0.54	1.81	1.45	0.02	11.5
10	96.57	0.57	1.89	1.39	0.02	15.8
12.6	96.65	0.55	1.90	1.35	0.02	18.6
16	96.73	0.54	1.96	1.34	0.03	20.8
20	96.82	0.51	1.99	1.29	0.03	21.9
24	96.91	0.47	2.01	1.21	0.03	22.3
28	96.98	0.47	2.08	1.19	0.03	22.6
31.6	97.03	0.47	2.17	1.20	0.03	23.2
35	97.09	0.47	2.19	1.16	0.03	24.9
40	97.16	0.47	2.26	1.14	0.03	25.3
45	97.23	0.46	2.32	1.12	0.03	25.8
50	97.29	0.46	2.39	1.11	0.03	26.1
55	97.35	0.46	2.45	1.10	0.03	26.5
60	97.40	0.46	2.53	1.10	0.03	26.9
65	97.45	0.47	2.60	1.10	0.03	27.2
70	97.51	0.46	2.64	1.08	0.03	27.6
73.9	97.55	0.46	2.68	1.07	0.03	27.7
80	97.61	0.46	2.74	1.07	0.03	27.8
85	97.65	0.46	2.81	1.07	0.03	27.9
90	97.70	0.46	2.85	1.06	0.03	28.0
100	97.78	0.46	2.97	1.07	0.03	28.2
110	97.86	0.47	3.07	1.07	0.03	28.3
120	97.93	0.47	3.19	1.07	0.03	28.5
130	98.01	0.47	3.27	1.07	0.03	28.6
140	98.07	0.48	3.38	1.08	0.03	28.8
150	98.14	0.48	3.47	1.08	0.03	28.9
160	98.20	0.49	3.57	1.08	0.03	29.0
170	98.27	0.49	3.64	1.08	0.03	29.2
180.0	98.32	0.49	3.75	1.09	0.033	29.4

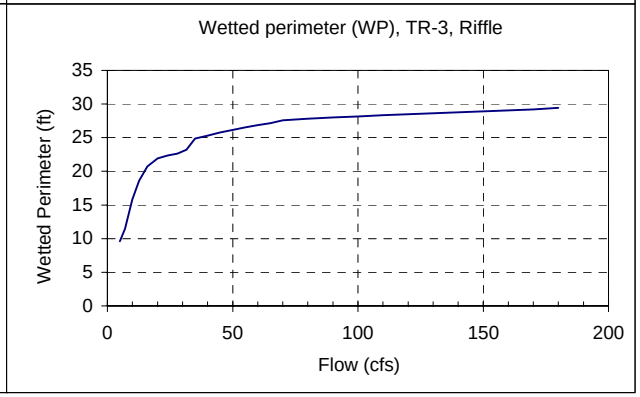












cTR3 - Transect hydraulic parameters

IFG4 Data Deck

```
     Pebble      08-NFK-190  07/26/08
POOL                        0708Q                                        TRANSECT 1
IOC       1101100100001000101000
QARD   5.0
QARD   7.0
QARD  10.0
QARD  12.6
QARD  16.0
QARD  20.0
QARD  24.0
QARD  28.0
QARD  31.6
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  65.0
QARD  70.0
QARD  73.9
QARD  80.0
QARD  85.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
XSEC  1000     1000. 1.0     95.65    .00364
      1000  2.099.15  4.699.02  6.797.54  6.895.45  7.594.90  8.094.75
      1000  8.594.55  9.094.45  9.594.45 10.094.30 10.594.35 11.094.35
      1000 11.594.55 12.094.30 13.094.25 14.094.40 15.094.95 16.095.55
      1000 17.095.55 18.095.85 19.095.90 20.096.30 21.095.95 22.095.90
      1000 23.096.25 24.096.55 24.396.65 26.197.01 31.598.01 34.398.49
NS    1000      11.9      11.9      11.9 0.7  21.6      62.6      76.6
NS    1000      67.6      67.6      76.6      65.6      67.6      67.6
NS    1000      67.6      76.6      67.6      67.6      67.6 .10  76.6
NS    1000      76.6      76.6      67.6      76.6      65.6 .40  65.6
NS    1000      65.6      65.6      75.6      45.6      54.6      45.6
WSL   1000     96.14     96.22     96.32     96.38     96.46     96.54
WSL   1000     96.62     96.68     96.74     96.79     96.85     96.92
WSL   1000     96.97     97.03     97.08     97.13     97.18     97.21
WSL   1000     97.27     97.31     97.35     97.43     97.50     97.58
WSL   1000     97.64     97.71     97.77     97.83     97.88     97.94
```

IFG4 Data Deck (continued)

```
CAL1  1000     96.75      31.6
VEL1  1000                0.00 0.44 0.60 0.67 0.97 1.68 1.74 1.81 2.15
VEL1  1000 2.24 1.76 1.70 1.69 1.42 0.94 1.19 1.35 0.75 0.64 0.30 0.10
VEL1  1000 0.00 0.00 0.00
CAL2  1000     97.21      73.9
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.38      12.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR1

IFG4 Data Deck

```
     Pebble      08-NFK-190  07/26/08
RUN                        0708Q                                  TRANSECT 2
IOC       1101100100001000101000
QARD   5.0
QARD   7.0
QARD  10.0
QARD  12.6
QARD  16.0
QARD  20.0
QARD  24.0
QARD  28.0
QARD  31.6
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  65.0
QARD  70.0
QARD  73.9
QARD  80.0
QARD  85.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
XSEC  1000     1000. 1.0     95.65    .00364
      1000  2.099.48  6.998.72  7.897.63  8.195.13  9.095.08 10.095.03
      1000 11.095.23 12.095.33 13.095.03 14.095.13 15.095.38 16.095.33
      1000 17.095.38 18.095.83 19.095.98 20.096.13 21.096.43 22.096.78
      1000 23.096.83 24.097.06 25.097.26 26.097.31 27.097.31 32.598.02
      1000 42.298.56
NS    1000      11.9      11.9      11.9      45.6      67.6      76.6
NS    1000      76.6      76.6      76.6      67.6      65.6      65.6
NS    1000      54.6      56.6      54.6 .07  54.6      67.6      67.6
NS    1000      56.6      54.6      45.6      45.6 0.5  65.6      45.6
NS    1000      34.6
WSL   1000     96.16     96.25     96.35     96.43     96.51     96.60
WSL   1000     96.69     96.76     96.82     96.88     96.95     97.02
WSL   1000     97.09     97.15     97.21     97.26     97.32     97.36
WSL   1000     97.42     97.47     97.52     97.61     97.69     97.77
WSL   1000     97.85     97.92     97.99     98.06     98.13     98.19
```

IFG4 Data Deck - TR2

IFG4 Data Deck (continued)

```
CAL1  1000     96.83      31.6
VEL1  1000                0.00 0.64 1.22 1.94 2.29 1.73 2.29 2.49 2.68
VEL1  1000 2.07 1.73 1.76 0.74 1.02 0.00 0.00
VEL1  1000
CAL2  1000     97.36      73.9
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.43      12.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR2

IFG4 Data Deck

```
     Pebble      08-NFK-190  07/26/08
RIFFLE                      0708Q                                    TRANSECT 3
IOC       11011001000010001010000
QARD   5.0
QARD   7.0
QARD  10.0
QARD  12.6
QARD  16.0
QARD  20.0
QARD  24.0
QARD  28.0
QARD  31.6
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  65.0
QARD  70.0
QARD  73.9
QARD  80.0
QARD  85.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
XSEC  1000     1000. 1.0     95.67    .00364
      1000  2.0100.4  8.599.74  9.699.00  9.897.07 11.096.42 12.096.37
      1000 13.095.92 14.096.07 15.095.72 16.095.67 17.095.92 18.096.47
      1000 19.096.07 20.096.32 21.096.22 22.096.47 23.096.57 24.096.47
      1000 25.096.62 26.096.47 27.096.62 28.096.67 29.096.77 30.096.67
      1000 31.096.57 32.097.07 33.097.02 33.797.07 36.197.52 36.498.28
      1000 39.598.92
NS    1000      11.9      11.9      11.9      76.6      56.6      65.6
NS    1000      76.6      76.6      76.6      76.6      67.6      67.6
NS    1000      67.6      67.6      65.6      67.6      67.6      65.6
NS    1000      67.6      65.6      67.6      54.6      57.6      45.6
NS    1000      45.6      11.9 .02  34.6 0.2  64.6  .5  22.9      11.9
NS    1000      11.9
WSL   1000     96.37     96.46     96.57     96.65     96.73     96.82
WSL   1000     96.91     96.98     97.03     97.09     97.16     97.23
WSL   1000     97.29     97.35     97.40     97.45     97.51     97.55
```

IFG4 Data Deck (continued)

```
WSL   1000     97.61     97.65     97.70     97.78     97.86     97.93
WSL   1000     98.01     98.07     98.14     98.20     98.27     98.32
CAL1  1000     97.07      31.6
VEL1  1000                0.00 0.29 1.71 2.45 1.68 3.11 2.70 0.81 0.63
VEL1  1000 2.61 3.27 3.67 0.42 1.88 0.75 0.78 0.64 0.95 2.22 2.07 1.88
VEL1  1000 3.05 0.00 1.71 0.00
CAL2  1000     97.56      73.9
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.60      12.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

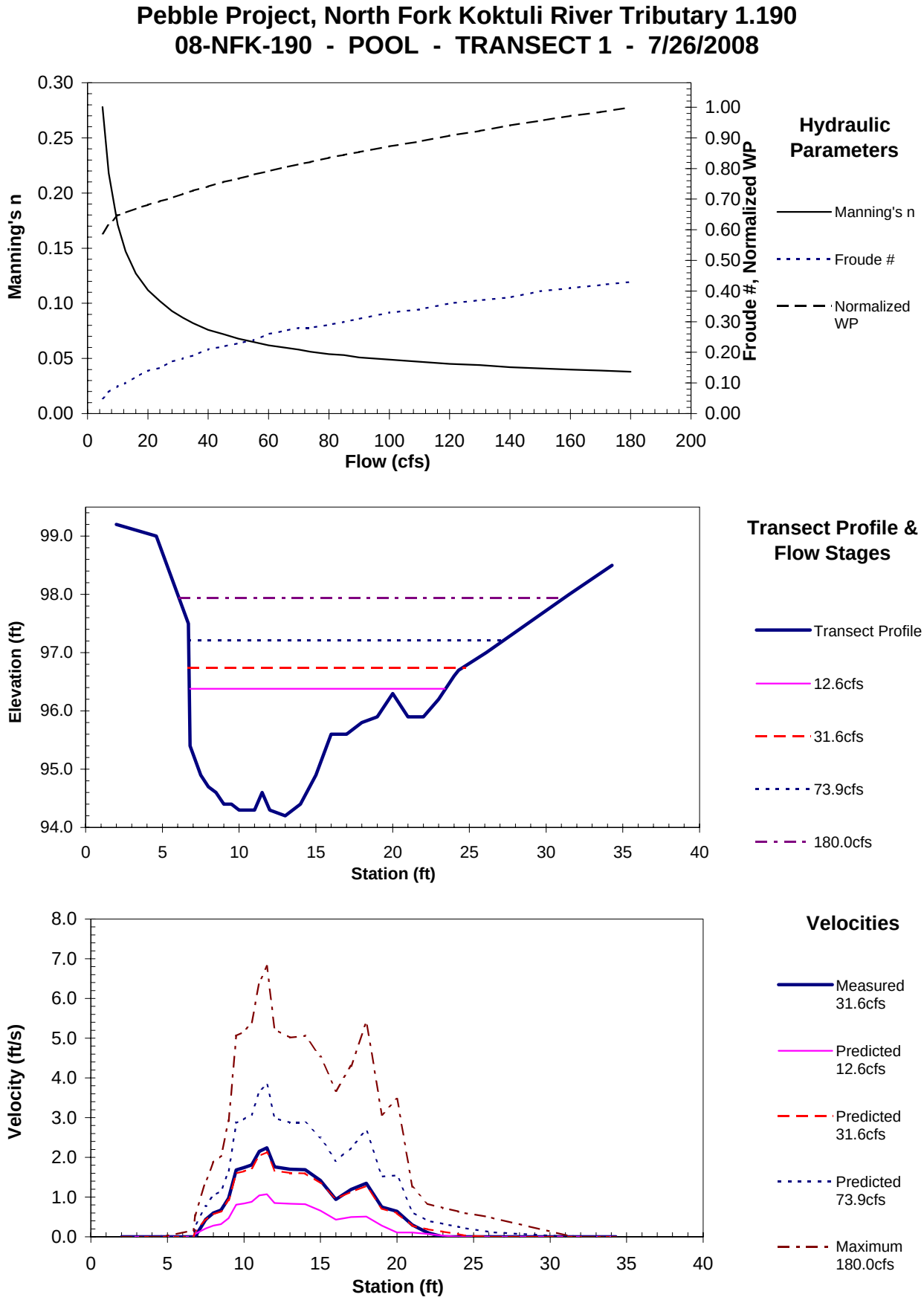
IFG4 Data Deck - TR3

WSP Data Deck

```
   08-NFK-190           Jun-Aug/08
Riffle                    0608Q
PARD    30      1.00      0        1.000
QARD   5.0     96.16              1.2125    1.2125
QARD   7.0     96.25              1.1976    1.1976
QARD  10.0     96.35              1.1757    1.1757
QARD  12.6     96.43              1.1570    1.1570
QARD  16.0     96.51              1.1330    1.1330
QARD  20.0     96.60              1.1054    1.1054
QARD  24.0     96.69              1.0785    1.0785
QARD  28.0     96.76              1.0522    1.0522
QARD  31.6     96.82              1.0000    1.0000
QARD  35.0     96.88              1.0078    1.0078
QARD  40.0     96.95              0.9772    0.9772
QARD  45.0     97.02              0.9476    0.9476
QARD  50.0     97.09              0.9188    0.9188
QARD  55.0     97.15              0.8909    0.8909
QARD  60.0     97.21              0.8639    0.8639
QARD  65.0     97.26              0.8377    0.8377
QARD  70.0     97.32              0.8123    0.8123
QARD  73.9     97.36              0.7930    0.7930
QARD  80.0     97.42              0.7637    0.7637
QARD  85.0     97.47              0.7405    0.7405
QARD  90.0     97.52              0.7181    0.7181
QARD 100.0     97.61              0.6752    0.6752
QARD 110.0     97.69              0.6348    0.6348
QARD 120.0     97.77              0.5969    0.5969
QARD 130.0     97.85              0.5612    0.5612
QARD 140.0     97.92              0.5277    0.5277
QARD 150.0     97.99              0.4961    0.4961
QARD 160.0     98.06              0.4665    0.4665
QARD 170.0     98.13              0.4386    0.4386
QARD 180.0     98.19              0.4124    0.4124
FFFFTFFFF                                                              **
       548  2.099.48  6.998.72  7.897.63  8.194.96  9.094.96 10.094.96
       548 11.095.06 12.095.31 13.095.01 14.095.01 15.095.01 16.095.21
       548 17.095.46 18.095.66 19.096.01 20.096.31 21.096.31 22.096.71
       548 23.097.01 24.097.06 25.097.26 26.097.31 27.097.36 32.598.02
       548 42.298.56
       548 .06   6.9      .06   7.8      .06   8.1      .06   9.0             *
       548 .06  10.0      .06  11.0      .06  12.0     -.06  13.0             *
       548 .06  14.0      .06  15.0      .06  16.0      .06  17.0             *
       548 .06  18.0      .06  19.0      .06  20.0      .06  21.0             *
       548 .06  22.0      .06  23.0      .06  24.0      .06  25.0             *
       548 .06  26.0      .06  27.0      .06  32.5      .06  42.2             *
       593  2.0100.4  8.599.74  9.699.00  9.897.06 11.096.31 12.096.16
       593 13.095.91 14.095.91 15.095.66 16.095.66 17.095.76 18.096.36
       593 19.096.01 20.096.06 21.096.01 22.096.36 23.096.51 24.096.41
       593 25.096.46 26.096.36 27.096.41 28.096.66 29.096.76 30.096.56
```

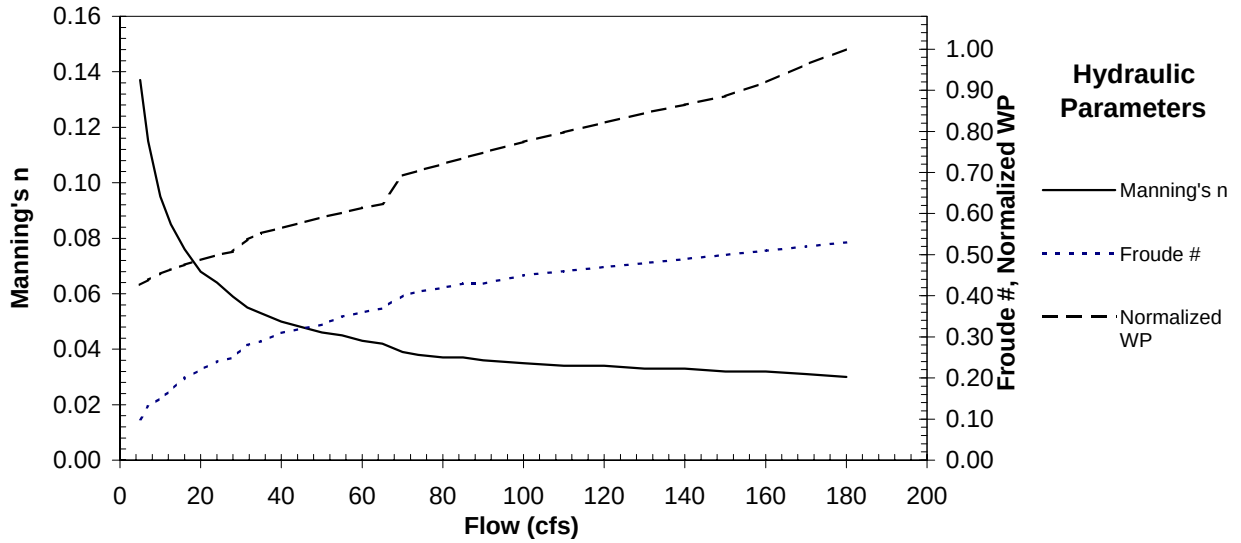
WSP Data Deck (continued)

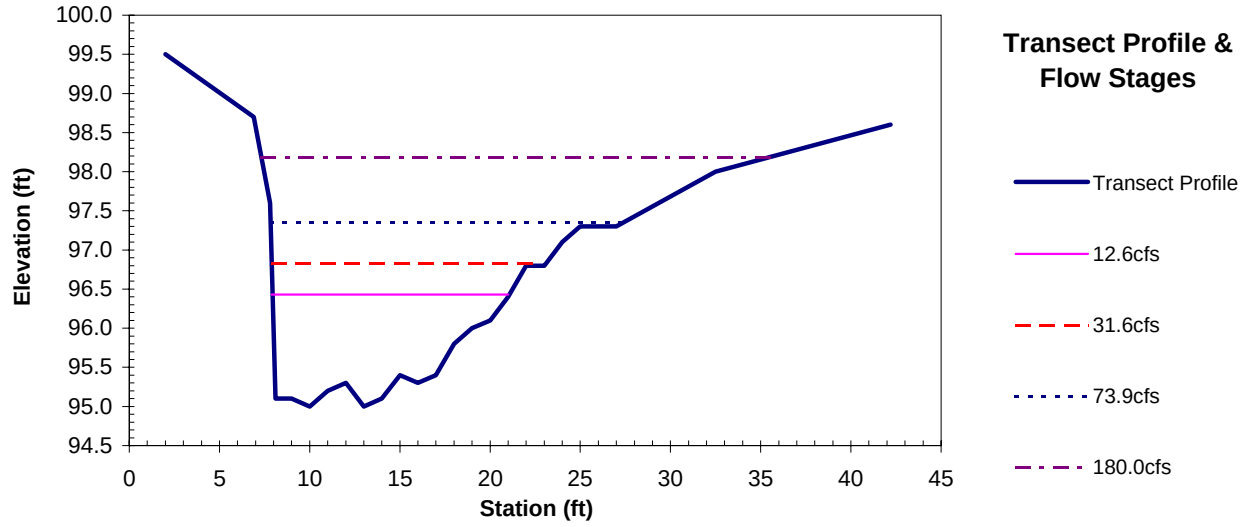
```
      593 31.096.66 32.096.91 33.096.96 34.097.21 35.097.41 36.197.46
      593 36.498.28 39.598.92
      593 .06   8.5      .06   9.6      .06   9.8      .06  11.0              *
      593 .06  12.0      .06  13.0      .06  14.0     -.06  15.0              *
      593 .06  16.0      .06  17.0      .06  18.0      .06  19.0              *
      593 .06  20.0      .06  21.0      .06  22.0      .06  23.0              *
      593 .06  24.0      .06  25.0      .06  26.0      .06  27.0              *
      593 .06  28.0      .06  29.0      .06  30.0      .06  31.0              *
      593 .06  32.0      .06  33.0      .06  34.0      .06  35.0              *
      593 .06  36.1      .06  36.4      .06  39.5                           *
ENDJ
ENDR
```

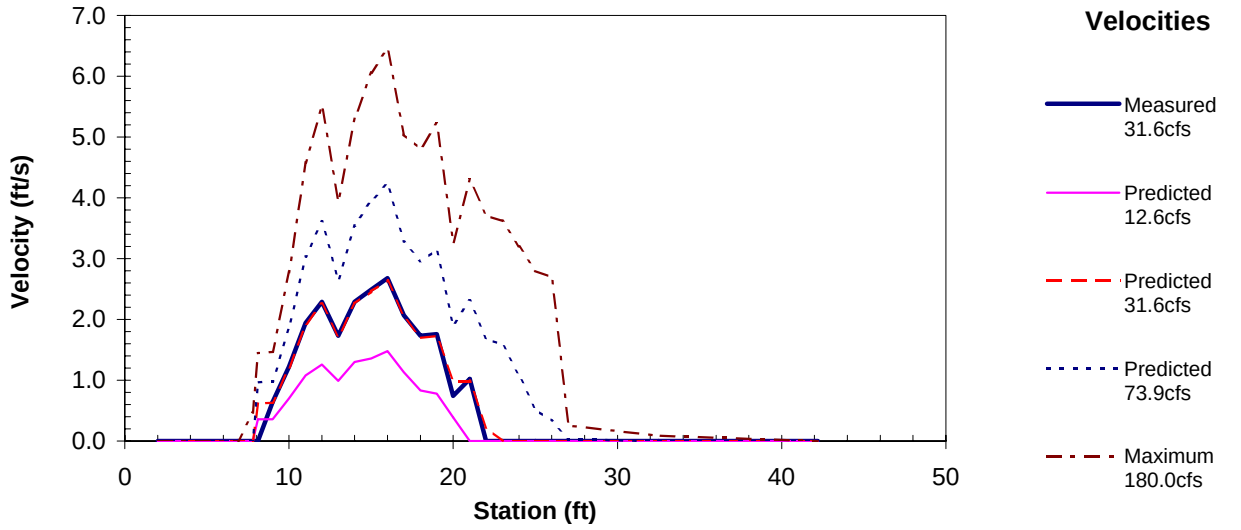


Transect hydraulic summary plots

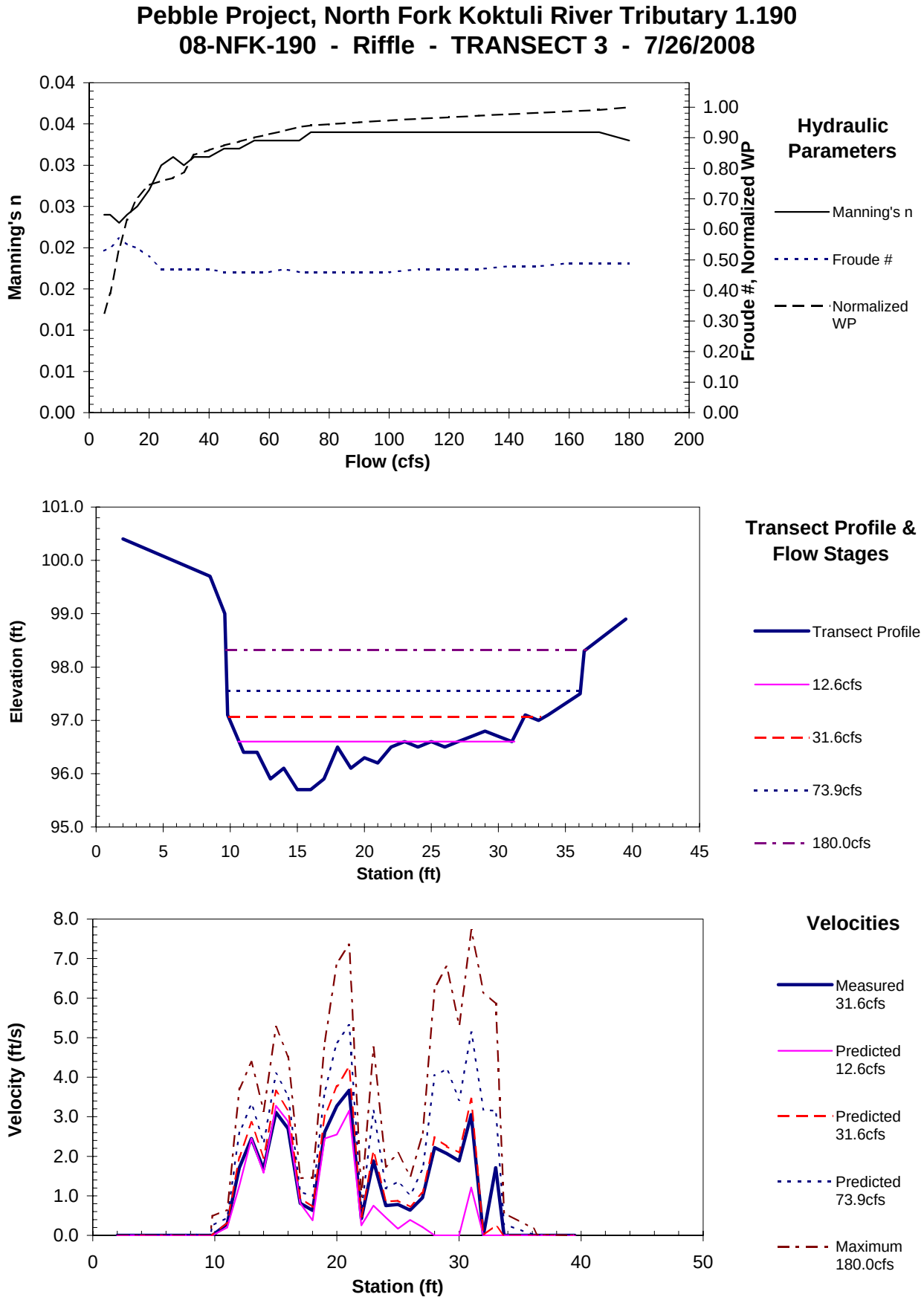
Pebble Project, North Fork Koktuli River Tributary 1.190
08-NFK-190 - RUN - TRANSECT 2 - 7/26/2008







Transect hydraulic summary plots



Transect hydraulic summary plots

PHABSIM Hydraulic Model Calibration Details

Stream: South Fork Koktuli River

PHABSIM Hydraulic Model Calibration Details

Stream: South Fork Koktuli River

Reach: SFK-A

SFK-A Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
05-SFK1-IC1	2.39	236.7	67.0	162.8		97.01	96.28	96.78		0.01	0.00	-0.01		IFG4
05-SFK1-RF1	4.91	224.2	70.5	147.9		98.11	97.59	97.92		0.01	0.00	-0.01		IFG4
08-SFK1-MS1-TR1	6.91	436.0	247.7	100.1		97.85	97.19	96.38		0.00	0.00	0.00		IFG4
08-SFK1-MS1-TR2	6.96	436.0	247.7	100.1		98.28	97.56	96.89		-0.04	0.05	-0.02		IFG4
08-SFK1-MS1-TR3	7.02	436.0	247.7	100.1		98.97	98.29	97.63		-0.03	0.04	-0.02		IFG4
08-SFK1-MS1-TR4	7.04	436.0	247.7	100.1		99.26	98.61	98.03		-0.04	0.05	-0.02		IFG4
08-SFK1-MS1-TR5	7.05	436.0	247.7	100.1		99.36	98.77	98.11		-0.01	0.00	0.00		IFG4
08-SFK1-MS1-TR6	7.14	436.0	247.7	100.1		100.07	99.17	98.39		0.00	0.07	-0.02		MANSQ
04-SFK-IC1	12.36	178.3	58.3	145.1		97.28	96.63	97.14		0.00	0.00	0.00		IFG4
08-SFK1-MS2-TR1	19.21	393.8	252.5	99.3	77.7	93.27	93.01	92.64	92.52	-0.01	0.01	0.00	0.03	IFG4
08-SFK1-MS2-TR2	19.29	393.8	252.5	99.3	77.7	93.78	93.39	92.93	92.89	-0.04	0.05	0.02	-0.04	IFG4
08-SFK1-MS2-TR3	19.42	393.8	252.5	99.3	77.7	94.53	94.15	93.50	93.42	-0.01	0.00	0.03	-0.03	IFG4
08-SFK1-MS2-TR4	19.47	393.8	252.5	99.3	77.7	94.71	94.28	93.54	93.48	-0.01	0.00	0.04	-0.05	IFG4
08-SFK1-MS2-TR5	19.55	393.8	252.5	99.3	77.7	95.45	95.18	94.69	94.53	0.02	-0.02	-0.03	0.02	IFG4
08-SFK1-MS2-TR6	19.60	393.8	252.5	99.3	77.7	95.96	95.65	95.15	94.96	0.01	0.00	-0.04	0.03	IFG4
04-SFK-RF3	19.80	149.8	48.1	106.8		98.18	97.78	98.01		-0.02	-0.01	0.03		IFG4
04-SFK-RN3	20.10	142.8	53.4	98.8		96.17	95.58	95.97		0.03	0.01	-0.02		IFG4
07-SFK1-RF1	24.21	107.4	63.3	220.0		96.78	96.60	97.24		0.03	-0.02	-0.02		IFG4
04-SFK-RF2	24.68	76.8	404.6	125.4		94.48	95.90	94.88		0.00	0.00	0.00		MANSQ

* RK is an abbreviation for River Kilometer

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 05-SFK1-IC1

Habitat Type: Island Complex

River Kilometer: 2.39

Stream: South Fork Koktuli River
Reach: A
Site: 05-SFK1-IC1
Habitat Type: Island Complex

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	AP	TP
1st	6/15/2005	100.00	99.50	98.37	99.23
2nd	7/18/2005	100.00	99.52	98.38	99.26
3rd	8/12/2005	100.00	99.51	98.39	99.25
4th	7/9/2006	100.00	99.52	97.98	99.26
5th	4/11/2007	100.00	99.53		99.29

(a) Elevations of control pins (BM, HP, AP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ±0.02ft during 2005-2006 period. Small changes of elevations indicated control pins were stable during that period.
(c) AP, Angle Pin, is a working pin located in the channel between TP and HP. The elevation changes indicated it may have been disturbed due to channel aggradation/degradation over the 2006-2007 winter. This won't affect the accuracy of survey because the datum was based on BM.

calibration notes

Measured WSE:

This transect has a complex bathymetry with two islands separating the cross-section into Left channel, Main-L channel, and Main-R channel. Each channel has multiple surveyed WSEs, including LWSE, MWSE and RWSE, taken during each site visit. Each of the WSE shown below is the average of the multiple WSEs of each channel.

Date	WSE (ft)		
	Left	Main-L	Main-R
6/15/2005	96.63	96.95	97.01
7/18/2005	96.36	96.75	96.55
8/12/2005	95.99	dry	96.28
7/9/2006	96.19	96.88	96.78
4/11/2007	95.95	dry	96.36

WSEs of Main-R channel were used for modeling, because Main-R channel carried the majority of water. The bed profile of the rest part of the transect was adjusted based on their WSE differences from the Main-R channel.

Discharge:

All measured discharges are listed in the following table, including all three channels.

Date	Flow (cfs)			
	Left (side)	Left (main)	Right (main)	Total
6/15/2005	33.1	24.3	179.3	236.7
7/18/2005	NA	NA	NA	NA
8/12/2005	1.8	dry	65.2	67.0
7/9/2006	3.8	8.9	150.04	162.8
4/11/2007	0.4		96.4	96.8

No flows was measured during the 7/18/05 site visit.
Partial flow was measured during the 4/11/07 site visit. Most of the transect was covered in ice.

calibration notes

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (ft/ft)		
	Left (side)	Main-Left	Main-Right
6/15/2005	0.346%	NA	0.497%
7/18/2005	0.452%	NA	0.528%
8/12/2005	0.000%	NA	0.182%
7/9/2006	0.374%	NA	0.560%
4/11/2007	0.043%	NA	0.353%

The slope S=0.497% of 6/15//2005 survey was used for hydraulic modeling.

Date	WSE Slope Distance (ft)		
	Left (side)	Main-Left	Main-Right
6/15/2005	115.6	NA	174.3
7/18/2005	101.7	NA	132.5
8/12/2005	21.4	NA	82.3
7/9/2006	98.8	NA	169.5
4/11/2007	70.30	NA	90.60

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/15/2005	94.41
7/18/2005	
8/12/2005	94.38
7/9/2006	94.18
4/11/2007	94.26
Invert	94.41
SZF	94.41

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Substrate was collected on 7/18/05, but no bed profile was surveyed on that date.
(4) Photos of 4/11/07 site visit showed most of the transect was still covered in ice, and thus the surveyed hydraulics of this date were not used for modeling.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/15/2005	236.7	97.01	97.02	0.01	IFG4
2nd	7/18/2005	NA	96.55			
3rd	8/12/2005	67.0	96.28	96.28	0.00	IFG4
4th	7/9/2006	162.8	96.78	96.77	-0.01	IFG4
5th	4/11/2007	96.8	96.36			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No discharge was measured during the 7/18/05 trip, and only partial flow was measured in 4/11/07 trip.
(d) Photos of 4/11/07 trip showed most of the transect was covered in ice. Hydraulics were apparently impacted by the ice and were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 67.0cfs to 236.7cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
No adjustments for the model-calculated n values were needed for any of the three calibrated velocity profiles.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

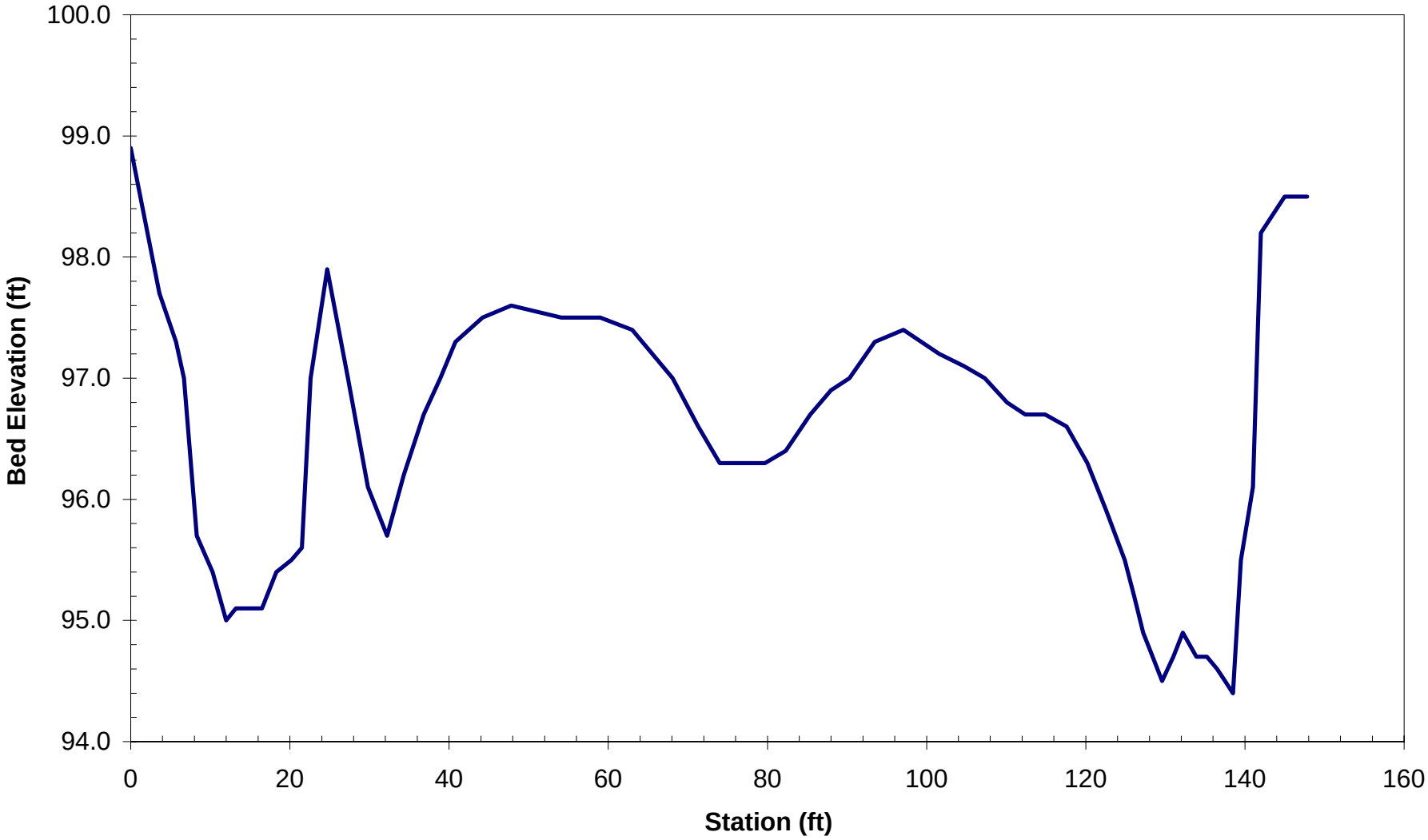
Survey Date	Q (cfs)	WUA (Y/N)
6/15/2005	236.7	Y
7/18/2005	NA	
8/12/2005	67.0	Y
7/9/2006	162.8	
4/11/2007	96.8	

(4) Hydraulic Calibration Results:

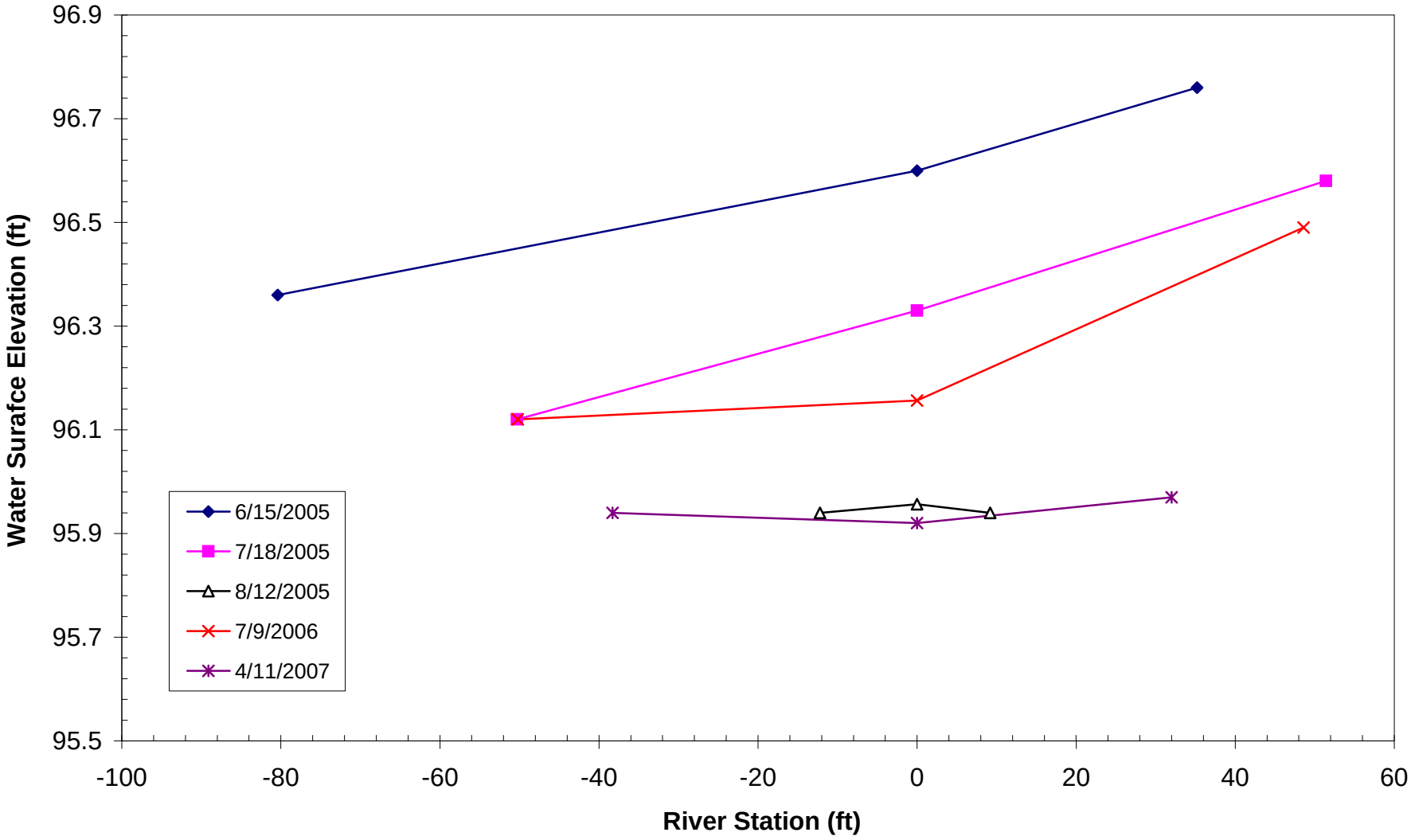
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are
all within reasonable ranges and appear to vary in normal trends.

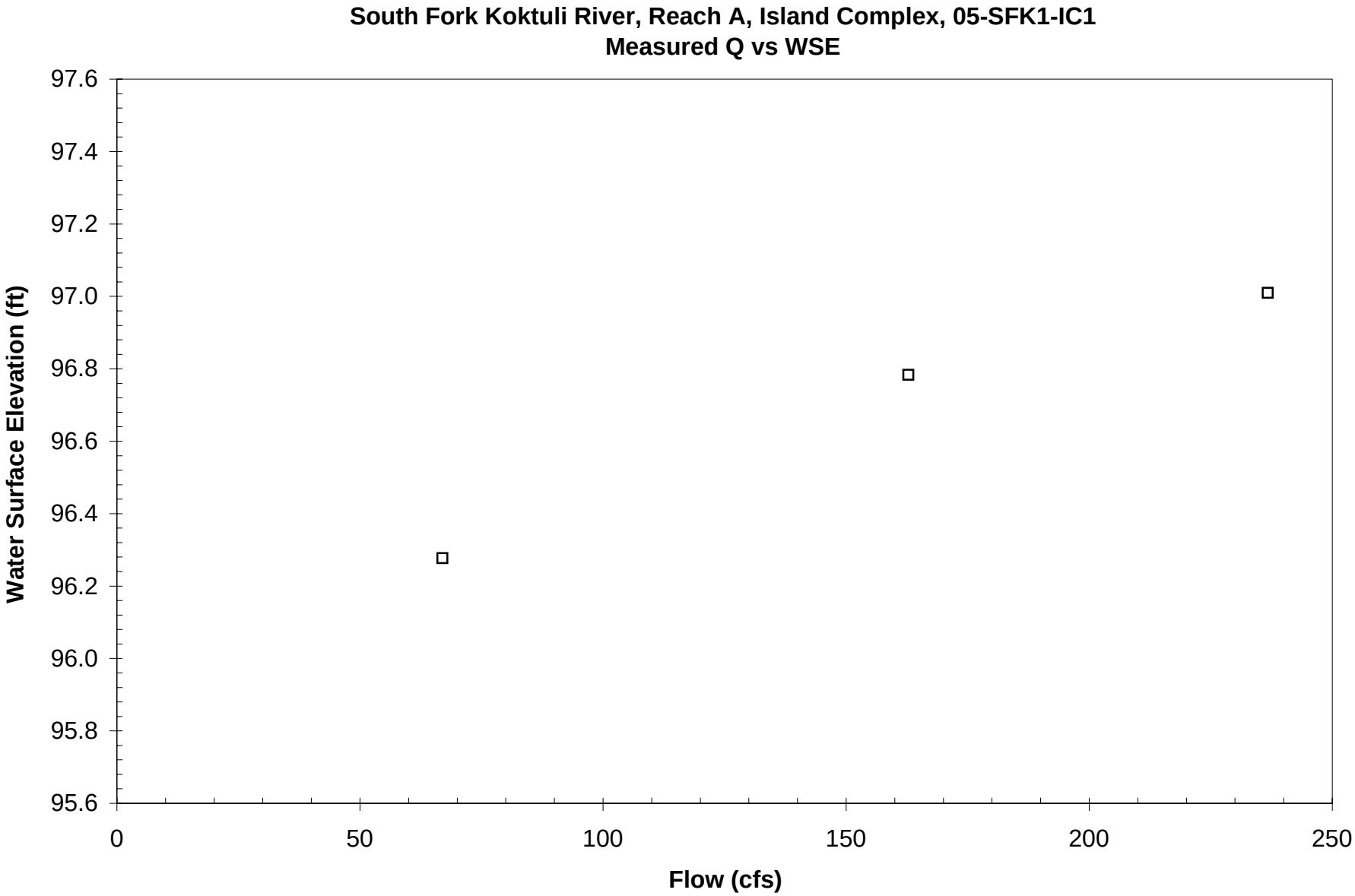
calibration notes

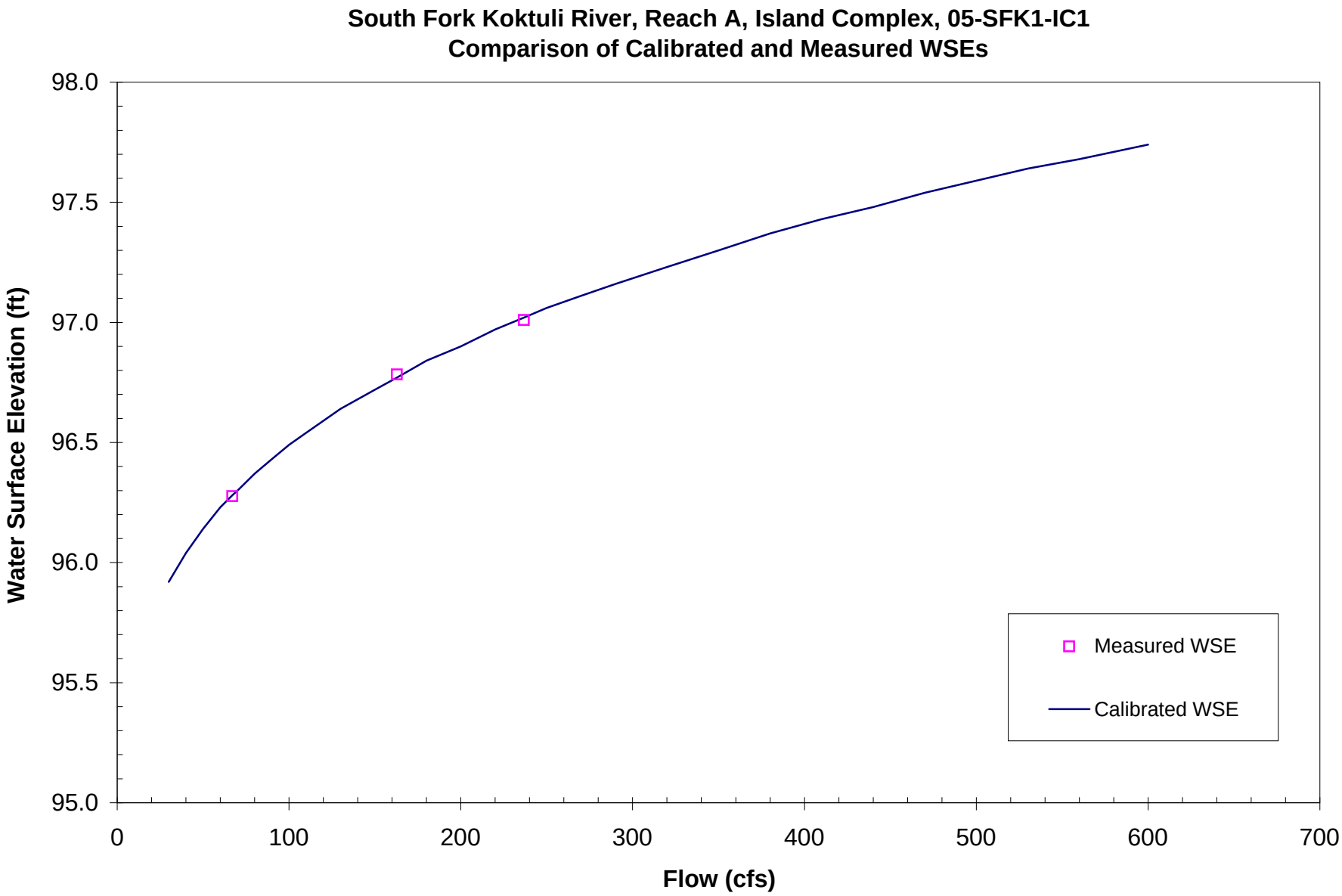
South Fork Koktuli River, Reach A, Island Complex, 05-SFK1-IC1
Measured Transect Profile



South Fork Koktuli River, Reach A, Island Complex, 05-SFK1-IC1
Longitudinal Water Surface Elevation Profiles

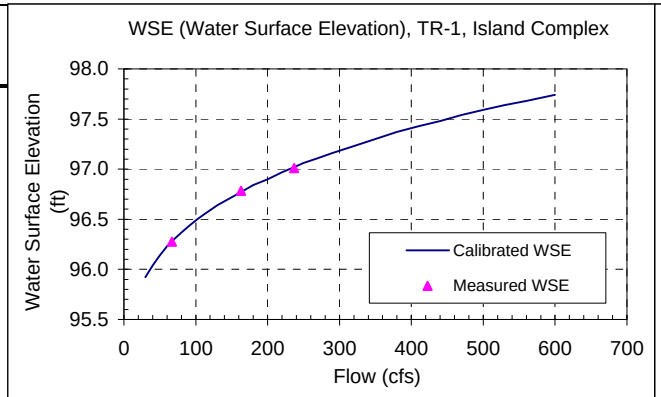


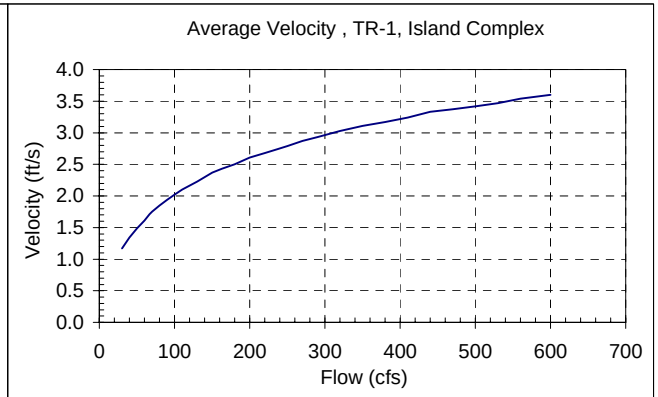

South Fork Koktuli River, Reach A, Island Complex, 05-SFK1-IC1
Measured Q vs WSE
Water Surface Elevation (ft)
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
0
50
100
150
200
250
Flow (cfs)

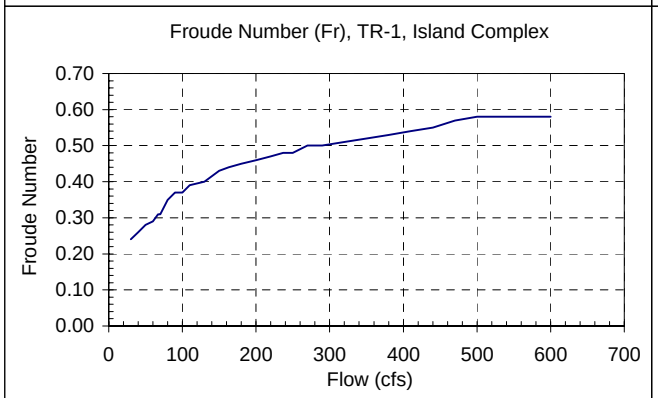

South Fork Koktuli River, Reach A, Island Complex, 05-SFK1-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
100
200
300
400
500
600
700
Flow (cfs)
Measured WSE
Calibrated WSE

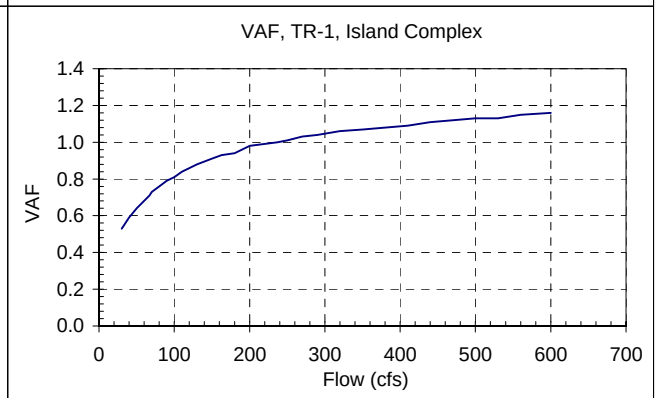
Stream: South Fork Koktuli River **Reach:** A
Site Name: 05-SFK1-IC1 **Site #:** 1
Date: 6/15/2005 **Transect:** 1
Calibration Flow: Q(6/15/2005) **Habitat:** Run

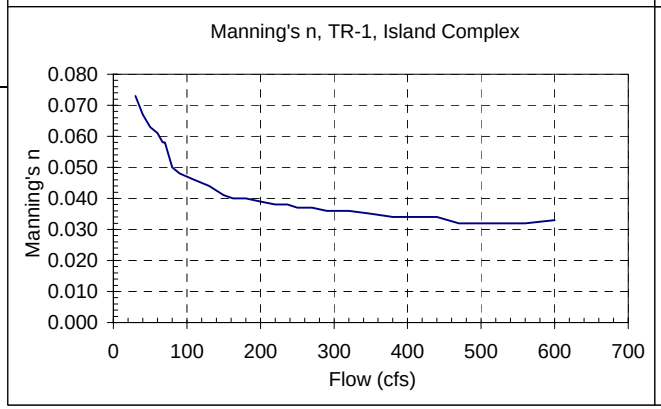
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	95.92	0.24	1.17	0.53	0.073	35.0
40	96.04	0.26	1.34	0.59	0.07	37.6
50	96.14	0.28	1.49	0.64	0.06	39.7
60	96.23	0.29	1.61	0.68	0.06	41.2
67	96.28	0.31	1.71	0.71	0.06	42.2
70	96.30	0.31	1.75	0.73	0.06	42.5
80	96.37	0.35	1.85	0.76	0.05	51.7
90	96.43	0.37	1.94	0.79	0.05	54.8
100	96.49	0.37	2.02	0.81	0.05	57.2
110	96.54	0.39	2.10	0.84	0.05	59.2
130	96.64	0.40	2.23	0.88	0.04	63.7
150	96.72	0.43	2.37	0.91	0.04	70.8
162.8	96.77	0.44	2.43	0.93	0.04	73.8
180	96.84	0.45	2.50	0.94	0.04	77.6
200	96.90	0.46	2.61	0.98	0.04	80.5
220	96.97	0.47	2.68	0.99	0.04	84.5
236.7	97.02	0.48	2.74	1.00	0.04	87.7
250	97.06	0.48	2.79	1.01	0.04	90.7
270	97.11	0.50	2.87	1.03	0.04	93.9
290	97.16	0.50	2.93	1.04	0.04	96.7
320	97.23	0.51	3.03	1.06	0.04	100.7
350	97.30	0.52	3.11	1.07	0.04	105.4
380	97.37	0.53	3.17	1.08	0.03	112.8
410	97.43	0.54	3.24	1.09	0.03	117.0
440	97.48	0.55	3.33	1.11	0.03	120.2
470	97.54	0.57	3.37	1.12	0.03	131.5
500	97.59	0.58	3.42	1.13	0.03	139.5
530	97.64	0.58	3.47	1.13	0.03	140.1
560	97.68	0.58	3.54	1.15	0.03	140.6
600	97.74	0.58	3.60	1.16	0.033	141.3

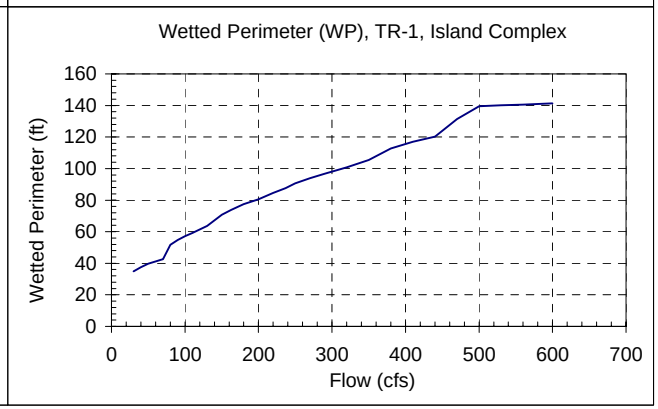




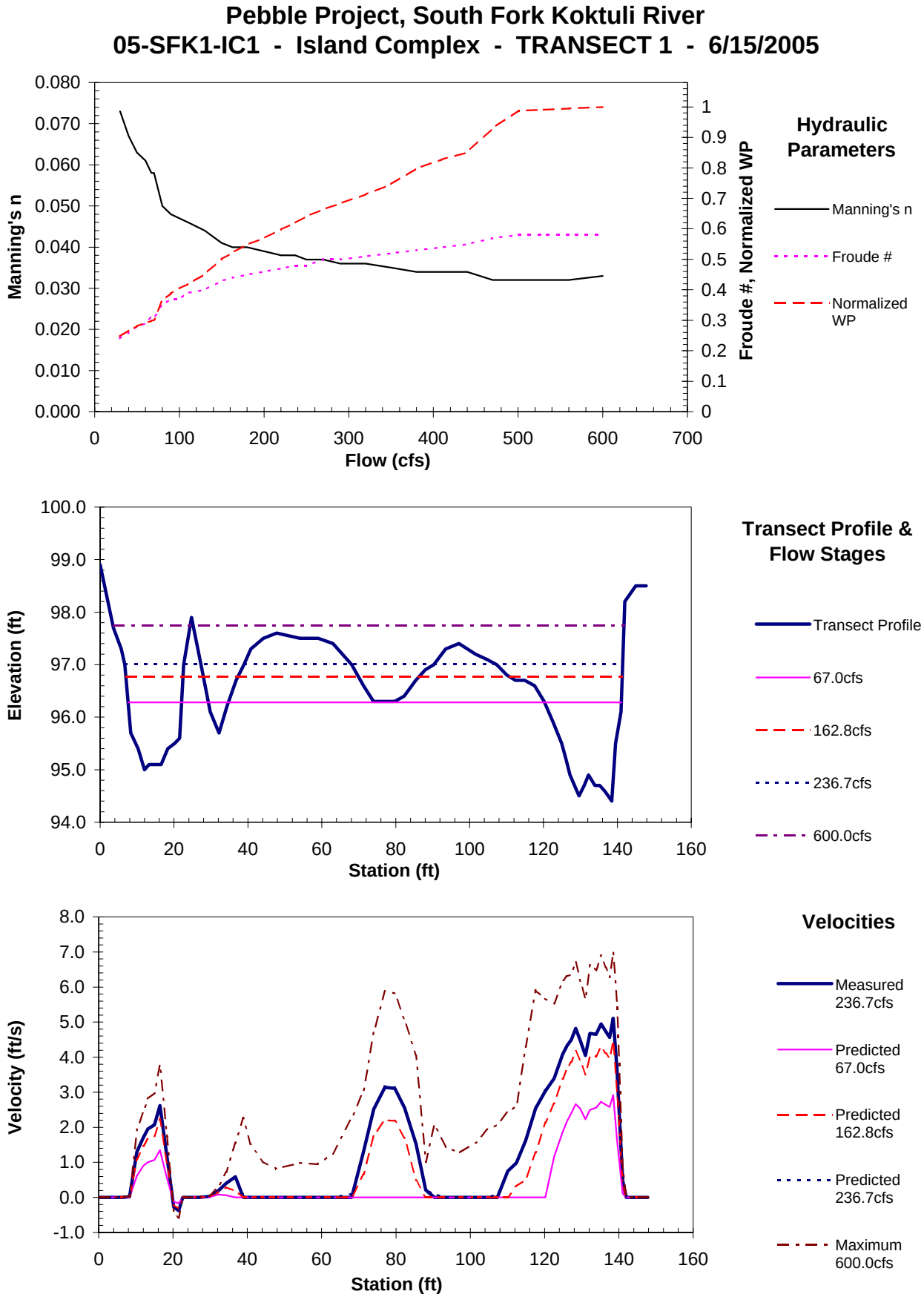








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK1-IC1  06/15/05
ISLAND                     0605Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  67.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 130.0
QARD 150.0
QARD 162.8
QARD 180.0
QARD 200.0
QARD 220.0
QARD 236.7
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 470.0
QARD 500.0
QARD 530.0
QARD 560.0
QARD 600.0
XSEC  1000     1000. 1.0     94.41    .00497
      1000   .098.89  3.697.75  5.797.34  6.797.01  8.395.71 10.395.41
      1000 12.095.01 13.295.11 15.095.11 16.595.11 18.395.41 20.295.51
      1000 21.595.61 22.697.01 24.797.88 27.397.01 29.896.11 32.295.71
      1000 34.396.21 36.896.71 38.997.01 40.897.34 44.297.52 47.897.58
      1000 54.197.53 59.097.54 63.097.44 68.197.01 71.396.61 74.096.31
      1000 77.096.31 79.796.31 82.396.41 85.496.71 88.096.91 90.397.01
      1000 93.597.31 97.197.39101.697.25104.797.08107.397.01110.196.81
      1000112.496.71114.996.71117.696.61120.296.31122.695.91124.995.51
      1000126.195.21127.294.91128.494.71129.694.51131.094.71132.294.91
      1000133.994.71135.294.71136.594.61137.594.51138.594.41139.595.51
      1000141.096.11142.098.15145.098.53147.898.49
NS    1000      22.9      22.9      22.9      22.9      22.9      23.8
NS    1000      32.6      23.8      43.6      43.6      34.7      23.9
NS    1000      23.9      23.7      22.9      24.9      22.9      22.9
NS    1000      22.9      24.6      34.7      43.8      34.6      34.8
NS    1000      34.9      34.9      34.9      34.8      34.8      43.7
NS    1000      43.7      45.6      45.6      45.6      45.6      45.6
```

IFG4 Data Deck (continued)

```
NS    1000      54.6      54.6      54.6      54.6      45.6      45.6
NS    1000      45.6      45.7      45.6      45.7      45.7      43.8
NS    1000      43.8      45.8      43.9      43.9      43.8      43.7
NS    1000      34.6      43.7      45.9      43.9      24.6      22.9
NS    1000      22.9      22.9      22.9      11.9
WSL   1000     95.92     96.04     96.14     96.23     96.28     96.30
WSL   1000     96.37     96.43     96.49     96.54     96.64     96.72
WSL   1000     96.77     96.84     96.90     96.97     97.02     97.06
WSL   1000     97.11     97.16     97.23     97.30     97.37     97.43
WSL   1000     97.48     97.54     97.59     97.64     97.68     97.74
CAL1  1000     97.01     236.7
VEL1  1000                0.00 0.02 1.30 1.71 1.95 2.07 2.62 1.19-0.27
VEL1  1000-0.38 0.00      0.00 0.03 0.19 0.40 0.59 0.00
VEL1  1000                0.00 1.31 2.52 3.14 3.11 2.55 1.53 0.21 0.00
VEL1  1000                     0.00 0.75 0.98 1.62 2.54 3.03 3.39 4.08
VEL1  1000 4.33 4.49 4.82 4.48 4.05 4.68 4.65 4.95 4.73 4.56 5.11 3.65
VEL1  1000 0.48
CAL2  1000     96.28      67.0
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.78     162.8
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 05-SFK1-RF1

Habitat Type: Riffle

River Kilometer: 4.91

Stream: South Fork Koktuli River
Reach: A
Site: 05-SFK1-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/15/2005	1	100.00	99.95	103.32
2nd	7/18/2005	2	100.00	99.96	103.33
3rd	8/11/2005	3	100.00	99.95	103.32
4th	7/9/2006	4	100.00	99.96	103.32
5th	4/11/2007	5	100.00	99.96	103.33

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between control pins were within 0.01ft during 2005-2007 period.
(c) Small changes of elevations indicated control pins were stable.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/15/2005	98.11
7/18/2005	97.84
8/11/2005	97.59
7/9/2006	97.92
4/11/2007	97.89

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/15/2005	224.2
7/18/2005	
8/11/2005	70.5
7/9/2006	147.9
4/11/2007	82.8

No flow was surveyed during the 7/18/05 site visit.
Photos of 4/11/07 site visit showed ice/snow on banks and waters edge. Hydraulics were impacted by ice and thus were not used for modeling.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/15/2005	0.367%	201.8
7/18/2005	0.417%	192.0
8/11/2005	0.350%	171.2
7/9/2006	0.491%	171.0
4/11/2007	0.311%	132.0

The slope S=0.337% of 6/15/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/15/2005	96.41
7/18/2005	
8/11/2005	95.89
7/9/2006	96.52
4/11/2007	96.59
Invert	96.52
SZF	95.89

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Substrate was collected on 7/18/05, but no bed profile was surveyed on that date.
(4) Photos of 4/11/07 site visit showed ice on both sides of the channel, which may have resulted in an inconsistent WSE-Q relationship on rating curve.
The inconsistent relationship suggested the hydraulics were impacted by the ice. As the result, hydraulics, including channel invert, of this date were not used for further analysis.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/15/2005	224.2	98.11	98.12	0.01	IFG4
2nd	7/18/2005	NA	97.84			
3rd	8/11/2005	70.5	97.59	97.59	0.00	IFG4
4th	7/9/2006	147.9	97.92	97.91	-0.01	IFG4
5th	4/11/2007	82.8	97.89			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No discharge was measured during the 7/18/05 trip, and only partial flow was measured in 4/11/07 trip.
(d) Photos of 4/11/07 trip showed most of the transect was covered in ice. Hydraulics were apparently impacted by the ice and thus were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, ranging from 70.5cfs to 224.2cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For any of the three calibrated velocity profiles, no adjustments were needed for the model-calculated n values.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

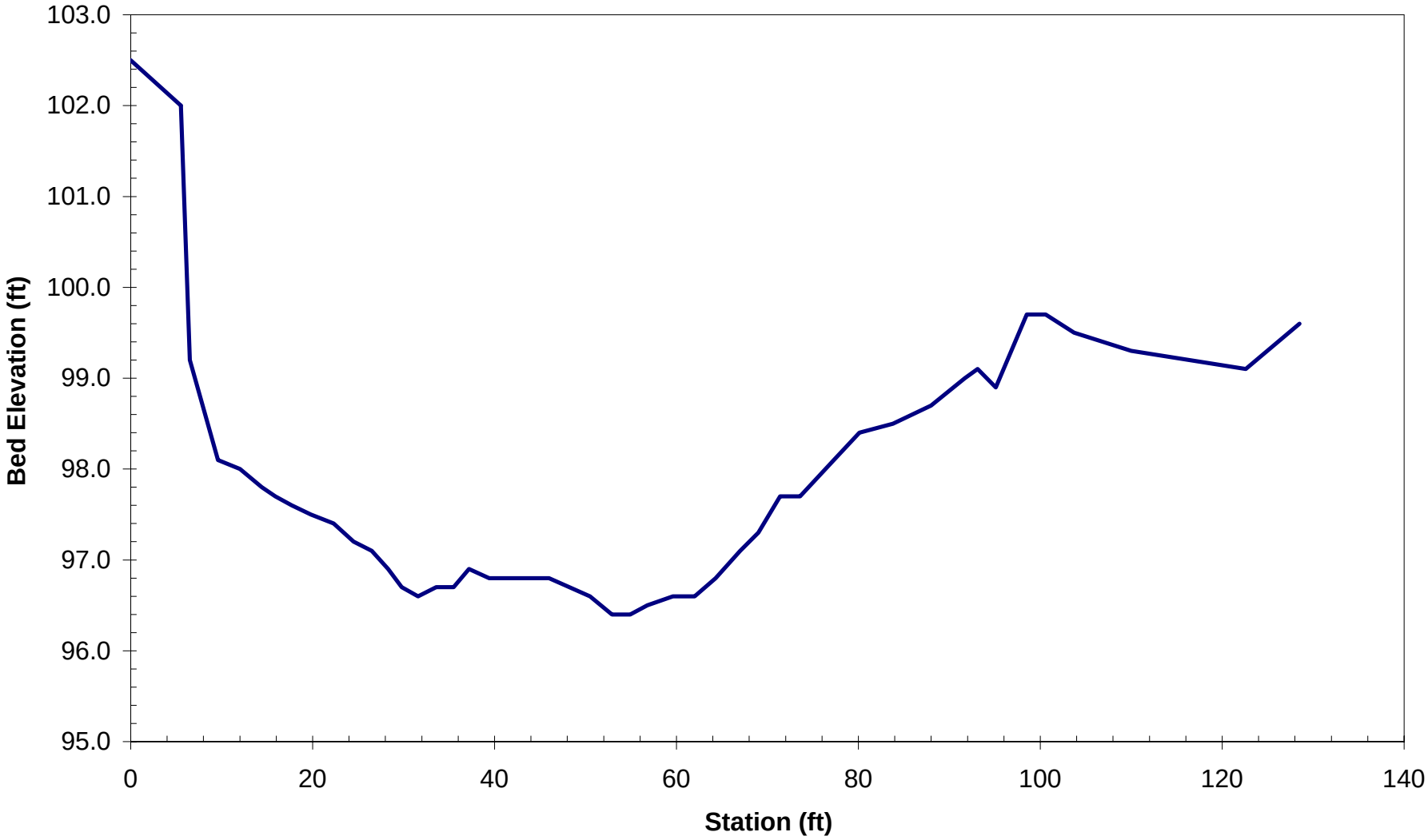
Survey Date	Q (cfs)	WUA (Y/N)
6/15/2005	224.2	Y
7/18/2005	NA	
8/11/2005	70.5	Y
7/9/2006	147.9	
4/11/2007	82.8	

(4) Hydraulic Calibration Results:

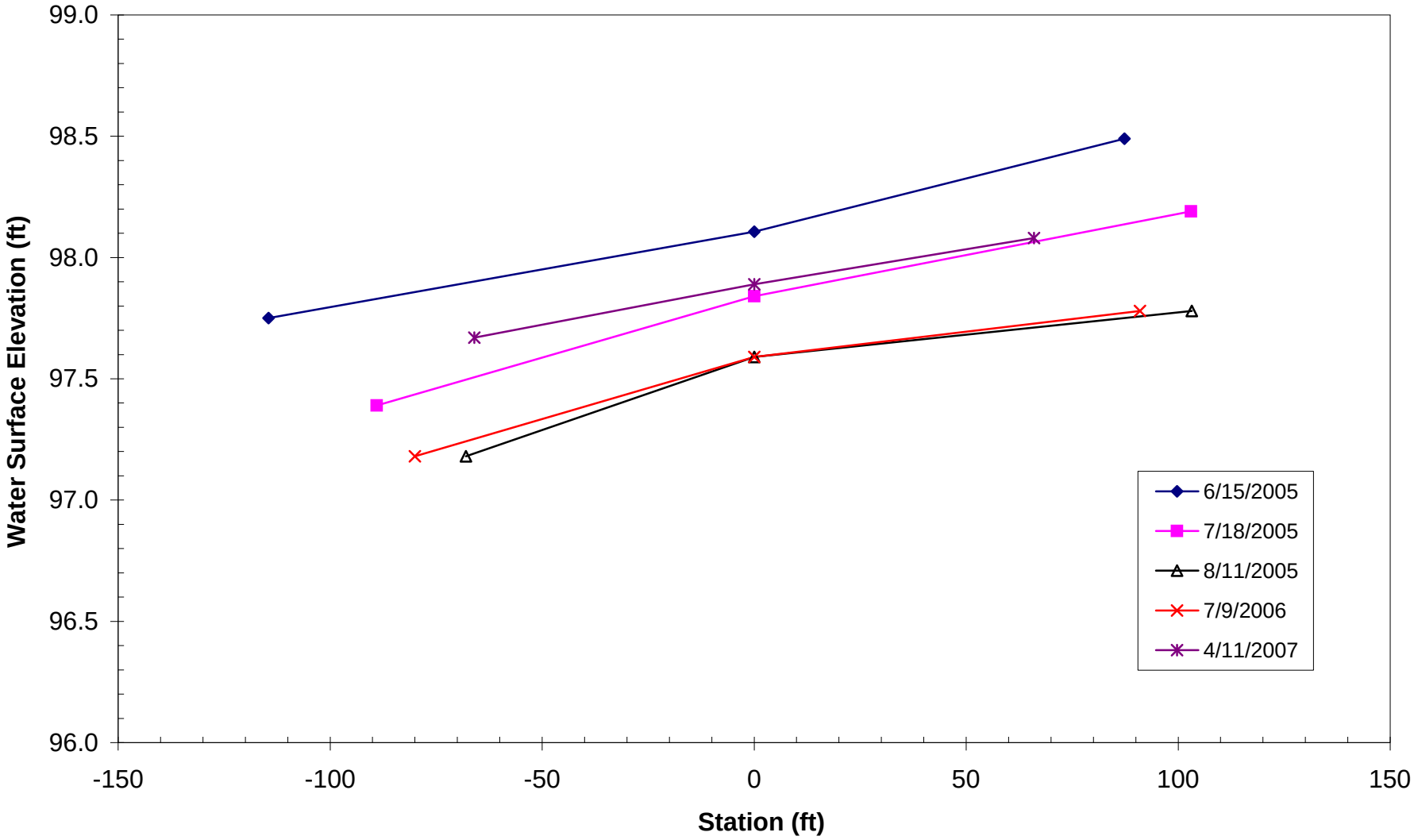
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends.

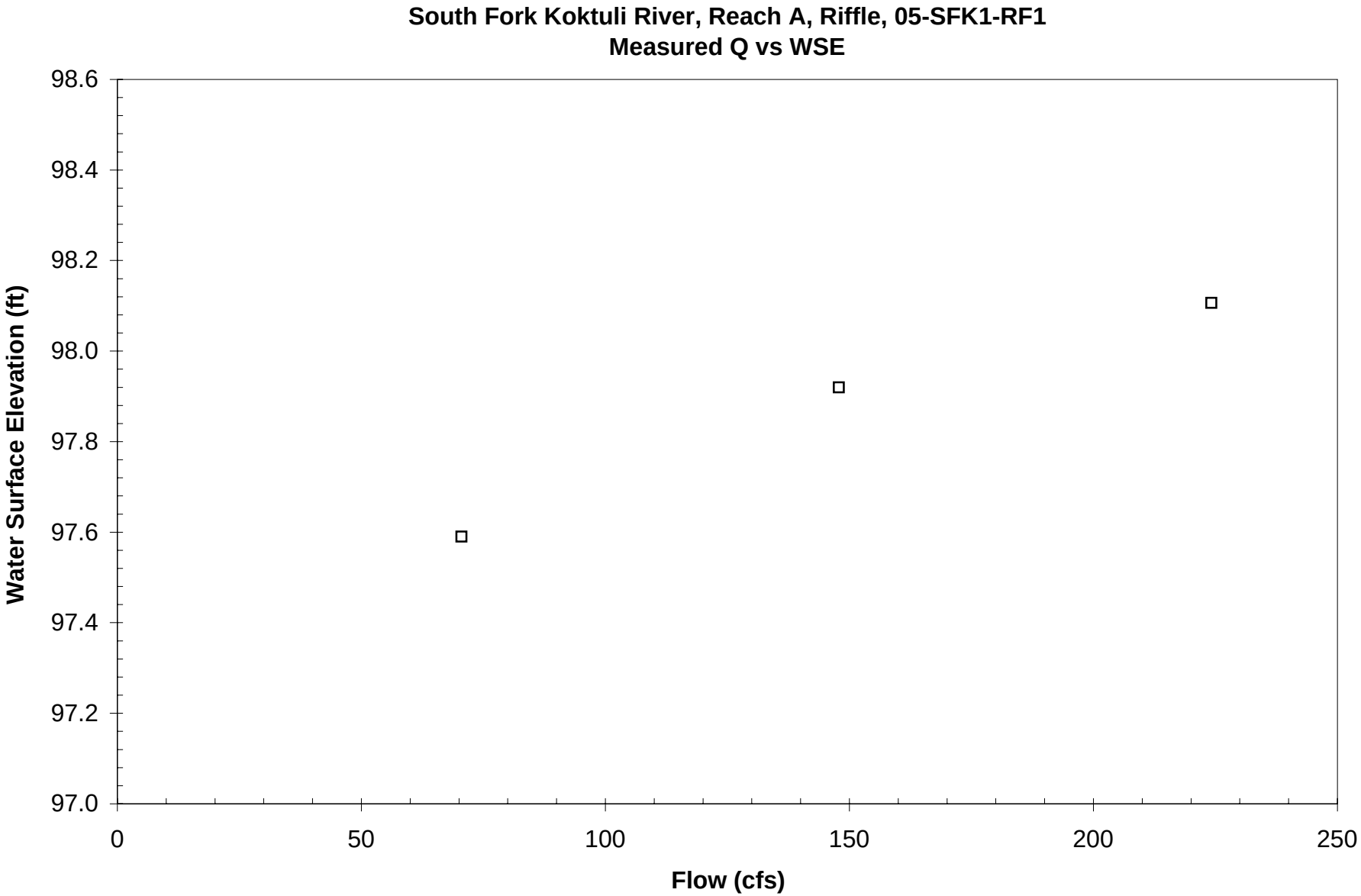
calibration notes

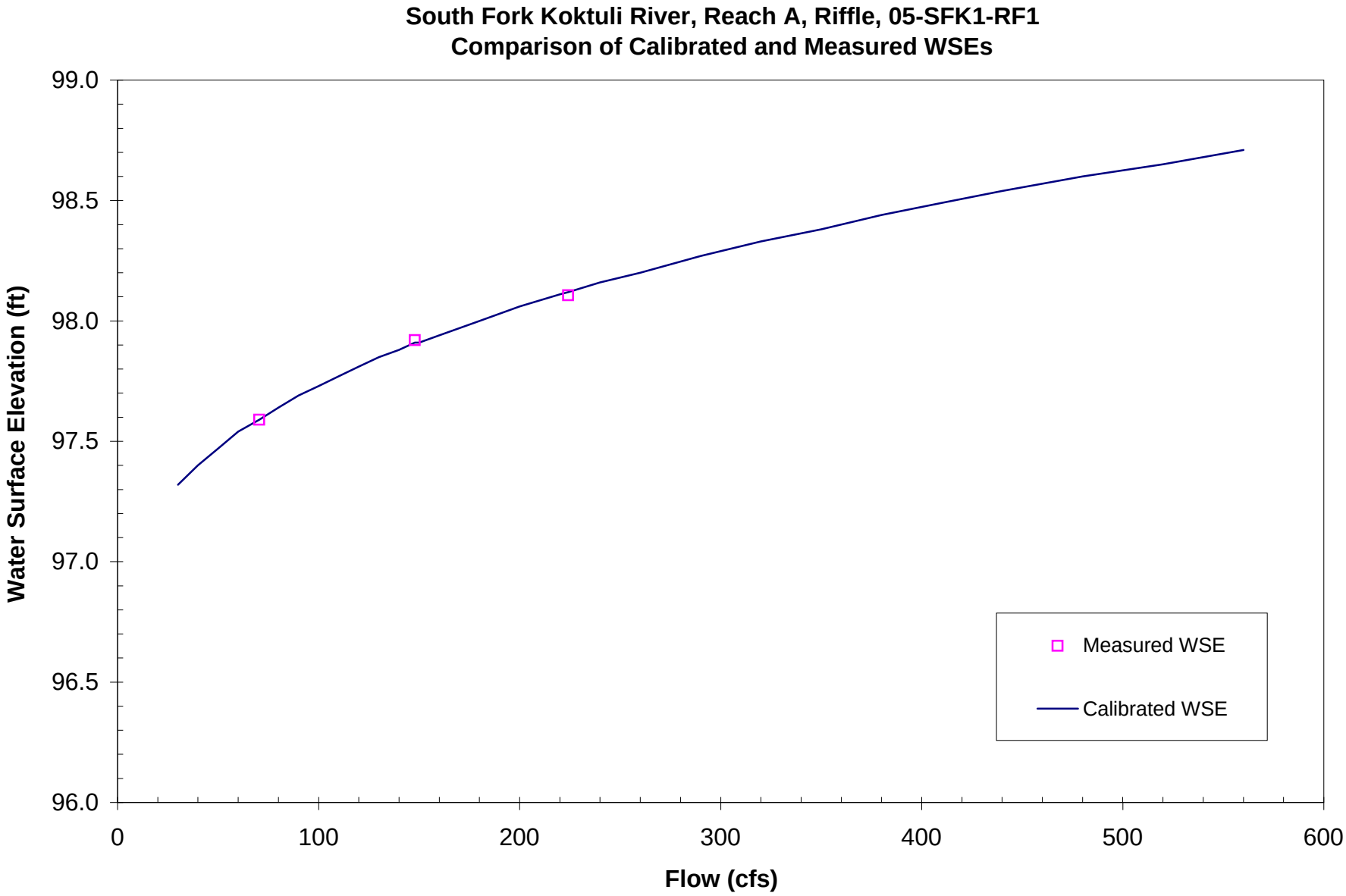
South Fork Koktuli River, Reach A, Riffle, 05-SFK1-RF1
Measured Transect Profile



South Fork Koktuli River, Reach A, Riffle, 05-SFK1-RF1
Longitudinal Water Surface Elevation Profiles

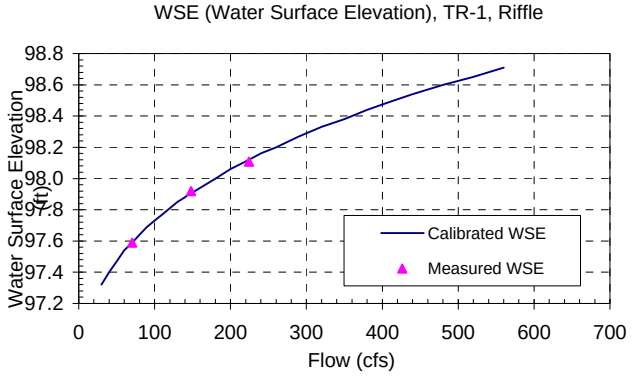


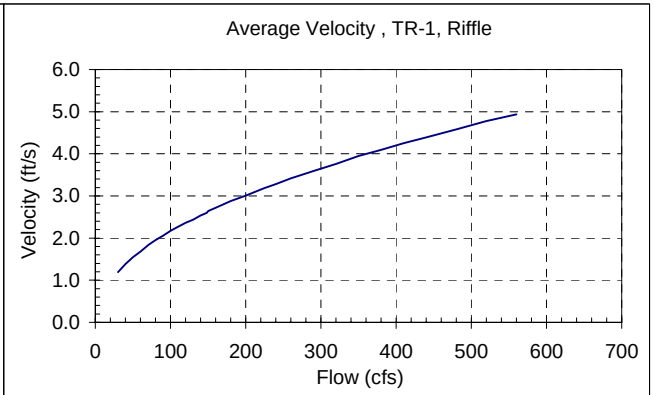

South Fork Koktuli River, Reach A, Riffle, 05-SFK1-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
50
100
150
200
250
Flow (cfs)

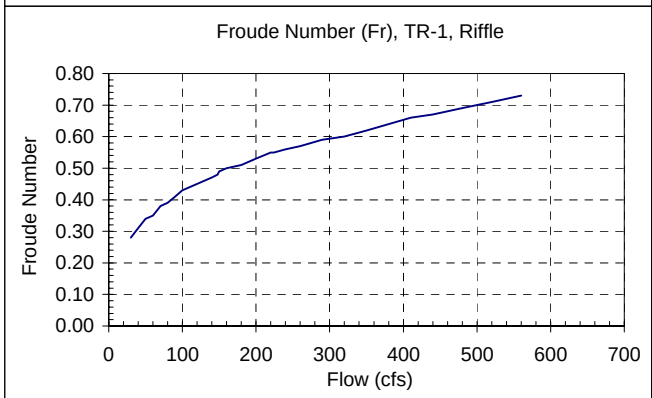

South Fork Koktuli River, Reach A, Riffle, 05-SFK1-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.0
98.5
98.0
97.5
97.0
96.5
96.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

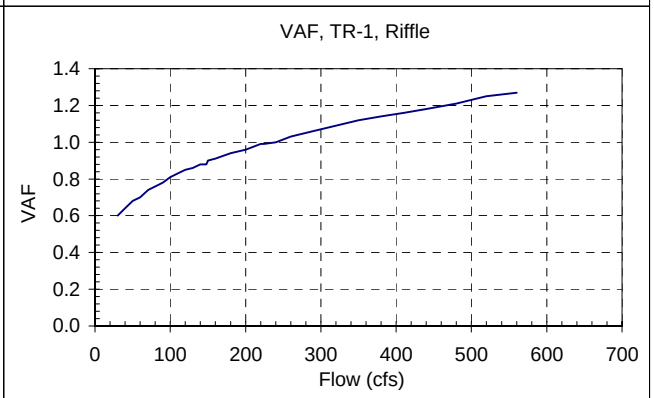
Stream: South Fork Koktuli River **Reach:** A
Site Name: 05-SFK1-RF1 **Site #:** 1
Date: 6/15/2005 **Transect:** 1
Calibration Flow: Q(6/15/2005) **Habitat:** Riffle

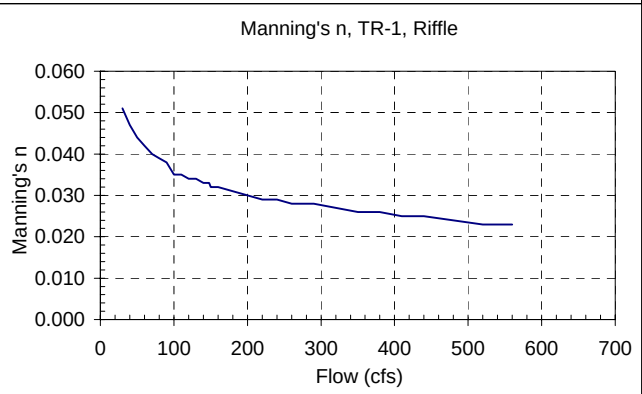
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	97.32	0.28	1.19	0.60	0.051	45.9
40	97.40	0.31	1.38	0.64	0.05	47.2
50	97.47	0.34	1.55	0.68	0.04	49.3
60	97.54	0.35	1.68	0.70	0.04	51.3
70.5	97.59	0.38	1.84	0.74	0.04	52.7
80	97.64	0.39	1.95	0.76	0.04	54.0
90	97.69	0.41	2.06	0.78	0.04	55.2
100	97.73	0.43	2.17	0.81	0.04	58.3
110	97.77	0.44	2.27	0.83	0.04	59.3
120	97.81	0.45	2.36	0.85	0.03	60.3
130	97.85	0.46	2.44	0.86	0.03	61.1
140	97.88	0.47	2.54	0.88	0.03	61.8
147.9	97.91	0.48	2.60	0.88	0.03	62.4
150	97.91	0.49	2.64	0.90	0.03	62.4
160	97.94	0.50	2.72	0.91	0.03	63.1
180	98.00	0.51	2.88	0.94	0.03	64.3
200	98.06	0.53	3.01	0.96	0.03	66.2
220	98.11	0.55	3.15	0.99	0.03	67.9
224.2	98.12	0.55	3.18	0.99	0.03	68.0
240	98.16	0.56	3.28	1.00	0.03	68.5
260	98.20	0.57	3.42	1.03	0.03	69.0
290	98.27	0.59	3.59	1.06	0.03	69.9
320	98.33	0.60	3.76	1.09	0.03	70.7
350	98.38	0.62	3.95	1.12	0.03	71.3
380	98.44	0.64	4.09	1.14	0.03	72.8
410	98.49	0.66	4.25	1.16	0.03	74.4
440	98.54	0.67	4.39	1.18	0.03	75.9
480	98.60	0.69	4.58	1.21	0.02	77.3
520	98.65	0.71	4.78	1.25	0.02	78.5
560	98.71	0.73	4.94	1.27	0.023	79.8

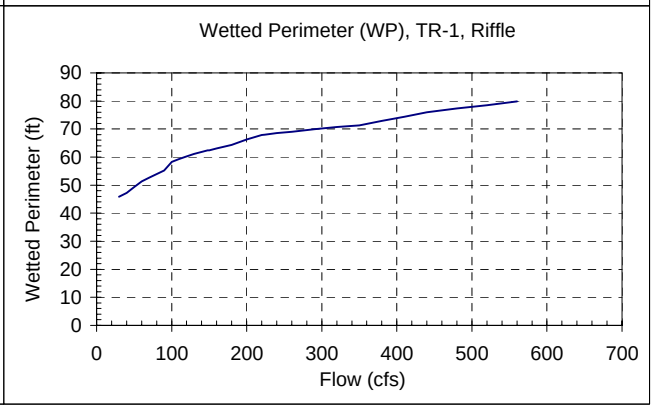




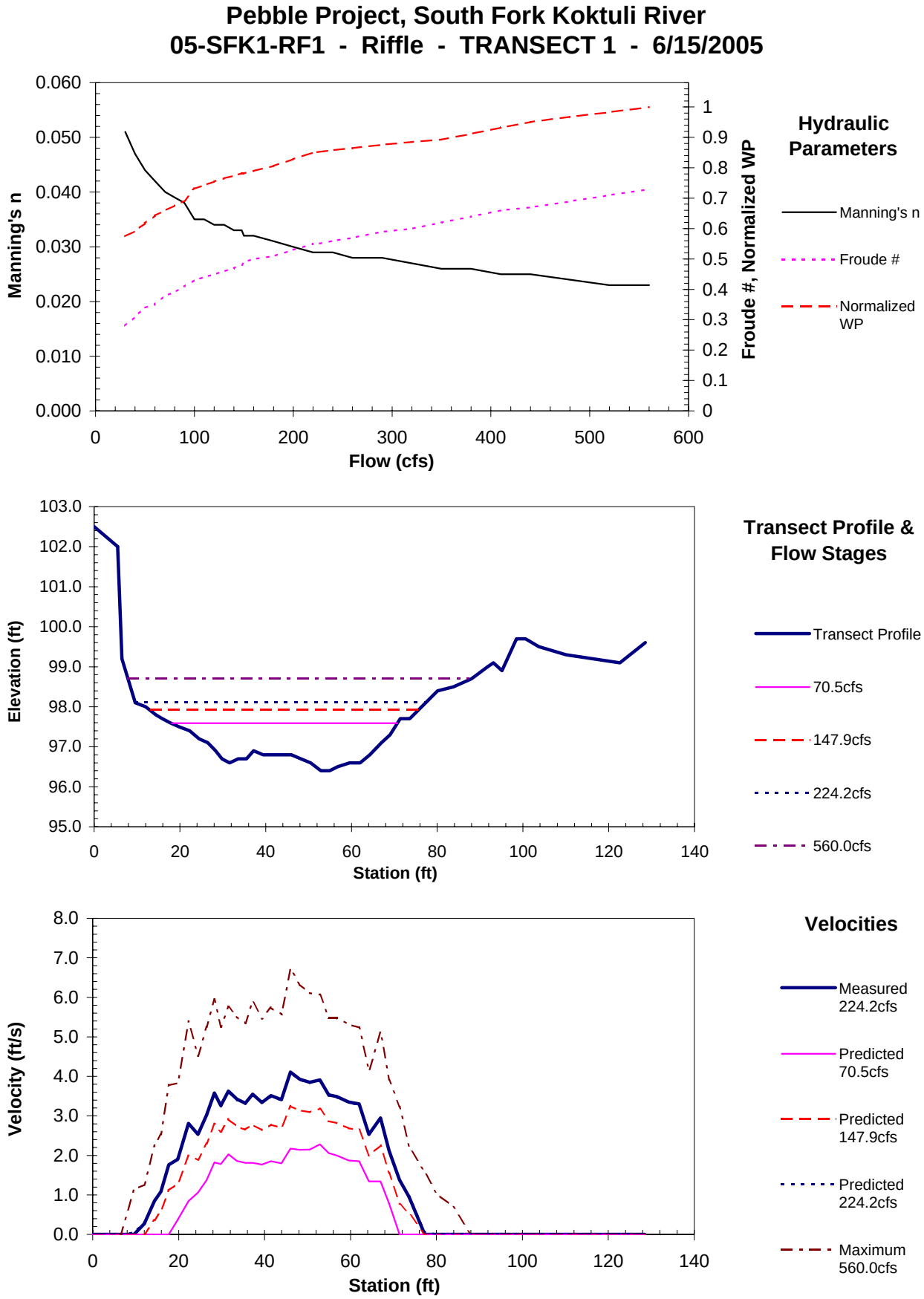








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK1-RF1  06/15/05
RIFFLE                      0605Q                                    TRANSECT 1
IOC       11011001000010001010 00
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.5
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 147.9
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 224.2
QARD 240.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
XSEC  1000     1000. 1.0     96.52    .00367
      1000   .0102.5  5.5102.0  6.599.18  9.698.11 12.098.01 14.497.81
      1000 15.997.71 17.797.61 19.897.51 22.397.41 24.597.21 26.597.11
      1000 28.396.91 29.896.71 31.696.61 33.696.71 35.596.71 37.296.91
      1000 39.496.81 41.596.81 43.996.81 46.096.81 48.296.71 50.596.61
      1000 52.996.41 54.996.41 56.896.51 59.696.61 62.096.61 64.396.81
      1000 67.097.11 69.097.31 71.497.71 73.697.71 77.398.11 80.198.40
      1000 83.898.53 88.098.74 91.799.02 93.199.12 95.198.94 98.599.73
      1000100.699.70103.799.48110.099.28122.699.11128.599.59
NS    1000      22.9      23.7      23.8      43.6      43.8      43.8
NS    1000      45.9      43.9      43.9      43.8      45.9      45.8
NS    1000      43.8      43.8      43.8      43.8      45.8      45.8
NS    1000      43.9      43.9      43.8      43.8      43.9      43.8
NS    1000      43.8      43.8      43.8      43.8      43.6      34.8
NS    1000      43.6      43.6      34.6      34.6      34.6      34.6
NS    1000      43.6      34.6      23.6      23.9      23.7      23.9
NS    1000      23.9      32.9      22.9      32.6      32.9
```

IFG4 Data Deck (continued)

```
WSL   1000     97.32     97.40     97.47     97.54     97.59     97.64
WSL   1000     97.69     97.73     97.77     97.81     97.85     97.88
WSL   1000     97.91     97.91     97.94     98.00     98.06     98.11
WSL   1000     98.12     98.16     98.20     98.27     98.33     98.38
WSL   1000     98.44     98.49     98.54     98.60     98.65     98.71
CAL1  1000     98.11     224.2
VEL1  1000                0.00 0.27 0.85 1.08 1.76 1.90 2.81 2.53 3.02
VEL1  1000 3.58 3.26 3.63 3.42 3.32 3.55 3.34 3.51 3.41 4.11 3.93 3.85
VEL1  1000 3.91 3.53 3.49 3.35 3.30 2.53 2.95 2.12 1.38 0.95 0.00
VEL1  1000
CAL2  1000     97.59      70.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.92     147.9
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-A

Site: 08-SFK1-MS1

TR1:	08-SFK1-MS1-TR1	**Habitat Type:**	Run	**River Kilometer:**	6.91
TR2:	08-SFK1-MS1-TR2	**Habitat Type:**	Island Complex	**River Kilometer:**	6.96
TR3:	08-SFK1-MS1-TR3	**Habitat Type:**	Island Complex	**River Kilometer:**	7.02
TR4:	08-SFK1-MS1-TR4	**Habitat Type:**	Island Complex	**River Kilometer:**	7.04
TR5:	08-SFK1-MS1-TR5	**Habitat Type:**	Riffle	**River Kilometer:**	7.05
TR6:	08-SFK1-MS1-TR6	**Habitat Type:**	Run	**River Kilometer:**	7.14

Stream: SF Koktuli River
Reach: A
Site: 08-SFK1-MS1

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3	4-CWP
6/22/2008	100.00	99.95		99.56
7/22/2008	100.00	99.95		
8/15/2008	100.00	99.95	100.49	99.55

(a) Elevations of control pins (BM's, CWP) are taken from the first half of each level loop survey
(b) Relative elevation change between the control pins were within 0.01ft.
(c) Samll elevation changes indicated the control pins were stable during the entire course of survey period.

Measured WSE:

TR-1, TR-5, and TR-6 have a single channel, and TR-2, TR-3, and TR-4 have multiple channels (LC and RC).
WSEs were measured on the left (LWSE) and right (RWSE) sides of each channel.
Average of the left and right WSEs is used as transect representative WSE for modeling.

Date	Measured WSE (ft)								
	TR-1	TR-2		TR-3		TR-4		TR-5	TR-6
		LC	RC	LC	RC	LC	RC		
6/22/2008	97.85	98.28	98.02	98.97	98.51	99.26	99.24	99.36	100.07
7/22/2008	97.19	97.56	97.28	98.29	97.84	98.61		98.77	99.17
8/15/2008	96.38	96.89	96.94	97.63		98.03		98.11	98.39

WSEs of RC and LC are not the same, but the WSEs of left channels are used for hydraulic calibration, because most of the water flows through the left channels. The bed bathymetry of RCs is adjusted, with the amount of the WSE difference between RC and LC, so that both channels (RC and LC) would have the same WSE, as required by the IFG4 model.

calibration notes

Discharge:

All measured discharges are listed in the following table.

The discharge include the flows of both RC and LC for the multiple channel transects (i.e., TR-2, TR-3, TR4).

Date	Measured Discharge (cfs)						**Ave Q (cfs)**
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	
6/22/2008					436.0		**436.0**
7/22/2008	234.4	252.2	257.4	249.0	241.4	251.9	**247.7**
8/15/2008	98.8	98.8	99.1	100.1	109.4	94.7	**100.1**

Average Q is used as the representative flows of the site for hydraulic calibration

Longitudinal WSE Slope:

Slopes are calculated from the measured WSEs and longitudinal distances

	Longitudinal Stations					
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
LB	0.0	131.0	248.0	43.0	56.0	250.0
RB	0.0	156.0	192.0	59.0	24.0	300.0
Ave	0.0	143.5	220.0	51.0	40.0	275.0
Station	0.0	143.5	363.5	414.5	454.5	729.5

	Slope					
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/22/2008	-	0.303%	0.309%	0.341%	0.332%	0.304%
7/22/2008	-	0.254%	0.303%	0.343%	0.347%	0.271%
8/15/2008	-	0.355%	0.343%	0.397%	0.381%	0.276%

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.

The TR-6 slope S=0.304% of 6/22/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/22/2008					96.76	
7/22/2008	94.29	95.06	96.09	96.41	96.77	96.57
8/15/2008	94.23	95.09	96.13	96.43	96.76	96.59
Invert	94.29	95.09	96.13	96.43	96.77	96.59
SZF	94.29	95.09	96.13	96.43	96.77	96.77

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) SZF of the upstream transect must be no less than that of its downstream transect.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

TR-1 through TR-5 were calibrated using IFG4.
WSEs of TR-6 were calibrated using both IFG4 and MANSQ models, and a composite WSE~Q relationship was developed using the WSE~Q rating curves derived from each of the two models. The details of developing the composite curve are shown below.

Simulation	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6		
	Simulated WSE							Composite
Q (cfs)	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ	WSE
40	95.79	96.38	97.13	97.57	97.66	97.80	98.20	97.80
60	96.03	96.57	97.32	97.74	97.83	98.02	98.44	98.02
80	96.22	96.73	97.48	97.89	97.98	98.21	98.68	98.21
100.1	96.38	96.87	97.61	98.01	98.11	98.37	98.86	98.37
120	96.52	97.00	97.73	98.12	98.22	98.51	99.29	98.51
140	96.65	97.11	97.85	98.22	98.32	98.65	99.36	98.65
160	96.77	97.22	97.95	98.31	98.42	98.77	99.42	98.77
180	96.87	97.32	98.04	98.40	98.51	98.89	99.48	98.89
200	96.97	97.41	98.13	98.48	98.59	99.00	99.54	99.00
220	97.07	97.49	98.22	98.56	98.67	99.10	99.60	99.10
247.7	97.19	97.61	98.33	98.66	98.77	99.24	99.67	99.24
260	97.24	97.66	98.38	98.70	98.82	99.30	99.70	99.33
300	97.40	97.81	98.52	98.83	98.95	99.48	99.79	99.57
350	97.57	97.98	98.69	98.99	99.11	99.69	99.90	99.80

calibration notes

400	97.74	98.13	98.84	99.13	99.25	99.88	100.00	99.98
436	97.85	98.24	98.94	99.22	99.35	100.01	100.07	100.07
460	97.92	98.31	99.01	99.28	99.41	100.10	100.12	100.12
500	98.03	98.42	99.11	99.38	99.51	100.23	100.19	100.19
550	98.16	98.55	99.24	99.50	99.63	100.39	100.27	100.27
600	98.28	98.68	99.36	99.61	99.74	100.55	100.36	100.36
650	98.40	98.79	99.47	99.72	99.85	100.70	100.44	100.44
700	98.51	98.91	99.58	99.82	99.95	100.84	100.52	100.52
750	98.62	99.02	99.69	99.92	100.05	100.98	100.59	100.59
800	98.72	99.12	99.79	100.01	100.15	101.11	100.67	100.67
850	98.82	99.22	99.89	100.10	100.24	101.24	100.74	100.74
900	98.91	99.32	99.98	100.19	100.33	101.36	100.81	100.81
950	99.00	99.42	100.07	100.28	100.42	101.48	100.88	100.88
1000	99.09	99.51	100.16	100.36	100.50	101.60	100.95	100.95
1050	99.17	99.60	100.25	100.44	100.58	101.71	101.01	101.01
1100	99.26	99.69	100.33	100.52	100.66	101.83	101.07	101.07

(1) β=-0.25 was used for MANSQ modeling

(2) Comparison of measured and calibrated WSEs are plotted in the WSE comparison figure.
The "bump" at Qhigh on TR-6 curve may be due to the sharp bend just below TR-6.
The bend could cause the water to back up when flow velocity is high.

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)						Calibrated WSE(ft)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/22/2008	436.0	97.85	98.28	98.97	99.26	99.36	100.07	97.85	98.24	98.94	99.22	99.35	100.07
7/22/2008	247.7	97.19	97.56	98.29	98.61	98.77	99.17	97.19	97.61	98.33	98.66	98.77	99.24
8/15/2008	100.1	96.38	96.89	97.63	98.03	98.11	98.39	96.38	96.87	97.61	98.01	98.11	98.37

Survey Date	Q (cfs)	WSE calibration error (ft)						WSE Calibration Method					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/22/2008	436.0	0.00	-0.04	-0.03	-0.04	-0.01	0.00	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ
7/22/2008	247.7	0.00	0.05	0.04	0.05	0.00	0.07	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ
8/15/2008	100.1	0.00	-0.02	-0.02	-0.02	0.00	-0.02	IFG4	IFG4	IFG4	IFG4	IFG4	MANSQ

(a) WSE calibration error = calibrated WSE - measured WSE

(b) All calibration errors are no more than 0.05ft, except the mid flow of TR-6.

calibration notes

(3) Velocity calibration

This site has six transects and each transect has 2 or 3 velocity/discharge measurements.
TR-5 has three measured velocity profiles while the other five transects each has only 2 measured profiles.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

The Q_{high} velocity profile of TR-3 was only measured in the right channel during the 6/22/08 site visit. Instead of tossing out the partial measurement, the Q_{high} velocity distribution (i.e., profile) in the left channel was estimated using the measured Q_{mid} velocity distrubution surveyed on 7/22/08. Then the simulated (i.e., estimated) velocity profile of Q_{high} is combined with the partial measured velocity profile to become a complete velocity profile for Q_{high}.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

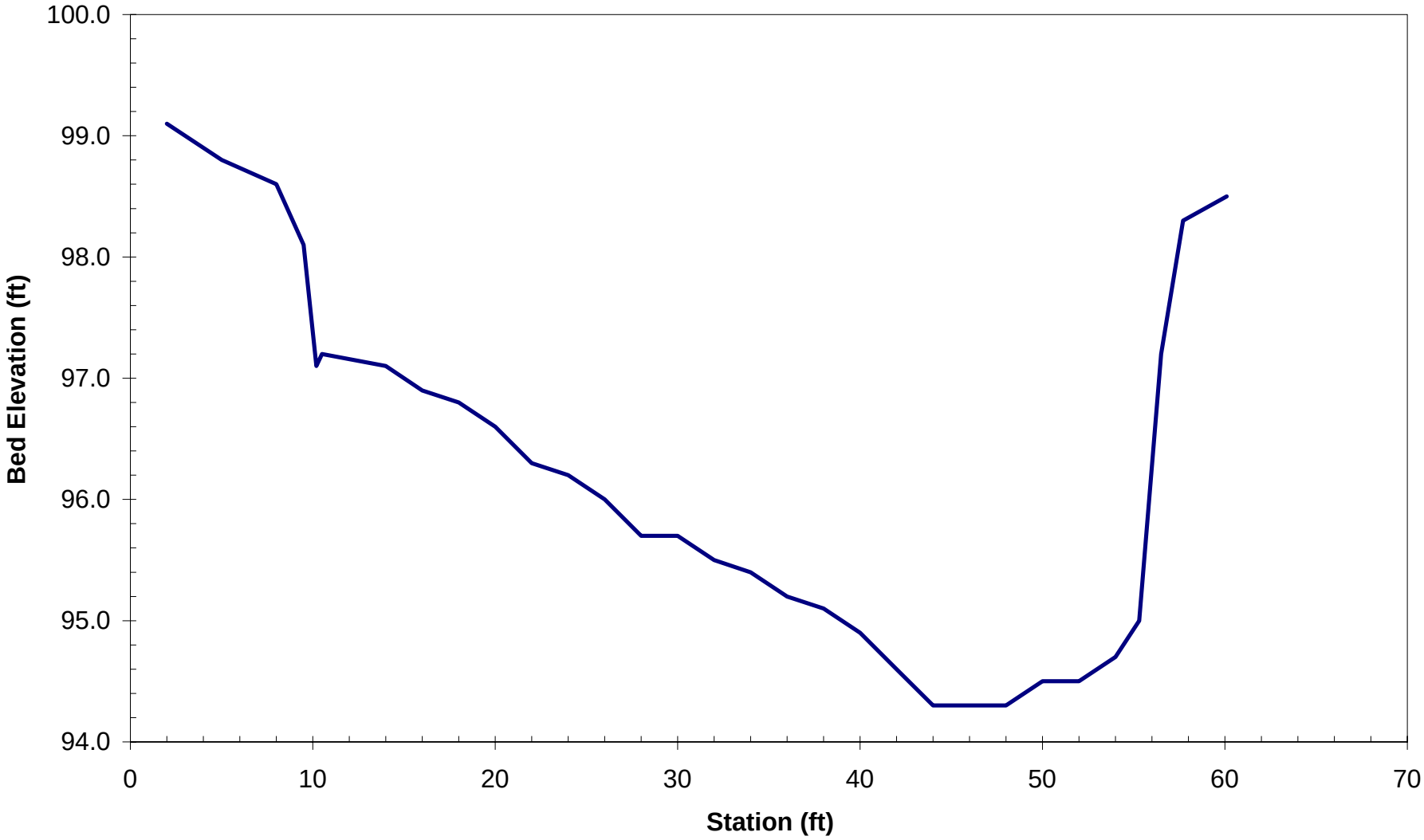
Survey Date	Q (cfs)	WUA (Y/N)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/22/2008	436.0					Y	
7/22/2008	247.7	Y	Y	Y	Y	Y	Y
8/15/2008	100.1	Y	Y	Y	Y	Y	Y

(4) Hydraulic Calibration Results:

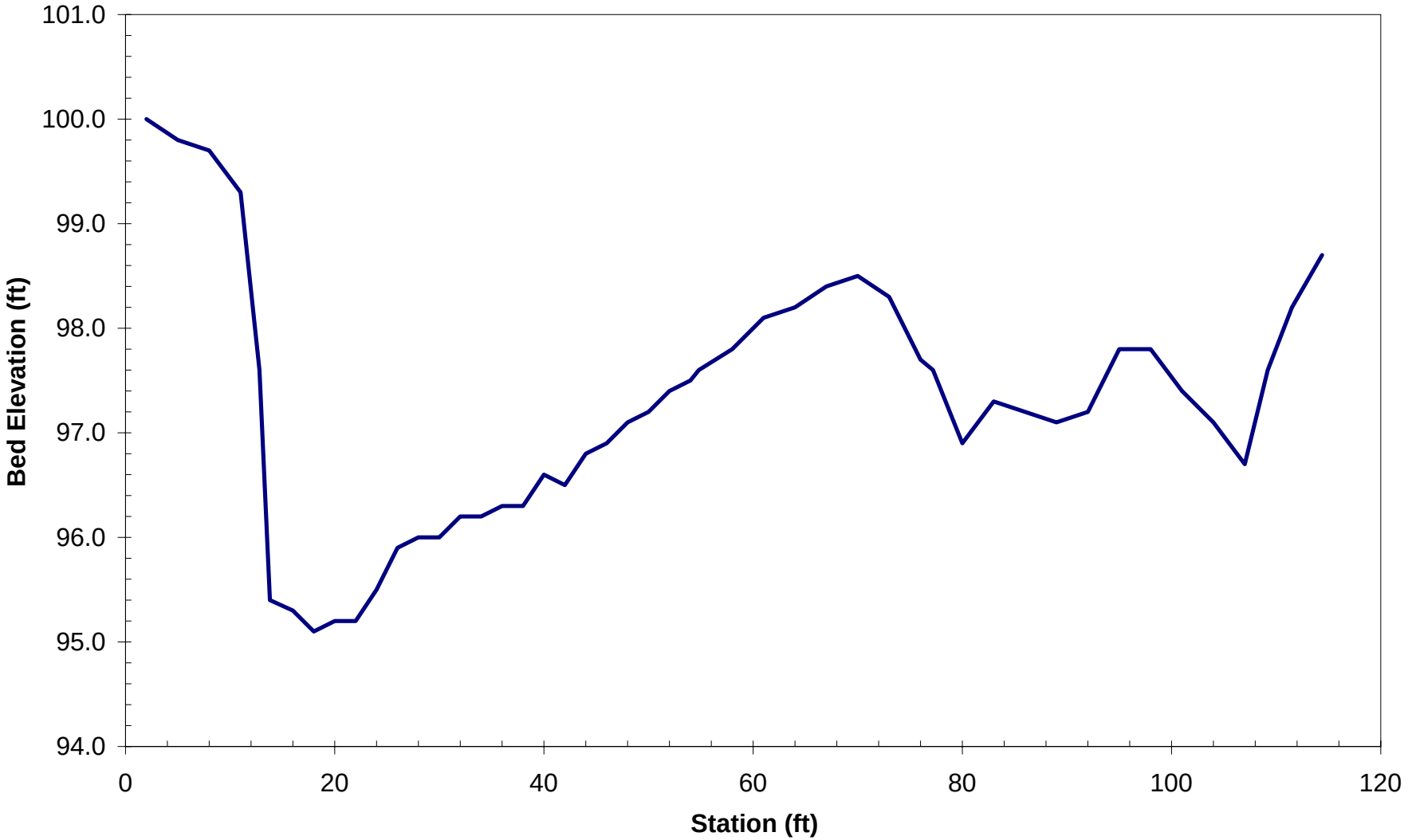
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges. TR-1, TR-5, and TR-6 are single channels, and their hydraulic parameters all have the normal trends in the direction of increasing flow. TR-2, TR-3, and TR-4 each has multiple channels with an island separating the transect into two channels, and consequently the trends of their hydraulic parameters are difficult to predict. The definition of Fr is for the transect with a single channel may not be applicable to the transect with multiple channels for accurate calculation.

calibration notes

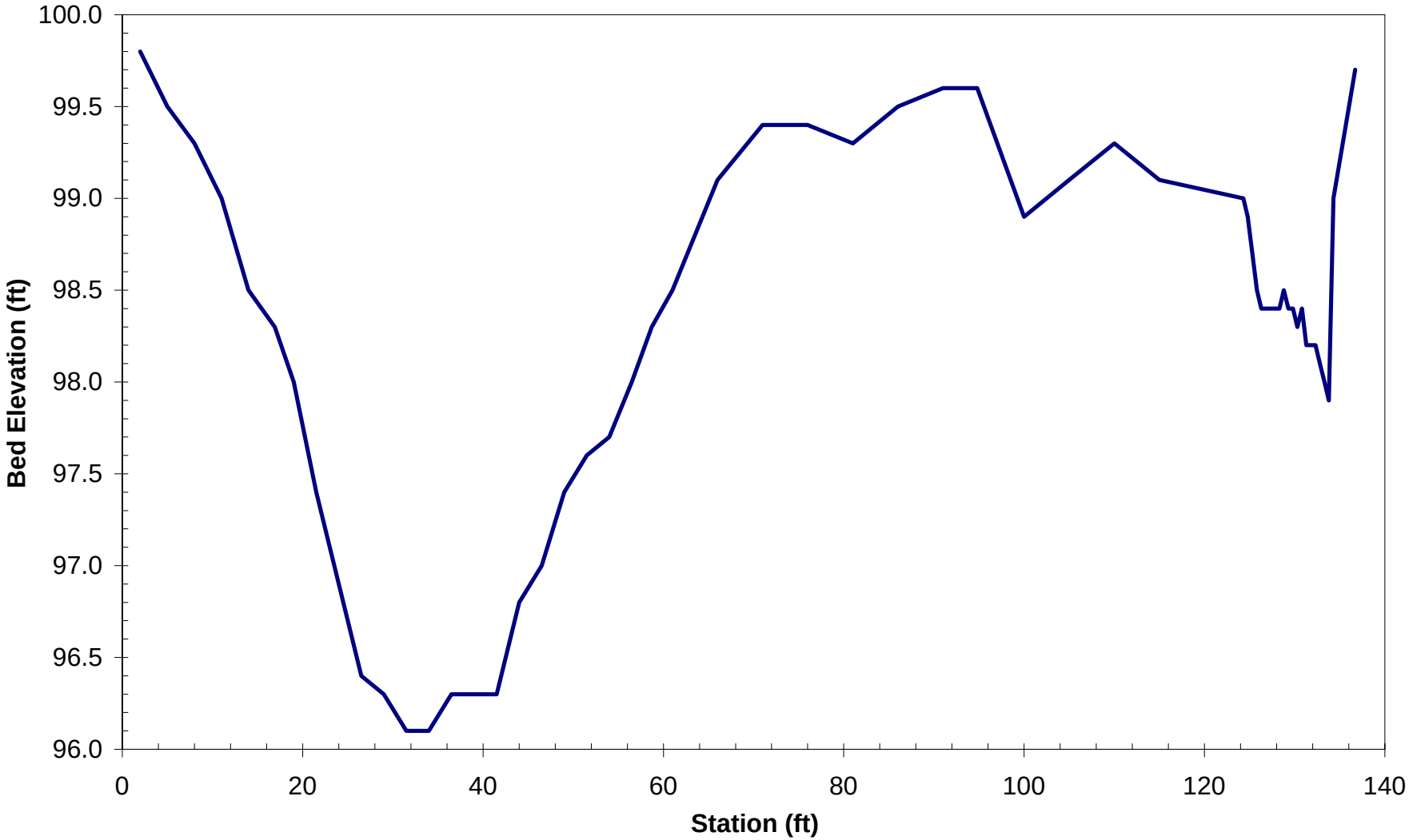
South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR1
Measured Transect Profile



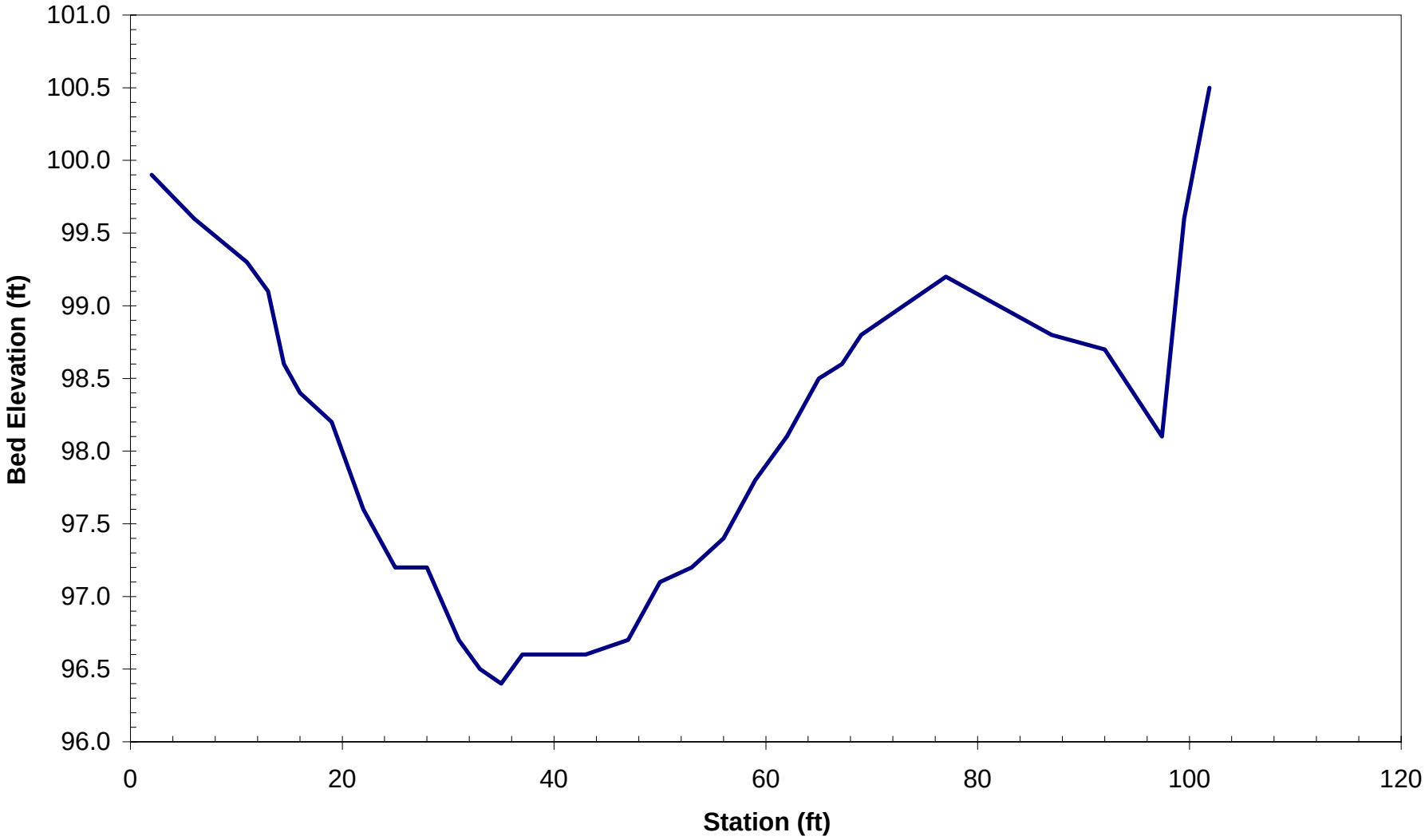
South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR2
Measured Transect Profile



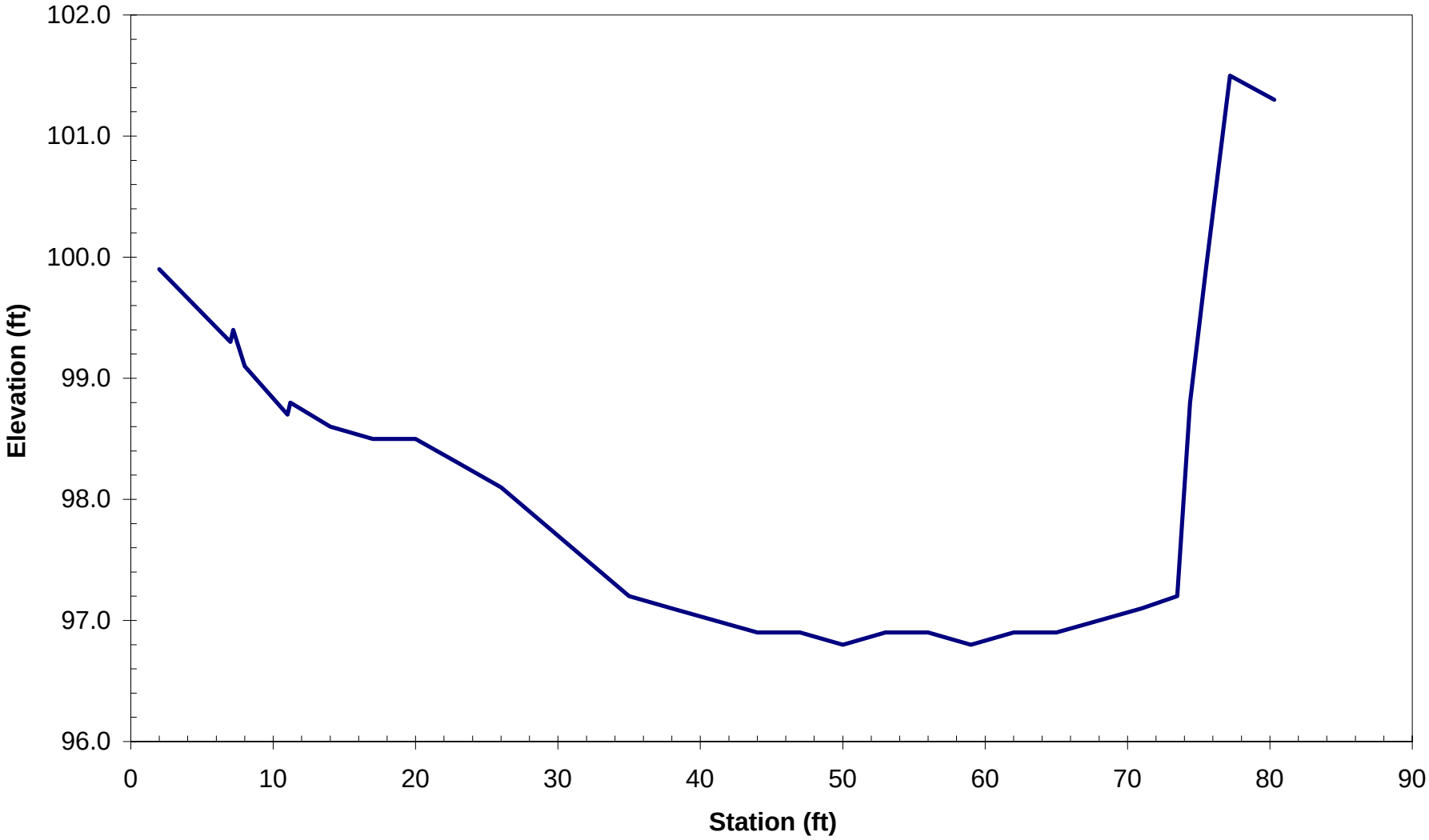
South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR3
Measured Transect Profile



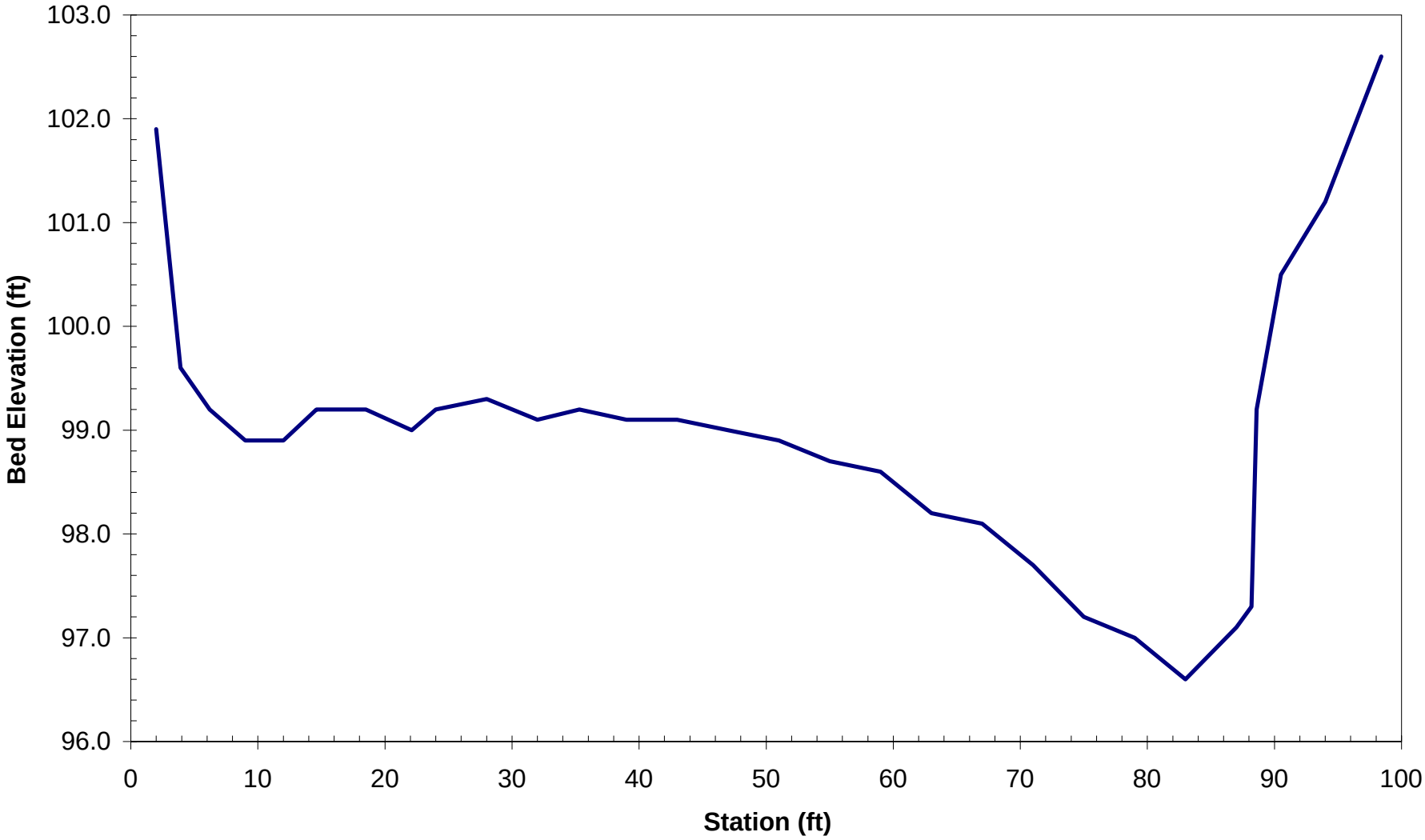
South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR4
Measured Transect Profile



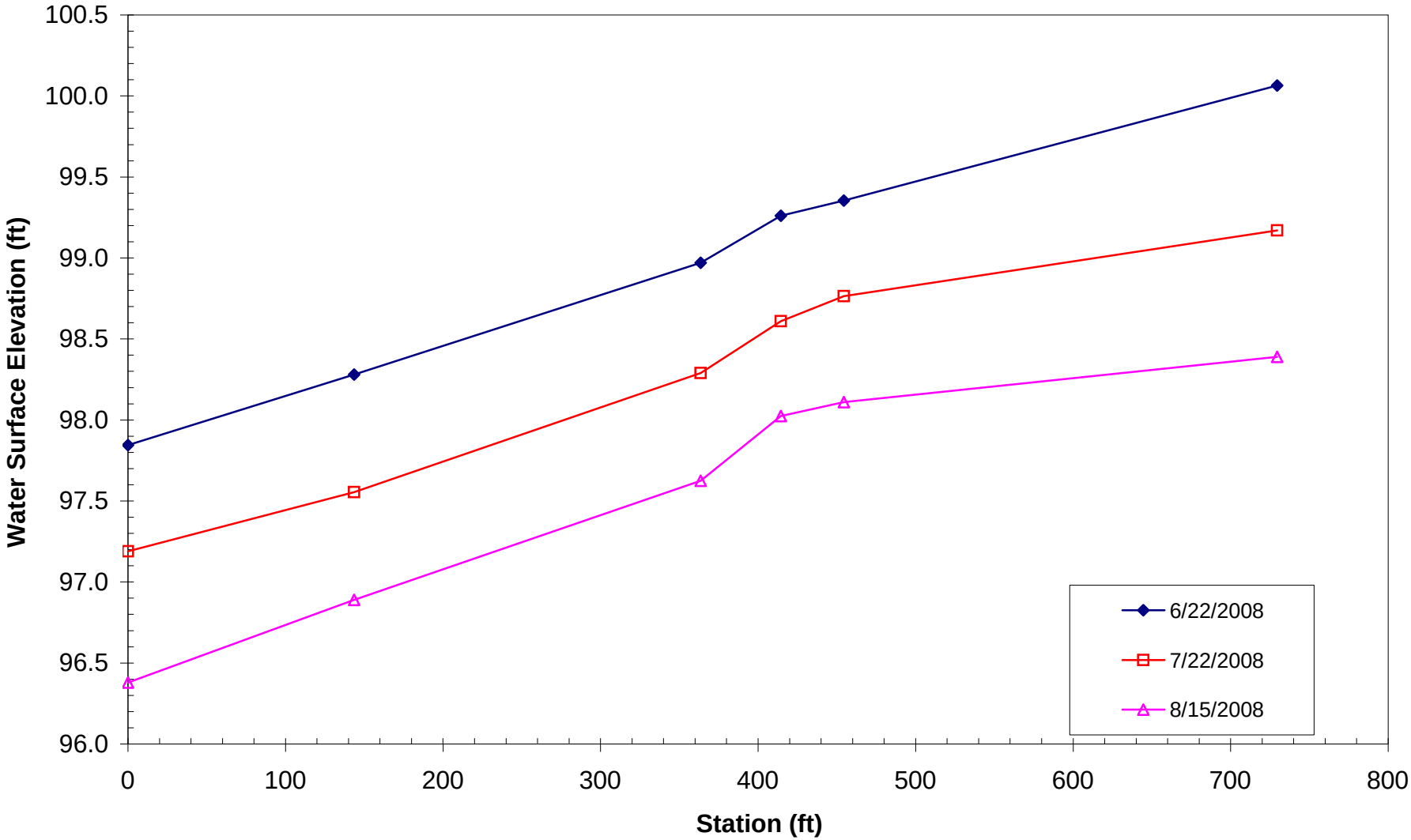
South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR5
Measured Transect Profile

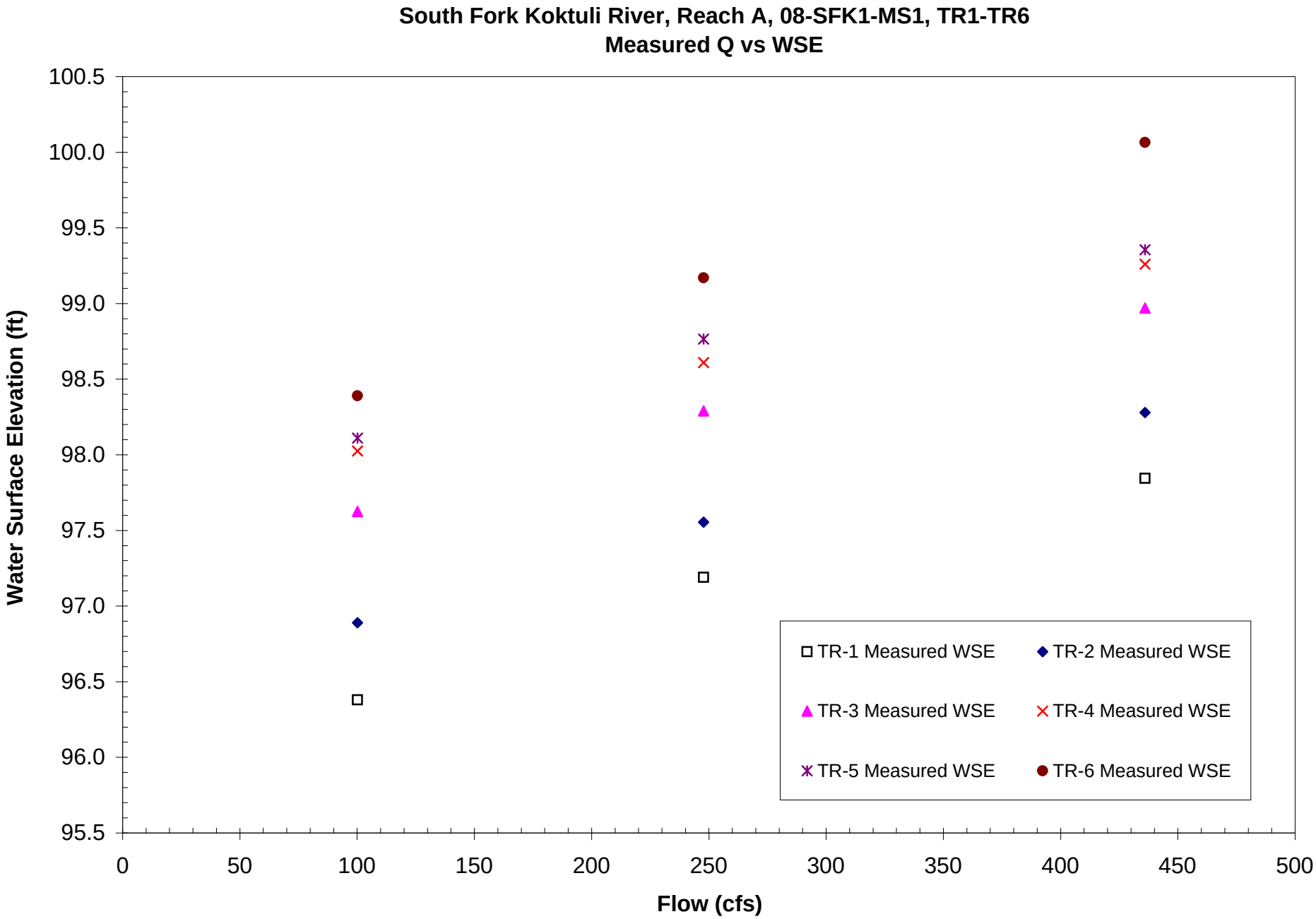


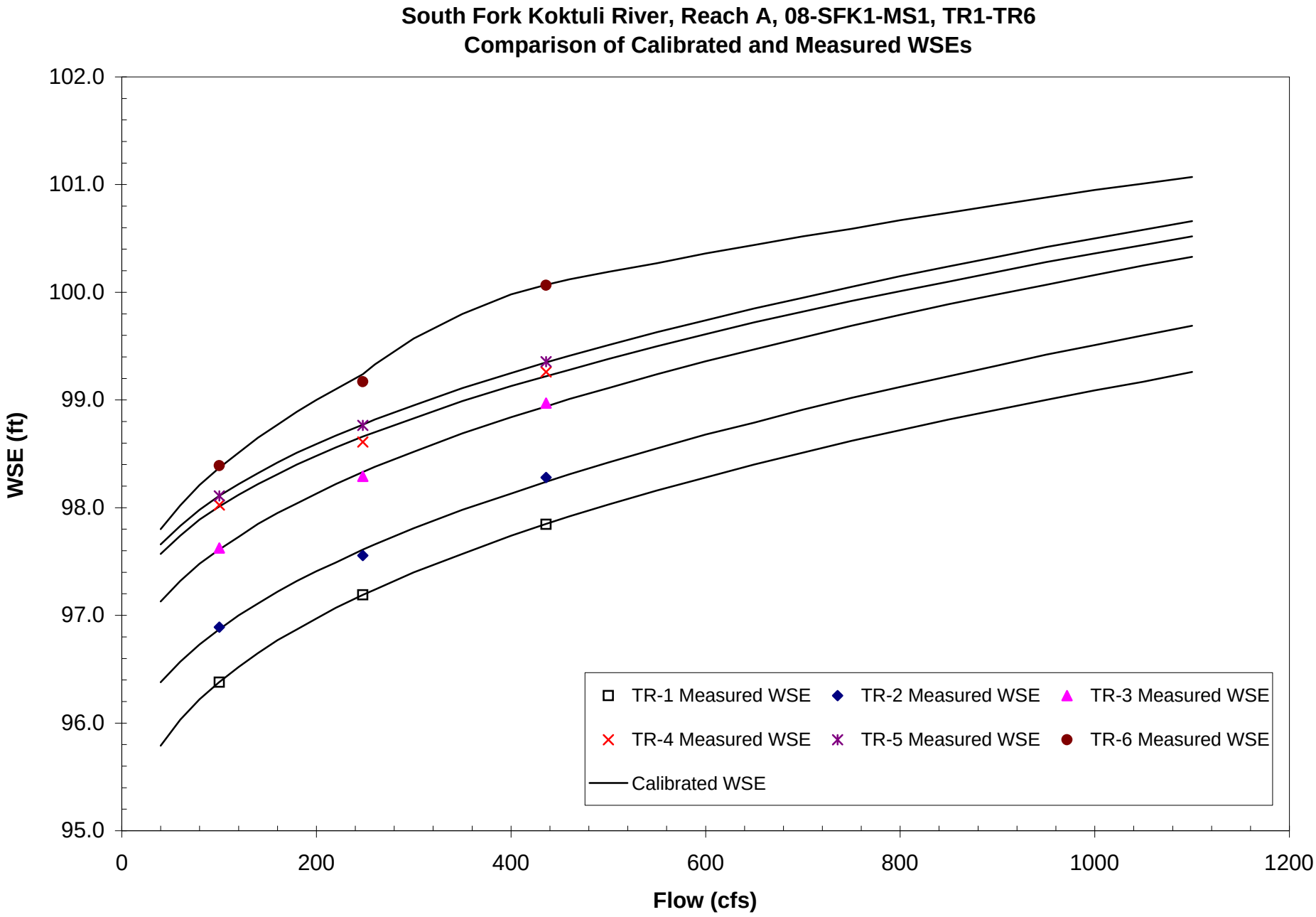
South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR6
Measured Transect Profile



South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR1-TR6
Longitudinal Water Surface Elevation Profiles



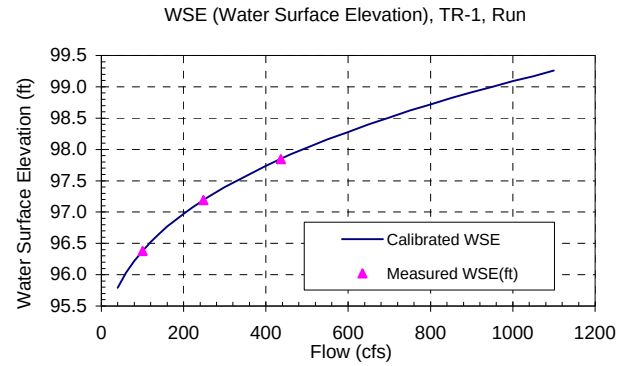

South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR1-TR6
Measured Q vs WSE
Water Surface Elevation (ft)
100.5
100.0
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE

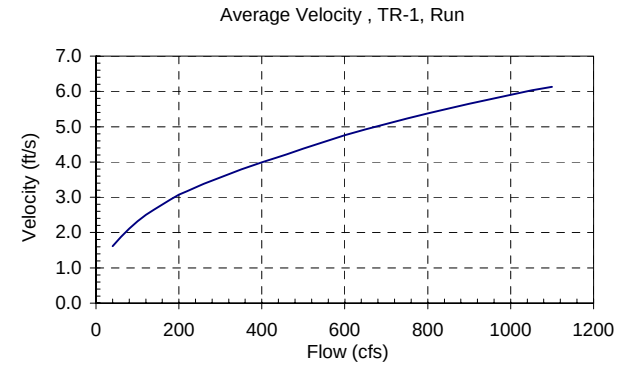

South Fork Koktuli River, Reach A, 08-SFK1-MS1, TR1-TR6
Comparison of Calibrated and Measured WSEs
WSE (ft)
102.0
101.0
100.0
99.0
98.0
97.0
96.0
95.0
0
200
400
600
800
1000
1200
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE
Calibrated WSE

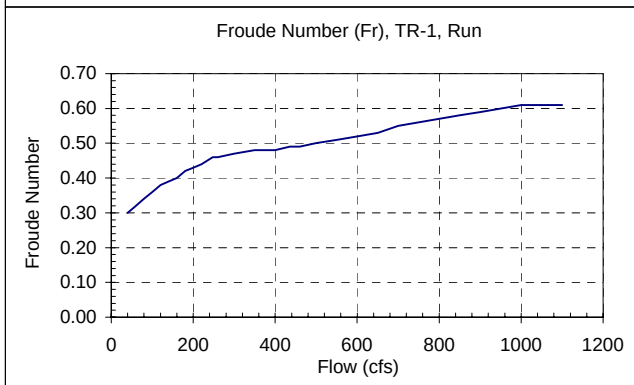
Stream: SF Koktuli River
Site Identifier: 08-SFK1-MS1
Date: 7/22/2008
Calibration Flow: High

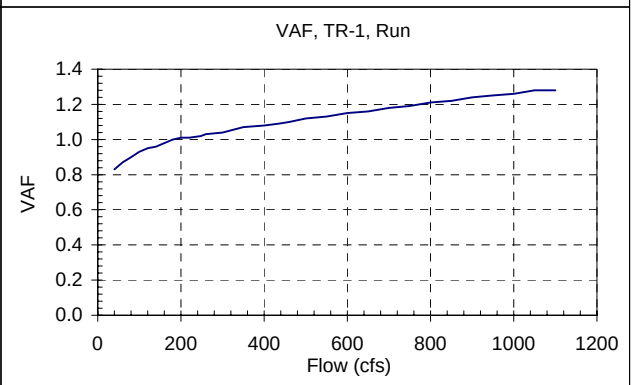
Reach: A
Site: 1
Transect: 1
Habitat: Run

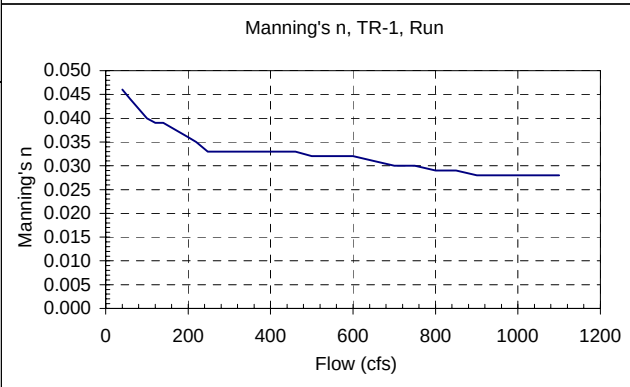
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	95.79	0.30	1.61	0.83	0.046	28.7
60	96.03	0.32	1.88	0.87	0.04	31.0
80	96.22	0.34	2.11	0.90	0.04	33.3
100.1	96.38	0.36	2.32	0.93	0.04	35.4
120	96.52	0.38	2.50	0.95	0.04	36.7
140	96.65	0.39	2.65	0.96	0.04	38.0
160	96.77	0.40	2.79	0.98	0.04	39.3
180	96.87	0.42	2.94	1.00	0.04	40.7
200	96.97	0.43	3.07	1.01	0.04	42.2
220	97.07	0.44	3.17	1.01	0.04	43.6
247.7	97.19	0.46	3.32	1.02	0.03	47.9
260	97.24	0.46	3.38	1.03	0.03	48.0
300	97.40	0.47	3.56	1.04	0.03	48.5
350	97.57	0.48	3.79	1.07	0.03	48.9
400	97.74	0.48	3.99	1.08	0.03	49.4
436	97.85	0.49	4.13	1.09	0.03	49.7
460	97.92	0.49	4.22	1.10	0.03	49.9
500	98.03	0.50	4.38	1.12	0.03	50.2
550	98.16	0.51	4.57	1.13	0.03	50.6
600	98.28	0.52	4.76	1.15	0.03	51.1
650	98.40	0.53	4.92	1.16	0.03	52.8
700	98.51	0.55	5.08	1.18	0.03	54.3
750	98.62	0.56	5.23	1.19	0.03	54.6
800	98.72	0.57	5.38	1.21	0.03	56.5
850	98.82	0.58	5.51	1.22	0.03	58.2
900	98.91	0.59	5.65	1.24	0.03	59.1
950	99.00	0.60	5.78	1.25	0.03	60.0
1000	99.09	0.61	5.90	1.26	0.03	60.7
1050	99.17	0.61	6.03	1.28	0.03	60.7
1100.0	99.26	0.61	6.13	1.28	0.028	60.7

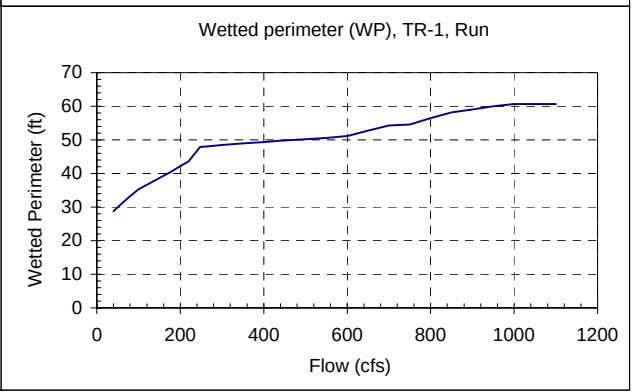










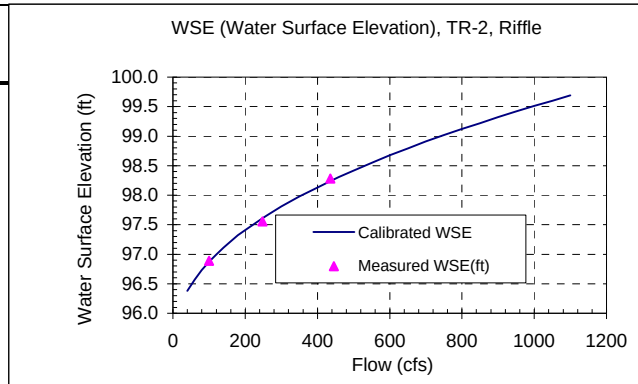


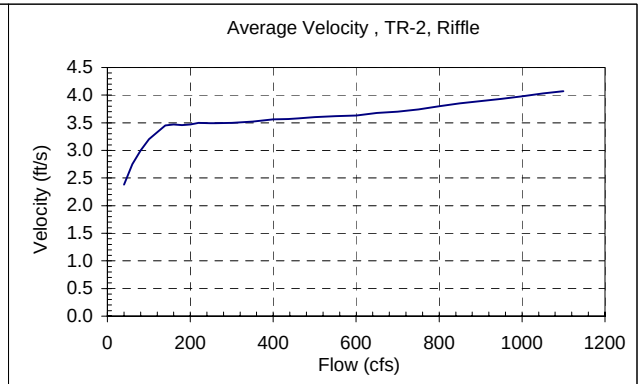
cTR1 - Transect hydraulic parameters

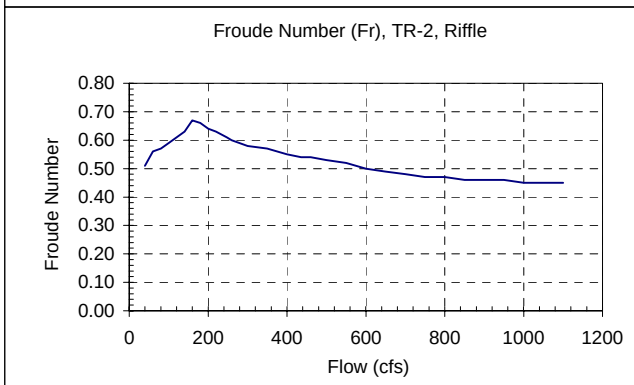
Stream: SF Koktuli River
Site Identifier: 08-SFK1-MS1
Date: 7/22/2008
Calibration Flow: Mid

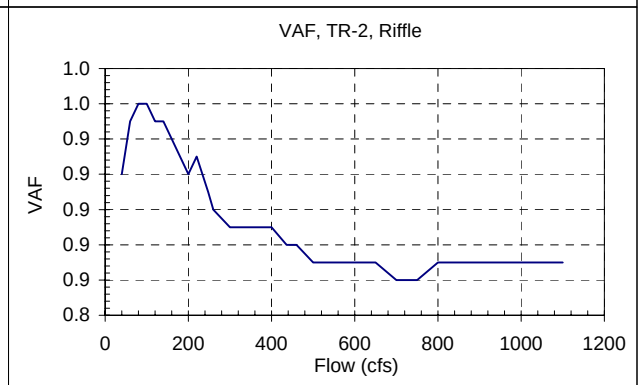
Reach: A
Site: 1
Transect: 2
Habitat: Island Complex

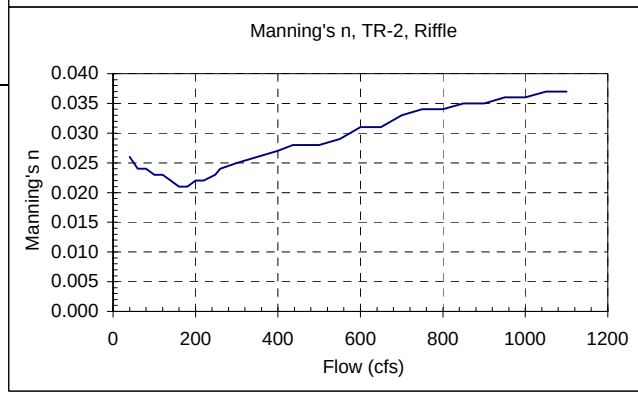
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	96.38	0.51	2.38	0.92	0.026	25.9
60	96.57	0.56	2.75	0.95	0.02	30.1
80	96.73	0.57	3.00	0.96	0.02	32.2
100.1	96.87	0.59	3.20	0.96	0.02	35.7
120	97.00	0.61	3.33	0.95	0.02	40.4
140	97.11	0.63	3.45	0.95	0.02	44.8
160	97.22	0.67	3.47	0.94	0.02	57.3
180	97.32	0.66	3.46	0.93	0.02	62.1
200	97.41	0.64	3.47	0.92	0.02	65.4
220	97.49	0.63	3.50	0.93	0.02	68.2
247.7	97.61	0.61	3.49	0.91	0.02	71.9
260	97.66	0.60	3.49	0.90	0.02	73.6
300	97.81	0.58	3.50	0.89	0.03	78.8
350	97.98	0.57	3.52	0.89	0.03	85.8
400	98.13	0.55	3.56	0.89	0.03	89.7
436	98.24	0.54	3.57	0.88	0.03	92.7
460	98.31	0.54	3.58	0.88	0.03	95.2
500	98.42	0.53	3.60	0.87	0.03	99.6
550	98.55	0.52	3.62	0.87	0.03	104.5
600	98.68	0.50	3.63	0.87	0.03	105.4
650	98.79	0.49	3.68	0.87	0.03	105.6
700	98.91	0.48	3.70	0.86	0.03	105.7
750	99.02	0.47	3.74	0.86	0.03	105.9
800	99.12	0.47	3.80	0.87	0.03	106.1
850	99.22	0.46	3.85	0.87	0.04	106.2
900	99.32	0.46	3.89	0.87	0.04	106.6
950	99.42	0.46	3.93	0.87	0.04	107.3
1000	99.51	0.45	3.98	0.87	0.04	107.9
1050	99.60	0.45	4.03	0.87	0.04	108.5
1100.0	99.69	0.45	4.07	0.87	0.037	109.1

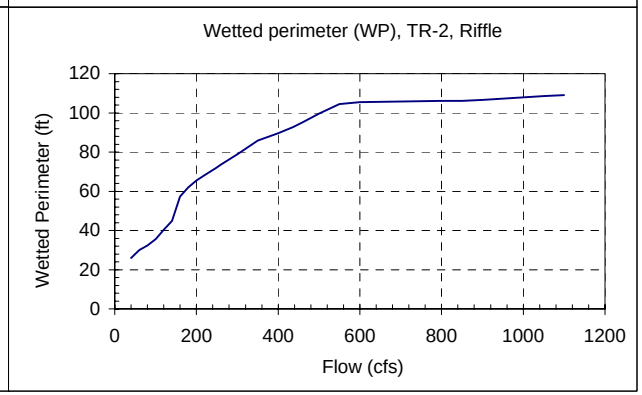










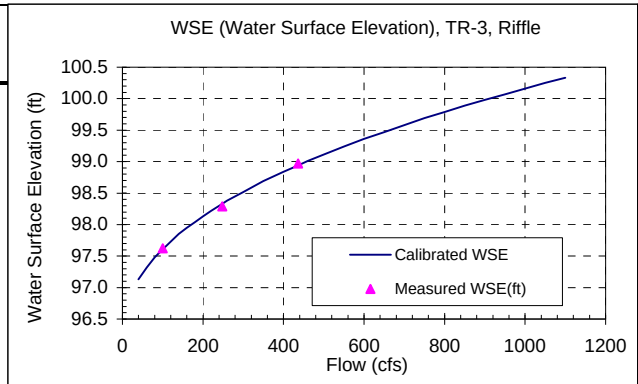


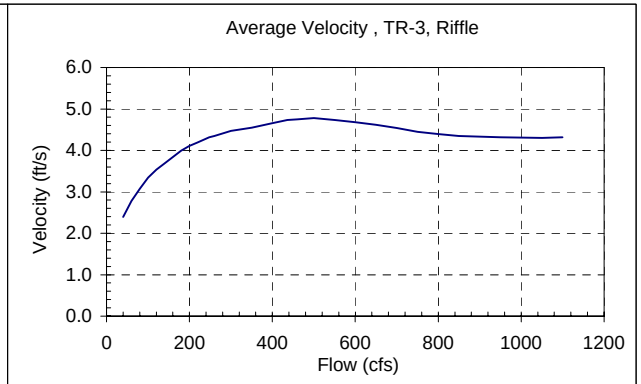
cTR2 - Transect hydraulic parameters

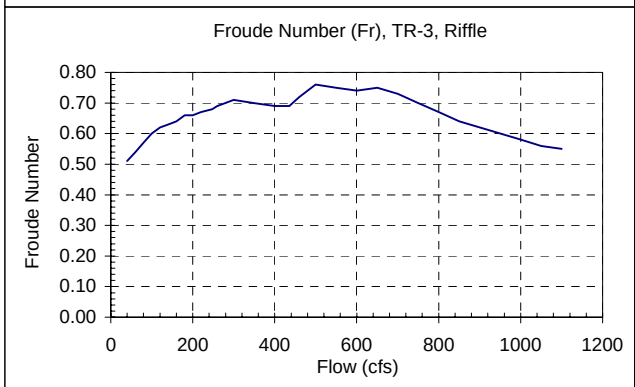
Stream: SF Koktuli River
Site Identifier: 08-SFK1-MS1
Date: 7/22/2008
Calibration Flow: Mid

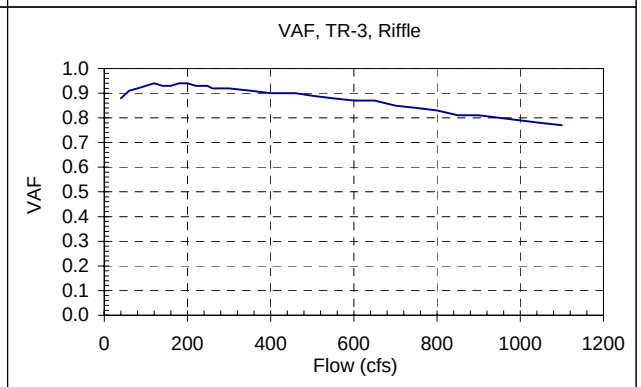
Reach: A
Site: 1
Transect: 3
Habitat: Island Complex

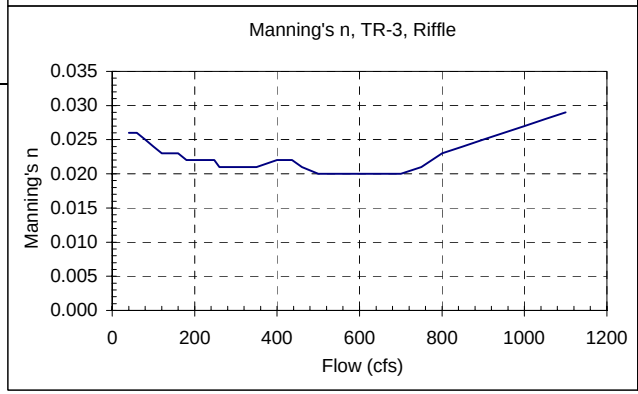
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.13	0.51	2.39	0.88	0.026	24.7
60	97.32	0.54	2.78	0.91	0.03	26.9
80	97.48	0.57	3.07	0.92	0.03	29.2
100.1	97.61	0.60	3.34	0.93	0.02	31.5
120	97.73	0.62	3.54	0.94	0.02	34.0
140	97.85	0.63	3.68	0.93	0.02	35.8
160	97.95	0.64	3.84	0.93	0.02	37.5
180	98.04	0.66	3.99	0.94	0.02	39.5
200	98.13	0.66	4.11	0.94	0.02	41.4
220	98.22	0.67	4.19	0.93	0.02	44.0
247.7	98.33	0.68	4.32	0.93	0.02	46.8
260	98.38	0.69	4.35	0.92	0.02	49.7
300	98.52	0.71	4.47	0.92	0.02	56.1
350	98.69	0.70	4.55	0.91	0.02	59.6
400	98.84	0.69	4.66	0.90	0.02	62.6
436	98.94	0.69	4.73	0.90	0.02	64.9
460	99.01	0.72	4.75	0.90	0.02	73.0
500	99.11	0.76	4.78	0.89	0.02	85.7
550	99.24	0.75	4.73	0.88	0.02	95.4
600	99.36	0.74	4.68	0.87	0.02	105.1
650	99.47	0.75	4.62	0.87	0.02	121.1
700	99.58	0.73	4.54	0.85	0.02	130.8
750	99.69	0.70	4.45	0.84	0.02	134.7
800	99.79	0.67	4.39	0.83	0.02	135.9
850	99.89	0.64	4.35	0.81	0.02	136.2
900	99.98	0.62	4.33	0.81	0.03	136.2
950	100.07	0.60	4.32	0.80	0.03	136.2
1000	100.16	0.58	4.31	0.79	0.03	136.2
1050	100.25	0.56	4.30	0.78	0.03	136.2
1100.0	100.33	0.55	4.32	0.77	0.029	136.2

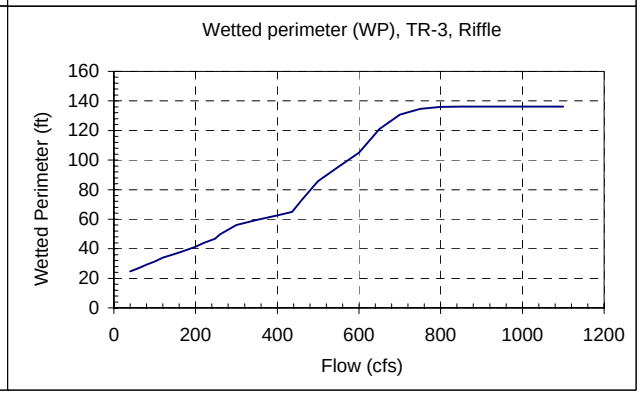










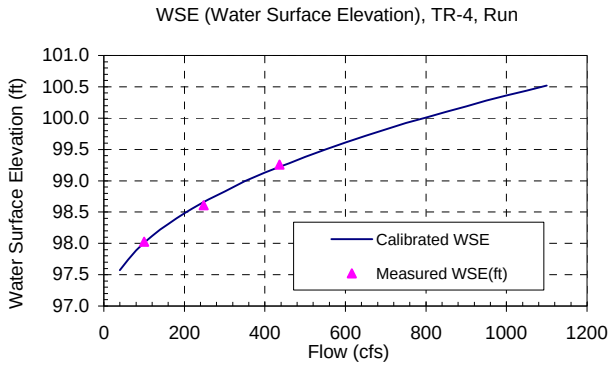


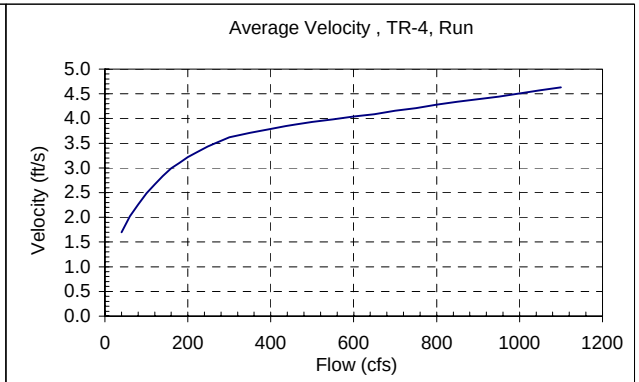
cTR3 - Transect hydraulic parameters

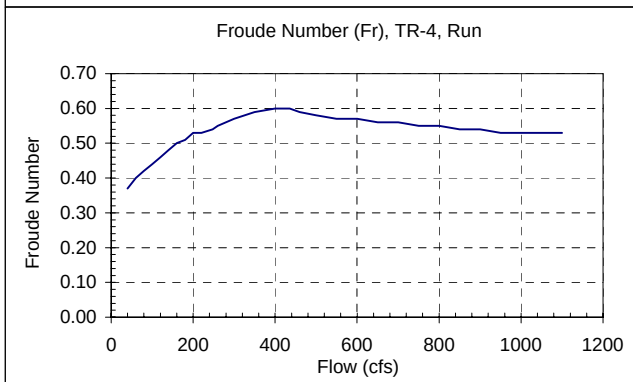
Stream: SF Koktuli River
Site Identifier: 08-SFK1-MS1
Date: 7/22/2008
Calibration Flow: Mid

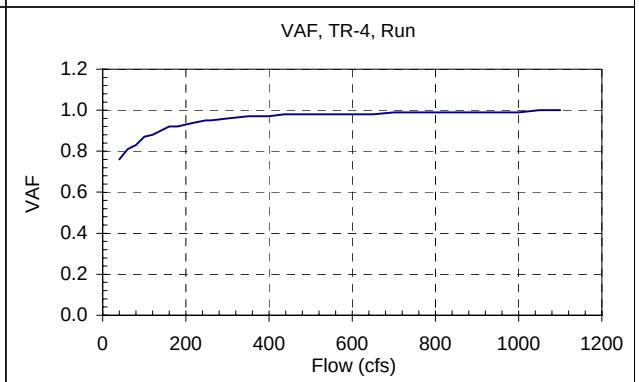
Reach: A
Site: 1
Transect: 4
Habitat: Island Complex

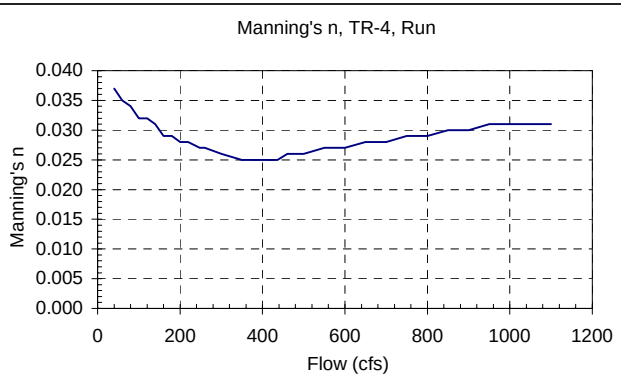
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.57	0.37	1.70	0.76	0.037	35.2
60	97.74	0.40	2.02	0.81	0.04	37.3
80	97.89	0.42	2.26	0.83	0.03	39.5
100.1	98.01	0.44	2.49	0.87	0.03	41.6
120	98.12	0.46	2.67	0.88	0.03	43.2
140	98.22	0.48	2.84	0.90	0.03	45.5
160	98.31	0.50	2.99	0.92	0.03	48.5
180	98.40	0.51	3.10	0.92	0.03	51.5
200	98.48	0.53	3.22	0.93	0.03	53.8
220	98.56	0.53	3.31	0.94	0.03	56.4
247.7	98.66	0.54	3.43	0.95	0.03	59.2
260	98.70	0.55	3.48	0.95	0.03	60.1
300	98.83	0.57	3.62	0.96	0.03	67.1
350	98.99	0.59	3.71	0.97	0.03	77.1
400	99.13	0.60	3.79	0.97	0.03	84.4
436	99.22	0.60	3.85	0.98	0.03	87.9
460	99.28	0.59	3.88	0.98	0.03	88.6
500	99.38	0.58	3.93	0.98	0.03	90.4
550	99.50	0.57	3.98	0.98	0.03	92.6
600	99.61	0.57	4.04	0.98	0.03	94.6
650	99.72	0.56	4.09	0.98	0.03	96.6
700	99.82	0.56	4.16	0.99	0.03	98.3
750	99.92	0.55	4.21	0.99	0.03	99.4
800	100.01	0.55	4.28	0.99	0.03	99.6
850	100.10	0.54	4.34	0.99	0.03	99.9
900	100.19	0.54	4.39	0.99	0.03	100.1
950	100.28	0.53	4.44	0.99	0.03	100.4
1000	100.36	0.53	4.51	0.99	0.03	100.6
1050	100.44	0.53	4.57	1.00	0.03	100.8
1100.0	100.52	0.53	4.63	1.00	0.031	101.0

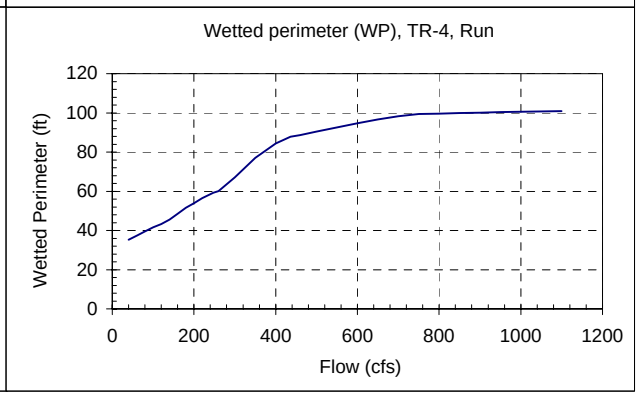










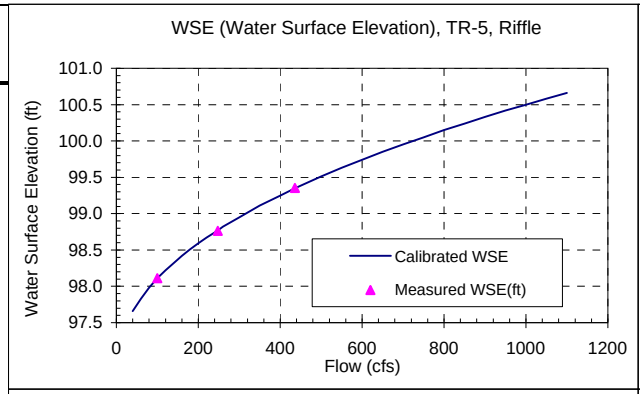


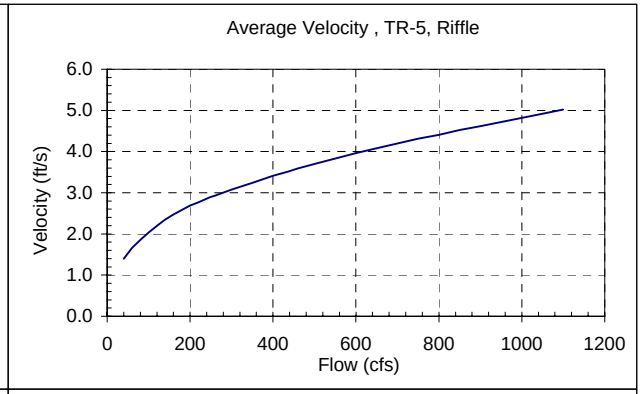
cTR4 - Transect hydraulic parameters

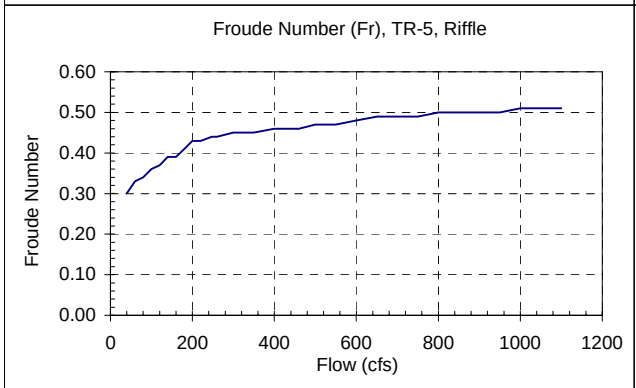
Stream: SF Koktuli River
Site Identifier: 08-SFK1-MS1
Date: 7/22/2008
Calibration Flow: Mid

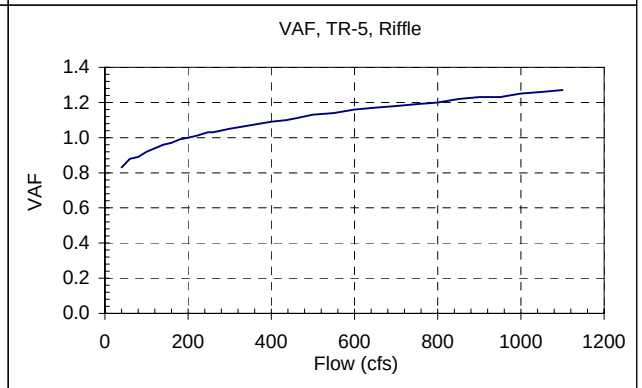
Reach: A
Site: 1
Transect: 5
Habitat: Riffle

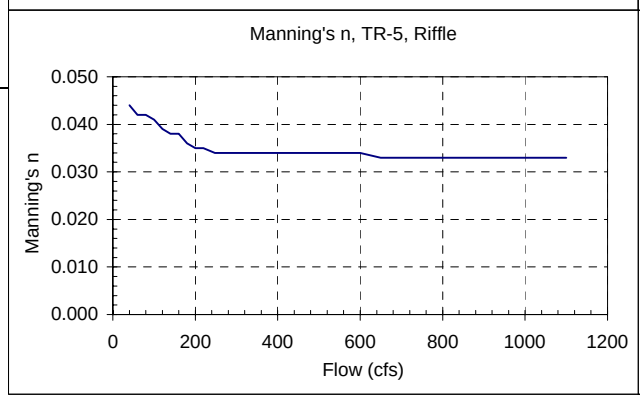
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.66	0.30	1.40	0.83	0.044	43.5
60	97.83	0.33	1.66	0.88	0.04	45.4
80	97.98	0.34	1.86	0.89	0.04	47.0
100.1	98.11	0.36	2.04	0.92	0.04	48.5
120	98.22	0.37	2.20	0.94	0.04	50.7
140	98.32	0.39	2.35	0.96	0.04	52.4
160	98.42	0.39	2.47	0.97	0.04	53.8
180	98.51	0.41	2.58	0.99	0.04	58.6
200	98.59	0.43	2.69	1.00	0.04	61.4
220	98.67	0.43	2.77	1.01	0.04	62.7
247.7	98.77	0.44	2.89	1.03	0.03	64.9
260	98.82	0.44	2.93	1.03	0.03	65.4
300	98.95	0.45	3.08	1.05	0.03	66.7
350	99.11	0.45	3.24	1.07	0.03	68.0
400	99.25	0.46	3.41	1.09	0.03	68.6
436	99.35	0.46	3.51	1.10	0.03	69.6
460	99.41	0.46	3.59	1.11	0.03	70.2
500	99.51	0.47	3.70	1.13	0.03	71.2
550	99.63	0.47	3.83	1.14	0.03	72.5
600	99.74	0.48	3.96	1.16	0.03	73.6
650	99.85	0.49	4.08	1.17	0.03	74.7
700	99.95	0.49	4.20	1.18	0.03	75.2
750	100.05	0.49	4.31	1.19	0.03	75.3
800	100.15	0.50	4.41	1.20	0.03	75.5
850	100.24	0.50	4.52	1.22	0.03	75.6
900	100.33	0.50	4.62	1.23	0.03	75.7
950	100.42	0.50	4.72	1.23	0.03	75.8
1000	100.50	0.51	4.82	1.25	0.03	76.0
1050	100.58	0.51	4.92	1.26	0.03	76.1
1100.0	100.66	0.51	5.02	1.27	0.033	76.2

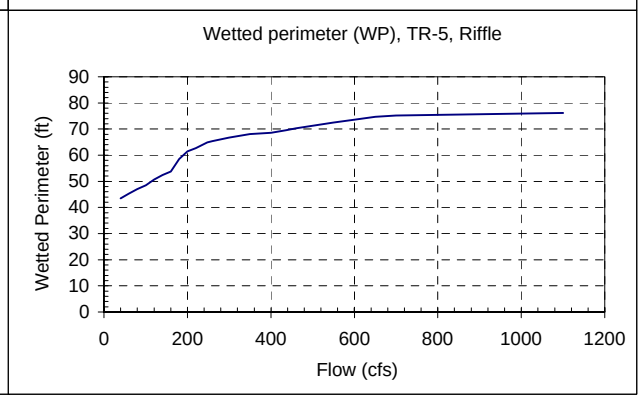










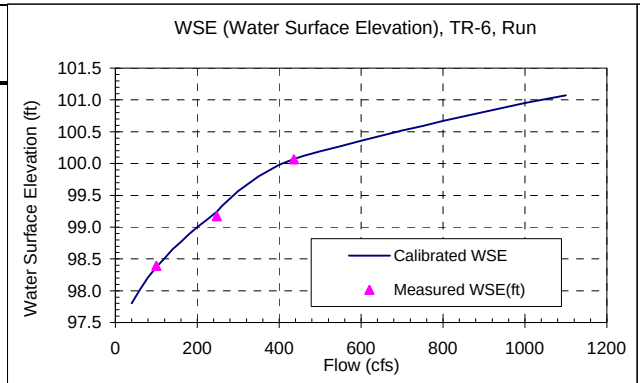


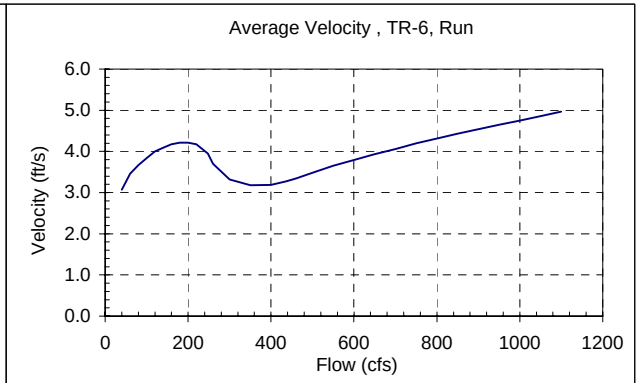
cTR5 - Transect hydraulic parameters

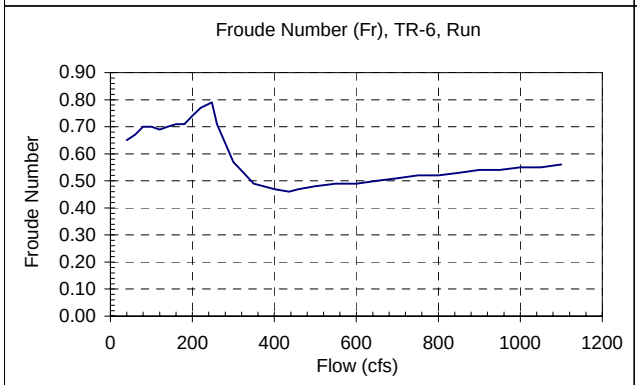
Stream: SF Koktuli River
Site Identifier: 08-SFK1-MS1
Date: 7/22/2008
Calibration Flow: Mid

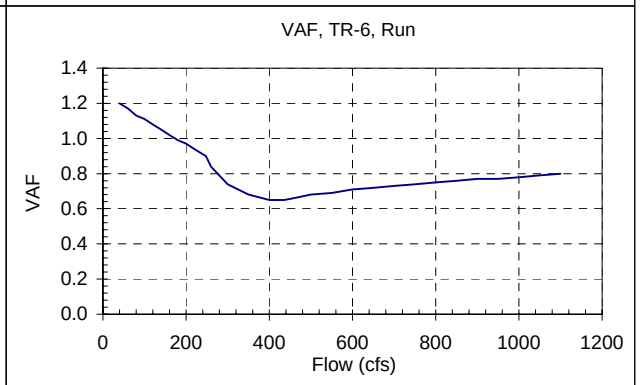
Reach: A
Site: 1
Transect: 6
Habitat: Run

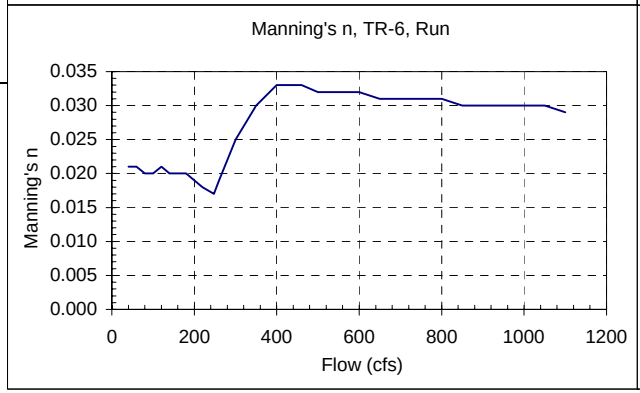
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.80	0.65	3.07	1.20	0.021	19.1
60	98.02	0.67	3.46	1.17	0.02	21.6
80	98.21	0.70	3.67	1.13	0.02	26.7
100.1	98.37	0.70	3.84	1.11	0.02	28.5
120	98.51	0.69	4.00	1.08	0.02	30.0
140	98.65	0.70	4.09	1.05	0.02	34.0
160	98.77	0.71	4.17	1.02	0.02	36.9
180	98.89	0.71	4.21	0.99	0.02	40.9
200	99.00	0.74	4.21	0.97	0.02	48.5
220	99.10	0.77	4.17	0.94	0.02	60.2
247.7	99.24	0.79	3.95	0.90	0.02	82.6
260	99.33	0.71	3.70	0.84	0.02	85.3
300	99.57	0.57	3.32	0.74	0.03	87.0
350	99.80	0.49	3.18	0.68	0.03	87.8
400	99.98	0.47	3.19	0.65	0.03	88.4
436	100.07	0.46	3.27	0.65	0.03	88.7
460	100.12	0.47	3.34	0.66	0.03	88.8
500	100.19	0.48	3.48	0.68	0.03	89.0
550	100.27	0.49	3.65	0.69	0.03	89.3
600	100.36	0.49	3.79	0.71	0.03	89.5
650	100.44	0.50	3.93	0.72	0.03	89.8
700	100.52	0.51	4.06	0.73	0.03	90.1
750	100.59	0.52	4.20	0.74	0.03	90.5
800	100.67	0.52	4.31	0.75	0.03	91.0
850	100.74	0.53	4.43	0.76	0.03	91.5
900	100.81	0.54	4.54	0.77	0.03	91.9
950	100.88	0.54	4.65	0.77	0.03	92.4
1000	100.95	0.55	4.75	0.78	0.03	92.8
1050	101.01	0.55	4.86	0.79	0.03	93.2
1100.0	101.07	0.56	4.97	0.80	0.029	93.6

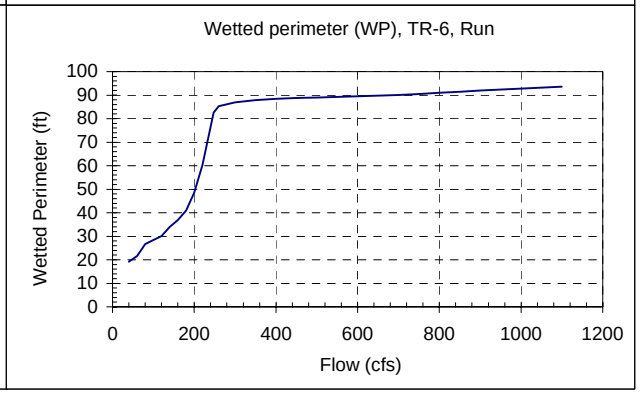




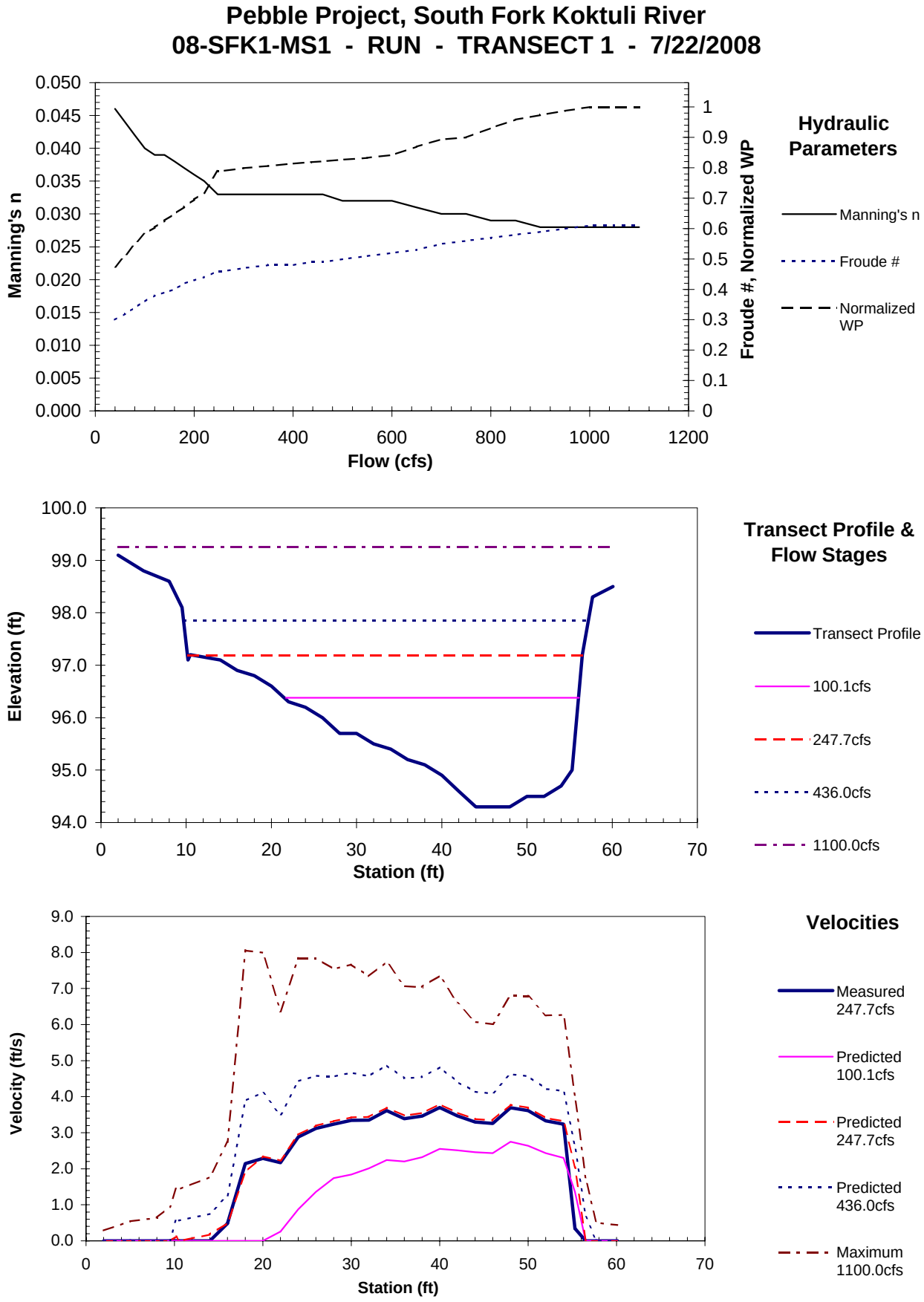






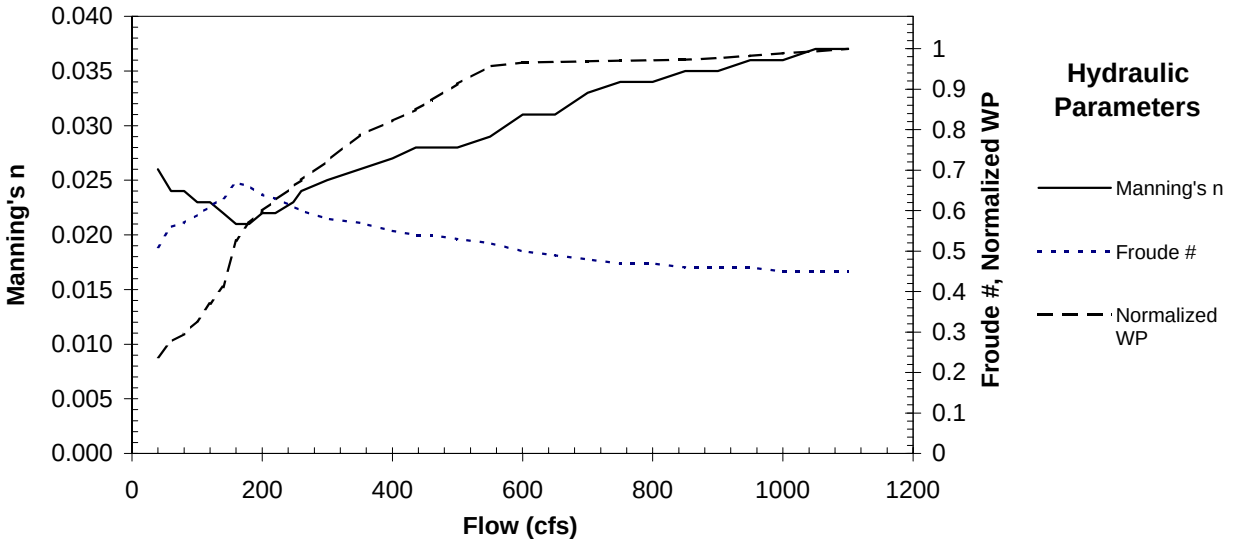


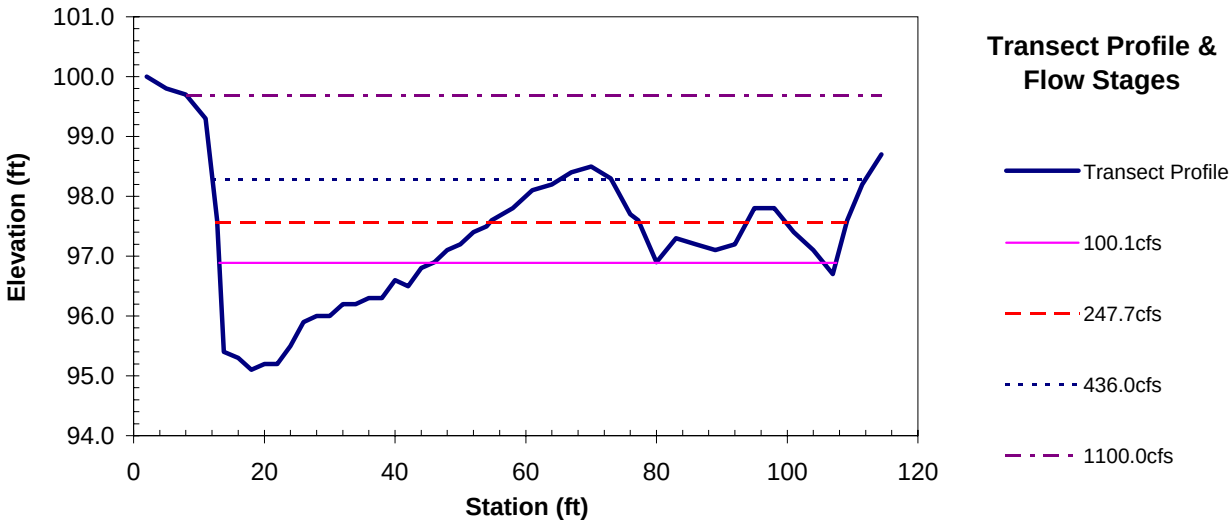
cTR6 - Transect hydraulic parameters

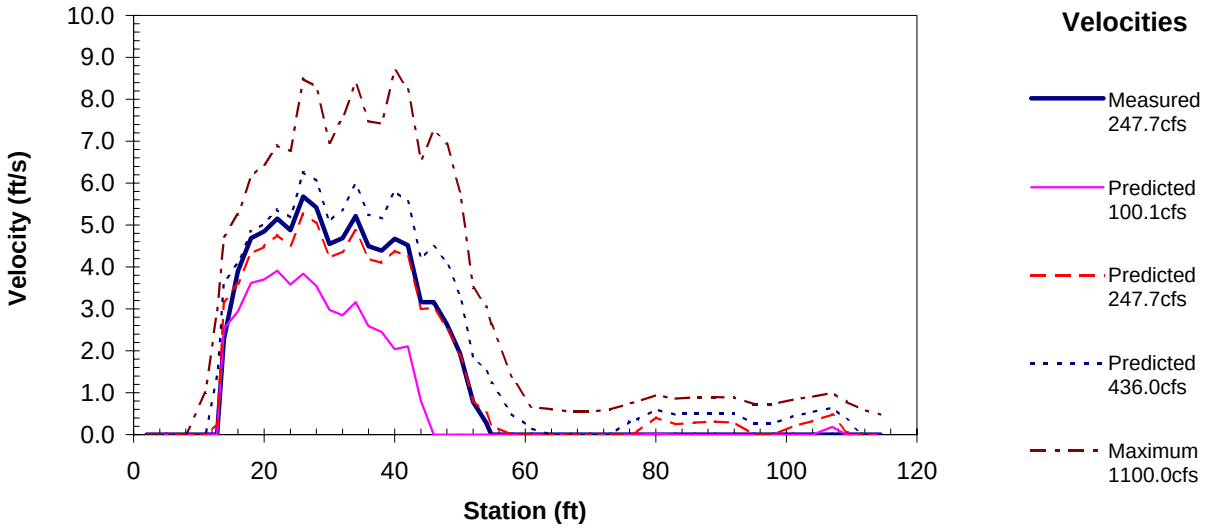


Transect hydraulic summary plots

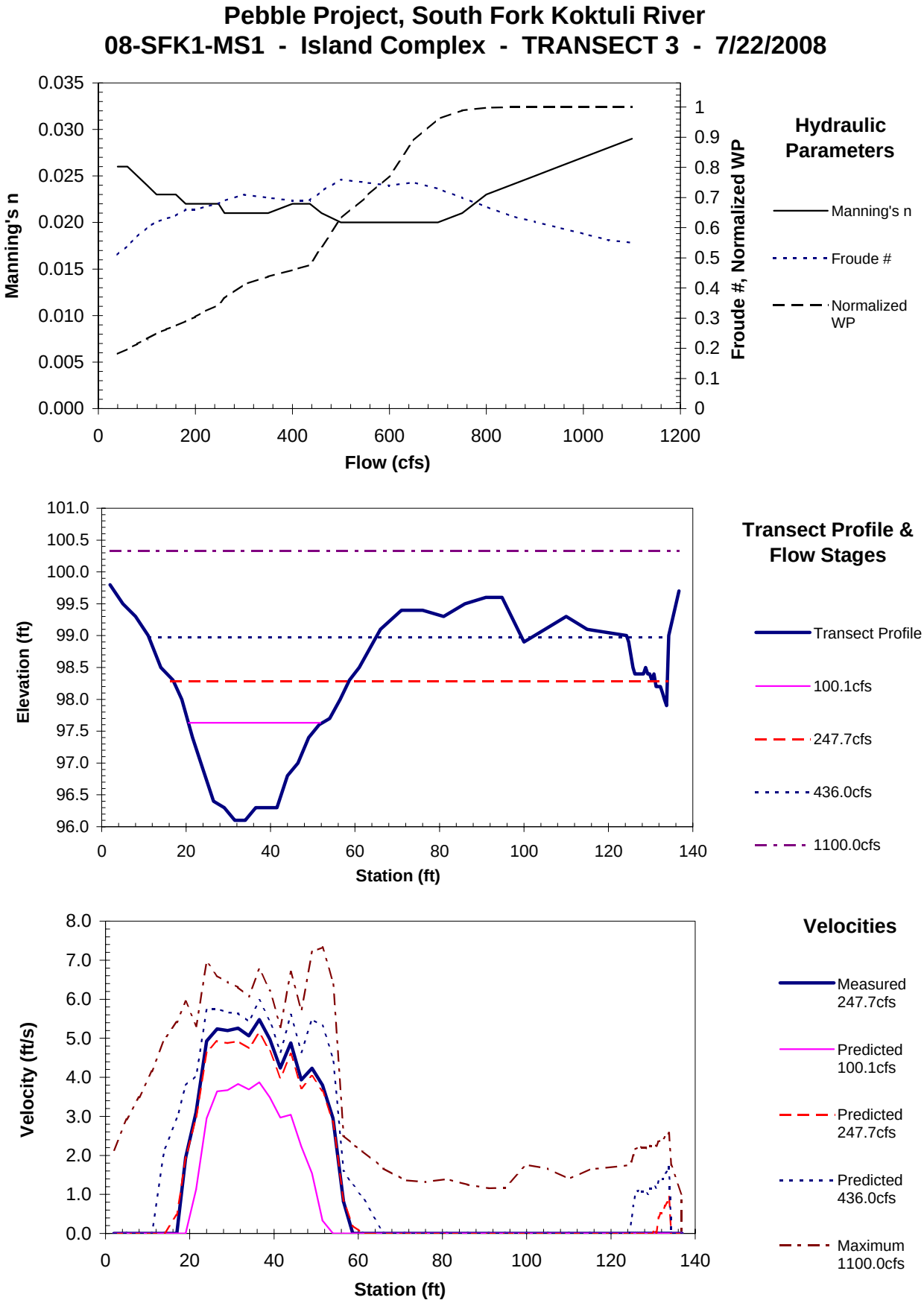
Pebble Project, South Fork Koktuli River
08-SFK1-MS1 - Island Complex - TRANSECT 2 - 7/22/2008



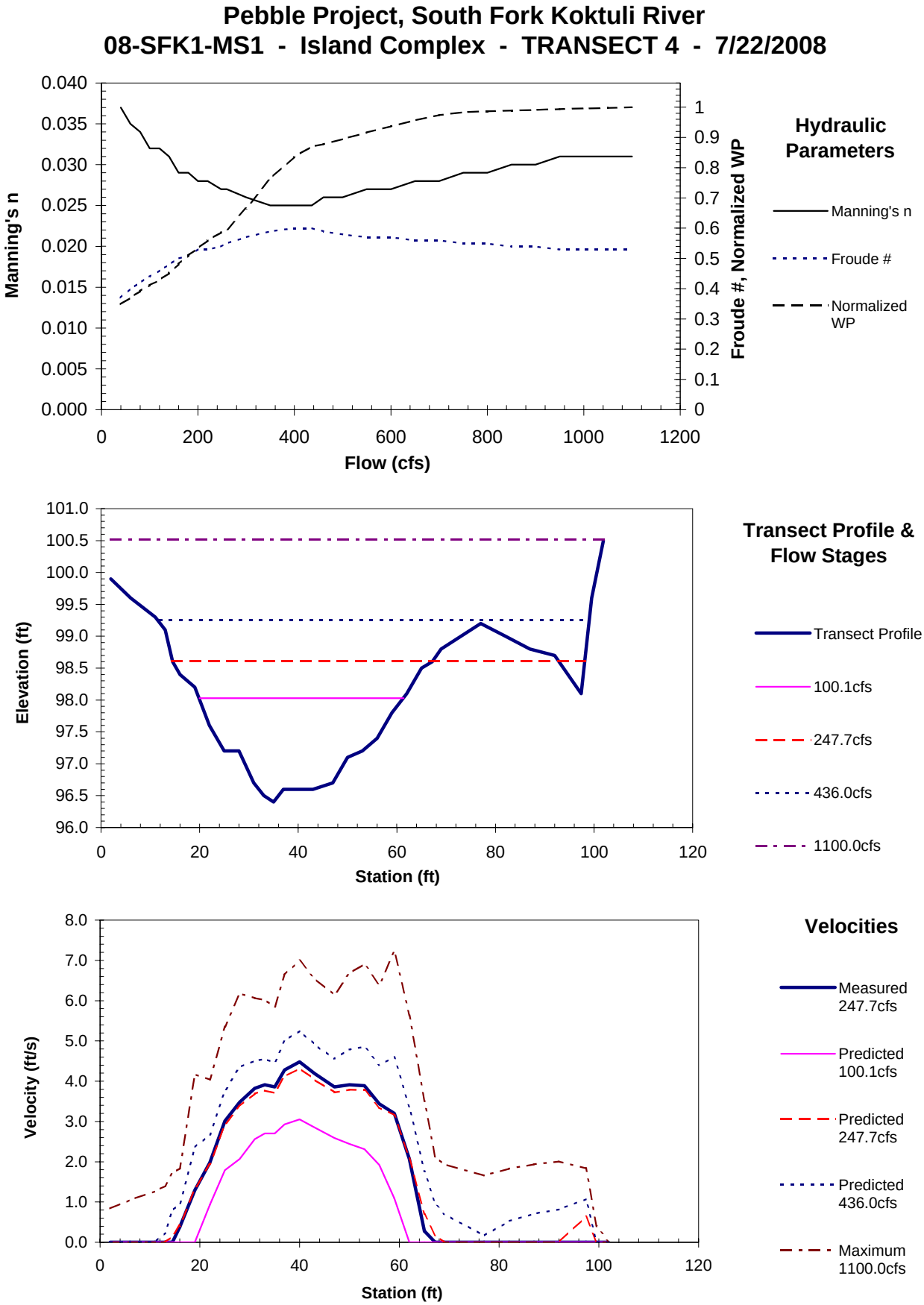




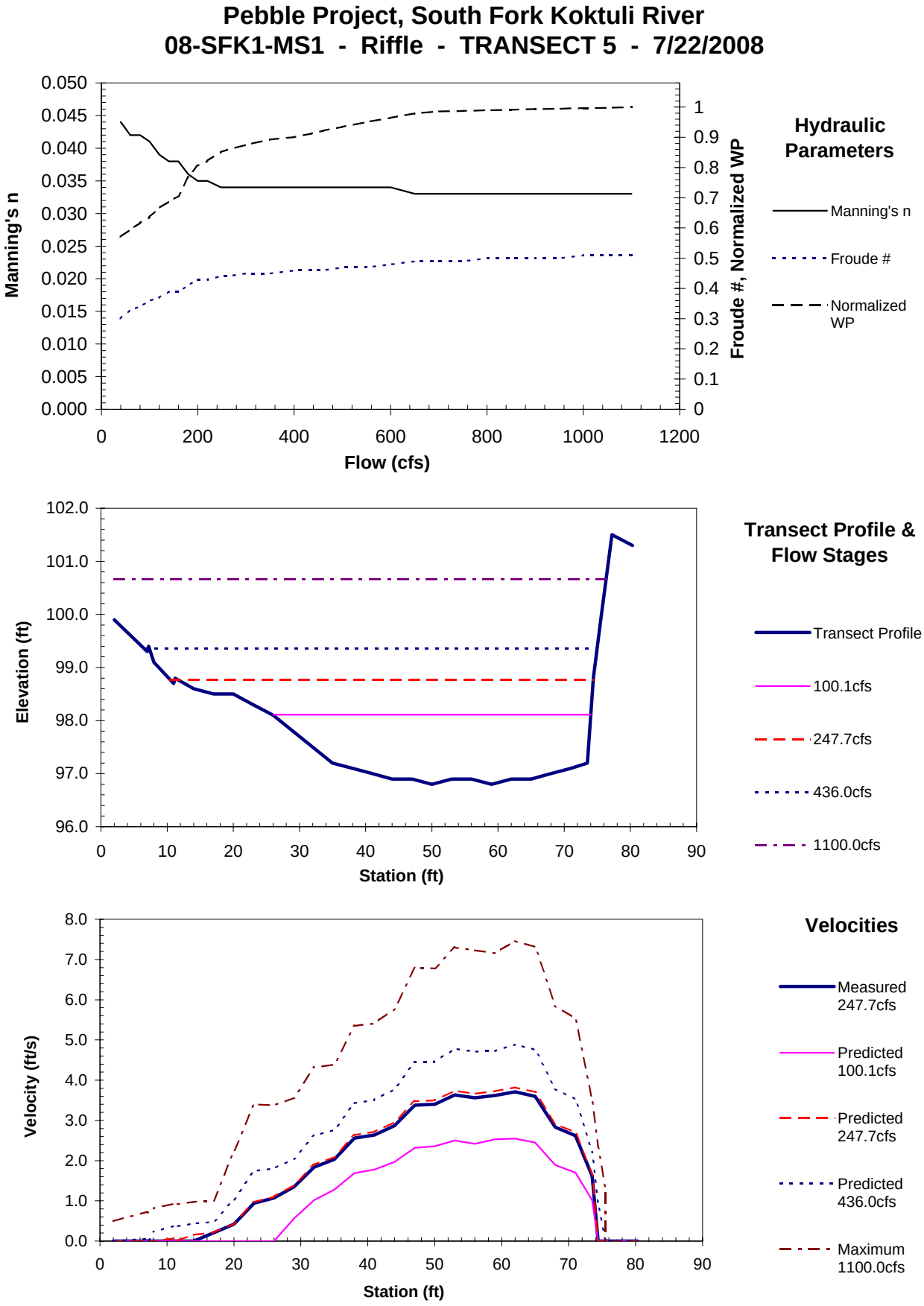
Transect hydraulic summary plots



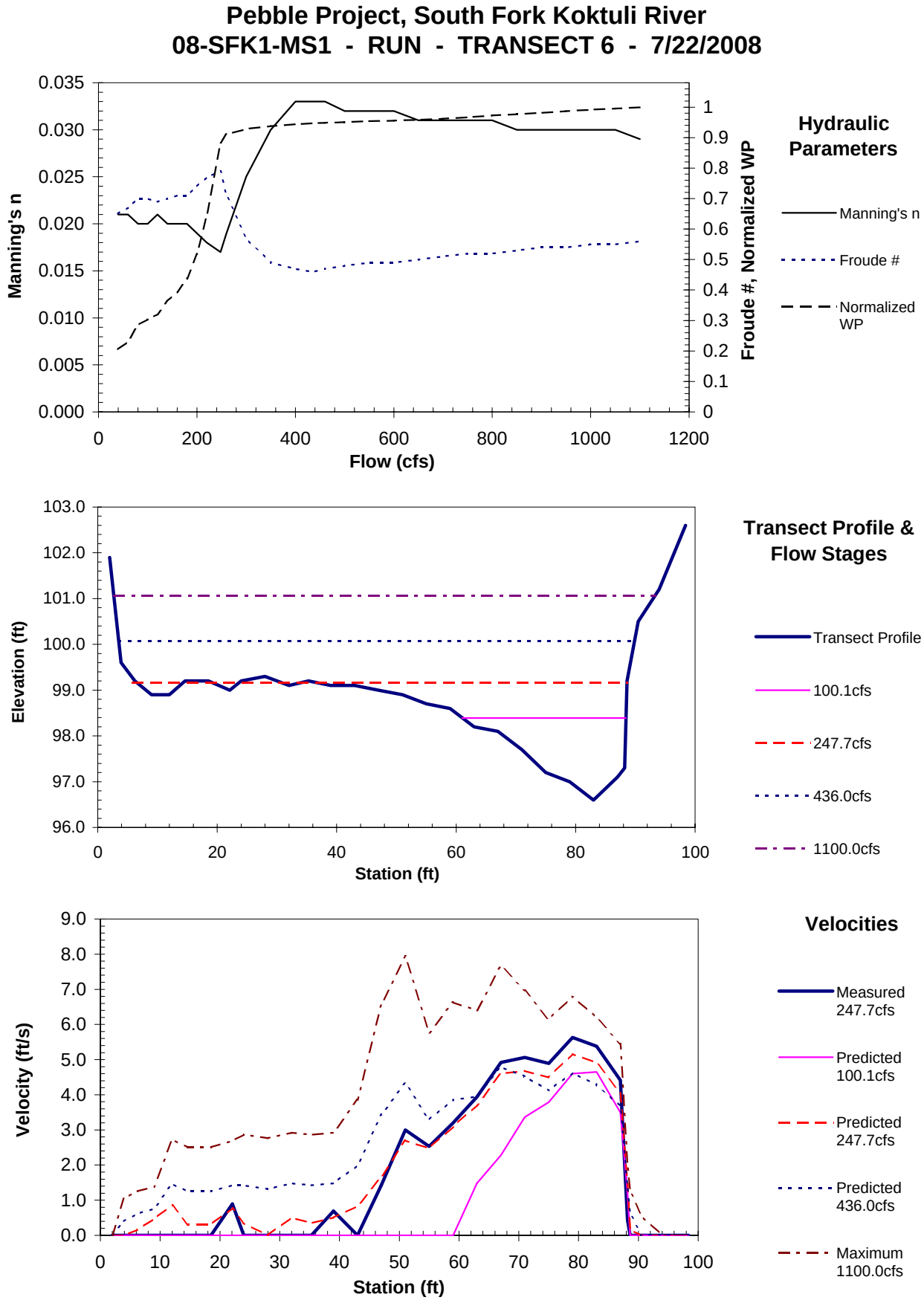
Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
RUN                        0708Q                                  TRANSECT
IOC       1101100100001000101000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     94.29    .00304
      1000  2.099.07  5.098.77  8.098.64  9.598.13 10.297.12 10.597.19
      1000 14.097.09 16.096.94 18.096.79 20.096.59 22.096.34 24.096.19
      1000 26.095.99 28.095.74 30.095.69 32.095.49 34.095.39 36.095.24
      1000 38.095.09 40.094.94 42.094.59 44.094.29 46.094.29 48.094.29
      1000 50.094.49 52.094.49 54.094.74 55.394.99 56.597.19 57.798.30
      1000 60.198.49
NS    1000      11.9      11.9      11.9      11.9      23.6 .12  23.6
NS    1000 .1   34.6      34.6 .024 34.6      45.6      45.6      54.6
NS    1000      54.6      54.6      54.6      54.6      54.6      54.6
NS    1000      54.6      54.6      54.6      54.6      56.6      54.6
NS    1000      54.6      54.6      54.6 .07  54.6 .1   11.9 .2   11.9
NS    1000      11.9
```

IFG4 Data Deck - TR1

IFG4 Data Deck (continued)

```
WSL   1000     95.79     96.03     96.22     96.38     96.52     96.65
WSL   1000     96.77     96.87     96.97     97.07     97.19     97.24
WSL   1000     97.40     97.57     97.74     97.85     97.92     98.03
WSL   1000     98.16     98.28     98.40     98.51     98.62     98.72
WSL   1000     98.82     98.91     99.00     99.09     99.17     99.26
CAL1  1000     97.19     247.7
VEL1  1000                          0.00 0.00 0.48 2.14 2.29 2.17 2.88
VEL1  1000 3.12 3.24 3.34 3.35 3.61 3.39 3.46 3.70 3.47 3.30 3.26 3.69
VEL1  1000 3.61 3.33 3.24 0.34 0.00
CAL2  1000     97.85     436.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.38     100.1
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR1

IFG4 Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
Island                     0708Q                                  TRANSECT
IOC       1101100100001000101000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     95.39    .00304
      1000  2.0100.0  5.099.85  8.099.72 11.099.27 12.897.56 13.895.41
      1000 16.095.26 18.095.06 20.095.16 22.095.21 24.095.46 26.095.86
      1000 28.095.96 30.095.96 32.096.16 34.096.16 36.096.26 38.096.31
      1000 40.096.56 42.096.51 44.096.76 46.096.91 48.097.06 50.097.16
      1000 52.097.36 54.097.46 54.897.56 58.097.84 61.098.06 64.098.24
      1000 67.098.43 70.098.46 73.098.27 76.097.72 77.297.56 80.096.86
      1000 83.097.26 86.097.16 89.097.11 92.097.16 95.097.81 98.097.81
      1000101.097.36104.097.06107.096.66109.297.56111.598.24114.498.66
NS    1000      11.9      11.9      11.9      11.9      11.9 .04  54.6
NS    1000      54.6      54.6      54.6      54.6      54.6      54.6
NS    1000      54.6      54.6      54.6      54.6      54.6      54.6
NS    1000      54.6      54.6      54.6      54.6      54.6      54.6
NS    1000      54.6 .04  54.6 .045 54.6 .08  43.6 .15  43.6      43.6
```

IFG4 Data Deck - TR2

IFG4 Data Deck (continued)

```
NS    1000      34.6      34.6      32.6      23.6      23.6      23.6
NS    1000      23.6      23.6      24.6      24.6      24.6      23.6
NS    1000      22.9      22.9      22.9      21.6      11.9      11.9
WSL   1000     96.38     96.57     96.73     96.87     97.00     97.11
WSL   1000     97.22     97.32     97.41     97.49     97.61     97.66
WSL   1000     97.81     97.98     98.13     98.24     98.31     98.42
WSL   1000     98.55     98.68     98.79     98.91     99.02     99.12
WSL   1000     99.22     99.32     99.42     99.51     99.60     99.69
CAL1  1000     97.56     247.7
VEL1  1000                      0.00 2.27 3.90 4.69 4.85 5.15 4.88 5.68
VEL1  1000 5.42 4.55 4.69 5.21 4.50 4.39 4.67 4.52 3.16 3.16 2.63 1.94
VEL1  1000 0.78 0.28 0.00                                     0.00 0.00
VEL1  1000 0.00 0.00 0.00 0.00           0.00 0.00 0.00 0.00
CAL2  1000     98.28     436.0
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.89     100.1
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
Island                     0708Q                                TRANSECT 3
IOC       1101100100001000101000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     96.13    .00304
      1000  2.099.82  5.099.52  8.099.27 11.098.96 14.098.53 16.998.29
      1000 19.097.99 21.597.39 24.096.89 26.596.39 29.096.29 31.596.09
      1000 34.096.09 36.596.29 39.096.34 41.596.34 44.096.79 46.596.99
      1000 49.097.39 51.597.59 54.097.74 56.597.99 58.798.29 61.098.52
      1000 66.099.06 71.099.38 76.099.43 81.099.35 86.099.50 91.099.59
      1000 94.899.57100.098.95105.099.07110.099.35115.099.09124.398.96
      1000124.898.86125.398.66125.898.46126.398.41126.898.36127.398.41
      1000127.898.41128.398.41128.898.46129.398.36129.898.36130.398.31
      1000130.898.36131.398.21131.898.16132.398.16132.898.06133.398.01
      1000133.897.91134.398.96136.799.73136.799.73
NS    1000      11.9      11.9      11.9      11.9      42.6      43.6
NS    1000      45.6      45.6      54.6      45.6      45.6      54.6
NS    1000      54.6      54.6      54.6      54.6      54.6      56.6
```

IFG4 Data Deck - TR3

IFG4 Data Deck (continued)

```
NS    1000      45.6      45.6      54.6      54.6      45.6      54.6
NS    1000      43.6      43.6      43.6      34.6      34.6      34.6
NS    1000      32.6      22.9      12.6      34.6      34.6      43.6
NS    1000      43.6      43.6      43.6      34.6      34.6      34.6
NS    1000      34.6      34.6      34.6      34.6      34.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      11.9      11.9
WSL   1000     97.13     97.32     97.48     97.61     97.73     97.85
WSL   1000     97.95     98.04     98.13     98.22     98.33     98.38
WSL   1000     98.52     98.69     98.84     98.94     99.01     99.11
WSL   1000     99.24     99.36     99.47     99.58     99.69     99.79
WSL   1000     99.89     99.98    100.07    100.16    100.25    100.33
CAL1  1000     98.29     247.7
VEL1  1000                          0.00 1.94 3.11 4.93 5.24 5.20 5.26
VEL1  1000 5.06 5.48 4.98 4.24 4.88 3.93 4.23 3.80 2.95 0.82 0.00
VEL1  1000
VEL1  1000
VEL1  1000
CAL2  1000     98.97     436.0
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.63     100.1
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR3

IFG4 Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
Island                     0708Q                                TRANSECT 4
IOC       1101100100001000101000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     96.73    .00304
      1000  2.099.87  6.099.60 11.099.30 13.099.12 14.598.61 16.098.41
      1000 19.098.21 22.097.61 25.097.21 28.097.21 31.096.71 33.096.51
      1000 35.096.41 37.096.56 40.096.61 43.096.61 47.096.71 50.097.06
      1000 53.097.21 56.097.36 59.097.81 62.098.06 65.098.46 67.298.61
      1000 69.098.83 77.099.18 82.098.97 87.098.83 92.098.74 97.498.13
      1000 99.599.57101.9100.5
NS    1000      11.9      11.9      11.9      11.9      21.6      43.6
NS    1000      34.6      43.6      43.6      43.6      43.6      54.6
NS    1000      54.6      54.6      54.6      54.6      45.6      54.6
NS    1000      54.6      45.6      54.6      45.6 .038 43.6 .06  43.6
NS    1000      45.6      45.6      45.6      45.6      43.6 .08  34.6
NS    1000 .2   11.9      11.9
```

IFG4 Data Deck - TR4

IFG4 Data Deck (continued)

```
WSL   1000     97.57     97.74     97.89     98.01     98.12     98.22
WSL   1000     98.31     98.40     98.48     98.56     98.66     98.70
WSL   1000     98.83     98.99     99.13     99.22     99.28     99.38
WSL   1000     99.50     99.61     99.72     99.82     99.92    100.01
WSL   1000    100.10    100.19    100.28    100.36    100.44    100.52
CAL1  1000     98.61     247.7
VEL1  1000                      0.00 0.38 1.29 1.98 3.01 3.48 3.82 3.91
VEL1  1000 3.86 4.28 4.48 4.19 3.86 3.91 3.89 3.44 3.20 2.07 0.28 0.00
VEL1  1000
CAL2  1000     99.26     436.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.03     100.1
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR4

IFG4 Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
RIFFLE                     0708Q                                TRANSECT 5
IOC       1101100100001000101000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     96.77    .00304
      1000  2.099.89  7.099.31  7.299.36  8.099.06 11.098.71 11.298.77
      1000 14.098.57 17.098.47 20.098.52 23.098.27 26.098.12 29.097.82
      1000 32.097.52 35.097.22 38.097.07 41.096.97 44.096.87 47.096.87
      1000 50.096.82 53.096.87 56.096.92 59.096.77 62.096.87 65.096.92
      1000 68.097.02 71.097.12 73.597.22 74.498.77 75.599.89 75.599.89
      1000 77.2101.5 80.3101.3
NS    1000      11.9      11.9      11.9      11.9      12.6      12.6
NS    1000      12.6      42.6      42.6      43.6      45.6      45.6
NS    1000      34.6      54.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      45.6      45.6      54.6      54.6
NS    1000      54.6      43.6      43.6      11.9      11.9      11.9
NS    1000      11.9      11.9
WSL   1000     97.66     97.83     97.98     98.11     98.22     98.32
WSL   1000     98.42     98.51     98.59     98.67     98.77     98.82
```

IFG4 Data Deck - TR5

IFG4 Data Deck (continued)

```
WSL   1000     98.95     99.11     99.25     99.35     99.41     99.51
WSL   1000     99.63     99.74     99.85     99.95    100.05    100.15
WSL   1000    100.24    100.33    100.42    100.50    100.58    100.66
CAL1  1000     98.77     247.7
VEL1  1000                          0.00 0.00 0.21 0.42 0.94 1.07 1.35
VEL1  1000 1.84 2.03 2.56 2.64 2.87 3.38 3.40 3.63 3.56 3.62 3.71 3.60
VEL1  1000 2.83 2.62 1.62 0.00
CAL2  1000     99.36     436.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.11     100.1
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR5

IFG4 Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
RUN                        0708Q                                  TRANSECT 6
IOC       1101100100001000101000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     96.77    .00304
      1000  2.0101.9  3.999.61  6.299.17  9.098.87 12.098.92 14.699.17
      1000 18.599.17 22.198.97 24.099.17 28.099.27 32.099.12 35.399.17
      1000 39.099.12 43.099.07 47.099.02 51.098.87 55.098.67 59.098.57
      1000 63.098.17 67.098.07 71.097.67 75.097.22 79.096.97 83.096.57
      1000 87.097.12 88.297.27 88.699.17 90.5100.5 94.0101.2 98.4102.6
NS    1000      11.9      22.9      11.9 .08  23.6      24.6      35.6
NS    1000      45.6 .04  43.6      34.6      43.6      45.6      43.6
NS    1000 .035 45.6 .027 45.6      45.6 .014 45.6      45.6      45.6
NS    1000      45.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6 .08  51.6      12.6      11.9      11.9      11.9
WSL   1000     97.80     98.02     98.21     98.37     98.51     98.65
WSL   1000     98.77     98.89     99.00     99.10     99.24     99.33
WSL   1000     99.57     99.80     99.98    100.07    100.12    100.19
```

IFG4 Data Deck - TR6

IFG4 Data Deck (continued)

```
WSL   1000    100.27    100.36    100.44    100.52    100.59    100.67
WSL   1000    100.74    100.81    100.88    100.95    101.01    101.07
CAL1  1000     99.17     247.7
VEL1  1000           0.00 0.00 0.00 0.00 0.00 0.89 0.00      0.00 0.00
VEL1  1000 0.69 0.00 1.43 3.00 2.53 3.20 3.94 4.92 5.06 4.89 5.63 5.38
VEL1  1000 4.41 0.44 0.00
CAL2  1000    100.07     436.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.39     100.1
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR6

MANSQ Data Deck

```
     Pebble     08-SFK1-MS1  07/22/08
RUN                          0708Q                                      TRANSECT 6
IOC       0110000000000000000000
QARD  40.0
QARD  60.0
QARD  80.0
QARD 100.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 247.7
QARD 260.0
QARD 300.0
QARD 350.0
QARD 400.0
QARD 436.0
QARD 460.0
QARD 500.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     96.77    .00304
      1000  2.0101.9  3.999.61  6.299.17  9.098.87 12.098.92 14.699.17
      1000 18.599.17 22.198.97 24.099.17 28.099.27 32.099.12 35.399.17
      1000 39.099.12 43.099.07 47.099.02 51.098.87 55.098.67 59.098.57
      1000 63.098.17 67.098.07 71.097.67 75.097.22 79.096.97 83.096.57
      1000 87.097.12 88.297.27 88.699.17 90.5100.5 94.0101.2 98.4102.6
NS    1000      11.9      22.9      11.9      23.6      24.6      35.6
NS    1000      45.6      43.6      34.6      43.6      45.6      43.6
NS    1000      45.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6      51.6      12.6      11.9      11.9      11.9
CALQ  1000    100.07     436.0     -0.25
ENDJ
```

MANSQ Data Deck

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 04-SFK-IC1

Habitat Type: Island Complex

River Kilometer: 12.36

Stream: South Fork Koktuli River
Reach: A
Site: 04-SFK-IC1
Habitat Type: Island Complex

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1st	6/24/2005	100.00	99.43	99.37
2nd	7/18/2005	100.00	99.40	99.41
3rd	8/12/2005	100.00	99.37	99.35
4th	7/3/2006	100.00	99.64	99.52
5th	7/9/2006	100.00	99.55	99.51
6th	4/13/2007			

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) No level loop was conducted during the 4/13/07 site visit
(c) Level loop results showed pins were disturbed, but unable to accurately determine the amount of disturbance to the elevation datum from the survey results.

Measured WSE:

This transect has three channels (Left, Center, Right) with each one having one to three measured WSEs. Average of the measured WSEs in each individual channel was use as the representative WSE of that channel, as listed below, for hydraulic modeling:

	WSE (ft)		
Date	Left (main)	Center	Right (side)
6/24/2005	97.28	96.95	96.80
7/18/2005	97.02	96.88	96.78
8/12/2005	96.63	dry	96.62
7/3/2006	97.20	96.99	96.86
7/9/2006	97.14	96.93	96.78
4/13/2007	?	ice	ice

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Flow (cfs)			
	Left (main)	Center	Right (side)	Total
6/24/2005	177	0	2	178.3
7/18/2005	NA	NA	NA	
8/12/2005	59	Dry	0	58.3
7/3/2006	NA	NA	NA	
7/9/2006	145	0	0	145.1
4/13/2007	57	NA	NA	

No discharges were surveyed in the 7/18/05 and 7/3/06 site visits.
Flow measurement was incomplete for the 4/13/07 site visit.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Left (Main) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/24/2005	0.243%	103
7/18/2005	0.163%	184.2
8/12/2005	0.413%	104
7/3/2006	0.161%	117.9
7/9/2006	0.165%	109
4/13/2007	0.264%	277

The slope S=0.243% of 6/24/2005 survey was used for hydraulic modeling.

Center Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/24/2005	0.050%	20
7/18/2005		
8/12/2005		
7/3/2006		
7/9/2006		
4/13/2007	NA	NA

Right (Side) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/24/2005	0.000%	35.3
7/18/2005	0.016%	62.8
8/12/2005	-0.057%	87
7/3/2006	0.015%	68.8
7/9/2006	0.054%	56
4/13/2007	NA	NA

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/24/2005	95.40
7/18/2005	NA
8/12/2005	95.42
7/3/2006	95.31
7/9/2006	95.38
4/13/2007	NA
Invert	95.42
SZF	95.42

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Transect profile of 7/18/05 was not measured. Transect profile of 4/13/07 was incomplete
(4) Invert of 4/13/07 was impacted by ice and not used in modeling analysis.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/24/2005	178.3	97.28	97.28	0.00	IFG4
2nd	7/18/2005		97.02			
3rd	8/12/2005	58.3	96.63	96.63	0.00	IFG4
4th	7/3/2006		97.20			
5th	7/9/2006	145.1	97.14	97.14	0.00	IFG4
6th	4/13/2007		?			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No or only partial discharges were measured during the 7/18/05, 7/3/06, and 4/13/07site visits.
(d) Photos of 4/13/07 showed ice on banks and waters edge. Data of this date not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 58.3cfs to 178.3cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

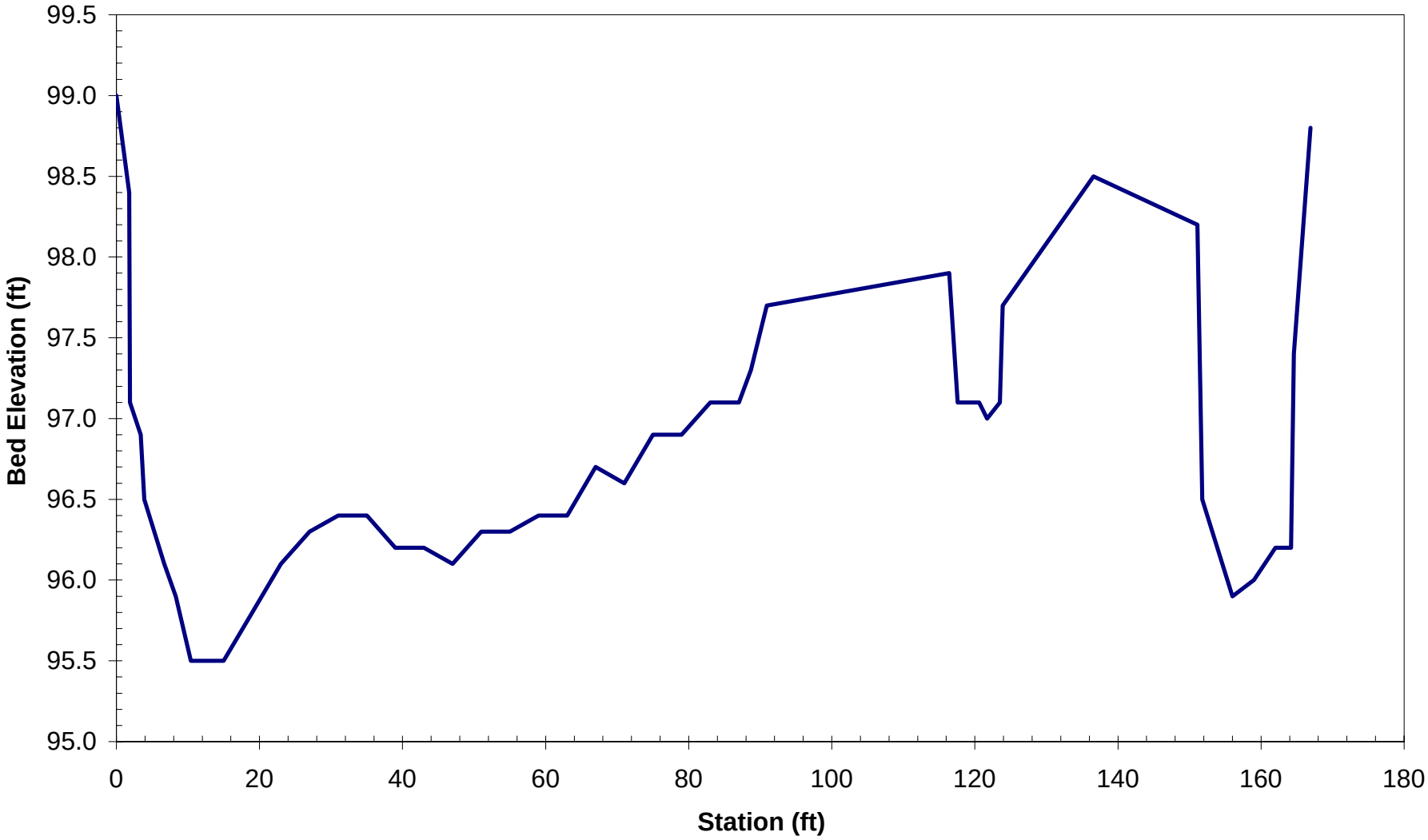
Survey Date	Q (cfs)	WUA (Y/N)
6/24/2005	178.3	Y
7/18/2005		
8/12/2005	58.3	Y
7/3/2006		
7/9/2006	145.1	Y
4/13/2007		

(4) Hydraulic Calibration Results:

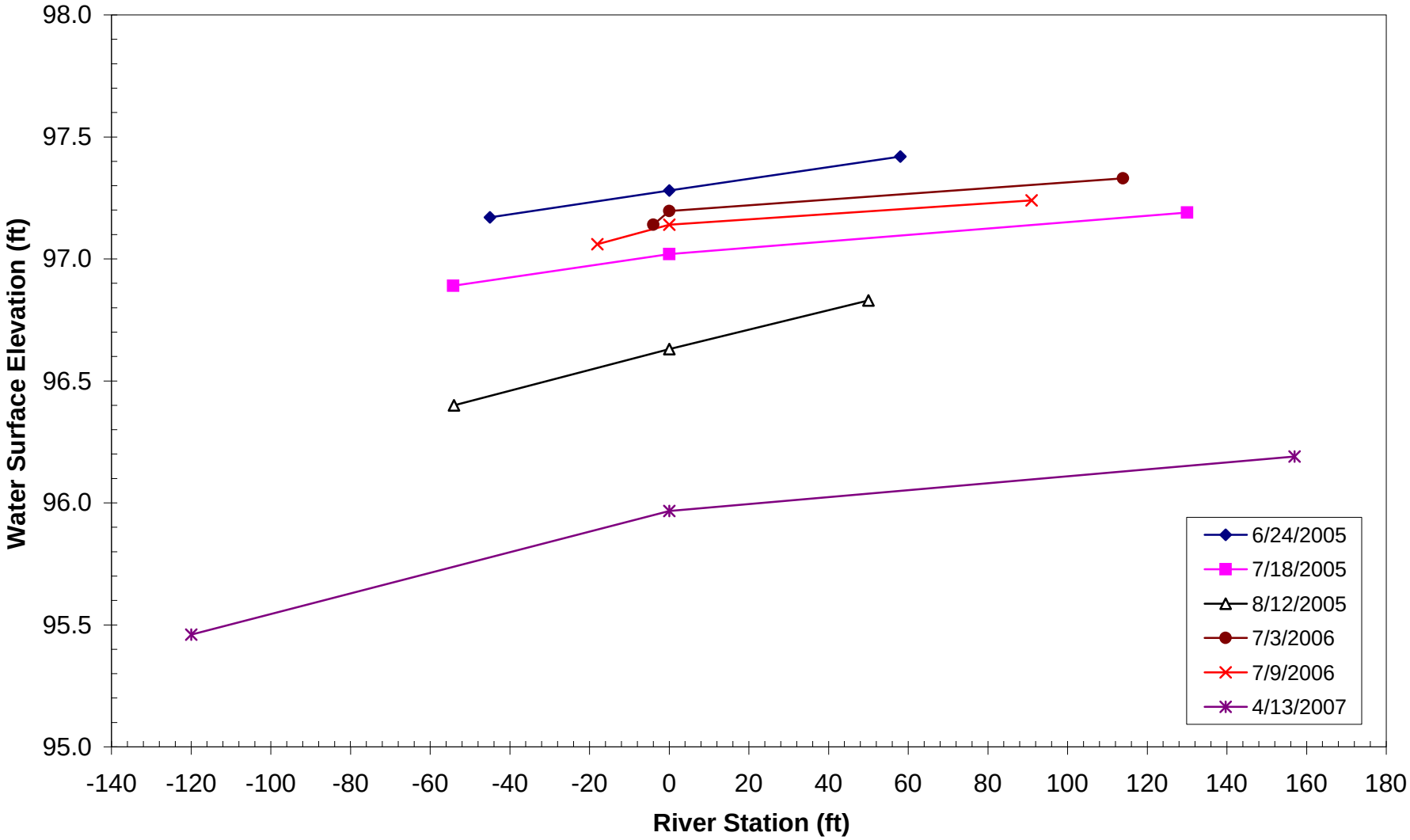
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends with increasing flows as flows > Q_{mid}=145.1cfs.
The hydraulic parameters vary in opposite trends as Q<Q_{mid}. This may be caused by (1) the complex multiple-channel bathymetry to which the Froude number definition (Fr=V_ave/sqrt(g*A/T), Chow, 1959) may not be applicable and (2) the very different WSE levels and velocity distributions across the multiple channels in the transect, where the definition of uniform flow, as required by the Manning's equation, may not be completely satisfied. As the result, the calculated Manning's n values for characterizing the channel roughness may not reflect the actual flow resistance of each individual channel.

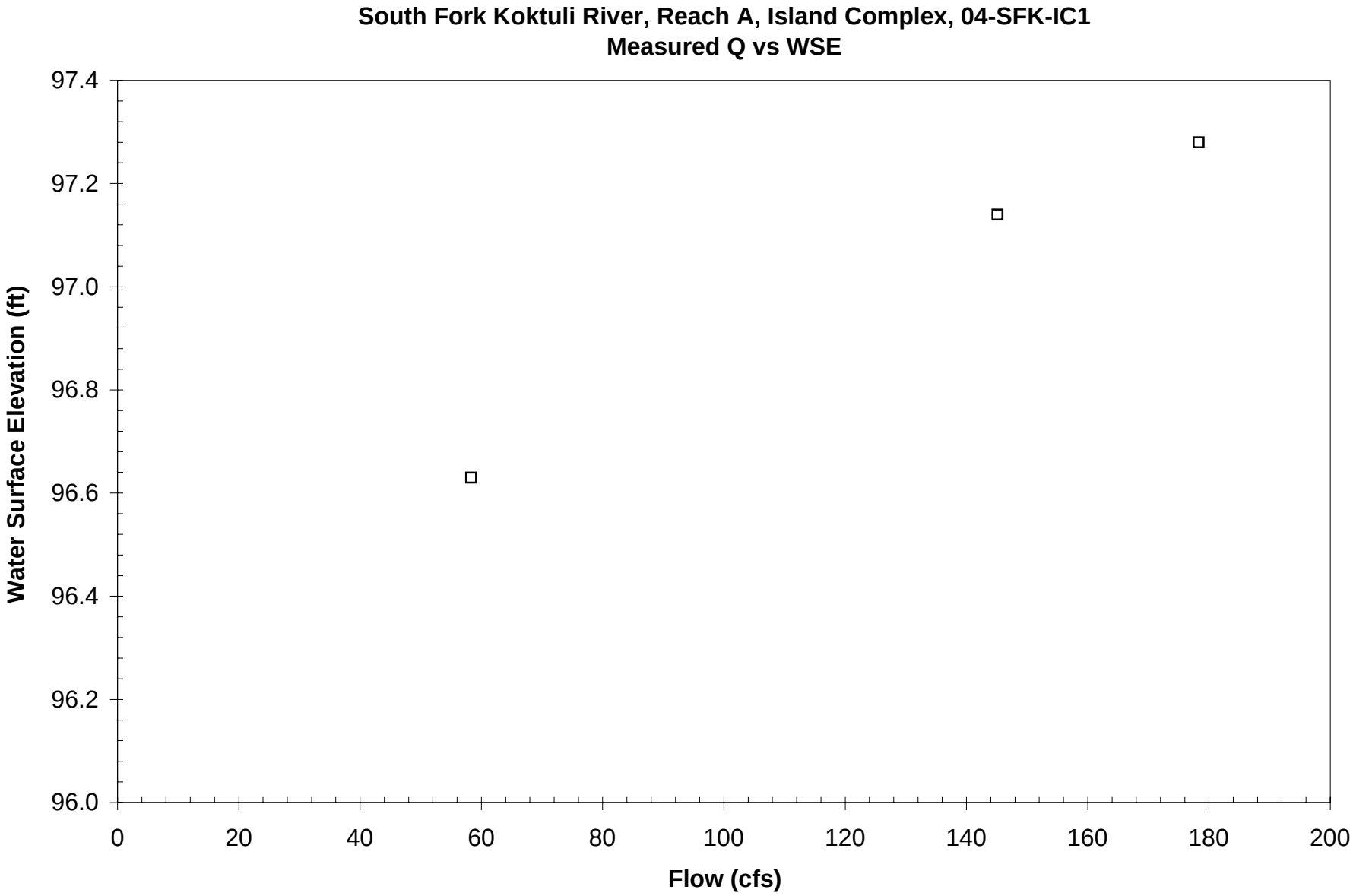
calibration notes

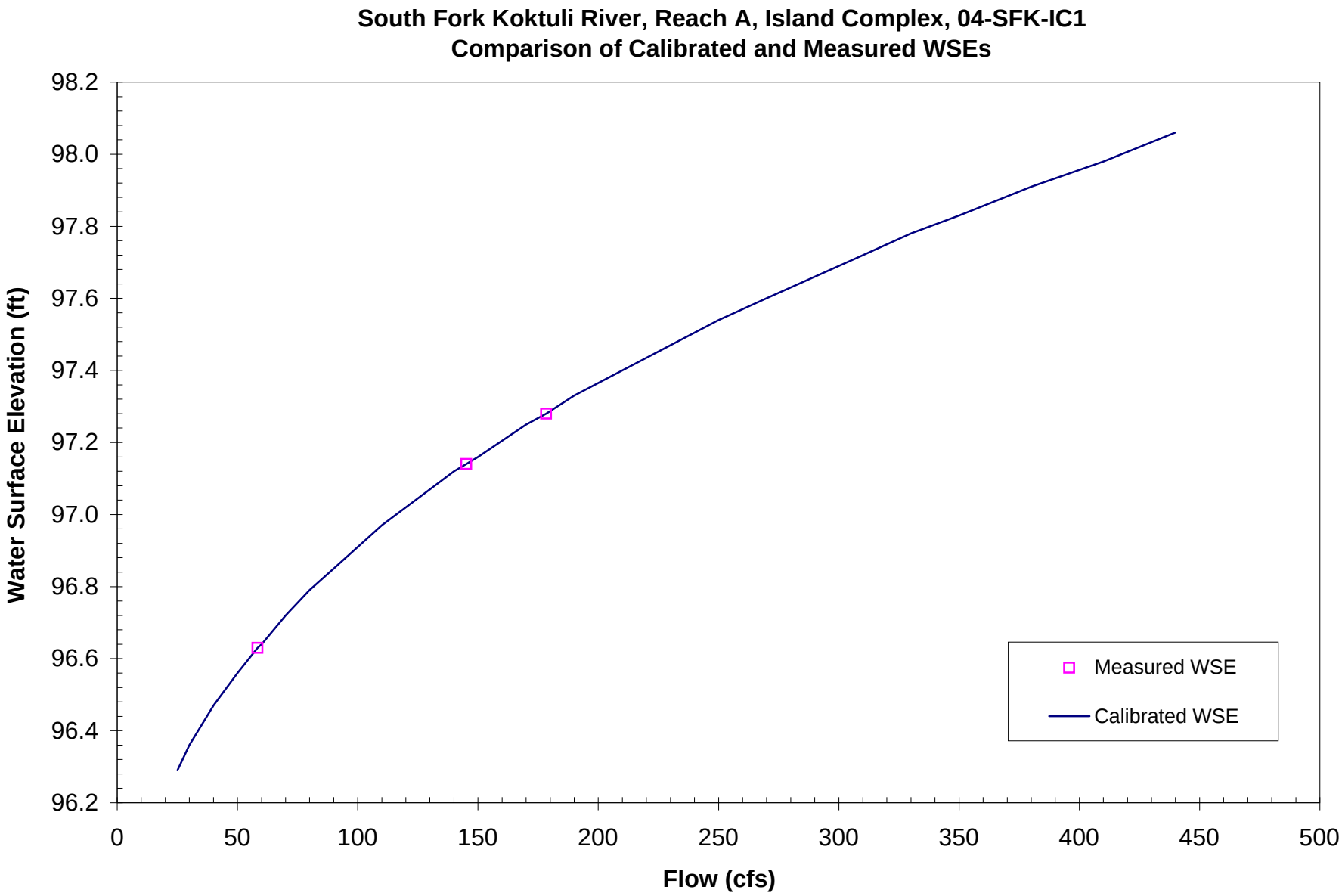
South Fork Koktuli River, Reach A, Island Complex, 04-SFK-IC1
Measured Transect Profile



South Fork Koktuli River, Reach A, Island Complex, 04-SFK-IC1
Longitudinal Water Surface Elevation Profiles



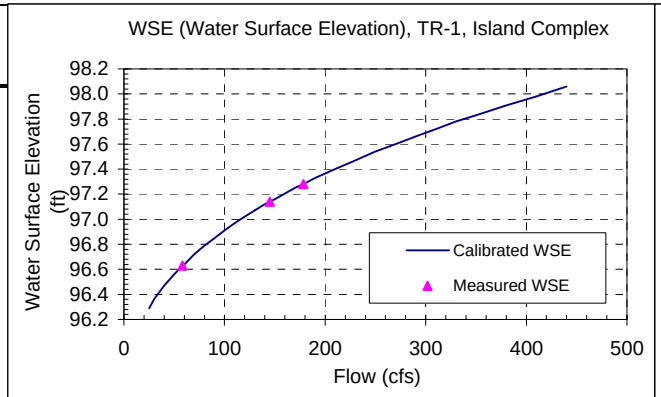

South Fork Koktuli River, Reach A, Island Complex, 04-SFK-IC1
Measured Q vs WSE
Water Surface Elevation (ft)
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)

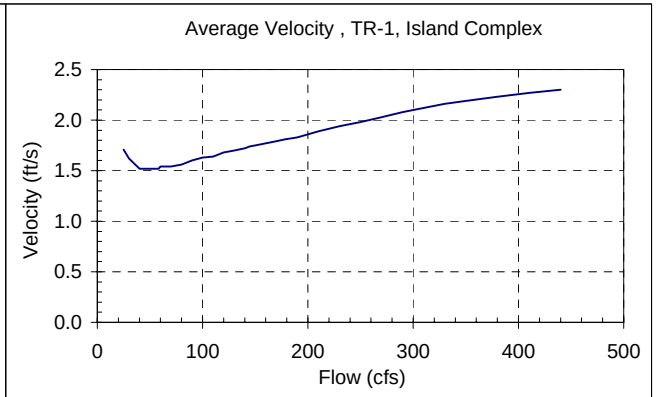

South Fork Koktuli River, Reach A, Island Complex, 04-SFK-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

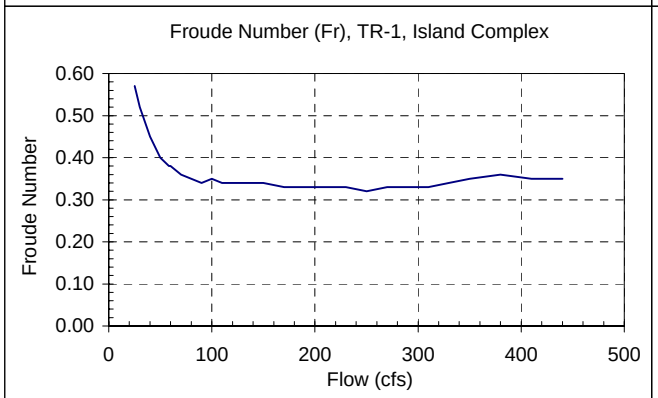
Stream: South Fork Koktuli River
Site Name: 04-SFK-IC1
Date: 6/24/2005
Calibration Flow: Q(6/24/2005)

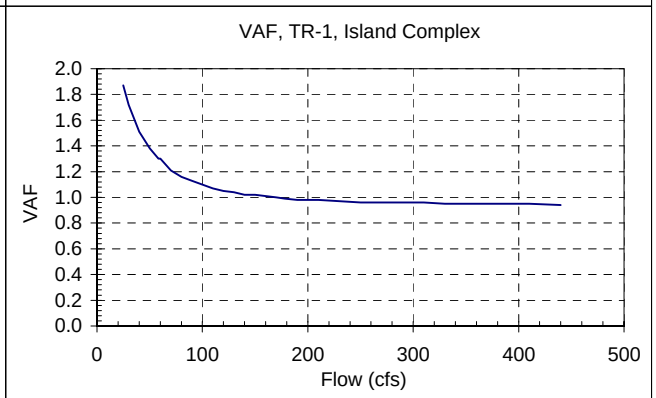
Reach: A
Site #: 1
Transect: 1
Habitat: Island Complex

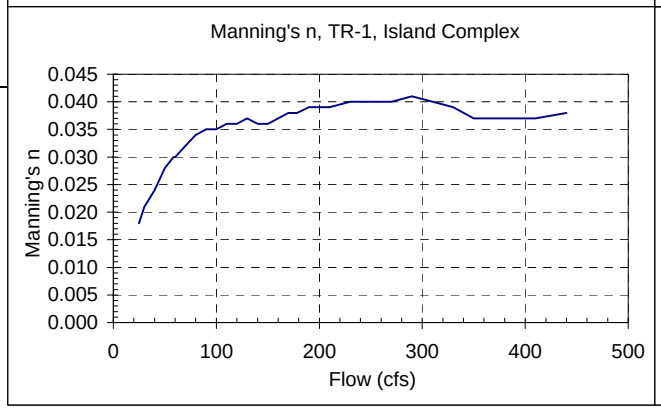
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	96.29	0.57	1.71	1.87	0.018	53.0
30	96.36	0.52	1.62	1.72	0.021	61.2
40	96.47	0.45	1.52	1.51	0.024	73.1
50	96.56	0.40	1.52	1.38	0.028	74.7
58.3	96.63	0.38	1.52	1.30	0.030	78.6
60	96.64	0.38	1.54	1.30	0.030	79.3
70	96.72	0.36	1.54	1.21	0.032	82.8
80	96.79	0.35	1.56	1.16	0.034	84.1
90	96.85	0.34	1.60	1.13	0.035	85.1
100	96.91	0.35	1.63	1.10	0.035	90.6
110	96.97	0.34	1.64	1.07	0.036	92.3
120	97.02	0.34	1.68	1.05	0.036	94.9
130	97.07	0.34	1.70	1.04	0.037	97.8
140	97.12	0.34	1.72	1.02	0.036	105.9
145.1	97.14	0.34	1.74	1.02	0.036	106.2
150	97.16	0.34	1.75	1.02	0.036	106.5
170	97.25	0.33	1.79	1.00	0.038	107.9
178.3	97.28	0.33	1.81	0.99	0.038	108.3
190	97.33	0.33	1.83	0.98	0.039	108.9
210	97.40	0.33	1.89	0.98	0.039	109.7
230	97.47	0.33	1.94	0.97	0.040	110.5
250	97.54	0.32	1.98	0.96	0.040	111.4
270	97.60	0.33	2.03	0.96	0.040	112.2
290	97.66	0.33	2.08	0.96	0.041	112.9
310	97.72	0.33	2.12	0.96	0.040	117.7
330	97.78	0.34	2.16	0.95	0.039	127.4
350	97.83	0.35	2.19	0.95	0.037	135.6
380	97.91	0.36	2.23	0.95	0.037	143.0
410	97.98	0.35	2.27	0.95	0.037	144.5
440	98.06	0.35	2.30	0.94	0.038	146.1

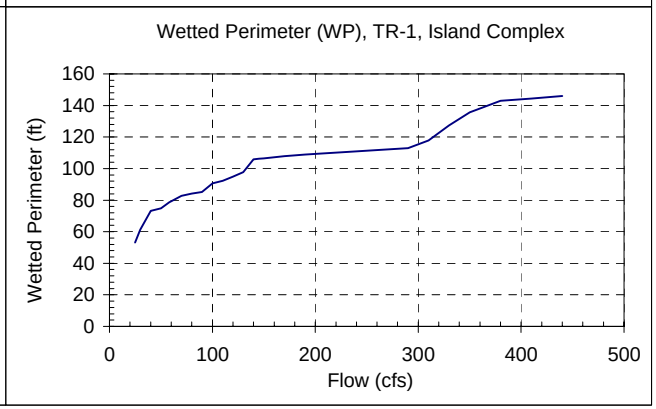




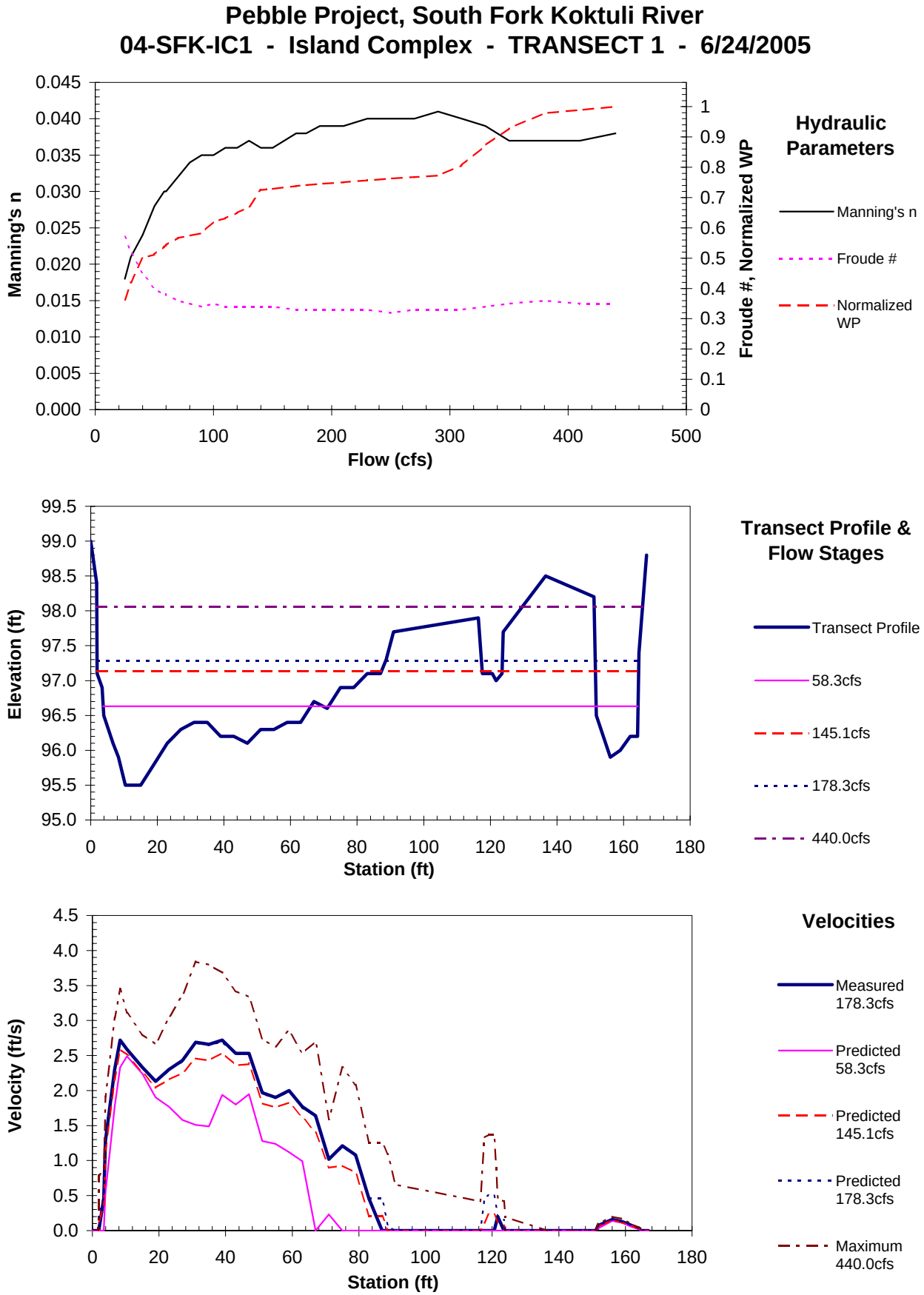








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-IC1  06/24/05
ISLAND                      0605Q                                    TRANSECT 1
IOC       11011001000010001010 00
QARD  25.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  58.3
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 145.1
QARD 150.0
QARD 170.0
QARD 178.3
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 330.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
XSEC  1000     1000. 1.0     95.42    .00243
      1000   .098.98  1.898.38  1.997.08  3.496.87  3.996.48  6.796.08
      1000  8.395.87 10.495.48 15.095.48 19.095.77 23.096.08 27.096.27
      1000 31.096.37 35.096.37 39.096.18 43.096.18 47.096.08 51.096.27
      1000 55.096.27 59.096.37 63.096.37 67.096.68 71.096.58 75.096.87
      1000 79.096.87 83.097.08 87.097.08 88.797.27 90.997.69116.497.87
      1000117.697.12118.997.08120.697.08121.796.98123.597.08123.997.73
      1000136.698.50151.198.16151.896.48156.095.87159.095.98162.096.18
      1000164.296.18164.697.40166.998.77
NS    1000      24.8      22.9      23.8      43.8      43.8      43.8
NS    1000      22.9      22.9      54.6      54.6      54.6      54.6
NS    1000      54.7      64.6      64.6      64.6      45.8      45.8
NS    1000      45.8      42.9      45.8      45.8      45.8      45.6
NS    1000      45.9      45.9      42.6      22.9      22.9      22.9
NS    1000 .05  22.9      22.9      23.8      32.6      32.6      42.6
NS    1000      42.6      22.9      22.9      22.9      23.8      23.9
NS    1000      23.9      22.9      22.9
```

IFG4 Data Deck (continued)

```
WSL   1000     96.29     96.36     96.47     96.56     96.63     96.64
WSL   1000     96.72     96.79     96.85     96.91     96.97     97.02
WSL   1000     97.07     97.12     97.14     97.16     97.25     97.28
WSL   1000     97.33     97.40     97.47     97.54     97.60     97.66
WSL   1000     97.72     97.78     97.83     97.91     97.98     98.06
CAL1  1000     97.28     178.3
VEL1  1000           0.00 0.46 1.28 2.30 2.72 2.59 2.33 2.13 2.30 2.43
VEL1  1000 2.69 2.66 2.72 2.53 2.53 1.97 1.90 2.00 1.77 1.64 1.02 1.21
VEL1  1000 1.08 0.46 0.00 0.00               0.00 0.00 0.20 0.00
VEL1  1000           0.07 0.16 0.13 0.07 0.03
CAL2  1000     96.63      58.3
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.14     145.1
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-A

Site: 08-SFK1-MS2

TR1:	08-SFK1-MS2-TR1	**Habitat Type:**	Riffle	**River Kilometer:**	19.21
TR2:	08-SFK1-MS2-TR2	**Habitat Type:**	Riffle	**River Kilometer:**	19.29
TR3:	08-SFK1-MS2-TR3	**Habitat Type:**	Island Complex	**River Kilometer:**	19.42
TR4:	08-SFK1-MS2-TR4	**Habitat Type:**	Island Complex	**River Kilometer:**	19.47
TR5:	08-SFK1-MS2-TR5	**Habitat Type:**	Island Complex	**River Kilometer:**	19.55
TR6:	08-SFK1-MS2-TR6	**Habitat Type:**	Run	**River Kilometer:**	19.60

Stream: **SF Koktuli River**
Reach: **A**
Site: **08-SFK1-MS2**

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3	BM4	BM5
6/21/2008	100.00	100.04	96.65	96.74	
7/24/2008	100.00	100.06	96.73	96.84	
8/7/2008	100.00	100.04	96.69	96.80	
8/17/2008	100.00	100.04	96.73		97.00

(a) Pin elevations are taken from the first half of each level loop survey
(b) Field crew indicated BM4 was not stable, so its elevation was not used for determining control pin stability.
(c) Relative elevation changes between BM1 and BM2 were within 0.02ft.
(d) BM 1 and BM2 were rebars driven into the ground and field crew indicated both appeared stable, and therefore they are used as elevation control pins for all level loop surveys.

Measured WSE:

There were multiple WSEs surveyed across each channel/transect for each flow, and the average of the measured WSEs of each channel/transect was summarized in the following table.

Date	WSE (ft)								
	TR-1	TR-2	TR-3		TR-4		TR-5		TR-6
			LC	RC	LC	RC	LC	RC	
6/21/2008	93.27	93.78	94.40	94.53	94.45	94.71	95.44	95.45	95.96
7/24/2008	93.01	93.39	94.07	94.15	94.06	94.28	95.22	95.18	95.65
8/7/2008	92.64	92.93	93.44	93.50	93.44	93.54	94.88	94.69	95.15
8/17/2008	92.52	92.89	93.37	93.42	93.38	93.48	94.65	94.53	94.96

WSEs of RC and LC are not the same for the Island Complex transects (i.e., TR-3, TR-4, TR-5), but the WSEs of right channels are used for hydraulic calibration, because most of the water flows through the right channels. The bed bathymetry of LCs is adjusted, with the amount of the WSE difference between RC and LC, so that both channels (RC and LC) would have the same WSE, as required by the IFG4 model.

calibration notes

Discharge:

All measured discharges are listed in the following table.

The discharge include the flows of both RC and LC for the multiple channel transects (i.e., TR-3, TR-4, TR-5).

	Discharge (cfs)						
Date	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	Ave Q
6/21/2008				395.5		392.1	393.8
7/24/2008	261.4	237.0	261.8	235.5	272.5	246.6	252.5
8/7/2008		104.8		93.8			99.3
8/17/2008	77.6		81.1		81.4	70.7	77.7

Average Q of all measured flows is used as the representative flows of the site for hydraulic calibration

Longitudinal WSE Slope:

Slopes are calculated using the measured WSEs and longitudinal distances.

Distances are calculated in Dec, 2009 based on the channel centerline on which transects are located.

	Longitudinal Stations					
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
LB RB						
Ave						
Station	0.0	263.2	683.8	854.6	1129.5	1281.2

	Slope					
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	-	0.194%	0.184%	0.168%	0.193%	0.210%
7/24/2008	-	0.144%	0.166%	0.149%	0.192%	0.206%
8/7/2008	-	0.110%	0.126%	0.105%	0.182%	0.196%
8/17/2008	-	0.142%	0.132%	0.113%	0.178%	0.191%

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.

The TR-6 slope S=0.210% of 6/21/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Discharge (cfs)					
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008				91.16		93.21
7/24/2008	91.61	91.49	90.60	91.18	93.28	93.20
8/7/2008		91.58		90.89		
8/17/2008	91.62		90.72		93.38	93.26
Invert	91.62	91.58	90.72	91.18	93.38	93.26
SZF	91.62	91.68	91.68	91.68	93.38	93.38

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) SZF of upstream transect must be no less than that of the downstream transect.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

IFG4 was applied to calibrating the WSEs of all 6 transects.

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)						Calibrated WSE(ft)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	393.8	93.27	93.78	94.53	94.71	95.45	95.96	93.26	93.74	94.52	94.70	95.47	95.97
7/24/2008	252.5	93.01	93.39	94.15	94.28	95.18	95.65	93.02	93.44	94.15	94.28	95.16	95.65
8/7/2008	99.3	92.64	92.93	93.50	93.54	94.69	95.15	92.63	92.95	93.53	93.58	94.66	95.11
8/17/2008	77.7	92.52	92.89	93.42	93.48	94.53	94.96	92.55	92.85	93.39	93.43	94.55	94.99

Survey Date	Q (cfs)	WSE calibration error (ft)						WSE Calibration Method					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	393.8	-0.01	-0.04	-0.01	-0.01	0.02	0.01	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4
7/24/2008	252.5	0.01	0.05	0.00	0.00	-0.02	0.00	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4
8/7/2008	99.3	0.00	0.02	0.03	0.04	-0.03	-0.04	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4
8/17/2008	77.7	0.03	-0.04	-0.03	-0.05	0.02	0.03	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) All calibration errors are no more than 0.05ft

calibration notes

(3) Velocity calibration

This site has six transects and each transect has 2 or 3 velocity/discharge measurements.
TR-4 and TR-6 each has three measured velocity profiles and the other four transects (TR-1, TR-2, TR-3, TR-5) each has 2 measured profiles. Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

(4) Hydraulic Calibration Results:

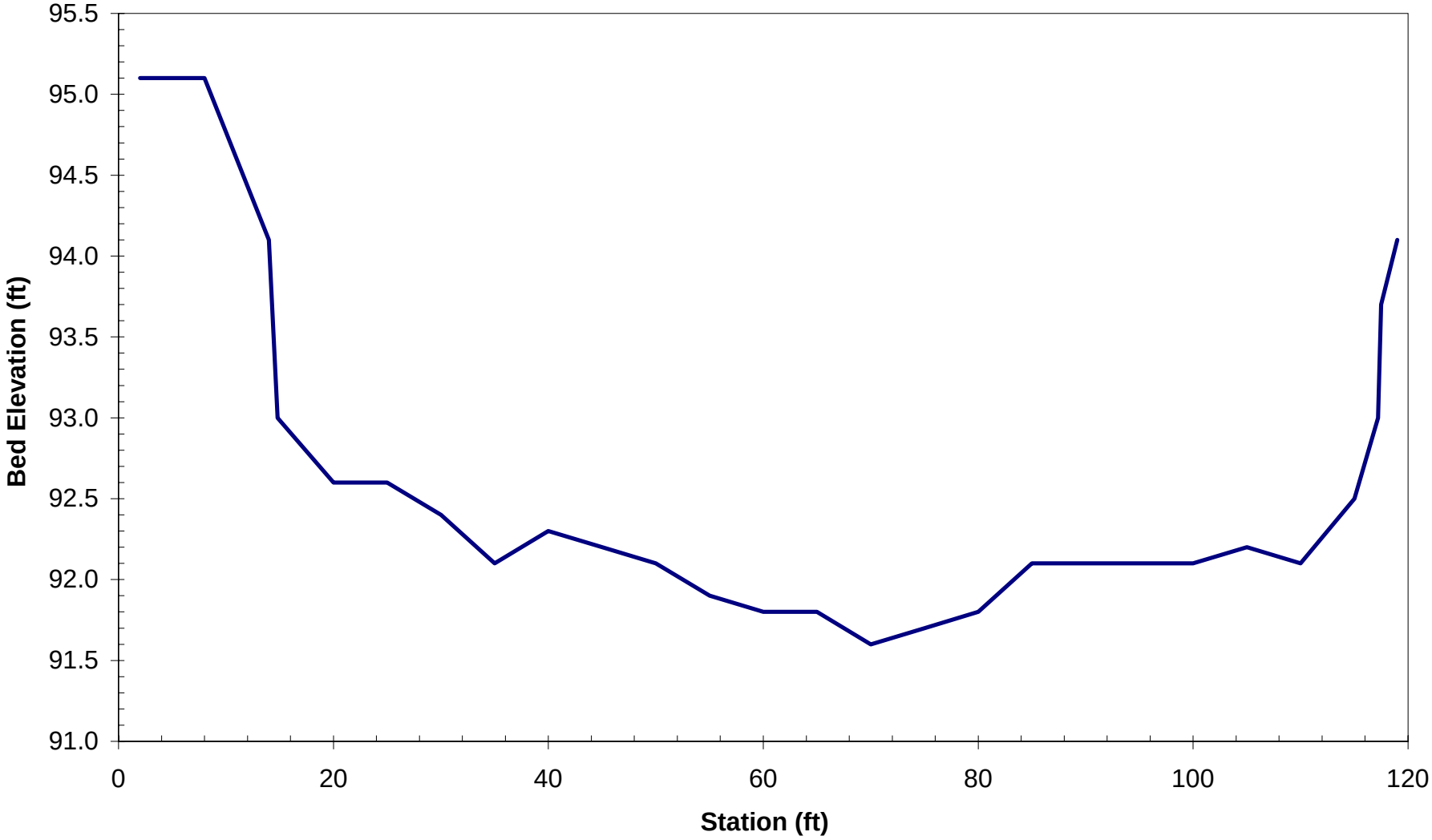
Hydraulic simulation results are summarized in the tables and figures in that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges with normal trends. The Manning's n values and Froude numbers of TR-5, however, are slightly out of the normal trends between 70cfs and 300cfs because of increasing n value and decreasing Fr as flows increase. This is ok because Q=70cfs~300cfs is approximately in the same range as the measured flows (77 cfs to 393 cfs), and the trends are just reflecting the hydraulic behavior within that flow range. Also the maximum WSE calibration is 0.05ft or less, and the irregularity between 70cfa and 300cfs should not be the result of calibration errors.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

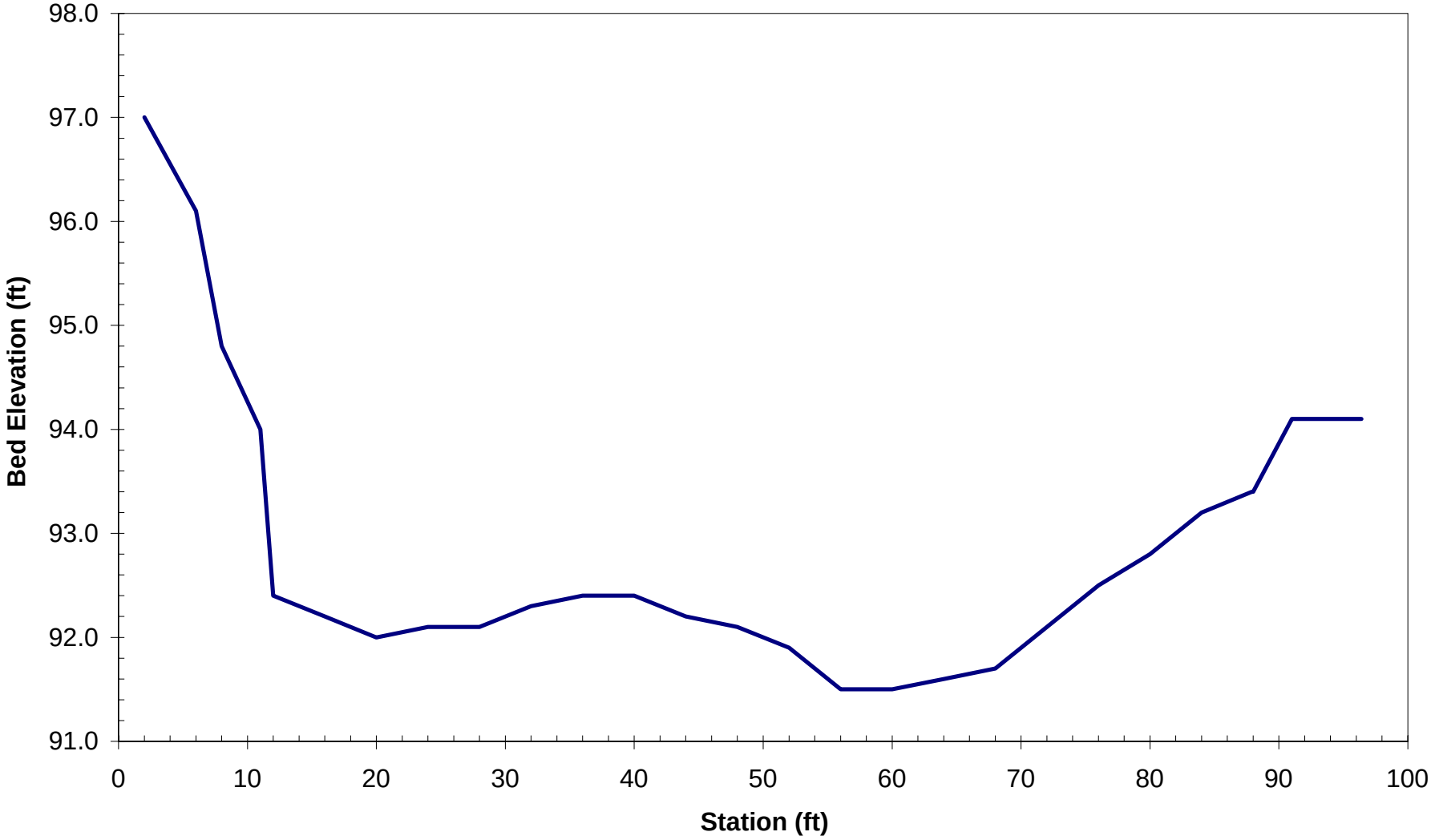
Survey Date	Q (cfs)	WUA (Y/N)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/21/2008	393.8						Y
7/24/2008	252.5	Y	Y	Y	Y	Y	Y
8/7/2008	99.3	Y			Y		Y
8/17/2008	77.7		Y	Y	Y	Y	

calibration notes

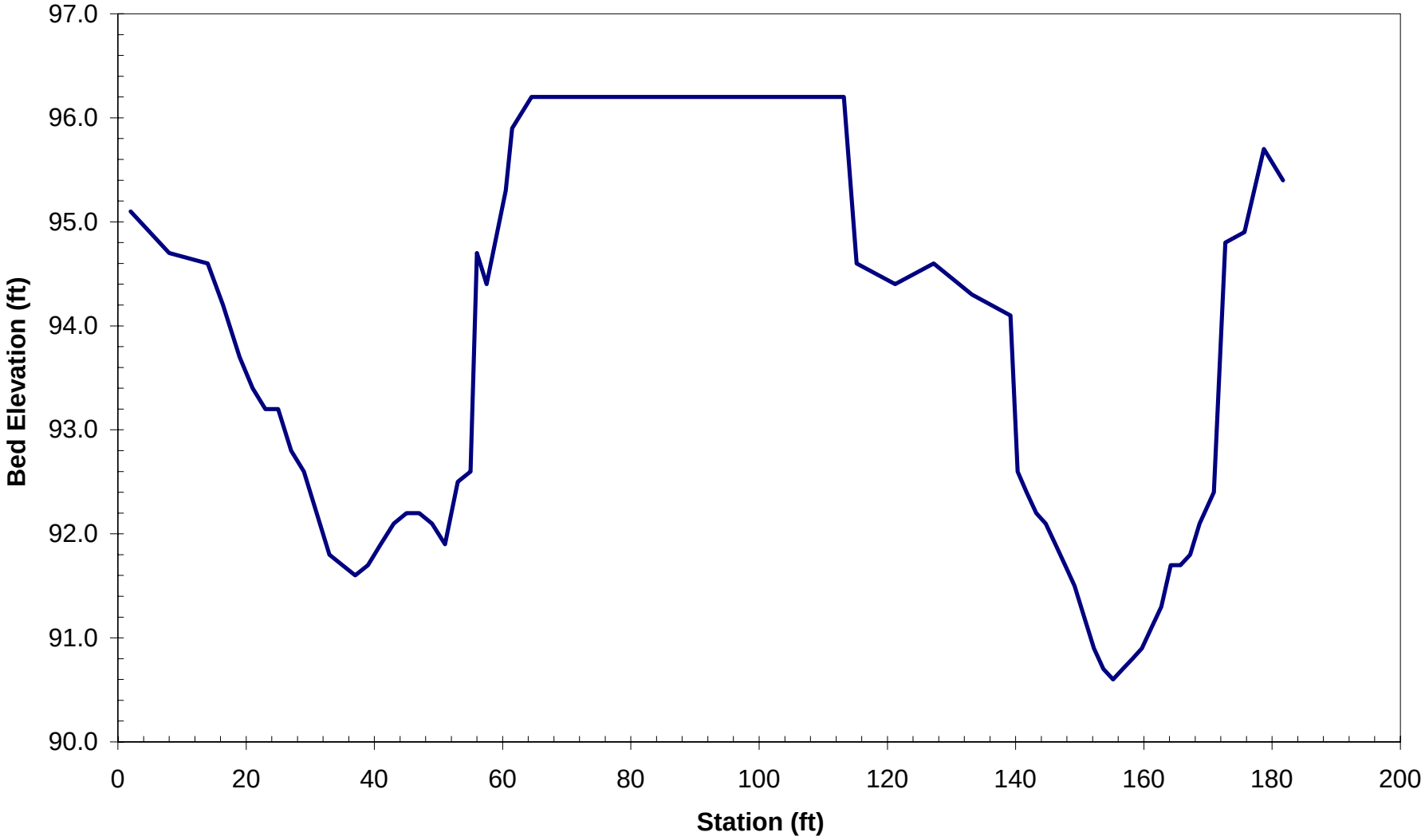
South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR1
Measured Transect Profile



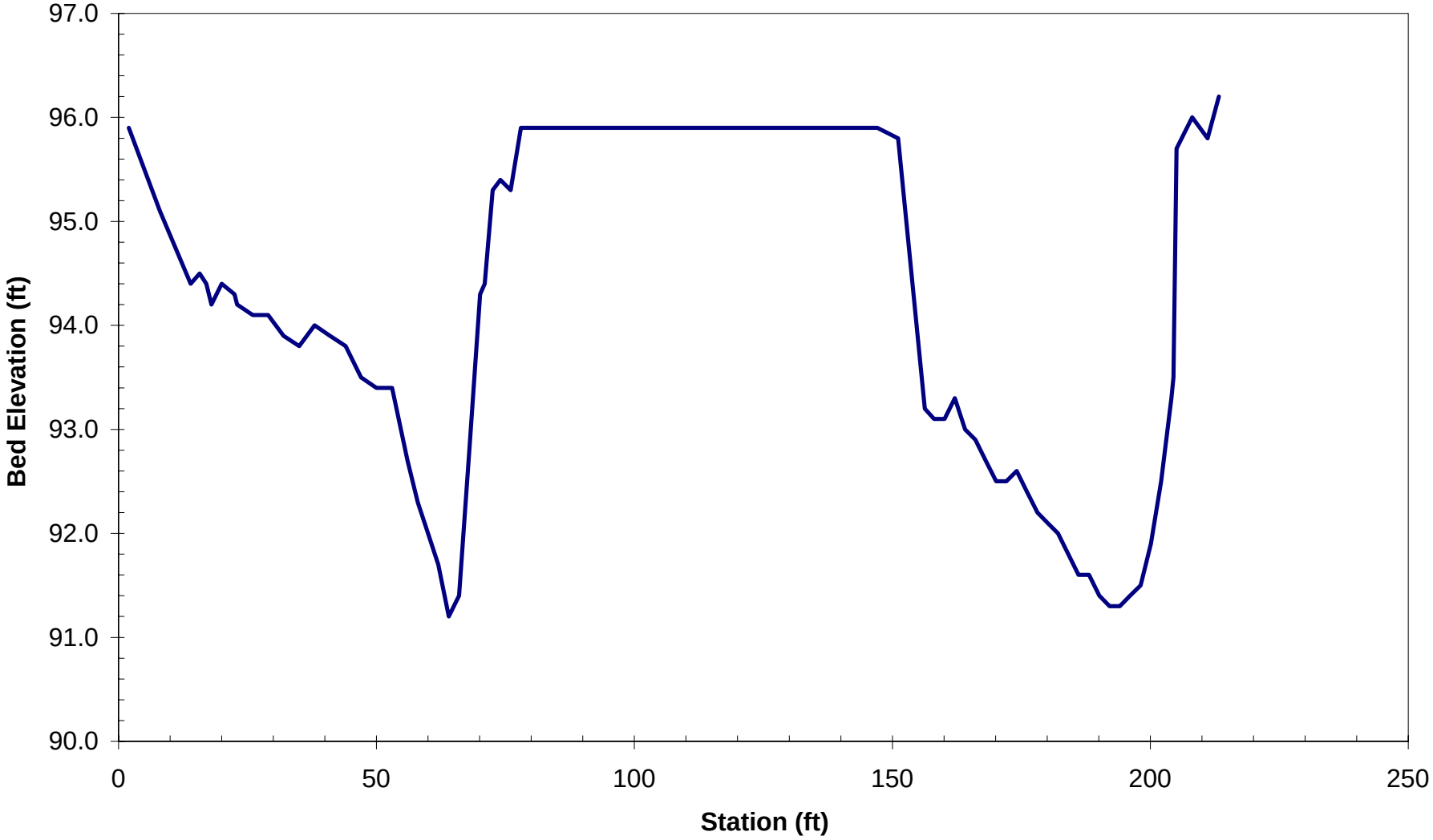
South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR2
Measured Transect Profile



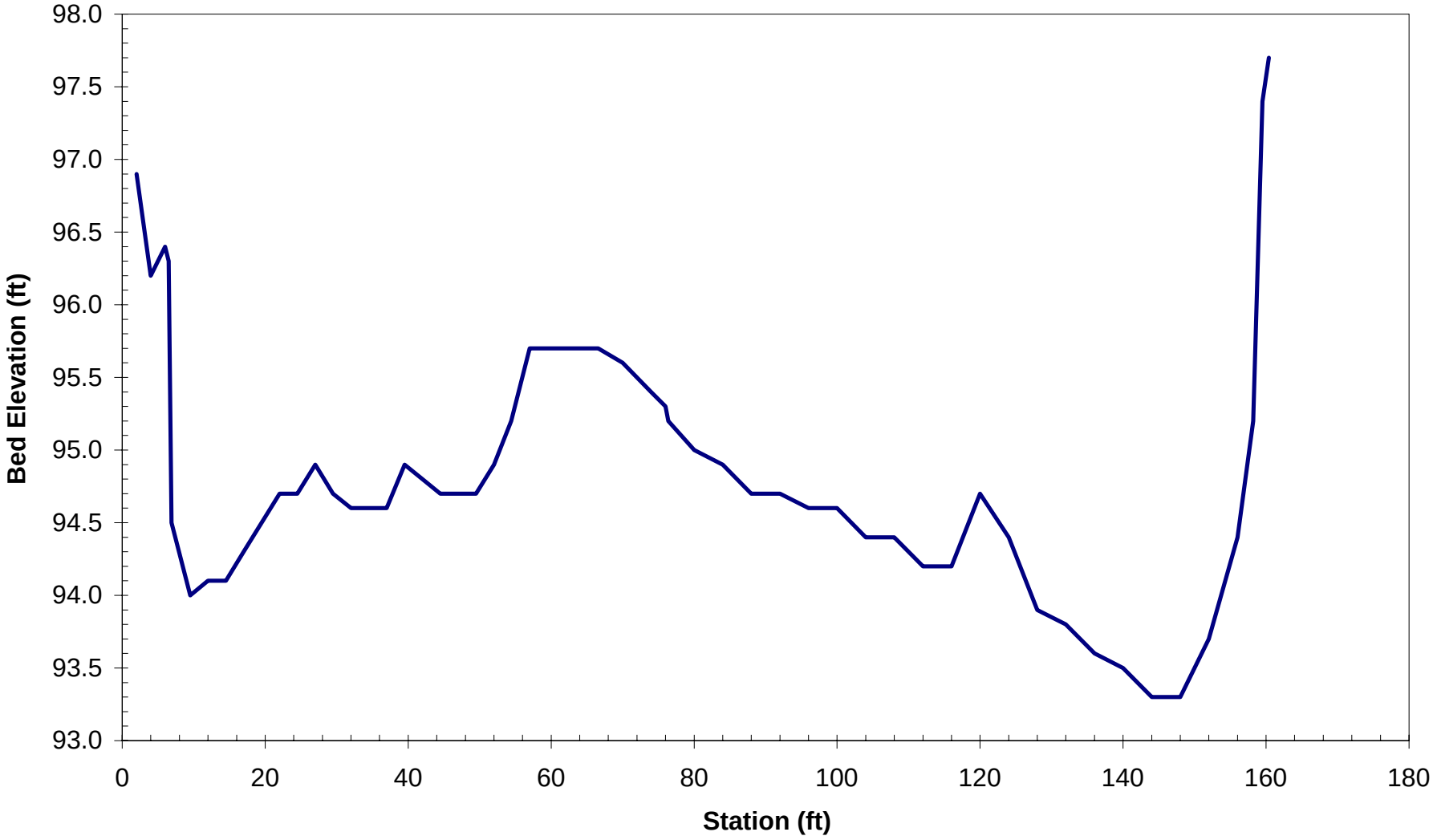
South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR3
Measured Transect Profile



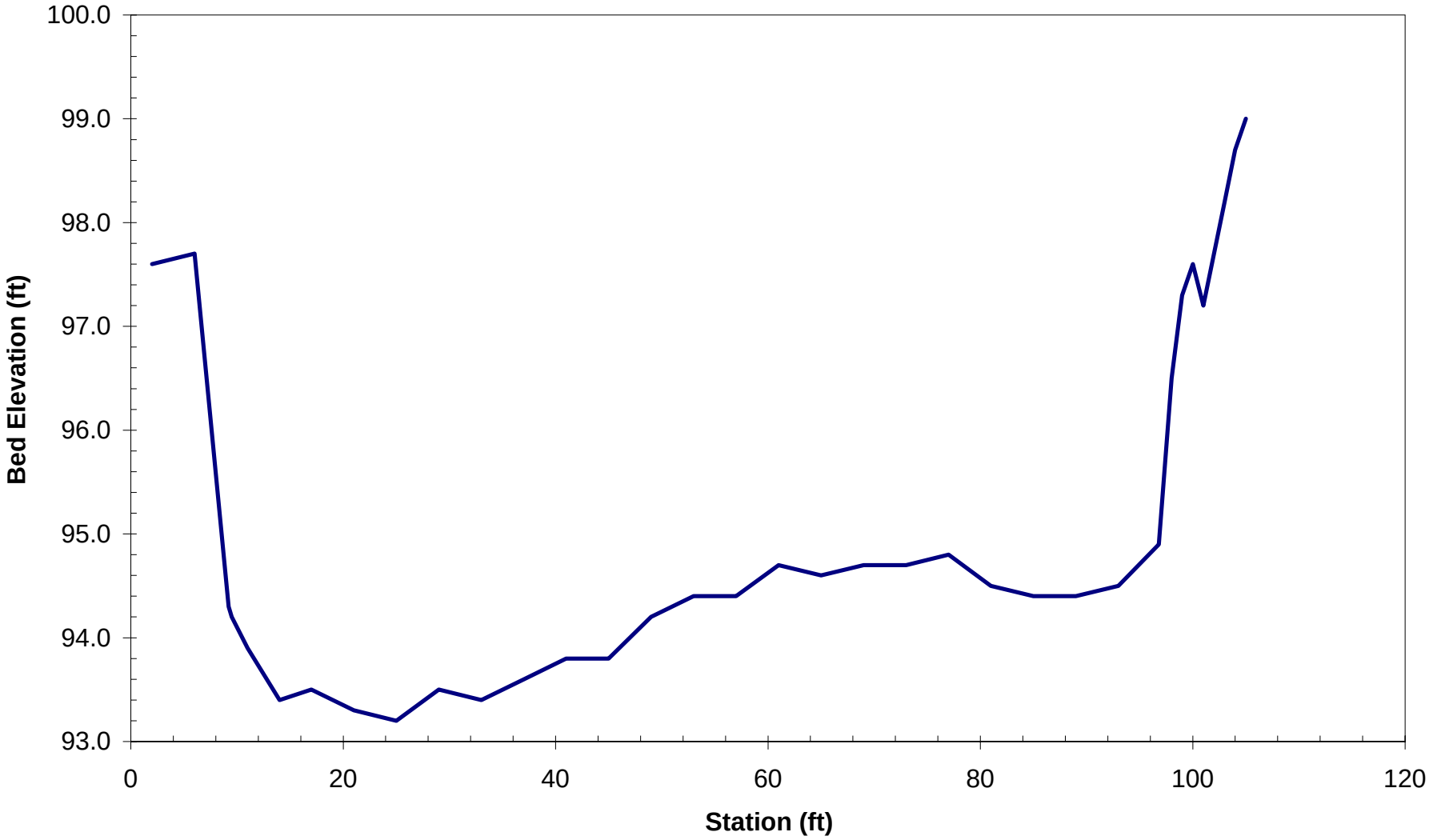
South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR4
Measured Transect Profile



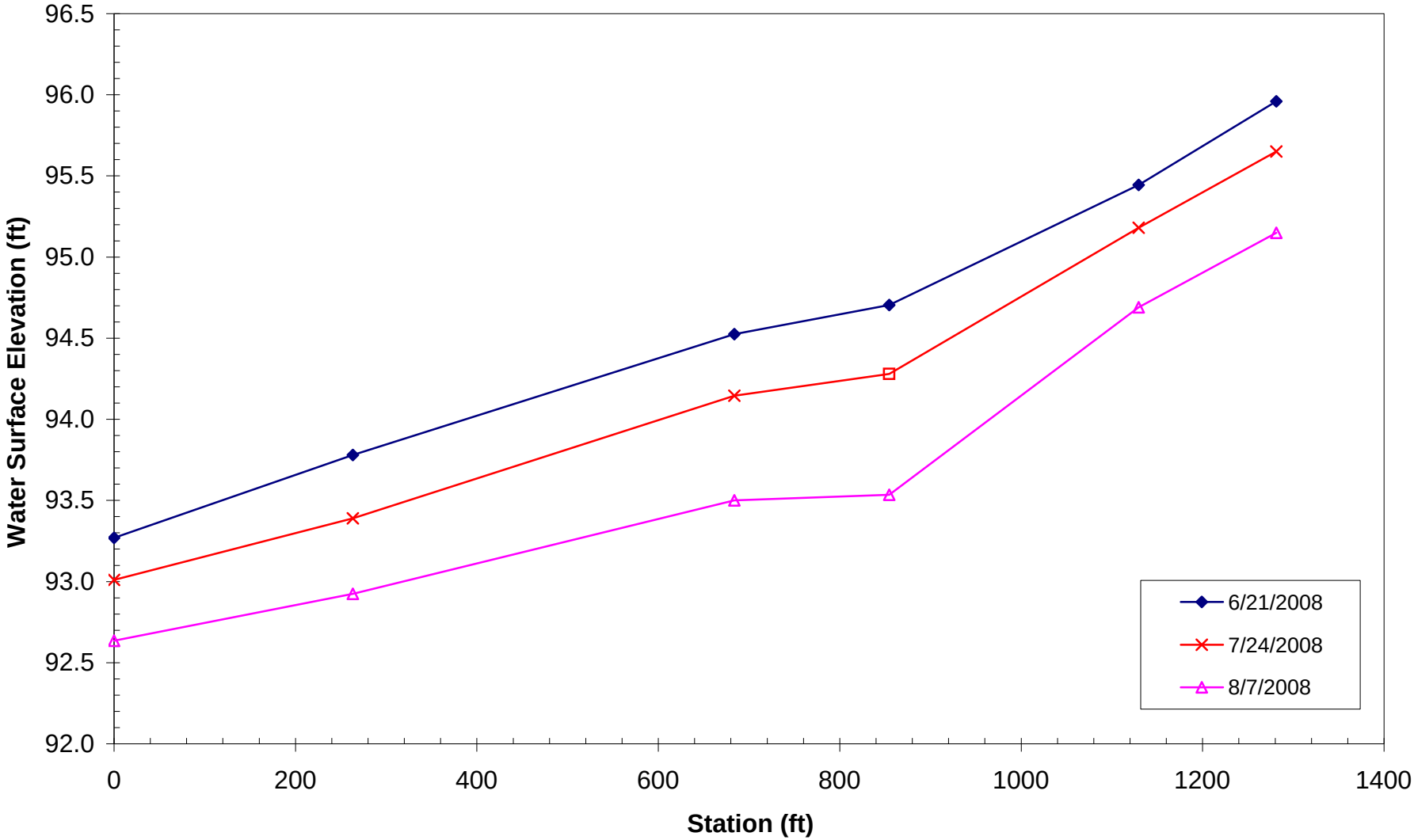
South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR5
Measured Transect Profile

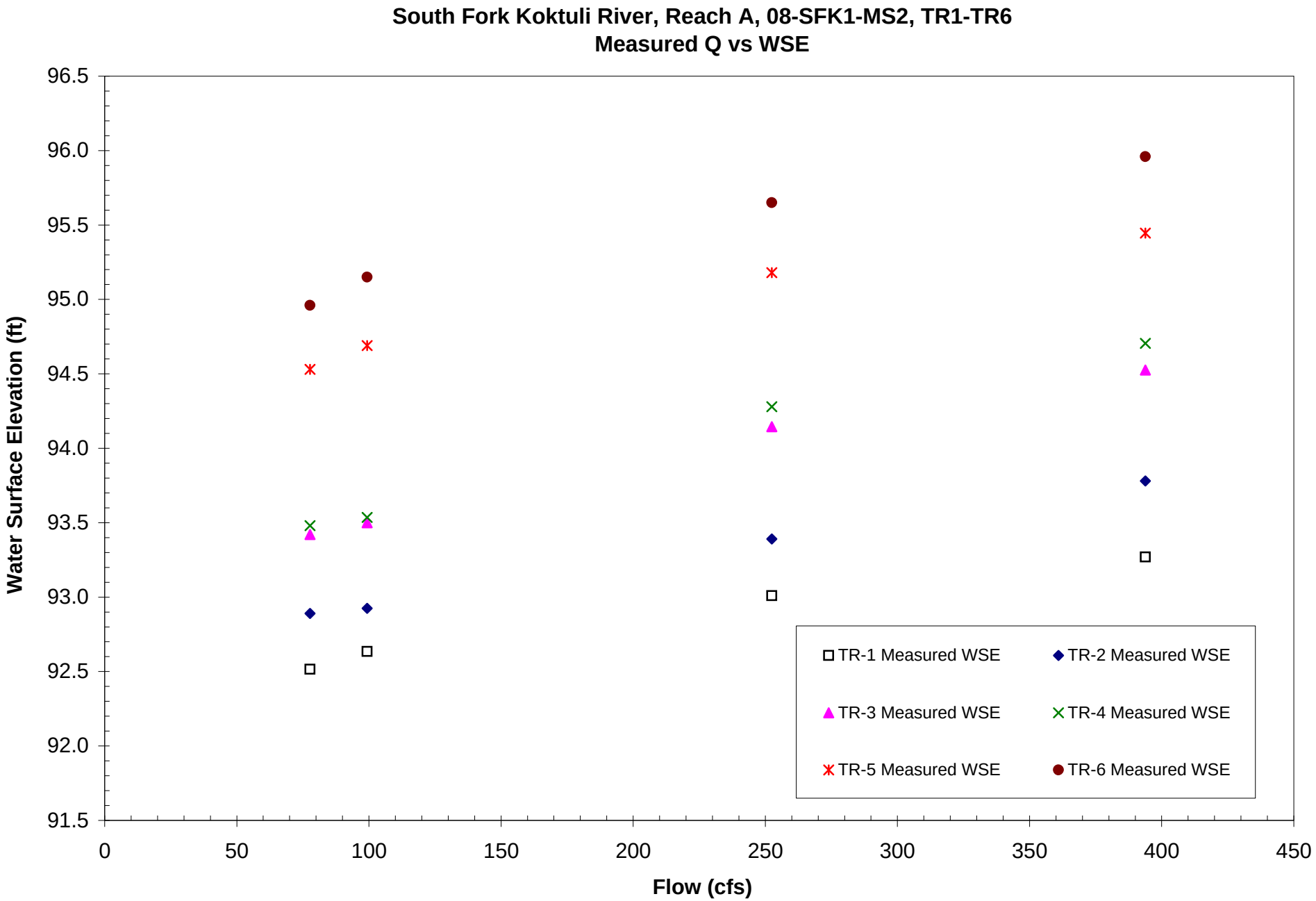


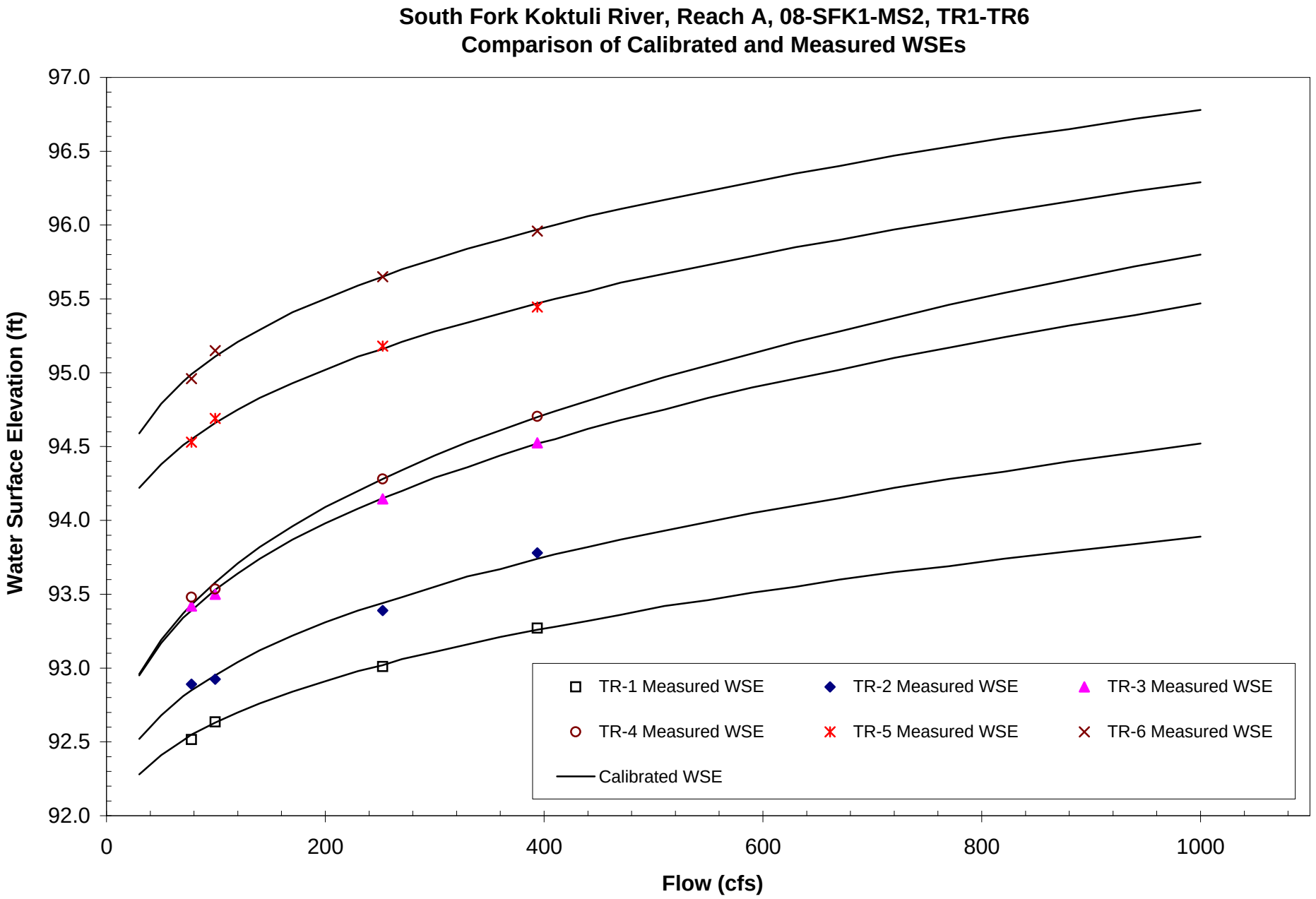
South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR6
Measured Transect Profile



South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR1-TR6
Longitudinal Water Surface Elevation Profiles

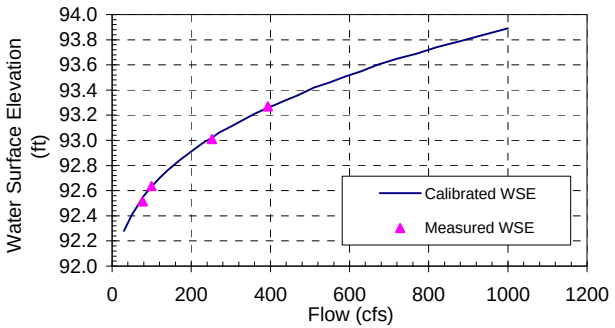


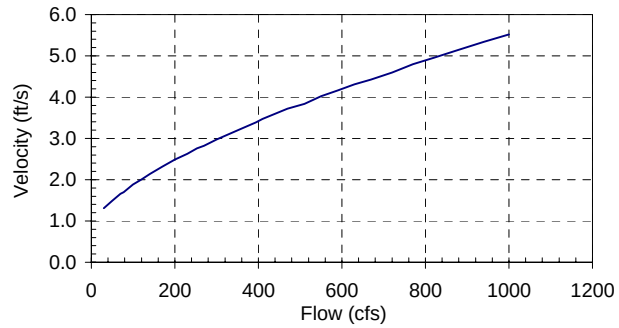

South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR1-TR6
Measured Q vs WSE
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
92.5
92.0
91.5
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE

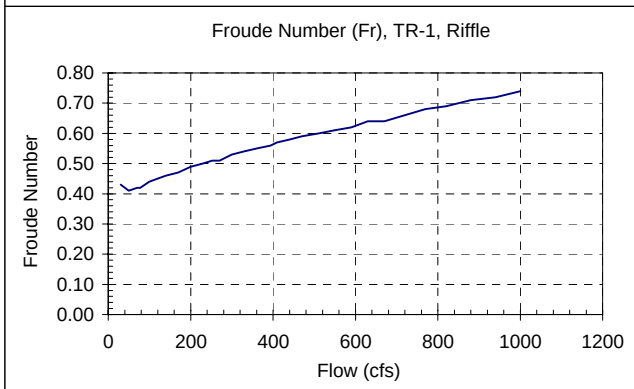

South Fork Koktuli River, Reach A, 08-SFK1-MS2, TR1-TR6
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
92.5
92.0
0
200
400
600
800
1000
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE
Calibrated WSE

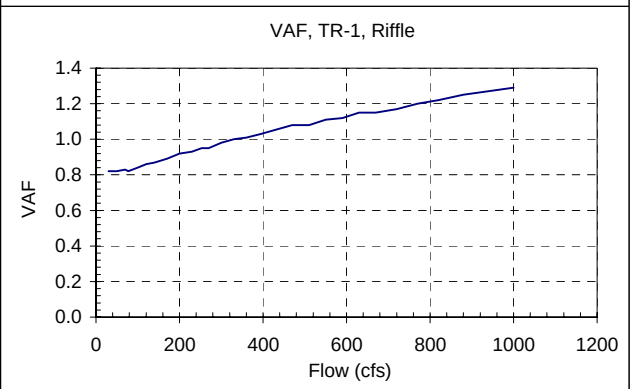
Stream: SF Koktuli River **Reach:** A
Site Identifier: 08-SFK1-MS2 **Site:** 2
Date: 7/24/2008 **Transect:** 1
Calibration Flow: Mid **Habitat:** Riffle

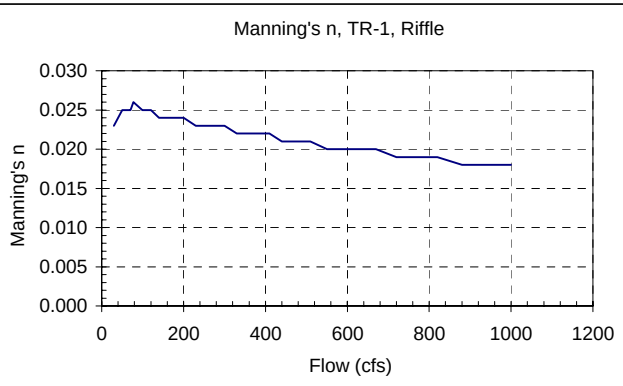
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	92.28	0.43	1.31	0.82	0.023	78.7
50	92.41	0.41	1.49	0.82	0.03	83.8
70	92.51	0.42	1.66	0.83	0.03	87.6
77.7	92.55	0.42	1.70	0.82	0.03	88.7
99.3	92.63	0.44	1.88	0.84	0.03	95.9
120	92.70	0.45	2.01	0.86	0.03	97.1
140	92.76	0.46	2.14	0.87	0.02	98.1
170	92.84	0.47	2.32	0.89	0.02	99.5
200	92.91	0.49	2.49	0.92	0.02	100.8
230	92.98	0.50	2.63	0.93	0.02	102.0
252.5	93.02	0.51	2.76	0.95	0.02	102.6
270	93.06	0.51	2.82	0.95	0.02	102.6
300	93.11	0.53	2.98	0.98	0.02	102.8
330	93.16	0.54	3.11	1.00	0.02	102.9
360	93.21	0.55	3.24	1.01	0.02	103.0
393.8	93.26	0.56	3.39	1.03	0.02	103.1
410	93.28	0.57	3.47	1.04	0.02	103.2
440	93.32	0.58	3.60	1.06	0.02	103.3
470	93.36	0.59	3.72	1.08	0.02	103.3
510	93.42	0.60	3.84	1.08	0.02	103.5
550	93.46	0.61	4.02	1.11	0.02	103.6
590	93.51	0.62	4.16	1.12	0.02	103.7
630	93.55	0.64	4.31	1.15	0.02	103.8
670	93.60	0.64	4.43	1.15	0.02	103.9
720	93.65	0.66	4.60	1.17	0.02	104.0
770	93.69	0.68	4.80	1.20	0.02	104.2
820	93.74	0.69	4.95	1.22	0.02	104.5
880	93.79	0.71	5.15	1.25	0.02	104.7
940	93.84	0.72	5.34	1.27	0.02	105.0
1000	93.89	0.74	5.52	1.29	0.018	105.2

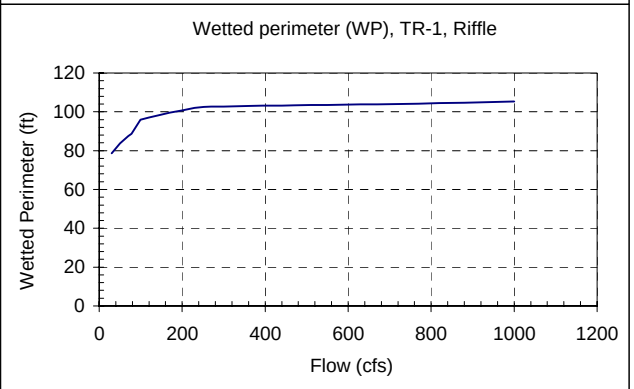






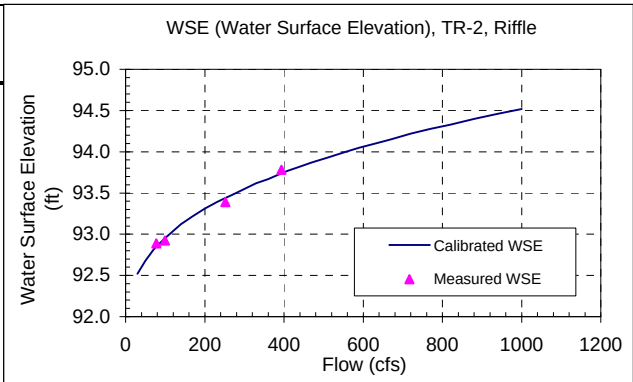


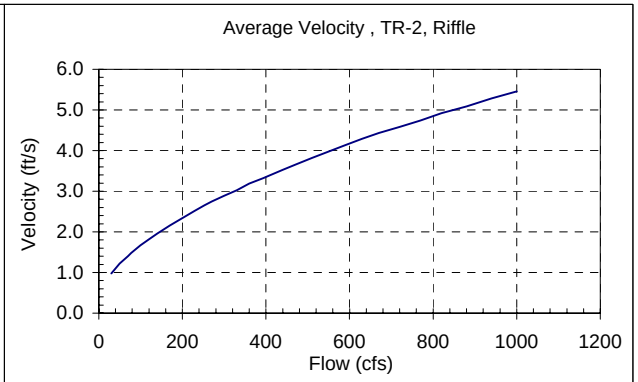


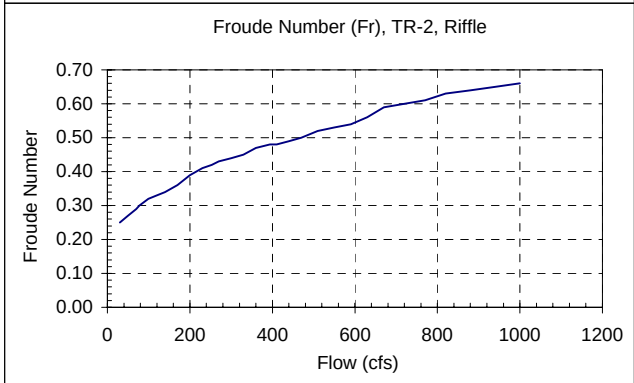


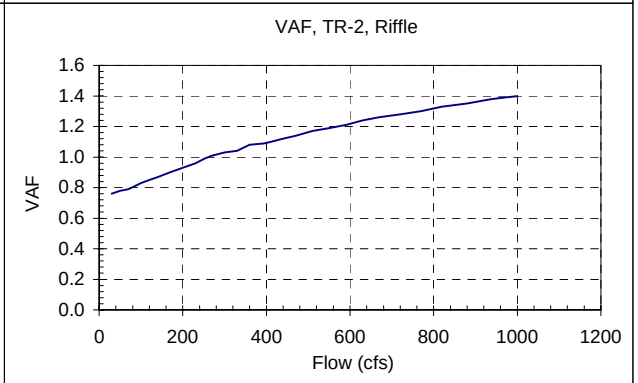
Stream: SF Koktuli River **Reach:** A
Site Identifier: 08-SFK1-MS2 **Site:** 2
Date: 7/24/2008 **Transect:** 2
Calibration Flow: Mid **Habitat:** Riffle

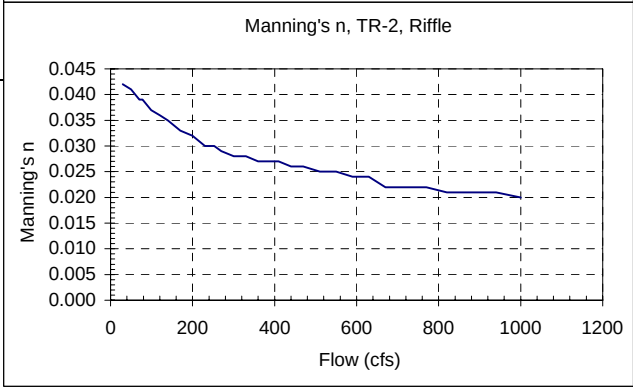
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	92.52	0.25	0.98	0.76	0.042	64.6
50	92.68	0.27	1.22	0.78	0.04	66.9
70	92.81	0.29	1.40	0.79	0.04	68.7
77.7	92.85	0.30	1.48	0.80	0.04	69.1
99.3	92.95	0.32	1.67	0.83	0.04	70.1
120	93.04	0.33	1.82	0.85	0.04	71.0
140	93.12	0.34	1.96	0.87	0.04	71.9
170	93.22	0.36	2.16	0.90	0.03	72.9
200	93.31	0.39	2.34	0.93	0.03	75.0
230	93.39	0.41	2.52	0.96	0.03	77.2
252.5	93.44	0.42	2.65	0.99	0.03	77.5
270	93.48	0.43	2.75	1.01	0.03	77.7
300	93.55	0.44	2.89	1.03	0.03	78.1
330	93.62	0.45	3.02	1.04	0.03	78.5
360	93.67	0.47	3.19	1.08	0.03	78.8
393.8	93.74	0.48	3.32	1.09	0.03	79.2
410	93.77	0.48	3.39	1.10	0.03	79.3
440	93.82	0.49	3.53	1.12	0.03	79.6
470	93.87	0.50	3.65	1.14	0.03	79.9
510	93.93	0.52	3.82	1.17	0.03	80.2
550	93.99	0.53	3.98	1.19	0.03	80.5
590	94.05	0.54	4.13	1.21	0.02	81.0
630	94.10	0.56	4.29	1.24	0.02	81.4
670	94.15	0.59	4.43	1.26	0.02	87.1
720	94.22	0.60	4.58	1.28	0.02	87.3
770	94.28	0.61	4.74	1.30	0.02	87.6
820	94.33	0.63	4.92	1.33	0.02	87.8
880	94.40	0.64	5.09	1.35	0.02	88.1
940	94.46	0.65	5.28	1.38	0.02	88.3
1000	94.52	0.66	5.46	1.40	0.020	88.6

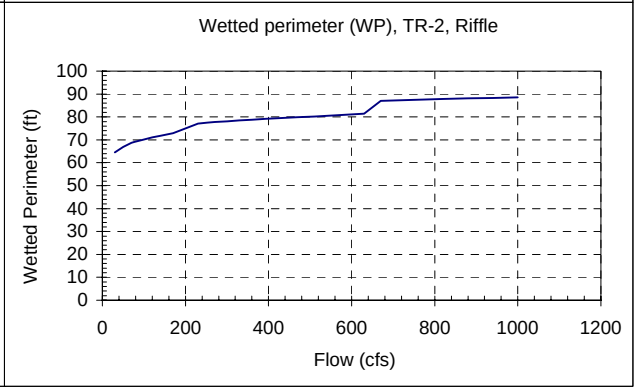






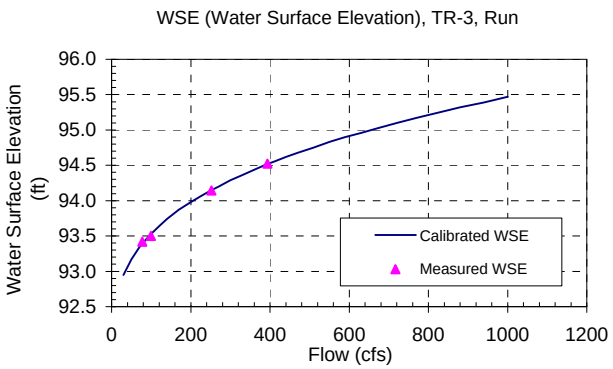


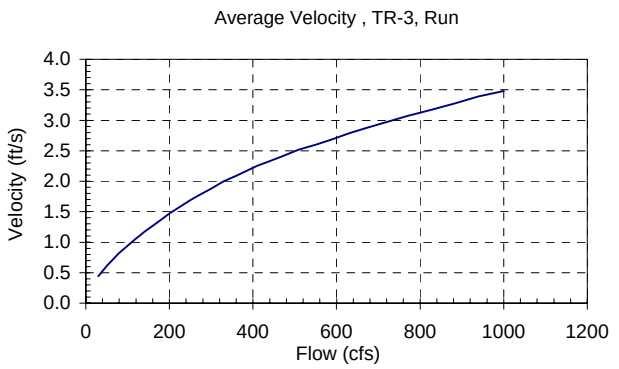


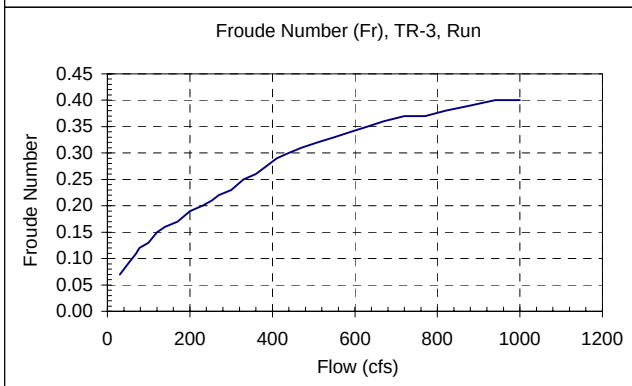


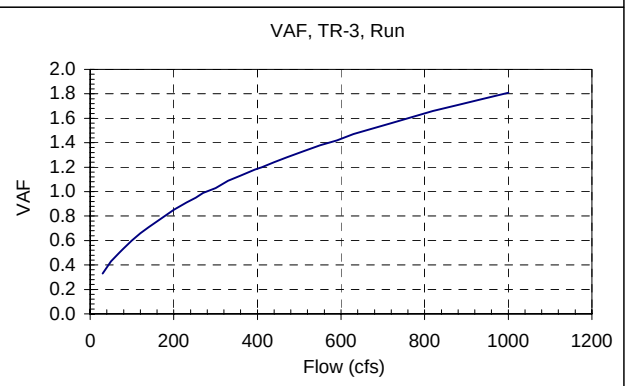
Stream: SF Koktuli River **Reach:** A
Site Identifier: 08-SFK1-MS2 **Site:** 2
Date: 7/24/2008 **Transect:** 3
Calibration Flow: Mid **Habitat:** Island Complex

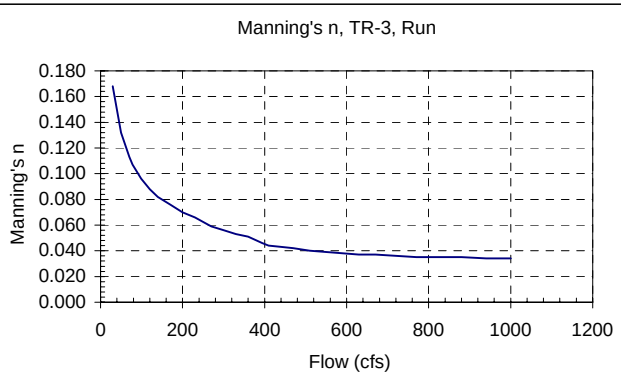
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	92.95	0.07	0.44	0.33	0.168	61.3
50	93.17	0.09	0.61	0.43	0.13	63.8
70	93.34	0.11	0.75	0.50	0.11	66.9
77.7	93.39	0.12	0.81	0.53	0.11	67.6
99.3	93.53	0.13	0.94	0.60	0.10	69.3
120	93.64	0.15	1.06	0.66	0.09	70.4
140	93.74	0.16	1.17	0.71	0.08	71.5
170	93.87	0.17	1.32	0.78	0.08	72.8
200	93.98	0.19	1.47	0.85	0.07	73.9
230	94.08	0.20	1.60	0.91	0.07	75.2
252.5	94.15	0.21	1.70	0.95	0.06	77.9
270	94.20	0.22	1.77	0.99	0.06	79.8
300	94.29	0.23	1.88	1.03	0.06	83.0
330	94.36	0.25	2.00	1.09	0.05	85.0
360	94.44	0.26	2.09	1.13	0.05	88.2
393.8	94.52	0.28	2.20	1.18	0.05	98.5
410	94.55	0.29	2.25	1.20	0.04	102.3
440	94.62	0.30	2.33	1.24	0.04	104.8
470	94.68	0.31	2.41	1.28	0.04	108.7
510	94.75	0.32	2.52	1.33	0.04	112.5
550	94.83	0.33	2.60	1.38	0.04	114.5
590	94.90	0.34	2.69	1.42	0.04	117.8
630	94.96	0.35	2.79	1.47	0.04	120.0
670	95.02	0.36	2.87	1.51	0.04	121.4
720	95.10	0.37	2.97	1.56	0.04	123.4
770	95.17	0.37	3.07	1.61	0.04	124.5
820	95.24	0.38	3.16	1.66	0.04	125.1
880	95.32	0.39	3.27	1.71	0.04	125.9
940	95.39	0.40	3.39	1.76	0.03	126.4
1000	95.47	0.4	3.48	1.81	0.034	127.9

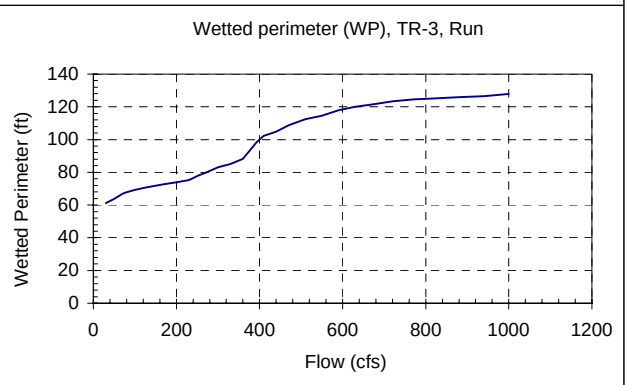






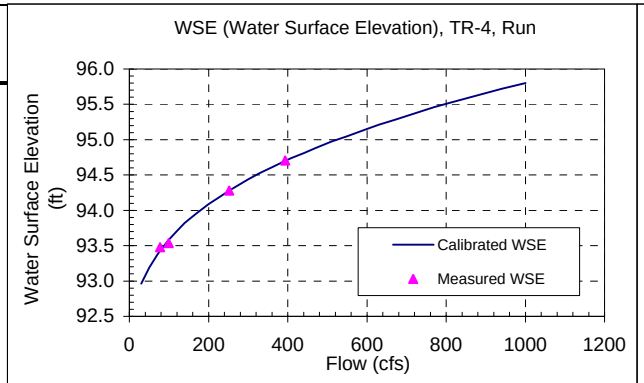


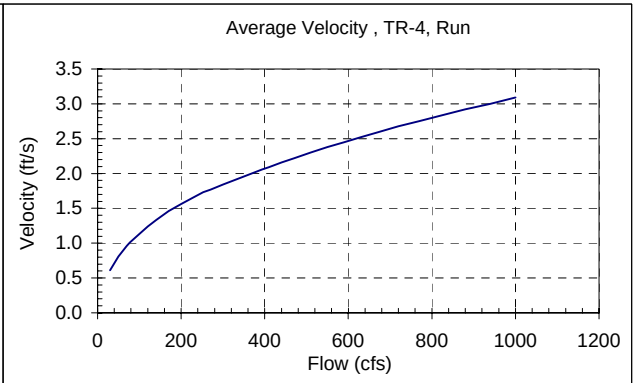


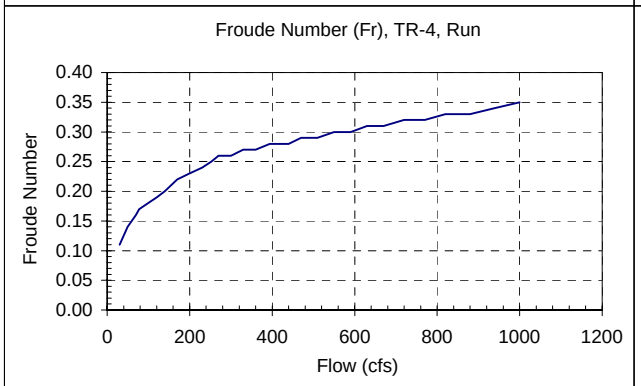


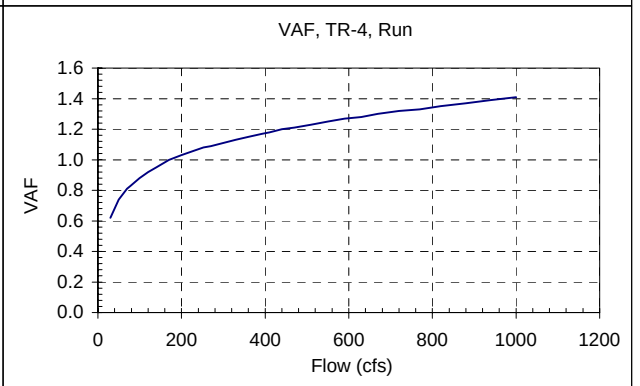
Stream: SF Koktuli River **Reach:** A
Site Identifier: 08-SFK1-MS2 **Site:** 2
Date: 7/24/2008 **Transect:** 4
Calibration Flow: Mid **Habitat:** Island Complex

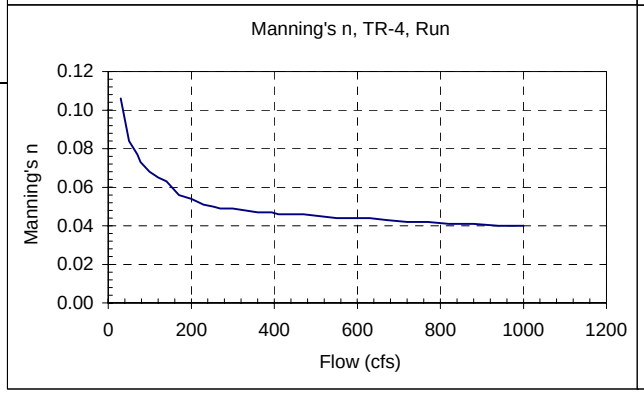
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	92.96	0.11	0.61	0.62	0.106	52.7
50	93.19	0.14	0.81	0.74	0.08	61.9
70	93.37	0.16	0.96	0.81	0.08	65.4
77.7	93.43	0.17	1.01	0.83	0.07	68.8
99.3	93.58	0.18	1.13	0.88	0.07	73.4
120	93.71	0.19	1.24	0.92	0.07	75.5
140	93.82	0.20	1.33	0.95	0.06	77.7
170	93.96	0.22	1.46	1.00	0.06	88.6
200	94.09	0.23	1.56	1.03	0.05	93.8
230	94.20	0.24	1.66	1.06	0.05	99.0
252.5	94.28	0.25	1.73	1.08	0.05	102.2
270	94.34	0.26	1.77	1.09	0.05	105.8
300	94.44	0.26	1.84	1.11	0.05	108.2
330	94.53	0.27	1.91	1.13	0.05	112.0
360	94.61	0.27	1.98	1.15	0.05	113.2
393.8	94.70	0.28	2.06	1.17	0.05	114.6
410	94.74	0.28	2.09	1.18	0.05	115.2
440	94.81	0.28	2.16	1.20	0.05	116.2
470	94.88	0.29	2.22	1.21	0.05	117.3
510	94.97	0.29	2.30	1.23	0.05	118.7
550	95.05	0.30	2.38	1.25	0.04	119.9
590	95.13	0.30	2.45	1.27	0.04	120.9
630	95.21	0.31	2.52	1.28	0.04	121.9
670	95.28	0.31	2.59	1.30	0.04	122.7
720	95.37	0.32	2.68	1.32	0.04	125.5
770	95.46	0.32	2.75	1.33	0.04	128.6
820	95.54	0.33	2.83	1.35	0.04	129.8
880	95.63	0.33	2.92	1.37	0.04	131.1
940	95.72	0.34	3.00	1.39	0.04	132.7
1000	95.80	0.35	3.09	1.41	0.040	134.8

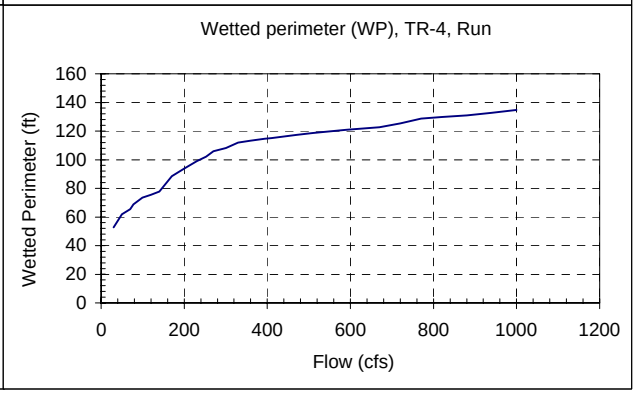






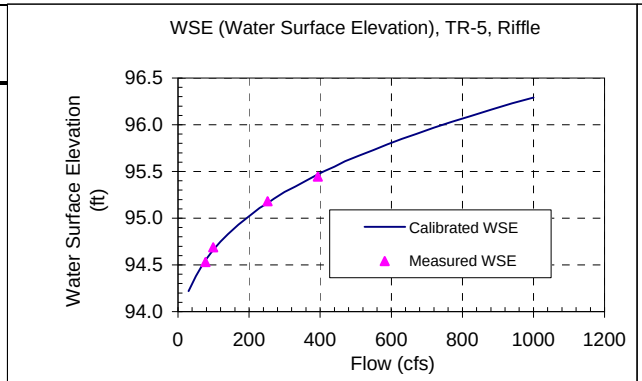


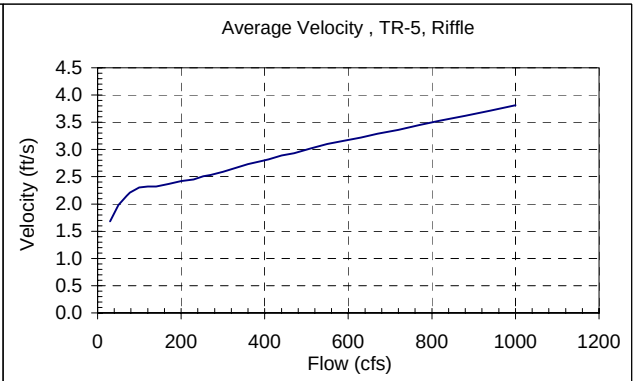


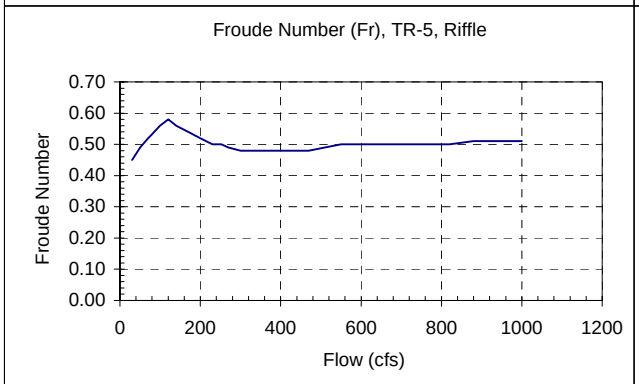


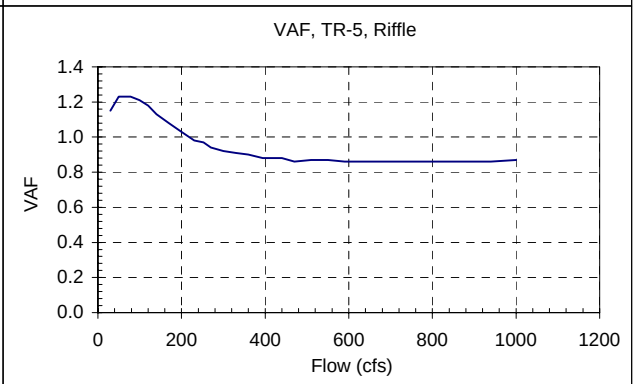
Stream: SF Koktuli River **Reach:** A
Site Identifier: 08-SFK1-MS2 **Site:** 2
Date: 7/24/2008 **Transect:** 5
Calibration Flow: Mid **Habitat:** Island Complex

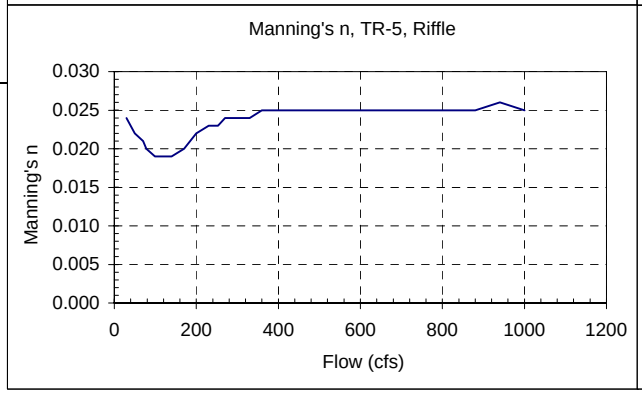
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	94.22	0.45	1.68	1.15	0.024	40.8
50	94.38	0.49	1.98	1.23	0.02	50.6
70	94.51	0.52	2.15	1.23	0.02	62.8
77.7	94.55	0.53	2.21	1.23	0.02	65.5
99.3	94.66	0.56	2.30	1.21	0.02	82.9
120	94.75	0.58	2.32	1.18	0.02	103.4
140	94.83	0.56	2.32	1.13	0.02	111.7
170	94.93	0.54	2.37	1.08	0.02	120.7
200	95.02	0.52	2.42	1.03	0.02	124.4
230	95.11	0.50	2.45	0.98	0.02	127.8
252.5	95.16	0.50	2.51	0.97	0.02	129.7
270	95.21	0.49	2.53	0.94	0.02	130.7
300	95.28	0.48	2.59	0.92	0.02	131.5
330	95.34	0.48	2.66	0.91	0.02	132.7
360	95.40	0.48	2.73	0.90	0.03	134.9
393.8	95.47	0.48	2.79	0.88	0.03	136.7
410	95.50	0.48	2.82	0.88	0.03	137.5
440	95.55	0.48	2.89	0.88	0.03	138.8
470	95.61	0.48	2.93	0.86	0.03	140.6
510	95.67	0.49	3.02	0.87	0.03	144.1
550	95.73	0.50	3.10	0.87	0.03	151.3
590	95.79	0.50	3.16	0.86	0.03	153.8
630	95.85	0.50	3.22	0.86	0.03	154.0
670	95.90	0.50	3.29	0.86	0.03	154.1
720	95.97	0.50	3.36	0.86	0.03	154.2
770	96.03	0.50	3.45	0.86	0.03	154.4
820	96.09	0.50	3.53	0.86	0.03	154.5
880	96.16	0.51	3.62	0.86	0.03	154.6
940	96.23	0.51	3.71	0.86	0.03	154.9
1000	96.29	0.51	3.81	0.87	0.025	156.0

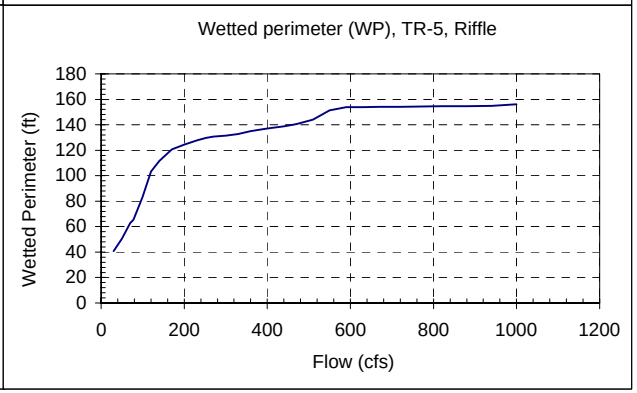






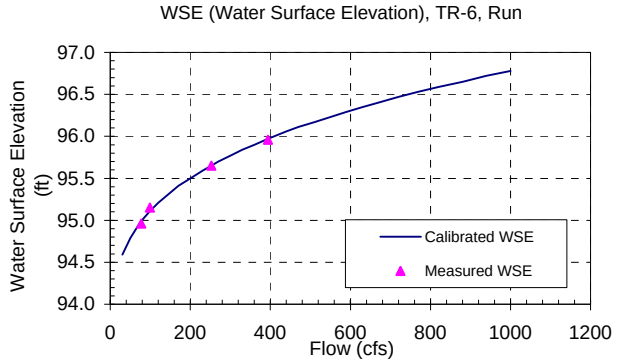


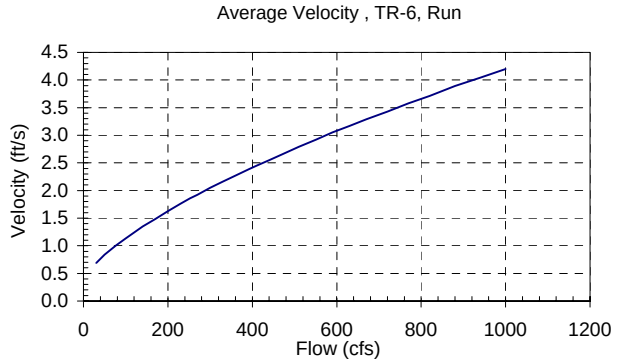


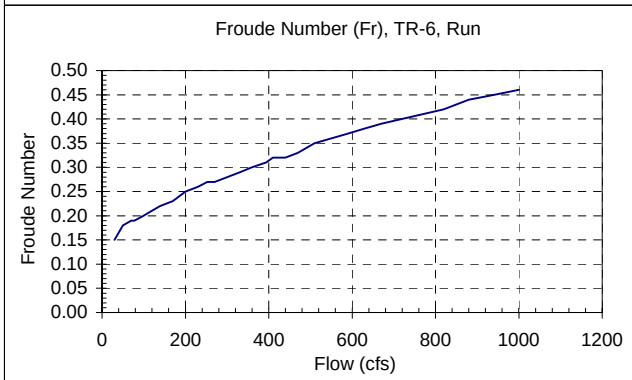


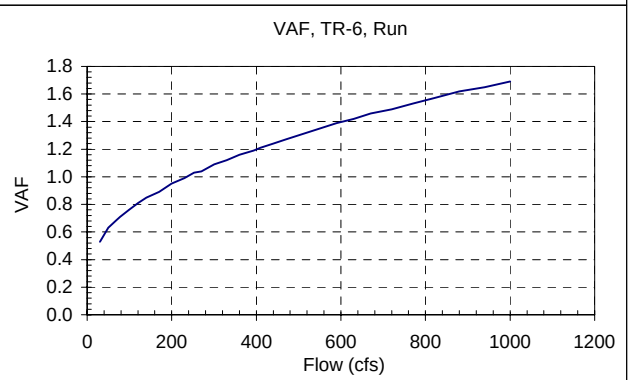
Stream: SF Koktuli River **Reach:** A
Site Identifier: 08-SFK1-MS2 **Site:** 2
Date: 7/24/2008 **Transect:** 6
Calibration Flow: Mid **Habitat:** Run

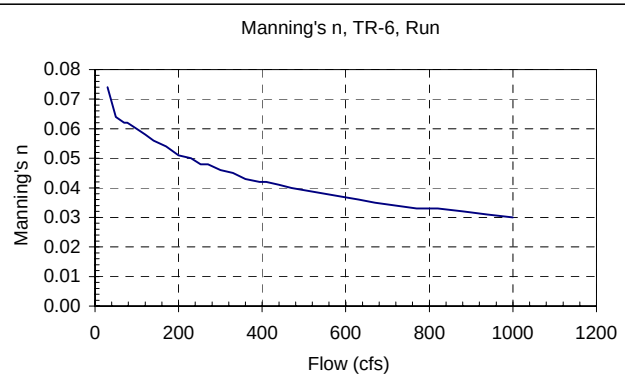
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	94.59	0.15	0.69	0.53	0.074	68.6
50	94.79	0.18	0.84	0.63	0.06	87.0
70	94.94	0.19	0.96	0.69	0.06	88.7
77.7	94.99	0.19	1.01	0.71	0.06	88.8
99.3	95.11	0.20	1.13	0.76	0.06	89.1
120	95.21	0.21	1.24	0.81	0.06	89.4
140	95.29	0.22	1.35	0.85	0.06	89.6
170	95.41	0.23	1.48	0.89	0.05	89.9
200	95.50	0.25	1.63	0.95	0.05	90.2
230	95.59	0.26	1.76	0.99	0.05	90.4
252.5	95.65	0.27	1.86	1.03	0.05	90.6
270	95.70	0.27	1.92	1.04	0.05	90.7
300	95.77	0.28	2.05	1.09	0.05	90.9
330	95.84	0.29	2.16	1.12	0.05	91.1
360	95.90	0.30	2.27	1.16	0.04	91.2
393.8	95.97	0.31	2.39	1.19	0.04	91.4
410	96.00	0.32	2.45	1.21	0.04	91.5
440	96.06	0.32	2.55	1.24	0.04	91.7
470	96.11	0.33	2.65	1.27	0.04	91.8
510	96.17	0.35	2.79	1.31	0.04	91.9
550	96.23	0.36	2.92	1.35	0.04	92.1
590	96.29	0.37	3.05	1.39	0.04	92.3
630	96.35	0.38	3.17	1.42	0.04	92.4
670	96.40	0.39	3.29	1.46	0.04	92.6
720	96.47	0.40	3.43	1.49	0.03	92.7
770	96.53	0.41	3.58	1.53	0.03	92.9
820	96.59	0.42	3.71	1.57	0.03	93.1
880	96.65	0.44	3.89	1.62	0.03	93.3
940	96.72	0.45	4.04	1.65	0.03	93.5
1000	96.78	0.46	4.20	1.69	0.030	93.6

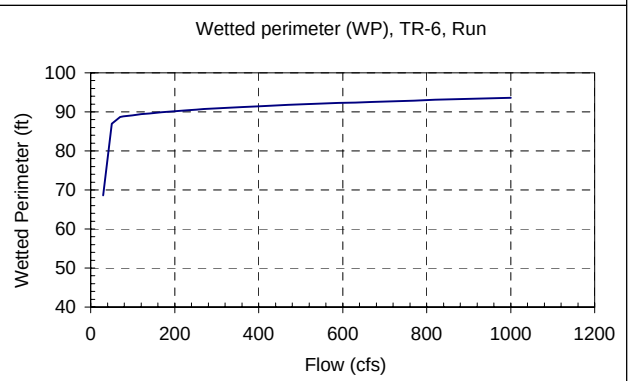




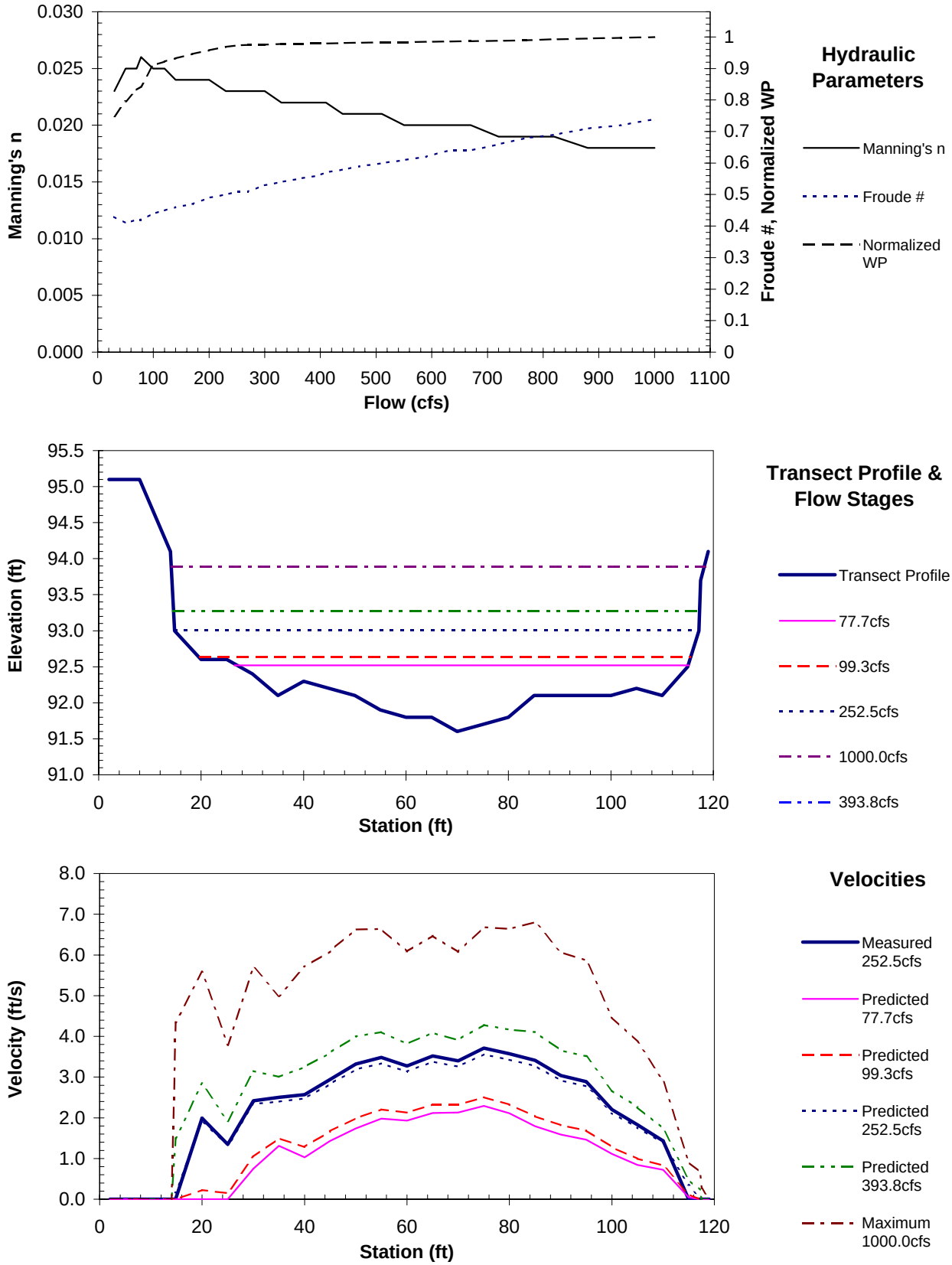




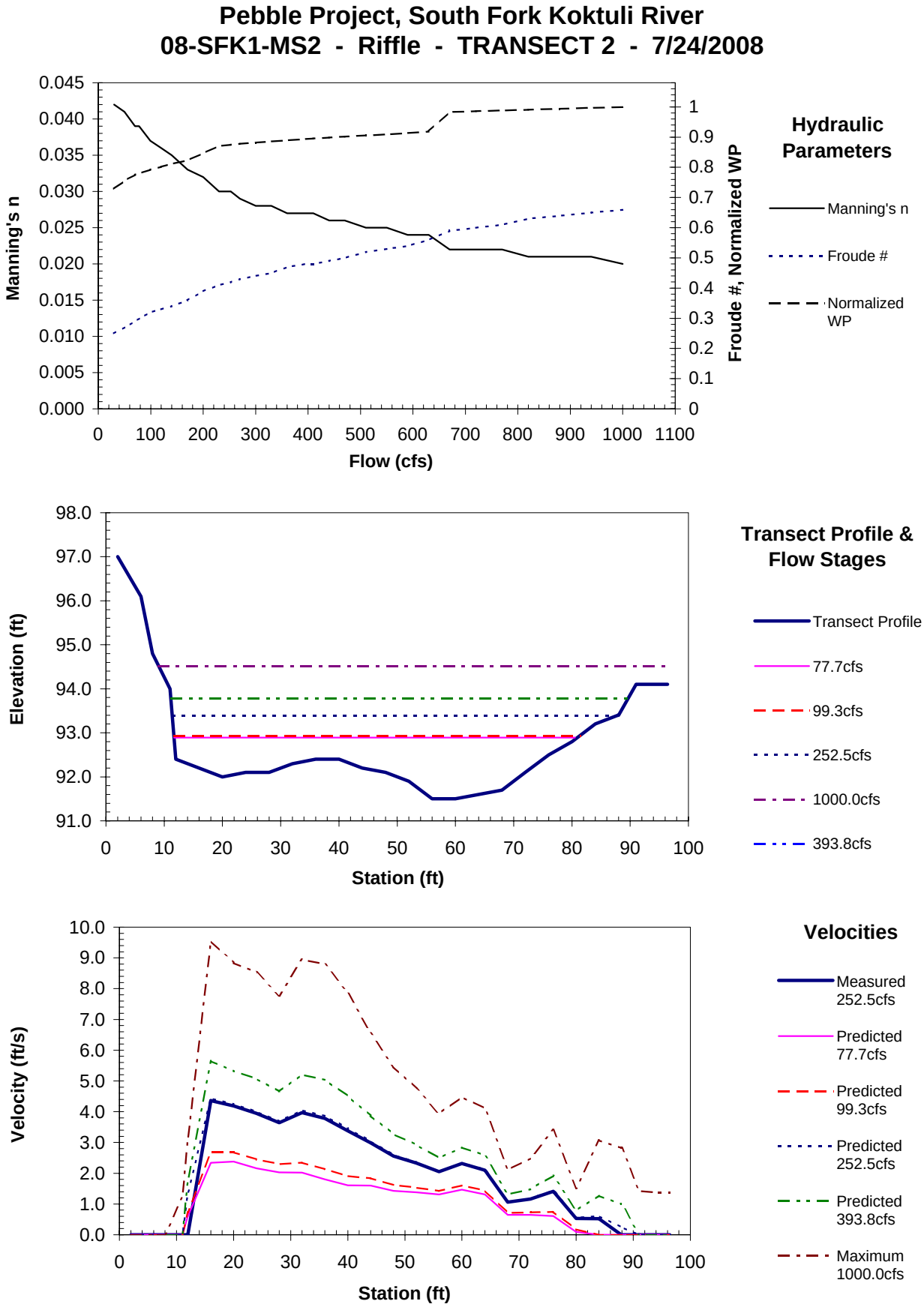




Pebble Project, South Fork Koktuli River
08-SFK1-MS2 - Riffle - TRANSECT 1 - 7/24/2008

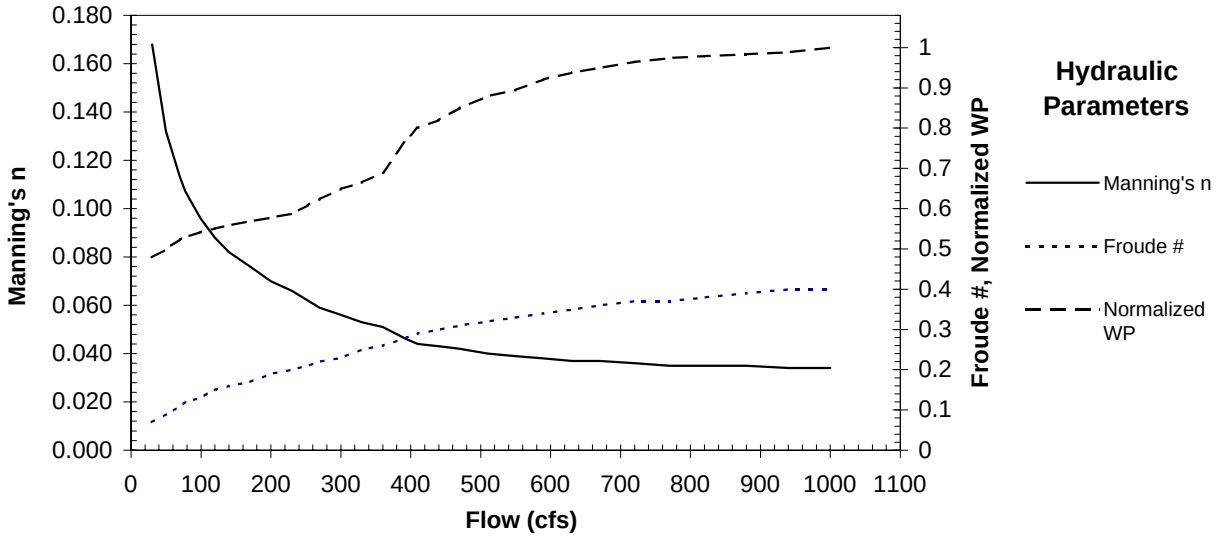


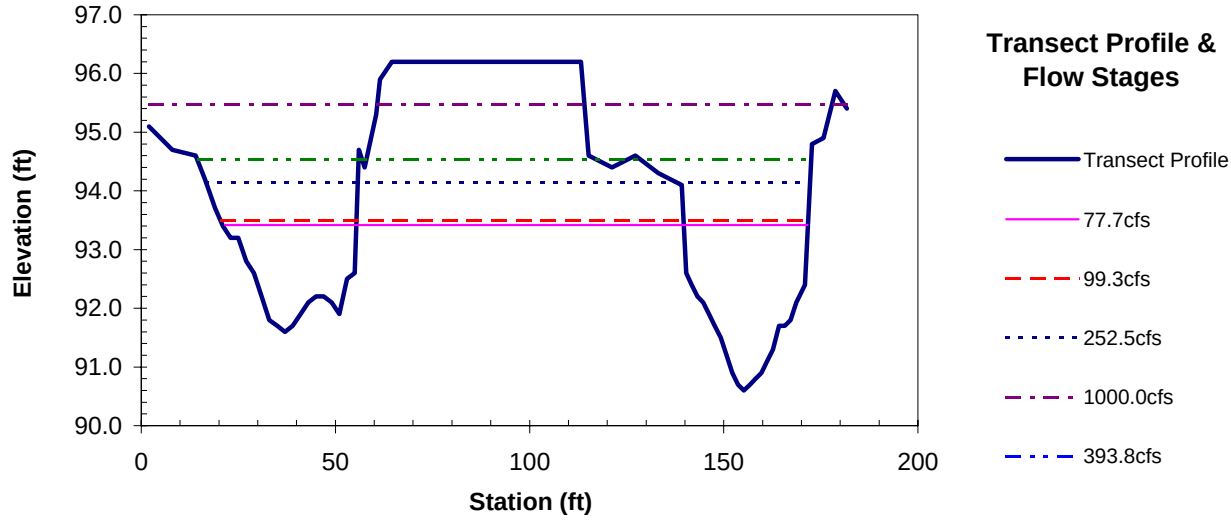
Transect hydraulic summary plots

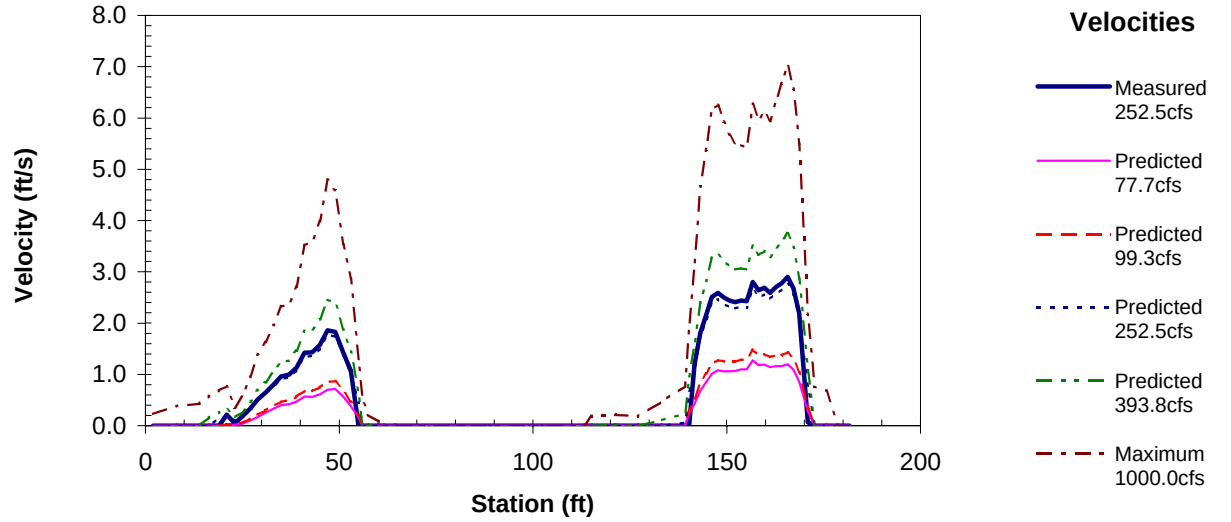


Transect hydraulic summary plots

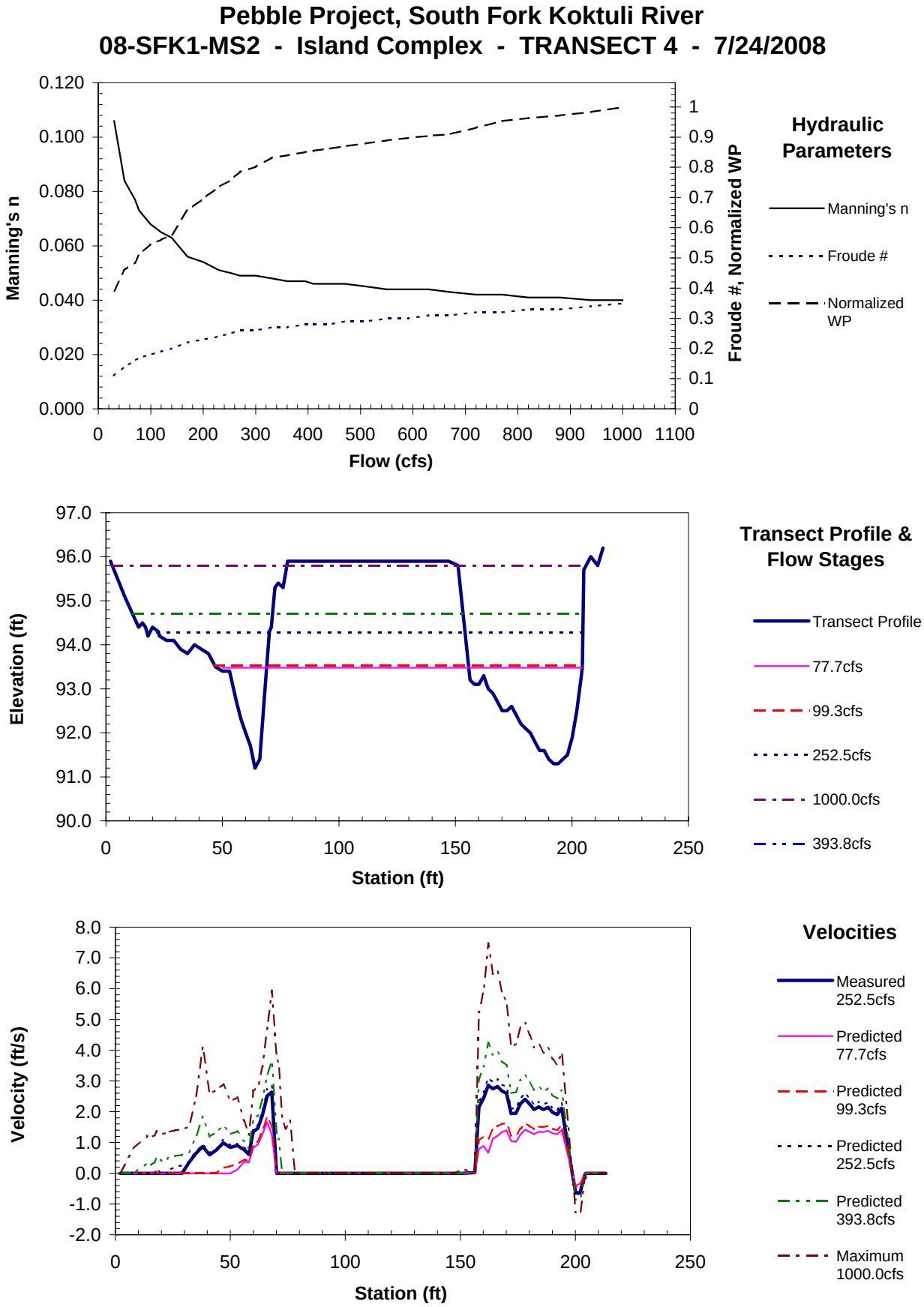
Pebble Project, South Fork Koktuli River
08-SFK1-MS2 - Island Complex - TRANSECT 3 - 7/24/2008



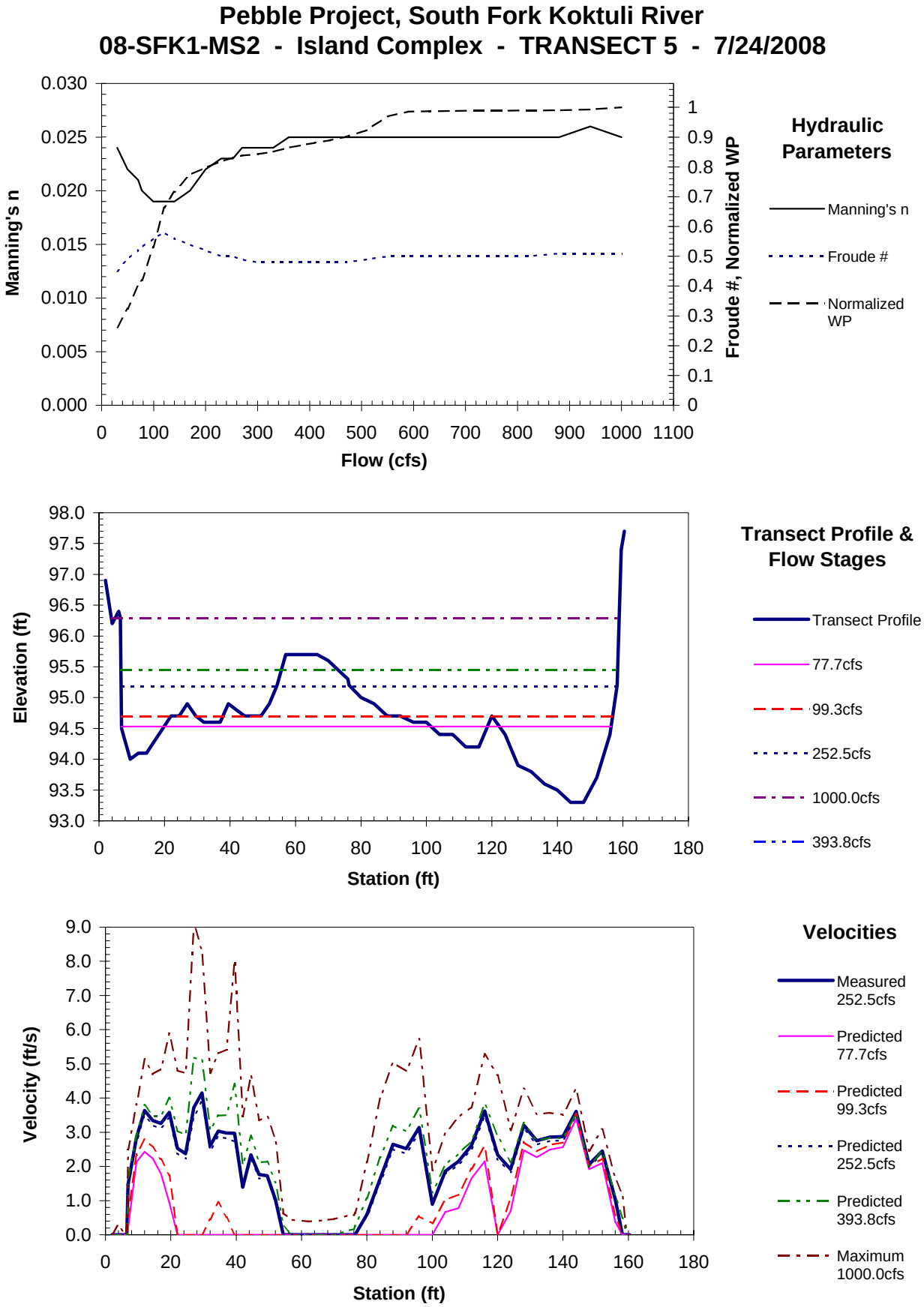




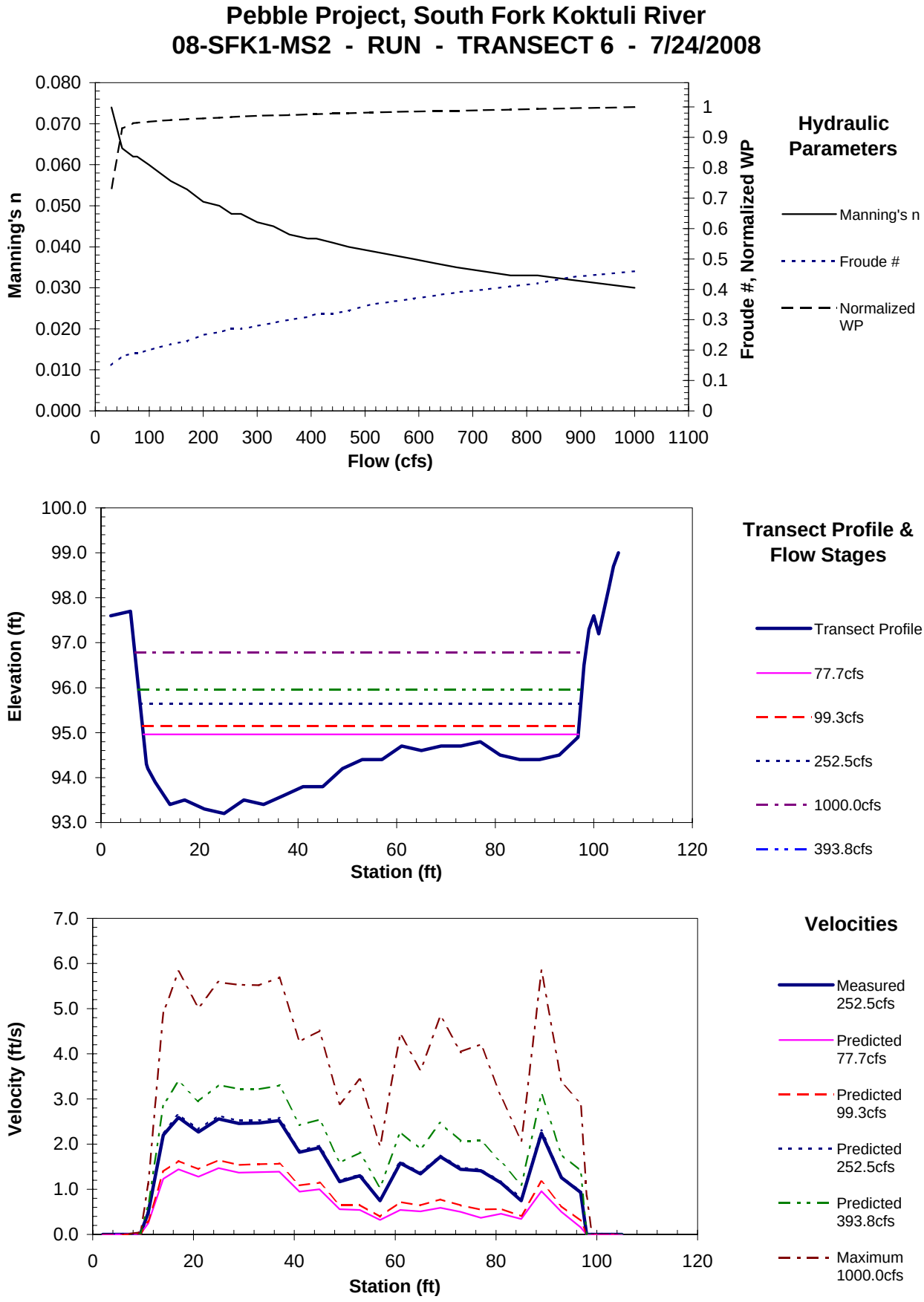
Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-SFK1-MS2  07/24/08
RIFFLE                     0708Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  30.0
QARD  50.0
QARD  70.0
QARD  77.7
QARD  99.3
QARD 120.0
QARD 140.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 252.5
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 393.8
QARD 410.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
QARD 590.0
QARD 630.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 880.0
QARD 940.0
QARD1000.0
XSEC  1000     1000. 1.0     91.62    .00210
      1000  2.095.13  8.095.13 14.094.11 14.893.01 20.092.61 25.092.61
      1000 30.092.41 35.092.06 40.092.31 45.092.16 50.092.06 55.091.91
      1000 60.091.81 65.091.76 70.091.61 75.091.66 80.091.81 85.092.06
      1000 90.092.06 95.092.11100.092.11105.092.21110.092.11115.092.51
      1000117.293.01117.593.66119.094.05
NS    1000      11.9      11.9      11.9      22.9      45.6      54.6
NS    1000      54.6      54.6      56.6      55.9      54.6      56.6
NS    1000      54.6      54.6      54.6      54.6      45.6      45.6
NS    1000      45.6      45.6      43.6      43.6      43.6 .12  22.9
NS    1000      22.9      22.9      22.9
WSL   1000     92.28     92.41     92.51     92.55     92.63     92.70
WSL   1000     92.76     92.84     92.91     92.98     93.02     93.06
WSL   1000     93.11     93.16     93.21     93.26     93.28     93.32
WSL   1000     93.36     93.42     93.46     93.51     93.55     93.60
WSL   1000     93.65     93.69     93.74     93.79     93.84     93.89
```

IFG4 Data Deck - TR1

IFG4 Data Deck (continued)

```
CAL1  1000     93.01     252.5
VEL1  1000                0.00 1.99 1.35 2.42 2.50 2.57 2.94 3.32 3.48
VEL1  1000 3.27 3.52 3.40 3.71 3.57 3.41 3.04 2.89 2.20 1.83 1.43 0.00
VEL1  1000 0.00
CAL2  1000     93.27     393.8
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     92.64      99.3
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     92.52      77.7
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck - TR1

IFG4 Data Deck

```
     Pebble     08-SFK1-MS2  07/24/08
RIFFLE                     0708Q                                    TRANSECT 2
IOC       1101100100001000101000
QARD  30.0
QARD  50.0
QARD  70.0
QARD  77.7
QARD  99.3
QARD 120.0
QARD 140.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 252.5
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 393.8
QARD 410.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
QARD 590.0
QARD 630.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 880.0
QARD 940.0
QARD1000.0
XSEC  1000     1000. 1.0     91.68    .00210
      1000  2.097.00  6.096.06  8.094.76 11.094.01 12.092.44 16.092.19
      1000 20.092.04 24.092.14 28.092.09 32.092.29 36.092.39 40.092.39
      1000 44.092.19 48.092.09 52.091.89 56.091.49 60.091.54 64.091.64
      1000 68.091.74 72.092.09 76.092.49 80.092.79 84.093.24 87.993.39
      1000 88.093.39 91.094.11 94.094.13 96.494.13
NS    1000      11.9      11.9      11.9      11.9 .05  43.6      45.6
NS    1000      45.6      54.6      54.6      54.6      54.6      54.6
NS    1000      56.6      54.6      56.6      65.6      65.6      56.6
NS    1000      56.6      56.6      54.6      54.6      42.6      11.9
NS    1000      11.9      11.9      11.9      11.9
WSL   1000     92.52     92.68     92.81     92.85     92.95     93.04
WSL   1000     93.12     93.22     93.31     93.39     93.44     93.48
WSL   1000     93.55     93.62     93.67     93.74     93.77     93.82
WSL   1000     93.87     93.93     93.99     94.05     94.10     94.15
WSL   1000     94.22     94.28     94.33     94.40     94.46     94.52
```

IFG4 Data Deck - TR2

IFG4 Data Deck (continued)

```
CAL1  1000     93.39     252.5
VEL1  1000                     0.00 4.36 4.19 3.95 3.64 3.97 3.78 3.38
VEL1  1000 2.99 2.56 2.33 2.05 2.32 2.10 1.06 1.16 1.41 0.53 0.52 0.00
VEL1  1000
CAL2  1000     93.78     393.8
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     92.93      99.3
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     92.89      77.7
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-SFK1-MS2  07/24/08
Island                      0708Q                                    TRANSECT 3
IOC       11011001000010001010 00
QARD  30.0
QARD  50.0
QARD  70.0
QARD  77.7
QARD  99.3
QARD 120.0
QARD 140.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 252.5
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 393.8
QARD 410.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
QARD 590.0
QARD 630.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 880.0
QARD 940.0
QARD1000.0
XSEC  1000     1000. 1.0     91.68    .00210
      1000  2.095.13  8.094.73 14.094.63 16.494.15 19.093.75 21.093.45
      1000 23.093.25 25.093.15 27.092.85 29.092.60 31.092.15 33.091.85
      1000 35.091.75 37.091.55 39.091.65 41.091.95 43.092.05 45.092.15
      1000 47.092.25 49.092.05 51.091.95 53.092.50 55.092.55 56.094.69
      1000 57.594.45 60.595.32 61.595.92 64.596.15113.296.15115.294.58
      1000121.294.43127.294.55133.294.27139.294.07140.392.60141.792.45
      1000143.292.25144.792.05146.291.90147.791.70149.291.50150.791.25
      1000152.290.95153.790.65155.290.60156.790.65158.290.80159.790.95
      1000161.291.05162.791.35164.291.65165.791.75167.291.85168.792.05
      1000170.992.45172.794.82175.794.93178.795.68181.795.39
NS    1000      11.9      11.9      11.9      12.6      22.9      23.6
NS    1000 .6   22.9      22.9      23.6      32.6      32.6      32.6
NS    1000      32.6      34.6      43.6      45.6      45.6      45.6
NS    1000      45.6      45.6      34.6      32.6      32.6 .2   11.9
NS    1000      11.9      11.9      11.9      11.9      11.9      11.9
```

IFG4 Data Deck (continued)

```
NS    1000      11.9  .6  11.9 .3   11.9 .2   11.9 .13  22.9      23.6
NS    1000      23.6      32.6      34.6      34.6      34.6      34.6
NS    1000      34.6      34.6      43.6      45.6      45.6      45.6
NS    1000      54.6      54.6      54.6      54.6      45.6      45.6
NS    1000 .12  45.6      11.9      11.9      11.9      11.9
WSL   1000     92.95     93.17     93.34     93.39     93.53     93.64
WSL   1000     93.74     93.87     93.98     94.08     94.15     94.20
WSL   1000     94.29     94.36     94.44     94.52     94.55     94.62
WSL   1000     94.68     94.75     94.83     94.90     94.96     95.02
WSL   1000     95.10     95.17     95.24     95.32     95.39     95.47
CAL1  1000     94.15     252.5
VEL1  1000                0.00 0.00 0.21 0.05 0.18 0.33 0.51 0.64 0.80
VEL1  1000 0.96 0.99 1.13 1.42 1.43 1.57 1.86 1.83 1.43 1.07 0.00
VEL1  1000                                                    0.00 1.20
VEL1  1000 1.81 2.15 2.51 2.59 2.50 2.44 2.41 2.44 2.43 2.80 2.64 2.69
VEL1  1000 2.59 2.70 2.78 2.90 2.68 2.19 0.07
CAL2  1000     94.53     393.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     93.50      99.3
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     93.42      77.7
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-SFK1-MS2  07/24/08
Island                      0708Q                                    TRANSECT 4
IOC       1101100100001000101000
QARD  30.0
QARD  50.0
QARD  70.0
QARD  77.7
QARD  99.3
QARD 120.0
QARD 140.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 252.5
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 393.8
QARD 410.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
QARD 590.0
QARD 630.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 880.0
QARD 940.0
QARD1000.0
XSEC  1000     1000. 1.0     91.68    .00210
      1000  2.095.90  8.095.06 14.094.45 15.794.51 17.094.41 18.094.19
      1000 20.094.36 22.594.28 23.094.23 26.094.13 29.094.08 32.093.93
      1000 35.093.83 38.093.98 41.093.93 44.093.78 47.093.51 50.093.43
      1000 53.093.38 56.092.73 58.092.28 60.091.98 62.091.68 64.091.18
      1000 66.091.43 68.092.78 70.194.28 71.094.37 72.595.30 74.095.43
      1000 76.095.33 78.095.89147.195.89151.195.79156.393.18158.193.08
      1000160.193.08162.193.28164.192.98166.192.93168.192.68170.192.53
      1000172.192.48174.192.58176.192.43178.192.18180.192.08182.191.98
      1000184.191.83186.191.58188.191.63190.191.43192.191.28194.191.33
      1000196.191.43198.191.48200.191.88202.192.48204.193.28204.593.54
      1000205.195.67208.196.03211.195.83213.396.23
NS    1000      11.9      11.9      11.9      23.6      23.6      23.6
NS    1000      34.6      24.6      42.6      42.6      24.6      24.6
NS    1000      24.6      24.6      42.6      43.6      45.6      54.6
NS    1000      54.6      54.6      54.6      45.6      45.6      45.6
```

IFG4 Data Deck - TR4

IFG4 Data Deck (continued)

```
NS    1000      54.6      21.6      11.9      11.9      11.9      11.9
NS    1000      11.9      11.9      11.9      11.9      54.6      54.6
NS    1000      43.6      54.6      43.6      43.6      43.6      43.6
NS    1000      43.6      45.6      45.6      45.6      45.6      45.6
NS    1000      54.6      56.6      56.6      56.6      56.6      56.6
NS    1000      56.6      56.6      56.6      54.6      24.6      24.6
NS    1000      11.9      11.9      11.9      11.9
WSL   1000     92.96     93.19     93.37     93.43     93.58     93.71
WSL   1000     93.82     93.96     94.09     94.20     94.28     94.34
WSL   1000     94.44     94.53     94.61     94.70     94.74     94.81
WSL   1000     94.88     94.97     95.05     95.13     95.21     95.28
WSL   1000     95.37     95.46     95.54     95.63     95.72     95.80
CAL1  1000     94.28     252.5
VEL1  1000                                      0.00 0.00 0.00 0.00 0.35
VEL1  1000 0.64 0.87 0.60 0.76 0.99 0.84 0.90 0.76 0.61 1.35 1.46 1.89
VEL1  1000 2.52 2.64 0.00                                  0.02 2.15
VEL1  1000 2.43 2.86 2.74 2.82 2.67 2.60 1.94 1.95 2.26 2.41 2.25 2.07
VEL1  1000 2.16 2.07 2.14 1.98 1.91 2.11 1.21 0.23-0.65-0.62-0.06
VEL1  1000
CAL2  1000     94.71     393.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     93.54      99.3
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     93.48      77.7
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-SFK1-MS2  07/24/08
Island                     0708Q                                    TRANSECT 5
IOC       1101100100001000101000
QARD  30.0
QARD  50.0
QARD  70.0
QARD  77.7
QARD  99.3
QARD 120.0
QARD 140.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 252.5
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 393.8
QARD 410.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
QARD 590.0
QARD 630.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 880.0
QARD 940.0
QARD1000.0
XSEC  1000     1000. 1.0     93.38    .00210
      1000  2.096.90  4.096.22  6.096.40  6.596.26  6.994.53  9.593.98
      1000 12.094.13 14.594.13 17.094.28 19.594.48 22.094.68 24.594.73
      1000 27.094.88 29.594.73 32.094.63 34.594.58 37.094.63 39.594.93
      1000 42.094.83 44.594.73 47.094.68 49.594.73 52.094.93 54.495.18
      1000 57.095.66 62.095.75 66.695.68 70.095.60 74.095.38 76.095.32
      1000 76.495.18 80.095.03 84.094.88 88.094.68 92.094.68 96.094.63
      1000100.094.58104.094.43108.094.43112.094.18116.094.23120.094.73
      1000124.094.43128.093.93132.093.78136.093.63140.093.53144.093.28
      1000148.093.33152.093.68156.094.43158.295.18159.597.40160.497.69
NS    1000      11.9      11.9      11.9      11.9      34.6      34.6
NS    1000      34.6      43.6      43.6      43.6      45.6      45.6
NS    1000      54.6      54.6      54.6      54.6      54.6      54.6
NS    1000 .022 56.6      45.6      45.6      65.6      65.6      65.6
NS    1000      15.6      15.6      15.6      15.6      15.6      65.6
NS    1000 .10  65.6      65.6      64.6      67.6      67.6      56.6
```

IFG4 Data Deck (continued)

```
NS    1000 .045 45.6      54.6      54.6      54.6      65.6      34.6
NS    1000      54.6      54.6      64.6      54.6      45.6      45.6
NS    1000      45.6      43.6      43.6      21.6      11.9      11.9
WSL   1000     94.22     94.38     94.51     94.55     94.66     94.75
WSL   1000     94.83     94.93     95.02     95.11     95.16     95.21
WSL   1000     95.28     95.34     95.40     95.47     95.50     95.55
WSL   1000     95.61     95.67     95.73     95.79     95.85     95.90
WSL   1000     95.97     96.03     96.09     96.16     96.23     96.29
CAL1  1000     95.18     252.5
VEL1  1000                     1.47 2.84 3.64 3.34 3.26 3.58 2.53 2.37
VEL1  1000 3.72 4.15 2.60 3.03 2.98 2.97 1.39 2.34 1.76 1.73 1.03 0.00
VEL1  1000                           0.00 0.59 1.63 2.65 2.52 3.14
VEL1  1000 0.89 1.86 2.15 2.61 3.62 2.34 1.92 3.21 2.75 2.86 2.87 3.61
VEL1  1000 2.06 2.45 1.04 0.00
CAL2  1000     95.45     393.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     94.69      99.3
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     94.53      77.7
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-SFK1-MS2  07/24/08
RUN                          0708Q                                        TRANSECT 6
IOC       1101100100001000101000
QARD  30.0
QARD  50.0
QARD  70.0
QARD  77.7
QARD  99.3
QARD 120.0
QARD 140.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 252.5
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 393.8
QARD 410.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
QARD 590.0
QARD 630.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 880.0
QARD 940.0
QARD1000.0
XSEC  1000     1000. 1.0     93.32    .00210
      1000  2.097.55  6.097.66  9.294.35  9.594.15 11.093.90 14.093.45
      1000 17.093.50 21.093.35 25.093.20 29.093.50 33.093.45 37.093.55
      1000 41.093.85 45.093.85 49.094.15 53.094.45 57.094.40 61.094.65
      1000 65.094.55 69.094.65 73.094.65 77.094.80 81.094.50 85.094.40
      1000 89.094.40 93.094.50 96.894.90 98.096.48 99.097.34100.097.63
      1000101.097.24103.098.25104.098.68105.098.97
NS    1000      11.9      11.9      24.6      24.6      25.6      54.6
NS    1000      54.6      56.6      56.6      54.6      54.6      45.6
NS    1000      45.6      57.6      57.6      64.6      65.6      67.6
NS    1000      54.6      54.6      67.6      56.6      56.6 .10  56.6
NS    1000      45.6      45.6      45.6      11.9      11.9      11.9
NS    1000      11.9      11.9      11.9      11.9
WSL   1000     94.59     94.79     94.94     94.99     95.11     95.21
WSL   1000     95.29     95.41     95.50     95.59     95.65     95.70
WSL   1000     95.77     95.84     95.90     95.97     96.00     96.06
```

IFG4 Data Deck (continued)

```
WSL   1000     96.11     96.17     96.23     96.29     96.35     96.40
WSL   1000     96.47     96.53     96.59     96.65     96.72     96.78
CAL1  1000     95.65     252.5
VEL1  1000           0.00 0.02 0.47 2.20 2.59 2.27 2.56 2.46 2.47 2.52
VEL1  1000 1.82 1.92 1.17 1.30 0.75 1.58 1.34 1.72 1.44 1.41 1.14 0.75
VEL1  1000 2.24 1.26 0.93
CAL2  1000     95.96     393.8
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.15      99.3
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     94.96      77.7
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 04-SFK-RF3

Habitat Type: Riffle

River Kilometer: 19.80

Stream: South Fork Koktuli River
Reach: A
Site: 04-SFK-RF3
Habitat Type: Riffle

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1st	6/24/2005	100.00	99.79	100.53
2nd	7/17/2005	100.00	99.78	100.52
3rd	8/11/2005	100.00	99.77	100.52
4th	7/6/2006	100.00	99.75	100.49

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes of the control pins were within 0.04ft.
(c) Small changes of elevations indicated the pins were stable during the 2005-2006 period.

Measured WSE:

Multiple WSEs were surveyed across the transect, but due to the complexity of hydraulics, the WSEs had as much as 0.52ft in difference within the transect of the same flow. To best model the hydraulics, the Right WSE was used for the modeling. Bed profile of the rest part of the channel of each flow was adjusted based on the WSE difference from the right WSE.

	WSE		
Date	Left	Center	Right
6/24/2005	97.82	98.08	98.18
7/17/2005	97.73	97.96	98.00
8/11/2005	97.26	97.69	97.78
7/6/2006	97.58	97.92	98.01

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Q (cfs)			
	Left	Center	Right	Total
6/24/2005	45.0	10.3	94.5	149.8
7/17/2005				
8/11/2005	3.9	0.61	43.6	48.1
7/6/2006	18.1	3.3	85.3	106.8

No discharge was surveyed in 7/17/05 survey

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/24/2005	0.763%	114
7/17/2005	0.588%	221
8/11/2005	0.561%	221
7/6/2006	0.698%	147.6

The slope S=0.763% of 6/24/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/24/2005	95.52
7/17/2005	
8/11/2005	95.76
7/6/2006	95.58
Invert	95.76
SZF	95.76

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was measured in 7/17/05 trip

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/24/2005	149.8	98.18	98.16	-0.02	IFG4
2nd	7/17/2005		98.00			
3rd	8/11/2005	48.1	97.78	97.77	-0.01	IFG4
4th	7/6/2006	106.8	98.01	98.04	0.03	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured on 7/17/05.

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 48.1cfs to 149.8cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
No adjustment to the model-calculated n values was made for any of the three calibrated velocity profiles.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/24/2005	149.8	Y
7/17/2005		
8/11/2005	48.1	Y
7/6/2006	106.8	

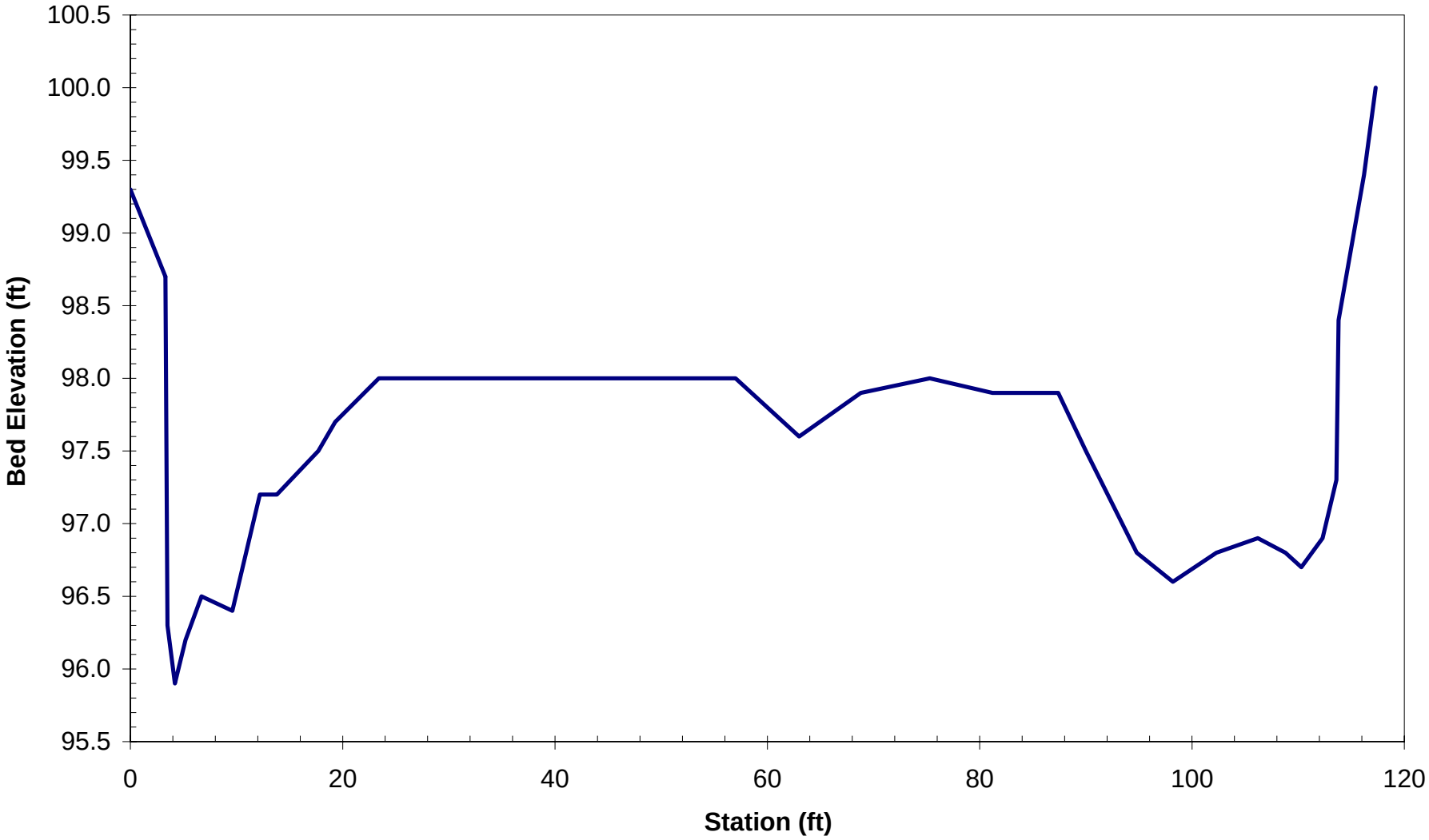
calibration notes

(4) Hydraulic Calibration Results:

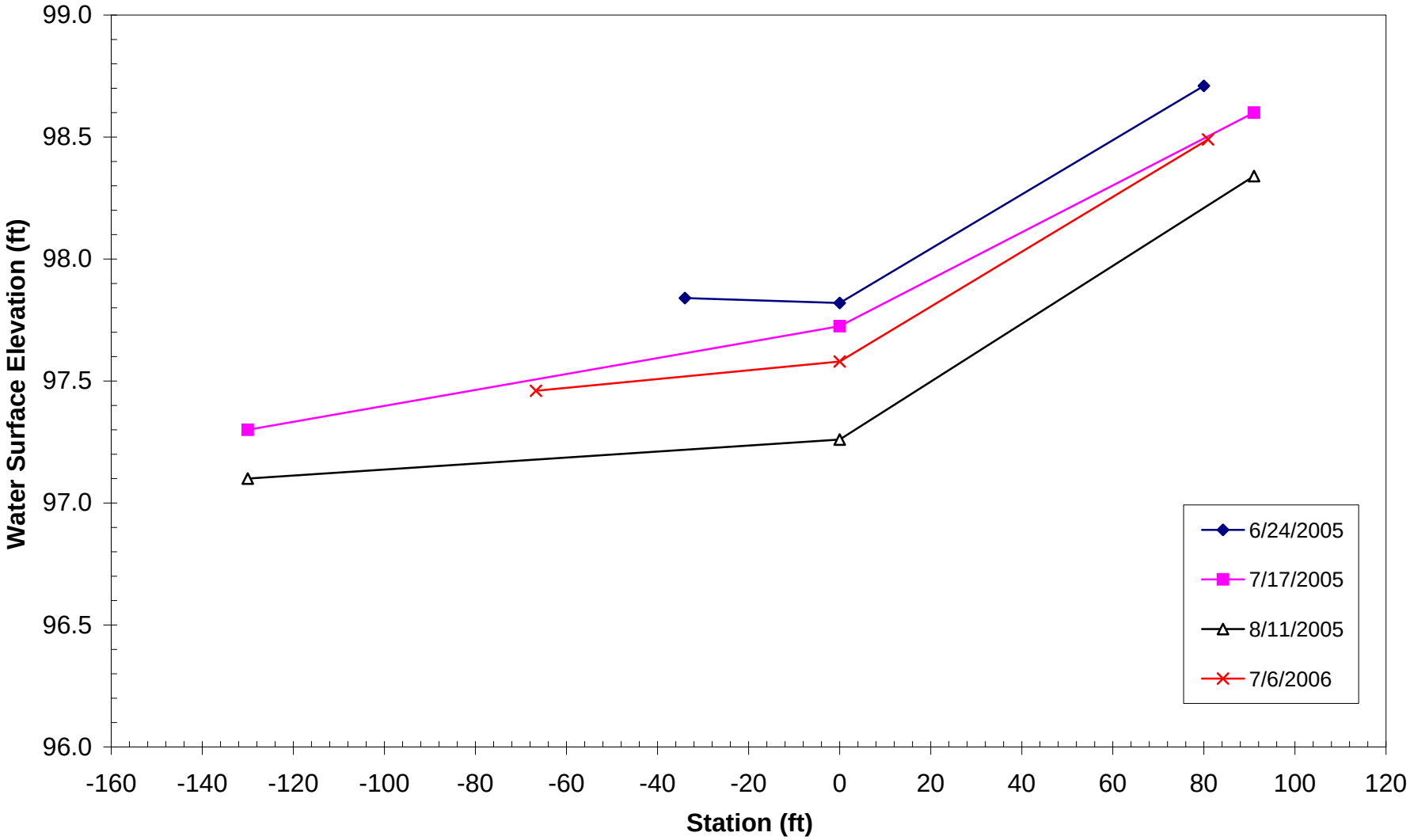
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends.

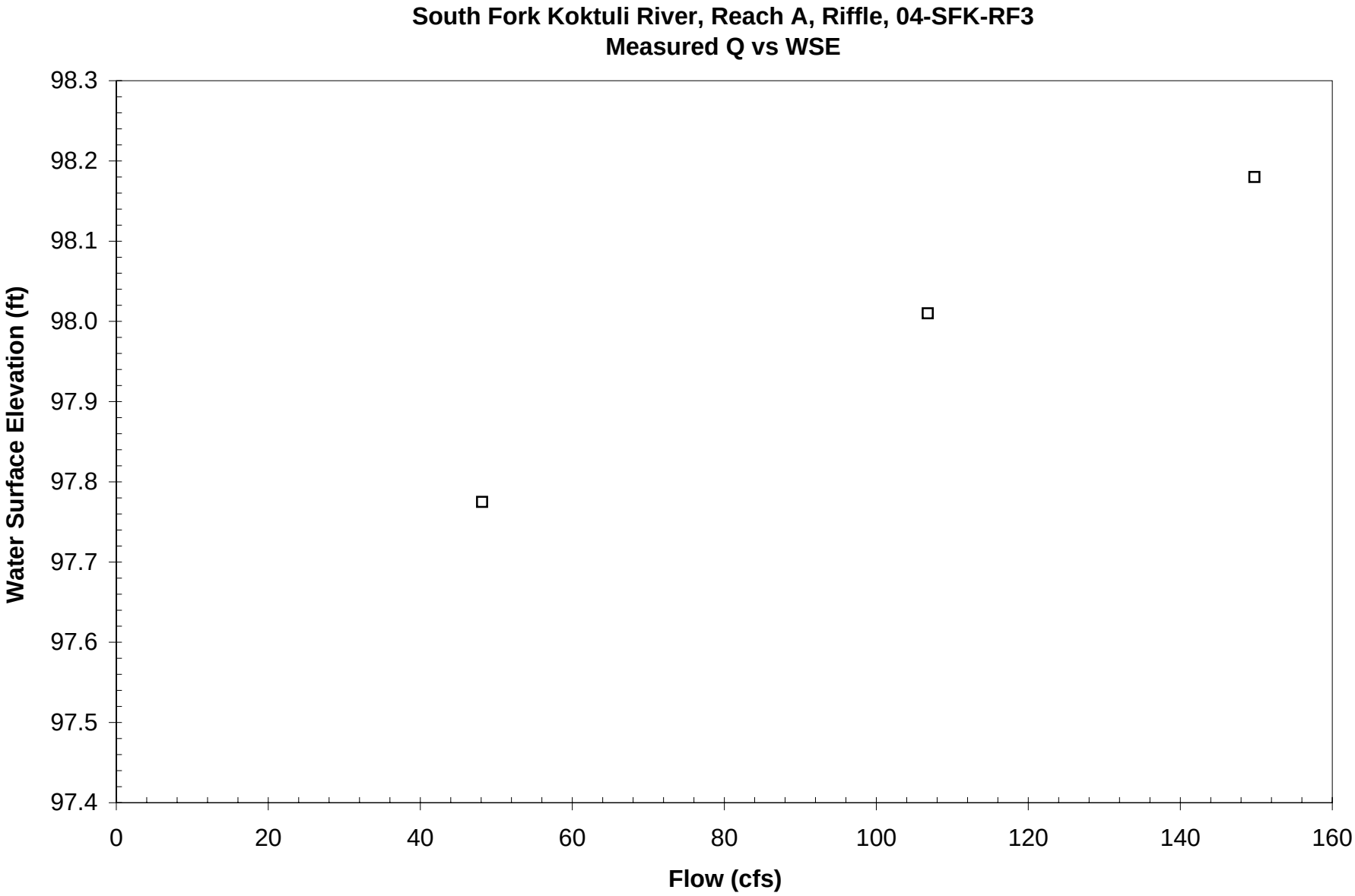
calibration notes

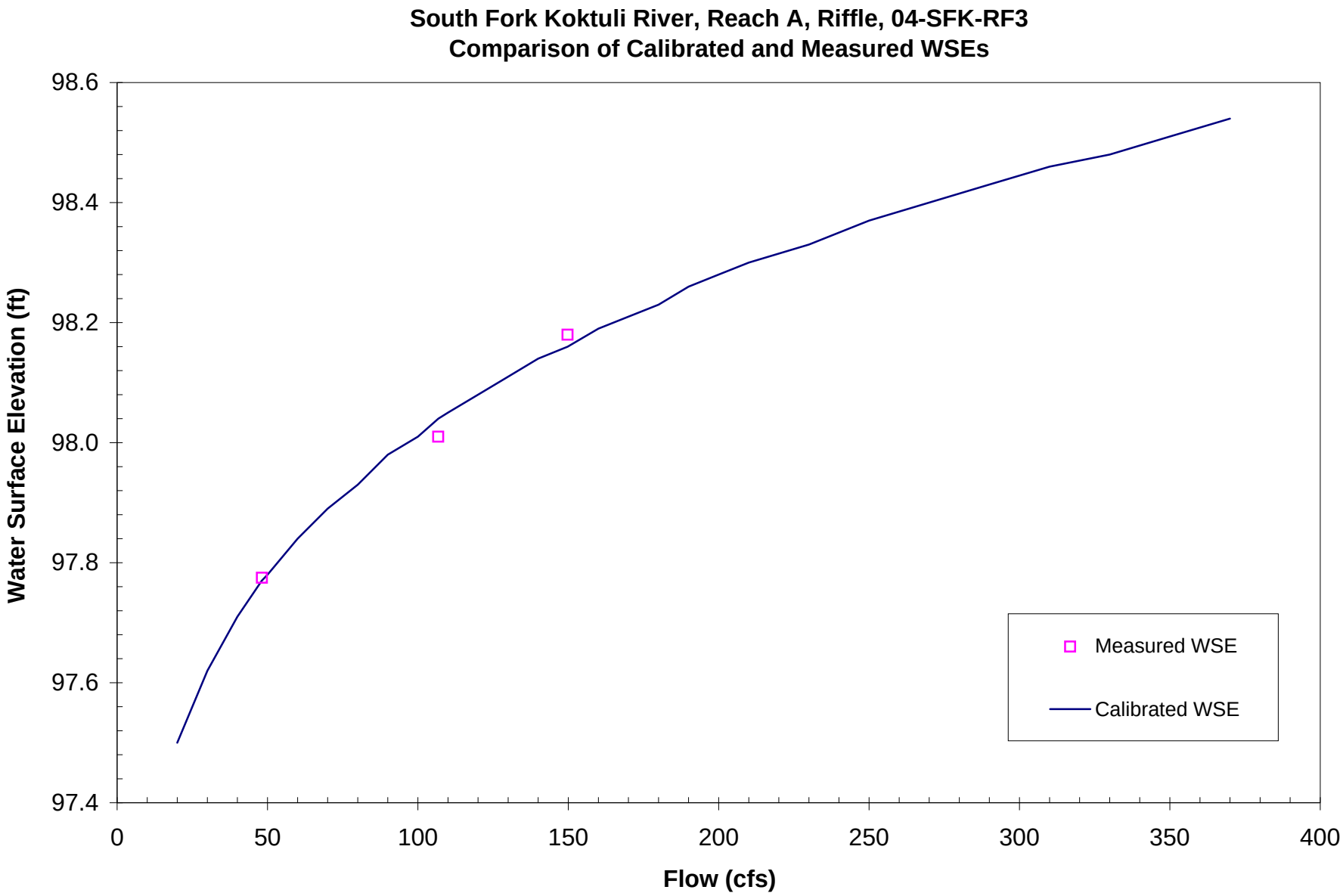
South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF3
Measured Transect Profile



South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF3
Longitudinal Water Surface Elevation Profiles

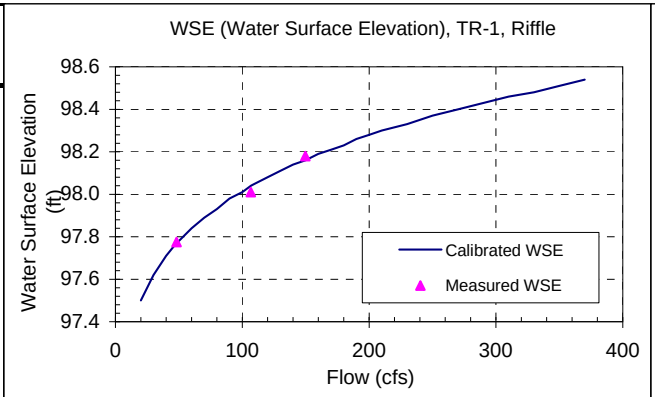


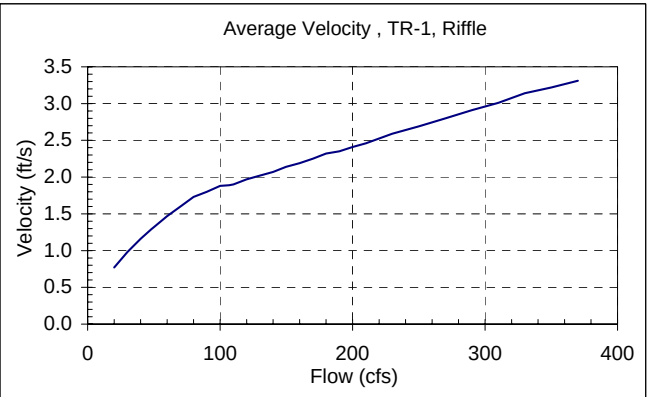

South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF3
Measured Q vs WSE
Water Surface Elevation (ft)
98.3
98.2
98.1
98.0
97.9
97.8
97.7
97.6
97.5
97.4
0
20
40
60
80
100
120
140
160
Flow (cfs)

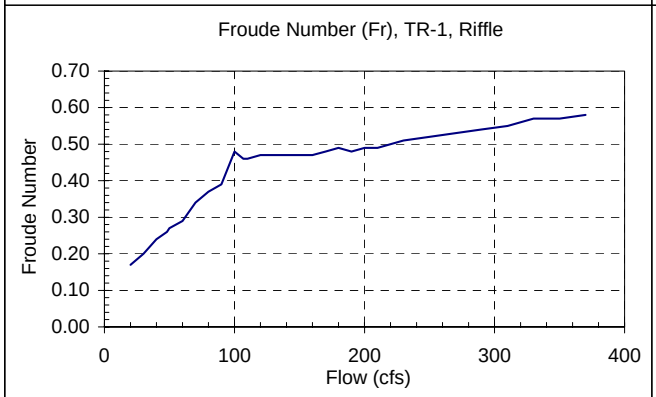

South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
0
50
100
150
200
250
300
350
400
Flow (cfs)
Measured WSE
Calibrated WSE

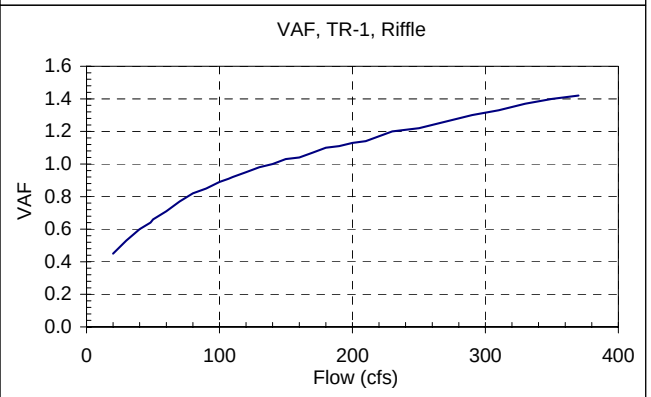
Stream: South Fork Koktuli River **Reach:** A
Site Name: 04-SFK-RF3 **Site #:** 3
Date: 6/24/2005 **Transect:** 1
Calibration Flow: Q(6/24/2005) **Habitat:** Riffle

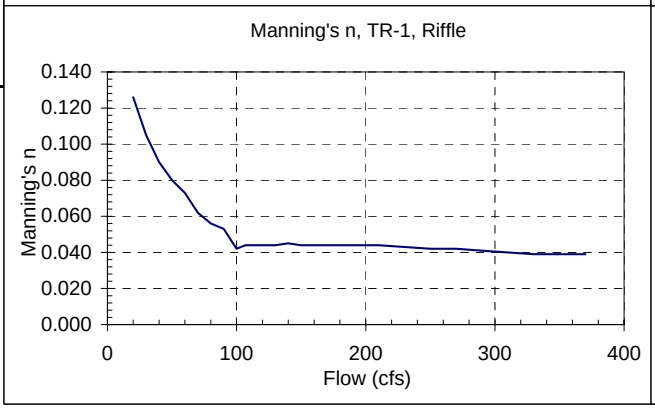
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
20	97.50	0.17	0.77	0.45	0.126	40.0
30	97.62	0.20	0.98	0.53	0.11	43.4
40	97.71	0.24	1.16	0.60	0.09	48.1
48.1	97.77	0.26	1.29	0.64	0.08	51.5
50	97.78	0.27	1.32	0.66	0.08	52.1
60	97.84	0.29	1.47	0.71	0.07	55.5
70	97.89	0.34	1.60	0.77	0.06	65.5
80	97.93	0.37	1.73	0.82	0.06	71.7
90	97.98	0.39	1.80	0.85	0.05	79.4
100	98.01	0.48	1.88	0.89	0.04	113.1
106.8	98.04	0.46	1.89	0.91	0.04	113.2
110	98.05	0.46	1.90	0.92	0.04	113.2
120	98.08	0.47	1.97	0.95	0.04	113.2
130	98.11	0.47	2.02	0.98	0.04	113.3
140	98.14	0.47	2.07	1.00	0.05	113.4
149.8	98.16	0.47	2.14	1.03	0.04	113.4
160	98.19	0.47	2.19	1.04	0.04	113.5
170	98.21	0.48	2.25	1.07	0.04	113.5
180	98.23	0.49	2.32	1.10	0.04	113.6
190	98.26	0.48	2.35	1.11	0.04	113.6
200	98.28	0.49	2.41	1.13	0.04	113.7
210	98.30	0.49	2.46	1.14	0.04	113.7
230	98.33	0.51	2.59	1.20	0.04	113.8
250	98.37	0.52	2.69	1.22	0.04	113.8
270	98.40	0.53	2.80	1.26	0.04	113.9
290	98.43	0.54	2.91	1.30	0.04	114.0
310	98.46	0.55	3.01	1.33	0.04	114.1
330	98.48	0.57	3.14	1.37	0.04	114.2
350	98.51	0.57	3.22	1.40	0.04	114.3
370	98.54	0.58	3.31	1.42	0.039	114.4

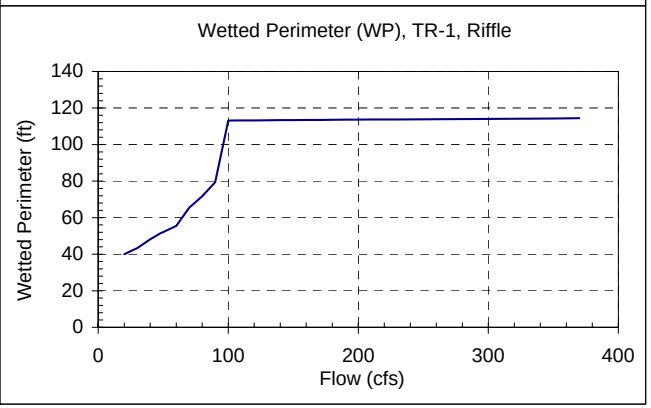






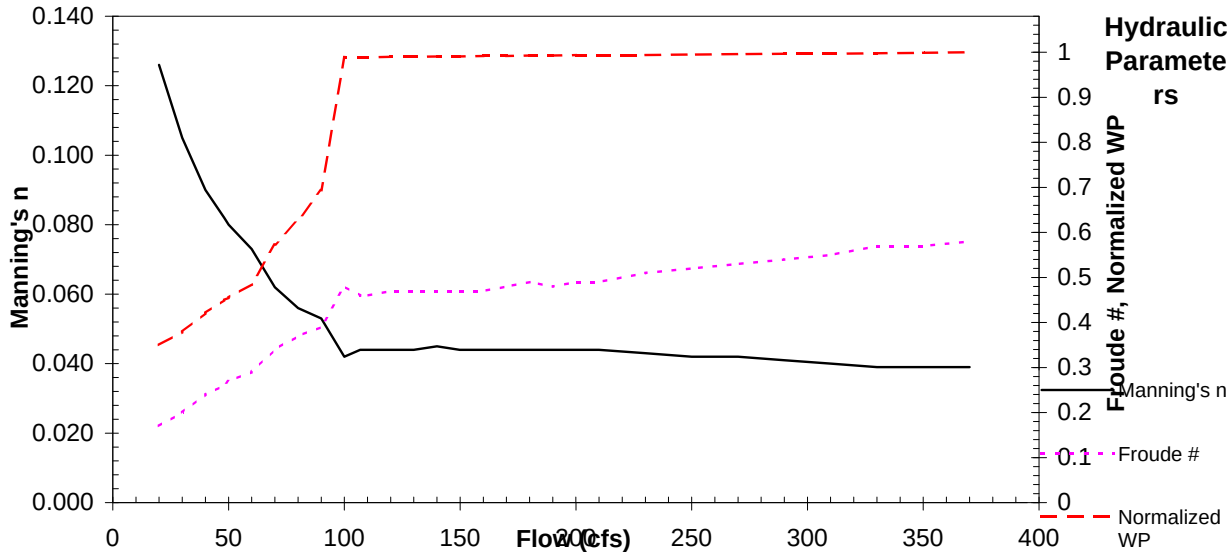


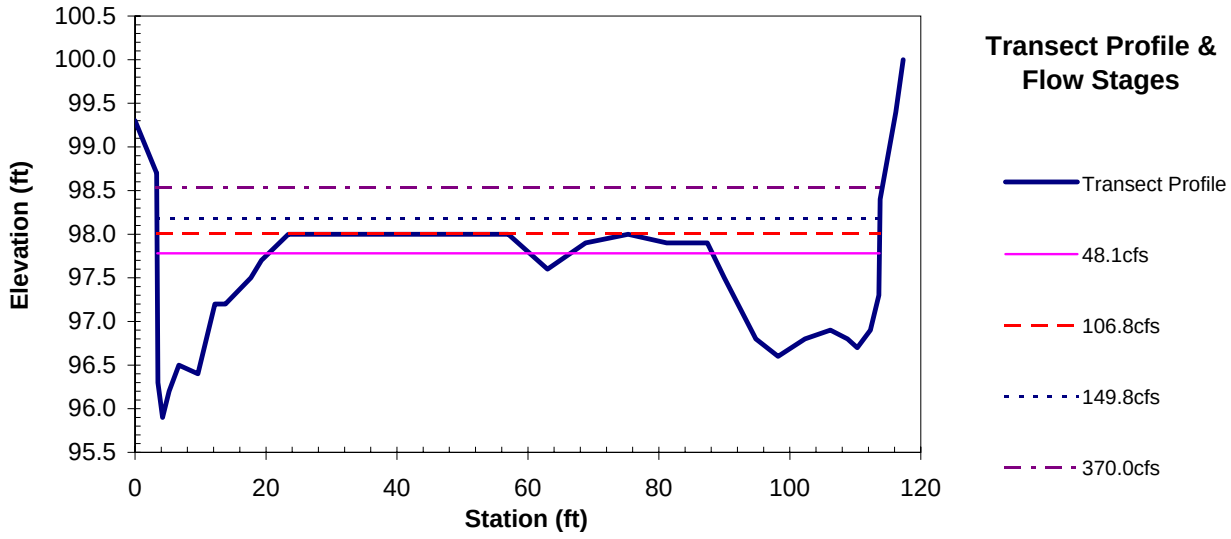


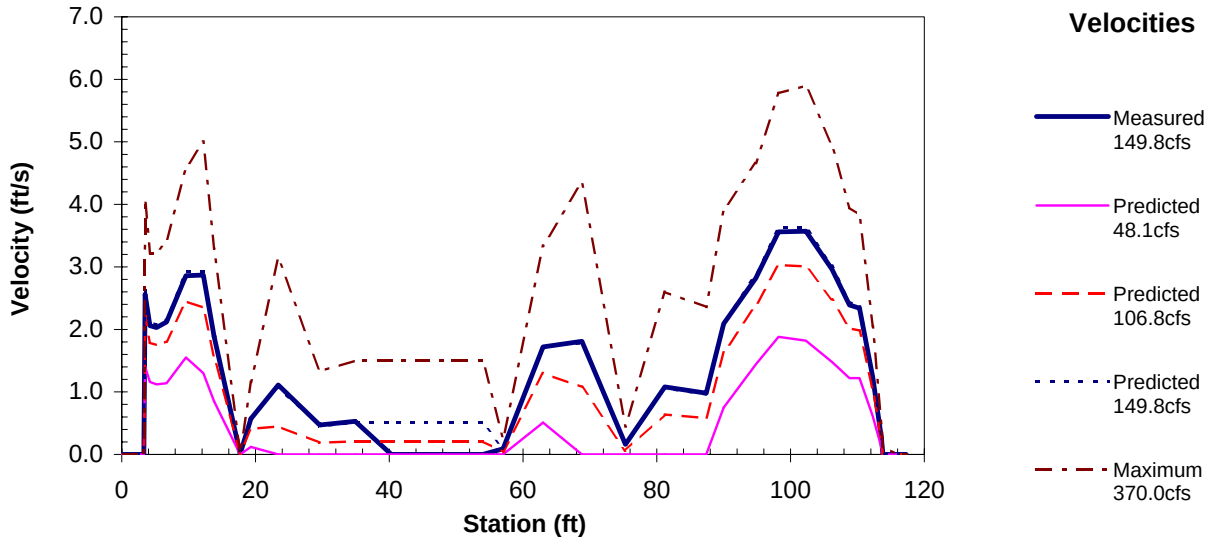


cTR1 - Transect hydraulic parameters

Pebble Project, South Fork Koktuli River
04-SFK-RF3 - Riffle - TRANSECT 1 - 6/24/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-RF3  06/24/05
RIFFLE                     0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  20.0
QARD  30.0
QARD  40.0
QARD  48.1
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 106.8
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 149.8
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 330.0
QARD 350.0
QARD 370.0
XSEC  1000     1000. 1.0     95.76    .00763
      1000   .099.35  3.398.75  3.596.28  4.295.88  5.296.18  6.796.48
      1000  9.696.38 12.297.18 13.897.18 17.797.48 19.397.68 23.497.98
      1000 29.697.98 34.997.98 40.397.98 45.597.98 48.197.98 54.097.98
      1000 57.097.98 63.097.58 68.897.88 75.397.98 81.297.88 87.497.88
      1000 90.097.48 94.896.78 98.296.58102.396.78106.296.88108.896.78
      1000110.396.68112.396.88113.697.28113.898.40116.299.41117.3100.0
NS    1000      22.9      23.7      24.6      54.7      54.6      54.6
NS    1000      34.8      37.6      32.8      32.6      24.8      35.6
NS    1000      52.6      34.6      34.7      34.7      34.6      43.6
NS    1000      43.7      45.8      45.8      43.7      43.8      43.9
NS    1000      45.8      43.8      43.8      43.6      43.6      34.6
NS    1000      35.6      74.6      27.7      27.7      22.9      22.9
WSL   1000     97.50     97.62     97.71     97.77     97.78     97.84
WSL   1000     97.89     97.93     97.98     98.01     98.04     98.05
WSL   1000     98.08     98.11     98.14     98.16     98.19     98.21
WSL   1000     98.23     98.26     98.28     98.30     98.33     98.37
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     98.40     98.43     98.46     98.48     98.51     98.54
CAL1  1000     98.18     149.8
VEL1  1000           2.56 2.06 2.03 2.12 2.86 2.87 1.89 0.01 0.57 1.11
VEL1  1000 0.47 0.53 0.00 0.00 0.00 0.00 0.09 1.72 1.81 0.16 1.08 0.98
VEL1  1000 2.09 2.82 3.56 3.57 2.96 2.39 2.34 1.23 0.26
CAL2  1000     97.78      48.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.01     106.8
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 04-SFK-RN3

Habitat Type: Run

River Kilometer: 20.10

Stream: South Fork Koktuli River
Reach: A
Site: 04-SFK-RN3
Habitat Type: Run

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1st	6/24/2005	100.00	97.97	98.37
2nd	7/17/2005	100.00	97.97	98.36
3rd	8/11/2005	100.00	97.98	98.35
4th	7/3/2006	100.00	98.00	98.47
5th	7/6/2006	100.00	98.01	98.47

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and HP were within 0.04ft.
(c) Small changes of elevations indicated BM & HP were stable during the 2005-2006 period.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/24/2005	96.17
7/17/2005	96.00
8/11/2005	95.58
7/3/2006	96.07
7/6/2006	95.97

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/24/2005	142.8
7/17/2005	
8/11/2005	53.4
7/3/2006	
7/6/2006	98.8

No Flows were measured during the 7/17/05 and 7/3/06 trips

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/24/2005	0.284%	88
7/17/2005	0.212%	118
8/11/2005	0.192%	104
7/3/2006	0.284%	149
7/6/2006	0.228%	116.2

The slope S=0.284% of 6/24//2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/24/2005	94.37
7/17/2005	
8/11/2005	94.38
7/3/2006	94.39
7/6/2006	94.37
Invert	94.39
SZF	94.39

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Bed profile was surveyed on 7/3/06, but no discharge was measured on that date.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/24/2005	142.8	96.17	96.20	0.03	IFG4
2nd	7/17/2005		96.00			
3rd	8/11/2005	53.4	95.58	95.59	0.01	IFG4
4th	7/3/2006		96.07			
5th	7/6/2006	98.8	95.97	95.95	-0.02	

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharges were measured during the 7/17/05 and 7/3/06 trips.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 53.4cfs to 142.8cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

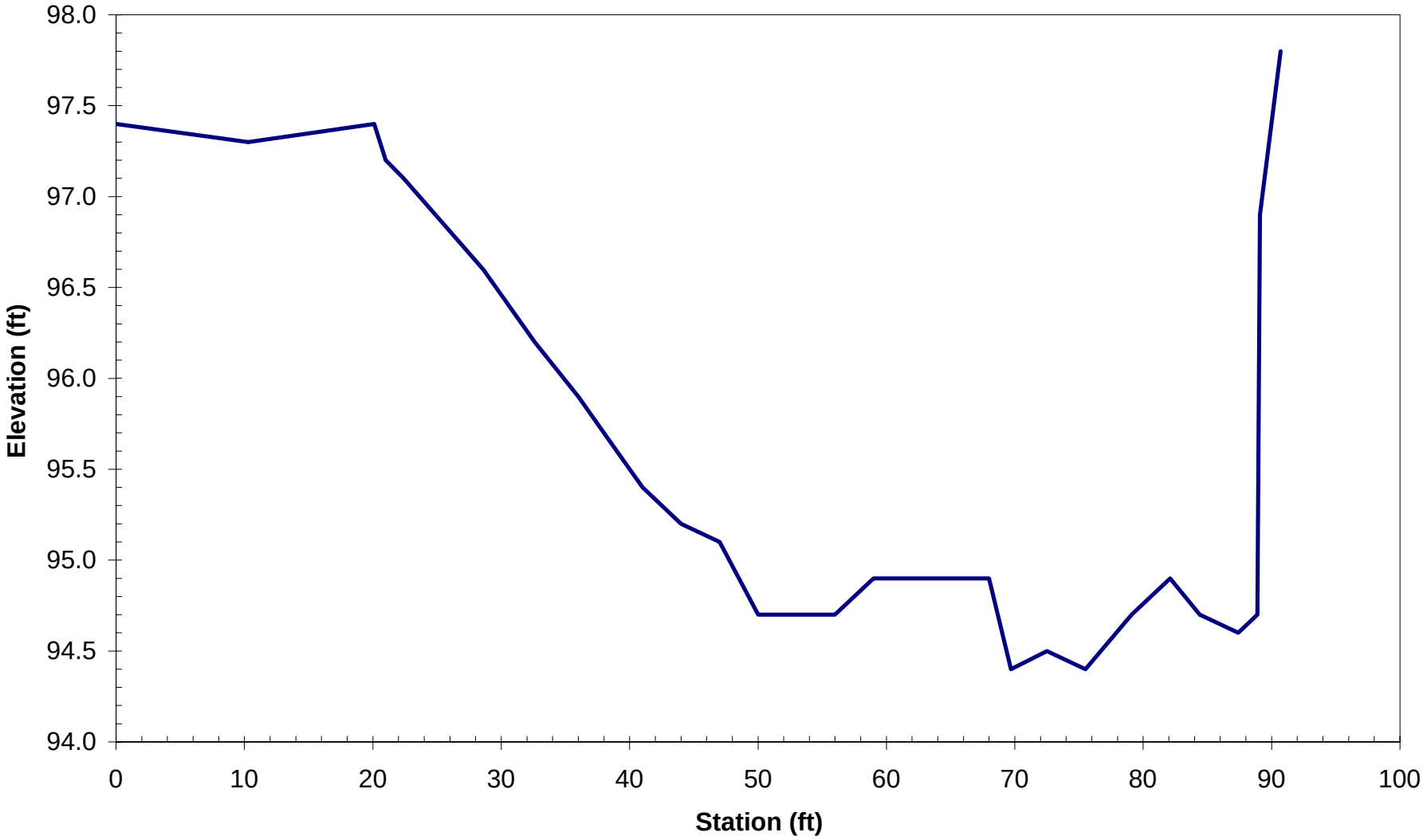
Survey Date	Q (cfs)	WUA (Y/N)
6/24/2005	142.8	Y
7/17/2005		
8/11/2005	53.4	Y
7/3/2006		
7/6/2006	98.8	

(4) Hydraulic Calibration Results:

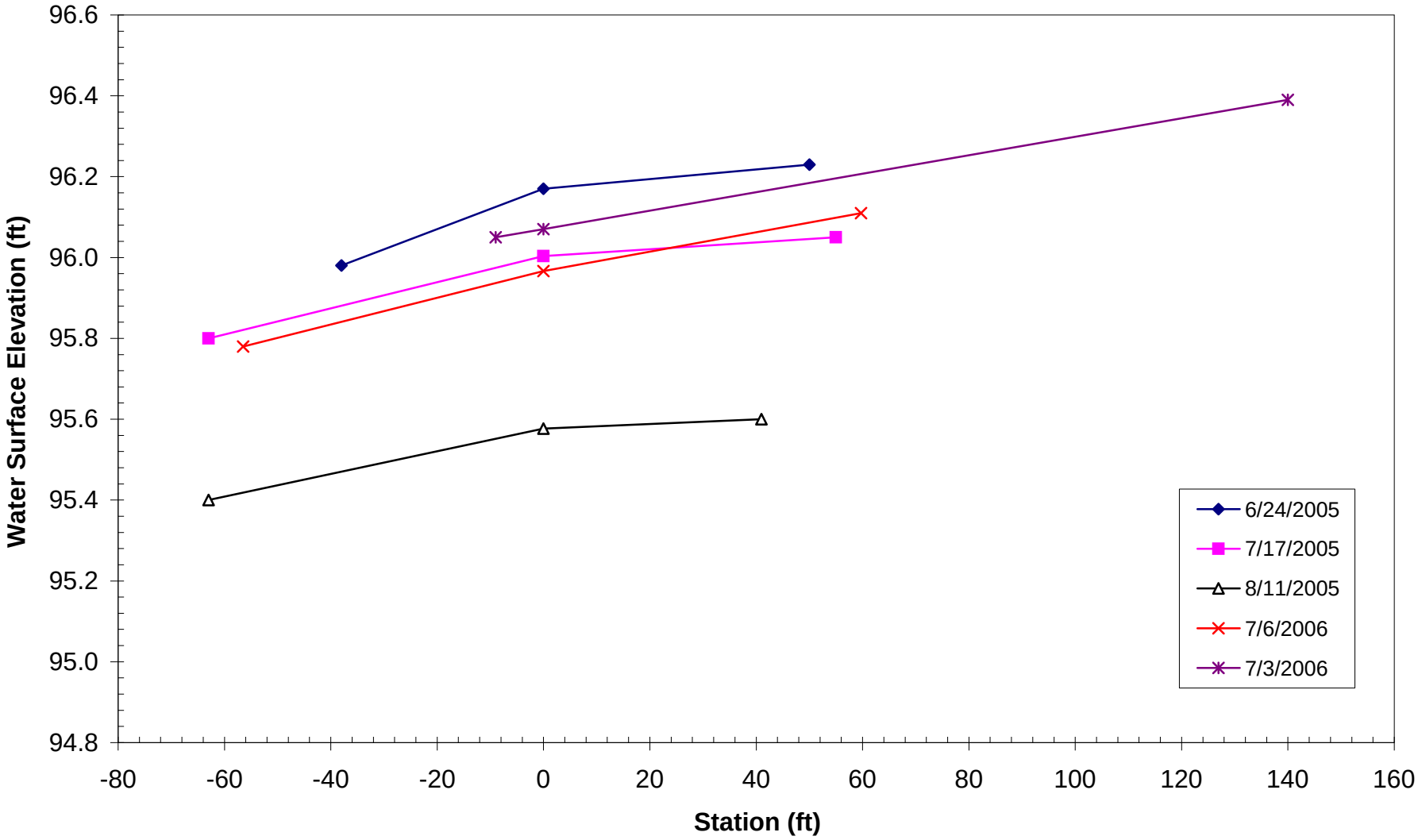
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends.

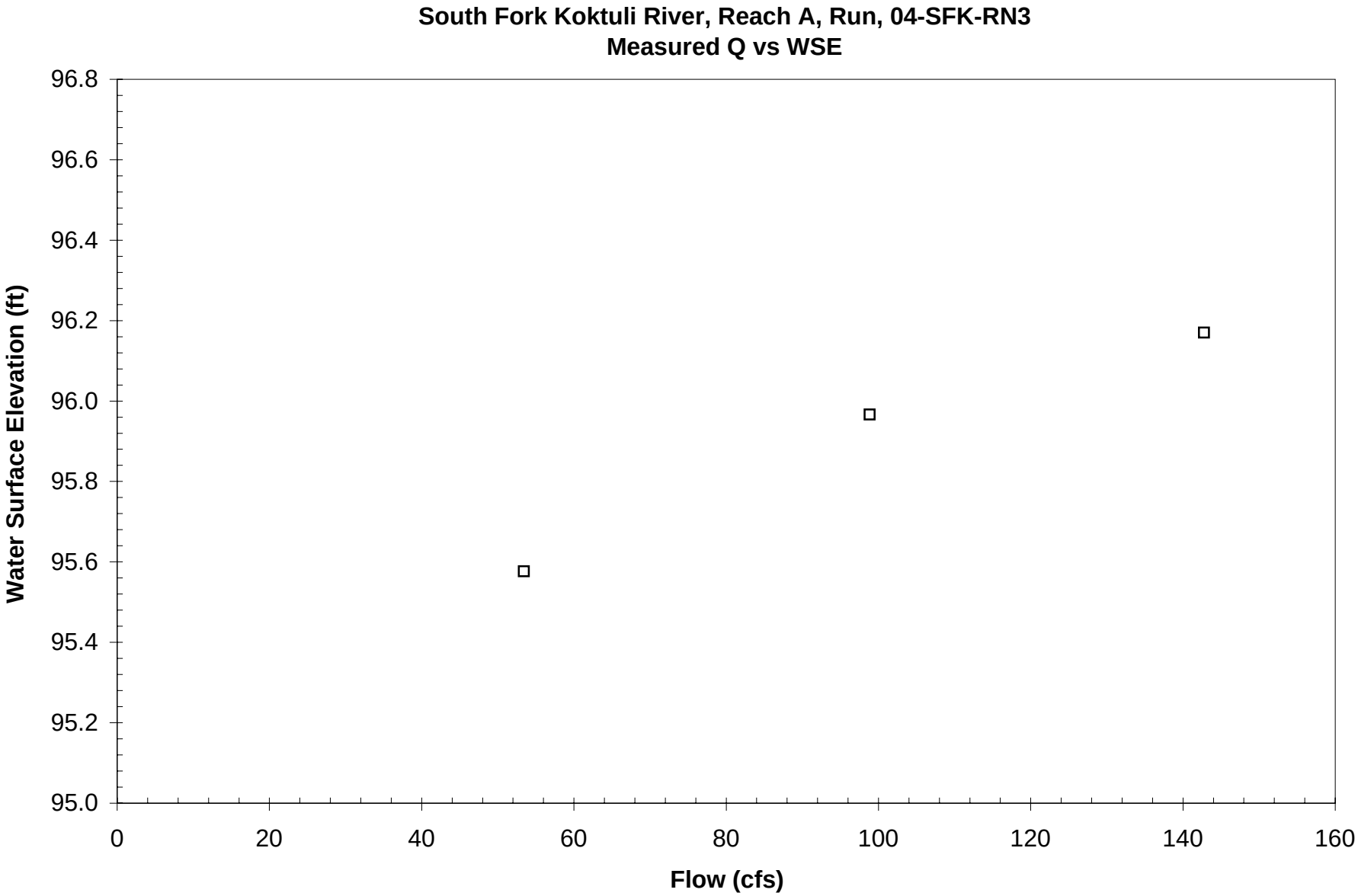
calibration notes

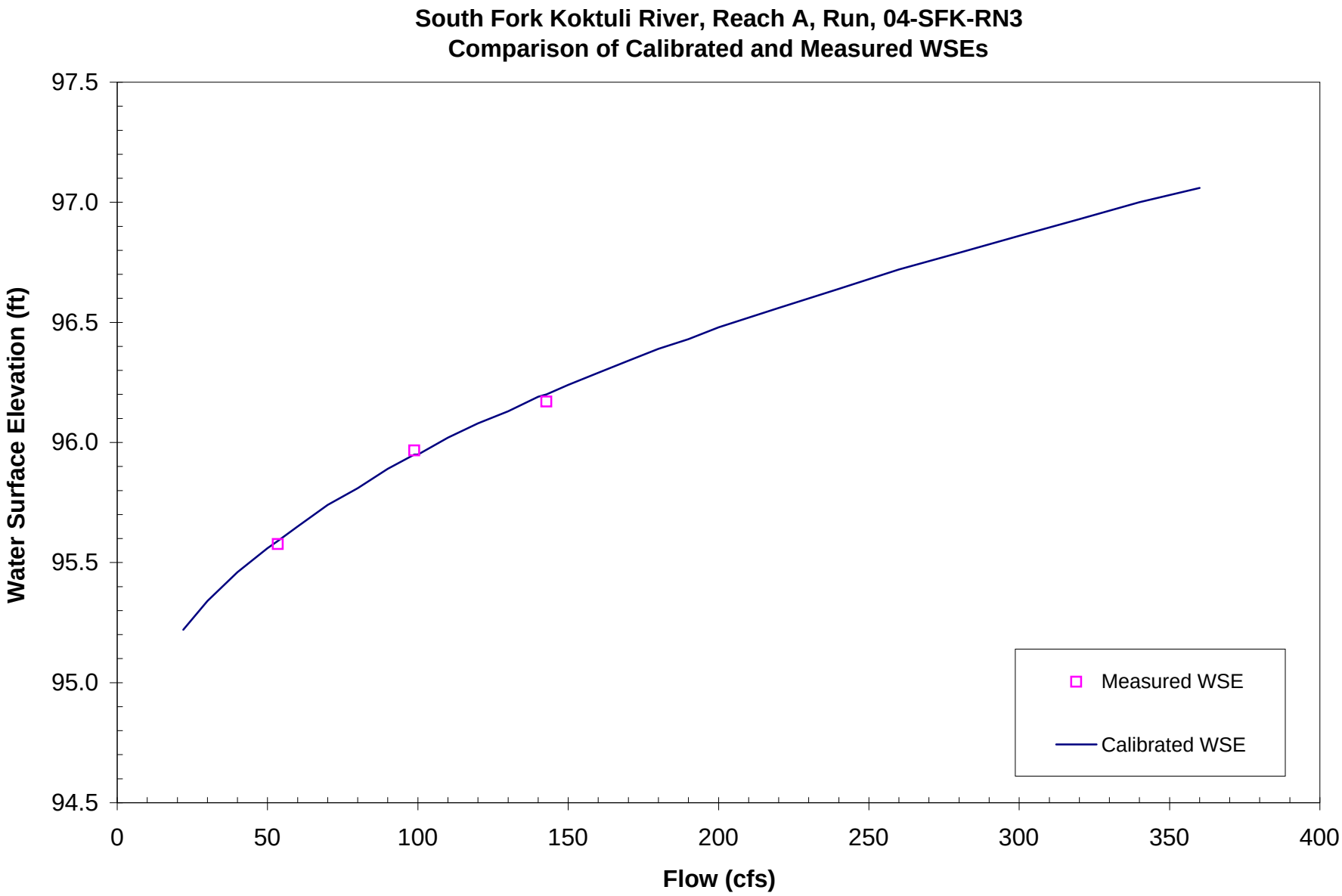
South Fork Koktuli River, Reach A, Run, 04-SFK-RN3
Measured Transect Profile



South Fork Koktuli River, Reach A, Run, 04-SFK-RN3
Longitudinal Water Surface Elevation Profiles

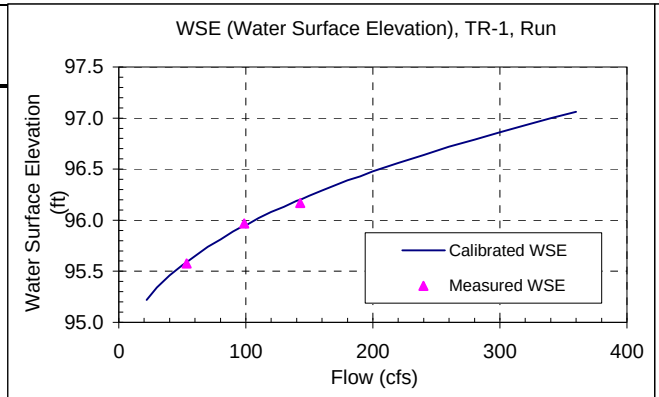


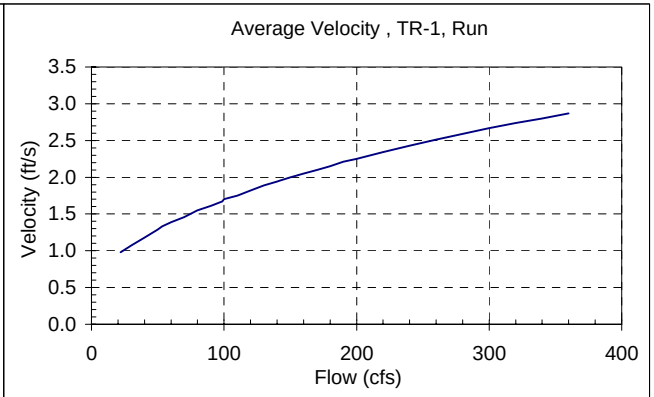

South Fork Koktuli River, Reach A, Run, 04-SFK-RN3
Measured Q vs WSE
Water Surface Elevation (ft)
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
20
40
60
80
100
120
140
160
Flow (cfs)

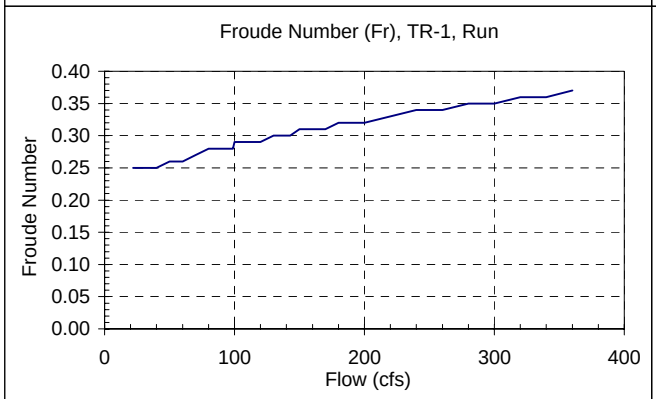

South Fork Koktuli River, Reach A, Run, 04-SFK-RN3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
50
100
150
200
250
300
350
400
Flow (cfs)
Measured WSE
Calibrated WSE

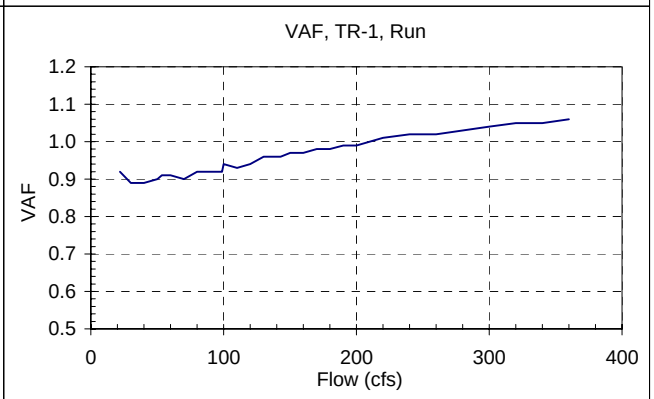
Stream: South Fork Koktuli River **Reach:** A
Site Name: 04-SFK-RN3 **Site #:** 3
Date: 6/24/2005 **Transect:** 1
Calibration Flow: Q(6/24/2005) **Habitat:** Run

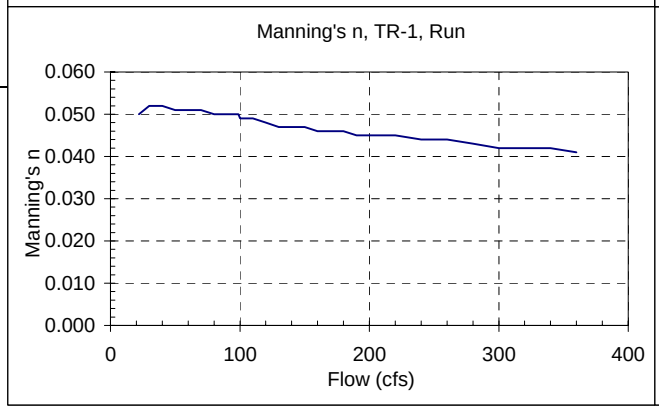
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
22	95.22	0.25	0.98	0.92	0.050	46.3
30	95.34	0.25	1.07	0.89	0.05	48.3
40	95.46	0.25	1.18	0.89	0.05	49.7
50	95.56	0.26	1.29	0.90	0.05	50.9
53.4	95.59	0.26	1.33	0.91	0.05	51.2
60	95.65	0.26	1.39	0.91	0.05	51.8
70	95.74	0.27	1.46	0.90	0.05	52.8
80	95.81	0.28	1.55	0.92	0.05	53.6
90	95.89	0.28	1.61	0.92	0.05	54.5
98.8	95.95	0.28	1.67	0.92	0.05	55.3
100	95.95	0.29	1.70	0.94	0.05	55.3
110	96.02	0.29	1.75	0.93	0.05	56.1
120	96.08	0.29	1.82	0.94	0.05	56.9
130	96.13	0.30	1.89	0.96	0.05	57.5
140	96.19	0.30	1.94	0.96	0.05	58.2
142.8	96.20	0.30	1.96	0.96	0.05	58.3
150	96.24	0.31	2.00	0.97	0.05	58.7
160	96.29	0.31	2.05	0.97	0.05	59.2
170	96.34	0.31	2.10	0.98	0.05	59.8
180	96.39	0.32	2.15	0.98	0.05	60.3
190	96.43	0.32	2.21	0.99	0.05	60.7
200	96.48	0.32	2.25	0.99	0.05	61.2
220	96.56	0.33	2.34	1.01	0.05	62.0
240	96.64	0.34	2.43	1.02	0.04	63.0
260	96.72	0.34	2.51	1.02	0.04	64.1
280	96.79	0.35	2.59	1.03	0.04	65.1
300	96.86	0.35	2.67	1.04	0.04	66.1
320	96.93	0.36	2.74	1.05	0.04	67.1
340	97.00	0.36	2.80	1.05	0.04	68.1
360	97.06	0.37	2.87	1.06	0.041	69.0

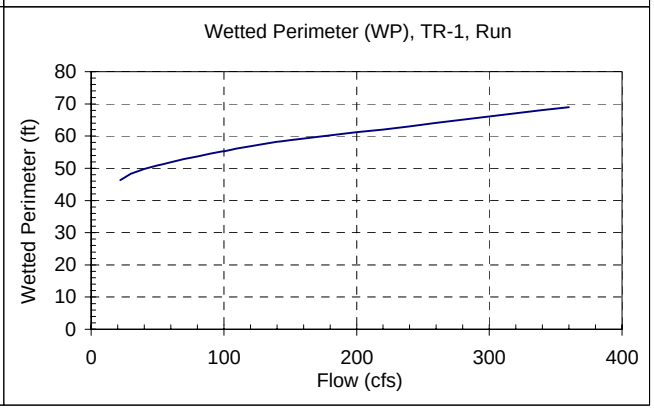




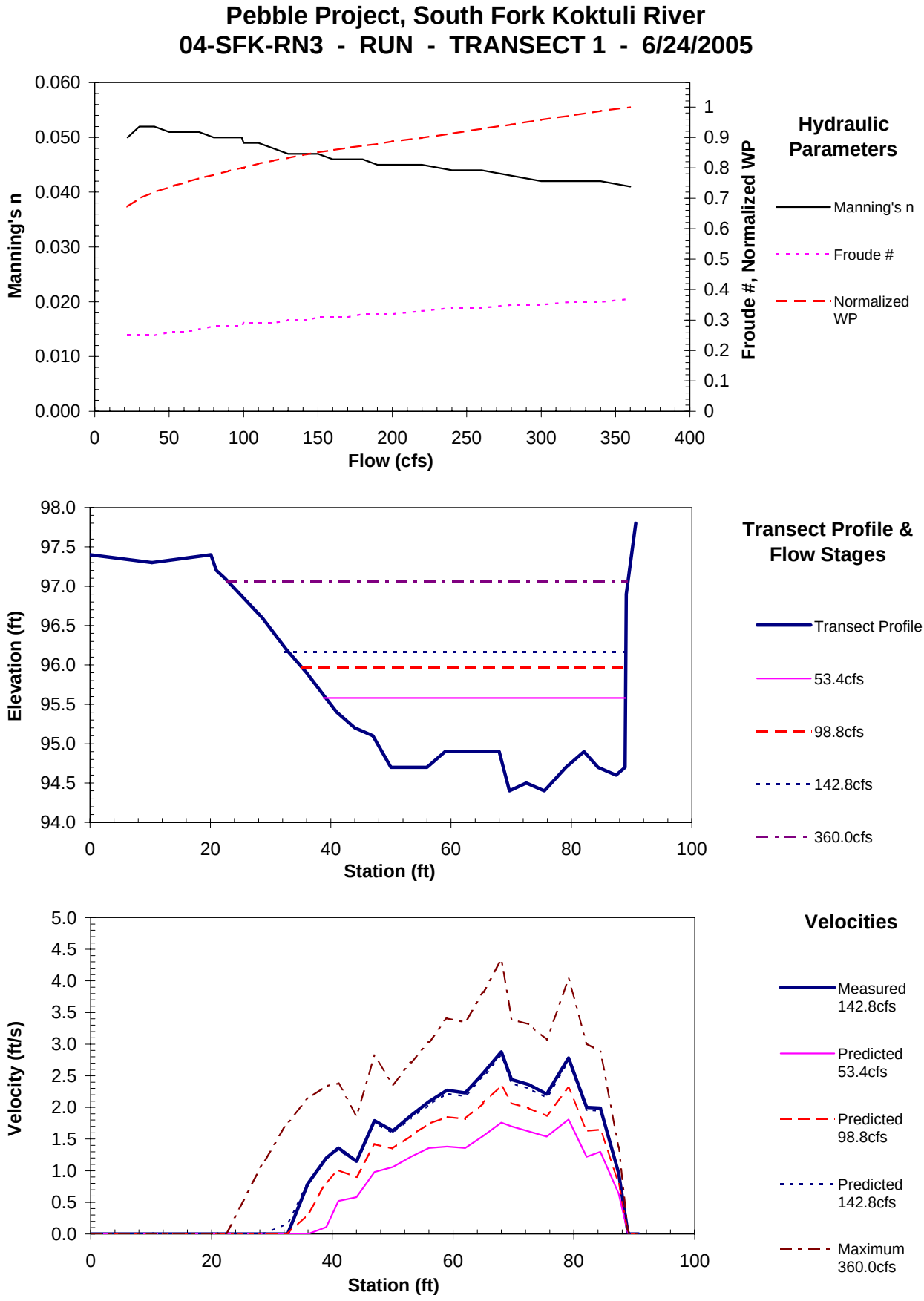








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-RN3  06/24/05
RUN                        0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  22.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  53.4
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  98.8
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 142.8
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
XSEC  1000     1000. 1.0     94.39    .00284
      1000   .097.39 10.397.31 20.197.36 21.097.17 22.497.08 28.696.60
      1000 32.696.17 36.095.87 39.095.57 41.095.37 44.095.17 47.095.07
      1000 50.094.67 53.094.67 56.094.67 59.094.87 62.094.87 65.094.87
      1000 68.094.87 69.794.37 72.594.47 75.594.37 79.194.67 82.194.87
      1000 84.494.67 87.494.57 88.994.67 89.196.93 90.797.84
NS    1000      22.9      22.9      22.9      23.7      43.6      43.6
NS    1000      53.7      43.7      43.7      43.7      42.7      42.7
NS    1000      54.6      54.6      45.6      43.7      43.7      43.6
NS    1000      43.7      43.8      43.7      43.7      45.6      64.6
NS    1000      64.7      43.6      23.7      23.7      22.9
WSL   1000     95.22     95.34     95.46     95.56     95.59     95.65
WSL   1000     95.74     95.81     95.89     95.95     95.95     96.02
WSL   1000     96.08     96.13     96.19     96.20     96.24     96.29
WSL   1000     96.34     96.39     96.43     96.48     96.56     96.64
WSL   1000     96.72     96.79     96.86     96.93     97.00     97.06
```

IFG4 Data Deck (continued)

```
CAL1  1000     96.17     142.8
VEL1  1000                                0.00 0.80 1.20 1.36 1.15 1.79
VEL1  1000 1.63 1.87 2.09 2.27 2.23 2.54 2.88 2.44 2.36 2.21 2.78 2.00
VEL1  1000 1.99 0.96 0.04
CAL2  1000     95.58      53.4
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.97      98.8
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 07-SFK1-RF1

Habitat Type: Riffle

River Kilometer: 24.21

Stream: South Fork Koktuli River
Reach: A
Site: 07-SFK1-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/13/2007	1	100.00	99.19	99.22
2nd	7/18/2007	2	100.00	99.13	99.22
3rd	9/20/2007	3			
4th	10/19/2007	4	100.00	99.09	99.23

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and TP were within 0.01ft.
(c) Small changes of elevations suggested BM and TP were stable.
(d) No level loop survey was conducted during the 9/20/07 site visit
(e) The relative elevations showed HP continued to sink from June to October for 0.1ft.
No corrections to WSE's were needed because the suevey datum were based on BM.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/13/2007	96.78
7/18/2007	96.60
9/20/2007	98.23
10/19/2007	97.24

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/13/2007	107.4
7/18/2007	63.3
9/20/2007	
10/19/2007	220.0

No discharge was measured during the 9/20/07 site visit

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/13/2007	0.787%	75
7/18/2007	0.921%	89
9/20/2007	0.463%	149
10/19/2007	0.598%	82

The slope S=0.787% of 6/13/2007 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/13/2007	95.48
7/18/2007	95.60
9/20/2007	-
10/19/2007	94.94
Invert	95.60
SZF	95.60

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Site was flooded on 9/20/07. Limited data were collected.
(4) The invert of 10/19/07 survey was about 0.5ft lower than the other two surveyes. This may be the result of of degradation from the September flooding.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/13/2007	107.4	96.78	96.81	0.03	IFG4
2nd	7/18/2007	63.3	96.60	96.58	-0.02	IFG4
3rd	9/20/2007		98.23			
4th	10/19/2007	220.0	97.24	97.22	-0.02	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured during the 9/20/07 site visit due to flooding

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 63.3cfs to 220.0cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment
of n values was made at the stations where simulated velocity was greatly different from the measured
values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

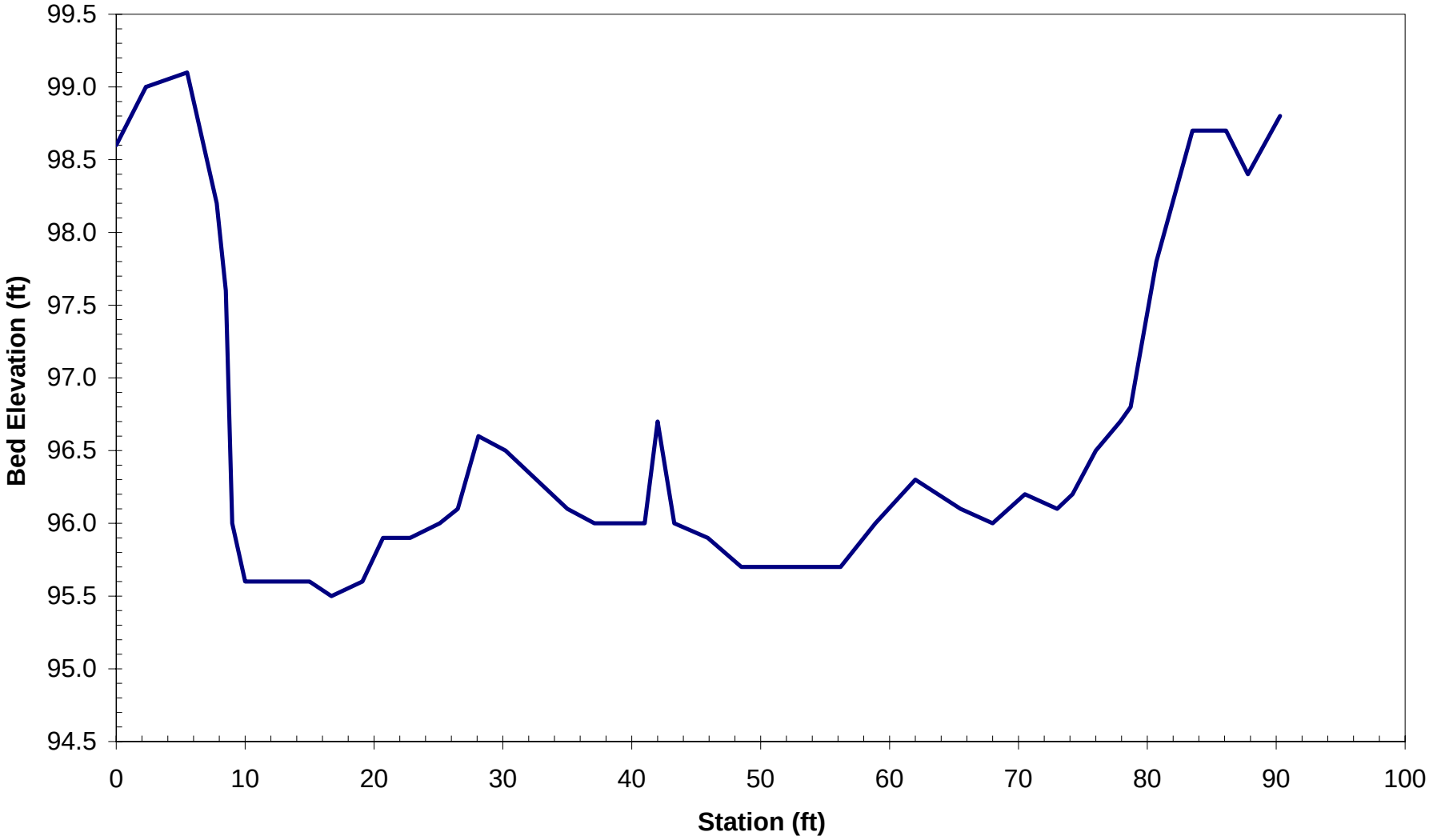
Survey Date	Q (cfs)	WUA (Y/N)
6/13/2007	107.4	Y
7/18/2007	63.3	Y
9/20/2007		
10/19/2007	220.0	Y

(4) Hydraulic Calibration Results:

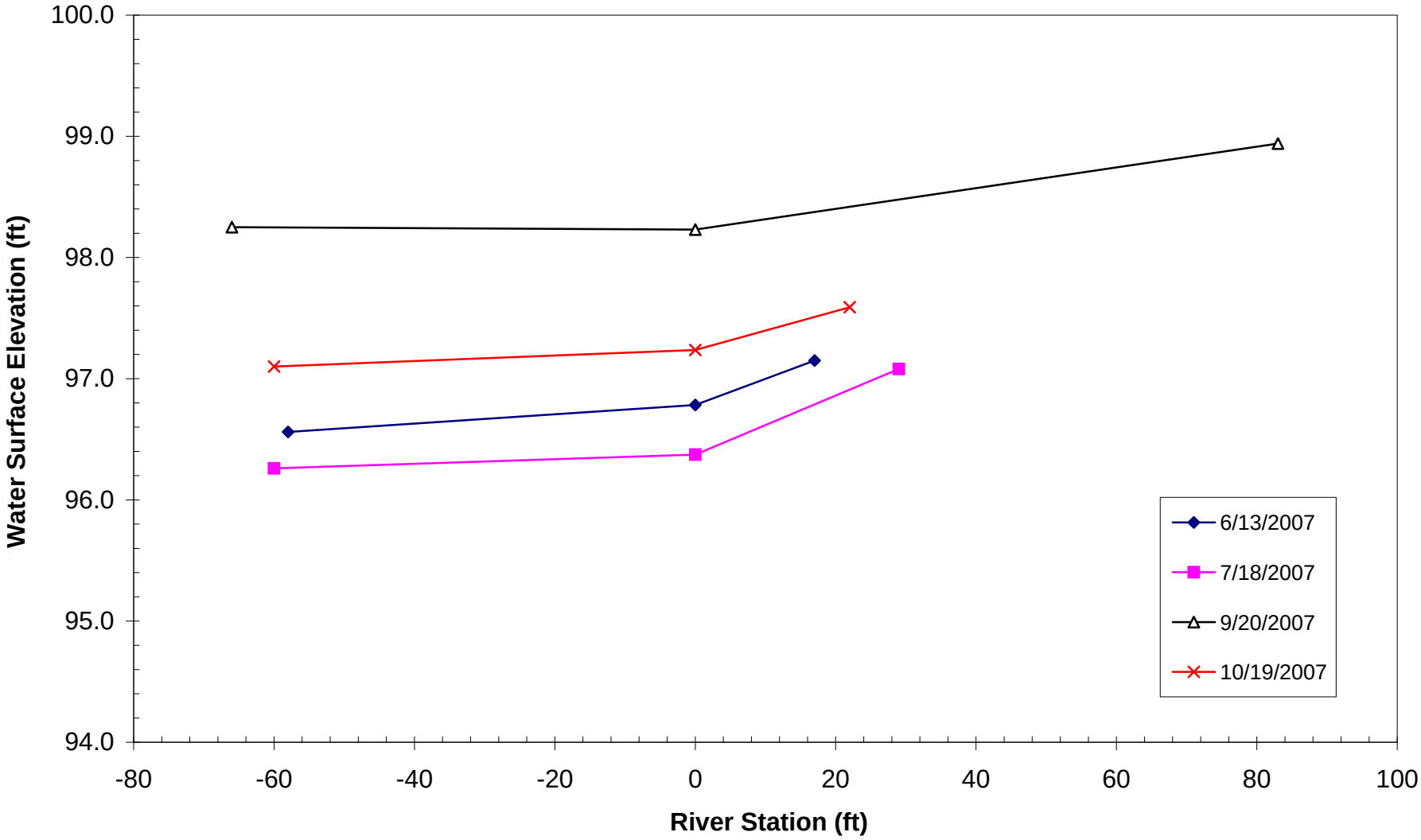
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are
all within reasonable ranges and appear to vary in normal trends.

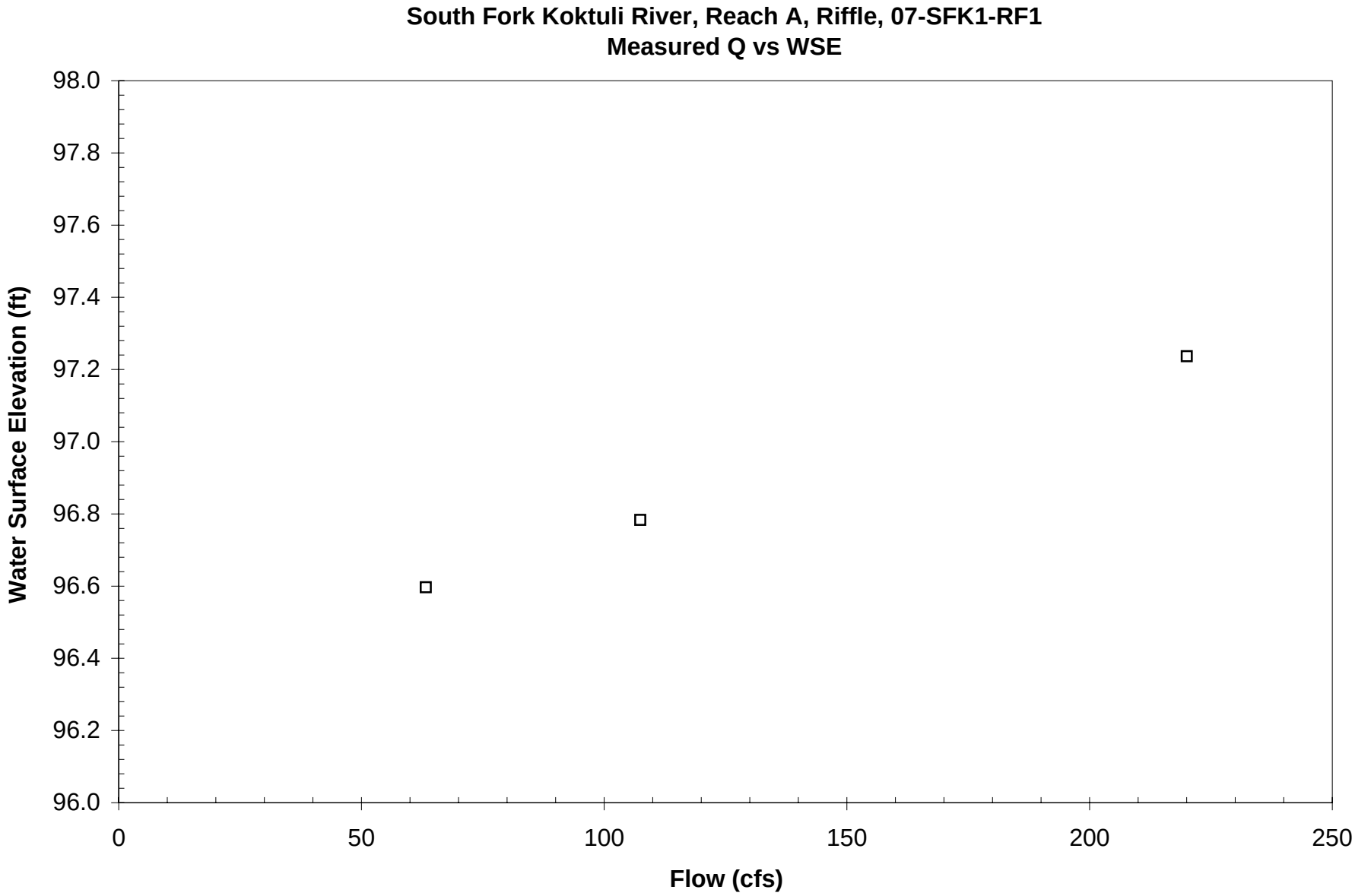
calibration notes

South Fork Koktuli River, Reach A, Riffle, 07-SFK1-RF1
Measured Transect Profile

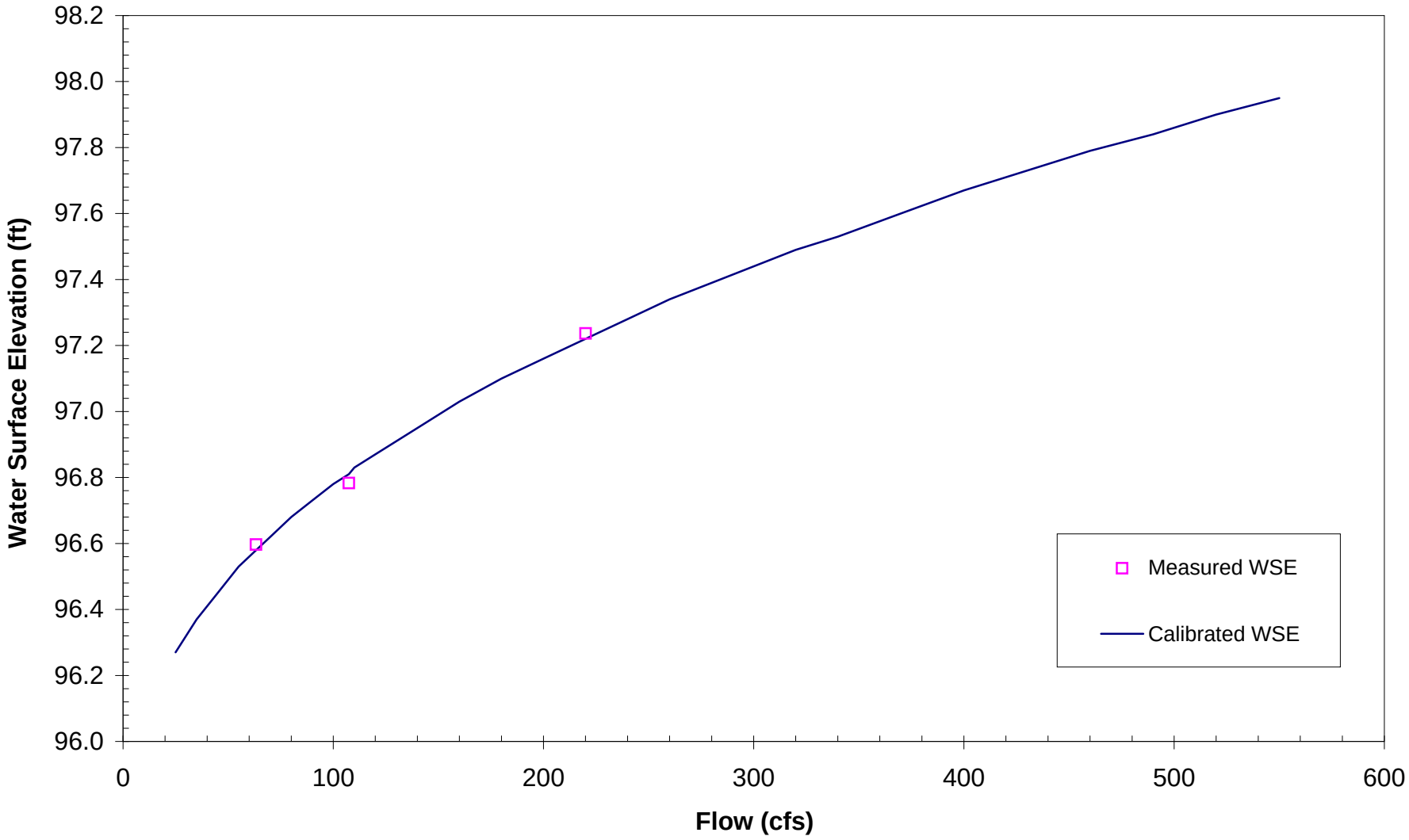


South Fork Koktuli River, Reach A, Riffle, 07-SFK1-RF1
Longitudinal Water Surface Elevation Profiles



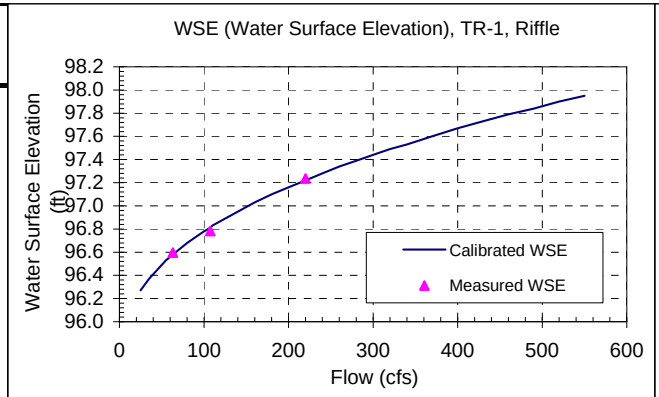

South Fork Koktuli River, Reach A, Riffle, 07-SFK1-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
50
100
150
200
250
Flow (cfs)

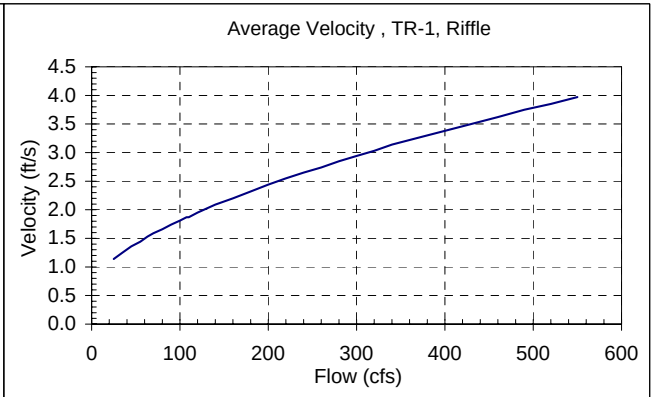
South Fork Koktuli River, Reach A, Riffle, 07-SFK1-RF1
Comparison of Calibrated and Measured WSE

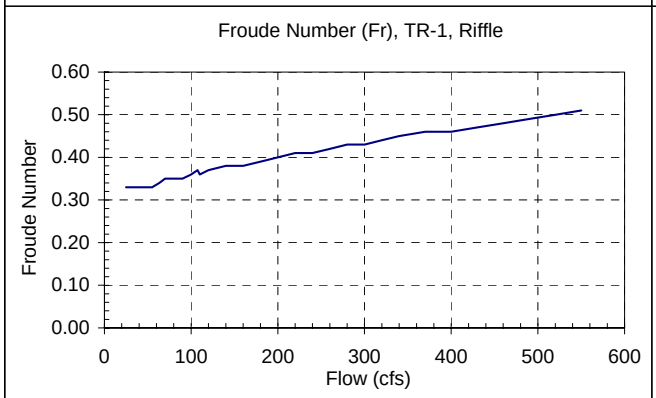


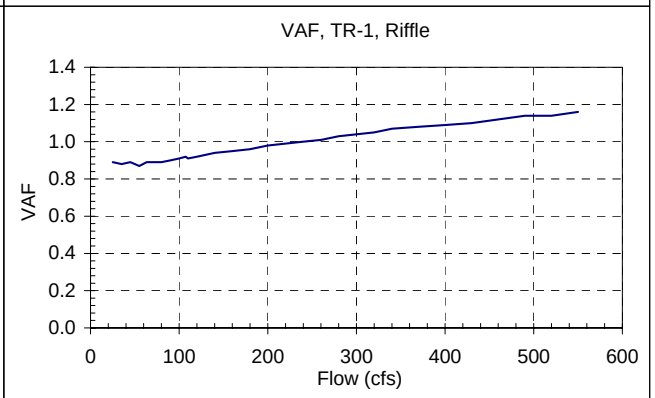
Stream: South Fork Koktuli River **Reach:** A
Site Name: 07-SFK1-RF1 **Site #:** 1
Date: 6/13/2007 **Transect:** 1
Calibration Flow: Q(6/13/2007) **Habitat:** Riffle

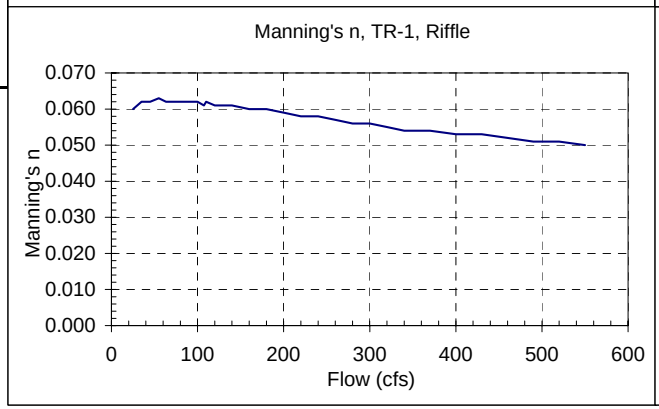
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	96.27	0.33	1.14	0.89	0.060	59.5
35	96.37	0.33	1.25	0.88	0.06	62.0
45	96.45	0.33	1.36	0.89	0.06	64.0
55	96.53	0.33	1.44	0.87	0.06	66.6
63.3	96.58	0.34	1.53	0.89	0.06	68.5
70	96.62	0.35	1.59	0.89	0.06	69.1
80	96.68	0.35	1.66	0.89	0.06	69.9
90	96.73	0.35	1.74	0.90	0.06	70.4
100	96.78	0.36	1.81	0.91	0.06	71.3
107.4	96.81	0.37	1.87	0.92	0.06	71.4
110	96.83	0.36	1.87	0.91	0.06	71.4
120	96.87	0.37	1.95	0.92	0.06	71.6
140	96.95	0.38	2.09	0.94	0.06	71.9
160	97.03	0.38	2.20	0.95	0.06	72.1
180	97.10	0.39	2.32	0.96	0.06	72.4
200	97.16	0.40	2.44	0.98	0.06	72.5
220	97.22	0.41	2.55	0.99	0.06	72.7
240	97.28	0.41	2.65	1.00	0.06	72.9
260	97.34	0.42	2.74	1.01	0.06	73.1
280	97.39	0.43	2.85	1.03	0.06	73.2
300	97.44	0.43	2.94	1.04	0.06	73.4
320	97.49	0.44	3.03	1.05	0.06	73.5
340	97.53	0.45	3.14	1.07	0.05	73.7
370	97.60	0.46	3.26	1.08	0.05	73.9
400	97.67	0.46	3.38	1.09	0.05	74.2
430	97.73	0.47	3.50	1.10	0.05	74.4
460	97.79	0.48	3.62	1.12	0.05	74.6
490	97.84	0.49	3.75	1.14	0.05	74.7
520	97.90	0.50	3.85	1.14	0.05	75.0
550	97.95	0.51	3.97	1.16	0.050	75.3

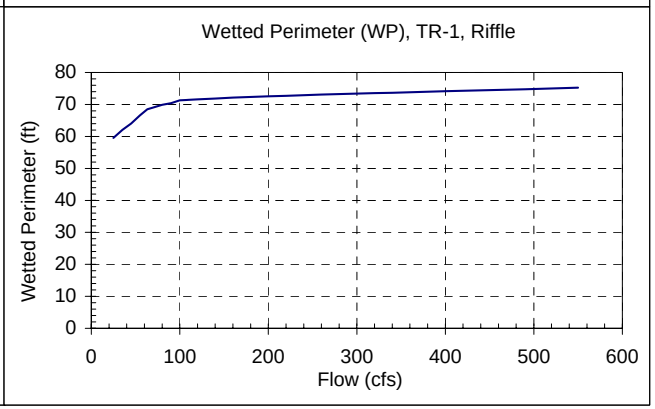






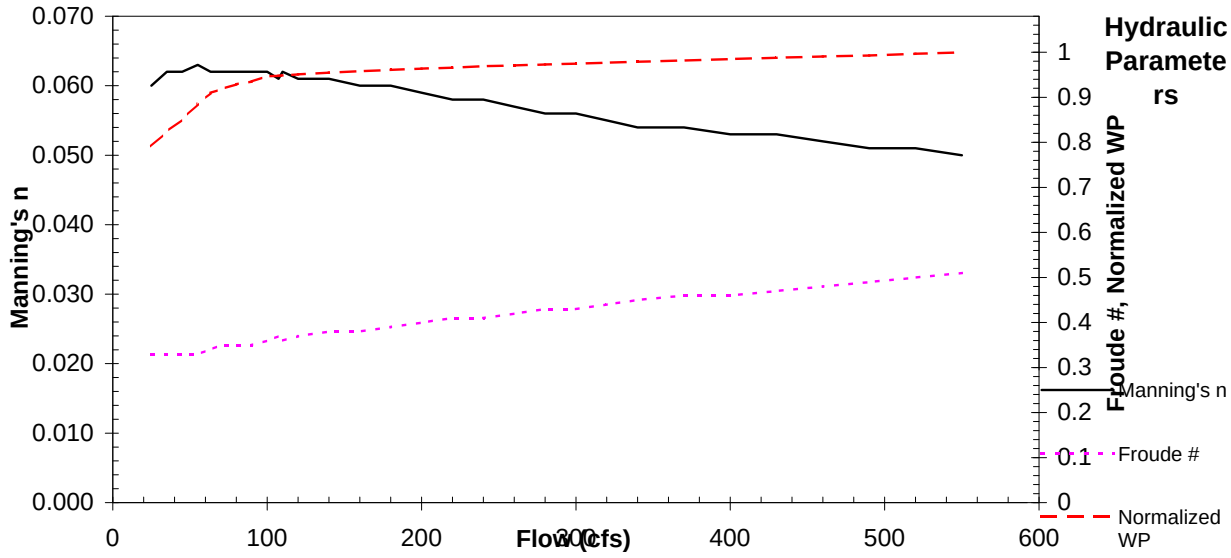


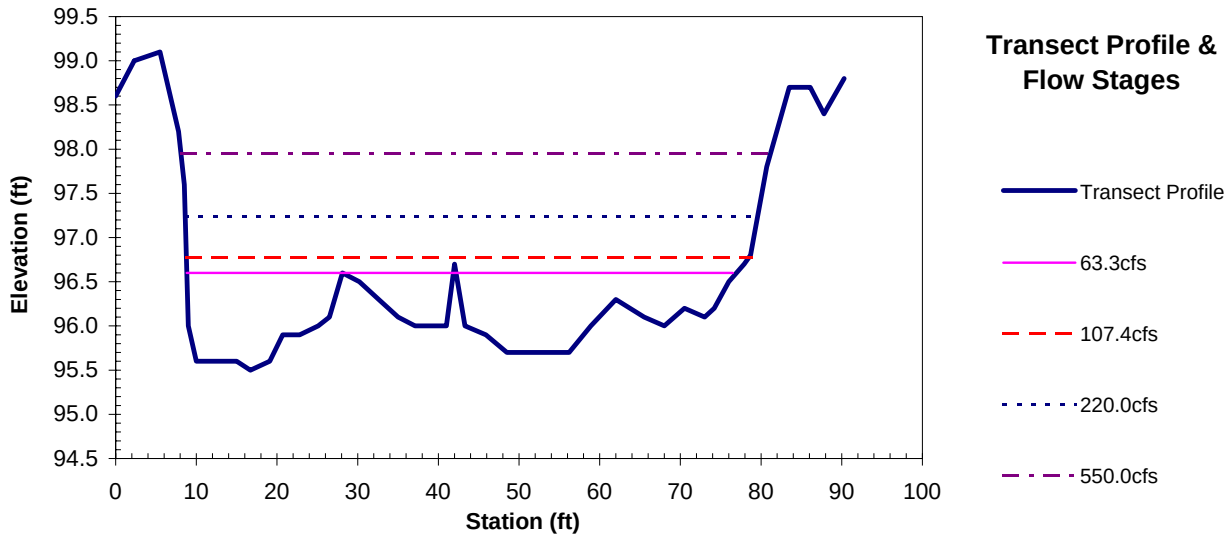


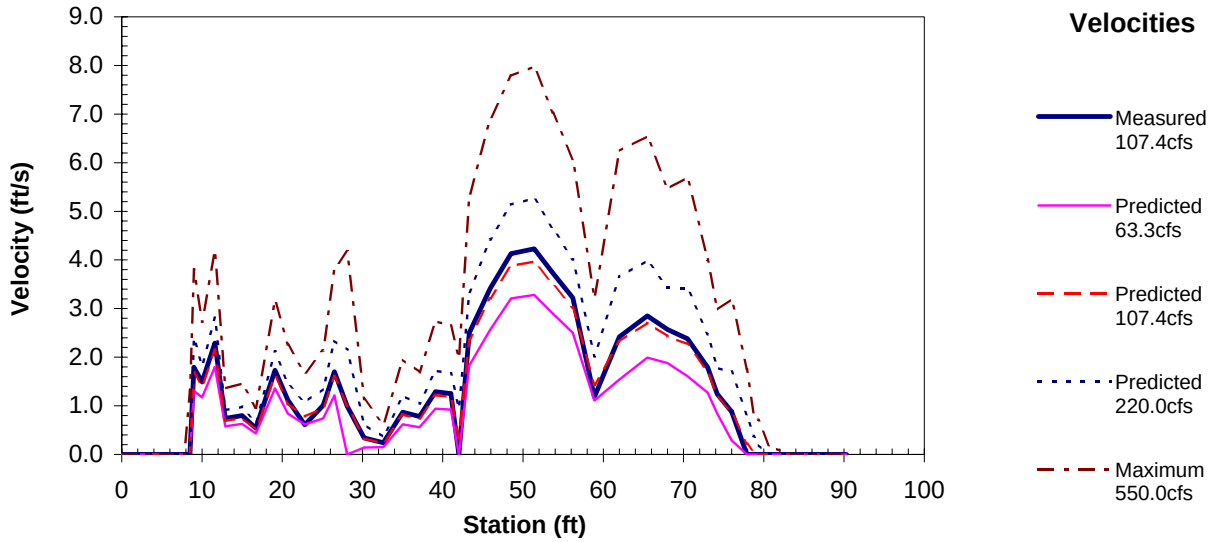


cTR1 - Transect hydraulic parameters

Pebble Project, South Fork Koktuli River
07-SFK1-RF1 - Riffle - TRANSECT 1 - 6/13/2007







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-SFK1-RF1  06/13/07
RIFFLE                      0607Q                                        TRANSECT 1
IOC       1101100100001000101000
QARD  25.0
QARD  35.0
QARD  45.0
QARD  55.0
QARD  63.3
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 107.4
QARD 110.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 430.0
QARD 460.0
QARD 490.0
QARD 520.0
QARD 550.0
XSEC  1000     1000. 1.0     95.60    .00787
      1000   .098.62  2.398.98  5.599.05  7.898.19  8.597.55  9.095.98
      1000 10.095.58 11.695.58 12.995.58 15.095.58 16.795.48 19.195.58
      1000 20.795.87 22.895.87 25.195.98 26.596.08 28.196.58 30.296.48
      1000 32.696.27 35.096.08 37.196.02 39.195.98 41.095.98 42.096.68
      1000 43.395.98 45.995.87 48.595.68 51.495.68 53.795.68 56.295.68
      1000 58.995.98 62.096.27 65.596.12 68.095.98 70.596.18 73.096.08
      1000 74.296.18 76.096.52 77.996.73 78.796.77 79.397.05 80.797.85
      1000 83.598.75 86.198.71 87.898.45 90.398.77
NS    1000      22.9      22.9      22.9      42.8      43.8      43.7
NS    1000      76.6      54.6      75.7      74.7      43.7      64.8
NS    1000      64.6 .15  45.6      46.7      64.6      64.8      77.9
NS    1000      74.8      43.8      45.7      76.7      77.9      74.6
NS    1000      45.6      63.8      43.7      46.6      43.9      45.7
NS    1000 .075 43.8      43.7      43.9      45.8      43.9      43.6
NS    1000      43.6      43.6 .1   43.6 .2   43.6      32.6      22.9
```

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     96.27     96.37     96.45     96.53     96.58     96.62
WSL   1000     96.68     96.73     96.78     96.81     96.83     96.87
WSL   1000     96.95     97.03     97.10     97.16     97.22     97.28
WSL   1000     97.34     97.39     97.44     97.49     97.53     97.60
WSL   1000     97.67     97.73     97.79     97.84     97.90     97.95
CAL1  1000     96.78     107.4
VEL1  1000                          1.79 1.49 2.29 0.74 0.80 0.54 1.73
VEL1  1000 1.12 0.61 1.01 1.70 0.99 0.34 0.24 0.87 0.78 1.29 1.25 0.00
VEL1  1000 2.50 3.41 4.13 4.23 3.73 3.22 1.18 2.42 2.85 2.57 2.38 1.79
VEL1  1000 1.24 0.88 0.00 0.00
CAL2  1000     96.60      63.3
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.24     220.0
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-A

Site/TR: 04-SFK-RF2

Habitat Type: Riffle

River Kilometer: 24.68

Stream South Fork Koktuli River
Site: 04-SFK-RF2
Habitat Type: Riffle

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1st	7/17/2005	98.43	96.74	97.94
2nd	8/11/2005	98.43	96.74	97.93
3rd	9/8/2005	98.43	96.75	97.94
4th	7/6/2006	98.43	96.73	98.05
5th	4/12/2007	98.43	96.71	97.90

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes between BM and HP were within ±0.03ft from 2005 to 2007.
(c) Small relative elevation changes suggest BM and HP were stable between 2005 and 2006.
(4) Photos of 4/12/07 trip showed the site was covered in snow and ice.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/17/2005	94.94
8/11/2005	94.48
9/8/2005	95.90
7/6/2006	94.88
4/12/2007	94.36

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/17/2005	
8/11/2005	76.8
9/8/2005	404.6
7/6/2006	125.4
4/12/2007	54.0

No discharge was surveyed during 7/17/07 site visit.

Photos of 4/12/07 site visit showed ice on banks and waters edge. Hydraulics may be impacted by ice.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/17/2005	0.159%	112.9
8/11/2005	0.330%	118.1
9/8/2005	0.140%	128.2
7/6/2006	0.250%	140.1
4/12/2007	0.373%	142

The slope S=0.330% of 8/11/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/17/2005	93.68
8/11/2005	93.68
9/8/2005	93.60
7/6/2006	93.58
4/12/2007	93.66
Invert	93.68
SZF	93.68

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

8/8/08: Initial WSE calibration using IFG4 shows the Froude number decreases as flow increases. This may have been caused by the flood plain near stage 94.8ft between two of the measured WSEs. To more accurately model the WSE, it is determined MANSQ be used because IFG4 does not take into account the abrupt bathymetric change as WSEs vary across the floodplain stage. To best characterize the WSE~Q rating curve relationship, MANSQ method was applied to different simulation flow ranges, as detailed in the following table As the result of this application (multiple ranges of flow), a composite rating curve was developed to describe the relationship between flows and WSEs for the entire range of simulation flows. The procedures for the composite curve is shown as follows.

	WSE (ft)			
Simulation Q (cfs)	Q=76.8 (β=-0.25)	Q=125.4 (β=0.0)	Q=404.6 (β=-1.0)	Composite
30	94.25	94.27	94.67	94.25
40	94.31	94.35	94.86	94.31
60	94.41	94.48	95.05	94.41
76.8	94.48	94.58	95.13	94.48
80	94.50	94.60	95.14	94.51
100	94.57	94.70	95.22	94.63
125.4	94.66	94.88	95.31	94.88
150	94.75	95.02	95.38	95.05
180	94.87	95.11	95.46	95.18
210	94.99	95.19	95.54	95.30
240	95.05	95.27	95.60	95.41
270	95.10	95.35	95.66	95.51
300	95.15	95.42	95.72	95.61
340	95.21	95.52	95.79	95.73
380	95.27	95.60	95.86	95.84
404.6	95.31	95.66	95.90	95.90
440	95.35	95.73	95.95	95.95
480	95.41	95.81	96.01	96.01
520	95.46	95.89	96.07	96.07
560	95.50	95.97	96.12	96.12
600	95.55	96.04	96.17	96.17

calibration notes

640	95.59	96.11	96.24	96.24
680	95.64	96.18	96.29	96.29
720	95.68	96.27	96.34	96.34
760	95.72	96.33	96.38	96.38
800	95.76	96.40	96.42	96.42
850	95.81	96.48	96.47	96.47
900	95.86	96.55	96.52	96.52
950	95.90	96.63	96.56	96.56
1000	95.95	96.70	96.61	96.61

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft)	calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR-1	TR-1	TR-1	
1st	7/17/2005		94.94			
2nd	8/11/2005	76.8	94.48	94.48	0.00	MANSQ
3rd	9/8/2005	404.6	95.90	95.90	0.00	MANSQ
4th	7/6/2006	125.4	94.88	94.88	0.00	MANSQ
5th	4/12/2007	54.0	94.36			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharge was measured on 7/17/05.
(d) Photos of 4/12/07 showed thick ice on banks and waters edge. Ice near shore had collapsed and fallen into the water, which should have backed up the WSE. Therefore the hydraulics will not be included in the modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 76.8cfs to 404.6cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

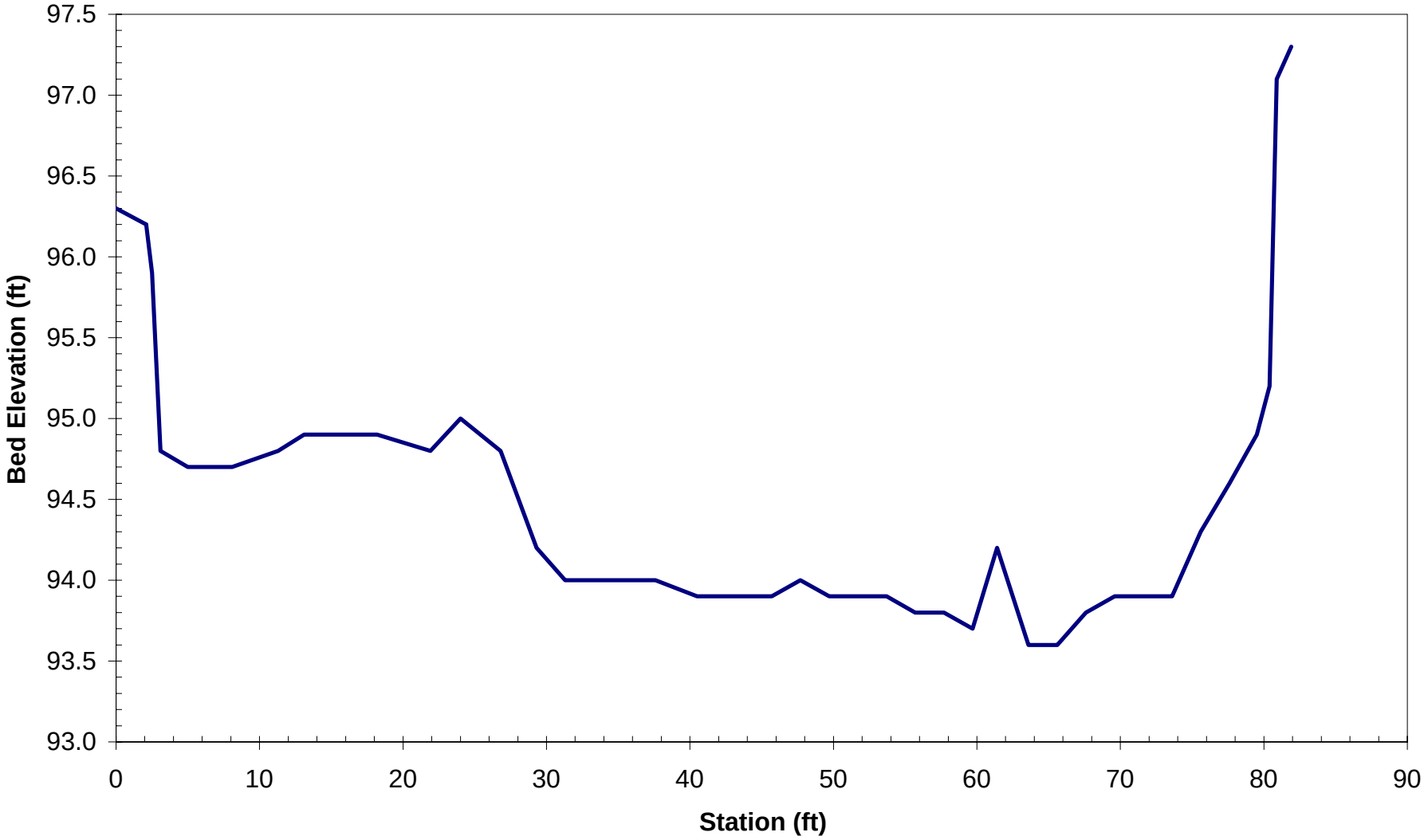
Survey Date	Q (cfs)	WUA (Y/N)
7/17/2005		
8/11/2005	76.8	Y
9/8/2005	404.6	Y
7/6/2006	125.4	Y
4/12/2007	54.0	

(4) Hydraulic Calibration Results:

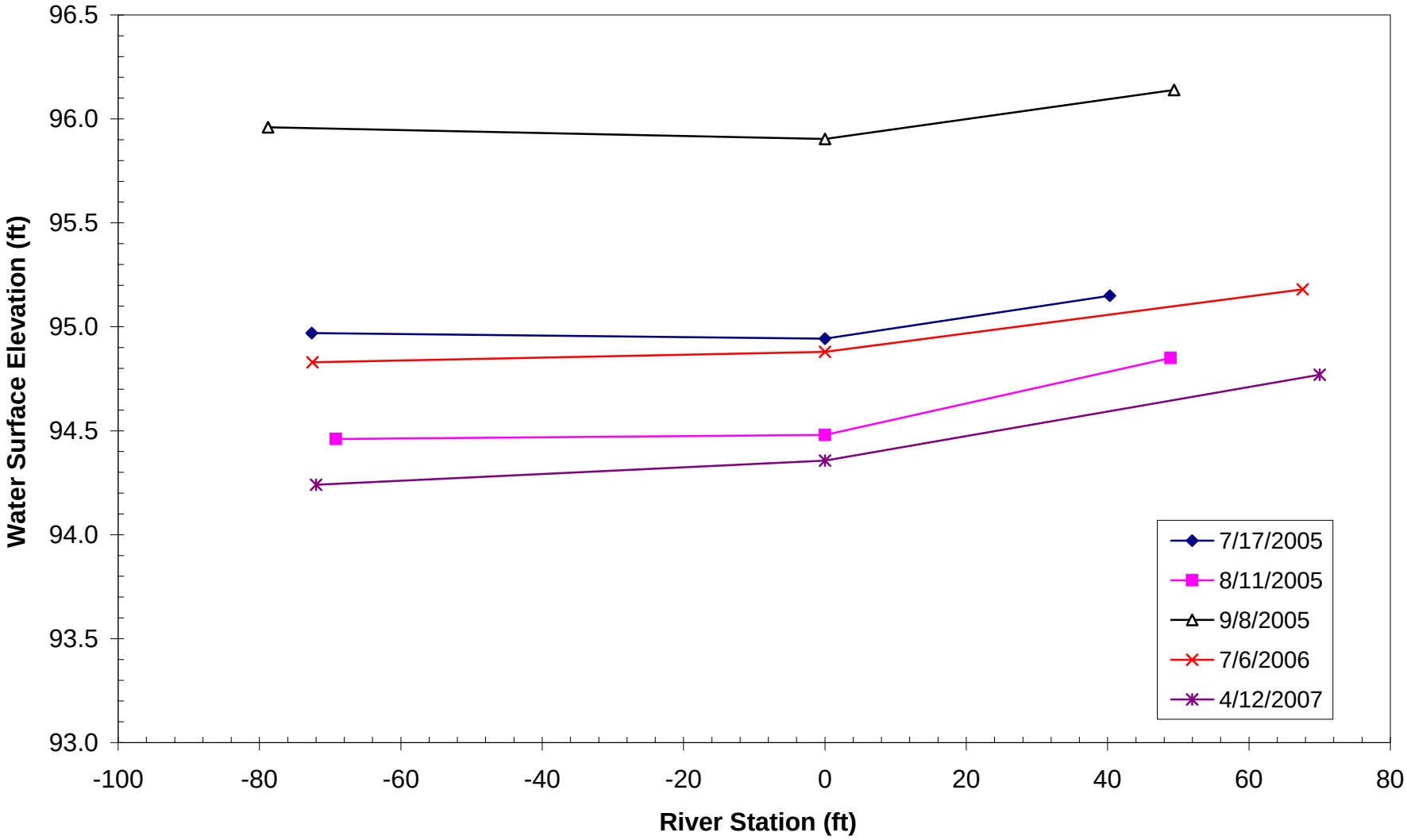
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends as $Q < Q_{low}$=76.8cfs and as $Q > Q_{high}$=404.6cfs, the flow with stage about 1.0ft higher than the flood plain.
The Fr and n values, however, vary in opposite trends with flows between Q_{low} and Q_{high}. Since this only occurs within the range of the three measured flows, such trends reflects the actual hydraulic changes as flow varies.

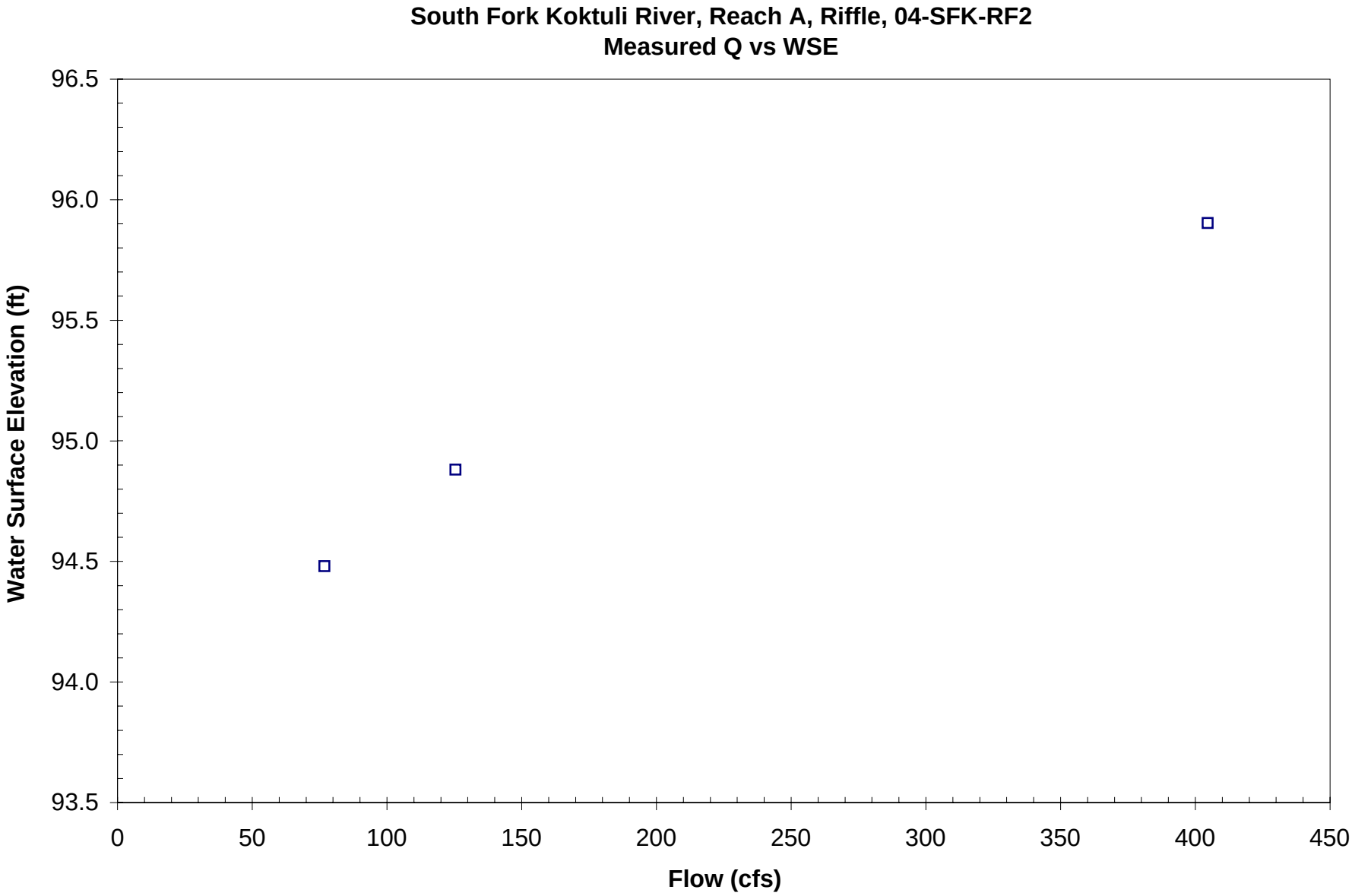
calibration notes

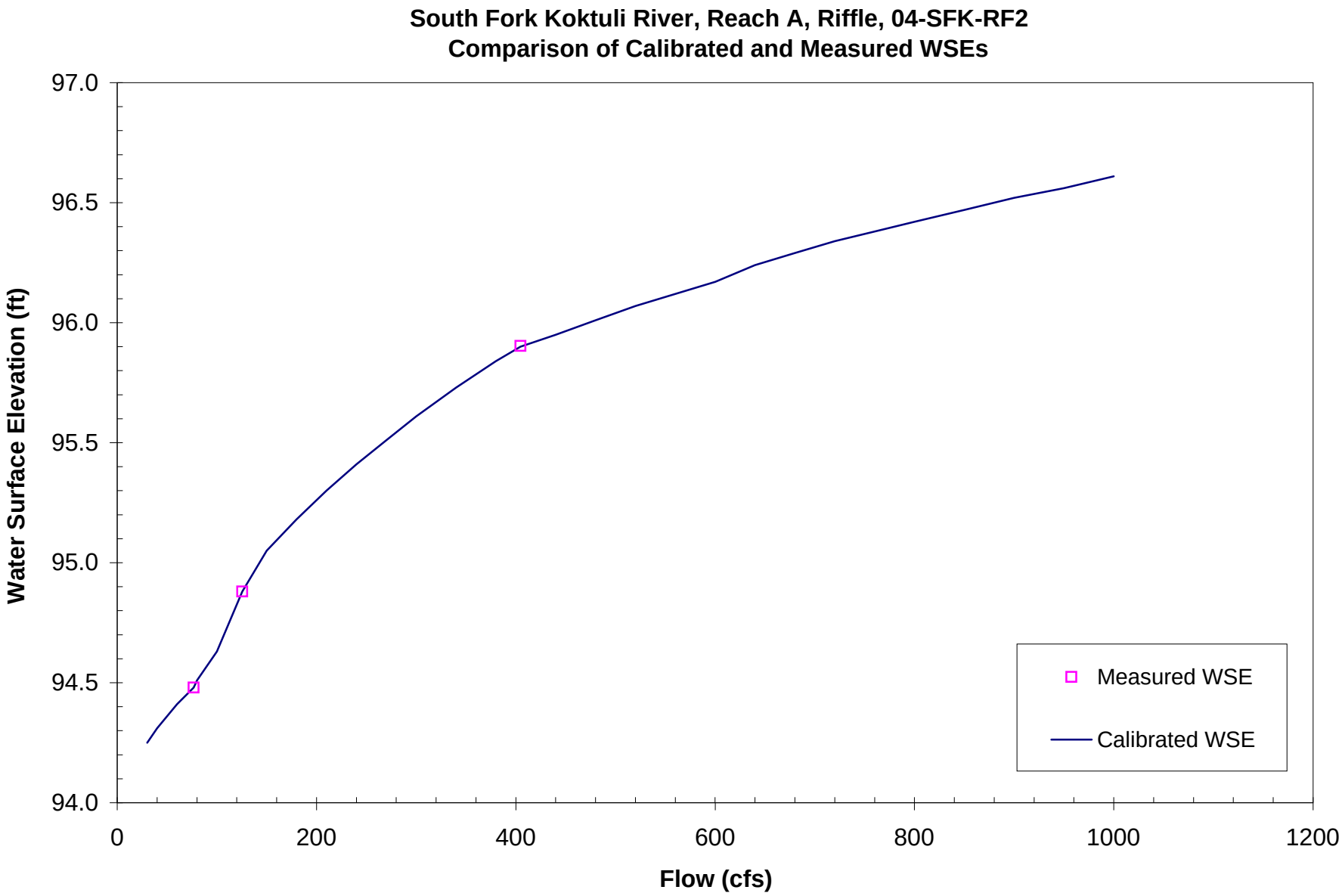
South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF2
Measured Transect Profile



South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF2
Longitudinal Water Surface Elevation Profiles



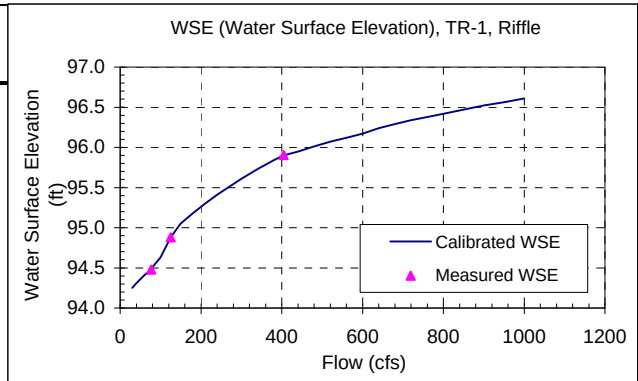

South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF2
Measured Q vs WSE
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
93.5
0
50
100
150
200
250
300
350
400
450
Flow (cfs)

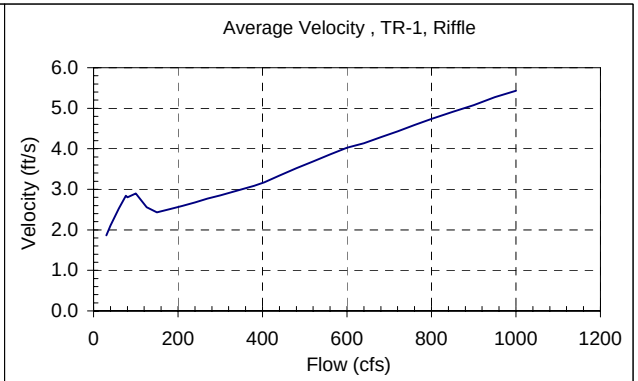

South Fork Koktuli River, Reach A, Riffle, 04-SFK-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
94.5
94.0
0
200
400
600
800
1000
1200
Flow (cfs)
Measured WSE
Calibrated WSE

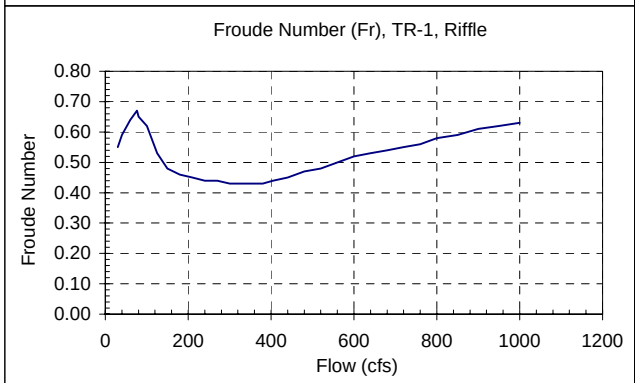
Stream: South Fork Koktuli River
Site Name: 04-SFK-RF2
Date: 9/8/2005
Calibration Flow: Q(9/8/2005)

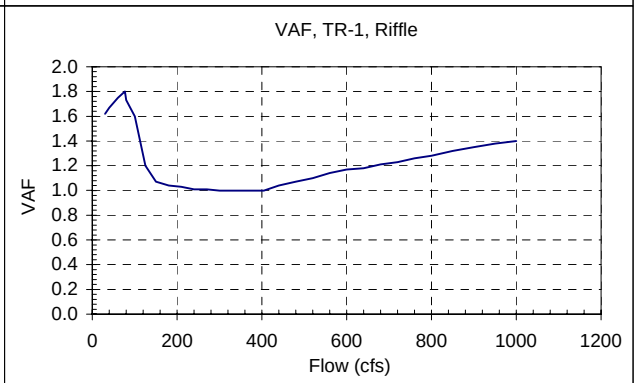
Reach: A
Site #: 2
Transect: 1
Habitat: Riffle

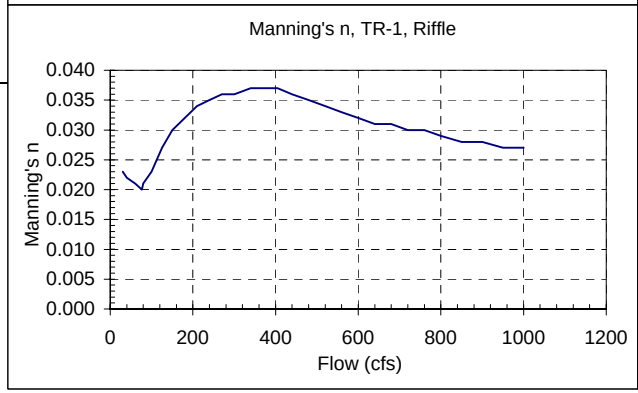
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	94.25	0.55	1.86	1.62	0.023	46.5
40	94.31	0.59	2.11	1.67	0.02	47.1
60	94.41	0.64	2.53	1.75	0.02	48.2
76.8	94.48	0.67	2.84	1.80	0.02	49.0
80	94.51	0.65	2.80	1.73	0.02	49.3
100	94.63	0.62	2.90	1.60	0.02	50.7
125.4	94.88	0.53	2.56	1.20	0.03	67.6
150	95.05	0.48	2.43	1.07	0.03	77.5
180	95.18	0.46	2.51	1.04	0.03	78.1
210	95.30	0.45	2.59	1.03	0.03	78.4
240	95.41	0.44	2.68	1.01	0.04	78.6
270	95.51	0.44	2.77	1.01	0.04	78.9
300	95.61	0.43	2.85	1.00	0.04	79.1
340	95.73	0.43	2.97	1.00	0.04	79.3
380	95.84	0.43	3.09	1.00	0.04	79.6
404.6	95.90	0.44	3.17	1.00	0.04	79.7
440	95.95	0.45	3.34	1.04	0.04	79.8
480	96.01	0.47	3.52	1.07	0.04	80.0
520	96.07	0.48	3.69	1.10	0.03	80.2
560	96.12	0.50	3.86	1.14	0.03	80.3
600	96.17	0.52	4.03	1.17	0.03	80.5
640	96.24	0.53	4.14	1.18	0.03	82.1
680	96.29	0.54	4.29	1.21	0.03	82.7
720	96.34	0.55	4.43	1.23	0.03	82.7
760	96.38	0.56	4.59	1.26	0.03	82.8
800	96.42	0.58	4.74	1.28	0.03	82.8
850	96.47	0.59	4.91	1.32	0.03	82.9
900	96.52	0.61	5.08	1.35	0.03	82.9
950	96.56	0.62	5.27	1.38	0.03	83.0
1000	96.61	0.63	5.43	1.40	0.027	83.0

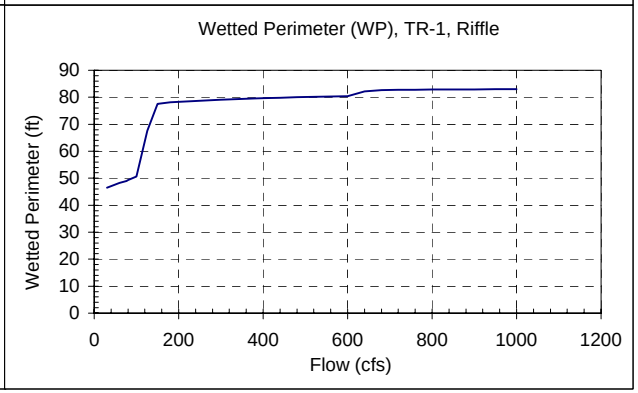




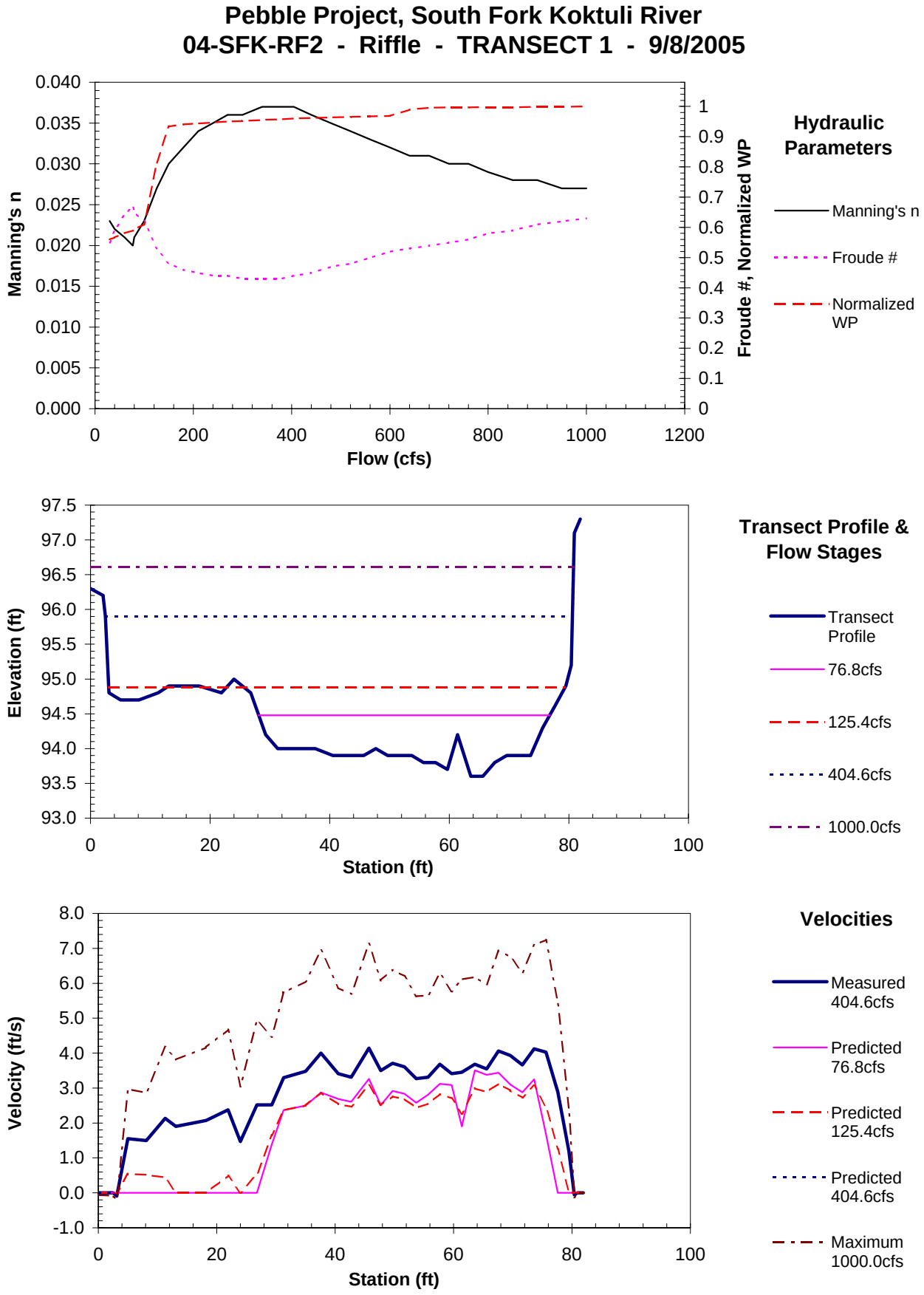








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-RF2  09/08/05
RIFFLE                     0905Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  30.0
QARD  40.0
QARD  60.0
QARD  76.8
QARD  80.0
QARD 100.0
QARD 125.4
QARD 150.0
QARD 180.0
QARD 210.0
QARD 240.0
QARD 270.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 404.6
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
XSEC  1000     1000. 1.0     93.68    .00330
      1000   .096.26  2.196.18  2.595.90  3.194.80  5.094.69  8.194.69
      1000 11.394.80 13.194.90 18.294.90 21.994.80 24.095.00 26.894.80
      1000 29.394.19 31.394.00 35.094.00 37.694.00 40.593.90 42.793.90
      1000 45.793.90 47.794.00 49.793.90 51.793.90 53.793.90 55.793.80
      1000 57.793.80 59.793.69 61.494.19 63.693.59 65.693.59 67.693.80
      1000 69.693.90 71.693.90 73.693.90 75.694.30 77.694.59 79.594.90
      1000 80.495.19 80.997.12 81.997.33
NS    1000      22.9      22.9      22.9      22.9      25.8      25.8
NS    1000      23.7      34.7      35.7      34.7      73.8      62.8
NS    1000      64.6      43.6      43.8      43.8      43.8      42.8
NS    1000      43.8      43.6      34.6      43.6      43.6      43.6
NS    1000      43.6      43.6      77.9      54.6      45.6      46.7
NS    1000      54.6      45.6      43.9      43.8      45.6      42.6
NS    1000      22.9      22.9      22.9
WSL   1000     94.25     94.31     94.41     94.48     94.51     94.63
WSL   1000     94.88     95.05     95.18     95.30     95.41     95.51
WSL   1000     95.61     95.73     95.84     95.90     95.95     96.01
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     96.07     96.12     96.17     96.24     96.29     96.34
WSL   1000     96.38     96.42     96.47     96.52     96.56     96.61
CAL1  1000     95.90     404.6
VEL1  1000           0.00-0.09 1.55 1.50 2.13 1.90 2.07 2.38 1.47 2.52
VEL1  1000 2.52 3.30 3.48 4.00 3.41 3.31 4.14 3.50 3.71 3.61 3.27 3.31
VEL1  1000 3.68 3.41 3.45 3.68 3.55 4.06 3.93 3.66 4.12 4.03 2.89 1.19
VEL1  1000-0.06
CAL2  1000     94.88     125.4
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     94.48      76.8
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: South Fork Koktuli River

Reach: SFK-B

SFK-B Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
04-SFK-RN2	24.91	76.1	403.2	123.4		97.26	98.33	97.55		0.01	0.01	-0.02		IFG4
04-SFK-IC2	25.67	70.2	435.6	118.7		95.61	96.77	95.88		0.00	0.00	-0.01		IFG4
05-SFK2-RF1	26.22	195.3	71.6	109.2		98.99	98.51	98.62		-0.02	-0.03	0.04		IFG4
05-SFK2-RN4	27.03	182.5	59.2	102.0	34.4	98.18	97.29	97.61	96.96	-0.02	-0.02	0.04	-0.01	IFG4
05-SFK2-IC1	27.42	188.1	58.2	99.1	25.2	96.75	96.03	96.17	95.58	0.04	-0.11	0.07	0.01	IFG4
05-SFK2-RN7	28.07	191.1	52.4	91.9	24.1	96.70	95.95	96.20	95.65	-0.03	0.00	0.03	-0.01	IFG4
05-SFK2-RN6	29.24	185.8	44.2	80.6	16.1	98.70	97.77	98.01	97.10	0.02	-0.10	0.05	0.02	IFG4
05-SFK2-RN3	30.19	163.9	36.8	80.5		96.94	96.29	96.55		-0.02	-0.02	0.05		IFG4
05-SFK2-RN5	31.37	177.3	33.2	70.8	7.7	96.89	95.84	96.24	95.44	-0.02	0.03	-0.01	-0.01	IFG4
05-SFK2-RN2	31.75	151.0	34.7	70.9		98.56	97.74	98.07		0.00	0.00	0.01		IFG4
05-SFK2-PL1	33.16	13.1	212.6	41.3		95.16	96.85	95.79		0.01	0.03	-0.04		IFG4
05-SFK2-RN1	33.80	121.5	11.1	47.2		97.45	96.62	96.96		-0.04	-0.01	0.04		IFG4

* RK is an abbreviation for River Kilometer

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 04-SFK-RN2

Habitat Type: Run

River Kilometer: 24.91

Stream: South Fork Koktuli River
Reach: B
Site: 04-SFK-RN2
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/17/2005	100.00	101.33	99.25
2nd	8/11/2005	100.00	101.32	99.26
3rd	9/8/2005	100.00	101.32	99.25
4th	7/6/2006	100.00	101.38	99.27
5th	4/12/2007	100.00	101.25	

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and TP were within 0.02ft.
(c) Small changes of elevations indicated BM & TP were stable during the 2005-2006 period.
(d) Survey results of 4/12/07 were affected by ice and not included in modeling.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/17/2005	97.63
8/11/2005	97.26
9/8/2005	98.33
7/6/2006	97.55
4/12/2007	96.80

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/17/2005	
8/11/2005	76.1
9/8/2005	403.2
7/6/2006	123.4
4/12/2007	55.1

No discharge measurement on 7/17/05

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/17/2005	0.316%	142.4
8/11/2005	0.176%	125.3
9/8/2005	0.330%	194.2
7/6/2006	0.274%	117
4/12/2007	0.175%	97

The slope S=0.176% of 8/11/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/17/2005	95.47
8/11/2005	95.56
9/8/2005	95.43
7/6/2006	95.35
4/12/2007	95.10
Invert	95.56
SZF	95.56

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Bed profile comparison shows that 4/12/07 has a lower invert, which may have been the result of scour due to ice. Data of this date not used for analysis.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	7/17/2005		97.63			
2nd	8/11/2005	76.1	97.26	97.27	0.01	IFG4
3rd	9/8/2005	403.2	98.33	98.34	0.01	IFG4
4th	7/6/2006	123.4	97.55	97.53	-0.02	IFG4
5th	4/12/2007	55.1	96.80			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range.
(c) No discharge was measured on 7/17/05.
(d) Photos of 4/12/07 survey showed ice/snow on banks and waters edge. Hydraulics may have been impacted by the ice/snow and thus were not be used in the modeling analysis.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 76.1cfs to 403.2cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

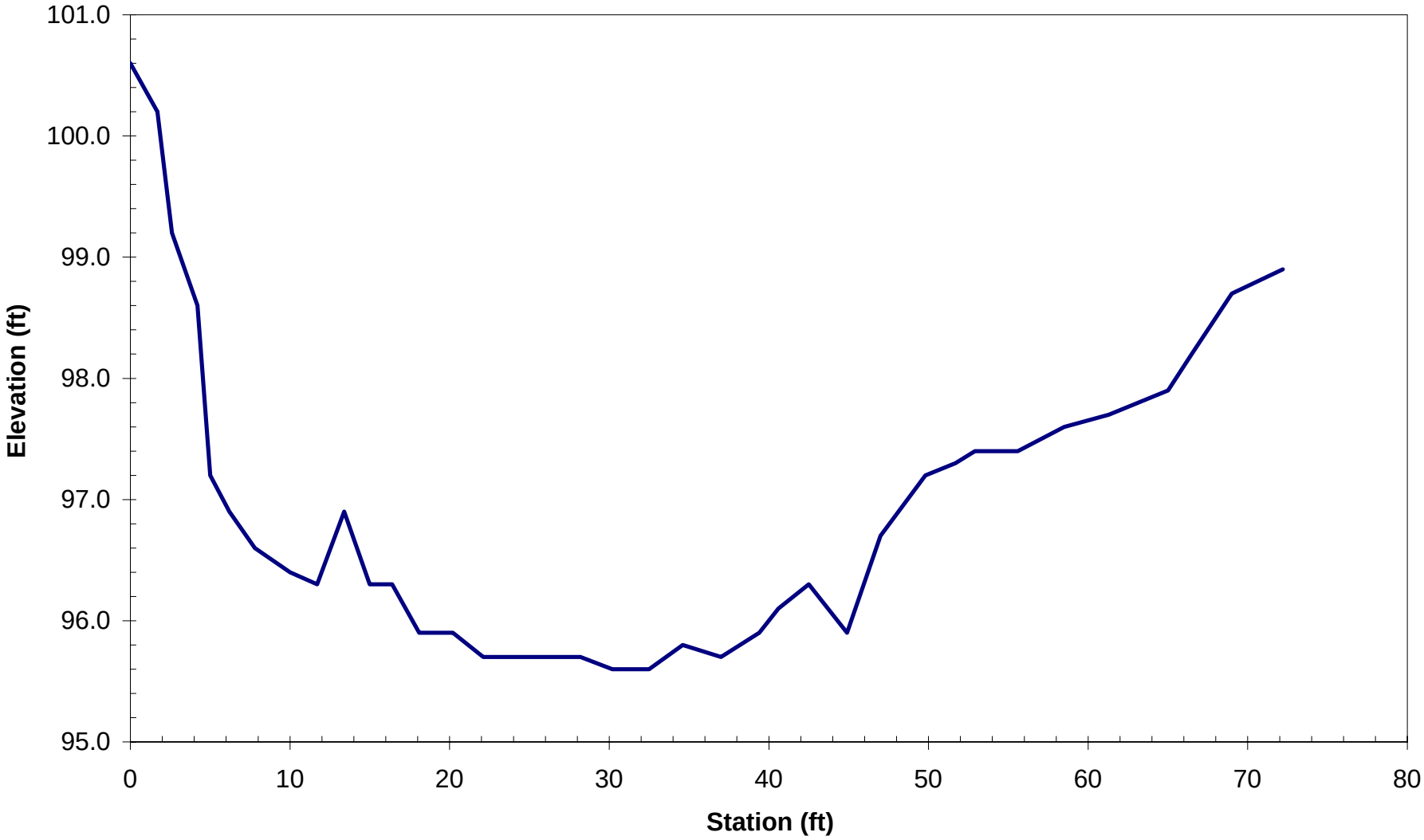
Survey Date	Q (cfs)	WUA (Y/N)
7/17/2005		
8/11/2005	76.1	Y
9/8/2005	403.2	Y
7/6/2006	123.4	Y
4/12/2007	55.1	

(4) Hydraulic Calibration Results:

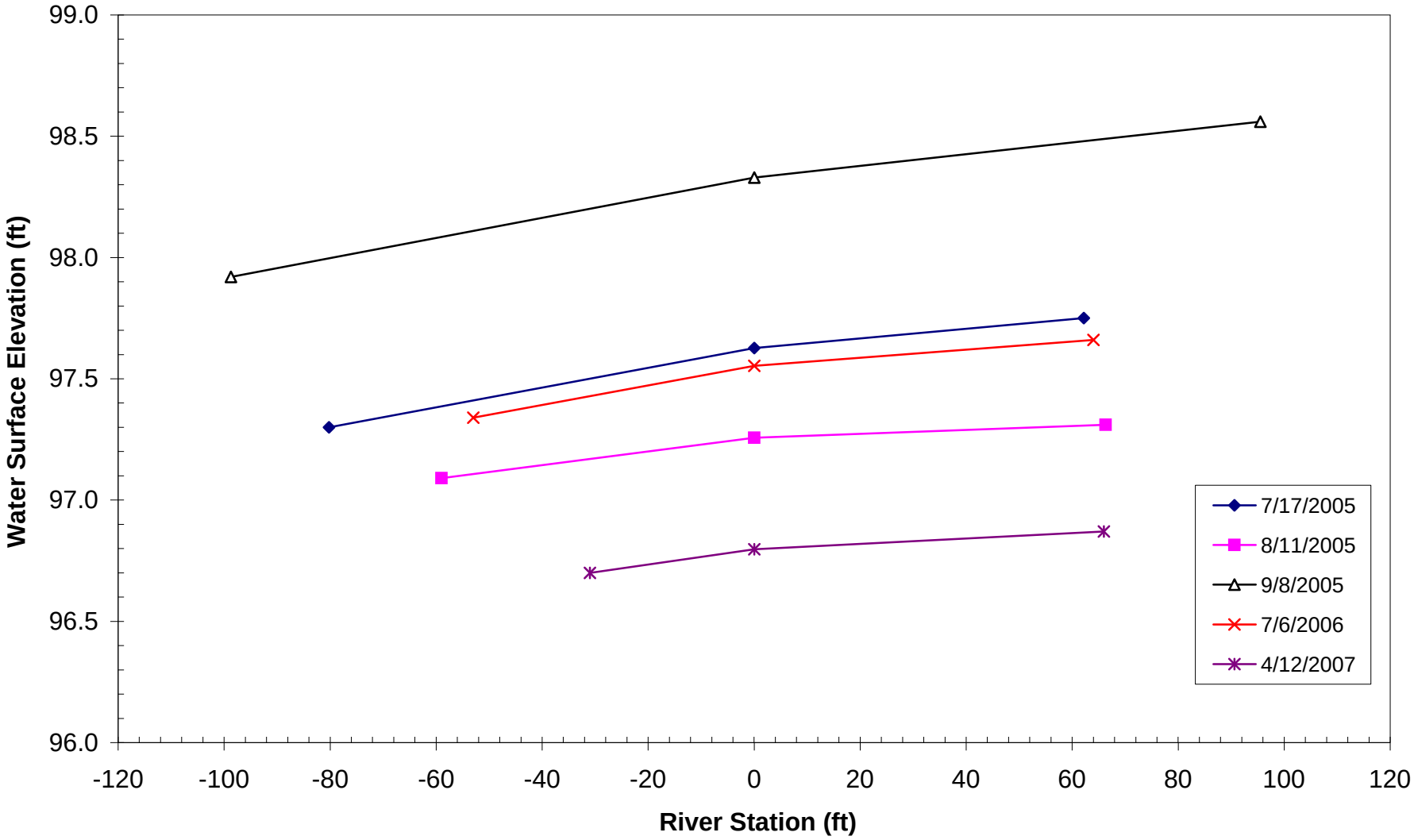
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends.

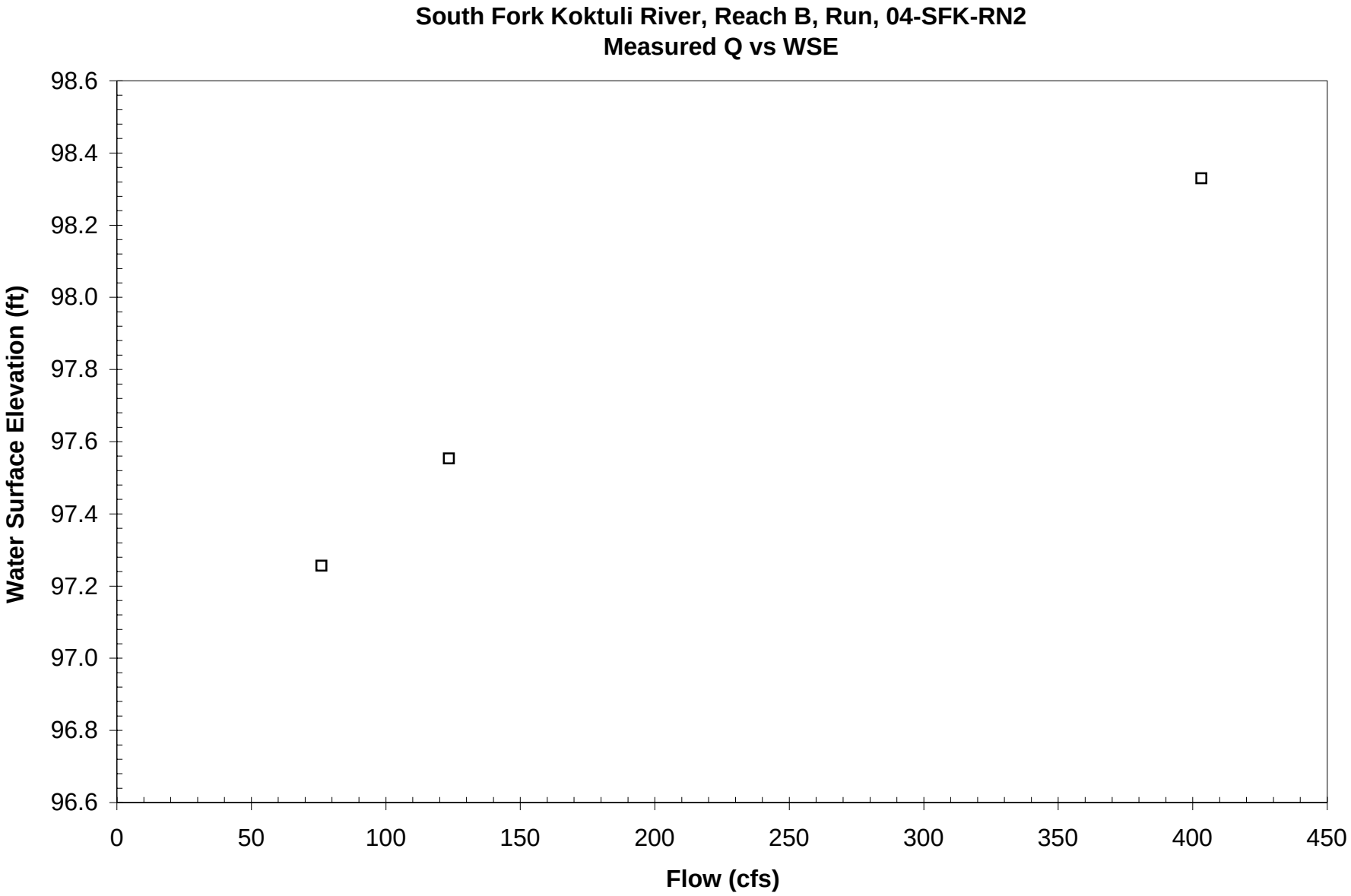
calibration notes

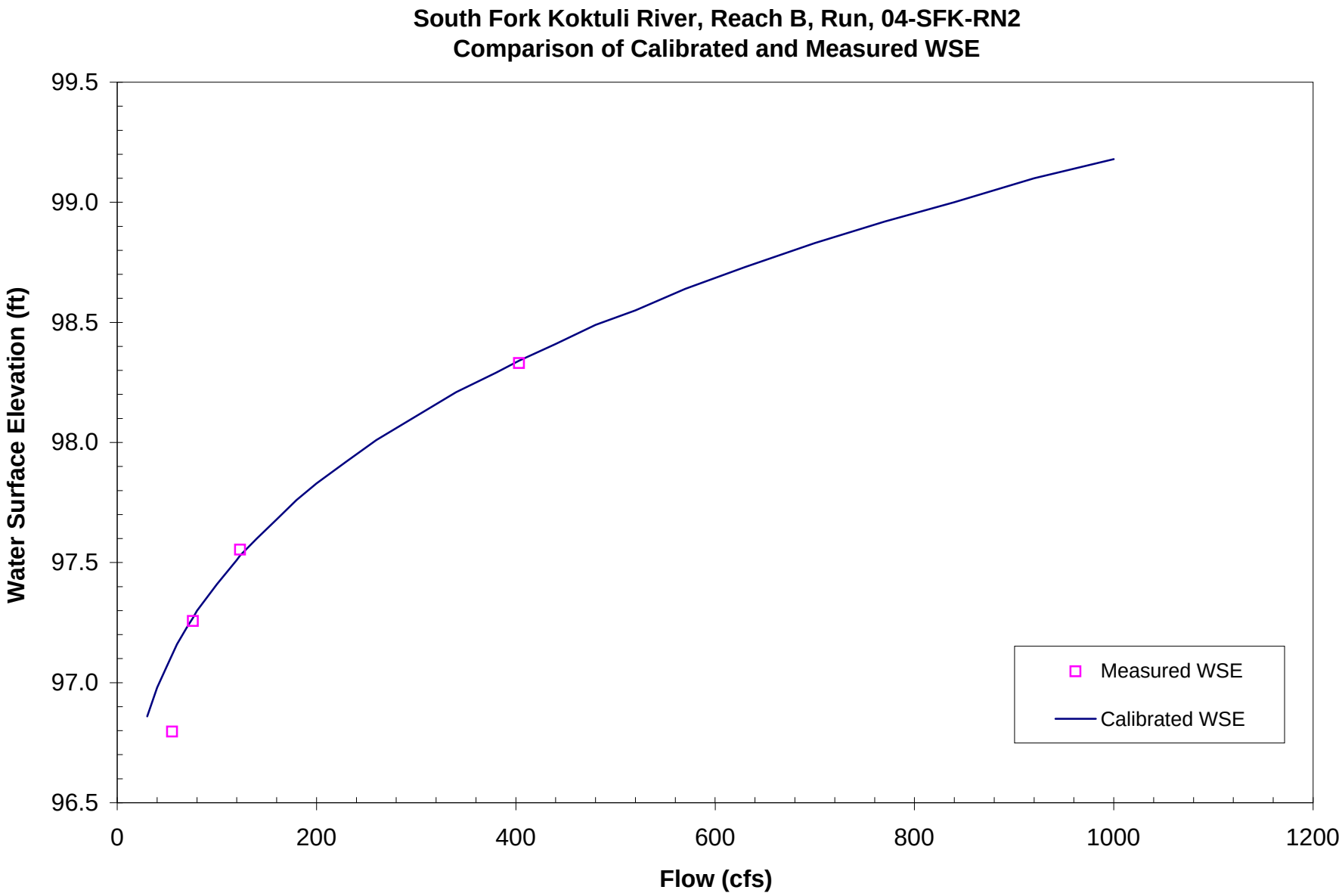
South Fork Koktuli River, Reach B, Run, 04-SFK-RN2
Measured Transect Profile



South Fork Koktuli River, Reach B, Run, 04-SFK-RN2
Longitudinal Water Surface Elevation Profiles

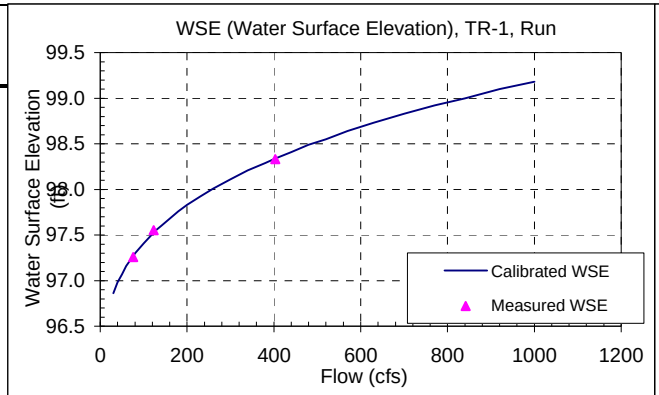


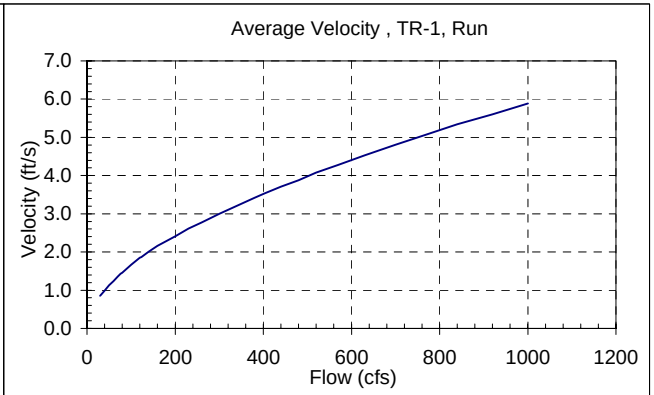

South Fork Koktuli River, Reach B, Run, 04-SFK-RN2
Measured Q vs WSE
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
0
50
100
150
200
250
300
350
400
450
Flow (cfs)

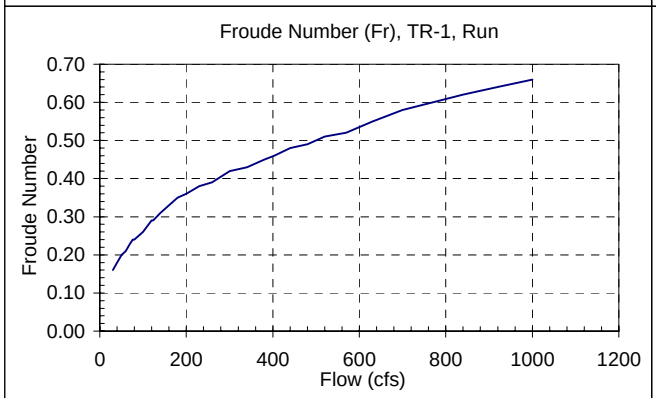

South Fork Koktuli River, Reach B, Run, 04-SFK-RN2
Comparison of Calibrated and Measured WSE
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
0
200
400
600
800
1000
1200
Flow (cfs)
Measured WSE
Calibrated WSE

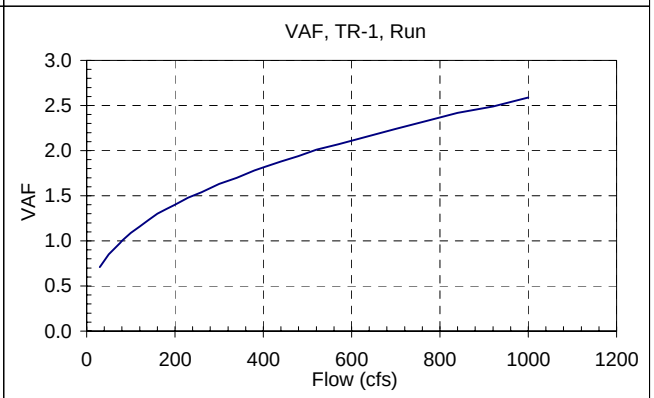
Stream: South Fork Koktuli River **Reach:** B
Site Name: 04-SFK-RN2 **Site #:** 2
Date: 8/11/2005 **Transect:** 1
Calibration Flow: Q(8/11/2005) **Habitat:** Run

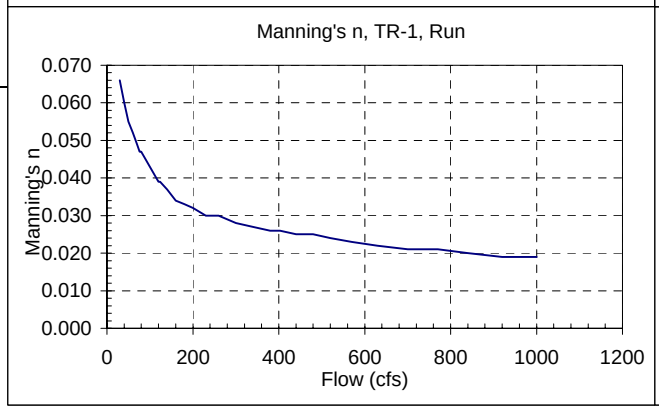
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	96.86	0.16	0.85	0.71	0.066	41.7
40	96.98	0.18	0.99	0.78	0.06	43.4
50	97.07	0.20	1.13	0.85	0.06	44.4
60	97.16	0.21	1.24	0.90	0.05	45.4
70	97.23	0.23	1.36	0.95	0.05	46.9
76.1	97.27	0.24	1.43	0.98	0.05	47.5
80	97.30	0.24	1.46	1.00	0.05	47.8
100	97.41	0.26	1.67	1.09	0.04	48.6
120	97.51	0.29	1.85	1.16	0.04	52.7
123.4	97.53	0.29	1.87	1.17	0.04	53.1
140	97.60	0.31	2.01	1.23	0.04	54.5
160	97.68	0.33	2.16	1.30	0.03	57.9
180	97.76	0.35	2.29	1.35	0.03	59.1
200	97.83	0.36	2.41	1.40	0.03	60.2
230	97.92	0.38	2.61	1.48	0.03	61.6
260	98.01	0.39	2.77	1.54	0.03	62.1
300	98.11	0.42	3.00	1.63	0.03	62.7
340	98.21	0.43	3.21	1.70	0.03	63.3
380	98.29	0.45	3.42	1.78	0.03	63.8
403.2	98.34	0.46	3.53	1.82	0.03	64.1
440	98.41	0.48	3.71	1.88	0.03	64.5
480	98.49	0.49	3.88	1.94	0.03	65.0
520	98.55	0.51	4.08	2.01	0.02	65.4
570	98.64	0.52	4.28	2.07	0.02	65.9
630	98.73	0.55	4.53	2.15	0.02	66.6
700	98.83	0.58	4.81	2.24	0.02	69.2
770	98.92	0.60	5.07	2.33	0.02	70.5
840	99.00	0.62	5.34	2.42	0.02	70.8
920	99.10	0.64	5.60	2.49	0.02	71.1
1000	99.18	0.66	5.89	2.59	0.019	71.3

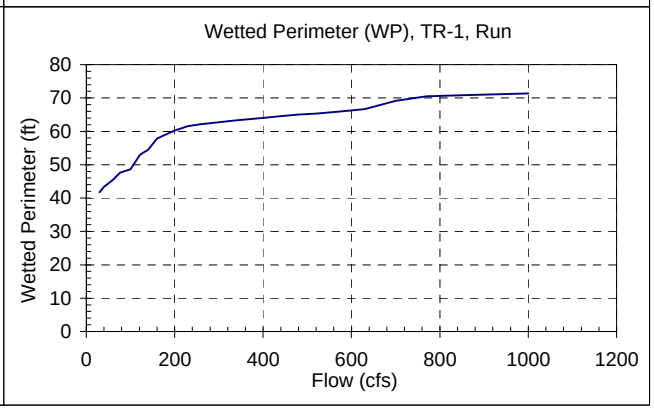




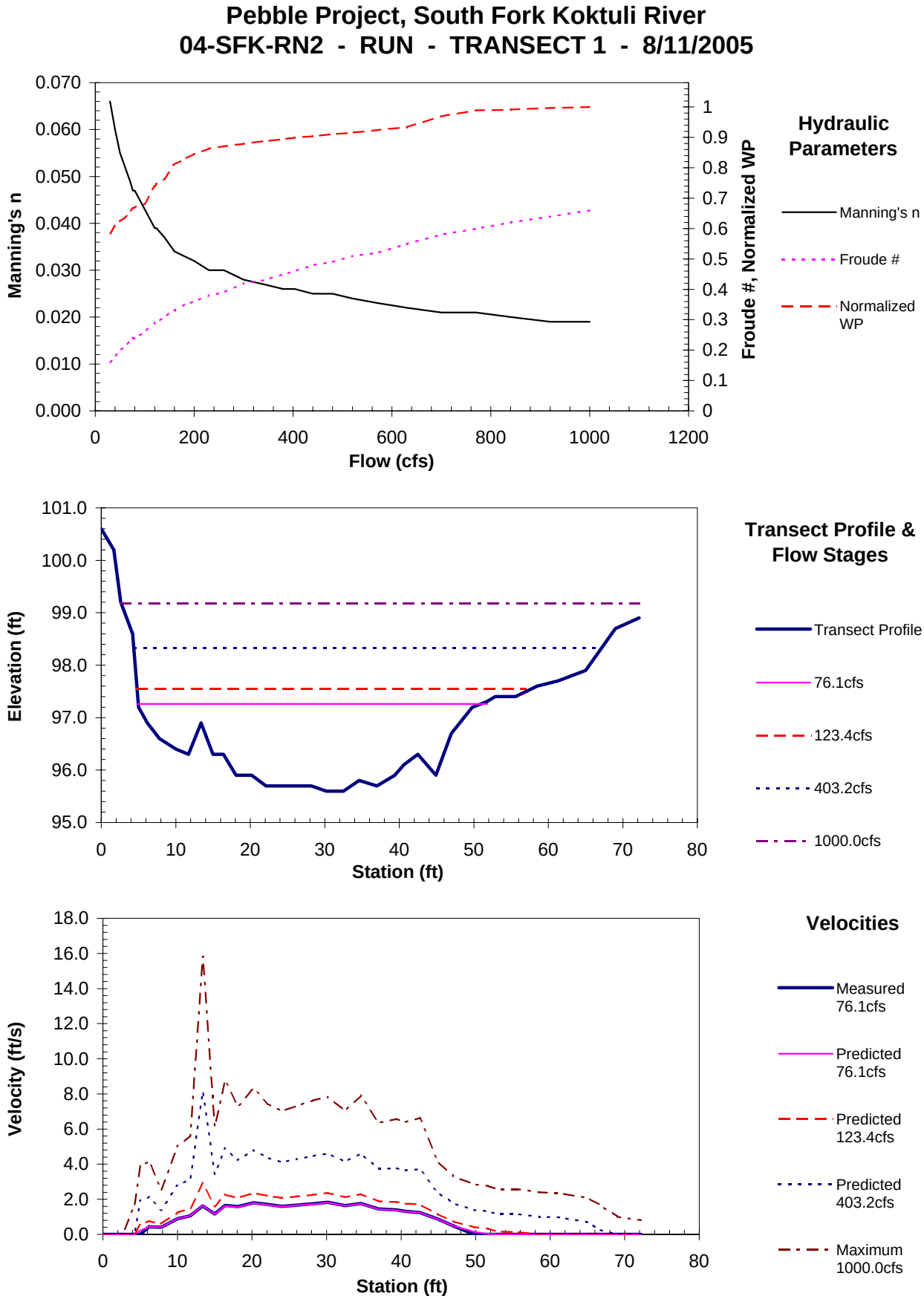








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-RN2  08/11/05
RUN                        0805Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  76.1
QARD  80.0
QARD 100.0
QARD 120.0
QARD 123.4
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 300.0
QARD 340.0
QARD 380.0
QARD 403.2
QARD 440.0
QARD 480.0
QARD 520.0
QARD 570.0
QARD 630.0
QARD 700.0
QARD 770.0
QARD 840.0
QARD 920.0
QARD1000.0
XSEC  1000     1000. 1.0     95.56    .00176
      1000   .0100.6  1.7100.2  2.699.18  4.298.63  5.097.16  6.296.95
      1000  7.896.55 10.096.36 11.796.26 13.496.95 15.096.26 16.496.26
      1000 18.195.86 20.295.86 22.195.66 24.095.66 26.095.66 28.295.66
      1000 30.295.55 32.595.55 34.695.76 37.095.66 39.495.95 40.696.05
      1000 42.596.26 44.995.95 47.096.66 49.897.16 51.797.26 52.997.44
      1000 55.697.45 58.597.61 61.397.66 65.097.91 66.598.23 69.098.75
      1000 72.298.87
NS    1000      22.9      22.9      22.9      22.9      43.6      74.6
NS    1000      64.7      57.6      75.6      76.9      76.8      76.8
NS    1000      74.6      56.6      56.7      67.6      54.6      65.8
NS    1000      65.8      65.8      62.7      65.8      65.6      65.6
NS    1000      56.7      56.7      56.7      54.6      42.6      42.6
NS    1000      45.6      45.6      42.6      23.8      22.9      22.9
NS    1000      22.9
WSL   1000     96.86     96.98     97.07     97.16     97.23     97.27
WSL   1000     97.30     97.41     97.51     97.53     97.60     97.68
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     97.76     97.83     97.92     98.01     98.11     98.21
WSL   1000     98.29     98.34     98.41     98.49     98.55     98.64
WSL   1000     98.73     98.83     98.92     99.00     99.10     99.18
CAL1  1000     97.26      76.1
VEL1  1000                     0.00 0.43 0.41 0.90 1.06 1.63 1.16 1.65
VEL1  1000 1.58 1.80 1.70 1.60 1.67 1.74 1.83 1.64 1.76 1.45 1.39 1.31
VEL1  1000 1.25 0.88 0.49 0.00 0.00
VEL1  1000
CAL2  1000     98.33     403.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.55     123.4
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 04-SFK-IC2

Habitat Type: Island Complex

River Kilometer: 25.67

Stream: South Fork Koktuli River
Reach: B
Site: 04-SFK-IC2
Habitat Type: Island Complex

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/17/2005	100.00	97.97	98.68
2nd	8/12/2005	100.00	97.97	98.66
3rd	9/8/2005	100.00	97.97	98.67
4th	6/29/2006	100.00	98.11	98.70
5th	7/6/2006	100.00	98.50	98.69
6th	4/12/2007	100.00	98.64	98.69

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and TP were within ±0.02ft over the 2005-2006 period. Small changes of elevations suggested both BM and TP were stable during that period.
(c) The relative elevation changes showed HP continued to raise from 2005 to 2007, which may be caused by frost heave No corrections for WSE's were needed because the datums were based on BM, not HP.

calibration notes

Measured WSE:

This transect is an island complex with three channels (Left, Center, Right). Each channel has multiple measured WSEs on both waters edge and maybe an additional one at center of the channel. Average of all measured WSEs in each channel is used as the representative WSE of that channel.

Date	WSE (ft)		
	Left	Center (main)	Right
7/17/2005	95.95	95.94	95.85
8/12/2005	95.71	95.61	95.48
9/8/2005	96.57	96.77	96.71
6/29/2006	96.03	95.99	95.91
7/6/2006	95.94	95.88	95.75
4/12/2007	95.64	95.48	95.44

WSEs of the center channel are used for modeling because it carries the majority of water. The bed profiles of the left and right channels were adjusted based on their WSE differences from the center channel.

Discharge:

Measured discharges of each channel are listed in the following table.

Date	Flow (cfs)			
	Left	Center (main)	Right	Total
7/17/2005				
8/12/2005	22.0	44.7	3.6	70.2
9/8/2005	135.9	232.7	67.0	435.6
6/29/2006				
7/6/2006	37.4	68.7	12.5	118.7
4/12/2007	16.3	26.4	0.5	43.2

No discharges were measured during the 7/17/05 and 6/29/06 site visits.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (ft/ft)		
	Left	Center (main channel)	Right
7/17/2005	0.407%	0.228%	0.12%
8/12/2005	0.179%	0.160%	0.16%
9/8/2005	0.506%	0.186%	0.24%
6/29/2006	0.425%	0.281%	0.22%
7/6/2006	0.417%	0.331%	0.44%
4/12/2007	0.504%	0.329%	NA

The slope S=0.160% of 8/12/2005 survey was used for hydraulic modeling.

Date	WSE Slope Distance (ft)		
	Left	Center	Right
7/17/2005	110.5	175.4	60.3
8/12/2005	61.5	27.5	83.6
9/8/2005	142.4	113.1	89
6/29/2006	127	142.3	82.1
7/6/2006	144.12	127	89
4/12/2007	136.8	60	NA

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/17/2005	94.22
8/12/2005	94.21
9/8/2005	94.27
6/29/2006	94.36
7/6/2006	94.18
4/12/2007	94.08
Invert	94.27
SZF	94.27

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Bed profiles were surveyed on 7/17/05 and 6/29/06, but their inverts were not used to determine SZF because there were no flows measured on these two dates.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	7/17/2005		95.94			
2nd	8/12/2005	70.2	95.61	95.61	0.00	IFG4
3rd	9/8/2005	435.6	96.77	96.77	0.00	IFG4
4th	6/29/2006		95.99			
5th	7/6/2006	118.7	95.88	95.87	-0.01	IFG4
6th	4/12/2007	43.2	95.48			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No discharges were measured during the 7/17/05 and 6/29/06 site visits
(d) Photos of 4/12/07 site visit showed part of the channel was occupied by ice, and the transect profile comparison showed the channel width was smaller than those from the previous surveys. Both suggested the hydraulics (Q and WSE) surveyed on this date were affected by the ice and thus were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 70.2cfs to 435.6cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

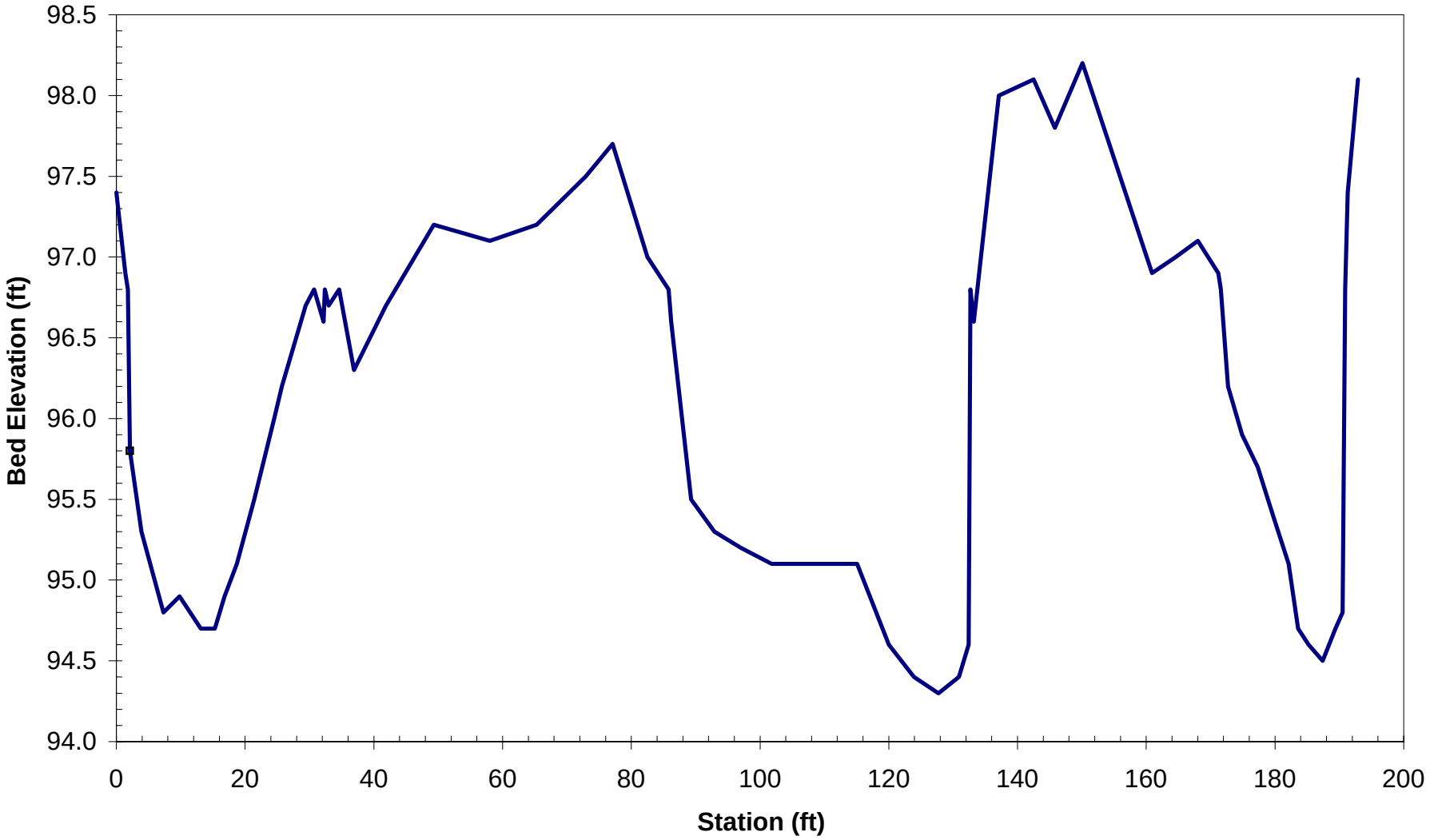
Survey Date	Q (cfs)	WUA (Y/N)
7/17/2005		
8/12/2005	70.2	Y
9/8/2005	435.6	Y
6/29/2006		
7/6/2006	118.7	
4/12/2007	43.2	

(4) Hydraulic Calibration Results:

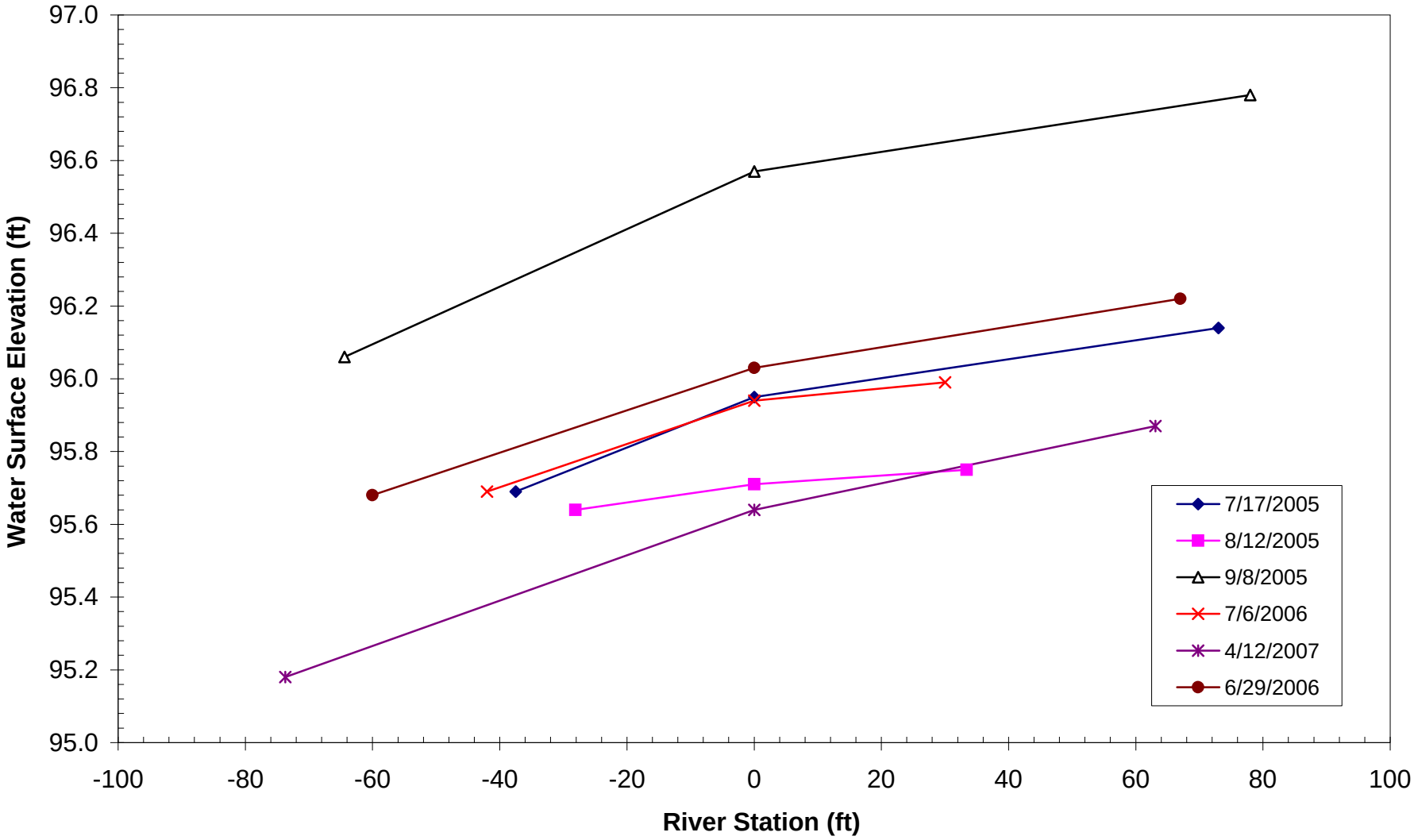
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges and appear to vary in normal trends.

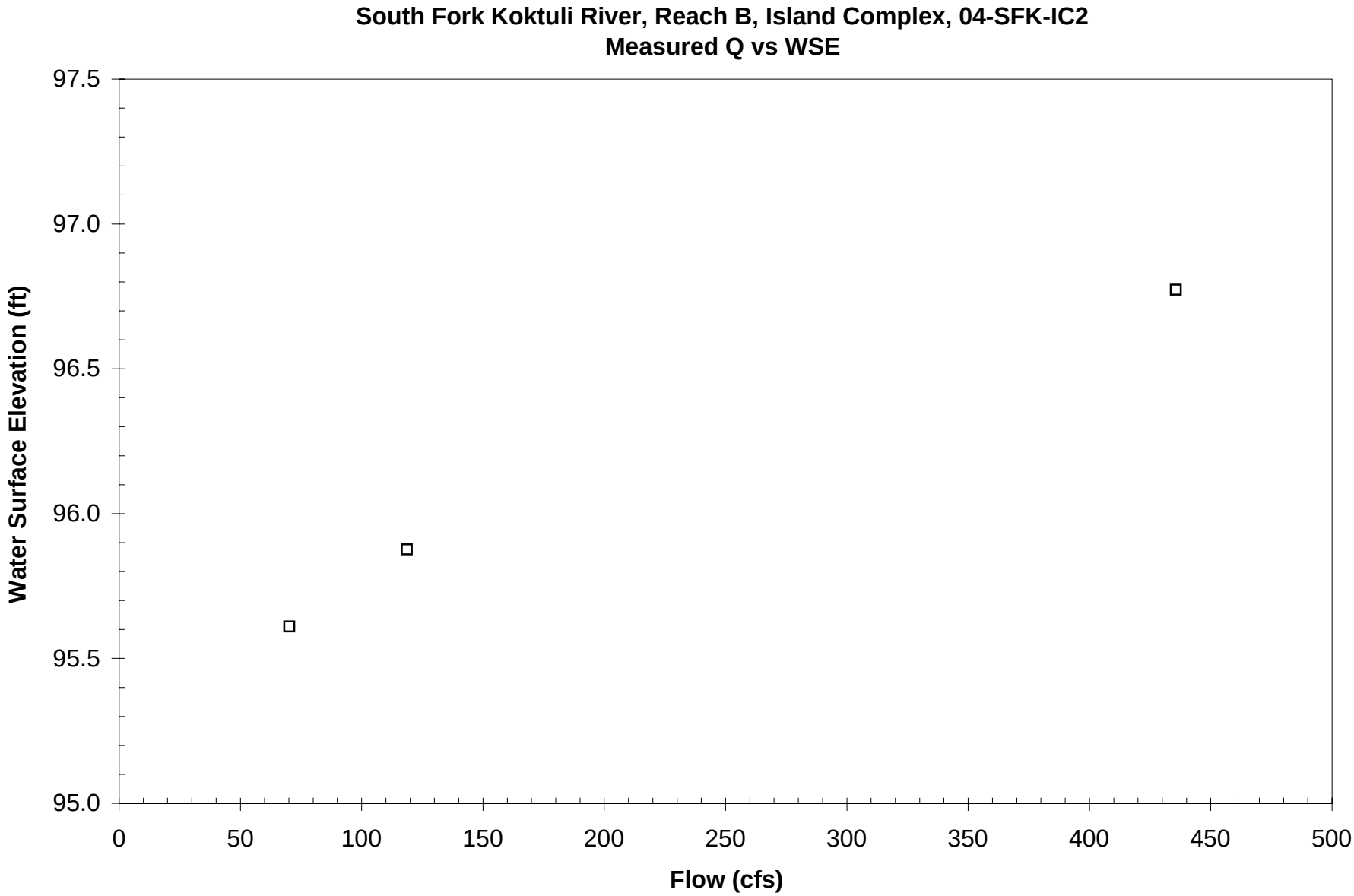
calibration notes

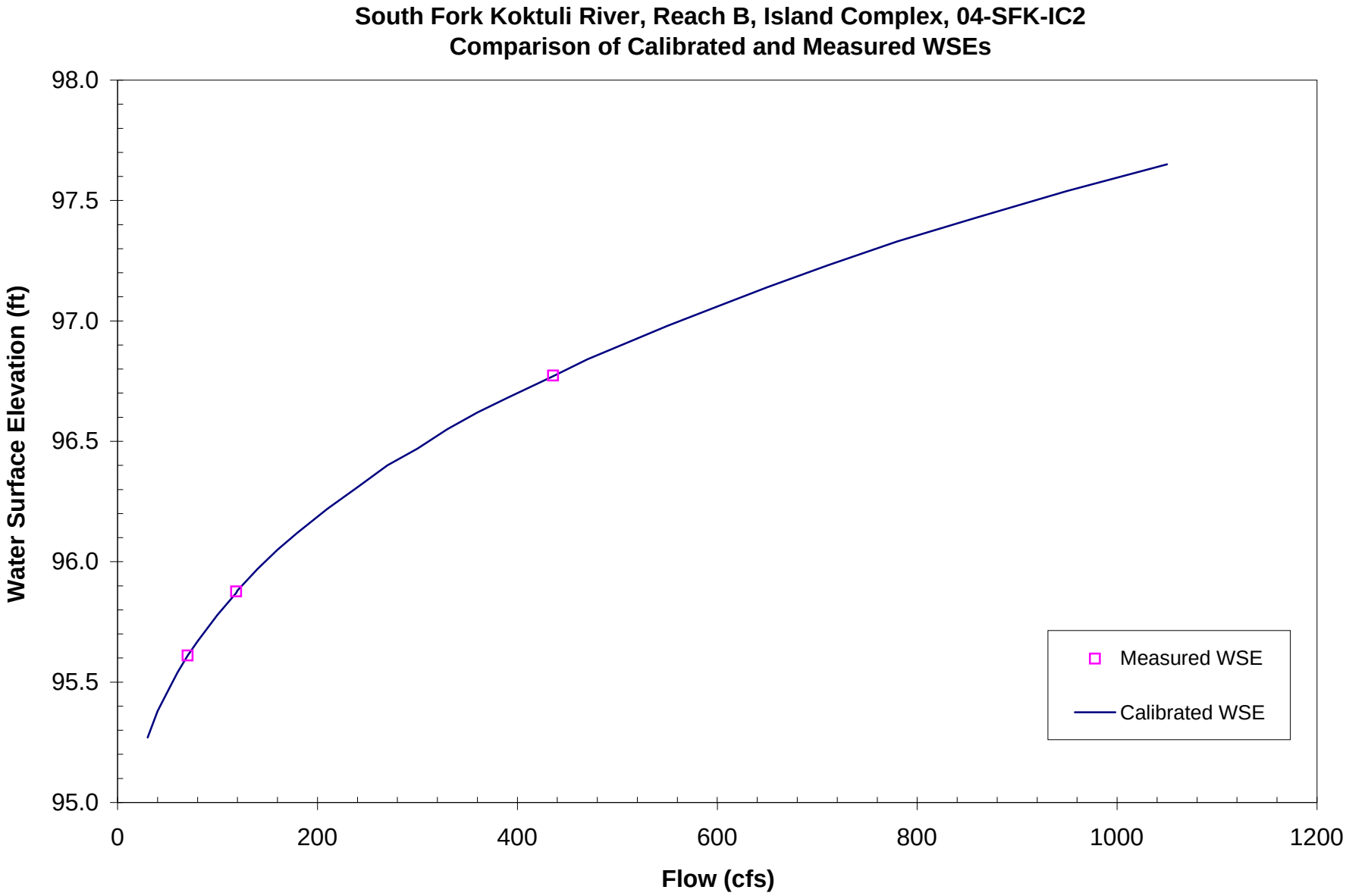
South Fork Koktuli River, Reach B, Island Complex, 04-SFK-IC2
Measured Transect Profile



South Fork Koktuli River, Reach B, Island Complex, 04-SFK-IC2
Longitudinal Water Surface Elevation Profiles

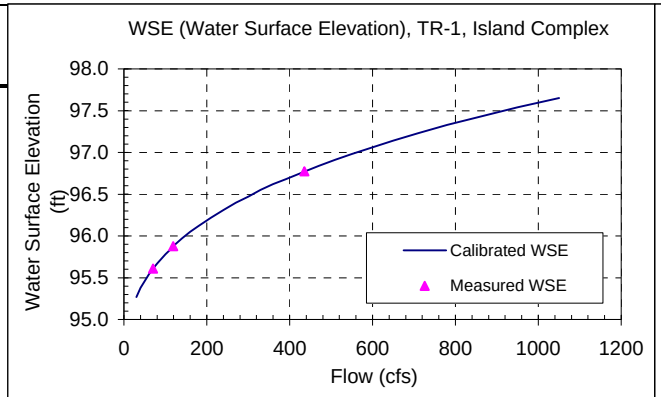


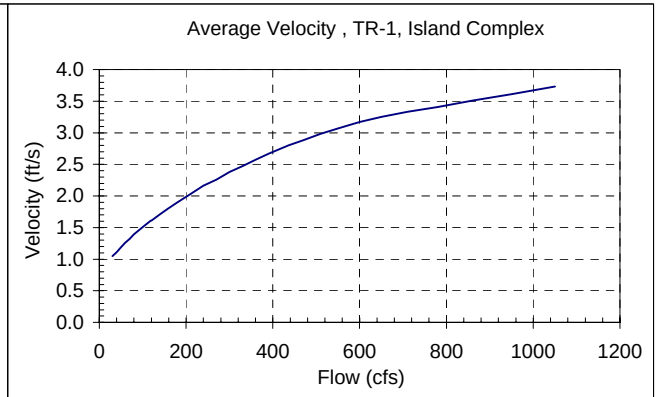

South Fork Koktuli River, Reach B, Island Complex, 04-SFK-IC2
Measured Q vs WSE
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)

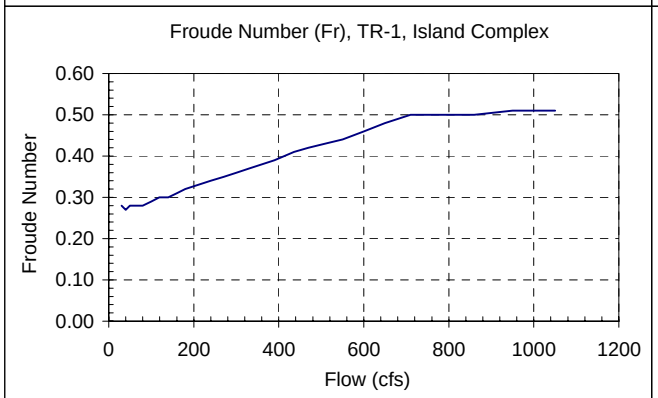

South Fork Koktuli River, Reach B, Island Complex, 04-SFK-IC2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
200
400
600
800
1000
1200
Flow (cfs)
Measured WSE
Calibrated WSE

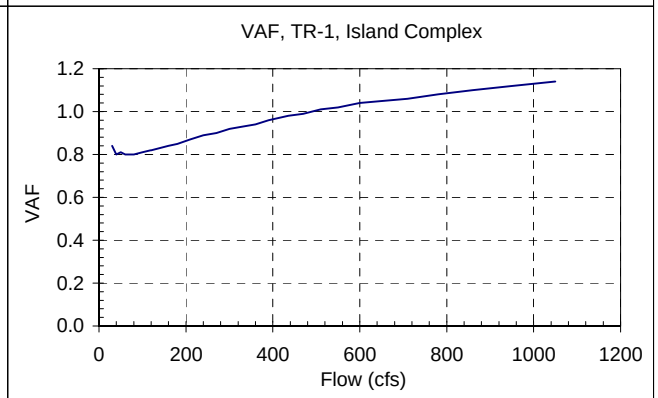
Stream: South Fork Koktuli River **Reach:** B
Site Name: 04-SFK-IC2 **Site #:** 2
Date: 9/8/2005 **Transect:** 1
Calibration Flow: Q(9/8/2005) **Habitat:** Island Complex

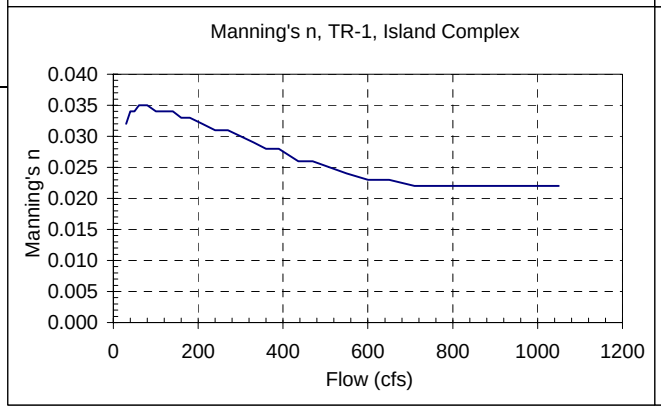
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	95.27	0.28	1.05	0.84	0.032	67.1
40	95.38	0.27	1.11	0.80	0.03	71.3
50	95.46	0.28	1.19	0.81	0.03	74.4
60	95.54	0.28	1.26	0.80	0.04	76.4
70.2	95.61	0.28	1.32	0.80	0.04	78.1
80	95.67	0.28	1.39	0.80	0.04	79.4
100	95.78	0.29	1.51	0.81	0.03	82.4
118.7	95.87	0.30	1.61	0.82	0.03	84.6
120	95.88	0.30	1.61	0.82	0.03	84.8
140	95.97	0.30	1.71	0.83	0.03	86.6
160	96.05	0.31	1.81	0.84	0.03	88.1
180	96.12	0.32	1.90	0.85	0.03	89.5
210	96.22	0.33	2.03	0.87	0.03	91.3
240	96.31	0.34	2.16	0.89	0.03	92.7
270	96.40	0.35	2.26	0.90	0.03	95.1
300	96.47	0.36	2.38	0.92	0.03	97.6
330	96.55	0.37	2.47	0.93	0.03	100.4
360	96.62	0.38	2.57	0.94	0.03	103.5
390	96.68	0.39	2.67	0.96	0.03	106.6
435.6	96.77	0.41	2.80	0.98	0.03	113.1
470	96.84	0.42	2.88	0.99	0.03	116.9
510	96.91	0.43	2.98	1.01	0.03	119.6
550	96.98	0.44	3.07	1.02	0.02	126.9
600	97.06	0.46	3.17	1.04	0.02	136.1
650	97.14	0.48	3.25	1.05	0.02	145.4
710	97.23	0.50	3.33	1.06	0.02	158.3
780	97.33	0.50	3.41	1.08	0.02	162.9
860	97.43	0.50	3.51	1.10	0.02	167.5
950	97.54	0.51	3.61	1.12	0.02	172.4
1050	97.65	0.51	3.73	1.14	0.022	177.4

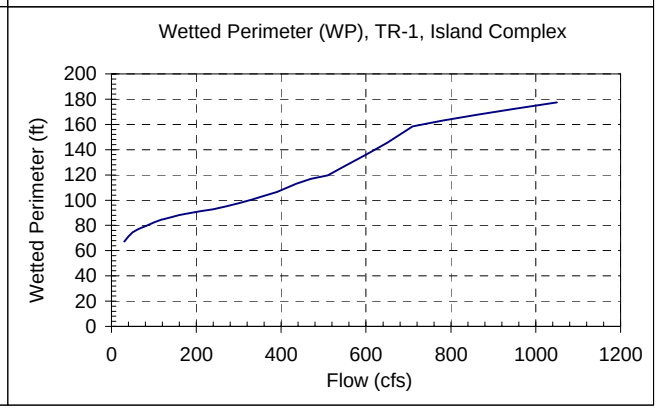




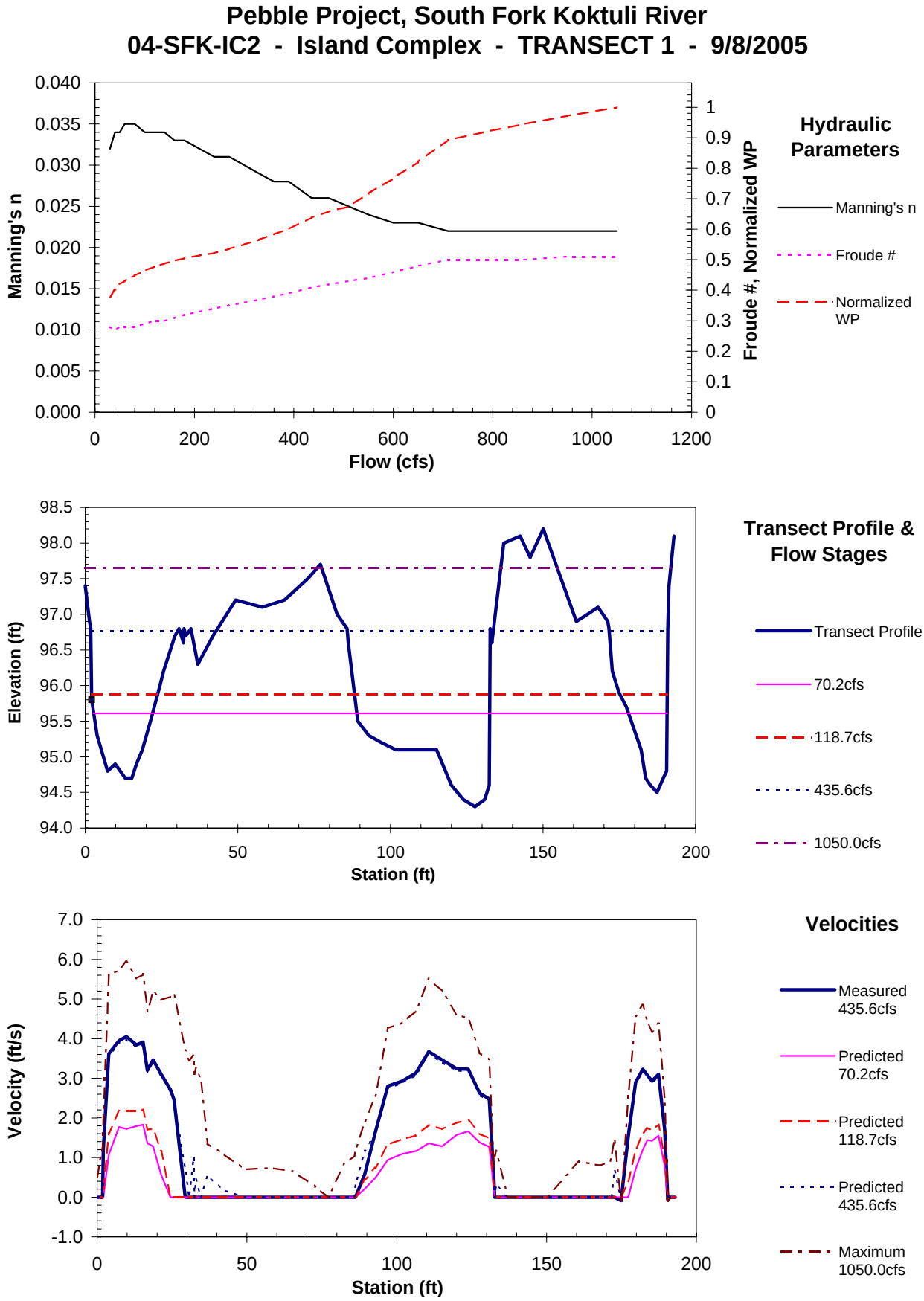








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-IC2  09/08/05
ISLAND                      0905Q                                    TRANSECT 1
IOC       11011001000010001010 00
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.2
QARD  80.0
QARD 100.0
QARD 118.7
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 210.0
QARD 240.0
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 435.6
QARD 470.0
QARD 510.0
QARD 550.0
QARD 600.0
QARD 650.0
QARD 710.0
QARD 780.0
QARD 860.0
QARD 950.0
QARD1050.0
XSEC  1000     1000. 1.0     94.27    .00160
      1000   .097.42  1.496.86  1.896.77  2.195.77  3.995.27  7.394.77
      1000  9.894.87 13.194.67 15.394.67 16.894.87 18.795.07 21.495.47
      1000 24.595.97 25.796.17 29.496.67 30.796.77 32.296.57 32.496.77
      1000 33.096.71 34.696.82 36.996.35 41.996.68 49.397.16 58.097.12
      1000 65.397.20 72.997.54 77.197.72 82.597.02 85.896.77 86.296.57
      1000 89.395.47 92.995.27 97.095.17101.895.07106.495.07110.795.07
      1000115.195.07120.094.57123.994.37127.794.27130.994.37132.494.57
      1000132.796.77133.296.59137.197.99142.598.07145.897.80150.198.17
      1000160.996.94164.696.99168.097.05171.296.92171.696.77172.796.17
      1000174.995.87177.395.67179.795.37182.195.07183.694.67185.294.57
      1000187.494.47189.494.67190.594.77190.996.77191.397.41192.998.10
NS    1000      22.9      22.9      22.9      43.8      43.6      54.6
NS    1000      54.7      64.6      64.8      65.6      45.7      54.8
NS    1000      54.8      43.6      34.7 .018 34.7      23.8      23.8
NS    1000      22.9 .02  22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000 .06  45.8      54.6      54.6      32.6      54.6      34.6
```

IFG4 Data Deck (continued)

```
NS    1000      32.6      32.8      32.8      32.8      34.7      34.7
NS    1000 .06  34.7      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      23.9      23.7      32.7      32.6      23.8
NS    1000      52.7      43.6      32.6      22.9      22.9      22.9
WSL   1000     95.27     95.38     95.46     95.54     95.61     95.67
WSL   1000     95.78     95.87     95.88     95.97     96.05     96.12
WSL   1000     96.22     96.31     96.40     96.47     96.55     96.62
WSL   1000     96.68     96.77     96.84     96.91     96.98     97.06
WSL   1000     97.14     97.23     97.33     97.43     97.54     97.65
CAL1  1000     96.77     435.6
VEL1  1000           0.00 1.19 3.62 3.95 4.05 3.84 3.91 3.20 3.46 3.10
VEL1  1000 2.71 2.46 0.00 0.00 0.00 0.00
VEL1  1000                     0.00 0.00 0.58 1.65 2.80 2.93 3.13 3.67
VEL1  1000 3.46 3.24 3.23 2.62 2.48 0.52 0.00
VEL1  1000                     0.00 0.00-0.09 1.54 2.90 3.23 3.08 2.93
VEL1  1000 3.10 1.70-0.07 0.00
CAL2  1000     95.61      70.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.88     118.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RF1

Habitat Type: Riffle

River Kilometer: 26.22

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	Trip	BM	HP	TP
1st	6/12/2005	1	100.00	100.95	100.46
2nd	6/13/2005	2	100.00		
3rd	7/17/2005	3	100.00	100.94	100.45
4th	8/11/2005	4	100.00	100.94	100.45
5th	7/6/2006	5	100.00	101.07	100.40
6th	4/11/2007	6	100.00	101.54	100.19

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between control pins were within 0.01ft in 2005
(c) The relative elevation changes indicated all control pins were disturbed in 2006 and 2007.
(d) No level loop was conducted on 6/13/05, a day after the pins were established.

Measured WSE:

Level loop of 7/6/06 indicated control pins were disturbed in 2006. It is not able to accurately determined the amount of disturbance to each pin using the surveyed elevations. Therefore, no corrections were made to the WSEs of 2006. Part of the transect was in ice during the 2007 site visit, and thus the hydraulics data were not used for modeling.
There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/12/2005	99.01
6/13/2005	98.99
7/17/2005	98.74
8/11/2005	98.51
7/6/2006	98.62
4/11/2007	98.17

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/12/2005	
6/13/2005	195.3
7/17/2005	
8/11/2005	71.6
7/6/2006	109.2
4/11/2007	42.4

Only partial transect flow was measured in 4/11/07 trip, because part of the channel was still occupied by ice at the time of survey.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/12/2005	0.409%	185.7
6/13/2005	0.410%	178
7/17/2005	0.514%	183
8/11/2005	0.386%	119.1
7/6/2006	0.444%	141.8
4/11/2007	0.336%	125

The slope S=0.410% of 6/13/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/12/2005	97.46
6/13/2005	97.49
7/17/2005	
8/11/2005	97.51
7/6/2006	97.42
4/11/2007	97.27
Invert	97.51
SZF	97.51

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/17/05 and only partial transect was surveyed on 4/11/07 due to shore ice.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/12/2005		99.01			
2nd	6/13/2005	195.3	98.99	98.97	-0.02	IFG4
3rd	7/17/2005		98.74			
4th	8/11/2005	71.6	98.51	98.48	-0.03	IFG4
5th	7/6/2006	109.2	98.62	98.66	0.04	IFG4
6th	4/11/2007	42.4	98.17			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharge was collected on 6/12/05 and only partial flow measured on 4/11/07 due to shore ice
(d) Photos of 4/11/07 site visit showed part of the channel was still occupied by ice.
Hydraulics were affected by the ice and thus data were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 71.6cfs, 109.2cfs, and 195.3cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

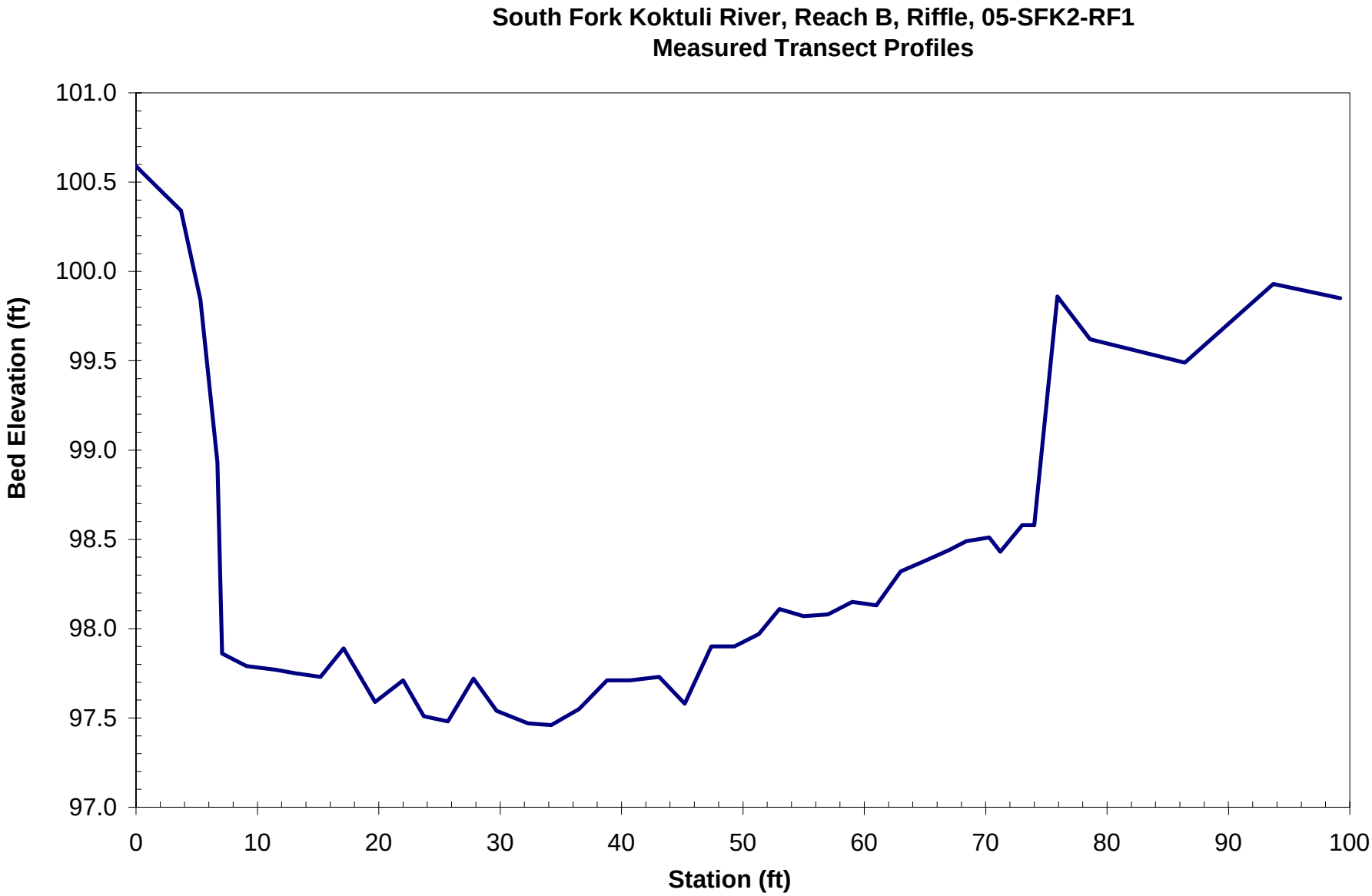
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/12/2005		
6/13/2005	195.3	Y
7/17/2005		
8/11/2005	71.6	Y
7/6/2006	109.2	Y
4/11/2007	42.4	

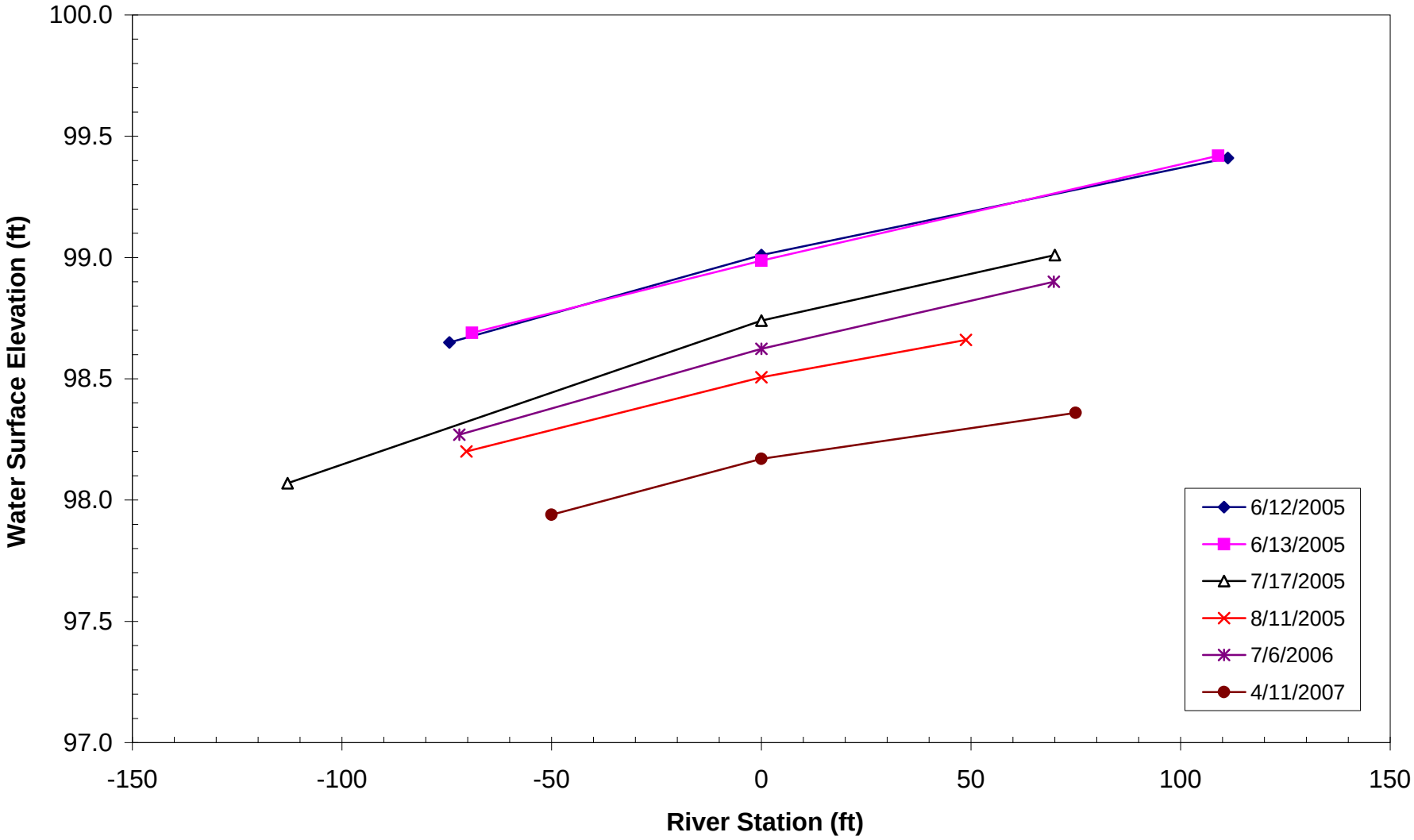
(4) Hydraulic Calibration Results:

Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

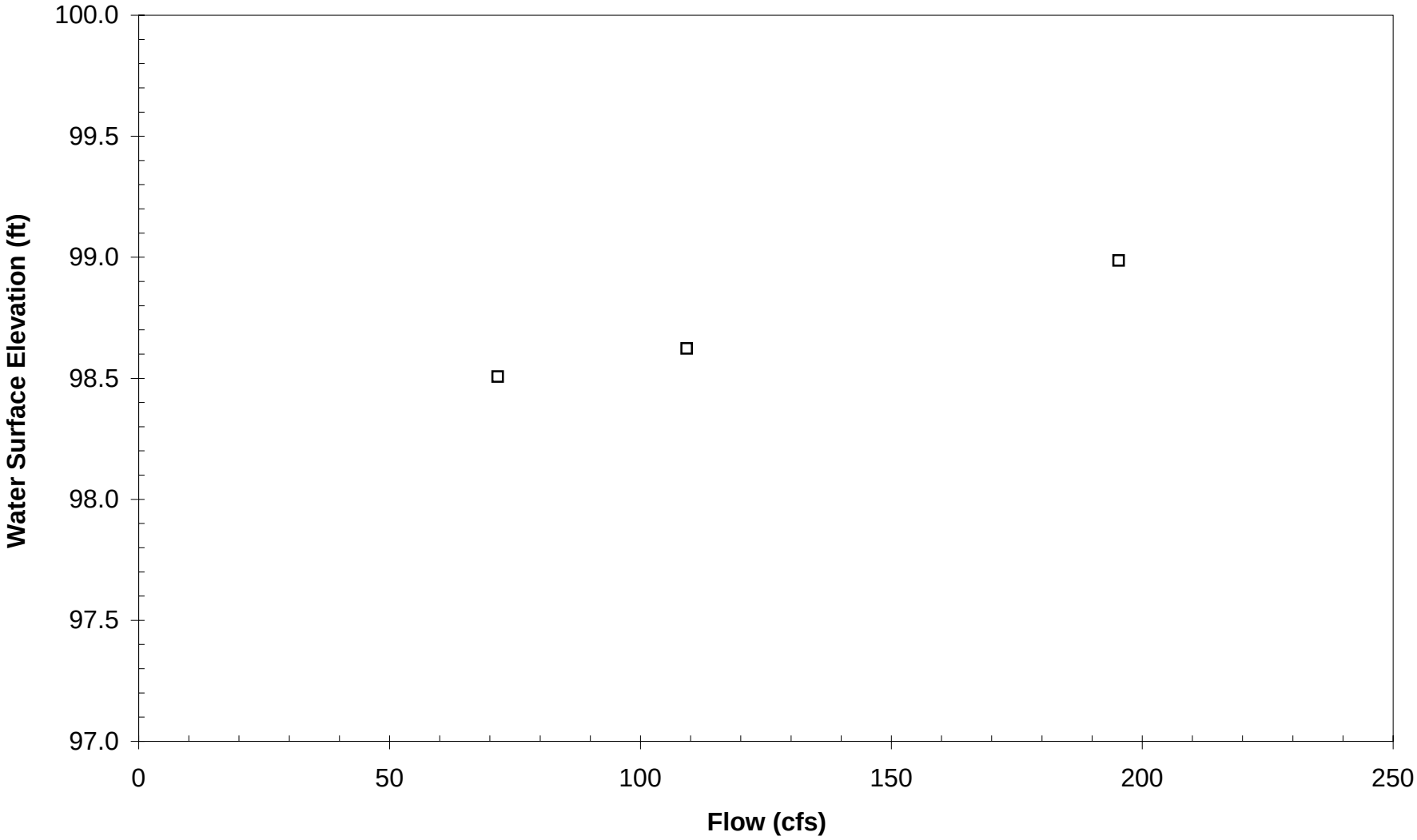
calibration notes

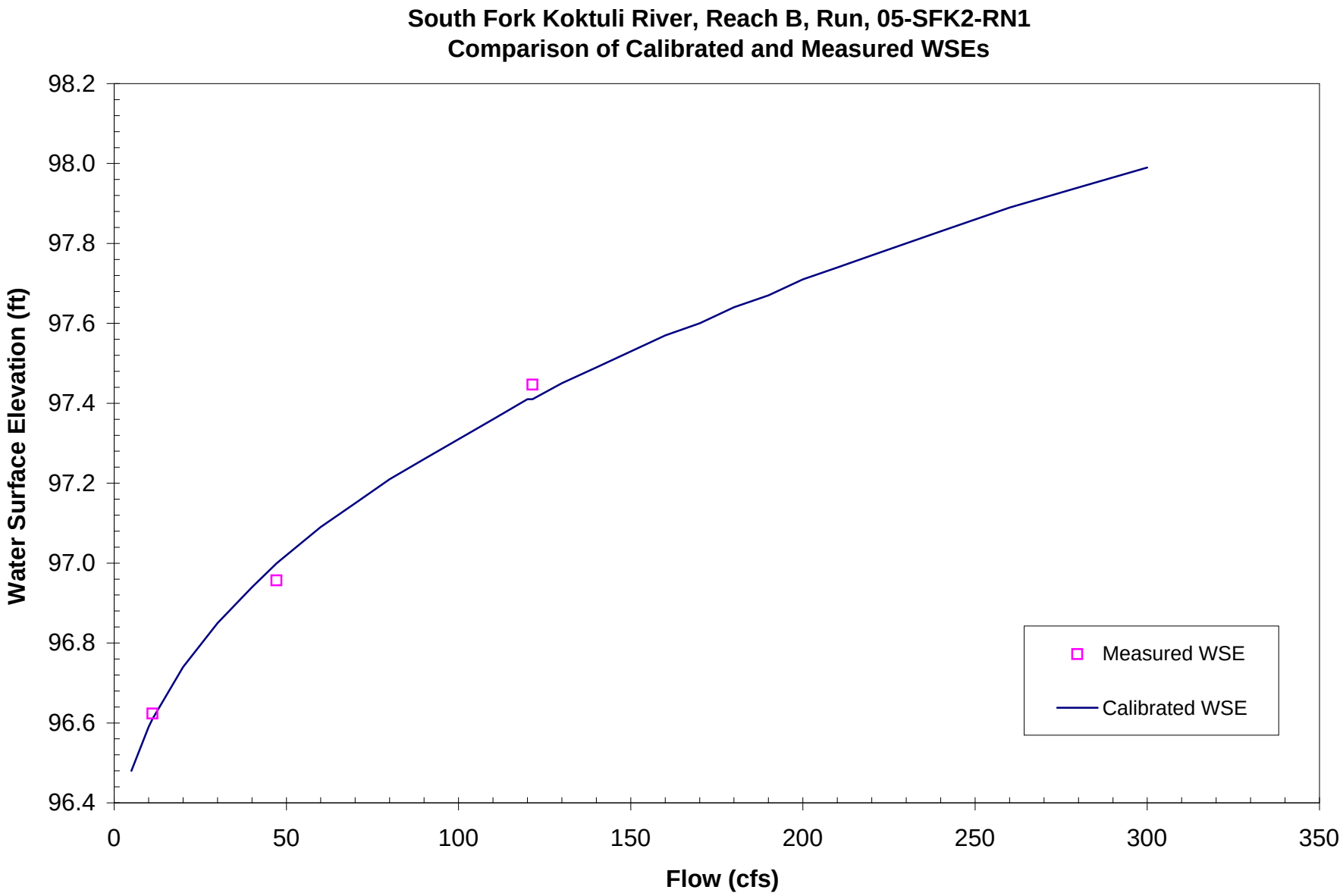

South Fork Koktuli River, Reach B, Riffle, 05-SFK2-RF1
Measured Transect Profiles
Bed Elevation (ft)
101.0
100.5
100.0
99.5
99.0
98.5
98.0
97.5
97.0
0
10
20
30
40
50
60
70
80
90
100
Station (ft)

South Fork Koktuli River, Reach B, Riffle, 05-SFK2-RF1
Longitudinal Water Surface Elevation Profiles



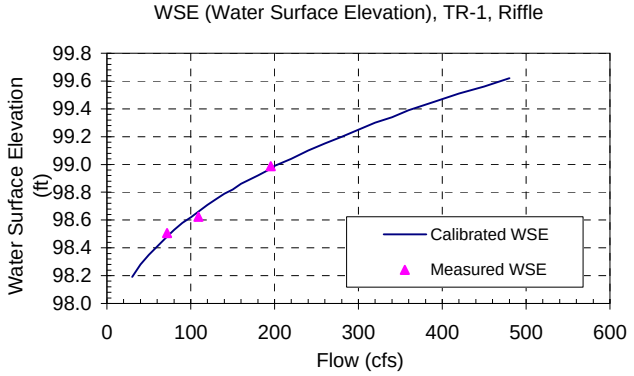
South Fork Koktuli River, Reach B, Riffle, 05-SFK2-RF1
Measured Q vs WSE

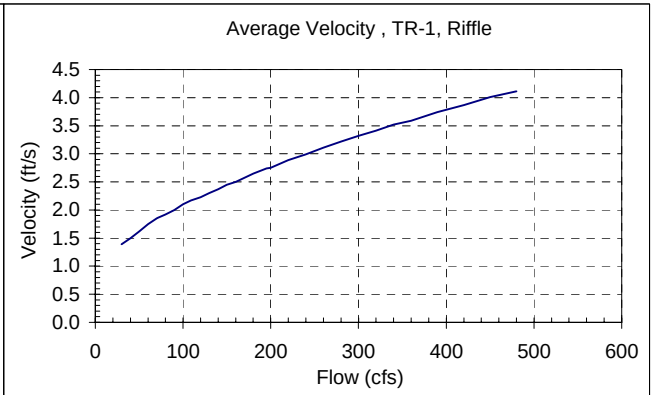


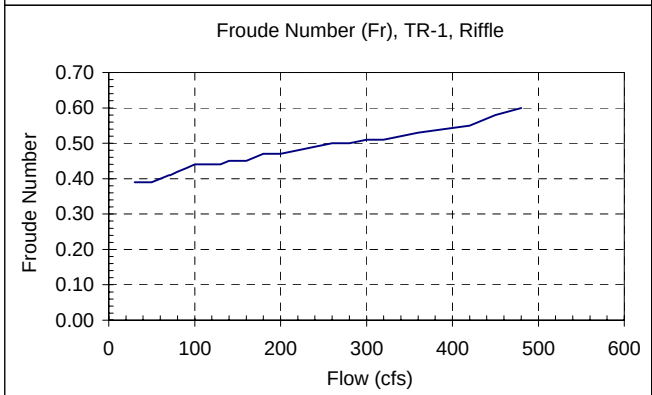

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
0
50
100
150
200
250
300
350
Flow (cfs)
Measured WSE
Calibrated WSE

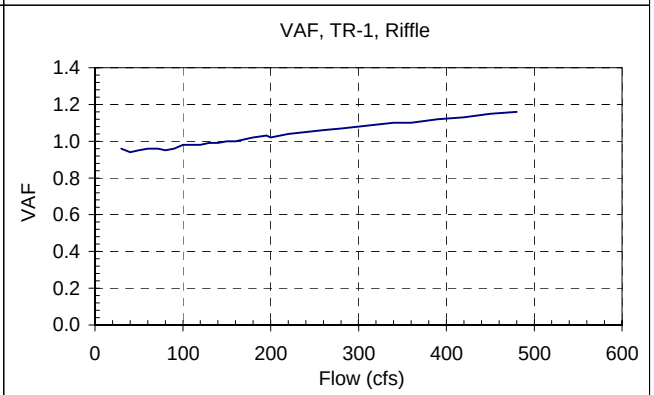
Stream: South Fork Koktuli River **Reach:** B
Site Name: 05-SFK2-RF1 **Site #:** 2
Date: 6/12/2005 **Transect:** 1
Calibration Flow: Q(6/12/2005) **Habitat:** Riffle

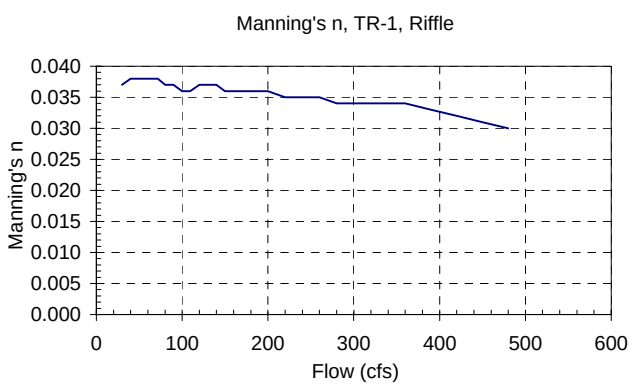
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	98.19	0.39	1.39	0.96	0.037	54.2
40	98.28	0.39	1.50	0.94	0.04	58.1
50	98.35	0.39	1.62	0.95	0.04	59.0
60	98.41	0.40	1.75	0.96	0.04	59.7
70	98.47	0.41	1.85	0.96	0.04	60.4
71.6	98.48	0.41	1.86	0.96	0.04	60.5
80	98.53	0.42	1.92	0.95	0.04	65.7
90	98.58	0.43	2.00	0.96	0.04	66.7
100	98.62	0.44	2.10	0.98	0.04	67.8
109.2	98.66	0.44	2.17	0.98	0.04	67.9
120	98.71	0.44	2.23	0.98	0.04	68.0
130	98.75	0.44	2.30	0.99	0.04	68.1
140	98.79	0.45	2.37	0.99	0.04	68.3
150	98.82	0.45	2.45	1.00	0.04	68.3
160	98.86	0.45	2.50	1.00	0.04	68.5
180	98.92	0.47	2.65	1.02	0.04	68.6
195.3	98.97	0.47	2.74	1.03	0.04	68.8
200	98.99	0.47	2.75	1.02	0.04	68.8
220	99.04	0.48	2.89	1.04	0.04	69.0
240	99.10	0.49	2.99	1.05	0.04	69.3
260	99.15	0.50	3.11	1.06	0.04	69.4
280	99.20	0.50	3.22	1.07	0.03	69.6
300	99.25	0.51	3.32	1.08	0.03	69.8
320	99.30	0.51	3.41	1.09	0.03	70.0
340	99.34	0.52	3.52	1.10	0.03	70.1
360	99.39	0.53	3.59	1.10	0.03	70.3
390	99.45	0.54	3.74	1.12	0.03	70.6
420	99.51	0.55	3.87	1.13	0.03	72.9
450	99.56	0.58	4.01	1.15	0.03	76.7
480	99.62	0.6	4.11	1.16	0.030	81.3

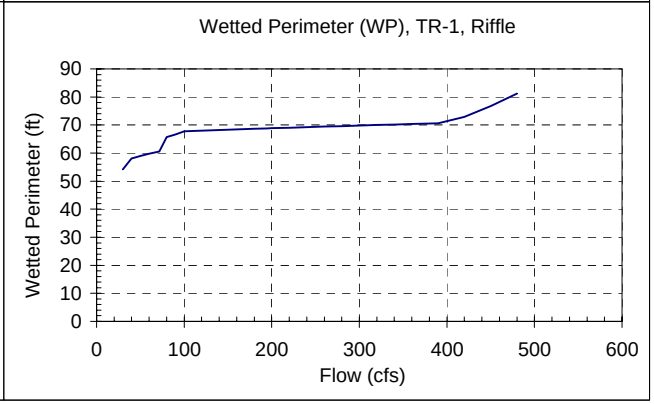




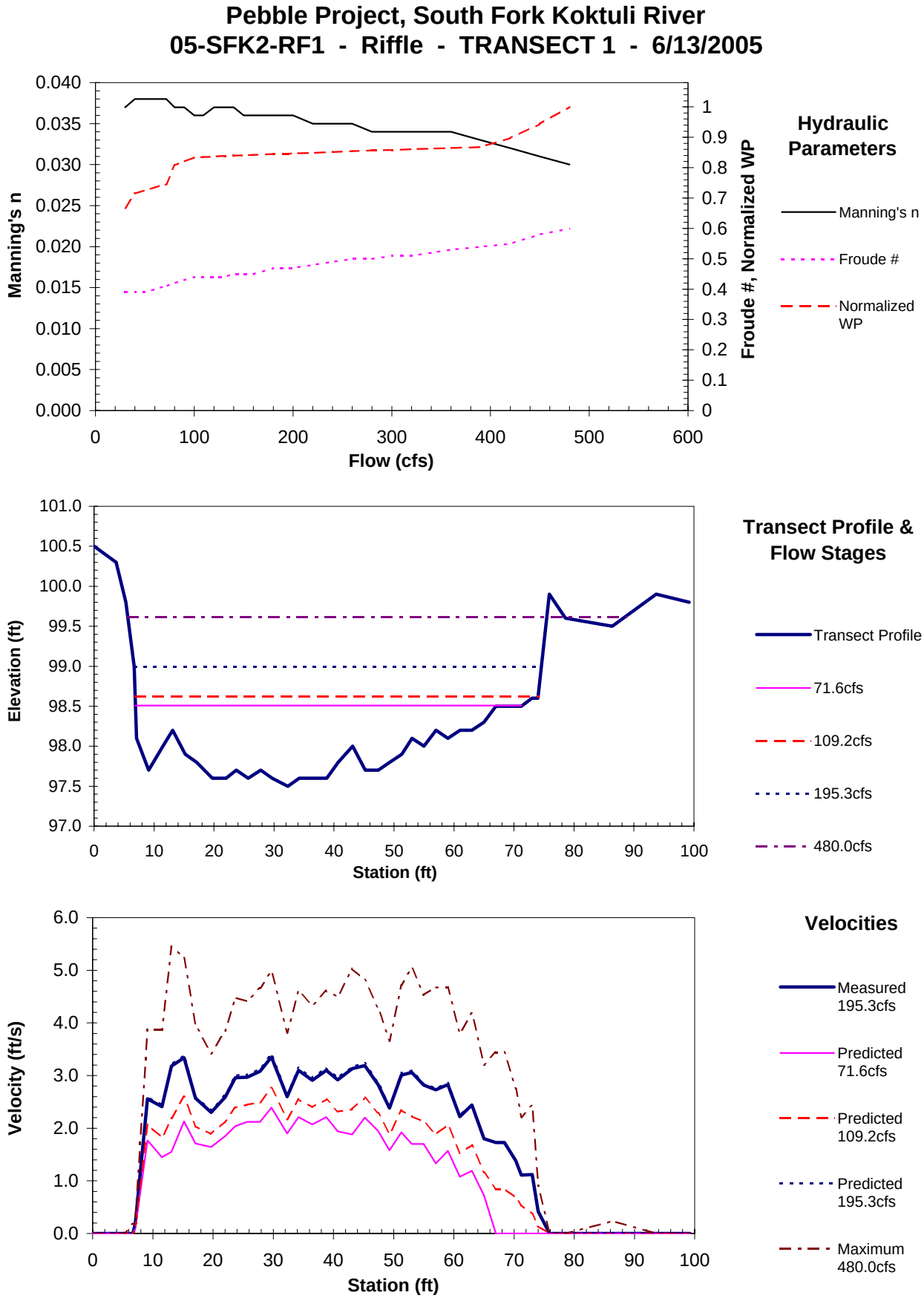








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RF1  06/13/05
RIFFLE                      0605Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  71.6
QARD  80.0
QARD  90.0
QARD 100.0
QARD 109.2
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 195.3
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
XSEC  1000     1000. 1.0     97.51    .00410
      1000   .0100.5  3.7100.3  5.399.83  6.798.98  7.198.08  9.197.69
      1000 11.597.98 13.198.19 15.297.88 17.197.79 19.797.58 22.097.58
      1000 23.797.69 25.797.58 27.897.69 29.797.58 32.397.48 34.297.58
      1000 36.597.58 38.897.58 40.797.79 43.197.98 45.297.69 47.497.69
      1000 49.397.79 51.397.88 53.098.08 55.097.98 57.098.19 59.098.08
      1000 61.098.19 63.098.19 65.098.29 67.098.48 68.498.48 70.398.48
      1000 71.298.48 73.098.58 74.098.58 75.999.86 78.699.62 86.499.48
      1000 93.799.93 99.299.84
NS    1000      22.9      22.9      22.9      23.7      24.6      45.6
NS    1000      54.7      64.6      54.6      53.6      65.7      65.6
NS    1000      65.6      54.7      46.6      65.8      65.8      45.6
NS    1000      64.8      64.6      56.8      54.7      45.7      45.6
NS    1000      45.6      45.6      64.6      43.9      46.6      54.6
NS    1000      43.6      63.6      64.6      53.6      34.6      54.6
NS    1000      54.6      32.6      23.9      22.9      22.9      22.9
NS    1000      22.9      22.9
```

IFG4 Data Deck (continued)

```
WSL   1000     98.19     98.28     98.35     98.41     98.47     98.48
WSL   1000     98.53     98.58     98.62     98.66     98.71     98.75
WSL   1000     98.79     98.82     98.86     98.92     98.97     98.99
WSL   1000     99.04     99.10     99.15     99.20     99.25     99.30
WSL   1000     99.34     99.39     99.45     99.51     99.56     99.62
CAL1  1000     98.99     195.3
VEL1  1000                0.00 0.20 2.56 2.41 3.18 3.34 2.57 2.30 2.59
VEL1  1000 2.96 2.97 3.08 3.35 2.60 3.10 2.91 3.10 2.92 3.13 3.19 2.83
VEL1  1000 2.38 3.01 3.06 2.82 2.73 2.83 2.22 2.44 1.80 1.73 1.73 1.38
VEL1  1000 1.11 1.12 0.42
CAL2  1000     98.51      71.6
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.62     109.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN4

Habitat Type: Run

River Kilometer: 27.03

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-RN4
Habitat Type: Run

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1st	6/11/2005	100.00	99.43	101.32
2nd	6/13/2005	100.00		
3rd	7/17/2005	100.00	99.41	101.30
4th	8/11/2005	100.00	99.42	101.32
5th	7/6/2006	100.00	99.43	101.35
6th	4/11/2007	100.00	99.51	101.74

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
(b) No level loop conducted on 6/13/05, two days after the pins were initially set up.
(c) Relative elevation changes between BM and HP were within ±0.01ft during 2005-2006, indicating the pins were stable during the period.
(c) Results of 4/11/07 level loop suggested pins were disturbed in 2007. Not able to determine the datum elevation shift, so hydraulics of this date not were used for modeling.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

	WSE (ft)		
Date	L. Off Ch.	Center (main)	R. Off Ch.
6/11/2005	97.68	98.24	98.37
6/13/2005	97.73	98.18	97.39
7/17/2005	97.67	97.75	98.01
8/11/2005	97.57	97.29	97.68
7/6/2006	na	97.61	98.11
4/11/2007	na	96.96	na

Off-channel hydraulics were not considered in the in-stream flow analysis

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Flow (cfs)			
	L. Off Ch.	Center (main)	R. Off Ch.	Total
6/11/2005				
6/13/2005		182.5		182.5
7/17/2005				
8/11/2005		59.2	0.0	59.2
7/6/2006		102.0		102.0
4/11/2007		34.4		34.4

(1) No discharges were taken on 6/11/05 and 7/17/05

(2) Right and left off-channels were either no flow or dry during the site visits. Off-channel hydraulics were not considered for in-stream flow analysis

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (ft)	WSE Slope Distance (ft)
6/11/2005	0.163%	208.2
6/13/2005	0.180%	211.4
7/17/2005	0.118%	372.0
8/11/2005	0.117%	273.5
7/6/2006	0.108%	186.0
4/11/2007	0.071%	211.4

The slope S=0.180% of 6/13/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Main Channel Invert (ft)
6/11/2005	95.42
6/13/2005	95.28
7/17/2005	
8/11/2005	95.39
7/6/2006	95.41
4/11/2007	95.46
Invert	95.46
SZF	95.46

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) The invert of 6/11/05 survey was not used to determine SZF because of no flow measured.
(4) No transect profile was surveyed in 7/17/05 trip.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR-1	calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/11/2005		98.24			
2nd	6/13/2005	182.5	98.18	98.16	-0.02	IFG4
3rd	7/17/2005		97.75			
4th	8/11/2005	59.2	97.29	97.27	-0.02	IFG4
5th	7/6/2006	102.0	97.61	97.65	0.04	IFG4
6th	4/11/2007	34.4	96.96	96.95	-0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharges were measured in 6/11/05 and 7/17/05 trips
(d) Photos of 4/11/07 site visit showed channel clear of ice and banks with only residual snow. Surveyed data were included in hydraulic modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 34.4cfs, 59.2cfs 102.0cfs, and 182.5cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the four calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

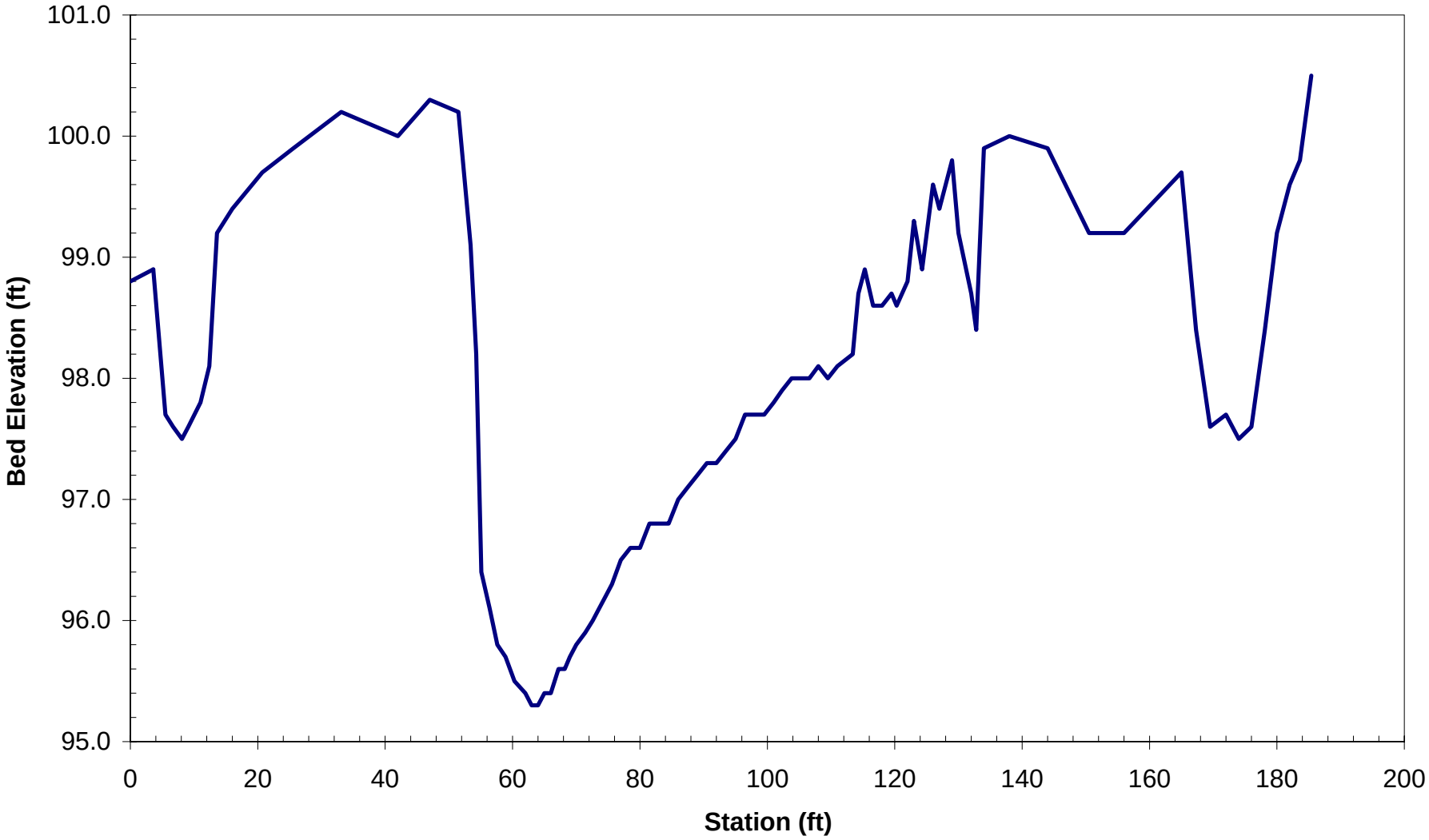
Survey Date	Q (cfs)	WUA (Y/N)
6/11/2005		
6/13/2005	182.5	Y
7/17/2005		
8/11/2005	59.2	Y
7/6/2006	102.0	Y
4/11/2007	34.4	Y

(4) Hydraulic Calibration Results:

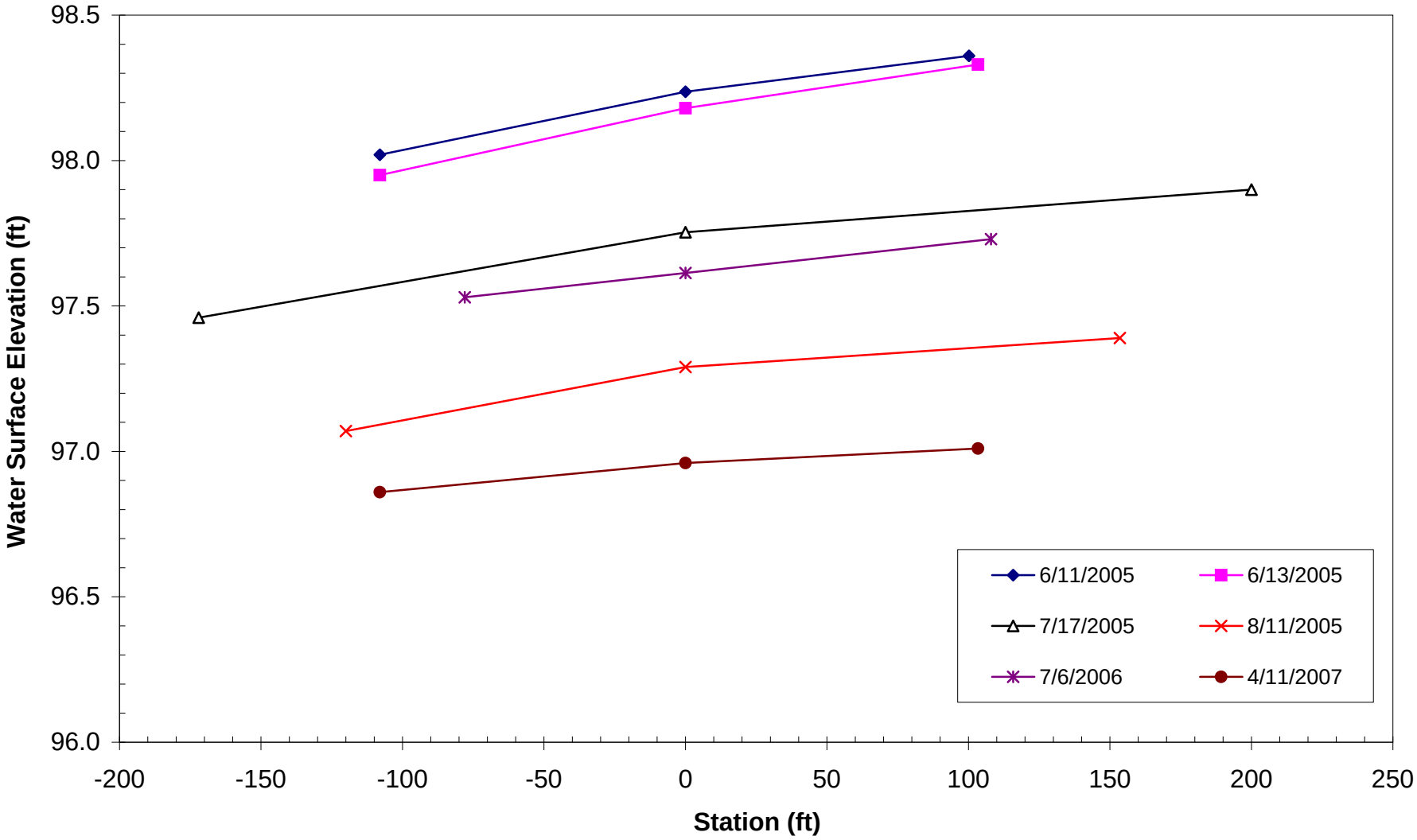
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

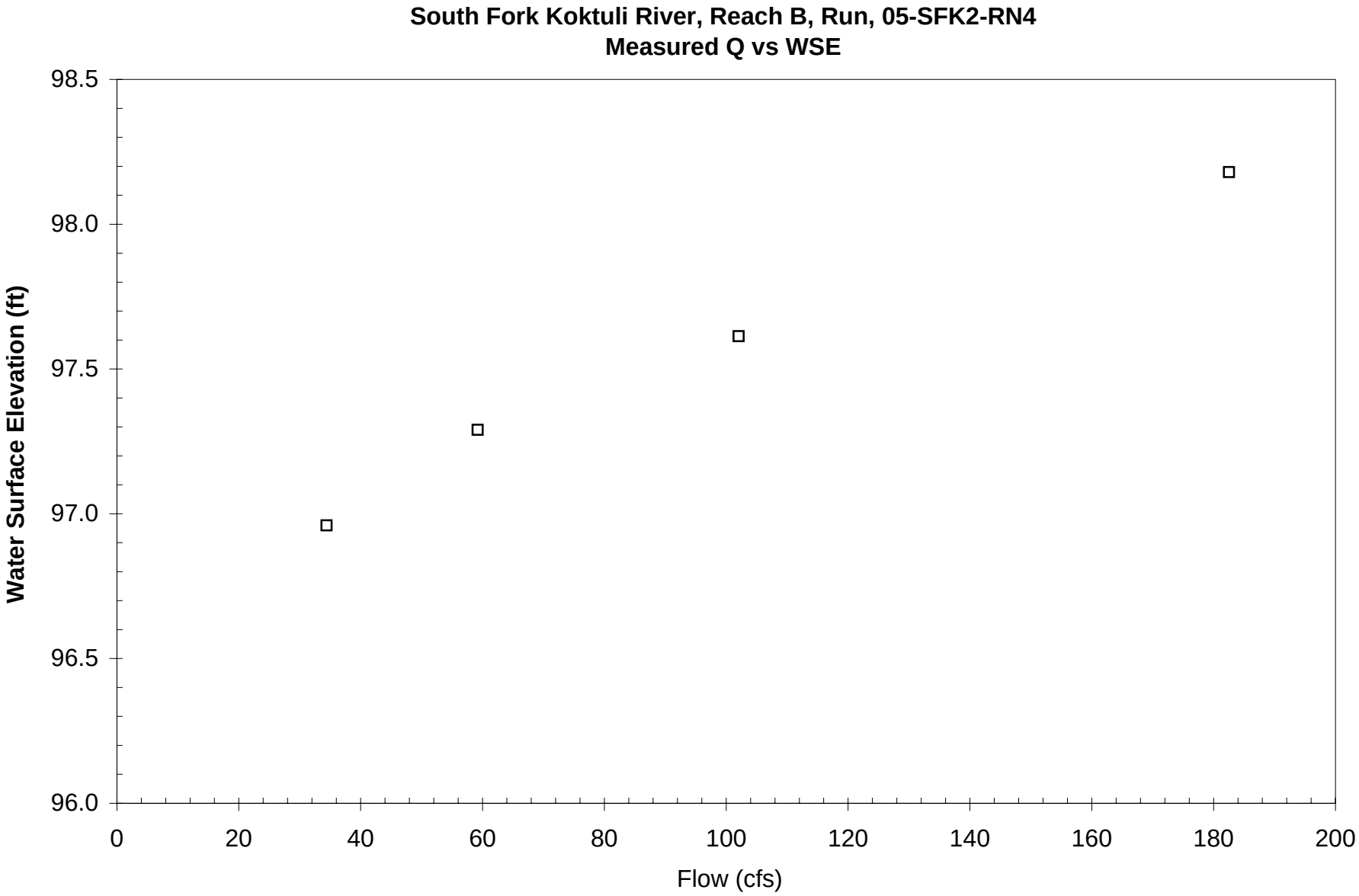
calibration notes

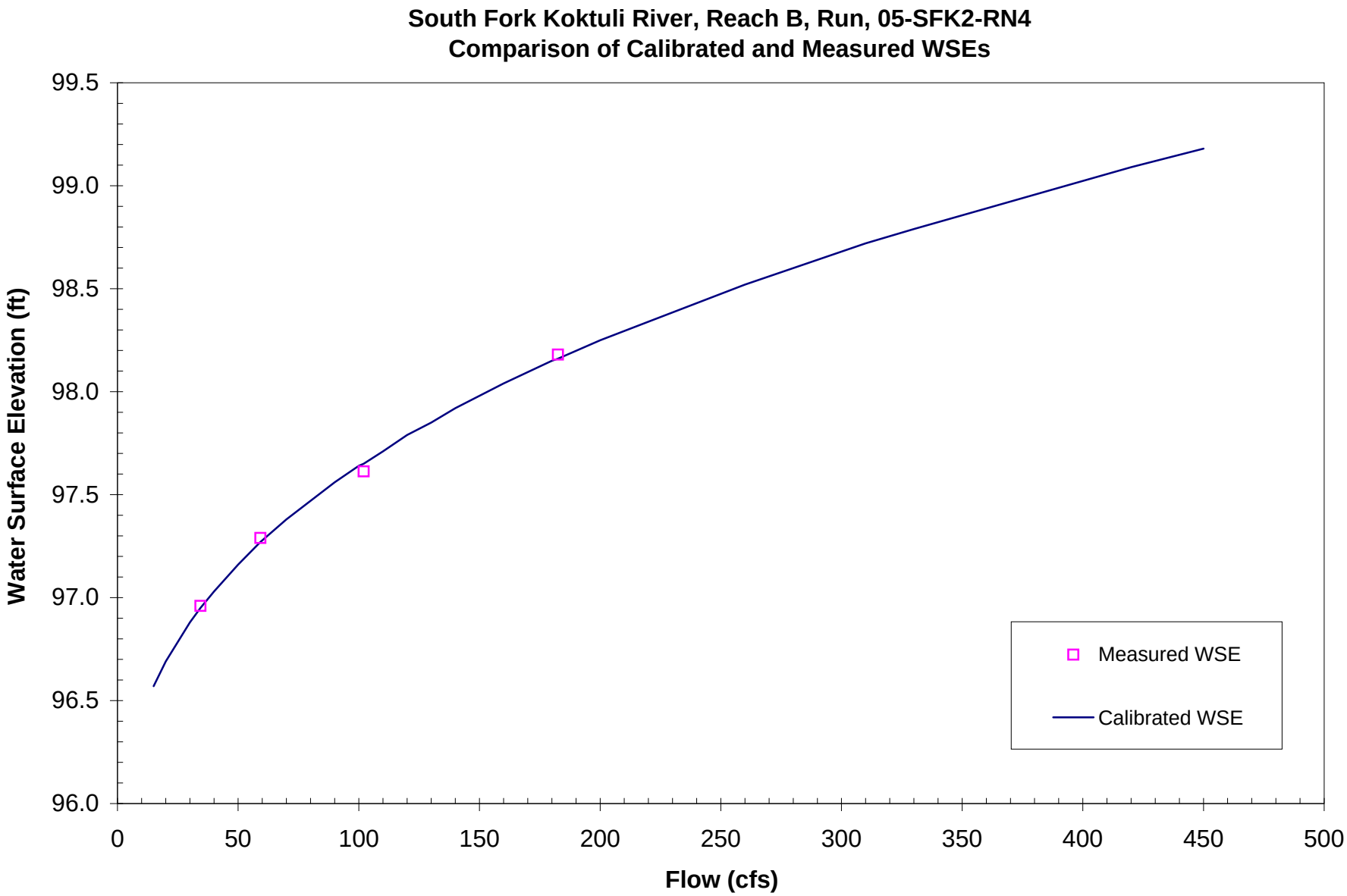
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN4
Measured Transect Profile



South Fork Koktuli River, Reach B, Run, 05-SFK2-RN4
Longitudinal Water Surface Elevation Profiles

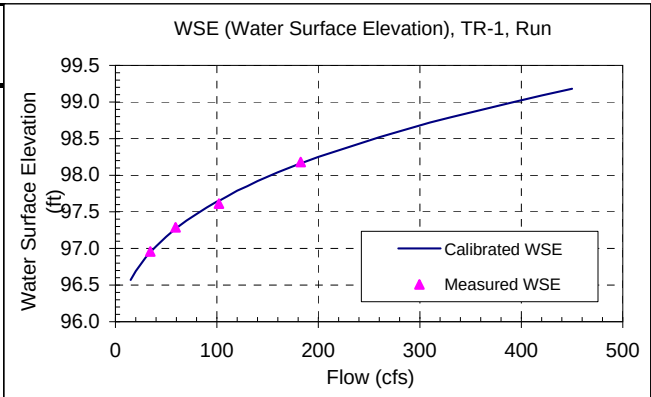


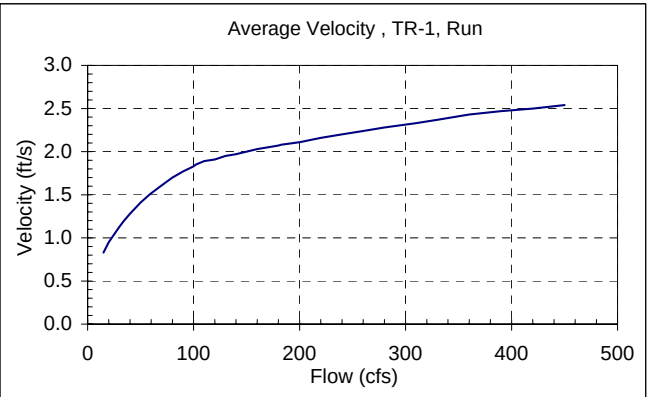

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN4
Measured Q vs WSE
Water Surface Elevation (ft)
98.5
98.0
97.5
97.0
96.5
96.0
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)

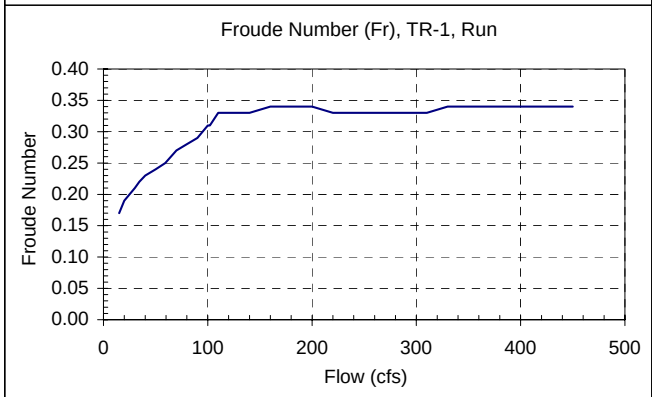

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN4
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

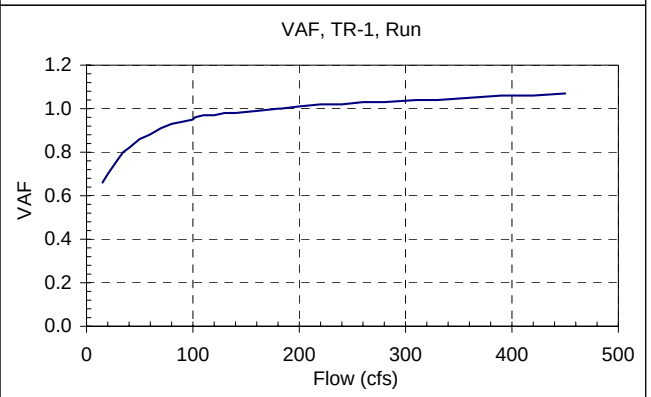
Stream: South Fork Koktuli River **Reach:** B
Site Name: 05-SFK2-RN4 **Habitat:** Run
Date: 6/11/2005 **Site #:** 4
Calibration Flow: Q(6/11/2005) **Transect:** 1

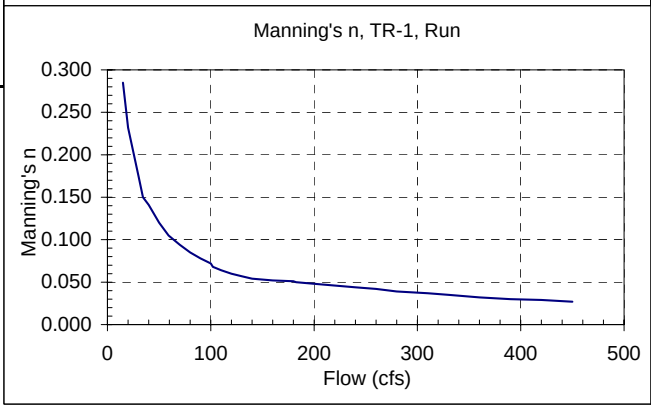
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
15	96.57	0.17	0.83	0.66	0.285	44.4
20	96.69	0.19	0.95	0.70	0.23	44.9
30	96.88	0.21	1.13	0.77	0.18	45.9
34.4	96.95	0.22	1.20	0.80	0.15	46.6
40	97.03	0.23	1.28	0.82	0.14	46.9
50	97.16	0.24	1.41	0.86	0.12	47.7
59.2	97.27	0.25	1.51	0.88	0.11	48.6
70	97.38	0.27	1.61	0.91	0.09	49.5
80	97.47	0.28	1.70	0.93	0.09	49.8
90	97.56	0.29	1.77	0.94	0.08	50.0
100	97.64	0.31	1.83	0.95	0.07	50.1
102.0	97.65	0.31	1.85	0.96	0.07	50.3
110	97.71	0.33	1.89	0.97	0.06	50.4
120	97.79	0.33	1.91	0.97	0.06	50.5
130	97.85	0.33	1.95	0.98	0.06	50.7
140	97.92	0.33	1.97	0.98	0.05	50.8
160	98.04	0.34	2.03	0.99	0.05	50.9
180	98.15	0.34	2.07	1.00	0.05	50.9
182.5	98.16	0.34	2.08	1.00	0.05	51.0
200	98.25	0.34	2.11	1.01	0.05	51.1
220	98.34	0.33	2.16	1.02	0.05	51.2
240	98.43	0.33	2.20	1.02	0.04	51.3
260	98.52	0.33	2.24	1.03	0.04	51.5
280	98.60	0.33	2.28	1.03	0.04	51.6
310	98.72	0.33	2.33	1.04	0.04	51.7
330	98.79	0.34	2.37	1.04	0.04	51.9
360	98.89	0.34	2.43	1.05	0.03	52.0
390	98.99	0.34	2.47	1.06	0.03	52.2
420	99.09	0.34	2.50	1.06	0.03	52.4
450	99.18	0.34	2.54	1.07	0.027	52.5

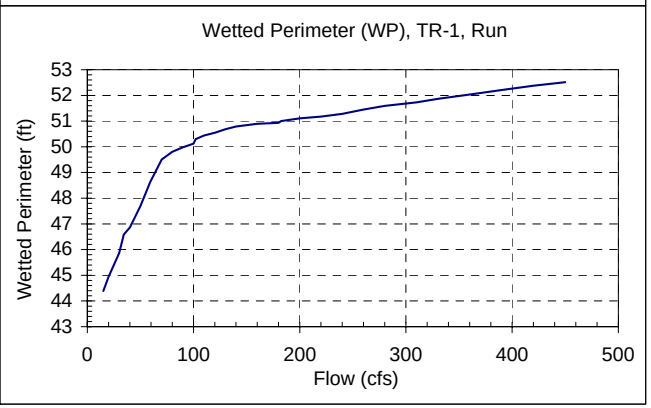




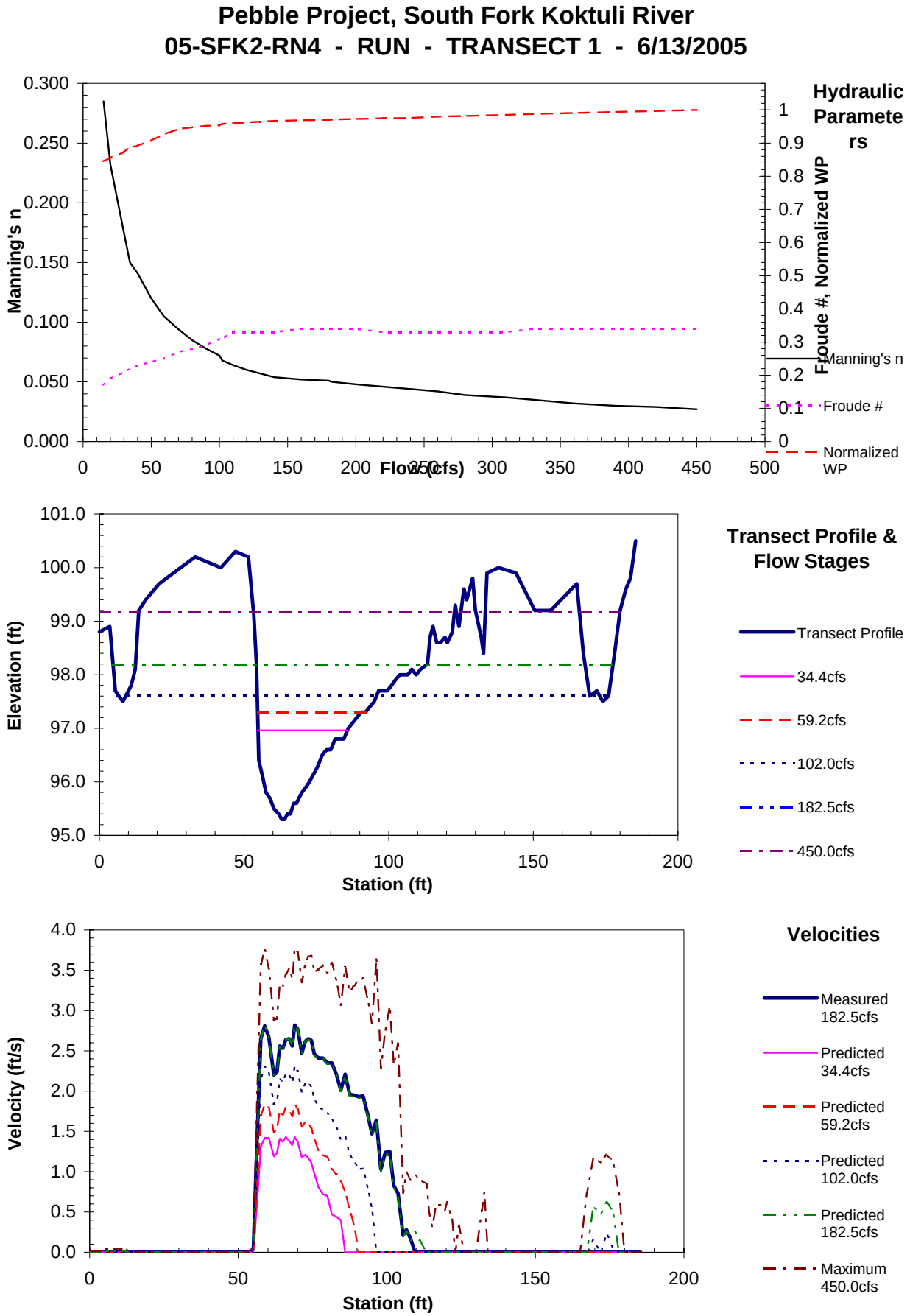








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

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QARD  20.0
QARD  30.0
QARD  34.4
QARD  40.0
QARD  50.0
QARD  59.2
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 102.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 182.5
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 310.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 420.0
QARD 450.0
XSEC  1000     1000. 1.0     95.46    .00180
      1000   .098.79  3.698.88  5.597.69  6.797.58  8.197.54  9.197.62
      1000 11.097.80 12.498.09 13.699.16 16.099.38 20.799.69 25.699.90
      1000 33.1100.2 42.0100.0 47.0100.3 51.5100.2 53.499.05 54.398.18
      1000 55.196.37 56.496.08 57.695.77 58.995.68 60.395.48 62.095.37
      1000 63.095.27 64.095.27 65.095.37 66.095.37 67.295.58 68.295.58
      1000 69.095.68 70.095.77 71.495.87 72.695.98 73.696.08 74.696.18
      1000 75.696.27 77.096.48 78.596.58 80.096.58 81.596.77 83.096.77
      1000 84.596.77 86.096.98 87.597.08 89.097.18 90.597.27 92.097.27
      1000 93.597.37 95.097.48 96.597.68 98.097.68 99.597.68101.097.77
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```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
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NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      23.9
NS    1000      23.9      34.9      32.6      23.6      43.6      43.7
NS    1000      34.8      23.6      42.6      34.6      35.6      34.6
NS    1000      42.7      34.6      43.7      32.7      23.6      23.6
NS    1000      34.8      43.6      34.6      43.6      43.6      34.6
NS    1000      34.6      34.8      34.6      34.6      43.6      34.6
NS    1000      34.6      34.6      34.6      34.8      34.7      34.7
NS    1000      34.7      34.7      34.7      32.7      23.7      23.9
NS    1000      23.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9
WSL   1000     96.57     96.69     96.88     96.95     97.03     97.16
WSL   1000     97.27     97.38     97.47     97.56     97.64     97.65
WSL   1000     97.71     97.79     97.85     97.92     98.04     98.15
WSL   1000     98.16     98.25     98.34     98.43     98.52     98.60
WSL   1000     98.72     98.79     98.89     98.99     99.09     99.18
CAL1  1000     98.18     182.5
VEL1  1000
VEL1  1000                                 0.00 0.05 1.47 2.65 2.81 2.67 2.20
VEL1  1000 2.23 2.56 2.53 2.64 2.65 2.56 2.82 2.77 2.47 2.62 2.65 2.63
VEL1  1000 2.46 2.41 2.41 2.35 2.35 2.21 2.01 2.21 1.96 1.95 1.93 1.94
VEL1  1000 1.72 1.47 1.64 1.03 1.24 1.25 0.83 0.73 0.21 0.28 0.17 0.00
VEL1  1000 0.00 0.00
VEL1  1000
VEL1  1000
CAL2  1000     97.29      59.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.61     102.0
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     96.96      34.4
VEL4  1000
VEL4  1000
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-IC1

Habitat Type: Island Complex

River Kilometer: 27.42

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-IC1
Habitat Type: Island Complex

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	Trip	BM	HP	AP	TP
1st	6/13/2005	1	100.00	98.61	99.19	98.54
2nd	7/17/2005	2	100.00	98.61	99.19	98.53
3rd	8/10/2005	3	100.00	98.62	99.20	98.54
4th	7/6/2006	4	100.00	98.62	99.19	98.57
5th	4/11/2007	5	100.00	98.60	99.19	98.67

(a) Elevations of control pins (BM, HP, AP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between control pins (except TP) were within ±0.01ft over the 2 years period. Small changes of elevations suggested the control pin datum was stable.
(c) The relative elevation changes showed TP continued to raise from 2005 to 2007, which may be caused by frost heave No corrections for WSE's were needed because the survey datum was based on BM, not TP.
(d) AP, angle pin, was a working pin located on the island in the stream between HP and TP.

calibration notes

Measured WSE:

This transect is an island complex with a right channel and a left channel. Right channel was designated as main channel because it carried the majority of water. There were multiple WSEs surveyed across each channel during each site visit. The average of all measured WSEs of each channel is used as the representative WSE of that channel for hydraulic modeling.

Date	WSE (ft)	
	Left	Main-R
6/13/2005	97.51	96.75
7/17/2005	96.75	96.32
8/10/2005	96.12	96.03
7/6/2006	95.87	96.17
4/11/2007	95.67	95.58

The bed profiles of left channel from each site visit were adjusted based on their WSE differences from the right channel. This is to meet the requirement of one-WSE across the transect when modeling using PHABSIM.

Discharge:

All measured discharges for each channel and the entire transect are summarized in the following table.

Date	Flow (cfs)		
	Left	Right (main)	Total
6/13/2005	22.2	165.8	188.1
7/17/2005			
8/10/2005	16.3	41.9	58.2
7/6/2006	34.2	64.9	99.1
4/11/2007	11.5	13.7	25.2

No discharge was measured during the 7/17/05 site visit.
Photos of 4/11/07 site visit showed residual ice on banks and near shore, but the transect was clear of ice. The ice impact should be minimal and thus the surveyed hydraulics of this date were included in modeling.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Left Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/13/2005	-0.013%	157.5
7/17/2005	-0.005%	184
8/10/2005	0.022%	179.4
7/6/2006	0.267%	89.9
4/11/2007	0.179%	156.7

Right (Main) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/13/2005	0.380%	147.5
7/17/2005	0.381%	97
8/10/2005	0.357%	100.8
7/6/2006	0.409%	90.5
4/11/2007	0.332%	144.6

The slope S=0.380% of 6/13//2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/13/2005	94.95
7/17/2005	
8/10/2005	95.11
7/6/2006	94.68
4/11/2007	94.73
Invert	95.11
SZF	95.11

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/17/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/13/2005	188.1	96.75	96.79	0.04	IFG4
2nd	7/17/2005		96.32			
3rd	8/10/2005	58.2	96.03	95.92	**-0.11**	IFG4
4th	7/6/2006	99.1	96.17	96.24	0.07	IFG4
5th	4/11/2007	25.2	95.58	95.59	0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.11ft is unusually high compared to the other sites.
(c) No discharge was measured during the 7/17/05 site visit.
(d) Photos of 4/11/07 site visit showed residual ice on banks and waters edge. Not expected ice to have much significant impact on hydraulics, and thus calibration included the hydraulics surveyed on this date.

calibration notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 25.2cfs to 188.1cfs.
Each of the four measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity
profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
For the four calibrated velocity profiles, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

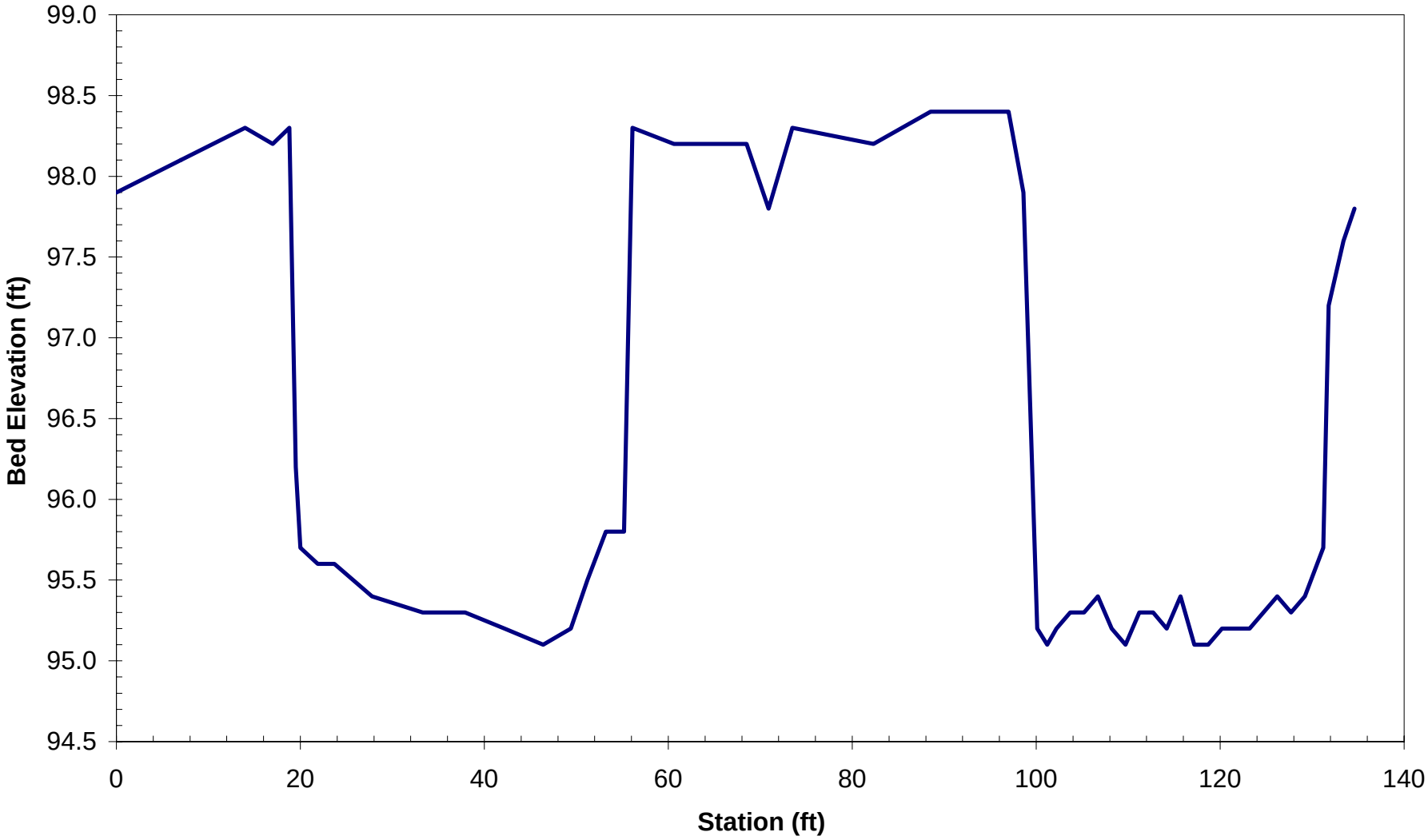
Survey Date	Q (cfs)	WUA (Y/N)
6/13/2005	188.1	Y
7/17/2005		
8/10/2005	58.2	Y
7/6/2006	99.1	Y
4/11/2007	25.2	Y

(4) Hydraulic Calibration Results:

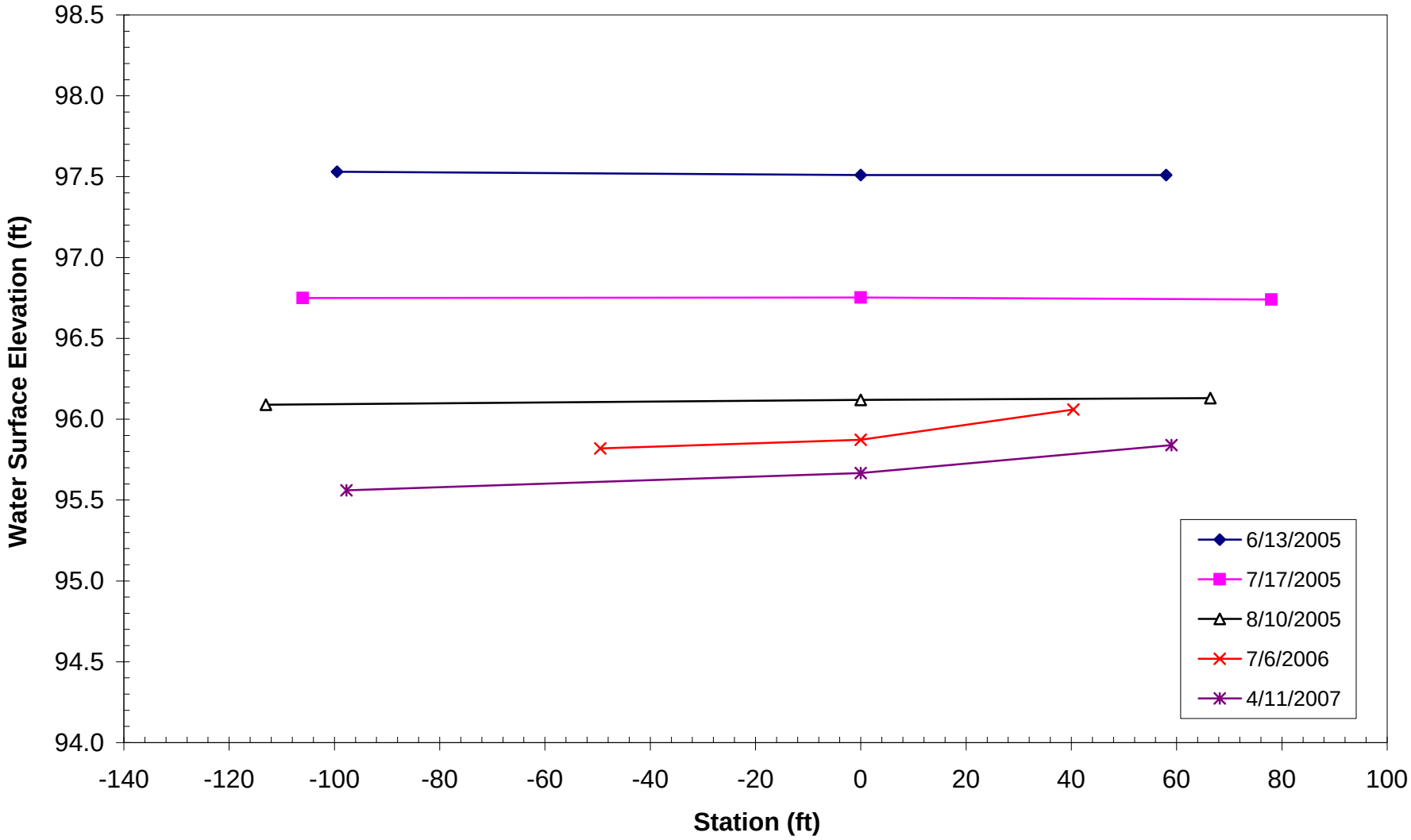
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were
all within reasonable ranges. The Manning's n and Froude number, however, did not vary in the normal directions
for the entire range of simulation flows. This may have been caused by (1) the complex multiple-channel
bathymetry to which the Froude number definition (Fr=V_ave/sqrt(g*A/T), Chow, 1959) for a single-channel
transect may not be applicable and (2) the very different WSE levels (as much as 0.76ft in elevation difference)
and velocity distributions across the two channels in the transect, where the definition of uniform flow, as
required by the Manning's equation, may not be completely satisfied. As the result, the calculated Manning's n
values for characterizing the channel roughness may not reflect the actual flow resistance of each individual channel.

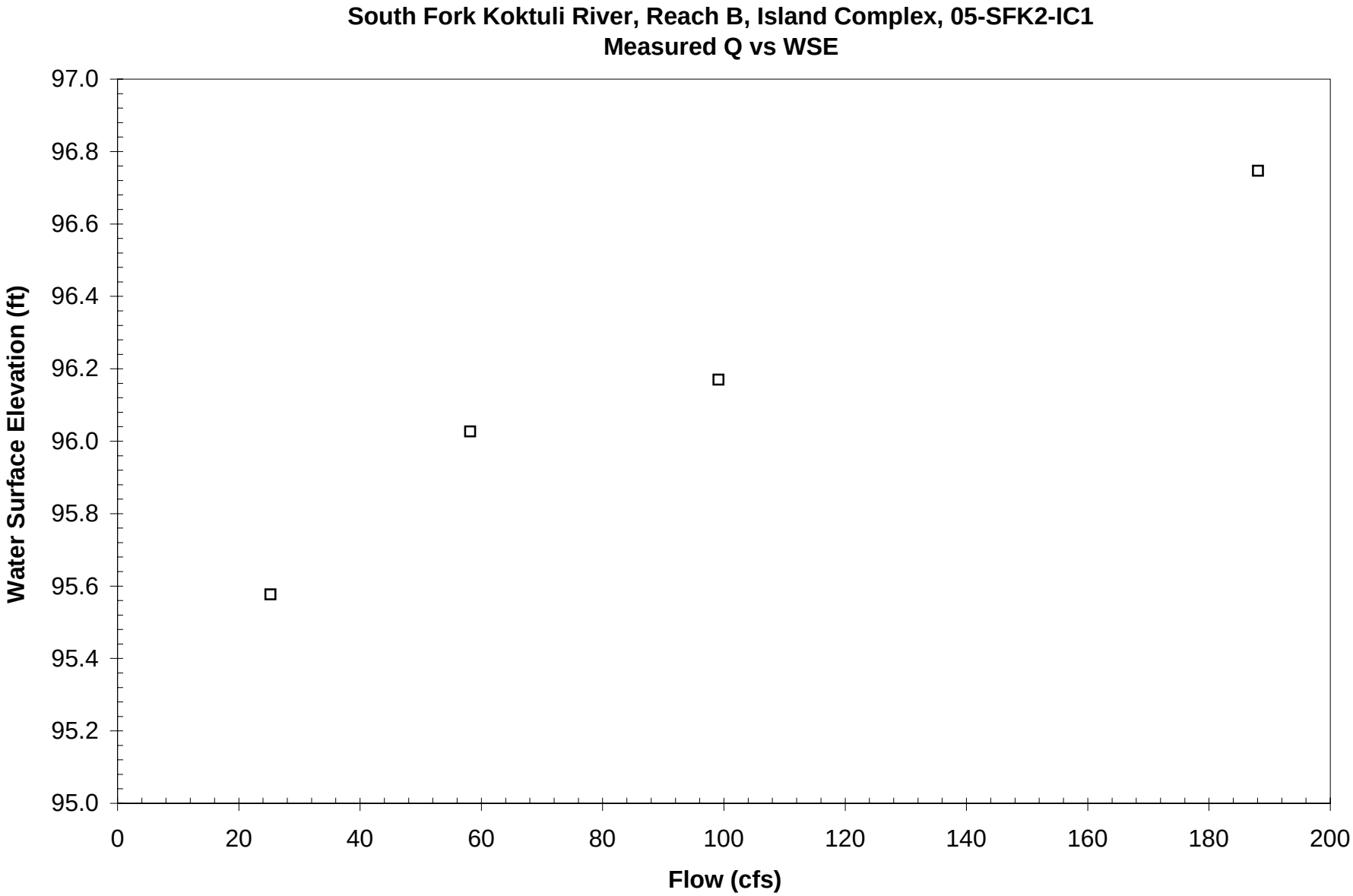
calibration notes

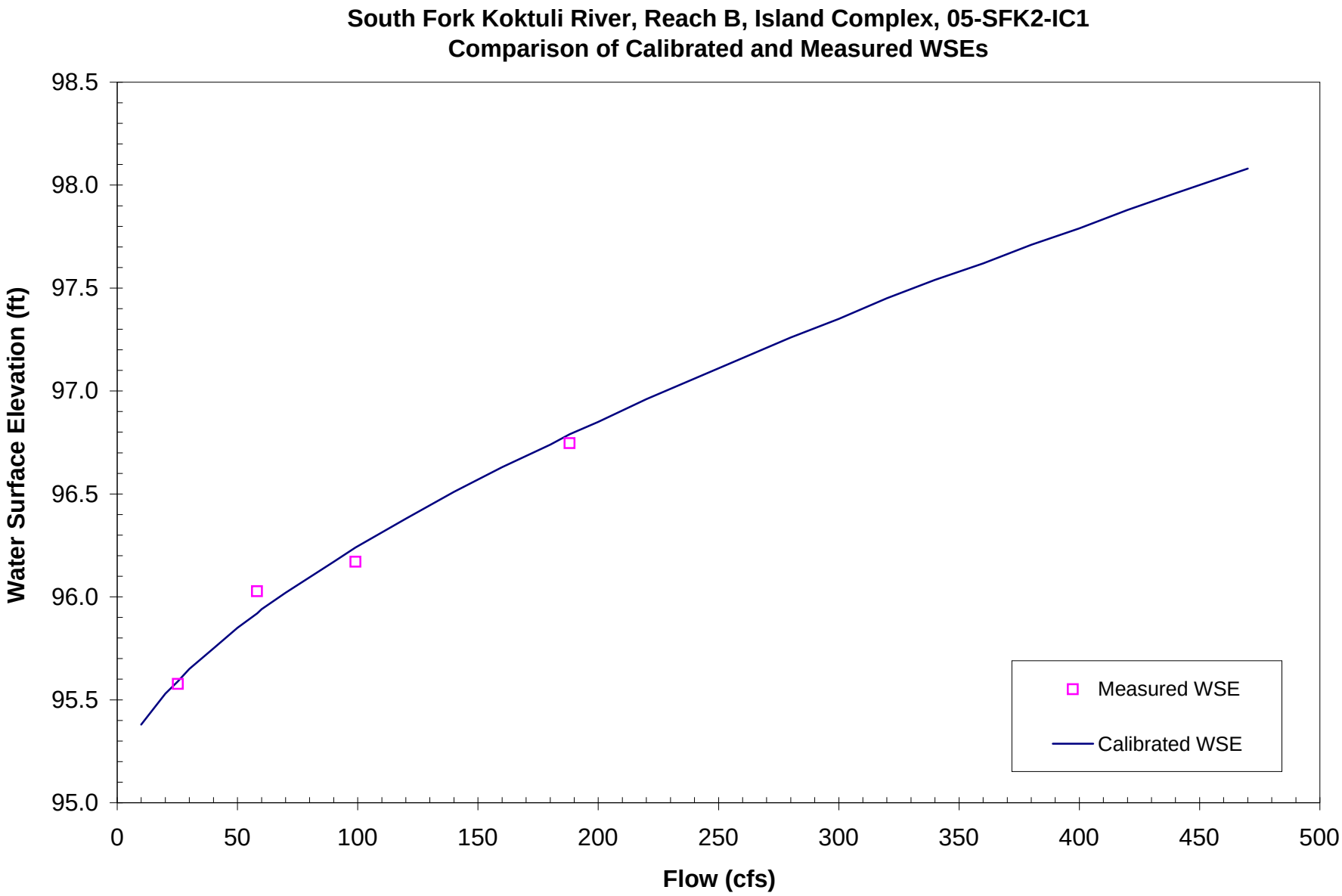
South Fork Koktuli River, Reach B, Island Complex, 05-SFK2-IC1
Measured Transect Profile



South Fork Koktuli River, Reach B, Island Complex, 05-SFK2-IC1
Longitudinal Water Surface Elevation Profiles



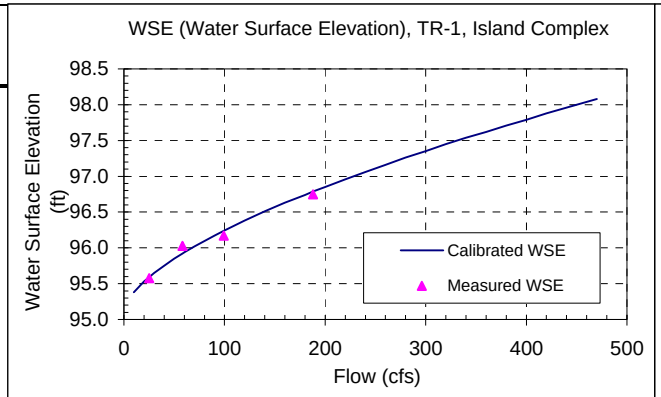

South Fork Koktuli River, Reach B, Island Complex, 05-SFK2-IC1
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)

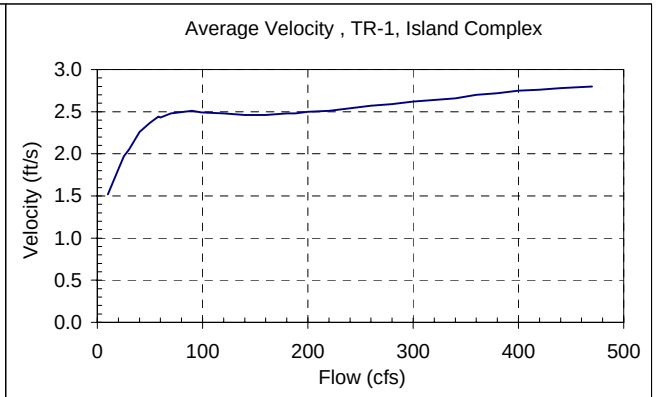

South Fork Koktuli River, Reach B, Island Complex, 05-SFK2-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

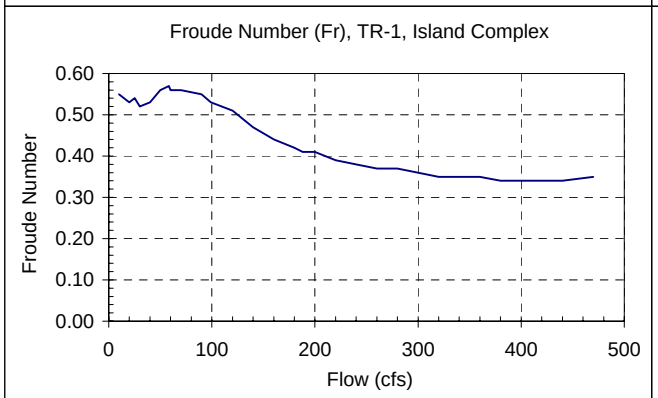
Stream: South Fork Koktuli River
Site Name: 05-SFK2-IC1
Date: 6/13/2005
Calibration Flow: Q(6/13/2005)

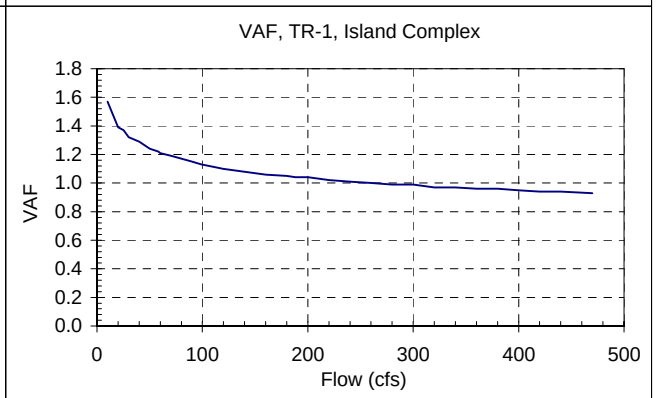
Reach: B
Site #: 1
Transect: 1
Habitat: Island Complex

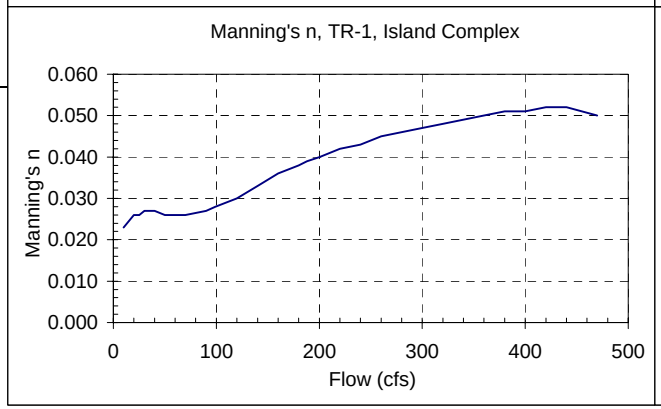
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
10	95.38	0.55	1.52	1.57	0.023	28.4
20	95.53	0.53	1.82	1.39	0.03	30.2
25.2	95.59	0.54	1.97	1.37	0.03	30.6
30	95.65	0.52	2.05	1.32	0.03	31.1
40	95.75	0.53	2.26	1.29	0.03	31.9
50	95.85	0.56	2.37	1.24	0.03	37.9
58.2	95.92	0.57	2.44	1.22	0.03	41.9
60	95.94	0.56	2.43	1.21	0.03	43.0
70	96.02	0.56	2.48	1.19	0.03	47.2
90	96.17	0.55	2.51	1.15	0.03	56.3
99.1	96.24	0.53	2.49	1.13	0.03	59.8
120	96.38	0.51	2.48	1.10	0.03	66.0
140	96.51	0.47	2.46	1.08	0.03	69.0
160	96.63	0.44	2.46	1.06	0.04	69.6
180	96.74	0.42	2.48	1.05	0.04	70.1
188.1	96.79	0.41	2.48	1.04	0.04	70.3
200	96.85	0.41	2.50	1.04	0.04	70.6
220	96.96	0.39	2.51	1.02	0.04	71.1
240	97.06	0.38	2.54	1.01	0.04	71.5
260	97.16	0.37	2.57	1.00	0.05	72.0
280	97.26	0.37	2.59	0.99	0.05	72.7
300	97.35	0.36	2.62	0.99	0.05	73.4
320	97.45	0.35	2.64	0.97	0.05	74.1
340	97.54	0.35	2.66	0.97	0.05	74.8
360	97.62	0.35	2.70	0.96	0.05	75.5
380	97.71	0.34	2.72	0.96	0.05	76.3
400	97.79	0.34	2.75	0.95	0.05	77.0
420	97.88	0.34	2.76	0.94	0.05	78.4
440	97.96	0.34	2.78	0.94	0.05	81.1
470	98.08	0.35	2.80	0.93	0.050	88.5

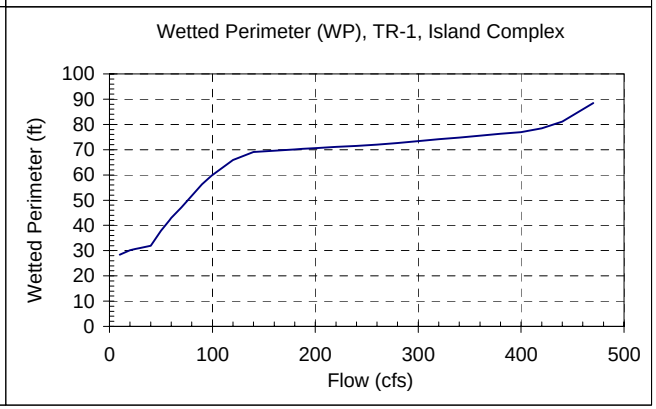




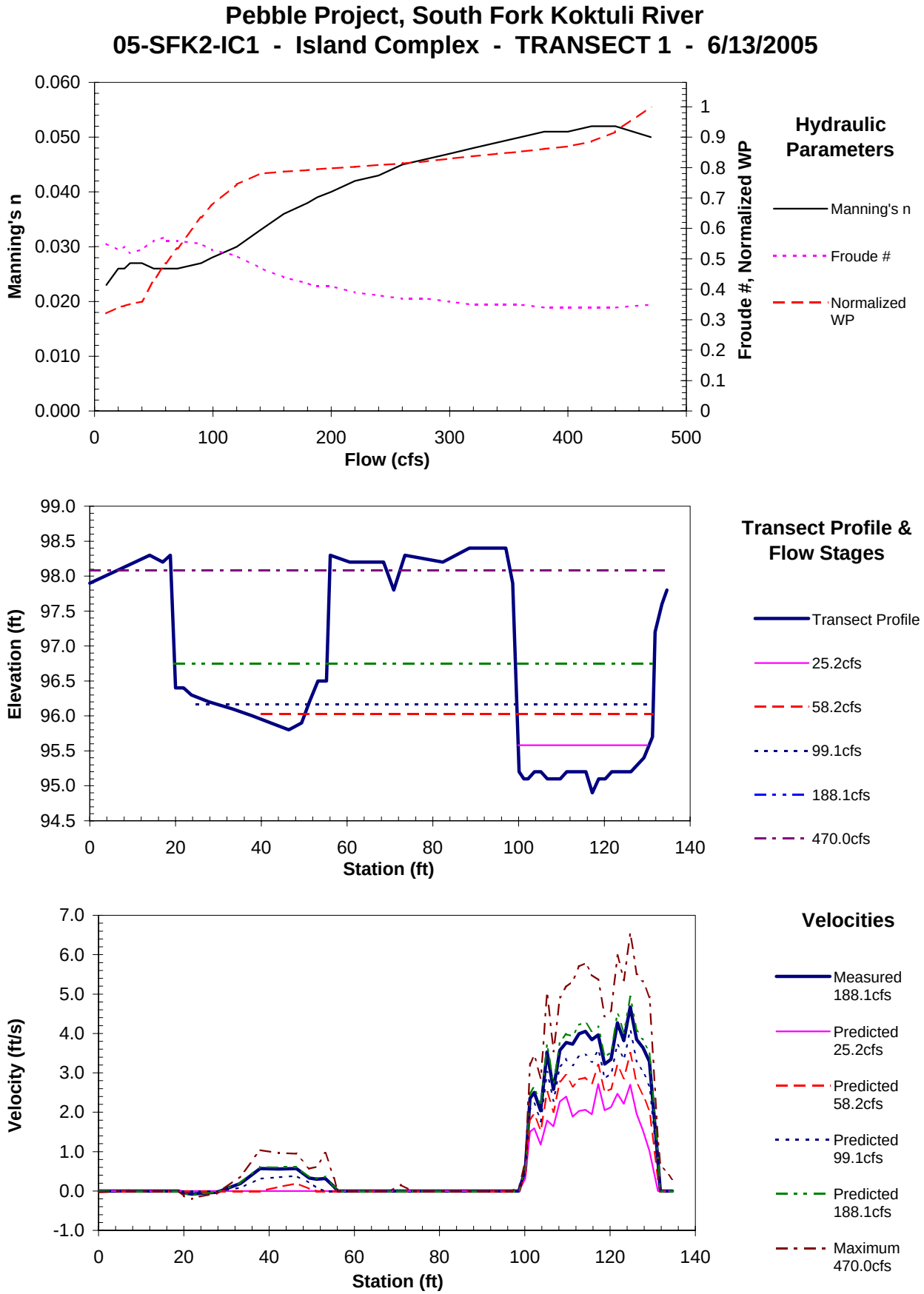








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-IC1  06/13/05
ISLAND                      0605Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  10.0
QARD  20.0
QARD  25.2
QARD  30.0
QARD  40.0
QARD  50.0
QARD  58.2
QARD  60.0
QARD  70.0
QARD  90.0
QARD  99.1
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 188.1
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
XSEC  1000     1000. 1.0     95.11    .00380
      1000   .097.93  7.098.09 14.098.26 17.098.18 18.898.27 20.096.37
      1000 21.996.37 23.796.27 27.896.17 33.396.07 37.995.97 42.295.87
      1000 46.495.77 49.495.87 51.296.17 53.296.47 55.296.47 56.198.27
      1000 60.698.20 68.598.17 70.997.79 73.598.28 82.398.17 88.598.39
      1000 97.098.36 98.697.91100.195.15101.295.05102.295.05103.795.15
      1000105.295.25106.795.05108.295.05109.795.05111.295.25112.795.25
      1000114.295.25115.795.25117.294.95118.795.05120.295.05121.795.15
      1000123.295.15124.795.15126.295.25127.795.35129.295.45131.295.75
      1000131.897.19133.497.57134.697.81
NS    1000      22.9      22.9      22.9      22.9      23.9      23.9
NS    1000      22.9      23.9      24.8      24.6      23.9      23.9
NS    1000      22.9      24.9      23.8      23.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      23.6      34.8      24.7      23.8
NS    1000      23.9      34.7      34.9      34.7      23.6      34.6
NS    1000      32.8      43.6      34.6      34.7      45.6      34.7
```

IFG4 Data Deck (continued)

```
NS    1000      43.6      45.8      43.7      45.6      34.6      37.6
NS    1000      22.9      22.9      22.9
WSL   1000     95.38     95.53     95.59     95.65     95.75     95.85
WSL   1000     95.92     95.94     96.02     96.17     96.24     96.38
WSL   1000     96.51     96.63     96.74     96.79     96.85     96.96
WSL   1000     97.06     97.16     97.26     97.35     97.45     97.54
WSL   1000     97.62     97.71     97.79     97.88     97.96     98.08
CAL1  1000     96.75     188.1
VEL1  1000                     0.00-0.05-0.08-0.06-0.03 0.19 0.57 0.56
VEL1  1000 0.57 0.33 0.30 0.32 0.11 0.00
VEL1  1000           0.53 2.35 2.50 2.04 3.53 2.58 3.57 3.77 3.73 3.99
VEL1  1000 4.05 3.84 3.96 3.22 3.34 4.27 3.82 4.67 3.85 3.64 3.29 0.78
VEL1  1000
CAL2  1000     96.03      58.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.17      99.1
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.58      25.2
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN7

Habitat Type: Run

River Kilometer: 28.07

Stream: South Fork Koktuli River
Reach: B
Site Name: 05-SFK2-RN7
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/12/2005	1	100.00	98.83	101.06
2nd	7/16/2005	2	100.00	98.82	101.04
3rd	8/11/2005	3	100.00	98.83	101.05
4th	7/6/2006	4	100.00	98.85	101.21
5th	4/11/2007	5	100.00	98.87	101.47

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and HP were within ±0.02ft during the 2005-2006 period, indicating BM and HP were relatively stable during that period.
(c) 4/11/07 survey results showed HP and TP elevations increased 0.02ft and 0.25ft, respectively, from 2006. The small change in HP suggested BM and HP were still relatively stable. The elevation change of TP was significant, but no corrections were needed for the 2007 WSEs, because elevation datum was based on BM.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/12/2005	96.70
7/16/2005	96.33
8/11/2005	95.95
7/6/2006	96.20
4/11/2007	95.65

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/12/2005	191.1
7/16/2005	
8/11/2005	52.4
7/6/2006	91.9
4/11/2007	24.1

Substrate was surveyed on 7/16/05, but no discharge was measured on the same date.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/12/2005	0.227%	145.5
7/16/2005	0.199%	135.8
8/11/2005	0.131%	99.3
7/6/2006	0.210%	119.2
4/11/2007	0.079%	101.8

The slope S=0.227% of 6/12/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/12/2005	94.20
7/16/2005	
8/11/2005	94.35
7/6/2006	94.30
4/11/2007	94.25
Invert	94.35
SZF	94.35

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in 7/16/05 trip.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR1	calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/12/2005	191.1	96.70	96.67	-0.03	IFG4
2nd	7/16/2005		96.33			
3rd	8/11/2005	52.4	95.95	95.95	0.00	IFG4
4th	7/6/2006	91.9	96.20	96.23	0.03	IFG4
5th	4/11/2007	24.1	95.65	95.64	-0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range
(c) No discharge was measured in 7/16/05 trip
(d) Photos of 4/11/07 site visit showed scattered ice on waters edge. Don't expect the residual ice had significant impact on hydraulics, and thus the surveyed data were included in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 24.1cfs, 52.4cfs 91.9cfs, and 191.1cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

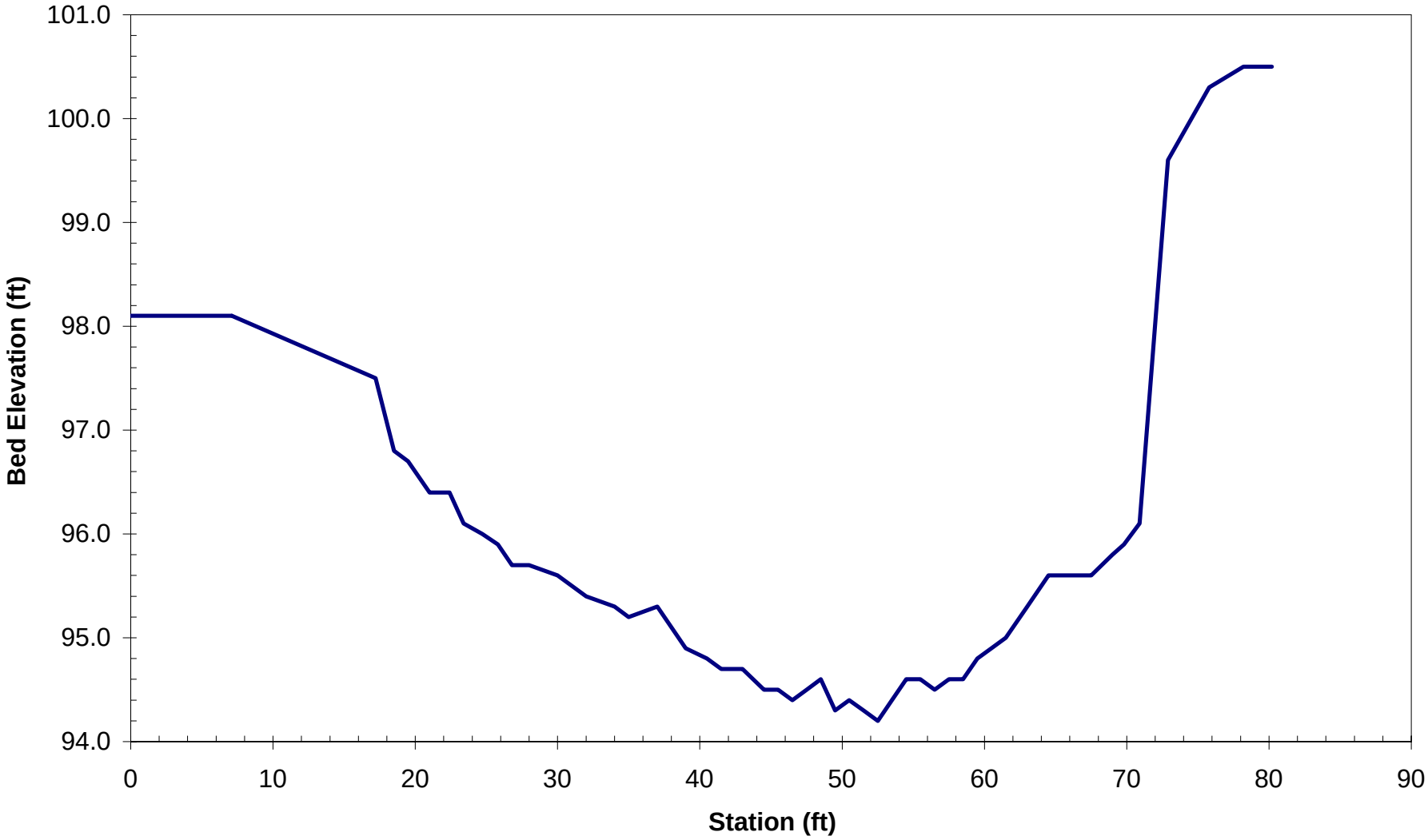
Survey Date	Q (cfs)	WUA (Y/N)
6/12/2005	191.1	Y
7/16/2005		
8/11/2005	52.4	Y
7/6/2006	91.9	Y
4/11/2007	24.1	Y

(4) Hydraulic Calibration Results:

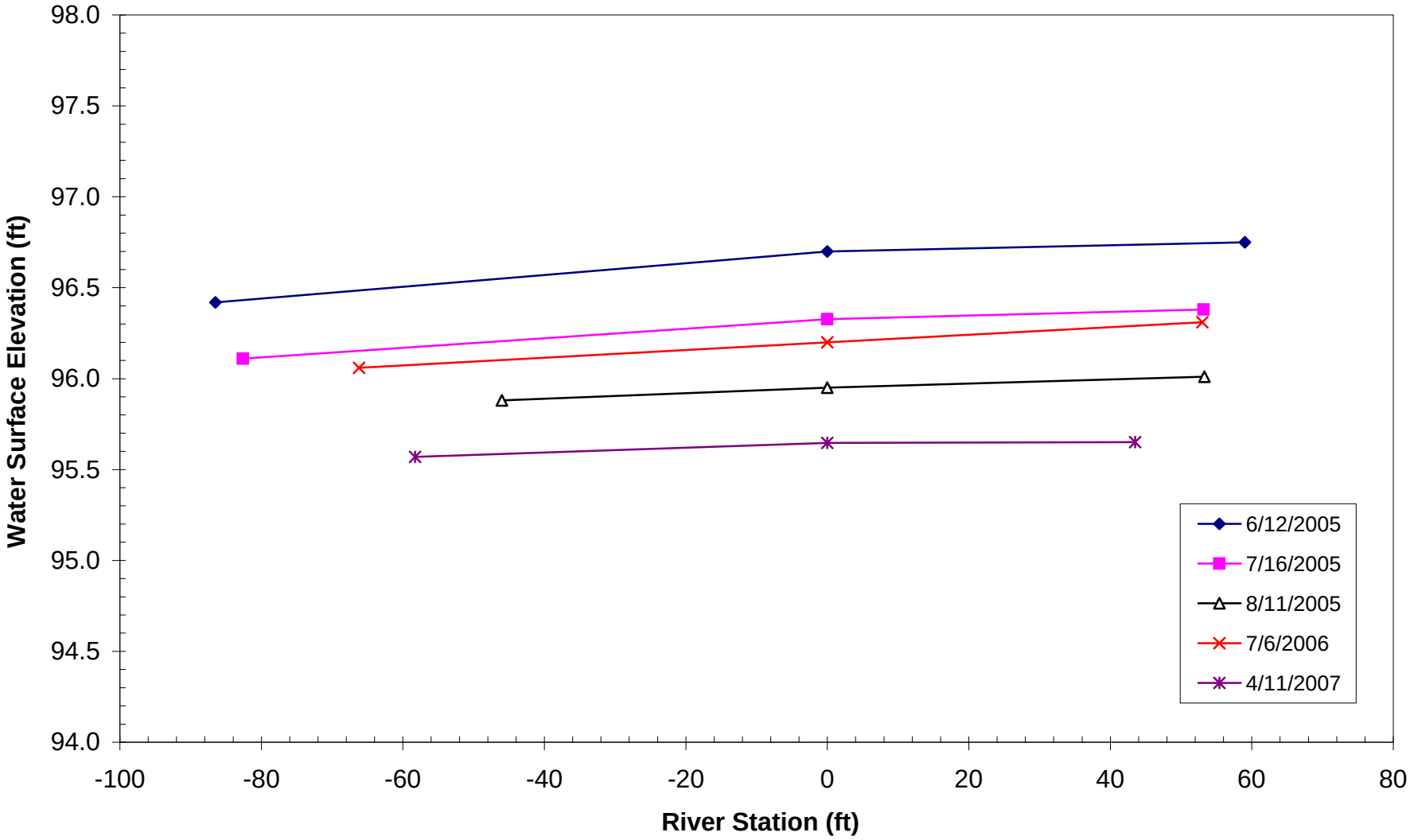
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

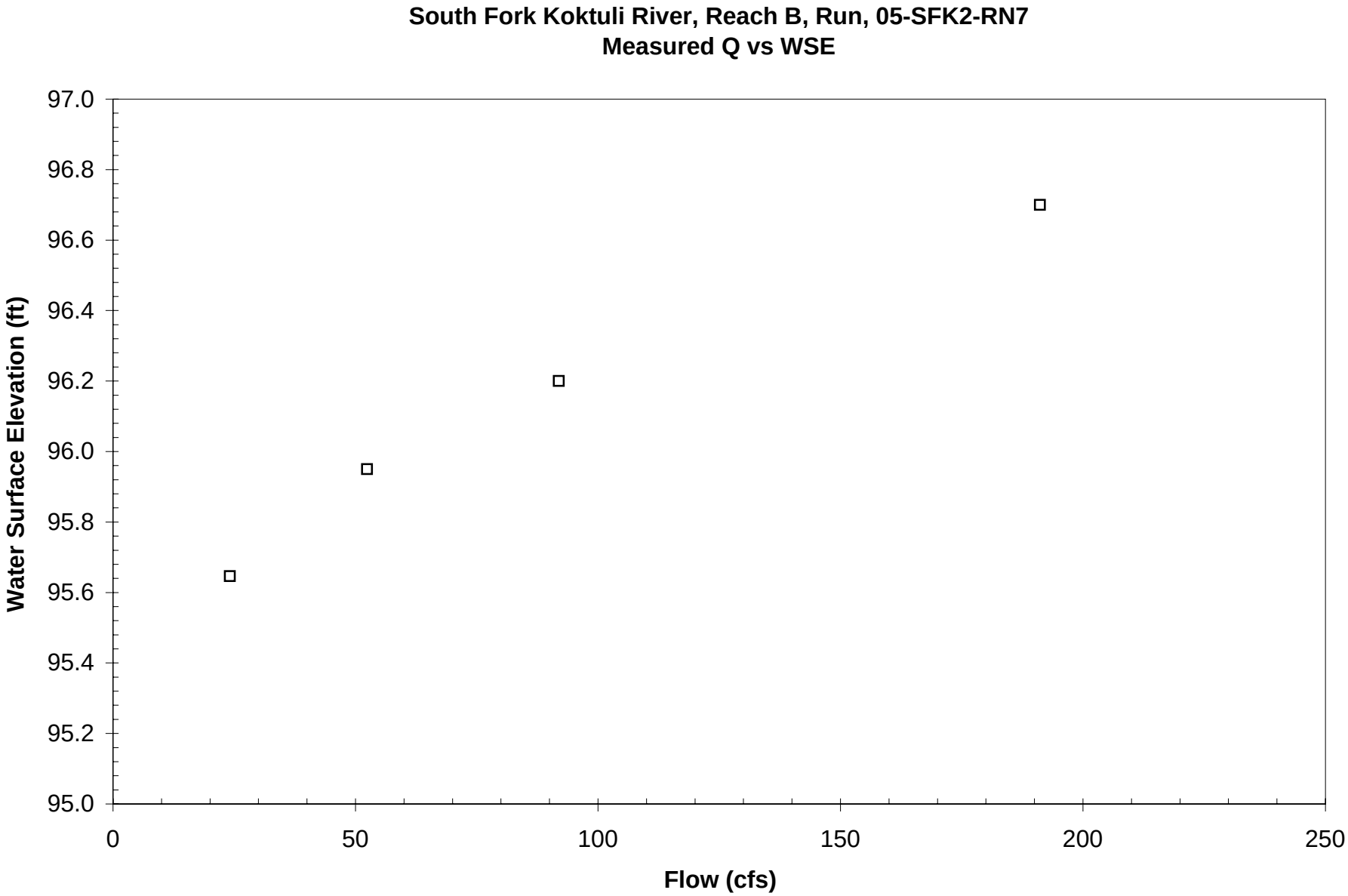
calibration notes

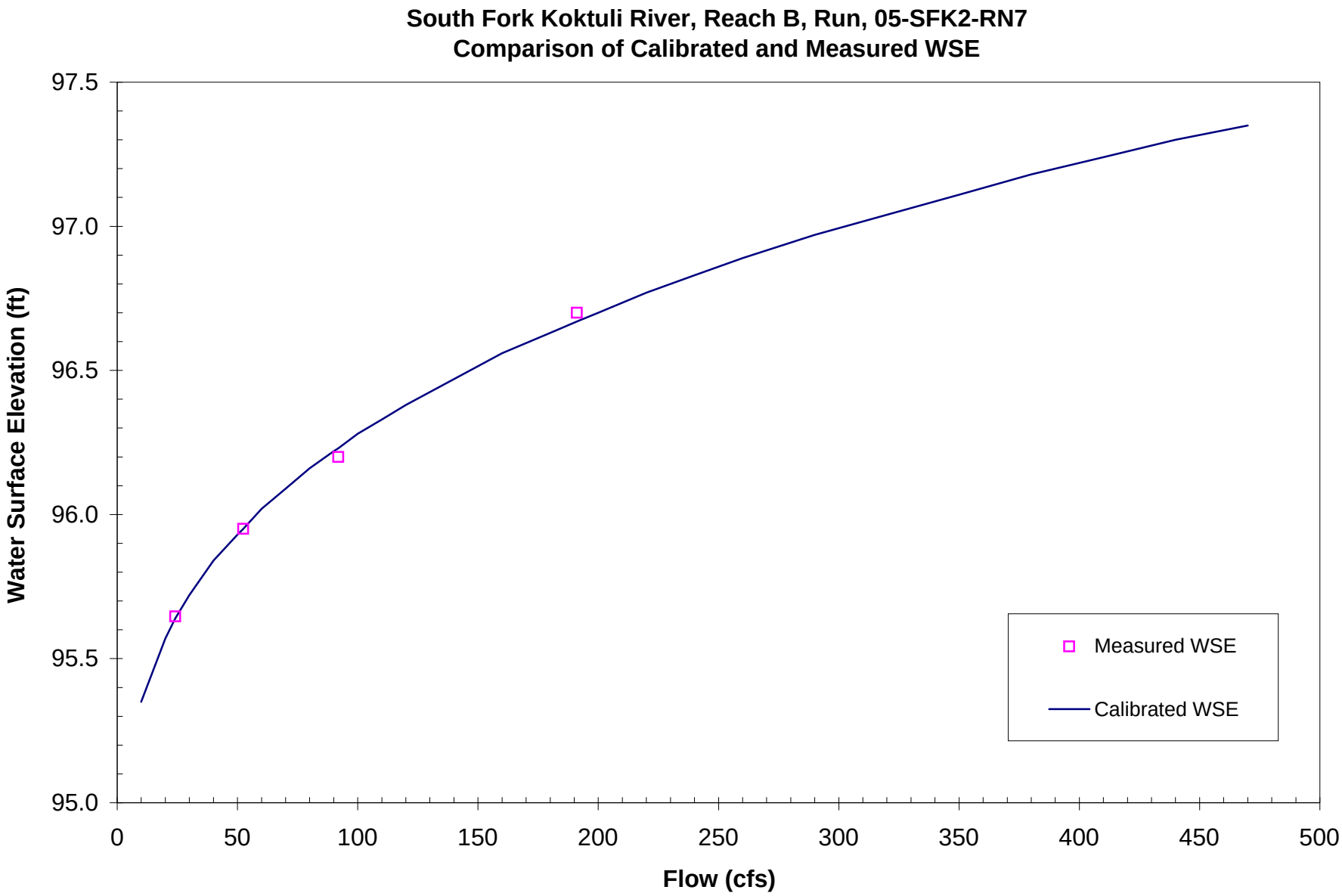
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN7
Measured Transect Profile



South Fork Koktuli River, Reach B, Run, 05-SFK2-RN7
Longitudinal Water Surface Elevation Profiles



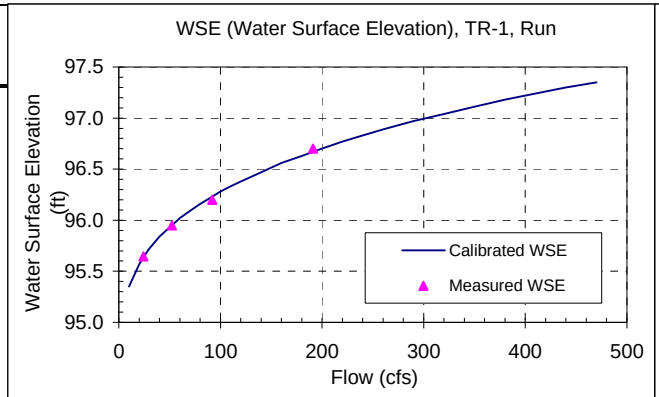

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN7
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
50
100
150
200
250
Flow (cfs)

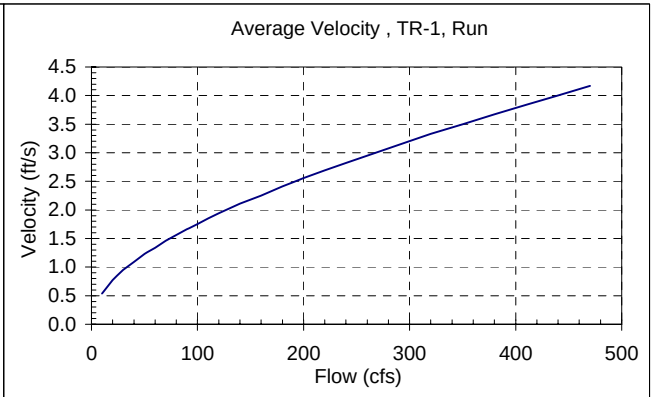

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN7
Comparison of Calibrated and Measured WSE
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

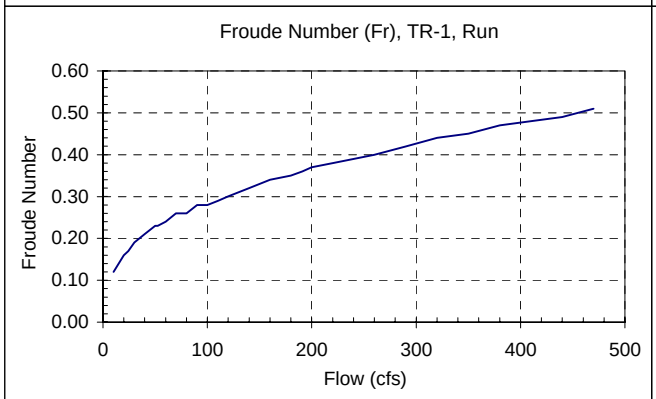
Stream: South Fork Koktuli River
Site Name: 05-SFK2-RN7
Date: 6/12/2005
Calibration Flow: Q(6/12/2005)

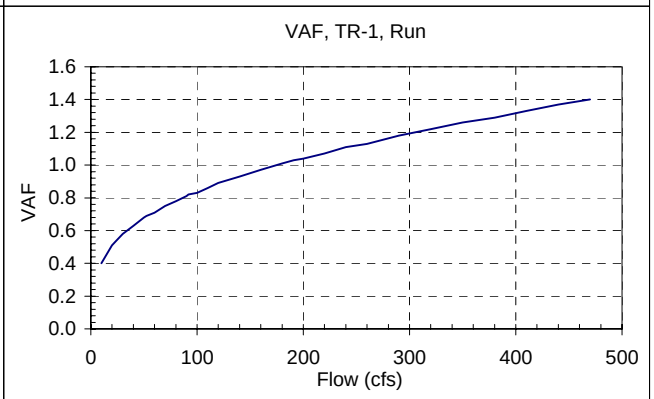
Reach: B
Habitat: Run
Site #: 7
Transect: 1

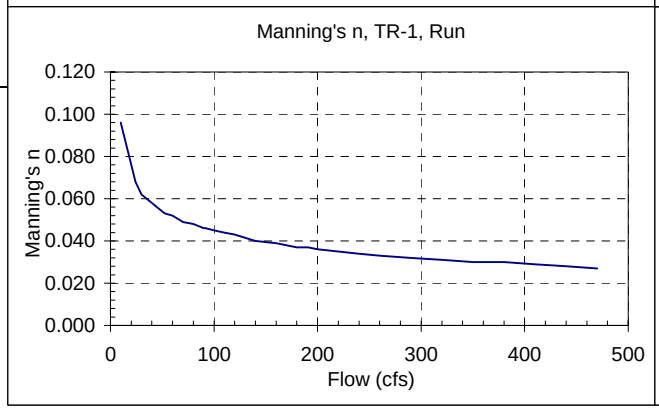
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
10	95.35	0.12	0.54	0.40	0.096	30.5
20	95.57	0.16	0.77	0.51	0.08	34.5
24.1	95.64	0.17	0.85	0.54	0.07	39.2
30	95.72	0.19	0.95	0.58	0.06	42.1
40	95.84	0.21	1.09	0.63	0.06	43.6
50	95.93	0.23	1.23	0.68	0.05	44.8
52.4	95.95	0.23	1.26	0.69	0.05	45.2
60	96.02	0.24	1.34	0.71	0.05	46.4
70	96.09	0.26	1.46	0.75	0.05	47.9
80	96.16	0.26	1.56	0.78	0.05	48.2
90	96.22	0.28	1.66	0.81	0.05	48.4
91.9	96.23	0.28	1.68	0.82	0.05	48.5
100	96.28	0.28	1.75	0.83	0.05	48.7
110	96.33	0.29	1.85	0.86	0.04	48.9
120	96.38	0.30	1.94	0.89	0.04	49.2
140	96.47	0.32	2.11	0.93	0.04	51.1
160	96.56	0.34	2.25	0.97	0.04	51.7
180	96.63	0.35	2.41	1.01	0.04	52.1
191.1	96.67	0.36	2.49	1.03	0.04	52.4
200	96.70	0.37	2.56	1.04	0.04	52.6
220	96.77	0.38	2.69	1.07	0.04	53.2
240	96.83	0.39	2.82	1.11	0.03	53.7
260	96.89	0.40	2.95	1.13	0.03	53.9
290	96.97	0.42	3.14	1.18	0.03	54.2
320	97.04	0.44	3.33	1.22	0.03	54.4
350	97.11	0.45	3.50	1.26	0.03	54.6
380	97.18	0.47	3.67	1.29	0.03	54.9
410	97.24	0.48	3.84	1.33	0.03	55.1
440	97.30	0.49	4.00	1.37	0.03	55.3
470	97.35	0.51	4.17	1.40	0.027	55.5

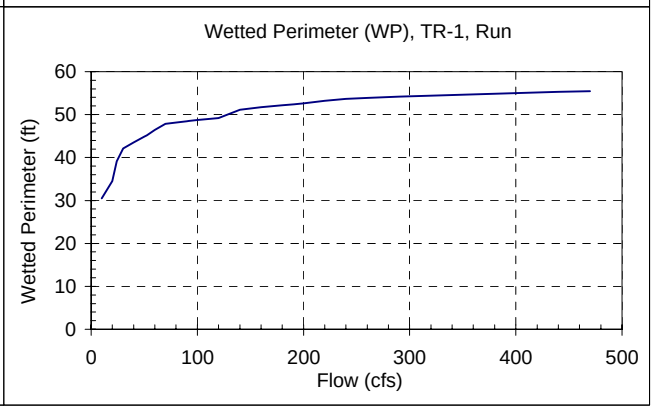




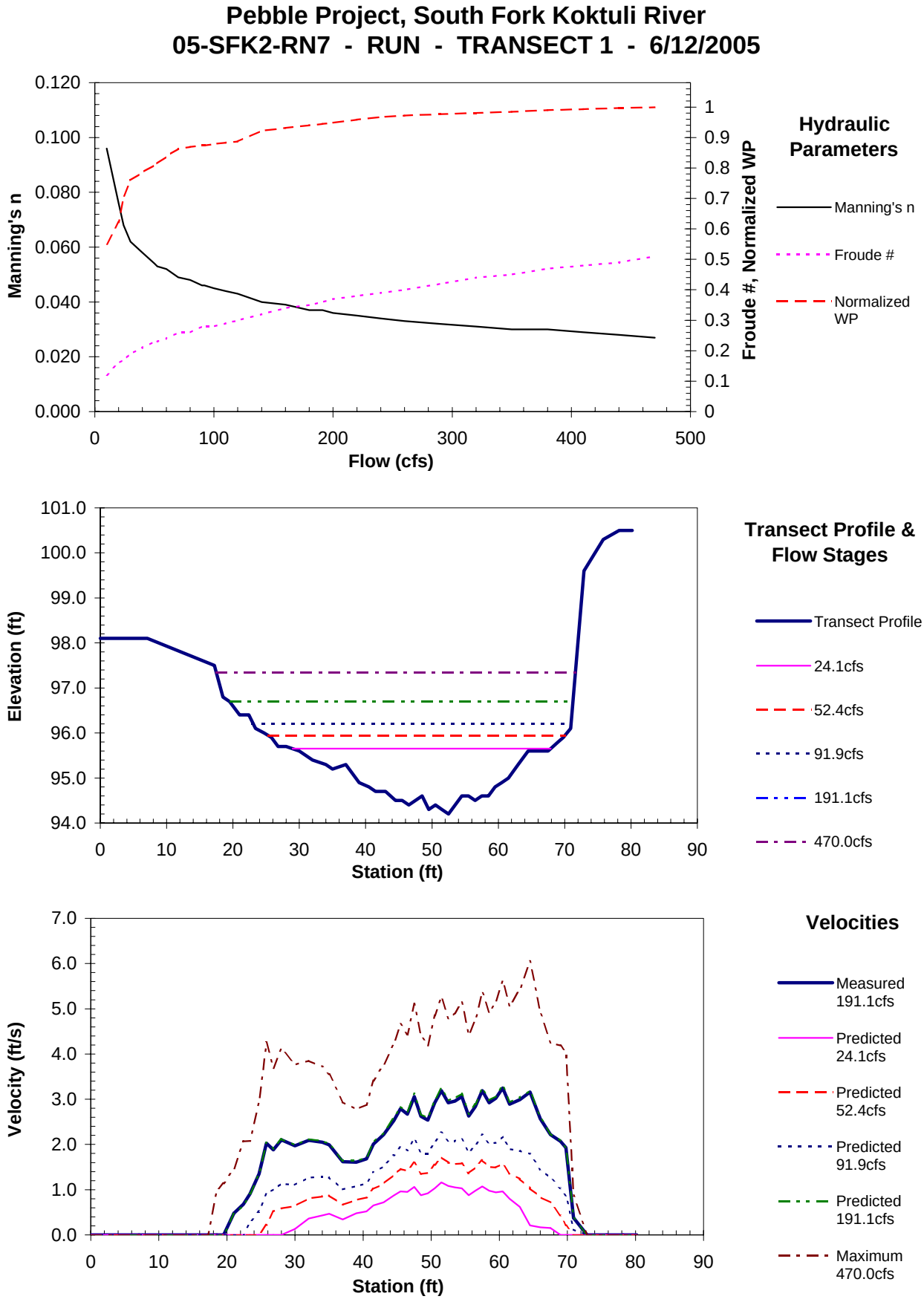








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RN7  06/12/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  10.0
QARD  20.0
QARD  24.1
QARD  30.0
QARD  40.0
QARD  50.0
QARD  52.4
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  91.9
QARD 100.0
QARD 110.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 191.1
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 470.0
XSEC  1000     1000. 1.0     94.35    .00227
      1000   .098.09  7.198.09 17.297.48 18.596.83 19.596.69 21.096.40
      1000 22.496.40 23.496.09 24.796.00 25.895.90 26.895.69 28.095.69
      1000 30.095.59 32.095.40 34.095.30 35.095.19 37.095.30 39.094.90
      1000 40.594.80 41.594.69 43.094.69 44.594.50 45.594.50 46.594.40
      1000 47.594.50 48.594.59 49.594.30 50.594.40 51.594.30 52.594.19
      1000 53.594.40 54.594.59 55.594.59 56.594.50 57.594.59 58.594.59
      1000 59.594.80 60.594.90 61.595.00 63.095.30 64.595.59 66.095.59
      1000 67.595.59 69.095.80 69.895.90 70.996.09 72.999.59 75.8100.3
      1000 78.2100.5 80.2100.5
NS    1000      22.9      22.9      22.9      22.9      23.7      23.6
NS    1000      62.6      65.6      43.6      64.6      42.6      43.6
NS    1000      32.7      42.7      42.7      65.6      64.7      62.6
NS    1000      64.7      62.6      35.6      63.6      53.6      53.6
NS    1000      32.6      62.8      43.6      54.7      65.7      65.7
NS    1000      65.7      65.6      65.6      45.6      43.7      54.6
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      43.6      43.6      43.6      45.7      64.6      54.8
NS    1000      65.7      54.6      52.6      23.8      22.9      22.9
NS    1000      22.9      22.9
WSL   1000     95.35     95.57     95.64     95.72     95.84     95.93
WSL   1000     95.95     96.02     96.09     96.16     96.22     96.23
WSL   1000     96.28     96.33     96.38     96.47     96.56     96.63
WSL   1000     96.67     96.70     96.77     96.83     96.89     96.97
WSL   1000     97.04     97.11     97.18     97.24     97.30     97.35
CAL1  1000     96.70     191.1
VEL1  1000                     0.00 0.48 0.68 0.91 1.35 2.03 1.88 2.10
VEL1  1000 1.97 2.09 2.05 1.99 1.62 1.61 1.68 2.01 2.22 2.53 2.79 2.67
VEL1  1000 3.06 2.62 2.54 2.92 3.19 2.92 2.96 3.06 2.63 2.84 3.19 2.92
VEL1  1000 3.02 3.25 2.89 2.99 3.16 2.57 2.22 2.07 1.93 0.38
VEL1  1000
CAL2  1000     95.95      52.4
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.20      91.9
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.65      24.1
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN6

Habitat Type: Run

River Kilometer: 29.24

Stream: South Fork Koktuli River
Reach: B
Site Name: 05-SFK2-RN6
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/12/2005	1	100.00	100.84	100.51
2nd	7/16/2005	2	100.00	100.84	100.51
3rd	8/10/2005	3	100.00	100.84	100.51
4th	7/6/2006	4	100.00	100.82	100.46
5th	4/11/2007	5	100.00	100.85	100.43

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and HP were within 0.02ft during the 2005-2007 period, indicating BM and HP were stable in this period.
(c) TP of 4/11/07 survey showed 0.08ft elevation shift, but the elevation datum was still considered stable because small relative elevation changes between BM and HP. No corrections to the surveyed WSEs were needed because elevations were based on BM.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/12/2005	98.70
7/16/2005	98.28
8/10/2005	97.77
7/6/2006	98.01
4/11/2007	97.10

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/12/2005	185.8
7/16/2005	
8/10/2005	44.2
7/6/2006	80.6
4/11/2007	16.1

Substrate was surveyed on 7/16/05, but no discharge was measured on the same date.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/12/2005	0.219%	90
7/16/2005	0.106%	180
8/10/2005	0.011%	190.4
7/6/2006	0.053%	151.5
4/11/2007	-0.024%	165.4

The slope S=0.219% of 6/12/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/12/2005	95.20
7/16/2005	
8/10/2005	95.17
7/6/2006	95.21
4/11/2007	95.10
Invert	95.21
SZF	95.21

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in 7/16/05 trip.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR	TR	TR	
1st	6/12/2005	185.8	98.70	98.72	0.02	IFG4
2nd	7/16/2005		98.28			
3rd	8/10/2005	44.2	97.77	97.67	-0.10	IFG4
4th	7/6/2006	80.6	98.01	98.06	0.05	IFG4
5th	4/11/2007	16.1	97.10	97.12	0.02	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.10ft is marginally acceptable.
(c) No discharge was measured in 7/16/05 trip
(d) Photos of 4/11/07 site visit showed channel was clear of ice and there was only scattered ice on waters edge. Don't expect the residual ice had any significant impact on hydraulics.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 16.1cfs, 44.2cfs 80.6cfs, and 185.8cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/12/2005	185.8	Y
7/16/2005		
8/10/2005	44.2	Y
7/6/2006	80.6	Y
4/11/2007	16.1	Y

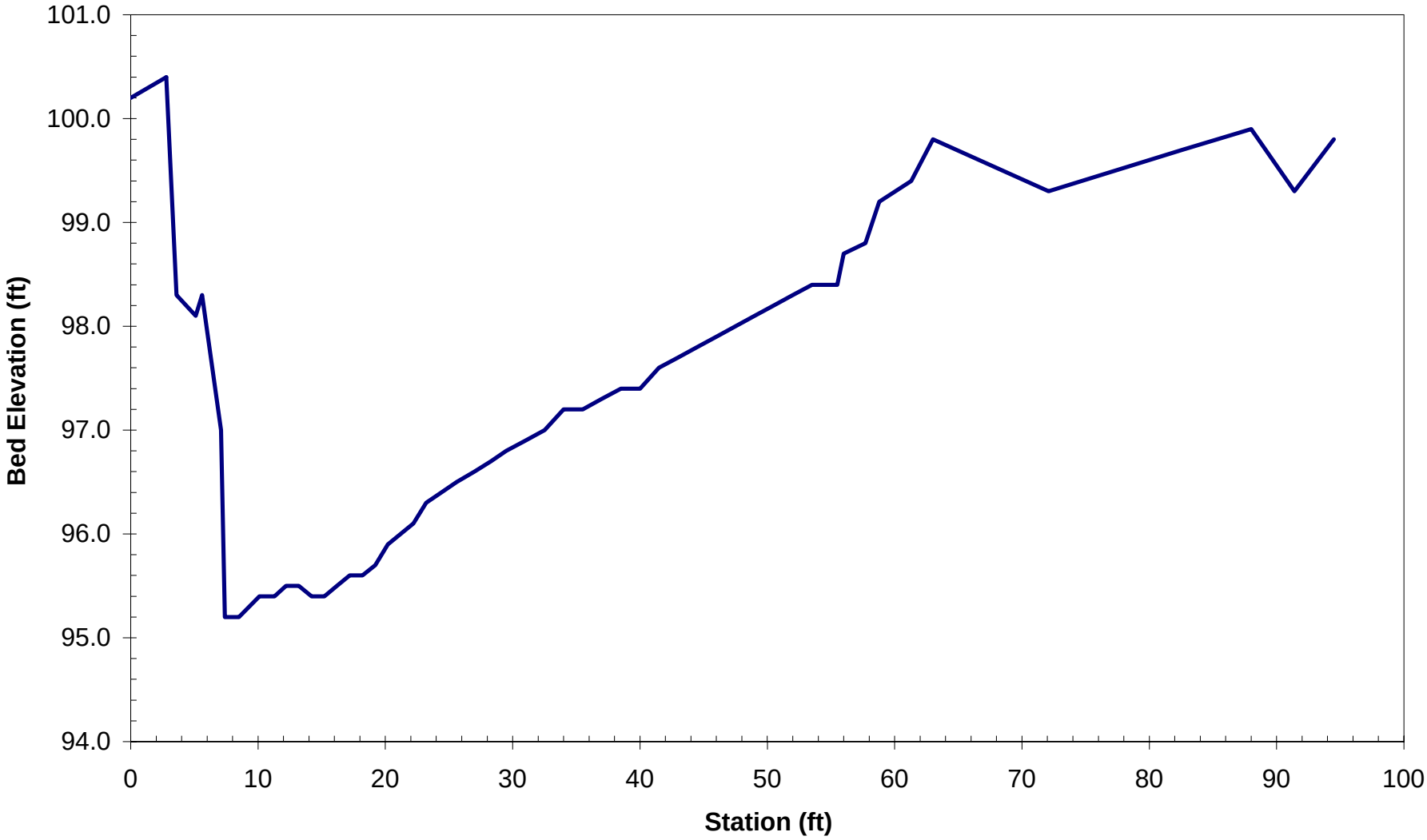
calibration notes

(4) Hydraulic Calibration Results:

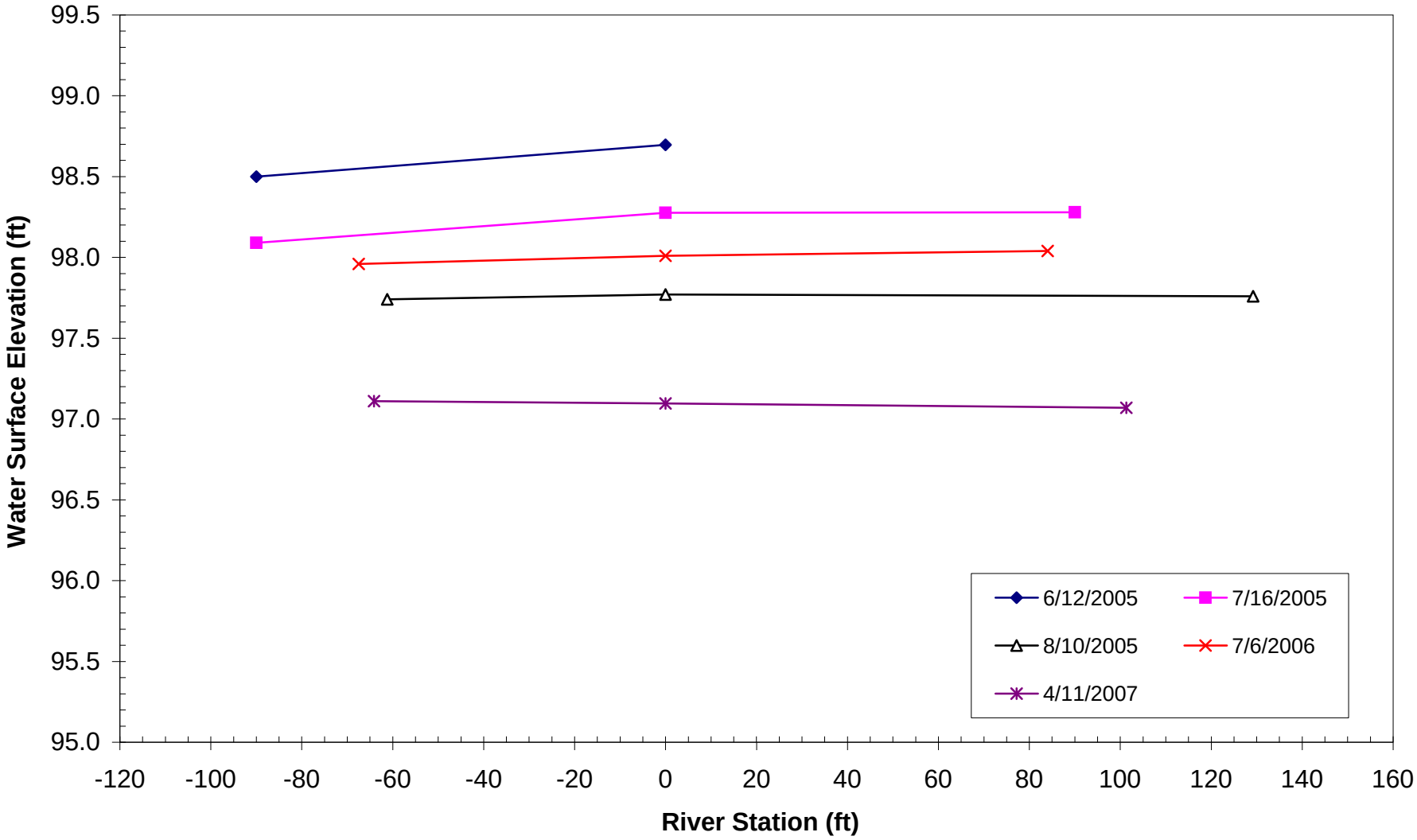
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

calibration notes

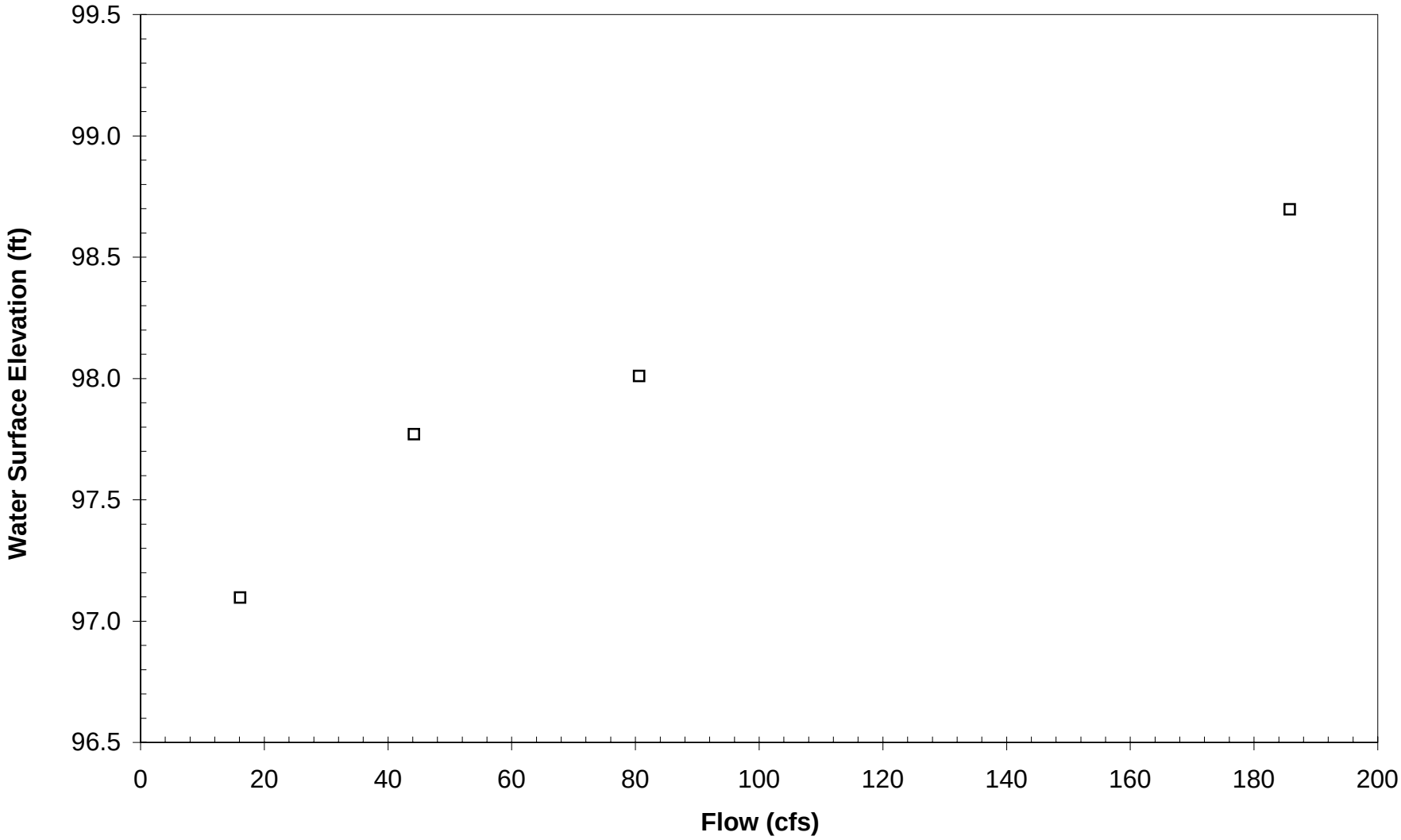
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN6
Measured Transect Profile

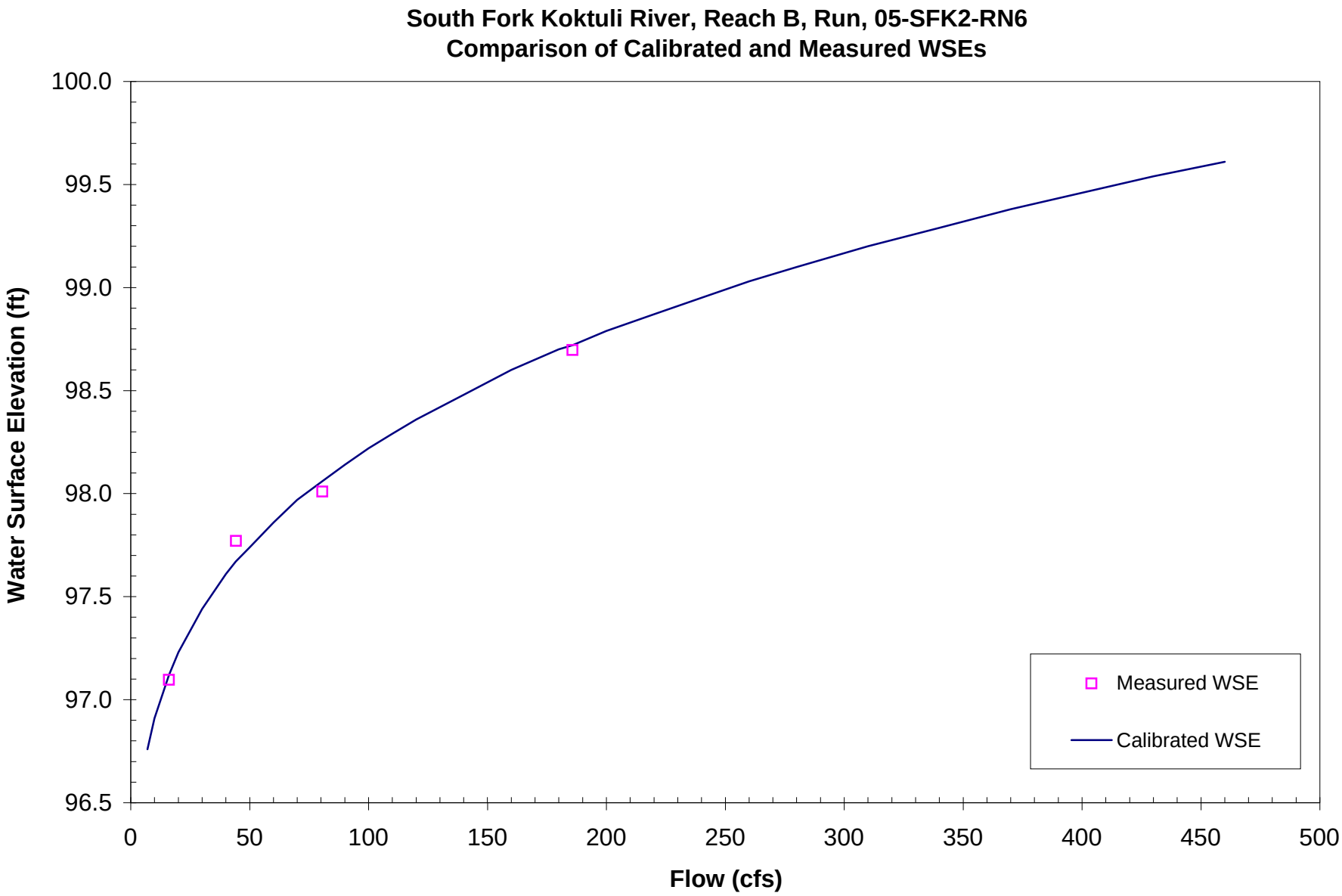


South Fork Koktuli River, Reach B, Run, 05-SFK2-RN6
Longitudinal Water Surface Elevation Profiles



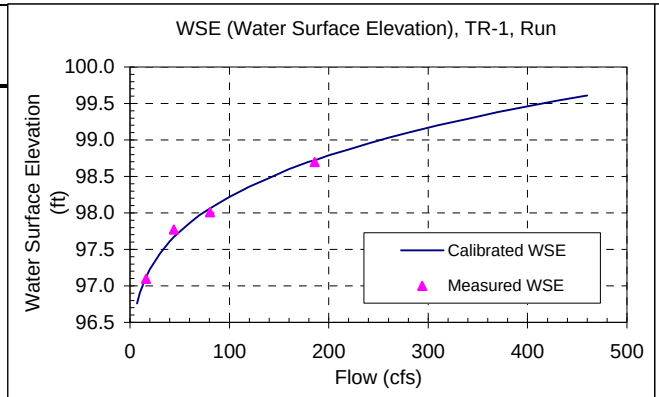
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN6
Measured Q vs WSE

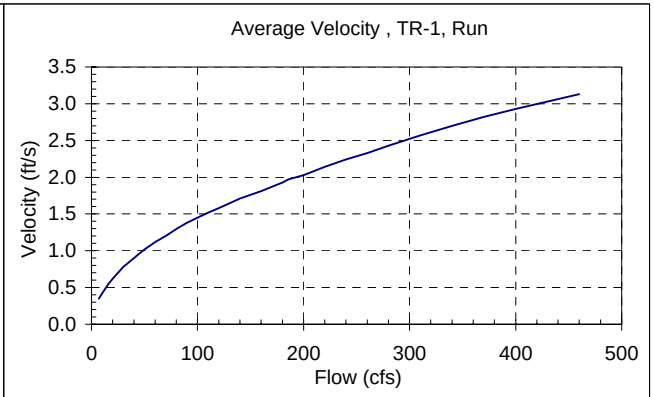


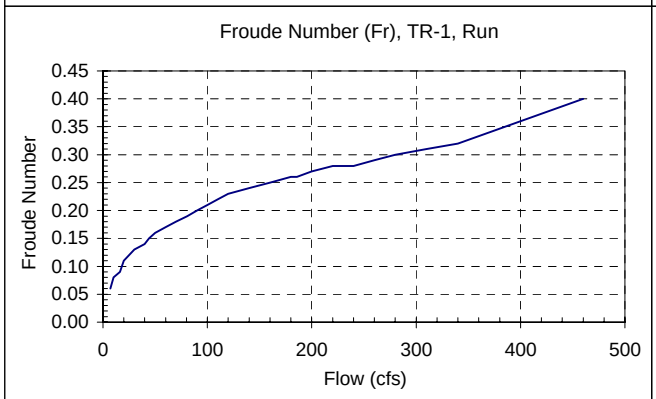

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN6
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
100.0
99.5
99.0
98.5
98.0
97.5
97.0
96.5
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

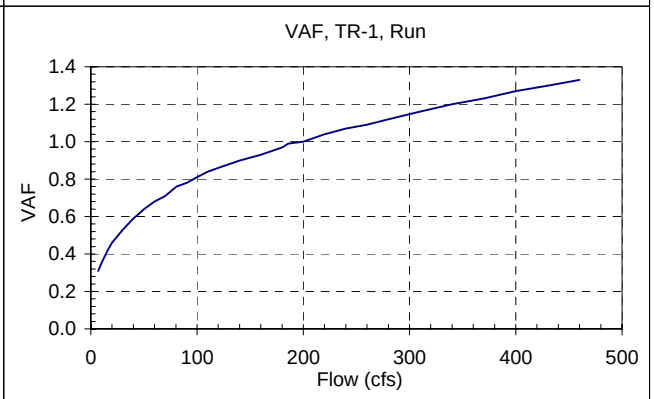
Stream: South Fork Koktuli River **Reach:** B
Site Name: 05-SFK2-RN6 **Habitat:** Run
Date: 6/12/2005 **Site #:** 6
Calibration Flow: Q(6/12/2005) **Transect:** 1

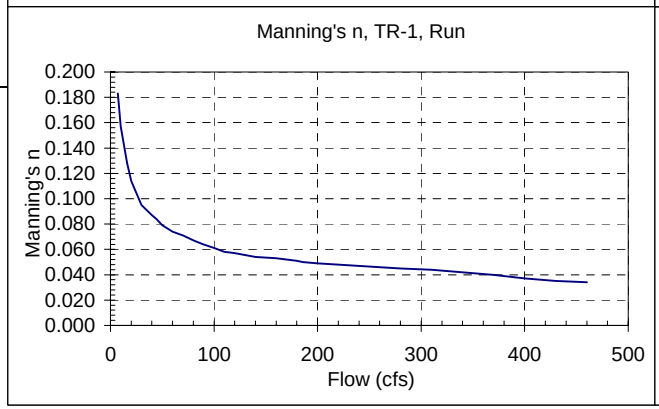
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
7	96.76	0.06	0.35	0.31	0.183	23.4
10	96.91	0.08	0.42	0.35	0.16	25.6
16.1	97.12	0.09	0.55	0.42	0.13	28.2
20	97.23	0.11	0.62	0.46	0.11	31.0
30	97.44	0.13	0.78	0.53	0.10	35.6
40	97.61	0.14	0.90	0.59	0.09	37.3
44.2	97.67	0.15	0.95	0.61	0.08	38.3
50	97.74	0.16	1.02	0.64	0.08	39.4
60	97.86	0.17	1.12	0.68	0.07	41.3
70	97.97	0.18	1.20	0.71	0.07	43.1
80.6	98.06	0.19	1.30	0.76	0.07	44.7
90	98.14	0.20	1.38	0.78	0.06	46.6
100	98.22	0.21	1.45	0.81	0.06	48.7
110	98.29	0.22	1.52	0.84	0.06	50.4
120	98.36	0.23	1.58	0.86	0.06	51.6
140	98.48	0.24	1.71	0.90	0.05	54.5
160	98.60	0.25	1.81	0.93	0.05	54.9
180	98.70	0.26	1.93	0.97	0.05	55.4
185.8	98.72	0.26	1.97	0.99	0.05	55.8
200	98.79	0.27	2.03	1.00	0.05	57.0
220	98.87	0.28	2.14	1.04	0.05	57.3
240	98.95	0.28	2.24	1.07	0.05	57.6
260	99.03	0.29	2.33	1.09	0.05	58.0
280	99.10	0.30	2.43	1.12	0.05	58.2
310	99.20	0.31	2.57	1.16	0.04	58.8
340	99.29	0.32	2.70	1.20	0.04	60.1
370	99.38	0.34	2.82	1.23	0.04	64.5
400	99.46	0.36	2.93	1.27	0.04	69.7
430	99.54	0.38	3.03	1.30	0.04	74.8
460	99.61	0.4	3.13	1.33	0.034	79.2

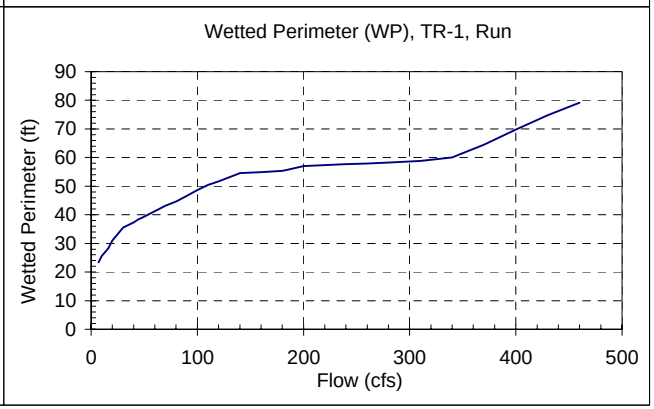




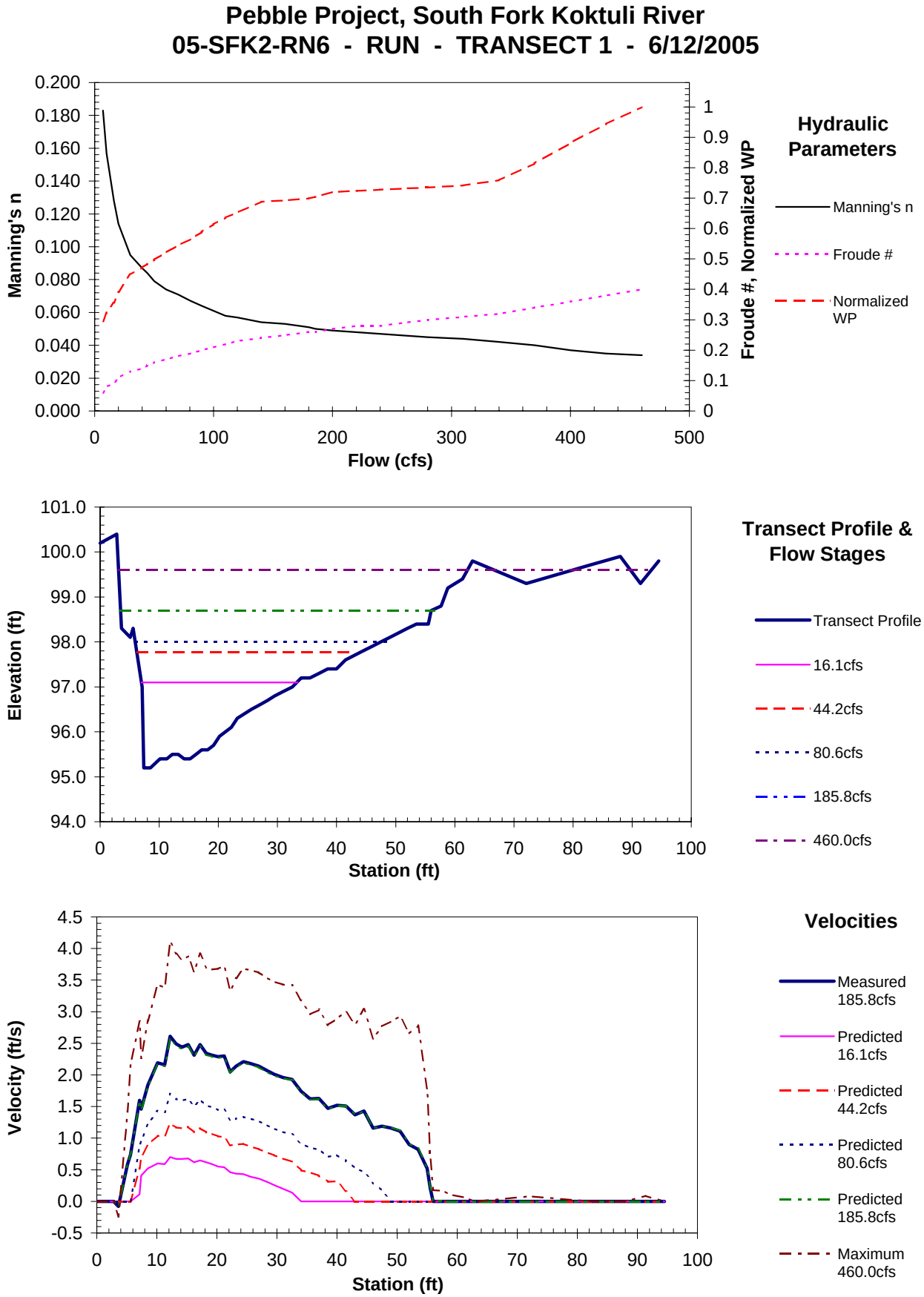








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RN6  06/12/05
RUN                          0605Q                                        TRANSECT 1
IOC       1101100100001000101000
QARD   7.0
QARD  10.0
QARD  16.1
QARD  20.0
QARD  30.0
QARD  40.0
QARD  44.2
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.6
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 185.8
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 430.0
QARD 460.0
XSEC  1000     1000. 1.0     95.21    .00219
      1000   .0100.2  2.8100.4  3.698.30  5.198.09  5.698.30  7.197.00
      1000  7.495.19  8.595.19 10.195.40 11.395.40 12.295.50 13.295.50
      1000 14.295.40 15.295.40 16.295.50 17.295.59 18.295.59 19.295.69
      1000 20.295.90 21.296.00 22.296.09 23.296.30 24.496.40 25.696.50
      1000 27.096.59 28.396.69 29.596.80 31.096.90 32.597.00 34.097.19
      1000 35.597.19 37.097.30 38.597.40 40.097.40 41.597.59 43.097.69
      1000 44.597.80 46.097.90 47.598.00 49.098.09 50.598.19 52.098.30
      1000 53.598.40 55.098.40 55.598.40 56.098.69 57.798.77 58.899.18
      1000 61.399.41 63.099.84 72.199.33 82.699.69 88.099.93 91.499.27
      1000 94.599.83
NS    1000      22.9      22.9      32.6      23.7      22.9      22.9
NS    1000      52.6      62.6      53.6      54.6      54.7      54.6
NS    1000      45.7      26.6      45.6      65.6      52.6      54.6
NS    1000      43.7      43.7      43.6      43.6      43.6      34.6
NS    1000      32.6      42.7      23.6      43.6      43.6      43.6
```

IFG4 Data Deck (continued)

```
NS    1000      42.6      43.6      42.6      32.6      43.6      32.7
NS    1000      32.6      32.6      42.6      42.6      42.6      43.6
NS    1000      34.6      23.6      23.9 .5   22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9
WSL   1000     96.76     96.91     97.12     97.23     97.44     97.61
WSL   1000     97.67     97.74     97.86     97.97     98.06     98.14
WSL   1000     98.22     98.29     98.36     98.48     98.60     98.70
WSL   1000     98.72     98.79     98.87     98.95     99.03     99.10
WSL   1000     99.20     99.29     99.38     99.46     99.54     99.61
CAL1  1000     98.70     185.8
VEL1  1000          -0.08 0.58 0.74 1.60 1.46 1.84 2.19 2.16 2.61 2.49
VEL1  1000 2.44 2.48 2.31 2.48 2.34 2.31 2.29 2.30 2.05 2.14 2.21 2.18
VEL1  1000 2.14 2.07 2.01 1.96 1.93 1.74 1.62 1.63 1.47 1.52 1.51 1.37
VEL1  1000 1.43 1.16 1.19 1.16 1.11 0.90 0.82 0.52 0.21 0.00
VEL1  1000
CAL2  1000     97.77      44.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.01      80.6
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     97.10      16.1
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN3

Habitat Type: Run

River Kilometer: 30.19

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-RN3
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/11/2005	1	100.00	100.24	99.12
2nd	6/13/2005	2	100.00		
3rd	7/18/2005	3	100.00	100.27	99.13
4th	8/11/2005	4	100.00	100.28	99.14
5th	6/29/2006	5	100.00	100.28	99.15
6th	7/7/2006	6	100.00	100.25	99.13
7th	4/11/2007	7		100.25	99.22

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
No level loop conducted on 6/13/05, two days after the pins were initially set up.
(b) Relative elevation changes between BM and TP were within ±0.02ft during 2005-2006, indicating the pins were stable during that period.
(c) BM of 4/11/07 was under 8ft of snow. Hydraulics not used for modeling due to ice impact.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative for the modeling.

Date	WSE (ft)
6/11/2005	97.01
6/13/2005	96.94
7/18/2005	96.62
8/11/2005	96.29
6/29/2006	96.56
7/7/2006	96.55
4/11/2007	95.94

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/11/2005	
6/13/2005	163.9
7/18/2005	
8/11/2005	36.8
6/29/2006	
7/7/2006	80.5
4/11/2007	20.8

The 4/11/07 flow was inomplete due to anchor ice near shore.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/11/2005	0.094%	170
6/13/2005	0.059%	153.7
7/18/2005	0.044%	158
8/11/2005	0.006%	155.8
6/29/2006	0.235%	115
7/7/2006	0.039%	128.4
4/11/2007	0.020%	153.7

The slope S=0.059% of 6/13/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/11/2005	93.07
6/13/2005	93.04
7/18/2005	
8/11/2005	93.09
6/29/2006	92.92
7/7/2006	93.05
4/11/2007	93.04
Invert	93.09
SZF	93.09

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) The inverts from the 6/11/05 and 6/29/06 surveys were not used to determine SZF because of no flows measured.
(4) The 7/18/05 site visit has no bed profile survey.
(5) The invert of 4/11/07 survey was not used to determine SZF because of incomplete transect measurement due to ice on waters edge.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/11/2005		97.01			
2nd	6/13/2005	163.9	96.94	96.92	-0.02	IFG4
3rd	7/18/2005		96.62			
4th	8/11/2005	36.8	96.29	96.27	-0.02	IFG4
5th	6/29/2006		96.56			
6th	7/7/2006	80.5	96.55	96.60	0.05	IFG4
7th	4/11/2007	20.8	95.94			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within acceptable range.
(c) No discharges were measured in 6/11/05, 7/18/05, and 6/29/06 trips
(d) Only partial flow was measured on 4/11/07 due to anchor ice on waters edge.
Photos indicated the hydraulics was affected by the ice and, as the result, the measured hydraulics were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 36.8cfs, 80.5cfs, and 163.9cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

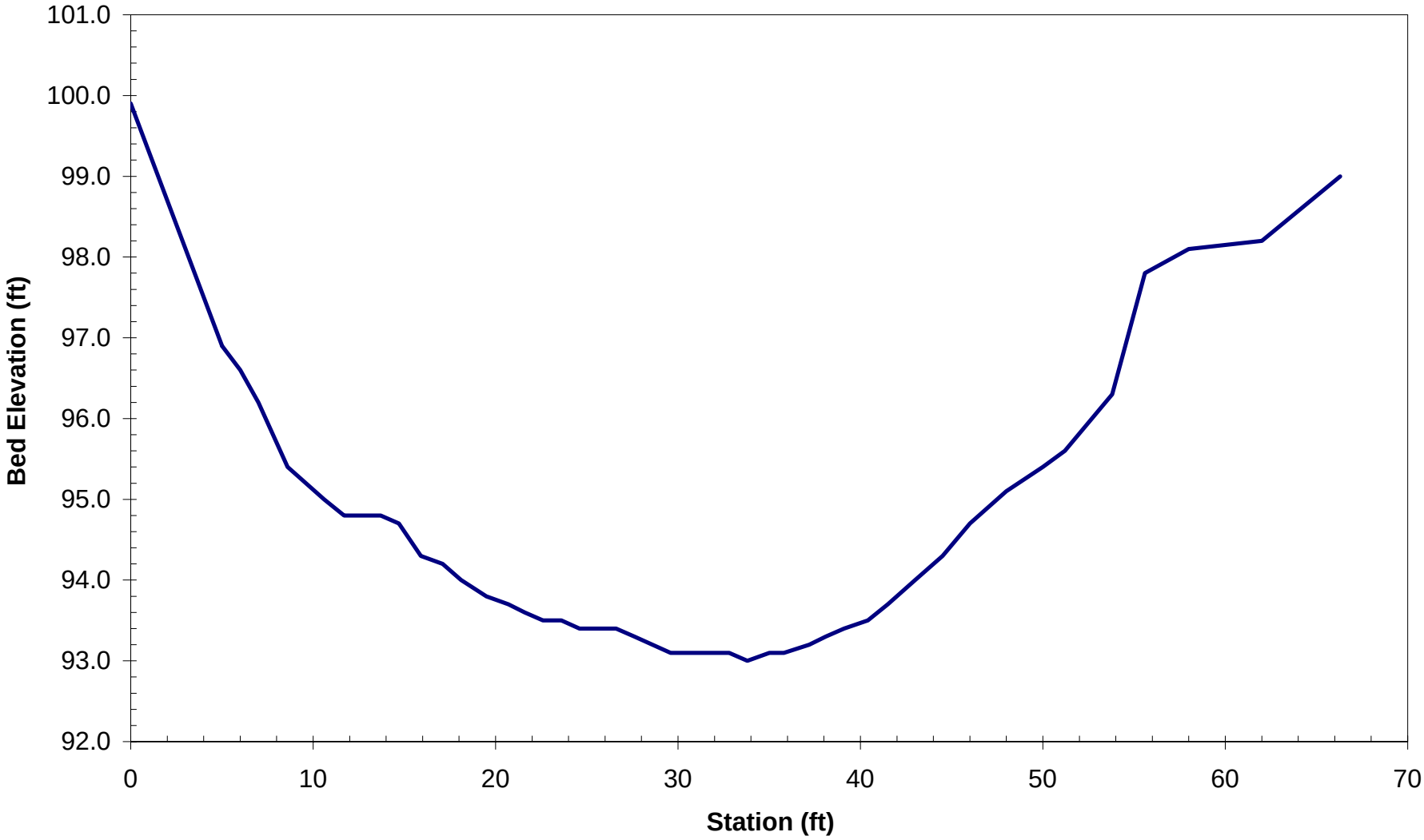
Survey Date	Q (cfs)	WUA (Y/N)
6/11/2005		
6/13/2005	163.9	Y
7/18/2005		
8/11/2005	36.8	Y
6/29/2006		
7/7/2006	80.5	Y
4/11/2007	20.8	

(4) Hydraulic Calibration Results:

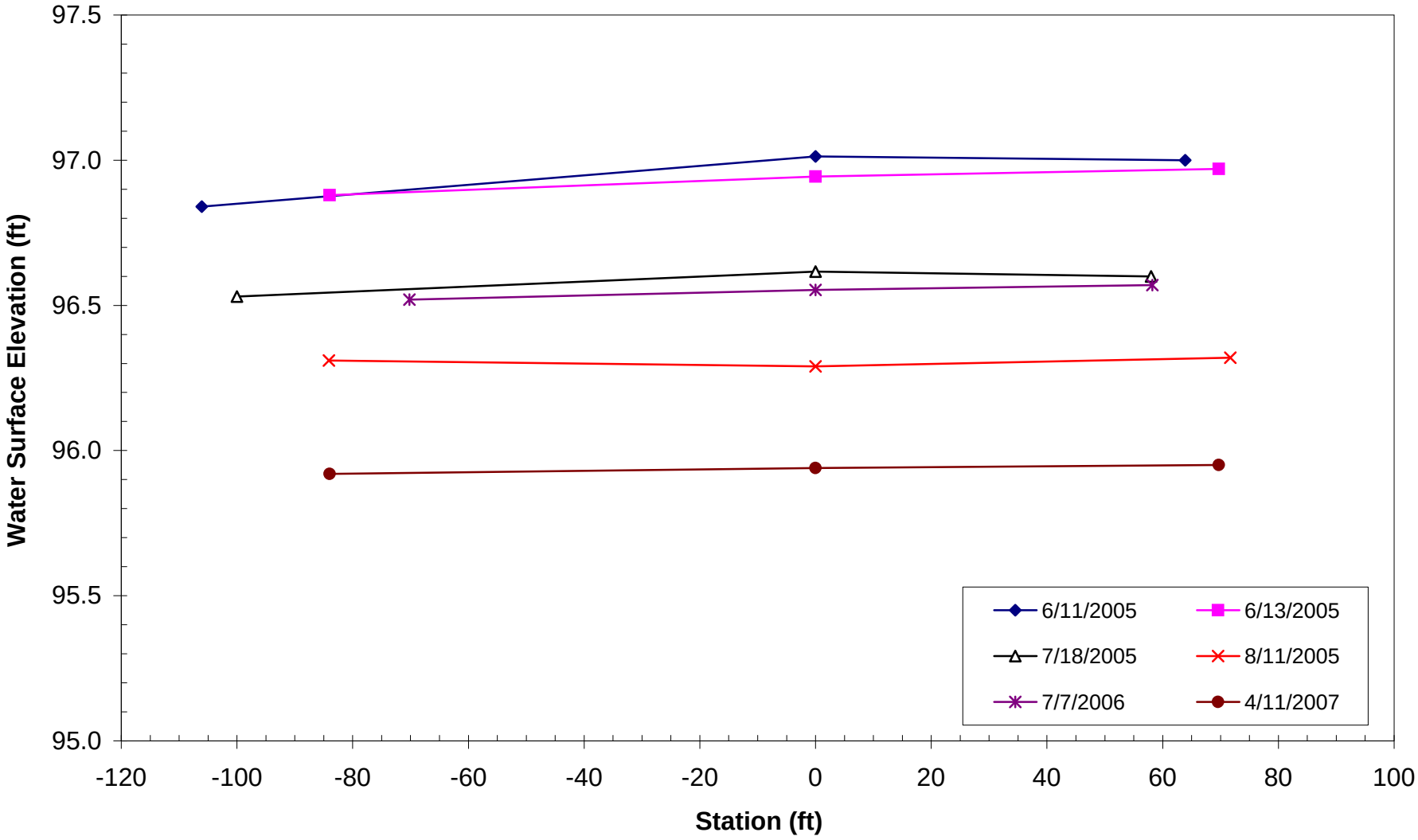
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

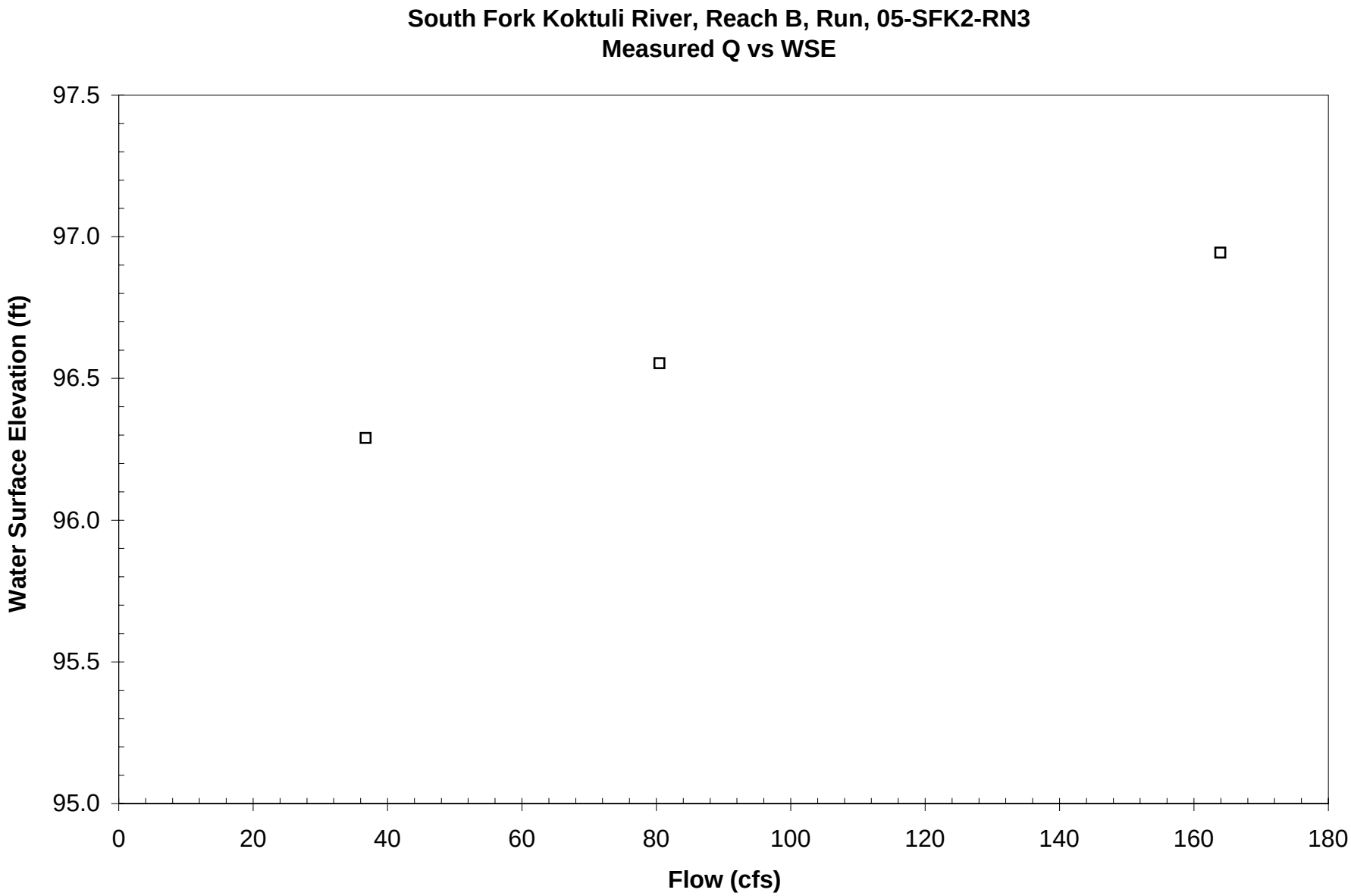
calibration notes

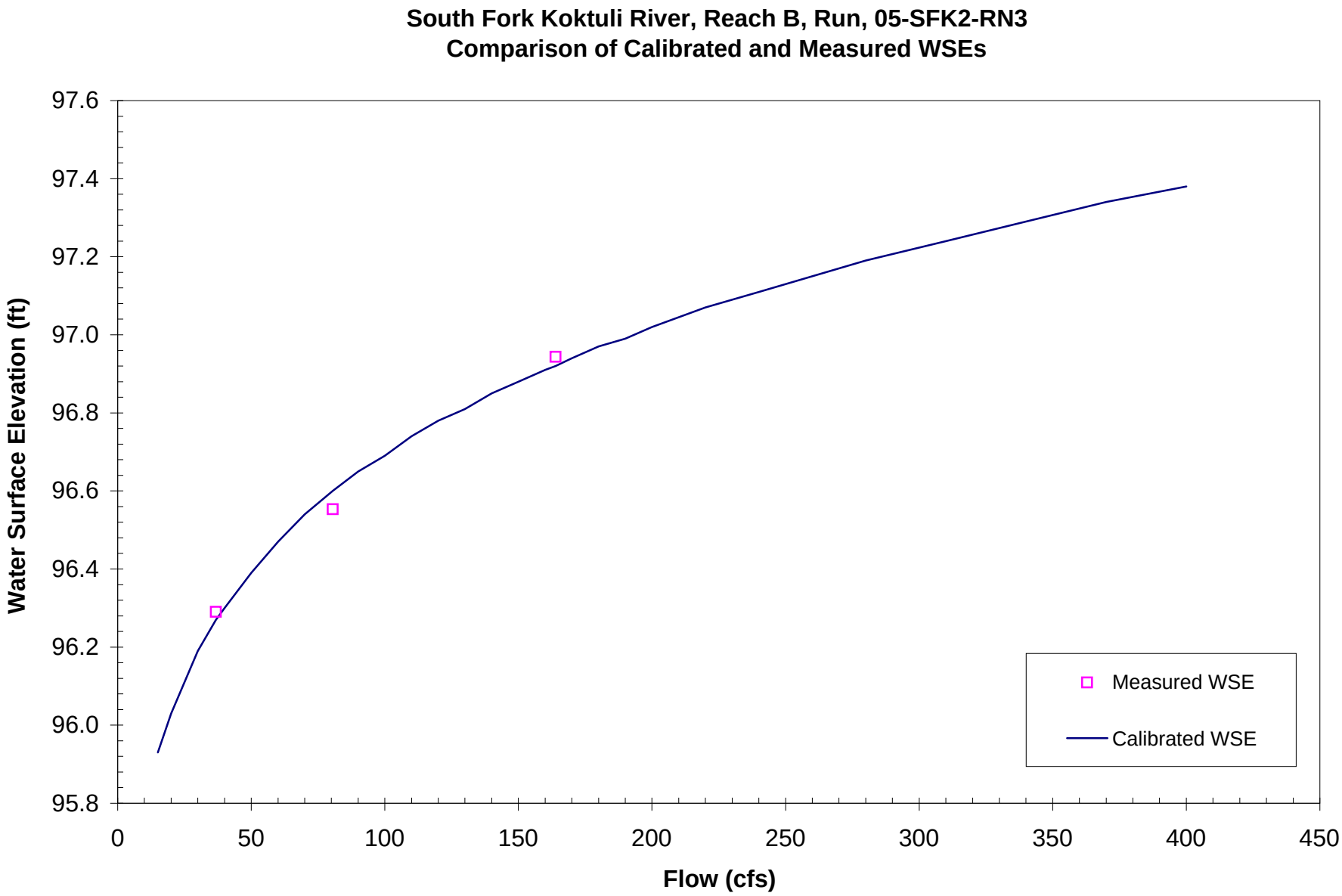
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN3
Measured Transect Profile



South Fork Koktuli River, Reach B, Run, 05-SFK2-RN3
Longitudinal Water Surface Elevation Profiles

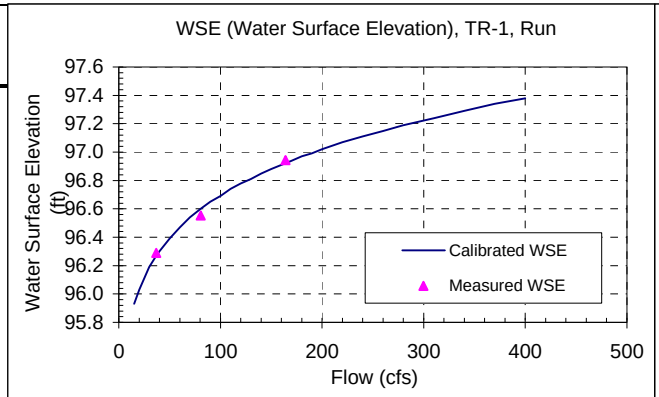


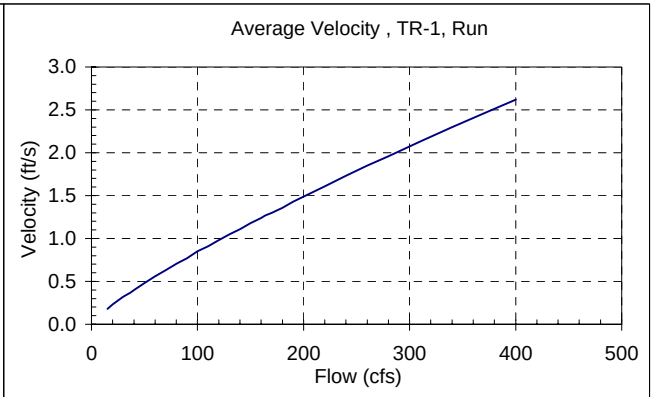

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN3
Measured Q vs WSE
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

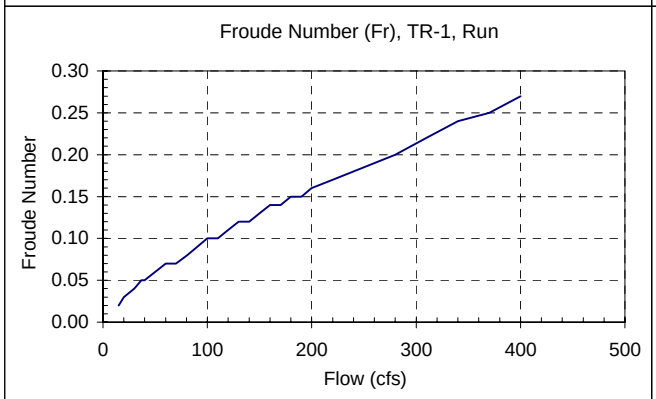

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

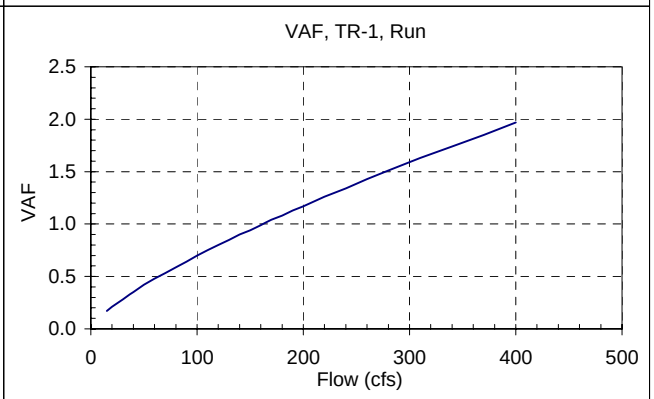
Stream: South Fork Koktuli River **Reach:** B
Site Name: 05-SFK2-RN3 **Habitat:** Run
Date: 6/11/2005 **Site #:** 3
Calibration Flow: Q(6/11/2005) **Transect:** 1

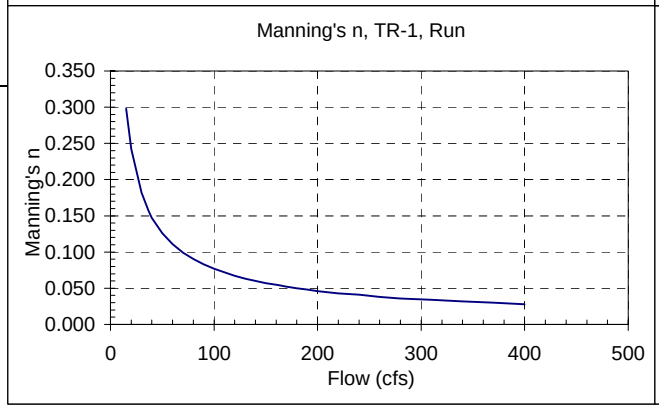
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
15	95.93	0.02	0.18	0.17	0.298	45.3
20	96.03	0.03	0.23	0.21	0.24	45.9
30	96.19	0.04	0.32	0.28	0.18	46.9
36.8	96.27	0.05	0.37	0.33	0.16	47.4
40	96.30	0.05	0.40	0.35	0.15	47.6
50	96.39	0.06	0.48	0.42	0.13	48.0
60	96.47	0.07	0.56	0.48	0.11	48.4
70	96.54	0.07	0.63	0.53	0.10	48.7
80.5	96.60	0.08	0.71	0.59	0.09	48.9
90	96.65	0.09	0.77	0.64	0.08	49.2
100	96.69	0.10	0.85	0.70	0.08	49.4
110	96.74	0.10	0.91	0.75	0.07	49.6
120	96.78	0.11	0.98	0.80	0.07	49.8
130	96.81	0.12	1.05	0.85	0.06	49.9
140	96.85	0.12	1.11	0.90	0.06	50.1
150	96.88	0.13	1.18	0.94	0.06	50.3
160	96.91	0.14	1.24	0.99	0.06	50.4
163.9	96.92	0.14	1.27	1.01	0.05	50.5
170	96.94	0.14	1.30	1.04	0.05	50.6
180	96.97	0.15	1.36	1.08	0.05	50.7
190	96.99	0.15	1.43	1.13	0.05	50.8
200	97.02	0.16	1.49	1.17	0.05	50.9
220	97.07	0.17	1.61	1.26	0.04	51.0
240	97.11	0.18	1.73	1.34	0.04	51.2
260	97.15	0.19	1.85	1.43	0.04	51.3
280	97.19	0.20	1.96	1.51	0.04	51.5
310	97.24	0.22	2.13	1.63	0.03	51.6
340	97.29	0.24	2.30	1.74	0.03	51.8
370	97.34	0.25	2.46	1.85	0.03	52.0
400	97.38	0.27	2.62	1.97	0.028	52.1

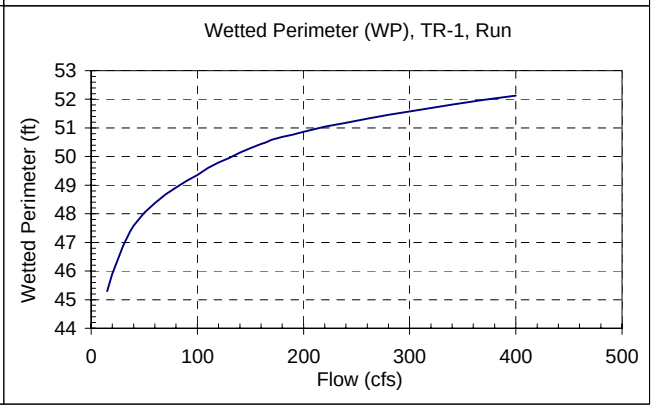




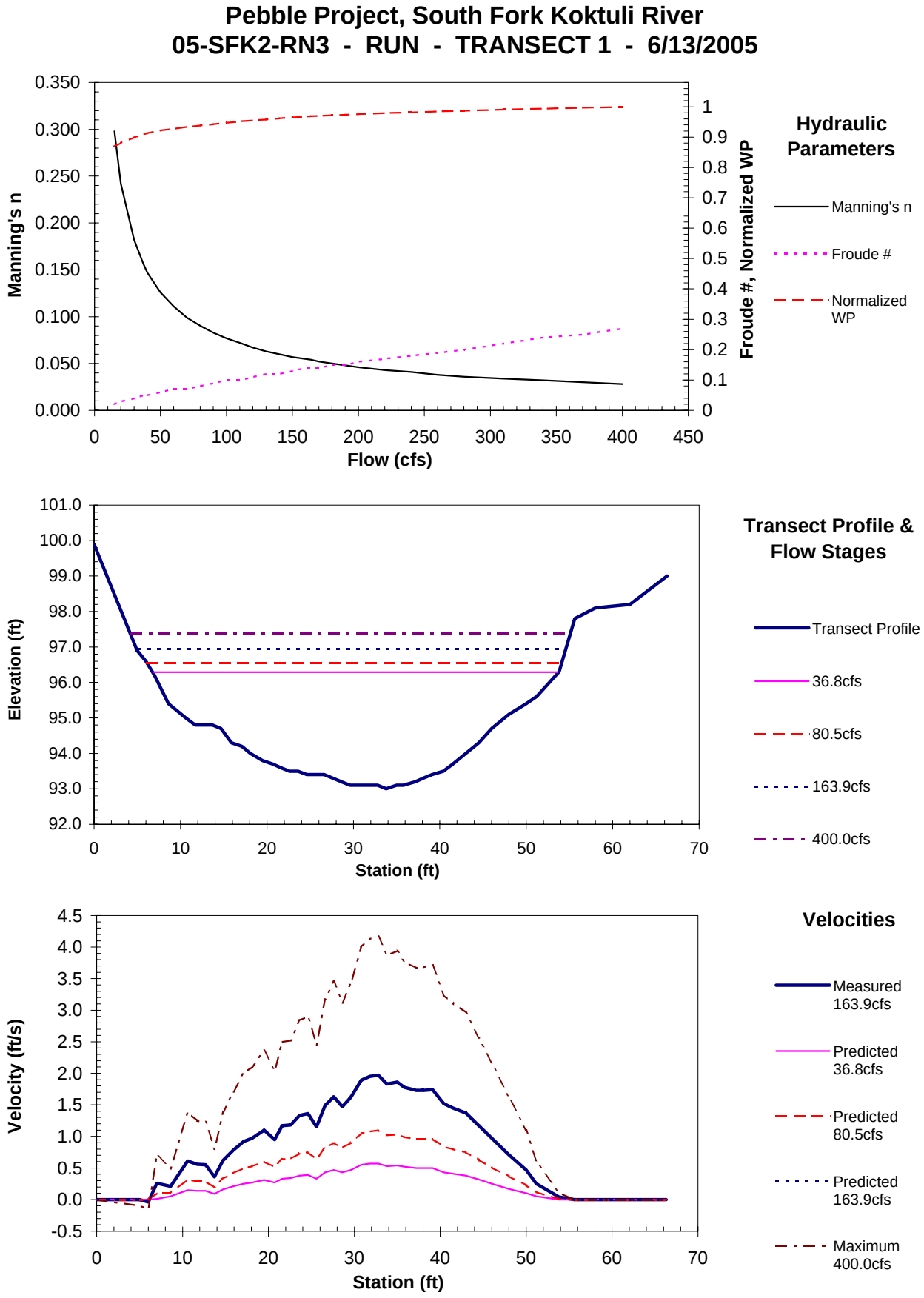








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RN3  06/13/05
RUN                          0605Q                                      TRANSECT 1
IOC       11011001000010001010000
QARD  15.0
QARD  20.0
QARD  30.0
QARD  36.8
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.5
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 163.9
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
XSEC  1000     1000. 1.0     93.09    .00059
      1000   .099.94  5.096.94  6.096.63  7.096.23  8.695.44 10.695.04
      1000 11.794.83 12.794.83 13.794.83 14.794.73 15.994.33 17.194.23
      1000 18.194.04 19.593.83 20.793.73 21.693.63 22.693.54 23.693.54
      1000 24.693.44 25.693.44 26.693.44 27.693.33 28.693.23 29.693.13
      1000 30.893.13 31.893.13 32.893.13 33.893.04 35.093.13 35.893.13
      1000 37.293.23 38.193.33 39.193.44 40.493.54 41.593.73 43.094.04
      1000 44.594.33 46.094.73 48.095.13 50.095.44 51.295.63 53.896.33
      1000 55.697.84 58.098.12 62.098.23 66.399.01
NS    1000      43.6      45.8      45.8      54.6      54.6      65.6
NS    1000      52.6      25.6      24.7      25.8      25.7      22.9
NS    1000      25.9      62.6      25.7      25.6      52.6      52.6
NS    1000      52.6      62.6      62.6      62.8      62.8      52.8
NS    1000      52.8      54.8      54.8      54.8      52.9      54.8
NS    1000      54.8      54.7      54.8      52.6      42.6      23.7
NS    1000      43.6      24.6      23.9      23.9      22.9      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     95.93     96.03     96.19     96.27     96.30     96.39
WSL   1000     96.47     96.54     96.60     96.65     96.69     96.74
WSL   1000     96.78     96.81     96.85     96.88     96.91     96.92
WSL   1000     96.94     96.97     96.99     97.02     97.07     97.11
WSL   1000     97.15     97.19     97.24     97.29     97.34     97.38
CAL1  1000     96.94     163.9
VEL1  1000      0.00-0.04 0.26 0.21 0.61 0.56 0.55 0.36 0.62 0.78 0.92
VEL1  1000 0.97 1.10 0.95 1.17 1.18 1.33 1.36 1.15 1.49 1.63 1.47 1.62
VEL1  1000 1.89 1.95 1.97 1.83 1.86 1.78 1.73 1.73 1.74 1.52 1.45 1.37
VEL1  1000 1.17 0.97 0.71 0.47 0.25 0.04
CAL2  1000     96.29      36.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.55      80.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN5

Habitat Type: Run

River Kilometer: 31.37

Stream: South Fork Koktuli River
Reach: B
Site Name: 05-SFK2-RN5
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/12/2005	1	100.00	99.40	99.54
2nd	7/16/2005	2	100.00	99.41	99.55
3rd	8/10/2005	3	100.00	99.41	99.54
4th	7/7/2006	4	100.00	99.38	99.58
5th	4/11/2007	5	100.00	99.43	99.85

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM and HP were no more than 0.03ft during the 2005-2007 period. Small changes indicated BM were stable during that period.
(c) TP of 4/11/07 survey showed more than 1/4ft elevation increase. No corrections to WSEs were needed because the elevation datum was referenced to BM.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/12/2005	96.89
7/16/2005	93.33
8/10/2005	95.84
7/7/2006	96.24
4/11/2007	95.44

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/12/2005	177.3
7/16/2005	
8/10/2005	33.2
7/7/2006	70.8
4/11/2007	7.7

No flow was measured on 7/16/05.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/12/2005	0.122%	212.7
7/16/2005	0.083%	181.4
8/10/2005	0.043%	138
7/7/2006	0.011%	93.7
4/11/2007	0.018%	113

The slope S=0.122% of 6/12/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/12/2005	93.89
7/16/2005	
8/10/2005	93.94
7/7/2006	94.04
4/11/2007	94.04
Invert	94.04
SZF	94.94

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in the 7/16/05 trip

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR1	calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/12/2005	177.3	96.89	96.87	-0.02	IFG4
2nd	7/16/2005		93.33			
3rd	8/10/2005	33.2	95.84	95.87	0.03	IFG4
4th	7/7/2006	70.8	96.24	96.23	-0.01	IFG4
5th	4/11/2007	7.7	95.44	95.43	-0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured in 7/16/05 trip
(d) Photos of 4/11/07 site visit showed channel was clear of ice but there was scattered ice on waters edge. Don't expect the residual ice had significant impact on hydraulics, and therefore the surveyed hydraulics were included ifor modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 7.7cfs, 33.2cfs 70.8cfs, and 177.3cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

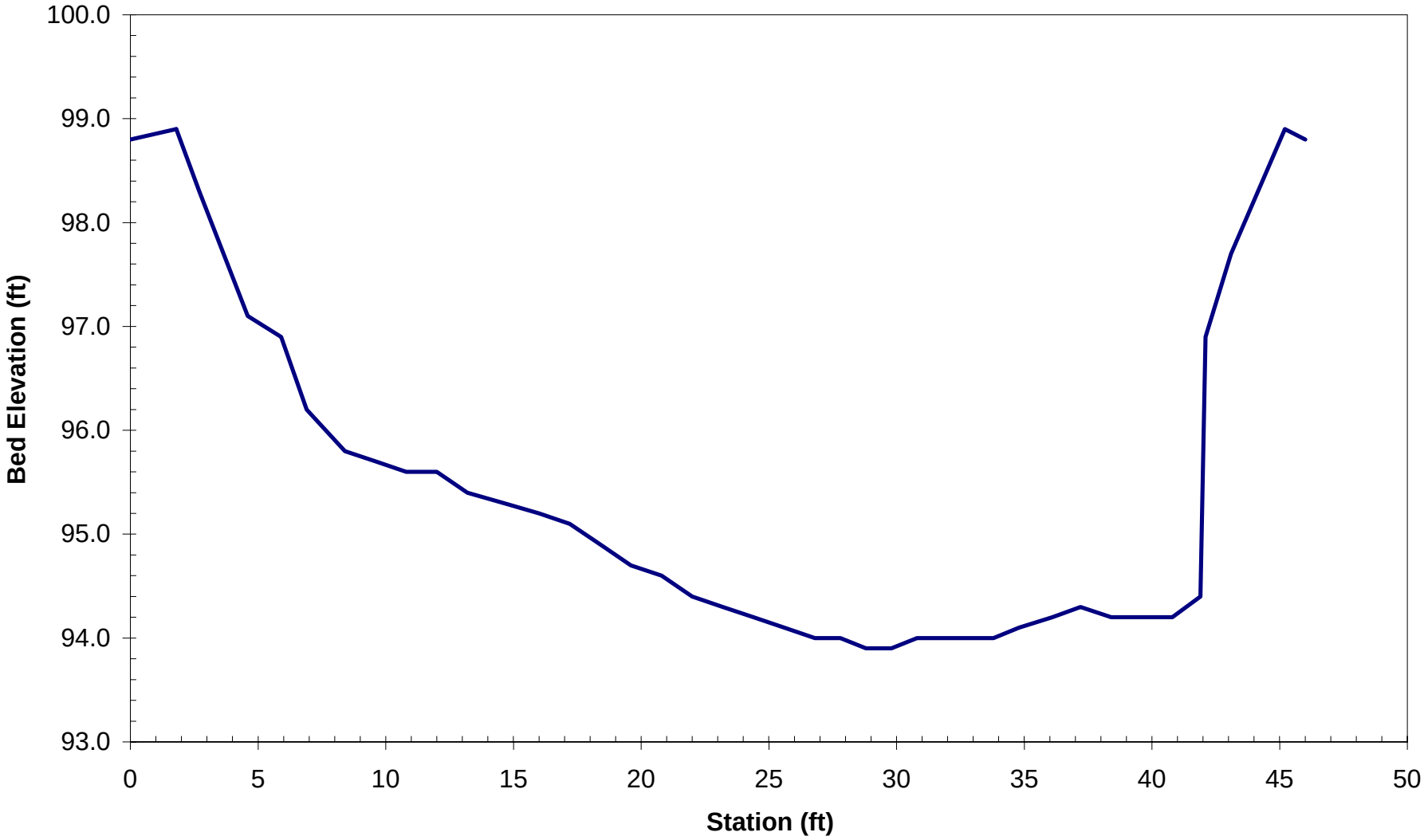
Survey Date	Q (cfs)	WUA (Y/N)
6/12/2005	177.3	Y
7/16/2005		
8/10/2005	33.2	Y
7/7/2006	70.8	Y
4/11/2007	7.7	Y

(4) Hydraulic Calibration Results:

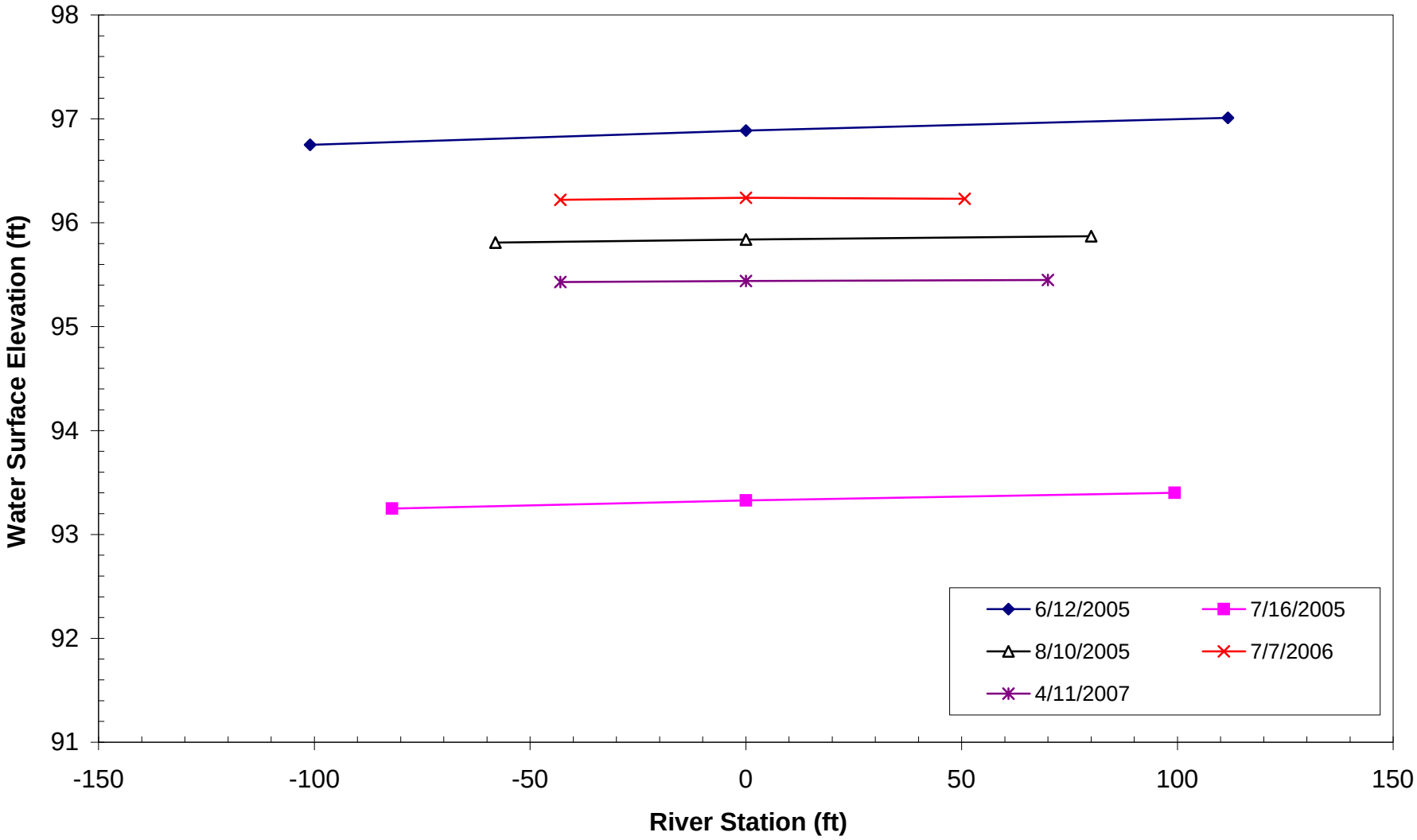
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

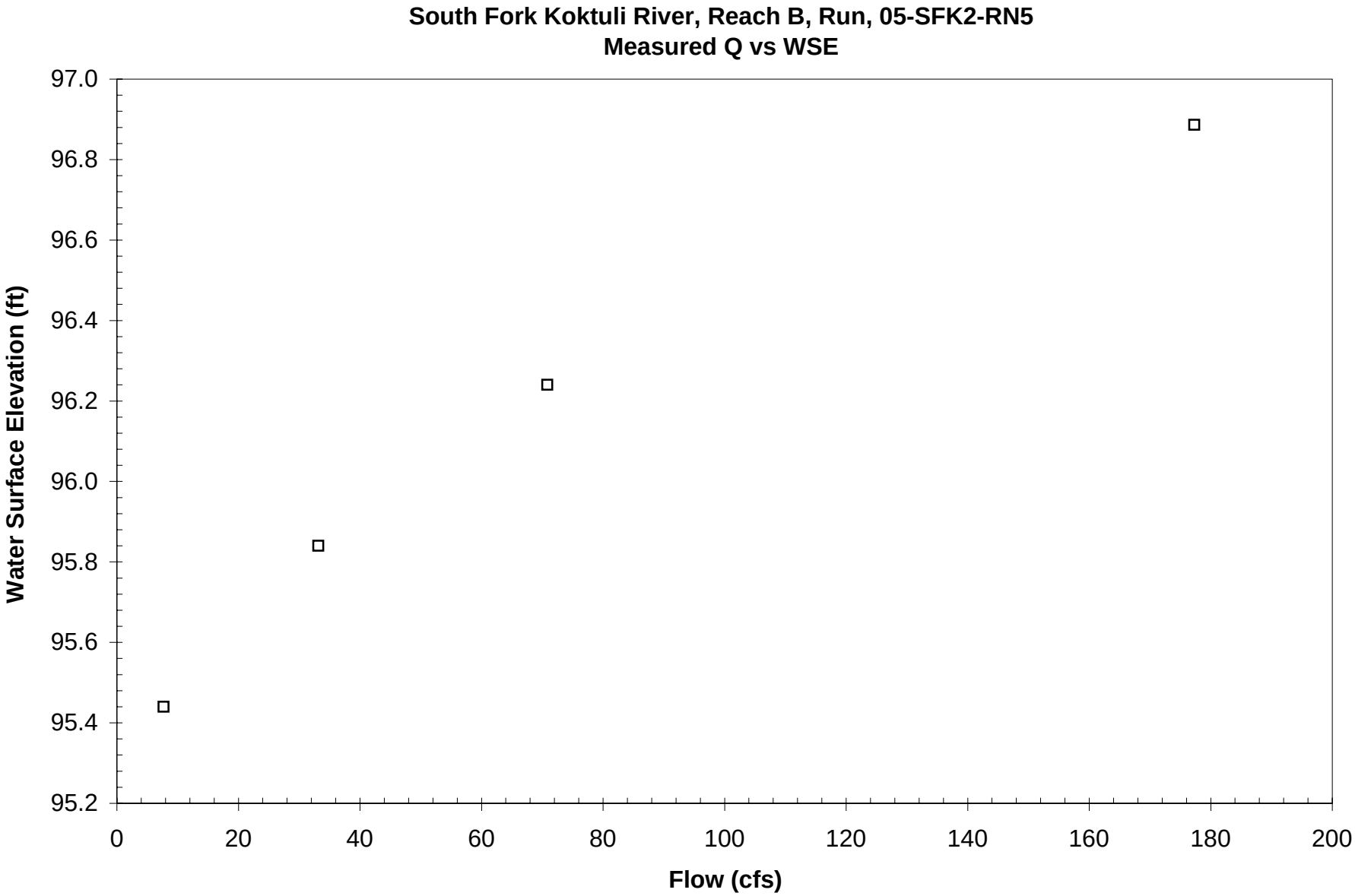
calibration notes

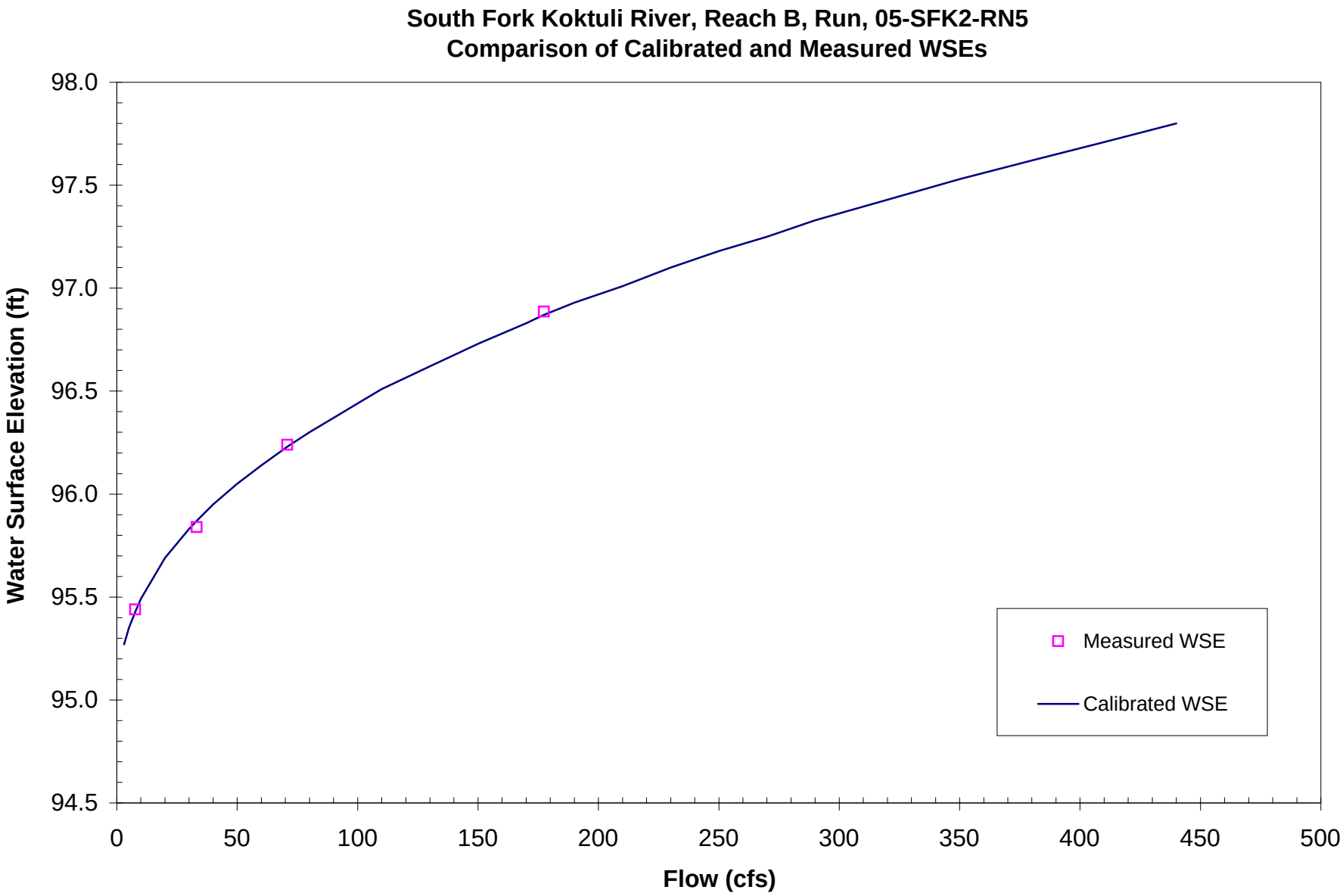
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN5
Measured Transect Profile



South Fork Koktuli River, Reach B, Run, 05-SFK2-RN5
Longitudinal Water Surface Elevation Profiles



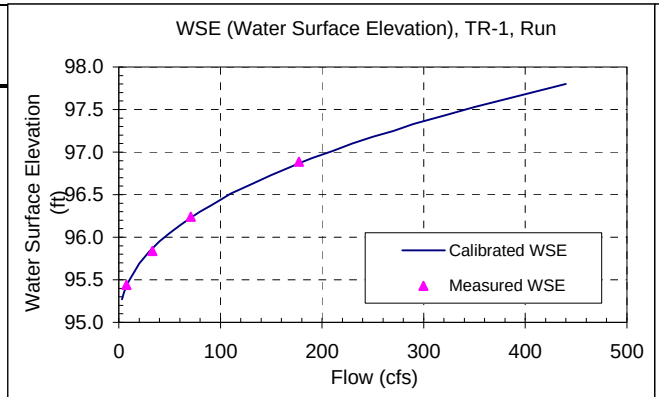

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN5
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)

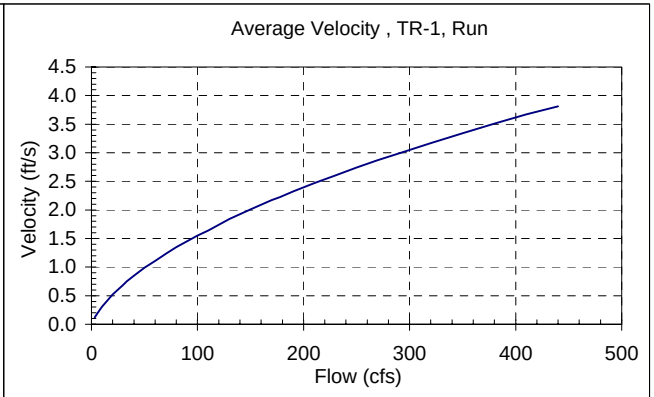

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN5
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

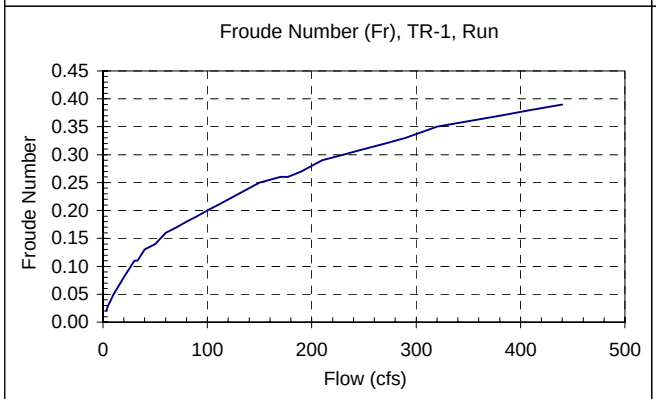
Stream: South Fork Koktuli River
Site Name: 05-SFK2-RN5
Date: 6/12/2005
Calibration Flow: Q(6/12/2005)

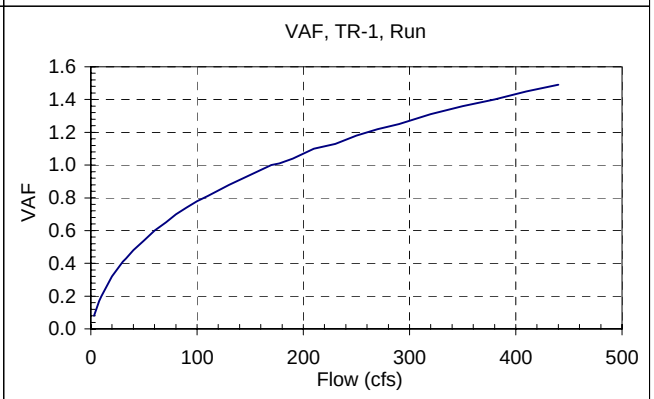
Reach: B
Habitat: Run
Site #: 5
Transect: 1

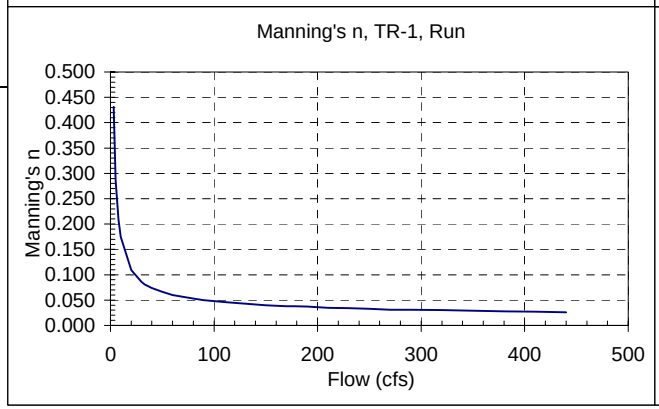
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	95.27	0.02	0.12	0.08	0.431	28.0
5	95.35	0.03	0.18	0.12	0.29	29.3
7.7	95.43	0.04	0.25	0.17	0.21	30.2
10	95.49	0.05	0.31	0.20	0.18	30.6
20	95.69	0.08	0.52	0.32	0.11	33.8
30	95.83	0.11	0.69	0.41	0.09	35.3
33.2	95.87	0.11	0.75	0.43	0.08	35.5
40	95.95	0.13	0.85	0.48	0.07	35.8
50	96.05	0.14	0.99	0.54	0.07	36.3
60	96.14	0.16	1.11	0.60	0.06	36.8
70.8	96.23	0.17	1.24	0.65	0.06	37.1
80	96.30	0.18	1.35	0.70	0.05	37.3
90	96.37	0.19	1.45	0.74	0.05	37.5
100	96.44	0.20	1.55	0.78	0.05	37.7
110	96.51	0.21	1.64	0.81	0.05	37.9
130	96.62	0.23	1.84	0.88	0.04	38.2
150	96.73	0.25	2.01	0.94	0.04	38.5
170	96.83	0.26	2.17	1.00	0.04	38.8
177.3	96.87	0.26	2.22	1.01	0.04	38.9
190	96.93	0.27	2.32	1.04	0.04	39.3
210	97.01	0.29	2.47	1.10	0.04	39.8
230	97.10	0.30	2.60	1.13	0.03	40.4
250	97.18	0.31	2.74	1.18	0.03	40.8
270	97.25	0.32	2.87	1.22	0.03	41.1
290	97.33	0.33	2.99	1.25	0.03	41.3
320	97.43	0.35	3.17	1.31	0.03	41.7
350	97.53	0.36	3.34	1.36	0.03	42.0
380	97.62	0.37	3.51	1.40	0.03	42.4
410	97.71	0.38	3.67	1.45	0.03	42.7
440	97.80	0.39	3.81	1.49	0.026	43.0

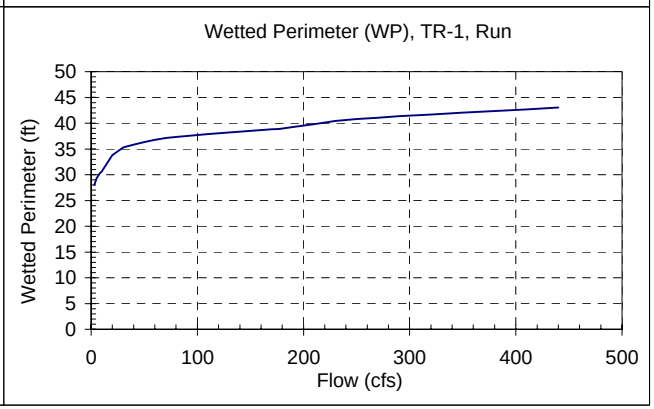




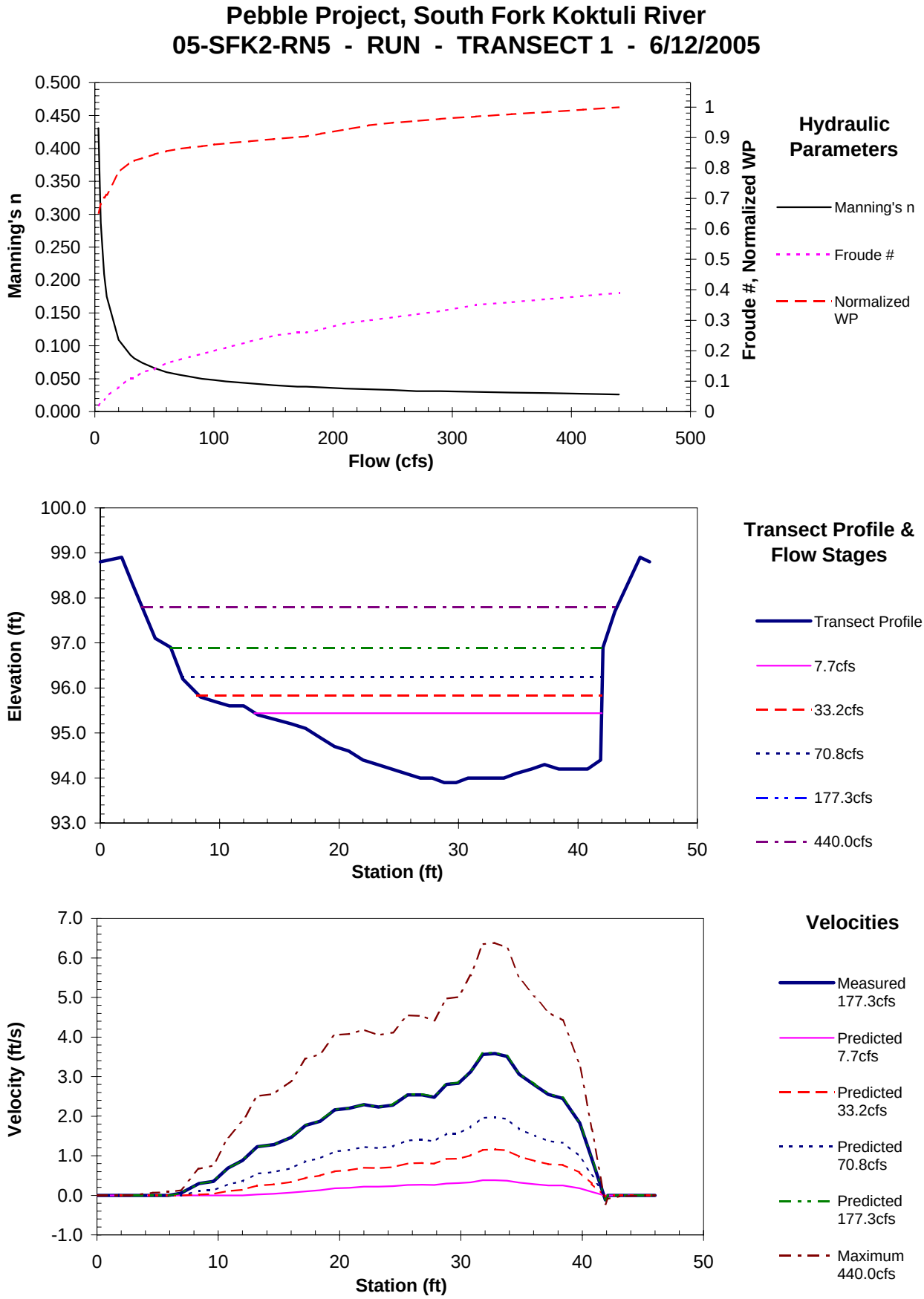








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RN5  06/12/05
RUN                          0605Q                                        TRANSECT 1
IOC        1101100100001000101000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  20.0
QARD  30.0
QARD  33.2
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.8
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 130.0
QARD 150.0
QARD 170.0
QARD 177.3
QARD 190.0
QARD 210.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 320.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
XSEC  1000     1000. 1.0     94.94    .00122
      1000   .098.84  1.898.87  2.798.26  4.697.13  5.996.88  6.996.19
      1000  8.495.79  9.695.69 10.895.58 12.095.58 13.295.38 14.695.29
      1000 16.095.19 17.295.08 18.494.88 19.694.69 20.894.58 22.094.38
      1000 23.294.29 24.494.19 25.694.08 26.893.98 27.893.98 28.893.88
      1000 29.893.88 30.893.98 31.893.98 32.893.98 33.893.98 34.894.08
      1000 36.194.19 37.294.29 38.494.19 39.894.19 40.894.19 41.994.38
      1000 42.196.88 43.197.73 45.298.88 46.098.84
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      23.9      23.8      23.8      32.7
NS    1000      34.6      32.7      34.6      43.6      42.6      32.7
NS    1000      43.6      32.7      32.6      45.6      53.6      54.7
NS    1000      45.6      45.6      54.6      54.6      54.7      54.7
NS    1000      45.6      54.6      45.7      54.6      42.6      23.8
NS    1000      23.9      22.9      22.9      22.9
```

IFG4 Data Deck (continued)

```
WSL   1000     95.27     95.35     95.43     95.49     95.69     95.83
WSL   1000     95.87     95.95     96.05     96.14     96.23     96.30
WSL   1000     96.37     96.44     96.51     96.62     96.73     96.83
WSL   1000     96.87     96.93     97.01     97.10     97.18     97.25
WSL   1000     97.33     97.43     97.53     97.62     97.71     97.80
CAL1  1000     96.89     177.3
VEL1  1000                      0.00 0.05 0.30 0.35 0.69 0.88 1.23 1.28
VEL1  1000 1.46 1.77 1.87 2.16 2.20 2.29 2.23 2.28 2.54 2.54 2.48 2.80
VEL1  1000 2.83 3.12 3.56 3.58 3.51 3.06 2.78 2.55 2.45 1.83 0.92-0.12
VEL1  1000 0.00
CAL2  1000     95.84      33.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.24      70.8
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.44       7.7
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN2

Habitat Type: Run

River Kilometer: 31.75

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-RN2
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/11/2005	100.00	100.57	101.89
2nd	6/13/2005			
3rd	7/18/2005	100.00	100.57	101.89
4th	8/10/2005	100.00	100.57	101.89
5th	6/29/2006	100.00	100.59	101.89
6th	7/7/2006	100.00	100.59	101.90
7th	4/10/2007	100.00	100.63	101.90

(a) Elevation of control pins (BM. HP, TP) are from the first half of each level loop survey
No level loop was conducted on 6/13/05, two days after the pins were initially set up.
The later level loop surveys in 7/05 & 8/05 showed the control pins were stable in 2005.
(b) Relative elevation changes between BM and TP were within ±0.01ft during 2005-2007.
Small changes of elevations indicated the elevation datum was stable.
(c) Survey results of 4/10/07 were affected by ice and not included in modeling.
(d) Small relative elevation changes in HP in 2007. No corrections to the WSEs were needed because the datum was not based on HP.

calibration notes

Measured WSE:

This transect is an island complex with a main channel and a side channel.
Multiple WSEs were surveyed across the main channel, and only one WSE measured in the side channel for each flow. The following table summarizes the representative WSEs of each channel.
The WSE of main channel is the average of right WSE, mid WSE, and left WSE of each flow.

	WSE (ft)		
Date	Main channel	Side channel	Off channel
6/11/2005	98.66	98.62	99.65
6/13/2005	98.56	98.53	99.59
7/18/2005	98.15	98.44	99.35
8/10/2005	97.74	98.41	99.03
6/29/2006	98.19		
7/7/2006	98.07	98.43	99.19
4/10/2007	97.22		

Discharge:

All measured discharges are listed in the following table.

	Flow (cfs)			
Date	Main channel	Side channel	Off channel	Total Q (cfs)
6/11/2005				
6/13/2005	151.0	0.0	0.0	151.0
7/18/2005				
8/10/2005	34.9	0.0	-0.1	34.7
6/29/2006				
7/7/2006	71.2	0.0	-0.3	70.9
4/10/2007	5.2			5.2

Off-channel flows were not included for modeling

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (ft)	WSE Slope Distance (ft)
6/11/2005	0.236%	275.5
6/13/2005	0.233%	240
7/18/2005	0.240%	242
8/10/2005	0.201%	214
6/29/2006	0.120%	100
7/7/2006	0.099%	141.5
4/10/2007	0.017%	116.2

The slope S=0.233% of 6/13/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/11/2005	96.51
6/13/2005	96.46
7/18/2005	
8/10/2005	96.24
6/29/2006	96.38
7/7/2006	96.27
4/10/2007	96.62
Invert	96.46
SZF	96.46

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) The inverts from the 6/11/05, 7/18/05, 6/29/06 surveys were not used to determine SZF because of no flows measured.
(4) The invert of 4/10/07 survey was not used to determine SZF because of ice impact and incomplete transect measurement.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/11/2005		98.66			
2nd	6/13/2005	151.0	98.56	98.56	0.00	IFG4
3rd	7/18/2005		98.15			
4th	8/10/2005	34.7	97.74	97.74	0.00	IFG4
5th	6/29/2006		98.19			
6th	7/7/2006	70.9	98.07	98.08	0.01	IFG4
7th	4/10/2007	5.2	97.22			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.01ft is within the acceptable range.
(c) No discharges were measured in the 6/11/05, 7/18/05, and 6/29/06 trips
(d) Only partial flow was measured on 4/10/07 possibly due to anchor ice.
No photos available for the 4/10/07 site visit, but the photos taken at the nearby site (05-SFK2-PL1), less than 1 mile away, showed the stream bank was covered in snow and anchor ice in the channel. This suggested the hydraulics of the current site were affected by the ice and, as the result, the measured hydraulics were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 34.7cfs, 70.9cfs, and 151.0cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

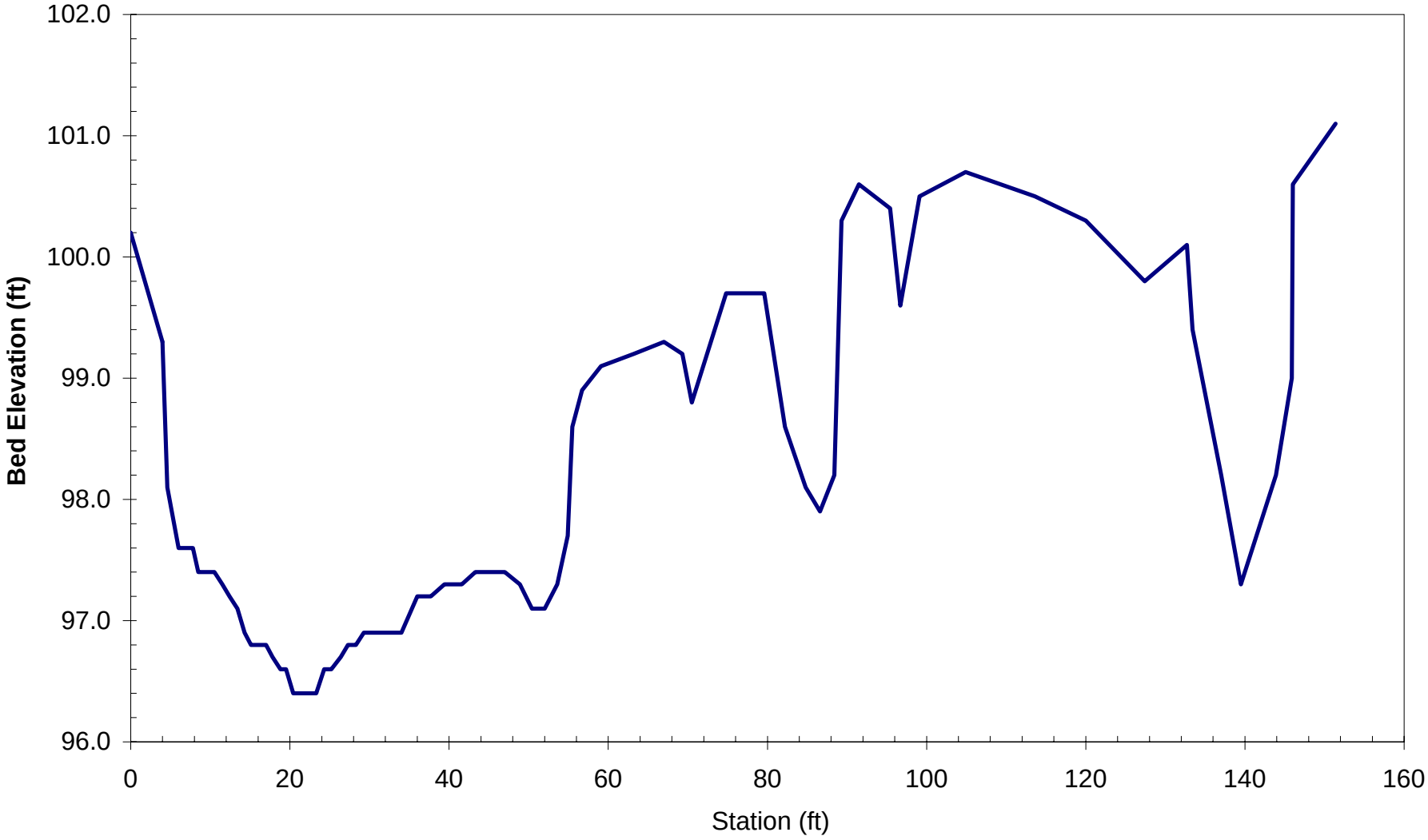
Survey Date	Q (cfs)	WUA (Y/N)
6/11/2005		
6/13/2005	151.0	Y
7/18/2005		
8/10/2005	34.7	Y
6/29/2006		
7/7/2006	70.9	Y
4/10/2007	5.2	

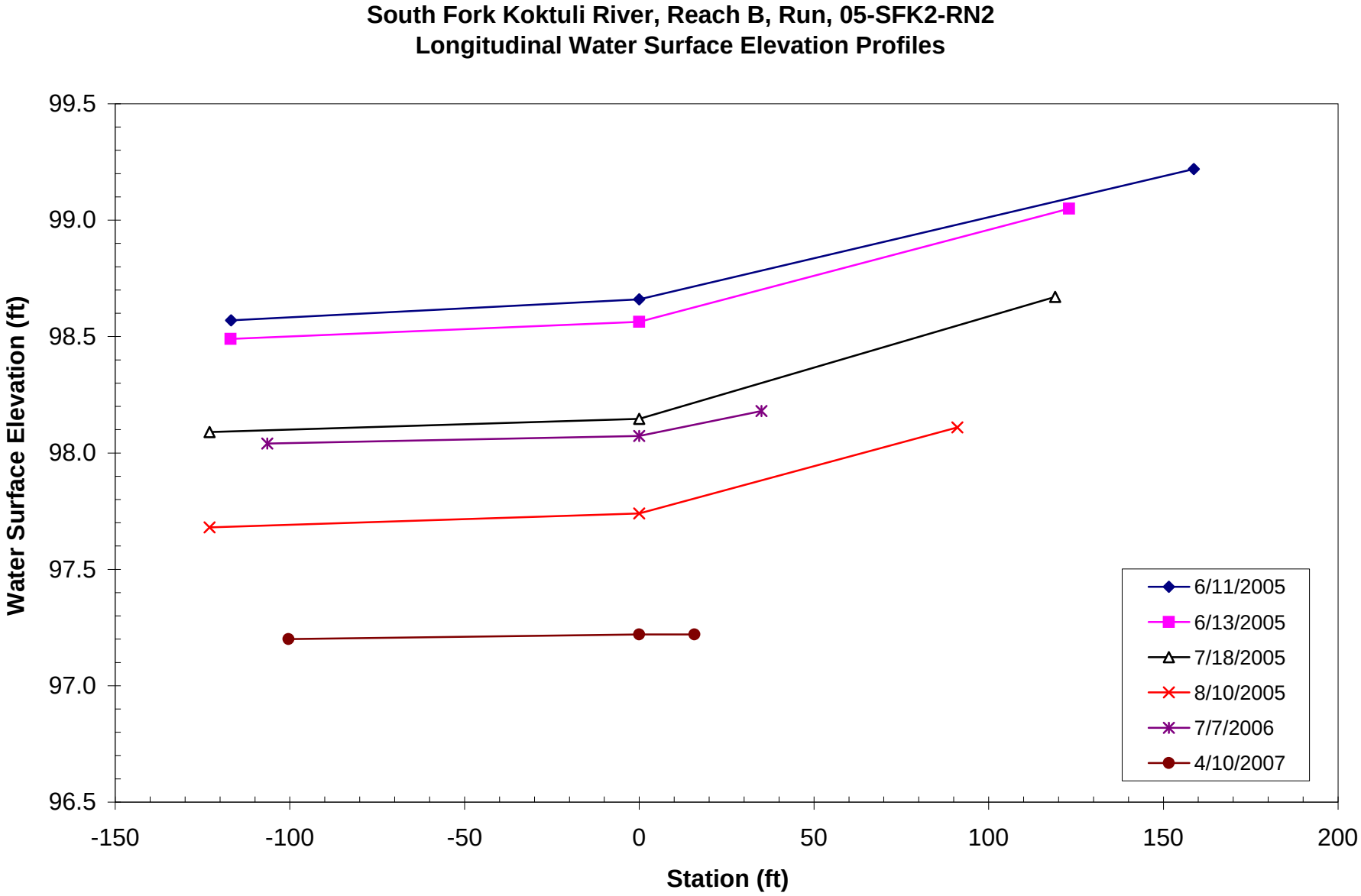
(4) Hydraulic Calibration Results:

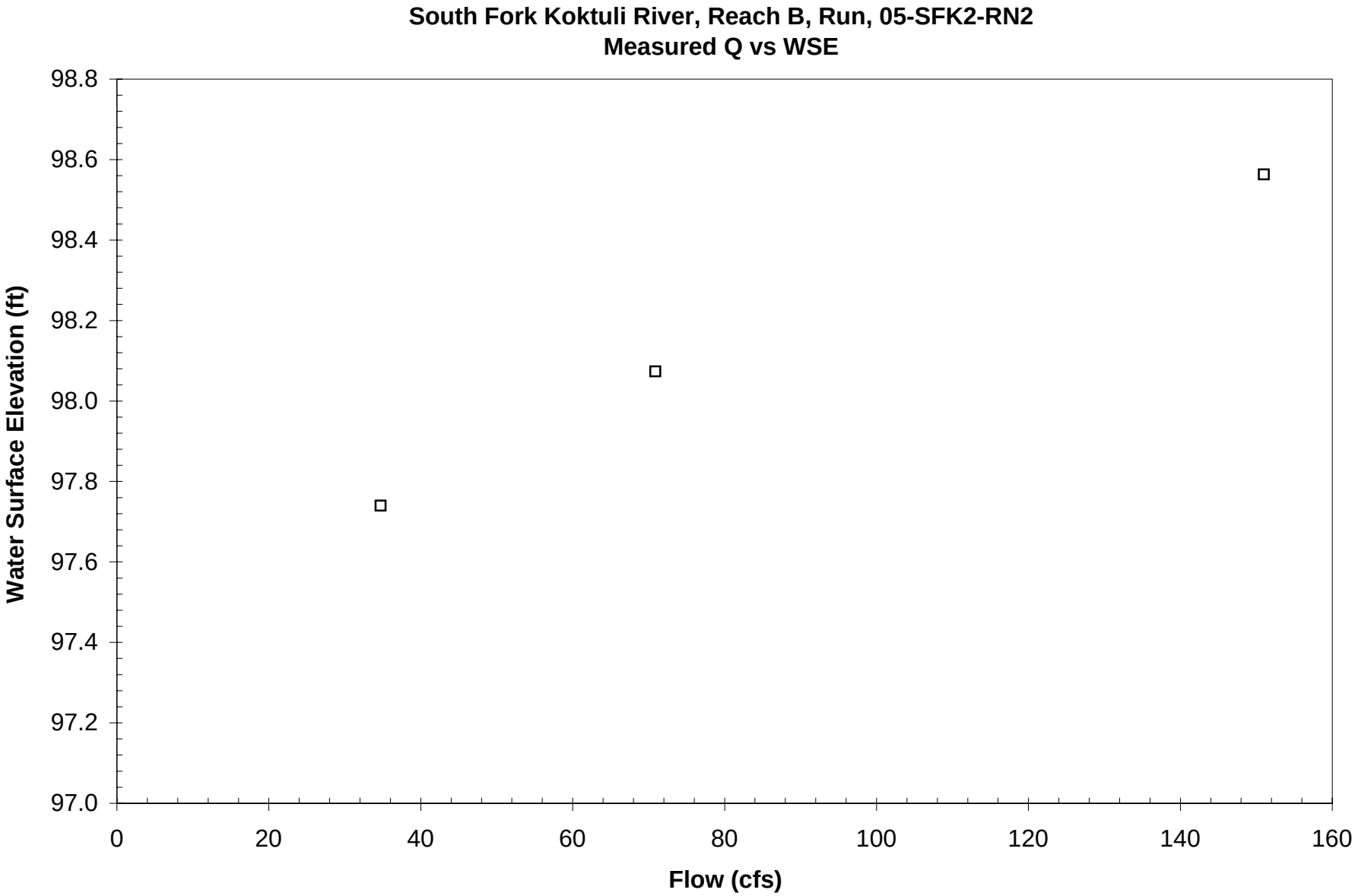
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

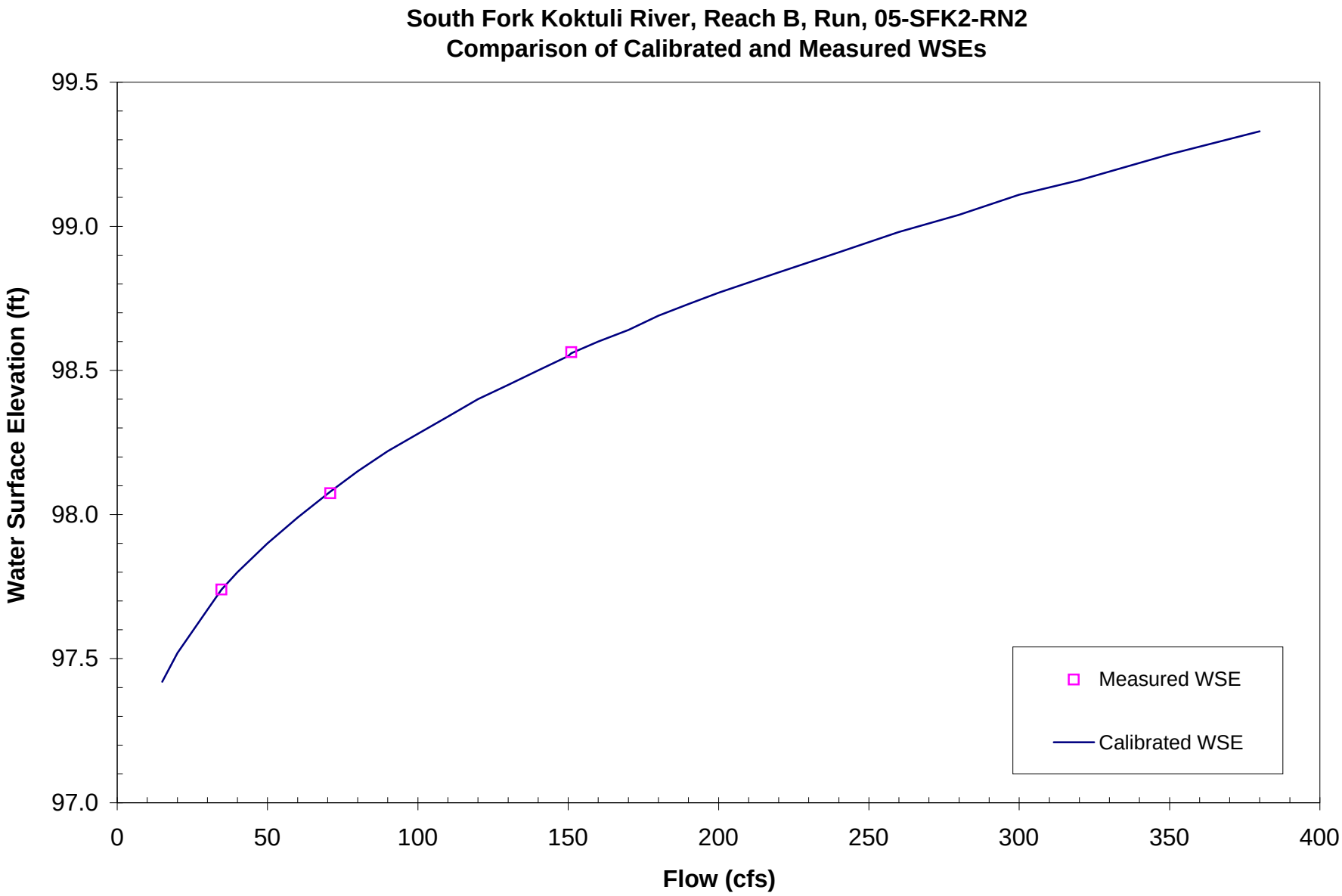
calibration notes

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN2
Measured Transect Profile




South Fork Koktuli River, Reach B, Run, 05-SFK2-RN2
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
-150
-100
-50
0
50
100
150
200
Station (ft)
6/11/2005
6/13/2005
7/18/2005
8/10/2005
7/7/2006
4/10/2007

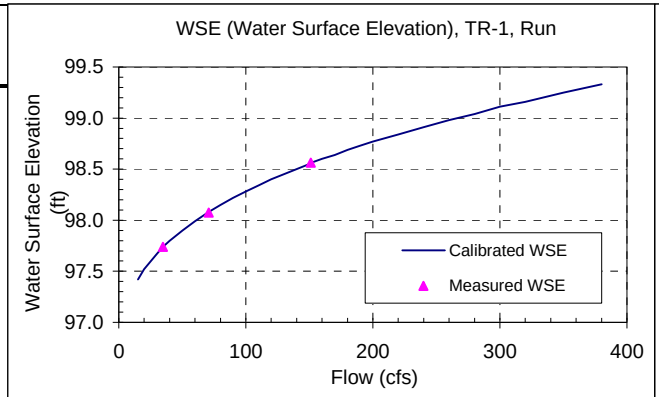

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN2
Measured Q vs WSE
Water Surface Elevation (ft)
98.8
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
20
40
60
80
100
120
140
160
Flow (cfs)

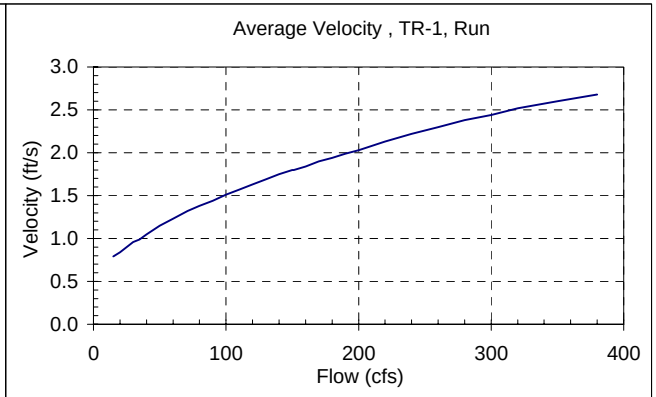

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
0
50
100
150
200
250
300
350
400
Flow (cfs)
Measured WSE
Calibrated WSE

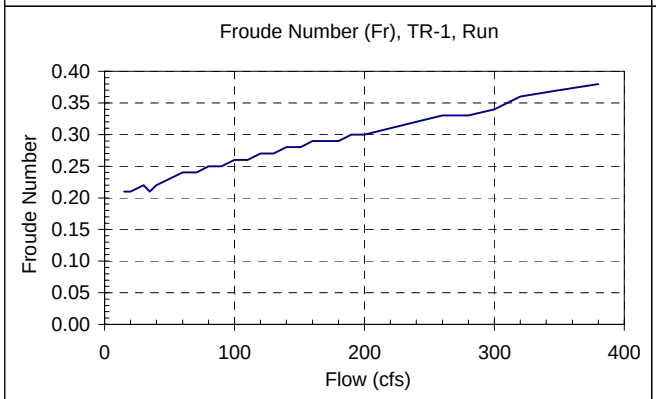
Stream: South Fork Koktuli River
Site Name: 05-SFK2-RN2
Date: 6/11/2005
Calibration Flow: Q(6/11/2005)

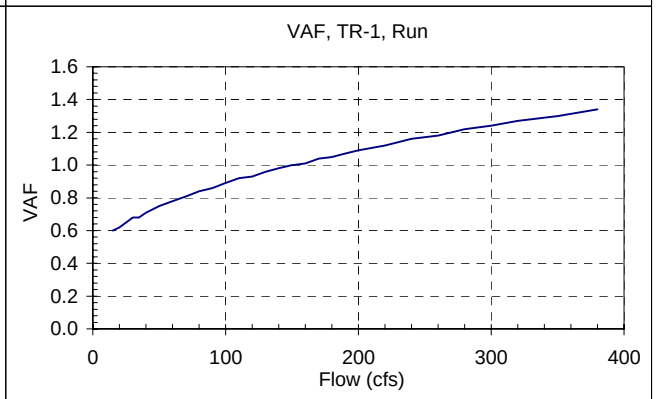
Reach: B
Habitat: Run
Site #: 2
Transect: 1

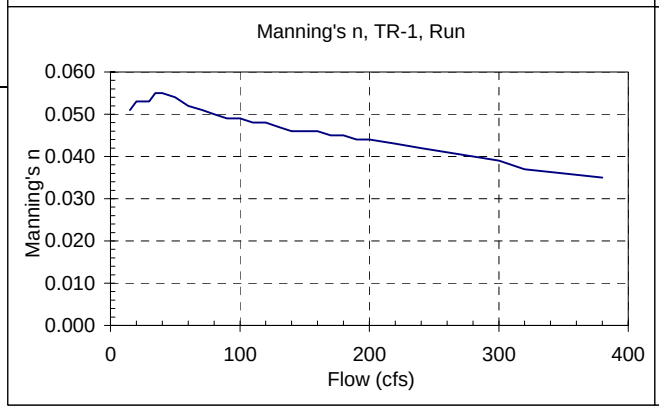
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
15	97.42	0.21	0.79	0.60	0.051	45.2
20	97.52	0.21	0.84	0.62	0.05	48.1
30	97.67	0.22	0.96	0.68	0.05	52.3
34.7	97.74	0.21	0.99	0.68	0.06	53.1
40	97.80	0.22	1.05	0.71	0.06	53.9
50	97.90	0.23	1.15	0.75	0.05	55.1
60	97.99	0.24	1.23	0.78	0.05	57.6
70.9	98.08	0.24	1.32	0.81	0.05	60.1
80	98.15	0.25	1.38	0.84	0.05	61.6
90	98.22	0.25	1.44	0.86	0.05	63.0
100	98.28	0.26	1.51	0.89	0.05	63.9
110	98.34	0.26	1.57	0.92	0.05	64.7
120	98.40	0.27	1.63	0.93	0.05	65.6
130	98.45	0.27	1.69	0.96	0.05	66.3
140	98.50	0.28	1.75	0.98	0.05	67.1
150	98.55	0.28	1.80	1.00	0.05	67.8
151.0	98.56	0.28	1.80	1.00	0.05	67.9
160	98.60	0.29	1.84	1.01	0.05	68.6
170	98.64	0.29	1.90	1.04	0.05	69.2
180	98.69	0.29	1.94	1.05	0.05	69.9
190	98.73	0.30	1.99	1.07	0.04	70.4
200	98.77	0.30	2.03	1.09	0.04	71.0
220	98.84	0.31	2.13	1.12	0.04	72.5
240	98.91	0.32	2.22	1.16	0.04	74.2
260	98.98	0.33	2.30	1.18	0.04	76.2
280	99.04	0.33	2.38	1.22	0.04	77.8
300	99.11	0.34	2.44	1.24	0.04	79.7
320	99.16	0.36	2.52	1.27	0.04	84.9
350	99.25	0.37	2.60	1.30	0.04	90.3
380	99.33	0.38	2.68	1.34	0.035	93.5

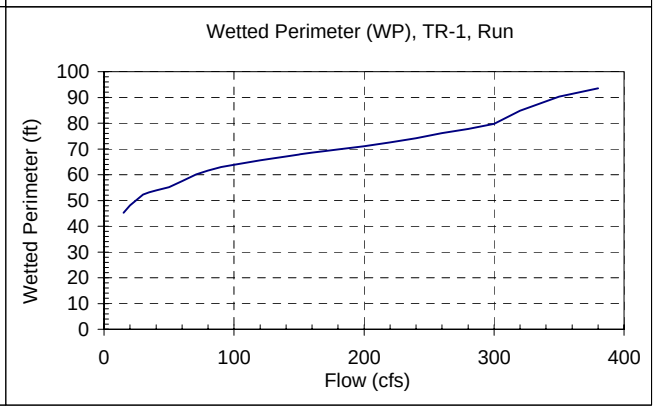




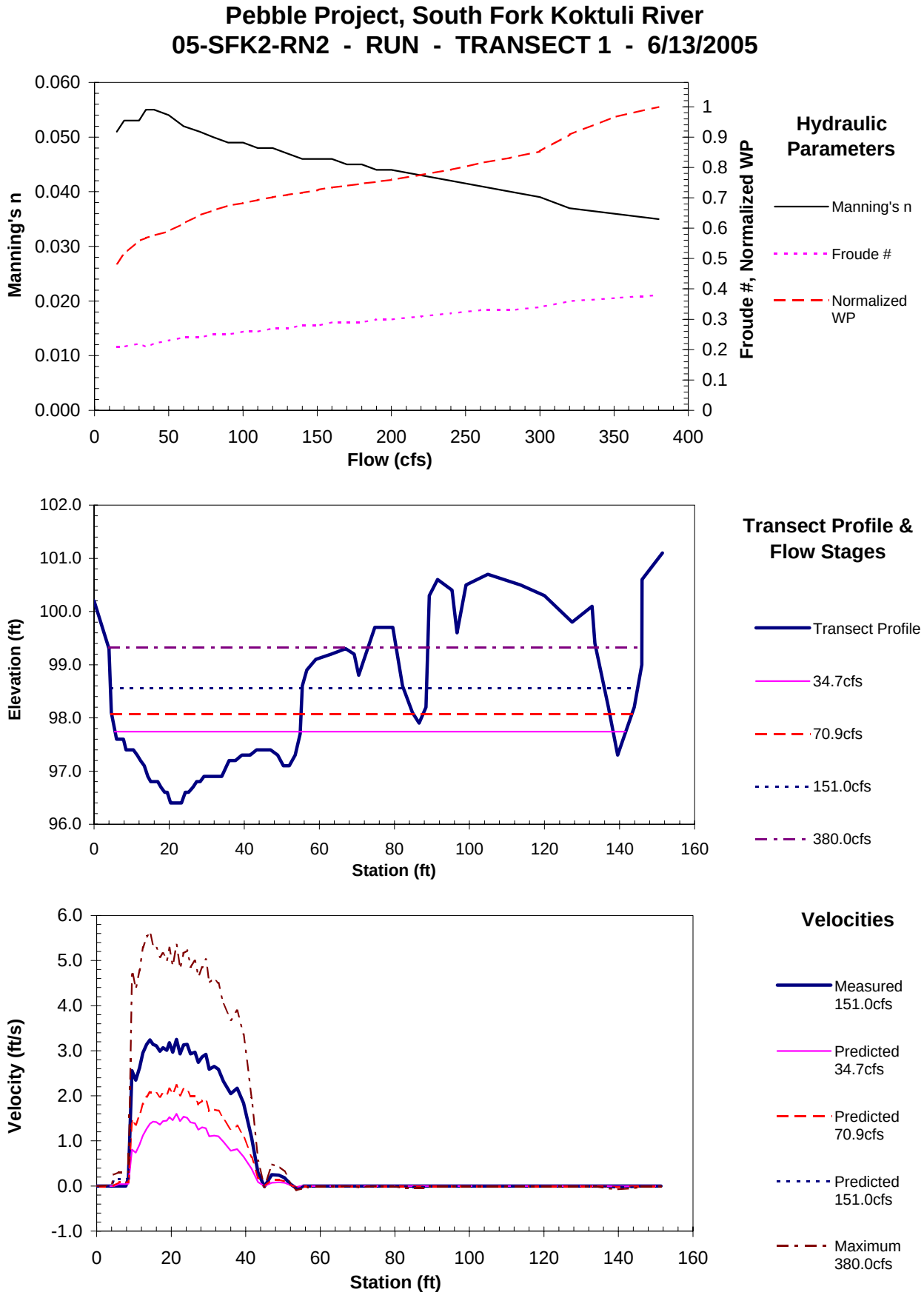








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RN2  06/13/05
RUN                        0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  15.0
QARD  20.0
QARD  30.0
QARD  34.7
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.9
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 151.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 350.0
QARD 380.0
XSEC  1000     1000. 1.0     96.46    .00233
      1000   .0100.2  4.099.30  4.698.05  6.097.55  7.897.55  8.597.45
      1000  9.597.36 10.597.36 11.597.26 12.497.16 13.497.05 14.396.95
      1000 15.196.76 16.096.76 17.096.76 17.896.66 18.896.55 19.596.55
      1000 20.496.45 21.496.45 22.496.45 23.396.45 24.396.55 25.296.55
      1000 26.496.66 27.396.76 28.396.76 29.396.86 30.296.95 31.596.95
      1000 32.796.95 34.096.95 36.097.16 37.797.16 39.497.26 41.697.26
      1000 43.397.36 45.097.36 47.097.45 48.997.26 50.497.05 52.097.05
      1000 53.697.26 54.997.66 55.598.55 56.798.90 59.199.13 63.299.16
      1000 67.099.29 69.399.18 70.598.77 74.899.69 76.499.68 79.699.69
      1000 82.298.59 84.898.08 86.697.91 88.498.23 89.3100.3 91.5100.6
      1000 95.4100.4 96.799.59 99.1100.5104.9100.7113.6100.5120.0100.3
      1000127.499.80132.7100.1133.499.44137.098.25139.597.34143.998.16
      1000145.998.98146.0100.6151.4101.1
NS    1000      22.9      22.9      22.9      23.9      23.7      24.6
NS    1000      43.7      34.6      34.6      34.6      43.6      43.6
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      43.7      43.8      43.6      43.6      43.6      43.7
NS    1000      34.6      34.6      34.6      34.7      34.7      34.8
NS    1000      34.6      34.6      34.6      43.7      43.7      43.6
NS    1000      43.6      43.6      34.6      32.6      23.6      24.8
NS    1000      22.9      24.9      23.7      23.6      23.6      42.6
NS    1000      23.6      23.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      23.6      23.6      22.9      25.9      25.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      23.9      23.9      22.9
NS    1000      22.9      22.9      22.9
WSL   1000     97.42     97.52     97.67     97.74     97.80     97.90
WSL   1000     97.99     98.08     98.15     98.22     98.28     98.34
WSL   1000     98.40     98.45     98.50     98.55     98.56     98.60
WSL   1000     98.64     98.69     98.73     98.77     98.84     98.91
WSL   1000     98.98     99.04     99.11     99.16     99.25     99.33
CAL1  1000     98.56     151.0
VEL1  1000           0.00 0.00 0.00 0.17 2.56 2.35 2.62 2.95 3.14 3.24
VEL1  1000 3.14 3.11 2.99 3.07 3.01 3.18 2.97 3.25 2.93 3.13 3.14 2.93
VEL1  1000 2.97 2.74 2.86 2.92 2.59 2.65 2.59 2.32 2.05 2.17 1.84 1.07
VEL1  1000 0.30-0.01 0.25 0.24 0.18 0.04-0.05-0.03 0.00
VEL1  1000
VEL1  1000
VEL1  1000
CAL2  1000     97.74      34.7
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.07      70.9
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-PL1

Habitat Type: Pool

River Kilometer: 33.16

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-PL1
Habitat Type: Pool

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	7/24/2005	1	100.00	98.12	98.08
2nd	8/10/2005	2	100.00	98.11	98.07
3rd	9/8/2005	3	100.00	98.14	98.10
4th	7/7/2006	4	100.00	98.14	98.12
5th	4/10/2007	5	100.00	98.13	98.28

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Relative elevation changes between BM & HP were within ±0.02ft over the 2005-2007 2 year period. Small changes of elevations suggested BM was stable.
(c) The relative elevation changes showed TP was raised by more than 0.15ft in 2007, which may be caused by frost heave. No corrections for WSE's were needed, because the survey datum was based on BM, not TP.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/24/2005	95.49
8/10/2005	95.16
9/8/2005	96.85
7/7/2006	95.79
4/10/2007	94.06

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/24/2005	
8/10/2005	13.1
9/8/2005	212.6
7/7/2006	41.3
4/10/2007	

No discharges were measured during the 7/24/05 and 4/10/07 trips.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/24/2005	-0.005%	186.4
8/10/2005	-0.009%	230.2
9/8/2005	0.015%	193.6
7/7/2006	0.039%	228.2

Negative longitudinal WSE slopes of 7/24/05 and 8/10/05 were due to measurement errors. The flow on these two days were very low (only 13.1cfs on 8/10/05), and a slight error in WSE survey could have caused the slopes to become negative.
The slope S=0.015% of 9/8/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/24/2005	93.11
8/10/2005	93.16
9/8/2005	93.05
7/7/2006	93.19
4/10/2007	NA
Invert	93.19
SZF	93.19

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 4/10/07 when the site was in snow/ice.
Limited data were collected on this date.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	7/24/2005		95.49			
2nd	8/10/2005	13.1	95.16	95.17	0.01	IFG4
3rd	9/8/2005	212.6	96.85	96.88	0.03	IFG4
4th	7/7/2006	41.3	95.79	95.75	-0.04	IFG4
5th	4/10/2007		94.06			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharges were measured in 7/24/05 and 4/10/07 trip.
(d) Photos of 4/10/07 site visit showed the stream was almost entirely covered in ice.
Only limited hydraulic data were collected. Data were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, including 13.1cfs, 41.3cfs, and 212.6cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

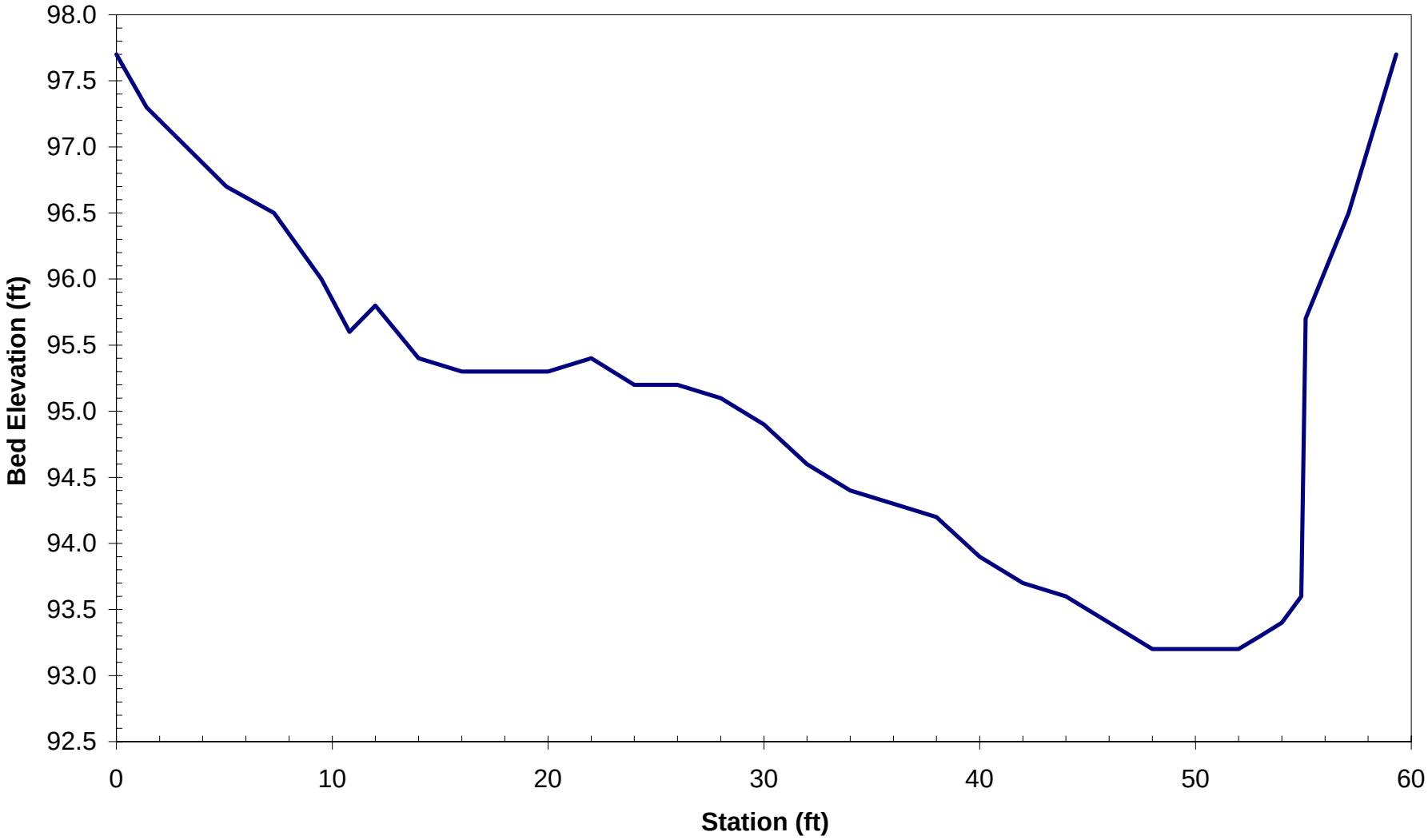
Survey Date	Q (cfs)	WUA (Y/N)
7/24/2005		
8/10/2005	13.1	Y
9/8/2005	212.6	Y
7/7/2006	41.3	Y
4/10/2007		

(4) Hydraulic Calibration Results:

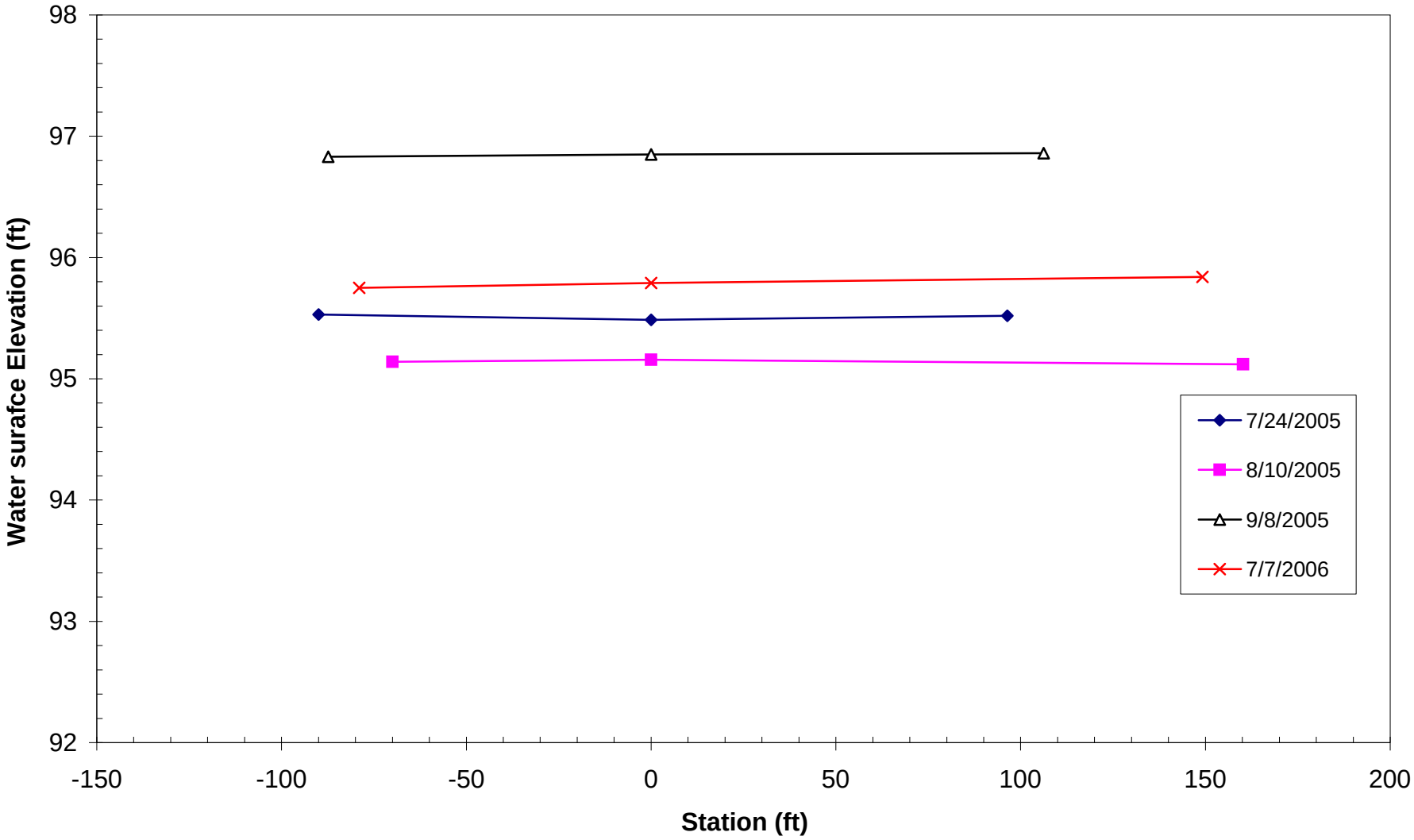
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

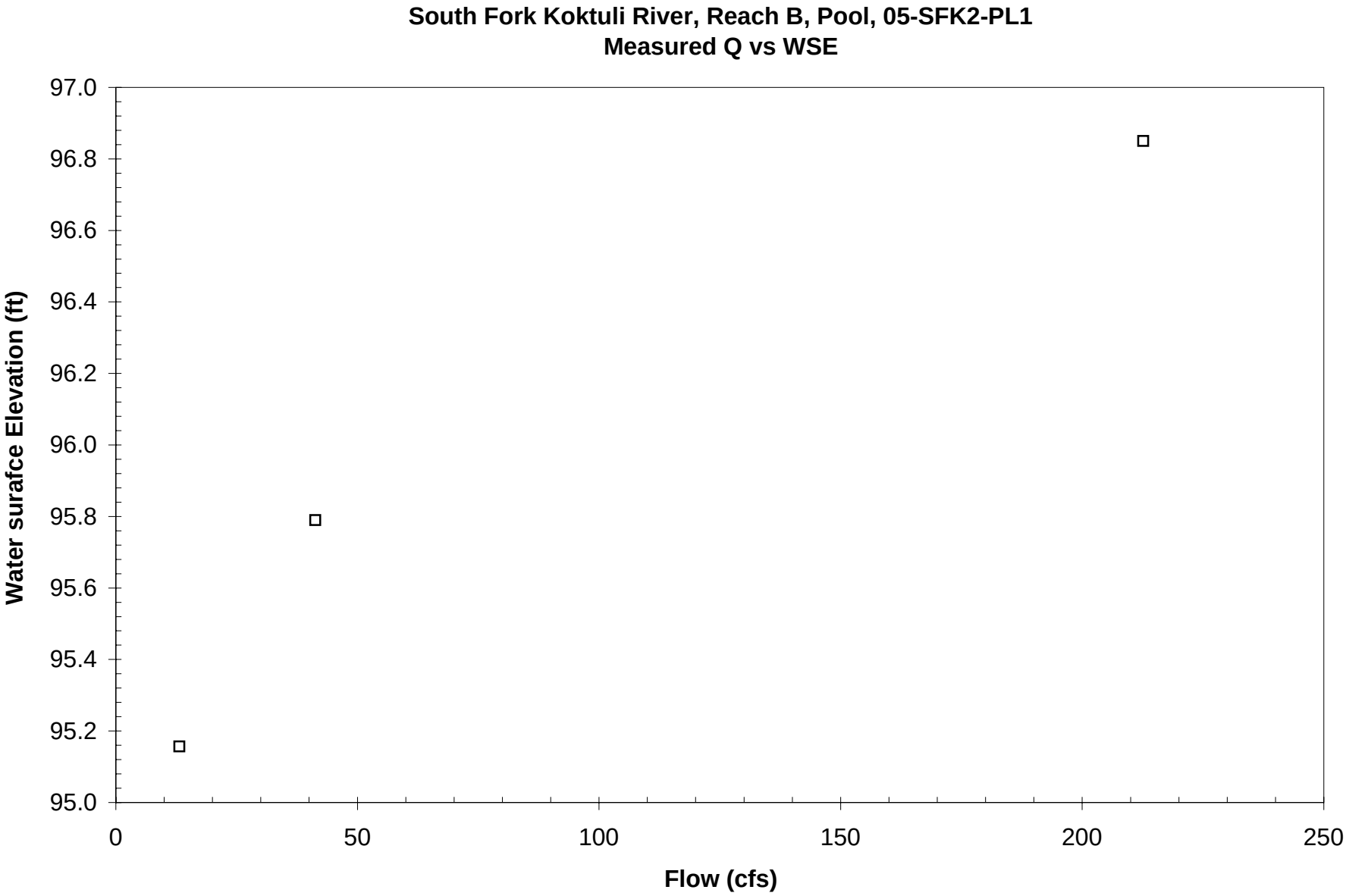
calibration notes

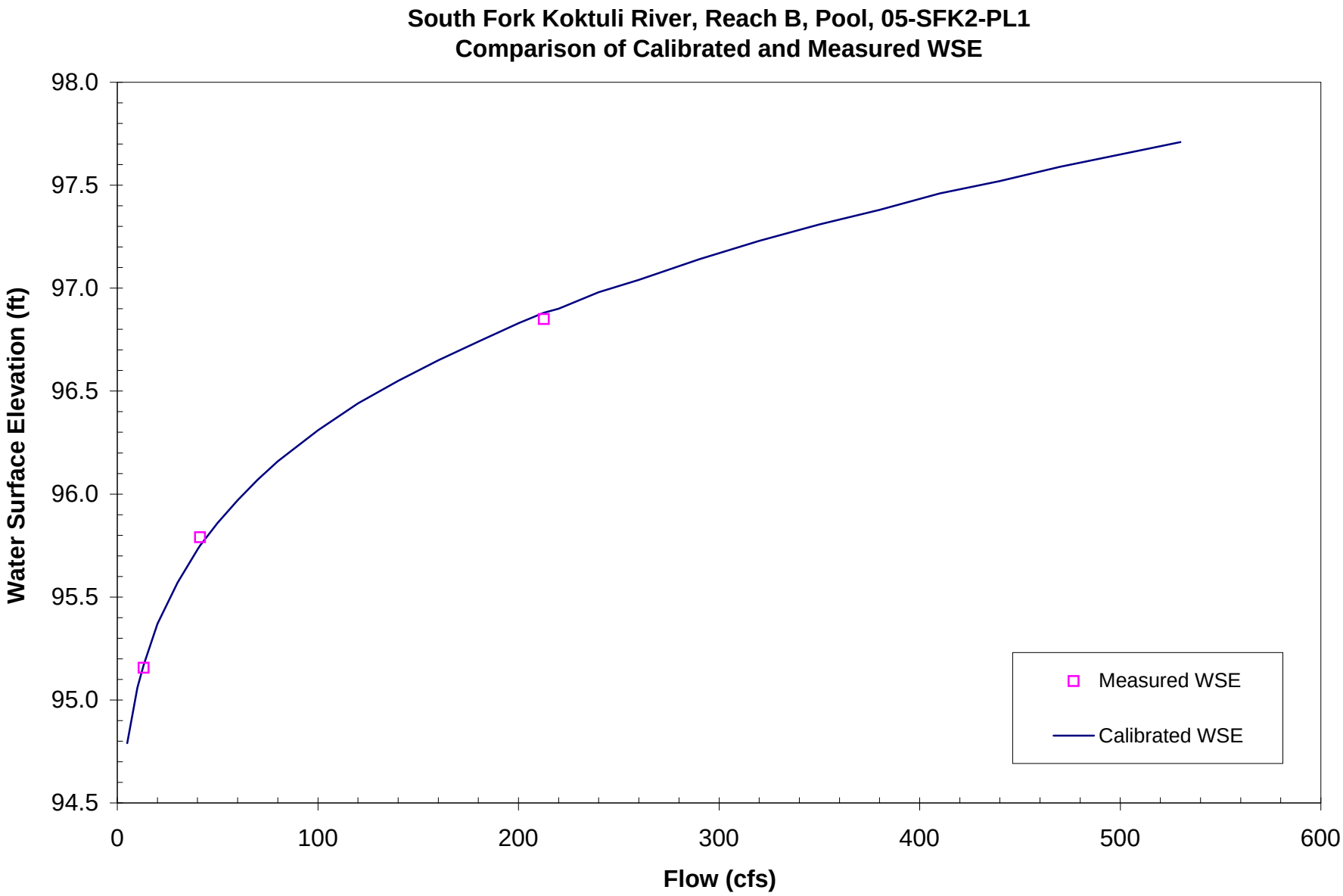
South Fork Koktuli River, Reach B, Pool, 05-SFK2-PL1
Measured Transect Profile



South Fork Koktuli River, Reach B, Pool, 05-SFK2-PL1
Longitudinal Water Surface Elevation Profiles

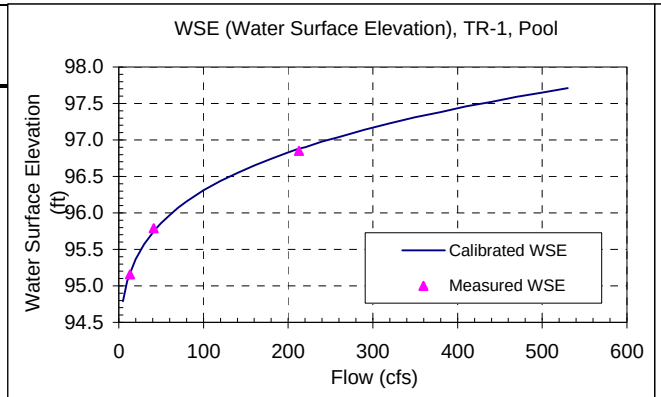


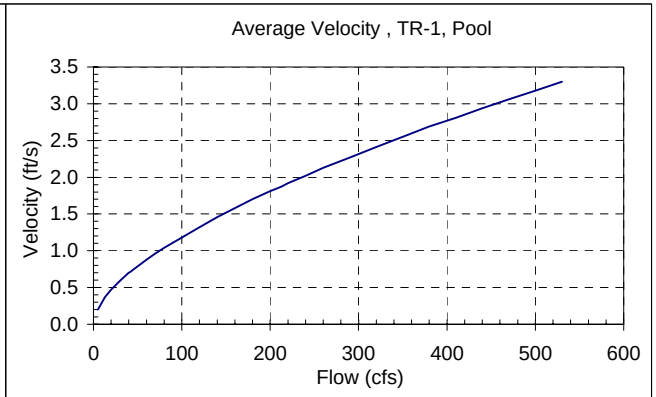

South Fork Koktuli River, Reach B, Pool, 05-SFK2-PL1
Measured Q vs WSE
Water surafce Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
50
100
150
200
250
Flow (cfs)

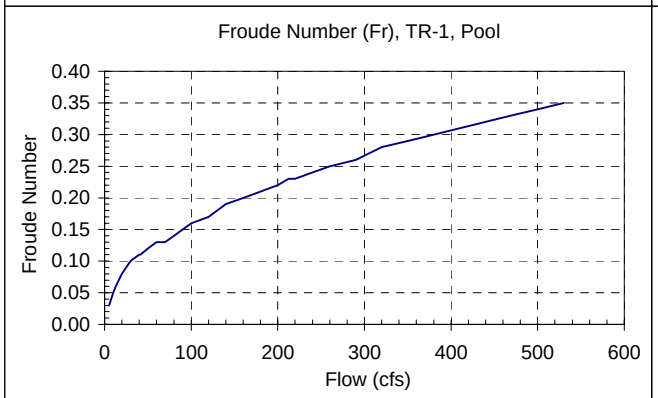

South Fork Koktuli River, Reach B, Pool, 05-SFK2-PL1
Comparison of Calibrated and Measured WSE
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

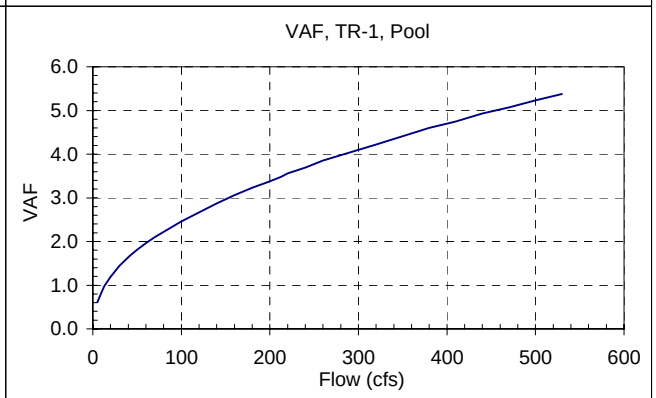
Stream: South Fork Koktuli River **Reach:** B
Site Name: 05-SFK2-PL1 **Site #:** 1
Date: 8/10/2005 **Transect:** 1
Calibration Flow: Q(8/10/2005) **Habitat:** Pool

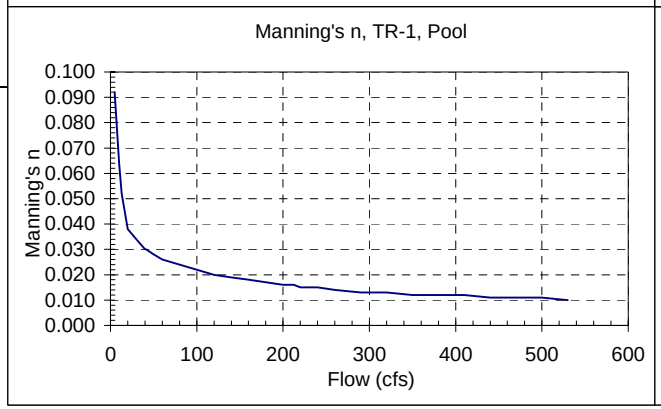
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
5	94.79	0.03	0.20	0.61	0.092	25.8
10	95.06	0.05	0.31	0.85	0.06	28.7
13.1	95.17	0.06	0.37	0.98	0.05	32.8
20	95.37	0.08	0.47	1.19	0.04	42.9
30	95.57	0.10	0.59	1.44	0.03	44.1
40	95.73	0.11	0.70	1.64	0.03	46.6
41.3	95.75	0.11	0.71	1.66	0.03	46.9
50	95.86	0.12	0.79	1.81	0.03	47.6
60	95.97	0.13	0.88	1.96	0.03	48.3
70	96.07	0.13	0.96	2.10	0.03	48.9
80	96.16	0.14	1.04	2.22	0.02	49.6
100	96.31	0.16	1.18	2.46	0.02	50.7
120	96.44	0.17	1.32	2.67	0.02	51.7
140	96.55	0.19	1.46	2.87	0.02	52.8
160	96.65	0.20	1.58	3.06	0.02	54.2
180	96.74	0.21	1.70	3.23	0.02	55.3
200	96.83	0.22	1.81	3.38	0.02	56.0
212.6	96.88	0.23	1.87	3.48	0.02	56.5
220	96.90	0.23	1.92	3.56	0.02	56.6
240	96.98	0.24	2.02	3.69	0.02	57.3
260	97.04	0.25	2.13	3.85	0.01	57.9
290	97.14	0.26	2.27	4.04	0.01	58.7
320	97.23	0.28	2.41	4.22	0.01	59.5
350	97.31	0.29	2.55	4.41	0.01	60.1
380	97.38	0.30	2.69	4.60	0.01	60.5
410	97.46	0.31	2.81	4.75	0.01	60.9
440	97.52	0.32	2.94	4.93	0.01	61.3
470	97.59	0.33	3.06	5.07	0.01	61.7
500	97.65	0.34	3.18	5.23	0.01	62.0
530	97.71	0.35	3.30	5.38	0.010	62.2

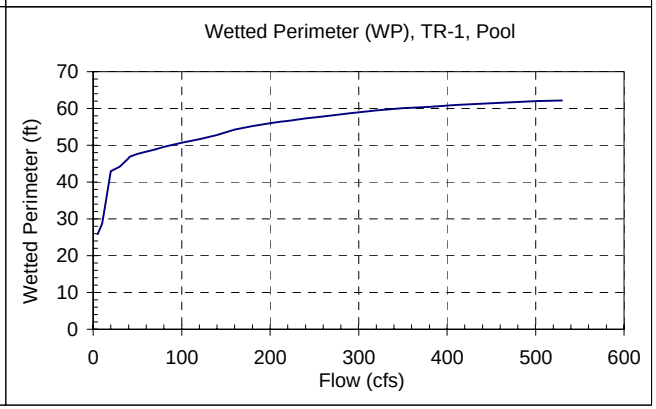




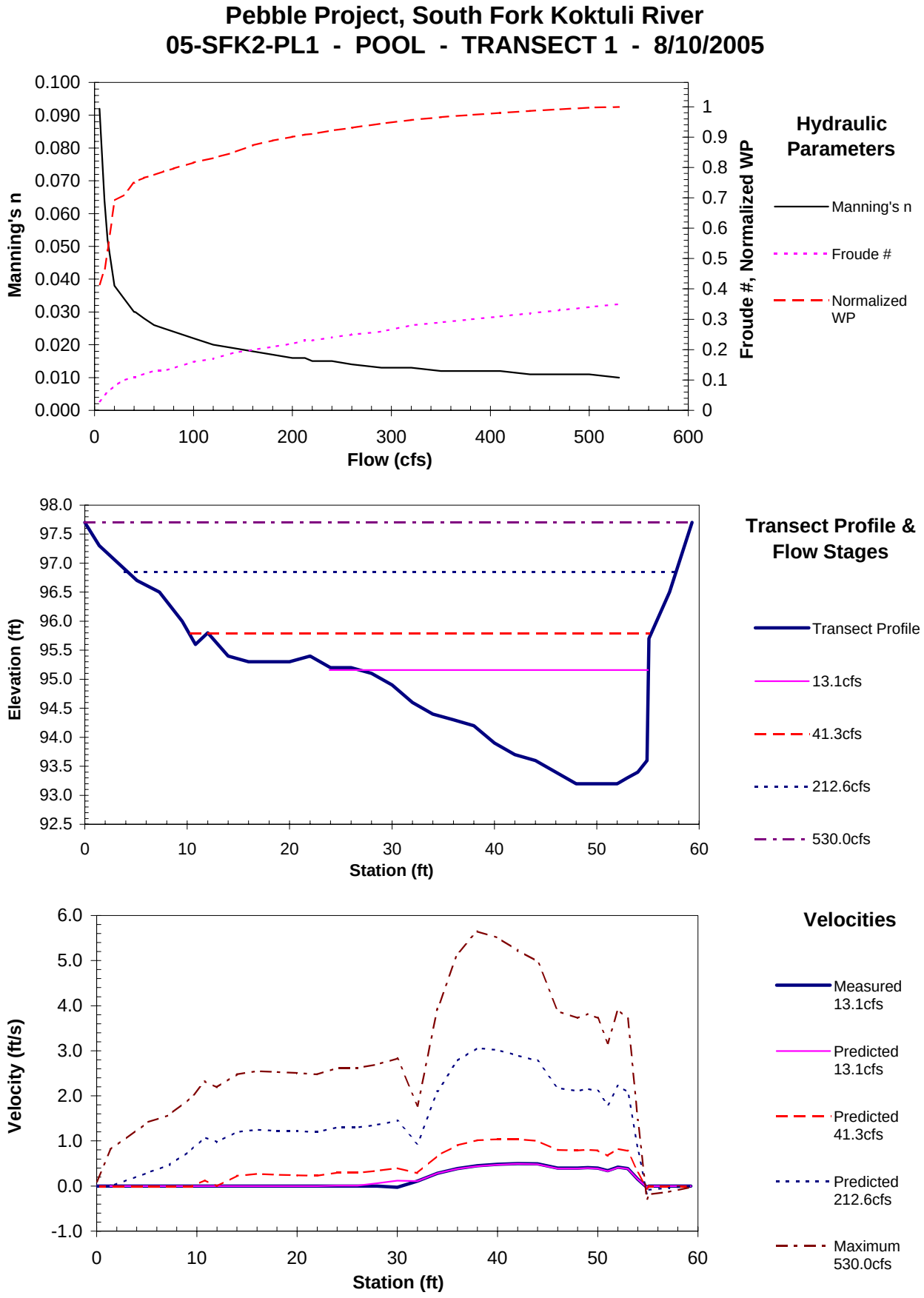








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
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QARD  10.0
QARD  13.1
QARD  20.0
QARD  30.0
QARD  40.0
QARD  41.3
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD 100.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 212.6
QARD 220.0
QARD 240.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 470.0
QARD 500.0
QARD 530.0
XSEC  1000     1000. 1.0     93.19    .00015
      1000   .097.69  1.497.27  5.196.69  7.396.51  9.596.04 10.895.59
      1000 12.095.76 14.095.36 16.095.26 18.095.30 20.095.33 22.095.37
      1000 24.095.16 25.995.16 26.095.16 28.095.05 30.094.86 32.094.55
      1000 34.094.36 36.094.26 38.094.16 40.093.95 42.093.66 44.093.55
      1000 46.093.36 48.093.16 49.093.16 50.093.16 51.093.16 52.093.16
      1000 53.093.26 54.093.36 54.993.55 55.195.75 57.196.54 59.397.66
NS    1000      22.9      22.9      22.9      22.9      22.9      24.9
NS    1000      23.9      23.9      24.7      24.6      42.6      42.6
NS    1000      42.6      42.7      42.7      42.7 0.07 42.7      43.6
NS    1000      43.6      43.8      43.8      42.7      45.6      45.6
NS    1000      54.6      54.6      45.6      45.6      42.6      42.6
NS    1000      54.6      24.6      24.8      24.8      22.9      22.9
WSL   1000     94.79     95.06     95.17     95.37     95.57     95.73
WSL   1000     95.75     95.86     95.97     96.07     96.16     96.31
WSL   1000     96.44     96.55     96.65     96.74     96.83     96.88
WSL   1000     96.90     96.98     97.04     97.14     97.23     97.31
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     97.38     97.46     97.52     97.59     97.65     97.71
CAL1  1000     95.16      13.1
VEL1  1000
VEL1  1000 0.00 0.00 0.00 0.00-0.03 0.11 0.28 0.39 0.45 0.48 0.50 0.49
VEL1  1000 0.40 0.40 0.41 0.40 0.34 0.42 0.39 0.15-0.03
CAL2  1000     96.85     212.6
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.79      41.3
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-B

Site/TR: 05-SFK2-RN1

Habitat Type: Run

River Kilometer: 33.80

Stream: South Fork Koktuli River
Reach: B
Site: 05-SFK2-RN1
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/11/2005	1	100.00	101.71	99.54
2nd	6/14/2005	2	100.00		
3rd	7/16/2005	3	100.00	101.71	99.55
4th	8/10/2005	4	100.00	101.70	99.54
5th	7/7/2006	5	100.00	101.69	99.49

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey
(b) Max relative elevation changes between control pins were 0.01ft in 2005, and 0.05ft in 2006.
(c) The elevation changes indicated control pins were slightly disturbed in 2006, and adjustments are needed to correct the 2006 WSEs to the 2005 datum. The BM may have been raised by 0.02ft to 0.05ft, and, after preliminary modeling results, it was decided the HI of 2006 be increased by 0.05ft to convert to the same elevation datum as the three surveys in 2005.
(c) No level loop was conducted on 6/14/05, three days after the pins were initially established Survey of 7/16/05 suggested the pins were not disturbed on 6/14/05.

Measured WSE:

Average of all measured WSEs (Right, mid, and Left) is used as transect representative WSE.
The 2006 WSE below has reflected the elevation datum adjustment of 0.05ft.

Date	WSE (ft)
6/11/2005	97.52
6/14/2005	97.45
7/16/2005	97.11
8/10/2005	96.62
7/7/2006	96.96

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/11/2005	
6/14/2005	121.5
7/16/2005	
8/10/2005	11.1
7/7/2006	47.2

No flows were surveyed on 6/11/05 and 7/16/05

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/11/2005	0.416%	158.6
6/14/2005	0.321%	54
7/16/2005	0.569%	153
8/10/2005	0.127%	63
7/7/2006	0.282%	78

The slope S=0.321% of 6/14/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/11/2005	95.77
6/14/2005	95.75
7/16/2005	
8/10/2005	95.62
7/7/2006	95.66
Invert	95.75
SZF	96.15

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) The invert of 6/11/05 survey was not used to determine SZF because of no flow measured

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/11/2005		97.52			
2nd	6/14/2005	121.5	97.45	97.41	-0.04	IFG4
3rd	7/16/2005		97.11			
4th	8/10/2005	11.1	96.62	96.61	-0.01	IFG4
5th	7/7/2006	47.2	96.96	97.00	0.04	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharges were measured on 6/11/05 and 7/16/05

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 11.1cfs, 47.2cfs, and 121.5cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

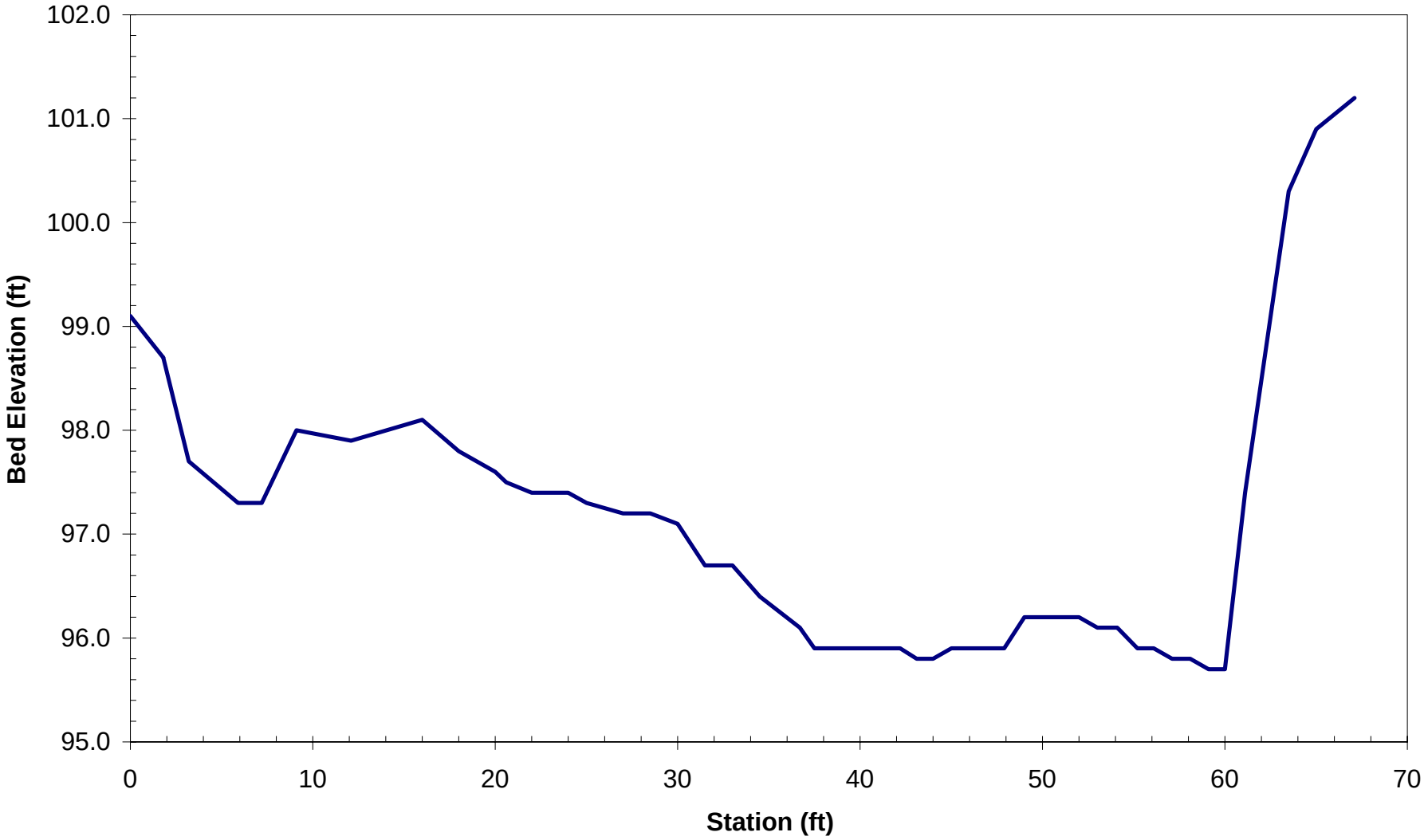
Survey Date	Q (cfs)	WUA (Y/N)
6/11/2005		
6/14/2005	121.5	Y
7/16/2005		
8/10/2005	11.1	Y
7/7/2006	47.2	Y

(4) Hydraulic Calibration Results:

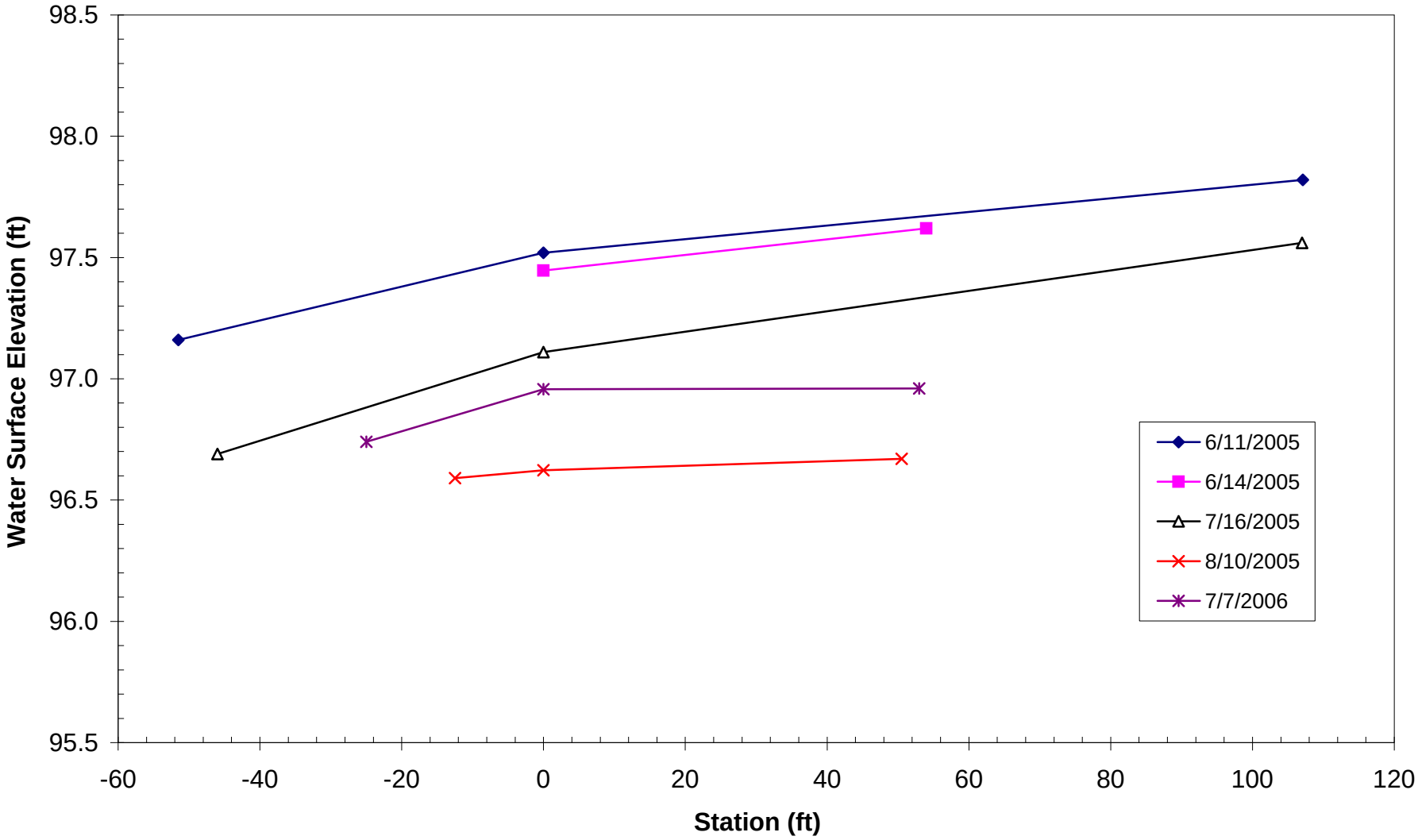
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

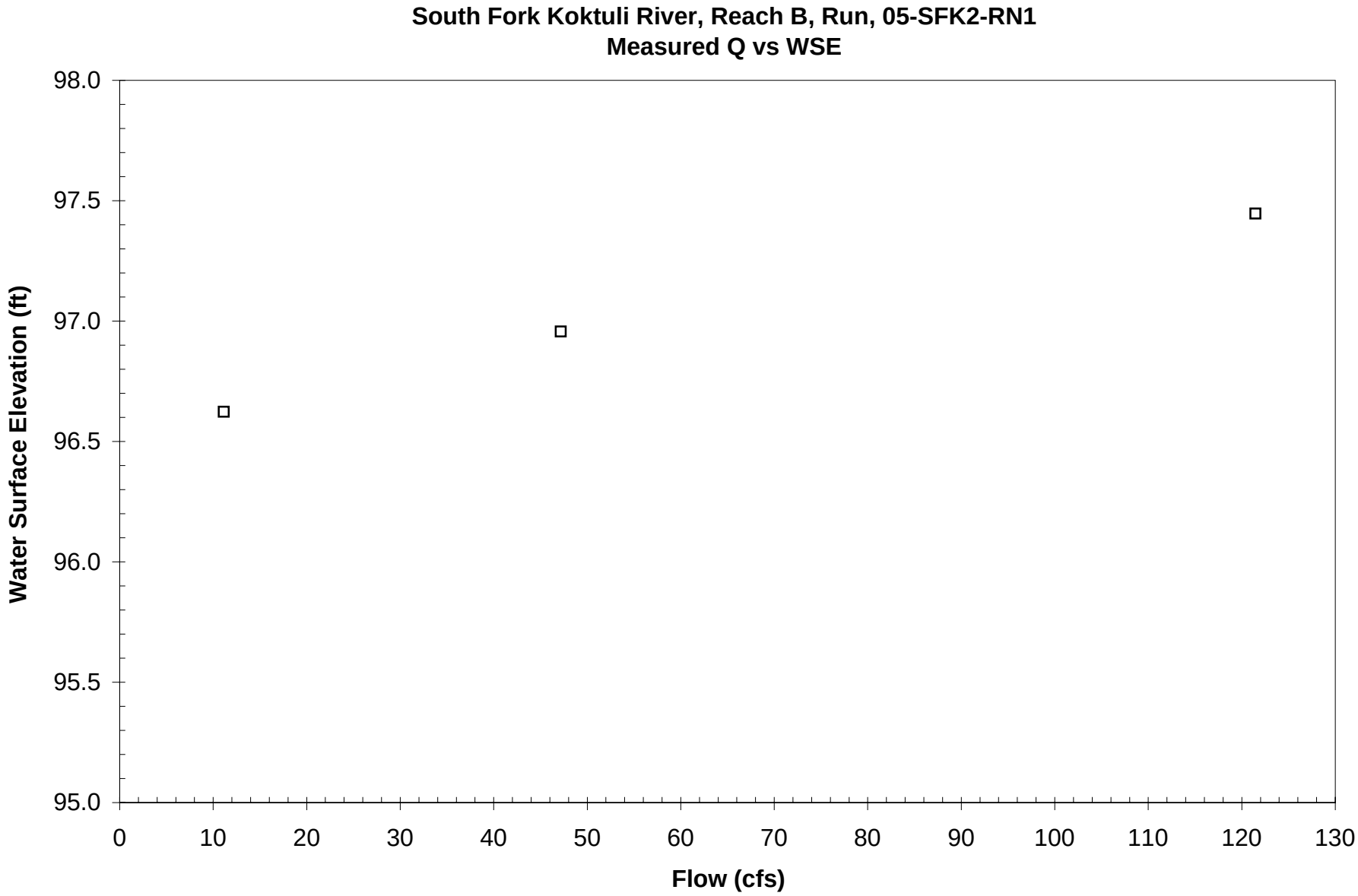
calibration notes

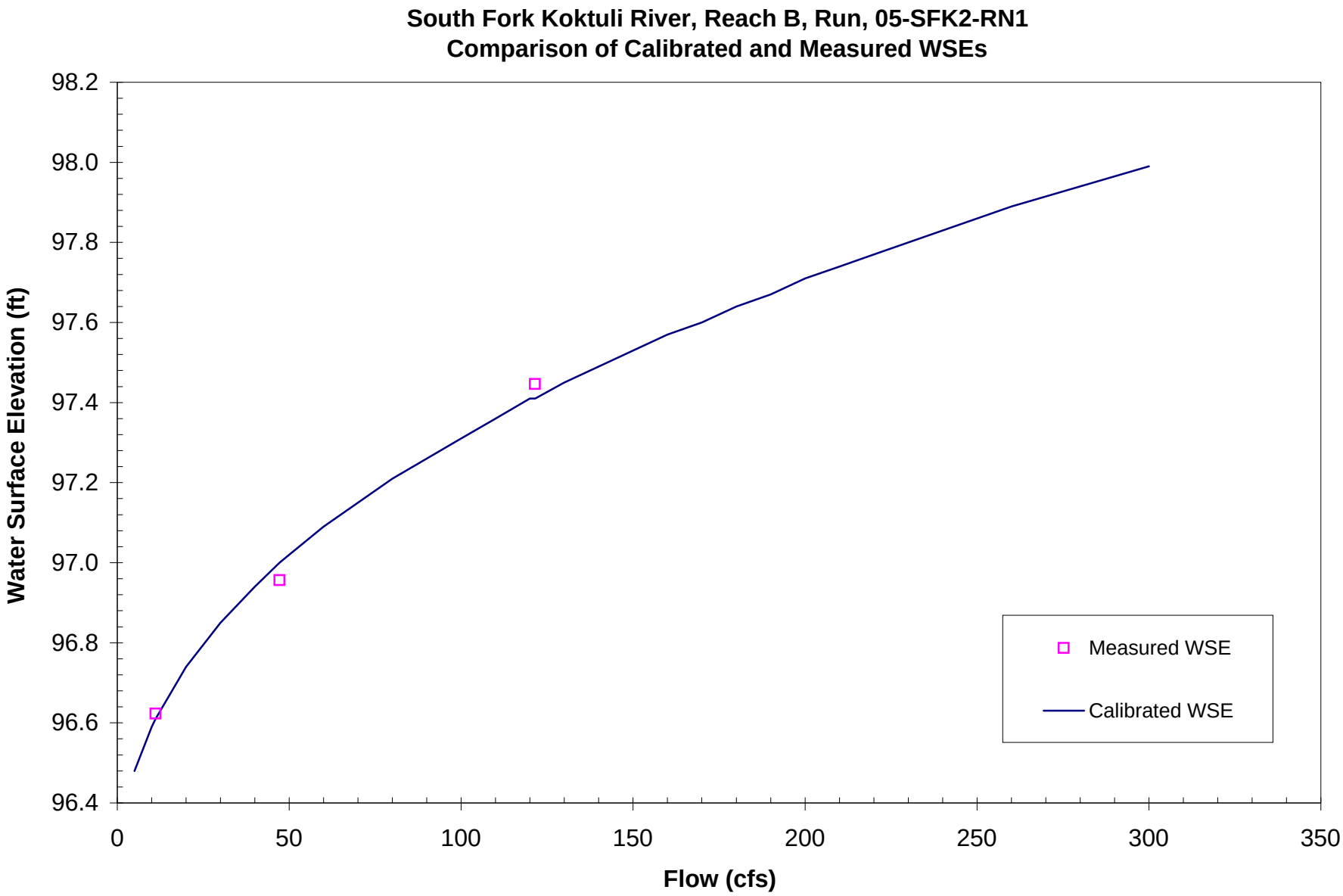
South Fork Koktuli River, Reach B, Run, 05-SFK2-RN1
Measured Transect Profile



South Fork Koktuli River, Reach B, Run, 05-SFK2-RN1
Longitudinal Water surface Elevation Profiles

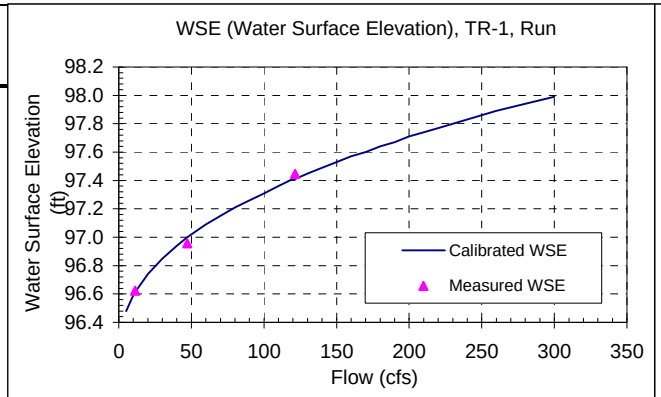


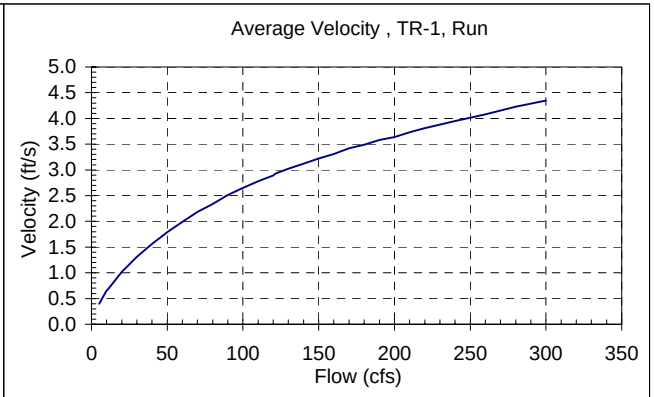

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
10
20
30
40
50
60
70
80
90
100
110
120
130
Flow (cfs)

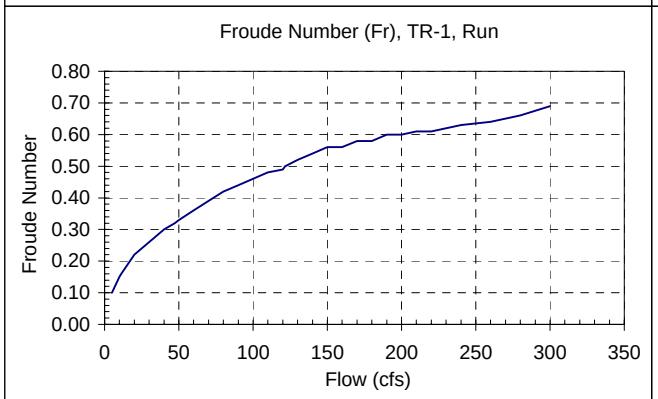

South Fork Koktuli River, Reach B, Run, 05-SFK2-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
0
50
100
150
200
250
300
350
Flow (cfs)
Measured WSE
Calibrated WSE

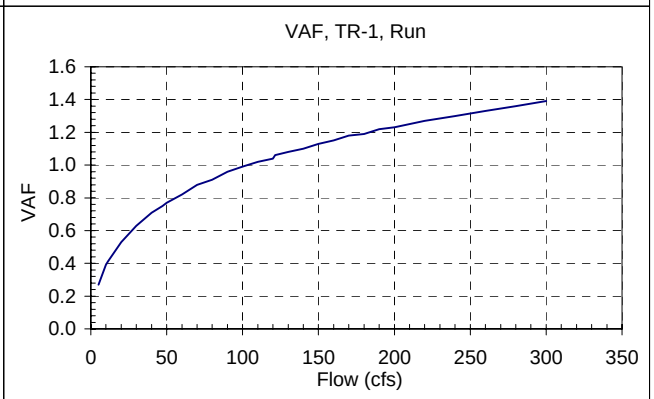
Stream: South Fork Koktuli River **Reach:** B
Site Name: 05-SFK2-RN1 **Habitat:** Run
Date: 6/11/2005 **Site #:** 1
Calibration Flow: Q(6/11/2005) **Transect:** 1

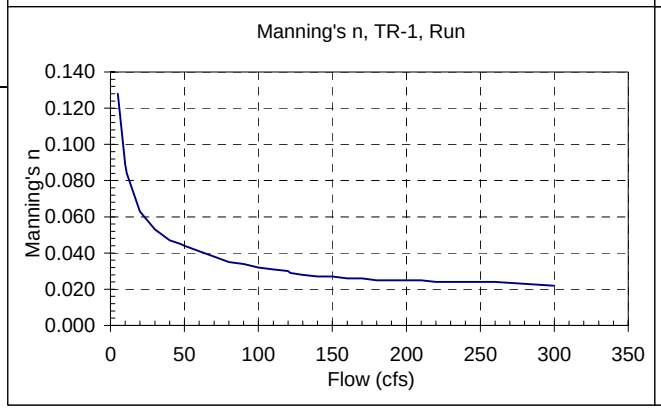
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
5	96.48	0.10	0.40	0.27	0.128	26.7
10	96.59	0.15	0.65	0.39	0.09	27.7
11.1	96.61	0.16	0.69	0.41	0.08	27.8
20	96.74	0.22	1.02	0.53	0.06	29.6
30	96.85	0.26	1.31	0.63	0.05	30.4
40	96.94	0.30	1.56	0.71	0.05	31.0
47.2	97.00	0.32	1.72	0.75	0.05	31.4
50	97.02	0.33	1.79	0.77	0.04	31.5
60	97.09	0.36	1.99	0.82	0.04	32.3
70	97.15	0.39	2.18	0.88	0.04	33.3
80	97.21	0.42	2.34	0.91	0.04	35.5
90	97.26	0.44	2.51	0.96	0.03	36.1
100	97.31	0.46	2.65	0.99	0.03	38.0
110	97.36	0.48	2.78	1.02	0.03	39.0
120	97.41	0.49	2.89	1.04	0.03	40.1
121.5	97.41	0.50	2.93	1.06	0.03	40.1
130	97.45	0.52	3.02	1.08	0.03	42.8
140	97.49	0.54	3.12	1.10	0.03	44.9
150	97.53	0.56	3.22	1.13	0.03	45.7
160	97.57	0.56	3.31	1.15	0.03	46.5
170	97.60	0.58	3.42	1.18	0.03	47.1
180	97.64	0.58	3.49	1.19	0.03	47.9
190	97.67	0.60	3.58	1.22	0.03	48.5
200	97.71	0.60	3.64	1.23	0.03	49.0
210	97.74	0.61	3.73	1.25	0.03	49.4
220	97.77	0.61	3.81	1.27	0.02	49.8
240	97.83	0.63	3.95	1.30	0.02	50.6
260	97.89	0.64	4.08	1.33	0.02	51.4
280	97.94	0.66	4.23	1.36	0.02	54.2
300	97.99	0.69	4.35	1.39	0.022	56.9

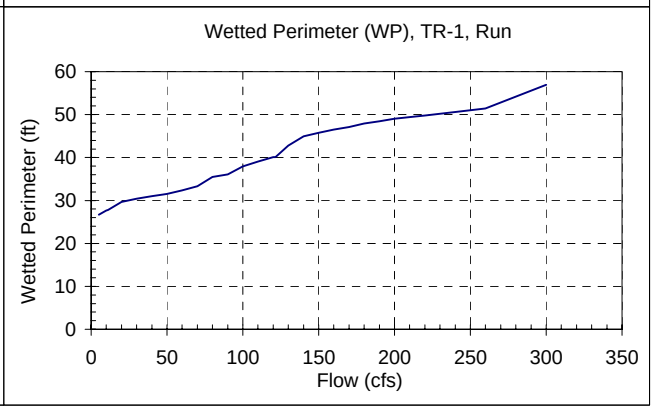






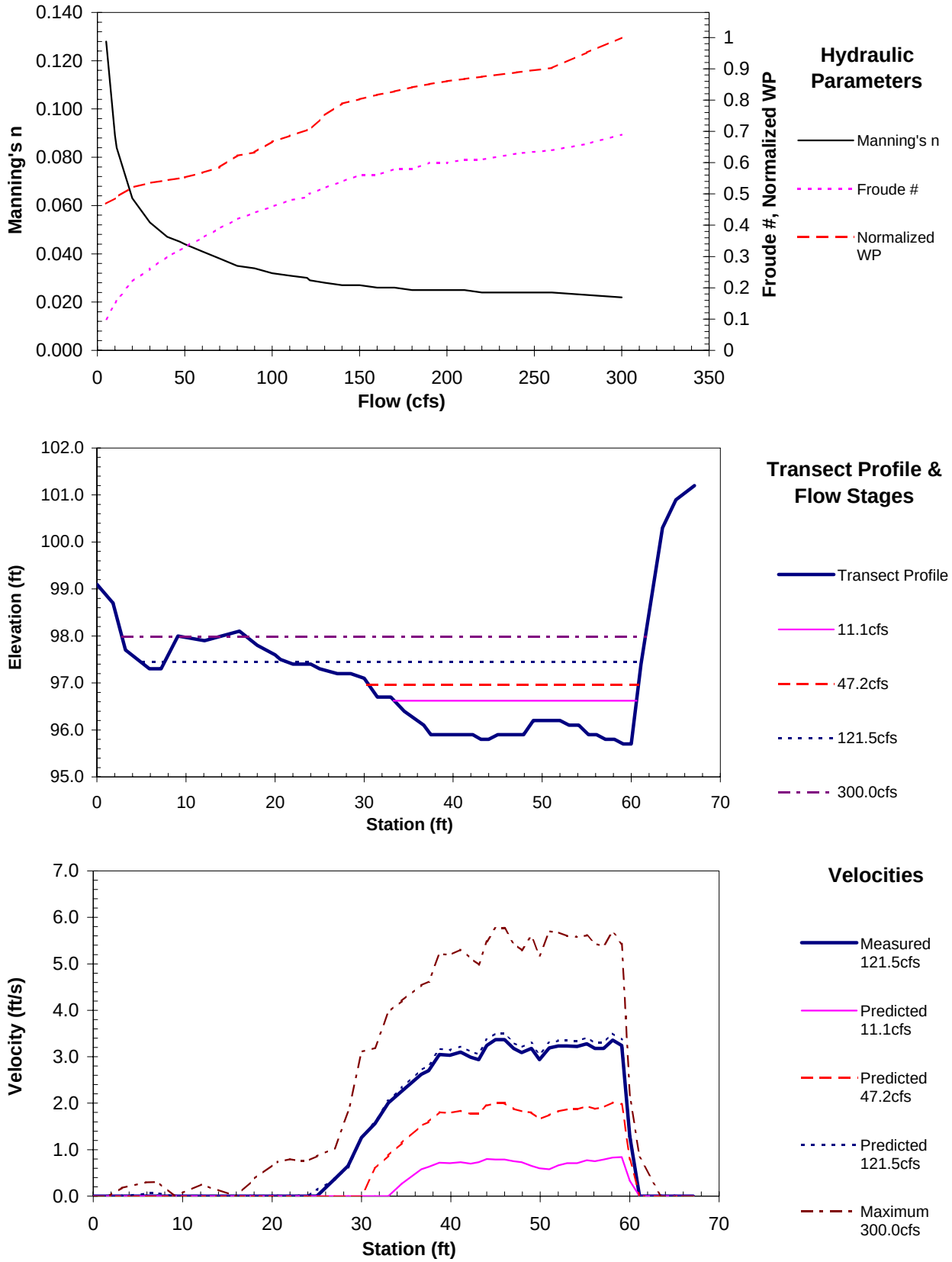






cTR1 - Transect hydraulic parameters

Pebble Project, South Fork Koktuli River
05-SFK2-RN1 - RUN - TRANSECT 1 - 6/14/2005



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK2-RN1  06/14/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   5.0
QARD  10.0
QARD  11.1
QARD  20.0
QARD  30.0
QARD  40.0
QARD  47.2
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 121.5
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
XSEC  1000     1000. 1.0     96.15    .00321
      1000   .099.06  1.898.75  3.297.67  5.997.31  7.297.29  9.198.04
      1000 12.197.89 16.098.07 18.097.81 20.097.55 20.697.48 22.097.41
      1000 23.097.45 24.097.45 25.097.35 27.097.15 28.597.15 30.097.05
      1000 31.596.75 33.096.65 34.596.45 36.796.05 37.595.95 38.795.95
      1000 39.995.95 41.195.95 42.295.95 43.195.85 44.095.85 45.095.95
      1000 46.095.95 47.095.95 47.995.95 49.096.15 49.996.15 51.096.25
      1000 52.096.15 53.096.05 54.196.05 55.295.95 56.195.95 57.195.85
      1000 58.195.85 59.195.75 60.095.75 61.197.45 63.5100.3 65.0100.9
      1000 67.1101.2
NS    1000      22.9      22.9      22.9      32.7      32.9 .3   32.6
NS    1000      32.7      34.9      34.9      34.8      34.8      32.9
NS    1000      34.9      34.7      34.7      34.7      34.8      34.9
NS    1000      34.9      34.9      34.8      32.8      34.8      34.6
NS    1000      34.7      54.6      53.6      34.6      43.7      46.6
NS    1000      43.6      34.8      32.8      32.7      32.9      32.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      32.6      32.8      34.9      34.7      34.6      34.6
NS    1000      34.6      43.7      34.6      22.9      22.9      22.9
NS    1000      22.9
WSL   1000     96.48     96.59     96.61     96.74     96.85     96.94
WSL   1000     97.00     97.02     97.09     97.15     97.21     97.26
WSL   1000     97.31     97.36     97.41     97.41     97.45     97.49
WSL   1000     97.53     97.57     97.60     97.64     97.67     97.71
WSL   1000     97.74     97.77     97.83     97.89     97.94     97.99
CAL1  1000     97.45     121.5
VEL1  1000
VEL1  1000 0.00 0.00 0.00 0.37 0.65 1.26 1.56 2.01 2.26 2.62 2.70 3.05
VEL1  1000 3.03 3.10 2.99 2.94 3.24 3.37 3.37 3.18 3.09 3.18 2.94 3.19
VEL1  1000 3.23 3.23 3.22 3.28 3.18 3.18 3.36 3.24 1.29 0.00
VEL1  1000
CAL2  1000     96.62      11.1
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.96      47.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: South Fork Koktuli River

Reach: SFK-C

SFK-C Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
05-SFK3-RN1	34.81	71.6	16.9			96.10	95.21			0.00	0.00			IFG4
04-SFK-RF1	36.54	35.6	6.0	21.6		95.27	94.57	95.02		0.00	0.00	0.00		IFG4
04-SFK-PL1	36.58	37.4	5.2	32.6		95.55	94.79	95.63		0.08	0.00	-0.07		IFG4
04-SFK-RN1	36.62	37.6	5.5	22.9		95.56	94.77	95.25		-0.03	-0.02	0.05		IFG4
05-SFK3-PL1	39.83	70.5	8.2	31.6		95.85	94.07	95.27		0.14	0.02	-0.15		IFG4
05-SFK3-PL2	40.93	63.6	9.5	33.4		94.66	93.11	93.91		-0.03	-0.01	0.04		IFG4

* RK is an abbreviation for River Kilometer

Stream: South Fork Koktuli River

Reach: SFK-C

Site/TR: 05-SFK3-RN1

Habitat Type: Run

River Kilometer: 34.81

Stream: South Fork Koktuli River
Reach: C
Site Name: 05-SFK3-RN1
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/14/2005	1	100.00	99.01	101.43
2nd	7/17/2005	2	100.00	99.01	101.43
3rd	8/10/2005	3	100.00	99.00	101.42
4th	7/7/2006	4	100.00	99.04	101.45

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between control pins were within 0.02ft during the 2005-2006 period. Small elevation changes indicated the BM were stable.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/14/2005	96.10
7/17/2005	95.56
8/10/2005	94.33
7/7/2006	95.21

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/14/2005	71.6
7/17/2005	
8/10/2005	
7/7/2006	16.9

Substrate was surveyed on 7/17/05, but no discharge was measured on the same day.
Depth was too shallow for velocity measurement during the 8/10/05 trip.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/14/2005	0.094%	159.2
7/17/2005	0.076%	79.0
8/10/2005	0.000%	59.6
7/7/2006	0.163%	153.2

The slope S=0.094% of 6/14/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/14/2005	94.00
7/17/2005	
8/10/2005	
7/7/2006	93.81
Invert	94.00
SZF	94.00

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in 7/17/05 trip.
(4) Only partial bed profile was surveyed on 8/10/05 due to insufficient water depth for velocity probe.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR1	calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/14/2005	71.6	96.10	96.10	0.00	IFG4
2nd	7/17/2005		95.56			
3rd	8/10/2005		94.33			
4th	7/7/2006	16.9	95.21	95.21	0.00	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharge was measured in 7/17/05 trip
(d) Partial flow was measured in 8/10/05 trip due to water depth too shallow.
(e) This transect has only two pairs of WSE~Q available, but Log-log (IFG4 method) relationship was still assumed when calibrating the WSE~Q rating curve. Usually MANSQ would have been applied for the calibration when only two pairs of WSE~Q can be used, but MANSQ calibration results showed large (~0.1ft) calibration errors. To minimize the calbration error, IFG4's log-log relationship was applied.

calibration notes

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/14/2005	71.6	Y
7/17/2005		
8/10/2005		
7/7/2006	16.9	Y

(3) Velocity calibration

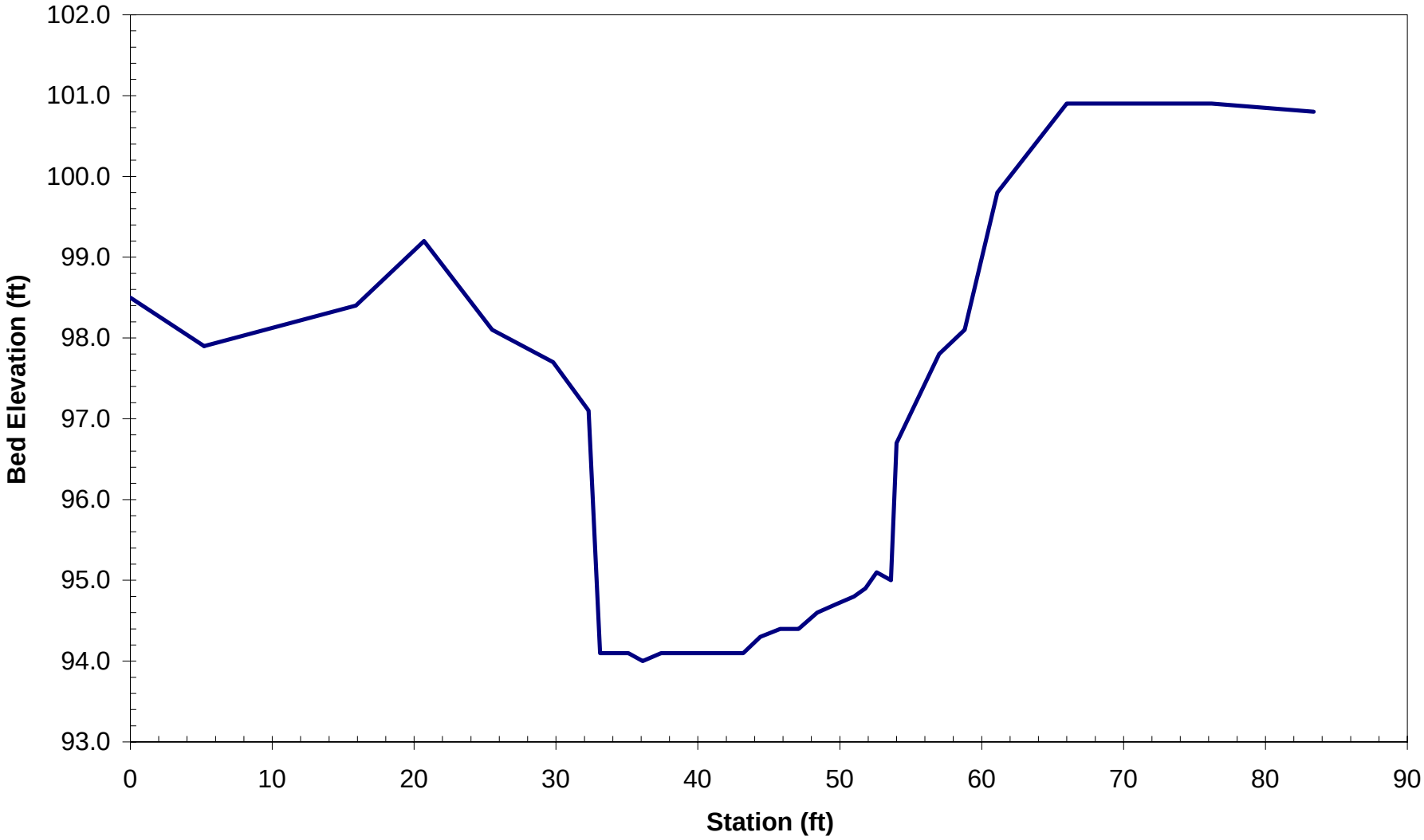
This site has one transect with two complete velocity/discharge measurements, including 16.9cfs and 71.6cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the two calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

(4) Hydraulic Calibration Results:

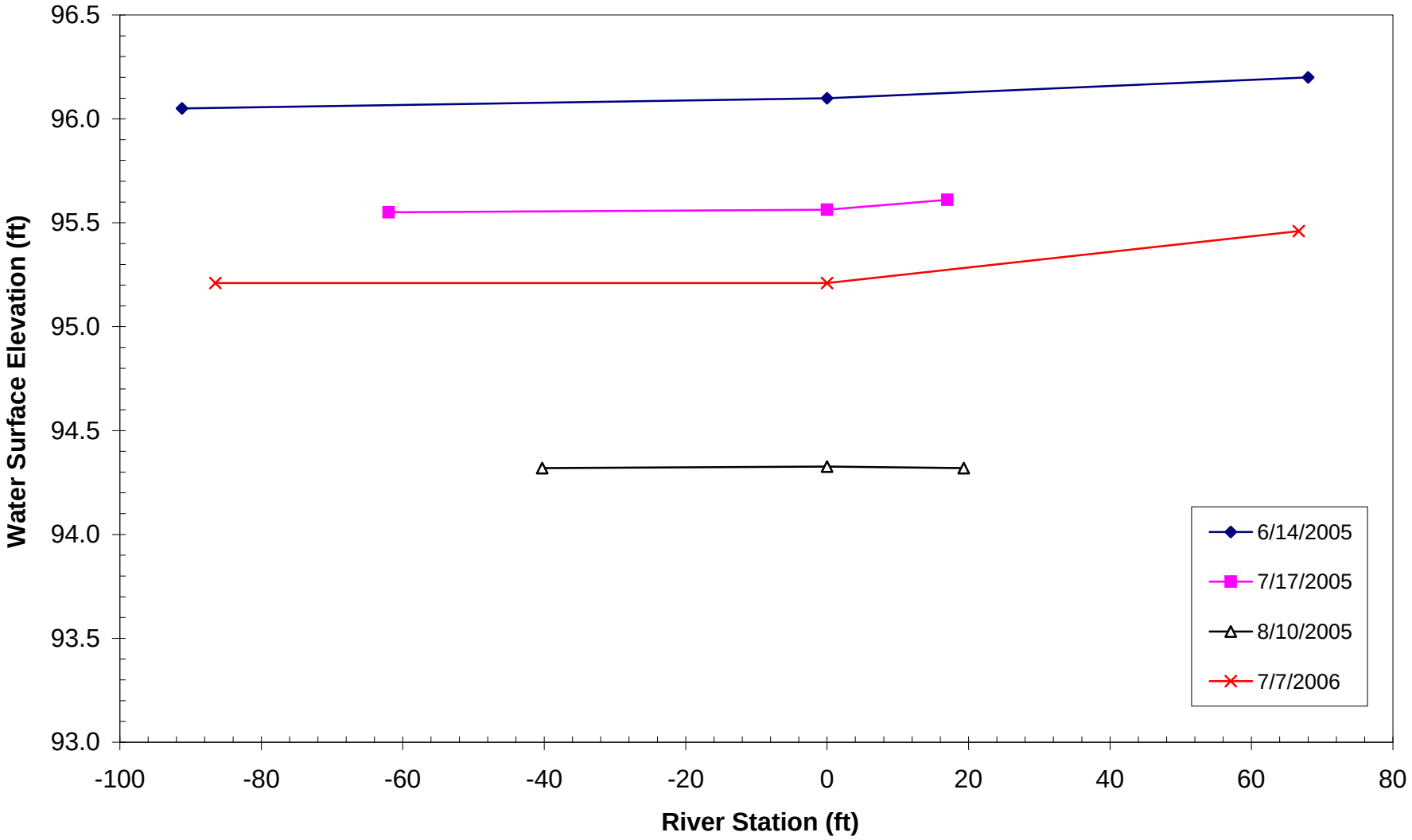
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and generally varied with normal trends.

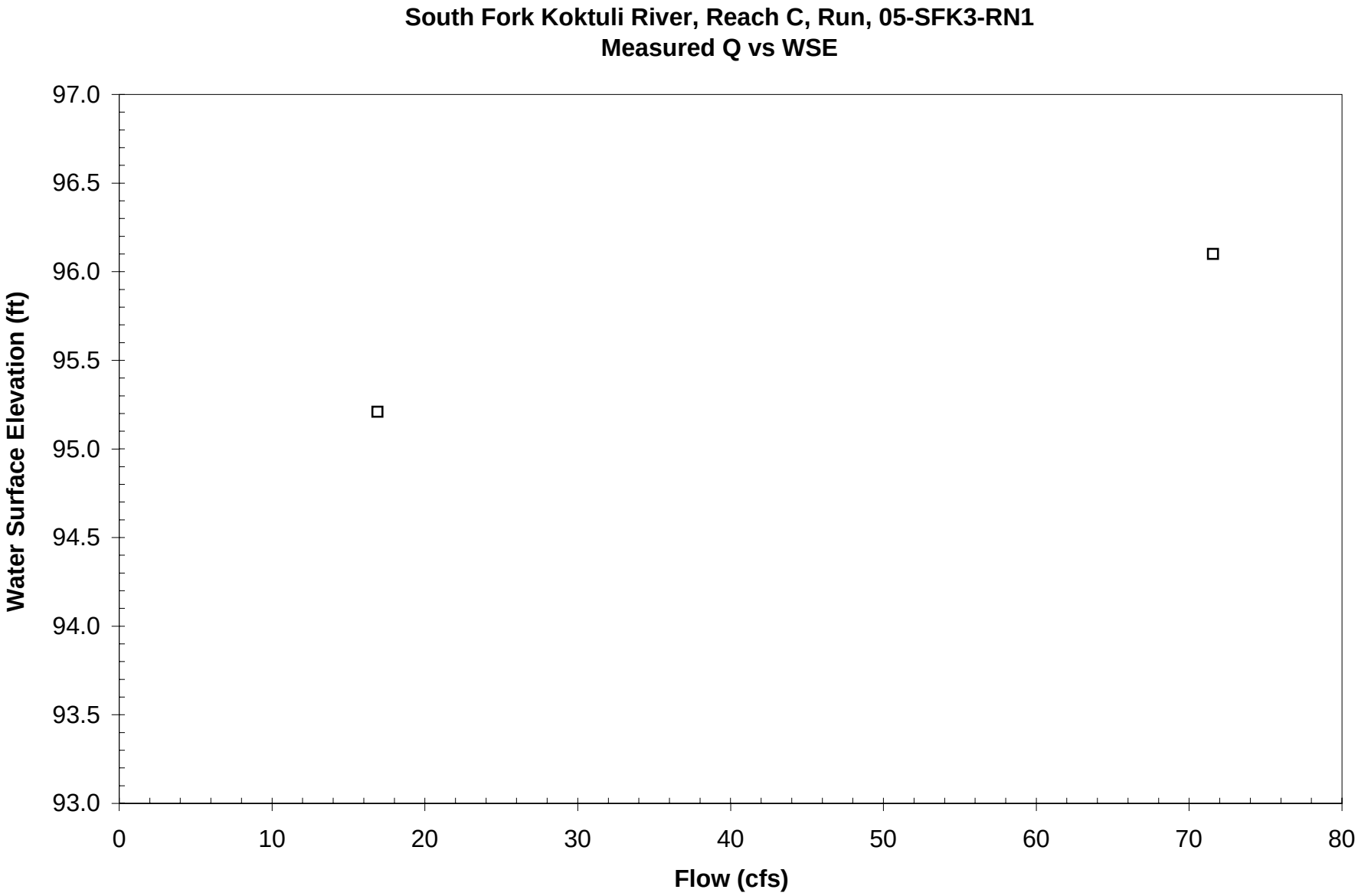
calibration notes

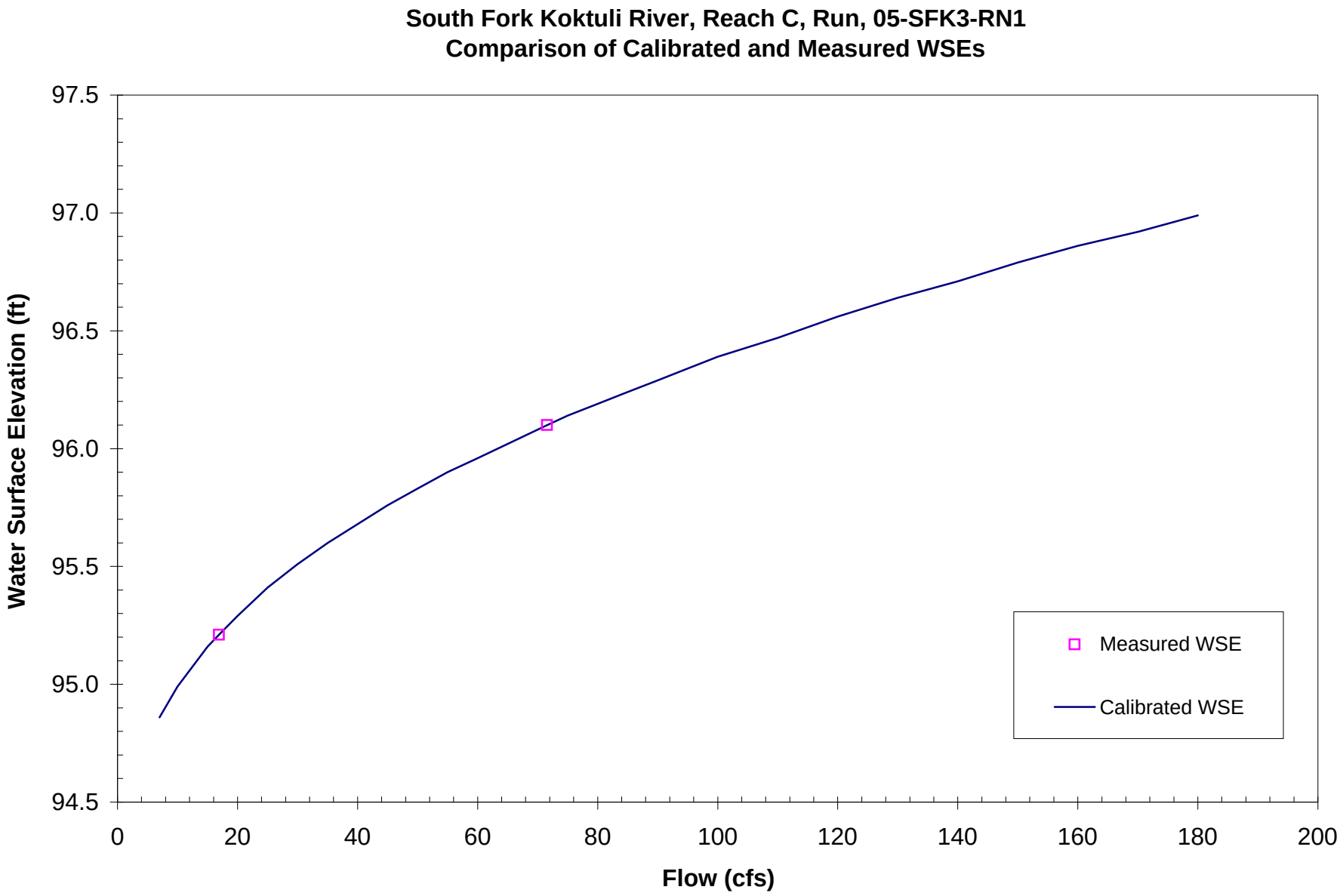
South Fork Koktuli River, Reach C, Run, 05-SFK3-RN1
Measured Transect Profile



South Fork Koktuli River, Reach C, Run, 05-SFK3-RN1
Longitudinal Water Surface Elevation Profiles



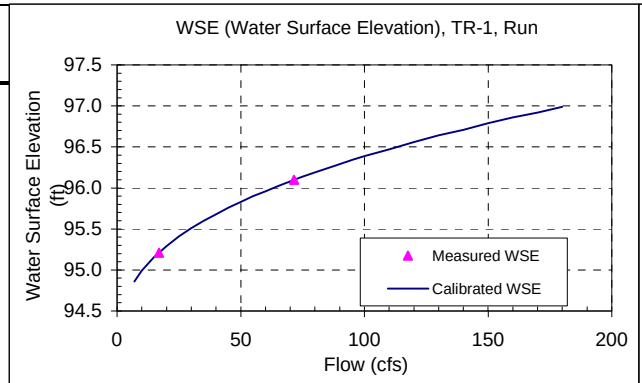

South Fork Koktuli River, Reach C, Run, 05-SFK3-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
0
10
20
30
40
50
60
70
80
Flow (cfs)

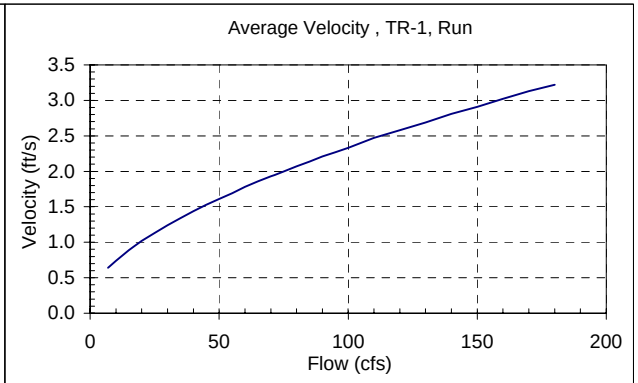

South Fork Koktuli River, Reach C, Run, 05-SFK3-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)
Measured WSE
Calibrated WSE

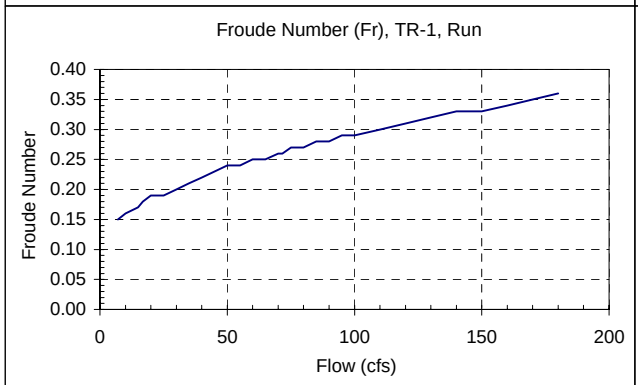
Stream: South Fork Koktuli River
Site Name: 05-SFK3-RN1
Date: 6/14/2005
Calibration Flow: Q(6/14/2005)

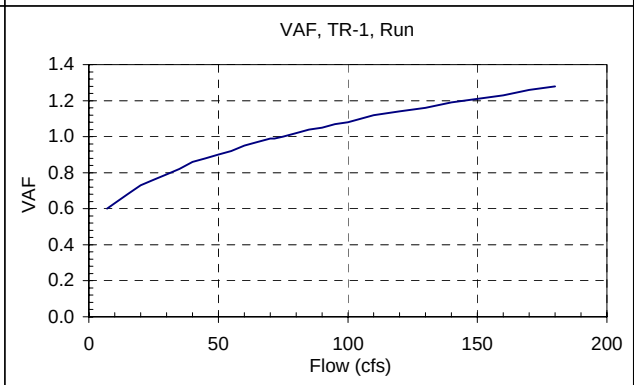
Reach: C
Habitat: Run
Site #: 1
Transect: 1

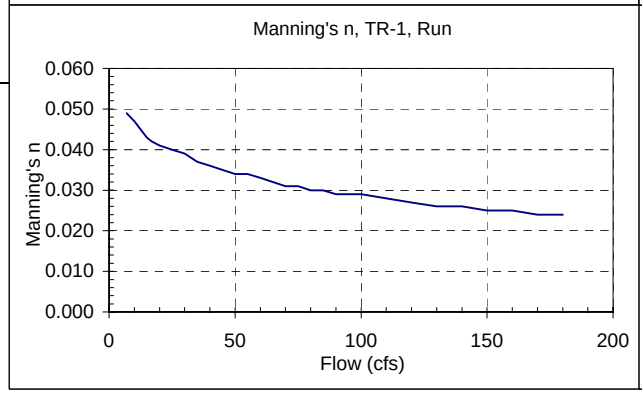
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
7	94.86	0.15	0.64	0.60	0.049	19.2
10	94.99	0.16	0.74	0.63	0.05	20.1
15	95.16	0.17	0.89	0.68	0.04	21.9
16.9	95.21	0.18	0.94	0.70	0.04	22.0
20	95.29	0.19	1.02	0.73	0.04	22.1
25	95.41	0.19	1.13	0.76	0.04	22.4
30	95.51	0.20	1.24	0.79	0.04	22.6
35	95.60	0.21	1.34	0.82	0.04	22.8
40	95.68	0.22	1.44	0.86	0.04	22.9
45	95.76	0.23	1.53	0.88	0.04	23.1
50	95.83	0.24	1.61	0.90	0.03	23.2
55	95.90	0.24	1.69	0.92	0.03	23.4
60	95.96	0.25	1.78	0.95	0.03	23.5
65	96.02	0.25	1.86	0.97	0.03	23.6
70	96.08	0.26	1.93	0.99	0.03	23.8
71.6	96.10	0.26	1.95	0.99	0.03	23.8
75	96.14	0.27	2.00	1.00	0.03	23.9
80	96.19	0.27	2.07	1.02	0.03	24.0
85	96.24	0.28	2.14	1.04	0.03	24.1
90	96.29	0.28	2.21	1.05	0.03	24.2
95	96.34	0.29	2.27	1.07	0.03	24.3
100	96.39	0.29	2.33	1.08	0.03	24.4
110	96.47	0.30	2.47	1.12	0.03	24.6
120	96.56	0.31	2.58	1.14	0.03	24.7
130	96.64	0.32	2.69	1.16	0.03	24.9
140	96.71	0.33	2.81	1.19	0.03	25.0
150	96.79	0.33	2.91	1.21	0.03	25.3
160	96.86	0.34	3.02	1.23	0.03	25.6
170	96.92	0.35	3.13	1.26	0.02	25.8
180	96.99	0.36	3.22	1.28	0.024	26.1

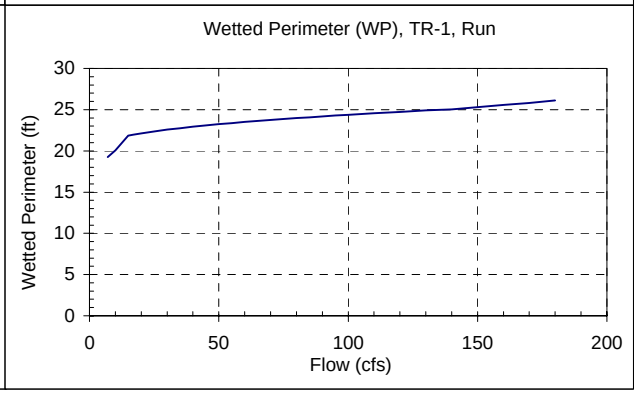




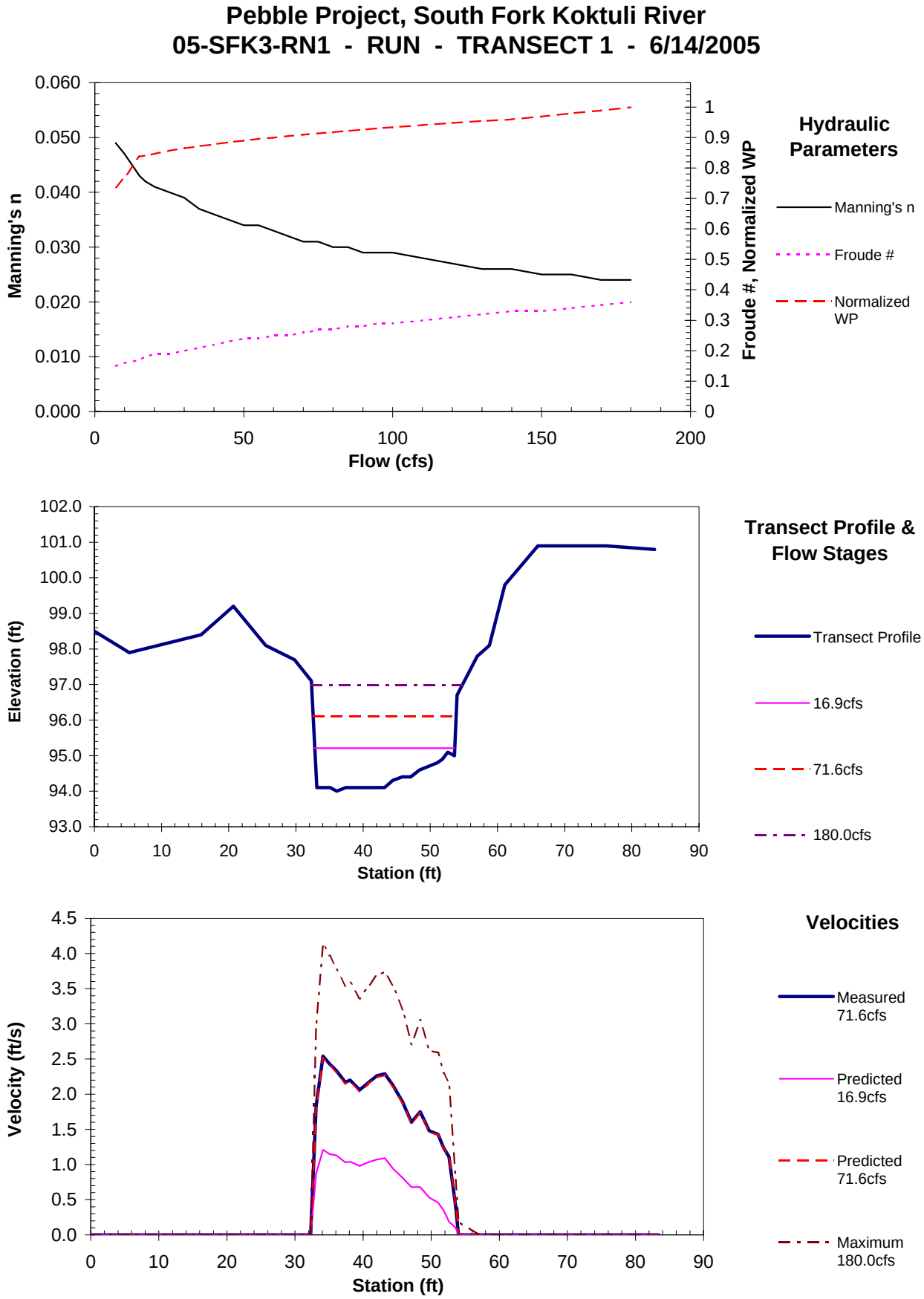








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK3-RN1  06/14/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   7.0
QARD  10.0
QARD  15.0
QARD  16.9
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  65.0
QARD  70.0
QARD  71.6
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
XSEC  1000     1000. 1.0     94.00    .00094
      1000   .098.47  5.297.87 15.998.37 20.799.19 25.598.05 29.897.69
      1000 32.397.12 33.194.09 34.194.09 35.194.09 36.194.00 37.494.09
      1000 38.194.09 39.594.09 40.794.09 42.094.09 43.294.09 44.494.30
      1000 45.894.40 47.194.40 48.494.59 49.794.69 51.094.80 51.894.90
      1000 52.695.09 53.695.00 54.096.75 57.097.80 58.898.08 61.199.77
      1000 66.0100.9 76.2100.9 83.4100.8
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      35.7      34.8      34.8      32.9      34.9
NS    1000      34.8      32.9      32.8      32.8      34.7      43.6
NS    1000      34.6      34.8      34.6      34.6      23.6      23.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9
WSL   1000     94.86     94.99     95.16     95.21     95.29     95.41
WSL   1000     95.51     95.60     95.68     95.76     95.83     95.90
WSL   1000     95.96     96.02     96.08     96.10     96.14     96.19
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     96.24     96.29     96.34     96.39     96.47     96.56
WSL   1000     96.64     96.71     96.79     96.86     96.92     96.99
CAL1  1000     96.10      71.6
VEL1  1000                                    1.83 2.54 2.43 2.33 2.17
VEL1  1000 2.20 2.06 2.16 2.26 2.29 2.12 1.89 1.60 1.75 1.48 1.43 1.24
VEL1  1000 1.11 0.41
CAL2  1000     95.21      16.9
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-C

Site/TR: 04-SFK-RF1

Habitat Type: Riffle

River Kilometer: 36.54

Stream: South Fork Koktuli River
Reach: C
Site Name: 04-SFK-RF1
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/29/2005	100.00	97.99	98.06
2nd	7/16/2005	100.00	97.99	98.07
3rd	8/9/2005	100.00	98.01	97.89
4th	6/29/2006	100.00	97.87	98.22
5th	7/6/2006	100.00	97.85	98.21

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were within 0.02ft in 2005 which indicated BM was stable.
TP moved 0.17ft (=98.06-97.89) in 2005, but since the survey elevation was based on BM, there is no need to adjust the surveyed WSEs for the TP movement.
(c) Either HP or BM was disturbed in 2006, resulting in more than 0.15ft relative elevation change between these two pins. Not able to determine which pins had moved from the survey results. Assumed BM was stable and therefore made no corrections to the 2006 WSEs.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/29/2005	95.27
7/16/2005	94.99
8/9/2005	94.57
6/29/2006	95.14
7/6/2006	95.02

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/29/2005	35.6
7/16/2005	
8/9/2005	6.0
6/29/2006	
7/6/2006	21.6

No discharges were measured on 7/16/05 and 6/29/06.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/29/2005	0.385%	39
7/16/2005	0.376%	63.8
8/9/2005	1.541%	26.6
6/29/2006	0.413%	46
7/6/2006	0.442%	43

The steep slope of 8/9/05 was due to the sudden WSE drop across a gravel XS, a hydraulic control during low flows, just below the transect. During higher flows the hydraulic control was submerged and no WSE discontinuity would occur, resulting in milder longitudinal WSE slope.

The slope S=0.385% of 6/29/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/29/2005	93.77
7/16/2005	
8/9/2005	93.67
6/29/2006	93.86
7/6/2006	93.92
Invert	93.92
SZF	93.92

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in the 7/16/05 trip.
(4) Invert of 6/29/06 survey was not used to determine SZF because of no flow measured on that day.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/29/2005	35.6	95.27	95.31	0.04	IFG4
2nd	7/16/2005		94.99			
3rd	8/9/2005	6.0	94.57	94.65	0.08	IFG4
4th	6/29/2006		95.14			
5th	7/6/2006	21.6	95.02	95.07	0.05	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharges were measured during the 7/16/05 and 6/29/06 site visits.

calibration notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, including 6.0cfs, 21.6cfs, and 35.6cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

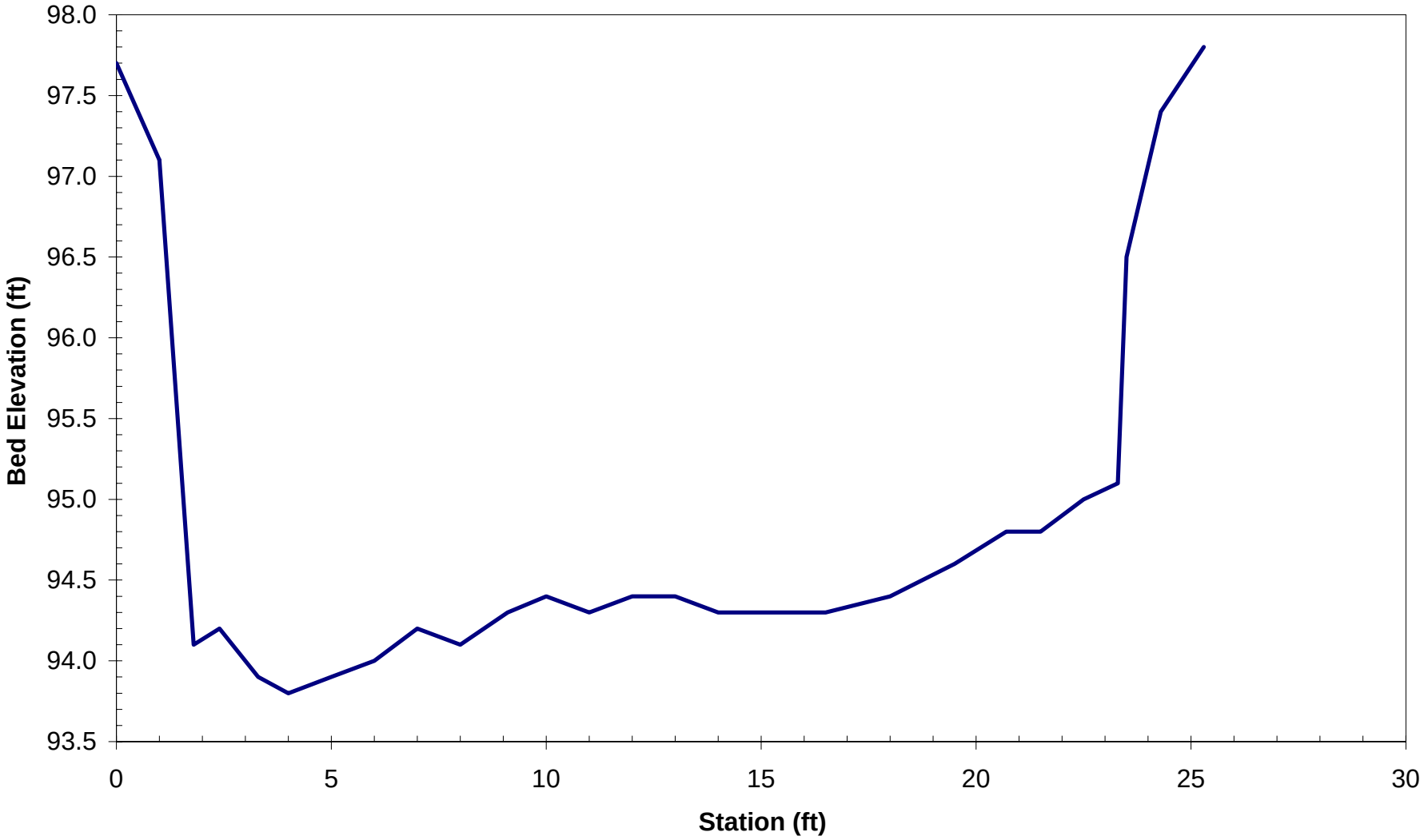
Survey Date	Q (cfs)	WUA (Y/N)
6/29/2005	35.6	Y
7/16/2005		
8/9/2005	6.0	Y
6/29/2006		
7/6/2006	21.6	

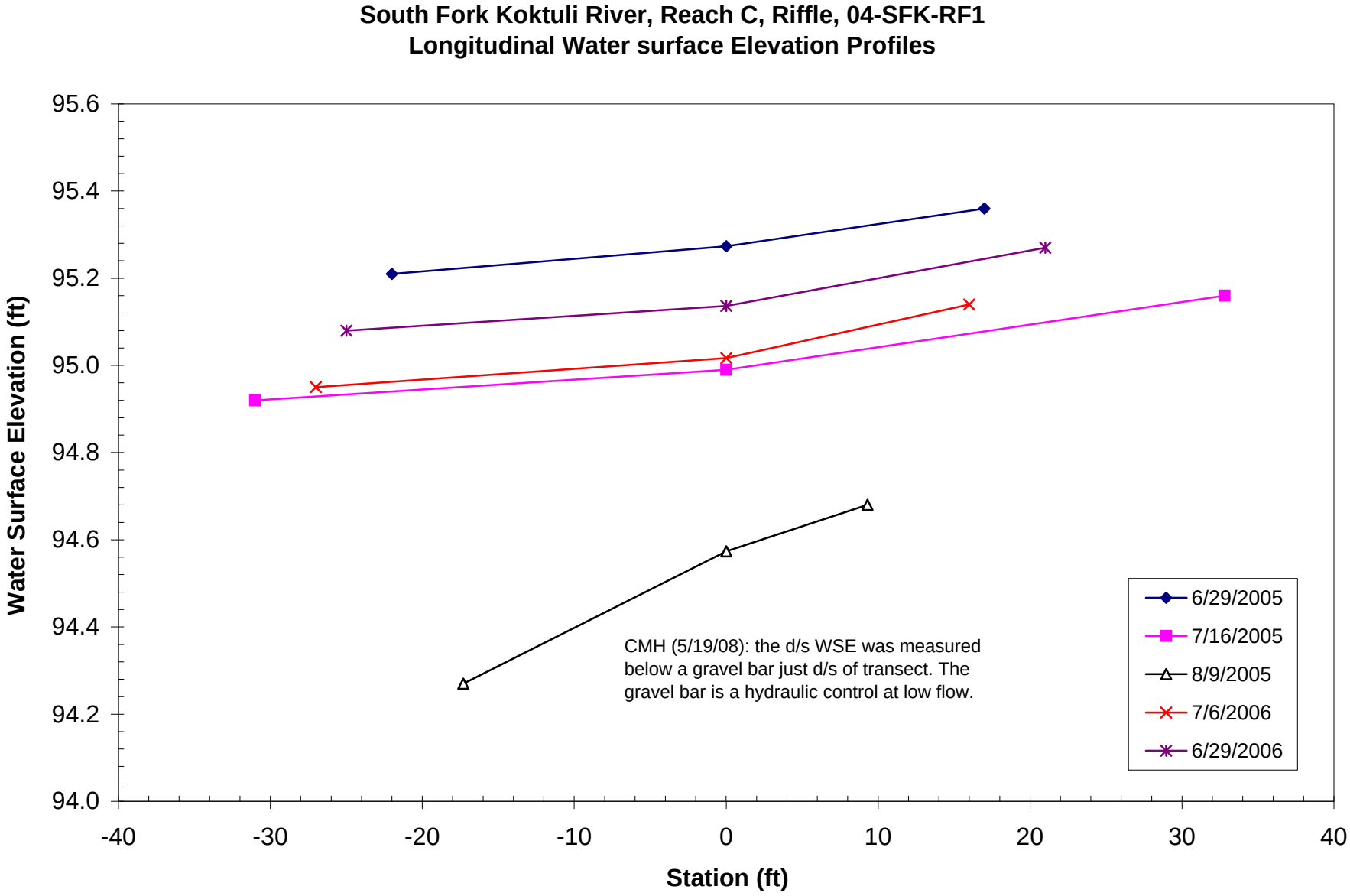
(4) Hydraulic Calibration Results:

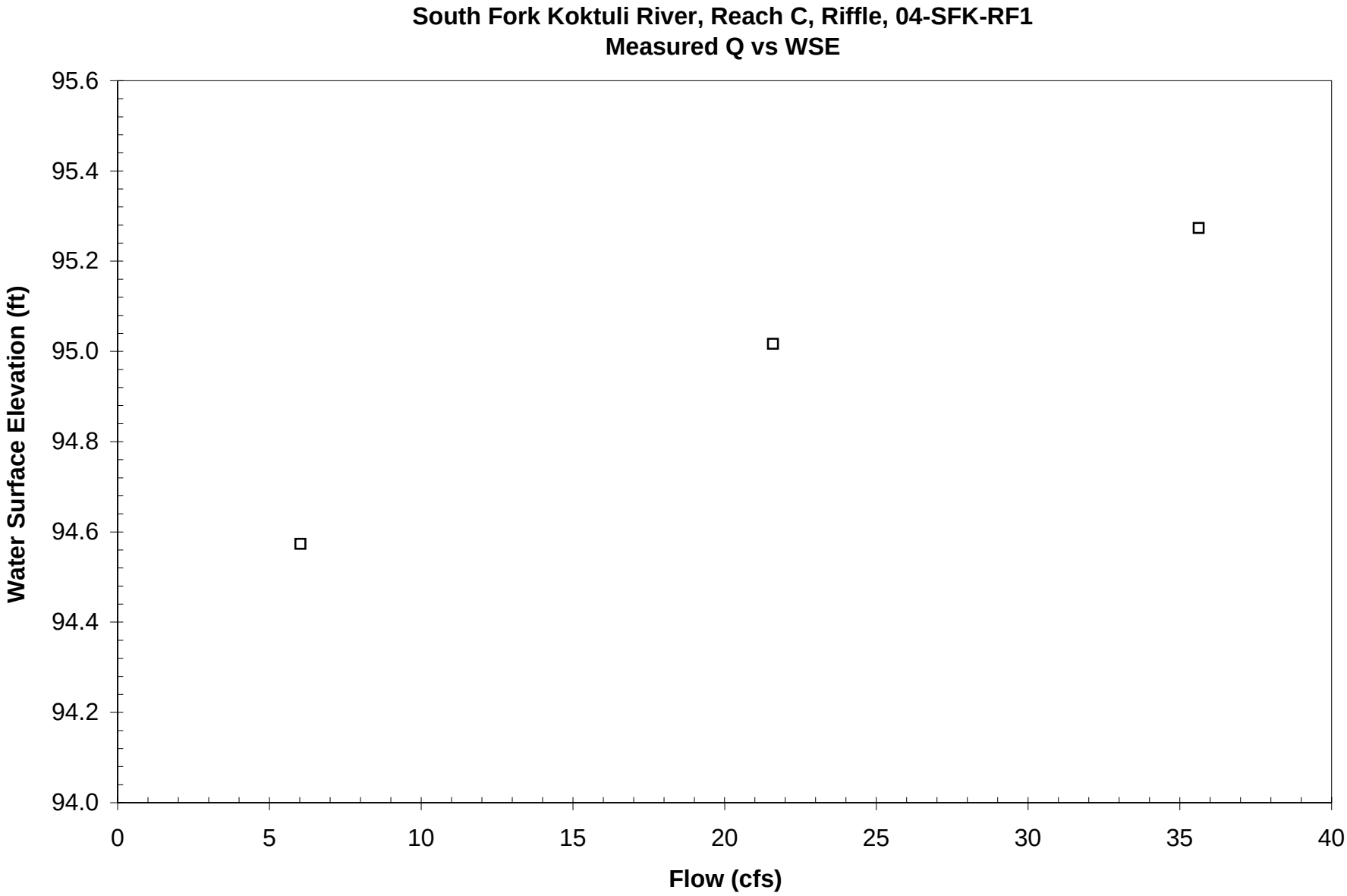
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and generally varied with normal trends.

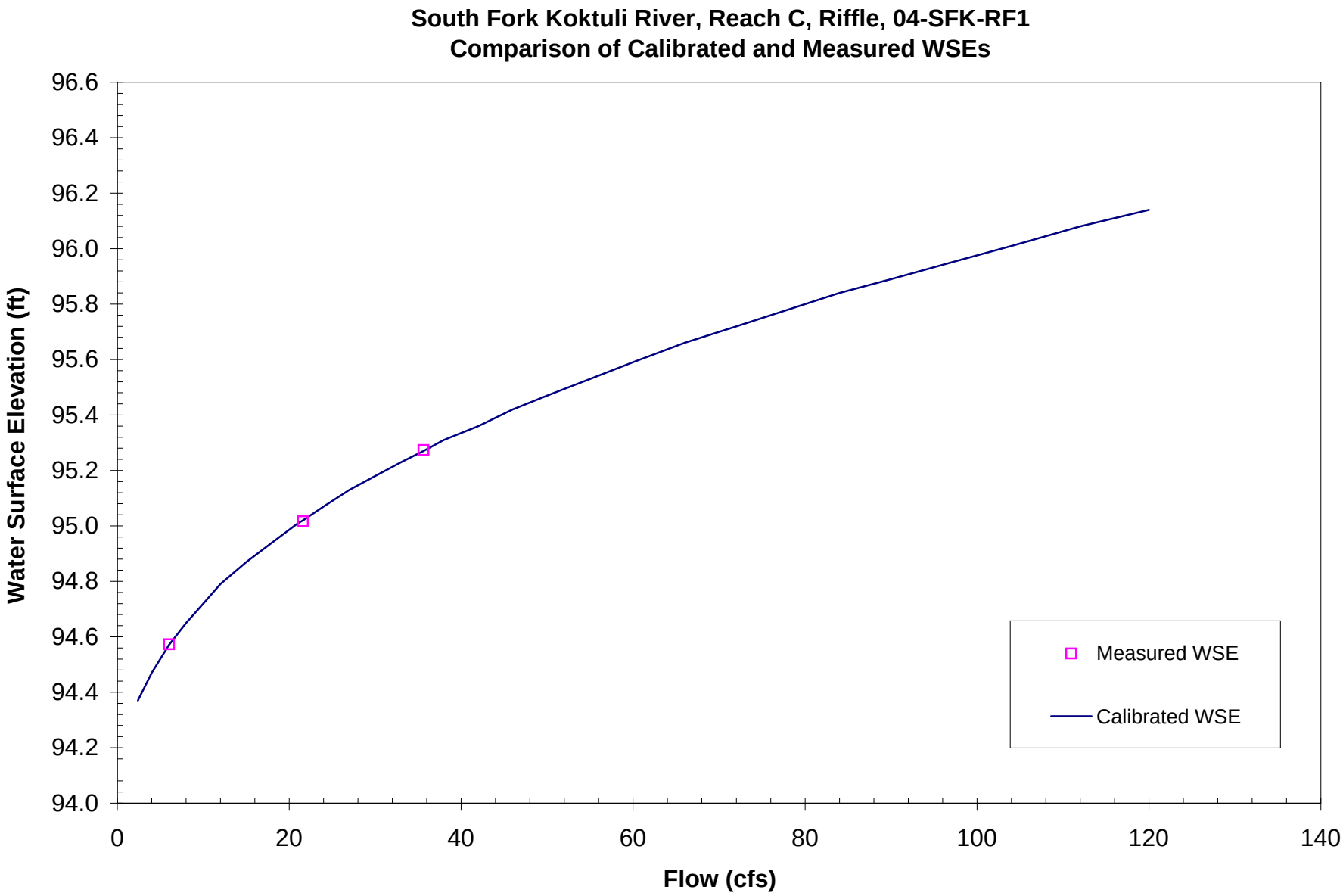
calibration notes

South Fork Koktuli River, Reach C, Riffle, 04-SFK-RF1
Measured Transect Profile




South Fork Koktuli River, Reach C, Riffle, 04-SFK-RF1
Longitudinal Water surface Elevation Profiles
Water Surface Elevation (ft)
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
-40
-30
-20
-10
0
10
20
30
40
Station (ft)
CMH (5/19/08): the d/s WSE was measured below a gravel bar just d/s of transect. The gravel bar is a hydraulic control at low flow.
6/29/2005
7/16/2005
8/9/2005
7/6/2006
6/29/2006

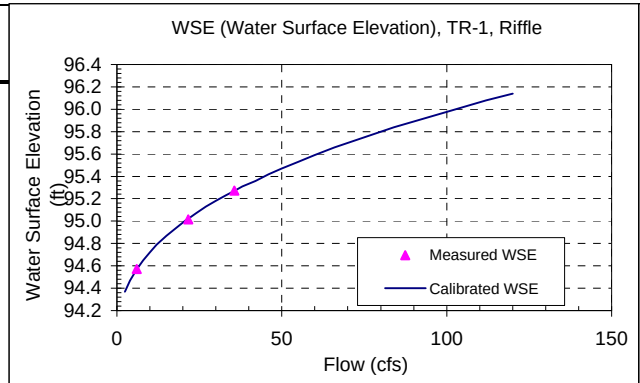

South Fork Koktuli River, Reach C, Riffle, 04-SFK-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
0
5
10
15
20
25
30
35
40
Flow (cfs)

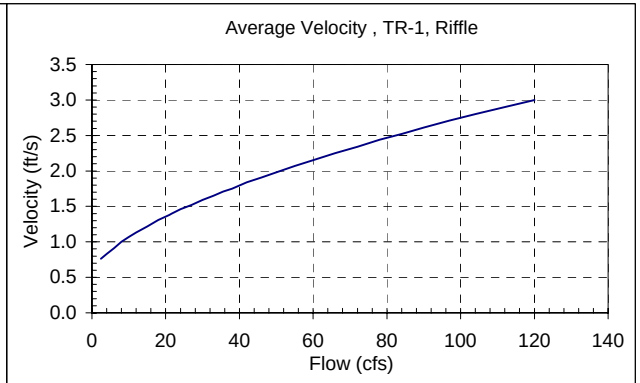

South Fork Koktuli River, Reach C, Riffle, 04-SFK-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
0
20
40
60
80
100
120
140
Flow (cfs)
Measured WSE
Calibrated WSE

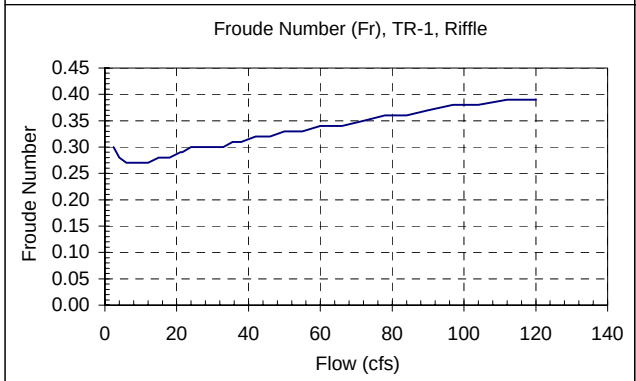
Stream: South Fork Koktuli River
Site Name: 04-SFK-RF1
Date: 6/29/2005
Calibration Flow: Q(6/29/2005)

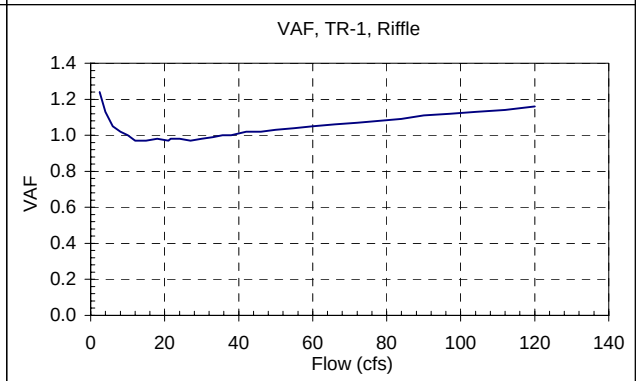
Reach: C
Habitat: Riffle
Site #: 1
Transect: 1

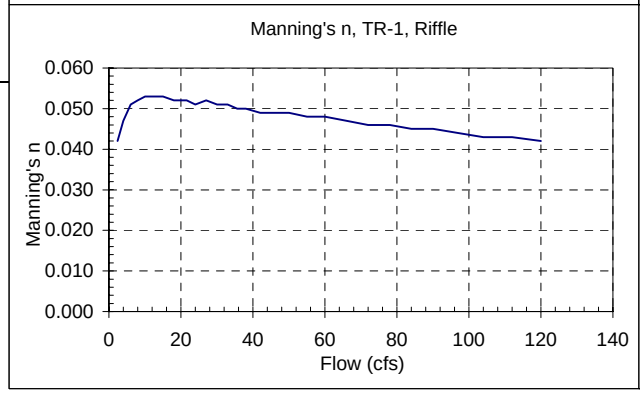
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
2.4	94.37	0.30	0.76	1.24	0.042	15.7
4	94.47	0.28	0.83	1.13	0.05	17.5
6	94.57	0.27	0.91	1.05	0.05	18.4
8	94.65	0.27	1.00	1.02	0.05	18.9
10	94.72	0.27	1.07	1.00	0.05	19.4
12	94.79	0.27	1.13	0.97	0.05	20.7
15	94.87	0.28	1.22	0.97	0.05	21.2
18	94.94	0.28	1.31	0.98	0.05	21.6
21	95.01	0.29	1.38	0.97	0.05	22.2
21.6	95.02	0.29	1.40	0.98	0.05	22.3
24	95.07	0.30	1.46	0.98	0.05	22.7
27	95.13	0.30	1.52	0.97	0.05	22.9
30	95.18	0.30	1.59	0.98	0.05	23.0
33	95.23	0.30	1.65	0.99	0.05	23.1
35.6	95.27	0.31	1.71	1.00	0.05	23.1
38	95.31	0.31	1.75	1.00	0.05	23.2
42	95.36	0.32	1.84	1.02	0.05	23.3
46	95.42	0.32	1.91	1.02	0.05	23.4
50	95.47	0.33	1.98	1.03	0.05	23.5
55	95.53	0.33	2.07	1.04	0.05	23.7
60	95.59	0.34	2.15	1.05	0.05	23.8
66	95.66	0.34	2.25	1.06	0.05	23.9
72	95.72	0.35	2.34	1.07	0.05	24.1
78	95.78	0.36	2.44	1.08	0.05	24.2
84	95.84	0.36	2.52	1.09	0.05	24.3
90	95.89	0.37	2.61	1.11	0.05	24.4
97	95.95	0.38	2.71	1.12	0.04	24.5
104	96.01	0.38	2.80	1.13	0.04	24.7
112	96.08	0.39	2.90	1.14	0.04	24.8
120	96.14	0.39	3.00	1.16	0.042	24.9

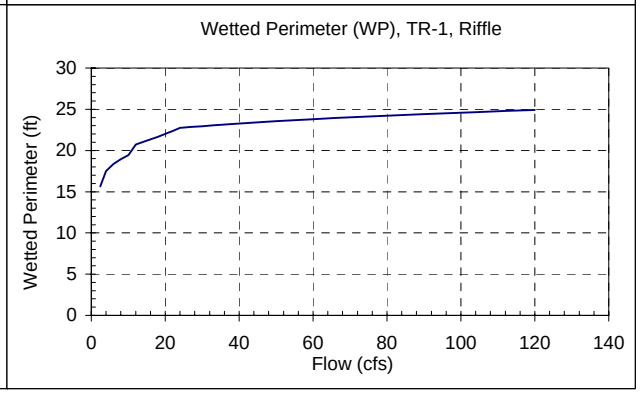






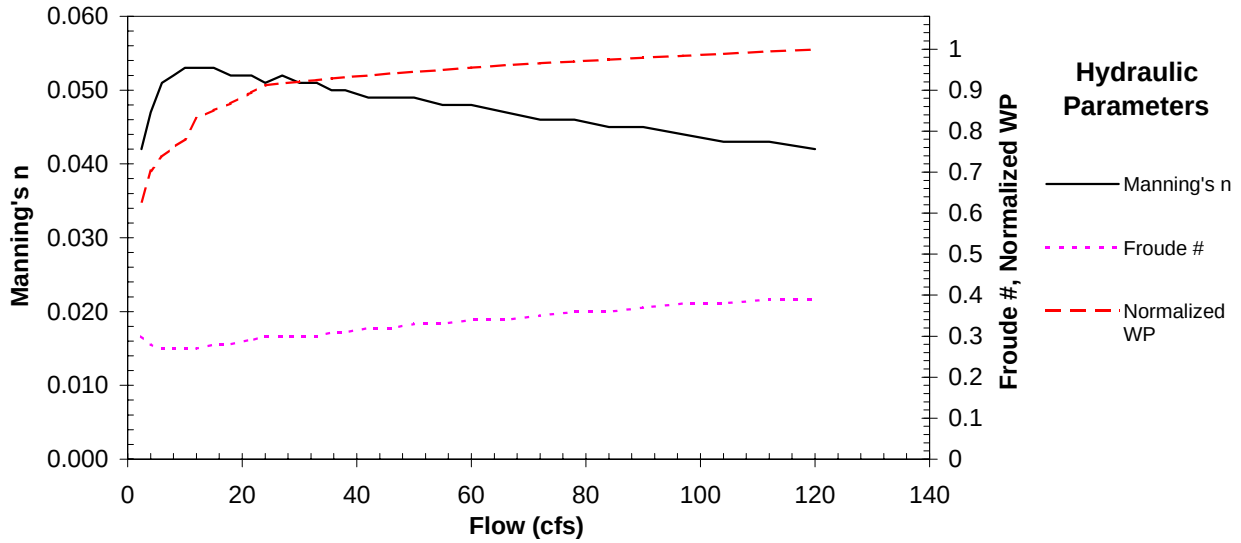


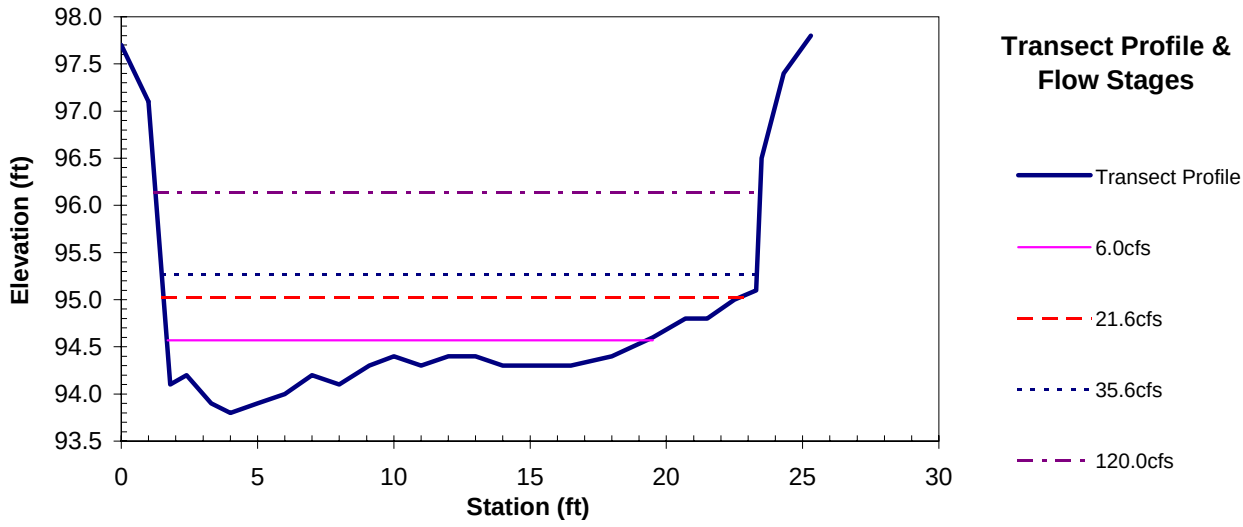


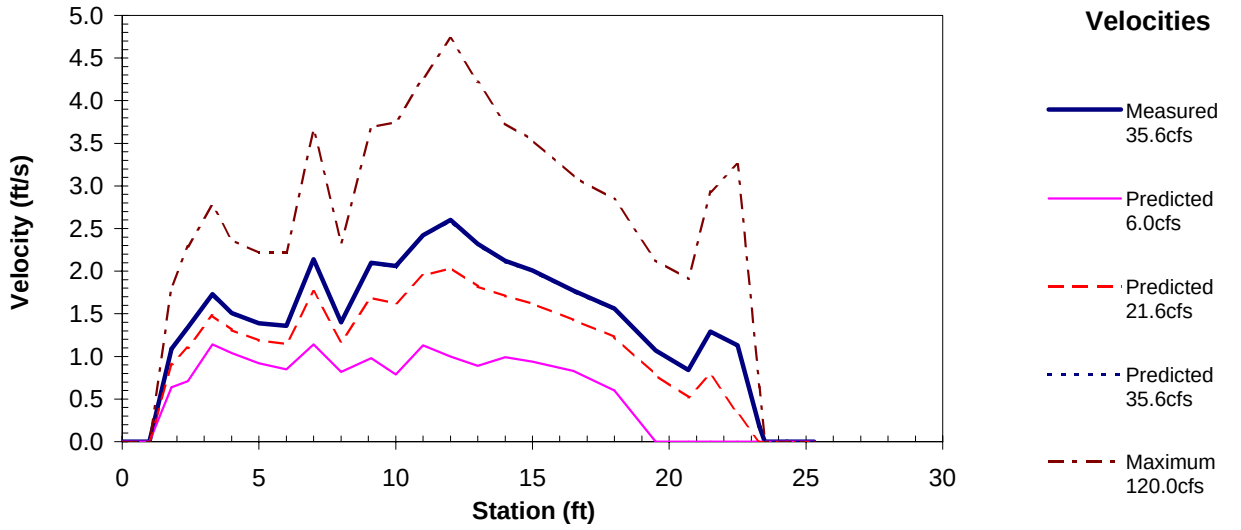


cTR1 - Transect hydraulic parameters

Pebble Project, South Fork Koktuli River
04-SFK-RF1 - Riffle - TRANSECT 1 - 6/29/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-RF1  06/29/05
RIFFLE                     0605Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD   2.4
QARD   4.0
QARD   6.0
QARD   8.0
QARD  10.0
QARD  12.0
QARD  15.0
QARD  18.0
QARD  21.0
QARD  21.6
QARD  24.0
QARD  27.0
QARD  30.0
QARD  33.0
QARD  35.6
QARD  38.0
QARD  42.0
QARD  46.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  66.0
QARD  72.0
QARD  78.0
QARD  84.0
QARD  90.0
QARD  97.0
QARD 104.0
QARD 112.0
QARD 120.0
XSEC  1000     1000. 1.0     93.92    .00385
      1000   .097.69  1.097.07  1.894.07  2.494.17  3.393.87  4.093.77
      1000  5.093.87  6.093.97  7.094.17  8.094.07  9.194.27 10.094.37
      1000 11.094.27 12.094.37 13.094.37 14.094.27 15.094.27 16.594.27
      1000 18.094.37 19.594.57 20.794.77 21.594.77 22.594.97 23.395.07
      1000 23.596.53 24.397.37 25.397.76
NS    1000      22.9      22.9      26.6      62.7      62.7      52.8
NS    1000      24.6      42.8      42.8      54.6      54.6      45.6
NS    1000      45.6      45.6      43.6      43.6      43.7      42.8
NS    1000      32.6      52.6      43.7      32.7      23.7      23.8
NS    1000      22.9      22.9      22.9
WSL   1000     94.37     94.47     94.57     94.65     94.72     94.79
WSL   1000     94.87     94.94     95.01     95.02     95.07     95.13
WSL   1000     95.18     95.23     95.27     95.31     95.36     95.42
WSL   1000     95.47     95.53     95.59     95.66     95.72     95.78
WSL   1000     95.84     95.89     95.95     96.01     96.08     96.14
CAL1  1000     95.27      35.6
VEL1  1000           1.09 1.34 1.73 1.51 1.39 1.36 2.14 1.40 2.10 2.06
```

IFG4 Data Deck (continued)

```
VEL1  1000 2.42 2.60 2.32 2.12 2.01 1.77 1.56 1.07 0.84 1.29 1.13 0.18
VEL1  1000
CAL2  1000     94.57       6.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.02      21.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-C

Site/TR: 04-SFK-PL1

Habitat Type: Pool

River Kilometer: 36.58

Stream: South Fork Koktuli River
Reach: C
Site Name: 04-SFK-PL1
Habitat Type: Pool

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/29/2005	1	100.00	97.85	97.95
2nd	7/15/2005	2	100.00	97.85	97.95
3rd	8/9/2005	3	100.00	97.87	97.96
4th	6/27/2006	4	100.00	97.83	97.80

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were within ±0.02ft during the 2005-2006 period. Small elevation changes indicated the survey datum were stable.
(b) The 2006 level loop indicated TP may have sunk 0.15ft. No corrections were needed for the 2006 WSEs because the datum was based on BM and HP, both of which were considered stable in 2006.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/29/2005	95.55
7/15/2005	95.33
8/9/2005	94.79
6/27/2006	95.63

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/29/2005	37.4
7/15/2005	
8/9/2005	5.2
6/27/2006	32.6

No discharge was measured on 7/15/05.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/29/2005	0.022%	46
7/15/2005	0.139%	28.7
8/9/2005	0.024%	42
6/27/2006	0.000%	55.7

The slope S=0.022% of 6/29/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/29/2005	92.55
7/15/2005	
8/9/2005	92.59
6/27/2006	92.53
Invert	92.59
SZF	92.59

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in 7/17/05 trip.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/29/2005	37.4	95.55	95.63	0.08	IFG4
2nd	7/15/2005		95.33			
3rd	8/9/2005	5.2	94.79	94.79	0.00	IFG4
4th	6/27/2006	32.6	95.63	95.56	-0.07	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.08ft is marginally acceptable.
(c) No discharge was measured during the 7/15/05 site visit.
(d) The "Measured Q vs.WSE" figure shows WSE did not increase with increasing flows from 32.6cfs to 37.4cfs. Checked all surveyed data but was unable to determine the cause. From the plot, it appears the errors are within 0.10ft for either of the two WSE~Q data sets. Because the error was not too significant, it was decided to keep both data sets in hydraulic modeling.

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, including 5.2cfs, 32.6cfs, and 37.4cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/29/2005	37.4	Y
7/15/2005		
8/9/2005	5.2	Y
6/27/2006	32.6	Y

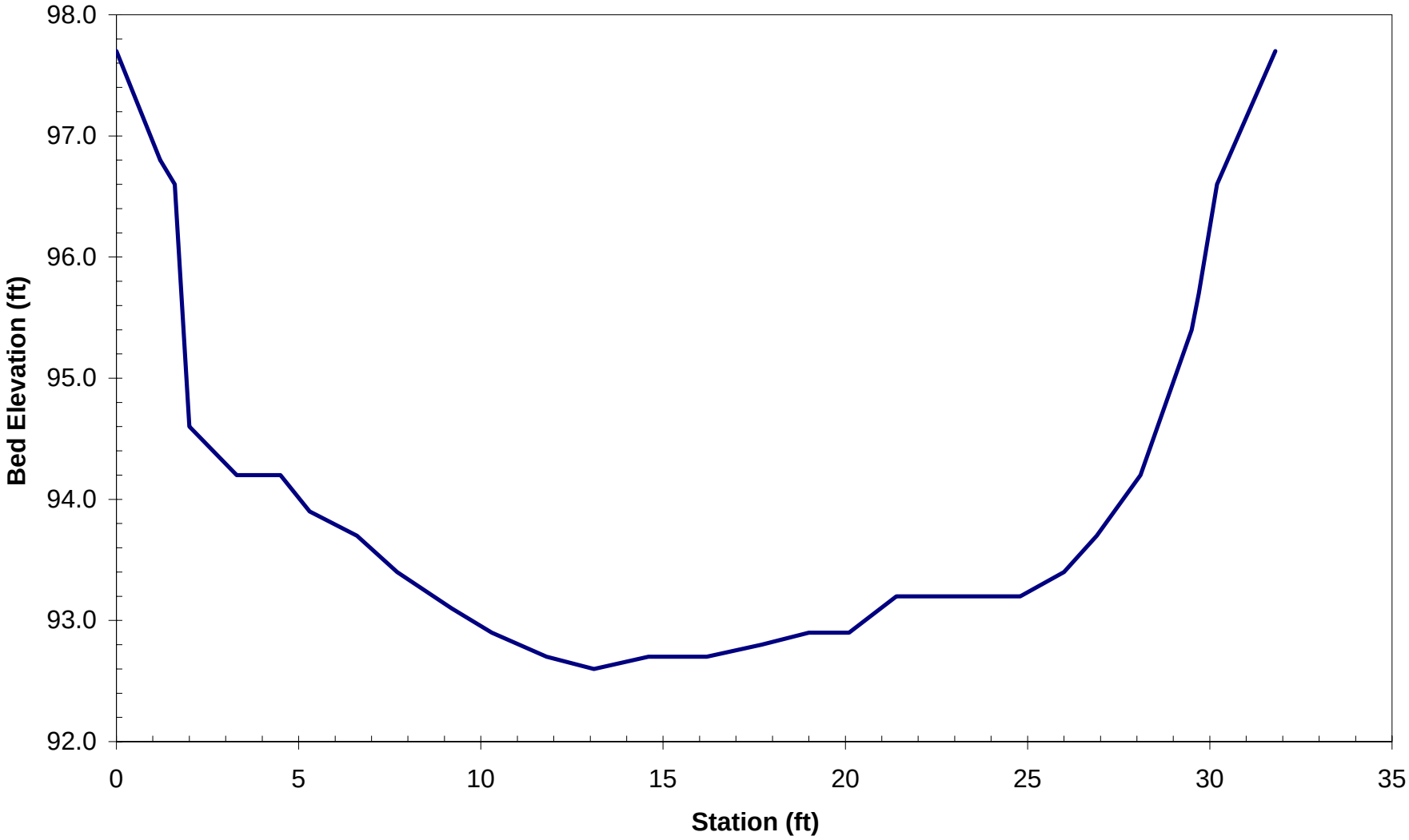
calibration notes

(4) Hydraulic Calibration Results:

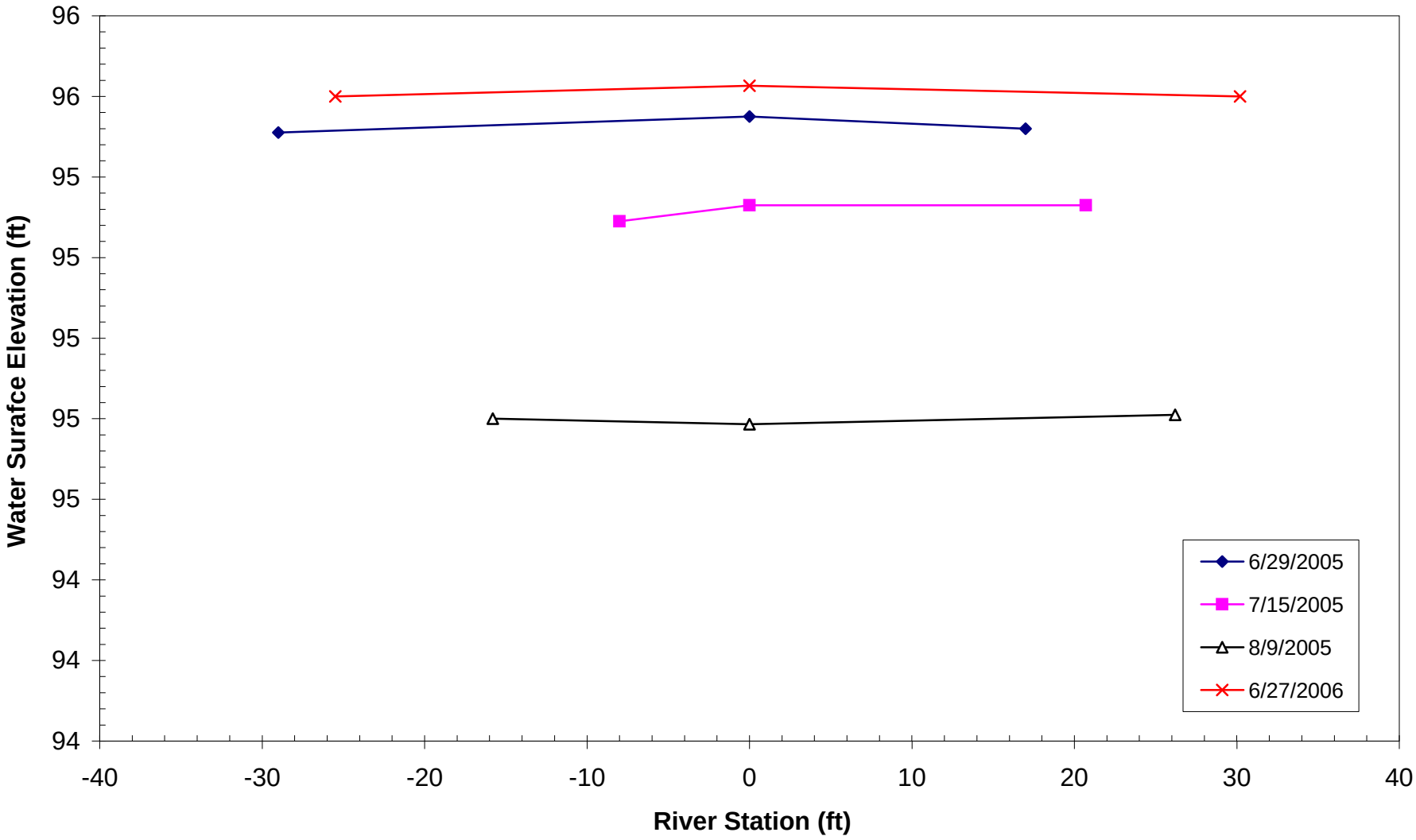
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary in normal trends.

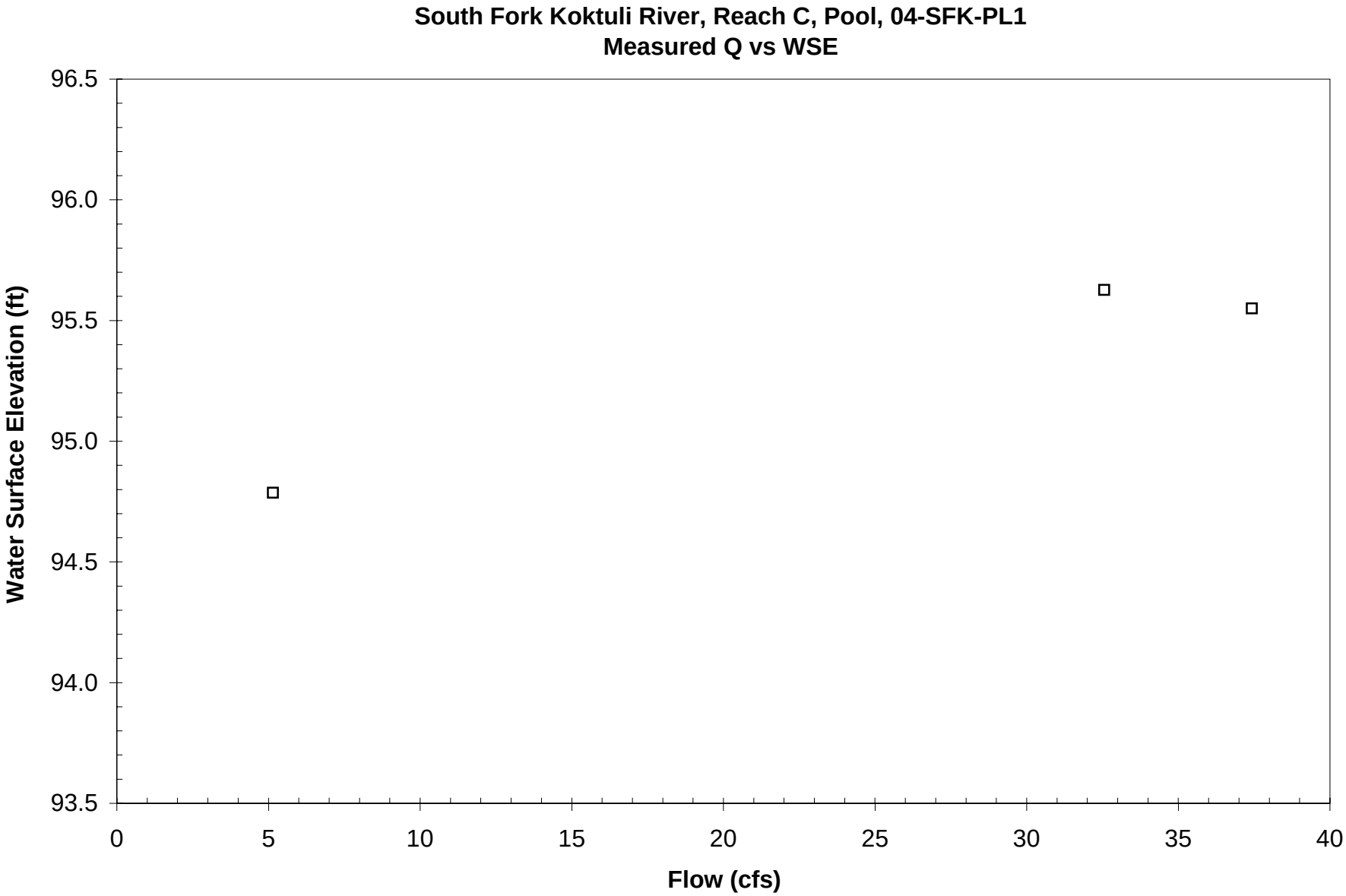
calibration notes

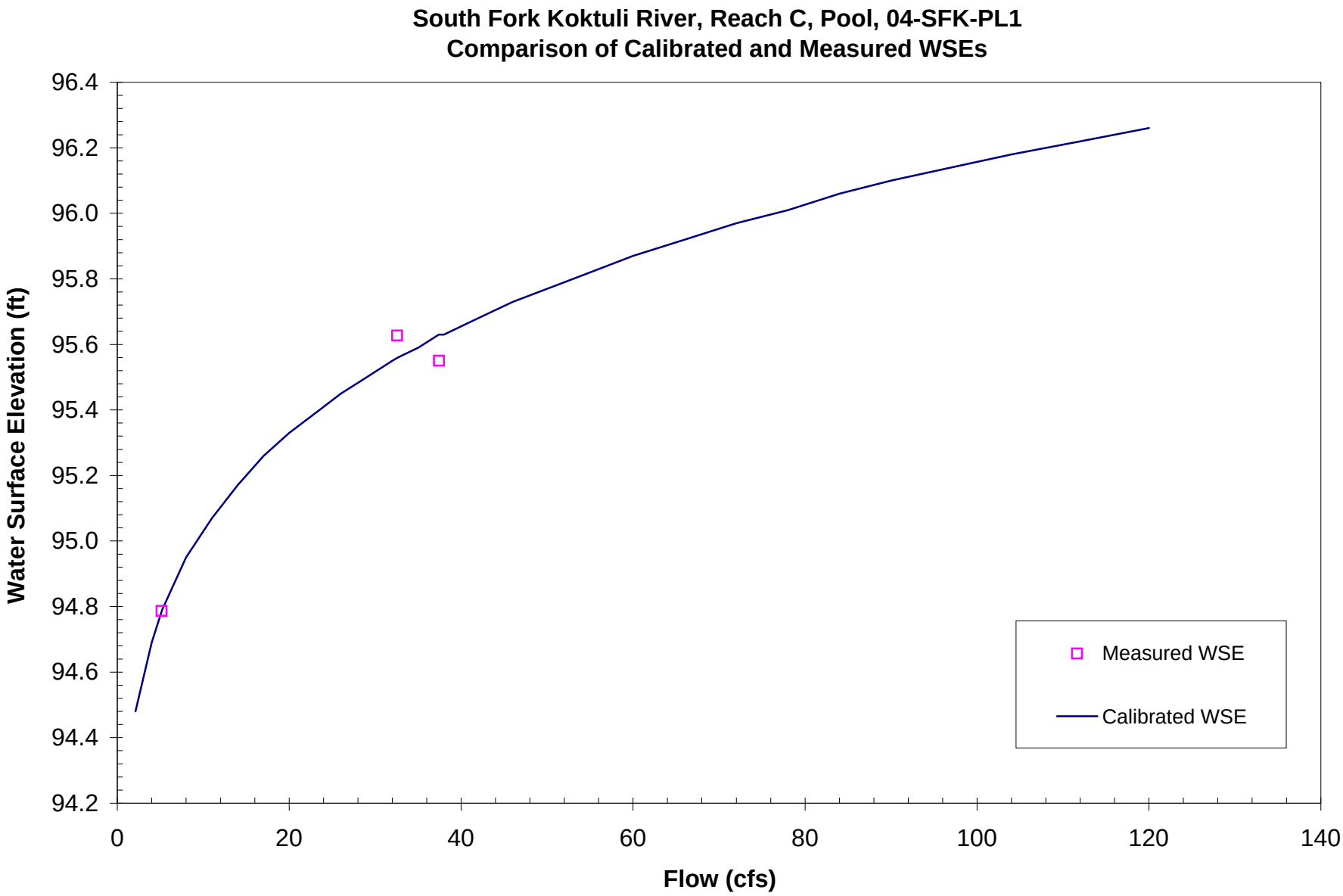
South Fork Koktuli River, Reach C, Pool, 04-SFK-PL1
Measured Transect Profile



South Fork Koktuli River, Reach C, Pool, 04-SFK-PL1
Longitudinal Water Surface Elevation Profiles



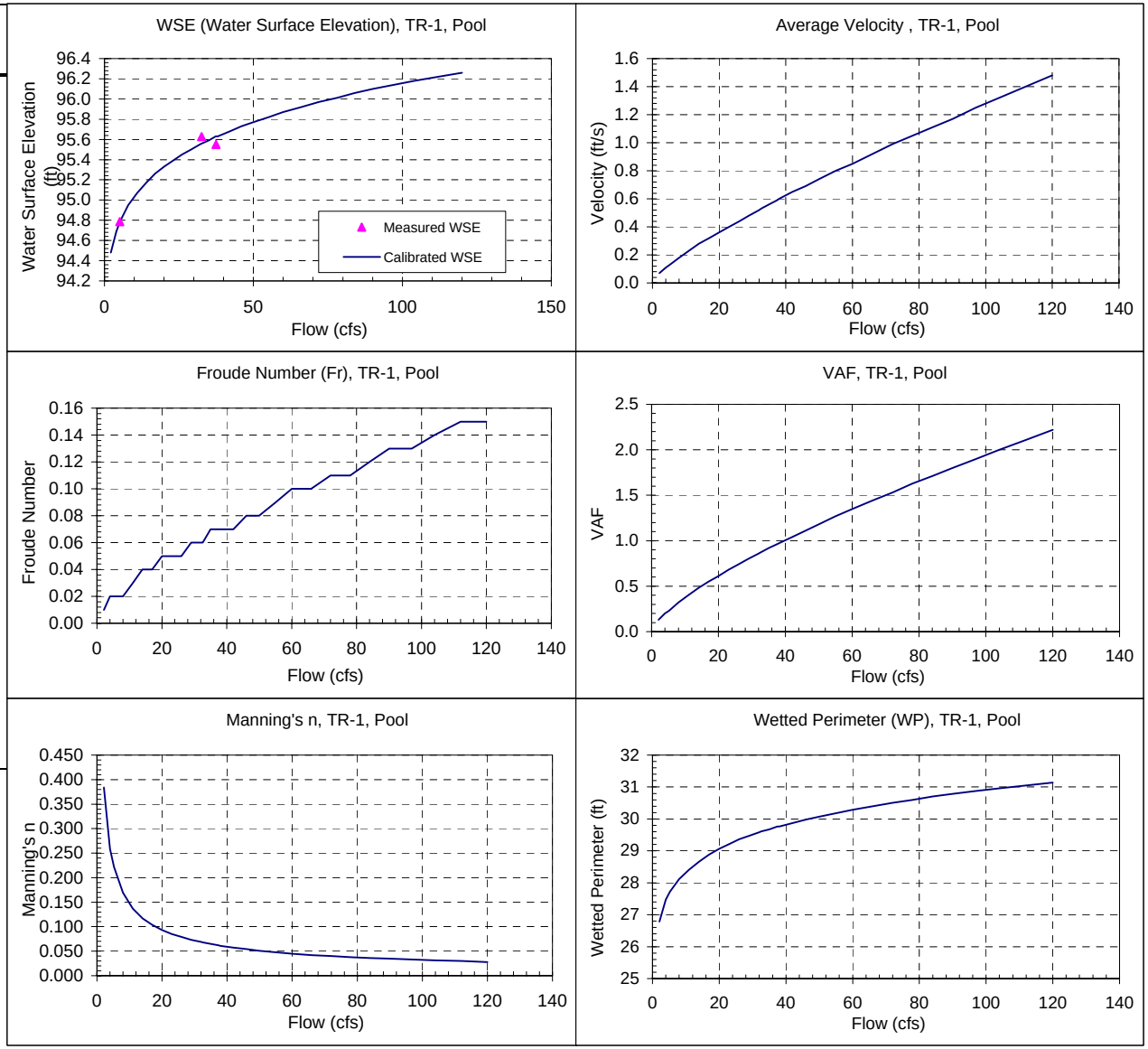

South Fork Koktuli River, Reach C, Pool, 04-SFK-PL1
Measured Q vs WSE
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
93.5
0
5
10
15
20
25
30
35
40
Flow (cfs)


South Fork Koktuli River, Reach C, Pool, 04-SFK-PL1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
0
20
40
60
80
100
120
140
Flow (cfs)
Measured WSE
Calibrated WSE

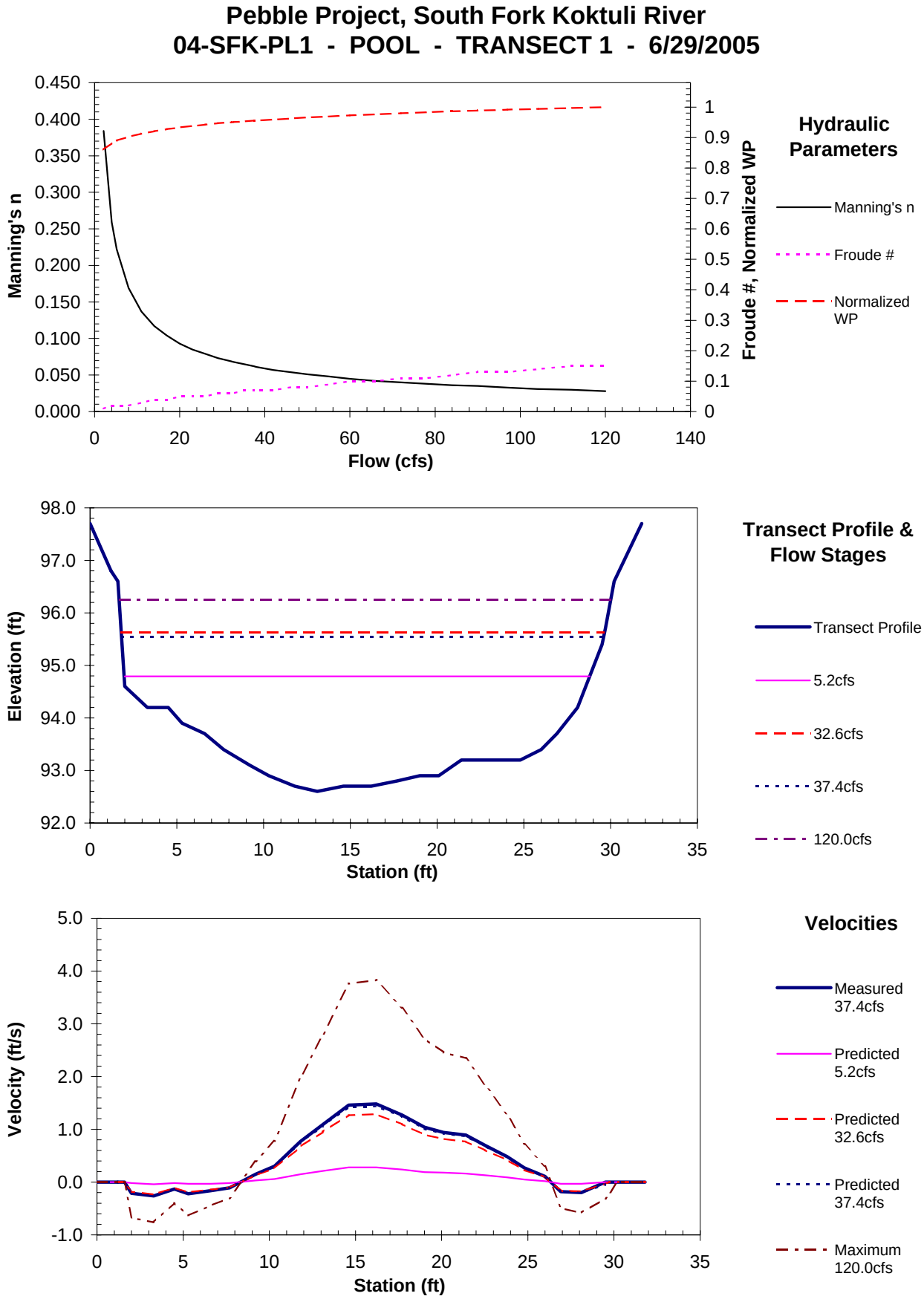
Stream: South Fork Koktuli River
Site Name: 04-SFK-PL1
Date: 6/29/2005
Calibration Flow: Q(6/29/2005)

Reach: C
Habitat: Pool
Site #: 1
Transect: 1

Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
2.1	94.48	0.01	0.07	0.13	0.384	26.8
4	94.69	0.02	0.11	0.20	0.26	27.5
5.2	94.79	0.02	0.13	0.23	0.22	27.7
8	94.95	0.02	0.18	0.32	0.17	28.1
11	95.07	0.03	0.23	0.40	0.14	28.4
14	95.17	0.04	0.28	0.48	0.12	28.7
17	95.26	0.04	0.32	0.55	0.10	28.9
20	95.33	0.05	0.36	0.61	0.09	29.1
23	95.39	0.05	0.40	0.68	0.09	29.2
26	95.45	0.05	0.44	0.74	0.08	29.4
29	95.50	0.06	0.48	0.80	0.07	29.5
32	95.55	0.06	0.52	0.86	0.07	29.6
32.6	95.56	0.06	0.53	0.87	0.07	29.6
35	95.59	0.07	0.56	0.92	0.07	29.7
37.4	95.63	0.07	0.59	0.96	0.06	29.8
38	95.63	0.07	0.60	0.97	0.06	29.8
42	95.68	0.07	0.65	1.04	0.06	29.9
46	95.73	0.08	0.69	1.11	0.05	30.0
50	95.77	0.08	0.74	1.18	0.05	30.1
55	95.82	0.09	0.80	1.27	0.05	30.2
60	95.87	0.10	0.85	1.35	0.05	30.3
66	95.92	0.10	0.92	1.44	0.04	30.4
72	95.97	0.11	0.99	1.53	0.04	30.5
78	96.01	0.11	1.05	1.63	0.04	30.6
84	96.06	0.12	1.11	1.71	0.04	30.7
90	96.10	0.13	1.17	1.80	0.04	30.8
97	96.14	0.13	1.25	1.90	0.03	30.9
104	96.18	0.14	1.32	2.00	0.03	31.0
112	96.22	0.15	1.40	2.11	0.03	31.1
120	96.26	0.15	1.48	2.22	0.028	31.1



cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-PL1  06/29/05
POOL                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   2.1
QARD   4.0
QARD   5.2
QARD   8.0
QARD  11.0
QARD  14.0
QARD  17.0
QARD  20.0
QARD  23.0
QARD  26.0
QARD  29.0
QARD  32.0
QARD  32.6
QARD  35.0
QARD  37.4
QARD  38.0
QARD  42.0
QARD  46.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  66.0
QARD  72.0
QARD  78.0
QARD  84.0
QARD  90.0
QARD  97.0
QARD 104.0
QARD 112.0
QARD 120.0
XSEC  1000     1000. 1.0     92.59    .00022
      1000   .097.66  1.296.78  1.696.56  2.094.55  3.394.15  4.594.25
      1000  5.393.95  6.693.65  7.793.45  9.293.05 10.392.95 11.892.65
      1000 13.192.55 14.692.65 16.292.75 17.792.85 19.092.95 20.192.95
      1000 21.493.15 22.593.15 23.893.25 24.893.25 26.093.45 26.993.65
      1000 28.194.15 29.595.45 29.795.75 30.296.61 31.897.70
NS    1000      11.9      11.9      11.9      22.9      26.8      26.7
NS    1000      23.6      23.6      32.8      35.6      64.6      54.6
NS    1000      54.6      56.6      45.8      42.9      45.9      53.6
NS    1000      45.9      62.6      24.9      23.9      23.9      23.9
NS    1000      22.9      22.9      22.9      11.9      11.9
WSL   1000     94.48     94.69     94.79     94.95     95.07     95.17
WSL   1000     95.26     95.33     95.39     95.45     95.50     95.55
WSL   1000     95.56     95.59     95.63     95.63     95.68     95.73
WSL   1000     95.77     95.82     95.87     95.92     95.97     96.01
WSL   1000     96.06     96.10     96.14     96.18     96.22     96.26
CAL1  1000     95.55      37.4
VEL1  1000               -0.21-0.26-0.13-0.22-0.16-0.11 0.15 0.30 0.77
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
VEL1  1000 1.09 1.46 1.48 1.27 1.04 0.94 0.89 0.70 0.48 0.27 0.11-0.18
VEL1  1000-0.20 0.00
CAL2  1000     94.79       5.2
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.63      32.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-C

Site/TR: 04-SFK-RN1

Habitat Type: Run

River Kilometer: 36.62

Stream: South Fork Koktuli River
Reach: C
Site: 04-SFK-RN1
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/29/2005	1	100.00	98.59	99.19
2nd	7/16/2005	2	100.00	98.61	99.21
3rd	8/9/2005	3	100.00	98.62	99.20
4th	7/6/2006	4	100.00	98.68	99.27

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) The relative elevations between TP and HP showed they were relatively stable with consistent elevation difference between 0.58ft and 0.60ft throughout the 1+ year survey period.
(c) Relative elevation changes between the control pins indicated the HP and TP elevations continued to rise from the initial pin setup in 6/2005 to the last site visit in 7/2006.
(d) The survey results indicated BM continued to sink gradually, resulting in higher elevations of HP and TP each time of survey following the initial pin setup. The data indicated BM sank 0.02ft in 2005 and 0.08ft in 2006.
(e) To compensate for the movement of BM, the elevation datum, all surveyed WSEs other than the initial ones were adjusted with the sinking amount of BM to make all elevations referenced to the same datum.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/29/2005	95.56
7/16/2005	95.33
8/9/2005	94.77
7/6/2006	95.25

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/29/2005	37.6
7/16/2005	
8/9/2005	5.5
7/6/2006	22.9

No discharge was measured on 7/16/05.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/29/2005	0.128%	47
7/16/2005	0.043%	47
8/9/2005	-0.043%	47
7/6/2006	-0.018%	55

Negative slopes may be due to measurement errors or mislabeling of upstream and downstream. Velocity head was less than 0.01ft, too small to result in negative WSE slope. The slope S=0.128% of 6/29/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/29/2005	93.26
7/16/2005	
8/9/2005	93.17
7/6/2006	93.25
Invert	93.26
SZF	93.26

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in the 7/16/05 trip.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/29/2005	37.6	95.56	95.53	-0.03	IFG4
2nd	7/16/2005		95.33			
3rd	8/9/2005	5.5	94.77	94.75	-0.02	IFG4
4th	7/6/2006	22.9	95.25	95.30	0.05	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within acceptable range.
(c) No discharge was measured during the 7/16/05 site visit.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 5.5cfs, 22.9cfs, and 37.6cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

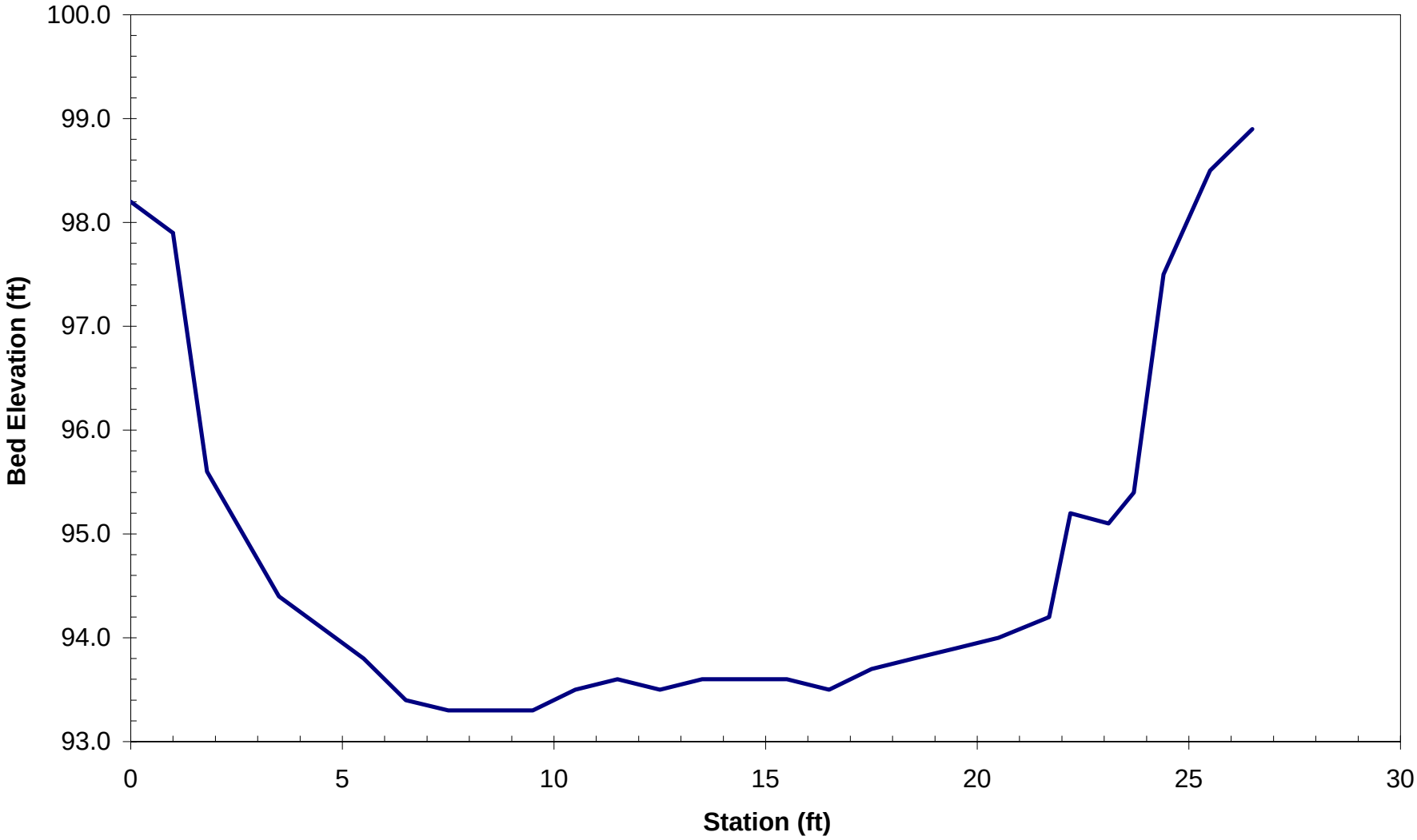
Survey Date	Q (cfs)	WUA (Y/N)
6/29/2005	37.6	Y
7/16/2005		
8/9/2005	5.5	Y
7/6/2006	22.9	Y

(4) Hydraulic Calibration Results:

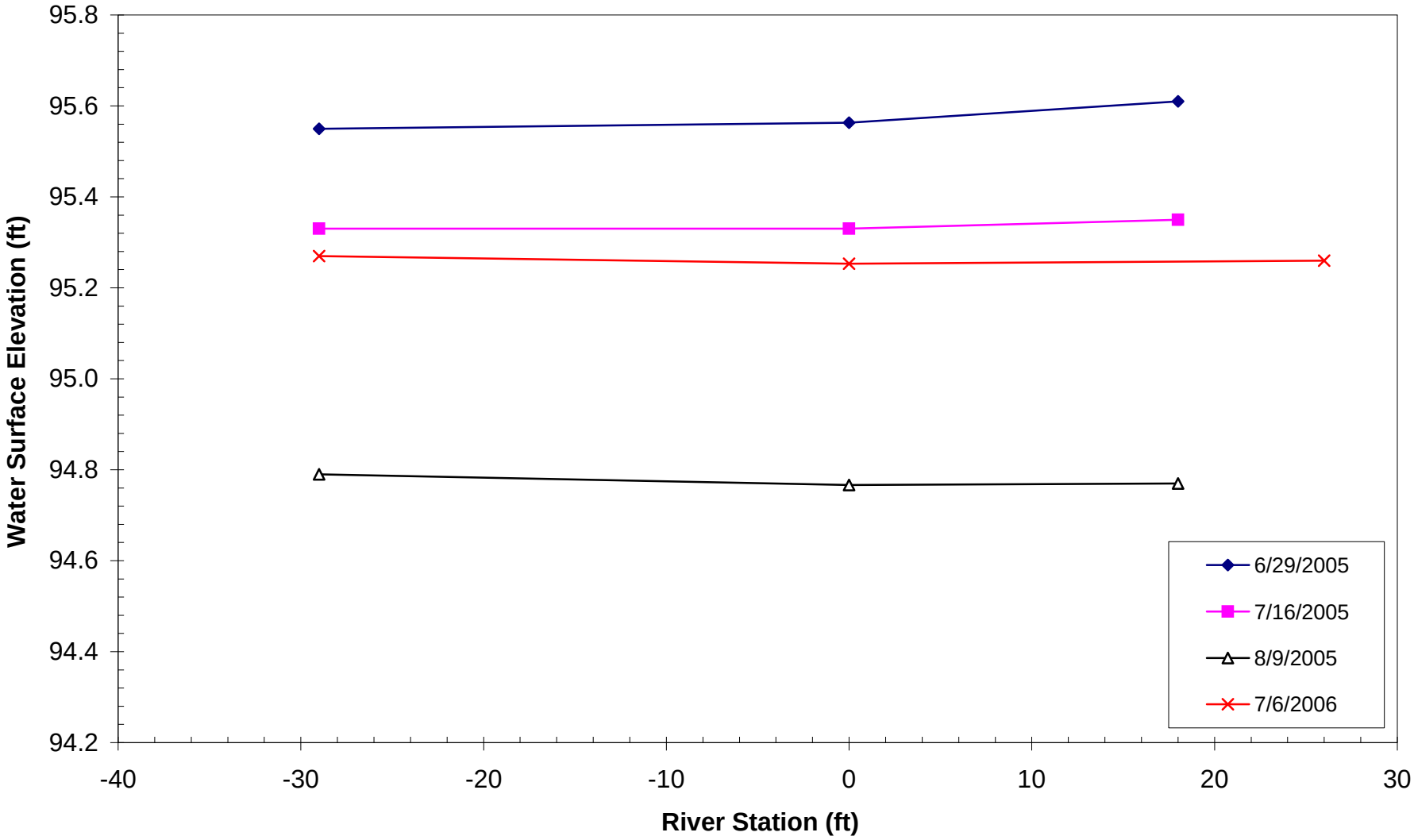
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary in normal trends.

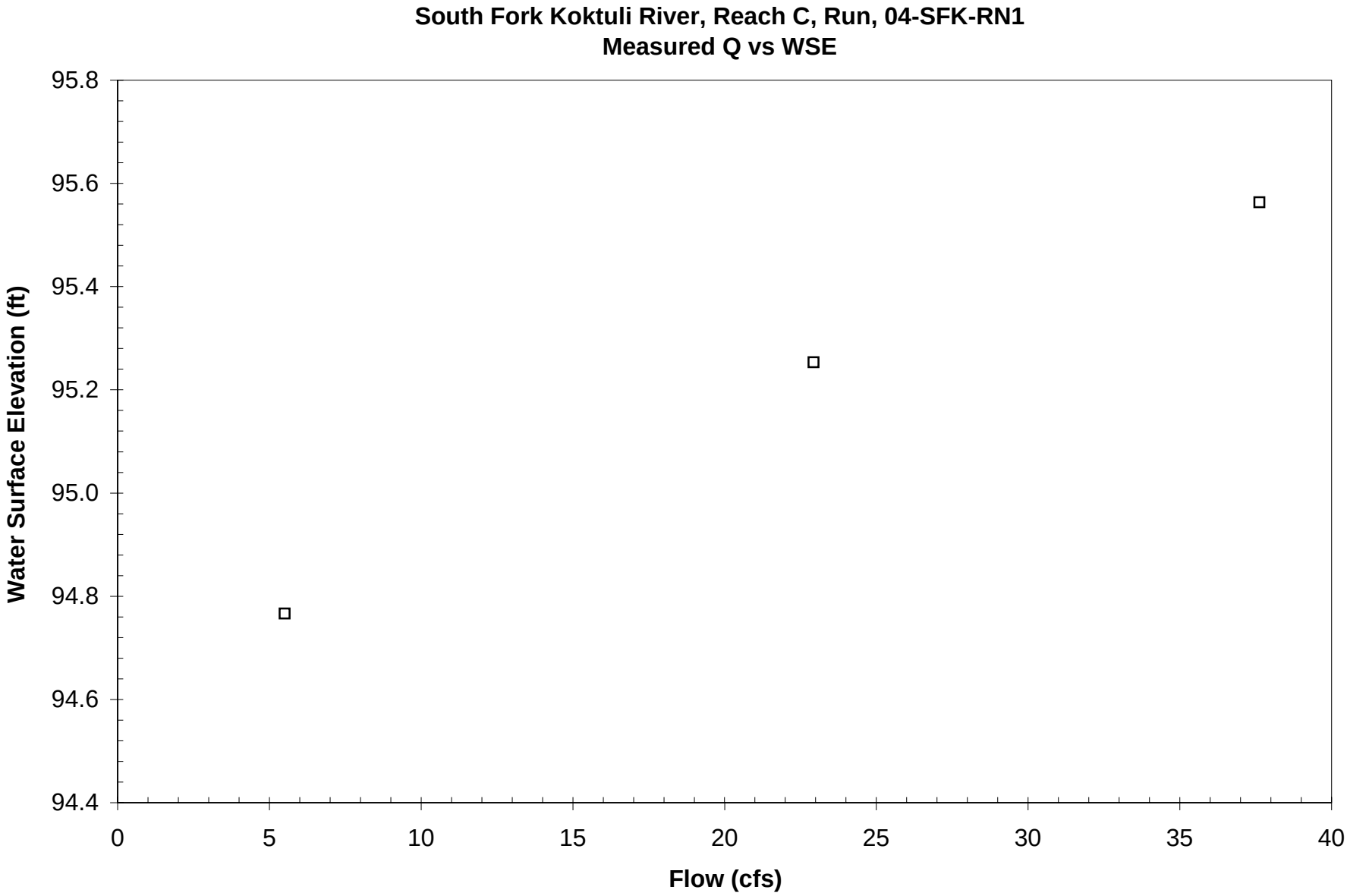
calibration notes

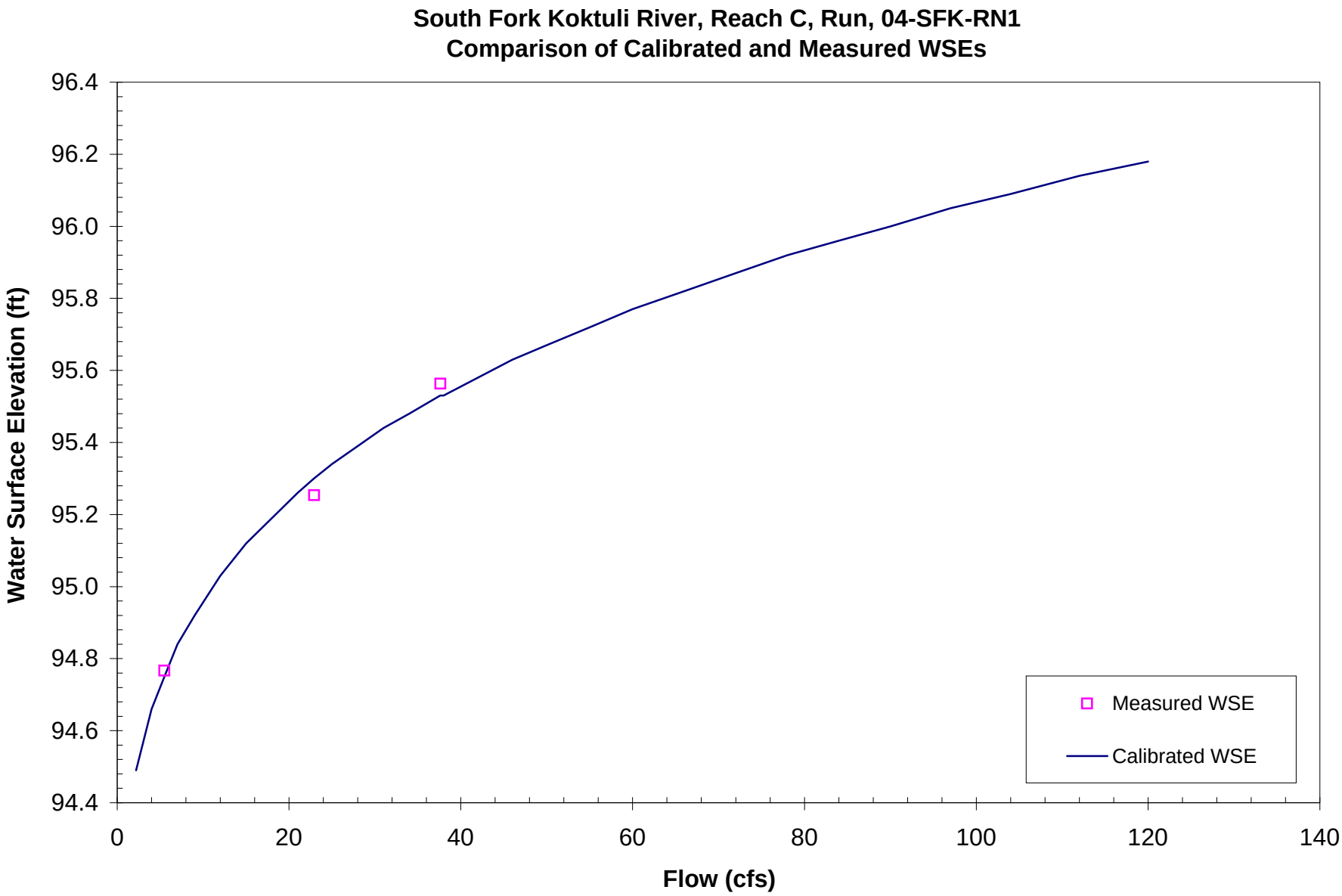
South Fork Koktuli River, Reach C, Run, 04-SFK-RN1
Measured Transect Profile



South Fork Koktuli River, Reach C, Run, 04-SFK-RN1
Longitudinal Water Surface Elevation Profiles



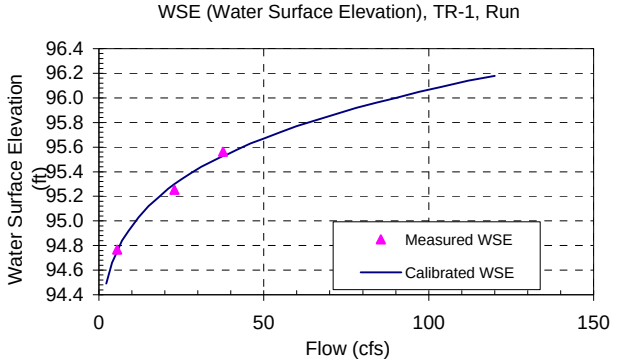

South Fork Koktuli River, Reach C, Run, 04-SFK-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
0
5
10
15
20
25
30
35
40
Flow (cfs)

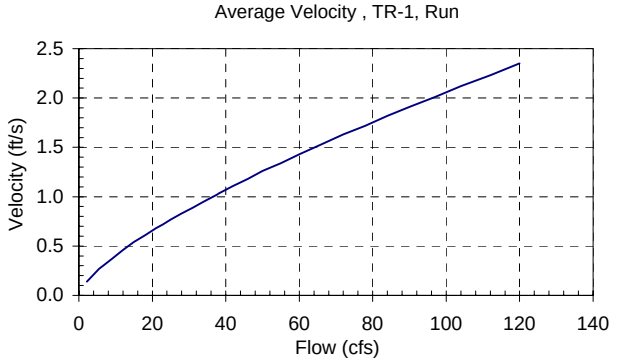

South Fork Koktuli River, Reach C, Run, 04-SFK-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
0
20
40
60
80
100
120
140
Flow (cfs)
Measured WSE
Calibrated WSE

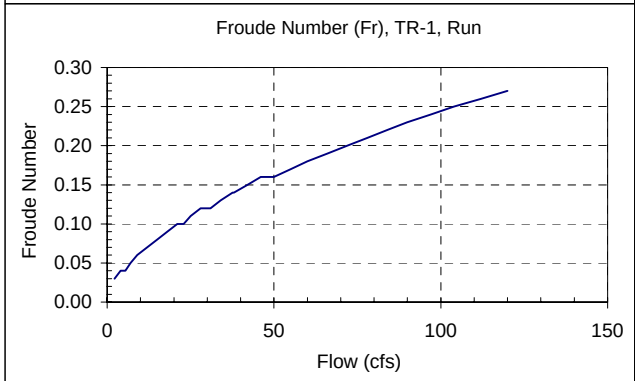
Stream: South Fork Koktuli River
Site Name: 04-SFK-RN1
Date: 6/29/2005
Calibration Flow: Q(6/29/2005)

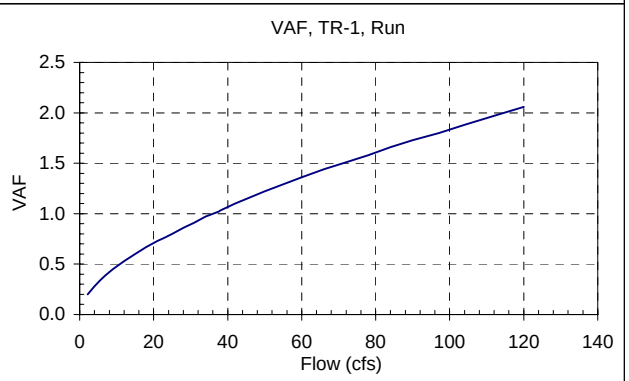
Reach: C
Habitat: Run
Site #: 1
Transect: 1

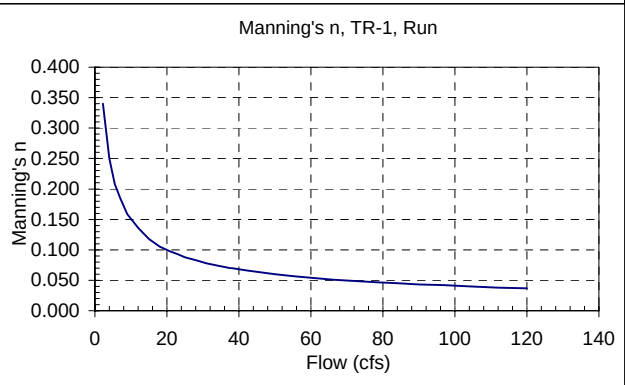
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
2.2	94.49	0.03	0.14	0.20	0.340	19.1
4	94.66	0.04	0.21	0.28	0.250	19.5
5.5	94.75	0.04	0.27	0.34	0.208	19.8
7	94.84	0.05	0.31	0.39	0.185	20.1
9	94.92	0.06	0.37	0.45	0.159	20.3
12	95.03	0.07	0.46	0.53	0.136	20.6
15	95.12	0.08	0.54	0.60	0.118	21.5
18	95.19	0.09	0.61	0.67	0.105	22.2
21	95.26	0.10	0.68	0.73	0.097	22.5
22.9	95.30	0.10	0.72	0.76	0.093	22.7
25	95.34	0.11	0.77	0.80	0.088	22.8
28	95.39	0.12	0.83	0.86	0.083	23.0
31	95.44	0.12	0.89	0.91	0.078	23.1
34	95.48	0.13	0.95	0.97	0.074	23.2
37.6	95.53	0.14	1.02	1.02	0.070	23.4
38	95.53	0.14	1.03	1.03	0.070	23.4
42	95.58	0.15	1.11	1.10	0.066	23.5
46	95.63	0.16	1.18	1.16	0.063	23.6
50	95.67	0.16	1.26	1.22	0.060	23.7
55	95.72	0.17	1.34	1.29	0.057	23.8
60	95.77	0.18	1.43	1.36	0.054	23.9
66	95.82	0.19	1.53	1.44	0.051	24.0
72	95.87	0.20	1.63	1.51	0.049	24.1
78	95.92	0.21	1.72	1.58	0.047	24.2
84	95.96	0.22	1.82	1.66	0.045	24.3
90	96.00	0.23	1.91	1.73	0.043	24.4
97	96.05	0.24	2.01	1.80	0.042	24.5
104	96.09	0.25	2.12	1.88	0.040	24.6
112	96.14	0.26	2.23	1.97	0.038	24.7
120	96.18	0.27	2.35	2.06	0.037	24.8

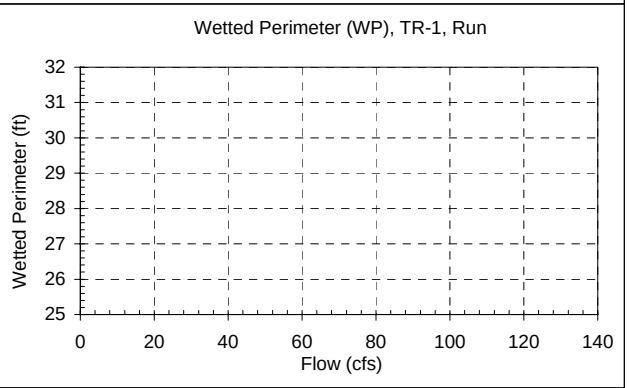




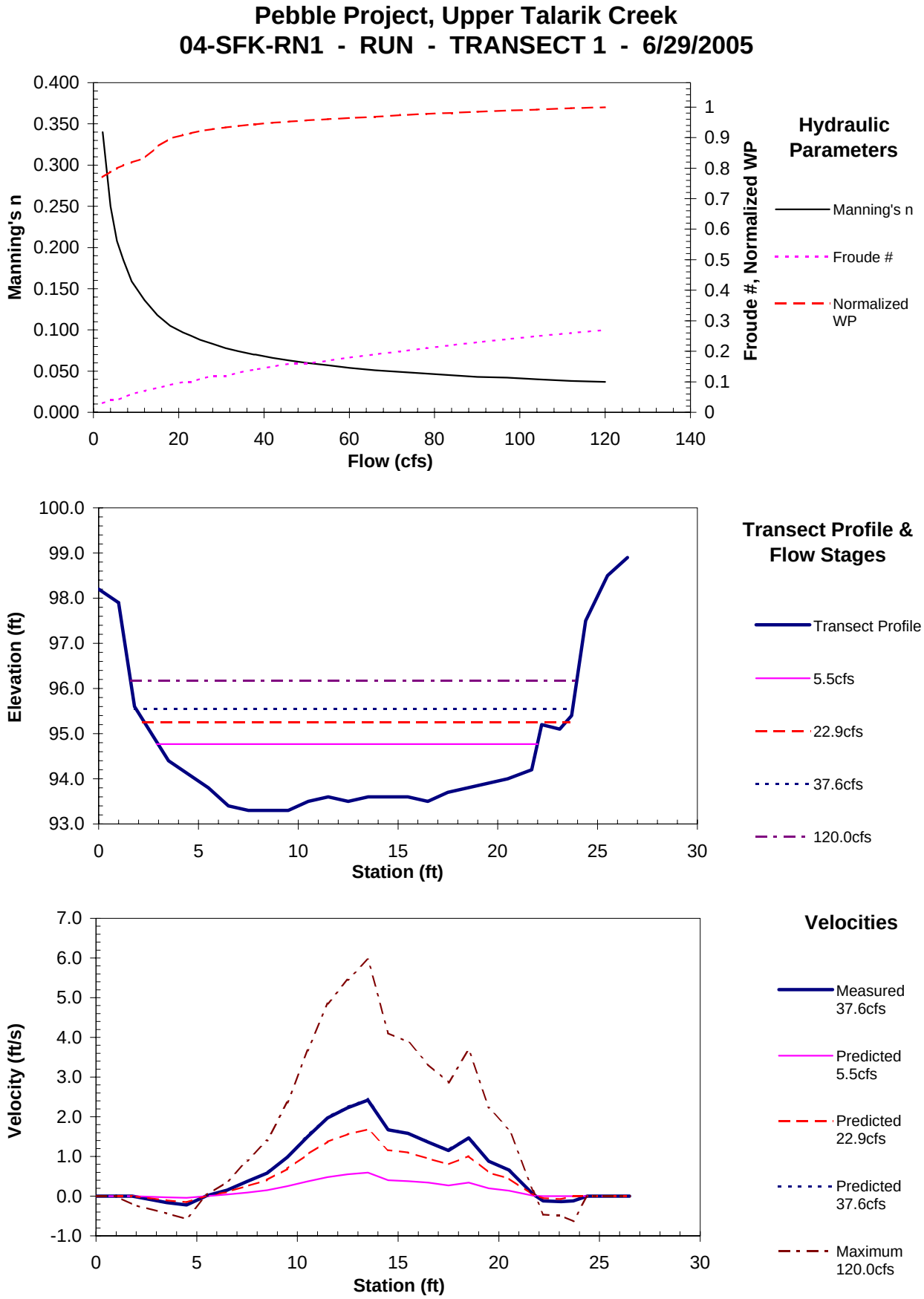








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-SFK-RN1  06/29/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   2.2
QARD   4.0
QARD   5.5
QARD   7.0
QARD   9.0
QARD  12.0
QARD  15.0
QARD  18.0
QARD  21.0
QARD  22.9
QARD  25.0
QARD  28.0
QARD  31.0
QARD  34.0
QARD  37.6
QARD  38.0
QARD  42.0
QARD  46.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  66.0
QARD  72.0
QARD  78.0
QARD  84.0
QARD  90.0
QARD  97.0
QARD 104.0
QARD 112.0
QARD 120.0
XSEC  1000     1000. 1.0     93.26    .00128
      1000   .098.19  1.097.93  1.895.56  3.594.36  4.594.06  5.593.76
      1000  6.593.36  7.593.26  8.593.26  9.593.26 10.593.46 11.593.56
      1000 12.593.46 13.593.56 14.593.56 15.593.56 16.593.46 17.593.66
      1000 18.593.76 19.593.86 20.593.96 21.794.16 22.295.16 23.195.06
      1000 23.795.36 24.497.54 25.598.48 26.598.91
NS    1000      11.9      11.9      11.9      24.9      22.9      24.9
NS    1000      24.8      42.8      45.6      42.7      45.6      53.6
NS    1000      43.7      42.9      45.6      42.7      43.6      45.6
NS    1000      43.9      32.9      32.6      23.8      22.9      22.9
NS    1000      22.9      11.9      11.9      11.9
WSL   1000     94.49     94.66     94.75     94.84     94.92     95.03
WSL   1000     95.12     95.19     95.26     95.30     95.34     95.39
WSL   1000     95.44     95.48     95.53     95.53     95.58     95.63
WSL   1000     95.67     95.72     95.77     95.82     95.87     95.92
WSL   1000     95.96     96.00     96.05     96.09     96.14     96.18
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
CAL1  1000     95.56      37.6
VEL1  1000           0.00-0.16-0.22 0.01 0.15 0.37 0.58 0.98 1.50 1.97
VEL1  1000 2.23 2.42 1.67 1.58 1.36 1.15 1.47 0.88 0.66 0.05-0.12-0.14
VEL1  1000-0.12
CAL2  1000     94.77       5.5
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.25      22.9
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: South Fork Koktuli River

Reach: SFK-C

Site/TR: 05-SFK3-PL1

Habitat Type: Pool

River Kilometer: 39.83

Stream: South Fork Koktuli River
Reach: C
Site Name: 05-SFK3-PL1
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/14/2005	1	100.00	99.22	100.61
2nd	7/16/2005	2	100.00	99.20	100.59
3rd	8/10/2005	3	100.00	99.19	100.60
4th	7/8/2006	4	100.00	99.25	100.65

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Level loop of 2006 showed BM may have moved up slightly about 0.03ft to 0.04ft from the the control pins set up initially in 2005.
(c) As the result, HI of 2006 is artificially lowered by 0.04ft so that all surveys in both years would be referenced to the same 2005 datum.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/14/2005	95.85
7/16/2005	94.93
8/10/2005	94.07
7/8/2006	95.27

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/14/2005	70.5
7/16/2005	
8/10/2005	8.2
7/8/2006	31.6

Substrate was surveyed on 7/16/05, but no discharge was measured on the same day.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/14/2005	0.034%	87.5
7/16/2005	0.046%	64.8
8/10/2005	-0.020%	100.6
7/8/2006	0.027%	75

Negative slope could be due to surveying/recording errors.
Velocity head was less than 0.01ft, too small to result in the negative slope.
The slope S=0.034% of 6/14/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/14/2005	92.35
7/16/2005	
8/10/2005	92.27
7/8/2006	92.27
Invert	92.35
SZF	92.35

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in the 7/16/05 trip.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/14/2005	70.5	95.85	95.99	0.14	IFG4
2nd	7/16/2005		94.93			
3rd	8/10/2005	8.2	94.07	94.09	0.02	IFG4
4th	7/8/2006	31.6	95.27	95.12	-0.15	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.15ft is marginally acceptable for a pool habitat.
This transect is a pool with deep water depth and a single substrate type of fine. As the result, a calibration error of 0.15 is not expected to have significant impact on the habitat area.
(c) No discharge was measured during the 7/16/05 trip

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 8.2cfs, 31.6cfs and 70.5cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

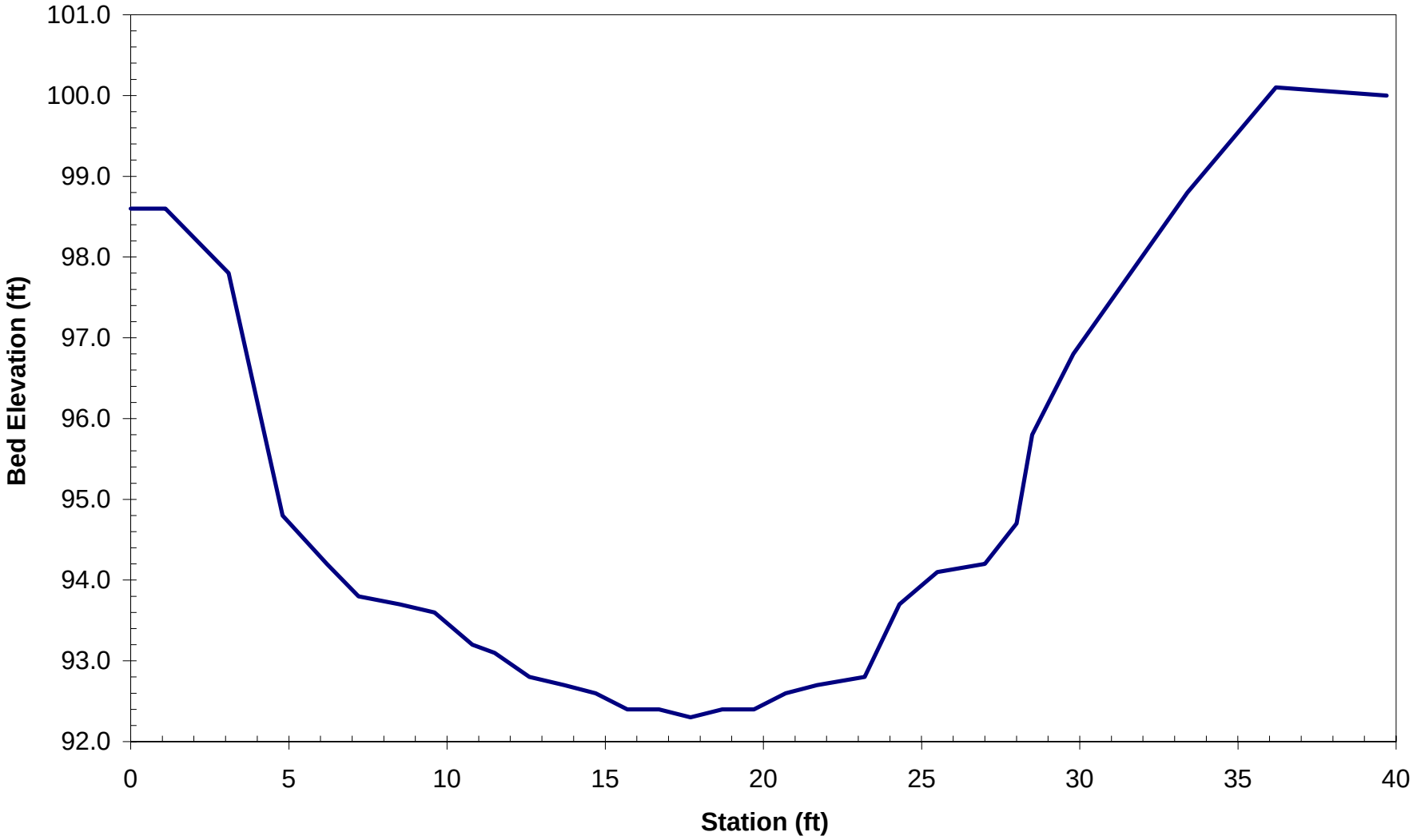
Survey Date	Q (cfs)	WUA (Y/N)
6/14/2005	70.5	Y
7/16/2005		
8/10/2005	8.2	Y
7/8/2006	31.6	Y

(4) Hydraulic Calibration Results:

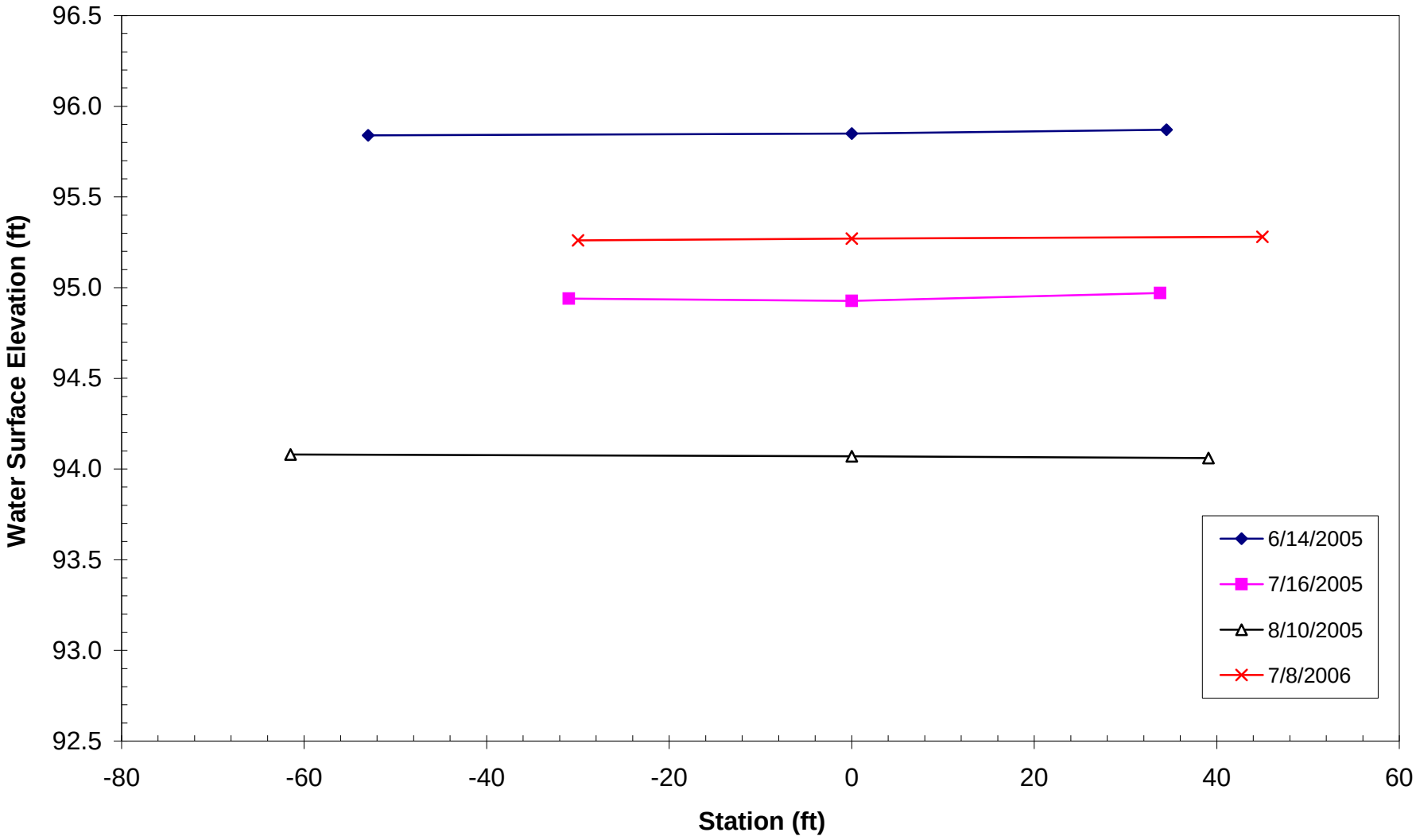
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and varied with normal trends.

calibration notes

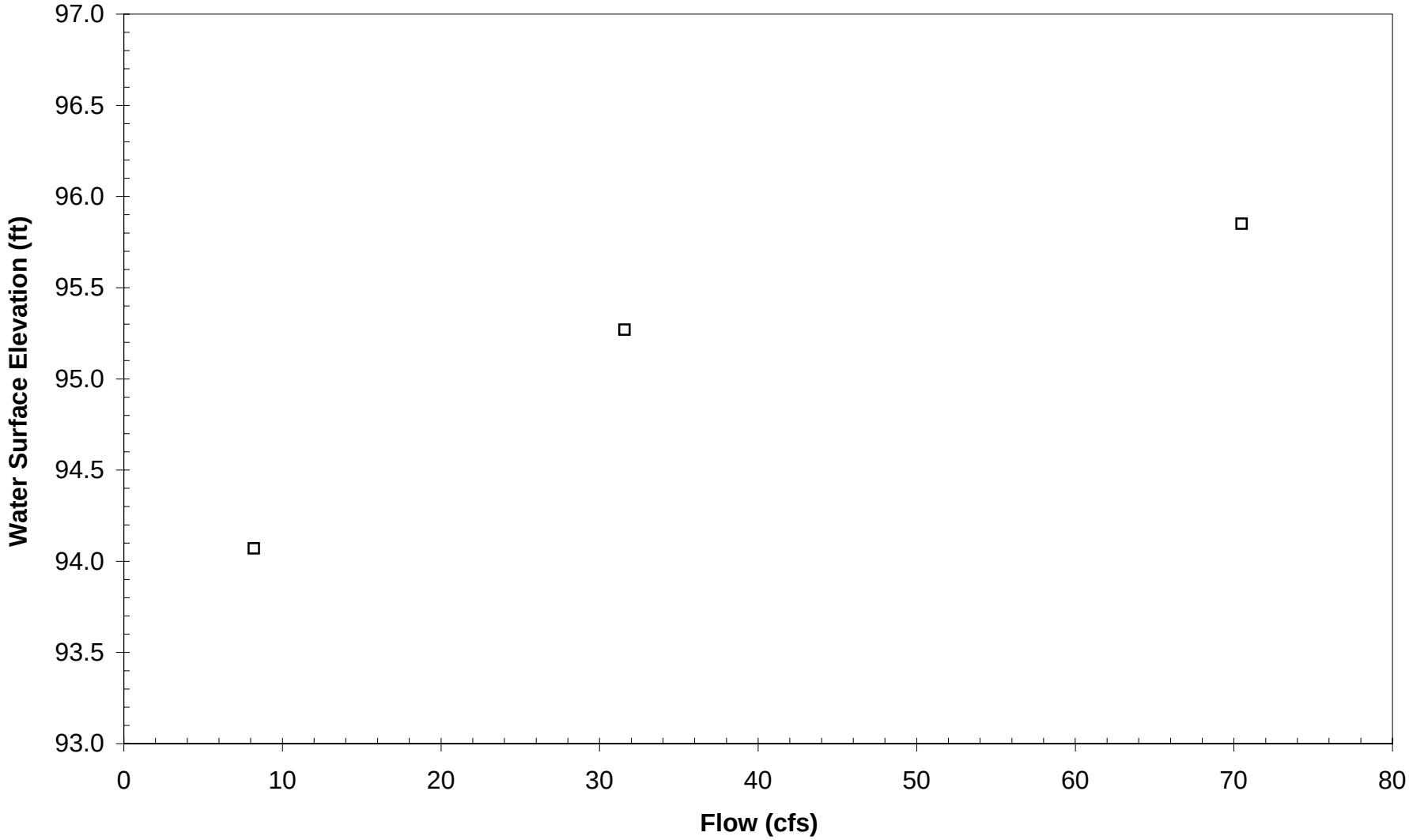
South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL1
Measured Transect Profile

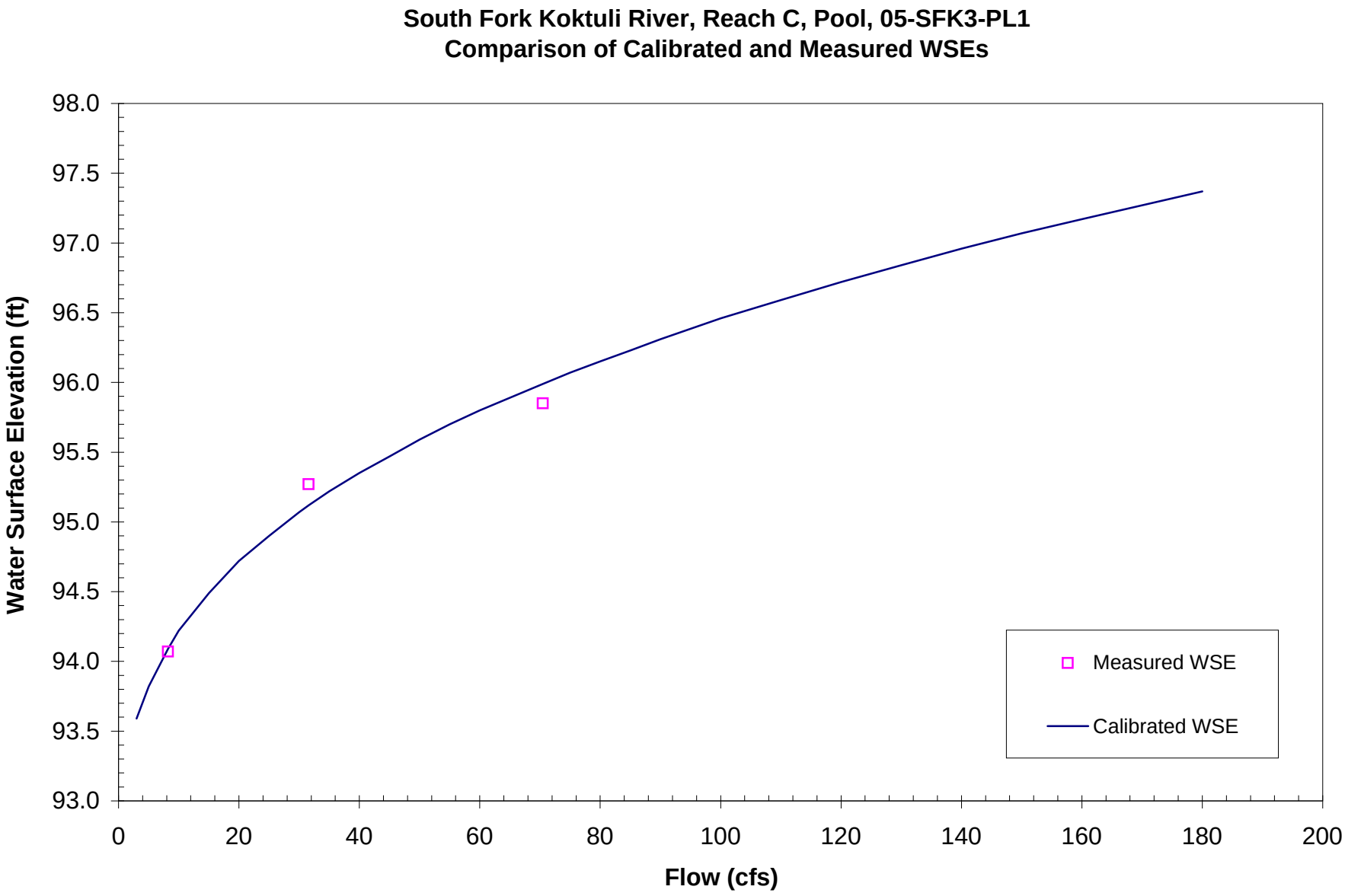


South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL1
Longitudinal Water Surface Elevation Profiles



South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL1
Measured Q vs WSE

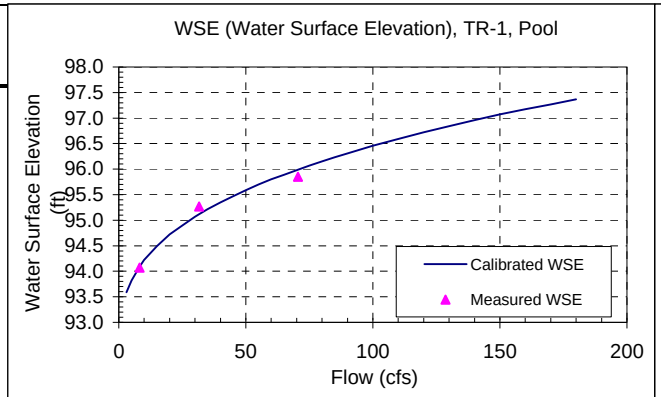


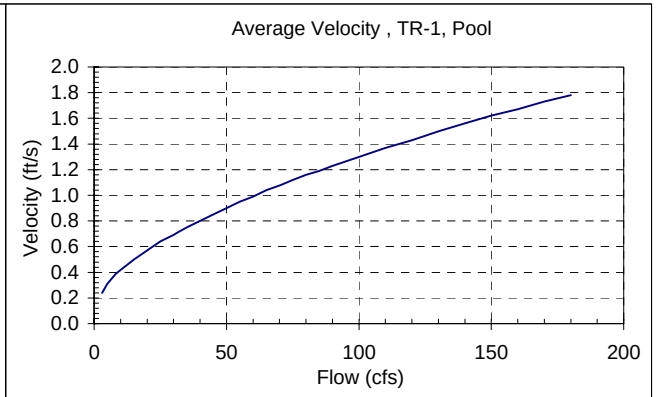

South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)
Measured WSE
Calibrated WSE

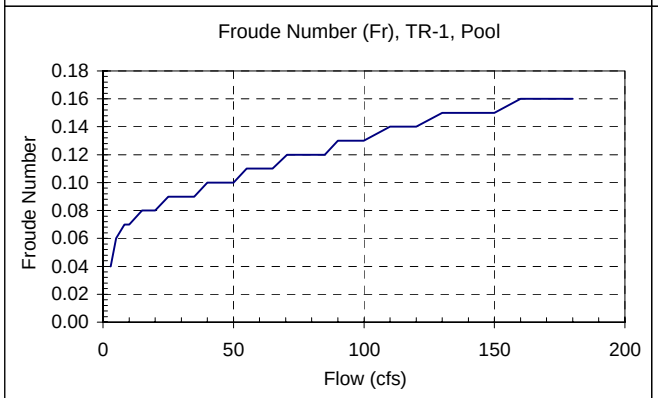
Stream: South Fork Koktuli River
Site Name: 05-SFK3-PL1
Date: 6/14/2005
Calibration Flow: Q(6/14/2005)

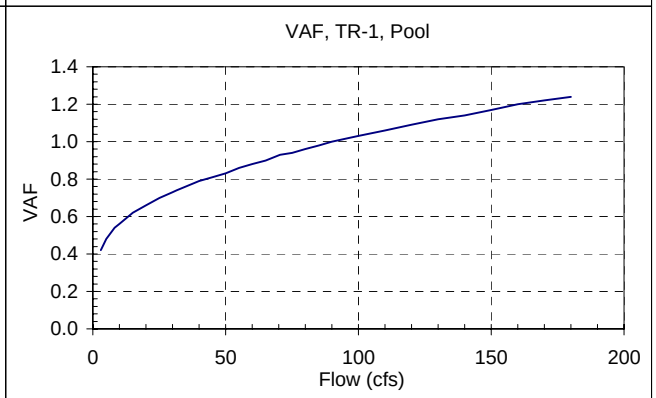
Reach: C
Habitat: Pool
Site #: 1
Transect: 1

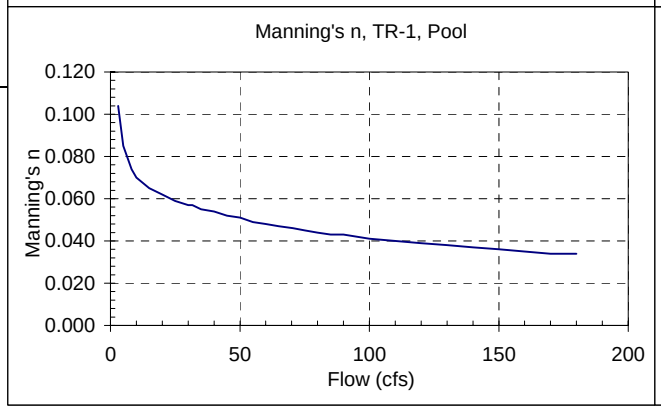
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	93.59	0.04	0.24	0.42	0.104	15.2
5	93.82	0.06	0.31	0.48	0.09	17.6
8.2	94.09	0.07	0.39	0.54	0.07	20.3
10	94.22	0.07	0.42	0.56	0.07	21.7
15	94.49	0.08	0.50	0.62	0.07	22.9
20	94.72	0.08	0.57	0.66	0.06	23.9
25	94.90	0.09	0.64	0.70	0.06	24.4
30	95.07	0.09	0.69	0.73	0.06	24.8
31.6	95.12	0.09	0.71	0.74	0.06	24.9
35	95.22	0.09	0.75	0.76	0.06	25.1
40	95.35	0.10	0.80	0.79	0.05	25.4
45	95.47	0.10	0.85	0.81	0.05	25.7
50	95.59	0.10	0.90	0.83	0.05	25.9
55	95.70	0.11	0.95	0.86	0.05	26.2
60	95.80	0.11	0.99	0.88	0.05	26.4
65	95.89	0.11	1.04	0.90	0.05	26.6
70.5	95.99	0.12	1.08	0.93	0.05	26.9
75	96.07	0.12	1.12	0.94	0.05	27.2
80	96.15	0.12	1.16	0.96	0.04	27.4
85	96.23	0.12	1.19	0.98	0.04	27.6
90	96.31	0.13	1.23	1.00	0.04	27.8
100	96.46	0.13	1.30	1.03	0.04	28.3
110	96.59	0.14	1.37	1.06	0.04	28.6
120	96.72	0.14	1.43	1.09	0.04	29.0
130	96.84	0.15	1.50	1.12	0.04	29.3
140	96.96	0.15	1.56	1.14	0.04	29.7
150	97.07	0.15	1.62	1.17	0.04	30.1
160	97.17	0.16	1.67	1.20	0.04	30.4
170	97.27	0.16	1.73	1.22	0.03	30.7
180	97.37	0.16	1.78	1.24	0.034	31.1

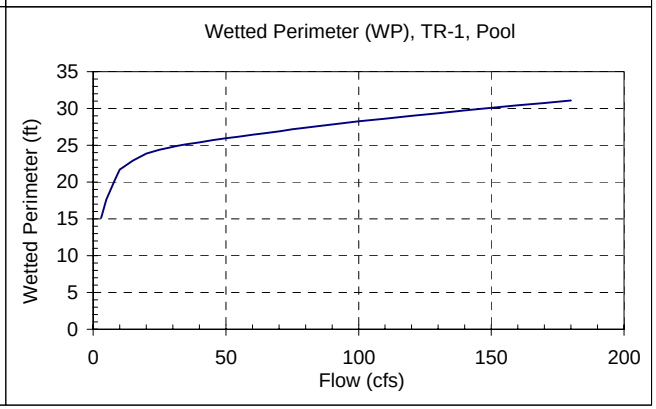




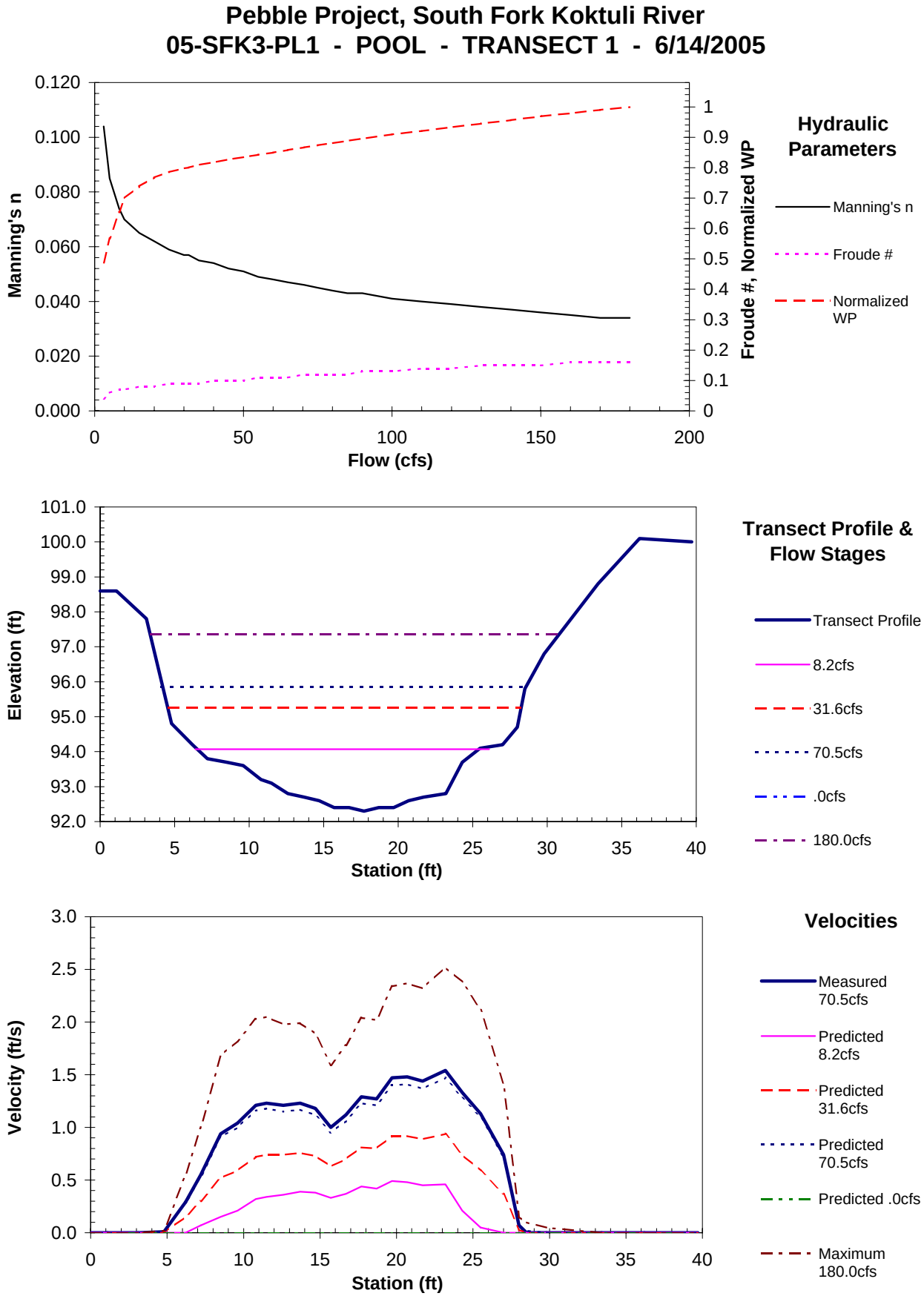








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK3-PL1  06/14/05
POOL                       0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD   3.0
QARD   5.0
QARD   8.2
QARD  10.0
QARD  15.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  31.6
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  65.0
QARD  70.5
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
XSEC  1000     1000. 1.0     92.35    .00034
      1000   .098.58  1.198.59  3.197.83  4.894.84  6.294.15  7.293.84
      1000  8.593.75  9.693.55 10.893.15 11.593.05 12.692.84 13.792.65
      1000 14.792.55 15.792.44 16.792.44 17.792.34 18.792.44 19.792.44
      1000 20.792.55 21.792.65 23.292.84 24.393.75 25.594.05 27.094.15
      1000 28.094.65 28.595.84 29.896.81 33.498.76 36.2100.1 39.7100.0
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      23.9      22.9
NS    1000      22.9      22.9      22.9      22.9      23.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
WSL   1000     93.59     93.82     94.09     94.22     94.49     94.72
WSL   1000     94.90     95.07     95.12     95.22     95.35     95.47
WSL   1000     95.59     95.70     95.80     95.89     95.99     96.07
WSL   1000     96.15     96.23     96.31     96.46     96.59     96.72
WSL   1000     96.84     96.96     97.07     97.17     97.27     97.37
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
CAL1  1000     95.85      70.5
VEL1  1000                0.01 0.29 0.55 0.94 1.04 1.21 1.23 1.21 1.23
VEL1  1000 1.18 1.00 1.12 1.29 1.27 1.47 1.48 1.44 1.54 1.33 1.13 0.74
VEL1  1000 0.07 0.00
CAL2  1000     94.07       8.2
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.27      31.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: South Fork Koktuli River

Reach: SFK-C

Site/TR: 05-SFK3-PL2

Habitat Type: Pool

River Kilometer: 40.93

Stream: South Fork Koktuli River
Reach: C
Site Name: 05-SFK3-PL2
Habitat Type: Run

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	Trip	BM	HP	TP
1st	6/14/2005	1	100.00	99.23	99.57
2nd	7/16/2005	2	100.00	99.21	99.56
3rd	8/10/2005	3	100.00	99.20	99.55
4th	7/8/2006	4	100.00	99.29	99.56

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and TP were within 0.02ft during the 2005-2006 period, suggesting the BM and TP were stable in this period.
(c) HP elevation in 2006 rose 0.06ft from the initial 2005 datum. No corrections were needed for WSEs because the survey datum was based on BM.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/14/2005	94.66
7/16/2005	93.98
8/10/2005	93.11
7/8/2006	93.91

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/14/2005	63.6
7/16/2005	
8/10/2005	9.5
7/8/2006	33.4

Substrate was surveyed on 7/16/05, but no discharge was measured on the same day.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/14/2005	0.058%	136.8
7/16/2005	0.059%	136.5
8/10/2005	0.149%	121
7/8/2006	0.067%	134.2

The slope S=0.058% of 6/14/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/14/2005	92.06
7/16/2005	
8/10/2005	92.01
7/8/2006	92.01
Invert	92.06
SZF	92.06

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed in the 7/16/05 trip.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR	calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/14/2005	63.6	94.66	94.63	-0.03	IFG4
2nd	7/16/2005		93.98			
3rd	8/10/2005	9.5	93.11	93.10	-0.01	IFG4
4th	7/8/2006	33.4	93.91	93.95	0.04	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharge was measured in the 7/16/05 trip

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 9.5cfs, 33.4cfs and 63.6cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/14/2005	63.6	Y
7/16/2005		
8/10/2005	9.5	Y
7/8/2006	33.4	Y

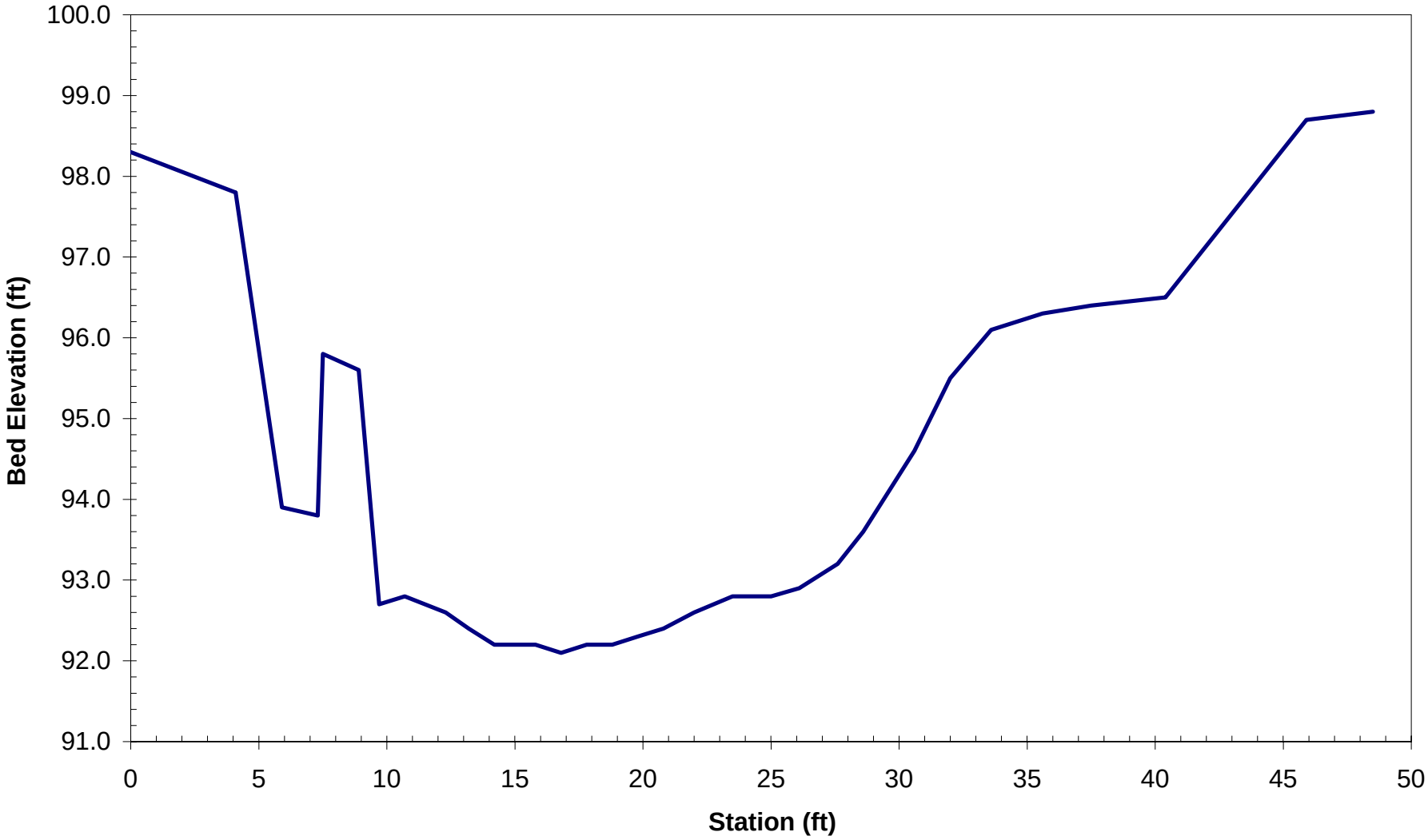
calibration notes

(4) Hydraulic Calibration Results:

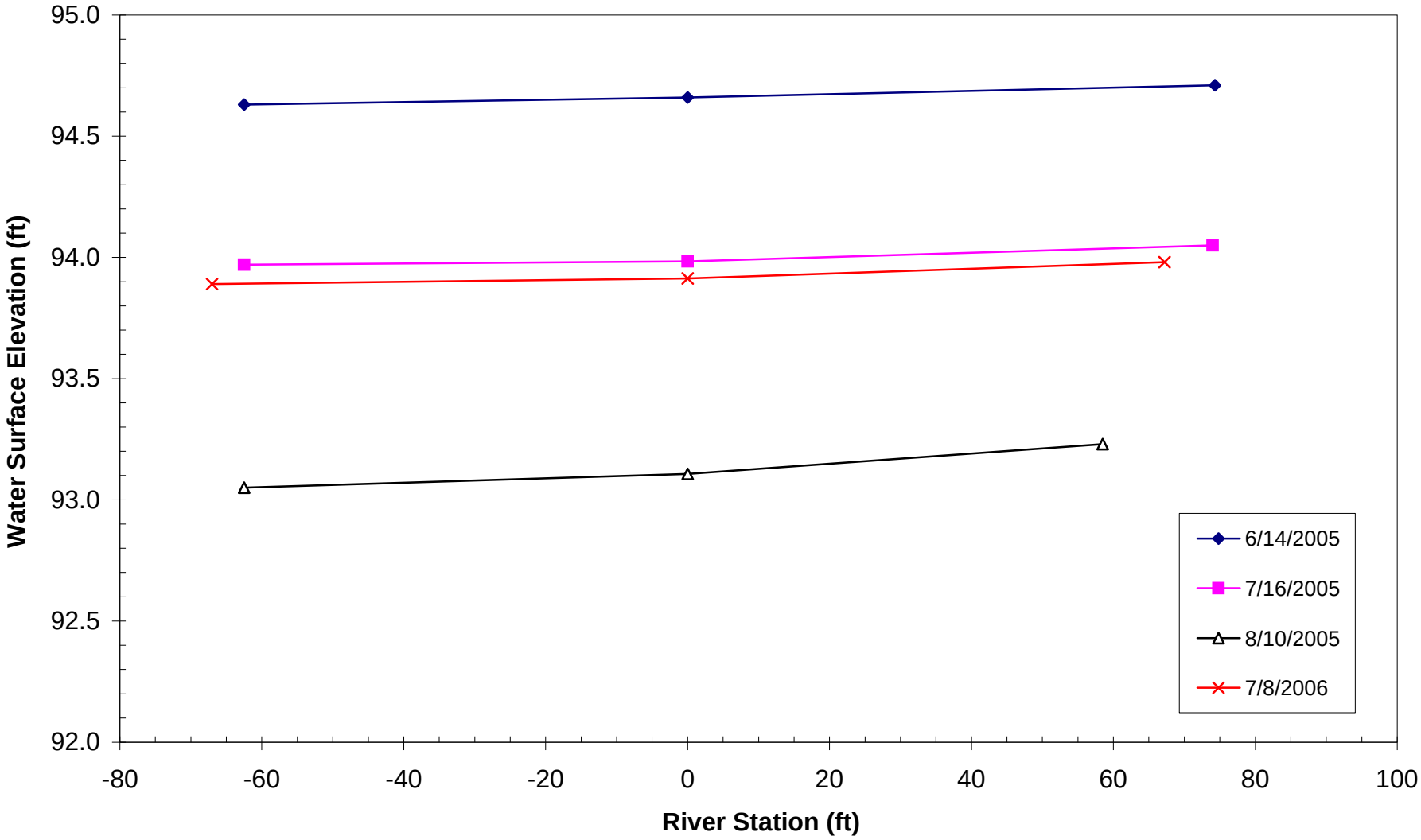
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and generally varied with normal trends except at low flows where Q<25cfs.

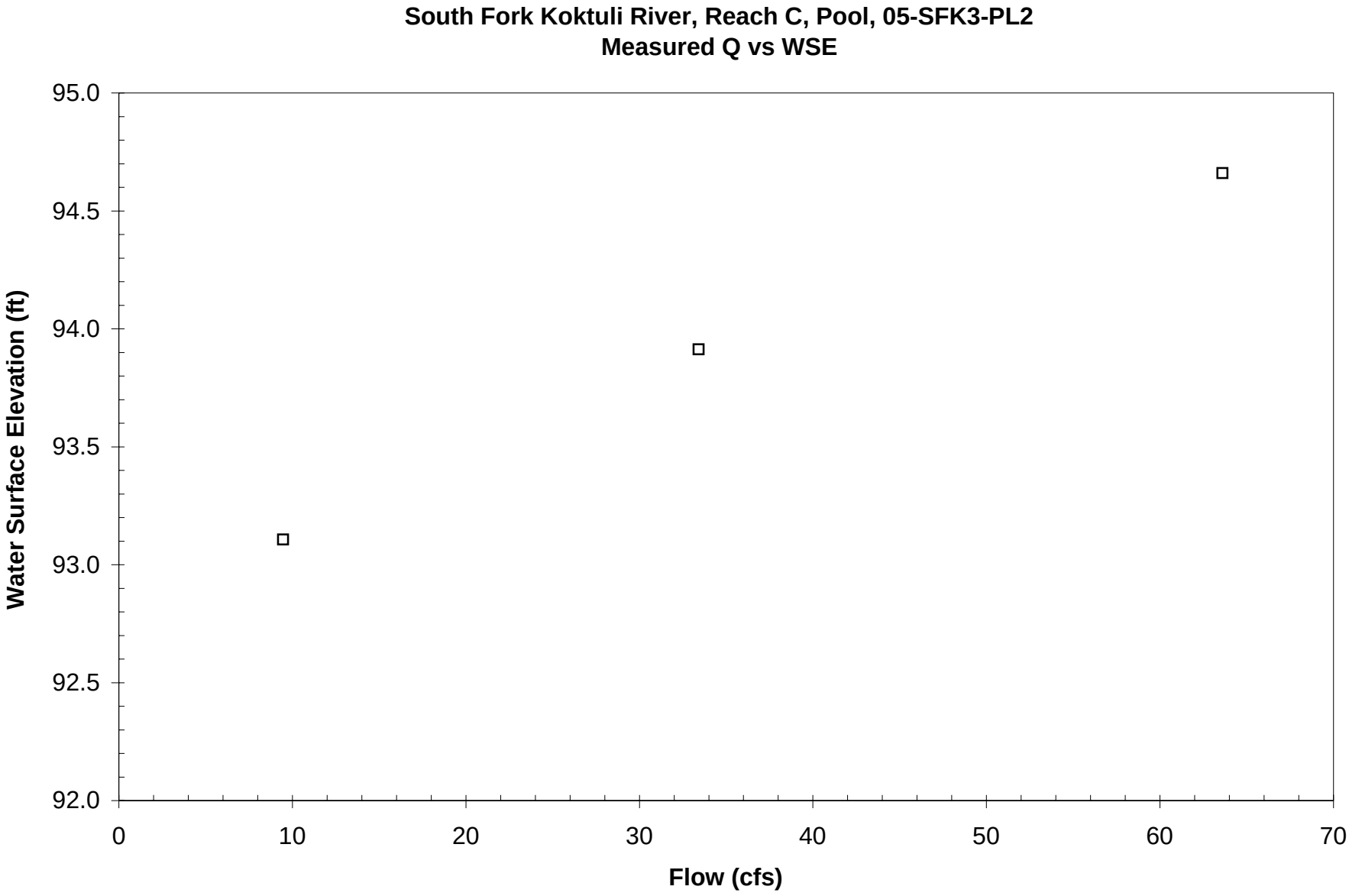
calibration notes

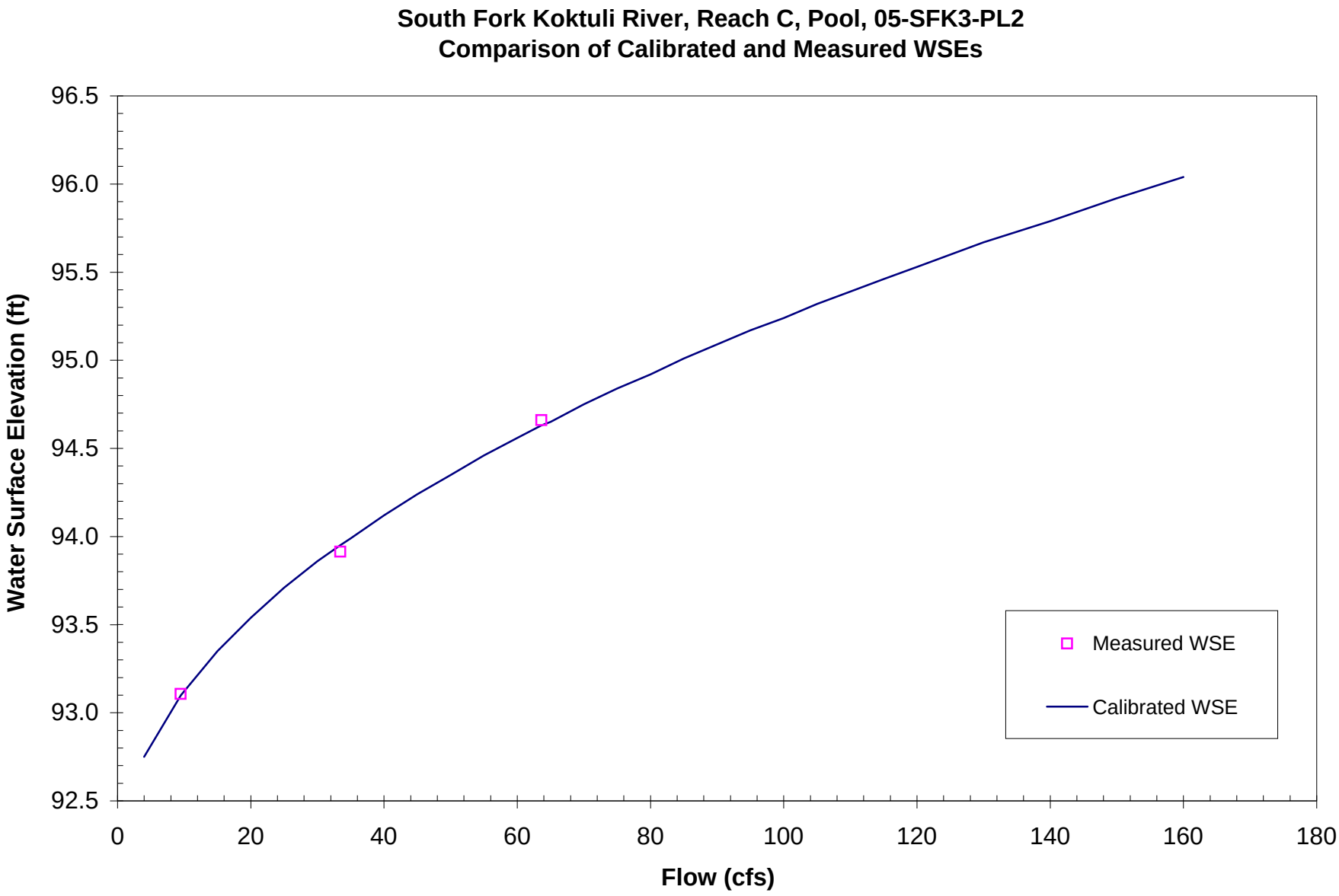
South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL2
Measured Transect Profile



South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL2
Longitudinal Water Surface Elevation Profiles



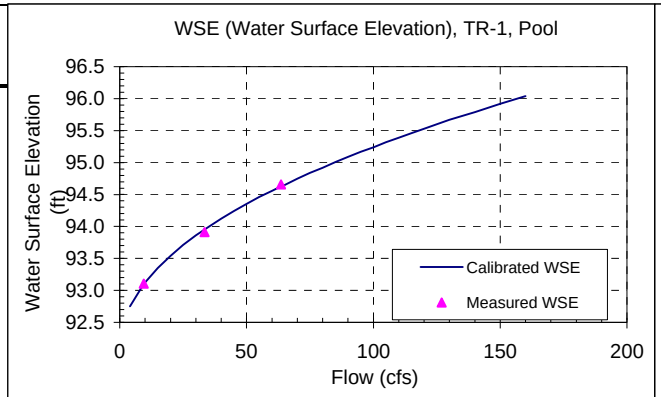

South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL2
Measured Q vs WSE
Water Surface Elevation (ft)
95.0
94.5
94.0
93.5
93.0
92.5
92.0
0
10
20
30
40
50
60
70
Flow (cfs)

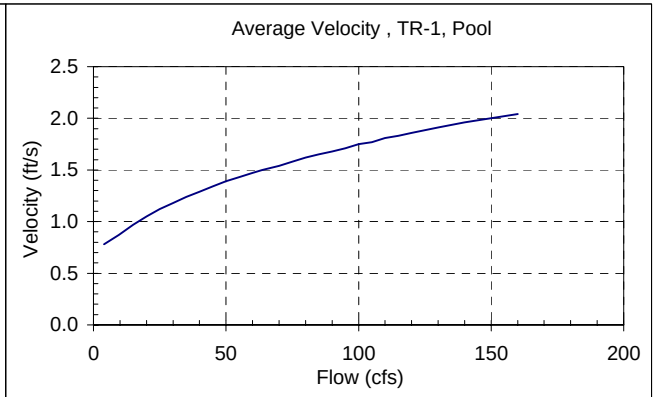

South Fork Koktuli River, Reach C, Pool, 05-SFK3-PL2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
92.5
0
20
40
60
80
100
120
140
160
180
Flow (cfs)
Measured WSE
Calibrated WSE

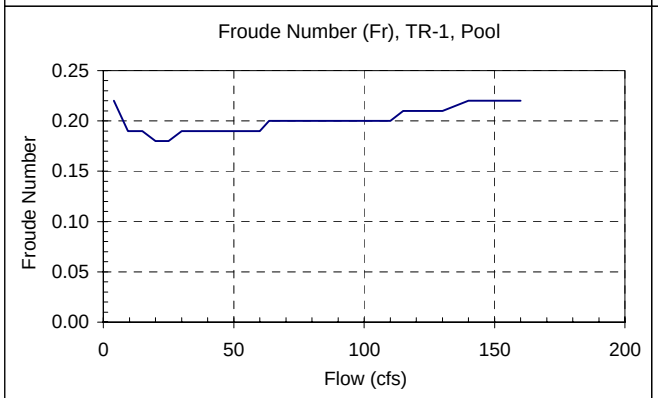
Stream: South Fork Koktuli River
Site Name: 05-SFK3-PL2
Date: 6/14/2005
Calibration Flow: Q(6/14/2005)

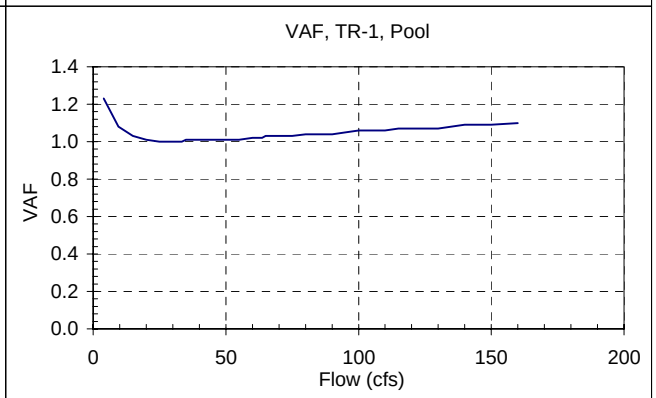
Reach: C
Habitat: Pool
Site #: 2
Transect: 1

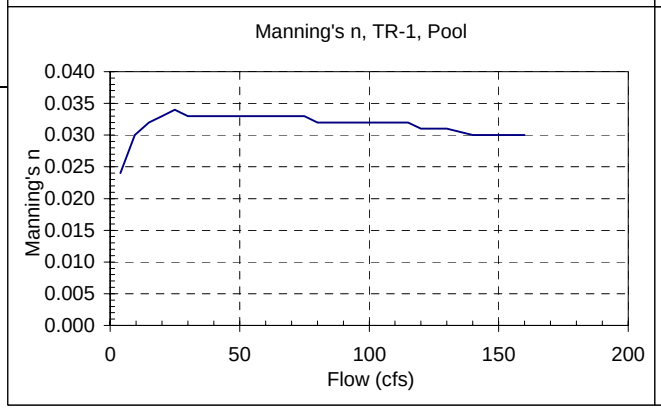
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
4	92.75	0.22	0.78	1.23	0.024	13.8
9.5	93.10	0.19	0.87	1.08	0.03	18.2
15	93.35	0.19	0.97	1.03	0.03	19.3
20	93.54	0.18	1.05	1.01	0.03	20.0
25	93.71	0.18	1.12	1.00	0.03	20.6
30	93.86	0.19	1.18	1.00	0.03	21.9
33.4	93.95	0.19	1.22	1.00	0.03	23.0
35	93.99	0.19	1.24	1.01	0.03	23.2
40	94.12	0.19	1.29	1.01	0.03	23.9
45	94.24	0.19	1.34	1.01	0.03	24.5
50	94.35	0.19	1.39	1.01	0.03	25.1
55	94.46	0.19	1.43	1.01	0.03	25.7
60	94.56	0.19	1.47	1.02	0.03	26.2
63.6	94.63	0.20	1.50	1.02	0.03	26.6
65	94.65	0.20	1.51	1.03	0.03	26.7
70	94.75	0.20	1.54	1.03	0.03	27.2
75	94.84	0.20	1.58	1.03	0.03	27.6
80	94.92	0.20	1.62	1.04	0.03	28.0
85	95.01	0.20	1.65	1.04	0.03	28.4
90	95.09	0.20	1.68	1.04	0.03	28.8
95	95.17	0.20	1.71	1.05	0.03	29.2
100	95.24	0.20	1.75	1.06	0.03	29.6
105	95.32	0.20	1.77	1.06	0.03	30.0
110	95.39	0.20	1.81	1.06	0.03	30.3
115	95.46	0.21	1.83	1.07	0.03	30.6
120	95.53	0.21	1.86	1.07	0.03	31.0
130	95.67	0.21	1.91	1.07	0.03	32.2
140	95.79	0.22	1.96	1.09	0.03	33.8
150	95.92	0.22	2.00	1.09	0.03	34.3
160	96.04	0.22	2.04	1.10	0.030	34.8

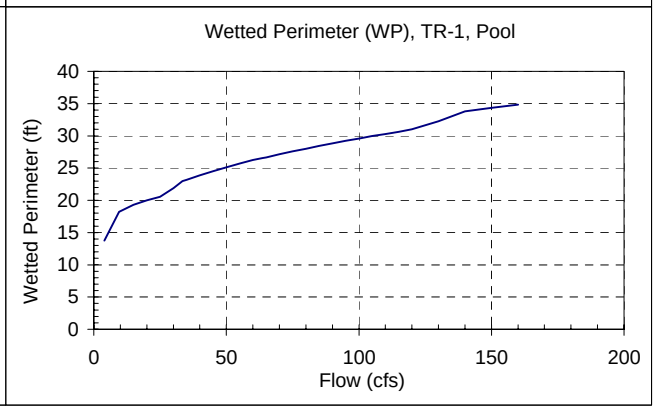




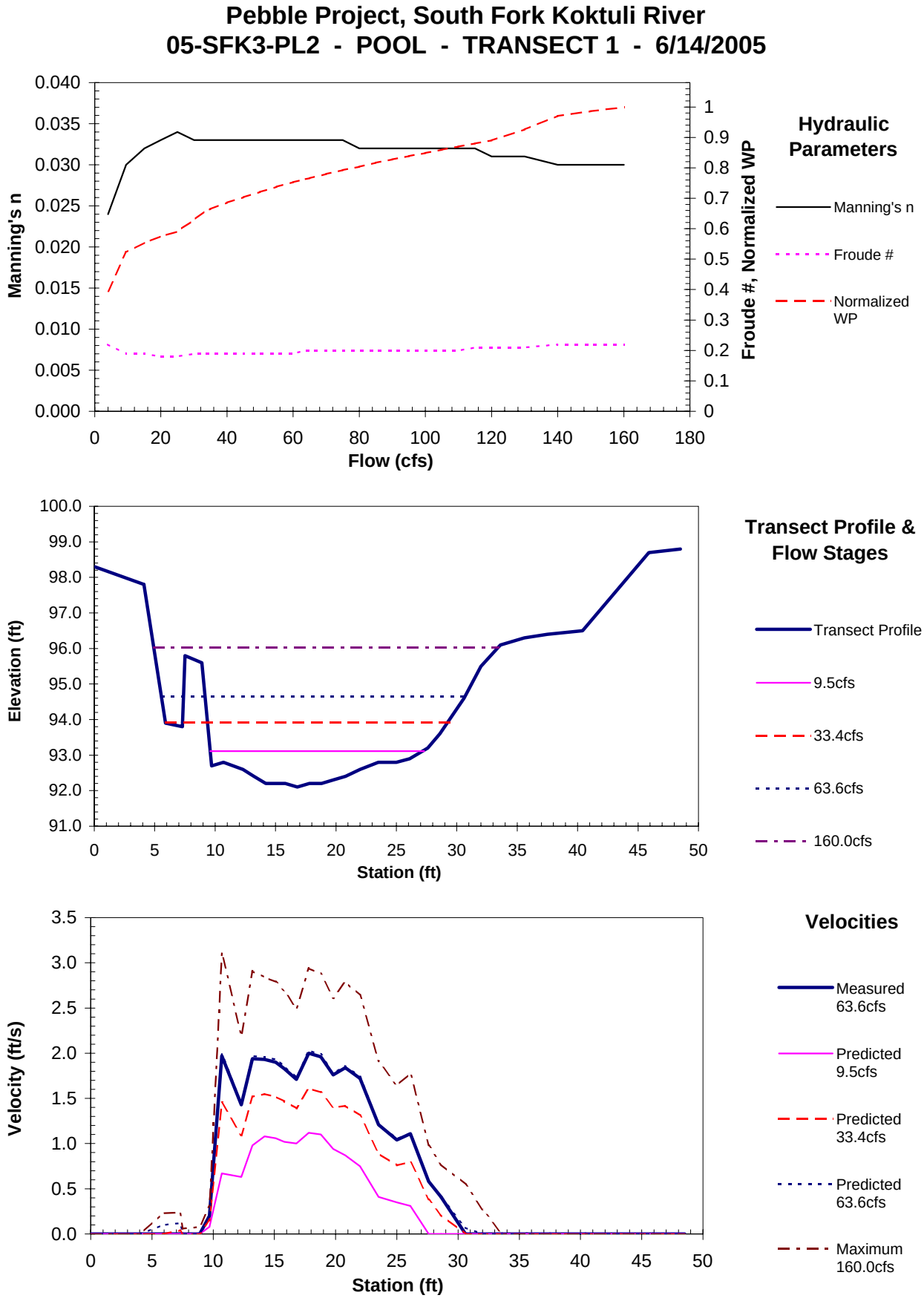








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-SFK3-PL2  06/14/05
POOL                       0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   4.0
QARD   9.5
QARD  15.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  33.4
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  63.6
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
XSEC  1000     1000. 1.0     92.06    .00058
      1000   .098.33  4.197.84  5.993.95  7.393.76  7.595.76  8.995.63
      1000  9.792.66 10.792.76 12.392.55 13.292.36 14.292.16 15.192.16
      1000 15.892.16 16.892.05 17.892.16 18.892.16 19.892.26 20.892.45
      1000 22.092.55 23.592.76 25.092.76 26.192.86 27.693.16 28.693.55
      1000 30.694.55 32.095.52 33.696.09 35.696.34 37.596.41 40.496.52
      1000 45.998.70 48.598.83
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      23.8      23.7      24.7      23.6      23.6      23.8
NS    1000      23.9      23.8      23.9      23.9      23.9      23.9
NS    1000      23.8      23.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9
WSL   1000     92.75     93.10     93.35     93.54     93.71     93.86
WSL   1000     93.95     93.99     94.12     94.24     94.35     94.46
WSL   1000     94.56     94.63     94.65     94.75     94.84     94.92
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     95.01     95.09     95.17     95.24     95.32     95.39
WSL   1000     95.46     95.53     95.67     95.79     95.92     96.04
CAL1  1000     94.66      63.6
VEL1  1000           0.00 0.00           0.20 1.97 1.43 1.94 1.93 1.90
VEL1  1000 1.83 1.71 2.00 1.96 1.76 1.84 1.72 1.21 1.04 1.11 0.58 0.41
VEL1  1000 0.00
CAL2  1000     93.11       9.5
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     93.91      33.4
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: South Fork Koktuli River Tributary 1.190

Reach: SFK-1.190 (SFK-B)

SFK 1.190 Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
08-SFK-190-TR1	0.64	95.3	39.1	14.5		89.57	89.01	88.66		-0.02	0.03	-0.01		IFG4
08-SFK-190-TR2	0.66	95.3	39.1	14.5	7.7	89.77	89.19	88.77	88.62	-0.03	0.02	0.03	-0.02	IFG4
08-SFK-190-TR3	0.67	95.3	39.1	14.5	7.7	89.83	89.23	88.80	88.62	-0.02	0.01	0.01	-0.01	IFG4
08-SFK-190-TR4	0.70	95.3	39.1	14.5	7.7	89.96	89.30	88.92	88.75	-0.04	0.04	0.00	-0.01	IFG4
08-SFK-190-TR5	0.71	95.3	39.1	14.5	7.7	90.02	89.36	89.00	88.84	-0.04	0.04	0.00	-0.02	IFG4
08-SFK-190-TR6	0.73	95.3	39.1	14.5	7.7	90.23	89.58	89.19	89.05	-0.04	0.04	0.02	-0.03	IFG4

* RK is an abbreviation for River Kilometer

Stream: South Fork Koktuli River Tributary 1.190

Reach: SFK-1.190 (SFK-B)

Site: 08-SFK-190

TR1:	08-SFK-190-TR1	**Habitat Type:**	Run	**River Kilometer:**	0.64
TR2:	08-SFK-190-TR2	**Habitat Type:**	Run	**River Kilometer:**	0.66
TR3:	08-SFK-190-TR3	**Habitat Type:**	Riffle	**River Kilometer:**	0.67
TR4:	08-SFK-190-TR4	**Habitat Type:**	Riffle	**River Kilometer:**	0.70
TR5:	08-SFK-190-TR5	**Habitat Type:**	Run	**River Kilometer:**	0.71
TR6:	08-SFK-190-TR6	**Habitat Type:**	Run	**River Kilometer:**	0.73

Stream: **SF Koktuli River Tributary 1.190**
Reach: **Trib 190**
Site: **08-SFK-190**

(1) Field Data

Level Loop Surveys:

Date	BM1	BM2	BM3	BM4	1-LHP	2-RHP	3-RHP	4-RHP	5-RHP	6-LHP
6/19/2008	100.00	99.83	93.01	92.39	92.17	91.56	91.88	90.78	92.32	92.38
7/25/2008	100.00	99.83	93.00	92.39	92.19	91.59	91.90	90.79	92.32	92.40
8/7/2008	100.00	99.83	92.99	92.38		91.56	91.87			
8/22/2008	100.00	99.83	92.98	92.39						

(a) Elevations of control pins (BM, left HP [LHP], right HP [RHP]) are taken from the first half of each level loop survey
(b) Relative elevation changes between the control pins were within 0.01ft.
(c) The small elevation changes indicated control pins were stable during the survey period.

Measured WSE:

There were two WSEs (Right and Left) measured on each channel/transect for each flow,
and the average of the two was used as representative WSE for modeling.

Date	Measured WSE (ft)						
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	
						LC	RC
6/19/2008	89.57	89.77	89.83	89.96	90.02	90.23	90.10
7/25/2008	89.01	89.19	89.23	89.30	89.36	89.58	89.51
8/7/2008	88.66	88.77	88.80	88.92	89.00	89.19	89.05
8/22/2008		88.62	88.62	88.75	88.84	89.05	89.01

WSEs of RC and LC are not the same for the Island Complex transect (i.e., TR-6), but the WSE of the left channels was used for hydraulic calibration, because most of the water flows through the left channels.
The bed bathymetry of RCs is adjusted, with the amount of the WSE difference between RC and LC, so that both channels (RC and LC) would have the same WSE, as required by the IFG4 model.

calibration notes

Discharge:

All measured discharges are listed in the following table.

	Measured Discharge (cfs)						
Date	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	Ave
6/19/2008	91.0					99.7	95.3
7/25/2008	37.9	39.9	36.9	42.6	40.0	37.6	39.1
8/7/2008	15.6					13.5	14.5
8/22/2008		7.7	6.6	8.4	8.1		7.7

Average Q of all transects is used as the representative flows of the site for hydraulic calibration.

Longitudinal WSE Slope:

Slopes are calculated using the measured WSEs and longitudinal distances.

Distances are the measured length between the headpins of two adjacent transects.

Longitudinal Stations						
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
LB	0.0	59.0	77.0	74.0	28.5	81.5
RB	0.0	47.0	35.0	53.0	40.0	70.0
Ave	0.0	53.0	56.0	63.5	34.3	75.8
Station	0.0	53.0	109.0	172.5	206.8	282.5
Slope						
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/19/2008		0.39%	0.24%	0.23%	0.22%	0.235%
7/25/2008		0.34%	0.21%	0.17%	0.17%	0.20%
8/7/2008		0.20%	0.13%	0.15%	0.16%	0.19%
8/22/2008			0.00%	0.11%	0.14%	0.19%

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.

The TR-6 slope S=0.235% of 6/19/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Discharge (cfs)					
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/19/2008	87.97					87.88
7/25/2008	87.96	87.04	87.73	88.00	87.06	87.88
8/7/2008	87.86					87.89
8/22/2008		87.02	87.67	88.00	87.14	
Invert	87.97	87.04	87.73	88.00	87.14	87.89
SZF	87.97	87.97	87.97	88.20	88.34	88.49

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
SZF of the upstream transect must be no less than that of its downstream transect.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

IFG4 model was applied to all 6 transects for WSE calibration.

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)						Calibrated WSE(ft)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/19/2008	95.3	89.57	89.77	89.83	89.96	90.02	90.23	89.55	89.74	89.81	89.92	89.98	90.19
7/25/2008	39.1	89.01	89.19	89.23	89.30	89.36	89.58	89.03	89.20	89.24	89.34	89.40	89.62
8/7/2008	14.5	88.66	88.77	88.80	88.92	89.00	89.19	88.65	88.79	88.81	88.92	89.00	89.21
8/22/2008	7.7		88.62	88.62	88.75	88.84	89.05		88.60	88.61	88.74	88.82	89.02

Survey Date	Q (cfs)	WSE calibration error (ft)						WSE Calibration Method					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/19/2008	95.3	-0.02	-0.03	-0.02	-0.04	-0.04	-0.04	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4
7/25/2008	39.1	0.03	0.02	0.01	0.04	0.04	0.04	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4
8/7/2008	14.5	-0.01	0.03	0.01	0.00	0.00	0.02	IFG4	IFG4	IFG4	IFG4	IFG4	IFG4
8/22/2008	7.7		-0.02	-0.01	-0.01	-0.02	-0.03		IFG4	IFG4	IFG4	IFG4	IFG4

(a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration 0.04ft is within the acceptable range.

calibration notes

(3) Velocity calibration

This site has six transects and each transect has 2 or 3 velocity/discharge measurements.
TR-1 and TR-6 each has three times of velocity measurements and TR-2, TR-3, TR-4, and TR-5 each has only two.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by the IFG4 model. Then the calibrated velocity profile was used to simulate the velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/19/2008	95.3	Y					Y
7/25/2008	39.1	Y	Y	Y	Y	Y	Y
8/7/2008	14.5	Y					Y
8/22/2008	7.7		Y	Y	Y	Y	

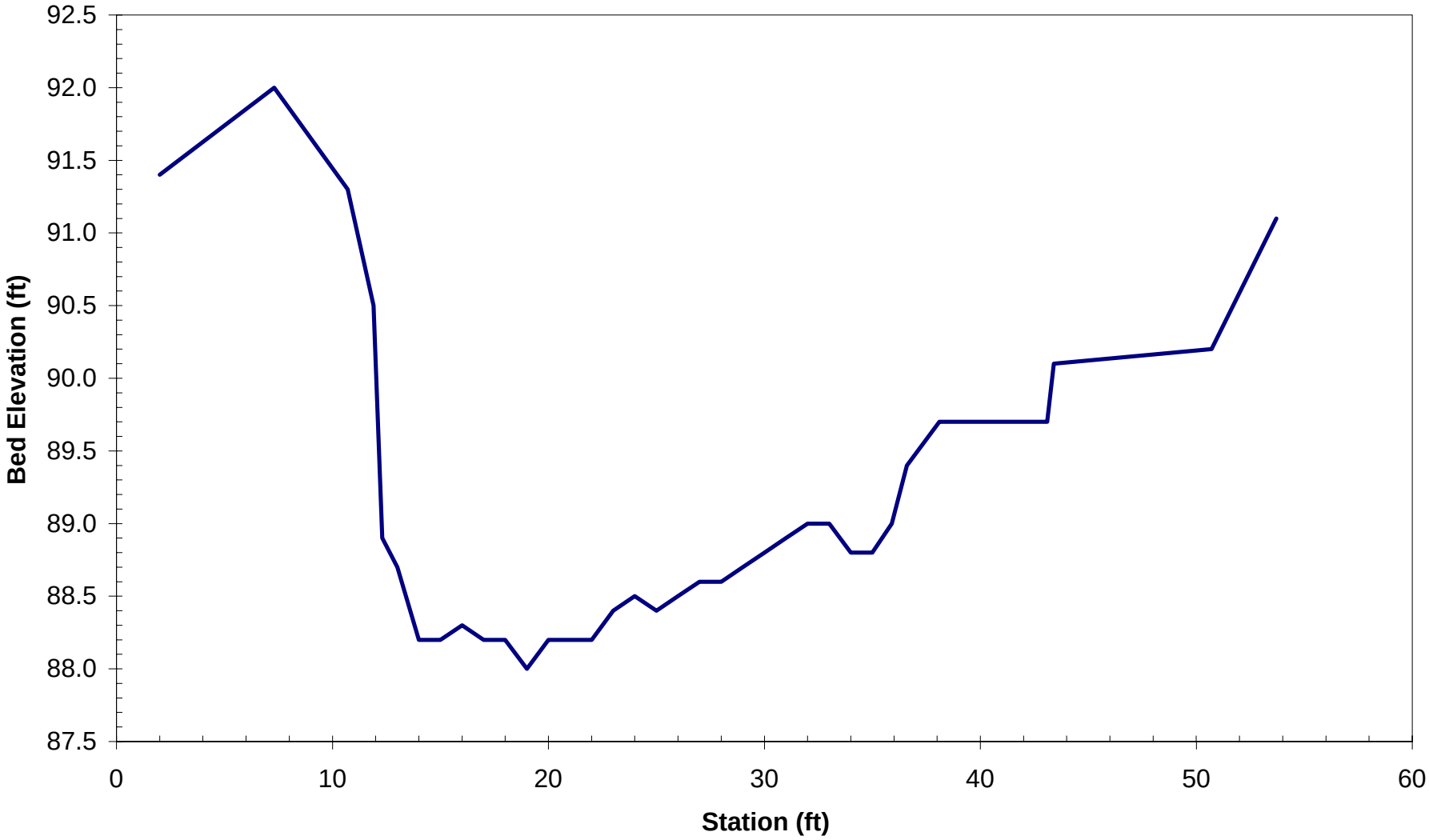
(4) Hydraulic Calibration Results:

Hydraulic simulation results are summarized in the tables and figures that follow.
The simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges with normal varying trends, except TR-1. The Manning's n and Froude number of TR-1 increases and decreases, respectively, with increasing flows with the measured flow range between 7.7cfs and 95.3cfs. Outside the measured flow range, the Manning's n values and Fr numbers both appear varying in normal trends.

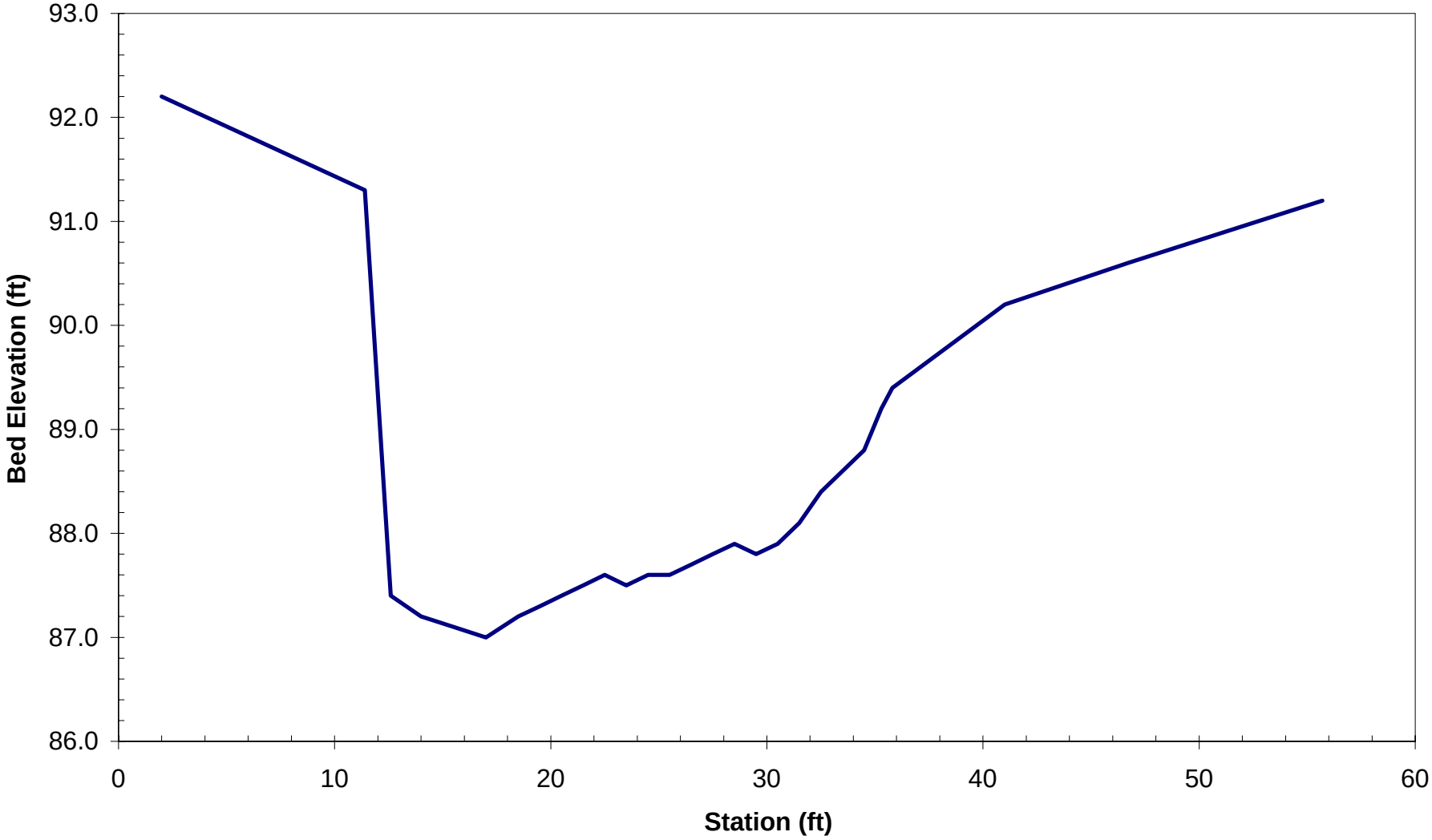
There are minor kinks in the plots of Fr and Manning's n values for TR-4, TR-5, and TR-6. Examination of hydraulics and cross-sectional profiles indicates the kinks are caused by the small plateaus in the middle (TR-6) or on the right side (TR-4 & TR-5) of the channel.

calibration notes

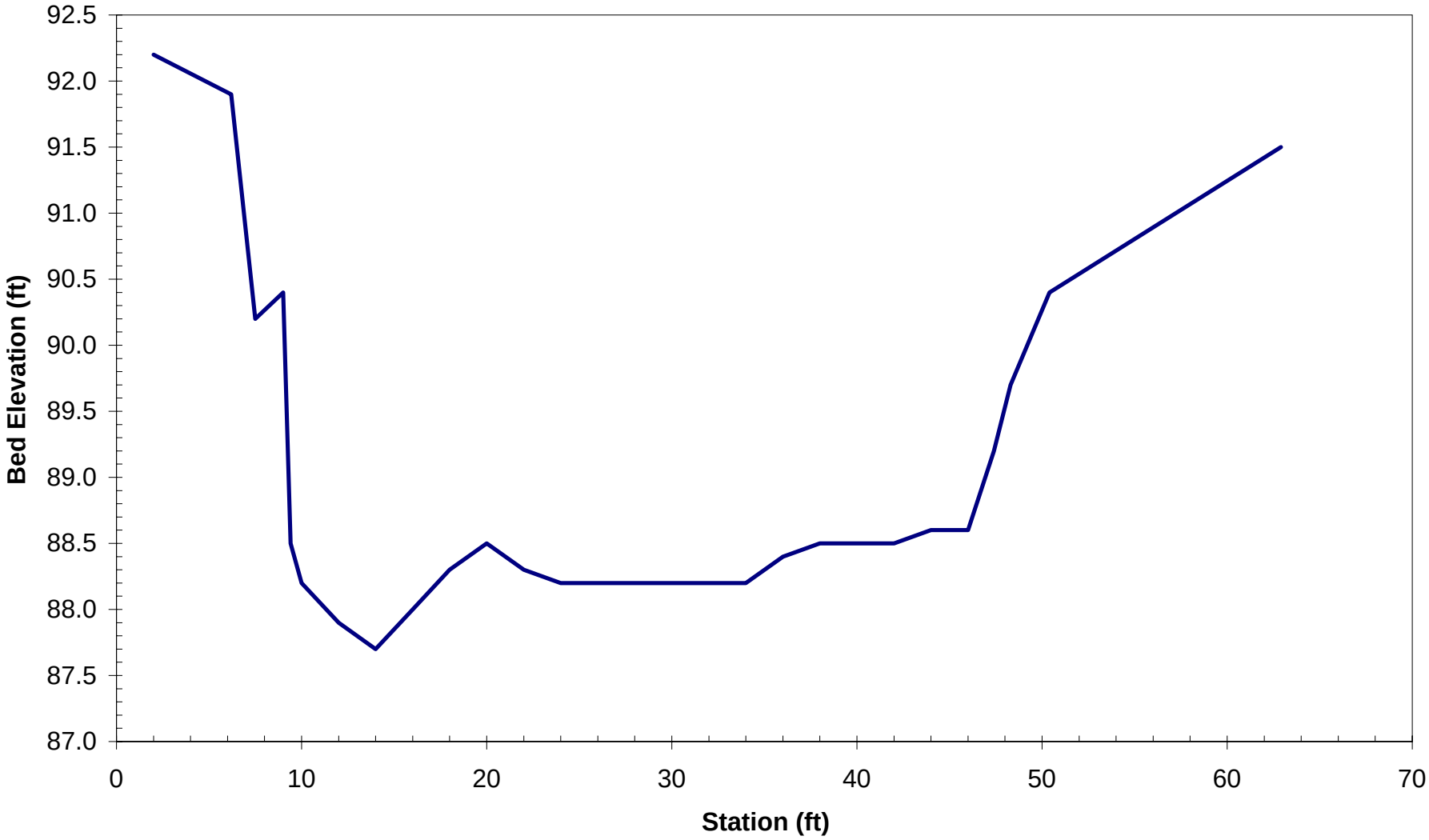
South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR1
Measured Transect Profile



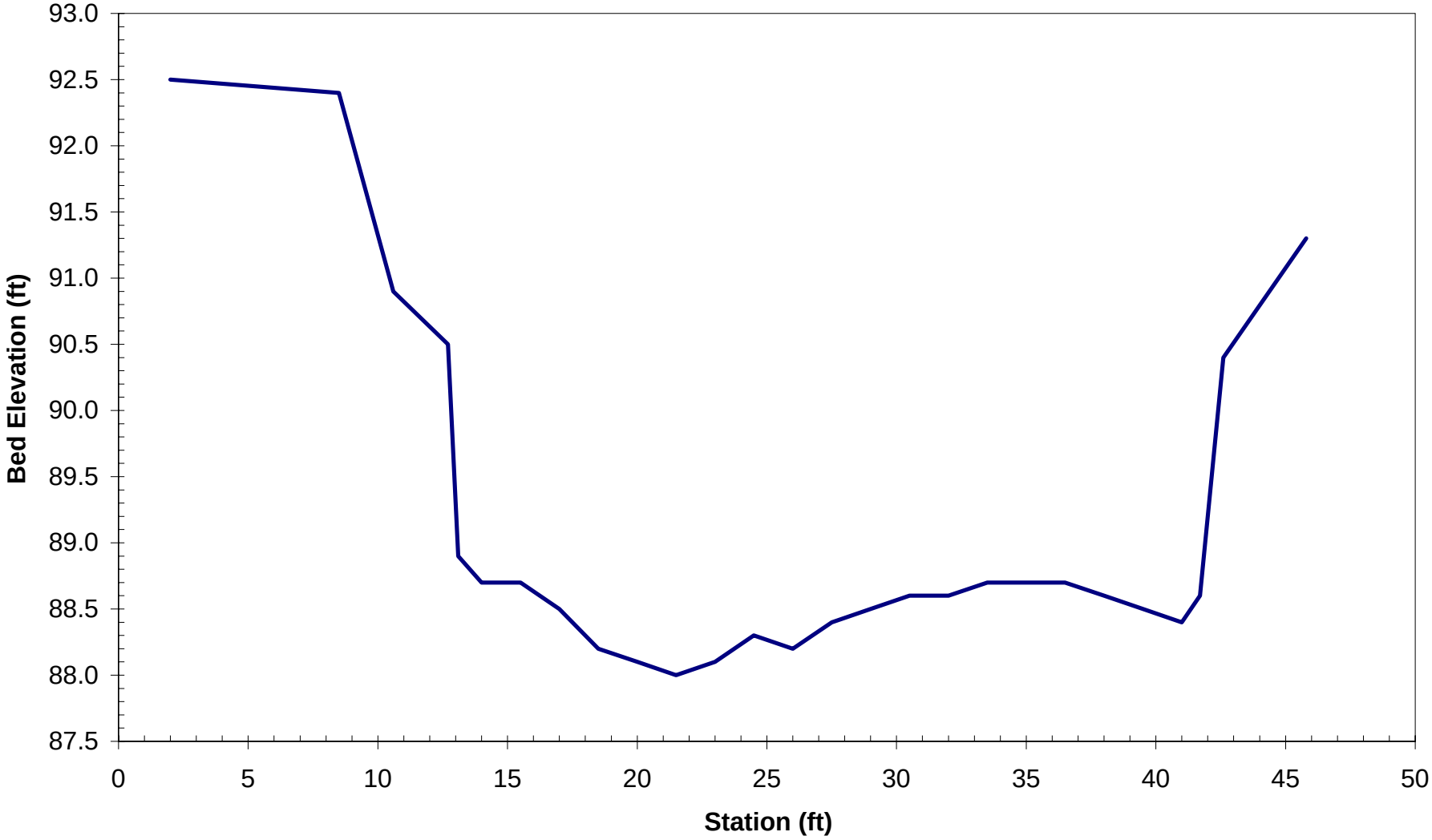
South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR2
Measured Transect Profile



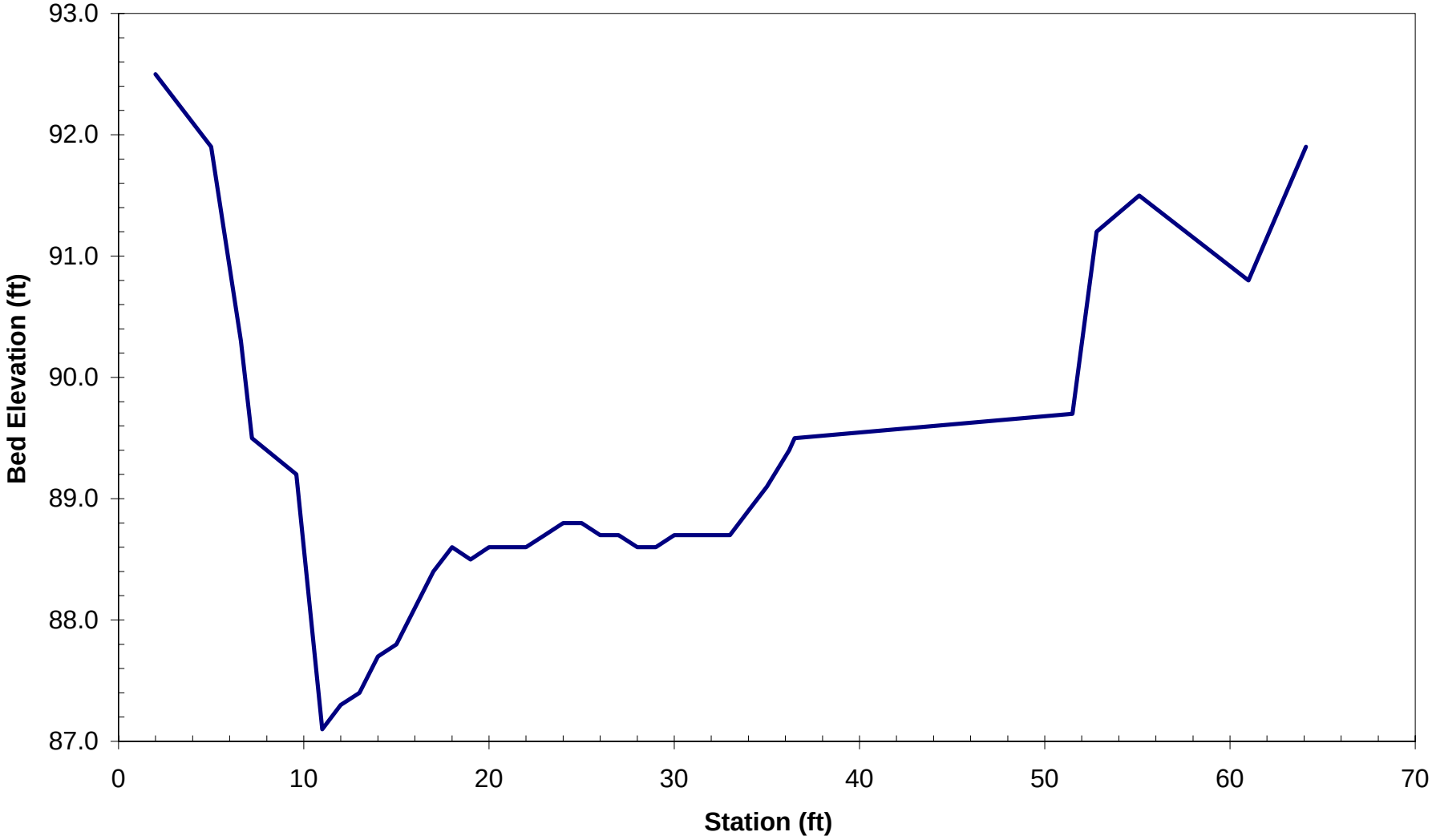
South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR3
Measured Transect Profile



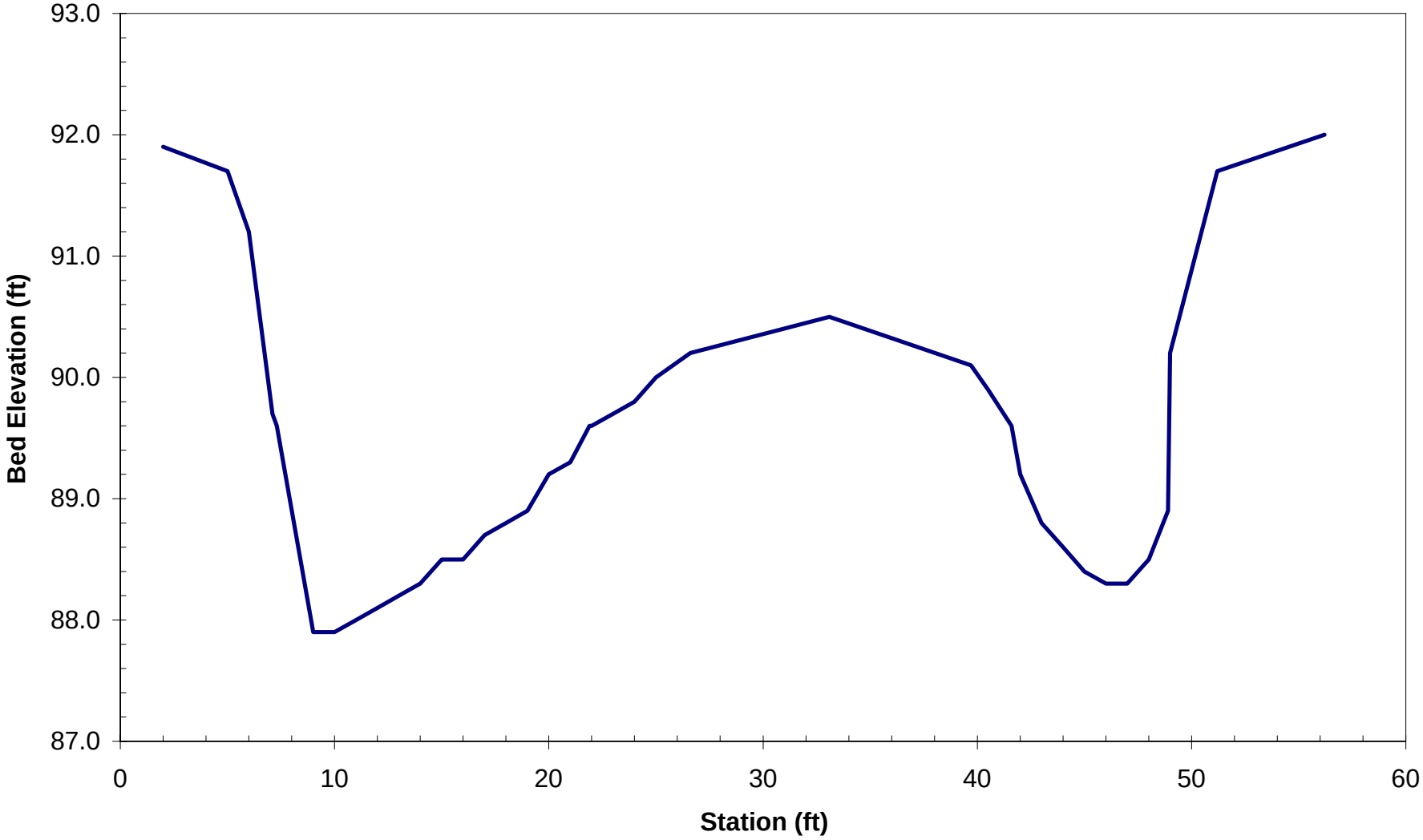
South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR4
Measured Transect Profile



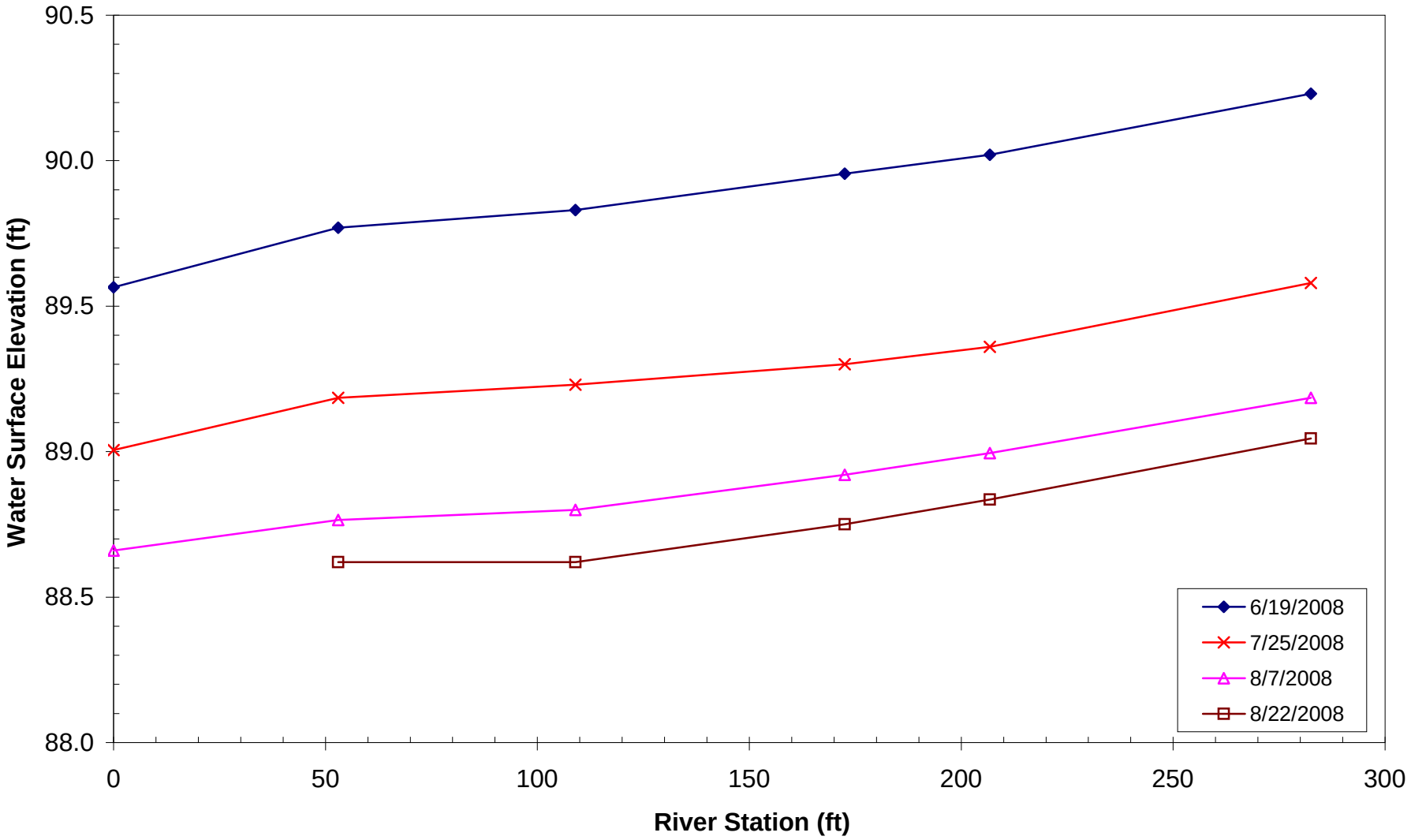
South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR5
Measured Transect Profile

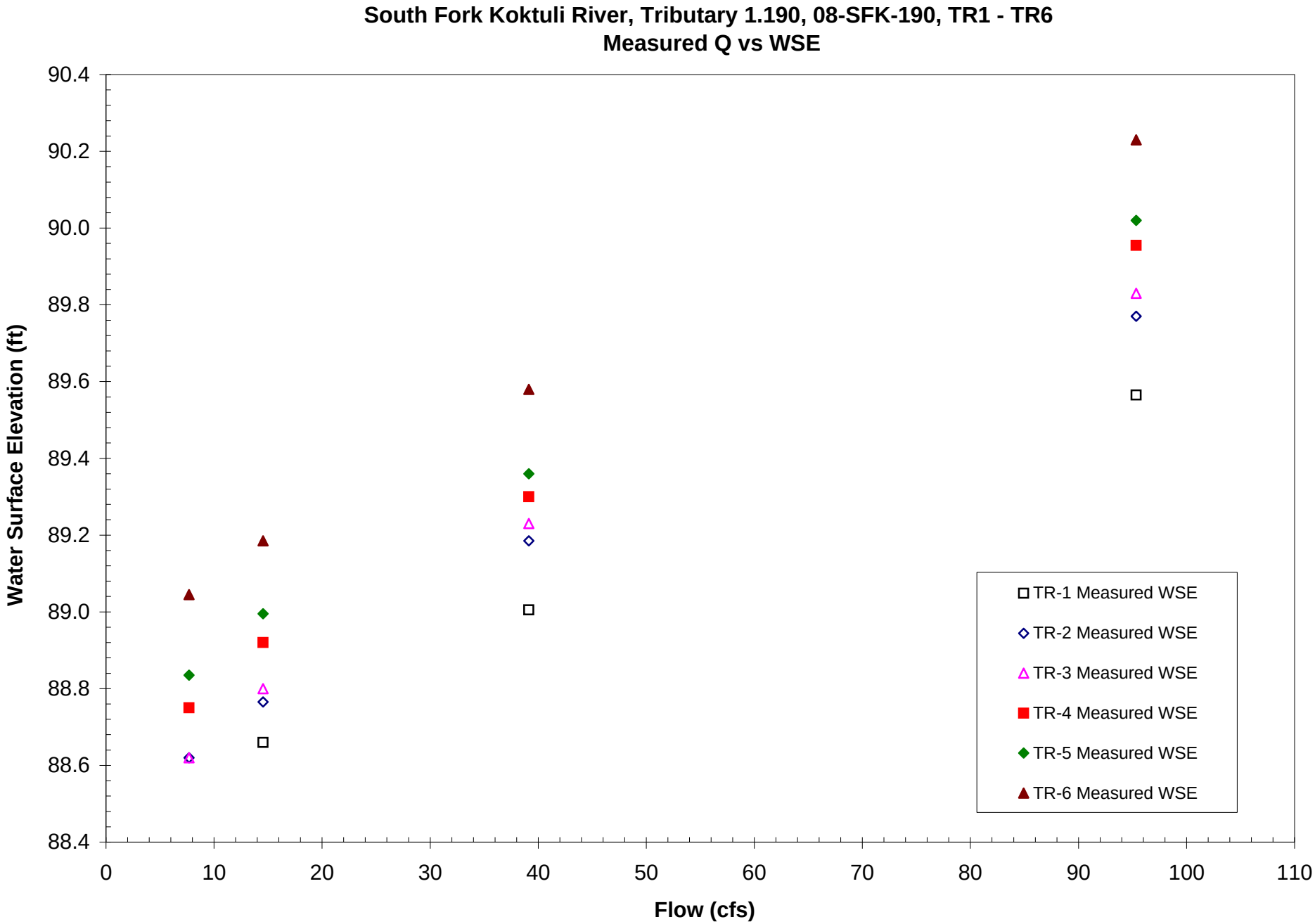


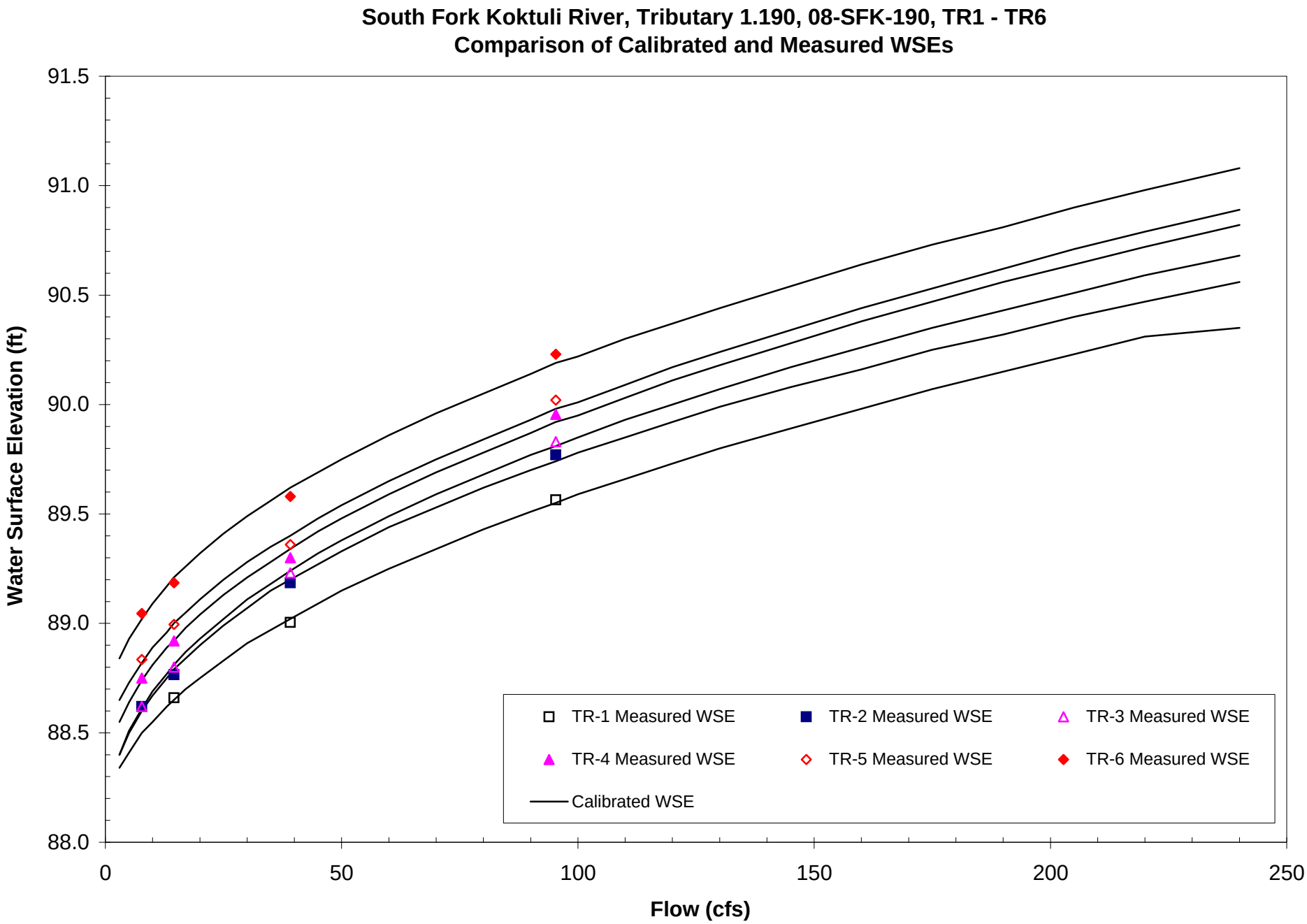
South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR6
Measured Transect Profile



South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR1 - TR6
Longitudinal Water Surface Elevation Profiles



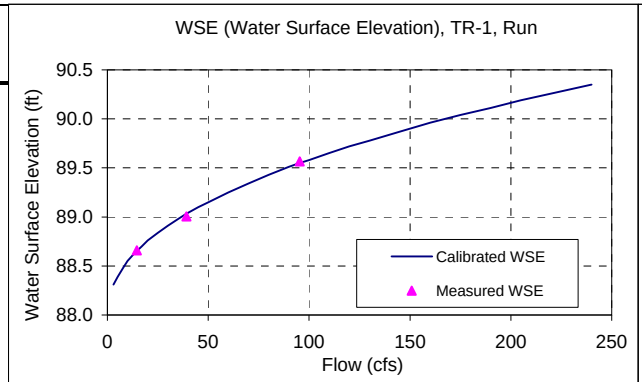

South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR1 - TR6
Measured Q vs WSE
Water Surface Elevation (ft)
90.4
90.2
90.0
89.8
89.6
89.4
89.2
89.0
88.8
88.6
88.4
0
10
20
30
40
50
60
70
80
90
100
110
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE

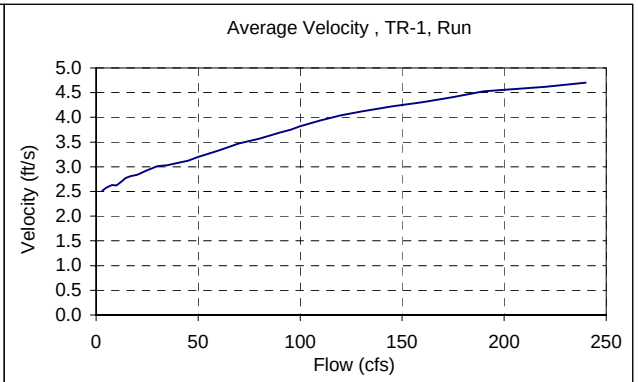

South Fork Koktuli River, Tributary 1.190, 08-SFK-190, TR1 - TR6
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
91.5
91.0
90.5
90.0
89.5
89.0
88.5
88.0
0
50
100
150
200
250
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE
Calibrated WSE

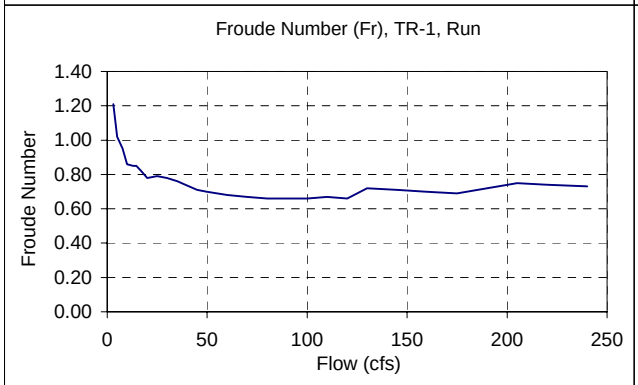
Stream: SF Koktuli River Tributary 1.190
Site: 08-SFK-190
Date: 7/25/2008
Calibration Flow: Mid

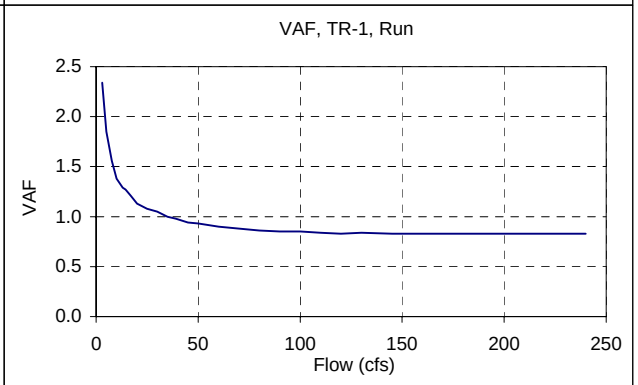
Reach: SFK-C (Trib 190)
Site: Trib 190
Transect: 1
Habitat: Run

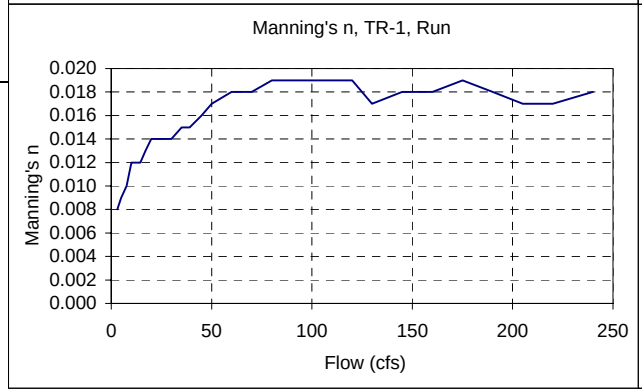
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	88.31	1.21	2.51	2.34	0.008	9.0
5	88.39	1.02	2.58	1.85	0.01	9.8
7.7	88.48	0.95	2.63	1.56	0.01	12.4
10	88.55	0.86	2.62	1.38	0.01	13.3
13	88.62	0.85	2.72	1.29	0.01	15.3
14.5	88.65	0.85	2.77	1.27	0.01	16.0
17	88.70	0.82	2.81	1.21	0.01	16.6
20	88.76	0.78	2.84	1.13	0.01	17.2
25	88.84	0.79	2.93	1.08	0.01	20.0
30	88.91	0.78	3.01	1.05	0.01	21.8
35	88.98	0.76	3.03	1.00	0.02	24.0
39.1	89.03	0.74	3.07	0.98	0.02	24.2
45	89.10	0.71	3.12	0.94	0.02	24.4
50	89.15	0.70	3.20	0.93	0.02	24.5
60	89.25	0.68	3.33	0.90	0.02	24.8
70	89.34	0.67	3.47	0.88	0.02	25.1
80	89.43	0.66	3.57	0.86	0.02	25.5
90	89.51	0.66	3.69	0.85	0.02	25.9
95.3	89.55	0.66	3.75	0.85	0.02	26.1
100	89.58	0.66	3.82	0.85	0.02	26.3
110	89.65	0.67	3.94	0.84	0.02	26.7
120	89.72	0.66	4.04	0.83	0.02	27.1
130	89.78	0.72	4.12	0.84	0.02	32.2
145	89.87	0.71	4.22	0.83	0.02	32.4
160	89.96	0.70	4.31	0.83	0.02	32.7
175	90.04	0.69	4.41	0.83	0.02	32.9
190	90.11	0.72	4.53	0.83	0.02	36.1
205	90.19	0.75	4.57	0.83	0.02	40.3
220	90.26	0.74	4.62	0.83	0.02	40.6
240.0	90.35	0.73	4.70	0.83	0.018	41.0

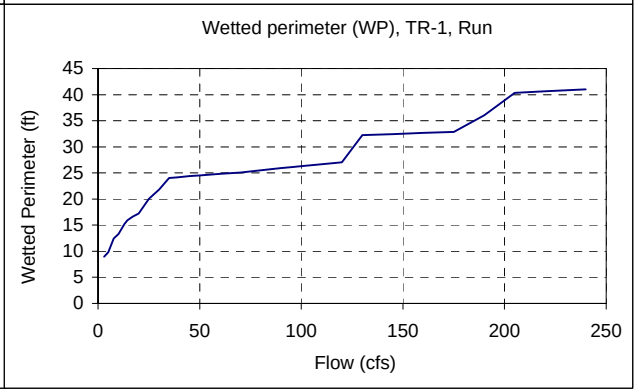








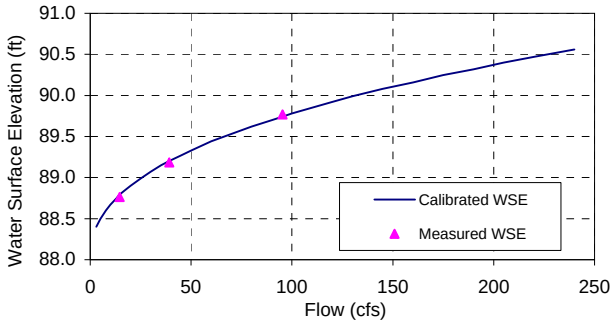


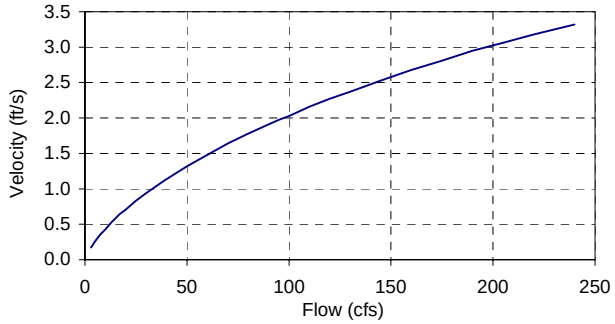


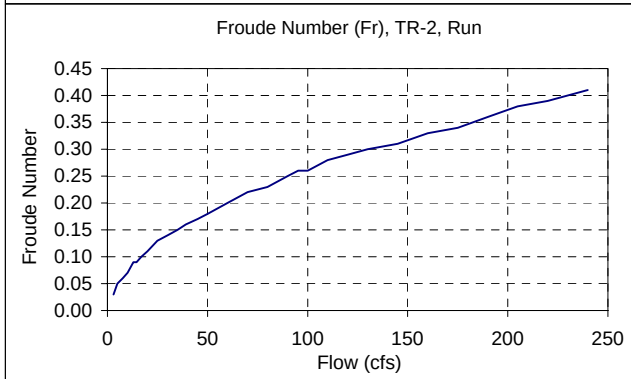
cTR1 - Transect hydraulic parameters

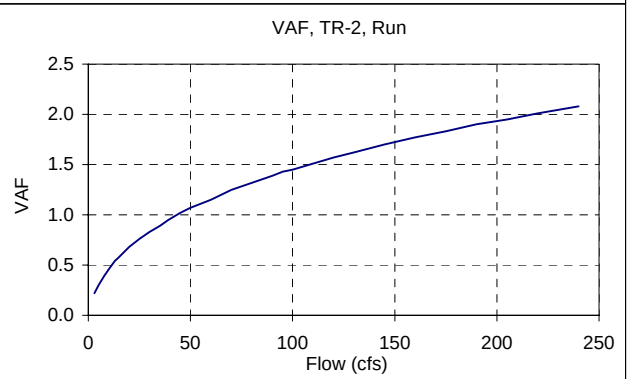
Stream: SF Koktuli River Tributary 1.190 **Reach:** SFK-C (Trib 190)
Site: 08-SFK-190 **Site:** Trib 190
Date: 7/25/2008 **Transect:** 2
Calibration Flow: Mid **Habitat:** Run

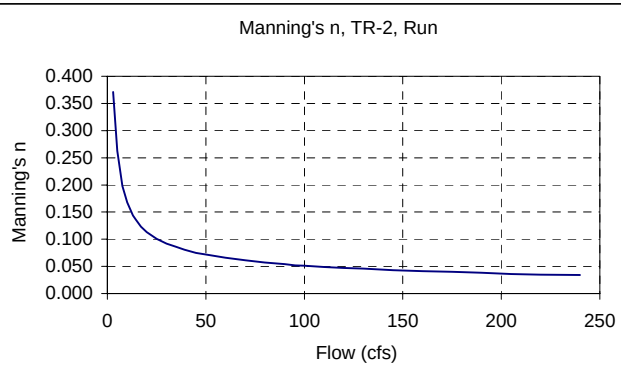
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	88.40	0.03	0.17	0.22	0.371	20.9
5	88.50	0.05	0.26	0.30	0.26	21.5
7.7	88.60	0.06	0.36	0.39	0.20	22.1
10	88.67	0.07	0.43	0.46	0.17	22.5
13	88.75	0.09	0.53	0.54	0.14	23.0
14.5	88.79	0.09	0.57	0.57	0.14	23.2
17	88.84	0.10	0.64	0.62	0.12	23.5
20	88.90	0.11	0.71	0.68	0.11	23.8
25	88.99	0.13	0.83	0.76	0.10	24.1
30	89.07	0.14	0.94	0.83	0.09	24.4
35	89.15	0.15	1.04	0.89	0.09	24.6
39.1	89.20	0.16	1.12	0.95	0.08	24.8
45	89.27	0.17	1.23	1.02	0.08	25.1
50	89.33	0.18	1.32	1.07	0.07	25.3
60	89.44	0.20	1.48	1.15	0.07	25.8
70	89.53	0.22	1.64	1.25	0.06	26.5
80	89.62	0.23	1.78	1.32	0.06	27.2
90	89.70	0.25	1.91	1.39	0.05	27.8
95.3	89.74	0.26	1.98	1.43	0.05	28.1
100	89.78	0.26	2.03	1.45	0.05	28.4
110	89.85	0.28	2.16	1.51	0.05	28.9
120	89.92	0.29	2.27	1.57	0.05	29.4
130	89.99	0.30	2.37	1.62	0.05	30.0
145	90.08	0.31	2.53	1.70	0.04	30.6
160	90.16	0.33	2.68	1.77	0.04	31.2
175	90.25	0.34	2.81	1.83	0.04	32.2
190	90.32	0.36	2.95	1.90	0.04	33.5
205	90.40	0.38	3.06	1.95	0.04	35.0
220	90.47	0.39	3.18	2.01	0.04	36.3
240.0	90.56	0.41	3.32	2.08	0.034	37.9

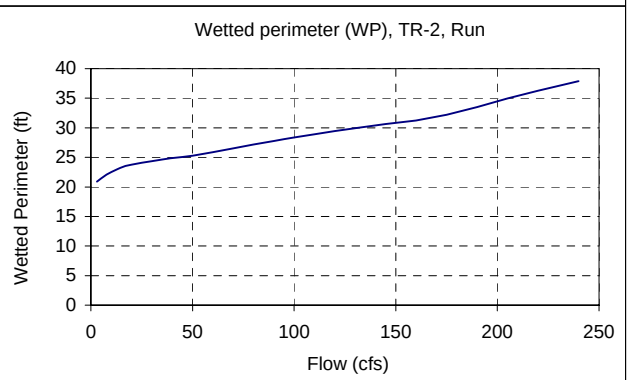










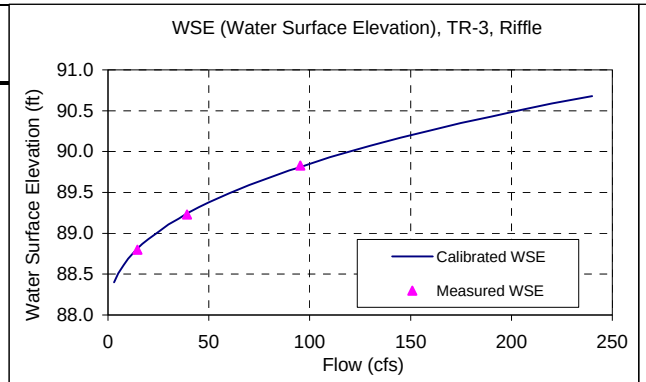


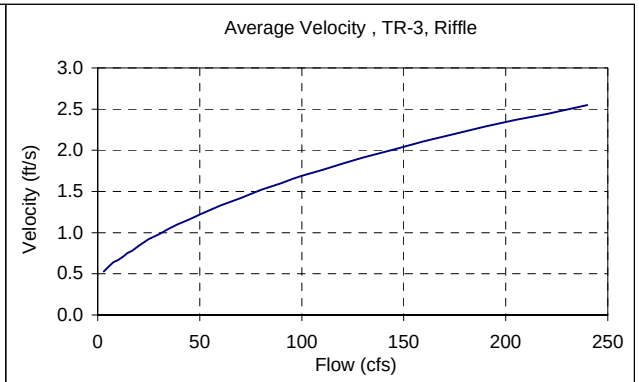
cTR2 - Transect hydraulic parameters

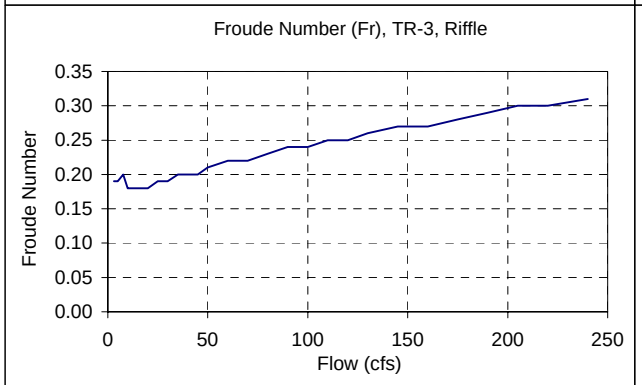
Stream: SF Koktuli River Tributary 1.190
Site: 08-SFK-190
Date: 7/25/2008
Calibration Flow: Mid

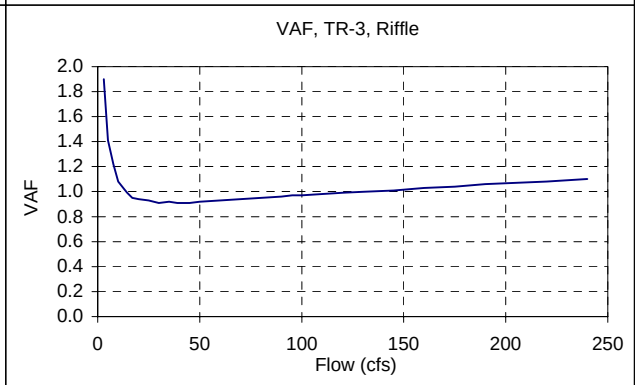
Reach: SFK-C (Trib 190)
Site: Trib 190
Transect: 3
Habitat: Riffle

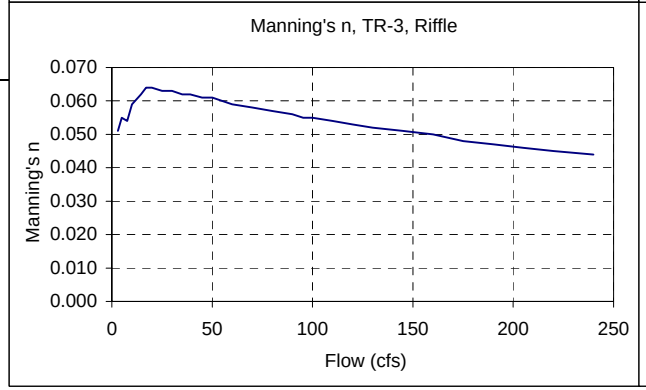
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	88.40	0.19	0.53	1.90	0.051	25.0
5	88.51	0.19	0.58	1.41	0.06	29.9
7.7	88.61	0.20	0.64	1.22	0.05	36.9
10	88.69	0.18	0.67	1.08	0.06	37.2
13	88.77	0.18	0.72	1.02	0.06	37.5
14.5	88.81	0.18	0.75	0.99	0.06	37.6
17	88.87	0.18	0.78	0.95	0.06	37.8
20	88.93	0.18	0.84	0.94	0.06	38.0
25	89.02	0.19	0.92	0.93	0.06	38.3
30	89.11	0.19	0.98	0.91	0.06	38.6
35	89.18	0.20	1.05	0.92	0.06	38.9
39.1	89.24	0.20	1.10	0.91	0.06	39.1
45	89.32	0.20	1.16	0.91	0.06	39.3
50	89.38	0.21	1.22	0.92	0.06	39.5
60	89.49	0.22	1.33	0.93	0.06	39.9
70	89.59	0.22	1.42	0.94	0.06	40.2
80	89.68	0.23	1.52	0.95	0.06	40.5
90	89.77	0.24	1.60	0.96	0.06	40.8
95.3	89.81	0.24	1.65	0.97	0.06	41.0
100	89.85	0.24	1.69	0.97	0.06	41.1
110	89.93	0.25	1.76	0.98	0.05	41.5
120	90.00	0.25	1.84	0.99	0.05	41.8
130	90.07	0.26	1.91	1.00	0.05	42.0
145	90.17	0.27	2.01	1.01	0.05	42.5
160	90.26	0.27	2.11	1.03	0.05	43.0
175	90.35	0.28	2.20	1.04	0.05	44.6
190	90.43	0.29	2.29	1.06	0.05	45.3
205	90.51	0.30	2.37	1.07	0.05	46.3
220	90.59	0.30	2.44	1.08	0.05	47.3
240.0	90.68	0.31	2.55	1.10	0.044	48.5

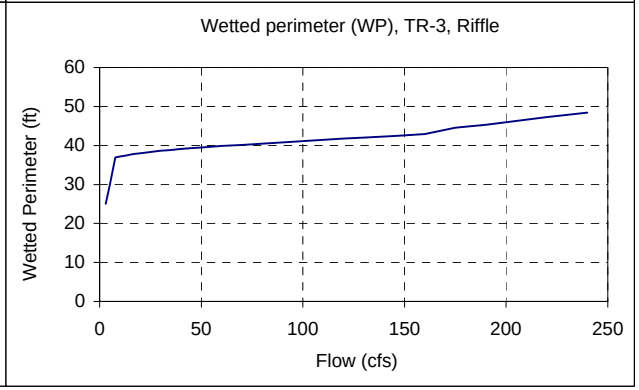








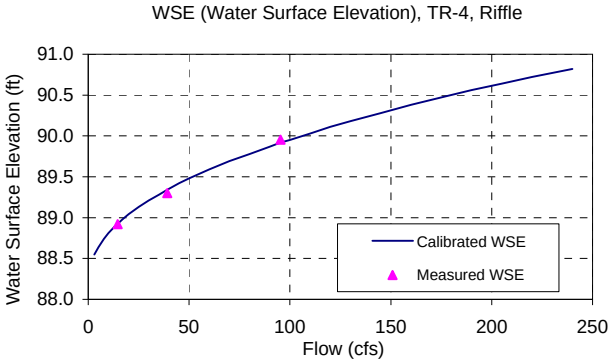


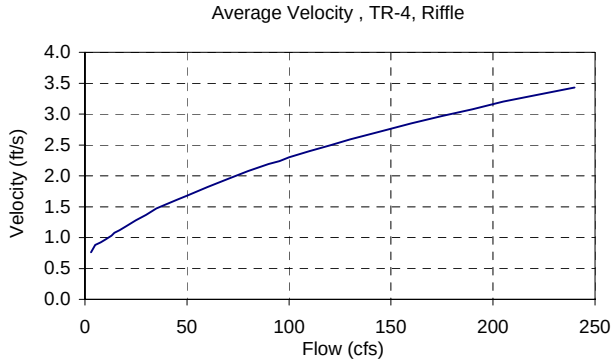


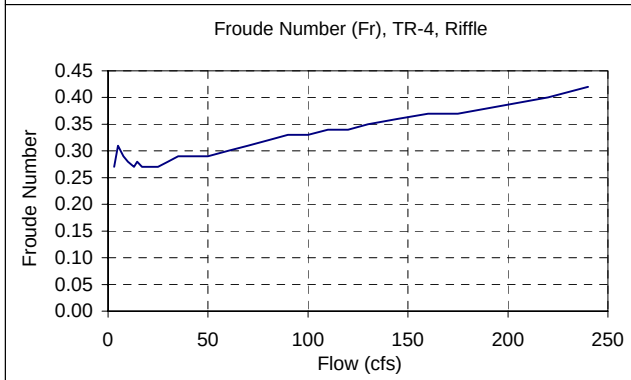
cTR3 - Transect hydraulic parameters

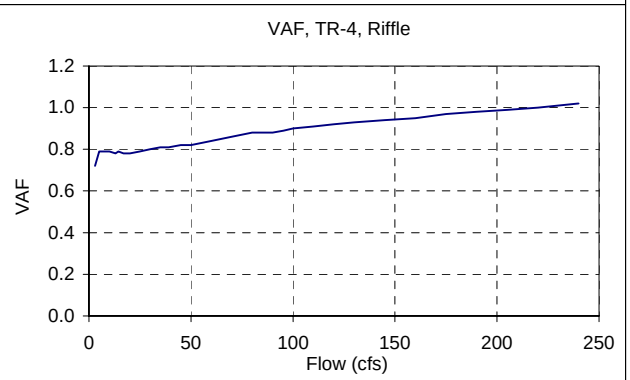
Stream: SF Koktuli River Tributary 1.190 **Reach:** SFK-C (Trib 190)
Site: 08-SFK-190 **Site:** Trib 190
Date: 7/25/2008 **Transect:** 4
Calibration Flow: Mid **Habitat:** Riffle

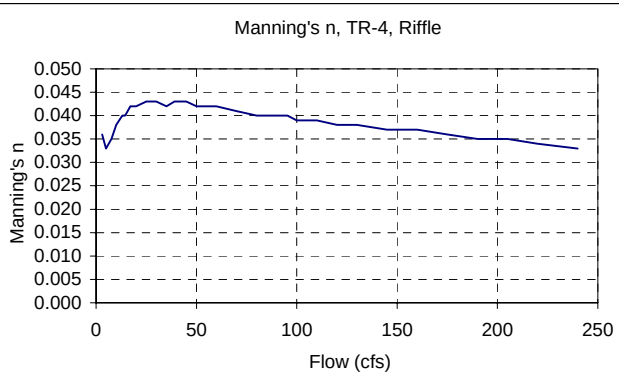
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	88.55	0.27	0.76	0.72	0.036	16.8
5	88.64	0.31	0.88	0.79	0.03	22.6
7.7	88.74	0.29	0.92	0.79	0.04	27.8
10	88.81	0.28	0.97	0.79	0.04	28.4
13	88.89	0.27	1.03	0.78	0.04	29.0
14.5	88.92	0.28	1.08	0.79	0.04	29.1
17	88.98	0.27	1.12	0.78	0.04	29.2
20	89.04	0.27	1.18	0.78	0.04	29.3
25	89.13	0.27	1.28	0.79	0.04	29.5
30	89.21	0.28	1.37	0.80	0.04	29.7
35	89.28	0.29	1.47	0.81	0.04	29.9
39.1	89.34	0.29	1.53	0.81	0.04	30.0
45	89.42	0.29	1.61	0.82	0.04	30.2
50	89.48	0.29	1.68	0.82	0.04	30.3
60	89.59	0.30	1.82	0.84	0.04	30.5
70	89.69	0.31	1.95	0.86	0.04	30.7
80	89.78	0.32	2.08	0.88	0.04	30.9
90	89.87	0.33	2.19	0.88	0.04	31.1
95.3	89.92	0.33	2.24	0.89	0.04	31.2
100	89.95	0.33	2.30	0.90	0.04	31.3
110	90.03	0.34	2.40	0.91	0.04	31.5
120	90.11	0.34	2.49	0.92	0.04	31.6
130	90.18	0.35	2.59	0.93	0.04	31.8
145	90.28	0.36	2.72	0.94	0.04	32.0
160	90.38	0.37	2.85	0.95	0.04	32.2
175	90.47	0.37	2.97	0.97	0.04	32.5
190	90.56	0.38	3.08	0.98	0.04	33.1
205	90.64	0.39	3.20	0.99	0.04	33.9
220	90.72	0.40	3.30	1.00	0.03	34.6
240.0	90.82	0.42	3.43	1.02	0.033	35.5

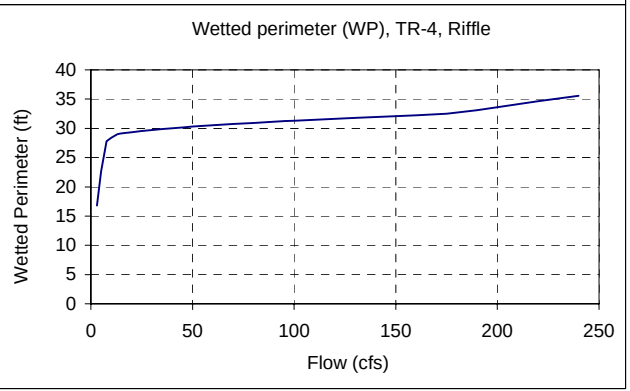










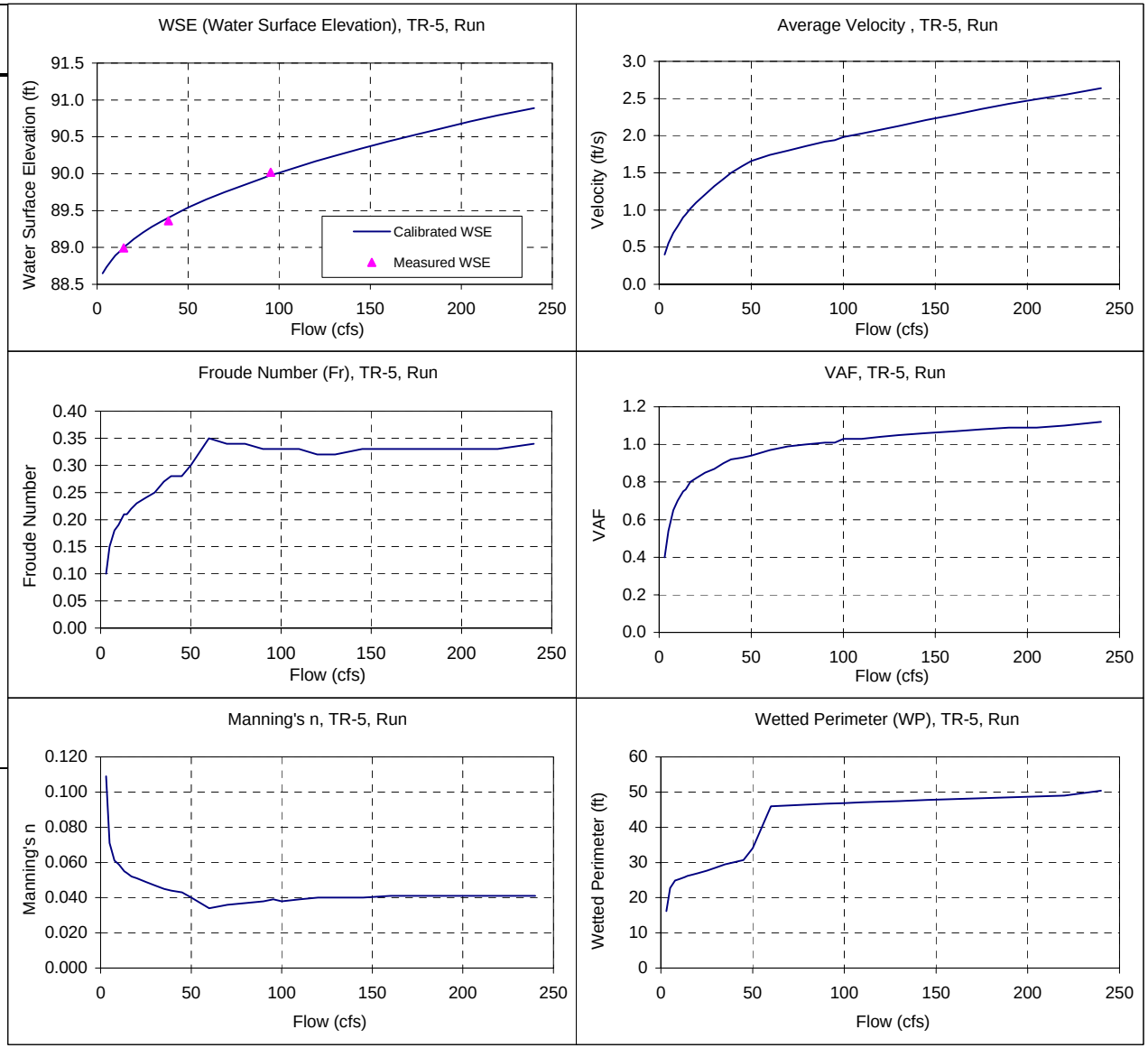


cTR4 - Transect hydraulic parameters

Stream: SF Koktuli River Tributary 1.190
Site: 08-SFK-190
Date: 7/25/2008
Calibration Flow: Mid

Reach: SFK-C (Trib 190)
Site: Trib 190
Transect: 5
Habitat: Run

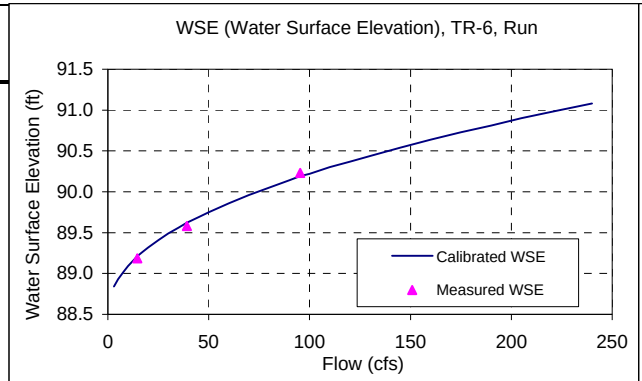
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	88.65	0.10	0.40	0.40	0.109	16.2
5	88.73	0.15	0.55	0.54	0.07	22.7
7.7	88.82	0.18	0.69	0.65	0.06	24.9
10	88.89	0.19	0.78	0.70	0.06	25.3
13	88.96	0.21	0.90	0.75	0.06	25.8
14.5	89.00	0.21	0.94	0.76	0.05	26.2
17	89.05	0.22	1.02	0.80	0.05	26.5
20	89.11	0.23	1.10	0.82	0.05	26.9
25	89.20	0.24	1.21	0.85	0.05	27.6
30	89.28	0.25	1.32	0.87	0.05	28.6
35	89.35	0.27	1.42	0.90	0.05	29.4
39.1	89.40	0.28	1.50	0.92	0.04	29.9
45	89.48	0.28	1.59	0.93	0.04	30.7
50	89.54	0.30	1.66	0.94	0.04	34.0
60	89.65	0.35	1.74	0.97	0.03	46.0
70	89.75	0.34	1.80	0.99	0.04	46.2
80	89.84	0.34	1.86	1.00	0.04	46.5
90	89.93	0.33	1.92	1.01	0.04	46.7
95.3	89.98	0.33	1.94	1.01	0.04	46.8
100	90.01	0.33	1.98	1.03	0.04	46.9
110	90.09	0.33	2.03	1.03	0.04	47.1
120	90.17	0.32	2.08	1.04	0.04	47.3
130	90.24	0.32	2.13	1.05	0.04	47.5
145	90.34	0.33	2.21	1.06	0.04	47.7
160	90.44	0.33	2.28	1.07	0.04	48.0
175	90.53	0.33	2.36	1.08	0.04	48.3
190	90.62	0.33	2.43	1.09	0.04	48.5
205	90.71	0.33	2.49	1.09	0.04	48.7
220	90.79	0.33	2.55	1.10	0.04	49.0
240.0	90.89	0.34	2.64	1.12	0.041	50.4

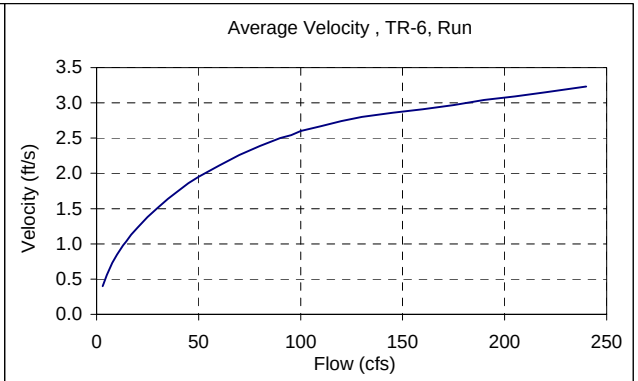


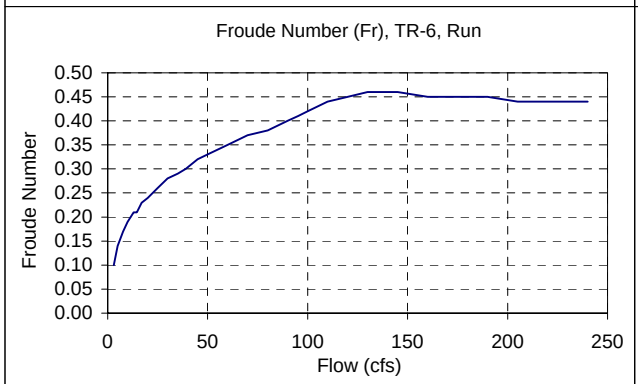
cTR5 - Transect hydraulic parameters

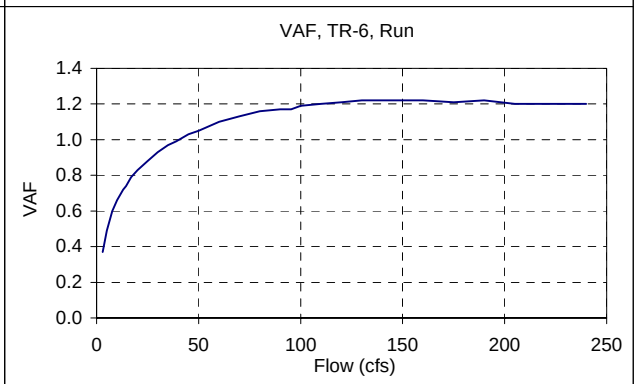
Stream: SF Koktuli River Tributary 1.190 **Reach:** Tributary 190
Site: 08-SFK-190 **Site:** Trib 190
Date: 7/25/2008 **Transect:** 6
Calibration Flow: Mid **Habitat:** Run

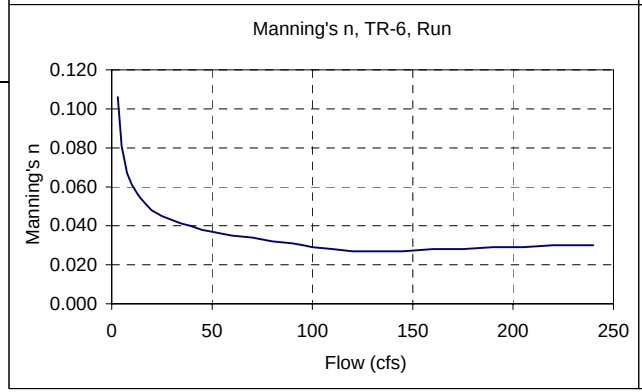
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	88.84	0.10	0.40	0.37	0.106	16.5
5	88.93	0.14	0.56	0.49	0.08	17.9
7.7	89.02	0.17	0.73	0.60	0.07	18.8
10	89.09	0.19	0.85	0.66	0.06	19.4
13	89.17	0.21	0.98	0.72	0.06	20.1
14.5	89.21	0.21	1.03	0.74	0.05	20.6
17	89.26	0.23	1.13	0.79	0.05	21.1
20	89.32	0.24	1.23	0.83	0.05	21.8
25	89.41	0.26	1.38	0.88	0.05	22.5
30	89.49	0.28	1.51	0.93	0.04	23.1
35	89.56	0.29	1.64	0.97	0.04	23.7
39.1	89.62	0.30	1.73	0.99	0.04	24.5
45	89.69	0.32	1.86	1.03	0.04	25.4
50	89.75	0.33	1.95	1.05	0.04	26.2
60	89.86	0.35	2.11	1.10	0.04	27.7
70	89.96	0.37	2.26	1.13	0.03	28.9
80	90.05	0.38	2.39	1.16	0.03	30.1
90	90.14	0.40	2.50	1.17	0.03	32.3
95.3	90.19	0.41	2.54	1.17	0.03	34.1
100	90.22	0.42	2.60	1.19	0.03	35.2
110	90.30	0.44	2.67	1.20	0.03	38.3
120	90.37	0.45	2.74	1.21	0.03	41.0
130	90.44	0.46	2.80	1.22	0.03	43.7
145	90.54	0.46	2.86	1.22	0.03	46.2
160	90.64	0.45	2.91	1.22	0.03	46.5
175	90.73	0.45	2.97	1.21	0.03	46.7
190	90.81	0.45	3.04	1.22	0.03	47.0
205	90.90	0.44	3.09	1.20	0.03	47.3
220	90.98	0.44	3.15	1.20	0.03	47.5
240.0	91.08	0.44	3.23	1.20	0.030	47.8

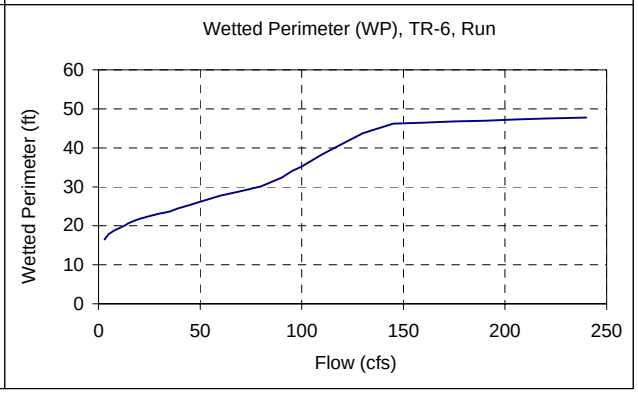




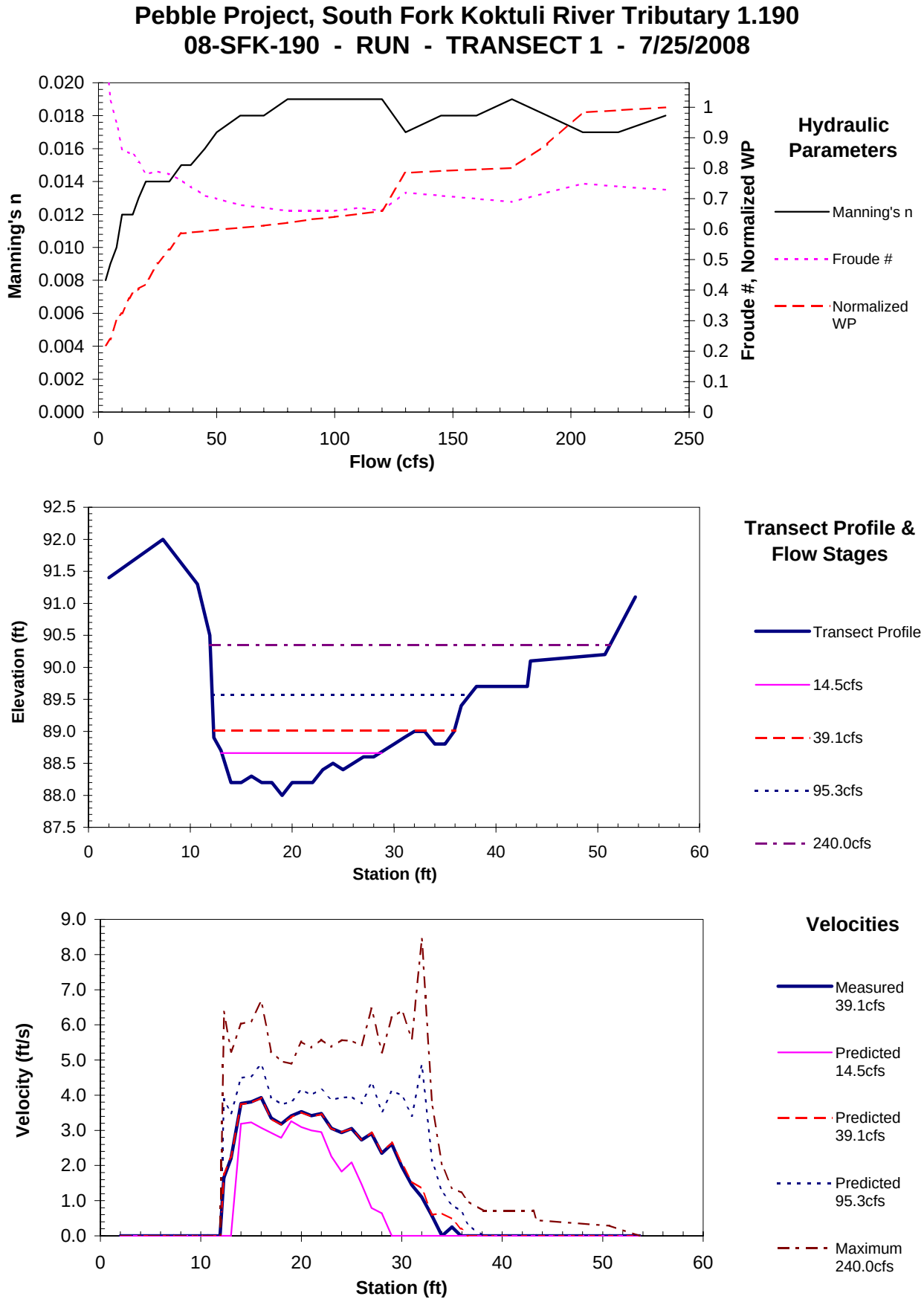






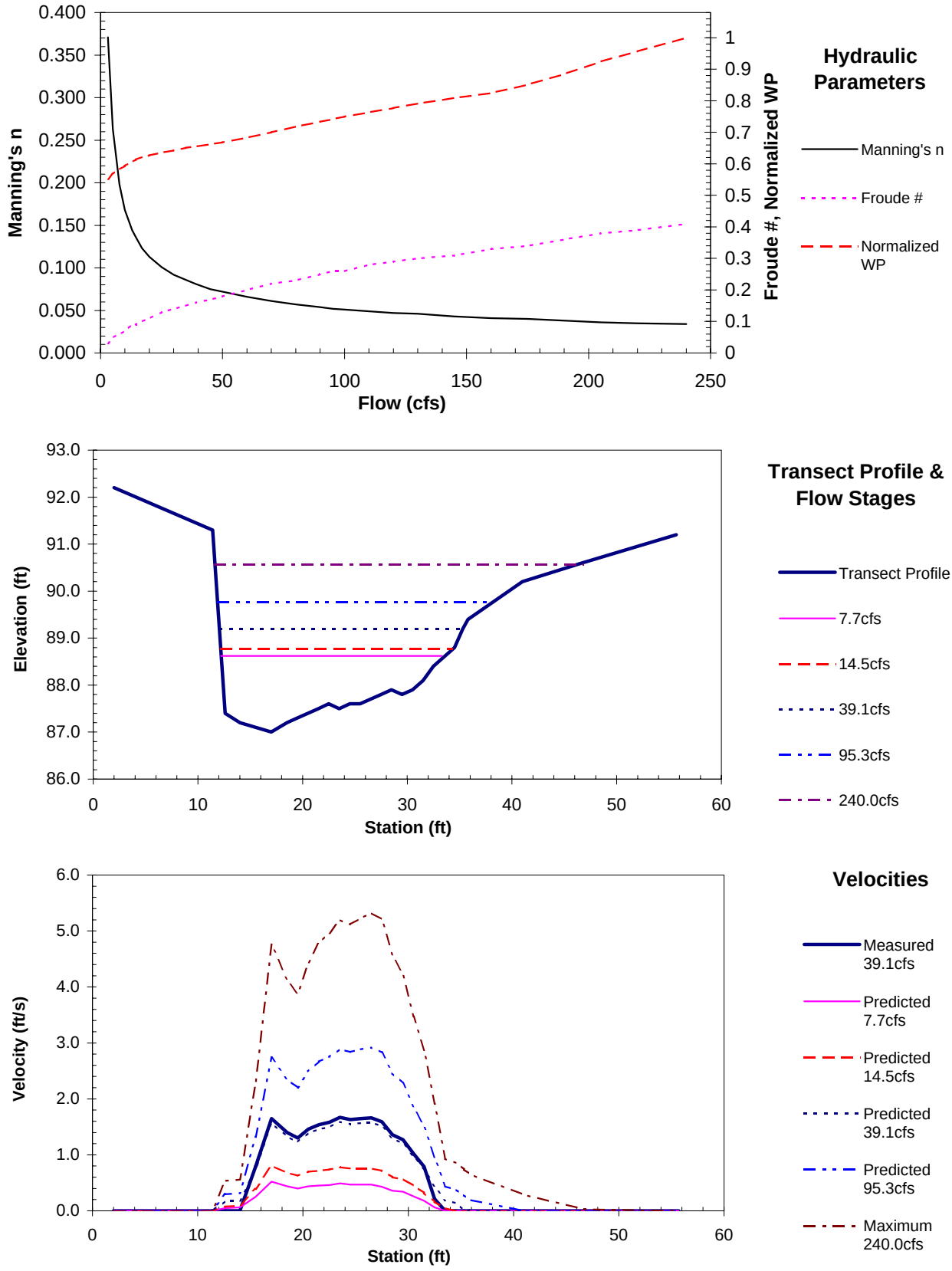


cTR6 - Transect hydraulic parameters

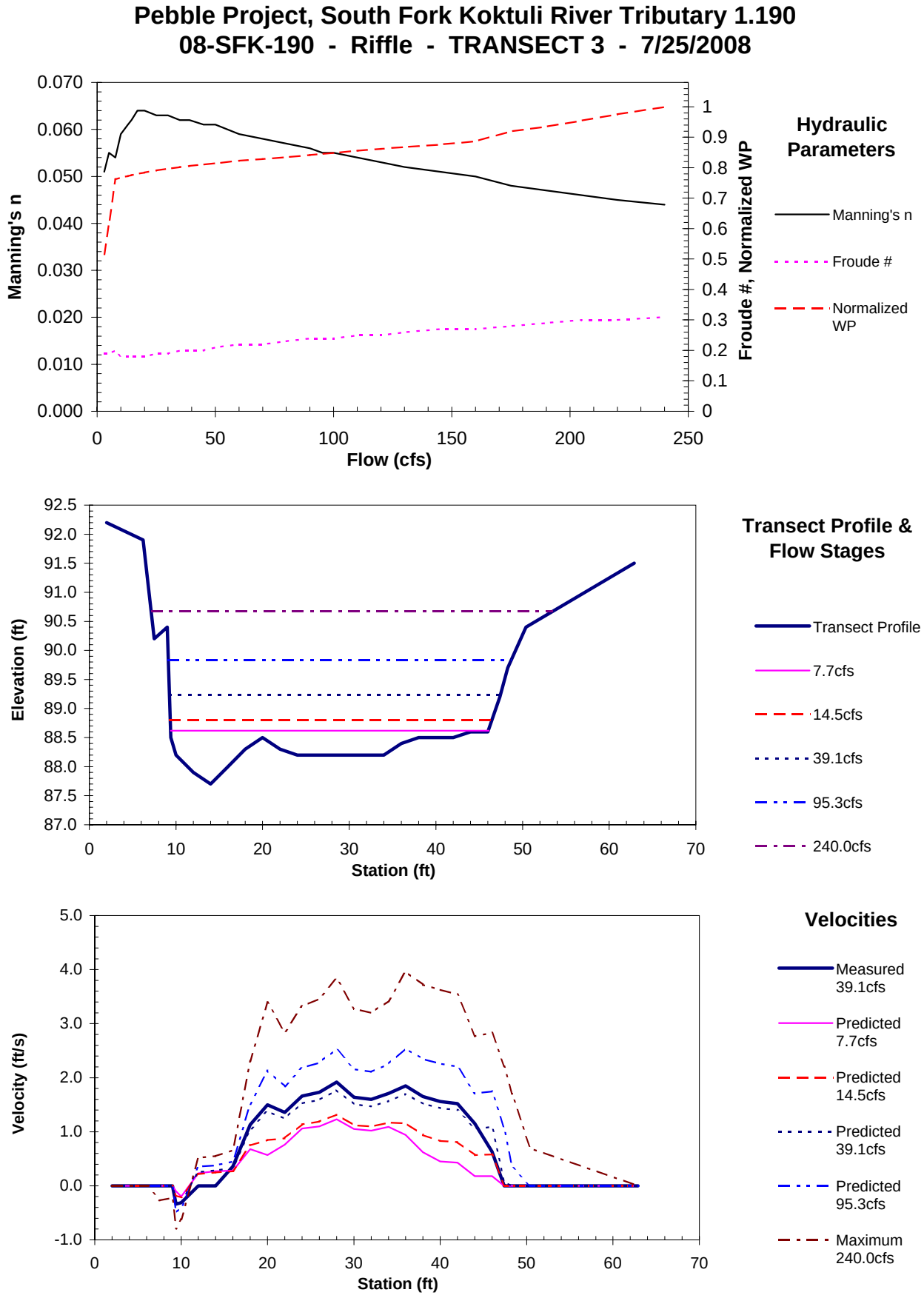


Transect hydraulic summary plots

Pebble Project, South Fork Koktuli River Tributary 1.190
08-SFK-190 - RUN - TRANSECT 2 - 7/25/2008

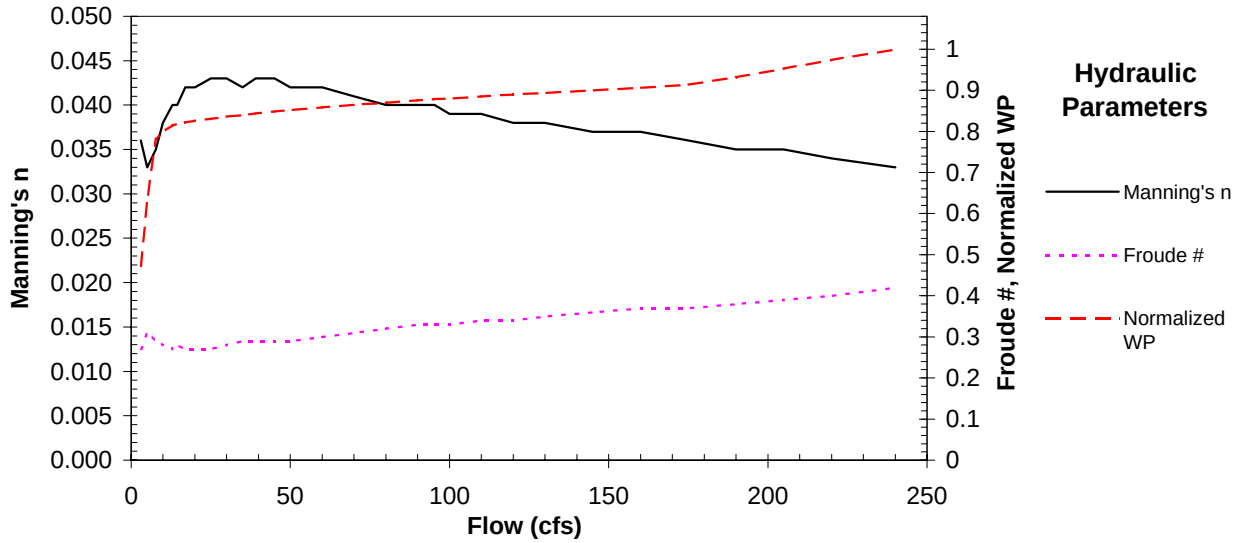


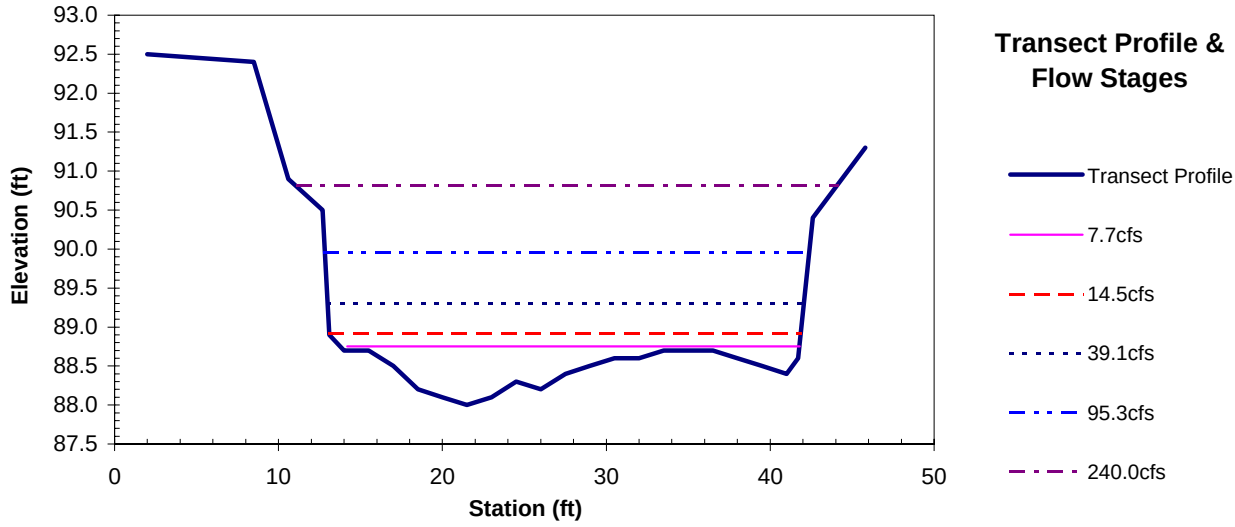
Transect hydraulic summary plots

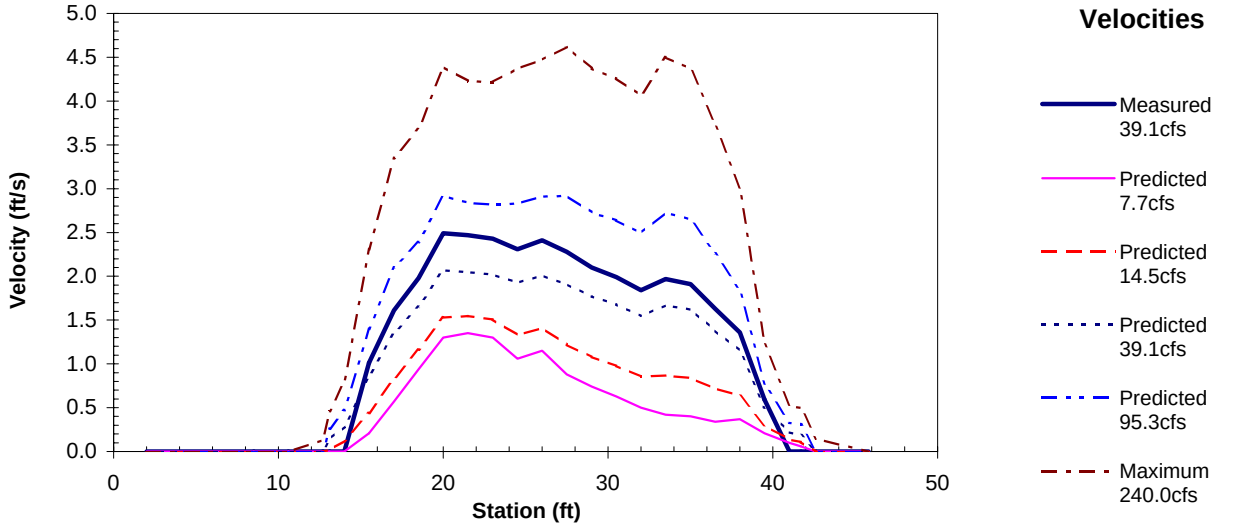


Transect hydraulic summary plots

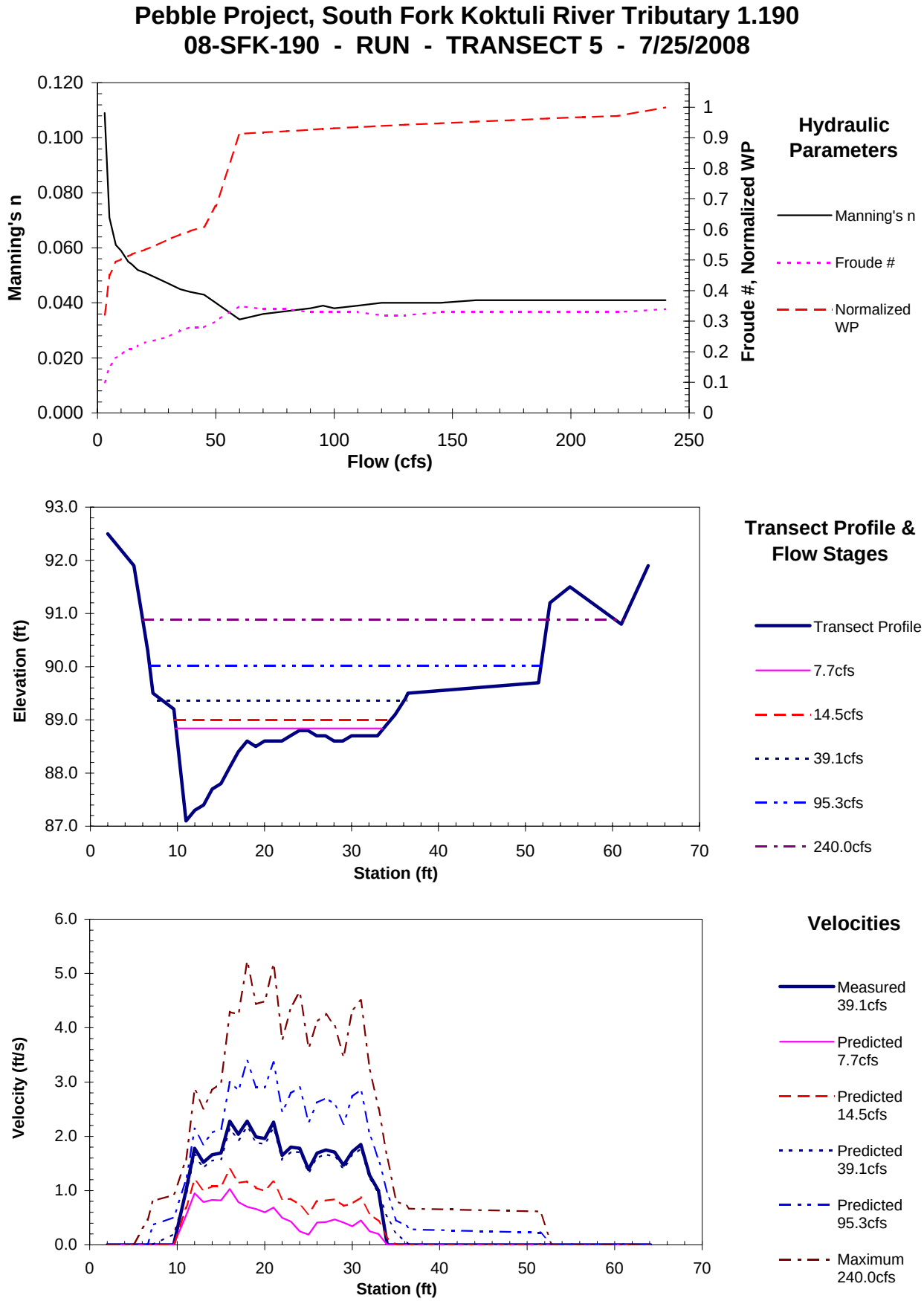
Pebble Project, South Fork Koktuli River Tributary 1.190
08-SFK-190 - Riffle - TRANSECT 4 - 7/25/2008





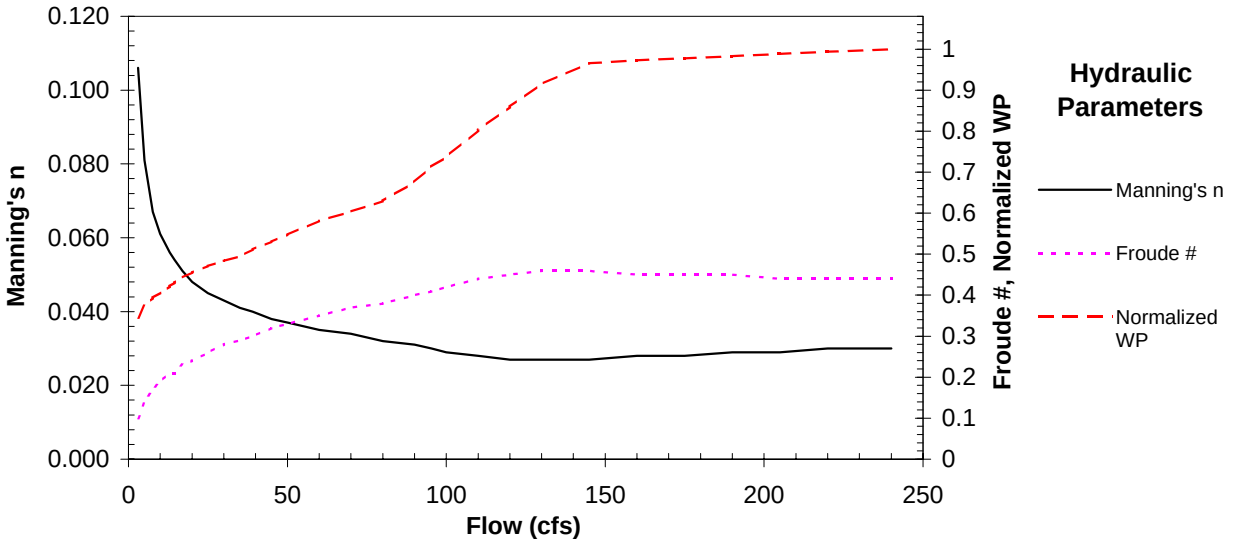


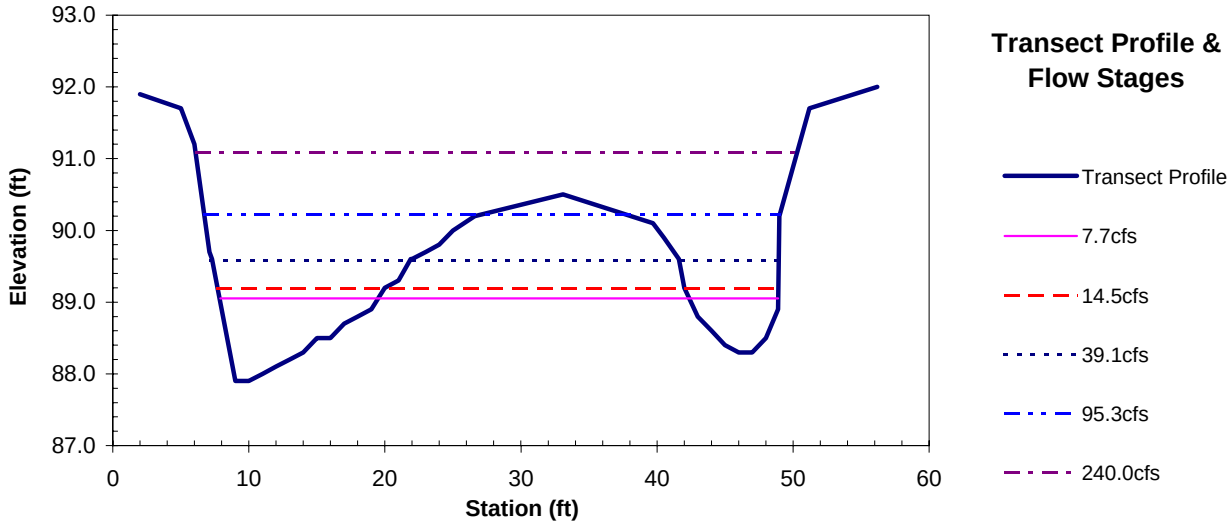
Transect hydraulic summary plots

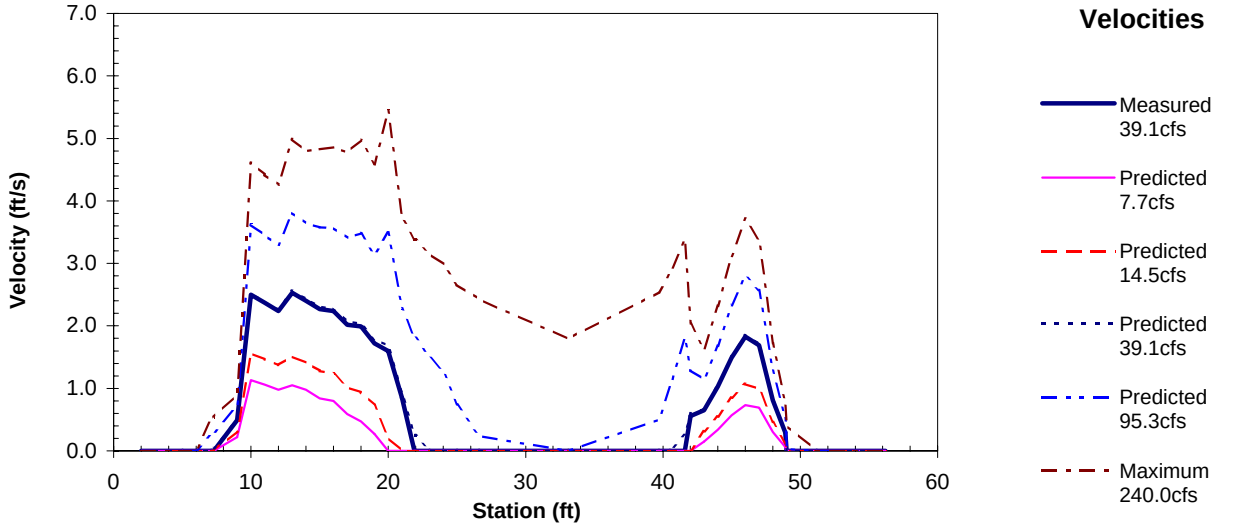


Transect hydraulic summary plots

Pebble Project, South Fork Koktuli River Tributary 1.190
08-SFK-190 - RUN - TRANSECT 6 - 7/25/2008







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      08-SFK-190  07/25/08
RUN                        0708Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  13.0
QARD  14.5
QARD  17.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.1
QARD  45.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  95.3
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 145.0
QARD 160.0
QARD 175.0
QARD 190.0
QARD 205.0
QARD 220.0
QARD 240.0
XSEC  1000     1000. 1.0     88.07    .00235
      1000  2.091.42  7.391.99 10.791.34 11.990.50 12.388.86 13.088.66
      1000 14.088.21 15.088.21 16.088.31 17.088.16 18.088.16 19.087.96
      1000 20.088.16 21.088.16 22.088.21 23.088.36 24.088.46 25.088.41
      1000 26.088.51 27.088.61 28.088.61 29.088.66 30.088.81 31.088.86
      1000 32.088.96 33.088.96 34.088.81 35.088.76 35.988.96 36.689.38
      1000 38.189.73 43.189.74 43.490.05 50.790.19 53.791.13
NS    1000      11.9      11.9      11.9      11.9      11.9      11.9
NS    1000      45.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6      45.6      45.6      45.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6 .02  43.6 .04  43.6 .06  43.6      43.6      11.9
NS    1000      11.9      11.9      11.9      11.9      11.9
WSL   1000     88.31     88.39     88.48     88.55     88.62     88.65
WSL   1000     88.70     88.76     88.84     88.91     88.98     89.03
WSL   1000     89.10     89.15     89.25     89.34     89.43     89.51
```

IFG4 Data Deck - TR1

IFG4 Data Deck (continued)

```
WSL   1000     89.55     89.58     89.65     89.72     89.78     89.87
WSL   1000     89.96     90.04     90.11     90.19     90.26     90.35
CAL1  1000     89.01      39.1
VEL1  1000                     1.65 2.20 3.76 3.81 3.93 3.35 3.18 3.41
VEL1  1000 3.53 3.42 3.48 3.06 2.94 3.05 2.73 2.91 2.35 2.61 1.97 1.45
VEL1  1000 1.10 0.57 0.00 0.25 0.00
CAL2  1000     89.57      95.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     88.66      14.5
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR1

IFG4 Data Deck

```
     Pebble      08-SFK-190  07/25/08
RUN                         0708Q                                        TRANSECT 2
IOC        1101100100001000101000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  13.0
QARD  14.5
QARD  17.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.1
QARD  45.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  95.3
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 145.0
QARD 160.0
QARD 175.0
QARD 190.0
QARD 205.0
QARD 220.0
QARD 240.0
XSEC  1000     1000. 1.0     88.07    .00235
      1000  2.092.20 11.491.32 12.687.44 14.087.19 15.587.09 17.087.04
      1000 18.587.19 19.587.29 20.587.39 21.587.54 22.587.59 23.587.54
      1000 24.587.59 25.587.64 26.587.69 27.587.79 28.587.89 29.587.84
      1000 30.587.94 31.588.14 32.588.44 33.588.64 34.588.84 35.389.19
      1000 35.889.40 41.090.22 46.790.55 55.791.23
NS    1000      11.9      11.9      23.6 .6   32.6      43.6      54.6
NS    1000      54.6      54.6      45.6      45.6      54.6      56.6
NS    1000      56.6      54.6      45.6      45.6      45.6      43.6
NS    1000      32.6      23.6 .13  22.9 .25  22.9      22.9      23.6
NS    1000      11.9      11.9      11.9      11.9
WSL   1000     88.40     88.50     88.60     88.67     88.75     88.79
WSL   1000     88.84     88.90     88.99     89.07     89.15     89.20
WSL   1000     89.27     89.33     89.44     89.53     89.62     89.70
WSL   1000     89.74     89.78     89.85     89.92     89.99     90.08
WSL   1000     90.16     90.25     90.32     90.40     90.47     90.56
```

IFG4 Data Deck (continued)

```
CAL1  1000     89.19      39.1
VEL1  1000           0.00 0.00 0.79 1.65 1.40 1.30 1.46 1.54 1.58 1.67
VEL1  1000 1.63 1.65 1.66 1.59 1.36 1.27 1.02 0.79 0.21 0.00 0.00 0.00
VEL1  1000
CAL2  1000     89.77      95.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     88.77      14.5
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     88.62       7.7
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck - TR2

IFG4 Data Deck

```
     Pebble      08-SFK-190  07/25/08
RIFFLE                      0708Q                                    TRANSECT 3
IOC       11011001000010001010000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  13.0
QARD  14.5
QARD  17.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.1
QARD  45.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  95.3
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 145.0
QARD 160.0
QARD 175.0
QARD 190.0
QARD 205.0
QARD 220.0
QARD 240.0
XSEC  1000     1000. 1.0     88.07    .00235
      1000  2.092.18  6.291.87  7.590.25  9.090.37  9.488.53 10.088.23
      1000 12.087.93 14.087.73 16.087.98 18.088.28 20.088.48 22.088.33
      1000 24.088.23 26.088.23 28.088.23 30.088.23 32.088.23 34.088.23
      1000 36.088.38 38.088.48 40.088.53 42.088.53 44.088.58 46.088.58
      1000 47.489.23 48.389.70 50.490.42 62.991.52
NS    1000      11.9      11.9      11.9      11.9      23.6      23.6
NS    1000 .3   24.6      23.6      23.6      23.6      23.6      34.6
NS    1000      43.6      43.6      43.6      45.6      45.6      45.6
NS    1000      43.6      43.6      43.6      43.6      34.6 .046 32.6
NS    1000      21.6      11.9      11.9      11.9
WSL   1000     88.40     88.51     88.61     88.69     88.77     88.81
WSL   1000     88.87     88.93     89.02     89.11     89.18     89.24
WSL   1000     89.32     89.38     89.49     89.59     89.68     89.77
WSL   1000     89.81     89.85     89.93     90.00     90.07     90.17
WSL   1000     90.26     90.35     90.43     90.51     90.59     90.68
```

IFG4 Data Deck (continued)

```
CAL1  1000     89.23      39.1
VEL1  1000                    -0.34-0.31 0.00 0.00 0.36 1.13 1.50 1.36
VEL1  1000 1.66 1.73 1.92 1.64 1.60 1.71 1.85 1.65 1.56 1.52 1.15 0.63
VEL1  1000 0.00
CAL2  1000     89.83      95.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     88.80      14.5
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     88.62       7.7
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble      08-SFK-190  07/25/08
RIFFLE                      0708Q                                    TRANSECT 4
IOC       11011001000010001010000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  13.0
QARD  14.5
QARD  17.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.1
QARD  45.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  95.3
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 145.0
QARD 160.0
QARD 175.0
QARD 190.0
QARD 205.0
QARD 220.0
QARD 240.0
XSEC  1000     1000. 1.0     88.20    .00235
      1000  2.092.51  8.592.36 10.690.92 12.790.52 13.188.90 14.088.75
      1000 15.588.65 17.088.50 18.588.25 20.088.10 21.588.00 23.088.05
      1000 24.588.30 26.088.25 27.588.45 29.088.50 30.588.55 32.088.60
      1000 33.588.65 35.088.65 36.588.65 38.088.60 39.588.50 41.088.45
      1000 41.788.60 42.690.44 45.891.27
NS    1000      11.9      11.9      11.9      11.9 .25  23.6 .15  23.6
NS    1000      34.6      43.6      45.6      45.6      54.6      54.6
NS    1000      54.6      45.6      45.6      43.6      43.6      43.6
NS    1000      43.6      34.6      23.6      23.6      23.6 .25  22.9
NS    1000      22.9      11.9      11.9
WSL   1000     88.55     88.64     88.74     88.81     88.89     88.92
WSL   1000     88.98     89.04     89.13     89.21     89.28     89.34
WSL   1000     89.42     89.48     89.59     89.69     89.78     89.87
WSL   1000     89.92     89.95     90.03     90.11     90.18     90.28
WSL   1000     90.38     90.47     90.56     90.64     90.72     90.82
```

IFG4 Data Deck (continued)

```
CAL1  1000     89.30      39.1
VEL1  1000                     0.00 0.00 1.01 1.61 1.98 2.49 2.47 2.43
VEL1  1000 2.31 2.41 2.28 2.10 1.99 1.84 1.97 1.91 1.63 1.36 0.59 0.00
VEL1  1000 0.00
CAL2  1000     89.96      95.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     88.92      14.5
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     88.75       7.7
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble      08-SFK-190  07/25/08
RUN                        0708Q                                  TRANSECT 5
IOC       1101100100001000101000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  13.0
QARD  14.5
QARD  17.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.1
QARD  45.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  95.3
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 145.0
QARD 160.0
QARD 175.0
QARD 190.0
QARD 205.0
QARD 220.0
QARD 240.0
XSEC  1000     1000. 1.0     88.34    .00235
      1000  2.092.49  5.091.87  6.690.27  7.289.47  9.689.16 11.087.06
      1000 12.087.26 13.087.41 14.087.66 15.087.81 16.088.06 17.088.36
      1000 18.088.56 19.088.51 20.088.56 21.088.56 22.088.56 23.088.66
      1000 24.088.76 25.088.76 26.088.66 27.088.66 28.088.61 29.088.61
      1000 30.088.71 31.088.66 32.088.71 33.088.71 34.088.91 35.089.06
      1000 36.289.36 36.589.51 51.589.65 52.891.20 55.191.51 61.090.79
      1000 64.191.90
NS    1000      11.9      11.9      11.9      11.9      22.9      34.6
NS    1000      34.6      34.6      34.6      34.6      45.6      45.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      45.6      45.6      45.6      43.6      43.6      43.6
NS    1000      43.6      43.6      32.6      23.6 .08  22.9 0.15 22.9
NS    1000      22.9      11.9      11.9      11.9 2.5  11.9      11.9
NS    1000      11.9
WSL   1000     88.65     88.73     88.82     88.89     88.96     89.00
```

IFG4 Data Deck - TR5

IFG4 Data Deck (continued)

```
WSL   1000     89.05     89.11     89.20     89.28     89.35     89.40
WSL   1000     89.48     89.54     89.65     89.75     89.84     89.93
WSL   1000     89.98     90.01     90.09     90.17     90.24     90.34
WSL   1000     90.44     90.53     90.62     90.71     90.79     90.89
CAL1  1000     89.36      39.1
VEL1  1000                     0.00 1.00 1.78 1.52 1.66 1.69 2.28 2.04
VEL1  1000 2.28 1.99 1.96 2.26 1.65 1.80 1.78 1.39 1.69 1.75 1.71 1.47
VEL1  1000 1.72 1.85 1.28 1.00 0.00 0.00 0.00
VEL1  1000
CAL2  1000     90.02      95.3
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     89.00      14.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     88.84       7.7
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble      08-SFK-190  07/25/08
RUN                          0708Q                                      TRANSECT 6
IOC        1101100100001000101000
QARD   3.0
QARD   5.0
QARD   7.7
QARD  10.0
QARD  13.0
QARD  14.5
QARD  17.0
QARD  20.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.1
QARD  45.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  95.3
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 145.0
QARD 160.0
QARD 175.0
QARD 190.0
QARD 205.0
QARD 220.0
QARD 240.0
XSEC  1000     1000. 1.0     88.49    .00235
      1000  2.091.93  5.091.73  6.091.15  7.189.67  7.389.58  9.087.88
      1000 10.087.93 11.087.98 12.088.08 13.088.23 14.088.28 15.088.48
      1000 16.088.53 17.088.73 18.088.83 19.088.93 20.089.18 21.089.33
      1000 21.989.58 22.089.58 23.089.73 24.089.83 25.090.03 26.690.16
      1000 33.190.50 39.790.10 40.589.93 41.689.58 42.089.23 43.088.83
      1000 44.088.63 45.088.43 46.088.33 47.088.28 48.088.48 48.988.88
      1000 49.090.17 51.291.73 56.292.01
NS    1000      11.9      11.9      11.9      11.9      22.9      34.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      45.6      45.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      34.6
NS    1000      33.9      23.6      23.6      22.9      22.9      22.9
NS    1000      32.6      34.6      34.6      45.6      43.6      23.6
NS    1000      11.9      11.9      11.9
WSL   1000     88.84     88.93     89.02     89.09     89.17     89.21
```

IFG4 Data Deck (continued)

```
WSL   1000     89.26     89.32     89.41     89.49     89.56     89.62
WSL   1000     89.69     89.75     89.86     89.96     90.05     90.14
WSL   1000     90.19     90.22     90.30     90.37     90.44     90.54
WSL   1000     90.64     90.73     90.81     90.90     90.98     91.08
CAL1  1000     89.58      39.1
VEL1  1000                     0.00 0.49 2.50 2.37 2.24 2.53 2.40 2.27
VEL1  1000 2.24 2.02 1.99 1.72 1.60 0.85 0.00
VEL1  1000                0.00 0.56 0.65 1.03 1.49 1.83 1.69 0.81 0.29
VEL1  1000
CAL2  1000     90.23      95.3
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     89.19      14.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     89.05       7.7
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek

Reach: UT-B

UT-B Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
08-UTC1-MS1-TR1	6.08	380.0	325.0	201.7		96.33	96.15	95.65		0.00	0.00	0.00		IFG4
08-UTC1-MS1-TR2	6.14	380.0	325.0	201.7		97.25	97.10	96.61		-0.02	-0.03	0.00		WSP
08-UTC1-MS1-TR3	6.16	380.0	325.0	201.7		97.57	97.33	97.06		-0.04	0.05	-0.04		WSP
08-UTC1-MS1-TR4	6.18	380.0	325.0	201.7		97.71	97.63	97.28		0.02	-0.02	0.02		WSP
08-UTC1-MS1-TR5	6.21	380.0	325.0	201.7		97.98	97.89	97.49		0.01	-0.04	0.03		WSP

* RK is an abbreviation for River Kilometer

Stream: Upper Talarik Creek

Reach: UT-B

Site: 08-UTC1-MS1

TR1:	08-UTC1-MS1-TR1	**Habitat Type:**	Pool	**River Kilometer:**	6.08
TR2:	08-UTC1-MS1-TR2	**Habitat Type:**	Pool	**River Kilometer:**	6.14
TR3:	08-UTC1-MS1-TR3	**Habitat Type:**	Pool	**River Kilometer:**	6.16
TR4:	08-UTC1-MS1-TR4	**Habitat Type:**	Run	**River Kilometer:**	6.18
TR5:	08-UTC1-MS1-TR5	**Habitat Type:**	Run	**River Kilometer:**	6.21

Stream: **Upper Talarik Creek**
Reach: **B**
Site: **08-UT1-MS1**

(1) Field Data

Level Loop and Headpin Elevations:

Date	BM1	BM2	BM3	4-RHP	5-RHP
6/24/2008	100.00	100.37		100.00	101.08
7/23/2008	100.00	100.36	101.38		
8/18/2008	100.00	100.37	101.39		101.09

(a) Elevations of control pins (BM, right HP [RHP], left HP [LHP]) are taken from the first half of each level loop survey
(b) Relative elevation changes among the control pins were 0.01ft.
(c) The small relative elevation changes indicated control pins were stable during the survey period.

Measured WSE:

There were two WSEs (Right and Left) measured on each transect for each flow,
and the average of the two was used as representative WSE for modeling.
High flow survey on 6/24/08 has only one WSE measured on the right side of the stream.

	Measured WSE(ft)				
Date	TR-1	TR-2	TR-3	TR-4	TR-5
6/24/2008	96.33	97.25	97.57	97.71	97.98
7/23/2008	96.15	97.10	97.33	97.63	97.89
8/18/2008	95.65	96.61	97.06	97.28	97.49

TR-1 WSE of 6/24/08 survey is estimated.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Measured Discharge (cfs)					
	TR-1	TR-2	TR-3	TR-4	TR-5	**Ave Q**
6/24/2008						**380**
7/23/2008		312.8	330.4	321.8	334.8	**325.0**
8/18/2008	201.6	205.8	201.8	188.1	211.3	**201.7**

Average Q of all transect was used as the representative flow for the site

Flow of June 24, 2008 was estimated using the gaged flows received from Knight Piesold:

There was no measured flow for the June (6/24/08) trip due to safety concern of fast current and deep flow. The flow discharge can be estimated using the daily flow measured/calculated at the three gaging stations set up by Knight Piesold on the APC land.

	APC1	APC2	APC3	
River Kilometer (RK)	14.359	9.846	2.240	(approximate values from S.Beck)
daily Flow (cfs) on 6/24/08	313.7	282.8	418.3	(daily flow from Knight Piesold)

APC1 is the most upstream station of the three gages, and APC3 is the most downstream one. APC2 is approximately in the middle of the three. APC2, however, has lower flow than APC3, and that may be due to the groundwater down-welling and/or distributions to side channels. The real cause of lower flow at APC2, however, is not in the scope of this discussion.

The PHABSIM site 08-UTC1-MS1 is located roughly in the middle of APC2 and APC3, and there is a tributary entering the Upper Talarik just below APC2. Without the tributary contribution, the flow at the site can be estimated using the flows of APC2 and APC3 with equal weighting of each. Due to the contribution of the tributary, the flow at the PHABSIM site is estimated with 3/4 weighting for the APC3 and 1/4 weighting for the APC2.
As the result, the Q at the PHABSIM site = 282.8*1/4+418.3*3/4=384.4 or approximately Q=380cfs.

calibration notes

Longitudinal WSE Slope:

Slopes are calculated using the measured WSEs and longitudinal distances.
Distances were originally estimated using the GPS coordinates in 7/09, but later in 12/09 were updated after TR locations were QA/QC'd with the field map and distance calculation was based on the channel center line.

Longitudinal TR Stations						
TR	TR-1	TR-2	TR-3	TR-4	TR-5	
LB	0.0					
RB	0.0					
GPS	0.0	183.8	263.8	365.8	437.8	<-- based on GPS coordinates of the TR control pins
Station	0.0	183.8	250.8	334.6	413.0	<-- based on GPS, channel centerline, and QA/QC'd TR locations.

Longitudinal WSE Slope						
TR	TR-1	TR-2	TR-3	TR-4	TR-5	
6/24/2008	-	0.500%	0.494%	0.412%	0.400%	<-- TR-1 WSE is an estimated, corrected value
7/23/2008	-	0.514%	0.471%	0.442%	0.420%	<-- use this slope in calibration
8/18/2008	-	0.522%	0.564%	0.489%	0.447%	

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.
The TR-5 slope S=0.420% of 7/23/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Discharge (cfs)				
	TR-1	TR-2	TR-3	TR-4	TR-5
6/24/2008					
7/23/2008		94.00	95.23	94.23	94.69
8/18/2008	91.65	94.01	95.01	94.18	94.79
Invert	91.65	94.01	95.23	94.23	94.79
SZF	91.65	94.01	95.73	95.73	95.73

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
SZF of the upstream transect must be no less than that of its downstream transect.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

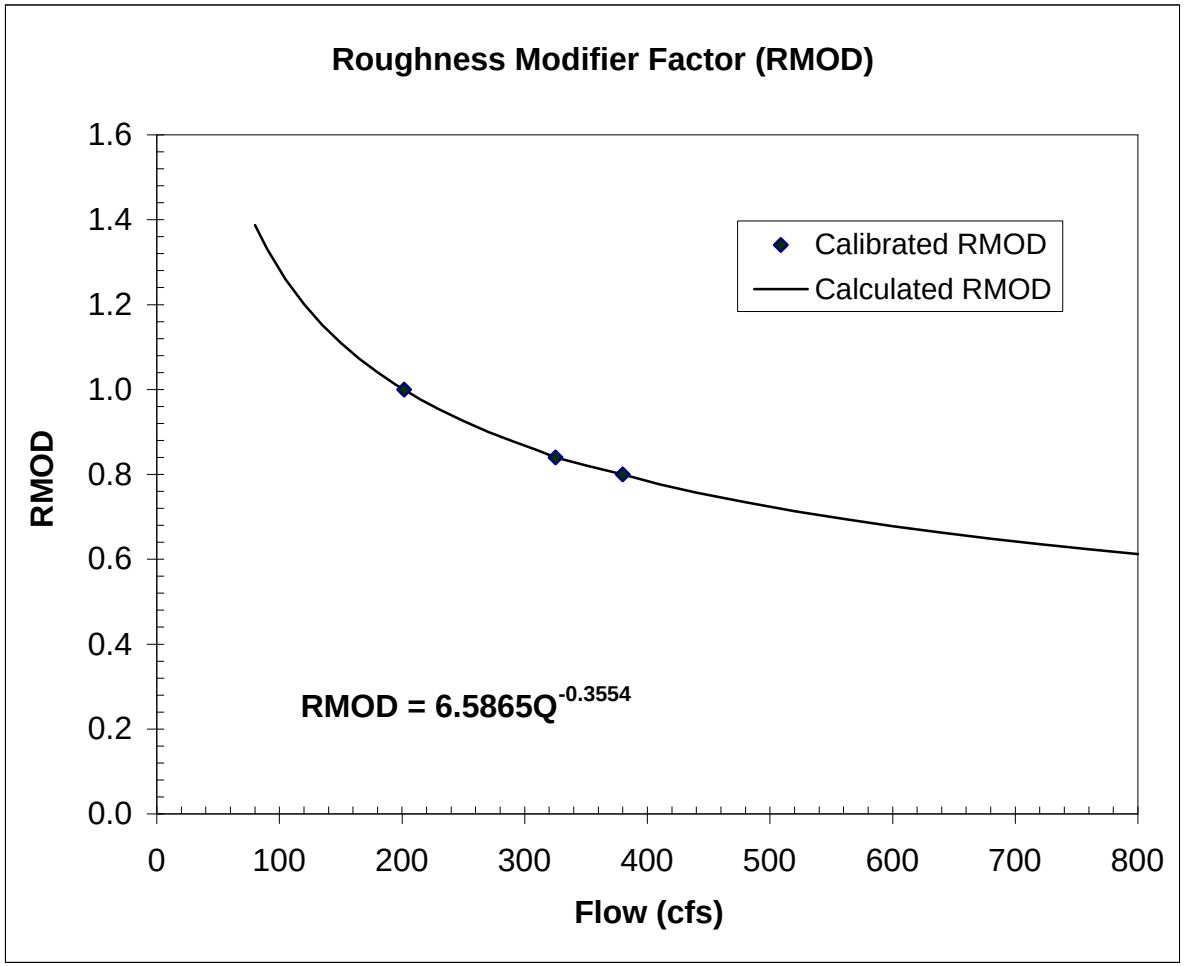
IFG4 was applied to calibrating WE of TR-1.

Three WSE calibration methods were tried that include IFG4, WSP, and HEC-RAS
WSP and HEC-RAS resulted in similar results that the simulated WSEs of TR-3 and TR-4 started to approach each other at flows higher than 500cfs. The first thought was that the simulation was erroneous, but a closer look at both transect profiles revealed that this was possible because TR-4 was a narrower (than TR-3) channel where water would accelerate and result in a lower WSE at higher flows when the water velocity was fast.

calibration notes

WSE Calibration: WSP

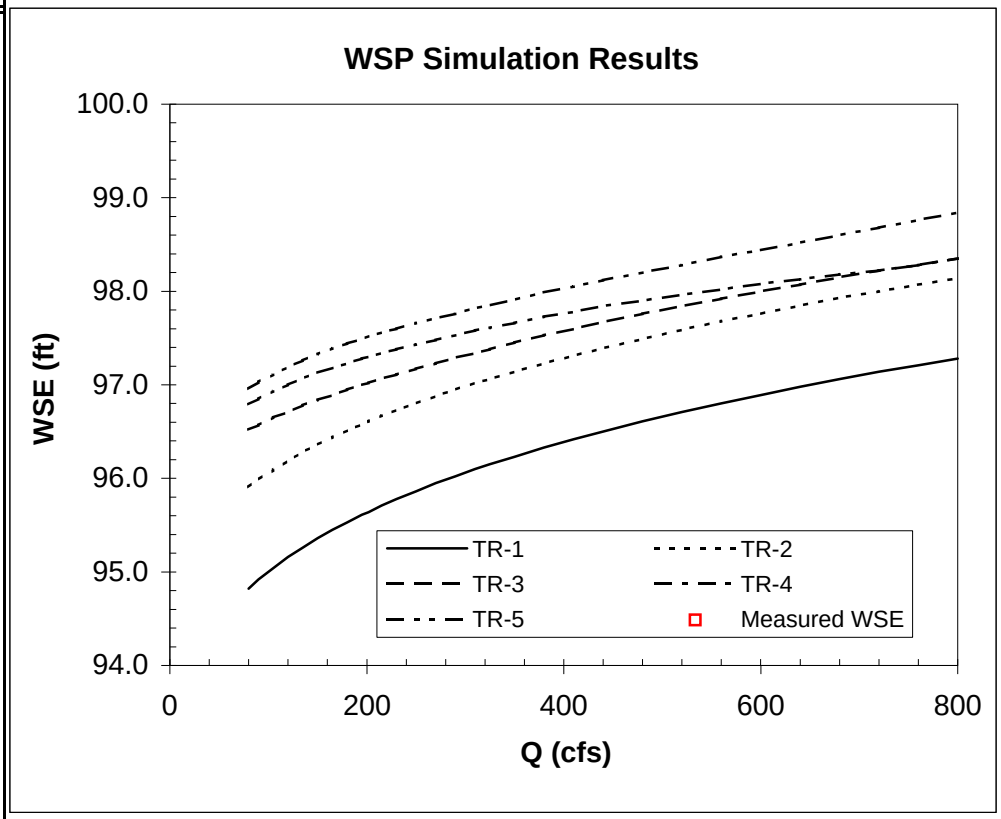
Flow (cfs)	RMOD
80	1.388
90	1.331
105	1.260
120	1.201
135	1.152
150	1.110
165	1.073
180	1.040
195	1.011
201.7	1.000
215	0.977
230	0.953
250	0.926
270	0.901
290	0.878
310	0.857
325	0.840
350	0.821
380	0.800
410	0.776
440	0.757
480	0.734
520	0.713
560	0.695
600	0.678
640	0.663
680	0.649
720	0.636
760	0.623
800	0.612



Note: Bolded values are measured flows. Highlighted values are calibrated RMOD values for the measured flows.

calibration notes

Simulation Q(cfs)	WSE(ft) - WSP method				
	TR-1	TR-2	TR-3	TR-4	TR-5
80	94.82	95.91	96.52	96.79	96.96
90	94.92	95.99	96.57	96.85	97.03
105	95.04	96.09	96.65	96.93	97.11
120	95.16	96.19	96.71	97.00	97.19
135	95.26	96.28	96.78	97.07	97.26
150	95.36	96.36	96.84	97.13	97.33
165	95.45	96.44	96.89	97.18	97.39
180	95.53	96.51	96.95	97.23	97.44
195	95.61	96.58	97.00	97.28	97.49
201.7	95.64	96.61	97.02	97.30	97.52
215	95.71	96.67	97.07	97.34	97.56
230	95.78	96.73	97.11	97.38	97.60
250	95.86	96.80	97.17	97.43	97.66
270	95.95	96.88	97.23	97.48	97.71
290	96.02	96.95	97.29	97.53	97.76
310	96.10	97.02	97.34	97.58	97.82
325	96.15	97.06	97.38	97.61	97.85
350	96.23	97.14	97.45	97.66	97.91
380	96.33	97.23	97.53	97.73	97.99
410	96.42	97.31	97.60	97.78	98.05
440	96.50	97.39	97.67	97.84	98.12
480	96.61	97.49	97.76	97.90	98.20
520	96.71	97.59	97.84	97.96	98.28
560	96.80	97.68	97.92	98.02	98.37
600	96.89	97.76	98.00	98.08	98.44
640	96.98	97.85	98.07	98.13	98.52
680	97.06	97.93	98.15	98.18	98.60
720	97.14	98.00	98.22	98.22	98.68
760	97.21	98.07	98.28	98.28	98.76
800	97.28	98.14	98.35	98.35	98.84



calibration notes

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)					Calibrated WSE(ft)				
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-1	TR-2	TR-3	TR-4	TR-5
6/24/2008	380.0	96.33	97.25	97.57	97.71	97.98	96.33	97.23	97.53	97.73	97.99
7/23/2008	325.0	96.15	97.10	97.33	97.63	97.89	96.15	97.06	97.38	97.61	97.85
8/18/2008	201.7	95.65	96.61	97.06	97.28	97.49	95.64	96.61	97.02	97.30	97.52

Survey Date	Q (cfs)	WSE calibration error (ft)					WSE Calibration Method				
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-1	TR-2	TR-3	TR-4	TR-5
6/24/2008	380.0	0.00	-0.02	-0.04	0.02	0.01	IFG4	WSP	WSP	WSP	WSP
7/23/2008	325.0	0.00	-0.03	0.05	-0.02	-0.04	IFG4	WSP	WSP	WSP	WSP
8/18/2008	201.7	0.00	0.00	-0.04	0.02	0.03	IFG4	WSP	WSP	WSP	WSP

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within the acceptable range.

(3) Velocity calibration

This site has five transects and each transect has 2 velocity/discharge measurements except TR-1 which has only one. Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. Due to only one measured velocity profile available for TR-1, the calibrated velocity template was used to predict velocities for the entire simulation range of flows.
The adjustment of n values was made at the stations where simulated velocities were significantly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)				
		TR-1	TR-2	TR-3	TR-4	TR-5
6/24/2008	380.0					
7/23/2008	325.0		Y	Y	Y	Y
8/18/2008	201.7	Y	Y	Y	Y	Y

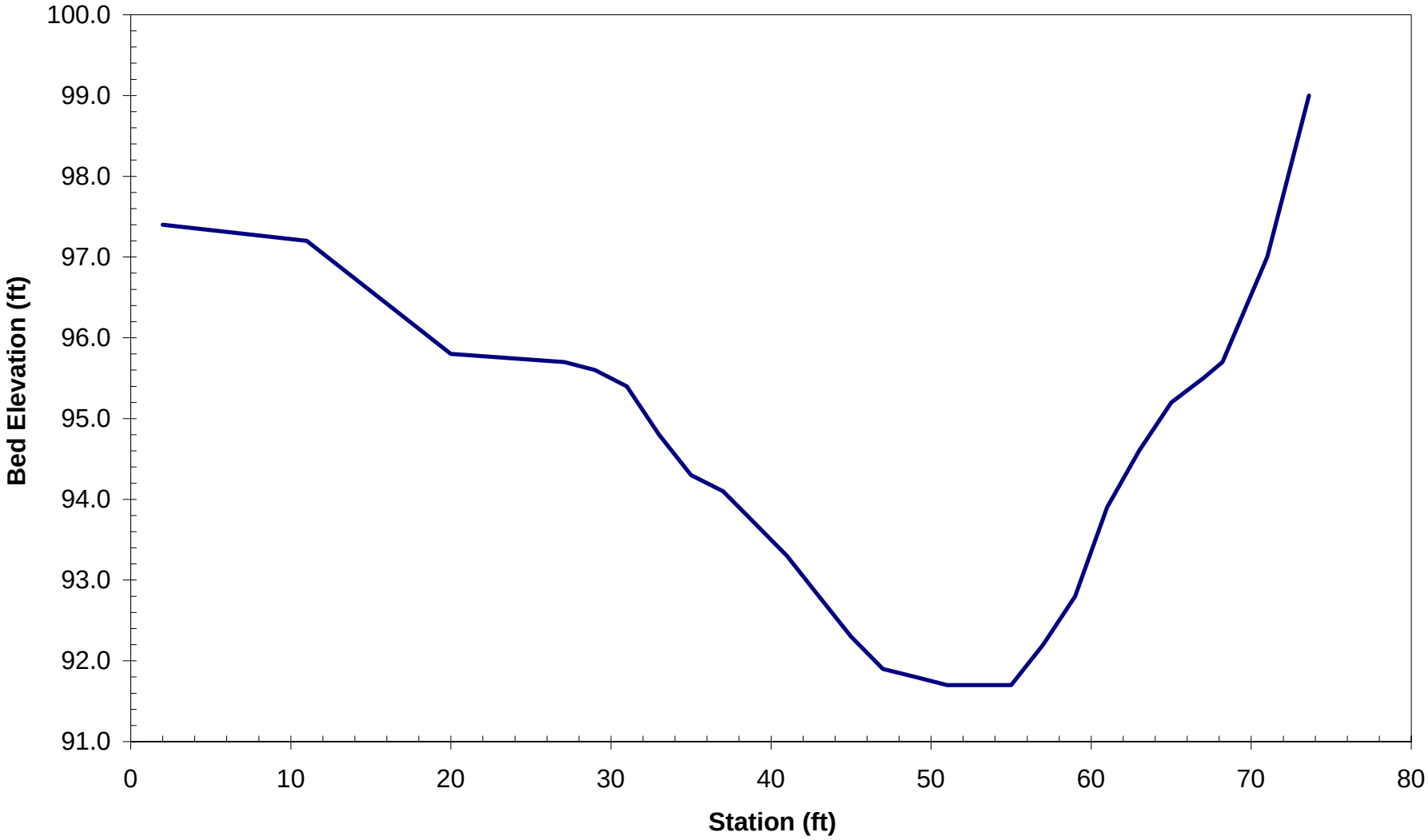
calibration notes

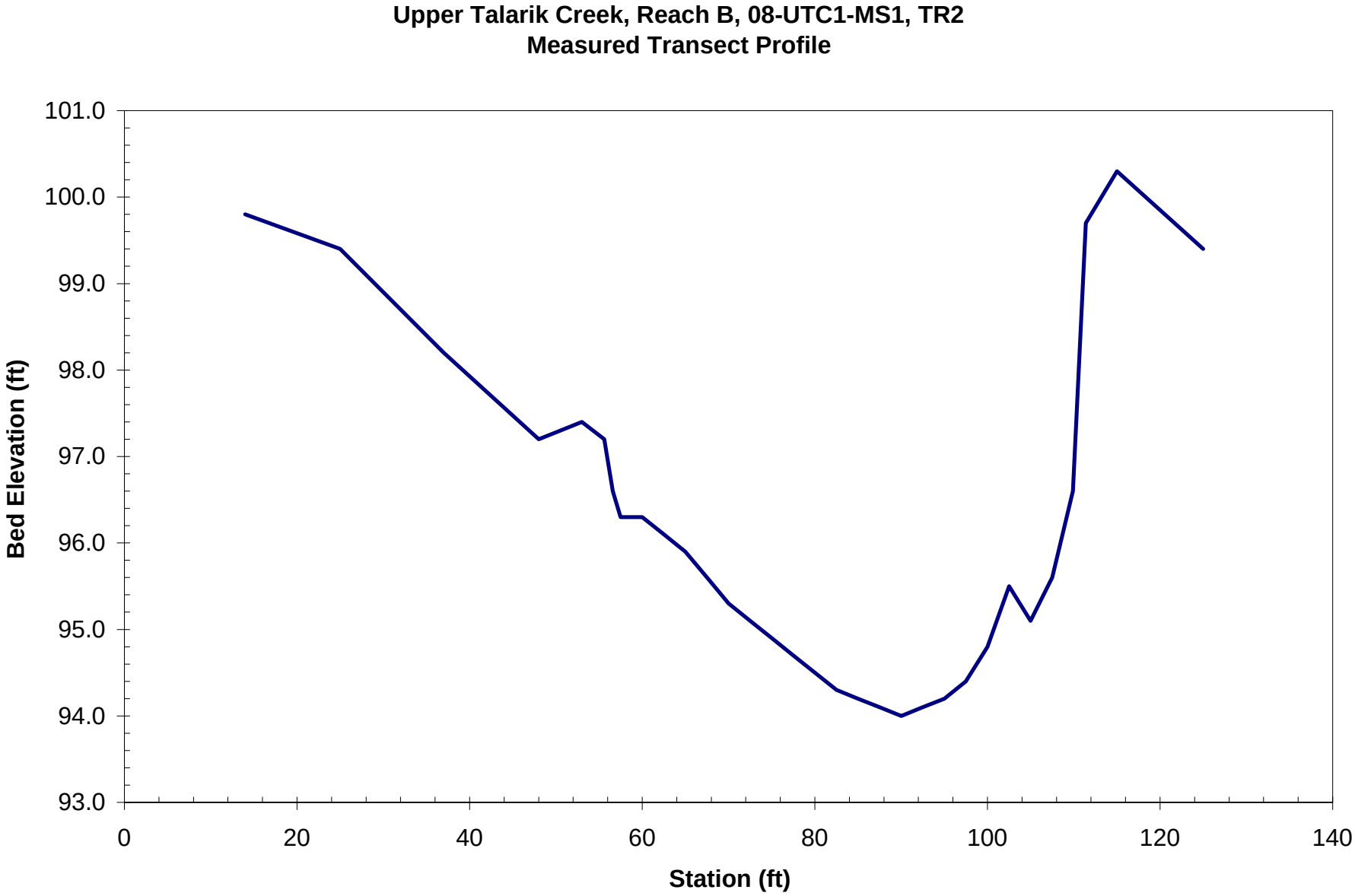
(4) Hydraulic Calibration Results:

Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges with normal trends.
The Manning's n values of TR-3 stay virtually flat within the entire range of simulation flows. This is considered ok given the abrupt expansion of channel width and flow conveyance area from TR-4 (u/s) to TR-3 (d/s) when flows are high.

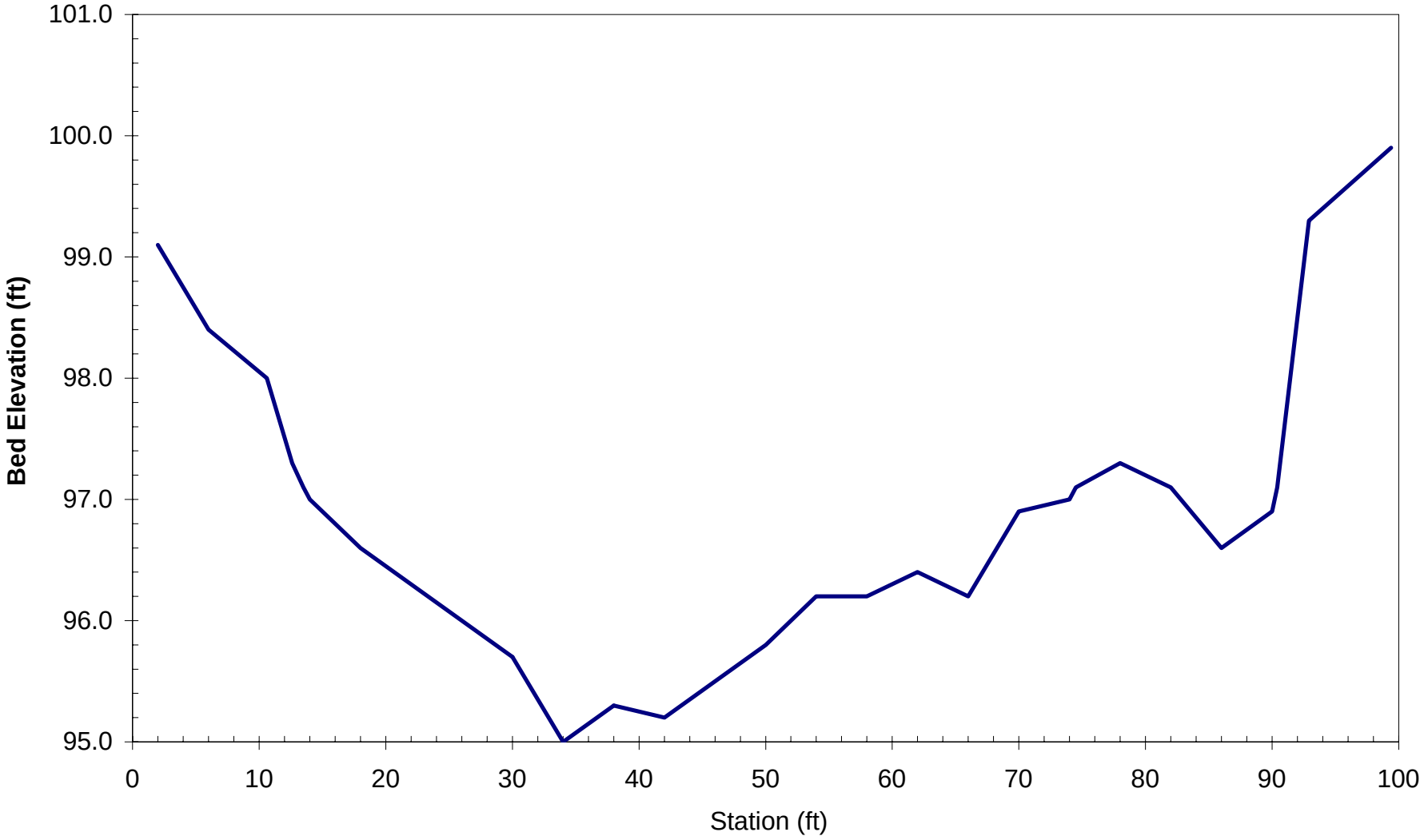
calibration notes

Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR1
Measured Transect Profile

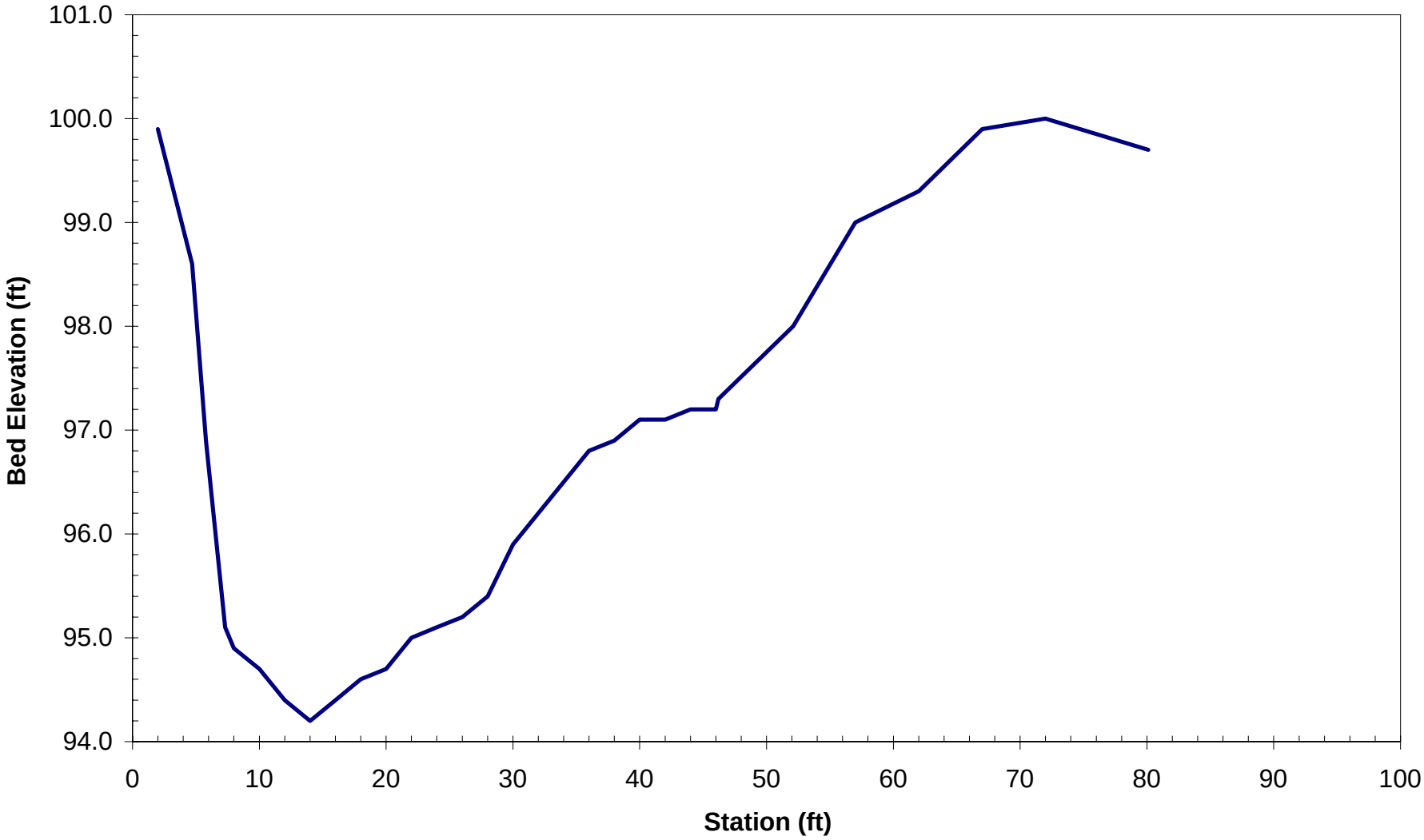



Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR2
Measured Transect Profile
Bed Elevation (ft)
101.0
100.0
99.0
98.0
97.0
96.0
95.0
94.0
93.0
0
20
40
60
80
100
120
140
Station (ft)

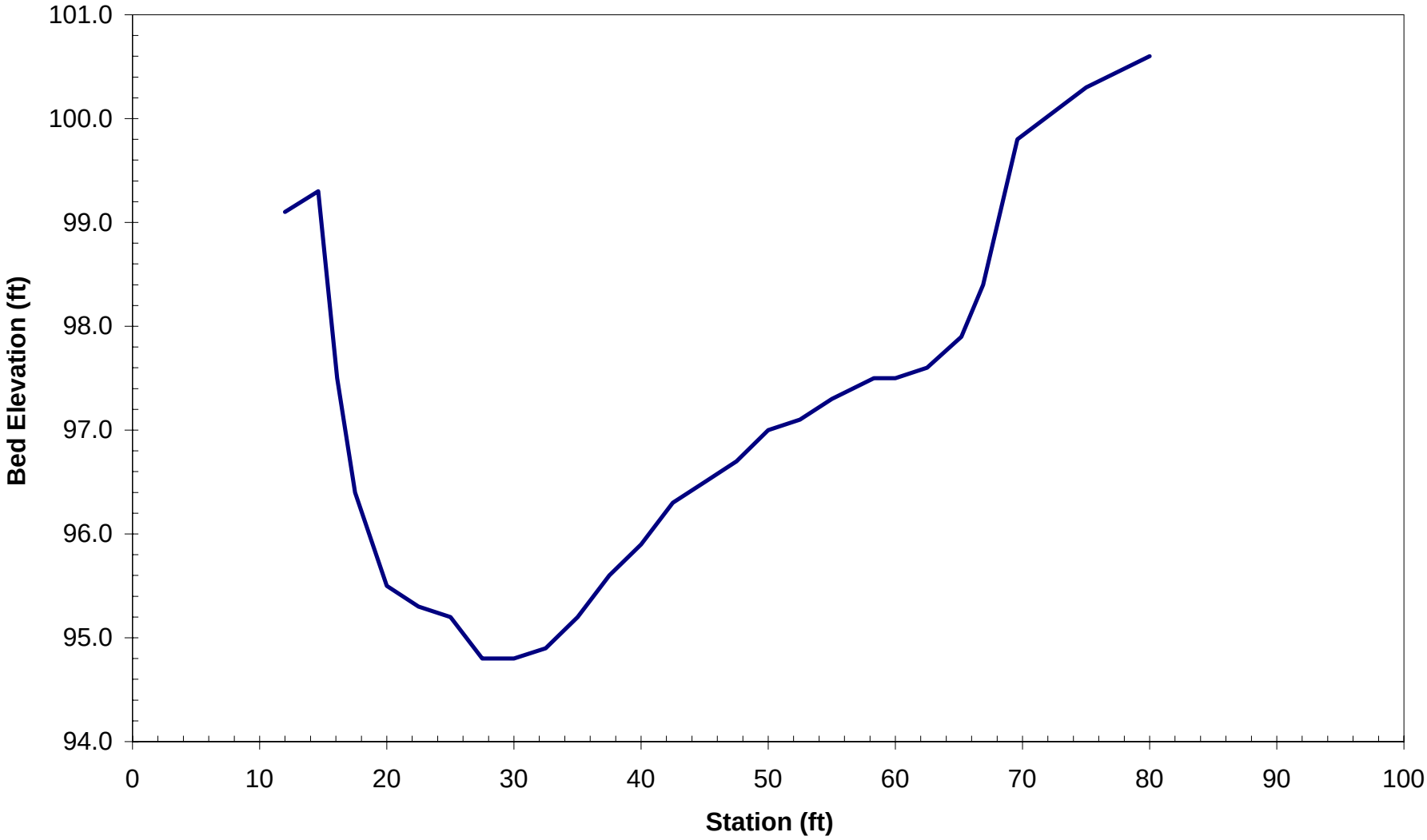
Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR3
Measured Transect Profile



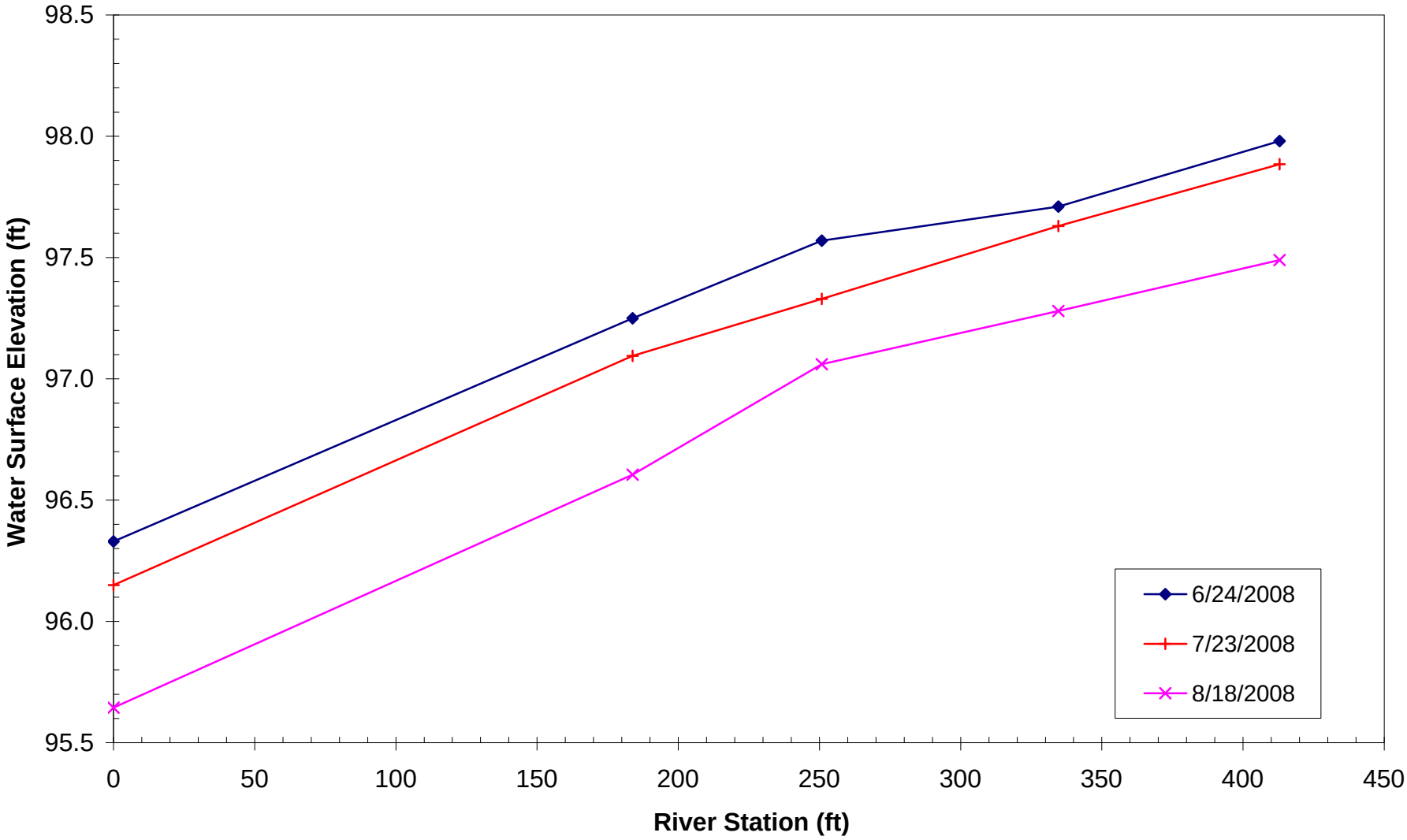
Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR4
Measured Transect Profile

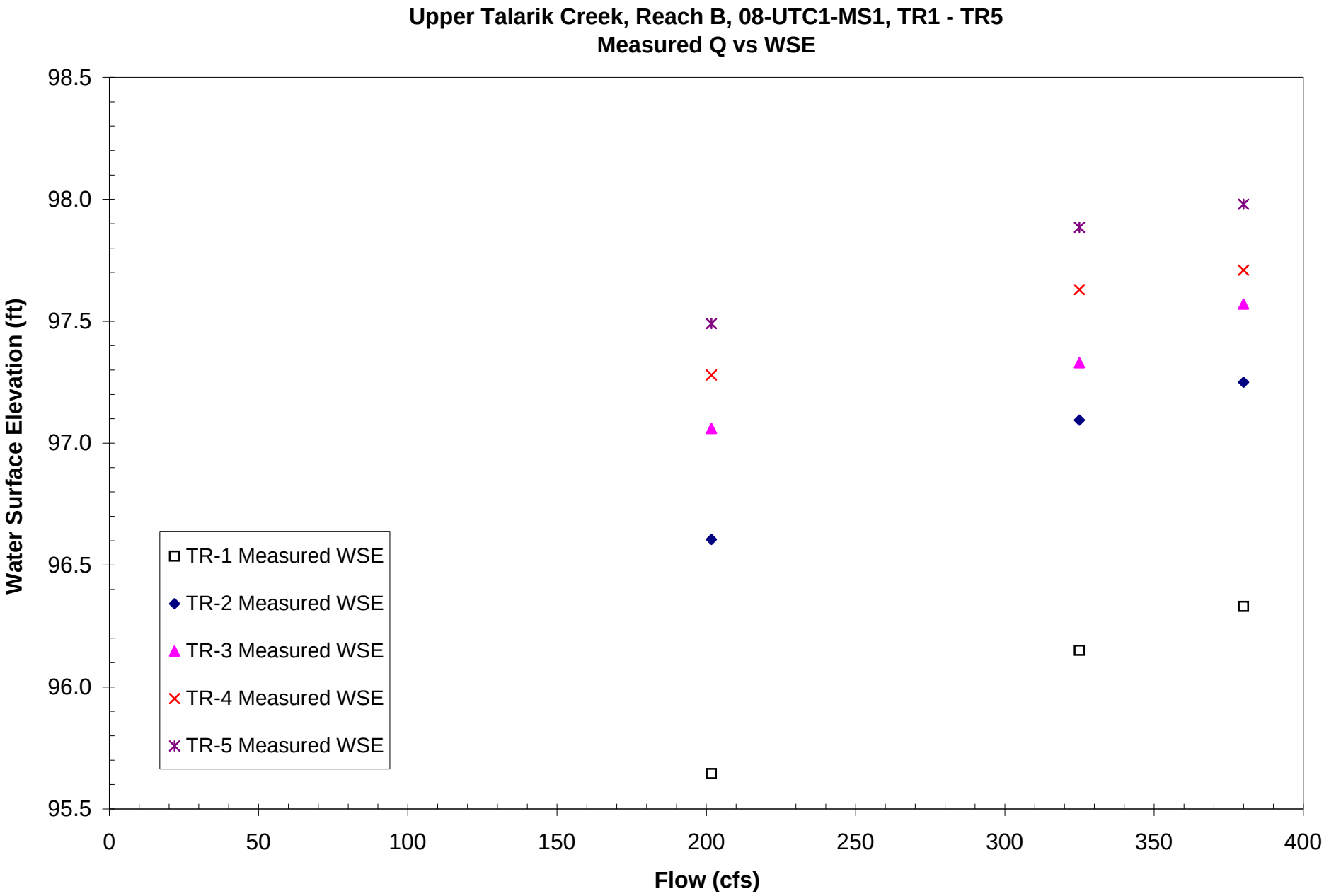


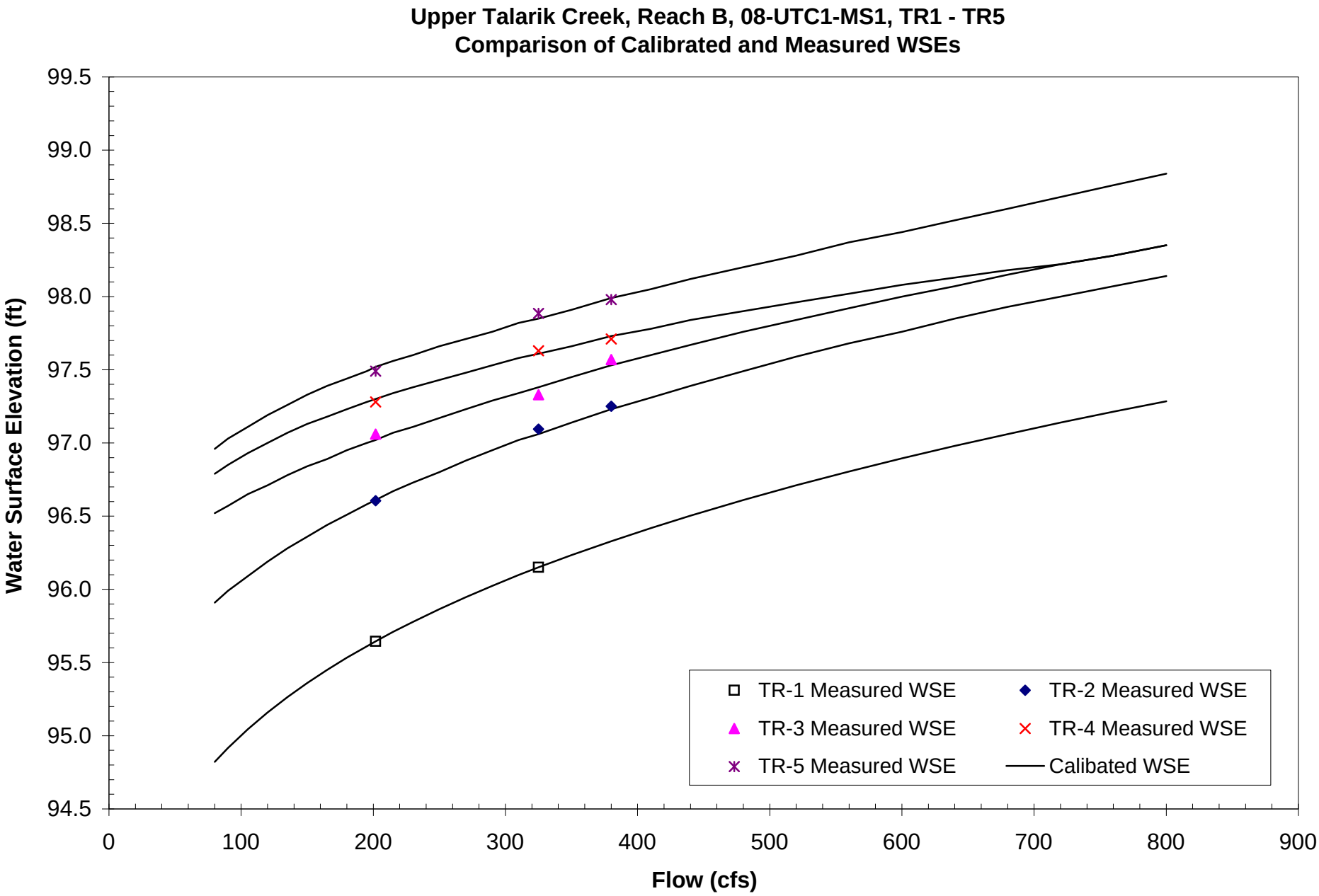
Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR5
Measured Transect Profile



Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR1 - TR5
Longitudinal Water Surface Elevation Profiles



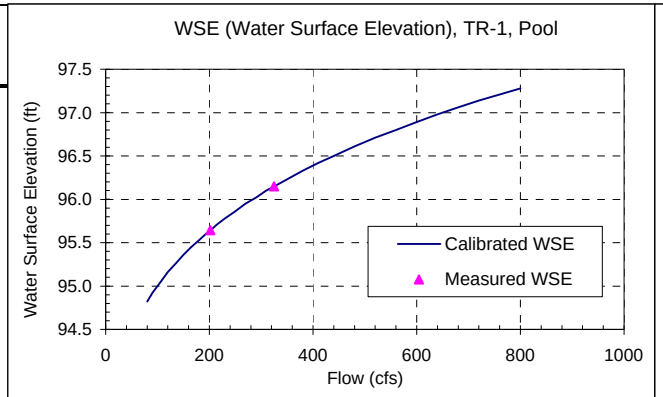

Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR1 - TR5
Measured Q vs WSE
Water Surface Elevation (ft)
98.5
98.0
97.5
97.0
96.5
96.0
95.5
0
50
100
150
200
250
300
350
400
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE

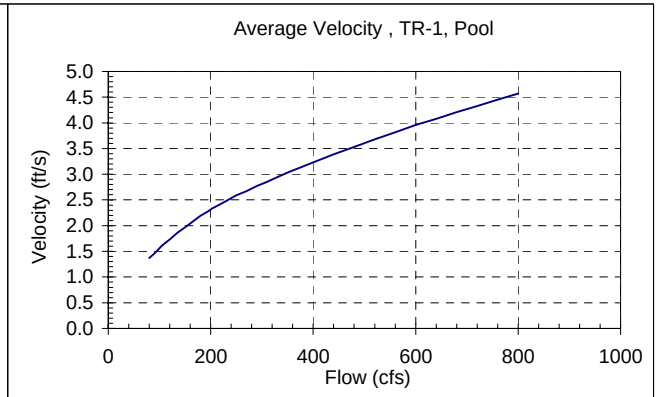

Upper Talarik Creek, Reach B, 08-UTC1-MS1, TR1 - TR5
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
100
200
300
400
500
600
700
800
900
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
Calibated WSE

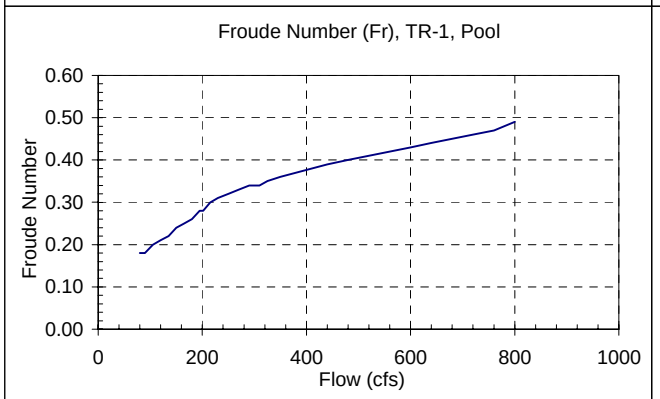
Stream: Upper Talarik Creek
Site: 08-UT1-MS1
Date: 8/18/2008
Calibration Flow: Low

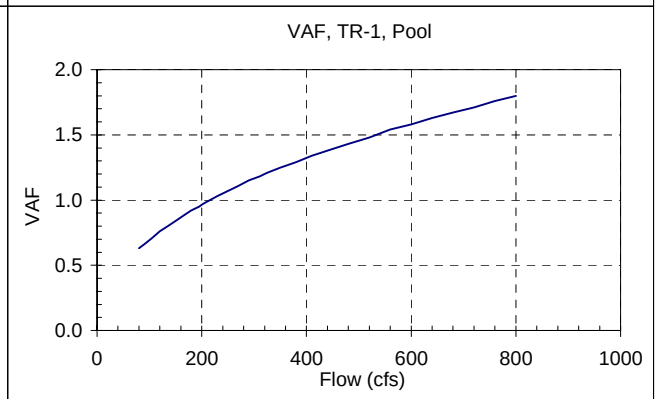
Reach: B
Site: 1
Transect: 1
Habitat: Pool

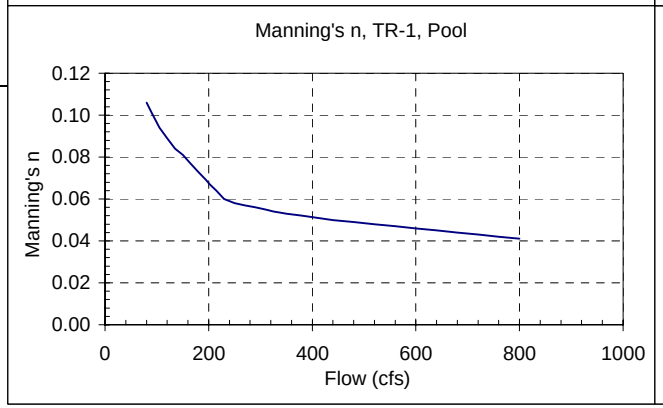
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
80	94.82	0.18	1.37	0.63	0.106	31.7
90	94.92	0.18	1.46	0.66	0.10	32.4
105	95.04	0.20	1.61	0.71	0.09	33.3
120	95.16	0.21	1.73	0.76	0.09	34.2
135	95.26	0.22	1.86	0.80	0.08	35.1
150	95.36	0.24	1.97	0.84	0.08	36.1
165	95.45	0.25	2.08	0.88	0.08	37.4
180	95.53	0.26	2.19	0.92	0.07	39.0
195	95.61	0.28	2.28	0.95	0.07	41.1
201.7	95.64	0.28	2.33	0.97	0.07	41.9
215	95.71	0.30	2.40	1.00	0.06	45.2
230	95.78	0.31	2.48	1.03	0.06	48.6
250	95.86	0.32	2.59	1.07	0.06	50.2
270	95.95	0.33	2.67	1.11	0.06	50.9
290	96.02	0.34	2.77	1.15	0.06	51.6
310	96.10	0.34	2.85	1.18	0.06	52.3
325	96.15	0.35	2.92	1.21	0.05	52.7
350	96.23	0.36	3.03	1.25	0.05	53.4
380	96.33	0.37	3.15	1.29	0.05	54.3
410	96.42	0.38	3.27	1.34	0.05	55.1
440	96.50	0.39	3.39	1.38	0.05	55.8
480	96.61	0.40	3.53	1.43	0.05	56.8
520	96.71	0.41	3.68	1.48	0.05	57.7
560	96.80	0.42	3.82	1.54	0.05	58.4
600	96.89	0.43	3.96	1.58	0.05	59.2
640	96.98	0.44	4.08	1.63	0.05	60.0
680	97.06	0.45	4.21	1.67	0.04	60.7
720	97.14	0.46	4.33	1.71	0.04	61.3
760	97.21	0.47	4.45	1.76	0.04	62.3
800	97.28	0.49	4.57	1.80	0.041	65.8

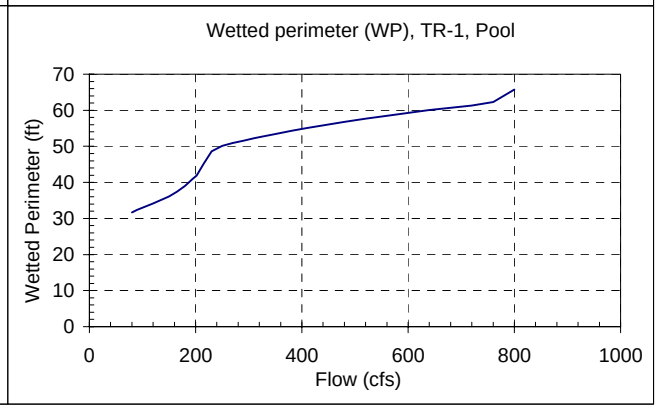










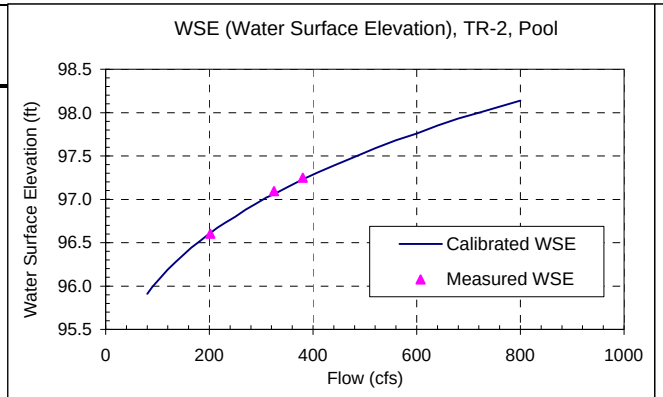


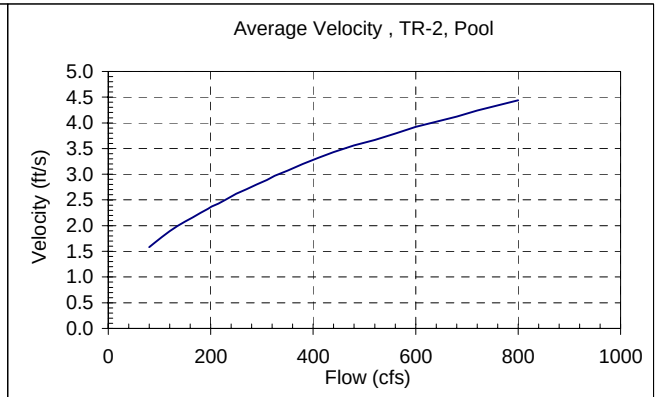
cTR1 - Transect hydraulic parameters

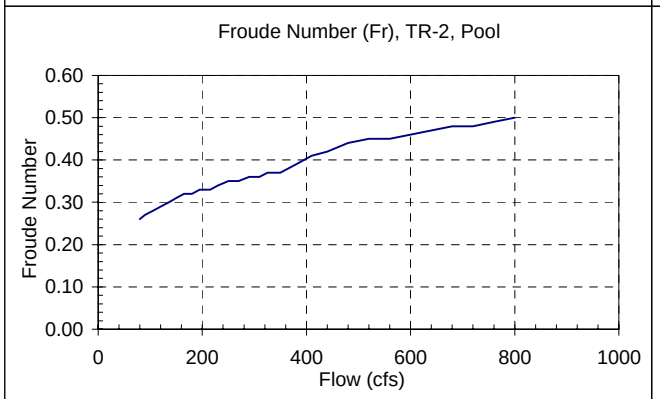
Stream: Upper Talarik Creek
Site: 08-UT1-MS1
Date: 8/18/2008
Calibration Flow: Low

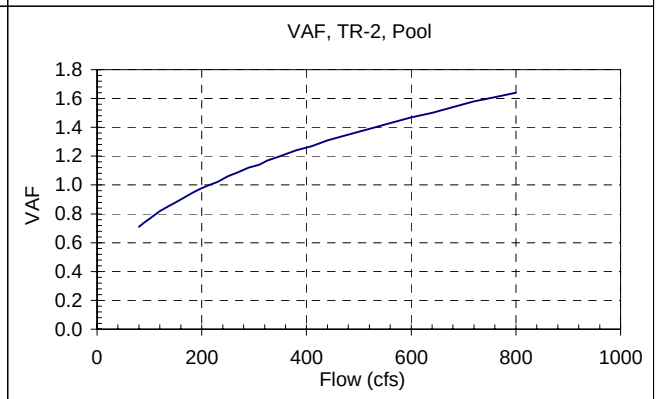
Reach: B
Site: 1
Transect: 2
Habitat: Pool

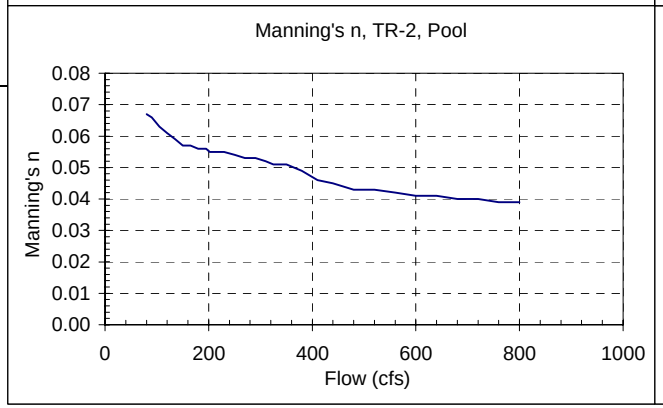
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
80	95.91	0.26	1.58	0.71	0.067	44.2
90	95.99	0.27	1.66	0.74	0.066	45.2
105	96.09	0.28	1.78	0.78	0.063	46.5
120	96.19	0.29	1.89	0.82	0.061	48.3
135	96.28	0.30	1.99	0.85	0.059	50.7
150	96.36	0.31	2.08	0.88	0.057	52.5
165	96.44	0.32	2.16	0.91	0.057	53.0
180	96.51	0.32	2.25	0.94	0.056	53.4
195	96.58	0.33	2.33	0.97	0.056	53.8
201.7	96.61	0.33	2.37	0.98	0.055	53.9
215	96.67	0.33	2.43	1.00	0.055	54.1
230	96.73	0.34	2.51	1.02	0.055	54.3
250	96.80	0.35	2.62	1.06	0.054	54.5
270	96.88	0.35	2.71	1.09	0.053	54.7
290	96.95	0.36	2.80	1.12	0.053	54.9
310	97.02	0.36	2.89	1.14	0.052	55.2
325	97.06	0.37	2.97	1.17	0.051	55.3
350	97.14	0.37	3.07	1.20	0.051	55.5
380	97.23	0.39	3.20	1.24	0.049	57.6
410	97.31	0.41	3.32	1.27	0.046	61.1
440	97.39	0.42	3.43	1.31	0.045	64.6
480	97.49	0.44	3.56	1.35	0.043	67.1
520	97.59	0.45	3.67	1.39	0.043	68.3
560	97.68	0.45	3.79	1.43	0.042	69.4
600	97.76	0.46	3.92	1.47	0.041	70.4
640	97.85	0.47	4.02	1.50	0.041	71.5
680	97.93	0.48	4.12	1.54	0.040	72.5
720	98.00	0.48	4.24	1.58	0.040	73.4
760	98.07	0.49	4.34	1.61	0.039	74.2
800	98.14	0.5	4.44	1.64	0.039	75.1

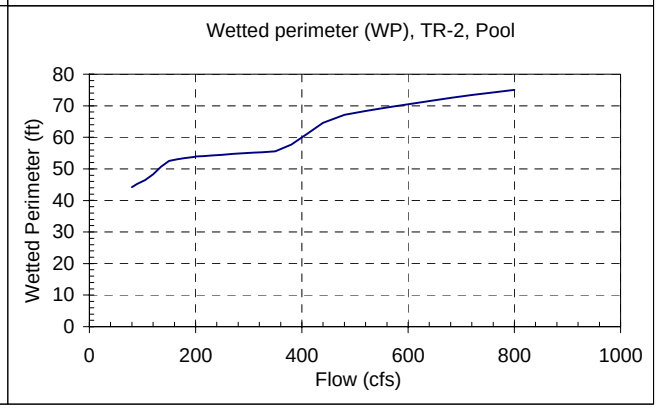










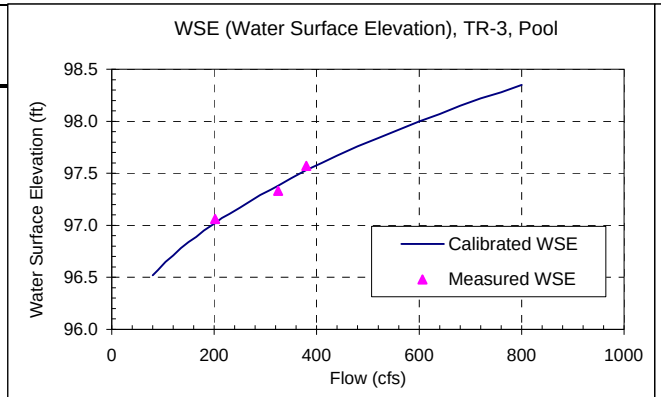


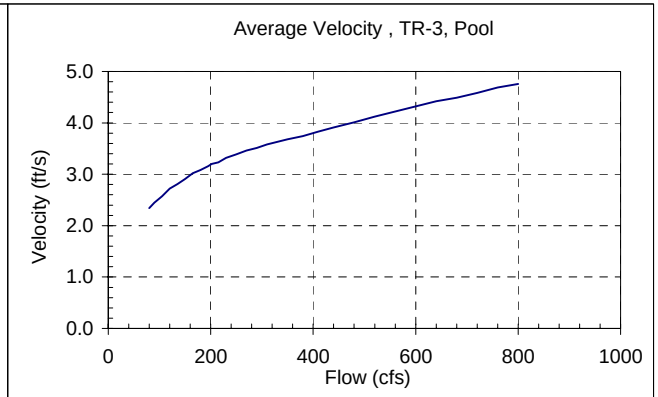
cTR2 - Transect hydraulic parameters

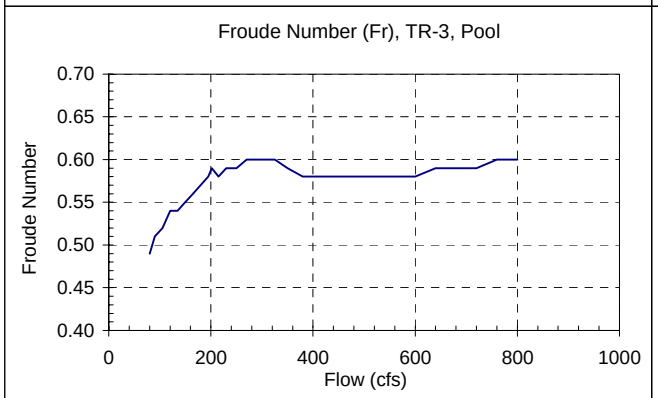
Stream: Upper Talarik Creek
Site: 08-UT1-MS1
Date: 8/18/2008
Calibration Flow: Low

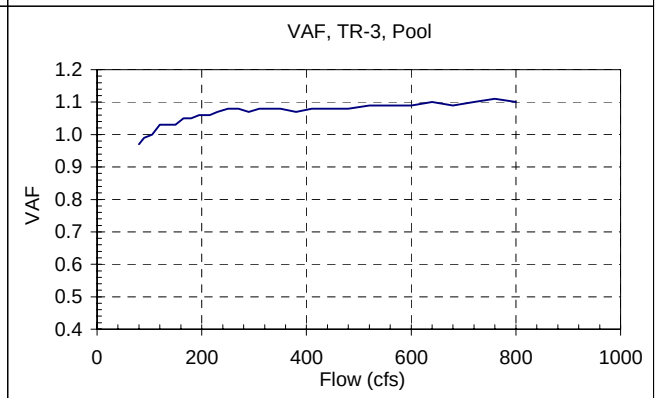
Reach: B
Site: 1
Transect: 3
Habitat: Pool

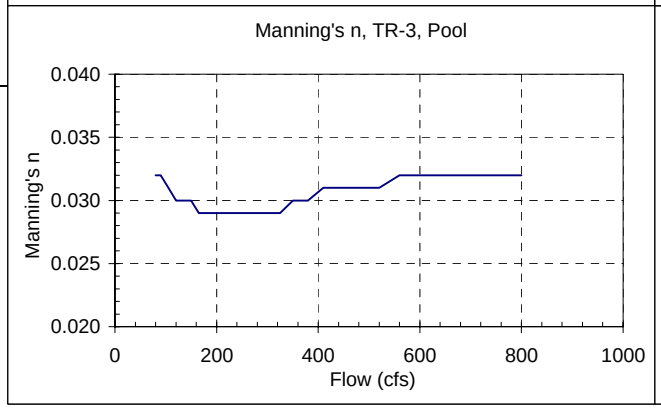
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
80	96.52	0.49	2.34	0.97	0.032	49.6
90	96.57	0.51	2.45	0.99	0.032	50.7
105	96.65	0.52	2.57	1.00	0.031	53.5
120	96.71	0.54	2.72	1.03	0.030	55.6
135	96.78	0.54	2.81	1.03	0.030	58.0
150	96.84	0.55	2.91	1.03	0.030	60.1
165	96.89	0.56	3.02	1.05	0.029	61.9
180	96.95	0.57	3.08	1.05	0.029	65.0
195	97.00	0.58	3.16	1.06	0.029	67.9
201.7	97.02	0.59	3.20	1.06	0.029	68.7
215	97.07	0.58	3.23	1.06	0.029	70.1
230	97.11	0.59	3.32	1.07	0.029	71.4
250	97.17	0.59	3.39	1.08	0.029	73.3
270	97.23	0.60	3.46	1.08	0.029	75.3
290	97.29	0.60	3.51	1.07	0.029	77.3
310	97.34	0.60	3.58	1.08	0.029	78.6
325	97.38	0.60	3.62	1.08	0.029	78.8
350	97.45	0.59	3.68	1.08	0.030	79.1
380	97.53	0.58	3.74	1.07	0.030	79.5
410	97.60	0.58	3.83	1.08	0.031	79.8
440	97.67	0.58	3.91	1.08	0.031	80.2
480	97.76	0.58	4.01	1.08	0.031	80.6
520	97.84	0.58	4.12	1.09	0.031	80.9
560	97.92	0.58	4.22	1.09	0.032	81.3
600	98.00	0.58	4.32	1.09	0.032	81.7
640	98.07	0.59	4.42	1.10	0.032	82.6
680	98.15	0.59	4.49	1.09	0.032	83.6
720	98.22	0.59	4.58	1.10	0.032	84.6
760	98.28	0.60	4.69	1.11	0.032	85.4
800	98.35	0.6	4.76	1.10	0.032	86.4

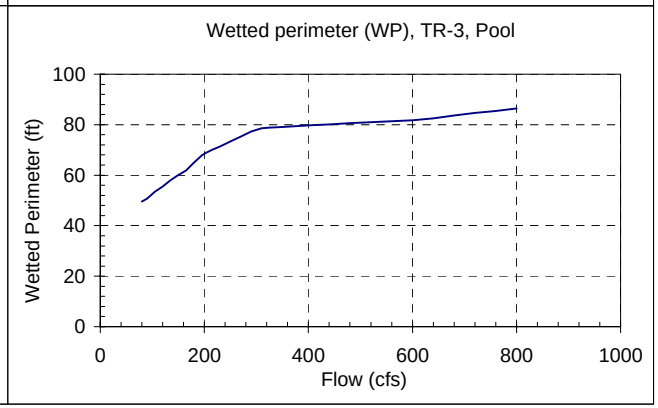










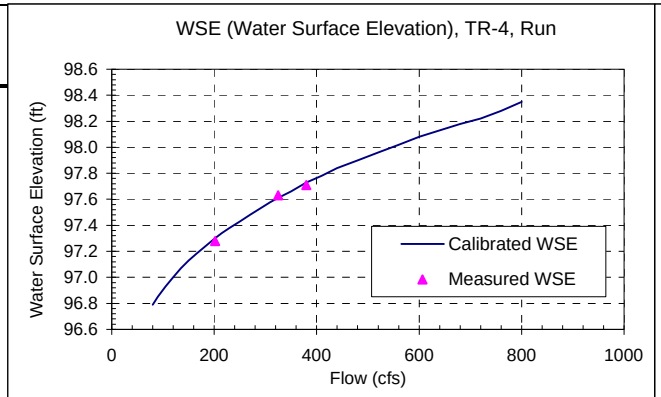


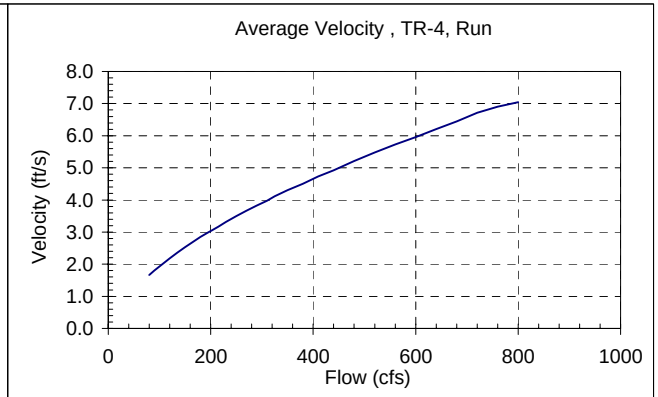
cTR3 - Transect hydraulic parameters

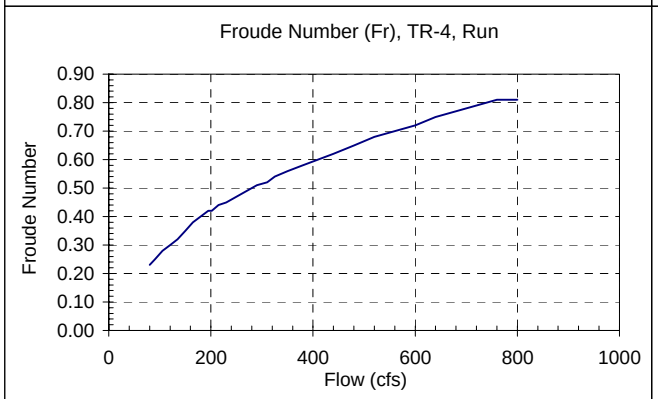
Stream: Upper Talarik Creek
Site: 08-UT1-MS1
Date: 8/18/2008
Calibration Flow: Low

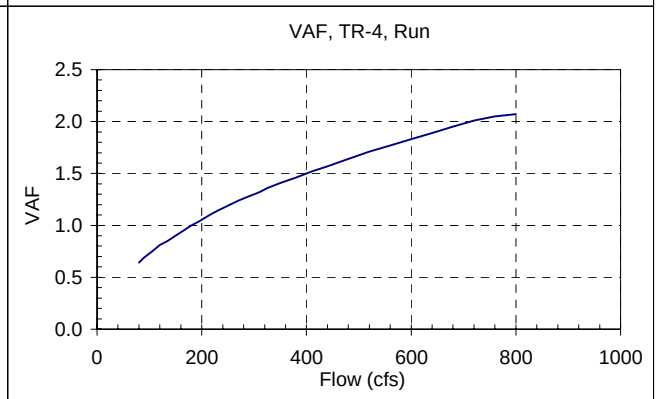
Reach: B
Site: 1
Transect: 4
Habitat: Run

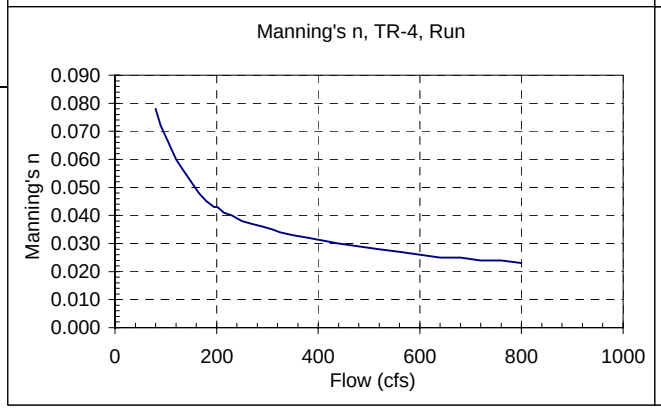
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
80	96.79	0.23	1.66	0.64	0.078	31.3
90	96.85	0.25	1.80	0.69	0.072	32.2
105	96.93	0.28	1.99	0.75	0.066	33.4
120	97.00	0.30	2.18	0.81	0.060	34.4
135	97.07	0.32	2.36	0.85	0.056	35.4
150	97.13	0.35	2.53	0.90	0.052	37.6
165	97.18	0.38	2.69	0.95	0.048	39.7
180	97.23	0.40	2.85	1.00	0.045	41.7
195	97.28	0.42	2.99	1.04	0.043	42.0
201.7	97.30	0.42	3.05	1.06	0.043	42.2
215	97.34	0.44	3.17	1.10	0.041	42.6
230	97.38	0.45	3.32	1.14	0.040	42.9
250	97.43	0.47	3.50	1.19	0.038	43.4
270	97.48	0.49	3.67	1.24	0.037	43.9
290	97.53	0.51	3.83	1.28	0.036	44.4
310	97.58	0.52	3.98	1.32	0.035	44.8
325	97.61	0.54	4.11	1.36	0.034	45.1
350	97.66	0.56	4.30	1.41	0.033	45.6
380	97.73	0.58	4.50	1.46	0.032	46.3
410	97.78	0.60	4.73	1.52	0.031	46.7
440	97.84	0.62	4.92	1.57	0.030	47.3
480	97.90	0.65	5.21	1.64	0.029	47.9
520	97.96	0.68	5.48	1.71	0.028	48.4
560	98.02	0.70	5.73	1.77	0.027	48.9
600	98.08	0.72	5.96	1.83	0.026	49.3
640	98.13	0.75	6.21	1.89	0.025	49.6
680	98.18	0.77	6.45	1.95	0.025	49.9
720	98.22	0.79	6.71	2.01	0.024	50.2
760	98.28	0.81	6.90	2.05	0.024	50.5
800	98.35	0.81	7.04	2.07	0.023	51.0

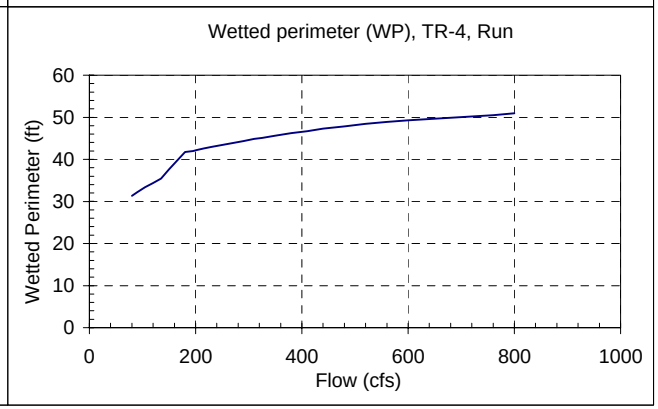










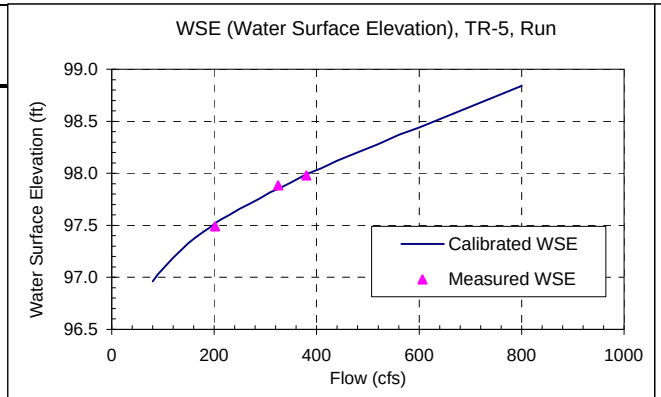


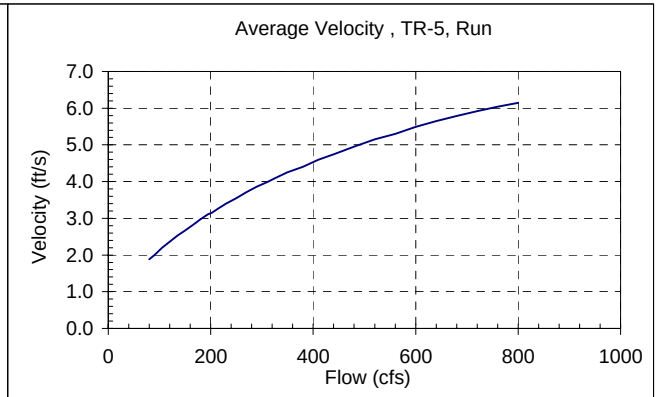
cTR4 - Transect hydraulic parameters

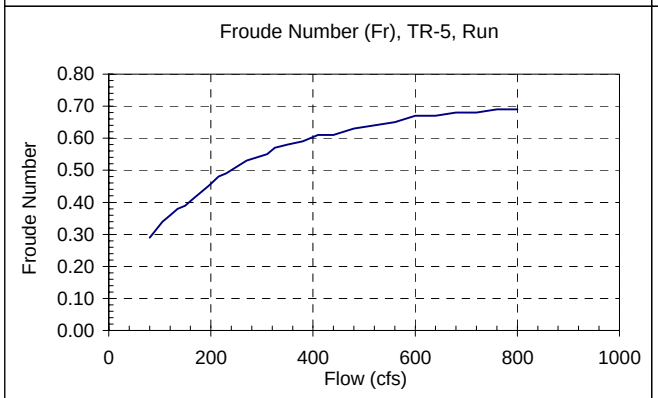
Stream: Upper Talarik Creek
Site: 08-UT1-MS1
Date: 8/18/2008
Calibration Flow: Low

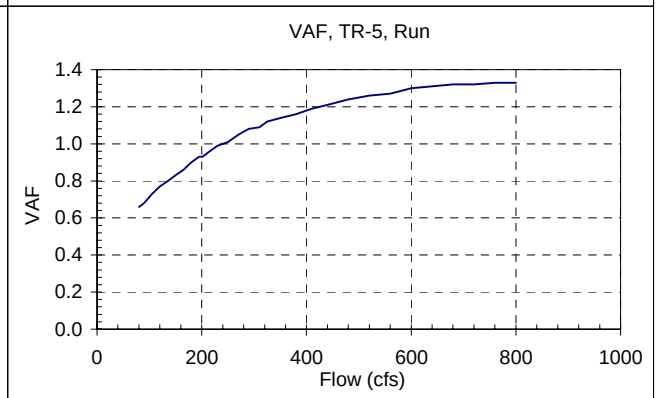
Reach: B
Site: 1
Transect: 5
Habitat: Run

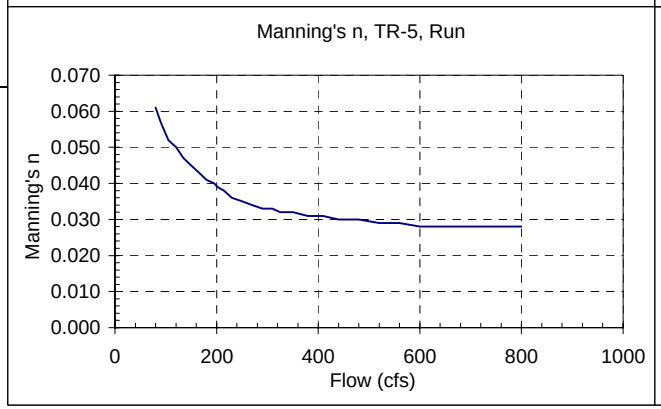
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
80	96.96	0.29	1.88	0.66	0.061	33.5
90	97.03	0.31	2.00	0.68	0.057	34.8
105	97.11	0.34	2.20	0.73	0.052	36.7
120	97.19	0.36	2.36	0.77	0.050	37.9
135	97.26	0.38	2.53	0.80	0.047	38.8
150	97.33	0.39	2.67	0.83	0.045	40.0
165	97.39	0.41	2.82	0.86	0.043	41.1
180	97.44	0.43	2.97	0.90	0.041	42.0
195	97.49	0.45	3.11	0.93	0.040	42.9
201.7	97.52	0.46	3.15	0.93	0.039	45.2
215	97.56	0.48	3.27	0.96	0.038	45.9
230	97.60	0.49	3.40	0.99	0.036	46.6
250	97.66	0.51	3.55	1.01	0.035	47.6
270	97.71	0.53	3.71	1.05	0.034	48.2
290	97.76	0.54	3.86	1.08	0.033	48.8
310	97.82	0.55	3.98	1.09	0.033	49.5
325	97.85	0.57	4.09	1.12	0.032	49.9
350	97.91	0.58	4.25	1.14	0.032	50.4
380	97.99	0.59	4.40	1.16	0.031	50.8
410	98.05	0.61	4.59	1.19	0.031	51.1
440	98.12	0.61	4.74	1.21	0.030	51.4
480	98.20	0.63	4.95	1.24	0.030	51.8
520	98.28	0.64	5.15	1.26	0.029	52.2
560	98.37	0.65	5.30	1.27	0.029	52.6
600	98.44	0.67	5.49	1.30	0.028	52.9
640	98.52	0.67	5.65	1.31	0.028	53.2
680	98.60	0.68	5.79	1.32	0.028	53.5
720	98.68	0.68	5.92	1.32	0.028	53.7
760	98.76	0.69	6.04	1.33	0.028	54.0
800	98.84	0.69	6.15	1.33	0.028	54.3

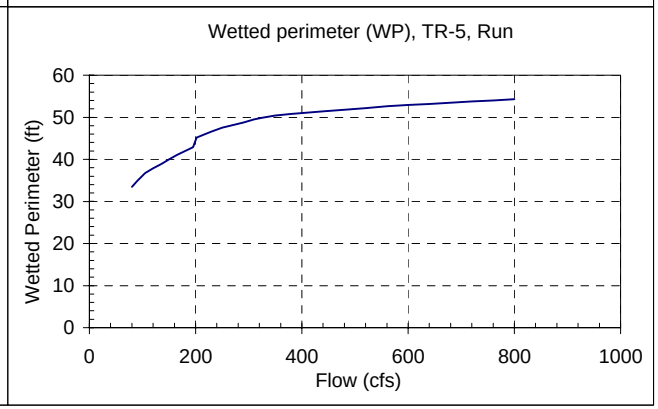




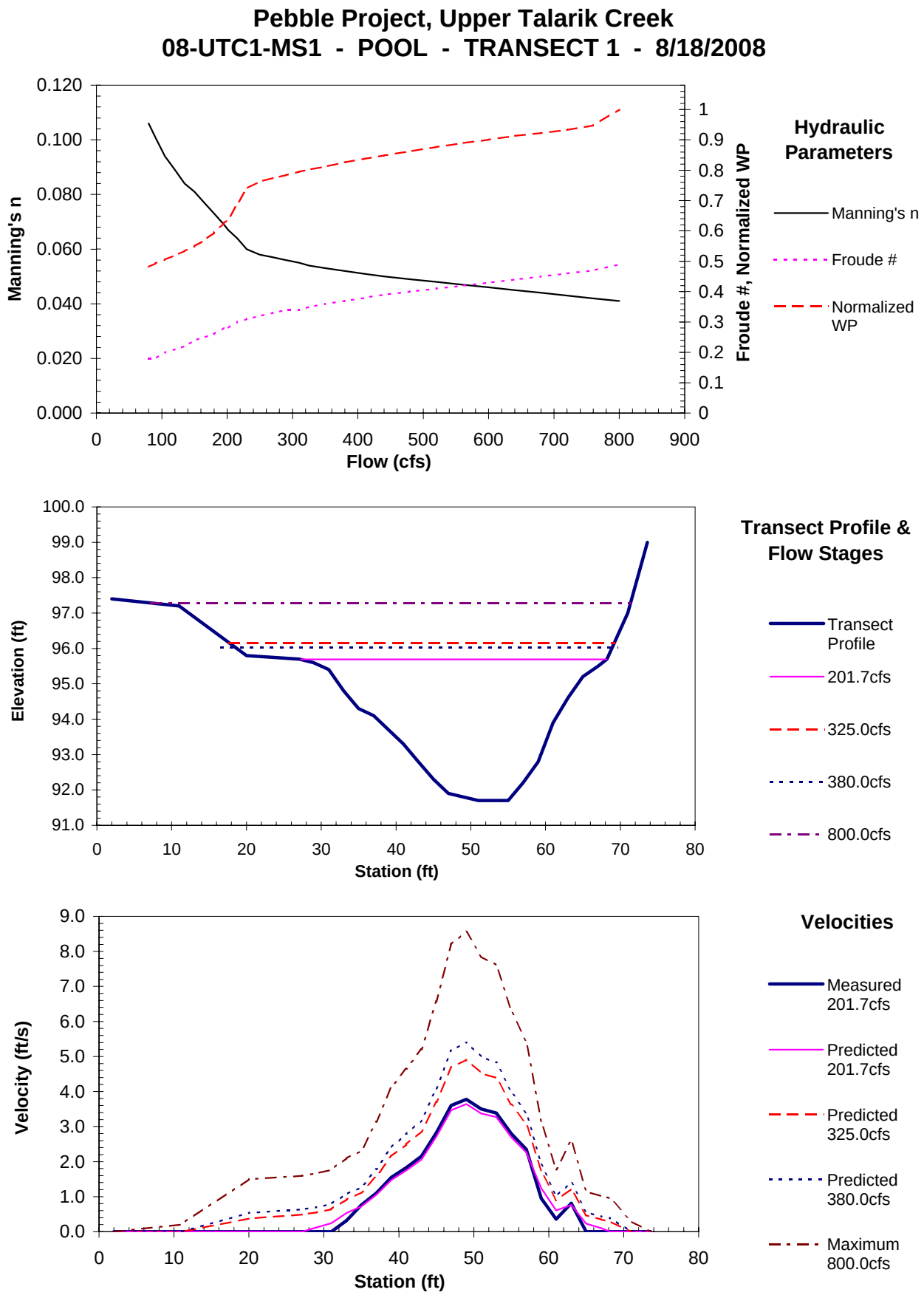




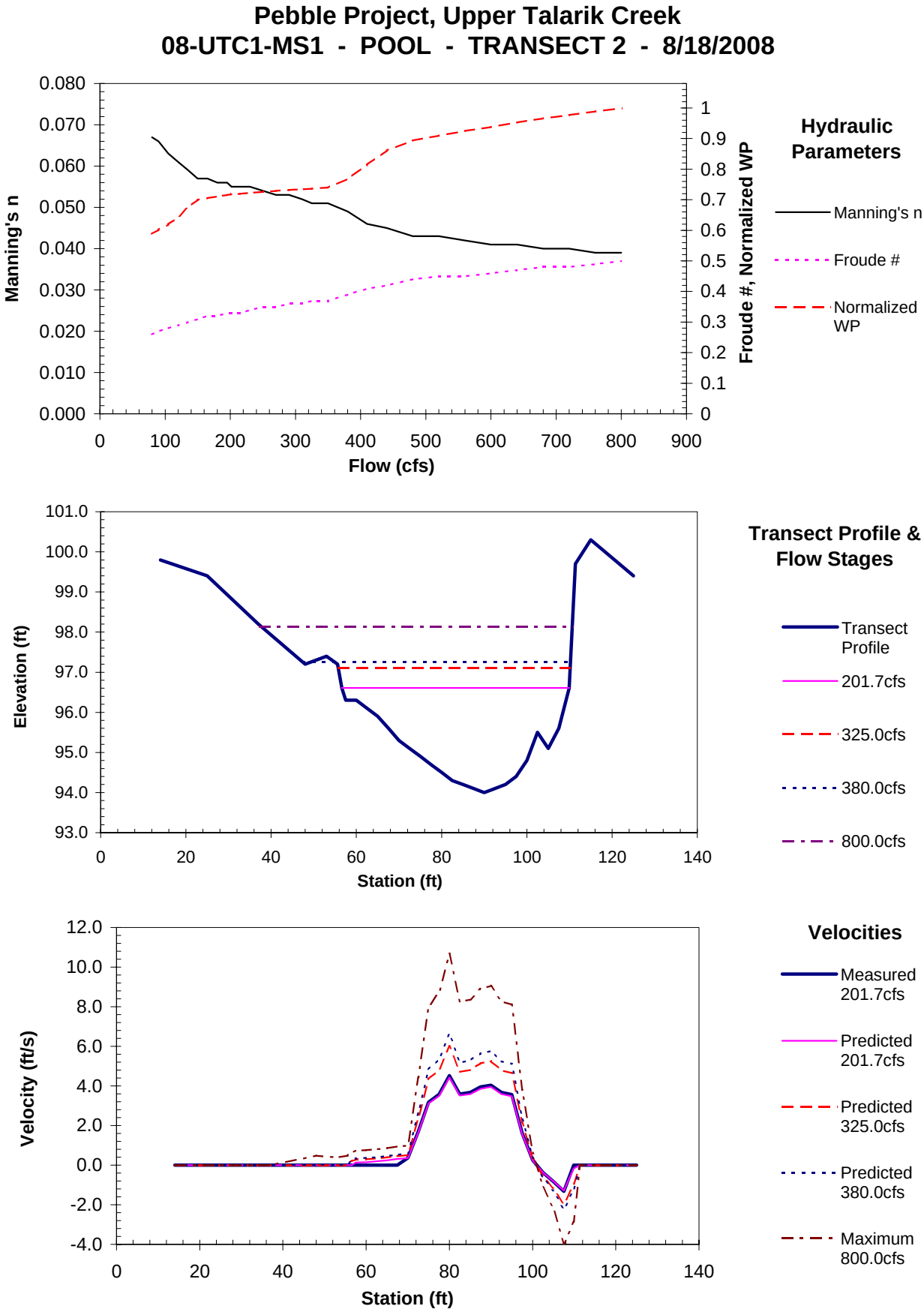




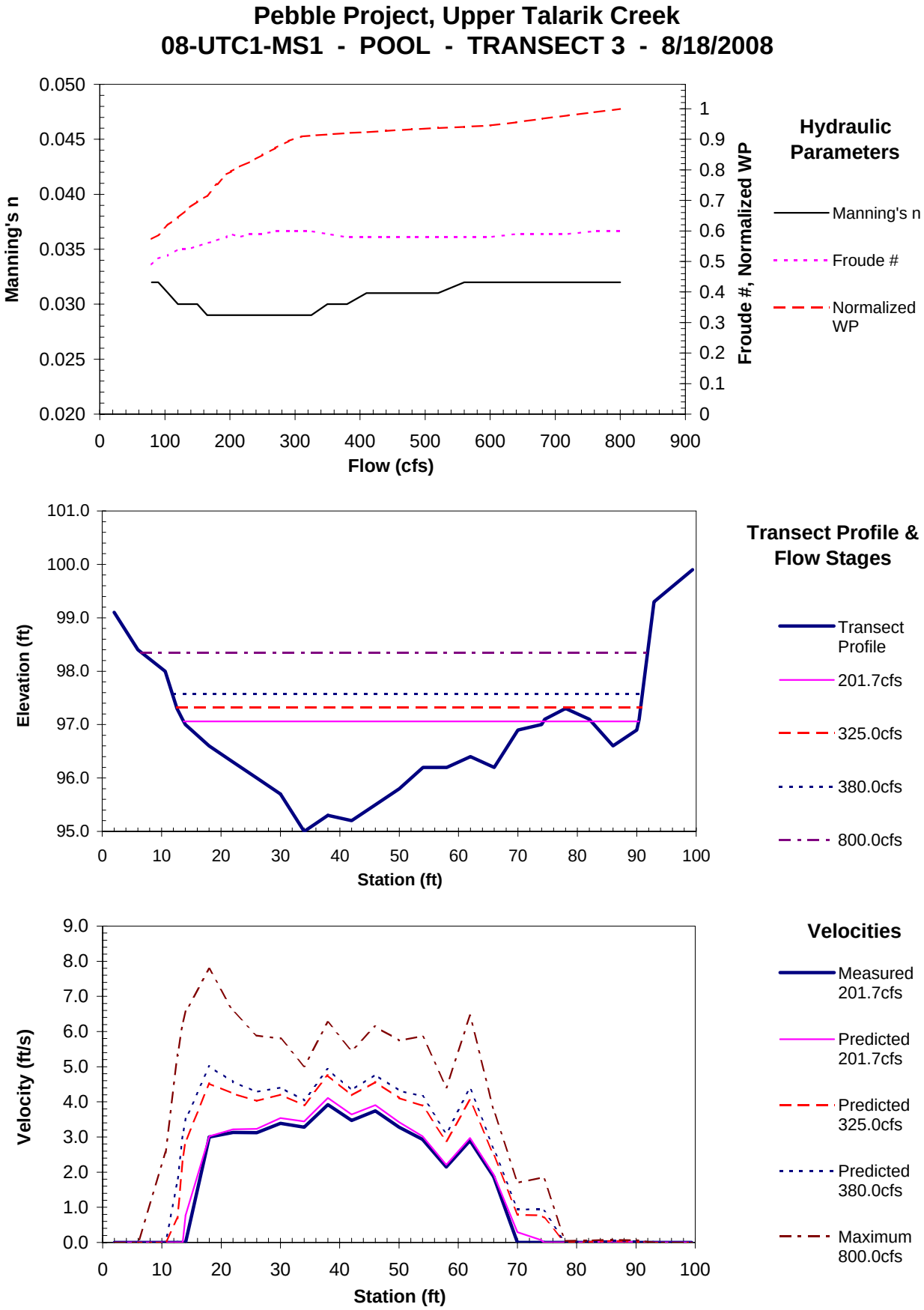
cTR5 - Transect hydraulic parameters



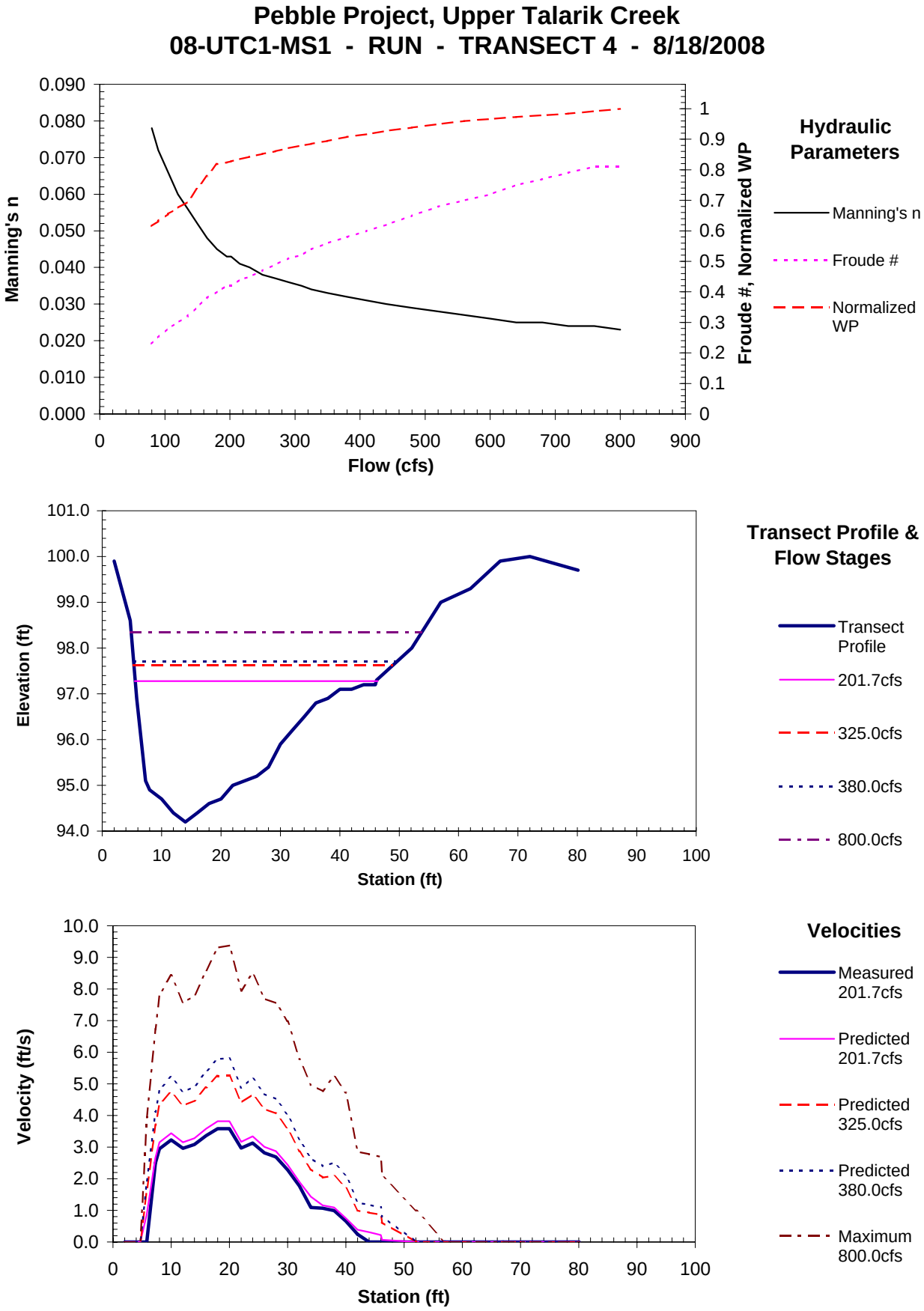
Transect hydraulic summary plots



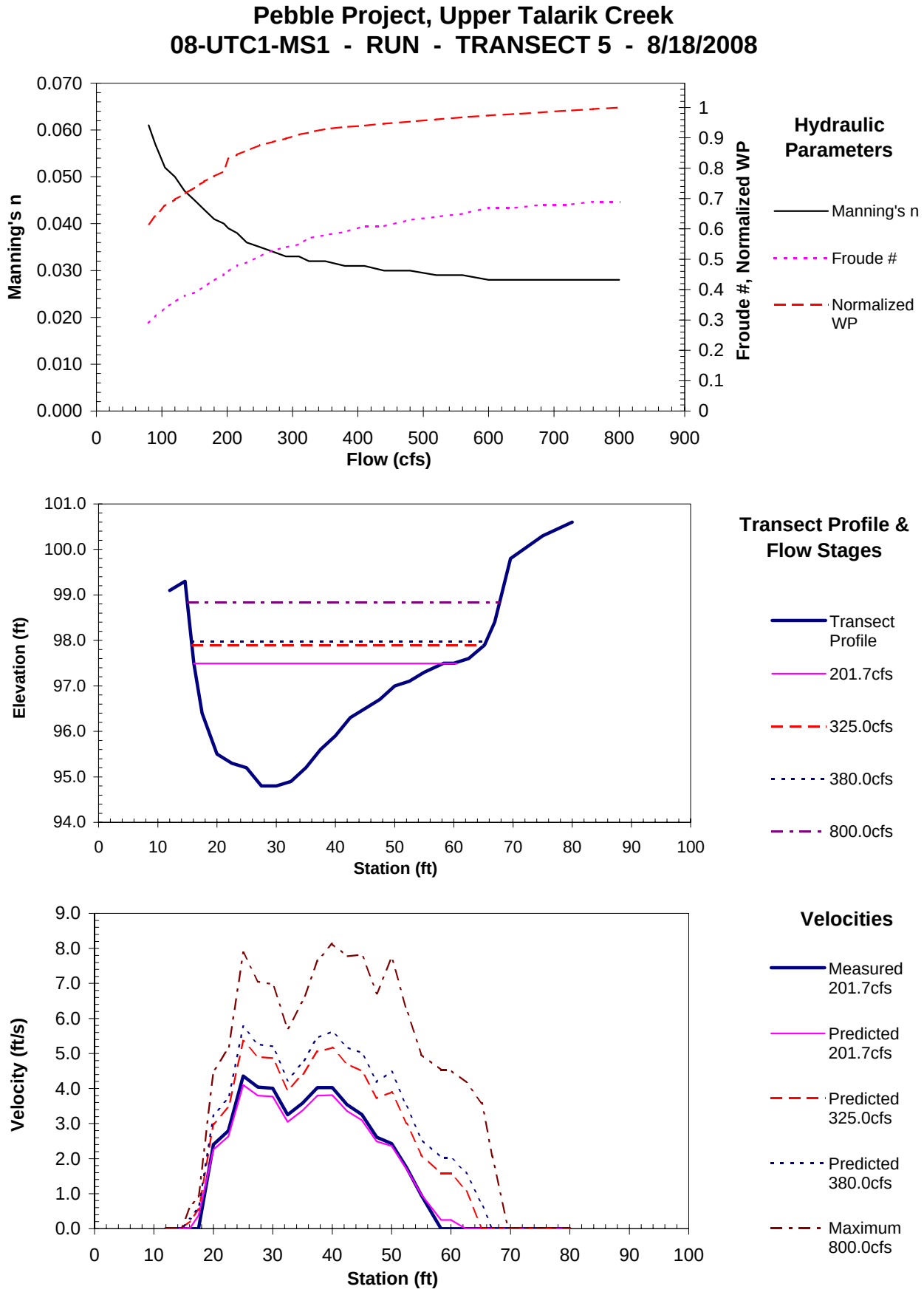
Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-UTC1-MS1  08/18/08
POOL                        0808Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  80.0
QARD  90.0
QARD 105.0
QARD 120.0
QARD 135.0
QARD 150.0
QARD 165.0
QARD 180.0
QARD 195.0
QARD 201.7
QARD 215.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 325.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
XSEC  1000     1000. 1.0     91.65    .00420
      1000  2.097.39 11.097.20 20.095.80 27.195.65 29.095.55 31.095.40
      1000 33.094.85 35.094.35 37.094.10 39.093.70 41.093.35 43.092.85
      1000 45.092.35 47.091.95 49.091.85 51.091.65 53.091.65 55.091.70
      1000 57.092.15 59.092.85 61.093.95 63.094.55 65.095.15 67.095.50
      1000 68.295.65 71.096.99 73.698.99
NS    1000      32.6      32.6      23.6      23.6      22.9      22.9
NS    1000 .15  22.9      23.6      23.6      32.6      34.6      43.6
NS    1000      45.6      54.6      56.6      67.6      76.6      76.6
NS    1000      76.6 .15  43.6 .22  22.9      22.9 .25  21.6      21.6
NS    1000      11.9      12.6      11.9
WSL   1000     94.82     94.92     95.04     95.16     95.26     95.36
WSL   1000     95.45     95.53     95.61     95.64     95.71     95.78
WSL   1000     95.86     95.95     96.02     96.10     96.15     96.23
WSL   1000     96.33     96.42     96.50     96.61     96.71     96.80
WSL   1000     96.89     96.98     97.06     97.14     97.21     97.28
```

IFG4 Data Deck - TR1

IFG4 Data Deck (continued)

```
CAL1  1000     95.69     201.7
VEL1  1000                0.00 0.00 0.00 0.32 0.76 1.10 1.55 1.83 2.15
VEL1  1000 2.82 3.60 3.78 3.50 3.39 2.80 2.35 0.95 0.36 0.81 0.00 0.00
VEL1  1000 0.00
CAL2  1000     96.03     380.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.15     325.0
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR1

IFG4 Data Deck

```
     Pebble     08-UTC1-MS1  08/18/08
POOL                        0808Q                                  TRANSECT 2
IOC       1101100100001000101000
QARD  80.0
QARD  90.0
QARD 105.0
QARD 120.0
QARD 135.0
QARD 150.0
QARD 165.0
QARD 180.0
QARD 195.0
QARD 201.7
QARD 215.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 325.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
XSEC  1000     1000. 1.0     94.01    .00420
      1000 14.099.77 25.099.43 37.098.17 48.097.18 53.097.43 55.697.20
      1000 56.696.61 57.596.31 60.096.26 62.596.11 65.095.86 67.595.56
      1000 70.095.31 72.595.11 75.094.86 77.594.71 80.094.46 82.594.26
      1000 85.094.16 87.594.06 90.094.01 92.594.06 95.094.16 97.594.41
      1000100.094.81102.595.46105.095.11107.595.56109.996.56111.499.68
      1000115.0100.3125.099.38
NS    1000      45.6      45.6      52.6      52.6      32.6      22.9
NS    1000      21.6      21.6      45.6      45.6      45.6      54.6
NS    1000      45.6      45.6      45.6      45.6      45.6      45.6
NS    1000      45.6      45.6      45.6      54.6      54.6      34.6
NS    1000      23.6      23.6      23.6      32.6      34.6      11.9
NS    1000      11.9      11.9
WSL   1000     95.91     95.99     96.09     96.19     96.28     96.36
WSL   1000     96.44     96.51     96.58     96.61     96.67     96.73
WSL   1000     96.80     96.88     96.95     97.02     97.06     97.14
```

IFG4 Data Deck - TR2

IFG4 Data Deck (continued)

```
WSL   1000     97.23     97.31     97.39     97.49     97.59     97.68
WSL   1000     97.76     97.85     97.93     98.00     98.07     98.14
CAL1  1000     96.61     201.7
VEL1  1000                                0.00 0.00 0.00 0.00 0.00 0.00
VEL1  1000 0.36 1.68 3.18 3.57 4.52 3.59 3.67 3.95 4.04 3.67 3.56 1.62
VEL1  1000 0.25-0.38-0.83-1.32 0.00
CAL2  1000     97.25     380.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.10     325.0
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC1-MS1  08/18/08
POOL                        0808Q                                  TRANSECT 3
IOC       1101100100001000101000
QARD  80.0
QARD  90.0
QARD 105.0
QARD 120.0
QARD 135.0
QARD 150.0
QARD 165.0
QARD 180.0
QARD 195.0
QARD 201.7
QARD 215.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 325.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
XSEC  1000     1000. 1.0     95.73    .00420
      1000  2.099.11  6.098.39 10.698.01 12.697.33 13.597.06 14.096.96
      1000 18.096.56 22.096.26 26.096.01 30.095.66 34.095.01 38.095.31
      1000 42.095.21 46.095.46 50.095.76 54.096.16 58.096.21 62.096.36
      1000 66.096.16 70.096.91 74.097.01 74.597.06 78.097.33 82.097.06
      1000 86.096.56 90.096.91 90.497.06 92.999.26 99.499.93
NS    1000      32.6      12.6      15.6      43.6      45.6      45.6
NS    1000      45.6      45.6      45.6      45.6      54.6      54.6
NS    1000      54.6      45.6      54.6      54.6      45.6      45.6
NS    1000      34.6 .08  21.6 .07  21.6      22.9 2.0  21.6      22.9
NS    1000      22.9      22.9      22.9      11.9      11.9
WSL   1000     96.52     96.57     96.65     96.71     96.78     96.84
WSL   1000     96.89     96.95     97.00     97.02     97.07     97.11
WSL   1000     97.17     97.23     97.29     97.34     97.38     97.45
WSL   1000     97.53     97.60     97.67     97.76     97.84     97.92
WSL   1000     98.00     98.07     98.15     98.22     98.28     98.35
```

IFG4 Data Deck - TR3

IFG4 Data Deck (continued)

```
CAL1  1000     97.06     201.7
VEL1  1000                     0.00 0.00 3.00 3.13 3.12 3.39 3.28 3.92
VEL1  1000 3.47 3.74 3.28 2.93 2.15 2.90 1.87 0.00 0.00 0.00      0.00
VEL1  1000 0.00 0.00 0.00
CAL2  1000     97.57     380.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.33     325.0
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC1-MS1  08/18/08
RUN                        0808Q                                  TRANSECT 4
IOC       1101100100001000101000
QARD  80.0
QARD  90.0
QARD 105.0
QARD 120.0
QARD 135.0
QARD 150.0
QARD 165.0
QARD 180.0
QARD 195.0
QARD 201.7
QARD 215.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 325.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
XSEC  1000     1000. 1.0     95.73    .00420
      1000  2.099.94  4.798.56  5.896.88  7.395.08  8.094.88 10.094.68
      1000 12.094.38 14.094.18 16.094.38 18.094.63 20.094.73 22.094.98
      1000 24.095.13 26.095.18 28.095.43 30.095.93 32.096.18 34.096.53
      1000 36.096.78 38.096.93 40.097.08 42.097.13 44.097.18 46.097.23
      1000 46.297.28 52.198.00 57.099.01 62.099.31 67.099.95 72.0100.0
      1000 80.199.75
NS    1000      11.9      12.6      22.9      43.6      43.6      43.6
NS    1000      43.6      54.6      54.6      54.6      64.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6 .06  34.6
NS    1000      43.6      43.6      43.6 .08  43.6      43.6      43.6
NS    1000 .1   43.6      45.6      21.6      21.6      21.6      23.6
NS    1000      12.6
WSL   1000     96.79     96.85     96.93     97.00     97.07     97.13
WSL   1000     97.18     97.23     97.28     97.30     97.34     97.38
WSL   1000     97.43     97.48     97.53     97.58     97.61     97.66
```

IFG4 Data Deck - TR4

IFG4 Data Deck (continued)

```
WSL   1000     97.73     97.78     97.84     97.90     97.96     98.02
WSL   1000     98.08     98.13     98.18     98.22     98.28     98.35
CAL1  1000     97.28     201.7
VEL1  1000           0.00 2.49 2.95 3.23 2.96 3.08 3.36 3.58 3.58 2.97
VEL1  1000 3.13 2.82 2.69 2.28 1.77 1.09 1.07 0.99 0.66 0.24 0.00 0.00
VEL1  1000 0.00
CAL2  1000     97.71     380.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.63     325.0
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC1-MS1  08/18/08
RUN                        0808Q                                  TRANSECT 5
IOC       1101100100001000101000
QARD  80.0
QARD  90.0
QARD 105.0
QARD 120.0
QARD 135.0
QARD 150.0
QARD 165.0
QARD 180.0
QARD 195.0
QARD 201.7
QARD 215.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 325.0
QARD 350.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
XSEC  1000     1000. 1.0     95.73    .00420
      1000 12.099.09 14.699.26 16.197.49 17.596.44 20.095.49 22.595.34
      1000 25.095.19 27.594.84 30.094.79 32.594.89 35.095.19 37.595.59
      1000 40.095.94 42.596.29 45.096.54 47.596.69 50.096.99 52.597.09
      1000 55.097.29 58.397.49 60.097.49 62.597.64 65.297.89 66.998.42
      1000 69.699.78 75.0100.3 80.0100.6
NS    1000      11.9      11.9      32.6 .25  22.9      54.6      54.6
NS    1000      54.6      54.6      54.6      54.6      54.6      54.6
NS    1000      54.6      43.6      43.6      43.6      43.6      34.6
NS    1000      34.6      34.6      34.6      34.6      34.6      43.6
NS    1000      15.6      32.6      34.6
WSL   1000     96.96     97.03     97.11     97.19     97.26     97.33
WSL   1000     97.39     97.44     97.49     97.52     97.56     97.60
WSL   1000     97.66     97.71     97.76     97.82     97.85     97.91
WSL   1000     97.99     98.05     98.12     98.20     98.28     98.37
WSL   1000     98.44     98.52     98.60     98.68     98.76     98.84
```

IFG4 Data Deck - TR5

IFG4 Data Deck (continued)

```
CAL1  1000     97.49     201.7
VEL1  1000           0.00 0.00 2.40 2.79 4.36 4.04 4.01 3.25 3.58 4.03
VEL1  1000 4.03 3.54 3.26 2.61 2.43 1.75 0.95 0.00
VEL1  1000
CAL2  1000     97.98     380.0
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.89     325.0
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck - TR5

WSP Data Deck

```
  Upper Talarik Creek MS-1 08/18/08
RN-RF                        Mid
PARD    30      1.00      0        1.000
QARD  80.0     94.82               1.388     1.388
QARD  90.0     94.92               1.331     1.331
QARD 105.0     95.04               1.260     1.260
QARD 120.0     95.16               1.201     1.201
QARD 135.0     95.26               1.152     1.152
QARD 150.0     95.36               1.110     1.110
QARD 165.0     95.45               1.073     1.073
QARD 180.0     95.53               1.040     1.040
QARD 195.0     95.61               1.011     1.011
QARD 201.7     95.64               1.000     1.000
QARD 215.0     95.71               0.977     0.977
QARD 230.0     95.78               0.953     0.953
QARD 250.0     95.86               0.926     0.926
QARD 270.0     95.95               0.901     0.901
QARD 290.0     96.02               0.878     0.878
QARD 310.0     96.10               0.857     0.857
QARD 325.0     96.15               0.840     0.840
QARD 350.0     96.23               0.821     0.821
QARD 380.0     96.33               0.800     0.800
QARD 410.0     96.42               0.776     0.776
QARD 440.0     96.50               0.757     0.757
QARD 480.0     96.61               0.734     0.734
QARD 520.0     96.71               0.713     0.713
QARD 560.0     96.80               0.695     0.695
QARD 600.0     96.89               0.678     0.678
QARD 640.0     96.98               0.663     0.663
QARD 680.0     97.06               0.649     0.649
QARD 720.0     97.14               0.636     0.636
QARD 760.0     97.21               0.623     0.623
QARD 800.0     97.28               0.612     0.612
FFFFTFFFF                                                                **
       0.0  2.097.39 11.097.20 20.095.80 27.195.65 29.095.55 31.095.40
       0.0 33.094.85 35.094.35 37.094.10 39.093.70 41.093.35 43.092.85
       0.0 45.092.35 47.091.95 49.091.85 51.091.65 53.091.65 55.091.70
       0.0 57.092.15 59.092.85 61.093.95 63.094.55 65.095.15 67.095.50
       0.0 68.295.65 71.096.99 73.698.99
       0.0 .08  11.0      .08  20.0      .08  27.1      .08  29.0             *
       0.0 .08  31.0      .08  33.0      .08  35.0      .08  37.0             *
       0.0 .08  39.0      .08  41.0      .08  43.0      .08  45.0             *
       0.0 .08  47.0      .08  49.0     -.08  51.0      .08  53.0             *
       0.0 .08  55.0      .08  57.0      .08  59.0      .08  61.0             *
       0.0 .08  63.0      .08  65.0      .08  67.0      .08  68.2             *
       0.0 .08  71.0      .08  73.6                                           *
      184. 14.099.77 25.099.43 37.098.17 48.097.18 53.097.43 55.697.20
      184. 56.696.61 57.596.31 60.096.26 62.596.11 65.095.86 67.595.56
      184. 70.095.31 72.595.11 75.094.86 77.594.71 80.094.46 82.594.26
```

WSP Data Deck (continued)

```
     184. 85.094.16 87.594.06 90.094.01 92.594.06 95.094.16 97.594.41
     184.100.094.81102.595.46105.095.11107.595.56109.996.56111.499.68
     184.115.0100.3125.099.38
     184. .079 25.0      .079 37.0      .079 48.0      .079 53.0            *
     184. .079 55.6      .079 56.6      .079 57.5      .079 60.0            *
     184. .079 62.5      .079 65.0      .079 67.5      .079 70.0            *
     184. .079 72.5      .079 75.0      .079 77.5      .079 80.0            *
     184. .079 82.5      .079 85.0      .079 87.5     -.079 90.0            *
     184. .079 92.5      .079 95.0      .079 97.5      .079100.0            *
     184. .079102.5      .079105.0      .079107.5      .079109.9            *
     184. .079111.4      .079115.0      .079125.0                           *
     251.  2.099.11  6.098.39 10.698.01 12.697.33 13.597.06 14.096.96
     251. 18.096.56 22.096.26 26.096.01 30.095.66 34.095.01 38.095.31
     251. 42.095.21 46.095.46 50.095.76 54.096.16 58.096.21 62.096.36
     251. 66.096.16 70.096.91 74.097.01 74.597.06 78.097.33 82.097.06
     251. 86.096.56 90.096.91 90.497.06 92.999.26 99.499.93
     251. .045  6.0      .045 10.6      .045 12.6      .045 13.5            *
     251. .045 14.0      .045 18.0      .045 22.0      .045 26.0            *
     251. .045 30.0     -.045 34.0      .045 38.0      .045 42.0            *
     251. .045 46.0      .045 50.0      .045 54.0      .045 58.0            *
     251. .045 62.0      .045 66.0      .045 70.0      .045 74.0            *
     251. .045 74.5      .045 78.0      .045 82.0      .045 86.0            *
     251. .045 90.0      .045 90.4      .045 92.9      .045 99.4            *
     335.  2.099.94  4.798.56  5.896.88  7.395.08  8.094.88 10.094.68
     335. 12.094.38 14.094.18 16.094.38 18.094.63 20.094.73 22.094.98
     335. 24.095.13 26.095.18 28.095.43 30.095.93 32.096.18 34.096.53
     335. 36.096.78 38.096.93 40.097.08 42.097.13 44.097.18 46.097.23
     335. 46.297.28 52.198.00 57.099.01 62.099.31 67.099.95 72.0100.0
     335. 80.199.75
     335. .036  4.7      .036  5.8      .036  7.3      .036  8.0            *
     335. .036 10.0      .036 12.0     -.036 14.0      .036 16.0            *
     335. .036 18.0      .036 20.0      .036 22.0      .036 24.0            *
     335. .036 26.0      .036 28.0      .036 30.0      .036 32.0            *
     335. .036 34.0      .036 36.0      .036 38.0      .036 40.0            *
     335. .036 42.0      .036 44.0      .036 46.0      .036 46.2            *
     335. .036 52.1      .036 57.0      .036 62.0      .036 67.0            *
     335. .036 72.0      .036 80.1                                           *
     413. 12.099.09 14.699.26 16.197.49 17.596.44 20.095.49 22.595.34
     413. 25.095.19 27.594.84 30.094.79 32.594.89 35.095.19 37.595.59
     413. 40.095.94 42.596.29 45.096.54 47.596.69 50.096.99 52.597.09
     413. 55.097.29 58.397.49 60.097.49 62.597.64 65.297.89 66.998.42
     413. 69.699.78 75.0100.3 80.0100.6
     413. .045 16.1      .045 17.5      .045 20.0      .045 22.5            *
     413. .045 25.0      .045 27.5     -.045 30.0      .045 32.5            *
     413. .045 35.0      .045 37.5      .045 40.0      .045 42.5            *
     413. .045 45.0      .045 47.5      .045 50.0      .045 52.5            *
     413. .045 55.0      .045 58.3      .045 60.0      .045 62.5            *
     413. .045 65.2      .045 66.9      .045 69.6      .045 75.0            *
     413. .045 80.0                                                         *
ENDJ
```

WSP Data Deck

WSP Data Deck (continued)

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ENDR
```

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek

Reach: UT-C

UT-C Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
05-UTC1-IC1	16.84	271.2	86.8			96.46	96.30			0.00	0.00			IFG4
05-UTC1-RF2	17.36	257.4	201.5	213.7		95.90	95.65	95.70		0.00	0.04	0.03		MANSQ
05-UTC1-RN1	19.34	195.2	143.6	194.8		96.39	96.25	96.39		0.00	0.00	0.00		IFG4
04-UTC-IC2	19.82	165.2	181.4			95.77	95.82			0.00	0.00			MANSQ
04-UTC-RN1	23.75	124.1	191.1			97.69	97.83			0.00	-0.01			MANSQ
04-UTC-RN2	24.36	142.1	419.9	159.5	121.4	94.85	95.64	94.99	94.77	0.02	0.02	-0.05	0.01	IFG4
04-UTC-RF2	24.59	151.1	402.7	166.5		99.42	100.05	99.51		0.02	0.01	-0.02		IFG4

* RK is an abbreviation for River Kilometer

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 05-UTC1-IC1

Habitat Type: Island Complex

River Kilometer: 16.84

Stream: **Upper Talarik Creek**
Reach: **C**
Site Name: **05-UTC1-IC1**
Habitat Type: **Island Complex**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/19/2005	100.00	99.41	99.48
2nd	7/20/2005	100.00	99.42	99.49
3rd	7/26/2006	100.00	99.46	99.38
4th	4/7/2007	100.00	99.43	99.54

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between control pins indicated the pins were slightly moved in 2006 and 2007. The disturbance was +0.05ft for HP and -0.10ft for TP, both from 2005 to 2006.
(c) The disturbance cause was unclear. We are unable to determine how much each pin was moved from the survey results, to adjust all WSEs to the datum initially set up in 2005.
(d) It is decided, however, no adjustment would be made to any WSEs because we consider the 0.05ft change between BM and HP is still marginally acceptable. The errors resulted from the unadjusted WSEs should not be too significant.
(e) Photos of 4/7/07 survey showed thick ice covered the entire channel. Hydraulics were impacted by ice and were not used for modeling.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

	WSE (ft)	
Date	Left	Right (main)
6/19/2005	96.31	96.46
7/20/2005	96.12	96.27
7/26/2006	96.16	96.30
4/7/2007	98.42	98.51

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Q (cfs)		
	Left	Right (main)	Total
6/19/2005	2.6	268.6	271.2
7/20/2005			
7/26/2006	0.3	86.4	86.8
4/7/2007			

No discharge was measured during the 7/20/05 survey.
Discharge measured on 4/7/07 was affected by ice. Photos showed thick ice in channel.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/19/2005	0.813%	75
7/20/2005	0.813%	75
7/26/2006	0.649%	72.4
4/7/2007	NA	NA

No longitudinal WSE was measured in 4/7/07 trip.
The slope S=0.813% of 6/19/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert	
	Right (Main) Channel	Left (Side) Channel
6/19/2005	94.86	95.91
7/20/2005		
7/26/2006	94.90	95.96
4/7/2007	96.72	97.42
max Invert	94.90	
SZF	96.15	

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed during the 7/20/05 site visit.
(4) Transect profile of 4/7/07 was affected by ice. The invert was not used to determine SZF.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE -R ch. (ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR1	TR1	TR1	
1st	6/19/2005	271.2	96.46	96.46	0.00	IFG4
2nd	7/20/2005		96.27			
3rd	7/26/2006	86.8	96.30	96.30	0.00	IFG4
4th	4/7/2007		98.51			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharge was measured in the 7/20/05 trip.
(d) Field photos of 4/7/07 showed thick ice on banks and in the channel. Hydraulics were impacted by ice and were not used in modeling.
(e) This transect has only two pairs of WSE~Q available, but Log-log (IFG4 method) relationship was still assumed when calibrating the WSE~Q rating curve. Usually MANSQ would be applied for the calibration when only two pairs of WSE~Q can be used, but MANSQ calibration results showed large (>0.25ft) calibration errors. To make rating curve more reasonable, IFG4's log-log relationship was applied.

calibration notes

(3) Velocity calibration

This site has one transect with two complete velocity/discharge measurements, including 86.8cfs and 271.2cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the two calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

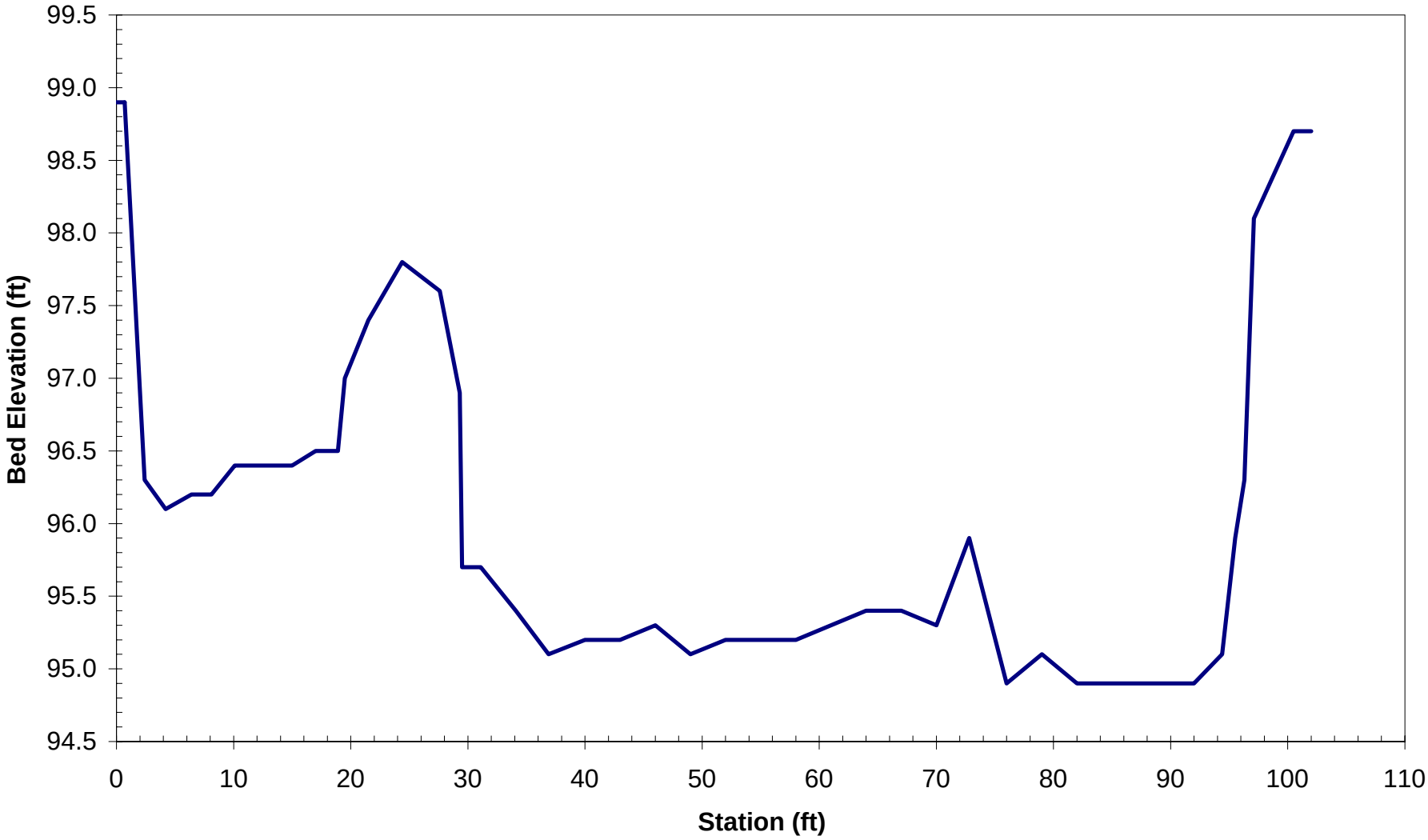
Survey Date	Q (cfs)	WUA (Y/N)
6/19/2005	271.2	Y
7/20/2005		
7/26/2006	86.8	Y
4/7/2007		

(4) Hydraulic Calibration Results:

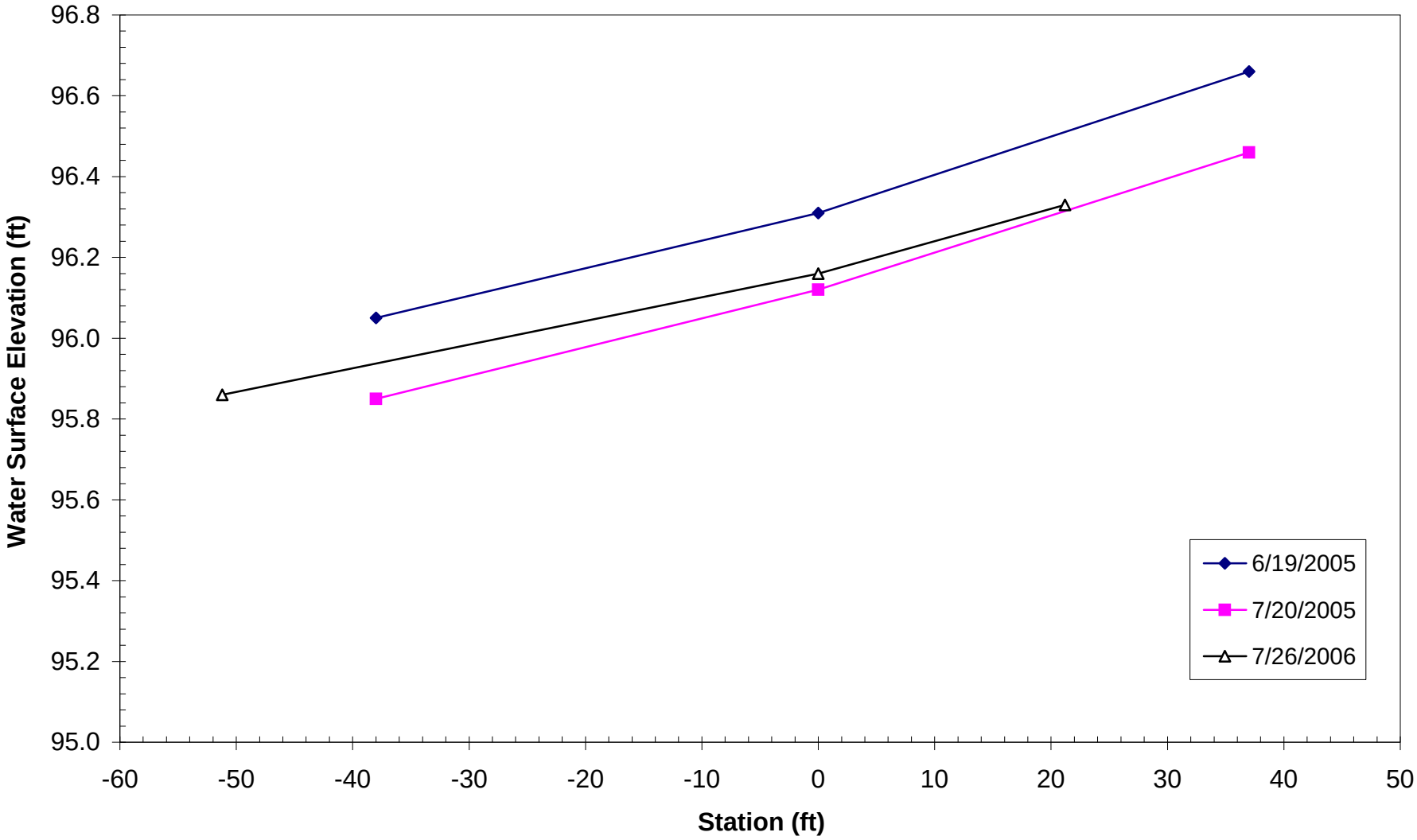
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

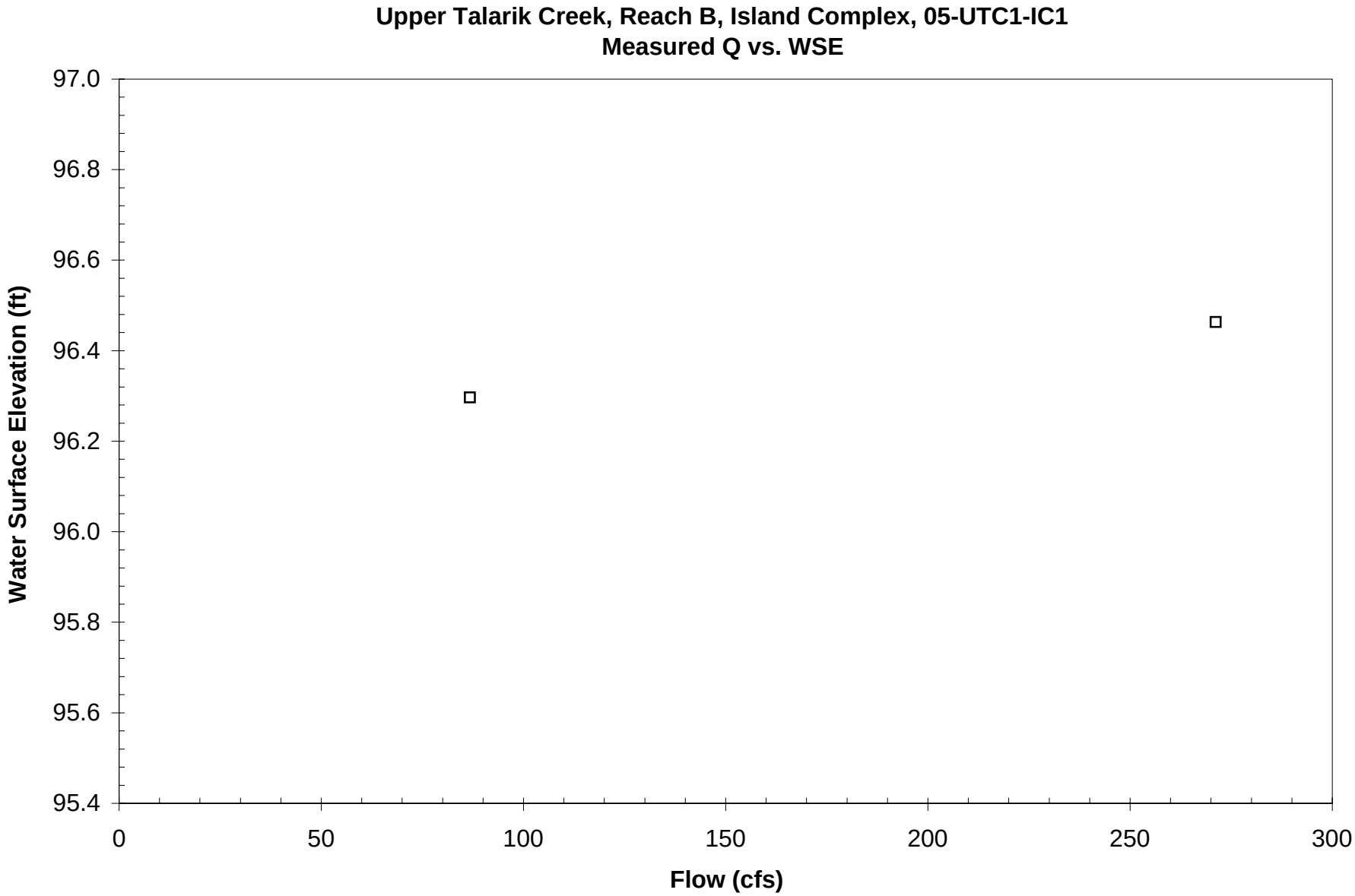
calibration notes

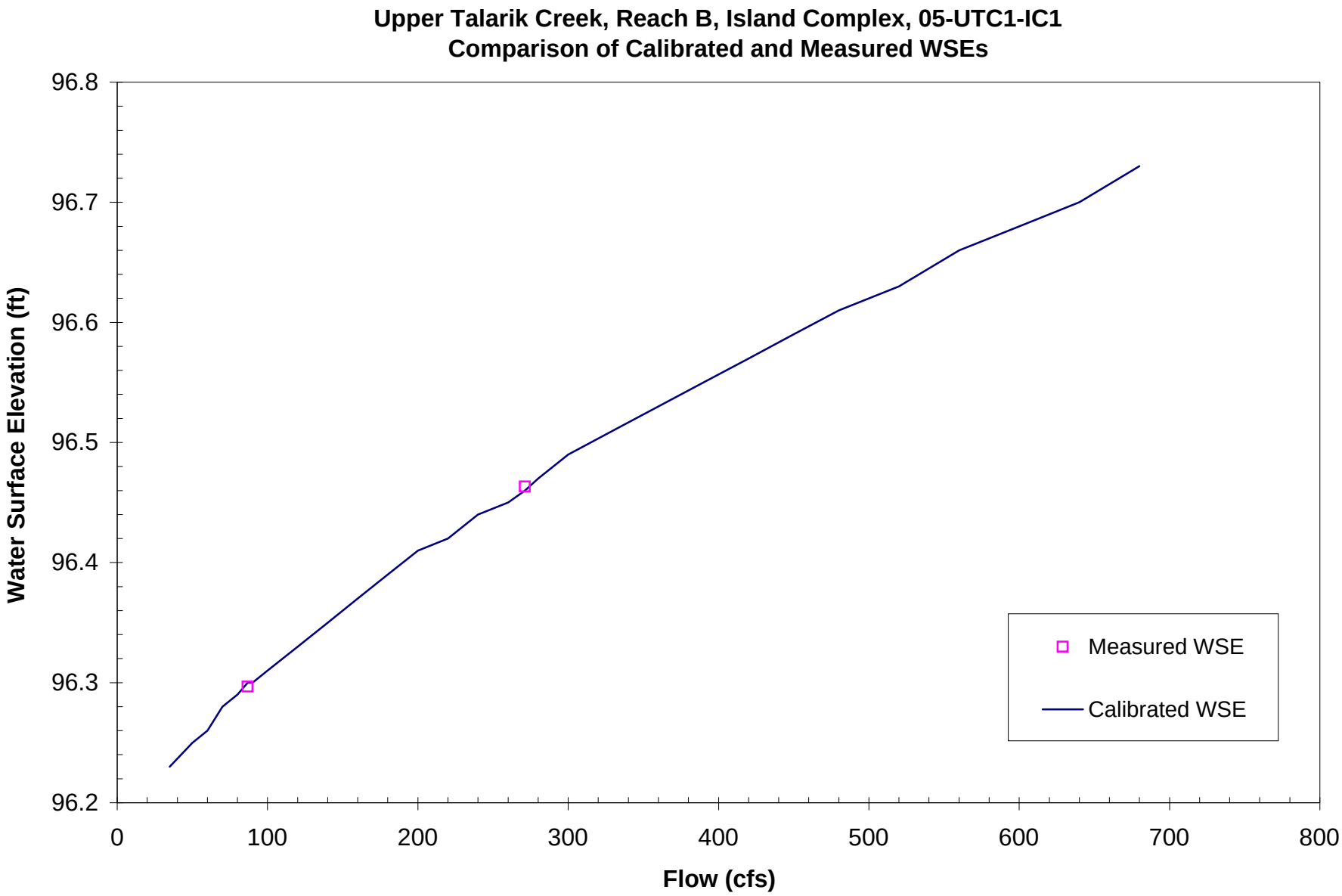
Upper Talarik Creek, Reach C, Island Complex, 05-UTC1-IC1
Measured Transect Profile



Upper Talarik Creek, Reach B, Island Complex, 05-UTC1-IC1
Longitudinal Water surface Elevation Profiles



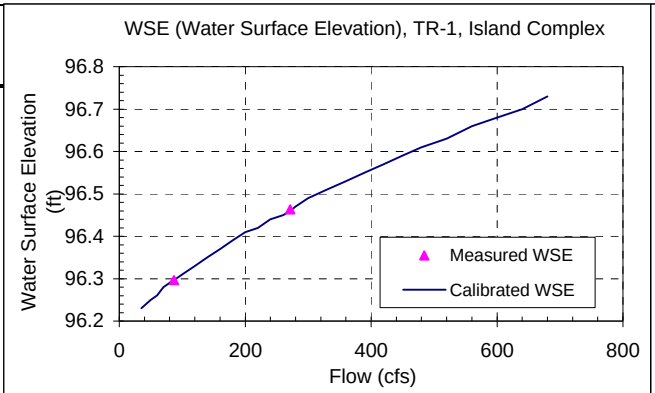

Upper Talarik Creek, Reach B, Island Complex, 05-UTC1-IC1
Measured Q vs. WSE
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
0
50
100
150
200
250
300
Flow (cfs)

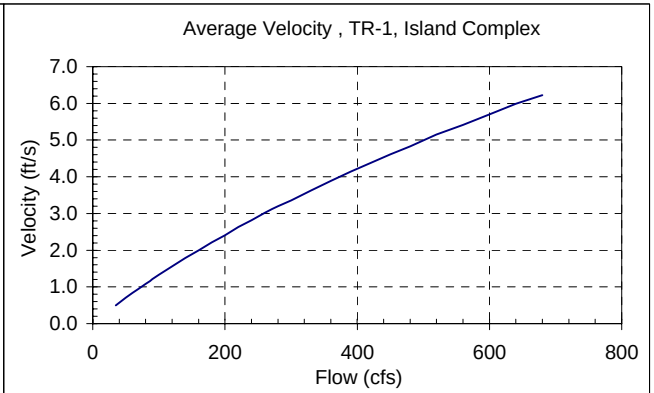

Upper Talarik Creek, Reach B, Island Complex, 05-UTC1-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.8
96.7
96.6
96.5
96.4
96.3
96.2
0
100
200
300
400
500
600
700
800
Flow (cfs)
Measured WSE
Calibrated WSE

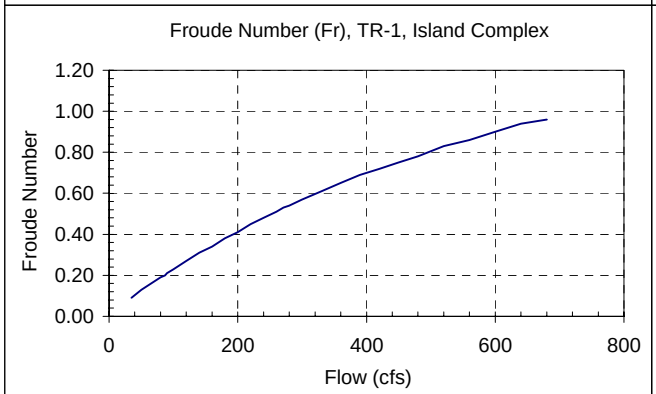
Stream: Upper Talarik Creek
Site Name: 05-UTC1-IC1
Date: 6/19/2005
Calibration Flow: Q(6/19/2005)

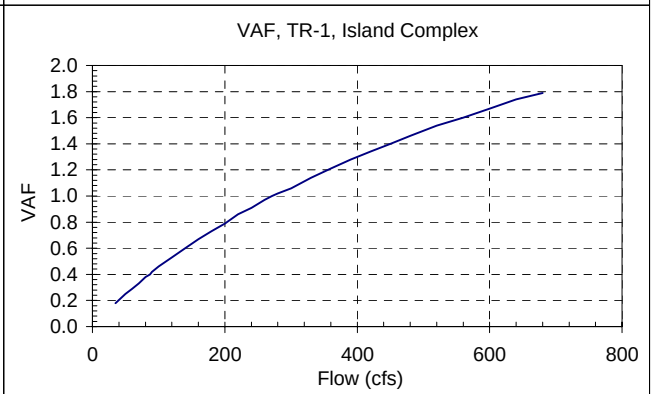
Reach: B
Habitat: Island Complex
Site #: 1
Transect: 1

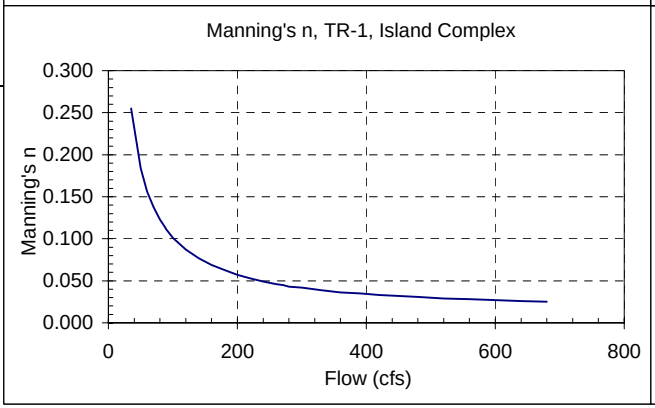
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
35	96.23	0.09	0.50	0.18	0.255	74.1
50	96.25	0.13	0.71	0.25	0.184	74.5
60	96.26	0.15	0.84	0.29	0.156	74.7
70	96.28	0.17	0.96	0.33	0.138	75.0
80	96.29	0.19	1.08	0.38	0.123	75.1
86.8	96.30	0.20	1.16	0.40	0.115	75.3
90	96.30	0.21	1.21	0.42	0.111	75.3
100	96.31	0.23	1.33	0.46	0.101	75.4
120	96.33	0.27	1.56	0.53	0.087	75.7
140	96.35	0.31	1.79	0.60	0.077	75.9
160	96.37	0.34	2.00	0.67	0.069	76.7
180	96.39	0.38	2.21	0.73	0.063	77.8
200	96.41	0.41	2.41	0.79	0.057	79.0
220	96.42	0.45	2.63	0.86	0.053	79.6
240	96.44	0.48	2.82	0.91	0.049	80.7
260	96.45	0.51	3.02	0.97	0.046	81.3
271.2	96.46	0.53	3.12	1.00	0.045	82.3
280	96.47	0.54	3.20	1.02	0.043	83.4
300	96.49	0.57	3.36	1.06	0.042	84.2
330	96.51	0.61	3.63	1.14	0.039	85.0
360	96.53	0.65	3.89	1.21	0.036	85.5
390	96.55	0.69	4.14	1.28	0.035	85.6
420	96.57	0.72	4.38	1.34	0.033	85.7
450	96.59	0.75	4.61	1.40	0.032	85.8
480	96.61	0.78	4.83	1.46	0.031	85.9
520	96.63	0.83	5.15	1.54	0.029	86.0
560	96.66	0.86	5.41	1.60	0.028	86.1
600	96.68	0.90	5.70	1.67	0.027	86.2
640	96.70	0.94	5.99	1.74	0.026	86.3
680	96.73	0.96	6.22	1.79	0.025	86.4

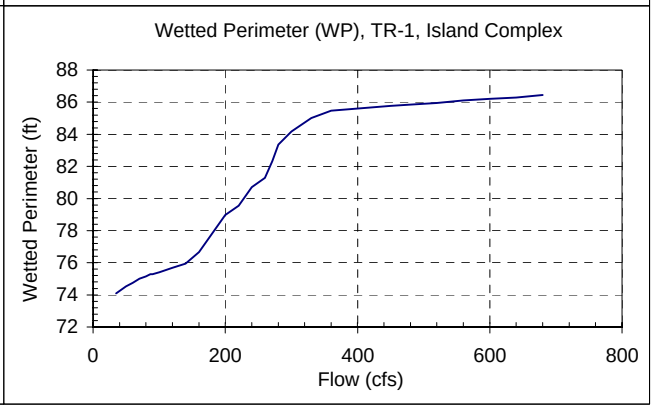




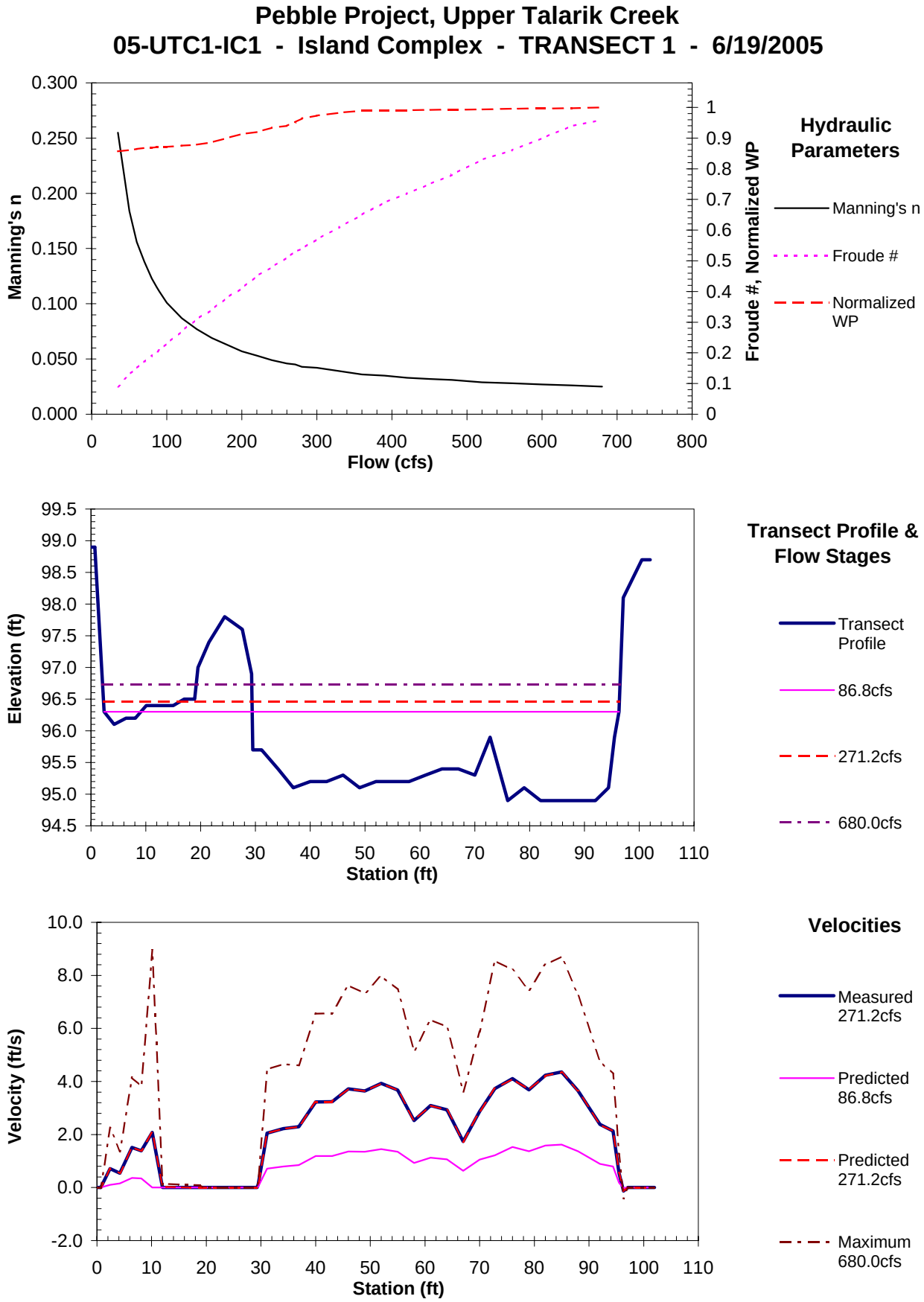








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC1-IC1  06/19/05
ISLAND                     0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  35.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  86.8
QARD  90.0
QARD 100.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 271.2
QARD 280.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
XSEC  1000     1000. 1.0     96.15    .00813
      1000   .098.87   .798.86  2.496.26  4.296.05  6.496.16  8.196.16
      1000 10.196.36 12.096.45 12.796.36 15.096.45 17.096.47 18.996.52
      1000 19.597.01 21.597.40 24.497.80 27.697.62 29.396.93 29.595.66
      1000 31.195.66 34.195.45 36.995.05 40.095.16 43.095.16 46.095.26
      1000 49.095.05 52.095.16 55.095.16 58.095.16 61.095.26 64.095.36
      1000 67.095.36 70.095.26 72.895.86 76.094.95 79.095.05 82.094.86
      1000 85.094.95 88.094.86 92.094.95 94.495.05 95.595.86 96.396.26
      1000 97.198.13100.598.66102.098.73
NS    1000      22.9      22.9      24.8      43.6      45.6      45.9
NS    1000      45.7      43.6      54.6      56.7      34.6      24.7
NS    1000      24.8      22.9      22.9      22.9      23.6      23.6
NS    1000      32.7      53.6      46.8      64.6      45.6      54.6
NS    1000      45.6      54.6      54.6      63.7      54.6      64.6
NS    1000      54.6      54.7      73.7      53.7      54.7      54.7
NS    1000      45.8      45.7      45.7      23.6      23.8      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9
WSL   1000     96.23     96.25     96.26     96.28     96.29     96.30
WSL   1000     96.30     96.31     96.33     96.35     96.37     96.39
WSL   1000     96.41     96.42     96.44     96.45     96.46     96.47
WSL   1000     96.49     96.51     96.53     96.55     96.57     96.59
WSL   1000     96.61     96.63     96.66     96.68     96.70     96.73
CAL1  1000     96.46     271.2
VEL1  1000           0.71 0.54 1.51 1.39 2.08 0.00 0.00 0.00
VEL1  1000                          0.13 2.05 2.22 2.29 3.23 3.24 3.72
VEL1  1000 3.64 3.93 3.68 2.53 3.09 2.93 1.74 2.87 3.73 4.11 3.69 4.23
VEL1  1000 4.36 3.65 2.38 2.13 0.55-0.13
CAL2  1000     96.30      86.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 05-UTC1-RF2

Habitat Type: Riffle

River Kilometer: 17.36

Stream: Upper Talarik Creek
Reach: C
Site Name: 05-UTC1-RF2
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	AP	TP
1st	6/20/2005	1	100.00	98.83	99.49	101.25
2nd	7/19/2005	2	100.00	98.81	99.49	101.24
3rd	8/18/2005	3	100.00	98.82	98.49	101.24
4th	7/25/2006	4	100.00	98.82	99.51	101.21
5th	4/7/2007	5	100.00	98.87	99.61	101.13

(a) Elevations of control pins (BM, HP, AP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes among BM, HP and AP were within ±0.01ft in 2005-2006 period. Small changes suggested the three pins be stable in that period.
(c) TP moved slightly 0.04ft in 2006. No WSE corrections were needed because the elevation datum was based on BM, which was stable.
(d) Field notes of 4/7/07 indicated ice at the site. Also the transect profile plot showed the bed was elevated, likely by the anchor ice in the channel. The hydraulics were impacted by the ice and thus were not included for modeling.

calibration notes

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.
Off channel is considered a side channel in the modeling.

Date	Main Channel	Off Channel
6/20/2005	95.90	94.89
7/19/2005	95.68	94.87
8/18/2005	95.65	94.78
7/25/2006	95.70	94.97
4/7/2007	97.61	97.04

No flow was measured on 7/19/05.
The WSE of 4/7/07 was affected by ice.

Discharge:

All measured discharges are listed in the following table.

Date	Main Channel	Off Channel	Total	
6/20/2005	255.6	1.80	257.4	
7/19/2005				Substrate survey
8/18/2005	200.2	1.24	201.5	
7/25/2006	213.8	-0.15	213.7	
4/7/2007	113.2	6.67	119.9	ice

No flow was measured on 7/19/05.
Channel was occupied by ice in 4/7/07 trip.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/20/2005	0.849%	139.0
7/19/2005	0.820%	139.0
8/18/2005	0.899%	139.0
7/25/2006	0.946%	120.5
4/7/2007	0.439%	139.0

The slope S=0.849% of 6/20/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/20/2005	94.10
7/19/2005	
8/18/2005	94.15
7/25/2006	94.20
4/7/2007	95.91
max Invert	94.20
SZF	94.20

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed during the 7/19/05 site visit.
(4) Transect profile of 4/7/07 was affected by ice. The invert was not used to determine SZF.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

IFG4 was first tried for WSE modeling. Small calibration errors were resulted in, but the simulated hydraulics were unable to be justified. Therefore MANSQ was used and reasonable simulated hydraulics were obtained. β=0.00 was used in MANSQ WSE calibration.

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR1	TR1	TR1	
1st	6/20/2005	257.4	95.90	95.90	0.00	MANSQ
2nd	7/19/2005		95.68			
3rd	8/18/2005	201.5	95.65	95.69	0.04	MANSQ
4th	7/25/2006	213.7	95.70	95.73	0.03	MANSQ
5th	4/7/2007	119.9	97.61			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.
(c) No discharge was measured in 7/19/05 trip.
(d) No field photos were available for 4/7/07 site visit, but the field notes indicated ice at the site and transect profile surveyed on this date showed the bed was elevated significantly. As the result, hydraulics were severely affected by ice and were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 201.5cfs, 213.7cfs, and 257.4cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

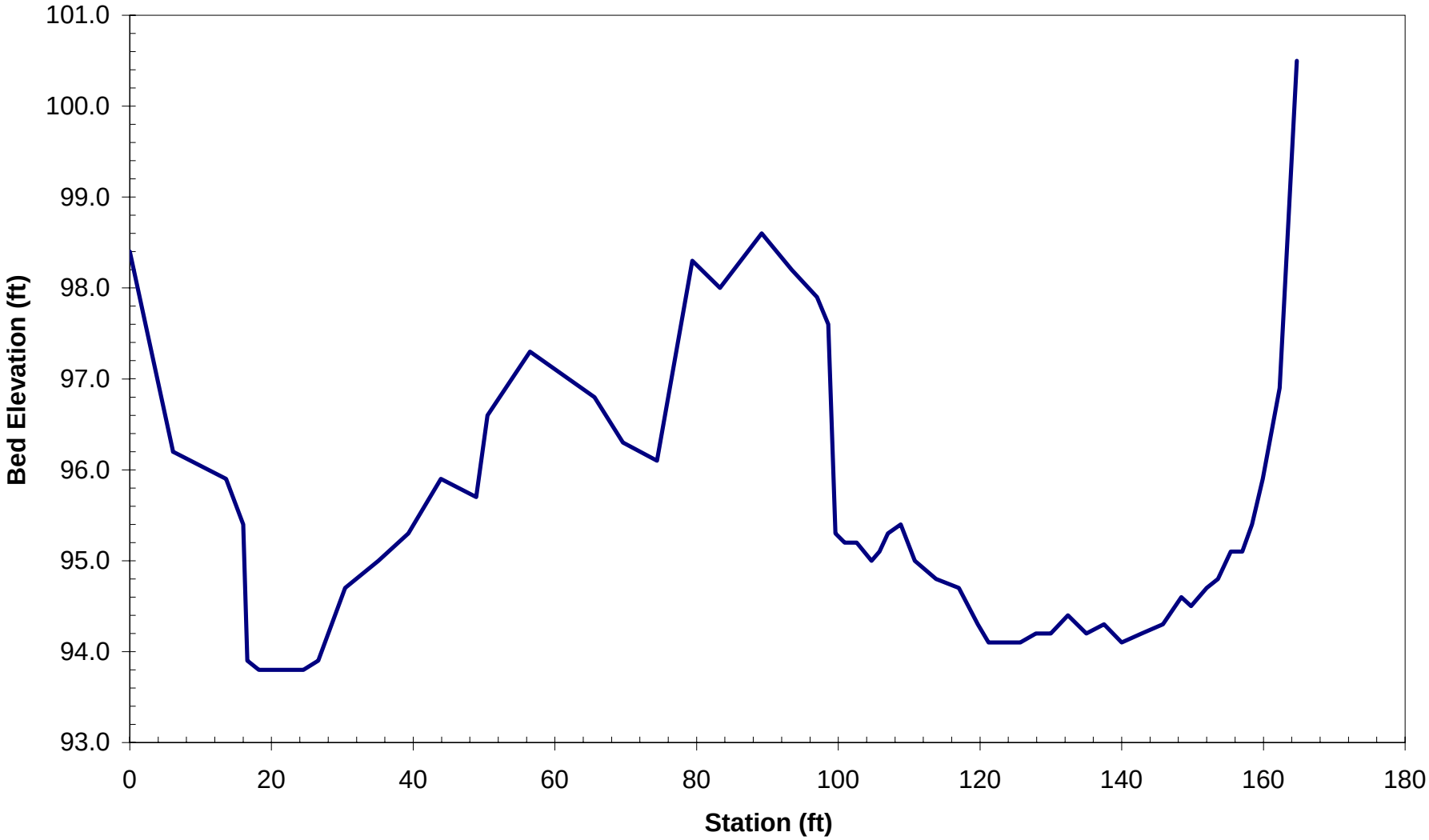
Survey Date	Q (cfs)	WUA (Y/N)
6/20/2005	257.4	Y
7/19/2005		
8/18/2005	201.5	Y
7/25/2006	213.7	
4/7/2007	119.9	

(4) Hydraulic Calibration Results:

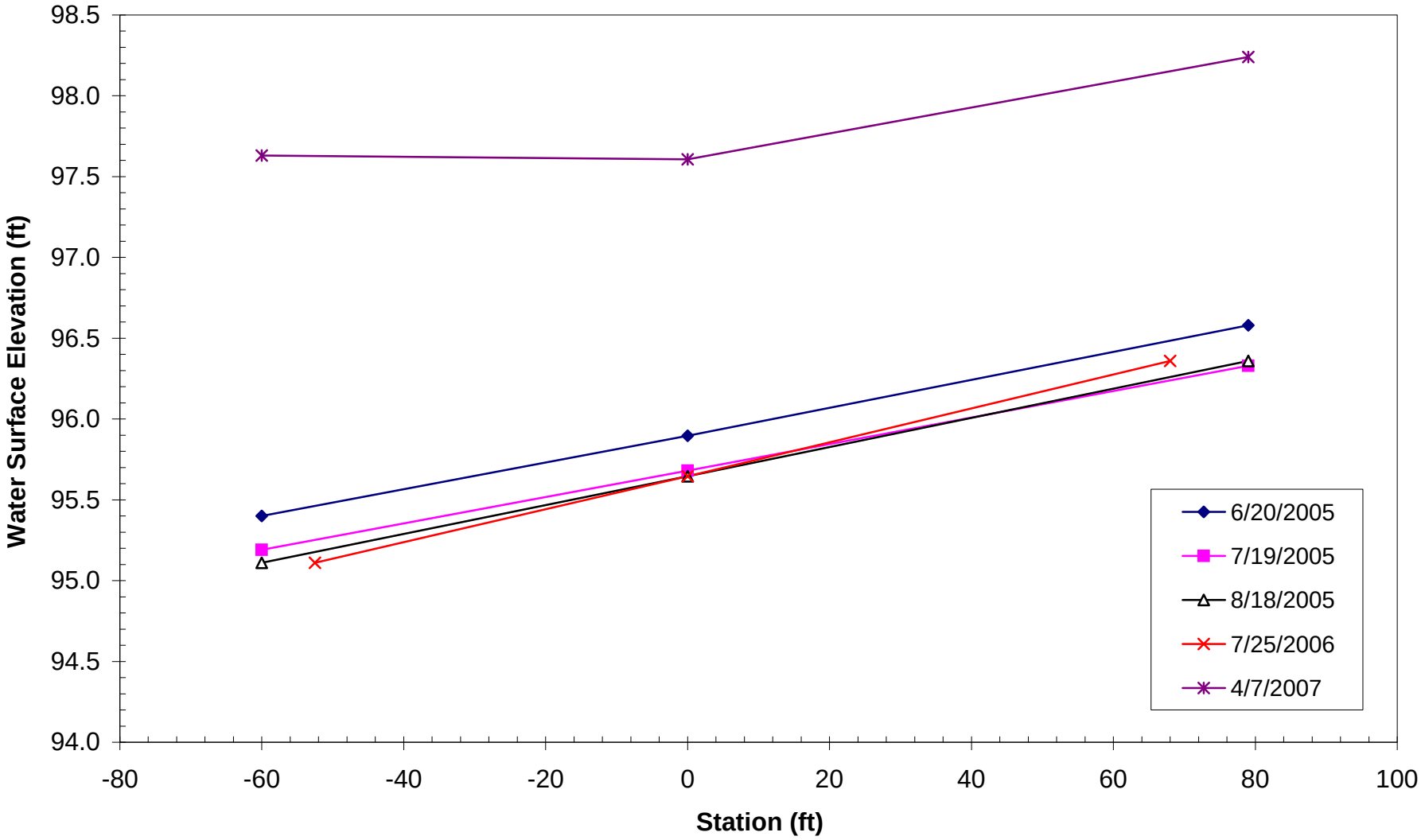
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

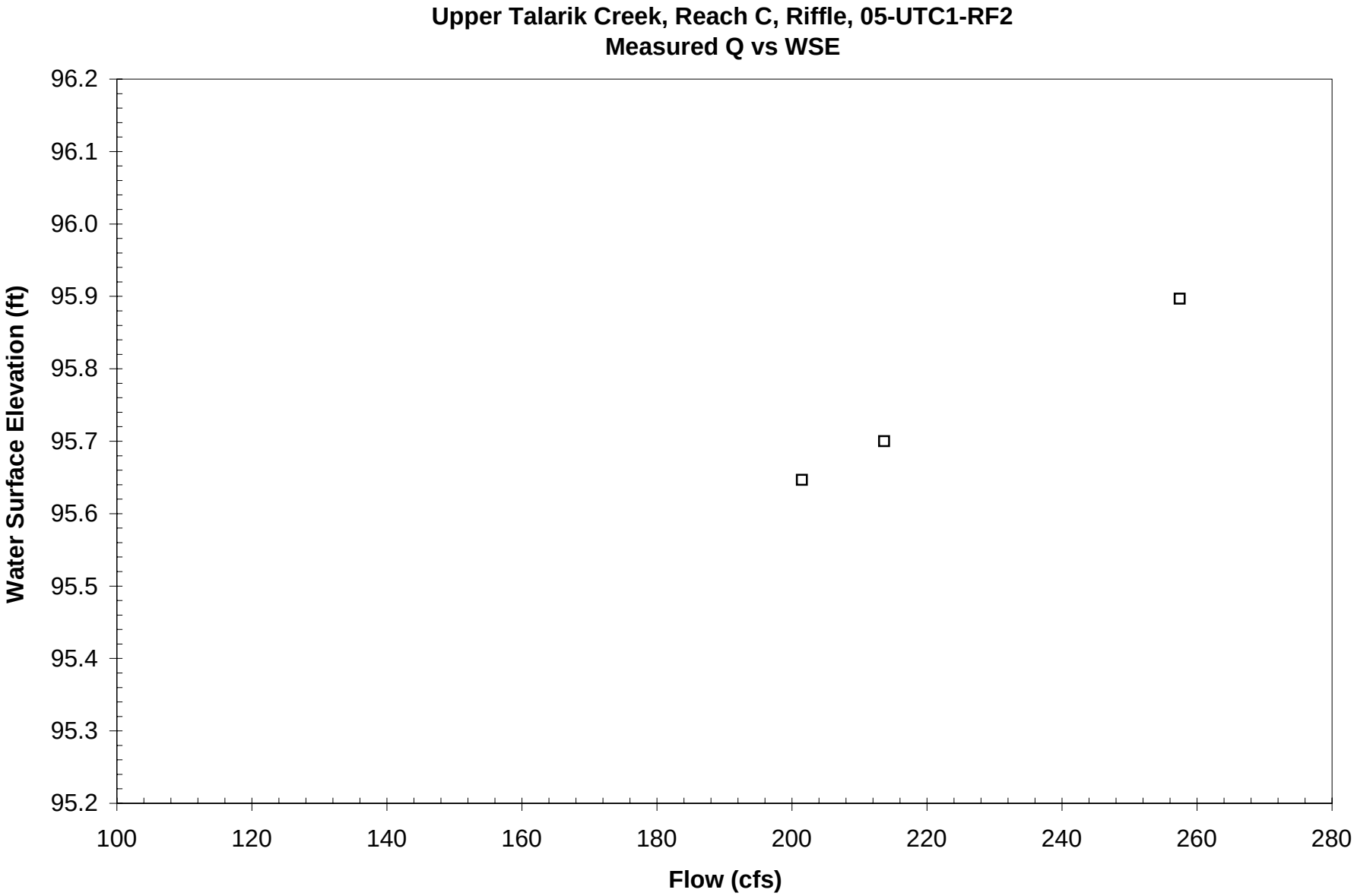
calibration notes

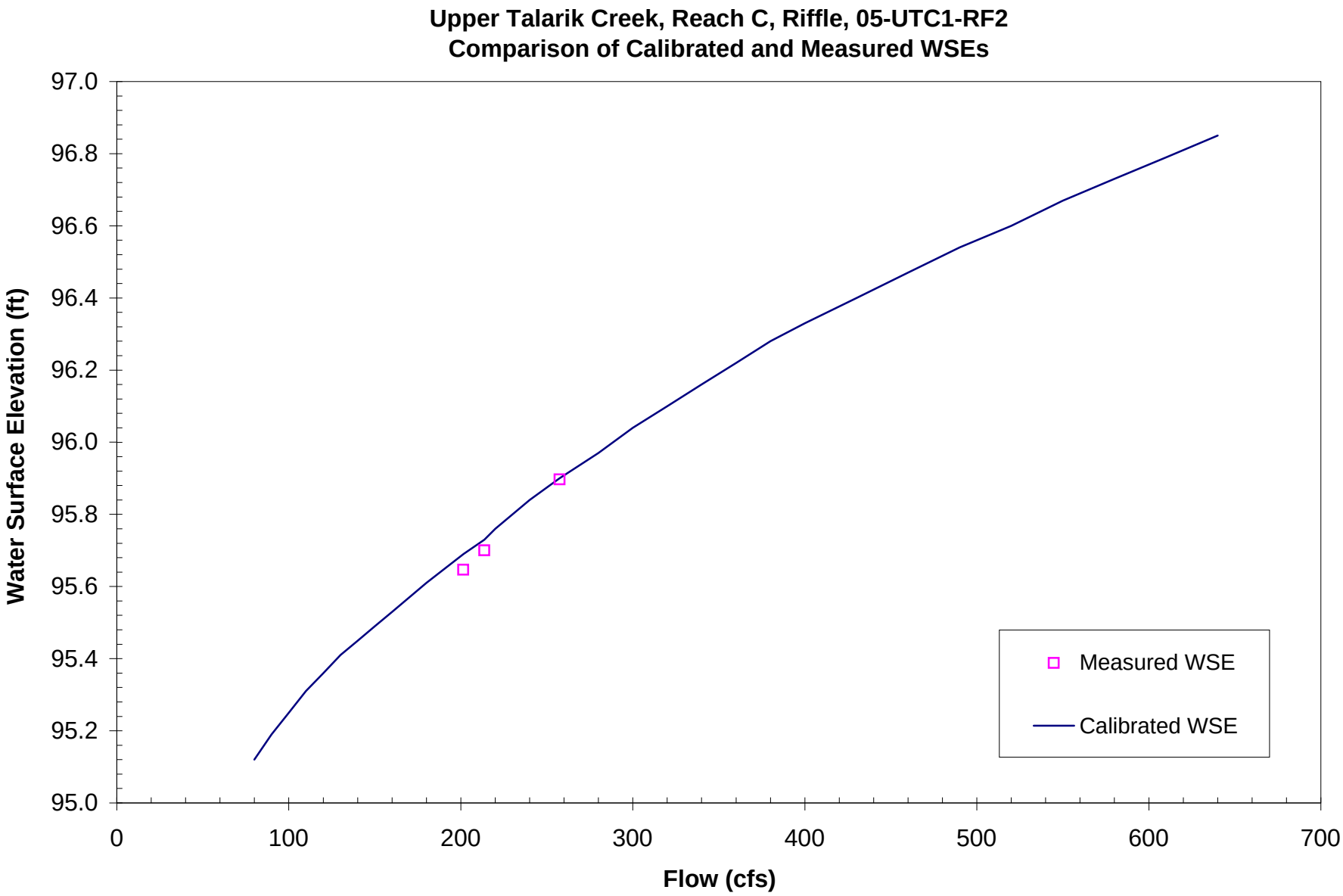
Upper Talarik Creek, Reach C, Riffle, 05-UTC1-RF2
Measured Transect Profile



Upper Talarik Creek, Reach C, Riffle, 05-UTC1-RF2
Longitudinal Water Surface Elevation Profiles



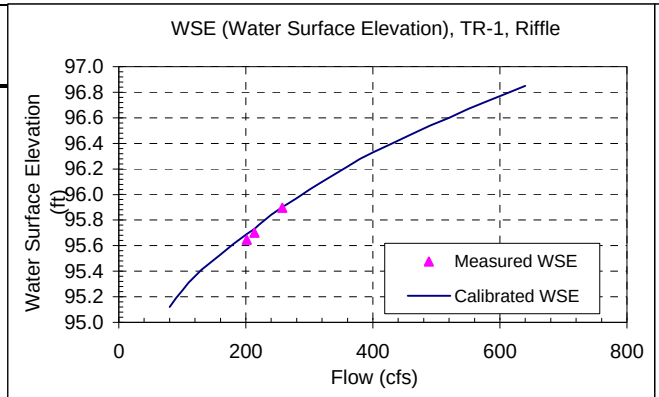

Upper Talarik Creek, Reach C, Riffle, 05-UTC1-RF2
Measured Q vs WSE
Water Surface Elevation (ft)
96.2
96.1
96.0
95.9
95.8
95.7
95.6
95.5
95.4
95.3
95.2
100
120
140
160
180
200
220
240
260
280
Flow (cfs)

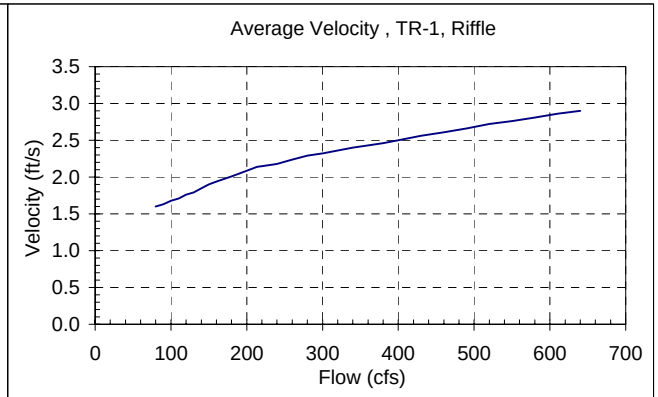

Upper Talarik Creek, Reach C, Riffle, 05-UTC1-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
100
200
300
400
500
600
700
Flow (cfs)
Measured WSE
Calibrated WSE

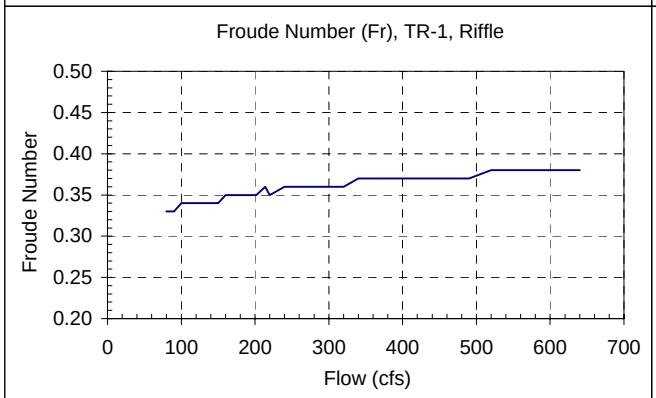
Stream: Upper Talarik Creek
Site Name: 05-UTC1-RF2
Date: 6/20/2005
Calibration Flow: Q(6/20/2005)

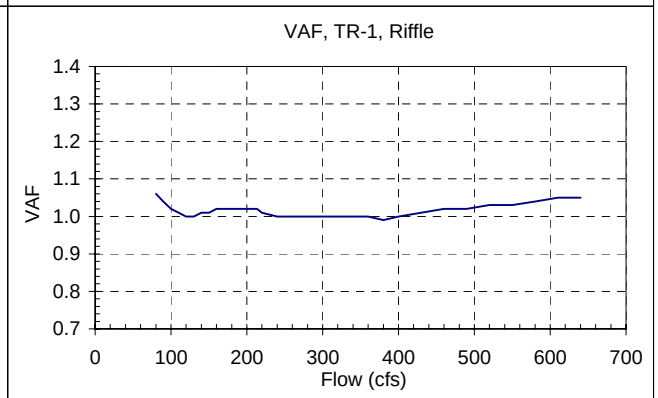
Reach: C
Habitat: Riffle
Site #: 2
Transect: 1

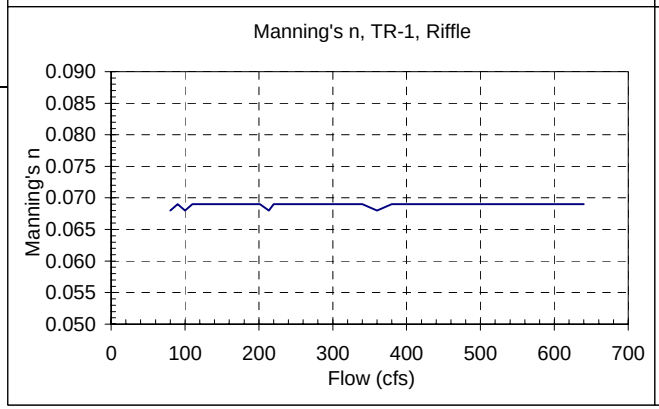
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
80	95.12	0.33	1.60	1.06	0.068	71.1
90	95.19	0.33	1.63	1.04	0.069	74.0
100	95.25	0.34	1.68	1.02	0.068	78.4
110	95.31	0.34	1.71	1.01	0.069	81.0
120	95.36	0.34	1.76	1.00	0.069	82.8
130	95.41	0.34	1.79	1.00	0.069	84.5
140	95.45	0.34	1.85	1.01	0.069	85.2
150	95.49	0.34	1.90	1.01	0.069	85.9
160	95.53	0.35	1.94	1.02	0.069	86.6
180	95.61	0.35	2.01	1.02	0.069	87.9
201.5	95.69	0.35	2.09	1.02	0.069	89.3
213.7	95.73	0.36	2.14	1.02	0.068	90.5
220	95.76	0.35	2.15	1.01	0.069	91.9
240	95.84	0.36	2.18	1.00	0.069	95.5
257.4	95.90	0.36	2.23	1.00	0.069	98.2
280	95.97	0.36	2.29	1.00	0.069	100.2
300	96.04	0.36	2.32	1.00	0.069	102.3
320	96.10	0.36	2.36	1.00	0.069	104.5
340	96.16	0.37	2.40	1.00	0.069	107.8
360	96.22	0.37	2.43	1.00	0.068	111.1
380	96.28	0.37	2.46	0.99	0.069	113.1
400	96.33	0.37	2.50	1.00	0.069	114.3
430	96.40	0.37	2.56	1.01	0.069	115.6
460	96.47	0.37	2.61	1.02	0.069	117.0
490	96.54	0.37	2.66	1.02	0.069	118.4
520	96.60	0.38	2.72	1.03	0.069	119.7
550	96.67	0.38	2.76	1.03	0.069	121.5
580	96.73	0.38	2.81	1.04	0.069	123.0
610	96.79	0.38	2.86	1.05	0.069	124.7
640	96.85	0.38	2.90	1.05	0.069	126.6

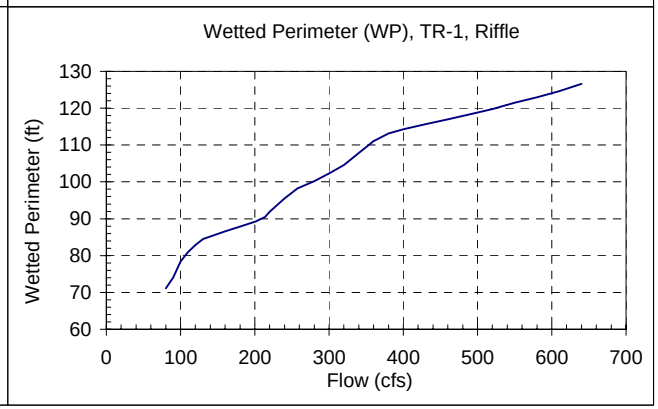






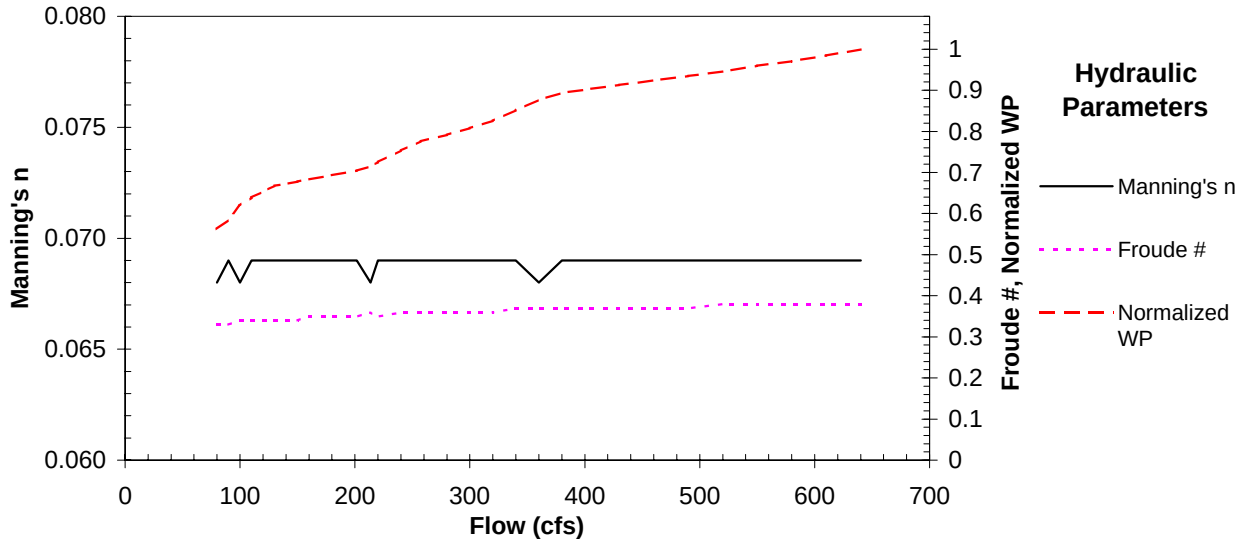


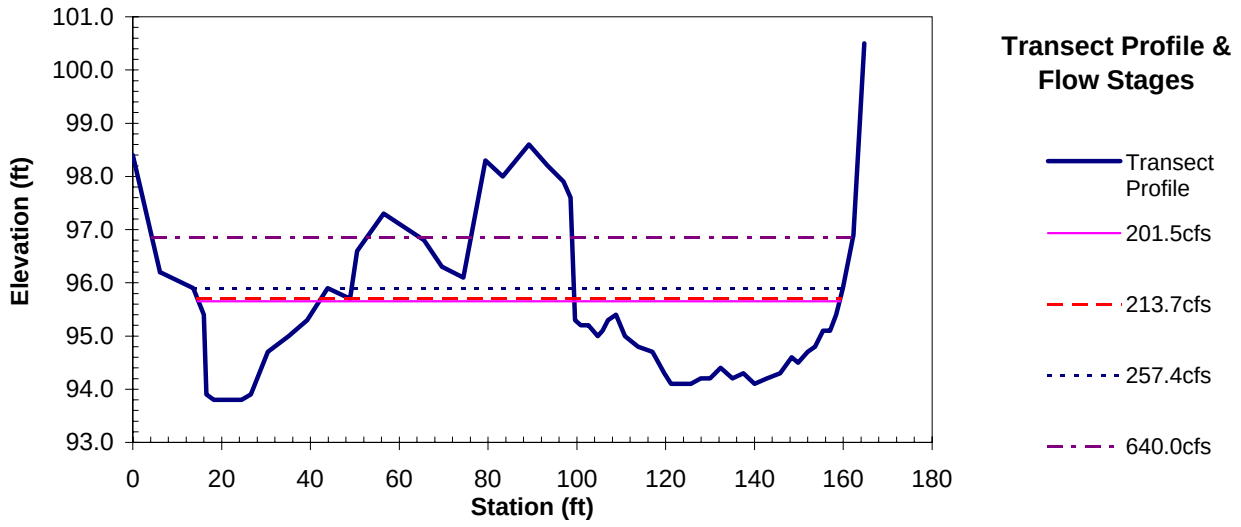


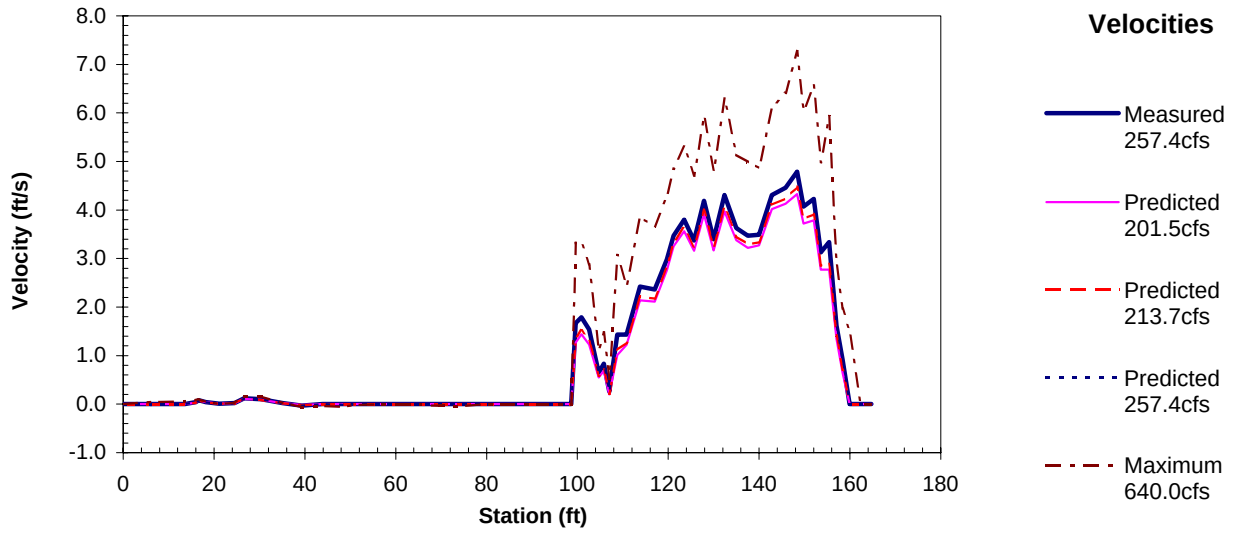


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
05-UTC1-RF2 - Riffle - TRANSECT 1 - 6/20/2005







Transect hydraulic summary plots

IFG4 Data Deck

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     Pebble     05-UTC1-RF2  06/20/05
RIFFLE                     0605Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 201.5
QARD 213.7
QARD 220.0
QARD 240.0
QARD 257.4
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 430.0
QARD 460.0
QARD 490.0
QARD 520.0
QARD 550.0
QARD 580.0
QARD 610.0
QARD 640.0
XSEC  1000     1000. 1.0     94.20    .00849
      1000   .098.37  6.196.22 13.695.90 16.095.40 16.693.90 18.293.80
      1000 21.193.80 24.593.80 26.693.90 30.494.70 35.195.00 39.395.30
      1000 43.995.90 48.995.71 50.596.57 56.597.35 65.696.77 69.696.29
      1000 74.496.08 79.498.28 83.397.98 89.298.59 93.498.22 97.097.90
      1000 98.697.56 99.695.30100.995.20102.695.20104.795.00105.895.10
      1000107.095.30108.895.40110.895.00113.894.80117.094.70119.794.30
      1000121.294.10123.594.10125.794.10127.994.20130.094.20132.494.40
      1000135.094.20137.594.30140.094.10142.894.20145.894.30148.494.60
      1000149.894.50152.094.70153.694.80155.495.10157.095.10158.495.40
      1000159.995.90162.396.95164.7100.5
NS    1000      24.6      23.9      24.9      22.9      22.9      24.9
NS    1000      25.9      22.9      22.9      22.9      37.8      22.9
NS    1000      22.9      22.9      22.9      32.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      45.7      65.7      54.6      45.6      45.6
```

IFG4 Data Deck (continued)

```
NS    1000      42.8      45.6      36.6      45.6      63.9      65.6
NS    1000      45.6      56.7      56.9      54.9      56.7      56.7
NS    1000      56.8      54.8      54.9      54.8      56.8      45.6
NS    1000      54.6      65.6      56.6      54.6      54.6      54.7
NS    1000      54.8      25.6      22.9
WSL   1000     95.12     95.19     95.25     95.31     95.36     95.41
WSL   1000     95.45     95.49     95.53     95.61     95.69     95.73
WSL   1000     95.76     95.84     95.90     95.97     96.04     96.10
WSL   1000     96.16     96.22     96.28     96.33     96.40     96.47
WSL   1000     96.54     96.60     96.67     96.73     96.79     96.85
CAL1  1000     95.90     257.4
VEL1  1000           0.00 0.04 0.08 0.04 0.01 0.02 0.12 0.10 0.02-0.03
VEL1  1000 0.00
VEL1  1000      1.67 1.79 1.54 0.65 0.83 0.26 1.43 1.43 2.42 2.36 2.98
VEL1  1000 3.47 3.80 3.37 4.19 3.40 4.31 3.63 3.47 3.49 4.31 4.46 4.79
VEL1  1000 4.07 4.23 3.13 3.34 1.62 0.92 0.00
CAL2  1000     95.65     201.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.70     213.7
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble     05-UTC1-RF2  06/20/05
RIFFLE                     Q0605                                    TRANSECT 1
IOC       0110000000000000000000
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 201.5
QARD 213.7
QARD 220.0
QARD 240.0
QARD 257.4
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 430.0
QARD 460.0
QARD 490.0
QARD 520.0
QARD 550.0
QARD 580.0
QARD 610.0
QARD 640.0
XSEC  1000     1000. 1.0     94.20    .00849
      1000   .098.37  6.196.22 13.695.90 16.095.40 16.693.90 18.293.80
      1000 21.193.80 24.593.80 26.693.90 30.494.69 35.195.00 39.395.30
      1000 43.995.90 48.995.70 50.596.56 56.597.34 65.696.76 69.696.29
      1000 74.496.08 79.498.27 83.397.98 89.298.58 93.498.22 97.097.90
      1000 98.697.55 99.695.30100.995.19102.695.19104.795.00105.895.09
      1000107.095.30108.895.40110.895.00113.894.80117.094.69119.794.30
      1000121.294.09123.594.09125.794.09127.994.19130.094.19132.494.40
      1000135.094.19137.594.30140.094.09142.894.19145.894.30148.494.59
      1000149.894.50152.094.69153.694.80155.495.09157.095.09158.495.40
      1000159.995.90162.396.94164.7100.4
NS    1000      24.6      23.9      24.9      22.9      22.9      24.9
NS    1000      25.9      22.9      22.9      22.9      37.8      22.9
NS    1000      22.9      22.9      22.9      32.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      45.7      65.7      54.6      45.6      45.6
```

MANSQ Data Deck

MANSQ Data Deck (continued)

```
NS    1000      42.8      45.6      36.6      45.6      63.9      65.6
NS    1000      45.6      56.7      56.9      54.9      56.7      56.7
NS    1000      56.8      54.8      54.9      54.8      56.8      45.6
NS    1000      54.6      65.6      56.6      54.6      54.6      54.7
NS    1000      54.8      25.6      22.9
CALQ  1000     95.90     257.4    -0.000
ENDJ
```

MANSQ Data Deck

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 05-UTC1-RN1

Habitat Type: Run

River Kilometer: 19.34

Stream : **Upper Talarik Creek**
Reach: **C**
Site Name: **05-UTC1-RN1**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/17/2005	1	100.00	100.32	98.87
2nd	7/19/2005	2	100.00	100.33	98.87
3rd	8/17/2005	3	100.00	100.31	98.86
4th	7/25/2006	4	100.00	100.33	98.86
5th	4/8/2007	5	100.00	100.25	98.75

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between any two control pins were within±0.01ft in 2005-2006 period. Small changes indicated the control pins were stable in that period.
(c) TP moved about 0.1ft in 2007. No WSE corrections were needed because the survey elevation datum was based on BM, which was stable, and hydraulics of 2007 were not used in modeling due to sever ice impact.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/17/2005	96.39
7/19/2005	96.32
8/17/2005	96.25
7/25/2006	96.39
4/8/2007	97.27

No flow was measured on 7/19/05.
Channel was occupied by ice during the 4/7/07 survey. Hydraulics had been impacted by ice

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/17/2005	195.2
7/19/2005	
8/17/2005	143.6
7/25/2006	194.8
4/8/2007	173.6

No flow was measured on 7/19/05.
Trip photos of 4/8/07 showed floating ice in the channel and water frozen near shore
The measured flow of 4/8/07 may not be accurate.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/17/2005	0.066%	195.7
7/19/2005	0.067%	195.0
8/17/2005	0.022%	138.0
7/25/2006	0.072%	152.1
4/8/2007	0.286%	182.0

The slope S=0.066% of 6/17/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/17/2005	93.59
7/19/2005	
8/17/2005	93.55
7/25/2006	93.29
4/8/2007	93.97
max Invert	93.59
SZF	95.89

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed during the 7/19/05 site visit.
(4) Transect profile of 4/8/07 was affected by ice. The invert was not used to determine SZF.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR1	TR1	TR1	
1st	6/17/2005	195.2	96.39	96.39	0.00	IFG4
2nd	7/19/2005		96.32			
3rd	8/17/2005	143.6	96.25	96.25	0.00	IFG4
4th	7/25/2006	194.8	96.39	96.39	0.00	
5th	4/8/2007	173.6	97.27			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharge was measured in 7/19/05 trip.
(d) Photos of 4/7/07 site visit showed thick ice on waters edge and floating ice in the channel. Hydraulics were impacted by ice and were not used in the modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 143.6cfs, 194.8cfs, and 195.2cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

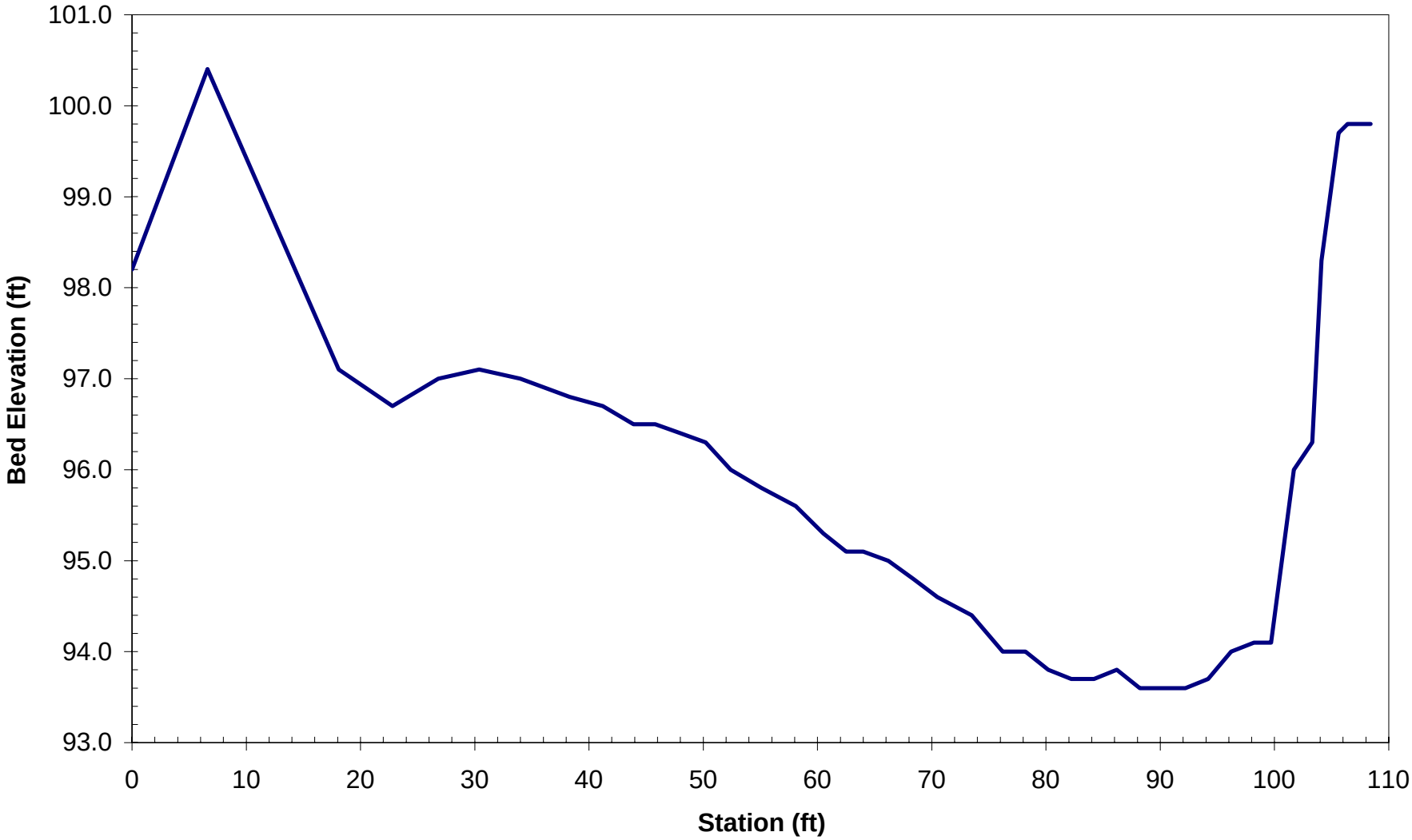
Survey Date	Q (cfs)	WUA (Y/N)
6/17/2005	195.2	Y
7/19/2005		
8/17/2005	143.6	Y
7/25/2006	194.8	
4/8/2007	173.6	

(4) Hydraulic Calibration Results:

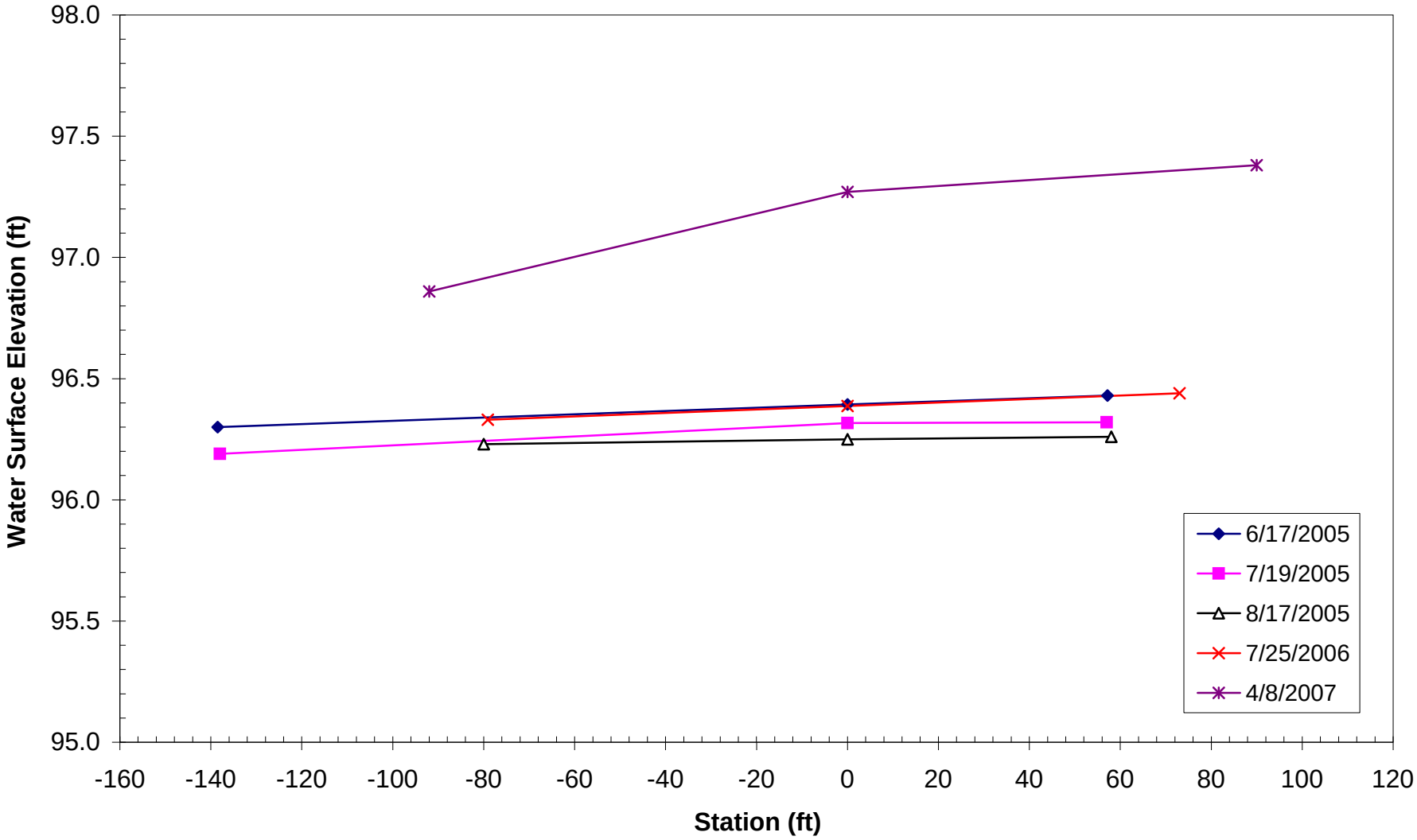
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.
A little kink in Manning's n and Froude number plots at Q>420cfs was due to the small plateau on the left bank above El= 97ft.

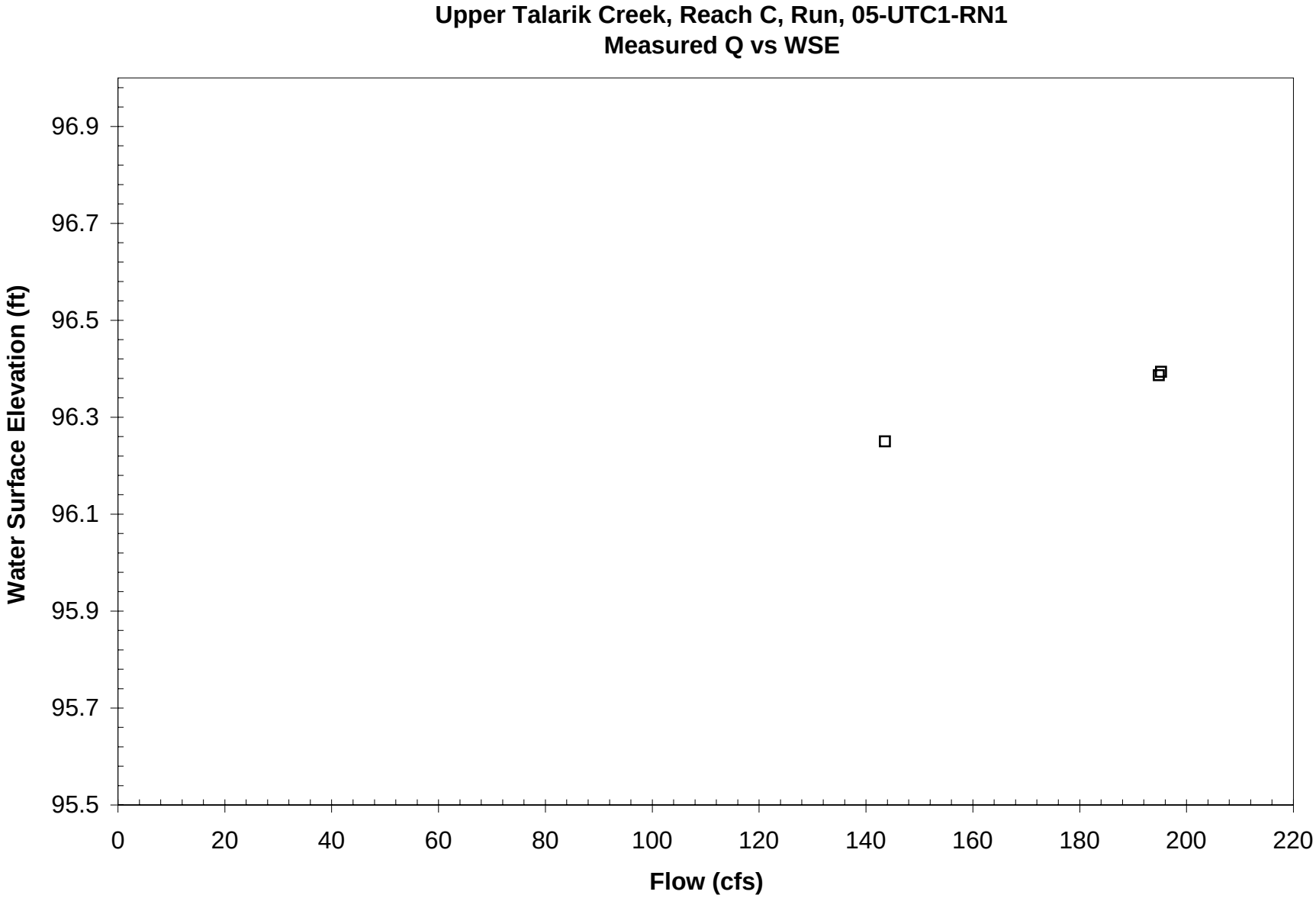
calibration notes

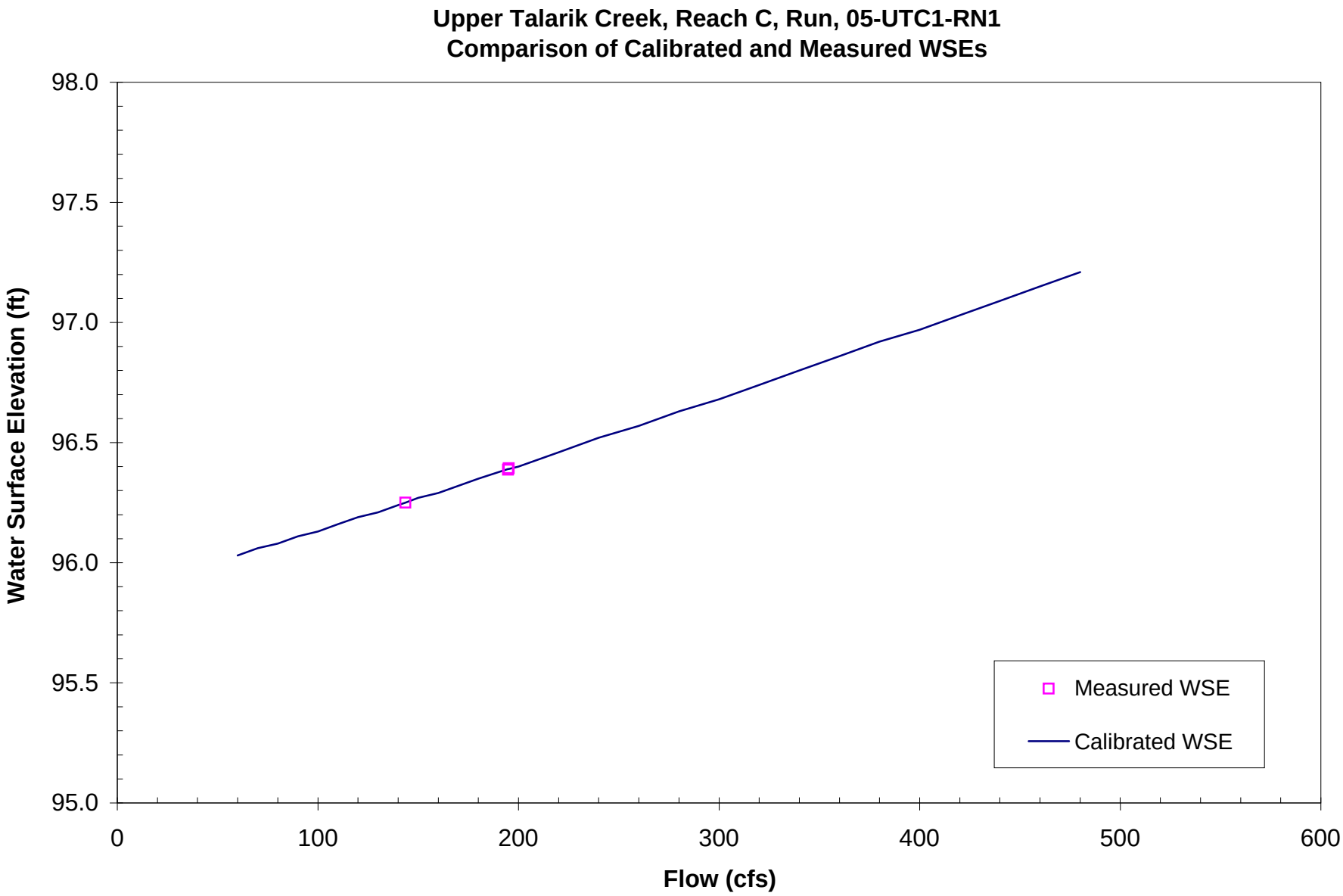
Upper Talarik Creek, Reach C, Run, 05-UTC1-RN1
Measured Transect Profile



Upper Talarik Creek, Reach C, Run, 05-UTC1-RN1
Longitudinal Water Surface Elevation Profiles



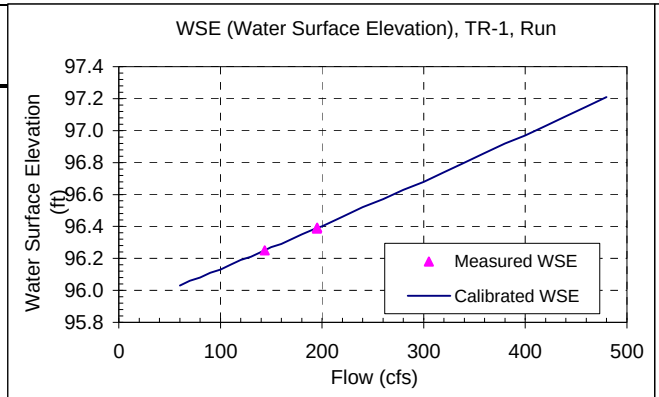

Upper Talarik Creek, Reach C, Run, 05-UTC1-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
96.9
96.7
96.5
96.3
96.1
95.9
95.7
95.5
0
20
40
60
80
100
120
140
160
180
200
220
Flow (cfs)

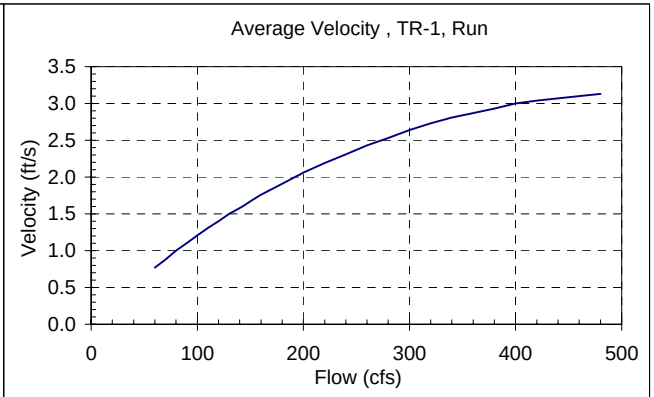

Upper Talarik Creek, Reach C, Run, 05-UTC1-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

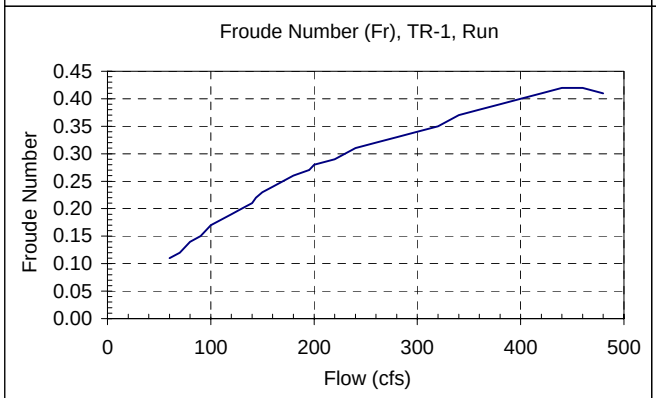
Stream: Upper Talarik Creek
Site Name: 05-UTC1-RN1
Date: 6/17/2005
Calibration Flow: Q(6/17/2005)

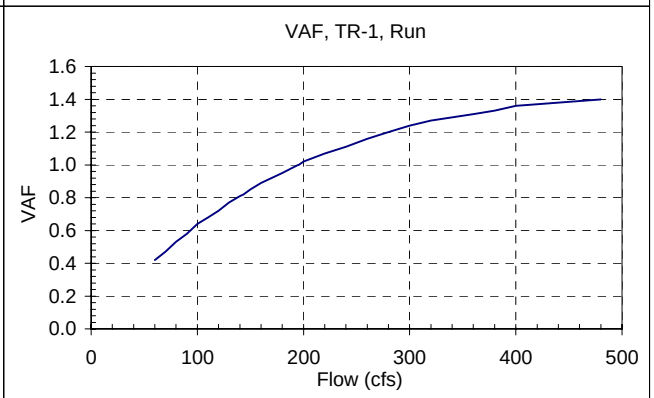
Reach: C
Habitat: Run
Site #: 1
Transect: 1

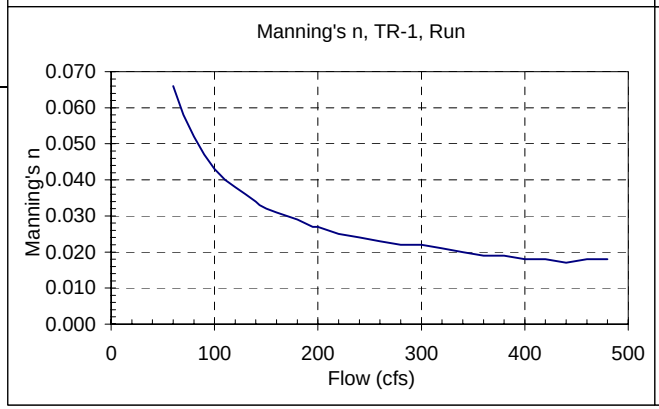
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
60	96.03	0.11	0.77	0.42	0.066	50.7
70	96.06	0.12	0.88	0.47	0.058	51.1
80	96.08	0.14	1.00	0.53	0.052	51.4
90	96.11	0.15	1.10	0.58	0.047	51.8
100	96.13	0.17	1.21	0.64	0.043	52.0
110	96.16	0.18	1.31	0.68	0.040	52.4
120	96.19	0.19	1.40	0.72	0.038	52.8
130	96.21	0.20	1.50	0.77	0.036	53.0
140	96.24	0.21	1.58	0.81	0.034	53.4
143.6	96.25	0.22	1.61	0.82	0.033	53.5
150	96.27	0.23	1.67	0.85	0.032	53.8
160	96.29	0.24	1.76	0.89	0.031	54.1
180	96.35	0.26	1.91	0.95	0.029	55.4
194.8	96.39	0.27	2.02	1.00	0.027	56.4
195.2	96.39	0.27	2.02	1.00	0.027	56.4
200	96.40	0.28	2.06	1.02	0.027	56.7
220	96.46	0.29	2.19	1.07	0.025	58.4
240	96.52	0.31	2.31	1.11	0.024	60.3
260	96.57	0.32	2.43	1.16	0.023	61.2
280	96.63	0.33	2.53	1.20	0.022	62.1
300	96.68	0.34	2.64	1.24	0.022	62.8
320	96.74	0.35	2.73	1.27	0.021	64.4
340	96.80	0.37	2.81	1.29	0.020	68.1
360	96.86	0.38	2.87	1.31	0.019	71.6
380	96.92	0.39	2.93	1.33	0.019	74.9
400	96.97	0.40	3.00	1.36	0.018	77.7
420	97.03	0.41	3.04	1.37	0.018	84.1
440	97.09	0.42	3.07	1.38	0.017	86.9
460	97.15	0.42	3.10	1.39	0.018	87.3
480	97.21	0.41	3.13	1.40	0.018	87.6

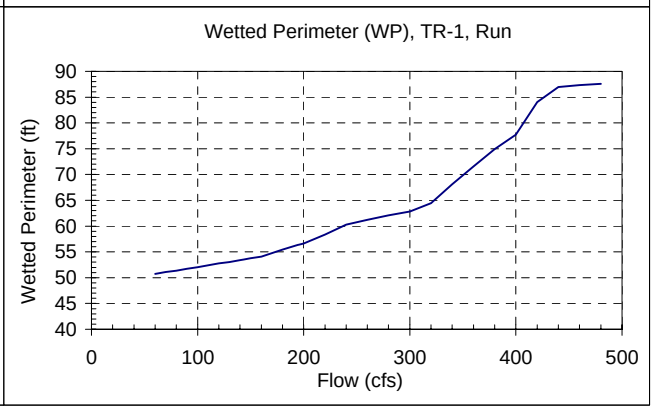




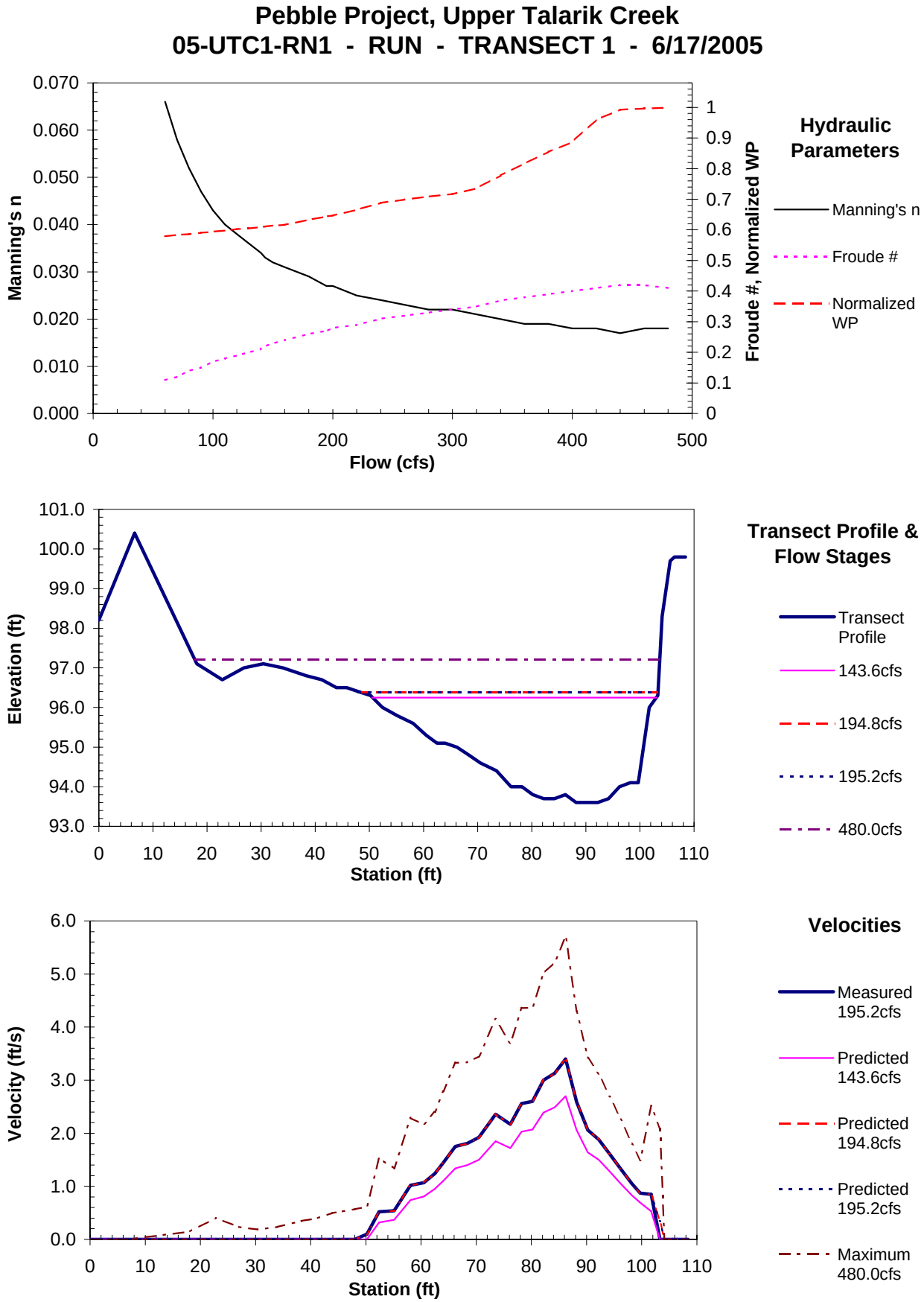








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC1-RN1  06/17/05
RUN                        0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 143.6
QARD 150.0
QARD 160.0
QARD 180.0
QARD 194.8
QARD 195.2
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 460.0
QARD 480.0
XSEC  1000     1000. 1.0     95.89    .00066
      1000   .098.18  6.6100.4 18.197.10 22.896.72 26.896.98 30.497.05
      1000 34.096.98 38.396.82 41.296.73 43.996.53 45.896.47 48.096.39
      1000 50.296.29 52.495.99 55.195.79 58.195.59 60.595.29 62.595.09
      1000 64.095.09 66.294.99 68.494.79 70.594.59 73.594.39 76.293.99
      1000 78.293.99 80.293.79 82.293.69 84.293.69 86.293.79 88.293.59
      1000 90.293.59 92.293.59 94.293.69 96.293.99 98.294.09 99.794.09
      1000101.795.99103.396.29104.198.35105.699.65106.499.76108.499.76
NS    1000      22.9      22.9      22.9      24.6      42.7      43.6
NS    1000      43.6      43.6      43.6      45.6      42.7      25.6
NS    1000      45.6      54.6      45.6      45.8      54.6      65.6
NS    1000      54.7      45.6      45.6      45.6      45.7      45.7
NS    1000      46.8      54.6      45.6      54.6      45.6      56.8
NS    1000      45.8      43.9      43.6      42.8      54.6      26.7
NS    1000      23.8      23.7      24.9      22.9      22.9      22.9
WSL   1000     96.03     96.06     96.08     96.11     96.13     96.16
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     96.19     96.21     96.24     96.25     96.27     96.29
WSL   1000     96.35     96.39     96.39     96.40     96.46     96.52
WSL   1000     96.57     96.63     96.68     96.74     96.80     96.86
WSL   1000     96.92     96.97     97.03     97.09     97.15     97.21
CAL1  1000     96.39     195.2
VEL1  1000                                                      0.00
VEL1  1000 0.10 0.52 0.54 1.02 1.07 1.24 1.44 1.75 1.81 1.92 2.36 2.17
VEL1  1000 2.56 2.60 3.00 3.13 3.40 2.59 2.06 1.88 1.61 1.33 1.05 0.87
VEL1  1000 0.85 0.00
CAL2  1000     96.25     143.6
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.39     194.8
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 04-UTC-IC2

Habitat Type: Island Complex

River Kilometer: 19.82

Stream: **Upper Talarik Creek**
Reach: **C**
Site Name: **04-UTC-IC2**
Habitat Type: **Island Complex**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/19/2005	100.00	99.17	101.35
2nd	8/17/2005	100.00	99.18	101.34
3rd	7/3/2006	100.00	99.21	101.35
4th	7/25/2006	100.00	99.19	101.36
5th	4/7/2007	100.00	99.33	101.49

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and TP were within ±0.01ft from 2005 to 2006. Small changes suggested BM be stable during the period.
(c) HP elevation changed as much as 0.04ft from 2005 to 2006, but this won't affect WSE results because the surveys were based on the BM datum, which was considered stable.
(d) Greater pin elevation changes occurred in 2007. Photos of 4/7/07 survey showed water was covered in thick ice, and as the results, the surveyed data were not included for modeling.

calibration notes

Measured WSE:

This transect is an island complex with a right (side) channel and a left (main) channel.
There were three WSEs (Right, mid, and Left) measured across each channel for each flow,
and the average of the three was used as representative WSE of each channel for modeling.

	WSE (ft)	
Date	Left (main)	Right (side)
7/19/2005	95.92	95.65
8/17/2005	95.77	95.59
7/3/2006	95.96	95.76
7/25/2006	95.82	95.64
4/7/2007	96.53	95.86

WSE's of the left channel were used for modeling, because left channel carried the majority of water.
Bed elevation of the right channel is adjusted based on the difference between the two WSEs.

Dischar

All measured discharges are listed in the following table.

	Q (cfs)		
Date	Left (main)	Right (side)	Total
7/19/2005			
8/17/2005	125.99	39.2	165.22
7/3/2006			
7/25/2006	130.5	50.9	181.4
4/7/2007	113.4	47.6	161.06

(1) No discharges were measured in the 7/19/05 and 7/3/06 trips.
(2) The hydraulics of 4/7/07 trip was severely affected by thick ice and not used for modeling.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (ft/ft)	
	Left (main)	Right (side)
7/19/2005	0.835%	0.43%
8/17/2005	1.066%	0.53%
7/3/2006	0.986%	0.57%
7/25/2006	0.943%	0.77%
4/7/2007	1.019%	NA

The slope S=0.835% of 7/19/2005 survey was used for hydraulic modeling.

Date	WSE Slope Distance (ft)	
	Left (main)	Right (side)
7/19/2005	87.4	66.7
8/17/2005	175.5	60.5
7/3/2006	141.0	67.0
7/25/2006	105.0	52.0
4/7/2007	258.0	NA

No WSE slope was surveyed for the right channel during the 4/7/07 trip.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)	
	Left (main)	Right (side)
7/19/2005	94.67	94.41
8/17/2005	94.57	94.39
7/3/2006	94.16	94.56
7/25/2006	94.02	94.34
4/7/2007	95.23	94.56
Invert	94.57	
SZF	93.26	

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) The inverts of 7/17/05 and 7/3/06 were not used for determining SZF due to no flows measured.
(4) The invert of 4/7/07 was not used for determining SZF due to ice in the channel.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/19/2005		95.92			
2nd	8/17/2005	165.2	95.77	95.77	0.00	MANSQ
3rd	7/3/2006		95.96			
4th	7/25/2006	181.4	95.82	95.82	0.00	MANSQ
5th	4/7/2007	161.1	96.53			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharges were measured during the 7/19/05 and 7/3/06 site visits.
(d) Photos of 4/7/07 site visit showed the channel was covered in thick ice.
Hydraulics were affected by ice and not used in modeling.
(e) MANSQ was used for calibration because this transect has only two pairs of WSE~Q.
Coefficient β=-0.1 was used, and the results are listed as follows.

calibration notes

Simulation Q (cfs)	WSE (ft)
70	95.42
80	95.46
90	95.51
100	95.55
110	95.59
120	95.62
130	95.66
140	95.69
150	95.72
160	95.75
165.2	95.77
170	95.78
180	95.81
181.4	95.82
190	95.84
200	95.87
210	95.89
220	95.92
230	95.94
250	95.99
270	96.03
290	96.07
310	96.11
330	96.15
350	96.19
370	96.23
390	96.27
410	96.30
430	96.34
450	96.37

calibration notes

(3) Velocity calibration

This site has one transect with two complete velocity/discharge measurements, including 165.2cfs and 181.4cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the two calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

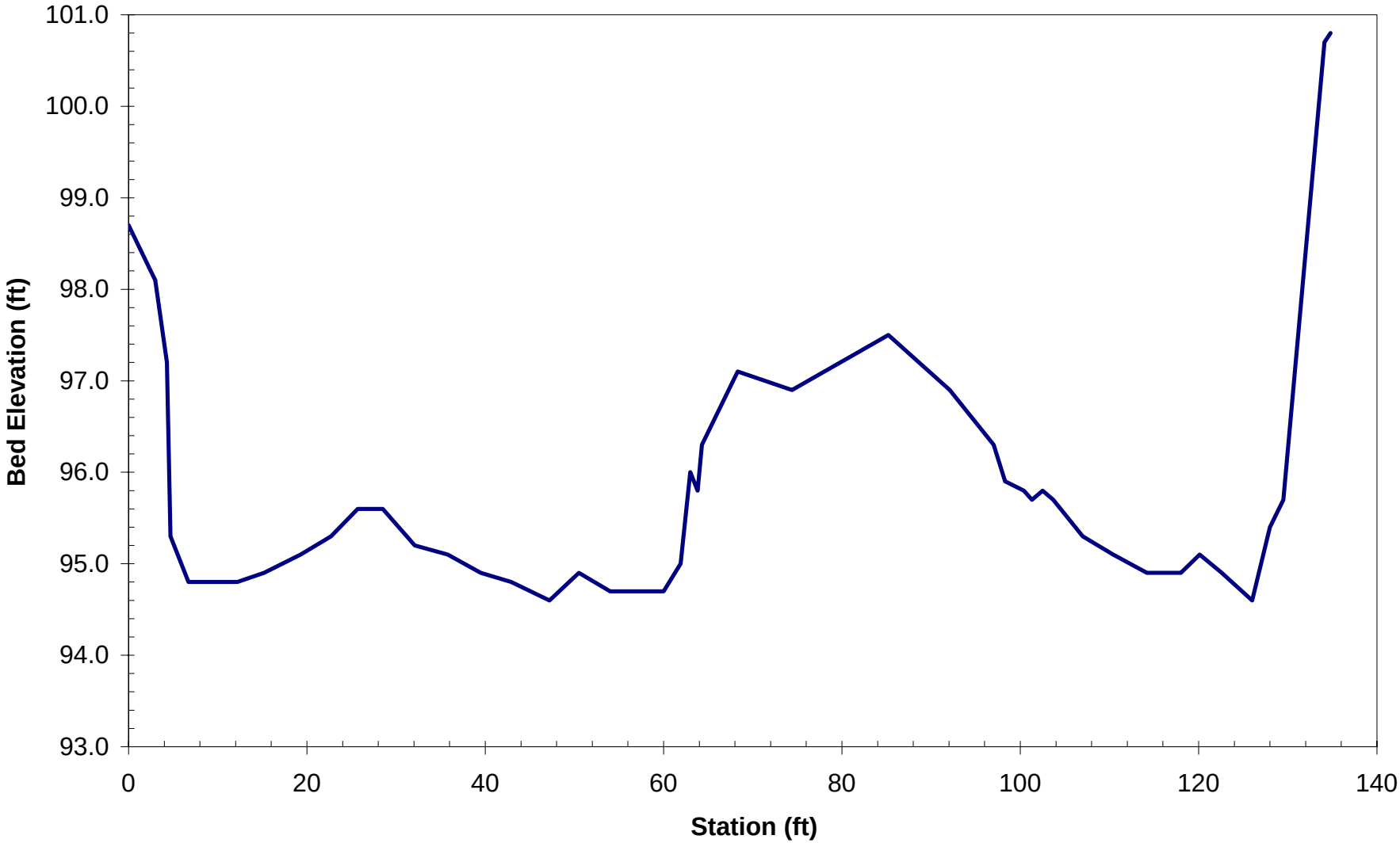
Survey Date	Q (cfs)	WUA (Y/N)
7/19/2005		
8/17/2005	165.2	Y
7/3/2006		
7/25/2006	181.4	Y
4/7/2007	161.1	

(4) Hydraulic Calibration Results:

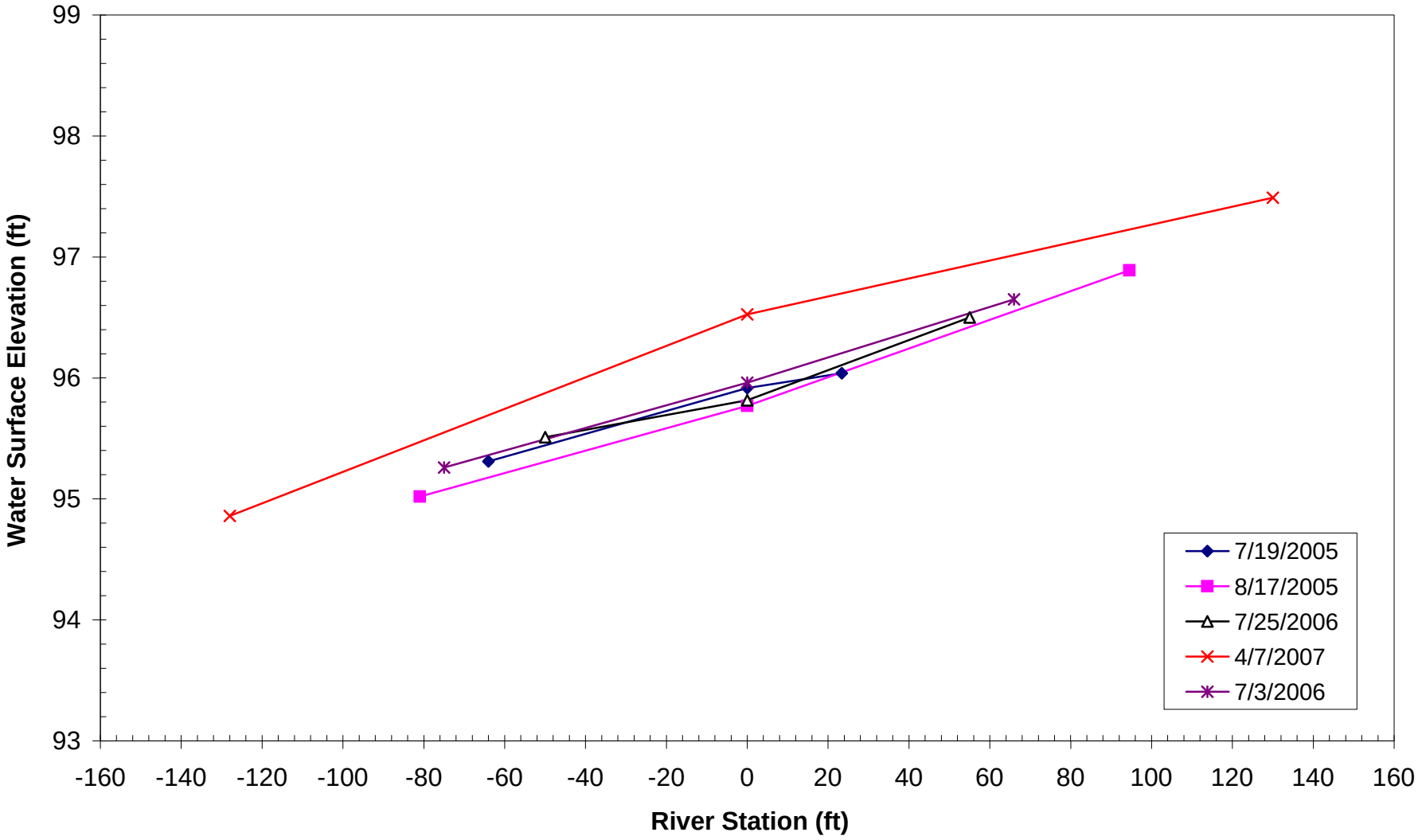
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary in normal trends.

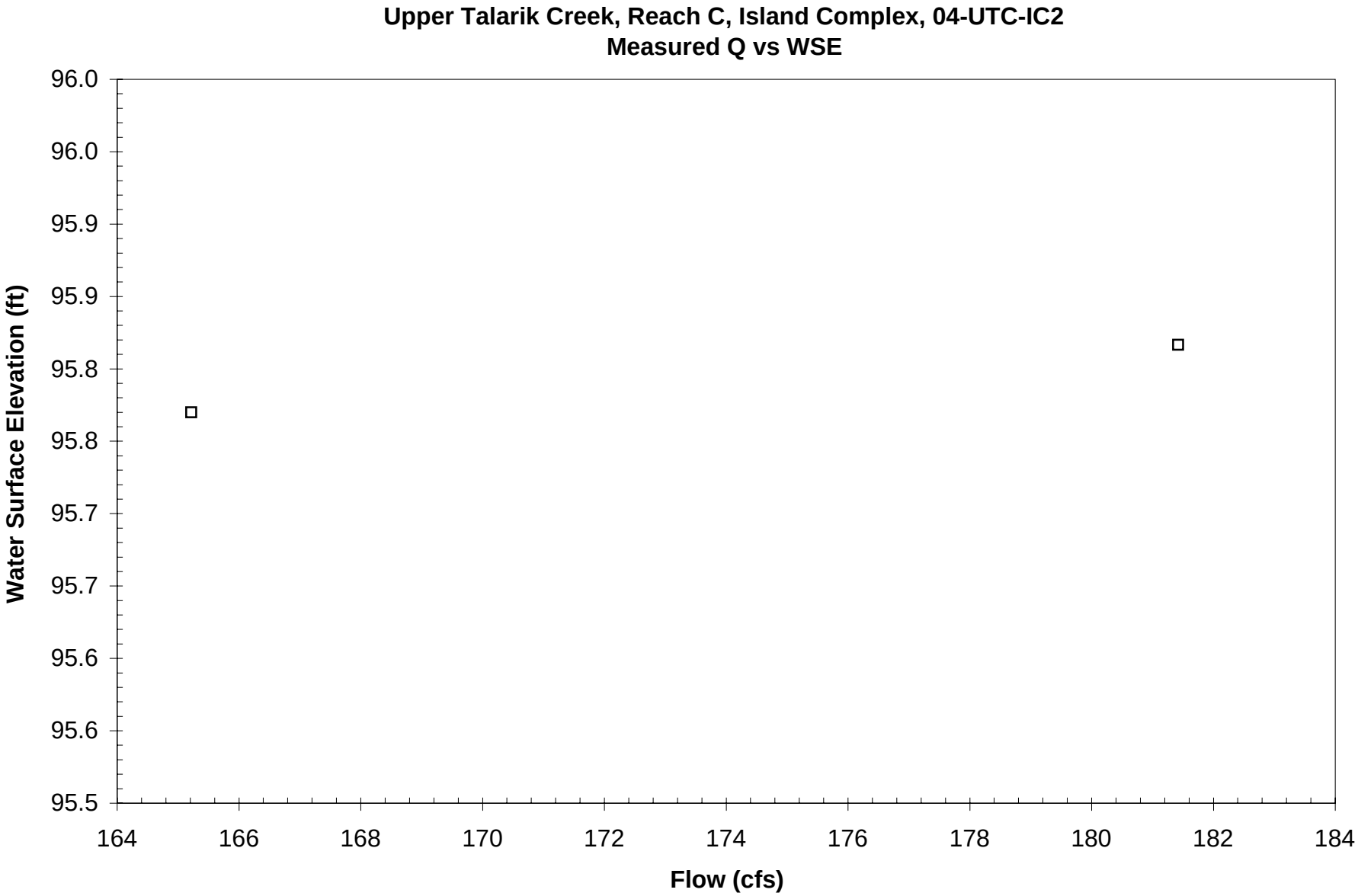
calibration notes

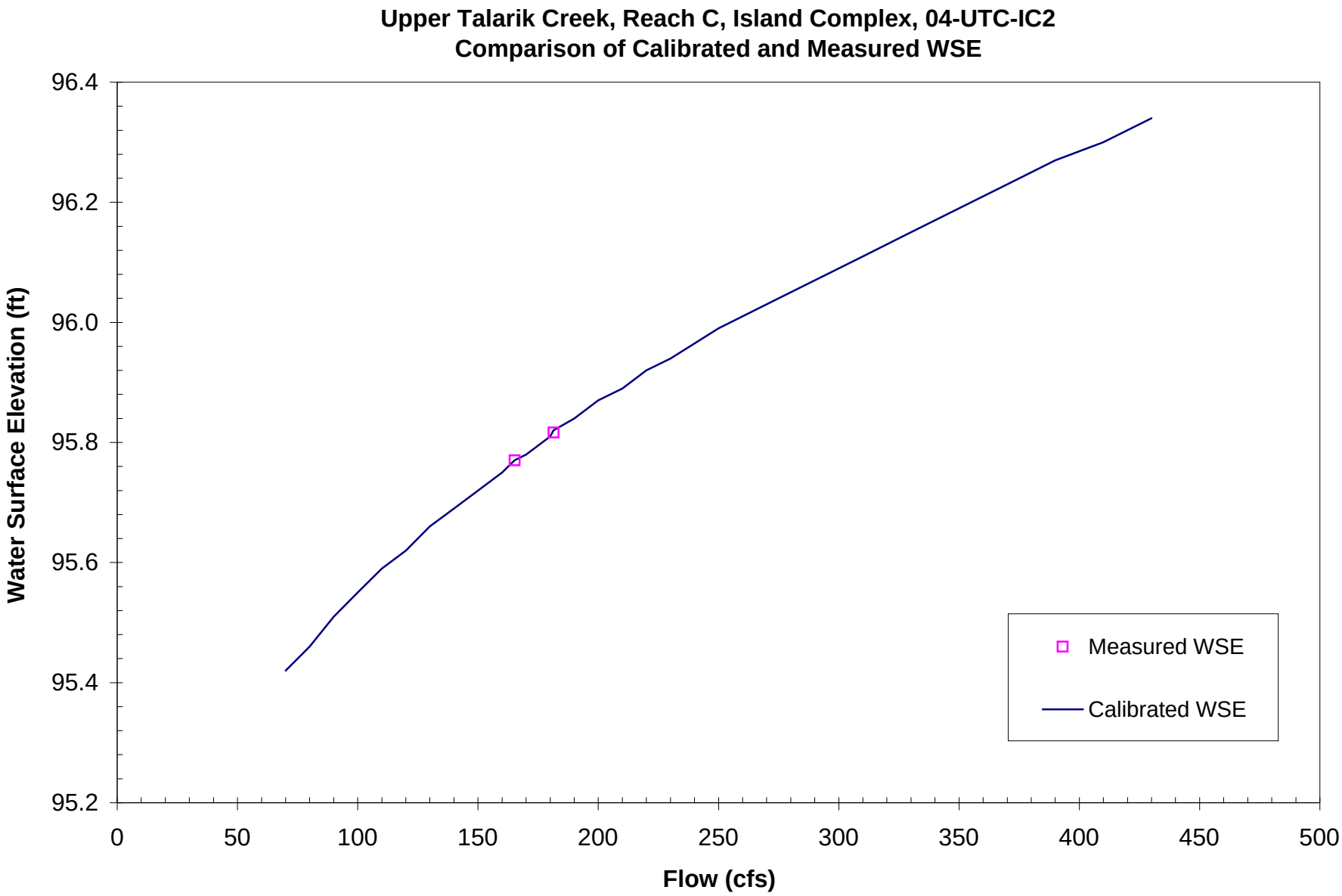
Upper Talarik Creek, Reach C, Island Complex, 04-UTC-IC2
Measured Transect Profile



Upper Talarik Creek, Reach C, Island Complex, 04-UTC-IC2
Longitudinal Water Surface Elevation Profiles



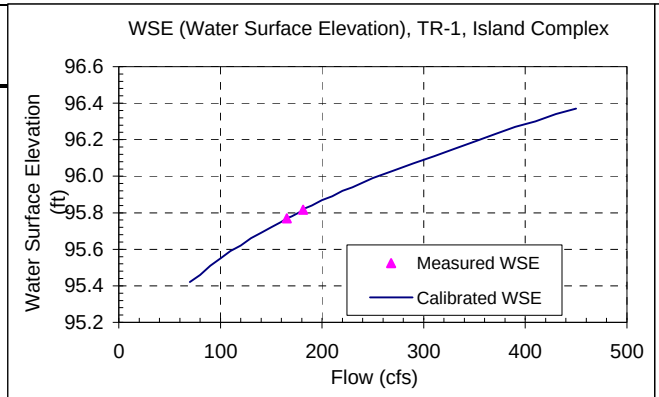

Upper Talarik Creek, Reach C, Island Complex, 04-UTC-IC2
Measured Q vs WSE
Water Surface Elevation (ft)
96.0
96.0
95.9
95.9
95.8
95.8
95.7
95.7
95.6
95.6
95.5
164
166
168
170
172
174
176
178
180
182
184
Flow (cfs)

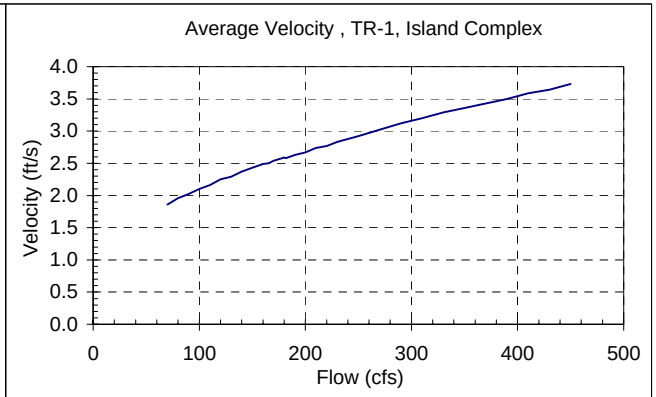

Upper Talarik Creek, Reach C, Island Complex, 04-UTC-IC2
Comparison of Calibrated and Measured WSE
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

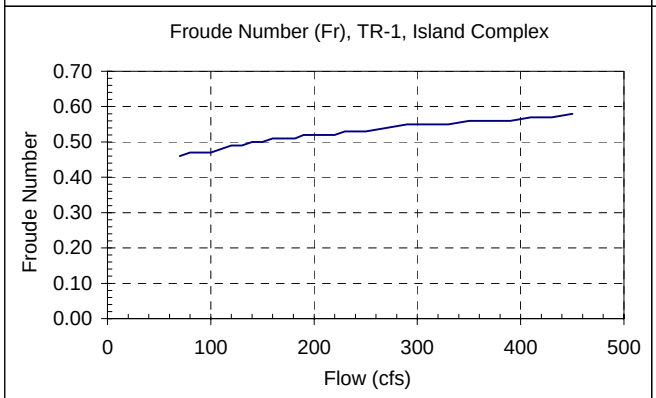
Stream: Upper Talarik Creek
Site Name: 04-UTC-IC2
Date: 8/17/2005
Calibration Flow: Q(8/17/2005)

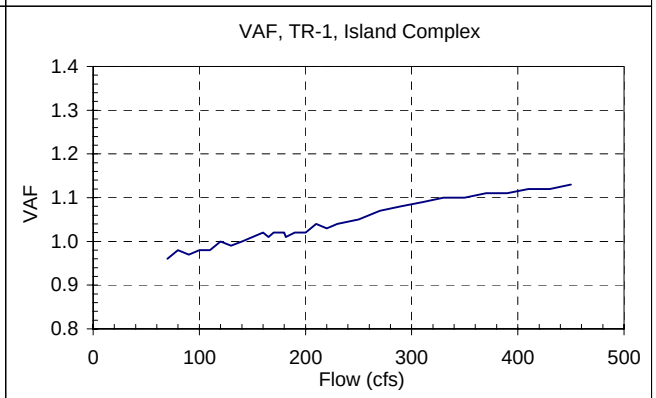
Reach: C
Habitat: Island Complex
Site #: 1
Transect: 1

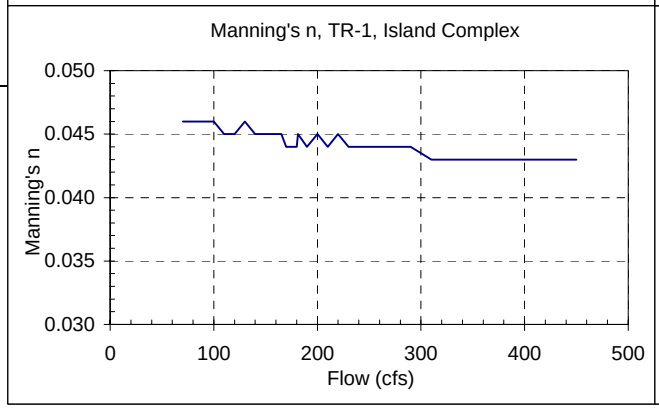
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
70	95.42	0.46	1.86	0.96	0.046	75.1
80	95.46	0.47	1.96	0.98	0.046	76.4
90	95.51	0.47	2.02	0.97	0.046	78.1
100	95.55	0.47	2.10	0.98	0.046	79.5
110	95.59	0.48	2.16	0.98	0.045	83.3
120	95.62	0.49	2.25	1.00	0.045	83.7
130	95.66	0.49	2.29	0.99	0.046	84.3
140	95.69	0.50	2.37	1.00	0.045	84.7
150	95.72	0.50	2.43	1.01	0.045	85.8
160	95.75	0.51	2.49	1.02	0.045	87.4
165.2	95.77	0.51	2.50	1.01	0.045	88.4
170	95.78	0.51	2.54	1.02	0.044	88.6
180	95.81	0.51	2.59	1.02	0.044	89.6
181.4	95.82	0.51	2.58	1.01	0.045	89.9
190	95.84	0.52	2.63	1.02	0.044	90.5
200	95.87	0.52	2.67	1.02	0.045	91.5
210	95.89	0.52	2.74	1.04	0.044	91.7
220	95.92	0.52	2.77	1.03	0.045	92.0
230	95.94	0.53	2.83	1.04	0.044	92.3
250	95.99	0.53	2.92	1.05	0.044	92.8
270	96.03	0.54	3.02	1.07	0.044	93.3
290	96.07	0.55	3.12	1.08	0.044	93.6
310	96.11	0.55	3.20	1.09	0.043	93.9
330	96.15	0.55	3.29	1.10	0.043	94.1
350	96.19	0.56	3.36	1.10	0.043	94.4
370	96.23	0.56	3.43	1.11	0.043	94.7
390	96.27	0.56	3.50	1.11	0.043	95.0
410	96.30	0.57	3.59	1.12	0.043	95.2
430	96.34	0.57	3.64	1.12	0.043	95.7
450	96.37	0.58	3.73	1.13	0.043	96.1

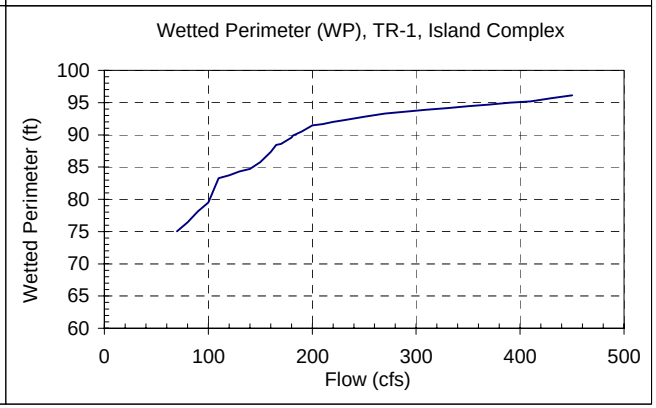




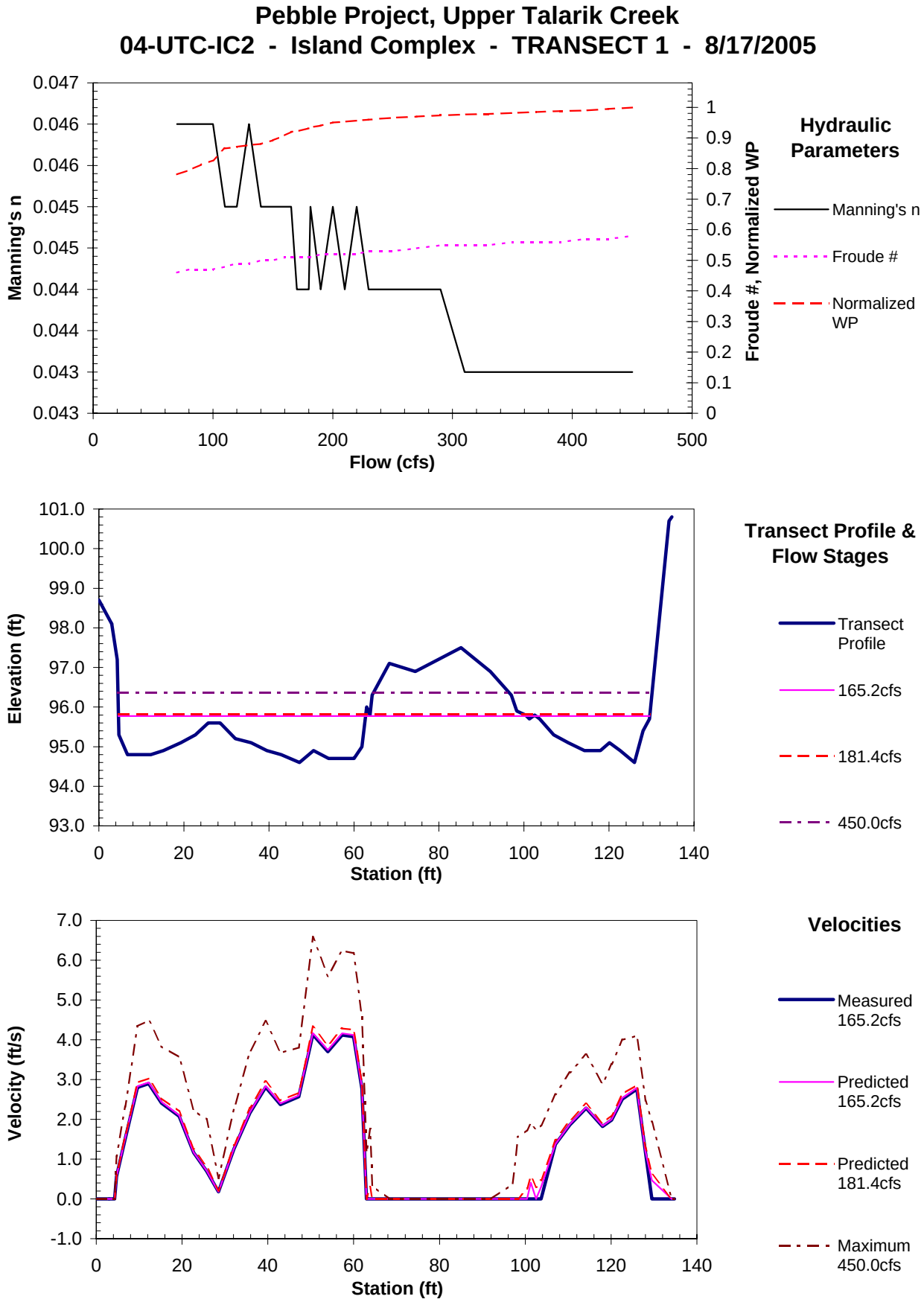








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-UTC-IC2  08/17/05
ISLAND                     0805Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 165.2
QARD 170.0
QARD 180.0
QARD 181.4
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 330.0
QARD 350.0
QARD 370.0
QARD 390.0
QARD 410.0
QARD 430.0
QARD 450.0
XSEC  1000     1000. 1.0     94.57    .00835
      1000   .098.70  3.098.10  4.397.16  4.795.27  6.794.77  9.694.77
      1000 12.294.77 15.294.87 19.395.07 22.795.27 25.795.57 28.595.57
      1000 32.195.17 35.895.07 39.594.87 42.994.77 47.294.57 50.594.87
      1000 54.094.67 57.394.67 60.094.67 61.994.97 63.096.04 63.895.77
      1000 64.396.32 68.397.12 74.496.87 85.297.51 92.196.93 97.096.31
      1000 98.395.87100.495.78101.395.69102.595.77103.795.72107.095.27
      1000110.495.07114.294.87118.094.87120.195.07122.694.87126.094.57
      1000128.095.37129.595.67134.1100.7134.8100.8
NS    1000      22.9      22.9      22.9      42.6      64.6      52.6
NS    1000      64.7      54.6      43.7      42.6      45.6      45.6
NS    1000      45.6      45.6      56.7      65.6      65.6      76.6
NS    1000      56.6      56.6      56.6      45.6      72.8      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      24.8      46.7      46.7      46.7      63.6      54.6
NS    1000      54.6      52.6      63.6      65.6      53.7      65.6
```

IFG4 Data Deck (continued)

```
NS    1000      56.8      42.6      22.9      22.9
WSL   1000     95.42     95.46     95.51     95.55     95.59     95.62
WSL   1000     95.66     95.69     95.72     95.75     95.77     95.78
WSL   1000     95.81     95.82     95.84     95.87     95.89     95.92
WSL   1000     95.94     95.99     96.03     96.07     96.11     96.15
WSL   1000     96.19     96.23     96.27     96.30     96.34     96.37
CAL1  1000     95.77     165.2
VEL1  1000                0.56 1.50 2.80 2.90 2.41 2.08 1.16 0.70 0.18
VEL1  1000 1.26 2.16 2.81 2.37 2.57 4.13 3.70 4.12 4.08 2.77      0.00
VEL1  1000                                                0.00 0.00 1.37
VEL1  1000 1.86 2.28 1.82 1.98 2.51 2.76 1.18 0.00
CAL2  1000     95.82     181.4
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble      04-UTC-IC2  08/17/05
ISLAND                      0805Q                                    TRANSECT 1
IOC       01100000000000000000
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 165.2
QARD 170.0
QARD 180.0
QARD 181.4
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 250.0
QARD 270.0
QARD 290.0
QARD 310.0
QARD 330.0
QARD 350.0
QARD 370.0
QARD 390.0
QARD 410.0
QARD 430.0
QARD 450.0
XSEC  1000     1000. 1.0     94.57    .00835
      1000   .098.69  3.098.09  4.397.16  4.795.26  6.794.76  9.694.76
      1000 12.294.76 15.294.87 19.395.06 22.795.26 25.795.56 28.595.56
      1000 32.195.16 35.895.06 39.594.87 42.994.76 47.294.56 50.594.87
      1000 54.094.66 57.394.66 60.094.66 61.994.97 63.096.04 63.895.76
      1000 64.396.31 68.397.12 74.496.87 85.297.51 92.196.93 97.096.30
      1000 98.395.87100.495.77101.395.69102.595.76103.795.72107.095.26
      1000110.495.06114.294.87118.094.87120.195.06122.694.87126.094.56
      1000128.095.37129.595.66134.1100.7134.8100.7
NS    1000      22.9      22.9      22.9      42.6      64.6      52.6
NS    1000      64.7      54.6      43.7      42.6      45.6      45.6
NS    1000      45.6      45.6      56.7      65.6      65.6      76.6
NS    1000      56.6      56.6      56.6      45.6      72.8      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      24.8      46.7      46.7      46.7      63.6      54.6
NS    1000      54.6      52.6      63.6      65.6      53.7      65.6
```

MANSQ Data Deck (continued)

```
NS    1000      56.8      42.6      22.9      22.9
CALQ  1000     95.77     165.2     -0.10
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 04-UTC-RN1

Habitat Type: Run

River Kilometer: 23.75

Stream: Upper Talarik Creek
Reach: C
Site Name: 04-UTC-RN1
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1	7/19/2005	100.00	98.76	99.30
2	8/16/2005	100.00	98.77	99.30
3	7/3/2006	100.00	98.80	99.32
4	7/25/2006	100.00	98.77	99.30
5	4/8/2007	100.00		99.42

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and TP were within 0.02ft during 2005- 2006 period. Small changes indicated both pins were stable during the period.
(c) Photos of 4/8/07 site visit showed thick ice on waters edge and ice fallen in water, both of which suggested the hydraulics be impacted and not be used for modeling.
(d) HP was lost in the 2007 survey. TP elevation increased by 0.12ft in 2007, but not able to determine if BM or TP or both were moved from the survey results.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/19/2005	97.92
8/16/2005	97.69
7/3/2006	97.82
7/25/2006	97.83
4/8/2007	97.68

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/19/2005	
8/16/2005	124.1
7/3/2006	
7/25/2006	191.1
4/8/2007	165.4

Flow measurement of 4/8/07 site visit may be incomplete due to thick ice on waters edge.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/19/2005	0.233%	158.5
8/16/2005	0.253%	193.7
7/3/2006	0.455%	132.0
7/25/2006	0.430%	118.5
4/8/2007	0.390%	84.7

The slope S=0.253% of 8/16/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/19/2005	96.29
8/16/2005	96.19
7/3/2006	96.26
7/25/2006	96.23
4/8/2007	96.08
Invert	96.23
SZF	96.23

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) The inverts of 7/19/05 and 7/3/06 were not used for determining SZF due to no flows measured.
(4) The invert of 4/8/07 was not used for determining SZF due to ice impact.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR1	calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1	7/19/2005		97.92			
2	8/16/2005	124.1	97.69	97.69	0.00	MANSQ
3	7/3/2006		97.82			
4	7/25/2006	191.1	97.83	97.82	-0.01	MANSQ
5	4/8/2007	165.4	97.68			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No discharges were measured during the 7/19/05 and 7/3/06 site visits.
(d) Hydraulics of 4/8/07 site visit did not have complete flow measuredment due to shore ice and thus were not used for modeling.
(e) MANSQ was used for calibration because this transect has ony two pairs of WSE~Q. Coefficient β=-1.7 was used, and the results are listed as follows.

calibration notes

Simulation Q (cfs)	WSE (ft)
50	97.44
60	97.49
70	97.53
80	97.57
90	97.60
100	97.63
110	97.66
120	97.68
124.1	97.69
130	97.70
140	97.73
150	97.75
160	97.77
180	97.80
191.1	97.82
200	97.84
220	97.87
240	97.90
260	97.93
280	97.96
300	97.99
320	98.02
340	98.04
360	98.07
380	98.09
400	98.12
420	98.14
440	98.16
460	98.18
480	98.20

calibration notes

(3) Velocity calibration

This site has one transect with two complete velocity/discharge measurements, including 124.1cfs and and 191.1cfs. Both measured velocity profiles were used as template for velocity calibration. Simulated velocity profiles of both measured flows were calibrated to resemble their measured profiles by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then each calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the water's edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

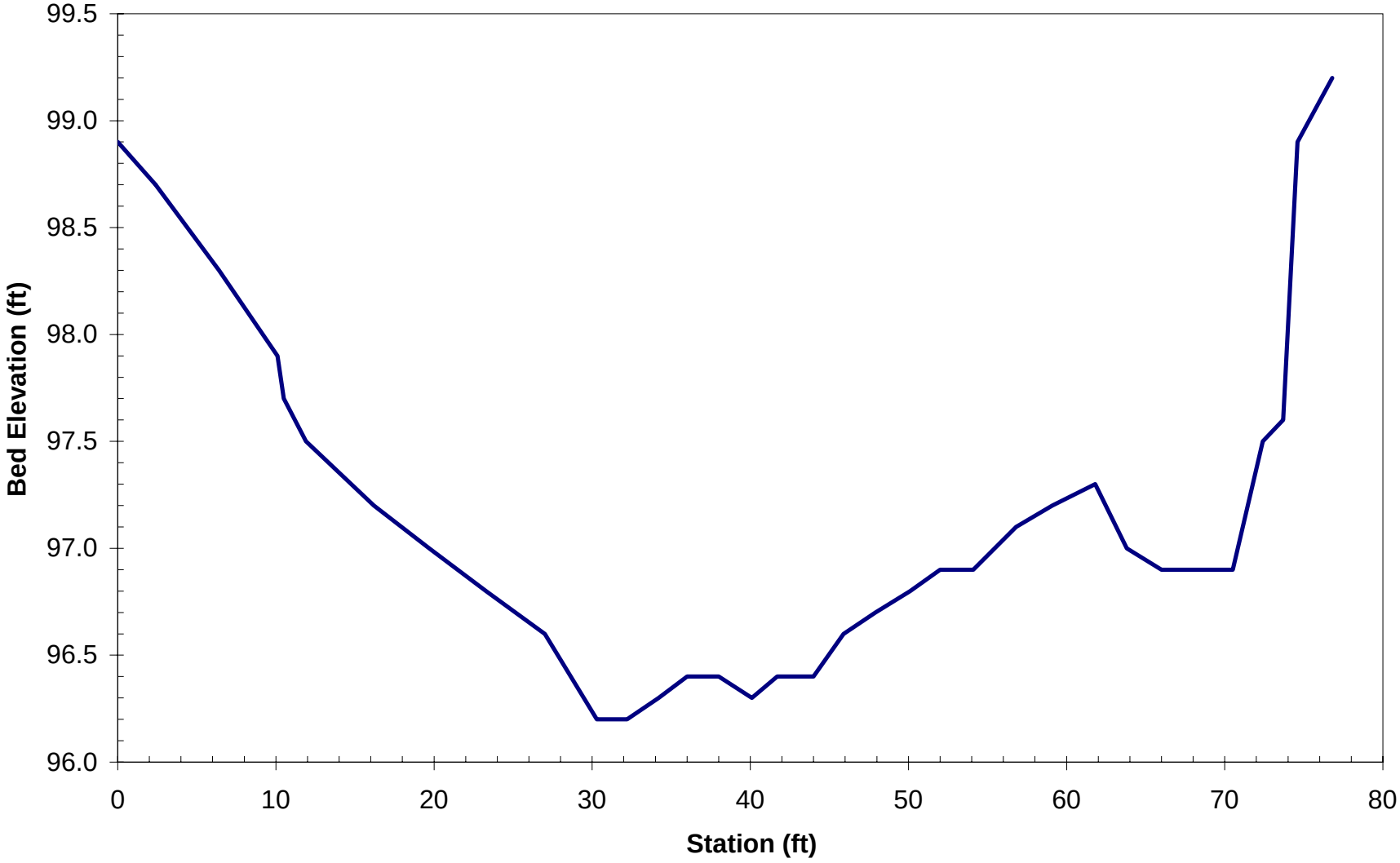
Survey Date	Q (cfs)	WUA (Y/N)
7/19/2005		
8/16/2005	124.1	Y
7/3/2006		
7/25/2006	191.1	Y
4/8/2007	165.4	

(4) Hydraulic Calibration Results:

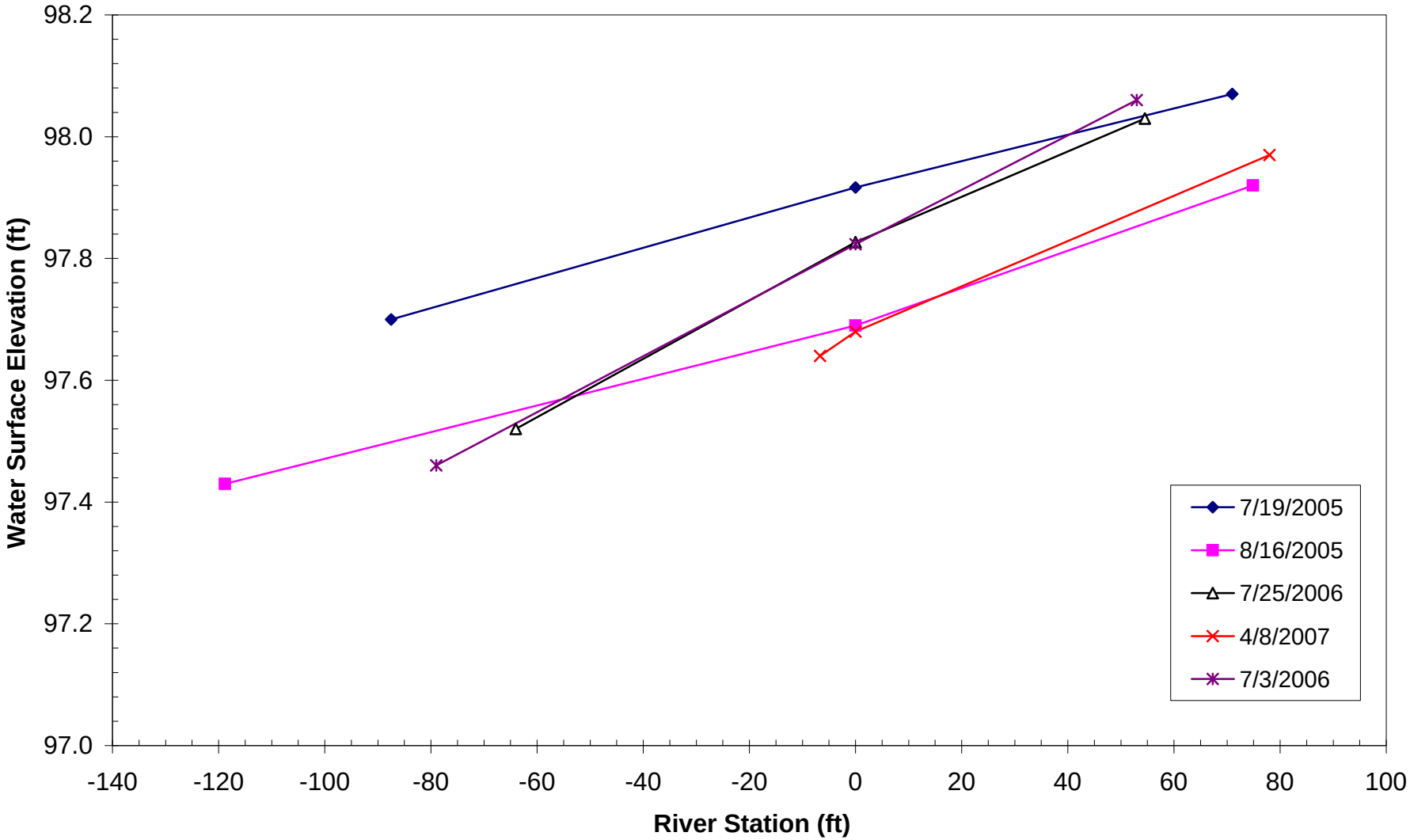
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) appeared to vary with normal trends.
Froude number appeared to be large and close to critical flow, and Manning's n values of higher simulation flows are less than 0.02, which is relatively small for a gravel channel. Additional surveys are needed to more accurately address the range of Froude number and channel roughness.

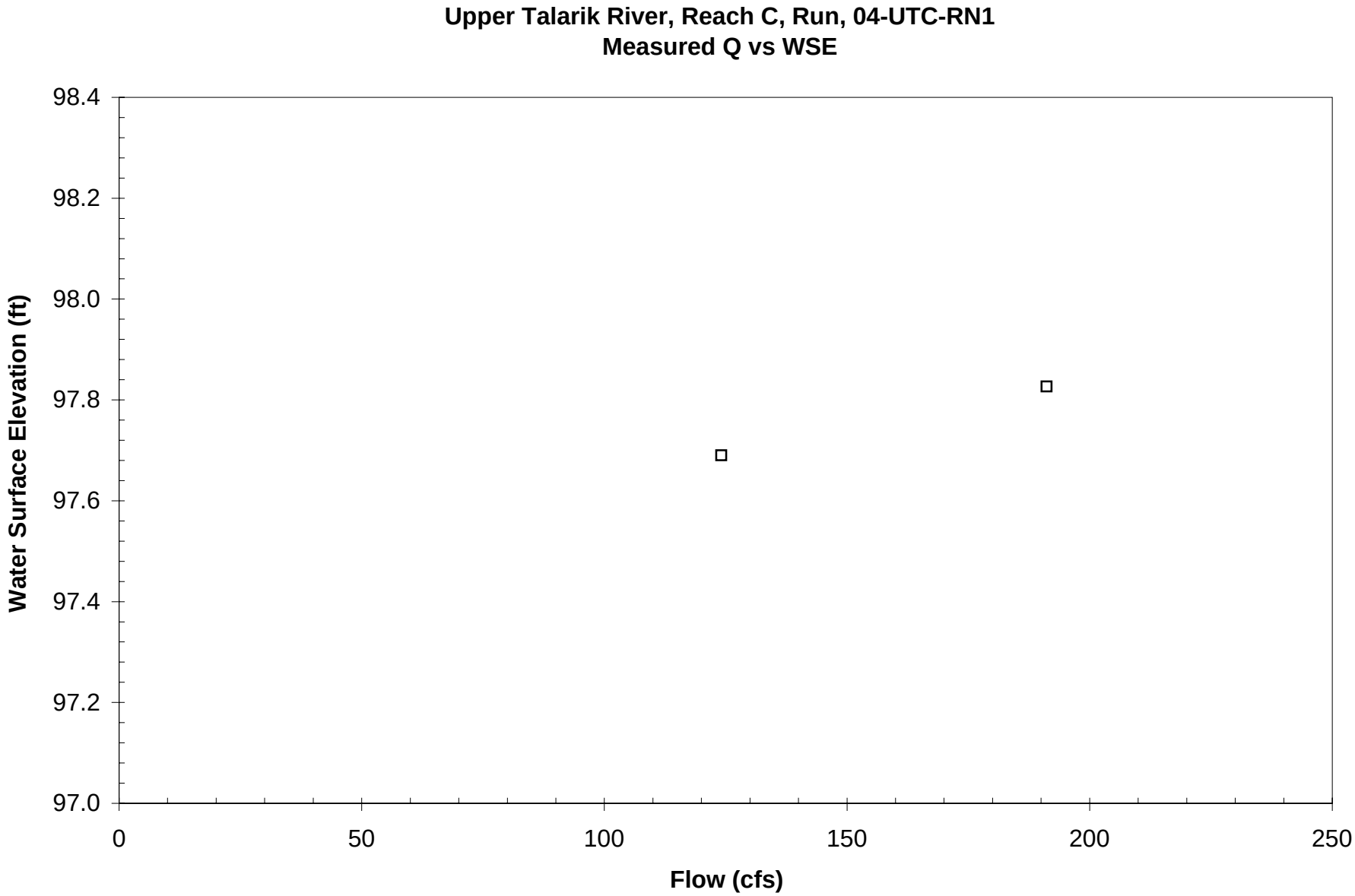
calibration notes

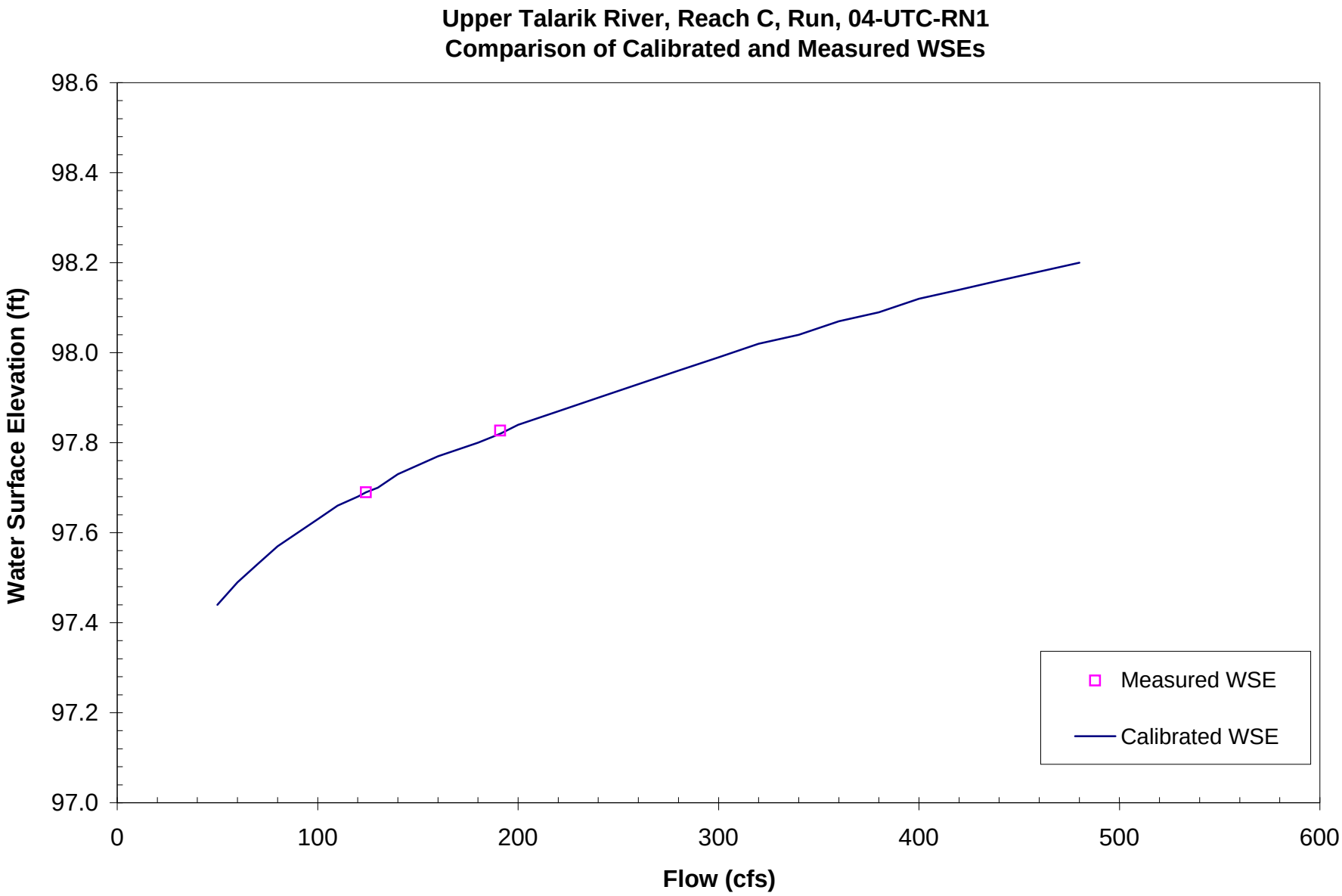
Upper Talarik River, Reach C, Run, 04-UTC-RN1
Measured Transect Profile



Upper Talarik River, Reach C, Run, 04-UTC-RN1
Longitudinal Water Surface Elevation Profiles



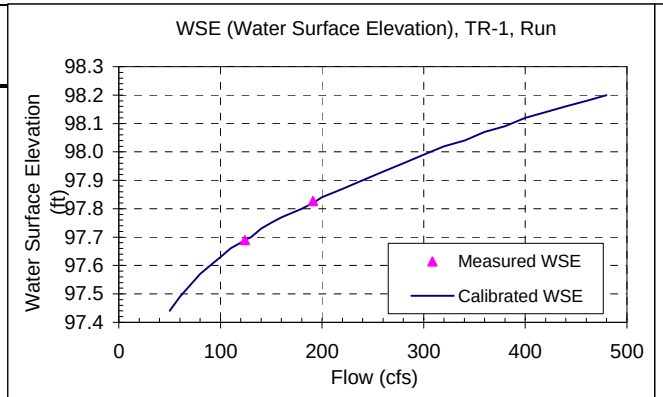

Upper Talarik River, Reach C, Run, 04-UTC-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
50
100
150
200
250
Flow (cfs)

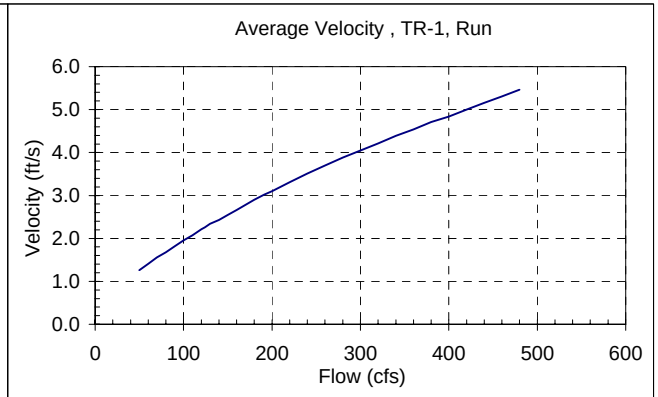

Upper Talarik River, Reach C, Run, 04-UTC-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

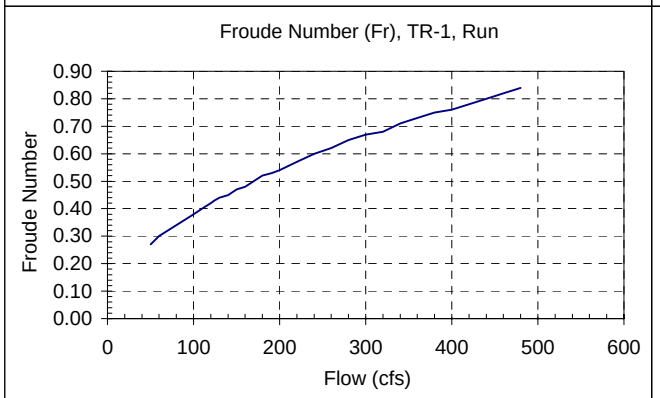
Stream: Upper Talarik Creek
Site Name: 04-UTC-RN1
Date: 8/16/2005
Calibration Flow: Q(8/16/2005)

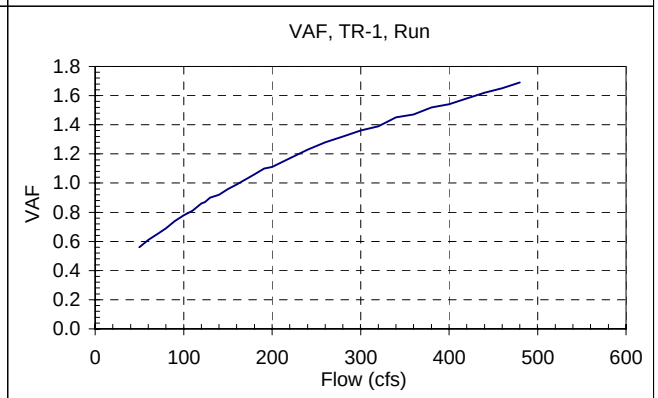
Reach: C
Habitat: Run
Site #: 1
Transect: 1

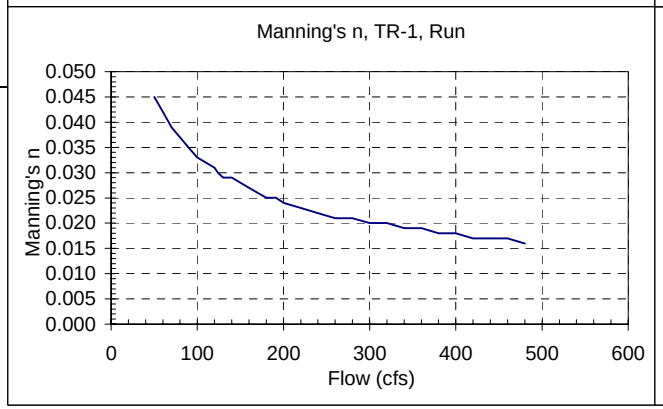
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
50	97.44	0.27	1.26	0.56	0.045	59.8
60	97.49	0.30	1.41	0.61	0.042	60.7
70	97.53	0.32	1.56	0.65	0.039	61.5
80	97.57	0.34	1.68	0.69	0.037	62.3
90	97.60	0.36	1.82	0.74	0.035	62.8
100	97.63	0.38	1.95	0.78	0.033	63.1
110	97.66	0.40	2.07	0.81	0.032	63.3
120	97.68	0.42	2.21	0.86	0.031	63.5
124.1	97.69	0.43	2.26	0.87	0.030	63.5
130	97.70	0.44	2.34	0.90	0.029	63.6
140	97.73	0.45	2.43	0.92	0.029	63.7
150	97.75	0.47	2.55	0.96	0.028	63.7
160	97.77	0.48	2.66	0.99	0.027	63.8
180	97.80	0.52	2.90	1.06	0.025	63.9
191.1	97.82	0.53	3.02	1.10	0.025	64.0
200	97.84	0.54	3.10	1.11	0.024	64.0
220	97.87	0.57	3.31	1.17	0.023	64.1
240	97.90	0.60	3.51	1.23	0.022	64.2
260	97.93	0.62	3.70	1.28	0.021	64.5
280	97.96	0.65	3.88	1.32	0.021	64.8
300	97.99	0.67	4.05	1.36	0.020	65.1
320	98.02	0.68	4.21	1.39	0.020	65.5
340	98.04	0.71	4.39	1.45	0.019	65.7
360	98.07	0.73	4.54	1.47	0.019	66.0
380	98.09	0.75	4.71	1.52	0.018	66.2
400	98.12	0.76	4.84	1.54	0.018	66.5
420	98.14	0.78	5.00	1.58	0.017	66.7
440	98.16	0.80	5.16	1.62	0.017	67.0
460	98.18	0.82	5.31	1.65	0.017	67.2
480	98.20	0.84	5.46	1.69	0.016	67.4

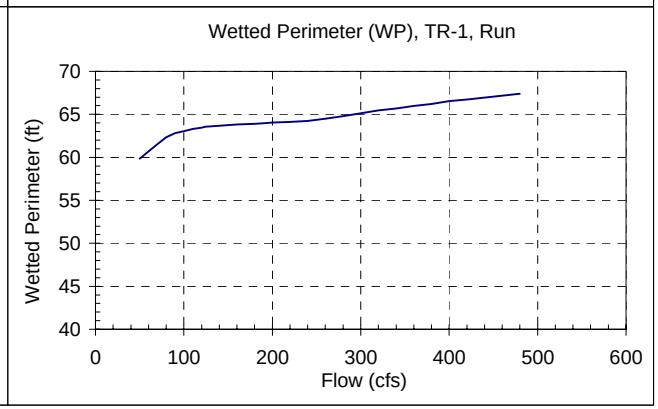




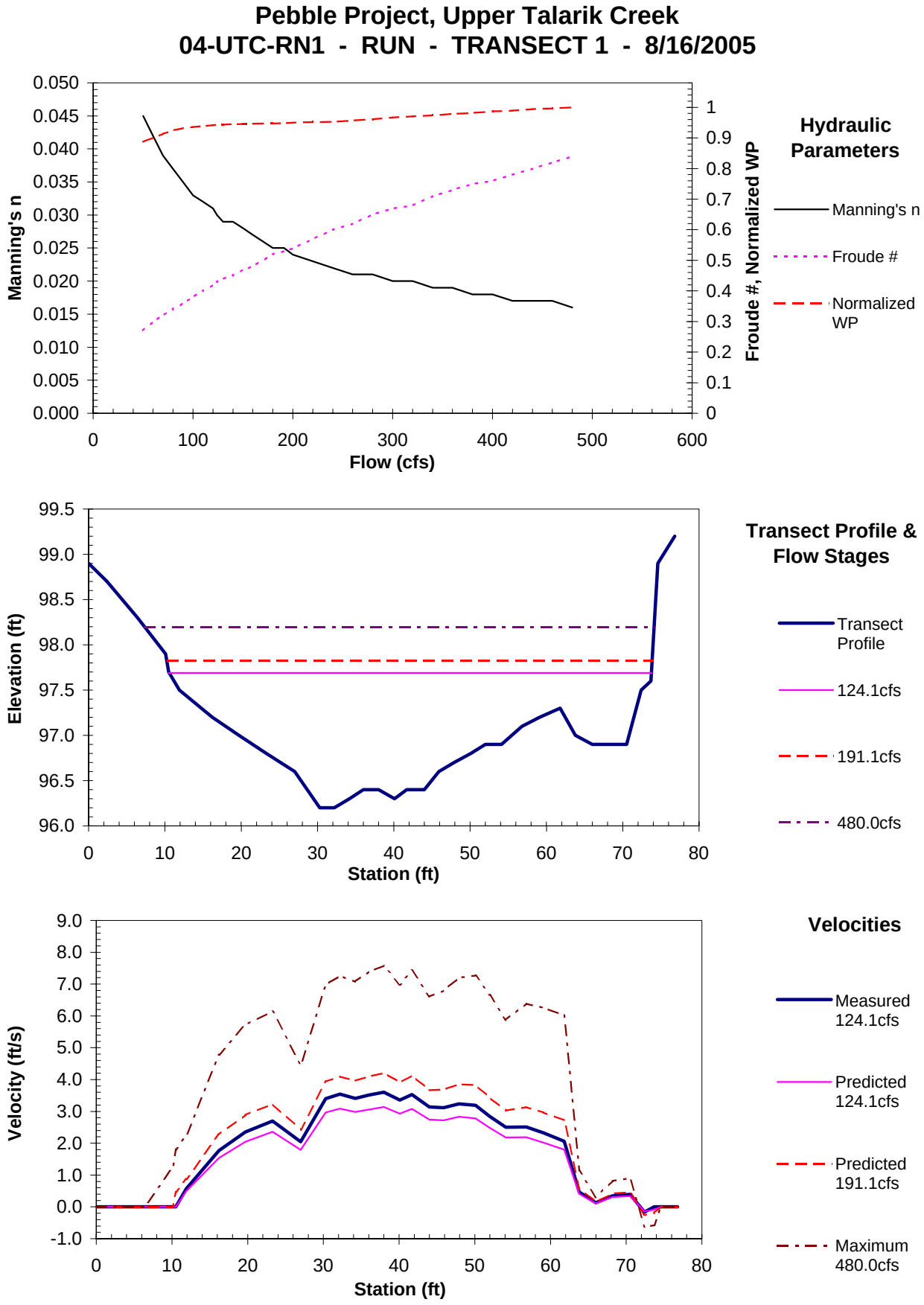








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-UTC-RN1  08/16/05
RUN                        0805Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 124.1
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 191.1
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 460.0
QARD 480.0
XSEC  1000     1000. 1.0     96.23    .00253
      1000   .098.93  2.498.66  6.498.30 10.197.91 10.597.69 11.997.49
      1000 16.297.19 19.796.99 23.396.79 27.096.59 30.396.19 32.296.19
      1000 34.296.29 36.096.39 38.096.39 40.196.29 41.796.39 44.096.39
      1000 45.996.59 47.996.69 50.196.79 52.096.89 54.196.89 56.897.09
      1000 59.197.19 61.897.29 63.896.99 66.096.89 68.296.89 70.596.89
      1000 72.497.49 73.797.59 74.698.93 76.899.20
NS    1000      22.9      22.9      22.9      23.7      23.7      23.7
NS    1000      54.6      65.7      42.6      46.6      46.6      65.6
NS    1000      65.6      54.6      65.6      65.6      65.6      65.6
NS    1000      64.6      64.6      54.7      54.7      45.6      45.7
NS    1000      42.8      42.6      23.8      42.6      42.6      42.7
NS    1000      25.9      24.9      22.9      22.9
WSL   1000     97.44     97.49     97.53     97.57     97.60     97.63
WSL   1000     97.66     97.68     97.69     97.70     97.73     97.75
WSL   1000     97.77     97.80     97.82     97.84     97.87     97.90
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     97.93     97.96     97.99     98.02     98.04     98.07
WSL   1000     98.09     98.12     98.14     98.16     98.18     98.20
CAL1  1000     97.69     124.1
VEL1  1000                     0.00 0.57 1.77 2.35 2.70 2.05 3.40 3.54
VEL1  1000 3.41 3.51 3.60 3.36 3.53 3.14 3.12 3.24 3.19 2.84 2.50 2.51
VEL1  1000 2.32 2.06 0.47 0.13 0.35 0.39-0.16 0.00
CAL2  1000     97.83     191.1
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble      04-UTC-RN1  08/16/05
RUN                        0805Q                                TRANSECT 1
IOC       0110000000000000000000
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 124.1
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 191.1
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 460.0
QARD 480.0
XSEC  1000     1000. 1.0     96.23    .00253
      1000   .098.93  2.498.66  6.498.30 10.197.91 10.597.69 11.997.48
      1000 16.297.19 19.796.98 23.396.79 27.096.58 30.396.19 32.296.19
      1000 34.296.29 36.096.38 38.096.38 40.196.29 41.796.38 44.096.38
      1000 45.996.58 47.996.69 50.196.79 52.096.88 54.196.88 56.897.08
      1000 59.197.19 61.897.29 63.896.98 66.096.88 68.296.88 70.596.88
      1000 72.497.48 73.797.58 74.698.93 76.899.19
NS    1000      22.9      22.9      22.9      23.7      23.7      23.7
NS    1000      54.6      65.7      42.6      46.6      46.6      65.6
NS    1000      65.6      54.6      65.6      65.6      65.6      65.6
NS    1000      64.6      64.6      54.7      54.7      45.6      45.7
NS    1000      42.8      42.6      23.8      42.6      42.6      42.7
NS    1000      25.9      24.9      22.9      22.9
CALQ  1000     97.69     124.1     -1.70
ENDJ
```

MANSQ Data Deck

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 04-UTC-RN2

Habitat Type: Run

River Kilometer: 24.36

Stream: **Upper Talarik Creek**
Reach: **C**
Site: **04-UTC-RN2**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1	7/19/2005	100.00	99.58	98.70
2	8/16/2005	100.00	99.56	98.70
3	9/7/2005	100.00	99.56	98.71
4	7/24/2006	100.00	99.57	98.70
5	4/6/2007	100.00	99.61	98.69

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and TP were within ±0.01ft in 2005-2007 period. Small changes indicated survey datum was stable during that period.
(c) HP elevation had a 0.03ft shift in 2007. This change did not affect WSEs because the survey datum was based on BM which was stable suring the entire course of survey period.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/19/2005	95.00
8/16/2005	94.85
9/7/2005	95.64
7/24/2006	94.99
4/6/2007	94.77

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/19/2005	
8/16/2005	142.1
9/7/2005	419.9
7/24/2006	159.5
4/6/2007	121.4

Discharge was not measured during the 7/19/05 site visit.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/19/2005	0.299%	66.8
8/16/2005	0.180%	206.0
9/7/2005	0.310%	177.4
7/24/2006	0.190%	115.9
4/6/2007	0.439%	378.0

The slope S=0.180% of 8/16/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/19/2005	93.05
8/16/2005	93.05
9/7/2005	93.14
7/24/2006	93.19
4/6/2007	93.17
Invert	93.19
SZF	93.19

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) The invert of 7/19/05 surevy was not used for determining SZF due to no flow measured.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1	7/19/2005		95.00			
2	8/16/2005	142.1	94.85	94.87	0.02	IFG4
3	9/7/2005	419.9	95.64	95.66	0.02	IFG4
4	7/24/2006	159.5	94.99	94.94	-0.05	IFG4
5	4/6/2007	121.4	94.77	94.78	0.01	IFG4

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.05ft is within acceptable range.
(c) No discharge was measured in 7/19/05 trip.
(d) Field notes of 4/6/07 indicated ice on the shore, but there were no site photos available to show the extend of ice impact on hydraulics. Photos taken at a nearby site, 04-UTC-RN1, on 4/8/07 showed the bank was covered in ice but channel was almost clear of ice. It is thus assumed the ice impact on the hydraulics was minimal, and the surveyed data were included in hydraulic modeling.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 121.4cfs, 142.1cfs, 159.5cfs, and 419.9cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

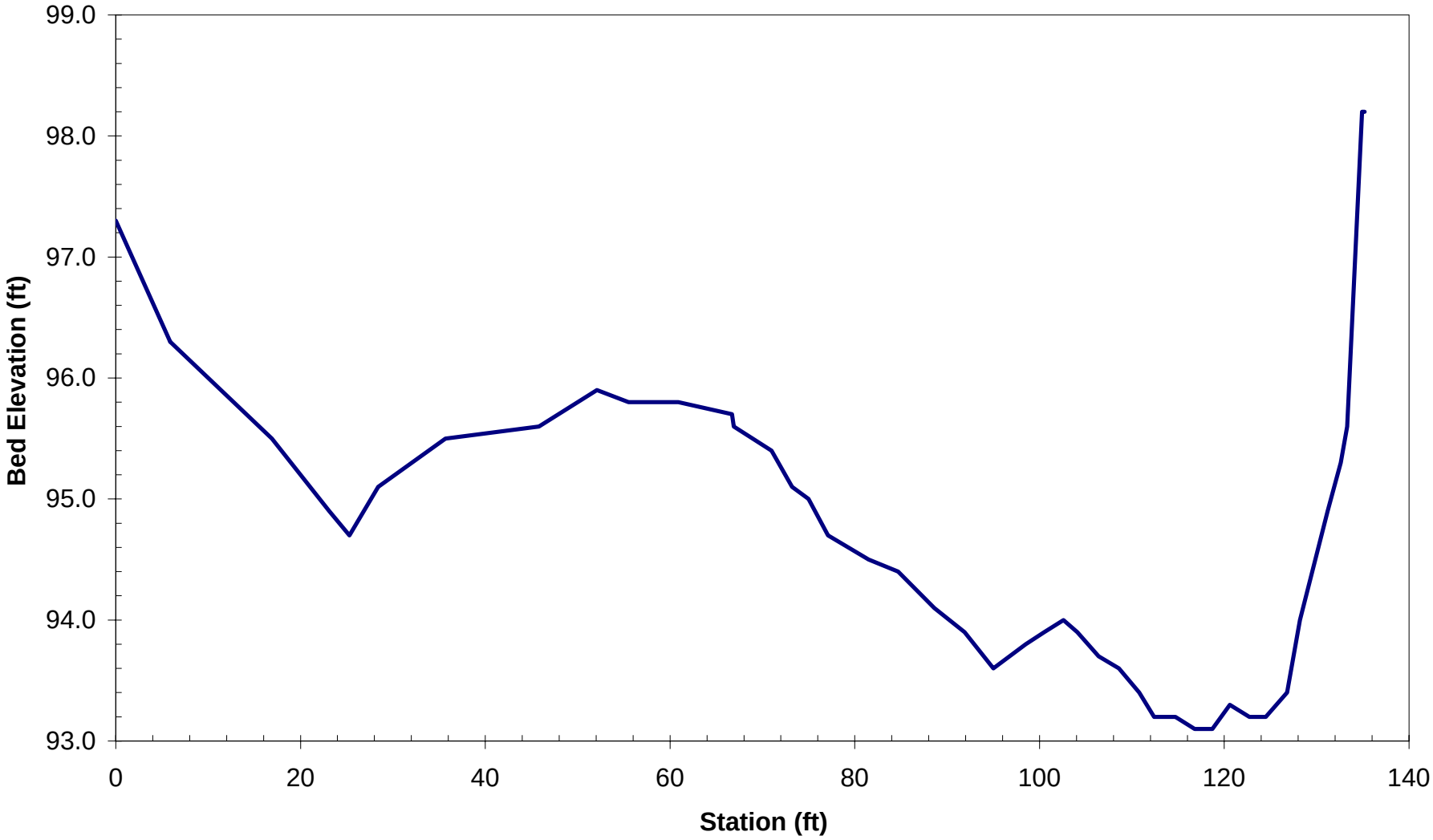
Survey Date	Q (cfs)	WUA (Y/N)
7/19/2005		
8/16/2005	142.1	Y
9/7/2005	419.9	Y
7/24/2006	159.5	Y
4/6/2007	121.4	Y

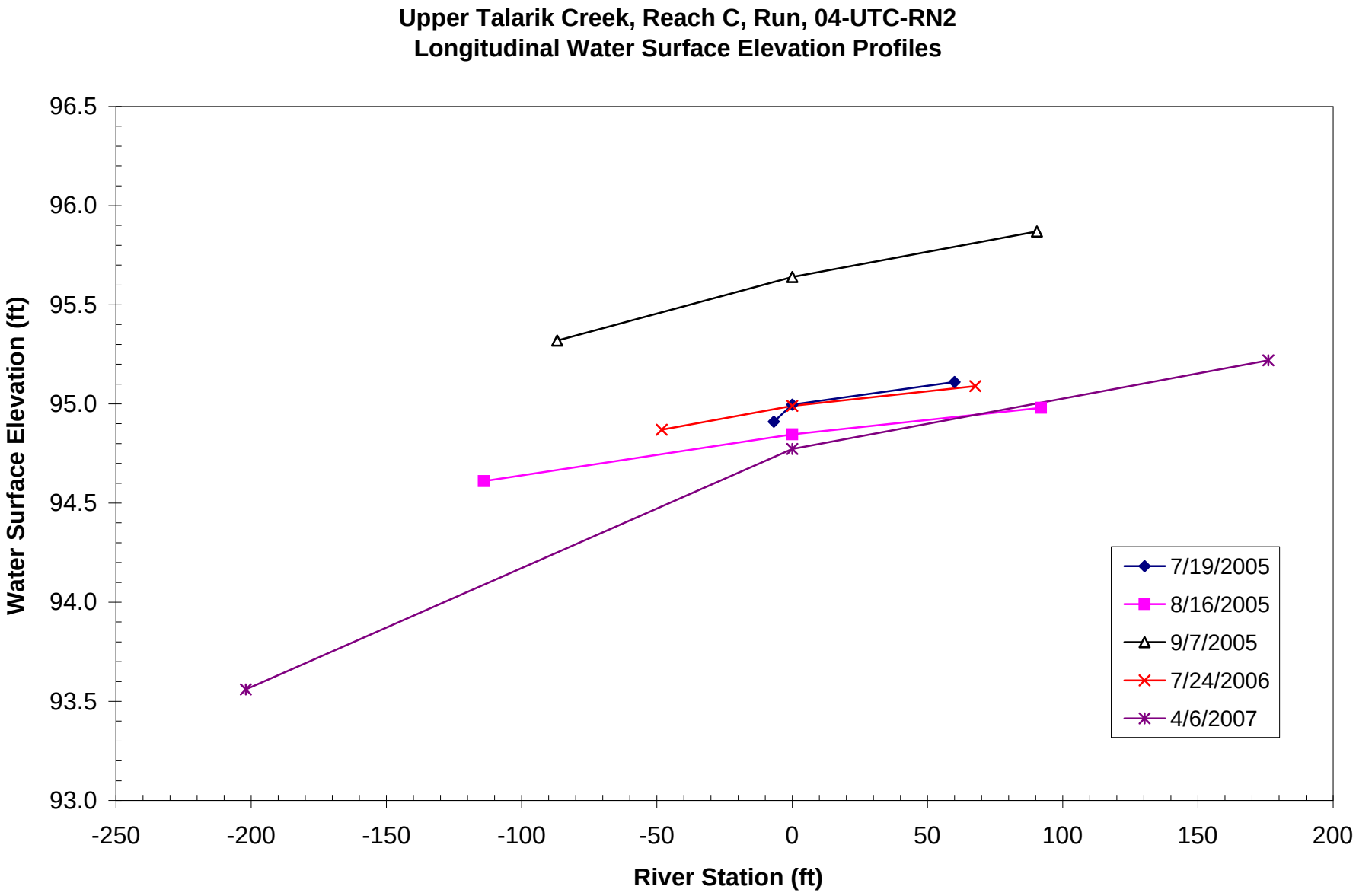
(4) Hydraulic Calibration Results:

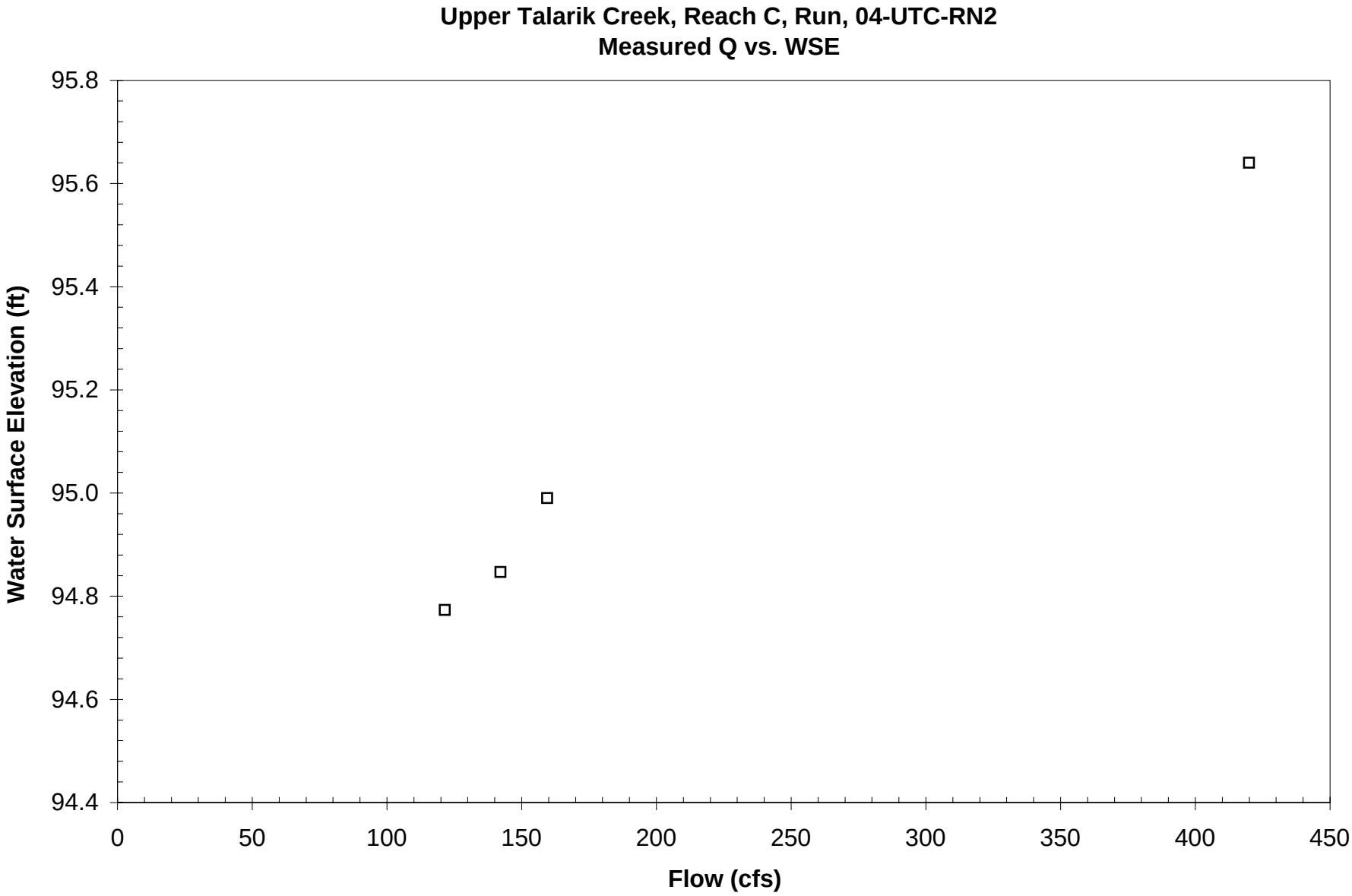
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends for Q ≤ 500cfs.
For flows greater than 500cfs, the trends were virtually flat for both Froude number and Manning's n values.
The flat trends may caused by the small flood plain between Sta=35 and Sta=65ft, which increased wetted perimeter significantly while flow conveyance area only increased moderately when flow just inundated floodplain.

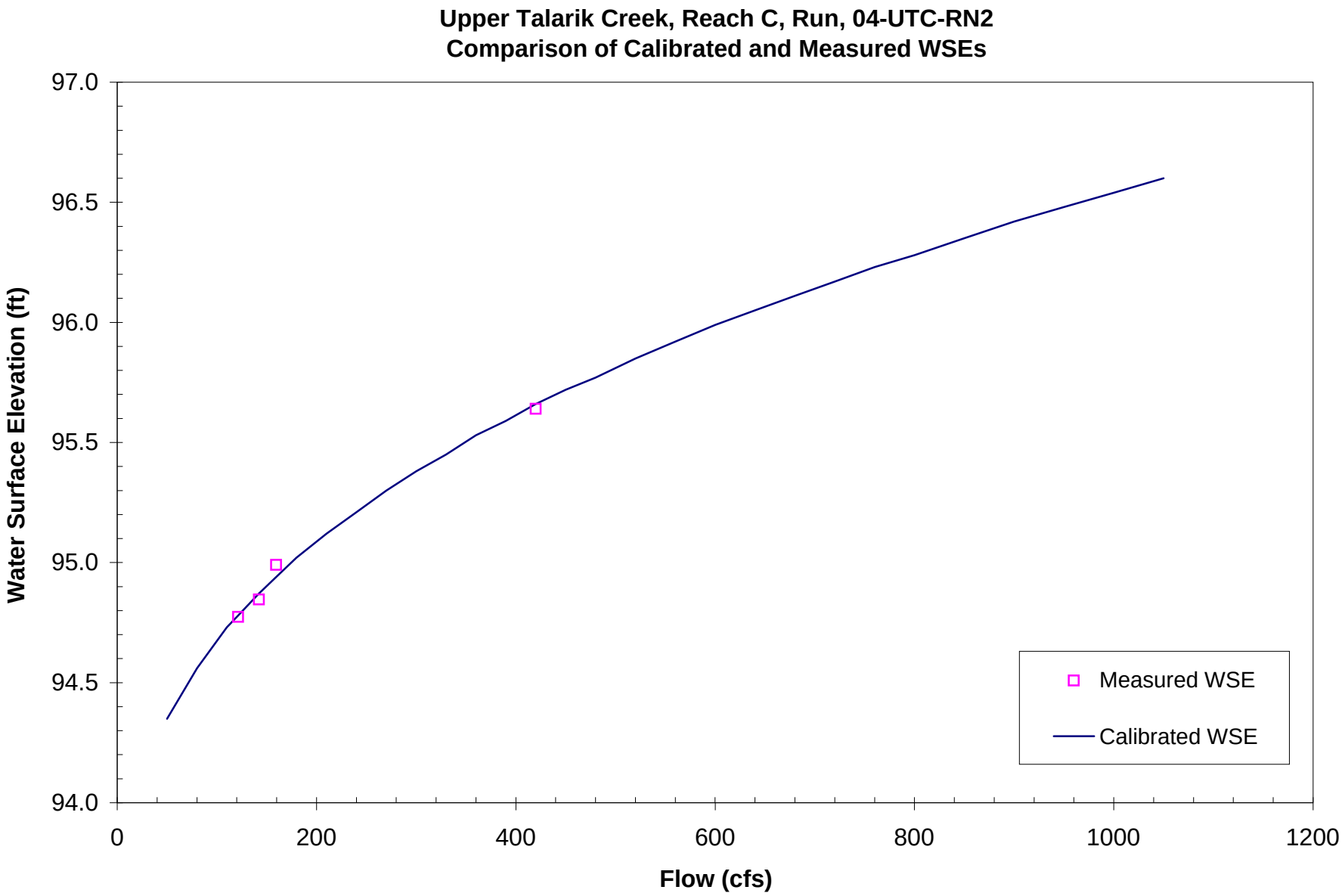
calibration notes

Upper Talarik Creek, Reach C, Run, 04-UTC-RN2
Measured Transect Profile




Upper Talarik Creek, Reach C, Run, 04-UTC-RN2
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
-250
-200
-150
-100
-50
0
50
100
150
200
River Station (ft)
7/19/2005
8/16/2005
9/7/2005
7/24/2006
4/6/2007

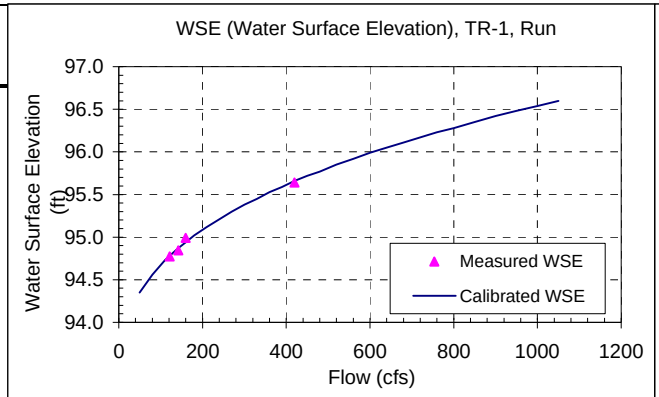

Upper Talarik Creek, Reach C, Run, 04-UTC-RN2
Measured Q vs. WSE
Water Surface Elevation (ft)
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
0
50
100
150
200
250
300
350
400
450
Flow (cfs)

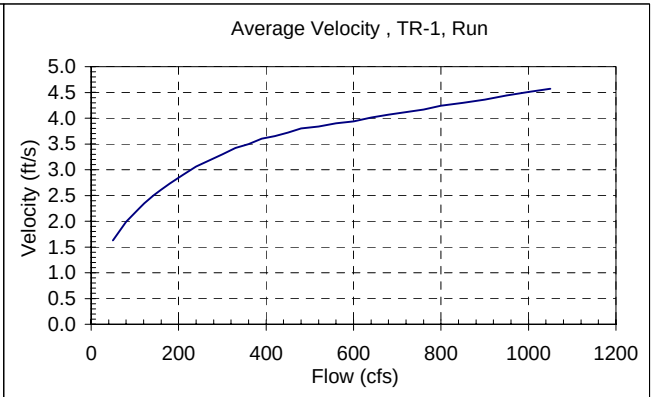

Upper Talarik Creek, Reach C, Run, 04-UTC-RN2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
94.5
94.0
0
200
400
600
800
1000
1200
Flow (cfs)
Measured WSE
Calibrated WSE

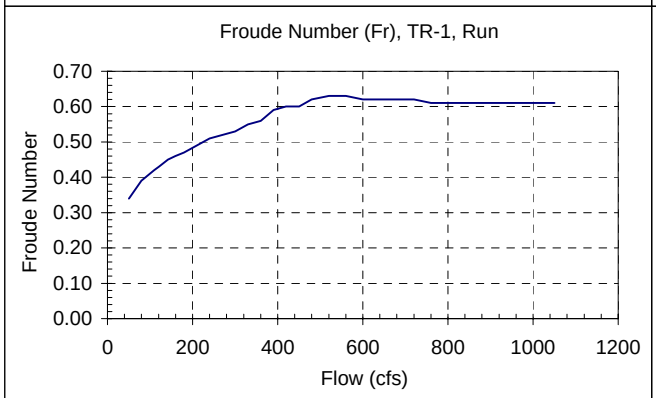
Stream: Upper Talarik Creek
Site Name: 04-UTC-RN2
Date: 9/7/2005
Calibration Flow: Q(9/7/2005)

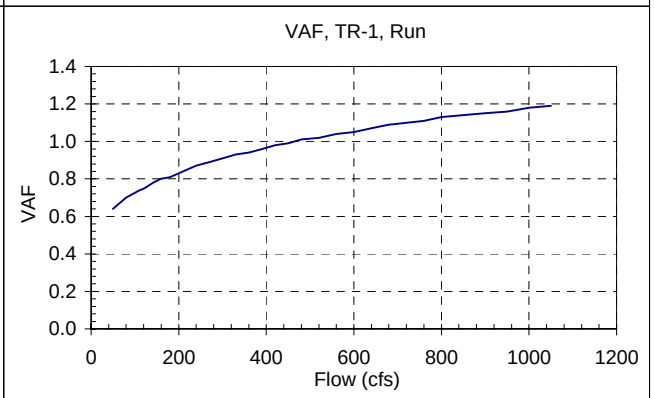
Reach: C
Habitat: Run
Site #: 2
Transect: 1

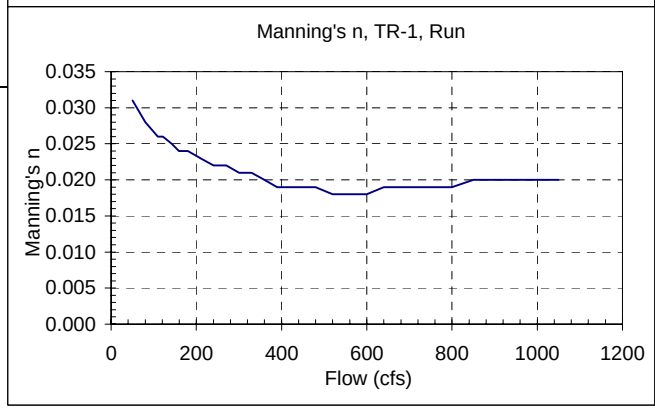
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
50	94.35	0.34	1.63	0.64	0.031	43.7
80	94.56	0.39	1.99	0.70	0.028	49.2
110	94.73	0.42	2.25	0.74	0.026	54.5
121.4	94.78	0.43	2.35	0.75	0.026	56.0
142.1	94.87	0.45	2.50	0.78	0.025	58.7
159.5	94.94	0.46	2.61	0.80	0.024	60.7
180	95.02	0.47	2.73	0.81	0.024	62.9
210	95.12	0.49	2.90	0.84	0.023	66.8
240	95.21	0.51	3.06	0.87	0.022	70.4
270	95.30	0.52	3.18	0.89	0.022	73.9
300	95.38	0.53	3.30	0.91	0.021	77.0
330	95.45	0.55	3.42	0.93	0.021	79.8
360	95.53	0.56	3.50	0.94	0.020	85.7
390	95.59	0.59	3.60	0.96	0.019	94.0
419.9	95.66	0.60	3.65	0.98	0.019	99.2
450	95.72	0.60	3.72	0.99	0.019	103.2
480	95.77	0.62	3.80	1.01	0.019	107.2
520	95.85	0.63	3.84	1.02	0.018	119.0
560	95.92	0.63	3.90	1.04	0.018	122.8
600	95.99	0.62	3.94	1.05	0.018	123.8
640	96.05	0.62	4.01	1.07	0.019	124.7
680	96.11	0.62	4.07	1.09	0.019	125.6
720	96.17	0.62	4.12	1.10	0.019	126.4
760	96.23	0.61	4.17	1.11	0.019	127.3
800	96.28	0.61	4.24	1.13	0.019	128.0
850	96.35	0.61	4.30	1.14	0.020	129.0
900	96.42	0.61	4.36	1.15	0.020	129.5
950	96.48	0.61	4.44	1.16	0.020	129.9
1000	96.54	0.61	4.51	1.18	0.020	130.4
1050	96.60	0.61	4.57	1.19	0.020	130.8

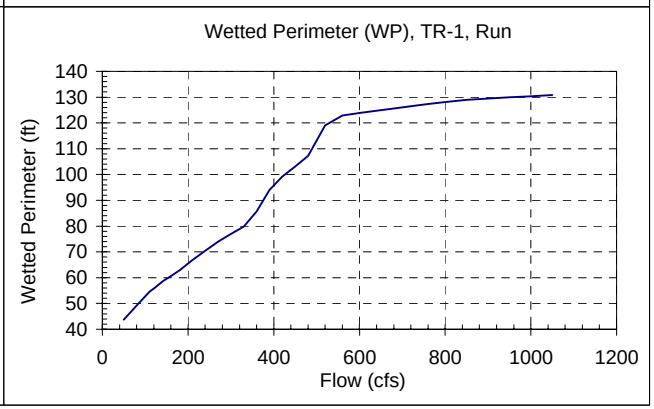






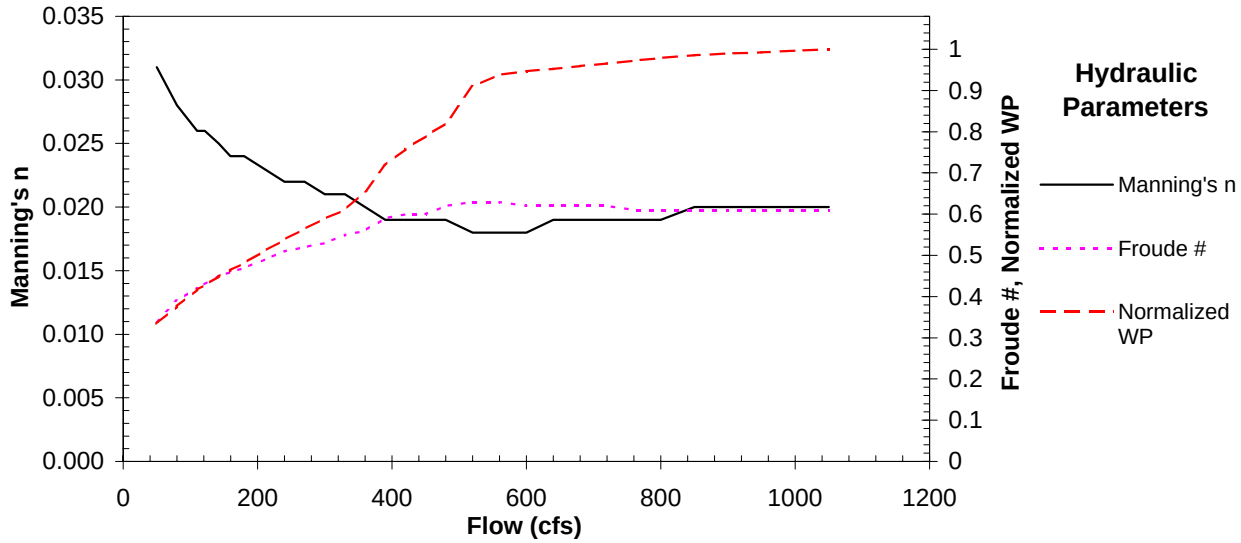


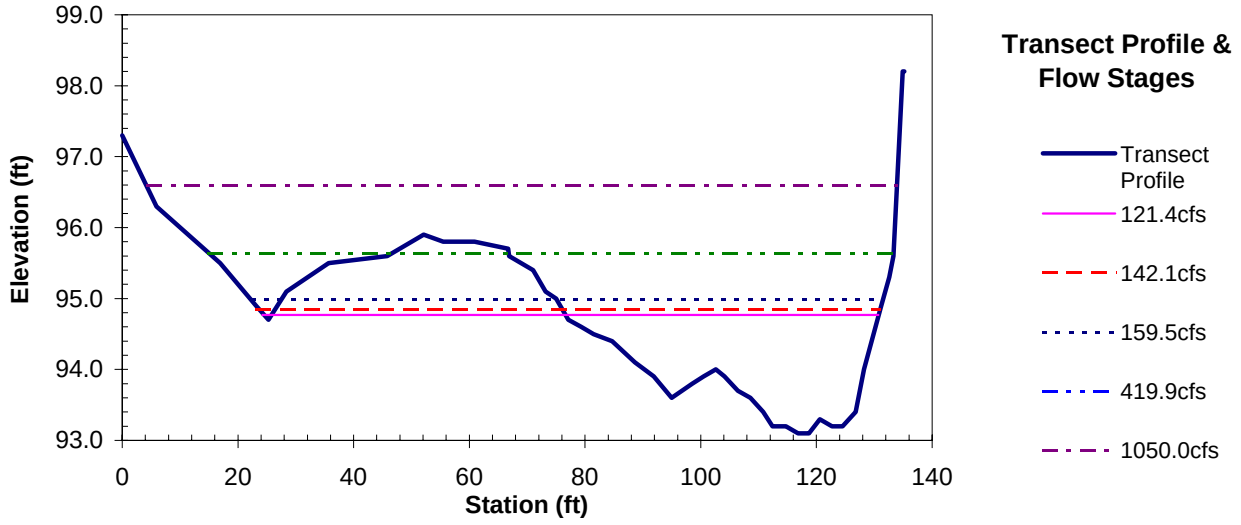


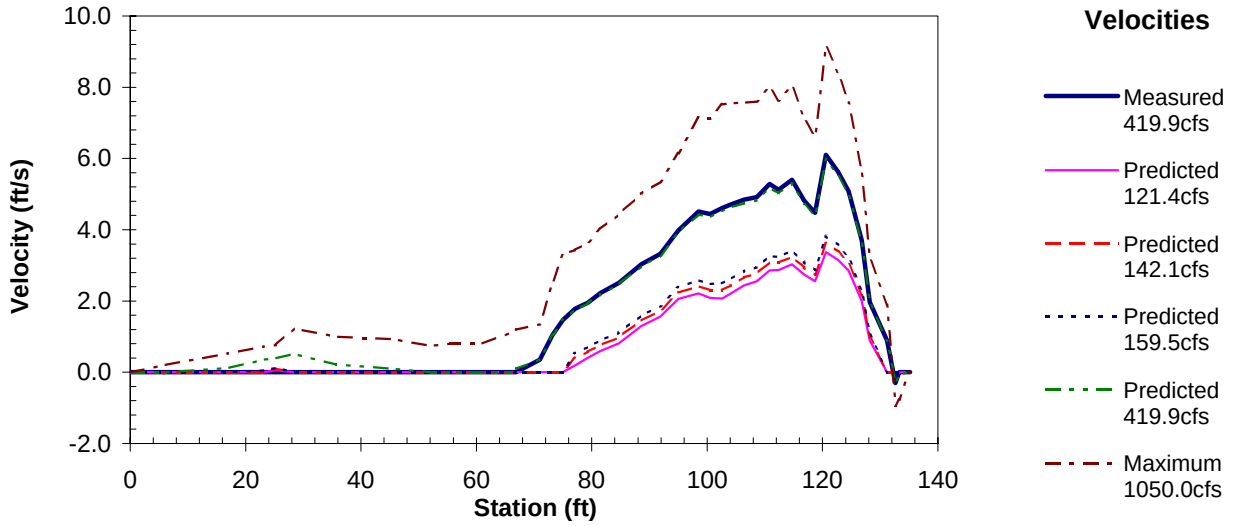


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
04-UTC-RN2 - RUN - TRANSECT 1 - 9/7/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-UTC-RN2  09/07/05
RUN                        0905Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  50.0
QARD  80.0
QARD 110.0
QARD 121.4
QARD 142.1
QARD 159.5
QARD 180.0
QARD 210.0
QARD 240.0
QARD 270.0
QARD 300.0
QARD 330.0
QARD 360.0
QARD 390.0
QARD 419.9
QARD 450.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
XSEC  1000     1000. 1.0     93.19    .00180
      1000   .097.30  5.996.34 16.995.51 23.194.87 25.394.69 28.495.11
      1000 35.795.51 45.895.61 52.195.90 55.595.80 60.995.81 66.795.68
      1000 66.995.63 71.095.44 73.295.13 75.095.04 77.194.73 79.394.63
      1000 81.594.54 84.794.44 88.694.13 91.993.94 95.093.63 98.593.83
      1000100.593.94102.694.04104.193.94106.493.73108.693.63110.893.44
      1000112.493.23114.793.23116.893.13118.793.13120.693.33122.793.23
      1000124.593.23126.893.44128.294.04131.294.94132.695.33133.395.63
      1000134.998.16135.298.16
NS    1000      22.9      22.9      22.9      22.9 .15  24.6      22.9
NS    1000      22.9      22.9      22.9      24.6 .08  46.6      42.6
NS    1000      42.6      25.6      23.7      52.6      42.6      42.6
NS    1000      42.6      62.6      46.6      25.7      25.7      64.7
NS    1000      64.6      74.6      64.6      64.6      64.6      67.6
NS    1000      65.7      64.7      65.6      54.6      54.6      65.6
NS    1000      65.6      54.6      54.6      43.8      24.6      24.6
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9
WSL   1000     94.35     94.56     94.73     94.78     94.87     94.94
WSL   1000     95.02     95.12     95.21     95.30     95.38     95.45
WSL   1000     95.53     95.59     95.66     95.72     95.77     95.85
WSL   1000     95.92     95.99     96.05     96.11     96.17     96.23
WSL   1000     96.28     96.35     96.42     96.48     96.54     96.60
CAL1  1000     95.64     419.9
VEL1  1000
VEL1  1000 0.00 0.35 1.05 1.47 1.78 1.95 2.22 2.51 3.03 3.33 3.98 4.51
VEL1  1000 4.44 4.61 4.71 4.84 4.92 5.28 5.12 5.40 4.82 4.48 6.10 5.63
VEL1  1000 5.08 3.70 1.97 0.89-0.30 0.00
CAL2  1000     94.99     159.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     94.77     121.4
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     94.85     142.1
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-C

Site/TR: 04-UTC-RF2

Habitat Type: Riffle

River Kilometer: 24.59

Stream: Upper Talarik Creek
Reach: C
Site Name: 04-UTC-RF2
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/20/2005	99.79	101.17	101.20
2nd	8/16/2005	99.79	101.19	101.17
3rd	9/7/2005	99.79	101.17	101.20
4th	7/24/2006		101.17	101.21
5th	4/6/2007		101.17	101.26

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between the control pins were within 0.02ft during the 2005-2006 period. Small changes indicated control pins were stable during that period.
(c) BM was lost in the 2006 survey, but consistent relative elevation between HP and TP suggested survey datum be stable.
(d) TP elevation increased by 0.05ft from 2006 to 2007. Not able to determine if HP or TP or both were moved. No photos for the 2007 survey, but comparison of the 2007 transect profile to the previous ones indicated the channel was affected by anchor ice. As the result, surveyed hydraulics were not used for modeling.

calibration notes

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/20/2005	99.51
8/16/2005	99.42
9/7/2005	100.05
7/24/2006	99.51
4/6/2007	99.51

WSEs of 4/6/07 survey was affected by ice. No photos available, but the field notes indicated there was shore ice as thick as 2ft.

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/20/2005	
8/16/2005	151.1
9/7/2005	402.7
7/24/2006	166.5
4/6/2007	120.8

No discharge was measured on 7/20/05.
The discharge measurement of 4/6/07 was incomplete.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/20/2005	0.559%	153.4
8/16/2005	0.572%	337.5
9/7/2005	0.634%	227.3
7/24/2006	0.644%	139.7
4/6/2007	0.717%	337.5

The slope S=0.572% of 8/16/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/20/2005	97.89
8/16/2005	97.82
9/7/2005	97.75
7/24/2006	97.71
4/6/2007	97.81
Invert	97.89
SZF	97.89

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) The invert of 4/6/07 was not used for determining SZF due to thick shore ice.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	measured WSE(ft) TR1	calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/20/2005		99.51			
2nd	8/16/2005	151.1	99.42	99.44	0.02	IFG4
3rd	9/7/2005	402.7	100.05	100.06	0.01	IFG4
4th	7/24/2006	166.5	99.51	99.49	-0.02	IFG4
5th	4/6/2007	120.8	99.51			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range.
(c) No discharge was measured during the 7/20/05 site visit.
(d) No photos of 4/6/07 site visit were available, but the field notes indicated there was thick shore ice.
Hydraulics were affected by ice and not used in modeling.
Flow measurement was incomplete.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 151.1cfs, 166.5cfs, and 402.7cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

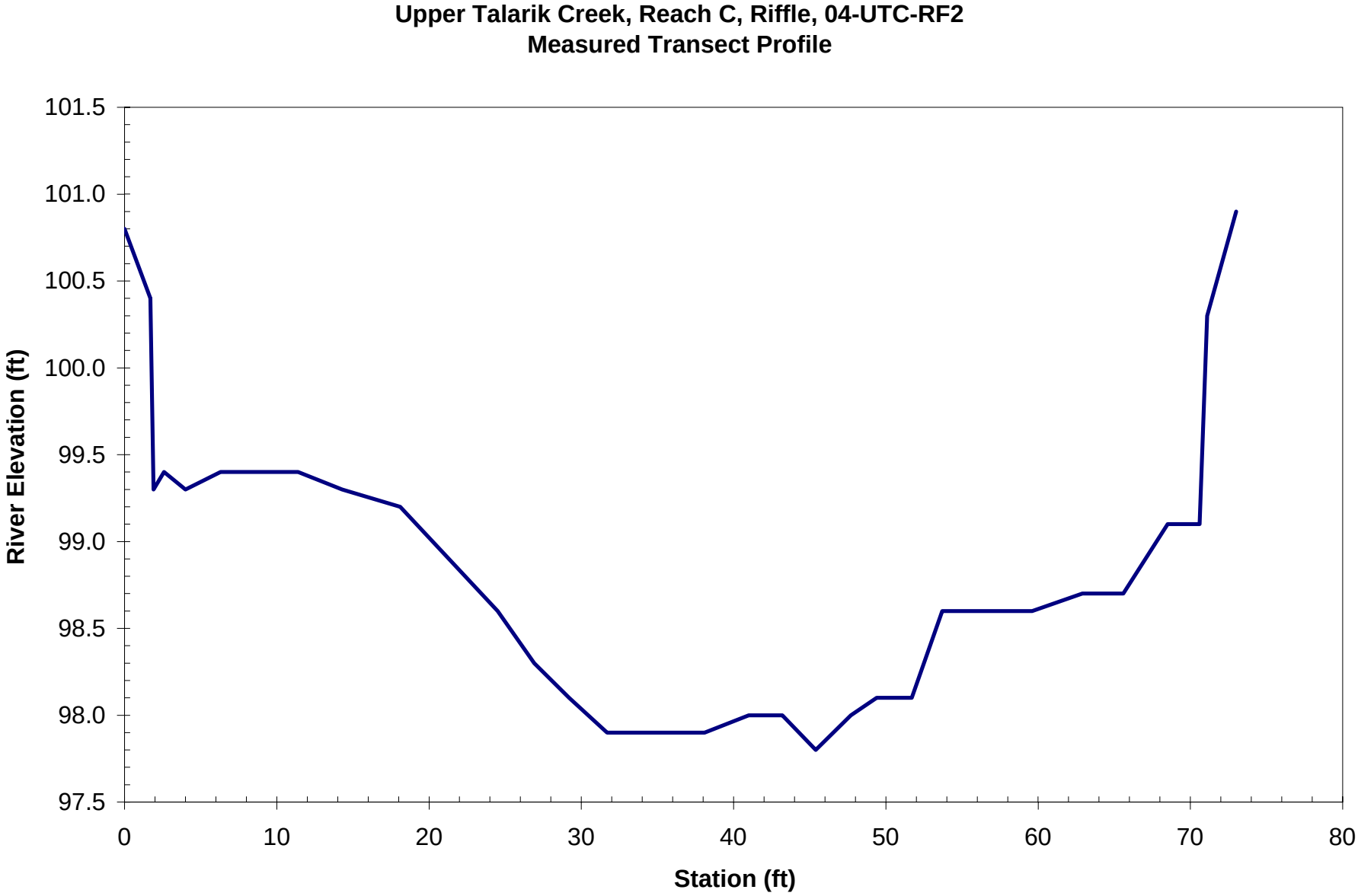
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
7/20/2005		
8/16/2005	151.1	Y
9/7/2005	402.7	Y
7/24/2006	166.5	
4/6/2007	120.8	

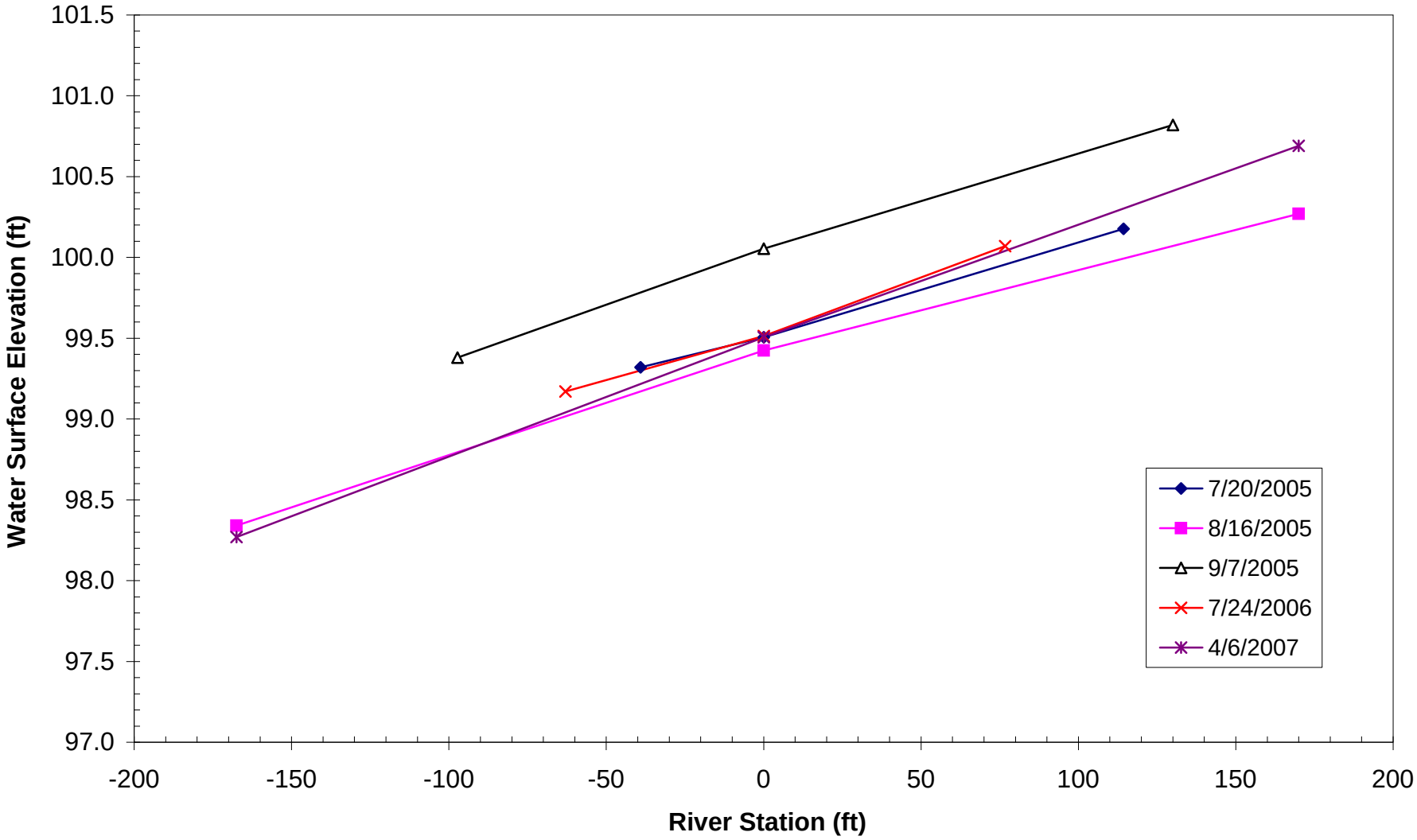
(4) Hydraulic Calibration Results:

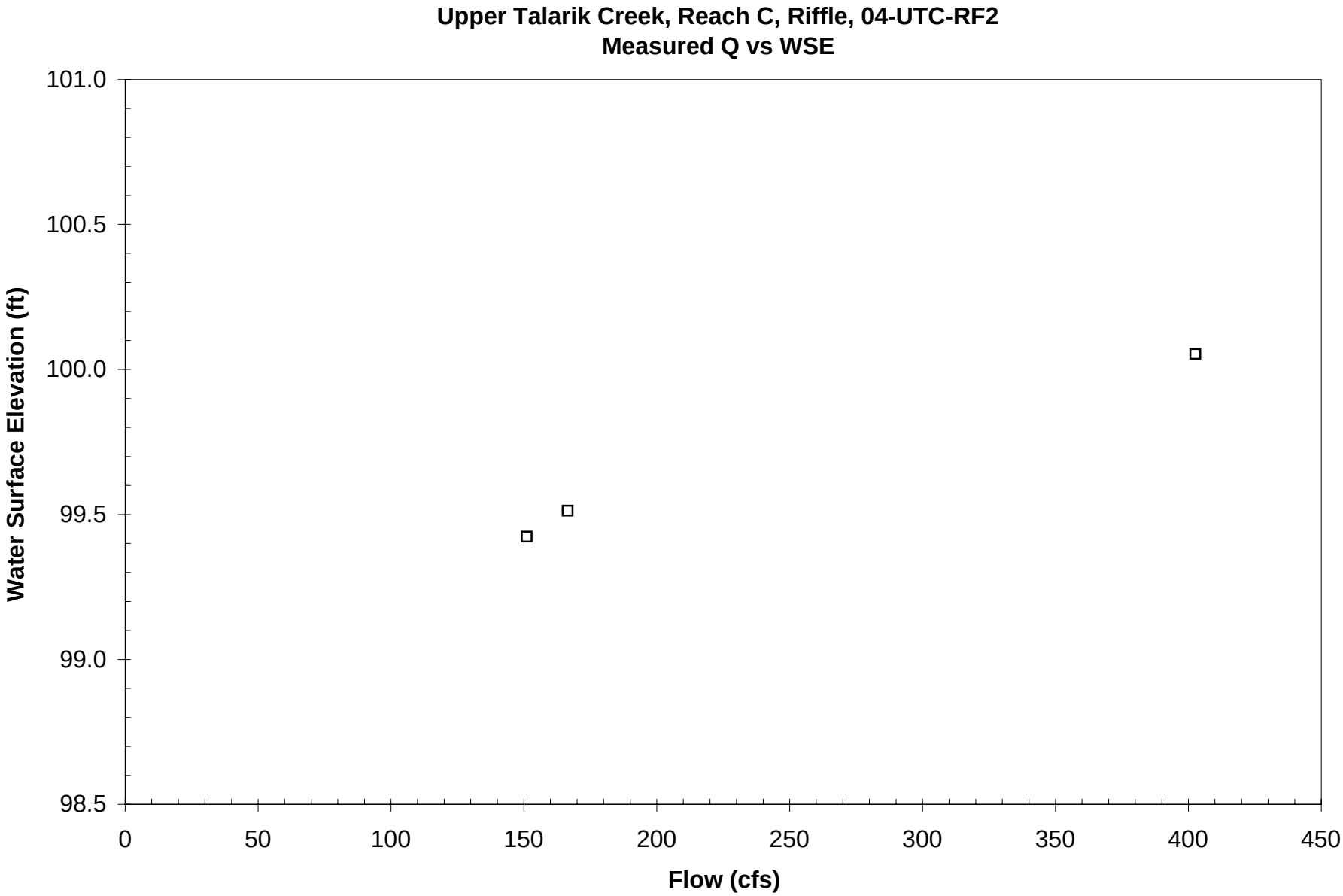
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

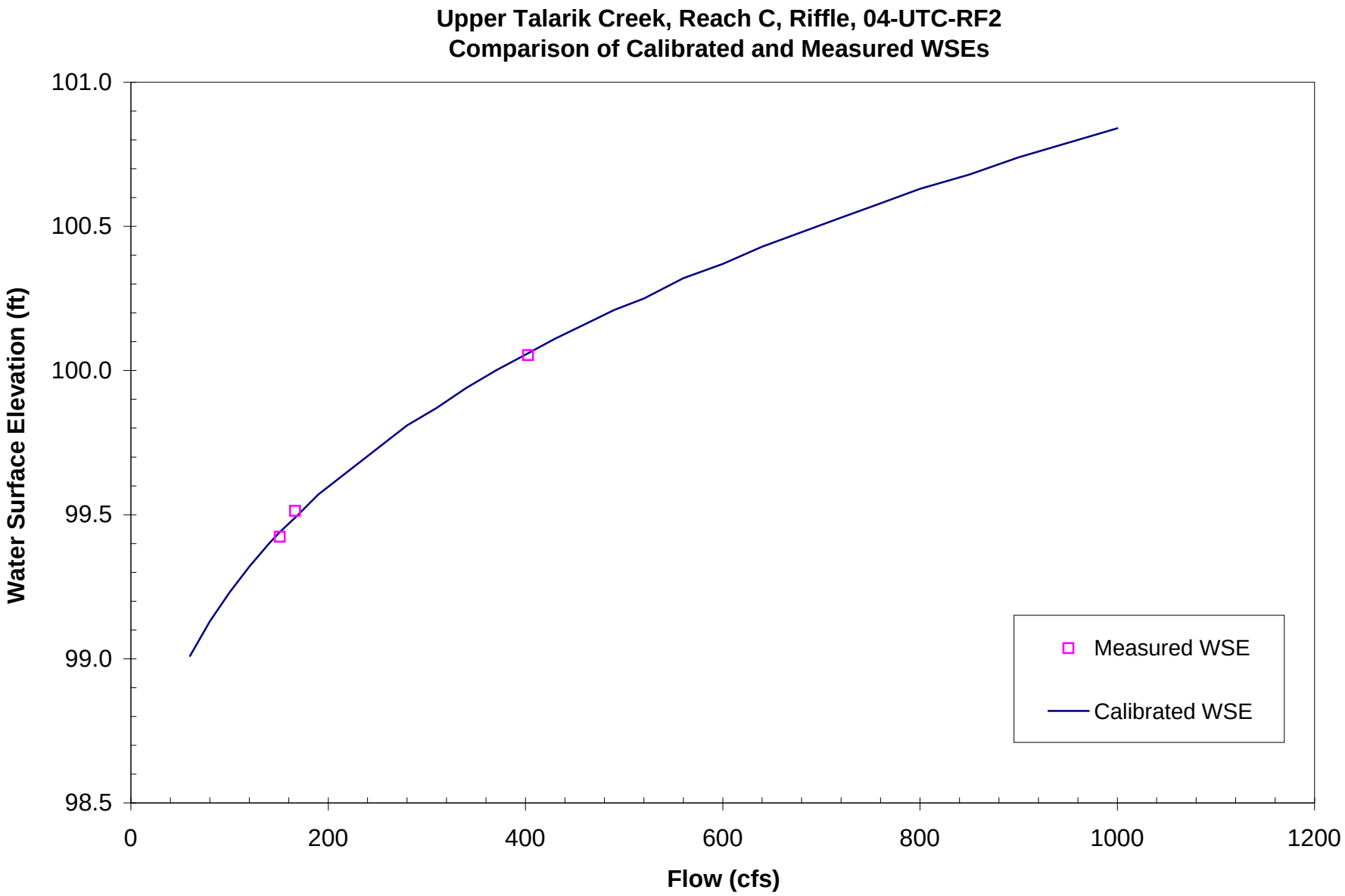
calibration notes


Upper Talarik Creek, Reach C, Riffle, 04-UTC-RF2
Measured Transect Profile
River Elevation (ft)
101.5
101.0
100.5
100.0
99.5
99.0
98.5
98.0
97.5
0
10
20
30
40
50
60
70
80
Station (ft)

Upper Talarik Creek, Reach C, Riffle, 04-UTC-RF2
Longitudinal Water Surface Elevation Profiles



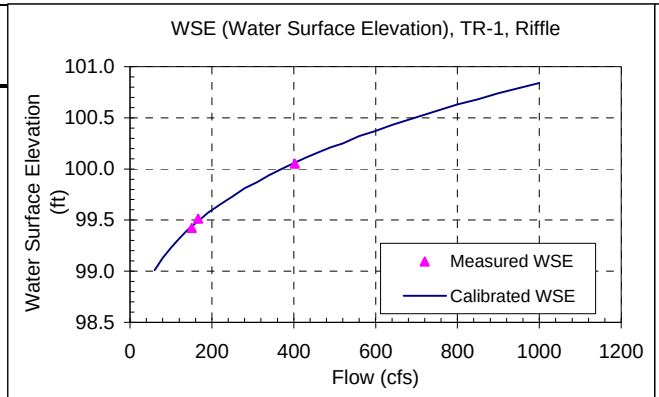

Upper Talarik Creek, Reach C, Riffle, 04-UTC-RF2
Measured Q vs WSE
Water Surface Elevation (ft)
101.0
100.5
100.0
99.5
99.0
98.5
0
50
100
150
200
250
300
350
400
450
Flow (cfs)

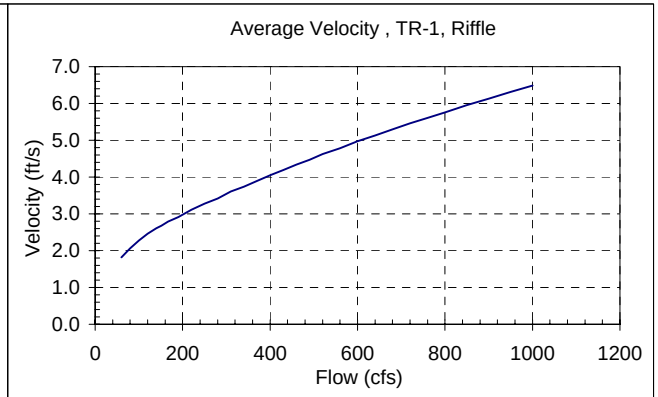

Upper Talarik Creek, Reach C, Riffle, 04-UTC-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
101.0
100.5
100.0
99.5
99.0
98.5
0
200
400
600
800
1000
1200
Flow (cfs)
Measured WSE
Calibrated WSE

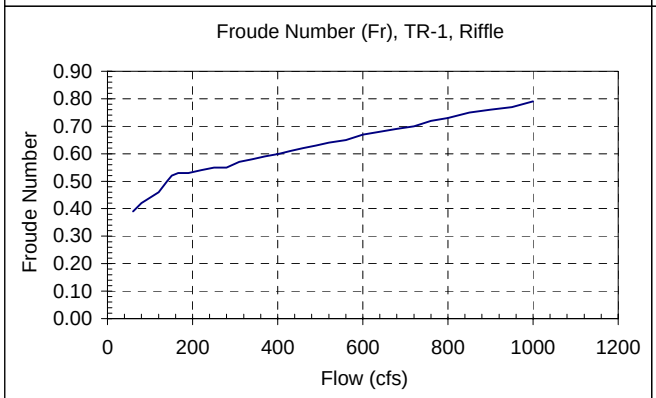
Stream: Upper Talarik Creek
Site Name: 04-UTC-RF2
Date: 8/16/2005
Calibration Flow: Q(8/16/2005)

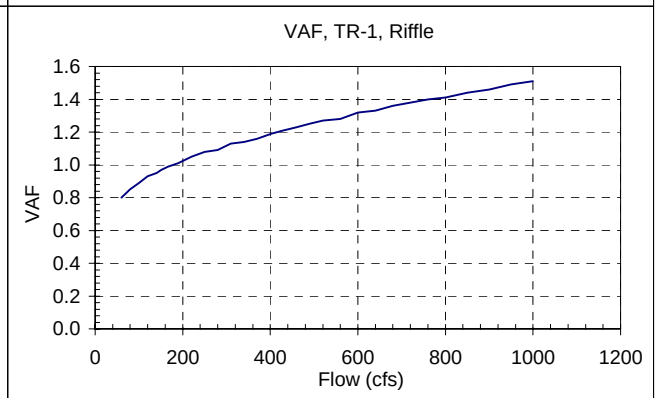
Reach: C
Habitat: Riffle
Site #: 2
Transect: 1

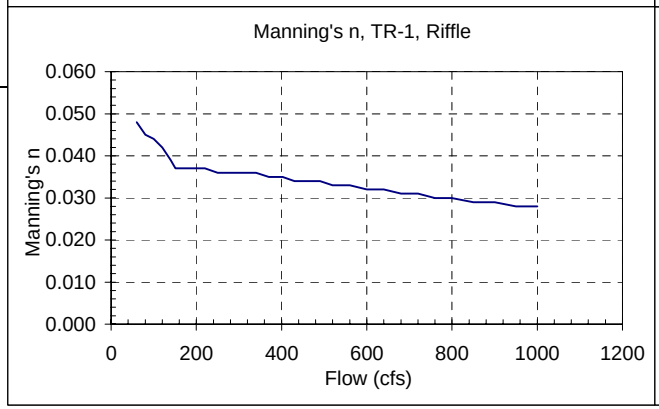
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
60	99.01	0.39	1.82	0.80	0.048	47.5
80	99.13	0.42	2.06	0.85	0.045	51.7
100	99.23	0.44	2.28	0.89	0.044	53.2
120	99.32	0.46	2.46	0.93	0.042	56.7
140	99.40	0.50	2.61	0.95	0.039	63.1
151.1	99.44	0.52	2.68	0.97	0.037	69.3
166.5	99.49	0.53	2.79	0.99	0.037	69.4
190	99.57	0.53	2.91	1.01	0.037	69.6
220	99.65	0.54	3.11	1.05	0.037	69.8
250	99.73	0.55	3.28	1.08	0.036	69.9
280	99.81	0.55	3.42	1.09	0.036	70.1
310	99.87	0.57	3.61	1.13	0.036	70.2
340	99.94	0.58	3.74	1.14	0.036	70.4
370	100.00	0.59	3.90	1.16	0.035	70.5
402.7	100.06	0.60	4.06	1.19	0.035	70.6
430	100.11	0.61	4.19	1.21	0.034	70.7
460	100.16	0.62	4.34	1.23	0.034	70.9
490	100.21	0.63	4.47	1.25	0.034	71.0
520	100.25	0.64	4.63	1.27	0.033	71.0
560	100.32	0.65	4.78	1.28	0.033	71.2
600	100.37	0.67	4.97	1.32	0.032	71.5
640	100.43	0.68	5.13	1.33	0.032	71.8
680	100.48	0.69	5.30	1.36	0.031	72.2
720	100.53	0.70	5.46	1.38	0.031	72.6
760	100.58	0.72	5.61	1.40	0.030	73.0
800	100.63	0.73	5.76	1.41	0.030	73.3
850	100.68	0.75	5.96	1.44	0.029	73.7
900	100.74	0.76	6.13	1.46	0.029	74.2
950	100.79	0.77	6.31	1.49	0.028	74.6
1000	100.84	0.79	6.49	1.51	0.028	74.8

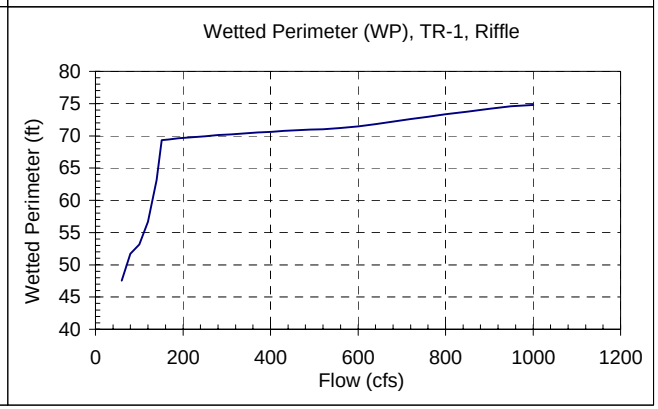




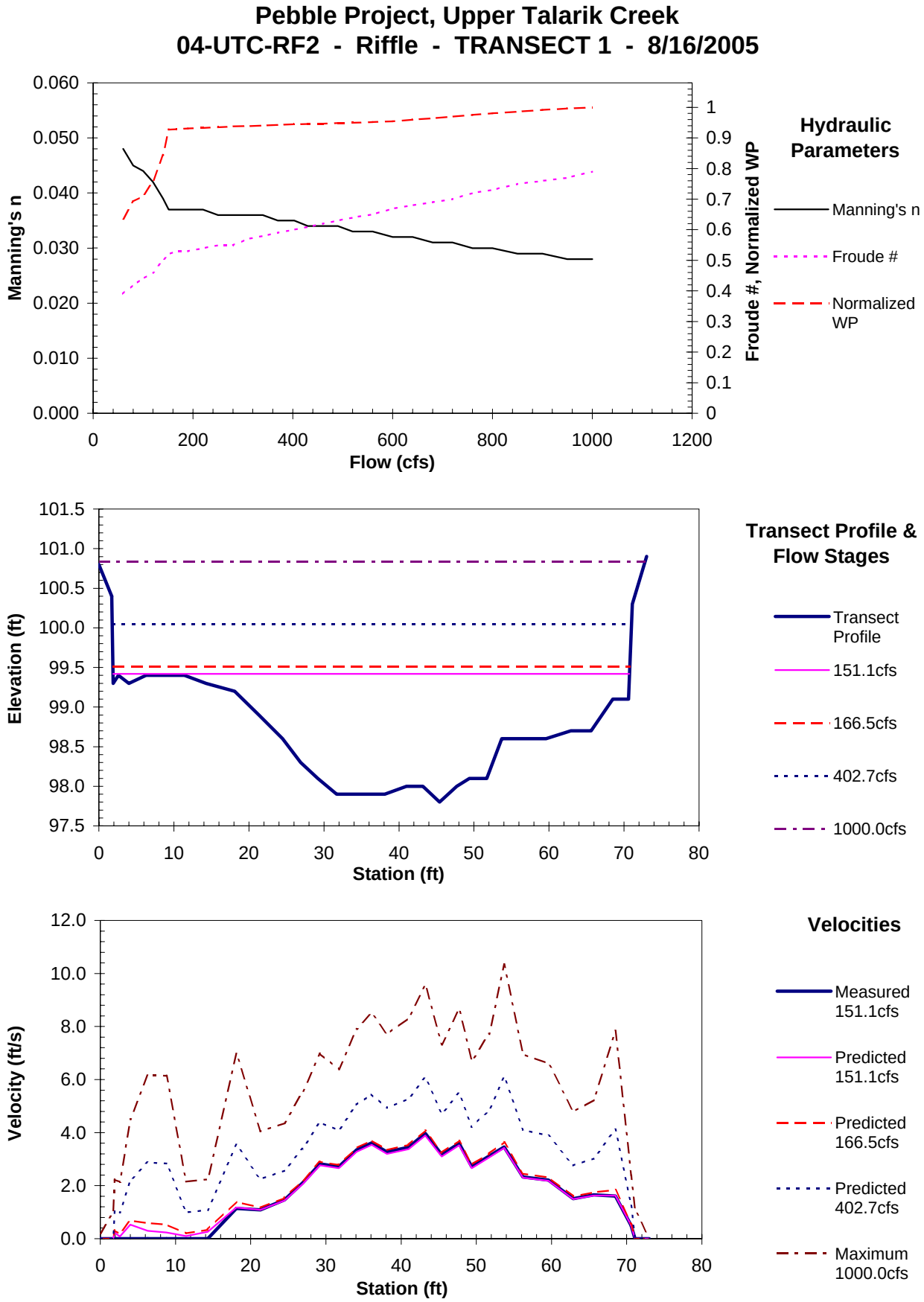








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-UTC-RF2  08/16/05                                C
RIFFLE                     0805Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  60.0
QARD  80.0
QARD 100.0
QARD 120.0
QARD 140.0
QARD 151.1
QARD 166.5
QARD 190.0
QARD 220.0
QARD 250.0
QARD 280.0
QARD 310.0
QARD 340.0
QARD 370.0
QARD 402.7
QARD 430.0
QARD 460.0
QARD 490.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
XSEC  1000     1000. 1.0     97.82    .00572
      1000   .0100.8  1.7100.4  1.999.34  2.699.42  4.099.32  6.399.41
      1000  8.899.42 11.499.41 14.399.32 18.199.22 21.398.92 24.598.62
      1000 26.998.32 29.298.12 31.797.92 34.197.92 36.197.92 38.197.92
      1000 41.098.02 43.298.02 45.497.82 47.798.02 49.498.12 51.798.12
      1000 53.798.62 56.298.62 59.698.62 62.998.72 65.698.72 68.599.12
      1000 70.699.12 71.1100.3 73.0100.9
NS    1000      22.9      22.9      32.6 .1   32.6 .05  64.6      54.6
NS    1000 .035 65.6      54.6 .1   65.6      75.7      65.6      75.7
NS    1000      54.7      54.7      54.6      54.6      76.6      76.6
NS    1000      54.6      56.7      56.6      64.6      65.6      65.6
NS    1000      54.6      54.6      74.6      45.6      65.8      43.7
NS    1000      43.6      22.9      22.9
WSL   1000     99.01     99.13     99.23     99.32     99.40     99.44
WSL   1000     99.49     99.57     99.65     99.73     99.81     99.87
WSL   1000     99.94    100.00    100.06    100.11    100.16    100.21
```

IFG4 Data Deck (continued)

```
WSL   1000    100.25    100.32    100.37    100.43    100.48    100.53
WSL   1000    100.58    100.63    100.68    100.74    100.79    100.84
CAL1  1000     99.42     151.1
VEL1  1000                0.00 0.00 0.00 0.00 0.00 0.00 1.14 1.09 1.46
VEL1  1000 2.10 2.82 2.71 3.35 3.61 3.27 3.45 3.97 3.17 3.59 2.71 3.12
VEL1  1000 3.46 2.33 2.21 1.51 1.65 1.61 0.49
CAL2  1000    100.05     402.7
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     99.51     166.5
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek

Reach: UT-D

UT-D Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
07-UTC2-RN3	26.02	136.8	96.7	190.5		96.13	95.98	96.41		0.04	-0.02	-0.02		IFG4
07-UTC2-RN1	29.31	126.4	89.9	160.8		95.96	95.81	96.05		-0.01	0.00	0.01		IFG4
07-UTC2-RN2	30.04	125.7	76.5	167.3		96.63	96.36	96.87		0.03	-0.01	-0.01		IFG4
05-UTC2-RF1	32.36	136.5	78.4	108.9		97.30	97.03	97.13		-0.02	-0.02	0.03		IFG4
04-UTC-RF3	34.62	57.6	216.1	70.7		95.53	96.10	95.58		-0.01	-0.01	0.02		IFG4
04-UTC-RN3	34.76	71.3	238.3	94.1	56.0	97.46	98.27	97.58	97.30	-0.02	0.00	0.03	0.01	IFG4
05-UTC2-RN2	35.64	120.5	68.3	91.3		96.96	96.74	96.83		-0.01	-0.01	0.01		IFG4

* RK is an abbreviation for River Kilometer

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 07-UTC2-RN3

Habitat Type: Run

River Kilometer: 26.02

Stream: **Upper Talarik Creek**
Reach: **D**
Site Name: **07-UTC2-RN3**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/2/2007	1	100.00	101.64	98.76
2nd	7/17/2007	2	100.00	101.67	98.75
3rd	10/19/2007	3	100.00	101.75	98.82

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes showed the pins moved slightly in the 7/07 survey from their initial setup in 6/07.
(c) The pins moved more in the 10/07 survey. The relative elevation changes showed HP and TP were elevated by 0.11ft and 0.06ft, respectively, from the initial setup.
(d) From the relative elevation changes, it was decided the BM sank 0.1ft in 10/07. Therefore, correction was made to the HI for the WSE in the October survey.
(e) No correction for the HI of 7/07 WSE survey was needed because datum shift was small.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/2/2007	96.13
7/17/2007	95.98
10/19/2007	96.41

The October WSE has reflected the 0.10ft datum correction.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/2/2007	136.8
7/17/2007	96.7
10/19/2007	190.5

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/2/2007	0.248%	161.2
7/17/2007	0.142%	105.5
10/19/2007	0.329%	170

The slope S=0.248% of 6/2/2007 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/2/2007	94.33
7/17/2007	94.43
10/19/2007	94.21
max Invert	94.43
SZF	94.43

(1) Transect invert is the lowest elevation of the cross-section

(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method	WUA (Y/N)
1st	6/2/2007	136.8	96.13	96.17	0.04	IFG4	Y
2nd	7/17/2007	96.7	95.98	95.96	-0.02	IFG4	Y
3rd	10/19/2007	190.5	96.41	96.39	-0.02	IFG4	Y

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range.

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 96.7cfs, 136.8cfs, and 190.5cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

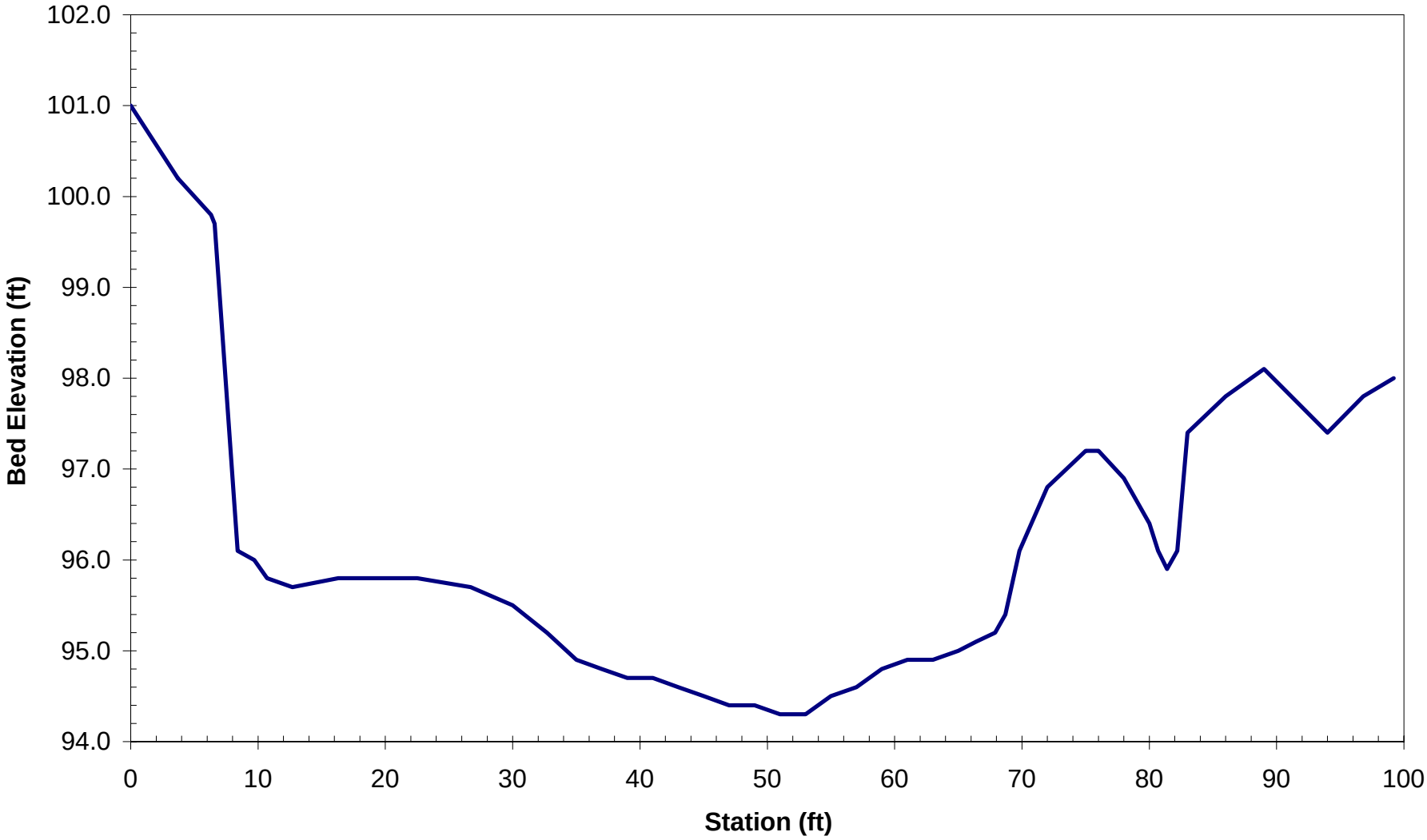
Survey Date	Q (cfs)	WUA (Y/N)
6/2/2007	136.8	Y
7/17/2007	96.7	Y
10/19/2007	190.5	Y

(4) Hydraulic Calibration Results:

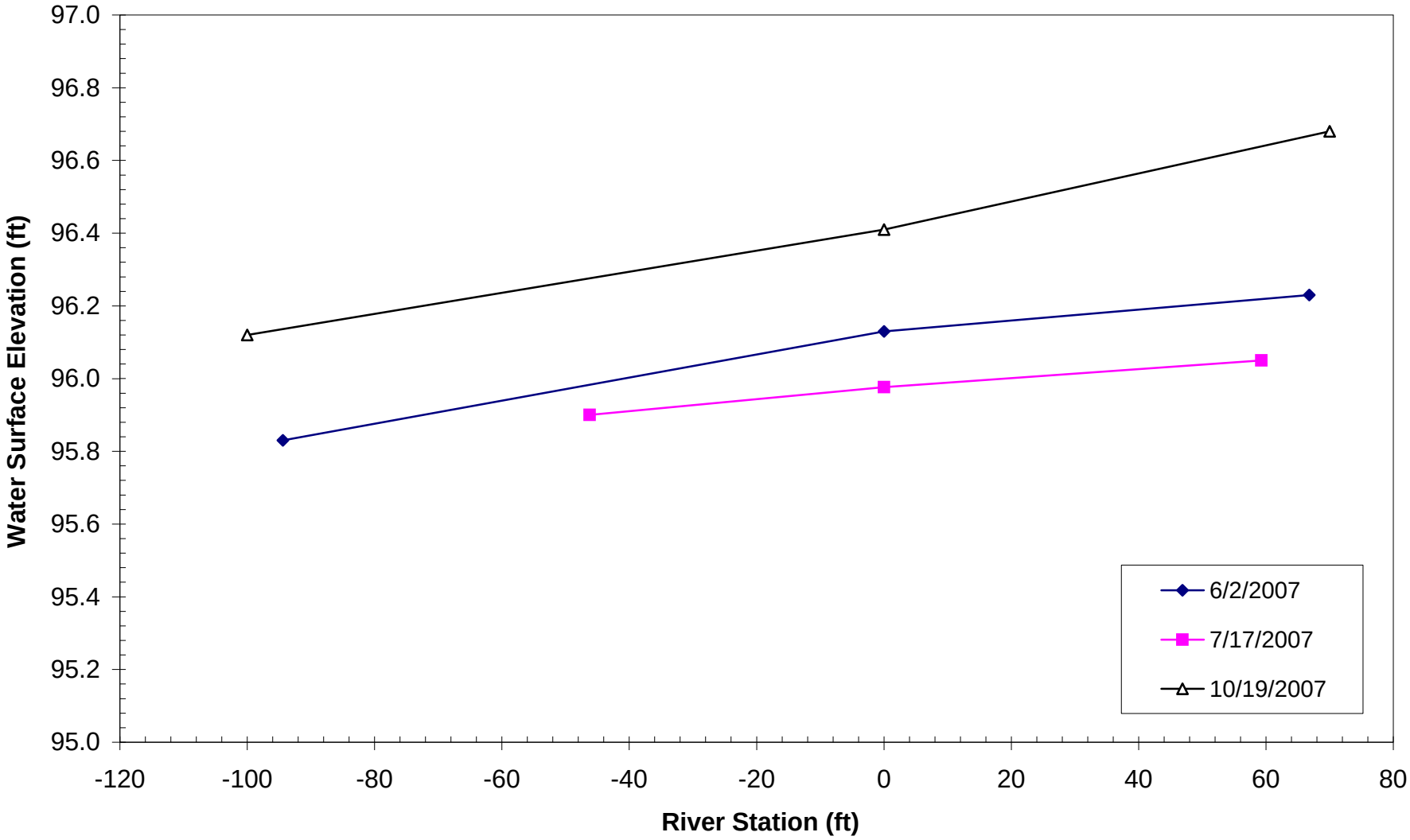
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

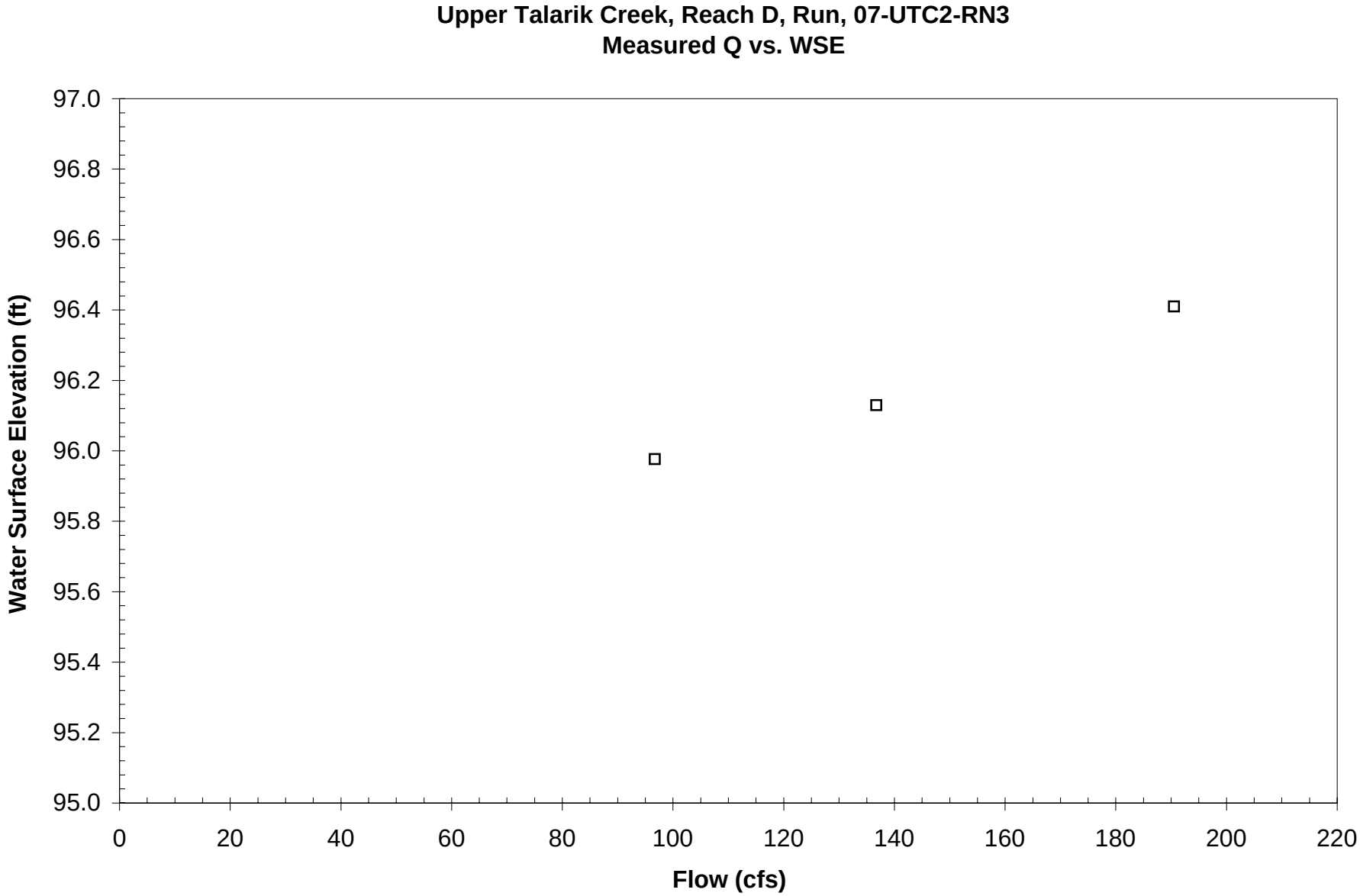
calibration notes

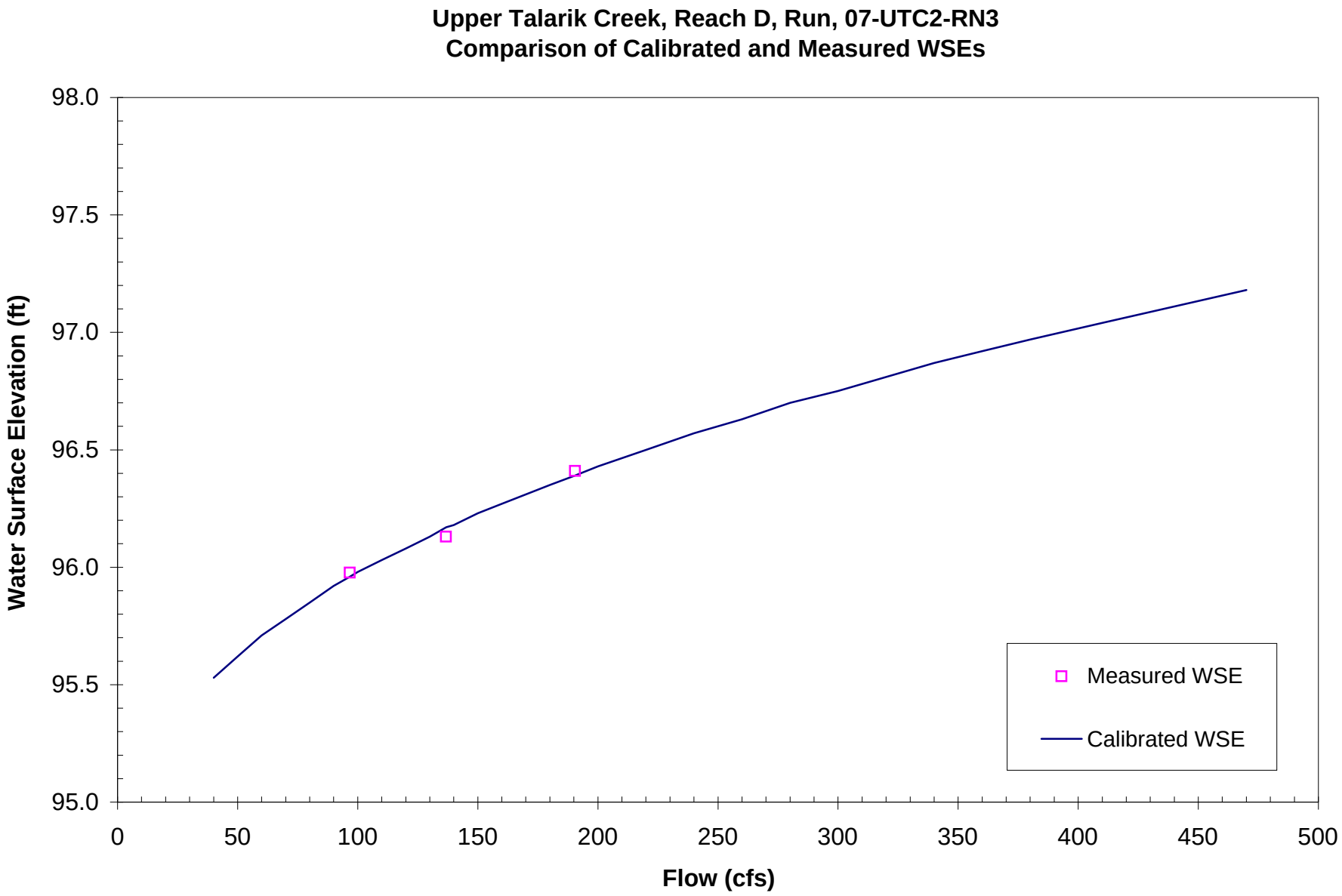
Upper Talarik Creek, Reach D, Run, 07-UTC2-RN3
Measured Transect Profile



Upper Talarik Creek, Reach D, Run, 07-UTC2-RN3
Longitudinal Water Surface Elevation Profiles



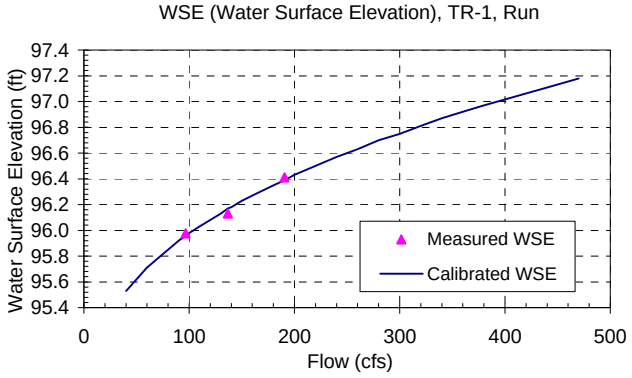

Upper Talarik Creek, Reach D, Run, 07-UTC2-RN3
Measured Q vs. WSE
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
20
40
60
80
100
120
140
160
180
200
220
Flow (cfs)

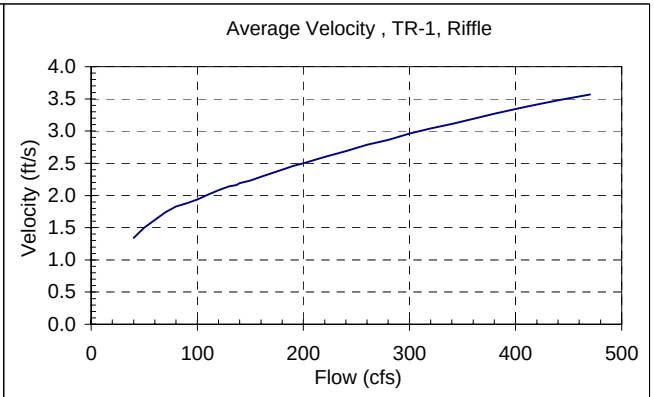

Upper Talarik Creek, Reach D, Run, 07-UTC2-RN3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)
Measured WSE
Calibrated WSE

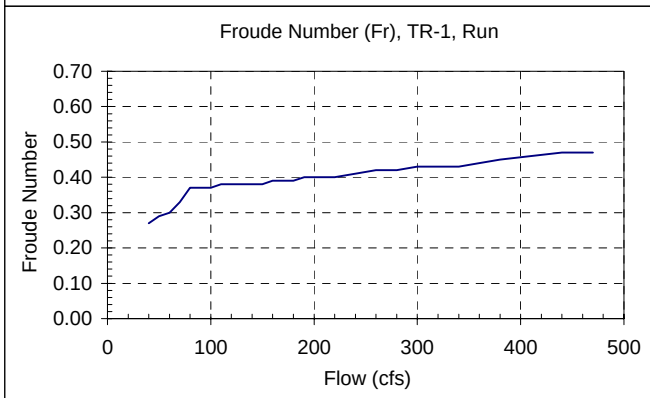
Stream: Upper Talarik Creek
Site Name: 07-UTC2-RN3
Date: 6/2/2007
Calibration Flow: Q(6/2/2007)

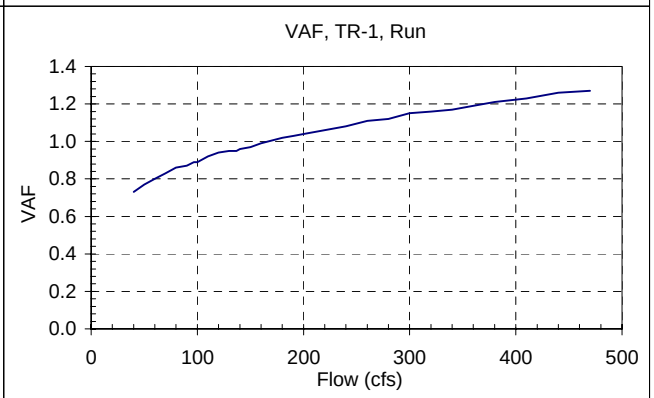
Reach: D
Habitat: Run
Site #: 3
Transect: 1

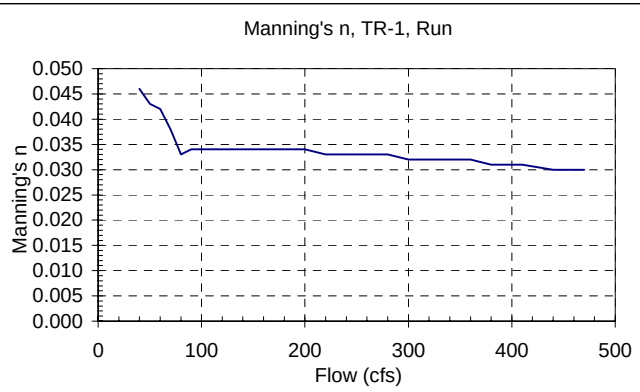
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	95.53	0.27	1.34	0.73	0.046	39.2
50	95.62	0.29	1.50	0.77	0.043	40.7
60	95.71	0.30	1.62	0.80	0.042	42.3
70	95.78	0.33	1.74	0.83	0.038	47.7
80	95.85	0.37	1.83	0.86	0.033	59.1
90	95.92	0.37	1.88	0.87	0.034	60.0
96.7	95.96	0.37	1.92	0.89	0.034	60.6
100	95.98	0.37	1.94	0.89	0.034	60.9
110	96.03	0.38	2.01	0.92	0.034	61.7
120	96.08	0.38	2.08	0.94	0.034	62.6
130	96.13	0.38	2.14	0.95	0.034	63.4
136.8	96.17	0.38	2.16	0.95	0.034	63.7
140	96.18	0.38	2.19	0.96	0.034	63.8
150	96.23	0.38	2.23	0.97	0.034	64.2
160	96.27	0.39	2.29	0.99	0.034	64.5
180	96.35	0.39	2.40	1.02	0.034	65.2
190.5	96.39	0.40	2.46	1.03	0.034	65.5
200	96.43	0.40	2.50	1.04	0.034	65.9
220	96.50	0.40	2.60	1.06	0.033	66.6
240	96.57	0.41	2.69	1.08	0.033	67.2
260	96.63	0.42	2.79	1.11	0.033	67.8
280	96.70	0.42	2.86	1.12	0.033	68.5
300	96.75	0.43	2.96	1.15	0.032	69.0
320	96.81	0.43	3.04	1.16	0.032	69.6
340	96.87	0.43	3.11	1.17	0.032	70.3
360	96.92	0.44	3.19	1.19	0.032	71.1
380	96.97	0.45	3.27	1.21	0.031	72.0
410	97.04	0.46	3.38	1.23	0.031	73.2
440	97.11	0.47	3.48	1.26	0.030	74.5
470	97.18	0.47	3.57	1.27	0.030	75.7

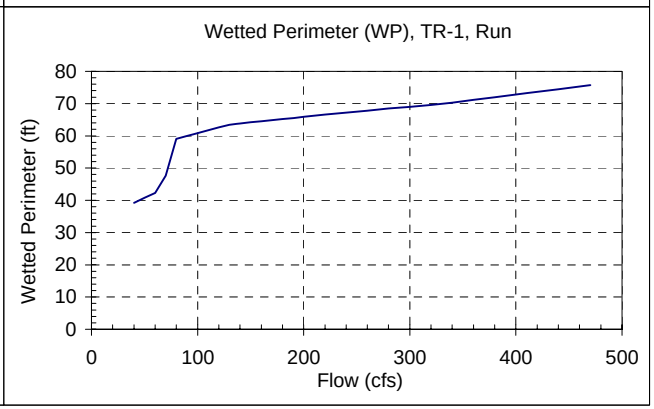




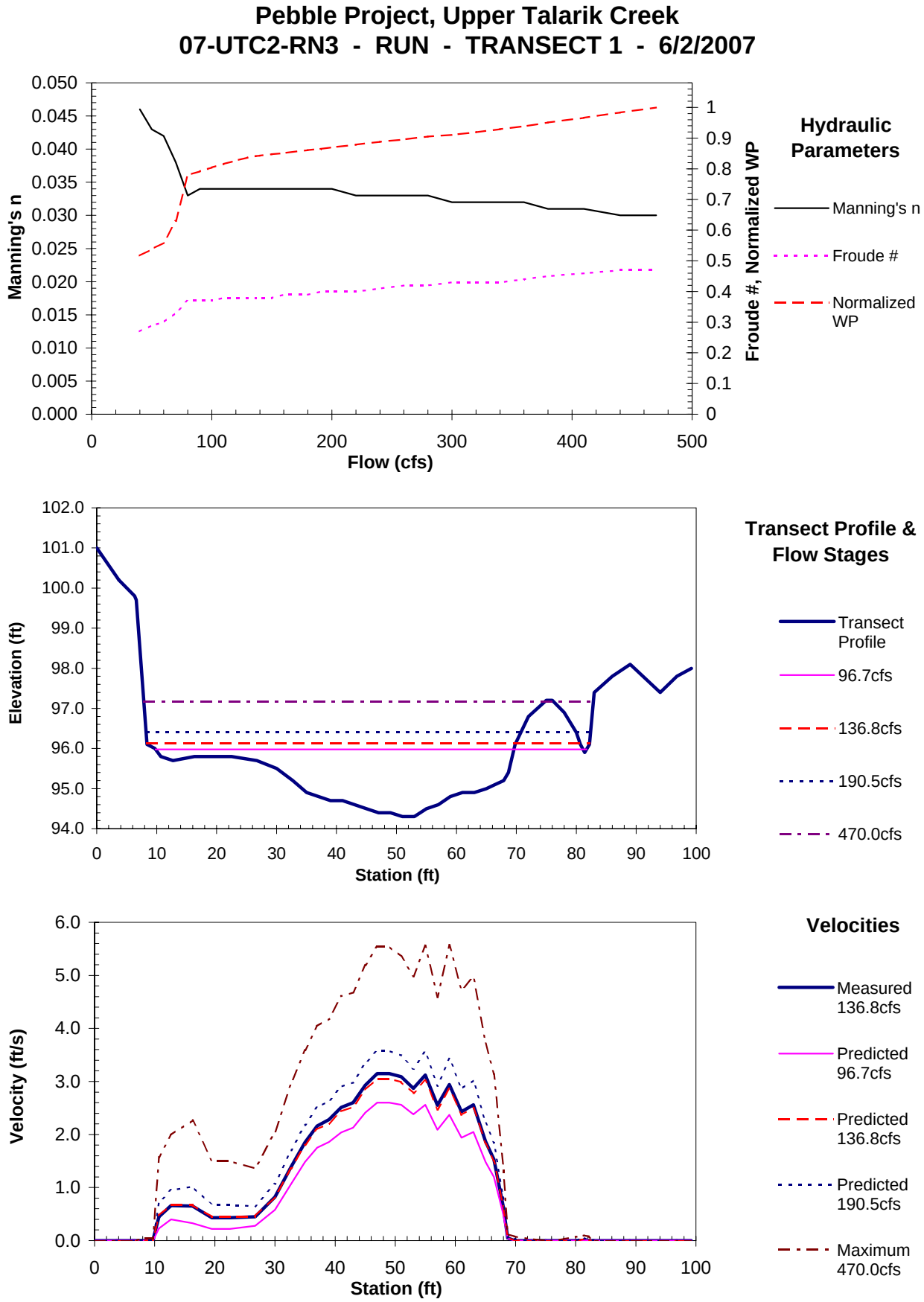








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-UTC2-RN3  06/02/07
RUN                        0607Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.0
QARD  96.7
QARD 100.0
QARD 110.0
QARD 120.0
QARD 130.0
QARD 136.8
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 190.5
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 410.0
QARD 440.0
QARD 470.0
XSEC  1000     1000. 1.0     94.43    .00248
      1000   .0101.0  3.7100.2  6.399.84  6.699.69  8.496.12  9.795.98
      1000 10.795.83 12.795.73 16.395.83 19.595.83 22.595.83 26.795.73
      1000 30.095.52 32.795.23 35.094.93 37.094.77 39.094.68 41.094.68
      1000 43.094.58 45.094.48 47.094.43 49.094.43 51.094.33 53.094.33
      1000 55.094.52 57.094.58 59.094.83 61.094.93 63.094.93 65.095.02
      1000 66.495.12 67.995.23 68.795.43 69.896.12 72.096.84 75.097.19
      1000 76.097.20 78.096.90 80.096.41 80.796.12 81.495.87 82.296.12
      1000 83.097.41 86.097.84 89.098.08 94.097.40 96.897.79 99.297.98
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      24.9      23.9      22.9      23.9      23.9
NS    1000      23.7      32.8      32.8      34.8      34.8      34.8
NS    1000      34.8      34.8      32.9      34.7      34.8      43.9
NS    1000      54.6      45.8      45.8      43.8      45.8      43.7
NS    1000      42.9      43.6      23.8      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
WSL   1000     95.53     95.62     95.71     95.78     95.85     95.92
WSL   1000     95.96     95.98     96.03     96.08     96.13     96.17
WSL   1000     96.18     96.23     96.27     96.35     96.39     96.43
WSL   1000     96.50     96.57     96.63     96.70     96.75     96.81
WSL   1000     96.87     96.92     96.97     97.04     97.11     97.18
CAL1  1000     96.13     136.8
VEL1  1000                     0.00 0.01 0.45 0.66 0.65 0.43 0.43 0.45
VEL1  1000 0.82 1.39 1.85 2.16 2.28 2.51 2.60 2.93 3.15 3.15 3.09 2.87
VEL1  1000 3.12 2.55 2.94 2.43 2.56 1.87 1.53 0.67 0.05 0.00
VEL1  1000                0.00 0.00 0.00
CAL2  1000     95.98      96.7
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.41     190.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 07-UTC2-RN1

Habitat Type: Run

River Kilometer: 29.31

Stream: **Upper Talarik Creek**
Reach: **D**
Site Name: **07-UTC2-RN1**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/1/2007	1	100.00	98.46	99.96
2nd	7/18/2007	2	100.00	98.49	99.99
3rd	10/20/2007	3	100.00	98.49	100.00

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between control pins indicated both HP and TP were elevated by 0.03ft in the 7/07 survey, suggesting BM have sunk 0.03ft since the setup in 6/07.
(c) The control pins were stable since 7/07.
(d) Elevation datums of 7/07 and 10/07 for WSE surveys were needed to be corrected to the 6/07 datum.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/1/2007	95.96
7/18/2007	95.81
10/20/2007	96.05

The above WSEs have reflected the 0.03ft datum correction made to the July and Oct surveys.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/1/2007	126.4
7/18/2007	89.9
10/20/2007	160.8

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/1/2007	0.462%	123.5
7/18/2007	0.127%	79
10/20/2007	0.240%	100

The slope S=0.462% of 6/1/2007 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/1/2007	94.21
7/18/2007	94.36
10/20/2007	94.25
max Invert	94.36
SZF	94.36

(1) Transect invert is the lowest elevation of the cross-section

(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/1/2007	126.4	95.96	95.95	-0.01	IFG4
2nd	7/18/2007	89.9	95.81	95.81	0.00	IFG4
3rd	10/20/2007	160.8	96.05	96.06	0.01	IFG4

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 89.9cfs, 126.4cfs, and 160.8cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

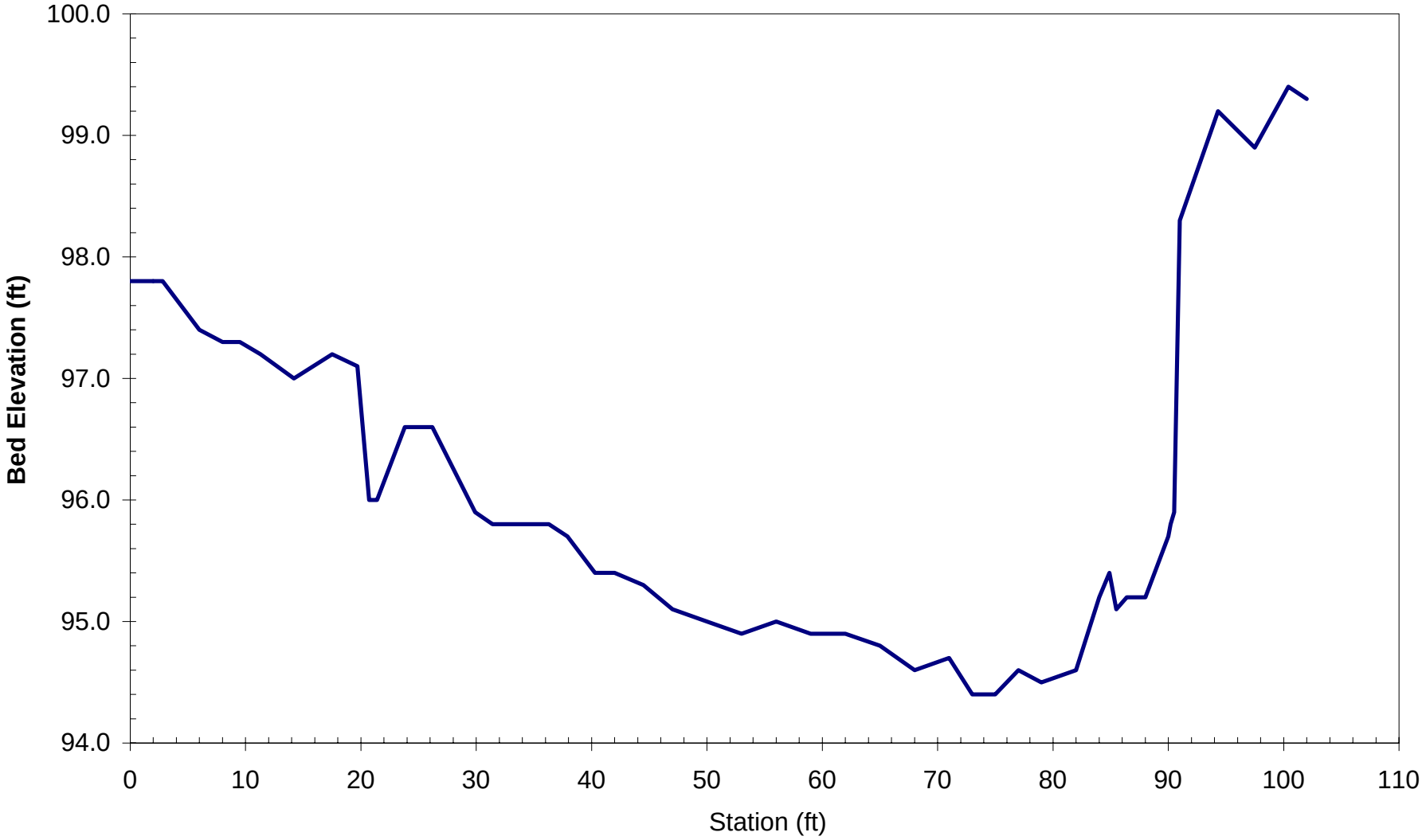
Survey Date	Q (cfs)	WUA (Y/N)
6/1/2007	126.4	Y
7/18/2007	89.9	Y
10/20/2007	160.8	Y

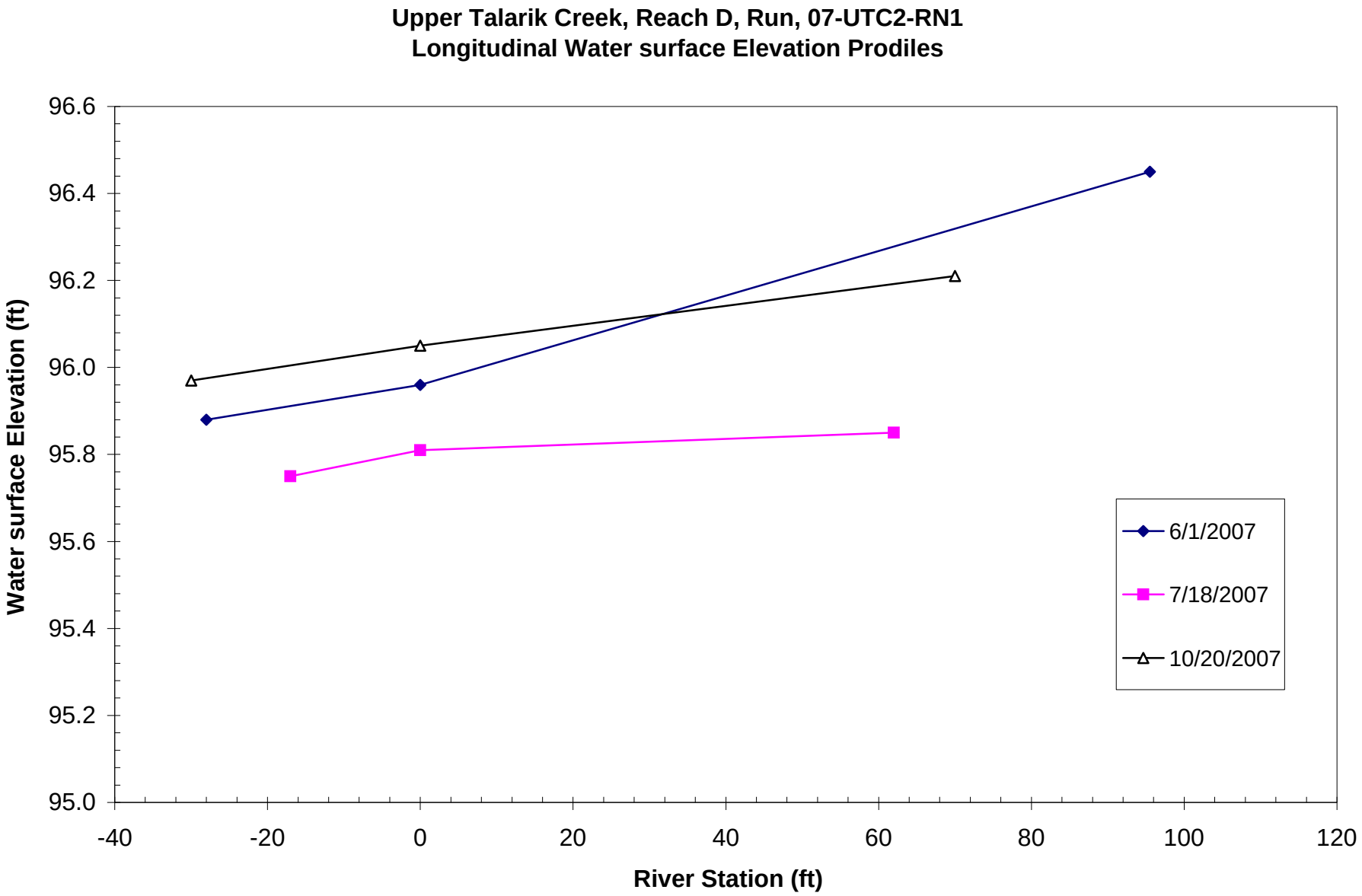
(4) Hydraulic Calibration Results:

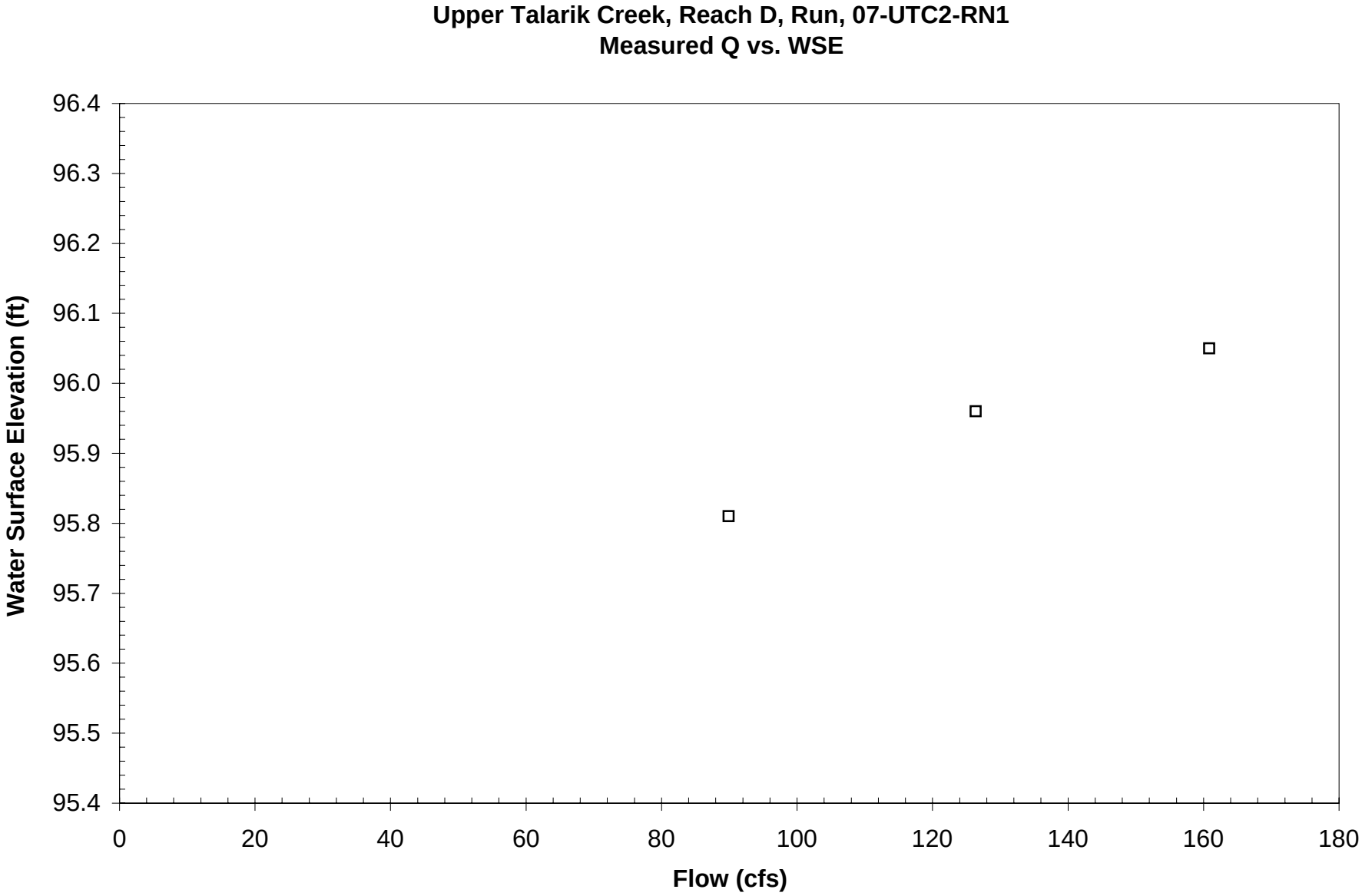
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

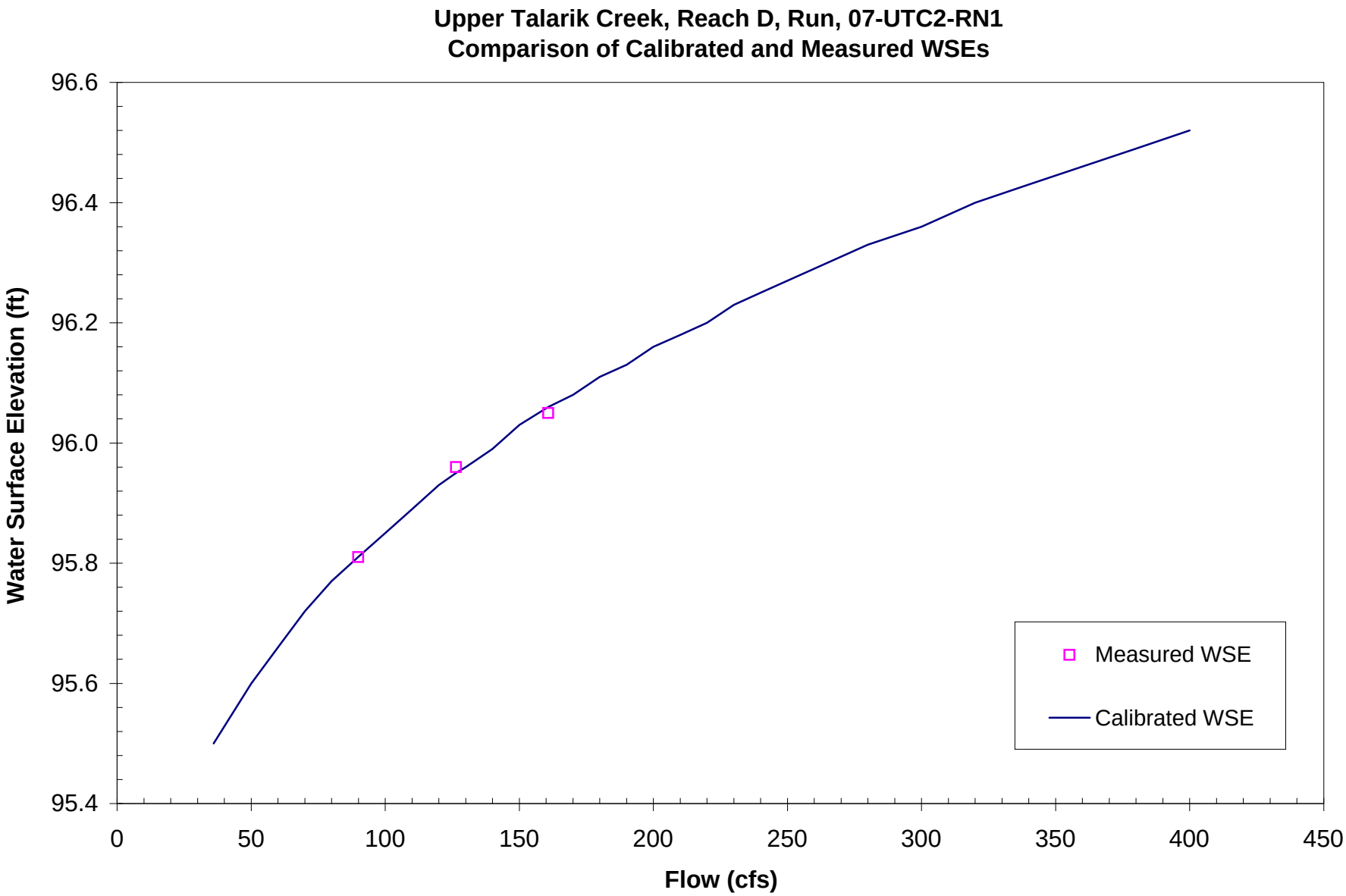
calibration notes

Upper Talarik River, Reach D, Run, 07-UTC2-RN1
Measured Transect Profile




Upper Talarik Creek, Reach D, Run, 07-UTC2-RN1
Longitudinal Water surface Elevation Prodiles
Water surface Elevation (ft)
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
-40
-20
0
20
40
60
80
100
120
River Station (ft)
6/1/2007
7/18/2007
10/20/2007

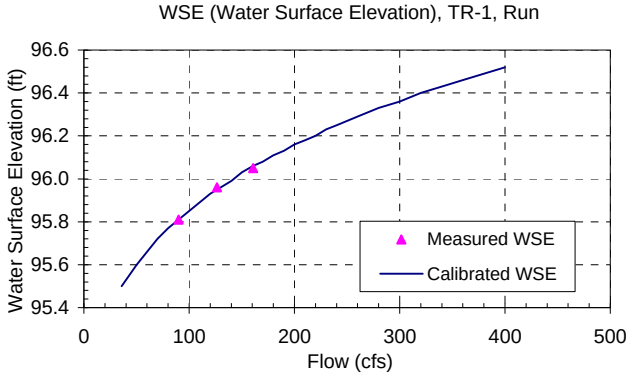

Upper Talarik Creek, Reach D, Run, 07-UTC2-RN1
Measured Q vs. WSE
Water Surface Elevation (ft)
96.4
96.3
96.2
96.1
96.0
95.9
95.8
95.7
95.6
95.5
95.4
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

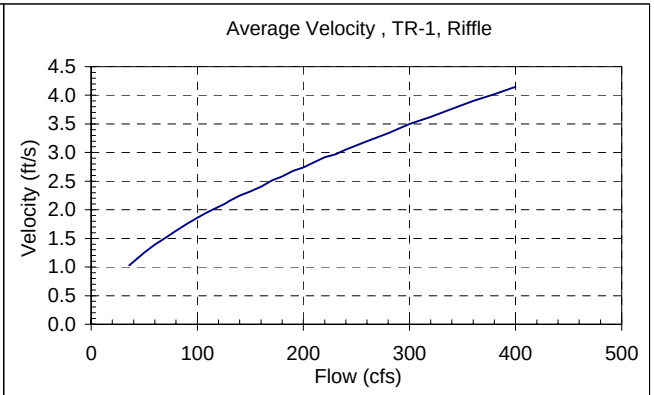

Upper Talarik Creek, Reach D, Run, 07-UTC2-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.6
96.4
96.2
96.0
95.8
95.6
95.4
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

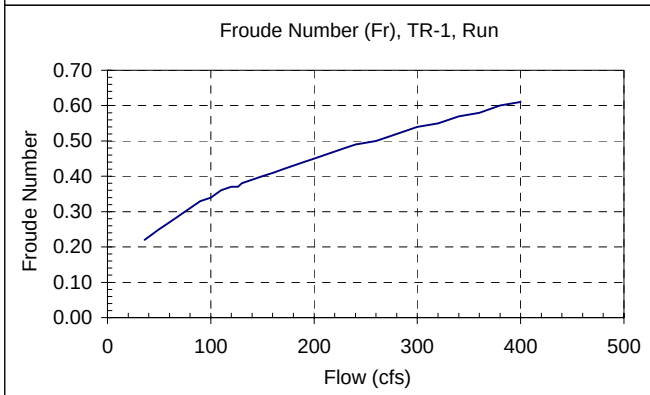
Stream: Upper Talarik Creek
Site Name: 07-UTC2-RN1
Date: 6/1/2007
Calibration Flow: Q(6/1/2007)

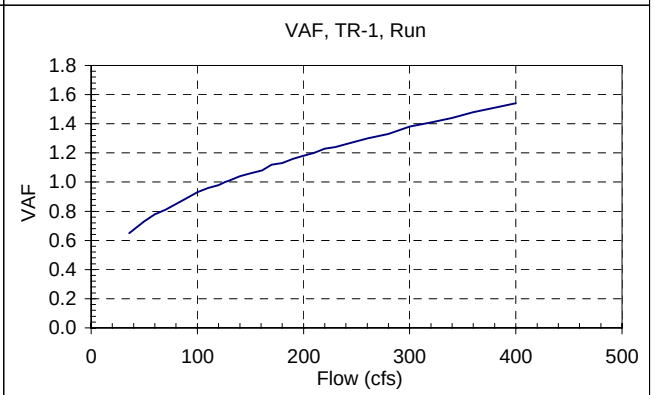
Reach: D
Habitat: Run
Site #: 1
Transect: 1

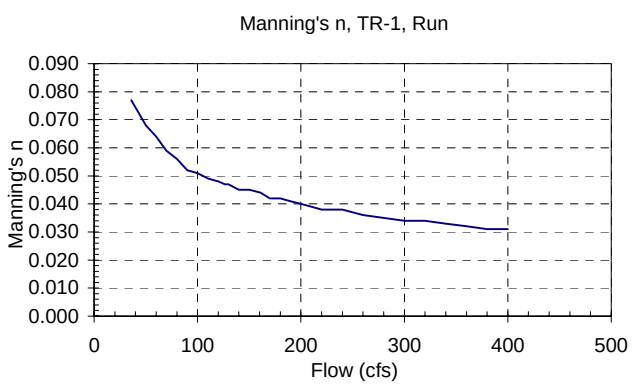
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
36	95.50	0.22	1.03	0.65	0.077	50.5
50	95.60	0.25	1.25	0.73	0.068	51.8
60	95.66	0.27	1.39	0.78	0.064	52.6
70	95.72	0.29	1.51	0.81	0.059	55.7
80	95.77	0.31	1.63	0.85	0.056	57.5
89.9	95.81	0.33	1.75	0.89	0.052	59.8
100	95.85	0.34	1.86	0.93	0.051	60.2
110	95.89	0.36	1.96	0.96	0.049	60.6
120	95.93	0.37	2.05	0.98	0.048	61.0
126.4	95.95	0.37	2.11	1.00	0.047	61.2
130	95.96	0.38	2.15	1.01	0.047	61.3
140	95.99	0.39	2.25	1.04	0.045	61.5
150	96.03	0.40	2.32	1.06	0.045	62.5
160.8	96.06	0.41	2.41	1.08	0.044	62.9
170	96.08	0.42	2.51	1.12	0.042	63.2
180	96.11	0.43	2.58	1.13	0.042	63.6
190	96.13	0.44	2.68	1.16	0.041	63.8
200	96.16	0.45	2.74	1.18	0.040	64.2
210	96.18	0.46	2.83	1.20	0.039	64.5
220	96.20	0.47	2.92	1.23	0.038	64.7
230	96.23	0.48	2.97	1.24	0.038	65.1
240	96.25	0.49	3.05	1.26	0.038	65.4
260	96.29	0.50	3.20	1.30	0.036	65.9
280	96.33	0.52	3.34	1.33	0.035	66.4
300	96.36	0.54	3.50	1.38	0.034	66.8
320	96.40	0.55	3.62	1.41	0.034	67.3
340	96.43	0.57	3.76	1.44	0.033	67.7
360	96.46	0.58	3.90	1.48	0.032	68.1
380	96.49	0.60	4.02	1.51	0.031	68.5
400	96.52	0.61	4.15	1.54	0.031	68.9

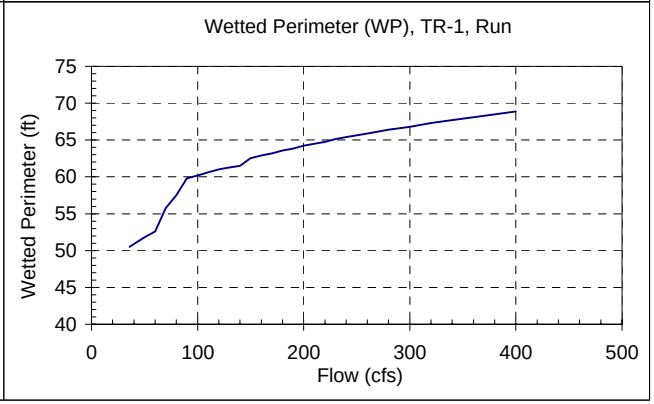






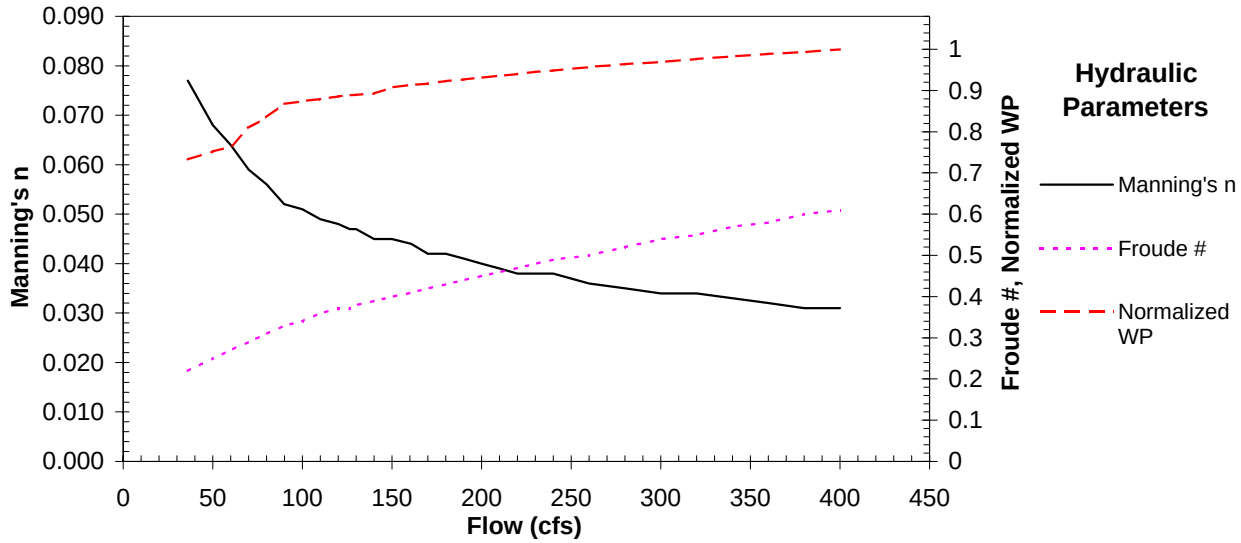


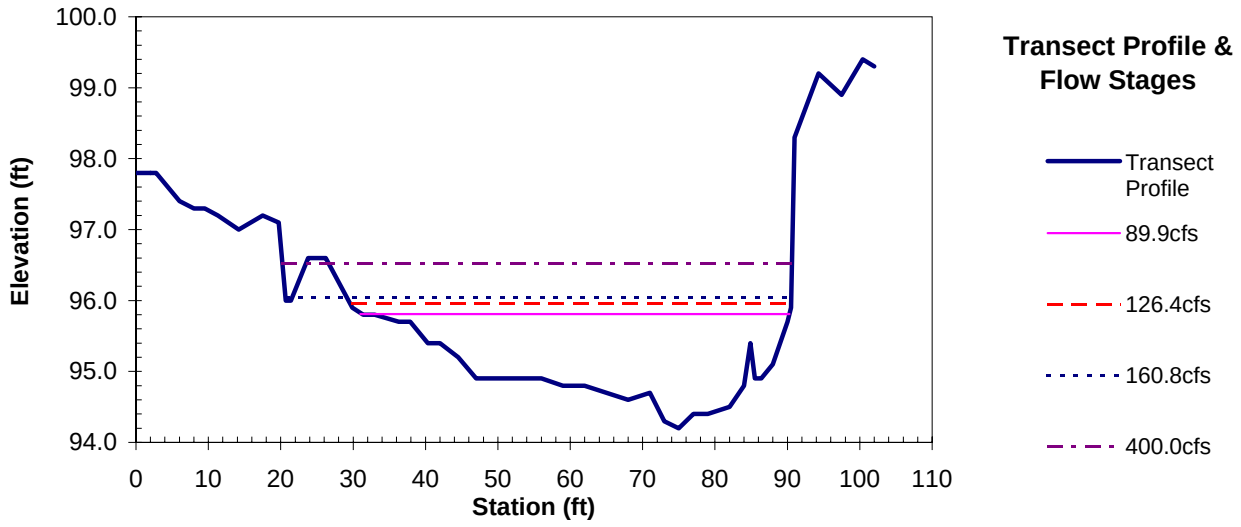


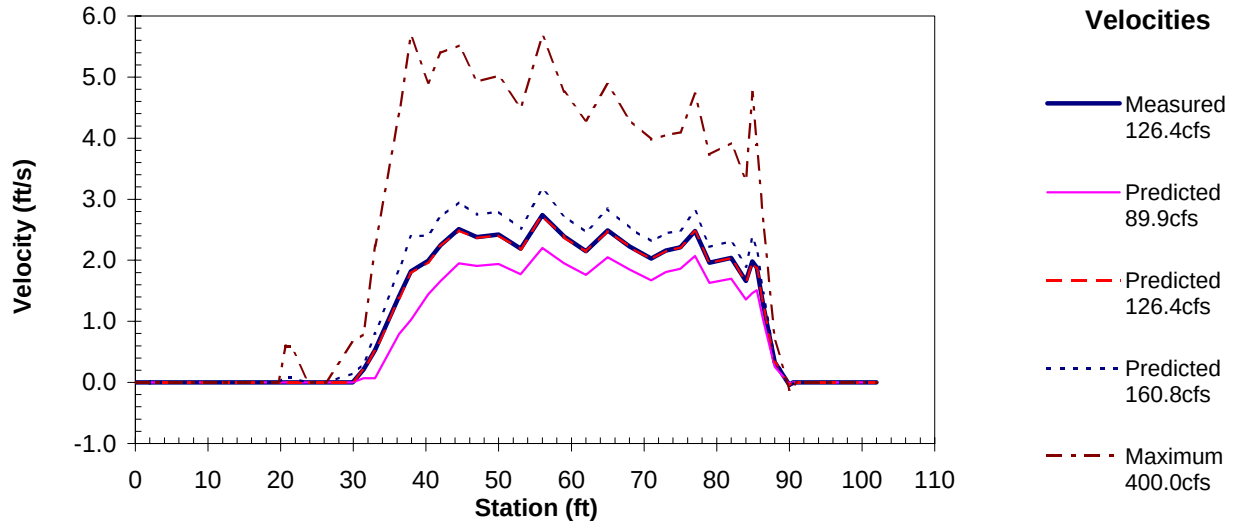


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
07-UTC2-RN1 - RUN - TRANSECT 1 - 6/1/2007







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-UTC2-RN1  06/01/07
RUN                         0607Q                                        TRANSECT 1
IOC       1101100100001000101000
QARD  36.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  89.9
QARD 100.0
QARD 110.0
QARD 120.0
QARD 126.4
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.8
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
XSEC  1000     1000. 1.0     94.36    .00462
      1000   .097.77  2.097.79  2.897.83  6.097.43  8.097.26  9.597.33
      1000 11.397.20 14.296.97 17.597.19 19.797.09 20.796.02 21.496.02
      1000 23.896.58 26.296.56 29.995.95 31.495.76 33.095.80 36.395.66
      1000 37.995.66 40.395.41 42.095.36 44.595.16 47.094.95 50.094.95
      1000 53.094.91 56.094.95 59.094.76 62.094.76 65.094.66 68.094.55
      1000 71.094.66 73.094.30 75.094.20 77.094.45 79.094.45 82.094.51
      1000 84.094.76 84.995.36 85.594.95 86.494.95 88.095.05 90.095.66
      1000 90.595.95 91.098.27 94.399.18 97.598.87100.499.38102.099.34
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      23.6      34.8
NS    1000      34.7      43.6      43.6      43.6      53.7      54.6
NS    1000      45.6      45.7      34.6      64.6      63.7      43.7
NS    1000      63.6      45.7      45.6      54.6      54.6      54.7
NS    1000      76.8      77.9      74.6      53.6      23.8      23.7
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
WSL   1000     95.50     95.60     95.66     95.72     95.77     95.81
WSL   1000     95.85     95.89     95.93     95.95     95.96     95.99
WSL   1000     96.03     96.06     96.08     96.11     96.13     96.16
WSL   1000     96.18     96.20     96.23     96.25     96.29     96.33
WSL   1000     96.36     96.40     96.43     96.46     96.49     96.52
CAL1  1000     95.96     126.4
VEL1  1000
VEL1  1000           0.00 0.21 0.53 1.41 1.82 1.99 2.25 2.51 2.38 2.42
VEL1  1000 2.19 2.74 2.39 2.15 2.49 2.23 2.03 2.16 2.21 2.48 1.96 2.04
VEL1  1000 1.66 1.98 1.88 1.27 0.33-0.04 0.00
CAL2  1000     95.81      89.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.05     160.8
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 07-UTC2-RN2

Habitat Type: Run

River Kilometer: 30.04

Stream: **Upper Talarik Creek**
Reach: **D**
Site Name: **07-UTC2-RN2**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/1/2007	1	100.00	100.13	98.18
2nd	7/18/2007	2	100.00	100.14	98.18
3rd	10/19/2007	3	100.00	100.14	98.18

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between control pins were within 0.01ft.
Small elevation changes indicated survey datum was stable during the survey period.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/1/2007	96.63
7/18/2007	96.36
10/19/2007	96.87

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/1/2007	125.7
7/18/2007	76.5
10/19/2007	167.3

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/1/2007	0.454%	187.3
7/18/2007	0.405%	195
10/19/2007	0.396%	192

The slope S=0.454% of 6/1/2007 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/1/2007	94.23
7/18/2007	94.16
10/19/2007	94.27
max Invert	94.27
SZF	94.27

(1) Transect invert is the lowest elevation of the cross-section

(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/1/2007	125.7	96.63	96.66	0.03	IFG4
2nd	7/18/2007	76.5	96.36	96.35	-0.01	IFG4
3rd	10/19/2007	167.3	96.87	96.86	-0.01	IFG4

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE

(b) Maximum WSE calibration error 0.03ft is within acceptable range.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 76.5cfs, 125.7cfs, and 167.3cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

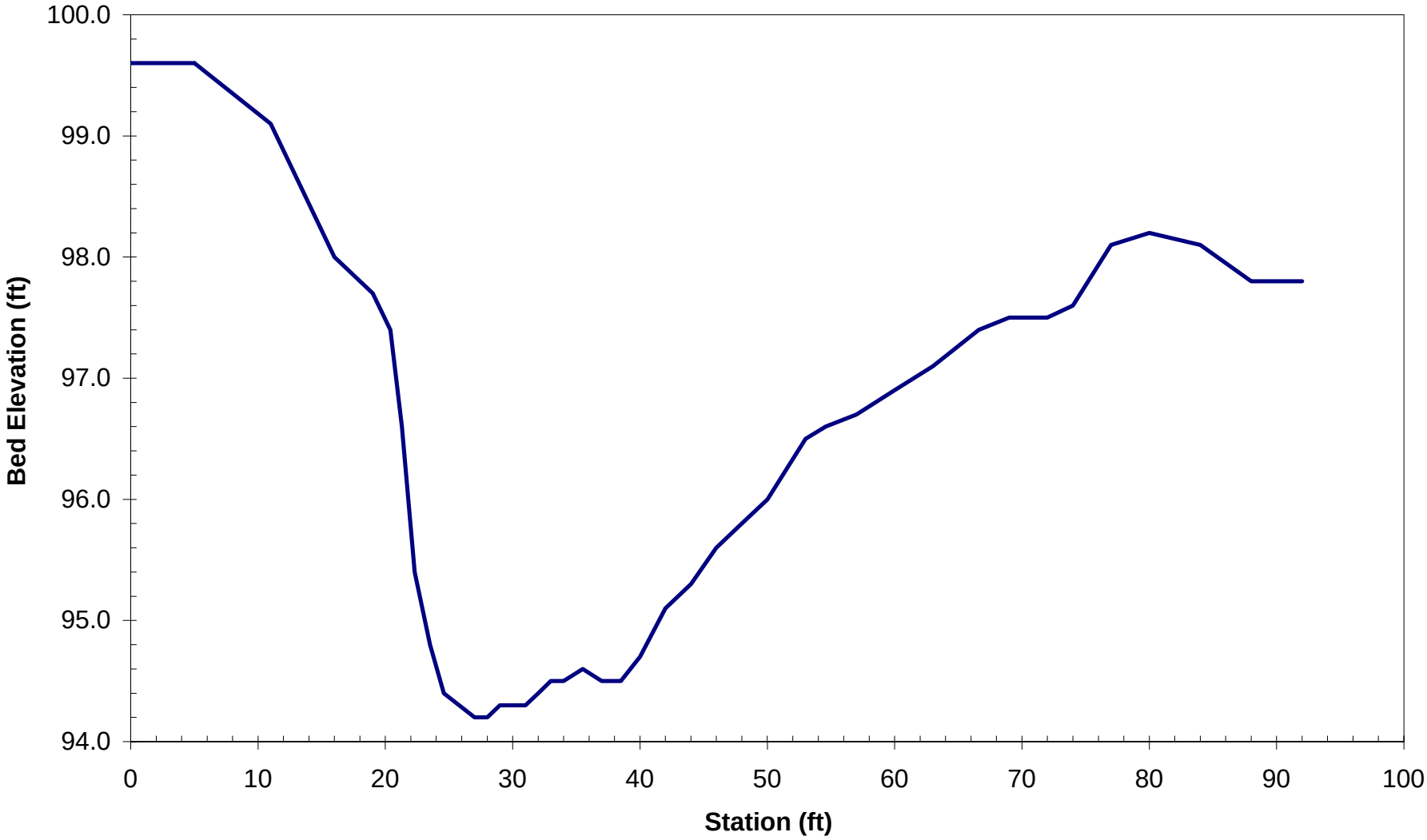
Survey Date	Q (cfs)	WUA (Y/N)
6/1/2007	125.7	Y
7/18/2007	76.5	Y
10/19/2007	167.3	Y

(4) Hydraulic Calibration Results:

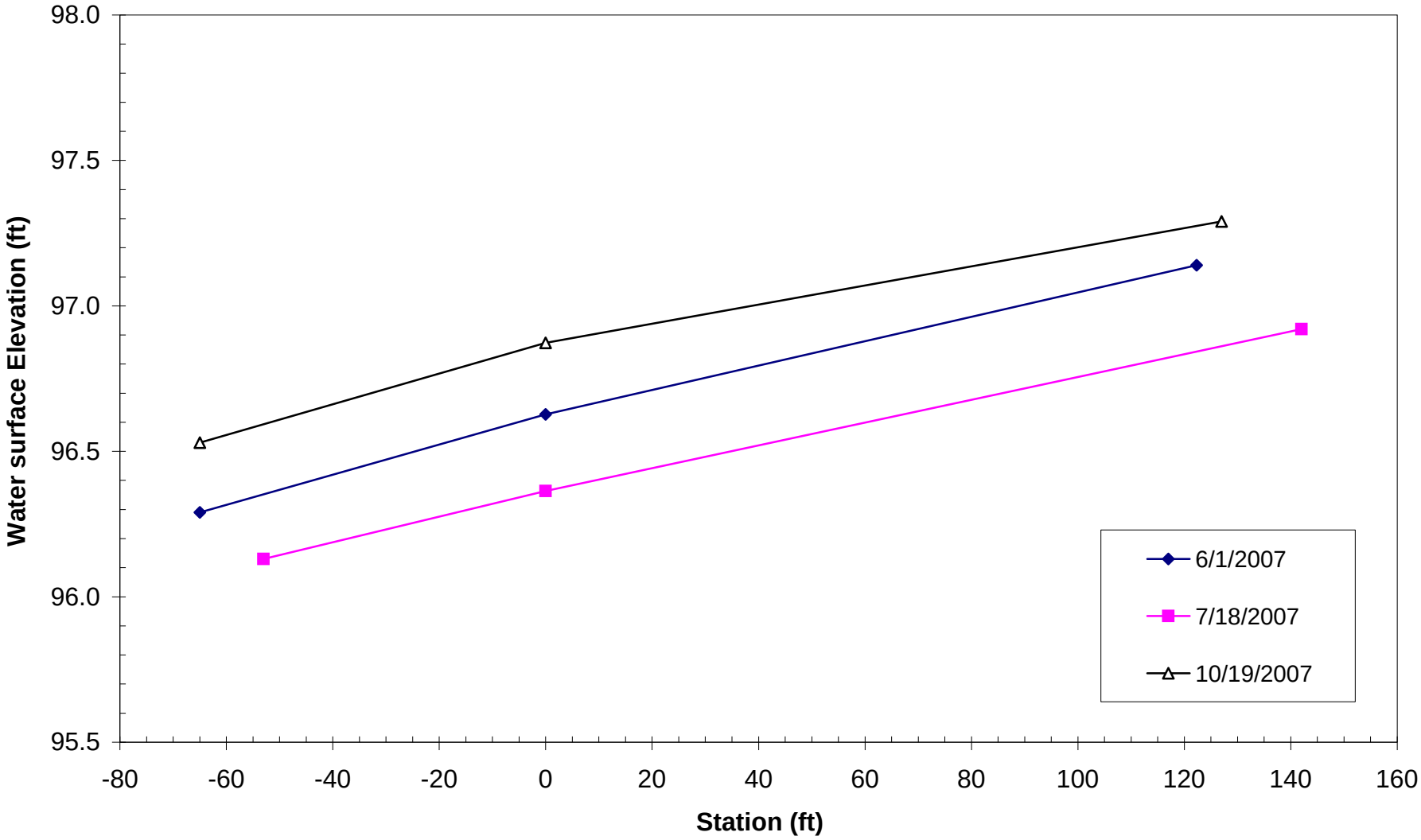
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

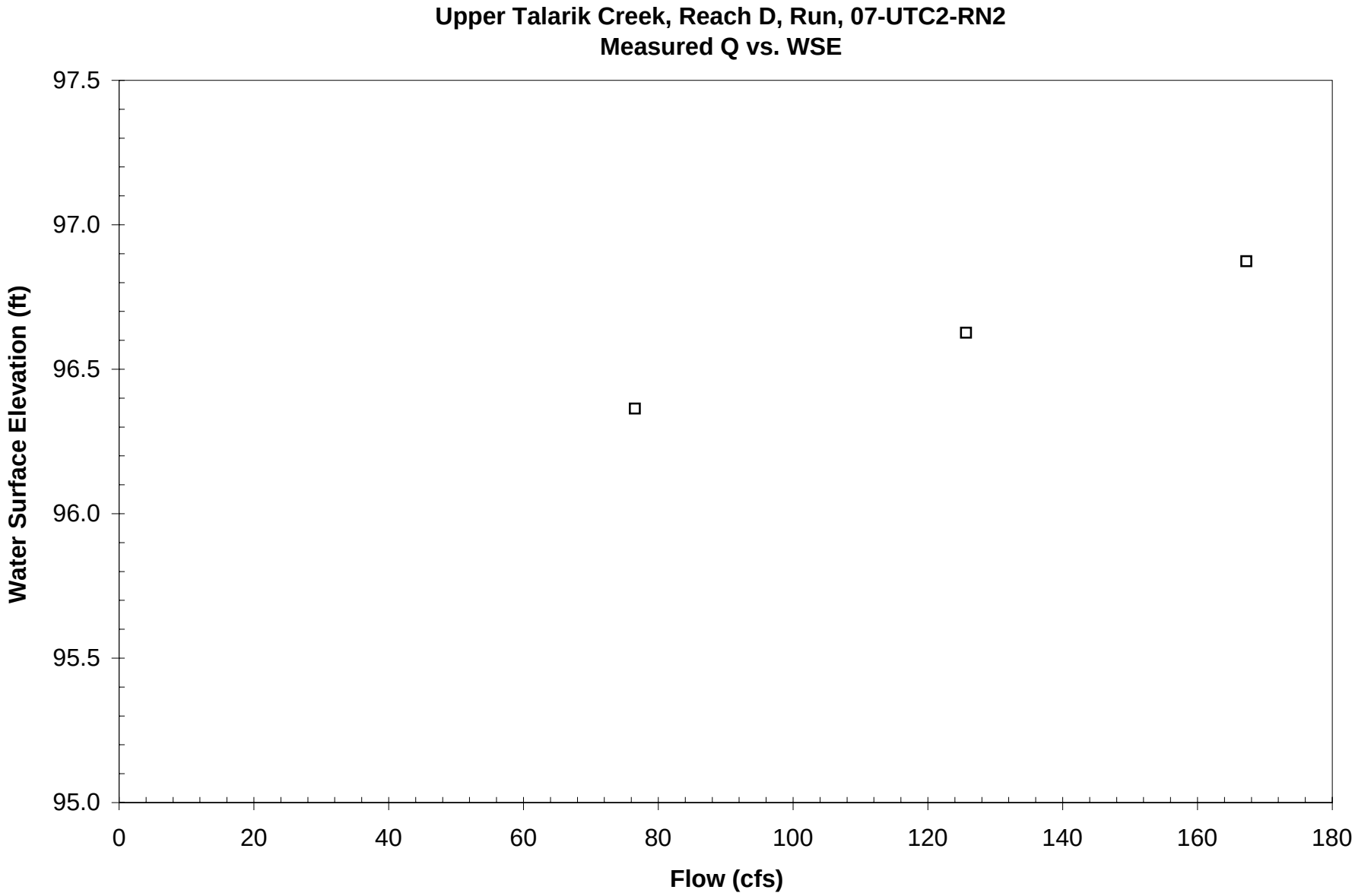
calibration notes

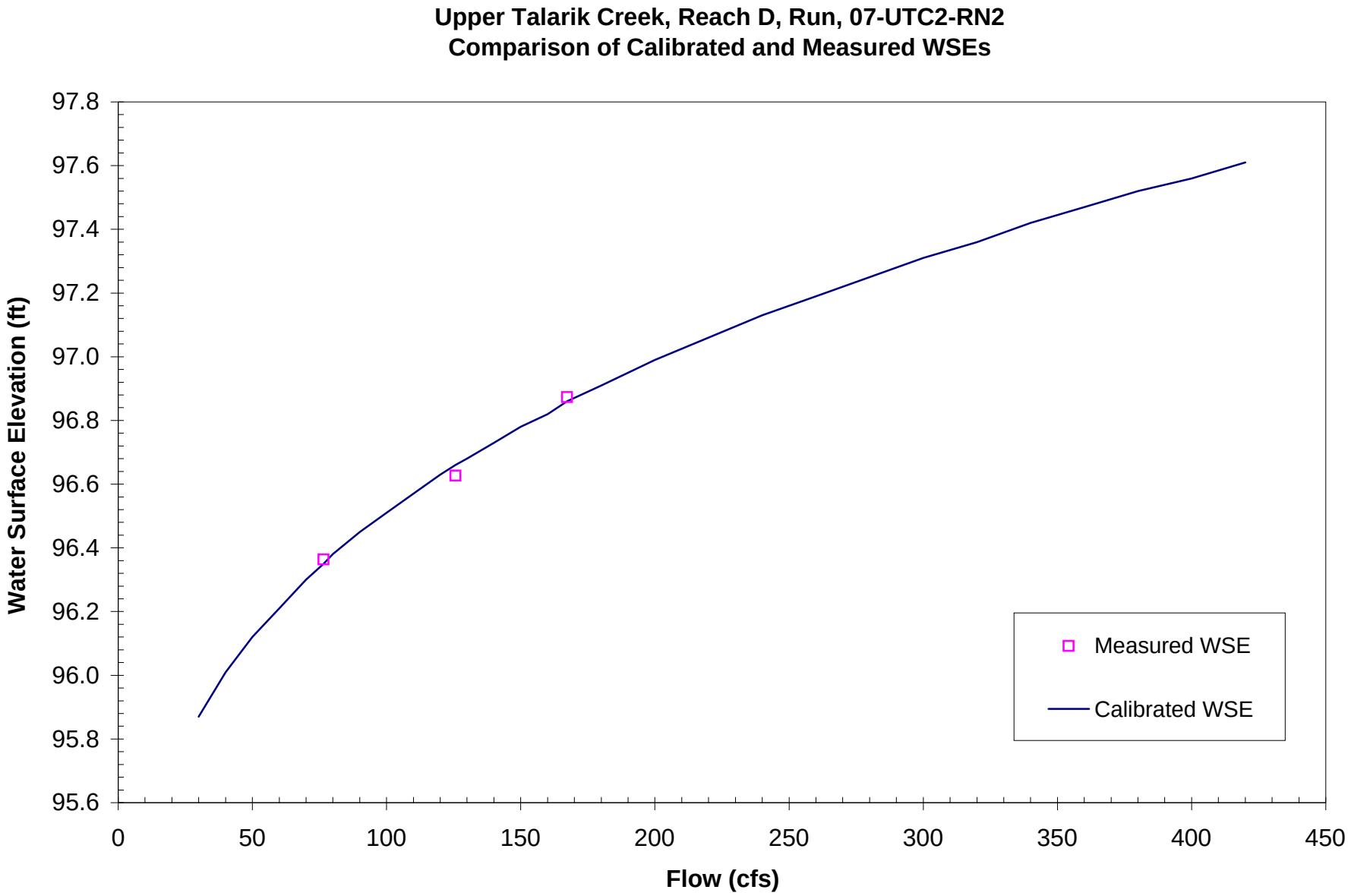
Upper Talarik Creek, Reach D, Run, 07-UTC2-RN2
Measured Transect Profile



Upper Talarik Creek, Reach D, Run, 07-UTC2-RN2
Longitudinal Water surface Elevation Profiles



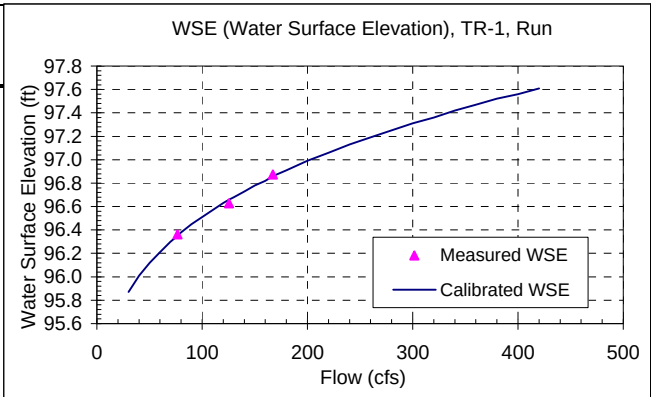

Upper Talarik Creek, Reach D, Run, 07-UTC2-RN2
Measured Q vs. WSE
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)

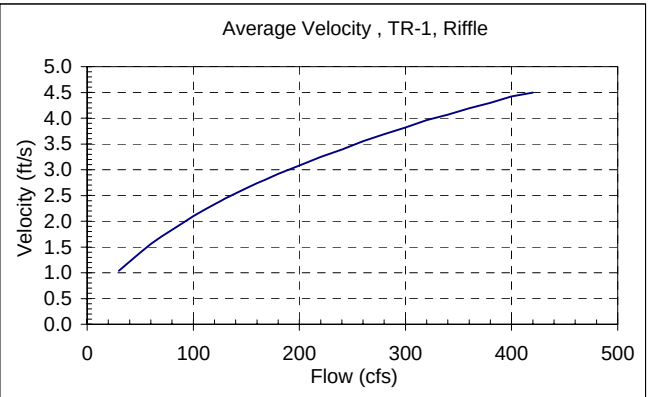

Upper Talarik Creek, Reach D, Run, 07-UTC2-RN2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
0
50
100
150
200
250
300
350
400
450
Flow (cfs)
Measured WSE
Calibrated WSE

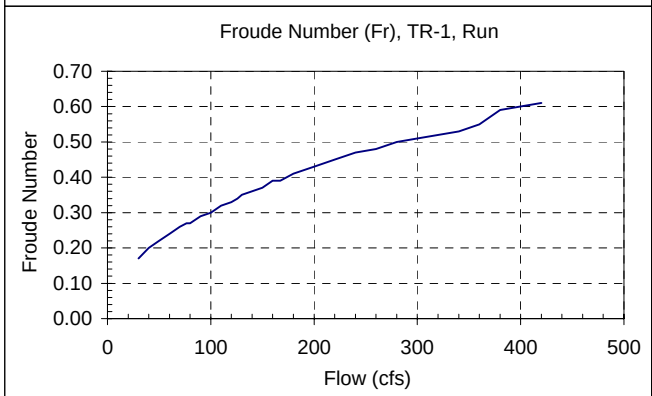
Stream: Upper Talarik Creek
Site Name: 07-UTC2-RN2
Date: 6/1/2007
Calibration Flow: Q(6/1/2007)

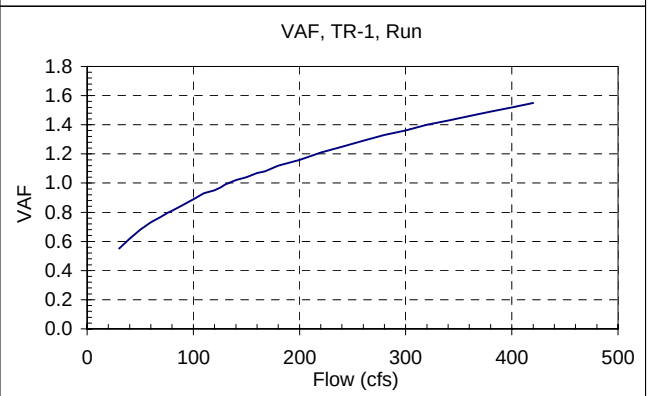
Reach: D
Habitat: Run
Site #: 2
Transect: 1

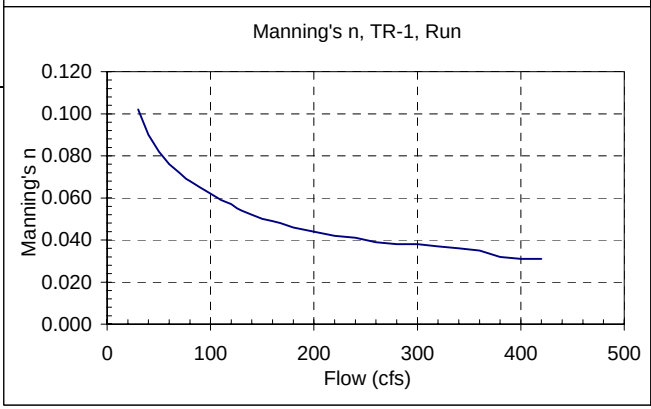
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	95.87	0.17	1.04	0.55	0.102	27.0
40	96.01	0.20	1.22	0.62	0.090	28.7
50	96.12	0.22	1.39	0.68	0.082	29.6
60	96.21	0.24	1.56	0.73	0.076	30.2
70	96.30	0.26	1.70	0.77	0.072	30.9
76.5	96.35	0.27	1.79	0.80	0.069	31.3
80	96.38	0.27	1.83	0.81	0.068	31.5
90	96.45	0.29	1.96	0.85	0.065	32.0
100	96.51	0.30	2.10	0.89	0.062	32.4
110	96.57	0.32	2.22	0.93	0.059	33.4
120	96.63	0.33	2.33	0.95	0.057	34.4
125.7	96.66	0.34	2.39	0.97	0.055	35.0
130	96.68	0.35	2.44	0.99	0.054	35.4
140	96.73	0.36	2.54	1.02	0.052	36.4
150	96.78	0.37	2.64	1.04	0.050	37.4
160	96.82	0.39	2.74	1.07	0.049	38.1
167.3	96.86	0.39	2.80	1.08	0.048	38.8
180	96.91	0.41	2.92	1.12	0.046	39.6
200	96.99	0.43	3.08	1.16	0.044	41.3
220	97.06	0.45	3.25	1.21	0.042	42.9
240	97.13	0.47	3.39	1.25	0.041	43.9
260	97.19	0.48	3.55	1.29	0.039	44.6
280	97.25	0.50	3.69	1.33	0.038	45.3
300	97.31	0.51	3.82	1.36	0.038	46.0
320	97.36	0.52	3.96	1.40	0.037	46.6
340	97.42	0.53	4.07	1.43	0.036	47.3
360	97.47	0.55	4.19	1.46	0.035	48.9
380	97.52	0.59	4.30	1.49	0.032	54.5
400	97.56	0.60	4.42	1.52	0.031	55.8
420	97.61	0.61	4.50	1.55	0.031	56.4

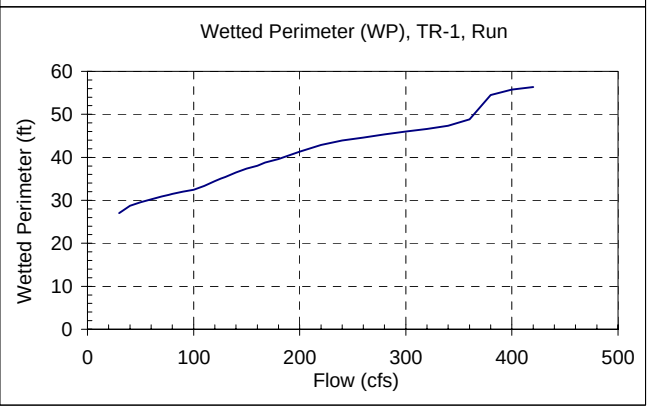






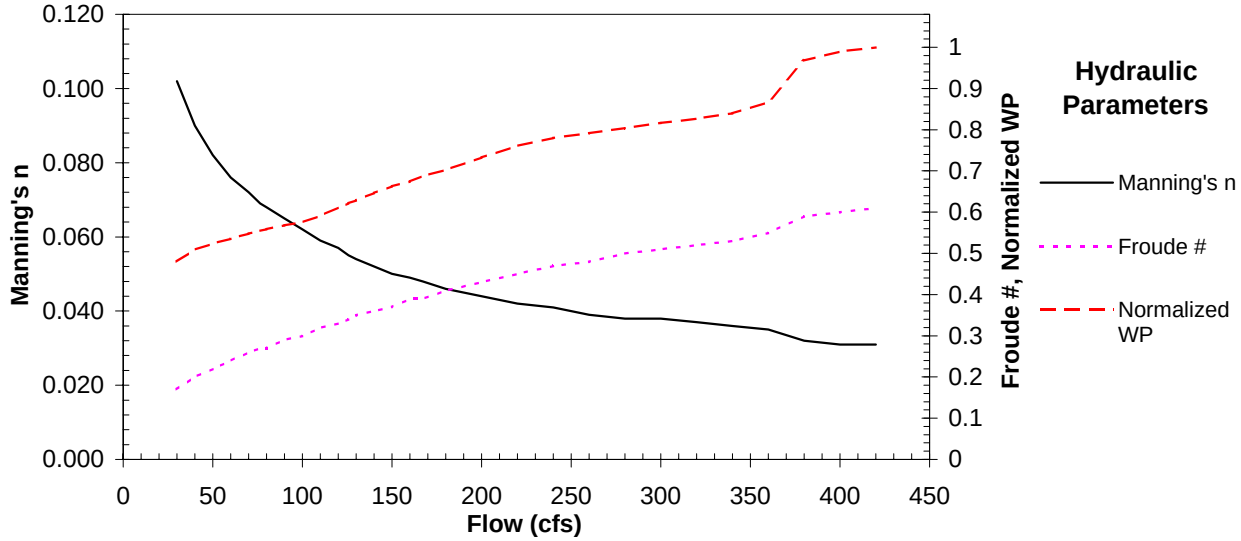


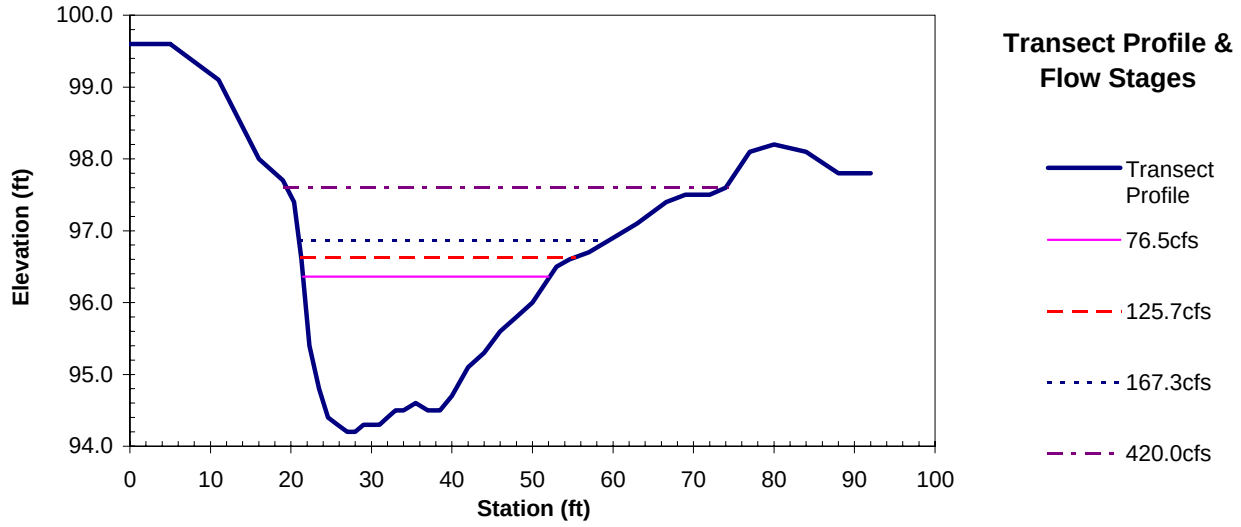


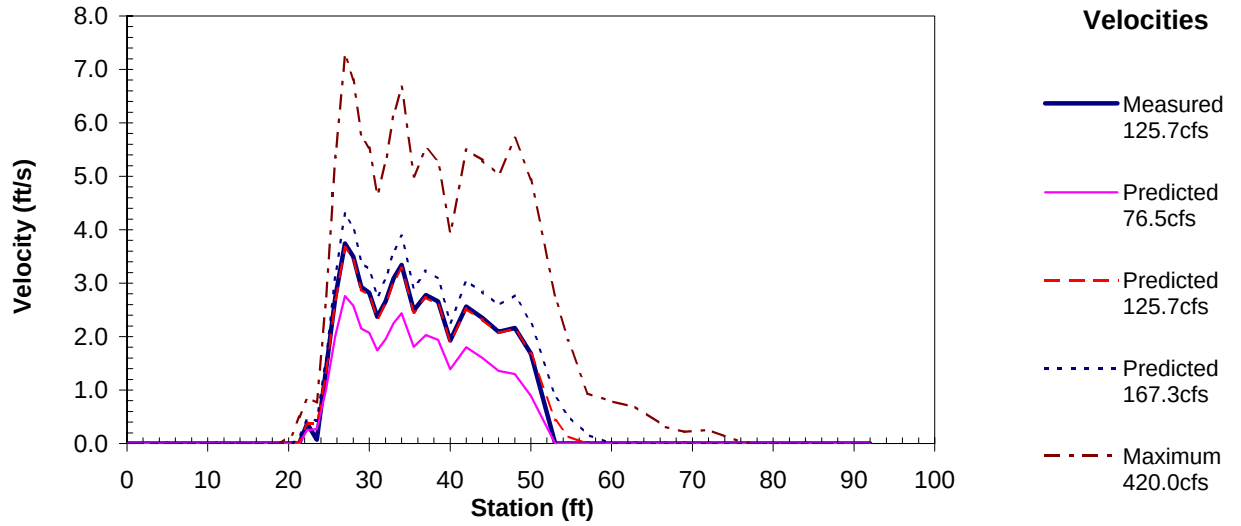


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
07-UTC2-RN2 - RUN - TRANSECT 1 - 6/1/2007







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-UTC2-RN2  06/01/07
RUN                          0607Q                                        TRANSECT 1
IOC       1101100100001000101000
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  76.5
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.0
QARD 120.0
QARD 125.7
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 167.3
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
XSEC  1000     1000. 1.0     94.27    .00454
      1000   .099.55  5.099.58 11.099.13 16.098.01 19.097.65 20.497.41
      1000 21.396.62 22.395.43 23.594.83 24.694.43 25.894.33 27.094.23
      1000 28.094.23 29.094.33 30.094.33 31.094.33 32.094.43 33.094.52
      1000 34.094.52 35.594.58 37.094.48 38.594.48 40.094.73 42.095.08
      1000 44.095.33 46.095.58 48.095.83 50.096.02 53.096.52 54.696.62
      1000 57.096.75 60.096.94 63.097.08 66.697.44 69.097.51 72.097.48
      1000 74.097.56 77.098.08 80.098.23 84.098.05 88.097.81 92.097.77
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9 .4   26.9      77.9      64.6      46.7
NS    1000      46.7      54.6      54.6      45.6      43.6      43.8
NS    1000      43.8      43.8      45.7      43.7      43.6      43.6
NS    1000      43.8      43.6      32.8      42.8 .06  32.7 .08  34.7
NS    1000 0.15 34.7      43.6      34.6      43.8      32.8      32.8
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
WSL   1000     95.87     96.01     96.12     96.21     96.30     96.35
```

IFG4 Data Deck (continued)

```
WSL   1000     96.38     96.45     96.51     96.57     96.63     96.66
WSL   1000     96.68     96.73     96.78     96.82     96.86     96.91
WSL   1000     96.99     97.06     97.13     97.19     97.25     97.31
WSL   1000     97.36     97.42     97.47     97.52     97.56     97.61
CAL1  1000     96.63     125.7
VEL1  1000                                0.00 0.37 0.07 1.34 2.74 3.74
VEL1  1000 3.50 2.93 2.82 2.37 2.66 3.09 3.34 2.49 2.78 2.66 1.93 2.56
VEL1  1000 2.35 2.09 2.16 1.68 0.00 0.00
VEL1  1000
CAL2  1000     96.36      76.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.87     167.3
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 05-UTC2-RF1

Habitat Type: Riffle

River Kilometer: 32.36

Stream: **Upper Talarik Creek**
Reach: **D**
Site: **05-UTC2-RF1**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/16/2005	1	100.00	100.02	101.58
2nd	7/19/2005	2	100.00	100.02	101.57
3rd	8/16/2005	3	100.00	100.01	101.57
4th	7/24/2006	4	100.00	100.04	101.54
5th	4/6/2007	5	100.00	100.13	101.55

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were within 0.02ft between 2005 and 2006. Small relative elevation changes indiated the two pins were stable in that period.
(c) HP moved 0.11ft in 2007 from the 2005 datum. No corrections to the WSEs needed, because the hydraulics of 4/6/07 survey were affected by heavy ice, and were not used for modeling.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/16/2005	97.30
7/19/2005	97.09
8/16/2005	97.03
7/24/2006	97.13
4/6/2007	97.46

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/16/2005	136.5
7/19/2005	
8/16/2005	78.4
7/24/2006	108.9
4/6/2007	19.5

No flow was measured on 7/19/05 when only substrate was surveyed.
Flow of 4/6/07 survey was affected by ice. Discharge may not be accurate.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/16/2005	0.585%	80.4
7/19/2005	0.712%	80.0
8/16/2005	0.712%	80.0
7/24/2006	0.800%	60.0
4/6/2007	-	-

No longitudinal WSE slope was surveyed during the 4/6/07 site visit.
The slope S=0.585% of 6/16/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/16/2005	95.60
7/19/2005	
8/16/2005	95.73
7/24/2006	95.63
4/6/2007	96.06
max Invert	95.73
SZF	95.73

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/19/05.
(4) Invert of 4/6/07 was not used to determine SZF because of anchor ice in the channel that resulted in elevated bed elevation.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/16/2005	136.5	97.30	97.28	-0.02	IFG4
2nd	7/19/2005		97.09			
3rd	8/16/2005	78.4	97.03	97.01	-0.02	IFG4
4th	7/24/2006	108.9	97.13	97.16	0.03	IFG4
5th	4/6/2007	19.5	97.46			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured in 7/19/05 trip.
(d) Photos of 4/6/07 showed the entire channel was covered in ice. Hydraulics were impacted by ice and thus not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 78.4cfs, 108.9cfs, and 136.5cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

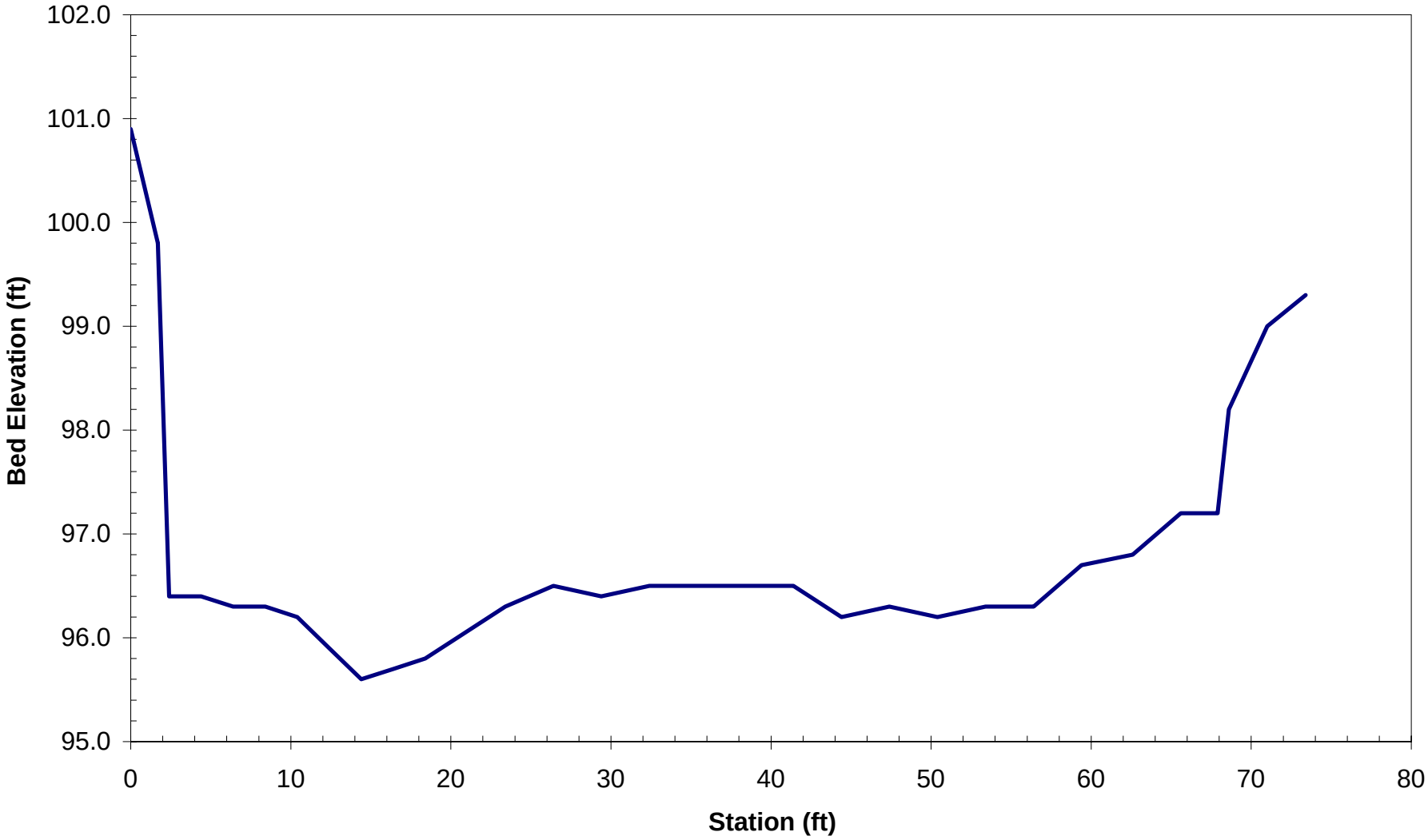
Survey Date	Q (cfs)	WUA (Y/N)
6/16/2005	136.5	Y
7/19/2005		
8/16/2005	78.4	Y
7/24/2006	108.9	Y
4/6/2007	19.5	

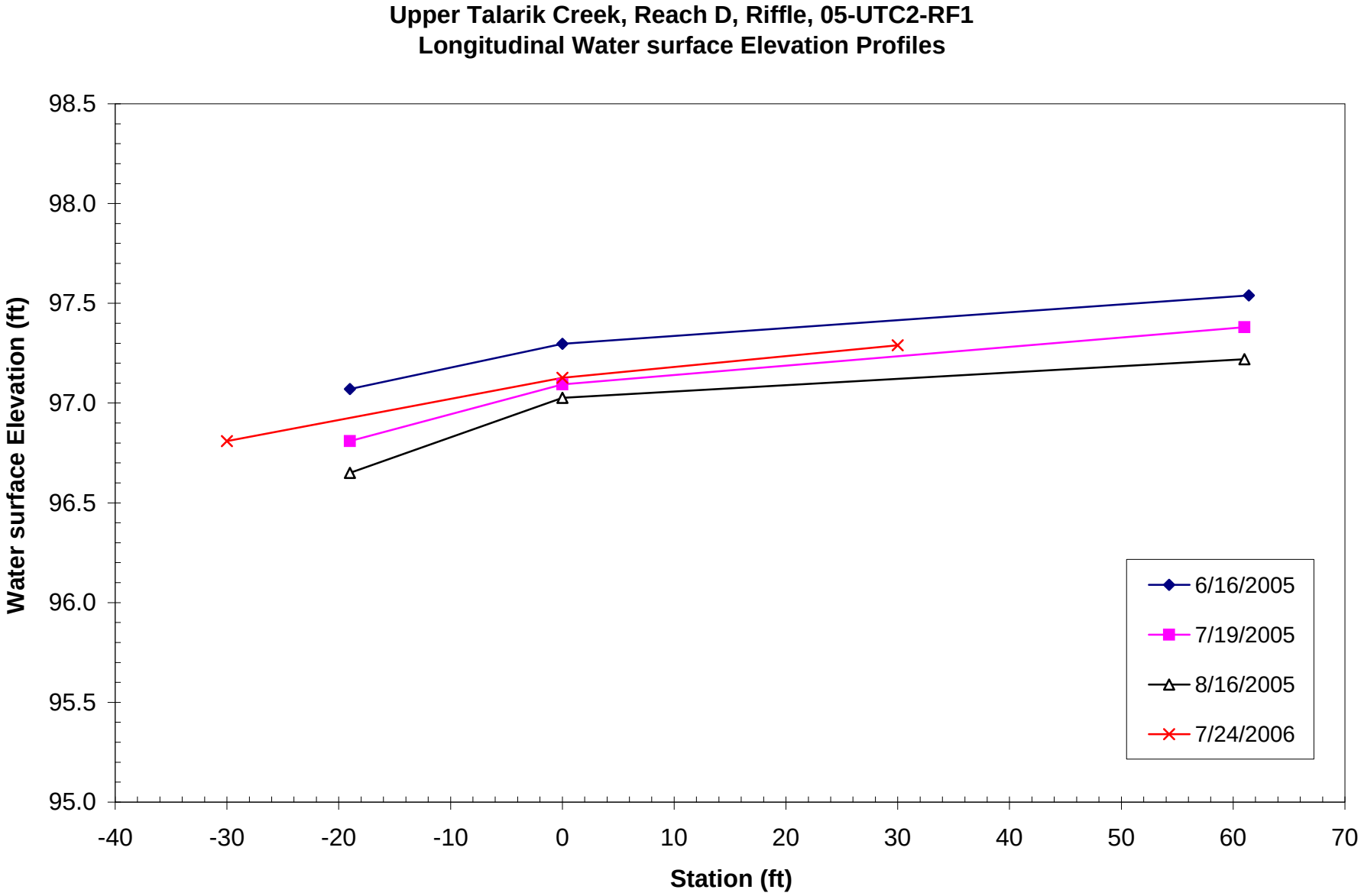
(4) Hydraulic Calibration Results:

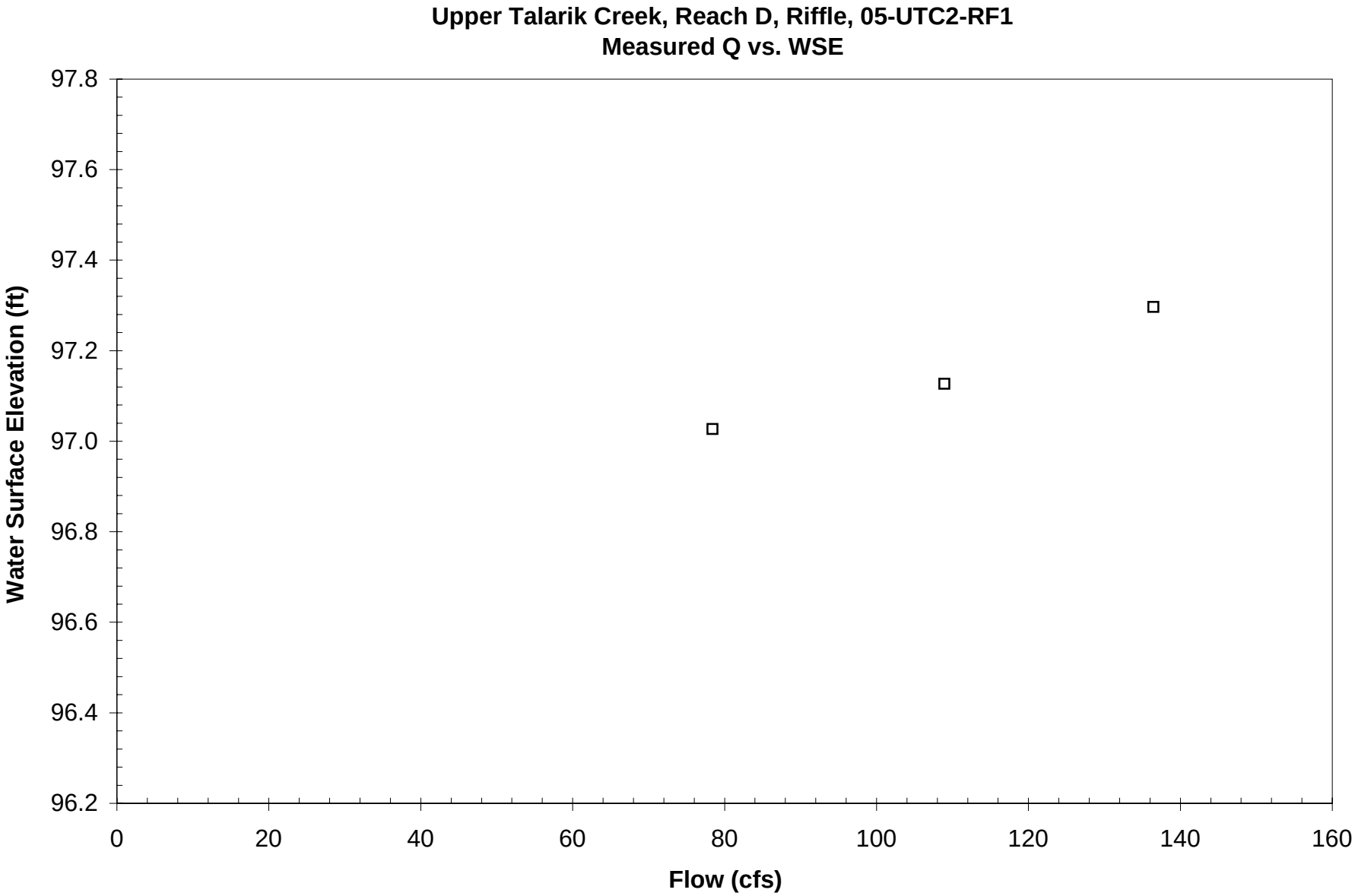
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

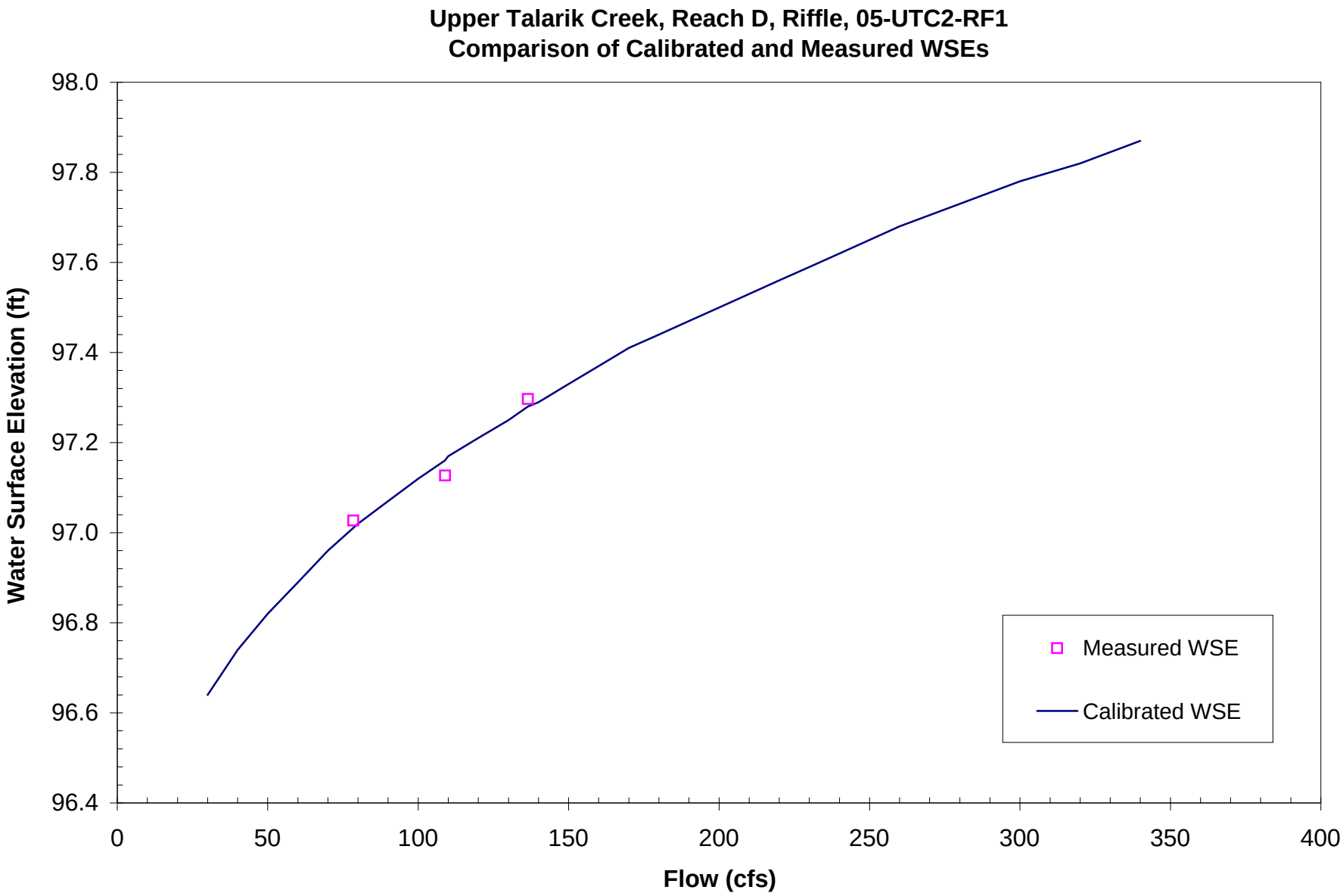
calibration notes

Upper Talarik Creek, Reach D, Riffle, 05-UTC2-RF1
Measured Transect Profile




Upper Talarik Creek, Reach D, Riffle, 05-UTC2-RF1
Longitudinal Water surface Elevation Profiles
Water surface Elevation (ft)
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
-40
-30
-20
-10
0
10
20
30
40
50
60
70
Station (ft)
6/16/2005
7/19/2005
8/16/2005
7/24/2006

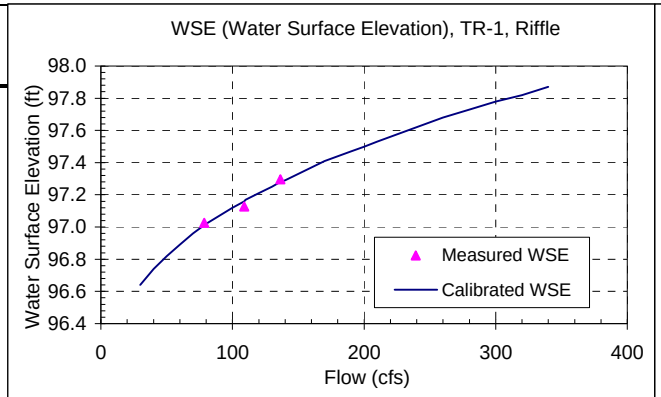

Upper Talarik Creek, Reach D, Riffle, 05-UTC2-RF1
Measured Q vs. WSE
Water Surface Elevation (ft)
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
20
40
60
80
100
120
140
160
Flow (cfs)

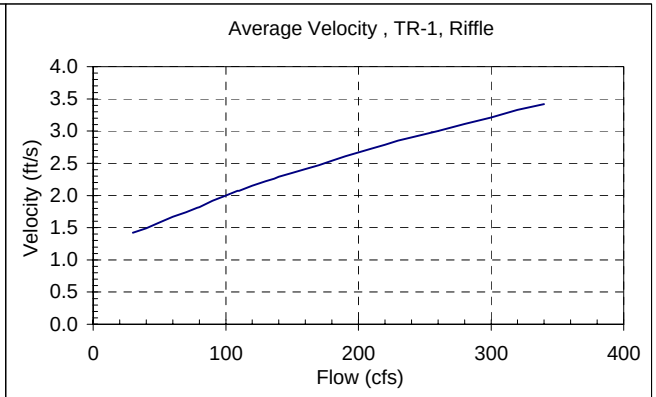

Upper Talarik Creek, Reach D, Riffle, 05-UTC2-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
0
50
100
150
200
250
300
350
400
Flow (cfs)
Measured WSE
Calibrated WSE

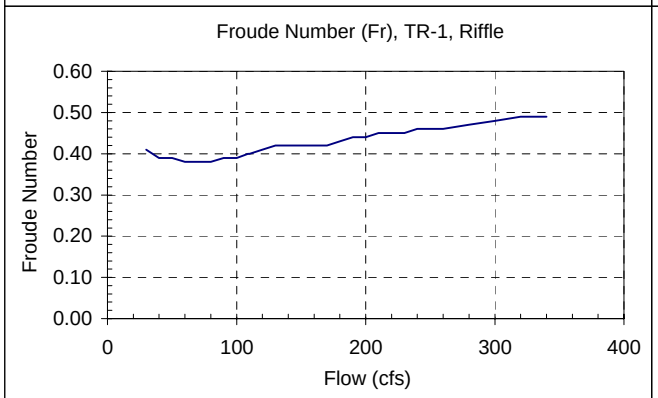
Stream: Upper Talarik Creek
Site Name: 05-UTC2-RF1
Date: 6/16/2005
Calibration Flow: Q(6/16/2005)

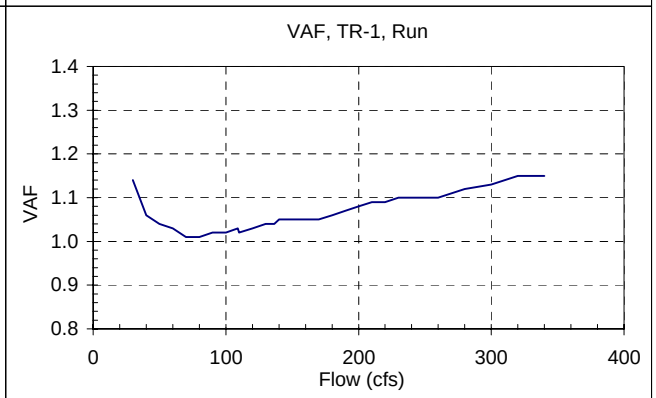
Reach: D
Habitat: Riffle
Site #: 1
Transect: 1

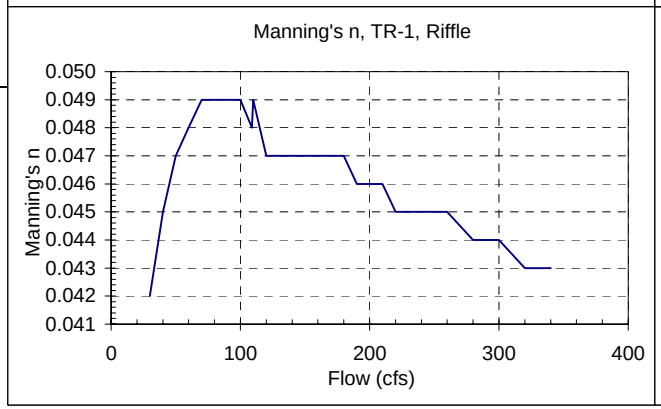
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	96.64	0.41	1.42	1.14	0.042	56.9
40	96.74	0.39	1.49	1.06	0.045	58.8
50	96.82	0.39	1.58	1.04	0.047	60.9
60	96.89	0.38	1.67	1.03	0.048	61.5
70	96.96	0.38	1.74	1.01	0.049	62.1
78.4	97.01	0.38	1.81	1.01	0.049	62.5
80	97.02	0.38	1.82	1.01	0.049	62.6
90	97.07	0.39	1.92	1.02	0.049	63.1
100	97.12	0.39	2.00	1.02	0.049	63.5
108.9	97.16	0.40	2.07	1.03	0.048	63.8
110	97.17	0.40	2.07	1.02	0.049	63.9
120	97.21	0.41	2.15	1.03	0.047	66.5
130	97.25	0.42	2.22	1.04	0.047	66.6
136.5	97.28	0.42	2.26	1.04	0.047	66.7
140	97.29	0.42	2.29	1.05	0.047	66.7
150	97.33	0.42	2.35	1.05	0.047	66.8
160	97.37	0.42	2.41	1.05	0.047	66.9
170	97.41	0.42	2.47	1.05	0.047	67.0
180	97.44	0.43	2.54	1.06	0.047	67.0
190	97.47	0.44	2.61	1.07	0.046	67.1
200	97.50	0.44	2.67	1.08	0.046	67.2
210	97.53	0.45	2.73	1.09	0.046	67.2
220	97.56	0.45	2.79	1.09	0.045	67.3
230	97.59	0.45	2.85	1.10	0.045	67.4
240	97.62	0.46	2.90	1.10	0.045	67.4
260	97.68	0.46	3.00	1.10	0.045	67.6
280	97.73	0.47	3.11	1.12	0.044	67.7
300	97.78	0.48	3.21	1.13	0.044	67.8
320	97.82	0.49	3.33	1.15	0.043	67.9
340	97.87	0.49	3.42	1.15	0.043	68.0

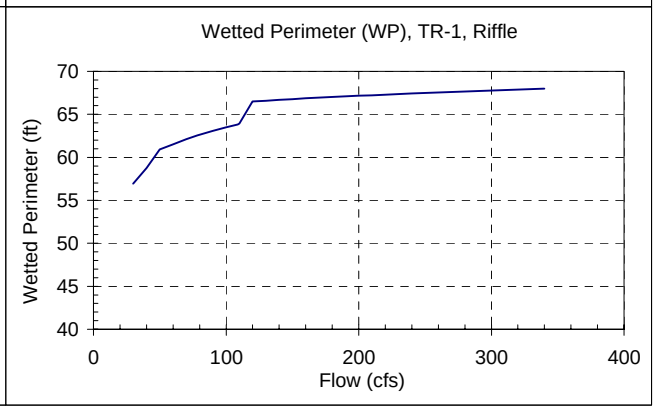




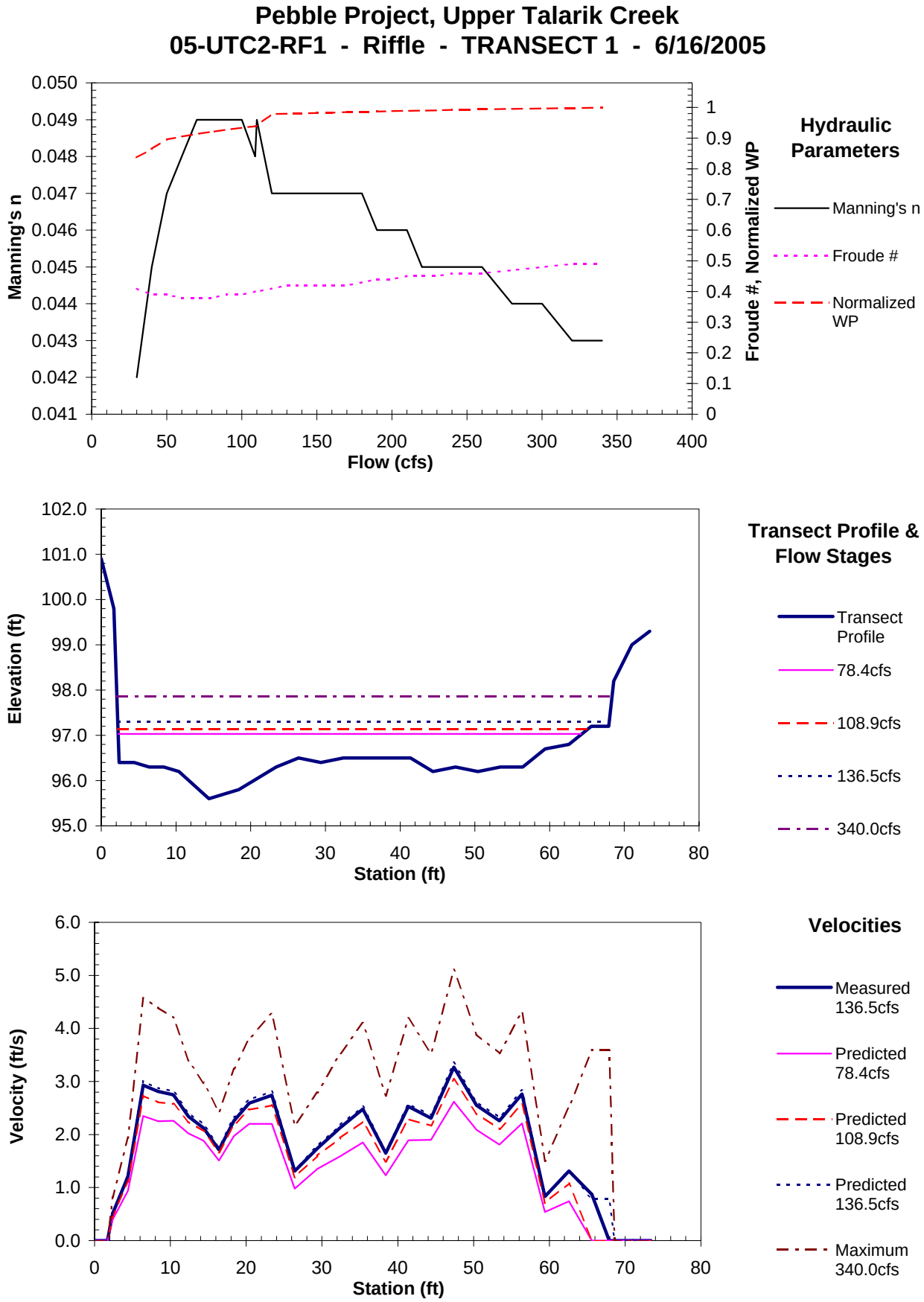








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

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QARD  50.0
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QARD  78.4
QARD  80.0
QARD  90.0
QARD 100.0
QARD 108.9
QARD 110.0
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QARD 230.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
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      1000   .0100.9  1.799.81  2.496.40  4.496.40  6.496.30  8.496.30
      1000 10.496.20 12.495.90 14.495.60 16.495.70 18.495.80 20.496.00
      1000 23.496.30 26.496.50 29.496.40 32.496.50 35.496.50 38.496.50
      1000 41.496.50 44.496.20 47.496.30 50.496.20 53.496.30 56.496.30
      1000 59.496.70 62.696.80 65.697.20 67.997.20 68.698.19 71.098.99
      1000 73.499.34
NS    1000      22.9      23.9      24.8      43.6      45.6      46.7
NS    1000      46.6      46.6      54.6      45.6      46.6      42.8
NS    1000      63.6      46.6      46.6      53.6      46.6      63.7
NS    1000      64.6      45.6      45.7      45.6      46.6      76.6
NS    1000      64.6      64.8      24.6      24.7      23.9      22.9
NS    1000      22.9
WSL   1000     96.64     96.74     96.82     96.89     96.96     97.01
WSL   1000     97.02     97.07     97.12     97.16     97.17     97.21
WSL   1000     97.25     97.28     97.29     97.33     97.37     97.41
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     97.44     97.47     97.50     97.53     97.56     97.59
WSL   1000     97.62     97.68     97.73     97.78     97.82     97.87
CAL1  1000     97.30     136.5
VEL1  1000           0.51 1.21 2.93 2.81 2.75 2.34 2.12 1.71 2.26 2.59
VEL1  1000 2.74 1.31 1.74 2.13 2.48 1.65 2.53 2.31 3.27 2.55 2.26 2.76
VEL1  1000 0.83 1.31 0.87 0.00
CAL2  1000     97.03      78.4
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.13     108.9
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 04-UTC-RF3

Habitat Type: Riffle

River Kilometer: 34.62

Stream: **Upper Talarik Creek**
Reach: **D**
Site: **04-UTC-RF3**
Habitat Type: **Riffle**

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	TP
1	7/20/2005	100.00	99.93	97.74
2	8/16/2005	100.00	99.92	97.74
3	9/7/2005	100.00	99.93	97.75
4	7/24/2006	100.00	99.88	97.71
5	4/6/2007	100.00	99.91	97.60

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between any of two pins were within 0.01ft in 2005. HP was lowered 0.05ft and TP 0.03ft in 2006, suggesting BM may have risen by at least 0.03ft in 2006. Therefore, added 0.03ft to the HI of 2006 WSE survey to correct WSEs to the initial datum set up in 2005.
(c) No photos of 4/6/07 were available, but the field notes indicated ice on waters edge.
(d) The control pins moved more in 2007 but no corrections were applied to the WSEs because the hydraulics were impacted by ice and they were not used in the modeling.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/20/2005	95.63
8/16/2005	95.53
9/7/2005	96.10
7/24/2006	95.58
4/6/2007	95.35

The 7/24/06 WSE has reflected a 0.03ft correction due to the possible pin (BM) movement.
No corrections to 4/6/08 WSEs were made.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/20/2005	
8/16/2005	57.6
9/7/2005	216.1
7/24/2006	70.7
4/6/2007	50.0

(a) Discharge was not measured on 7/20/05

(b) Hydraulics of 4/6/07 was affected by ice. Measured flow may not be accurate.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/20/2005	0.686%	196.7
8/16/2005	0.788%	183.9
9/7/2005	0.792%	190.6
7/24/2006	0.802%	113.5
4/6/2007	0.742%	236.0

The slope S=0.788% of 8/16/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/20/2005	94.25
8/16/2005	94.23
9/7/2005	94.20
7/24/2006	94.28
4/6/2007	94.25
max Invert	94.28
SZF	94.28

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) Invert of 7/20/05 survey was not used to determine SZF due to no flow measured.
(4) Transect profile of 4/6/07 was affected by ice. The invert was not used to determine SZF.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1	7/20/2005		95.63			
2	8/16/2005	57.6	95.53	95.52	-0.01	IFG4
3	9/7/2005	216.1	96.10	96.09	-0.01	IFG4
4	7/24/2006	70.7	95.58	95.60	0.02	IFG4
5	4/6/2007	50.0	95.35			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range.
(c) No discharge was measured in 7/20/05 trip.
(d) No photos of 4/6/07 site visit were available, but the field notes indicated ice on waters edge.
The transect profile survey was not complete, suggesting hydraulics were impacted by the ice.
Therefore, the hydraulics were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 57.6cfs, 70.7cfs, and 216.1cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

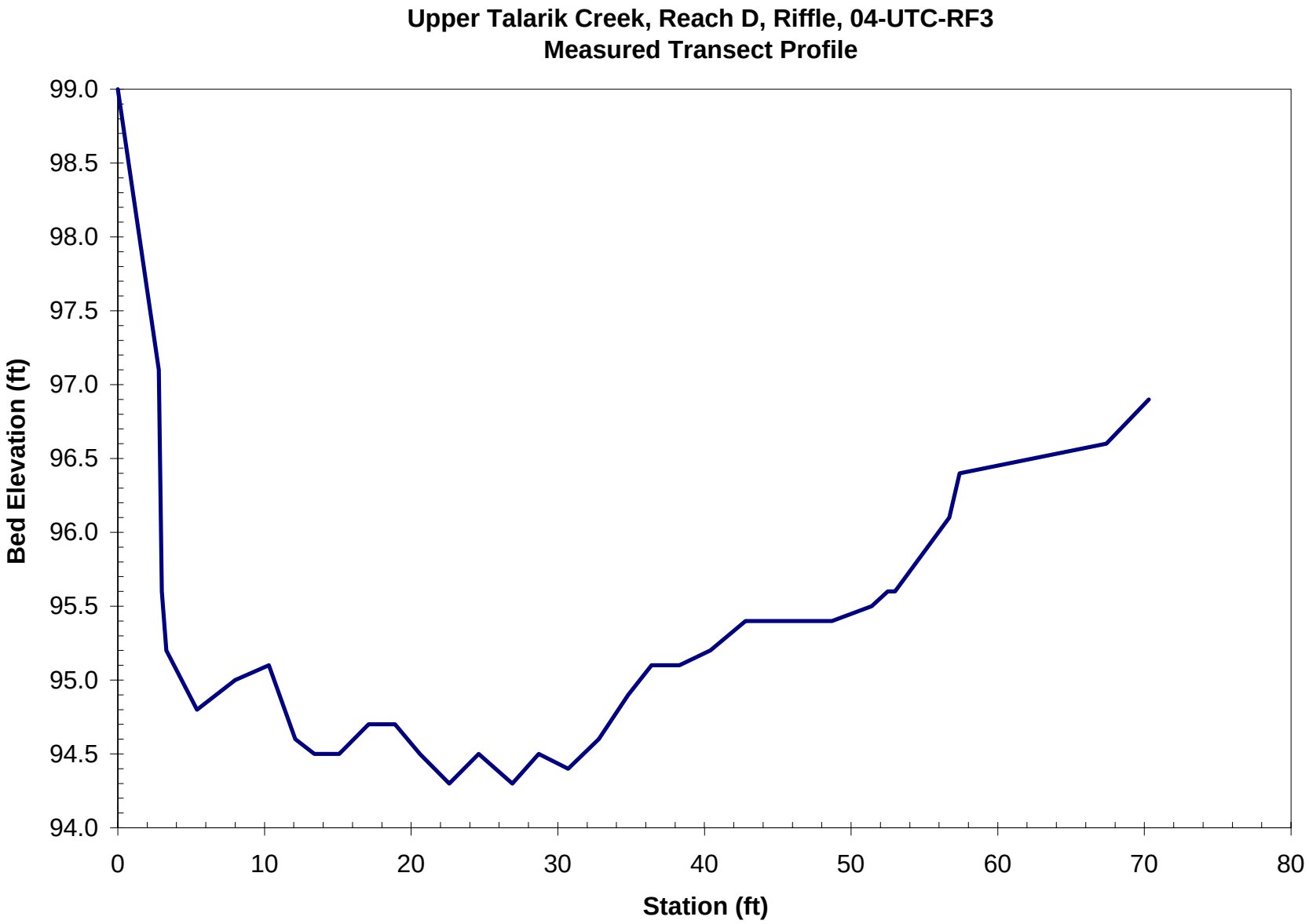
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
7/20/2005		
8/16/2005	57.6	Y
9/7/2005	216.1	Y
7/24/2006	70.7	Y
4/6/2007	50.0	

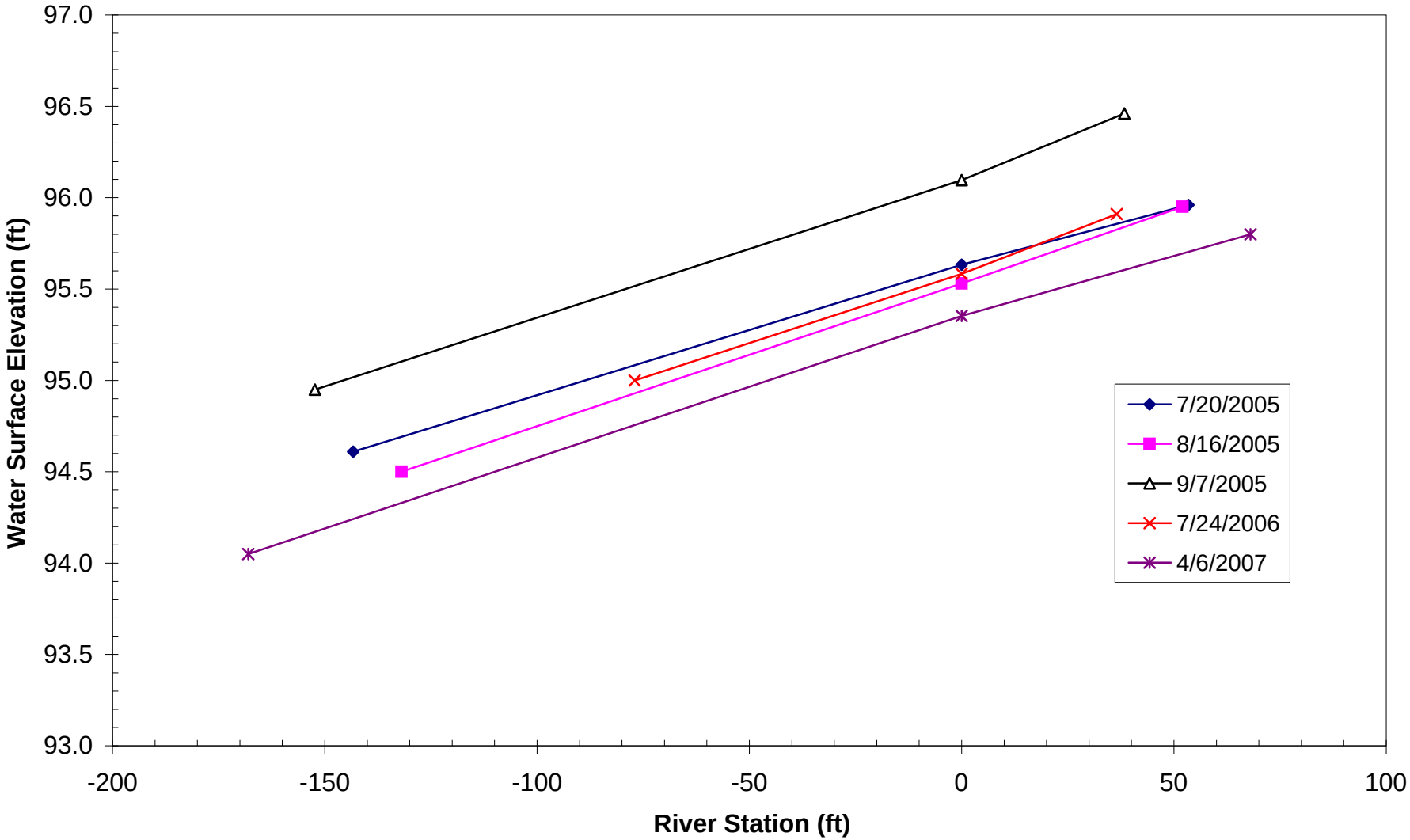
(4) Hydraulic Calibration Results:

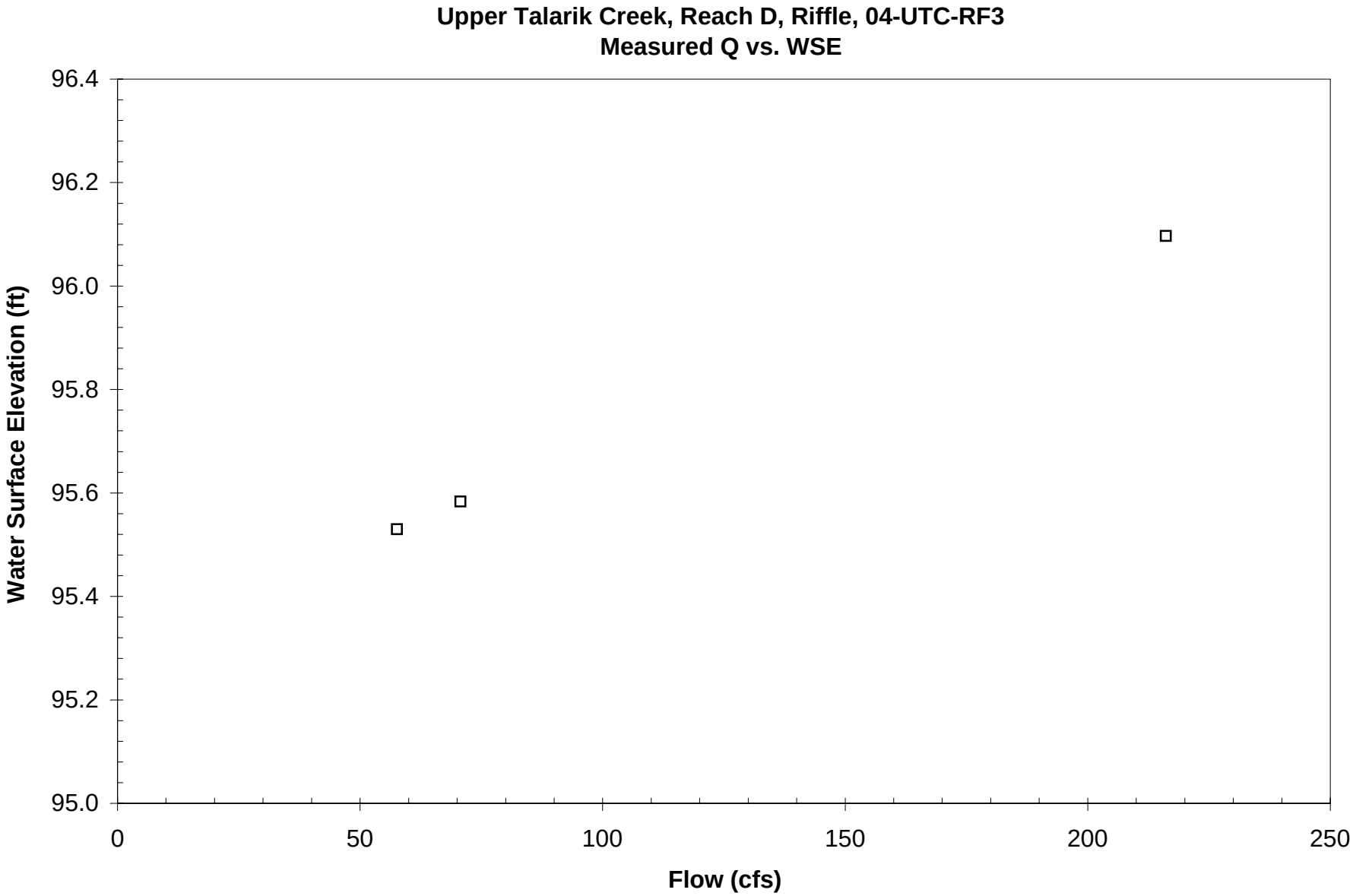
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

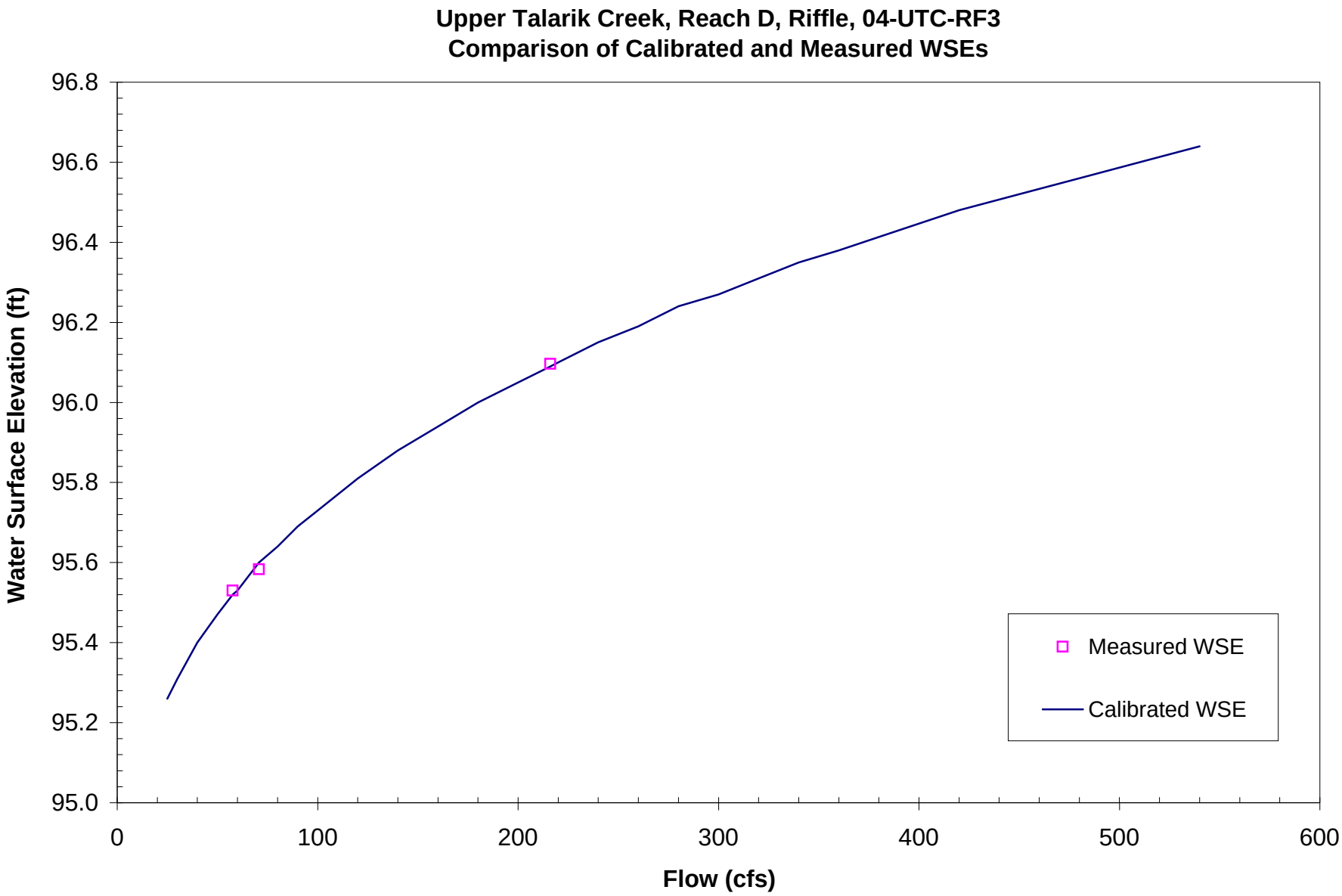
calibration notes


Upper Talarik Creek, Reach D, Riffle, 04-UTC-RF3
Measured Transect Profile
Bed Elevation (ft)
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
0
10
20
30
40
50
60
70
80
Station (ft)

Upper Talarik Creek, Reach D, Riffle, 04-UTC-RF3
Longitudinal Water Surface Elevation Profiles



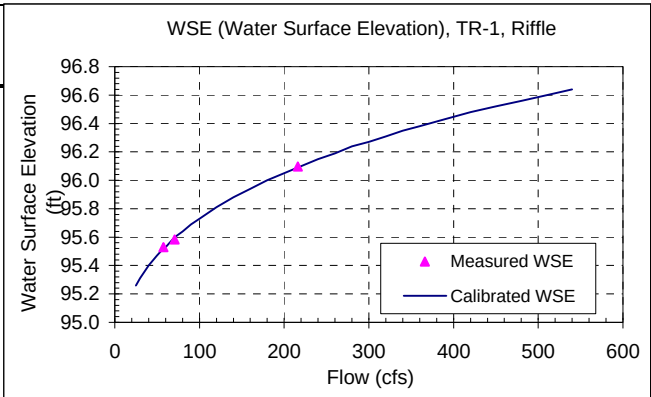

Upper Talarik Creek, Reach D, Riffle, 04-UTC-RF3
Measured Q vs. WSE
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
50
100
150
200
250
Flow (cfs)

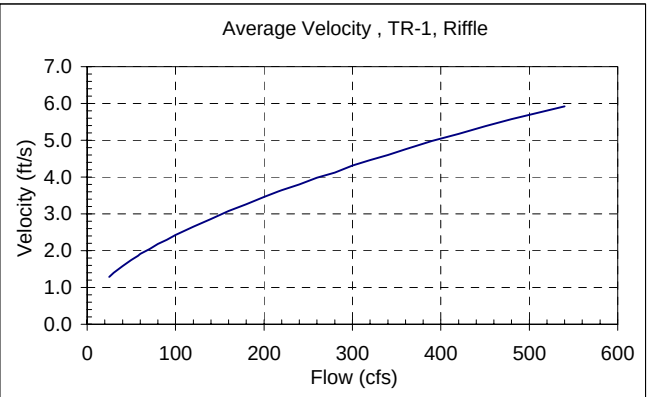

Upper Talarik Creek, Reach D, Riffle, 04-UTC-RF3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
100
200
300
400
500
600
Flow (cfs)
Measured WSE
Calibrated WSE

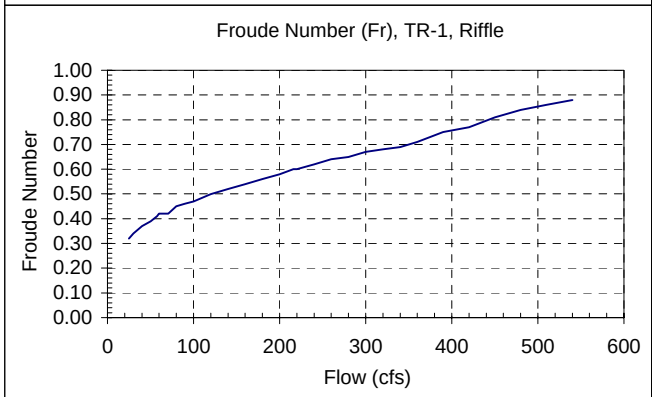
Stream: Upper Talarik Creek
Site Name: 04-UTC-RF3
Date: 8/16/2005
Calibration Flow: Q(8/16/2005)

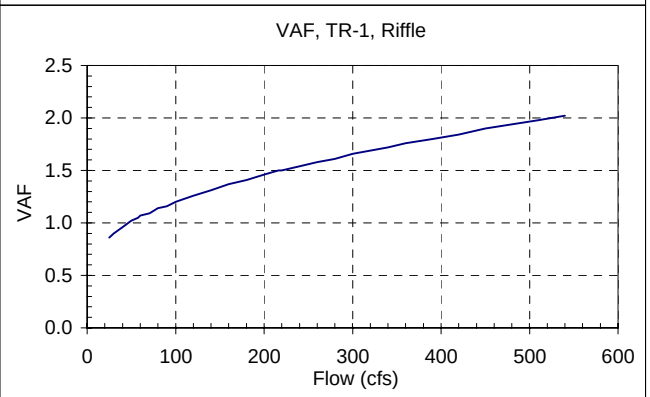
Reach: D
Habitat: Riffle
Site #: 3
Transect: 1

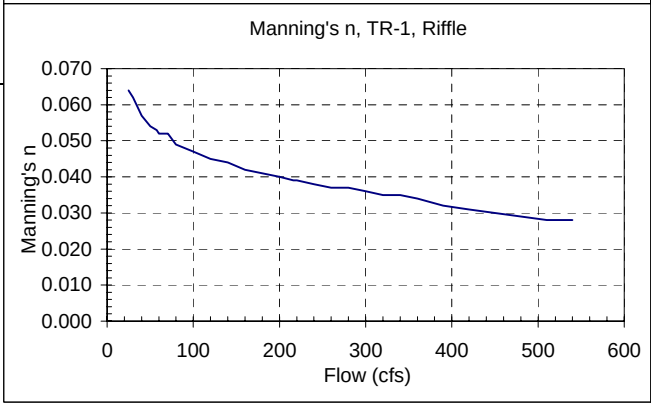
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	95.26	0.32	1.29	0.86	0.064	39.2
30	95.31	0.34	1.40	0.90	0.062	40.6
40	95.40	0.37	1.58	0.96	0.057	45.7
50	95.47	0.39	1.75	1.02	0.054	47.2
57.6	95.52	0.41	1.86	1.05	0.053	48.3
60	95.53	0.42	1.91	1.07	0.052	48.3
70.7	95.60	0.42	2.04	1.09	0.052	48.8
80	95.64	0.45	2.18	1.14	0.049	50.6
90	95.69	0.46	2.30	1.16	0.048	51.0
100	95.73	0.47	2.43	1.20	0.047	51.4
120	95.81	0.50	2.65	1.26	0.045	52.1
140	95.88	0.52	2.86	1.31	0.044	52.7
160	95.94	0.54	3.08	1.37	0.042	53.2
180	96.00	0.56	3.26	1.41	0.041	53.8
200	96.05	0.58	3.46	1.46	0.040	54.2
216.1	96.09	0.60	3.61	1.50	0.039	54.6
220	96.10	0.60	3.64	1.50	0.039	54.6
240	96.15	0.62	3.80	1.54	0.038	54.9
260	96.19	0.64	3.98	1.58	0.037	55.0
280	96.24	0.65	4.12	1.61	0.037	55.2
300	96.27	0.67	4.31	1.66	0.036	55.4
320	96.31	0.68	4.46	1.69	0.035	55.5
340	96.35	0.69	4.60	1.72	0.035	55.7
360	96.38	0.71	4.76	1.76	0.034	56.1
390	96.43	0.75	4.98	1.80	0.032	58.1
420	96.48	0.77	5.17	1.84	0.031	60.1
450	96.52	0.81	5.38	1.90	0.030	62.0
480	96.56	0.84	5.57	1.94	0.029	64.3
510	96.60	0.86	5.75	1.98	0.028	66.1
540	96.64	0.88	5.92	2.02	0.028	66.5

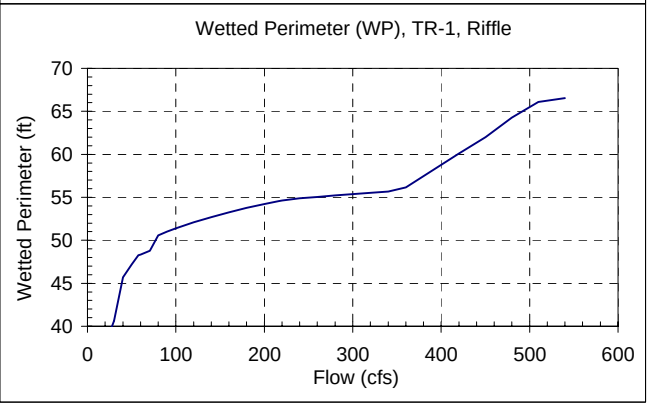






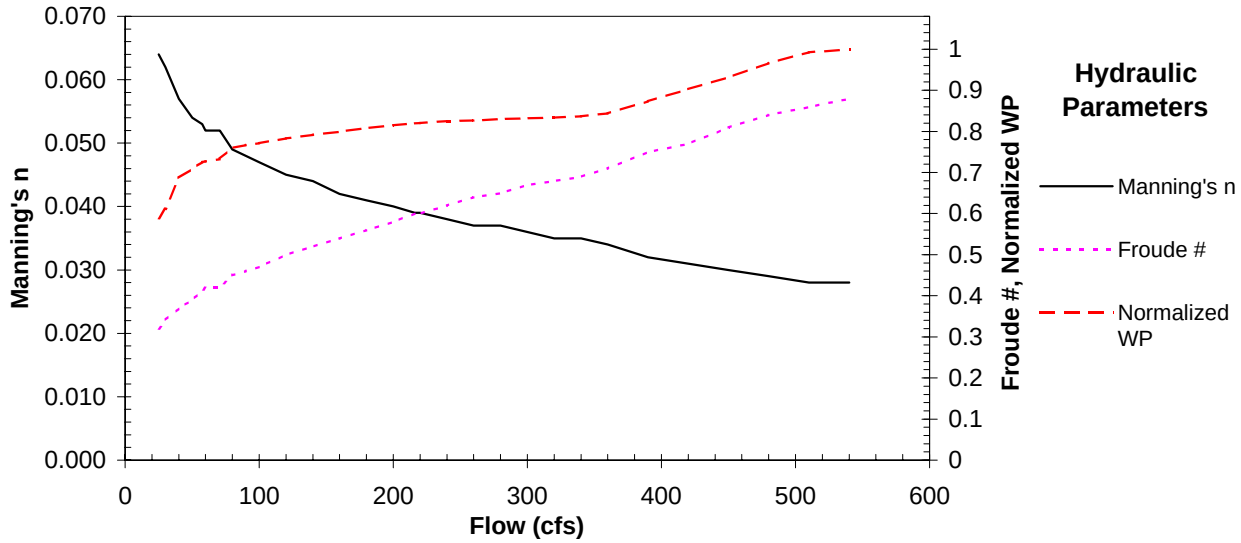


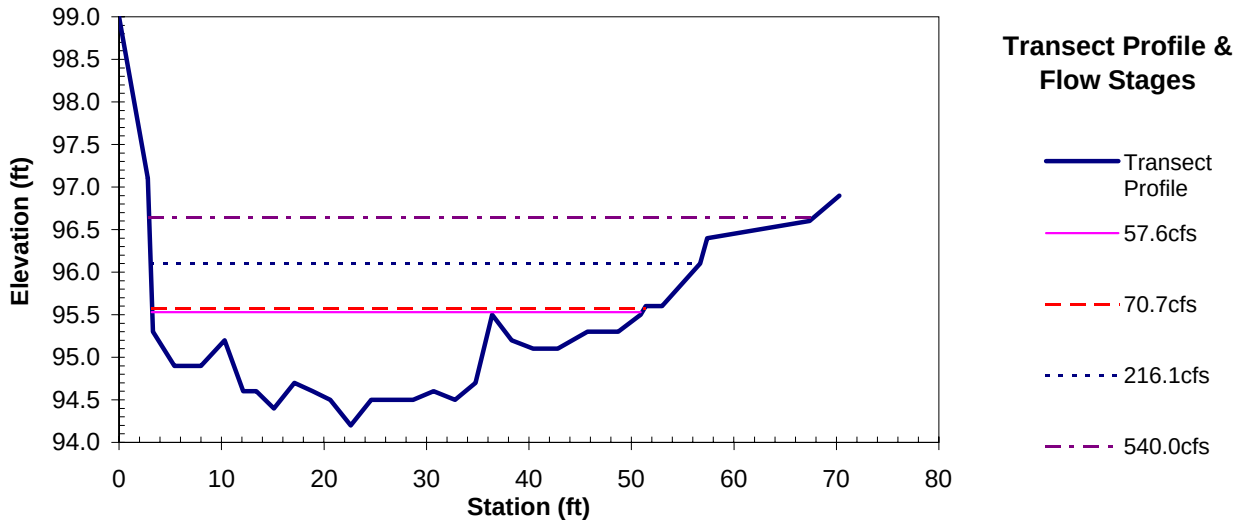


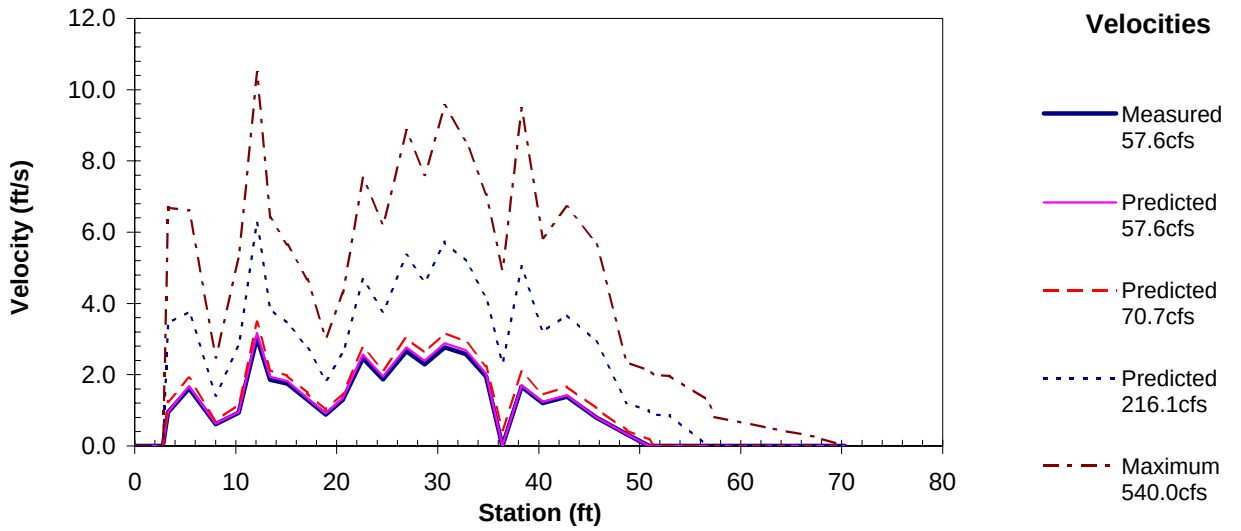


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
04-UTC-RF3 - Riffle - TRANSECT 1 - 8/16/2005







Transect hydraulic summary plots

IFG4 Data Deck

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QARD  30.0
QARD  40.0
QARD  50.0
QARD  57.6
QARD  60.0
QARD  70.7
QARD  80.0
QARD  90.0
QARD 100.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 216.1
QARD 220.0
QARD 240.0
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QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 390.0
QARD 420.0
QARD 450.0
QARD 480.0
QARD 510.0
QARD 540.0
XSEC  1000     1000. 1.0     94.28    .00788
      1000   .099.01  2.897.12  3.395.33  5.494.93  8.094.93 10.395.23
      1000 12.194.62 13.494.62 15.194.43 17.194.73 18.994.62 20.694.52
      1000 22.694.23 24.694.52 26.994.52 28.794.52 30.794.62 32.894.52
      1000 34.894.73 36.495.52 38.395.23 40.495.12 42.895.12 45.795.33
      1000 48.795.33 50.995.52 51.495.62 53.095.63 56.796.11 57.496.37
      1000 62.496.50 67.496.59 70.396.88
NS    1000      22.9      22.9      64.6      53.7      67.6      75.9
NS    1000      64.7      76.6      65.6      65.8      75.6      75.8
NS    1000      75.6      65.7      65.7      65.6      65.6      64.6
NS    1000      74.6      77.9      45.6      45.8      45.6      65.8
NS    1000      65.8      52.6      52.6      52.6      22.9      22.9
NS    1000      22.9      22.9      22.9
WSL   1000     95.26     95.31     95.40     95.47     95.52     95.53
WSL   1000     95.60     95.64     95.69     95.73     95.81     95.88
WSL   1000     95.94     96.00     96.05     96.09     96.10     96.15
```

IFG4 Data Deck (continued)

```
WSL   1000     96.19     96.24     96.27     96.31     96.35     96.38
WSL   1000     96.43     96.48     96.52     96.56     96.60     96.64
CAL1  1000     95.53      57.6
VEL1  1000           0.94 1.62 0.61 0.93 3.04 1.86 1.75 1.29 0.88 1.29
VEL1  1000 2.46 1.87 2.66 2.29 2.77 2.58 1.95 0.00 1.66 1.20 1.38 0.80
VEL1  1000 0.33 0.00
CAL2  1000     96.10     216.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.58      70.7
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 04-UTC-RN3

Habitat Type: Run

River Kilometer: 34.76

Stream: **Upper Talarik Creek**
Reach: **D**
Site: **04-UTC-RN3**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1	7/20/2005	99.77	99.29	100.25
2	8/16/2005	99.77	99.29	100.25
3	9/7/2005	99.77	99.29	100.25
4	7/24/2006	99.77	99.41	100.39
5	4/6/2007	99.77	99.34	100.52

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) No relative elevation changes between any of two pins in 2005, indicating all control pins were stable in that period.
(c) Pins were disturbed in 2006. The relative elevation showed HP and TP elevations increased 0.12ft-0.14ft, indicating BM sunk that amount in 2006 from 2005. Therefore, the HI for WSE survey was lowered 0.12ft to correct to the 2005 BM datum.
(c) Pins were further disturbed in 2007 with inconsistent amount for HP and TP. We assumed HP was stable (because it had less movement than TP), and BM moved up 0.07ft (=99.41-99.34) from 2006. As the result, the HI for the WSE survey was reduced 0.05ft (=0.12ft-0.07ft or 99.34ft-99.24ft) to correct to the 2005 BM datum.

calibration notes

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/20/2005	97.63
8/16/2005	97.46
9/7/2005	98.27
7/24/2006	97.58
4/6/2007	97.30

The 7/24/06 and 4/6/07 WSEs have reflected a 0.12ft and a 0.05ft, respectively, corrections.

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/20/2005	
8/16/2005	71.3
9/7/2005	238.3
7/24/2006	94.1
4/6/2007	56.0

No flow was measured on 7/20/05 when only substrate was surveyed.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/20/2005	0.154%	104.0
8/16/2005	0.202%	148.7
9/7/2005	0.236%	169.2
7/24/2006	0.125%	104.0
4/6/2007	0.267%	191.0

The slope S=0.202% of 8/16/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/20/2005	95.38
8/16/2005	95.36
9/7/2005	95.27
7/24/2006	95.18
4/6/2007	95.20
max Invert	95.36
SZF	94.28

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) Invert of 7/20/05 survey was not used to determine SZF due to no flow measured.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1	7/20/2005		97.63			
2	8/16/2005	71.3	97.46	97.44	-0.02	IFG4
3	9/7/2005	238.3	98.27	98.27	0.00	IFG4
4	7/24/2006	94.1	97.58	97.61	0.03	IFG4
5	4/6/2007	56.0	97.30	97.31	0.01	IFG4

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured in 7/20/05 trip.
(d) Field notes of 4/6/07 indicated ice had no contact with water, and thus the measured data was included for the hydraulic modeling. No photos were available for the trip.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 56.0cfs, 71.3cfs, 94.1cfs, and 238.3cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

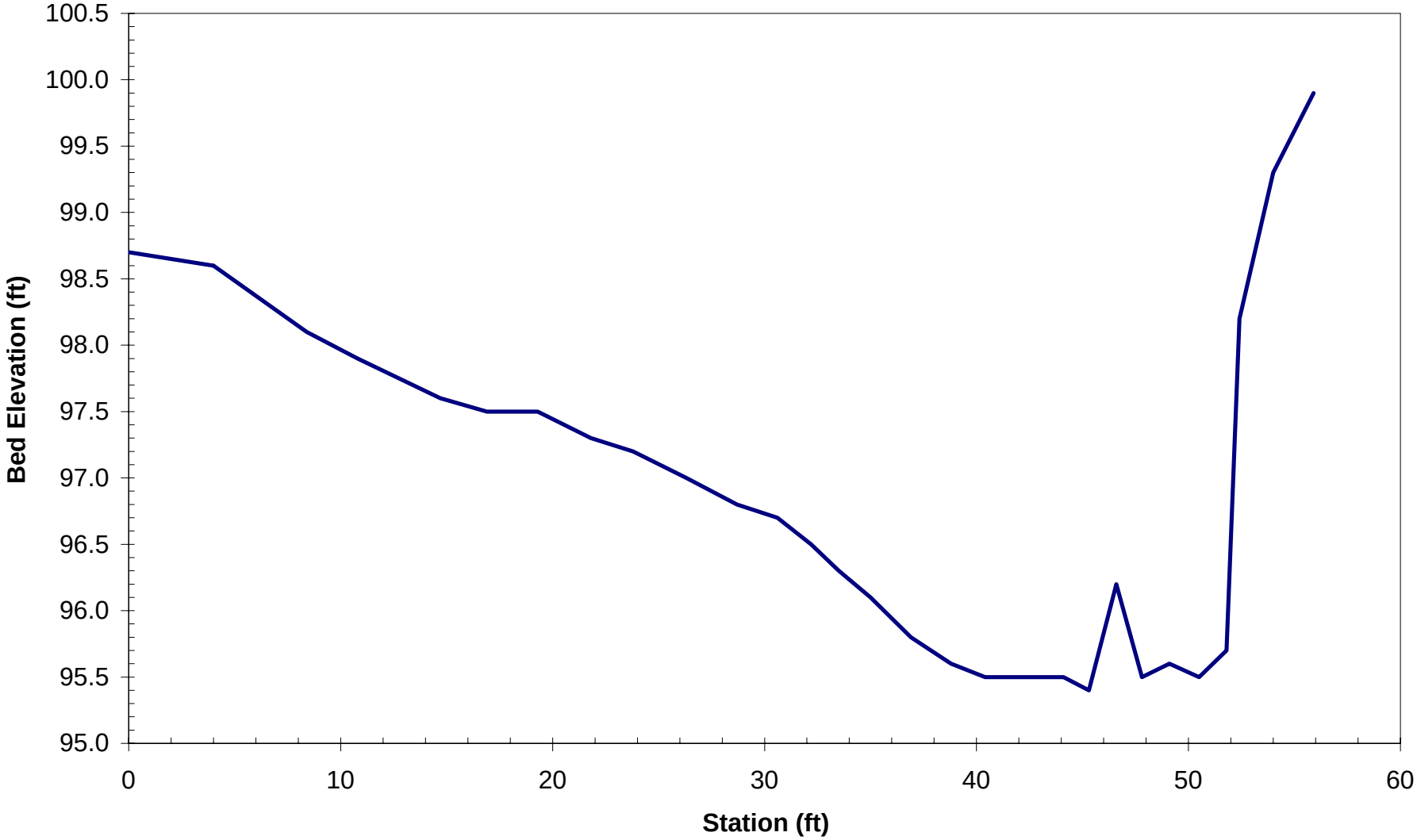
Survey Date	Q (cfs)	WUA (Y/N)
7/20/2005		
8/16/2005	71.3	Y
9/7/2005	238.3	Y
7/24/2006	94.1	Y
4/6/2007	56.0	Y

(4) Hydraulic Calibration Results:

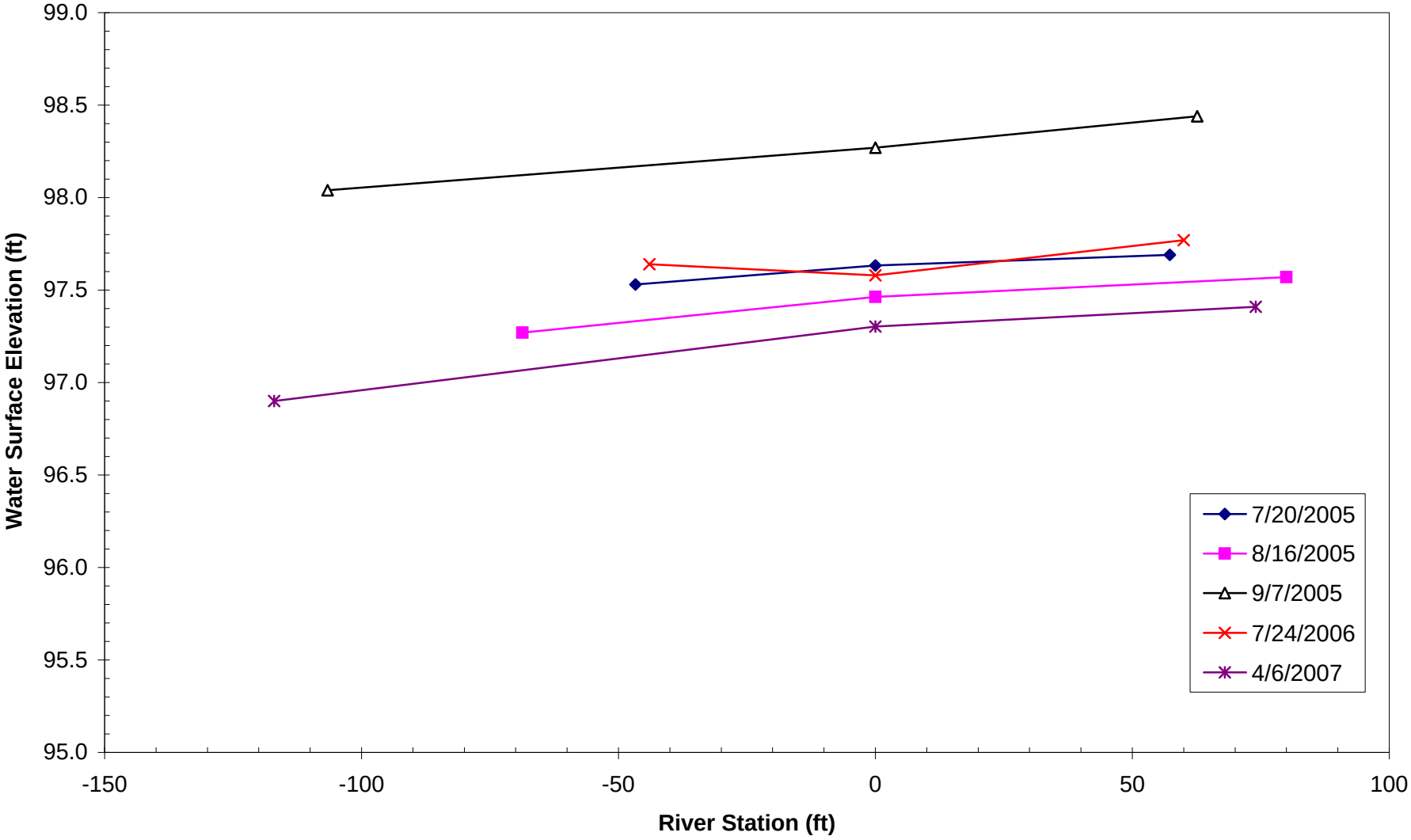
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

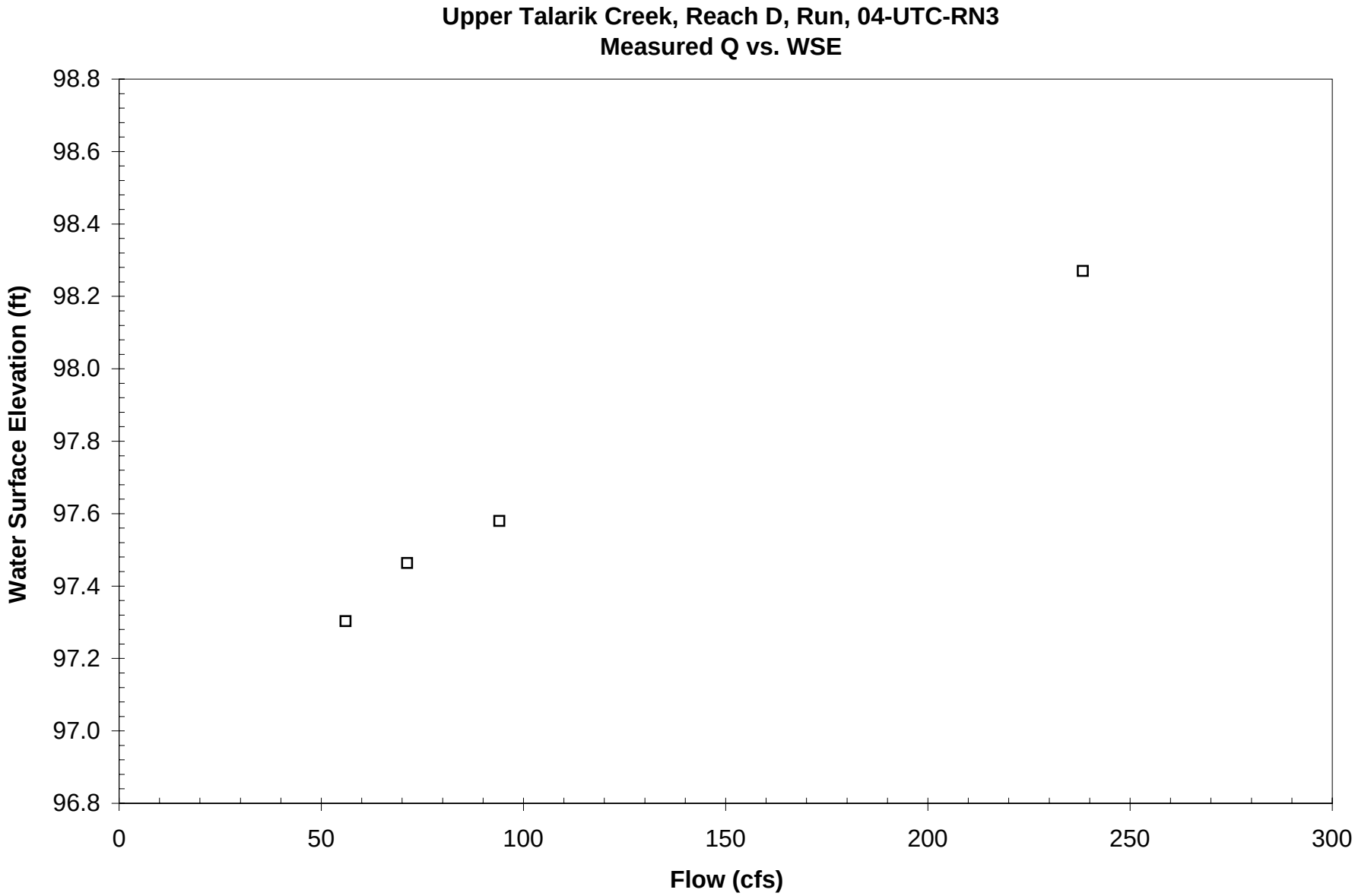
calibration notes

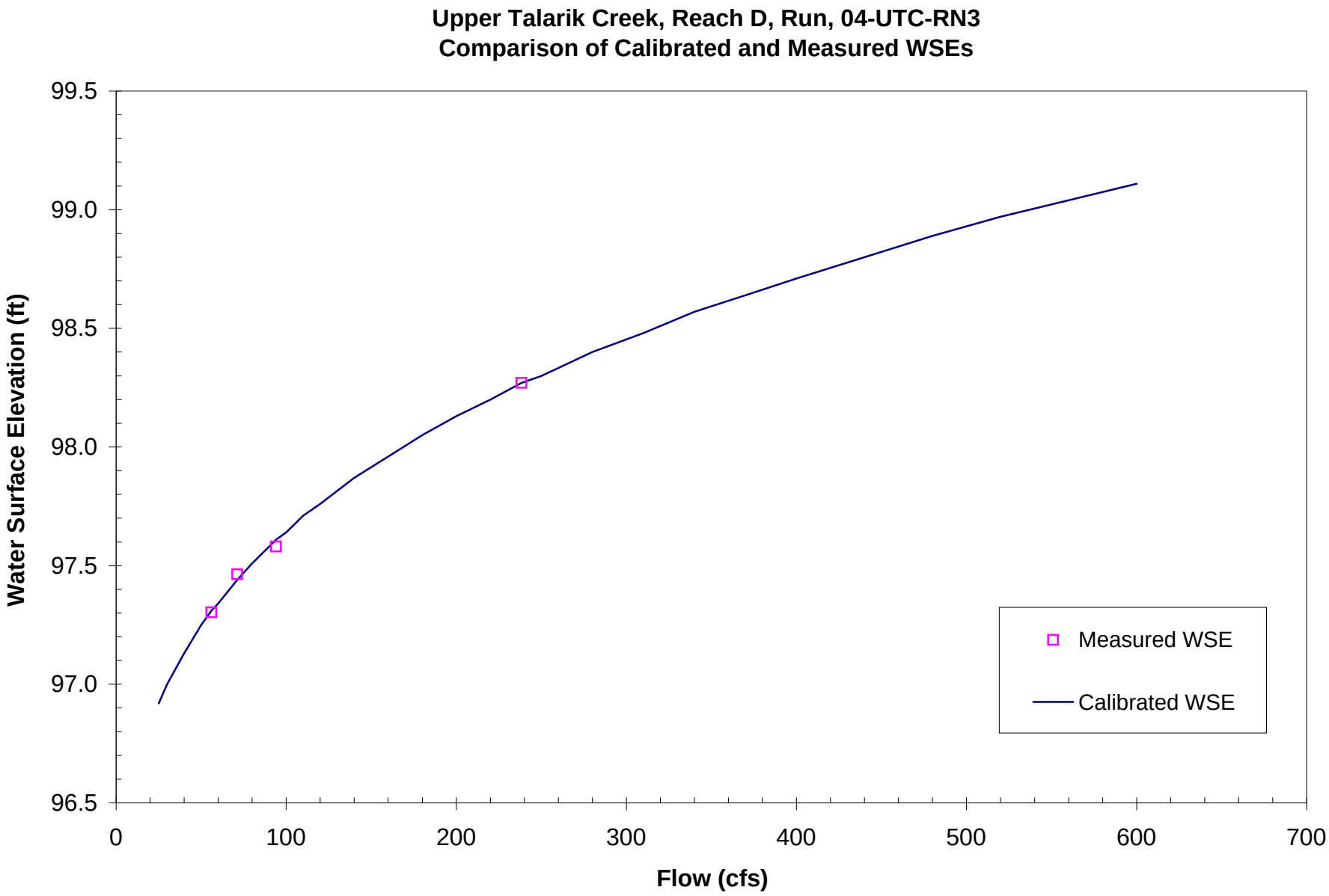
Upper Talarik Creek, Reach D, Run, 04-UTC-RN3
Measured Transect Profile



Upper Talarik Creek, Reach D, Run, 04-UTC-RN3
Longitudinal Water surface Elevation Profiles



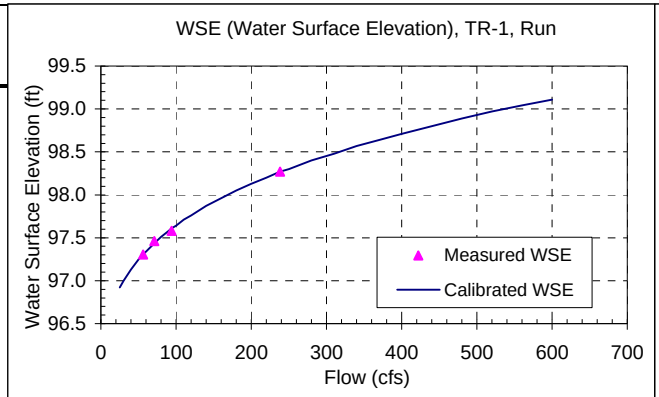

Upper Talarik Creek, Reach D, Run, 04-UTC-RN3
Measured Q vs. WSE
Water Surface Elevation (ft)
98.8
98.6
98.4
98.2
98.0
97.8
97.6
97.4
97.2
97.0
96.8
0
50
100
150
200
250
300
Flow (cfs)

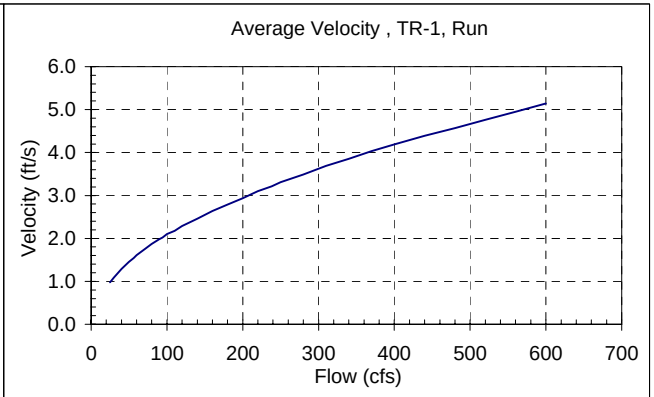

Upper Talarik Creek, Reach D, Run, 04-UTC-RN3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
0
100
200
300
400
500
600
700
Flow (cfs)
Measured WSE
Calibrated WSE

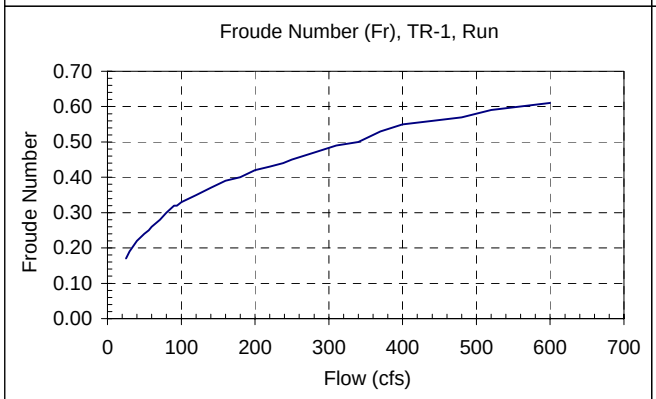
Stream: Upper Talarik Creek
Site Name: 04-UTC-RN3
Date: 8/16/2005
Calibration Flow: Q(8/16/2005)

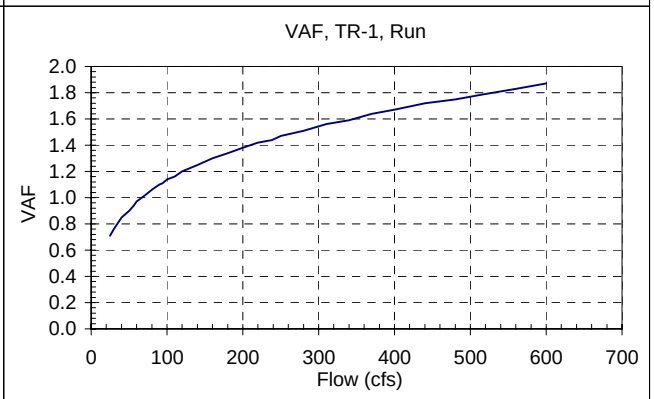
Reach: D
Habitat: Run
Site #: 3
Transect: 1

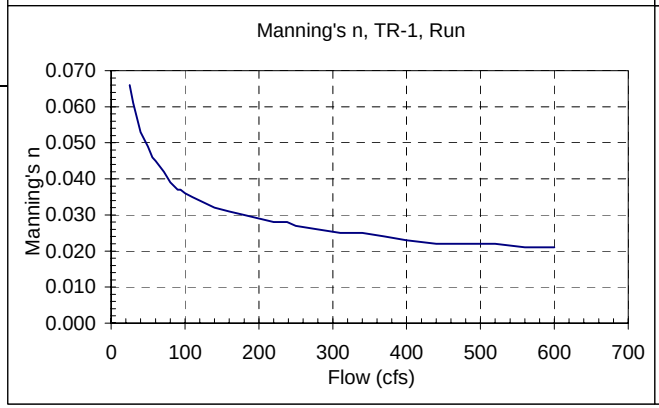
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	96.92	0.17	0.98	0.71	0.066	26.8
30	97.00	0.19	1.09	0.76	0.061	27.9
40	97.13	0.22	1.29	0.85	0.053	29.7
50	97.25	0.24	1.45	0.90	0.049	32.0
56	97.31	0.25	1.54	0.94	0.046	32.9
60	97.34	0.26	1.61	0.97	0.045	33.3
71.3	97.44	0.28	1.76	1.02	0.042	34.6
80	97.51	0.30	1.87	1.06	0.039	38.1
90	97.58	0.32	1.98	1.10	0.037	39.3
94.1	97.61	0.32	2.02	1.11	0.037	39.8
100	97.64	0.33	2.10	1.14	0.036	40.2
110	97.71	0.34	2.18	1.16	0.035	41.2
120	97.76	0.35	2.29	1.20	0.034	42.0
140	97.87	0.37	2.46	1.25	0.032	43.6
160	97.96	0.39	2.64	1.30	0.031	44.6
180	98.05	0.40	2.79	1.34	0.030	45.6
200	98.13	0.42	2.94	1.38	0.029	46.4
220	98.20	0.43	3.10	1.42	0.028	47.2
238.3	98.27	0.44	3.21	1.44	0.028	48.0
250	98.30	0.45	3.31	1.47	0.027	48.3
280	98.40	0.47	3.49	1.51	0.026	49.5
310	98.48	0.49	3.69	1.56	0.025	50.4
340	98.57	0.50	3.85	1.59	0.025	51.4
370	98.64	0.53	4.03	1.64	0.024	54.5
400	98.71	0.55	4.19	1.67	0.023	55.9
440	98.80	0.56	4.39	1.72	0.022	56.1
480	98.89	0.57	4.57	1.75	0.022	56.2
520	98.97	0.59	4.76	1.79	0.022	56.4
560	99.04	0.60	4.95	1.83	0.021	56.5
600	99.11	0.61	5.14	1.87	0.021	56.6

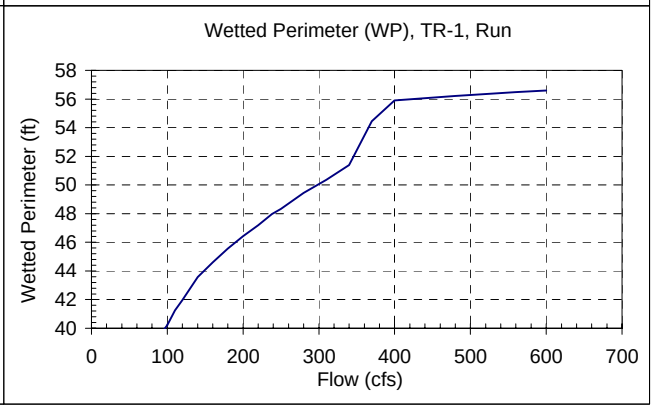




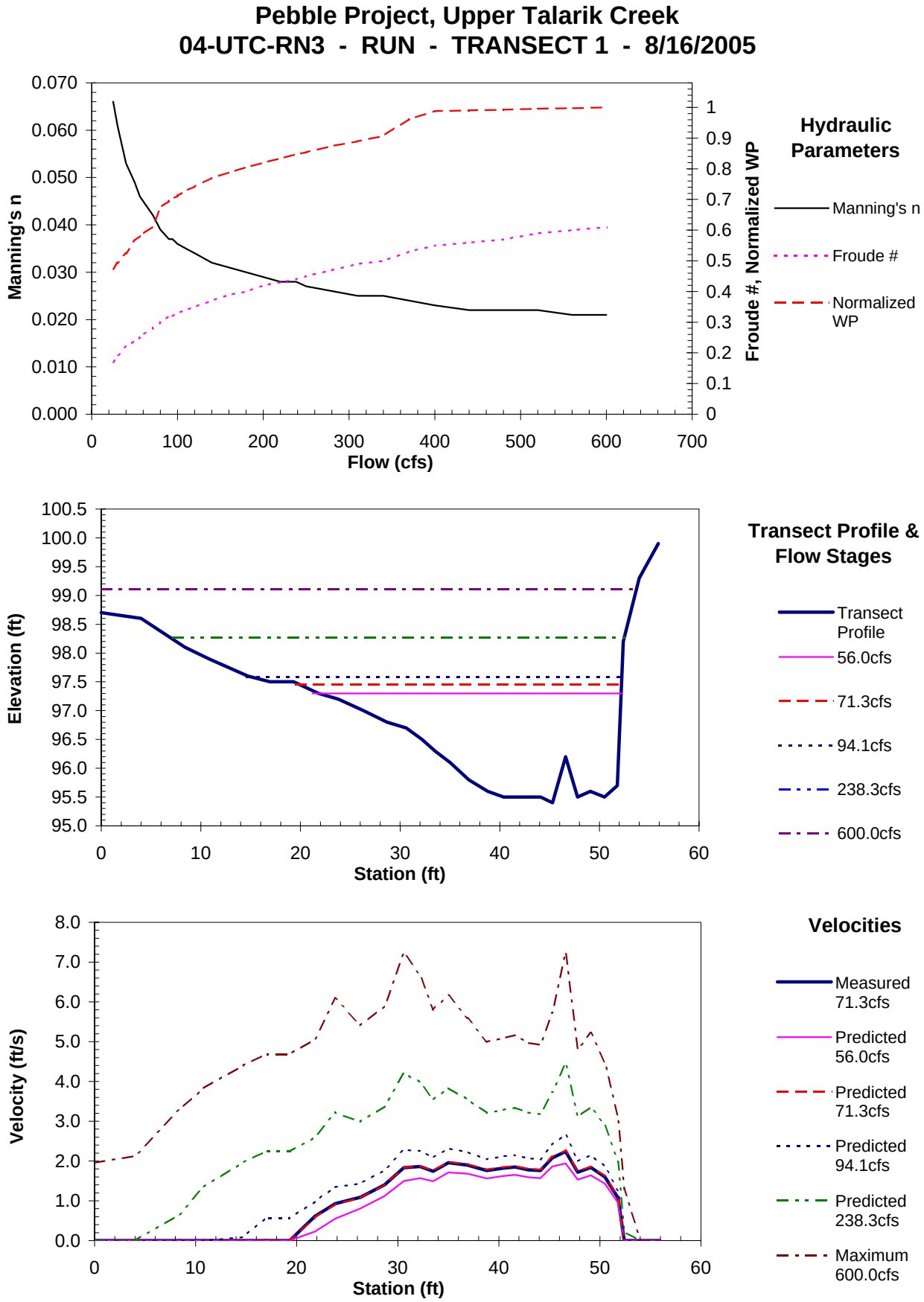








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-UTC-RN3  08/16/05
RUN                          0805Q                                      TRANSECT 1
IOC       1101100100001000101000
QARD  25.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  56.0
QARD  60.0
QARD  71.3
QARD  80.0
QARD  90.0
QARD  94.1
QARD 100.0
QARD 110.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 238.3
QARD 250.0
QARD 280.0
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
XSEC  1000     1000. 1.0     95.36    .00202
      1000   .098.66  4.098.60  8.498.14 10.897.89 14.797.60 16.997.46
      1000 17.197.46 19.397.46 21.897.26 23.897.16 26.396.96 28.796.76
      1000 30.696.66 32.296.46 33.596.26 35.096.06 36.995.76 38.895.56
      1000 40.495.46 41.695.46 42.995.46 44.195.46 45.395.36 46.696.16
      1000 47.895.46 49.195.56 50.595.46 51.895.66 52.498.17 54.099.32
      1000 55.999.90
NS    1000      22.9      22.9      22.9      42.6      24.6      42.6
NS    1000      42.6      42.7      42.8      42.8      42.8      42.8
NS    1000      42.9      74.6      46.7      47.6      74.6      67.6
NS    1000      65.6      65.6      65.6      65.6      65.6      75.8
NS    1000      56.6      64.6      45.7      45.6      22.9      22.9
NS    1000      22.9
WSL   1000     96.92     97.00     97.13     97.25     97.31     97.34
WSL   1000     97.44     97.51     97.58     97.61     97.64     97.71
WSL   1000     97.76     97.87     97.96     98.05     98.13     98.20
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     98.27     98.30     98.40     98.48     98.57     98.64
WSL   1000     98.71     98.80     98.89     98.97     99.04     99.11
CAL1  1000     97.46      71.3
VEL1  1000                          0.00 0.00 0.00 0.61 0.93 1.09 1.40
VEL1  1000 1.83 1.86 1.74 1.96 1.90 1.76 1.82 1.85 1.78 1.76 2.08 2.24
VEL1  1000 1.72 1.84 1.60 1.07
CAL2  1000     98.27     238.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.58      94.1
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     97.30      56.0
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-D

Site/TR: 05-UTC2-RN2

Habitat Type: Run

River Kilometer: 35.64

Stream: **Upper Talarik Creek**
Reach: **D**
Site Name: **05-UTC2-RN2**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/16/2005	1	100.00	100.73	98.82
2nd	7/19/2005	2	100.00	100.72	98.81
3rd	8/16/2005	3	100.00	100.73	98.82
4th	7/24/2006	4	100.00	100.62	98.86
5th	4/6/2007	5	100.00	100.78	98.89

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between the control pins were within 0.01ft in 2005.
Small elevation changes indicated pins were stable in that period.
(c) The 2006 survey showed the pins were disturbed with inconsistent amount for HP and TP.
Not able to determine the amount of movement of the survey datum from the survey results.
(d) Level loop results of 2007 showed HP and TP were 0.05ft to 0.07ft, respectively, higher than the 2005 elevations, suggesting they were relatively more stable than BM between 2005 and 2007.
(e) From the relative elevation changes among the pins, it was estimated that BM was elevated 0.04ft in 2006 and 0.07ft in 2007, both from the initial datum set up in 2005, with the assumption that TP was stable during the 2-year period.

calibration notes

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/16/2005	96.96
7/19/2005	96.82
8/16/2005	96.74
7/24/2006	96.83
4/6/2007	96.61

The WSEs in the above table have reflected the datum corrections of 0.04ft and 0.07ft, respectively, to the 2006 and 2007 surveys.

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/16/2005	120.5
7/19/2005	
8/16/2005	68.3
7/24/2006	91.3
4/6/2007	46.8

No flow was measured on 7/19/05 when substrate was surveyed.
Photos of 4/6/08 showed ice hanging over the right side of the channel bank and the transect profile survey indicated the water column near the right shore was occupied by ice. It appeared hydraulics were affected by ice and thus not used in modeling.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/16/2005	0.123%	146.6
7/19/2005	0.130%	146.0
8/16/2005	0.107%	215.3
7/24/2006	0.103%	126.0
4/6/2007	0.104%	182.6

The slope S=0.123% of 6/16/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/16/2005	95.06
7/19/2005	
8/16/2005	95.04
7/24/2006	95.13
4/6/2007	95.06
max Invert	95.13
SZF	95.33

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/19/05.
(4) Invert of 4/6/07 was not used to determine SZF because of anchor ice in the channel near the right water edge.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/16/2005	120.5	96.96	96.95	-0.01	IFG4
2nd	7/19/2005		96.82			
3rd	8/16/2005	68.3	96.74	96.73	-0.01	IFG4
4th	7/24/2006	91.3	96.83	96.84	0.01	IFG4
5th	4/6/2007	46.8	96.61			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No discharge was measured during the 7/19\/05 site visit.
(d) Photos of 4/6/07 showed the right side of the channel was covered in ice.
Hydraulics were impacted by the ice and thus not used for modeling.

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 68.3cfs, 91.3cfs, and 120.5cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/16/2005	120.5	Y
7/19/2005		
8/16/2005	68.3	Y
7/24/2006	91.3	Y
4/6/2007	46.8	

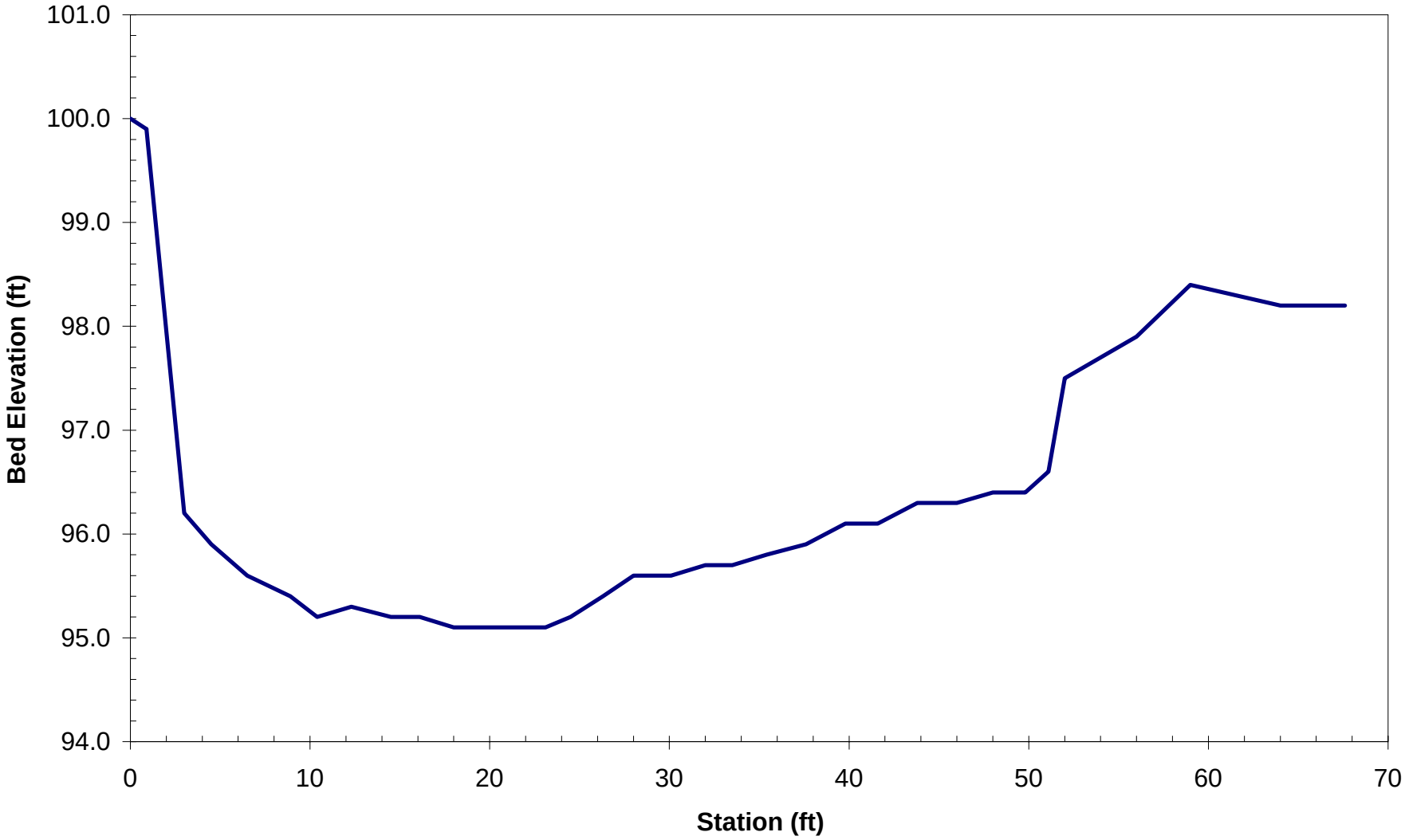
calibration notes

(4) Hydraulic Calibration Results:

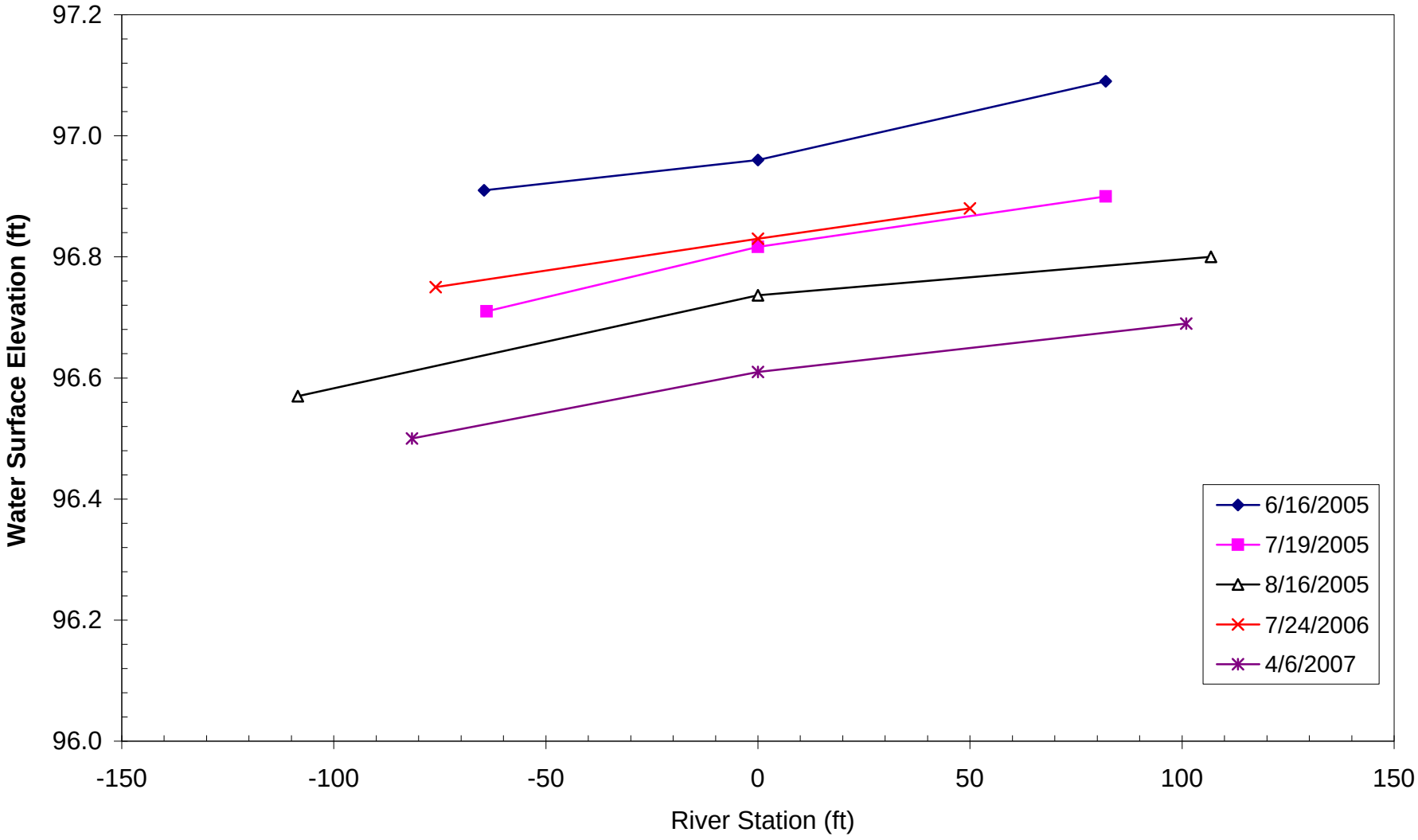
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

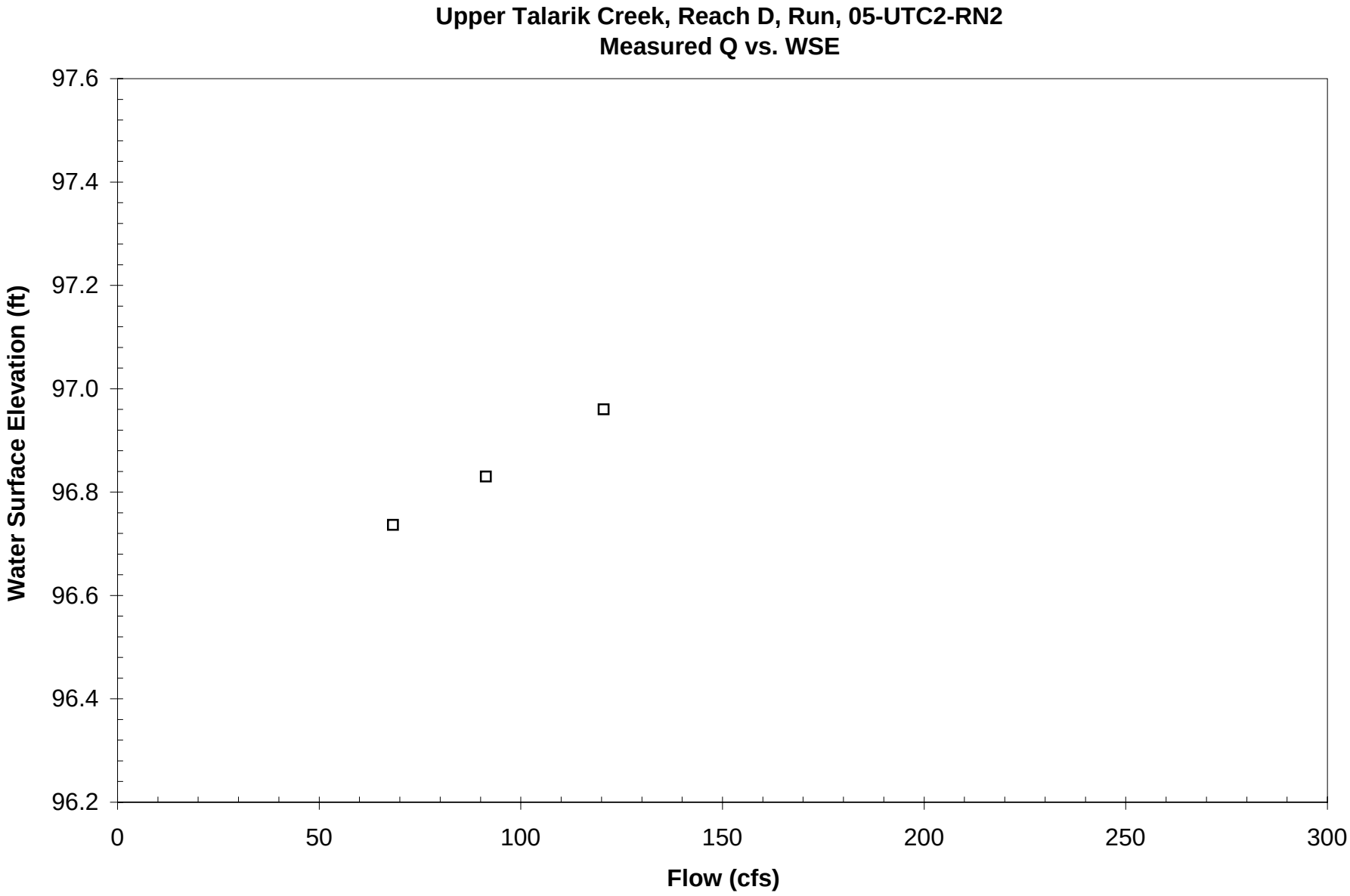
calibration notes

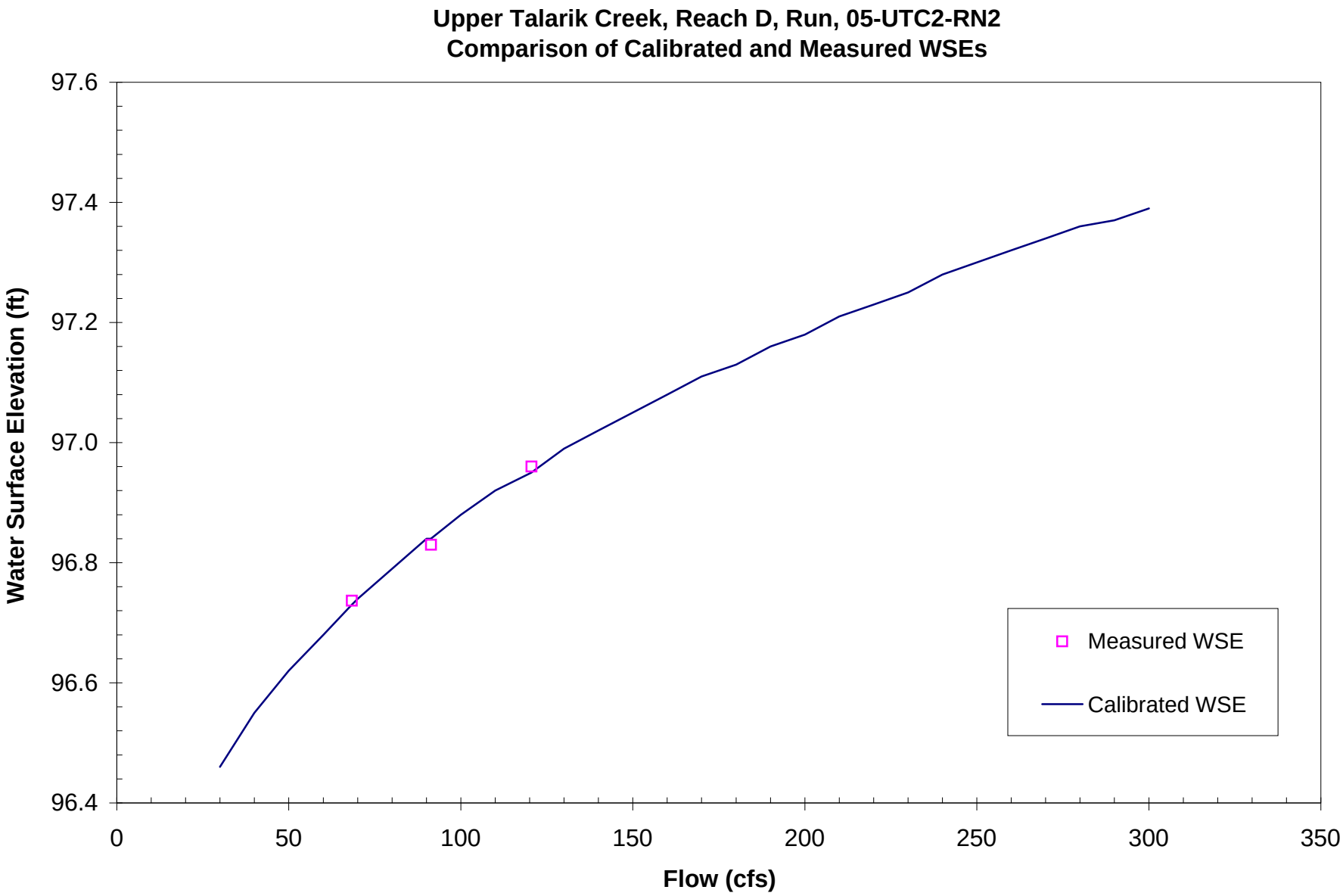
Upper Talarik Creek, Reach D, Run, 05-UTC2-RN2
Measured Transect Pofile



Upper Talarik Creek, Reach D, Run, 05-UTC2-RN2
Longitudinal Water Surface Elevation Profiles



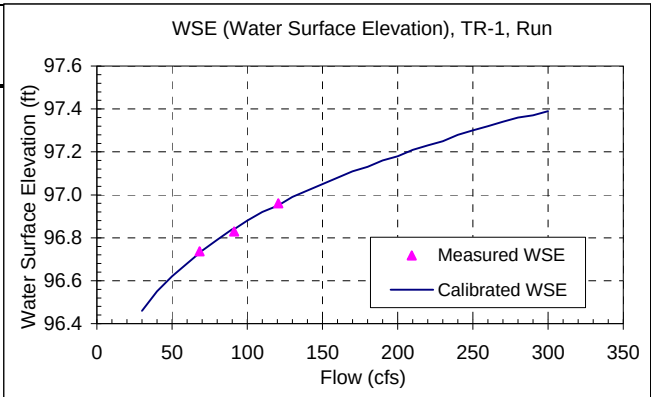

Upper Talarik Creek, Reach D, Run, 05-UTC2-RN2
Measured Q vs. WSE
Water Surface Elevation (ft)
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
50
100
150
200
250
300
Flow (cfs)

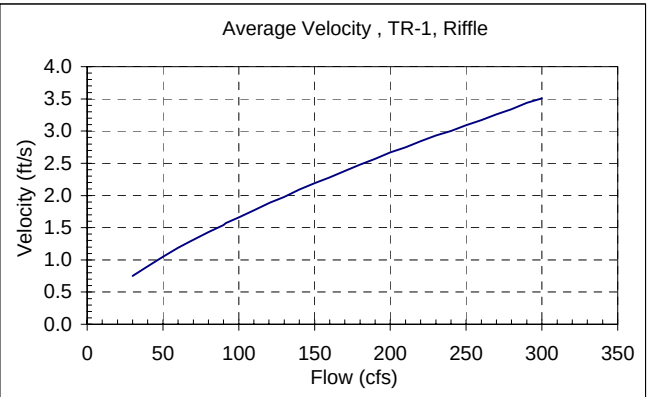

Upper Talarik Creek, Reach D, Run, 05-UTC2-RN2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.6
97.4
97.2
97.0
96.8
96.6
96.4
0
50
100
150
200
250
300
350
Flow (cfs)
Measured WSE
Calibrated WSE

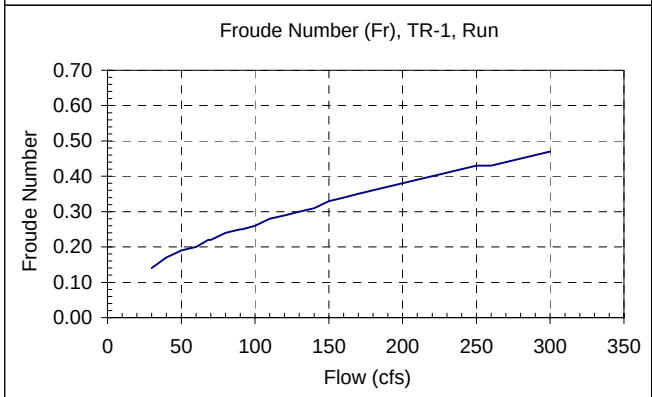
Stream: Upper Talarik Creek
Site Name: 05-UTC2-RN2
Date: 6/16/2005
Calibration Flow: Q(6/16/2005)

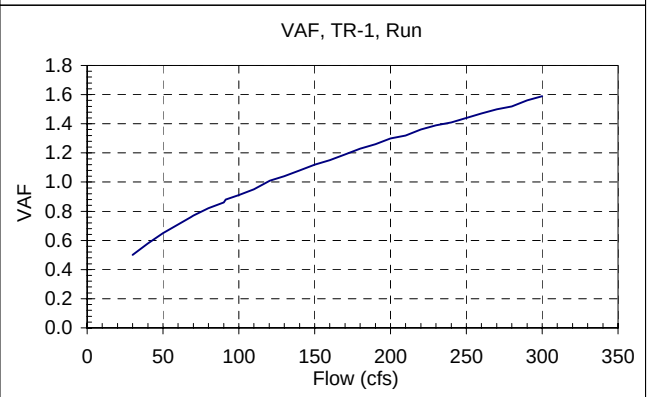
Reach: D
Habitat: Run
Site #: 2
Transect: 1

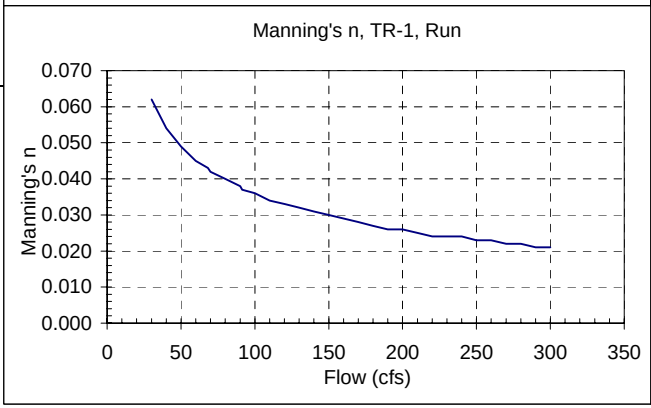
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	96.46	0.14	0.75	0.50	0.062	47.4
40	96.55	0.17	0.90	0.58	0.054	48.7
50	96.62	0.19	1.05	0.65	0.049	48.9
60	96.68	0.20	1.19	0.71	0.045	49.0
68.3	96.73	0.22	1.29	0.76	0.043	49.2
70	96.74	0.22	1.31	0.77	0.042	49.2
80	96.79	0.24	1.43	0.82	0.040	49.3
90	96.84	0.25	1.54	0.86	0.038	49.4
91.3	96.84	0.25	1.57	0.88	0.037	49.4
100	96.88	0.26	1.66	0.91	0.036	49.5
110	96.92	0.28	1.77	0.95	0.034	49.6
120.5	96.95	0.29	1.89	1.01	0.033	49.7
130	96.99	0.30	1.98	1.04	0.032	49.8
140	97.02	0.31	2.09	1.08	0.031	49.9
150	97.05	0.33	2.19	1.12	0.030	50.0
160	97.08	0.34	2.28	1.15	0.029	50.0
170	97.11	0.35	2.38	1.19	0.028	50.1
180	97.13	0.36	2.48	1.23	0.027	50.2
190	97.16	0.37	2.57	1.26	0.026	50.2
200	97.18	0.38	2.67	1.30	0.026	50.3
210	97.21	0.39	2.75	1.32	0.025	50.4
220	97.23	0.40	2.84	1.36	0.024	50.4
230	97.25	0.41	2.93	1.39	0.024	50.5
240	97.28	0.42	3.00	1.41	0.024	50.5
250	97.30	0.43	3.09	1.44	0.023	50.6
260	97.32	0.43	3.17	1.47	0.023	50.6
270	97.34	0.44	3.26	1.50	0.022	50.7
280	97.36	0.45	3.34	1.52	0.022	50.7
290	97.37	0.46	3.44	1.56	0.021	50.8
300	97.39	0.47	3.51	1.59	0.021	50.8

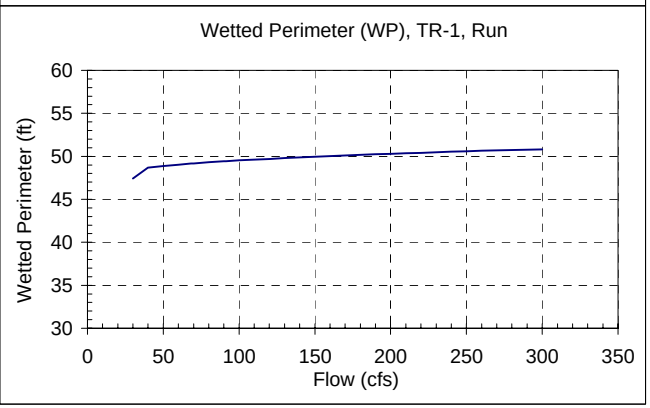




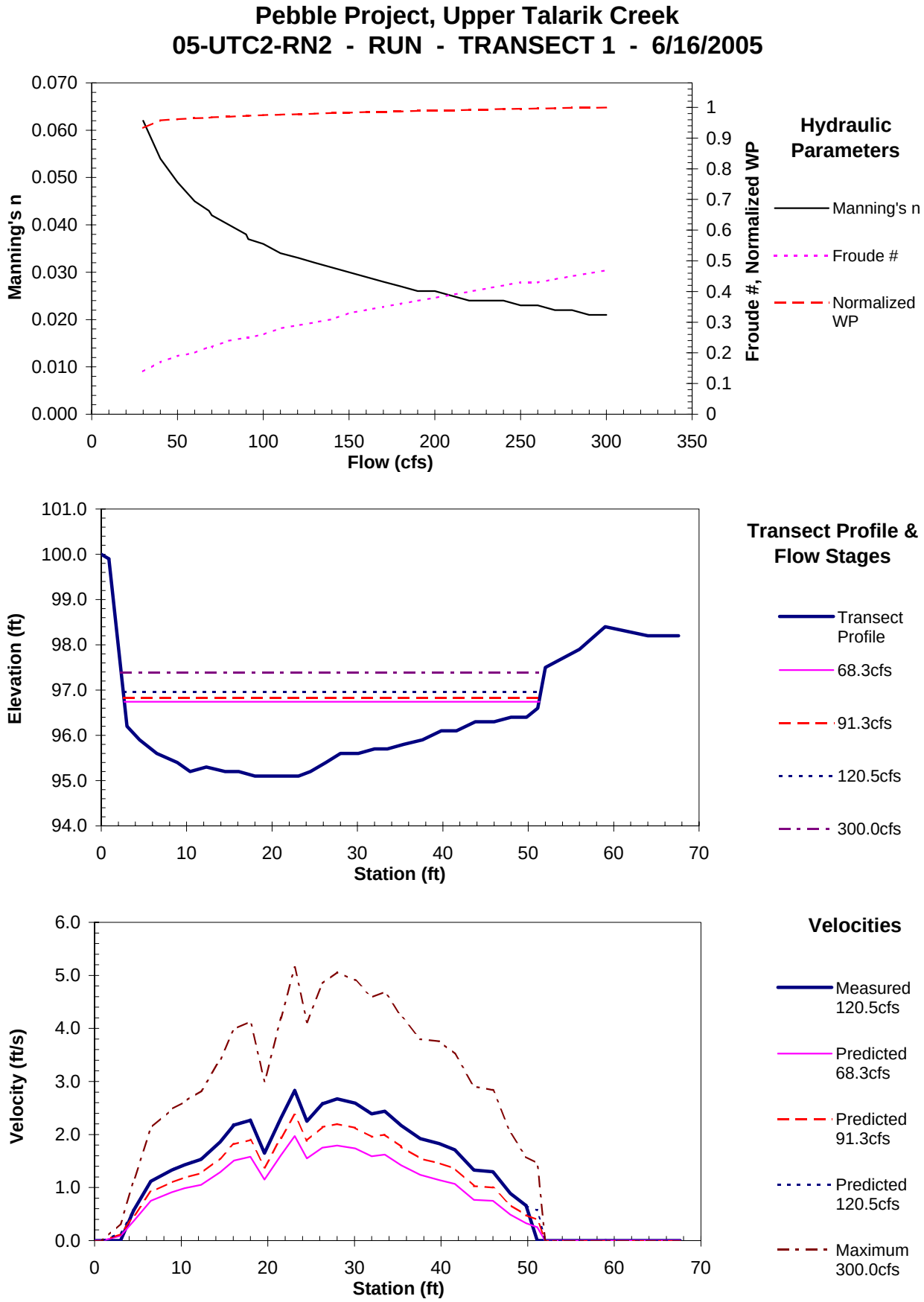








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC2-RN2  06/16/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  30.0
QARD  40.0
QARD  50.0
QARD  60.0
QARD  68.3
QARD  70.0
QARD  80.0
QARD  90.0
QARD  91.3
QARD 100.0
QARD 110.0
QARD 120.5
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 260.0
QARD 270.0
QARD 280.0
QARD 290.0
QARD 300.0
XSEC  1000     1000. 1.0     95.33    .00123
      1000   .0100.0   .999.87  3.096.16  4.595.86  6.595.55  8.995.36
      1000 10.495.16 12.395.26 14.595.16 16.195.16 18.095.05 19.695.05
      1000 21.595.05 23.195.05 24.595.16 26.395.45 28.095.55 30.195.55
      1000 32.095.66 33.595.66 35.495.76 37.695.86 39.896.05 41.696.05
      1000 43.896.26 46.096.26 48.096.36 49.896.45 51.196.55 52.097.50
      1000 56.097.91 59.098.38 64.098.23 67.698.25
NS    1000      22.9      22.9 0.3  25.8      54.6      56.7      56.8
NS    1000      54.8      54.9      54.8      54.7      54.9      45.7
NS    1000      54.6      43.8      43.8      43.8      42.8      43.7
NS    1000      42.8      45.6      42.6      42.6      42.7      42.8
NS    1000      42.6      42.6      32.6      23.8      23.9      22.9
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     96.46     96.55     96.62     96.68     96.73     96.74
WSL   1000     96.79     96.84     96.84     96.88     96.92     96.95
WSL   1000     96.99     97.02     97.05     97.08     97.11     97.13
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     97.16     97.18     97.21     97.23     97.25     97.28
WSL   1000     97.30     97.32     97.34     97.36     97.37     97.39
CAL1  1000     96.96     120.5
VEL1  1000           0.00 0.57 1.12 1.33 1.43 1.53 1.86 2.18 2.27 1.65
VEL1  1000 2.31 2.83 2.25 2.58 2.67 2.59 2.39 2.44 2.17 1.92 1.83 1.71
VEL1  1000 1.33 1.30 0.89 0.66 0.00
CAL2  1000     96.74      68.3
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.83      91.3
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek

Reach: UT-E

UT-E Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
05-UTC2-RF2	36.70	113.2	66.8	110.3		95.78	95.51	95.76		0.00	0.03	0.01		MANSQ
04-UTC-IC1	37.91	63.7	306.2	85.8		95.74	96.69	95.87		0.00	0.00	0.01		IFG4
08-UTC2-MS1-TR1	41.66	223.9	110.6	90.2		96.73	96.07	95.91		0.00	0.00	0.02		MANSQ
08-UTC2-MS1-TR2	41.73	223.9	110.6	90.2		96.98	96.40	96.21		0.00	-0.02	0.04		WSP
08-UTC2-MS1-TR3	41.76	223.9	110.6	90.2		97.28	96.81	96.69		0.00	0.01	0.03		WSP
08-UTC2-MS1-TR4	41.83	223.9	110.6	90.2		97.96	97.43	97.31		-0.04	0.00	0.00		WSP
08-UTC2-MS1-TR5	41.88	223.9	110.6	90.2		98.27	97.74	97.58		0.03	-0.02	-0.01		WSP
08-UTC2-MS1-TR6	41.90	223.9	110.6	90.2		98.32	97.76	97.60		0.03	-0.02	-0.01		WSP
07-UTC2-RN5	42.71	73.8	44.8			94.99	94.66			0.00	0.00			IFG4
07-UTC2-RN4	44.63	73.4	44.5	348.2	117.0	95.62	95.43	97.15	95.92	0.04	-0.07	-0.06	0.08	IFG4

* RK is an abbreviation for River Kilometer

Stream: Upper Talarik Creek

Reach: UT-E

Site/TR: 05-UTC2-RF2

Habitat Type: Riffle

River Kilometer: 36.70

Stream: Upper Talarik Creek
Reach: E
Site Name: 05-UTC2-RF2
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/17/2005	1	100.00	99.01	99.12
2nd	7/20/2005	2	100.00	99.06	99.18
3rd	8/15/2005	3	100.00	99.03	99.15
4th	7/25/2006	4	100.00	99.08	99.15
5th	4/6/2007	5	100.00	99.15	99.26

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between the pins showed elevations of HP and TP continued to increase during the 2005-2007 period, which suggested BM continued to sink during that period.
(c) Based on the survey results, 0.05ft, 0.02ft, and 0.05ft were subtracted from the HI's for WSE surveys of 7/20/06, 8/15/05, and 7/25/06 site visits, respectively, to correct to the initial datum set up on 6/17/05.
(d) Photos of 4/6/07 trip showed the site was covered in thick ice and frozen water in the channel. Surveyed data of 4/6/07 were not used for modeling due to the ice impact.

Measured WSE:

There were three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/17/2005	95.78
7/20/2005	95.68
8/15/2005	95.51
7/25/2006	95.76
4/6/2007	95.70

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/17/2005	113.2
7/20/2005	
8/15/2005	66.8
7/25/2006	110.3
4/6/2007	46.1

No flow was measured on 7/20/05 when only substrate was surveyed.
Flow of 4/6/07 survey was affected by ice. Discharge may not be accurate.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/17/2005	0.996%	94.4
7/20/2005	1.039%	94.3
8/15/2005	0.904%	94.0
7/25/2006	1.198%	128.5
4/6/2007	1.070%	204.7

The slope S=0.996% of 6/17/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/17/2005	94.28
7/20/2005	
8/15/2005	94.31
7/25/2006	94.46
4/6/2007	94.60
max Invert	94.46
SZF	95.73

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/20/05.
(4) Invert of 4/6/07 was not used to determine SZF because of anchor ice in the channel that resulted in elevated bed elevation.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

IFG4 method was first used to calibrate the WSE, but resulted in hydraulics not able to be fully justified, and as the result, MANSQ with β=0.0 was tried and used for the WSE calibration.

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/17/2005	113.2	95.78	95.78	0.00	MANSQ
2nd	7/20/2005		95.68			
3rd	8/15/2005	66.8	95.51	95.54	0.03	MANSQ
4th	7/25/2006	110.3	95.76	95.77	0.01	MANSQ
5th	4/6/2007	46.1	95.70			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range.
(c) No discharge was measured during the 7/20\/05 site visit.
(d) Photos of 4/6/07 showed the entire channel was covered in ice.
Hydraulics were impacted by the ice and thus not included in hydraulic modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 66.8cfs, 110.3cfs, and 113.2cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/17/2005	113.2	Y
7/20/2005		
8/15/2005	66.8	Y
7/25/2006	110.3	
4/6/2007	46.1	

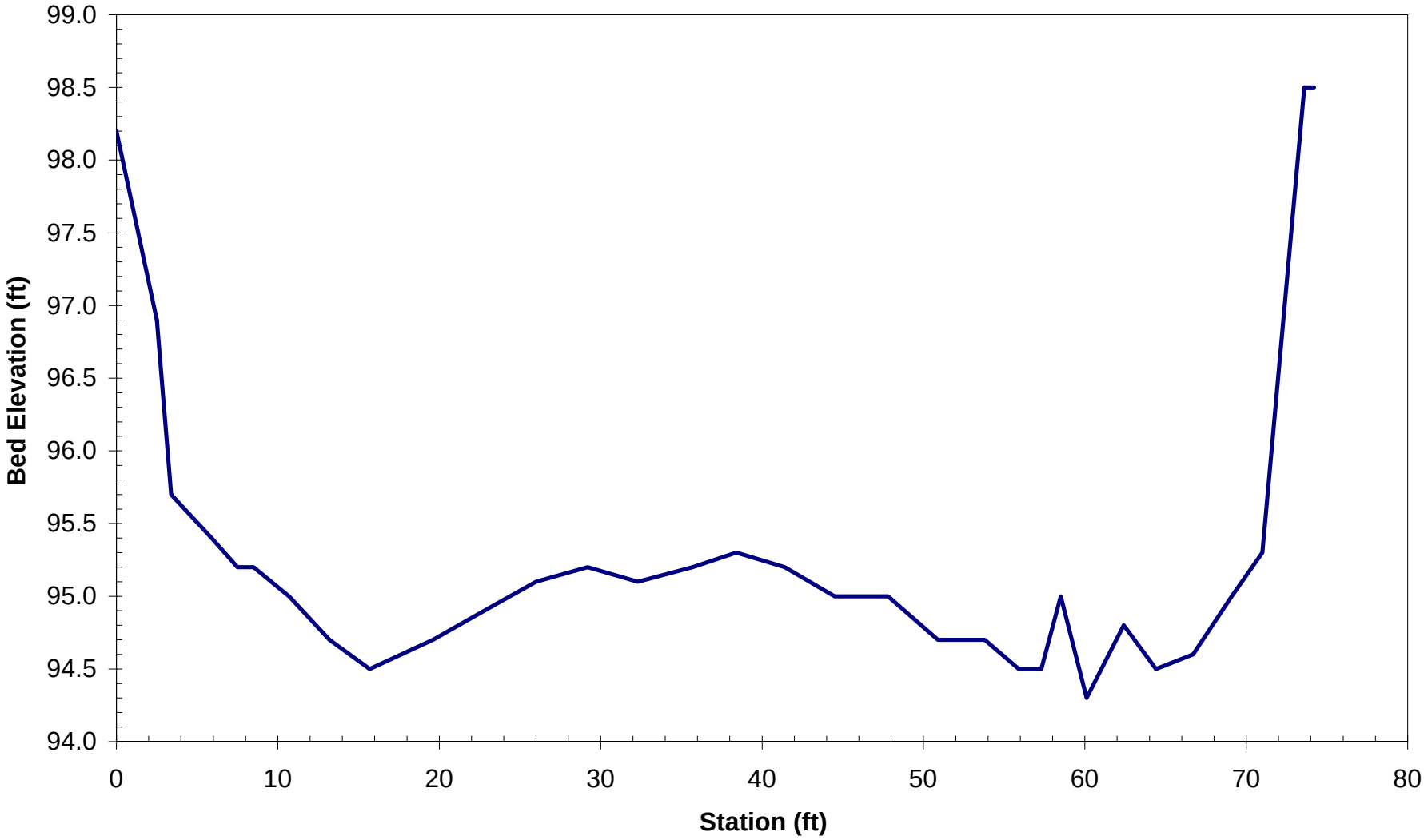
calibration notes

(4) Hydraulic Calibration Results:

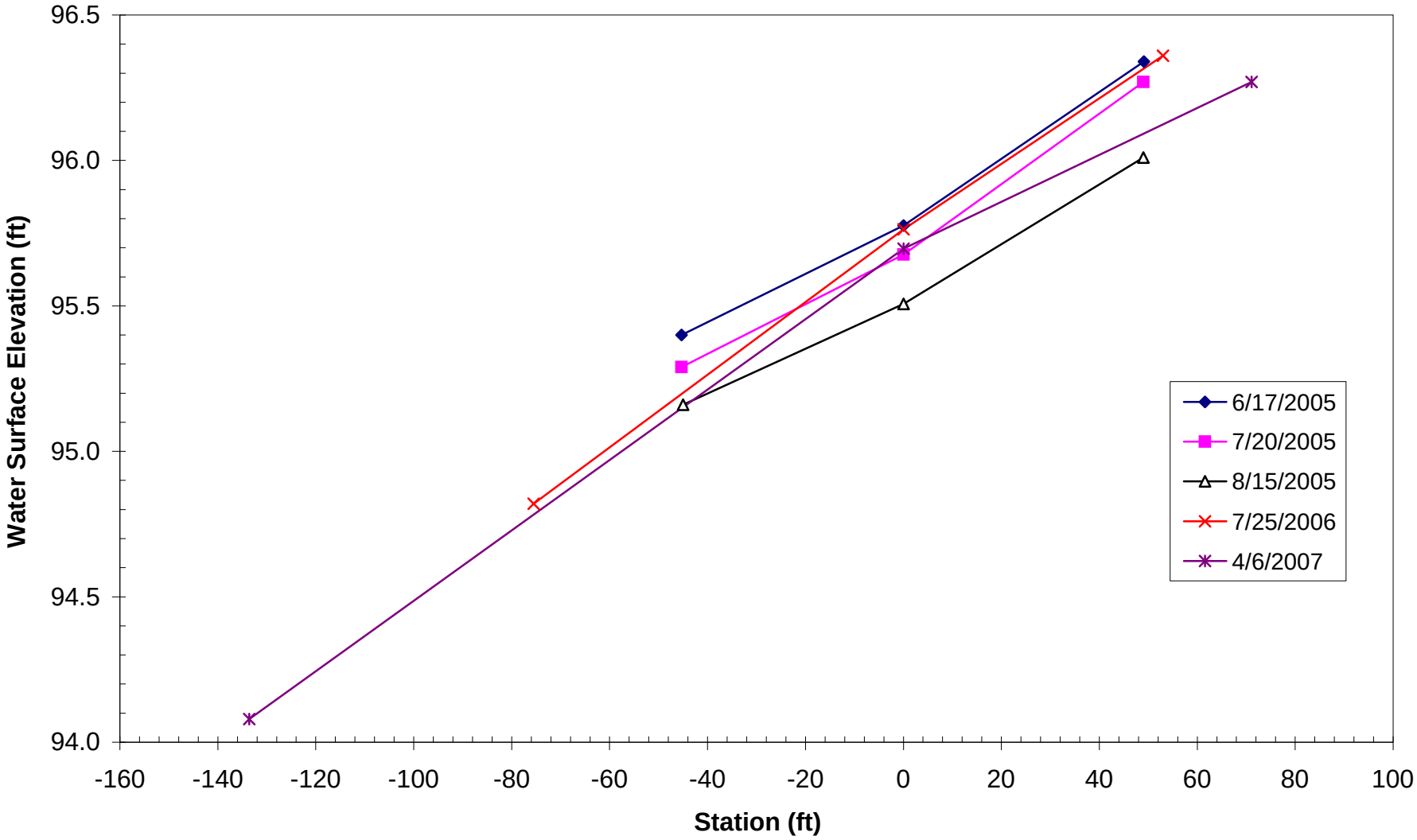
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

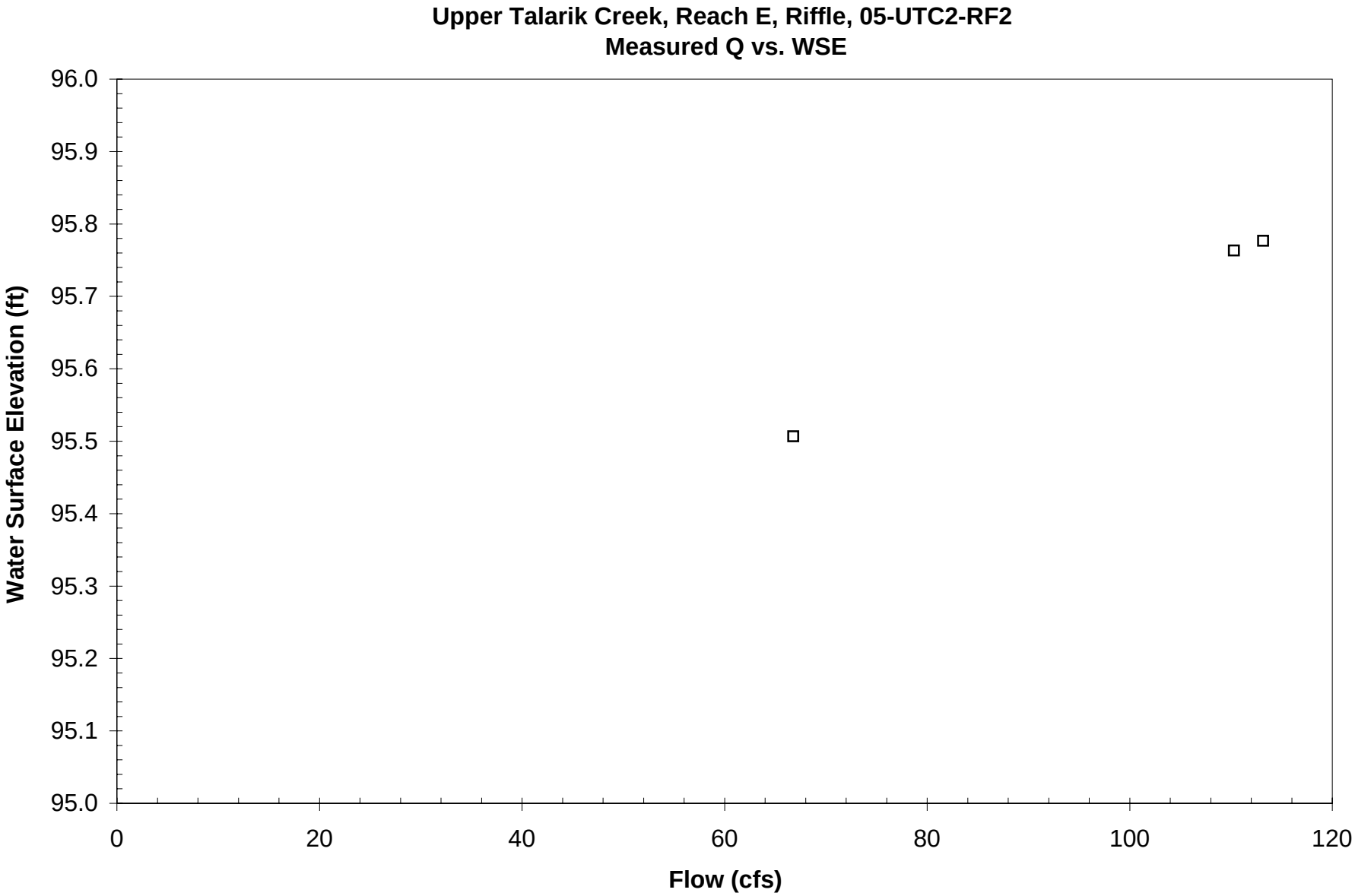
calibration notes

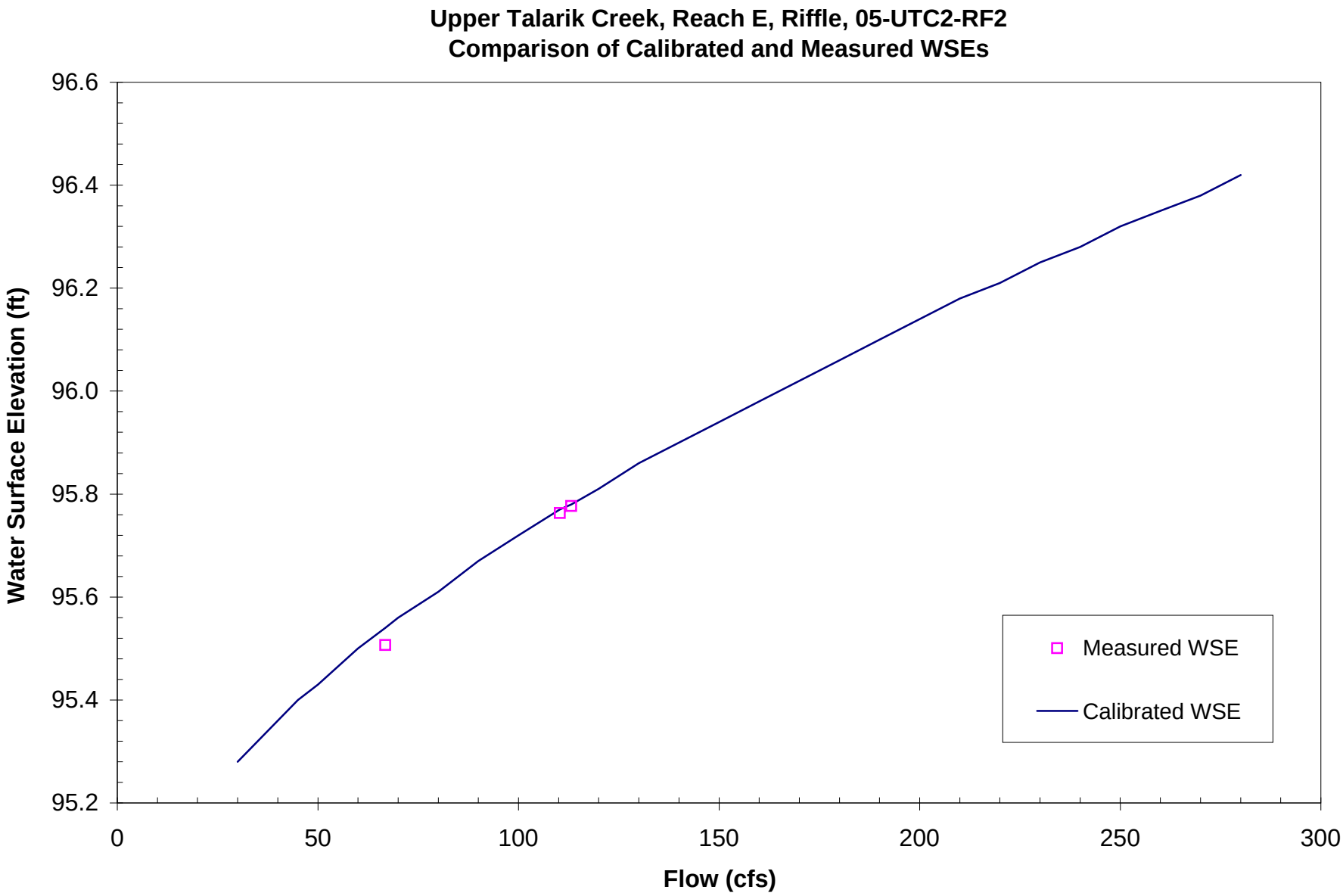
Upper Talarik Creek, Reach E, Riffle, 05-UTC2-RF2
Measured Transect Profile



Upper Talarik Creek, Reach E, Riffle, 05-UTC2-RF2
Longitudinal Water Surface Elevation Profiles



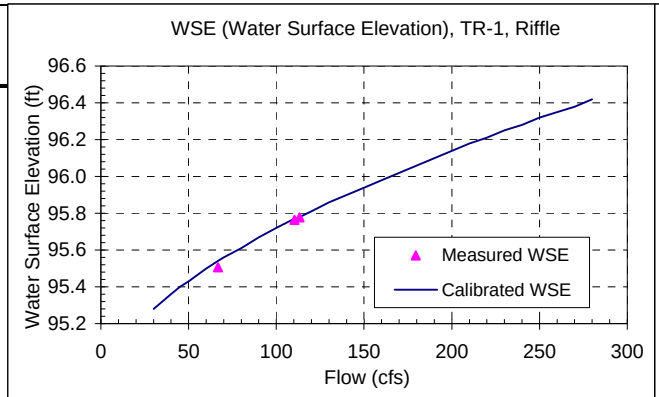

Upper Talarik Creek, Reach E, Riffle, 05-UTC2-RF2
Measured Q vs. WSE
Water Surface Elevation (ft)
96.0
95.9
95.8
95.7
95.6
95.5
95.4
95.3
95.2
95.1
95.0
0
20
40
60
80
100
120
Flow (cfs)

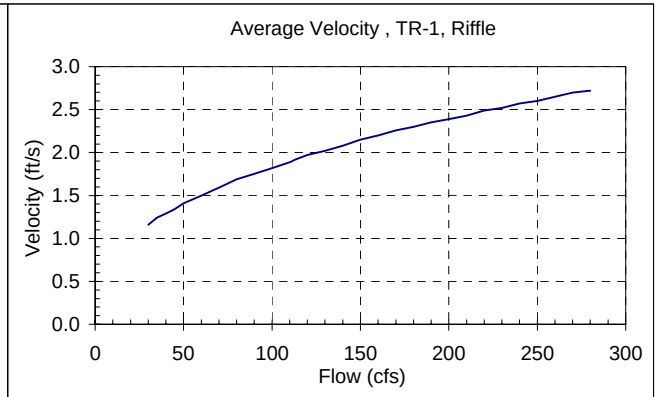

Upper Talarik Creek, Reach E, Riffle, 05-UTC2-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
0
50
100
150
200
250
300
Flow (cfs)
Measured WSE
Calibrated WSE

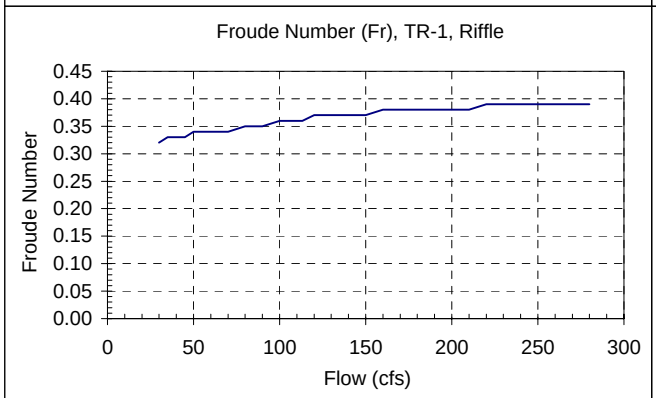
Stream: Upper Talarik Creek
Site Name: 05-UTC2-RF2
Date: 6/17/2005
Calibration Flow: Q(6/17/2005)

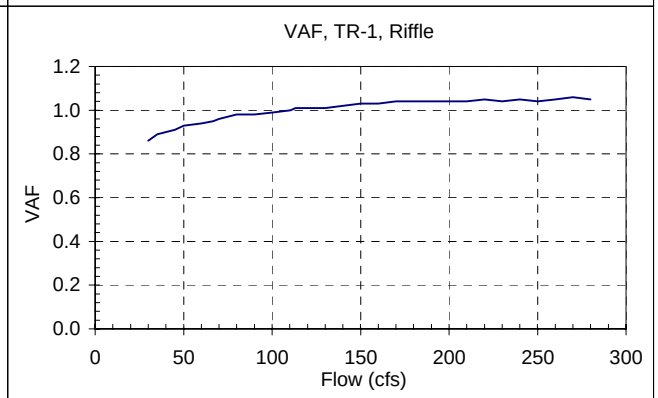
Reach: E
Habitat: Riffle
Site #: 2
Transect: 1

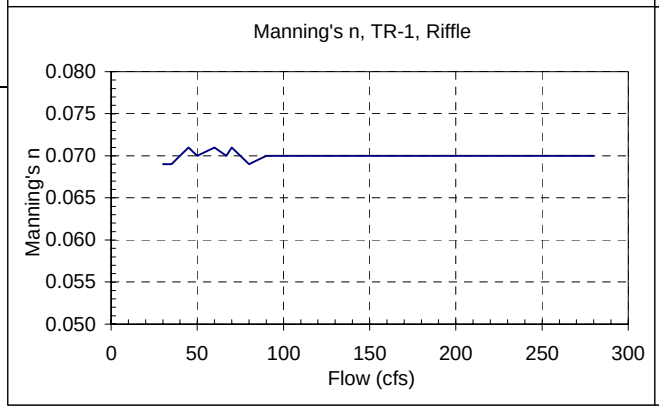
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
30	95.28	0.32	1.16	0.86	0.069	64.8
35	95.32	0.33	1.24	0.89	0.069	65.2
40	95.36	0.33	1.29	0.90	0.070	65.5
45	95.40	0.33	1.34	0.91	0.071	65.9
50	95.43	0.34	1.41	0.93	0.070	66.2
60	95.50	0.34	1.50	0.94	0.071	66.9
66.8	95.54	0.34	1.56	0.95	0.070	67.3
70	95.56	0.34	1.59	0.96	0.071	67.5
80	95.61	0.35	1.69	0.98	0.069	67.9
90	95.67	0.35	1.75	0.98	0.070	68.5
100	95.72	0.36	1.82	0.99	0.070	68.7
110.3	95.77	0.36	1.89	1.00	0.070	68.8
113.2	95.78	0.36	1.92	1.01	0.070	68.9
120	95.81	0.37	1.97	1.01	0.070	68.9
130	95.86	0.37	2.02	1.01	0.070	69.1
140	95.90	0.37	2.08	1.02	0.070	69.2
150	95.94	0.37	2.15	1.03	0.070	69.3
160	95.98	0.38	2.20	1.03	0.070	69.4
170	96.02	0.38	2.26	1.04	0.070	69.5
180	96.06	0.38	2.30	1.04	0.070	69.6
190	96.10	0.38	2.35	1.04	0.070	69.7
200	96.14	0.38	2.39	1.04	0.070	69.8
210	96.18	0.38	2.43	1.04	0.070	69.9
220	96.21	0.39	2.49	1.05	0.070	70.0
230	96.25	0.39	2.52	1.04	0.070	70.1
240	96.28	0.39	2.57	1.05	0.070	70.1
250	96.32	0.39	2.60	1.04	0.070	70.2
260	96.35	0.39	2.65	1.05	0.070	70.3
270	96.38	0.39	2.70	1.06	0.070	70.4
280	96.42	0.39	2.72	1.05	0.070	70.5

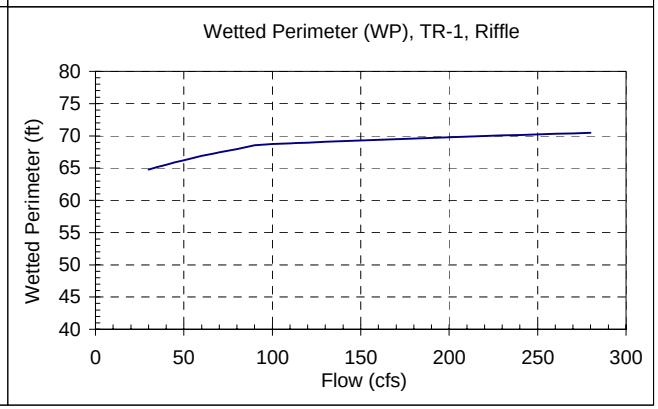






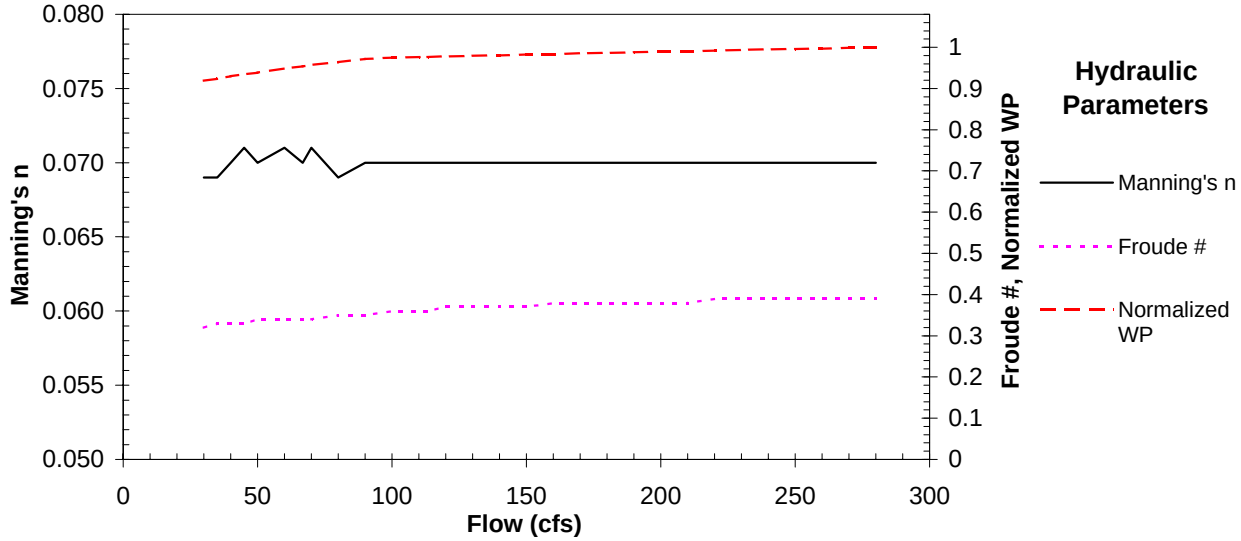


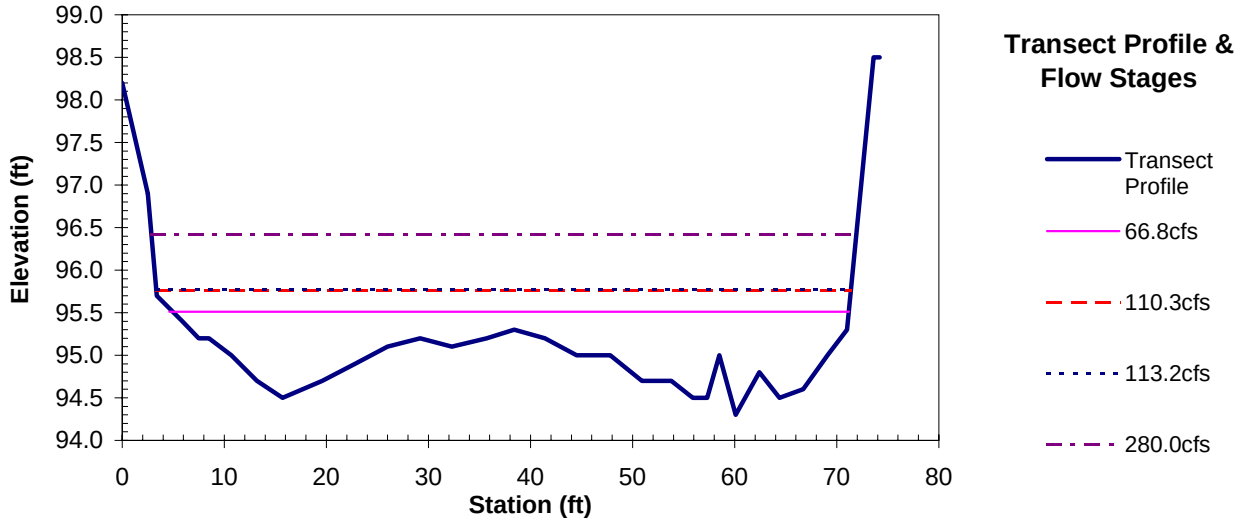


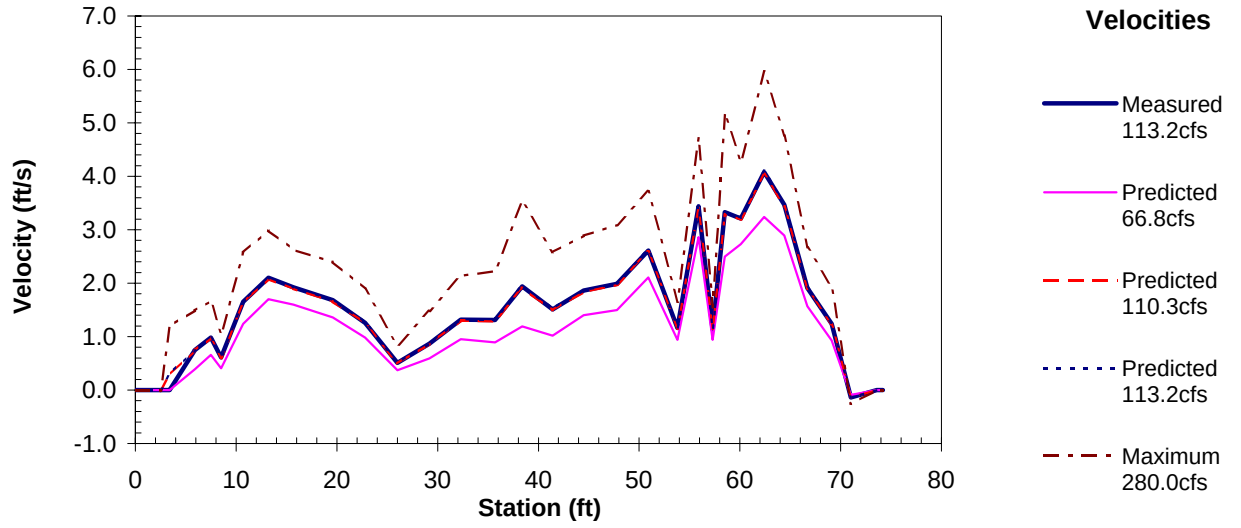


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
05-UTC2-RF2 - Riffle - TRANSECT 1 - 6/17/2005







Transect hydraulic summary plots

IFG4 Data Deck

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QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  60.0
QARD  66.8
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.3
QARD 113.2
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 260.0
QARD 270.0
QARD 280.0
XSEC  1000     1000. 1.0     94.46    .00996
      1000   .098.23  2.596.89  3.495.68  5.995.38  7.595.18  8.595.18
      1000 10.794.98 13.294.68 15.794.48 19.694.68 22.894.88 26.095.08
      1000 29.295.18 32.395.08 35.795.18 38.495.28 41.495.18 44.594.98
      1000 47.894.98 50.994.68 53.894.68 55.994.48 57.394.48 58.594.98
      1000 60.194.28 62.494.78 64.494.48 66.794.58 69.194.98 71.095.28
      1000 73.698.47 74.298.50
NS    1000      22.9      22.9      22.9      23.9      23.7      26.6
NS    1000      46.6      42.7      54.6      43.6      43.6      42.9
NS    1000      46.6      64.6      65.7      65.6      56.6      54.6
NS    1000      64.6      53.6      53.6      64.6      73.6      76.6
NS    1000      54.7      63.6      35.7      56.8      45.7      56.6
NS    1000      22.9      22.9
WSL   1000     95.28     95.32     95.36     95.40     95.43     95.50
WSL   1000     95.54     95.56     95.61     95.67     95.72     95.77
WSL   1000     95.78     95.81     95.86     95.90     95.94     95.98
```

IFG4 Data Deck (continued)

```
WSL   1000     96.02     96.06     96.10     96.14     96.18     96.21
WSL   1000     96.25     96.28     96.32     96.35     96.38     96.42
CAL1  1000     95.78     113.2
VEL1  1000           0.00 0.75 0.98 0.61 1.65 2.10 1.92 1.68 1.26 0.51
VEL1  1000 0.87 1.32 1.31 1.94 1.51 1.86 1.99 2.61 1.16 3.44 1.13 3.33
VEL1  1000 3.21 4.08 3.47 1.91 1.24-0.14
CAL2  1000     95.51      66.8
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.76     110.3
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble     05-UTC2-RF2  06/17/05
RIFFLE                     Q0605                                    TRANSECT 1
IOC       01100000000000000000
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QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  60.0
QARD  66.8
QARD  70.0
QARD  80.0
QARD  90.0
QARD 100.0
QARD 110.3
QARD 113.2
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
QARD 190.0
QARD 200.0
QARD 210.0
QARD 220.0
QARD 230.0
QARD 240.0
QARD 250.0
QARD 260.0
QARD 270.0
QARD 280.0
XSEC  1000     1000. 1.0     94.46    .00996
      1000   .098.23  2.596.88  3.495.68  5.995.37  7.595.18  8.595.18
      1000 10.794.98 13.294.68 15.794.48 19.694.68 22.894.87 26.095.08
      1000 29.295.18 32.395.08 35.795.18 38.495.27 41.495.18 44.594.98
      1000 47.894.98 50.994.68 53.894.68 55.994.48 57.394.48 58.594.98
      1000 60.194.27 62.494.77 64.494.48 66.794.58 69.194.98 71.095.27
      1000 73.698.47 74.298.50
NS    1000      22.9      22.9      22.9      23.9      23.7      26.6
NS    1000      46.6      42.7      54.6      43.6      43.6      42.9
NS    1000      46.6      64.6      65.7      65.6      56.6      54.6
NS    1000      64.6      53.6      53.6      64.6      73.6      76.6
NS    1000      54.7      63.6      35.7      56.8      45.7      56.6
NS    1000      22.9      22.9
CALQ  1000     95.78     113.2     -0.00
ENDJ
```

MANSQ Data Deck

Stream: Upper Talarik Creek

Reach: UT-E

Site/TR: 04-UTC-IC1

Habitat Type: Island Complex

River Kilometer: 37.91

Stream: **Upper Talarik Creek**
Reach: **E**
Site Name: **04-UTC-IC1**
Habitat Type: **Island Complex**

(1) Field Data

Level Loop and Headpin Elevations:

Flow	Date	BM	HP	AP	TP
1st	7/20/2005	100.00	97.66	97.63	97.94
2nd	8/16/2005	100.00	97.67	97.64	97.95
3rd	9/6/2005	100.00	97.67	97.64	97.95
4th	7/3/2006	100.00	97.69	97.64	97.94
5th	7/24/2006	100.00	97.68	97.65	97.95
6th	4/8/2007	100.00	97.62	97.61	97.90

(a) Elevations of control pins (BM, HP, AP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between any of two pins were within ±0.01ft in 2005-2006 period.
Small changes indicated the control pins were stable in that period.
(c) The control pins moved as much as 0.04ft in 2007 from the initial setup in 2005.
No corrections were needed for the 2007 WSEs for the hydraulic calibration purpose, because the hydraulics of 2007 were not used in the modeling due to ice impact.

calibration notes

Measured WSE:

This transect is an island complex with a main (right) channel and a side (left) channel.
There were three WSEs (Right, Mid, and Left) measured across the main channel for each flow, and the average of the three was used as transect representative WSE for modeling.

	WSE (ft)	
Date	Left (side)	Right (main)
7/20/2005	95.66	95.88
8/16/2005	95.59	95.74
9/6/2005	96.67	96.69
7/3/2006	95.80	95.87
7/24/2006	96.77	95.87
4/8/2007	96.42	96.41

(1) Right channel WSEs were used for modeling because it carried the majority of flow.
Bed profile of left channel was adjusted with the amount of the WSE difference between the two channels.
(2) WSE of 4/8/07 survey was affected by ice.

Discharge:

All measured discharges are listed in the following table.

	Q (cfs)		
Date	Left (side)	Right (main)	Total
7/20/2005			
8/16/2005	0.2	63.5	63.7
9/6/2005	45.1	261.1	306.2
7/3/2006			
7/24/2006	0.8	85.0	85.8
4/8/2007	5.2	62.9	68.2

No discharges were measured during the 7/20/05 and 7/3/06 surveys.
Measured flow of 4/8/07 may not be accurate due to anchor ice in the channel.

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Left (Side Channel)

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/20/2005	0.050%	39.8
8/16/2005	0.092%	43.3
9/6/2005	0.364%	107.1
7/3/2006	NA	NA
7/24/2006	0.036%	83.3
4/8/2007	NA	NA

Left (Side Channel)

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/20/2005	0.363%	162.6
8/16/2005	0.354%	147
9/6/2005	0.518%	166
7/3/2006	0.387%	142
7/24/2006	0.360%	119.6
4/8/2007	NA	NA

The slope S=0.354% of 8/16/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Right (main) Channel Invert (ft)
7/20/2005	94.43
8/16/2005	94.44
9/6/2005	94.49
7/3/2006	94.51
7/24/2006	94.47
4/8/2007	94.51
max Invert	94.49
SZF	94.49

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) Inverts of 7/20/05 and 7/3/06 surveys were not used to determine SZF due to no flows measured.
(4) Transect profile of 4/8/07 was affected by ice. The invert was not used to determine SZF.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/20/2005		95.88			
2nd	8/16/2005	63.7	95.74	95.74	0.00	IFG4
3rd	9/6/2005	306.2	96.69	96.69	0.00	IFG4
4th	7/3/2006		95.87			
5th	7/24/2006	85.8	95.87	95.88	0.01	IFG4
6th	4/8/2007	68.2	96.41			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No discharges were measured in the 7/20/05 and 7/3/06 trips.
(d) No photos of 4/8/07 site visit were available, but the field notes indicated the TP was under 8 feet of hard snow, and only small portion of water was "open no ice".
(e) Hydraulics were impacted by ice and thus were not used in the modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 63.7cfs, 85.8cfs, and 306.2cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

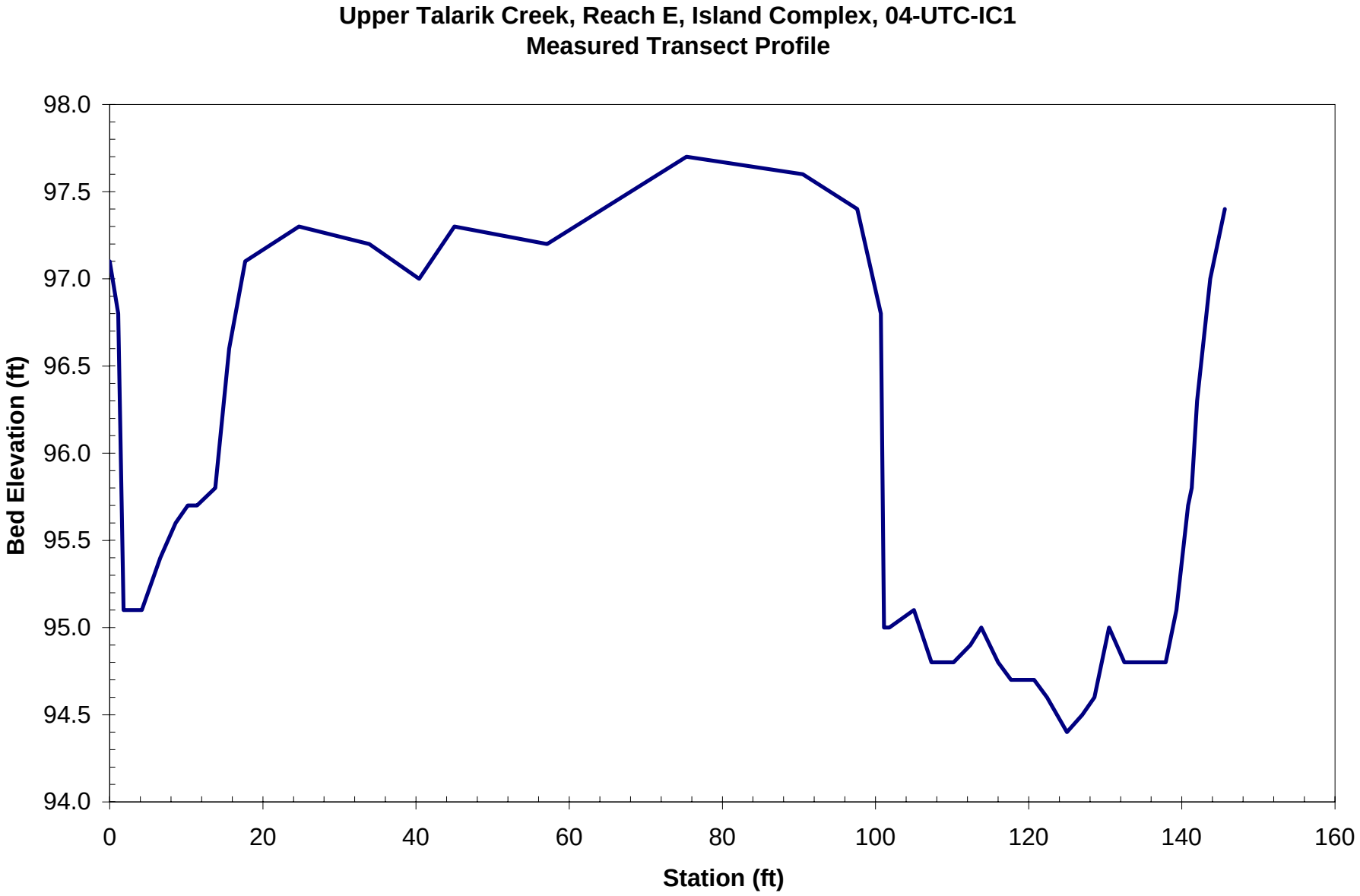
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
7/20/2005		
8/16/2005	63.7	Y
9/6/2005	306.2	Y
7/3/2006		
7/24/2006	85.8	Y
4/8/2007	68.2	

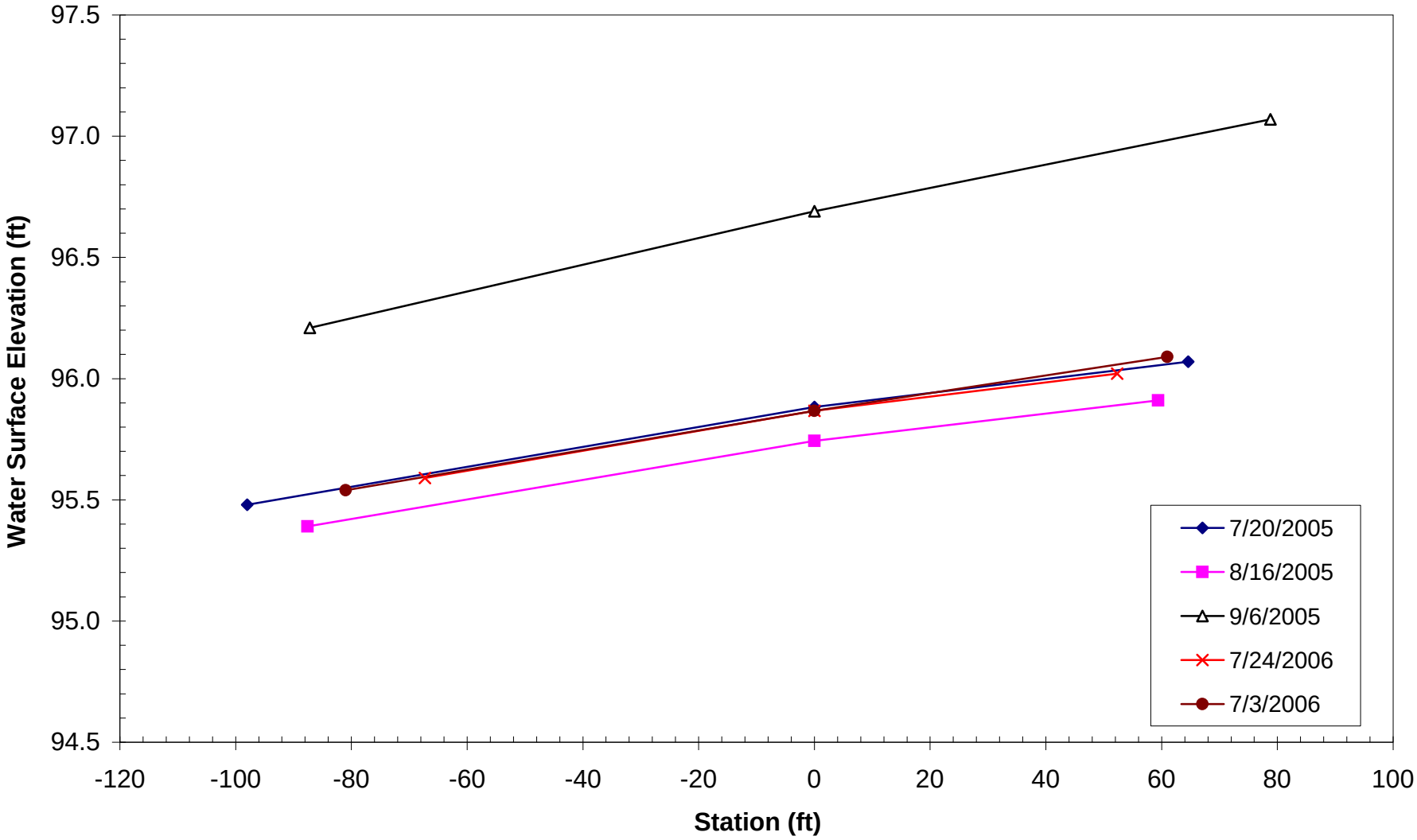
(4) Hydraulic Calibration Results:

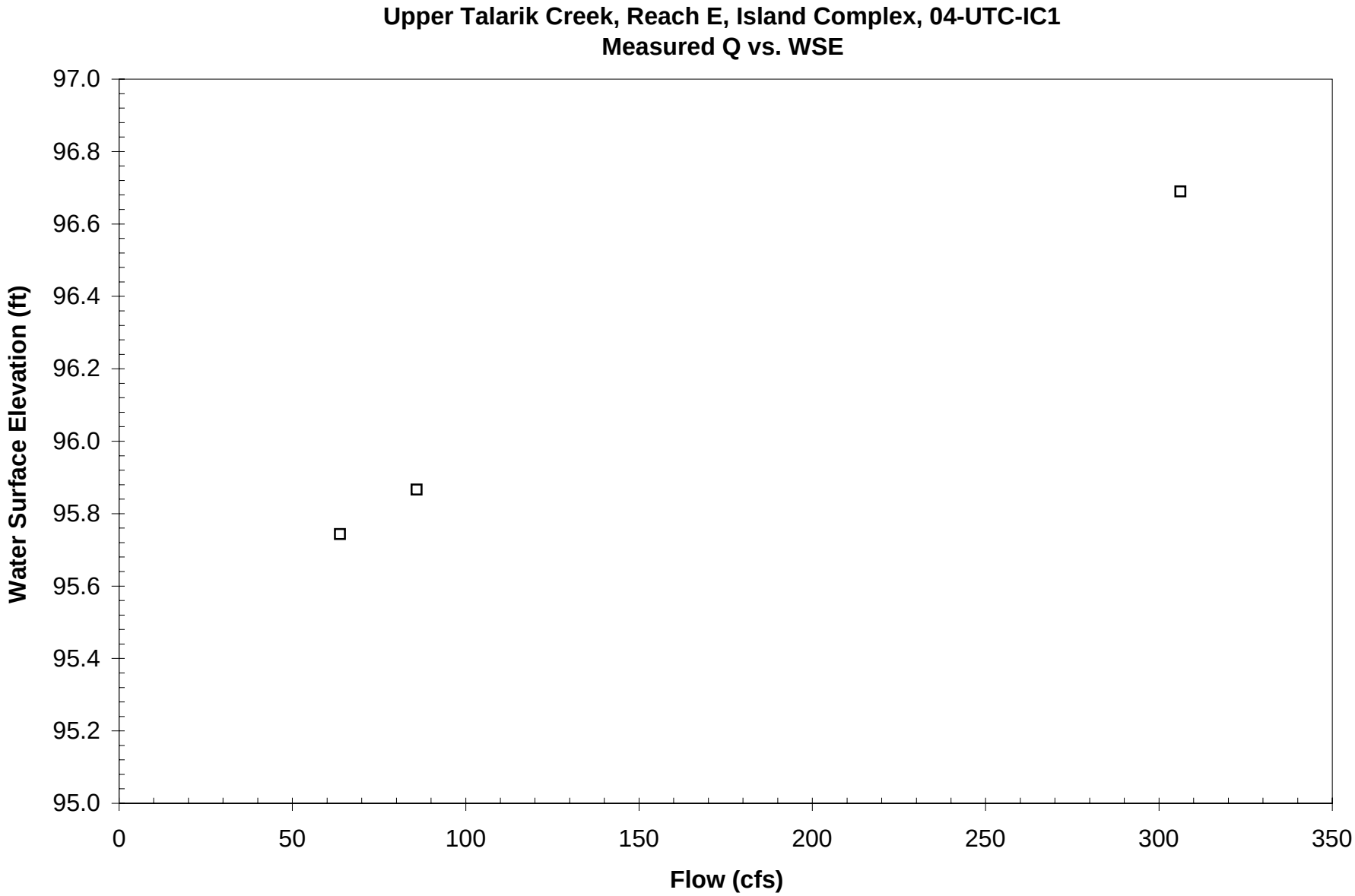
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

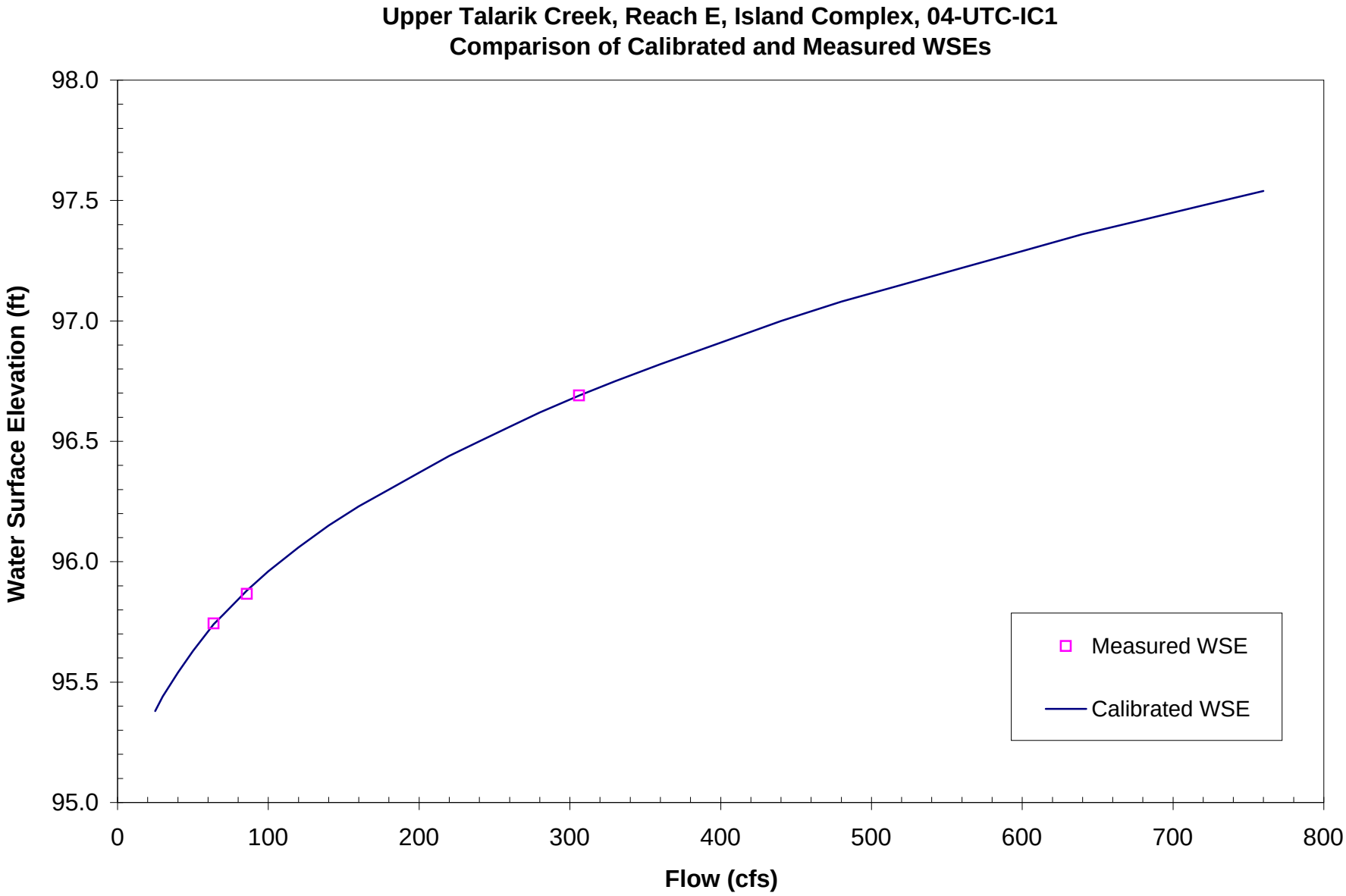
calibration notes


Upper Talarik Creek, Reach E, Island Complex, 04-UTC-IC1
Measured Transect Profile
Bed Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
0
20
40
60
80
100
120
140
160
Station (ft)

Upper Talarik Creek, Reach E, Island Complex, 04-UTC-IC1
Longitudinal Water Surface Elevation Profiles



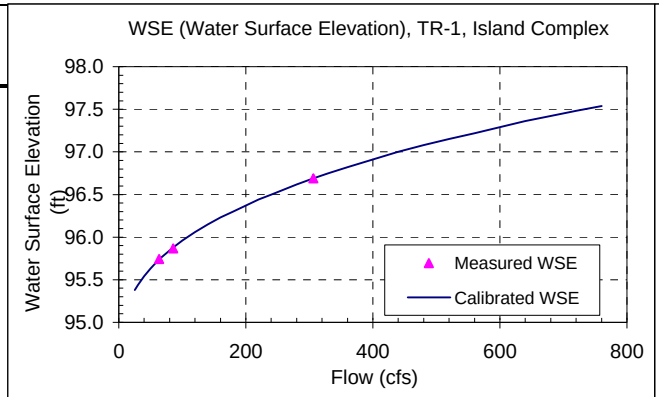

Upper Talarik Creek, Reach E, Island Complex, 04-UTC-IC1
Measured Q vs. WSE
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
50
100
150
200
250
300
350
Flow (cfs)

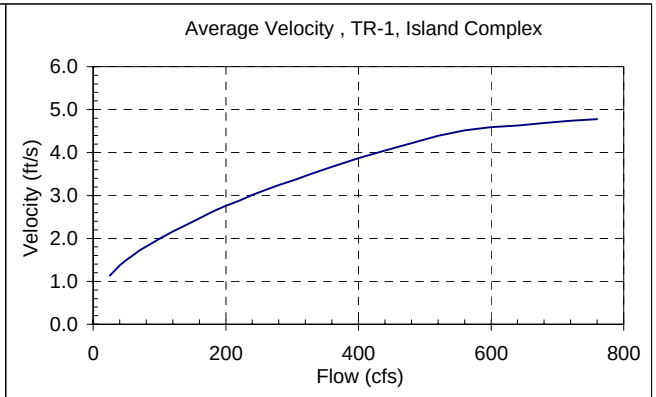

Upper Talarik Creek, Reach E, Island Complex, 04-UTC-IC1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
100
200
300
400
500
600
700
800
Flow (cfs)
Measured WSE
Calibrated WSE

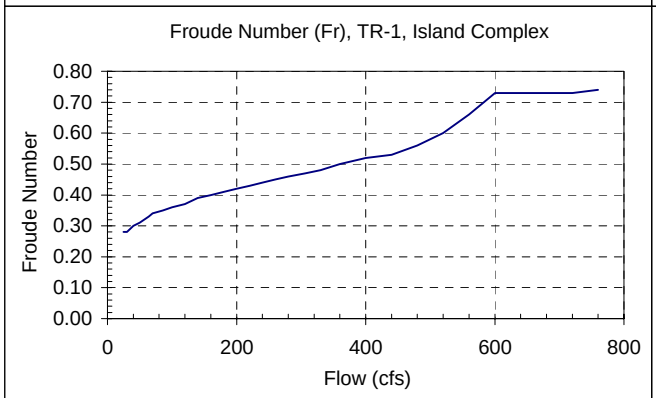
Stream: Upper Talarik Creek
Site Name: 04-UTC-IC1
Date: 8/16/2005
Calibration Flow: Q(8/16/2005)

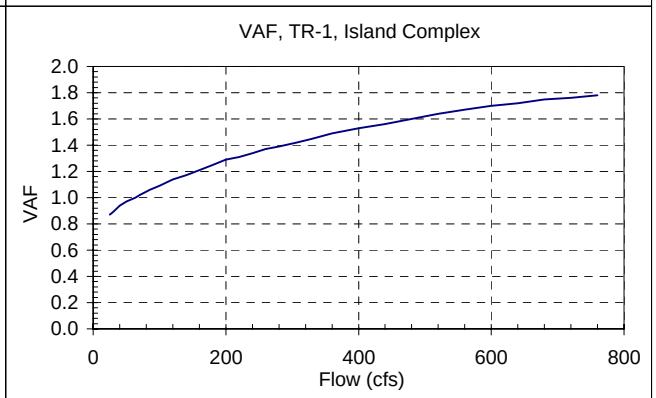
Reach: E
Habitat: Island Complex
Site #: 1
Transect: 1

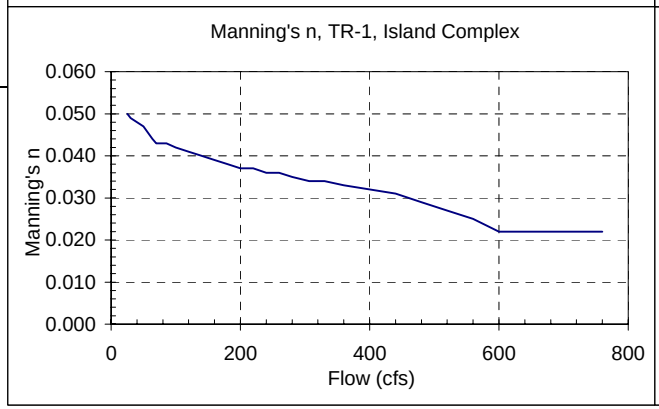
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
25	95.38	0.28	1.13	0.87	0.050	44.0
30	95.44	0.28	1.21	0.89	0.049	44.7
40	95.54	0.30	1.37	0.94	0.048	46.3
50	95.63	0.31	1.50	0.97	0.047	47.7
63.7	95.74	0.33	1.65	1.00	0.044	52.5
70	95.78	0.34	1.72	1.02	0.043	53.5
85.8	95.88	0.35	1.86	1.06	0.043	54.5
100	95.96	0.36	1.99	1.09	0.042	55.0
120	96.06	0.37	2.16	1.14	0.041	55.6
140	96.15	0.39	2.31	1.17	0.040	56.2
160	96.23	0.40	2.47	1.21	0.039	56.7
180	96.30	0.41	2.62	1.25	0.038	57.2
200	96.37	0.42	2.76	1.29	0.037	57.7
220	96.44	0.43	2.88	1.31	0.037	58.2
240	96.50	0.44	3.01	1.34	0.036	58.7
260	96.56	0.45	3.13	1.37	0.036	59.1
280	96.62	0.46	3.24	1.39	0.035	59.6
306.2	96.69	0.47	3.38	1.42	0.034	60.2
330	96.75	0.48	3.51	1.45	0.034	60.8
360	96.82	0.50	3.67	1.49	0.033	61.4
400	96.91	0.52	3.87	1.53	0.032	62.8
440	97.00	0.53	4.05	1.56	0.031	64.3
480	97.08	0.56	4.22	1.60	0.029	68.8
520	97.15	0.60	4.39	1.64	0.027	75.4
560	97.22	0.66	4.52	1.67	0.025	88.1
600	97.29	0.73	4.59	1.70	0.022	110.5
640	97.36	0.73	4.63	1.72	0.022	113.5
680	97.42	0.73	4.69	1.75	0.022	116.0
720	97.48	0.73	4.74	1.76	0.022	119.7
760	97.54	0.74	4.78	1.78	0.022	124.9

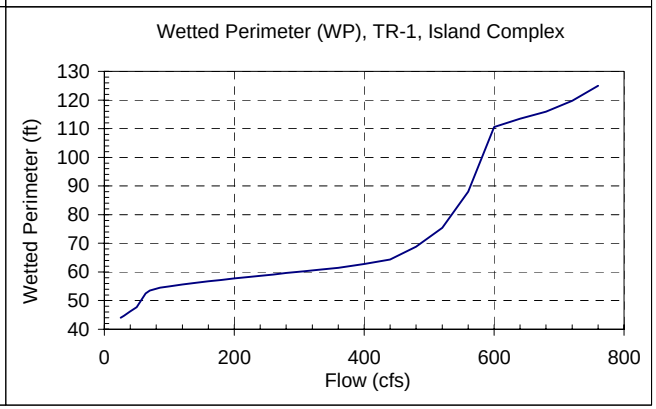




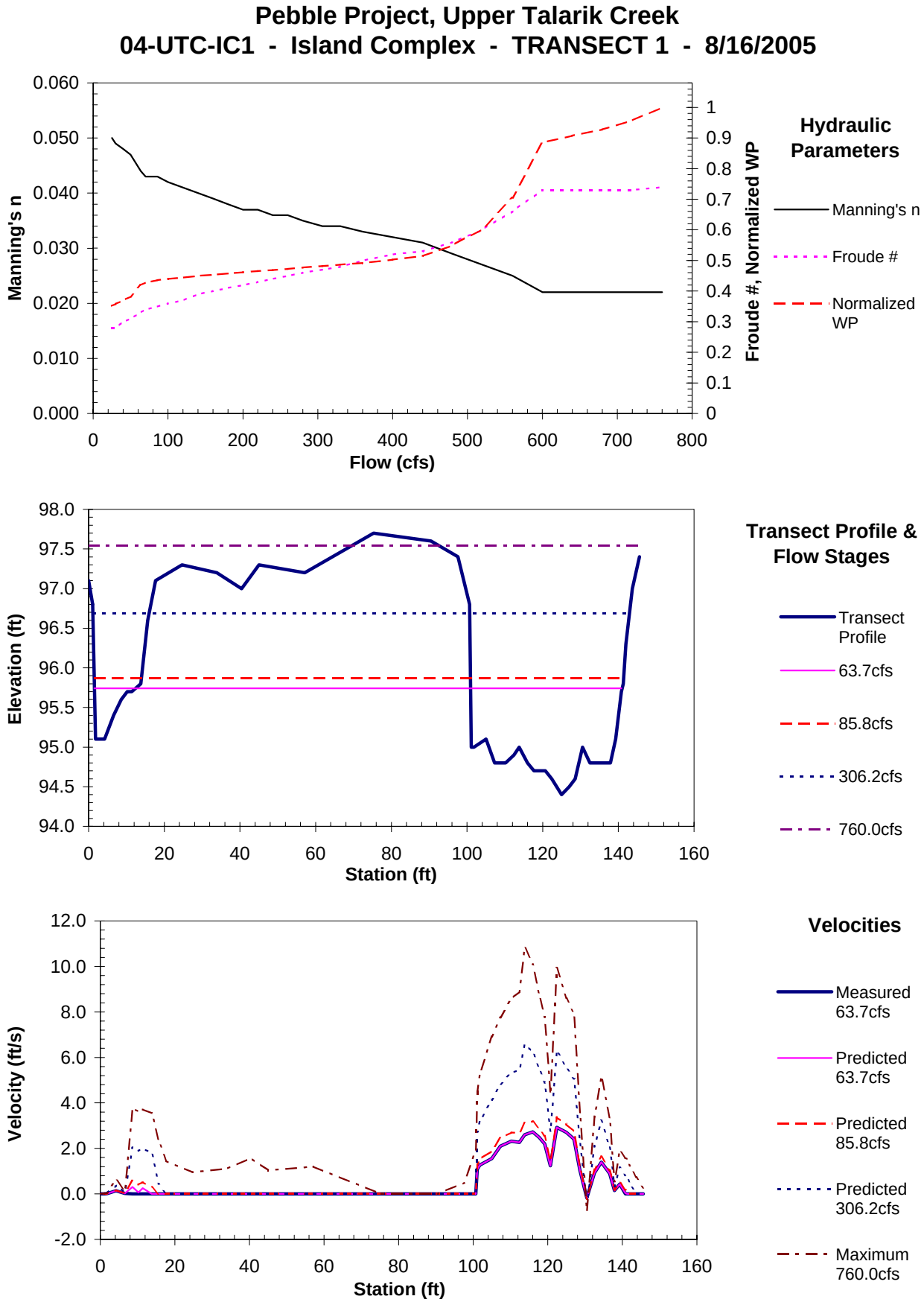








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble      04-UTC-IC1  08/16/05
ISLAND                     0805Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  25.0
QARD  30.0
QARD  40.0
QARD  50.0
QARD  63.7
QARD  70.0
QARD  85.8
QARD 100.0
QARD 120.0
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 220.0
QARD 240.0
QARD 260.0
QARD 280.0
QARD 306.2
QARD 330.0
QARD 360.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 520.0
QARD 560.0
QARD 600.0
QARD 640.0
QARD 680.0
QARD 720.0
QARD 760.0
XSEC  1000     1000. 1.0     94.49    .00354
      1000   .097.11  1.196.83  1.895.13  4.295.13  6.695.44  8.695.63
      1000 10.295.73 11.495.66 13.895.79 15.696.58 17.797.08 24.797.29
      1000 33.997.23 40.497.02 45.097.26 57.197.19 75.397.75 90.597.58
      1000 97.697.45100.796.83101.195.04101.895.04105.095.13107.394.83
      1000110.294.83112.494.94113.895.04116.094.83117.794.73119.294.73
      1000120.794.73122.494.63125.094.44127.094.54128.694.63130.595.04
      1000132.594.83134.494.83136.694.83137.994.83139.395.13140.895.73
      1000141.395.83142.096.29143.796.97145.697.41
NS    1000      22.9      22.9      42.6      42.6      24.6      24.9
NS    1000      24.9      24.9      23.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      23.6      34.6      43.6      43.6
NS    1000      45.7      43.6      43.6      34.6      43.9      43.9
NS    1000      47.6      45.8      45.8      47.6      65.6      65.6
NS    1000      75.6      45.7      42.6      54.6      25.8      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     95.38     95.44     95.54     95.63     95.74     95.78
WSL   1000     95.88     95.96     96.06     96.15     96.23     96.30
WSL   1000     96.37     96.44     96.50     96.56     96.62     96.69
WSL   1000     96.75     96.82     96.91     97.00     97.08     97.15
WSL   1000     97.22     97.29     97.36     97.42     97.48     97.54
CAL1  1000     95.74      63.7
VEL1  1000           0.01 0.14 0.02 0.00 0.00
VEL1  1000                                        1.08 1.27 1.55 2.10
VEL1  1000 2.32 2.27 2.60 2.73 2.48 2.20 1.24 2.93 2.70 2.41 1.04-0.18
VEL1  1000 0.92 1.40 0.89 0.15 0.43 0.00
CAL2  1000     96.69     306.2
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.87      85.8
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-E

Site: 08-UTC2-MS1

TR1:	08-UTC2-MS1-TR1	**Habitat Type:**	Run	**River Kilometer:**	41.66
TR2:	08-UTC2-MS1-TR2	**Habitat Type:**	Island Complex	**River Kilometer:**	41.73
TR3:	08-UTC2-MS1-TR3	**Habitat Type:**	Island Complex	**River Kilometer:**	41.76
TR4:	08-UTC2-MS1-TR4	**Habitat Type:**	Island Complex	**River Kilometer:**	41.83
TR5:	08-UTC2-MS1-TR5	**Habitat Type:**	Island Complex	**River Kilometer:**	41.88
TR6:	08-UTC2-MS1-TR6	**Habitat Type:**	Island Complex	**River Kilometer:**	41.90

Stream: Upper Talarik Creek
Reach: E
Site: 08-UTC2-MS1

(1) Field Data

Level Loop and Headpin Elevations:

Date	BM1	BM2	BM3	BM4	BM5
6/20/2008	100.00	99.25	98.26	99.02	97.30
7/18/2008	100.00	99.26	98.27	99.02	97.30
8/16/2008	100.00	99.26	98.27	99.02	97.30

(a) Elevations of control pins (BMs) are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within 0.01ft.
(c) The small relative elevation changes indicated all control pins were stable over the survey period.

Measured WSE:

There were two WSEs (Right and Left) measured on each channel/transect for each flow, and the average of the two was used as representative WSE for modeling.

Date	Measured WSE (ft)										
	TR-1	TR-2		TR-3		TR-4		TR-5		TR-6	
		LC	RC	LC	RC	LC	RC	LC	RC	Main	Side
6/20/2008	96.73	96.79	96.98	97.36	**97.28**	97.48	**97.96**	97.68	98.27	98.32	97.88
7/18/2008	96.07	96.28	96.40	96.85	96.81	96.96	97.43	97.05	97.74	97.76	97.28
8/16/2008	95.91	96.16	96.21	96.79	96.69	96.86	97.31	96.94	97.58	97.60	97.16

For TRs with multiple channels, average WSE of right channel is used for hydraulic calibration because the majority of water flows through right channels.
WSEs of RC and LC are not the same for the Island Complex transects (i.e., TR-2 to TR-6), but the WSEs of right channels are used for hydraulic calibration, because most of the water flows through the right channels. The bed bathymetry of LCs is adjusted, as the result of using Right WSE for modeling, with the amount of the WSE difference between RC and LC, so that both channels (RC and LC) would have the same WSE, as required by the IFG4 model.

calibration notes

Discharge:

All measured flows are listed in the following table.

Date	Measured Discharge (cfs)						Ave Q (cfs)
	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	
6/20/2008	215.8	232.4	235.7	221.5	235.4	202.5	**223.9**
7/18/2008	115.3	115.7	110.4	110.4	107.3	104.3	**110.6**
8/16/2008	93.3	90.6	92.6	89.2	87.3	88.1	**90.2**

The flows shown above are the total discharge of each transect that may include multiple channels.
Average Q of all transects was used as the representative flows for the site for modeling.

Longitudinal WSE Slope and Stations:

Slopes are calculated using the measured WSEs and longitudinal distances.

Longitudinal Stations						
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
LB	0.0	207.0	176.0	46.0	124.0	133.0
RB	0.0	230.0	149.0	217.0	147.0	9.0
repr. dist.	0.0	230.0	149.0	217.0	147.0	9.0
Station	0.0	230.0	379.0	596.0	743.0	752.0

Note: Right bank distance is used because right channel carries the majority of water.
The 9ft from TR6 to TR5 is the distance between the two HP's and may be less than the actual distance along the waters edge.

Slope						
TR	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/20/2008	-	0.11%	0.15%	0.21%	0.21%	0.211%
7/18/2008	-	0.14%	0.20%	0.23%	0.22%	0.225%
8/16/2008	-	0.13%	0.20%	0.23%	0.22%	0.225%

Slope of each TR is the average slope from TR-1, which is the ratio of WSE difference from TR-1 to the distance from TR-1.
The TR-6 slope S=0.211% of 6/20/2008 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/20/2008	93.53	94.08	95.48	94.66	94.57	94.22
7/18/2008	93.57	94.10	95.46	94.68	94.64	94.26
8/16/2008	93.51	94.11	95.39	94.66	94.68	94.30
Invert	93.57	94.11	95.48	94.68	94.68	94.30
SZF	93.57	94.11	95.48	95.48	95.48	95.48

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
SZF of upstream transect must be no less than that of downstream transect.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

TR-1 WSE calibration

The stream morphology of this site (08-UTC2-MS1) is very complex. A string of islands divided the stream into multiple channels. Water was separated from where each island started and reconnected at where that island ended. TR-1 is a single-channel transect, located immediately below the tip of the most downstream island. Water from the two channels (LC & RC) flanking the most d/s island converged at TR-1, allowing insufficient distance for the flow to become uniform. As the result of the short distance, a single simple method of IFG4 or MANSQ may not be adequate to characterize the WSE~Q behavior for TR-1. Consequently, multiple methods (i.e., IFG4 and MANSQ) were applied to TR-1 and a composite rating curve was developed from the results of the two methods.

The following table summarizes the WSE~Q rating curve calibrations from using IFG4 and MANSQ.
A composite rating curve is developed from the results of the two methods with the weighting factor described below.

Simulation	TR-1 WSE			Weighting	Calibration
Q (cfs)	IFG4	MANSQ	Composite	factor, f_w	Method
40	95.36	95.50	95.50	0.000	MANSQ
50	95.49	95.60	95.60	0.000	MANSQ
60	95.61	95.69	95.69	0.000	MANSQ
70	95.72	95.77	95.77	0.000	MANSQ
80	95.82	95.85	95.85	0.000	MANSQ
90.2	95.91	95.93	95.93	0.000	MANSQ
100	95.99	96.00	96.00	0.000	MANSQ
110.6	96.07	96.07	96.07	0.000	MANSQ

calibration notes

120	96.14	96.13	96.13	0.223	Composite
130	96.21	96.20	96.20	0.298	Composite
140	96.27	96.26	96.27	0.372	Composite
150	96.34	96.32	96.33	0.447	Composite
160	96.40	96.38	96.39	0.522	Composite
180	96.51	96.50	96.51	0.672	Composite
200	96.61	96.61	96.61	0.821	Composite
223.9	96.73	96.73	96.73	1.000	IFG4
240	96.80	96.82	96.80	1.000	IFG4
260	96.89	96.91	96.89	1.000	IFG4
280	96.97	97.01	96.97	1.000	IFG4
300	97.05	97.10	97.05	1.000	IFG4
320	97.13	97.19	97.13	1.000	IFG4
340	97.20	97.27	97.20	1.000	IFG4
360	97.27	97.36	97.27	1.000	IFG4
380	97.33	97.44	97.33	1.000	IFG4
400	97.40	97.52	97.40	1.000	IFG4
420	97.46	97.61	97.46	1.000	IFG4
440	97.52	97.69	97.52	1.000	IFG4
470	97.61	97.89	97.61	1.000	IFG4
510	97.72	98.02	97.72	1.000	IFG4
550	97.82	98.14	97.82	1.000	IFG4

Note:

A composite (WSE~Q) rating curve is developed using the following algorithm:

For Q≤110.6cfs(Q_{low}): WSEs from the rating curve of MANSQ method are used for the composite curve

For Q≥223.9cfs(Q_{high}): WSEs from the rating curve of IFG4 are used for the composite curve

For $Q_{low} \le Q \le Q_{high}$: A weighting factor f_w is applied for weighted WSE calculation to develop the composite curve

The weighting for each flow is read

$$f_w=(Q-Q_{low})/(Q_{high}-Q_{low})$$

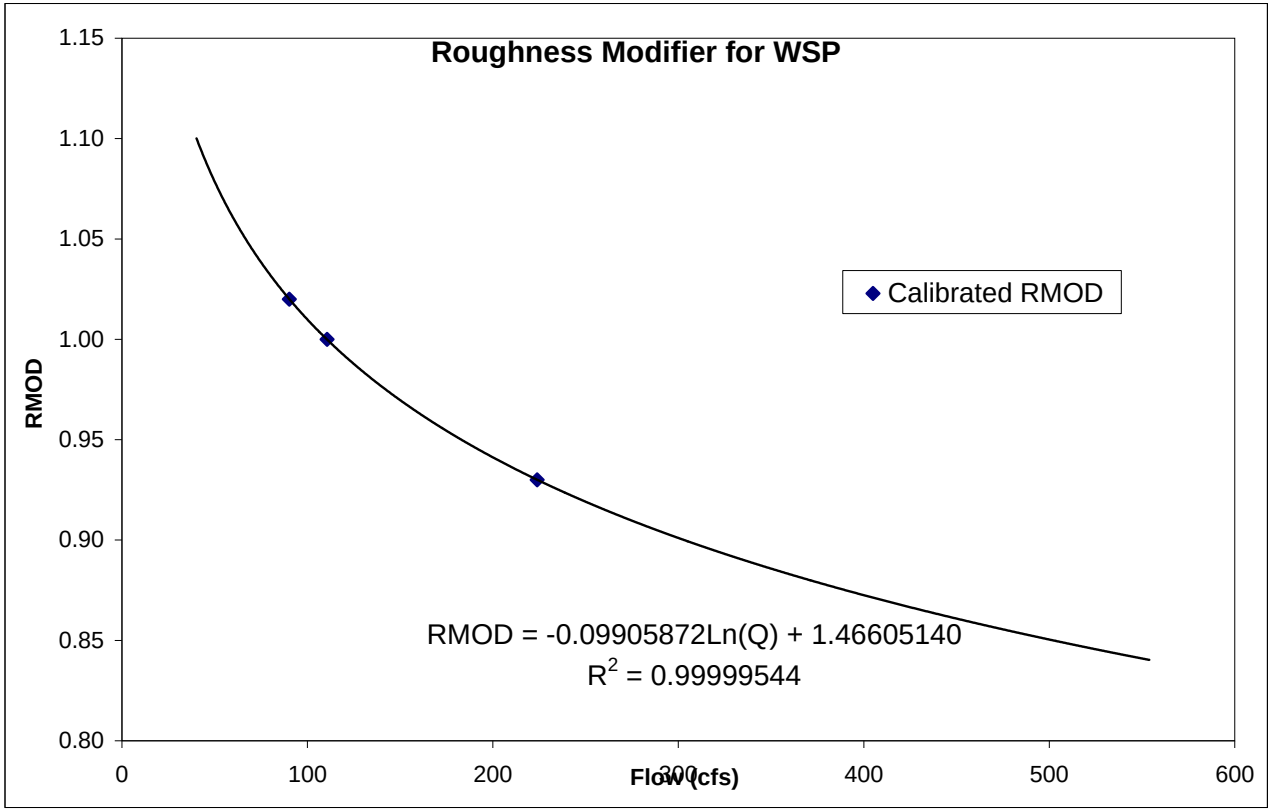
Then the weighted WSE for the composite curve would be

$$WSE_{Composite}=f_w*WSE_{IFG4}+(1-f_w)WSE_{MANSQ}$$

calibration notes

TR-2 to TR6 WSE calibration:
WSP backwater simulation was applied to calibrate the WSE for the rest of the transects (TR-2 to TR-6).
The calibrated WSEs of TR-1 were used as the d/s boundary condition for the backwater simulation.
The Roughness Modifier (RMOD) calibration is summarized in the following table:

Simul. Q (cfs)	Calibr. RMOD
40.0	1.1006
50.0	1.0785
60.0	1.0605
70.0	1.0452
80.0	1.0320
90.2	**1.0200**
100.0	1.0099
110.6	**1.0000**
120.0	0.9918
130.0	0.9839
140.0	0.9765
150.0	0.9697
160.0	0.9633
180.0	0.9516
200.0	0.9412
223.9	**0.930**
240.0	0.9231
260.0	0.9152
280.0	0.9079
300.0	0.9010
320.0	0.8946
340.0	0.8886
360.0	0.8830
380.0	0.8776
400.0	0.8725
420.0	0.8677
440.0	0.8631
470.0	0.8566
510.0	0.8485
550.0	0.8410



calibration notes

The following table summarizes the WSE calibration for all 6 TRs

Simulation	WSE (ft)					
Q (cfs)	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
40	95.50	95.81	96.37	96.88	97.05	97.06
50	95.60	95.92	96.46	96.99	97.18	97.20
60	95.69	96.02	96.53	97.09	97.30	97.31
70	95.77	96.10	96.60	97.17	97.39	97.41
80	95.85	96.18	96.66	97.24	97.48	97.51
90.2	95.93	96.25	96.72	97.31	97.57	97.59
100	96.00	96.32	96.77	97.37	97.64	97.67
110.6	96.07	96.38	96.82	97.43	97.72	97.74
120	96.13	96.44	96.86	97.48	97.78	97.81
130	96.20	96.50	96.91	97.53	97.84	97.87
140	96.26	96.55	96.95	97.58	97.90	97.93
150	96.33	96.61	96.99	97.62	97.95	97.99
160	96.39	96.66	97.03	97.67	98.01	98.04
180	96.51	96.77	97.11	97.75	98.10	98.15
200	96.61	96.86	97.19	97.83	98.20	98.24
223.9	96.73	96.97	97.28	97.92	98.30	98.35
240	96.80	97.04	97.33	97.97	98.37	98.42
260	96.89	97.12	97.40	98.04	98.45	98.50
280	96.97	97.20	97.47	98.11	98.52	98.58
300	97.05	97.27	97.53	98.17	98.59	98.65
320	97.13	97.35	97.60	98.23	98.66	98.72
340	97.20	97.41	97.66	98.29	98.73	98.78
360	97.27	97.48	97.72	98.35	98.79	98.85
380	97.33	97.54	97.77	98.41	98.85	98.91
400	97.40	97.61	97.83	98.46	98.91	98.97
420	97.46	97.67	97.89	98.51	98.97	99.02
440	97.52	97.73	97.94	98.57	99.02	99.08
470	97.61	97.81	98.02	98.64	99.09	99.15
510	97.72	97.92	98.12	98.73	99.18	99.24
550	97.82	98.02	98.21	98.82	99.26	99.32

calibration notes

WSE Calibration Results:

Survey Date	Q (cfs)	Measured WSE(ft)						Calibrated WSE(ft)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/20/2008	223.9	96.73	96.98	**97.28**	**97.96**	98.27	98.32	96.73	96.97	97.28	97.92	98.30	98.35
7/18/2008	110.6	96.07	96.40	96.81	97.43	97.74	97.76	96.07	96.38	96.82	97.43	97.72	97.74
8/16/2008	90.2	95.91	96.21	96.69	97.31	97.58	97.60	95.93	96.25	96.72	97.31	97.57	97.59

Survey Date	Q (cfs)	WSE calibration error (ft)						WSE Calibration Method					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6	TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/20/2008	223.9	0.00	0.00	0.00	-0.04	0.03	0.03	MANSQ	WSP	WSP	WSP	WSP	WSP
7/18/2008	110.6	0.00	-0.02	0.01	0.00	-0.02	-0.02	MANSQ	WSP	WSP	WSP	WSP	WSP
8/16/2008	90.2	0.02	0.04	0.03	0.00	-0.01	-0.01	MANSQ	WSP	WSP	WSP	WSP	WSP

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.04ft is within the acceptable range.

(3) Velocity calibration

This site has six transects and each transect has 3 velocity/discharge measurements.
Each measured velocity profile was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model.
Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow.
The adjustment of n values was made at the stations where simulated velocities were significantly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)					
		TR-1	TR-2	TR-3	TR-4	TR-5	TR-6
6/20/2008	223.9	Y	Y	Y	Y	Y	Y
7/18/2008	110.6	Y	Y	Y	Y	Y	Y
8/16/2008	90.2	Y	Y	Y	Y	Y	Y

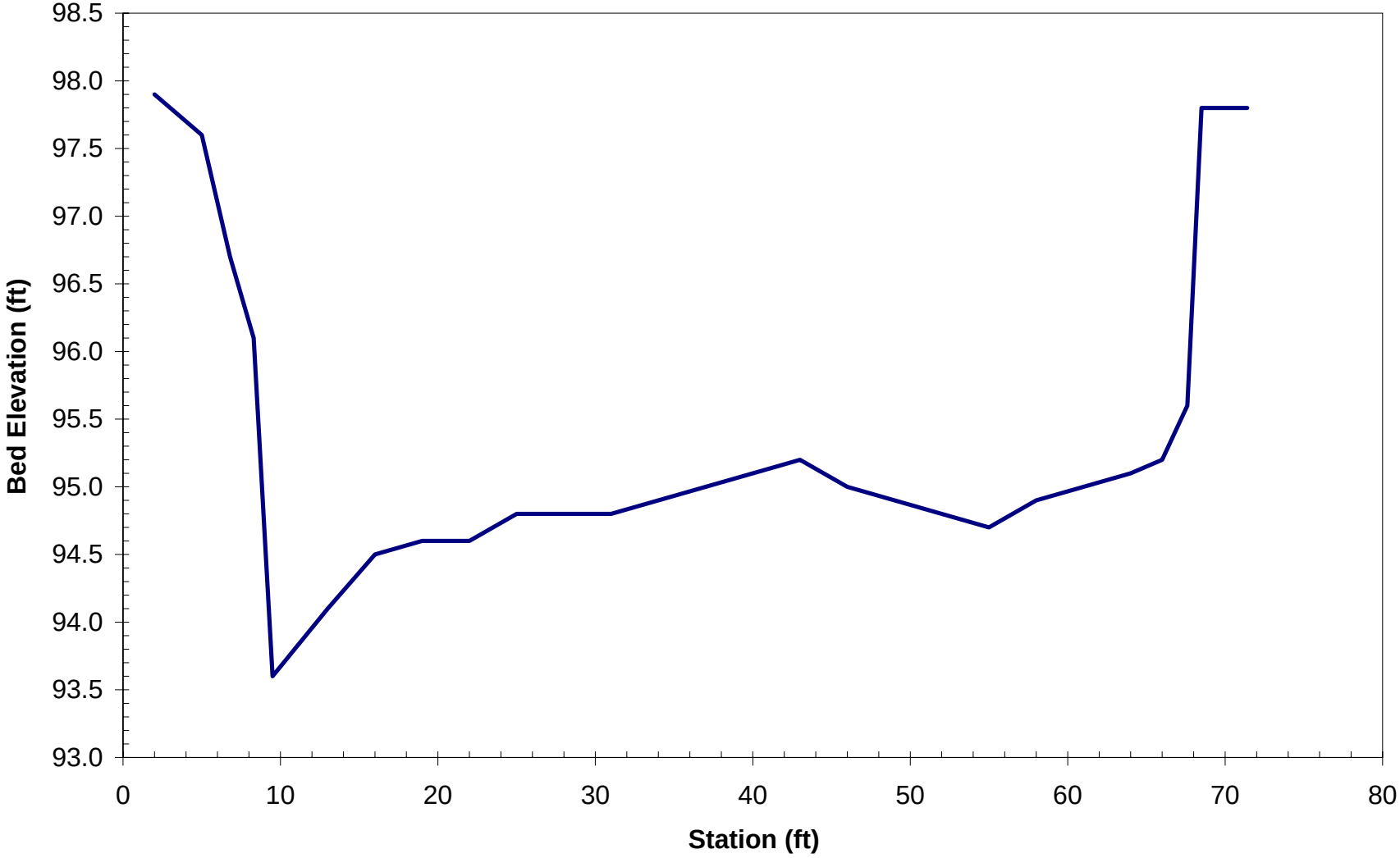
calibration notes

(4) Hydraulic Calibration Results:

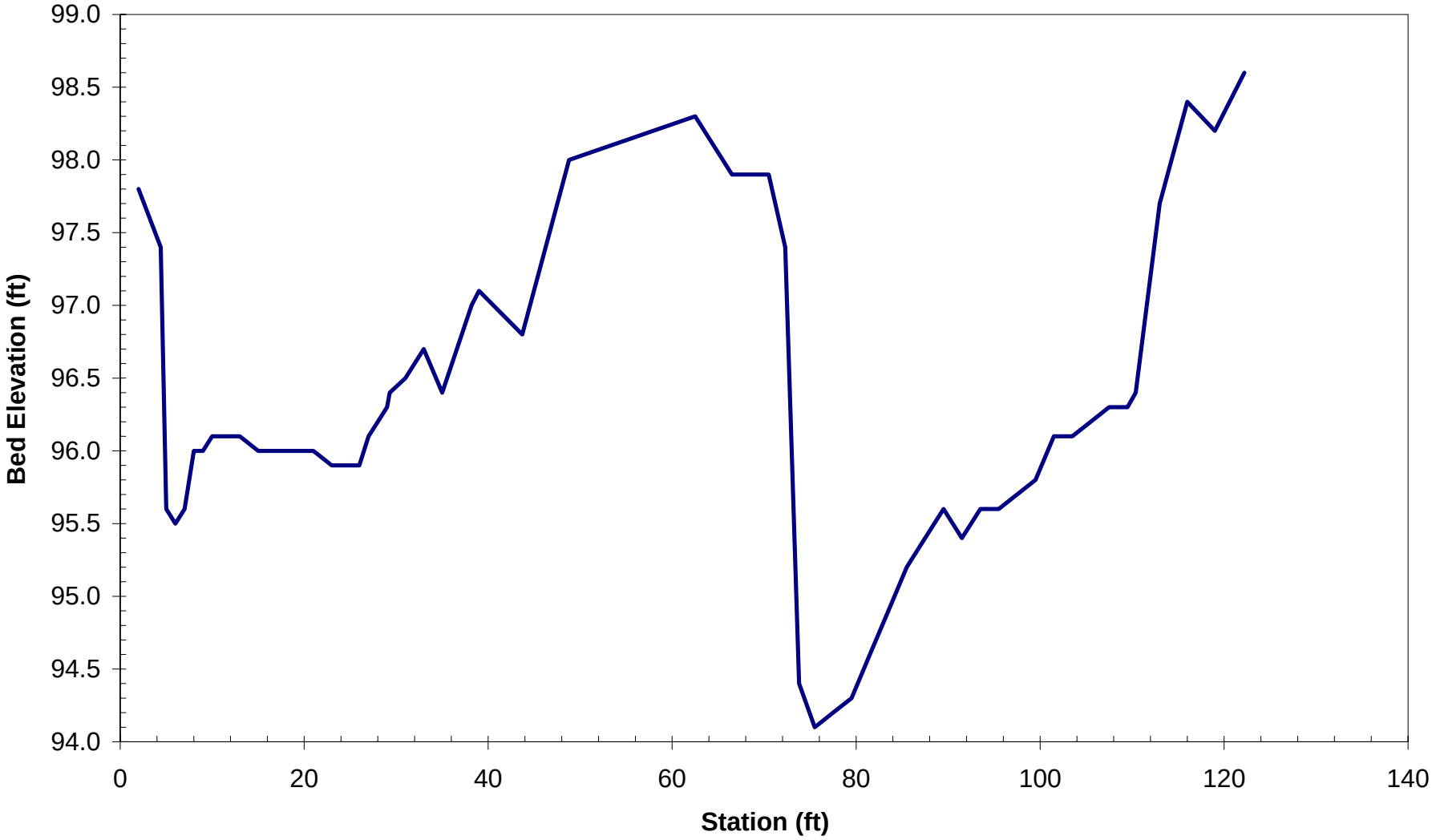
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges.
TR-1 is a single channel transect, and all of its hydraulic parameters appear varying in normal trends.
TR-2 through TR-6 each has very complex bathymetry with islands separating each transect into multiple channels. The hydraulics (velocity and WSE) were generally different in each channel such that the flow did not meet the definition of uniform flow across the transect, a hydraulic condition required when applying Manning's equation. In addition, the Froude number was originally developed for the single-channel transect and may not be applicable to predicting for multiple-channel transect.
As the result, the Manning's n value calculated for the transects with multiple channels may not adequately reflect the roughness of the transect.

calibration notes

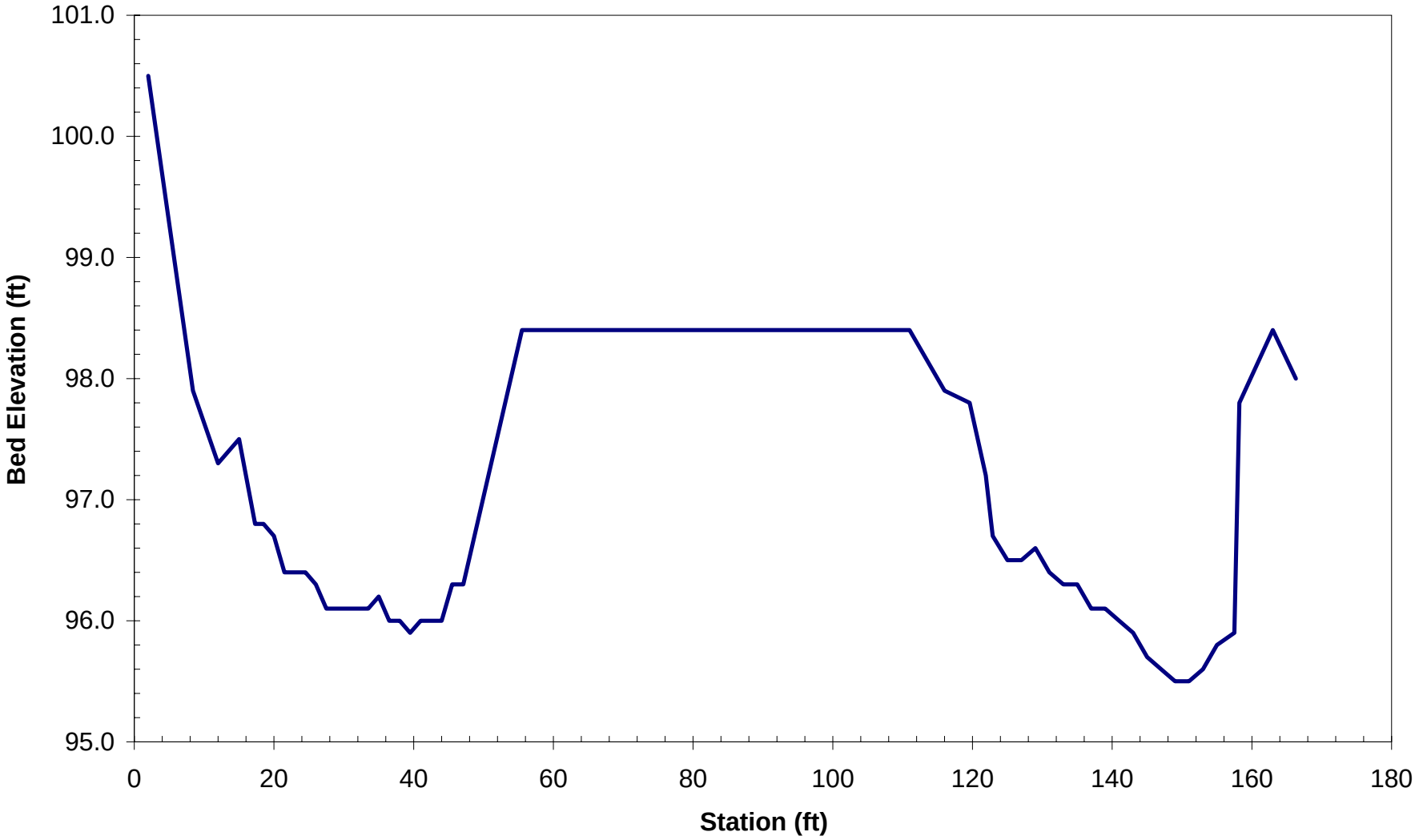
Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR1
Measured Transect Profile



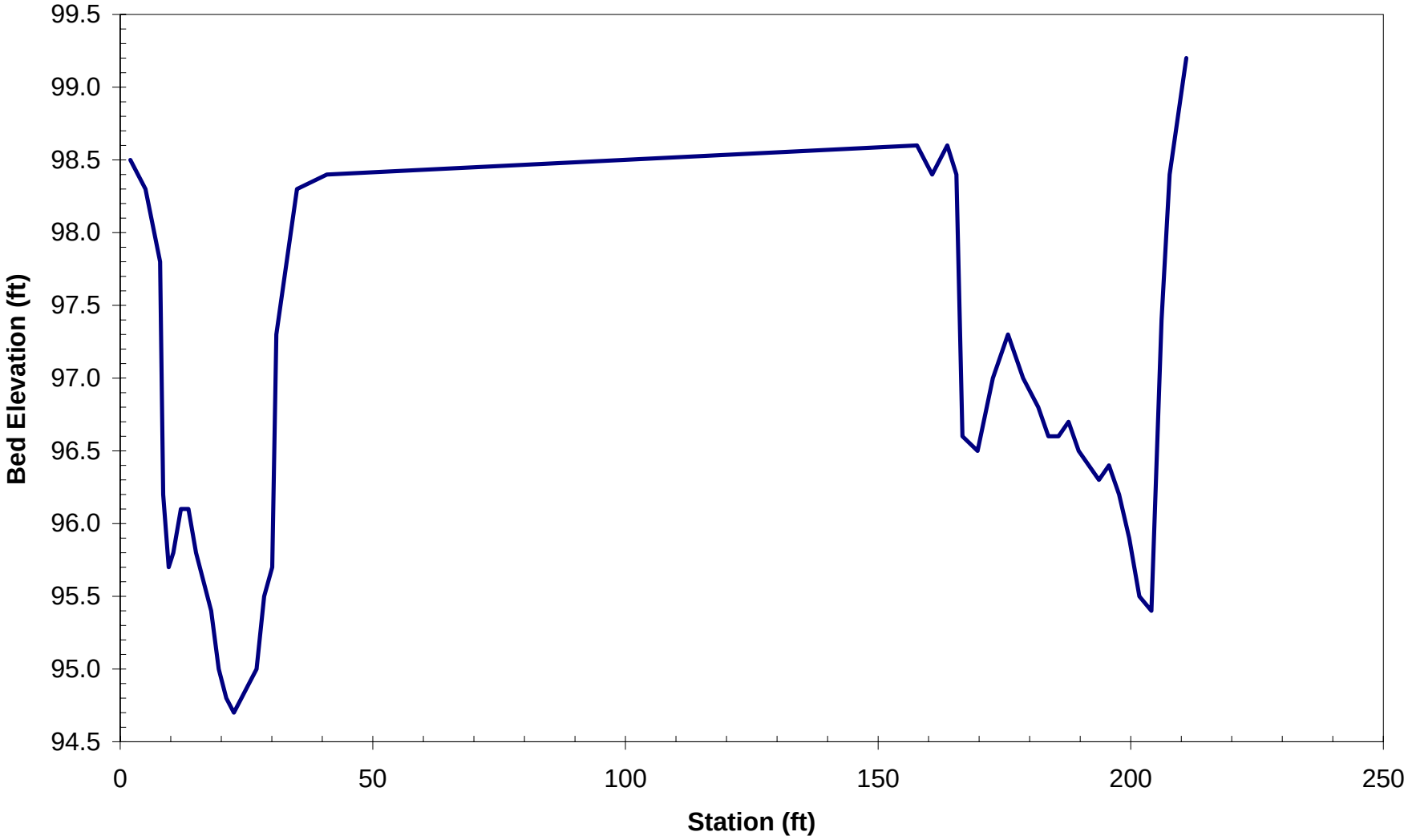
Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR2
Measured Transect Profile



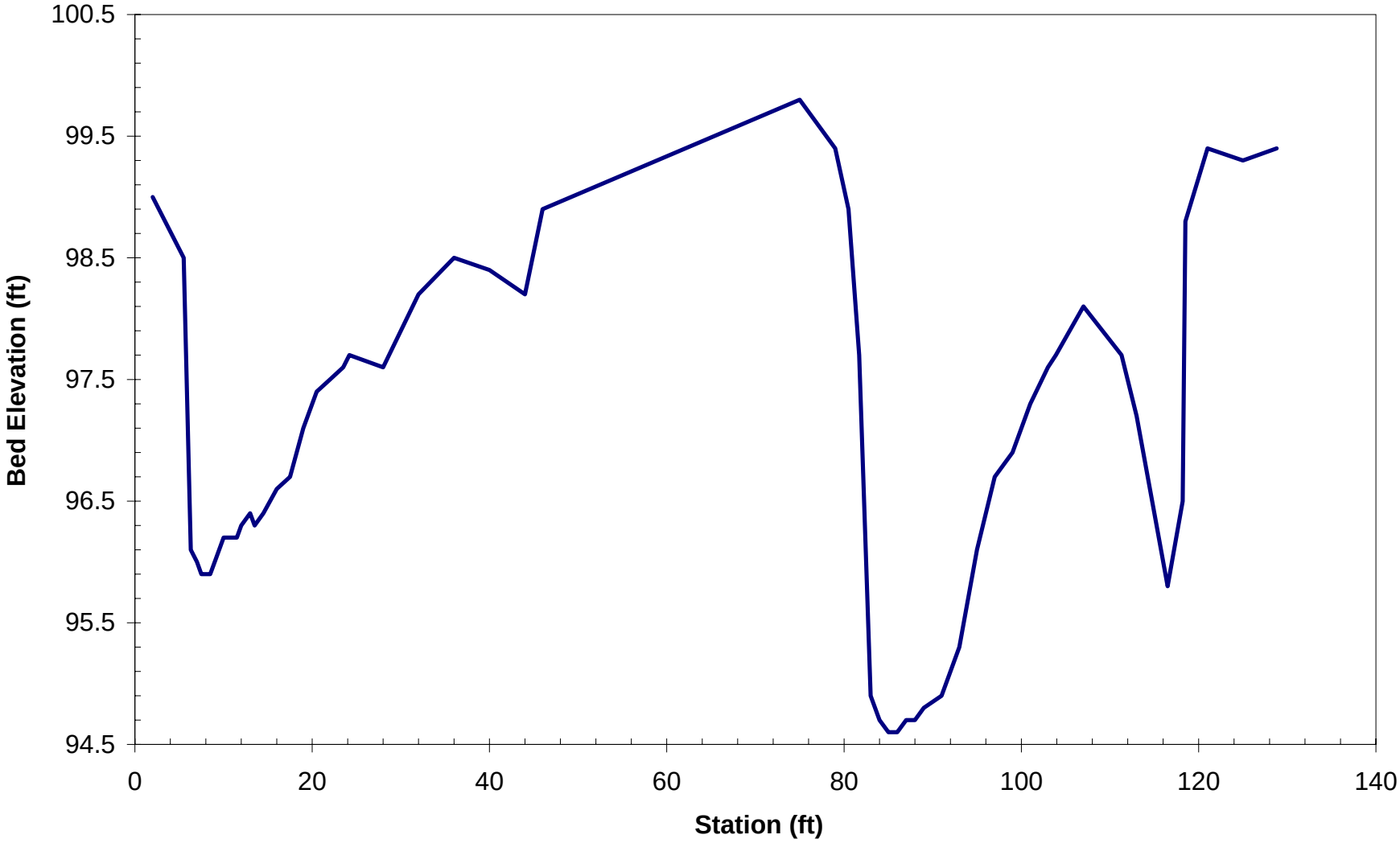
Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR3
Measured Transect Profile



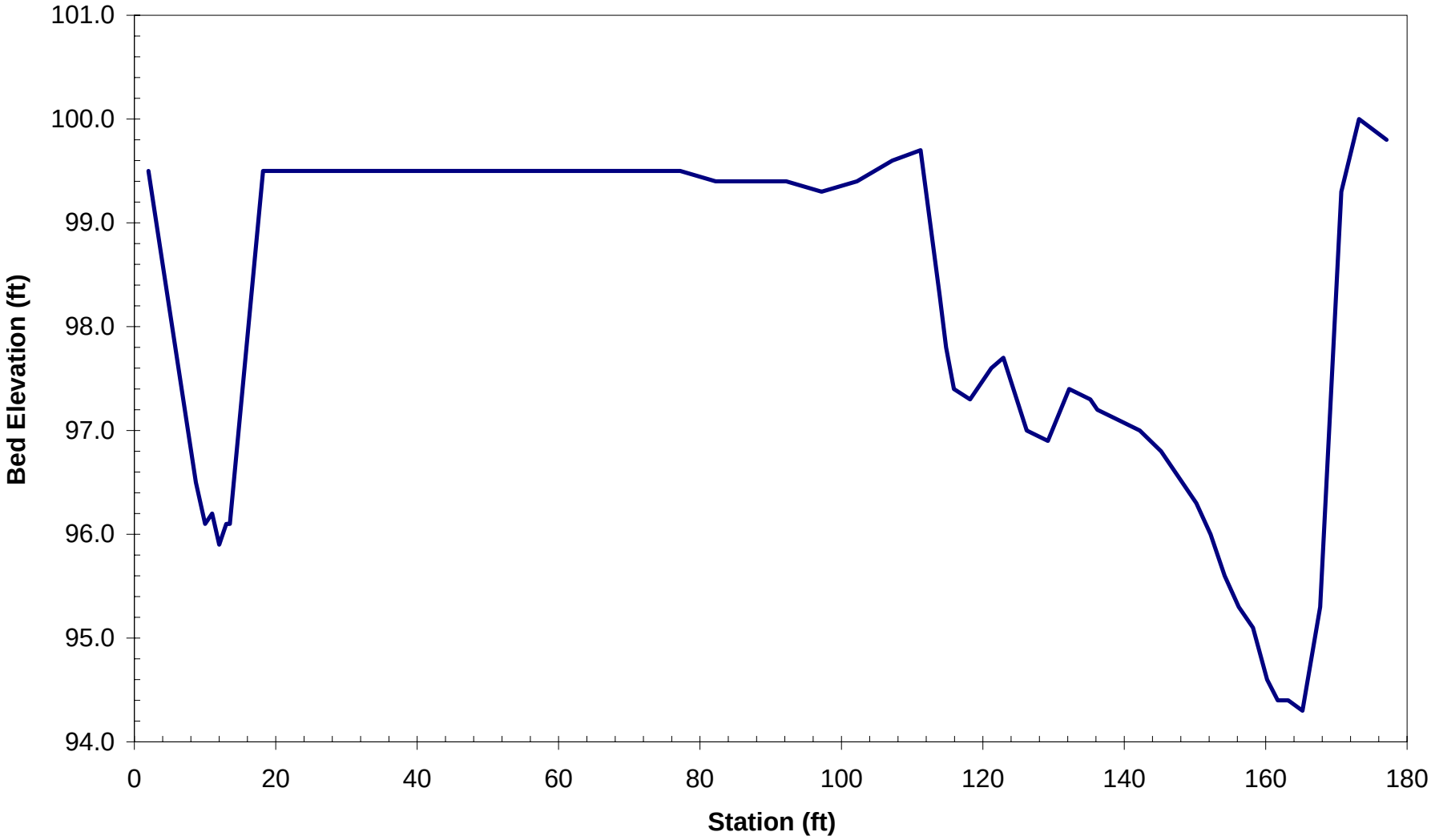
Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR4
Measured Transect Profile



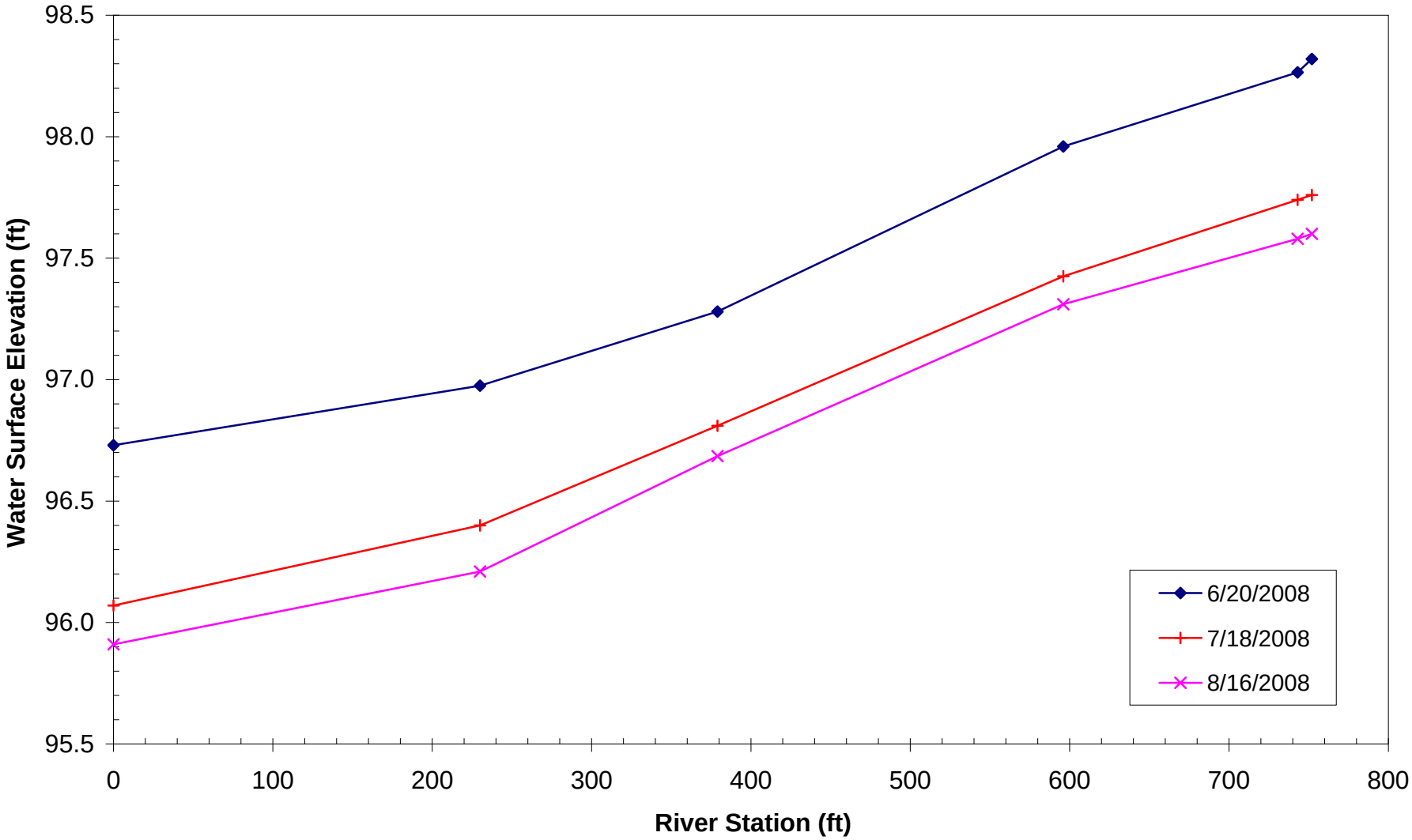
Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR5
Measured Transect Profile

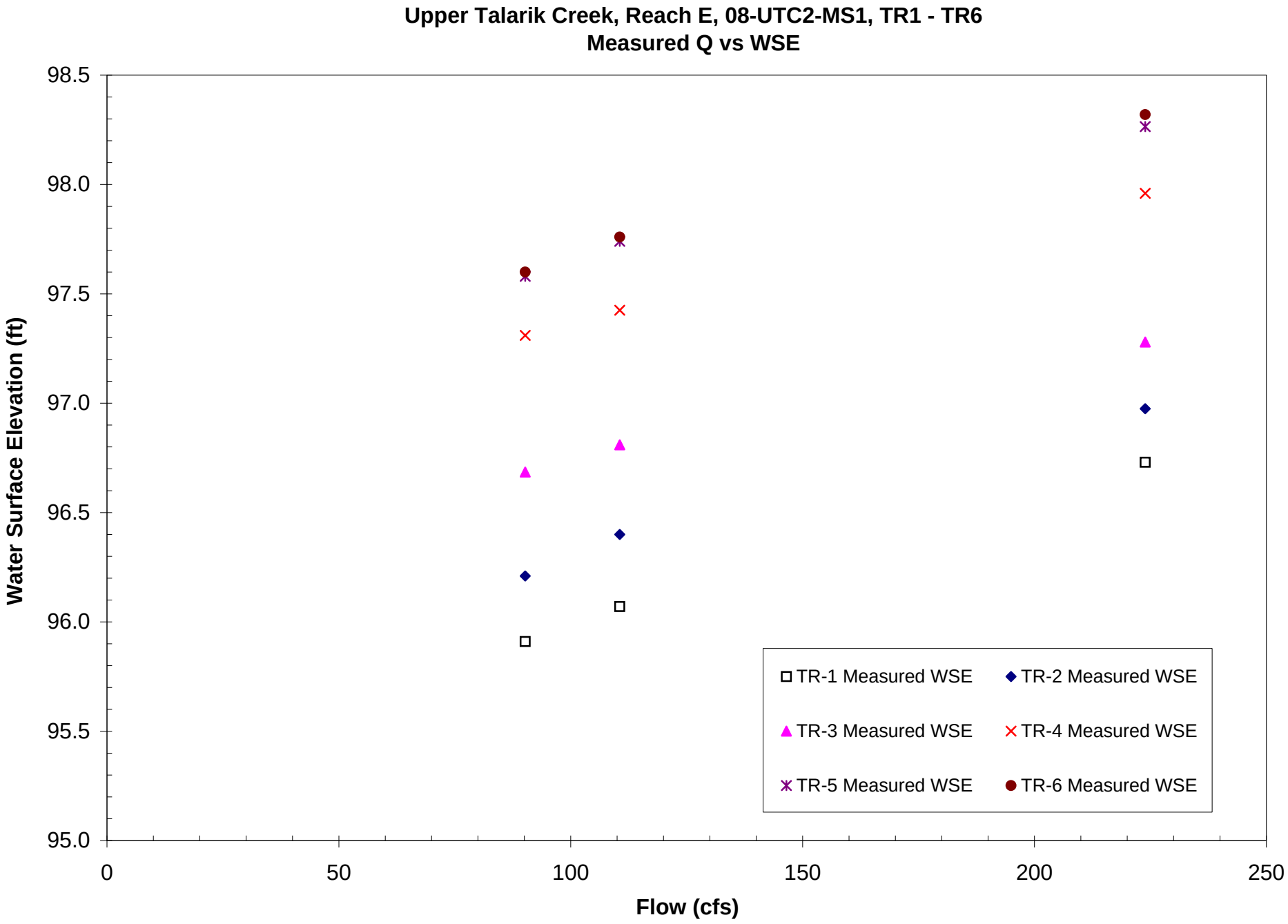


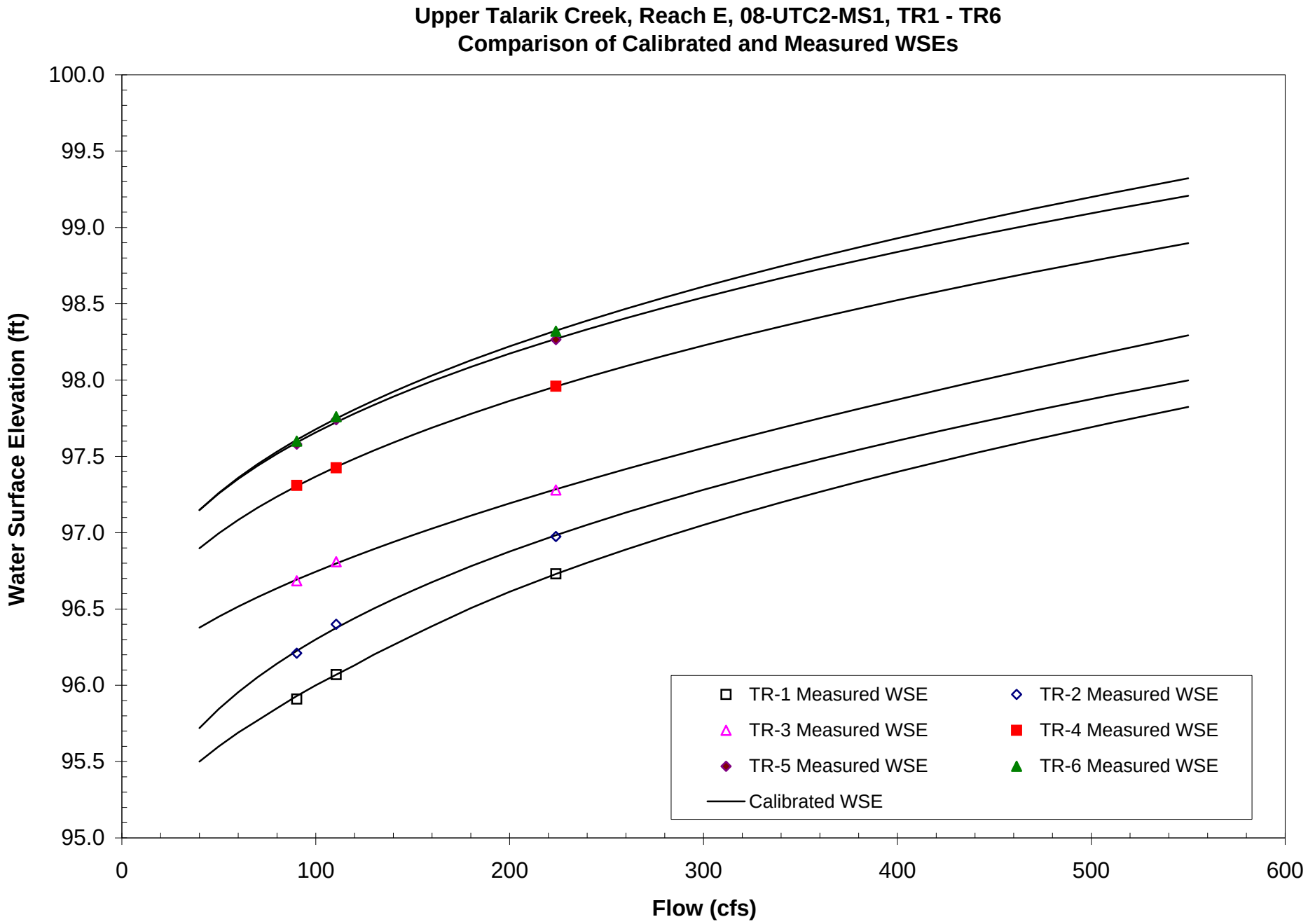
Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR6
Measured Transect Profile



Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR1 - TR6
Longitudinal Water Surface Elevation Profiles



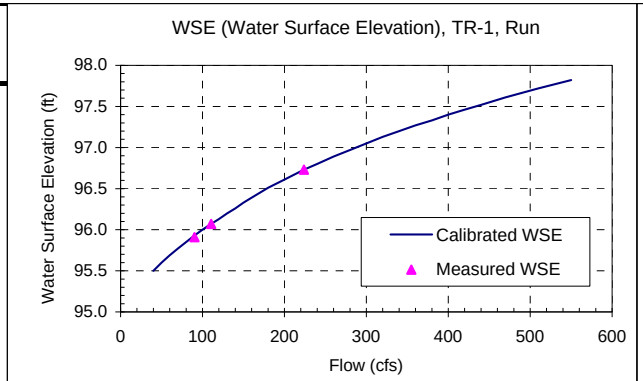

Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR1 - TR6
Measured Q vs WSE
Water Surface Elevation (ft)
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
50
100
150
200
250
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE

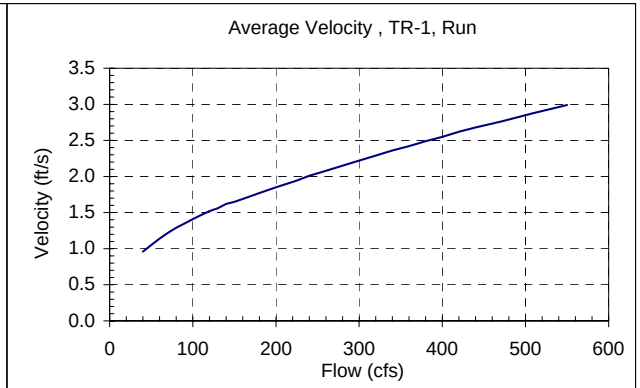

Upper Talarik Creek, Reach E, 08-UTC2-MS1, TR1 - TR6
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
100.0
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
0
100
200
300
400
500
600
Flow (cfs)
TR-1 Measured WSE
TR-2 Measured WSE
TR-3 Measured WSE
TR-4 Measured WSE
TR-5 Measured WSE
TR-6 Measured WSE
Calibrated WSE

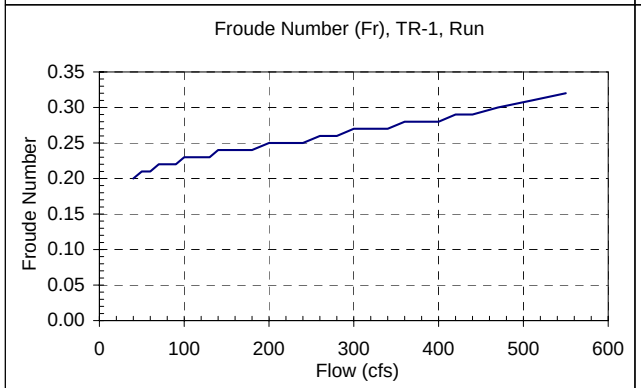
Stream: Upper Talarik Creek
Site: 08-UTC2-MS1
Date: 7/18/2008
Calibration Flow: Mid

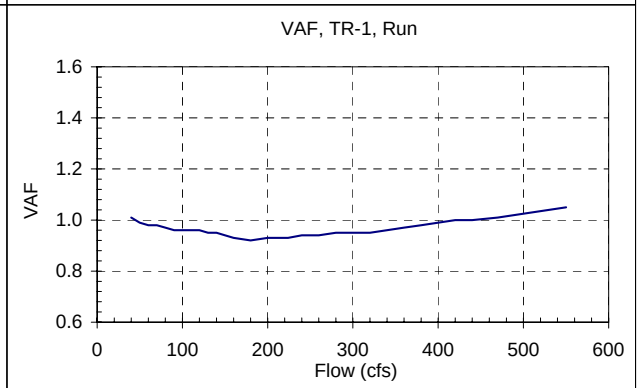
Reach: E
Site: 1
Transect: 1
Habitat: Run

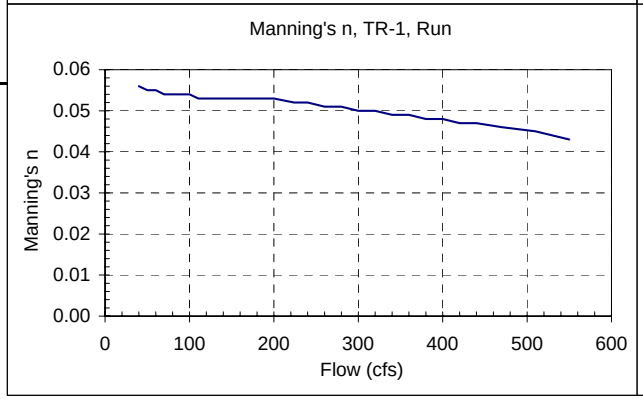
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	95.50	0.20	0.96	1.01	0.056	60.1
50	95.60	0.21	1.05	0.99	0.055	60.5
60	95.69	0.21	1.14	0.98	0.055	60.7
70	95.77	0.22	1.22	0.98	0.054	60.9
80	95.85	0.22	1.29	0.97	0.054	61.1
90.2	95.93	0.22	1.35	0.96	0.054	61.3
100	96.00	0.23	1.41	0.96	0.054	61.4
110.6	96.07	0.23	1.47	0.96	0.053	61.6
120	96.13	0.23	1.52	0.96	0.053	61.8
130	96.20	0.23	1.56	0.95	0.053	62.0
140	96.26	0.24	1.62	0.95	0.053	62.2
150	96.33	0.24	1.65	0.94	0.053	62.5
160	96.39	0.24	1.69	0.93	0.053	62.7
180	96.51	0.24	1.77	0.92	0.053	63.1
200	96.61	0.25	1.85	0.93	0.053	63.5
223.9	96.73	0.25	1.94	0.93	0.052	63.9
240	96.80	0.25	2.01	0.94	0.052	64.1
260	96.89	0.26	2.08	0.94	0.051	64.4
280	96.97	0.26	2.15	0.95	0.051	64.7
300	97.05	0.27	2.22	0.95	0.050	65.0
320	97.13	0.27	2.29	0.95	0.050	65.2
340	97.20	0.27	2.36	0.96	0.049	65.5
360	97.27	0.28	2.42	0.97	0.049	65.7
380	97.33	0.28	2.49	0.98	0.048	65.9
400	97.40	0.28	2.55	0.99	0.048	66.1
420	97.46	0.29	2.62	1.00	0.047	66.3
440	97.52	0.29	2.68	1.00	0.047	66.5
470	97.61	0.30	2.76	1.01	0.046	66.8
510	97.72	0.31	2.88	1.03	0.045	68.0
550	97.82	0.32	2.99	1.05	0.043	72.1

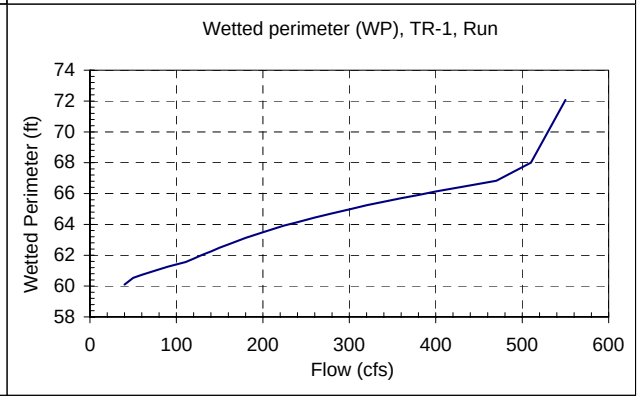










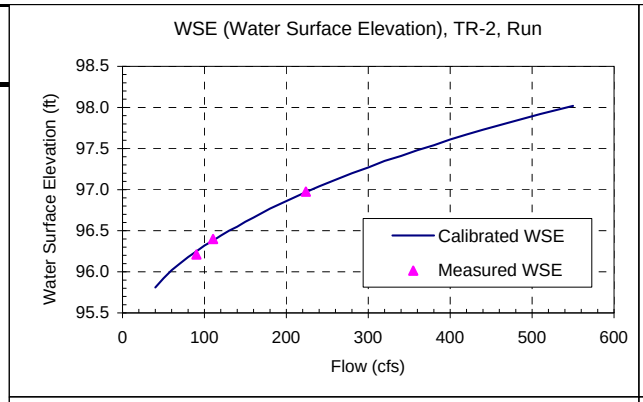


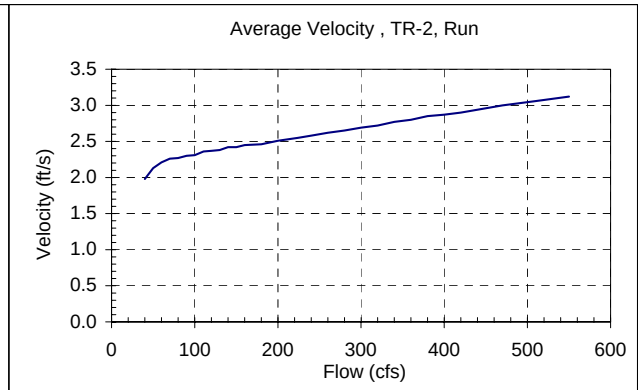
cTR1 - Transect hydraulic parameters

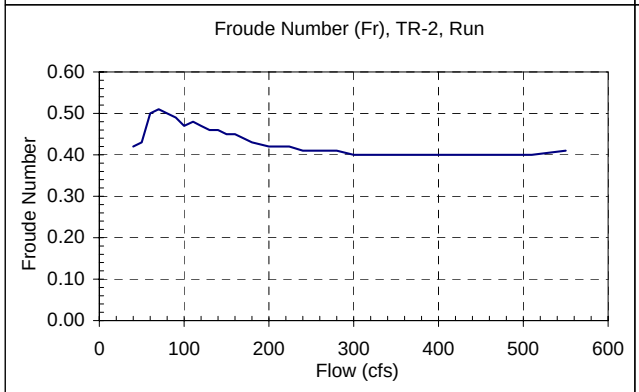
Stream: Upper Talarik Creek
Site: 08-UTC2-MS1
Date: 7/18/2008
Calibration Flow: Mid

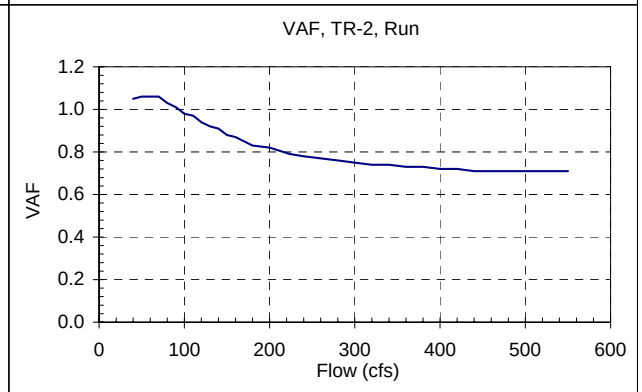
Reach: E
Site: 1
Transect: 2
Habitat: Island Complex

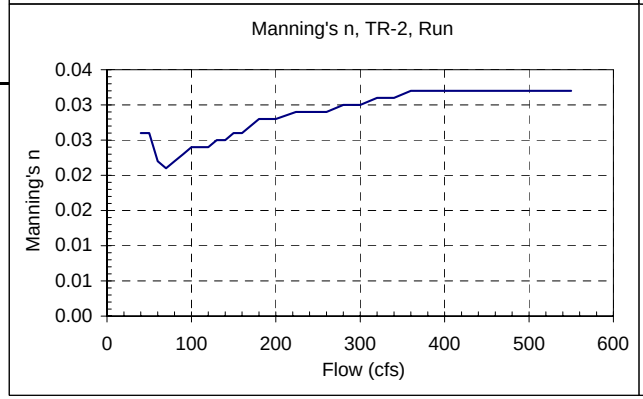
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	95.81	0.42	1.98	1.05	0.026	30.3
50	95.92	0.43	2.13	1.06	0.026	32.6
60	96.02	0.50	2.21	1.06	0.022	46.7
70	96.10	0.51	2.26	1.06	0.021	53.4
80	96.18	0.50	2.27	1.03	0.022	57.0
90.2	96.25	0.49	2.30	1.01	0.023	58.9
100	96.32	0.47	2.31	0.98	0.024	60.6
110.6	96.38	0.48	2.36	0.97	0.024	63.9
120	96.44	0.47	2.37	0.94	0.024	66.1
130	96.50	0.46	2.38	0.92	0.025	68.1
140	96.55	0.46	2.42	0.91	0.025	69.5
150	96.61	0.45	2.42	0.88	0.026	71.1
160	96.66	0.45	2.45	0.87	0.026	72.4
180	96.77	0.43	2.46	0.83	0.028	73.8
200	96.86	0.42	2.51	0.82	0.028	74.9
223.9	96.97	0.42	2.55	0.79	0.029	78.4
240	97.04	0.41	2.58	0.78	0.029	80.5
260	97.12	0.41	2.62	0.77	0.029	83.0
280	97.20	0.41	2.65	0.76	0.030	84.0
300	97.27	0.40	2.69	0.75	0.030	84.6
320	97.35	0.40	2.72	0.74	0.031	85.3
340	97.41	0.40	2.77	0.74	0.031	86.0
360	97.48	0.40	2.80	0.73	0.032	87.2
380	97.54	0.40	2.85	0.73	0.032	88.2
400	97.61	0.40	2.87	0.72	0.032	89.3
420	97.67	0.40	2.90	0.72	0.032	90.4
440	97.73	0.40	2.94	0.71	0.032	91.5
470	97.81	0.40	3.00	0.71	0.032	92.7
510	97.92	0.40	3.06	0.71	0.032	97.3
550	98.02	0.41	3.12	0.71	0.032	101.0

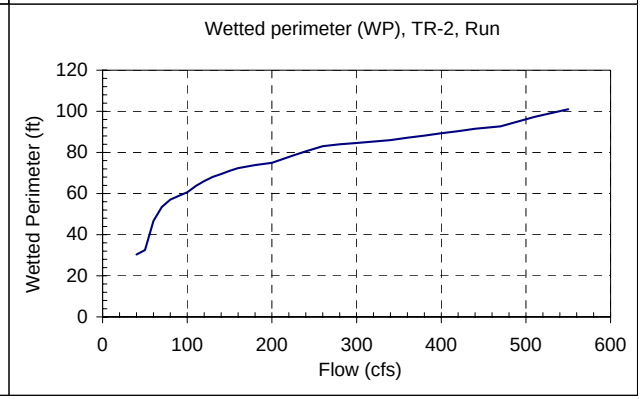










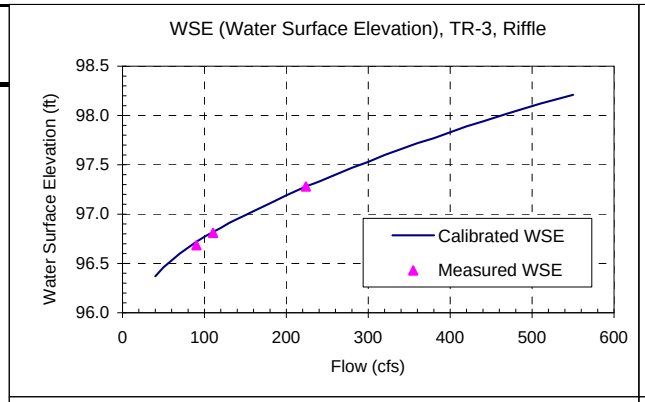


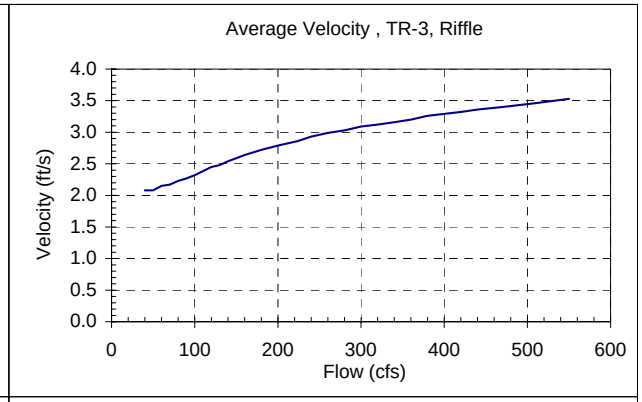
cTR2 - Transect hydraulic parameters

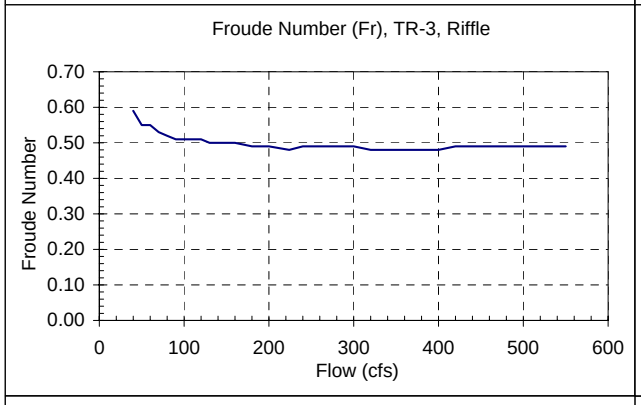
Stream: Upper Talarik Creek
Site: 08-UTC2-MS1
Date: 7/18/2008
Calibration Flow: Mid

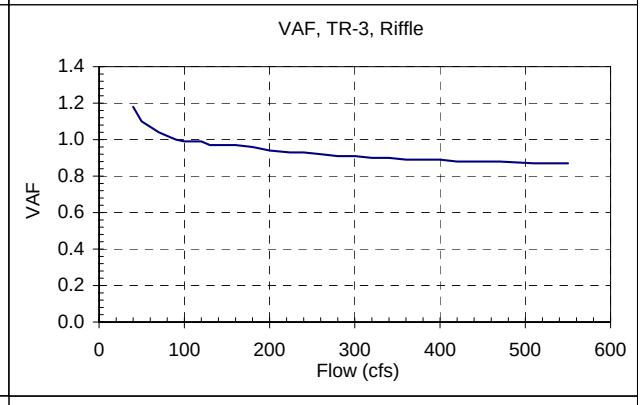
Reach: E
Site: 1
Transect: 3
Habitat: Island Complex

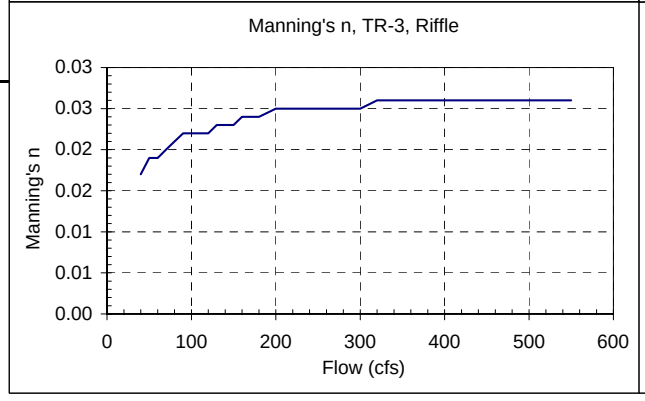
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	96.37	0.59	2.08	1.18	0.017	51.2
50	96.46	0.55	2.08	1.10	0.019	54.4
60	96.53	0.55	2.15	1.07	0.019	59.5
70	96.60	0.53	2.17	1.04	0.020	62.5
80	96.66	0.52	2.23	1.02	0.021	63.6
90.2	96.72	0.51	2.27	1.00	0.022	65.3
100	96.77	0.51	2.32	0.99	0.022	66.5
110.6	96.82	0.51	2.39	0.99	0.022	67.9
120	96.86	0.51	2.45	0.99	0.022	68.3
130	96.91	0.50	2.48	0.97	0.023	68.9
140	96.95	0.50	2.54	0.97	0.023	69.3
150	96.99	0.50	2.59	0.97	0.023	69.8
160	97.03	0.50	2.64	0.97	0.024	70.2
180	97.11	0.49	2.72	0.96	0.024	71.1
200	97.19	0.49	2.79	0.94	0.025	72.1
223.9	97.28	0.48	2.86	0.93	0.025	73.5
240	97.33	0.49	2.93	0.93	0.025	75.1
260	97.40	0.49	2.99	0.92	0.025	77.2
280	97.47	0.49	3.03	0.91	0.025	79.4
300	97.53	0.49	3.09	0.91	0.025	80.6
320	97.60	0.48	3.12	0.90	0.026	81.6
340	97.66	0.48	3.16	0.90	0.026	82.5
360	97.72	0.48	3.20	0.89	0.026	83.4
380	97.77	0.48	3.26	0.89	0.026	84.1
400	97.83	0.48	3.29	0.89	0.026	85.0
420	97.89	0.49	3.32	0.88	0.026	89.8
440	97.94	0.49	3.36	0.88	0.026	91.0
470	98.02	0.49	3.40	0.88	0.026	93.3
510	98.12	0.49	3.46	0.87	0.026	96.4
550	98.21	0.49	3.53	0.87	0.026	99.3

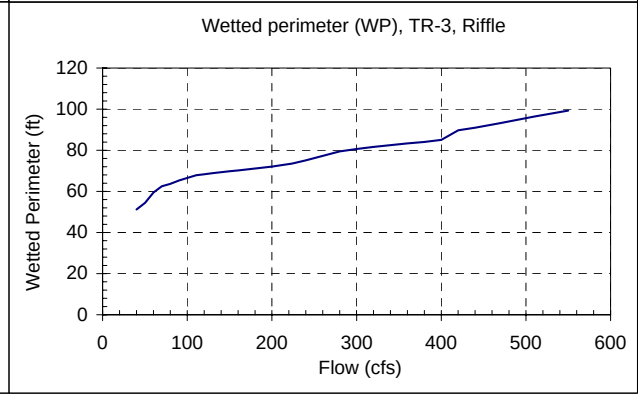










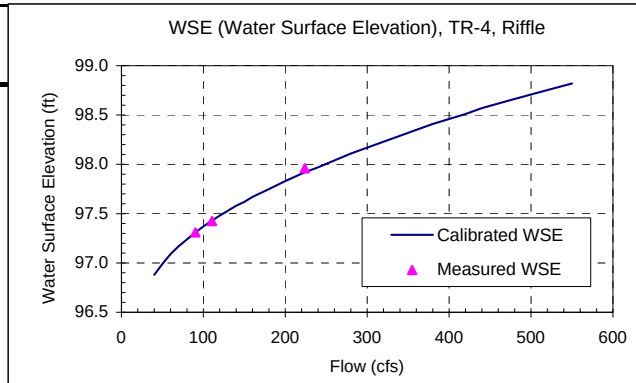


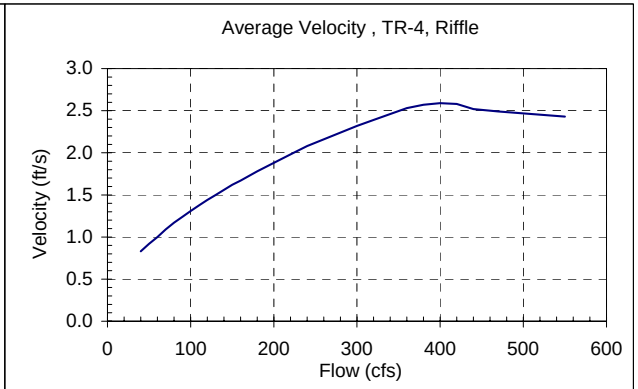
cTR3 - Transect hydraulic parameters

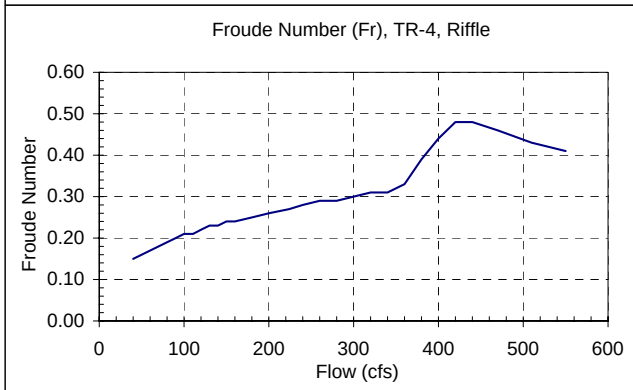
Stream: Upper Talarik Creek
Site: 08-UTC2-MS1
Date: 7/18/2008
Calibration Flow: Mid

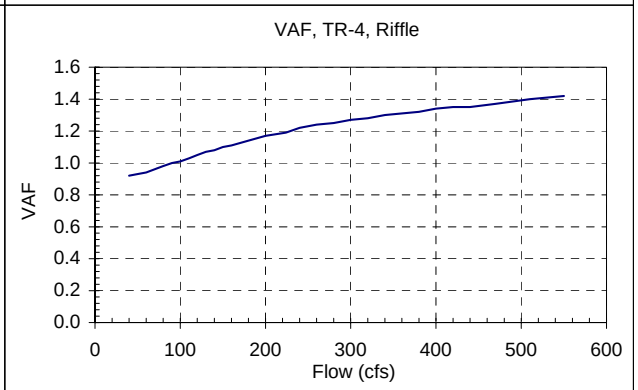
Reach: E
Site: 1
Transect: 4
Habitat: Island Complex

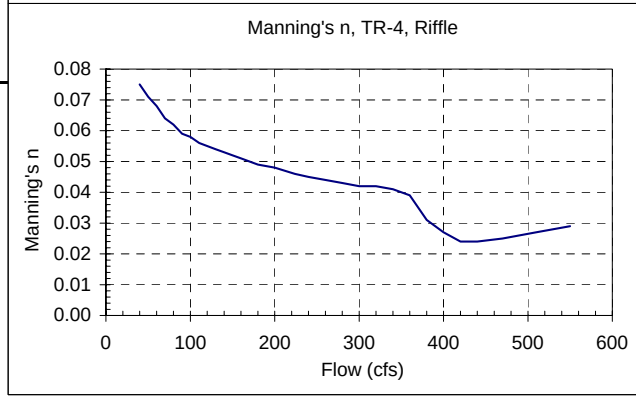
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	96.88	0.15	0.83	0.92	0.075	55.1
50	96.99	0.16	0.92	0.93	0.071	57.6
60	97.09	0.17	1.00	0.94	0.068	60.1
70	97.17	0.18	1.09	0.96	0.064	62.1
80	97.24	0.19	1.17	0.98	0.062	63.8
90.2	97.31	0.20	1.24	1.00	0.059	65.5
100	97.37	0.21	1.31	1.01	0.058	66.3
110.6	97.43	0.21	1.38	1.03	0.056	66.8
120	97.48	0.22	1.44	1.05	0.055	67.2
130	97.53	0.23	1.50	1.07	0.054	67.7
140	97.58	0.23	1.56	1.08	0.053	68.1
150	97.62	0.24	1.62	1.10	0.052	68.4
160	97.67	0.24	1.67	1.11	0.051	68.9
180	97.75	0.25	1.78	1.14	0.049	69.6
200	97.83	0.26	1.88	1.17	0.048	70.4
223.9	97.92	0.27	2.00	1.19	0.046	71.7
240	97.97	0.28	2.08	1.22	0.045	72.4
260	98.04	0.29	2.16	1.24	0.044	73.4
280	98.11	0.29	2.24	1.25	0.043	74.3
300	98.17	0.30	2.32	1.27	0.042	75.2
320	98.23	0.31	2.39	1.28	0.042	76.0
340	98.29	0.31	2.46	1.30	0.041	77.0
360	98.35	0.33	2.53	1.31	0.039	83.2
380	98.41	0.39	2.57	1.32	0.031	116.8
400	98.46	0.44	2.59	1.34	0.027	150.3
420	98.51	0.48	2.58	1.35	0.024	183.4
440	98.57	0.48	2.52	1.35	0.024	210.3
470	98.64	0.46	2.49	1.37	0.025	211.6
510	98.73	0.43	2.46	1.40	0.027	212.0
550	98.82	0.41	2.43	1.42	0.029	212.3

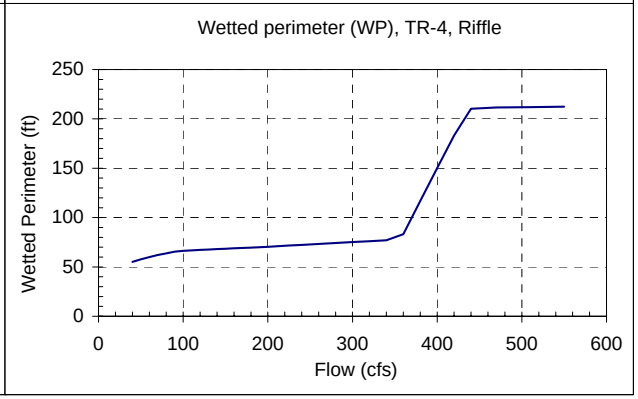










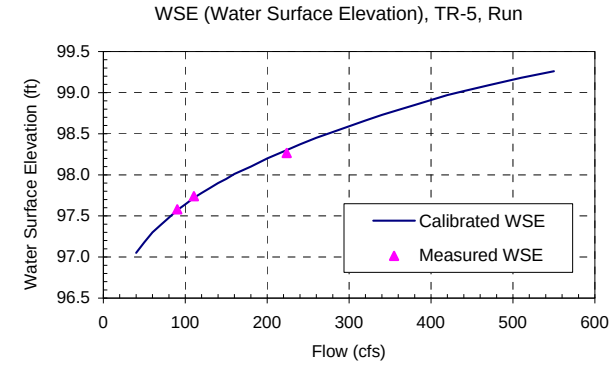


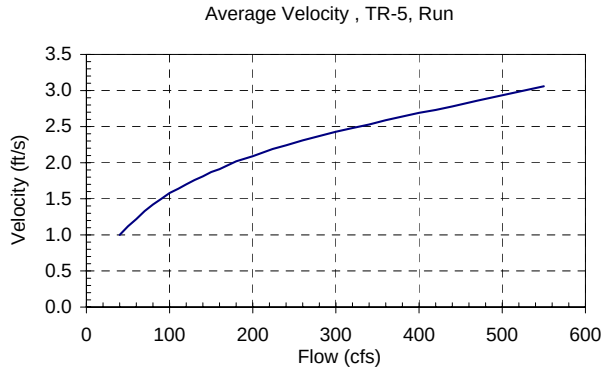
cTR4 - Transect hydraulic parameters

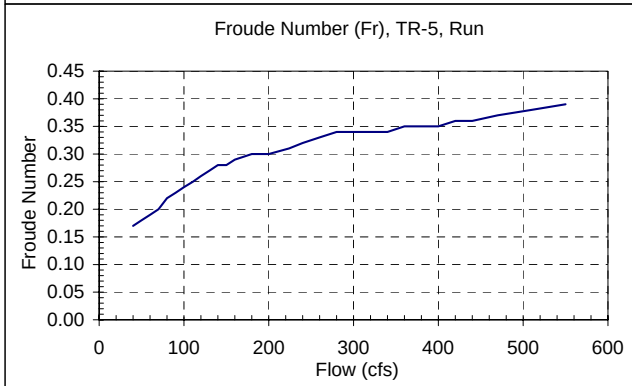
Stream: Upper Talarik Creek
Site: 08-UTC2-MS1
Date: 7/18/2008
Calibration Flow: Mid

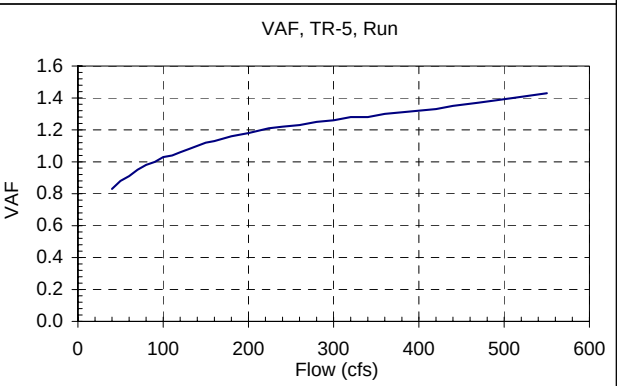
Reach: E
Site: 1
Transect: 5
Habitat: Island Complex

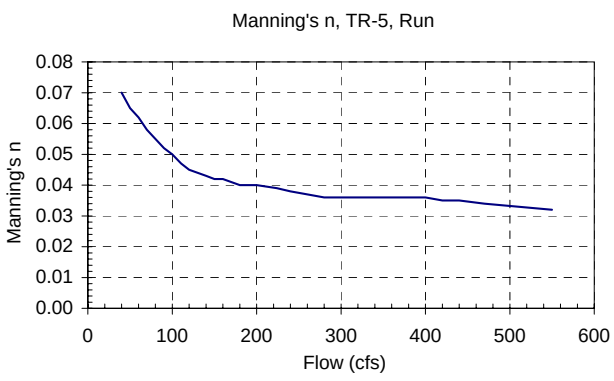
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.05	0.17	1.00	0.83	0.070	38.5
50	97.18	0.18	1.12	0.88	0.065	40.6
60	97.30	0.19	1.22	0.91	0.062	42.6
70	97.39	0.20	1.33	0.95	0.058	44.2
80	97.48	0.22	1.42	0.98	0.055	46.2
90.2	97.57	0.23	1.50	1.00	0.052	49.1
100	97.64	0.24	1.58	1.03	0.050	51.5
110.6	97.72	0.25	1.64	1.04	0.047	56.3
120	97.78	0.26	1.70	1.06	0.045	58.8
130	97.84	0.27	1.76	1.08	0.044	60.9
140	97.90	0.28	1.81	1.10	0.043	62.9
150	97.95	0.28	1.87	1.12	0.042	64.5
160	98.01	0.29	1.91	1.13	0.042	66.6
180	98.10	0.30	2.02	1.16	0.040	68.9
200	98.20	0.30	2.09	1.18	0.040	70.6
223.9	98.30	0.31	2.19	1.21	0.039	73.9
240	98.37	0.32	2.24	1.22	0.038	76.2
260	98.45	0.33	2.31	1.23	0.037	79.4
280	98.52	0.34	2.37	1.25	0.036	83.8
300	98.59	0.34	2.43	1.26	0.036	84.6
320	98.66	0.34	2.48	1.28	0.036	85.5
340	98.73	0.34	2.53	1.28	0.036	86.4
360	98.79	0.35	2.59	1.30	0.036	87.2
380	98.85	0.35	2.64	1.31	0.036	88.0
400	98.91	0.35	2.69	1.32	0.036	88.9
420	98.97	0.36	2.73	1.33	0.035	91.2
440	99.02	0.36	2.78	1.35	0.035	93.5
470	99.09	0.37	2.86	1.37	0.034	96.4
510	99.18	0.38	2.96	1.40	0.033	100.2
550	99.26	0.39	3.06	1.43	0.032	103.5

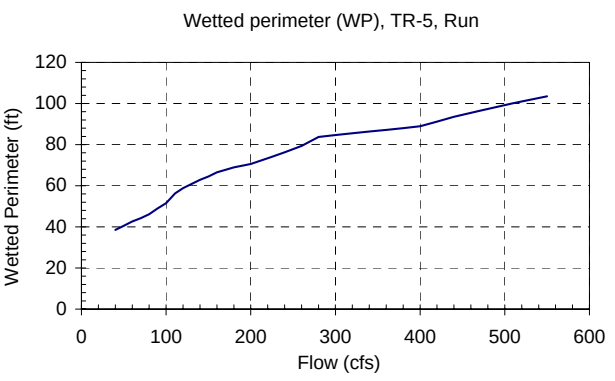










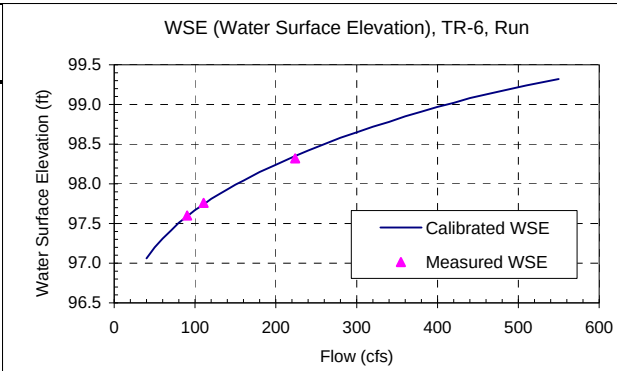


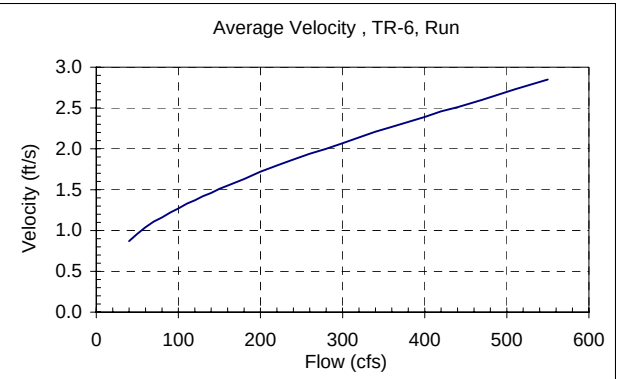
cTR5 - Transect hydraulic parameters

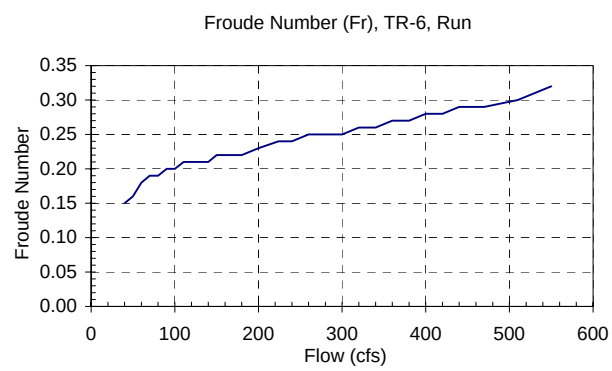
Stream: Upper Talarik Creek
Site: 08-UTC2-MS1
Date: 7/18/2008
Calibration Flow: Mid

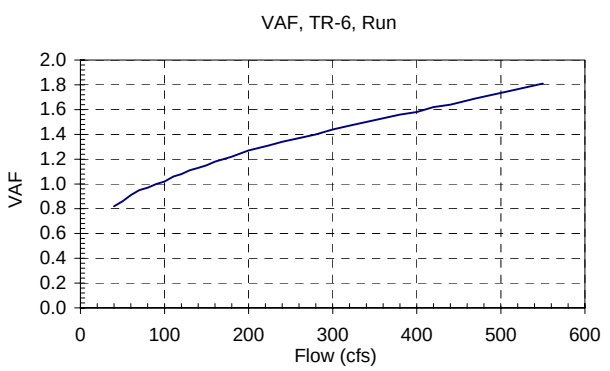
Reach: E
Site: 1
Transect: 6
Habitat: Island Complex

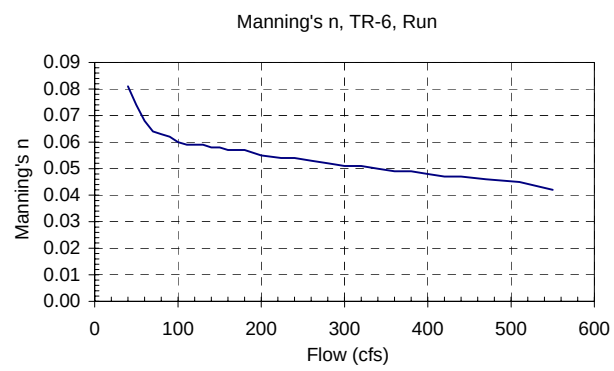
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
40	97.06	0.15	0.87	0.82	0.081	43.9
50	97.20	0.16	0.96	0.86	0.074	49.6
60	97.31	0.18	1.04	0.91	0.068	54.7
70	97.41	0.19	1.11	0.95	0.064	59.9
80	97.51	0.19	1.16	0.97	0.063	62.1
90.2	97.59	0.20	1.22	1.00	0.062	63.9
100	97.67	0.20	1.27	1.02	0.060	66.8
110.6	97.74	0.21	1.33	1.06	0.059	67.4
120	97.81	0.21	1.37	1.08	0.059	67.9
130	97.87	0.21	1.42	1.11	0.059	68.4
140	97.93	0.21	1.46	1.13	0.058	68.8
150	97.99	0.22	1.51	1.15	0.058	69.2
160	98.04	0.22	1.55	1.18	0.057	69.6
180	98.15	0.22	1.63	1.22	0.057	70.4
200	98.24	0.23	1.72	1.27	0.055	71.0
223.9	98.35	0.24	1.81	1.31	0.054	71.8
240	98.42	0.24	1.87	1.34	0.054	72.4
260	98.50	0.25	1.94	1.37	0.053	73.0
280	98.58	0.25	2.00	1.40	0.052	73.6
300	98.65	0.25	2.07	1.44	0.051	74.1
320	98.72	0.26	2.14	1.47	0.051	74.6
340	98.78	0.26	2.21	1.50	0.050	75.1
360	98.85	0.27	2.27	1.53	0.049	75.6
380	98.91	0.27	2.33	1.56	0.049	76.1
400	98.97	0.28	2.39	1.58	0.048	76.5
420	99.02	0.28	2.46	1.62	0.047	76.9
440	99.08	0.29	2.51	1.64	0.047	77.4
470	99.15	0.29	2.60	1.69	0.046	77.9
510	99.24	0.30	2.73	1.75	0.045	78.6
550	99.32	0.32	2.85	1.81	0.042	83.5

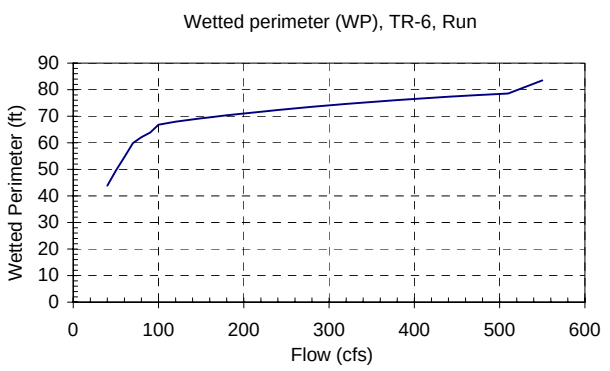






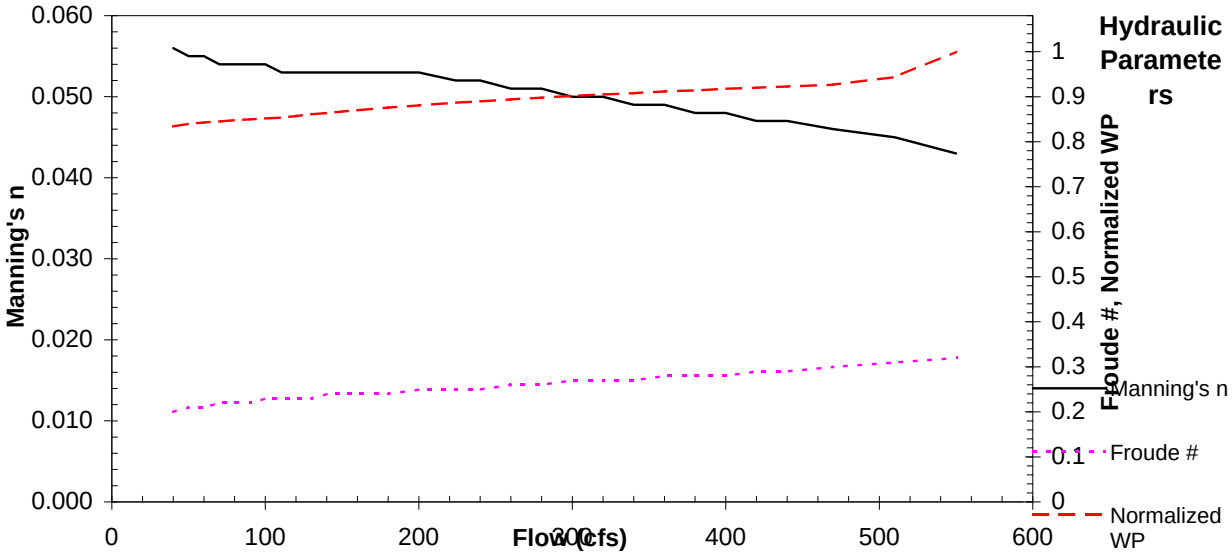


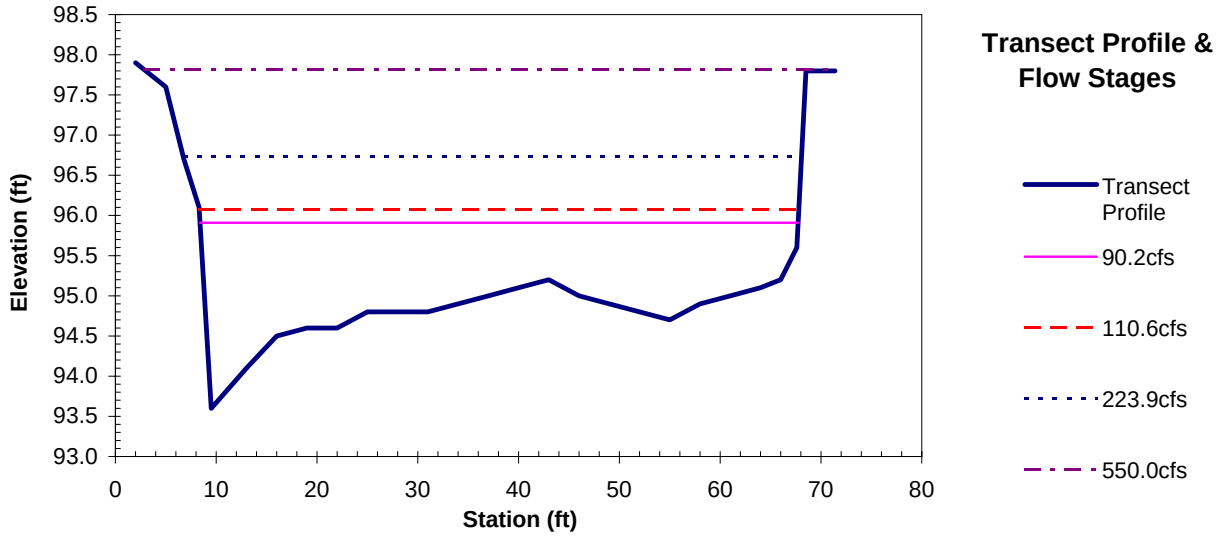


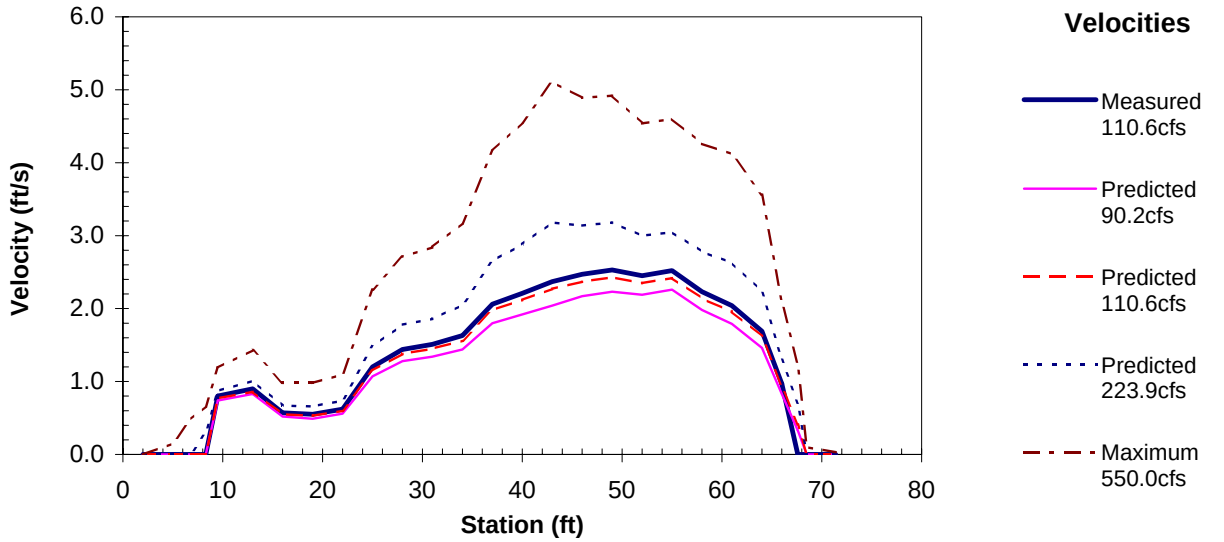


cTR6 - Transect hydraulic parameters

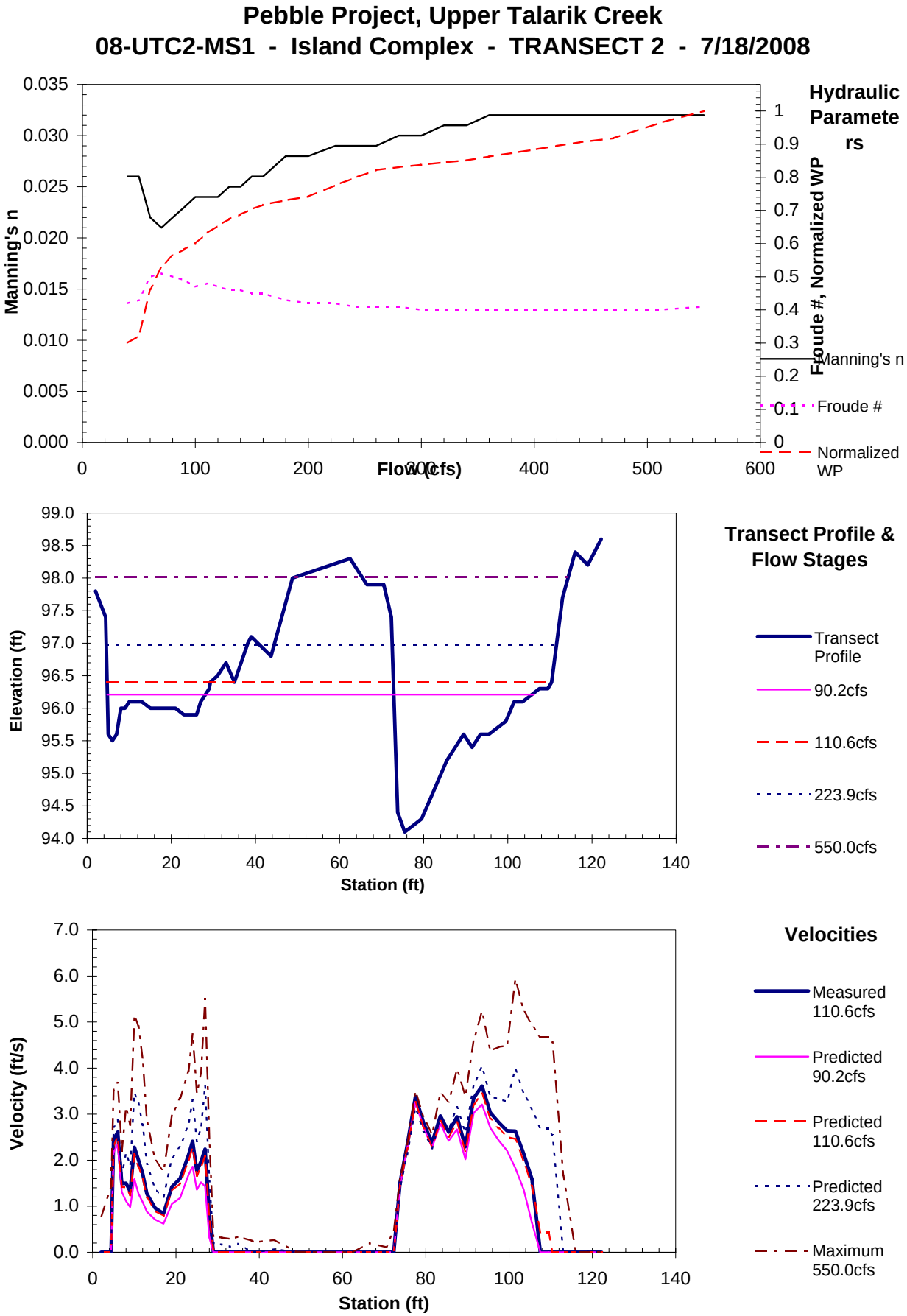
Pebble Project, Upper Talarik Creek
08-UTC2-MS1 - RUN - TRANSECT 1 - 7/18/2008





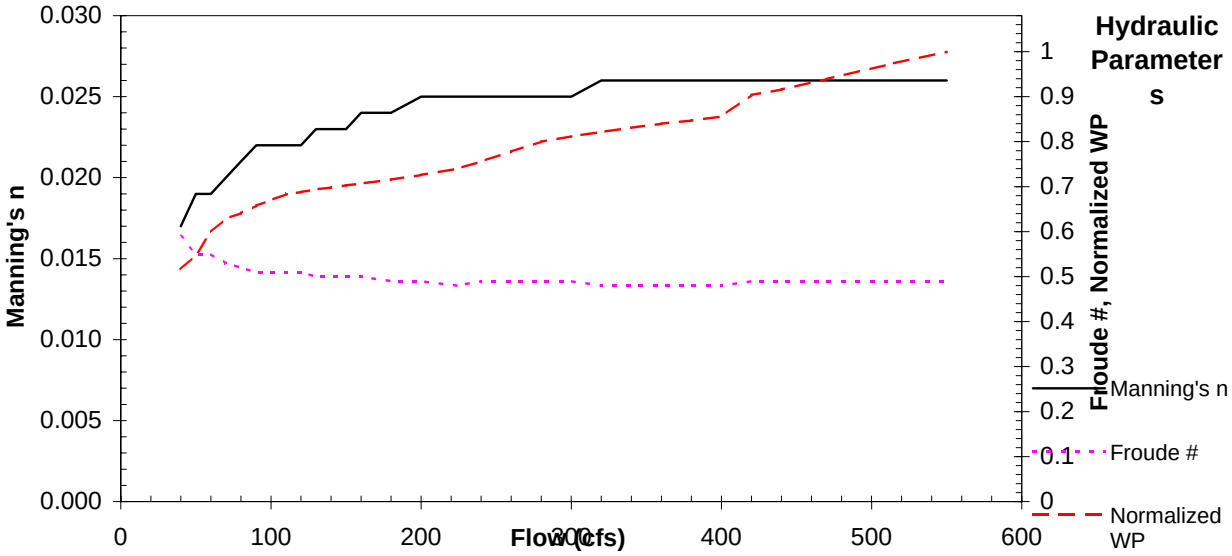


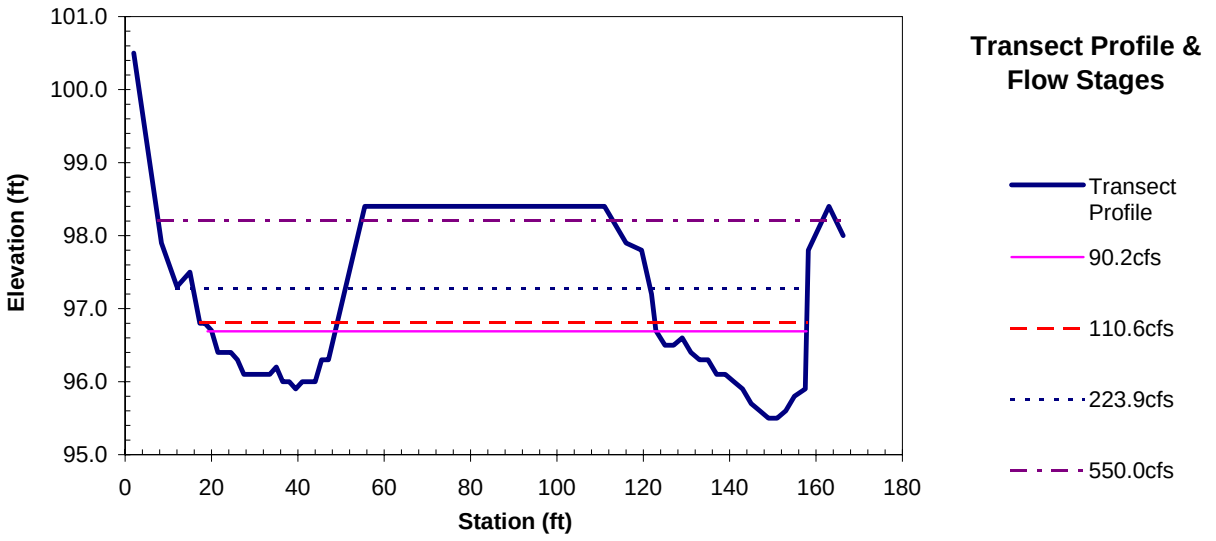
Transect hydraulic summary plots

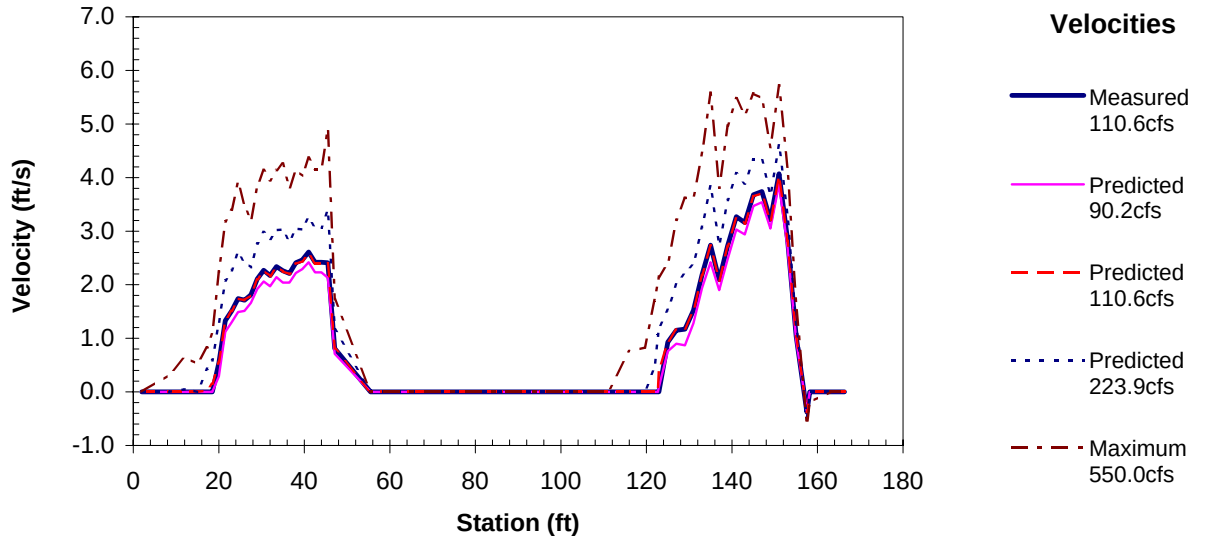


Transect hydraulic summary plots

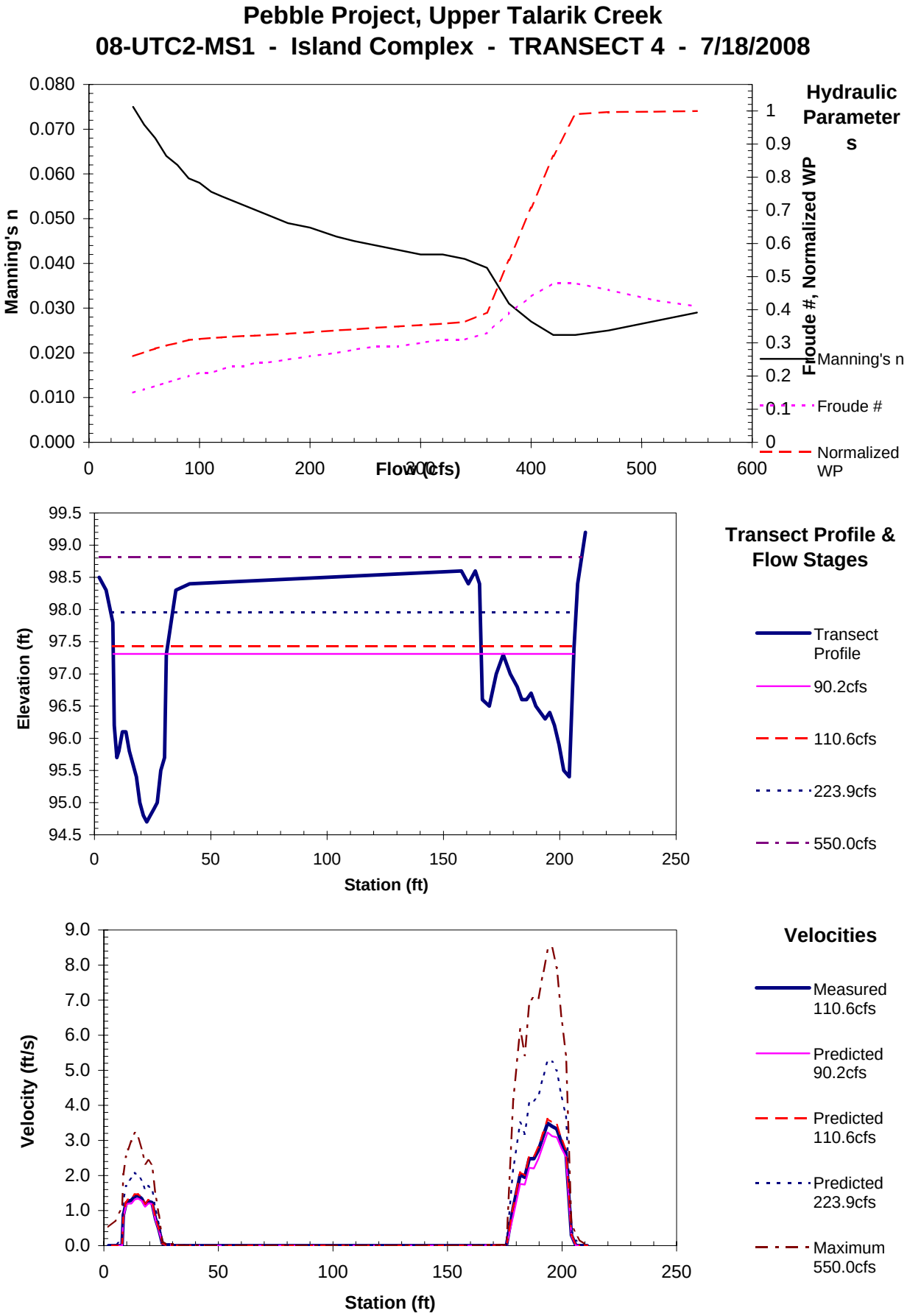
Pebble Project, Upper Talarik Creek
08-UTC2-MS1 - Island Complex - TRANSECT 3 - 7/18/2008



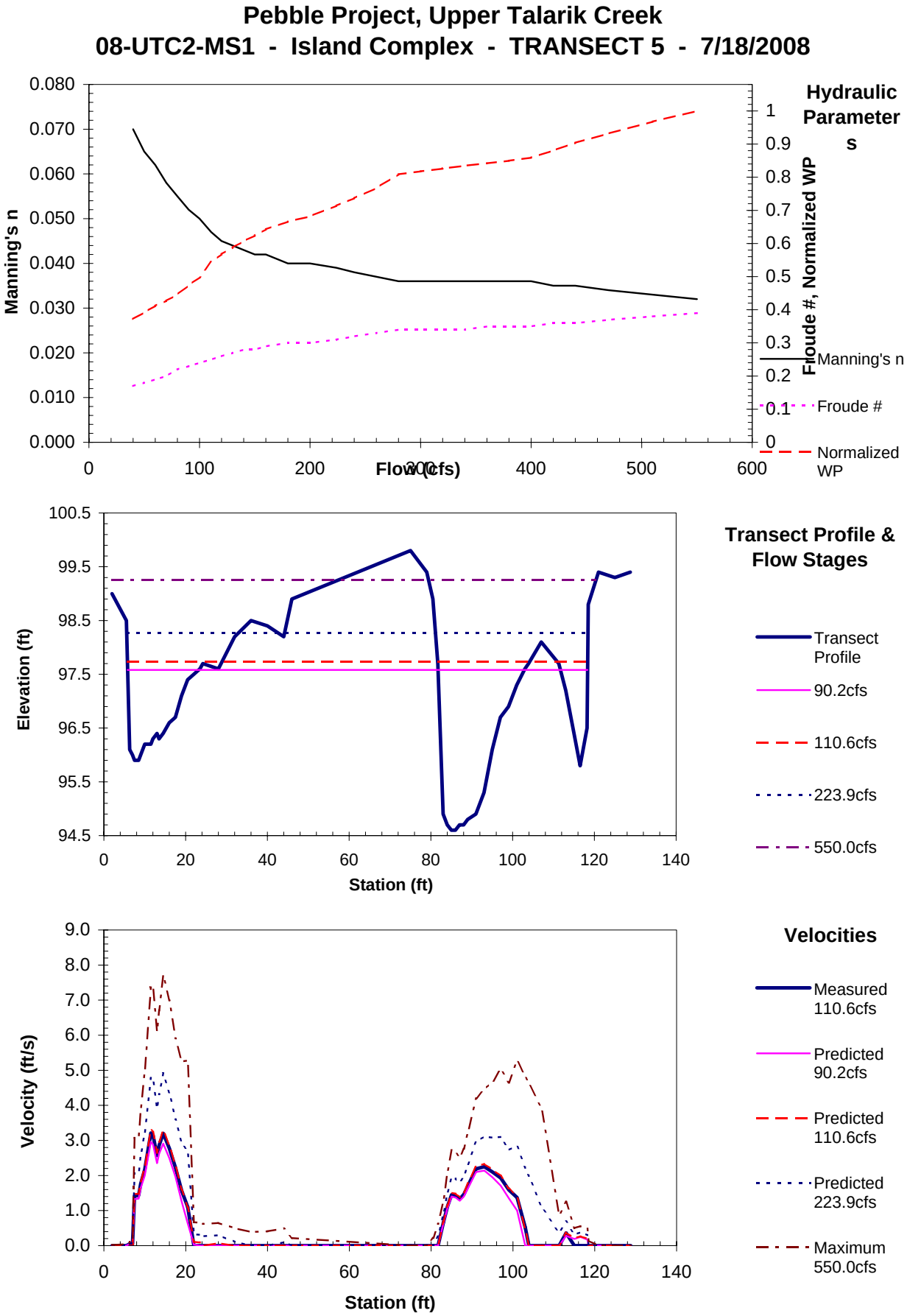




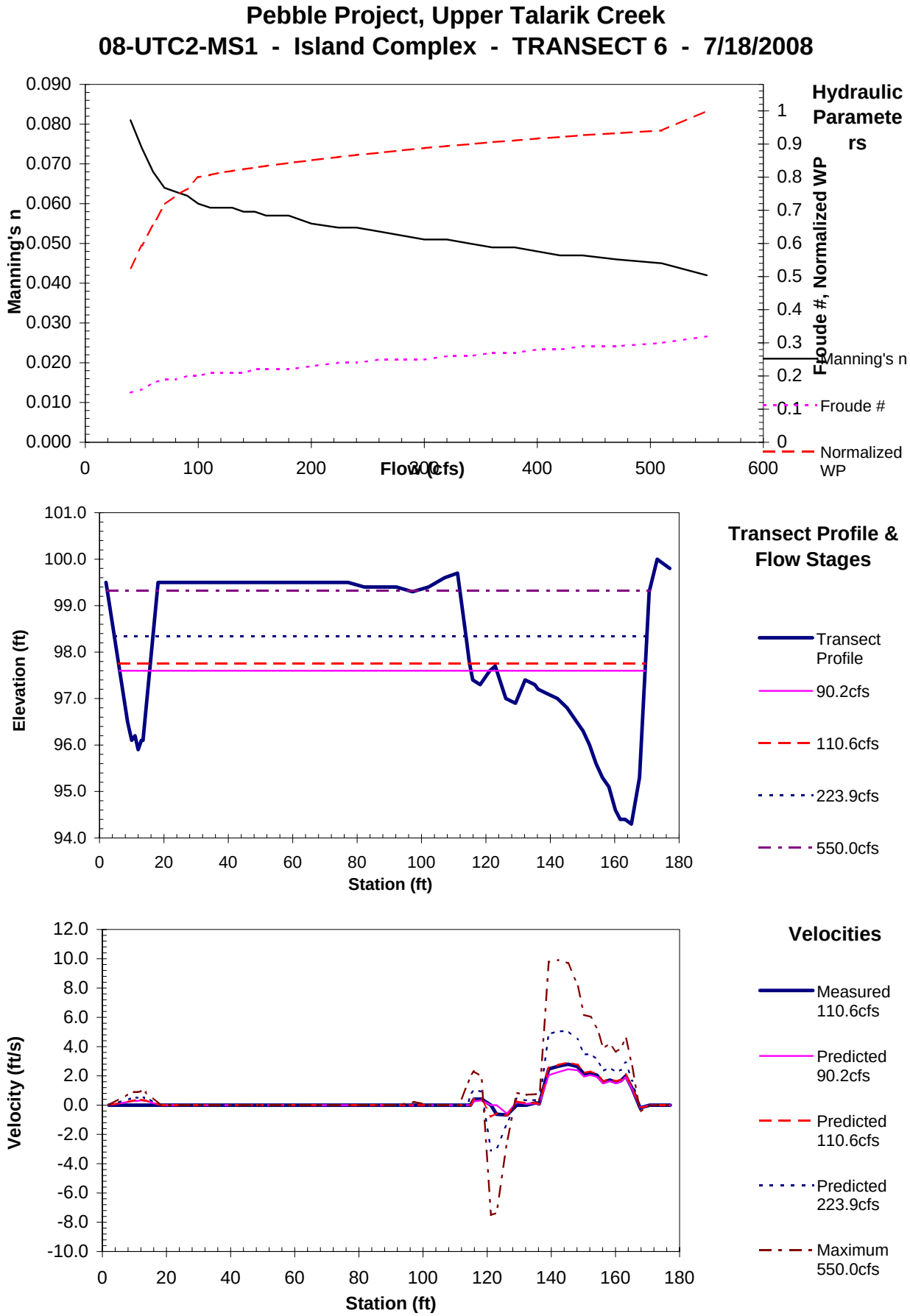
Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
RUN                          0708Q                                      TRANSECT 1
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     93.57    .00211
      1000  2.097.90  5.097.63  6.896.73  8.396.07  9.593.57 13.094.07
      1000 16.094.47 19.094.62 22.094.62 25.094.82 28.094.82 31.094.82
      1000 34.094.92 37.095.02 40.095.07 43.095.17 46.094.97 49.094.92
      1000 52.094.77 55.094.72 58.094.87 61.095.02 64.095.12 66.095.17
      1000 67.695.57 68.597.77 71.497.81
NS    1000      11.9      11.9      11.9      32.6      32.6      23.6
NS    1000      23.6      23.6      23.6      23.6      42.6      54.6
NS    1000      42.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      42.6
NS    1000 .1   43.6      11.9      11.9
WSL   1000     95.50     95.60     95.69     95.77     95.85     95.93
WSL   1000     96.00     96.07     96.13     96.20     96.26     96.33
WSL   1000     96.39     96.51     96.61     96.73     96.80     96.89
WSL   1000     96.97     97.05     97.13     97.20     97.27     97.33
WSL   1000     97.40     97.46     97.52     97.61     97.72     97.82
```

IFG4 Data Deck (continued)

```
CAL1  1000     96.07     110.6
VEL1  1000                0.00 0.80 0.90 0.57 0.55 0.62 1.20 1.44 1.51
VEL1  1000 1.63 2.06 2.21 2.37 2.47 2.53 2.45 2.52 2.23 2.04 1.69 0.97
VEL1  1000 0.00
CAL2  1000     96.73     223.9
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.91      90.2
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
Island                      0708Q                                        TRANSECT 2
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     94.11    .00211
      1000  2.097.76  4.497.39  5.095.55  6.095.50  7.095.60  8.096.00
      1000  9.096.00 10.096.05 11.096.10 12.096.10 13.096.05 15.096.00
      1000 17.096.00 19.096.00 21.096.00 23.095.90 24.095.95 25.095.95
      1000 26.095.95 27.096.10 28.096.20 29.096.30 29.396.40 31.096.48
      1000 33.096.68 35.096.38 38.296.98 39.097.13 43.796.85 48.898.01
      1000 62.598.28 66.597.86 70.597.95 72.397.41 73.894.40 75.594.10
      1000 77.594.25 79.594.35 81.594.55 83.594.95 85.595.20 87.595.40
      1000 89.595.60 91.595.45 93.595.55 95.595.55 97.595.70 99.595.80
      1000101.596.05103.596.10105.596.20107.596.35109.596.35110.496.40
      1000113.097.66116.098.38119.098.22122.298.55
NS    1000      11.9      11.9      43.6      43.6      34.6      43.6
NS    1000      34.6      43.6      34.6      43.6      34.6      34.6
NS    1000      34.6      34.6      34.6      34.6      43.6      34.6
NS    1000      43.6      34.6      43.6      32.6      32.6      32.6
NS    1000      22.9      22.9      22.9      12.6      12.6      11.9
```

IFG4 Data Deck (continued)

```
NS    1000 0.2  11.9      11.9      11.9      11.9      45.6      45.6
NS    1000      45.6      42.6      45.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      34.6      34.6      23.6      23.6
NS    1000      11.9      11.9      11.9      11.9
WSL   1000     95.81     95.92     96.02     96.10     96.18     96.25
WSL   1000     96.32     96.38     96.44     96.50     96.55     96.61
WSL   1000     96.66     96.77     96.86     96.97     97.04     97.12
WSL   1000     97.20     97.27     97.35     97.41     97.48     97.54
WSL   1000     97.61     97.67     97.73     97.81     97.92     98.02
CAL1  1000     96.40     110.6
VEL1  1000           2.44 2.61 1.49 1.50 1.32 2.28 2.00 1.71 1.27 0.96
VEL1  1000 0.84 1.42 1.60 2.11 2.41 1.76 1.97 2.24 0.79 0.00 0.00
VEL1  1000                                                  1.51 2.31
VEL1  1000 3.38 2.80 2.38 2.96 2.61 2.94 2.29 3.35 3.61 3.03 2.82 2.64
VEL1  1000 2.63 2.14 1.59 0.00 0.00 0.00
CAL2  1000     96.98     223.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.21      90.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
Island                      0708Q                                    TRANSECT 3
IOC       11011001000010001010 00
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     95.88    .00211
      1000  2.0100.5  8.497.88 12.097.26 15.097.49 17.396.81 18.596.76
      1000 20.096.66 21.596.41 23.096.36 24.596.36 26.096.26 27.596.06
      1000 29.096.11 30.596.11 32.096.11 33.596.06 35.096.16 36.596.01
      1000 38.096.01 39.595.91 41.095.96 42.596.01 44.096.01 45.596.26
      1000 47.196.31 55.598.45111.098.45116.097.89119.697.85121.997.15
      1000122.796.81122.996.71125.096.46127.096.51129.096.56131.096.41
      1000133.096.26135.096.26137.096.11139.096.11141.095.96143.095.91
      1000145.095.71147.095.61149.095.51151.095.46153.095.61155.095.81
      1000157.595.91158.297.82163.098.40166.397.97
NS    1000      11.9      11.9      11.9      12.6 .09  34.6 .07  43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      11.9      11.9      11.9      11.9      11.9
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
```

IFG4 Data Deck (continued)

```
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      42.6
NS    1000      42.6      11.9      11.9      11.9
WSL   1000     96.37     96.46     96.53     96.60     96.66     96.72
WSL   1000     96.77     96.82     96.86     96.91     96.95     96.99
WSL   1000     97.03     97.11     97.19     97.28     97.33     97.40
WSL   1000     97.47     97.53     97.60     97.66     97.72     97.77
WSL   1000     97.83     97.89     97.94     98.02     98.12     98.21
CAL1  1000     96.81     110.6
VEL1  1000                     0.00 0.00 0.54 1.33 1.51 1.74 1.71 1.81
VEL1  1000 2.11 2.27 2.17 2.34 2.26 2.21 2.41 2.46 2.61 2.42 2.42 2.41
VEL1  1000 0.81                         0.00 0.00 0.93 1.15 1.17 1.52
VEL1  1000 2.19 2.74 2.09 2.73 3.27 3.16 3.68 3.74 3.21 4.07 2.85 1.04
VEL1  1000-0.38
CAL2  1000     97.28     223.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.69      90.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
Island                     0708Q                                TRANSECT 4
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     95.88    .00211
      1000  2.098.47  5.098.27  7.997.80  8.596.22  9.695.73 10.595.83
      1000 12.096.13 13.596.08 15.095.83 16.595.58 18.095.38 19.595.03
      1000 21.094.78 22.594.68 24.094.83 25.594.93 27.095.03 28.595.48
      1000 30.195.73 30.997.35 35.098.29 40.998.36157.798.55160.798.38
      1000163.798.62165.598.43166.796.63169.796.53172.797.03175.797.33
      1000178.797.03181.796.78183.796.63185.796.63187.796.68189.796.48
      1000191.796.38193.796.28195.796.38197.796.23199.795.93201.795.53
      1000204.195.43206.197.43207.798.36211.099.25
NS    1000      11.9      11.9      11.9      11.9      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      45.6      45.6      43.6      43.6      43.6      34.6
NS    1000      32.6      12.6      12.6      11.9      11.9      11.9
NS    1000      11.9      11.9      43.6      32.6      32.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.6
```

IFG4 Data Deck - TR4

IFG4 Data Deck (continued)

```
NS    1000      14.6      11.9      11.9      11.9
WSL   1000     96.88     96.99     97.09     97.17     97.24     97.31
WSL   1000     97.37     97.43     97.48     97.53     97.58     97.62
WSL   1000     97.67     97.75     97.83     97.92     97.97     98.04
WSL   1000     98.11     98.17     98.23     98.29     98.35     98.41
WSL   1000     98.46     98.51     98.57     98.64     98.73     98.82
CAL1  1000     97.43     110.6
VEL1  1000                0.86 1.20 1.27 1.29 1.41 1.42 1.34 1.16 1.26
VEL1  1000 1.23 0.77 0.46 0.07 0.02 0.02 0.00
VEL1  1000           0.00 0.00 0.00 0.00 1.08 2.02 1.95 2.48 2.48 2.72
VEL1  1000 3.11 3.49 3.40 3.33 2.95 2.65 0.30 0.00
CAL2  1000     97.96     223.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.31      90.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
Island                      0708Q                                    TRANSECT 5
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     95.88    .00211
      1000  2.099.00  5.598.52  6.396.14  7.095.99  7.595.94  8.595.94
      1000  9.096.04 10.096.24 11.596.24 12.096.34 13.096.39 13.596.34
      1000 14.596.44 16.096.59 17.596.74 19.097.14 20.597.44 22.097.54
      1000 23.597.59 24.297.74 28.097.62 32.098.15 36.098.50 40.098.44
      1000 44.098.18 46.098.93 75.099.79 79.099.37 80.598.93 81.797.74
      1000 83.094.89 84.094.74 85.094.64 86.094.64 87.094.74 88.094.74
      1000 89.094.84 91.094.94 93.095.29 95.096.09 97.096.69 99.096.94
      1000101.097.29103.097.64103.997.74107.098.07111.397.74113.097.19
      1000115.096.39116.595.84118.296.54118.598.83121.099.43125.099.31
      1000128.899.44
NS    1000      11.9      11.9      32.6      32.6      43.6      23.6
NS    1000      43.6      42.6      43.6      43.6      43.6      34.6
NS    1000      43.6      34.6      34.6      34.6      43.6      34.6
NS    1000      34.6      34.6      43.6      43.6      43.6      23.6
NS    1000      12.6      11.9      11.9      11.9      11.9      11.9
```

IFG4 Data Deck (continued)

```
NS    1000      11.9      45.6      45.6      43.6      54.6      54.6
NS    1000      54.6      45.6      45.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      34.6 .15  34.6      34.6
NS    1000 .4   25.6      25.6      22.9      11.9      11.9      11.9
NS    1000      11.9
WSL   1000     97.05     97.18     97.30     97.39     97.48     97.57
WSL   1000     97.64     97.72     97.78     97.84     97.90     97.95
WSL   1000     98.01     98.10     98.20     98.30     98.37     98.45
WSL   1000     98.52     98.59     98.66     98.73     98.79     98.85
WSL   1000     98.91     98.97     99.02     99.09     99.18     99.26
CAL1  1000     97.74     110.6
VEL1  1000           0.05 0.05 1.42 1.43 1.77 2.17 3.21 3.15 2.57 2.86
VEL1  1000 3.20 2.77 2.22 1.57 1.10 0.00 0.00 0.00
VEL1  1000                          0.00 0.66 1.12 1.45 1.42 1.33 1.46
VEL1  1000 1.71 2.19 2.25 2.10 1.93 1.59 1.37 0.52 0.00      0.00 0.36
VEL1  1000 0.00 0.00 0.00
CAL2  1000     98.27     223.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.58      90.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
RUN                          0708Q                                      TRANSECT 6
IOC       1101100100001000101000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     96.10    .00211
      1000  2.099.47  8.796.46 10.096.06 11.096.16 12.095.86 13.096.06
      1000 13.596.11 18.299.47 77.299.47 82.299.42 87.299.39 92.299.38
      1000 97.299.26102.299.44107.299.62111.299.75113.998.35114.897.76
      1000115.997.41118.297.26121.297.61122.997.66126.296.96129.296.86
      1000132.297.36135.297.26136.297.16139.297.06142.296.96145.296.81
      1000148.296.51150.296.26152.295.96154.295.61156.295.31158.295.06
      1000160.294.56161.794.36163.294.36165.294.26167.795.26170.799.27
      1000173.299.98177.199.80
NS    1000      11.9      21.6      43.6      54.6      34.6      23.6
NS    1000      22.9 .3   11.9      23.6      12.6      32.6      12.6
NS    1000      41.6      42.6      42.6      34.6      43.6      43.6
NS    1000      42.6      32.6      32.6      32.6      32.6      23.6
NS    1000      21.6      23.6      24.6      43.6      43.6      43.6
NS    1000      43.6      45.6      54.6      54.6      45.6      45.6
NS    1000      45.6      45.6      45.6      11.9      11.9      11.9
```

IFG4 Data Deck - TR6

IFG4 Data Deck (continued)

```
NS    1000      11.9      11.9
WSL   1000     97.06     97.20     97.31     97.41     97.51     97.59
WSL   1000     97.67     97.74     97.81     97.87     97.93     97.99
WSL   1000     98.04     98.15     98.24     98.35     98.42     98.50
WSL   1000     98.58     98.65     98.72     98.78     98.85     98.91
WSL   1000     98.97     99.02     99.08     99.15     99.24     99.32
CAL1  1000     97.76     110.6
VEL1  1000      0.00 0.00 0.00 0.00 0.00 0.00
VEL1  1000                          0.00 0.41 0.42 0.00-0.62-0.67 0.00
VEL1  1000 0.00 0.16 0.08 2.47 2.66 2.80 2.64 2.12 2.20 2.04 1.55 1.71
VEL1  1000 1.55 1.67 1.99 1.15-0.19
CAL2  1000     98.35     223.9
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.60      90.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

MANSQ Data Deck

```
     Pebble     08-UTC2-MS1  07/18/08
RUN                          0708Q                                      TRANSECT 1
IOC        011000000000000000000
QARD  40.0
QARD  50.0
QARD  60.0
QARD  70.0
QARD  80.0
QARD  90.2
QARD 100.0
QARD 110.6
QARD 120.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 223.9
QARD 240.0
QARD 260.0
QARD 280.0
QARD 300.0
QARD 320.0
QARD 340.0
QARD 360.0
QARD 380.0
QARD 400.0
QARD 420.0
QARD 440.0
QARD 470.0
QARD 510.0
QARD 550.0
XSEC  1000     1000. 1.0     93.57    .00215
      1000  2.097.90  5.097.63  6.896.73  8.396.07  9.593.57 13.094.07
      1000 16.094.47 19.094.62 22.094.62 25.094.82 28.094.82 31.094.82
      1000 34.094.92 37.095.02 40.095.07 43.095.17 46.094.97 49.094.92
      1000 52.094.77 55.094.72 58.094.87 61.095.02 64.095.12 66.095.17
      1000 67.695.57 68.597.77 71.497.81
NS    1000      11.9      11.9      11.9      32.6      32.6      23.6
NS    1000      23.6      23.6      23.6      23.6      42.6      54.6
NS    1000      42.6      43.6      43.6      43.6      43.6      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      42.6
NS    1000      43.6      11.9      11.9
CALQ  1000     96.07     110.6    -0.050
ENDJ
```

WSP Data Deck (continued)

```
  Upper Talarik Creek MS-1 08/18/08
RN-RF                        Mid
PARD    30      1.00      0        1.000
QARD  40.0     95.50              1.1006    1.1006
QARD  50.0     95.60              1.0785    1.0785
QARD  60.0     95.69              1.0605    1.0605
QARD  70.0     95.77              1.0452    1.0452
QARD  80.0     95.85              1.0320    1.0320
QARD  90.2     95.93              1.0201    1.0201
QARD 100.0     96.00              1.0099    1.0099
QARD 110.6     96.07              0.9999    0.9999
QARD 120.0     96.13              0.9918    0.9918
QARD 130.0     96.20              0.9839    0.9839
QARD 140.0     96.26              0.9765    0.9765
QARD 150.0     96.33              0.9697    0.9697
QARD 160.0     96.39              0.9633    0.9633
QARD 180.0     96.51              0.9516    0.9516
QARD 200.0     96.61              0.9412    0.9412
QARD 223.9     96.73              0.9300    0.9300
QARD 240.0     96.80              0.9231    0.9231
QARD 260.0     96.89              0.9152    0.9152
QARD 280.0     96.97              0.9079    0.9079
QARD 300.0     97.05              0.9010    0.9010
QARD 320.0     97.13              0.8946    0.8946
QARD 340.0     97.20              0.8886    0.8886
QARD 360.0     97.27              0.8830    0.8830
QARD 380.0     97.33              0.8776    0.8776
QARD 400.0     97.40              0.8725    0.8725
QARD 420.0     97.46              0.8677    0.8677
QARD 440.0     97.52              0.8631    0.8631
QARD 470.0     97.61              0.8566    0.8566
QARD 510.0     97.72              0.8485    0.8485
QARD 550.0     97.82              0.8410    0.8410
FFFFTFFFF                                                                **
         0  2.097.90  5.097.63  6.896.73  8.396.07  9.593.57 13.094.07
         0 16.094.47 19.094.62 22.094.62 25.094.82 28.094.82 31.094.82
         0 34.094.92 37.095.02 40.095.07 43.095.17 46.094.97 49.094.92
         0 52.094.77 55.094.72 58.094.87 61.095.02 64.095.12 66.095.17
         0 67.695.57 68.597.77 71.497.81
         0 .03   5.0      .03   6.8      .03   8.3      .03   9.5              *
         0-.03  13.0      .03  16.0      .03  19.0      .03  22.0              *
         0 .03  25.0      .03  28.0      .03  31.0      .03  34.0              *
         0 .03  37.0      .03  40.0      .03  43.0      .03  46.0              *
         0 .03  49.0      .03  52.0      .03  55.0      .03  58.0              *
         0 .03  61.0      .03  64.0      .03  66.0      .03  67.6              *
         0 .03  68.5      .03  71.4                                            *
       230  2.097.76  4.497.39  5.095.55  6.095.50  7.095.60  8.096.00
       230  9.096.00 10.096.05 11.096.10 12.096.10 13.096.05 15.096.00
       230 17.096.00 19.096.00 21.096.00 23.095.90 24.095.95 25.095.95
```

WSP Data Deck (continued)

```
230 26.095.95 27.096.10 28.096.20 29.096.30 29.396.40 31.096.48
230 33.096.68 35.096.38 38.296.98 39.097.13 43.796.85 48.898.01
230 62.598.28 66.597.86 70.597.95 72.397.41 73.894.40 75.594.10
230 77.594.25 79.594.35 81.594.55 83.594.95 85.595.20 87.595.40
230 89.595.60 91.595.45 93.595.55 95.595.55 97.595.70 99.595.80
230101.596.05103.596.10105.596.20107.596.35109.596.35110.496.40
230113.097.66116.098.38119.098.22122.298.55
230 .035  4.4      .035  5.0      .035  6.0      .035  7.0              *
230 .035  8.0      .035  9.0      .035 10.0      .035 11.0              *
230 .035 12.0      .035 13.0      .035 15.0      .035 17.0              *
230 .035 19.0      .035 21.0      .035 23.0      .035 24.0              *
230 .035 25.0      .035 26.0      .035 27.0      .035 28.0              *
230 .035 29.0      .035 29.3      .035 31.0      .035 33.0              *
230 .035 35.0      .035 38.2      .035 39.0      .035 43.7              *
230 .035 48.8      .035 62.5      .035 66.5      .035 70.5              *
230 .035 72.3      .035 73.8      .035 75.5     -.035 77.5              *
230 .035 79.5      .035 81.5      .035 83.5      .035 85.5              *
230 .035 87.5      .035 89.5      .035 91.5      .035 93.5              *
230 .035 95.5      .035 97.5      .035 99.5      .035101.5              *
230 .035103.5      .035105.5      .035107.5      .035109.5              *
230 .035110.4      .035113.0      .035116.0      .035119.0              *
379  2.0100.5  8.497.88 12.097.26 15.097.49 17.396.81 18.596.76
379 20.096.66 21.596.41 23.096.36 24.596.36 26.096.26 27.596.06
379 29.096.11 30.596.11 32.096.11 33.596.06 35.096.16 36.596.01
379 38.096.01 39.595.91 41.095.96 42.596.01 44.096.01 45.596.26
379 47.196.31 55.598.45111.098.45116.097.89119.697.85121.997.15
379122.796.81122.996.71125.096.46127.096.51129.096.56131.096.41
379133.096.26135.096.26137.096.11139.096.11141.095.96143.095.91
379145.095.71147.095.61149.095.51151.095.46153.095.61155.095.81
379157.595.91158.297.82163.098.40166.397.97
379 .03   8.4      .03  12.0      .03  15.0      .03  17.3              *
379 .03  18.5      .03  20.0      .03  21.5      .03  23.0              *
379 .03  24.5      .03  26.0      .03  27.5      .03  29.0              *
379 .03  30.5      .03  32.0      .03  33.5      .03  35.0              *
379 .03  36.5      .03  38.0      .03  39.5      .03  41.0              *
379 .03  42.5      .03  44.0      .03  45.5      .03  47.1              *
379 .03  55.5      .03 111.0      .03 116.0      .03 119.6              *
379 .03 121.9      .03 122.7      .03 122.9      .03 125.0              *
379 .03 127.0      .03 129.0      .03 131.0      .03 133.0              *
379 .03 135.0      .03 137.0      .03 139.0      .03 141.0              *
379 .03 143.0      .03 145.0      .03 147.0      .03 149.0              *
379-.03 151.0      .03 153.0      .03 155.0      .03 157.5              *
379 .03 158.2      .03 163.0      .03 166.3                             *
596  2.098.47  5.098.27  7.997.80  8.596.22  9.695.73 10.595.83
596 12.096.13 13.596.08 15.095.83 16.595.58 18.095.38 19.595.03
596 21.094.78 22.594.68 24.094.83 25.594.93 27.095.03 28.595.48
596 30.195.73 30.997.35 35.098.29 40.998.36157.798.55160.798.38
596163.798.62165.598.43166.796.63169.796.53172.797.03175.797.33
596178.797.03181.796.78183.796.63185.796.63187.796.68189.796.48
```

WSP Data Deck

WSP Data Deck (continued)

```
596191.796.38193.796.28195.796.38197.796.23199.795.93201.795.53
596204.195.43206.197.43207.798.36211.099.25
596 .067  5.0      .067  7.9      .067  8.5      .067  9.6             *
596 .067 10.5      .067 12.0      .067 13.5      .067 15.0             *
596 .067 16.5      .067 18.0      .067 19.5      .067 21.0             *
596-.067 22.5      .067 24.0      .067 25.5      .067 27.0             *
596 .067 28.5      .067 30.1      .067 30.9      .067 35.0             *
596 .067 40.9      .067157.7      .067160.7      .067163.7             *
596 .067165.5      .067166.7      .067169.7      .067172.7             *
596 .067175.7      .067178.7      .067181.7      .067183.7             *
596 .067185.7      .067187.7      .067189.7      .067191.7             *
596 .067193.7      .067195.7      .067197.7      .067199.7             *
596 .067201.7      .067204.1      .067206.1      .067207.7             *
596 .067211.0                                                          *
743  2.099.00  5.598.52  6.396.14  7.095.99  7.595.94  8.595.94
743  9.096.04 10.096.24 11.596.24 12.096.34 13.096.39 13.596.34
743 14.596.44 16.096.59 17.596.74 19.097.14 20.597.44 22.097.54
743 23.597.59 24.297.74 28.097.62 32.098.15 36.098.50 40.098.44
743 44.098.18 46.098.93 75.099.79 79.099.37 80.598.93 81.797.74
743 83.094.89 84.094.74 85.094.64 86.094.64 87.094.74 88.094.74
743 89.094.84 91.094.94 93.095.29 95.096.09 97.096.69 99.096.94
743101.097.29103.097.64103.997.74107.098.07111.397.74113.097.19
743115.096.39116.595.84118.296.54118.598.83121.099.43125.099.31
743128.899.44
743 .06   5.5      .06   6.3      .06   7.0      .06   7.5             *
743 .06   8.5      .06   9.0      .06  10.0      .06  11.5             *
743 .06  12.0      .06  13.0      .06  13.5      .06  14.5             *
743 .06  16.0      .06  17.5      .06  19.0      .06  20.5             *
743 .06  22.0      .06  23.5      .06  24.2      .06  28.0             *
743 .06  32.0      .06  36.0      .06  40.0      .06  44.0             *
743 .06  46.0      .06  75.0      .06  79.0      .06  80.5             *
743 .06  81.7      .06  83.0      .06  84.0     -.06  85.0             *
743 .06  86.0      .06  87.0      .06  88.0      .06  89.0             *
743 .06  91.0      .06  93.0      .06  95.0      .06  97.0             *
743 .06  99.0      .06 101.0      .06 103.0      .06 103.9             *
743 .06 107.0      .06 111.3      .06 113.0      .06 115.0             *
743 .06 116.5      .06 118.2      .06 118.5      .06 121.0             *
743 .06 125.0      .06 128.8                                          *
752  2.099.47  8.796.46 10.096.06 11.096.16 12.095.86 13.096.06
752 13.596.11 18.299.47 77.299.47 82.299.42 87.299.39 92.299.38
752 97.299.26102.299.44107.299.62111.299.75113.998.35114.897.76
752115.997.41118.297.26121.297.61122.997.66126.296.96129.296.86
752132.297.36135.297.26136.297.16139.297.06142.296.96145.296.81
752148.296.51150.296.26152.295.96154.295.61156.295.31158.295.06
752160.294.56161.794.36163.294.36165.294.26167.795.26170.799.27
752173.299.98177.199.80
752 .05   8.7      .05  10.0      .05  11.0      .05  12.0             *
752 .05  13.0      .05  13.5      .05  18.2      .05  77.2             *
752 .05  82.2      .05  87.2      .05  92.2      .05  97.2             *
```

WSP Data Deck (continued)

```
      752 .05 102.2      .05 107.2      .05 111.2      .05 113.9             *
      752 .05 114.8      .05 115.9      .05 118.2      .05 121.2             *
      752 .05 122.9      .05 126.2      .05 129.2      .05 132.2             *
      752 .05 135.2      .05 136.2      .05 139.2      .05 142.2             *
      752 .05 145.2      .05 148.2      .05 150.2      .05 152.2             *
      752 .05 154.2      .05 156.2      .05 158.2      .05 160.2             *
      752 .05 161.7      .05 163.2     -.05 165.2      .05 167.7             *
      752 .05 170.7      .05 173.2      .05 177.1                            *
ENDJ
ENDR
```

Stream: Upper Talarik Creek

Reach: UT-E

Site/TR: 07-UTC2-RN5

Habitat Type: Run

River Kilometer: 42.71

Stream: **Upper Talarik Creek**
Reach: **E**
Site Name: **07-UTC2-RN5**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/2/2007	1	100.00	97.15	97.68
2nd	7/18/2007	2	100.00	97.14	97.64
3rd	9/19/2007	3	100.00		97.64
4th	10/20/2007	4	100.00	97.13	97.65

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were within 0.02ft. The small changes suggested the survey datum was stable.
(c) Level loop of 9/19/07 was not completed due to unsafe flow condition from a recent storm.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, except the September site visit, which had only one WSE on the right edge of the channel. The average of the three WSEs was used as transect representative WSE for modeling.

Date	WSE (ft)
6/2/2007	94.99
7/18/2007	94.66
9/19/2007	96.76
10/20/2007	95.39

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)	
6/2/2007	73.8	
7/18/2007	44.8	
9/19/2007		
10/20/2007	76.2	ice

No discharge was measured on 9/19/07 due to unsafe high flow condition.
There was ice on water edge during the 10/20/07 trip. Hydraulics may be impacted by ice.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/2/2007	0.144%	83.4
7/18/2007	0.060%	99.4
9/19/2007	0.116%	121
10/20/2007	0.160%	75

The slope S=0.144% of 6/2/2007 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/2/2007	92.49
7/18/2007	92.51
9/19/2007	
10/20/2007	92.59
max Invert	92.51
SZF	92.51

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) Invert of 10/20/07 was not used to determine SZF because hydraulics of this date were affected by ice.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/2/2007	73.8	94.99	94.99	0.00	IFG4
2nd	7/18/2007	44.8	94.66	94.66	0.00	IFG4
3rd	9/19/2007		96.76			
4th	10/20/2007	76.2	95.39			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) No flow was measured during the 9/19/07 site visit due to unsafe high flow condition.
(d) Hydraulics of 10/20/07 were affected by ice. Plotting the WSE~Q data of all three surveys shows the water was possibly backed up by about 0.4ft at the site. Due to the backwater effect, the hydraulics were not used for modeling.
(e) This transect has only two pairs of WSE~Q available, but Log-log (IFG4 method) relationship was still applied when calibrating the WSE~Q rating curve. Usually MANSQ would be applied for the calibration when only two pairs of WSE~Q can be used, but MANSQ calibration results showed erratic WSE-Q relationship that can not be applied at flows greater than 75cfs. As the result, log-log relationship was still applied to WSE calibration.

calibration notes

(3) Velocity calibration

This site has one transect with two complete velocity/discharge measurements, including 44.8cfs and 73.8cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

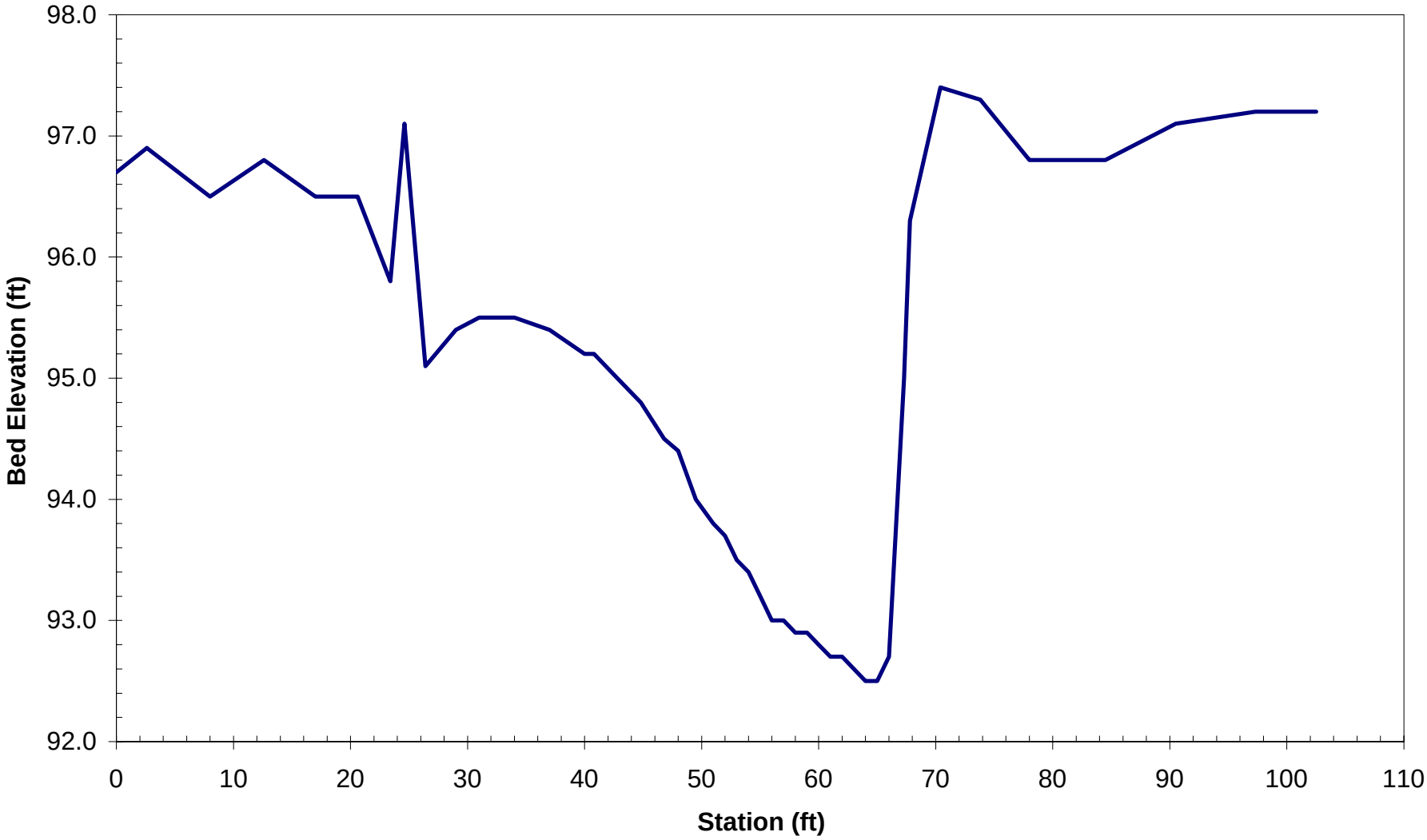
Survey Date	Q (cfs)	WUA (Y/N)
6/2/2007	73.8	Y
7/18/2007	44.8	Y
9/19/2007		
10/20/2007	76.2	

(4) Hydraulic Calibration Results:

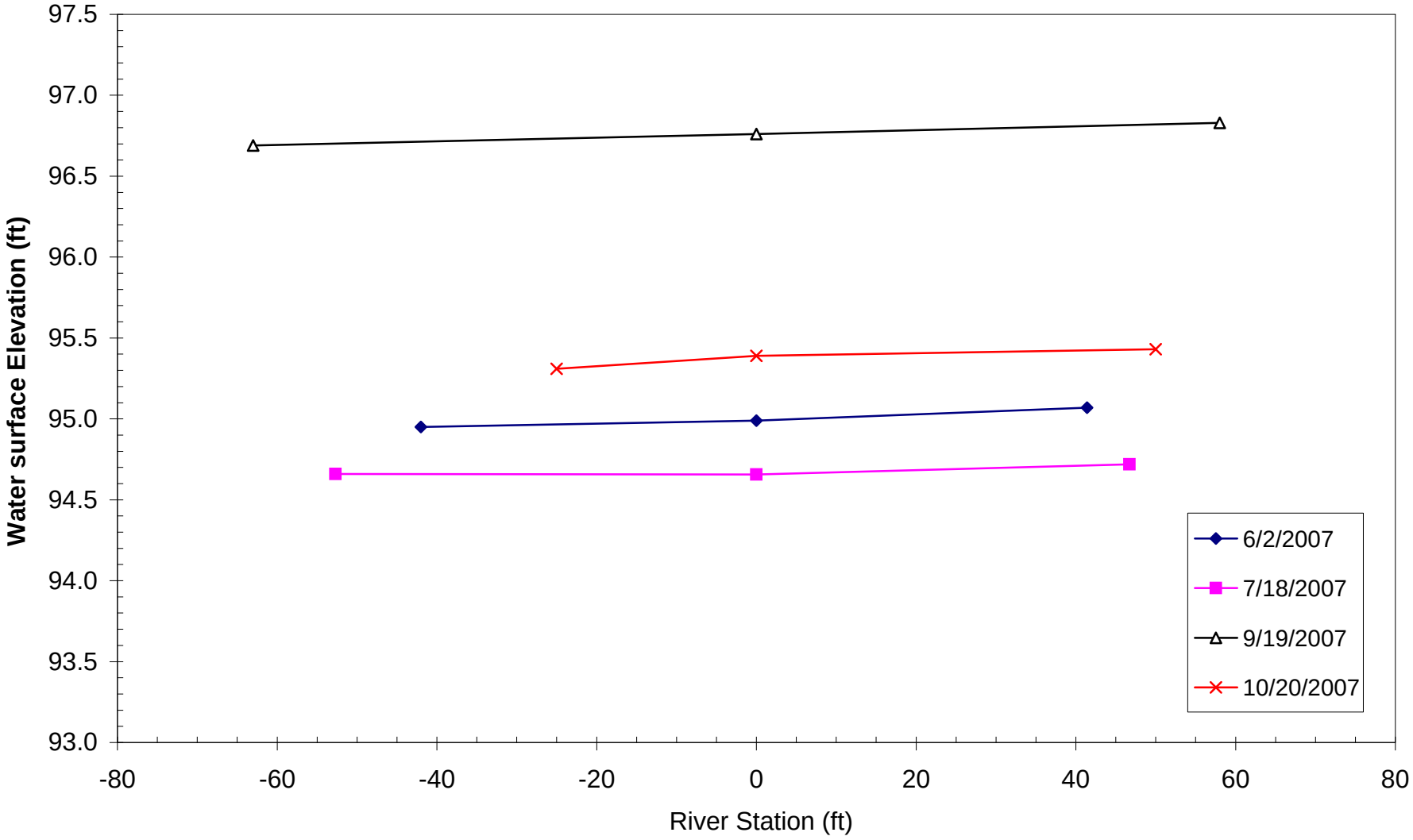
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

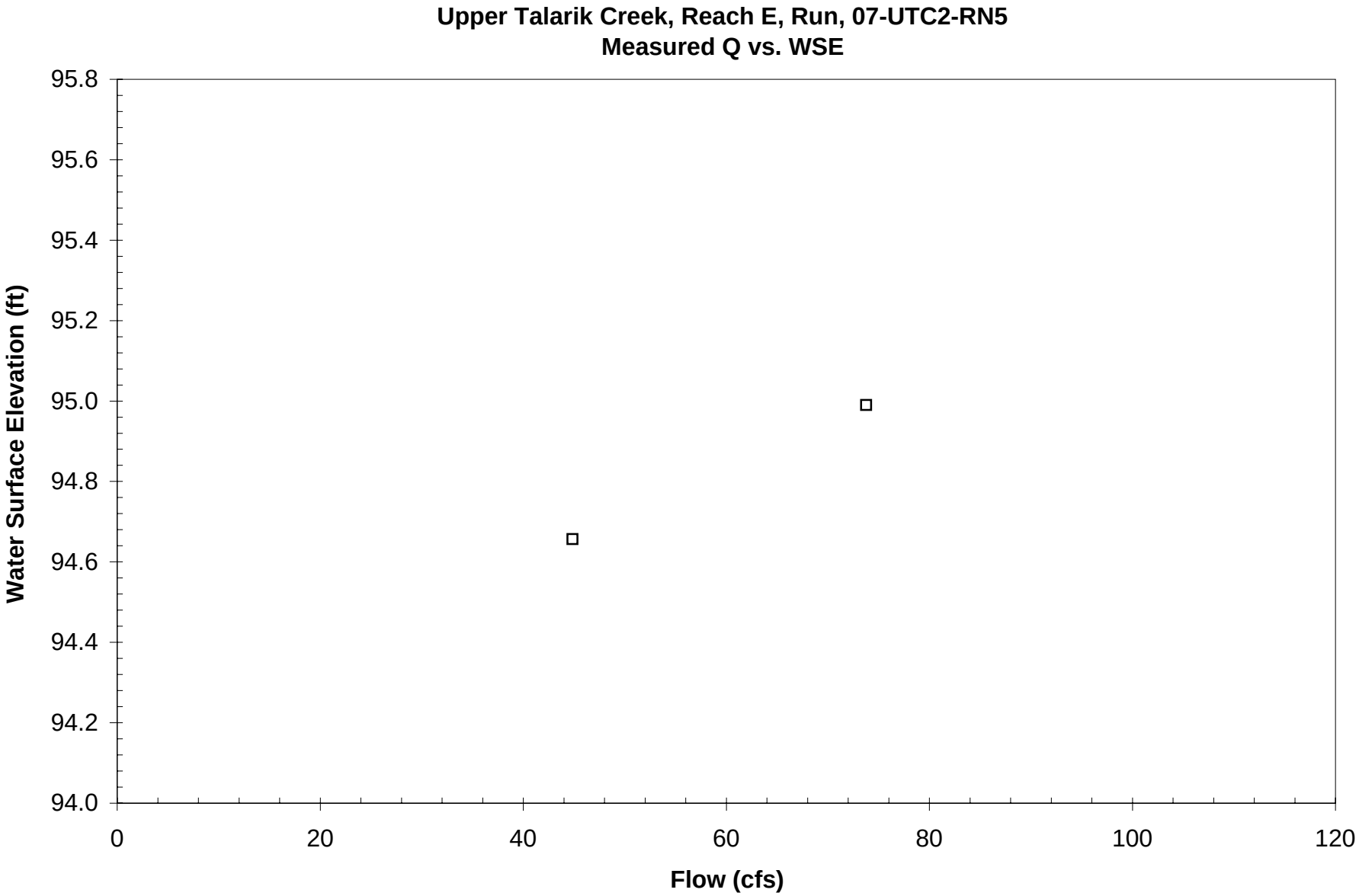
calibration notes

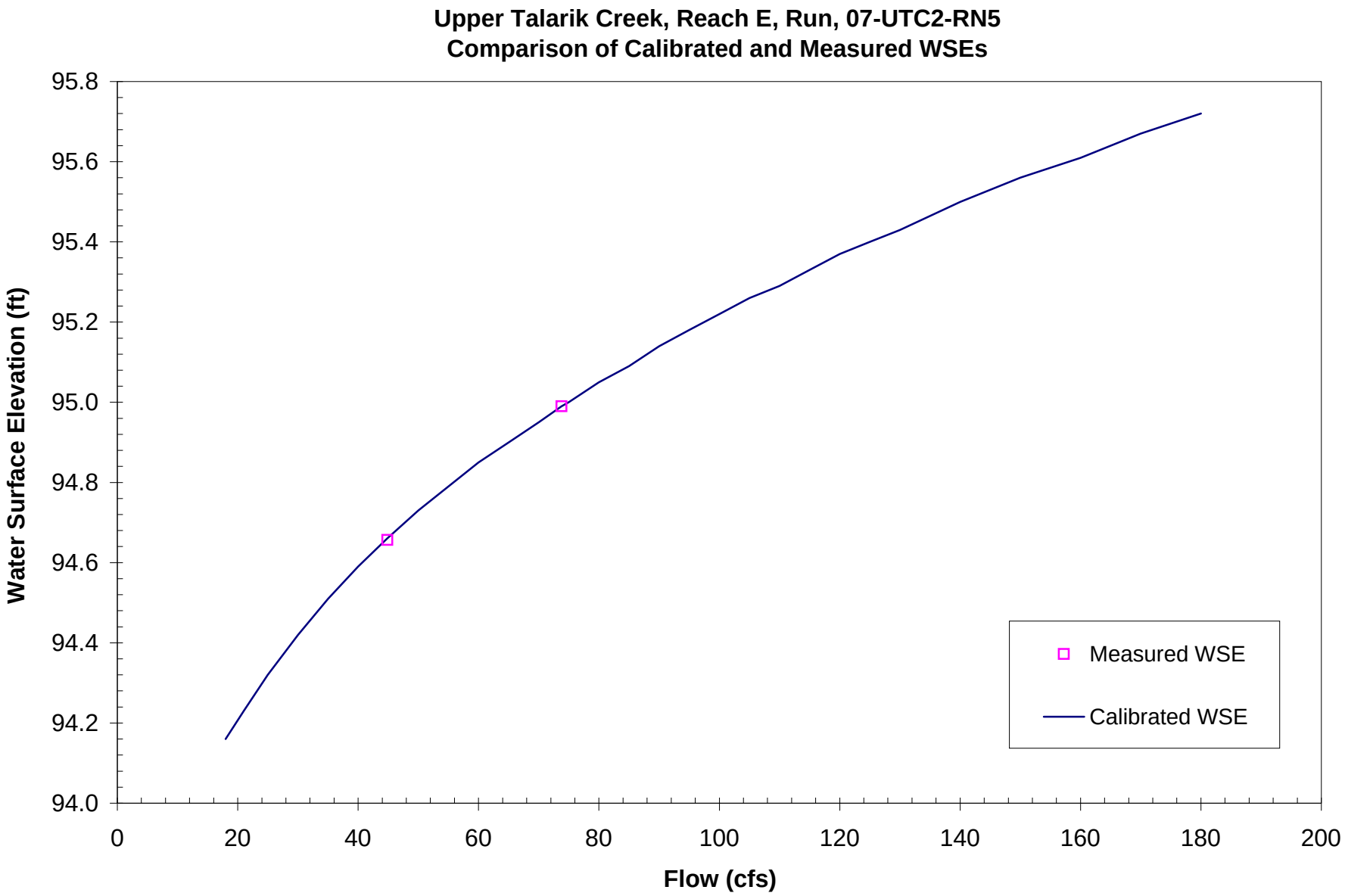
Upper Talarik Creek, Reach E, Run, 07-UTC2-RN5
Measured Transect Profile



Upper Talarik Creek, Reach E, Run, 07-UTC2-RN5
Longitudinal Water surface Elevation Profiles



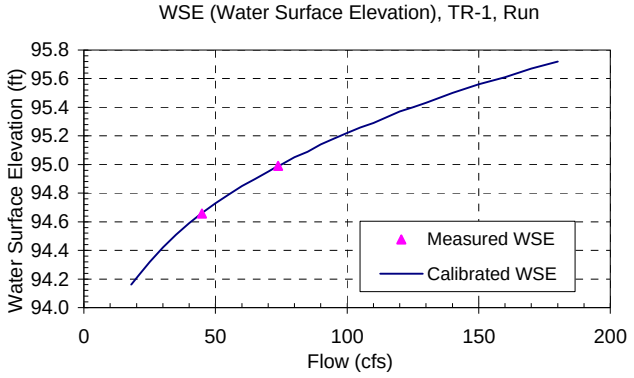

Upper Talarik Creek, Reach E, Run, 07-UTC2-RN5
Measured Q vs. WSE
Water Surface Elevation (ft)
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
0
20
40
60
80
100
120
Flow (cfs)

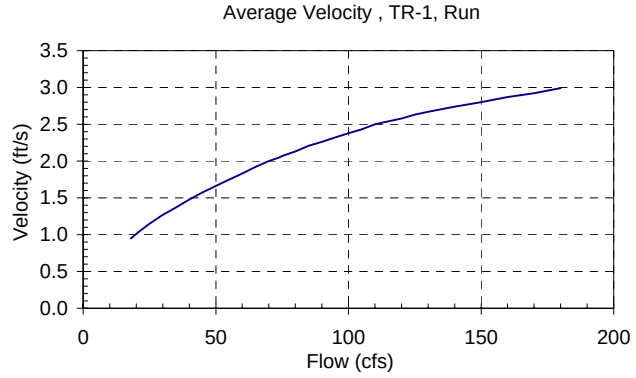

Upper Talarik Creek, Reach E, Run, 07-UTC2-RN5
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
0
20
40
60
80
100
120
140
160
180
200
Flow (cfs)
Measured WSE
Calibrated WSE

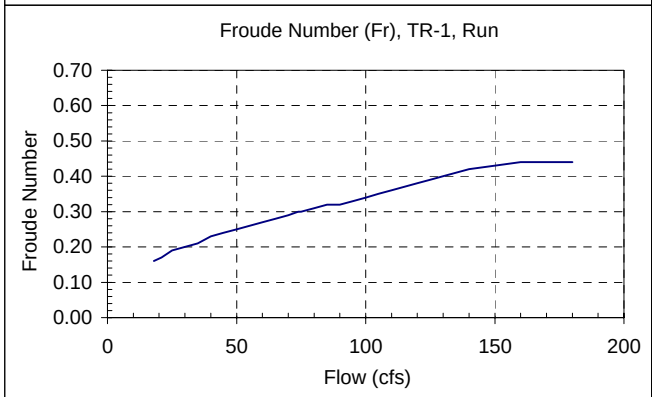
Stream: Upper Talarik Creek
Site Name: 07-UTC2-RN5
Date: 6/2/2007
Calibration Flow: Q(6/2/2007)

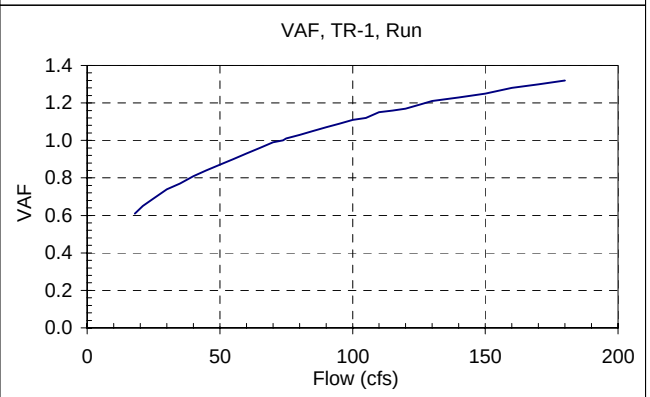
Reach: E
Habitat: Run
Site #: 5
Transect: 1

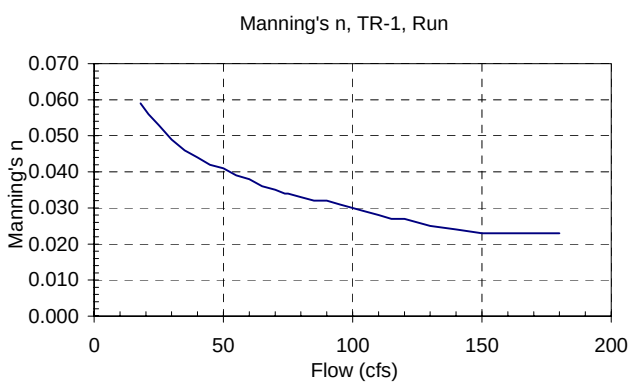
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
18	94.16	0.16	0.95	0.61	0.059	18.8
21	94.23	0.17	1.04	0.65	0.056	19.2
25	94.32	0.19	1.15	0.69	0.053	19.8
30	94.42	0.20	1.27	0.74	0.049	20.4
35	94.51	0.21	1.37	0.77	0.046	21.2
40	94.59	0.23	1.48	0.81	0.044	21.9
44.8	94.66	0.24	1.57	0.84	0.042	22.5
50	94.73	0.25	1.66	0.87	0.041	23.0
55	94.79	0.26	1.75	0.90	0.039	23.5
60	94.85	0.27	1.83	0.93	0.038	24.1
65	94.90	0.28	1.92	0.96	0.036	24.9
70	94.95	0.29	2.00	0.99	0.035	25.6
73.8	94.99	0.30	2.05	1.00	0.034	26.1
75	95.00	0.30	2.07	1.01	0.034	26.3
80	95.05	0.31	2.13	1.03	0.033	26.9
85	95.09	0.32	2.21	1.05	0.032	27.4
90	95.14	0.32	2.26	1.07	0.032	28.2
95	95.18	0.33	2.32	1.09	0.031	29.1
100	95.22	0.34	2.38	1.11	0.030	30.0
105	95.26	0.35	2.43	1.12	0.029	31.1
110	95.29	0.36	2.50	1.15	0.028	32.0
115	95.33	0.37	2.54	1.16	0.027	33.3
120	95.37	0.38	2.58	1.17	0.027	34.5
125	95.40	0.39	2.63	1.19	0.026	35.6
130	95.43	0.40	2.67	1.21	0.025	36.9
140	95.50	0.42	2.74	1.23	0.024	40.8
150	95.56	0.43	2.80	1.25	0.023	43.7
160	95.61	0.44	2.87	1.28	0.023	43.8
170	95.67	0.44	2.92	1.30	0.023	43.9
180	95.72	0.44	2.99	1.32	0.023	44.1

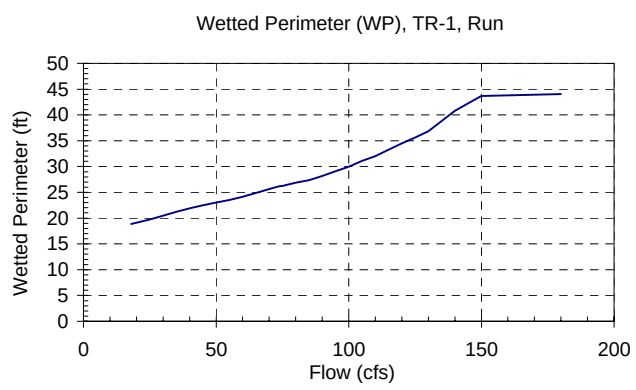




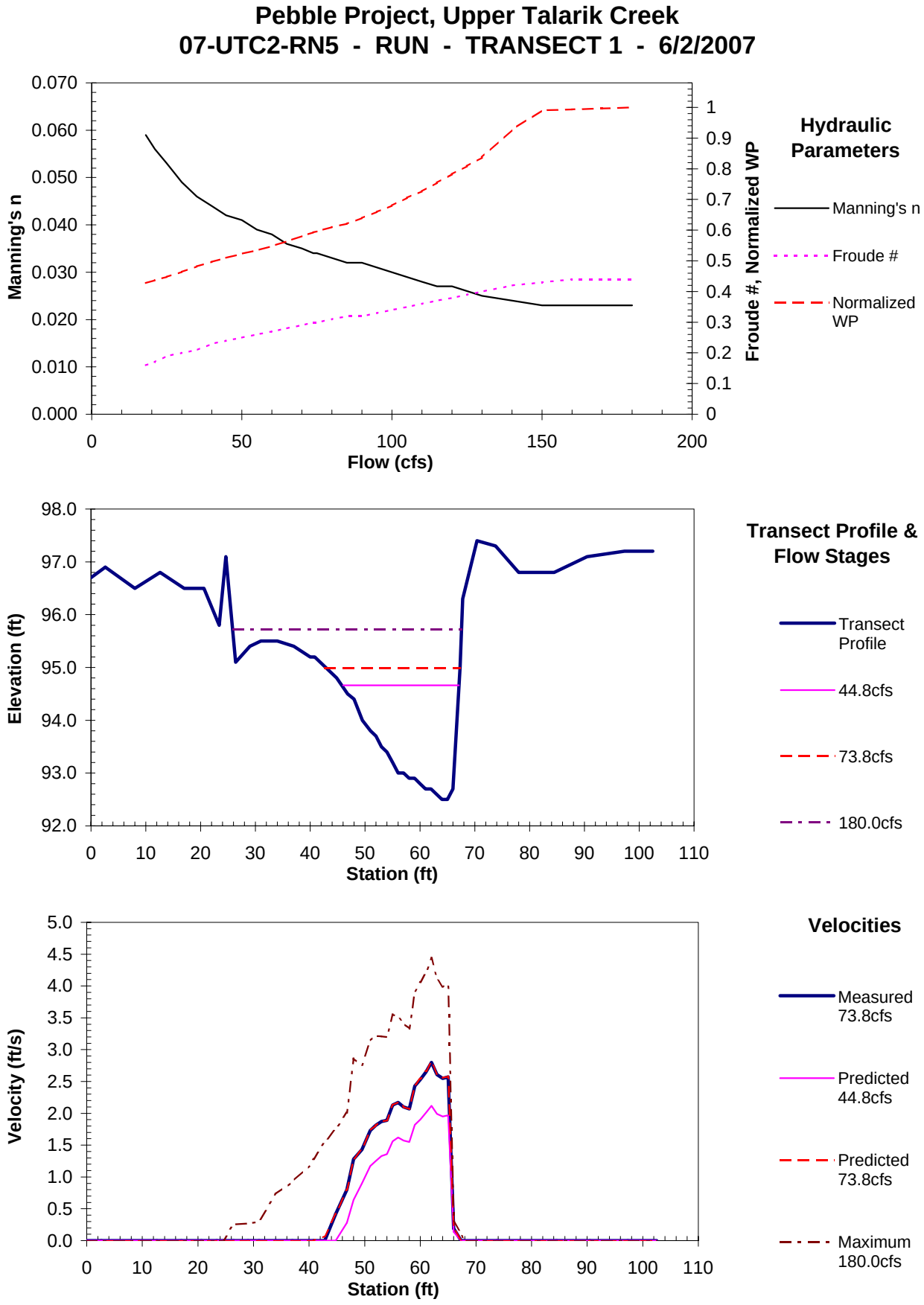








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-UTC2-RN5  06/02/07
RUN                        0607Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD  18.0
QARD  21.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  40.0
QARD  44.8
QARD  50.0
QARD  55.0
QARD  60.0
QARD  65.0
QARD  70.0
QARD  73.8
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
QARD 170.0
QARD 180.0
XSEC  1000     1000. 1.0     92.51    .00144
      1000   .096.66  2.696.88  8.096.52 12.696.80 17.096.52 20.696.51
      1000 23.495.83 24.697.12 26.495.12 29.095.43 31.095.54 34.095.48
      1000 37.095.38 40.095.23 40.895.16 42.894.98 44.894.83 46.894.54
      1000 48.094.38 49.594.04 51.093.79 52.093.69 53.093.48 54.093.38
      1000 55.093.23 56.092.98 57.092.98 58.092.88 59.092.88 60.092.83
      1000 61.092.69 62.092.69 63.092.58 64.092.48 65.092.48 66.092.73
      1000 67.394.98 67.896.31 70.497.40 73.897.30 78.096.80 84.596.77
      1000 90.597.09 97.397.22102.597.18
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9 .20  23.8 .12  32.6 .08  32.8      32.8
NS    1000      43.6      43.7      43.7      34.6      32.6      42.6
NS    1000      42.6      43.6      43.6      43.6      43.6      32.6
NS    1000      32.6      42.8      42.8      42.8      42.6      42.6
NS    1000      32.7      32.7      34.6      34.6      42.6      23.6
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9
WSL   1000     94.16     94.23     94.32     94.42     94.51     94.59
WSL   1000     94.66     94.73     94.79     94.85     94.90     94.95
WSL   1000     94.99     95.00     95.05     95.09     95.14     95.18
WSL   1000     95.22     95.26     95.29     95.33     95.37     95.40
WSL   1000     95.43     95.50     95.56     95.61     95.67     95.72
CAL1  1000     94.99      73.8
VEL1  1000
VEL1  1000                0.00 0.42 0.80 1.28 1.43 1.73 1.81 1.87 1.89
VEL1  1000 2.13 2.17 2.10 2.07 2.43 2.53 2.65 2.80 2.61 2.55 2.57 0.19
VEL1  1000 0.00
CAL2  1000     94.66      44.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-E

Site/TR: 07-UTC2-RN4

Habitat Type: Run

River Kilometer: 44.63

Stream: Upper Talarik Creek
Reach: E
Site: 07-UTC2-RN4
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/2/2007	1	100.00	98.64	98.67
2nd	7/18/2007	2	100.00	98.61	98.71
3rd	9/19/2007	3	100.00	98.62	98.73
4th	10/18/2007	4	100.00	98.61	98.73

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were no more than 0.03ft relative to the datum initially set up in 6/07.
(c) Consistent elevations of the control pins in the last three surveys suggested all control pins had been stable since the 7/18/07 survey.
(d) Unable to determine how much the survey datum was disturbed between the first (6/07) and second (7/07) level loop surveys, but
(e) The disturbance should be relatively small (within ±0.02 between BM and HP), and thus it was decided no adjustments would be applied to correcting the WSEs.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/2/2007	95.62
7/18/2007	95.43
9/19/2007	97.15
10/18/2007	95.92

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/2/2007	73.4
7/18/2007	44.5
9/19/2007	348.2
10/18/2007	117.0

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/2/2007	0.214%	84
7/18/2007	-0.039%	51.8
9/19/2007	0.067%	104
10/18/2007	0.232%	99

The slope S=0.214% of 6/2/2007 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/2/2007	93.72
7/18/2007	93.88
9/19/2007	93.95
10/18/2007	93.92
max Invert	93.95
SZF	93.95

(1) Transect invert is the lowest elevation of the cross-section

(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/2/2007	73.4	95.62	95.66	0.04	IFG4
2nd	7/18/2007	44.5	95.43	95.36	-0.07	IFG4
3rd	9/19/2007	348.2	97.15	97.09	-0.06	IFG4
4th	10/18/2007	117.0	95.92	96.00	0.08	IFG4

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.08ft is marginally acceptable.

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 44.5cfs, 73.4cfs, 117.0cfs, and 348.2cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/2/2007	73.4	Y
7/18/2007	44.5	Y
9/19/2007	348.2	Y
10/18/2007	117.0	Y

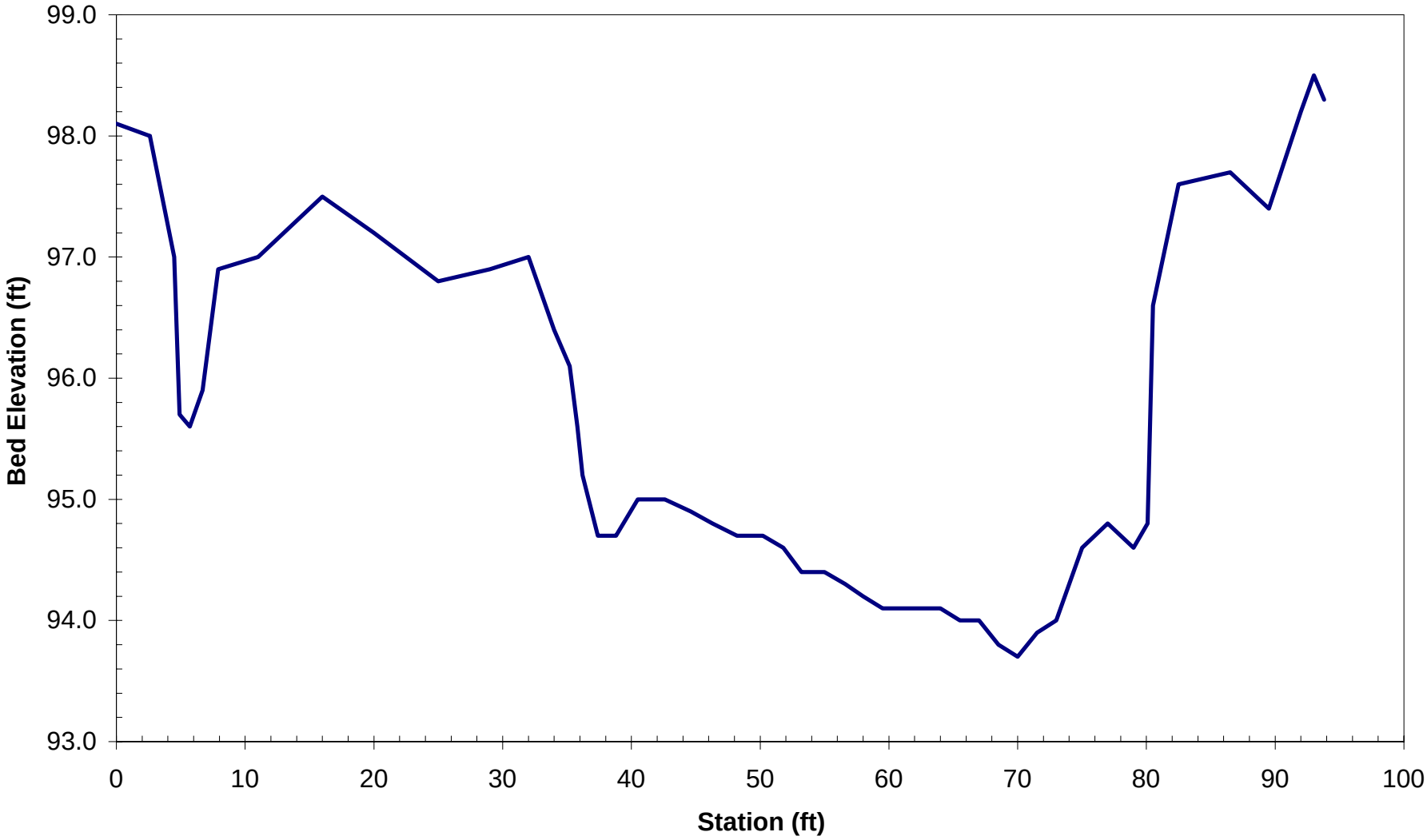
calibration notes

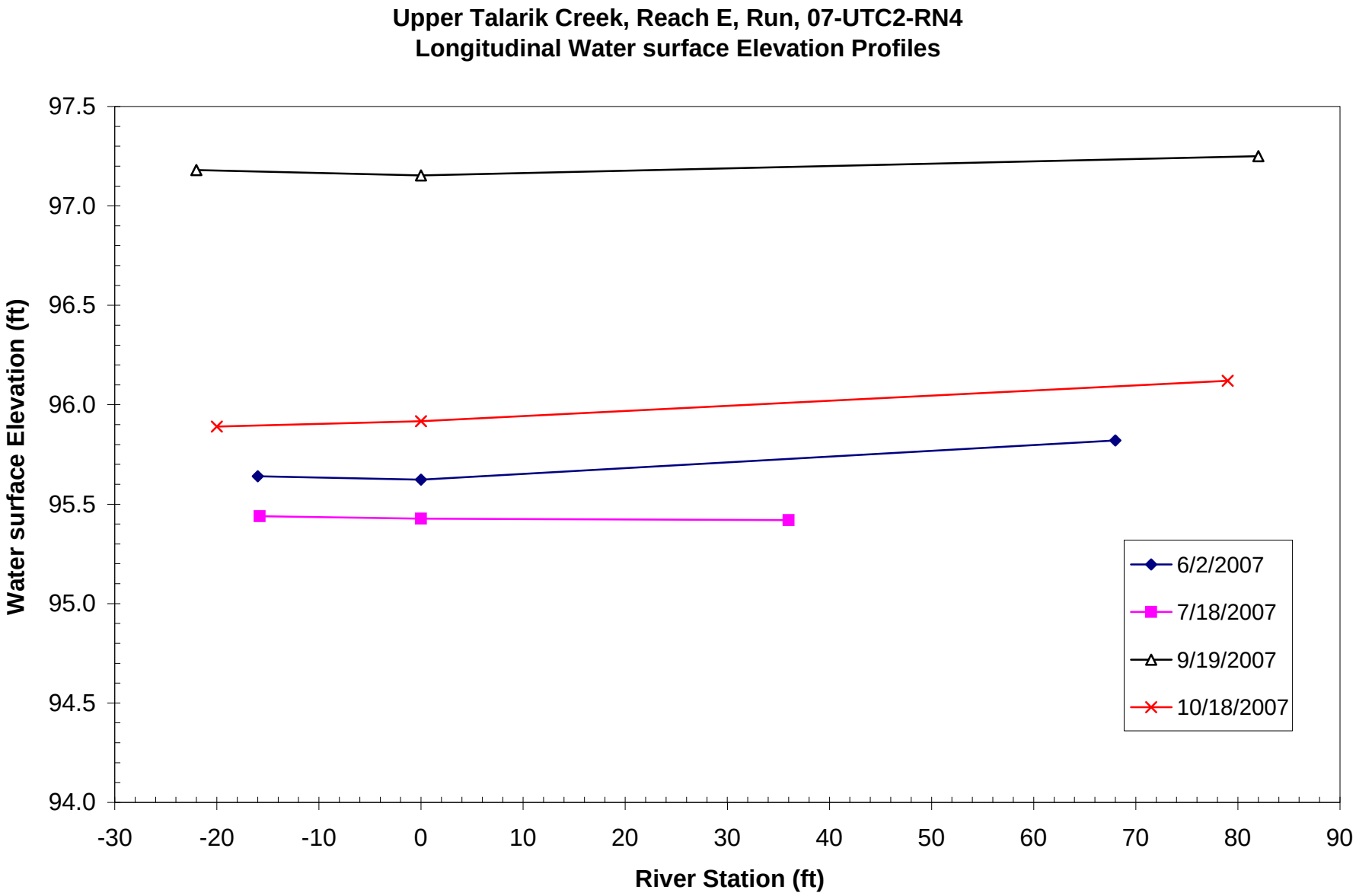
(4) Hydraulic Calibration Results:

Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

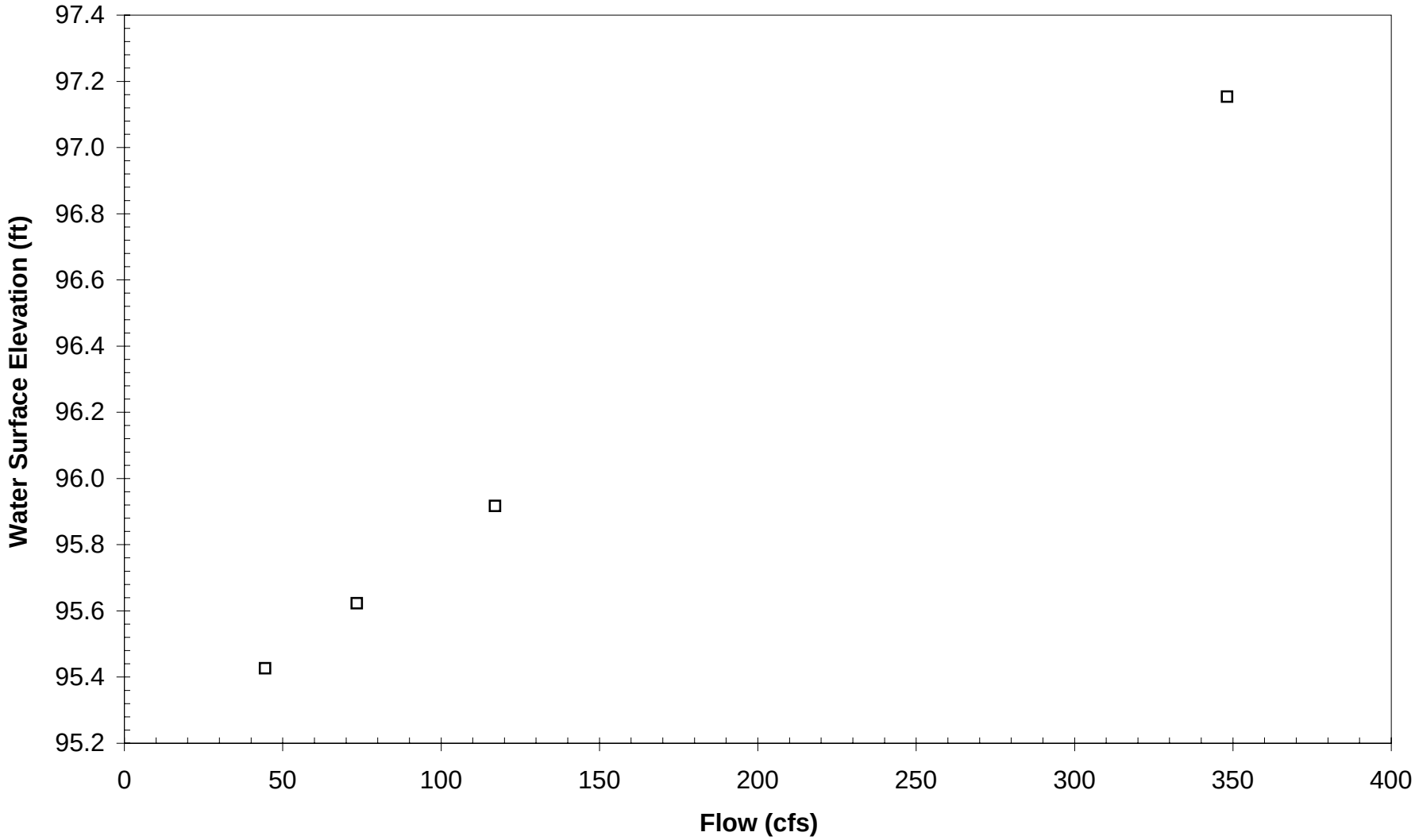
calibration notes

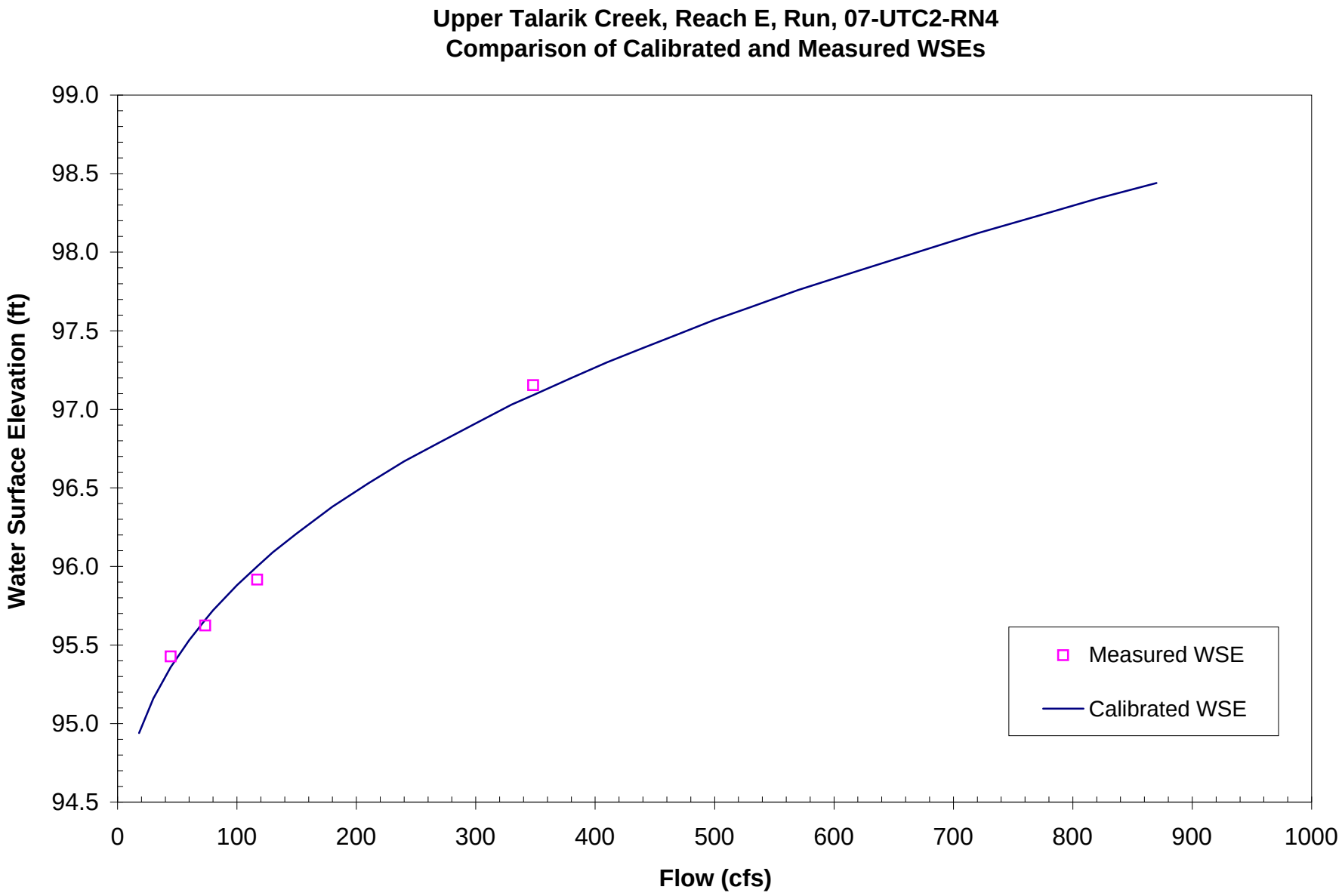
Upper Talarik Creek, Reach E, Run, 07-UTC2-RN4
Measured Transect Profile




Upper Talarik Creek, Reach E, Run, 07-UTC2-RN4
Longitudinal Water surface Elevation Profiles
Water surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
-30
-20
-10
0
10
20
30
40
50
60
70
80
90
River Station (ft)
6/2/2007
7/18/2007
9/19/2007
10/18/2007

Upper Talarik Creek, Reach E, Run, 07-UTC2-RN4
Measured Q vs. WSE

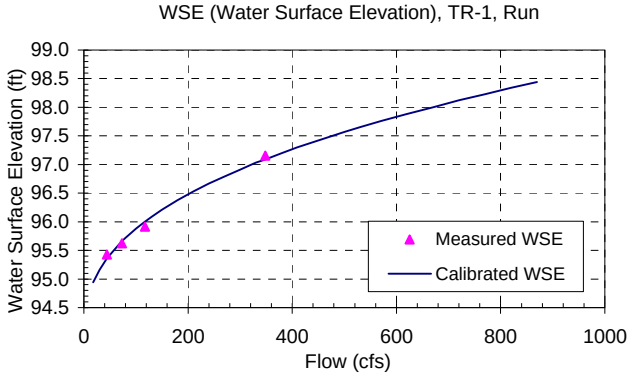


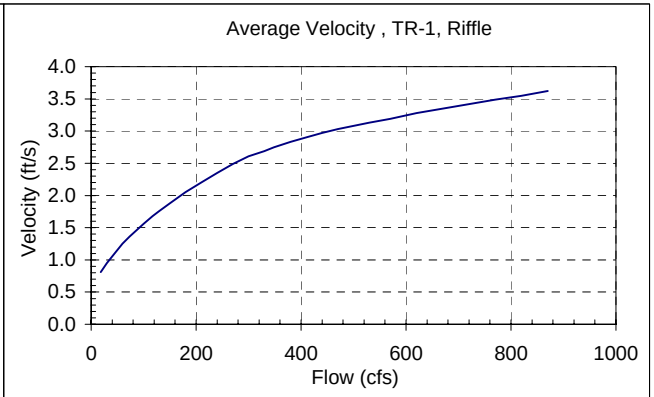

Upper Talarik Creek, Reach E, Run, 07-UTC2-RN4
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
100
200
300
400
500
600
700
800
900
1000
Flow (cfs)
Measured WSE
Calibrated WSE

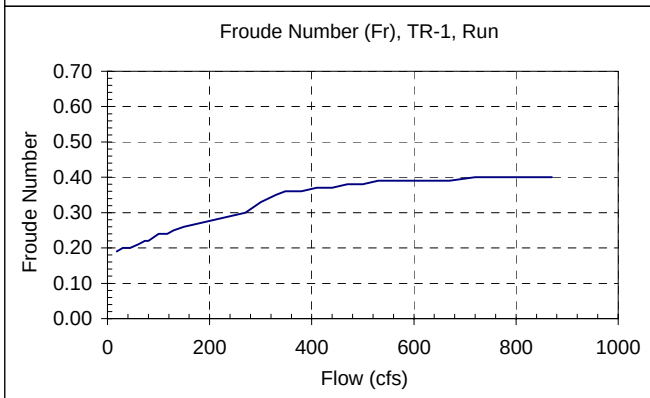
Stream: Upper Talarik Creek
Site Name: 07-UTC2-RN4
Date: 6/2/2007
Calibration Flow: Q(6/2/2007)

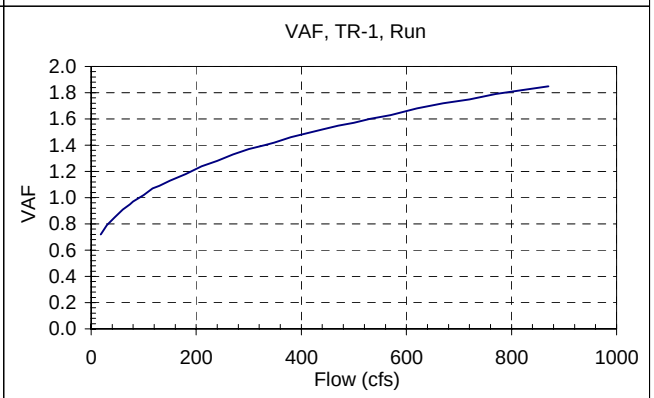
Reach: E
Habitat: Run
Site #: 4
Transect: 1

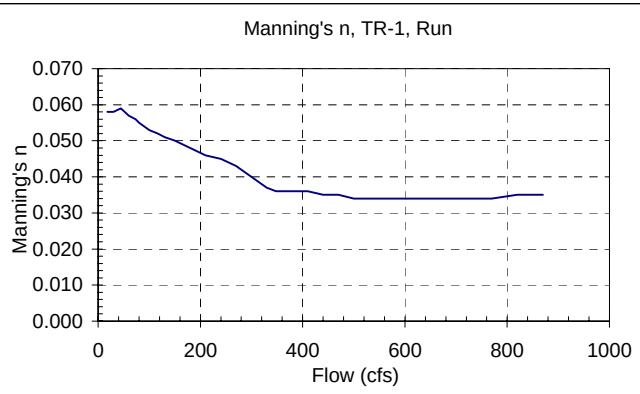
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
18	94.94	0.19	0.81	0.72	0.058	39.8
30	95.16	0.20	0.95	0.79	0.058	44.5
44.5	95.36	0.20	1.10	0.85	0.059	45.0
60	95.53	0.21	1.25	0.91	0.057	45.4
73.4	95.66	0.22	1.36	0.95	0.056	46.4
80	95.72	0.22	1.41	0.97	0.055	47.2
100	95.88	0.24	1.56	1.02	0.053	48.4
117	96.00	0.24	1.68	1.07	0.052	49.0
130	96.09	0.25	1.76	1.09	0.051	49.6
150	96.21	0.26	1.88	1.13	0.050	50.4
180	96.38	0.27	2.05	1.18	0.048	51.6
210	96.53	0.28	2.20	1.24	0.046	52.7
240	96.67	0.29	2.35	1.28	0.045	53.8
270	96.79	0.30	2.49	1.33	0.043	55.6
300	96.91	0.33	2.61	1.37	0.040	61.6
330	97.03	0.35	2.69	1.40	0.037	70.5
348.2	97.09	0.36	2.75	1.42	0.036	72.1
380	97.20	0.36	2.83	1.46	0.036	75.0
410	97.30	0.37	2.90	1.49	0.036	77.5
440	97.39	0.37	2.97	1.52	0.035	79.8
470	97.48	0.38	3.03	1.55	0.035	82.7
500	97.57	0.38	3.08	1.57	0.034	85.7
530	97.65	0.39	3.13	1.60	0.034	89.4
570	97.76	0.39	3.19	1.63	0.034	91.7
620	97.88	0.39	3.28	1.68	0.034	92.3
670	98.00	0.39	3.35	1.72	0.034	93.0
720	98.12	0.40	3.42	1.75	0.034	96.0
770	98.23	0.40	3.49	1.79	0.034	96.4
820	98.34	0.40	3.55	1.82	0.035	96.9
870	98.44	0.4	3.62	1.85	0.035	97.8

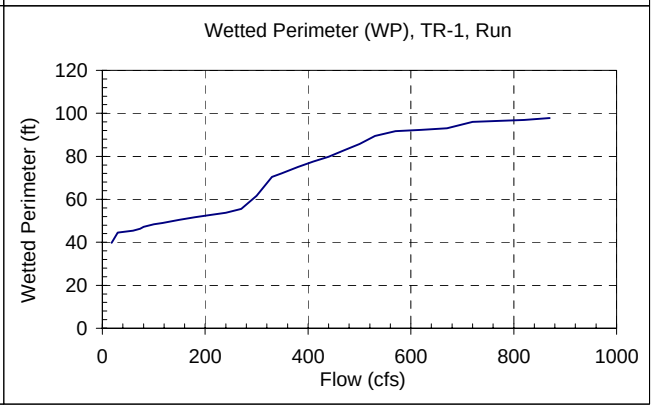






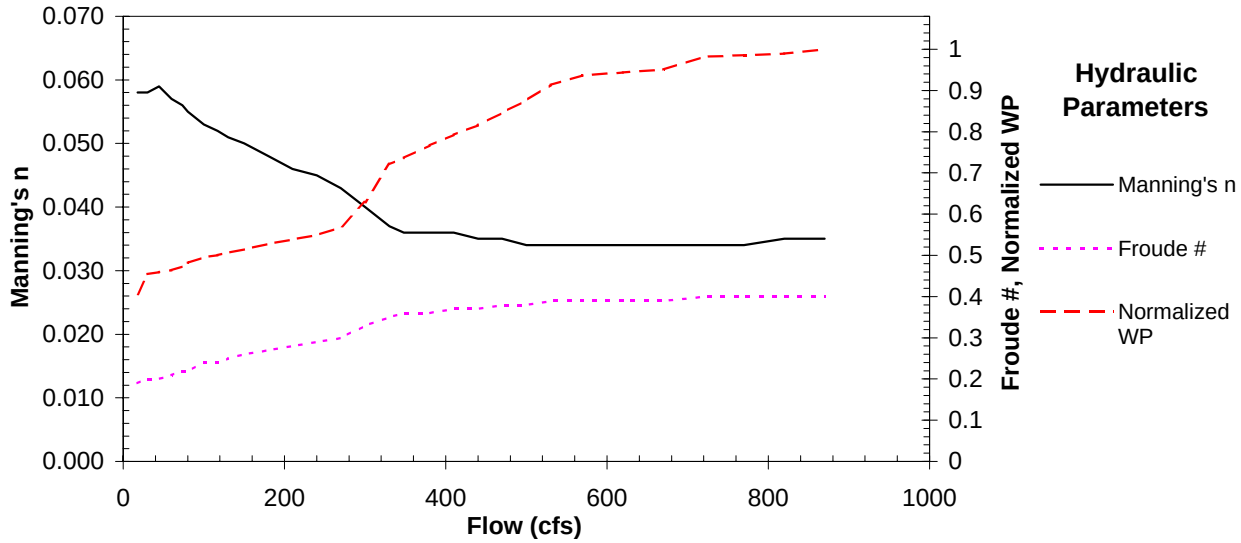


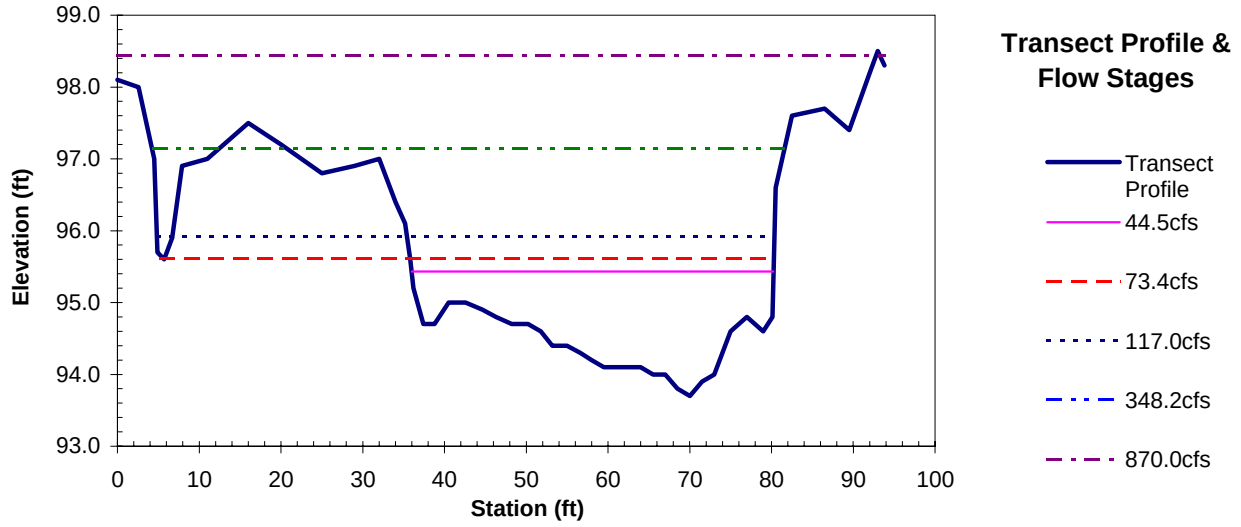


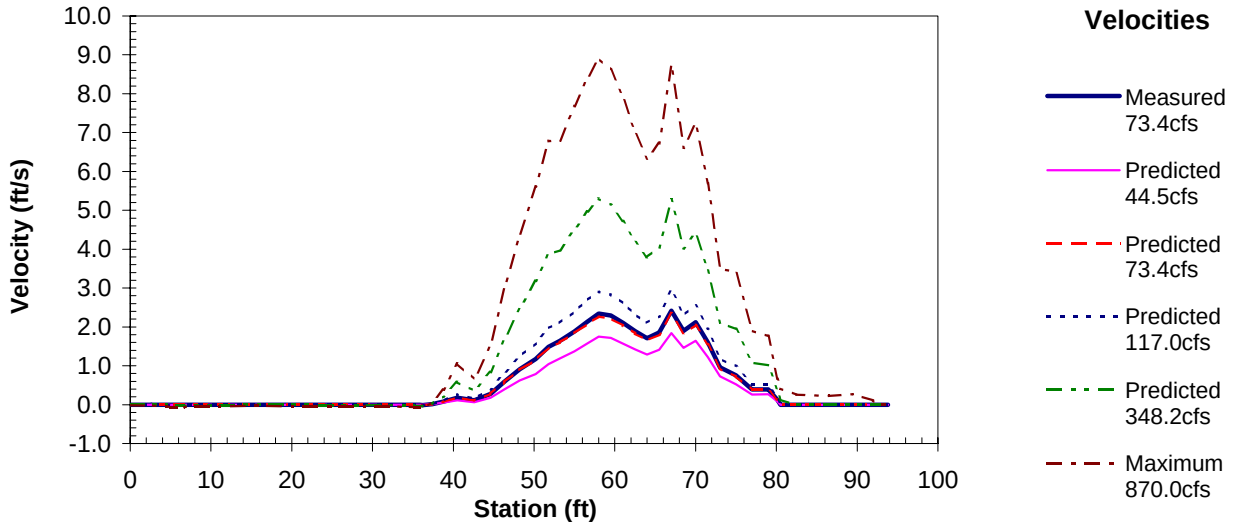


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
07-UTC2-RN4 - RUN - TRANSECT 1 - 6/2/2007







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     07-UTC2-RN4  06/02/07
RUN                         0607Q                                        TRANSECT 1
IOC       11011001000010001010000
QARD  18.0
QARD  30.0
QARD  44.5
QARD  60.0
QARD  73.4
QARD  80.0
QARD 100.0
QARD 117.0
QARD 130.0
QARD 150.0
QARD 180.0
QARD 210.0
QARD 240.0
QARD 270.0
QARD 300.0
QARD 330.0
QARD 348.2
QARD 380.0
QARD 410.0
QARD 440.0
QARD 470.0
QARD 500.0
QARD 530.0
QARD 570.0
QARD 620.0
QARD 670.0
QARD 720.0
QARD 770.0
QARD 820.0
QARD 870.0
XSEC  1000     1000. 1.0     93.95    .00214
      1000   .098.12  2.698.00  4.597.00  4.995.69  5.795.62  6.795.86
      1000  7.996.91 11.096.98 16.097.51 20.097.16 25.096.77 29.096.91
      1000 32.097.01 34.096.41 35.296.06 35.895.62 36.295.16 37.494.72
      1000 38.894.72 40.595.01 42.695.01 44.694.91 46.394.81 48.294.72
      1000 50.294.72 51.894.62 53.294.41 55.094.37 56.694.26 58.094.16
      1000 59.594.12 61.094.12 62.594.06 64.094.06 65.593.97 67.093.97
      1000 68.593.81 70.093.72 71.593.91 73.094.01 75.094.62 77.094.76
      1000 79.094.62 80.194.81 80.596.61 82.597.55 86.597.69 89.597.44
      1000 92.098.18 93.098.47 93.898.33
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      23.9      23.8
NS    1000      32.6      32.8      32.8      32.9      32.9      32.9
NS    1000      32.9      32.9      32.9      32.9      32.9      34.8
```

IFG4 Data Deck (continued)

```
NS    1000      34.8      34.7      34.6      43.7      42.9      42.8
NS    1000      43.6      32.6      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9
WSL   1000     94.94     95.16     95.36     95.53     95.66     95.72
WSL   1000     95.88     96.00     96.09     96.21     96.38     96.53
WSL   1000     96.67     96.79     96.91     97.03     97.09     97.20
WSL   1000     97.30     97.39     97.48     97.57     97.65     97.76
WSL   1000     97.88     98.00     98.12     98.23     98.34     98.44
CAL1  1000     95.62      73.4
VEL1  1000
VEL1  1000               0.00-0.01 0.01 0.08 0.18 0.11 0.28 0.59 0.91
VEL1  1000 1.17 1.49 1.64 1.88 2.14 2.34 2.29 2.10 1.89 1.71 1.86 2.42
VEL1  1000 1.90 2.12 1.60 0.96 0.75 0.39 0.39 0.13
VEL1  1000
CAL2  1000     95.43      44.5
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     97.15     348.2
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
CAL4  1000     95.92     117.0
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek

Reach: UT-F

UT-F Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
05-UTC3-RN3	48.86	55.6	18.8	39.9		96.08	95.75	95.94		-0.02	0.00	0.02		IFG4
05-UTC3-RN2	52.01	42.4	11.6	37.6		95.49	95.02	95.46		0.01	0.00	-0.02		IFG4
05-UTC3-PL1	56.65	18.1	6.6	12.9		96.26	95.87	95.95		-0.03	-0.09	0.12		IFG4
05-UTC3-RF1	56.83	21.6	7.8	13.8		96.15	95.85	96.04		0.01	0.01	-0.03		IFG4
05-UTC3-RF2	57.25	16.6	7.1	13.3		98.56	98.37	98.49		-0.01	-0.01	0.01		IFG4
05-UTC3-RN1	58.24	19.8	8.8	13.3		95.69	95.40	95.50		-0.01	-0.01	0.02		IFG4

* RK is an abbreviation for River Kilometer

Stream: Upper Talarik Creek

Reach: UT-F

Site/TR: 05-UTC3-RN3

Habitat Type: Run

River Kilometer: 48.86

Stream: Upper Talarik Creek
Reach: F
Site Name: 05-UTC3-RN3
Habitat Type: Run

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/19/2005	1	100.00	98.32	98.88
2nd	7/20/2005	2	100.00	98.31	98.88
3rd	8/15/2005	3	100.00	98.31	98.88
4th	6/28/2006	4	100.00	98.41	98.92
5th	4/10/2007	5	100.00	98.71	99.03

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevation changes were within 0.01ft in 2005, indicating all three pins were stable in that period.
(c) HP and TP elevations rose 0.09ft and 0.04ft, respectively, in 2006, but it was unclear which pin(s) had moved.
(d) Because the shift of 0.04ft between BM and TP was not too significant, it was decided no adjustment would be applied to correcting the WSEs surveyed in 2006 to 2005 datum.
(e) Hydraulics of 4/10/2007 survey were affected by ice and were not be included for modeling

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/19/2005	96.08
7/20/2005	95.85
8/15/2005	95.75
6/28/2006	95.94
4/10/2007	98.85

WSE of 4/10/07 was affected by ice. Photos showed anchor ice in channel and on waters edge.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/19/2005	55.6
7/20/2005	
8/15/2005	18.8
6/28/2006	39.9
4/10/2007	31.8

(a) No flow was measured on 7/20/05.

(b) Transect profile of 4/10/07 survey showed the bed was elevated for more than 3 feet, indicating the channel was filled with anchor ice. Hydraulics were impacted by ice and no used for modeling.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/19/2005	0.067%	104
7/20/2005	0.038%	104
8/15/2005	0.037%	80.5
6/28/2006	0.015%	65
4/10/2007	0.202%	128.6

The slope S=0.067% of 6/19/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/19/2005	93.78
7/20/2005	
8/15/2005	93.95
6/28/2006	93.99
4/10/2007	97.25
max Invert	93.99
SZF	93.99

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/20/05.
(4) Invert of 4/10/07 survey was not used to determine SZF because hydraulics was impacted by ice.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR1	TR1	TR1	
1st	6/19/2005	55.6	96.08	96.06	-0.02	IFG4
2nd	7/20/2005		95.85			
3rd	8/15/2005	18.8	95.75	95.75	0.00	IFG4
4th	6/28/2006	39.9	95.94	95.96	0.02	IFG4
5th	4/10/2007	31.8	98.85			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range
(c) No flow was measured during the 7/20/05 site visit.
(d) Hydraulics of 4/10/07 were affected by ice, and therefore were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 18.8cfs, 39.9cfs, and 55.6cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

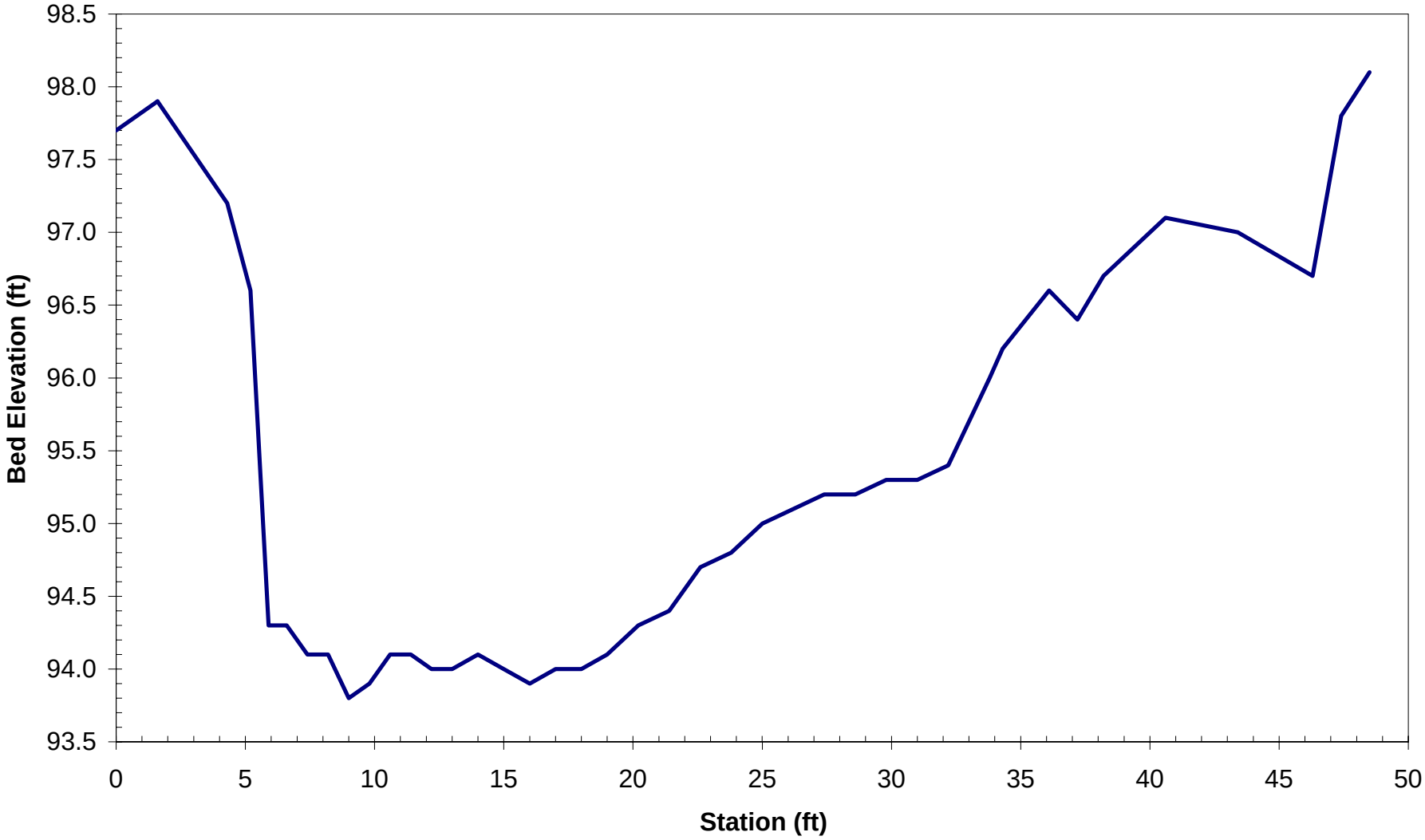
Survey Date	Q (cfs)	WUA (Y/N)
6/19/2005	55.6	Y
7/20/2005		
8/15/2005	18.8	Y
6/28/2006	39.9	Y
4/10/2007	31.8	

(4) Hydraulic Calibration Results:

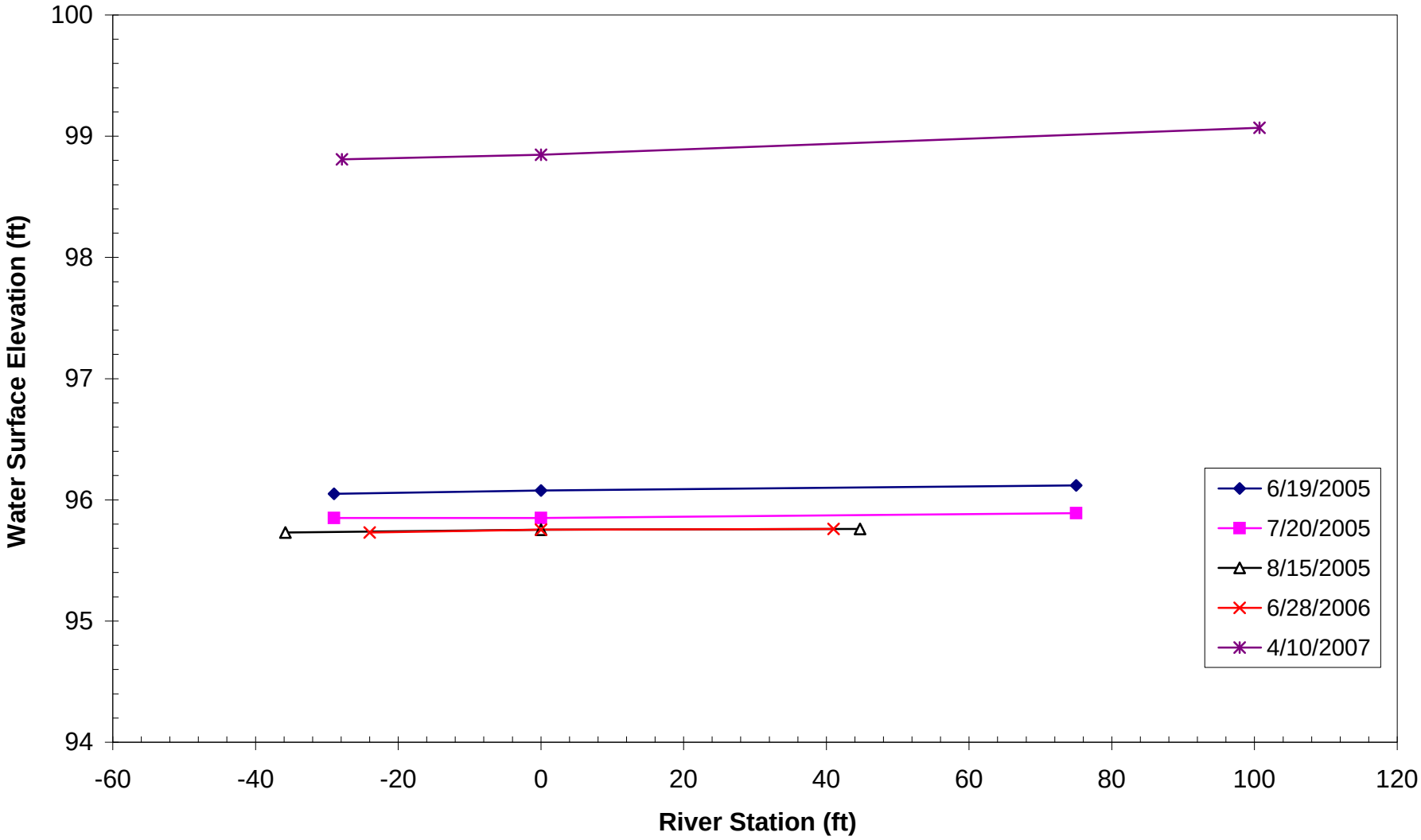
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

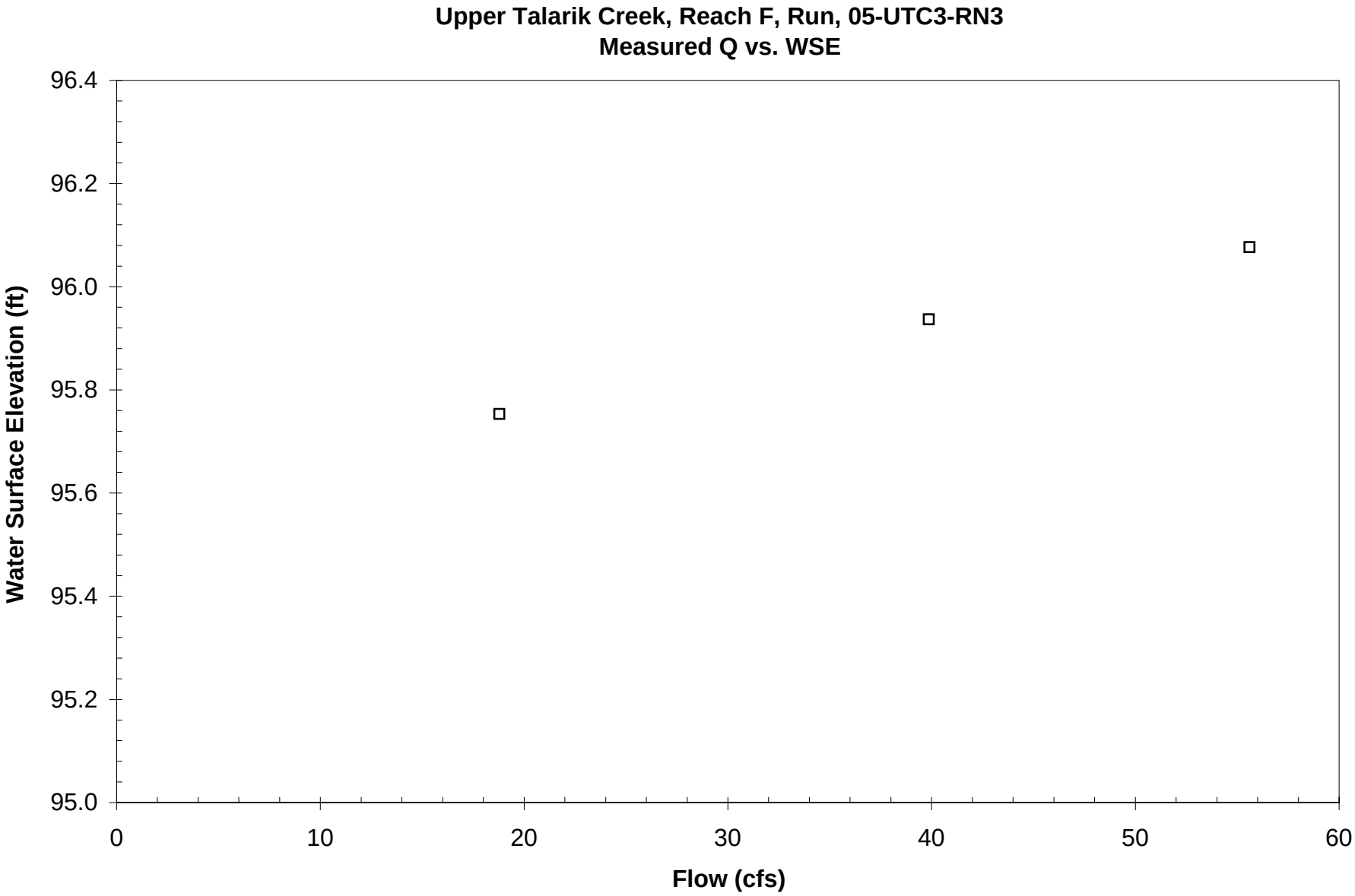
calibration notes

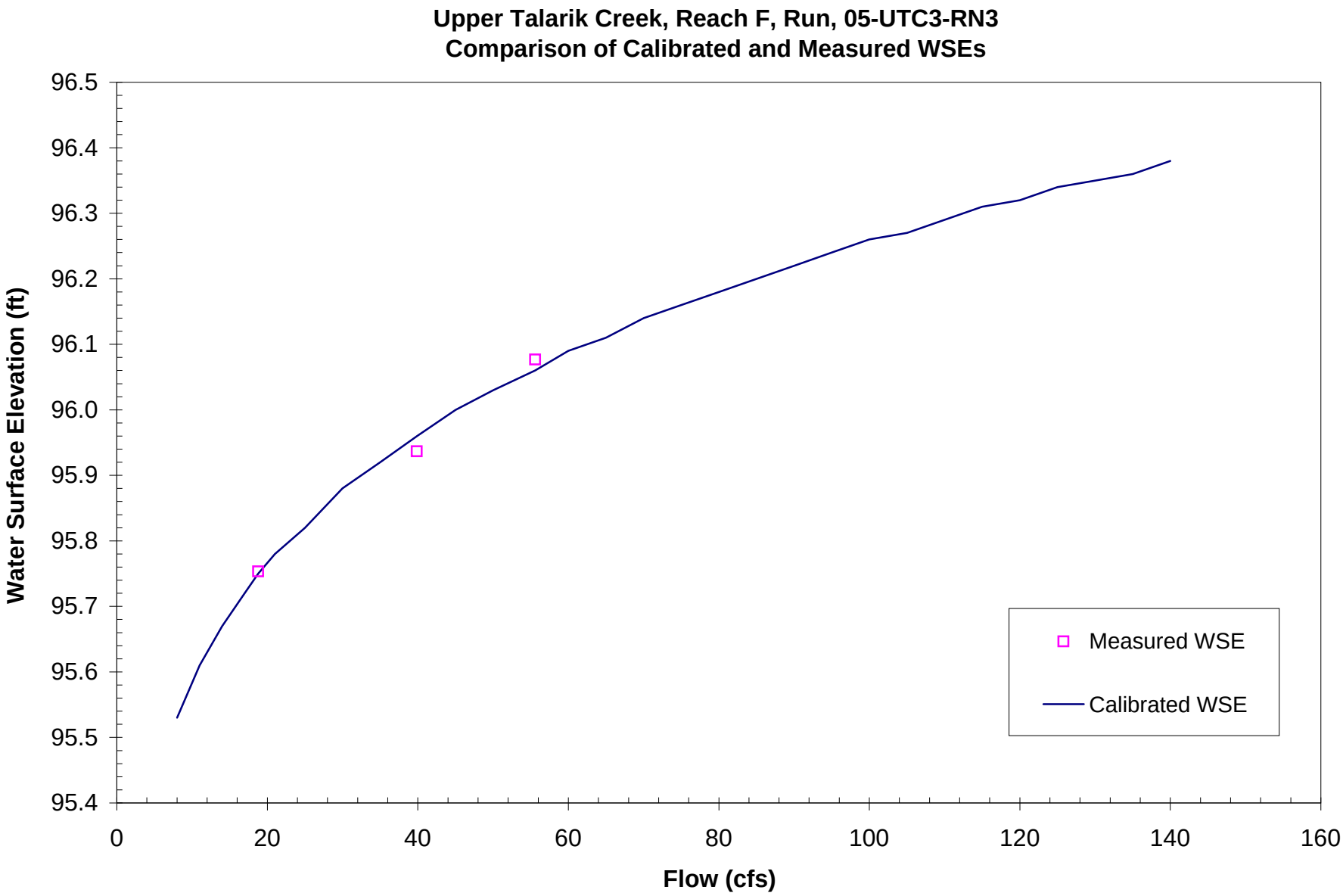
Upper Talarik Creek, Reach F, Run, 05-UTC3-RN3
Measured Transect Profile



Upper Talarik Creek, Reach F, Run, 05-UTC3-RN3
Longitudinal Water Surface Elevation Profiles



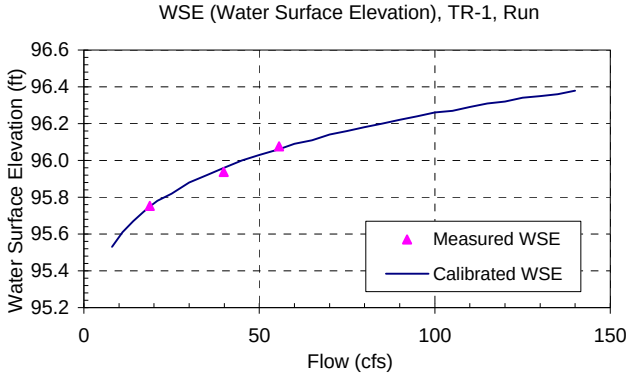

Upper Talarik Creek, Reach F, Run, 05-UTC3-RN3
Measured Q vs. WSE
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
10
20
30
40
50
60
Flow (cfs)

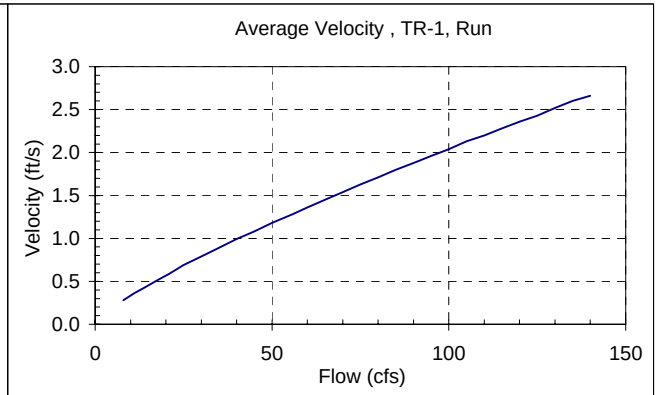

Upper Talarik Creek, Reach F, Run, 05-UTC3-RN3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.5
96.4
96.3
96.2
96.1
96.0
95.9
95.8
95.7
95.6
95.5
95.4
0
20
40
60
80
100
120
140
160
Flow (cfs)
Measured WSE
Calibrated WSE

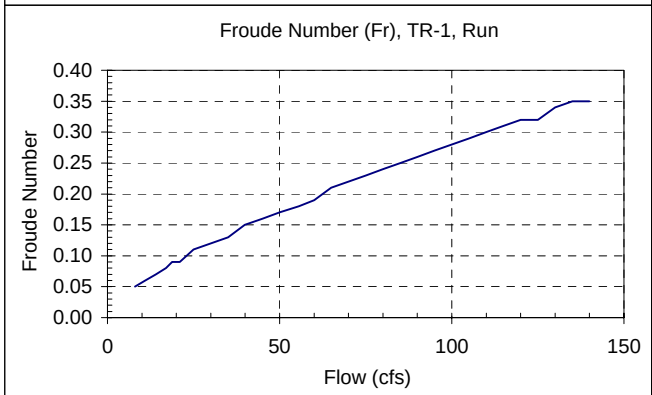
Stream: Upper Talarik Creek
Site Name: 05-UTC3-RN3
Date: 6/19/2005
Calibration Flow: Q(6/19/2005)

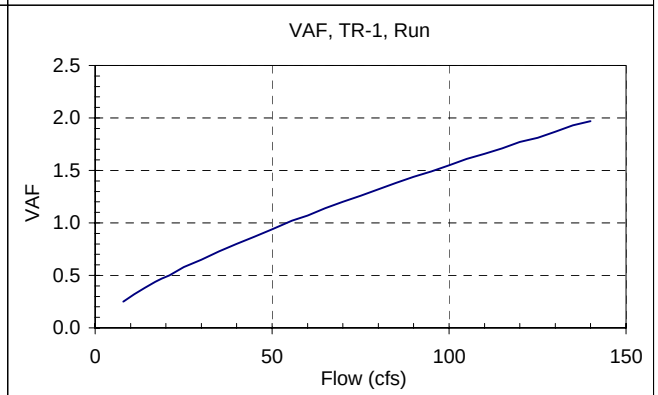
Reach: F
Habitat: Run
Site #: 3
Transect: 1

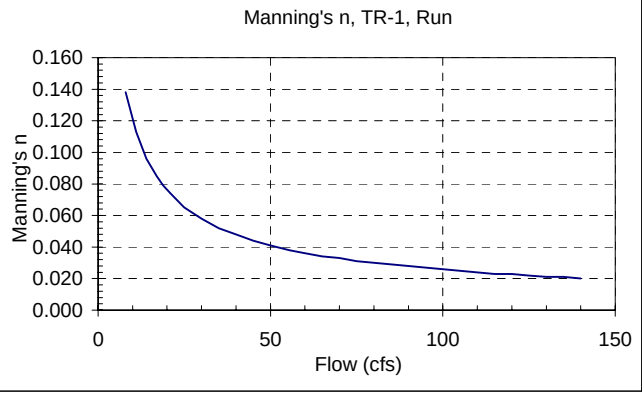
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
8	95.53	0.05	0.28	0.25	0.138	28.3
11	95.61	0.06	0.36	0.32	0.113	28.6
14	95.67	0.07	0.43	0.38	0.096	28.8
17	95.72	0.08	0.50	0.44	0.085	29.0
18.8	95.75	0.09	0.54	0.47	0.079	29.1
21	95.78	0.09	0.59	0.50	0.074	29.2
25	95.82	0.11	0.69	0.58	0.065	29.4
30	95.88	0.12	0.79	0.65	0.058	29.6
35	95.92	0.13	0.89	0.73	0.052	29.8
39.9	95.96	0.15	0.99	0.80	0.048	29.9
45	96.00	0.16	1.08	0.87	0.044	30.1
50	96.03	0.17	1.18	0.94	0.041	30.2
55.6	96.06	0.18	1.28	1.02	0.038	30.3
60	96.09	0.19	1.36	1.07	0.036	30.4
65	96.11	0.21	1.45	1.14	0.034	30.4
70	96.14	0.22	1.54	1.20	0.033	30.5
75	96.16	0.23	1.63	1.26	0.031	30.6
80	96.18	0.24	1.71	1.32	0.030	30.7
85	96.20	0.25	1.80	1.38	0.029	30.7
90	96.22	0.26	1.88	1.44	0.028	30.8
95	96.24	0.27	1.96	1.49	0.027	30.8
100	96.26	0.28	2.04	1.55	0.026	30.9
105	96.27	0.29	2.13	1.61	0.025	31.0
110	96.29	0.30	2.20	1.66	0.024	31.1
115	96.31	0.31	2.28	1.71	0.023	31.2
120	96.32	0.32	2.36	1.77	0.023	31.3
125	96.34	0.32	2.43	1.81	0.022	31.4
130	96.35	0.34	2.52	1.87	0.021	31.5
135	96.36	0.35	2.60	1.93	0.021	31.6
140	96.38	0.35	2.66	1.97	0.020	31.7

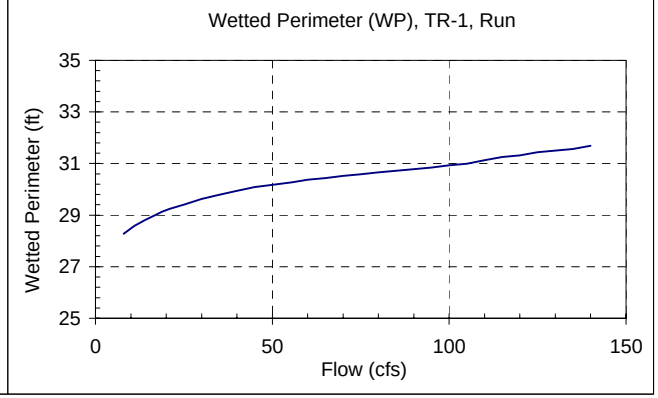




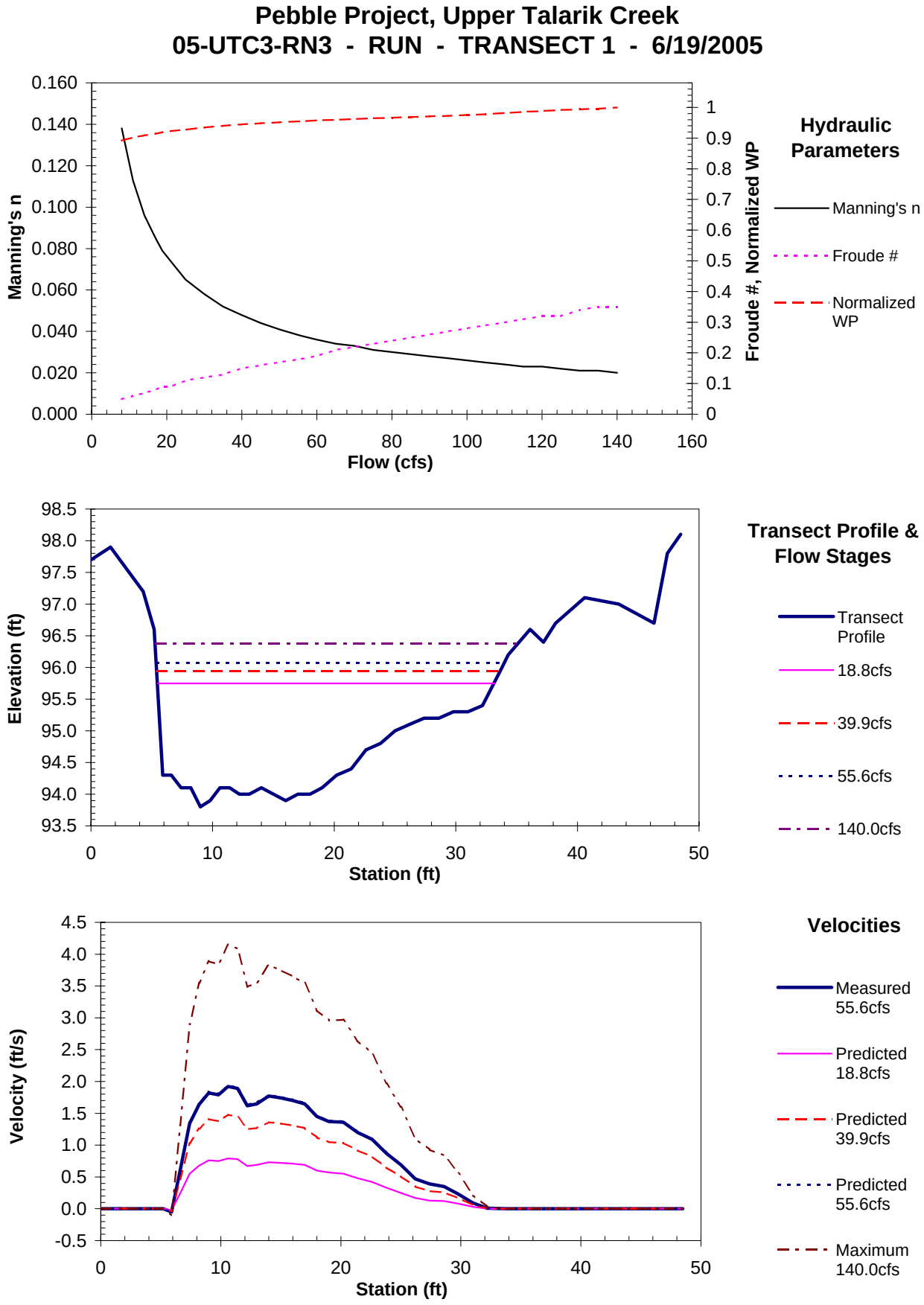








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC3-RN3  06/19/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   8.0
QARD  11.0
QARD  14.0
QARD  17.0
QARD  18.8
QARD  21.0
QARD  25.0
QARD  30.0
QARD  35.0
QARD  39.9
QARD  45.0
QARD  50.0
QARD  55.6
QARD  60.0
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 135.0
QARD 140.0
XSEC  1000     1000. 1.0     93.99    .00067
      1000   .097.66  1.697.90  4.397.22  5.296.58  5.994.28  6.694.28
      1000  7.494.08  8.294.08  9.093.78  9.893.88 10.694.08 11.494.08
      1000 12.293.98 13.093.98 14.094.08 15.093.98 16.093.88 17.093.98
      1000 18.093.98 19.094.08 20.294.28 21.494.38 22.694.68 23.894.78
      1000 25.094.98 26.295.08 27.495.18 28.695.18 29.895.28 31.095.28
      1000 32.295.38 33.895.98 34.396.25 36.196.60 37.296.43 38.296.73
      1000 40.697.11 43.496.97 46.396.73 47.497.77 48.598.11
NS    1000      22.9      22.9      22.9      22.9      23.8      24.6
NS    1000      43.8      43.7      43.6      43.6      43.8      43.8
NS    1000      42.8      42.8      43.8      43.8      42.7      32.6
NS    1000      23.7      23.8      23.9      23.9      23.9      23.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9
WSL   1000     95.53     95.61     95.67     95.72     95.75     95.78
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     95.82     95.88     95.92     95.96     96.00     96.03
WSL   1000     96.06     96.09     96.11     96.14     96.16     96.18
WSL   1000     96.20     96.22     96.24     96.26     96.27     96.29
WSL   1000     96.31     96.32     96.34     96.35     96.36     96.38
CAL1  1000     96.08      55.6
VEL1  1000                    -0.05 0.60 1.34 1.64 1.82 1.79 1.92 1.89
VEL1  1000 1.62 1.65 1.77 1.74 1.70 1.65 1.45 1.37 1.36 1.20 1.09 0.87
VEL1  1000 0.69 0.47 0.39 0.35 0.23 0.09 0.01 0.00
VEL1  1000
CAL2  1000     95.75      18.8
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.94      39.9
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-F

Site/TR: 05-UTC3-RN2

Habitat Type: Run

River Kilometer: 52.01

Stream: **Upper Talarik Creek**
Reach: **F**
Site Name: **05-UTC3-RN2**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/18/2005	1	100.00	97.90	97.43
2nd	7/20/2005	2	100.00	97.98	97.49
3rd	8/15/2005	3	100.00	97.97	97.49
4th	7/8/2006	4	100.00	98.09	97.55
5th	4/8/2007	5	100.00	98.15	97.49

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevation changes from 6/05 to 7/05 showed BM may have sunken 0.06ft to 0.08ft. Pins stabilized in the 8/05 survey.
(c) The 7/06 survey results suggested (1) BM have sunken an additional 0.06ft to 0.12ft from 8/05, (2) BM were lowered or (3) combination of sinking and rising of all pins.
(d) Adjustments were needed to correct all WSEs to reference to the 6/05 datum.
(e) Hydraulics of 4/8/07 survey were impacted by ice and not used in modeling.

calibration notes

Measured WSE:

The level loop results showed the control pins moved randomly over the 2-year survey period. As the result, it was difficult to estimate the accurate movement of the datum shift in each survey. Instead of using the pin elevation changes to determine the required adjustment to the datum, it was assumed the bed was stable from 2005 to 2006. With the assumption, the adjustments to the WSEs of 7/20/5, 8/15/05 and 7/8/06 would be -0.15ft, -0.15ft, and -0.10ft, respectively. After applying the adjustments, the three bed profiles surveyed in 2005 and 2006 were reasonably matched in the center portion of the transect.

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/18/2005	95.49
7/20/2005	95.05
8/15/2005	95.02
7/8/2006	95.46
4/8/2007	98.36

The WSEs of 7/05, 8/05, 7/06 have reflected the adjustments due to datum shift.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/18/2005	42.4
7/20/2005	
8/15/2005	11.6
7/8/2006	37.6
4/8/2007	7.6

(a) No flow was measured in 7/20/05 trip.

(b) Measured flow of 4/8/07 was affected by ice. There were no photos available for this site, but the photos of a higher site, 05-UTC3-RF2 (~3.2 miles upstream), showed the entire channel was covered in ice, Also the photos of a lower site, 05-UTC3-RN3 (~2.0 miles downstream), showed the ice still occupied waters edge. The photos of both sites were taken on 4/10/07.

(c) Transect profile of 4/8/07 survey showed the channel bottom was elevated for more than 4 feet, indicating the channel was filled with anchor ice.

(d) Hydraulics of 4/8/07 was impacted by ice and not used for modeling.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/18/2005	0.506%	63.3
7/20/2005	0.648%	63
8/15/2005	0.671%	51
7/8/2006	0.389%	77
4/8/2007	0.269%	63

The slope S=0.506% of 6/18/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/18/2005	94.29
7/20/2005	
8/15/2005	94.22
7/8/2006	94.46
4/8/2007	97.46
max Invert	94.46
SZF	94.46

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/20/05
(4) Invert of 4/8/07 survey was not used to determine SZF because hydraulics was impacted by ice

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/18/2005	42.4	95.49	95.50	0.01	IFG4
2nd	7/20/2005		95.05			
3rd	8/15/2005	11.6	95.02	95.02	0.00	IFG4
4th	7/8/2006	37.6	95.46	95.44	-0.02	IFG4
5th	4/8/2007	7.6	98.36			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range
(c) No flow was measured during the 7/20/05 site visit.
(d) Hydraulics of 4/10/07 were affected by ice and were not used for modeling

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 11.6cfs, 37.6cfs, and 42.4cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

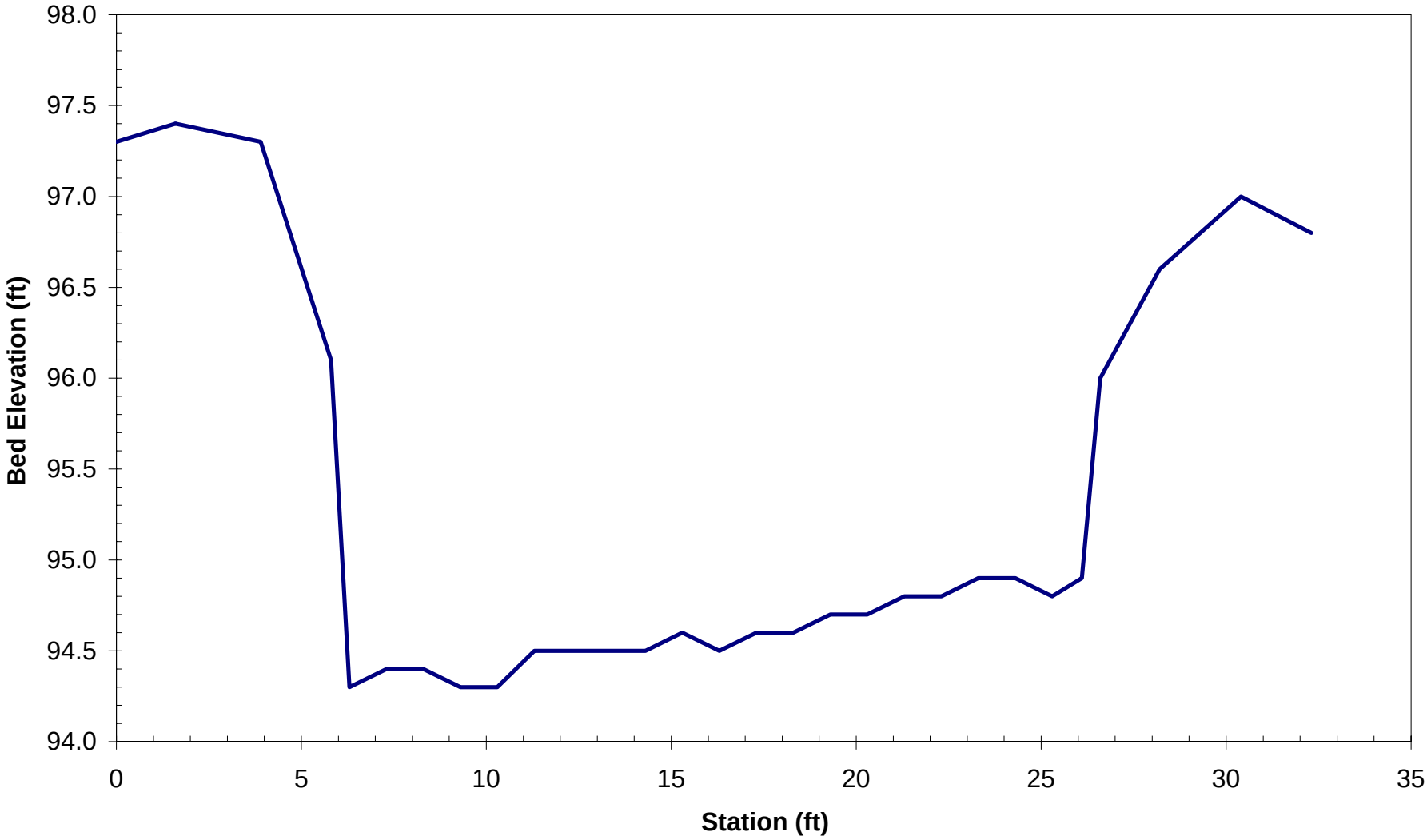
Survey Date	Q (cfs)	WUA (Y/N)
6/18/2005	42.4	Y
7/20/2005		
8/15/2005	11.6	Y
7/8/2006	37.6	
4/8/2007	7.6	

(4) Hydraulic Calibration Results:

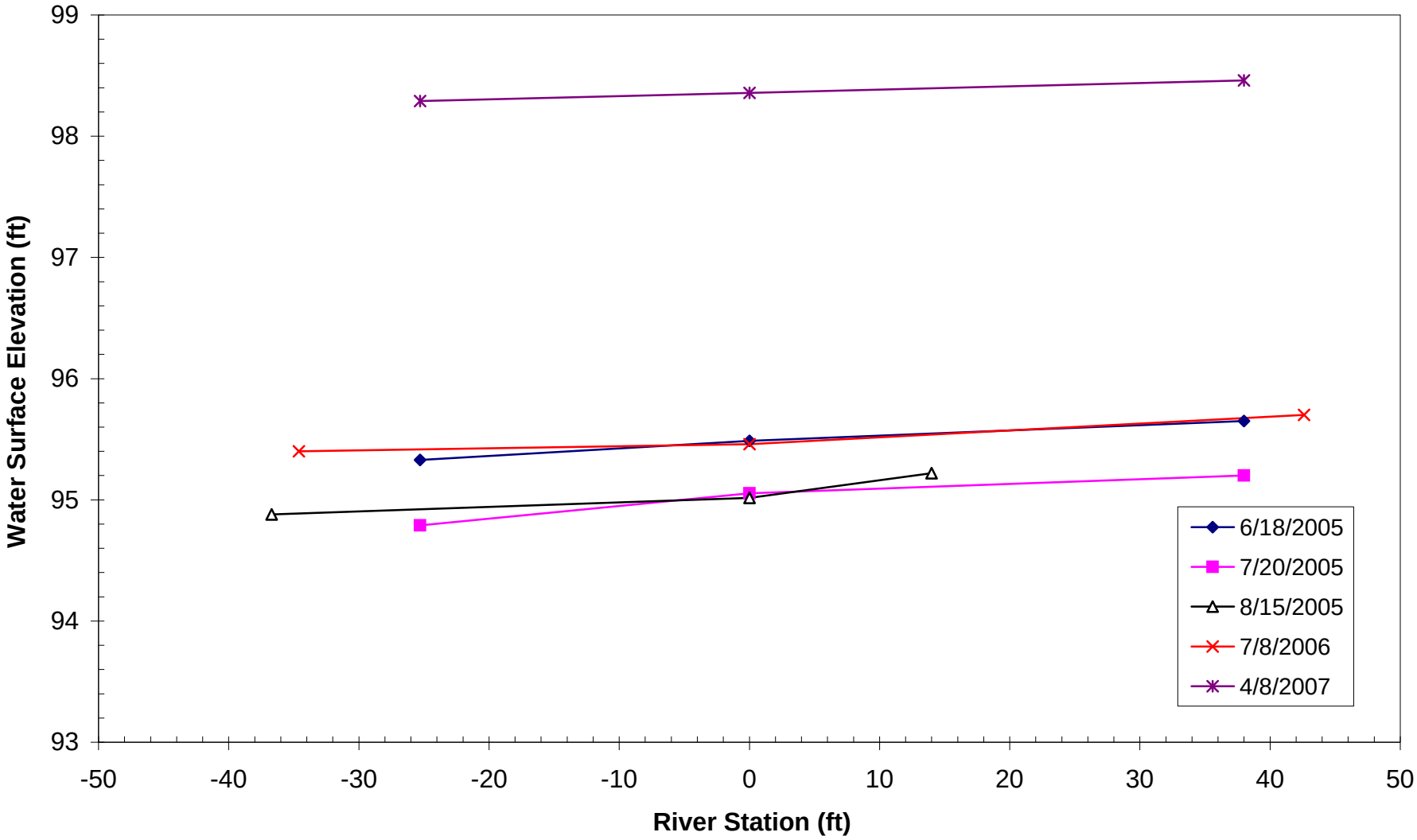
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

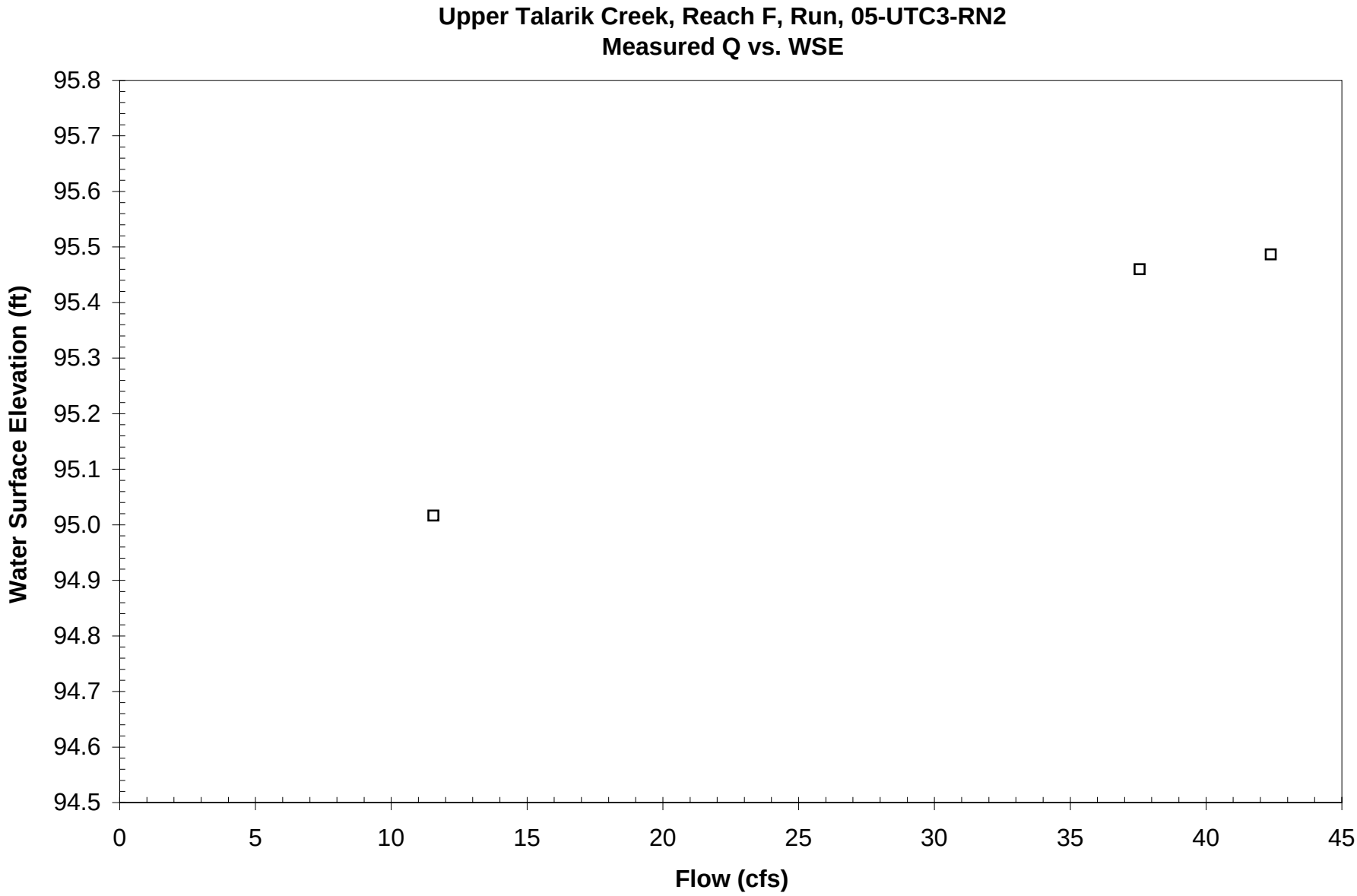
calibration notes

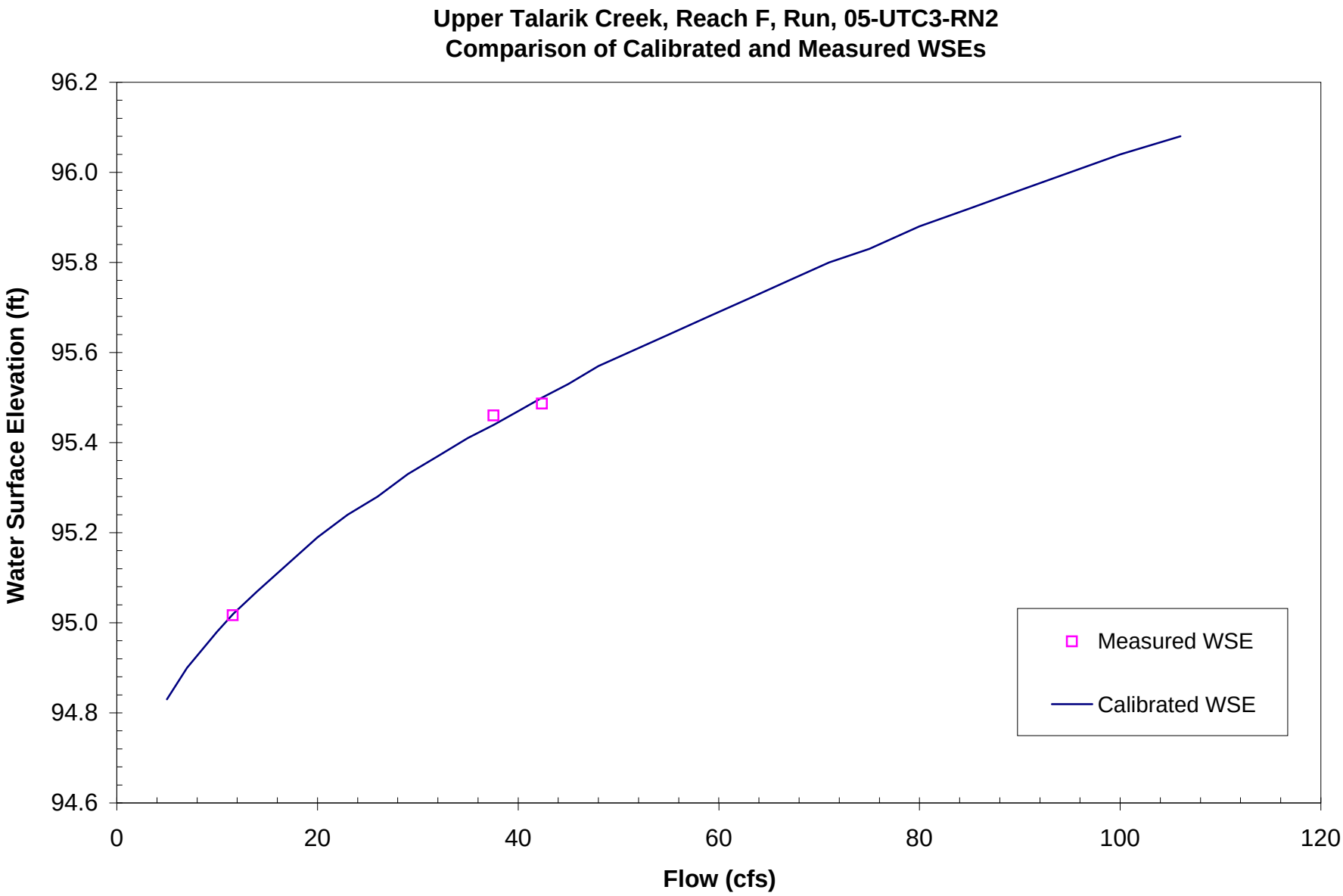
Upper Talarik Creek, Reach F, Run, 05-UTC3-RN2
Measured Transect Profiles



Upper Talarik Creek, Reach F, Run, 05-UTC3-RN2
Longitudinal Water Surface Elevation Profiles



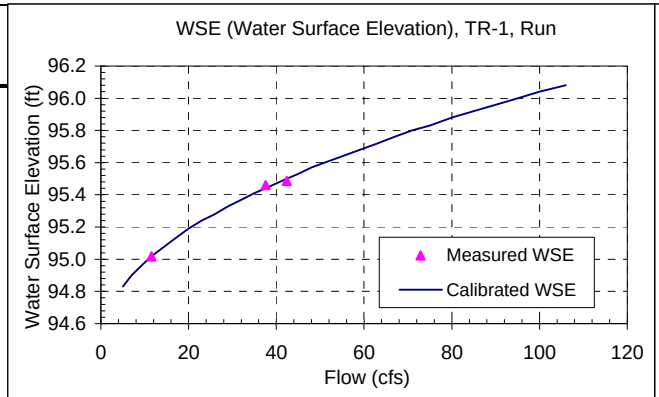

Upper Talarik Creek, Reach F, Run, 05-UTC3-RN2
Measured Q vs. WSE
Water Surface Elevation (ft)
95.8
95.7
95.6
95.5
95.4
95.3
95.2
95.1
95.0
94.9
94.8
94.7
94.6
94.5
0
5
10
15
20
25
30
35
40
45
Flow (cfs)

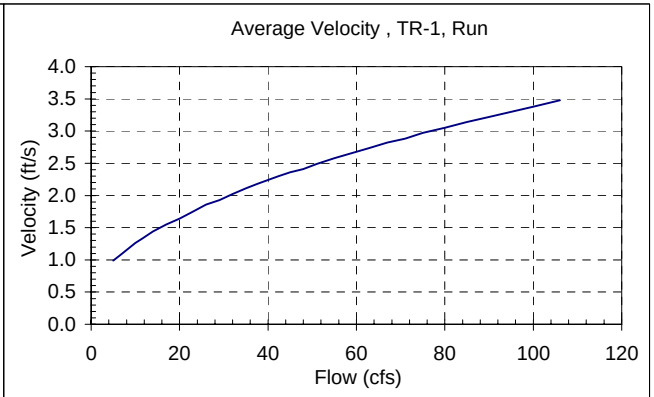

Upper Talarik Creek, Reach F, Run, 05-UTC3-RN2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.2
96.0
95.8
95.6
95.4
95.2
95.0
94.8
94.6
0
20
40
60
80
100
120
Flow (cfs)
Measured WSE
Calibrated WSE

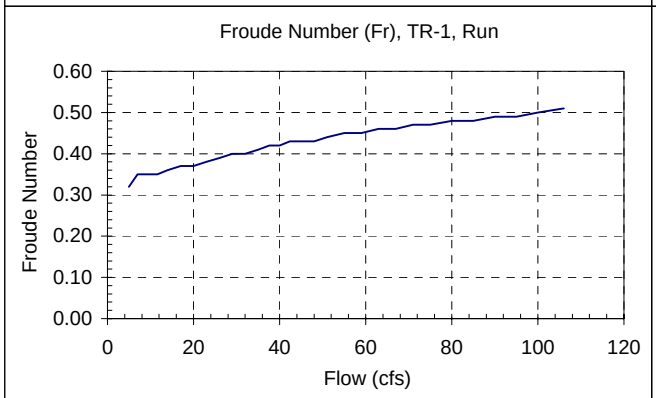
Stream: Upper Talarik Creek
Site Name: 05-UTC3-RN2
Date: 6/18/2005
Calibration Flow: Q(6/18/2005)

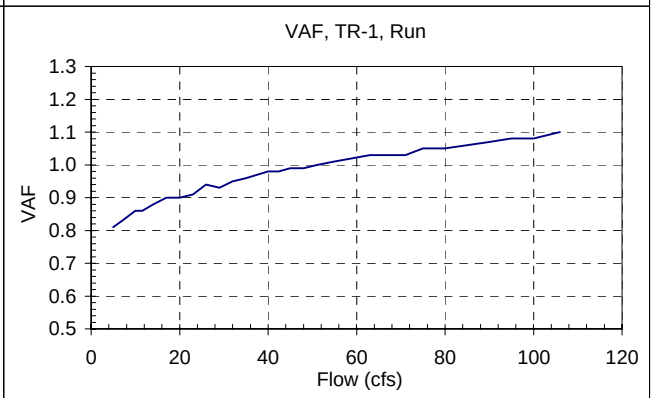
Reach: F
Habitat: Run
Site #: 2
Transect: 1

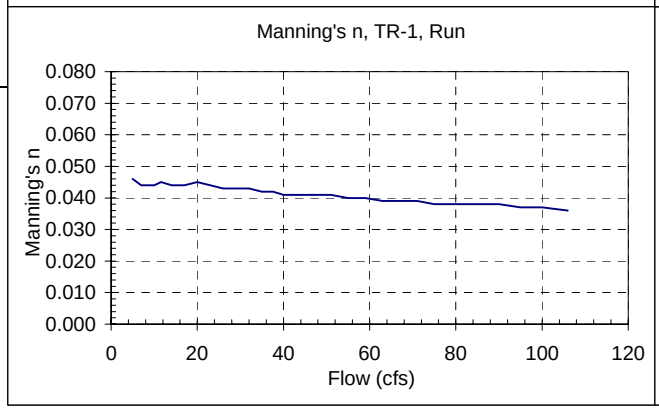
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
5	94.83	0.32	0.99	0.81	0.046	17.7
7	94.90	0.35	1.10	0.83	0.044	20.5
10	94.98	0.35	1.26	0.86	0.044	20.7
11.6	95.02	0.35	1.33	0.86	0.045	20.8
14	95.07	0.36	1.44	0.88	0.044	20.9
17	95.13	0.37	1.55	0.90	0.044	21.0
20	95.19	0.37	1.64	0.90	0.045	21.1
23	95.24	0.38	1.75	0.91	0.044	21.2
26	95.28	0.39	1.86	0.94	0.043	21.3
29	95.33	0.40	1.93	0.93	0.043	21.4
32	95.37	0.40	2.02	0.95	0.043	21.5
35	95.41	0.41	2.11	0.96	0.042	21.6
37.6	95.44	0.42	2.18	0.97	0.042	21.7
40	95.47	0.42	2.24	0.98	0.041	21.7
42.4	95.50	0.43	2.30	0.98	0.041	21.8
45	95.53	0.43	2.36	0.99	0.041	21.9
48	95.57	0.43	2.41	0.99	0.041	21.9
51	95.60	0.44	2.49	1.00	0.041	22.0
55	95.64	0.45	2.58	1.01	0.040	22.1
59	95.68	0.45	2.66	1.02	0.040	22.2
63	95.72	0.46	2.74	1.03	0.039	22.3
67	95.76	0.46	2.82	1.03	0.039	22.3
71	95.80	0.47	2.88	1.03	0.039	22.4
75	95.83	0.47	2.97	1.05	0.038	22.5
80	95.88	0.48	3.05	1.05	0.038	22.6
85	95.92	0.48	3.14	1.06	0.038	22.7
90	95.96	0.49	3.22	1.07	0.038	22.8
95	96.00	0.49	3.30	1.08	0.037	22.9
100	96.04	0.50	3.38	1.08	0.037	22.9
106	96.08	0.51	3.48	1.10	0.036	23.1

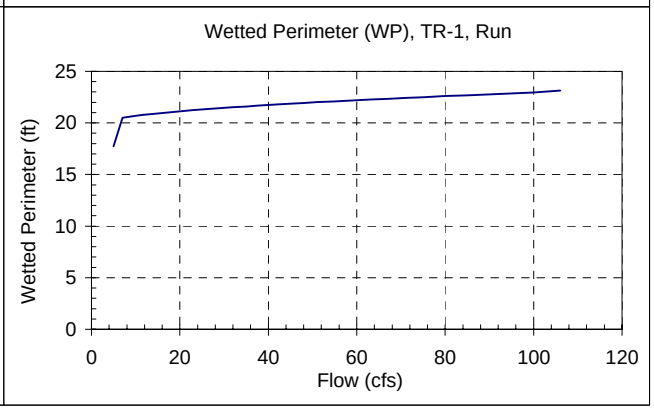




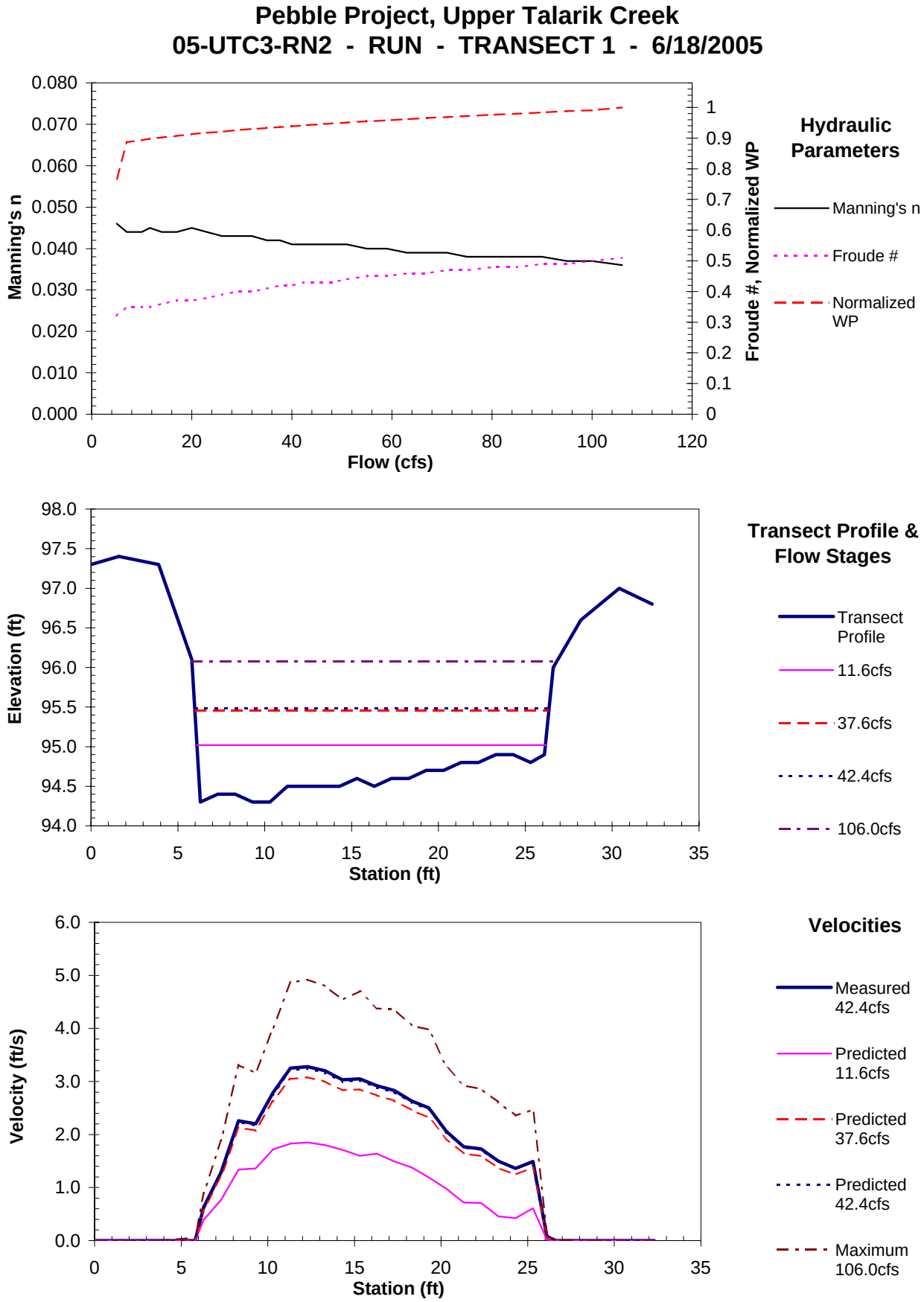








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC3-RN2  06/18/05
RUN                          0605Q                                      TRANSECT 1
IOC       1101100100001000101000
QARD   5.0
QARD   7.0
QARD  10.0
QARD  11.6
QARD  14.0
QARD  17.0
QARD  20.0
QARD  23.0
QARD  26.0
QARD  29.0
QARD  32.0
QARD  35.0
QARD  37.6
QARD  40.0
QARD  42.4
QARD  45.0
QARD  48.0
QARD  51.0
QARD  55.0
QARD  59.0
QARD  63.0
QARD  67.0
QARD  71.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 106.0
XSEC  1000     1000. 1.0     94.46    .00506
      1000   .097.28  1.697.36  3.997.27  5.896.05  6.394.29  7.394.39
      1000  8.394.39  9.394.29 10.394.29 11.394.49 12.394.49 13.394.49
      1000 14.394.49 15.394.59 16.394.49 17.394.59 18.394.59 19.394.69
      1000 20.394.69 21.394.79 22.394.79 23.394.89 24.394.89 25.394.79
      1000 26.194.89 26.696.04 28.296.55 30.496.96 32.396.77
NS    1000      22.9      22.9      22.9      22.9      24.8      34.6
NS    1000      43.7      42.8      43.6      43.8      43.7      34.6
NS    1000      34.6      34.8      34.8      34.6      43.6      34.7
NS    1000      34.6      34.8      32.8      32.7      23.6      23.7
NS    1000      24.9      24.9      22.9      22.9      22.9
WSL   1000     94.83     94.90     94.98     95.02     95.07     95.13
WSL   1000     95.19     95.24     95.28     95.33     95.37     95.41
WSL   1000     95.44     95.47     95.50     95.53     95.57     95.60
WSL   1000     95.64     95.68     95.72     95.76     95.80     95.83
WSL   1000     95.88     95.92     95.96     96.00     96.04     96.08
```

IFG4 Data Deck (continued)

```
CAL1  1000     95.49      42.4
VEL1  1000                     0.63 1.29 2.26 2.20 2.79 3.25 3.28 3.20
VEL1  1000 3.03 3.05 2.92 2.83 2.63 2.50 2.06 1.77 1.73 1.50 1.36 1.49
VEL1  1000 0.08
CAL2  1000     95.02      11.6
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.46      37.6
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-F

Site/TR: 05-UTC3-PL1

Habitat Type: Pool

River Kilometer: 56.65

Stream: Upper Talarik
Reach: F
Site Name: 05-UTC3-PL1
Habitat Type: Pool

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/18/2005	1	100.00	99.59	97.73
2nd	7/21/2005	2	100.00	99.59	97.73
3rd	8/15/2005	3	100.00	99.58	97.71
4th	6/28/2006	4	100.00	99.62	97.79
5th	4/8/2007	5	100.00	99.62	97.91

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were within 0.03ft during the 2005-2006 period. This suggested survey datum may have been moved slightly.
(c) It was decided no adjustments to the WSEs surveyed in 2006 would be applied, because the 0.03ft elevation shift was marginally acceptable.
(d) Hydraulics of 2007 survey were affected by the beaver dam and thus not used in modeling.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/18/2005	96.26
7/21/2005	95.97
8/15/2005	95.87
6/28/2006	95.95
4/8/2007	97.81

WSE of 4/8/07 was backed up by beaver dam

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/18/2005	18.1
7/21/2005	
8/15/2005	6.6
6/28/2006	12.9
4/8/2007	12.8

(a) No discharge was measured on 7/21/05, when substrate was surveyed.
(b) WSE of 4/8/07 was backed up by the downstream beaver dam. Hydraulics were not used in modeling.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/18/2005	0.208%	28.9
7/21/2005	0.107%	28.0
8/15/2005	0.036%	28.0
6/28/2006	0.237%	38.0
4/8/2007	-0.035%	28.9

The slope S=0.208% of 6/18/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/18/2005	93.36
7/21/2005	
8/15/2005	93.37
6/28/2006	93.35
4/8/2007	93.61
max Invert	93.37
SZF	92.51

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/21/05.
(4) Invert of 4/8/07 was not used to determine SZF because the bed profile had changed significantly from the one initially surveyed in 2005.

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR1	TR1	TR1	
1st	6/18/2005	18.1	96.26	96.23	-0.03	IFG4
2nd	7/21/2005		95.97			
3rd	8/15/2005	6.6	95.87	95.78	-0.09	IFG4
4th	6/28/2006	12.9	95.95	96.07	0.12	IFG4
5th	4/8/2007	12.8	97.81			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE

(b) Maximum WSE calibration error 0.12ft is marginally acceptable.
Not able to determine the cause to the relatively large calibration errors.

(c) No flow was measured during the 7/21/05 site visit.

(d) Hydraulics of 4/8/07 were affected by the downstream beaver dam, which backed up water for more than 2 feet at the site.

(e) Hydraulics of 4/8/07 were affected by the downstream beaver dam, which backed up water for more than 2 feet, and thus hydraulics were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 6.6cfs, 12.9cfs, and 18.1cfs. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

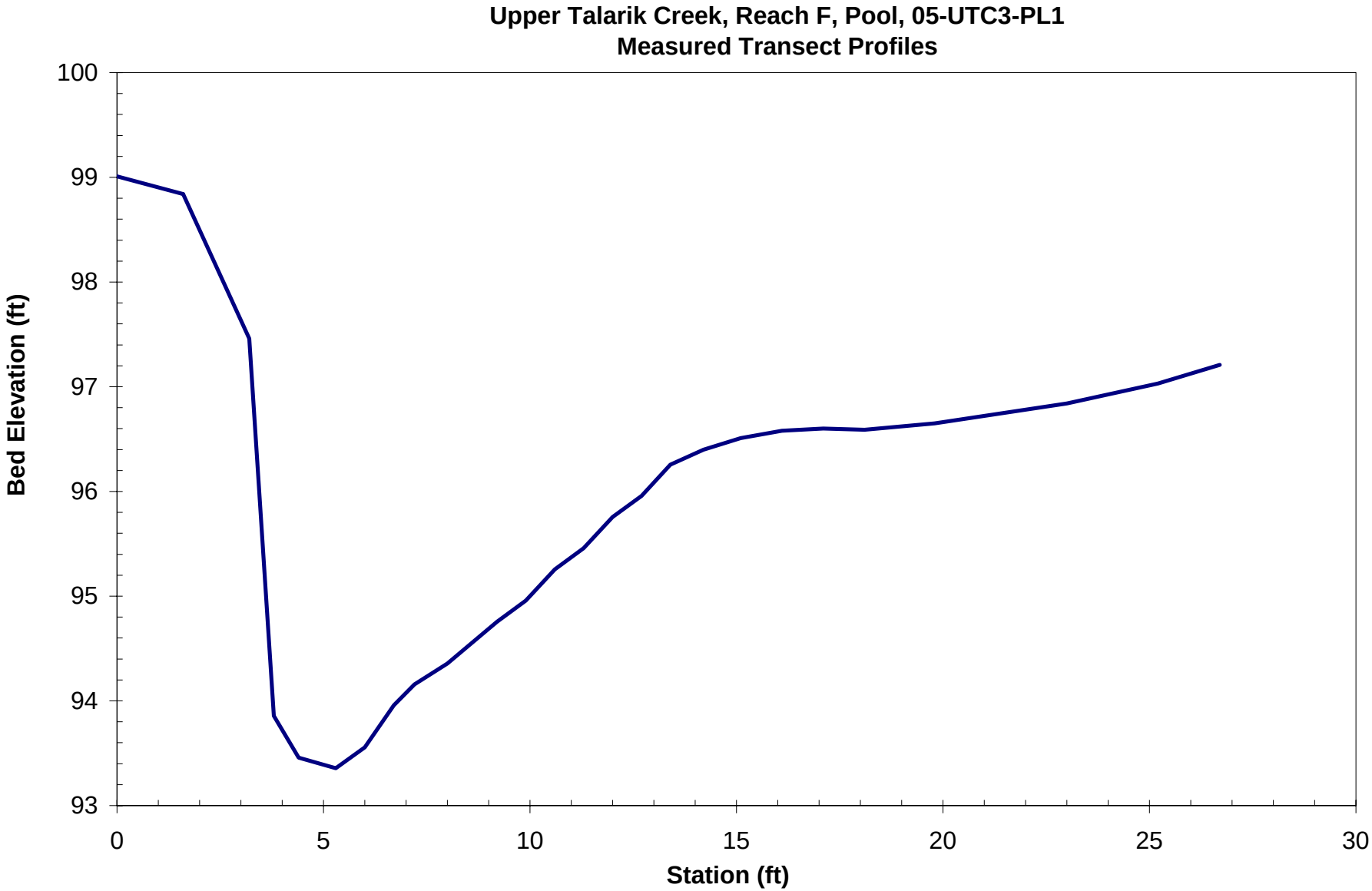
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/18/2005	18.1	Y
7/21/2005		
8/15/2005	6.6	Y
6/28/2006	12.9	Y
4/8/2007	12.8	

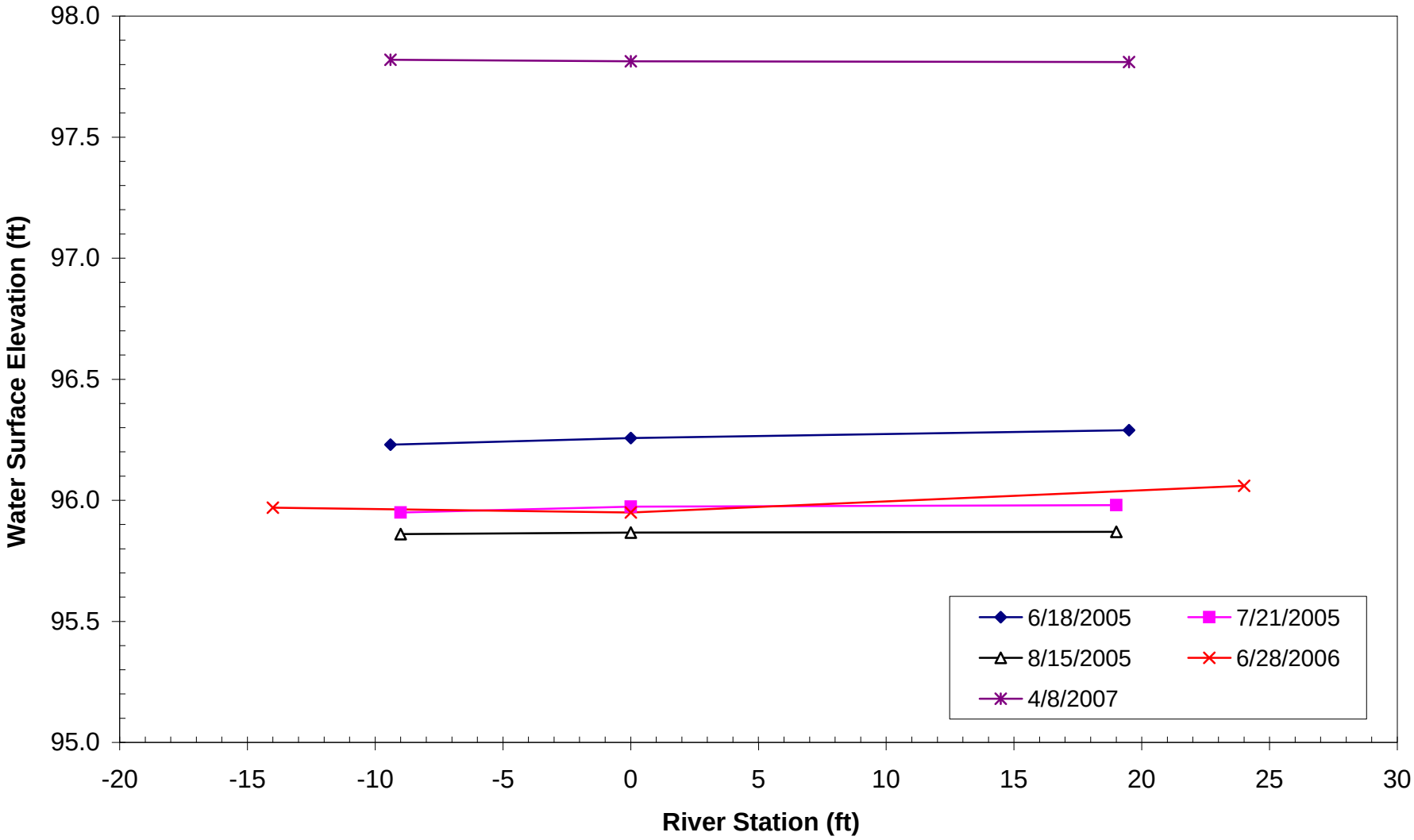
(4) Hydraulic Calibration Results:

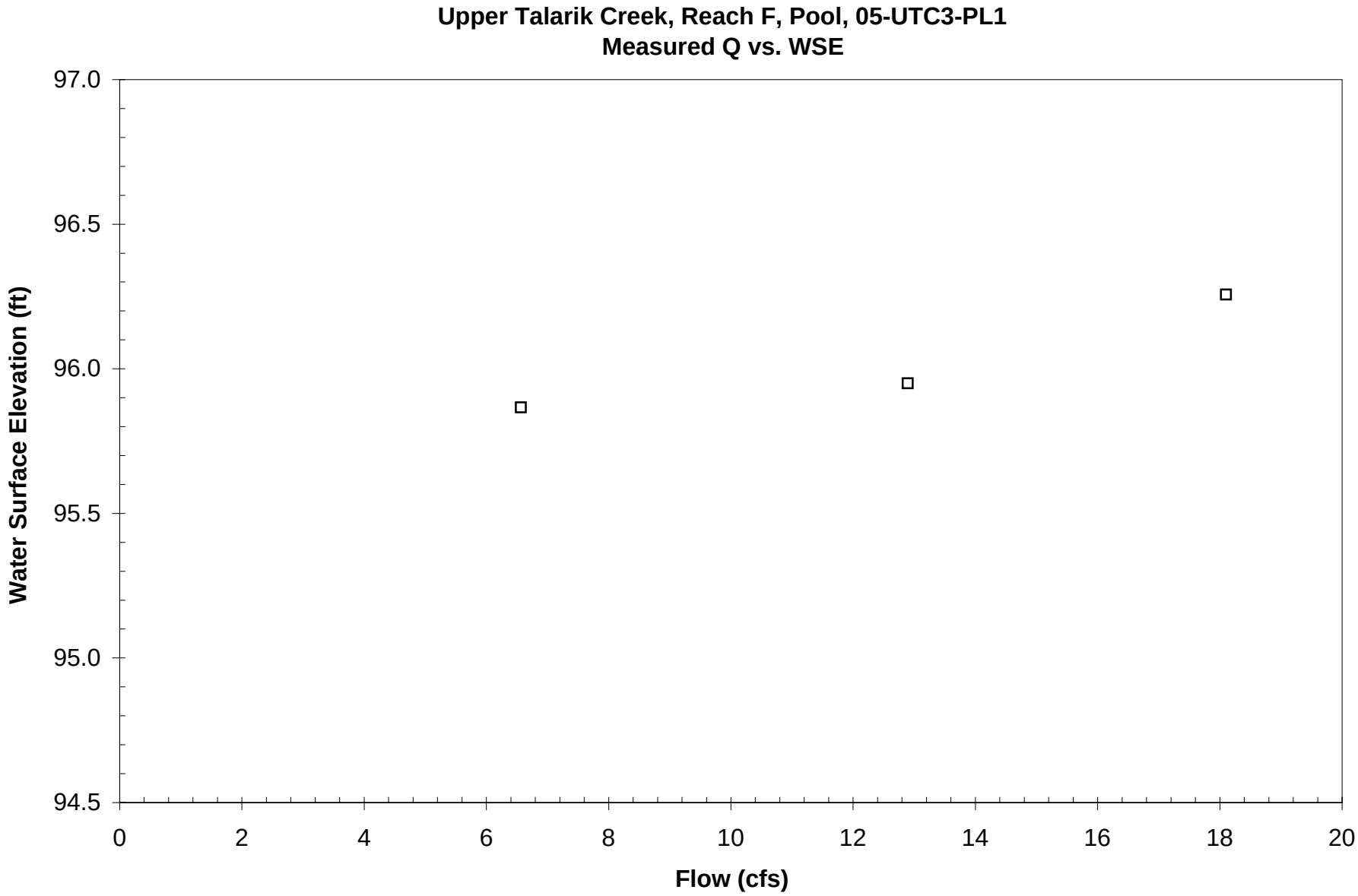
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

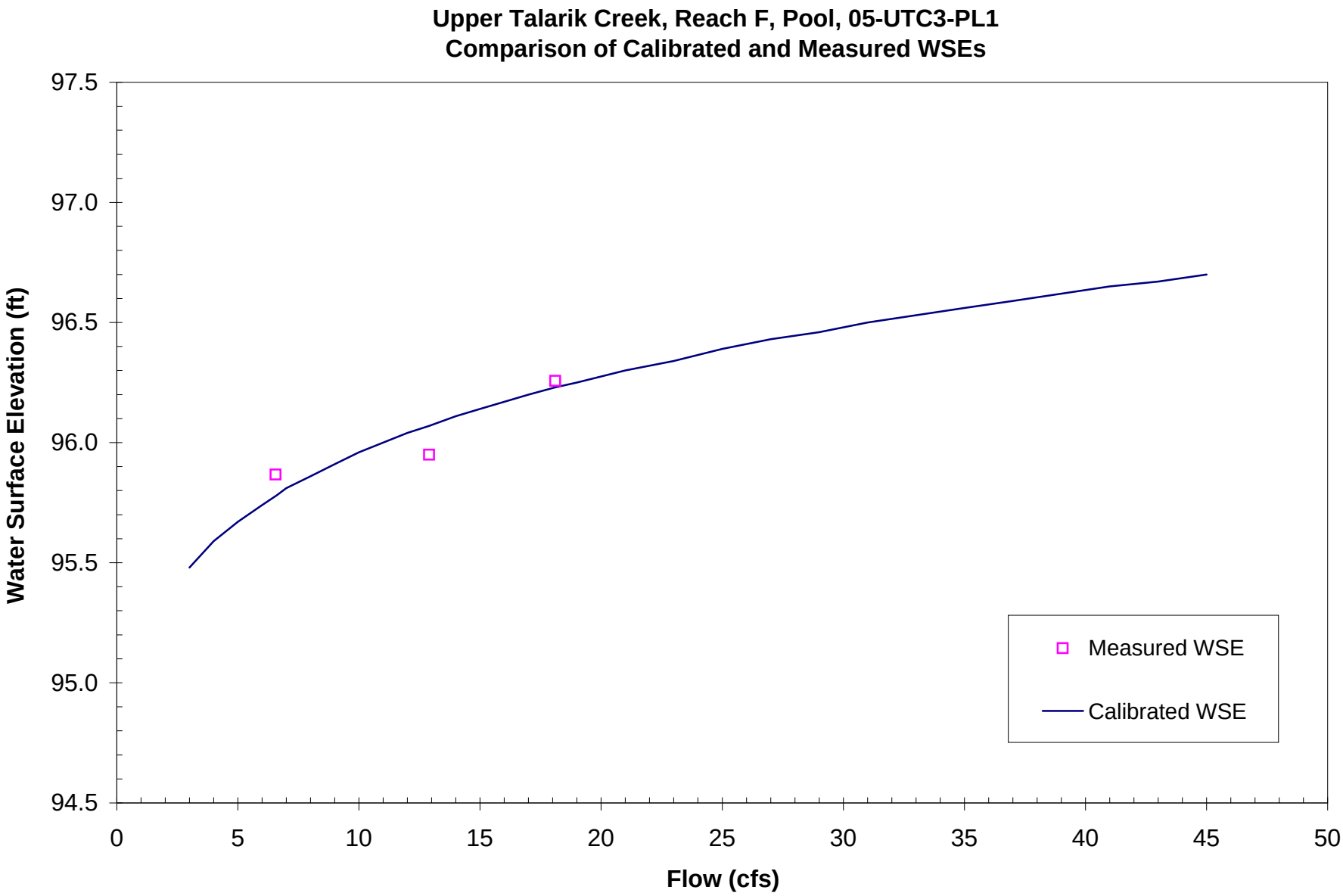
calibration notes


Upper Talarik Creek, Reach F, Pool, 05-UTC3-PL1
Measured Transect Profiles
Bed Elevation (ft)
100
99
98
97
96
95
94
93
0
5
10
15
20
25
30
Station (ft)

Upper Talarik Creek, Reach F, Pool, 05-UTC3-PL1
Longitudinal Water Surface Elevation Profiles

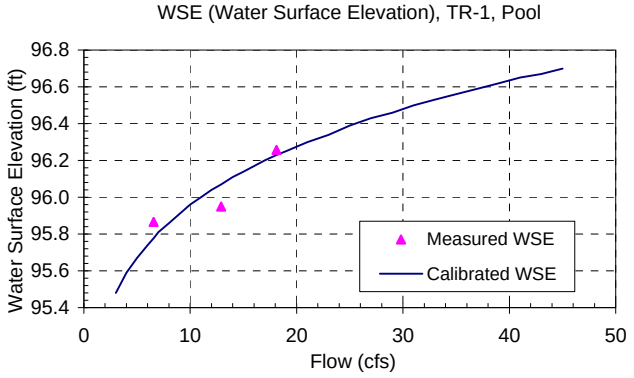


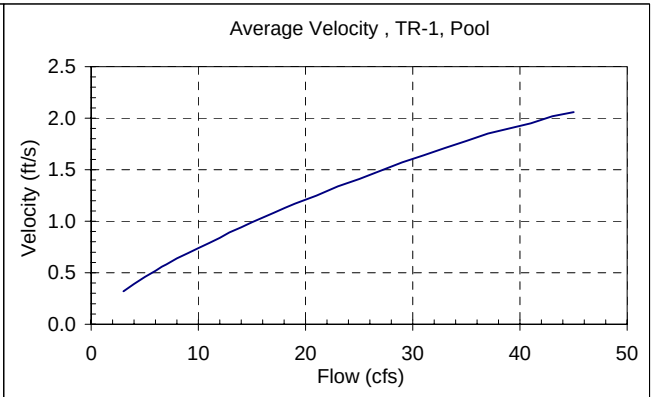

Upper Talarik Creek, Reach F, Pool, 05-UTC3-PL1
Measured Q vs. WSE
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
94.5
0
2
4
6
8
10
12
14
16
18
20
Flow (cfs)

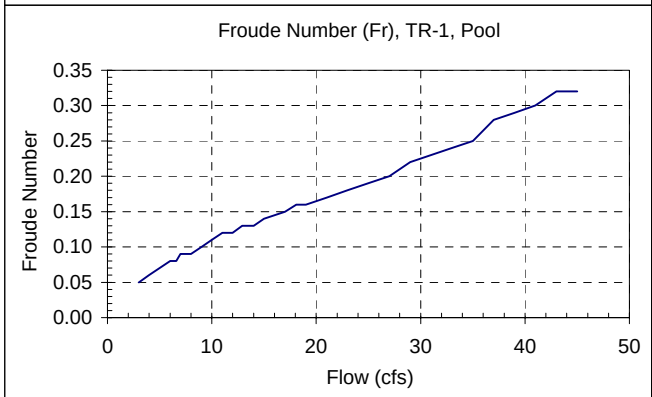

Upper Talarik Creek, Reach F, Pool, 05-UTC3-PL1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
5
10
15
20
25
30
35
40
45
50
Flow (cfs)
Measured WSE
Calibrated WSE

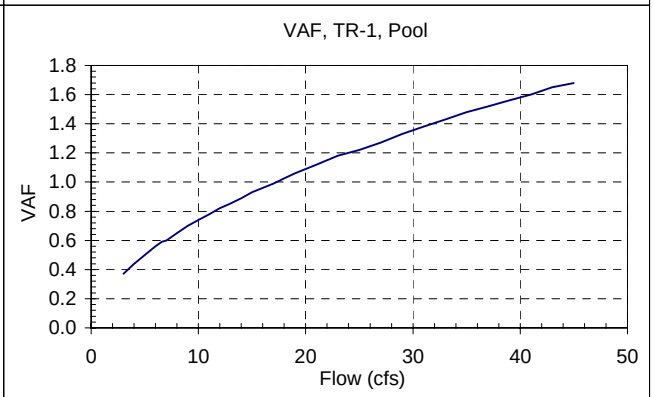
Stream: Upper Talarik **Reach:** 3
Site Name: F **Habitat:** Pool
Date: 6/18/2005 **Site #:** 1
Calibration Flow: Q(6/18/2005) **Transect:** 1

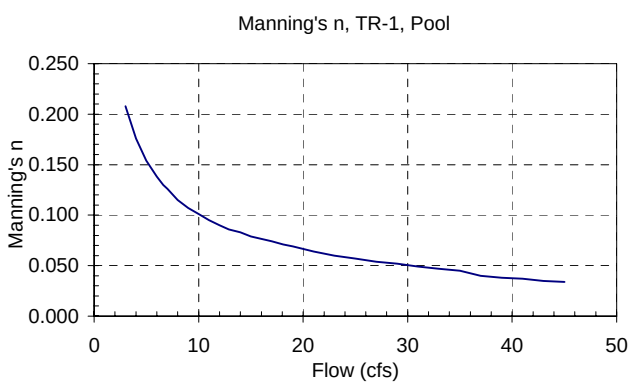
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	95.48	0.05	0.32	0.37	0.208	9.7
4	95.59	0.06	0.39	0.44	0.176	10.1
5	95.67	0.07	0.46	0.50	0.154	10.4
6	95.74	0.08	0.52	0.56	0.138	10.6
6.6	95.78	0.08	0.56	0.59	0.130	10.8
7	95.81	0.09	0.58	0.60	0.126	10.9
8	95.86	0.09	0.64	0.65	0.115	11.2
9	95.91	0.10	0.69	0.70	0.107	11.4
10	95.96	0.11	0.74	0.74	0.101	11.7
11	96.00	0.12	0.79	0.78	0.095	11.8
12	96.04	0.12	0.84	0.82	0.090	11.9
12.9	96.07	0.13	0.89	0.85	0.086	12.0
14	96.11	0.13	0.94	0.89	0.083	12.2
15	96.14	0.14	0.99	0.93	0.079	12.3
17	96.20	0.15	1.08	0.99	0.074	12.5
18.1	96.23	0.16	1.13	1.03	0.071	12.6
19	96.25	0.16	1.17	1.06	0.069	12.7
21	96.30	0.17	1.25	1.12	0.064	13.0
23	96.34	0.18	1.34	1.18	0.060	13.2
25	96.39	0.19	1.41	1.22	0.057	13.6
27	96.43	0.20	1.49	1.27	0.054	13.9
29	96.46	0.22	1.57	1.33	0.052	14.2
31	96.50	0.23	1.64	1.38	0.049	14.6
33	96.53	0.24	1.71	1.43	0.047	15.0
35	96.56	0.25	1.78	1.48	0.045	15.4
37	96.59	0.28	1.85	1.52	0.040	18.0
39	96.62	0.29	1.90	1.56	0.038	18.8
41	96.65	0.30	1.95	1.60	0.037	19.5
43	96.67	0.32	2.02	1.65	0.035	19.9
45	96.70	0.32	2.06	1.68	0.034	20.5

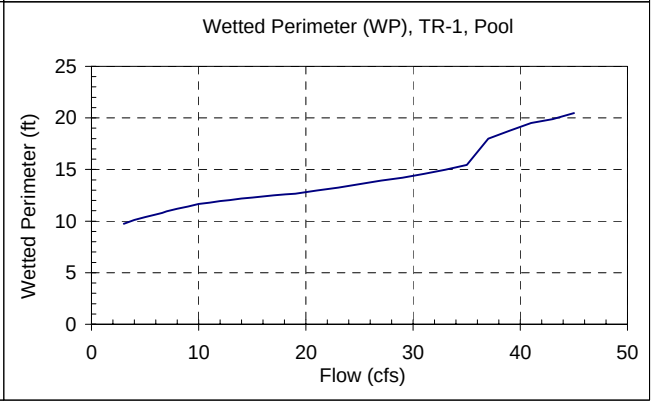




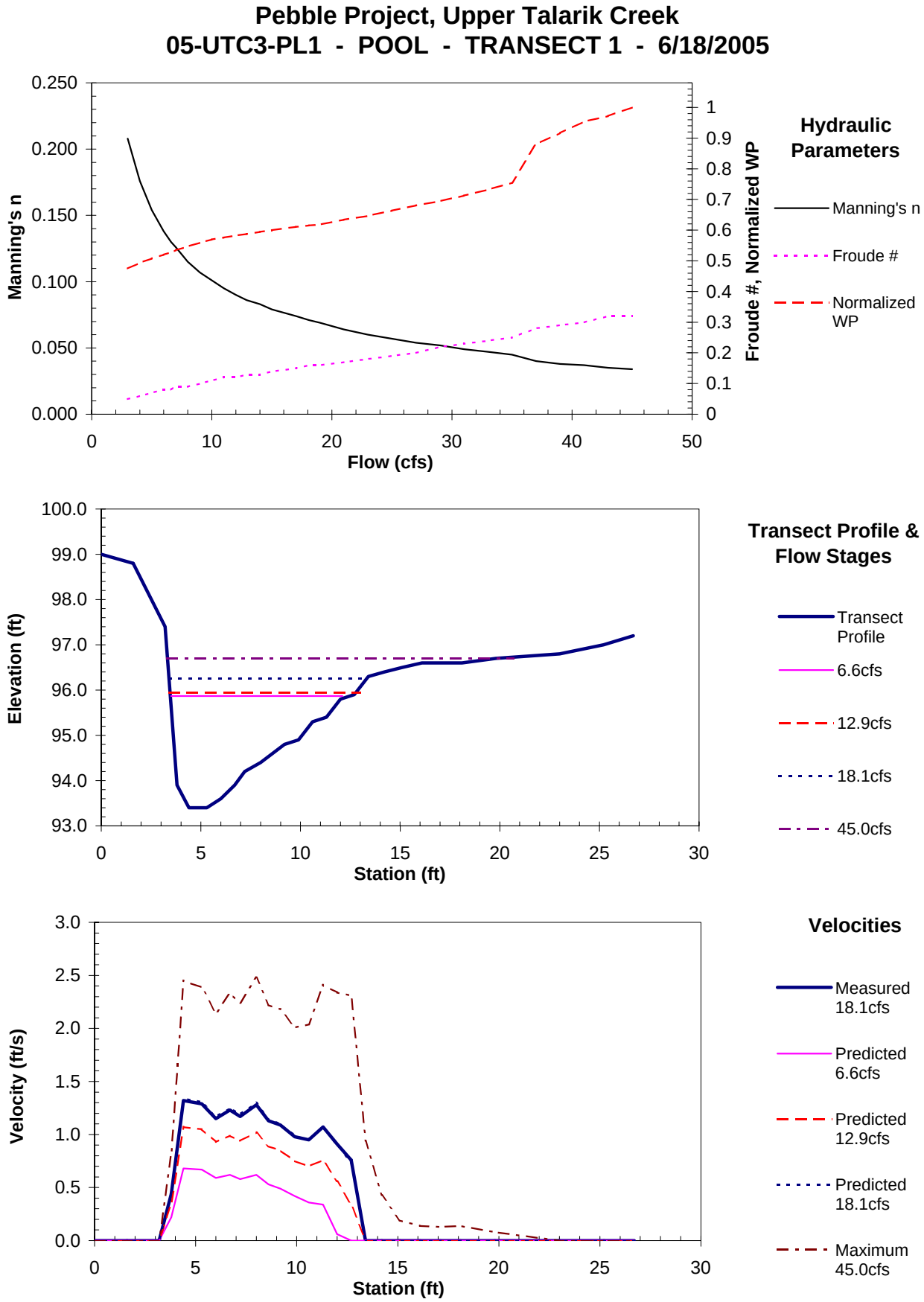








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC3-PL1  06/18/05
POOL             F
IOC        11011001000010001010000
QARD   3.0
QARD   4.0
QARD   5.0
QARD   6.0
QARD   6.6
QARD   7.0
QARD   8.0
QARD   9.0
QARD  10.0
QARD  11.0
QARD  12.0
QARD  12.9
QARD  14.0
QARD  15.0
QARD  17.0
QARD  18.1
QARD  19.0
QARD  21.0
QARD  23.0
QARD  25.0
QARD  27.0
QARD  29.0
QARD  31.0
QARD  33.0
QARD  35.0
QARD  37.0
QARD  39.0
QARD  41.0
QARD  43.0
QARD  45.0
XSEC  1000     1000. 1.0     93.37    .00208
      1000   .099.01  1.698.83  3.297.45  3.893.86  4.493.45  5.393.36
      1000  6.093.55  6.793.95  7.294.16  8.094.36  8.694.55  9.294.76
      1000  9.994.95 10.695.26 11.395.45 12.095.76 12.795.95 13.496.26
      1000 14.296.40 15.196.51 16.196.58 17.196.59 18.196.58 19.896.65
      1000 23.096.83 25.297.02 26.797.20
NS    1000      22.9      22.9      23.7      23.7      43.6      43.6
NS    1000      34.6      34.7      34.7      34.6      43.6      43.6
NS    1000      43.8      42.8      42.8      42.8      24.6 .07  43.6
NS    1000 .12  34.6 0.2  43.6      43.6      42.7      42.6      23.8
NS    1000      22.9      22.9      22.9
WSL   1000     95.48     95.59     95.67     95.74     95.78     95.81
WSL   1000     95.86     95.91     95.96     96.00     96.04     96.07
WSL   1000     96.11     96.14     96.20     96.23     96.25     96.30
WSL   1000     96.34     96.39     96.43     96.46     96.50     96.53
WSL   1000     96.56     96.59     96.62     96.65     96.67     96.70
```

IFG4 Data Deck (continued)

```
CAL1  1000     96.26      18.1
VEL1  1000                0.44 1.32 1.29 1.15 1.23 1.17 1.28 1.13 1.09
VEL1  1000 0.98 0.95 1.07 0.91 0.76 0.00
VEL1  1000
CAL2  1000     95.87       6.6
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.95      12.9
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-F

Site/TR: 05-UTC3-RF1

Habitat Type: Riffle

River Kilometer: 56.83

Stream: **Upper Talarik Creek**
Reach: **F**
Site Name: **05-UTC3-RF1**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/18/2005	1	100.00	96.96	99.24
2nd	7/20/2005	2	100.00	96.95	99.23
3rd	8/15/2005	3	100.00	96.95	99.22
4th	6/28/2006	4	100.00	97.00	99.34
5th	4/10/2007	5	100.00	97.01	99.44

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes of the pins were within ±0.01ft in 2005, indicating the control pins were stable in that period.
(c) Survey results showed the pins were disturbed in 2006, with 0.04ft and 0.10ft elevation increase for HP and TP, respectively, relative to BM.
(d) TP continued to rise over the 2-yr period, while TP became stable since 2006. Based on the stability of each pin, it was determine BM should be stable the entire period, and thus no corrections to the survey results were needed.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/18/2005	96.15
7/20/2005	95.95
8/15/2005	95.85
6/28/2006	96.04
4/10/2007	95.94

WSE of 4/10/07 was affected by ice.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/18/2005	21.6
7/20/2005	
8/15/2005	7.8
6/28/2006	13.8
4/10/2007	15.2

(a) No discharge was measured on 7/20/05, when only substrate was surveyed.

(b) Measured flow of 4/10/07 was affected by ice. There were no photos available for this site, but the photos of an upstream site, 05-UTC3-RF2, less than a quarter mile away, taken on the same day, showed the entire stream was covered in ice.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/18/2005	0.576%	76.4
7/20/2005	0.724%	76
8/15/2005	0.757%	70
6/28/2006	0.851%	101
4/10/2007	-	-

No longitudinal WSE slope were surveyed during the 4/10/07 site visit due to ice.
The slope S=0.576% of 6/18/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/18/2005	94.85
7/20/2005	
8/15/2005	95.15
6/28/2006	95.24
4/10/2007	95.04
max Invert	95.24
SZF	95.24

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/20/05.
(4) Invert of 4/10/07 was not used to determine SZF because of ice impact.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/18/2005	21.6	96.15	96.16	0.01	IFG4
2nd	7/20/2005		95.95			
3rd	8/15/2005	7.8	95.85	95.86	0.01	IFG4
4th	6/28/2006	13.8	96.04	96.01	-0.03	IFG4
5th	4/10/2007	15.2	95.94			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range
(c) No flow was measured during the 7/20/05 site visit.
(d) Hydraulics of 4/10/07 were affected by ice, and thus not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 7.8cfs, 13.8cfs, and 21.6cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

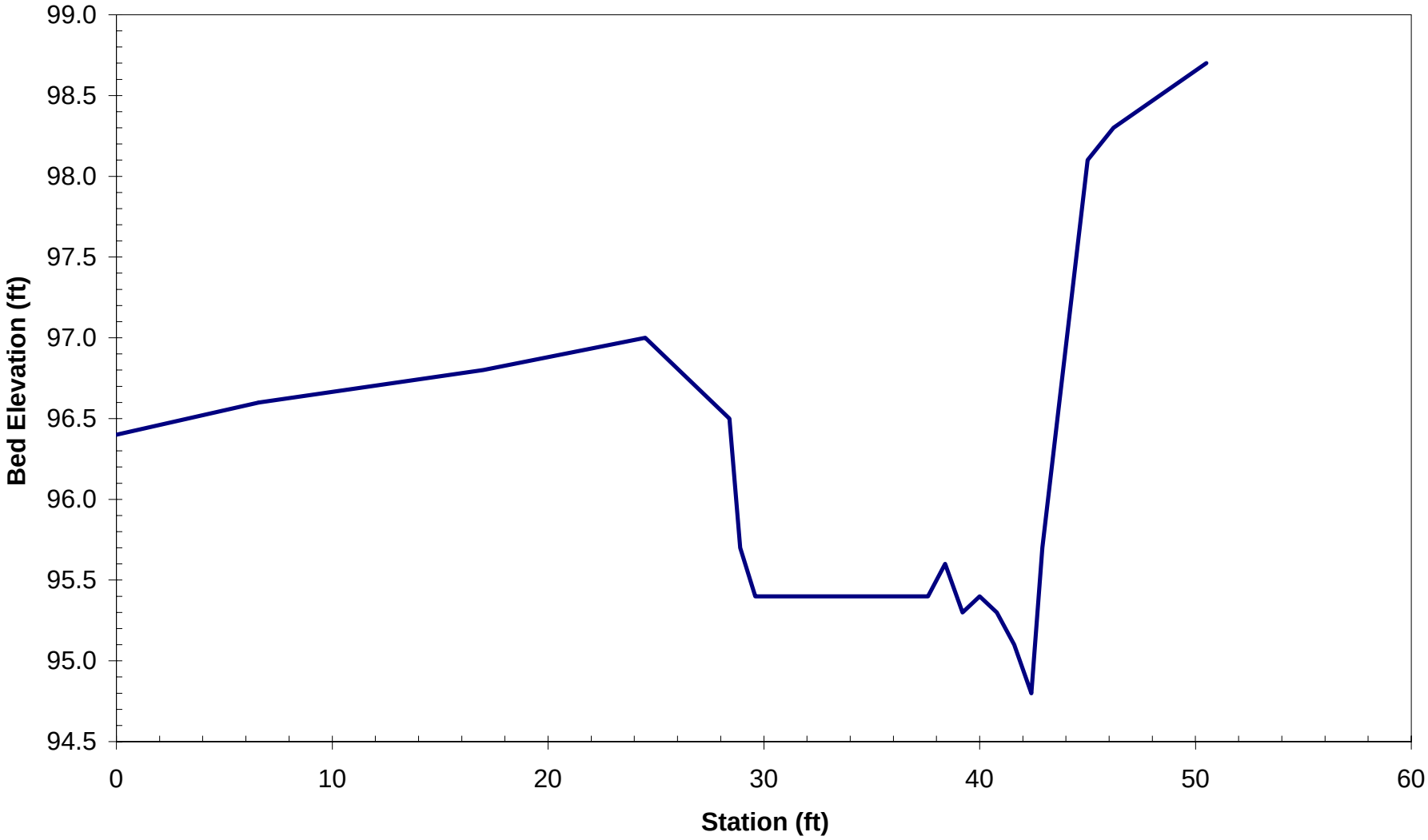
Survey Date	Q (cfs)	WUA (Y/N)
6/18/2005	21.6	Y
7/20/2005		
8/15/2005	7.8	Y
6/28/2006	13.8	Y
4/10/2007	15.2	

(4) Hydraulic Calibration Results:

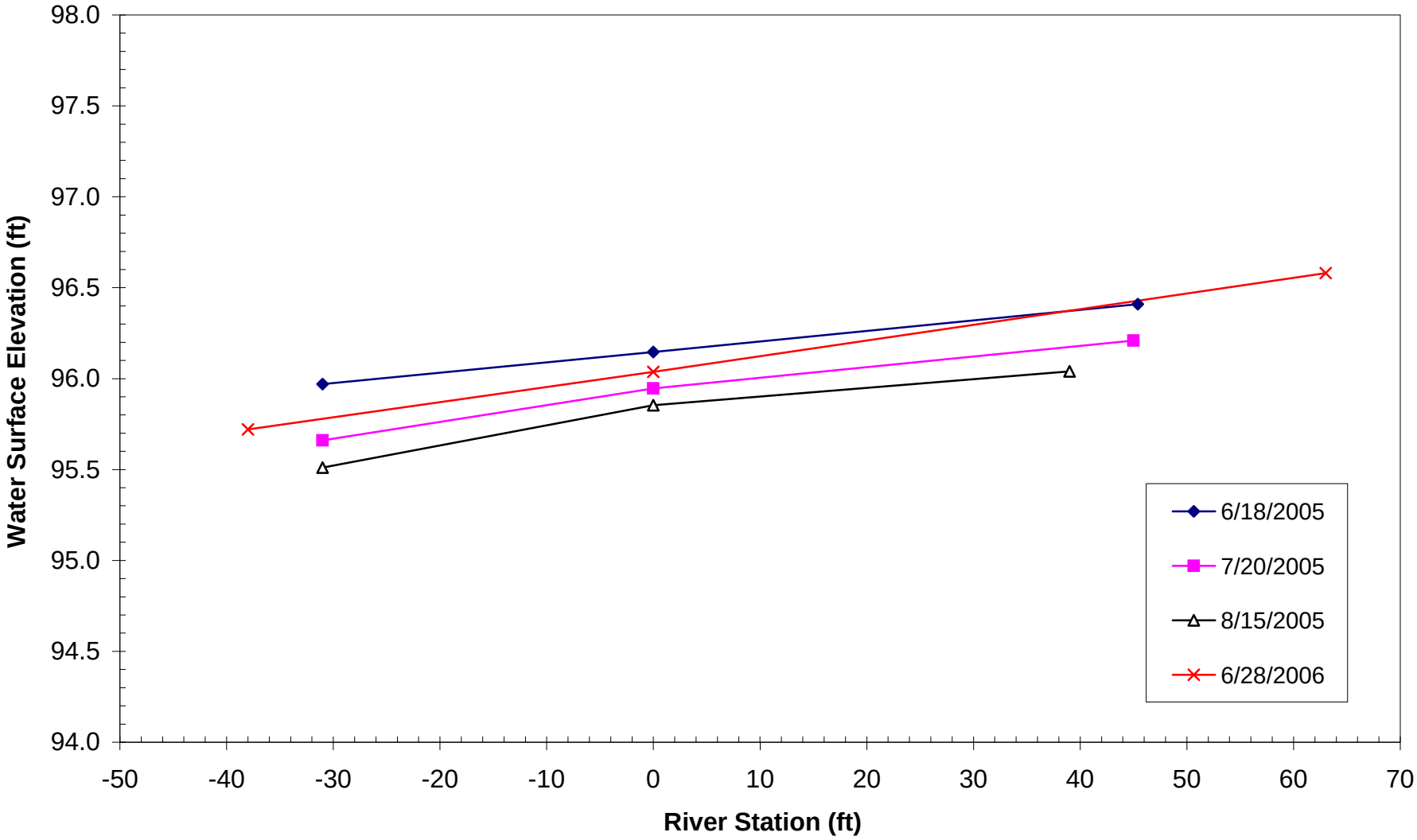
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

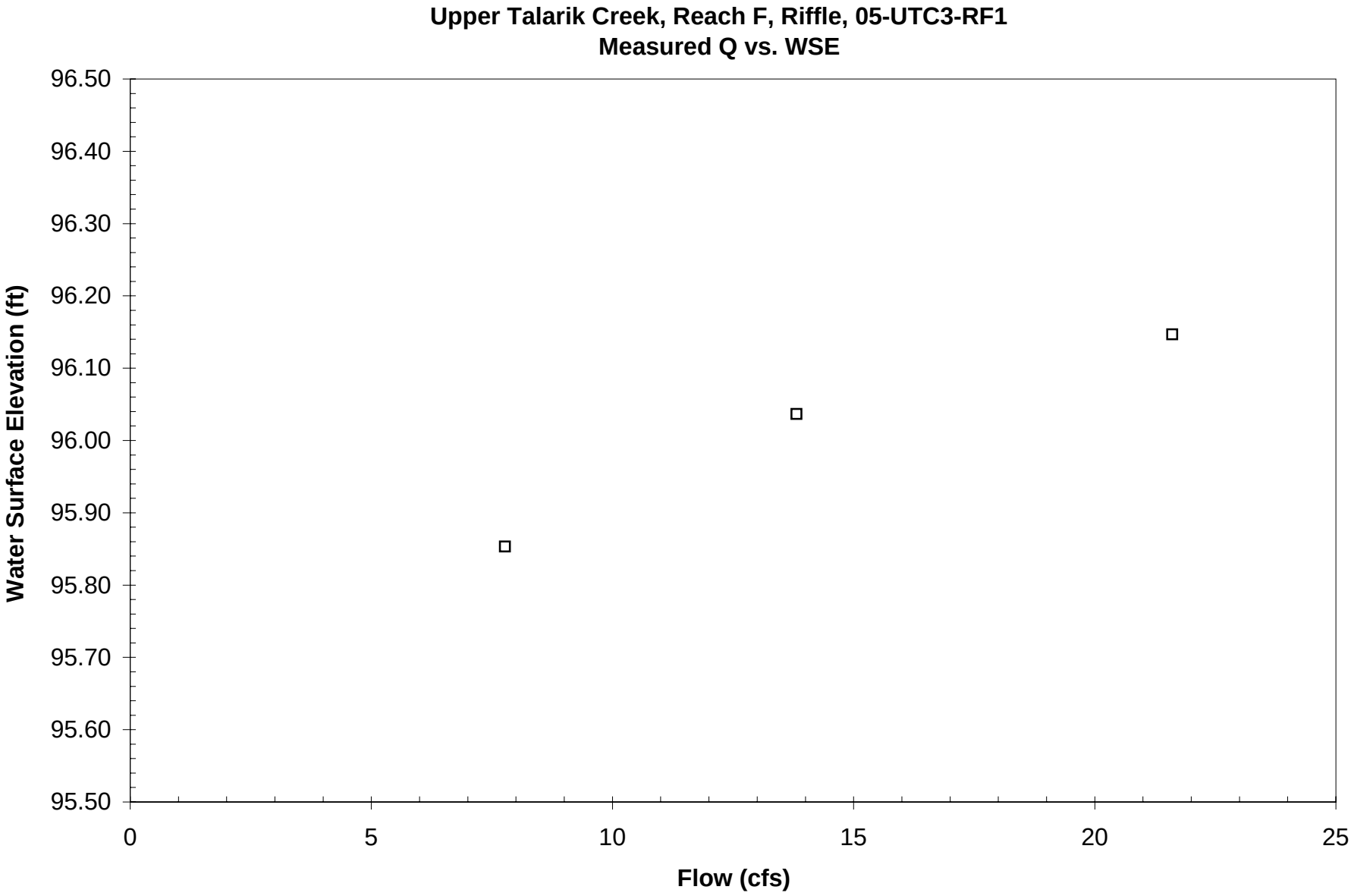
calibration notes

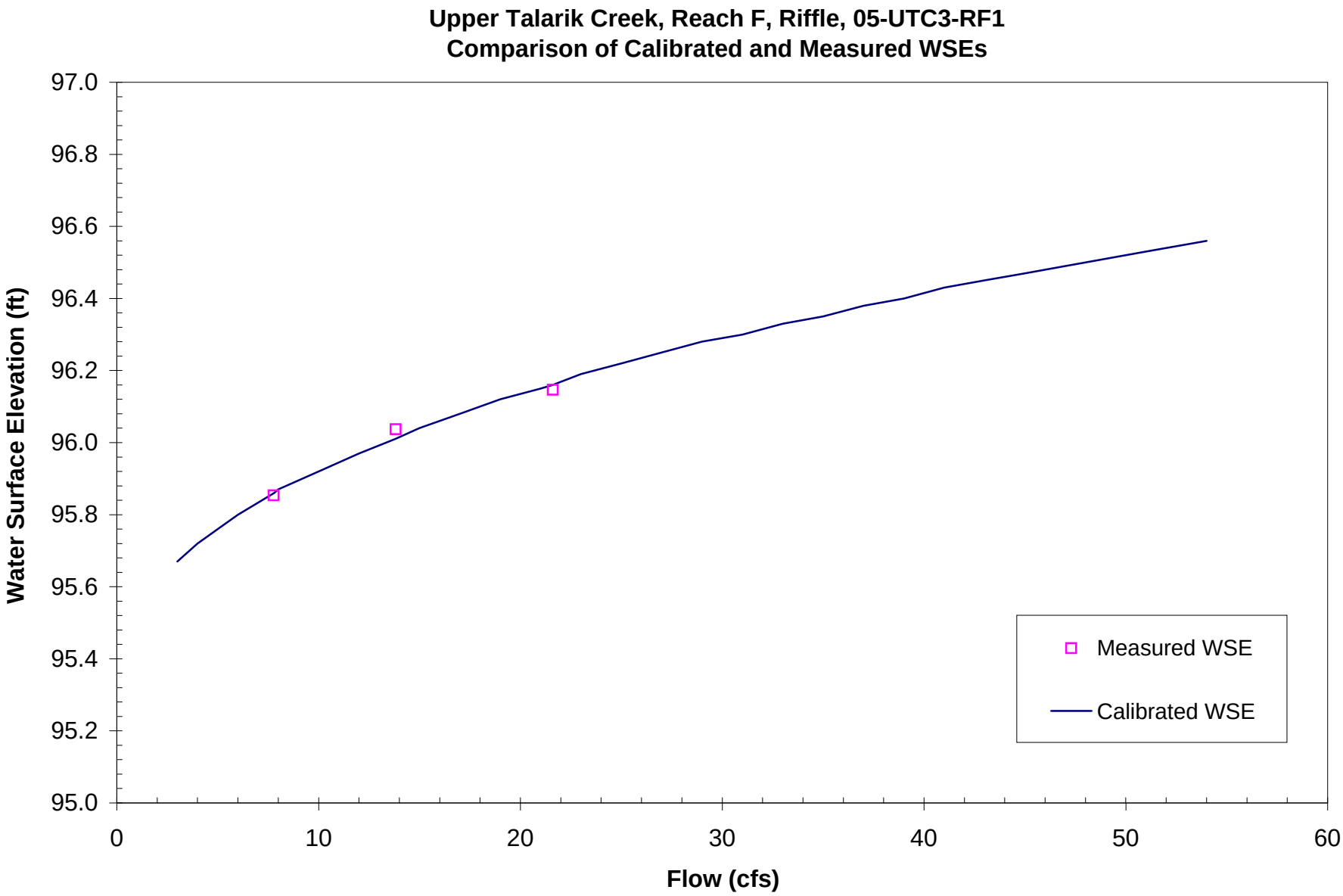
Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF1
Measured Transect Profile



Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF1
Longitudinal Water Surface Elevation Profiles



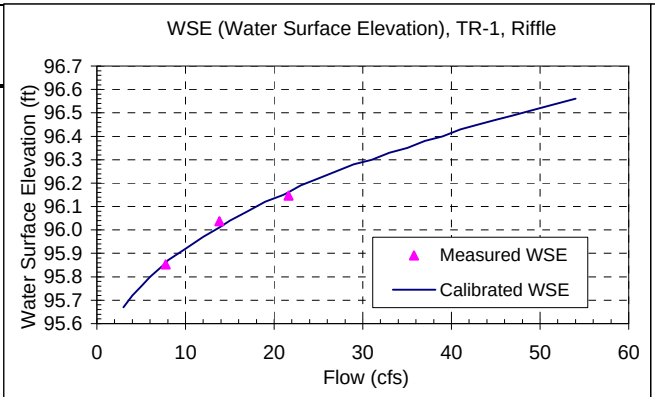

Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF1
Measured Q vs. WSE
Water Surface Elevation (ft)
96.50
96.40
96.30
96.20
96.10
96.00
95.90
95.80
95.70
95.60
95.50
0
5
10
15
20
25
Flow (cfs)

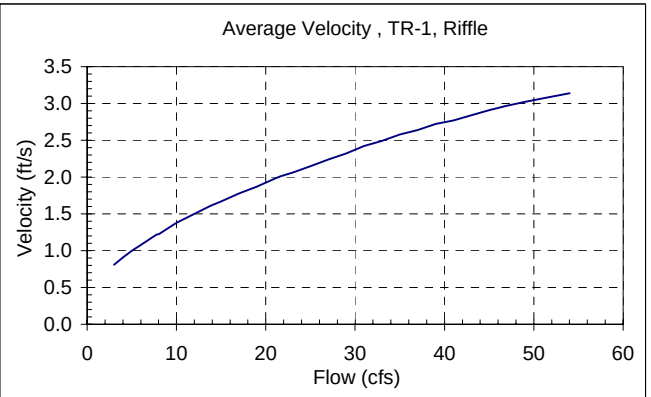

Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
10
20
30
40
50
60
Flow (cfs)
Measured WSE
Calibrated WSE

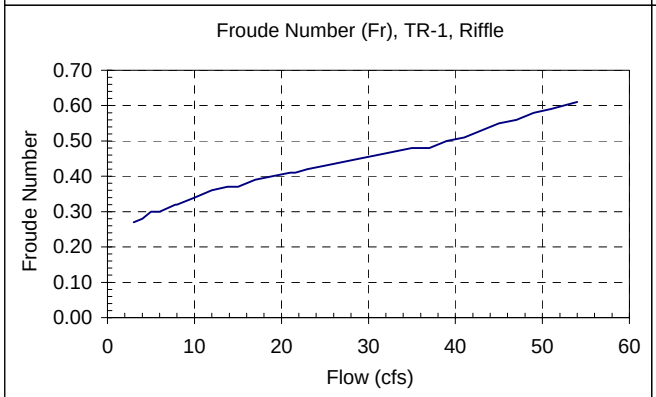
Stream: Upper Talarik Creek
Site Name: 05-UTC3-RF1
Date: 6/18/2005
Calibration Flow: Q(6/18/2005)

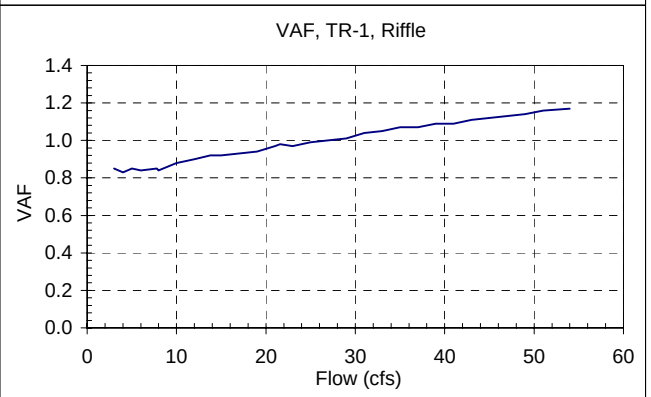
Reach: F
Habitat: Riffle
Site #: 1
Transect: 1

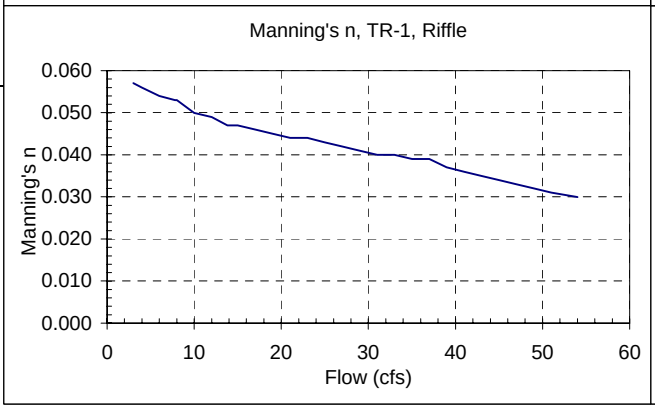
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	95.67	0.27	0.81	0.85	0.057	14.5
4	95.72	0.28	0.91	0.83	0.056	14.6
5	95.76	0.30	1.00	0.85	0.055	14.8
6	95.80	0.30	1.08	0.84	0.054	14.9
7.8	95.86	0.32	1.22	0.85	0.053	15.0
8	95.87	0.32	1.22	0.84	0.053	15.1
10	95.92	0.34	1.38	0.88	0.050	15.2
12	95.97	0.36	1.50	0.90	0.049	15.3
13.8	96.01	0.37	1.61	0.92	0.047	15.4
15	96.04	0.37	1.67	0.92	0.047	15.5
17	96.08	0.39	1.78	0.93	0.046	15.6
19	96.12	0.40	1.87	0.94	0.045	15.7
21	96.15	0.41	1.98	0.97	0.044	15.8
21.6	96.16	0.41	2.01	0.98	0.044	15.8
23	96.19	0.42	2.06	0.97	0.044	15.9
25	96.22	0.43	2.15	0.99	0.043	15.9
27	96.25	0.44	2.24	1.00	0.042	16.0
29	96.28	0.45	2.32	1.01	0.041	16.1
31	96.30	0.46	2.42	1.04	0.040	16.1
33	96.33	0.47	2.49	1.05	0.040	16.2
35	96.35	0.48	2.58	1.07	0.039	16.3
37	96.38	0.48	2.64	1.07	0.039	16.3
39	96.40	0.50	2.72	1.09	0.037	16.7
41	96.43	0.51	2.77	1.09	0.036	17.7
43	96.45	0.53	2.84	1.11	0.035	18.4
45	96.47	0.55	2.91	1.12	0.034	19.1
47	96.49	0.56	2.97	1.13	0.033	19.8
49	96.51	0.58	3.02	1.14	0.032	20.4
51	96.53	0.59	3.07	1.16	0.031	21.3
54	96.56	0.61	3.14	1.17	0.030	22.5

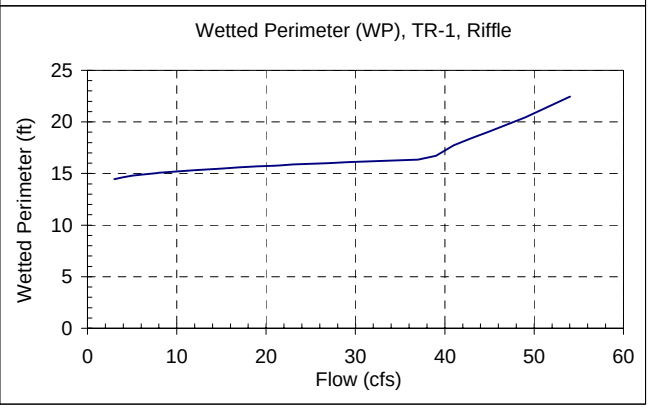






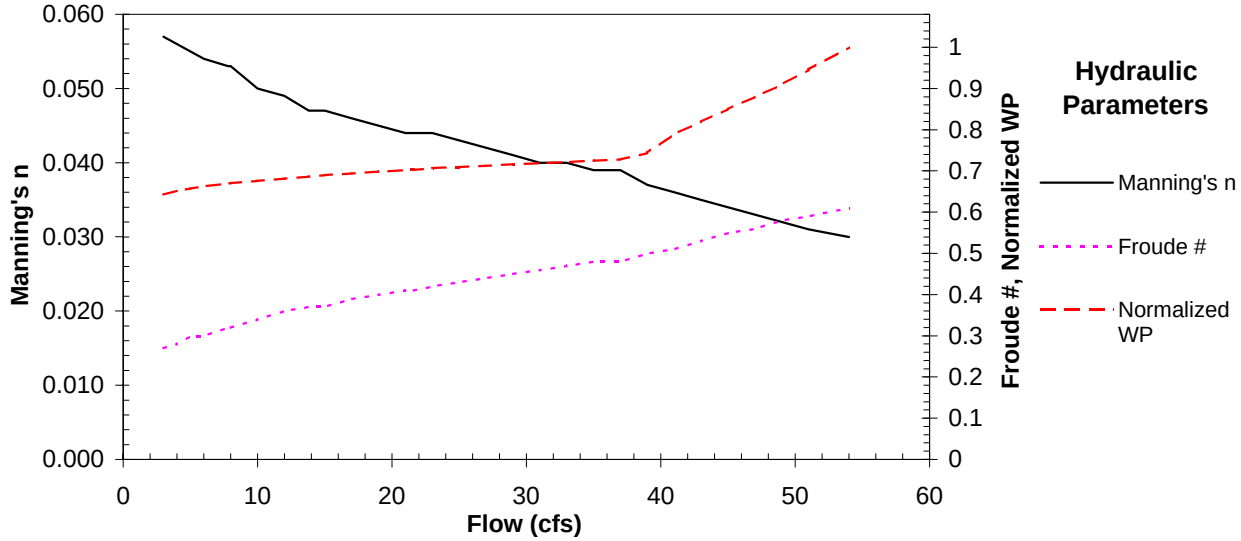


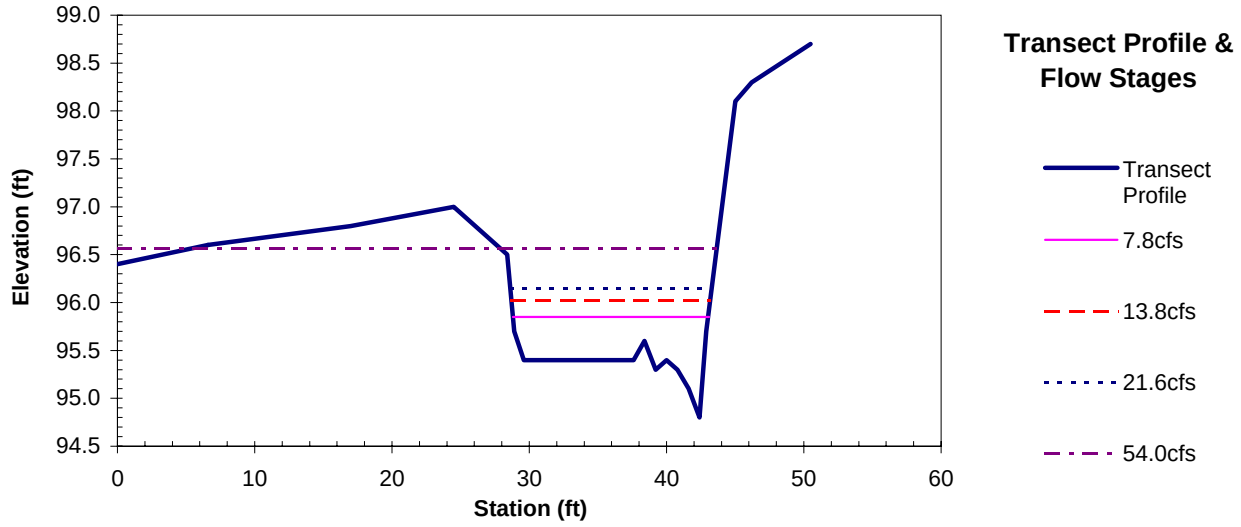


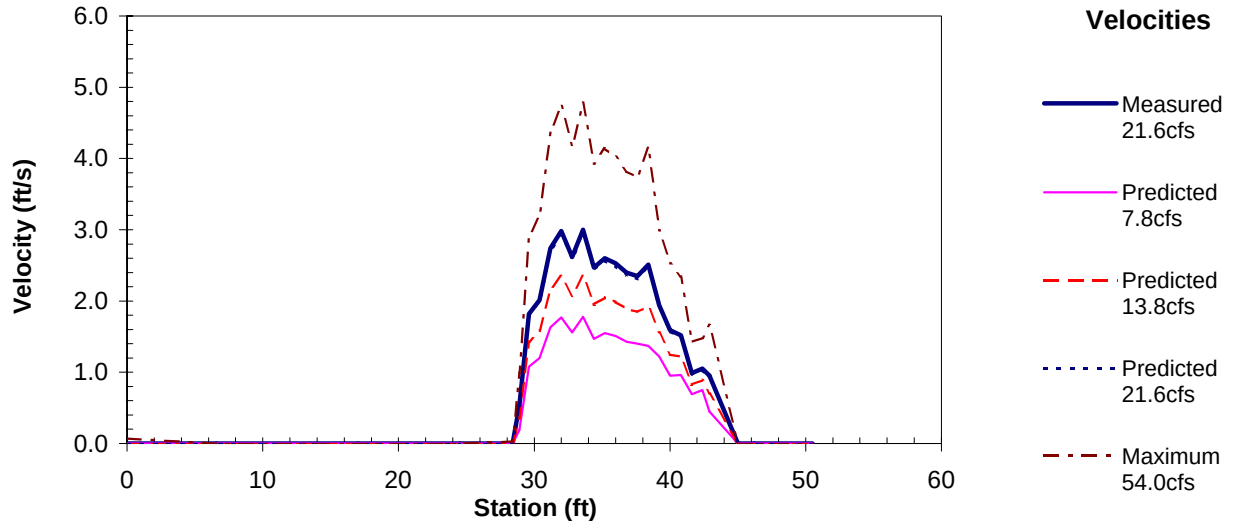


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
05-UTC3-RF1 - Riffle - TRANSECT 1 - 6/18/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
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QARD   4.0
QARD   5.0
QARD   6.0
QARD   7.8
QARD   8.0
QARD  10.0
QARD  12.0
QARD  13.8
QARD  15.0
QARD  17.0
QARD  19.0
QARD  21.0
QARD  21.6
QARD  23.0
QARD  25.0
QARD  27.0
QARD  29.0
QARD  31.0
QARD  33.0
QARD  35.0
QARD  37.0
QARD  39.0
QARD  41.0
QARD  43.0
QARD  45.0
QARD  47.0
QARD  49.0
QARD  51.0
QARD  54.0
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      1000   .096.39  6.696.60 17.096.79 24.597.04 28.496.51 28.995.75
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      1000 34.495.45 35.295.45 36.095.45 36.895.45 37.695.45 38.495.55
      1000 39.295.35 40.095.45 40.895.35 41.695.05 42.494.85 42.995.65
      1000 45.098.08 46.298.30 50.598.66
NS    1000      22.9      22.9      22.9      22.9 .60  24.9      24.9
NS    1000      24.8      23.8      42.6      42.6      42.6      43.6
NS    1000      43.6      43.6      42.6      43.6      34.6      43.6
NS    1000      43.6      43.6      32.6      43.6      23.7      23.8
NS    1000      22.9      22.9      22.9
WSL   1000     95.67     95.72     95.76     95.80     95.86     95.87
WSL   1000     95.92     95.97     96.01     96.04     96.08     96.12
WSL   1000     96.15     96.16     96.19     96.22     96.25     96.28
WSL   1000     96.30     96.33     96.35     96.38     96.40     96.43
WSL   1000     96.45     96.47     96.49     96.51     96.53     96.56
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
CAL1  1000     96.15      21.6
VEL1  1000                          0.53 1.82 2.01 2.74 2.98 2.62 3.00
VEL1  1000 2.47 2.60 2.53 2.40 2.35 2.51 1.94 1.59 1.52 0.99 1.05 0.95
VEL1  1000
CAL2  1000     95.85       7.8
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.02      13.8
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek

Reach: UT-F

Site/TR: 05-UTC3-RF2

Habitat Type: Riffle

River Kilometer: 57.25

Stream: Upper Talarik Creek
Reach: F
Site: 05-UTC3-RF2
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/19/2005	1	100.00	101.39	101.44
2nd	7/21/2005	2	100.00	101.39	101.44
3rd	8/15/2005	3	100.00	101.39	101.44
4th	6/28/2006	4	100.00	101.39	101.42
5th	6/29/2006	6	100.00	101.38	101.43
6th	4/10/2007	5	100.00	101.40	101.61

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes of the pins were within ±0.01ft in 2005-2006, indicating the control pins were stable during that period.
(d) TP rose almost 0.2ft in the 2007 survey, but BM and HP remained stable relative to each other. Elevation datum was based on BM, and thus no corrections were applied to the surveyed elevations.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/19/2005	98.56
7/21/2005	98.45
8/15/2005	98.37
6/28/2006	98.49
6/29/2006	98.57
4/10/2007	98.36

WSE of 4/10/07 was affected by ice. Field photos showed the channel was frozen in ice and field crew used an auger to drill holes to reach water.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/19/2005	16.6
7/21/2005	
8/15/2005	7.1
6/28/2006	13.3
6/29/2006	
4/10/2007	15.4

No flows were measured in the 7/21/05 and 6/29/06 trips.
Hydraulics of 4/10/07 was affected by ice. Photos showed stream was covered in ice.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/19/2005	1.641%	26.2
7/21/2005	1.808%	26
8/15/2005	2.080%	25
6/28/2006	1.379%	29
6/29/2006	1.595%	26
4/10/2007	1.463%	29

The slope S=1.641% of 6/19/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/19/2005	97.56
7/21/2005	
8/15/2005	97.67
6/28/2006	97.79
6/29/2006	97.80
4/10/2007	97.76
max Invert	97.79
SZF	97.79

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/21/05.
(4) Invert of 6/29/06 survey was not used to determine SZF because of no flow measured.
(5) Invert of 4/10/07 survey was not used to determine SZF because hydraulics was impacted by ice.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/19/2005	16.6	98.56	98.55	-0.01	IFG4
2nd	7/21/2005		98.45			
3rd	8/15/2005	7.1	98.37	98.36	-0.01	IFG4
4th	6/28/2006	13.3	98.49	98.50	0.01	IFG4
5th	6/29/2006		98.57			
6th	4/10/2007	15.4	98.36			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range
(c) No flows were measured during the 7/21/05 and 6/29/06 site visits.
(d) Hydraulics of 4/10/07 were affected by ice, and thus not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 7.1cfs, 13.3cfs, and 16.6cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

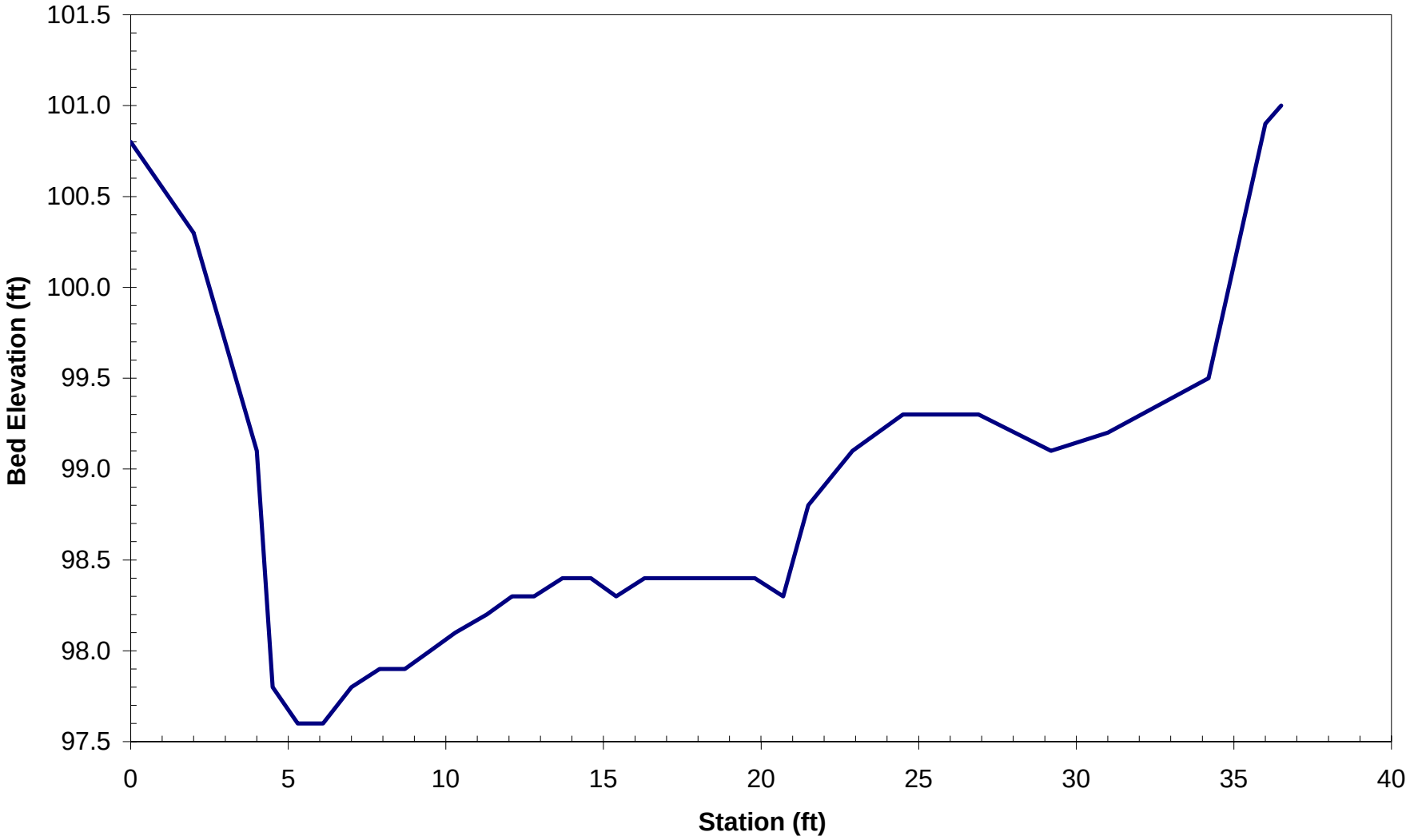
Survey Date	Q (cfs)	WUA (Y/N)
6/19/2005	16.6	Y
7/21/2005		
8/15/2005	7.1	Y
6/28/2006	13.3	
6/29/2006		
4/10/2007	15.4	

(4) Hydraulic Calibration Results:

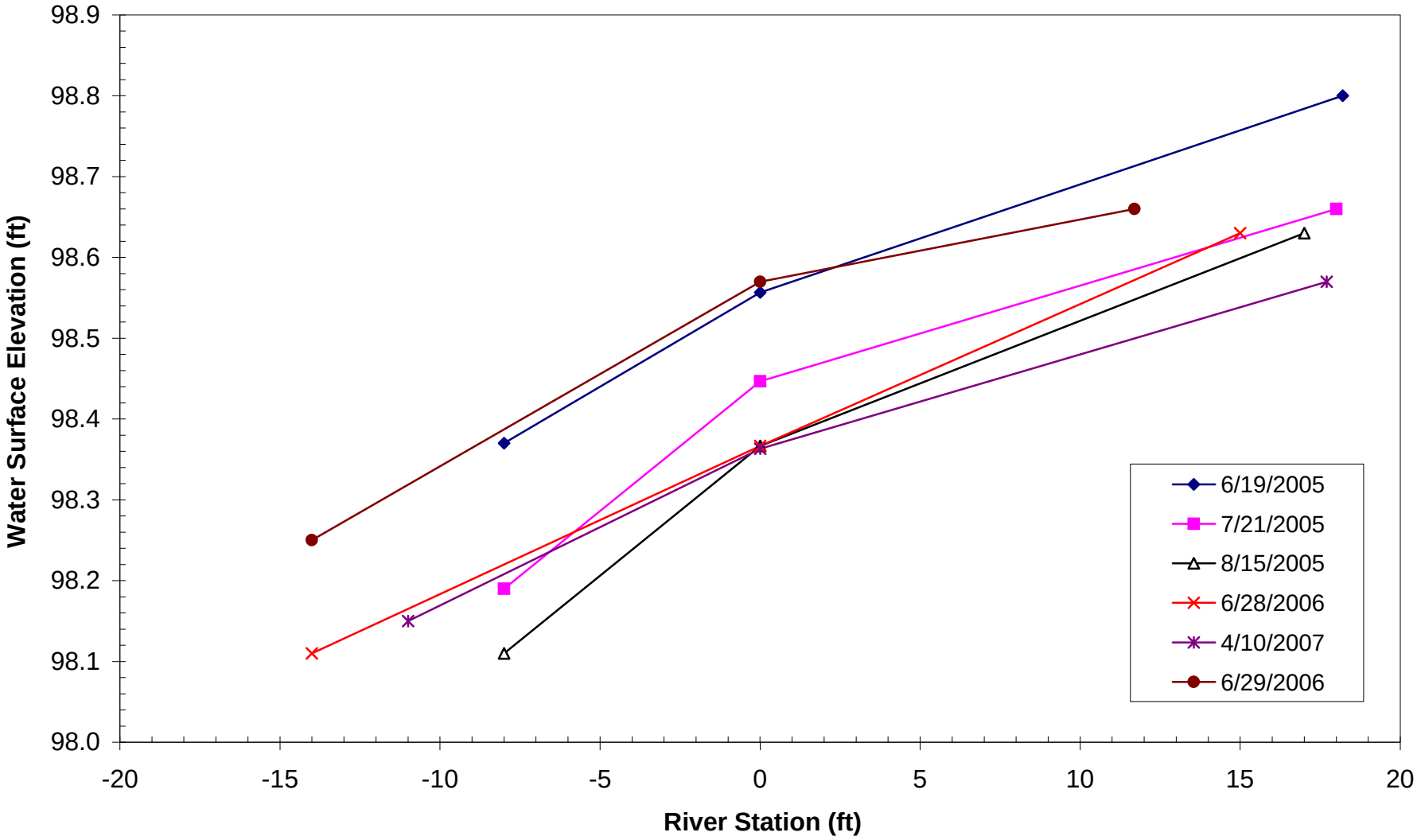
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

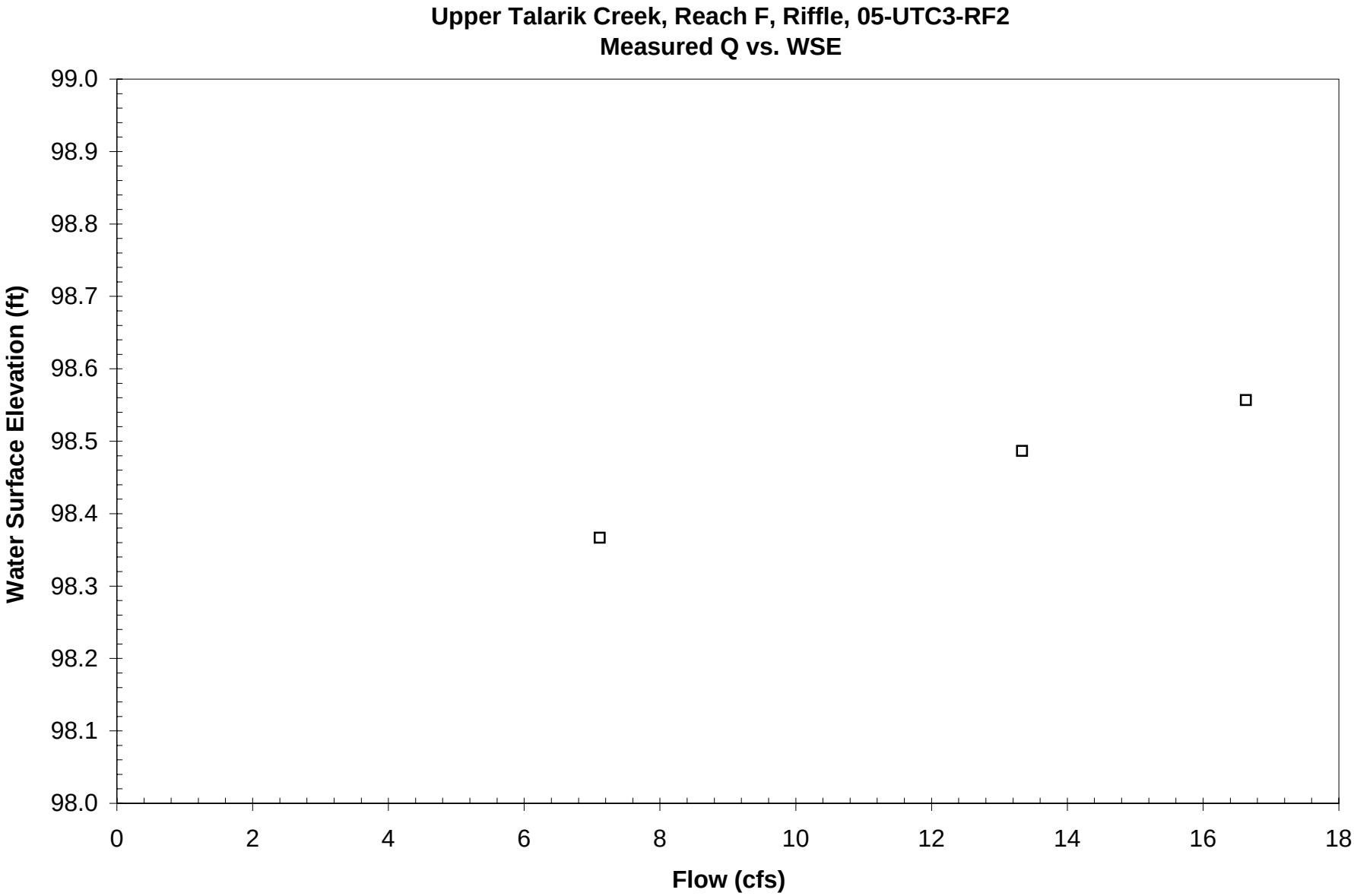
calibration notes

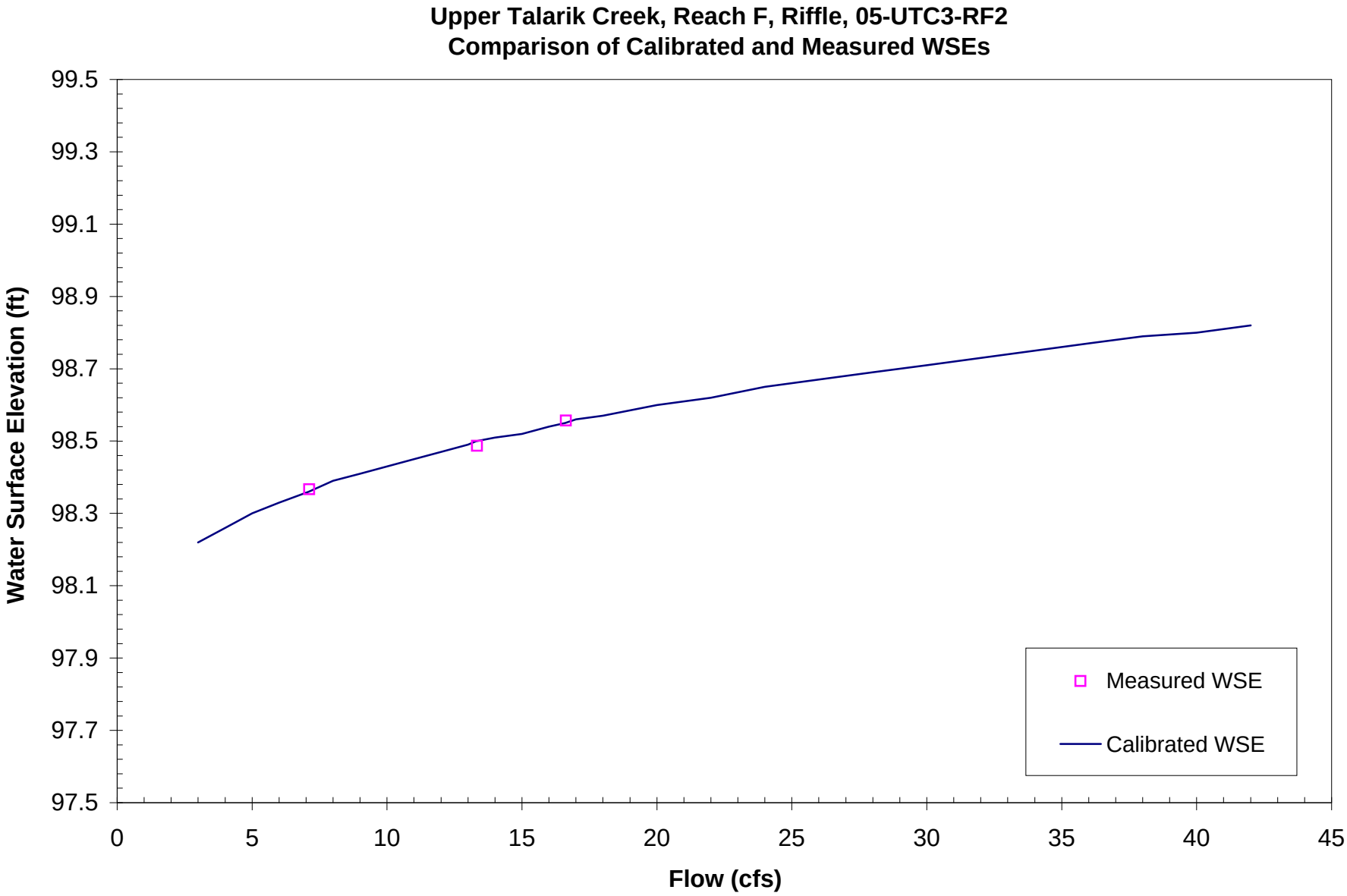
Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF2
Measured Transect Profile



Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF2
Longitudinal Water Surface Elevation Profiles



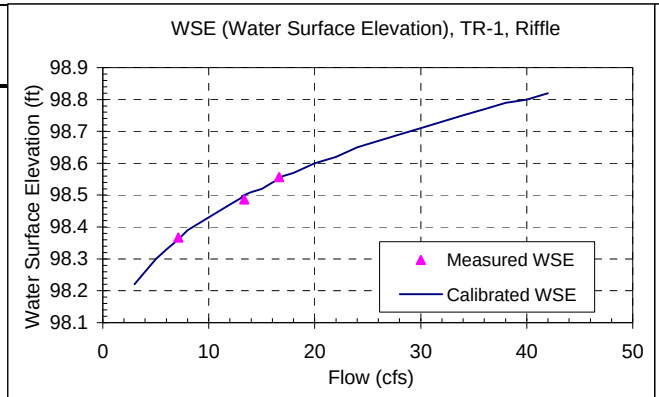

Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF2
Measured Q vs. WSE
Water Surface Elevation (ft)
99.0
98.9
98.8
98.7
98.6
98.5
98.4
98.3
98.2
98.1
98.0
0
2
4
6
8
10
12
14
16
18
Flow (cfs)

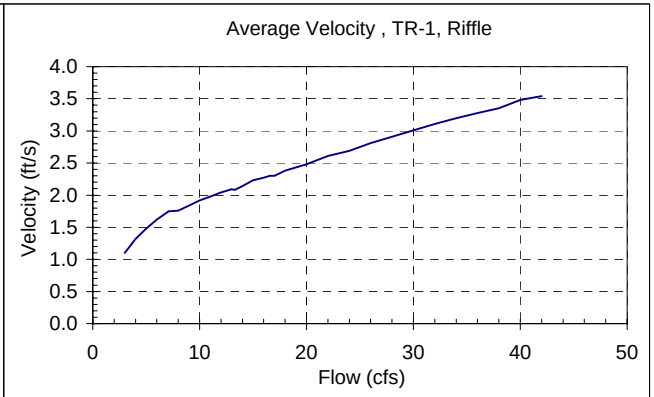

Upper Talarik Creek, Reach F, Riffle, 05-UTC3-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.5
99.3
99.1
98.9
98.7
98.5
98.3
98.1
97.9
97.7
97.5
0
5
10
15
20
25
30
35
40
45
Flow (cfs)
Measured WSE
Calibrated WSE

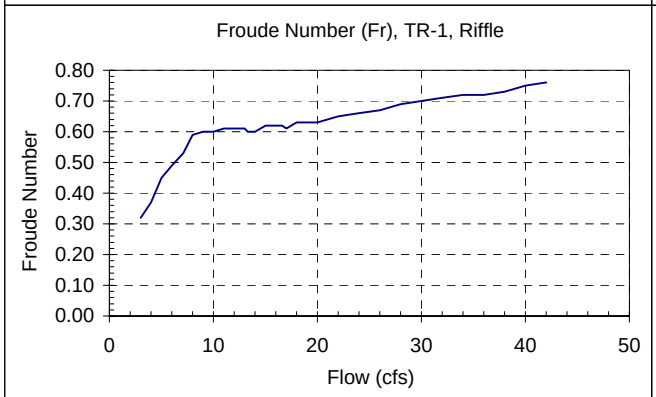
Stream: Upper Talarik Creek
Site Name: 05-UTC3-RF2
Date: 6/19/2005
Calibration Flow: Q(6/19/2005)

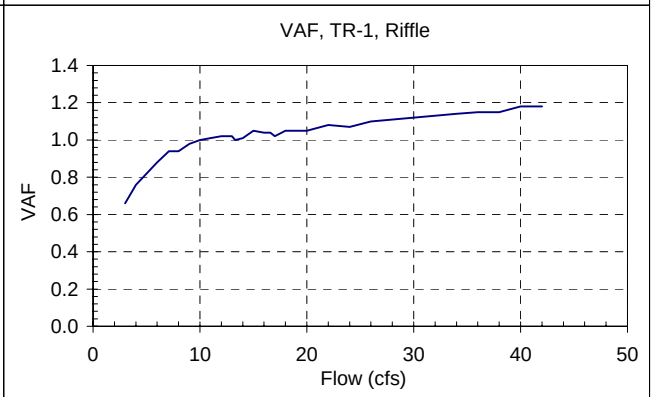
Reach: F
Habitat: Riffle
Site #: 2
Transect: 1

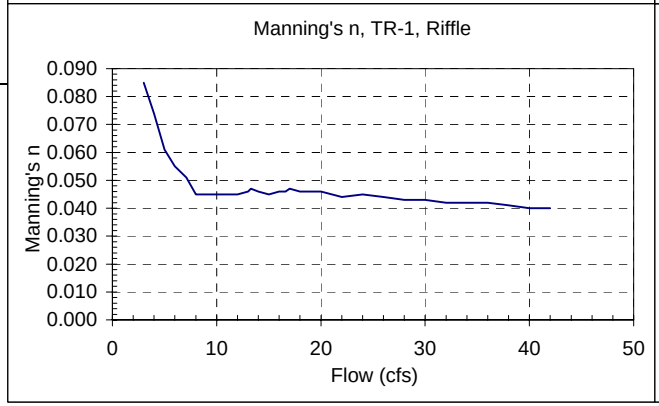
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3	98.22	0.32	1.10	0.66	0.085	7.8
4	98.26	0.37	1.32	0.76	0.074	8.2
5	98.30	0.45	1.48	0.82	0.061	10.4
6	98.33	0.49	1.62	0.88	0.055	11.6
7.1	98.36	0.53	1.75	0.94	0.051	12.7
8	98.39	0.59	1.76	0.94	0.045	17.2
9	98.41	0.60	1.84	0.98	0.045	17.2
10	98.43	0.60	1.92	1.00	0.045	17.3
11	98.45	0.61	1.98	1.01	0.045	17.4
12	98.47	0.61	2.04	1.02	0.045	17.4
13	98.49	0.61	2.09	1.02	0.046	17.5
13.3	98.50	0.60	2.08	1.00	0.047	17.5
14	98.51	0.60	2.14	1.01	0.046	17.5
15	98.52	0.62	2.23	1.05	0.045	17.6
16	98.54	0.62	2.27	1.04	0.046	17.6
16.6	98.55	0.62	2.30	1.04	0.046	17.6
17	98.56	0.61	2.30	1.02	0.047	17.7
18	98.57	0.63	2.38	1.05	0.046	17.7
20	98.60	0.63	2.48	1.05	0.046	17.8
22	98.62	0.65	2.61	1.08	0.044	17.8
24	98.65	0.66	2.69	1.07	0.045	17.9
26	98.67	0.67	2.81	1.10	0.044	18.0
28	98.69	0.69	2.91	1.11	0.043	18.0
30	98.71	0.70	3.01	1.12	0.043	18.1
32	98.73	0.71	3.11	1.13	0.042	18.1
34	98.75	0.72	3.20	1.14	0.042	18.2
36	98.77	0.72	3.28	1.15	0.042	18.2
38	98.79	0.73	3.35	1.15	0.041	18.3
40	98.80	0.75	3.48	1.18	0.040	18.3
42	98.82	0.76	3.54	1.18	0.040	18.4

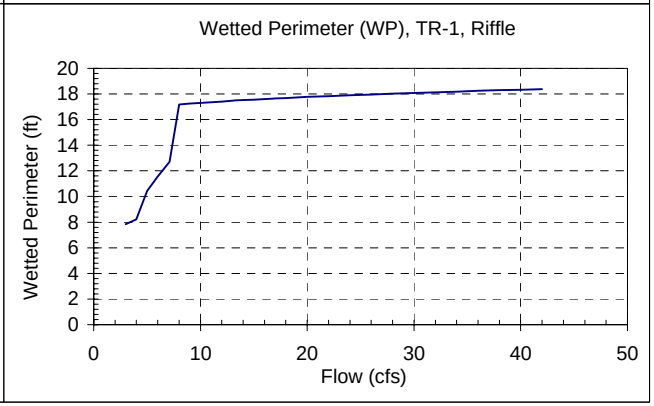




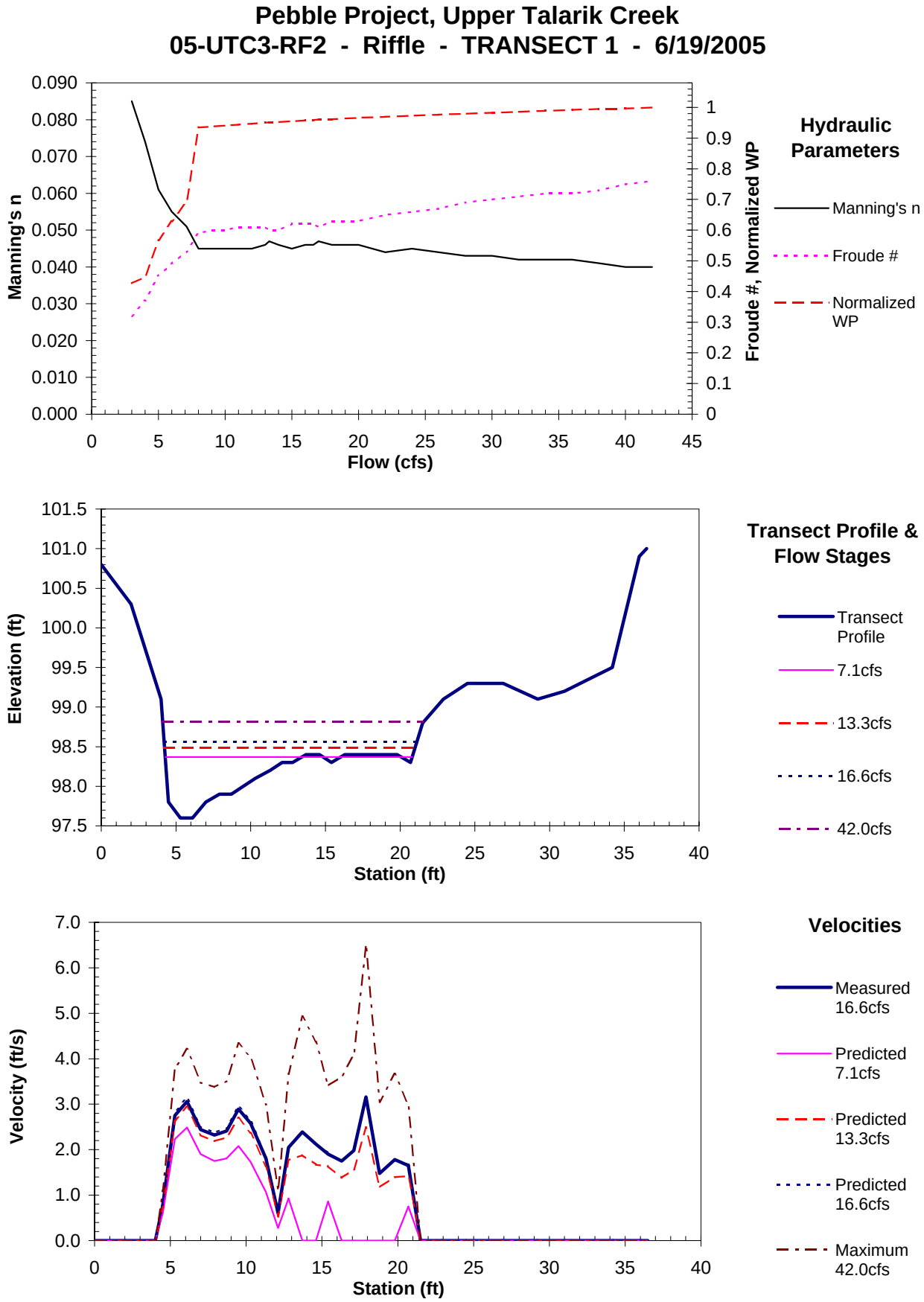








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

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QARD   4.0
QARD   5.0
QARD   6.0
QARD   7.1
QARD   8.0
QARD   9.0
QARD  10.0
QARD  11.0
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QARD  13.0
QARD  13.3
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QARD  15.0
QARD  16.0
QARD  16.6
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QARD  20.0
QARD  22.0
QARD  24.0
QARD  26.0
QARD  28.0
QARD  30.0
QARD  32.0
QARD  34.0
QARD  36.0
QARD  38.0
QARD  40.0
QARD  42.0
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      1000  7.097.76  7.997.86  8.797.86  9.597.96 10.398.06 11.398.16
      1000 12.198.26 12.898.26 13.798.36 14.698.36 15.498.26 16.398.36
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      1000 22.999.07 24.599.26 26.999.26 29.299.14 31.099.17 34.299.48
      1000 36.0100.9 36.5101.0
NS    1000      22.9      22.9      24.7      23.7      43.6      43.6
NS    1000      34.6      34.6      43.6      34.6      43.6      43.8
NS    1000      43.6      43.6      43.6      34.6      43.6      43.7
NS    1000      43.7      43.6      24.6      42.6      24.8      23.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9
WSL   1000     98.22     98.26     98.30     98.33     98.36     98.39
WSL   1000     98.41     98.43     98.45     98.47     98.49     98.50
WSL   1000     98.51     98.52     98.54     98.55     98.56     98.57
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
WSL   1000     98.60     98.62     98.65     98.67     98.69     98.71
WSL   1000     98.73     98.75     98.77     98.79     98.80     98.82
CAL1  1000     98.56      16.6
VEL1  1000                0.77 2.75 3.06 2.44 2.32 2.41 2.89 2.58 1.81
VEL1  1000 0.61 2.05 2.39 2.12 1.90 1.75 1.98 3.16 1.48 1.78 1.65
VEL1  1000
CAL2  1000     98.37       7.1
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     98.49      13.3
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek

Reach: UT-F

Site/TR: 05-UTC3-RN1

Habitat Type: Run

River Kilometer: 58.24

Stream: **Upper Talarik Creek**
Reach: **F**
Site: **05-UTC3-RN1**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	Trip	BM	HP	TP
1st	6/18/2005	1	100.00	98.10	98.14
2nd	7/20/2005	2	100.00	98.10	98.15
3rd	8/15/2005	3	100.00	98.09	98.14
4th	6/28/2006	4	100.00	98.10	98.20
5th	4/10/2007	5	100.00	98.01	98.25

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative elevation changes between BM and HP were within 0.01ft in 2005-2006 period. Small changes indicated the two control pins were stable during that period
(d) TP rose 0.06ft in 2006 from 2005. There is no need to correct the WSEs of 2006 because the survey elevation datum was based on BM, which was stable in 2006
(e) Pins were disturbed in the 2007 survey. No corrections were applied to the surveyed WSEs because the hydraulics were impacted by ice and not used in the modeling.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
6/18/2005	95.69
7/20/2005	95.53
8/15/2005	95.40
6/28/2006	95.50
4/10/2007	95.29

WSE of 4/10/07 was affected by ice.

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/18/2005	19.8
7/20/2005	
8/15/2005	8.8
6/28/2006	13.3
4/10/2007	11.7

(a) No flow was measured in the 7/20/05 trip.

(b) Measured flow of 4/10/07 was affected by ice. There were no photos available for this site, but the photos of a nearby site, 05-UTC3-RF2, about half a mile downstream with lower elevation, taken on the same day, showed the entire channel was covered in ice.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/18/2005	1.550%	27.1
7/20/2005	1.852%	27
8/15/2005	1.721%	24
6/28/2006	1.278%	36
4/10/2007	-	-

No longitudinal WSE slope surveyed on 4/10/07 trip "due to Ice U.S. + D.S."

The slope S=1.550% of 6/18/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/18/2005	94.69
7/20/2005	
8/15/2005	94.70
6/28/2006	94.70
4/10/2007	94.59
max Invert	94.70
SZF	94.70

(1) Transect invert is the lowest elevation of the cross-section.
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process.
(3) No transect profile was surveyed on 7/20/05.
(4) Invert of 4/10/07 survey was not used to determine SZF because hydraulics was impacted by ice.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	6/18/2005	19.8	95.69	95.68	-0.01	IFG4
2nd	7/20/2005		95.53			
3rd	8/15/2005	8.8	95.40	95.39	-0.01	IFG4
4th	6/28/2006	13.3	95.50	95.52	0.02	IFG4
5th	4/10/2007	11.7	95.29			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range
(c) No flow was measured during the 7/20/05 site visit.
(d) Hydraulics of 4/10/07 were affected by ice, and were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 8.8cfs, 13.3cfs, and 19.8cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

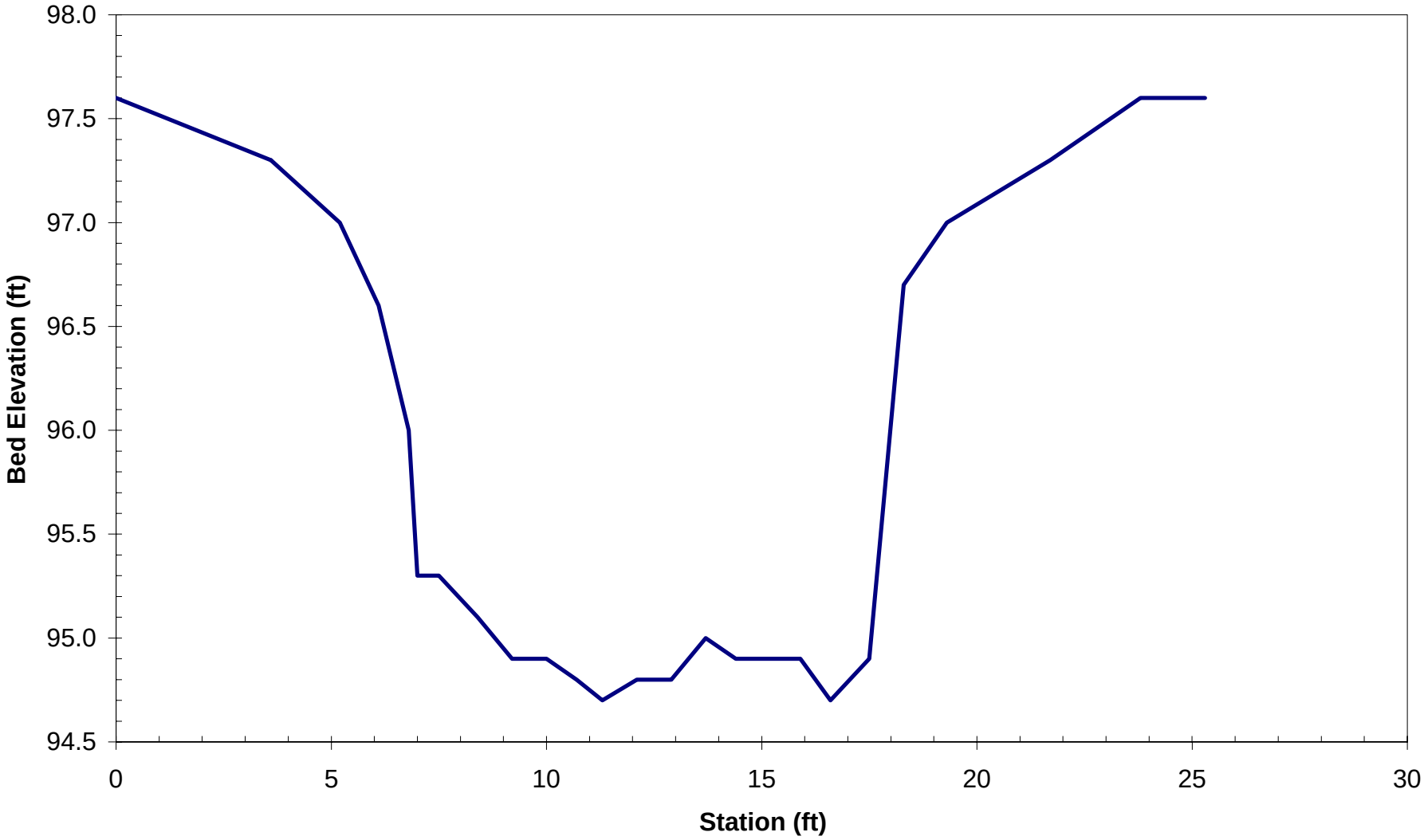
Survey Date	Q (cfs)	WUA (Y/N)
6/18/2005	19.8	Y
7/20/2005		
8/15/2005	8.8	Y
6/28/2006	13.3	
4/10/2007	11.7	

(4) Hydraulic Calibration Results:

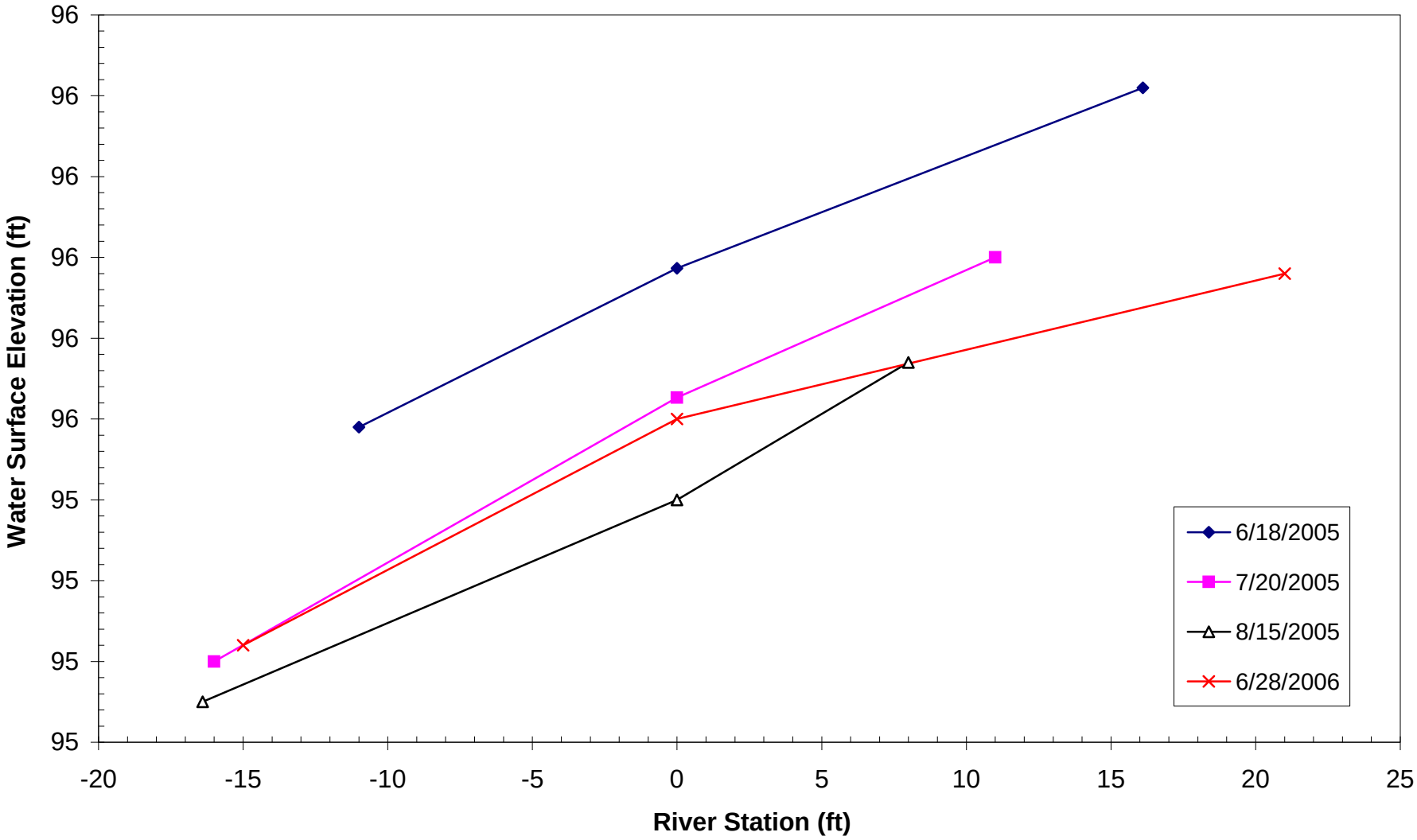
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

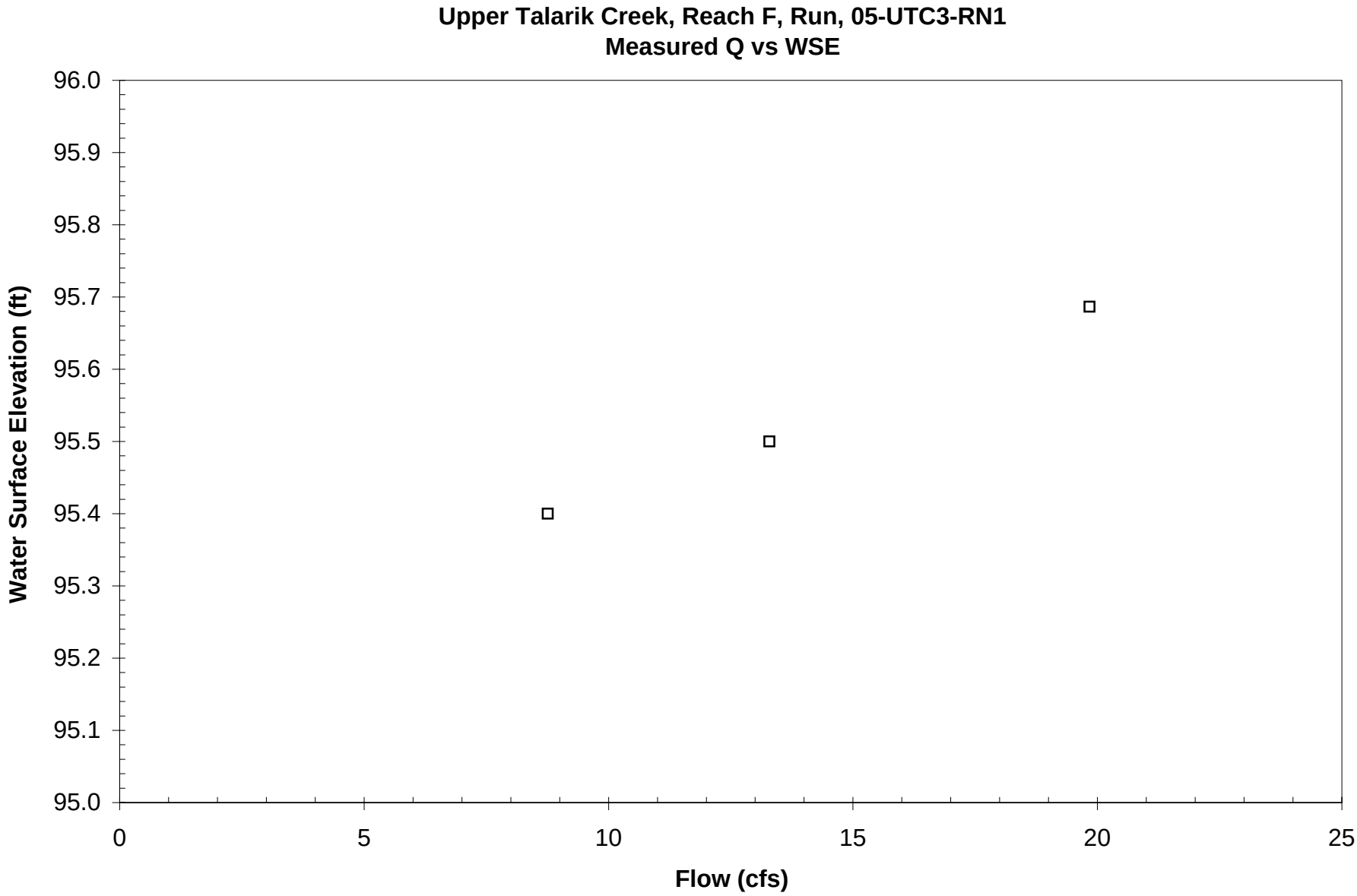
calibration notes

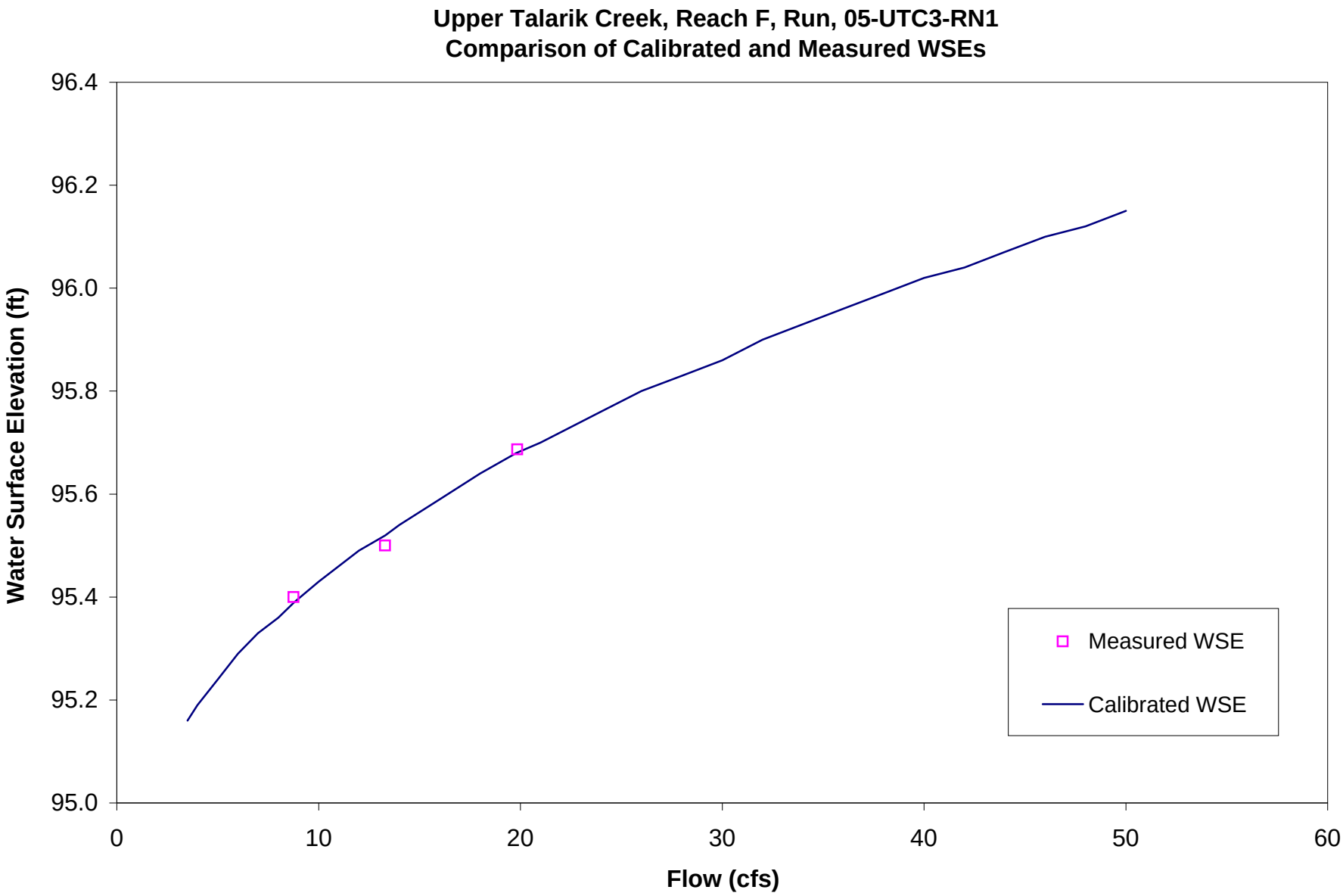
Upper Talarik Creek, Reach F, Run, 05-UTC3-RN1
Measured Transect Profiles



Upper Talarik Creek, Reach F, Run, 05-UTC3-RN1
Longitudinal Water Surface Elevation Profiles



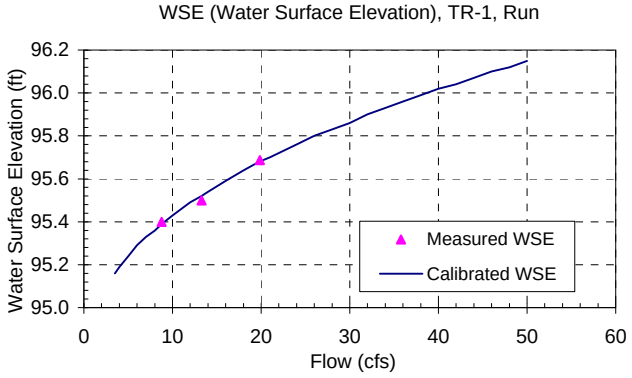

Upper Talarik Creek, Reach F, Run, 05-UTC3-RN1
Measured Q vs WSE
Water Surface Elevation (ft)
96.0
95.9
95.8
95.7
95.6
95.5
95.4
95.3
95.2
95.1
95.0
0
5
10
15
20
25
Flow (cfs)

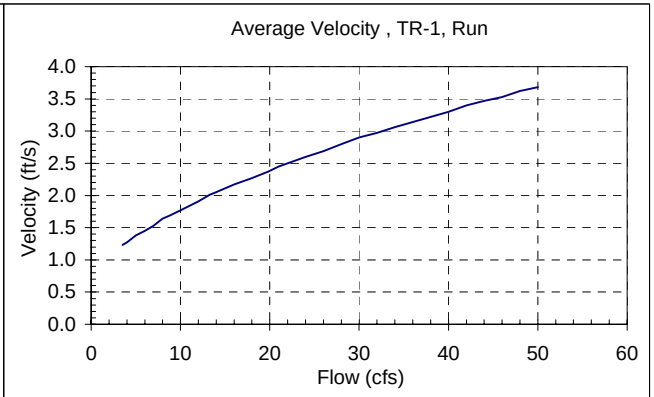

Upper Talarik Creek, Reach F, Run, 05-UTC3-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.4
96.2
96.0
95.8
95.6
95.4
95.2
95.0
0
10
20
30
40
50
60
Flow (cfs)
Measured WSE
Calibrated WSE

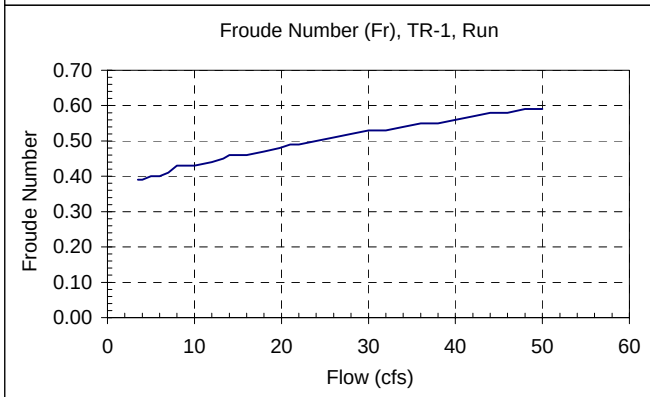
Stream: Upper Talarik Creek
Site Name: 05-UTC3-RN1
Date: 6/18/2005
Calibration Flow: Q(6/18/2005)

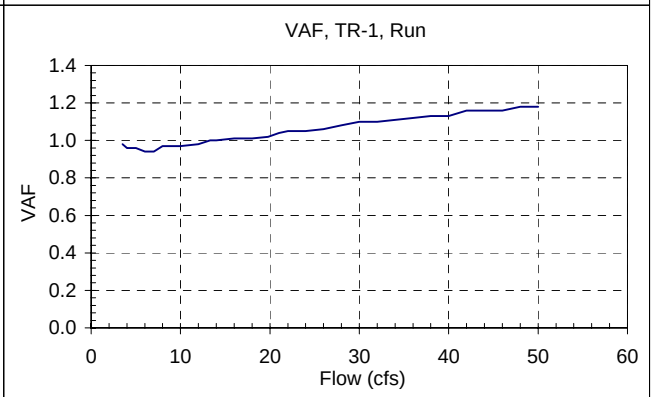
Reach: F
Habitat: Run
Site #: 1
Transect: 1

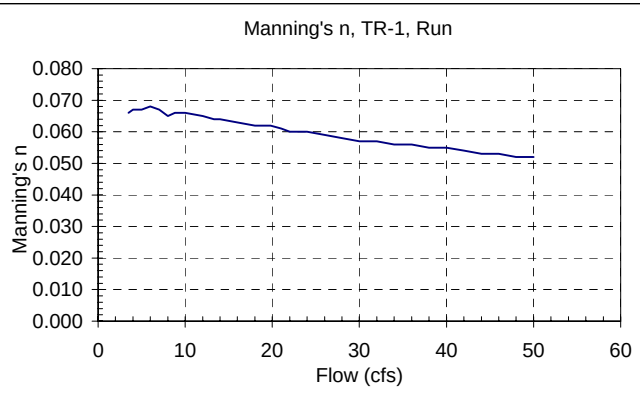
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
3.5	95.16	0.39	1.23	0.98	0.066	9.8
4	95.19	0.39	1.27	0.96	0.067	10.0
5	95.24	0.40	1.38	0.96	0.067	10.3
6	95.29	0.40	1.45	0.94	0.068	10.6
7	95.33	0.41	1.53	0.94	0.067	11.2
8	95.36	0.43	1.64	0.97	0.065	11.2
8.8	95.39	0.43	1.69	0.97	0.066	11.3
10	95.43	0.43	1.77	0.97	0.066	11.4
12	95.49	0.44	1.91	0.98	0.065	11.5
13.3	95.52	0.45	2.01	1.00	0.064	11.6
14	95.54	0.46	2.05	1.00	0.064	11.6
16	95.59	0.46	2.17	1.01	0.063	11.7
18	95.64	0.47	2.27	1.01	0.062	11.8
19.8	95.68	0.48	2.37	1.02	0.062	11.9
21	95.70	0.49	2.45	1.04	0.061	12.0
22	95.72	0.49	2.50	1.05	0.060	12.0
24	95.76	0.50	2.60	1.05	0.060	12.1
26	95.80	0.51	2.69	1.06	0.059	12.2
28	95.83	0.52	2.80	1.08	0.058	12.2
30	95.86	0.53	2.90	1.10	0.057	12.3
32	95.90	0.53	2.97	1.10	0.057	12.4
34	95.93	0.54	3.06	1.11	0.056	12.5
36	95.96	0.55	3.14	1.12	0.056	12.5
38	95.99	0.55	3.22	1.13	0.055	12.6
40	96.02	0.56	3.30	1.13	0.055	12.7
42	96.04	0.57	3.40	1.16	0.054	12.7
44	96.07	0.58	3.47	1.16	0.053	12.8
46	96.10	0.58	3.53	1.16	0.053	12.9
48	96.12	0.59	3.62	1.18	0.052	12.9
50	96.15	0.59	3.68	1.18	0.052	13.0

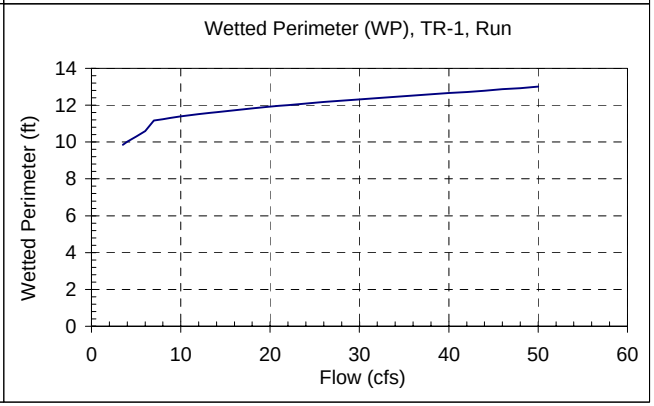






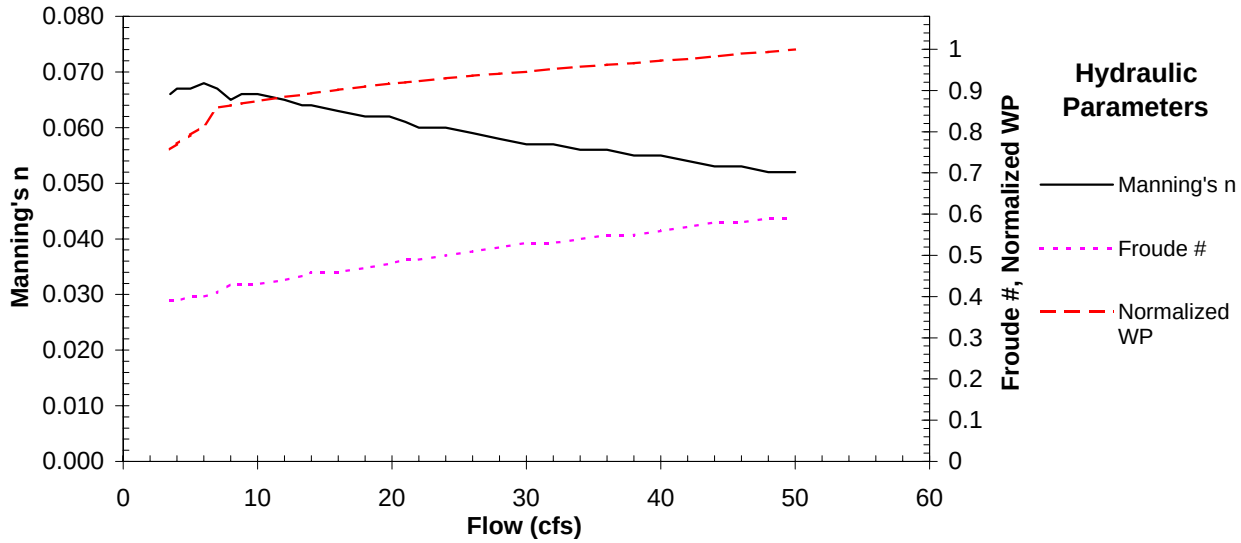


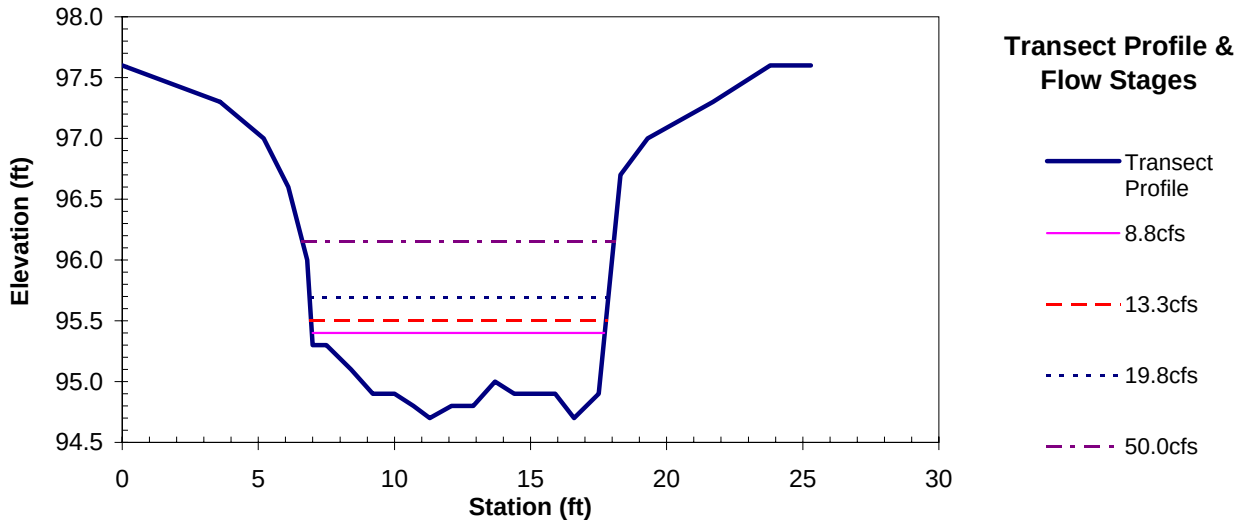


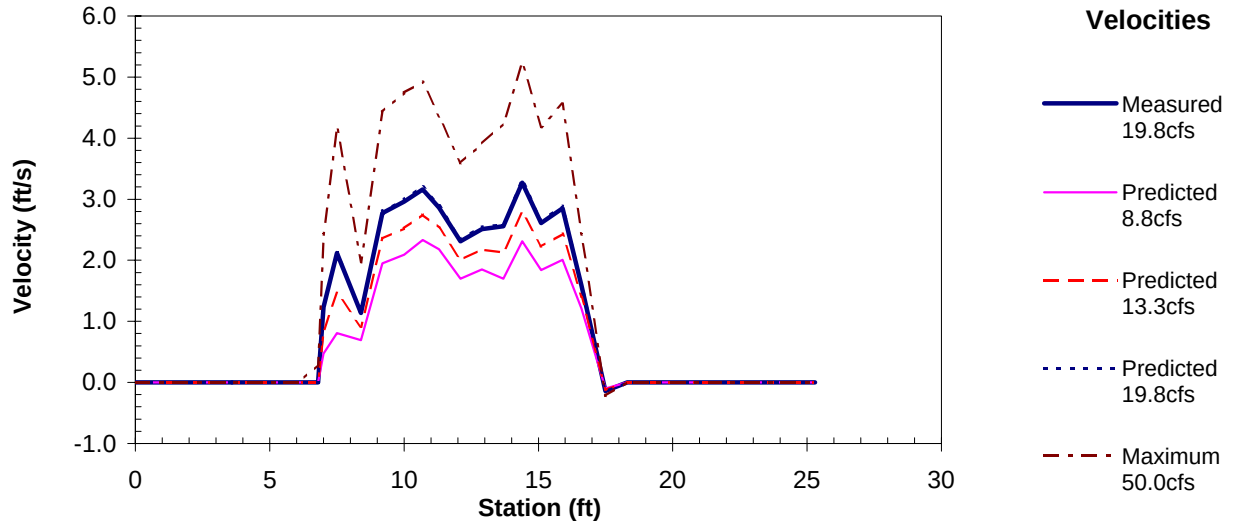


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek
05-UTC3-RN1 - RUN - TRANSECT 1 - 6/18/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05-UTC3-RN1  06/18/05
RUN                        0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD   3.5
QARD   4.0
QARD   5.0
QARD   6.0
QARD   7.0
QARD   8.0
QARD   8.8
QARD  10.0
QARD  12.0
QARD  13.3
QARD  14.0
QARD  16.0
QARD  18.0
QARD  19.8
QARD  21.0
QARD  22.0
QARD  24.0
QARD  26.0
QARD  28.0
QARD  30.0
QARD  32.0
QARD  34.0
QARD  36.0
QARD  38.0
QARD  40.0
QARD  42.0
QARD  44.0
QARD  46.0
QARD  48.0
QARD  50.0
XSEC  1000     1000. 1.0     94.70    .01550
      1000   .097.55  3.697.26  5.296.96  6.196.56  6.896.01  7.095.29
      1000  7.595.29  8.495.09  9.294.89 10.094.89 10.794.79 11.394.69
      1000 12.194.79 12.994.79 13.794.99 14.494.89 15.194.89 15.994.89
      1000 16.694.69 17.594.89 18.396.65 19.397.00 21.797.35 23.897.61
      1000 25.397.59
NS    1000      22.9      22.9      22.9      22.9 0.2  23.7      24.6
NS    1000      24.6      43.6      43.6      43.7      43.6      43.6
NS    1000      43.6      43.6      43.6      34.6      34.6      43.6
NS    1000      43.6      24.6      24.8      22.9      22.9      22.9
NS    1000      22.9
WSL   1000     95.16     95.19     95.24     95.29     95.33     95.36
WSL   1000     95.39     95.43     95.49     95.52     95.54     95.59
WSL   1000     95.64     95.68     95.70     95.72     95.76     95.80
WSL   1000     95.83     95.86     95.90     95.93     95.96     95.99
WSL   1000     96.02     96.04     96.07     96.10     96.12     96.15
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
CAL1  1000     95.69      19.8
VEL1  1000                          1.23 2.12 1.14 2.77 2.96 3.16 2.86
VEL1  1000 2.31 2.51 2.56 3.27 2.61 2.85 1.59-0.14
VEL1  1000
CAL2  1000     95.40       8.8
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.50      13.3
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: Upper Talarik Creek Tributary 1.190

Reach: UT-1.190 (UT-C)

UT 1.190 Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
05UT190-RF1	0.50	35.3	63.7	27.9		96.39	96.60	96.34		0.01	-0.01	0.00		IFG4
05UT190-RF3	0.91	32.8	59.3	26.1	27.8	96.86	97.14	96.74	96.77	0.00	-0.03	0.04	0.03	MANSQ
05-UT190-RF4	1.12	31.8	64.8	29.1	24.9	96.47	96.77	96.47	96.42	0.02	0.00	-0.01	0.00	IFG4
05UT190-RN1	1.35	27.3	56.1	24.8		97.06	97.31	96.98		-0.03	0.00	0.02		IFG4
05-UT190-RF5	2.48	40.4	19.6	18.2		98.85	98.63	98.60		0.00	-0.01	0.01		IFG4

* RK is an abbreviation for River Kilometer

Stream: Upper Talarik Creek Tributary 1.190

Reach: UT-1.190 (UT-C)

Site/TR: 05UT190-RF1

Habitat Type: Riffle

River Kilometer: 0.50

Stream: **Upper Talarik Creek Tributary 1.190**
Reach: **Trib 190**
Site: **05UT190-RF1**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1	7/21/2005	100.00	98.39	100.36
2	8/17/2005	100.00	98.37	100.35
3	9/9/2005	100.00	98.38	100.35
4	6/29/2006	100.00	98.43	100.36
5	7/9/2006	100.00	98.43	100.37
6	4/14/2007	100.00	98.59	100.57

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevations changes between BM and TP were within ±0.01ft in 2005-2006 period.
Small elevation changes suggested BM datum was stable during that period.
(c) Both HP and TP elevations rose about 0.2ft in 2007 from the initial 2005 survey.
Not able to determine the cause to the elevation change from the level loop results.
(d) The relatively large pin elevation change suggested the WSEs of 2007 survey may not reference to the same datum initially set up on 7/21/05.
Therefore, the 2007 hydraulics were not used in modeling.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/21/2005	96.35
8/17/2005	96.39
9/9/2005	96.60
6/29/2006	96.35
7/9/2006	96.34
4/14/2007	96.34

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/21/2005	
8/17/2005	35.3
9/9/2005	63.7
6/29/2006	
7/9/2006	27.9
4/14/2007	25.9

No flows were measured on 7/21/05 and 6/29/06

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/21/2005	2.088%	109.2
8/17/2005	1.872%	94.0
9/9/2005	2.120%	104.7
6/29/2006	2.025%	94.3
7/9/2006	1.908%	84.9
4/14/2007	1.994%	136.9

The slope S=1.872% of 8/17/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/21/2005	95.27
8/17/2005	95.69
9/9/2005	95.70
6/29/2006	95.34
7/9/2006	95.74
4/14/2007	95.24
max Invert	95.74
SZF	93.99

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Inverts of 7/21/05 and 6/29/06 surveys were not used to determine SZF because no flows were measured
(4) Invert of 4/10/07 survey was not used to determine SZF because of possible disturbance to the BM datum

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1	7/21/2005		96.35			
2	8/17/2005	35.3	96.39	96.40	0.01	IFG4
3	9/9/2005	63.7	96.60	96.59	-0.01	IFG4
4	6/29/2006		96.35			
5	7/9/2006	27.9	96.34	96.34	0.00	IFG4
6	4/14/2007	25.9	96.34			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No flows were measured during the 7/21/05 and 6/29/06 site visits.
(d) Hydraulics of 4/14/07 were affected by possible BM datum shift, and thus were not used for modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 27.9cfs, 35.3cfs, and 63.7cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

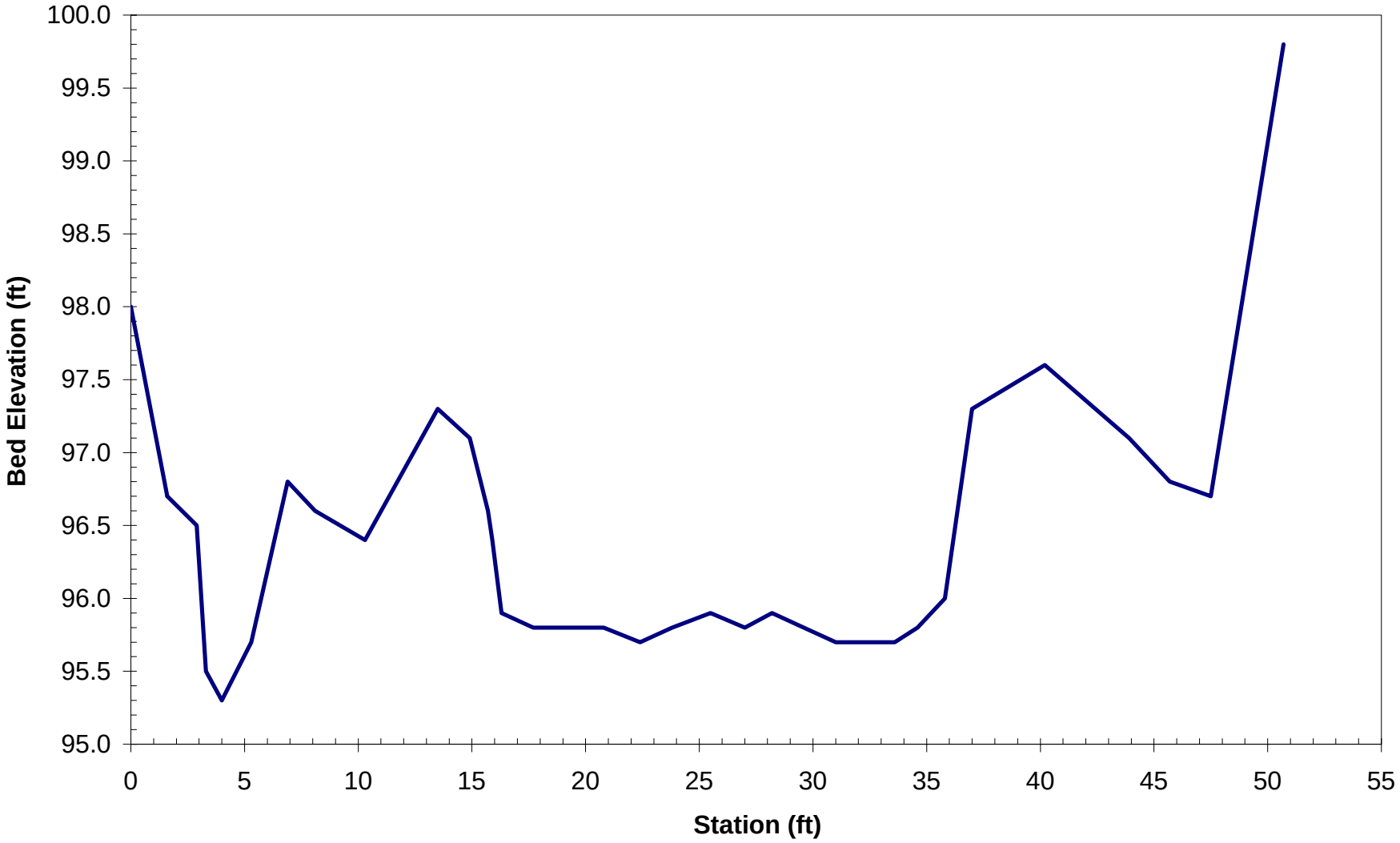
Survey Date	Q (cfs)	WUA (Y/N)
7/21/2005		
8/17/2005	35.3	Y
9/9/2005	63.7	Y
6/29/2006		
7/9/2006	27.9	Y
4/14/2007	25.9	

(4) Hydraulic Calibration Results:

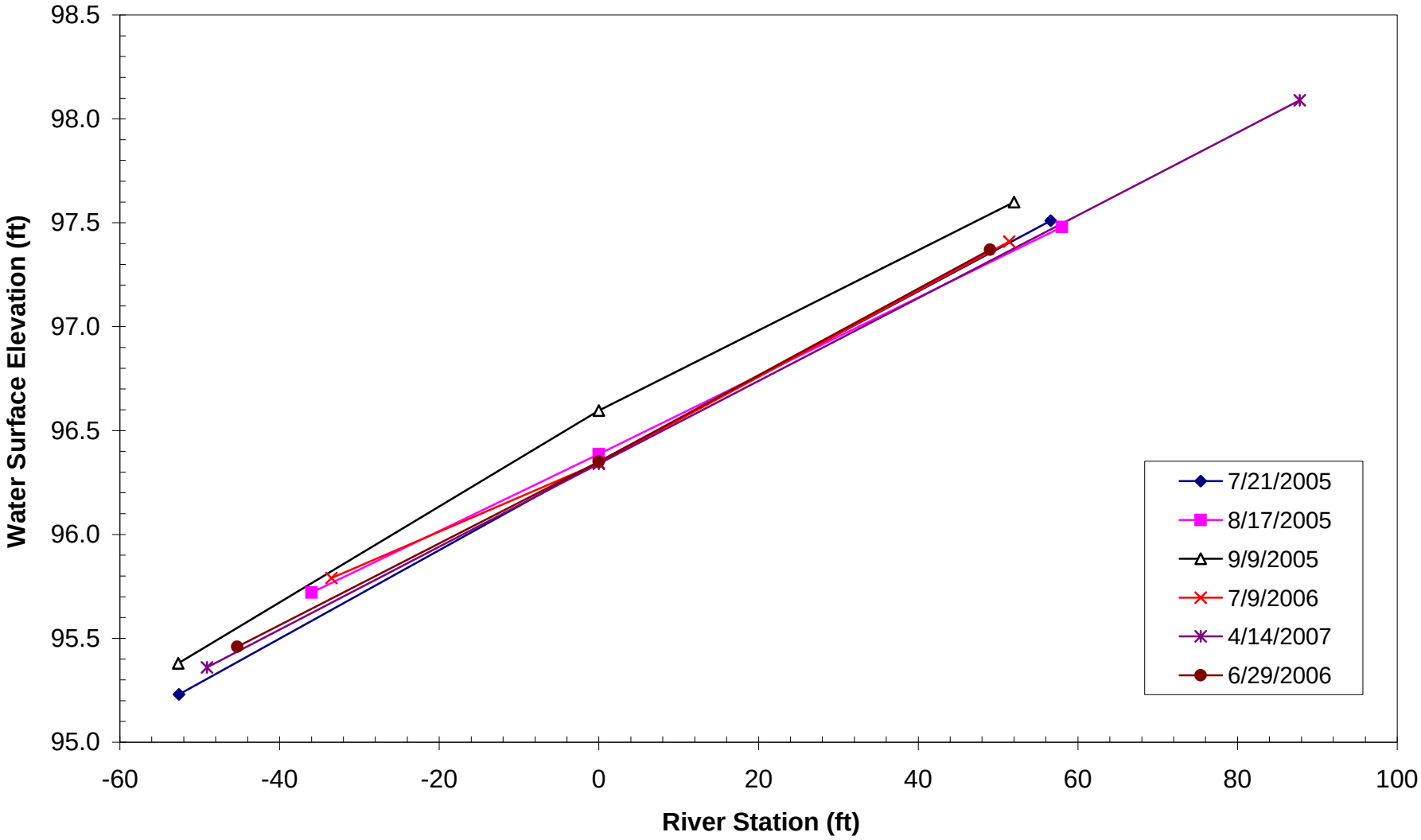
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

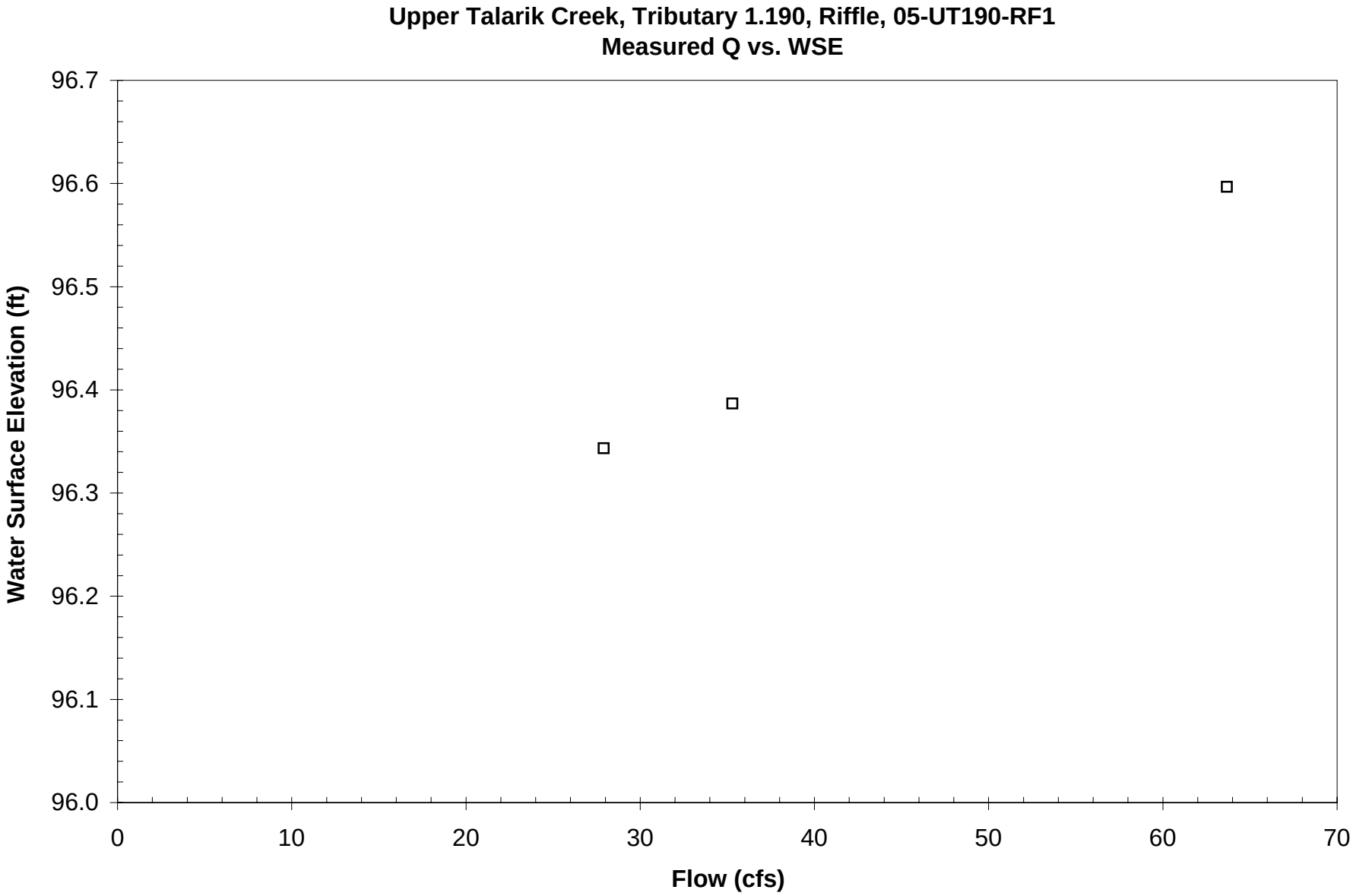
calibration notes

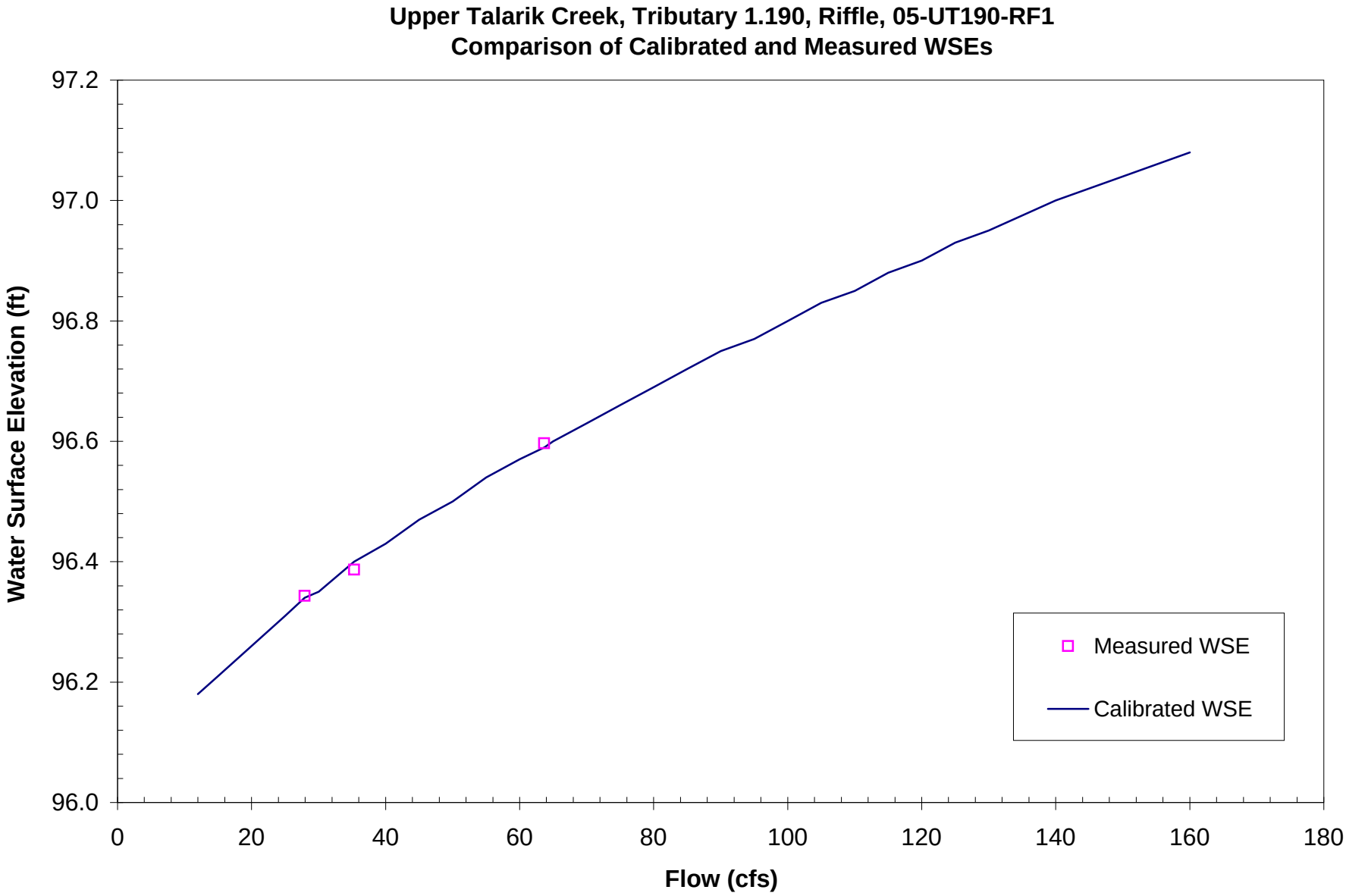
Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF1
Measured Transect Profile



Upper Talarik Creek, Tributary 1.190, Riffle, 05-UT190-RF1
Longitudinal Water surface Elevation Profiles

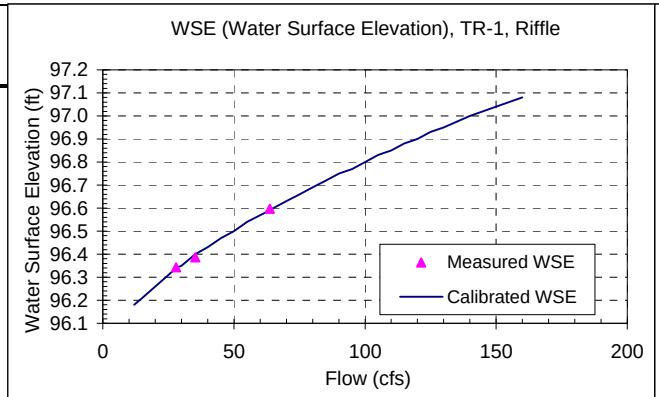


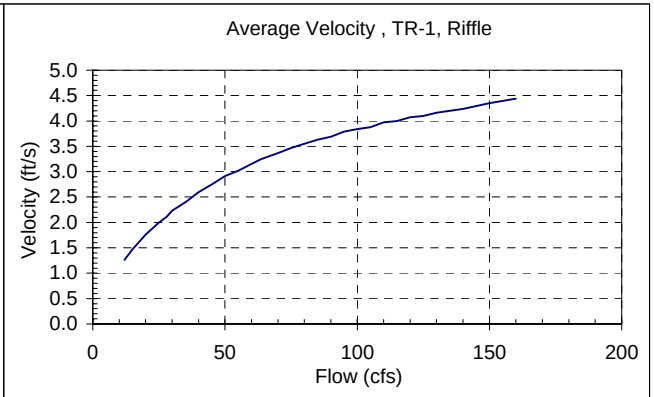

Upper Talarik Creek, Tributary 1.190, Riffle, 05-UT190-RF1
Measured Q vs. WSE
Water Surface Elevation (ft)
96.7
96.6
96.5
96.4
96.3
96.2
96.1
96.0
0
10
20
30
40
50
60
70
Flow (cfs)

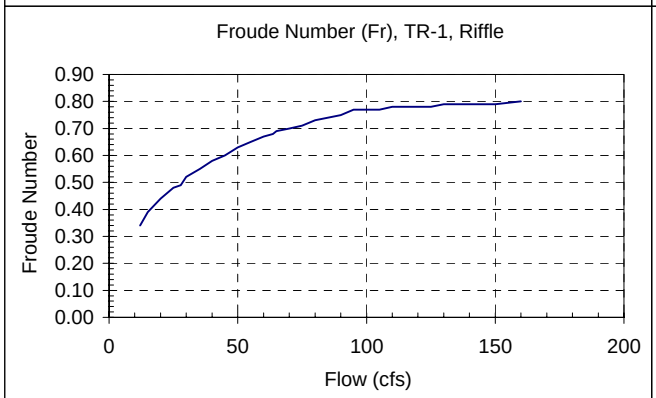

Upper Talarik Creek, Tributary 1.190, Riffle, 05-UT190-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)
Measured WSE
Calibrated WSE

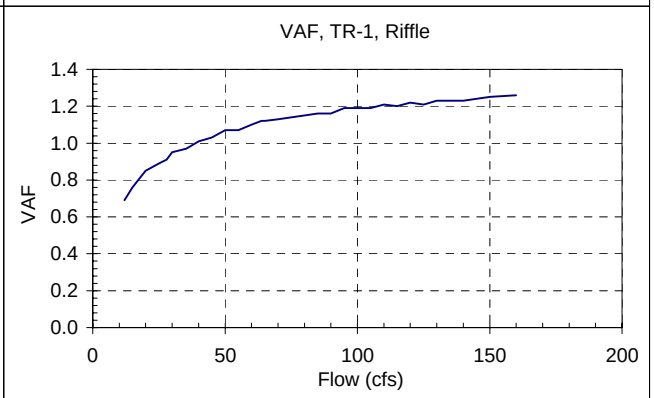
Stream: Upper Talarik Creek Tributary 1.19 **Reach:** Tributary 1.190
Site Name: 05UT190-RF1 **Habitat:** Riffle
Date: 8/17/2005 **Site #:** 1
Calibration Flow: Q(8/17/2005) **Transect:** 1

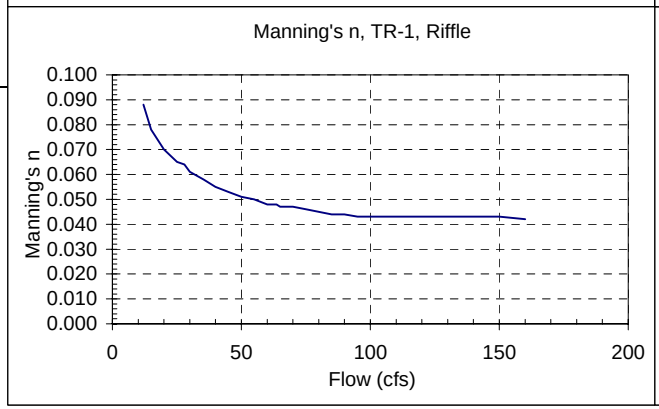
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
12	96.18	0.34	1.26	0.69	0.088	23.9
15	96.21	0.39	1.47	0.76	0.078	24.1
20	96.26	0.44	1.76	0.85	0.070	24.3
25	96.31	0.48	2.00	0.89	0.065	24.6
27.9	96.34	0.49	2.11	0.91	0.064	24.8
30	96.35	0.52	2.23	0.95	0.061	24.8
35.3	96.40	0.55	2.41	0.97	0.058	25.6
40	96.43	0.58	2.60	1.01	0.055	26.2
45	96.47	0.60	2.75	1.03	0.053	27.1
50	96.50	0.63	2.91	1.07	0.051	27.8
55	96.54	0.65	3.02	1.07	0.050	28.8
60	96.57	0.67	3.15	1.10	0.048	29.4
63.7	96.59	0.68	3.25	1.12	0.048	29.8
65	96.60	0.69	3.27	1.12	0.047	30.0
70	96.63	0.70	3.37	1.13	0.047	30.5
75	96.66	0.71	3.47	1.14	0.046	31.0
80	96.69	0.73	3.55	1.15	0.045	32.2
85	96.72	0.74	3.63	1.16	0.044	33.3
90	96.75	0.75	3.69	1.16	0.044	34.3
95	96.77	0.77	3.79	1.19	0.043	34.9
100	96.80	0.77	3.84	1.19	0.043	35.6
105	96.83	0.77	3.88	1.19	0.043	36.2
110	96.85	0.78	3.97	1.21	0.043	36.6
115	96.88	0.78	4.00	1.20	0.043	37.1
120	96.90	0.78	4.07	1.22	0.043	37.4
125	96.93	0.78	4.10	1.21	0.043	37.9
130	96.95	0.79	4.16	1.23	0.043	38.2
140	97.00	0.79	4.24	1.23	0.043	39.0
150	97.04	0.79	4.35	1.25	0.043	39.7
160	97.08	0.8	4.44	1.26	0.042	40.4

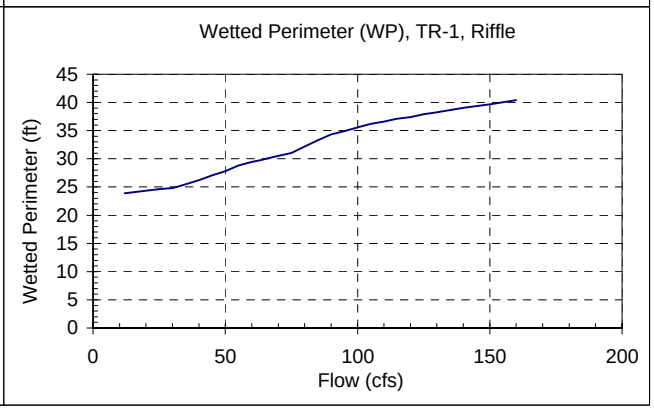




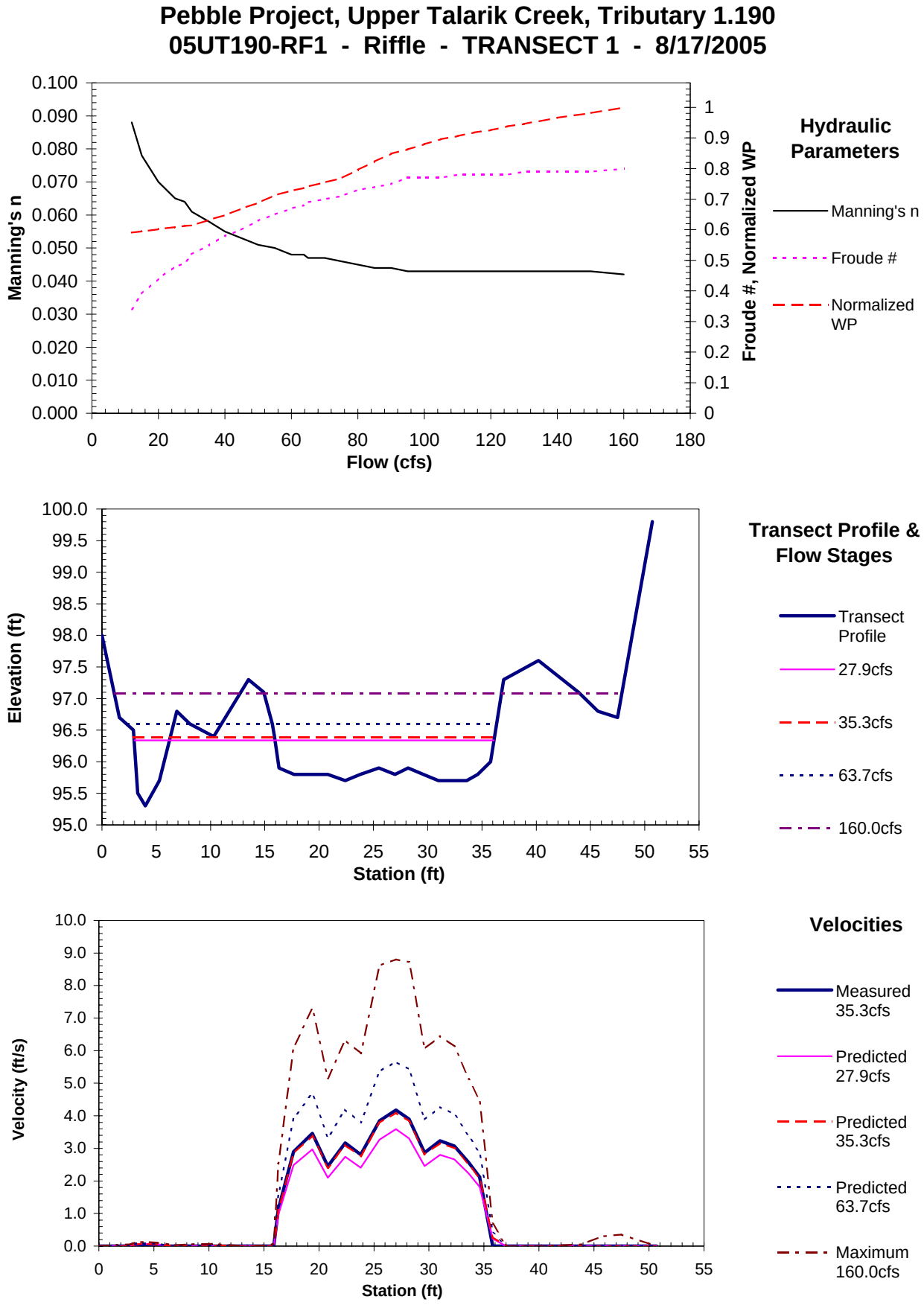








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05UT190-RF1  08/17/05
RIFFLE                     0805Q                                    TRANSECT 1
IOC       1101100100001000101000
QARD  12.0
QARD  15.0
QARD  20.0
QARD  25.0
QARD  27.9
QARD  30.0
QARD  35.3
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  63.7
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 140.0
QARD 150.0
QARD 160.0
XSEC  1000     1000. 1.0     95.94    .01872
      1000   .098.04  1.696.73  2.996.47  3.395.51  4.095.26  5.395.66
      1000  6.996.84  8.196.55 10.396.37 13.597.30 14.997.06 15.796.58
      1000 15.996.38 16.395.88 17.795.79 19.495.79 20.895.79 22.495.69
      1000 23.895.79 25.595.88 27.095.79 28.295.88 29.695.79 31.095.69
      1000 32.395.69 33.695.69 34.695.79 35.895.98 37.097.34 40.297.59
      1000 43.997.05 45.796.76 47.596.66 50.799.76
NS    1000      22.9 3.0  22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      32.6      43.7      45.6      45.6      45.6
NS    1000      45.6      45.6      45.6      45.6      45.7      43.7
NS    1000      46.6      43.8      43.6 .4   43.6      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     96.18     96.21     96.26     96.31     96.34     96.35
WSL   1000     96.40     96.43     96.47     96.50     96.54     96.57
WSL   1000     96.59     96.60     96.63     96.66     96.69     96.72
```

IFG4 Data Deck (continued)

```
WSL   1000     96.75     96.77     96.80     96.83     96.85     96.88
WSL   1000     96.90     96.93     96.95     97.00     97.04     97.08
CAL1  1000     96.39      35.3
VEL1  1000
VEL1  1000 0.00 1.13 2.90 3.46 2.45 3.17 2.81 3.85 4.18 3.90 2.87 3.23
VEL1  1000 3.07 2.57 2.12 0.00
CAL2  1000     96.60      63.7
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     96.34      27.9
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

Stream: Upper Talarik Creek Tributary 1.190

Reach: UT-1.190 (UT-C)

Site/TR: 05UT190-RF3

Habitat Type: Riffle

River Kilometer: 0.91

Stream: **Upper Talarik Creek Tributary 1.190**
Reach: **Trib 190**
Site: **05UT190-RF3**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/22/2005	100.00	98.63	99.82
2nd	8/17/2005	100.00	98.61	99.81
3rd	9/9/2005	100.00	98.62	99.81
4th	7/8/2006	100.00	98.60	99.81
5th	4/14/2007	100.00	98.55	99.82

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevations changes between BM and TP were within 0.01ft from 2005 to 2007. Small elevation changes suggested BM datum was stable during the 2-year period.
(c) It appeared HP was slightly unstable as it continued to sink, relative to both BM and TP. No corrections for the WSEs were needed because the BM datum was stable.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/22/2005	96.87
8/17/2005	96.86
9/9/2005	97.14
7/8/2006	96.74
4/14/2007	96.77

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/22/2005	
8/17/2005	32.8
9/9/2005	59.3
7/8/2006	26.1
4/14/2007	27.8

No discharge was measured on 7/22/05 when substrate was surveyed

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/22/2005	2.119%	68.9
8/17/2005	1.897%	48.5
9/9/2005	2.065%	58.6
7/8/2006	2.000%	44.0
4/14/2007	2.163%	68.9

The slope S=1.897% of 8/17/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/22/2005	95.85
8/17/2005	95.86
9/9/2005	95.94
7/8/2006	95.84
4/14/2007	95.97
max Invert	95.97
SZF	95.97

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Invert of 7/22/05 survey was not used to determine SZF because no flow was measured

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

8/8/2008 Initial WSE calibration using IFG4 showed Froude numbers decreasing with increasing flows.
Changed calibration method to MANSQ and the results became reasonable for all hydraulic parameters.

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/22/2005		96.87			
2nd	8/17/2005	32.8	96.86	96.86	0.00	MANSQ
3rd	9/9/2005	59.3	97.14	97.11	-0.03	MANSQ
4th	7/8/2006	26.1	96.74	96.78	0.04	MANSQ
5th	4/14/2007	27.8	96.77	96.80	0.03	

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.04ft is within acceptable range
(c) No flow was measured during the 7/22/05 site visit.
(d) Photos of 4/14/07 site visit showed only residual snow on the ground.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 26.1cfs, 27.8cfs, 32.8cfs, and 59.3cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

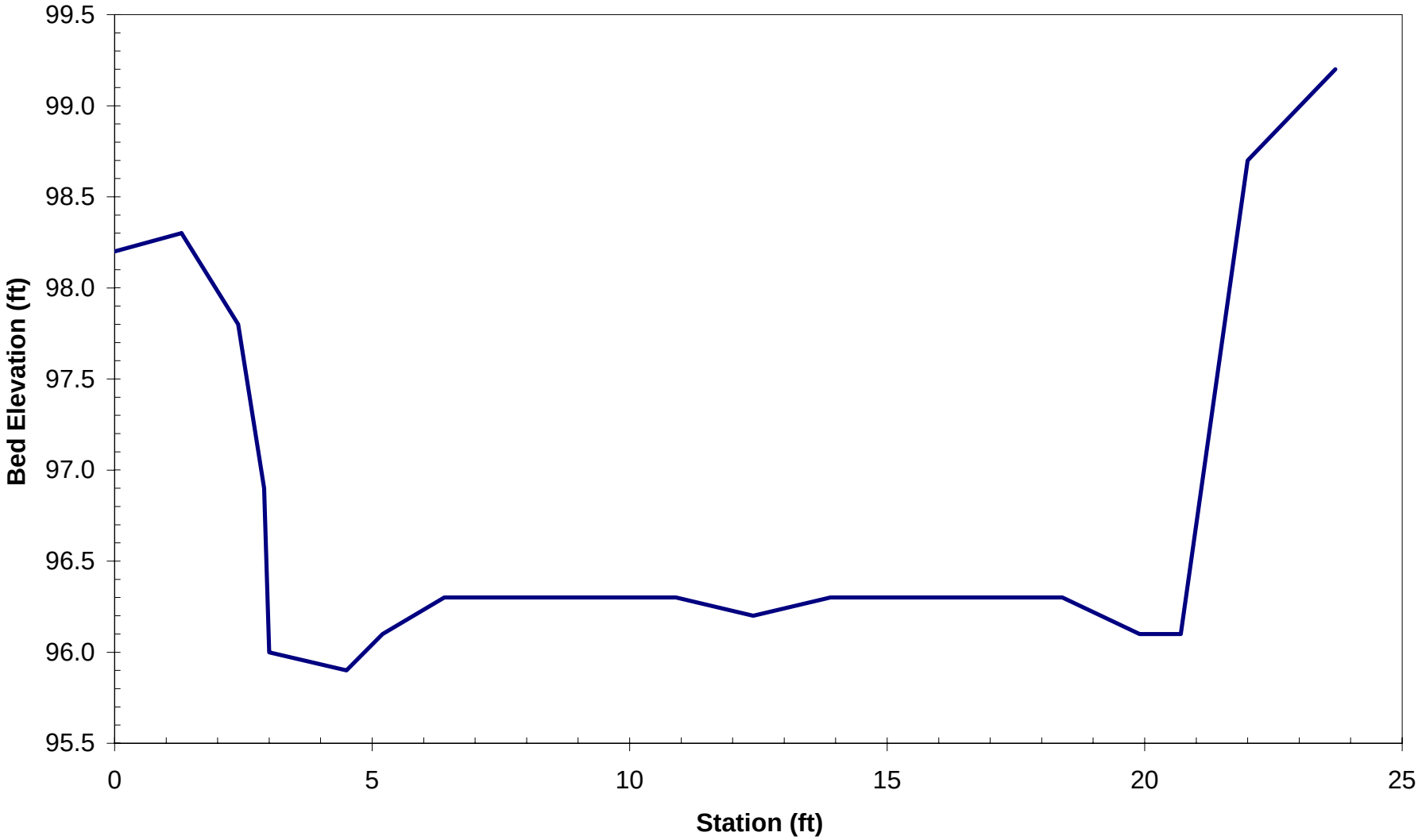
Survey Date	Q (cfs)	WUA (Y/N)
7/22/2005		
8/17/2005	32.8	Y
9/9/2005	59.3	Y
7/8/2006	26.1	Y
4/14/2007	27.8	

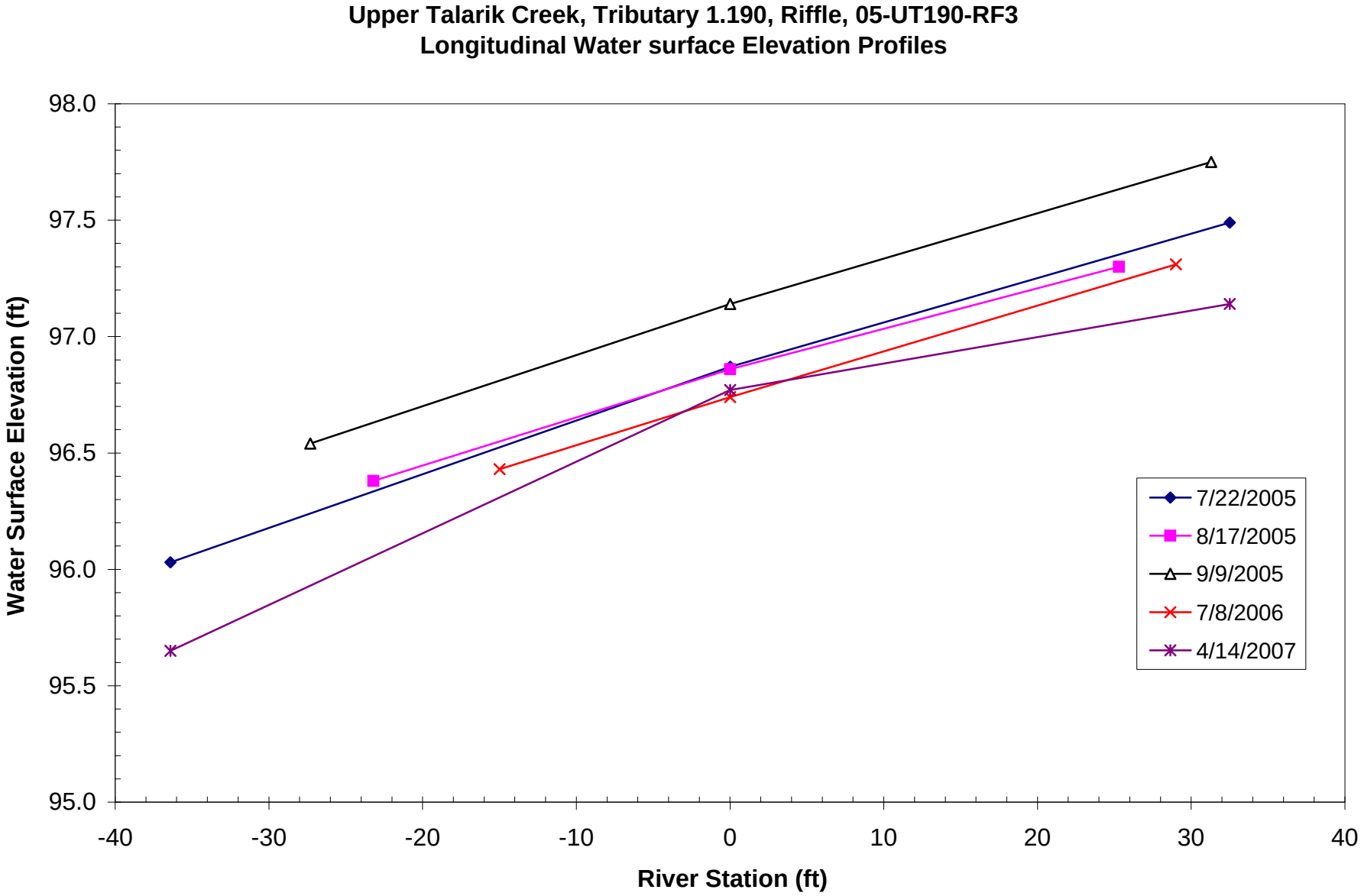
(4) Hydraulic Calibration Results:

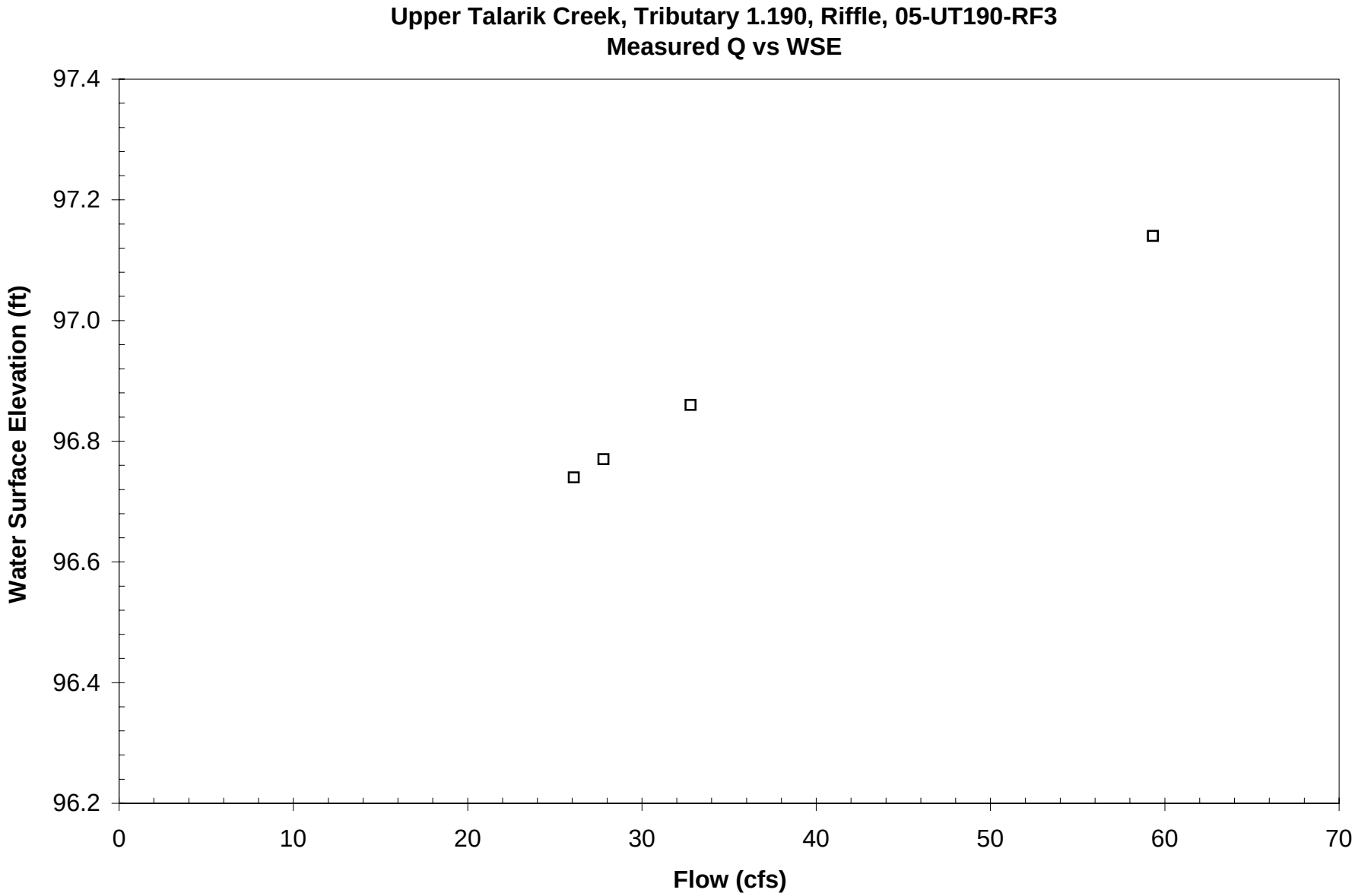
Hydraulic simulation results are summarized in the tables and figures that follow. The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.

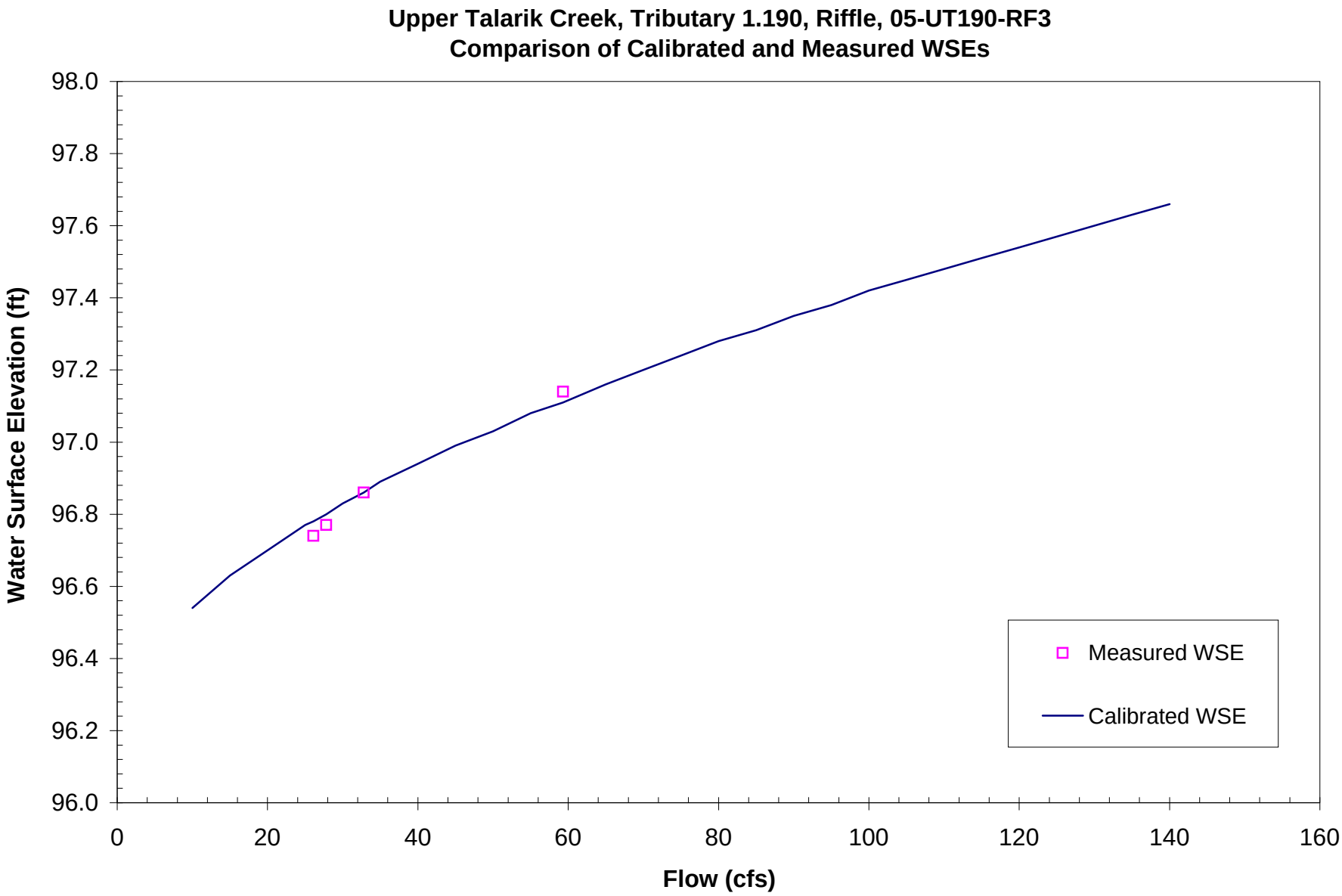
calibration notes

Upper Talarik Creek, Reach C, Tributary 190, Riffle, 05UT190-RF3
Measured Transect Profile



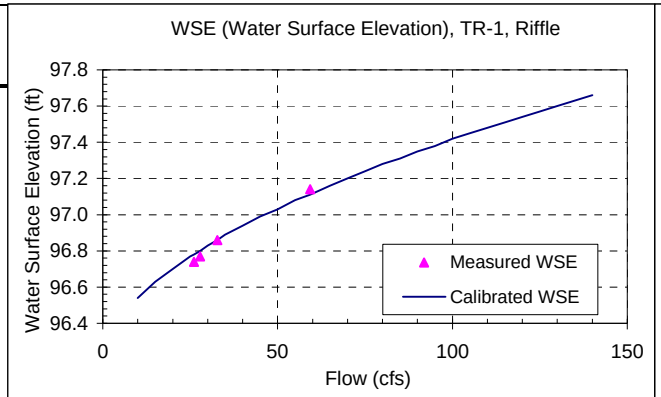

Upper Talarik Creek, Tributary 1.190, Riffle, 05-UT190-RF3
Longitudinal Water surface Elevation Profiles
Water Surface Elevation (ft)
98.0
97.5
97.0
96.5
96.0
95.5
95.0
-40
-30
-20
-10
0
10
20
30
40
River Station (ft)
7/22/2005
8/17/2005
9/9/2005
7/8/2006
4/14/2007

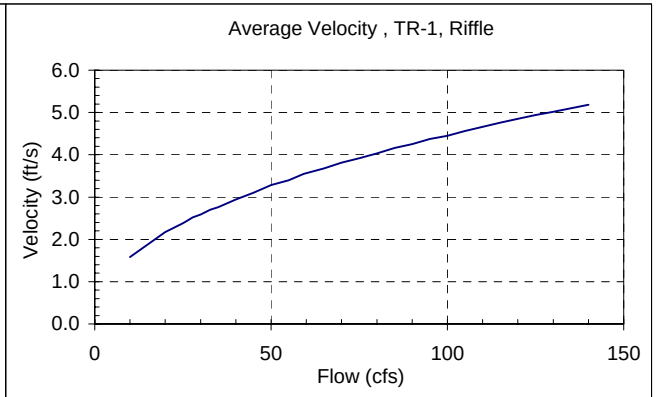

Upper Talarik Creek, Tributary 1.190, Riffle, 05-UT190-RF3
Measured Q vs WSE
Water Surface Elevation (ft)
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
10
20
30
40
50
60
70
Flow (cfs)

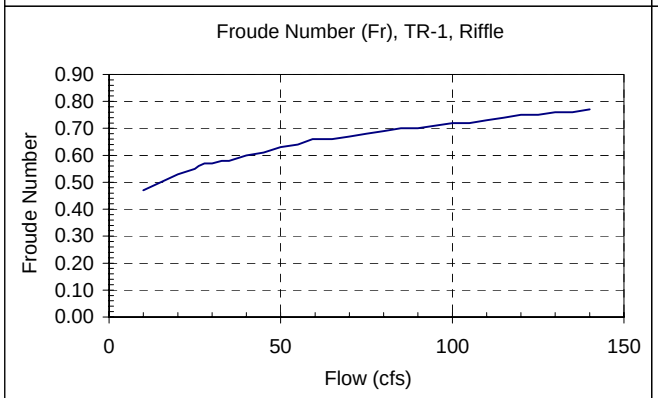

Upper Talarik Creek, Tributary 1.190, Riffle, 05-UT190-RF3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
20
40
60
80
100
120
140
160
Flow (cfs)
Measured WSE
Calibrated WSE

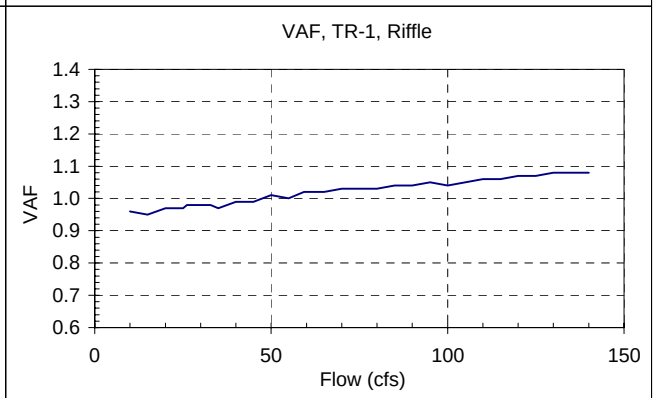
Stream: Upper Talarik Creek Tributary 1.19 **Reach:** Tributary 1.190
Site Name: 05UT190-RF3 **Habitat:** Riffle
Date: 8/17/2005 **Site #:** 3
Calibration Flow: Q(8/17/2005) **Transect:** 1

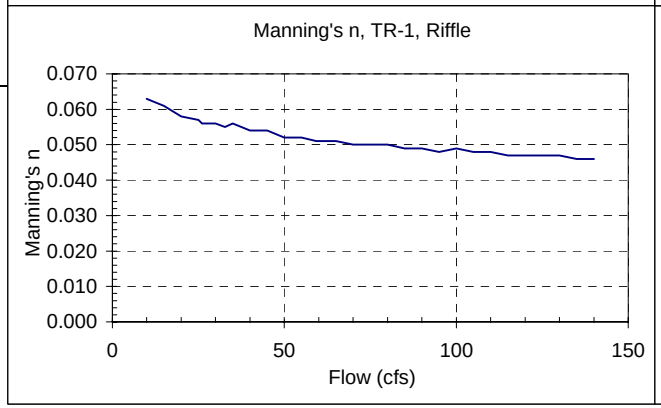
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
10	96.54	0.47	1.58	0.96	0.063	18.9
15	96.63	0.50	1.88	0.95	0.061	19.1
20	96.70	0.53	2.17	0.97	0.058	19.2
25	96.77	0.55	2.38	0.97	0.057	19.4
26.1	96.78	0.56	2.44	0.98	0.056	19.4
27.8	96.80	0.57	2.52	0.98	0.056	19.4
30	96.83	0.57	2.59	0.98	0.056	19.5
32.8	96.86	0.58	2.70	0.98	0.055	19.6
35	96.89	0.58	2.76	0.97	0.056	19.6
40	96.94	0.60	2.94	0.99	0.054	19.7
45	96.99	0.61	3.10	0.99	0.054	19.9
50	97.03	0.63	3.28	1.01	0.052	19.9
55	97.08	0.64	3.40	1.00	0.052	20.1
59.3	97.11	0.66	3.55	1.02	0.051	20.1
65	97.16	0.66	3.68	1.02	0.051	20.2
70	97.20	0.67	3.81	1.03	0.050	20.3
75	97.24	0.68	3.92	1.03	0.050	20.4
80	97.28	0.69	4.03	1.03	0.050	20.5
85	97.31	0.70	4.16	1.04	0.049	20.6
90	97.35	0.70	4.25	1.04	0.049	20.7
95	97.38	0.71	4.37	1.05	0.048	20.7
100	97.42	0.72	4.45	1.04	0.049	20.8
105	97.45	0.72	4.56	1.05	0.048	20.9
110	97.48	0.73	4.66	1.06	0.048	21.0
115	97.51	0.74	4.76	1.06	0.047	21.0
120	97.54	0.75	4.85	1.07	0.047	21.1
125	97.57	0.75	4.94	1.07	0.047	21.2
130	97.60	0.76	5.02	1.08	0.047	21.2
135	97.63	0.76	5.10	1.08	0.046	21.3
140	97.66	0.77	5.18	1.08	0.046	21.4

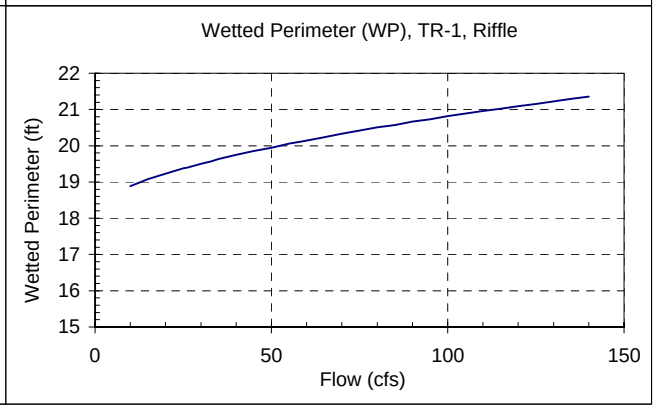






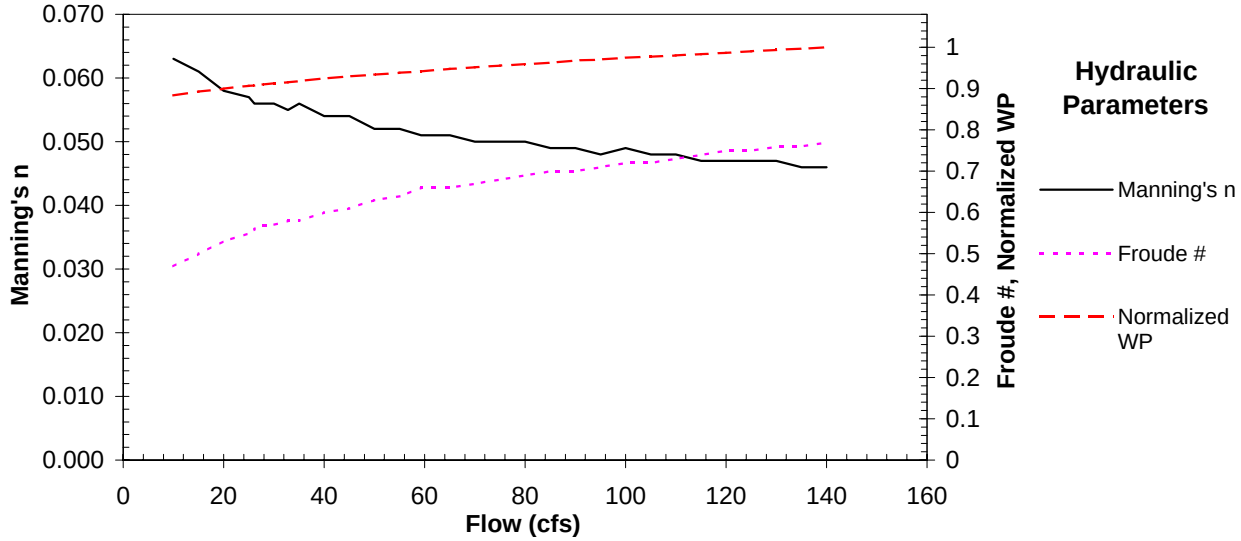


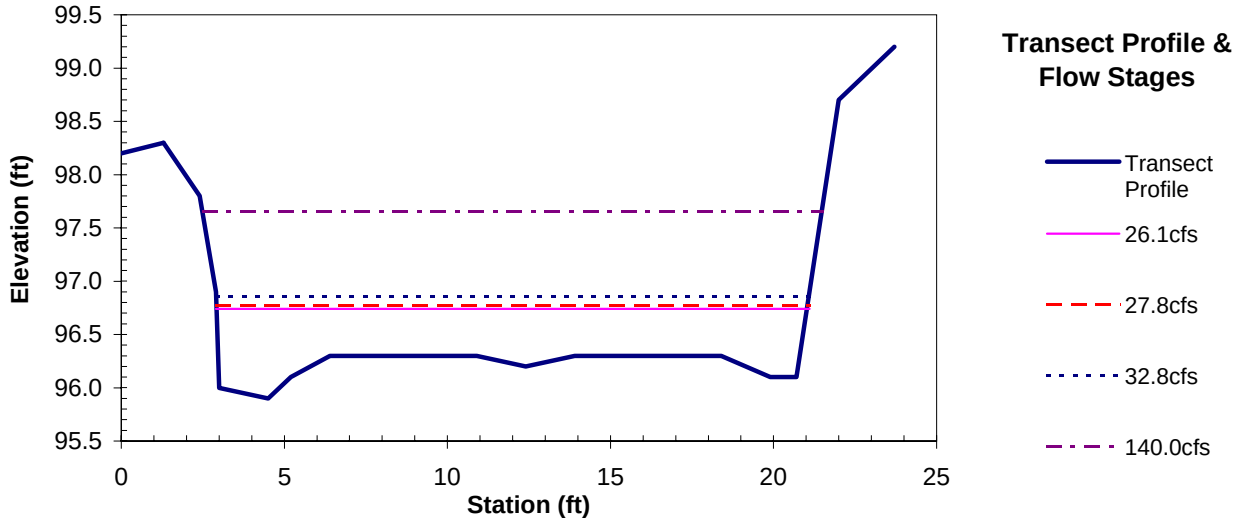


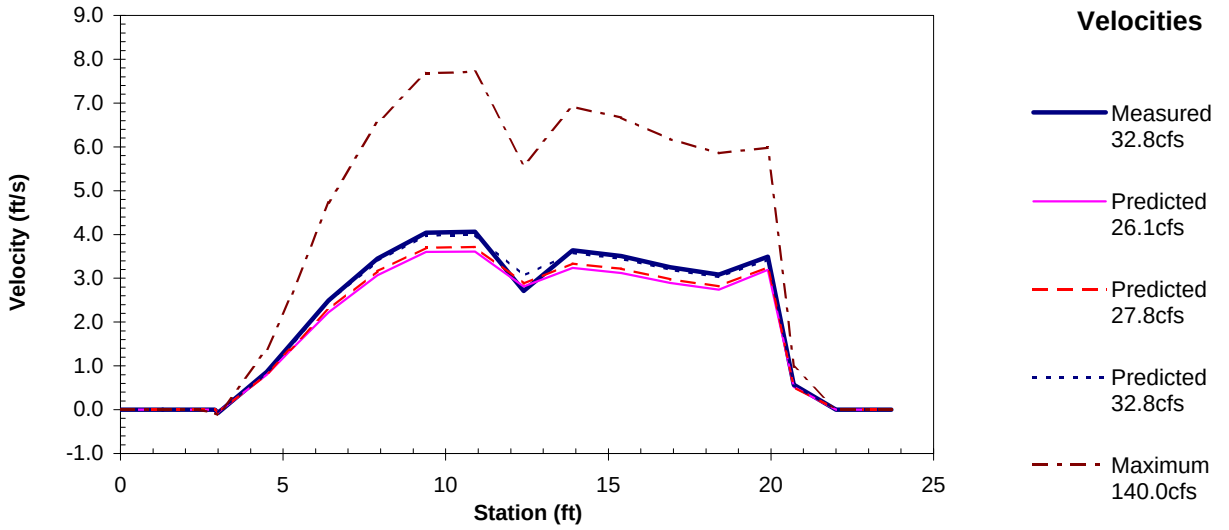


cTR1 - Transect hydraulic parameters

Pebble Project, Upper Talarik Creek, Tributary 190
05UT190-RF3 - Riffle - TRANSECT 1 - 8/17/2005







Transect hydraulic summary plots

IFG4 Data Deck

```
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IOC       1101100100001000101000
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QARD  15.0
QARD  20.0
QARD  25.0
QARD  26.1
QARD  27.8
QARD  30.0
QARD  32.8
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  59.3
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 135.0
QARD 140.0
XSEC  1000     1000. 1.0     95.97    .01897
      1000   .098.18  1.398.26  2.497.85  2.996.86  3.095.96  4.595.86
      1000  5.296.06  6.496.26  7.996.26  9.496.26 10.996.26 12.496.16
      1000 13.996.26 15.496.26 16.996.26 18.496.26 19.996.06 20.796.06
      1000 22.098.67 23.799.17
NS    1000      22.9      22.9      22.9      43.6      43.6      32.7
NS    1000      32.7      64.7      65.6      65.6      64.6 .052 64.6
NS    1000      64.6      64.6      54.7      54.7      54.7      54.7
NS    1000      22.9      22.9
WSL   1000     96.54     96.63     96.70     96.77     96.78     96.80
WSL   1000     96.83     96.86     96.89     96.94     96.99     97.03
WSL   1000     97.08     97.11     97.16     97.20     97.24     97.28
WSL   1000     97.31     97.35     97.38     97.42     97.45     97.48
WSL   1000     97.51     97.54     97.57     97.60     97.63     97.66
CAL1  1000     96.86      32.8
VEL1  1000               0.00-0.07 0.86 1.47 2.49 3.45 4.04 4.06 2.71
```

IFG4 Data Deck (continued)

```
VEL1  1000 3.64 3.51 3.25 3.08 3.49 0.57
CAL2  1000     97.14      59.3
VEL2  1000
VEL2  1000
CAL3  1000     96.74      26.1
VEL3  1000
VEL3  1000
CAL4  1000     96.77      27.8
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble     05UT190-RF3  08/17/05
RIFFLE                     Q0805                                    TRANSECT 1
IOC       01100000000000000000
QARD  10.0
QARD  15.0
QARD  20.0
QARD  25.0
QARD  26.1
QARD  27.8
QARD  30.0
QARD  32.8
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  59.3
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 135.0
QARD 140.0
XSEC  1000     1000. 1.0     95.97    .01897
      1000   .098.18  1.398.26  2.497.84  2.996.86  3.095.95  4.595.86
      1000  5.296.05  6.496.26  7.996.26  9.496.26 10.996.26 12.496.16
      1000 13.996.26 15.496.26 16.996.26 18.496.26 19.996.05 20.796.05
      1000 22.098.66 23.799.16
NS    1000      22.9      22.9      22.9      43.6      43.6      32.7
NS    1000      32.7      64.7      65.6      65.6      64.6      64.6
NS    1000      64.6      64.6      54.7      54.7      54.7      54.7
NS    1000      22.9      22.9
CALQ  1000     96.86      32.8    -0.250
ENDJ
```

MANSQ Data Deck

Stream: Upper Talarik Creek Tributary 1.190

Reach: UT-1.190 (UT-C)

Site/TR: 05UT190-RF4

Habitat Type: Riffle

River Kilometer: 1.12

Stream: **Upper Talarik Creek Tributary 1.190**
Reach: **Trib 190**
Site: **05UT190-RF4**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/22/2005	100.00	99.14	99.65
2nd	8/17/2005	100.00	99.13	99.64
3rd	9/9/2005	100.00	99.13	99.65
4th	7/9/2006	100.00	99.15	99.66
5th	4/14/2007	100.00	99.15	99.67

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevations changes between BM and HP were within ±0.01ft from 2005 to 2007.
Small elevation changes suggested survey datum was stable during the 2-year period.
(c) It appeared TP was also stable with no more than 0.02ft of change relative to BM datum

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/22/2005	96.49
8/17/2005	96.47
9/9/2005	96.77
7/9/2006	96.47
4/14/2007	96.42

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/22/2005	
8/17/2005	31.8
9/9/2005	64.8
7/9/2006	29.1
4/14/2007	24.9

No discharge was measured on 7/22/05.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/22/2005	1.860%	82.8
8/17/2005	1.751%	73.1
9/9/2005	1.801%	78.3
7/9/2006	1.618%	76.0
4/14/2007	1.812%	82.8

The slope S=1.751% of 8/17/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/22/2005	95.52
8/17/2005	95.57
9/9/2005	95.47
7/9/2006	95.37
4/14/2007	95.62
max Invert	95.62
SZF	95.92

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Invert of 7/22/05 survey was not used to determine SZF because no flow was measured

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/22/2005		96.49			
2nd	8/17/2005	31.8	96.47	96.49	0.02	IFG4
3rd	9/9/2005	64.8	96.77	96.77	0.00	IFG4
4th	7/9/2006	29.1	96.47	96.46	-0.01	IFG4
5th	4/14/2007	24.9	96.42	96.42	0.00	IFG4

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.02ft is within acceptable range
(c) No flow was measured during the 7/22/05 site visit.
(d) Photos of 4/14/07 site visit showed only residual snow on the ground with no contact with water.
Did not expect hydraulics were affected by the residual ice.

calibration notes

(3) Velocity calibration

This site has one transect with four complete velocity/discharge measurements, including 24.9cfs, 29.1cfs, 31.8cfs, and 64.8cfs. Each of the four measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

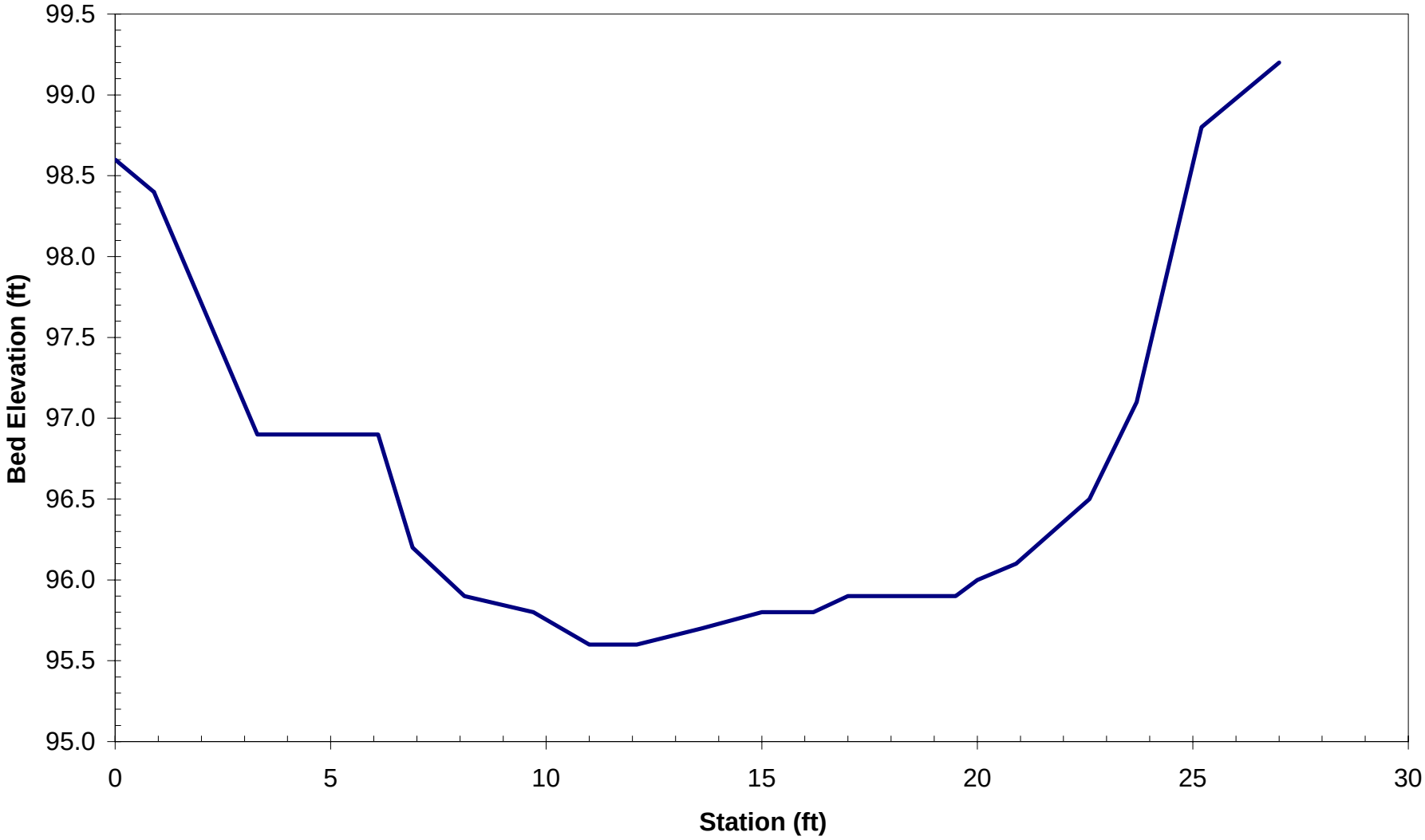
Survey Date	Q (cfs)	WUA (Y/N)
7/22/2005		
8/17/2005	31.8	Y
9/9/2005	64.8	Y
7/9/2006	29.1	Y
4/14/2007	24.9	Y

(4) Hydraulic Calibration Results:

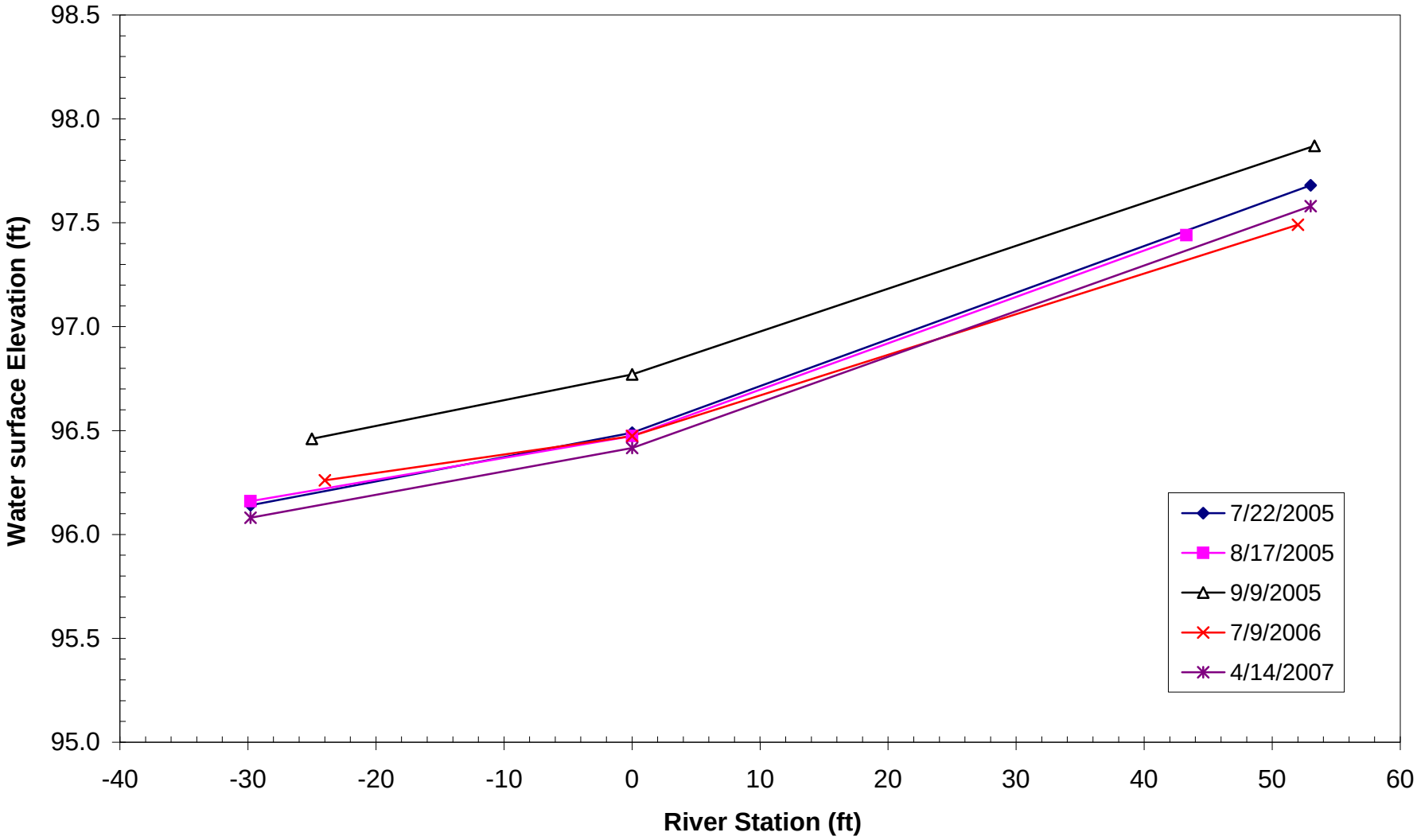
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.
Froude numbers at higher flows were near- or super-critical, which may be due to either or both of the two following reasons: (a) This section of stream was very steep with an average WSE slope of 1.75%, and/or (b) There was a small floodplain on the left side of the channel. When flow level reached the floodplain, the hydraulic depth abruptly decreased, causing the Froude number (see definition below) to significantly increase.

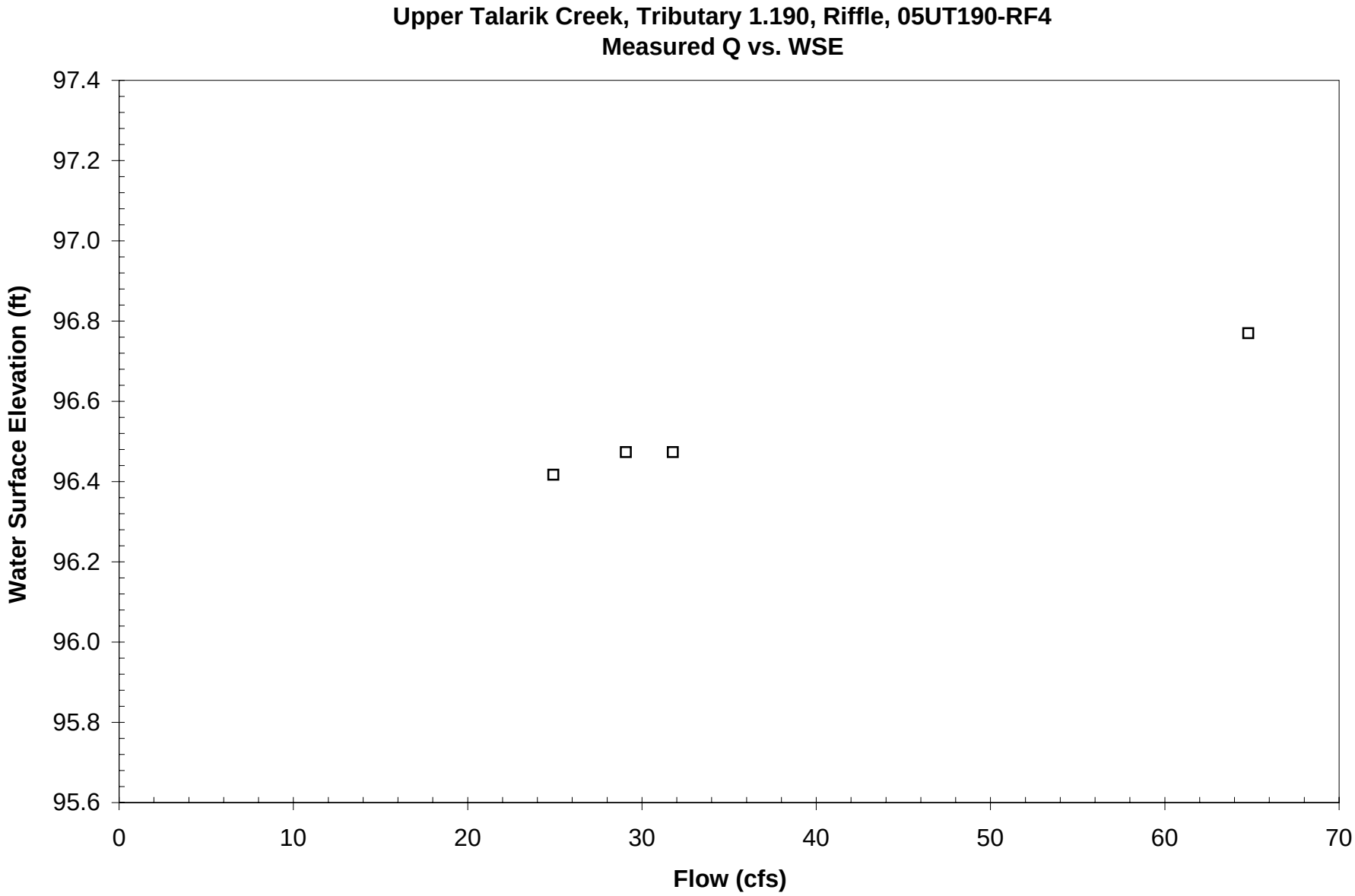
calibration notes

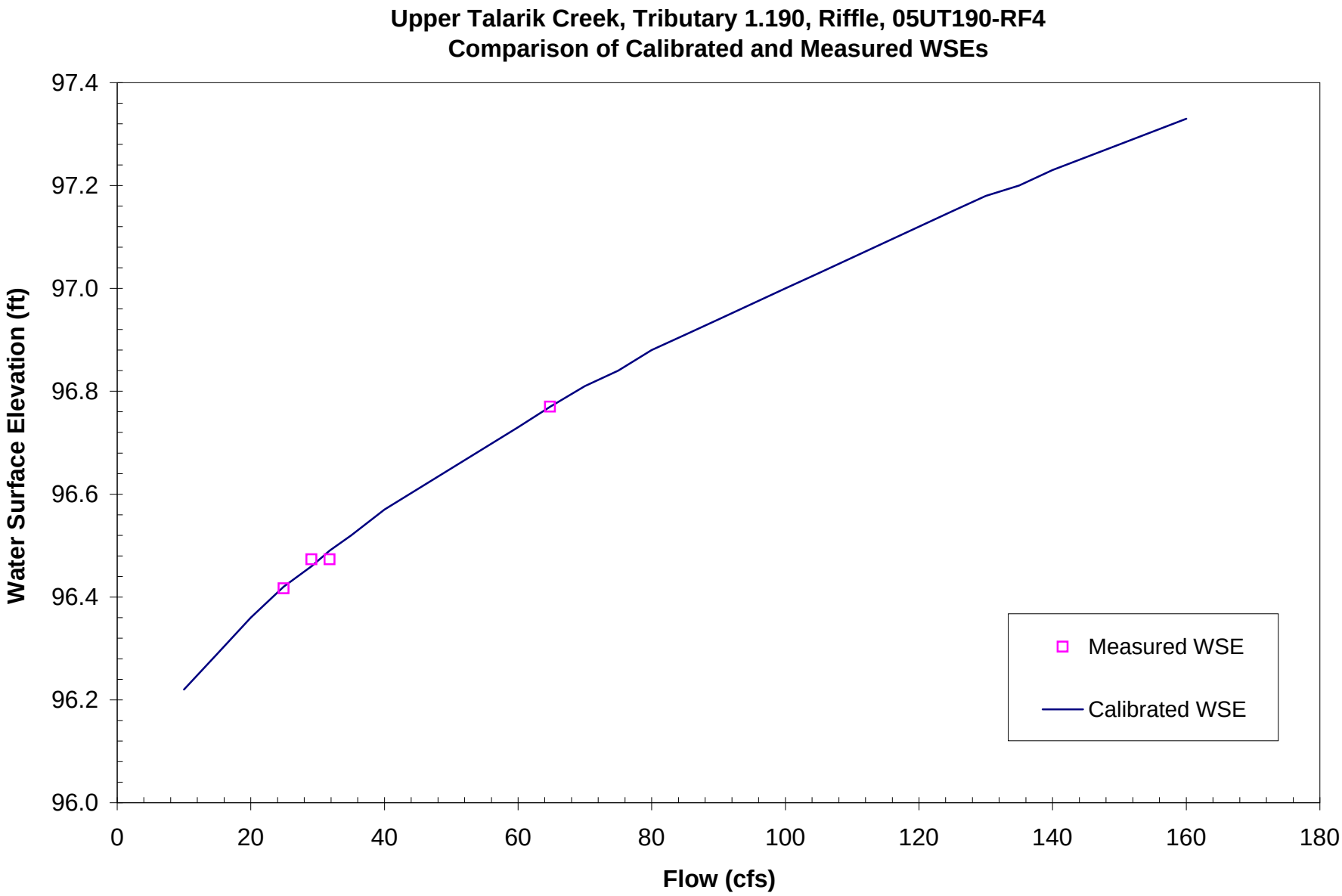
Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF4
Measured Transect Profile



Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF4
Longitudinal Water Surface Elevation Profiles

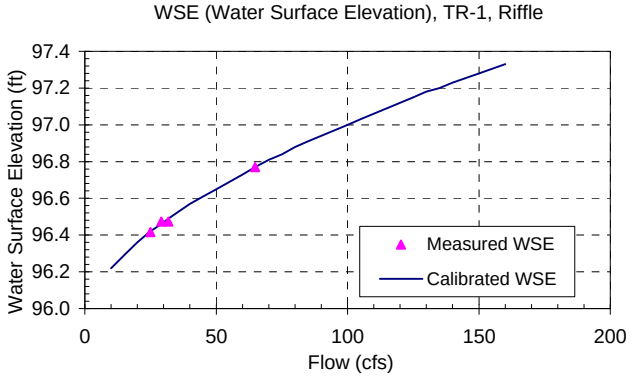


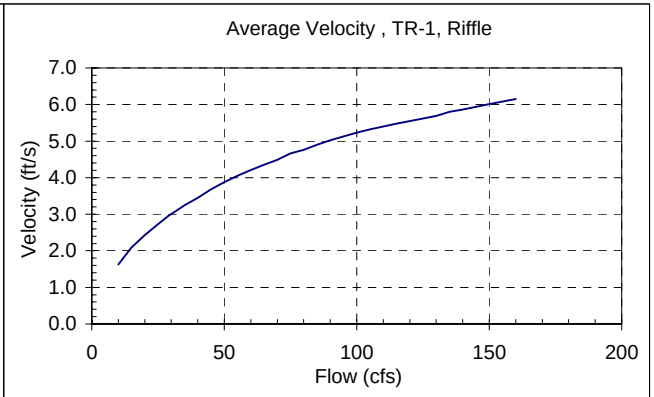

Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF4
Measured Q vs. WSE
Water Surface Elevation (ft)
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
95.6
0
10
20
30
40
50
60
70
Flow (cfs)

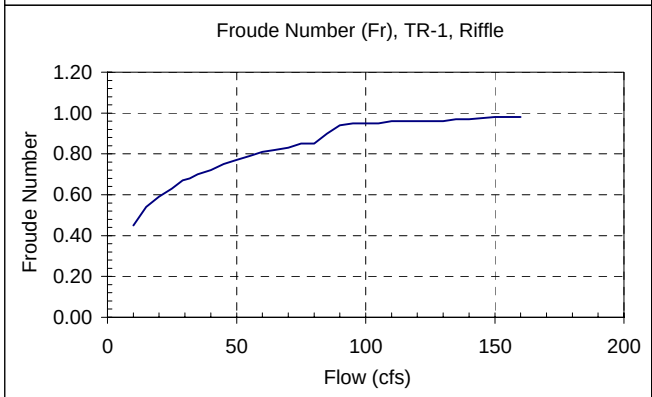

Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF4
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
0
20
40
60
80
100
120
140
160
180
Flow (cfs)
Measured WSE
Calibrated WSE

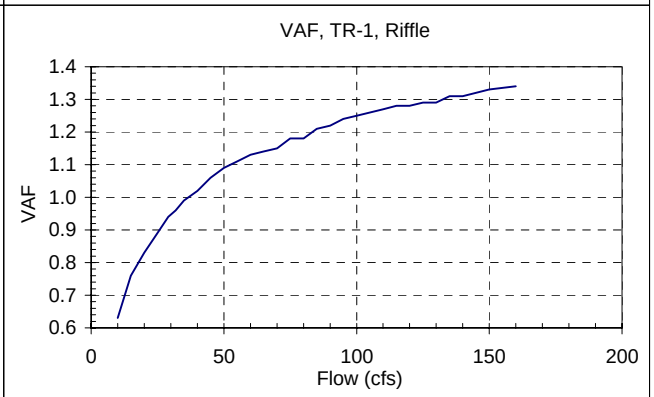
Stream: Upper Talarik Creek Tributary 1.19 **Reach:** Tributary 1.190
Site Name: 05UT190-RF4 **Habitat:** Riffle
Date: 8/17/2005 **Site #:** 4
Calibration Flow: Q(8/17/2005) **Transect:** 1

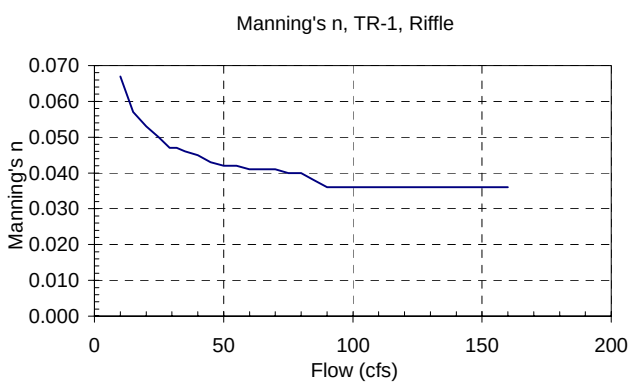
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
10	96.22	0.45	1.63	0.63	0.067	14.9
15	96.29	0.54	2.09	0.76	0.057	15.3
20	96.36	0.59	2.43	0.83	0.053	15.7
24.9	96.42	0.63	2.72	0.89	0.050	16.0
29.1	96.46	0.67	2.97	0.94	0.047	16.2
31.8	96.49	0.68	3.09	0.96	0.047	16.4
35	96.52	0.70	3.25	0.99	0.046	16.5
40	96.57	0.72	3.45	1.02	0.045	16.7
45	96.61	0.75	3.68	1.06	0.043	16.8
50	96.65	0.77	3.88	1.09	0.042	16.9
55	96.69	0.79	4.05	1.11	0.042	17.1
60	96.73	0.81	4.21	1.13	0.041	17.2
64.8	96.77	0.82	4.35	1.14	0.041	17.4
70	96.81	0.83	4.49	1.15	0.041	17.5
75	96.84	0.85	4.66	1.18	0.040	17.6
80	96.88	0.85	4.76	1.18	0.040	17.8
85	96.91	0.90	4.90	1.21	0.038	19.2
90	96.94	0.94	5.02	1.22	0.036	20.7
95	96.97	0.95	5.13	1.24	0.036	20.8
100	97.00	0.95	5.23	1.25	0.036	20.9
105	97.03	0.95	5.32	1.26	0.036	21.1
110	97.06	0.96	5.40	1.27	0.036	21.2
115	97.09	0.96	5.48	1.28	0.036	21.3
120	97.12	0.96	5.55	1.28	0.036	21.4
125	97.15	0.96	5.62	1.29	0.036	21.5
130	97.18	0.96	5.69	1.29	0.036	21.6
135	97.20	0.97	5.80	1.31	0.036	21.6
140	97.23	0.97	5.86	1.31	0.036	21.7
150	97.28	0.98	6.01	1.33	0.036	21.9
160	97.33	0.98	6.15	1.34	0.036	22.1

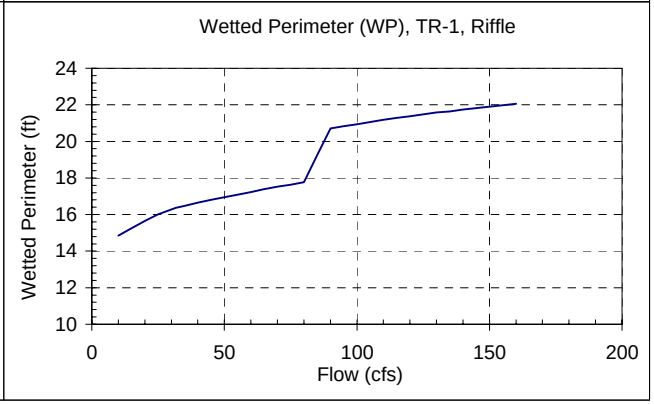




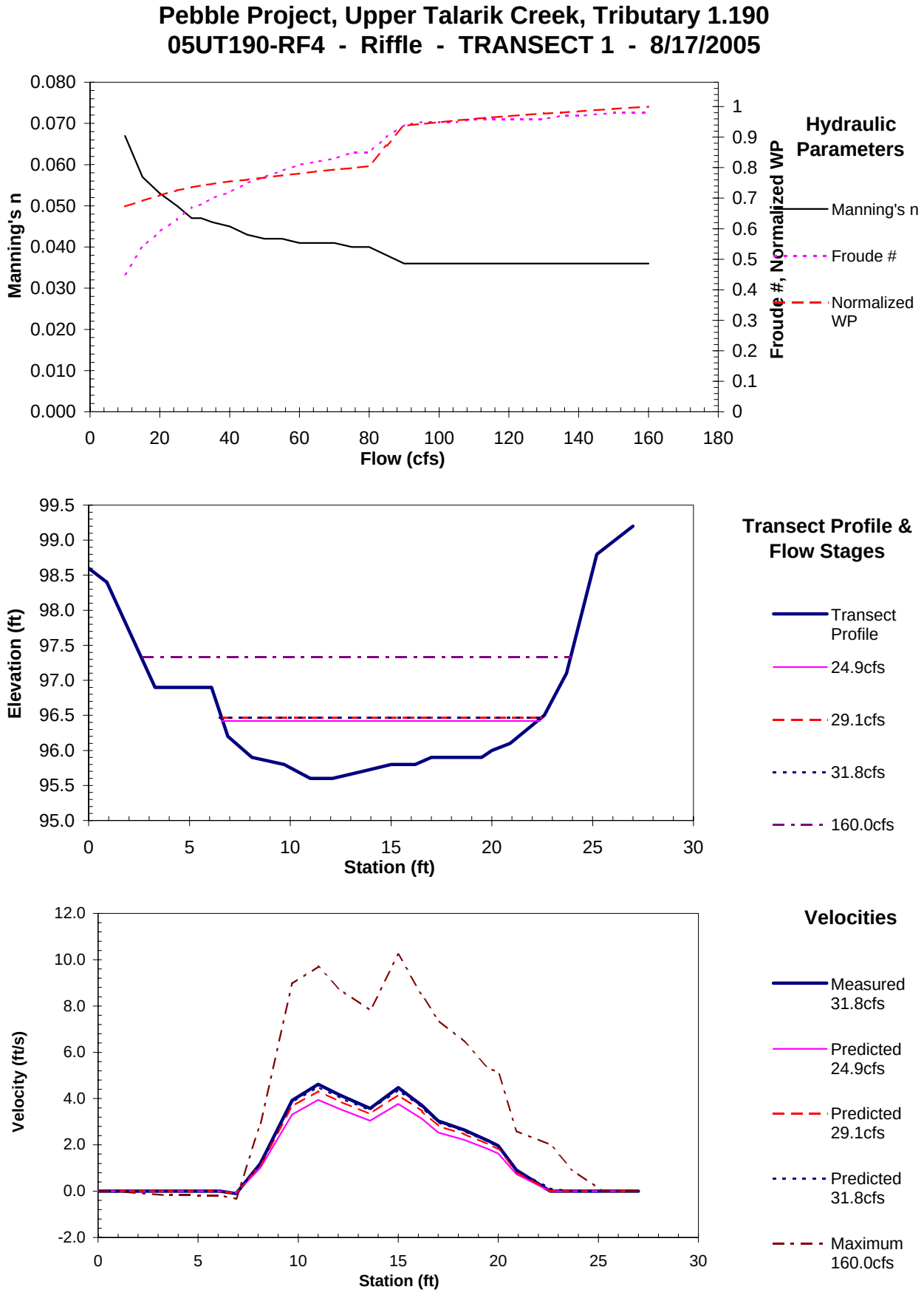








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05UT190-RF4  08/17/05
RIFFLE                      0805Q                                    TRANSECT 1
IOC       11011001000010001010000
QARD  10.0
QARD  15.0
QARD  20.0
QARD  24.9
QARD  29.1
QARD  31.8
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  60.0
QARD  64.8
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 135.0
QARD 140.0
QARD 150.0
QARD 160.0
XSEC  1000     1000. 1.0     95.92    .01751
      1000   .098.61   .998.40  3.396.94  6.196.88  6.996.16  8.195.87
      1000  9.795.76 11.095.56 12.195.56 13.695.66 15.095.76 16.295.76
      1000 17.095.87 18.395.87 19.595.87 20.095.97 20.996.06 22.696.47
      1000 23.797.06 25.298.80 27.099.19
NS    1000      22.9      22.9      22.9      22.9      23.6      43.6
NS    1000      52.6      52.6      54.6      45.6      45.7      45.7
NS    1000      46.8      43.6      43.6      43.6      42.6      22.9
NS    1000      22.9      22.9      22.9
WSL   1000     96.22     96.29     96.36     96.42     96.46     96.49
WSL   1000     96.52     96.57     96.61     96.65     96.69     96.73
WSL   1000     96.77     96.81     96.84     96.88     96.91     96.94
WSL   1000     96.97     97.00     97.03     97.06     97.09     97.12
WSL   1000     97.15     97.18     97.20     97.23     97.28     97.33
CAL1  1000     96.47      31.8
VEL1  1000                  -0.10 1.19 3.92 4.62 4.15 3.58 4.47 3.69
```

IFG4 Data Deck (continued)

```
VEL1  1000 3.03 2.65 2.18 1.96 0.91 0.00
CAL2  1000     96.77      64.8
VEL2  1000
VEL2  1000
CAL3  1000     96.47      29.1
VEL3  1000
VEL3  1000
CAL4  1000     96.42      24.9
VEL4  1000
VEL4  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek Tributary 1.190

Reach: UT-1.190 (UT-C)

Site/TR: 05UT190-RN1

Habitat Type: Run

River Kilometer: 1.35

Stream: **Upper Talarik Creek Tributary 1.190**
Reach: **Trib 190**
Site: **05UT190-RN1**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/22/2005	100.00	99.17	99.32
2nd	8/17/2005	100.00	99.18	99.32
3rd	9/9/2005	100.00	99.19	99.33
4th	7/8/2006	100.00	99.22	99.36
5th	4/14/2007	100.00	99.24	99.29

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevations changes between BM and HP or TP were within 0.02ft in 2005. Small elevation changes suggested the survey datum was stable during the period.
(c) TP and HP rose 0.04ft to 0.05ft, respectively, in 2006 from the initial elevation. Consistent pin elevation change suggested BM datum may have been lowered by the same amount. Therefore, the HI for 2006 elevation survey was reduced by 0.04ft to correct to the elevations referenced to the initial datum set up on 7/22/05.
(c) HP and TP moved again in the 2007 survey with inconsistent amount from their 2006 elevations. Not able to determine which pin(s) moved, and, therefore, the 2007 hydraulics data were not used for modeling.

calibration notes

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/22/2005	97.01
8/17/2005	97.06
9/9/2005	97.31
7/8/2006	96.98
4/14/2007	96.83

WSE of 2006 has reflected the 0.04 correction.

Control pins were disturbed in the 2007 survey. WSEs were not included in modeling.

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/22/2005	
8/17/2005	27.3
9/9/2005	56.1
7/8/2006	24.8
4/14/2007	23.7

No discharge was measured on 7/22/05

calibration notes

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/22/2005	1.474%	56.3
8/17/2005	1.280%	45.3
9/9/2005	1.411%	49.6
7/8/2006	1.159%	49.2
4/14/2007	1.563%	56.3

The slope S=1.280% of 8/17/2005 survey was used for hydraulic modeling.

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/22/2005	95.84
8/17/2005	95.86
9/9/2005	95.91
7/8/2006	95.78
4/14/2007	95.83
max Invert	95.91
SZF	95.91

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Invert of 7/22/05 survey was not used to determine SZF because flow was not measured
(4) Invert of 4/14/07 survey was not used to determine SZF because pins were disturbed

calibration notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/22/2005		97.01			
2nd	8/17/2005	27.3	97.06	97.03	-0.03	IFG4
3rd	9/9/2005	56.1	97.31	97.31	0.00	IFG4
4th	7/8/2006	24.8	96.98	97.00	0.02	IFG4
5th	4/14/2007	23.7	96.83			

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.03ft is within acceptable range
(c) No flow was measured during the 7/22/05 site visit.
(d) Photos of 4/14/07 site visit showed only residual snow on the ground,
but the surveyed data were used for modeling because pins were disturbed.

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 24.8cfs, 27.3cfs, and 56.1cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
7/22/2005		
8/17/2005	27.3	Y
9/9/2005	56.1	Y
7/8/2006	24.8	Y
4/14/2007	23.7	

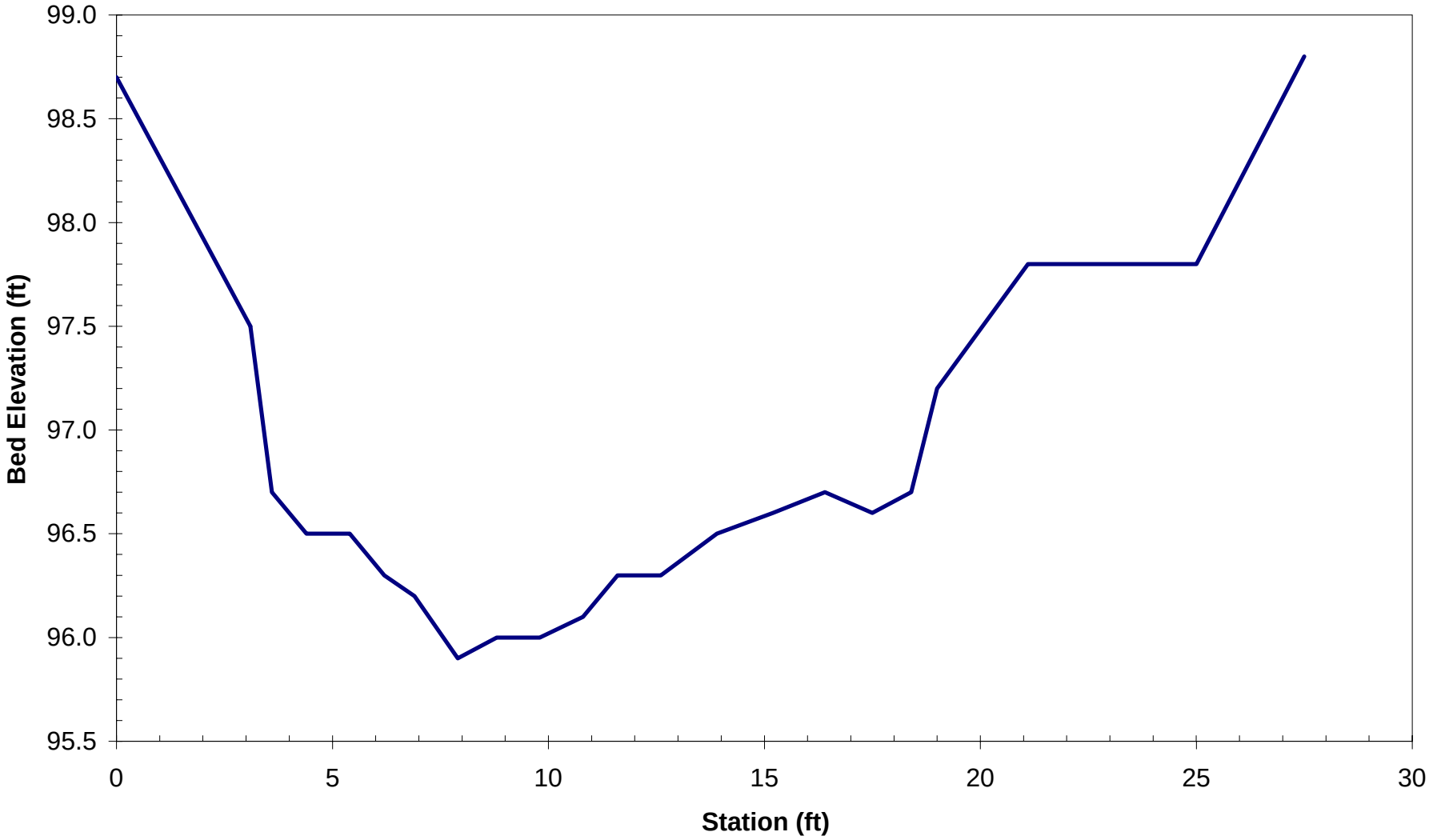
calibration notes

(4) Hydraulic Calibration Results:

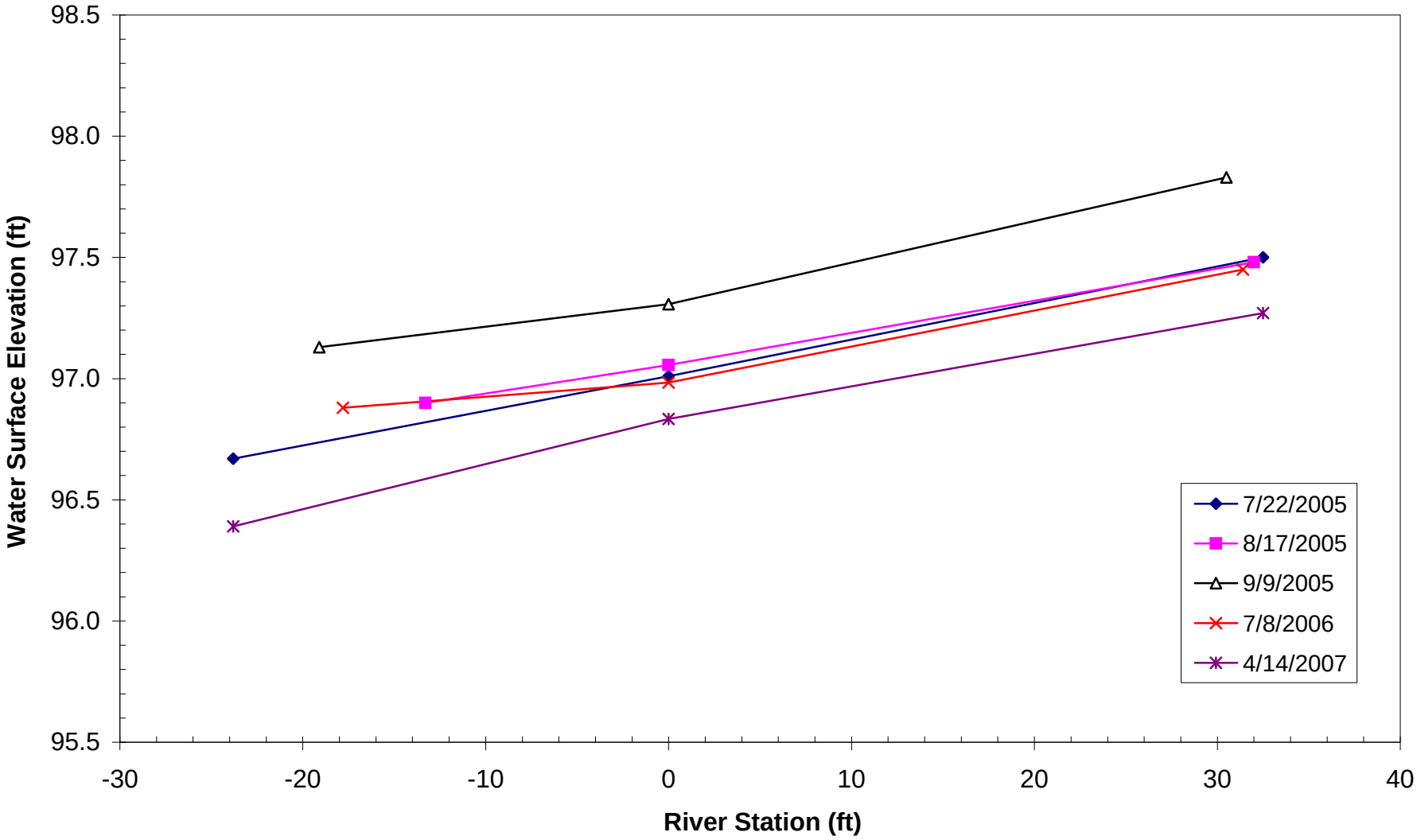
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.
Froude numbers at higher flows were near-critical. This was expected due to the steep WSE slope of nearly 1.3% in this section of the stream.

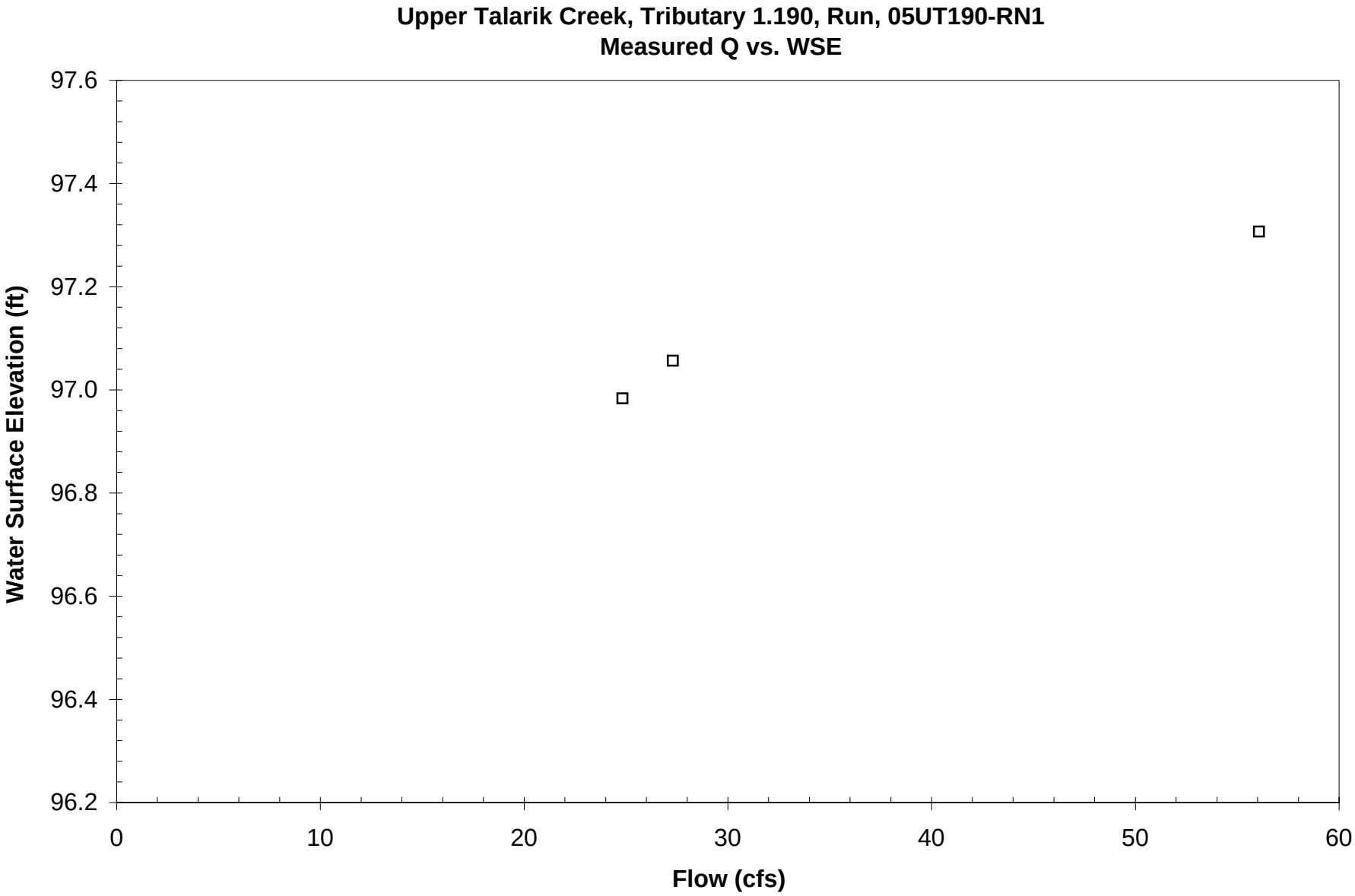
calibration notes

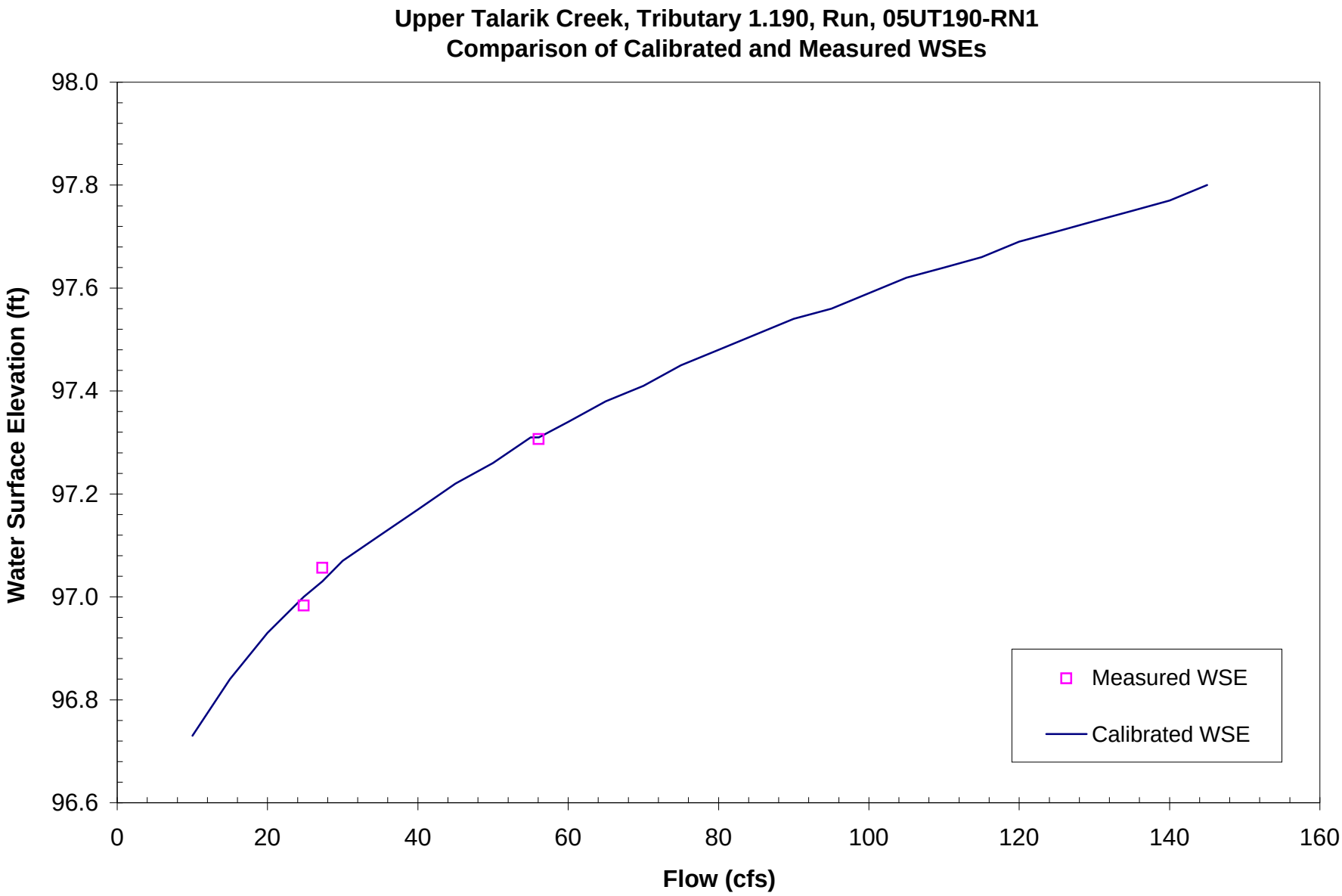
Upper Talarik Creek, Tributary 1.190, Run, 05UT190-RN1
Measured Transect Profile



Upper Talarik Creek, Tributary 1.190, Run, 05UT190-RN1
Longitudinal Water Surface Elevation Profiles

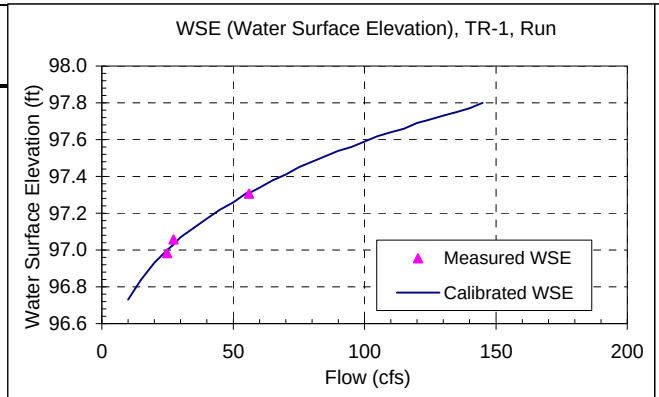


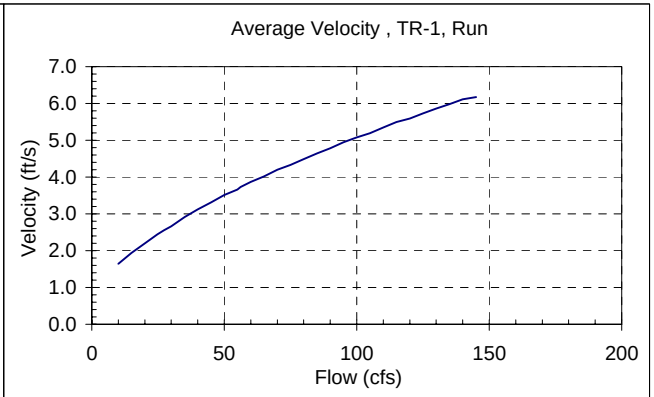

Upper Talarik Creek, Tributary 1.190, Run, 05UT190-RN1
Measured Q vs. WSE
Water Surface Elevation (ft)
97.6
97.4
97.2
97.0
96.8
96.6
96.4
96.2
0
10
20
30
40
50
60
Flow (cfs)

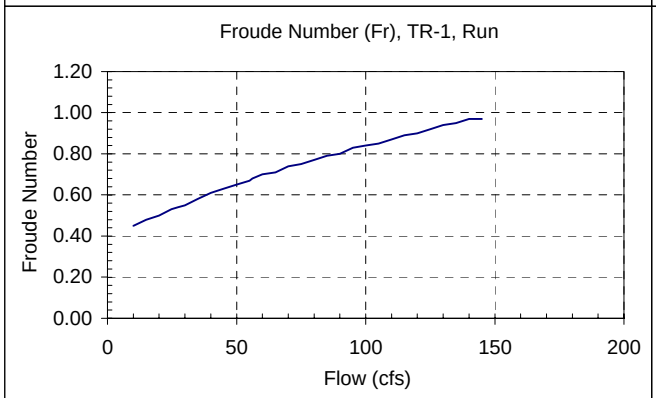

Upper Talarik Creek, Tributary 1.190, Run, 05UT190-RN1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
98.0
97.8
97.6
97.4
97.2
97.0
96.8
96.6
0
20
40
60
80
100
120
140
160
Flow (cfs)
Measured WSE
Calibrated WSE

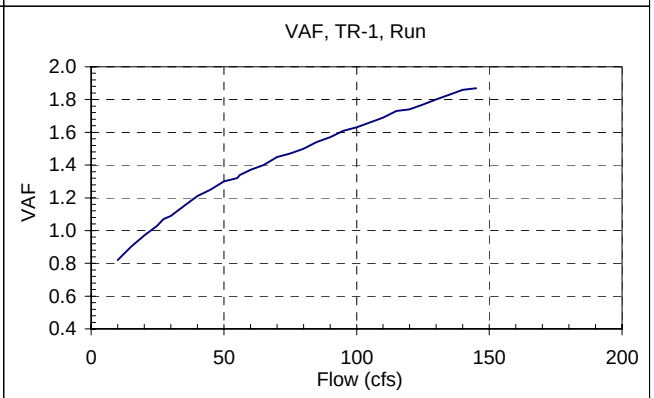
Stream: Upper Talarik Creek Tributary 1.19 **Reach:** Tributary 1.190
Site Name: 05UT190-RN1 **Habitat:** Run
Date: 8/17/2005 **Site #:** 1
Calibration Flow: Q(8/17/2005) **Transect:** 1

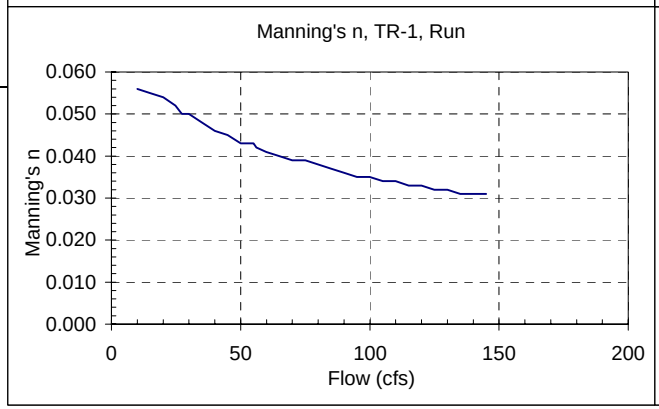
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
10	96.73	0.45	1.64	0.82	0.056	15.2
15	96.84	0.48	1.94	0.90	0.055	15.4
20	96.93	0.50	2.20	0.97	0.054	15.7
24.8	97.00	0.53	2.44	1.03	0.052	15.9
27.3	97.03	0.54	2.56	1.07	0.050	15.9
30	97.07	0.55	2.66	1.09	0.050	16.0
35	97.12	0.58	2.91	1.15	0.048	16.2
40	97.17	0.61	3.12	1.21	0.046	16.3
45	97.22	0.63	3.31	1.25	0.045	16.4
50	97.26	0.65	3.51	1.30	0.043	16.6
55	97.31	0.67	3.66	1.32	0.043	16.8
56.1	97.31	0.68	3.73	1.34	0.042	16.8
60	97.34	0.70	3.87	1.37	0.041	17.0
65	97.38	0.71	4.02	1.40	0.040	17.2
70	97.41	0.74	4.20	1.45	0.039	17.3
75	97.45	0.75	4.33	1.47	0.039	17.5
80	97.48	0.77	4.49	1.50	0.038	17.6
85	97.51	0.79	4.64	1.54	0.037	17.8
90	97.54	0.80	4.78	1.57	0.036	18.0
95	97.56	0.83	4.95	1.61	0.035	18.2
100	97.59	0.84	5.08	1.63	0.035	18.3
105	97.62	0.85	5.19	1.66	0.034	18.5
110	97.64	0.87	5.35	1.69	0.034	18.7
115	97.66	0.89	5.50	1.73	0.033	18.8
120	97.69	0.90	5.59	1.74	0.033	19.0
125	97.71	0.92	5.73	1.77	0.032	19.1
130	97.73	0.94	5.86	1.80	0.032	19.3
135	97.75	0.95	5.98	1.83	0.031	19.4
140	97.77	0.97	6.11	1.86	0.031	19.5
145	97.80	0.97	6.17	1.87	0.031	19.7

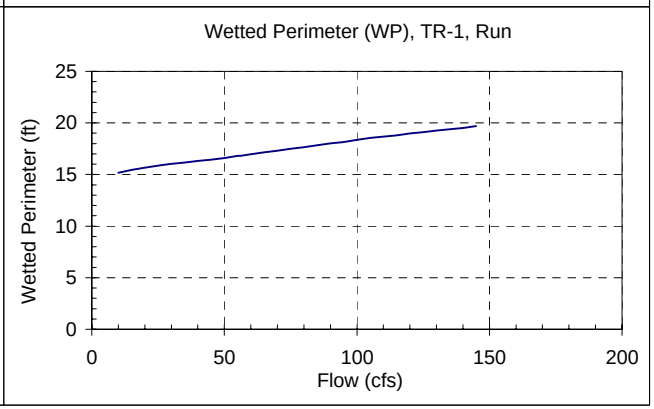




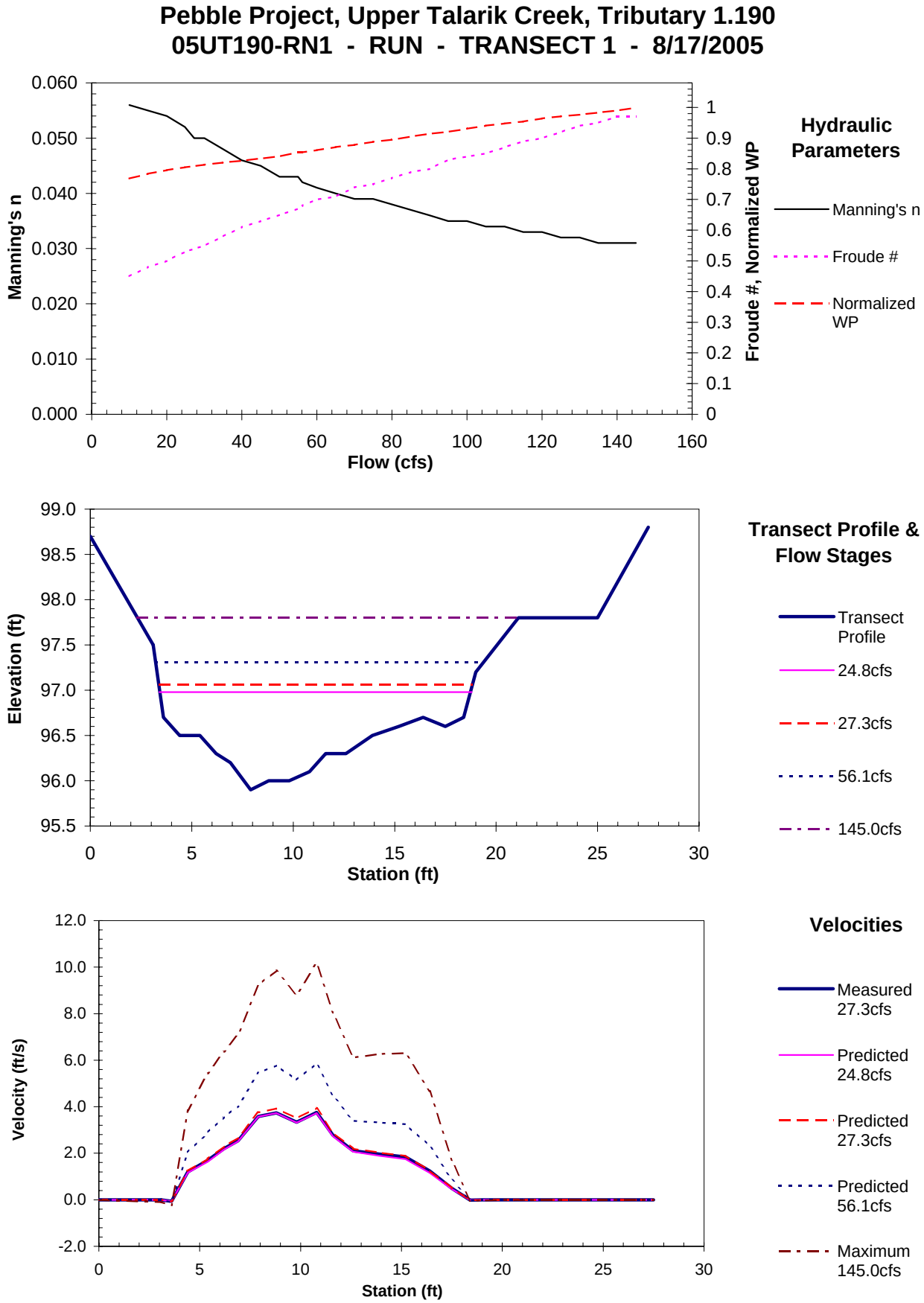








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
     Pebble     05UT190-RN1  08/17/05
RUN                         0805Q                                      TRANSECT 1
IOC       1101100100001000101000
QARD  10.0
QARD  15.0
QARD  20.0
QARD  24.8
QARD  27.3
QARD  30.0
QARD  35.0
QARD  40.0
QARD  45.0
QARD  50.0
QARD  55.0
QARD  56.1
QARD  60.0
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
QARD 105.0
QARD 110.0
QARD 115.0
QARD 120.0
QARD 125.0
QARD 130.0
QARD 135.0
QARD 140.0
QARD 145.0
XSEC  1000     1000. 1.0     95.91    .01280
      1000   .098.66  3.197.48  3.696.66  4.496.46  5.496.46  6.296.26
      1000  6.996.16  7.995.86  8.895.96  9.895.96 10.896.06 11.696.26
      1000 12.696.26 13.996.46 15.296.56 16.496.66 17.596.56 18.496.66
      1000 19.097.24 21.197.84 25.097.82 27.598.79
NS    1000      22.9      22.9      23.6      34.7      34.6      34.6
NS    1000      46.6      46.6      46.6      45.7      45.7      45.6
NS    1000      45.6      43.6      43.6      32.6      23.8      22.9
NS    1000      22.9      22.9      22.9      22.9
WSL   1000     96.73     96.84     96.93     97.00     97.03     97.07
WSL   1000     97.12     97.17     97.22     97.26     97.31     97.31
WSL   1000     97.34     97.38     97.41     97.45     97.48     97.51
WSL   1000     97.54     97.56     97.59     97.62     97.64     97.66
WSL   1000     97.69     97.71     97.73     97.75     97.77     97.80
CAL1  1000     97.06      27.3
VEL1  1000          -0.06 1.20 1.70 2.20 2.54 3.58 3.74 3.34 3.76 2.78
```

IFG4 Data Deck (continued)

```
VEL1  1000 2.11 1.96 1.84 1.24 0.49-0.01
CAL2  1000     97.31      56.1
VEL2  1000
VEL2  1000
CAL3  1000     96.98      24.8
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Upper Talarik Creek Tributary 1.190

Reach: UT-1.190 (UT-C)

Site/TR: 05UT190-RF5

Habitat Type: Riffle

River Kilometer: 2.48

Stream: Upper Talarik Creek Tributary 1.190
Reach: Trib 190
Site: 05UT190-RF5
Habitat Type: Riffle

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	7/22/2005	100.00	99.74	101.15
2nd	8/17/2005	100.00	99.74	101.16
3rd	9/9/2005	100.00	99.75	101.16
4th	7/9/2006	100.00	99.74	101.16
5th	4/14/2007	100.00	99.75	101.20

(a) Elevations of control pins (BM, HP, TP) are from the first half of each level loop survey.
(b) Relative pin elevations changes between BM and HP were within 0.01ft from 2005 to 2007. Small elevation changes suggested survey datum was stable during the 2-year period.
(c) HP rose 0.05ft in 2007 from the initial BM setup. No corrections for the WSEs were needed because the survey datum was stable through 2007.

Measured WSE:

There were three WSEs (Right, Mid, and Left) measured across the transect for each flow, and the average of the three was used as transect representative WSE for modeling.

Date	WSE (ft)
7/22/2005	98.59
8/17/2005	98.55
9/9/2005	98.85
7/9/2006	98.63
4/14/2007	98.60

calibration notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
7/22/2005	
8/17/2005	23.8
9/9/2005	40.4
7/9/2006	19.6
4/14/2007	18.2

No discharge was measured on 7/22/05.

Longitudinal WSE Slope:

Slopes were calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
7/22/2005	1.732%	45.6
8/17/2005	1.917%	48
9/9/2005	1.508%	35.8
7/9/2006	1.573%	33.7
4/14/2007	1.273%	55

The slope S=1.508% of 9/9/2005 survey was used for hydraulic modeling.

calibration notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
7/22/2005	97.74
8/17/2005	97.65
9/9/2005	97.65
7/9/2006	97.73
4/14/2007	97.80
max Invert	97.80
SZF	98.20

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) Invert of 7/22/05 survey was not used to determine SZF because no flow was measured.

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR1	Calibrated WSE(ft) TR1	WSE calibration error (ft) TR1	Calib. Method
1st	7/22/2005		98.59			
2nd	8/17/2005	23.8	98.55			
3rd	9/9/2005	40.4	98.85	98.85	0.00	IFG4
4th	7/9/2006	19.6	98.63	98.62	-0.01	IFG4
5th	4/14/2007	18.2	98.60	98.61	0.01	IFG4

Note: (a) WSE calibration error = Calibrated WSE - Measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range
(c) No flow was measured during the 7/22/05 site visit.
(d) Photos of 4/14/07 site visit showed only residual snow on the ground with no contact with water.
(e) Data collected on 8/27/05 was not included in modeling due to significant bathymetry change:
Bed profile comparison showed the last three measured transect profiles (9/9/05 and 2006 and 2007) were consistent while they each were about 0.2ft higher than the first two profiles collected ealier on 7/22/05 and 8/17/05. The bed profile change suggested the stream hydraulics have been significantly altered from 8/05 to 9/05. Hydraulics of 8/05 were not used in modeling.

calibration notes

(3) Velocity calibration

This site has one transect with three complete velocity/discharge measurements, including 18.2cfs, 19.6cfs, and 40.4cfs. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the three calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

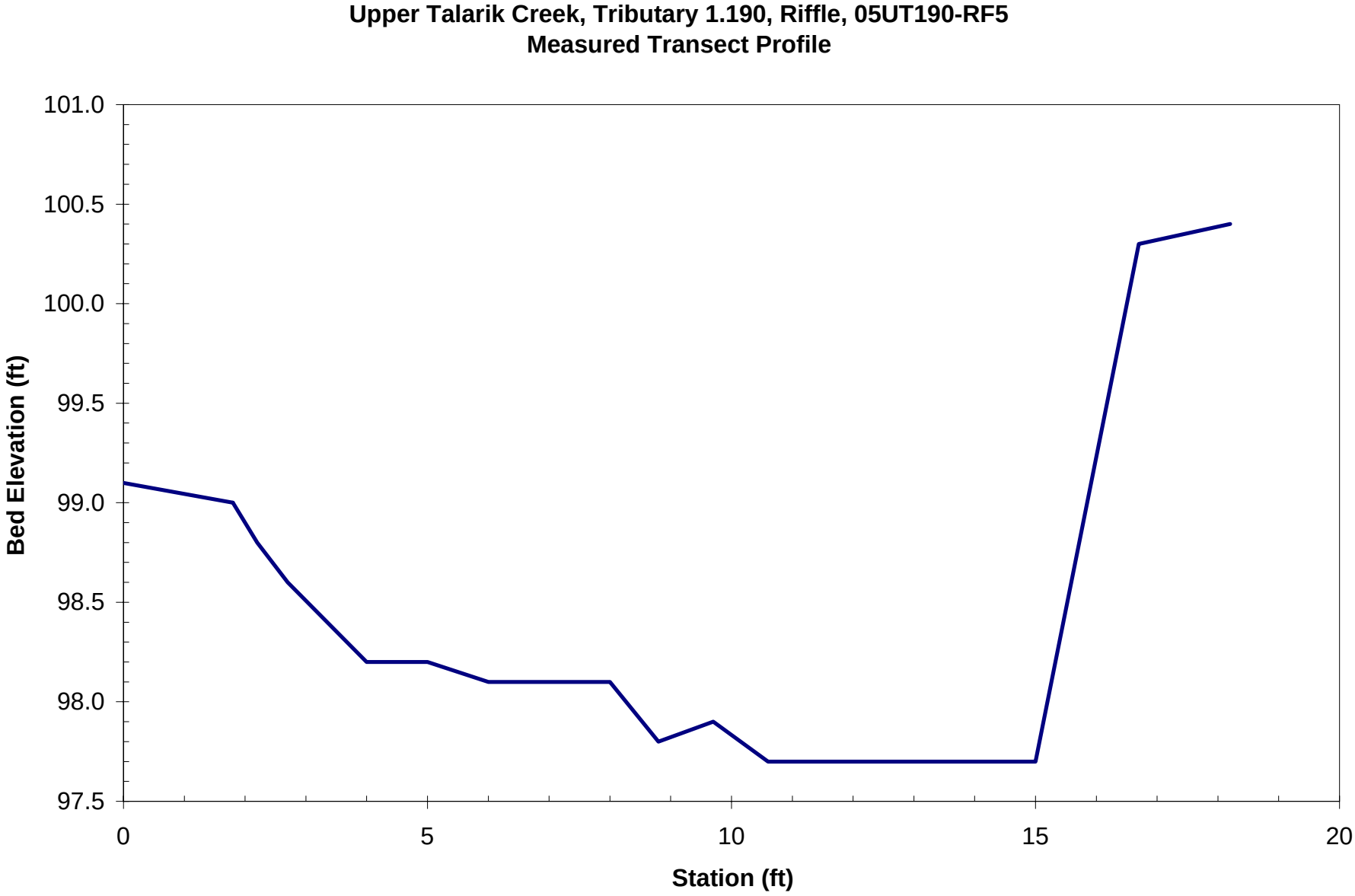
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
7/22/2005		
8/17/2005	23.8	
9/9/2005	40.4	Y
7/9/2006	19.6	Y
4/14/2007	18.2	Y

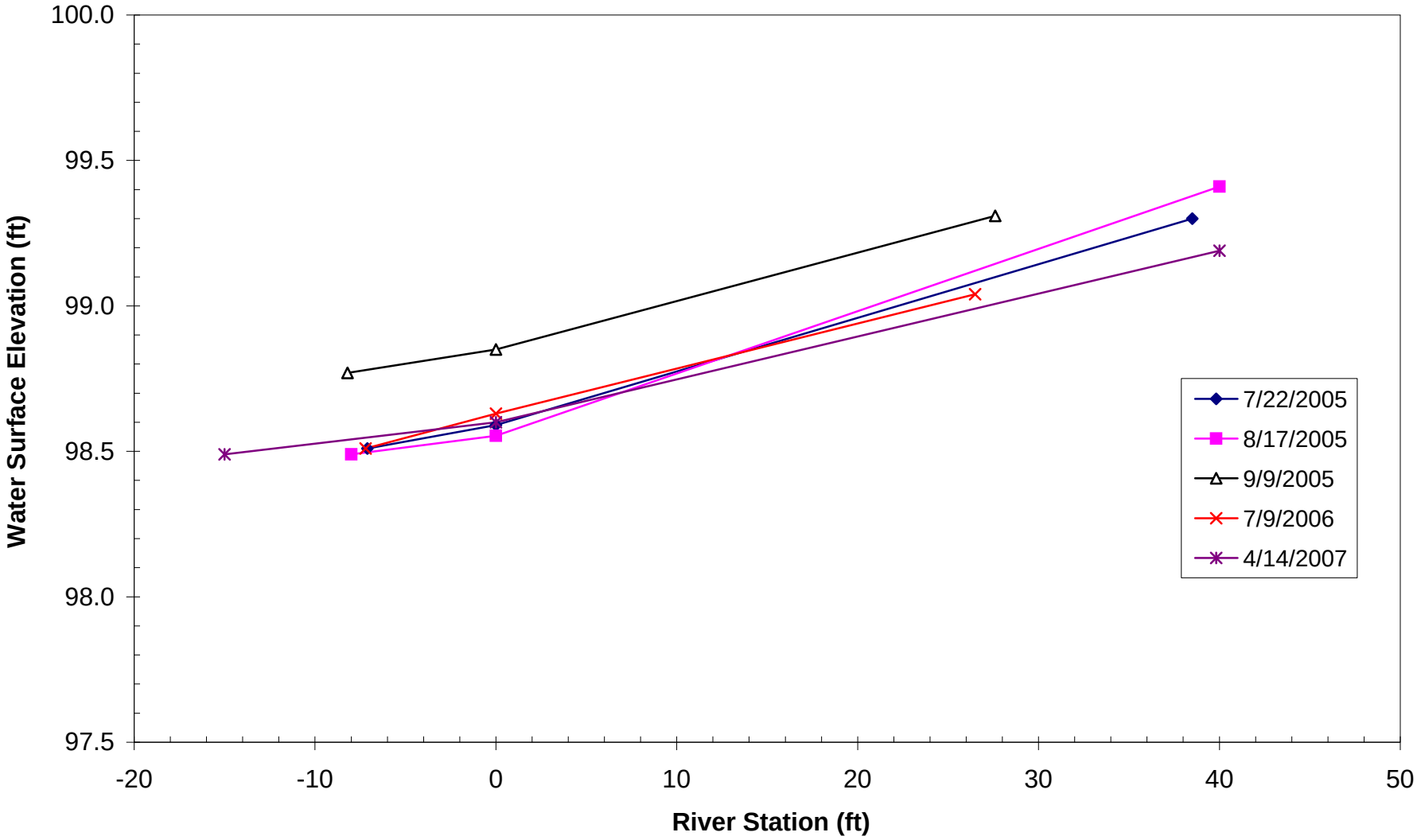
(4) Hydraulic Calibration Results:

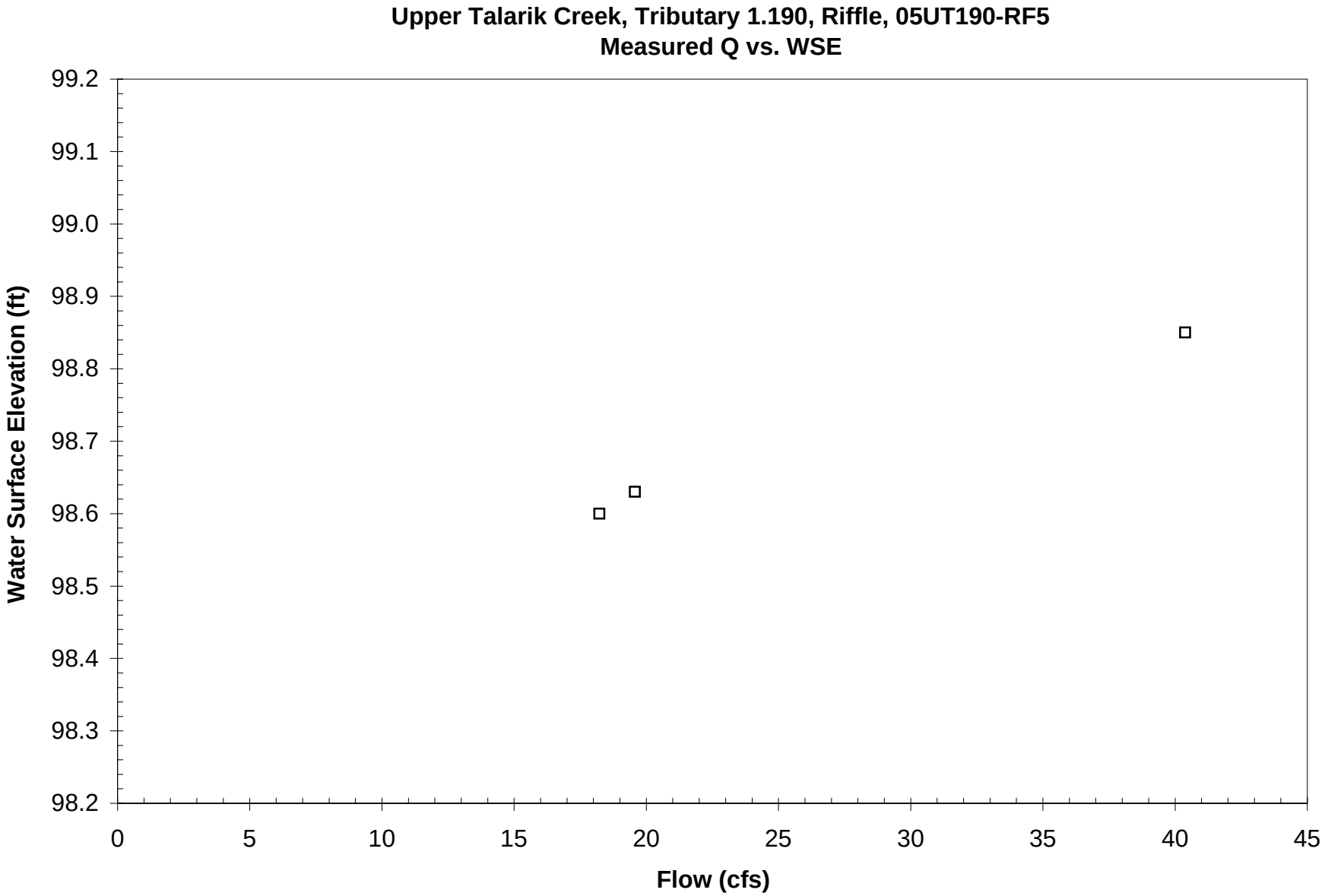
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulic parameters (Fr, V_ave, WSE, Manning's n, Wetted perimeter) were all within reasonable ranges and appeared to vary with normal trends.
Froude numbers at higher flows were near-critical. This was expected due to the steep WSE slope of 1.5% in this section of the stream.

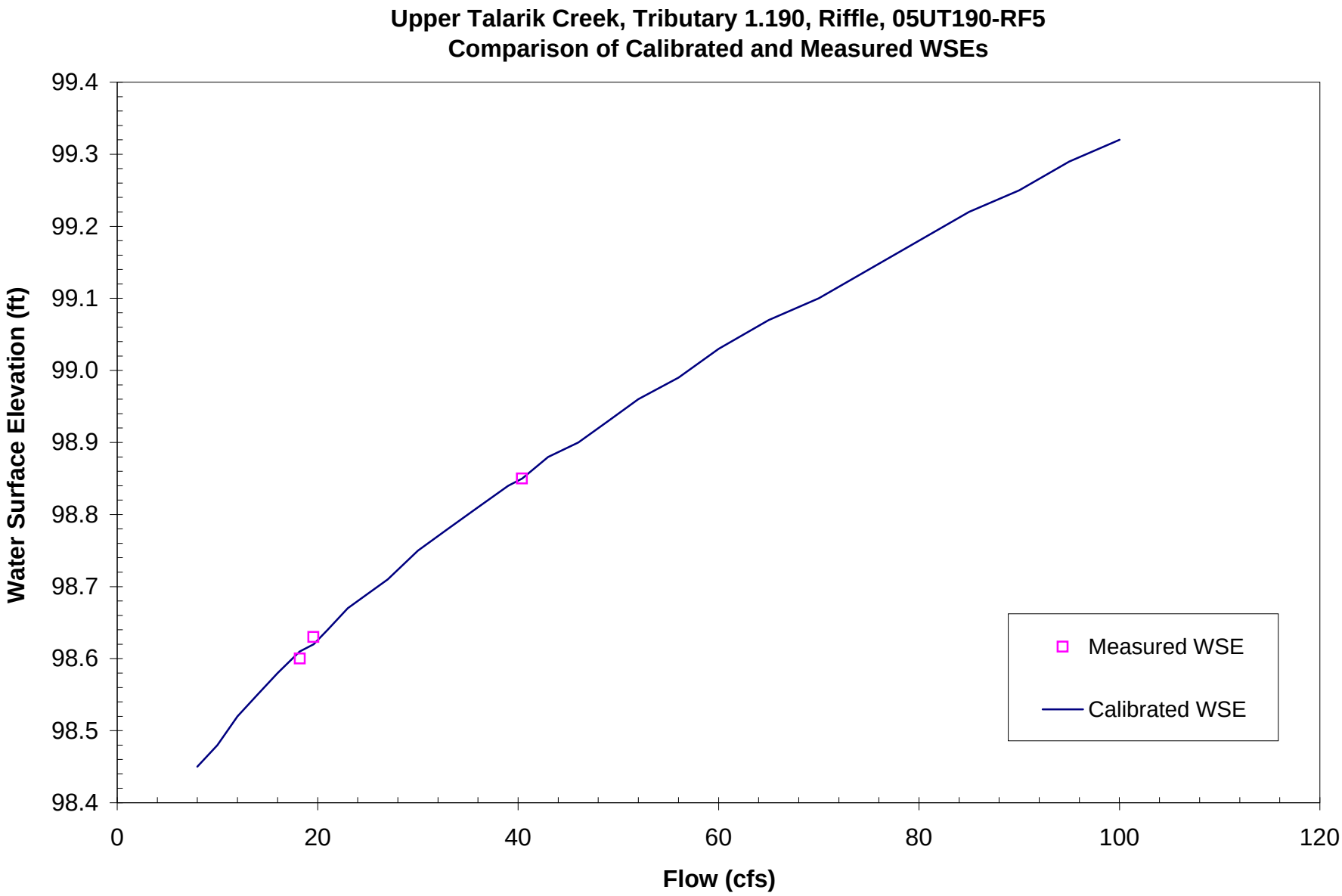
calibration notes


Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF5
Measured Transect Profile
Bed Elevation (ft)
101.0
100.5
100.0
99.5
99.0
98.5
98.0
97.5
0
5
10
15
20
Station (ft)

Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF5
Longitudinal Water Surface Elevation Profiles

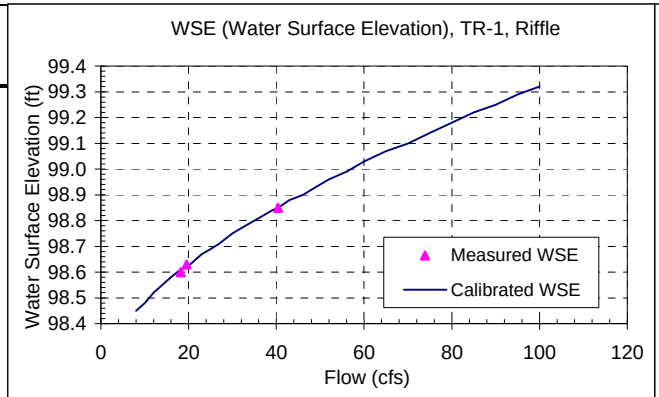


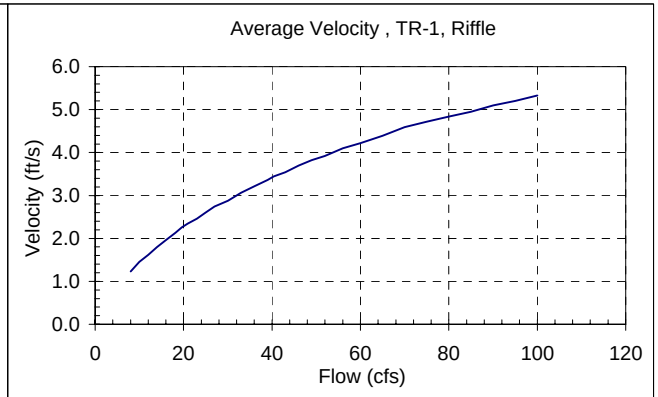

Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF5
Measured Q vs. WSE
Water Surface Elevation (ft)
99.2
99.1
99.0
98.9
98.8
98.7
98.6
98.5
98.4
98.3
98.2
0
5
10
15
20
25
30
35
40
45
Flow (cfs)

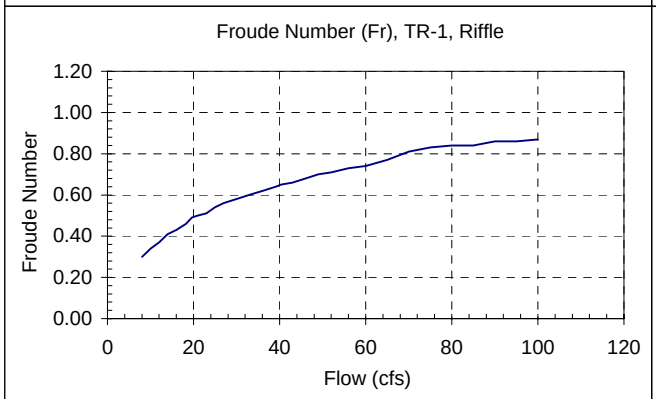

Upper Talarik Creek, Tributary 1.190, Riffle, 05UT190-RF5
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
99.4
99.3
99.2
99.1
99.0
98.9
98.8
98.7
98.6
98.5
98.4
0
20
40
60
80
100
120
Flow (cfs)
Measured WSE
Calibrated WSE

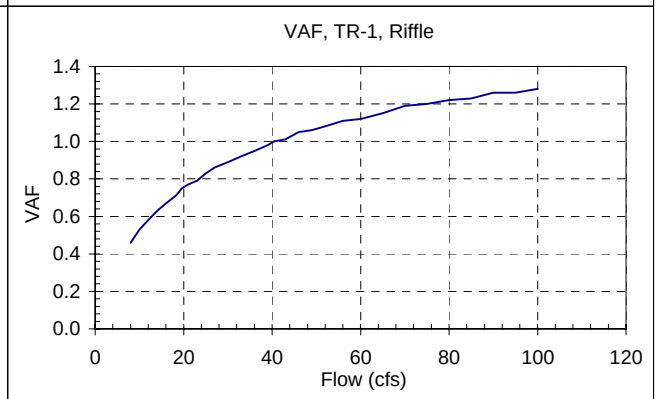
Stream: Upper Talarik Creek Tributary 1.19 **Reach:** Tributary 1.190
Site Name: 05UT190-RF5 **Habitat:** Riffle
Date: 9/9/2005 **Site #:** 5
Calibration Flow: Q(9/9/2005) **Transect:** 1

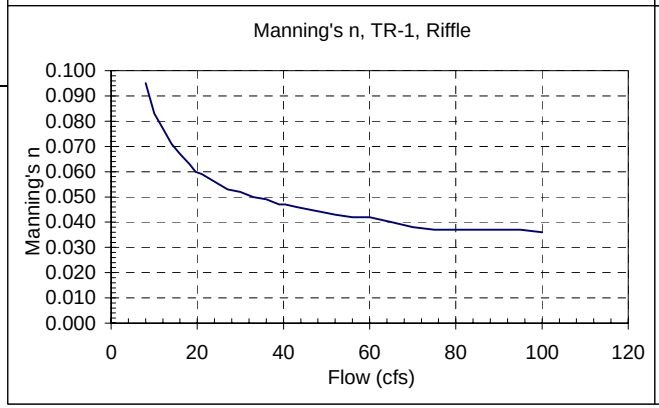
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
8	98.45	0.30	1.23	0.46	0.095	12.8
10	98.48	0.34	1.45	0.53	0.083	13.0
12	98.52	0.37	1.62	0.58	0.077	13.2
14	98.55	0.41	1.80	0.63	0.071	13.4
16	98.58	0.43	1.96	0.67	0.067	13.5
18.2	98.61	0.46	2.13	0.71	0.063	13.6
19.6	98.62	0.49	2.26	0.75	0.060	13.6
21	98.64	0.50	2.35	0.77	0.059	13.7
23	98.67	0.51	2.46	0.79	0.057	13.8
25	98.69	0.54	2.60	0.83	0.055	13.8
27	98.71	0.56	2.74	0.86	0.053	13.9
30	98.75	0.58	2.88	0.89	0.052	14.0
33	98.78	0.60	3.06	0.92	0.050	14.1
36	98.81	0.62	3.21	0.95	0.049	14.2
39	98.84	0.64	3.36	0.98	0.047	14.3
40.4	98.85	0.65	3.44	1.00	0.047	14.3
43	98.88	0.66	3.54	1.01	0.046	14.4
46	98.90	0.68	3.70	1.05	0.045	14.5
49	98.93	0.70	3.82	1.06	0.044	14.6
52	98.96	0.71	3.92	1.08	0.043	14.7
56	98.99	0.73	4.10	1.11	0.042	14.8
60	99.03	0.74	4.22	1.12	0.042	14.9
65	99.07	0.77	4.39	1.15	0.040	15.7
70	99.10	0.81	4.59	1.19	0.038	16.4
75	99.14	0.83	4.72	1.20	0.037	16.9
80	99.18	0.84	4.84	1.22	0.037	17.0
85	99.22	0.84	4.95	1.23	0.037	17.0
90	99.25	0.86	5.10	1.26	0.037	17.0
95	99.29	0.86	5.20	1.26	0.037	17.1
100	99.32	0.87	5.33	1.28	0.036	17.1

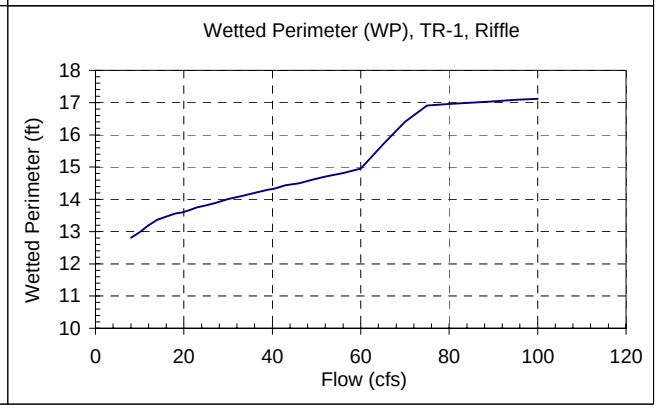




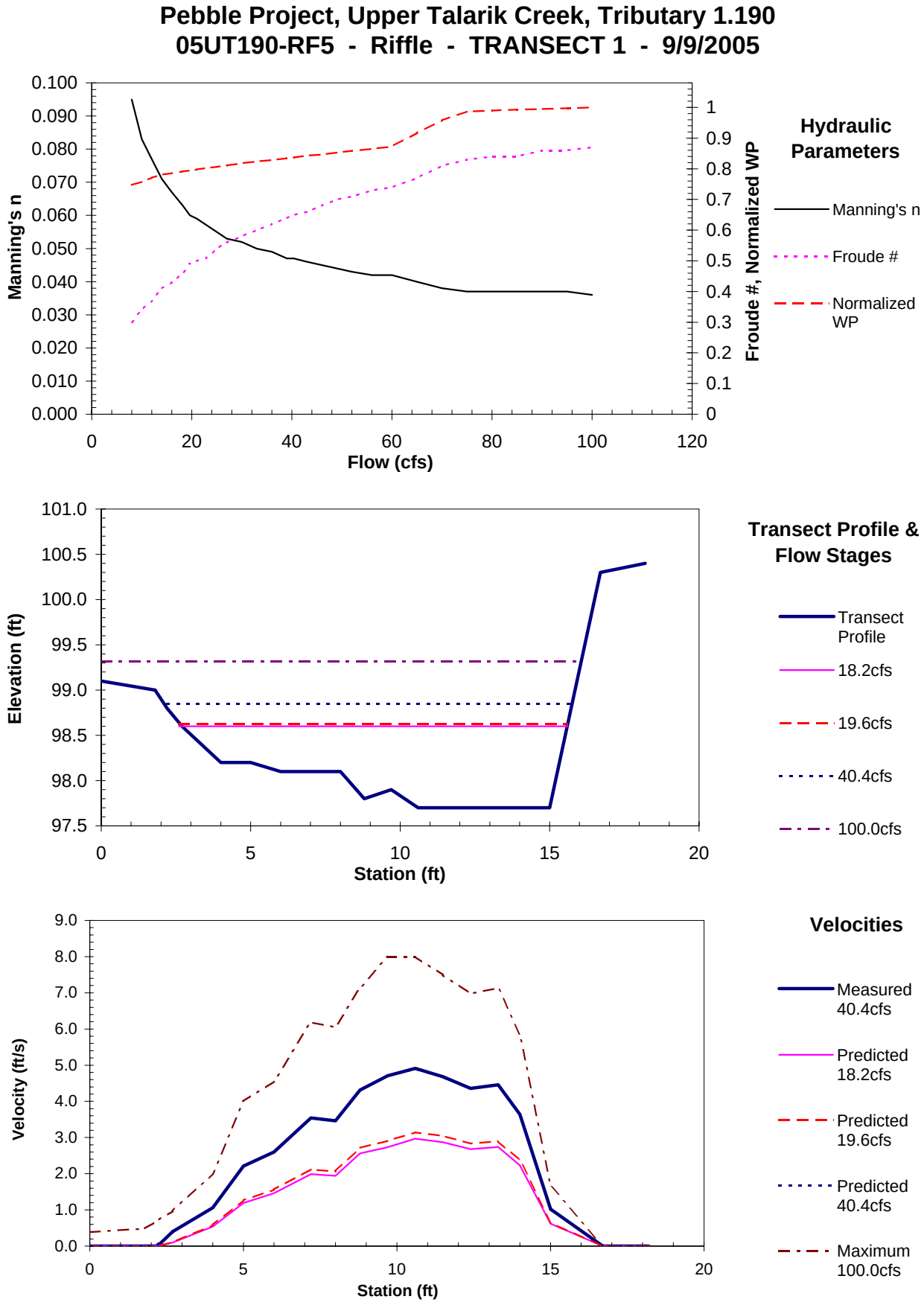








cTR1 - Transect hydraulic parameters



Transect hydraulic summary plots

IFG4 Data Deck

```
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QARD  10.0
QARD  12.0
QARD  14.0
QARD  16.0
QARD  18.2
QARD  19.6
QARD  21.0
QARD  23.0
QARD  25.0
QARD  27.0
QARD  30.0
QARD  33.0
QARD  36.0
QARD  39.0
QARD  40.4
QARD  43.0
QARD  46.0
QARD  49.0
QARD  52.0
QARD  56.0
QARD  60.0
QARD  65.0
QARD  70.0
QARD  75.0
QARD  80.0
QARD  85.0
QARD  90.0
QARD  95.0
QARD 100.0
XSEC  1000     1000. 1.0     98.20    .01508
      1000   .099.12  1.899.04  2.298.84  2.798.55  4.098.25  5.098.15
      1000  6.098.05  7.298.05  8.098.05  8.897.84  9.797.94 10.697.75
      1000 11.597.65 12.497.65 13.397.65 14.097.65 15.097.75 16.7100.3
      1000 18.2100.4
NS    1000      22.9      22.9      22.9      25.7      23.7      32.7
NS    1000      43.8      45.7      45.7      45.8      45.8      45.8
NS    1000      45.8      45.7      45.7      45.8      45.8      22.9
NS    1000      22.9
WSL   1000     98.45     98.48     98.52     98.55     98.58     98.61
WSL   1000     98.62     98.64     98.67     98.69     98.71     98.75
WSL   1000     98.78     98.81     98.84     98.85     98.88     98.90
WSL   1000     98.93     98.96     98.99     99.03     99.07     99.10
WSL   1000     99.14     99.18     99.22     99.25     99.29     99.32
CAL1  1000     98.85      40.4
VEL1  1000           0.00 0.40 1.06 2.21 2.60 3.54 3.46 4.31 4.71 4.91
```

IFG4 Data Deck (continued)

```
VEL1  1000 4.68 4.36 4.46 3.64 1.02
CAL2  1000     98.63      19.6
VEL2  1000
VEL2  1000
CAL3  1000     98.60      18.2
VEL3  1000
VEL3  1000
ENDJ
```

PHABSIM Hydraulic Model Calibration Details

Stream: Koktuli River

PHABSIM Hydraulic Model Calibration Details

Stream: Koktuli River

Reach: Koktuli River

Koktuli River Water Surface Elevation Calibration Summary

Site/TR	RK*	Measured Flow (cfs)				Measured WSE(ft)				WSE Calibration Error (ft)				Calib. Method
		Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	Q_1	Q_2	Q_3	Q_4	
04-MSK-RF2	24.85	541.59	354.32	482.52		95.85	95.45	95.72		-0.01	0.00	0.01		IFG4
04-MSK-IC2	25.37	557.58	342.63	499.45		95.23	94.82	95.03		-0.04	-0.03	0.07		IFG4
04-MSK-RF1	31.98	494.33	339.70			96.52	95.85			-0.01	0.00			MANSQ
04-MSK-RN3	43.96	282.68	429.76			94.22	94.45			0.00	0.01			MANSQ

* RK is an abbreviation for River Kilometer

Stream: Koktuli River

Reach: Koktuli River

Site/TR: 04-MSK-RF2

Habitat Type: Riffle

River Kilometer: 24.85

Stream: **Koktuli River**
Site: **04-MSK-RF2**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1	6/28/2005	100.00	99.66	98.71
2	7/18/2005	100.00	99.67	98.72
3	8/12/2005	100.00	99.65	98.71
4	7/25/2006	100.00	99.73	98.77
5	8/10/2006	100.00	99.71	98.77

(a) Elevation of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ± 0.01ft in 2005 and in 2006.
(c) Both HP and TP changed (increased) 0.06ft when compared to BM, which may be the results of BM being moved lower 0.06ft in 2006. Therefore, the WSE surveyed in 2006 was artificially raised by 0.06ft to compensate for the BM elevation change.
(d) HP and TP were stable for their consistent difference in elevation over time

Measured WSE:

There are three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/28/2005	95.85
7/18/2005	95.83
8/12/2005	95.45
7/25/2006	95.72
8/10/2006	95.67

The 2006 WSEs shown above have reflected the 0.06ft elevation adjustmentfor BM disturbance.

Calibration Notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/28/2005	541.6
7/18/2005	
8/12/2005	354.3
7/25/2006	482.5
8/10/2006	

(a) No discharge was measured during the 7/18/05 site visit
(b) No discharge was measured during the 8/10/06 site visit

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/28/2005	0.084%	119.1
7/18/2005	0.196%	352
8/12/2005	0.065%	323.2
7/25/2006	0.039%	170
8/10/2006	0.030%	164.20

The slope S=0.084% of 6/28/05 survey was used for hydraulic modeling.

Calibration Notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/28/2005	93.45
7/18/2005	
8/12/2005	93.35
7/25/2006	93.62
8/10/2006	
Invert	93.62
SZF	93.62

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profiles were surveyed on 7/18/05 and 8/10/06

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft)	Calibrated WSE(ft)	WSE calibration error (ft)	Calib. Method
			TR	TR	TR	
1	6/28/2005	541.6	95.85	95.84	-0.01	IFG4
2	7/18/2005		95.83			
3	8/12/2005	354.3	95.45	95.45	0.00	IFG4
4	7/25/2006	482.5	95.72	95.73	0.01	IFG4
5	8/10/2006		95.67			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) 7/18/05 and 8/10/06 data sets are not included in modeling because of no flows measured

Calibration Notes

(3) Velocity calibration

This site has one transect with three velocity/discharge measurements, ranging from 354.3cfs to 541.6cfs.
Each of the three measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocity was greatly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge.
The adjusted Manning's n are summarized in the NS lines of the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

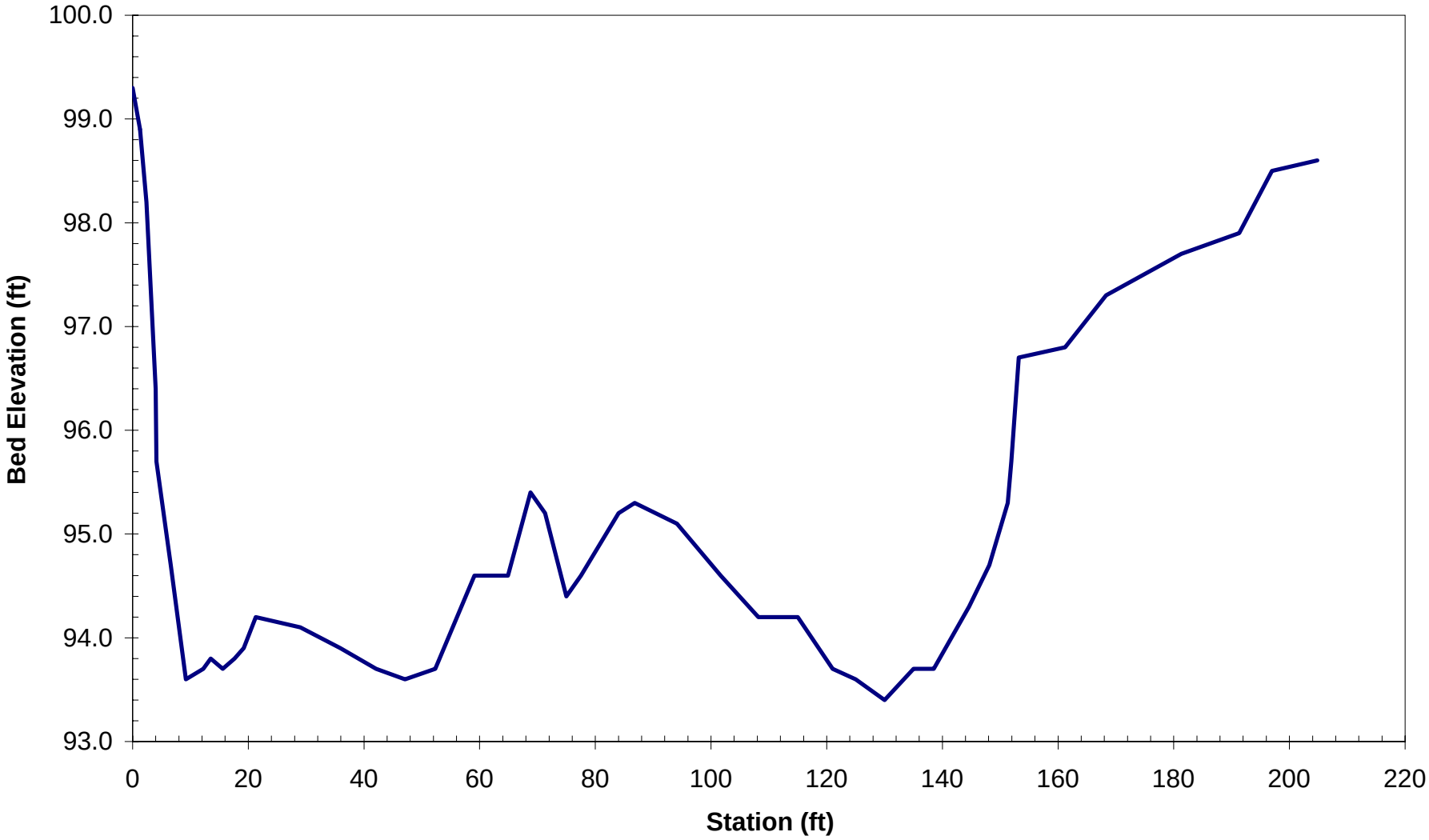
Survey Date	Q (cfs)	WUA (Y/N)
6/28/2005	541.6	Y
7/18/2005		
8/12/2005	354.3	Y
7/25/2006	482.5	
8/10/2006		

(4) Hydraulic Calibration Results:

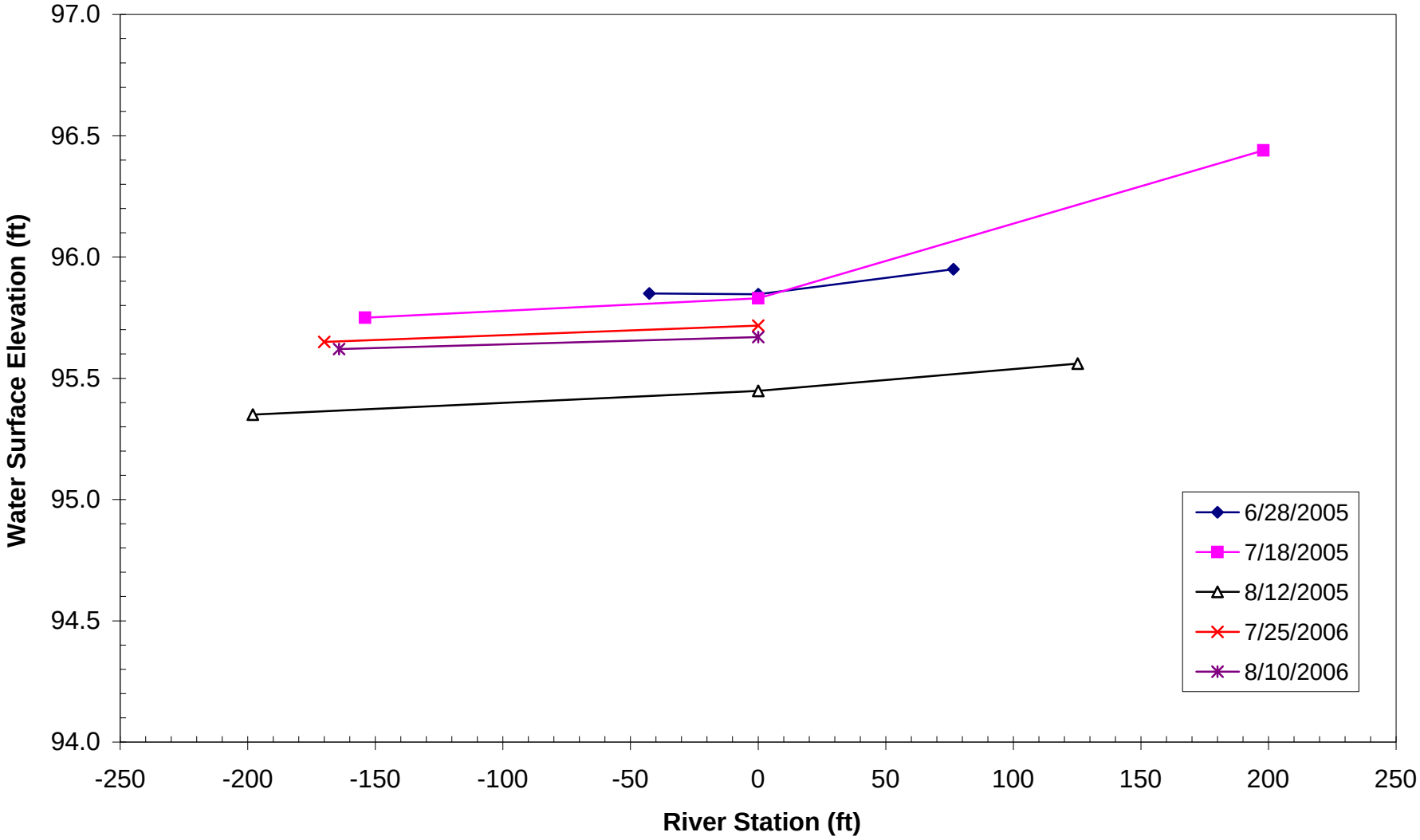
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges.
Manning's n and Fr decreases both stay virtually flat through the entire range of simulation flows.

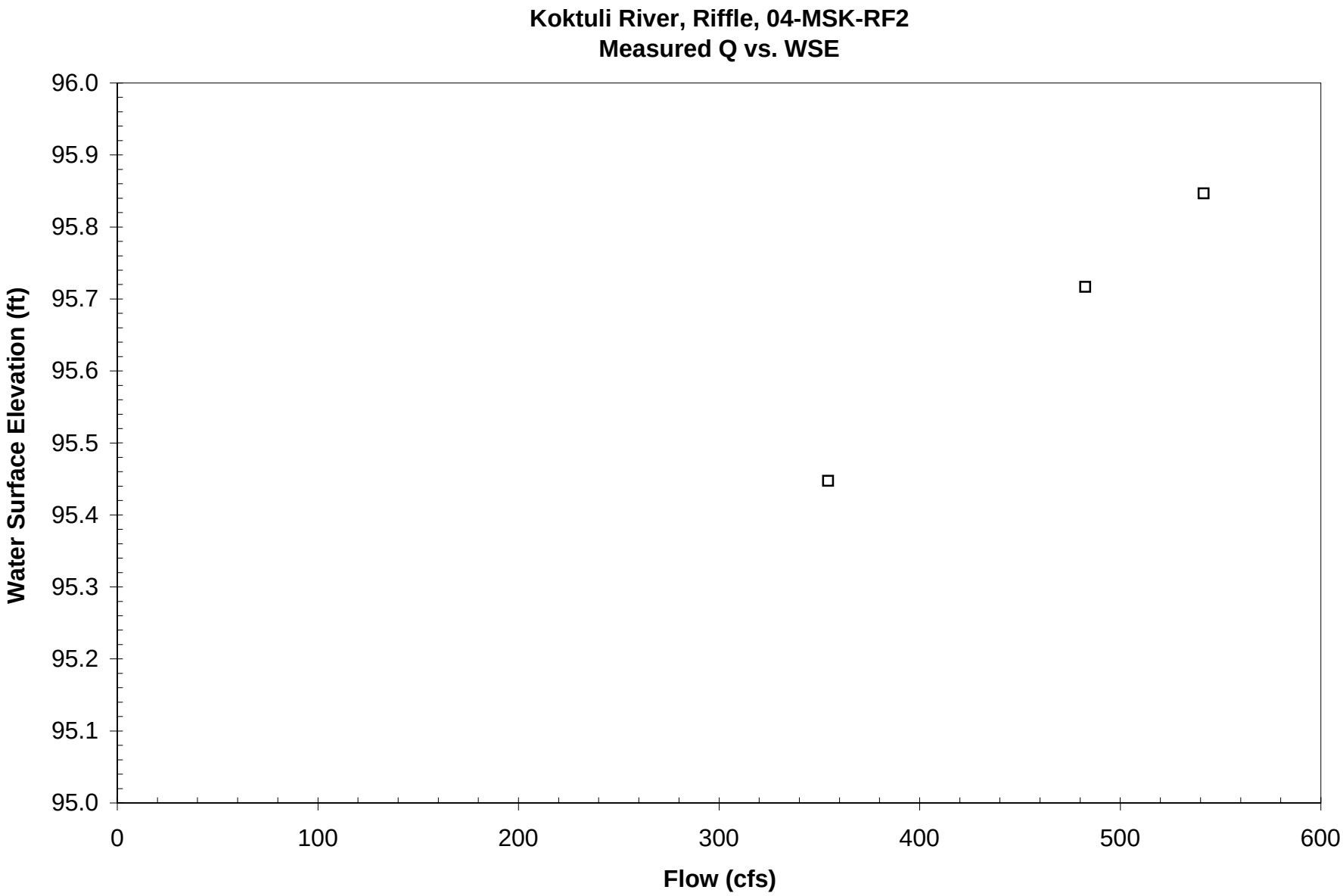
Calibration Notes

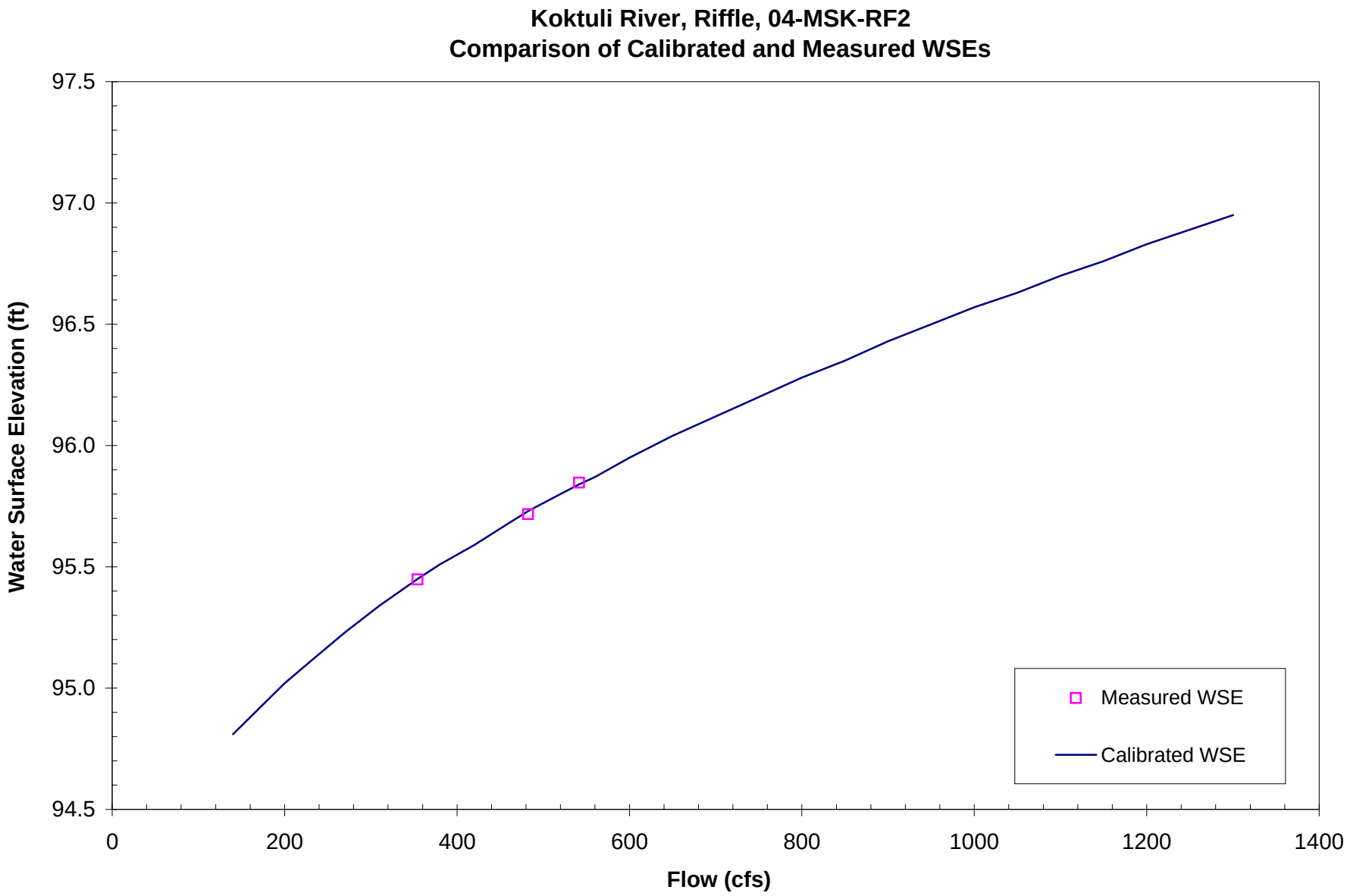
Koktuli River, Riffle, 04-MSK-RF2
Measured Transect Profile



Koktuli River, Riffle, 04-MSK-RF2
Longitudinal Water Surface Elevation Profiles

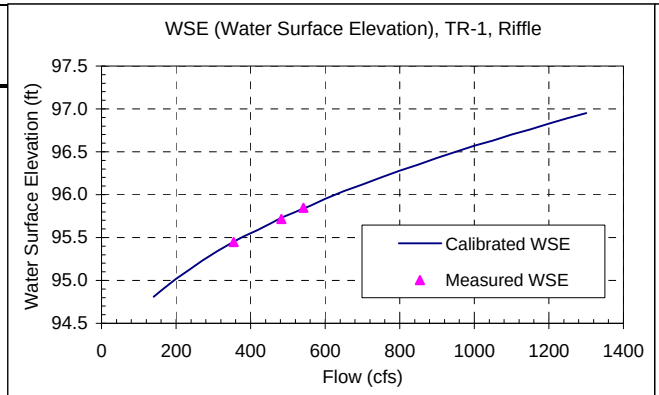


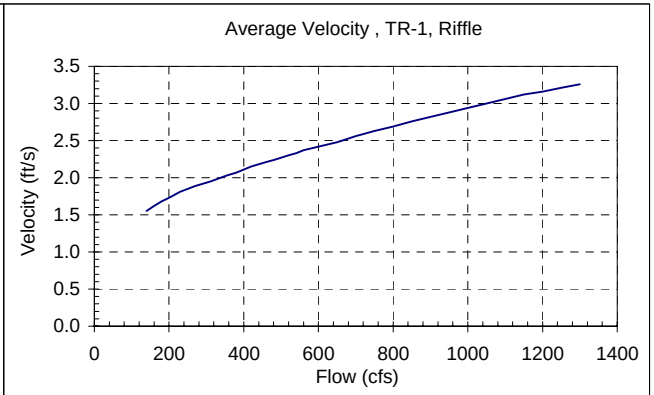

Koktuli River, Riffle, 04-MSK-RF2
Measured Q vs. WSE
Water Surface Elevation (ft)
96.0
95.9
95.8
95.7
95.6
95.5
95.4
95.3
95.2
95.1
95.0
0
100
200
300
400
500
600
Flow (cfs)

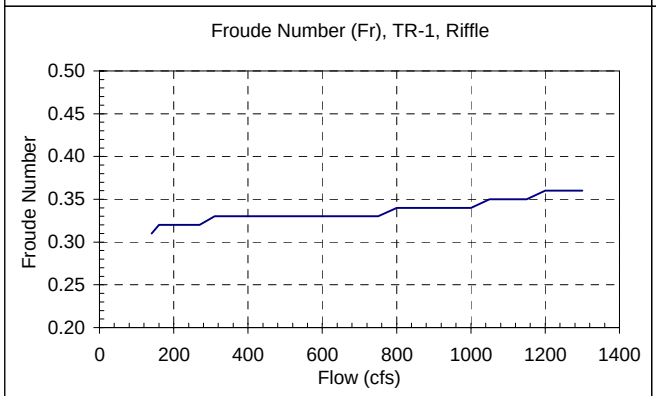

Koktuli River, Riffle, 04-MSK-RF2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
0
200
400
600
800
1000
1200
1400
Flow (cfs)
Measured WSE
Calibrated WSE

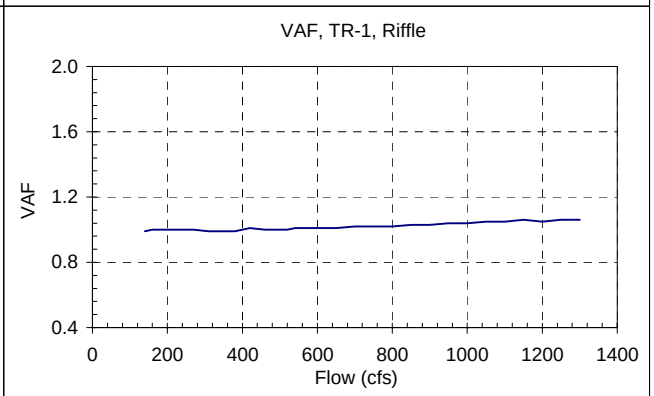
Stream: Koktuli River **Reach:** KR
Site Name: 04-MSK-RF2 **Site #:** 2
Date: 6/28/2005 **Transect:** 1
Calibration Flow: NA **Habitat:** Riffle

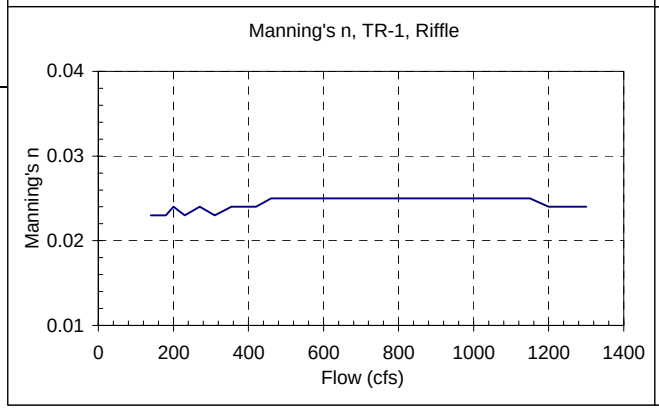
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
140	94.81	0.31	1.55	0.99	0.023	117.6
160	94.88	0.32	1.62	1.00	0.02	120.6
180	94.95	0.32	1.68	1.00	0.02	123.5
200	95.02	0.32	1.73	1.00	0.02	126.4
230	95.11	0.32	1.81	1.00	0.02	130.7
270	95.23	0.32	1.89	1.00	0.02	136.9
310	95.34	0.33	1.95	0.99	0.02	144.9
354.3	95.45	0.33	2.03	0.99	0.02	147.8
380	95.51	0.33	2.07	0.99	0.02	148.0
420	95.59	0.33	2.15	1.01	0.02	148.4
460	95.68	0.33	2.21	1.00	0.03	148.8
482.5	95.73	0.33	2.24	1.00	0.03	148.9
520	95.80	0.33	2.30	1.00	0.03	149.1
541.6	95.84	0.33	2.33	1.01	0.03	149.2
560	95.87	0.33	2.37	1.01	0.03	149.3
600	95.95	0.33	2.42	1.01	0.03	149.5
650	96.04	0.33	2.48	1.01	0.03	149.7
700	96.12	0.33	2.56	1.02	0.03	149.9
750	96.20	0.33	2.63	1.02	0.03	150.2
800	96.28	0.34	2.69	1.02	0.03	150.4
850	96.35	0.34	2.76	1.03	0.03	150.6
900	96.43	0.34	2.82	1.03	0.03	150.8
950	96.50	0.34	2.88	1.04	0.03	151.0
1000	96.57	0.34	2.94	1.04	0.03	151.2
1050	96.63	0.35	3.00	1.05	0.03	151.4
1100	96.70	0.35	3.06	1.05	0.03	151.6
1150	96.76	0.35	3.12	1.06	0.03	155.7
1200	96.83	0.36	3.16	1.05	0.02	160.3
1250	96.89	0.36	3.21	1.06	0.02	161.2
1300.0	96.95	0.36	3.26	1.06	0.024	162.0

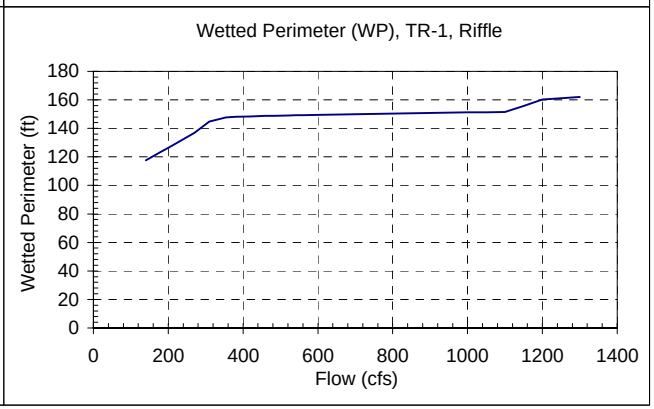






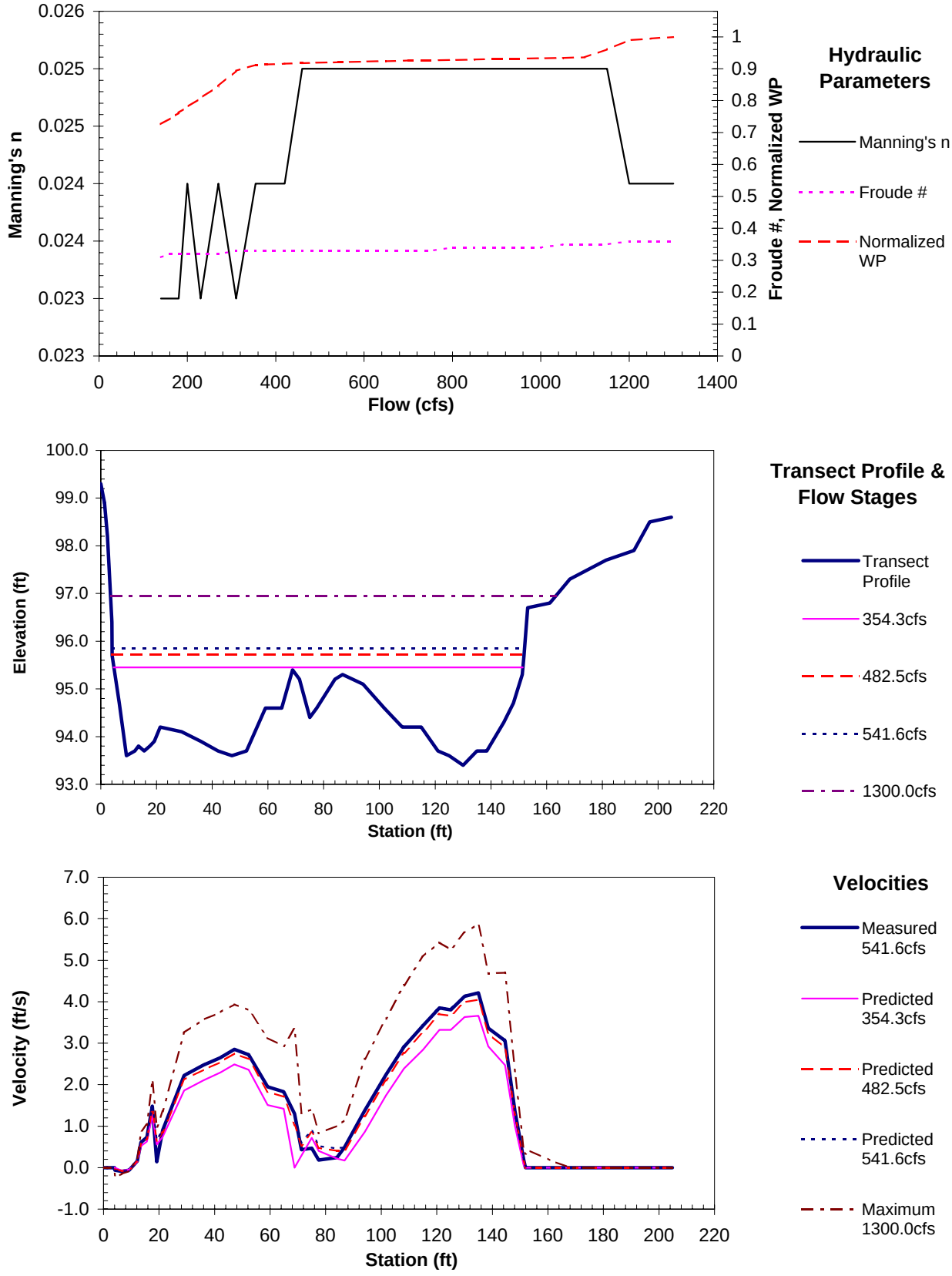






cTR1
Transect Hydraulic Parameters

Pebble Project, Koktuli River
04-MSK-RF2 - Riffle - TRANSECT 1 - 6/28/2005



Transect Hydraulic Summary

IFG4 Data Deck

```
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RIFFLE                     0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 270.0
QARD 310.0
QARD 354.3
QARD 380.0
QARD 420.0
QARD 460.0
QARD 482.5
QARD 520.0
QARD 541.6
QARD 560.0
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
QARD1150.0
QARD1200.0
QARD1250.0
QARD1300.0
XSEC  1000     1000. 1.0     93.62    .00084
      1000   .099.26  1.398.90  2.498.17  4.096.45  4.195.65  6.694.65
      1000  9.293.55 12.293.75 13.593.85 15.693.75 17.693.85 19.293.95
      1000 21.394.25 29.094.05 35.993.95 42.193.75 47.193.55 52.393.65
      1000 59.194.55 64.994.55 68.895.45 71.395.25 75.094.45 77.594.55
      1000 84.095.25 86.895.35 94.195.05101.794.55108.294.25115.094.15
      1000121.093.75125.093.55130.093.45135.093.65138.593.65144.694.35
      1000148.194.75151.395.35151.995.75153.296.73161.296.79168.397.35
      1000181.397.74191.397.88197.098.51204.898.63
NS    1000      22.9      22.9      22.9      22.9      23.7      24.7
NS    1000      23.9      23.9      23.9      23.9      23.9 .10  22.9
NS    1000      23.9      45.7      43.6      43.6      46.8      25.6
NS    1000      42.9      42.9      43.8 .05  42.7 .06  42.6 .10  24.7
NS    1000 .065 23.8      24.8      24.7      42.9      43.9      42.9
NS    1000      43.9      43.9      43.9      43.8      43.8      43.8
NS    1000      42.9      43.6      42.6 .04  42.6 .08  42.6      54.6
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      43.9      45.8      43.8      43.7
WSL   1000     94.81     94.88     94.95     95.02     95.11     95.23
WSL   1000     95.34     95.45     95.51     95.59     95.68     95.73
WSL   1000     95.80     95.84     95.87     95.95     96.04     96.12
WSL   1000     96.20     96.28     96.35     96.43     96.50     96.57
WSL   1000     96.63     96.70     96.76     96.83     96.89     96.95
CAL1  1000     95.85     541.6
VEL1  1000                   -0.06-0.09-0.06 0.16 0.61 0.73 1.48 0.14
VEL1  1000 0.90 2.22 2.47 2.65 2.85 2.72 1.95 1.83 1.30 0.43 0.47 0.18
VEL1  1000 0.24 0.49 1.38 2.24 2.91 3.42 3.85 3.80 4.13 4.21 3.36 3.06
VEL1  1000 1.37 0.18 0.00
CAL2  1000     95.45     354.3
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.72     482.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Koktuli River

Reach: Koktuli River

Site/TR: 04-MSK-IC2

Habitat Type: Island Complex

River Kilometer: 25.37

Stream: **Koktuli River**
Site Identifier: **04-MSK-IC2**
Habitat Type: **Island Complex**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/28/2005	100.00	99.58	97.73
2nd	7/18/2005	100.00	99.56	97.71
3rd	8/12/2005	100.00	99.55	97.71
4th	7/25/2006	100.00	99.57	97.72
5th	4/15/2007	100.00	99.59	97.76

(a) Elevations of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ±0.02ft from Year 2005 to Year 2006.
(c) The relatively small elevation changes suggested the control pins were stable over the period from 2005 to 2006.
(d) Year 2007 survey may be affected by frost heave and the data were not used.

Measured WSE:

There are three WSEs (Right, mid, and Left) measured across each of LC and RC of each flow, and the average of the three is used as transect representative WSE for modeling.

	WSE (ft)	
Date	Left (main)	Right
6/28/2005	95.23	94.82
7/18/2005	95.11	94.82
8/12/2005	94.82	94.54
7/25/2006	95.03	94.64
4/15/2007	95.19	94.99

WSEs of left channel were used in hydraulic modeling because most water flowed through the left channel.

Calibration Notes

Discharge:

All measured discharges are listed in the following table.

Date	Flow (cfs)		
	Left (main)	Right	Total
6/28/2005	431.9	125.7	557.6
7/18/2005			
8/12/2005	250.1	92.5	342.6
7/25/2006	360.2	139.3	499.5
4/15/2007	369.8	114.6	484.5

Left channel is designated as main channel because it carries more water than the right channel

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream on each side of the channel in the vicinity of the transect.

Left (Main) Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/28/2005	0.075%	160.5
7/18/2005	0.066%	228
8/12/2005	0.035%	228
7/25/2006	0.063%	206.5
4/15/2007	0.055%	200

The slope S=0.075% surveyed on 6/28/05 was used for hydraulic modeling.

Right Channel

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/28/2005		
7/18/2005	0.174%	149
8/12/2005	0.262%	149
7/25/2006	0.225%	111
4/15/2007	0.264%	170.6

Left channel WSE Slope of 6/28/05 is used in hydraulic modeling

Calibration Notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/28/2005	91.83
7/18/2005	
8/12/2005	91.62
7/25/2006	91.93
4/15/2007	91.69
Invert	91.93
SZF	91.93

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/18/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR-1	Calibrated WSE(ft) TR-1	WSE calibration error (ft) TR-1	Calib. Method
1st	6/28/2005	557.6	95.23	95.19	-0.04	IFG4
2nd	7/18/2005		95.11			
3rd	8/12/2005	342.6	94.82	94.79	-0.03	IFG4
4th	7/25/2006	499.5	95.03	95.10	0.07	IFG4
5th	4/15/2007	484.5	95.19			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.07ft is within acceptable range for a complex channel.
(c) No discharge was surveyed on 7/18/05
(d) 4/15/07: Photos showed bank was covered by snow/ice and ice collapsed and fell in the channel that would affect the hydraulics. Also the transect profile showed left side of the channel was shifted about 10ft to the right that may the result of ice formation near shore. Therefore, the surveyed results won't be used for modeling.

Calibration Notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 342.6cfs to 557.6cfs. The flow profile surveyed in 2007 would not be included for hydraulic modeling due to ice impact. Therefore, there are only three velocity profiles available for hydraulic modeling. Each of the three measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. The adjustment of n values was made at the stations where simulated velocities were significantly different from the measured values or unreasonably over/under-estimated by the model, particularly near the waters edge. The adjusted Manning's n values are summarized in the NS lines in the IFG4 data decks.

A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

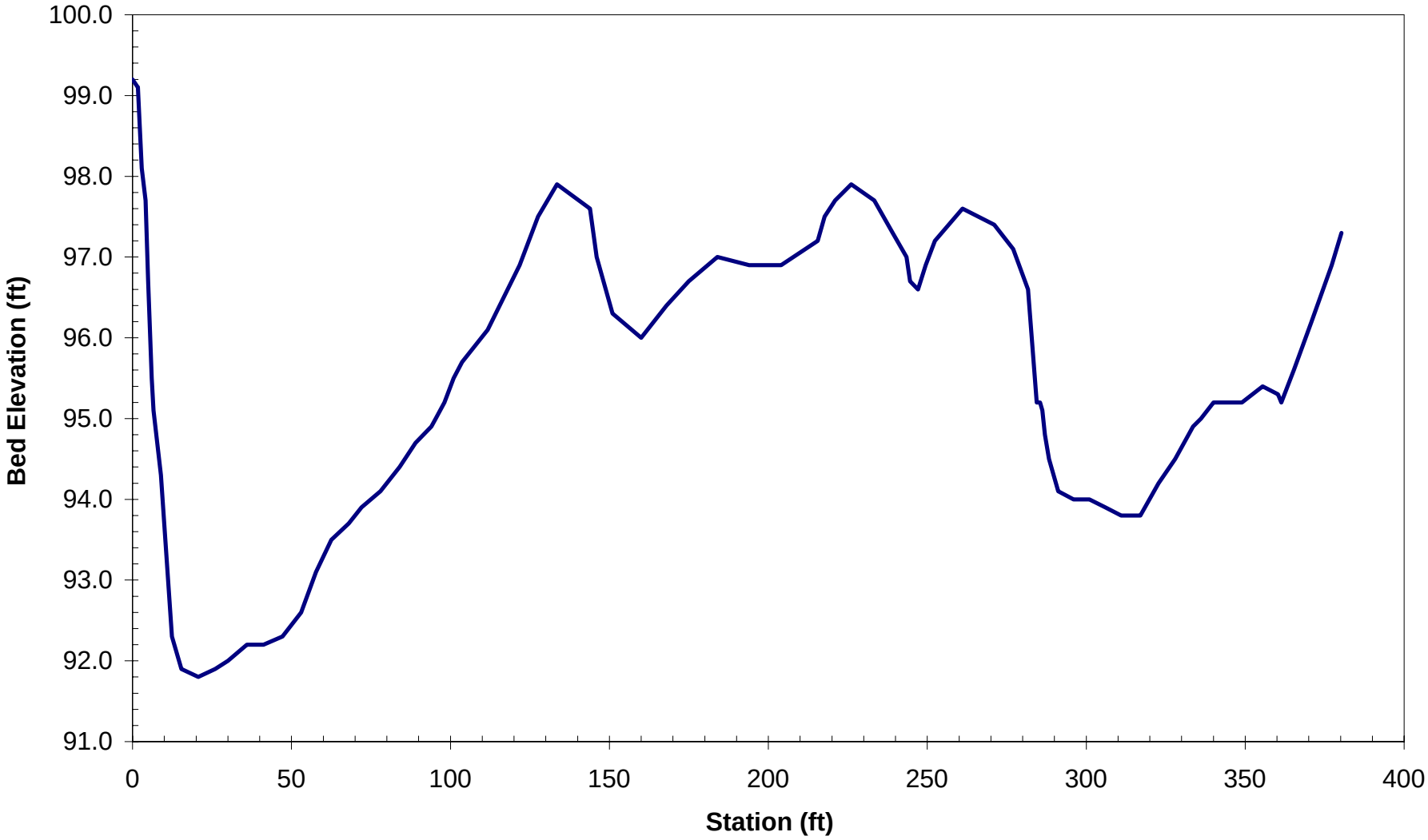
Survey Date	Q (cfs)	WUA (Y/N)
6/28/2005	557.6	Y
7/18/2005		
8/12/2005	342.6	Y
7/25/2006	499.5	
4/15/2007	484.5	

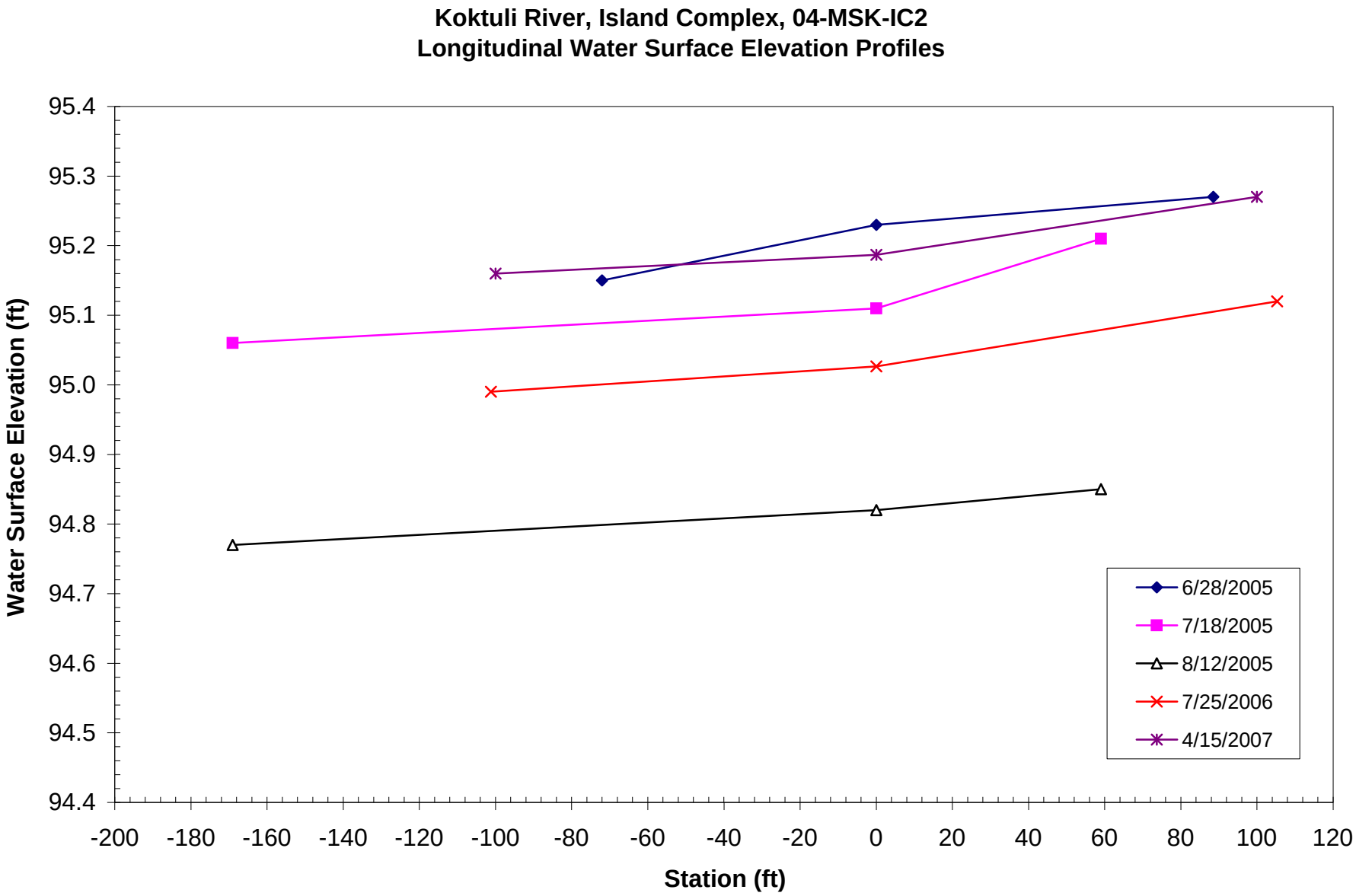
(4) Hydraulic Calibration Results:

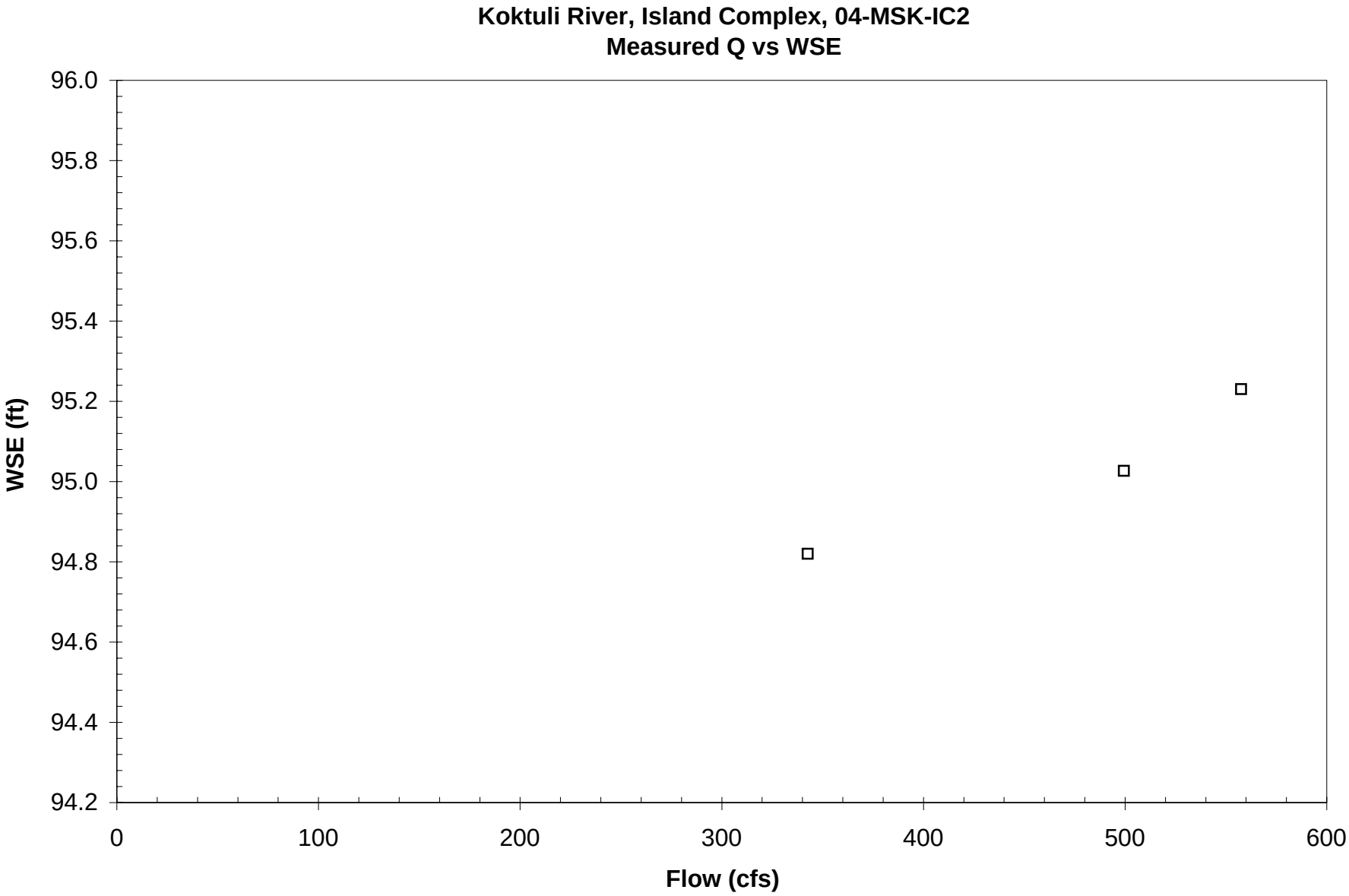
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges with normal trends.

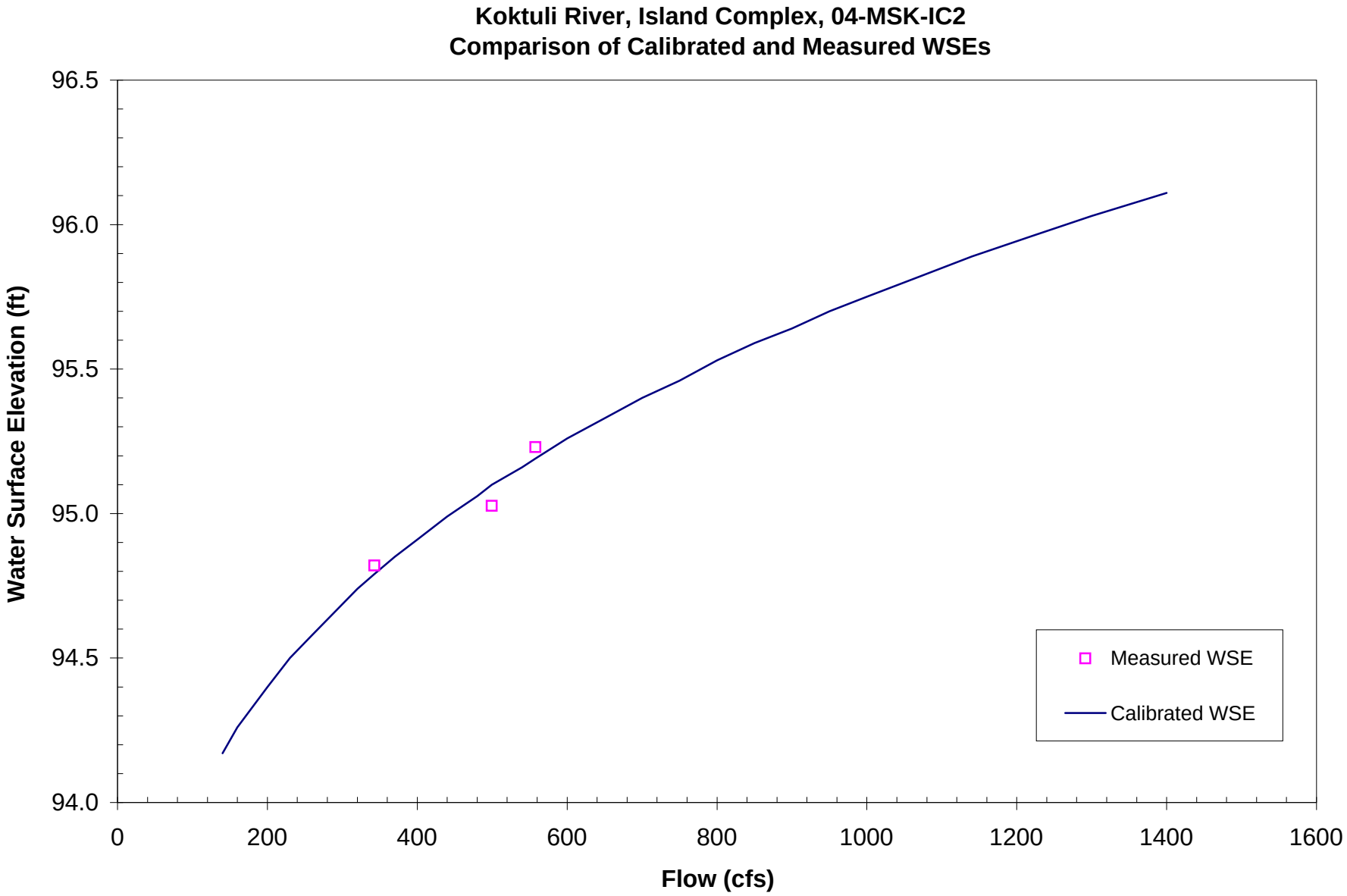
Calibration Notes

Koktuli River, Island Complex, 04-MSK-IC2
Measured Transect Profile




Koktuli River, Island Complex, 04-MSK-IC2
Longitudinal Water Surface Elevation Profiles
Water Surface Elevation (ft)
95.4
95.3
95.2
95.1
95.0
94.9
94.8
94.7
94.6
94.5
94.4
-200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120
Station (ft)
6/28/2005
7/18/2005
8/12/2005
7/25/2006
4/15/2007

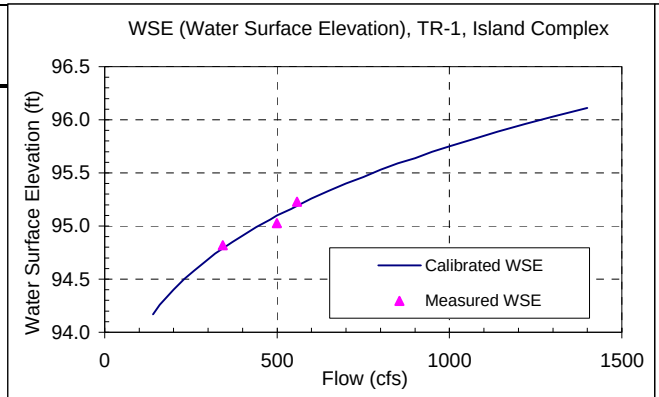

Koktuli River, Island Complex, 04-MSK-IC2
Measured Q vs WSE
WSE (ft)
96.0
95.8
95.6
95.4
95.2
95.0
94.8
94.6
94.4
94.2
0
100
200
300
400
500
600
Flow (cfs)

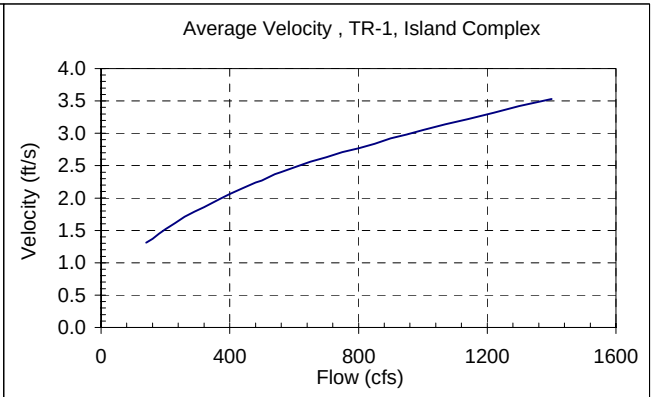

Koktuli River, Island Complex, 04-MSK-IC2
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
96.5
96.0
95.5
95.0
94.5
94.0
0
200
400
600
800
1000
1200
1400
1600
Flow (cfs)
Measured WSE
Calibrated WSE

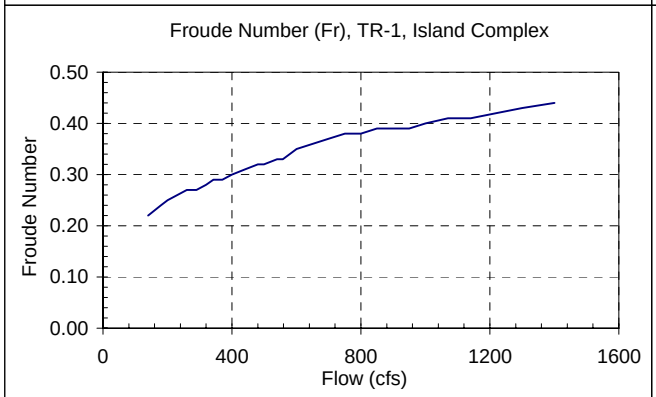
Stream: Koktuli River
Site Name: 04-MSK-IC2
Date: 6/28/2005
Calibration Flow: NA

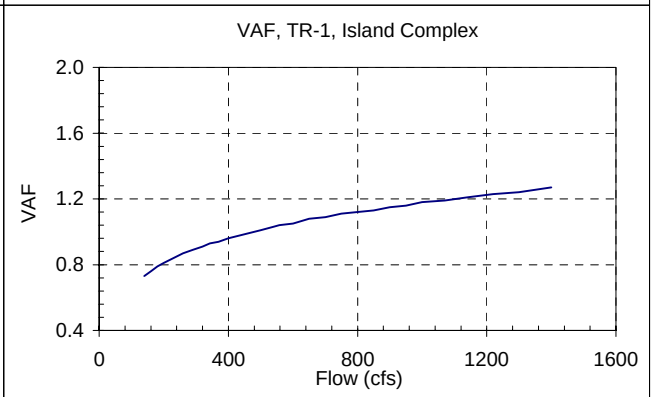
Reach: KR
Site #: 2
Transect: 1
Habitat: Island Complex

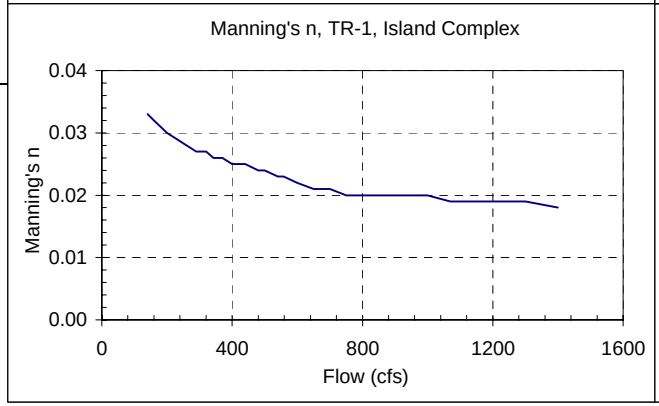
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
140	94.17	0.22	1.31	0.73	0.033	101.2
160	94.26	0.23	1.37	0.76	0.03	105.2
180	94.33	0.24	1.45	0.79	0.03	108.5
200	94.40	0.25	1.52	0.81	0.03	111.8
230	94.50	0.26	1.61	0.84	0.03	116.4
260	94.58	0.27	1.71	0.87	0.03	119.7
290	94.66	0.27	1.79	0.89	0.03	122.7
320	94.74	0.28	1.86	0.91	0.03	125.9
342.6	94.79	0.29	1.92	0.93	0.03	128.2
370	94.85	0.29	1.99	0.94	0.03	131.0
400	94.91	0.30	2.06	0.96	0.03	133.7
440	94.99	0.31	2.15	0.98	0.03	137.3
480	95.06	0.32	2.24	1.00	0.02	140.2
499.5	95.10	0.32	2.27	1.01	0.02	141.8
540	95.16	0.33	2.37	1.03	0.02	144.2
557.6	95.19	0.33	2.40	1.04	0.02	145.5
600	95.26	0.35	2.47	1.05	0.02	159.2
650	95.33	0.36	2.56	1.08	0.02	164.8
700	95.40	0.37	2.63	1.09	0.02	171.7
750	95.46	0.38	2.71	1.11	0.02	175.5
800	95.53	0.38	2.77	1.12	0.02	177.3
850	95.59	0.39	2.84	1.13	0.02	179.0
900	95.64	0.39	2.92	1.15	0.02	180.3
950	95.70	0.39	2.98	1.16	0.02	181.9
1000	95.75	0.40	3.05	1.18	0.02	183.4
1070	95.82	0.41	3.14	1.19	0.02	185.7
1140	95.89	0.41	3.22	1.21	0.02	188.0
1220	95.96	0.42	3.32	1.23	0.02	190.3
1300	96.03	0.43	3.42	1.24	0.02	194.2
1400.0	96.11	0.44	3.53	1.27	0.018	200.9

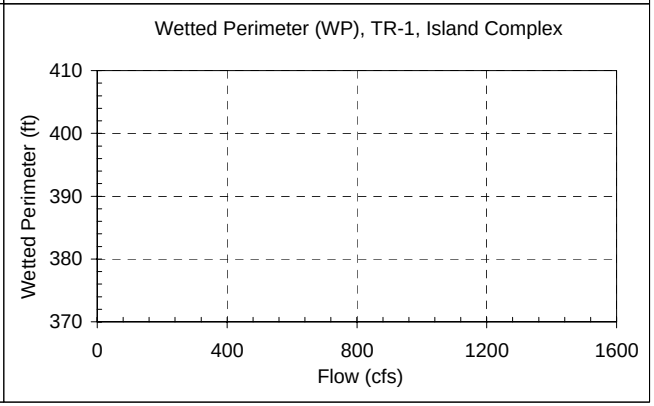






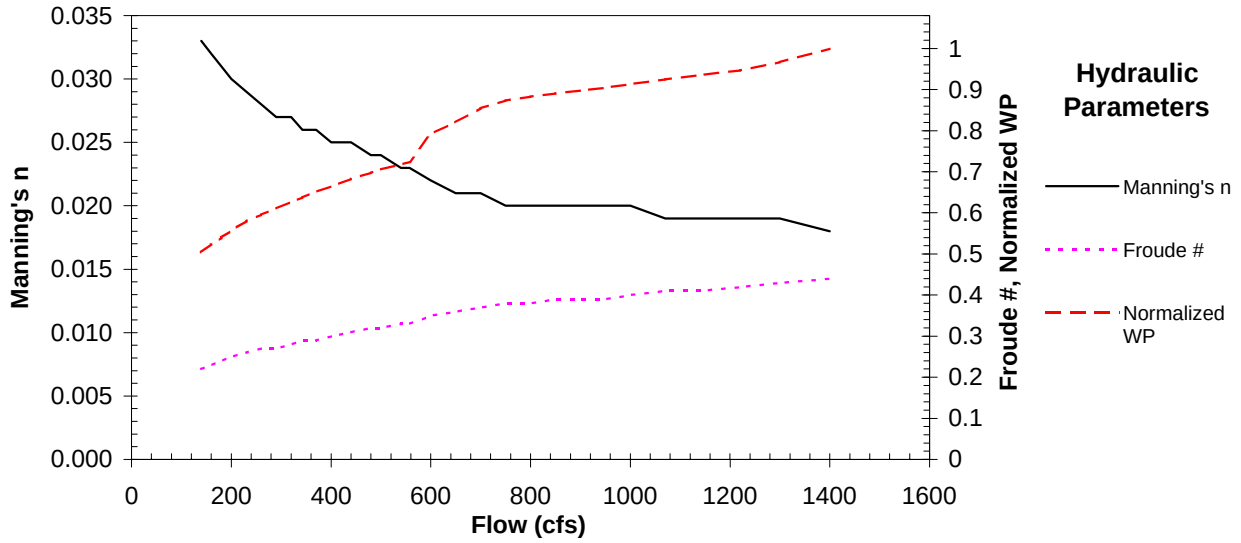


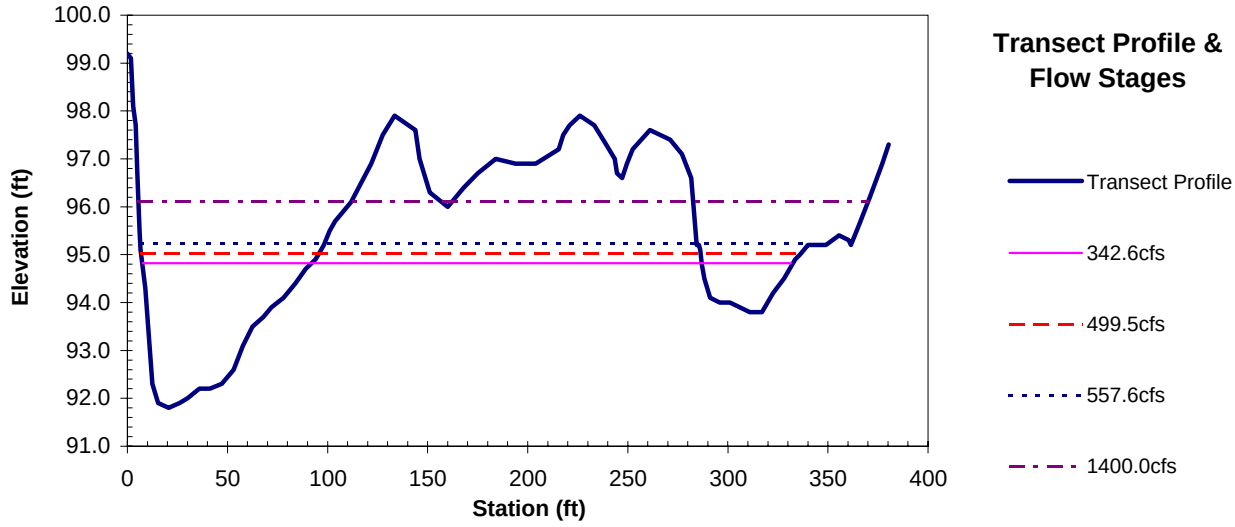


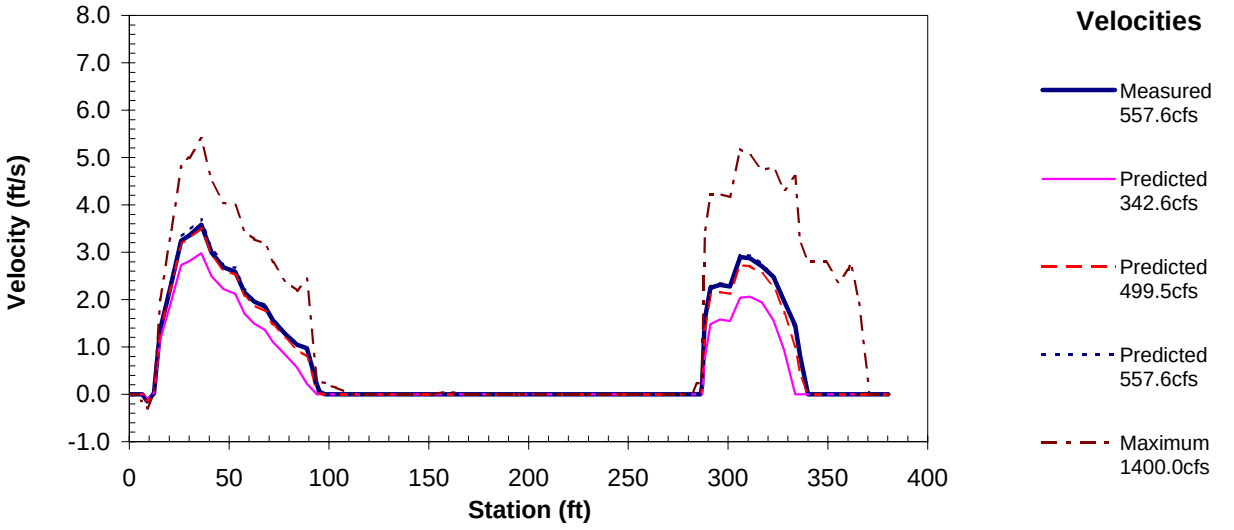


cTR1 - Transect hydraulic parameters

Pebble Project, Koktuli River
04-MSK-IC2 - Island Complex - TRANSECT 1 - 6/28/2005







Transect hydraulic summary

IFG4 Data Deck

```
     Pebble      04-MSK-IC2  06/28/05
ISLAND                     0605Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 342.6
QARD 370.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 499.5
QARD 540.0
QARD 557.6
QARD 600.0
QARD 650.0
QARD 700.0
QARD 750.0
QARD 800.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1070.0
QARD1140.0
QARD1220.0
QARD1300.0
QARD1400.0
XSEC  1000     1000. 1.0     91.93    .00075
      1000   .099.24  1.799.05  2.998.06  4.197.69  4.996.71  6.095.54
      1000  6.695.13  8.994.33 12.492.33 15.491.93 20.791.83 26.091.93
      1000 30.092.03 36.092.23 41.292.23 47.292.33 53.092.63 57.793.13
      1000 62.593.53 68.093.73 72.093.93 78.094.13 84.094.43 89.094.73
      1000 94.094.93 95.495.03 98.195.23101.095.51103.795.71111.796.10
      1000121.896.86127.697.53133.597.94143.997.55146.097.00151.096.29
      1000160.096.00168.096.38175.096.71184.096.97194.096.90204.096.87
      1000215.597.15217.797.46221.097.73226.197.90233.397.66239.197.32
      1000243.596.98244.696.71247.196.63249.596.92252.497.24261.197.58
      1000271.197.43277.097.13281.796.58284.495.25285.595.23286.295.13
      1000287.094.83288.394.53291.294.13296.094.03301.094.03306.093.93
      1000311.093.83317.093.83322.794.23328.094.53333.694.93336.195.03
      1000340.095.23349.095.23355.595.43360.395.31361.495.24365.395.58
      1000370.996.24377.296.95380.397.30
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      23.6      32.6      23.8
NS    1000      23.8      22.9      22.9      32.6      32.6      32.7
NS    1000      32.7      23.6      32.8      32.7      34.7      32.6
NS    1000      32.8      34.7      43.6      43.6      34.6      43.6
NS    1000 0.22 43.6 .2   43.7      43.6      43.6      43.6      43.6
NS    1000      34.6      34.7      43.6      43.6      23.6      34.6
NS    1000      43.6      34.8      43.6      43.6      23.6      23.6
NS    1000      42.6      43.7      34.6      43.7      34.6      34.7
NS    1000      32.8      32.8      32.8      23.6      34.6      43.6
NS    1000      34.6      32.6      32.6      42.6      24.7      23.9
NS    1000      23.7      32.6      32.7      34.6      43.6      34.6
NS    1000      43.6      34.6      43.6      43.6      43.7      43.8
NS    1000      43.6      43.6      32.6      23.6      23.8      24.9
NS    1000      24.9      32.6      32.6
WSL   1000     94.17     94.26     94.33     94.40     94.50     94.58
WSL   1000     94.66     94.74     94.79     94.85     94.91     94.99
WSL   1000     95.06     95.10     95.16     95.19     95.26     95.33
WSL   1000     95.40     95.46     95.53     95.59     95.64     95.70
WSL   1000     95.75     95.82     95.89     95.96     96.03     96.11
CAL1  1000     95.23     557.6
VEL1  1000                                 0.00-0.15 0.02 1.35 2.28 3.24
VEL1  1000 3.35 3.58 2.99 2.68 2.59 2.15 1.96 1.85 1.56 1.28 1.05 0.97
VEL1  1000 0.21 0.05 0.00
VEL1  1000
VEL1  1000                                                      0.00 0.00
VEL1  1000 0.18 1.56 2.25 2.31 2.28 2.90 2.87 2.70 2.48 1.97 1.45 0.82
VEL1  1000 0.00
CAL2  1000     94.82     342.6
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
CAL3  1000     95.03     499.5
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
VEL3  1000
ENDJ
```

IFG4 Data Deck

Stream: Koktuli River

Reach: Koktuli River

Site/TR: 04-MSK-RF1

Habitat Type: Riffle

River Kilometer: 31.98

Stream **Koktuli River**
Site: **04-MSK-RF1**
Habitat Type: **Riffle**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1st	6/27/2005	100.00	100.13	100.15
2nd	7/23/2005	100.00	100.15	100.12
3rd	8/18/2005	100.00	100.13	100.15

(a) Elevation of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevation changes between control pins were within ± 0.01ft.
(c) The small elevation changes indicate the control pins were stable during the survey period.

Meaured WSE:

There are multiple WSEs measured across the transect for each flow. The average WSE on the left side of the channel (i.e., main channel) is used as transect representative WSE for modeling.

Date	WSE (ft)
6/27/2005	96.52
7/23/2005	96.05
8/18/2005	95.85

WSEs above are the water surface elevations of the main channel where most water flows through.

Calibration Notes

Discharge:

All the measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/27/2005	494.3
7/23/2005	
8/18/2005	339.7

(1) No discharge was measured during the 7/23/05 survey

(2) The discharge is the total flow of the entire transect, including main (left), center and right channels. Main (left) channel contains the majority of flow.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/27/2005	0.411%	214.1
7/23/2005	0.486%	214
8/18/2005	0.449%	225

The slope S=0.411% of 6/27/05 survey was used for hydraulic modeling.

Calibration Notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/27/2005	92.62
7/23/2005	
8/18/2005	92.45
Invert	92.62
SZF	92.62

(1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/23/05

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1st	6/27/2005	494.3	96.52	96.50	-0.01	MANSQ
2nd	7/23/2005		96.05			
3rd	8/18/2005	339.7	95.85	95.85	0.00	MANSQ

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.01ft is within acceptable range.
(c) No discharge was measured during the 7/23/05 survey
(d) MANSQ was used for calibration because this transect has ony two pairs of WSE~Q.
Coefficient β=-1.0 was used, and the results are listed as follows.

Calibration Notes

Simulation Q (cfs)	WSE (ft)
140	94.53
160	94.61
180	94.69
200	94.76
230	94.85
260	94.94
290	95.44
320	95.50
339.7	95.85
370	96.06
400	96.14
440	96.30
480	96.47
494.3	96.50
530	96.55
570	96.60
610	96.64
650	96.68
690	96.72
730	96.75
770	96.79
810	96.82
850	96.85
900	96.89
950	96.93
1000	96.96
1050	97.00
1100	97.03
1150	97.06
1200	97.10

Calibration Notes

(3) Velocity calibration

This site has one transect with two velocity/discharge measurements at Q= 339.7cfs and 494.3cfs.
Each of the two measured velocity profiles was used as template for velocity calibration.
Simulated velocity profile of each measured flow was calibrated to resemble its measured profile
by slightly adjusting the Manning's n values given by IFG4 model. Then the calibrated velocity profile
was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the two
calibrated velocity profiles of this transect, no adjustments for the model-calculated n values were needed.

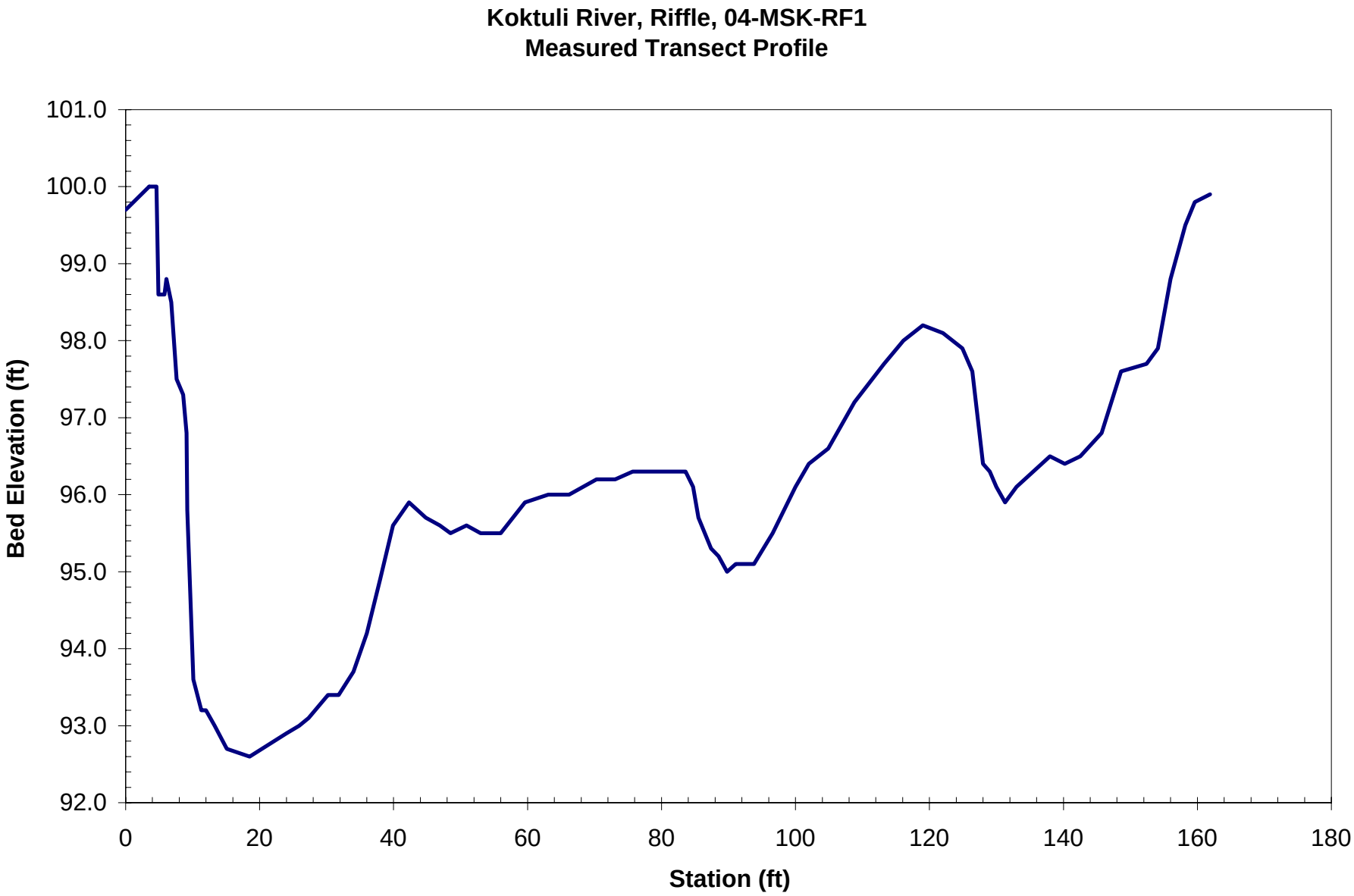
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/27/2005	494.3	Y
7/23/2005		
8/18/2005	339.7	Y

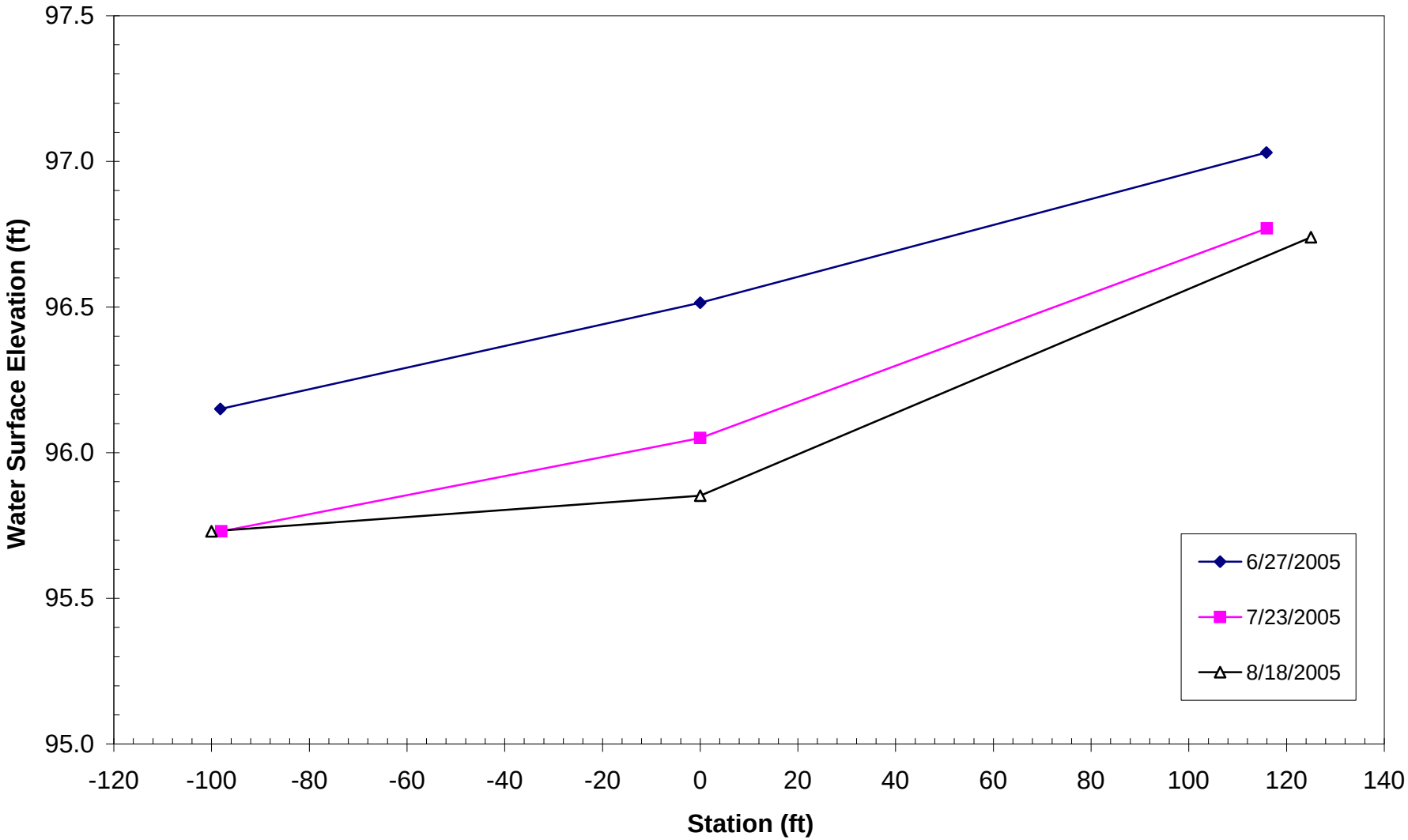
(4) Hydraulic Calibration Results:

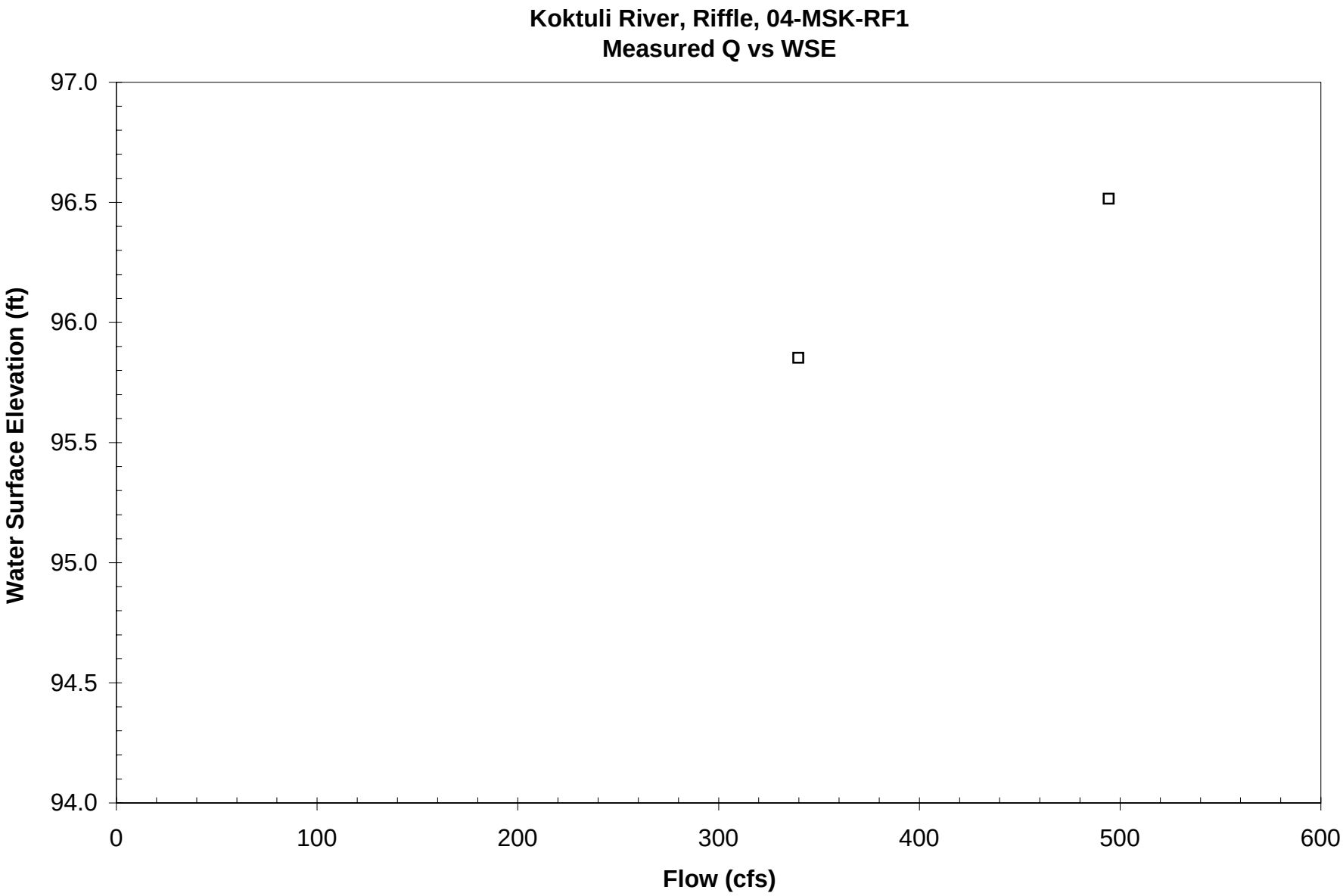
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within
reasonable ranges. The parameters have normal trends at Q>500cfs.
Manning's n increases and Fr decreases with increasing flows at lower simulation flow range below 500cfs.
This is expected because it is caused by the plateau at Elv~96ft between Sta=40 and Sta=85 when water
levels are in the vicinity of the plateau elevation.

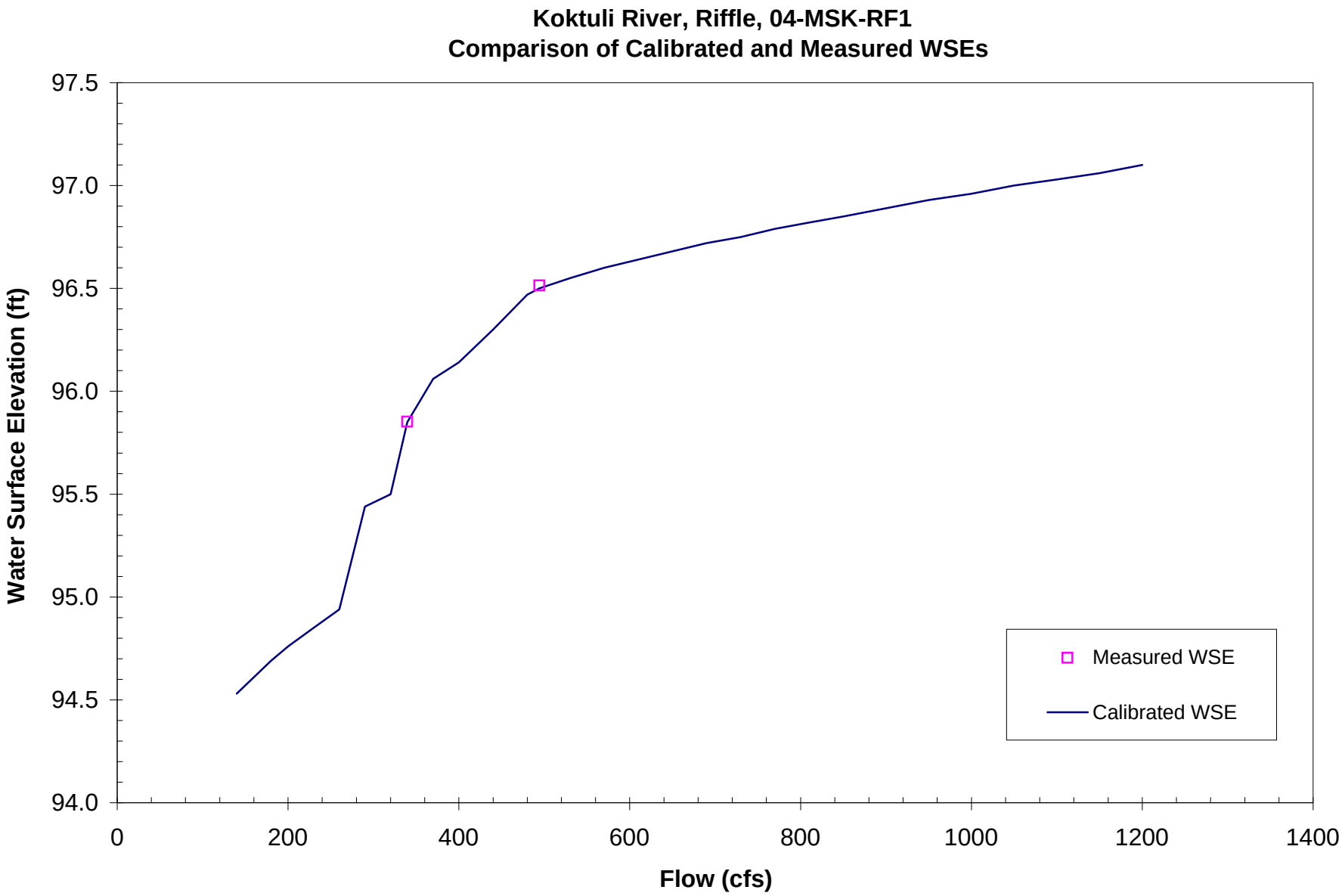
Calibration Notes


Koktuli River, Riffle, 04-MSK-RF1
Measured Transect Profile
Bed Elevation (ft)
101.0
100.0
99.0
98.0
97.0
96.0
95.0
94.0
93.0
92.0
0
20
40
60
80
100
120
140
160
180
Station (ft)

Koktuli River, Riffle, 04-MSK-RF1
Longitudinal Water Surafce Elevation Profiles



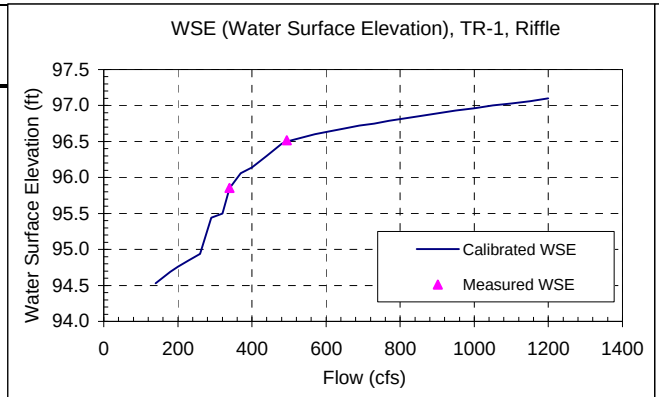

Koktuli River, Riffle, 04-MSK-RF1
Measured Q vs WSE
Water Surface Elevation (ft)
97.0
96.5
96.0
95.5
95.0
94.5
94.0
0
100
200
300
400
500
600
Flow (cfs)

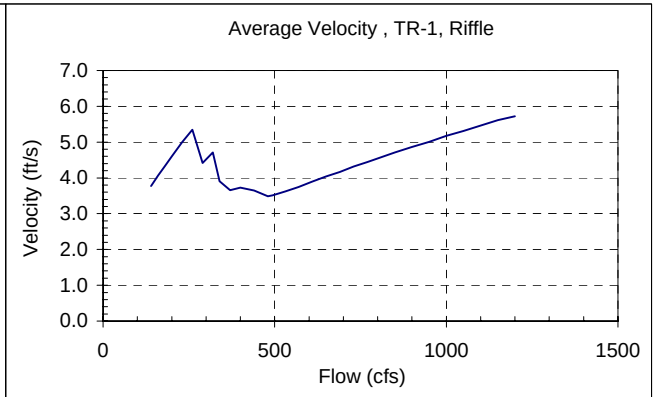

Koktuli River, Riffle, 04-MSK-RF1
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
0
200
400
600
800
1000
1200
1400
Flow (cfs)
Measured WSE
Calibrated WSE

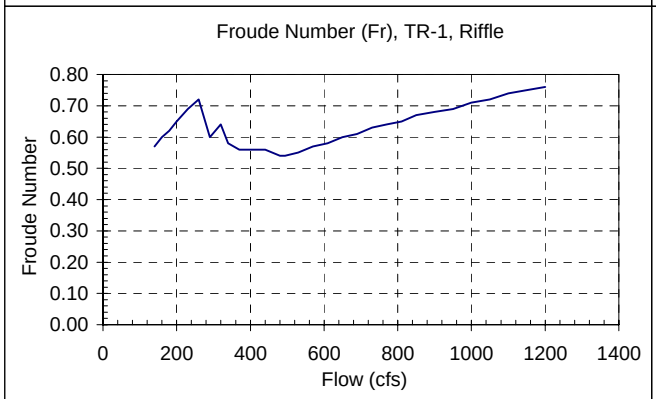
Stream: Koktuli River
Site Name: 04-MSK-RF1
Date: 6/27/2005
Calibration Flow: NA

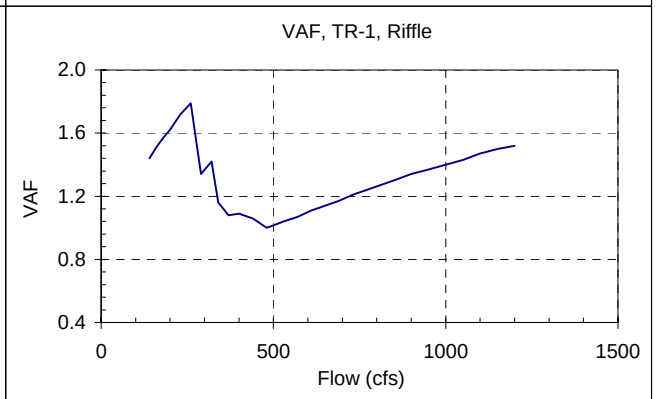
Reach: KR
Site #: 1
Transect: 1
Habitat: Riffle

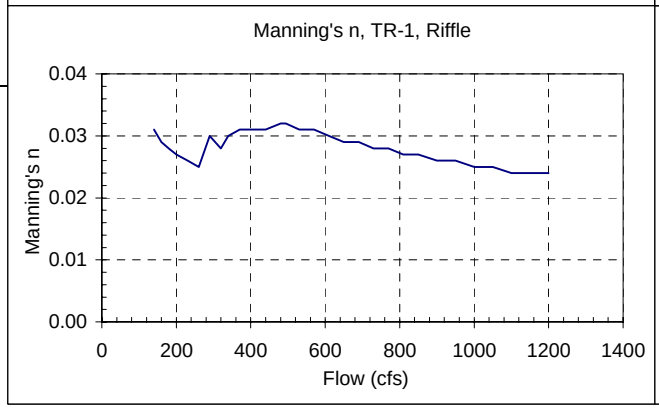
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
140	94.53	0.57	3.77	1.44	0.031	28.1
160	94.61	0.60	4.07	1.51	0.03	28.4
180	94.69	0.62	4.33	1.57	0.03	28.7
200	94.76	0.65	4.60	1.62	0.03	29.0
230	94.85	0.69	5.00	1.72	0.03	29.4
260	94.94	0.72	5.35	1.79	0.03	29.7
290	95.44	0.60	4.42	1.34	0.03	41.1
320	95.50	0.64	4.71	1.42	0.03	42.0
339.7	95.85	0.58	3.91	1.16	0.03	64.0
370	96.06	0.56	3.66	1.08	0.03	77.5
400	96.14	0.56	3.73	1.09	0.03	81.1
440	96.30	0.56	3.65	1.06	0.03	92.9
480	96.47	0.54	3.49	1.00	0.03	108.9
494.3	96.50	0.54	3.51	1.01	0.03	111.1
530	96.55	0.55	3.62	1.04	0.03	113.0
570	96.60	0.57	3.75	1.07	0.03	114.4
610	96.64	0.58	3.90	1.11	0.03	115.4
650	96.68	0.60	4.04	1.14	0.03	116.3
690	96.72	0.61	4.17	1.17	0.03	117.2
730	96.75	0.63	4.32	1.21	0.03	117.8
770	96.79	0.64	4.44	1.24	0.03	118.5
810	96.82	0.65	4.58	1.27	0.03	118.9
850	96.85	0.67	4.71	1.30	0.03	119.3
900	96.89	0.68	4.86	1.34	0.03	119.8
950	96.93	0.69	5.01	1.37	0.03	120.4
1000	96.96	0.71	5.18	1.40	0.03	120.8
1050	97.00	0.72	5.31	1.43	0.03	121.3
1100	97.03	0.74	5.46	1.47	0.02	121.7
1150	97.06	0.75	5.61	1.50	0.02	122.1
1200.0	97.10	0.76	5.72	1.52	0.024	122.7

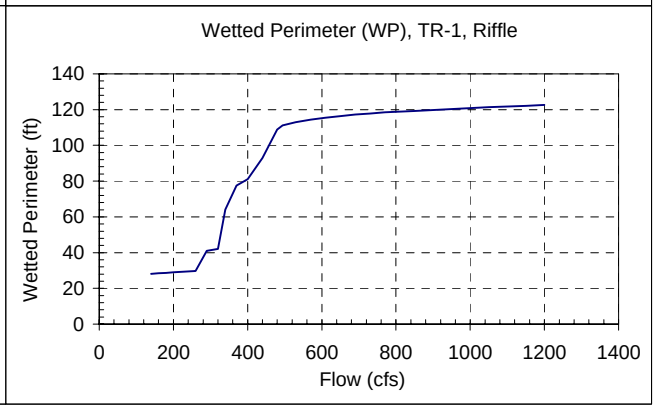






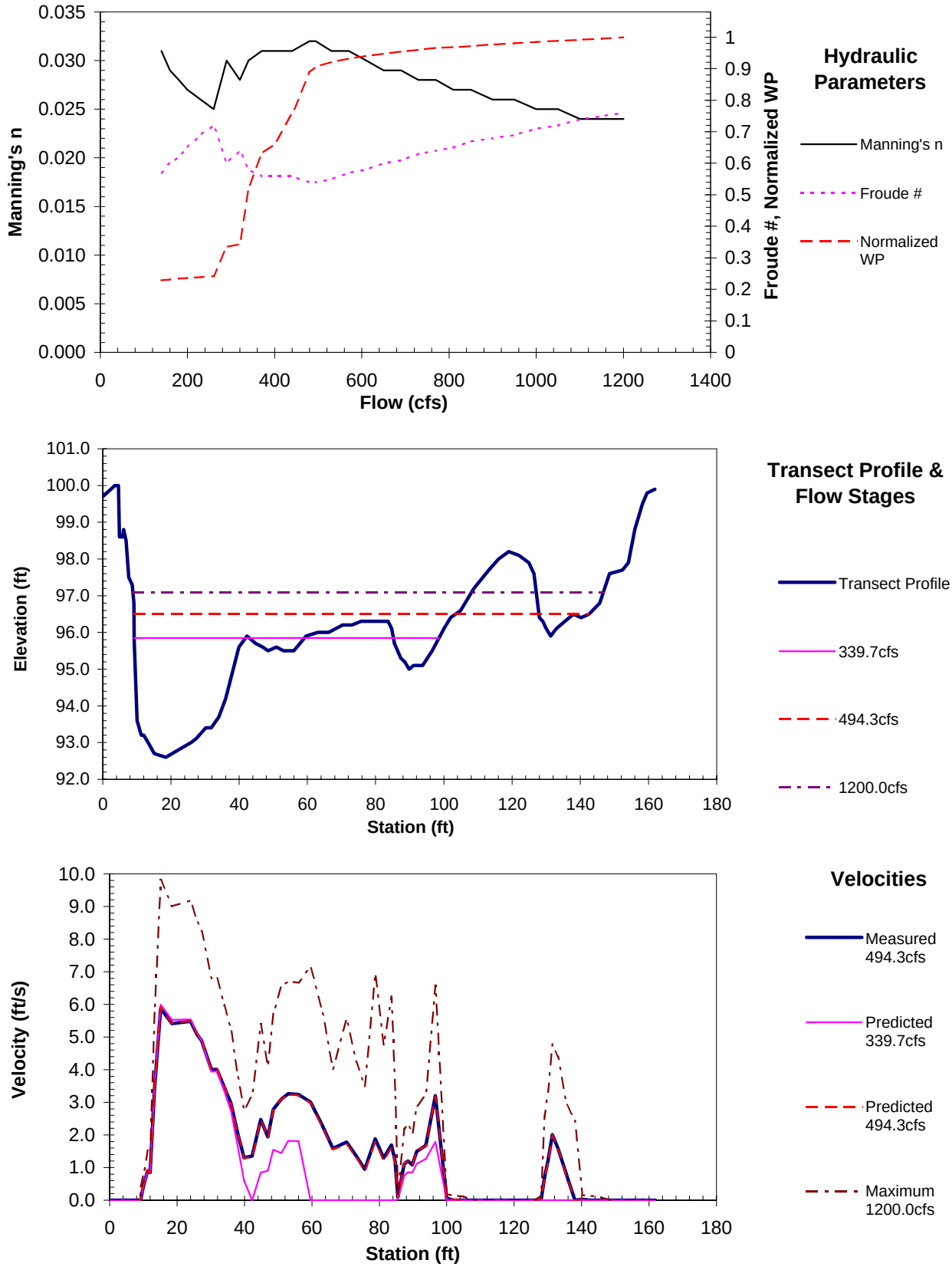






cTR1 - Transect hydraulic parameters

Pebble Project, Koktuli River
04-MSK-RF1 - Riffle - TRANSECT 1 - 6/27/2005



Transect hydraulic summary

IFG4 Data Deck

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     Pebble      04-MSK-RF1  06/27/05
RIFFLE                     0605Q                                TRANSECT 1
IOC       1101100100001000101000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 339.7
QARD 370.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 494.3
QARD 530.0
QARD 570.0
QARD 610.0
QARD 650.0
QARD 690.0
QARD 730.0
QARD 770.0
QARD 810.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
QARD1150.0
QARD1200.0
XSEC  1000     1000. 1.0     92.62    .00411
      1000   .099.65  3.599.98  4.699.97  4.998.58  5.898.62  6.198.83
      1000  6.898.47  7.697.47  8.697.33  9.196.84  9.295.81 10.193.62
      1000 11.393.22 12.093.22 13.393.01 15.192.72 18.592.62 24.092.91
      1000 25.993.01 27.393.12 30.293.41 31.893.41 34.093.72 36.094.22
      1000 38.094.91 39.995.62 42.395.91 44.895.72 46.995.62 48.595.51
      1000 50.995.62 53.095.51 56.095.51 59.695.91 63.196.01 66.296.01
      1000 70.396.22 73.196.22 75.796.31 78.896.31 81.396.31 83.696.31
      1000 84.796.12 85.595.72 87.495.31 88.595.22 89.895.01 91.195.12
      1000 93.895.12 96.695.51100.096.12102.096.41104.996.63108.897.23
      1000113.297.68116.198.01119.098.19122.098.11124.997.91126.497.61
      1000128.096.41129.096.31130.096.12131.395.91133.096.12135.596.31
      1000138.096.51140.296.41142.596.51145.796.77148.697.55152.497.72
      1000154.197.94156.098.83158.299.51159.699.83161.999.91
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      23.9      23.9
NS    1000      24.8      35.6      35.6      34.7      43.7      34.6
NS    1000      34.7      23.7      23.8      23.6      42.6      42.7
NS    1000      43.8      43.7      43.7      42.9      63.8      43.8
NS    1000      43.8      43.7      43.8      43.8      43.8      43.8
NS    1000      42.9      43.8      43.8      43.9      43.9      43.8
NS    1000      42.8      42.8      45.8      43.8      42.9      42.9
NS    1000      45.8      45.6      45.7      43.6      43.7      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.7
NS    1000      42.7      42.9      42.9      42.9      45.8      45.7
NS    1000      45.7      24.6      24.6      42.6      34.7      24.9
NS    1000      23.9      24.7      23.6      23.6      42.6
WSL   1000     94.53     94.61     94.69     94.76     94.85     94.94
WSL   1000     95.44     95.50     95.85     96.06     96.14     96.30
WSL   1000     96.47     96.50     96.55     96.60     96.64     96.68
WSL   1000     96.72     96.75     96.79     96.82     96.85     96.89
WSL   1000     96.93     96.96     97.00     97.03     97.06     97.10
CAL1  1000     96.52     494.3
VEL1  1000                                                      0.00 0.47
VEL1  1000 0.90 0.85 3.42 5.88 5.41 5.48 5.08 4.89 4.00 4.01 3.47 2.96
VEL1  1000 2.05 1.30 1.35 2.47 1.94 2.78 3.10 3.26 3.24 3.01 2.29 1.59
VEL1  1000 1.78 1.36 0.95 1.88 1.29 1.69 1.19 0.10 1.11 1.20 1.08 1.50
VEL1  1000 1.68 3.20 0.07 0.00
VEL1  1000 0.00 0.70 1.20 2.01 1.59 0.80 0.00 0.03 0.00
VEL1  1000
CAL2  1000     95.85     339.7
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

IFG4 Data Deck

MANSQ Data Deck

```
     Pebble      04-MSK-RF1  06/27/05
RIFFLE                      Q0605                                    TRANSECT 1
IOC       0110000000000000000000
QARD 140.0
QARD 160.0
QARD 180.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 290.0
QARD 320.0
QARD 339.7
QARD 370.0
QARD 400.0
QARD 440.0
QARD 480.0
QARD 494.3
QARD 530.0
QARD 570.0
QARD 610.0
QARD 650.0
QARD 690.0
QARD 730.0
QARD 770.0
QARD 810.0
QARD 850.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
QARD1150.0
QARD1200.0
XSEC  1000     1000. 1.0     92.62    .00411
      1000   .099.65  3.599.98  4.699.97  4.998.58  5.898.62  6.198.83
      1000  6.898.47  7.697.47  8.697.33  9.196.84  9.295.81 10.193.62
      1000 11.393.22 12.093.22 13.393.01 15.192.72 18.592.62 24.092.91
      1000 25.993.01 27.393.12 30.293.41 31.893.41 34.093.72 36.094.22
      1000 38.094.91 39.995.62 42.395.91 44.895.72 46.995.62 48.595.51
      1000 50.995.62 53.095.51 56.095.51 59.695.91 63.196.01 66.296.01
      1000 70.396.22 73.196.22 75.796.31 78.896.31 81.396.31 83.696.31
      1000 84.796.12 85.595.72 87.495.31 88.595.22 89.895.01 91.195.12
      1000 93.895.12 96.695.51100.096.12102.096.41104.996.63108.897.23
      1000113.297.68116.198.01119.098.19122.098.11124.997.91126.497.61
      1000128.096.41129.096.31130.096.12131.395.91133.096.12135.596.31
      1000138.096.51140.296.41142.596.51145.796.77148.697.55152.497.72
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```

MANSQ Data Deck (continued)

```
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      23.9      23.9
NS    1000      24.8      35.6      35.6      34.7      43.7      34.6
NS    1000      34.7      23.7      23.8      23.6      42.6      42.7
NS    1000      43.8      43.7      43.7      42.9      63.8      43.8
NS    1000      43.8      43.7      43.8      43.8      43.8      43.8
NS    1000      42.9      43.8      43.8      43.9      43.9      43.8
NS    1000      42.8      42.8      45.8      43.8      42.9      42.9
NS    1000      45.8      45.6      45.7      43.6      43.7      43.6
NS    1000      43.6      43.6      43.6      43.6      43.6      43.7
NS    1000      42.7      42.9      42.9      42.9      45.8      45.7
NS    1000      45.7      24.6      24.6      42.6      34.7      24.9
NS    1000      23.9      24.7      23.6      23.6      42.6
CALQ  1000     95.85     339.7    -1.000
ENDJ
```

MANSQ Data Deck

Stream: Koktuli River

Reach: Koktuli River

Site/TR: 04-MSK-RN3

Habitat Type: Run

River Kilometer: 43.96

Stream: **Koktuli River**
Site: **04-MSK-RN3**
Habitat Type: **Run**

(1) Field Data

Level Loop Surveys:

Flow	Date	BM	HP	TP
1	6/28/2005	100.00	99.62	98.13
2	7/18/2005	100.00	99.63	98.14
3	8/12/2005	100.00	99.62	98.12
4	7/5/2006	100.00	99.63	98.16
5	4/15/2007	100.00	99.63	98.30

(a) Elevation of control pins (BM, HP, TP) are taken from the first half of each level loop survey
(b) Relative elevations between BM and HP were no more than 0.01ft, indicating the control pins were stable during the 2005-2007 period.
(b) TP of April 07 may have moved slightly, but the hydraulics of this date was not used in hydraulic calibration due to ice near shore and possibly frost heave.

Measured WSE:

There are three WSEs (Right, mid, and Left) measured across the transect for each flow, and the average of the three is used as transect representative WSE for modeling.

Date	WSE (ft)
6/28/2005	94.75
7/18/2005	94.62
8/12/2005	94.22
7/5/2006	94.45
4/15/2007	94.19

Calibration Notes

Discharge:

All measured discharges are listed in the following table.

Date	Ave Q (cfs)
6/28/2005	449.7
7/18/2005	
8/12/2005	282.7
7/5/2006	429.8
4/15/2007	340.6

No discharge was measured on 7/18/05.

Longitudinal WSE Slope:

Slopes are calculated using the WSEs and longitudinal distances measured along the stream in the vicinity of the transect.

Date	WSE Slope (%)	WSE Slope Distance (ft)
6/28/2005	0.138%	115.7
7/18/2005	0.159%	232.6
8/12/2005	0.238%	239.6
7/5/2006	0.164%	261.5
4/15/2007	0.270%	126.0

The slope S=0.238% of 6/28/05 survey was used for hydraulic modeling.

Calibration Notes

SZF (Stage of Zero Flow):

Date	Transect Invert (ft)
6/28/2005	92.65
7/18/2005	
8/12/2005	92.52
7/5/2006	92.55
4/15/2007	92.34
Invert	92.65
SZF	92.65

Note: (1) Transect invert is the lowest elevation of the cross-section
(2) SZF is the theoretical stage of zero flow determined from the WSE calibration process
(3) No transect profile was surveyed on 7/18/05

Calibration Notes

(2) WSE Calibration:

Model: PHABSIM ver 2.1 July, 1989

WSE Calibration Results:

Flow	Survey Date	Q (cfs)	Measured WSE(ft) TR	Calibrated WSE(ft) TR	WSE calibration error (ft) TR	Calib. Method
1	6/28/2005	449.7	94.75			
2	7/18/2005		94.62			
3	8/12/2005	282.7	94.22	94.22	0.00	MANSQ
4	7/5/2006	429.8	94.45	94.46	0.01	MANSQ
5	4/15/2007	340.6	94.19			

Note: (a) WSE calibration error = calibrated WSE - measured WSE
(b) Maximum WSE calibration error 0.00ft is within acceptable range.
(c) 6/28/05 data was not included for calibration because of suspicious WSE, which was too high compared to the WSE of 7/5/06 which had a similar flow.
(d) 7/18/05 data set has no measured discharge
(e) 4/6/07 data set was not included in calibration due to ice effect

8/7/08: Initial WSE calibration using three flows (6/28/05, 8/12/05, and 7/5/06) shows Fr decreases with increasing flows. After examining the measured Q ~ WSE relationship, it is determined the unreasonable hydraulics may be caused by the 6/28/05 hydraulics. Therefore, only 8/12/05 and 7/5/06 hydraulics are used for modeling using MANSQ to calibrate the WSE.
Coefficient β=-0.4 was used and the simulation results for are listed in the following table.

Calibration Notes

Simulation Q (cfs)	WSE (ft)
110	93.83
130	93.89
150	93.94
170	93.99
200	94.06
230	94.12
260	94.18
282.7	94.22
310	94.27
340	94.32
370	94.37
400	94.42
429.8	94.46
449.7	94.49
480	94.53
510	94.58
540	94.62
580	94.67
620	94.72
660	94.77
700	94.82
740	94.86
780	94.91
820	94.95
860	94.99
900	95.03
950	95.08
1000	95.13
1050	95.17
1100	95.22

Calibration Notes

(3) Velocity calibration

This site has one transect with four velocity/discharge measurements, ranging from 282.7cfs to 449.7cfs. The hydraulics of 6/06 was not included in hydraulic modeling due to inconsistent WSE~Q relationship. The hydraulics of 4/07 was not included in hydraulic modeling due to ice impact. Therefore, there are only two complete velocity profiles available for hydraulic modeling. Each of the two measured velocity profiles was used as template for velocity calibration. Simulated velocity profile of each measured flow was calibrated to resemble its measured profile by slightly adjusting the Manning's n values given by IFG4 model, if needed. Then the calibrated velocity profile was used to simulate velocity for a range of flows in the vicinity of the measured flow. For the two calibrated velocity profiles of this transect, no adjustment for n values was needed

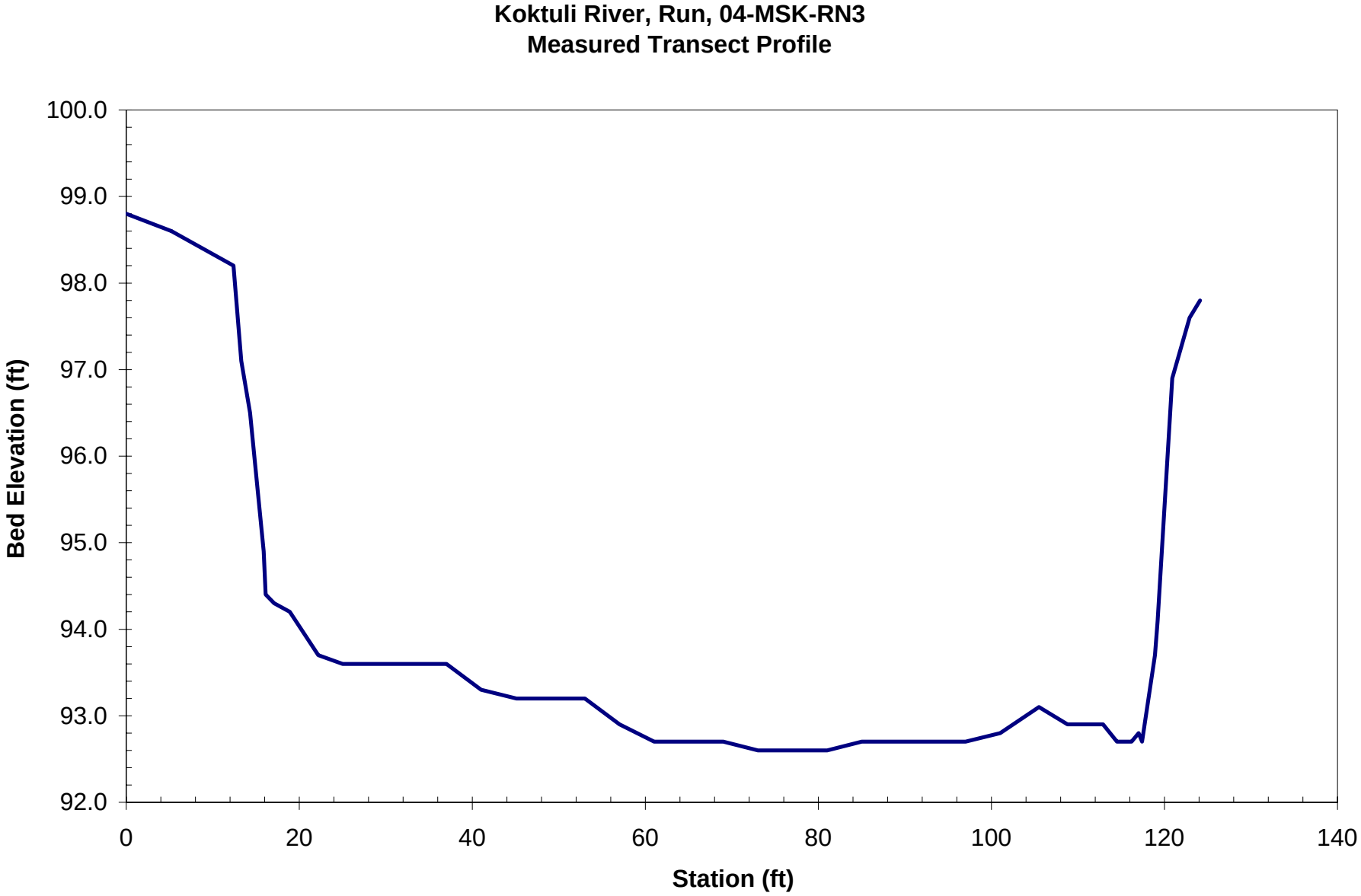
A Y in the following table calibrates the calibrated velocity profile was used in habitat (WUA) modeling.

Survey Date	Q (cfs)	WUA (Y/N)
6/28/2005	449.7	
7/18/2005		
8/12/2005	282.7	Y
7/5/2006	429.8	Y
4/15/2007	340.6	

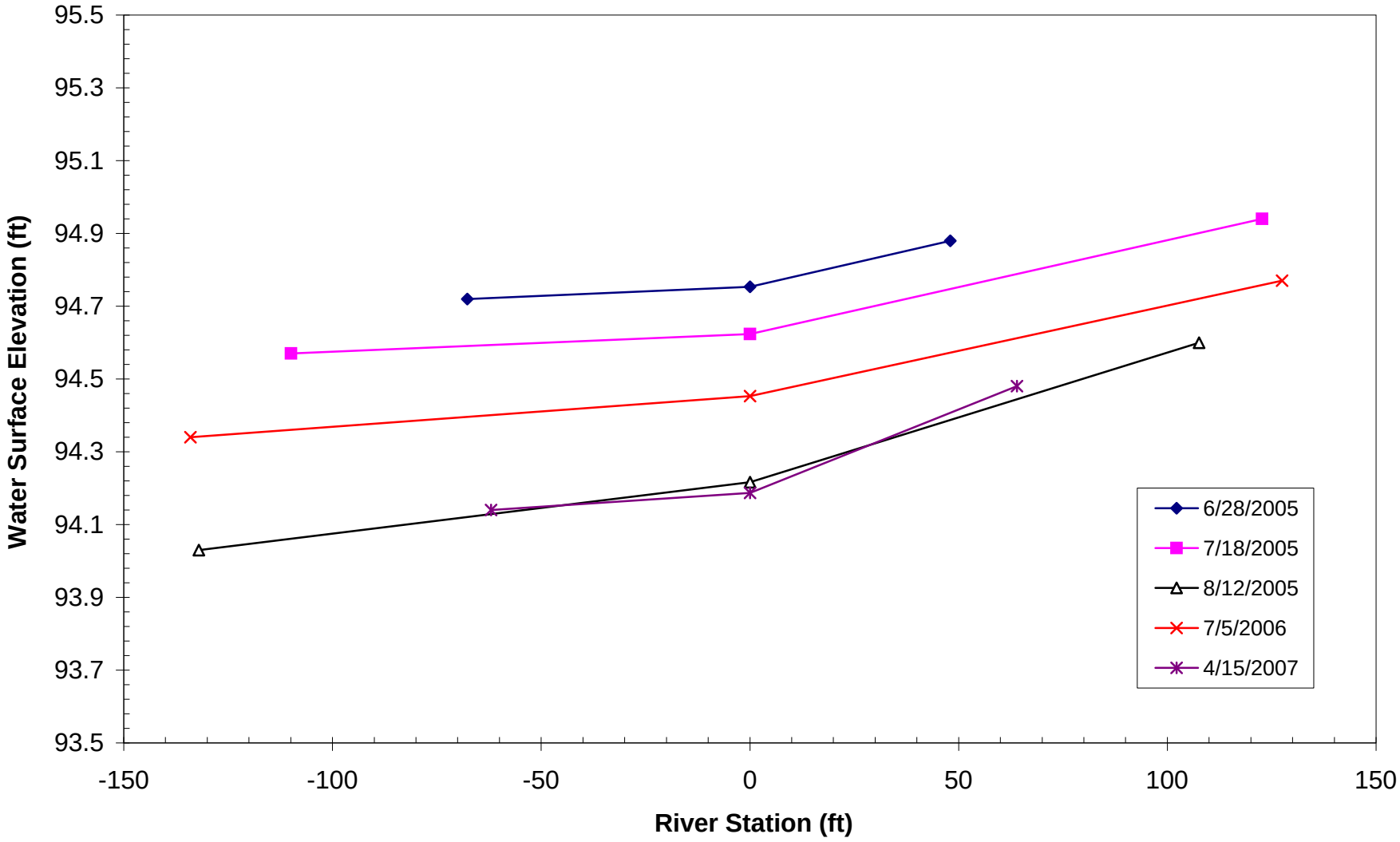
(4) Hydraulic Calibration Results:

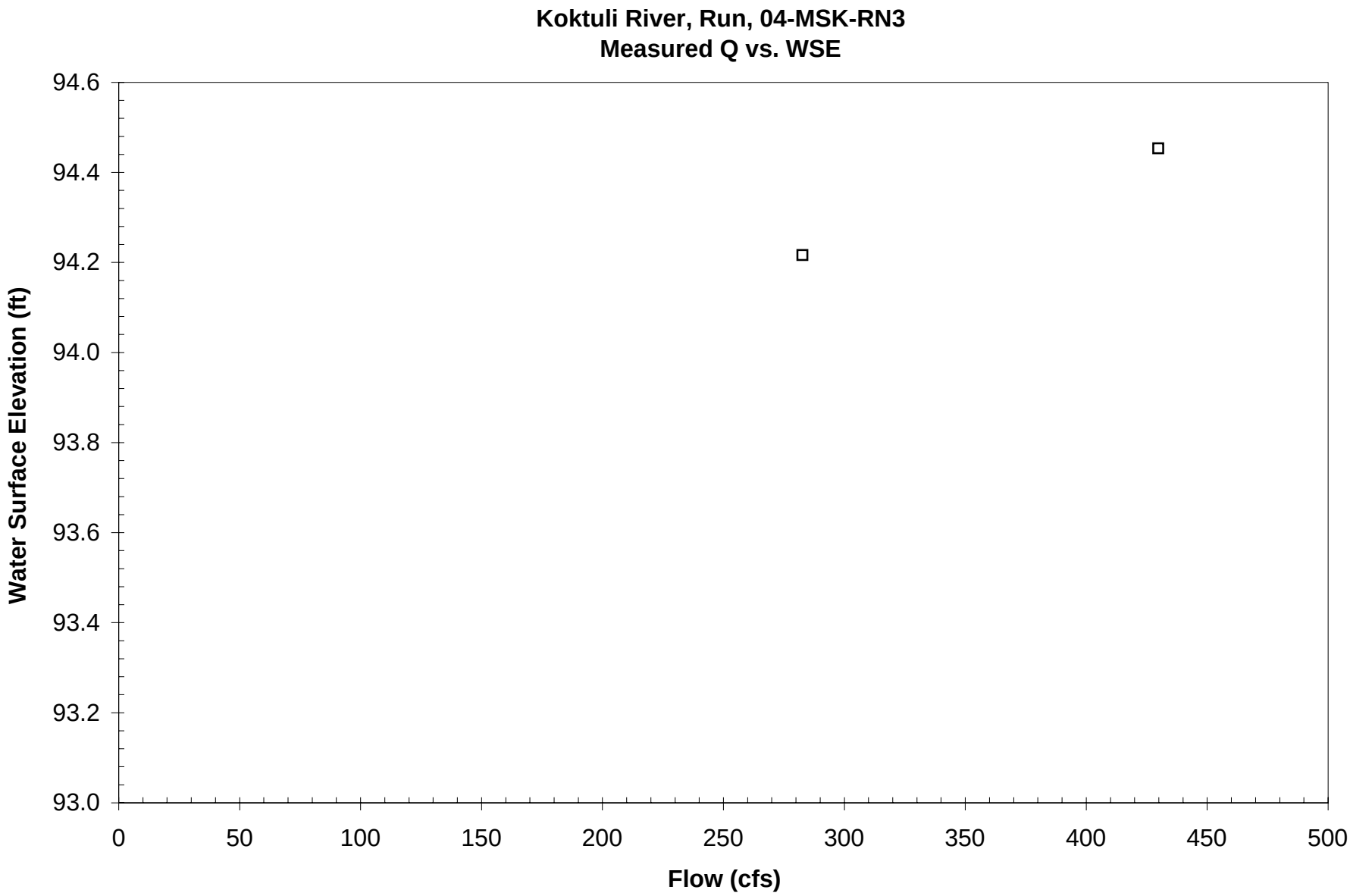
Hydraulic simulation results are summarized in the tables and figures that follow.
The results show the simulated hydraulics (Fr, V_ave, WSE, Manning's n, Wetted perimeter) are all within reasonable ranges with normal trends.

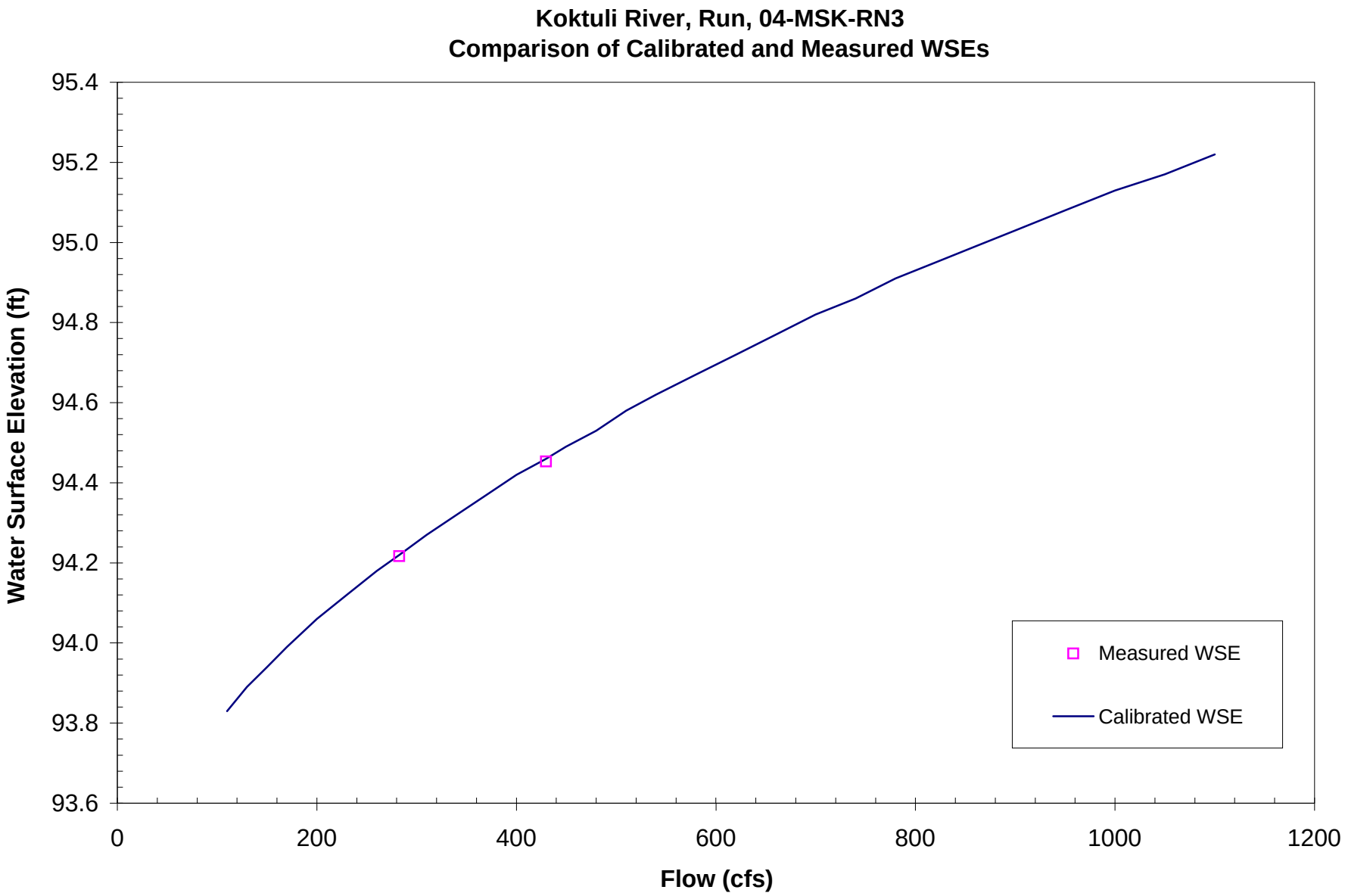
Calibration Notes


Koktuli River, Run, 04-MSK-RN3
Measured Transect Profile
Bed Elevation (ft)
100.0
99.0
98.0
97.0
96.0
95.0
94.0
93.0
92.0
0
20
40
60
80
100
120
140
Station (ft)

Koktuli River, Run, 04-MSK-RN3
Longitudinal Water Surface Elevation Profiles



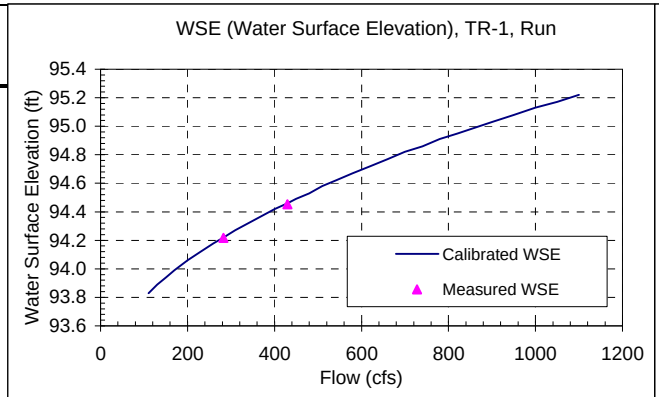

Koktuli River, Run, 04-MSK-RN3
Measured Q vs. WSE
Water Surface Elevation (ft)
94.6
94.4
94.2
94.0
93.8
93.6
93.4
93.2
93.0
0
50
100
150
200
250
300
350
400
450
500
Flow (cfs)

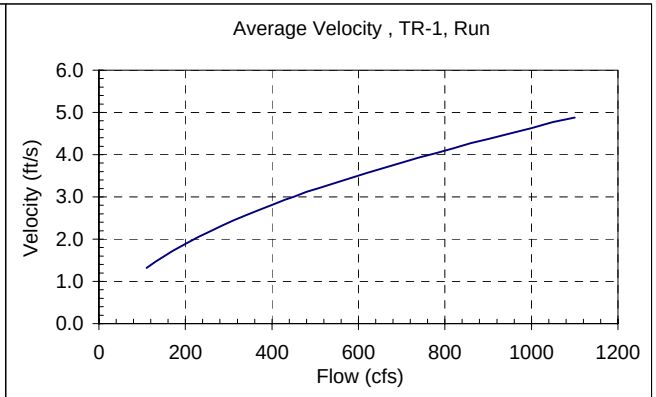

Koktuli River, Run, 04-MSK-RN3
Comparison of Calibrated and Measured WSEs
Water Surface Elevation (ft)
95.4
95.2
95.0
94.8
94.6
94.4
94.2
94.0
93.8
93.6
0
200
400
600
800
1000
1200
Flow (cfs)
Measured WSE
Calibrated WSE

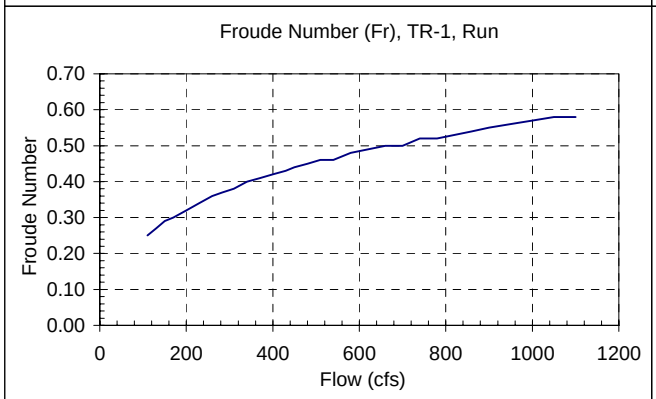
Stream: Koktuli River
Site Name: 04-MSK-RN3
Date: 7/5/2006
Calibration Flow: NA

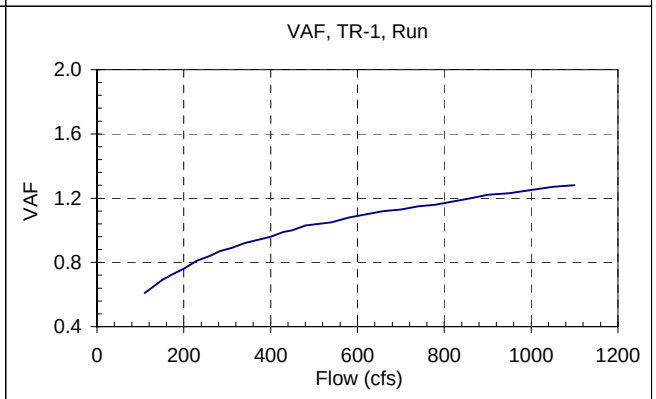
Reach: KR
Site #: 3
Transect: 1
Habitat: Run

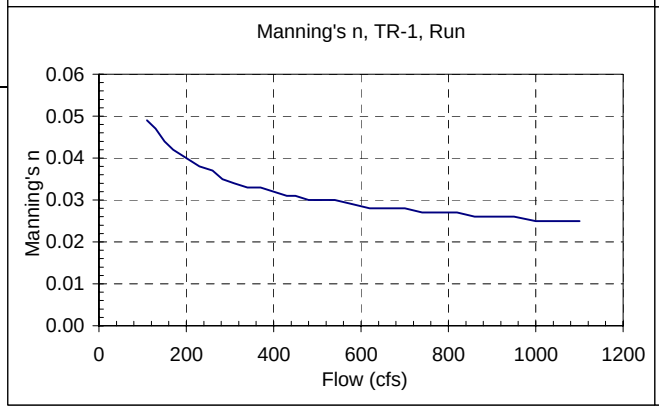
Q (cfs)	Calibrated WSE (ft)	Froude Number (Fr)	Average Velocity (ft/sec)	VAF	Manning's n	Wetted perimeter (ft)
110	93.83	0.25	1.32	0.61	0.049	98.4
130	93.89	0.27	1.46	0.65	0.05	98.9
150	93.94	0.29	1.59	0.69	0.04	99.3
170	93.99	0.30	1.72	0.72	0.04	99.7
200	94.06	0.32	1.89	0.76	0.04	100.3
230	94.12	0.34	2.05	0.81	0.04	100.7
260	94.18	0.36	2.20	0.84	0.04	101.3
282.7	94.22	0.37	2.31	0.87	0.04	101.7
310	94.27	0.38	2.44	0.89	0.03	102.2
340	94.32	0.40	2.57	0.92	0.03	102.7
370	94.37	0.41	2.69	0.94	0.03	103.2
400	94.42	0.42	2.81	0.96	0.03	103.8
429.8	94.46	0.43	2.93	0.99	0.03	104.2
449.7	94.49	0.44	3.00	1.00	0.03	104.2
480	94.53	0.45	3.12	1.03	0.03	104.3
510	94.58	0.46	3.21	1.04	0.03	104.4
540	94.62	0.46	3.31	1.05	0.03	104.5
580	94.67	0.48	3.44	1.08	0.03	104.6
620	94.72	0.49	3.57	1.10	0.03	104.7
660	94.77	0.50	3.69	1.12	0.03	104.9
700	94.82	0.50	3.81	1.13	0.03	105.0
740	94.86	0.52	3.93	1.15	0.03	105.1
780	94.91	0.52	4.04	1.16	0.03	105.2
820	94.95	0.53	4.15	1.18	0.03	105.3
860	94.99	0.54	4.27	1.20	0.03	105.4
900	95.03	0.55	4.37	1.22	0.03	105.5
950	95.08	0.56	4.50	1.23	0.03	105.6
1000	95.13	0.57	4.63	1.25	0.03	105.7
1050	95.17	0.58	4.77	1.27	0.03	105.8
1100.0	95.22	0.58	4.88	1.28	0.025	106.0

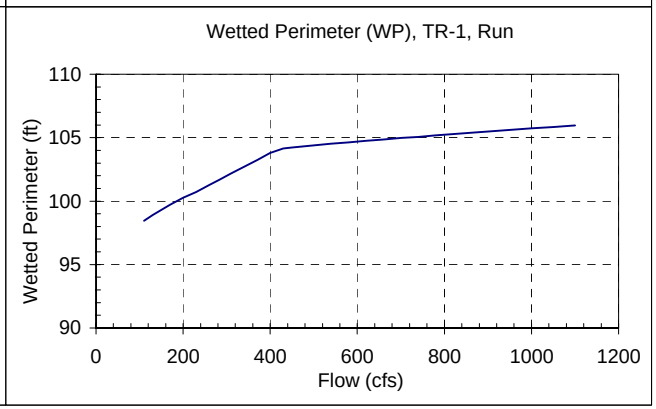




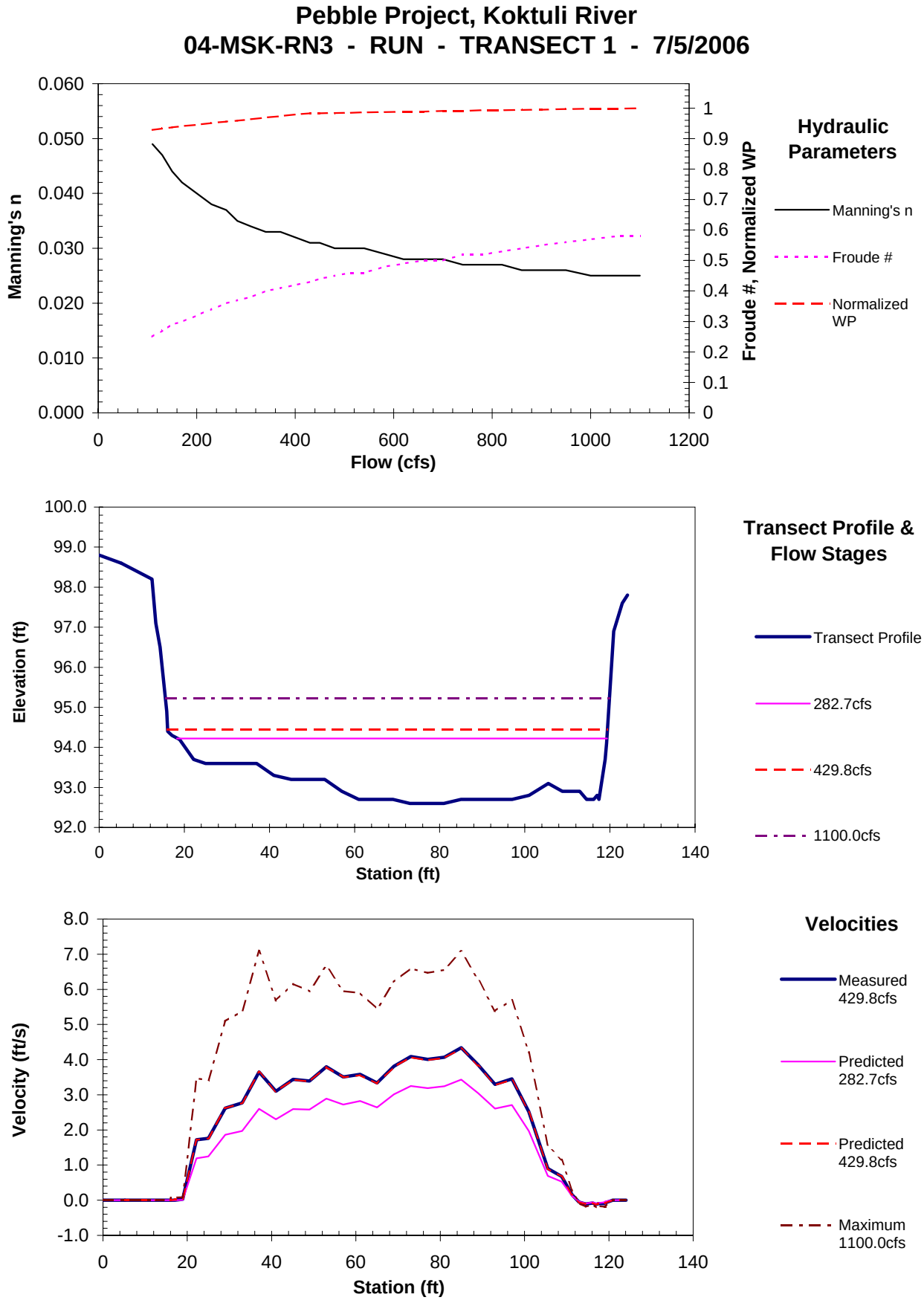








cTR1 - Transect hydraulic parameters



Transect hydraulic summary

IFG4 Data Deck

```
     Pebble      04-MSK-RN3  07/05/06
RUN                        0706Q                                  TRANSECT 1
IOC       1101100100001000101000
QARD 110.0
QARD 130.0
QARD 150.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 282.7
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 429.8
QARD 449.7
QARD 480.0
QARD 510.0
QARD 540.0
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
QARD 740.0
QARD 780.0
QARD 820.0
QARD 860.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     93.05    .00238
      1000   .098.81  5.298.63 12.498.23 13.397.13 14.396.53 15.994.88
      1000 16.194.45 17.194.35 18.994.15 22.293.65 25.093.55 29.093.55
      1000 33.093.55 37.093.55 41.093.35 45.193.25 49.093.15 53.093.15
      1000 57.092.95 61.092.75 65.092.65 69.092.65 73.092.55 77.092.55
      1000 81.092.55 85.092.65 89.092.65 93.092.65 97.092.75101.092.85
      1000105.593.05108.892.95111.392.95112.992.95114.592.75116.292.75
      1000117.092.85117.492.75118.993.65119.294.05120.996.90122.997.57
      1000124.197.81
NS    1000      42.7      24.8      42.6      42.6      42.6      42.6
NS    1000      24.7      24.7      45.8      54.6      45.6      45.6
NS    1000      45.6      54.6      45.6      45.6      45.6      64.6
NS    1000      43.9      45.6      43.7      45.8      42.9      42.9
NS    1000      42.9      45.6      43.8      43.8      43.7      54.6
NS    1000      45.7      24.6      24.6      42.6      22.9      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
```

IFG4 Data Deck

IFG4 Data Deck (continued)

```
NS    1000      22.9
WSL   1000     93.83     93.89     93.94     93.99     94.06     94.12
WSL   1000     94.18     94.22     94.27     94.32     94.37     94.42
WSL   1000     94.46     94.49     94.53     94.58     94.62     94.67
WSL   1000     94.72     94.77     94.82     94.86     94.91     94.95
WSL   1000     94.99     95.03     95.08     95.13     95.17     95.22
CAL1  1000     94.45     429.8
VEL1  1000                                0.00 0.00 0.03 1.72 1.76 2.62
VEL1  1000 2.77 3.65 3.10 3.44 3.39 3.80 3.51 3.58 3.34 3.81 4.09 4.01
VEL1  1000 4.07 4.34 3.85 3.30 3.45 2.52 0.90 0.68 0.16-0.05-0.11-0.08
VEL1  1000-0.12-0.10-0.09-0.07
CAL2  1000     94.22     282.7
VEL2  1000
VEL2  1000
VEL2  1000
VEL2  1000
ENDJ
```

MANSQ Data Deck

```
     Pebble      04-MSK-RN3  08/12/05
RUN                          Q0805                                    TRANSECT 1
IOC        0110000000000000000000
QARD 110.0
QARD 130.0
QARD 150.0
QARD 170.0
QARD 200.0
QARD 230.0
QARD 260.0
QARD 282.7
QARD 310.0
QARD 340.0
QARD 370.0
QARD 400.0
QARD 429.8
QARD 449.7
QARD 480.0
QARD 510.0
QARD 540.0
QARD 580.0
QARD 620.0
QARD 660.0
QARD 700.0
QARD 740.0
QARD 780.0
QARD 820.0
QARD 860.0
QARD 900.0
QARD 950.0
QARD1000.0
QARD1050.0
QARD1100.0
XSEC  1000     1000. 1.0     93.05    .00238
      1000   .098.80  5.298.62 12.498.23 13.397.12 14.396.52 15.994.87
      1000 16.394.75 17.194.65 18.494.22 18.993.91 22.293.51 25.093.41
      1000 29.093.22 33.093.51 37.093.41 41.093.31 45.193.41 49.093.31
      1000 53.093.01 57.093.12 61.092.91 65.093.01 69.092.72 73.093.12
      1000 77.093.22 81.092.91 85.092.81 89.092.91 93.093.22 97.093.31
      1000101.093.31105.593.51108.893.01111.392.72112.992.62114.592.62
      1000116.292.51117.093.31117.493.41118.993.91119.294.12120.996.90
      1000122.997.56124.197.80
```

MANSQ Data Deck (continued)

```
NS    1000      42.7      24.8      42.6      42.6      42.6      42.6
NS    1000      24.7      24.7      45.8      45.8      54.6      45.6
NS    1000      45.6      45.6      54.6      45.6      45.6      45.6
NS    1000      64.6      43.9      45.6      43.7      45.8      42.9
NS    1000      42.9      42.9      45.6      43.8      43.8      43.7
NS    1000      54.6      45.7      24.6      24.6      42.6      22.9
NS    1000      22.9      22.9      22.9      22.9      22.9      22.9
NS    1000      22.9      22.9
CALQ  1000     94.22     282.7     -0.4
ENDJ
```

ATTACHMENT 5

Transect Photographs

Transect Photographs

The photographs in this document show each of the PHABSIM (physical habitat simulation software computer model) transects throughout the Pebble Project study area at varying flows. The study area included the following basins: NorthFork Koktuli (NFK), South Fork Koktuli (SFK), Upper Talarik Creek (UT) and Mainstem Koktuli River (KR). Each page of photographs represents a single transect, whether that transect constitutes an entire site (e.g., 05-NFK1-RN1) or a section of a site (e.g., the left channel in 05-NFK1-IC3; the right channel of Transect 2 in 08-NFK1-MS2). The heading on each page identifies the location of the transect in the subbasin and reach, as well as the site name and the direction of view (e.g., looking downstream). Photographs are organized from the downstream-most site to the upstream-most site in each basin.

Most transects are represented by three views. Photographs are not available for every site visit; thus, some transects are represented by two views. Photographs are not arranged chronologically on the page. The highest recorded flow is represented by the left photograph, with lower flows presented in the center and to the right regardless of date. Each photograph is labeled with the date that the photograph was taken and the recorded flow (in cfs) on that date, unless otherwise noted. In a few situations, the date of the photograph differs by a few days from the date of the recorded flow.

Under certain circumstances, a flow value is not identified for a photograph. In these cases, the photograph shown is from a site visit for which no flow measurement was taken. This occurred during the July 2005 site visits, when only substrate measurements were collected, and during some of the April 2007 site visits, when ice conditions prevented the collection of flow data. Two other instances of unrecorded flow are: the August 10, 2005 site visit to 05-SFK3-RN1 when conditions were too shallow to measure velocity, and an aerial photograph of 04-UTC-IC2 on September 10, 2005 used to represent the highest flow. These photographs are included here to present a visual depiction of the site at three flows, whenever possible.

For each Island Complex (IC) site and each 2008 R2 site, a single flow value is used for all photographs of the site on a specific date; this represents the overall measured flow through multiple channels (and transects in the R2 sites). Hence, photographs of left and right channels that depict clearly different discharge are shown to have the same flow. The sole exception to this arrangement is 08-NFK2-MS1, Transect 1, which lies far enough downstream from Transect 2 to be considered separately from Transects 2 and 3 due to additional intervening flow.

FIGURES

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05-NFK1-IC3 CENTER CHANNEL 2
05-NFK1-IC3 RIGHT CHANNEL....3
08-NFK1-MS1 TRANSECT 1 LEFT CHANNEL....4
08-NFK1-MS1 TRANSECT 1 RIGHT CHANNEL 5
08-NFK1-MS1 TRANSECT 2 6
08-NFK1-MS1 TRANSECT 3 7
08-NFK1-MS1 TRANSECT 4 8
08-NFK1-MS1 TRANSECT 5 9
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08-NFK1-MS1 TRANSECT 6 RIGHT CHANNEL 11
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08-NFK1-MS2 TRANSECT 1 RIGHT CHANNEL 13
08-NFK1-MS2 TRANSECT 2 LEFT CHANNEL....14
08-NFK1-MS2 TRANSECT 2 RIGHT CHANNEL 15
08-NFK1-MS2 TRANSECT 3 LEFT CHANNEL....16
08-NFK1-MS2 TRANSECT 3 RIGHT CHANNEL 17
08-NFK1-MS2 TRANSECT 4 LEFT CHANNEL....18
08-NFK1-MS2 TRANSECT 4 RIGHT CHANNEL 19
08-NFK1-MS2 TRANSECT 5 LEFT CHANNEL....20
08-NFK1-MS2 TRANSECT 5 RIGHT CHANNEL 21
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05-NFK1-IC1 LEFT CHANNEL 24
05-NFK1-IC1 RIGHT CHANNEL....25
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04-NFK-IC1 TRANSECT 2 RIGHT CHANNEL....36
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04-NFK-IC2 RIGHT CHANNEL....40
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08-SFK1-MS1 TRANSECT 2 RIGHT CHANNEL....49
08-SFK1-MS1 TRANSECT 3 LEFT CHANNEL 50
08-SFK1-MS1 TRANSECT 3 RIGHT CHANNEL....51
08-SFK1-MS1 TRANSECT 4 LEFT CHANNEL 52
08-SFK1-MS1 TRANSECT 4 RIGHT CHANNEL....53
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08-SFK1-MS1 TRANSECT 6 55
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08-SFK1-MS2 TRANSECT 1 58
08-SFK1-MS2 TRANSECT 2 59

08-SFK1-MS2 TRANSECT 3 LEFT CHANNEL 60
08-SFK1-MS2 TRANSECT 3 RIGHT CHANNEL 61
08-SFK1-MS2 TRANSECT 4 LEFT CHANNEL 62
08-SFK1-MS2 TRANSECT 4 RIGHT CHANNEL 63
08-SFK1-MS2 TRANSECT 5 LEFT CHANNEL 64
08-SFK1-MS2 TRANSECT 5 RIGHT CHANNEL 65
08-SFK1-MS2 TRANSECT 6 66
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04-SFK-RN3 68
07-SFK1-RF1 69
04-SFK-RF2 70
04-SFK-RN2 71
04-SFK-IC2 LEFT CHANNEL 72
04-SFK-IC2 CENTER CHANNEL 73
04-SFK-IC2 RIGHT CHANNEL 74
05-SFK2-RF1 75
05-SFK2-RN4 76
05-SFK2-IC1 LEFT CHANNEL 77
05-SFK2-IC1 RIGHT CHANNEL 78
05-SFK2-RN7 79
05-SFK2-RN6 80
05-SFK2-RN3 81
05-SFK2-RN5 82
05-SFK2-RN2 83
05-SFK2-PL1 84
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08-SFK-190 TRANSECT 2 87
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05-SFK3-RN1 92
04-SFK-RF1 93
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04-SFK-RN1 95
05-SFK3-PL1 96
05-SFK3-PL2 97
08-UTC1-MS1 TRANSECT 1 98
08-UTC1-MS1 TRANSECT 2 99
08-UTC1-MS1 TRANSECT 3 100
08-UTC1-MS1 TRANSECT 4 101
08-UTC1-MS1 TRANSECT 5 102
05-UTC1-IC1 LEFT CHANNEL 103
05-UTC1-IC1 RIGHT CHANNEL 104
04-UTC1-RF2 105
05-UTC1-RN1 106
04-UTC-IC2 LEFT CHANNEL 107
04-UTC-IC2 RIGHT CHANNEL 108
04-UTC-RN1 109
04-UTC-RN2 110
04-UTC-RF2 111
05UT190-RF1 112
05UT190 RF3 113
05UT190-RF4 114
05UT190-RN1 115
05UT190-RF5 116
07-UTC2-RN3 117
07-UTC2-RN1 118
07-UTC2-RN2 119

05-UTC2-RF1 120
04-UTC-RF3 121
04-UTC-RN3 122
05-UTC2-RN2 123
05-UTC2-RF2 124
04-UTC-IC1 LEFT CHANNEL 125
04-UTC-IC1 RIGHT CHANNEL 126
08-UTC2-MS1 TRANSECT 1 127
08-UTC2-MS1 TRANSECT 2 LEFT CHANNEL 128
08-UTC2-MS1 TRANSECT 2 RIGHT CHANNEL 129
08-UTC2-MS1 TRANSECT 3 LEFT CHANNEL 130
08-UTC2-MS1 TRANSECT 3 RIGHT CHANNEL 131
08-UTC2-MS1 TRANSECT 4 LEFT CHANNEL 132
08-UTC2-MS1 TRANSECT 4 133
08-UTC2-MS1 TRANSECT 5 LEFT CHANNEL 134
08-UTC2-MS1 TRANSECT 5 RIGHT CHANNEL 135
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07-UTC2-RN4 138
05-UTC3-RN3 139
05-UTC3-RN2 140
05-UTC3-PL1 141
05-UTC3-RF1 142
05-UTC3-RF2 143
05-UTC3-RN1 144
04-MSK-RF2 145
04-MSK-IC2 LEFT CHANNEL 146
04-MSK-IC2 RIGHT CHANNEL 147
04-MSK-RF1 148
04-MSK-RN3 149

North Fork Koktuli River Reach NFK A

05-NFK1-IC3 Left Channel Looking Upstream

Date - 27 June 2005
Flow - 168 cfs

Date - 13 August 2005
Flow - 120 cfs

Date - 21 July 2007
Flow - 103 cfs

North Fork Koktuli River Reach NFK A

05-NFK1-IC3 Center Channel Looking Upstream

Date - 27 June 2005
Flow - 168 cfs

Date - 13 August 2005
Flow - 120 cfs

Date - 21 July 2007
Flow - 103 cfs

North Fork Koktuli River Reach NFK A

05-NFK1-IC3 Right Channel (main) Looking Upstream

Date - 27 June 2005
Flow - 168 cfs

Date - 13 August 2005
Flow - 120 cfs

Date - 21 July 2007
Flow - 103 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 1 Left Channel Looking Upstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 1 Right Channel Looking Upstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 2 Looking Upstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 3 Looking Downstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 4 Looking Upstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 5 Looking Upstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 6 Left Channel Looking Downstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS1 Transect 6 Right Channel Looking Downstream

Date - 21 June 2008
Flow - 521 cfs

Date - 19 July 2008
Flow - 237 cfs

Date - 19 August 2008
Flow - 118 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 1 Left Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 1 Right Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 2 Left Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 2 Right Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 3 Left Channel Looking Downstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 3 Right Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 4 Left Channel Looking Downstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 4 Right Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 5 Left Channel Looking Upstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

08-NFK1-MS2 Transect 5 Right Channel Looking Downstream

Date - 22 June 2008
Flow - 449 cfs

Date - 20 July 2008
Flow - 214 cfs

Date - 20 August 2008
Flow - 119 cfs

North Fork Koktuli River Reach NFK A

05-NFK1-RN1 Looking Upstream

Date - 23 June 2005
Flow - 224 cfs

Date - 05 July 2006
Flow - 153 cfs

Date - 13 August 2005
Flow - 90 cfs

North Fork Koktuli River Reach NFK B

07-NFK1-RF1 Looking Downstream

Date - 12 June 2007
Flow - 200 cfs

Date - 19 October 2007
Flow - 190 cfs

Date - 20 July 2007
Flow - 105 cfs

North Fork Koktuli River Reach NFK B

05-NFK1-IC1 Left Channel Looking Downstream

Date - 22 June 2005
Flow - 226 cfs

Date - 04 July 2006
Flow - 148 cfs

Date - 13 August 2005
Flow - 100 cfs

North Fork Koktuli River Reach NFK B

05-NFK1-IC1 Right Channel (main) Looking Upstream

Date - 22 June 2005
Flow - 226 cfs

Date - 04 July 2006
Flow - 148 cfs

Date - 13 August 2005
Flow - 100 cfs

North Fork Koktuli River Reach NFK B

05-NFK1-RF2 Looking Downstream

Date - 22 June 2005
Flow - Flow 220 cfs

Date - 04 July 2006
Flow - 161 cfs

Date - 14 August 2005
Flow - 110 cfs

North Fork Koktuli River Reach NFK B

05-NFK1-RF1 Looking Upstream

Date - 21 June 2005
Flow - 215 cfs

Date - 04 July 2006
Flow - 152 cfs
(photo taken on 03 July 2006)

Date - 14 August 2005
Flow - 97 cfs

North Fork Koktuli River Reach NFK B

04-NFK-RF1 Looking Downstream

Date - 23 June 2005
Flow - 169 cfs

Date - 14 August 2005
Flow - 87 cfs

Date - 13 April 2007
Flow - 62 cfs

North Fork Koktuli River Reach NFK C

04-NFK-RN1 Looking Upstream

Date - 24 June 2005
Flow - 146 cfs

Date - 14 August 2005
Flow - 92 cfs

Date - 20 July 2007
Flow - 80 cfs

North Fork Koktuli River Reach NFK C

04-NFK-IC1 Left Channel (main) Looking Upstream

Date - 23 June 2005
Flow - 167 cfs

Date - 14 August 2005
Flow - 85 cfs

Date - 13 April 2007
Flow - 61 cfs

North Fork Koktuli River Reach NFK C

04-NFK-IC1 Right Channel Looking Upstream

Date - 23 June 2005
Flow - 167 cfs

Date - 14 August 2005
Flow - 85 cfs

Date - 13 April 2007
Flow - 61 cfs

North Fork Koktuli River Reach NFK C

04-NFK-RN2 Looking Downstream

Date - 23 June 2005
Flow - 159 cfs

Date - 14 August 2005
Flow - 72 cfs

Date - 12 April 2007
Flow - 55 cfs

North Fork Koktuli River Reach NFK C

04-NFK-RF2 Looking Downstream

Date - 23 June 2005
Flow - 166 cfs

Date - 14 August 2005
Flow - 80 cfs

Date - 12 April 2007
Flow - 56 cfs

North Fork Koktuli River Reach NFK C

08-NFK2-MS1 Transect 1 Looking Upstream

Date - 24 June 2008
Flow - 287 cfs

Date - 21 July 2008
Flow - 177 cfs

Date - 16 August 2008
Flow - 89 cfs

North Fork Koktuli River Reach NFK C

08-NFK2-MS1 Transect 2 Left Channel Looking Downstream

Date - 23 June 2008
Flow - 272 cfs

Date - 21 July 2008
Flow - 156 cfs

Date - 17 August 2008
Flow - 73 cfs

North Fork Koktuli River Reach NFK C

04-NFK-IC1 Transect 2 Right Channel Looking Upstream

Date - 23 June 2008
Flow - 272 cfs

Date - 21 July 2008
Flow - 156 cfs

Date - 17 August 2008
Flow - 73 cfs

North Fork Koktuli River Reach NFK C

08-NFK2-MS1 Transect 3 Looking Upstream

Date - 23 June 2008
Flow - 272 cfs

Date - 21 July 2008
Flow - 156 cfs

Date - 17 August 2008
Flow - 73 cfs

North Fork Koktuli River Reach NFK C

04-NFK-RN3 Looking Downstream

Date - 21 June 2005
Flow - 107 cfs

Date - 28 June 2006
Flow - 70 cfs

Date - 14 August 2005
Flow - 24 cfs

North Fork Koktuli River Reach NFK C

04-NFK-IC2 Left Channel (main) Looking Downstream

Date - 22 June 2005
Flow - 92 cfs

Date - 28 June 2006
Flow - 71 cfs

Date - 14 August 2005
Flow - 38 cfs

North Fork Koktuli River Reach NFK C

04-NFK-IC2 Right Channel Looking Downstream

Date - 22 June 2005
Flow - 92 cfs

Date - 28 June 2006
Flow - 71 cfs

Date - 14 August 2005
Flow - 38 cfs

North Fork Koktuli River Tributary NFK 190

08-NFK-190 Transect 1 Looking Downstream

Date - 23 June 2008
Flow - 74 cfs

Date - 26 July 2008
Flow - 32 cfs

Date - 21 August 2008
Flow - 13 cfs
(Transect 1 is in upper right corner of photo.)

North Fork Koktuli River Tributary NFK 190

08-NFK-190 Transect 2 Looking Downstream

Date - 23 June 2008
Flow - 74 cfs

Date - 26 July 2008
Flow - 32 cfs

Date - 21 August 2008
Flow - 13 cfs

North Fork Koktuli River Tributary NFK 190

08-NFK-190 Transect 3 Looking Downstream

Date - 23 June 2008
Flow - 74 cfs

Date - 26 July 2008
Flow - 32 cfs

Date - 21 August 2008
Flow - 13 cfs

South Fork Koktuli River Reach SFK A

05-SFK1-IC1 Left Channel Looking Downstream

Date - 15 June 2005
Flow - 237 cfs

Date - 09 July 2006
Flow - 163 cfs

Date - 12 August 2005
Flow - 67 cfs
(Looking Downstream)

South Fork Koktuli River Reach SFK A

05-SFK1-IC1 Right Channel (main) Looking Downstream

Date - 15 June 2005
Flow - 237 cfs

Date - 09 July 2006
Flow - 163 cfs

Date - 12 August 2005
Flow - 67 cfs

South Fork Koktuli River Reach SFK A

05-SFK1-RF1 Looking Downstream

Date - 15 June 2005
Flow - 224 cfs

Date - 11 April 2007
Flow - 83 cfs

Date - 11 August 2005
Flow - 70 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 1 Looking Upstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 2 Left Channel Looking Downstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 2 Right Channel Looking Upstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs
(Right channel located on left of photo)

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 3 Left Channel Looking Downstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 3 Right Channel Looking from Left Bank to Right Bank

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 4 Left Channel Looking Downstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 4 Right Channel Looking Upstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs
(Right channel dry this date)

Date - 15 August 2008
Flow - 100 cfs
(Right channel dry this date)

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 5 Looking from Right Bank to Left Bank

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS1 Transect 6 Looking Downstream

Date - 22 June 2008
Flow - 436 cfs

Date - 22 July 2008
Flow - 248 cfs

Date - 15 August 2008
Flow - 100 cfs

South Fork Koktuli River Reach SFK A

04-SFK-IC1 Left Channel (main) Looking Downstream

Date - 24 June 2005
Flow - 178 cfs

Date - 09 July 2006
Flow - 145 cfs
(photo taken on 03 July 2006)

Date - 12 August 2005
Flow - 58 cfs

South Fork Koktuli River Reach SFK A

04-SFK-IC1 Right Channel Looking Upstream

Date - 24 June 2005
Flow - 178 cfs

Date - 09 July 2006
Flow - 145 cfs
(photo taken on 03 July 2006)

Date - 12 August 2005
Flow - 58 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 1 Looking Upstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 2 Looking Downstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 3 Left Channel Looking Upstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 3 Right Channel Looking Upstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs
(photo slightly upstream of Transect 3)

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 4 Left Channel Looking Upstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 4 Right Channel Looking Downstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 5 Left Channel Looking Upstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 5 Right Channel From Left Bank to Right Bank

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

08-SFK1-MS2 Transect 6 Looking Downstream

Date - 21 June 2008
Flow - 394 cfs

Date - 24 July 2008
Flow - 252 cfs

Date - 17 August 2008
Flow - 78 cfs

South Fork Koktuli River Reach SFK A

04-SFK-RF3 Looking Upstream

Date - 24 June 2005
Flow - 150 cfs

Date - 17 July 2005
Flow - not recorded

Date - 11 August 2005
Flow - 48 cfs

South Fork Koktuli River Reach SFK A

04-SFK-RN3 Looking Downstream

Date - 24 June 2005
Flow - 143 cfs

Date - 06 July 2006
Flow - 99 cfs
(photo taken on 03 July 2006)

Date - 11 August 2005
Flow - 53 cfs

South Fork Koktuli River Reach SFK A

07-SFK1-RF1 Looking Upstream

Date - 19 October 2007
Flow - 220 cfs

Date - 13 June 2007
Flow - 107 cfs
(photo taken on 12 June 2007)

Date - 18 July 2007
Flow - 63 cfs

South Fork Koktuli River Reach SFK A

04-SFK-RF2 Looking Downstream

Date - 08 September 2005
Flow - 405 cfs

Date - 11 August 2005
Flow - 77 cfs

Date - 12 April 2007
Flow - 54 cfs

South Fork Koktuli River Reach SFK B

04-SFK-RN2 Looking Downstream

Date - 08 September 2005
Flow - 403 cfs

Date - 11 August 2005
Flow - 76 cfs

Date - 12 April 2007
Flow - 55 cfs

South Fork Koktuli River Reach SFK B

04-SFK-IC2 Left Channel Looking Upstream

Date - 08 September 2005
Flow - 436 cfs

Date - 06 July 2006
Flow - 119 cfs
(photo taken on 29 June 2006)

Date - 12 August 2005
Flow - 70 cfs

South Fork Koktuli River Reach SFK B

04-SFK-IC2 Center Channel Looking Upstream

Date - 08 September 2005
Flow - 436 cfs

Date - 06 July 2006
Flow - 119 cfs
(photo taken on 29 June 2006)

Date - 12 August 2005
Flow - 70 cfs

South Fork Koktuli River Reach SFK B

04-SFK-IC2 Right Channel Looking Upstream

Date - 08 September 2005
Flow - 436 cfs

Date - 06 July 2006
Flow - 119 cfs
(photo taken on 29 June 2006)

Date - 12 August 2005
Flow - 70 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RF1 Looking Upstream

Date - 13 June 2005
Flow - 195 cfs
(photo taken on 12 June 2005)

Date - 06 July 2006
Flow - 109 cfs

Date - 11 August 2005
Flow - 72 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RN4 Looking Upstream

Date - 13 June 2005
Flow - 183 cfs
(photo taken on 11 June 2005)

Date - 11 August 2005
Flow - 59 cfs

Date - 11 April 2007
Flow - 34 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-IC1 Left Channel Looking Upstream

Date - 13 June 2005
Flow - 188 cfs

Date - 10 August 2005
Flow - 58 cfs

Date - 11 April 2007
Flow - 25 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-IC1 Right Channel (main) Looking Upstream

Date - 13 June 2005
Flow - 188 cfs

Date - 10 August 2005
Flow - 58 cfs

Date - 11 April 2007
Flow - 25 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RN7 Looking Downstream

Date - 12 June 2005
Flow - 191 cfs

Date - 06 July 2006
Flow - 92 cfs

Date - 11 August 2005
Flow - 52 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RN6 Looking Upstream

Date - 12 June 2005
Flow - 186 cfs

Date - 06 July 2006
Flow - 81 cfs

Date - 10 August 2005
Flow - 44 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RN3 Looking Upstream

Date - 13 June 2005
Flow - 164 cfs

Date - 07 July 2006
Flow - 80 cfs

Date - 11 August 2005
Flow - 37 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RN5 Looking Upstream

Date - 12 June 2005
Flow - 177 cfs

Date - 10 August 2005
Flow - 33 cfs

Date - 11 April 2007
Flow - 7.7 cfs
(photo taken on 10 April 2007)

South Fork Koktuli River Reach SFK B

05-SFK2-RN2 Looking Upstream

Date - 13 June 2005
Flow - 151 cfs
(photo taken on 11 June 2005)

Date - 18 July 2005
Flow - not recorded

Date - 10 August 2005
Flow - 35 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-PL1 Looking Downstream

Date - 08 September 2005
Flow - 213 cfs

Date - 07 July 2006
Flow - 41 cfs

Date - 10 August 2005
Flow - 13 cfs

South Fork Koktuli River Reach SFK B

05-SFK2-RN1 Looking Downstream

Date - 14 June 2005
Flow - 121 cfs
(photo taken on 11 June 2005)

Date - 16 July 2005
Flow - not recorded

Date - 10 August 2005
Flow - 11 cfs

South Fork Koktuli River Tributary SFK 190

08-SFK-190 Transect 1 Looking Downstream

Date - 19 June 2008
Flow - 95 cfs
(looking upstream)

Date - 25 July 2008
Flow - 39 cfs

Date - 22 August 2008
Flow - 7.7 cfs

South Fork Koktuli River Tributary SFK 190

08-SFK-190 Transect 2 From Left Bank to Right Bank

Date - 19 June 2008
Flow - 95 cfs

Date - 25 July 2008
Flow - 39 cfs

Date - 22 August 2008
Flow - 7.7 cfs

South Fork Koktuli River Tributary SFK 190

08-SFK-190 Transect 3 Looking Upstream

Date - 19 June 2008
Flow - 95 cfs

Date - 25 July 2008
Flow - 39 cfs

Date - 22 August 2008
Flow - 7.7 cfs

South Fork Koktuli River Tributary SFK 190

08-SFK-190 Transect 4 From Left Bank to Right Bank

Date - 19 June 2008
Flow - 95 cfs

Date - 25 July 2008
Flow - 39 cfs

Date - 22 August 2008
Flow - 7.7 cfs

South Fork Koktuli River Tributary SFK 190

08-SFK-190 Transect 5 From Left Bank to Right Bank

Date - 19 June 2008
Flow - 95 cfs

Date - 25 July 2008
Flow - 39 cfs

Date - 22 August 2008
Flow - 7.7 cfs

South Fork Koktuli River Tributary SFK 190

08-SFK-190 Transect 6 Left and Right Channels Looking Upstream

Date - 19 June 2008
Flow - 95 cfs
(looking downstream)

(Right Channel)

(Left Channel)

Date - 25 July 2008
Flow - 39 cfs

Date - 22 August 2008
Flow - 7.7 cfs

South Fork Koktuli River Reach SFK C

05-SFK3-RN1 Looking Upstream

Date - 14 June 2005
Flow - 72 cfs

Date - 07 July 2006
Flow - 17 cfs

Date - 10 August 2005
Flow - not recorded

South Fork Koktuli River Reach SFK C

04-SFK-RF1 Looking Upstream

Date - 29 June 2005
Flow - 36 cfs

Date - 09 August 2005
Flow - 6.0 cfs

Date - 25 August 2004
Flow - dry this date

South Fork Koktuli River Reach SFK C

04-SFK-PL1 Looking Upstream

Date - 29 June 2005
Flow - 37 cfs

Date - 09 August 2005
Flow - 5.2 cfs

Date - 25 August 2004
Flow - dry this date

South Fork Koktuli River Reach SFK C

04-SFK-RN1 Looking Upstream

Date - 29 June 2005
Flow - 38 cfs

No photo available

Date - 09 August 2005
Flow - 5.5 cfs

Date - 25 August 2004
Flow - dry this date

South Fork Koktuli River Reach SFK C

05-SFK3-PL1 Looking Upstream

Date - 14 June 2005
Flow - 70 cfs

No photo available

Date - 08 July 2006
Flow - 32 cfs

Date - 10 August 2005
Flow - 8.2 cfs

South Fork Koktuli River Reach SFK C

05-SFK3-PL2 Looking Downstream

Date - 14 June 2005
Flow - 64 cfs

Date - 08 July 2006
Flow - 33 cfs

Date - 10 August 2005
Flow - 9.5 cfs

Upper Talarik Creek Reach UT B

08-UTC1-MS1 Transect 1 From Left Bank to Right Bank

Date - 24 June 2008
Flow - 380 cfs
(looking downstream)

Date - 23 July 2008
Flow - 325 cfs

Date - 18 August 2008
Flow - 202 cfs

Upper Talarik Creek Reach UT B

08-UTC1-MS1 Transect 2 From Right Bank to Left Bank

Date - 24 June 2008
Flow - 380 cfs

Date - 23 July 2008
Flow - 325 cfs

Date - 18 August 2008
Flow - 202 cfs

Upper Talarik Creek Reach UT B

08-UTC1-MS1 Transect 3 Looking Downstream

Date - 24 June 2008
Flow - 380 cfs

Date - 23 July 2008
Flow - 325 cfs

Date - 18 August 2008
Flow - 202 cfs

Upper Talarik Creek Reach UT B

08-UTC1-MS1 Transect 4 Looking Downstream

Date - 24 June 2008
Flow - 380 cfs

Date - 23 July 2008
Flow - 325 cfs

Date - 18 August 2008
Flow - 202 cfs

Upper Talarik Creek Reach UT B

08-UTC1-MS1 Transect 5 Looking Upstream

Date - 24 June 2008
Flow - 380 cfs

Date - 23 July 2008
Flow - 325 cfs

Date - 18 August 2008
Flow - 202 cfs

Upper Talarik Creek Reach UT C

05-UTC1-IC1 Left Channel Looking Upstream

Date - 19 June 2005
Flow - 271 cfs

Date - 26 July 2006
Flow - 87 cfs

Date - 07 April 2007
Flow - not recorded

Upper Talarik Creek Reach UT C

05-UTC1-IC1 Right Channel (main) Looking Upstream

Date - 19 June 2005
Flow - 271 cfs

Date - 26 July 2006
Flow - 87 cfs

Date - 07 April 2007
Flow - not recorded

Upper Talarik Creek Reach UT C

04-UTC1-RF2 Looking Upstream

Date - 20 June 2005
Flow - 257 cfs

Date - 25 July 2006
Flow - 214 cfs

Date - 18 August 2005
Flow - 201 cfs

Upper Talarik Creek Reach UT C

05-UTC1-RN1 Looking Downstream

Date - 17 June 2005
Flow - 195 cfs

Date - 08 April 2007
Flow - 174 cfs

Date - 17 August 2005
Flow - 144 cfs

Upper Talarik Creek Reach UT C

04-UTC-IC2 Left Channel (main) Looking Upstream

Date - 10 September 2005
Flow - not recorded

Date - 17 August 2005
Flow - 165 cfs

Date - 07 April 2007
Flow - 161 cfs

Upper Talarik Creek Reach UT C

04-UTC-IC2 Right Channel Looking Upstream

Date - 10 September 2005
Flow - not recorded

Date - 17 August 2005
Flow - 165 cfs

Date - 07 April 2007
Flow - 161 cfs

Upper Talarik Creek Reach UT C

04-UTC-RN1 Looking Downstream

Date - 25 July 2006
Flow - 191 cfs

Date - 08 April 2007
Flow - 165 cfs

Date - 16 August 2005
Flow - 124 cfs

Upper Talarik Creek Reach UT C

04-UTC-RN2 Looking Upstream

Date - 07 September 2005
Flow - 420 cfs

Date - 24 July 2006
Flow - 159 cfs

Date - 16 August 2005
Flow - 142 cfs

Upper Talarik Creek Reach UT C

04-UTC-RF2 Looking Upstream

Date - 07 September 2005
Flow - 403 cfs

Date - 24 July 2006
Flow - 166 cfs

Date - 16 August 2005
Flow - 151 cfs

Upper Talarik Creek Tributary UT 190

05UT190-RF1 Looking Upstream

Date - 09 September 2005
Flow - 64 cfs

Date - 17 August 2005
Flow - 35 cfs

Date - 09 July 2006
Flow - 28 cfs

Upper Talarik Creek Tributary UT 190

05UT190 RF3 Looking Upstream

Date - 09 September 2005
Flow - 59 cfs

Date - 17 August 2005
Flow - 33 cfs

Date - 14 April 2007
Flow - 28 cfs

Upper Talarik Creek Tributary UT 190

05UT190-RF4 Looking Upstream

Date - 09 September 2005
Flow - 65 cfs

Date - 17 August 2005
Flow - 32 cfs

Date - 09 July 2006
Flow - 29 cfs

Upper Talarik Creek Tributary UT 190

05UT190-RN1 Looking Upstream

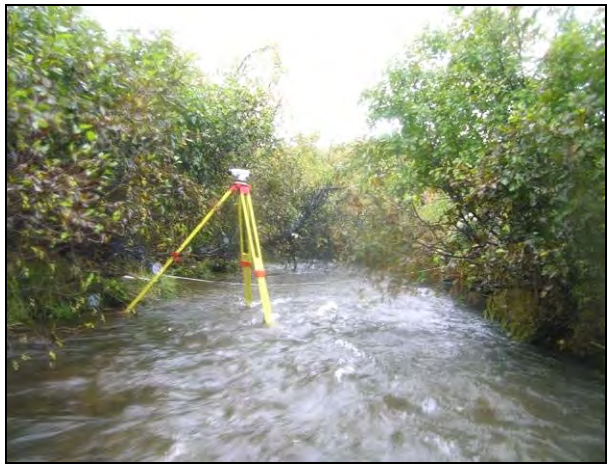
Date - 09 September 2005
Flow - 56 cfs

Date - 17 August 2005
Flow - 27 cfs

Date - 08 July 2006
Flow - 25 cfs

Upper Talarik Creek Tributary UT 190

05UT190-RF5 Looking Downstream



Date - 09 September 2005
Flow - 40 cfs

Date - 09 July 2006
Flow - 20 cfs

Date - 14 April 2007
Flow - 18 cfs

Upper Talarik Creek Reach UT D

07-UTC2-RN3 Looking Upstream

Date - 19 October 2007
Flow - 191 cfs

Date - 02 June 2007
Flow - 137 cfs

Date - 17 July 2007
Flow - 97 cfs

Upper Talarik Creek Reach UT D

07-UTC2-RN1 Looking Downstream

Date - 20 October 2007
Flow - 161 cfs

Date - 01 June 2007
Flow - 126 cfs

Date - 18 July 2007
Flow - 90 cfs

Upper Talarik Creek Reach UT D

07-UTC2-RN2 Looking Upstream

Date - 19 October 2007
Flow - 167 cfs

Date - 01 June 2007
Flow - 126 cfs

Date - 18 July 2007
Flow - 77 cfs

Upper Talarik Creek Reach UT D

05-UTC2-RF1 Looking Upstream

Date - 16 June 2005
Flow - 136 cfs

Date - 24 July 2006
Flow - 109 cfs

Date - 16 August 2005
Flow - 78 cfs

Upper Talarik Creek Reach UT D

04-UTC-RF3 Looking Upstream

Date - 07 September 2005
Flow - 216 cfs

Date - 20 July 2005
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Date - 16 August 2005
Flow - 58 cfs

Upper Talarik Creek Reach UT D

04-UTC-RN3 Looking Downstream

Date - 07 September 2005
Flow - 238 cfs

Date - 20 July 2005
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Date - 16 August 2005
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Upper Talarik Creek Reach UT D

05-UTC2-RN2 Looking Upstream

Date - 16 June 2005
Flow - 121 cfs

Date - 16 August 2005
Flow - 68 cfs

Date - 06 April 2007
Flow - 47 cfs

Upper Talarik Creek Reach UT E

05-UTC2-RF2 Looking Upstream

Date - 17 June 2005
Flow - 113 cfs

Date - 15 August 2005
Flow - 67 cfs

Date - 06 April 2007
Flow - 46 cfs

Upper Talarik Creek Reach UT E

04-UTC-IC1 Left Channel Looking Downstream

Date - 06 September 2005
Flow - 306 cfs

Date - 24 July 2006
Flow - 86 cfs

Date - 16 August 2005
Flow - 64 cfs

Upper Talarik Creek Reach UT E

04-UTC-IC1 Right Channel (main) Looking Downstream

Date - 06 September 2005
Flow - 306 cfs

Date - 24 July 2006
Flow - 86 cfs

Date - 16 August 2005
Flow - 64 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 1 Looking Downstream

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 2 Left Channel Looking Upstream

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 2 Right Channel From Left Bank to Right Bank

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 3 Left Channel Looking Upstream

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 3 Right Channel Looking Upstream

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 4 Left Channel From Left Bank to Right Bank

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 4 Right Channel Looking Downstream

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 5 Left Channel Looking Downstream

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 5 Right Channel From Left Bank to Right Bank

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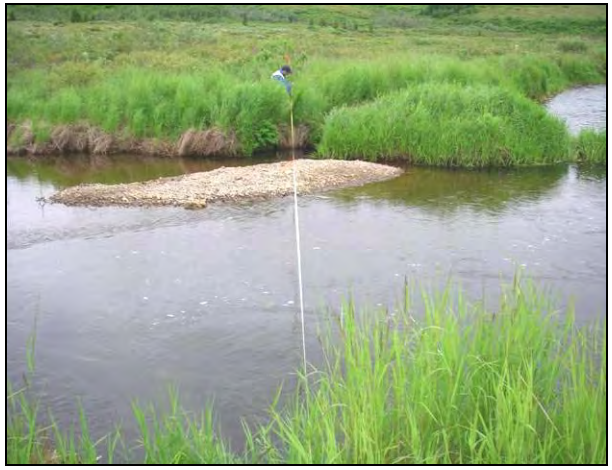
Flow - 224 cfs



Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

08-UTC2-MS1 Transect 6 Main Channel From Left Bank to Right Bank

Date - 20 June 2008
Flow - 224 cfs

Date - 18 July 2008
Flow - 111 cfs

Date - 16 August 2008
Flow - 90 cfs

Upper Talarik Creek Reach UT E

07-UTC2-RN5 Looking Upstream

Date - 20 October 2007
Flow - 76 cfs

Date - 02 June 2007
Flow - 74 cfs

Date - 18 July 2007
Flow - 45 cfs

Upper Talarik Creek Reach UT E

07-UTC2-RN4 Looking Upstream

Date - 19 September 2007
Flow - 348 cfs

Date - 18 October 2007
Flow - 117 cfs

Date - 18 July 2007
Flow - 44 cfs

Upper Talarik Creek Reach UT F

05-UTC3-RN3 Looking Upstream

Date - 19 June 2005
Flow - 56 cfs

Date - 10 April 2007
Flow - 32 cfs

Date - 15 August 2005
Flow - 19 cfs

Upper Talarik Creek Reach UT F

05-UTC3-RN2 Looking Upstream

Date - 18 June 2005
Flow - 42 cfs

Date - 08 July 2006
Flow - 38 cfs

Date - 15 August 2005
Flow - 12 cfs

Upper Talarik Creek Reach UT F

05-UTC3-PL1 Looking Downstream

Date - 18 June 2005
Flow - 18 cfs

No photo available

Date - 28 June 2006
Flow - 13 cfs

Date - 15 August 2005
Flow - 6.6 cfs

Upper Talarik Creek Reach UT F

05-UTC3-RF1 Looking Downstream

Date - 18 June 2005
Flow - 22 cfs

No photo available

Date - 28 June 2006
Flow - 14 cfs

Date - 15 August 2005
Flow - 7.8 cfs

Upper Talarik Creek Reach UT F

05-UTC3-RF2 Looking Upstream

Date - 19 June 2005
Flow - 17 cfs

Date - 28 June 2006
Flow - 13 cfs
(photo taken on 29 June 2006)

Date - 15 August 2005
Flow - 7.1 cfs

Upper Talarik Creek Reach UT F

05-UTC3-RN1 Looking Upstream

Date - 18 June 2005
Flow - 20 cfs

No photo available

Date - 28 June 2006
Flow - 13 cfs

Date - 15 August 2005
Flow - 8.8 cfs

Mainstem Koktuli River

04-MSK-RF2 Looking Downstream

Date - 28 June 2005
Flow - 542 cfs

Date - 25 July 2006
Flow - 483 cfs

Date - 12 August 2005
Flow - 354 cfs

Mainstem Koktuli River

04-MSK-IC2 Left Channel (main) Looking Downstream

Date - 28 June 2005
Flow - 558 cfs

Date - 15 April 2007
Flow - 484 cfs

Date - 12 August 2005
Flow - 343 cfs

Mainstem Koktuli River

04-MSK-IC2 Right Channel Looking Downstream

Date - 28 June 2005
Flow - 558 cfs

Date - 15 April 2007
Flow - 484 cfs

Date - 12 August 2005
Flow - 343 cfs

Mainstem Koktuli River

04-MSK-RF1 Looking Downstream

Date - 27 June 2005
Flow - 494 cfs

Date - 18 August 2005
Flow - 340 cfs

Date - 14 April 2007
Flow - not recorded

Mainstem Koktuli River

04-MSK-RN3 Looking Downstream

Date - 05 July 2006
Flow - 430 cfs

Date - 15 April 2007
Flow - 341 cfs

Date - 12 August 2005
Flow - 283 cfs

APPENDIX 15.1D

OFF-CHANNEL HABITAT

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ACRONYMS AND ABBREVIATIONS

cfs	cubic feet per second
EBD	environmental baseline document for Pebble Project
GIS	geographic information system
GPS	global positioning system
m^2	square meter
NFK	North Fork Koktuli River
OCH	Off-channel Habitat
R2	R2 Resource Consultants
SFK	South Fork Koktuli River
UT	Upper Talarik Creek
WSE	water surface elevation

OFF-CHANNEL HABITAT

1. INTRODUCTION

An instream flow habitat study was initiated in 2004 as part of the environmental baseline studies associated with the Pebble Project. Primary components of the instream flow habitat study include characteristics of flow to main-channel and off-channel habitats; availability of suitable spawning, rearing, and refuge habitats; surface water temperature; and fluvial geomorphology. This report describes the results of the off-channel habitat study, specifically focusing on the North Fork Koktuli River (NFK), South Fork Koktuli River (SFK) and Upper Talarik Creek (UT). The results of the main channel instream flow incremental methodology study and temperature monitoring/modeling components of the instream flow habitat study, respectively, are provided in Appendix 15.1C and Appendix 15.1D to Section 15.1 of the environmental baseline document for the Pebble Project (EBD).

The overall goal of the off-channel habitat study was to assess potential fish habitat provided by off-channel habitats (OCHs) located in the floodplain of the active valleys of the NFK, SFK, and UT. The active valley, as defined here, includes the mainstem channel and adjacent floodplain. A schematic of an active river valley is depicted in Figure 1. This report focuses on: (1) the distribution, physical characteristics, and connectivity of OCHs located within the active valley of all three rivers, and (2) fish utilization of OCHs.

1.1 Physiography and Planform

The NFK, SFK, and UT flow through Pleistocene era, glacially formed valley bottoms overlain with Holocene alluvial sediments (Hamilton, 2007; Detterman and Reed, 1973). The mainstem channels of all three rivers were set within floodplains composed of wetland shrub thickets, wet meadows and, in some reaches of UT, riparian forests. Interspersed throughout the floodplain of these rivers was an extensive network of OCHs. The complex of alluvial, glacial fluvial, glacial lacustrine, and colluvial deposits in these valleys has created a diverse hydrogeologic landscape wherein groundwater inflows support a variety of surficial waterbodies including: alcoves, side channels, beaver ponds (also referred to as beaver complexes), beaver pond outlet channels, percolation channels, and isolated ponds. Formal definitions of these waterbody types are presented in Section 2.2.

All three rivers were composed of pool-riffle and plane bed, gravel bedded channels (Appendix 15.1F; Montgomery and Buffington, 1997). Channel gradients were very low and ranged from 0 percent where the river flowed through lacustrine surficial deposits in the SFK, to steeper bedrock controlled channel reaches of UT, averaging a 0.5 percent gradient (R2, 2010). Low gradient (0 percent), relatively unconfined valley sites such as the NFK below Tributary NFK 1.190, were areas of high beaver activity where relic side and percolation channels are dammed—creating large beaver ponds within the wide active valley. More highly confined reaches, such as those of upper reaches of the UT, had less active valley area and, therefore, fewer OCH complexes.

Both braided and meandering channel planforms are found in the study area (Appendix 15.1F). The NFK and UT tend toward a braided planform (Photo 1), while much of the SFK and the headwater areas of all three rivers tend towards a meandering planform (Photo 2). The level of meandering found was associated with the degree of channel confinement, with less confined broader active valley areas having a more meandering form. This characterization was consistent with data on channel forming flows, channel slope data, and slope:discharge relationships in the study area, as well as from the literature (Leopold et al., 1995). Over time, meandering channel planforms generate cut-off-channels, ox bows, and other abandoned main stem floodplain channel features (Photo 1) that often are subsequently dammed by beavers—forming ponds.

1.2 Overview of OCH Formation and Fish Habitat Function

OCHs, as defined in this study, are specific habitat types located within a river's active valley but outside the mainstem channel. OCHs in glaciated river valleys are created by the interaction of channel processes, ground and surface water, vegetation, and beaver activity. The continuous interaction of all of these elements, especially channel migration and beaver activity, results in a dynamic floodplain environment within which OCHs are continually being created and destroyed. The locations (connections with mainstem rivers), morphologies (typically slow moving, relatively deep water), and complexities (often contain a mix of woody debris and aquatic vegetation) of many types of OCHs make them especially attractive as refuge and rearing habitats for juvenile salmonids. For example, sampling of a 20-kilometer reach of the Hoh River in the Olympic Peninsula of Washington found that nearly all rearing of salmonid fish occurred in off-channel areas and tributaries. Densities of salmonids in off-channel areas averaged 0.364 fish per 1 square meter (m^2), but only 0.004 fish/m^2 in the mainstem portions of the river (Sedell et al., 1980).

Channel migration leaves behind ponds and sloughs with varying depths and degrees of hydrologic connectivity to the mainstem. Channel migration may result from gradual annual movement or through channel avulsion processes driven by flow obstructions such as ice dams or large woody debris. Within the study area, ice dams likely play a larger role in channel migration than large woody debris, because little large woody debris was documented during baseline habitat surveys. The results of channel migration activity were abandoned, curved channels that can be seen throughout the floodplains of all three rivers (Figures 2, 3, 4a, 4b, and 5; Photo 1). These abandoned channels provide a framework for beaver activity and development of future OCH.

Ground and surface water both contribute to the generation and maintenance of OCHs (Gurnell, 1998; Pollock et al., 2003). Flowing surface water acts as an erosive agent, as well as an agent to transport the sediment that forms alluvial terrain features. Groundwater within these systems appears to be important to the generation and maintenance of OCHs and may also affect their potential to function as high quality fish habitat. Groundwater-controlled OCHs include isolated ponds, percolation channels, and beaver ponds. These OCHs contain water year-round and under varying flow conditions; they also may provide a continuous source of water to mainstem habitats. Surface water connectivity between OCHs and the mainstem is the critical element in providing fish access from the mainstem to and from off-channel habitat (Pollock et al., 2004).

Riparian vegetation provides root cohesion and shear resistance to unconsolidated alluvial sediments found in active valleys of glaciated terrain (Naiman et al., 2005). The dominant plants within the study

area were shrubs, herbs, and grasses, although some riparian forest was found in reaches of Upper Talarik Creek. Willow shrubs serve as a primary structural element utilized by beavers to build their dams.

Beavers construct dams from woody stems, herbaceous vegetation, mud, and rocks. Small diameter stems are cut by beavers and strategically placed in mud, forming the dam's skeletal structure. The willow stems generally resprout into new shrubs providing further root cohesion to the dam and trapping sediment that further stabilizes the structure and serves as a site for additional plant colonization (Photographs 3 and 4; Muller-Schwarze and Sun, 2003).

Beavers generate and maintain OCHs by building dams across floodplain channels resulting in formation of ponds upstream of the dam (Photograph 5). Beaver dams and ponds can effectively control primary geomorphologic and ecological processes across an entire active valley (McDowell and Naiman, 1986; Pollock et al., 2003; Pollock et al., 2004). Beaver ponds generally have large edge-to-surface area ratios and slow velocity currents. This provides an extensive area for both emergent and scrub shrub wetland vegetation and aquatic invertebrates, resulting in ideal foraging opportunities for fish (Pollock et al., 2004).

Beaver ponds have been demonstrated to provide important habitat for many fish species, including salmonids, especially in streams lacking deep pools (Cunjack, 1996; Pollock et al., 2003). In Oregon and Washington, beaver ponds have been found to provide critical juvenile coho salmon (*Oncorhynchus kisutch*) habitat, especially during winter months (Pollock et al., 2003; Nickelson et al., 1992). In summer in southeast Alaska, impounded streams were found to support larger populations of coho juveniles than non-impounded stream reaches (Bryant, 1983). At the watershed scale, beaver ponds provide slow-water habitat favorable to rearing juvenile coho salmon and have been found to be of great importance for juvenile coho salmon production. Furthermore, the historic loss of this habitat, due to beaver removal, was found to be the single-most important factor currently limiting coho salmon production in the Stillaguamish River basin in Washington State (Pollock et al., 2004).

2. STUDY OBJECTIVES

Although substantial information exists indicating that off-channel habitat areas are often extensively used for rearing by juvenile salmonids (Pollock et al., 2004), the extent to which this occurs in areas present within the NFK, SFK, and UT watersheds is unknown. Therefore, the off-channel studies focused on off-channel habitat structure and function and fish use of these areas.

The primary objectives of the off-channel fish sampling were to:

- Collect and evaluate fish distribution and abundance data from representative off-channel habitat types within the NFK, SFK, and UT watersheds.
- Compare distribution and abundance data and determine whether off-channel habitat use varies by species, habitat type, and watershed.

The results of this analysis will be used to evaluate the biological significance of the off-channel habitat areas, as well as to define the current locations and areal extents of such areas within the three watersheds.

In support of the fish sampling design, off-channel habitat structure and function were assessed. The primary objectives of the off-channel habitat assessments were to:

- Identify processes responsible for OCH development and maintenance within the NFK, SFK, and UT.
- Characterize the quality and quantity of aquatic habitats within representative off-channel areas adjacent to mainstem rivers.
- Understand OCH hydrologic function relative to mainstem flow patterns.
- Evaluate mechanisms of OCH connectivity with mainstem channels.

3. STUDY AREA

Off-channel habitat is found through the active floodplain of three watersheds in the vicinity of the Pebble Deposit. The study area specific to the off-channel habitat study included the full length of the mainstem portions of the North and South Fork Koktuli rivers and Upper Talarik Creek . Furthermore, within each watersheds areas of concentrated OCHs were selected as intensive study areas where actual field work occurred. There was one intensive study area in the NFK, one in the SFK, and three in the UT (Figure 2).

4. SCOPE OF WORK

The off-channel habitat instream flow study was initiated in September 2005 by HDR Inc. with the establishment of off-channel habitat transects at an intensive study area in the SFK (Figure 3). Transects were positioned in proximity to, or co-located with, main channel instream flow transects to provide analysis of hydrologic linkages between main channel and off-channel sites. Transect surveys were intended to identify off-channel site features and describe fish habitat conditions and water surface elevations relative to the mainstem. In 2007, HDR Inc. expanded the study to include three intensive study areas in the UT (Figures 4a and 4b). The study was further expanded in 2008 by R2 Resource Consultants (R2), with the establishment of transects within one intensive study area in the NFK (Figure 5). All OCHs located within each intensive study area were typed and mapped using geographic information system (GIS)-based analysis of aerial photography. Using data collected from 2005 through 2008, R2 also developed an OCH classification system based on information about OCH structure, hydrologic connectivity with mainstem, and formative processes.

In addition to the 2008 transect surveys in the NFK, R2 installed pressure transducers in selected channel areas to record water surface elevation fluctuations at hourly intervals. Inlet connectivity surveys also were conducted in 2008 to estimate the flows (stage and discharge) at which the mainstem NFK hydrologically connects with off-channel waterbodies. Detailed study methodologies for each study element are provided below.

5. METHODS

5.1 OCH Topography and Water Surface Elevation

Intensive study sites were selected in each basin within off-channel habitat areas that supported a high density of OCHs. In the SFK, 15 transects were established within the intensive study area (Figure 3). Eleven of the 15 transects were co-located with main channel instream flow transects to provide assessment of hydrologic linkages between main channel and off-channel sites. Sixteen transects adjacent to or between existing UT mainstem instream flow transects were established in three intensive study areas along the UT (Figures 4a and 4b). Six transects were established in one intensive study area in the NFK (Figure 5) and once again were co-located with mainstem instream flow transects. All OCH transects were established normal to the valley bottom and extended approximately 300 meters to either side of the main channel, or to a major break in slope associated with high terraces (over 3 meters) found adjacent to the stream channel.

A topographic survey of each valley bottom transect was conducted using real-time kinematic satellite navigation or more traditional methods involving a standard handheld global positioning system (GPS) unit, auto level, stadia rod, and measuring tape. Ground elevations were measured and recorded along the valley bottom portions of the transect lacking aquatic habitat. Main channel water surface elevations associated with each OCH transect were measured during each survey. At each OCH encountered, the water surface elevation at wetted edges was recorded, and channel bed elevation (and/or depth) was recorded such that the bottom profile of each waterbody could be determined.

Off-channel waterbodies were each assigned a unique identifier. In 2005, 2006, and 2007, OCHs were coded based on the: river name (SFK or UT), transect number, location of the waterbody relative to the mainstem (H=on right bank looking downstream; T=Left Bank looking downstream), and unit # (e.g., SF 5H C1, 5H C2 etc.). In 2008, OCHs were coded based on the transect number and alphabetically in the order each unit was encountered.

Physical and hydrologic data along each transect were collected at two or three different flow regimes. Data collection methodologies were designed such that valley bottom profiles could be mapped and variation in OCH water surface elevations could be linked to main channel flow conditions. The SFK transects were sampled in September 2005 and August 2006; UT transects were sampled in June and September 2007; and NFK transects were sampled in June, July, and August 2008.

For the SFK and UT transects, each OCH intersected by a transect was established as an OCH site and subsequently was sampled to collect habitat and fish data. The number of SFK and UT sites per transect varied from one to 10. Because of the more intensive habitat survey methods used in 2008, a subset of the intercepted NFK OCHs was selected for habitat and fish sampling. Each subset sampled included two or three OCH sites representative of the OCH types encountered for each NFK transect.

5.2 OCH Classification and Mapping

Following collection and preliminary review of field data, R2 delineated the area of the active valley bottom supporting OCHs for the entire length of the NFK, SFK, and UT using electronic digitization in an ArcView environment. Ortho-corrected aerial photographs flown in 2004 were used as the base map.

Photos were overlain by 5- to 10-foot (1.5- to 3-meter) topographic contours developed from a digital elevation model (DEM) created from the base photography. Areas supporting OCHs were identified based on:

- Elevation relative to the mainstem - land surface generally less than 5 feet (1.5 meters) higher than the mainstem.
- Visual observation of surface water in OCH features.
- Vegetation community characteristics.

All water features within the valley bottom (except for tributary channels) were assumed to represent potential OCH. Features exhibiting open surface water were delineated as polygons. Linear water features that were clearly linked to the mainstem or to other OCH units, but that were too narrow to depict as polygons, were mapped as linear features. Linear features were assumed to have a width of approximately 3.3 feet (1 meter), which was the minimum width that could clearly be identified as open water. GIS-shapefiles were created by digitizing all OCH features visible within each intensive study area.

OCHs associated with mainstem river channels within the study area were classified using a modified version of a system developed for glacially-influenced rivers in Washington State (Peterson and Reid, 1984). Modifications were developed specifically for this study to incorporate OCH habitat types observed in the tundra environment during data collection (i.e., isolated ponds, beaver ponds, and beaver pond outlet channels). OCH types assigned during the course of study are defined below, schematically illustrated on Figure 1 and examples are documented in Photos 5 through 9.

Six types of OCHs were defined and mapped in this study as follows:

- Alcove – backwater area with low or no water velocity that is connected to the mainstem at the downstream end only and surrounded on all other sides by terrestrial vegetation (Photo 6).
- Side channel – linear waterbody that is located within the floodplain and connected to the mainstem at both ends during summer baseflows and that transmits a small proportion of the mainstem discharge at all flow levels. Channels that transmit substantial amounts of the mainstem discharge at most flow levels are called secondary channels and are considered mainstem habitat types (Photo 7).
- Beaver pond – irregularly shaped waterbody that is formed by a water impoundment behind a beaver dam (Photo 5).
- Beaver pond outlet channels – linear waterbody that transmits outflow from beaver ponds to the mainstem, or to other beaver ponds (Photo 5).
- Percolation channels – groundwater-fed channels that discharge to the mainstem, but that have no defined inlet or inflow from the mainstem at discharges below bankfull (Photo 8).
- Isolated ponds – irregularly shaped surface water features with no discernable surface inlet or outlet flow path to the mainstem (Photo 9).

5.3 Estimation of Active Valley OCH Area: Scaling-up from Intensive Study Area to the River Segment

The area of OCH in each river active valley was estimated by scaling up from the OCH intensive study area results. The scaling procedure involved simply multiplying the total area of each river segment active valley (NFK, SFK, and UT) by the percentage of OCH found in each intensive study area. Limitations of this approach are that (1) the intensive study areas were subjectively selected to be representative of each river and (2) the total study area population of OCH was assumed to be uniform in composition relative to OCH areal cover. The scaling results are presented as a non-statistical estimation of the composition and abundance of OCH and are to be interpreted as a first order linear approximation.

5.4 OCH Characteristics: Substrate Size, and Water Quality

In addition to water surface elevations, substrate size (Table 1) and water quality were characterized and recorded for each OCH during the transect surveys. Water quality measurements included temperature, dissolved oxygen, and specific conductivity.

5.5 Water Surface Elevation Fluctuations

Solinst Levellogger Gold Pressure transducers were installed at six sites in the NFK intensive study area in 2008. Pressure transducers were programmed to record the depth of water above the transducer at hourly intervals, thus providing a continuous record of water surface elevation fluctuations. Transducer deployment sites were selected to include the mainstem NFK River and five of the six OCH types (alcove, side channel, beaver pond, percolation channel, and isolated pond). Side channels were omitted since they have a known and direct connection to mainstem flow. The expectation was that fluctuations in OCH water surface levels would be linked to water depth fluctuations in the mainstem, but would vary by OCH type. This was done to detect potential linkages in water surface elevation changes in the mainstem river with changes in water depths in different OCH types. One of the fundamental questions concerning off-channel habitat features is whether and to what extent they respond to changes in mainstem flows. This element of the study was designed to provide data to address that question.

5.6 Surface Connectivity

To obtain a greater understanding of relationships between main channel flow conditions and hydrologic connection with OCHs, researchers conducted a series of mainstem/OCH connectivity surveys between June and August 2008 in all intensive study areas (NFK, SFK, and UT). Potential inlets and outlets to the mainstem were identified using orthophotos and maps. A two-person field crew then walked the mainstem channel throughout each intensive study area, visiting potential inlet locations to confirm the presence or absence of a surface water connection, and to identify additional connections that were not observed during the remote mapping exercise. There was also a need to define the relationship between the mainstem water surface elevation and the bed elevation at the location of the inlet hydrologic control for each connected OCH. To accomplish this, the water surface and hydraulic control bed elevations (Figure 6) were measured using a real-time, kinematic differential GPS or an auto level and stadia rod.

One hundred eighty potential OCH inlets were identified on aerial photos prior to field work (19 in the NFK, 45 in the SFK, and 116 in the UT). Additional sites were identified in the field. Each potential inlet

was visited in the field in 2008 to determine if it was indeed an inlet channel and, if so, to estimate the flow at which the inlet began to transmit flow from the mainstem to the OCH. This mainstem flow level was estimated using inlet connectivity data in conjunction with mainstem transect rating curves. Thirty-five actual inlet channels were identified during the field surveys (11 in the NFK, 11 in the SFK, and 13 in the UT). The remainder of the sites investigated either did not support inflow channels that would be accessed at flow levels below bankfull (75 sites), or represented outflow from beaver ponds (70 sites).

5.7 Fish Sampling

Off-channel sites were sampled between early summer and early fall, with specific sampling months varying between watersheds and years. In the SFK watershed, fish sampling occurred in September 2005, June and August 2006, and July 2007 (Figure 7). The UT sites (Figure 8a and 8b) were sampled in July and October 2007, and the off-channel sites in the NFK (Figure 9) were sampled between late July and mid-August 2008. In general, the off-channel fish survey work was completed after all of the OCH transects had been initially surveyed. The fish field crews were then provided GPS coordinates of the OCH sites, GPS coordinates for specific transects, and OCH types to sample.

The 2005 through 2007 off-channel habitat fish surveys of the SFK and UT watersheds were typically conducted over a length of 60 meters, centered over the intersection point of the OCH transect. Thus, the surveyed segment consisted of 30 meters of habitat upstream from that point and 30 meters downstream of that point. If the OCH was less than 60 meters long, then the entire site was sampled. A variety of sampling techniques (snorkeling, direct observation, and backpack electrofishing) were used to sample the off-channel habitats. The final selection of a specific method depended largely on site conditions, including size, shape, and physical characteristics (water depth, velocity, and habitat complexity). In general, given suitable water clarity, snorkel surveys were the primary method used in conducting the off-channel fish surveys (Photo 10).

In segments where there was noticeable flowing water, snorkel surveys were completed in an upstream direction. In units that were pond-like and circular in shape, snorkelers made several passes in an attempt to cover the entire width of the unit. Bank-side visual observations were made in sections that were too shallow to sample otherwise. In deeper, more complex habitats, two-pass snorkeling was conducted to increase coverage and improve the accuracy of the survey (Slaney and Martin, 1987). All observed fish were identified and enumerated by species and life stage. All captured fish were measured for fork length and released near the point of capture.

During the 2008 NFK off-channel habitat fish surveys, a 40-meter section of each OCH was surveyed. For large and uniform sites (e.g., beaver ponds), the survey team sub-sampled an area representing 15 to 30 percent of the total habitat. Snorkeling was again the primary sampling method used, although multi-pass depletion electrofishing and/or minnow trapping also were utilized when stream conditions (e.g., water depth and visibility) precluded the ability to snorkel. A maximum of three passes was used when sampling with the backpack electrofisher. Any fish visually observed during the survey were identified by species, life stage, and enumerated. As in previous years, all captured fish were measured for fork length and released at the point of capture.

To derive estimates of relative fish abundance by OCH type, fish sampling locations were overlaid upon the OCH map layer and each sampling site was assigned an OCH type (Figures 7, 8a, 8b, and 9). Fish

data were summed by OCH type within each drainage. Relative abundance (number of fish per 100 meters of stream length) was generated from snorkel, electrofishing and minnow trap data. Where sampling length and wetted width data were available, fish densities (i.e., the number of fish/100 m^2) were calculated and compared among OCH types using snorkel and electrofishing catch data.

6. RESULTS

6.1 OCH Topography and Water Surface Elevations

There were 37 valley bottom transects surveyed over the 4-year field study period. An example transect profile and corresponding water surface elevation data for each watershed is presented on Figure 10. Profiles for all transects are provided in Attachment A. In the SFK intensive study area transects were established and were surveyed for physical data in summer 2005. In August 2006, water quality and depth data were collected.

A total of 141 OCHs were surveyed in the three stream basins: 61 in the SFK, 51 in the UT, and 29 in the NFK. Beaver ponds, isolated ponds, and alcoves were most frequently encountered; percolation channels and side channels were the least abundant. The relative number of alcoves and side channels encountered varied considerably by basin. The most side channels were found in the UT (approximately 31) and the fewest in the NFK (4). Alcoves were most abundant in the SFK and least abundant in the NFK.

6.2 OCHs: Intensive Study Area Mapping and Entire Study Area Estimation

6.2.1 INTENSIVE STUDY AREA MAPPING

There were 37.1 hectares of OCH area mapped in all of the intensive study areas; 13.1, 18.6, and 5.3 hectares in the NFK, SFK, and UT basins, respectively. The type and distribution of OCHs in each intensive study area are provided on Figures 7, 8a, 8b, and 9. Beaver ponds were the primary OCH documented in each basin with 85 percent by area in the NFK basin, 91 percent by area in the SFK, and 93 percent by area in the UT basin (Figure 11). Of the secondary OCHs, side channels were generally the next most extensive OCH but covered a substantially reduced area as compared to beaver ponds. The remaining secondary OCHs, percolation channels, pond outlet channels, isolated ponds, and alcoves, were encountered in all of the intensive study areas (Figures 7, 8a, 8b, and 9); however, the area they covered represented a small portion of the total OCH area. Overall, the composition and abundance of OCH types in all three river valleys was similar (Table 2). Although, it is worth noting that in the NFK, percolation channels and pond outlet channels covered similar or more OCH area than any of the secondary OCHs in the SFK or UT.

6.3 Off-channel Habitat Off-channel Habitat Characteristics: Water Depth, Substrates, and Water Quality

Water depth, substrate, and water quality data collected at each OCH unit were used to describe differences in the type of habitat provided by each OCH type identified for this study.

6.3.1 OCH WATER DEPTH

The median average and maximum depth of beaver pond units were lower than that of side channels, alcoves, and isolated ponds (Table 3): however, beaver ponds were the only OCH that exhibited depths greater than 1 meter. Approximately 12 percent of beaver ponds sampled had depth in excess of 1 meter; maximum depth was not recorded in these cases as the ponds were too deep to wade across.….

6.3.2 OCH SUBSTRATES

Substrate composition data indicated that fines were the dominant substrate in all OCHs (Table 3), however in isolated ponds a substantial percentage of the substrate was observed to be cobble. By definition alcoves and isolated ponds are units characterized by zero flow velocity, so the predominance of fine sediment in these units was expected. Most beaver ponds represent former mainstem or side channels and, as such, still contained areas with gravel and cobble substrates. Percolation channels and side channels exhibited active flow during the surveys, and also contained the greatest proportion of gravel to cobble size substrate (Table 3).

6.3.3 OCH WATER QUALITY

Water quality varied widely throughout the study area. Comparison of field water quality measurements across OCHs should be viewed with caution, because the sampling varied over a period of three months in three separate years. However, some generalities were evident (Figure 12). Percolation channels tended to have the coolest water and highest specific conductivity. This is consistent with the input of groundwater into this OCH type. Dissolved oxygen (DO) levels varied widely (2 to 15 milligrams per liter [mg/L]) within and across OCH types, but on average were consistent with levels considered to represent moderate to high quality fish habitat (7 mg/L and greater). Specific conductivity varied widely in beaver ponds, but averages of all OCH types clustered around 40 to 50 microSiemens per centimeter. Not surprisingly, isolated ponds were on average warmer than other waterbodies.

In 2007 and 2008, samples of mainstem water quality were collected from each transect on the same date as water quality sampling was conducted in the OCH. Paired sampling revealed that beaver ponds, beaver pond outlet channels, side channels and isolated ponds were all warmer than the mainstem river during the summer months and had lower levels of DO (Table 4). In contrast, groundwater-fed percolation channels tended to be cooler than the mainstem river. Specific conductivity was similar between mainstem and OCH sites. Alcoves were also cooler than the mainstem. This could be because such sites represent areas where hyporheic flow drains to the river; however, the small sample size limited the ability to confirm such a hypothesis.

6.4 Water Depth Fluctuations

To investigate the hydrologic relationship between the mainstem and OCHs, researchers compared the relative fluctuation in water depth within the mainstem to the water depth fluctuation of representative examples of five of the six OCH types. This comparison was not made with pond outlets, because a direct relationship between pond outlets and mainstem elevation is evident. Pressure transducers recorded water depth at hourly intervals. These data were reduced to average daily water column depths and plotted together to compare fluctuations in water levels (Figure 13).

A couple of logistic issues arose with instrumentation over the sample season. First, Site OCH 3D, one of the few active side channels that had not been influenced by beaver activity at the start of the field season, was dammed by beavers. A subsequent drop in water levels downstream of the dam left the pressure transducer out of the water on exposed substrates. The instrument was retrieved and reinstalled lower in the channel in late July. In addition, a pressure transducer in the mainstem was dislodged by bear activity in late July, and re-installed in August.

Despite the limited data set, several noteworthy trends were observed over the 2008 field season (Figure 13). The side channel and alcove sites, both of which are directly connected to the mainstem, tracked closely with the mainstem water surface fluctuations. All three sites exhibited a general decline in water depth from June through late August, and rapidly responded to late season rain events. In contrast, the water column depth at the beaver pond and percolation channel sites remained generally stable or increased through the late summer. Water depths in the isolated pond site, which was located approximately 35 meters from the mainstem channel, also tracked the mainstem depth fluctuation, although the changes were not as hydrologically flashy."

6.5 Surface Connectivity

The mainstem flow level required to initiate inflow to OCHs that were connected to the main channel, and the total area of these connected OCHs, are presented in Table 5. The cumulative amount of OCH habitat connected by surface inflows increased with mainstem flow up to the point of maximum inundation for all intensive study areas (Figure 14). The majority of OCHs connected to the mainstem via surface inflows were Beaver ponds or Side Channels. Notable exceptions were two Percolation Channels in the NFK that exhibited connectivity to the mainstem river (Table 5).

When mainstem flows become high enough to spill overbank and inundate the entire valley floor, all OCHs receive surface inflows. Overbank flow levels were estimated for each intensive study area based on stage:discharge relationships developed for instream flow incremental methodology transects located within each study site. Overbank flow levels were estimated for intensive study sites in each watershed at approximately 550 cubic feet per second (cfs), 580 cfs, and 620 cfs in the UT, NFK, and SFK, respectively (Appendix 15.1C, Attachment 5) .

6.6 Fish Sampling

At least 11 fish species were observed or captured within the OCH survey areas. In order of dominance, these included four species of anadromous salmonids (coho salmon, sockeye salmon, Chinook salmon, and chum salmon) and three resident salmonids (arctic grayling, Dolly Varden, and rainbow trout), as well as four other fish species groups. Since patterns in abundance and density were similar (Tables 6 and 7), only density values are presented. Fish density patterns were consistent across drainages for anadromous salmonids (Figures 15a, 16a, and 17a), with juvenile coho salmon the predominant species/life stage observed (Photo 11). Overall, densities of coho salmon were more than an order of magnitude greater than other species. Juvenile coho densities by OCH type were as high as 234.04 fish/m^2 as observed in one alcove area in the NFK. Sockeye salmon fry were the second-most commonly found anadromous species throughout the study area, with densities as high as 4.34 fish/100 m^2 calculated for alcove in the NFK. Comparatively few Chinook (0.01 to 7.74 fish/100 m^2) and chum salmon (0.05 fish/100 m^2) were found throughout the study area.

Some general patterns were evident for resident fish abundance in OCH across basins. All OCHs supported resident fish species although the extent and densities varied among OCH type and across basins. Overall, sticklebacks were the most commonly observed species and were present in the greatest densities of all resident fishes. It was interesting to note that where Dolly Varden density was high the density of sticklebacks was low compared to habitat where Dolly Varden were not present or where their densities were low.

Drainage specific variations in fish density were also noted. (Figures 15b, 16b, and 17b). Overall, the NFK OCHs exhibited the highest densities of resident fishes with most densities greater than 1 fish/ $100m^2$ and up to approximately 25 fish/ $100m^2$. The NFK OCHs also had the lowest species richness with only three species present versus five in the UT and six in the SFK.

When considering fish presence among habitat types, the greatest combined anadromous and resident fish densities (over 100 fish/100 m^2) were observed in side channels and in one alcove area within the NFK (Figure 15a). Although there were a few exceptions fish densities of approximately 15to 70 fish/100 m^2 were found in percolation channels and side channels indicating relatively moderate to high fish use in these habitats. One alcove in the UT also had a density of approximately 50 fish/ $100m^2$. Isolated pools had the lowest densities of fish for all sampled habitats ranging from no fish in the NFK to a high of 13 fish/100 m^2 in the UT (Figures 15a and 17b). Certain OCH types were represented by a single sample; therefore, extrapolation beyond specific sites should be done with caution (Tables 6 and 7).

7. DISCUSSION

All three of the primary watersheds within the study area contain substantial off-channel habitats consisting primarily of features created by beaver activity, followed by side channels and isolated ponds. Quantitatively, the area of off-channel habitat contained within beaver ponds represented more than 85 percent of the total amount of OCHs combined, demonstrating the importance and effect that beavers have in generating and maintaining channel and floodplain structure and aquatic habitat within the active river valleys of the NFK, SFK and UT. Beaver ponds were found to be created by the damming of main channels, side channels, and percolation channels. This resulted in an abundance of complex OCH habitat in all three drainages (Figure 11). These results are similar to other studies of off-channel aquatic habitat in river active valleys in glaciated landscapes in North America (Pollock et al., 2003; Pollock et al., 2004; Rosell et al., 2005).

Within all three intensive study areas, researchers mapped a total of 37.1 hectares of beaver ponds, compared to a total of 36.8 hectares of wetted mainstem habitat. The most striking trend in these data is that the total area of off-channel habitat compared to wetted mainstem habitat is consistent in all three drainages with NFK, SFK, and UT off-channel area to mainstem area being 13.1/14.1, 18.6/16.8, 5.3/5.9 hectares respectively. This is most likely the result of similar channel- and floodplain-forming processes occurring in all three drainages. Channel and floodplain forming processes in unconstrained active valleys with relatively unimpacted native beaver populations occurring during the entire holocene have likely resulted in such a stable landscape form and function. Furthermore, these results are consistent with other studies of beaver-generated floodplain waterbodies in glaciated terrain in North America (Muller-Schwarze and Sun, 2003; Pollock et al., 2003; Pollock et al., 2004).

Measurement of water depth, substrate type, and water quality parameters provide a general site description and information about the suitability of OCH for fish and other aquatic organisms. Although there were a few outliers for DO and specific conductivity, the majority of the water quality values fell within the ranges suitable for fish rearing. Thus, these results suggest that the general quality of the habitat provided by the OCHs would support anadromous salmonid production.

The results of the water level transducer study show that waterbodies with a direct hydrologic connection to the mainstem channel (side channel and alcove sites), as expected, closely track mainstem water surface level fluctuations, while other OCHs (beaver ponds and percolation channels) do not. Instead, the water surface levels of beaver ponds and percolation channels were generally more stable than the mainstem during summer and early fall and do not follow mainstem peak water surface level fluctuations. The beaver ponds and percolation channels are probably influenced by groundwater, seeps, and/or springs and, therefore, have a diminished reduction in water during low precipitation periods compared to the mainstem. These contrasting hydrologic conditions provide additional evidence that the OCHs likely serve as fish habitat during low mainstem river flow periods.

Water level fluctuations were not measured for late fall, winter and early spring months when freezing becomes a prominent element potentially restricting the area of available fish habitat. The total OCH area of juvenile salmonid habitat throughout the active valley obviously varies with hydroregime and seasonal climatic conditions. A full measure of critical salmonid habitat would need to take into account overwinter habitat conditions within OCHs and mainstem.

The findings related to surface connectivity illustrate that the area of OCH habitat influenced by surface water flows increases with mainstem flow in all three rivers and reaches an active valley flooding threshold at bank full discharge. This simple relationship indicates the OCHs are strongly influenced by seasonal variability of surface water sources. Furthermore, alterations of the natural flow regime would likely have a range of direct effects on both OCH quantity and quality.

Results of the fish surveys indicate that off-channel habitats provide rearing habitat for several stream resident and freshwater life stages of anadromous fishes. Beaver ponds and beaver pond outlet channels, when combined, were the only OCH type that supported all fish species observed in off-channel habitat. Fish appeared to be present in moderate densities within beaver-influenced off-channel habitat. However, the extensive areas covered by beaver ponds combined with low visibility due to turbid conditions when sampling, and variable water depths, made extensive sampling of these ponds challenging and we were largely limited to subsampling near edge habitat in beaver ponds.

Beaver ponds are the OCH type that was sub-sampled most frequently, with the survey area generally limited to sampling at one end or along the edge of the larger complexes. Additional information of the value of beaver ponds comes from aerial spawning surveys. Adults of both coho salmon and sockeye salmon have been observed spawning in active beaver ponds and milling in sloughs created by abandoned beaver dams. Although the number of spawners observed at any one time was less than 20, approximately 372 and 66, respectfully, sockeye were observed milling in UT and SFK relic beaver sloughs.

8. SUMMARY

The data from this study indicate that off-channel habitat within the study area is clearly important for rearing of juvenile coho salmon. Habitat mapping of the mainstem rivers within the study area show that these channels are fairly uniform and are composed primarily of alternating glide and riffle habitat types (Appendix 15.1B), with generally few pools. Such areas, while providing excellent adult holding and spawning habitats, do not contain the types of habitat features conducive to juvenile anadromous salmonid rearing, especially coho salmon. In contrast, the habitat mapping from this off-channel study shows that the beaver ponds contain extensive and diverse pool habitats that dominate the active valley floor. The existing literature on habitat use for coho salmon recognizes the importance of pool habitat for rearing of juvenile coho salmon (Cunjack, 1996; Nickelson et al., 1992, Pollock et al., 2003; Pollock et al. 2004). Working in Southeast Alaska streams, Bryant (1983) found that beaver-created impoundments support larger juvenile coho salmon populations than adjacent areas lacking impoundments. Given the lack of pool habitat in the mainstem channels, these off-channel habitats provide a critical habitat component for freshwater rearing of coho salmon and, to a lesser extent, other anadromous and resident species.

Pool habitat is also important for overwinter survival of stream fishes. Increased overwinter survival for coho salmon populations was found in streams with high pool: riffle ratios (Nickelson et al., 1992). Beaver ponds also have been found to provide critical overwintering habitat for juvenile coho salmon (Nickelson et al., 1992; Pollock et al., 2003; Sanner, 1987). Within the intensive study areas, coho salmon were present in greatest numbers in percolation channels, side channels, beaver ponds and alcoves. In the study area, these OCH types are often associated with groundwater inflow and, as such, would represent potential overwintering habitat for juvenile coho salmon and other species. Recent studies have also shown that coho salmon can and will utilize freshwater emergent wetlands within floodplain habitats, provided ingress and egress areas can be found (Henning et al., 2006).

This study demonstrates that there is substantial off-channel habitat area within the three watersheds that temporally and spatially provide rearing habitats for juvenile salmonids and resident fishes. The results also indicate that some of the OCHs, including those with moderate and high densities of fishes, have a hydrologic connection to the mainstem and, thus, the area of wetted habitat available will expand or contract along with changes in mainstem flows. Further conclusions about the relative value of this off-channel habitat are not recommended. This study was subject to logistical limitation both spatially due to an initial focus on selecting river reaches with high concentrations of off-channel habitat, and temporally by surveying and sampling only during summer(winter sampling in the project area has been proven to be challenging and poses high safety risks). These study-design limitations restrict the ability to infer the relative value of these off-channel habitats as compared to main channel habitats, as well as for their overall contribution to fish production in the three river basins.

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10. GLOSSARY

avulsion—The rapid abandonment of a river channel and the formation of a new river channel as a result of channel slopes that are much lower than the slope that the river could travel if it took a new course.

flashy - A flashy stream is one that exhibits significantly increased flows immediately following the onset of a precipitation event and a rapid return to pre-rain conditions shortly after the end of the precipitation. That is to say, water that precipitates within a flashy stream's watershed will make its way quickly from the land into the stream and be flushed through the system rapidly.

hyporheic flow—The subsurface flow between the water table and surface water flow.

kinematic satellite navigation—A survey technique based on the use of carrier phase measurements of the GPS where a single reference station provides real-time corrections, providing up to centimeter-level accuracy.

plane bed—Description of a stream that has a featureless bed that lacks a distinct sequence of bed features such as riffles and pools.

TABLES

TABLE 1
Modified Wentworth Scale for Substrate Size Classification

Description	Size Class (metric units/English units)	Code
Fines	<2 mm/<0.1 in.	FI
Small Gravel	2-16 mm/0.1-0.6 in.	SG
Large Gravel	16-64 mm/0.6-2.5 in.	LG
Small Cobble	64-128 mm/2.5-5.0 in.	SC
Large Cobble	128-256 mm/5.0-10.0 in.	LC
Boulder	>256 mm/>10.0 in.	BO
Bedrock	Bedrock	BR

Notes:

>= greater than

< = less than

in. = inches

mm = millimeters

TABLE 2
Total Estimated Areas of OCHs

	North Fork Koktuli River (hectares)	South Fork Koktuli River (hectares)	Upper Talarik Creek (hectares)
Active Valley	1,330	1,348	1,523
OCH Types			
Beaver pond	1,131	1,227	1,416
Beaver Pond Outlet Channel	39	27	15
Alcove	27	27	15
Percolation Channel	53	<1	15
Isolated Pond	13	40	15
Side Channel	66	27	46

TABLE 3
OCH Depth and Dominant Substrate

OCH Type (number)	Median Average Depth (25-75 Percentile)	Median Maximum Depth (25-75 Percentile)	Dominant Substrate [a]					
			FI	FI/GR	FI/C	GR	GR/C	C
Beaver pond (78)	0.24m (0.17m-0.31m)	0.43m (0.32m-0.53m)	78%	13%	5%	3%	<1%	<1%
Pond Outlet Channel (3)	0.31m (NA)	0.46m (NA)	100%	0%	0%	0%	0%	0%
Side Channel (4)	0.37m (0.28m-0.54m)	0.69m (Range: 0.62m-0.77m)	50%	25%	0%	25%	0%	0%
Percolation Channel (21)	0.15m (0.09m-0.24m)	0.20m (0.11m-0.30m)	60%	5%	5%	10%	10%	10%
Alcove (2)	0.34m (NA)	0.44m (NA)	100%	0%	0%	0%	0%	0%
Isolated Pond (7)	0.33m (0.27m-0.40m)	0.54m (0.45m-0.65m)	57%	0%	0%	0%	0%	43%

Notes:

a. FI (fines), FI/GR (fines, gravel), FI/C (fines, cobble), GR (gravel), GR/C (gravel, cobble), C (cobble).

% = percent

m = meter(s)

NA = not applicable

TABLE 4
Difference between Selected Water Quality Parameters in OCHs and the Mainstem River on the Same Sample Date

Waterbody Type (number)	Water Temperature (degrees Celsius)	Dissolved Oxygen (milligrams/ liter)	Specific Conductivity (microSiemens per centimeter)
Beaver pond (38)	+0.9	-2.4	+5
Pond Outlet Channel (3)	+0.72	-1.7	-23
Side Channel (4)	+0.8	-3.5	-5
Percolation Channel (16)	-1.6	-3.0	+1
Alcove (2)	-1.1	-1.2	+5
Isolated Pond (3)	+3.6	-2.9	-7

TABLE 5
Mainstem River Flow and OCH Area at Initiation of Surface Connection

Site Name	Waterbody Type [a]	Connecting Flow (cfs)	OCH Area (square meters)
North Fork Koktuli River			
NFKLB11A	SC	14	362
NFKLB5	BC	14	80
NFKRB12	SC	22	6,249
NFKLB8	SC	69	321
NFKLB504	SC	111.85	472
NFKRB6	PC	123.2	239
NFKRB10	BC	159.3	7,763
NFKRB7	PC	191.7	238
NFKRB11	SC	241.6	12
NFKLB503	SC	381.25	30
NFKRB502	SC	490	994
South Fork Koktuli River			
SFKLB10A	SC	26	447
SFKLB11B	BC	152	2,488
SFKRB16	SC	435	49
SFKRB21	SC	15	501
SFKRB22i	SC	10	308
SFKRB5	SC	5	79
SFKRB5A	SC	172	212
SFKRB5B	SC	435	62
SFKRB7	BC	172	4436
SFKRB9	BC	295	37
SFKRB12	BC	372	399
Upper Talarik Creek			
UTLB22A	BC	39	861
UTLB22	BC	45	6,013
UTRB31A	SC	45	127
UTRB2A	SC	66	109
UTLB4B	SC	90	27
UTLB4E	SC	109	58
UTLB1	SC	223	536
UTLB18	BC	240	167
UTRB26A	SC	280	281
UTRB11	SC	390	59
UTLB21	BC	455	11
UTLB6I	SC	308	49
UTRB7	SC	348	35

Notes:

a. SC = side channel, BC = beaver pond, PC = percolation channel.

TABLE 6
Relative Fish Abundance in OCHs

Drainage	OCH Type	Number of OCH Sites	Total Length (meters)	Number of fish per 100 meters										
				Chinook salmon	Coho salmon	Sockeye salmon	Chum salmon	Arctic grayling	Dolly Varden	Rainbow Trout	Northern Pike	Sculpin sp.	Stickleback sp.	Burbot
NFK	Alcove	1	48.5	2.06	1334.02	24.74	0.00	0.00	12.37	0.00	0.00	0.00	0.00	0.00
	Beaver pond	9	562.7	0.18	78.19	0.53	0.00	0.00	1.07	0.00	0.00	1.78	14.04	0.00
	Beaver pond outlet channel	1	37.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.56	0.00
	Isolated pool	2	36.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Percolation channel	16	321.7	2.49	51.60	0.62	0.00	0.00	8.70	0.00	0.00	10.88	0.00	0.00
	Side channel	8	138.7	0.00	568.13	0.00	0.00	0.00	69.21	0.00	0.00	12.98	0.00	0.00
SFK	Beaver pond	36	4150.8	2.94	30.38	10.84	0.17	7.37	4.29	0.00	0.02	3.54	3.32	0.02
	Isolated pool	2	85.2	0.00	8.22	2.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Percolation channel	2	70	0.00	11.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Side channel	3	387	10.34	66.41	5.17	0.00	0.52	0.00	0.52	0.00	0.00	0.78	0.00
UT	Alcove	1	31	0.00	87.10	0.00	0.00	0.00	0.00	0.00	0.00	3.23	0.00	0.00
	Beaver pond	24	1890.3	1.38	317.41	0.42	0.00	0.26	1.38	0.42	0.00	0.42	27.99	0.00
	Beaver pond outlet channel	3	75.5	0.00	42.38	0.00	0.00	0.00	1.32	1.32	0.00	2.65	3.97	0.00
	Isolated pool	4	351.2	0.00	15.09	0.00	0.00	0.00	0.00	0.00	0.00	0.28	46.40	0.00
	Percolation channel	10	637.9	0.63	144.38	3.92	0.00	12.54	0.16	0.78	0.00	0.47	6.90	0.00
	Side channel	3	132.8	0.75	270.33	1.51	0.00	0.00	0.75	0.00	0.00	4.52	11.30	0.00

TABLE 7
Fish Densities in OCHs

				Number of fish per100 square meters										
Drainage	OCH Type	Number of OCH Sites	Total Area (square meters)	Chinook salmon	Coho salmon	Sockeye salmon	Chum salmon	Arctic grayling	Dolly Varden	Rainbow Trout	Northern Pike	Sculpin sp.	Stickleback sp.	Burbot
NFK	Alcove	1	276.45	0.36	234.04	4.34	0.00	0.00	2.17	0.00	0.00	0.00	0.00	0.00
	Beaver pond	9	8058.80	0.01	5.46	0.04	0.00	0.00	0.07	0.00	0.00	0.12	0.98	0.00
	Beaver pond outlet channel	1	83.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.25	0.00
	Isolated pool	2	266.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Percolation channel	16	914.48	0.87	18.15	0.22	0.00	0.00	3.06	0.00	0.00	3.83	0.00	0.00
	Side channel	8	592.58	0.00	132.98	0.00	0.00	0.00	16.20	0.00	0.00	3.04	0.00	0.00
SFK	Beaver pond	36	10985.89	0.21	7.10	2.30	0.05	1.44	1.26	0.00	0.01	1.09	1.19	0.01
	Isolated pool	2	758.32	0.00	0.92	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Percolation channel	2	12.00	0.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Side channel	3	504.10	7.74	21.42	0.79	0.00	0.40	0.00	0.00	0.00	0.00	0.60	0.00
UT	Alcove	1	57.30	0.00	47.12	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00
	Beaver pond	20	10420.89	0.25	53.27	0.08	0.00	0.05	0.20	0.08	0.00	0.08	4.34	0.00
	Beaver pond outlet channel	3	63.30	0.00	15.80	0.00	0.00	0.00	0.00	0.00	0.00	3.16	4.74	0.00
	Isolated pool	4	1481.30	0.00	2.30	0.00	0.00	0.00	0.00	0.00	0.00	0.07	10.87	0.00
	Percolation channel	10	1381.13	0.00	59.01	1.81	0.00	5.79	0.00	0.00	0.00	0.14	0.50	0.00
	Side channel	3	790.80	0.00	15.17	0.25	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00

FIGURES

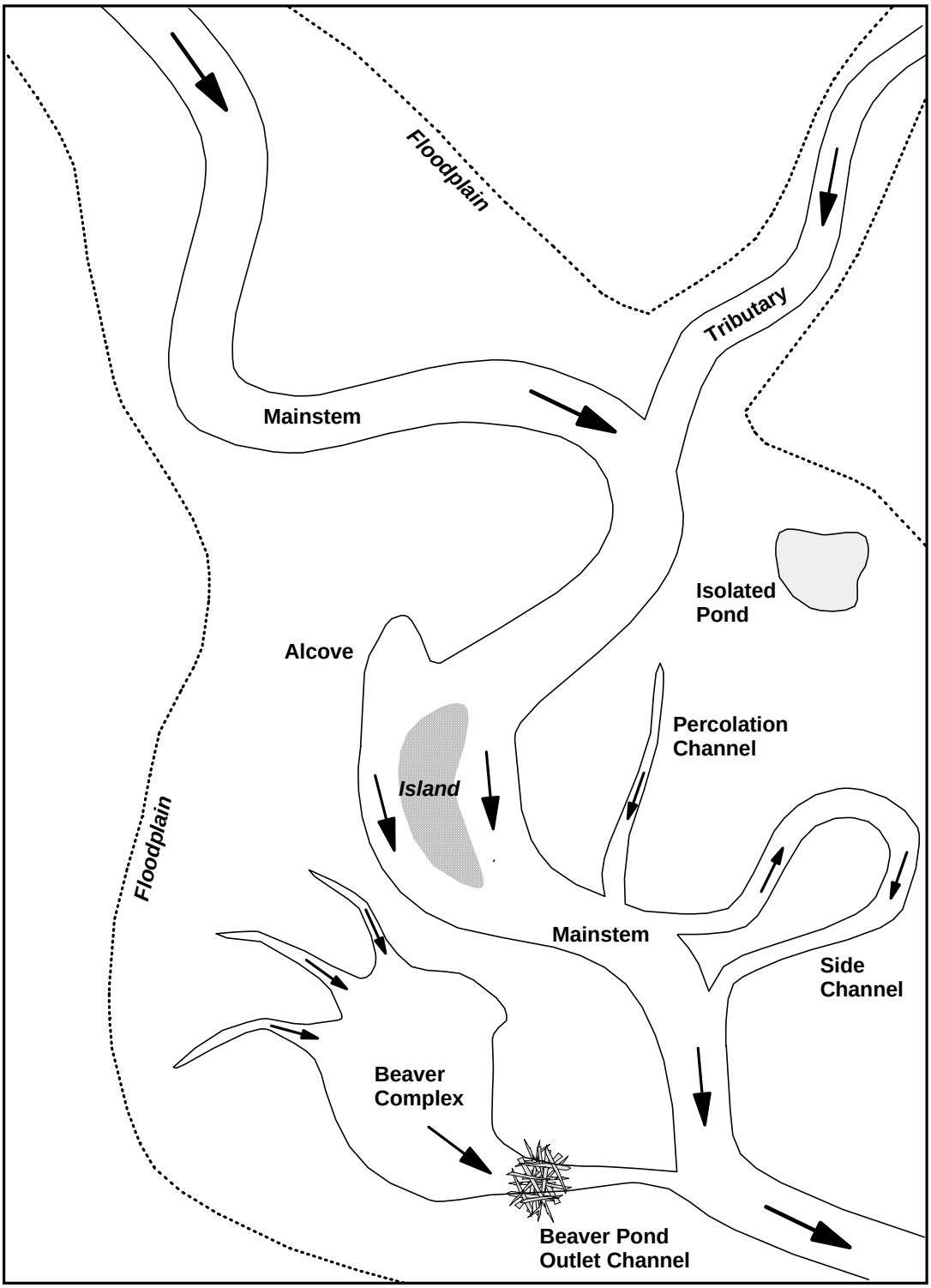


FIGURE 1
An Active River Valley with Off-channel Habitat Types

Note: Beaver ponds are also referred to as beaver complexes as depicted above.

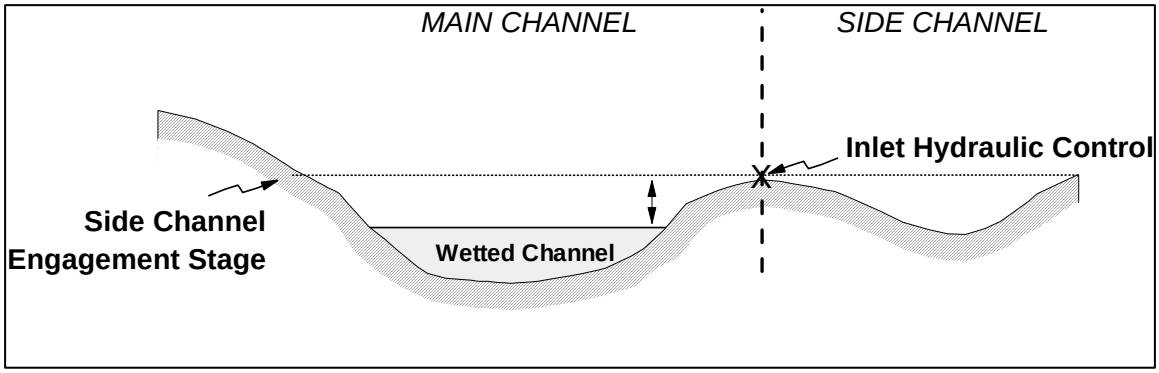


FIGURE 6
Schematic Diagram of Inlet Connectivity Survey

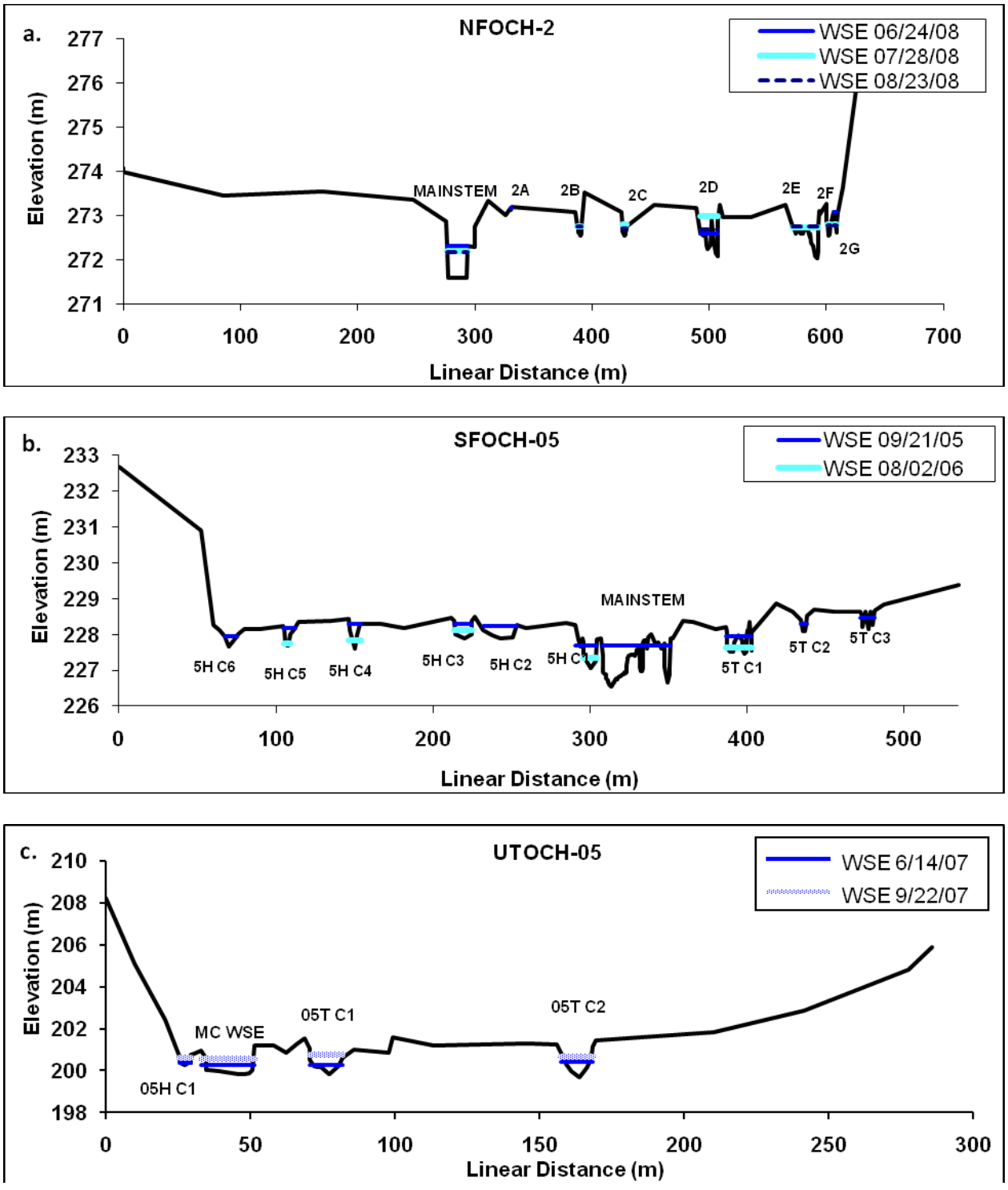


FIGURE 10
Typical Valley Bottom Transect Profiles and Water Surface Elevations for the Three Study Rivers

Note: a. North Fork Koktuli River; b. South Fork Koktuli River; and c. Upper Talarik Creek.
WSE = Water surface elevation

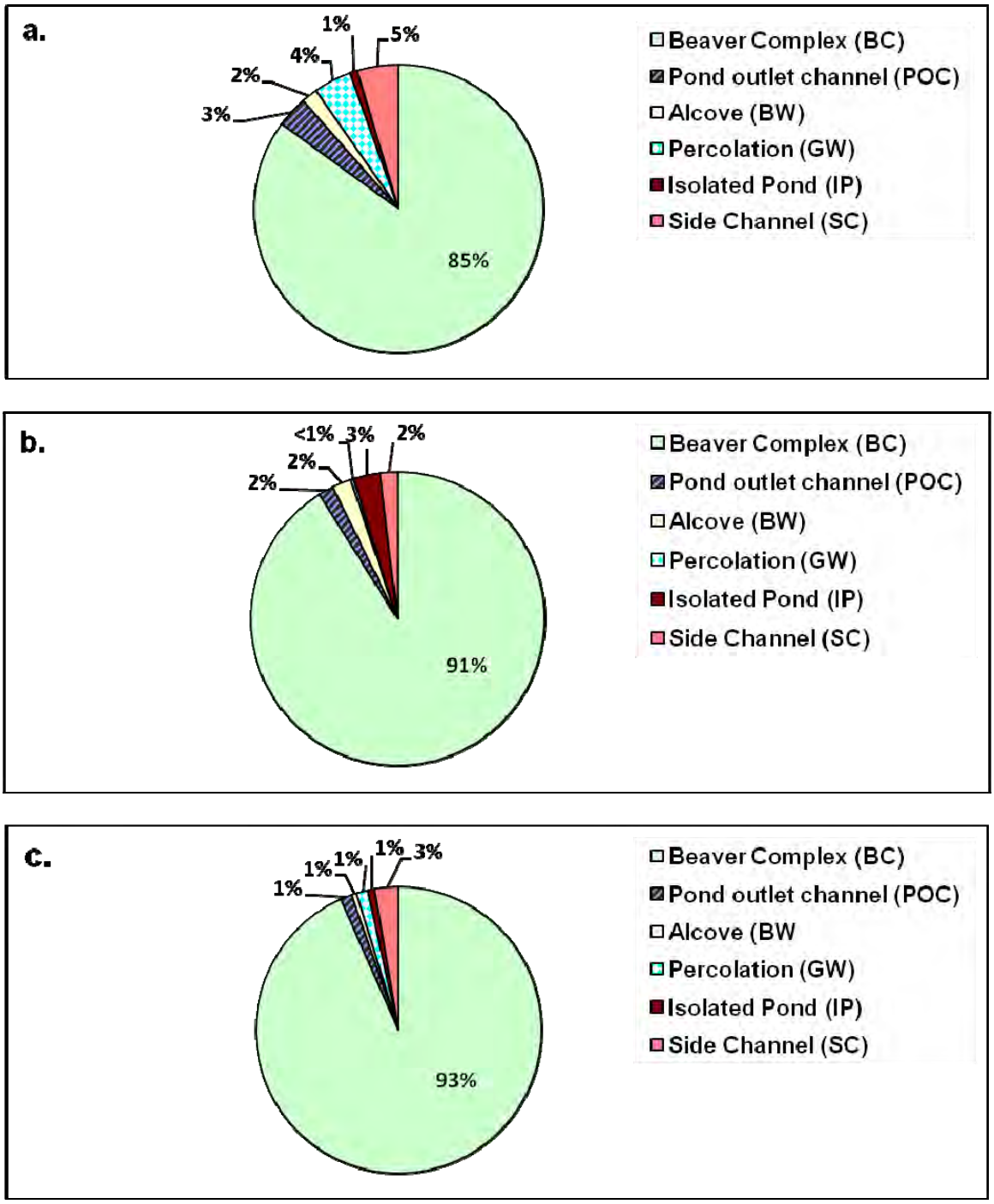


FIGURE 11
Proportion of Total OCH Area Represented by Each OCH Type in the Intensive Study Areas of the Three Study Rivers

Note: a. North Fork Koktuli River; b. South Fork Koktuli River; and c. Upper Talarik Creek.

OCH

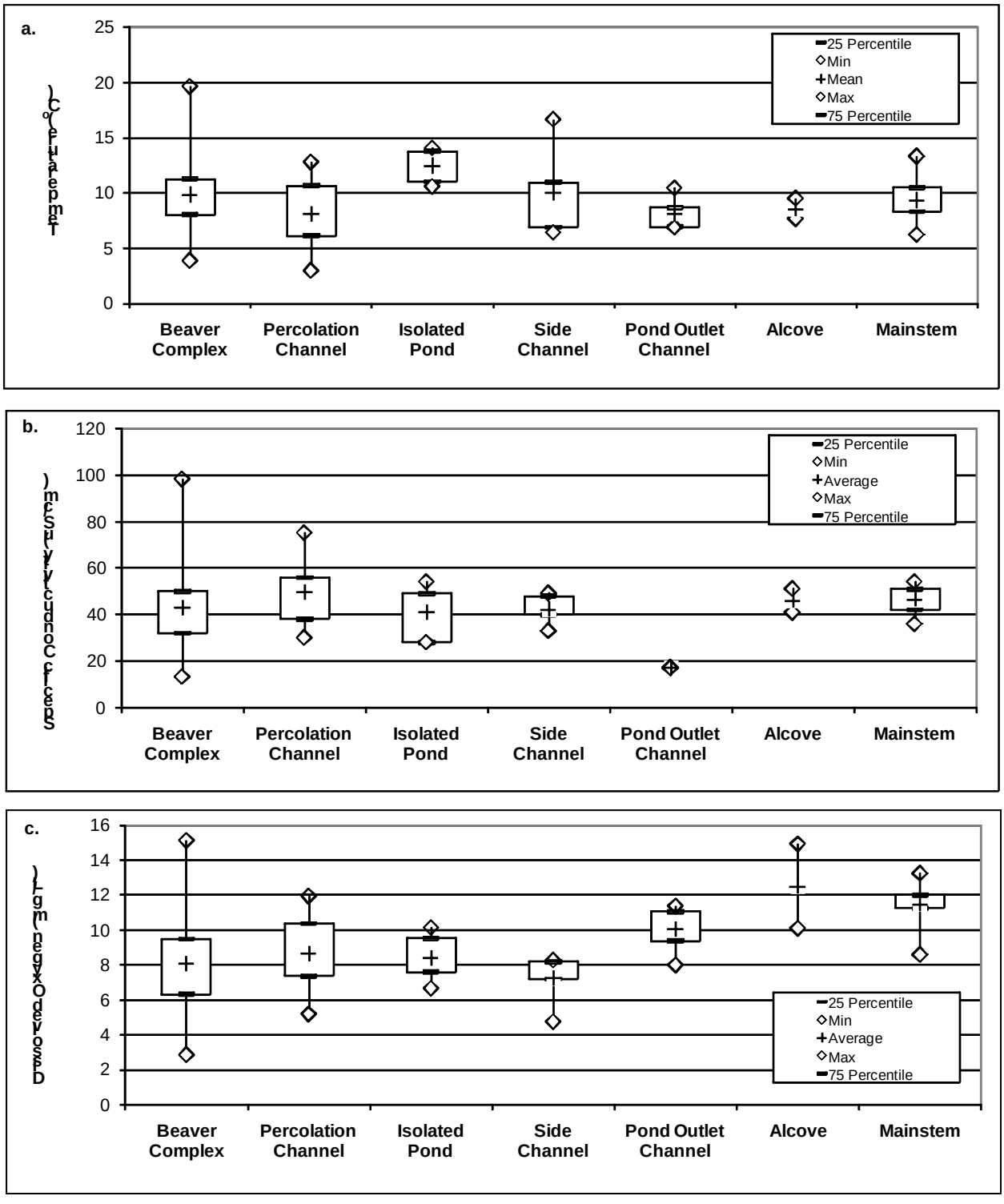


FIGURE 12
Water Quality Characteristics of OCHs and the Mainstem

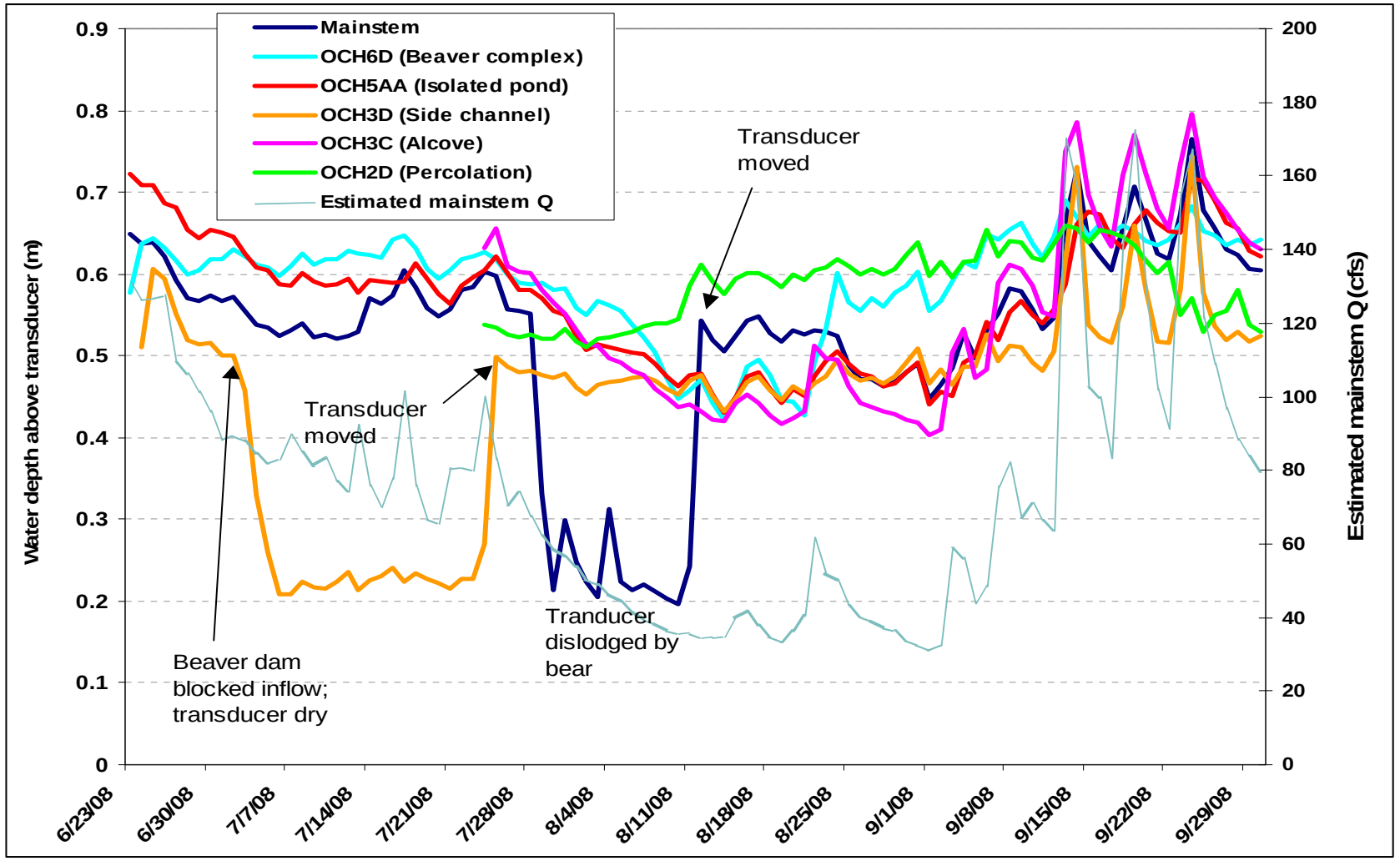


FIGURE 13
Relative Fluctuations in Average Daily Water Column Depth for Mainstem and OCH Stations at the NFK Intensive Study Site during the 2008 Study Season

Note: No rating curves were developed to predict flow volume at these sites because many had zero velocity. Mainstem flows derived by summing discharge data at the NFK 100C and NFK 119A sites upstream of the NFK study area are presented for context.

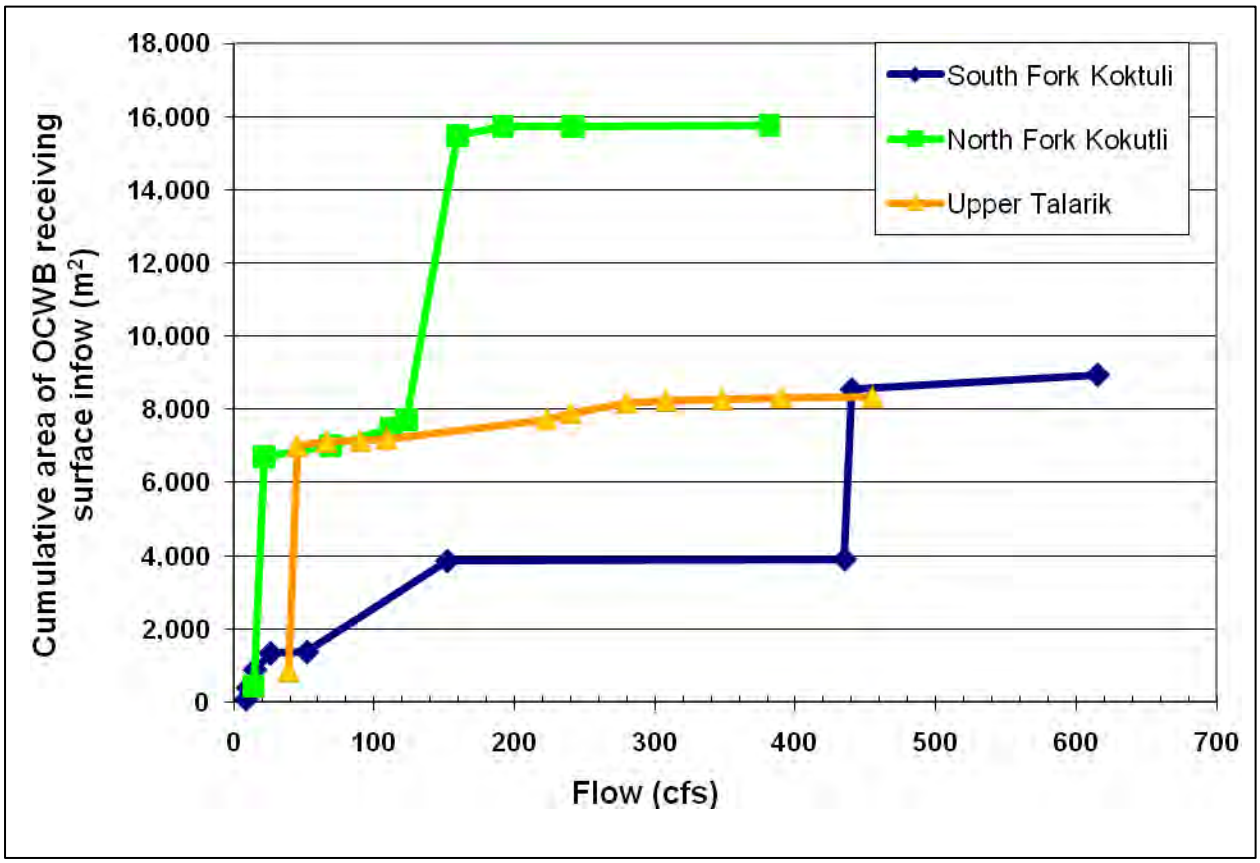


FIGURE 14
Relationship between Mainstem Flow Level and the Area of OCHs Receiving Surface Inflows

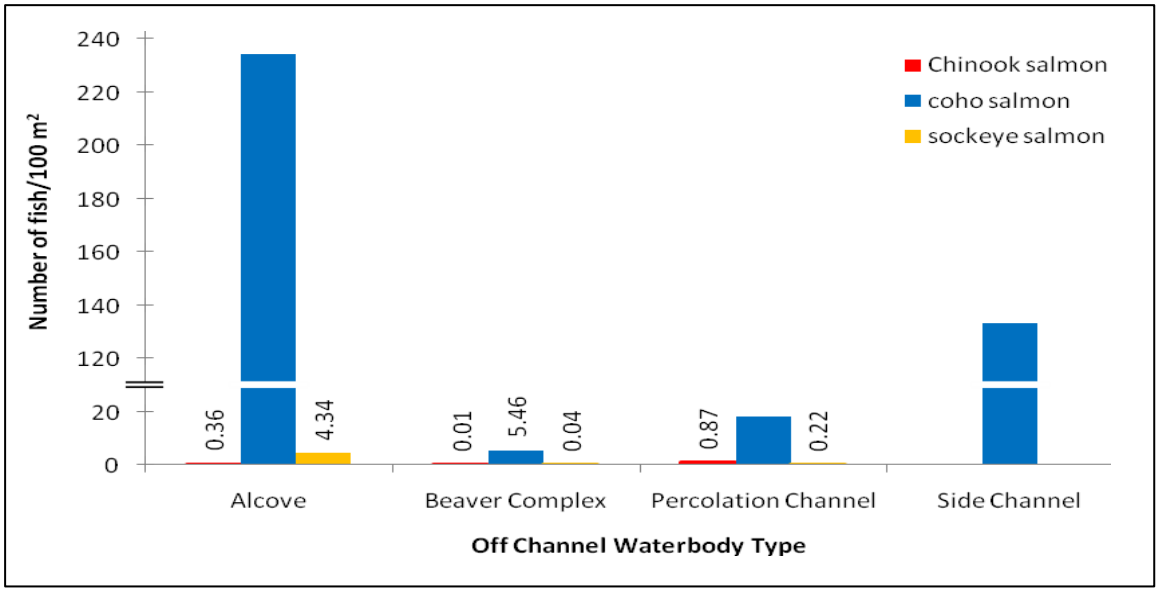


FIGURE 15a
Densities of Anadromous Salmonids among OCH Types in the NFK Watershed

Note: Densities were calculated only for habitat types with fish present during sampling.

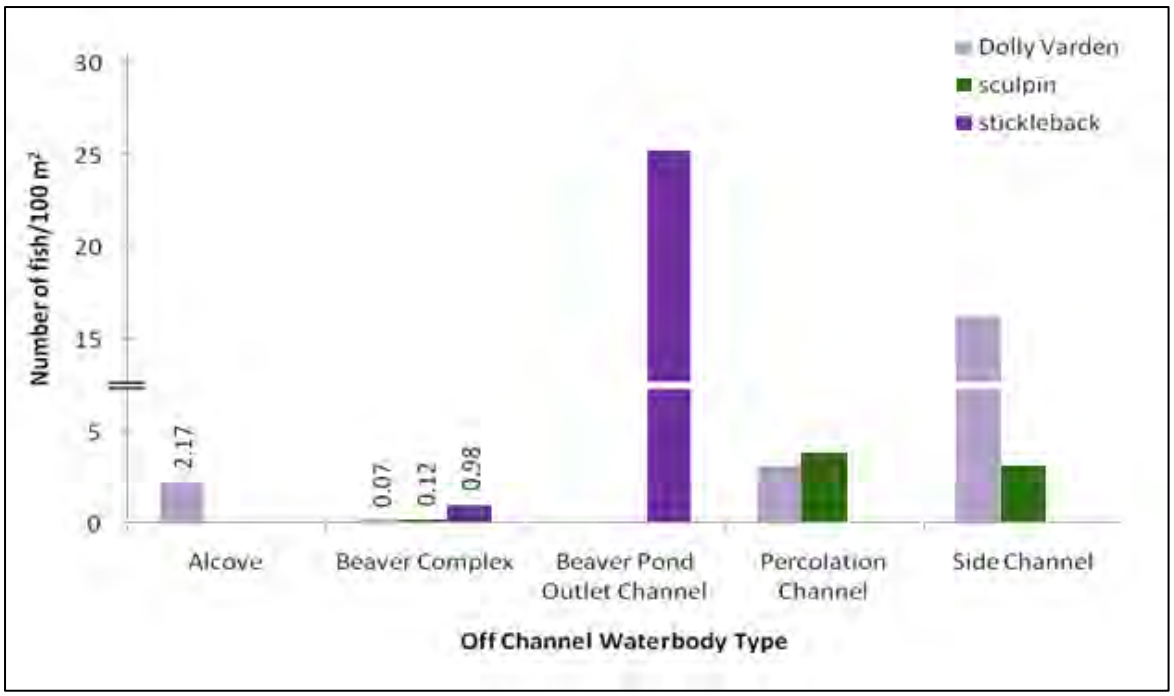


FIGURE 15b
Densities of Resident Fish Species among OCH Types in the NFK Watershed

Note: Densities were calculated only for habitat types with fish present during sampling.

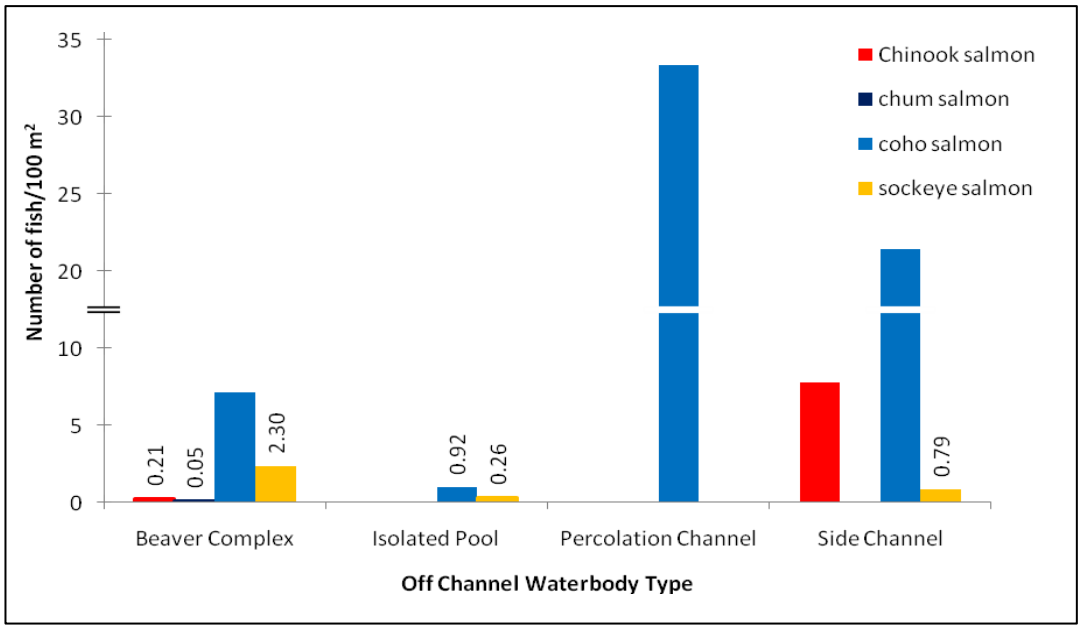


FIGURE 16a
Densities of Anadromous Salmonids among OCH Types in the SFK Watershed

Note: Densities were calculated only for habitat types with fish present during sampling.

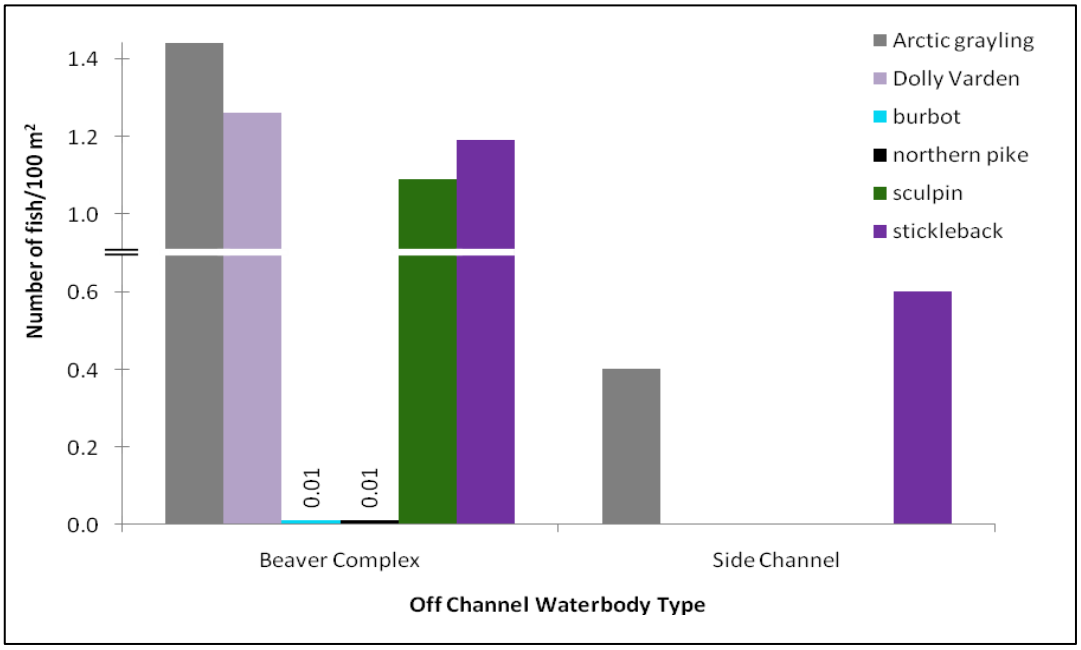


FIGURE 16b
Densities of Resident Fish Species among OCH Types in the SFK Watershed

Note: Densities were calculated only for habitat types with fish present during sampling.

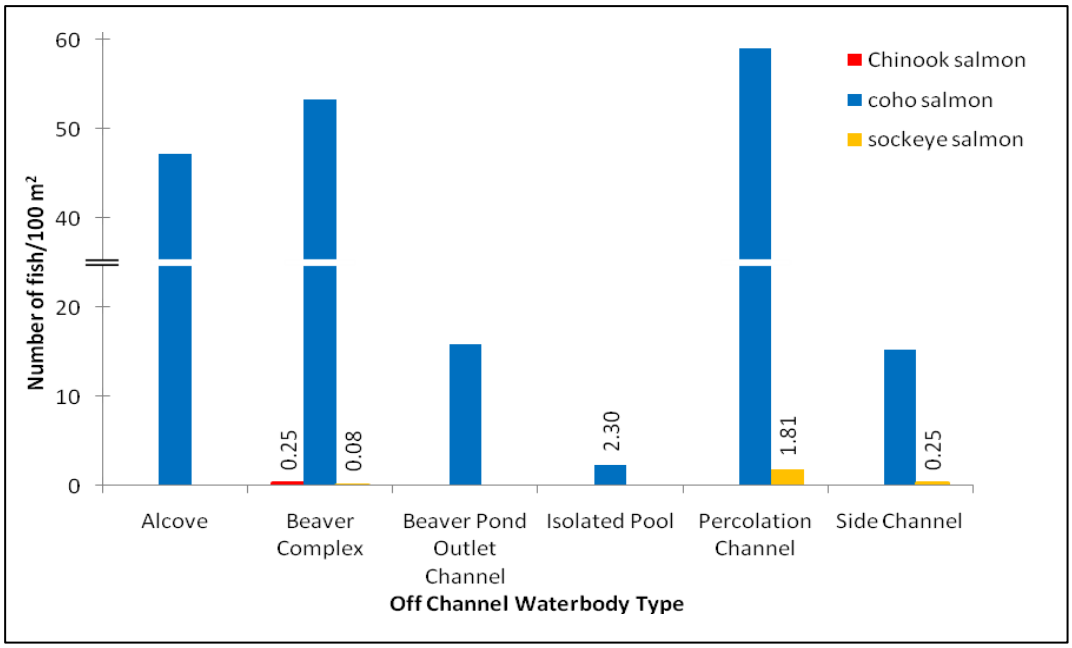


FIGURE 17a
Densities of Anadromous Salmonids among OCH Types in the UT Watershed

Note: Densities were calculated only for habitat types with fish present during sampling.

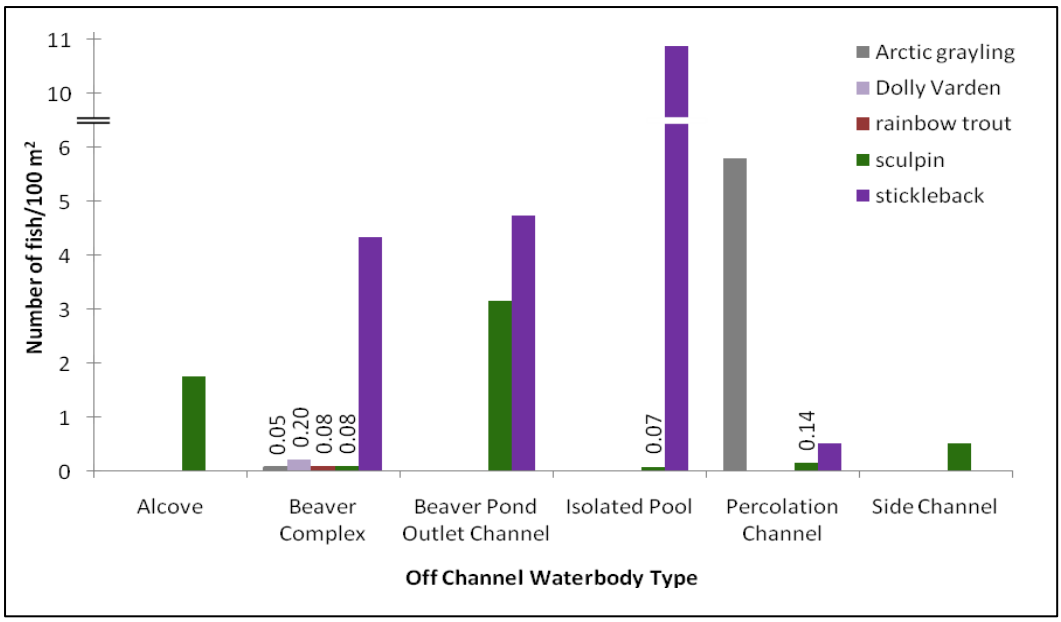


FIGURE 17b
Densities of Resident Fish Species among OCH Types in the UT Watershed

Note: Densities were calculated only for habitat types with fish present during sampling.

PHOTOGRAPHS

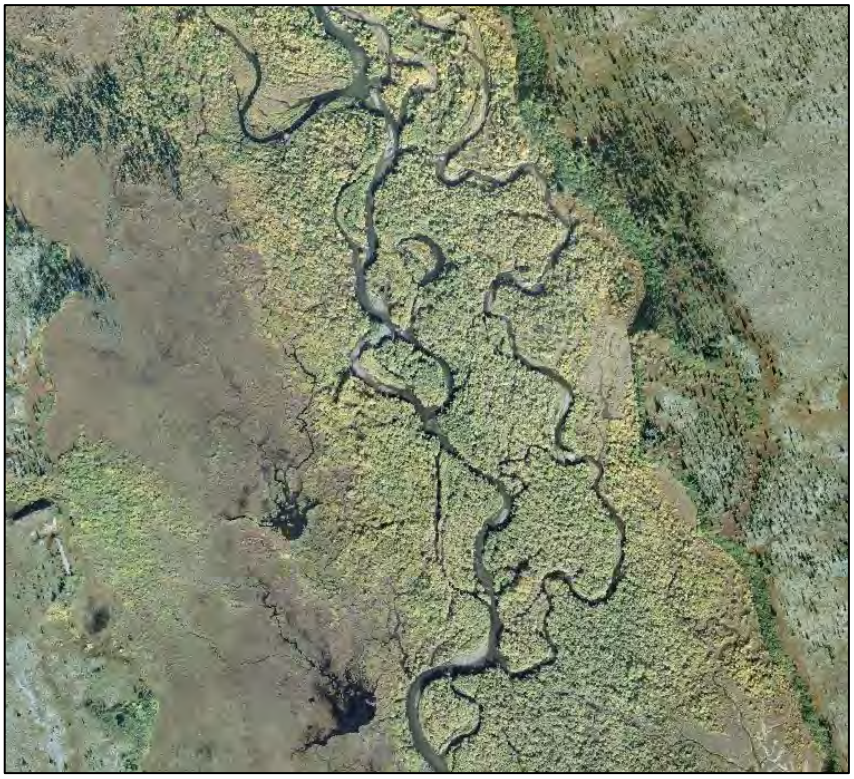


PHOTO 1: Example of a braided channel planform.

PHOTO 2: Example of a meandering channel planform.

PHOTO 3: Beaver dam under construction. Materials include mud, herbaceous vegetation, rocks, and cut woody stems (primarily willow).

PHOTO 4: Mature beaver dam with a well established willow shrub thicket.

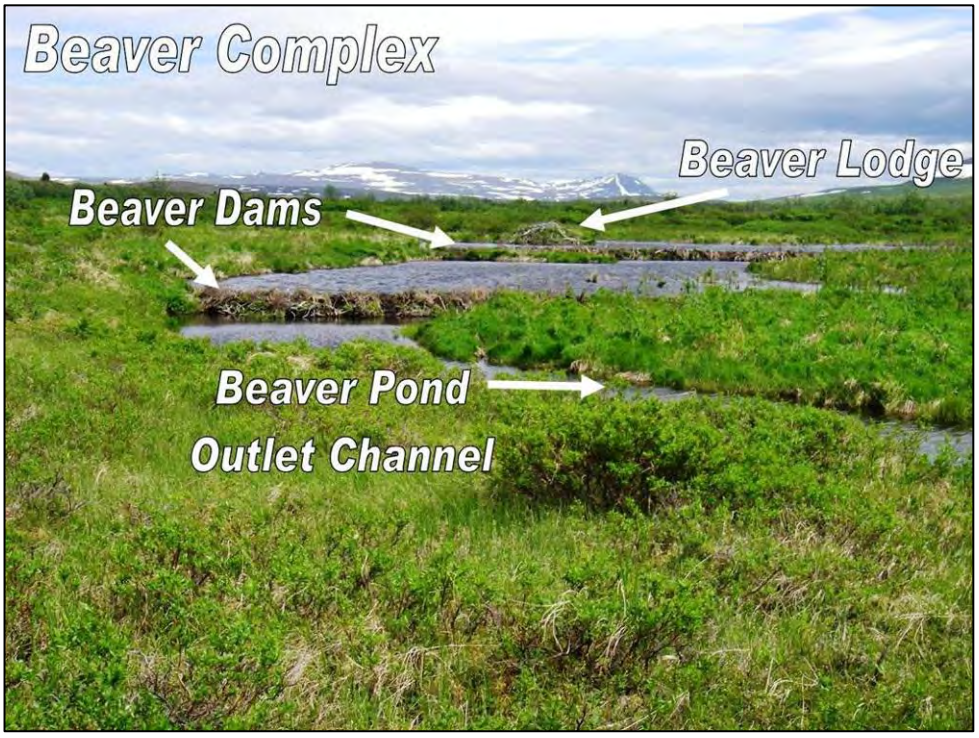


PHOTO 5: Beaver pond (also referred to as beaver complex) Off-channel Habitat , including: beaver dams across outlet channels, beaver ponds, and a beaver lodge.

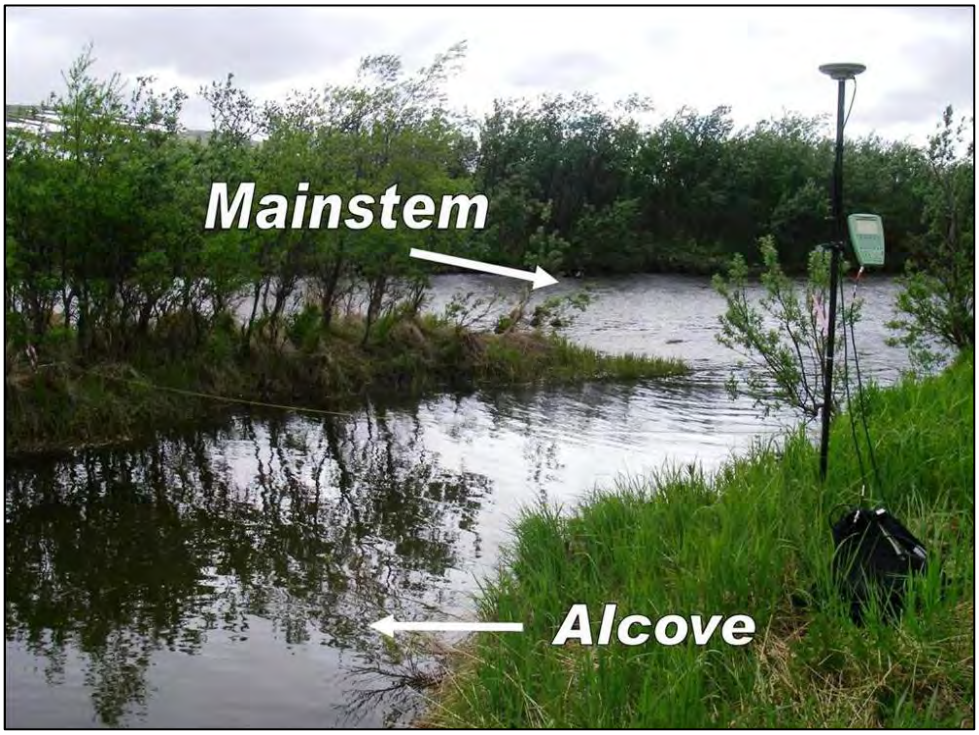


PHOTO 6: Alcove Off-channel Habitat.

PHOTO 7: Side channel Off-channel Habitat.

PHOTO 8: Percolation channel Off-channel Habitat.

PHOTO 9: Isolated pond Off-channel Habitat.

PHOTO 10: Off-channel Habitat snorkel fish survey.

PHOTO 11: Juvenile coho salmon photographed during a snorkel survey, North Fork Koktuli River.

ATTACHMENT

ATTACHMENT 1

Off-channel Habitat Topography and Water Surface Elevations

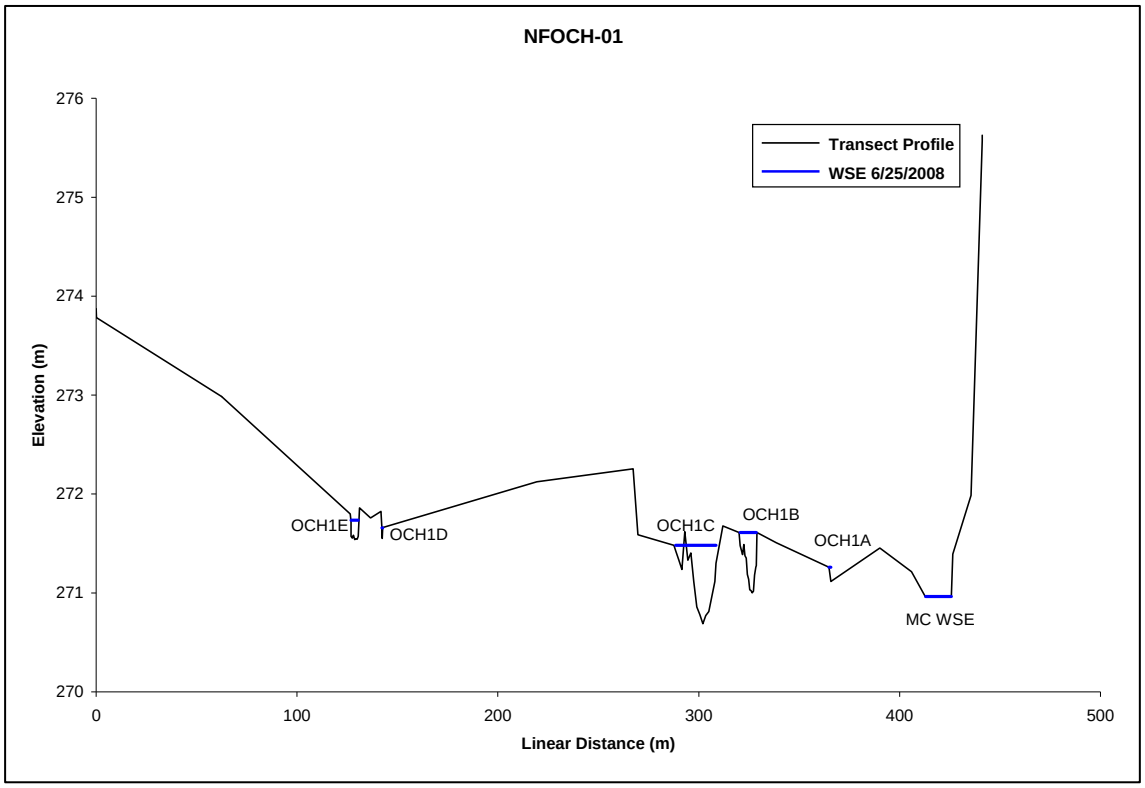
Off-channel Habitat Topography and Water Surface Elevations

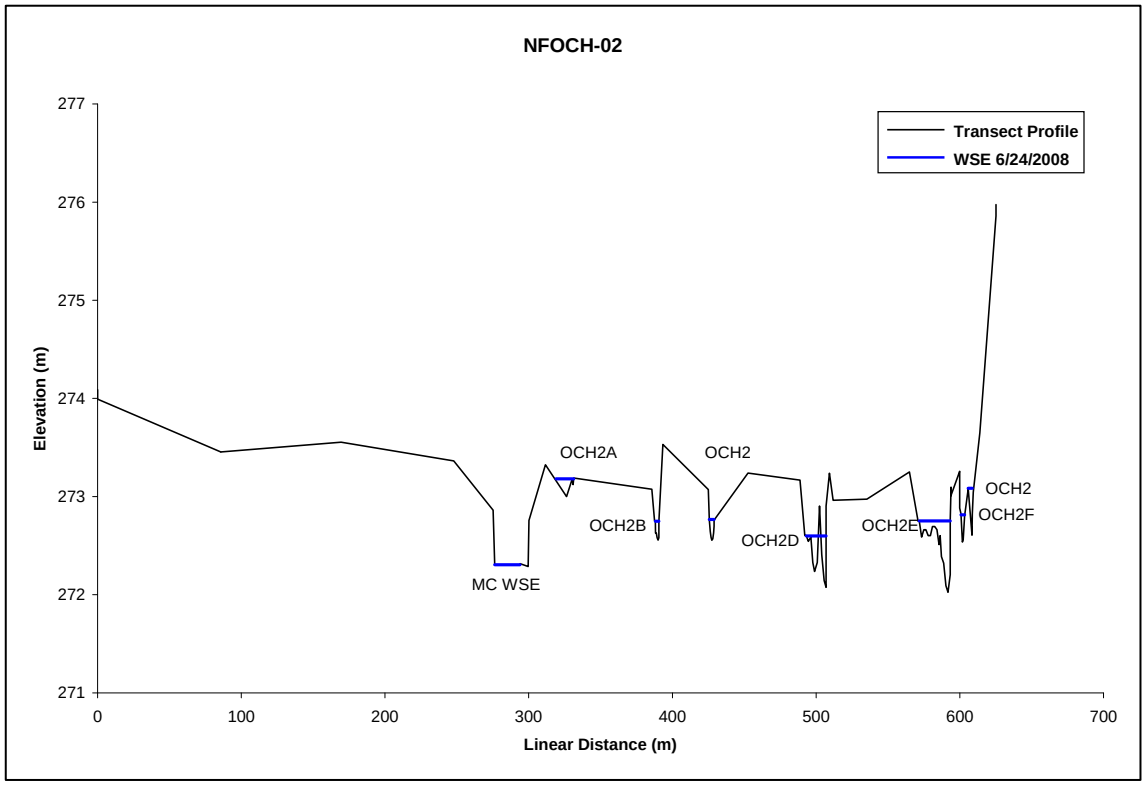
The following figures represent the topography at selected transects through off-channel habitat (OCH) areas in the North Fork Koktuli Rivers (NFK), South Fork Koktuli River (SFK), and Upper Talarik Creek (UT). These plots are based on global positioning system (GPS) points collected by HDR Inc. (HDR) and R2 Resource Consultants (R2) during the initial survey of each transect. The water surface elevations (WSEs) depicted on the graph for each OCH unit encountered and for the main stem of the river channel correspond to a single site visit. Other WSE data from other site visits are available in the complete dataset. For representational clarity, only one WSE is shown on the plot of each transect. The transect profiles are plotted such that the graphs represent a view looking downstream.

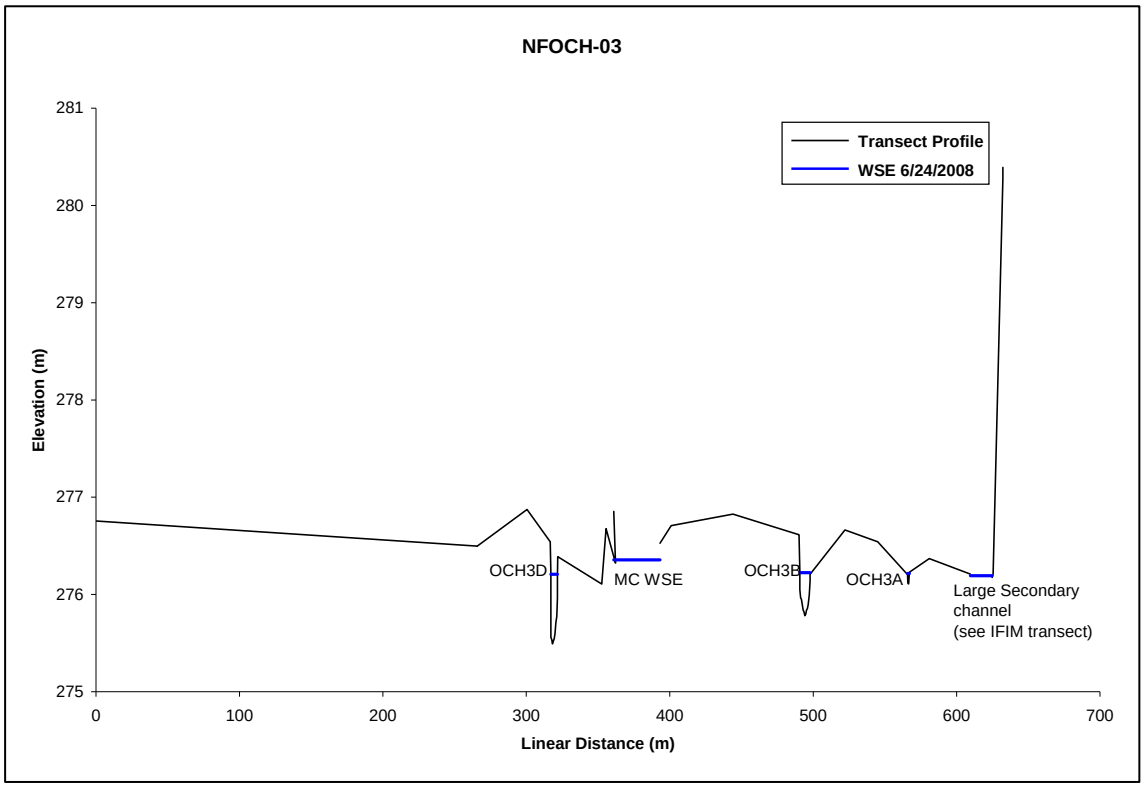
R2 surveyed the off-channel habitats in the NFK. Distinct aquatic habitat units that were located within the off-channel area and were crossed by the transect were identified with a unique code that indentified the location of the unit along the transect. The code begins with OCH to indicate that this is an off-channel habitat transect. OCH is followed by a transect number (1, 2, 3, etc.) and then a letter (A, B, C, etc.) indicating the sequential location of the unit from the start of the transect. OCH units on the opposite side of the main channel from previously identified units were given a double letter (e.g., AA). R2 did not survey in the main channel of the river; therefore, the plotted transect profiles show a gap at the main channel. The WSE for the main channel (MC WSE), as with all OCH units, is represented by a blue horizontal line, and this line does not denote the topography of the main channel.

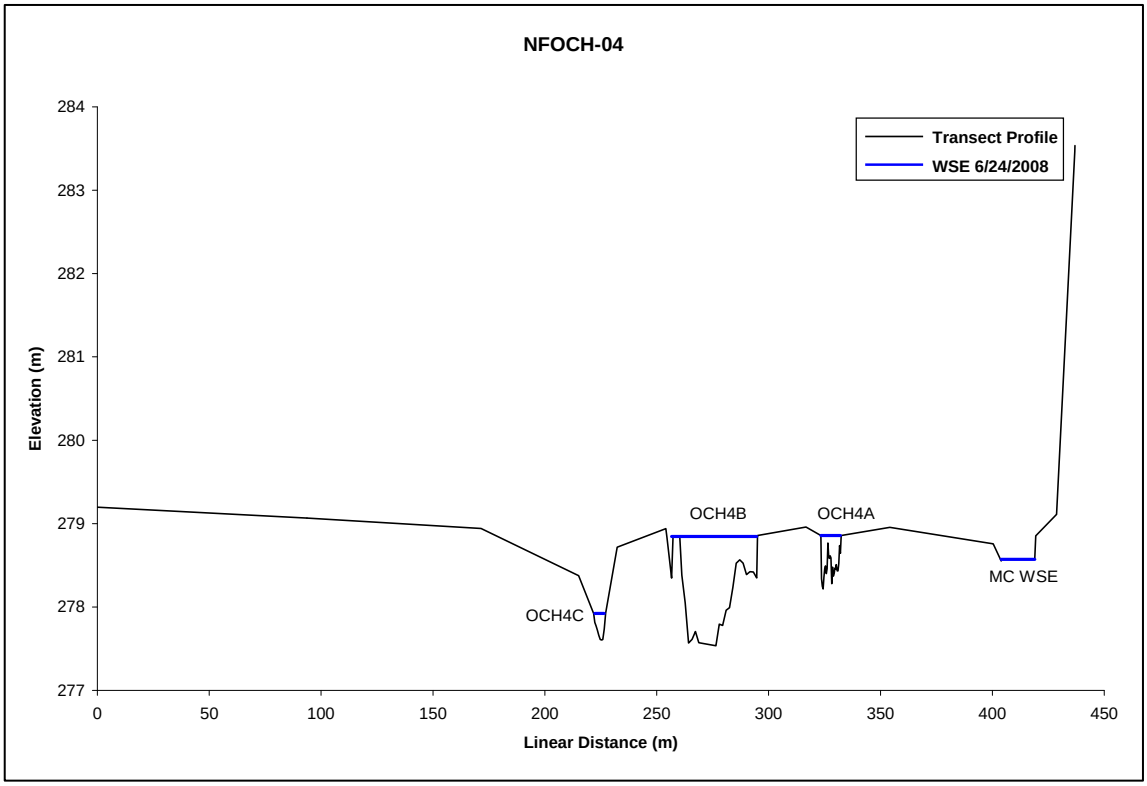
HDR surveyed OCHs in the SFK and UT. Each survey started at the left bank of the main channel, and the OCH units were numbered as moving away from the channel. Thus, OCH Unit #1 is closer to the main channel than OCH Unit #2, and so on. Also, HDR used the letter “H” to identify those OCH units to the left of the main channel (looking downstream), and the letter “T” for those OCH units to the right of the main channel. In the SFK basin, HDR did not survey in the main channel of the river; therefore, the transect profiles show a gap at the main channel. The MC WSE, as with all OCH units, is represented by a blue horizontal line, and this line does not denote the topography of the main channel. In the UT basin, HDR did survey across the main channel, and these transect profiles show a continuous line. This line, however, should not be considered a full representational survey of the main channel.

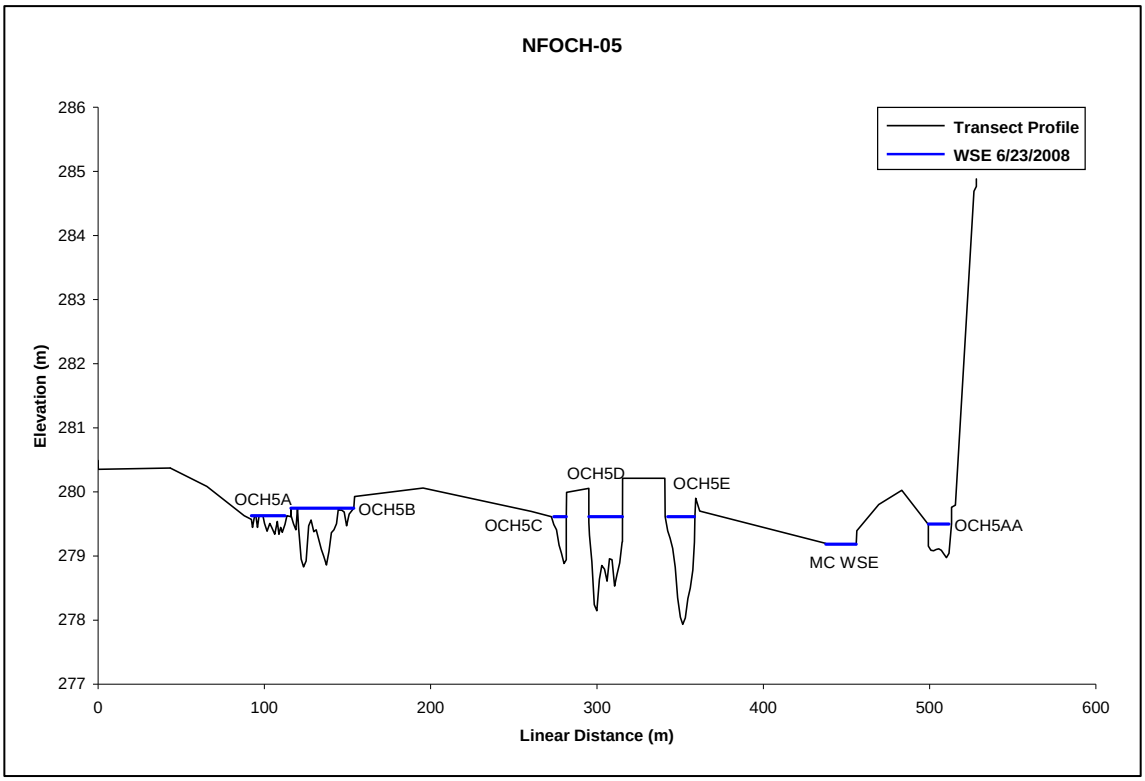
These transect plots are presented only as a graphic representation of the topography of the valley through which the transect lies. Slight modifications in WSE and ground elevations may have been necessary for the transect profile to be graphed properly.

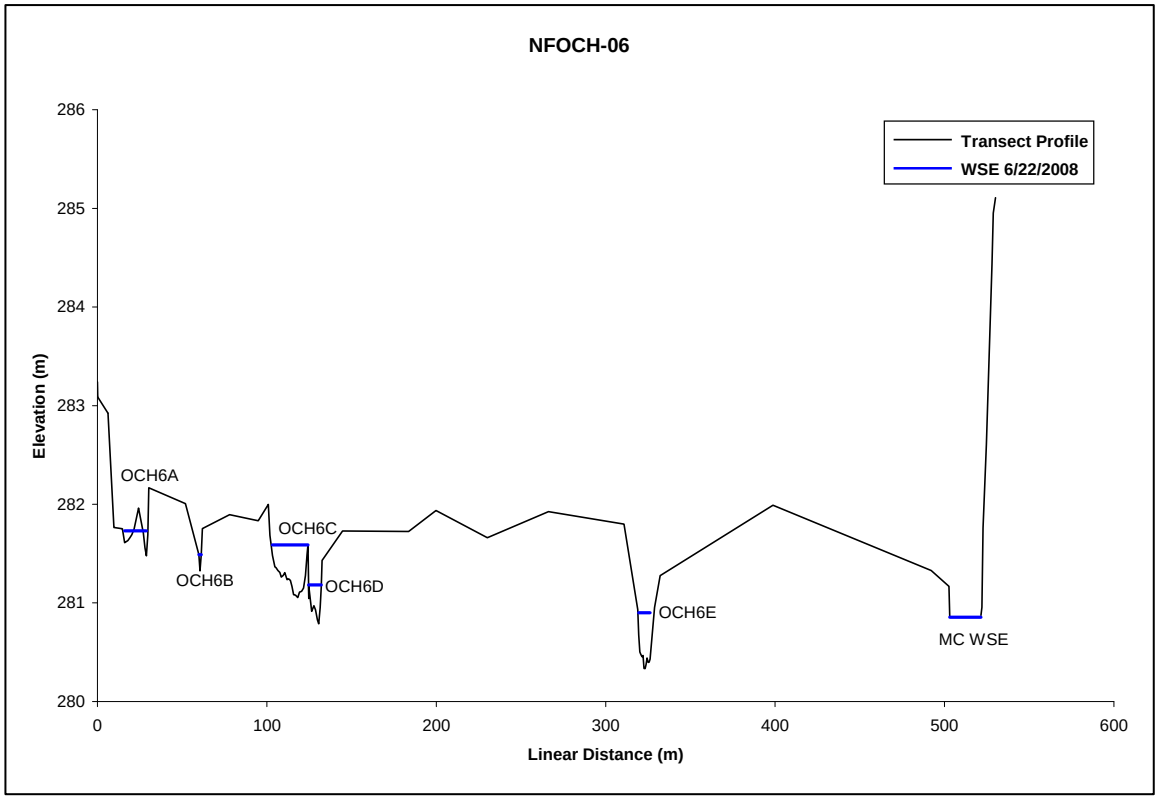

NFOCH-01
Transect Profile
WSE 6/25/2008
Elevation (m)
276
275
274
273
272
271
270
0
100
200
300
400
500
Linear Distance (m)
OCH1E
OCH1D
OCH1C
OCH1B
OCH1A
MC WSE

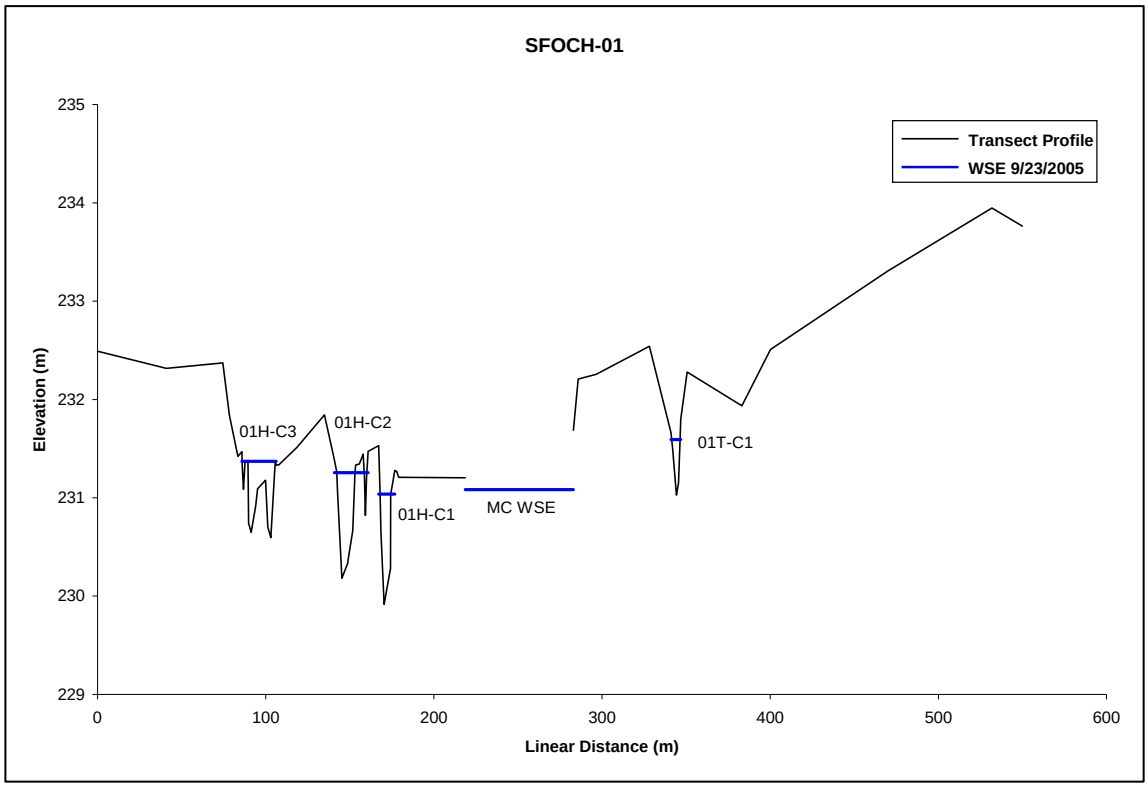

NFOCH-02
Transect Profile
WSE 6/24/2008
Elevation (m)
277
276
275
274
273
272
271
0
100
200
300
400
500
600
700
Linear Distance (m)
OCH2A
OCH2
OCH2B
OCH2D
OCH2E
OCH2
OCH2F
MC WSE

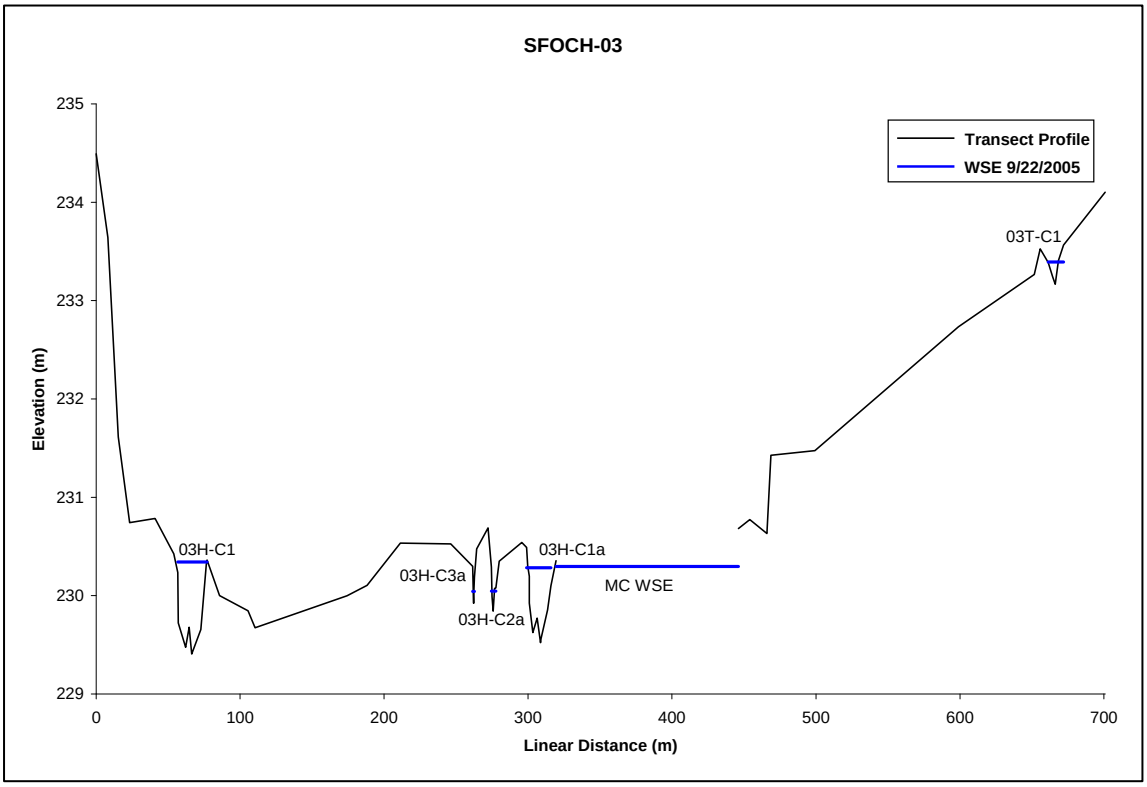

NFOCH-03
Transect Profile
WSE 6/24/2008
Elevation (m)
281
280
279
278
277
276
275
OCH3D
MC WSE
OCH3B
OCH3A
Large Secondary channel (see IFIM transect)
0
100
200
300
400
500
600
700
Linear Distance (m)

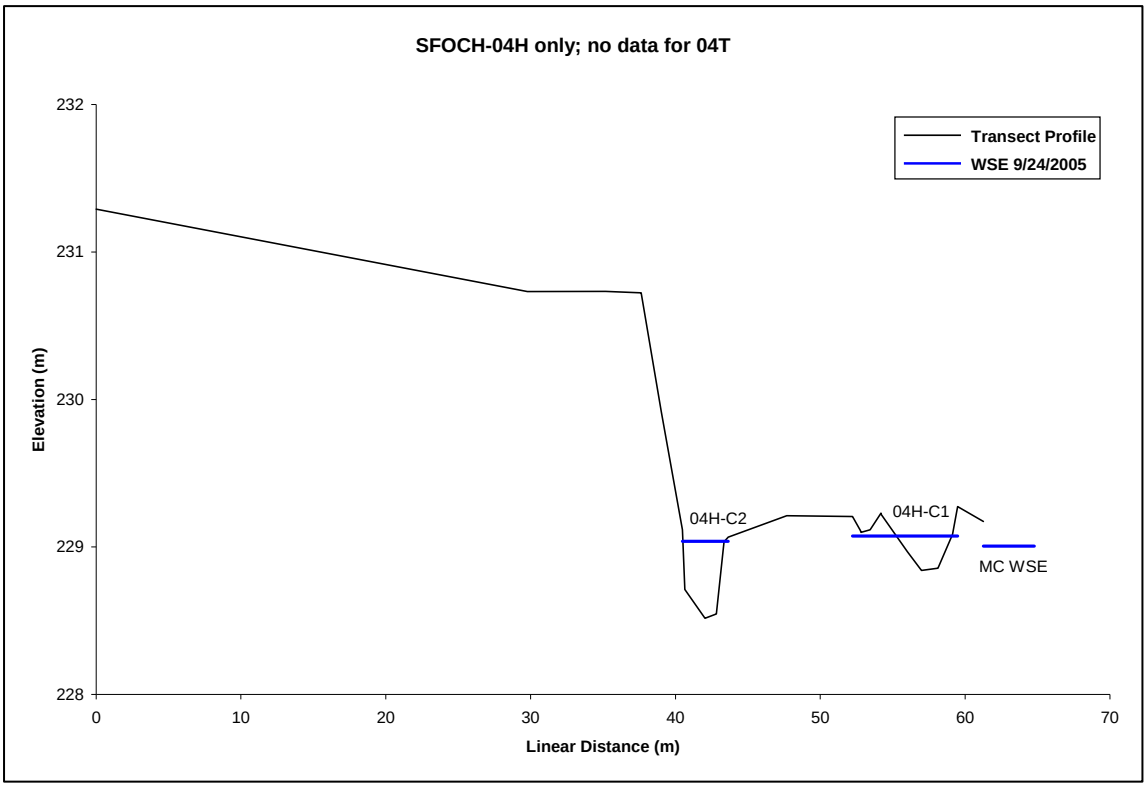

NFOCH-04
Transect Profile
WSE 6/24/2008
Elevation (m)
284
283
282
281
280
279
278
277
OCH4B
OCH4A
MC WSE
OCH4C
0
50
100
150
200
250
300
350
400
450
Linear Distance (m)

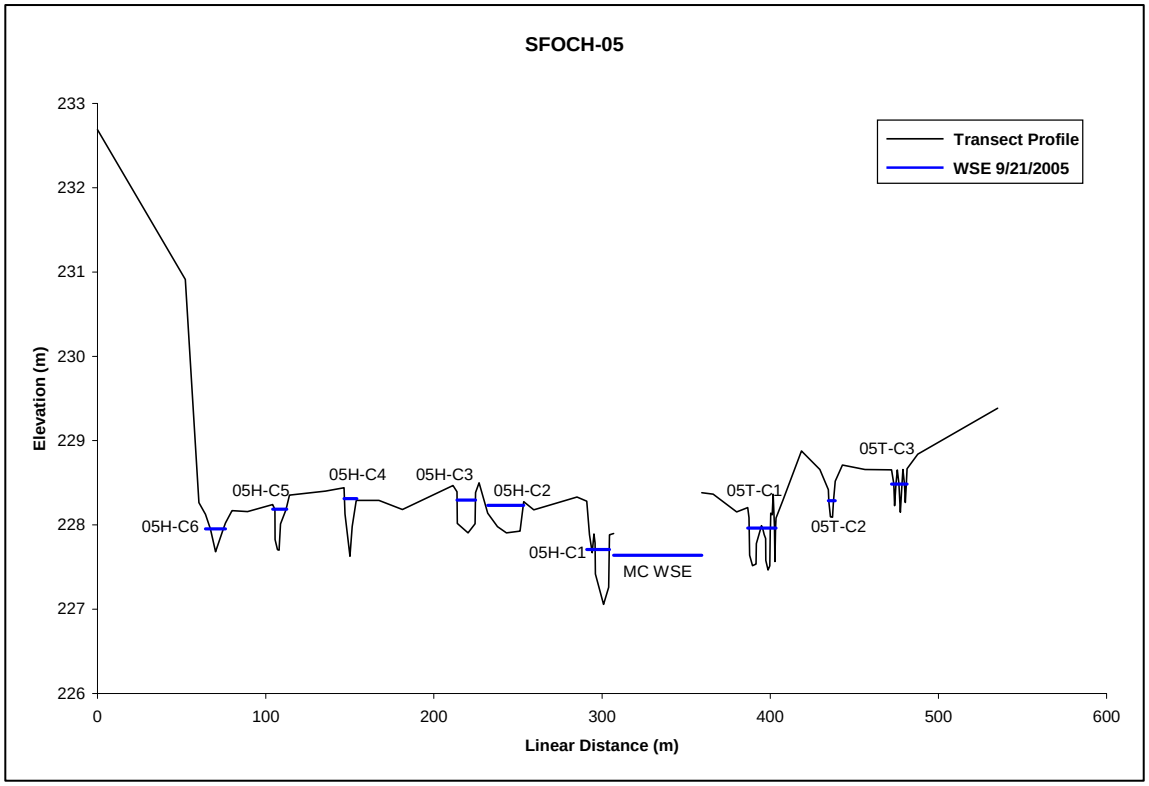

NFOCH-05
Transect Profile
WSE 6/23/2008
Elevation (m)
286
285
284
283
282
281
280
279
278
277
0
100
200
300
400
500
600
Linear Distance (m)
OCH5A
OCH5B
OCH5C
OCH5D
OCH5E
MC WSE
OCH5AA

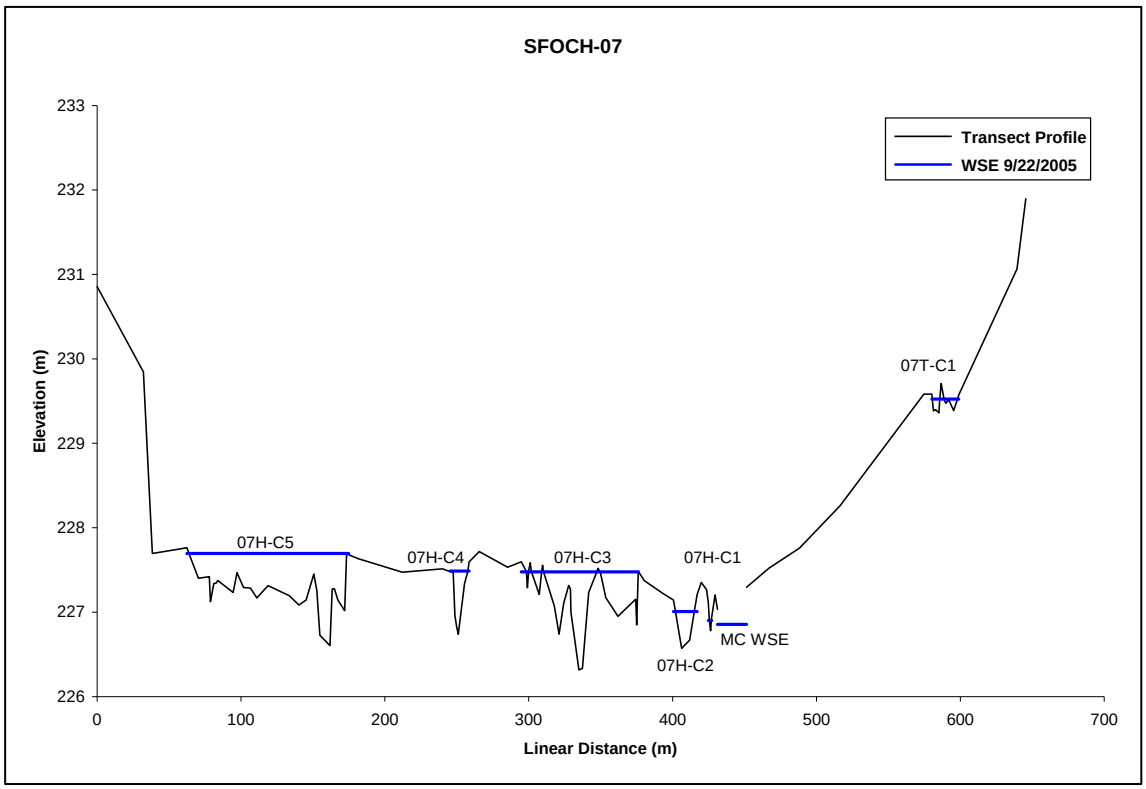

NFOCH-06
Transect Profile
WSE 6/22/2008
Elevation (m)
286
285
284
283
282
281
280
0
100
200
300
400
500
600
Linear Distance (m)
OCH6A
OCH6B
OCH6C
OCH6D
OCH6E
MC WSE

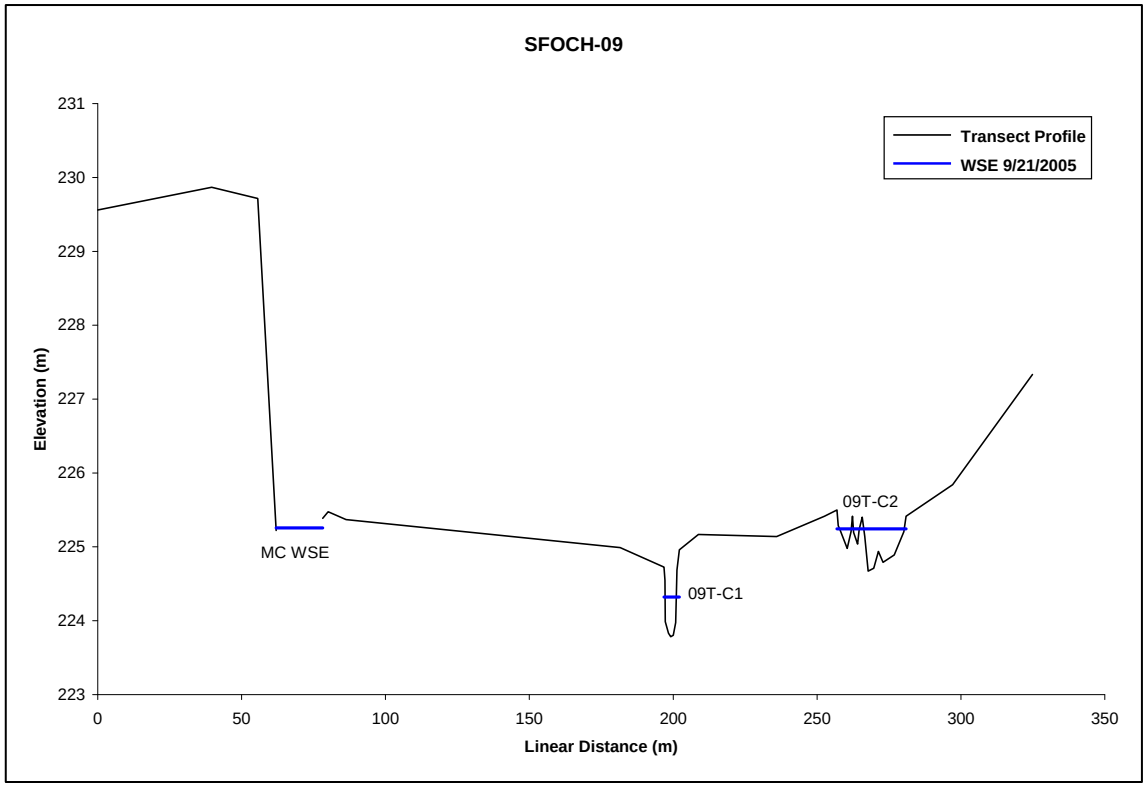

SFOCH-01
Transect Profile
WSE 9/23/2005
Elevation (m)
235
234
233
232
231
230
229
0
100
200
300
400
500
600
Linear Distance (m)
01H-C3
01H-C2
01H-C1
MC WSE
01T-C1

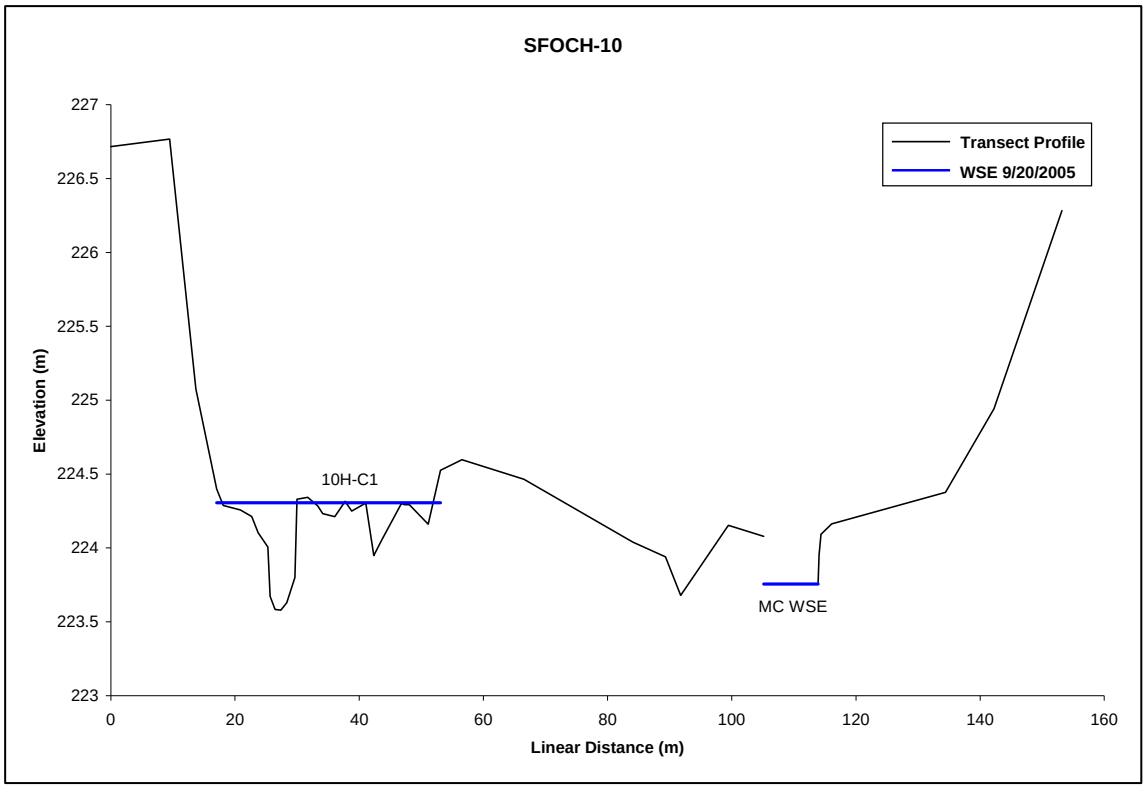

SFOCH-03
Transect Profile
WSE 9/22/2005
Elevation (m)
235
234
233
232
231
230
229
0
100
200
300
400
500
600
700
Linear Distance (m)
03H-C1
03H-C3a
03H-C2a
03H-C1a
MC WSE
03T-C1

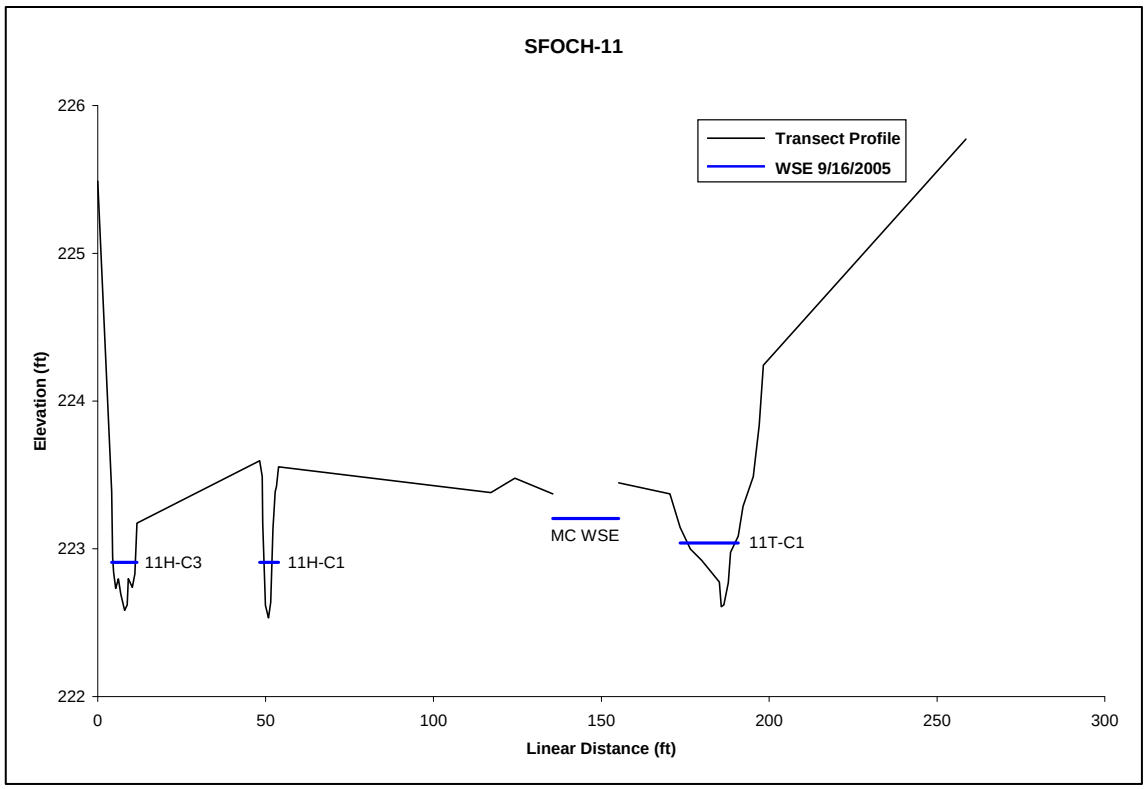

SFOCH-04H only; no data for 04T
Transect Profile
WSE 9/24/2005
Elevation (m)
232
231
230
229
228
0
10
20
30
40
50
60
70
Linear Distance (m)
04H-C2
04H-C1
MC WSE

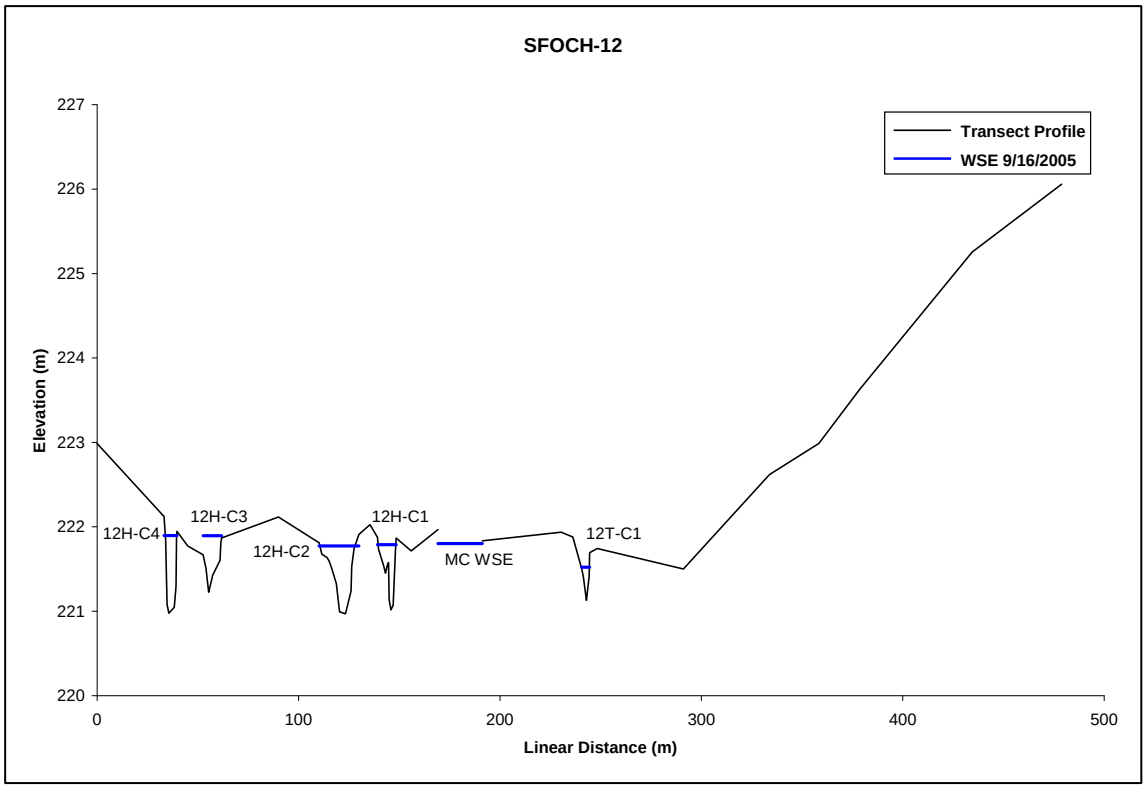

SFOCH-05
Transect Profile
WSE 9/21/2005
Elevation (m)
233
232
231
230
229
228
227
226
0
100
200
300
400
500
600
Linear Distance (m)
05H-C6
05H-C5
05H-C4
05H-C3
05H-C2
05H-C1
MC WSE
05T-C1
05T-C2
05T-C3

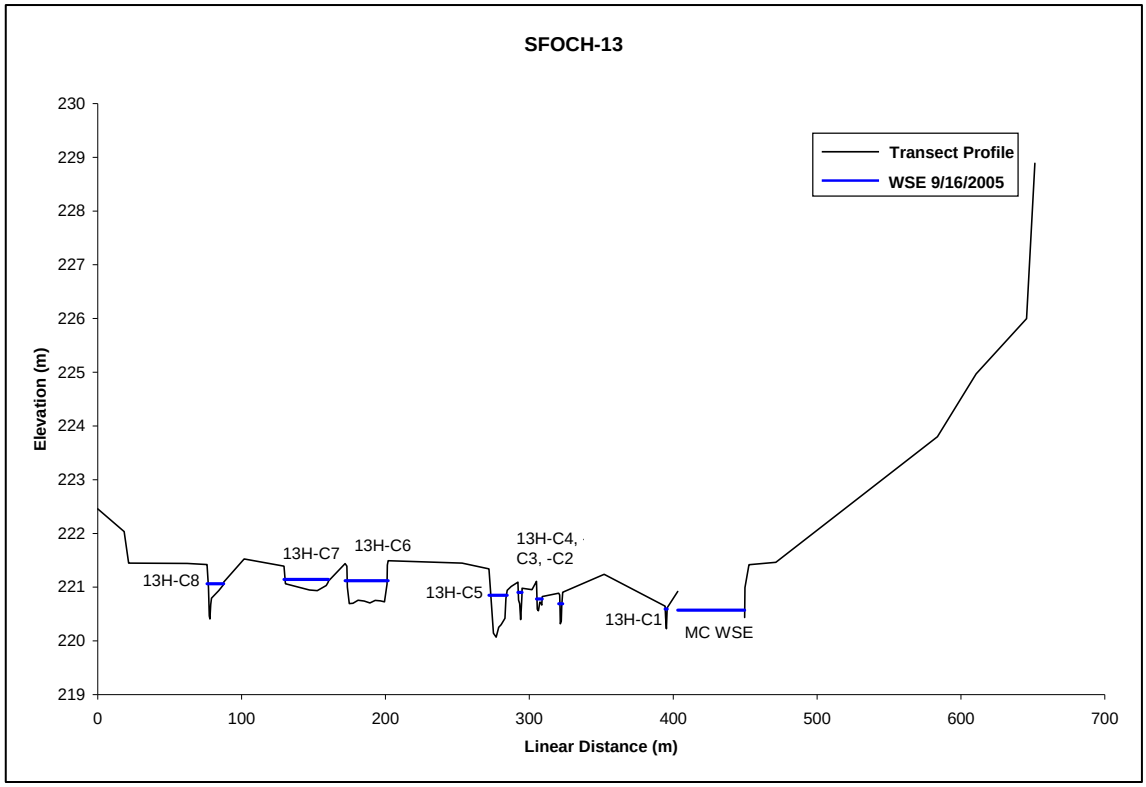

SFOCH-07
Transect Profile
WSE 9/22/2005
Elevation (m)
233
232
231
230
229
228
227
226
0
100
200
300
400
500
600
700
Linear Distance (m)
07H-C5
07H-C4
07H-C3
07H-C1
07H-C2
MC WSE
07T-C1

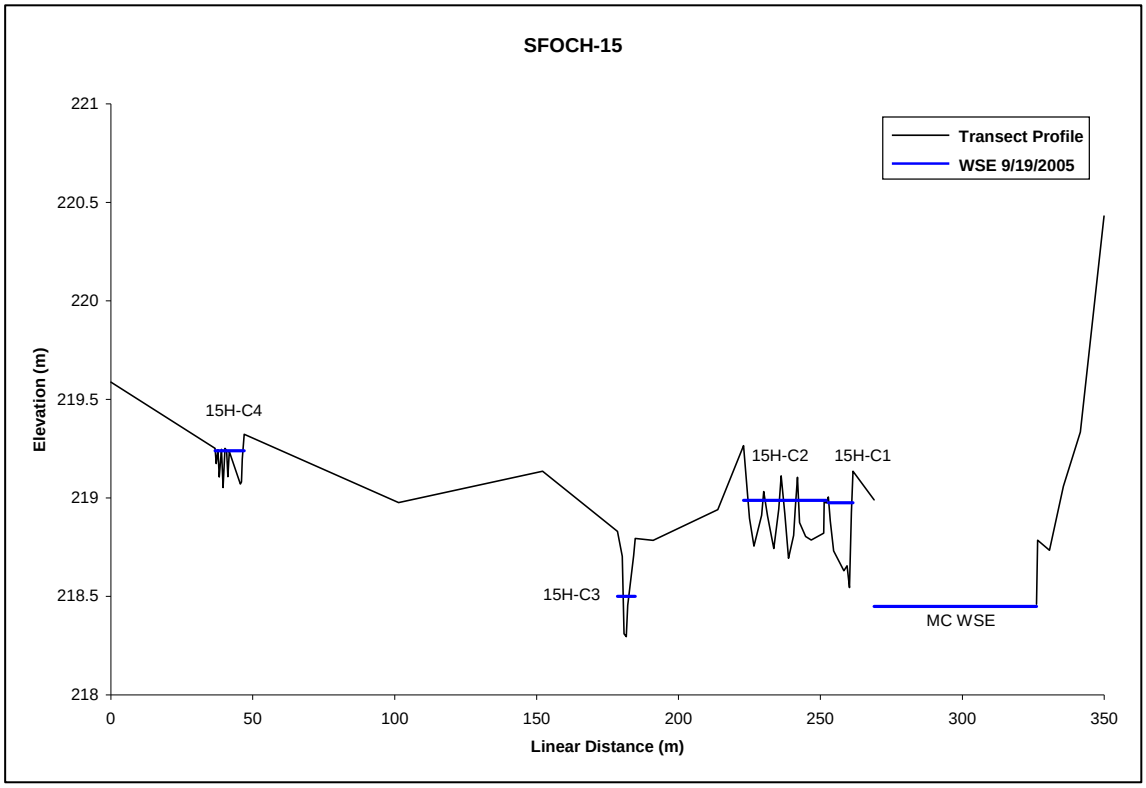

SFOCH-09
Transect Profile
WSE 9/21/2005
Elevation (m)
231
230
229
228
227
226
225
224
223
0
50
100
150
200
250
300
350
Linear Distance (m)
MC WSE
09T-C1
09T-C2

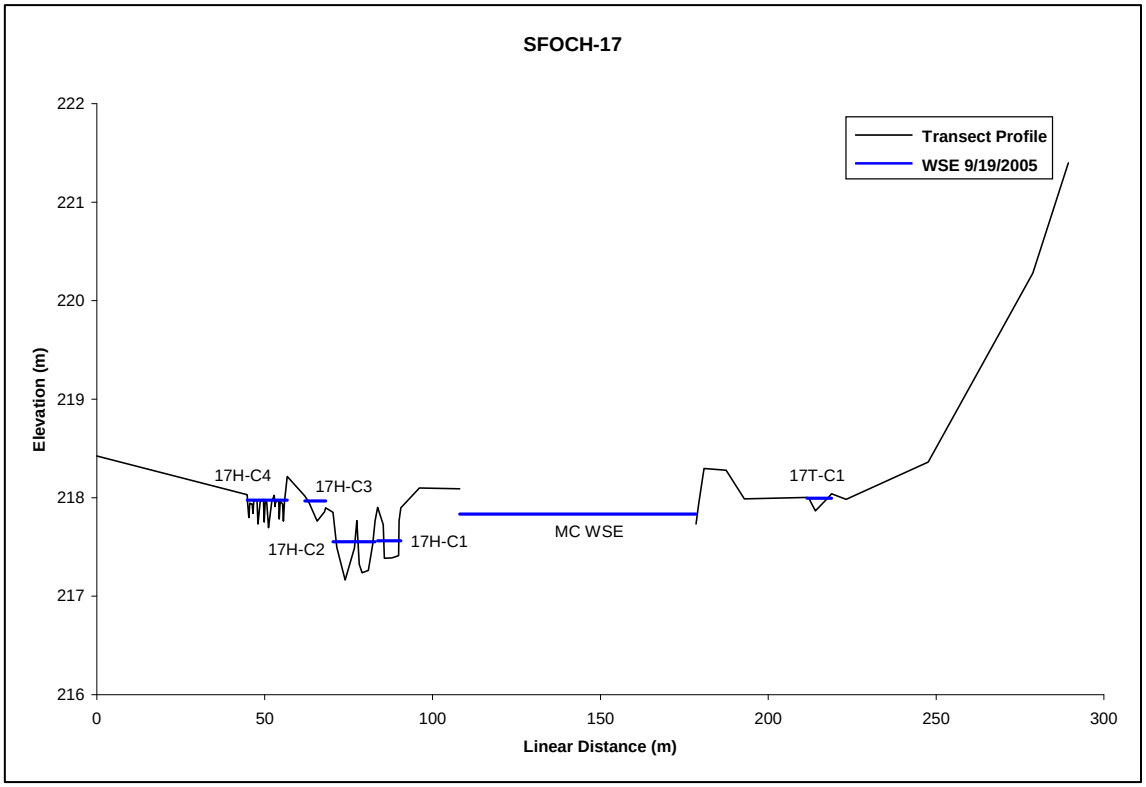

SFOCH-10
Transect Profile
WSE 9/20/2005
Elevation (m)
227
226.5
226
225.5
225
224.5
224
223.5
223
10H-C1
MC WSE
0
20
40
60
80
100
120
140
160
Linear Distance (m)

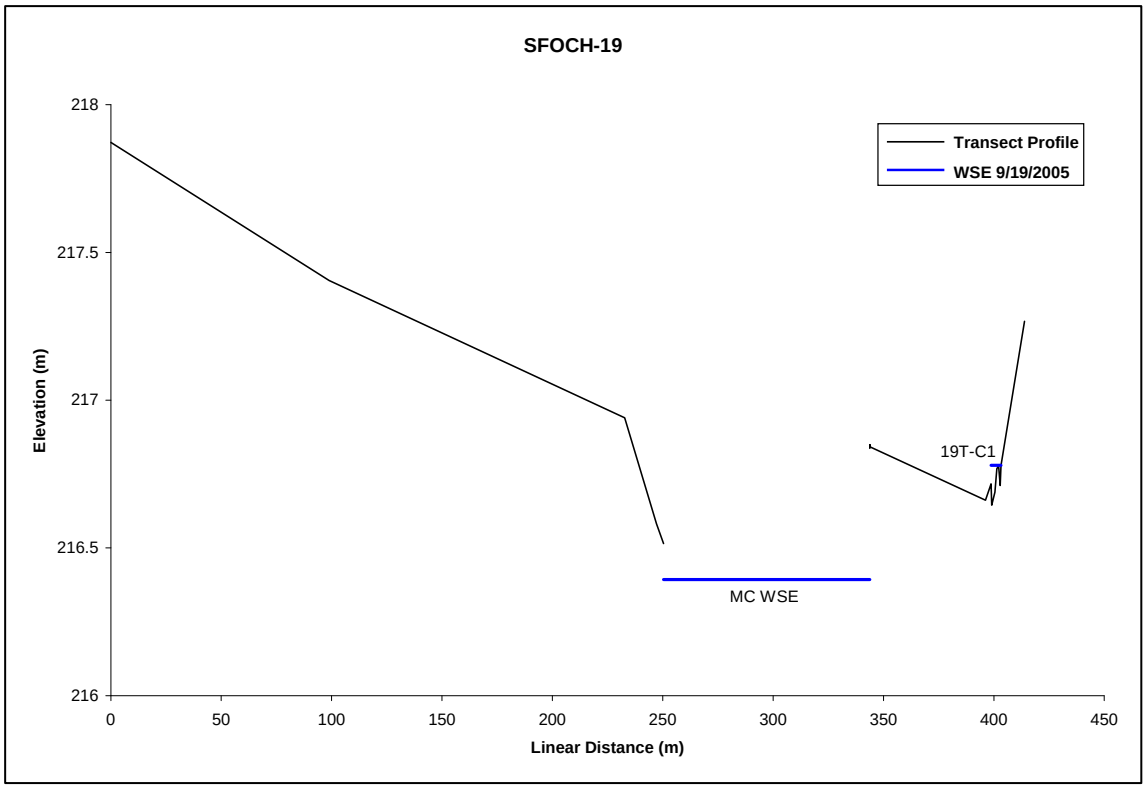

SFOCH-11
Transect Profile
WSE 9/16/2005
Elevation (ft)
226
225
224
223
222
11H-C3
11H-C1
MC WSE
11T-C1
0
50
100
150
200
250
300
Linear Distance (ft)

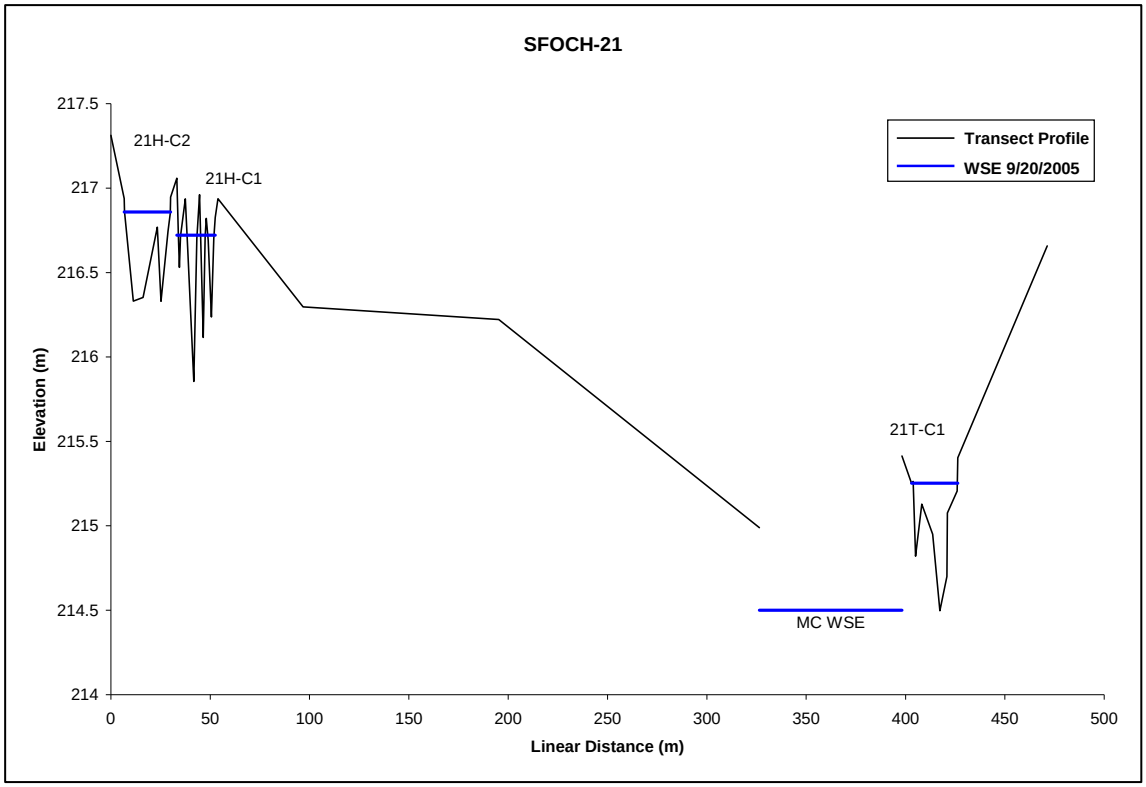

SFOCH-12
Transect Profile
WSE 9/16/2005
Elevation (m)
227
226
225
224
223
222
221
220
0
100
200
300
400
500
Linear Distance (m)
12H-C4
12H-C3
12H-C2
12H-C1
MC WSE
12T-C1

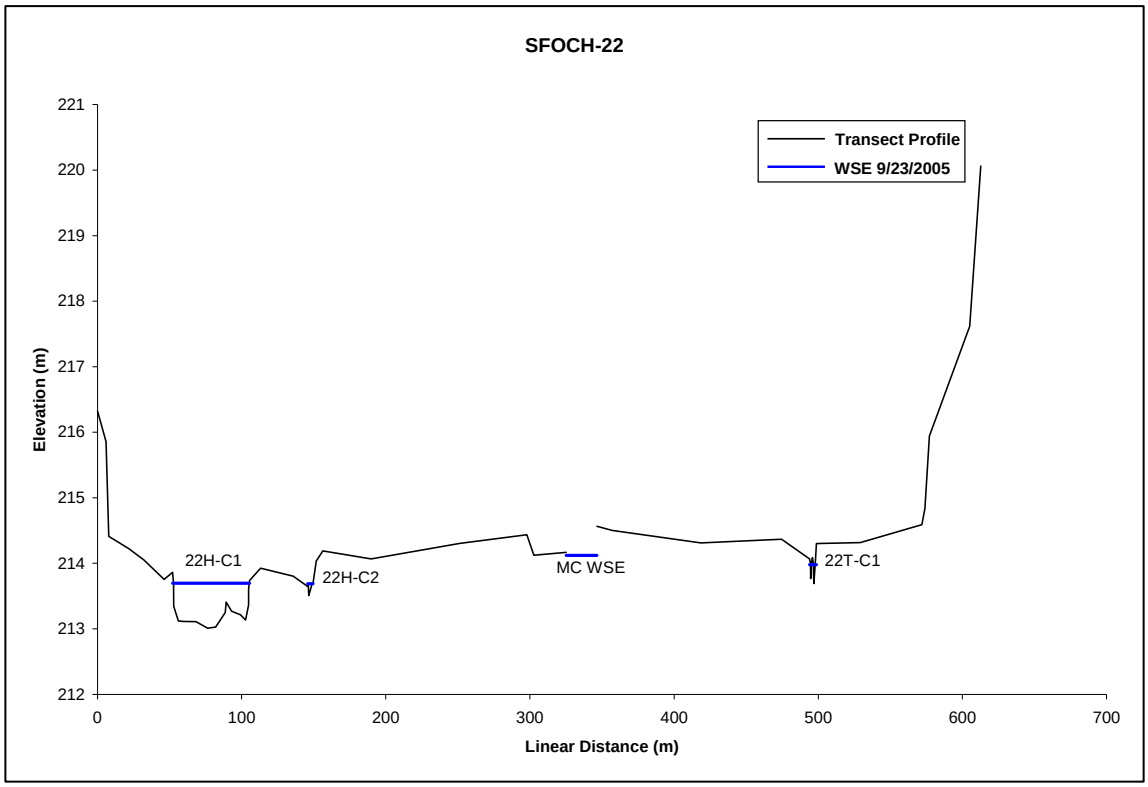

SFOCH-13
Transect Profile
WSE 9/16/2005
Elevation (m)
230
229
228
227
226
225
224
223
222
221
220
219
0
100
200
300
400
500
600
700
Linear Distance (m)
13H-C8
13H-C7
13H-C6
13H-C5
13H-C4, C3, -C2
13H-C1
MC WSE

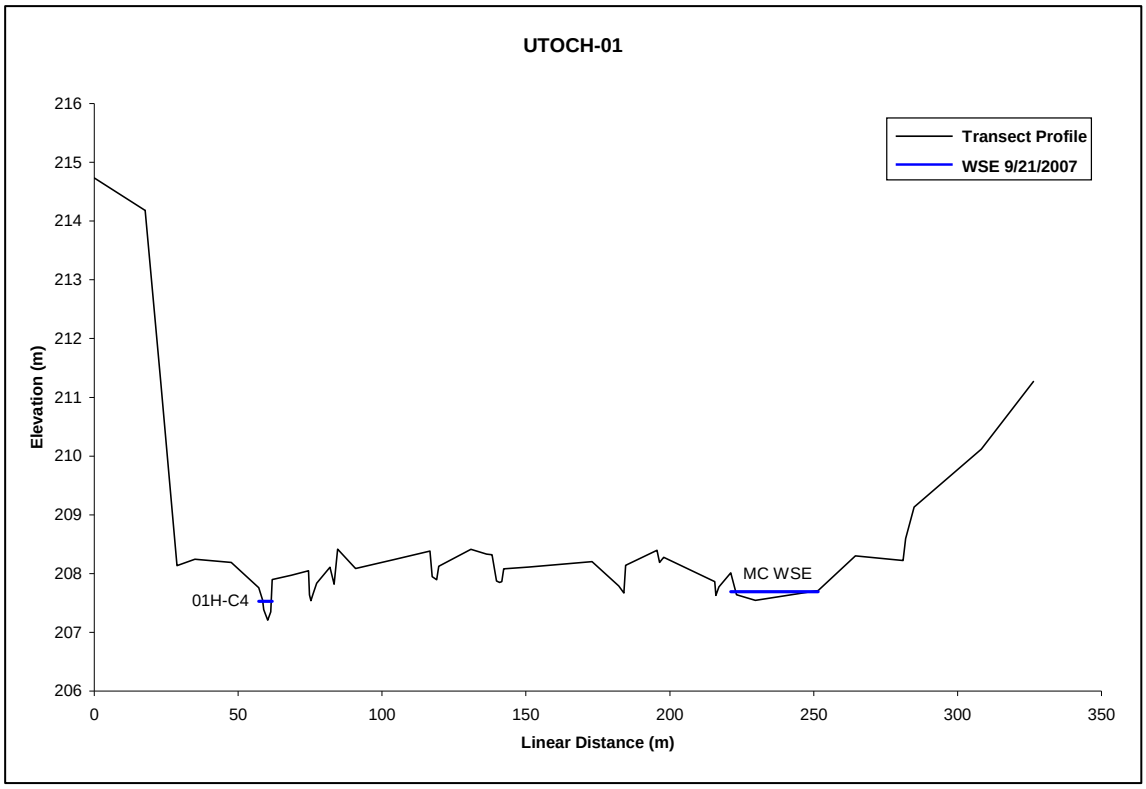

SFOCH-15
Transect Profile
WSE 9/19/2005
Elevation (m)
Linear Distance (m)
15H-C4
15H-C3
15H-C2
15H-C1
MC WSE
221
220.5
220
219.5
219
218.5
218
0
50
100
150
200
250
300
350

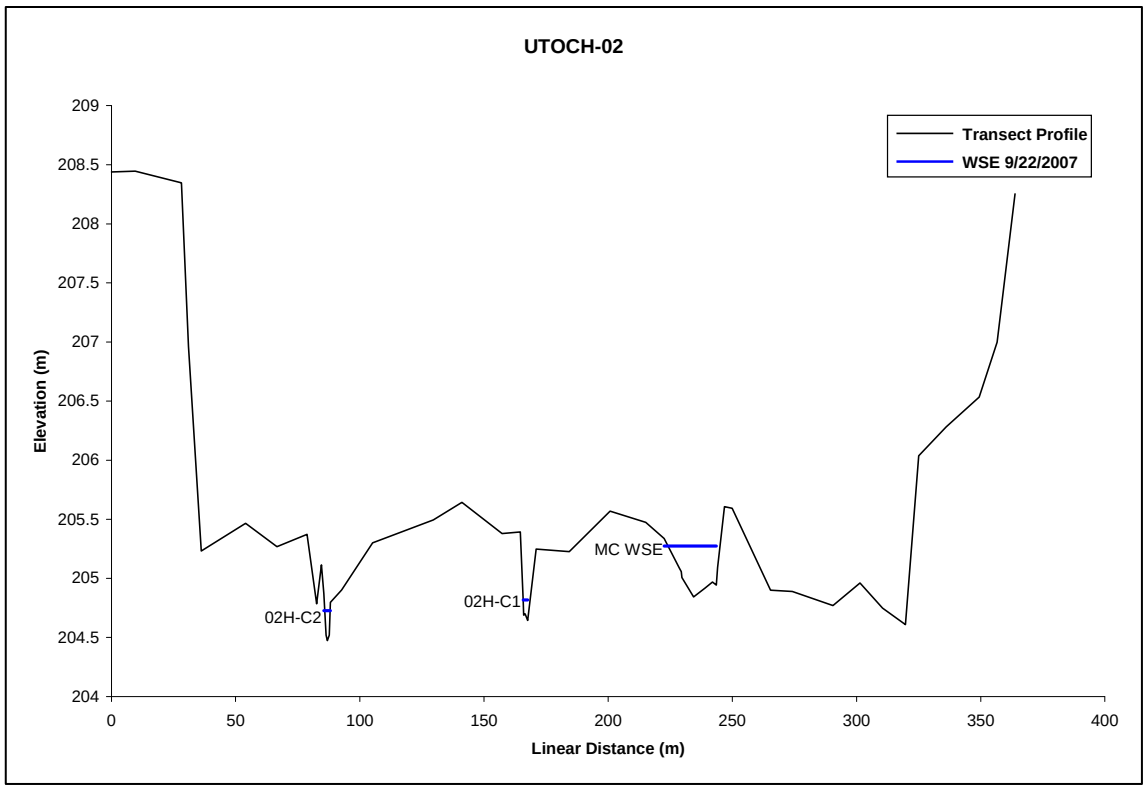

SFOCH-17
Transect Profile
WSE 9/19/2005
Elevation (m)
Linear Distance (m)
17H-C4
17H-C3
17H-C2
17H-C1
MC WSE
17T-C1
222
221
220
219
218
217
216
0
50
100
150
200
250
300

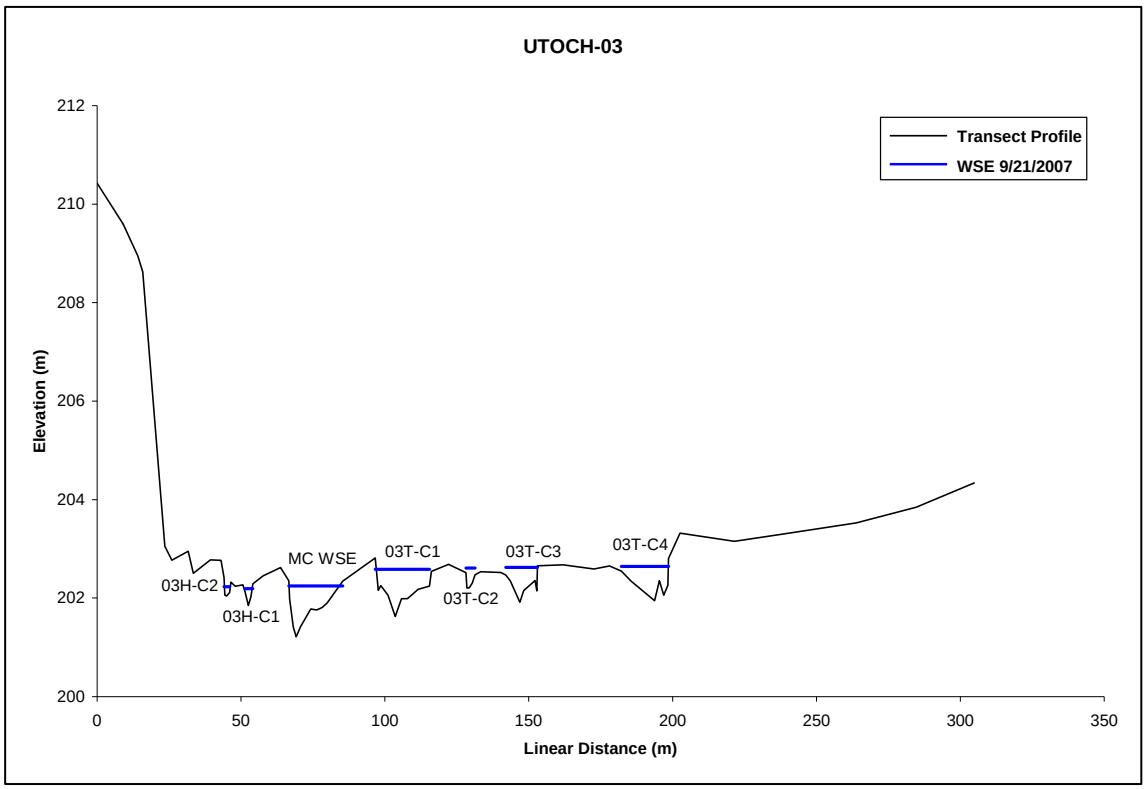

SFOCH-19
Transect Profile
WSE 9/19/2005
19T-C1
MC WSE
Elevation (m)
Linear Distance (m)
218
217.5
217
216.5
216
0
50
100
150
200
250
300
350
400
450

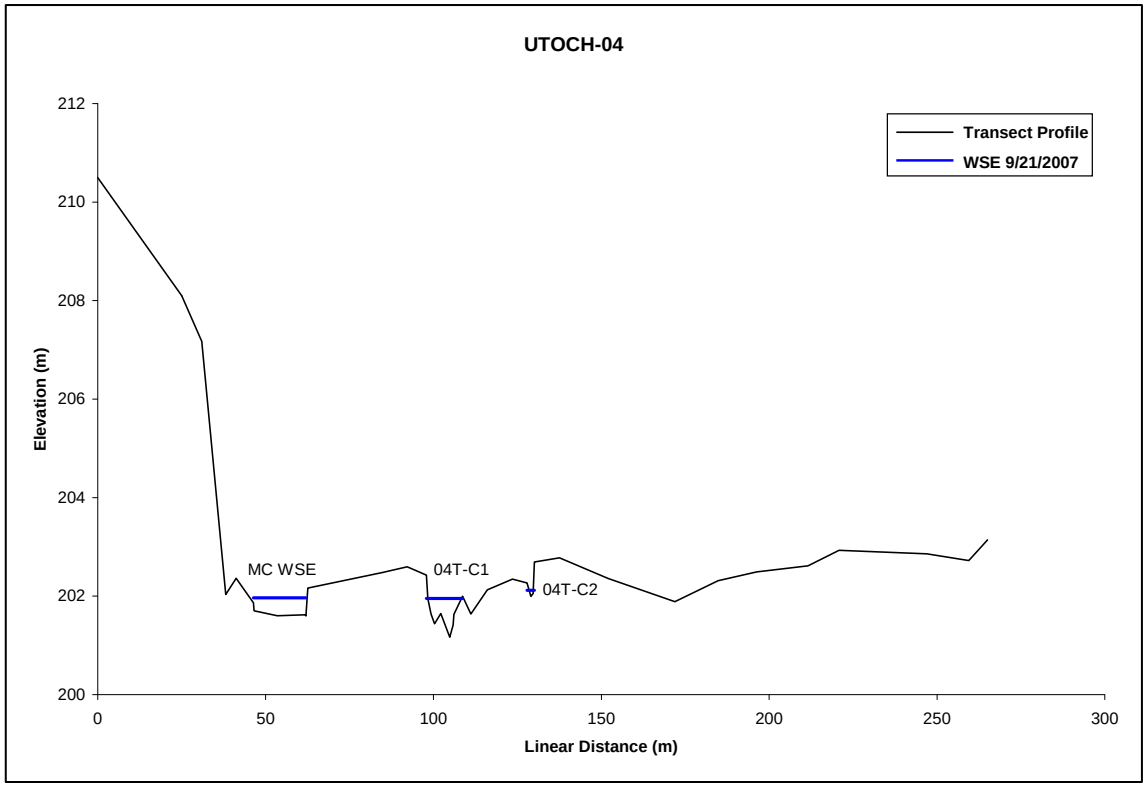

SFOCH-21
Transect Profile
WSE 9/20/2005
21H-C2
21H-C1
21T-C1
MC WSE
Elevation (m)
Linear Distance (m)
217.5
217
216.5
216
215.5
215
214.5
214
0
50
100
150
200
250
300
350
400
450
500

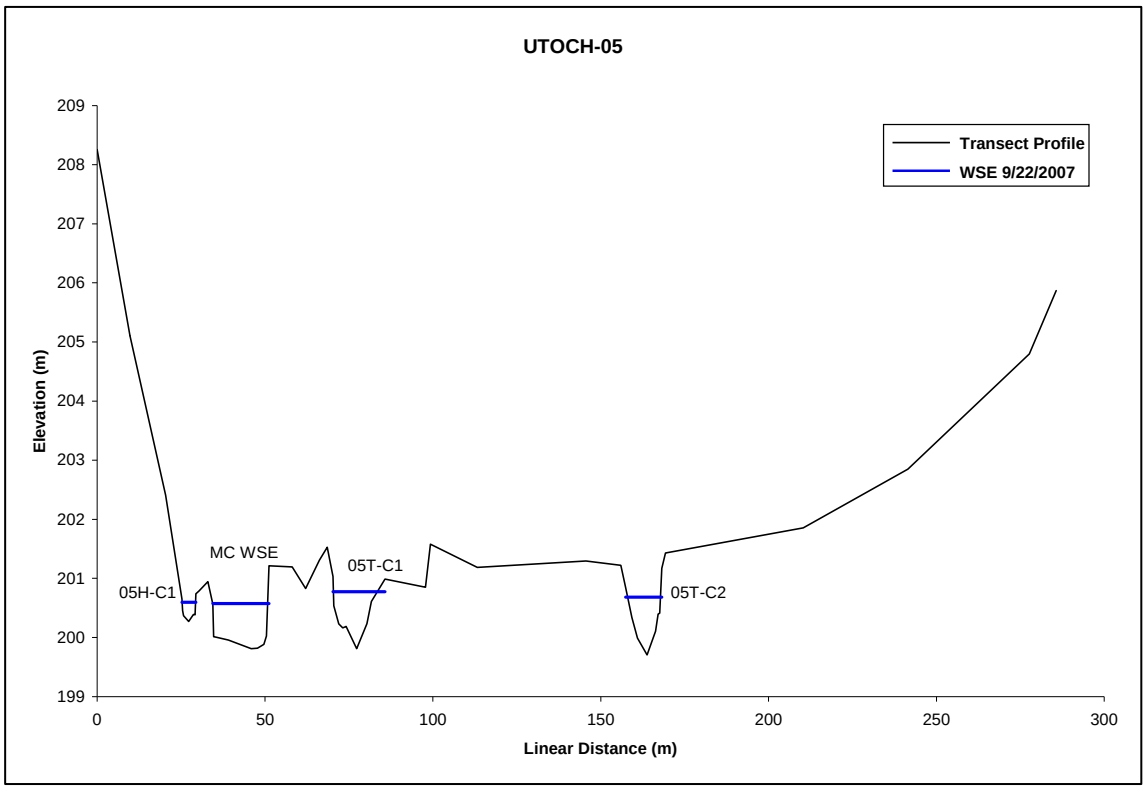

SFOCH-22
Transect Profile
WSE 9/23/2005
Elevation (m)
221
220
219
218
217
216
215
214
213
212
0
100
200
300
400
500
600
700
Linear Distance (m)
22H-C1
22H-C2
MC WSE
22T-C1

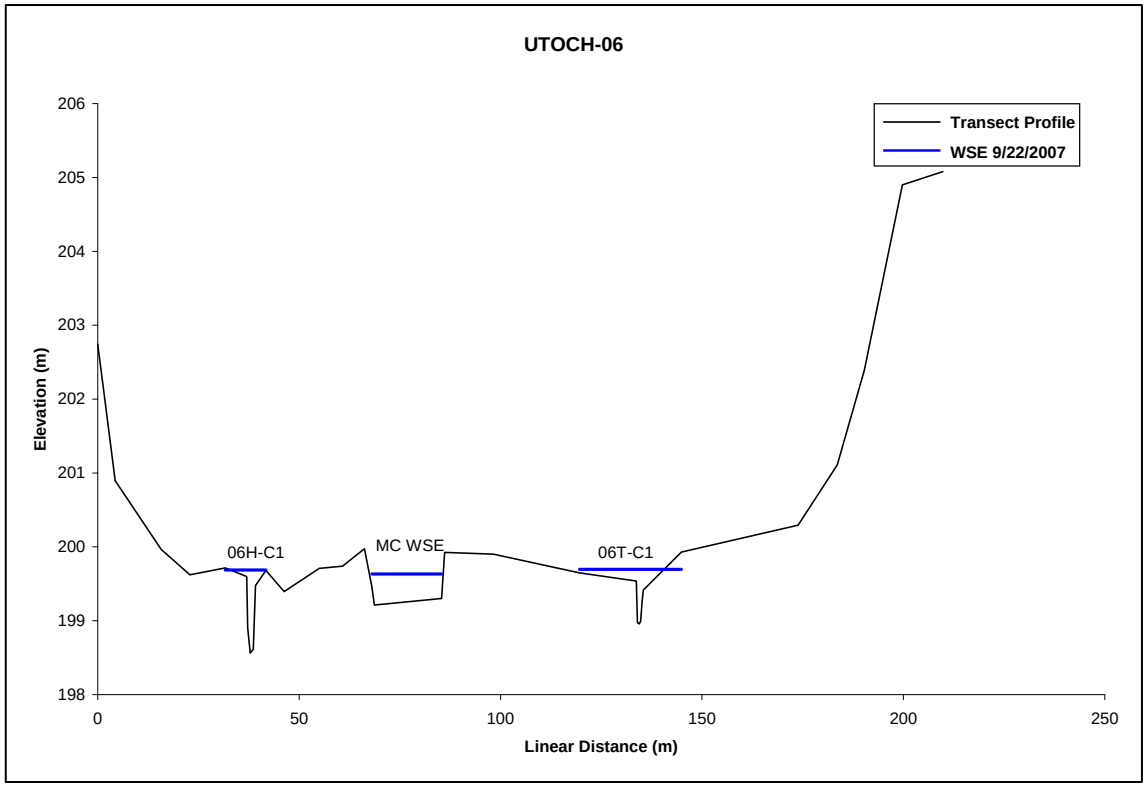

UTOCH-01
Transect Profile
WSE 9/21/2007
Elevation (m)
Linear Distance (m)
01H-C4
MC WSE
216
215
214
213
212
211
210
209
208
207
206
0
50
100
150
200
250
300
350

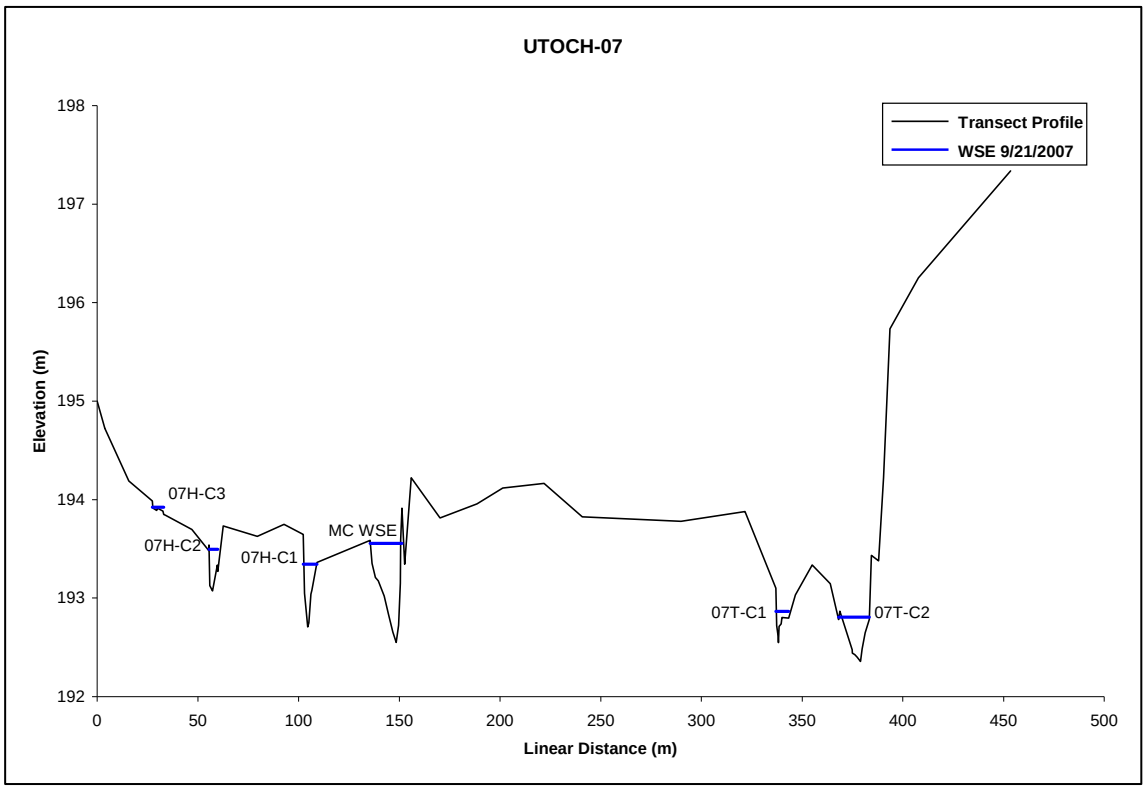

UTOCH-02
Transect Profile
WSE 9/22/2007
Elevation (m)
Linear Distance (m)
02H-C2
02H-C1
MC WSE
209
208.5
208
207.5
207
206.5
206
205.5
205
204.5
204
0
50
100
150
200
250
300
350
400

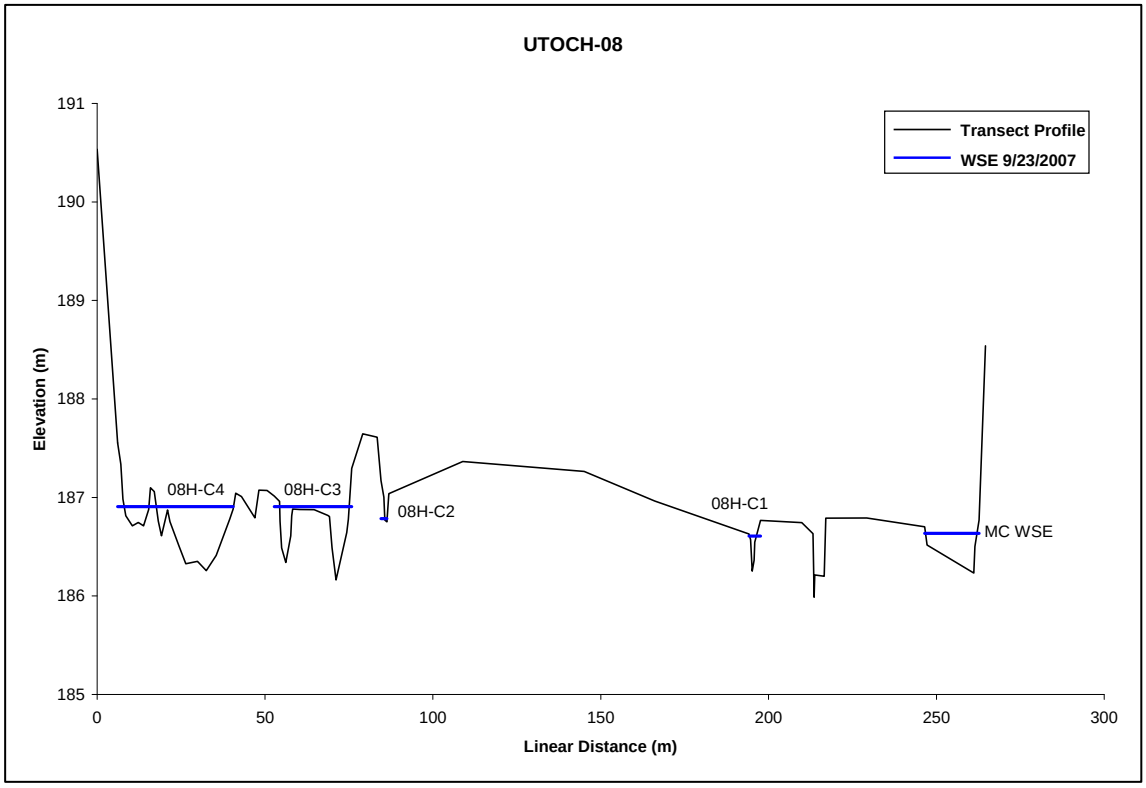

UTOCH-03
Transect Profile
WSE 9/21/2007
Elevation (m)
212
210
208
206
204
202
200
0
50
100
150
200
250
300
350
Linear Distance (m)
03H-C2
03H-C1
MC WSE
03T-C1
03T-C2
03T-C3
03T-C4

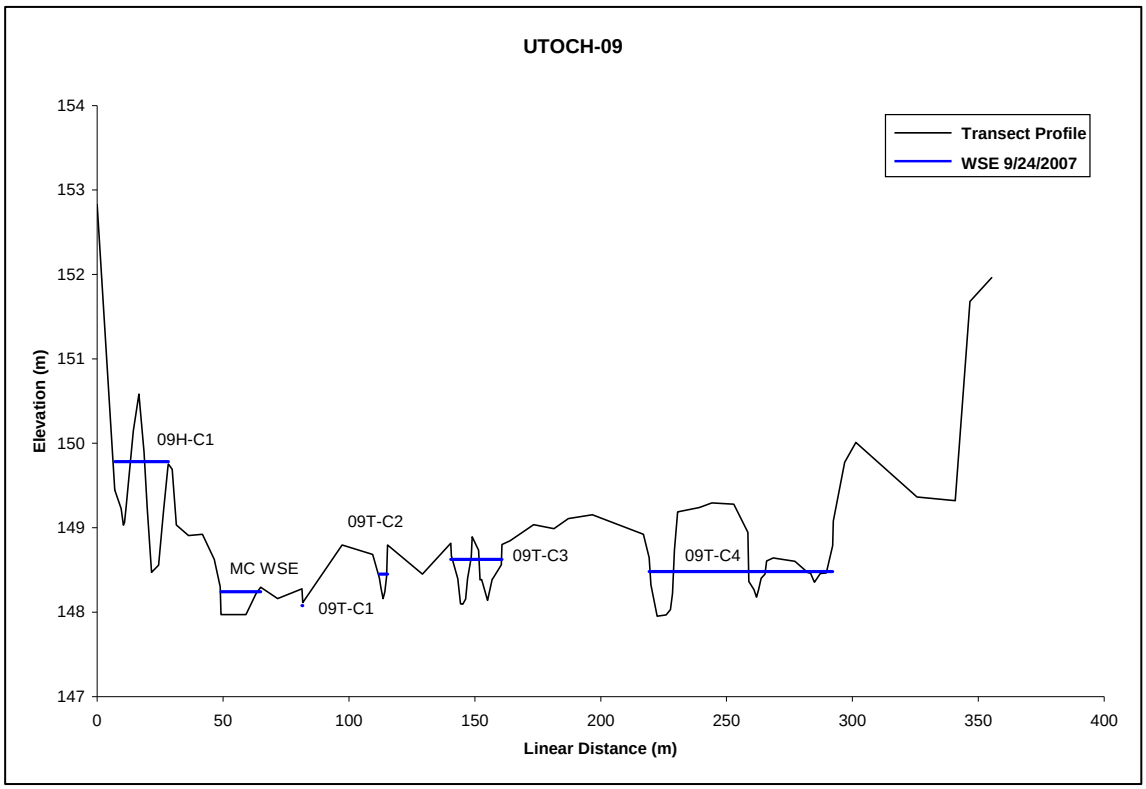

UTOCH-04
Transect Profile
WSE 9/21/2007
Elevation (m)
212
210
208
206
204
202
200
0
50
100
150
200
250
300
Linear Distance (m)
MC WSE
04T-C1
04T-C2

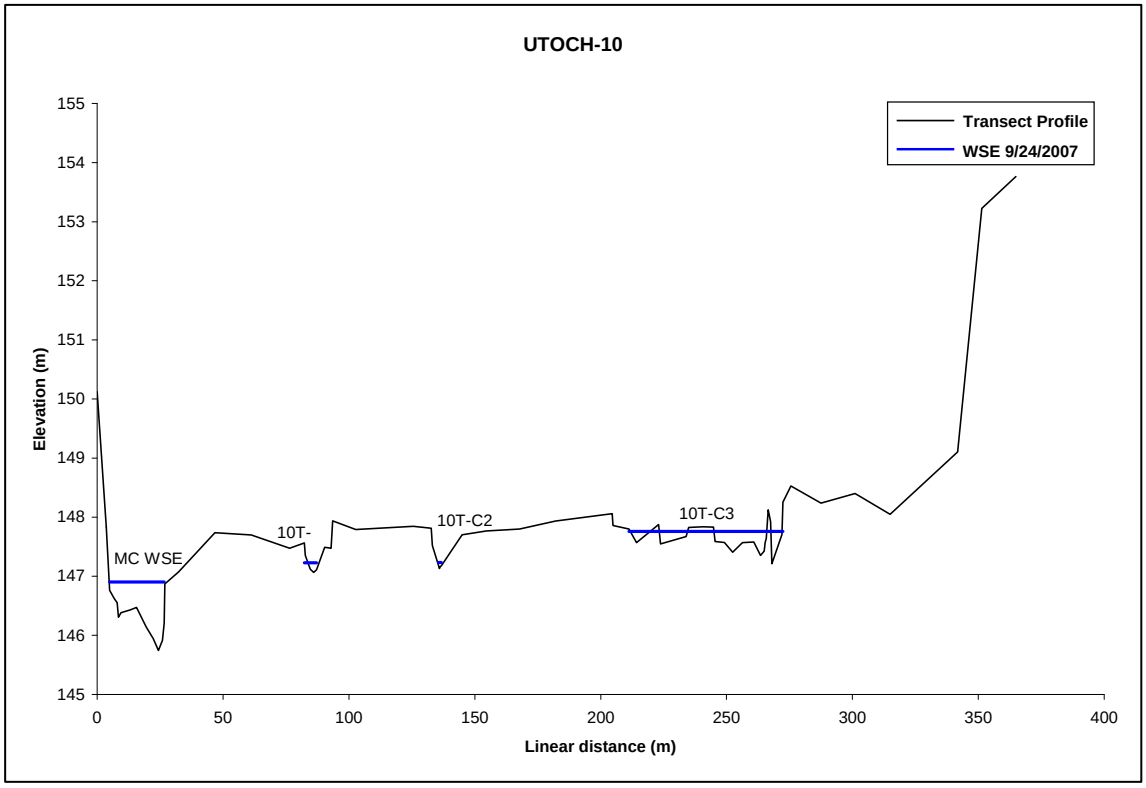

UTOCH-05
Transect Profile
WSE 9/22/2007
Elevation (m)
209
208
207
206
205
204
203
202
201
200
199
MC WSE
05H-C1
05T-C1
05T-C2
0
50
100
150
200
250
300
Linear Distance (m)

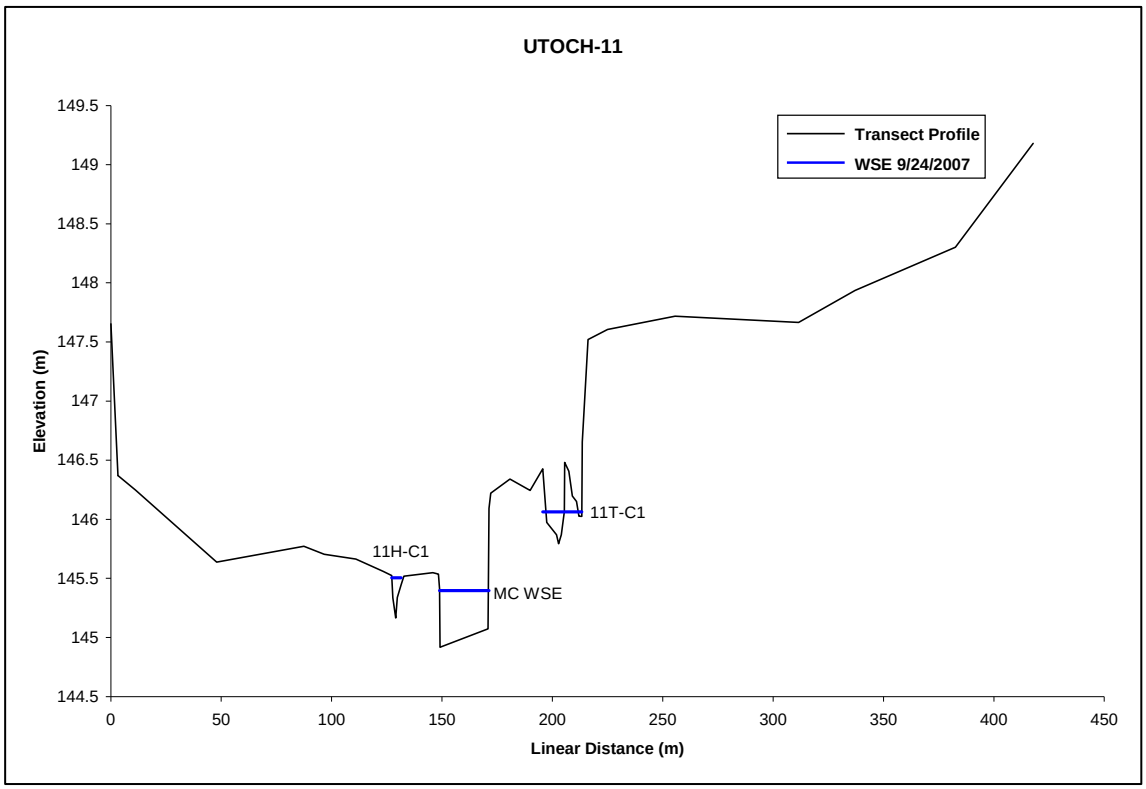

UTOCH-06
Transect Profile
WSE 9/22/2007
Elevation (m)
206
205
204
203
202
201
200
199
198
06H-C1
MC WSE
06T-C1
0
50
100
150
200
250
Linear Distance (m)

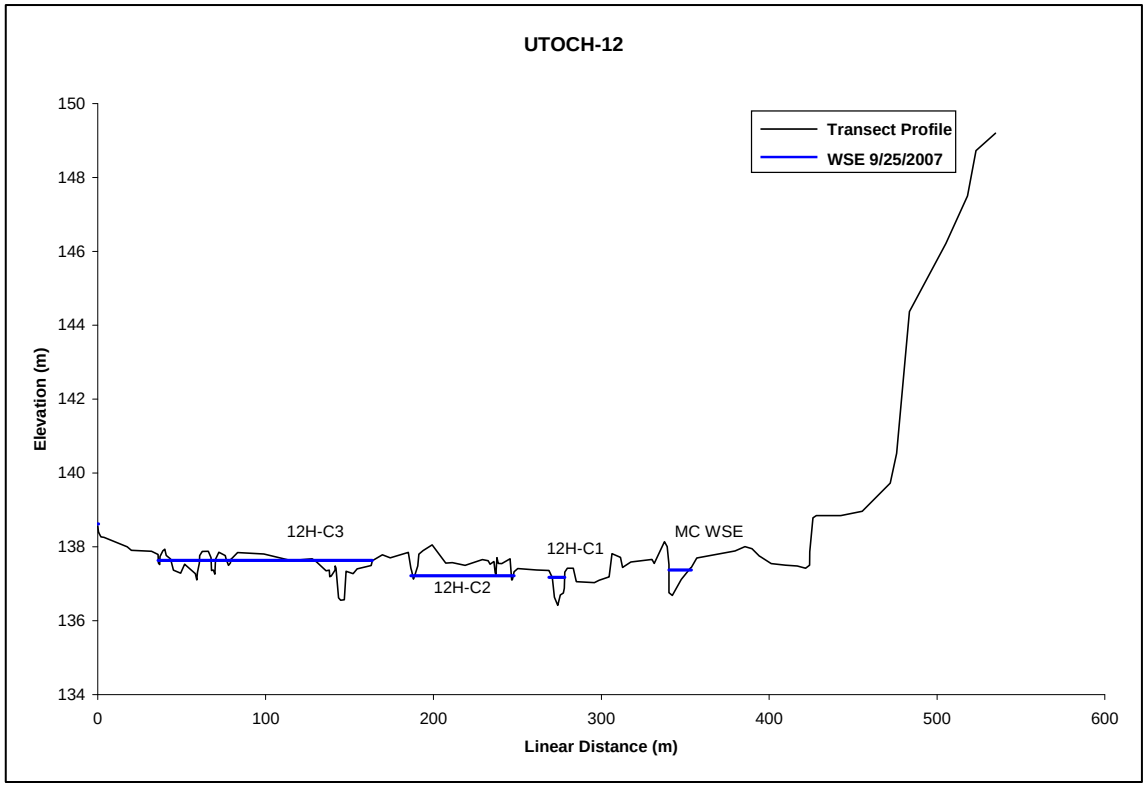

UTOCH-07
Transect Profile
WSE 9/21/2007
Elevation (m)
198
197
196
195
194
193
192
07H-C3
07H-C2
07H-C1
MC WSE
07T-C1
07T-C2
0
50
100
150
200
250
300
350
400
450
500
Linear Distance (m)

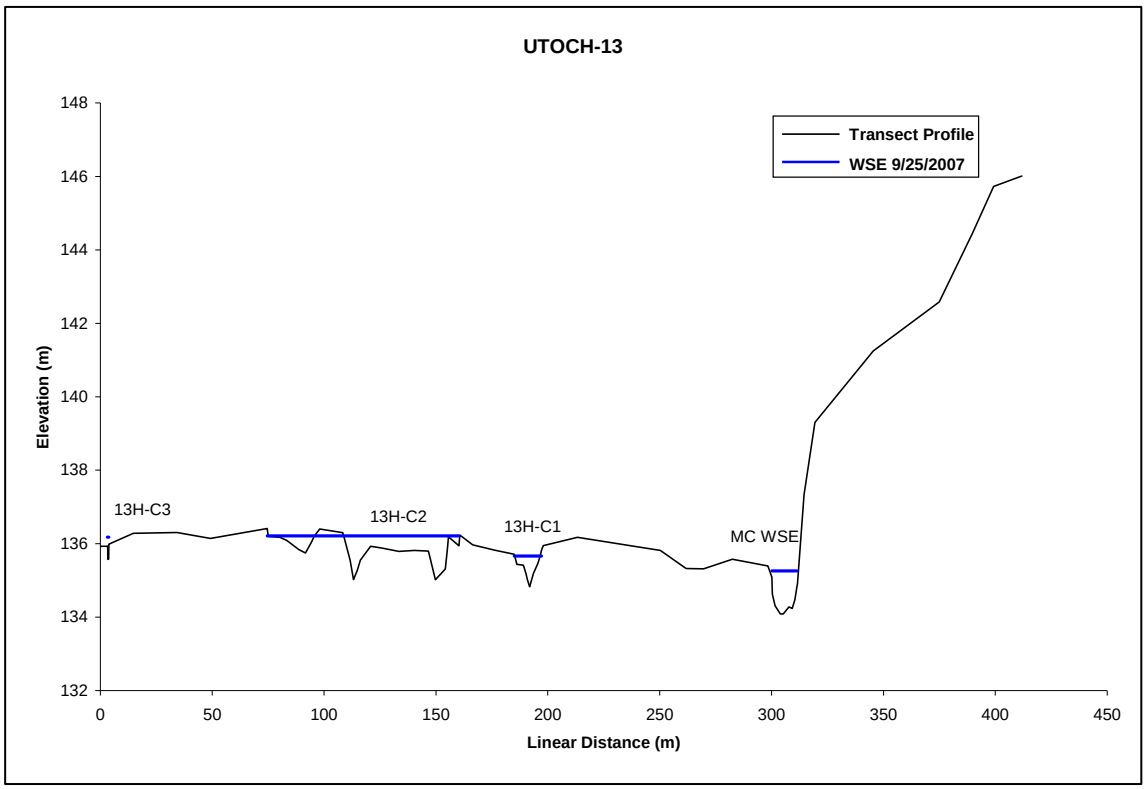

UTOCH-08
Transect Profile
WSE 9/23/2007
Elevation (m)
191
190
189
188
187
186
185
08H-C4
08H-C3
08H-C2
08H-C1
MC WSE
0
50
100
150
200
250
300
Linear Distance (m)

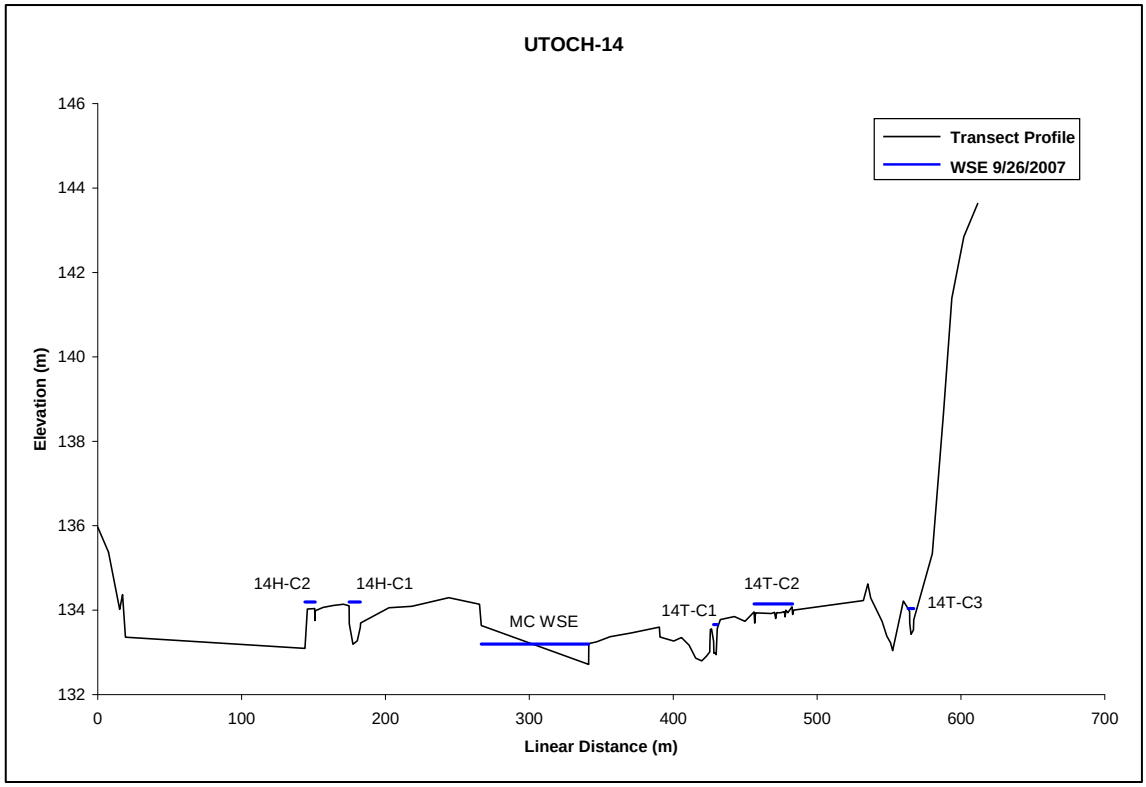

UTOCH-09
Transect Profile
WSE 9/24/2007
Elevation (m)
154
153
152
151
150
149
148
147
09H-C1
MC WSE
09T-C1
09T-C2
09T-C3
09T-C4
0
50
100
150
200
250
300
350
400
Linear Distance (m)

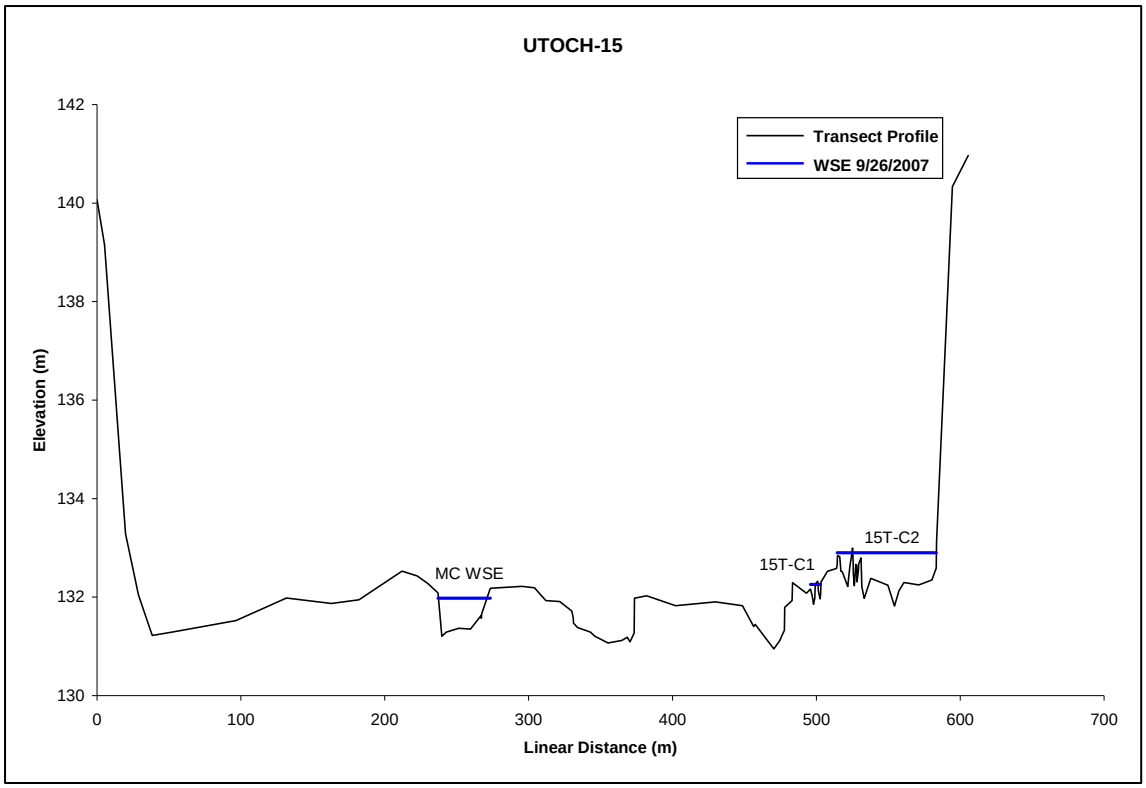

UTOCH-10
Transect Profile
WSE 9/24/2007
Elevation (m)
155
154
153
152
151
150
149
148
147
146
145
MC WSE
10T-
10T-C2
10T-C3
0
50
100
150
200
250
300
350
400
Linear distance (m)

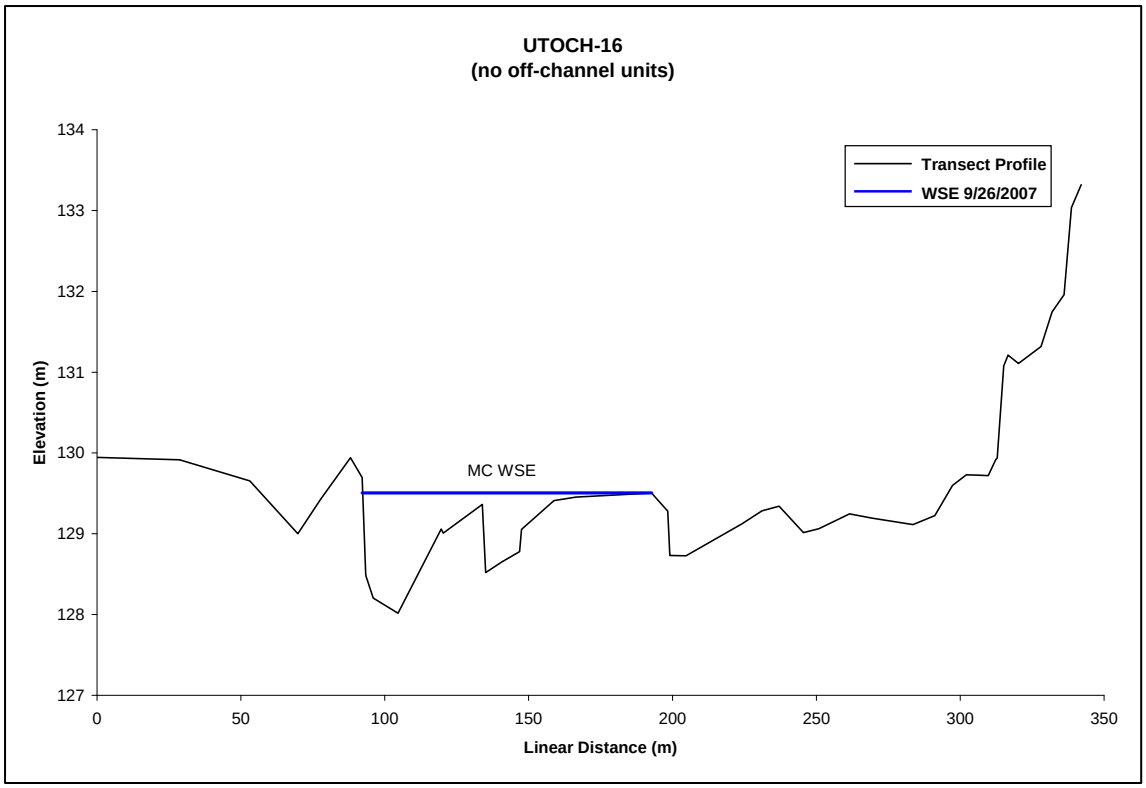

UTOCH-11
Transect Profile
WSE 9/24/2007
Elevation (m)
149.5
149
148.5
148
147.5
147
146.5
146
145.5
145
144.5
0
50
100
150
200
250
300
350
400
450
Linear Distance (m)
11H-C1
MC WSE
11T-C1


UTOCH-12
Transect Profile
WSE 9/25/2007
Elevation (m)
150
148
146
144
142
140
138
136
134
0
100
200
300
400
500
600
Linear Distance (m)
12H-C3
12H-C2
12H-C1
MC WSE


UTOCH-13
Transect Profile
WSE 9/25/2007
Elevation (m)
148
146
144
142
140
138
136
134
132
13H-C3
13H-C2
13H-C1
MC WSE
0
50
100
150
200
250
300
350
400
450
Linear Distance (m)


UTOCH-14
Transect Profile
WSE 9/26/2007
Elevation (m)
146
144
142
140
138
136
134
132
14H-C2
14H-C1
MC WSE
14T-C1
14T-C2
14T-C3
0
100
200
300
400
500
600
700
Linear Distance (m)


UTOCH-15
Transect Profile
WSE 9/26/2007
MC WSE
15T-C1
15T-C2
Elevation (m)
Linear Distance (m)
142
140
138
136
134
132
130
0
100
200
300
400
500
600
700


UTOCH-16
(no off-channel units)
Transect Profile
WSE 9/26/2007
MC WSE
Elevation (m)
Linear Distance (m)
134
133
132
131
130
129
128
127
0
50
100
150
200
250
300
350

APPENDIX 15.1E

OPEN WATER RIVER TEMPERATURE MODEL

TABLE OF CONTENTS

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LIST OF TABLES iii
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ACRONYMS AND ABBREVIATIONS

ºC	degrees Celsius
cms	cubic meters per second
GIS	Geographic Information System
KR	Koktuli River
m/s	meters per second
NFK	North Fork Koktuli River
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RK	River Kilometer
SFK	South Fork Koktuli River
SNTEMP	Stream Network Temperature
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UT	Upper Talarik Creek

OPEN WATER RIVER TEMPERATURE MODEL

1. INTRODUCTION

An instream flow habitat study (instream flow study) was initiated in 2004 as part of the environmental baseline studies associated with the Pebble Project. The study area specific to the instream flow study includes the upper portion of the mainstem Koktuli River (KR) and the full lengths of the South Fork Koktuli River (SFK), North Fork Koktuli River (NFK), and Upper Talarik Creek (UT; Figure 1). Primary components of the instream flow study involve: the relationship of flow to both main-channel and off-channel habitats, surface water temperature, geomorphology, availability of suitable spawning habitat, and fish use. This appendix is specific to the surface water temperature aspects of the instream flow study and includes a review of water temperature measurements, and development of surface water temperature models of the SFK, NFK, and UT.

Water temperature can affect a variety of salmonid species and their life history functions, including: the timing of adult upstream migrations, juvenile/smolt downstream migrations, and spawning and duration of egg incubation; growth rates; and overall rates of survival (Bjornn and Reiser, 1991; McCullough et al., 2001; Quinn, 2005; Sauter et al., 2001). Temperatures in streams can vary hourly, daily, seasonally, annually, and spatially. The degree of variation depends on meteorological, topographical, and hydrological characteristics including patterns of runoff and groundwater exchange. Because stream temperature can be directly influenced by flow (both surface and groundwater), it is important to understand how changes in streamflow may also affect water temperatures within the study area streams.

To facilitate this understanding, stream temperature models were developed and calibrated for each of the three major streams in the study area: the SFK, NFK, and UT. These models were used to define the baseline thermal regimes of the respective systems from which to evaluate potential thermal changes that could occur as a result of any alterations in flow regimes.

A stream temperature model was not developed for the KR because water temperatures were not monitored in the KR; therefore, there were no data available for calibrating a model of the KR. Stream temperatures at the upstream end of the KR were estimated by combining the flows and water temperatures from the downstream ends of the SFK and NFK, and performing a mixing calculation.

1.1 GOALS AND OBJECTIVE(S)

The overall goal of the stream temperature modeling study was to define temperature: flow relationships for each of the channel reaches measured and modeled, that can be used to:

- Characterize the baseline thermal conditions in the SFK, NFK, and UT.
- Predict potential temporal and spatial changes in temperatures that could occur as a result of any changes in flow regimes.
- Assess flow and temperature change effects on important fish species within these systems.

The assessment was completed via application of the latest version (Version 3, revised in May 2005) of the U.S. Fish and Wildlife Service's (USFWS's) Stream Network Temperature (SNTEMP) Model (Theurer et al., 1984), which is one component of the Instream Flow Incremental Methodology (IFIM) (Stalnaker et al., 1995).

Specific objectives of the stream temperature modeling study were as follows:

- Compile and review existing water temperature data that have been collected within project area streams.
- Maintain and download data from the existing network of temperature monitors within the SFK, NFK, and UT watersheds.
- Collect, compile, and review other meteorological, hydrological, and channel morphological data, including riparian shade information, that are necessary for developing the stream temperature models.
- Develop and calibrate individual stream temperature models for the SFK, NFK, and UT that would be useful for evaluation of potential impacts of flow changes on the thermal regimes of these three systems, and also on the upstream end of the KR.

1.2 MODEL SELECTION

From a thermal modeling perspective, two different seasons can be defined for the three study streams: a season with no ice cover and a season with ice cover. The models developed for this study were based on SNTEMP, a one-dimensional hydrothermal model developed by the USFWS (Theurer et al., 1984). This model is most accurate under conditions with no ice cover and, therefore, SNTEMP models were developed to cover the period of mid-May through mid-October for each of the three systems.

The SNTEMP model was developed to predict instream water temperatures based on either historical or synthetic hydrological, meteorological, and stream geometry conditions. The model can be applied to any size watershed or river basin with a stream network of any stream order and complexity. The model accounts for the physical processes of heat transfer with the following components:

- A heat transport model that predicts the average mean daily water temperature and diurnal fluctuations in water temperature as functions of stream distance.
- A heat flux model that predicts the energy balance between the water and its surrounding environment.
- A solar model that predicts the solar radiation that penetrates the water as a function of latitude, time of year, and meteorological conditions.
- A shade model that predicts the solar radiation-weighted shading resulting from both topography and riparian vegetation.
- Meteorological corrections that predict changes in air temperature, relative humidity, and atmospheric pressure as functions of a change in elevation.

The SNTEMP model requires meteorological and hydrologic data, as well as stream morphological characteristics. Instream water temperature data are used to calibrate the model.

Meteorological data required by the SNTEMP model consist of air temperature, relative humidity, sunshine ratio (the ratio of the actual solar radiation that reaches the ground surface to the solar radiation that would have reached the ground surface if there were no clouds), and wind speed. These data were obtained from meteorological stations established for the Pebble Project. Solar radiation is entirely modeled as a function of the latitude of the stream basin, time of the year, and prevailing meteorological conditions. Shading, resulting from both topographic features and riparian vegetation, is modeled as a function of latitude, time, basin topographic characteristics, and riparian vegetation parameters.

Hydrological data required by the model consist of discharge or flow data throughout the stream system and initial water temperatures at the beginning points. The hydrological data were developed from synthetic hydrological procedures, or empirical data collected at various stream gaging stations within the study area. Calibration of the stream temperature models developed for the Pebble Project was based on flows measured by the United States Geological Survey (USGS) and the Pebble Project.

Instream water temperature is needed for all input locations of the stream network. Calibration of the stream temperature models developed for the Pebble Project were based on water temperature data collected in the SFK, NFK, UT, and major tributaries of those streams.

Stream morphology information needed consists of the stream system network (mainstem and tributaries), stream widths, stream gradients, and hydraulic roughness. The stream temperature models developed for the Pebble Project were based on surveyed instream flow measurements.

Instream temperature models differ from lake models because the downstream water movement tends to mix the water. This turbulent mixing is assumed to evenly distribute the temperature both vertically and transversely and, therefore, is the basis for using a constant water temperature throughout a given cross section at any given instant. The purpose of the heat transport model (a component of SNTEMP) is to predict the longitudinal temperature variation. While the temperature at a specific cross section may be constant at any given time, a downstream differential is expected and predicted by the heat transport model.

The turbulent mixing, leading to a homogeneous distribution of temperature throughout a given cross section, simplifies the application of the heat flux relationships part of the SNTEMP model. All heat entering the water is assumed to be immediately distributed both vertically and transversely. All heat leaving the water is a function of the homogeneous water temperature. Flowing water generally mixes at a far faster rate due to turbulence rather than either conduction or convection within the water.

1.3 GEOGRAPHIC AREA

The geographic area of the SNTEMP model included the following three river segments:

- The SFK from the outlet of Frying Pan Lake to the confluence with the NFK. This includes reaches SFK-A through SFK-D (Figure 2).
- The NFK from the headwaters to the confluence with the SFK. This includes reaches NFK-A through NFK-F (Figure 3).
- The UT from the headwaters to the confluence with Iliamna Lake. This includes reaches UT-A through UT-G (Figure 4).

1.4 REVIEW OF AVAILABLE STREAM TEMPERATURE DATA

As an initial step in the SNTEMP model development, available stream water temperature records from various sites in the SFK, NFK, and UT were obtained and reviewed. These records were obtained from the following sources:

- Pebble Project hydrology gaging stations – These continuous stations monitor both water stage (water surface elevation referenced to a local site vertical datum) and temperature. The names of these stations start with the prefixes "SK," "NK," or "UT" for the SFK Basin, NFK Basin, or UT Basin, respectively.
- Pebble Project water temperature monitoring stations – These continuous stations monitor water temperature. The names of these stations start with the prefixes "SFK," "NFK," or "UT" for the SFK Basin, NFK Basin, or UT Basin, respectively.
- USGS hydrology gaging stations – These continuous stations monitor both water stage and temperature. The USGS gaging stations on the SFK, NFK, and UT are named SK100B (USGS Gage No. 15302200), NK100A (USGS Gage No. 15302250), and UT100B (USGS Gage No. 15300250), respectively.

Water temperature was monitored in each of the three basins from 2004 through 2007. Water temperature records from this time period for all three of the above sources were compiled for use in the SNTEMP model. Additional water temperature monitoring was carried out in 2008 and 2009; these water temperature records were not incorporated in the model but are presented in general temperature trend analyses.

1.4.1 SOUTH FORK KOKTULI RIVER

The locations of stations where water temperatures have been and/or continue to be monitored in the SFK Basin are shown on Figure 2. A spatial and temporal inventory of water temperature records for the SFK Basin is illustrated on Figure 5. These water temperatures were measured continuously at intervals ranging from 1 minute to 2 hours.

A detailed summary of water temperatures measured in the SFK Basin is presented in Attachment 1. This attachment includes water temperature data measured at the following nine temperature monitors in the SFK Basin (Figure 2):

- SK100G – Pebble hydrology gage, River Kilometer (RK) 58.01 in SFK-E.
- SK100F – Pebble hydrology gage, RK 54.67 in SFK-D.
- SK100C – Pebble hydrology gage, RK 35.81 in SFK-C.
- SK119A – Pebble hydrology gage, Tributary SFK 1.190, confluence with the SFK at RK 34.28 in SFK-B.
- SK100B1 – Pebble hydrology gage, RK 29.26 in SFK-B.
- SFK4WT – Pebble water temperature monitoring site, RK 29.23 in SFK-B.
- SK100B – USGS hydrology gage (USGS Gage No. 15302200), RK 24.90 in SFK-B.

- SFK2WT – Pebble water temperature monitoring site, RK 13.93 in SFK-A.
- SK100A – Pebble hydrology gage, RK 0.11 in SFK-A.

The data presented in Attachment 1 for these nine sites consist of thermographs of daily maximum, average, and minimum water temperatures for 2004 through 2007. In addition, tables are presented of monthly minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures for 2004 through 2007.

Most of the water temperature measurements were obtained during the summer ice-free period, as shown Figure 5. The best spatial coverage of water temperature data was obtained in 2007. Consequently, the summer ice-free period of 2007 was selected for development of a water temperature model (SNTEMP) of the SFK. Details of the development and calibration of this model for the SFK are provided in Section 3of this appendix.

Additional water temperature records were collected and compiled after the water temperature model was developed (Attachment 2). This attachment includes water temperature data measured in 2008 and 2009 at the following nine temperature monitors in the South Fork Koktuli River Basin (Figure 2):

- SFK7WT – Pebble water temperature monitoring site, RK 54.67 in SFK-D.
- SFK6WT – Pebble water temperature monitoring site, RK 40.94 in SFK-C.
- SFK5WT – Pebble water temperature monitoring site, RK 35.81 in SFK-C.
- SFK119WT – Pebble water temperature monitoring site, SFK 1.190, confluence with the SFK at RK 34.28 in SFK-B.
- SFK4WT – Pebble water temperature monitoring site, RK 29.23 in SFK-B.
- SK100B – USGS hydrology gage (USGS Gage No. 15302200), RK 24.90 in SFK-B.
- SFK3WT – Pebble water temperature monitoring site, RK 24.90 in SFK-B.
- SFK2WT – Pebble water temperature monitoring site, RK 13.93 in SFK-A.
- SFK1WT – Pebble water temperature monitoring site, RK 0.10 in SFK-A.

The data presented in Attachment 2 for these nine sites consist of thermographs of daily maximum, average, and minimum water temperatures for 2008 and 2009. In addition, tables are presented of monthly minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures for 2008 and 2009. The additional water temperatures reported for 2008 and 2009 do not include water temperatures measured at the Pebble hydrology gages, or water temperatures measured by the USGS after September 2008 at SK100B (USGS Gage No. 15302200).

The water temperature model developed for the SFK is specific to the summer ice-free period in 2007. It was based on flow and water temperature data from 2007 that were available at the time model was developed. Water temperature models have not been developed for the SFK for 2008 or 2009, but are presented in general temperature trend analyses.

Water temperature data reported by the USGS have been rounded off to the nearest 0.5 degrees Celsius (ºC). This suggests that water temperatures measured at a single point in a cross-section may be

representative of the cross-sectional average temperature to within plus or minus 0.25ºC. This would apply to most locations along a stream where the flow is well-mixed and the water temperatures are evenly distributed over the cross-section. However, there may be situations where the flow may not be well-mixed across the entire width and depth of the cross-section. Examples of these situations would include reaches just downstream from tributary confluences, and just downstream from upwelling areas. These localized reaches would be relatively short and would represent a small portion of the overall stream length.

An overall summary of monthly average water temperatures from all of the temperature monitors is presented in Table 1 for the years 2004 through 2009. Water temperatures in the SFK Basin generally peak in July and August, then cool down during September and October, stay near freezing from November through April, and then warm up during May and June.

Since water temperatures remain near freezing during the winter season, there is obviously greater variability in water temperatures during the summer. For July and August:

- Average monthly temperatures ranged from 7.2ºC at Hydrology Gage SK100B1 in SFK-B in July 2007 to 16.0ºC at Hydrology Gage SK100F in SFK-D in August 2004 (Table 1).
- Average daily temperatures ranged from 5.7ºC at Hydrology Gage SK100B1 in SFK-B in July 2007 to 20.3ºC at Hydrology Gage SK100F in SFK-D in August 2004 (Attachments 1 and 2).
- Instantaneous temperatures ranged from 3.8ºC at monitoring site SFK4WT in SFK-B in August 2008 to 24.4ºC at Hydrology Gage SK100F in SFK-D in August 2004 (Attachments 1 and 2).

Generally speaking, water temperatures would be expected to increase in the downstream direction in a stream because air temperatures generally increase in the downstream direction (with decreasing elevations). However, exceptions to these expected trends may occur when the stream receives input from a source of relatively cold water (surface water and/or groundwater).

Longitudinal trends of maximum instantaneous, daily average, and minimum instantaneous water temperatures in the SFK are illustrated on Figure 6 for late summer (August 24, 2007) and late fall (October 21, 2007) conditions. On August 24, 2007, water temperatures in upstream reaches SFK-C and SFK-D were warmer than the water temperatures in the downstream reaches SFK-A and SFK-B. This suggests that there is an input of relatively cool water near the upstream end of SFK-B.

On August 24, 2007, the average flow and water temperature at hydrology gage SK100C (near the downstream end of SFK-C at RK 35.81) were 0.10 cubic meters per second (cms) and 12.8ºC, respectively (Chapter 7 and Attachment 1, respectively). On the same day, the average flow and water temperature at hydrology gage SK100B1 (in SFK-B at RK 29.26) were 1.46 cms and 7.4ºC. In between these two locations, the SFK gained 1.36 cms and cooled down a total of 5.4ºC.

Part of the cooling can be accounted for by examining conditions in Tributary SFK 1.190 on August 24, 2007. This tributary enters the SFK at RK 34.28 (between hydrology gages SK100C and SK100B1). The average flow and water temperature at hydrology gage SK119A were 0.56 cms and 8.8ºC, respectively (Chapter 7 and Attachment 1, respectively).

In addition to the input from Tributary 1.190, the SFK gained an additional 0.80 cms in between hydrology gages SK100C and SK100B1. If this was examined purely from a mixing point of view, and all other sources of heating and cooling were ignored, then the average temperature of the additional inflow would be 5.7ºC. The actual temperature would likely be less than 5.7ºC to compensate for the expected warming effect from downstream increases in air temperature. This low temperature suggests that the additional inflow comes largely from groundwater.

A reverse trend can be seen on October 21, 2007. The water temperatures warm up from 1.5ºC to 2.1ºC as flow travels from SK100C to SK100B1. The combined input from Tributary SFK 1.190 and other sources (surface water and groundwater) helped to warm the water as it traveled through this reach.

During the winter period, intermittent contributions of relatively warm groundwater help to keep some portions of the SFK relatively ice-free.

1.4.2 NORTH FORK KOKTULI RIVER

The locations of stations where water temperatures have been and/or continue to be monitored in the NFK Basin are shown on Figure 3. A spatial and temporal inventory of water temperatures records in the NFK Basin is illustrated on Figure 7. These water temperatures were measured continuously at intervals ranging from 1 minute to 2 hours.

A detailed summary of water temperatures measured in the NFK Basin is presented in Attachment 3. This attachment includes water temperature data measured at the following nine temperature monitors in the NFK Basin (Figure 3):

- NFK9WT – Pebble water temperature monitoring site, RK 51.39 in NFK-E.
- NFK8WT – Pebble water temperature monitoring site, RK 44.54 in NFK-D.
- NFK7WT – Pebble water temperature monitoring site, RK 36.87 in NFK-D.
- NK100C – Pebble hydrology gage, RK 36.76 in NFK-D.
- NK119A – Pebble hydrology gage, Tributary NFK 1.190, confluence with the NFK at RK 36.52 in NFK-C.
- NK100B – Pebble hydrology gage, RK 35.76 in NFK-C.
- NFK5WT – Pebble water temperature monitoring site, RK 33.44 in NFK-C.
- NK100A1 – Pebble hydrology gage, RK 13.70 in NFK-B.
- NK100A – USGS hydrology gage (USGS Gage No. 15302250), RK 5.27 in NFK-A.

The data presented in Attachment 3 for these nine NFK sites consist of thermographs of daily maximum, average, and minimum water temperatures for 2004 through 2007. In addition, tables are presented of monthly minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures for 2004 through 2007.

Most of the water temperature measurements were obtained during the summer ice-free period, as shown Figure 7. The best spatial coverage of water temperature data was obtained in 2007. Consequently, the

summer ice-free period of 2007 was selected for development of a water temperature model (SNTEMP) of the NFK. Details of the development and calibration of this model are provided in Section 4of this appendix.

Additional water temperature records were collected and compiled after the water temperature model was developed. A detailed summary of these additional water temperatures measured in the NFK Basin is presented in Attachment 4. This attachment includes water temperature data measured in 2008 and 2009 at the following 10 temperature monitors in the NFK Basin (Figure 3):

- NFK9WT – Pebble water temperature monitoring site, RK 51.39 in NFK-E.
- NFK8WT – Pebble water temperature monitoring site, RK 44.54 in NFK-D.
- NFK7WT – Pebble water temperature monitoring site, RK 36.87 in NFK-D.
- NFK119WT – Pebble water temperature monitoring site, Tributary NFK 1.190, confluence with the NFK at RK 36.52 in NFK-C.
- NFK5WT – Pebble water temperature monitoring site, RK 33.44 in NFK-C.
- NFK4WT – Pebble water temperature monitoring site, RK 19.94 in NFK-B.
- NFK3WT – Pebble water temperature monitoring site, RK 15.41 in NFK-B.
- NK100A – USGS hydrology gage (USGS Gage No. 15302250), RK 5.27 in NFK-A.
- NFK2WT – Pebble water temperature monitoring site, RK 5.27 in NFK-A.
- NFK1WT – Pebble water temperature monitoring site, RK 0.29 in NFK-A.

The data presented in Attachment 4 for these 10 sites consist of thermographs of daily maximum, average, and minimum water temperatures for 2008 and 2009. In addition, tables are presented of monthly minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures for2008 and 2009. The additional water temperatures reported for 2008 and 2009 do not include water temperatures measured at the Pebble hydrology gages, or water temperatures measured by the USGS after September 2008 at NK100A (USGS Gage No. 15302250).

The water temperature model developed for the NFK is specific to the summer ice-free period in 2007. It was based on flow and water temperature data from 2007 that were available at the time model was developed. Water temperature models have not been developed for the NFK for 2008 or 2009 but are presented in general temperature trend analyses.

As for the SFK, water temperature data reported by the USGS for the NFK have been rounded off to the nearest 0.5ºC. This suggests that water temperatures measured at a single point in a cross-section may be representative of the cross-sectional average temperature to within plus or minus 0.25ºC. This would apply to most locations along a stream where the flow is well-mixed and the water temperatures are evenly distributed over the cross-section. However, there may be situations where the flow may not be well-mixed across the entire width and depth of the cross-section. Examples of these situations would include reaches just downstream from tributary confluences, and just downstream from upwelling areas. These localized reaches would be relatively short and would represent a small portion of the overall stream length.

An overall summary of monthly average water temperatures from all of the temperature monitors is presented in Table 2 for the years 2004 through 2009. Water temperatures in the NFK Basin generally peak in July and August, cool down during September and October, stay near freezing from November through April, and then warm up during May and June.

Since water temperatures remain near freezing during the winter season, there is obviously greater variability in water temperatures during the summer. For July and August:

- Average monthly temperatures ranged from 7.5ºC at monitoring site NFK9WT in NFK-E in August 2008 to 14.9ºC at monitoring site NFK8WT in NFK-D in July 2009 (Table 2).
- Average daily temperatures ranged from 6.6ºC at monitoring site NFK9WT in NFK-E in August 2008 to 20.1ºC at monitoring site NFK8WT in NFK-D in July 2009 (Attachments 3 and 4).
- Instantaneous temperatures ranged from 4.7ºC at monitoring site NFK9WT in NFK-E in August 2008 to 22.3ºC at monitoring site NFK8WT in NFK-D in July 2009 (Attachments 3 and 4).

Generally speaking, water temperatures would be expected to increase in the downstream direction in a stream because air temperatures generally increase in the downstream direction (with decreasing elevations). However, exceptions to these expected trends may occur when the stream receives input from a source of relatively cold water (surface water and/or groundwater).

Longitudinal trends of maximum instantaneous, daily average, and minimum instantaneous water temperatures in the NFK are illustrated on Figure 8 for late summer (August 29, 2007) and late fall (October 20, 2007) conditions. On August 29, 2007, water temperatures in the upstream reaches (NFK-D and NFK-E) were warmer than the water temperatures in the downstream reaches (NFK-A, NFK-B, and NFK-C). This suggests that there is an input of relatively cool water in NFK-C. On October 20, 2007, there was a slight warming trend in NFK-E and NFK-D, a drop in water temperature at the confluence with Tributary NFK 1.190, and a slight warming trend in NFK-C, NFK-B, and NFK-A.

On August 29, 2007, the average flow and water temperature at hydrology gage NK100C (just upstream from the confluence with Tributary NFK 1.190 at RK 36.76) were 0.70 cms and 13.4ºC, respectively (Chapter 7 and Attachment 3, respectively). On the same day, the average flow and water temperature at hydrology gage NK100B (just downstream from the confluence with Tributary NFK 1.190 at RK 35.76) were 1.03 cms and 11.9ºC. In between these two locations, the NFK gained 0.33 cms and cooled down a total of 1.5ºC.

The primary source of cool water between hydrology gages NK100C and NK100B would have been Tributary NFK 1.190. If a simple mixing calculation were performed and other sources of heating and cooling were ignored, then the estimated water temperature in Tributary NFK 1.190 would have been 8.7ºC on August 29, 2007. The actual measured water temperature at hydrology gage NK119A was 8.7ºC on August 29, 2007 (Attachment 3), which matches the temperature estimated from the mixing calculation.

On August 29, 2007, the average flow and water temperature at hydrology gage NK100A1 were 2.51 cms and 10.3ºC, respectively (Chapter 7 and Attachment 3, respectively). In between hydrology gages NK100B and NK100A1, the river gained 1.48 cms and cooled down a total of 1.6ºC. If this was examined purely from a mixing point of view, and all other sources of heating and cooling were ignored, then the

average temperature of the additional inflow would be 9.3ºC. The actual temperature would likely be less than 9.3ºC to compensate for the expected warming effect from downstream increases in air temperature.

While the results shown on Figure 8 suggest a gradual reduction in water temperature over the 22.06-kilometer long reach between hydrology gages NK100B and NK100A1, the monthly average results shown in Table 2 suggest that there is a large drop in temperature during summer months over the 13.50-kilometer long reach between water temperature monitoring sites NFK5WT and NFK4WT (located between hydrology gages NK100B and NK100A1). In July 2009, the average monthly temperature dropped from 13.4ºC at NFK5WT to 9.8ºC at NFK4WT. This suggests inflow of relatively cool groundwater between water temperature monitoring sites NFK5WT and NFK4WT during the summer months.

The monthly results shown in Table 2 also suggest a drop in water temperature during the summer months between water temperature monitoring sites NFK2WT and NFK1WT. In July 2009, the average monthly temperature dropped from 12.2ºC at NFK2WT to 10.3ºC at NFK1WT. This suggests the inflow of relatively cool groundwater during the summer months in the downstream portion of NFK-A.

During the winter period, intermittent contributions of relatively warm ground water help to keep some portions of the NFK relatively ice-free.

1.4.3 UPPER TALARIK CREEK

The locations of stations where water temperatures have been and/or continue to be monitored in the UT Basin are shown on Figure 4. A spatial and temporal inventory of water temperature records in the UT Basin is illustrated on Figure 9. These water temperatures were measured continuously at intervals ranging from 1 minute to 2 hours.

A detailed summary of water temperatures measured in the UT Basin is presented in Attachment 5. This attachment includes water temperature data measured at the following 11 temperature monitors in the UT Basin (Figure 4):

- UT100E – Pebble hydrology gage, RK 59.97 in UT-G.
- UT100D – Pebble hydrology gage, RK 51.62 in UT-F.
- UT135A – Pebble hydrology gage, Tributary UT 1.350, confluence with the UT at RK 45.05 in UT-E.
- UT100C2 – Pebble hydrology gage, RK 44.63 in UT-E.
- UT100C1 – Pebble hydrology gage, RK 37.64 in UT-E.
- UT5WT – Pebble water temperature monitoring site, RK 29.33 in UT-D.
- UT100C – Pebble hydrology gage, RK 29.31 in UT-D.
- UT119A – Pebble hydrology gage, Tributary UT 1.190, confluence with the UT at RK 24.74 in UT-C.
- UT100B – USGS hydrology gage (USGS Gage No. 15300250), RK 24.50 in UT-C.
- UT3WT – Pebble water temperature monitoring site, RK 17.23 in UT-C.

- UT1WT – Pebble water temperature monitoring site, RK 2.22 in UT-A.

The data presented in Attachment 5 for these 11 sites consist of thermographs of daily maximum, average, and minimum water temperatures for 2004 through 2007. In addition, tables are presented of monthly minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures for 2004 through 2007.

Most of the water temperature measurements were obtained during the summer ice-free period, as shown on Figure 9. The best spatial coverage of water temperature data was obtained in 2007. Consequently, the summer ice-free period of 2007 was selected for development of a water temperature model (SNTEMP) of the UT. Details of the development and calibration of this model are provided in Section 5 of this appendix.

Additional water temperature records were collected and compiled after the water temperature model was developed. A detailed summary of these additional water temperatures measured in the UT Basin is presented in Attachment 6. This attachment includes water temperature data measured in 2008 and 2009 at the following 12 temperature monitors in the NFK Basin (Figure 4):

- UT8WT – Pebble water temperature monitoring site, RK 51.62 in UT-F.
- UT135AWT – Pebble water temperature monitoring site, Tributary UT 1.350, confluence with the UT at RK 45.05 in UT-E.
- UT135BWT – Pebble water temperature monitoring site, Tributary UT 1.350, confluence with the UT at RK 45.05 in UT-E.
- UT7WT – Pebble water temperature monitoring site, RK 43.29 in UT-E.
- UT6WT – Pebble water temperature monitoring site, RK 37.16 in UT-E.
- UT5WT – Pebble water temperature monitoring site, RK 29.33 in UT-D.
- UT119WT – Pebble water temperature monitoring site, Tributary UT 1.190, confluence with the UT at RK 24.74 in UT-C.
- UT100B – USGS hydrology gage (USGS Gage No. 15300250), RK 24.50 in UT-C.
- UT4WT – Pebble water temperature monitoring site, RK 24.38 in UT-C.
- UT3WT – Pebble water temperature monitoring site, RK 17.23 in UT-C.
- UT2WT – Pebble water temperature monitoring site, RK 9.90 in UT-B.
- UT1WT – Pebble water temperature monitoring site, RK 2.22 in UT-A.

The data presented in Attachment 6 for these 12 sites consist of thermographs of daily maximum, average, and minimum water temperatures for 2008 and 2009. In addition, tables are presented of monthly minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures for 2008 and 2009. The additional water temperatures reported for 2008 and 2009 do not include water temperatures measured at the Pebble hydrology gages, or water temperatures measured by the USGS after September 2008 at UT100B (USGS Gage No. 15300250).

The water temperature model developed for UT is specific to the summer ice-free period in 2007. It was based on flow and water temperature data from 2007 that were available at the time model was developed. Water temperature models have not been developed for UT for 2008 or 2009 but are presented in general temperature trend analyses.

Water temperature data reported by the USGS have been rounded off to the nearest 0.5ºC. This suggests that water temperatures measured at a single point in a cross-section may be representative of the cross-sectional average temperature to within plus or minus 0.25ºC. This would apply to most locations along a stream where the flow is well-mixed and the water temperatures are evenly distributed over the cross-section. However, there may be situations where the flow may not be well-mixed across the entire width and depth of the cross-section. Examples of these situations would include reaches just downstream from tributary confluences, and just downstream from upwelling areas. These localized reaches would be relatively short and would represent a small portion of the overall stream length.

An overall summary of monthly average water temperatures from all of the temperature monitors is presented in Table 3 for the years 2004 through 2009. Water temperatures in the UT Basin generally peak in July and August, cool down during September and October, stay near freezing from November through April, and then warm up during May and June.

Since water temperatures remain near freezing during the winter season, there is obviously greater variability in water temperatures during the summer. For July and August:

- Average monthly temperatures in the mainstem UT (not including tributaries) ranged from 5.6ºC at Hydrology Gage UT100E in UT-G in July and August 2007 to 13.1ºC at Hydrology Gage UT100D in UT-F in August 2004 (Table 3).
- Average daily temperatures ranged from 4.7ºC at Hydrology Gage UT100E in UT-G in August 2004 to 16.0ºC at Hydrology Gage UT100D in UT-F in August 2004 (Attachments 5 and 6).
- Instantaneous temperatures ranged from 3.6ºC at Hydrology Gage UT100E in UT-G in August 2004 and July 2007 to 18.8ºC at Hydrology Gage UT100D in UT-F in August 2004 (Attachments 5 and 6).

Generally speaking, water temperatures would be expected to increase in the downstream direction in a stream because air temperatures generally increase in the downstream direction (with decreasing elevations). However, exceptions to these expected trends may occur when the stream receives input from a source of relatively cold water (surface water and/or groundwater).

Longitudinal trends of maximum instantaneous, daily average, and minimum instantaneous water temperatures in the NFK are illustrated on Figure 10 for late summer (August 29, 2007) and late fall (October 15, 2007) conditions. On August 29, 2007, there were two reaches where the water temperatures became cooler: the downstream portion of UT-F (downstream from hydrology gage UT100D); and in UT-D. In contrast, water temperatures on October 15, 2007, showed a slight warming trend from upstream to downstream reaches, with slight decreases in UT-F and UTE.

On August 29, 2007, the flow and water temperature at hydrology gage UT100D were 0.39 cms and 10.8ºC, respectively (Chapter 7 and Attachment 5, respectively). On the same day, the flow and water

temperature at hydrology gage UT100C2 were 1.35 cms and 8.7ºC, respectively. Between UT100D and UT100C2, the river gained 0.96 cms and cooled down a total of 2.1ºC.

One of the sources of inflow to UT between UT100D and UT100C2 was Tributary UT 1.350. On August 29, 2007, the flow and water temperature at hydrology gage UT135A in UT-1.350 were 0.57 cms and 12.4ºC, respectively (Chapter 7 and Attachment 5, respectively). This suggests that the remaining additional inflow to the UT between UT100D and UT100C2 on August 29, 2007, of 0.39 cms was relatively cool water. This suggests groundwater inflow to UT in the downstream portion of UT-F (downstream from hydrology gage UT100D).

On August 29, 2007, the flow and water temperature at hydrology gage UT100C1 were 1.64 cms and 11.8ºC, respectively (Chapter 7 and Attachment 5, respectively). On the same day, the flow and water temperature at USGS gage UT100B (USGS Gage No. 15300250) were 3.54 cms and 8.0ºC, respectively. Between UT100C1 and UT100B, the river gained 1.90 cms and cooled down a total of 3.8ºC.

One of the sources of inflow to UT between UT100C1 and UT100B was Tributary UT 1.190. On August 29, 2007, the flow and water temperature at hydrology gage UT119A in UT 1.190 were 0.67 cms and 5.8ºC, respectively. The very cool temperatures in this tributary indicate that it is fed by groundwater, and this accounts for some of the cooling between UT100C1 and UT100B. Other sources of inflow to UT between UT100C1 and UT100B provide additional cooling, which suggests additional groundwater input.

1.5 EVALUATION OF SELECTED MODELING PERIOD

The ice-free portion of 2007 was selected for development of SNTEMP models of the SFK, NFK, and UT because the spatial coverage of measured water temperatures was greater in this year than it was in 2004, 2005, and 2006. Historical air temperature measurements from 58 years of record at Iliamna Airport were analyzed to determine how 2007 compared with long-term records.

The annual total of cumulative degrees-days above freezing was calculated for each of the 58 years of air temperature measurements at Iliamna Airport. A cumulative frequency analysis of these annual totals was performed, and the results of this analysis are shown on Figure 11. The following five different classifications of summer ice-free periods were developed, based on percent exceedences:

- Warm – 0 to 20 percent exceedence
- Somewhat warm – 20 to 40 percent exceedence
- Moderate – 40 to 60 percent exceedence
- Somewhat cool – 60 to 80 percent exceedence
- Cool – 80 to 100 percent exceedence

Recent years were examined to see how they would fit in this classification scheme. The years 2004 and 2005 were warm; the years 2007 and 2009 were somewhat warm; the year 2006 was moderate; and the year 2008 was cool. Thus, the year selected for SNTEMP modeling, 2007, is somewhat warm when compared with long-term records.

While this appendix is primarily focused on aquatic thermal regimes during summer ice-free periods, a similar assessment can be performed with historical air temperatures measured at Iliamna Airport to characterize how cold historical winter seasons were.

The annual total of cumulative degrees-days below freezing was calculated for each of the 57 years of air temperature measurements at Iliamna Airport during winter periods. A cumulative frequency analysis of these annual totals was performed, and the results of this analysis are shown on Figure 12. The following five different classifications of winter periods were developed, based on percent exceedence:

- Cool – 0 to 20 percent exceedence
- Somewhat cool – 20 to 40 percent exceedence
- Moderate – 40 to 60 percent exceedence
- Somewhat warm – 60 to 80 percent exceedence
- Warm – 80 to 100 percent exceedence

Recent years were examined to see how they would fit in this classification scheme. The winter periods of 2006/2007 and 2008/2009 were cool; the winter period 2005/2006 was somewhat cool; the winter period 2007/2008 was moderate; and the winter period 2004/2005 was warm.

While the prediction of river ice thickness would be complicated by the effects of groundwater flow in the SFK, NFK, and UT, some simplistic calculations can be performed using the modified Stefan equation (USACE, 2002). According to this method, the maximum ice thickness in a stream depends on the cumulative degree-days below zero each winter.

A cumulative frequency analysis of maximum winter ice thickness was performed, and the results of this analysis are shown on Figure 13. The range of ice thicknesses depicted on Figure 13 does not account for the complicating effects of relatively warm groundwater inflow during the winter season. Indeed, some portions of the SFK, NFK, and UT have been observed to remain ice-free during the winter season.

2. METHODS

2.1 FIELD DATA COLLECTION

2.1.1 INSTREAM WATER TEMPERATURE

Continuous instream water temperatures have been measured in study area rivers at various locations and various time periods since 2004-2009, with intervals ranging from 1 minute to 2 hours. Water temperatures have been monitored at the following three types of stations:

- Pebble Project hydrology gaging stations – These continuous stations monitor both stage and water temperature. The names of these stations start with the prefixes “SK,” “NK,” or “UT” for the SFK Basin, NFK Basin, or UT Basin, respectively. Water temperatures at these stations have been measured primarily during summer ice-free periods since 2004-2009. Water temperatures

have been collected and compiled from 2004 through 2007 from seven sites in the SFK Basin, five sites in the NFK Basin, and seven sites in the UT Basin.

- Pebble Project water temperature monitoring stations – These continuous stations monitor water temperature. The names of these stations start with the prefixes "SFK," "NFK," or "UT" for the SFK Basin, NFK Basin, or UT Basin, respectively. Water temperatures at these stations have been monitored year-round using Onset Hobo Pendant monitors. In August 2007, 29 of these stations were initially installed. In October 2008, nine more stations were added to the network. There are now 11 sites in the SFK Basin, 13 sites in the NFK Basin, and 14 sites in the UT Basin.
- USGS hydrology gaging stations – These continuous stations monitor both stage and water temperature. The USGS gaging stations on the SFK, NFK, and UT are named SK100B (USGS Gage No. 15302200), NK100A (USGS Gage No. 15302250), and UT100B (USGS Gage No. 15300250), respectively. Water temperatures from these stations have been compiled and reported from July 2006 through September 2008.

During site visits to download data from the Pebble water temperature recorders, water temperature was measured with a thermometer as a quality assurance (QA)/quality control (QC) check. The water temperature and time of day were recorded in a field book.

Pebble water temperature monitors were installed within a protective housing of polyvinyl chloride (PVC) pipe (Photo 1). The PVC pipe was tethered to a steel cable that was anchored to the top of the streambank. During data retrieval in October 2008, it was necessary to use a sledge hammer to free the temperature monitor from below the ice surface (Photo 2). No instruments were damaged as a result of these activities.

2.1.2 AIR TEMPERATURE

Continuous air temperatures were also measured at six sites established near a corresponding water temperature site. These air temperature-monitoring sites include two on the SFK (SFK100FAT and SFK4AT), one on the NFK (NFK100A1AT), and three on the UT (UT100EAT, UT100C1AT, and UT3AT).

During site visits to download data from the corresponding water temperature site, air temperature data were also downloaded from the air temperature recorder. Air temperature was also measured with a thermometer as a QA/QC check. The air temperature and time of day were recorded in a fieldbook.

2.1.3 RIPARIAN SHADE

During each site visit to download data from the instream water temperature recorders, additional data were collected to characterize riparian shade. Riparian vegetation influences heat input from sunshine in the SNTEMP model by providing shade for the stream. The riparian vegetation data needed for input to the SNTEMP model were derived from field observations, site photographs, and reviewing available orthophotographs.

The shade from riparian vegetation was modeled in the SNTEMP model by specifying various parameters to characterize the riparian community. These parameters include the following:

- Vegetation Height – average maximum height of the overstory riparian vegetation above the water surface.
- Vegetation Crown Width – average of the maximum diameter of the riparian vegetation adjacent to the stream.
- Vegetation Offset – average distance of tree trunks from the water surface.
- Vegetation Density – ratio that quantifies the effective shading provided by the riparian vegetation (ranges from 0 to 1).

While the SNTEMP model is capable of modeling shade from trees and other riparian vegetation, it is recognized that the NFK, the SFK, and the upstream portion of UT (Reach Segments UT-C, UT-D, UT-E, UT-F, and UT-G) generally lack trees along their streambanks. Input to the SNTEMP model was specified in these areas to account for the lack of shade from trees, and to account for the shade provided by other riparian vegetation. The lower portion of the UT (Reach Segments UT-A and UT-B) does have trees along the streambanks (Photo 3), and appropriate riparian shade parameters were selected to account for the shade provided by these trees.

2.2 REVIEW AVAILABLE DATA OBTAINED FROM OTHER STUDIES/DATA SOURCES

Data were obtained from other studies and data sources, and QA/QC checked prior to incorporation in the SNTEMP model. Types of data included hydrologic data, meteorological data, river/valley morphology, and seasonal thermal characteristics.

2.2.1 HYDROLOGIC DATA

The SNTEMP models described herein relied on continuous flow records from the summer ice-free period of 2007 measured at 19 stations. The stations included:

- SFK – five stations on the mainstem (SK100F, SK100C, SK100B1, SK100B, and SK100A) and one on a tributary (SK119A; Figure 14).
- NFK – four stations on the mainstem (NK100C, NK100B, NK100A1, and NK100A) and one on a tributary (NK119A; Figure 15).
- UT – six stations on the mainstem (UT100E, UT100D, UT100C2, UT100C1, UT100C, and UT100B) and two on tributaries (UT119A and UT135A; Figure 16).

Additional hydrology nodes shown on Figures 14, 15, and 16 represent locations where flows were interpolated (or extrapolated) in the model.

2.2.2 METEOROLOGICAL DATA

The types of meteorological data required by the SNTEMP model include air temperature, relative humidity, wind speed, and sunshine ratio. These data were obtained from six meteorological stations established for the Pebble Project: (Figure 1): Pebble 1, Pebble 3, Pebble 4, Pebble 5, Pebble 5A, and Pebble 6. Of these six stations, Pebble 1 has the longest period of record (Hoefler, 2006, 2008a, and

2008b) and is centrally located near the headwaters of all three study basins. As a result, meteorological records from the Pebble 1 station were used for development of a SNTEMP model for each of the three basins.

2.2.2.1 AIR TEMPERATURE

Daily average air temperatures at the Pebble 1 station are shown on Figure 17 for the period from May 17 to October 5, 2007, the period selected for development of SNTEMP models. Daily average air temperatures during this period ranged from 0.5ºC on October 5, 2007, to 17.5ºC on August 13, 2007. Air temperatures generally increase with a decrease in elevation. This is accounted for in the SNTEMP model by using the default Moist-Air Adiabatic Lapse Rate (MALR) of 0.00656ºC per meter. Air temperature records from the Pebble 1 station were compared with air temperature records from the nearby Iliamna Airport to check the default rate used in the SNTEMP model.

The ground elevation at Pebble 1 meteorological station is 474.0 meters (1,555 feet, derived from 10-foot contours). The ground elevation at Iliamna Airport is 55.8 meters (183 feet, from United States National Climatic Data Center). The difference in elevation between these two locations is 418.2 meters. The average air temperature at Pebble 1 meteorological station was 8.7ºC from May 17 to October 5 2007. The corresponding average air temperature at Iliamna Airport was 11.3ºC. The difference in air temperature between these two locations was 2.6ºC. So, a difference in temperature of 2.6ºC was observed between two nearby locations with a difference in elevation of 418.2 meters. This is equivalent to a lapse rate of 0.0062ºC per meter, very similar to the default lapse rate used in the SNTEMP model.

2.2.2.2 RELATIVE HUMIDITY

Daily average relative humidity data at the Pebble 1 station are shown on Figure 18 for the period from May 17 to October 5, 2007, the period selected for development of SNTEMP models. Daily average relative humidity during this period ranged from 56 percent on June 20, 2007, to 100 percent on July 22, July 23, and August 4, 2007. The average relative humidity was 85 percent from May 17 to October 5, 2007. Relative humidity values for other sites were determined from the ideal gas law (Clapeyron, 1834).

2.2.2.3 WIND SPEED

Daily average wind speeds at the Pebble 1 station are shown on Figure 19 for the period from May 17 to October 5, 2007, the period selected for development of the SNTEMP models. Daily average wind speeds during this period ranged from 2.2 meters per second (m/s) on September 2, 2007, to 20.8 m/s on September 11, 2007. The average wind speed was 6.5 m/s from May 17 to October 5, 2007.

2.2.2.4 SOLAR RADIATION

Daily solar radiation measured at Pebble 1 station is shown on Figure 20 for the period from May 17 to October 5, 2007, the period selected for development of the SNTEMP models. Daily solar radiation during this period ranged from 13 Langleys on October 4, 2007, to 318 Langleys on June 15, 2007. The average daily solar radiation was 141 Langleys from May 17 to October 5, 2007.

The SNTEMP model also requires that a ground temperature be specified. For this parameter, the default value of ground temperature (average annual air temperature) was assumed for the temperature models developed for the SFK, NFK, and UT.

2.2.3 RIVER/VALLEY MORPHOLOGY

In the SNTEMP model, river and valley morphology influences heat input from sunshine, orographic adjustments to meteorological conditions, and travel time through the study reach. Thus, it was necessary to specify a number of factors related to the morphological characteristics of the river and valley, including the following:

- Longitudinal Profile – needed to perform orographic adjustments to meteorological conditions and to calculate travel time. This was derived from contour maps with 3.048-meter (10-foot) intervals.
- Latitude – needed to calculate heat input from sunshine. This was derived from orthophotographs incorporated into the Geographic Information System (GIS) database.
- Stream Reach Alignment (Azimuth) – needed to calculate heat input from sunshine. This was derived from orthophotographs incorporated into the GIS database.
- Channel Width – needed to calculate heat input from sunshine and to determine travel time. This was determined from channel cross-sections and stage/discharge ratings curves obtained from fluvial geomorphology study sites throughout the study reaches.
- Topographic Altitude (Lateral Valley Slope) – specified for both sides of the river and needed to calculate heat input from sunshine. This was derived from contour maps with 3.048-meter (10-foot) intervals.
- Channel Roughness (Manning's "n") – used to calculate diurnal range of water temperatures.

2.2.4 SEASONAL THERMAL CHARACTERISTICS

The SNTEMP model allows some parameters to be specified on a seasonal basis. These parameters include the dust coefficient, ground reflectivity (seasonally adjusted to account for snow cover in the winter season) and calibration factors for air temperature and wind speed. Appropriate values based on project characteristics were selected for these parameters.

2.3 STREAM TEMPERATURE MODEL DEVELOPMENT

The SNTEMP model is used to simulate heat transfer processes in a river network (mainstem and tributaries) where a steady-state solution was determined within each computational time step. Within this section, the river networks developed for the SFK, NFK, and UT are described and the rational for the computational time step discussed.

2.3.1 MODEL STRUCTURE

The structure of the SNTEMP model developed for each of the three study rivers was based on: computational nodes established to define the upstream and downstream end of the study river, the

confluence of major tributaries, the locations of hydrology gages, and locations where temperatures have been measured in each river.

2.3.2 COMPUTATIONAL TIME STEP

The computational time step used in the SNTEMP model should not exceed the travel time from the most upstream location in the study river to the most downstream location. The computational time step should also be as small as possible during the time of year when water temperatures are coolest, because this is a period with potential to impact eggs and newly hatched fish prior to emergence.

Travel time through a study river was determined from flow velocity/discharge relationships developed for the main-channel PHABSIM study sites, as well as flow velocity/discharge relationships derived from data collected at USGS gaging stations.

2.4 STREAM TEMPERATURE MODEL CALIBRATION

The SNTEMP models developed for the SFK, NFK, and UT were calibrated to ensure that predicted instream water temperatures matched observed water temperatures during periods with concurrent water temperature, meteorological, and hydrologic records. Typical input variables that were adjusted during the calibration process include wind speed, temperature of accretion flows (surface water and groundwater), and Manning's "n".

3. SNTEMP MODEL OF THE SOUTH FORK KOKTULI RIVER

3.1 MODEL STRUCTURE AND COMPUTATIONAL TIME STEP

The overall structure of the SNTEMP model used to analyze the SFK was defined by hydrology nodes, stream geometry nodes, and confluence nodes (Figure 14). Thirty-four nodes were used to construct the stream temperature model, consisting of the following:

- Hydrology Gage SK100F – RK 54.67 in SFK-D, just downstream from Frying Pan Lake.
- Stream Geometry Node SFKSG1 – RK 53.32 in SFK-D.
- Stream Geometry Node SFKSG2 – RK 51.22 in SFK-C.
- Hydrology Node SK100LF2 – RK 51.09 in SFK-C.
- Stream Geometry Node SFKSG3 – RK 49.41 in SFK-C.
- Stream Geometry Node SFKSG4 – RK 47.56 in SFK-C.
- Stream Geometry Node SFKSG5 – RK 45.71 in SFK-C.
- Stream Geometry Node SFKSG6 – RK 44.81 in SFK-C.
- Stream Geometry Node SFKSG7 – RK 43.94 in SFK-C.
- Hydrology Node SK100LF4 – RK 43.64 in SFK-C.
- Stream Geometry Node SFKSG8 – RK 41.08 in SFK-C.

- Stream Geometry Node SFKSG9 – RK 39.97 in SFK-C.
- Stream Geometry Node SFKSG10 – RK 38.36 in SFK-C.
- Hydrology Gage SK100C – RK 34.81 in SFK-C.
- Hydrology Gage SK119A – Located on Tributary SFK 1.190, 1.79 kilometers upstream from the confluence with the SFK (RK 34.28 in SFK-B).
- Confluence of the SFK and Tributary SFK 1.190 – RK 34.26 in SFK-B.
- Stream Geometry Node SFKSG11 – RK 34.14 in SFK-B.
- Hydrology Node SK100LF6 – RK 34.12 in SFK-B.
- Hydrology Gage SK100B1 – RK 29.26 in SFK-B.
- Stream Geometry Node SFKSG12 – RK 27.58 in SFK-B.
- Stream Geometry Node SFKSG13 – RK 25.10 in SFK-B.
- Hydrology Gage SK100B – RK 24.90 in SFK-B.
- Stream Geometry Node SFKSG14 – RK 21.85 in SFK-A.
- Stream Geometry Node SFKSG15 – RK 20.08 in SFK-A.
- Stream Geometry Node SFKSG16 – RK 15.36 in SFK-A.
- Hydrology Node FRS-3 – RK 13.91 in SFK-A.
- Stream Geometry Node SFKSG17 – RK 12.51 in SFK-A.
- Stream Geometry Node SFKSG18 – RK 9.23 in SFK-A.
- Stream Geometry Node SFKSG19 – RK 7.89 in SFK-A.
- Stream Geometry Node SFKSG20 – RK 5.10 in SFK-A.
- Hydrology Node FRS-2 – RK 2.97 in SFK-A.
- Stream Geometry Node SFKSG21 – RK 2.13 in SFK-A.
- Hydrology Gage SK100A – RK 0.11 in SFK-A.
- Confluence of the SFK and NFK – RK 0.00 in SFK-A.

The time step utilized in SNTEMP must be 1 day or greater. Based on the total reach length of the SFK model of 54.67 kilometers, a time step of 1 day was selected. A travel time of 1 day would be equivalent to a travel velocity of 0.6 m/s.

3.2 HYDROLOGIC DATA

Daily flows at Hydrology Gages SK100A, SK100B, SK100B1, SK100C, and SK100F are shown on Figure 21, as well as estimated flows in the SFK just downstream from the confluence with Tributary SFK 1.190, for the period from May 17 to October 5, 2007. Flow records from Hydrology Gage SK100C indicate that there was no flow in the SFK near the downstream end of SFK-C on five different occasions, for a total of 40 days during the summer ice-free period of 2007.

3.3 RIVER AND VALLEY MORPHOLOGY

A longitudinal profile of the SFK is shown on Figure 22. The average gradient over the SFK is 0.2 percent. Within SFK-C, there is a portion of the river with a very mild gradient (0.05 percent) that extends from RK 37.8 to RK 43.5.

The rate of heat exchange at the water surface is controlled by the wetted width of the channel. The SNTEMP model simulates wetted width as a function of flow. Channel width data were obtained from the fluvial geomorphology investigations (Appendix 15.1F). The wetted widths in the SFK simulated in the SNTEMP model under relatively high (October 5, 2007) and low (August 1, 2007) flow conditions are shown on Figure 23. There is a significant increase in wetted width at the transition from SFK-C to SFK-B.

The alignment of the river valley plays a role in how much shade is provided by the valley morphology. The valley alignment is specified in the SNTEMP model by using azimuth, as shown for the SFK on Figure 24. The valley is aligned in a North/South direction when the azimuth is zero, and the valley is aligned in an East/West direction when the azimuth is plus or minus 90 degrees.

The SFK receives more shade from the surrounding terrain in the upstream portions of the river and less shade in the downstream portions. This was accounted for in the SNTEMP model by specifying a lateral valley slope. A lateral valley slope of 5.7 degrees was applied from RK 0.00 to 25.10. In the next reach extending from RK 25.10 to 51.22, a lateral valley slope of 11.4 degrees was applied. In the most upstream reach of the SFK (RK 51.22 to 54.67), a lateral valley slope of 17.1 degrees was applied.

3.4 RIPARIAN SHADE

The height, crown measurement, and offset of the riparian vegetation for the SFK SNTEMP model were specified to be 2.0, 1.5, and 0.0 meters, respectively. Seasonal variation in riparian vegetation density was assumed to range from 40 to 60 percent.

3.5 MODEL CALIBRATION

Input to the SNTEMP model included measured average daily water temperatures in the SFK at Hydrology Gage SK100F and in Tributary SFK 1.190 at Hydrology Gage SK119A from May 17 to October 5, 2007 (Figure 25). Average daily water temperatures from lateral accretion sources (surface water and/or groundwater) were used to calibrate the SNTEMP model. Assumed water temperatures from lateral accretion sources are shown on Figure 26 for SFK reaches extending from RK 0.00 to 29.26, from RK 29.26 to 35.81, and from RK 35.81 to 54.67. The warmest assumed accretion flows were in the upstream SFK reach extending from RK 35.81 to 54.67, and the coolest assumed accretion flows were in the middle reach extending from RK 29.26 to 35.81.

Measured average daily water temperatures were compared with model predicted average daily water temperatures in the SFK at Hydrology Gages SK100A, SK100B1, and SK100C (Figures 27, 28, and 29, respectively). In general, there was perfect agreement between measured and predicted water temperatures at the most downstream hydrology gage (SK100A) and very good agreement at the Hydrology Gage SK100B1. Further upstream, there is still good agreement between measured and

predicted water temperatures at Hydrology Gage SK100C. However, the simulation of water temperatures at Hydrology Gage SK100C is complicated by the loss of flow upstream from this gage under low flow conditions.

Input files for the calibrated SNTEMP model of the SFK are provided in Attachment 7, and output files from the calibrated SNTEMP model of the SFK are provided in Attachment 8.

4. SNTEMP MODEL OF THE NORTH FORK KOKTULI RIVER

4.1 MODEL STRUCTURE AND COMPUTATIONAL TIME STEP

The overall structure of the SNTEMP model used to analyze the NFK is defined by the following 31 hydrology, stream geometry, and confluence nodes (Figure 15):

- Headwater of the NFK – RK 57.67 in NFK-F.
- Stream Geometry Node NFKSG1 – RK 55.75 in NFK-F.
- Stream Geometry Node NFKSG2 – RK 48.17 in NFK-D.
- Stream Geometry Node NFKSG3 – RK 44.77 in NFK-D.
- Stream Geometry Node NFKSG4 – RK 42.08 in NFK-D.
- Stream Geometry Node NFKSG5 – RK 41.23 in NFK-D.
- Stream Geometry Node NFKSG6 – RK 39.77 in NFK-D.
- Stream Geometry Node NFKSG7 – RK 38.55 in NFK-D.
- Hydrology Gage NK100C – RK 36.76 in NFK-D.
- Stream Geometry Node NFKSG8 – RK 36.53 in NFK-C.
- Hydrology Gage NK119A – Located on Tributary NFK 1.190, 1.84 kilometers upstream from the confluence with the NFK (RK 36.52 in NFK-C).
- Confluence of the NFK and Tributary NFK 1.190 – RK 36.52 in NFK-C.
- Hydrology Gage NK100B – RK 35.75 in NFK-C.
- Stream Geometry Node NFKSG9 – RK 35.38 in NFK-C.
- Stream Geometry Node NFKSG10 – RK 33.97 in NFK-C.
- Stream Geometry Node NFKSG11 – RK 30.99 in NFK-C.
- Stream Geometry Node NFKSG12 – RK 28.48 in NFK-C.
- Hydrology Node NK100LF3 – RK 27.93 in NFK-C.
- Stream Geometry Node NFKSG13 – RK 26.95 in NFK-C.
- Stream Geometry Node NFKSG14 – RK 24.52 in NFK-C.
- Stream Geometry Node NFKSG15 – RK 16.03 in NFK-B.

- Stream Geometry Node NFKSG16 – RK 13.83 in NFK-B.
- Hydrology Gage NK100A1 – RK 13.70 in NFK-B.
- Stream Geometry Node NFKSG17 – RK 11.57 in NFK-A.
- Stream Geometry Node NFKSG18 – RK 9.89 in NFK-A.
- Hydrology Node FRS-4 – RK 9.31 in NFK-A.
- Stream Geometry Node NFKSG19 – RK 7.56 in NFK-A.
- Stream Geometry Node NFKSG20 – RK 6.19 in NFK-A.
- Hydrology Gage NK100A – RK 5.27 in NFK-A.
- Stream Geometry Node NFKSG21 – RK 3.52 in NFK-A.
- Confluence of the NFK and SFK – RK 0.00 in NFK-A.

The time step utilized in SNTEMP must be 1 day or greater. Based on the total reach length of the NFK model of 57.67 kilometers, a time step of 1 day was selected. A travel time of 1 day would be equivalent to a travel velocity of 0.7 m/s.

4.2 HYDROLOGIC DATA

Daily flows at Hydrology Gages NK100A, NK100A1, NK100B, and NK100C are shown on Figure 30, as well as estimated flows in the NFK headwaters (RK 57.67), for the period from May 18 to October 5, 2007.

4.3 RIVER AND VALLEY MORPHOLOGY

A longitudinal profile of the NFK is shown on Figure 31. The average gradient in NFK-A, NFK-B, and NFK-C is 0.4 percent. The gradient in NFK-D is relatively mild (0.2 percent). Steeper gradients are found in NFK-E and NFK-F (0.8 percent and 6.6 percent, respectively).

The rate of heat exchange at the water surface is controlled by the wetted width of the channel. The SNTEMP model simulates wetted width as a function of flow. Channel width data were obtained from fluvial geomorphology investigations (Appendix 15.1F). The wetted widths in the NFK simulated in the SNTEMP model under relatively high (October 5, 2007) and low (August 2, 2007) flow conditions are shown on Figure 32.

The alignment of the river valley plays a role in how much shade is provided by the valley morphology. The valley alignment is specified in the SNTEMP model by using azimuth, as shown for the NFK on Figure 33. The valley is aligned in a North/South direction when the azimuth is zero, and the valley is aligned in an East/West direction when the azimuth is plus or minus 90 degrees.

The NFK receives more shade from the surrounding terrain in the upstream portions of the river and less shade in the downstream portions. This was accounted for in the SNTEMP model by specifying a lateral valley slope. A lateral valley slope of 5.7 degrees was applied from RK 0.00 to 13.83. In the next reach extending from RK 13.83 to 55.75, a lateral valley slope of 11.4 degrees was applied. In the most upstream reach extending from RK 55.75 to 57.67, a lateral valley slope of 17.1 degrees was applied.

4.4 RIPARIAN SHADE

The height, crown measurement, and offset of the riparian vegetation for the NFK SNTEMP model were specified to be 2.0, 1.5, and 0.0 meters, respectively. Seasonal variation in riparian vegetation density was assumed to range from 40 to 60 percent.

4.5 MODEL CALIBRATION

Input to the SNTEMP model included estimated average daily water temperatures in the NFK at the headwaters (RK 57.67) and measured average daily water temperatures in Tributary NFK 1.190 at Hydrology Gage NK119A from May 18 to October 5, 2007 (Figure 34). Average daily water temperatures from lateral accretion sources (surface water and/or groundwater) were used to calibrate the SNTEMP model. Assumed water temperatures from lateral accretion sources are shown on Figure 35 for NFK reaches extending from: RK 0.00 to 13.70, RK 13.70 to 35.75, RK 35.75 to 36.76, and RK 36.76 to 57.67. The warmest assumed accretion flows were in the upstream reach extending from RK 36.76 to 57.67, and the coolest assumed accretion flows were in the reach extending from RK 13.70 to 35.75.

Measured average daily water temperatures are compared with predicted average daily water temperatures in the NFK at Hydrology Gages NK100A, NK100A1, NK100B, and NK100C (Figures 36, 37, 38, and 39, respectively). There is generally good agreement between measured and predicted water temperatures at all four of these gage sites.

Input files for the calibrated SNTEMP model of the NFK are provided in Attachment 9, and output files from the calibrated SNTEMP model of the NFK are provided in Attachment 10.

5. SNTEMP MODEL OF UPPER TALARIK CREEK

5.1 MODEL STRUCTURE AND COMPUTATIONAL TIME STEP

The overall structure of the SNTEMP model used to analyze the UT was defined by of total of 30 nodes consisting of hydrology, stream geometry, and confluence nodes (Figure 16). These nodes, listed from upstream to downstream, consisted of the following:

- Headwater of the UT – RK 62.38 in UT-G.
- Hydrology Gage UT100E – RK 59.97 in UT-G.
- Stream Geometry Node UTSG1 – RK 59.66 in UT-G.
- Stream Geometry Node UTSG2 – RK 56.48 in UT-F.
- Stream Geometry NodeUTSG3 – RK 55.40 in UT-F.
- Stream Geometry Node UTSG4 – RK 51.86 in UT-F.
- Hydrology Gage UT100D – RK 51.62 in UT-F.
- Stream Geometry Node UTSG5 – RK 45.91 in UT-F.

- Hydrology Gage UT135A – Located on Tributary UT 1.350, 1.32 kilometers upstream from the confluence with the UT (RK 45.05 in UT-E).
- Confluence of the UT and Tributary UT 1.350 – RK 45.05 in UT-E.
- Hydrology Gage UT100C2 – RK 44.63 in UT-E.
- Stream Geometry Node UTSG6 – RK 38.36 in UT-E.
- Hydrology Gage UT100C1 – RK 37.64 in UT-E.
- Stream Geometry Node UTSG7 – RK 35.82 in UT-D.
- Stream Geometry Node UTSG8 – RK 32.95 in UT-D.
- Stream Geometry Node UTSG9 – RK 32.34 in UT-D.
- Hydrology Gage UT100C – RK 29.31 in UT-D.
- Stream Geometry Node UTSG10 – RK 27.15 in UT-D.
- Stream Geometry Node UTSG11 – RK 25.04 in UT-D.
- Hydrology Gage UT119A – Located on Tributary UT 1.190, 0.32 kilometers upstream from the confluence with the UT (RK 24.74 in UT-C).
- Confluence of the UT and Tributary UT 1.190 – RK 24.74 in UT-C.
- Hydrology Gage UT100B – RK 24.50 in UT-C.
- Stream Geometry Node UTSG12 – RK 20.81 in UT-C.
- Stream Geometry Node UTSG13 – RK 18.81 in UT-C.
- Stream Geometry Node UTSG14 – RK 14.60 in UT-B.
- Hydrology Gage UT100APC1 – RK 14.36 in UT-B.
- Hydrology Gage UT100APC2 – RK 9.85 in UT-B
- Stream Geometry Node UTSG15 – RK 9.12 in UT-B.
- Hydrology Gage UT100APC3 – RK 2.24 in UT-A.
- Mouth of the UT (Iliamna Lake) – RK 0.00 in UT-A.

Note: Flows at Hydrology Gages UT100APC1, UT100APC2, and UT100APC3 were estimated prior to August 20-21, 2007 when initial data collection began.

The time step utilized in the SNTEMP model must be 1 day or greater. Based on the total reach length of the model of the UT (62.38 kilometers), a time step of 1 day was selected for the model. A travel time of 1day would be equivalent to a travel velocity of 0.7 m/s.

5.2 HYDROLOGIC DATA

Daily flows at Hydrology Gages UT100B, UT100C, UT100C2, and UT100D are shown on Figure 40, as well as estimated flows in the UT at the mouth and at the headwaters, for the period from May 17 to October 5, 2007.

5.3 RIVER AND VALLEY MORPHOLOGY

A longitudinal profile of the UT is shown on Figure 41. The average gradient for UT-A through UT-F is 0.4 percent. The gradient is steeper in UT-G (1.7 percent).

The rate of heat exchange at the water surface is controlled by the wetted width of the channel. The SNTEMP model simulates wetted width as a function of flow. Channel width data were obtained from fluvial geomorphology investigations (Appendix 15.1F). The wetted widths in the UT simulated in the SNTEMP model under relatively high (October 5, 2007) and low (August 1, 2007) flow conditions are shown on Figure 42.

The alignment of the river valley plays a role in how much shade is provided by the valley morphology. The valley alignment is specified in the SNTEMP model by using azimuth, as shown for the UT on Figure 43. The valley is aligned in a North/South direction when the azimuth is zero, and the valley is aligned in an East/West direction when the azimuth is plus or minus 90 degrees.

The UT receives more shade from the surrounding terrain in the upstream portions of the river and less shade in the downstream portions. This was accounted for in the SNTEMP model by specifying a lateral valley slope. A lateral valley slope of 5.7 degrees was applied from RK 0.00 to 16.81. In the next reach extending from RK 16.81 to 59.13, a lateral valley slope of 11.4 degrees was applied. In the most upstream UT reach (RK 59.13 to 62.38), a lateral valley slope of 17.1 degrees was applied.

5.4 RIPARIAN SHADE

The riparian community in the downstream portion of the UT (RK 0.00 through RK 16.81) consists of a mix of willows and trees. In this portion of the UT, the height, crown measurement, and offset of the riparian vegetation were specified to be 4.0, 3.0, and 0.5 meters, respectively. Seasonal variation in riparian vegetation density was assumed to range from 40 to 60 percent.

The riparian community in the upstream portion of the UT (RK 16.81 through RK 62.38) consists primarily of willows. In this portion of the UT, the height, crown measurement, and offset of the riparian vegetation were specified to be 2.0, 1.5, and 0.0 meters, respectively. Seasonal variation in riparian vegetation density was assumed to range from 40 to 60 percent.

5.5 MODEL CALIBRATION

Input to the SNTEMP model included estimated average daily water temperatures in the UT at the headwaters (RK 62.38), and measured average daily water temperatures in Tributary UT 1.350 at Hydrology Gage UT135A and in Tributary UT 1.190 at Hydrology Gage UT119A from May 17 to October 5, 2007 (Figure 44). Average daily water temperatures from lateral accretion sources (surface water and/or groundwater) were used to calibrate the SNTEMP model. Assumed water temperatures from lateral accretion sources are shown on Figure 45 for reaches extending from: RK 0.00 to 29.31, RK 29.31 to 44.63, RK 44.63 to 51.62, and RK 51.62 to 62.38.

Measured average daily water temperatures were compared with predicted average daily water temperatures in the UT at Hydrology Gages UT100B, UT100C, UT100C2, and UT100D (Figures 46, 47,

48, and 49, respectively). There is generally good agreement between measured and predicted water temperatures at all four of the gage sites.

Input files for the calibrated SNTEMP model of the UT are provided in Attachment 11, and output files from the calibrated SNTEMP model of the UT are provided in Attachment 12.

6. WATER TEMPERATURES AT THE UPSTREAM END OF THE KOKTULI RIVER

A stream temperature model was not developed for the KR because water temperatures were not monitored in the KR; therefore, there were no data available for calibrating a model of the KR. Stream temperatures at the upstream end of the Koktuli River were estimated by combining the flows and water temperatures from the downstream ends of the SFK and NFK, and performing a simple mixing calculation.

Results of this calculation are shown on Figure 50. There is generally more flow in the NFK than there is in the SFK at the confluence, so the estimated water temperatures in the KR are closer to the water temperatures in the NFK than they are to water temperatures in the SFK.

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8. GLOSSARY

Accretion flow – the addition of flow to a river from surface water (tributaries) or groundwater sources.

Azimuth – a compass direction measured by an angle with respect to the north/south alignment. A valley aligned in the north/south direction would have an azimuth of zero degrees. The azimuth increases in the clockwise direction, and decreases in the counter-clockwise direction. Thus, a valley with a northeast/southwest alignment would have an azimuth of 45 degrees while a valley with a northwest/southeast alignment would have an azimuth of -45 degrees.

Orographic - of or pertaining to the effects of mountains on weather. In particular, air temperature and barometric pressure generally decrease with increasing elevation.

TABLES

TABLE 1
Monthly Average Water Temperatures from 15 Different Temperature Monitors in the SFK Basin, 2004 through 2009

Reach		SFK-E	SFK-D		SFK-C			SFK-B						SFK-A		
Monitor		SK100G	SK100F	SFK7WT	SFK6WT	SK100C	SFK5WT	SK119A	SFK119WT	SK100B1	SFK4WT	SK100B	SFK3WT	SFK2WT	SK100A	SFK1WT
River Kilometer		58.01	54.67	54.67	40.94	35.81	35.81	34.28	34.28	29.26	29.23	24.90	24.90	13.93	0.11	0.10
Date		Water Temperature (degrees Celsius)														
2004	Aug	14.0	16.0	—	—	—	—	11.3	—	—	—	—	—	—	12.3	—
	Sep	6.6	6.9	—	—	—	—	5.8	—	—	—	—	—	—	6.6	—
2005	May	5.9	—	—	—	—	—	2.1	—	—	—	—	—	—	6.0	—
	Jun	12.5	11.1	—	—	12.0	—	7.7	—	—	—	—	—	—	11.0	—
	Jul	13.8	13.0	—	—	14.3	—	10.1	—	—	—	—	—	—	12.6	—
	Aug	13.0	14.1	—	—	—	—	9.9	—	—	—	—	—	—	11.6	—
	Sep	8.2	8.1	—	—	8.1	—	6.5	—	—	—	—	—	—	—	—
2006	May	—	—	—	—	—	—	—	—	—	—	—	—	—	3.3	—
	Jun	9.3	9.7	—	—	—	—	5.2	—	—	—	—	—	—	8.6	—
	Jul	12.3	12.5	—	—	13.7	—	8.7	—	—	—	9.4	—	—	11.0	—
	Aug	10.3	10.7	—	—	10.5	—	7.3	—	7.7	—	8.3	—	—	9.3	—
	Sep	8.2	8.4	—	—	8.1	—	6.3	—	6.6	—	6.9	—	—	7.6	—
	Oct	3.6	3.3	—	—	3.5	—	3.4	—	3.5	—	3.5	—	—	—	—
	Nov	—	—	—	—	—	—	—	—	—	—	0.0	—	—	—	—
	Dec	—	—	—	—	—	—	—	—	—	—	0.1	—	—	—	—

Reach		SFK-E	SFK-D		SFK-C			SFK-B						SFK-A		
Monitor		SK100G	SK100F	SFK7WT	SFK6WT	SK100C	SFK5WT	SK119A	SFK119WT	SK100B1	SFK4WT	SK100B	SFK3WT	SFK2WT	SK100A	SFK1WT
River Kilometer		58.01	54.67	54.67	40.94	35.81	35.81	34.28	34.28	29.26	29.23	24.90	24.90	13.93	0.11	0.10
Date		Water Temperature (degrees Celsius)														
2007	Jan	—	—	—	—	—	—	—	—	—	—	0.0	—	—	—	—
	Feb	—	—	—	—	—	—	—	—	—	—	0.7	—	—	—	—
	Mar	—	—	—	—	—	—	—	—	—	—	0.1	—	—	—	—
	Apr	—	—	—	—	—	—	—	—	—	—	1.3	—	—	—	—
	May	—	—	—	—	—	—	—	—	3.5	—	4.0	—	—	5.5	—
	Jun	9.8	9.7	—	—	12.0	—	6.6	—	7.2	—	8.2	—	—	9.6	—
	Jul	12.5	14.3	—	—	—	—	8.9	—	7.2	—	8.8	—	—	11.3	—
	Aug	11.7	13.2	—	—	—	—	8.9	—	7.6	—	8.7	—	—	11.2	—
	Sep	8.1	8.2	—	—	—	—	6.6	6.9	6.7	6.9	6.8	—	7.9	8.1	—
	Oct	—	—	—	—	—	—	—	2.8	—	2.7	2.2	—	2.4	—	—
	Nov	—	—	—	—	—	—	—	1.7	—	1.5	—	—	1.0	—	—
	Dec	—	—	—	—	—	—	—	1.2	—	0.7	—	—	—	—	—
2008	Jan	—	—	—	—	—	—	—	0.9	—	0.3	0.0	—	—	—	—
	Feb	—	—	—	—	—	—	—	—	—	0.5	0.0	—	—	—	—
	Mar	—	—	—	—	—	—	—	—	—	1.1	0.0	—	—	—	—
	Apr	—	—	—	—	—	—	—	—	—	1.7	1.1	—	—	—	—
	May	—	—	—	—	—	—	—	0.7	—	—	2.4	—	—	—	—
	Jun	—	—	—	—	—	—	—	4.0	—	—	6.8	—	—	—	—
	Jul	—	—	—	—	—	—	—	7.7	—	—	8.8	—	—	—	—
	Aug	—	—	—	11.9	—	—	—	9.2	—	7.3	8.8	—	10.3	—	11.0
	Sep	—	—	—	7.7	—	—	—	—	—	5.8	6.2	—	7.1	—	7.4
	Oct	—	—	—	1.0	—	—	—	—	—	1.5	—	—	1.2	—	1.3
	Nov	—	—	0.3	0.1	—	0.1	—	—	—	0.7	—	—	—	—	0.2
	Dec	—	—	0.2	0.1	—	0.1	—	—	—	0.9	—	—	0.3	—	0.2

Reach		SFK-E	SFK-D		SFK-C			SFK-B						SFK-A		
Monitor		SK100G	SK100F	SFK7WT	SFK6WT	SK100C	SFK5WT	SK119A	SFK119WT	SK100B1	SFK4WT	SK100B	SFK3WT	SFK2WT	SK100A	SFK1WT
River Kilometer		58.01	54.67	54.67	40.94	35.81	35.81	34.28	34.28	29.26	29.23	24.90	24.90	13.93	0.11	0.10
Date		Water Temperature (degrees Celsius)														
2009	Jan	—	—	0.2	—	—	—	—	—	—	0.6	—	0.2	—	—	0.1
	Feb	—	—	0.2	—	—	—	—	—	—	—	—	0.8	—	—	0.1
	Mar	—	—	0.2	—	—	0.2	—	—	—	—	—	0.7	—	—	0.1
	Apr	—	—	0.2	—	—	0.3	—	—	—	0.9	—	0.3	0.1	—	0.3
	May	—	—	3.2	2.1	—	2.2	—	—	—	2.5	—	2.4	2.8	—	3.7
	Jun	—	—	9.4	9.3	—	8.8	—	—	—	7.1	—	—	8.2	—	8.8
	Jul	—	—	12.8	13.0	—	12.6	—	—	—	9.0	—	—	11.8	—	12.1
	Aug	—	—	11.5	10.9	—	11.1	—	—	—	8.0	—	—	9.7	—	10.3

Note:

— = Not available.

There are several reasons for missing data gaps. Hydrology gages (which are also used to measure temperature) are normally removed prior to winter freeze up, and reinstalled after the ice melts. Missing data gaps at other locations occurred when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.

TABLE 2
Monthly Average Water Temperatures from 14 Different Temperature Monitors in the SFK Basin, 2004 through 2009

Reach		NFK-E	NFK-D			NFK-C				NFK-B			NFK-A		
Monitor		NFK9WT	NFK8WT	NFK7WT	NK100C	NK119A	NFK119WT	NK100B	NFK5WT	NFK4WT	NFK3WT	NK100A1	NK100A	NFK2WT	NFK1WT
River Kilometer		51.39	44.54	36.87	36.76	36.52	36.52	35.76	33.44	19.94	15.41	13.70	5.27	5.27	0.29
Date		Water Temperature (degrees Celsius)													
2004	Aug	—	—	—	14.7	11.2	—	—	—	—	—	—	—	—	—
	Sep	—	—	—	6.7	5.3	—	—	—	—	—	—	—	—	—
2005	Jun	—	—	—	12.3	7.9	—	—	—	—	—	—	10.3	—	—
	Jul	—	—	—	14.3	10.1	—	—	—	—	—	—	12.4	—	—
	Aug	—	—	—	—	10.1	—	—	—	—	—	—	11.8	—	—
	Sep	—	—	—	—	6.6	—	—	—	—	—	—	7.8	—	—
2006	Jun	—	—	—	9.7	5.3	—	—	—	—	—	—	—	—	—
	Jul	—	—	—	13.2	8.9	—	—	—	—	—	—	—	—	—
	Aug	—	—	—	10.4	7.7	—	—	—	—	—	—	—	—	—
	Sep	—	—	—	8.1	6.3	—	—	—	—	—	—	—	—	—
	Oct	—	—	—	3.3	3.1	—	—	—	—	—	—	—	—	—
2007	May	—	—	—	—	1.1	—	—	—	—	—	—	—	—	—
	Jun	—	—	—	11.2	5.8	—	9.0	—	—	—	8.6	8.9	—	—
	Jul	—	—	—	13.7	8.9	—	12.0	—	—	—	9.9	11.2	—	—
	Aug	—	—	—	12.8	9.0	—	11.6	—	—	—	10.1	11.3	—	—
	Sep	6.2	8.8	8.9	8.6	6.7	—	7.9	8.2	—	—	7.5	7.9	—	—
	Oct	1.3	1.5	1.6	—	—	—	—	1.7	—	—	—	2.0	—	—
	Nov	0.2	0.5	0.4	—	—	—	—	0.6	—	—	—	0.7	—	—
	Dec	0.2	0.2	0.2	—	—	—	—	0.3	—	—	—	0.0	—	—

Reach		NFK-E	NFK-D			NFK-C				NFK-B			NFK-A		
Monitor		NFK9WT	NFK8WT	NFK7WT	NK100C	NK119A	NFK119WT	NK100B	NFK5WT	NFK4WT	NFK3WT	NK100A1	NK100A	NFK2WT	NFK1WT
River Kilometer		51.39	44.54	36.87	36.76	36.52	36.52	35.76	33.44	19.94	15.41	13.70	5.27	5.27	0.29
Date		Water Temperature (degrees Celsius)													
2008	Jan	0.4	0.0	0.2	—	—	0.0	—	0.2	—	—	—	—	—	—
	Feb	0.8	0.0	0.2	—	—	0.2	—	0.2	—	—	—	0.0	—	—
	Mar	0.8	0.0	0.2	—	—	0.3	—	0.2	—	—	—	0.0	—	—
	Apr	0.7	0.0	0.2	—	—	0.3	—	0.2	—	—	—	0.0	—	—
	May	—	1.2	—	—	—	0.5	—	—	—	—	—	1.4	—	—
	Jun	—	8.5	—	—	—	4.9	—	—	—	—	—	6.8	—	—
	Jul	—	11.2	—	—	—	8.2	—	—	—	—	—	9.6	—	—
	Aug	7.5	12.9	—	—	—	8.9	—	—	8.8	—	—	10.8	—	8.9
	Sep	5.7	—	—	—	—	6.4	—	—	6.5	—	—	7.3	—	6.9
	Oct	1.1	—	—	—	—	0.9	—	—	1.3	—	—	—	—	2.4
	Nov	0.4	0.2	—	—	—	0.1	—	0.1	0.3	0.1	—	—	0.1	—
	Dec	0.4	0.1	—	—	—	—	—	0.1	0.1	0.0	—	—	0.1	—
2009	Jan	0.4	0.0	—	—	—	—	—	0.1	0.1	0.0	—	—	0.1	—
	Feb	0.5	0.0	—	—	—	—	—	0.1	0.0	0.0	—	—	0.0	—
	Mar	0.9	0.0	—	—	—	—	—	0.1	0.0	0.0	—	—	0.0	—
	Apr	0.8	0.0	—	—	—	—	—	0.1	0.2	0.0	—	—	0.1	1.3
	May	1.9	3.1	—	—	—	—	—	2.2	2.7	2.4	—	—	2.7	2.9
	Jun	5.4	10.3	—	—	—	—	—	8.9	7.4	7.4	—	—	8.3	7.7
	Jul	—	14.9	—	—	—	—	—	13.4	9.8	11.4	—	—	12.2	10.3
	Aug	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note:

— = Not available.There are several reasons for missing data gaps. Hydrology gages (which are also used to measure temperature) are normally removed prior to winter freeze up, and reinstalled after the ice melts. Missing data gaps at other locations occurred when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.

TABLE 3
Monthly Average Water Temperatures from 19 Different Temperature Monitors in the UT Basin, 2004 through 2009

Reach		UT-G	UT-F		UT-E							UT-D		UT-C					UT-B	UT-A
Monitor		UT100E	UT100D	UT8WT	UT135A	UT135AWT	UT135BWT	UT100C2	UT7WT	UT100C1	UT6WT	UT5WT	UT100C	UT119A	UT119WT	UT100B	UT4WT	UT3WT	UT2WT	UT1WT
River Kilometer		59.97	51.62	51.62	45.05	45.05	45.05	44.63	43.29	37.64	37.16	29.33	29.31	24.74	24.74	24.50	24.38	17.23	9.90	2.22
Date		Water Temperature (degrees Celsius)																		
2004	Aug	5.9	13.1	—	—	—	—	—	—	—	—	—	—	5.7	—	—	—	—	—	—
	Sep	4.0	6.2	—	—	—	—	—	—	—	—	—	—	4.2	—	—	—	—	—	—
2005	Apr	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.0	—	—	—	—
	May	3.8	—	—	—	—	—	—	—	—	—	—	—	5.0	—	6.2	—	—	—	—
	Jun	5.9	10.7	—	—	—	—	—	—	—	—	—	—	6.0	—	9.6	—	—	—	—
	Jul	6.3	12.5	—	—	—	—	—	—	—	—	—	—	6.1	—	10.4	—	—	—	—
	Aug	6.0	12.0	—	—	—	—	—	—	—	—	—	—	5.8	—	9.6	—	—	—	—
	Sep	5.6	7.3	—	—	—	—	—	—	—	—	—	—	5.2	—	7.5	—	—	—	—
	Oct	—	—	—	—	—	—	—	—	—	—	—	—	3.3	—	—	—	—	—	—
2006	May	2.3	—	—	—	—	—	—	—	—	—	—	—	4.0	—	—	—	—	—	—
	Jun	5.1	7.5	—	—	—	—	—	—	—	—	—	—	5.2	—	—	—	—	—	—
	Jul	5.8	10.4	—	—	—	—	—	—	—	—	—	—	5.5	—	9.4	—	—	—	—
	Aug	6.0	8.5	—	—	—	—	—	—	—	—	—	—	5.2	—	8.4	—	—	—	—
	Sep	4.9	6.7	—	—	—	—	—	—	—	—	—	—	4.8	—	7.0	—	—	—	—
	Oct	3.3	3.2	—	—	—	—	—	—	—	—	—	—	3.6	—	3.7	—	—	—	—
	Nov	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Dec	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.3	—	—	—	—

Reach		UT-G	UT-F		UT-E							UT-D		UT-C					UT-B	UT-A
Monitor		UT100E	UT100D	UT8WT	UT135A	UT135AWT	UT135BWT	UT100C2	UT7WT	UT100C1	UT6WT	UT5WT	UT100C	UT119A	UT119WT	UT100B	UT4WT	UT3WT	UT2WT	UT1WT
River Kilometer		59.97	51.62	51.62	45.05	45.05	45.05	44.63	43.29	37.64	37.16	29.33	29.31	24.74	24.74	24.50	24.38	17.23	9.90	2.22
Date		Water Temperature (degrees Celsius)																		
2007	Jan	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.5	—	—	—	—
	Feb	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.6	—	—	—	—
	Mar	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.3	—	—	—	—
	Apr	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.4	—	—	—	—
	May	3.4	—	—	—	—	—	—	—	—	—	—	5.2	4.5	—	5.3	—	—	—	—
	Jun	5.3	8.7	—	9.4	—	—	8.0	—	9.2	—	—	8.8	5.4	—	8.1	—	—	—	—
	Jul	5.6	10.6	—	11.7	—	—	9.9	—	11.3	—	—	10.5	5.4	—	9.1	—	—	—	—
	Aug	5.6	10.6	—	11.6	—	—	8.7	—	11.2	—	—	10.5	5.4	—	9.1	—	—	—	—
	Sep	5.3	7.1	—	8.1	—	8.3	5.7	—	7.7	—	7.9	7.6	4.9	—	7.2	7.9	7.8	—	8.2
	Oct	—	—	—	—	—	1.7	—	—	—	—	2.1	—	—	—	2.3	2.2	2.6	—	2.7
	Nov	—	—	—	—	—	0.5	—	—	—	—	0.7	—	—	—	0.9	0.7	1.1	—	1.1
	Dec	—	—	—	—	—	0.3	—	—	—	—	0.9	—	—	—	0.4	—	0.4	—	—
2008	Jan	—	—	—	—	—	0.2	—	—	—	—	—	—	—	1.4	0.2	—	0.2	—	—
	Feb	—	—	—	—	—	0.2	—	—	—	—	0.3	—	—	1.7	0.4	—	0.2	—	—
	Mar	—	—	—	—	—	0.2	—	—	—	—	0.4	—	—	2.4	0.9	—	0.5	—	—
	Apr	—	—	—	—	—	0.2	—	—	—	—	1.6	—	—	2.8	1.7	—	2.2	—	—
	May	—	—	—	—	—	—	—	—	—	—	—	—	—	4.0	3.4	—	3.9	—	—
	Jun	—	—	—	—	—	—	—	—	—	—	—	—	—	5.2	7.5	—	8.5	—	—
	Jul	—	—	—	—	—	—	—	—	—	—	—	—	—	5.3	8.7	—	10.2	—	—
	Aug	—	—	—	—	12.1	12.2	—	—	—	—	10.0	—	—	5.1	8.6	8.0	10.2	10.6	—
	Sep	—	—	—	—	7.6	7.7	—	—	—	—	7.1	—	—	—	6.6	6.6	—	—	—

Reach		UT-G	UT-F		UT-E							UT-D		UT-C					UT-B	UT-A
Monitor		UT100E	UT100D	UT8WT	UT135A	UT135AWT	UT135BWT	UT100C2	UT7WT	UT100C1	UT6WT	UT5WT	UT100C	UT119A	UT119WT	UT100B	UT4WT	UT3WT	UT2WT	UT1WT
River Kilometer		59.97	51.62	51.62	45.05	45.05	45.05	44.63	43.29	37.64	37.16	29.33	29.31	24.74	24.74	24.50	24.38	17.23	9.90	2.22
Date		Water Temperature (degrees Celsius)																		
2009	Oct	—	—	—	—	1.0	1.1	—	—	—	—	1.2	—	—	—	—	—	—	—	—
	Nov	—	—	0.2	—	0.0	0.2	—	0.0	—	0.3	0.1	—	—	1.8	—	—	0.4	—	0.3
	Dec	—	—	0.2	—	0.0	—	—	0.0	—	0.3	0.0	—	—	1.8	—	—	0.2	—	0.2
2010	Jan	—	—	0.2	—	0.1	—	—	0.0	—	0.3	0.0	—	—	1.7	—	—	0.2	—	0.2
	Feb	—	—	0.2	—	0.0	—	—	0.0	—	0.2	—	—	—	1.7	—	—	0.2	—	0.2
	Mar	—	—	0.2	—	0.0	—	—	0.0	—	0.3	0.0	—	—	1.8	—	—	0.2	—	0.2
	Apr	—	—	0.2	—	0.0	—	—	0.0	—	0.4	0.1	—	—	3.0	—	—	0.8	—	0.3
	May	—	—	3.0	—	4.0	—	—	3.3	—	3.7	3.5	—	—	3.8	—	—	3.9	—	4.8
	Jun	—	—	8.0	—	9.4	—	—	8.6	—	9.0	8.4	—	—	5.2	—	—	8.6	—	9.4
	Jul	—	—	12.0	—	14.1	—	—	12.6	—	12.8	11.4	—	—	5.7	—	—	11.4	—	12.3
	Aug	—	—	9.8	—	11.8	—	—	10.6	—	10.9	—	—	—	—	—	—	—	—	—

Note:

— = Not available.

There are several reasons for missing data gaps. Hydrology gages (which are also used to measure temperature) are normally removed prior to winter freeze up, and reinstalled after the ice melts. Missing data gaps at other locations occurred when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.

FIGURES

156°20'0"W
156°0'0"W
155°40'0"W
155°20'0"W
155°0'0"W
60°0'0"N
59°50'0"N
59°40'0"N

Swan River
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
Talarik Creek
First Creek
Kaskanak Creek
Newhalen River
Iliamna Lake
Big Wiggly Lake
Frying Pan Lake
Chiquita Lake
Lake #2
Groundhog Mountain
Kaskanak Mountain
Koktuli Mountain
Sharp Mountain

NFK-A
NFK-B
NFK-C
NFK-D
NFK-E
NFK-F
SFK-A
SFK-B
SFK-C
SFK-D
SFK-E
UT-A
UT-B
UT-C
UT-D
UT-E
UT-F
UT-G

Pebble 1
Pebble 3
Pebble 4
Pebble 5
Pebble 5A
Pebble 6

Nondalton
Iliamna
Newhalen

Legend

- ▲ Meteorological Station and Name (Pebble 1)
- UT-A Mainstem Reach Example
- Watershed Boundary
- General Deposit Location

N W E S

THE pebble PARTNERSHIP

Figure 1
Instream Flow Study Area, Including the KR, SFK, NFK, and UT, and Pebble Project Meteorological Station Locations

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N 59°50'0"N 59°45'0"N

Koktuli River

North Fork Koktuli River

Kaskanak Mountain

SFK 1.340

SFK 1.240

SFK 1.310

Frying Pan Lake

Koktuli Mountain

SK100G

SFK-E

SK100F, SFK7WT

SFK-D

SFK 1.190

SK119A

SK100A, SFK1WT

SK100B1, SFK4WT

Koktuli River

SK100C, SFK5WT

SFK-C

SFK119WT

SFK6WT

SFK2WT

SFK-A

South Fork Koktuli River

SFK-B

SK100B, SFK3WT

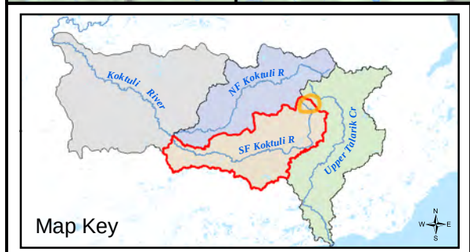
SFK 1.20

Sharp Mountain

SFK 1.130

Chiquita Lake

Kaskanak Creek



Map Key

Legend

- Stream Temperature Monitoring Site and Name (SK100A)
- SFK-A Mainstem Reach Example
- SFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

N W E S

THE pebble PARTNERSHIP

Figure 2
SFK Reaches and Stream Temperature Monitoring Sites

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

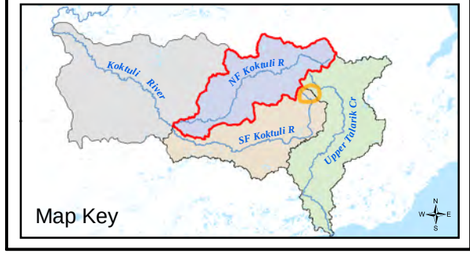
Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W
155°40'0"W
155°30'0"W
155°20'0"W
155°10'0"W
60°0'0"N
59°55'0"N
59°50'0"N

Black Lake
"Cone (Black) Mountain"
Groundhog Mountain
NFK 1.120
NFK 1.170
NFK 1.180
NFK 1.260
NFK 1.270
NFK 1.300
NFK 1.240
NFK 1.40
NFK 1.190
NFK9WT
NFK-E
NFK-F
NFK8WT
NFK-D
Big Wiggly Lake
(NFK 1.240.P1)
NFK5WT
NK100B
NFK7WT
NK100C
NFK119WT
NK119A
NFK-C
Koktuli River
NFK4WT
NFK-B
North Fork Koktuli River
NFK3WT
NK100A1
NK100A, NFK2WT
NFK-A
NFK1WT
Koktuli River
South Fork Koktuli River
Kaskanak Mountain
Frying Pan Lake
Koktuli Mountain
Upper Talarik Creek



Legend

- Stream Temperature Monitoring Site and Name (NK100A)
- NFK-A Mainstem Reach Example
- NFK 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

THE pebble PARTNERSHIP

Figure 3
NFK Reaches and Stream Temperature Monitoring Sites

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain

Nondalton

Big Wiggly Lake

UT 1.390

UT-G

UT100E

UT100D, UT8WT

UT-F

UT 1.410

UT 1.350

UT135A, UT135BWT

UT100C2

UT135AWT

UT7WT

UT-E

Kaskanak Mountain

Frying Pan Lake

Koktuli Mountain

UT100C1

UT6WT

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Talarik Creek

UT-D

UT 1.190

UT100C, UT5WT

UT 1.60

Sharp Mountain

UT119A, UT119WT

UT100B UT4WT

UT-C

Roadhouse Mountain

Chiquita Lake

Upper Talarik Creek

UT3WT

First Creek

Newhalen River

Iliamna

Kaskanak Creek

Lake #2

UT2WT

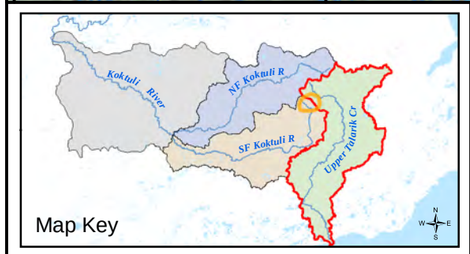
UT-B

Newhalen

UT-A

UT1WT

Iliamna Lake



Map Key

Legend

- Stream Temperature Monitoring Site and Name (UT100B)
- UT-A Mainstem Reach Example
- UT 1.190 Tributary Name Example
- Watershed Boundary
- General Deposit Location

N W E S

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Figure 4
UT Reaches and Stream Temperature Monitoring Sites

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

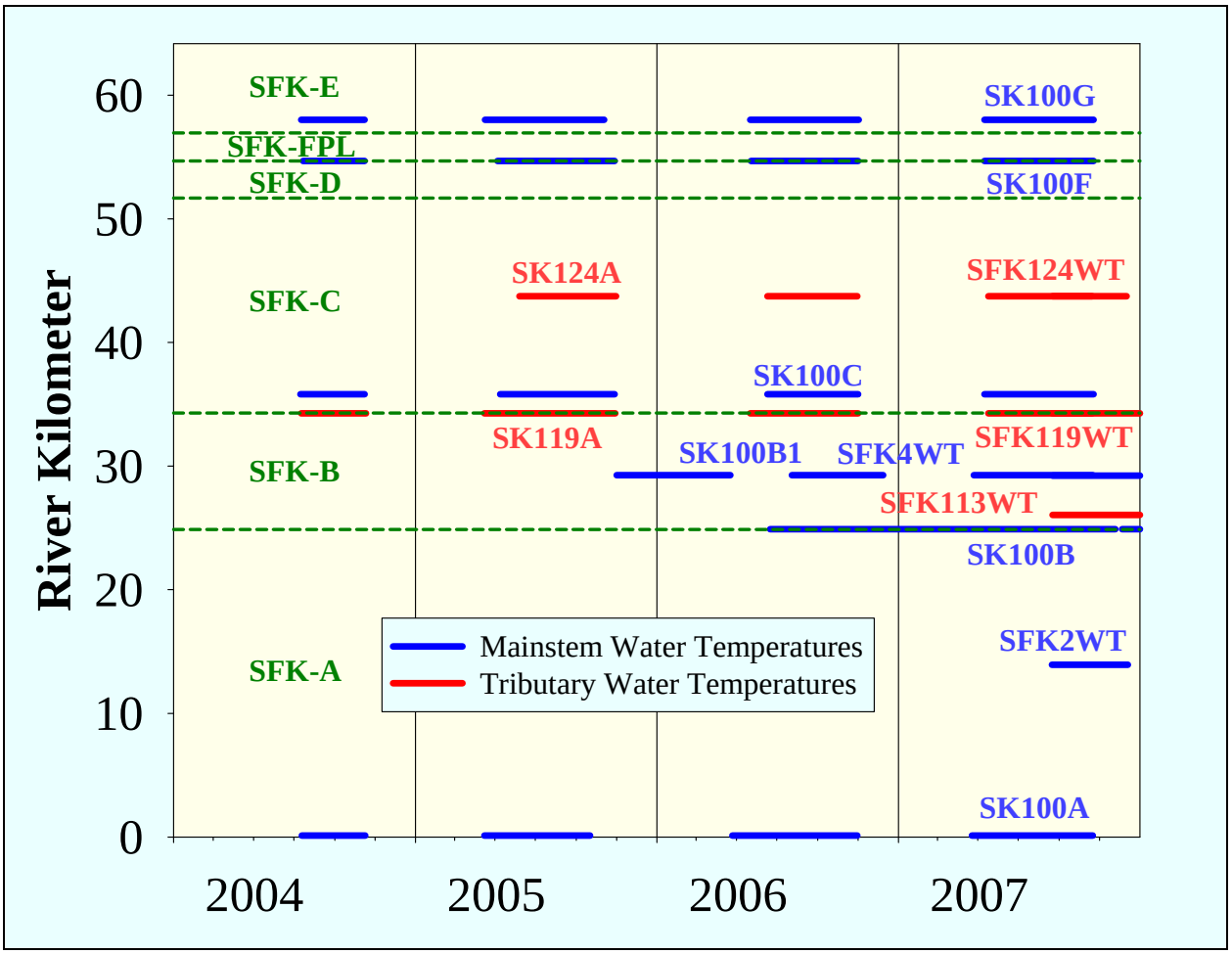

FIGURE 5
Spatial and Temporal Inventory of Water Temperature Records in the SFK and Tributaries, 2004 through 2007

Note: Records shown for SFK-A, SFK-B, SFK-C, SFK-D, and SFK-E.

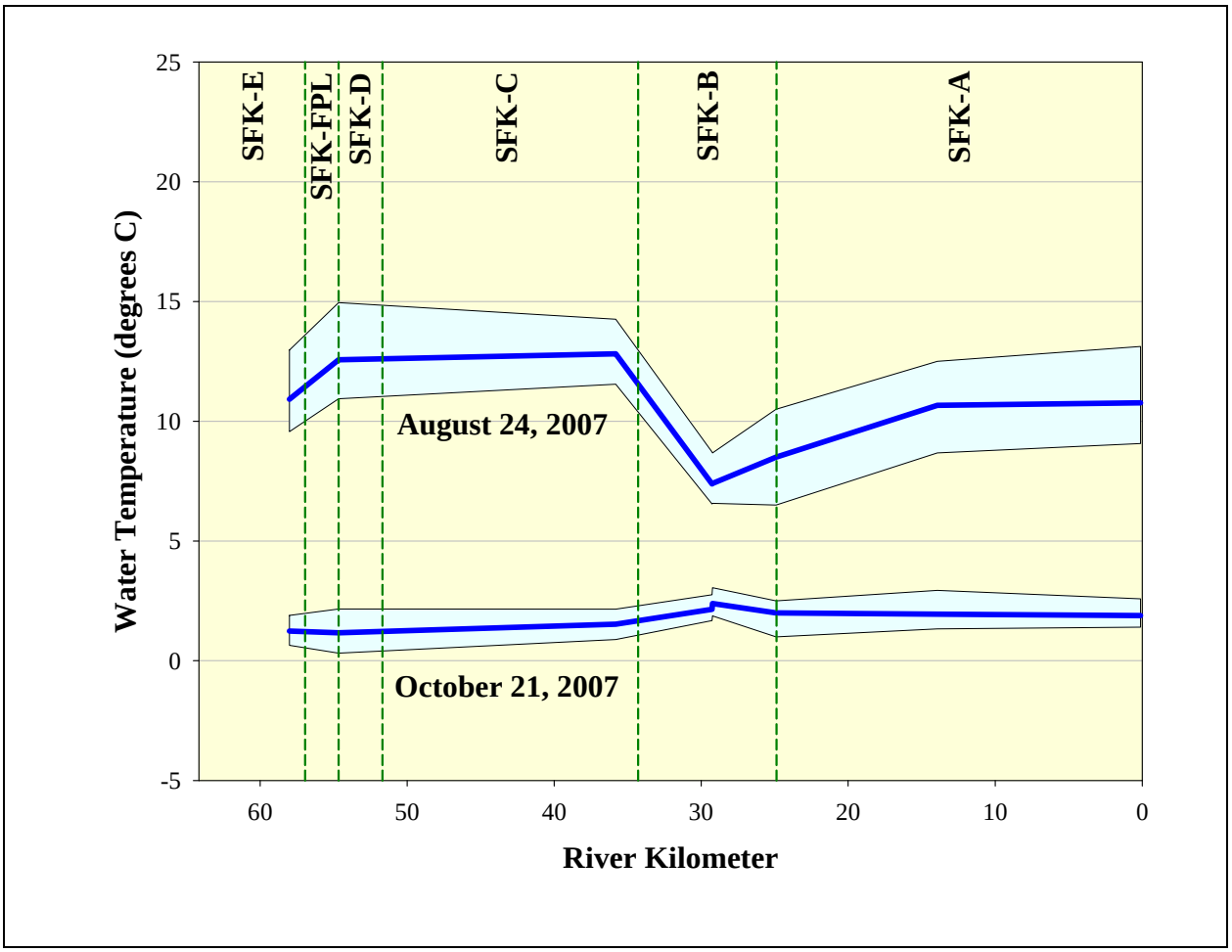

FIGURE 6
Longitudinal Trends of Maximum Instantaneous, Daily Average, and Minimum Instantaneous Water Temperatures in the SFK on August 24 and October 21, 2007

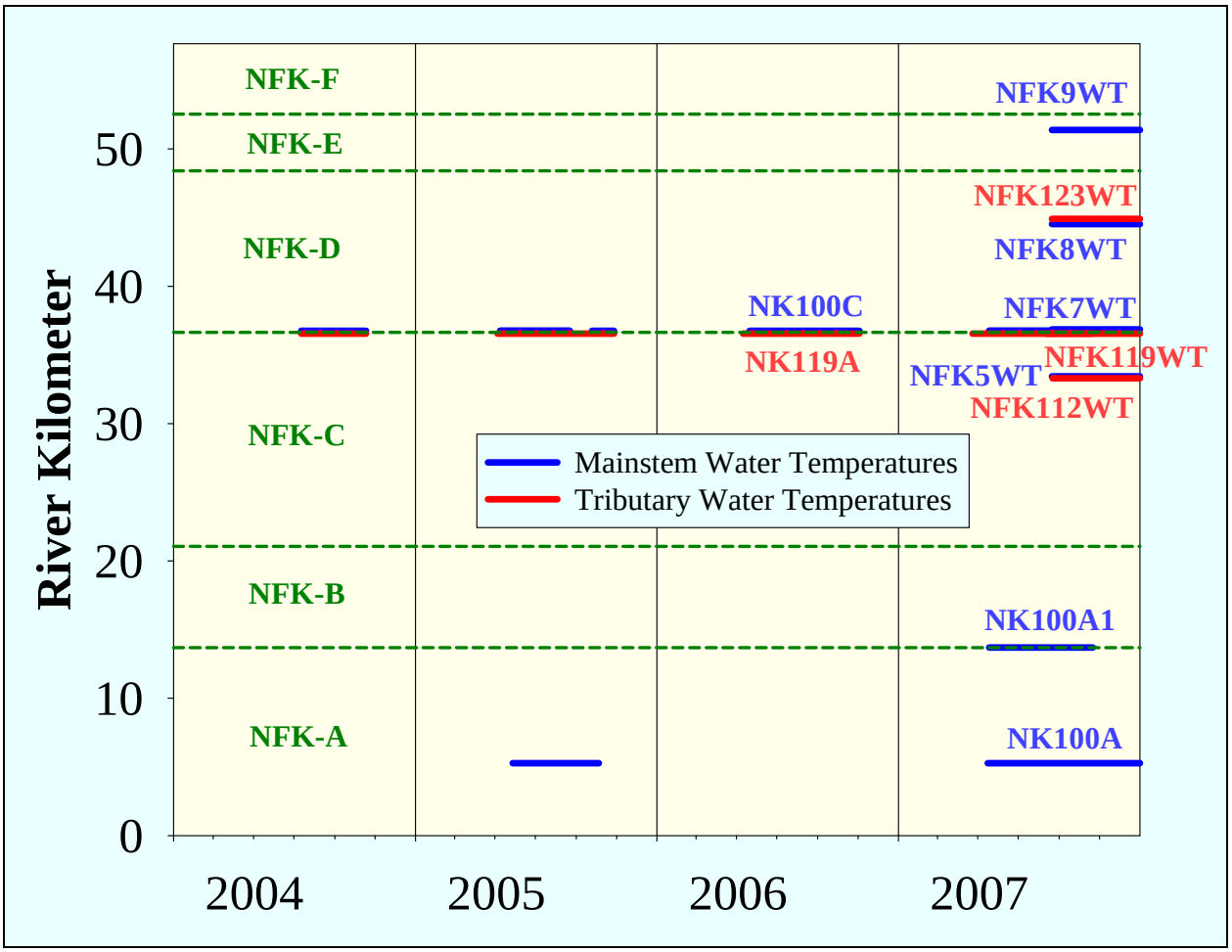

FIGURE 7
Spatial and Temporal Inventory of Water Temperature Records in the NFK and Tributaries , 2004 through 2007

Note: Records shown for NFK-A, NFK-B, NFK-C, NFK-D, and NFK-E.

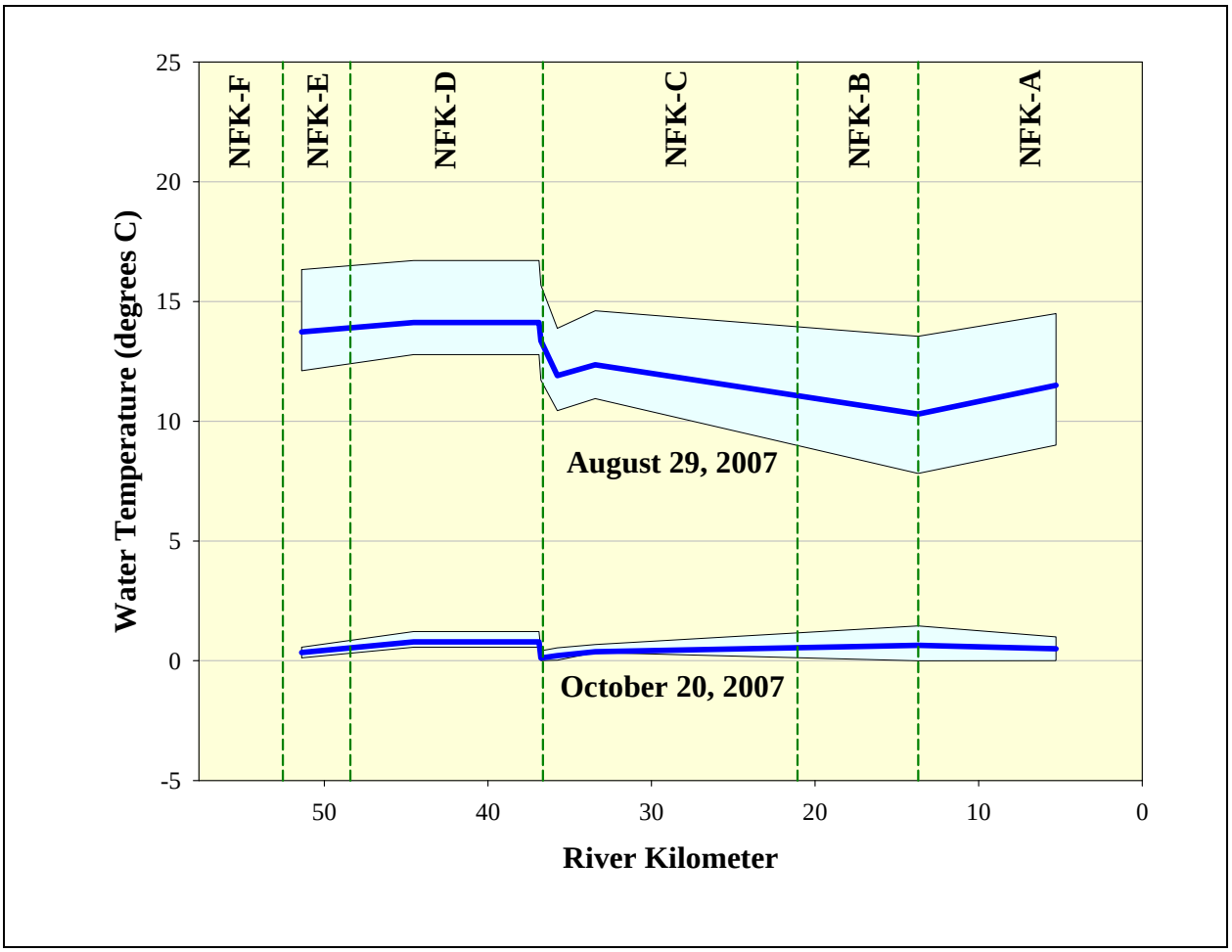

FIGURE 8
Longitudinal Trends of Maximum Instantaneous, Daily Average, and Minimum Instantaneous Water Temperatures in the NFK on August 29 and October 20, 2007

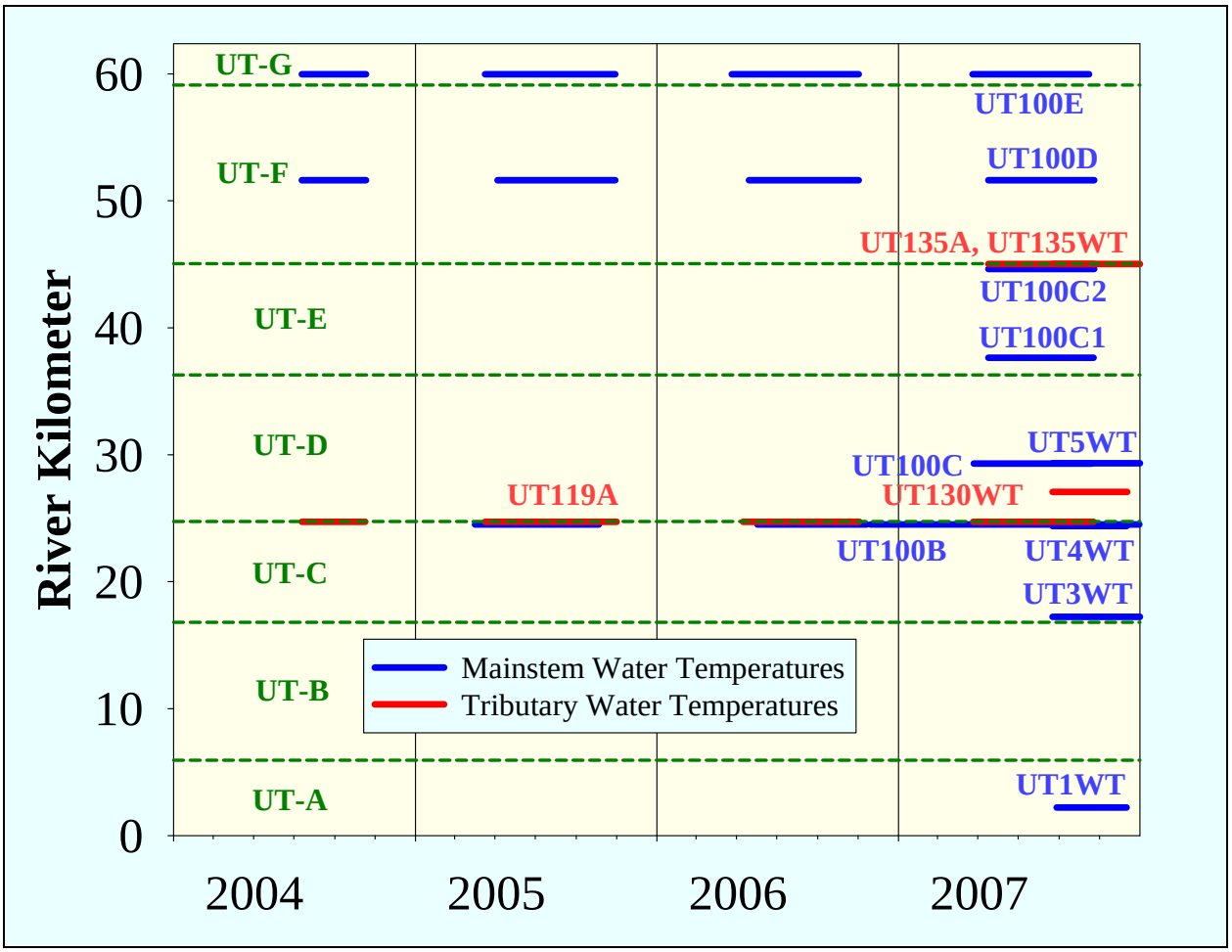

FIGURE 9
Spatial and Temporal Inventory of Water Temperature Records in the UT and Tributaries, 2004 through 2007

Note: Records are shown for UT-A, UT-C, UT-D, UT-E, UT-F and UT-G.

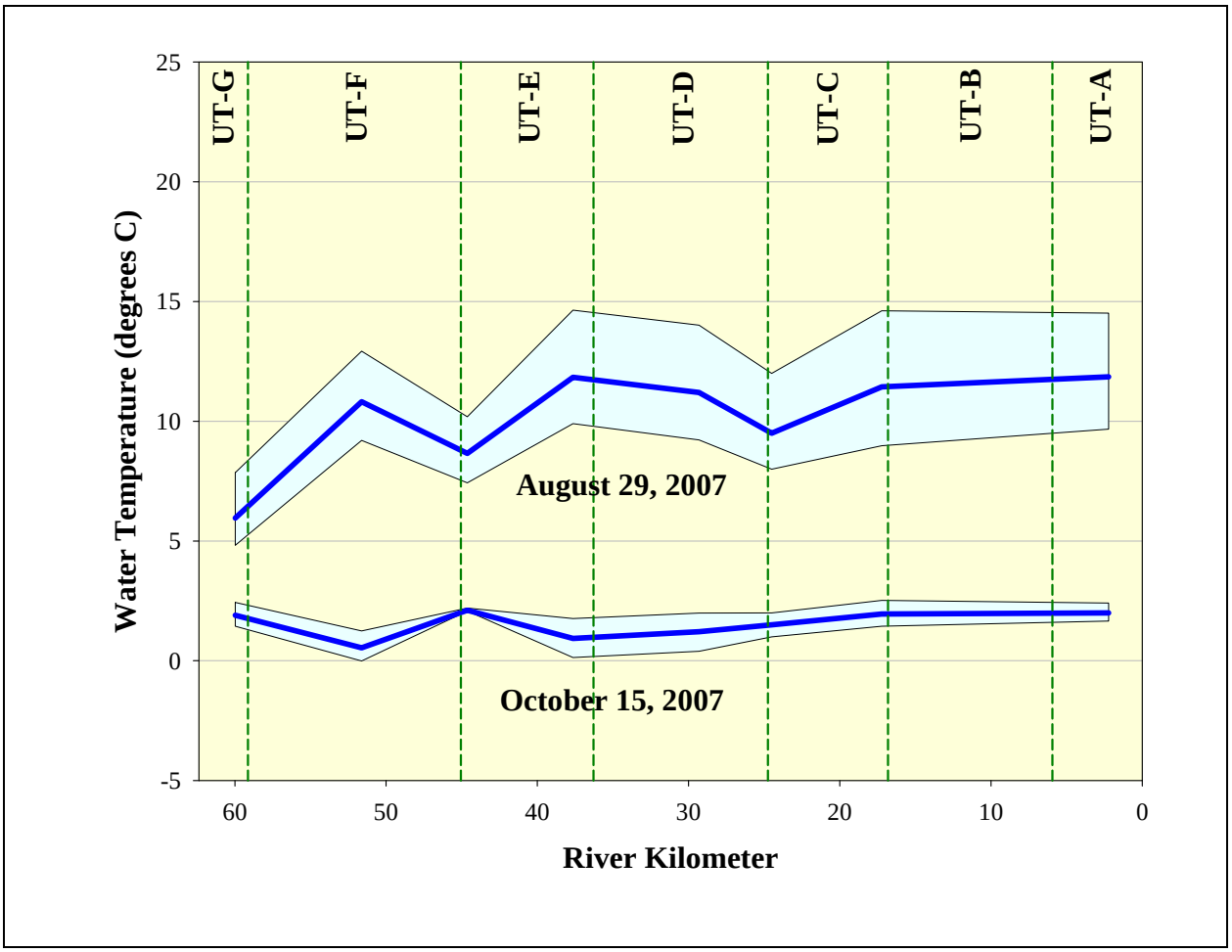

FIGURE 10
Longitudinal Trends of Maximum Instantaneous, Daily Average, and Minimum Instantaneous Water Temperatures in the UT on August 29 and October 15, 2007

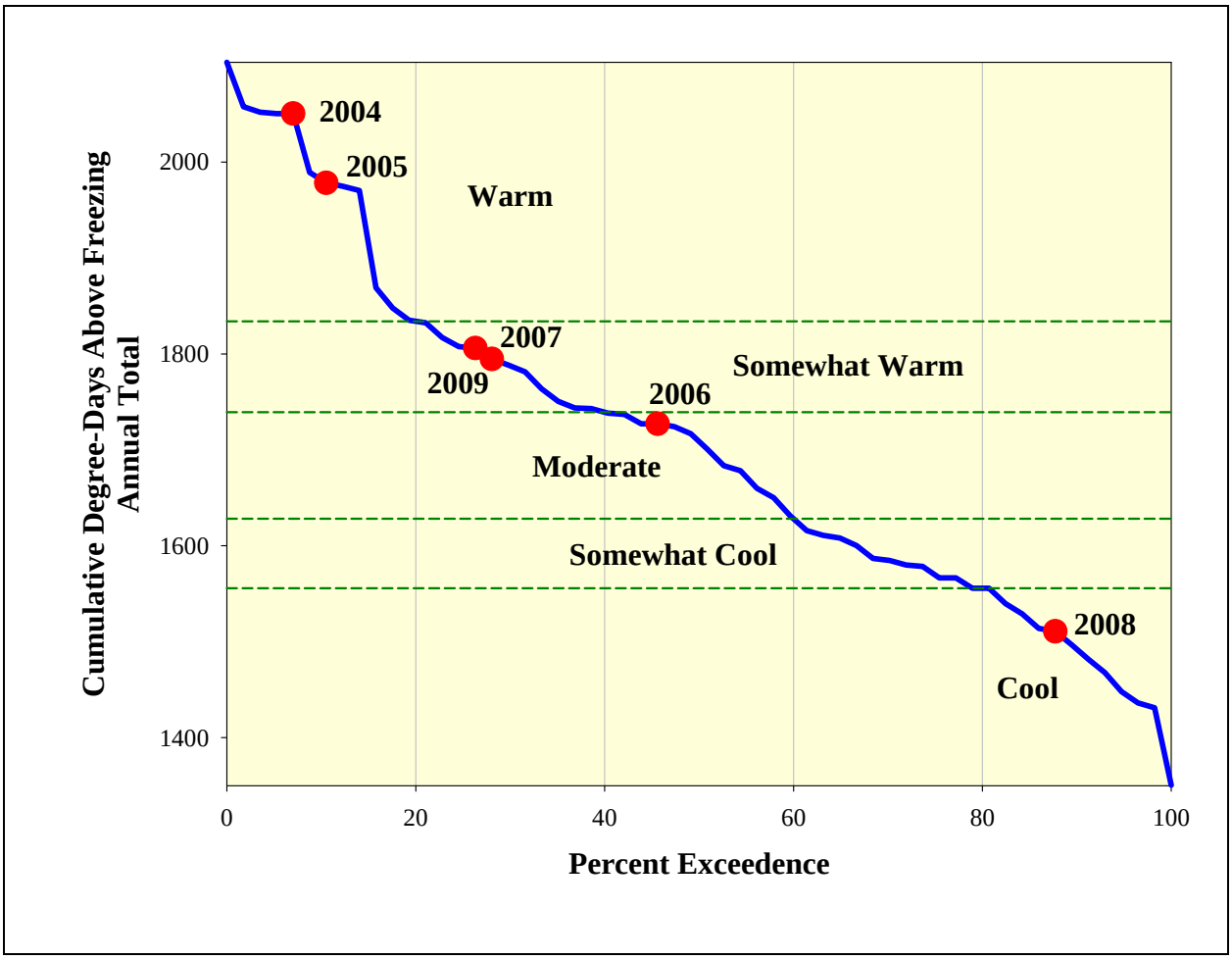

FIGURE 11
Frequency of Exceedence of the Annual Total of Cumulative Degree-Days Above Freezing at Iliamna Airport and Classification of Summer Ice-free Seasons, 2004 through 2009

Note: Derived from 58 years of air temperature records at Iliamna Airport. Classification is warm, somewhat warm, moderate, somewhat cool, and cool summer ice-free seasons.

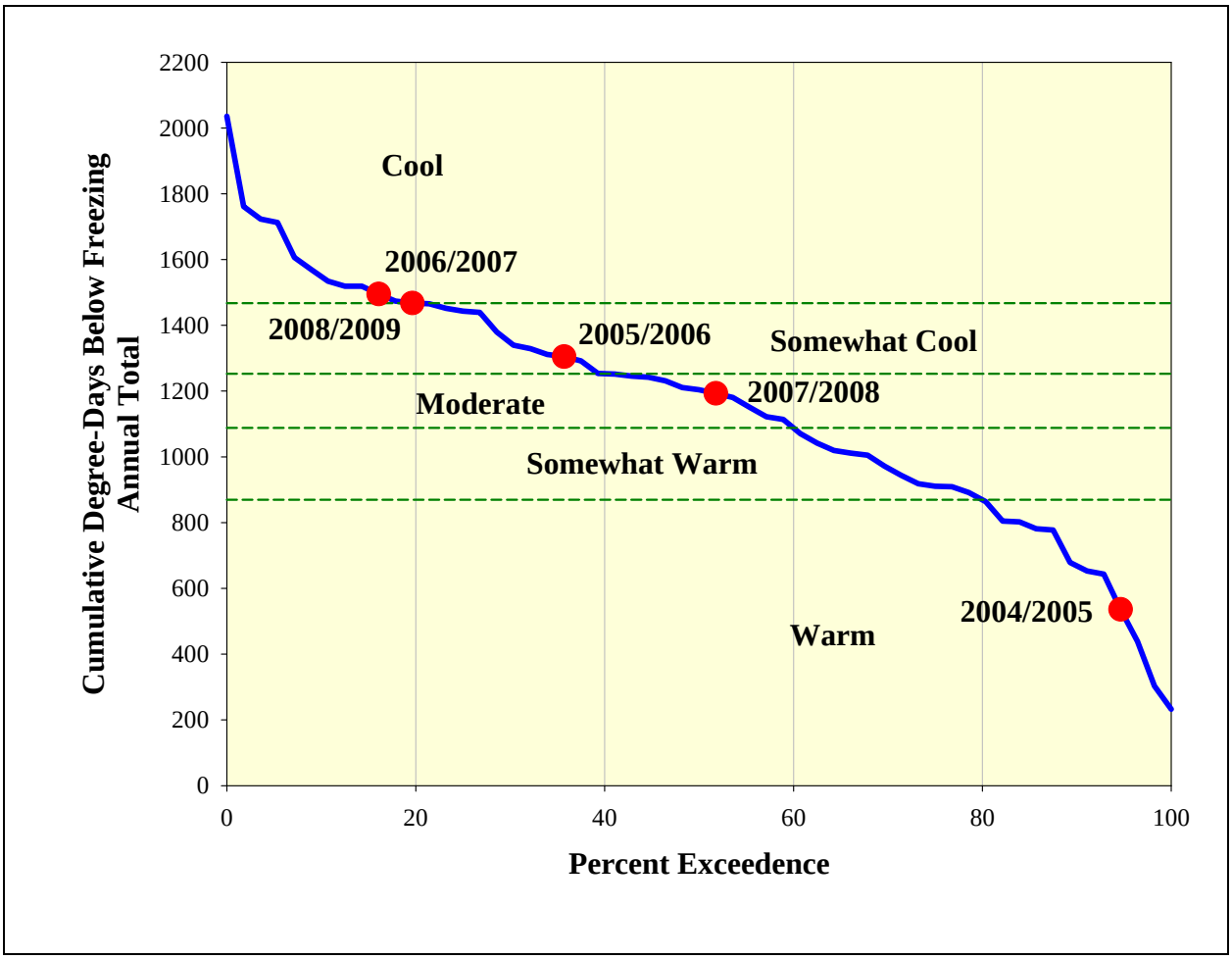

FIGURE 12
Frequency of Exceedence of the Annual Total of Cumulative Degree-Days Below Freezing at Iliamna Airport and Classification of Winter Seasons, 2004 through 2009

Note: Derived from 57 years of air temperature records at Iliamna Airport. Classification is cool, somewhat cool, moderate, somewhat warm, and warm winter seasons.

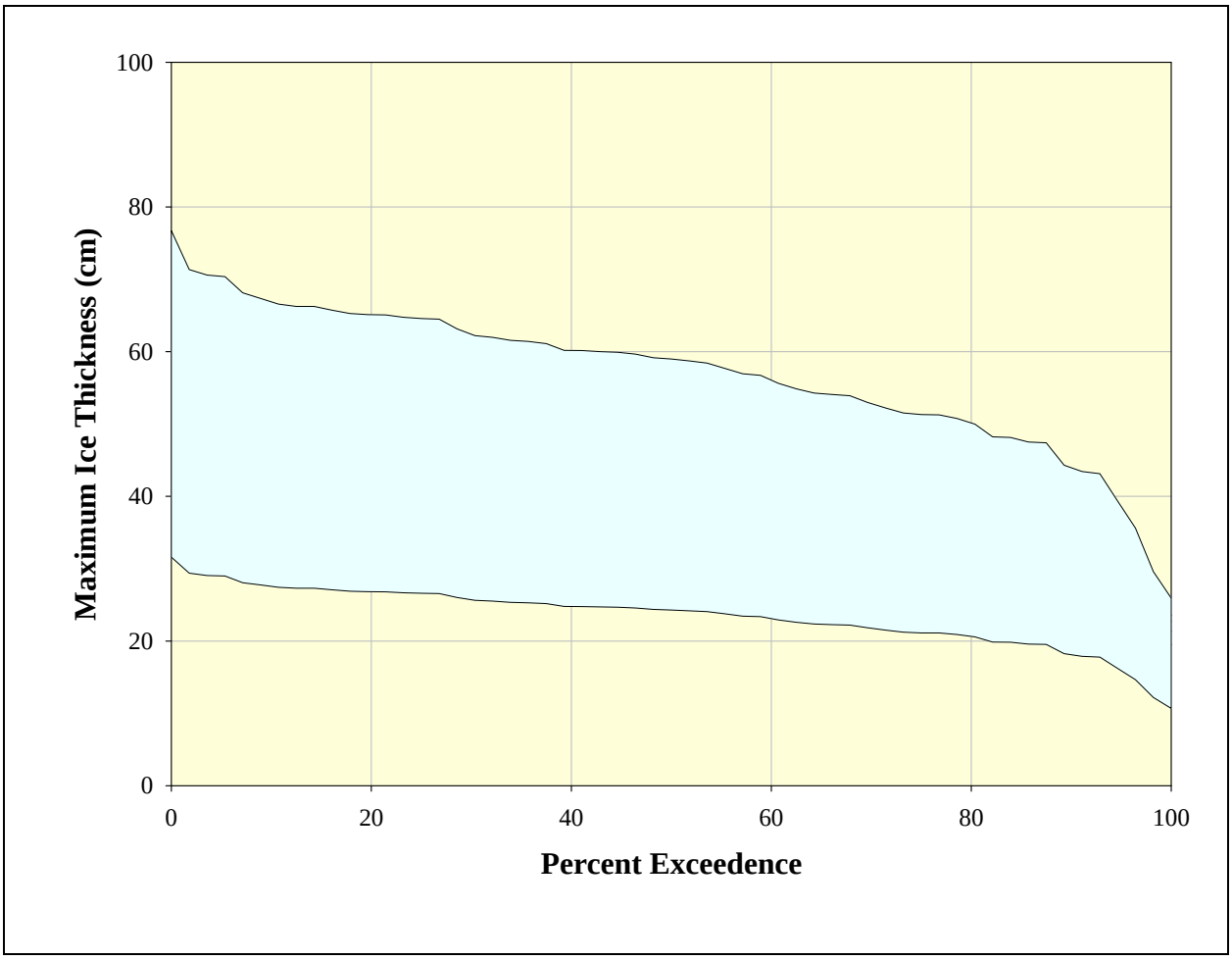

FIGURE 13
Frequency of Exceedence of Maximum Winter Ice Thickness in Study Area Rivers

Note: Derived from 57 years of winter air temperature records at Iliamna Airport, and based on the modified Stefan formula (USACE, 2002)
cm = centimeters.

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N 59°50'0"N 59°45'0"N

Koktuli River
North Fork Koktuli River
Kaskanak Mountain
SFK 1.340
SFK 1.240
SFK 1.310
Frying Pan Lake
Koktuli Mountain
SFK 1.190
SFK 1.20
South Fork Koktuli River
Sharp Mountain
SFK 1.130
Chiquita Lake
Kaskanak Creek

SK100A SG21 FRS-2 SG20 SG19 SG18 SG17 FRS-3 SG16 SG15 SG14 SG13 SK100B SK100B1 SG12 SK119A SK100LF6 SK100C SG11 SG10 SG9 SG8 SK100LF4 SG7 SG6 SG5 SG4 SG3 SK100LF2 SG2 SG1 SK100F

SFK-A SFK-B SFK-C SFK-D SFK-E

Legend

SNTEMP Modeling Nodes and Name (SG1)
- Confluence
- Mouth
- Hydrology
- Stream Geometry

SFK-A Mainstem Reach Example
SFK 1.190 Tributary Name Example
Watershed Boundary
General Deposit Location

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Figure 14
Structure of the SNTEMP Model Used to Analyze the SFK, as Defined by Hydrology, Stream Geometry, and Confluence Nodes

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2
Miles 0 1 2

April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W

60°0'0"N 59°55'0"N 59°50'0"N

Black Lake

"Cone (Black) Mountain"

Groundhog Mountain

NFK 1.120 NFK 1.140 NFK 1.170 NFK 1.180 NFK 1.190 NFK 1.240 NFK 1.260 NFK 1.270 NFK 1.300

NFK-A NFK-B NFK-C NFK-D NFK-E NFK-F

SG1 SG2 SG3 SG4 SG5 SG6 SG7 SG8 SG9 SG10 SG11 SG12 SG13 SG14 SG15 SG16 SG17 SG18 SG19 SG20 SG21

NK100A NK100B NK100C NK100LF3 NK100A1 NK119A FRS-4

Big Wiggly Lake (NFK 1.240.P1)

Kaskanak Mountain

Frying Pan Lake

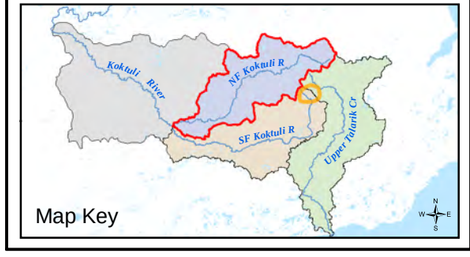
Koktuli Mountain

Koktuli River

North Fork Koktuli River

South Fork Koktuli River

Upper Talarik Creek



Legend

SNTEMP Modeling Nodes and Name (SG1)

- ☆ Headwater
- ○ Confluence
- ★ Mouth
- ● Hydrology
- △ Stream Geometry

NFK-A Mainstem Reach Example

NFK 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

N W E S

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Figure 15
Structure of the SNTEMP Model Used to Analyze the NFK, as Defined by Hydrology, Stream Geometry, and Confluence Nodes

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

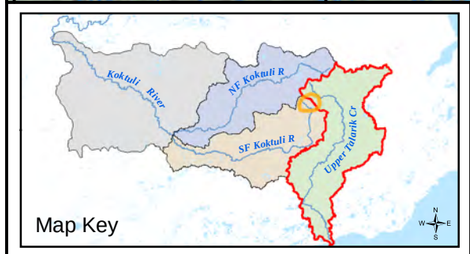
April 2011

Author: R2 - JJZ

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W 154°50'0"W 154°40'0"W

59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

Groundhog Mountain
Nondalton
Big Wiggly Lake
UT 1.390
UT-G
UT100E
SG1
SG2
SG3
SG4
UT100D
UT 1.410
UT-F
UT 1.350
SG5
UT135A
UT100C2
Kaskanak Mountain
Koktuli Mountain
Frying Pan Lake
UT-E
SG6
UT100C1
Creek
SG7
SG8
SG9
Talarik
UT-D
UT100C
UT 1.190
UT119A
UT100B
SG10
SG11
UT 1.60
UT-C
SG12
SG13
Upper
Chiquita Lake
Creek
First
Lake #2
SG14
UT100APC1
UT100APC2
UT-B
SG15
UT-A
UT100APC3
Roadhouse Mountain
River
Newhalen
Iliamna
Newhalen
Iliamna Lake
Koktuli River
North Fork Koktuli
South Fork Koktuli River
Sharp Mountain
Kaskanak Creek



Map Key

Legend

SNTEMP Modeling Nodes and Name (SG1)

- ☆ Headwater
- ○ Confluence
- ★ Mouth
- ● Hydrology
- △ Stream Geometry

UT-A Mainstem Reach Example

UT 1.190 Tributary Name Example

Watershed Boundary

General Deposit Location

N W E S

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Figure 16
Structure of the SNTEMP Model Used to Analyze the UT, as Defined by Hydrology, Stream Geometry, and Confluence Nodes

Alaska State Plane Zone 5
1983 North American Datum
Units Feet

Kilometers 0 1 2

Miles 0 1 2

April 2011

Author: R2 - JJZ

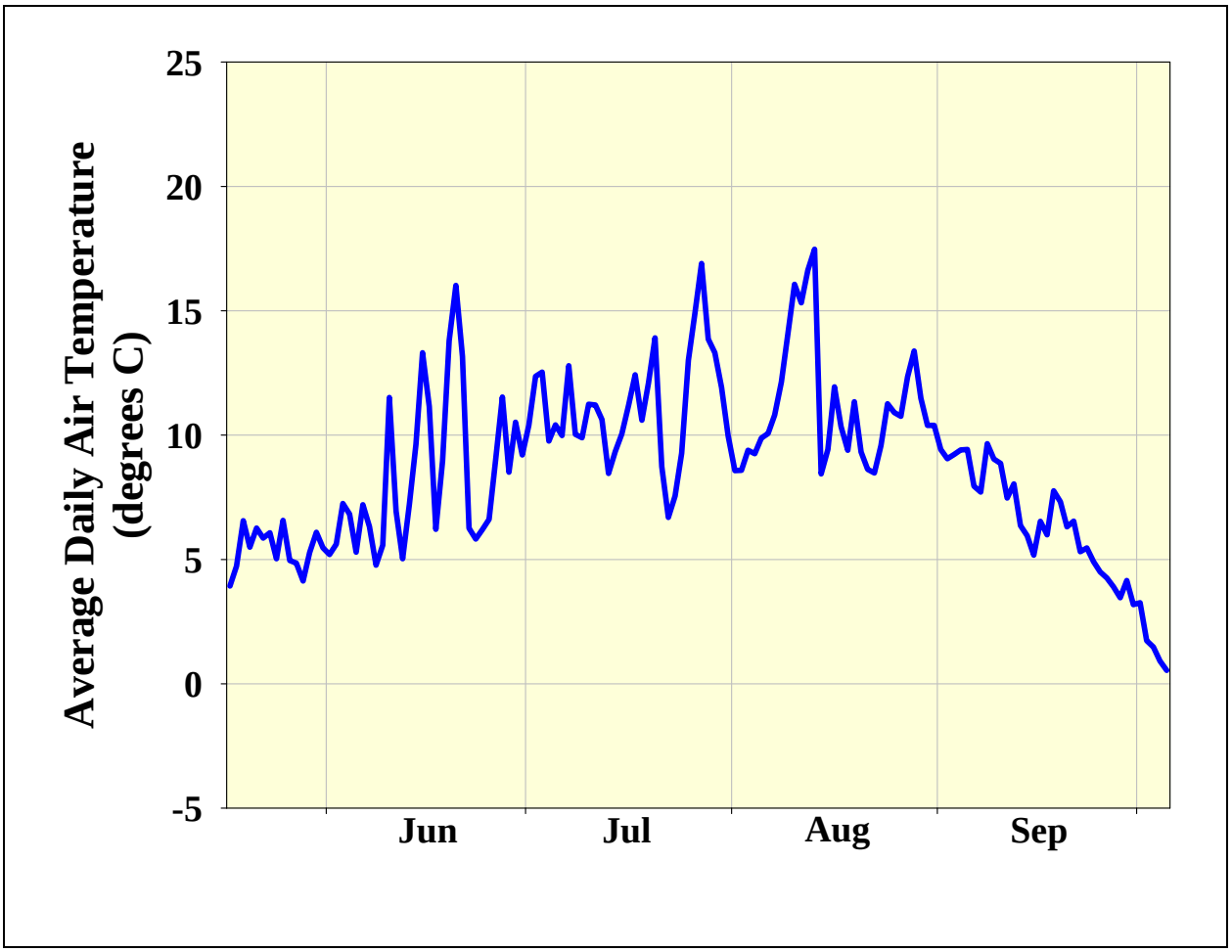


FIGURE 17
Average Daily Air Temperature at Pebble 1 Meteorological Station, May 17 to October 5, 2007.

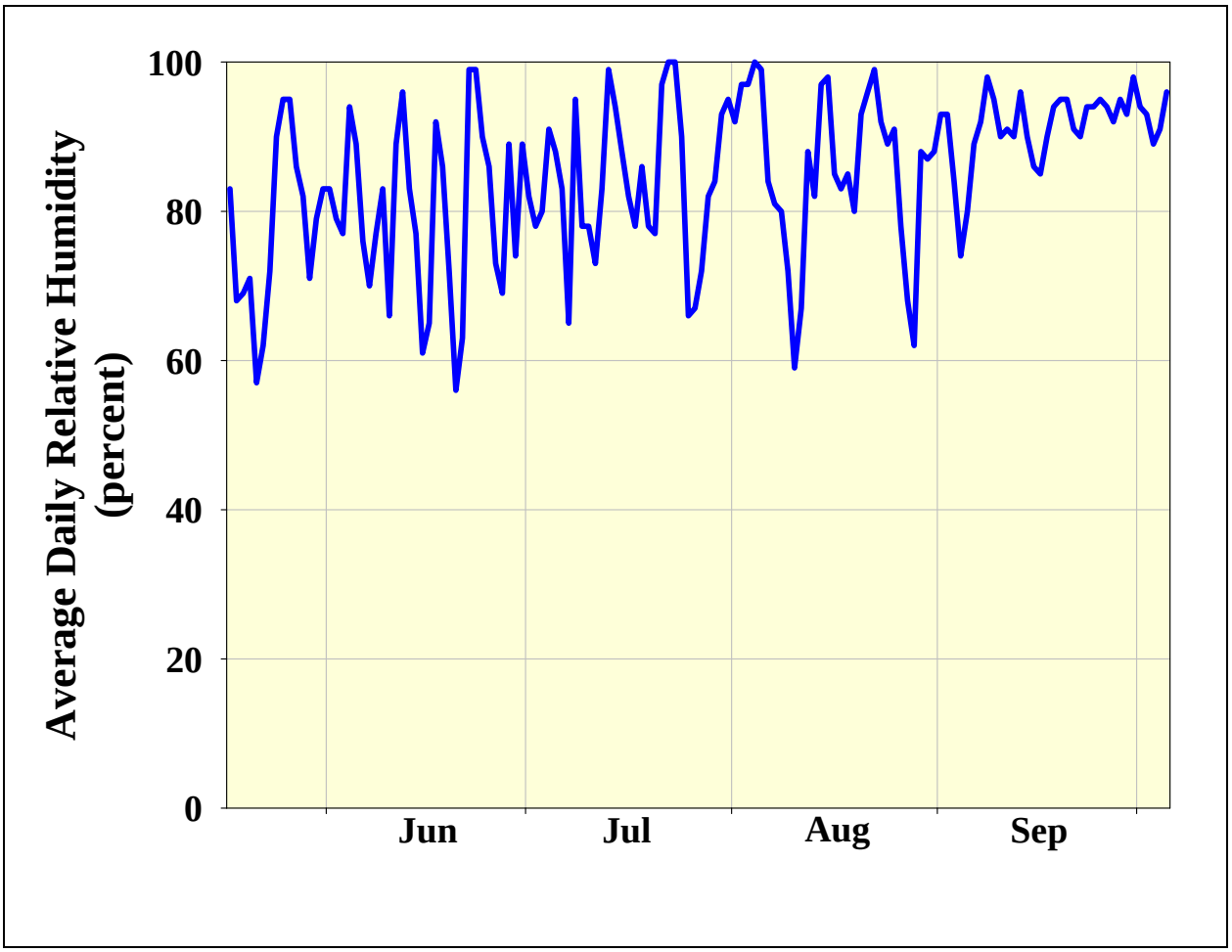


FIGURE 18
Average Daily Relative Humidity at Pebble 1 Meteorological Station, May 17 to October 5, 2007

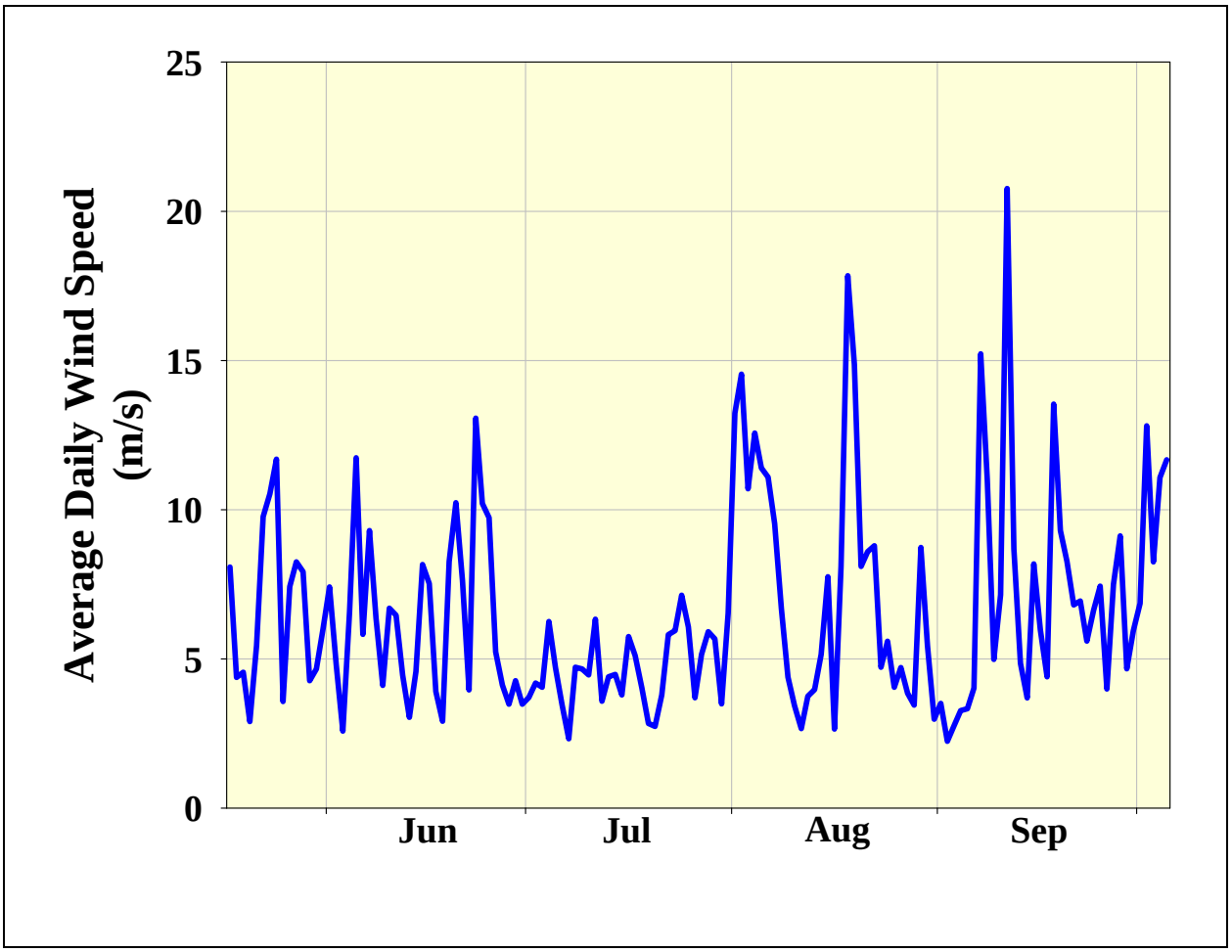


FIGURE 19
Average Daily Wind Speed at Pebble 1 Meteorological Station, May 17 to October 5, 2007

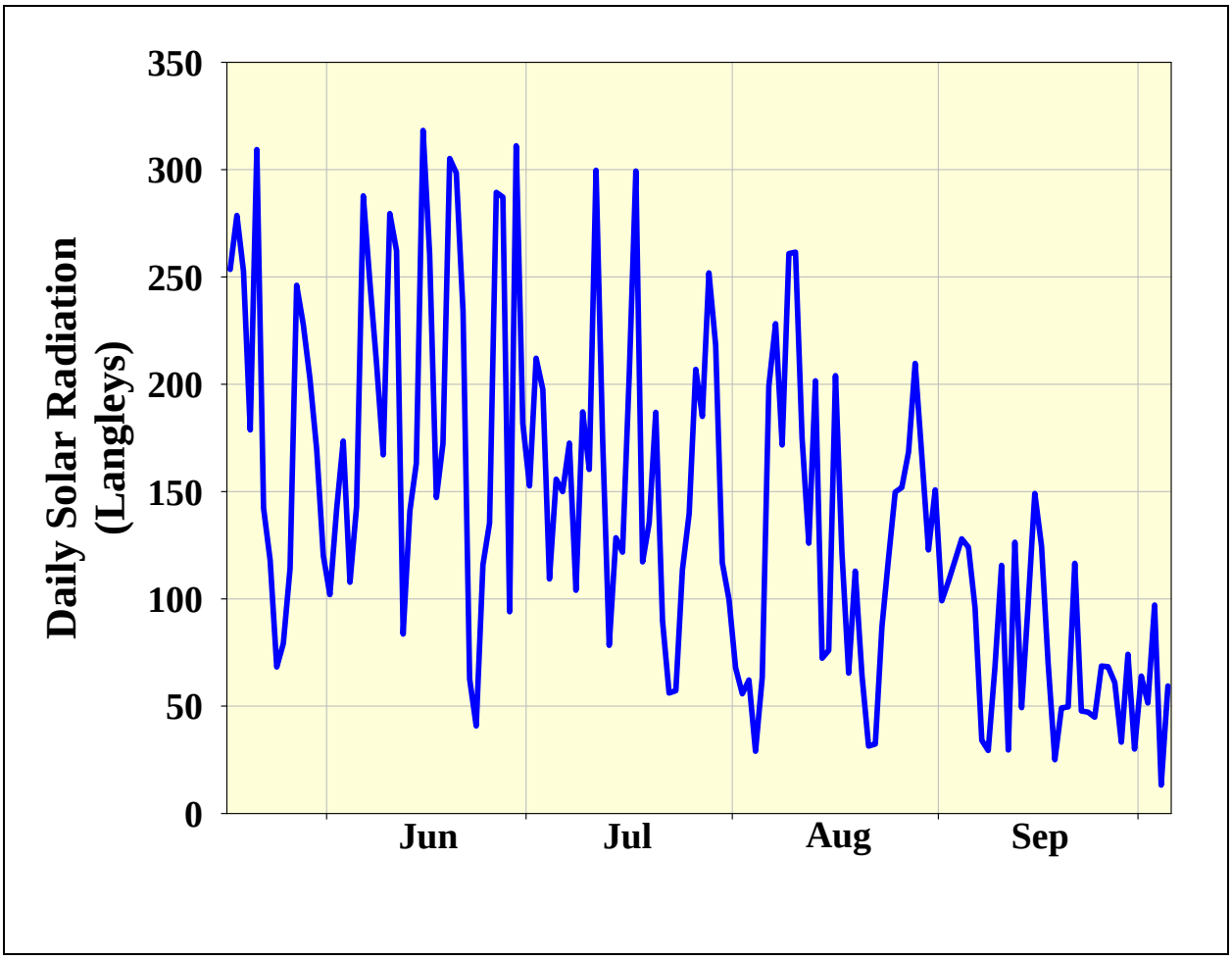


FIGURE 20
Daily Solar Radiation at Pebble 1 Meteorological Station, May 17 to October 5, 2007

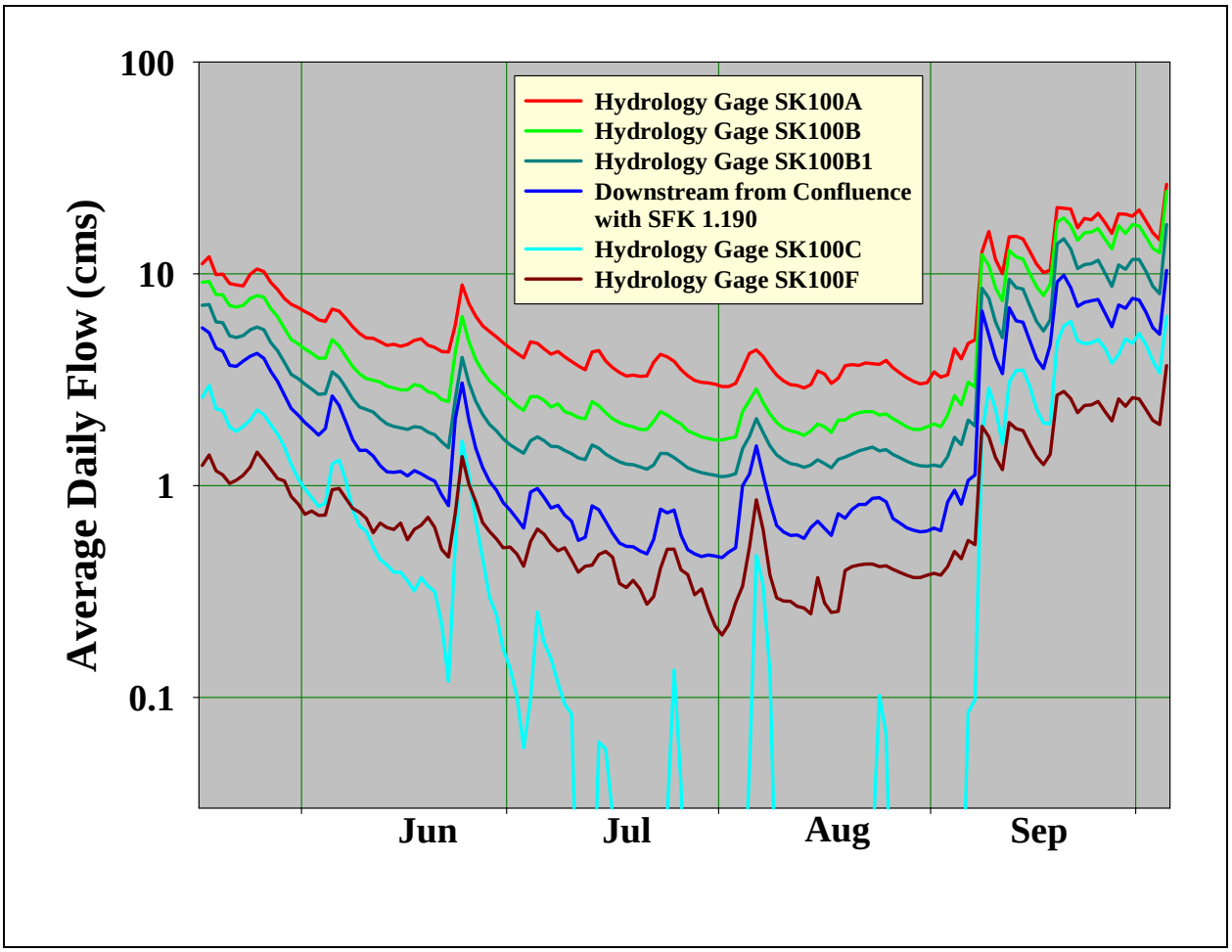


FIGURE 21
Daily Flows in the SFK at Five Hydrology Gages and Just Downstream from the Confluence with Tributary SFK 1.190, May 17 to October 5, 2007.

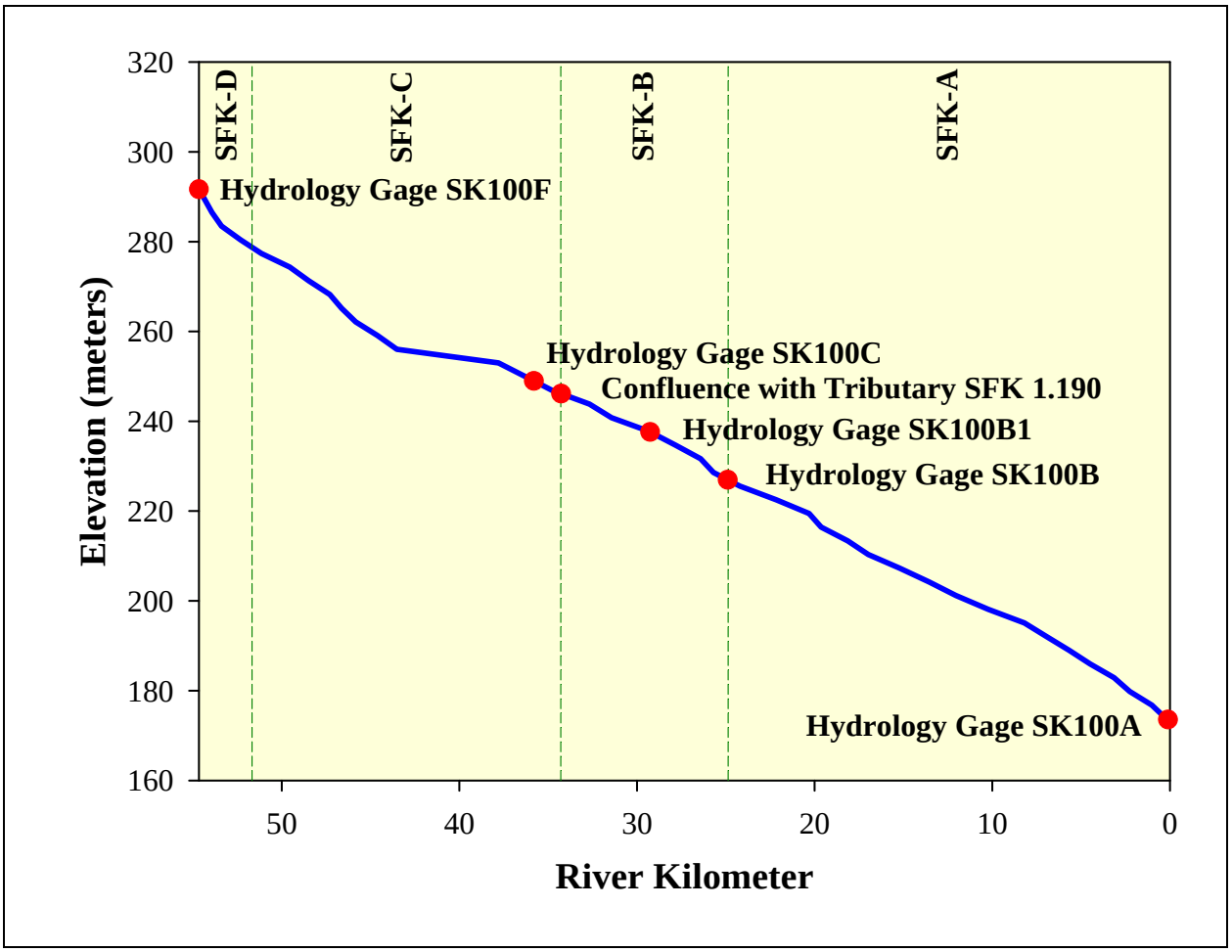


FIGURE 22
Longitudinal Profile of the SFK from the Upstream End (RK 54.67) to the Downstream End (RK 0.00)

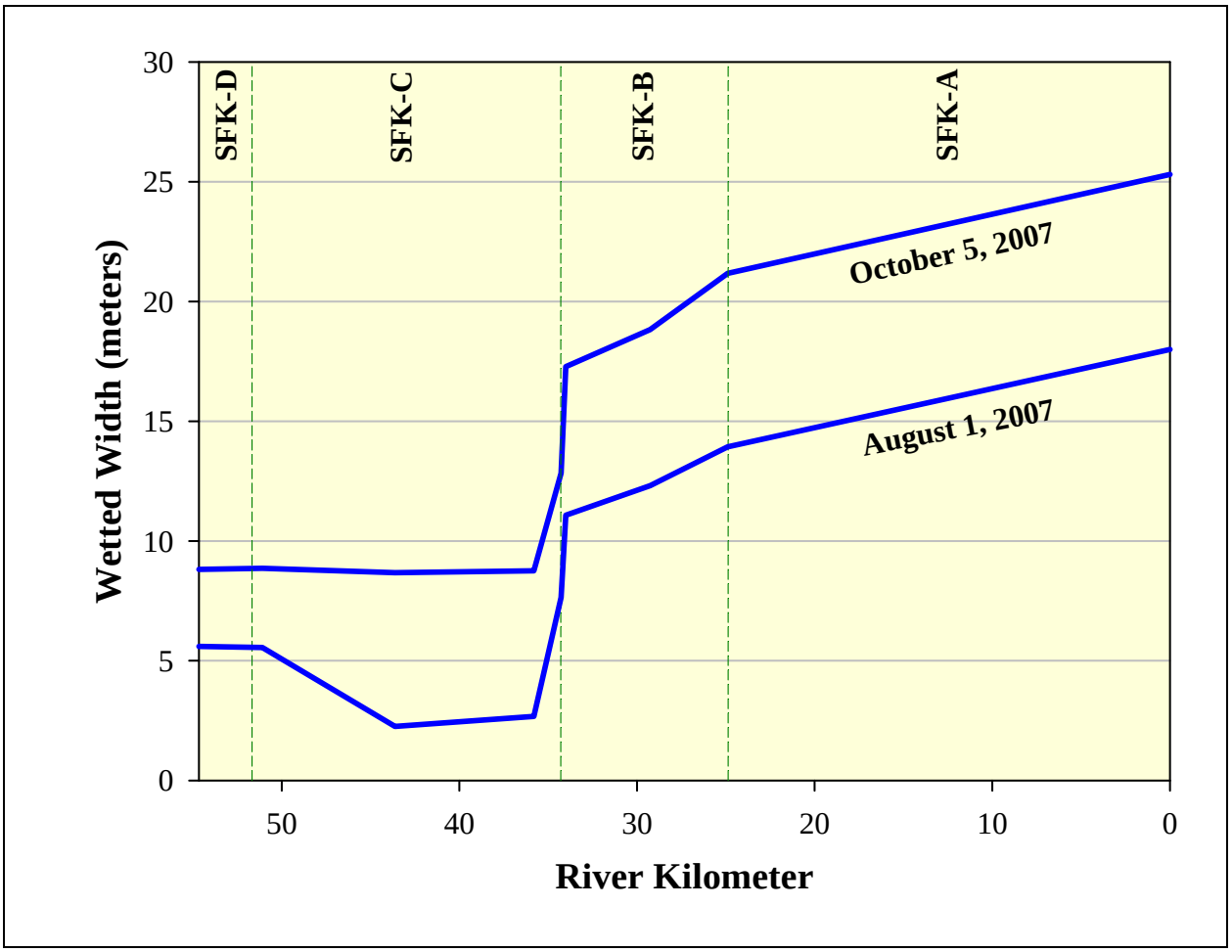


FIGURE 23
Wetted Width in the SFK Simulated in the SNTEMP Model under Relatively High (October 5, 2007) and Low (August 1, 2007) Flow Conditions

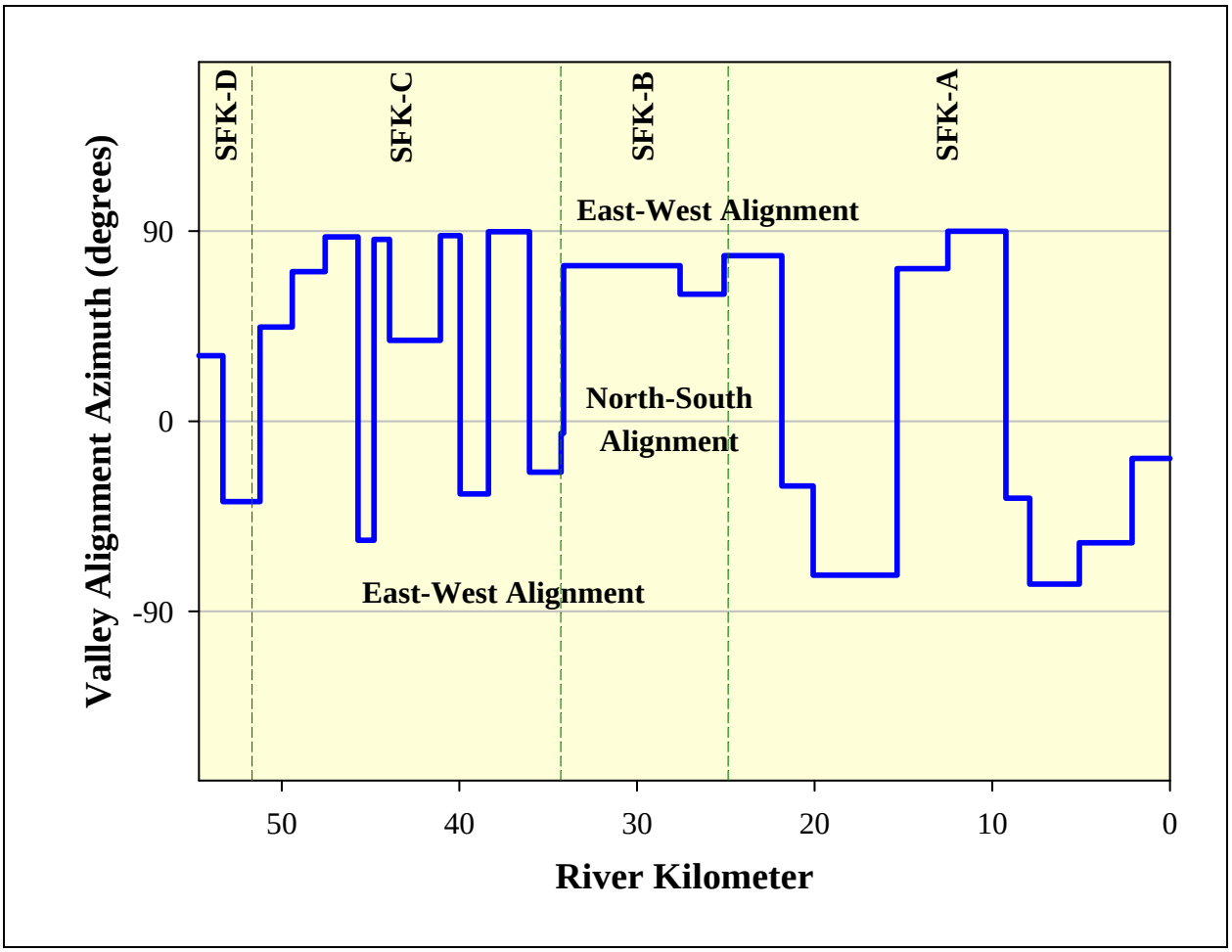


FIGURE 24
Alignment of the SFK Valley, as Characterized by Azimuth

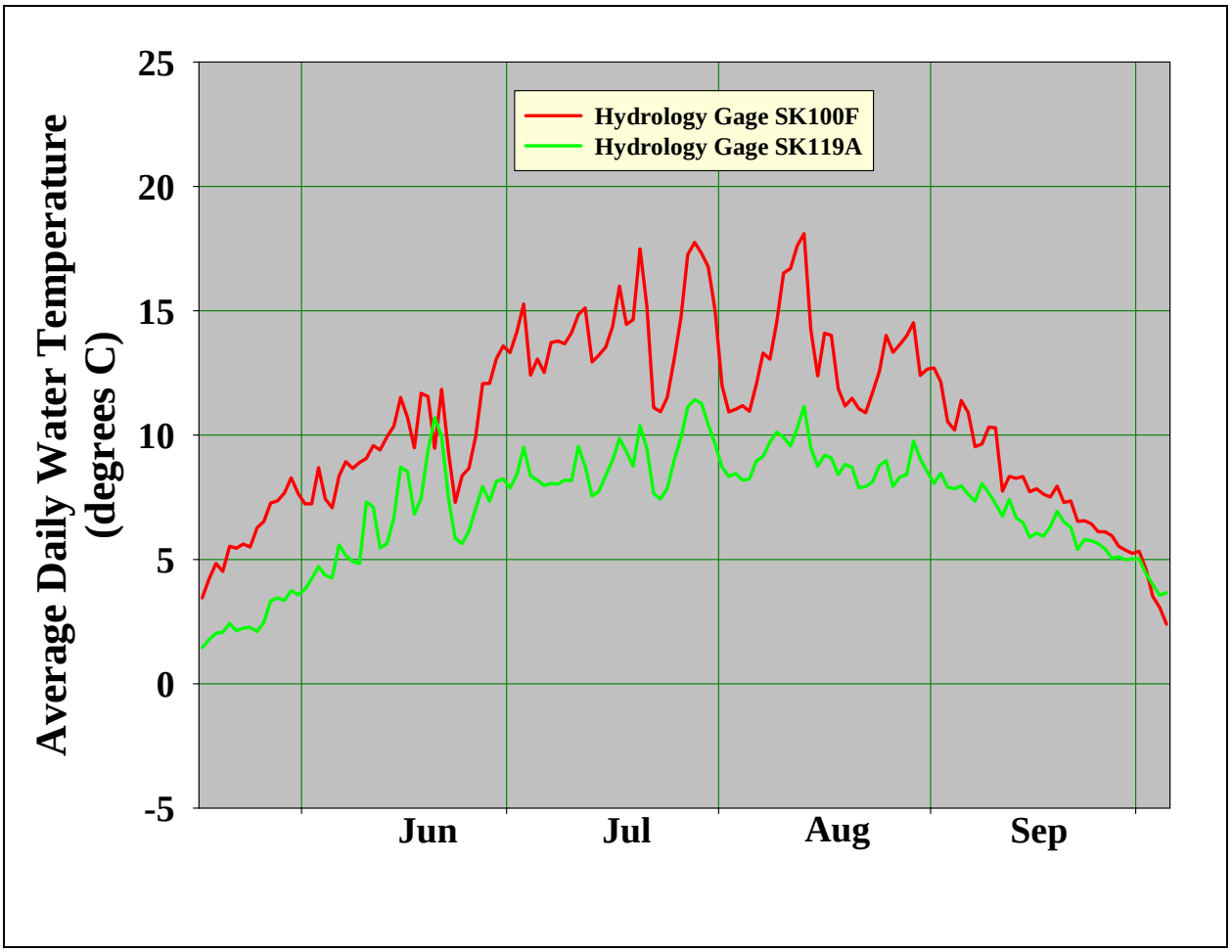


FIGURE 25
Measured Average Daily Water Temperatures in the SFK (Hydrology Gage SK100F) and Tributary SFK 1.190 (Hydrology Gage SK119A), May 17 to October 5, 2007

Note: These data were used as inputs to the SNTEMP model.

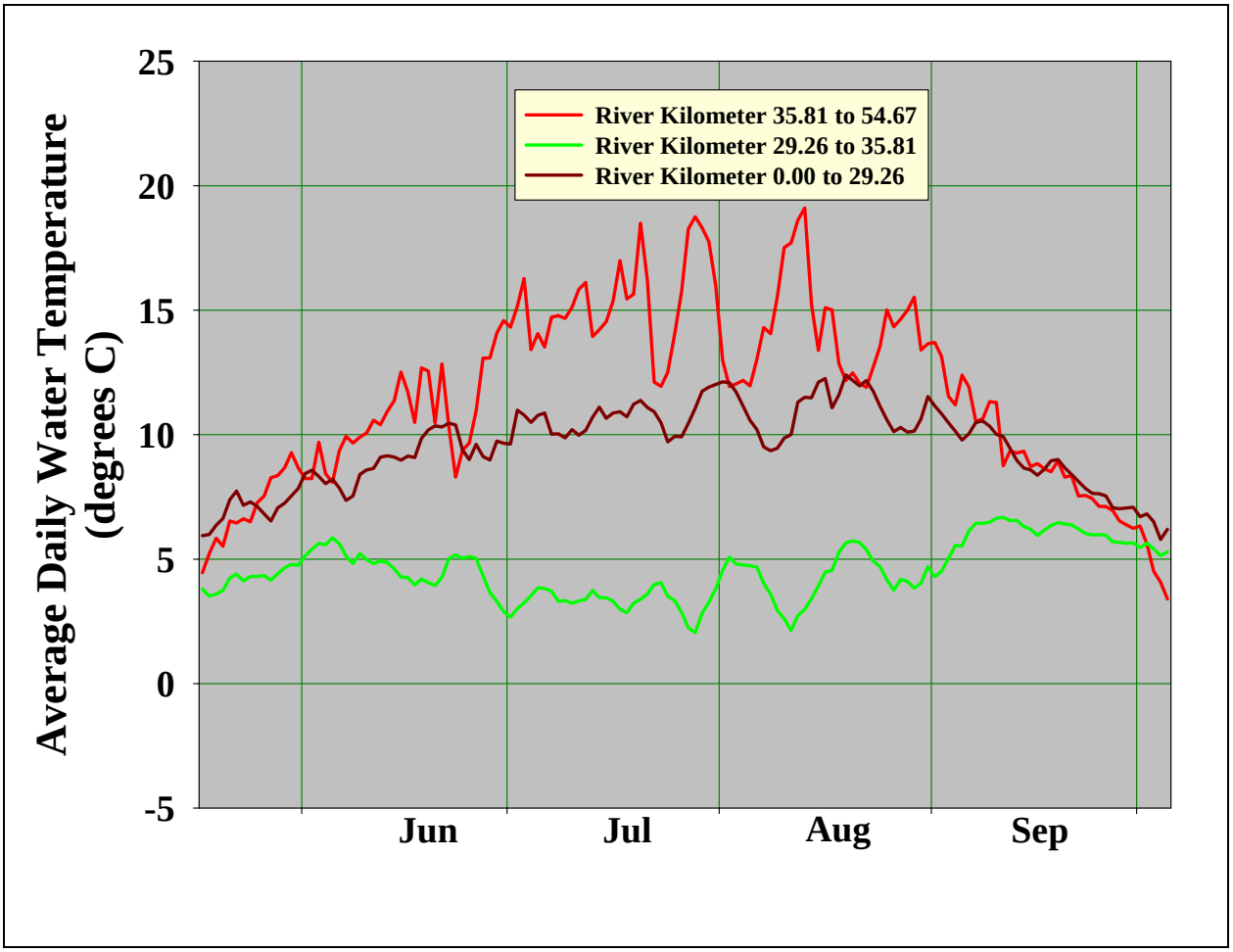


FIGURE 26
Assumed Average Daily Water Temperatures of Lateral Accretion Flows from Surface Water and/or Groundwater Sources to the SFK, May 17 to October 5, 2007

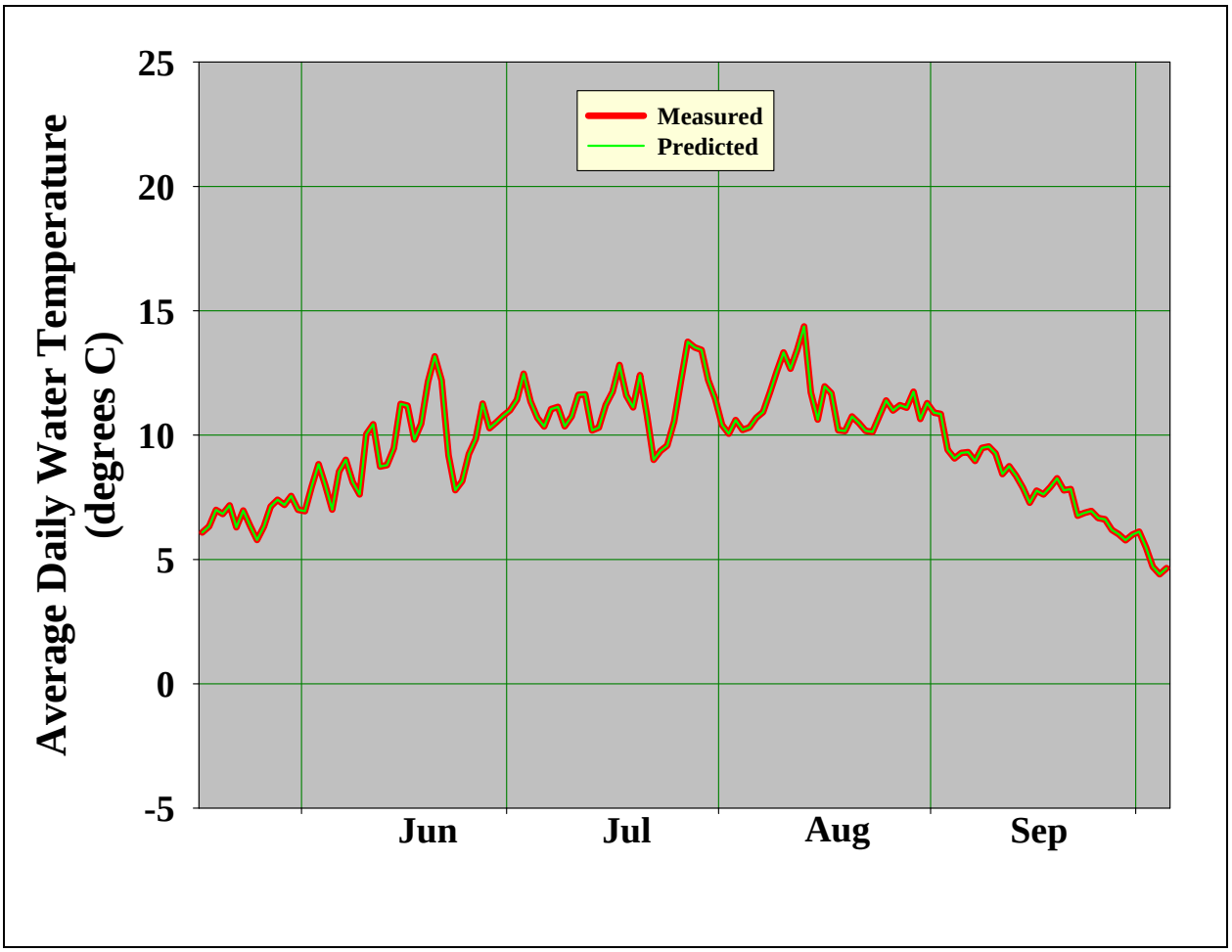


FIGURE 27
Comparison of Measured with Predicted Average Daily Water Temperatures in the SFK at Hydrology Gage SK100A (RK 0.11 in SFK-A), May 17 to October 5, 2007

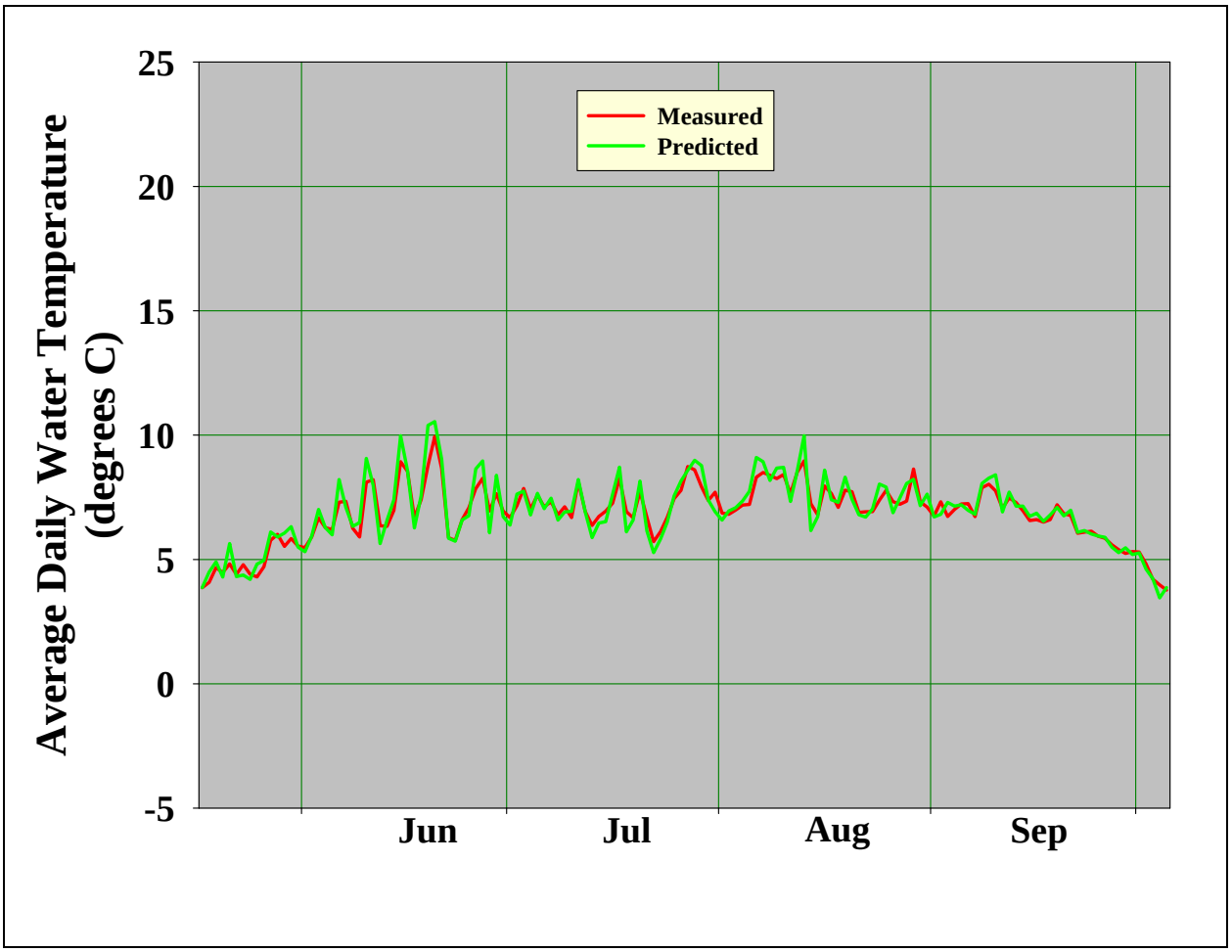


FIGURE 28
Comparison of Measured with Predicted Average Daily Water Temperatures in the SFK at Hydrology Gage SK100B1 (RK 29.26 in SFK-B), May 17 to October 5, 2007

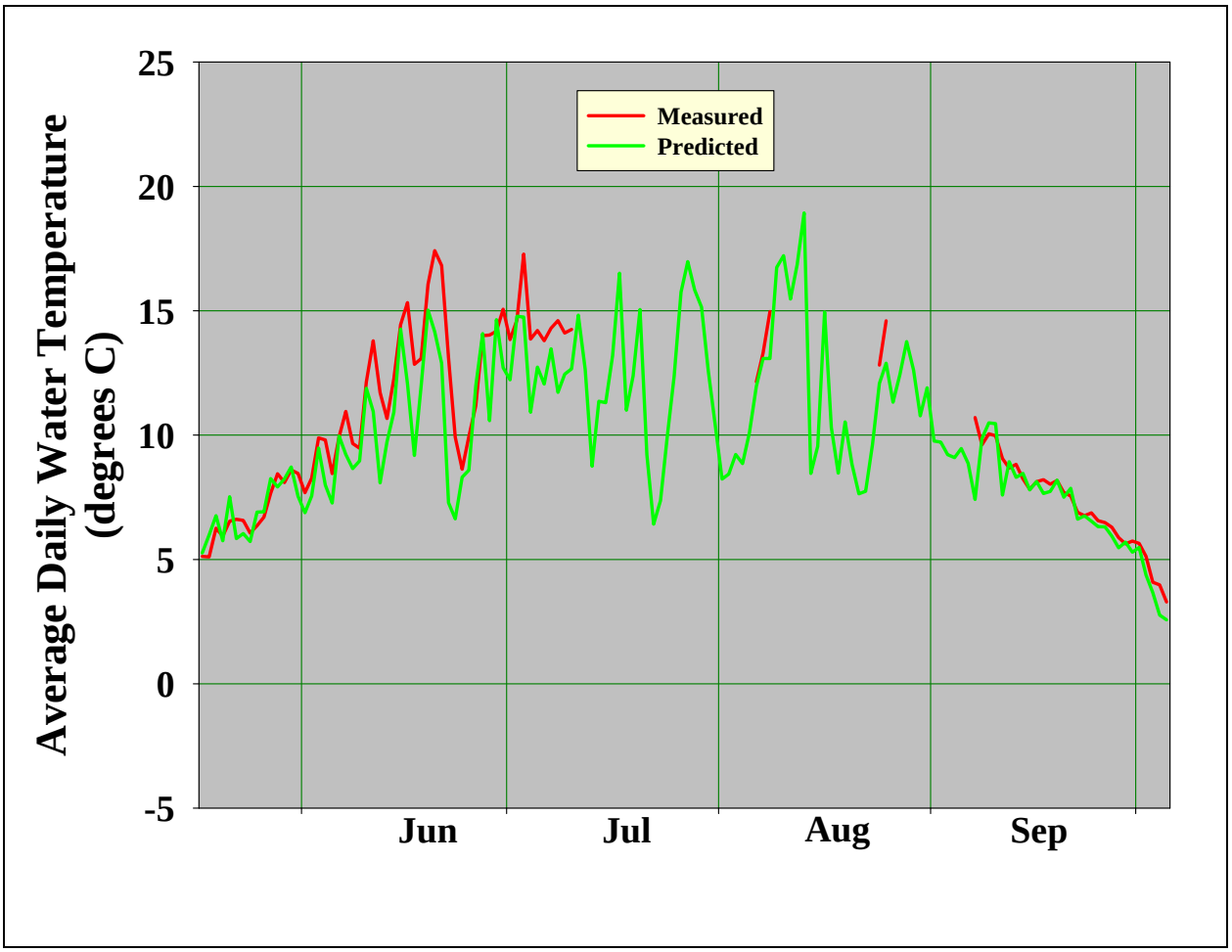


FIGURE 29
Comparison of Measured with Predicted Average Daily Water Temperatures in the SFK at Hydrology Gage SK100C (RK 35.81 in SFK-C), May 17 to October 5, 2007

Note: No measurements were available at this site on days when there was no flow in the river. This gage is located in the intermittent reach.

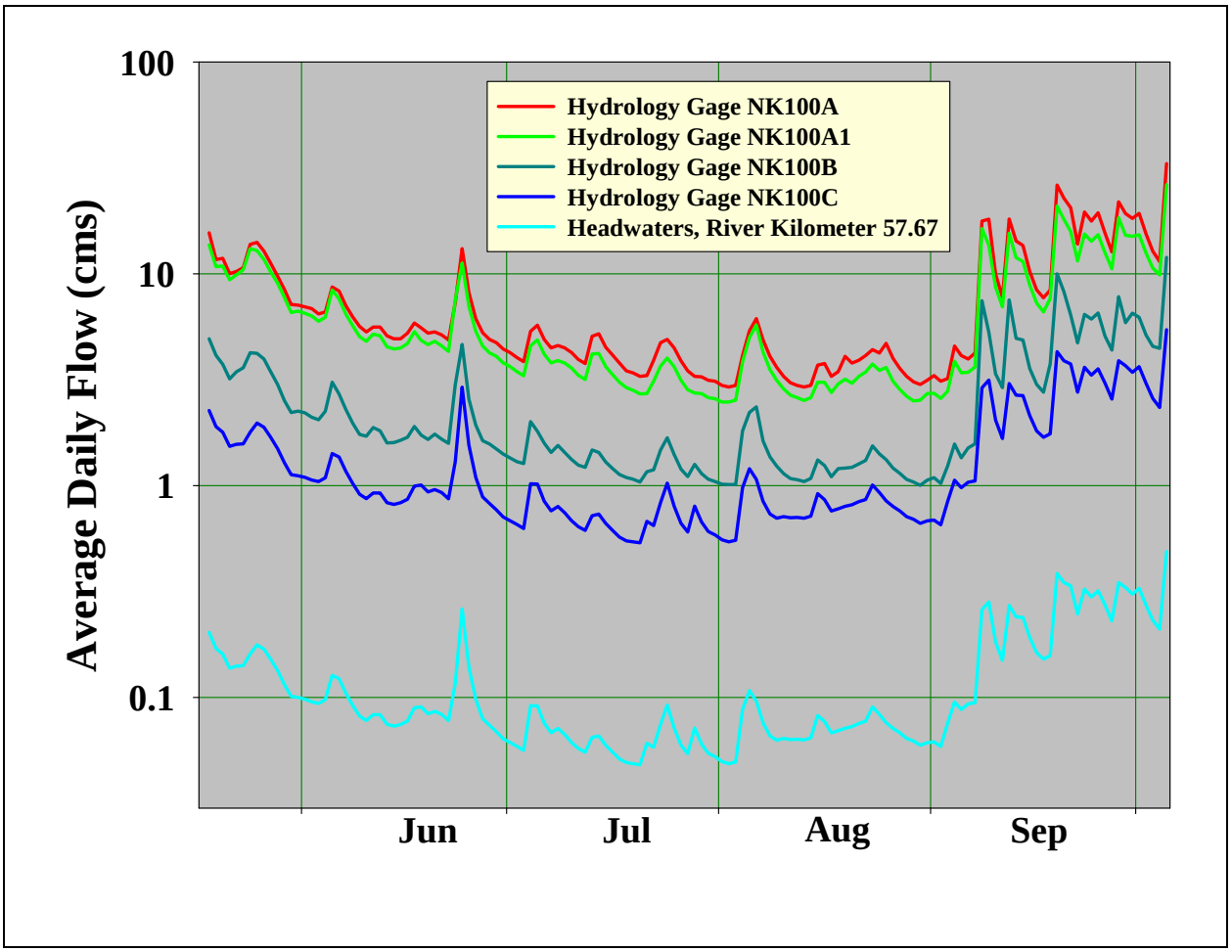


FIGURE 30
Daily Flows in the NFK at Four Hydrology Gages and Estimated Flows in the Headwaters at RK 57.67, May 18 to October 5, 2007

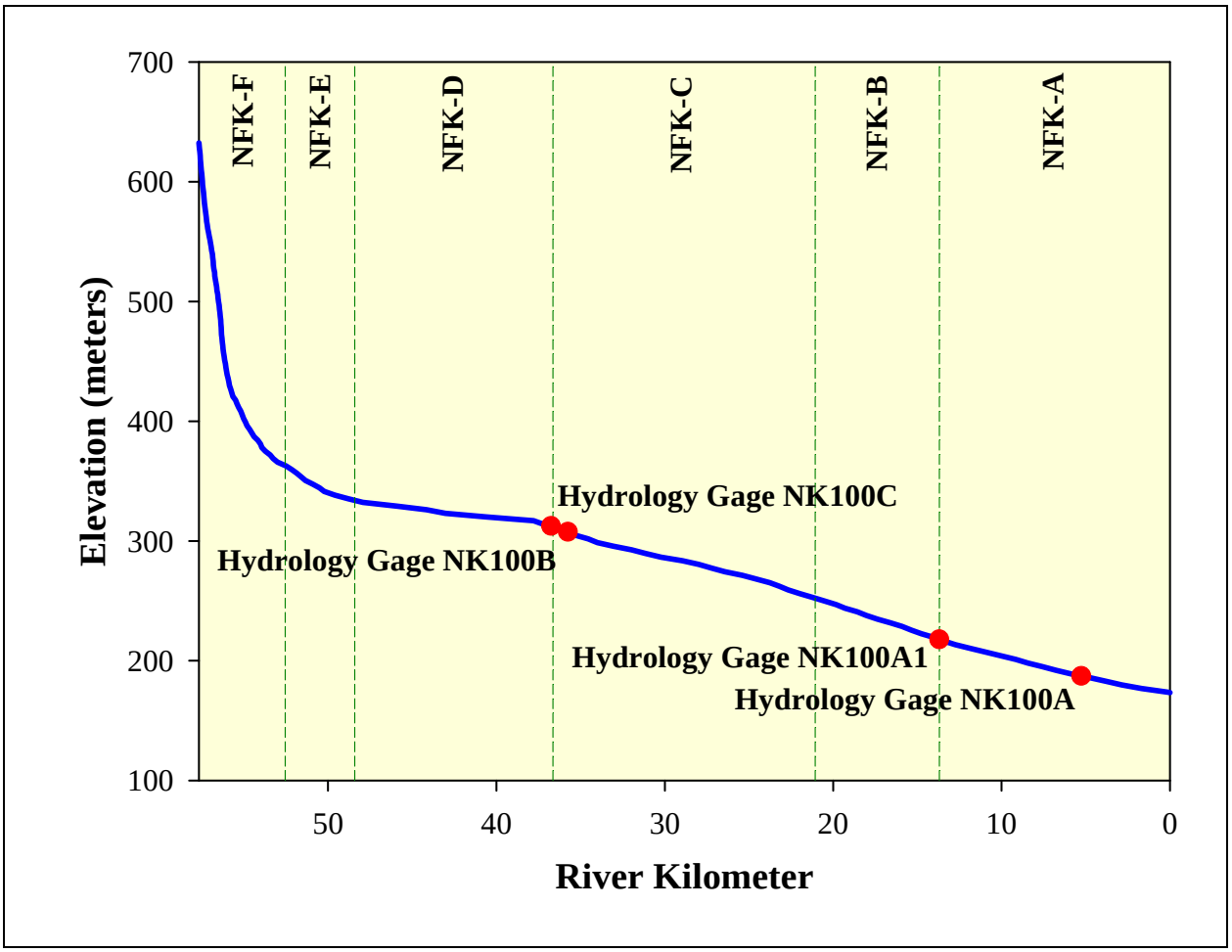


FIGURE 31
Longitudinal Profile of the NFK from the Upstream End (RK 57.67) to the Downstream End (RK 0.00)

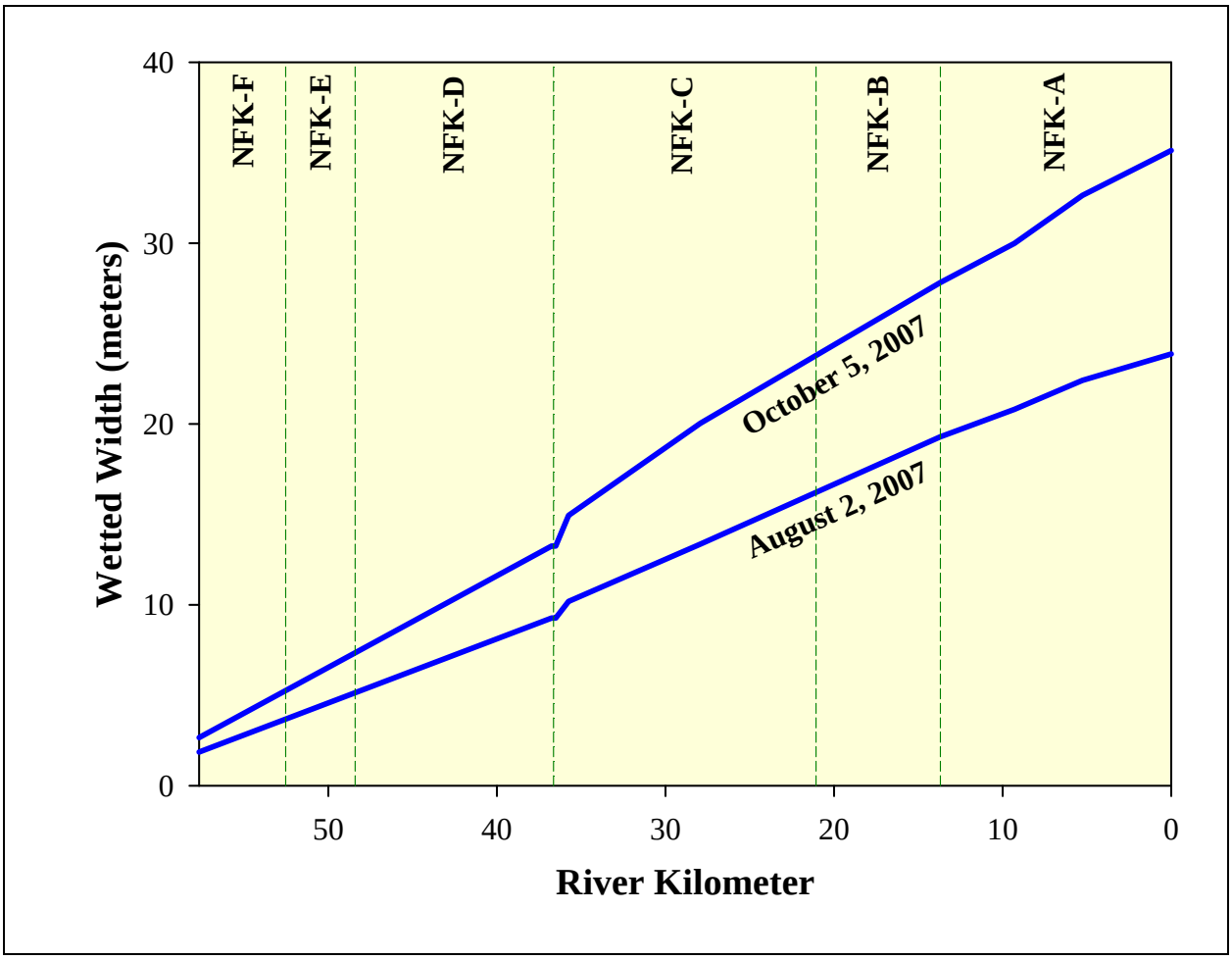


FIGURE 32
Wetted Width in the NFK Simulated in the SNTEMP Model under Relatively High (October 5, 2007) and low (August 2, 2007) Flow Conditions

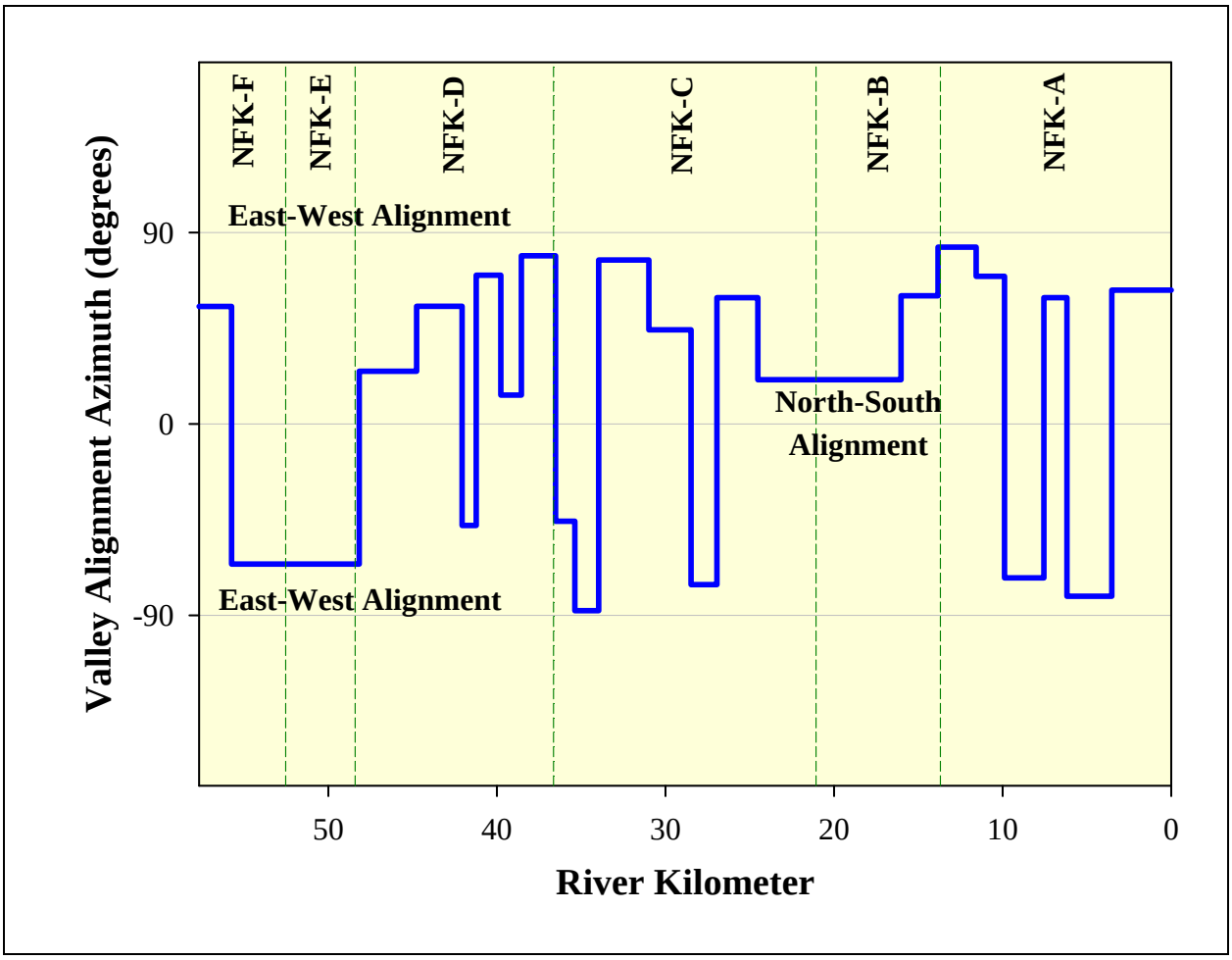


FIGURE 33
Alignment of the NFK Valley, as Characterized by Azimuth

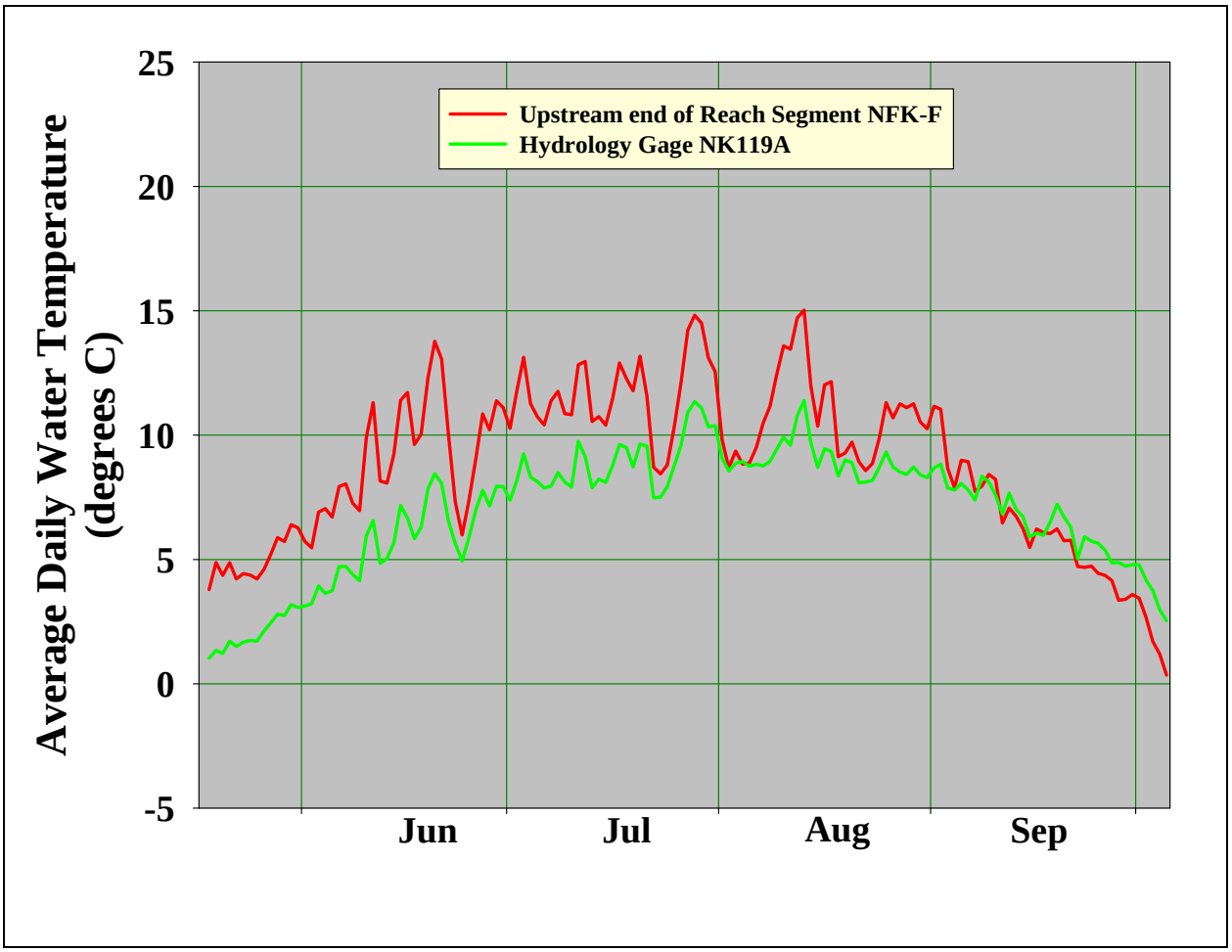


FIGURE 34
Estimated Average Daily Water Temperatures in NFK at the Upstream End (RK 57.67) and Measured Average Daily Water Temperatures in Tributary NFK 1.190 (Hydrology Gage NK119A), May 18 to October 5, 2007

Note: Data were used as inputs to the SNTEMP model.

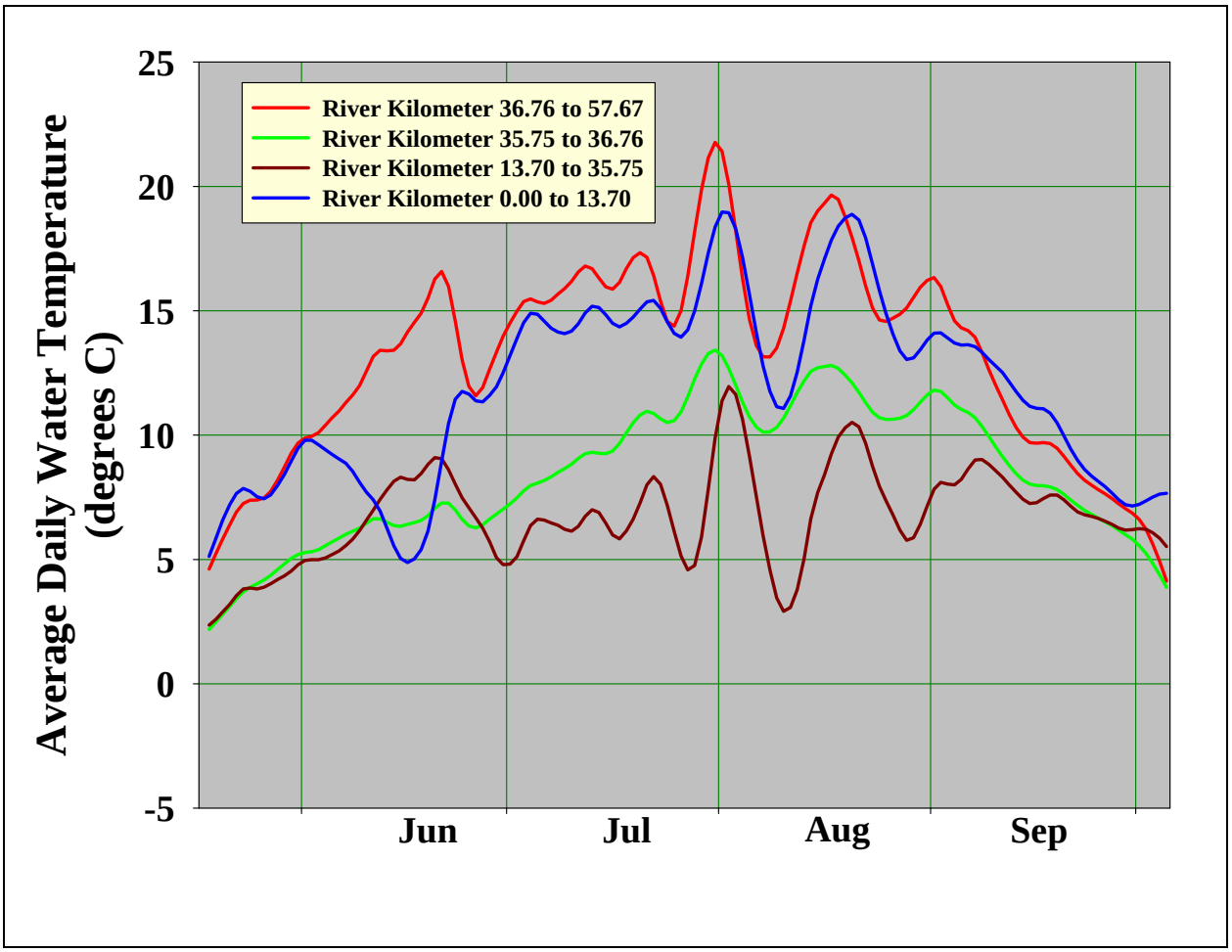


FIGURE 35
Estimated Average Daily Water Temperatures of Lateral Accretion Flows from Surface Water and/or Groundwater Sources to the NFK, May 18 to October 5, 2007

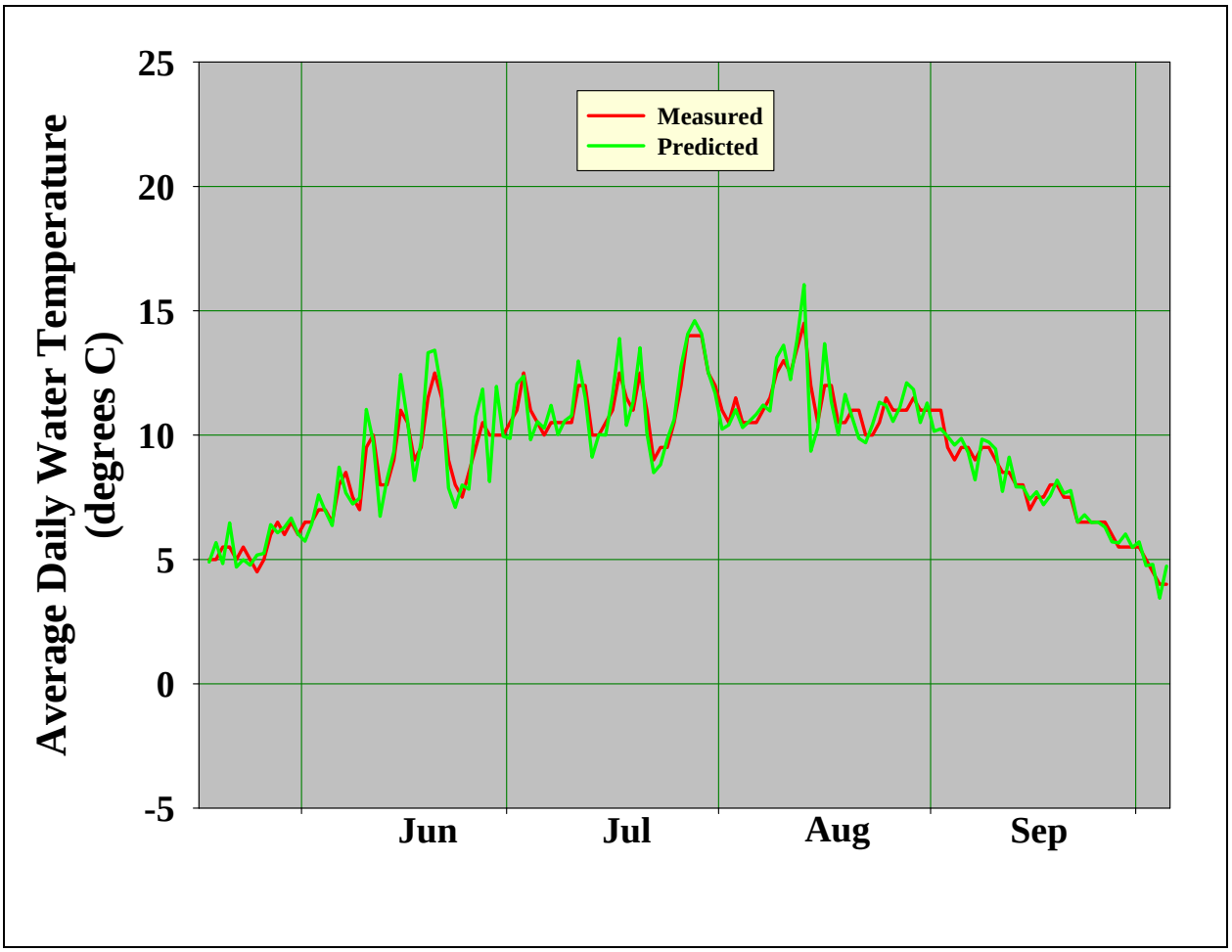


FIGURE 36
Comparison of Measured with Predicted Average Daily Water Temperatures in the NFK at Hydrology Gage NK100A (RK 5.27 in NFK-A), May 18 to October 5, 2007

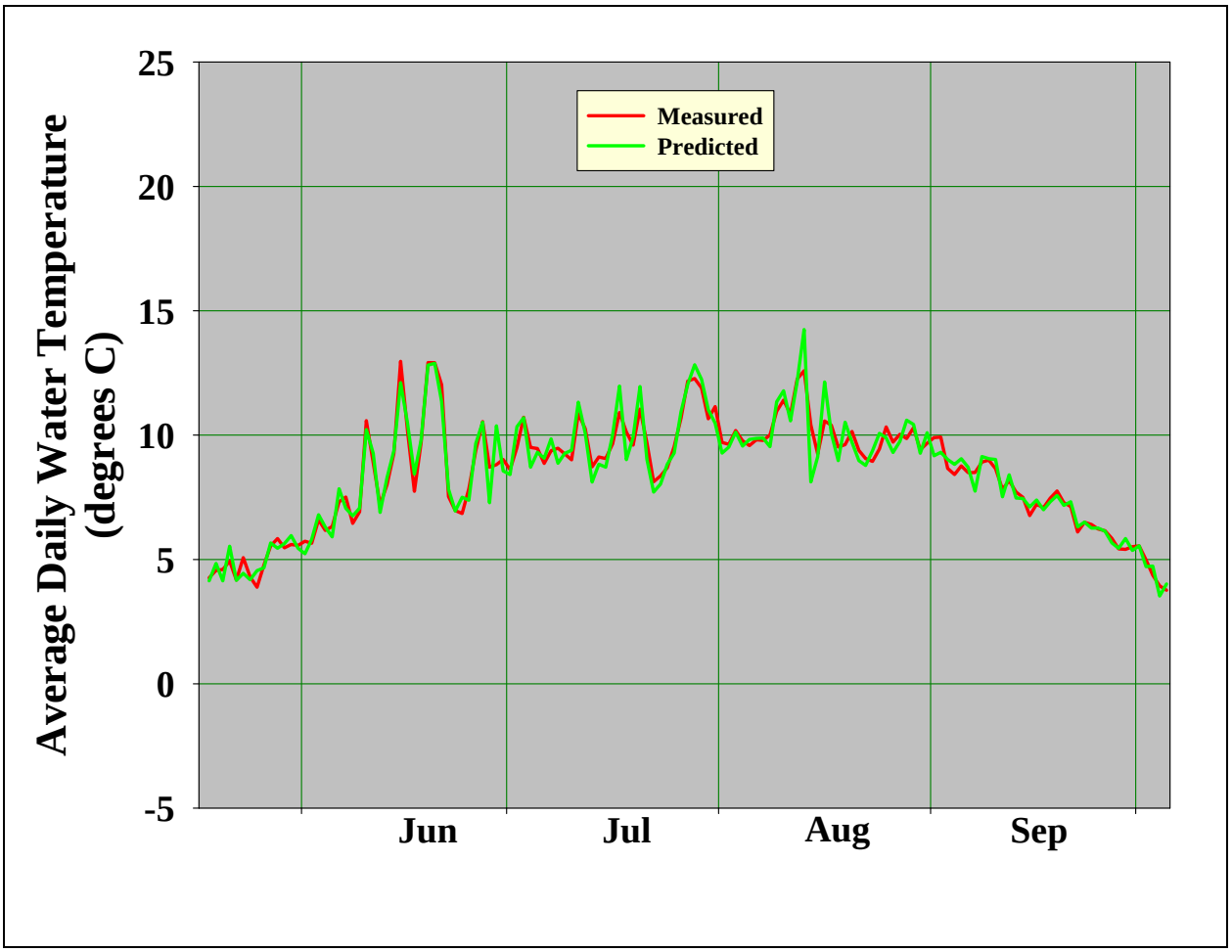


FIGURE 37
Comparison of Measured with Predicted Average Daily Water Temperatures in the NFK at Hydrology Gage NK100A1 (RK 13.70 in NFK-B), May 18 to October 5, 2007

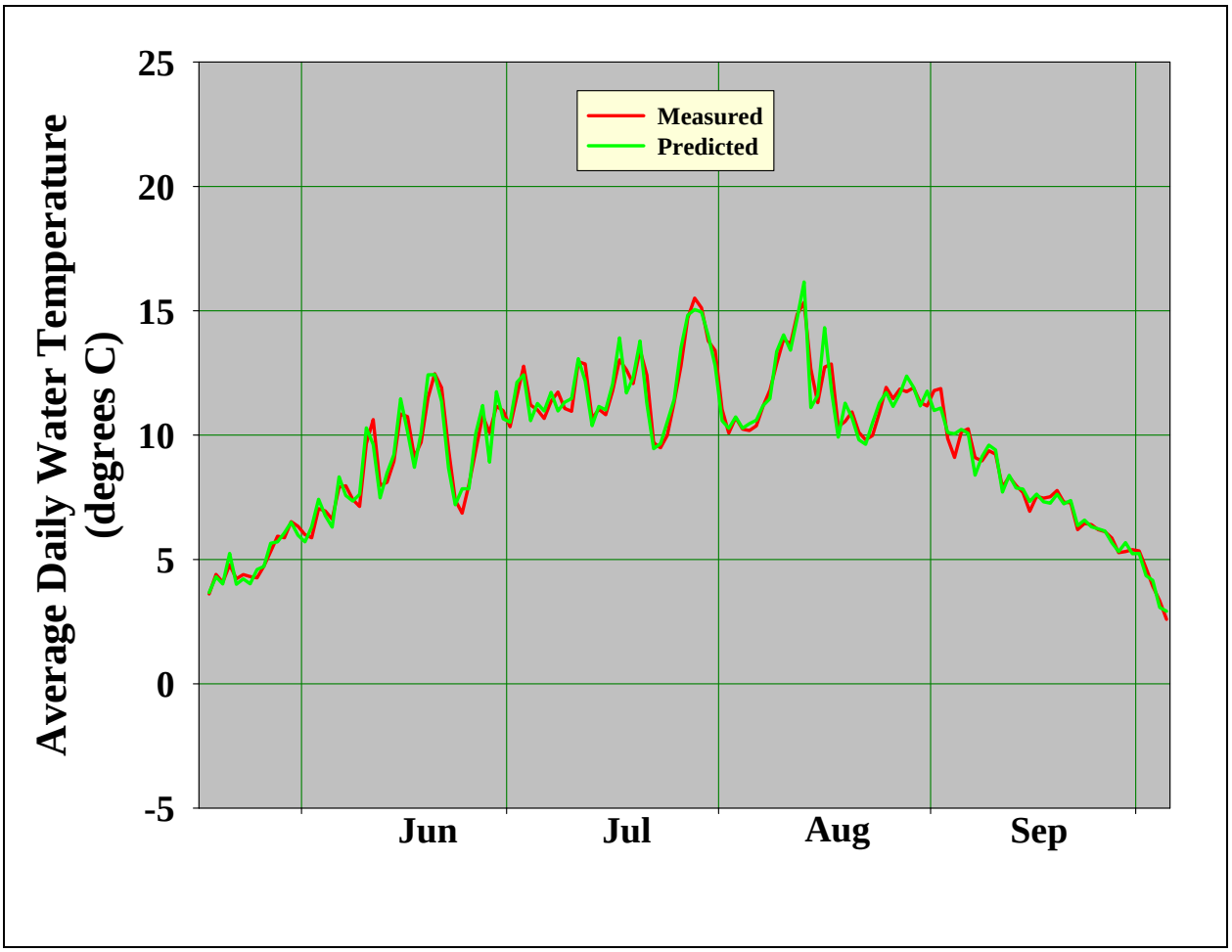


FIGURE 38
Comparison of Measured with Predicted Average Daily Water Temperatures in the NFK at Hydrology Gage NK100B (RK 35.75 in NFK-C), May 18 to October 5, 2007

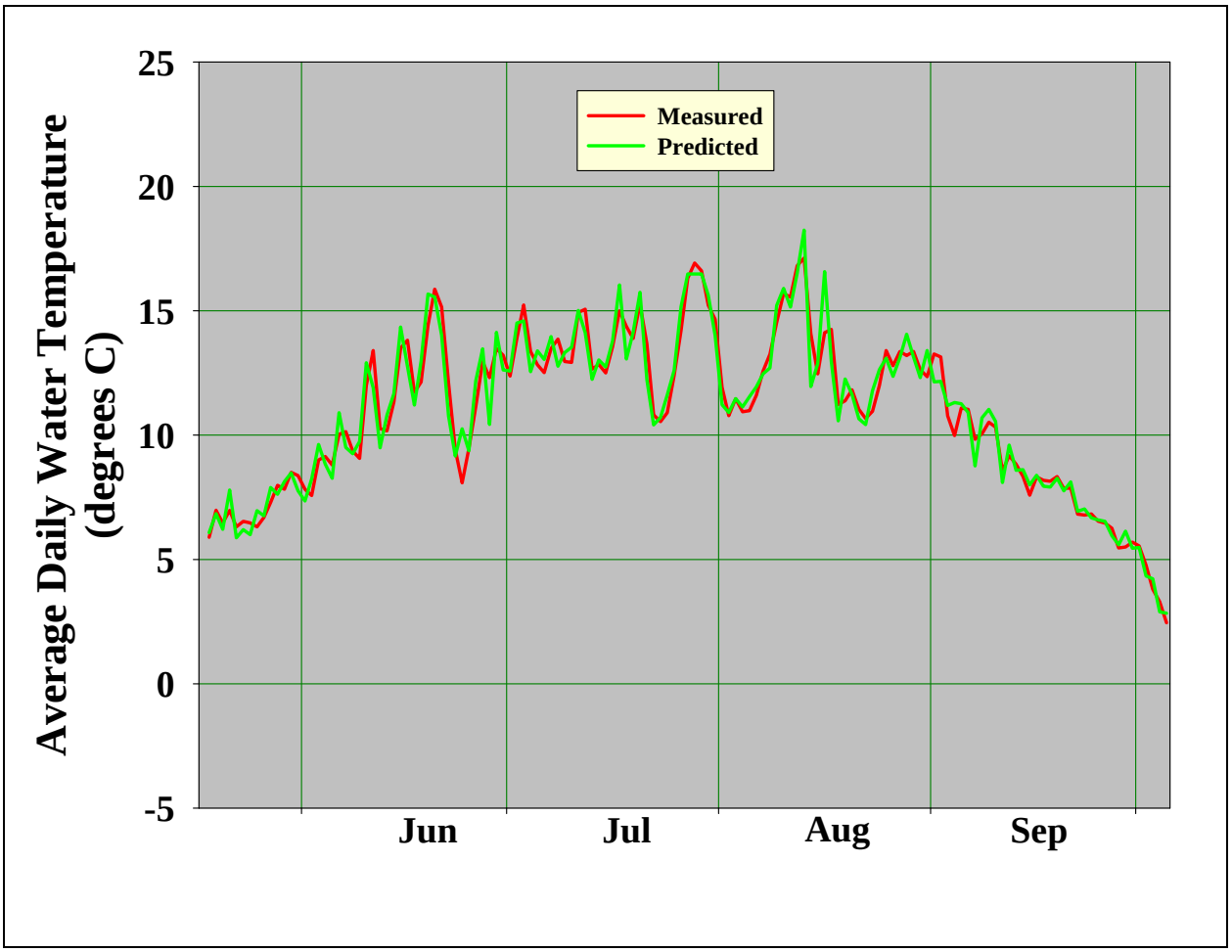


FIGURE 39
Comparison of Measured with Predicted Average Daily Water Temperatures in the NFK at Hydrology Gage NK100C (RK 36.76 in NFK-D), May 18 to October 5, 2007

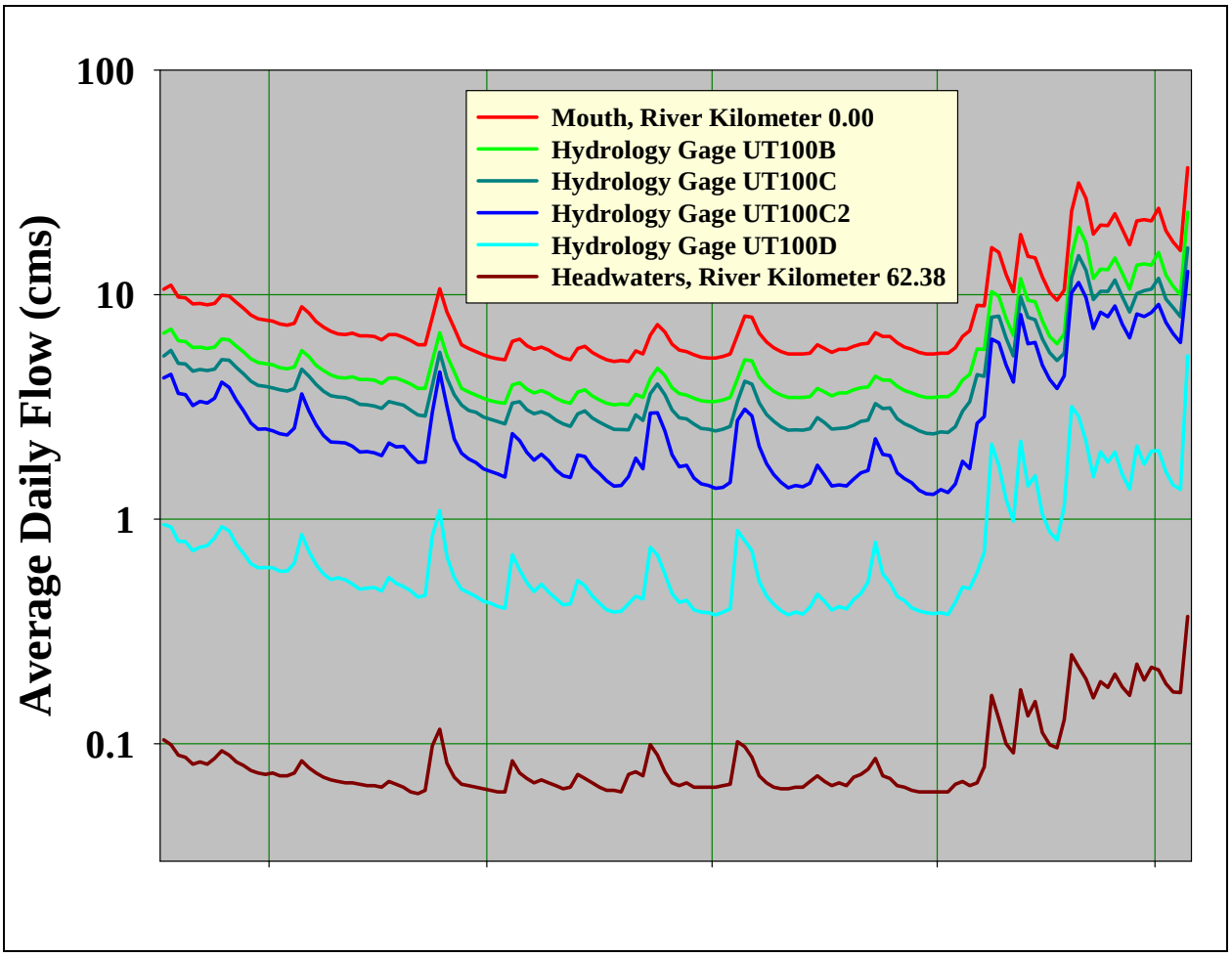


FIGURE 40
Estimated Daily Flows in the UT at the mouth (Iliamna Lake), Measured Flows at Four Hydrology Gages, and Estimated Flows in the Headwaters at RK 57.67, May 17 to October 5, 2007

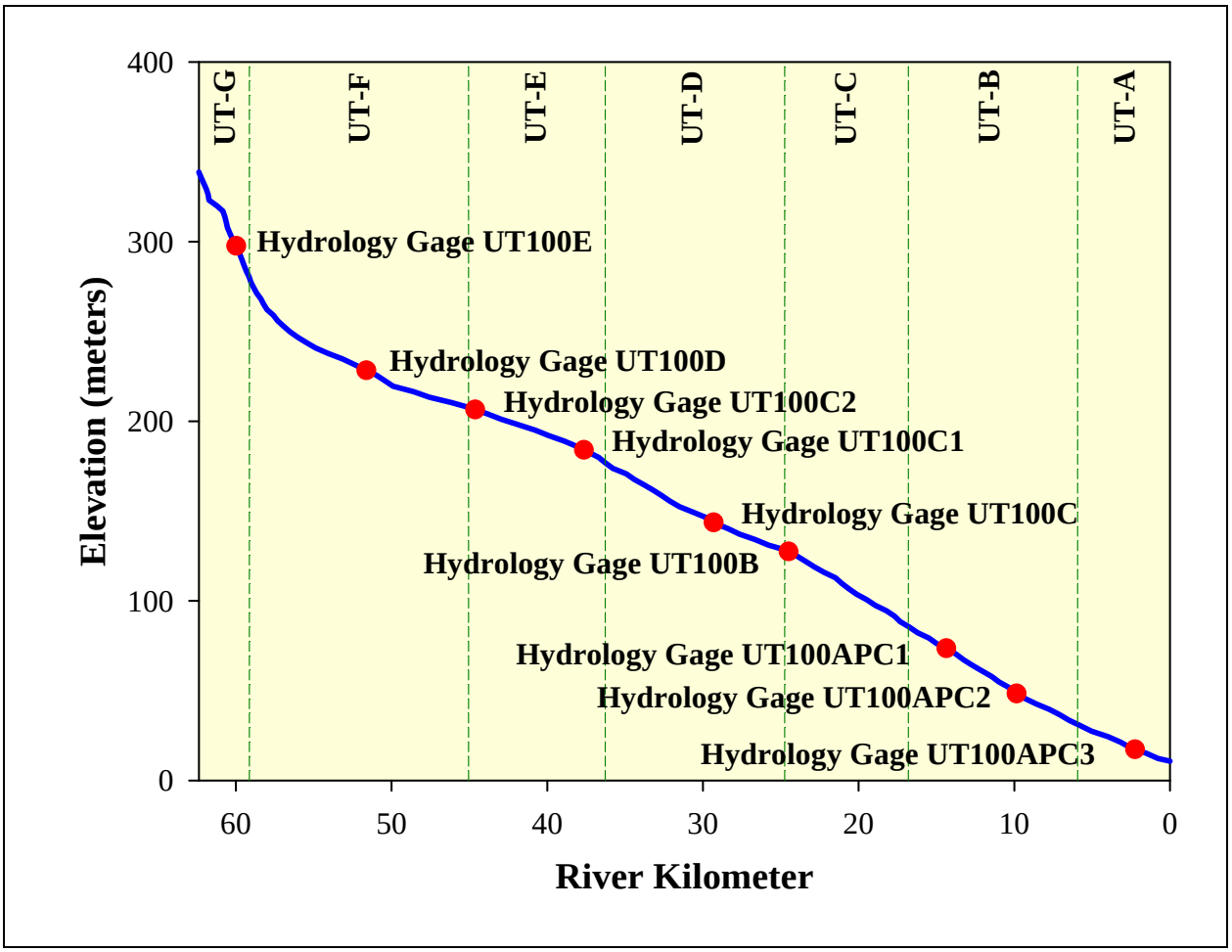


FIGURE 41
Longitudinal Profile of the UT from the Upstream End (RK 62.38) to the Downstream End (RK 0.00)

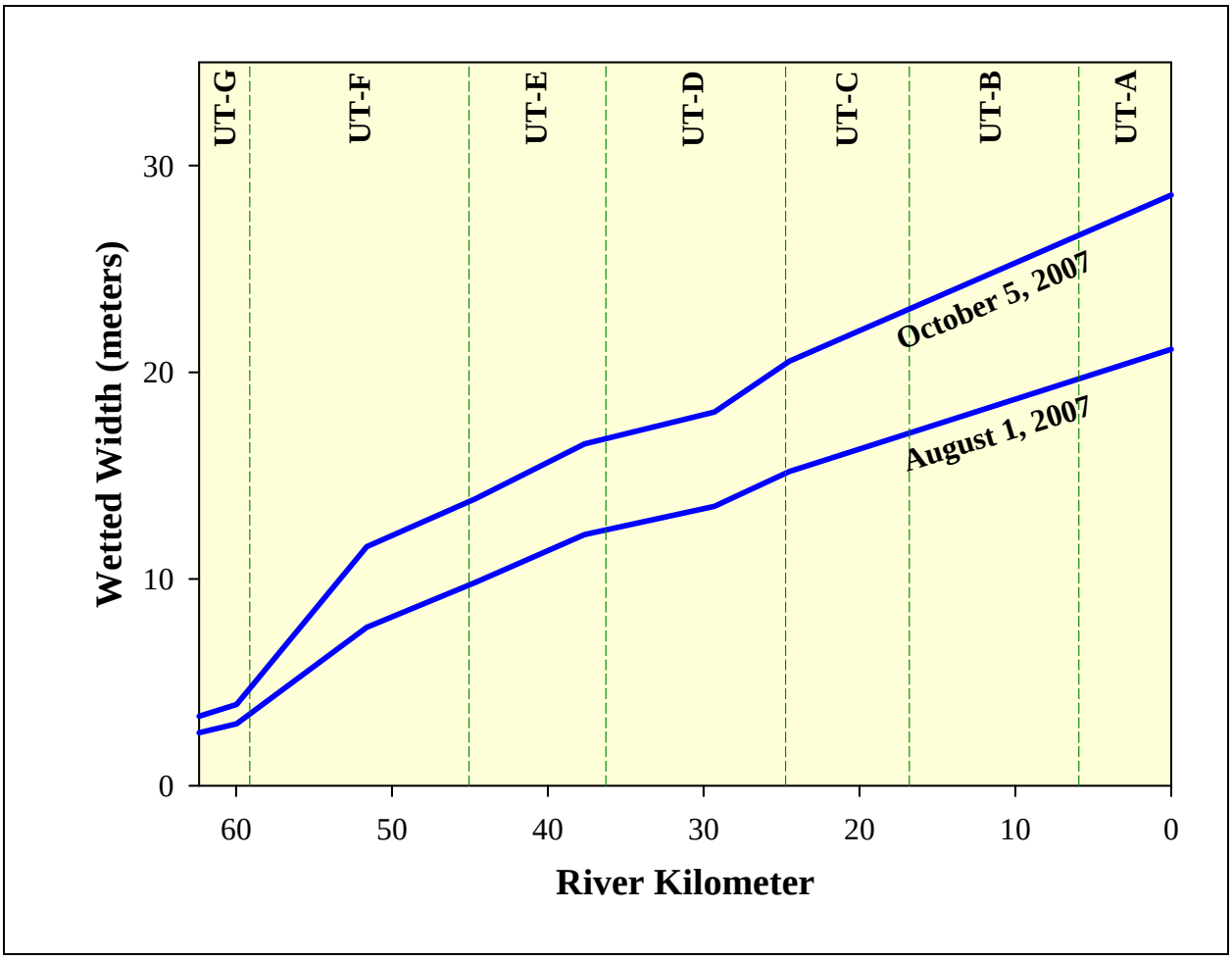


FIGURE 42
Wetted Width in the UT Simulated in the SNTEMP Model Under Relatively High (October 5, 2007) and low (August 1, 2007) Flow Conditions

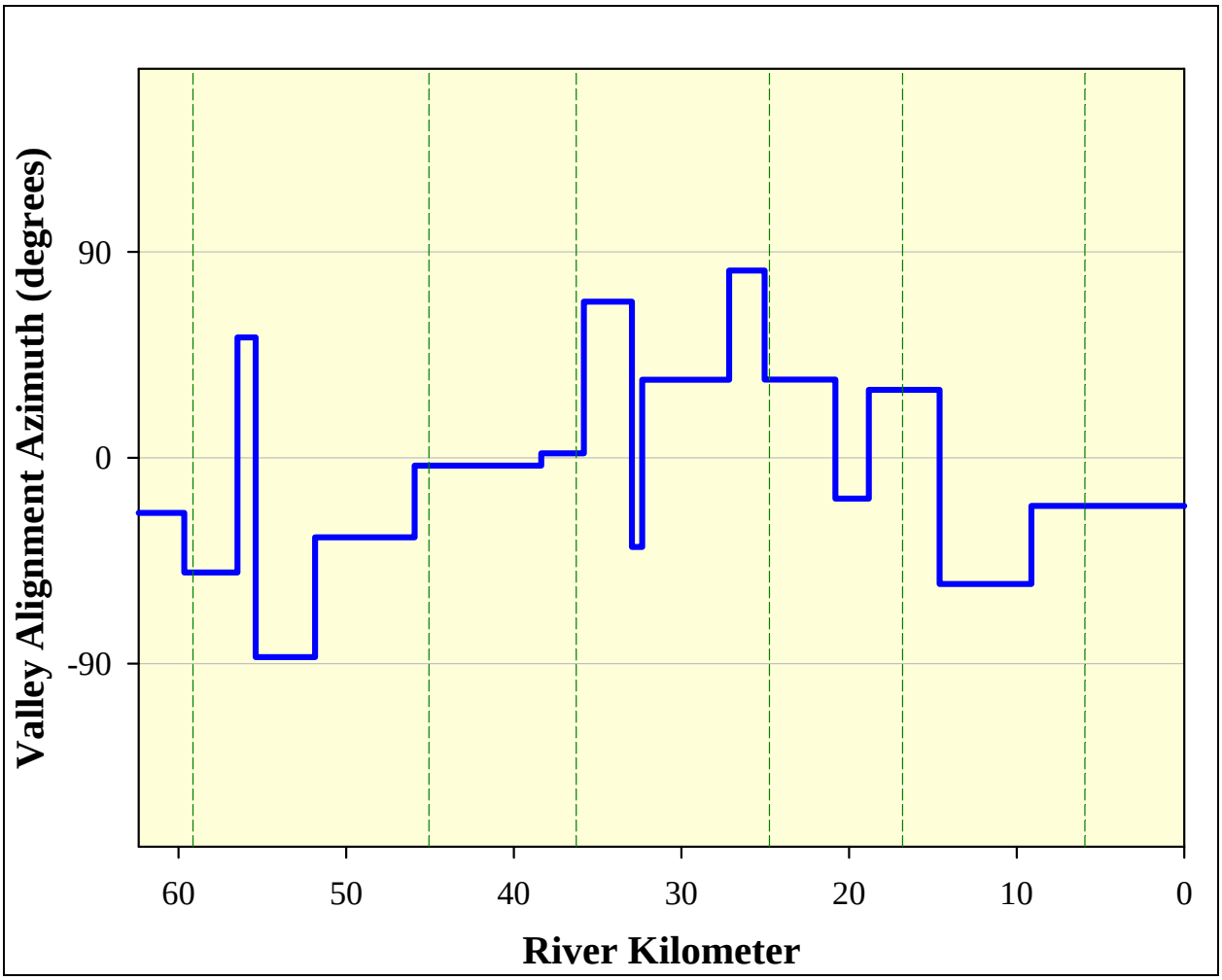


FIGURE 43
Alignment of the UT Valley, as Characterized by Azimuth

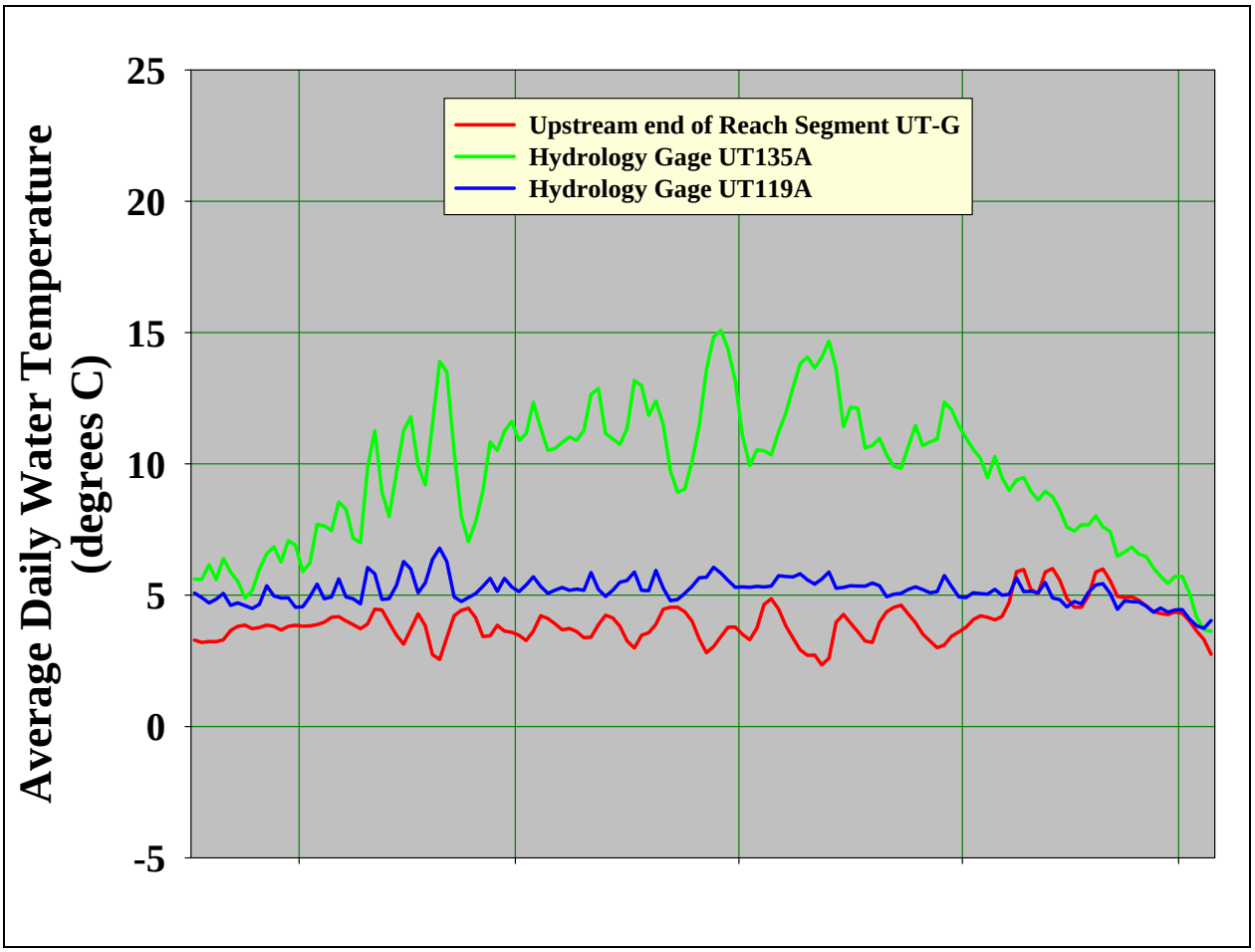


FIGURE 44
Estimated Average Daily Water Temperatures in the UT at the Upstream End (RK 62.38) and Measured Average Daily Water Temperatures in Tributary UT 1.350 (Hydrology Gage UT135A) and Tributary UT 1.190 (Hydrology Gage UT119A), May 17 to October 5, 2007

Note: Data were used as inputs to the SNTEMP model.

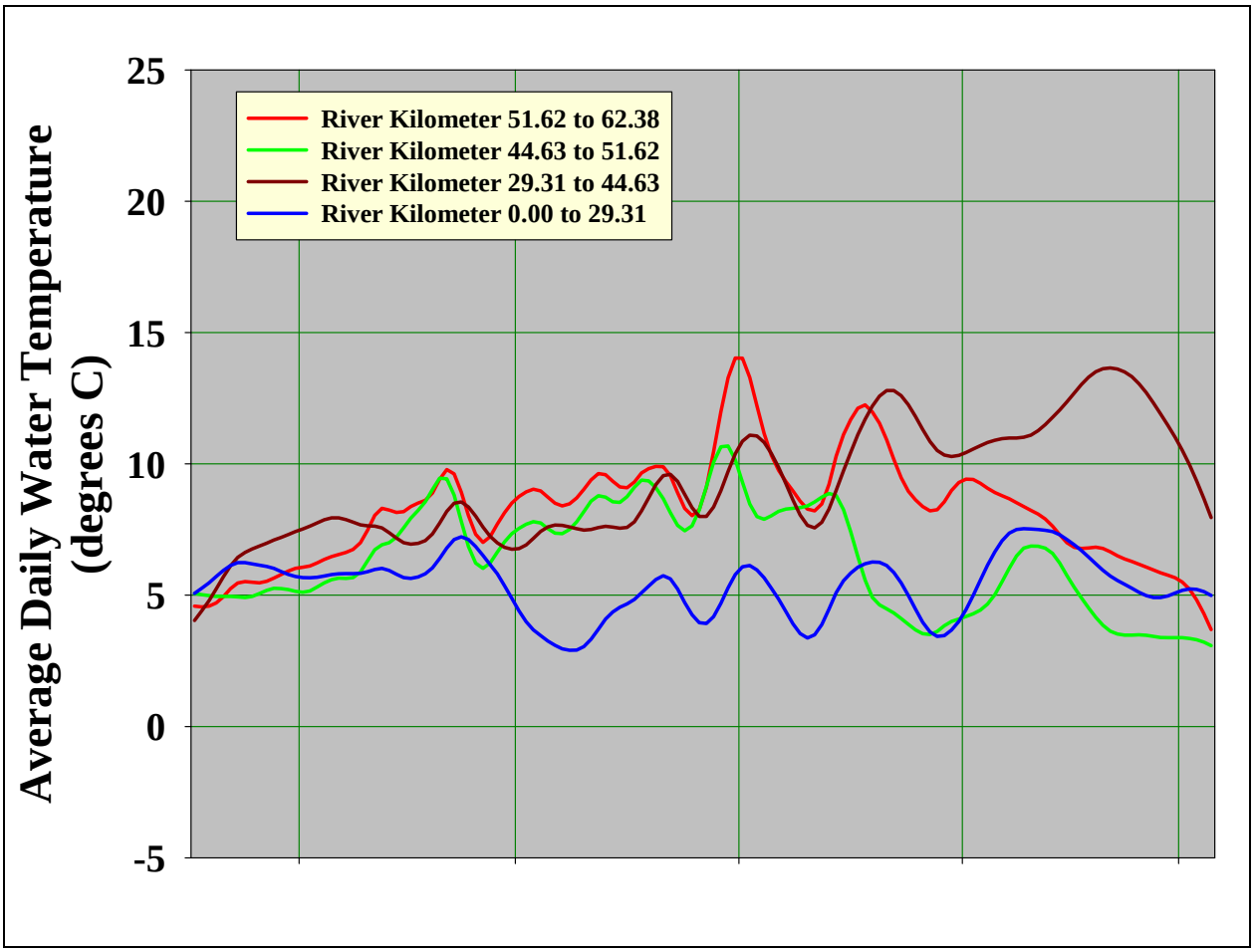


FIGURE 45
Estimated Average Daily Water Temperatures of Lateral Accretion Flows From Surface Water and/or Groundwater Sources to the UT, May 17 to October 5, 2007

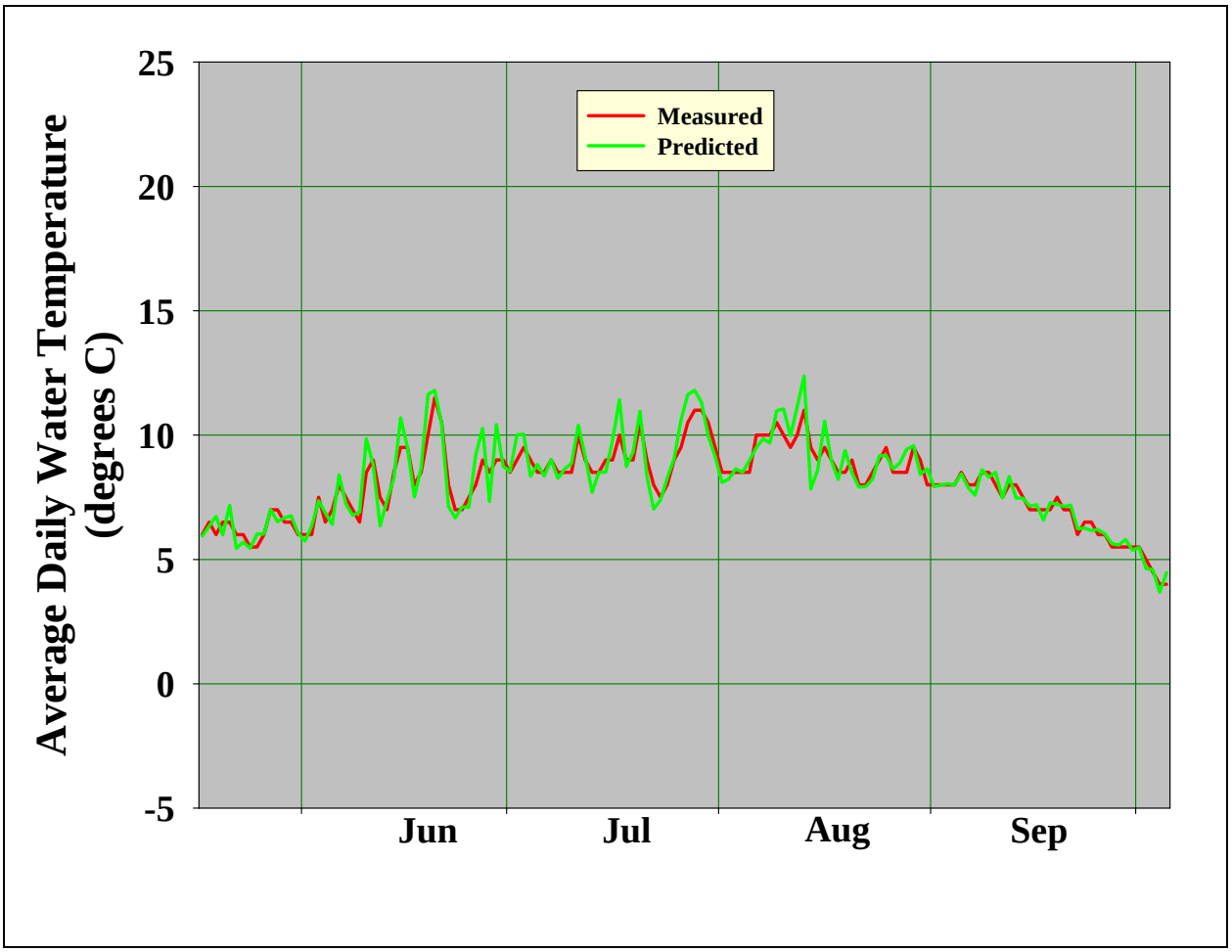


FIGURE 46
Comparison of Measured with Predicted Average Daily Water Temperatures in the UT at Hydrology Gage UT100B (RK 24.50 in UT-C), May 17 to October 5, 2007

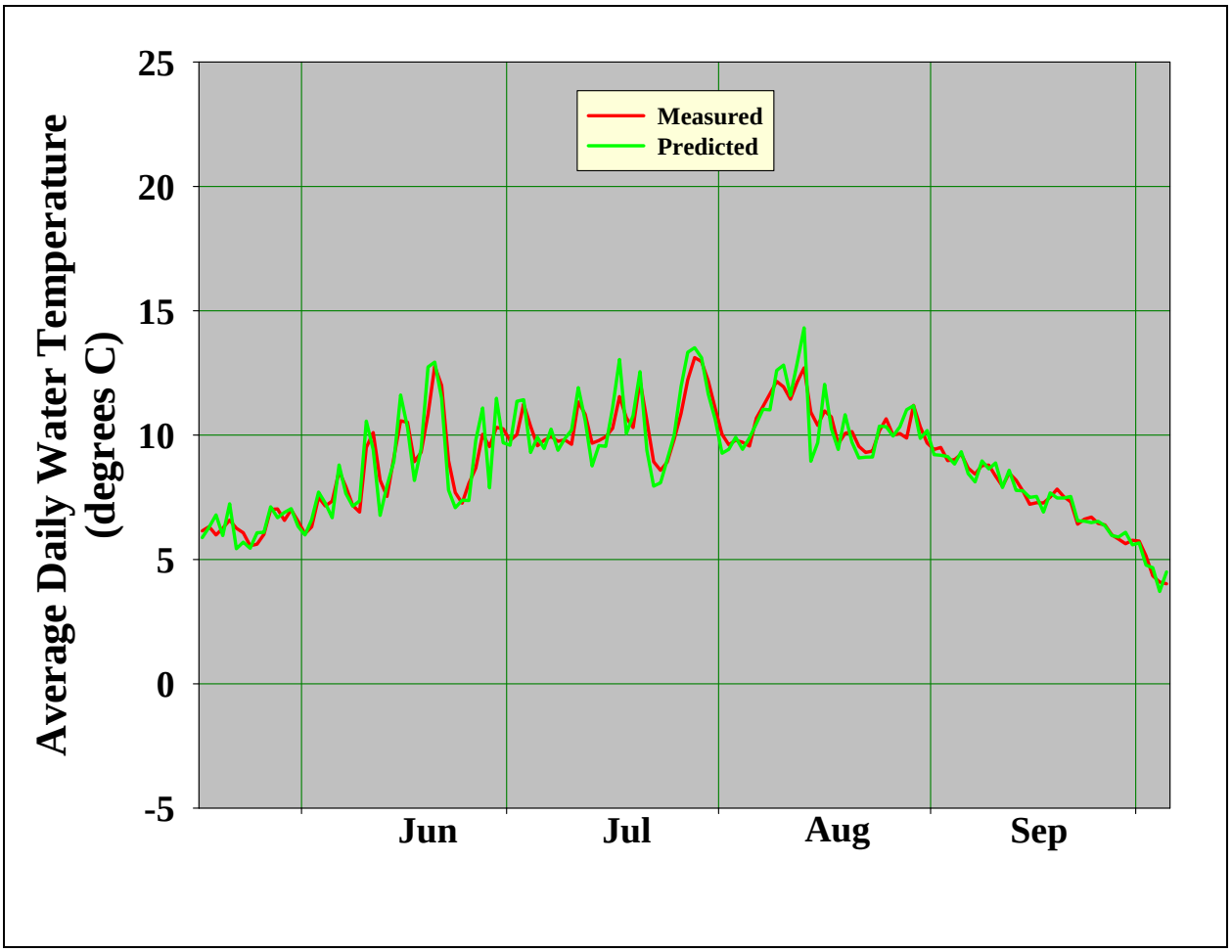


FIGURE 47
Comparison of Measured with Predicted Average Daily Water Temperatures in the UT at Hydrology Gage UT100C (RK 25.04 in UT-D), May 17 to October 5, 2007

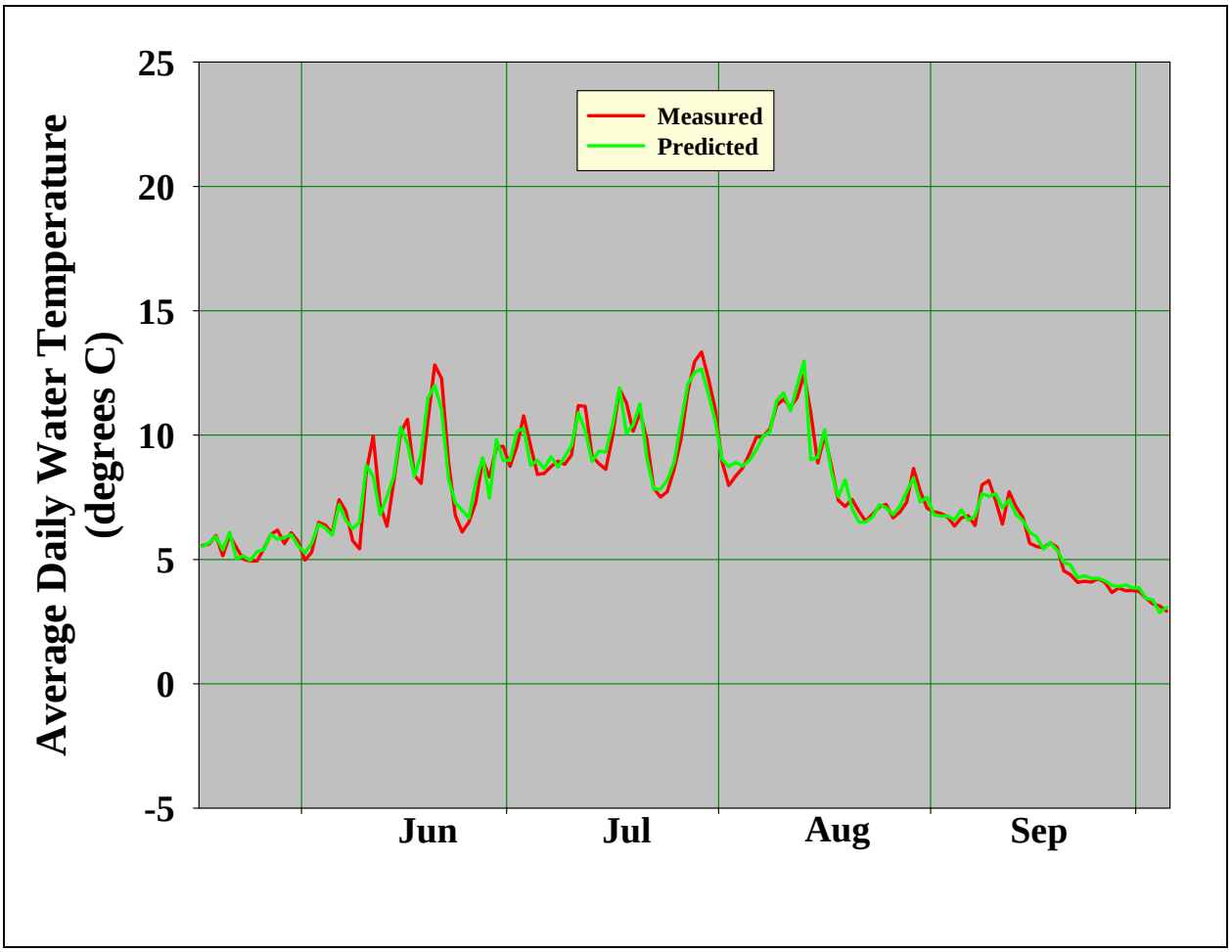


FIGURE 48
Comparison of Measured with Predicted Average Daily Water Temperatures in the UT at Hydrology Gage UT100C2 (RK 44.63 in UT-E), May 17 to October 5, 2007

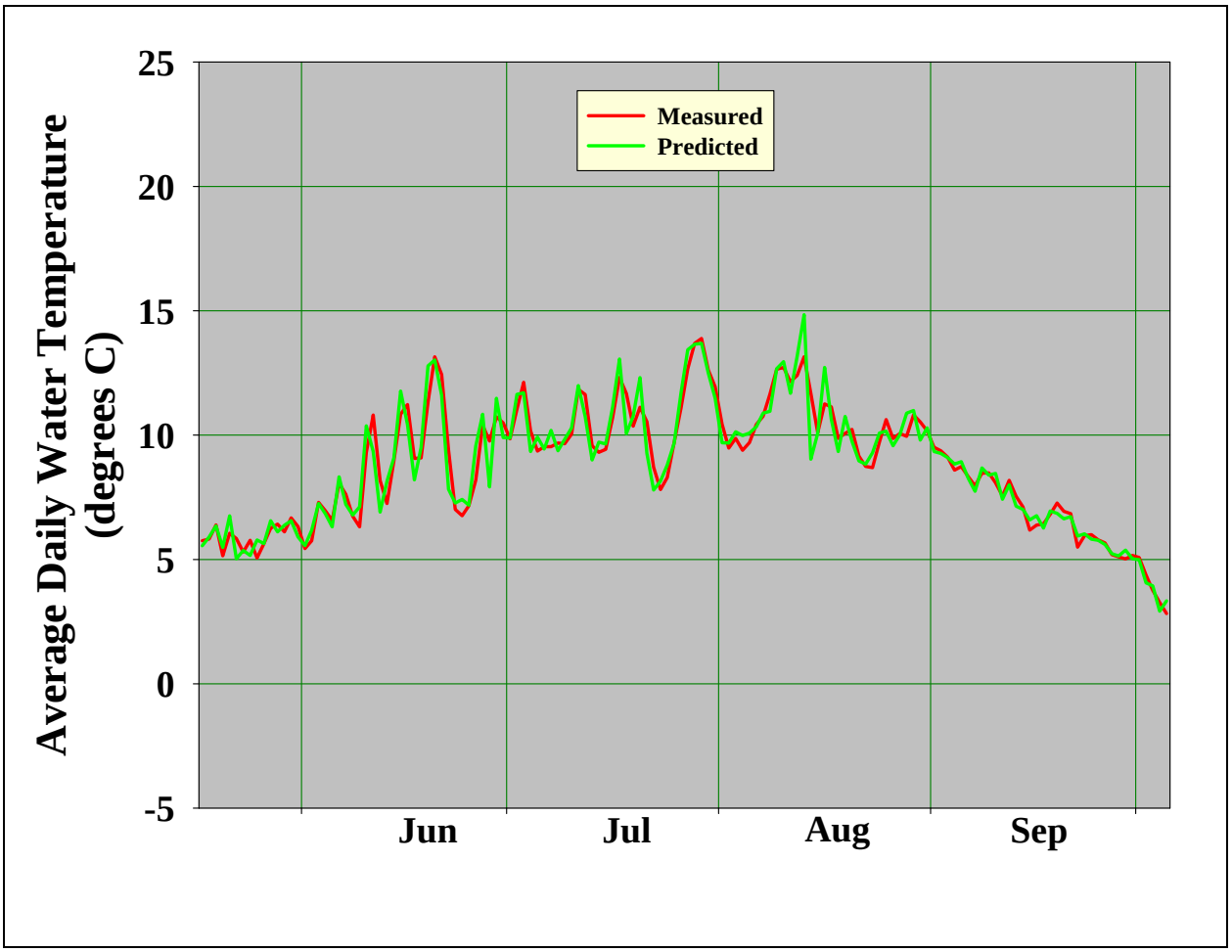


FIGURE 49
Comparison of Measured with Predicted Average Daily Water Temperatures in the UT at Hydrology Gage UT100D (RK 51.62 in UT-F), May 17 to October 5, 2007

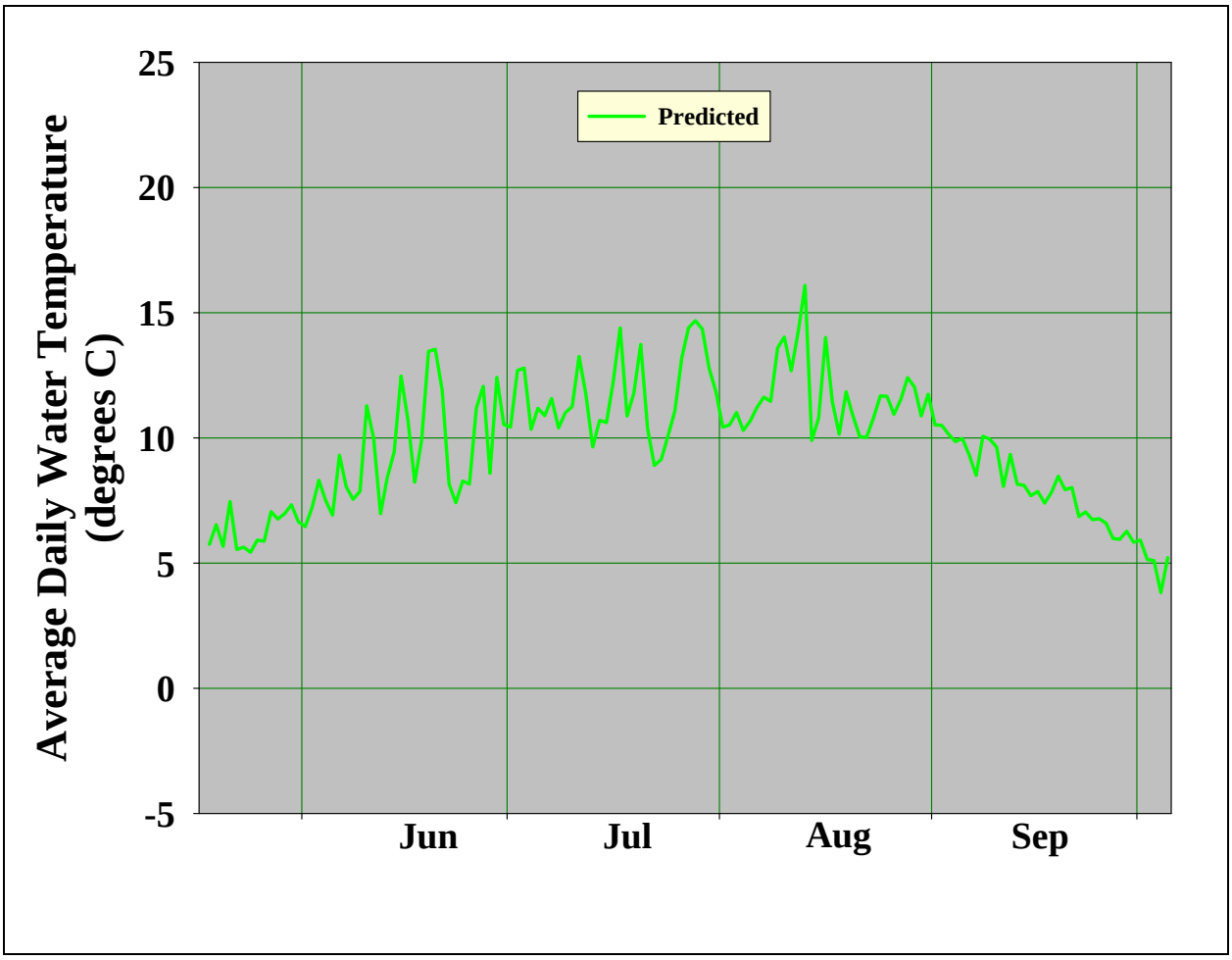


FIGURE 50
Estimated Water Temperatures at the Upstream End of the Koktuli River, May 17 to October 5, 2007

Note: Data derived from a mixing calculation of flow and water temperature at the downstream ends of the NFK and SFK.

PHOTOGRAPHS

PHOTO 1: Pebble water temperature recorders were installed within a protective housing of PVC pipe, and tethered to a steel cable that was anchored to the top of the streambank, July 2008.

PHOTO 2: Recovery of thermistors in October 2008 in the NFK required breaking the ice cover. No instruments were damaged as a result of these activities.

PHOTO 3: Shade provided by trees along the UT streambank at IFIM Site 08-UTC1-MS1, June 2008.

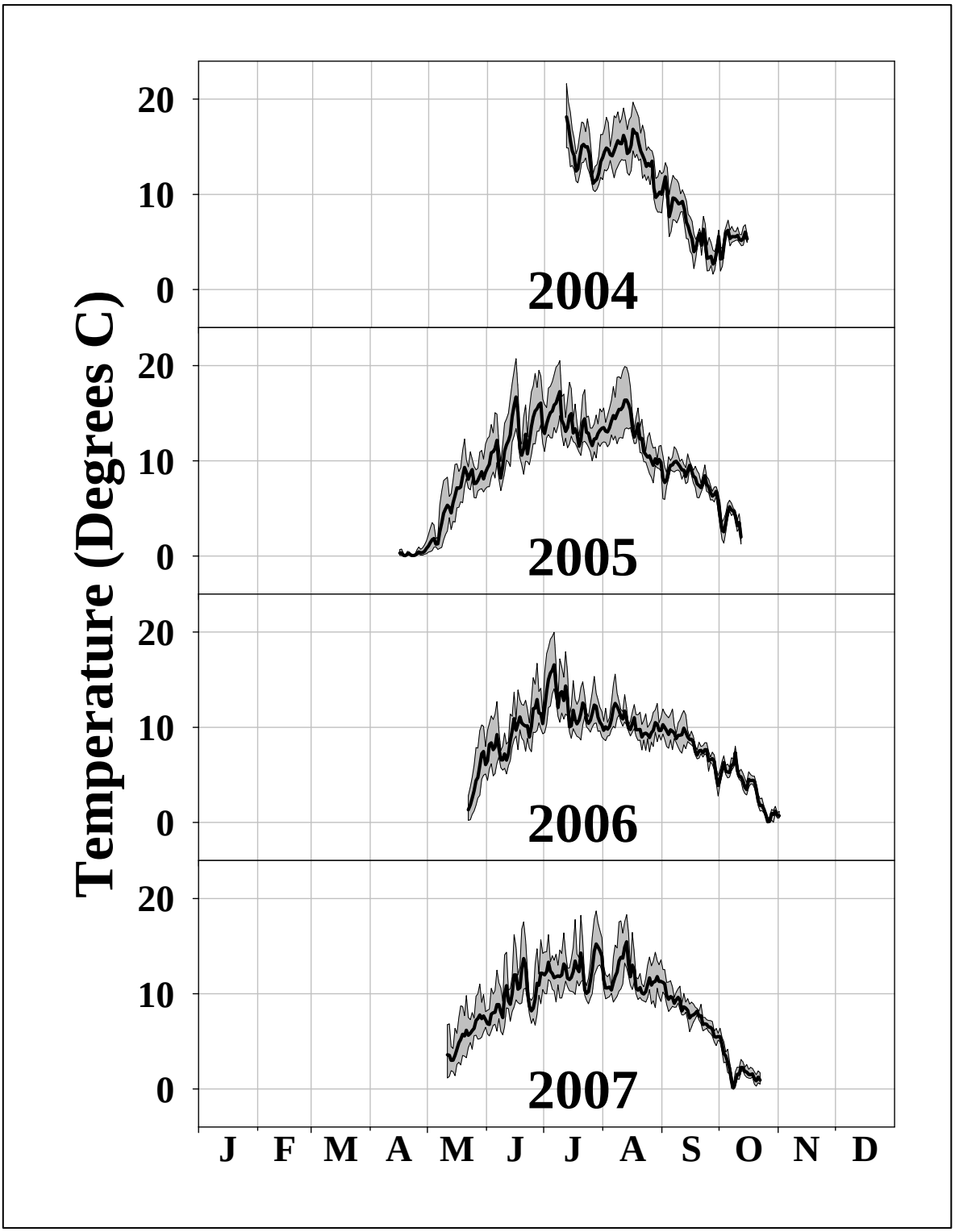
ATTACHMENTS

ATTACHMENT 1

SOUTH FORK KOKTULI RIVER THERMOGRAPHS, 2004 THROUGH 2007

Thermographs of Daily Maximum, Average, and Minimum Water Temperatures and Tables of Monthly Minimum Instantaneous, Minimum Daily, Monthly Average, Maximum Daily, and Maximum Instantaneous Water Temperatures at Hydrology and Water Temperature Monitoring Sites

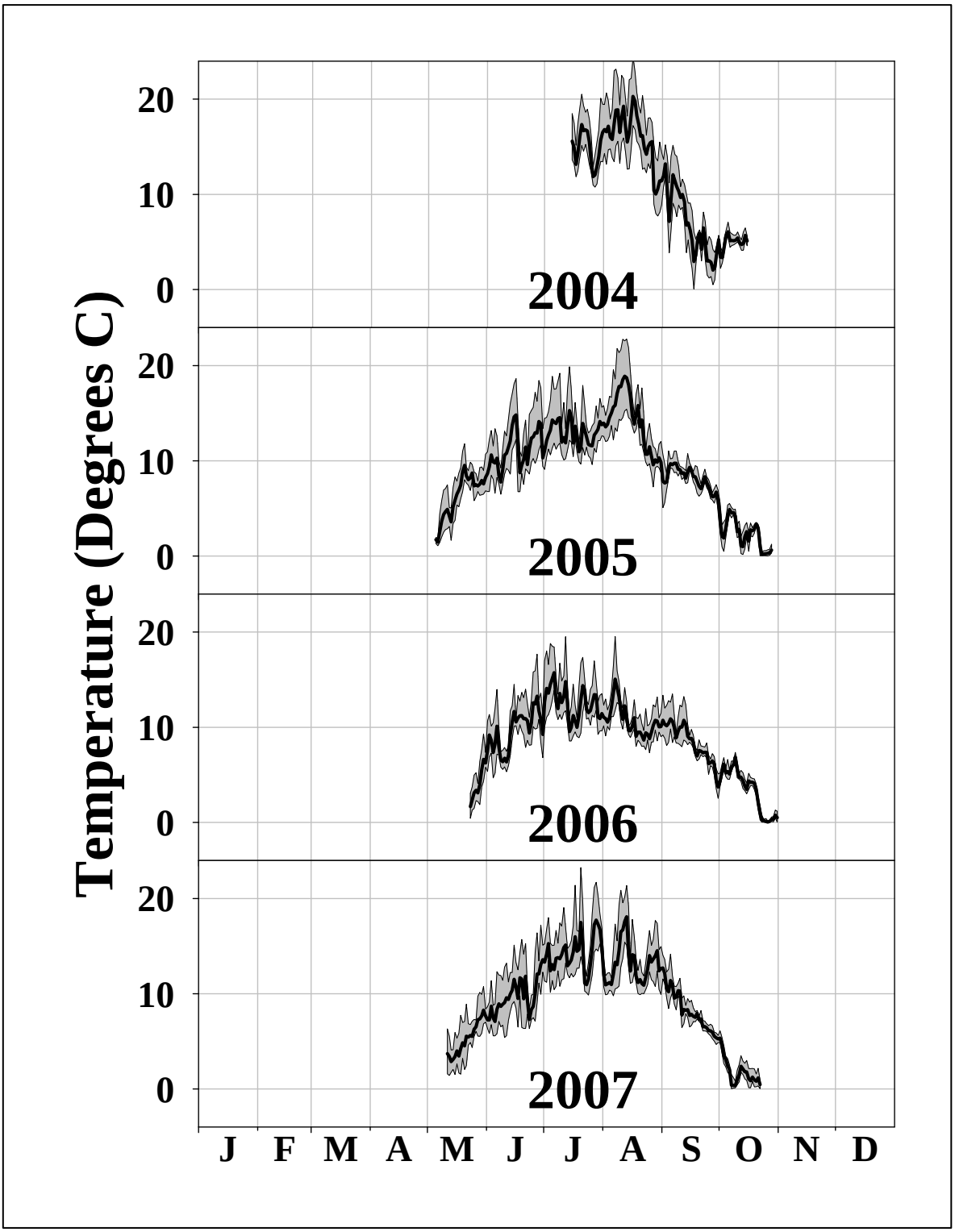
Note: There are several reasons for missing data gaps in this attachment. Hydrology gages (which are also used to measure temperature) are normally removed prior to winter freeze up, and reinstalled after the ice melts. Missing data gaps at other locations occurred when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100G (River Kilometer 58.01 in SFK-E), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100G (River Kilometer 58.01 in SFK-E), 2004 through 2007

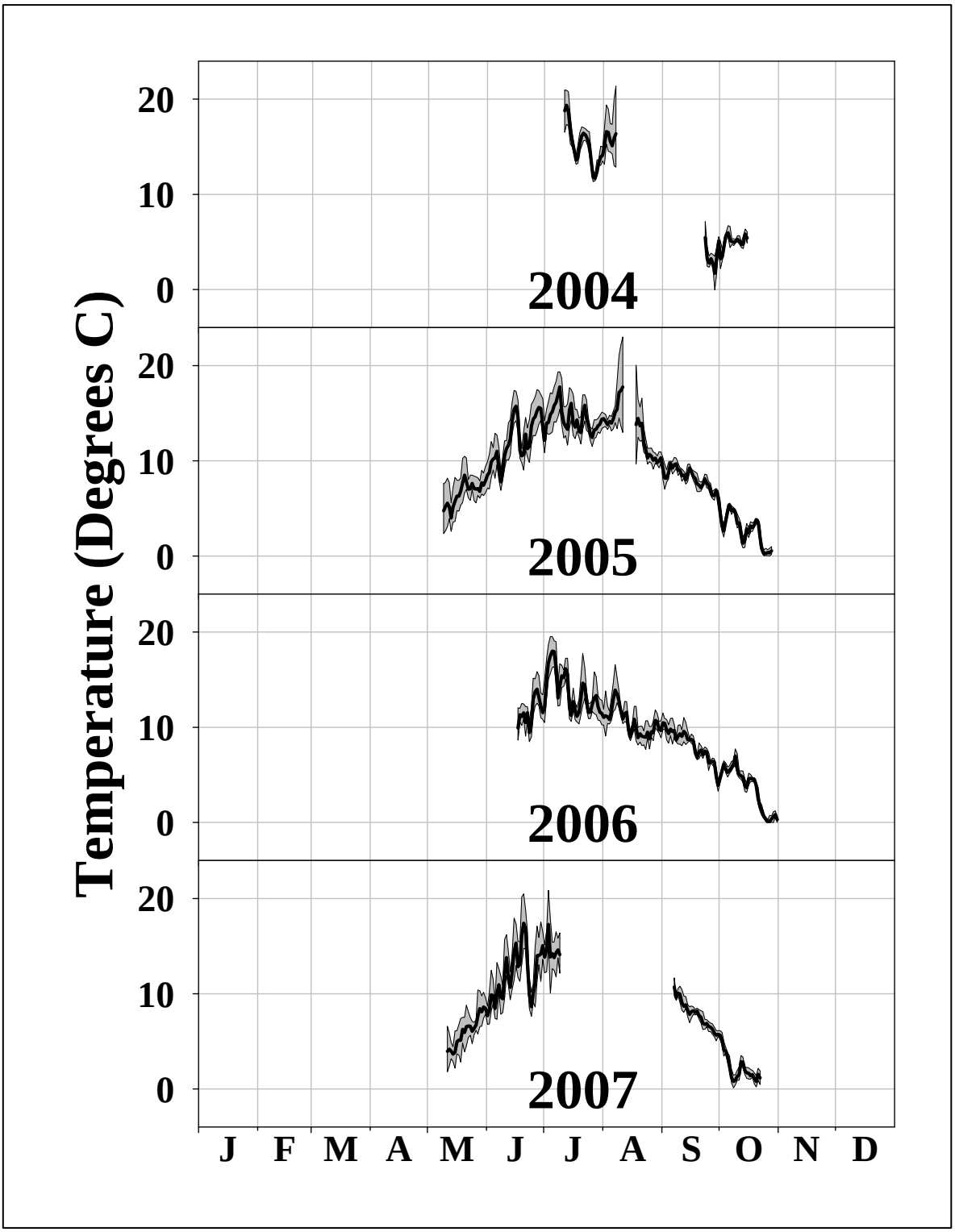
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	8.0	9.7	14.0	16.8	19.7
	Sep	1.6	2.7	6.6	11.8	13.3
2005	May	0.4	1.0	5.9	9.3	12.3
	Jun	6.9	8.2	12.5	16.7	20.7
	Jul	10.0	11.5	13.8	17.3	20.5
	Aug	7.7	9.5	13.0	16.4	19.9
	Sep	4.6	5.7	8.2	10.0	11.5
2006	May					
	Jun	4.4	6.5	9.3	12.9	16.7
	Jul	8.7	10.0	12.3	16.6	20.0
	Aug	7.4	8.9	10.3	12.5	15.6
	Sep	2.8	3.9	8.2	10.3	11.9
	Oct	0.0	0.1	3.6	7.3	8.0
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	5.6	6.8	9.8	13.7	17.5
	Jul	8.9	10.0	12.5	15.2	18.7
	Aug	8.5	10.0	11.7	15.5	18.3
	Sep	4.6	5.4	8.1	11.2	12.5
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100F (River Kilometer 54.67 in SFK-D), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100F (River Kilometer 54.67 in SFK-D), 2004 through 2007

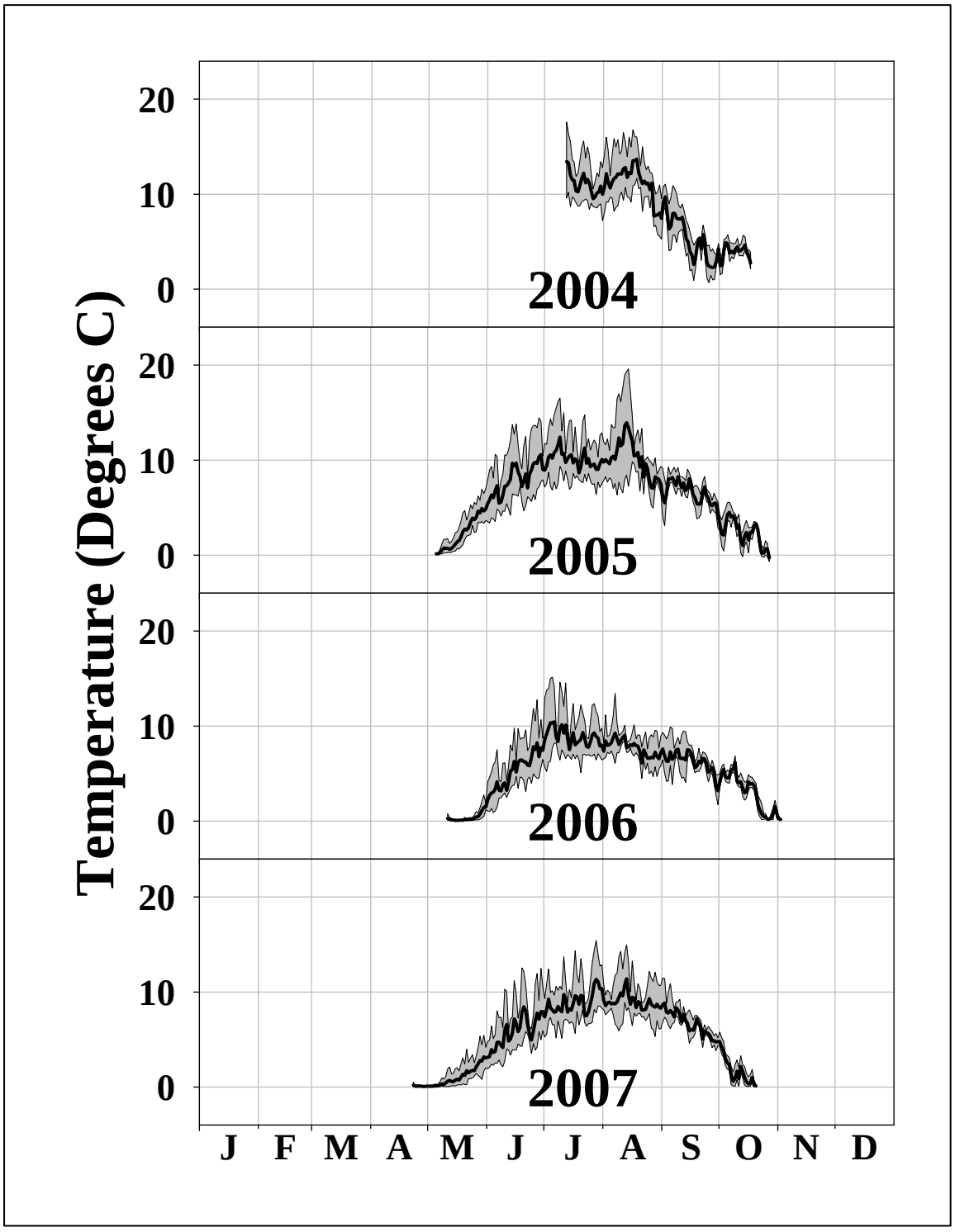
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	7.7	10.0	16.0	20.3	24.4
	Sep	0.1	2.0	6.9	13.2	15.2
2005	May					
	Jun	6.5	7.8	11.1	14.8	18.6
	Jul	9.1	10.9	13.0	15.3	19.9
	Aug	7.3	9.6	14.1	18.9	22.8
	Sep	4.9	5.9	8.1	9.7	11.0
2006	May					
	Jun	4.7	6.4	9.7	13.3	17.7
	Jul	8.5	9.5	12.5	15.7	19.5
	Aug	7.3	8.7	10.7	15.1	19.5
	Sep	2.5	3.7	8.4	10.9	13.5
	Oct	0.0	0.0	3.3	6.9	7.4
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	5.4	7.1	9.7	13.6	17.2
	Jul	9.9	10.9	14.3	17.7	23.3
	Aug	9.8	10.9	13.2	18.1	21.4
	Sep	4.7	5.2	8.2	12.7	14.2
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100C (River Kilometer 35.81 in SFK-C), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100C (River Kilometer 35.81 in SFK-C), 2004 through 2007

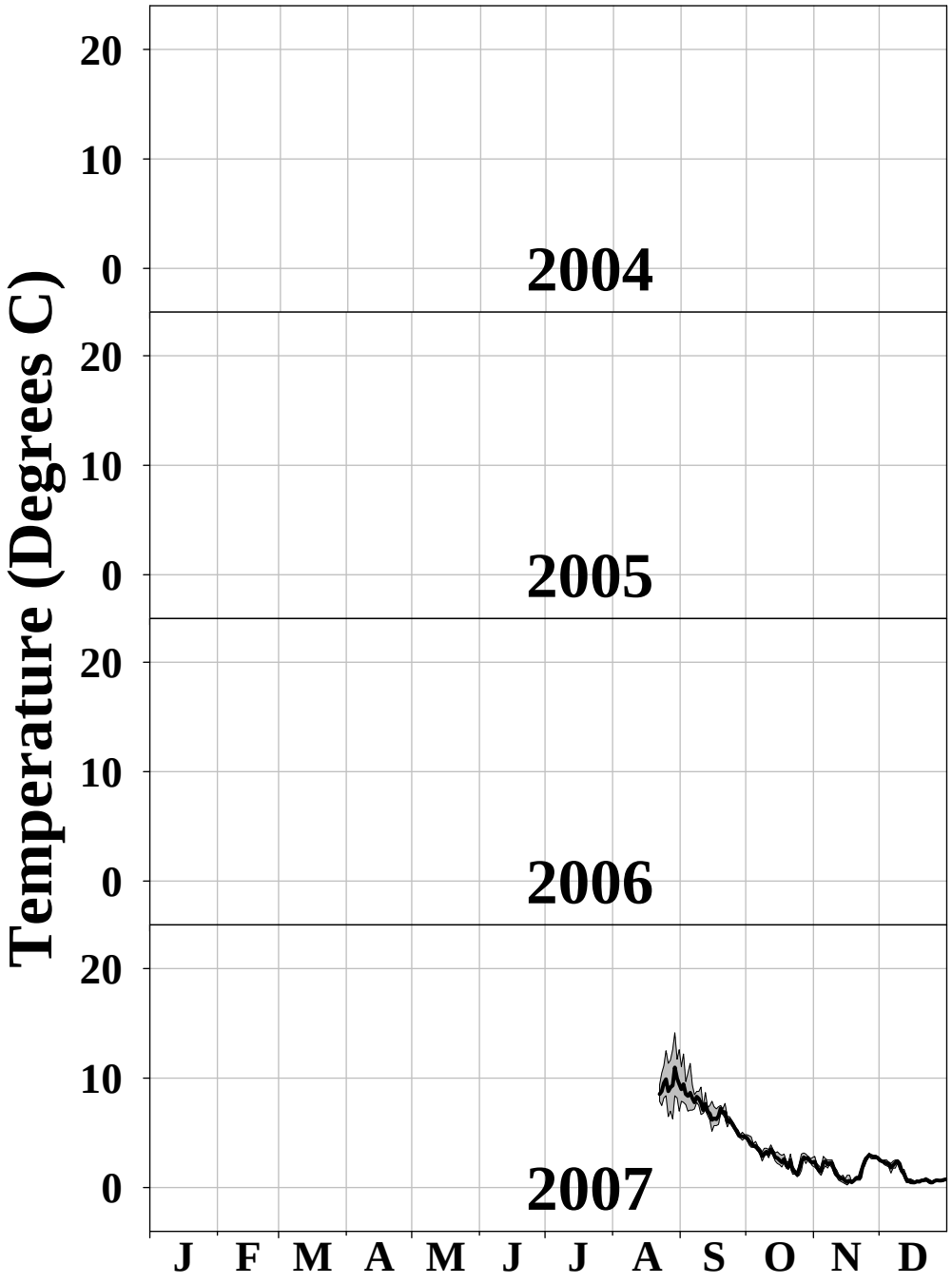
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	May					
	Jun	6.9	7.8	12.0	15.7	17.5
	Jul	10.8	12.1	14.3	17.8	19.4
	Aug					
	Sep	5.5	6.0	8.1	9.7	10.4
2006	May					
	Jun					
	Jul	10.3	11.1	13.7	18.0	19.5
	Aug	7.7	8.8	10.5	13.9	16.6
	Sep	3.3	3.9	8.1	10.5	11.5
	Oct	0.0	0.1	3.5	7.0	7.7
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	6.8	7.7	12.0	17.4	20.5
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Tributary SFK 1.190 at hydrology gage SK119A (confluence with South Fork Koktuli River at River Kilometer 34.28 in SFK-B), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary SFK 1.190 at hydrology gage SK119A (confluence with South Fork Koktuli River at River Kilometer 34.28 in SFK-B), 2004 through 2007

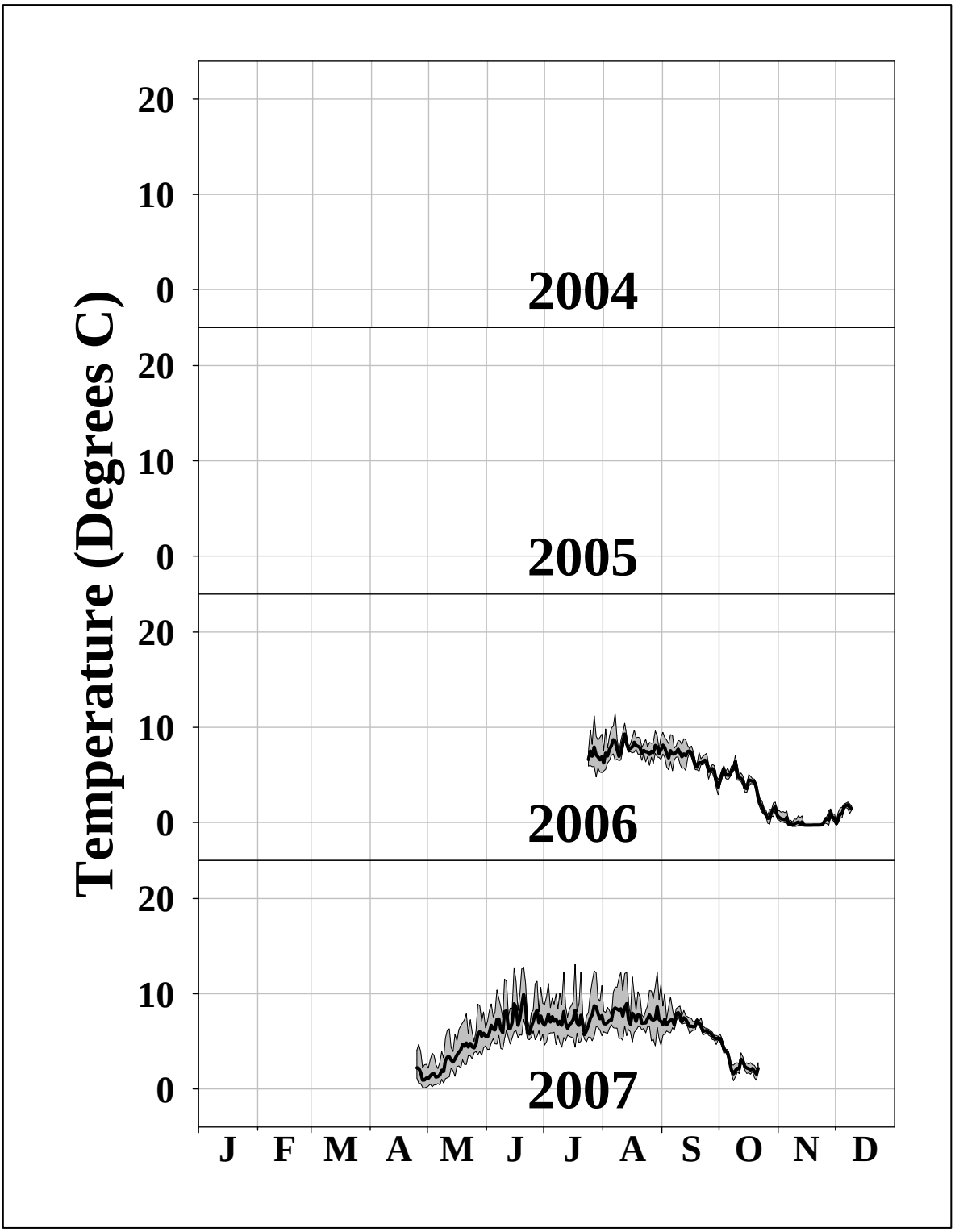
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	6.5	8.3	11.3	13.8	17.1
	Sep	0.5	2.6	5.8	10.0	11.7
2005	May	0.1	0.5	2.1	4.6	7.1
	Jun	2.9	5.0	7.7	10.3	14.4
	Jul	6.7	9.0	10.1	12.4	16.3
	Aug	5.8	7.3	9.9	12.3	16.6
	Sep	3.6	4.7	6.5	7.8	8.8
2006	May					
	Jun	1.1	3.0	5.2	8.0	12.2
	Jul	5.2	7.4	8.7	10.5	14.9
	Aug	4.8	6.0	7.3	9.0	12.2
	Sep	2.5	3.7	6.3	7.7	9.9
	Oct	0.0	0.0	3.4	6.1	6.7
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	2.2	3.8	6.6	10.7	14.3
	Jul	5.5	7.4	8.9	11.4	14.8
	Aug	5.9	7.9	8.9	11.2	14.1
	Sep	4.2	5.0	6.6	8.5	10.3
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Tributary SFK 1.190 at water temperature monitoring site SFK119WT (confluence with South Fork Koktuli River at River Kilometer 34.28 in SFK-B), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary SFK 1.190 at water temperature monitoring site SFK119WT (confluence with South Fork Koktuli River at River Kilometer 34.28 in SFK-B), in 2007

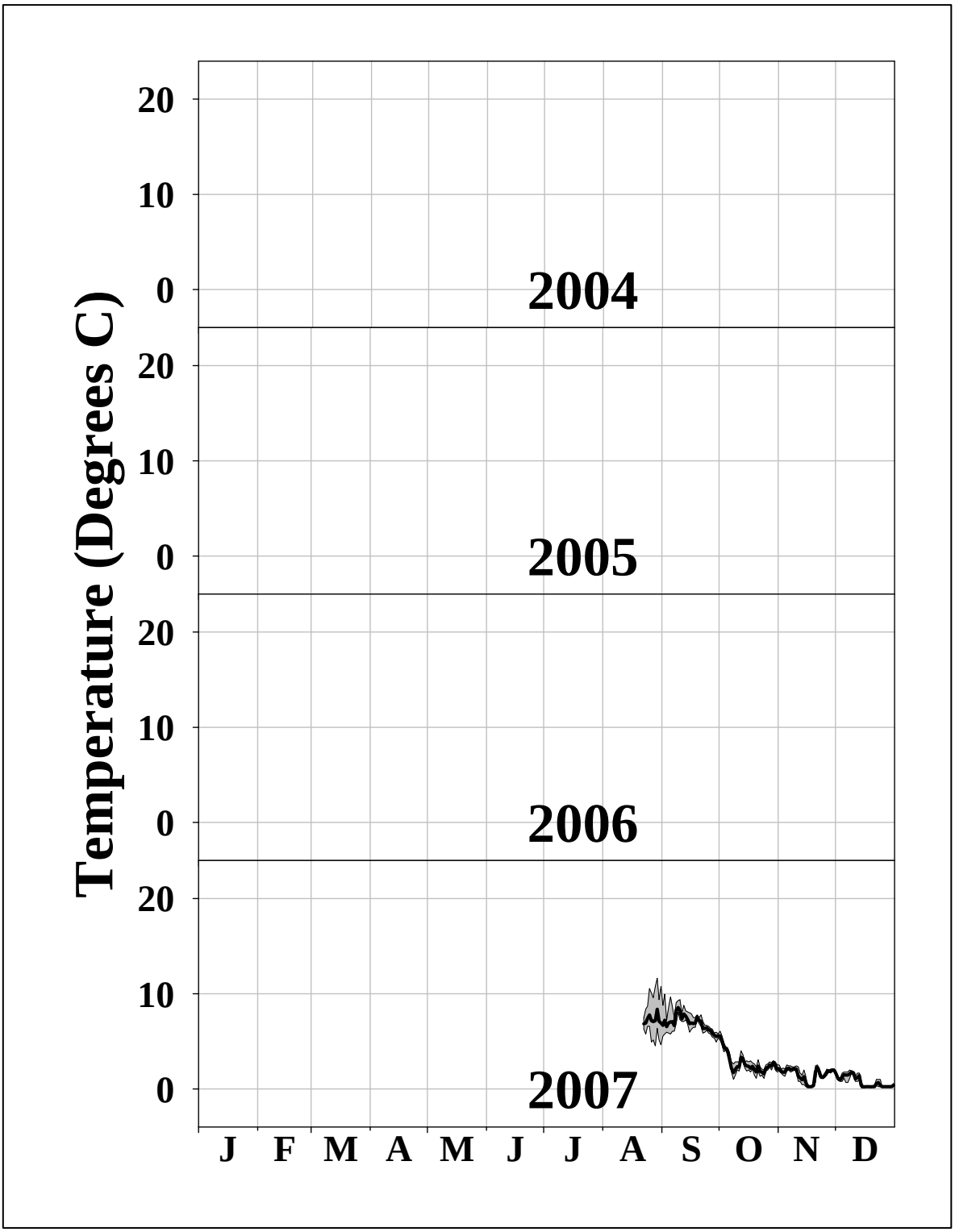
		Water Temperature (degrees C)				
Date		**Minimum Instantaneous**	**Minimum Daily**	**Monthly Average**	**Maximum Daily**	**Maximum Instantaneous**
2004	Aug					
	Sep					
2005	May					
	Jun					
	Jul					
	Aug					
	Sep					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep	4.3	4.6	6.9	9.4	12.2
	Oct	1.0	1.2	2.8	4.5	4.8
	Nov	0.2	0.5	1.7	3.0	3.2
	Dec	0.3	0.5	1.2	2.5	2.6



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100B1 (River Kilometer 29.26 in SFK-B), 2006 and 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100B1 (River Kilometer 29.26 in SFK-B), 2006 and 2007

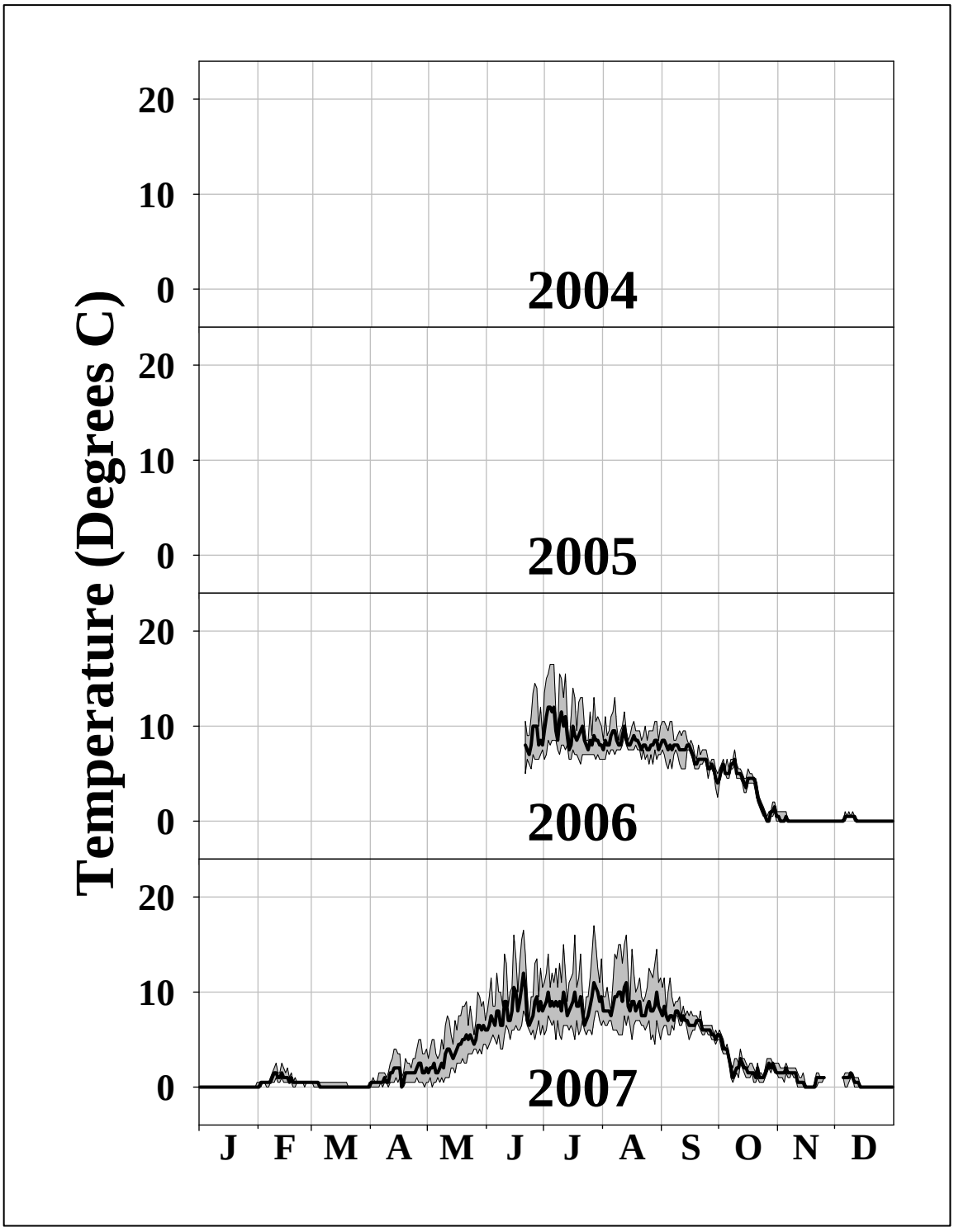
		Water Temperature (degrees C)				
Date		**Minimum Instantaneous**	**Minimum Daily**	**Monthly Average**	**Maximum Daily**	**Maximum Instantaneous**
2004	Aug					
	Sep					
2005	May					
	Jun					
	Jul					
	Aug					
	Sep					
2006	May					
	Jun					
	Jul					
	Aug	5.4	6.2	7.7	9.3	11.5
	Sep	2.9	3.7	6.6	8.1	9.5
	Oct	-0.2	0.4	3.5	6.4	7.0
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May	0.2	1.1	3.5	6.0	8.9
	Jun	4.1	5.5	7.2	9.9	12.8
	Jul	4.4	5.7	7.2	8.7	13.1
	Aug	4.5	6.8	7.6	9.0	12.3
	Sep	4.7	5.2	6.7	8.0	9.9
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK4WT (River Kilometer 29.23 in SFK-B), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK4WT (River Kilometer 29.23 in SFK-B), in 2007

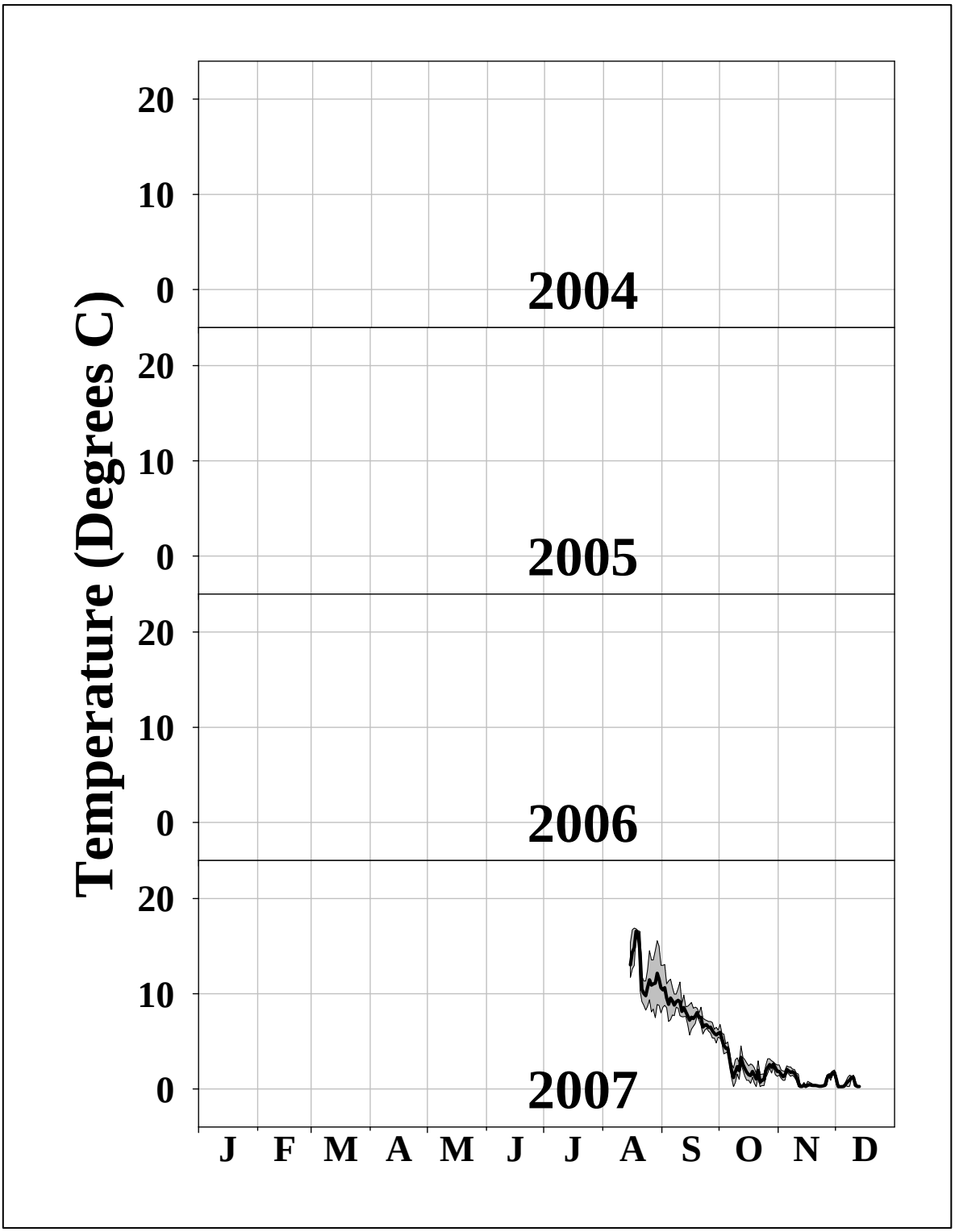
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	May					
	Jun					
	Jul					
	Aug					
	Sep					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep	4.9	5.5	6.9	8.5	10.0
	Oct	1.0	1.6	2.7	5.6	6.1
	Nov	0.2	0.2	1.5	2.3	2.5
	Dec	0.1	0.2	0.7	1.8	2.0



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100B (River Kilometer 24.90 in SFK-B), 2006 and 2007. This gage is maintained by the United States Geological Survey.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100B (River Kilometer 24.90 in SFK-B), 2006 and 2007. This gage is maintained by the United States Geological Survey.

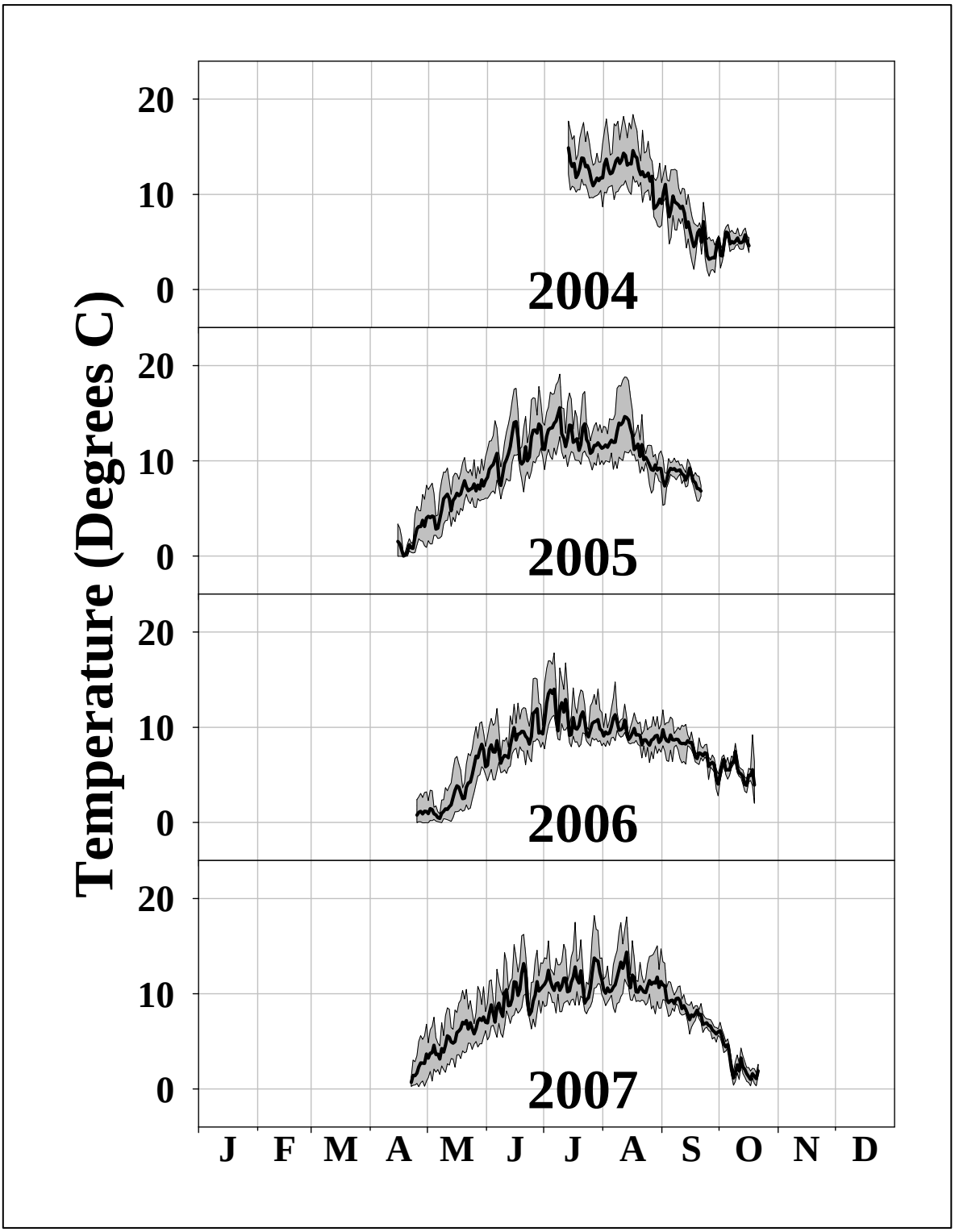
		Water Temperature (degrees C)				
Date		**Minimum Instantaneous**	**Minimum Daily**	**Monthly Average**	**Maximum Daily**	**Maximum Instantaneous**
2004	Aug					
	Sep					
2005	May					
	Jun					
	Jul					
	Aug					
	Sep					
2006	May					
	Jun					
	Jul	6.0	7.5	9.4	12.0	16.5
	Aug	6.0	7.5	8.3	10.0	13.0
	Sep	2.5	4.0	6.9	8.5	10.5
	Oct	0.0	0.0	3.5	6.5	7.5
	Nov	0.0	0.0	0.0	0.5	1.0
	Dec	0.0	0.0	0.1	0.5	1.0
2007	Jan	0.0	0.0	0.0	0.0	0.5
	Feb	0.0	0.0	0.7	1.5	2.5
	Mar	0.0	0.0	0.1	0.5	0.5
	Apr	0.0	0.0	1.3	2.5	5.0
	May	0.0	1.5	4.0	6.5	10.0
	Jun	4.0	6.0	8.2	12.0	16.5
	Jul	5.0	6.5	8.8	11.0	17.0
	Aug	4.5	7.5	8.7	11.0	16.0
	Sep	4.5	5.0	6.8	8.5	11.5
	Oct	0.5	1.0	2.2	5.5	6.0
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK2WT (River Kilometer 13.93 in SFK-A), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK2WT (River Kilometer 13.93 in SFK-A), in 2007

		Water Temperature (degrees C)				
Date		**Minimum Instantaneous**	**Minimum Daily**	**Monthly Average**	**Maximum Daily**	**Maximum Instantaneous**
2004	Aug					
	Sep					
2005	May					
	Jun					
	Jul					
	Aug					
	Sep					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep	4.8	5.7	7.9	10.6	13.1
	Oct	0.2	0.7	2.4	5.9	6.8
	Nov	0.2	0.3	1.0	2.1	2.5
	Dec					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100A (River Kilometer 0.11 in SFK-A), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100A (River Kilometer 0.11 in SFK-A), 2004 through 2007

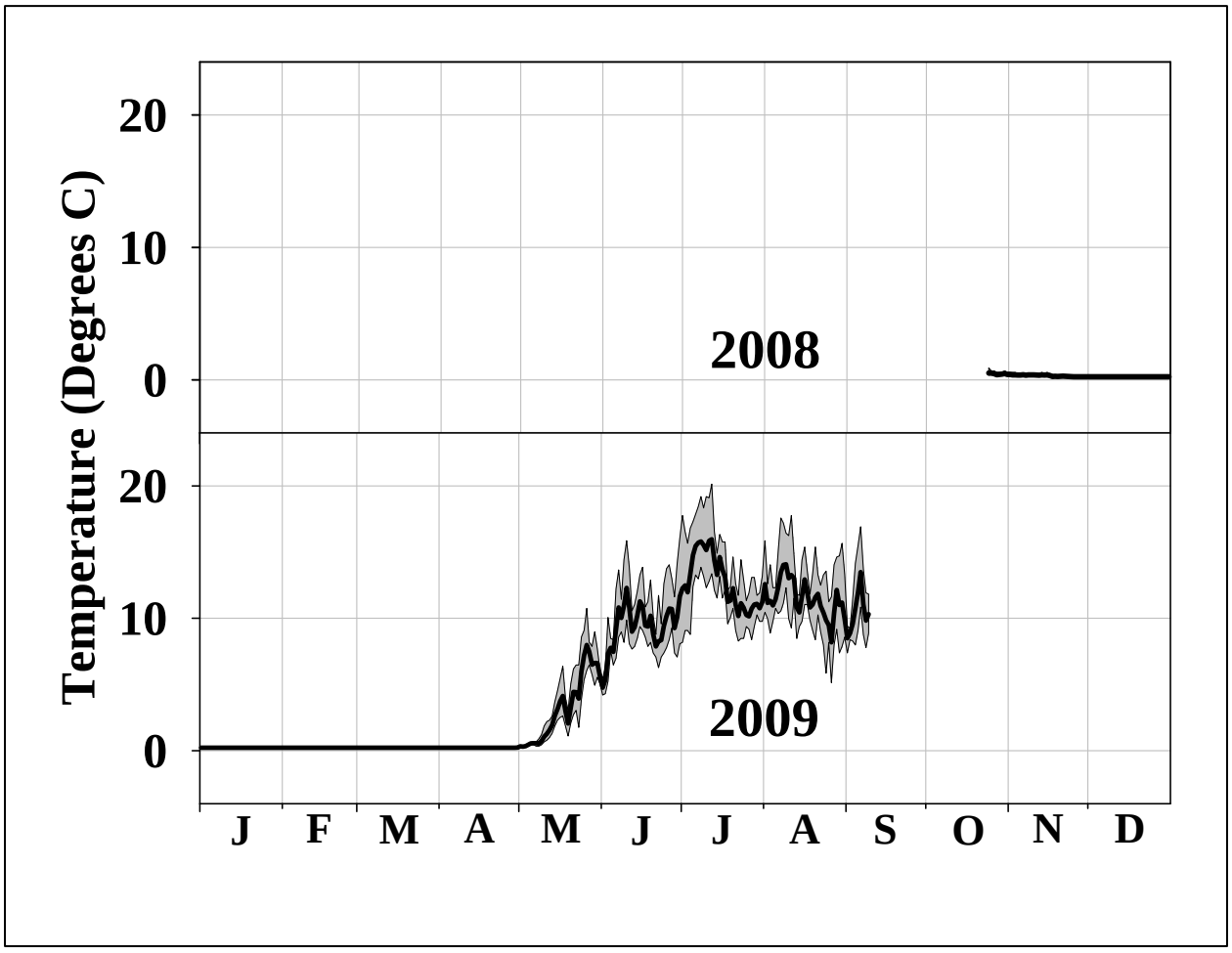
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	6.5	8.5	12.3	14.6	18.4
	Sep	1.4	3.2	6.6	11.0	13.0
2005	May	1.3	2.8	6.0	8.0	10.4
	Jun	6.0	7.4	11.0	14.1	17.8
	Jul	9.0	10.8	12.6	15.6	19.1
	Aug	6.6	9.0	11.6	14.7	18.8
	Sep					
2006	May	0.0	0.4	3.3	8.2	10.6
	Jun	4.4	6.0	8.6	11.9	15.2
	Jul	7.7	9.0	11.0	14.0	17.8
	Aug	6.3	8.1	9.3	11.3	14.8
	Sep	2.8	4.0	7.6	9.7	11.8
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May	0.8	3.1	5.5	7.6	10.8
	Jun	5.1	6.9	9.6	13.2	16.2
	Jul	7.9	9.0	11.3	13.8	18.2
	Aug	7.9	10.1	11.2	14.4	18.1
	Sep	4.9	5.8	8.1	10.9	13.4
	Oct					
	Nov					
	Dec					

ATTACHMENT 2

SOUTH FORK KOKTULI RIVER THERMOGRAPHS, 2008 AND 2009

Thermographs of Daily Maximum, Average, and Minimum Water Temperatures and Tables of Monthly Minimum Instantaneous, Minimum Daily, Monthly Average, Maximum Daily, and Maximum Instantaneous Water Temperatures at Hydrology and Water Temperature Monitoring Sites

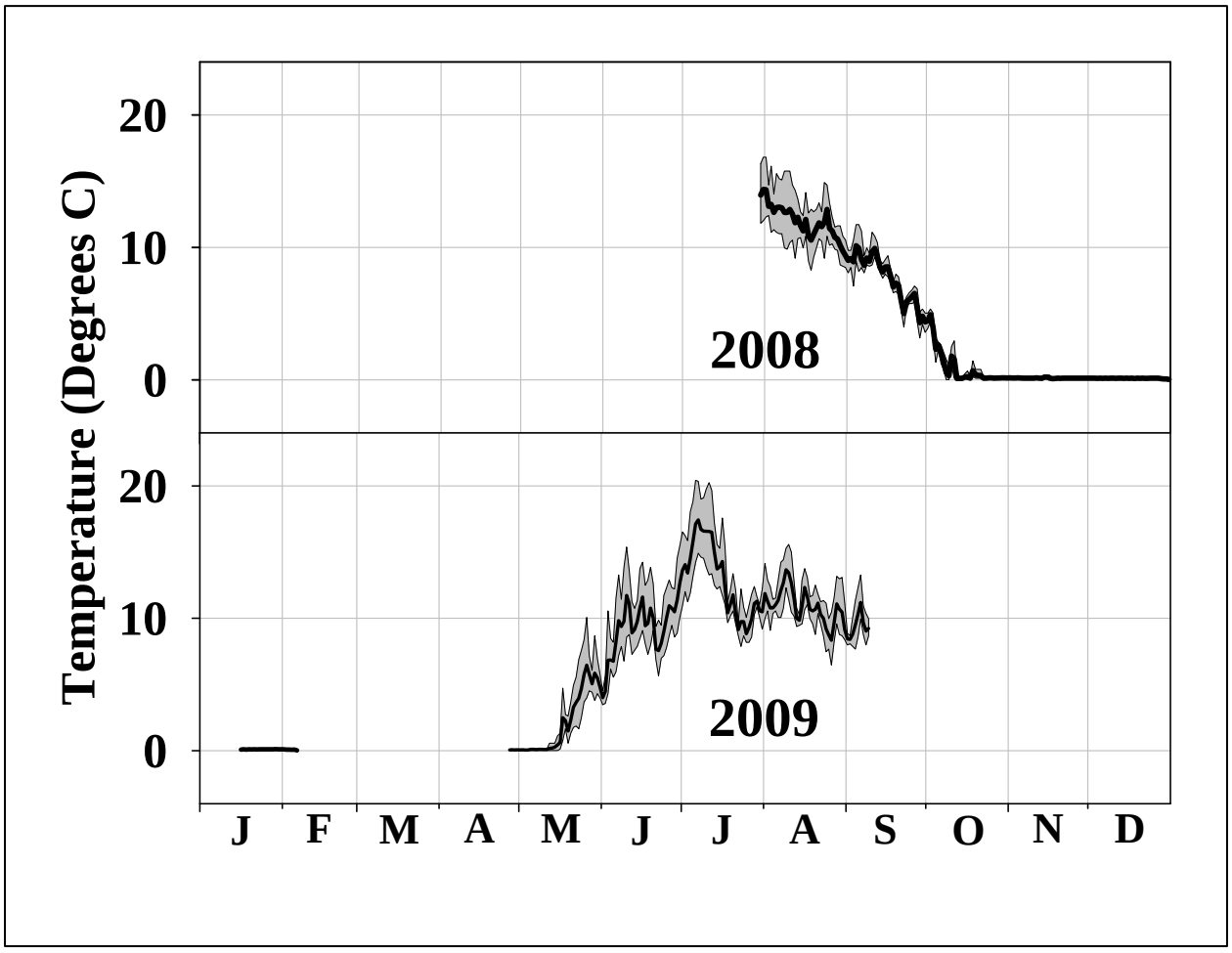
Note: There are a couple of reasons for missing data gaps in this attachment. Missing data gaps occurred at some locations when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK7WT (River Kilometer 54.67 in SFK-D), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK7WT (River Kilometer 54.67 in SFK-D), 2008 and 2009

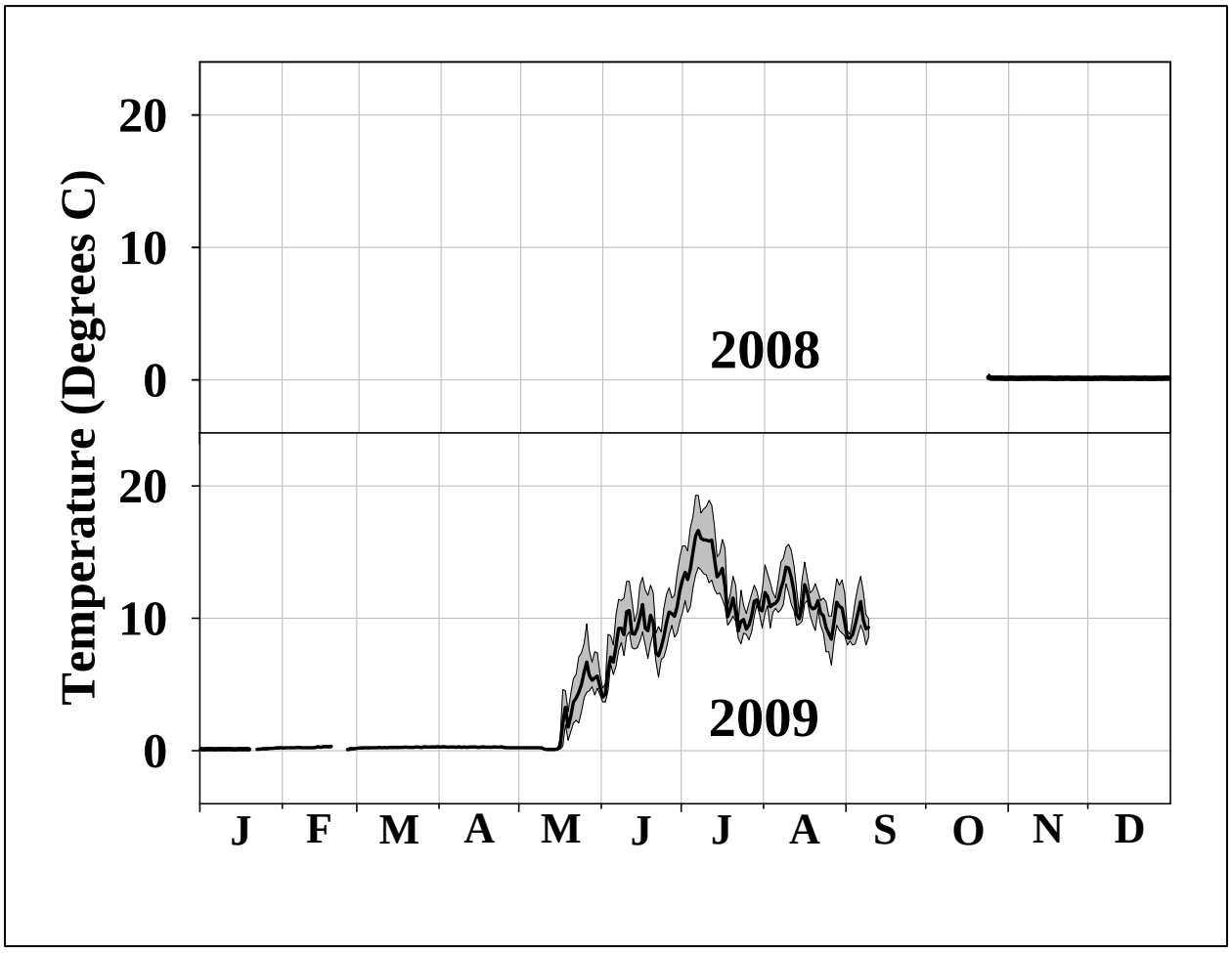
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.2	0.2	0.3	0.4	0.6
	Dec	0.2	0.2	0.2	0.2	0.3
2009	Jan	0.2	0.2	0.2	0.2	0.2
	Feb	0.2	0.2	0.2	0.2	0.2
	Mar	0.2	0.2	0.2	0.2	0.2
	Apr	0.2	0.2	0.2	0.2	0.3
	May	0.2	0.3	3.2	8.0	10.7
	Jun	4.2	4.8	9.4	12.3	16.0
	Jul	8.2	10.1	12.8	16.0	20.1
	Aug	5.1	8.2	11.5	14.1	17.8



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK6WT (River Kilometer 40.94 in SFK-C), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK6WT (River Kilometer 40.94 in SFK-C), 2008 and 2009

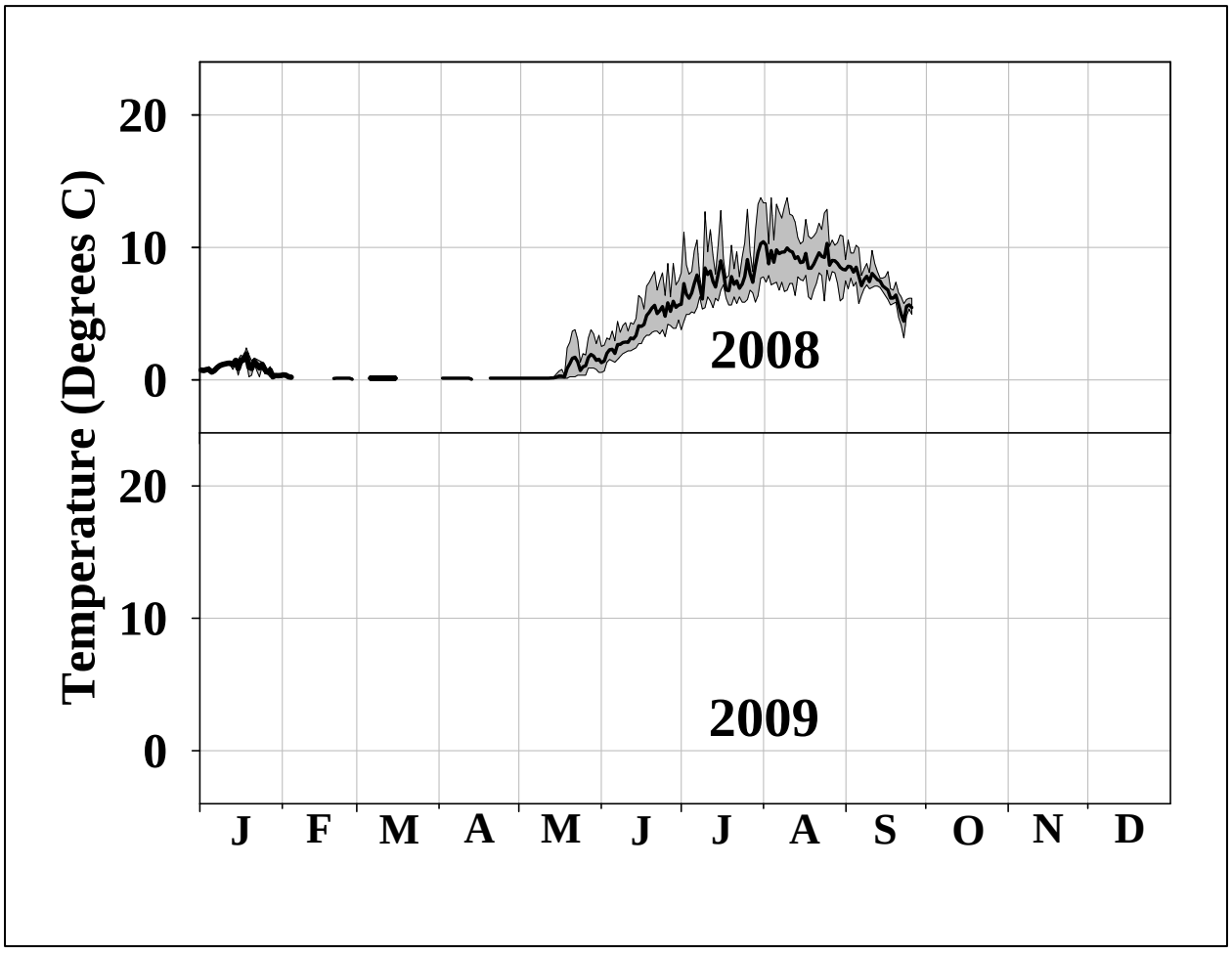
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	8.3	9.4	11.9	14.4	16.8
	Sep	3.2	4.3	7.7	10.1	11.7
	Oct	0.0	0.1	1.0	4.9	5.3
	Nov	0.0	0.1	0.1	0.2	0.3
	Dec	0.0	0.0	0.1	0.1	0.1
2009	Jan					
	Feb					
	Mar					
	Apr					
	May	0.0	0.0	2.1	6.5	10.1
	Jun	3.5	4.0	9.3	12.7	15.5
	Jul	7.9	8.8	13.0	17.4	20.4
	Aug	6.5	8.3	10.9	13.7	15.6



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK5WT (River Kilometer 35.81 in SFK-C), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK5WT (River Kilometer 35.81 in SFK-C), 2008 and 2009

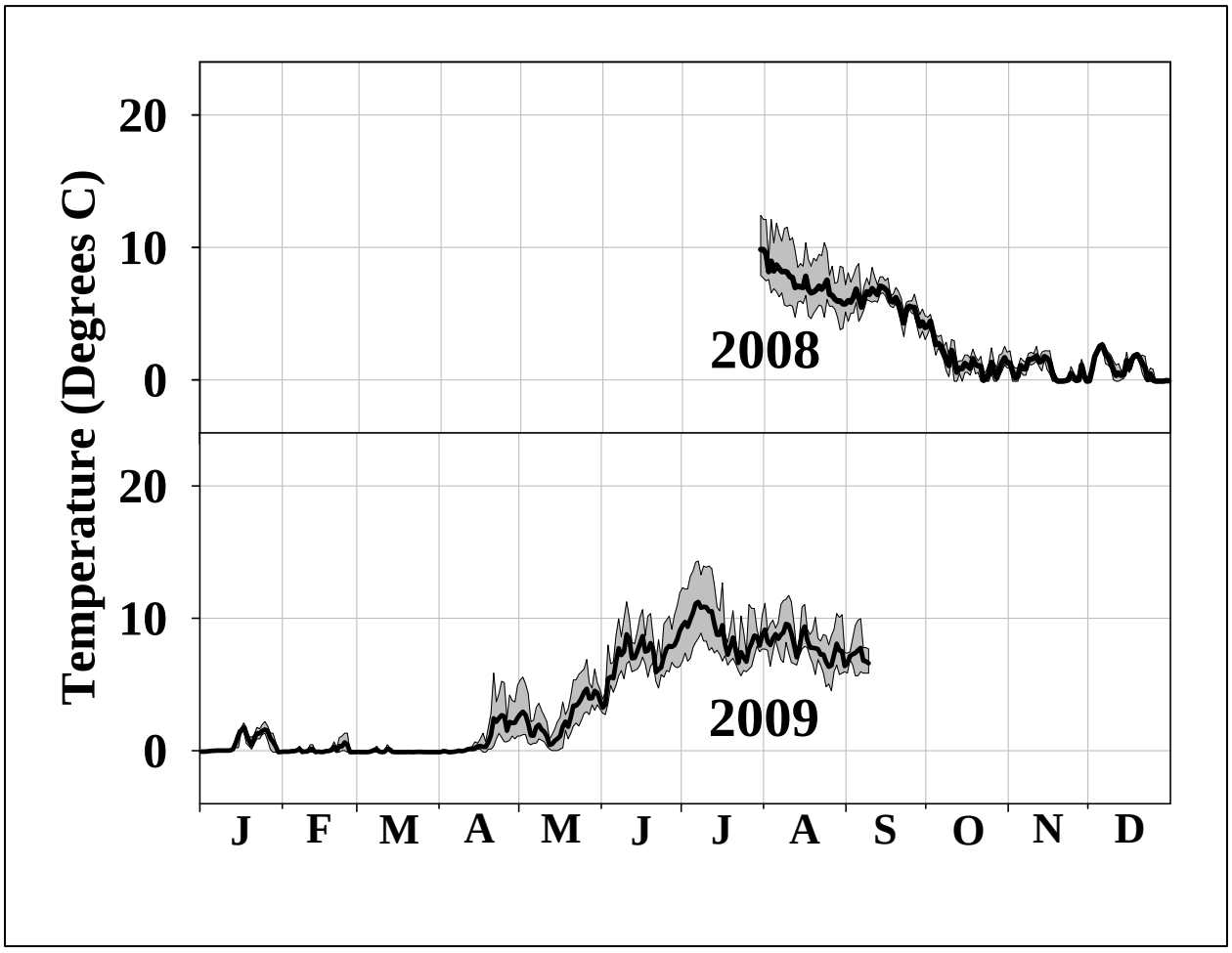
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.0	0.1	0.1	0.1	0.1
	Dec	0.0	0.1	0.1	0.1	0.1
2009	Jan					
	Feb					
	Mar	0.1	0.2	0.2	0.3	0.3
	Apr	0.2	0.2	0.3	0.3	0.3
	May	0.0	0.1	2.2	6.7	9.6
	Jun	3.7	4.1	8.8	12.1	14.6
	Jul	8.1	9.0	12.6	16.6	19.3
	Aug	6.5	8.4	11.1	13.9	15.6



Daily maximum, average, and minimum water temperatures in Tributary SFK 1.190 at water temperature monitoring site SFK119WT (confluence with South Fork Koktuli River at River Kilometer 34.28 in SFK-B), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary SFK 1.190 at water temperature monitoring site SFK119WT (confluence with South Fork Koktuli River at River Kilometer 34.28 in SFK-B), in 2008

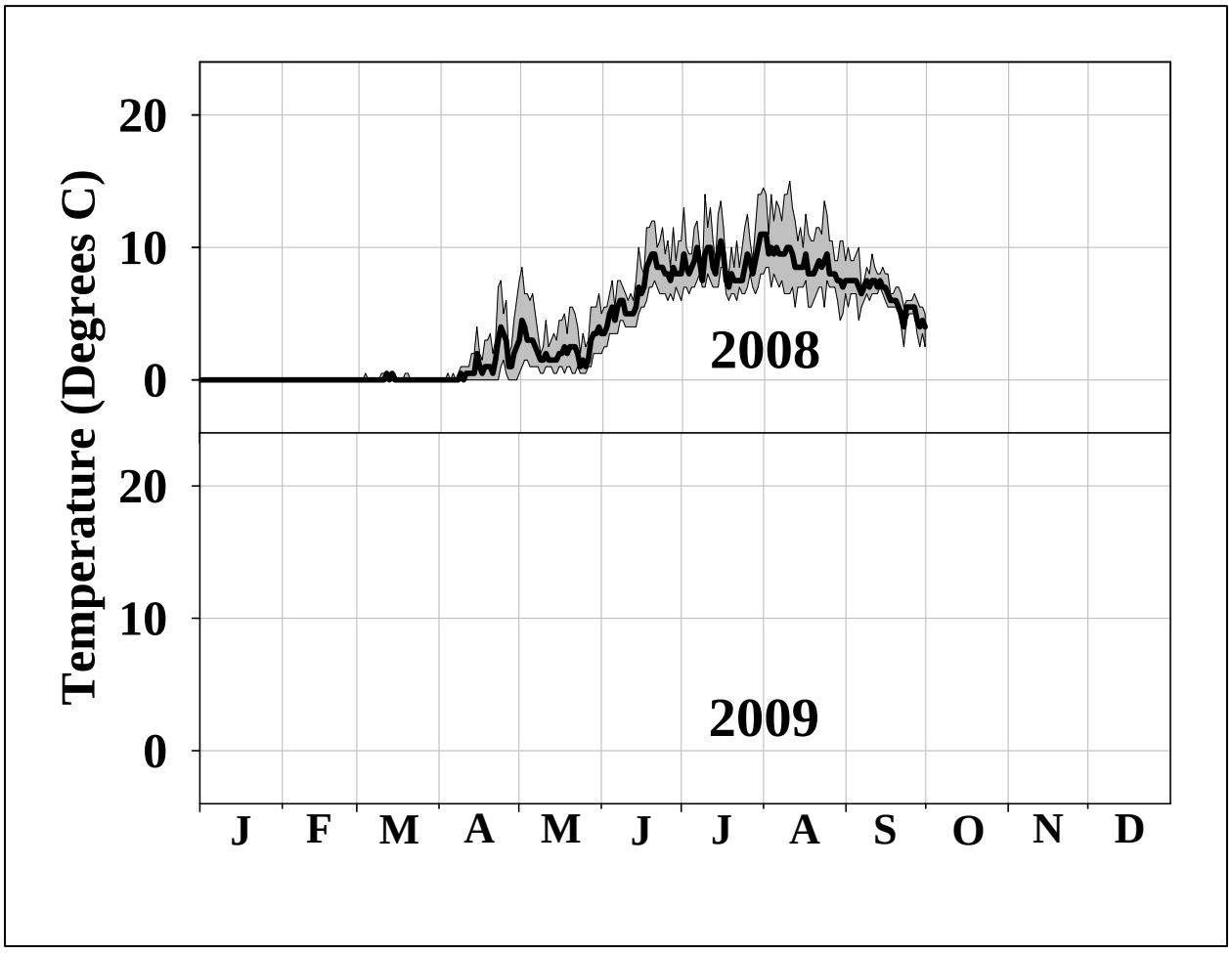
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.2	0.2	0.9	2.0	2.4
	Feb					
	Mar					
	Apr					
	May	0.1	0.1	0.7	1.9	3.8
	Jun	0.7	1.4	4.0	5.9	8.8
	Jul	4.4	6.1	7.7	10.4	13.8
	Aug	6.0	8.3	9.2	10.3	13.8
	Sep					
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK4WT (River Kilometer 29.23 in SFK-B), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK4WT (River Kilometer 29.23 in SFK-B), 2008 and 2009

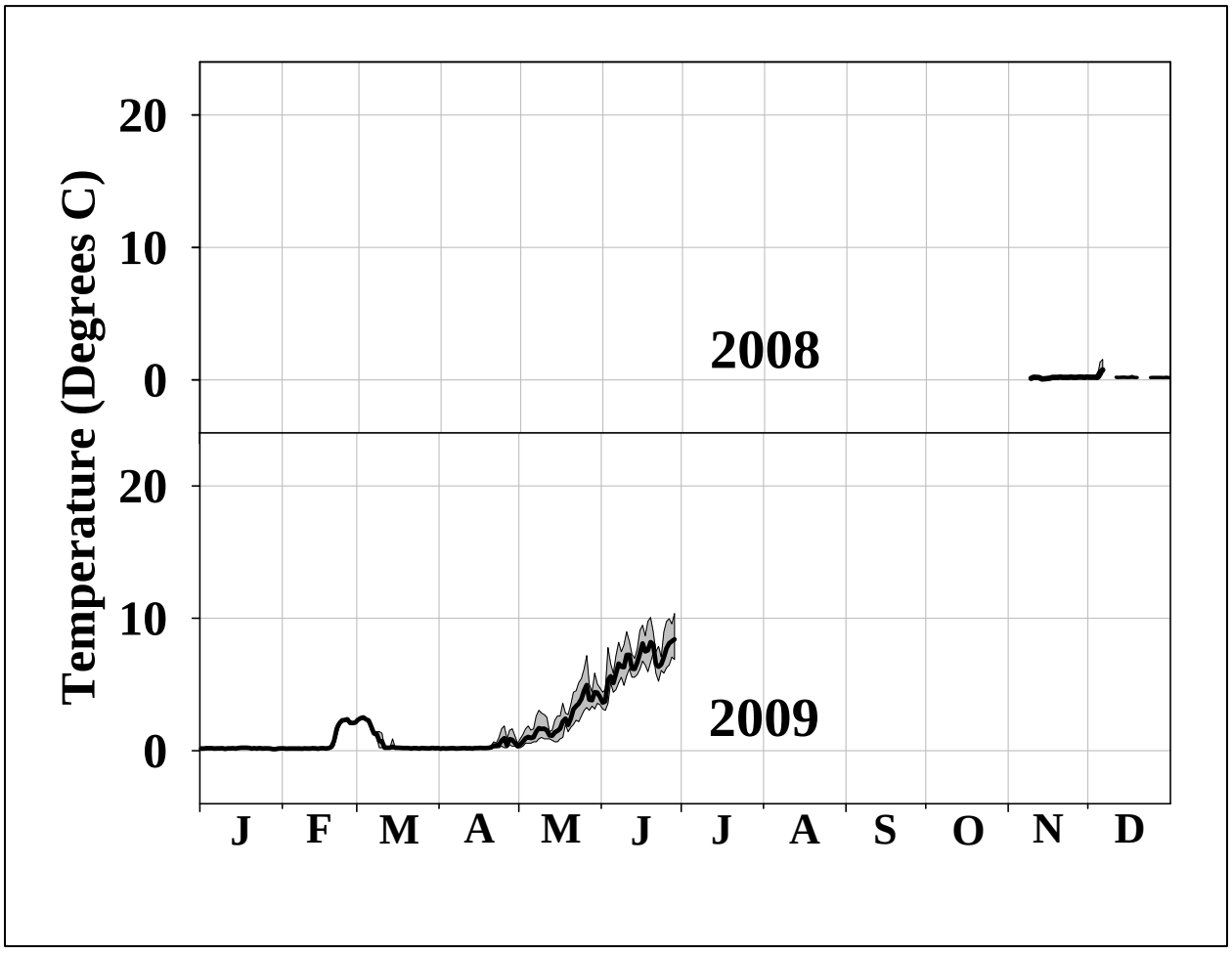
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.2	0.2	0.3	1.4	1.7
	Feb	0.2	0.2	0.5	2.0	2.9
	Mar	0.2	0.2	1.1	2.6	4.5
	Apr	0.2	0.3	1.7	4.5	8.3
	May					
	Jun					
	Jul					
	Aug	3.8	5.7	7.3	9.5	12.1
	Sep	3.0	3.9	5.8	7.1	8.8
	Oct	-0.1	0.0	1.5	4.4	4.9
	Nov	-0.1	-0.1	0.7	1.8	2.5
	Dec	-0.1	-0.1	0.9	2.6	2.8
2009	Jan	-0.1	-0.1	0.6	1.8	2.2
	Feb					
	Mar					
	Apr	-0.1	-0.1	0.9	2.7	5.9
	May	0.0	0.4	2.5	4.7	6.9
	Jun	2.7	3.2	7.1	9.1	11.9
	Jul	5.7	6.6	9.0	11.2	14.3
	Aug	4.5	6.3	8.0	9.6	11.7



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at hydrology gage SK100B (River Kilometer 24.90 in SFK-B), in 2008. This gage is maintained by the United States Geological Survey.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at hydrology gage SK100B (River Kilometer 24.90 in SFK-B), in 2008. This gage is maintained by the United States Geological Survey.

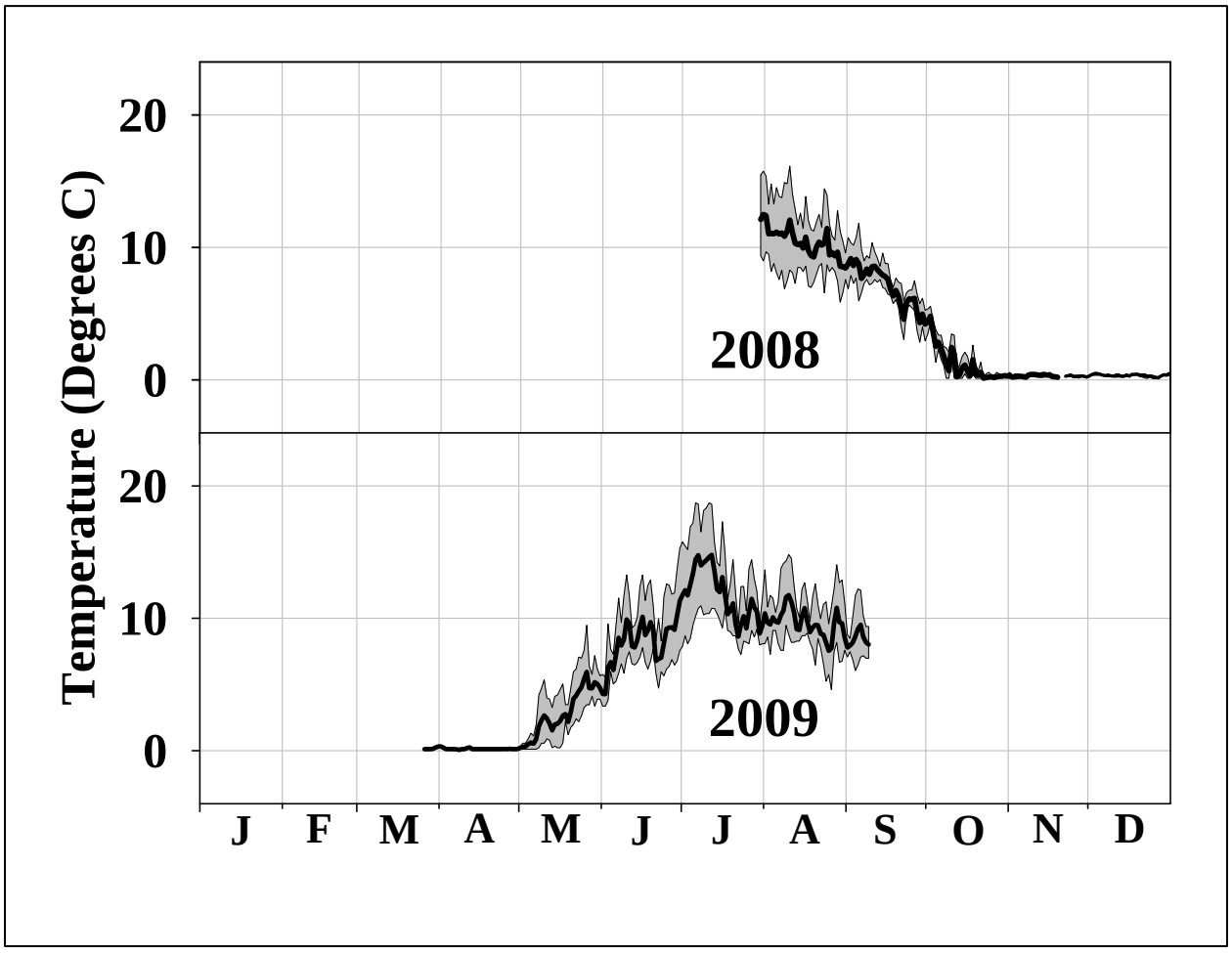
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.0	0.0	0.0	0.0	0.0
	Feb	0.0	0.0	0.0	0.0	0.0
	Mar	0.0	0.0	0.0	0.5	0.5
	Apr	0.0	0.0	1.1	4.0	7.5
	May	0.5	1.0	2.4	4.5	8.5
	Jun	2.5	3.5	6.8	9.5	12.0
	Jul	6.0	7.0	8.8	11.0	14.5
	Aug	4.5	7.0	8.8	11.0	15.0
	Sep	2.5	4.0	6.2	7.5	10.0
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK3WT (River Kilometer 24.90 in SFK-B), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK3WT (River Kilometer 24.90 in SFK-B), 2008 and 2009

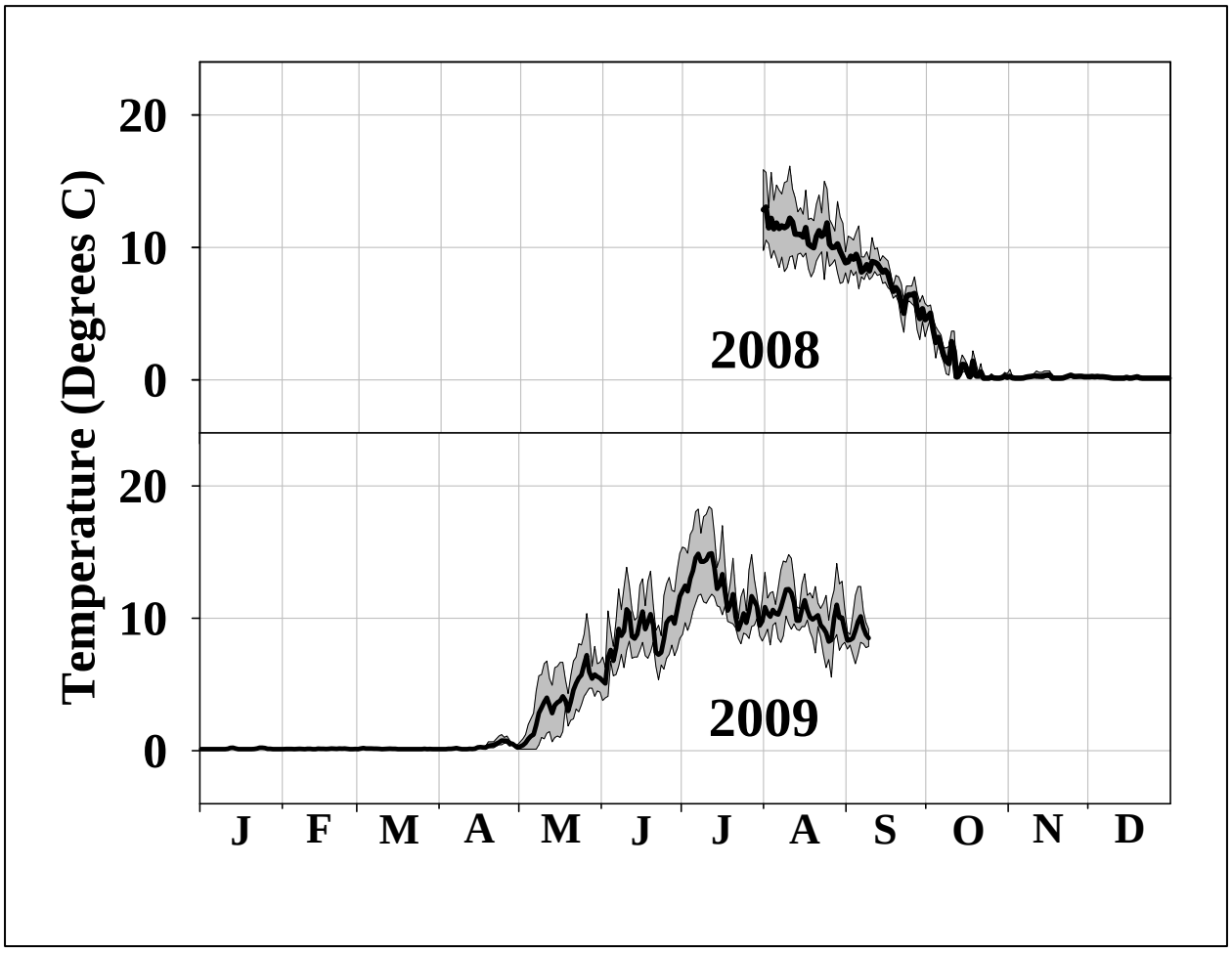
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2009	Jan	0.1	0.1	0.2	0.2	0.2
	Feb	0.1	0.2	0.8	2.4	2.4
	Mar	0.1	0.2	0.7	2.5	2.5
	Apr	0.1	0.2	0.3	0.9	1.9
	May	0.2	0.5	2.4	5.0	7.2
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK2WT (River Kilometer 13.93 in SFK-B), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK2WT (River Kilometer 13.93 in SFK-B), 2008 and 2009

Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	5.9	8.4	10.3	12.4	16.1
	Sep	2.8	4.2	7.1	9.2	11.8
	Oct	0.1	0.1	1.2	4.8	5.6
	Nov					
	Dec	0.1	0.2	0.3	0.5	0.6
2009	Jan					
	Feb					
	Mar					
	Apr	0.0	0.1	0.1	0.3	0.3
	May	0.1	0.2	2.8	6.0	9.5
	Jun	3.4	4.3	8.2	11.3	15.3
	Jul	7.3	8.6	11.8	14.8	18.7
	Aug	4.6	7.5	9.7	11.7	14.8



Daily maximum, average, and minimum water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK1WT (River Kilometer 0.10 in SFK-A), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the South Fork Koktuli River at water temperature monitoring site SFK1WT (River Kilometer 0.10 in SFK-A), 2008 and 2009

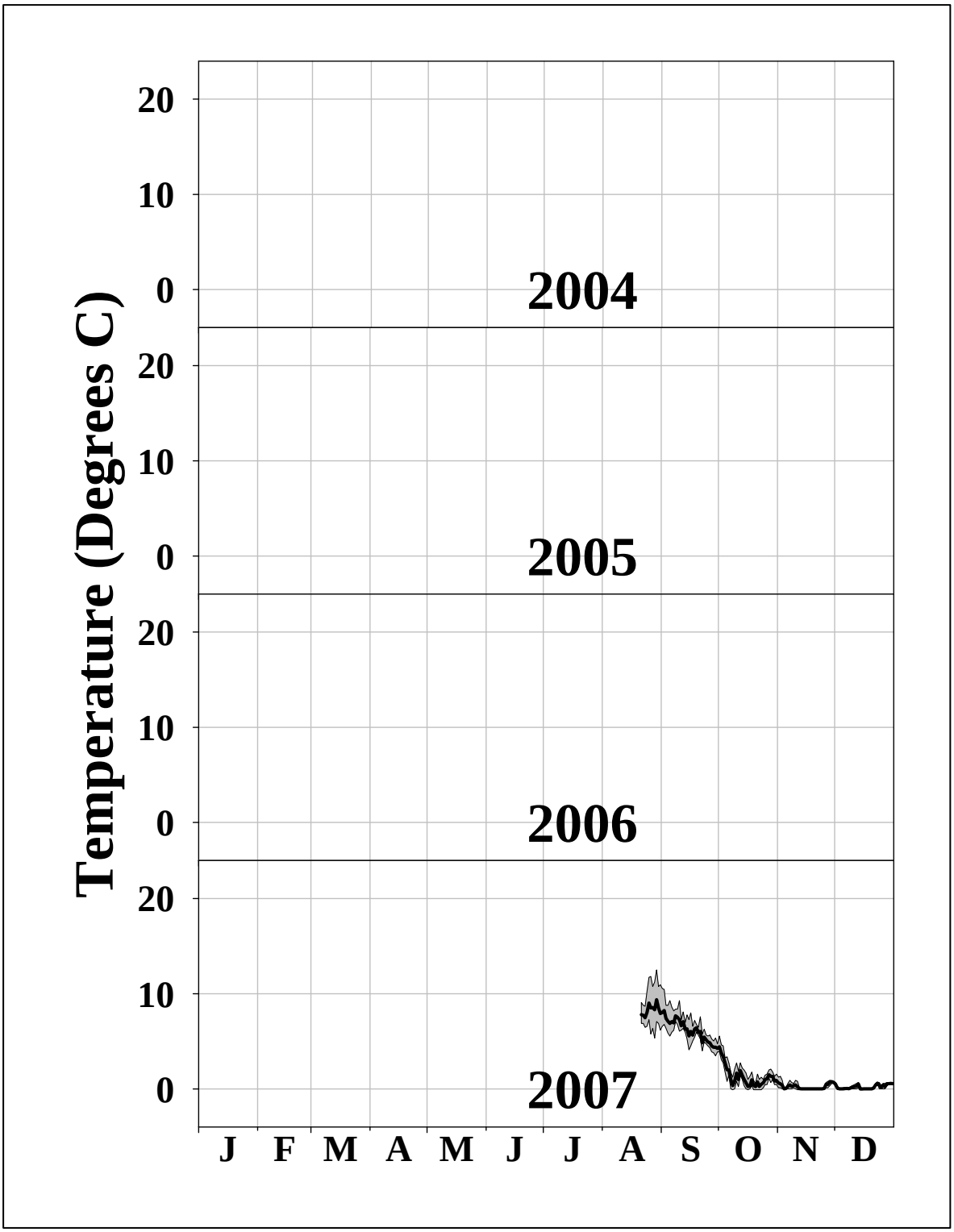
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	7.3	8.8	11.0	13.0	16.1
	Sep	3.0	4.5	7.4	9.5	11.6
	Oct	0.1	0.1	1.3	5.0	5.7
	Nov	0.1	0.1	0.2	0.4	0.8
	Dec	0.1	0.1	0.2	0.3	0.3
2009	Jan	0.1	0.1	0.1	0.2	0.2
	Feb	0.1	0.1	0.1	0.2	0.2
	Mar	0.1	0.1	0.1	0.2	0.2
	Apr	0.1	0.1	0.3	0.8	1.2
	May	0.1	0.3	3.7	7.2	10.4
	Jun	3.8	5.1	8.8	11.7	14.9
	Jul	8.1	9.1	12.1	14.9	18.4
	Aug	5.6	8.2	10.3	12.2	14.8

ATTACHMENT 3

NORTH FORK KOKTULI RIVER THERMOGRAPHS, 2004 THROUGH 2007

Thermographs of Daily Maximum, Average, and Minimum Water Temperatures and Tables of Monthly Minimum Instantaneous, Minimum Daily, Monthly Average, Maximum Daily, and Maximum Instantaneous Water Temperatures at Hydrology and Water Temperature Monitoring Sites

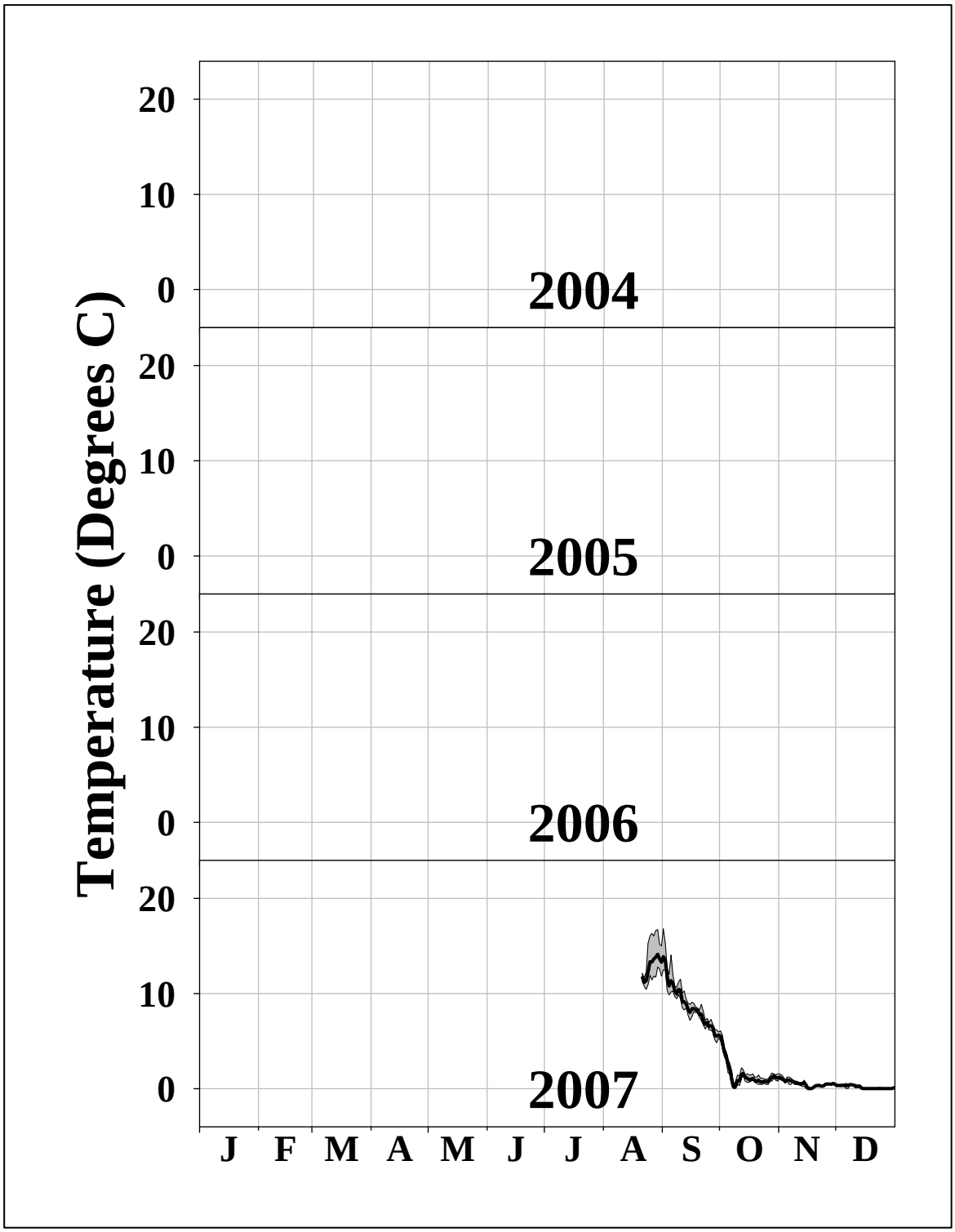
Note: There are several reasons for missing data gaps in this attachment. Hydrology gages (which are also used to measure temperature) are normally removed prior to winter freeze up, and reinstalled after the ice melts. Missing data gaps at other locations occurred when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK9WT (River Kilometer 51.39 in NFK-E), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK9WT (River Kilometer 51.39 in NFK-E), in 2007

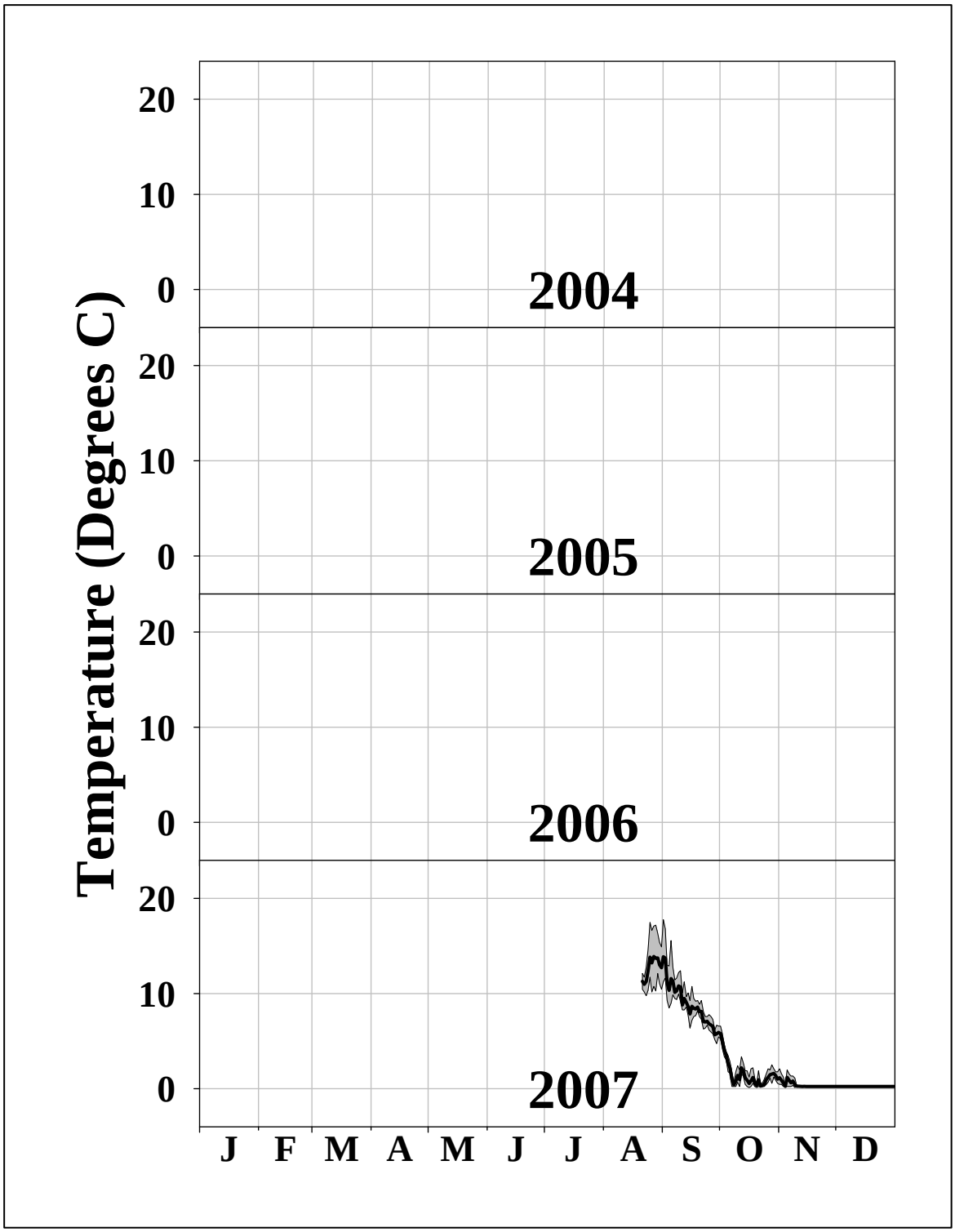
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun					
	Jul					
	Aug					
	Sep					
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun					
	Jul					
	Aug					
	Sep	3.5	4.2	6.2	8.2	10.6
	Oct	-0.1	0.2	1.3	4.4	5.6
	Nov	-0.1	0.0	0.2	0.8	1.3
	Dec	-0.1	0.0	0.2	0.6	0.7



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK8WT (River Kilometer 44.54 in NFK-D), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK8WT (River Kilometer 44.54 in NFK-D), in 2007.

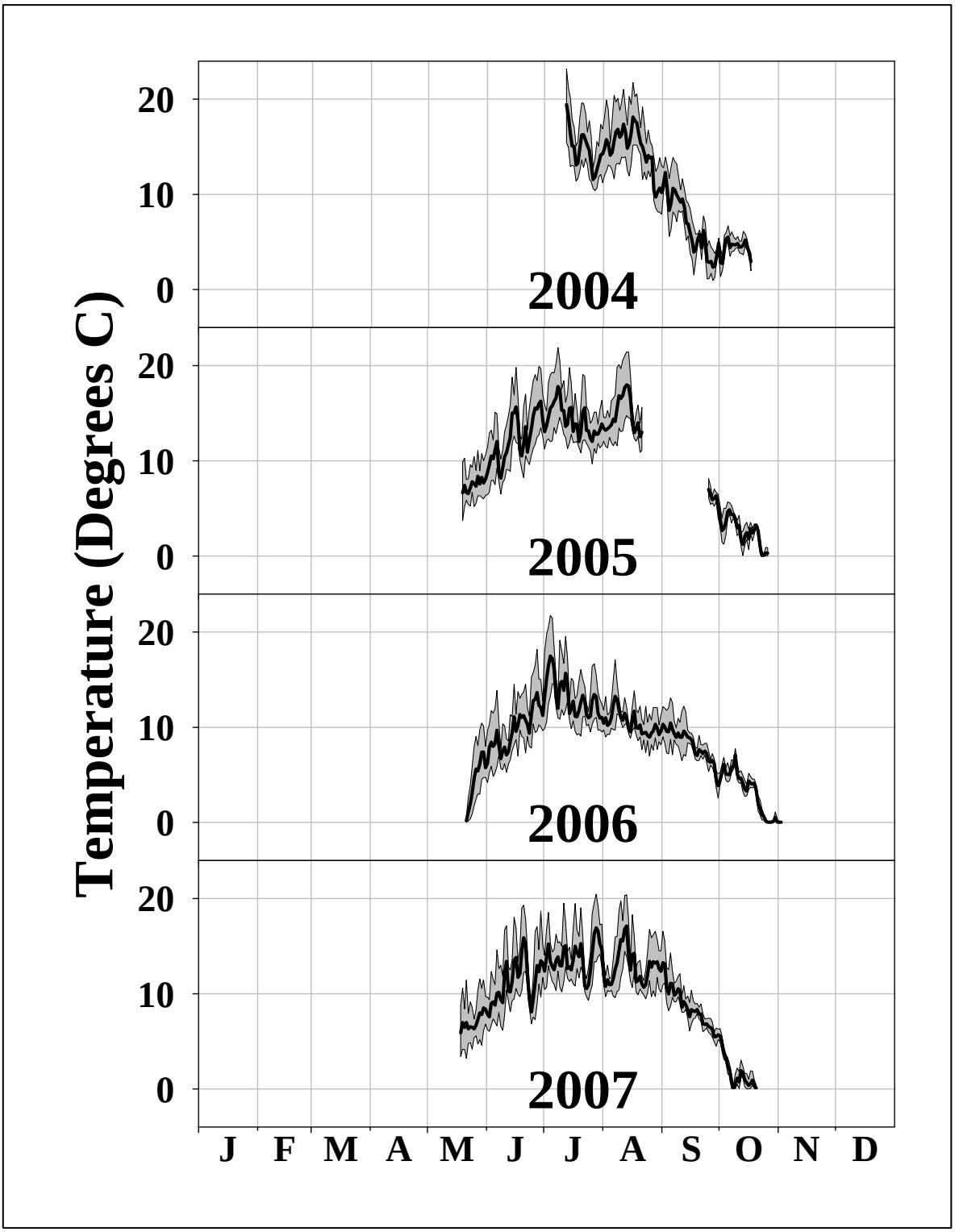
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun					
	Jul					
	Aug					
	Sep					
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun					
	Jul					
	Aug					
	Sep	4.8	5.5	8.8	13.9	16.8
	Oct	0.0	0.2	1.5	5.5	6.1
	Nov	0.0	0.0	0.5	1.2	1.5
	Dec	-0.1	0.0	0.2	0.4	0.6



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK7WT (River Kilometer 36.87 in NFK-D), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK7WT (River Kilometer 36.87 in NFK-D), in 2007

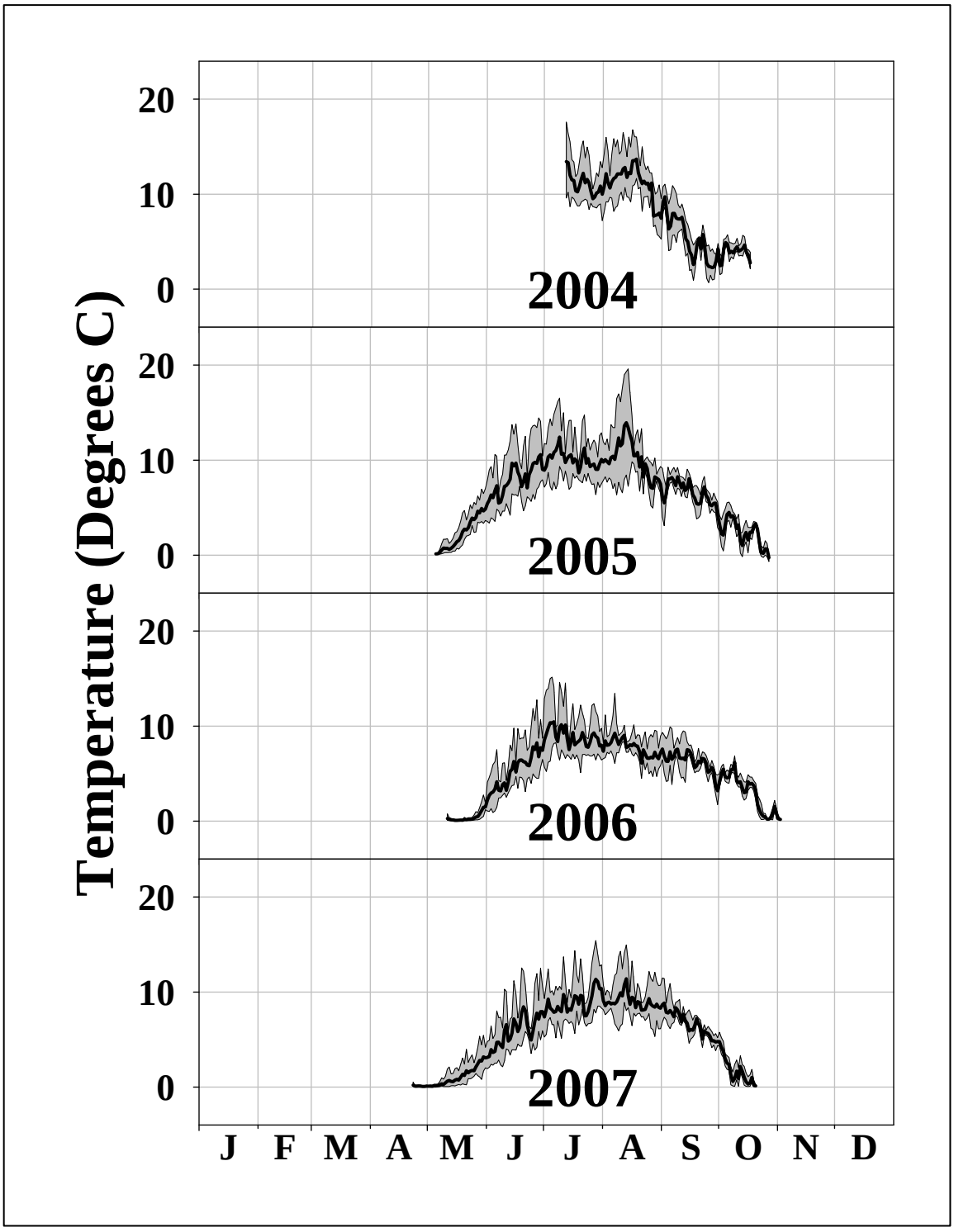
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun					
	Jul					
	Aug					
	Sep					
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun					
	Jul					
	Aug					
	Sep	4.7	5.7	8.9	13.9	17.8
	Oct	0.1	0.3	1.6	5.8	6.6
	Nov	0.1	0.2	0.4	1.2	2.1
	Dec	0.2	0.2	0.2	0.2	0.2



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at hydrology gage NK100C (River Kilometer 36.76 in NFK-D), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at hydrology gage NK100C (River Kilometer 36.76 in NFK-D), 2004 through 2007

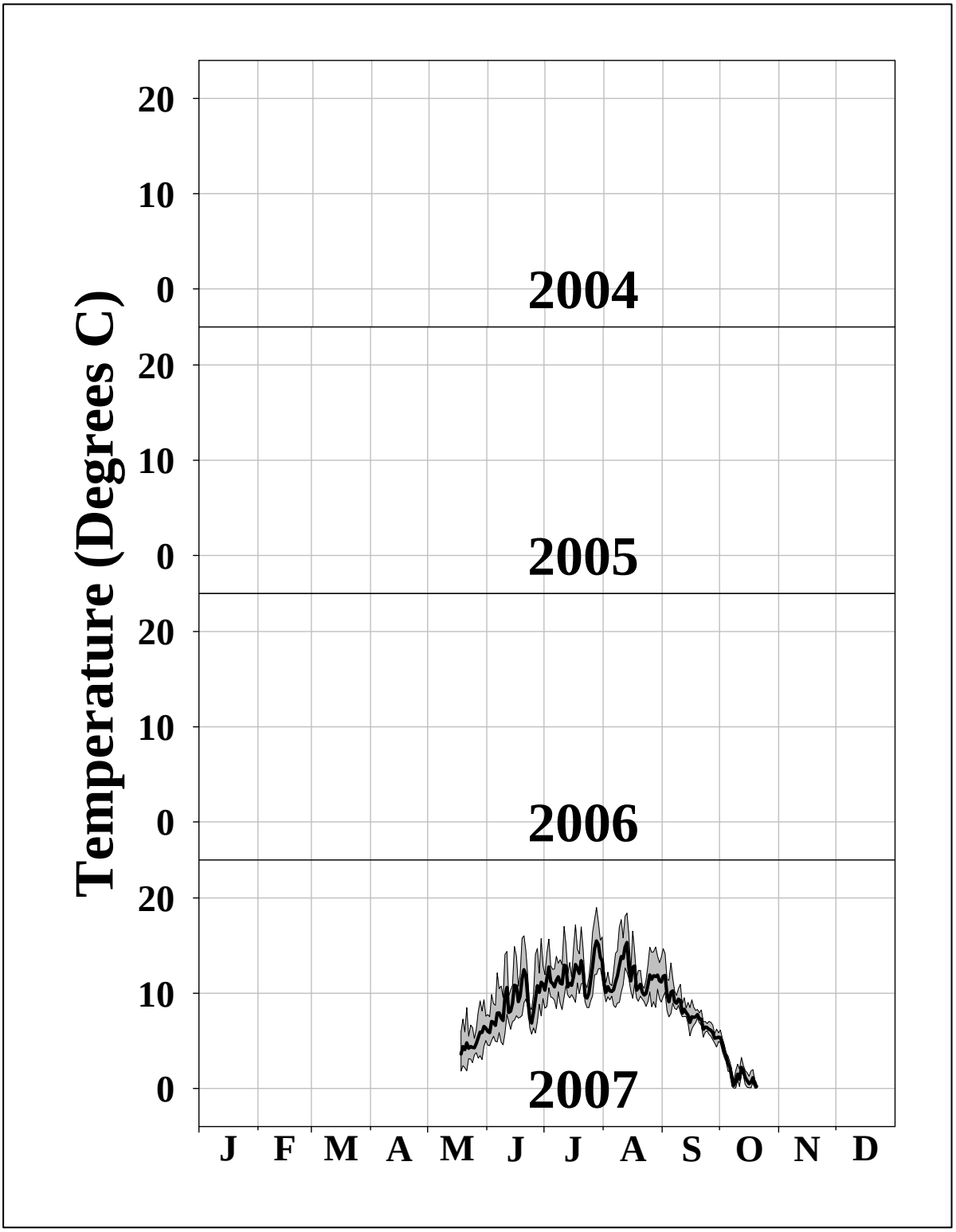
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	7.9	9.7	14.7	18.1	21.8
	Sep	1.0	2.3	6.7	12.3	13.9
2005	Jun	6.5	8.2	12.3	16.3	19.9
	Jul	9.7	12.0	14.3	17.8	21.9
	Aug					
	Sep					
2006	Jun	4.2	6.2	9.7	13.7	18.2
	Jul	9.1	11.0	13.2	17.5	21.7
	Aug	7.0	9.0	10.4	13.3	17.1
	Sep	2.6	3.9	8.1	10.4	13.1
	Oct	0.0	0.0	3.3	7.1	7.8
2007	May					
	Jun	6.0	7.6	11.2	15.9	19.3
	Jul	9.3	10.5	13.7	16.9	20.5
	Aug	9.5	10.7	12.8	17.1	20.4
	Sep	4.5	5.5	8.6	13.3	16.6
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Tributary NFK 1.190 at hydrology gage NK119A (confluence with North Fork Koktuli River at River Kilometer 36.52 in NFK-C), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary NFK 1.190 at hydrology gage NK119A (confluence with North Fork Koktuli River at River Kilometer 36.52 in NFK-C), 2004 through 2007

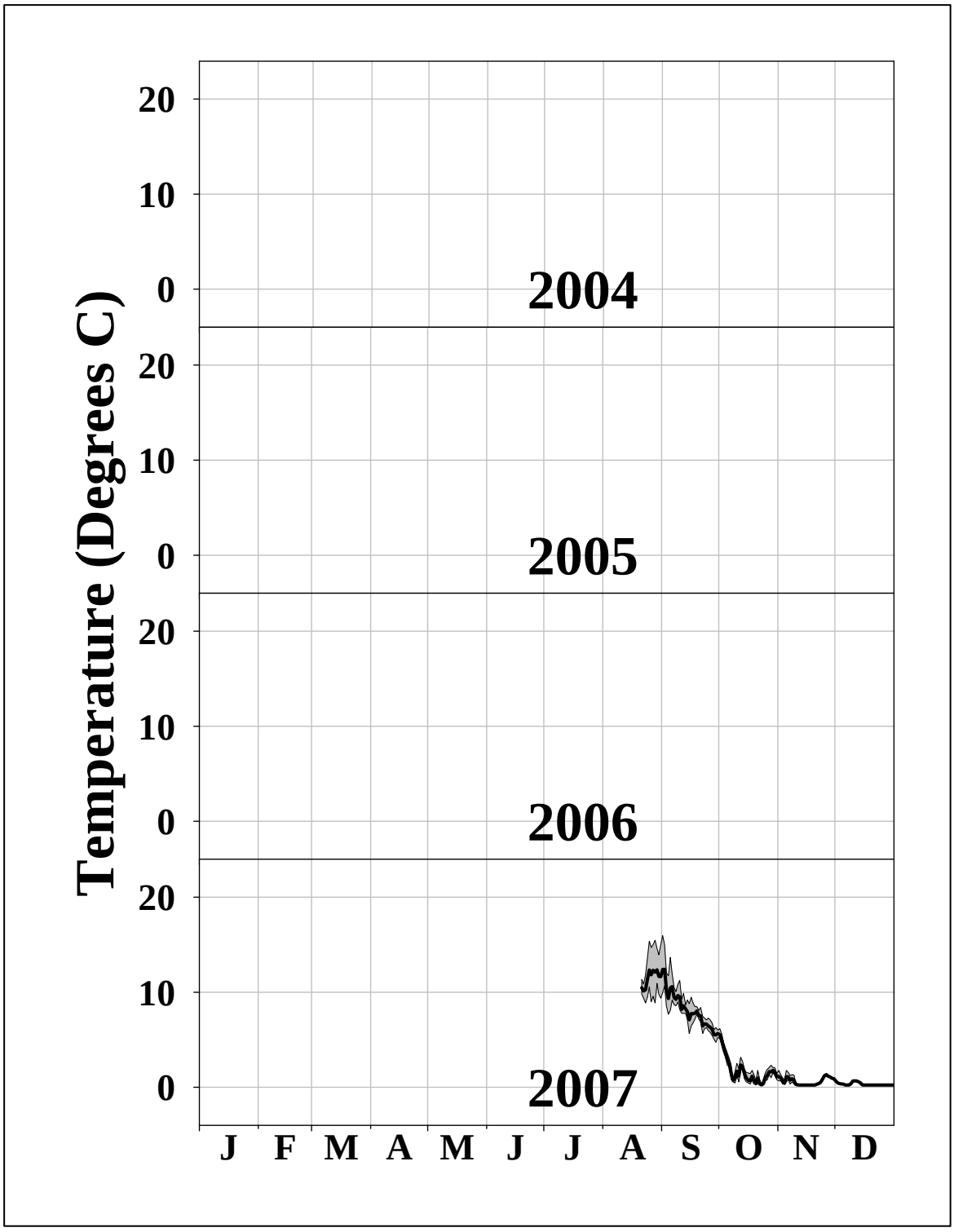
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	5.3	7.5	11.2	13.7	16.8
	Sep	0.7	2.3	5.3	9.7	11.0
2005	Jun	3.4	5.4	7.9	10.6	14.4
	Jul	6.4	8.7	10.1	12.4	16.5
	Aug	5.0	7.0	10.1	13.9	19.6
	Sep	2.9	4.2	6.6	8.3	9.3
2006	Jun	0.9	2.2	5.3	8.2	12.8
	Jul	5.1	7.5	8.9	10.4	15.1
	Aug	4.5	6.1	7.7	9.3	13.4
	Sep	1.7	3.2	6.3	7.6	9.9
	Oct	0.1	0.2	3.1	6.2	6.9
2007	May	0.0	0.1	1.1	3.2	5.4
	Jun	1.9	3.1	5.8	8.4	12.5
	Jul	5.1	7.4	8.9	11.3	15.4
	Aug	5.3	8.1	9.0	11.4	15.0
	Sep	3.8	4.7	6.7	8.8	11.5
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at hydrology gage NK100B (River Kilometer 35.76 in NFK-C), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at hydrology gage NK100B (River Kilometer 35.76 in NFK-C), in 2007

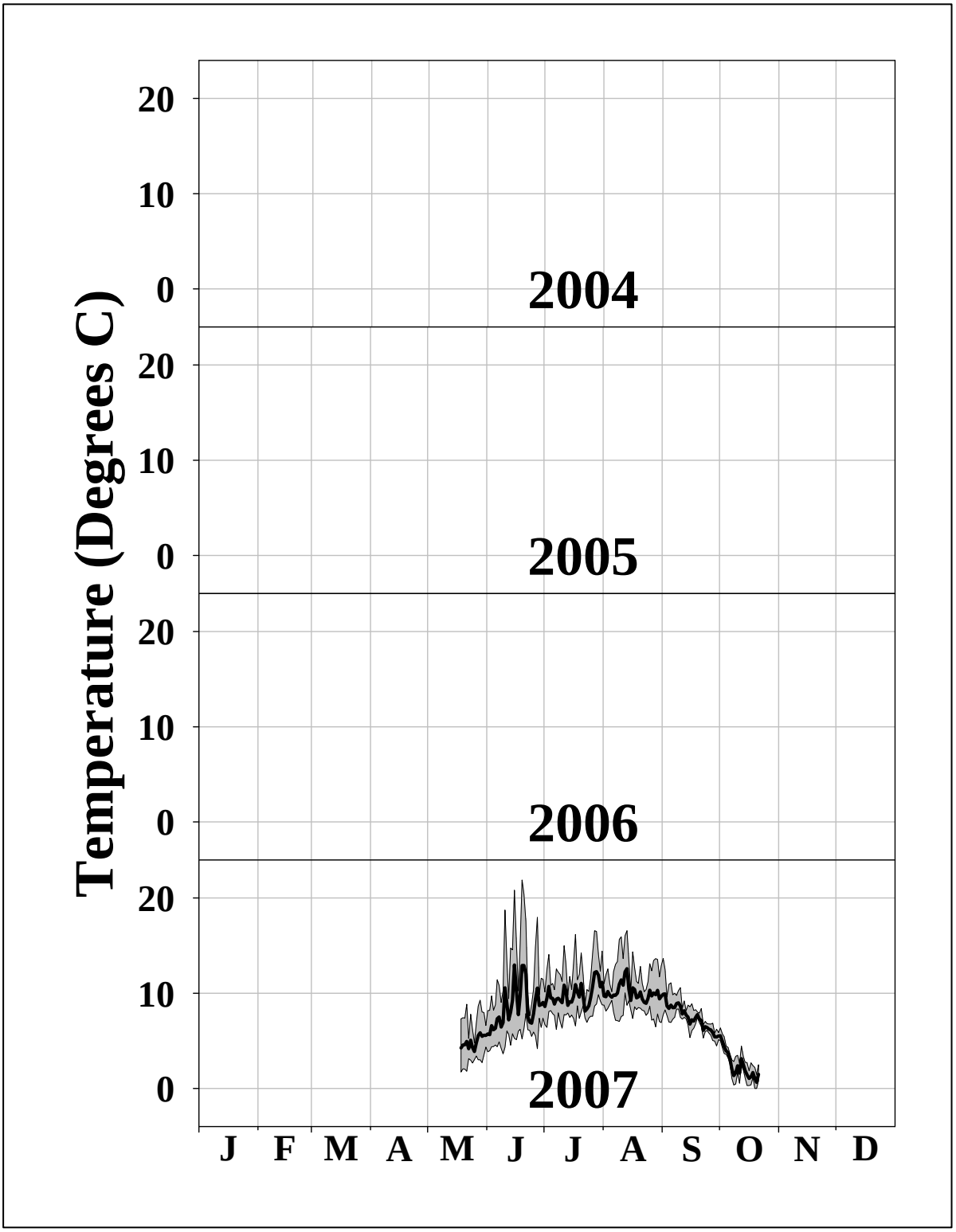
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun					
	Jul					
	Aug					
	Sep					
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun	4.5	5.9	9.0	12.5	16.0
	Jul	8.3	9.5	12.0	15.5	19.0
	Aug	8.5	9.8	11.6	15.3	18.4
	Sep	4.4	5.3	7.9	11.9	14.7
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK5WT (River Kilometer 33.44 in NFK-C), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK5WT (River Kilometer 33.44 in NFK-C), in 2007

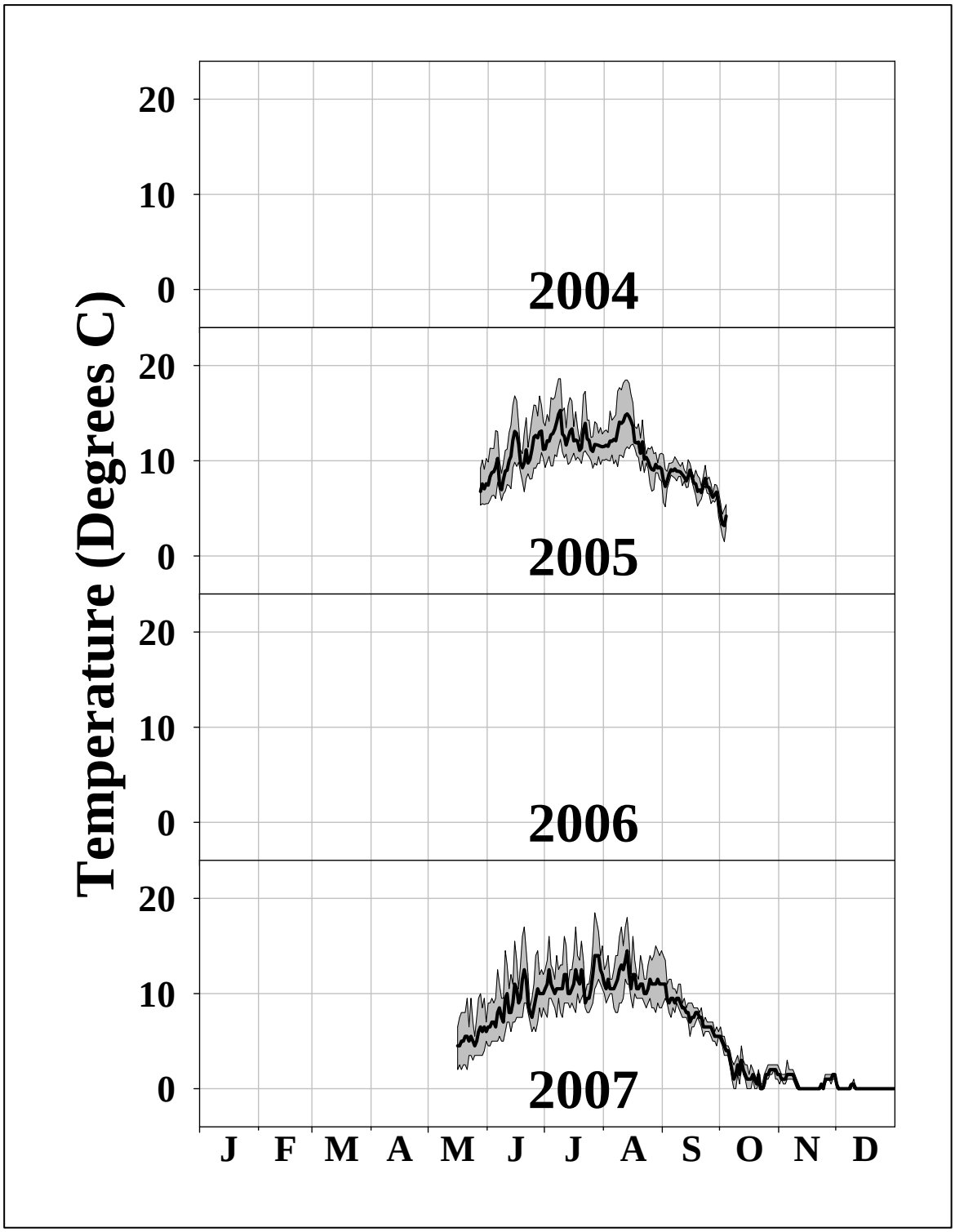
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun					
	Jul					
	Aug					
	Sep					
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun					
	Jul					
	Aug					
	Sep	4.7	5.5	8.2	12.4	16.0
	Oct	0.2	0.2	1.7	5.5	6.2
	Nov	0.2	0.2	0.6	1.3	1.8
	Dec	0.2	0.2	0.3	0.7	0.8



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at hydrology gage NK100A1 (River Kilometer 13.70 in NFK-B), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at hydrology gage NK100A1 (River Kilometer 13.70 in NFK-B), in 2007

Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun					
	Jul					
	Aug					
	Sep					
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun	3.6	5.6	8.6	13.0	21.9
	Jul	6.2	8.1	9.9	12.3	16.6
	Aug	6.5	8.9	10.1	12.6	16.6
	Sep	4.5	5.4	7.5	9.9	13.6
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at hydrology gage NK100A (River Kilometer 5.27 in NFK-A), 2005 and 2007. This gage is maintained by the United States Geological Survey.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at hydrology gage NK100A (River Kilometer 5.27 in NFK-A), 2005 and 2007. This gage is maintained by the United States Geological Survey.

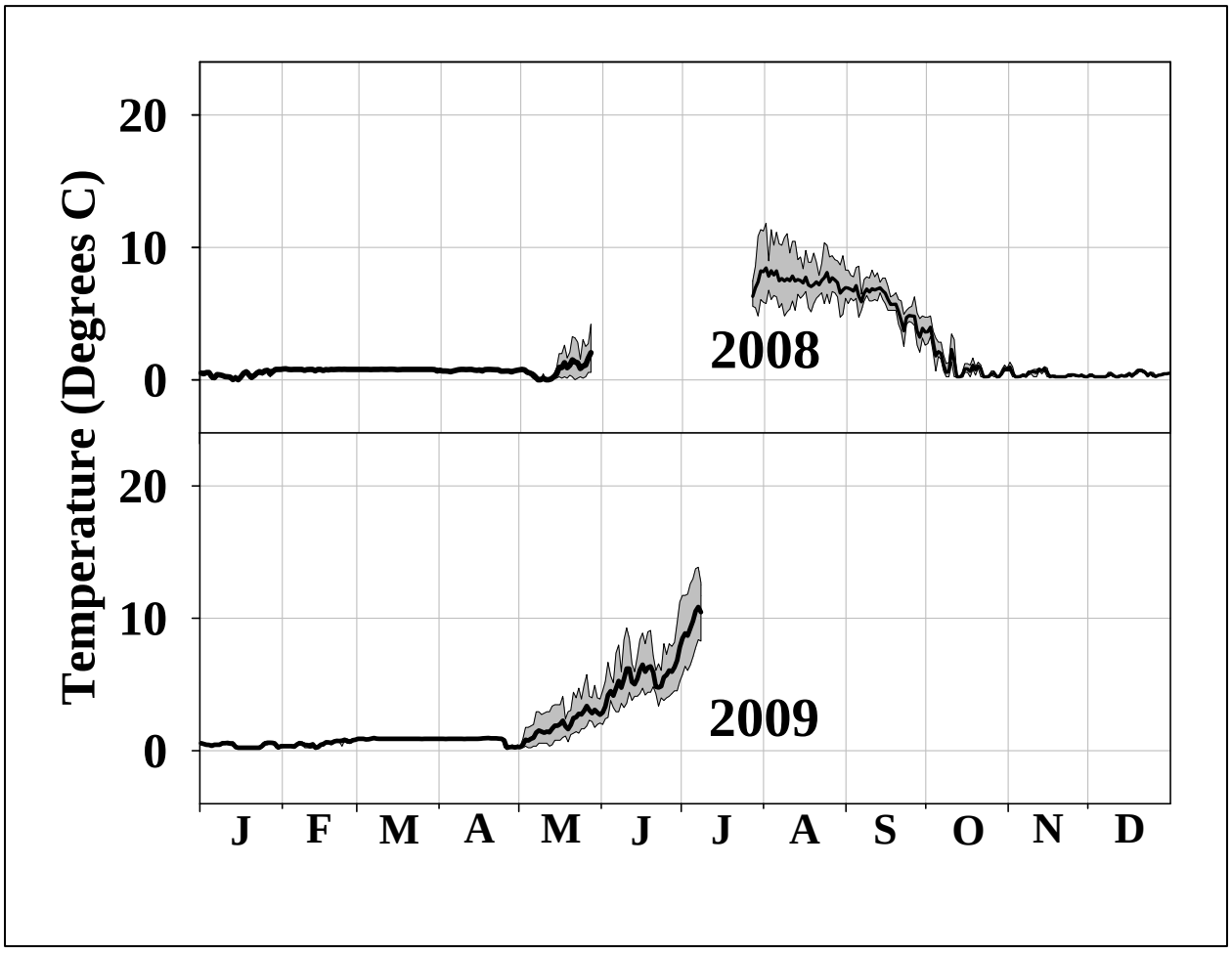
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Jun	5.5	7.0	10.3	13.1	16.8
	Jul	9.2	11.0	12.4	15.3	18.6
	Aug	6.8	9.0	11.8	14.9	18.5
	Sep	4.1	5.5	7.8	9.1	10.7
2006	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2007	May					
	Jun	4.5	6.5	8.9	12.5	17.0
	Jul	7.5	9.0	11.2	14.0	18.5
	Aug	8.0	10.0	11.3	14.5	18.0
	Sep	4.5	5.5	7.9	11.0	14.0
	Oct	0.0	0.0	2.0	5.5	6.5
	Nov	0.0	0.0	0.7	1.5	3.0
	Dec	0.0	0.0	0.0	0.5	1.0

ATTACHMENT 4

NORTH FORK KOKTULI RIVER THERMOGRAPHS, 2008 AND 2009

Thermographs of Daily Maximum, Average, and Minimum Water Temperatures and Tables of Monthly Minimum Instantaneous, Minimum Daily, Monthly Average, Maximum Daily, and Maximum Instantaneous Water Temperatures at Hydrology and Water Temperature Monitoring Sites

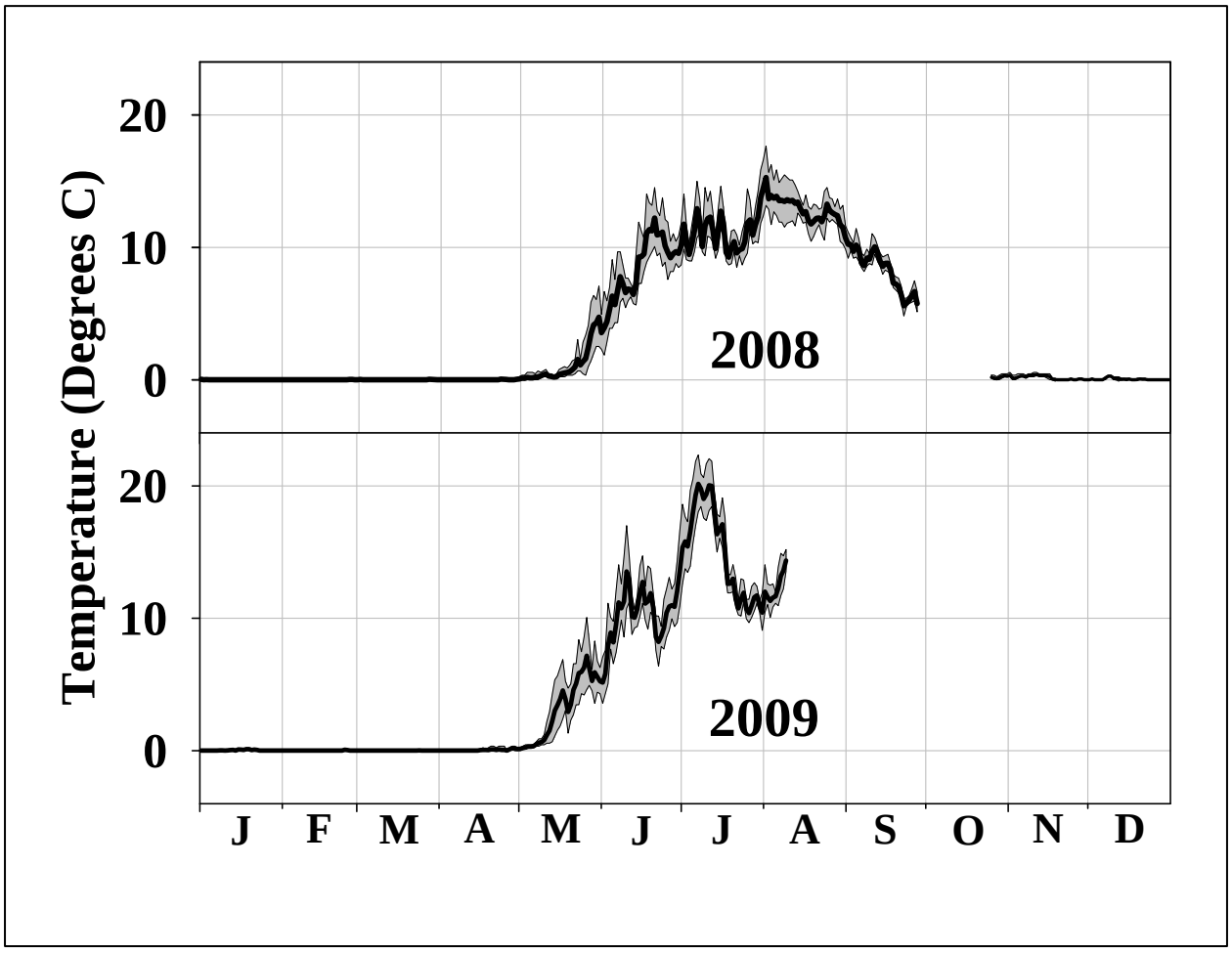
Note: There are a couple of reasons for missing data gaps in this attachment. Missing data gaps occurred at some locations when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK9WT (River Kilometer 51.39 in NFK-E), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK9WT (River Kilometer 51.39 in NFK-E), 2008 and 2009

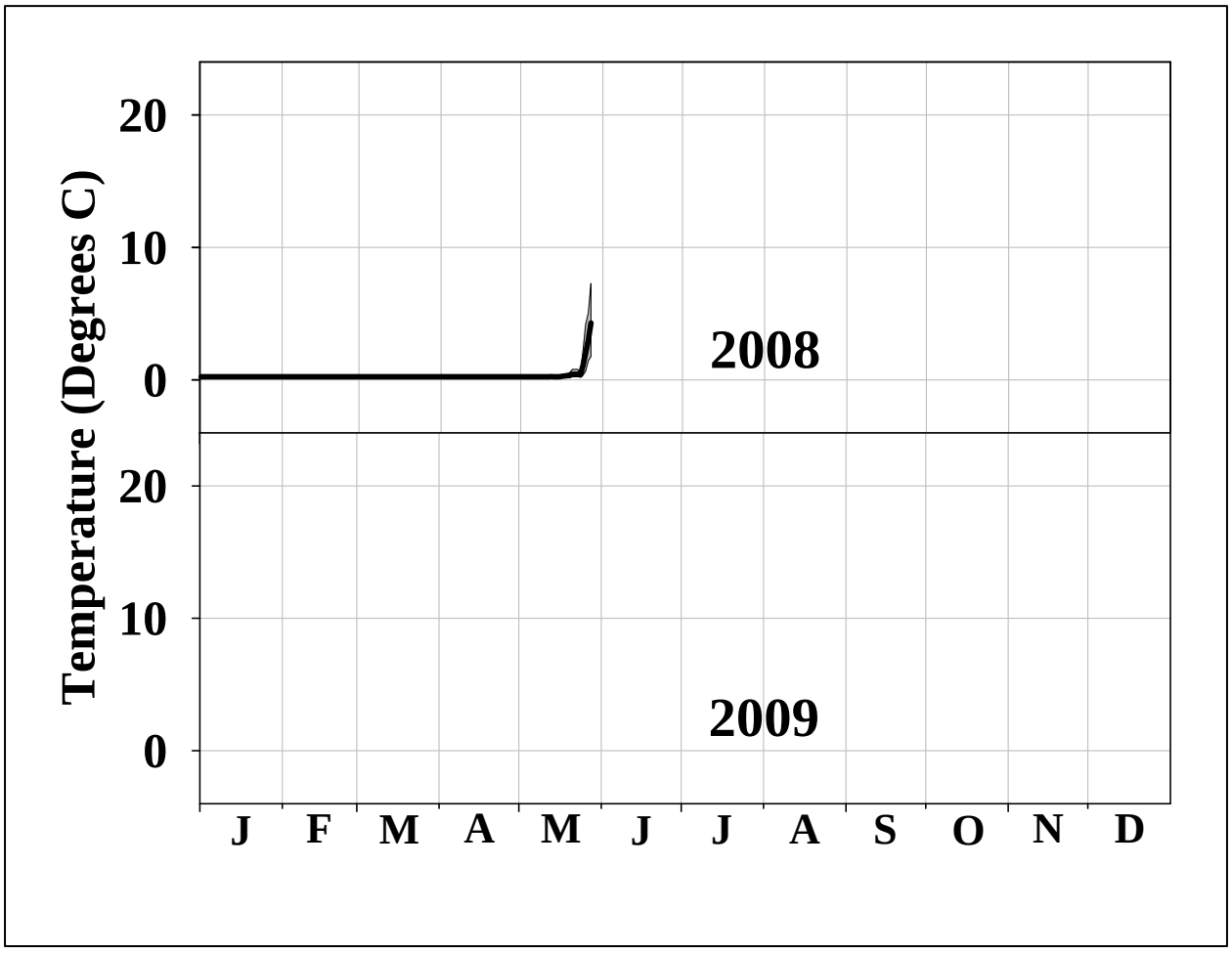
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.0	0.0	0.4	0.8	0.8
	Feb	0.6	0.7	0.8	0.8	0.9
	Mar	0.7	0.7	0.8	0.8	0.9
	Apr	0.6	0.6	0.7	0.8	0.8
	May					
	Jun					
	Jul					
	Aug	4.7	6.6	7.5	8.4	11.8
	Sep	2.1	3.2	5.7	7.1	8.6
	Oct	0.2	0.2	1.1	4.0	4.8
	Nov	0.2	0.2	0.4	1.0	1.3
	Dec	0.2	0.2	0.4	0.7	0.8
2009	Jan	0.2	0.2	0.4	0.6	0.7
	Feb	0.2	0.2	0.5	0.8	0.9
	Mar	0.8	0.9	0.9	1.0	1.0
	Apr	0.2	0.2	0.8	1.0	1.0
	May	0.2	0.3	1.9	3.4	5.8
	Jun	2.0	2.9	5.4	7.8	11.2
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK8WT (River Kilometer 44.54 in NFK-D), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK8WT (River Kilometer 44.54 in NFK-D), 2008 and 2009

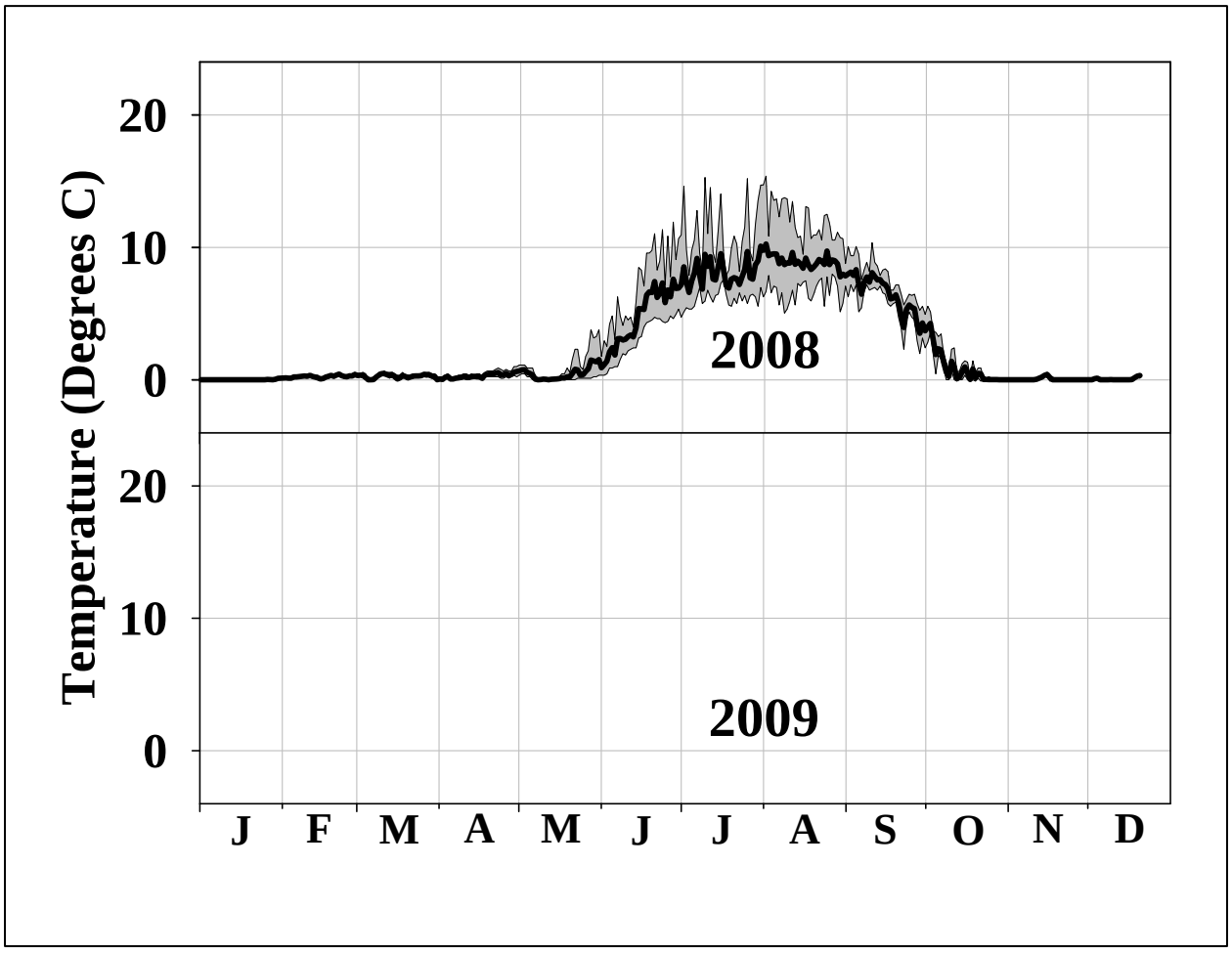
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.0	0.0	0.0	0.0	0.1
	Feb	0.0	0.0	0.0	0.0	0.1
	Mar	0.0	0.0	0.0	0.0	0.1
	Apr	0.0	0.0	0.0	0.1	0.2
	May	0.0	0.1	1.2	4.7	7.1
	Jun	1.9	3.9	8.5	12.2	14.5
	Jul	8.5	9.3	11.2	14.5	16.6
	Aug	9.9	10.7	12.9	15.3	17.7
	Sep					
	Oct					
	Nov	-0.1	0.0	0.2	0.4	0.6
	Dec	-0.1	0.0	0.1	0.3	0.3
2009	Jan	0.0	0.0	0.0	0.1	0.1
	Feb	0.0	0.0	0.0	0.1	0.1
	Mar	0.0	0.0	0.0	0.0	0.1
	Apr	0.0	0.0	0.0	0.2	0.3
	May	0.0	0.1	3.1	7.2	10.1
	Jun	3.6	5.1	10.3	13.6	17.0
	Jul	9.1	10.4	14.9	20.1	22.3
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK7WT (River Kilometer 36.87 in NFK-D), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK7WT (River Kilometer 36.87 in NFK-D), in 2008

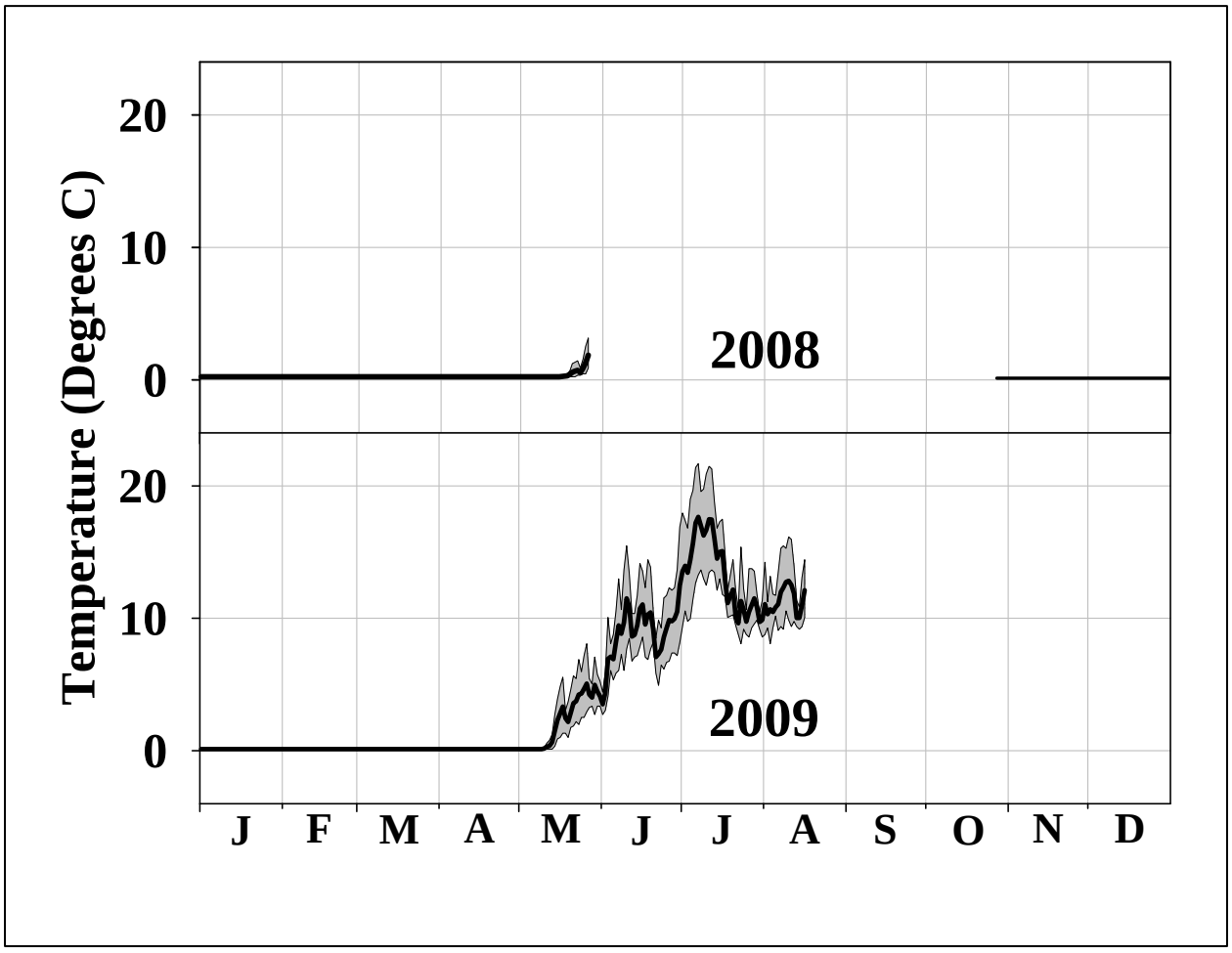
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.2	0.2	0.2	0.2	0.2
	Feb	0.2	0.2	0.2	0.2	0.2
	Mar	0.2	0.2	0.2	0.2	0.2
	Apr	0.2	0.2	0.2	0.2	0.2
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in Tributary NFK 1.190 at water temperature monitoring site NFK119WT (confluence with North Fork Koktuli River at River Kilometer 36.52 in NFK-C), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary NFK 1.190 at water temperature monitoring site NFK119WT (confluence with North Fork Koktuli River at River Kilometer 36.52 in NFK-C), in 2008

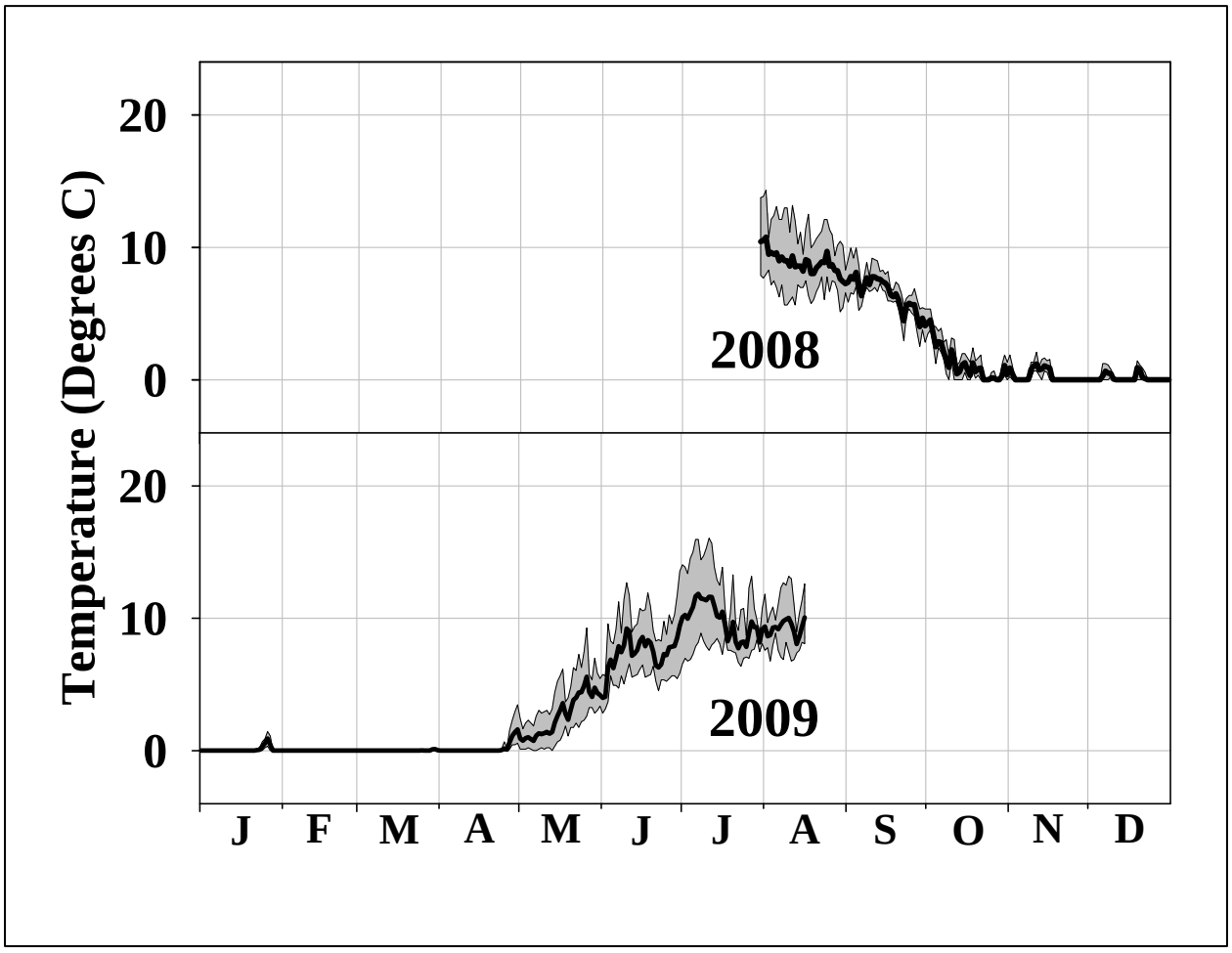
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.0	0.0	0.0	0.1	0.1
	Feb	0.0	0.1	0.2	0.4	0.6
	Mar	0.0	0.0	0.3	0.5	0.7
	Apr	0.0	0.0	0.3	0.7	1.1
	May	0.0	0.0	0.5	1.5	3.8
	Jun	0.3	1.2	4.9	7.6	11.9
	Jul	5.1	6.6	8.2	10.1	15.3
	Aug	5.0	7.8	8.9	10.3	15.4
	Sep	2.0	3.5	6.4	8.3	10.4
	Oct	-0.1	0.0	0.9	4.3	5.6
	Nov	-0.1	0.0	0.1	0.4	0.6
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK5WT (River Kilometer 33.44 in NFK-C), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK5WT (River Kilometer 33.44 in NFK-C), 2008 and 2009

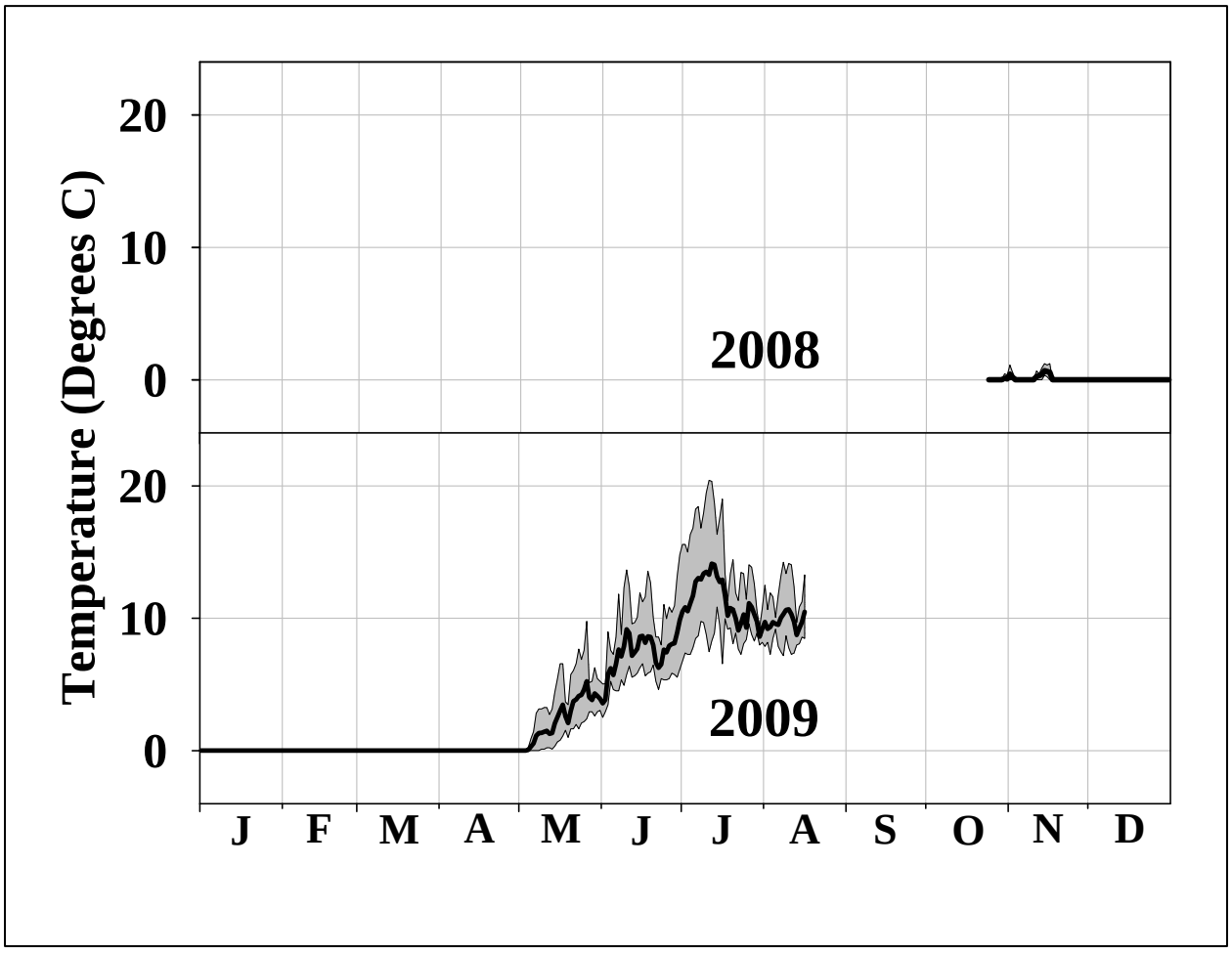
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.2	0.2	0.2	0.2	0.2
	Feb	0.2	0.2	0.2	0.2	0.2
	Mar	0.2	0.2	0.2	0.2	0.2
	Apr	0.2	0.2	0.2	0.2	0.2
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.1	0.1	0.1	0.1	0.1
	Dec	0.1	0.1	0.1	0.1	0.1
2009	Jan	0.1	0.1	0.1	0.1	0.1
	Feb	0.1	0.1	0.1	0.1	0.1
	Mar	0.1	0.1	0.1	0.1	0.1
	Apr	0.1	0.1	0.1	0.1	0.1
	May	0.1	0.1	2.2	5.1	8.1
	Jun	2.7	3.5	8.9	12.5	16.9
	Jul	8.1	9.6	13.4	17.7	21.7
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK4WT (River Kilometer 19.94 in NFK-B), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK4WT (River Kilometer 19.94 in NFK-B), 2008 and 2009

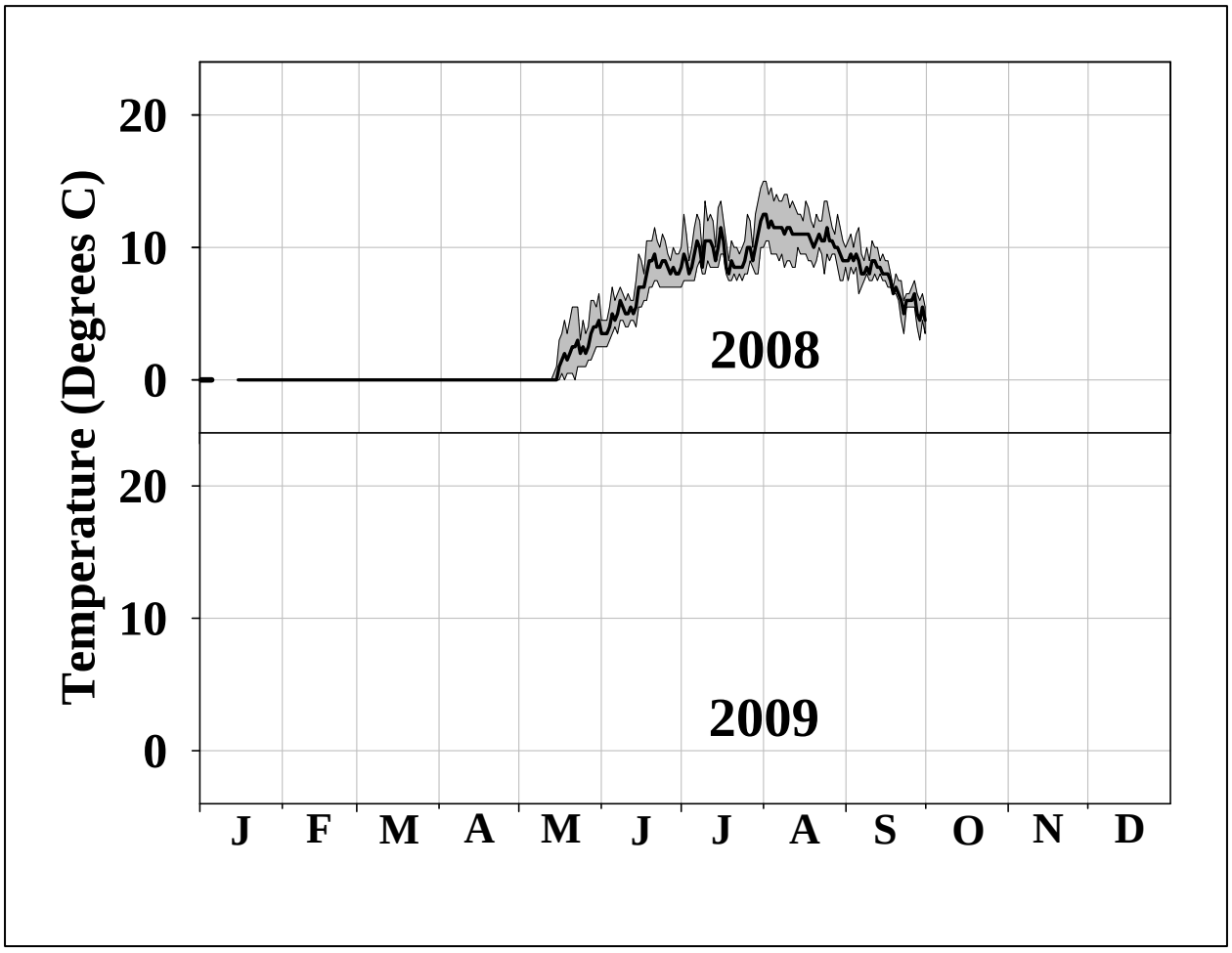
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	5.1	7.3	8.8	10.8	14.3
	Sep	2.5	4.0	6.5	8.1	10.0
	Oct	0.0	0.0	1.3	4.5	5.3
	Nov	0.0	0.0	0.3	1.2	2.1
	Dec	0.0	0.0	0.1	0.9	1.4
2009	Jan	0.0	0.0	0.1	0.9	1.4
	Feb	0.0	0.0	0.0	0.0	0.0
	Mar	0.0	0.0	0.0	0.1	0.1
	Apr	0.0	0.0	0.2	1.6	3.5
	May	0.0	0.7	2.7	5.6	9.3
	Jun	2.8	4.0	7.4	9.4	13.6
	Jul	6.4	7.7	9.8	11.8	16.0
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK3WT (River Kilometer 15.41 in NFK-B), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK3WT (River Kilometer 15.41 in NFK-B), 2008 and 2009

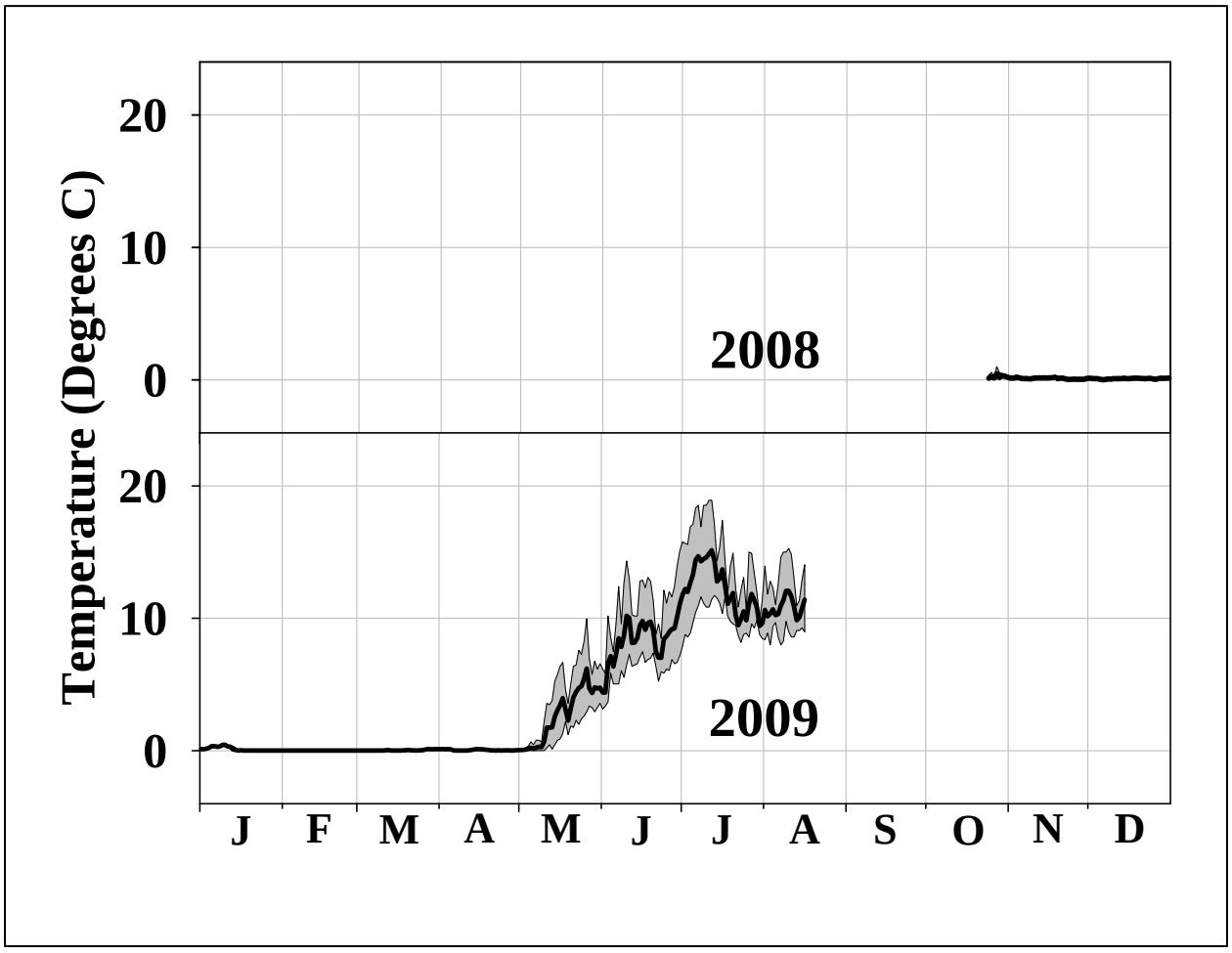
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.0	0.0	0.1	0.7	1.2
	Dec	0.0	0.0	0.0	0.0	0.0
2009	Jan	0.0	0.0	0.0	0.0	0.0
	Feb	0.0	0.0	0.0	0.0	0.0
	Mar	0.0	0.0	0.0	0.0	0.0
	Apr	0.0	0.0	0.0	0.0	0.0
	May	0.0	0.0	2.4	5.2	9.8
	Jun	2.5	3.6	7.4	9.9	14.8
	Jul	6.6	8.6	11.4	14.1	20.4
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at hydrology gage NK100A (River Kilometer 5.27 in NFK-A), in 2008. This gage is maintained by the United States Geological Survey.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at hydrology gage NK100A (River Kilometer 5.27 in NFK-A), in 2008. This gage is maintained by the United States Geological Survey.

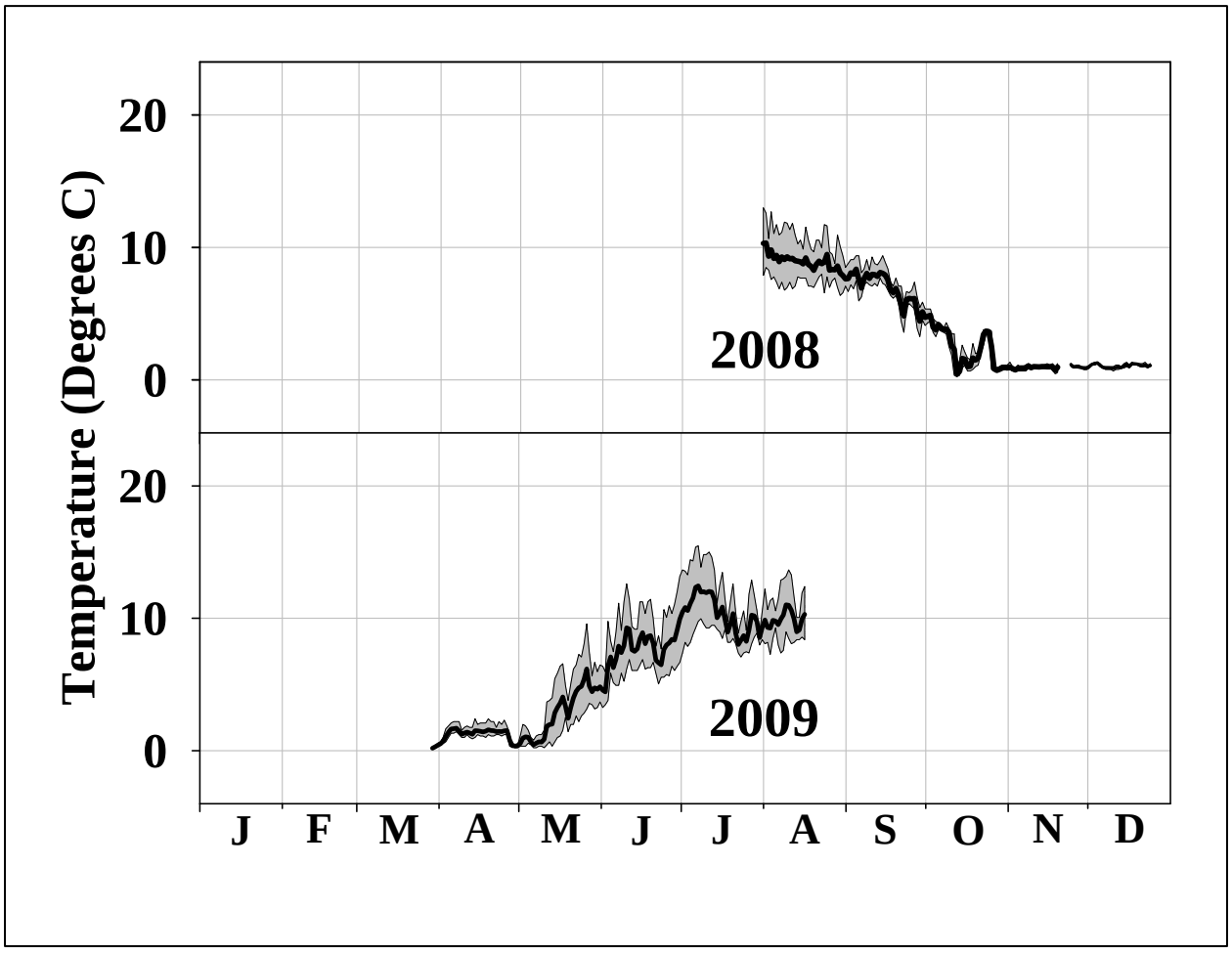
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb	0.0	0.0	0.0	0.0	0.0
	Mar	0.0	0.0	0.0	0.0	0.0
	Apr	0.0	0.0	0.0	0.0	0.0
	May	0.0	0.0	1.4	4.5	6.5
	Jun	2.5	3.5	6.8	9.5	11.5
	Jul	7.5	8.0	9.6	12.5	15.0
	Aug	7.5	9.0	10.8	12.5	15.0
	Sep	3.0	4.5	7.3	9.5	11.5
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK2WT (River Kilometer 5.27 in NFK-A), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK2WT (River Kilometer 5.27 in NFK-A), 2008 and 2009

Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.0	0.0	0.1	0.2	0.3
	Dec	0.0	0.0	0.1	0.1	0.1
2009	Jan	0.0	0.0	0.1	0.5	0.5
	Feb	0.0	0.0	0.0	0.0	0.1
	Mar	0.0	0.0	0.0	0.1	0.1
	Apr	0.0	0.0	0.1	0.1	0.1
	May	0.0	0.0	2.7	6.2	10.0
	Jun	3.2	4.4	8.3	11.1	15.1
	Jul	7.9	9.4	12.2	15.1	18.9
	Aug					



Daily maximum, average, and minimum water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK1WT (River Kilometer 0.29 in NFK-A), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in the North Fork Koktuli River at water temperature monitoring site NFK1WT (River Kilometer 0.29 in NFK-A), 2008 and 2009

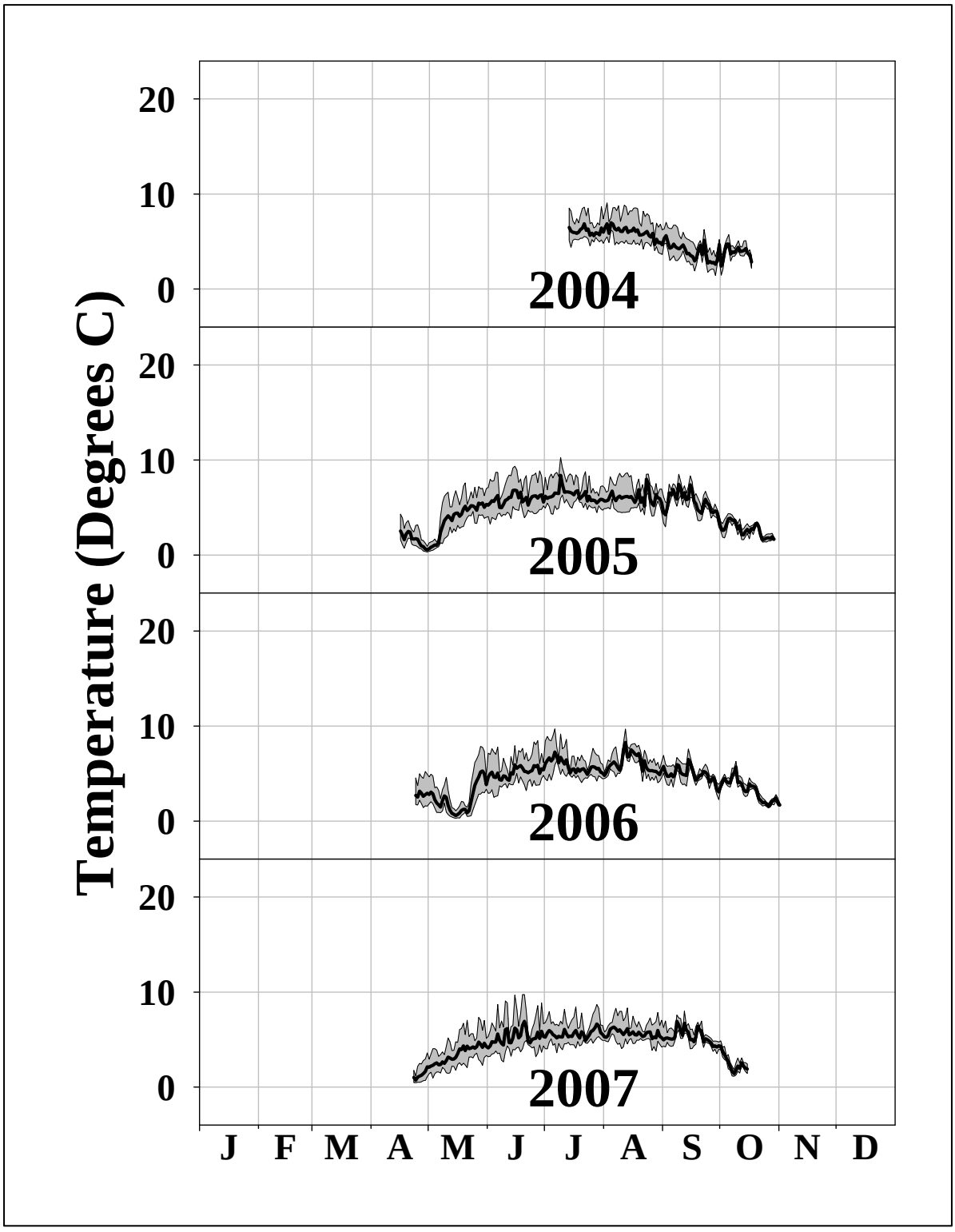
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	6.4	7.6	8.9	10.3	12.7
	Sep	3.3	4.4	6.9	8.4	9.4
	Oct	0.2	0.5	2.4	4.9	5.3
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr	0.2	0.4	1.3	1.7	2.4
	May	0.2	0.5	2.9	6.2	9.6
	Jun	3.3	4.4	7.7	9.9	13.2
	Jul	7.1	8.0	10.3	12.4	15.5
	Aug					

ATTACHMENT 5

UPPER TALARIK CREEK THERMOGRAPHS, 2004 THROUGH 2007

Thermographs of Daily Maximum, Average, and Minimum Water Temperatures and Tables of Monthly Minimum Instantaneous, Minimum Daily, Monthly Average, Maximum Daily, and Maximum Instantaneous Water Temperatures at Hydrology and Water Temperature Monitoring Sites

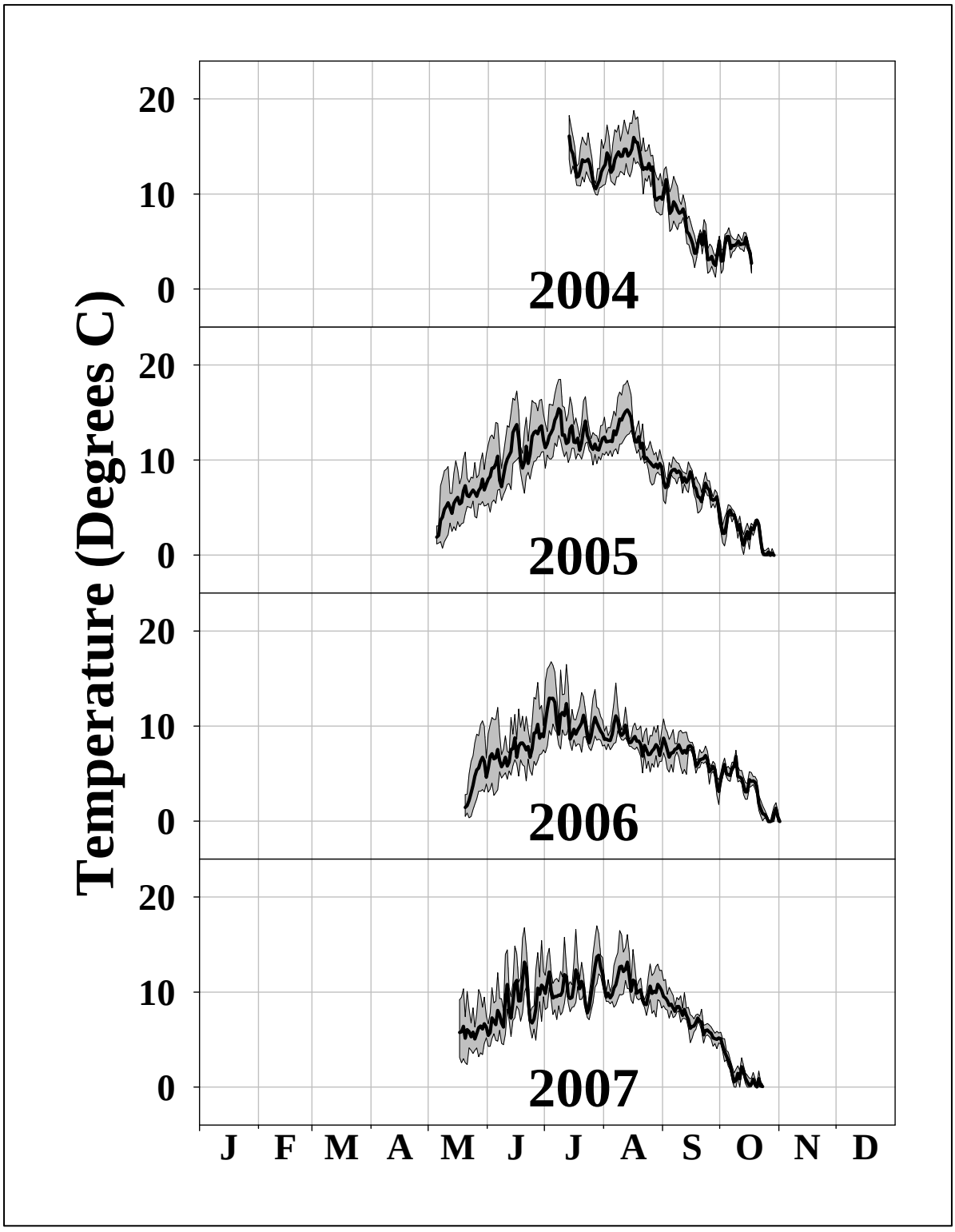
Note: There are several reasons for missing data gaps in this attachment. Hydrology gages (which are also used to measure temperature) are normally removed prior to winter freeze up, and reinstalled after the ice melts. Missing data gaps at other locations occurred when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100E (River Kilometer 59.97 in UT-G), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100E (River Kilometer 59.97 in UT-G), 2004 through 2007

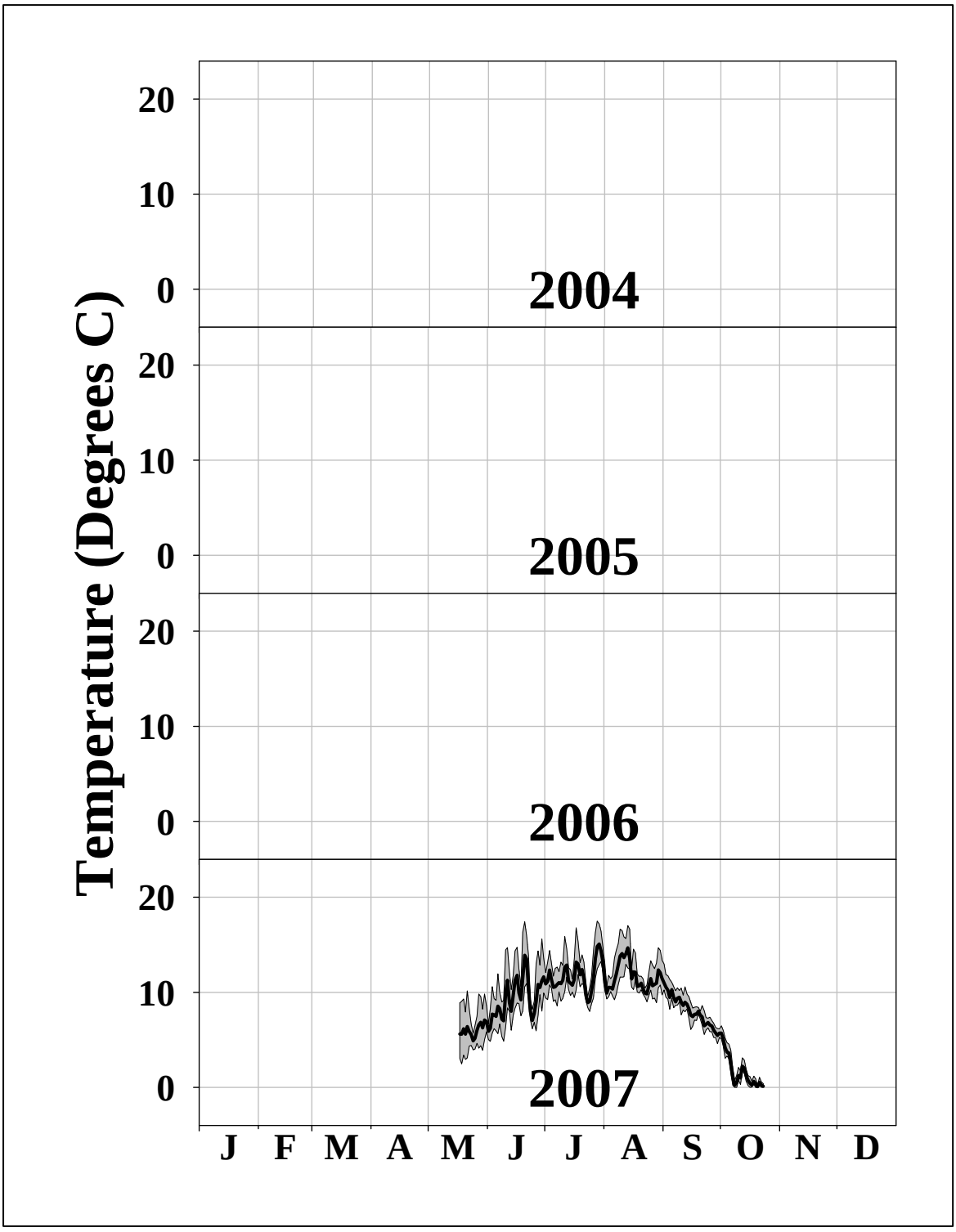
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	3.6	4.7	5.9	7.0	9.1
	Sep	1.4	2.6	4.0	5.6	7.0
2005	Apr					
	May	0.4	0.7	3.8	5.5	7.6
	Jun	3.3	5.0	5.9	6.8	9.3
	Jul	4.3	5.5	6.3	8.4	10.3
	Aug	4.1	5.1	6.0	8.0	8.7
	Sep	3.0	3.7	5.6	7.4	8.5
	Oct					
2006	May	0.3	0.6	2.3	5.3	7.9
	Jun	2.5	4.3	5.1	5.9	8.5
	Jul	4.0	4.9	5.8	7.3	9.7
	Aug	4.0	4.8	6.0	8.3	9.7
	Sep	2.3	3.1	4.9	6.5	7.6
	Oct	1.4	1.6	3.3	5.7	6.3
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May	0.9	2.1	3.4	4.7	7.3
	Jun	2.7	4.1	5.3	6.9	9.7
	Jul	3.6	4.9	5.6	6.6	8.7
	Aug	3.8	5.1	5.6	6.3	8.3
	Sep	3.5	4.2	5.3	6.9	8.0
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100D (River Kilometer 51.62 in UT-F), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100D (River Kilometer 51.62 in UT-F), 2004 through 2007

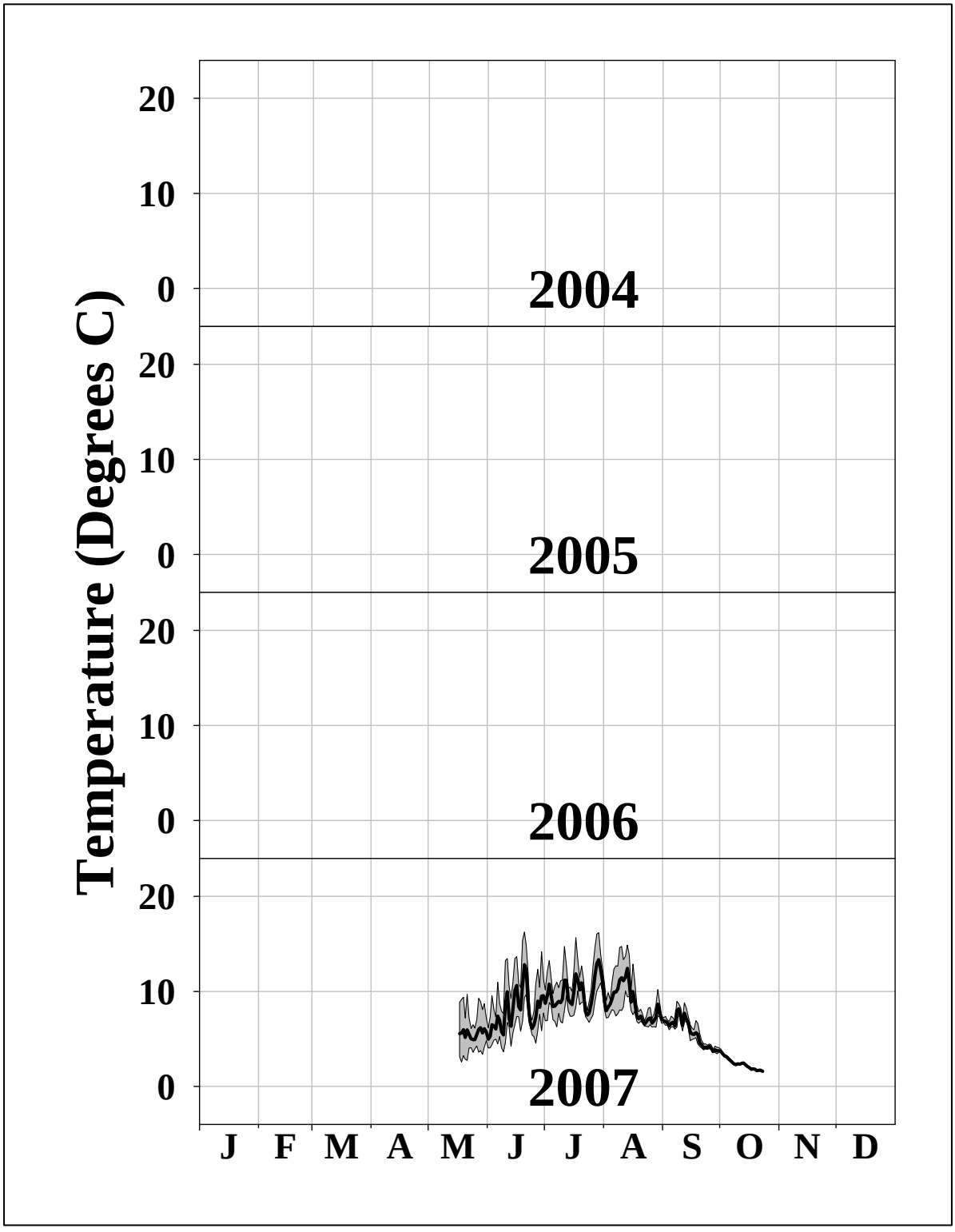
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	7.8	9.4	13.1	16.0	18.8
	Sep	1.2	2.5	6.2	11.5	12.9
2005	Apr					
	May					
	Jun	4.5	7.2	10.7	13.7	17.3
	Jul	9.1	11.0	12.5	15.4	18.5
	Aug	7.4	9.2	12.0	15.3	18.4
	Sep	3.5	4.7	7.3	9.0	10.3
	Oct					
2006	May					
	Jun	2.7	5.6	7.5	10.2	14.6
	Jul	7.2	8.2	10.4	12.9	16.8
	Aug	5.1	6.8	8.5	11.1	14.5
	Sep	1.7	3.1	6.7	8.7	10.7
	Oct	-0.1	-0.1	3.2	6.8	7.5
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	4.3	5.4	8.7	13.2	16.8
	Jul	7.1	7.8	10.6	13.9	17.0
	Aug	7.4	8.7	10.6	13.2	16.5
	Sep	4.1	5.0	7.1	9.5	11.3
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Tributary UT 1.350 at hydrology gage UT135A (confluence with Upper Talarik Creek at River Kilometer 45.05 in UT-E), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary UT 1.350 at hydrology gage UT135A (confluence with Upper Talarik Creek at River Kilometer 45.05 in UT-E), in 2007

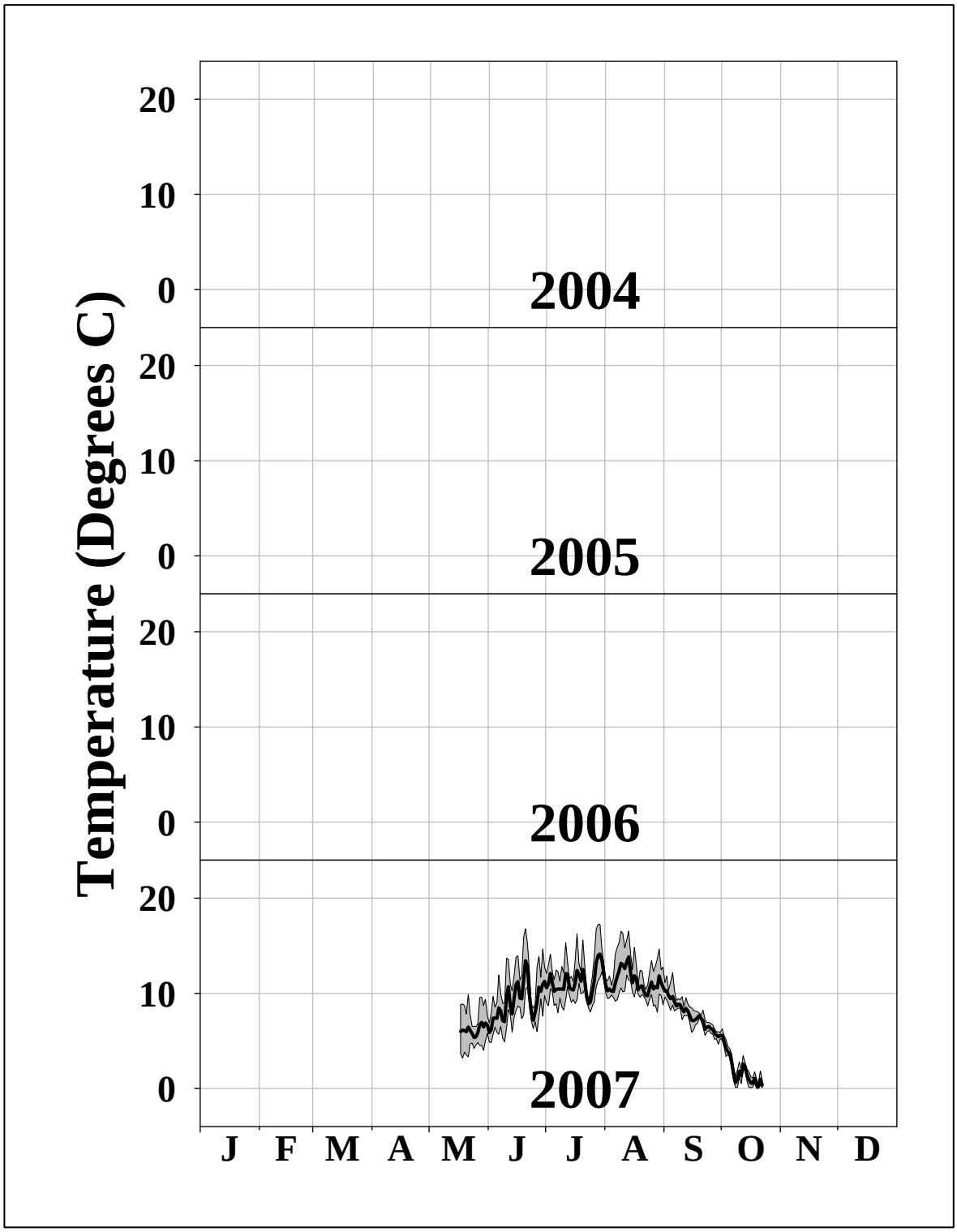
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	4.8	5.9	9.4	13.9	17.4
	Jul	8.0	8.9	11.7	15.1	17.5
	Aug	8.9	9.8	11.6	14.7	17.0
	Sep	4.6	5.5	8.1	11.0	13.0
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100C2 (River Kilometer 44.63 in UT-E), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100C2 (River Kilometer 44.63 in UT-E), in 2007

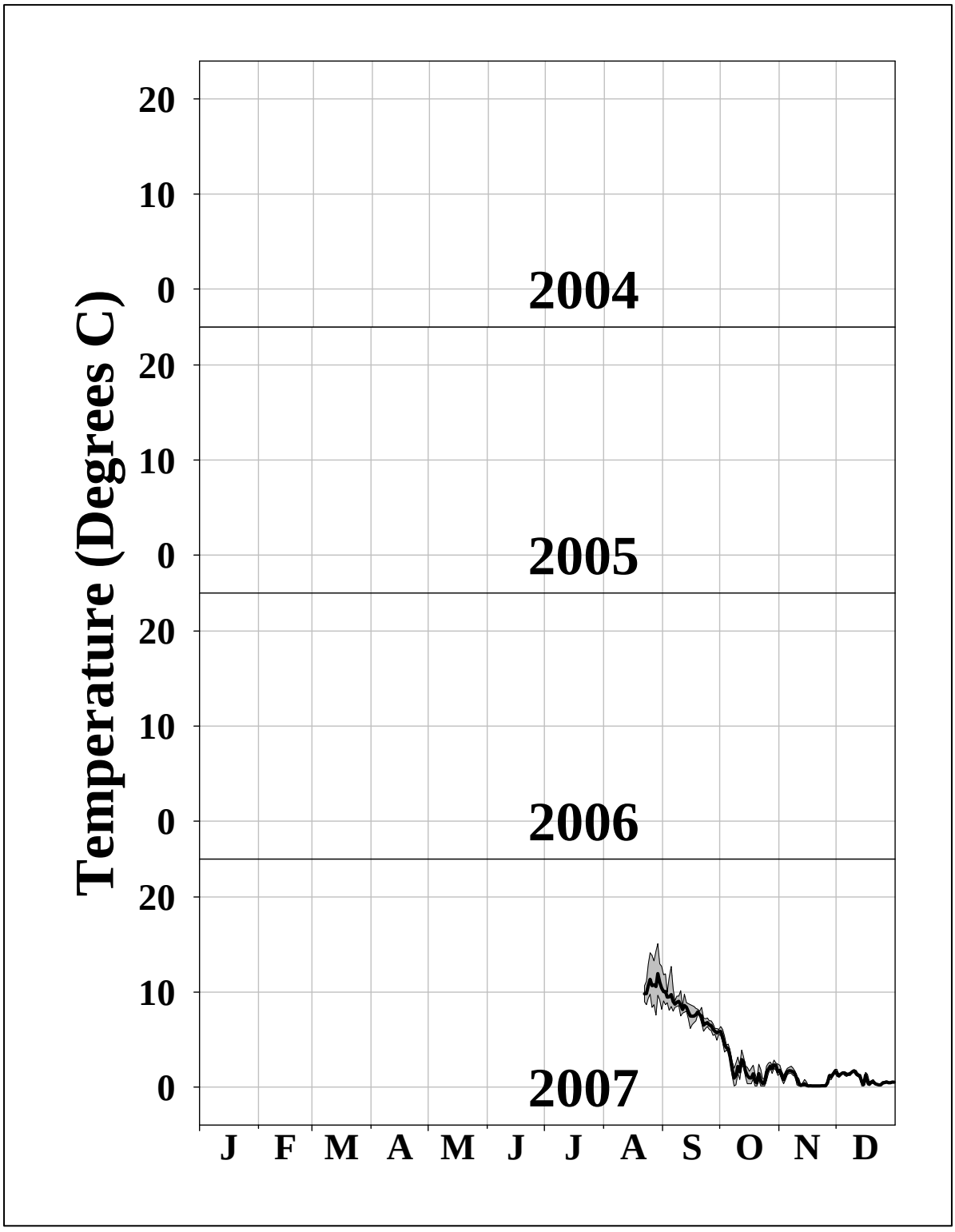
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	3.7	5.0	8.0	12.8	16.2
	Jul	6.3	7.5	9.9	13.3	16.2
	Aug	6.2	6.5	8.7	12.4	14.9
	Sep	3.4	3.7	5.7	8.2	9.0
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100C1 (River Kilometer 37.64 in UT-E), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100C1 (River Kilometer 37.64 in UT-E), in 2007

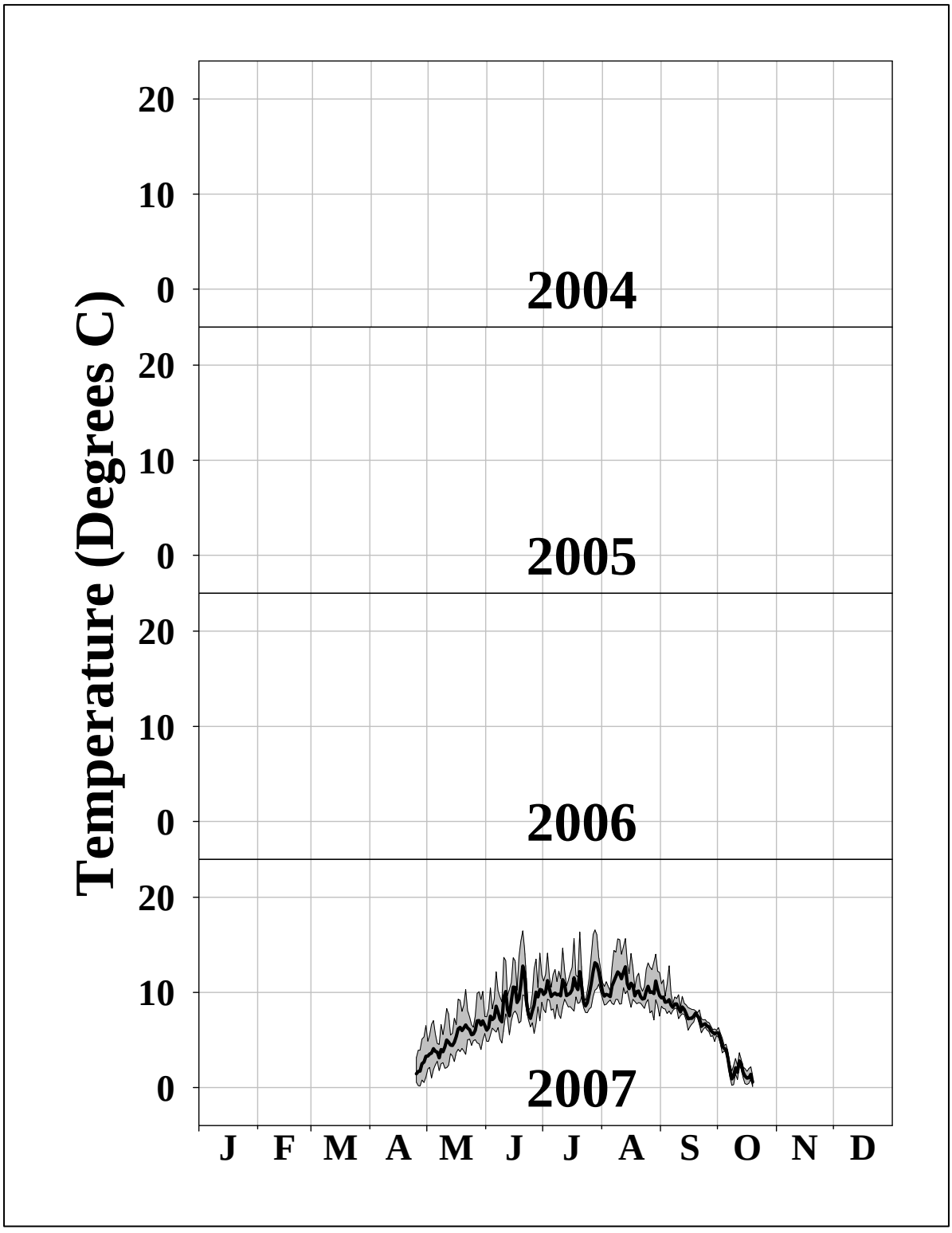
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun	4.8	5.9	9.2	13.4	16.8
	Jul	8.0	8.9	11.3	14.1	17.3
	Aug	8.0	9.7	11.2	13.8	16.5
	Sep	4.7	5.4	7.7	10.3	12.2
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT5WT (River Kilometer 29.33 in UT-D), in 2007.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT5WT (River Kilometer 29.33 in UT-D), in 2007

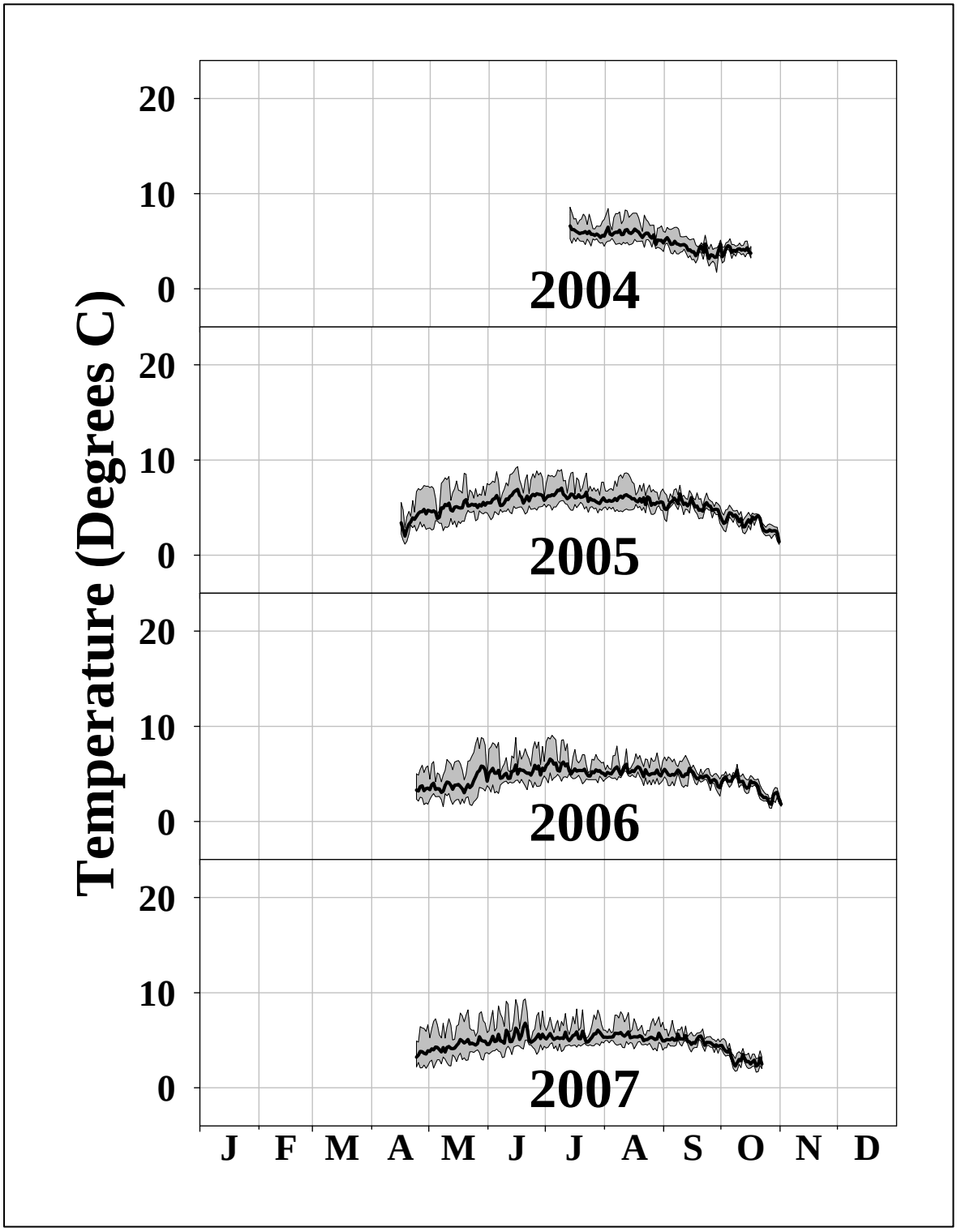
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep	4.9	5.7	7.9	10.0	12.7
	Oct	0.1	0.4	2.1	5.9	6.4
	Nov	0.1	0.1	0.7	1.8	2.3
	Dec	0.1	0.2	0.9	1.7	1.9



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100C (River Kilometer 29.31 in UT-D), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100C (River Kilometer 29.31 in UT-D), in 2007

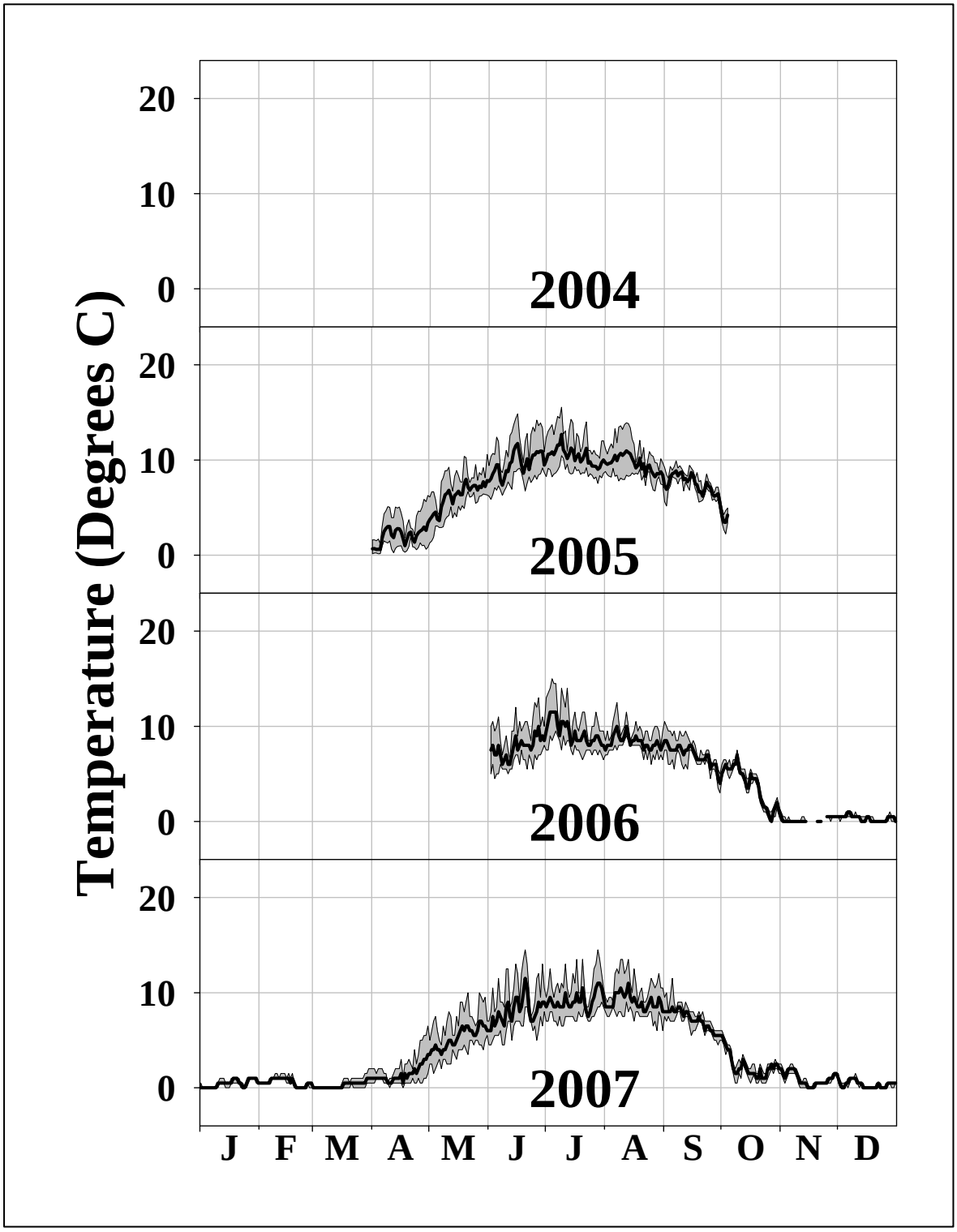
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May	1.0	3.1	5.2	7.0	10.3
	Jun	4.7	6.0	8.8	12.8	16.5
	Jul	7.2	8.6	10.5	13.1	16.6
	Aug	7.1	9.3	10.5	12.7	15.7
	Sep	4.8	5.6	7.6	9.5	12.8
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Tributary UT 1.190 at hydrology gage UT119A (confluence with Upper Talarik Creek at River Kilometer 24.74 in UT-C), 2004 through 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary UT 1.190 at hydrology gage UT119A (confluence with Upper Talarik Creek at River Kilometer 24.74 in UT-C), 2004 through 2007

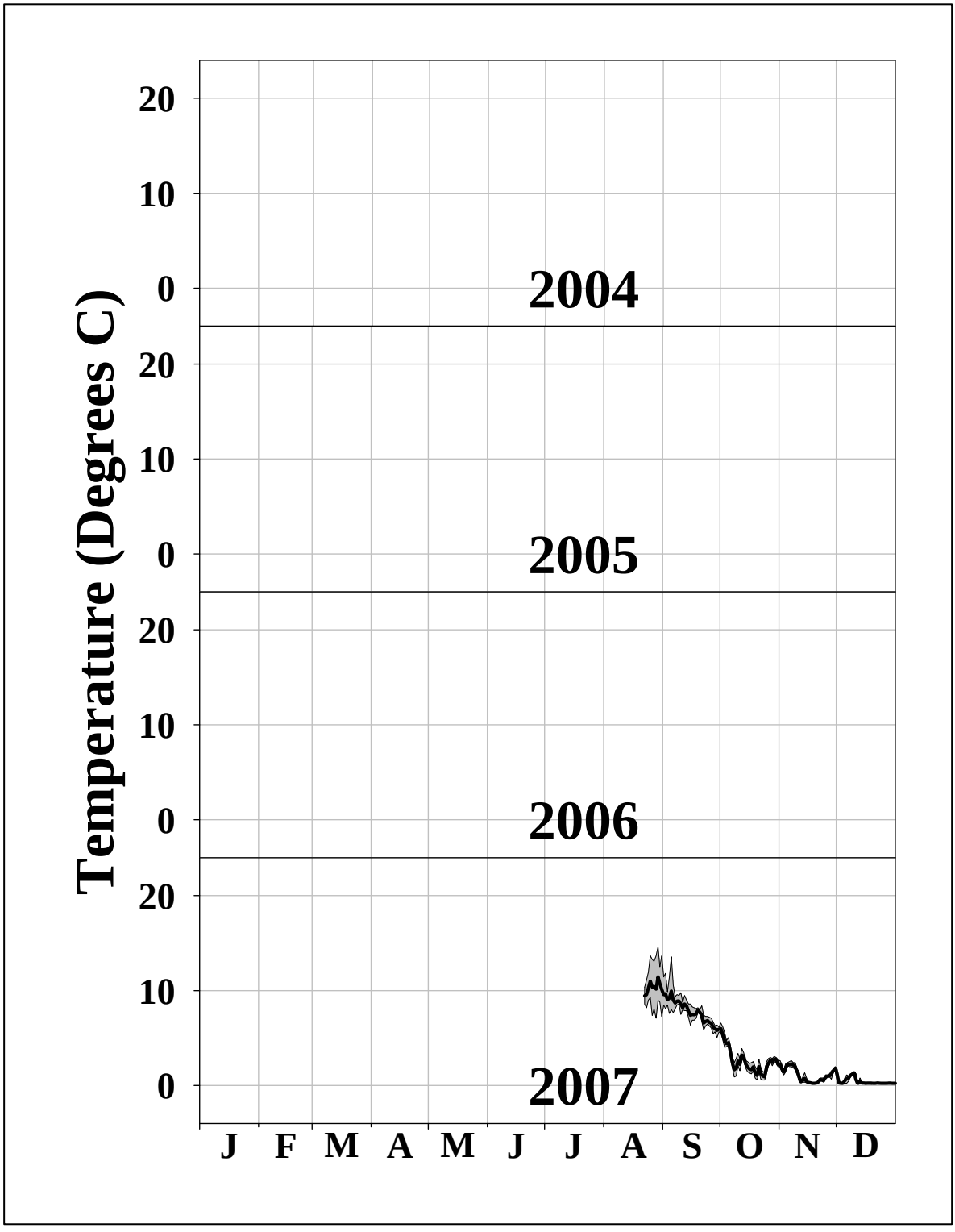
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug	3.9	4.6	5.7	6.5	8.4
	Sep	1.7	3.2	4.2	5.4	6.5
2005	Apr					
	May	2.6	3.8	5.0	5.8	8.6
	Jun	3.7	5.2	6.0	6.9	9.3
	Jul	4.4	5.4	6.1	7.0	9.0
	Aug	4.3	5.2	5.8	6.3	8.6
	Sep	3.3	4.2	5.2	6.4	7.4
	Oct	1.1	1.4	3.3	4.5	5.2
2006	May	1.6	3.0	4.0	5.8	8.8
	Jun	2.9	4.5	5.2	5.9	8.8
	Jul	3.9	4.8	5.5	6.6	9.0
	Aug	3.8	4.7	5.2	6.0	7.9
	Sep	2.7	3.5	4.8	5.6	6.9
	Oct	1.4	1.8	3.6	5.4	6.0
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May	2.1	3.7	4.5	5.4	8.2
	Jun	3.2	4.6	5.4	6.8	9.3
	Jul	3.8	4.8	5.4	6.1	8.3
	Aug	3.9	4.9	5.4	5.9	8.0
	Sep	3.6	4.3	4.9	5.6	7.1
	Oct					
	Nov					
	Dec					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100B (River Kilometer 24.50 in UT-C), 2005 through 2007. This gage is maintained by the United States Geological Survey.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100B (River Kilometer 24.50 in UT-C), 2005 through 2007. This gage is maintained by the United States Geological Survey.

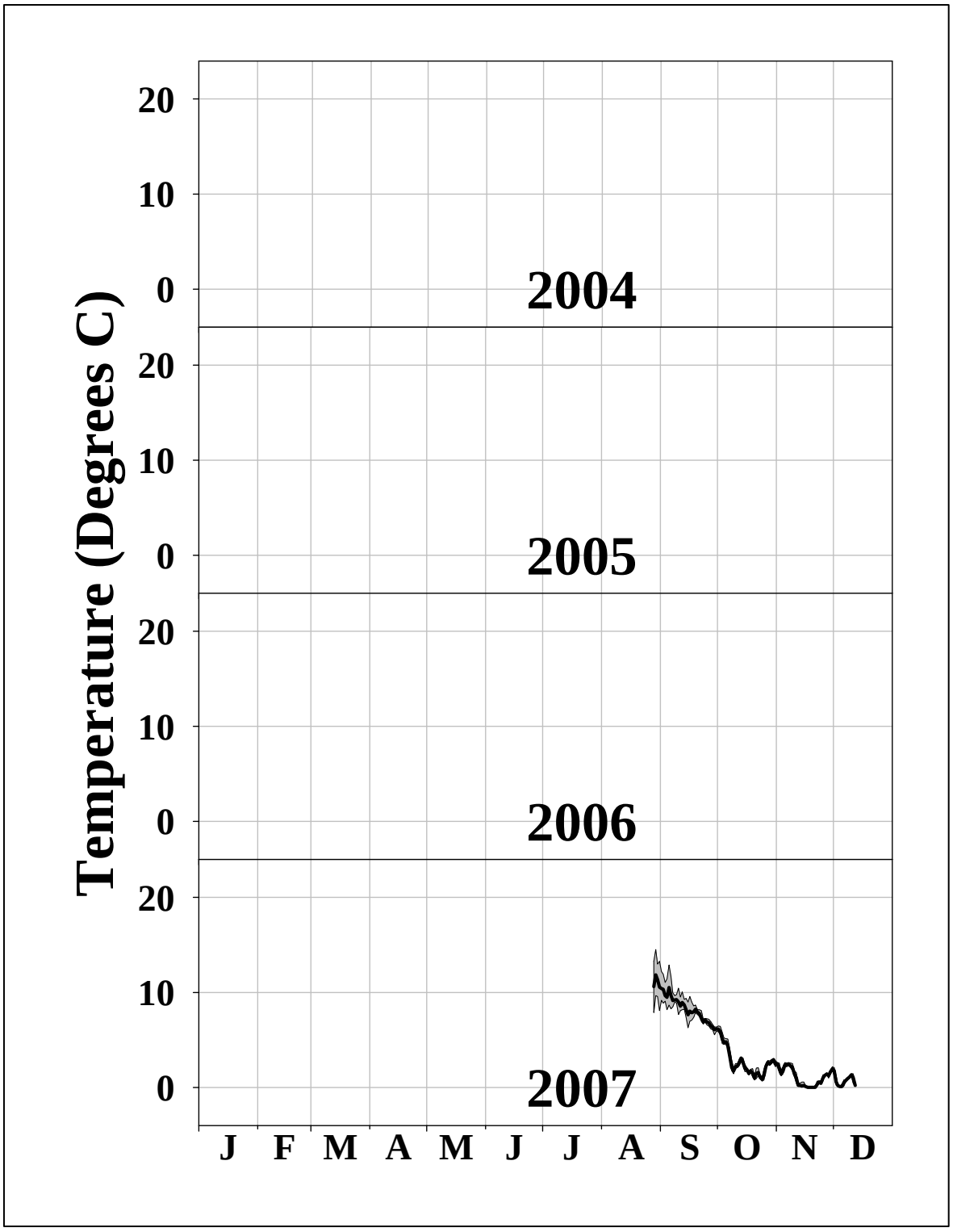
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr	0.1	0.6	2.0	3.4	6.3
	May	1.3	3.6	6.2	8.0	10.6
	Jun	5.8	7.3	9.6	11.7	14.9
	Jul	7.5	9.0	10.4	12.7	15.5
	Aug	6.7	8.2	9.6	11.0	13.9
	Sep	4.6	5.4	7.5	8.9	9.9
	Oct					
2006	May					
	Jun					
	Jul	6.5	8.0	9.4	11.5	15.0
	Aug	6.0	7.5	8.4	10.0	12.5
	Sep	3.0	4.0	7.0	8.5	10.5
	Oct	0.0	0.0	3.7	7.0	7.5
	Nov					
	Dec	0.0	0.0	0.3	1.0	1.0
2007	Jan	0.0	0.0	0.5	1.0	1.0
	Feb	0.0	0.0	0.6	1.0	1.5
	Mar	0.0	0.0	0.3	1.0	2.0
	Apr	0.0	0.5	1.4	3.5	6.5
	May	1.5	3.5	5.3	7.0	10.0
	Jun	4.5	6.0	8.1	11.5	14.5
	Jul	6.5	7.5	9.1	11.0	14.5
	Aug	6.0	8.0	9.1	11.0	13.5
	Sep	4.5	5.5	7.2	8.5	11.5
	Oct	0.5	1.0	2.3	5.5	6.0
	Nov	0.0	0.0	0.9	2.0	2.5
	Dec	0.0	0.0	0.4	1.0	1.5



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT3WT (River Kilometer 17.23 in UT-C), in 2007

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT3WT (River Kilometer 17.23 in UT-C), in 2007

Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep	5.0	5.8	7.8	9.9	13.6
	Oct	0.6	0.9	2.6	6.0	6.6
	Nov	0.2	0.2	1.1	2.3	2.6
	Dec	0.1	0.2	0.4	1.3	1.8



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT1WT (River Kilometer 2.22 in UT-A), in 2007.

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT1WT (River Kilometer 2.22 in UT-A), in 2007

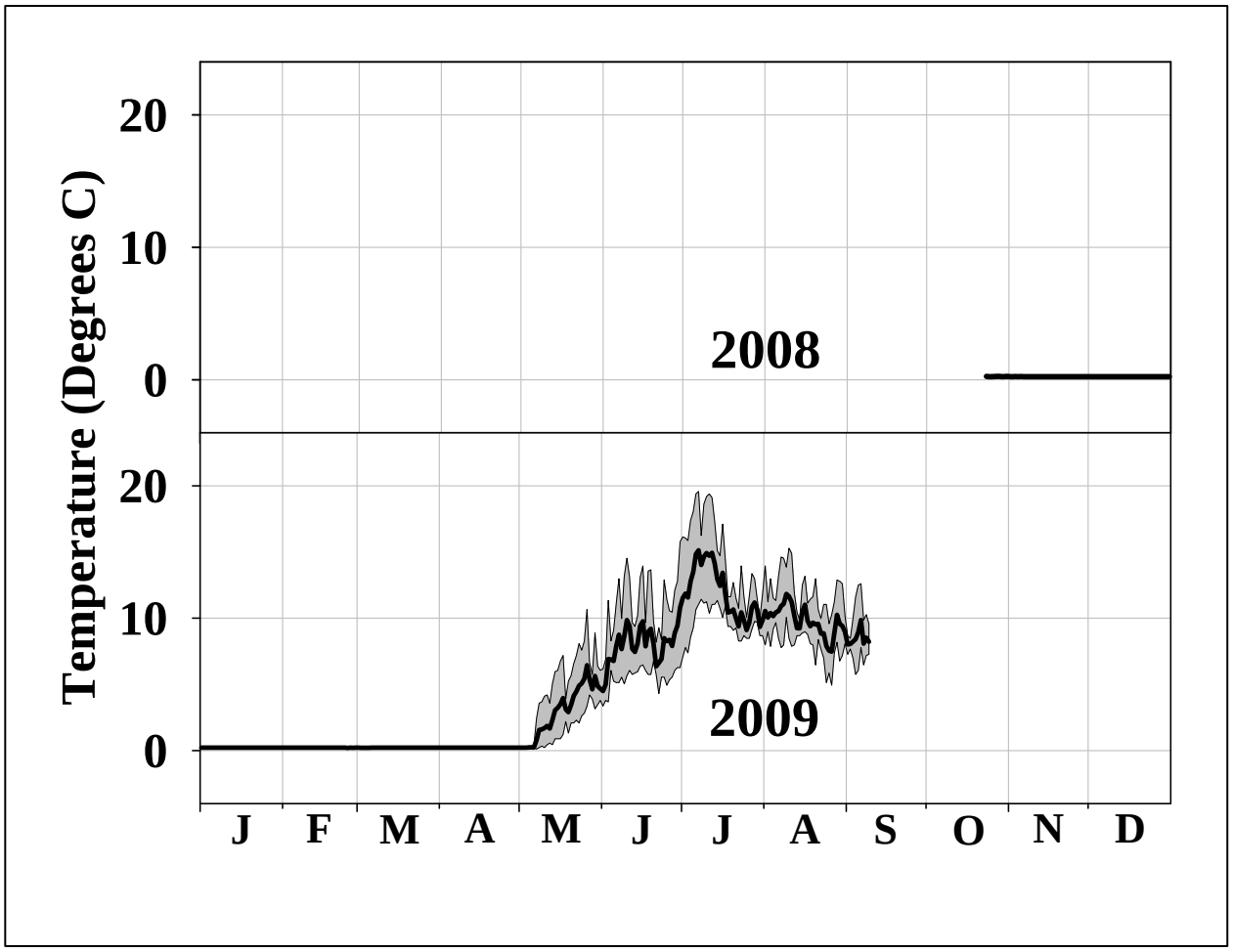
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2004	Aug					
	Sep					
2005	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
2006	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov					
	Dec					
2007	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep	5.6	6.1	8.2	10.5	12.9
	Oct	0.7	0.9	2.7	6.1	6.5
	Nov	0.0	0.0	1.1	2.5	2.6
	Dec					

ATTACHMENT 6

UPPER TALARIK CREEK THERMOGRAPHS, 2008 AND 2009

Thermographs of Daily Maximum, Average, and Minimum Water Temperatures and Tables of Monthly Minimum Instantaneous, Minimum Daily, Monthly Average, Maximum Daily, and Maximum Instantaneous Water Temperatures at Hydrology and Water Temperature Monitoring Sites

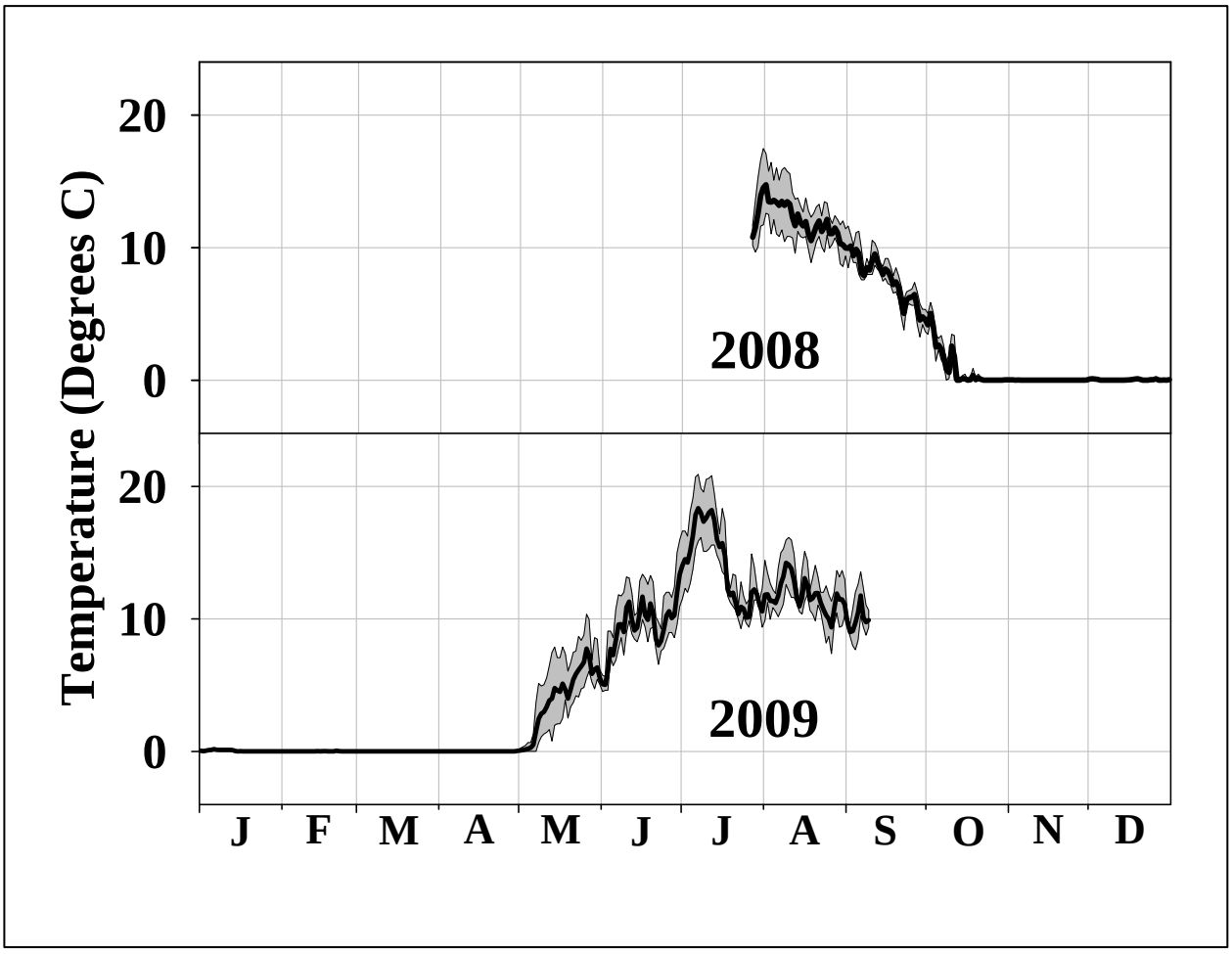
Note: There are a couple of reasons for missing data gaps in this attachment. Missing data gaps occurred at some locations when the memory limit of the monitor was reached before there was an opportunity to safely retrieve the data. Data gaps at some gages occurred when the water surrounding the monitor froze.



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT8WT (River Kilometer 51.62 in UT-F), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT8WT (River Kilometer 51.62 in UT-F), 2008 and 2009

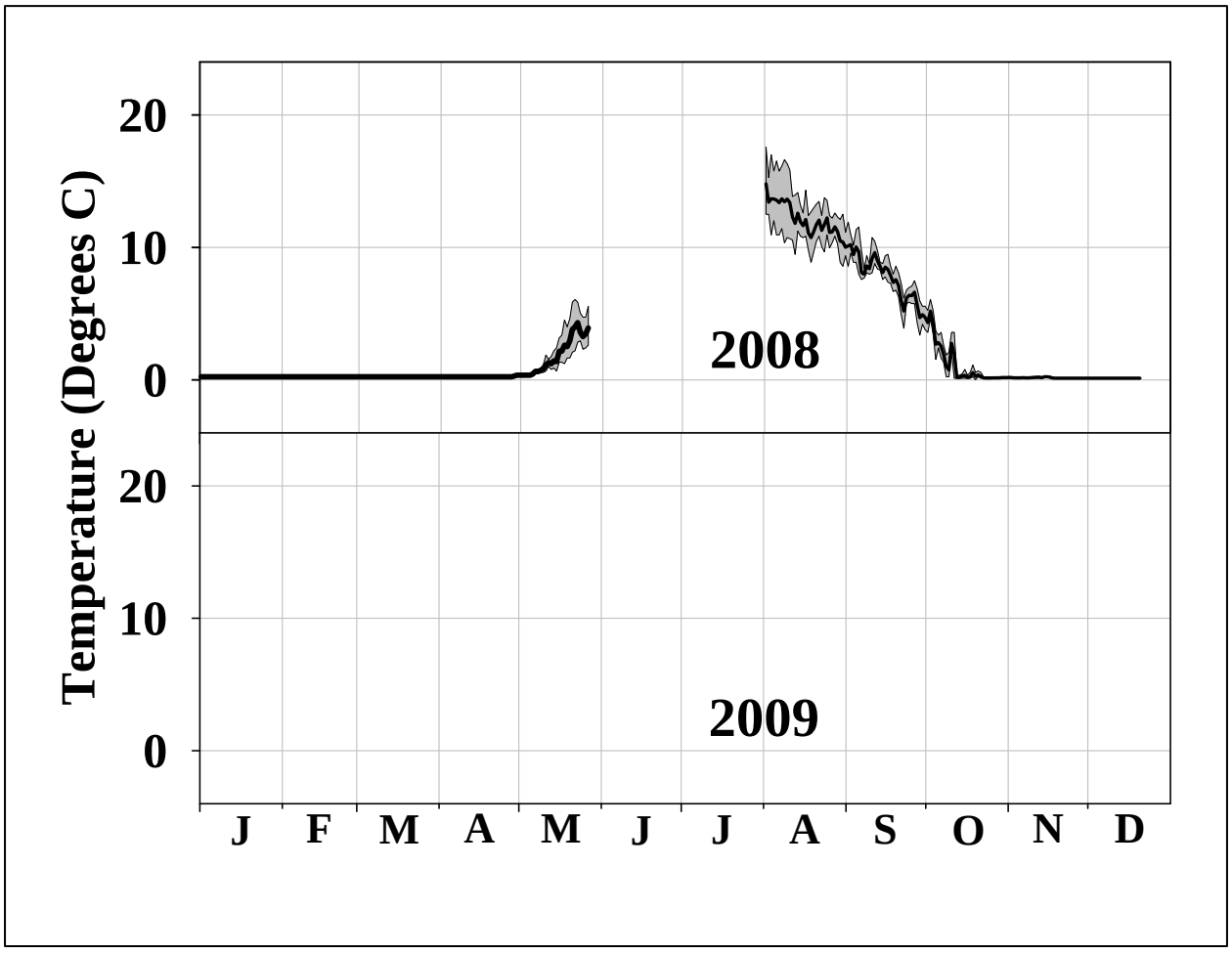
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.2	0.2	0.2	0.2	0.3
	Dec	0.2	0.2	0.2	0.2	0.2
2009	Jan	0.2	0.2	0.2	0.2	0.2
	Feb	0.1	0.2	0.2	0.2	0.2
	Mar	0.1	0.2	0.2	0.2	0.2
	Apr	0.1	0.2	0.2	0.2	0.2
	May	0.1	0.2	3.0	6.4	10.7
	Jun	3.4	4.5	8.0	10.8	15.8
	Jul	7.1	9.1	12.0	15.1	19.6
	Aug	4.9	7.5	9.8	11.8	15.3



Daily maximum, average, and minimum water temperatures in Tributary UT 1.350 at water temperature monitoring site UT135AWT (confluence with Upper Talarik Creek at River Kilometer 45.05 in UT-E), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary UT 1.350 at water temperature monitoring site UT135AWT (confluence with Upper Talarik Creek at River Kilometer 45.05 in UT-E), 2008 and 2009

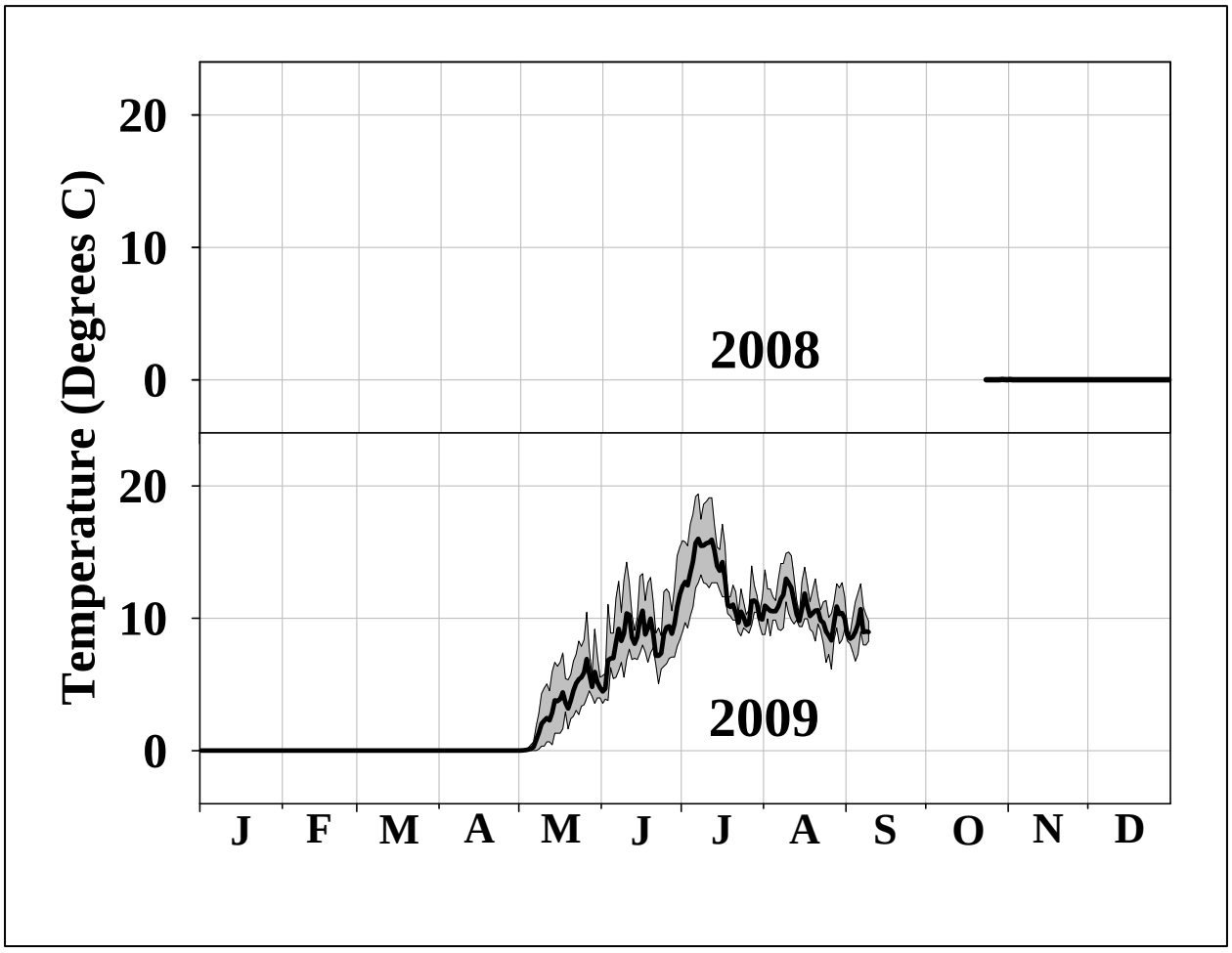
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	8.6	10.0	12.1	14.7	17.1
	Sep	3.3	4.5	7.6	10.1	11.6
	Oct	0.0	0.0	1.0	5.0	5.9
	Nov	0.0	0.0	0.0	0.0	0.1
	Dec	0.0	0.0	0.0	0.1	0.1
2009	Jan	0.0	0.0	0.1	0.2	0.2
	Feb	0.0	0.0	0.0	0.1	0.1
	Mar	0.0	0.0	0.0	0.0	0.1
	Apr	0.0	0.0	0.0	0.0	0.1
	May	0.0	0.1	4.0	7.8	10.4
	Jun	4.5	5.0	9.4	13.4	16.0
	Jul	9.3	10.1	14.1	18.4	20.9
	Aug	7.4	9.4	11.8	14.2	16.1



Daily maximum, average, and minimum water temperatures in Tributary UT 1.350 at water temperature monitoring site UT135BWT (confluence with Upper Talarik Creek at River Kilometer 45.05 in UT-E), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary UT 1.350 at water temperature monitoring site UT135BWT (confluence with Upper Talarik Creek at River Kilometer 45.05 in UT-E), in 2008

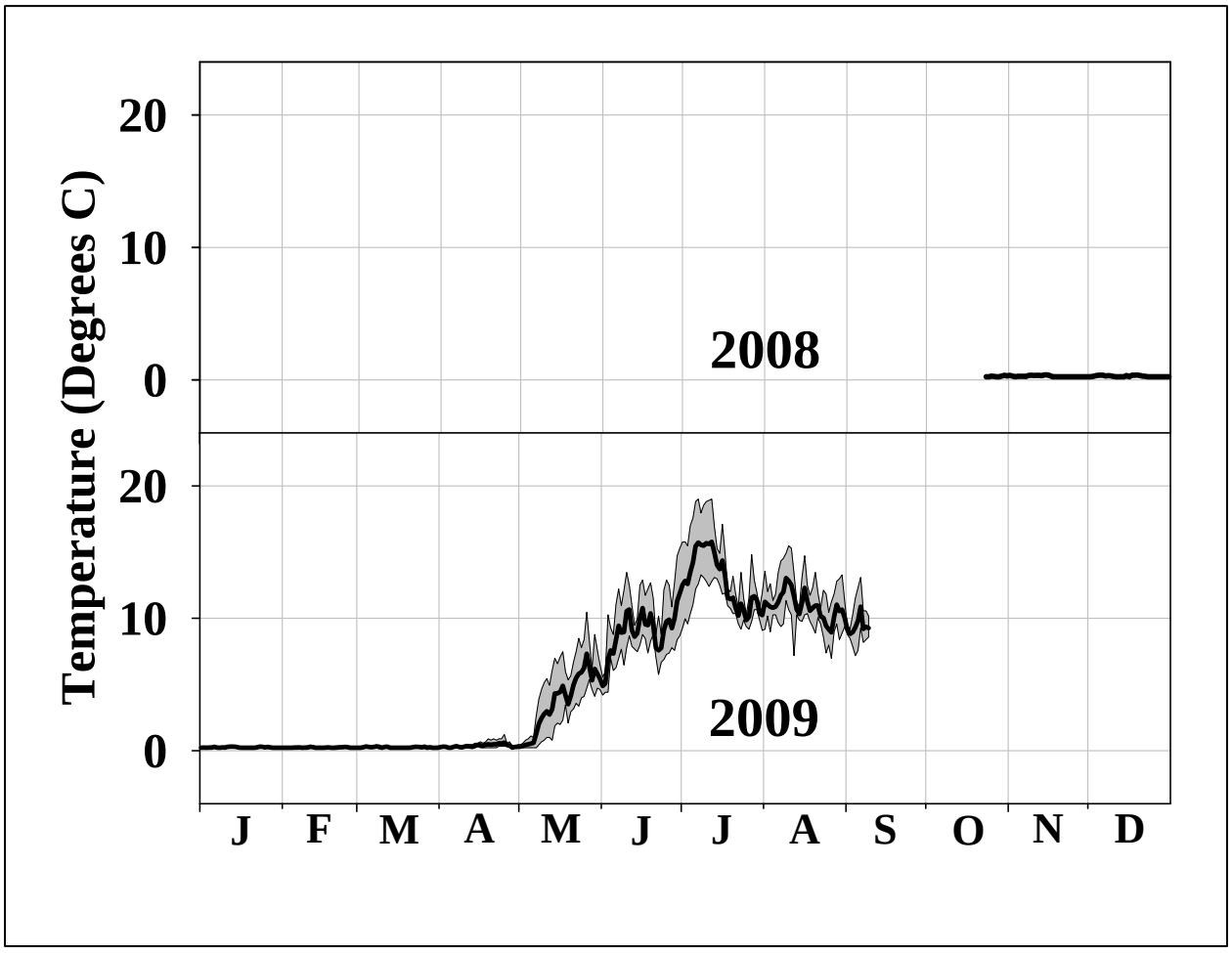
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.2	0.2	0.2	0.2	0.2
	Feb	0.2	0.2	0.2	0.2	0.2
	Mar	0.2	0.2	0.2	0.2	0.2
	Apr	0.2	0.2	0.2	0.3	0.3
	May					
	Jun					
	Jul					
	Aug	8.6	10.0	12.2	14.8	17.6
	Sep	3.4	4.7	7.7	10.2	11.9
	Oct	0.0	0.1	1.1	5.2	6.1
	Nov	0.1	0.1	0.2	0.2	0.2
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT7WT (River Kilometer 43.29 in UT-E), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT7WT (River Kilometer 43.29 in UT-E), 2008 and 2009

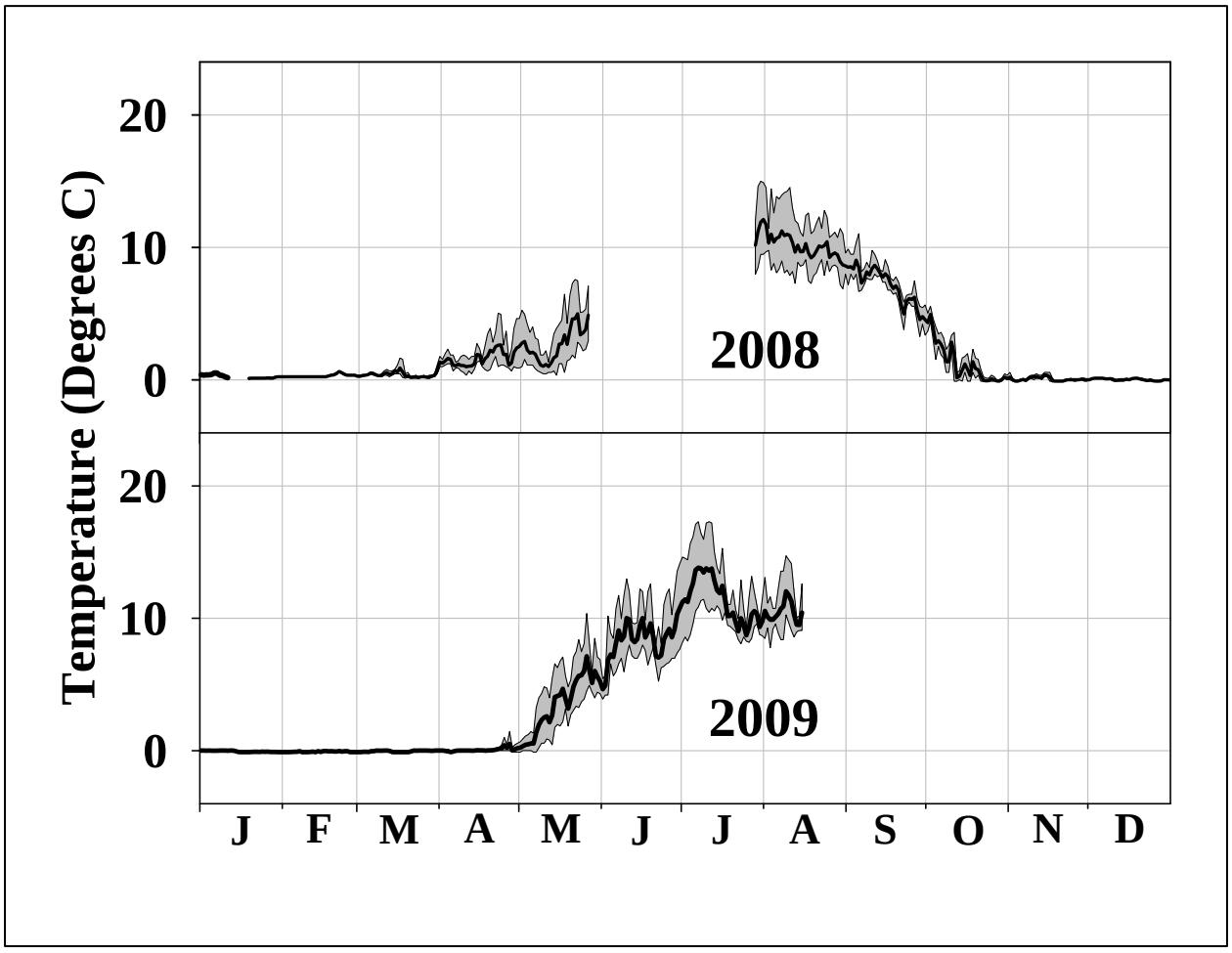
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.0	0.0	0.0	0.0	0.1
	Dec	0.0	0.0	0.0	0.0	0.0
2009	Jan	0.0	0.0	0.0	0.0	0.0
	Feb	0.0	0.0	0.0	0.0	0.0
	Mar	0.0	0.0	0.0	0.0	0.0
	Apr	0.0	0.0	0.0	0.0	0.0
	May	0.0	0.0	3.3	6.9	10.5
	Jun	3.6	4.5	8.6	11.8	15.4
	Jul	8.7	9.5	12.6	16.0	19.4
	Aug	6.2	8.3	10.6	13.0	15.0



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT6WT (River Kilometer 37.16 in UT-E), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT6WT (River Kilometer 37.16 in UT-E), 2008 and 2009

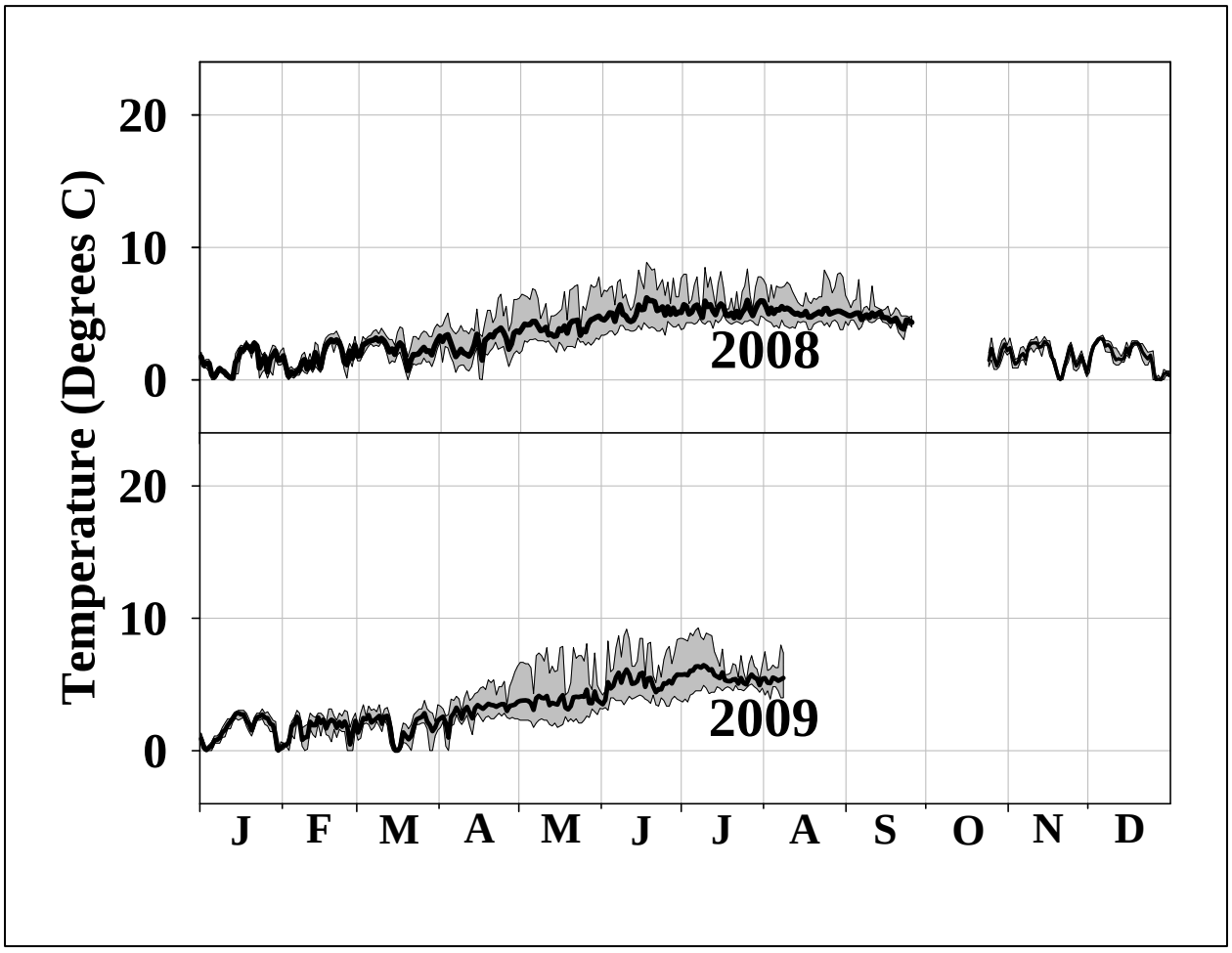
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.2	0.2	0.3	0.4	0.5
	Dec	0.2	0.2	0.3	0.4	0.5
2009	Jan	0.2	0.2	0.3	0.3	0.3
	Feb	0.2	0.2	0.2	0.3	0.3
	Mar	0.2	0.2	0.3	0.3	0.5
	Apr	0.2	0.2	0.4	0.6	1.2
	May	0.2	0.3	3.7	7.3	10.5
	Jun	4.2	4.9	9.0	11.9	15.3
	Jul	9.1	9.9	12.8	15.8	19.0
	Aug	7.0	8.9	10.9	13.0	15.5



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT5WT (River Kilometer 29.33 in UT-D), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT5WT (River Kilometer 29.33 in UT-D), 2008 and 2009

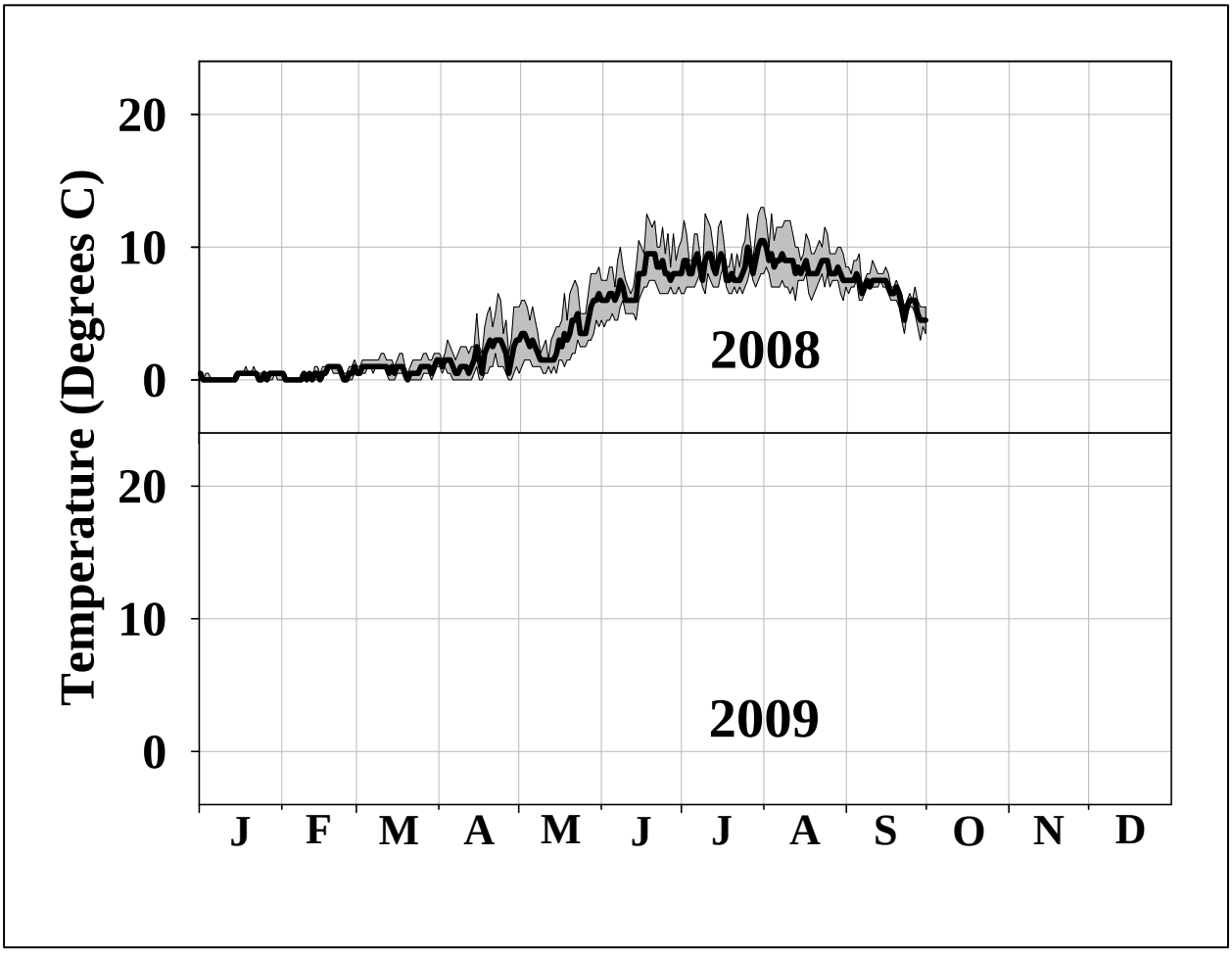
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb	0.2	0.2	0.3	0.6	0.7
	Mar	0.1	0.2	0.4	1.3	1.8
	Apr	0.3	1.0	1.6	2.6	5.0
	May					
	Jun					
	Jul					
	Aug	6.9	8.6	10.0	11.7	14.5
	Sep	3.3	4.5	7.1	9.0	11.0
	Oct	-0.1	-0.1	1.2	4.9	5.6
	Nov	-0.1	-0.1	0.1	0.4	0.6
	Dec	-0.1	-0.1	0.0	0.1	0.1
2009	Jan	-0.1	-0.1	0.0	0.0	0.0
	Feb	-0.1	-0.1	-0.1	0.0	0.0
	Mar	-0.1	-0.1	0.0	0.0	0.1
	Apr	-0.1	-0.1	0.1	0.5	1.4
	May	-0.1	0.2	3.5	7.1	10.4
	Jun	3.9	4.6	8.4	10.8	14.1
	Jul	8.1	8.7	11.4	13.8	17.3
	Aug					



Daily maximum, average, and minimum water temperatures in Tributary UT 1.190 at water temperature monitoring site UT119WT (confluence with Upper Talarik Creek at River Kilometer 24.74 in UT-C), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Tributary UT 1.190 at water temperature monitoring site UT119WT (confluence with Upper Talarik Creek at River Kilometer 24.74 in UT-C), 2008 and 2009

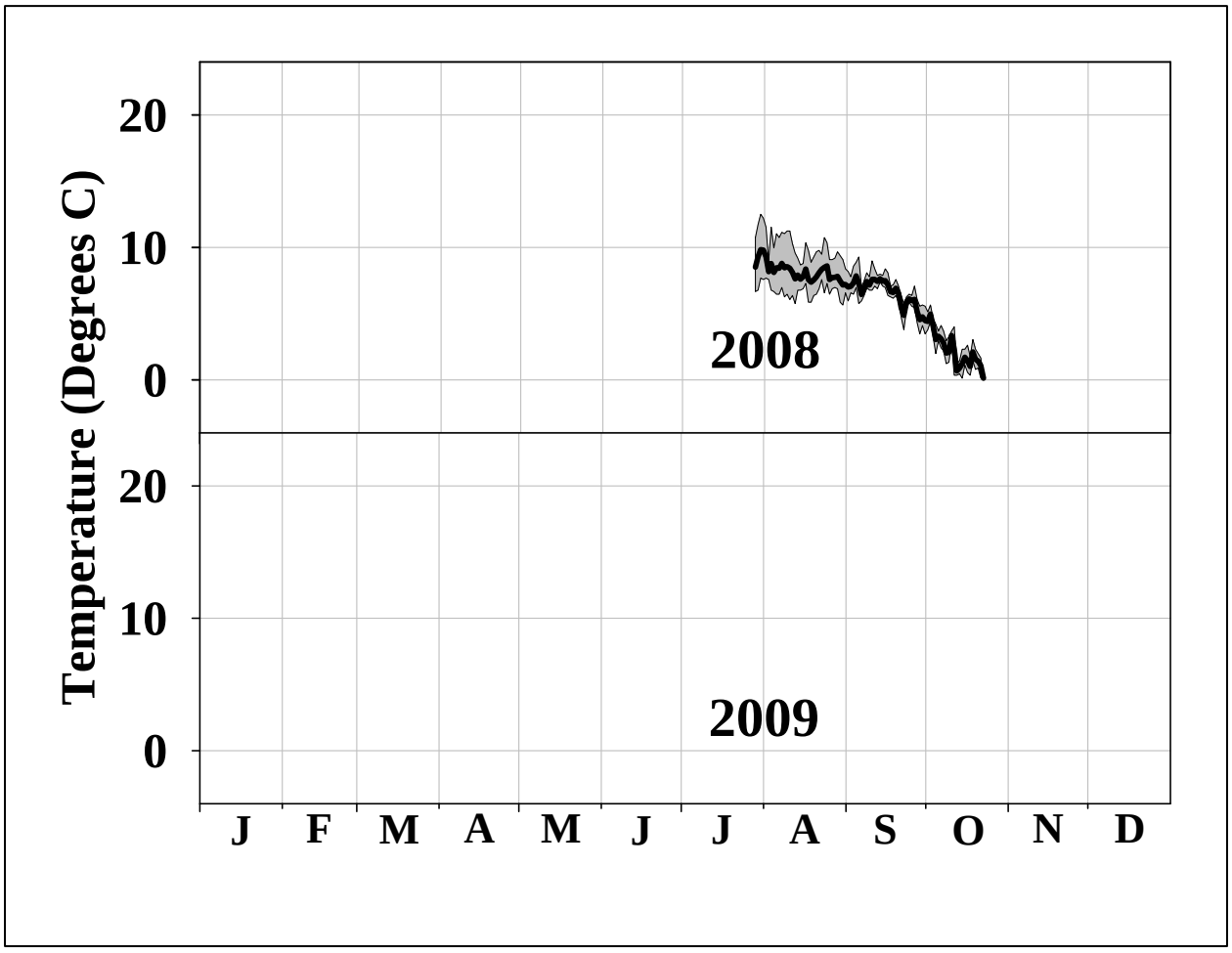
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.0	0.1	1.4	2.8	2.9
	Feb	0.0	0.3	1.7	3.0	3.7
	Mar	0.0	0.7	2.4	3.3	4.2
	Apr	0.0	1.5	2.8	3.9	6.5
	May	2.1	3.3	4.0	4.8	7.8
	Jun	3.4	4.4	5.2	6.2	8.9
	Jul	3.9	4.7	5.3	6.0	8.5
	Aug	3.8	4.7	5.1	5.5	8.3
	Sep					
	Oct					
	Nov	0.0	0.0	1.8	2.9	3.3
	Dec	0.0	0.0	1.8	3.1	3.4
2009	Jan	0.0	0.0	1.7	2.8	3.2
	Feb	0.0	0.4	1.7	2.6	3.2
	Mar	0.0	0.0	1.8	2.8	3.8
	Apr	0.0	1.0	3.0	3.7	6.4
	May	1.8	3.1	3.8	4.6	8.1
	Jun	3.0	3.5	5.2	6.1	9.2
	Jul	3.7	4.9	5.7	6.5	9.3
	Aug					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at hydrology gage UT100B (River Kilometer 24.50 in UT-C), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at hydrology gage UT100B (River Kilometer 24.50 in UT-C), in 2008

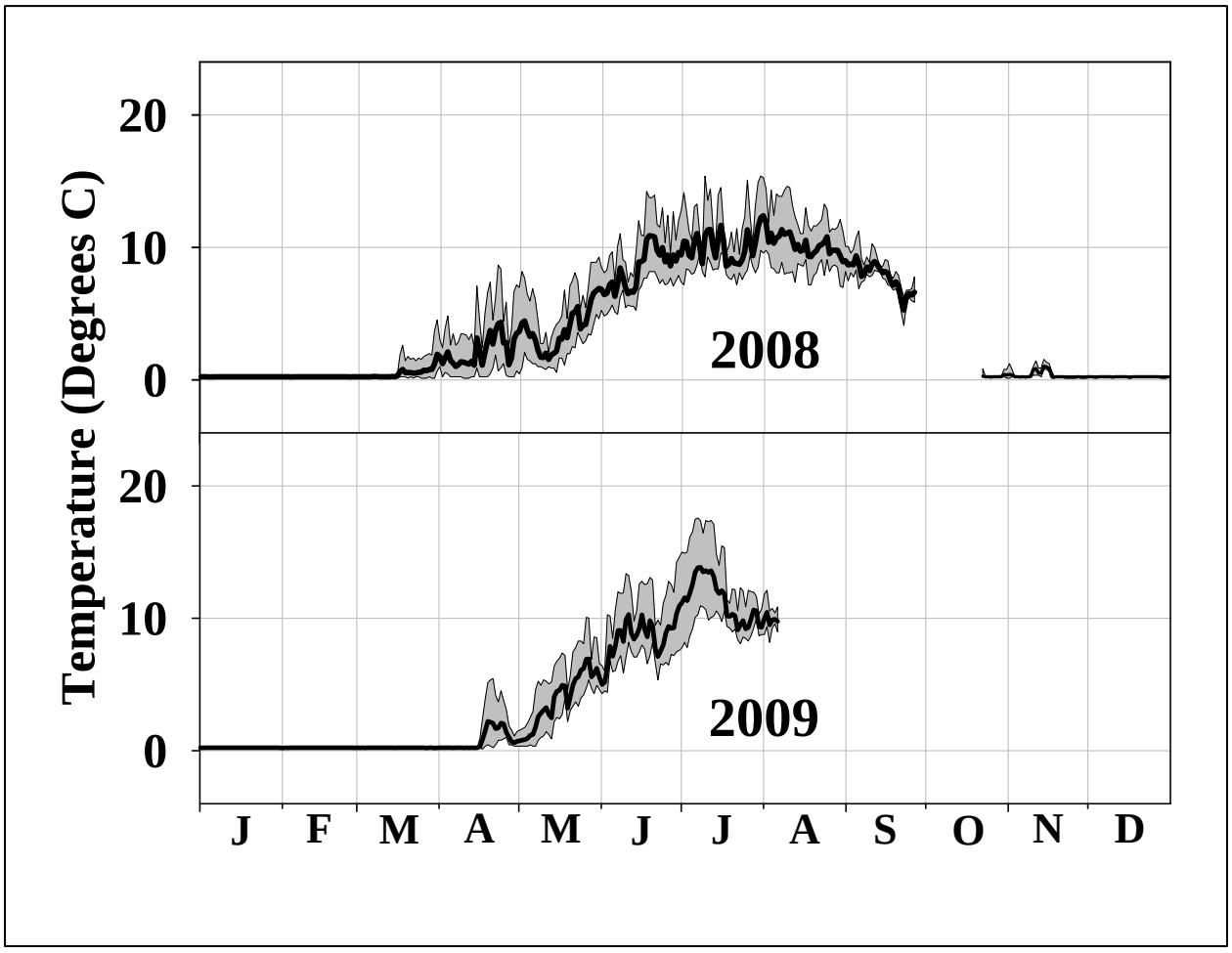
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.0	0.0	0.2	0.5	1.0
	Feb	0.0	0.0	0.4	1.0	1.5
	Mar	0.0	0.0	0.9	1.5	2.0
	Apr	0.0	0.5	1.7	3.0	6.5
	May	0.5	1.5	3.4	6.5	8.5
	Jun	4.0	6.0	7.5	9.5	12.5
	Jul	6.5	7.5	8.7	10.5	13.0
	Aug	6.0	7.5	8.6	10.0	12.5
	Sep	3.0	4.5	6.6	8.0	9.5
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT4WT (River Kilometer 24.38 in UT-C), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT4WT (River Kilometer 24.38 in UT-C), in 2008

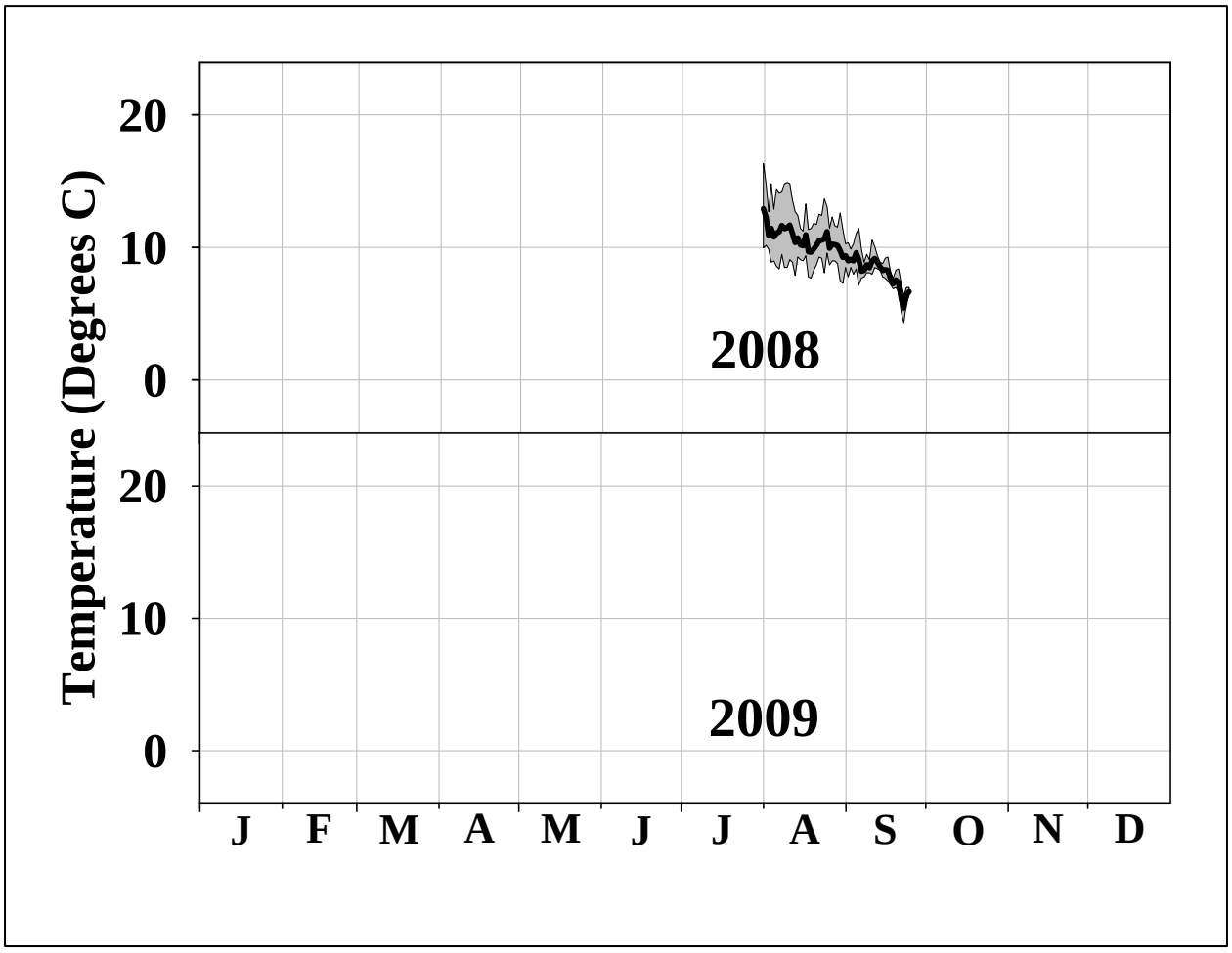
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	5.7	7.2	8.0	9.3	11.5
	Sep	3.5	4.5	6.6	7.8	9.3
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT3WT (River Kilometer 17.23 in UT-C), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT3WT (River Kilometer 17.23 in UT-C), 2008 and 2009

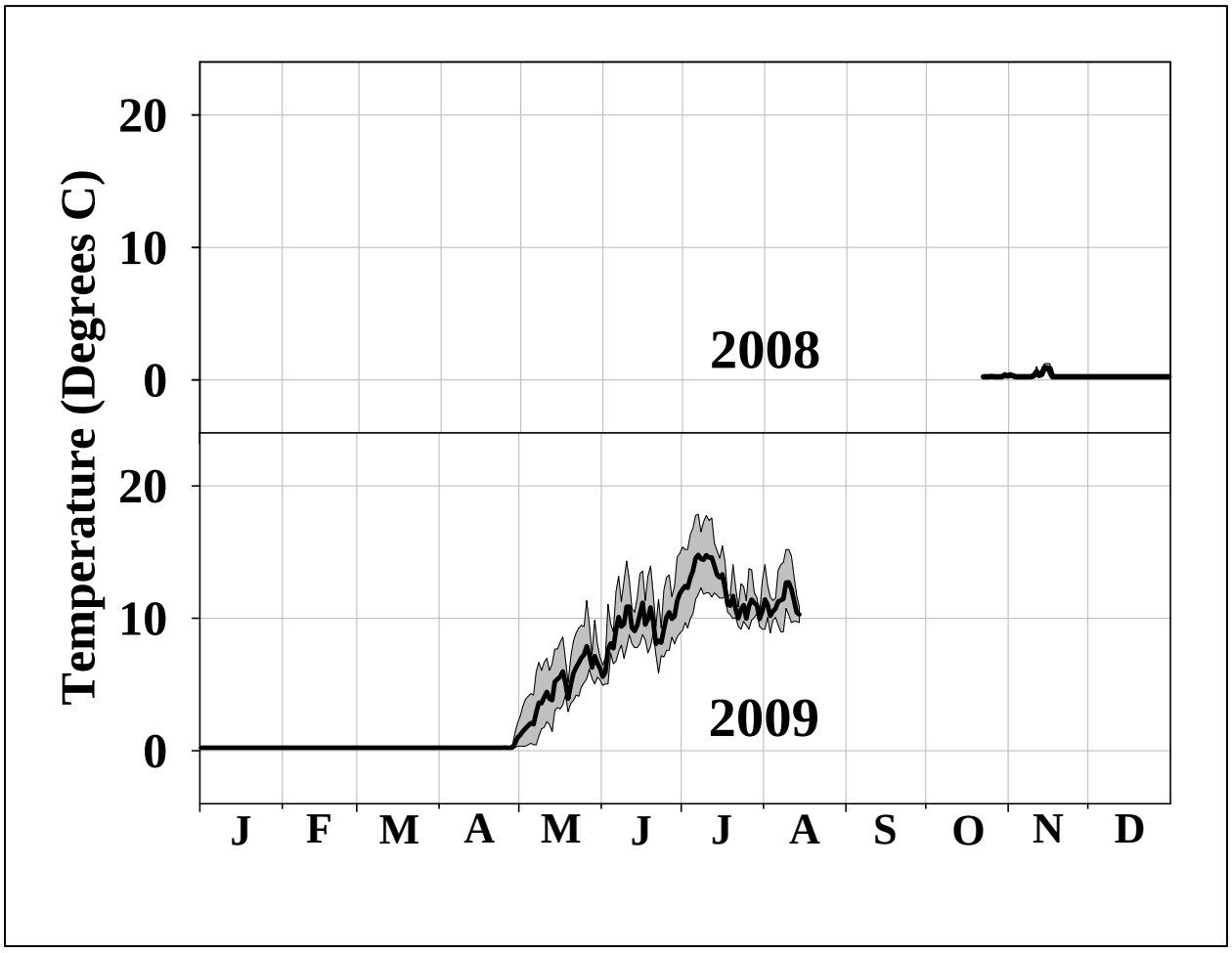
Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan	0.1	0.2	0.2	0.2	0.2
	Feb	0.1	0.2	0.2	0.2	0.2
	Mar	0.1	0.2	0.5	1.9	4.5
	Apr	0.1	1.0	2.2	4.3	8.7
	May	0.6	1.5	3.9	6.9	9.3
	Jun	4.8	6.3	8.5	10.9	14.2
	Jul	7.2	8.6	10.2	12.4	15.4
	Aug	7.0	8.9	10.2	11.9	14.6
	Sep					
	Oct					
	Nov	0.1	0.2	0.4	1.0	1.5
	Dec	0.1	0.2	0.2	0.2	0.2
2009	Jan	0.1	0.2	0.2	0.2	0.2
	Feb	0.1	0.2	0.2	0.2	0.2
	Mar	0.1	0.2	0.2	0.2	0.2
	Apr	0.1	0.2	0.8	2.2	5.5
	May	0.3	0.7	3.9	6.9	10.1
	Jun	4.3	5.0	8.6	10.9	14.6
	Jul	7.8	9.1	11.4	13.9	17.6
	Aug					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT2WT (River Kilometer 9.90 in UT-B), in 2008

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT2WT (River Kilometer 9.90 in UT-B), in 2008

Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug	7.3	9.2	10.6	12.3	14.9
	Sep					
	Oct					
	Nov					
	Dec					
2009	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					



Daily maximum, average, and minimum water temperatures in Upper Talarik Creek at water temperature monitoring site UT1WT (River Kilometer 2.22 in UT-A), 2008 and 2009

Monthly summary of minimum instantaneous, minimum daily, monthly average, maximum daily, and maximum instantaneous water temperatures in Upper Talarik Creek at water temperature monitoring site UT1WT (River Kilometer 2.22 in UT-A), 2008 and 2009

Date		Water Temperature (degrees C)				
		Minimum Instantaneous	Minimum Daily	Monthly Average	Maximum Daily	Maximum Instantaneous
2008	Jan					
	Feb					
	Mar					
	Apr					
	May					
	Jun					
	Jul					
	Aug					
	Sep					
	Oct					
	Nov	0.2	0.2	0.3	0.9	1.2
	Dec	0.2	0.2	0.2	0.2	0.2
2009	Jan	0.2	0.2	0.2	0.2	0.2
	Feb	0.2	0.2	0.2	0.2	0.2
	Mar	0.2	0.2	0.2	0.2	0.2
	Apr	0.2	0.2	0.3	1.0	2.1
	May	0.3	1.2	4.8	7.9	11.3
	Jun	4.9	5.6	9.4	11.9	14.9
	Jul	9.1	9.9	12.3	14.8	17.9
	Aug					

ATTACHMENT 7

SNTEMP Input Files
South Fork Koktuli River

```
JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFFTFFFFFFF                                   FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     35.     27.     15.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
S.F. KOKTULI         54.7     0.0
TRIBUTARY 119        36.1    34.3
 STR. NAME #   3      0.0     0.0
 STR. NAME #   4      0.0     0.0
 STR. NAME #   5      0.0     0.0
 STR. NAME #   6      0.0     0.0
 STR. NAME #   7      0.0     0.0
 STR. NAME #   8      0.0     0.0
 STR. NAME #   9      0.0     0.0
 STR. NAME #  10      0.0     0.0
```

TIME PERIOD	FILE: SOUTH FORK KOKTULI RIVER, ALASKA - PEBBLE PROJECT								
17-May	137.	137.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-May	138.	138.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-May	139.	139.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-May	140.	140.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-May	141.	141.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-May	142.	142.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-May	143.	143.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-May	144.	144.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-May	145.	145.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-May	146.	146.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-May	147.	147.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-May	148.	148.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-May	149.	149.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-May	150.	150.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-May	151.	151.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Jun	152.	152.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Jun	153.	153.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Jun	154.	154.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Jun	155.	155.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Jun	156.	156.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Jun	157.	157.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Jun	158.	158.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Jun	159.	159.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Jun	160.	160.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Jun	161.	161.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Jun	162.	162.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Jun	163.	163.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Jun	164.	164.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Jun	165.	165.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Jun	166.	166.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Jun	167.	167.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Jun	168.	168.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Jun	169.	169.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Jun	170.	170.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Jun	171.	171.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Jun	172.	172.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Jun	173.	173.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Jun	174.	174.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Jun	175.	175.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Jun	176.	176.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Jun	177.	177.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Jun	178.	178.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Jun	179.	179.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Jun	180.	180.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Jun	181.	181.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Jul	182.	182.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Jul	183.	183.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Jul	184.	184.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Jul	185.	185.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Jul	186.	186.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Jul	187.	187.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Jul	188.	188.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Jul	189.	189.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Jul	190.	190.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Jul	191.	191.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Jul	192.	192.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Jul	193.	193.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Jul	194.	194.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Jul	195.	195.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Jul	196.	196.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Jul	197.	197.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Jul	198.	198.	1.	0.05	0.15	0.000	0.000	0.000	0.000

18-Jul	199.	199.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Jul	200.	200.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Jul	201.	201.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Jul	202.	202.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Jul	203.	203.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Jul	204.	204.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Jul	205.	205.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Jul	206.	206.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Jul	207.	207.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Jul	208.	208.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Jul	209.	209.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Jul	210.	210.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Jul	211.	211.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-Jul	212.	212.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Aug	213.	213.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Aug	214.	214.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Aug	215.	215.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Aug	216.	216.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Aug	217.	217.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Aug	218.	218.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Aug	219.	219.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Aug	220.	220.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Aug	221.	221.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Aug	222.	222.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Aug	223.	223.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Aug	224.	224.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Aug	225.	225.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Aug	226.	226.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Aug	227.	227.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Aug	228.	228.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Aug	229.	229.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Aug	230.	230.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Aug	231.	231.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Aug	232.	232.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Aug	233.	233.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Aug	234.	234.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Aug	235.	235.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Aug	236.	236.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Aug	237.	237.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Aug	238.	238.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Aug	239.	239.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Aug	240.	240.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Aug	241.	241.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Aug	242.	242.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-Aug	243.	243.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Sep	244.	244.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Sep	245.	245.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Sep	246.	246.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Sep	247.	247.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Sep	248.	248.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Sep	249.	249.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Sep	250.	250.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Sep	251.	251.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Sep	252.	252.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Sep	253.	253.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Sep	254.	254.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Sep	255.	255.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Sep	256.	256.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Sep	257.	257.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Sep	258.	258.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Sep	259.	259.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Sep	260.	260.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Sep	261.	261.	1.	0.05	0.15	0.000	0.000	0.000	0.000

19-Sep	262.	262.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Sep	263.	263.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Sep	264.	264.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Sep	265.	265.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Sep	266.	266.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Sep	267.	267.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Sep	268.	268.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Sep	269.	269.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Sep	270.	270.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Sep	271.	271.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Sep	272.	272.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Sep	273.	273.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Oct	274.	274.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Oct	275.	275.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Oct	276.	276.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Oct	277.	277.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Oct	278.	278.	1.	0.05	0.15	0.000	0.000	0.000	0.000

METEOROLOGY FILE: SOUTH FORK KOKTULI RIVER, ALASKA

		1.04551	473.96	-0.75	PEBBLE 1 METEROLOGICAL STATION	
2007	17-May	3.93	5.30	0.83	1.000	253.5
	18-May	4.73	3.12	0.68	1.000	278.7
	19-May	6.56	3.66	0.69	1.000	252.6
	20-May	5.49	3.47	0.71	1.000	178.7
	21-May	6.26	4.27	0.57	1.000	309.3
	22-May	5.86	6.92	0.62	1.000	142.3
	23-May	6.07	7.60	0.72	1.000	118.0
	24-May	5.03	7.47	0.90	1.000	68.2
	25-May	6.57	2.90	0.95	1.000	79.2
	26-May	4.96	5.49	0.95	1.000	114.2
	27-May	4.85	5.63	0.86	1.000	246.1
	28-May	4.13	5.39	0.82	1.000	227.5
	29-May	5.28	3.56	0.71	1.000	202.4
	30-May	6.09	3.34	0.79	1.000	169.3
	31-May	5.47	4.60	0.83	1.000	120.1
	1-Jun	5.20	5.33	0.83	1.000	101.9
	2-Jun	5.61	3.39	0.79	1.000	141.8
	3-Jun	7.25	2.15	0.77	1.000	173.5
	4-Jun	6.82	4.54	0.94	1.000	107.7
	5-Jun	5.29	8.03	0.89	1.000	142.9
	6-Jun	7.20	4.97	0.76	1.000	287.8
	7-Jun	6.32	6.67	0.70	1.000	247.5
	8-Jun	4.77	4.70	0.77	1.000	210.1
	9-Jun	5.57	3.11	0.83	1.000	167.1
	10-Jun	11.51	5.15	0.66	1.000	279.5
	11-Jun	6.94	4.80	0.89	1.000	262.2
	12-Jun	5.03	2.65	0.96	1.000	83.6
	13-Jun	7.22	2.55	0.83	1.000	141.0
	14-Jun	9.63	3.36	0.77	1.000	163.1
	15-Jun	13.31	5.05	0.61	1.000	318.3
	16-Jun	11.15	6.53	0.65	1.000	260.6
	17-Jun	6.21	3.59	0.92	1.000	147.2
	18-Jun	8.96	2.23	0.86	1.000	172.4
	19-Jun	13.80	5.12	0.72	1.000	305.2
	20-Jun	16.02	7.01	0.56	1.000	298.5
	21-Jun	13.16	7.43	0.63	1.000	233.9
	22-Jun	6.25	2.63	0.99	1.000	62.7
	23-Jun	5.82	8.88	0.99	1.000	40.8
	24-Jun	6.20	6.97	0.90	1.000	115.9
	25-Jun	6.61	6.74	0.86	1.000	135.3
	26-Jun	9.01	3.45	0.73	1.000	289.4
	27-Jun	11.53	3.24	0.69	1.000	287.2
	28-Jun	8.51	2.48	0.89	1.000	94.0
	29-Jun	10.52	3.69	0.74	1.000	311.1
	30-Jun	9.20	2.91	0.89	1.000	181.8
	1-Jul	10.40	3.20	0.82	1.000	152.6
	2-Jul	12.36	2.67	0.78	1.000	212.1
	3-Jul	12.53	2.90	0.80	1.000	197.5
	4-Jul	9.76	3.78	0.91	1.000	109.3
	5-Jul	10.41	3.23	0.88	1.000	155.8
	6-Jul	9.98	2.37	0.83	1.000	150.0
	7-Jul	12.79	2.32	0.65	1.000	172.6
	8-Jul	10.03	3.21	0.95	1.000	104.0
	9-Jul	9.89	2.97	0.78	1.000	187.1
	10-Jul	11.24	3.31	0.78	1.000	160.3
	11-Jul	11.21	4.36	0.73	1.000	299.7
	12-Jul	10.62	2.49	0.83	1.000	174.8
	13-Jul	8.46	2.56	0.99	1.000	78.3
	14-Jul	9.34	2.79	0.94	1.000	128.5
	15-Jul	10.05	3.18	0.88	1.000	121.8
	16-Jul	11.20	4.91	0.82	1.000	204.7

17-Jul	12.42	3.65	0.78	1.000	299.3
18-Jul	10.60	2.55	0.86	1.000	117.2
19-Jul	12.09	1.92	0.78	1.000	135.4
20-Jul	13.91	3.07	0.77	1.000	186.9
21-Jul	8.73	4.55	0.97	1.000	89.8
22-Jul	6.69	3.56	1.00	1.000	56.1
23-Jul	7.55	4.17	1.00	1.000	57.2
24-Jul	9.27	5.26	0.90	1.000	113.5
25-Jul	13.01	3.83	0.66	1.000	139.7
26-Jul	14.91	2.44	0.67	1.000	206.9
27-Jul	16.90	3.26	0.72	1.000	185.0
28-Jul	13.86	6.32	0.82	1.000	251.9
29-Jul	13.31	5.44	0.84	1.000	218.2
30-Jul	11.91	3.74	0.93	1.000	116.9
31-Jul	9.96	5.03	0.95	1.000	99.7
1-Aug	8.57	9.75	0.92	1.000	67.9
2-Aug	8.58	10.30	0.97	1.000	55.7
3-Aug	9.39	7.57	0.97	1.000	62.2
4-Aug	9.25	9.21	1.00	1.000	29.0
5-Aug	9.88	8.54	0.99	1.000	63.4
6-Aug	10.06	8.02	0.84	1.000	199.1
7-Aug	10.80	6.89	0.81	1.000	228.2
8-Aug	12.13	4.94	0.80	1.000	171.7
9-Aug	14.09	2.81	0.72	1.000	260.9
10-Aug	16.06	2.77	0.59	1.000	261.5
11-Aug	15.32	1.74	0.67	1.000	174.9
12-Aug	16.63	2.31	0.88	1.000	125.9
13-Aug	17.47	2.68	0.82	1.000	201.6
14-Aug	8.44	4.14	0.97	1.000	72.3
15-Aug	9.42	4.67	0.98	1.000	76.0
16-Aug	11.94	1.89	0.85	1.000	204.0
17-Aug	10.34	5.57	0.83	1.000	121.7
18-Aug	9.39	12.55	0.85	1.000	65.4
19-Aug	11.34	9.46	0.80	1.000	112.9
20-Aug	9.32	5.83	0.93	1.000	64.4
21-Aug	8.62	6.00	0.96	1.000	31.4
22-Aug	8.48	5.83	0.99	1.000	32.4
23-Aug	9.58	3.13	0.92	1.000	86.7
24-Aug	11.26	3.26	0.89	1.000	118.7
25-Aug	10.91	2.90	0.91	1.000	149.7
26-Aug	10.76	3.28	0.78	1.000	151.9
27-Aug	12.34	2.76	0.68	1.000	168.5
28-Aug	13.38	3.06	0.62	1.000	209.7
29-Aug	11.48	5.73	0.88	1.000	166.1
30-Aug	10.39	3.78	0.87	1.000	122.8
31-Aug	10.39	2.29	0.88	1.000	150.8
1-Sep	9.42	3.16	0.93	1.000	99.1
2-Sep	9.05	2.34	0.93	1.000	108.1
3-Sep	9.22	5.84	0.84	1.000	118.1
4-Sep	9.40	3.42	0.74	1.000	128.0
5-Sep	9.42	3.39	0.80	1.000	124.0
6-Sep	7.95	2.89	0.89	1.000	95.9
7-Sep	7.71	10.84	0.92	1.000	34.1
8-Sep	9.65	7.62	0.98	1.000	29.3
9-Sep	9.04	3.01	0.95	1.000	68.2
10-Sep	8.86	5.71	0.90	1.000	115.6
11-Sep	7.47	15.23	0.91	1.000	29.6
12-Sep	8.04	5.74	0.90	1.000	126.4
13-Sep	6.36	2.98	0.96	1.000	49.3
14-Sep	5.95	3.29	0.90	1.000	98.0
15-Sep	5.17	6.74	0.86	1.000	149.1
16-Sep	6.53	4.72	0.85	1.000	124.5
17-Sep	5.99	2.74	0.90	1.000	70.0

18-Sep	7.76	10.01	0.94	1.000	25.0
19-Sep	7.32	6.38	0.95	1.000	49.2
20-Sep	6.31	6.13	0.95	1.000	49.7
21-Sep	6.54	4.89	0.91	1.000	116.6
22-Sep	5.31	5.59	0.90	1.000	47.8
23-Sep	5.46	3.86	0.94	1.000	47.2
24-Sep	4.91	4.27	0.94	1.000	44.9
25-Sep	4.50	4.82	0.95	1.000	68.7
26-Sep	4.25	2.88	0.94	1.000	68.4
27-Sep	3.90	6.01	0.92	1.000	61.0
28-Sep	3.46	6.26	0.95	1.000	33.2
29-Sep	4.15	3.08	0.93	1.000	74.2
30-Sep	3.18	4.09	0.98	1.000	30.0
1-Oct	3.26	4.39	0.94	1.000	64.0
2-Oct	1.73	8.61	0.93	1.000	51.5
3-Oct	1.48	6.40	0.89	1.000	97.1
4-Oct	0.92	8.71	0.91	1.000	13.2
5-Oct	0.54	8.32	0.96	1.000	59.4

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SKELETON NODE FILE: SOUTH FORK KOKTULI RIVER, ALASKA
S.F. KOKTULI    H         54.670 HYDROLOGY GAGE SK100F
S.F. KOKTULI    C         53.316 STREAM GEOMETRY NODE SFKSG1
S.F. KOKTULI    C         51.223 STREAM GEOMETRY NODE SFKSG2
S.F. KOKTULI    Q         51.094 HYDROLOGY NODE SK100LF2
S.F. KOKTULI    C         49.414 STREAM GEOMETRY NODE SFKSG3
S.F. KOKTULI    C         47.560 STREAM GEOMETRY NODE SFKSG4
S.F. KOKTULI    C         45.707 STREAM GEOMETRY NODE SFKSG5
S.F. KOKTULI    C         44.806 STREAM GEOMETRY NODE SFKSG6
S.F. KOKTULI    C         43.942 STREAM GEOMETRY NODE SFKSG7
S.F. KOKTULI    Q         43.635 HYDROLOGY NODE SK100LF4
S.F. KOKTULI    C         41.076 STREAM GEOMETRY NODE SFKSG8
S.F. KOKTULI    C         39.968 STREAM GEOMETRY NODE SFKSG9
S.F. KOKTULI    C         38.363 STREAM GEOMETRY NODE SFKSG10
S.F. KOKTULI    Q         35.810 HYDROLOGY GAGE SK100C
S.F. KOKTULI    B         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
TRIBUTARY 119   H         36.062 HYDROLOGY GAGE SK119A
TRIBUTARY 119   T         34.276 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
S.F. KOKTULI    J         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
S.F. KOKTULI    C         34.138 STREAM GEOMETRY NODE SFKSG11
S.F. KOKTULI    Q         34.019 HYDROLOGY NODE SK100LF6
S.F. KOKTULI    Q         29.261 HYDROLOGY GAGE SK100B1
S.F. KOKTULI    C         27.583 STREAM GEOMETRY NODE SFKSG12
S.F. KOKTULI    C         25.102 STREAM GEOMETRY NODE SFKSG13
S.F. KOKTULI    Q         24.898 HYDROLOGY GAGE SK100B
S.F. KOKTULI    C         21.851 STREAM GEOMETRY NODE SFKSG14
S.F. KOKTULI    C         20.084 STREAM GEOMETRY NODE SFKSG15
S.F. KOKTULI    C         15.358 STREAM GEOMETRY NODE SFKSG16
S.F. KOKTULI    Q         13.908 HYDROLOGY NODE FRS-3
S.F. KOKTULI    C         12.508 STREAM GEOMETRY NODE SFKSG17
S.F. KOKTULI    C          9.232 STREAM GEOMETRY NODE SFKSG18
S.F. KOKTULI    C          7.892 STREAM GEOMETRY NODE SFKSG19
S.F. KOKTULI    C          5.104 STREAM GEOMETRY NODE SFKSG20
S.F. KOKTULI    Q          2.972 HYDROLOGY NODE FRS-2
S.F. KOKTULI    C          2.126 STREAM GEOMETRY NODE SFKSG21
S.F. KOKTULI    Q          0.108 HYDROLOGY GAGE SK100A
S.F. KOKTULI    E          0.000 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
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STREAM GEOMETRY FILE: SOUTH FORK KOKTULI RIVER, ALASKA

S.F. KOKTULI    H         54.670 HYDROLOGY GAGE SK100F
 1.04455  291.66   0.040    7.20  0.1549

S.F. KOKTULI    C         53.316 STREAM GEOMETRY NODE SFKSG1
 1.04439  283.24   0.040    6.78  0.1549

S.F. KOKTULI    C         51.223 STREAM GEOMETRY NODE SFKSG2
 1.04419  277.56   0.040    6.58  0.1549

S.F. KOKTULI    C         49.414 STREAM GEOMETRY NODE SFKSG3
 1.04407  273.92   0.040    6.58  0.1549

S.F. KOKTULI    C         47.560 STREAM GEOMETRY NODE SFKSG4
 1.04401  268.90   0.040    6.58  0.1549

S.F. KOKTULI    C         45.707 STREAM GEOMETRY NODE SFKSG5
 1.04400  261.81   0.040    6.58  0.1549

S.F. KOKTULI    C         44.806 STREAM GEOMETRY NODE SFKSG6
 1.04405  259.55   0.040    6.58  0.1549

S.F. KOKTULI    C         43.942 STREAM GEOMETRY NODE SFKSG7
 1.04405  257.20   0.040    6.58  0.1549

S.F. KOKTULI    C         41.076 STREAM GEOMETRY NODE SFKSG8
 1.04384  254.73   0.040    6.58  0.1549

S.F. KOKTULI    C         39.968 STREAM GEOMETRY NODE SFKSG9
 1.04383  254.14   0.040    6.58  0.1549

S.F. KOKTULI    C         38.363 STREAM GEOMETRY NODE SFKSG10
 1.04396  253.28   0.040    6.58  0.1549

S.F. KOKTULI    B         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
 1.04395  246.14

TRIBUTARY 119   H         36.062 HYDROLOGY GAGE SK119A
 1.04409  253.30   0.040    8.70  0.1549

TRIBUTARY 119   T         34.276 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
 1.04395  246.14

S.F. KOKTULI    J         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
 1.04395  246.14   0.040   11.88  0.1549

S.F. KOKTULI    C         34.138 STREAM GEOMETRY NODE SFKSG11
 1.04395  245.94   0.040   12.13  0.1549

S.F. KOKTULI    C         27.583 STREAM GEOMETRY NODE SFKSG12
 1.04376  234.14   0.040   12.56  0.1549

S.F. KOKTULI    C         25.102 STREAM GEOMETRY NODE SFKSG13
 1.04361  227.37   0.040   12.90  0.1549

S.F. KOKTULI    C         21.851 STREAM GEOMETRY NODE SFKSG14
 1.04354  221.97   0.040   13.27  0.1549

S.F. KOKTULI    C         20.084 STREAM GEOMETRY NODE SFKSG15
 1.04369  218.41   0.040   13.64  0.1549

S.F. KOKTULI    C         15.358 STREAM GEOMETRY NODE SFKSG16
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 1.04384  207.50   0.040   14.16  0.1549

S.F. KOKTULI    C         12.508 STREAM GEOMETRY NODE SFKSG17
 1.04374  202.10   0.040   14.28  0.1549

S.F. KOKTULI    C          9.232 STREAM GEOMETRY NODE SFKSG18
 1.04373  196.63   0.040   14.41  0.1549

S.F. KOKTULI    C          7.892 STREAM GEOMETRY NODE SFKSG19
 1.04383  194.33   0.040   14.51  0.1549

S.F. KOKTULI    C          5.104 STREAM GEOMETRY NODE SFKSG20
 1.04390  187.51   0.040   14.64  0.1549

S.F. KOKTULI    C          2.126 STREAM GEOMETRY NODE SFKSG21
 1.04405  179.51   0.040   15.22  0.1549

S.F. KOKTULI    E          0.000 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
 1.04431  173.35
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STUDY FILE: SOUTH FORK KOKTULI RIVER, ALASKA
S.F. KOKTULI    H         54.670 HYDROLOGY GAGE SK100F
S.F. KOKTULI    B         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
TRIBUTARY 119   H         36.062 HYDROLOGY GAGE SK119A
TRIBUTARY 119   T         34.276 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
S.F. KOKTULI    J         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
S.F. KOKTULI    E          0.000 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
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HYDROLOGY NODE FILE: SOUTH FORK KOKTULI RIVER, ALASKA
S.F. KOKTULI    H         54.670 HYDROLOGY GAGE SK100F
S.F. KOKTULI    Q         51.094 HYDROLOGY NODE SK100LF2
S.F. KOKTULI    Q         43.635 HYDROLOGY NODE SK100LF4
S.F. KOKTULI    Q         35.810 HYDROLOGY GAGE SK100C
S.F. KOKTULI    B         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
TRIBUTARY 119   H         36.062 HYDROLOGY GAGE SK119A
TRIBUTARY 119   T         34.276 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
S.F. KOKTULI    J         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
S.F. KOKTULI    Q         34.019 HYDROLOGY NODE SK100LF6
S.F. KOKTULI    Q         29.261 HYDROLOGY GAGE SK100B1
S.F. KOKTULI    Q         24.898 HYDROLOGY GAGE SK100B
S.F. KOKTULI    Q         13.908 HYDROLOGY NODE FRS-3
S.F. KOKTULI    Q          2.972 HYDROLOGY NODE FRS-2
S.F. KOKTULI    Q          0.108 HYDROLOGY GAGE SK100A
S.F. KOKTULI    E          0.000 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
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HYDROLOGY DATA FILE: SOUTH FORK KOKTULI RIVER, ALASKA

S.F. KOKTULI H 54.670 HYDROLOGY GAGE SK100F

2007	17-May	1.245	3.45	4.45
	18-May	1.395	4.22	5.22
	19-May	1.175	4.84	5.84
	20-May	1.125	4.52	5.52
	21-May	1.024	5.53	6.53
	22-May	1.060	5.45	6.45
	23-May	1.121	5.62	6.62
	24-May	1.221	5.50	6.5
	25-May	1.438	6.27	7.27
	26-May	1.312	6.53	7.53
	27-May	1.193	7.27	8.27
	28-May	1.078	7.36	8.36
	29-May	1.051	7.67	8.67
	30-May	0.888	8.28	9.28
	31-May	0.820	7.66	8.66
	1-Jun	0.732	7.24	8.24
	2-Jun	0.758	7.24	8.24
	3-Jun	0.723	8.69	9.69
	4-Jun	0.725	7.43	8.43
	5-Jun	0.956	7.08	8.08
	6-Jun	0.969	8.36	9.36
	7-Jun	0.870	8.93	9.93
	8-Jun	0.780	8.66	9.66
	9-Jun	0.748	8.90	9.9
	10-Jun	0.700	9.06	10.06
	11-Jun	0.599	9.58	10.58
	12-Jun	0.665	9.40	10.4
	13-Jun	0.633	9.93	10.93
	14-Jun	0.620	10.36	11.36
	15-Jun	0.665	11.51	12.51
	16-Jun	0.555	10.71	11.71
	17-Jun	0.622	9.49	10.49
	18-Jun	0.650	11.68	12.68
	19-Jun	0.709	11.55	12.55
	20-Jun	0.634	9.47	10.47
	21-Jun	0.500	11.84	12.84
	22-Jun	0.460	9.31	10.31
	23-Jun	0.740	7.29	8.29
	24-Jun	1.373	8.37	9.37
	25-Jun	1.016	8.66	9.66
	26-Jun	0.839	9.96	10.96
	27-Jun	0.669	12.07	13.07
	28-Jun	0.607	12.08	13.08
	29-Jun	0.560	13.08	14.08
	30-Jun	0.508	13.58	14.58
	1-Jul	0.513	13.32	14.32
	2-Jul	0.475	14.16	15.16
	3-Jul	0.416	15.27	16.27
	4-Jul	0.544	12.41	13.41
	5-Jul	0.623	13.06	14.06
	6-Jul	0.588	12.52	13.52
	7-Jul	0.530	13.72	14.72
	8-Jul	0.492	13.78	14.78
	9-Jul	0.508	13.67	14.67
	10-Jul	0.447	14.12	15.12
	11-Jul	0.390	14.84	15.84
	12-Jul	0.416	15.11	16.11
	13-Jul	0.421	12.94	13.94
	14-Jul	0.473	13.21	14.21
	15-Jul	0.489	13.54	14.54

16-Jul	0.459	14.37	15.37
17-Jul	0.345	15.99	16.99
18-Jul	0.330	14.45	15.45
19-Jul	0.357	14.64	15.64
20-Jul	0.325	17.49	18.49
21-Jul	0.275	15.18	16.18
22-Jul	0.299	11.11	12.11
23-Jul	0.407	10.94	11.94
24-Jul	0.501	11.51	12.51
25-Jul	0.501	13.04	14.04
26-Jul	0.400	14.75	15.75
27-Jul	0.380	17.26	18.26
28-Jul	0.305	17.75	18.75
29-Jul	0.325	17.31	18.31
30-Jul	0.261	16.76	17.76
31-Jul	0.217	14.99	15.99
1-Aug	0.197	11.99	12.99
2-Aug	0.221	10.93	11.93
3-Aug	0.280	11.04	12.04
4-Aug	0.335	11.18	12.18
5-Aug	0.512	10.96	11.96
6-Aug	0.858	12.04	13.04
7-Aug	0.622	13.30	14.3
8-Aug	0.378	13.05	14.05
9-Aug	0.295	14.53	15.53
10-Aug	0.285	16.52	17.52
11-Aug	0.284	16.70	17.7
12-Aug	0.269	17.61	18.61
13-Aug	0.264	18.10	19.1
14-Aug	0.248	14.24	15.24
15-Aug	0.368	12.38	13.38
16-Aug	0.279	14.10	15.1
17-Aug	0.252	14.01	15.01
18-Aug	0.255	11.86	12.86
19-Aug	0.397	11.17	12.17
20-Aug	0.414	11.48	12.48
21-Aug	0.422	11.06	12.06
22-Aug	0.426	10.90	11.9
23-Aug	0.426	11.71	12.71
24-Aug	0.414	12.56	13.56
25-Aug	0.418	14.01	15.01
26-Aug	0.402	13.33	14.33
27-Aug	0.389	13.64	14.64
28-Aug	0.377	13.99	14.99
29-Aug	0.368	14.52	15.52
30-Aug	0.368	12.40	13.4
31-Aug	0.377	12.65	13.65
1-Sep	0.385	12.70	13.7
2-Sep	0.377	12.14	13.14
3-Sep	0.414	10.54	11.54
4-Sep	0.489	10.20	11.2
5-Sep	0.451	11.39	12.39
6-Sep	0.551	10.91	11.91
7-Sep	0.526	9.53	10.53
8-Sep	1.903	9.64	10.64
9-Sep	1.700	10.32	11.32
10-Sep	1.356	10.29	11.29
11-Sep	1.190	7.75	8.75
12-Sep	1.986	8.34	9.34
13-Sep	1.858	8.26	9.26
14-Sep	1.820	8.33	9.33
15-Sep	1.571	7.72	8.72
16-Sep	1.372	7.84	8.84

	17-Sep	1.256	7.63	8.63
	18-Sep	1.405	7.51	8.51
	19-Sep	2.671	7.95	8.95
	20-Sep	2.787	7.29	8.29
	21-Sep	2.575	7.35	8.35
	22-Sep	2.210	6.53	7.53
	23-Sep	2.389	6.56	7.56
	24-Sep	2.405	6.43	7.43
	25-Sep	2.496	6.12	7.12
	26-Sep	2.235	6.11	7.11
	27-Sep	2.019	5.95	6.95
	28-Sep	2.567	5.53	6.53
	29-Sep	2.368	5.37	6.37
	30-Sep	2.600	5.24	6.24
	1-Oct	2.563	5.33	6.33
	2-Oct	2.285	4.60	5.6
	3-Oct	2.032	3.51	4.51
	4-Oct	1.941	3.07	4.07
	5-Oct	3.687	2.40	3.4

S.F. KOKTULI Q 51.094 HYDROLOGY NODE SK100LF2

2007	17-May	2.565	4.45
	18-May	2.841	5.22
	19-May	2.435	5.84
	20-May	2.341	5.52
	21-May	2.152	6.53
	22-May	2.220	6.45
	23-May	2.334	6.62
	24-May	2.521	6.5
	25-May	2.920	7.27
	26-May	2.689	7.53
	27-May	2.469	8.27
	28-May	2.252	8.36
	29-May	2.203	8.67
	30-May	1.894	9.28
	31-May	1.762	8.66
	1-Jun	1.591	8.24
	2-Jun	1.642	8.24
	3-Jun	1.573	9.69
	4-Jun	1.577	8.43
	5-Jun	2.022	8.08
	6-Jun	2.047	9.36
	7-Jun	1.858	9.93
	8-Jun	1.684	9.66
	9-Jun	1.621	9.9
	10-Jun	1.529	10.06
	11-Jun	1.329	10.58
	12-Jun	1.459	10.4
	13-Jun	1.395	10.93
	14-Jun	1.370	11.36
	15-Jun	1.459	12.51
	16-Jun	1.240	11.71
	17-Jun	1.374	10.49
	18-Jun	1.430	12.68
	19-Jun	1.545	12.55
	20-Jun	1.397	10.47
	21-Jun	1.129	12.84
	22-Jun	1.048	10.31
	23-Jun	1.606	8.29
	24-Jun	2.801	9.37
	25-Jun	2.137	9.66
	26-Jun	1.798	10.96
	27-Jun	1.467	13.07

28-Jun	1.344	13.08
29-Jun	1.250	14.08
30-Jun	1.145	14.58
1-Jul	1.155	14.32
2-Jul	1.078	15.16
3-Jul	0.956	16.27
4-Jul	1.218	13.41
5-Jul	1.377	14.06
6-Jul	1.305	13.52
7-Jul	1.190	14.72
8-Jul	1.113	14.78
9-Jul	1.146	14.67
10-Jul	1.020	15.12
11-Jul	0.903	15.84
12-Jul	0.957	16.11
13-Jul	0.967	13.94
14-Jul	1.073	14.21
15-Jul	1.107	14.54
16-Jul	1.045	15.37
17-Jul	0.809	16.99
18-Jul	0.777	15.45
19-Jul	0.833	15.64
20-Jul	0.766	18.49
21-Jul	0.624	16.18
22-Jul	0.711	12.11
23-Jul	0.937	11.94
24-Jul	1.131	12.51
25-Jul	1.130	14.04
26-Jul	0.923	15.75
27-Jul	0.882	18.26
28-Jul	0.724	18.75
29-Jul	0.767	18.31
30-Jul	0.565	17.76
31-Jul	0.400	15.99
1-Aug	0.333	12.99
2-Aug	0.414	11.93
3-Aug	0.645	12.04
4-Aug	0.786	12.18
5-Aug	1.152	11.96
6-Aug	1.836	13.04
7-Aug	1.373	14.3
8-Aug	0.879	14.05
9-Aug	0.702	15.53
10-Aug	0.667	17.52
11-Aug	0.663	17.7
12-Aug	0.599	18.61
13-Aug	0.578	19.1
14-Aug	0.516	15.24
15-Aug	0.857	13.38
16-Aug	0.642	15.1
17-Aug	0.531	15.01
18-Aug	0.540	12.86
19-Aug	0.918	12.17
20-Aug	0.952	12.48
21-Aug	0.969	12.06
22-Aug	0.978	11.9
23-Aug	0.978	12.71
24-Aug	0.952	13.56
25-Aug	0.961	15.01
26-Aug	0.927	14.33
27-Aug	0.901	14.64
28-Aug	0.875	14.99
29-Aug	0.857	15.52

	30-Aug	0.857	13.4
	31-Aug	0.875	13.65
	1-Sep	0.892	13.7
	2-Sep	0.875	13.14
	3-Sep	0.952	11.54
	4-Sep	1.106	11.2
	5-Sep	1.029	12.39
	6-Sep	1.232	11.91
	7-Sep	1.181	10.53
	8-Sep	3.758	10.64
	9-Sep	3.395	11.32
	10-Sep	2.769	11.29
	11-Sep	2.462	8.75
	12-Sep	3.905	9.34
	13-Sep	3.677	9.26
	14-Sep	3.611	9.33
	15-Sep	3.163	8.72
	16-Sep	2.800	8.84
	17-Sep	2.586	8.63
	18-Sep	2.861	8.51
	19-Sep	5.098	8.95
	20-Sep	5.297	8.29
	21-Sep	4.934	8.35
	22-Sep	4.300	7.53
	23-Sep	4.611	7.56
	24-Sep	4.640	7.43
	25-Sep	4.798	7.12
	26-Sep	4.343	7.11
	27-Sep	3.964	6.95
	28-Sep	4.919	6.53
	29-Sep	4.575	6.37
	30-Sep	4.977	6.24
	1-Oct	4.912	6.33
	2-Oct	4.430	5.6
	3-Oct	3.986	4.51
	4-Oct	3.825	4.07
	5-Oct	6.815	3.4

S.F. KOKTULI Q 43.635 HYDROLOGY NODE SK100LF4

2007	17-May	1.95312	4.45
	18-May	2.30716	5.22
	19-May	1.66869	5.84
	20-May	1.62695	5.52
	21-May	1.29784	6.53
	22-May	1.22341	6.45
	23-May	1.31054	6.62
	24-May	1.42972	6.5
	25-May	1.64515	7.27
	26-May	1.53985	7.53
	27-May	1.34717	8.27
	28-May	1.17900	8.36
	29-May	0.98722	8.67
	30-May	0.77762	9.28
	31-May	0.64079	8.66
	1-Jun	0.55211	8.24
	2-Jun	0.49260	8.24
	3-Jun	0.43489	9.69
	4-Jun	0.45473	8.43
	5-Jun	0.78290	8.08
	6-Jun	0.82419	9.36
	7-Jun	0.62136	9.93
	8-Jun	0.41458	9.66
	9-Jun	0.33294	9.9

10-Jun	0.30939	10.06
11-Jun	0.24938	10.58
12-Jun	0.20964	10.4
13-Jun	0.19461	10.93
14-Jun	0.17581	11.36
15-Jun	0.17597	12.51
16-Jun	0.15596	11.71
17-Jun	0.13619	10.49
18-Jun	0.16324	12.68
19-Jun	0.14526	12.55
20-Jun	0.13479	10.47
21-Jun	0.08664	12.84
22-Jun	0.03922	10.31
23-Jun	0.25379	8.29
24-Jun	1.07150	9.37
25-Jun	0.67074	9.66
26-Jun	0.35548	10.96
27-Jun	0.21376	13.07
28-Jun	0.12443	13.08
29-Jun	0.09817	14.08
30-Jun	0.06120	14.58
1-Jul	0.04713	14.32
2-Jul	0.03168	15.16
3-Jul	0.01570	16.27
4-Jul	0.03090	13.41
5-Jul	0.10194	14.06
6-Jul	0.06673	13.52
7-Jul	0.05363	14.72
8-Jul	0.03833	14.78
9-Jul	0.02861	14.67
10-Jul	0.02498	15.12
11-Jul	0.00139	15.84
12-Jul	0.00090	16.11
13-Jul	0.00137	13.94
14-Jul	0.01703	14.21
15-Jul	0.01543	14.54
16-Jul	0.00617	15.37
17-Jul	0.00153	16.99
18-Jul	0.00080	15.45
19-Jul	0.00080	15.64
20-Jul	0.00075	18.49
21-Jul	0.00073	16.18
22-Jul	0.00088	12.11
23-Jul	0.00131	11.94
24-Jul	0.00642	12.51
25-Jul	0.04584	14.04
26-Jul	0.00943	15.75
27-Jul	0.00077	18.26
28-Jul	0.00073	18.75
29-Jul	0.00070	18.31
30-Jul	0.00071	17.76
31-Jul	0.00070	15.99
1-Aug	0.00069	12.99
2-Aug	0.00074	11.93
3-Aug	0.00079	12.04
4-Aug	0.00178	12.18
5-Aug	0.01164	11.96
6-Aug	0.22249	13.04
7-Aug	0.14804	14.3
8-Aug	0.04449	14.05
9-Aug	0.00200	15.53
10-Aug	0.00097	17.52
11-Aug	0.00093	17.7

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          12-Aug 0.00093          18.61
          13-Aug 0.00089          19.1
          14-Aug 0.00103          15.24
          15-Aug 0.00112          13.38
          16-Aug 0.00102          15.1
          17-Aug 0.00093          15.01
          18-Aug 0.00124          12.86
          19-Aug 0.00116          12.17
          20-Aug 0.00130          12.48
          21-Aug 0.00140          12.06
          22-Aug 0.00139          11.9
          23-Aug 0.00399          12.71
          24-Aug 0.03225          13.56
          25-Aug 0.01899          15.01
          26-Aug 0.00116          14.33
          27-Aug 0.00109          14.64
          28-Aug 0.00102          14.99
          29-Aug 0.00099          15.52
          30-Aug 0.00097          13.4
          31-Aug 0.00098          13.65
           1-Sep 0.00102          13.7
           2-Sep 0.00099          13.14
           3-Sep 0.00144          11.54
           4-Sep 0.00168          11.2
           5-Sep 0.00140          12.39
           6-Sep 0.02566          11.91
           7-Sep 0.03034          10.53
           8-Sep 1.15235          10.64
           9-Sep 2.22362          11.32
          10-Sep 1.66313          11.29
          11-Sep 1.02737          8.75
          12-Sep 2.40721          9.34
          13-Sep 2.82508          9.26
          14-Sep 2.84482          9.33
          15-Sep 2.28742          8.72
          16-Sep 1.66535          8.84
          17-Sep 1.37304          8.63
          18-Sep 1.35890          8.51
          19-Sep 4.15897          8.95
          20-Sep 5.21605          8.29
          21-Sep 5.56399          8.35
          22-Sep 4.27034          7.53
          23-Sep 4.08858          7.56
          24-Sep 4.14221          7.43
          25-Sep 4.32931          7.12
          26-Sep 3.84478          7.11
          27-Sep 3.13623          6.95
          28-Sep 3.53242          6.53
          29-Sep 4.37528          6.37
          30-Sep 4.10804          6.24
           1-Oct 4.70779          6.33
           2-Oct 4.02936          5.6
           3-Oct 3.24330          4.51
           4-Oct 2.73541          4.07
           5-Oct 5.96861          3.4

S.F. KOKTULI    Q         35.810 HYDROLOGY GAGE SK100C
    2007  17-May 2.60775          3.8
          18-May 2.97448          3.51
          19-May 2.30295          3.6
          20-May 2.25731          3.74
          21-May 1.88828          4.24
          22-May 1.80222          4.4
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23-May	1.90287	4.12
24-May	2.03828	4.3
25-May	2.27722	4.3
26-May	2.16131	4.34
27-May	1.94474	4.15
28-May	1.75037	4.41
29-May	1.52138	4.65
30-May	1.26001	4.79
31-May	1.08140	4.75
1-Jun	0.96138	5.13
2-Jun	0.87856	5.4
3-Jun	0.79622	5.63
4-Jun	0.82477	5.57
5-Jun	1.26676	5.86
6-Jun	1.31924	5.62
7-Jun	1.05542	5.12
8-Jun	0.76670	4.82
9-Jun	0.64476	5.22
10-Jun	0.60847	4.98
11-Jun	0.51318	4.82
12-Jun	0.44744	4.92
13-Jun	0.42190	4.86
14-Jun	0.38937	4.61
15-Jun	0.38965	4.28
16-Jun	0.35423	4.26
17-Jun	0.31826	3.96
18-Jun	0.36722	4.2
19-Jun	0.33488	4.05
20-Jun	0.31566	3.94
21-Jun	0.22267	4.27
22-Jun	0.11907	5.01
23-Jun	0.52034	5.17
24-Jun	1.62306	5.03
25-Jun	1.12113	5.1
26-Jun	0.67901	5.03
27-Jun	0.45436	4.33
28-Jun	0.29635	3.66
29-Jun	0.24576	3.3
30-Jun	0.16920	2.89
1-Jul	0.13767	2.67
2-Jul	0.10059	3.01
3-Jul	0.05778	3.24
4-Jul	0.09864	3.53
5-Jul	0.25318	3.85
6-Jul	0.18116	3.82
7-Jul	0.15245	3.71
8-Jul	0.11691	3.3
9-Jul	0.09282	3.33
10-Jul	0.08338	3.23
11-Jul	0.00601	3.32
12-Jul	0.00386	3.38
13-Jul	0.00593	3.74
14-Jul	0.06161	3.45
15-Jul	0.05698	3.44
16-Jul	0.02763	3.31
17-Jul	0.00666	2.99
18-Jul	0.00341	2.85
19-Jul	0.00338	3.23
20-Jul	0.00319	3.39
21-Jul	0.00307	3.6
22-Jul	0.00374	3.98
23-Jul	0.00567	4.05
24-Jul	0.02850	3.5

25-Jul	0.13468	3.33
26-Jul	0.03864	2.86
27-Jul	0.00325	2.24
28-Jul	0.00307	2.05
29-Jul	0.00296	2.82
30-Jul	0.00302	3.27
31-Jul	0.00298	3.8
1-Aug	0.00291	4.55
2-Aug	0.00315	5.08
3-Aug	0.00334	4.8
4-Aug	0.00779	4.77
5-Aug	0.04561	4.73
6-Aug	0.46896	4.68
7-Aug	0.33994	4.02
8-Aug	0.13153	3.6
9-Aug	0.00882	2.94
10-Aug	0.00415	2.6
11-Aug	0.00396	2.13
12-Aug	0.00397	2.73
13-Aug	0.00379	2.98
14-Aug	0.00441	3.41
15-Aug	0.00481	3.92
16-Aug	0.00436	4.48
17-Aug	0.00396	4.54
18-Aug	0.00534	5.27
19-Aug	0.00500	5.65
20-Aug	0.00564	5.73
21-Aug	0.00605	5.67
22-Aug	0.00605	5.38
23-Aug	0.01803	4.92
24-Aug	0.10202	4.69
25-Aug	0.06715	4.17
26-Aug	0.00499	3.75
27-Aug	0.00468	4.18
28-Aug	0.00439	4.1
29-Aug	0.00424	3.84
30-Aug	0.00416	4.03
31-Aug	0.00421	4.69
1-Sep	0.00438	4.29
2-Sep	0.00422	4.51
3-Sep	0.00626	5.03
4-Sep	0.00735	5.54
5-Sep	0.00607	5.53
6-Sep	0.08516	6.13
7-Sep	0.09720	6.44
8-Sep	1.71903	6.44
9-Sep	2.88909	6.48
10-Sep	2.29689	6.64
11-Sep	1.57002	6.68
12-Sep	3.07587	6.55
13-Sep	3.49043	6.55
14-Sep	3.50964	6.31
15-Sep	2.95436	6.2
16-Sep	2.29931	5.95
17-Sep	1.97418	6.16
18-Sep	1.95814	6.35
19-Sep	4.73726	6.46
20-Sep	5.66519	6.41
21-Sep	5.96158	6.37
22-Sep	4.83719	6.21
23-Sep	4.67385	6.03
24-Sep	4.72221	5.97
25-Sep	4.88988	5.98

	26-Sep	4.45229	5.96	
	27-Sep	3.79065	5.69	
	28-Sep	4.16410	5.67	
	29-Sep	4.93088	5.64	
	30-Sep	4.69145	5.65	
	1-Oct	5.22449	5.46	
	2-Oct	4.62029	5.64	
	3-Oct	3.89253	5.41	
	4-Oct	3.40265	5.14	
	5-Oct	6.30147	5.29	
S.F. KOKTULI	B		34.276	CONFLUENCE WITH TRIBUTARY SFK 1.119
2007	17-May	2.493	3.8	
	18-May	2.886	3.51	
	19-May	2.283	3.6	
	20-May	2.248	3.74	
	21-May	1.922	4.24	
	22-May	1.838	4.4	
	23-May	1.924	4.12	
	24-May	2.046	4.3	
	25-May	2.275	4.3	
	26-May	2.175	4.34	
	27-May	1.992	4.15	
	28-May	1.817	4.41	
	29-May	1.607	4.65	
	30-May	1.358	4.79	
	31-May	1.183	4.75	
	1-Jun	1.076	5.13	
	2-Jun	1.005	5.4	
	3-Jun	0.933	5.63	
	4-Jun	0.951	5.57	
	5-Jun	1.354	5.86	
	6-Jun	1.415	5.62	
	7-Jun	1.169	5.12	
	8-Jun	0.909	4.82	
	9-Jun	0.798	5.22	
	10-Jun	0.762	4.98	
	11-Jun	0.670	4.82	
	12-Jun	0.608	4.92	
	13-Jun	0.584	4.86	
	14-Jun	0.551	4.61	
	15-Jun	0.552	4.28	
	16-Jun	0.517	4.26	
	17-Jun	0.480	3.96	
	18-Jun	0.529	4.2	
	19-Jun	0.497	4.05	
	20-Jun	0.478	3.94	
	21-Jun	0.382	4.27	
	22-Jun	0.274	5.01	
	23-Jun	0.627	5.17	
	24-Jun	1.692	5.03	
	25-Jun	1.230	5.1	
	26-Jun	0.830	5.03	
	27-Jun	0.616	4.33	
	28-Jun	0.458	3.66	
	29-Jun	0.406	3.3	
	30-Jun	0.326	2.89	
	1-Jul	0.291	2.67	
	2-Jul	0.249	3.01	
	3-Jul	0.201	3.24	
	4-Jul	0.259	3.53	
	5-Jul	0.414	3.85	
	6-Jul	0.340	3.82	

7-Jul	0.307	3.71
8-Jul	0.272	3.3
9-Jul	0.243	3.33
10-Jul	0.231	3.23
11-Jul	0.141	3.32
12-Jul	0.139	3.38
13-Jul	0.158	3.74
14-Jul	0.215	3.45
15-Jul	0.204	3.44
16-Jul	0.167	3.31
17-Jul	0.140	2.99
18-Jul	0.133	2.85
19-Jul	0.133	3.23
20-Jul	0.130	3.39
21-Jul	0.128	3.6
22-Jul	0.138	3.98
23-Jul	0.157	4.05
24-Jul	0.180	3.5
25-Jul	0.288	3.33
26-Jul	0.177	2.86
27-Jul	0.131	2.24
28-Jul	0.128	2.05
29-Jul	0.126	2.82
30-Jul	0.127	3.27
31-Jul	0.126	3.8
1-Aug	0.125	4.55
2-Aug	0.129	5.08
3-Aug	0.132	4.8
4-Aug	0.166	4.77
5-Aug	0.208	4.73
6-Aug	0.618	4.68
7-Aug	0.502	4.02
8-Aug	0.288	3.6
9-Aug	0.153	2.94
10-Aug	0.143	2.6
11-Aug	0.141	2.13
12-Aug	0.141	2.73
13-Aug	0.138	2.98
14-Aug	0.146	3.41
15-Aug	0.150	3.92
16-Aug	0.145	4.48
17-Aug	0.141	4.54
18-Aug	0.154	5.27
19-Aug	0.151	5.65
20-Aug	0.156	5.73
21-Aug	0.159	5.67
22-Aug	0.159	5.38
23-Aug	0.176	4.92
24-Aug	0.260	4.69
25-Aug	0.224	4.17
26-Aug	0.151	3.75
27-Aug	0.148	4.18
28-Aug	0.146	4.1
29-Aug	0.144	3.84
30-Aug	0.143	4.03
31-Aug	0.143	4.69
1-Sep	0.145	4.29
2-Sep	0.144	4.51
3-Sep	0.160	5.03
4-Sep	0.165	5.54
5-Sep	0.159	5.53
6-Sep	0.247	6.13
7-Sep	0.260	6.44

	8-Sep	1.491		6.44
	9-Sep	2.813		6.48
	10-Sep	2.310		6.64
	11-Sep	1.622		6.68
	12-Sep	2.824		6.55
	13-Sep	3.334		6.55
	14-Sep	3.362		6.31
	15-Sep	2.903		6.2
	16-Sep	2.315		5.95
	17-Sep	2.015		6.16
	18-Sep	1.925		6.35
	19-Sep	4.216		6.46
	20-Sep	5.051		6.41
	21-Sep	5.509		6.37
	22-Sep	4.573		6.21
	23-Sep	4.375		6.03
	24-Sep	4.408		5.97
	25-Sep	4.564		5.98
	26-Sep	4.241		5.96
	27-Sep	3.670		5.69
	28-Sep	3.888		5.67
	29-Sep	4.684		5.64
	30-Sep	4.355		5.65
	1-Oct	4.903		5.46
	2-Oct	4.404		5.64
	3-Oct	3.777		5.41
	4-Oct	3.323		5.14
	5-Oct	5.611		5.29

TRIBUTARY 119 H 36.062 HYDROLOGY GAGE SK119A

2007	17-May	3.103	1.46	3.8
	18-May	2.420	1.78	3.51
	19-May	2.178	2.03	3.6
	20-May	2.064	2.07	3.74
	21-May	1.758	2.43	4.24
	22-May	1.805	2.13	4.4
	23-May	1.944	2.24	4.12
	24-May	2.032	2.27	4.3
	25-May	1.940	2.10	4.3
	26-May	1.808	2.48	4.34
	27-May	1.460	3.33	4.15
	28-May	1.266	3.45	4.41
	29-May	1.039	3.35	4.65
	30-May	0.923	3.74	4.79
	31-May	0.937	3.58	4.75
	1-Jun	0.869	3.80	5.13
	2-Jun	0.813	4.22	5.4
	3-Jun	0.754	4.71	5.63
	4-Jun	0.862	4.36	5.57
	5-Jun	1.266	4.26	5.86
	6-Jun	0.944	5.58	5.62
	7-Jun	0.792	5.16	5.12
	8-Jun	0.690	4.92	4.82
	9-Jun	0.616	4.83	5.22
	10-Jun	0.656	7.31	4.98
	11-Jun	0.654	7.11	4.82
	12-Jun	0.582	5.47	4.92
	13-Jun	0.522	5.63	4.86
	14-Jun	0.550	6.67	4.61
	15-Jun	0.562	8.71	4.28
	16-Jun	0.540	8.53	4.26
	17-Jun	0.643	6.82	3.96
	18-Jun	0.553	7.45	4.2

19-Jun	0.538	9.39	4.05
20-Jun	0.518	10.70	3.94
21-Jun	0.468	9.93	4.27
22-Jun	0.477	7.45	5.01
23-Jun	1.402	5.84	5.17
24-Jun	1.338	5.64	5.03
25-Jun	0.777	6.13	5.1
26-Jun	0.623	7.06	5.03
27-Jun	0.548	7.93	4.33
28-Jun	0.533	7.33	3.66
29-Jun	0.491	8.14	3.3
30-Jun	0.454	8.24	2.89
1-Jul	0.424	7.87	2.67
2-Jul	0.398	8.41	3.01
3-Jul	0.382	9.51	3.24
4-Jul	0.620	8.36	3.53
5-Jul	0.502	8.19	3.85
6-Jul	0.485	7.97	3.82
7-Jul	0.426	8.05	3.71
8-Jul	0.482	8.03	3.3
9-Jul	0.432	8.19	3.33
10-Jul	0.400	8.17	3.23
11-Jul	0.365	9.55	3.32
12-Jul	0.386	8.74	3.38
13-Jul	0.593	7.55	3.74
14-Jul	0.503	7.73	3.45
15-Jul	0.424	8.37	3.44
16-Jul	0.381	9.00	3.31
17-Jul	0.350	9.86	2.99
18-Jul	0.341	9.34	2.85
19-Jul	0.338	8.75	3.23
20-Jul	0.319	10.38	3.39
21-Jul	0.307	9.46	3.6
22-Jul	0.374	7.65	3.98
23-Jul	0.567	7.43	4.05
24-Jul	0.512	7.86	3.5
25-Jul	0.427	8.99	3.33
26-Jul	0.359	9.90	2.86
27-Jul	0.325	11.13	2.24
28-Jul	0.307	11.42	2.05
29-Jul	0.296	11.27	2.82
30-Jul	0.302	10.42	3.27
31-Jul	0.298	9.63	3.8
1-Aug	0.291	8.72	4.55
2-Aug	0.315	8.34	5.08
3-Aug	0.334	8.45	4.8
4-Aug	0.779	8.19	4.77
5-Aug	0.871	8.23	4.73
6-Aug	0.872	8.96	4.68
7-Aug	0.567	9.14	4.02
8-Aug	0.490	9.72	3.6
9-Aug	0.445	10.12	2.94
10-Aug	0.415	9.91	2.6
11-Aug	0.396	9.56	2.13
12-Aug	0.397	10.27	2.73
13-Aug	0.379	11.16	2.98
14-Aug	0.441	9.49	3.41
15-Aug	0.481	8.75	3.92
16-Aug	0.436	9.19	4.48
17-Aug	0.396	9.08	4.54
18-Aug	0.534	8.41	5.27
19-Aug	0.500	8.82	5.65
20-Aug	0.564	8.70	5.73

	21-Aug	0.605	7.88	5.67
	22-Aug	0.605	7.93	5.38
	23-Aug	0.642	8.11	4.92
	24-Aug	0.564	8.78	4.69
	25-Aug	0.562	8.97	4.17
	26-Aug	0.499	7.94	3.75
	27-Aug	0.468	8.32	4.18
	28-Aug	0.439	8.40	4.1
	29-Aug	0.424	9.76	3.84
	30-Aug	0.416	9.04	4.03
	31-Aug	0.421	8.54	4.69
	1-Sep	0.438	8.05	4.29
	2-Sep	0.422	8.47	4.51
	3-Sep	0.626	7.90	5.03
	4-Sep	0.735	7.84	5.54
	5-Sep	0.607	7.96	5.53
	6-Sep	0.757	7.62	6.13
	7-Sep	0.808	7.34	6.44
	8-Sep	5.271	8.05	6.44
	9-Sep	2.354	7.67	6.48
	10-Sep	1.681	7.24	6.64
	11-Sep	1.732	6.74	6.68
	12-Sep	4.166	7.41	6.55
	13-Sep	2.718	6.68	6.55
	14-Sep	2.593	6.48	6.31
	15-Sep	1.956	5.89	6.2
	16-Sep	1.649	6.06	5.95
	17-Sep	1.539	5.93	6.16
	18-Sep	2.712	6.31	6.35
	19-Sep	5.097	6.93	6.46
	20-Sep	4.991	6.51	6.41
	21-Sep	3.246	6.29	6.37
	22-Sep	2.533	5.40	6.21
	23-Sep	3.056	5.80	6.03
	24-Sep	3.155	5.75	5.97
	25-Sep	3.103	5.64	5.98
	26-Sep	2.361	5.42	5.96
	27-Sep	2.001	5.05	5.69
	28-Sep	3.330	5.11	5.67
	29-Sep	2.265	4.99	5.64
	30-Sep	3.408	5.02	5.65
	1-Oct	2.728	5.02	5.46
	2-Oct	2.249	4.42	5.64
	3-Oct	1.837	3.99	5.41
	4-Oct	1.881	3.56	5.14
	5-Oct	5.004	3.66	5.29

TRIBUTARY 119 T 34.276 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

2007	17-May	3.065	3.8
	18-May	2.390	3.51
	19-May	2.172	3.6
	20-May	2.061	3.74
	21-May	1.769	4.24
	22-May	1.817	4.4
	23-May	1.951	4.12
	24-May	2.034	4.3
	25-May	1.939	4.3
	26-May	1.813	4.34
	27-May	1.476	4.15
	28-May	1.288	4.41
	29-May	1.067	4.65
	30-May	0.955	4.79
	31-May	0.971	4.75

1-Jun	0.908	5.13
2-Jun	0.855	5.4
3-Jun	0.800	5.63
4-Jun	0.904	5.57
5-Jun	1.295	5.86
6-Jun	0.976	5.62
7-Jun	0.830	5.12
8-Jun	0.738	4.82
9-Jun	0.667	5.22
10-Jun	0.707	4.98
11-Jun	0.707	4.82
12-Jun	0.635	4.92
13-Jun	0.576	4.86
14-Jun	0.604	4.61
15-Jun	0.616	4.28
16-Jun	0.594	4.26
17-Jun	0.697	3.96
18-Jun	0.607	4.2
19-Jun	0.592	4.05
20-Jun	0.572	3.94
21-Jun	0.521	4.27
22-Jun	0.529	5.01
23-Jun	1.438	5.17
24-Jun	1.361	5.03
25-Jun	0.814	5.1
26-Jun	0.673	5.03
27-Jun	0.601	4.33
28-Jun	0.587	3.66
29-Jun	0.545	3.3
30-Jun	0.507	2.89
1-Jul	0.475	2.67
2-Jul	0.447	3.01
3-Jul	0.429	3.24
4-Jul	0.673	3.53
5-Jul	0.556	3.85
6-Jul	0.538	3.82
7-Jul	0.478	3.71
8-Jul	0.533	3.3
9-Jul	0.482	3.33
10-Jul	0.450	3.23
11-Jul	0.410	3.32
12-Jul	0.431	3.38
13-Jul	0.643	3.74
14-Jul	0.554	3.45
15-Jul	0.473	3.44
16-Jul	0.428	3.31
17-Jul	0.395	2.99
18-Jul	0.384	2.85
19-Jul	0.382	3.23
20-Jul	0.361	3.39
21-Jul	0.348	3.6
22-Jul	0.419	3.98
23-Jul	0.618	4.05
24-Jul	0.563	3.5
25-Jul	0.478	3.33
26-Jul	0.406	2.86
27-Jul	0.367	2.24
28-Jul	0.348	2.05
29-Jul	0.336	2.82
30-Jul	0.343	3.27
31-Jul	0.339	3.8
1-Aug	0.332	4.55
2-Aug	0.357	5.08

3-Aug	0.377	4.8
4-Aug	0.832	4.77
5-Aug	0.925	4.73
6-Aug	0.922	4.68
7-Aug	0.622	4.02
8-Aug	0.542	3.6
9-Aug	0.493	2.94
10-Aug	0.461	2.6
11-Aug	0.442	2.13
12-Aug	0.443	2.73
13-Aug	0.424	2.98
14-Aug	0.488	3.41
15-Aug	0.529	3.92
16-Aug	0.483	4.48
17-Aug	0.441	4.54
18-Aug	0.583	5.27
19-Aug	0.549	5.65
20-Aug	0.615	5.73
21-Aug	0.656	5.67
22-Aug	0.656	5.38
23-Aug	0.695	4.92
24-Aug	0.617	4.69
25-Aug	0.615	4.17
26-Aug	0.547	3.75
27-Aug	0.516	4.18
28-Aug	0.486	4.1
29-Aug	0.471	3.84
30-Aug	0.462	4.03
31-Aug	0.467	4.69
1-Sep	0.485	4.29
2-Sep	0.469	4.51
3-Sep	0.678	5.03
4-Sep	0.787	5.54
5-Sep	0.658	5.53
6-Sep	0.811	6.13
7-Sep	0.862	6.44
8-Sep	5.195	6.44
9-Sep	2.328	6.48
10-Sep	1.685	6.64
11-Sep	1.749	6.68
12-Sep	4.083	6.55
13-Sep	2.666	6.55
14-Sep	2.544	6.31
15-Sep	1.939	6.2
16-Sep	1.654	5.95
17-Sep	1.553	6.16
18-Sep	2.701	6.35
19-Sep	4.923	6.46
20-Sep	4.787	6.41
21-Sep	3.095	6.37
22-Sep	2.445	6.21
23-Sep	2.956	6.03
24-Sep	3.050	5.97
25-Sep	2.994	5.98
26-Sep	2.291	5.96
27-Sep	1.960	5.69
28-Sep	3.238	5.67
29-Sep	2.182	5.64
30-Sep	3.296	5.65
1-Oct	2.621	5.46
2-Oct	2.177	5.64
3-Oct	1.798	5.41
4-Oct	1.855	5.14

	5-Oct	4.774	5.29	
S.F. KOKTULI	J	34.276	CONFLUENCE WITH TRIBUTARY SFK	1.119
2007	17-May	5.558	3.8	
	18-May	5.276	3.51	
	19-May	4.455	3.6	
	20-May	4.310	3.74	
	21-May	3.691	4.24	
	22-May	3.655	4.4	
	23-May	3.875	4.12	
	24-May	4.080	4.3	
	25-May	4.214	4.3	
	26-May	3.988	4.34	
	27-May	3.467	4.15	
	28-May	3.105	4.41	
	29-May	2.675	4.65	
	30-May	2.313	4.79	
	31-May	2.154	4.75	
	1-Jun	1.984	5.13	
	2-Jun	1.860	5.4	
	3-Jun	1.732	5.63	
	4-Jun	1.855	5.57	
	5-Jun	2.649	5.86	
	6-Jun	2.391	5.62	
	7-Jun	1.998	5.12	
	8-Jun	1.647	4.82	
	9-Jun	1.465	5.22	
	10-Jun	1.468	4.98	
	11-Jun	1.377	4.82	
	12-Jun	1.243	4.92	
	13-Jun	1.160	4.86	
	14-Jun	1.155	4.61	
	15-Jun	1.167	4.28	
	16-Jun	1.111	4.26	
	17-Jun	1.177	3.96	
	18-Jun	1.137	4.2	
	19-Jun	1.089	4.05	
	20-Jun	1.050	3.94	
	21-Jun	0.903	4.27	
	22-Jun	0.803	5.01	
	23-Jun	2.064	5.17	
	24-Jun	3.053	5.03	
	25-Jun	2.043	5.1	
	26-Jun	1.503	5.03	
	27-Jun	1.217	4.33	
	28-Jun	1.046	3.66	
	29-Jun	0.951	3.3	
	30-Jun	0.832	2.89	
	1-Jul	0.766	2.67	
	2-Jul	0.696	3.01	
	3-Jul	0.630	3.24	
	4-Jul	0.932	3.53	
	5-Jul	0.970	3.85	
	6-Jul	0.878	3.82	
	7-Jul	0.784	3.71	
	8-Jul	0.806	3.3	
	9-Jul	0.725	3.33	
	10-Jul	0.680	3.23	
	11-Jul	0.551	3.32	
	12-Jul	0.570	3.38	
	13-Jul	0.802	3.74	
	14-Jul	0.769	3.45	
	15-Jul	0.677	3.44	

16-Jul	0.595	3.31
17-Jul	0.535	2.99
18-Jul	0.517	2.85
19-Jul	0.514	3.23
20-Jul	0.491	3.39
21-Jul	0.476	3.6
22-Jul	0.557	3.98
23-Jul	0.774	4.05
24-Jul	0.743	3.5
25-Jul	0.766	3.33
26-Jul	0.583	2.86
27-Jul	0.498	2.24
28-Jul	0.476	2.05
29-Jul	0.462	2.82
30-Jul	0.470	3.27
31-Jul	0.465	3.8
1-Aug	0.457	4.55
2-Aug	0.486	5.08
3-Aug	0.509	4.8
4-Aug	0.997	4.77
5-Aug	1.133	4.73
6-Aug	1.540	4.68
7-Aug	1.124	4.02
8-Aug	0.830	3.6
9-Aug	0.647	2.94
10-Aug	0.604	2.6
11-Aug	0.582	2.13
12-Aug	0.584	2.73
13-Aug	0.563	2.98
14-Aug	0.633	3.41
15-Aug	0.679	3.92
16-Aug	0.628	4.48
17-Aug	0.582	4.54
18-Aug	0.737	5.27
19-Aug	0.701	5.65
20-Aug	0.771	5.73
21-Aug	0.815	5.67
22-Aug	0.815	5.38
23-Aug	0.871	4.92
24-Aug	0.877	4.69
25-Aug	0.839	4.17
26-Aug	0.699	3.75
27-Aug	0.665	4.18
28-Aug	0.632	4.1
29-Aug	0.615	3.84
30-Aug	0.605	4.03
31-Aug	0.610	4.69
1-Sep	0.630	4.29
2-Sep	0.612	4.51
3-Sep	0.838	5.03
4-Sep	0.952	5.54
5-Sep	0.817	5.53
6-Sep	1.059	6.13
7-Sep	1.122	6.44
8-Sep	6.686	6.44
9-Sep	5.141	6.48
10-Sep	3.995	6.64
11-Sep	3.372	6.68
12-Sep	6.907	6.55
13-Sep	6.000	6.55
14-Sep	5.906	6.31
15-Sep	4.843	6.2
16-Sep	3.968	5.95

	17-Sep	3.568	6.16
	18-Sep	4.626	6.35
	19-Sep	9.139	6.46
	20-Sep	9.837	6.41
	21-Sep	8.605	6.37
	22-Sep	7.018	6.21
	23-Sep	7.331	6.03
	24-Sep	7.459	5.97
	25-Sep	7.559	5.98
	26-Sep	6.532	5.96
	27-Sep	5.630	5.69
	28-Sep	7.126	5.67
	29-Sep	6.866	5.64
	30-Sep	7.651	5.65
	1-Oct	7.524	5.46
	2-Oct	6.581	5.64
	3-Oct	5.575	5.41
	4-Oct	5.178	5.14
	5-Oct	10.385	5.29

S.F. KOKTULI Q 34.019 HYDROLOGY NODE SK100LF6

2007	17-May	5.466	3.8
	18-May	5.205	3.51
	19-May	4.439	3.6
	20-May	4.302	3.74
	21-May	3.718	4.24
	22-May	3.684	4.4
	23-May	3.893	4.12
	24-May	4.086	4.3
	25-May	4.213	4.3
	26-May	3.999	4.34
	27-May	3.505	4.15
	28-May	3.159	4.41
	29-May	2.744	4.65
	30-May	2.392	4.79
	31-May	2.236	4.75
	1-Jun	2.076	5.13
	2-Jun	1.961	5.4
	3-Jun	1.843	5.63
	4-Jun	1.957	5.57
	5-Jun	2.719	5.86
	6-Jun	2.468	5.62
	7-Jun	2.090	5.12
	8-Jun	1.762	4.82
	9-Jun	1.589	5.22
	10-Jun	1.592	4.98
	11-Jun	1.503	4.82
	12-Jun	1.373	4.92
	13-Jun	1.290	4.86
	14-Jun	1.286	4.61
	15-Jun	1.298	4.28
	16-Jun	1.242	4.26
	17-Jun	1.307	3.96
	18-Jun	1.268	4.2
	19-Jun	1.220	4.05
	20-Jun	1.180	3.94
	21-Jun	1.032	4.27
	22-Jun	0.928	5.01
	23-Jun	2.150	5.17
	24-Jun	3.109	5.03
	25-Jun	2.131	5.1
	26-Jun	1.625	5.03
	27-Jun	1.347	4.33

28-Jun	1.176	3.66
29-Jun	1.081	3.3
30-Jun	0.959	2.89
1-Jul	0.890	2.67
2-Jul	0.816	3.01
3-Jul	0.746	3.24
4-Jul	1.061	3.53
5-Jul	1.100	3.85
6-Jul	1.005	3.82
7-Jul	0.909	3.71
8-Jul	0.931	3.3
9-Jul	0.847	3.33
10-Jul	0.799	3.23
11-Jul	0.660	3.32
12-Jul	0.679	3.38
13-Jul	0.924	3.74
14-Jul	0.893	3.45
15-Jul	0.796	3.44
16-Jul	0.708	3.31
17-Jul	0.642	2.99
18-Jul	0.621	2.85
19-Jul	0.618	3.23
20-Jul	0.593	3.39
21-Jul	0.576	3.6
22-Jul	0.665	3.98
23-Jul	0.896	4.05
24-Jul	0.865	3.5
25-Jul	0.890	3.33
26-Jul	0.695	2.86
27-Jul	0.601	2.24
28-Jul	0.576	2.05
29-Jul	0.561	2.82
30-Jul	0.569	3.27
31-Jul	0.564	3.8
1-Aug	0.555	4.55
2-Aug	0.587	5.08
3-Aug	0.613	4.8
4-Aug	1.125	4.77
5-Aug	1.264	4.73
6-Aug	1.661	4.68
7-Aug	1.255	4.02
8-Aug	0.956	3.6
9-Aug	0.763	2.94
10-Aug	0.715	2.6
11-Aug	0.693	2.13
12-Aug	0.694	2.73
13-Aug	0.671	2.98
14-Aug	0.747	3.41
15-Aug	0.796	3.92
16-Aug	0.742	4.48
17-Aug	0.692	4.54
18-Aug	0.857	5.27
19-Aug	0.819	5.65
20-Aug	0.892	5.73
21-Aug	0.938	5.67
22-Aug	0.938	5.38
23-Aug	0.998	4.92
24-Aug	1.005	4.69
25-Aug	0.965	4.17
26-Aug	0.817	3.75
27-Aug	0.780	4.18
28-Aug	0.746	4.1
29-Aug	0.727	3.84

	30-Aug	0.716	4.03
	31-Aug	0.723	4.69
	1-Sep	0.744	4.29
	2-Sep	0.725	4.51
	3-Sep	0.962	5.03
	4-Sep	1.078	5.54
	5-Sep	0.940	5.53
	6-Sep	1.189	6.13
	7-Sep	1.252	6.44
	8-Sep	6.503	6.44
	9-Sep	5.079	6.48
	10-Sep	4.006	6.64
	11-Sep	3.414	6.68
	12-Sep	6.704	6.55
	13-Sep	5.873	6.55
	14-Sep	5.787	6.31
	15-Sep	4.801	6.2
	16-Sep	3.981	5.95
	17-Sep	3.601	6.16
	18-Sep	4.599	6.35
	19-Sep	8.719	6.46
	20-Sep	9.342	6.41
	21-Sep	8.240	6.37
	22-Sep	6.806	6.21
	23-Sep	7.090	6.03
	24-Sep	7.206	5.97
	25-Sep	7.297	5.98
	26-Sep	6.361	5.96
	27-Sep	5.532	5.69
	28-Sep	6.903	5.67
	29-Sep	6.667	5.64
	30-Sep	7.380	5.65
	1-Oct	7.265	5.46
	2-Oct	6.406	5.64
	3-Oct	5.481	5.41
	4-Oct	5.113	5.14
	5-Oct	9.829	5.29

S.F. KOKTULI Q 29.261 HYDROLOGY GAGE SK100B1

2007	17-May	7.093	5.94
	18-May	7.155	5.99
	19-May	5.931	6.36
	20-May	5.884	6.63
	21-May	5.100	7.39
	22-May	5.002	7.73
	23-May	5.112	7.16
	24-May	5.433	7.3
	25-May	5.605	7.12
	26-May	5.447	6.81
	27-May	4.742	6.53
	28-May	4.338	7.06
	29-May	3.818	7.25
	30-May	3.353	7.54
	31-May	3.200	7.84
	1-Jun	3.011	8.44
	2-Jun	2.858	8.57
	3-Jun	2.693	8.32
	4-Jun	2.712	8.03
	5-Jun	3.446	8.21
	6-Jun	3.239	7.85
	7-Jun	2.900	7.36
	8-Jun	2.562	7.54
	9-Jun	2.350	8.4

10-Jun	2.290	8.58
11-Jun	2.224	8.64
12-Jun	2.071	9.09
13-Jun	1.954	9.15
14-Jun	1.901	9.1
15-Jun	1.871	8.97
16-Jun	1.842	9.14
17-Jun	1.898	9.08
18-Jun	1.880	9.85
19-Jun	1.789	10.19
20-Jun	1.738	10.35
21-Jun	1.608	10.31
22-Jun	1.508	10.46
23-Jun	2.555	10.39
24-Jun	4.028	9.38
25-Jun	3.059	9
26-Jun	2.500	9.61
27-Jun	2.171	9.12
28-Jun	1.945	8.98
29-Jun	1.815	9.74
30-Jun	1.661	9.65
1-Jul	1.560	9.62
2-Jul	1.486	10.98
3-Jul	1.422	10.79
4-Jul	1.631	10.49
5-Jul	1.700	10.77
6-Jul	1.631	10.87
7-Jul	1.534	10.02
8-Jul	1.528	10.03
9-Jul	1.464	9.87
10-Jul	1.414	10.2
11-Jul	1.350	9.97
12-Jul	1.326	10.17
13-Jul	1.556	10.7
14-Jul	1.503	11.1
15-Jul	1.407	10.65
16-Jul	1.347	10.87
17-Jul	1.294	10.92
18-Jul	1.262	10.72
19-Jul	1.255	11.22
20-Jul	1.226	11.37
21-Jul	1.195	11.09
22-Jul	1.251	10.92
23-Jul	1.418	10.47
24-Jul	1.416	9.71
25-Jul	1.357	9.93
26-Jul	1.283	9.91
27-Jul	1.215	10.45
28-Jul	1.178	11.06
29-Jul	1.151	11.74
30-Jul	1.134	11.91
31-Jul	1.119	12.01
1-Aug	1.100	12.12
2-Aug	1.112	12.09
3-Aug	1.136	11.7
4-Aug	1.493	11.14
5-Aug	1.709	10.57
6-Aug	2.070	10.2
7-Aug	1.784	9.51
8-Aug	1.539	9.35
9-Aug	1.396	9.45
10-Aug	1.321	9.86
11-Aug	1.271	10

	12-Aug	1.253	11.31
	13-Aug	1.220	11.5
	14-Aug	1.251	11.48
	15-Aug	1.322	12.11
	16-Aug	1.271	12.25
	17-Aug	1.214	11.08
	18-Aug	1.330	11.6
	19-Aug	1.362	12.4
	20-Aug	1.410	12.18
	21-Aug	1.458	11.96
	22-Aug	1.487	12.17
	23-Aug	1.519	11.74
	24-Aug	1.458	11.13
	25-Aug	1.477	10.6
	26-Aug	1.402	10.12
	27-Aug	1.353	10.29
	28-Aug	1.304	10.1
	29-Aug	1.263	10.14
	30-Aug	1.241	10.63
	31-Aug	1.233	11.53
	1-Sep	1.250	11.15
	2-Sep	1.230	10.84
	3-Sep	1.370	10.48
	4-Sep	1.690	10.14
	5-Sep	1.561	9.78
	6-Sep	2.040	10.04
	7-Sep	1.911	10.49
	8-Sep	8.545	10.55
	9-Sep	7.678	10.34
	10-Sep	5.906	10.01
	11-Sep	4.988	9.92
	12-Sep	9.431	9.45
	13-Sep	8.611	8.96
	14-Sep	8.476	8.66
	15-Sep	7.090	8.58
	16-Sep	5.958	8.37
	17-Sep	5.369	8.61
	18-Sep	6.058	8.95
	19-Sep	13.863	9
	20-Sep	14.652	8.67
	21-Sep	13.107	8.4
	22-Sep	10.586	8.12
	23-Sep	11.057	7.84
	24-Sep	11.171	7.64
	25-Sep	11.595	7.63
	26-Sep	10.074	7.54
	27-Sep	8.729	7.06
	28-Sep	11.016	7.02
	29-Sep	10.507	7.05
	30-Sep	11.698	7.08
	1-Oct	11.685	6.7
	2-Oct	10.259	6.81
	3-Oct	8.732	6.5
	4-Oct	8.051	5.79
	5-Oct	17.085	6.2

S.F. KOKTULI Q 24.898 HYDROLOGY GAGE SK100B

2007	17-May	9.118	5.94
	18-May	9.203	5.99
	19-May	7.985	6.36
	20-May	7.957	6.63
	21-May	7.079	7.39
	22-May	6.966	7.73

23-May	7.108	7.16
24-May	7.646	7.3
25-May	7.900	7.12
26-May	7.759	6.81
27-May	6.853	6.53
28-May	6.286	7.06
29-May	5.522	7.25
30-May	4.899	7.54
31-May	4.672	7.84
1-Jun	4.417	8.44
2-Jun	4.219	8.57
3-Jun	3.993	8.32
4-Jun	3.993	8.03
5-Jun	4.899	8.21
6-Jun	4.559	7.85
7-Jun	4.078	7.36
8-Jun	3.653	7.54
9-Jun	3.370	8.4
10-Jun	3.200	8.58
11-Jun	3.143	8.64
12-Jun	3.087	9.09
13-Jun	2.945	9.15
14-Jun	2.888	9.1
15-Jun	2.832	8.97
16-Jun	2.832	9.14
17-Jun	3.002	9.08
18-Jun	2.945	9.85
19-Jun	2.775	10.19
20-Jun	2.718	10.35
21-Jun	2.549	10.31
22-Jun	2.492	10.46
23-Jun	4.248	10.39
24-Jun	6.286	9.38
25-Jun	4.786	9
26-Jun	3.936	9.61
27-Jun	3.455	9.12
28-Jun	3.115	8.98
29-Jun	2.917	9.74
30-Jun	2.718	9.65
1-Jul	2.549	9.62
2-Jul	2.379	10.98
3-Jul	2.265	10.79
4-Jul	2.633	10.49
5-Jul	2.633	10.77
6-Jul	2.520	10.87
7-Jul	2.350	10.02
8-Jul	2.435	10.03
9-Jul	2.237	9.87
10-Jul	2.180	10.2
11-Jul	2.095	9.97
12-Jul	2.067	10.17
13-Jul	2.492	10.7
14-Jul	2.379	11.1
15-Jul	2.209	10.65
16-Jul	2.067	10.87
17-Jul	1.982	10.92
18-Jul	1.926	10.72
19-Jul	1.897	11.22
20-Jul	1.841	11.37
21-Jul	1.841	11.09
22-Jul	2.010	10.92
23-Jul	2.237	10.47
24-Jul	2.152	9.71

25-Jul	2.039	9.93
26-Jul	1.954	9.91
27-Jul	1.812	10.45
28-Jul	1.756	11.06
29-Jul	1.699	11.74
30-Jul	1.671	11.91
31-Jul	1.642	12.01
1-Aug	1.642	12.12
2-Aug	1.671	12.09
3-Aug	1.699	11.7
4-Aug	2.237	11.14
5-Aug	2.520	10.57
6-Aug	2.860	10.2
7-Aug	2.464	9.51
8-Aug	2.180	9.35
9-Aug	1.982	9.45
10-Aug	1.869	9.86
11-Aug	1.812	10
12-Aug	1.784	11.31
13-Aug	1.727	11.5
14-Aug	1.812	11.48
15-Aug	1.954	12.11
16-Aug	1.897	12.25
17-Aug	1.784	11.08
18-Aug	2.039	11.6
19-Aug	2.039	12.4
20-Aug	2.152	12.18
21-Aug	2.209	11.96
22-Aug	2.237	12.17
23-Aug	2.237	11.74
24-Aug	2.152	11.13
25-Aug	2.180	10.6
26-Aug	2.067	10.12
27-Aug	1.982	10.29
28-Aug	1.897	10.1
29-Aug	1.841	10.14
30-Aug	1.841	10.63
31-Aug	1.897	11.53
1-Sep	1.954	11.15
2-Sep	1.897	10.84
3-Sep	2.152	10.48
4-Sep	2.662	10.14
5-Sep	2.407	9.78
6-Sep	3.087	10.04
7-Sep	2.917	10.49
8-Sep	12.318	10.55
9-Sep	10.930	10.34
10-Sep	8.580	10.01
11-Sep	7.447	9.92
12-Sep	12.884	9.45
13-Sep	12.006	8.96
14-Sep	11.751	8.66
15-Sep	10.052	8.58
16-Sep	8.693	8.37
17-Sep	7.900	8.61
18-Sep	8.920	8.95
19-Sep	17.556	9
20-Sep	18.349	8.67
21-Sep	16.905	8.4
22-Sep	14.413	8.12
23-Sep	15.631	7.84
24-Sep	15.744	7.64
25-Sep	16.367	7.63

	26-Sep	14.583		7.54
	27-Sep	13.111		7.06
	28-Sep	16.849		7.02
	29-Sep	15.489		7.05
	30-Sep	17.075		7.08
	1-Oct	16.820		6.7
	2-Oct	14.923		6.81
	3-Oct	13.196		6.5
	4-Oct	12.573		5.79
	5-Oct	24.494		6.2
S.F. KOKTULI	Q		13.908	HYDROLOGY NODE FRS-3
2007	17-May	7.857		5.94
	18-May	7.933		5.99
	19-May	6.847		6.36
	20-May	6.822		6.63
	21-May	6.042		7.39
	22-May	5.942		7.73
	23-May	6.067		7.16
	24-May	6.545		7.3
	25-May	6.771		7.12
	26-May	6.645		6.81
	27-May	5.842		6.53
	28-May	5.341		7.06
	29-May	4.669		7.25
	30-May	4.123		7.54
	31-May	3.925		7.84
	1-Jun	3.703		8.44
	2-Jun	3.531		8.57
	3-Jun	3.334		8.32
	4-Jun	3.334		8.03
	5-Jun	4.123		8.21
	6-Jun	3.827		7.85
	7-Jun	3.408		7.36
	8-Jun	3.04		7.54
	9-Jun	2.796		8.4
	10-Jun	2.65		8.58
	11-Jun	2.601		8.64
	12-Jun	2.553		9.09
	13-Jun	2.431		9.15
	14-Jun	2.383		9.1
	15-Jun	2.334		8.97
	16-Jun	2.334		9.14
	17-Jun	2.48		9.08
	18-Jun	2.431		9.85
	19-Jun	2.286		10.19
	20-Jun	2.237		10.35
	21-Jun	2.092		10.31
	22-Jun	2.044		10.46
	23-Jun	3.556		10.39
	24-Jun	5.341		9.38
	25-Jun	4.024		9
	26-Jun	3.285		9.61
	27-Jun	2.869		9.12
	28-Jun	2.577		8.98
	29-Jun	2.407		9.74
	30-Jun	2.237		9.65
	1-Jul	2.092		9.62
	2-Jul	1.948		10.98
	3-Jul	1.852		10.79
	4-Jul	2.165		10.49
	5-Jul	2.165		10.77
	6-Jul	2.068		10.87

7-Jul	1.924	10.02
8-Jul	1.996	10.03
9-Jul	1.828	9.87
10-Jul	1.78	10.2
11-Jul	1.708	9.97
12-Jul	1.684	10.17
13-Jul	2.044	10.7
14-Jul	1.948	11.1
15-Jul	1.804	10.65
16-Jul	1.684	10.87
17-Jul	1.612	10.92
18-Jul	1.564	10.72
19-Jul	1.536	11.22
20-Jul	1.466	11.37
21-Jul	1.466	11.09
22-Jul	1.636	10.92
23-Jul	1.828	10.47
24-Jul	1.756	9.71
25-Jul	1.66	9.93
26-Jul	1.588	9.91
27-Jul	1.428	10.45
28-Jul	1.351	11.06
29-Jul	1.276	11.74
30-Jul	1.24	11.91
31-Jul	1.204	12.01
1-Aug	1.204	12.12
2-Aug	1.24	12.09
3-Aug	1.276	11.7
4-Aug	1.828	11.14
5-Aug	2.068	10.57
6-Aug	2.358	10.2
7-Aug	2.02	9.51
8-Aug	1.78	9.35
9-Aug	1.612	9.45
10-Aug	1.506	9.86
11-Aug	1.428	10
12-Aug	1.389	11.31
13-Aug	1.314	11.5
14-Aug	1.428	11.48
15-Aug	1.588	12.11
16-Aug	1.536	12.25
17-Aug	1.389	11.08
18-Aug	1.66	11.6
19-Aug	1.66	12.4
20-Aug	1.756	12.18
21-Aug	1.804	11.96
22-Aug	1.828	12.17
23-Aug	1.828	11.74
24-Aug	1.756	11.13
25-Aug	1.78	10.6
26-Aug	1.684	10.12
27-Aug	1.612	10.29
28-Aug	1.536	10.1
29-Aug	1.466	10.14
30-Aug	1.466	10.63
31-Aug	1.536	11.53
1-Sep	1.588	11.15
2-Sep	1.536	10.84
3-Sep	1.756	10.48
4-Sep	2.189	10.14
5-Sep	1.972	9.78
6-Sep	2.553	10.04
7-Sep	2.407	10.49

	8-Sep	10.737	10.55
	9-Sep	9.484	10.34
	10-Sep	7.377	10.01
	11-Sep	6.369	9.92
	12-Sep	11.25	9.45
	13-Sep	10.455	8.96
	14-Sep	10.225	8.66
	15-Sep	8.695	8.58
	16-Sep	7.478	8.37
	17-Sep	6.771	8.61
	18-Sep	7.68	8.95
	19-Sep	15.511	9
	20-Sep	16.238	8.67
	21-Sep	14.914	8.4
	22-Sep	12.639	8.12
	23-Sep	13.749	7.84
	24-Sep	13.852	7.64
	25-Sep	14.422	7.63
	26-Sep	12.793	7.54
	27-Sep	11.455	7.06
	28-Sep	14.862	7.02
	29-Sep	13.619	7.05
	30-Sep	15.07	7.08
	1-Oct	14.836	6.7
	2-Oct	13.103	6.81
	3-Oct	11.532	6.5
	4-Oct	10.968	5.79
	5-Oct	21.916	6.2

S.F. KOKTULI Q 2.972 HYDROLOGY NODE FRS-2

2007	17-May	6.719	5.94
	18-May	7.047	5.99
	19-May	6.242	6.36
	20-May	6.261	6.63
	21-May	5.879	7.39
	22-May	5.818	7.73
	23-May	5.784	7.16
	24-May	6.254	7.3
	25-May	6.483	7.12
	26-May	6.371	6.81
	27-May	5.929	6.53
	28-May	5.645	7.06
	29-May	5.308	7.25
	30-May	5.109	7.54
	31-May	4.992	7.84
	1-Jun	4.860	8.44
	2-Jun	4.746	8.57
	3-Jun	4.592	8.32
	4-Jun	4.542	8.03
	5-Jun	4.939	8.21
	6-Jun	4.875	7.85
	7-Jun	4.633	7.36
	8-Jun	4.384	7.54
	9-Jun	4.189	8.4
	10-Jun	4.063	8.58
	11-Jun	4.051	8.64
	12-Jun	3.956	9.09
	13-Jun	3.862	9.15
	14-Jun	3.892	9.1
	15-Jun	3.841	8.97
	16-Jun	3.887	9.14
	17-Jun	3.995	9.08
	18-Jun	4.039	9.85

19-Jun	3.864	10.19
20-Jun	3.808	10.35
21-Jun	3.703	10.31
22-Jun	3.696	10.46
23-Jun	4.428	10.39
24-Jun	5.823	9.38
25-Jun	5.130	9
26-Jun	4.707	9.61
27-Jun	4.411	9.12
28-Jun	4.247	8.98
29-Jun	4.089	9.74
30-Jun	3.934	9.65
1-Jul	3.787	9.62
2-Jul	3.661	10.98
3-Jul	3.547	10.79
4-Jul	3.960	10.49
5-Jul	3.915	10.77
6-Jul	3.770	10.87
7-Jul	3.637	10.02
8-Jul	3.705	10.03
9-Jul	3.576	9.87
10-Jul	3.463	10.2
11-Jul	3.361	9.97
12-Jul	3.198	10.17
13-Jul	3.695	10.7
14-Jul	3.728	11.1
15-Jul	3.474	10.65
16-Jul	3.309	10.87
17-Jul	3.014	10.92
18-Jul	2.781	10.72
19-Jul	2.846	11.22
20-Jul	2.767	11.37
21-Jul	2.795	11.09
22-Jul	3.443	10.92
23-Jul	3.634	10.47
24-Jul	3.576	9.71
25-Jul	3.467	9.93
26-Jul	3.202	9.91
27-Jul	2.805	10.45
28-Jul	2.528	11.06
29-Jul	2.424	11.74
30-Jul	2.396	11.91
31-Jul	2.328	12.01
1-Aug	2.212	12.12
2-Aug	2.215	12.09
3-Aug	2.372	11.7
4-Aug	3.269	11.14
5-Aug	3.658	10.57
6-Aug	3.746	10.2
7-Aug	3.584	9.51
8-Aug	3.348	9.35
9-Aug	2.848	9.45
10-Aug	2.509	9.86
11-Aug	2.310	10
12-Aug	2.268	11.31
13-Aug	2.145	11.5
14-Aug	2.304	11.48
15-Aug	3.119	12.11
16-Aug	2.917	12.25
17-Aug	2.370	11.08
18-Aug	2.655	11.6
19-Aug	3.365	12.4
20-Aug	3.391	12.18

	21-Aug	3.369		11.96
	22-Aug	3.432		12.17
	23-Aug	3.411		11.74
	24-Aug	3.396		11.13
	25-Aug	3.489		10.6
	26-Aug	3.308		10.12
	27-Aug	2.978		10.29
	28-Aug	2.693		10.1
	29-Aug	2.478		10.14
	30-Aug	2.344		10.63
	31-Aug	2.410		11.53
	1-Sep	3.060		11.15
	2-Sep	2.718		10.84
	3-Sep	2.864		10.48
	4-Sep	3.774		10.14
	5-Sep	3.524		9.78
	6-Sep	3.916		10.04
	7-Sep	4.008		10.49
	8-Sep	7.286		10.55
	9-Sep	8.366		10.34
	10-Sep	6.910		10.01
	11-Sep	6.278		9.92
	12-Sep	8.061		9.45
	13-Sep	8.097		8.96
	14-Sep	7.955		8.66
	15-Sep	7.316		8.58
	16-Sep	6.701		8.37
	17-Sep	6.329		8.61
	18-Sep	6.430		8.95
	19-Sep	9.832		9
	20-Sep	9.797		8.67
	21-Sep	9.745		8.4
	22-Sep	8.571		8.12
	23-Sep	9.138		7.84
	24-Sep	9.056		7.64
	25-Sep	9.464		7.63
	26-Sep	8.884		7.54
	27-Sep	8.251		7.06
	28-Sep	9.420		7.02
	29-Sep	9.405		7.05
	30-Sep	9.271		7.08
	1-Oct	9.678		6.7
	2-Oct	8.964		6.81
	3-Oct	8.300		6.5
	4-Oct	7.901		5.79
	5-Oct	11.528		6.2

S.F. KOKTULI Q 0.108 HYDROLOGY GAGE SK100A

2007	17-May	11.153		5.94
	18-May	12.037		5.99
	19-May	9.911		6.36
	20-May	9.960		6.63
	21-May	9.003		7.39
	22-May	8.855		7.73
	23-May	8.771		7.16
	24-May	9.942		7.3
	25-May	10.531		7.12
	26-May	10.240		6.81
	27-May	9.126		6.53
	28-May	8.435		7.06
	29-May	7.644		7.25
	30-May	7.189		7.54
	31-May	6.928		7.84

1-Jun	6.637	8.44
2-Jun	6.389	8.57
3-Jun	6.059	8.32
4-Jun	5.955	8.03
5-Jun	6.810	8.21
6-Jun	6.670	7.85
7-Jun	6.147	7.36
8-Jun	5.626	7.54
9-Jun	5.230	8.4
10-Jun	4.981	8.58
11-Jun	4.957	8.64
12-Jun	4.772	9.09
13-Jun	4.591	9.15
14-Jun	4.650	9.1
15-Jun	4.551	8.97
16-Jun	4.639	9.14
17-Jun	4.848	9.08
18-Jun	4.933	9.85
19-Jun	4.596	10.19
20-Jun	4.488	10.35
21-Jun	4.292	10.31
22-Jun	4.279	10.46
23-Jun	5.718	10.39
24-Jun	8.866	9.38
25-Jun	7.238	9
26-Jun	6.305	9.61
27-Jun	5.681	9.12
28-Jun	5.347	8.98
29-Jun	5.032	9.74
30-Jun	4.730	9.65
1-Jul	4.450	9.62
2-Jul	4.215	10.98
3-Jul	4.007	10.79
4-Jul	4.779	10.49
5-Jul	4.693	10.77
6-Jul	4.417	10.87
7-Jul	4.170	10.02
8-Jul	4.296	10.03
9-Jul	4.059	9.87
10-Jul	3.856	10.2
11-Jul	3.675	9.97
12-Jul	3.523	10.17
13-Jul	4.277	10.7
14-Jul	4.340	11.1
15-Jul	3.875	10.65
16-Jul	3.606	10.87
17-Jul	3.421	10.92
18-Jul	3.287	10.72
19-Jul	3.325	11.22
20-Jul	3.279	11.37
21-Jul	3.295	11.09
22-Jul	3.820	10.92
23-Jul	4.166	10.47
24-Jul	4.059	9.71
25-Jul	3.862	9.93
26-Jul	3.525	9.91
27-Jul	3.302	10.45
28-Jul	3.135	11.06
29-Jul	3.071	11.74
30-Jul	3.053	11.91
31-Jul	3.010	12.01
1-Aug	2.934	12.12
2-Aug	2.936	12.09

3-Aug	3.038	11.7
4-Aug	3.562	11.14
5-Aug	4.210	10.57
6-Aug	4.372	10.2
7-Aug	4.073	9.51
8-Aug	3.653	9.35
9-Aug	3.326	9.45
10-Aug	3.124	9.86
11-Aug	2.998	10
12-Aug	2.971	11.31
13-Aug	2.890	11.5
14-Aug	2.994	11.48
15-Aug	3.480	12.11
16-Aug	3.366	12.25
17-Aug	3.037	11.08
18-Aug	3.212	11.6
19-Aug	3.682	12.4
20-Aug	3.728	12.18
21-Aug	3.690	11.96
22-Aug	3.800	12.17
23-Aug	3.763	11.74
24-Aug	3.737	11.13
25-Aug	3.902	10.6
26-Aug	3.605	10.12
27-Aug	3.401	10.29
28-Aug	3.235	10.1
29-Aug	3.104	10.14
30-Aug	3.020	10.63
31-Aug	3.062	11.53
1-Sep	3.447	11.15
2-Sep	3.250	10.84
3-Sep	3.336	10.48
4-Sep	4.426	10.14
5-Sep	3.965	9.78
6-Sep	4.696	10.04
7-Sep	4.874	10.49
8-Sep	12.698	10.55
9-Sep	15.848	10.34
10-Sep	11.665	10.01
11-Sep	10.001	9.92
12-Sep	14.932	9.45
13-Sep	15.038	8.96
14-Sep	14.619	8.66
15-Sep	12.782	8.58
16-Sep	11.104	8.37
17-Sep	10.134	8.61
18-Sep	10.395	8.95
19-Sep	20.524	9
20-Sep	20.409	8.67
21-Sep	20.236	8.4
22-Sep	16.475	8.12
23-Sep	18.255	7.84
24-Sep	17.991	7.64
25-Sep	19.308	7.63
26-Sep	17.448	7.54
27-Sep	15.498	7.06
28-Sep	19.166	7.02
29-Sep	19.117	7.05
30-Sep	18.682	7.08
1-Oct	20.011	6.7
2-Oct	17.701	6.81
3-Oct	15.647	6.5
4-Oct	14.459	5.79

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          5-Oct  26.487          6.2

S.F. KOKTULI    E          0.000 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
    2007  17-May  11.215
          18-May  12.104
          19-May  9.966
          20-May  10.015
          21-May  9.053
          22-May  8.904
          23-May  8.820
          24-May  9.997
          25-May  10.589
          26-May  10.297
          27-May  9.176
          28-May  8.482
          29-May  7.686
          30-May  7.229
          31-May  6.966
           1-Jun  6.674
           2-Jun  6.424
           3-Jun  6.093
           4-Jun  5.988
           5-Jun  6.848
           6-Jun  6.707
           7-Jun  6.181
           8-Jun  5.657
           9-Jun  5.259
          10-Jun  5.009
          11-Jun  4.984
          12-Jun  4.799
          13-Jun  4.617
          14-Jun  4.676
          15-Jun  4.577
          16-Jun  4.665
          17-Jun  4.875
          18-Jun  4.960
          19-Jun  4.621
          20-Jun  4.513
          21-Jun  4.316
          22-Jun  4.303
          23-Jun  5.749
          24-Jun  8.916
          25-Jun  7.278
          26-Jun  6.340
          27-Jun  5.713
          28-Jun  5.376
          29-Jun  5.060
          30-Jun  4.757
           1-Jul  4.474
           2-Jul  4.238
           3-Jul  4.029
           4-Jul  4.805
           5-Jul  4.719
           6-Jul  4.442
           7-Jul  4.193
           8-Jul  4.320
           9-Jul  4.082
          10-Jul  3.877
          11-Jul  3.695
          12-Jul  3.543
          13-Jul  4.301
          14-Jul  4.364
          15-Jul  3.896
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16-Jul	3.626
17-Jul	3.440
18-Jul	3.305
19-Jul	3.344
20-Jul	3.297
21-Jul	3.314
22-Jul	3.841
23-Jul	4.189
24-Jul	4.081
25-Jul	3.884
26-Jul	3.545
27-Jul	3.320
28-Jul	3.152
29-Jul	3.088
30-Jul	3.070
31-Jul	3.026
1-Aug	2.950
2-Aug	2.952
3-Aug	3.054
4-Aug	3.582
5-Aug	4.233
6-Aug	4.396
7-Aug	4.096
8-Aug	3.673
9-Aug	3.345
10-Aug	3.141
11-Aug	3.015
12-Aug	2.988
13-Aug	2.906
14-Aug	3.011
15-Aug	3.499
16-Aug	3.385
17-Aug	3.054
18-Aug	3.230
19-Aug	3.702
20-Aug	3.749
21-Aug	3.710
22-Aug	3.821
23-Aug	3.784
24-Aug	3.758
25-Aug	3.924
26-Aug	3.625
27-Aug	3.420
28-Aug	3.253
29-Aug	3.122
30-Aug	3.037
31-Aug	3.079
1-Sep	3.466
2-Sep	3.268
3-Sep	3.354
4-Sep	4.450
5-Sep	3.987
6-Sep	4.722
7-Sep	4.901
8-Sep	12.768
9-Sep	15.936
10-Sep	11.730
11-Sep	10.057
12-Sep	15.015
13-Sep	15.122
14-Sep	14.700
15-Sep	12.853
16-Sep	11.166

17-Sep	10.190
18-Sep	10.452
19-Sep	20.638
20-Sep	20.523
21-Sep	20.349
22-Sep	16.566
23-Sep	18.357
24-Sep	18.091
25-Sep	19.416
26-Sep	17.545
27-Sep	15.584
28-Sep	19.273
29-Sep	19.223
30-Sep	18.786
1-Oct	20.123
2-Oct	17.800
3-Oct	15.734
4-Oct	14.539
5-Oct	26.634

```
SHADE FILE: SOUTH FORK KOKTULI RIVER, ALASKA

S.F. KOKTULI    H         54.670 HYDROLOGY GAGE SK100F
 1.04455  0.5409    8.60
 0.30000      2.     1.5      0.     0.4     0.6
 0.30000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         53.316 STREAM GEOMETRY NODE SFKSG1
 1.04439 -0.6643    8.60
 0.30000      2.     1.5      0.     0.4     0.6
 0.30000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         51.223 STREAM GEOMETRY NODE SFKSG2
 1.04419  0.7776    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         49.414 STREAM GEOMETRY NODE SFKSG3
 1.04407  1.2361    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         47.560 STREAM GEOMETRY NODE SFKSG4
 1.04401  1.5219    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         45.707 STREAM GEOMETRY NODE SFKSG5
 1.04400 -0.9838    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         44.806 STREAM GEOMETRY NODE SFKSG6
 1.04405  1.5023    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         43.942 STREAM GEOMETRY NODE SFKSG7
 1.04405  0.6674    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         41.076 STREAM GEOMETRY NODE SFKSG8
 1.04384  1.5337    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         39.968 STREAM GEOMETRY NODE SFKSG9
 1.04383 -0.6002    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         38.363 STREAM GEOMETRY NODE SFKSG10
 1.04396  1.5651    8.60
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

TRIBUTARY 119   H         36.062 HYDROLOGY GAGE SK119A
 1.04409 -0.4215   10.66
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    J         34.276 CONFLUENCE WITH TRIBUTARY SFK 1.119
```

```
 1.04395 -0.0979   17.03
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         34.138 STREAM GEOMETRY NODE SFKSG11
 1.04395  1.2848   17.52
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         27.583 STREAM GEOMETRY NODE SFKSG12
 1.04376  1.0491   19.15
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         25.102 STREAM GEOMETRY NODE SFKSG13
 1.04361  1.3667   19.99
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         21.851 STREAM GEOMETRY NODE SFKSG14
 1.04354 -0.5341   20.56
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         20.084 STREAM GEOMETRY NODE SFKSG15
 1.04369 -1.2718   21.13
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         15.358 STREAM GEOMETRY NODE SFKSG16
 1.04384  1.2606   21.96
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C         12.508 STREAM GEOMETRY NODE SFKSG17
 1.04374  1.5702   22.33
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C          9.232 STREAM GEOMETRY NODE SFKSG18
 1.04373 -0.6356   22.74
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C          7.892 STREAM GEOMETRY NODE SFKSG19
 1.04383 -1.3456   23.01
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C          5.104 STREAM GEOMETRY NODE SFKSG20
 1.04390 -1.0035   23.43
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

S.F. KOKTULI    C          2.126 STREAM GEOMETRY NODE SFKSG21
 1.04405 -0.3073   25.17
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6
```

ATTACHMENT 8

SNTEMP Output Files
South Fork Koktuli River

JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT

VERIFICATION TABLE REQUESTS

TABLE NMB.	TABLES	T/F
1	STREAM GEOMETRY AFTER 'M' NODES MERGED	T
2	STREAM GEOMETRY AFTER '0' NODES MERGED	T
3	STREAM GEOMETRY AFTER HYDROLOGY NODES MERGED	T
4	HYDROLOGY WITH MISSING FLOWS ADDED	T
5	HYDROLOGY WITH LATERAL FLOWS ADDED	T
6	COMPOSITE-STR. GEOM., HYDR., & MET. MERGED	T
7	WATER TEMPERATURE REGRESSION STATISTICS	T
8	WATER TEMPERATURE DATA	T
9	VALIDATION STATISTICS	T
10	JOB CONTROL FILE	T

NODE INFORMATION
NETWORK NODES

	B	C	D	E	A	J	K	M	O	P	Q	R	S	T	V
SPATIAL OUTPUT REQUESTS	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NUMBER	1	21	0	1	2	1	0	0	0	0	9	0	0	0	0

NUMBER OF SKELETON SUBNETWORK NODES (H,B,T,J,S,E) = 35

NUMBER OF STREAM GEOMETRY SUBNETWORK NODES (H,J,S,C) = 27

NUMBER OF HYDROLOGY SUBNETWORK NODES (Q,D,P,R,V,K) = 15

NUMBER OF COMPOSITE NETWORK NODES = 0

NUMBER OF NODES REQUIRING REGRESSION ANALYSIS = 0

NUMBER OF STUDY SUBNETWORK NODES (H,B,T,J,S,E,O) = 6

```
MISC. CONTROL FLAGS        T/F
--------------------

HYDROLOGY WARNING MESSAGE   T
 SUPPRESSION FLAG

REGRESSION NEED FLAG        T

SHADE DATA AVAILABLE        T

GLOBAL SHADE MODE           T


                                  TEMPORAL INFORMATION
                                  --------------------

                                        YEARLY
                                         ------

NUMBER OF YEARS OF HISTORICAL DATA =    1          FIRST YEAR OF HISTORICAL DATA=   0

NUMBER OF YEARS OF SYNTHETIC DATA =    0

STARTING YEAR SEQUENCE NUMBER OF OUTPUT =    1     LAST YEAR SEQUENCE NUMBER OF OUTPUT =   1


                                    BY TIME PERIOD
                                      --------------

FIRST TIME PERIOD SEQUENCE NUMBER OF OUTPUT =    1    LAST TIME PERIOD SEQUENCE NUMBER OF OUTPUT = 142

STARTING TIME PERIOD SEQUENCE NUMBER =    0       LAST TIME PERIOD SEQUENCE NUMBER FOR =    0
 FOR AIR TEMPERATURE CORRECTION                       AIR TEMPERATURE CORRECTION

NUMBER OF TIME PERIODS PER YEAR =  142


USER SUPPLIED EVAPORATION FACTORS
---------------------------------

    EFA =  0.0000 (-)

    EFB =  0.0000 (1/MPS)

    EFC =  0.0000 (1/SQ.RT.(MPS))

USER SUPPLIED BOWEN RATIO
-------------------------
   BOWEN RATIO=   0.0000 (-)
```

GLOBAL CALIBRATION PARAMETERS

AIR TEMPERATURE CALIBRATION CONSTANT = 0.000 (C)

AIR TEMPERATURE CALIBRATION COEFFICIENT = 0.0000 (-)

WIND SPEED CALIBRATION CONSTANT = 0.000 (MPS)

WIND SPEED CALIBRATION COEFFICIENT = 0.0000 (-)

HUMIDITY CALIBRATION CONSTANT = 0.000 (DEC. OF RH)

HUMIDITY CALIBRATION COEFFICIENT = 0.0000 (-)

SUNSHINE CALIBRATION CONSTANT = 0.000 (DEC. OF S/SO)

SUNSHINE CALIBRATION COEFFICIENT = 0.0000 (-)

SOLAR CALIBRATION CONSTANT = 0.000 (J/SQ*M/S)

SOLAR CALIBRATION COEFFICIENT = 0.0000 (-)

AIR TEMPERATURE CORRECTION FACTORS

1ST ELEVATION = 0.000 (M)

1ST FACTOR = 0.0000 (C/M)

2ND ELEVATION = 0.000 (M)

2ND FACTOR = 0.0000 (C/M)

3RD ELEVATION = 0.000 (M)

3RD FACTOR = 0.0000 (C/M)

4TH ELEVATION = 0.000 (M)

4TH FACTOR = 0.0000 (C/M)

5TH ELEVATION = 0.000 (M)

5TH FACTOR = 0.0000 (C/M)

MAXIMUM DAILY
AIR TEMPERATURE REGRESSION COEFFICIENTS

A0 = 0.000 (C)

A1 = 0.0000 (C PER HSX)

A2 = 0.000 (C PER RH)

A3 = 0.0000 (C PER S/SO)

STREAM SPACIAL OUTPUT REQUEST

NAME	FROM (KM)	TO (KM)
S.F. KOKTULI	54.7	0.0
TRIBUTARY 119	36.1	34.3
STR. NAME # 3	0.0	0.0
STR. NAME # 4	0.0	0.0
STR. NAME # 5	0.0	0.0
STR. NAME # 6	0.0	0.0
STR. NAME # 7	0.0	0.0
STR. NAME # 8	0.0	0.0
STR. NAME # 9	0.0	0.0
STR. NAME # 10	0.0	0.0

STREAM NETWORK FILES	NAMES
TIME PERIOD	SFKTME.DAT
METEOROLOGY	SFKMET.DAT
SKELETON NETWORK	SFKSKL.DAT
STREAM GEOMETRY	SFKSTR.DAT

```
          STUDY       SFKSTD.DAT
HYDROLOGY DATA        SFKHDR.DAT
HYDROLOGY NODE        SFKHYD.DAT
          SHADE       SFKSHD.DAT
```

```
************************************** TABLE I: STREAM GEOMETRY AFTER 'M' NODES MERGED ****************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDCHG' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1) ADD'M' NODES TO THE STREAM GEOMETRY ('KGNSTRG') FILE WHEN THE ELEVATION BETWEEN THE UPSTREAM & DOWNSTREAM SUBREACH
     NODES WOULD OTHERWISE EXCEED 300 METERS;
      (2) CALCULATE THE AVERAGE LATITUDES & ELEVATIONS FOR THE REACH;
      (3) CALCULATE THE STREAM GRADIENT & STREAMBED TEMPERATURE;
      (4) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF 'KSTRMGM'.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     35.     27.     15.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
S.F. KOKTULI        54.7     0.0
TRIBUTARY 119       36.1    34.3
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	-STREAM WIDTH- EXP. (----)	----SHADE---- MIN. (DEC)	----SHADE---- MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	S.F. KOKTULI	H	54.7	1.04447	287.	0.040	0.00622	7.20	0.1549	0.0000	0.0000	0.47	1.65
2	S.F. KOKTULI	C	53.3	1.04429	280.	0.040	0.00271	6.78	0.1549	0.0000	0.0000	0.52	1.65
3	S.F. KOKTULI	C	51.2	1.04413	276.	0.040	0.00201	6.58	0.1549	0.0000	0.0000	0.55	1.65
4	S.F. KOKTULI	C	49.4	1.04404	271.	0.040	0.00271	6.58	0.1549	0.0000	0.0000	0.58	1.65
5	S.F. KOKTULI	C	47.6	1.04401	265.	0.040	0.00383	6.58	0.1549	0.0000	0.0000	0.62	1.65
6	S.F. KOKTULI	C	45.7	1.04402	261.	0.040	0.00251	6.58	0.1549	0.0000	0.0000	0.65	1.65
7	S.F. KOKTULI	C	44.8	1.04405	258.	0.040	0.00272	6.58	0.1549	0.0000	0.0000	0.66	1.65
8	S.F. KOKTULI	C	43.9	1.04395	256.	0.040	0.00086	6.58	0.1549	0.0000	0.0000	0.68	1.65
9	S.F. KOKTULI	C	41.1	1.04384	254.	0.040	0.00053	6.58	0.1549	0.0000	0.0000	0.69	1.65
10	S.F. KOKTULI	C	40.0	1.04390	254.	0.040	0.00054	6.58	0.1549	0.0000	0.0000	0.69	1.65
11	S.F. KOKTULI	C	38.4	1.04395	250.	0.040	0.00175	6.58	0.1549	0.0000	0.0000	0.72	1.65
12	S.F. KOKTULI	B	34.3										
13	TRIBUTARY 119	H	36.1	1.04402	250.	0.040	0.00401	8.70	0.1549	0.0000	0.0000	0.72	1.65
14	TRIBUTARY 119	T	34.3										
15	S.F. KOKTULI	J	34.3	1.04395	246.	0.040	0.00145	11.88	0.1549	0.0000	0.0000	0.75	1.65
16	S.F. KOKTULI	C	34.1	1.04385	240.	0.040	0.00180	12.13	0.1549	0.0000	0.0000	0.78	1.65
17	S.F. KOKTULI	C	27.6	1.04368	231.	0.040	0.00273	12.56	0.1549	0.0000	0.0000	0.85	1.65
18	S.F. KOKTULI	C	25.1	1.04358	225.	0.040	0.00166	12.90	0.1549	0.0000	0.0000	0.89	1.65
19	S.F. KOKTULI	C	21.9	1.04361	220.	0.040	0.00201	13.27	0.1549	0.0000	0.0000	0.91	1.65
20	S.F. KOKTULI	C	20.1	1.04377	213.	0.040	0.00231	13.64	0.1549	0.0000	0.0000	0.96	1.65
21	S.F. KOKTULI	C	15.4	1.04379	205.	0.040	0.00189	14.16	0.1549	0.0000	0.0000	1.02	1.65
22	S.F. KOKTULI	C	12.5	1.04374	199.	0.040	0.00167	14.28	0.1549	0.0000	0.0000	1.05	1.65
23	S.F. KOKTULI	C	9.2	1.04378	195.	0.040	0.00172	14.41	0.1549	0.0000	0.0000	1.08	1.65
24	S.F. KOKTULI	C	7.9	1.04386	191.	0.040	0.00245	14.51	0.1549	0.0000	0.0000	1.11	1.65
25	S.F. KOKTULI	C	5.1	1.04397	184.	0.040	0.00000	14.64	0.1549	0.0000	0.0000	1.16	1.65
26	S.F. KOKTULI	C	5.1	1.04418	176.	0.040	0.00121	15.22	0.1549	0.0000	0.0000	1.20	1.65
27	S.F. KOKTULI	E	0.0										

NORMAL COMPLETION OF 'ADDCHG'.

```
****************************************** TABLE II: STREAM GEOMETRY AFTER 'O' NODES MERGED ****************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDOUT' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1)MERGE THE OUTPUT ('O') NODES FROM THE STUDY ('KGNSTDY') FILE WITH THE STREAM GEOMETRY ('KSTRMGM') FILE;
      (2) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF THE 'KSTRMGM' FILE.

                            ** JOB CONTROL DATA **
JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     35.     27.     15.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
S.F. KOKTULI        54.7     0.0
TRIBUTARY 119       36.1    34.3
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	EXP. (----)	----SHADE---- MIN. (DEC)	MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	S.F. KOKTULI	H	54.7	1.04447	287.	0.040	0.00622	7.20	0.1549	0.0000	0.0000	0.47	1.65
2	S.F. KOKTULI	C	53.3	1.04429	280.	0.040	0.00271	6.78	0.1549	0.0000	0.0000	0.52	1.65
3	S.F. KOKTULI	C	51.2	1.04413	276.	0.040	0.00201	6.58	0.1549	0.0000	0.0000	0.55	1.65
4	S.F. KOKTULI	C	49.4	1.04404	271.	0.040	0.00271	6.58	0.1549	0.0000	0.0000	0.58	1.65
5	S.F. KOKTULI	C	47.6	1.04401	265.	0.040	0.00383	6.58	0.1549	0.0000	0.0000	0.62	1.65
6	S.F. KOKTULI	C	45.7	1.04402	261.	0.040	0.00251	6.58	0.1549	0.0000	0.0000	0.65	1.65
7	S.F. KOKTULI	C	44.8	1.04405	258.	0.040	0.00272	6.58	0.1549	0.0000	0.0000	0.66	1.65
8	S.F. KOKTULI	C	43.9	1.04395	256.	0.040	0.00086	6.58	0.1549	0.0000	0.0000	0.68	1.65
9	S.F. KOKTULI	C	41.1	1.04384	254.	0.040	0.00053	6.58	0.1549	0.0000	0.0000	0.69	1.65
10	S.F. KOKTULI	C	40.0	1.04390	254.	0.040	0.00054	6.58	0.1549	0.0000	0.0000	0.69	1.65
11	S.F. KOKTULI	C	38.4	1.04395	250.	0.040	0.00175	6.58	0.1549	0.0000	0.0000	0.72	1.65
12	S.F. KOKTULI	B	34.3	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
13	TRIBUTARY 119	H	36.1	1.04402	250.	0.040	0.00401	8.70	0.1549	0.0000	0.0000	0.72	1.65
14	TRIBUTARY 119	T	34.3	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
15	S.F. KOKTULI	J	34.3	1.04395	246.	0.040	0.00145	11.88	0.1549	0.0000	0.0000	0.75	1.65
16	S.F. KOKTULI	C	34.1	1.04385	240.	0.040	0.00180	12.13	0.1549	0.0000	0.0000	0.78	1.65
17	S.F. KOKTULI	C	27.6	1.04368	231.	0.040	0.00273	12.56	0.1549	0.0000	0.0000	0.85	1.65
18	S.F. KOKTULI	C	25.1	1.04358	225.	0.040	0.00166	12.90	0.1549	0.0000	0.0000	0.89	1.65
19	S.F. KOKTULI	C	21.9	1.04361	220.	0.040	0.00201	13.27	0.1549	0.0000	0.0000	0.91	1.65
20	S.F. KOKTULI	C	20.1	1.04377	213.	0.040	0.00231	13.64	0.1549	0.0000	0.0000	0.96	1.65
21	S.F. KOKTULI	C	15.4	1.04379	205.	0.040	0.00189	14.16	0.1549	0.0000	0.0000	1.02	1.65
22	S.F. KOKTULI	C	12.5	1.04374	199.	0.040	0.00167	14.28	0.1549	0.0000	0.0000	1.05	1.65
23	S.F. KOKTULI	C	9.2	1.04378	195.	0.040	0.00172	14.41	0.1549	0.0000	0.0000	1.08	1.65
24	S.F. KOKTULI	C	7.9	1.04386	191.	0.040	0.00245	14.51	0.1549	0.0000	0.0000	1.11	1.65
25	S.F. KOKTULI	C	5.1	1.04397	184.	0.040	0.00000	14.64	0.1549	0.0000	0.0000	1.16	1.65
26	S.F. KOKTULI	C	5.1	1.04418	176.	0.040	0.00121	15.22	0.1549	0.0000	0.0000	1.20	1.65
27	S.F. KOKTULI	E	0.0	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00

NORMAL COMPLETION OF 'ADDOUT'.

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********************************** TABLE III: STREAM GEOMETRY AFTER HYDROLOGY NODES MERGED ************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDHYD' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1)MERGE THE HYDROLOGY ('D', 'K', 'P', 'Q', 'R', AND 'V') NODES FROM THE HYDROLOGY ('KGNSHDR') FILE WITH THE STREAM
          GEOMETRY ('KSTRMGM') FILE;
      (2) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF THE 'KSTRMGM' FILE.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     35.     27.     15.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
S.F. KOKTULI        54.7     0.0
TRIBUTARY 119       36.1    34.3
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
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PAGE NO. 1

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	EXP. (----)	----SHADE---- MIN. (DEC)	MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	S.F. KOKTULI	H	54.7	1.04447	287.	0.040	0.00622	7.20	0.1549	0.0000	0.0000	0.47	1.65
2	S.F. KOKTULI	C	53.3	1.04429	280.	0.040	0.00271	6.78	0.1549	0.0000	0.0000	0.52	1.65
3	S.F. KOKTULI	C	51.2	1.04413	276.	0.040	0.00201	6.58	0.1549	0.0000	0.0000	0.55	1.65
4	S.F. KOKTULI	Q	51.1	1.04413	276.	0.040	0.00201	6.58	0.1549	0.0000	0.0000	0.55	1.65
5	S.F. KOKTULI	C	49.4	1.04404	271.	0.040	0.00271	6.58	0.1549	0.0000	0.0000	0.58	1.65
6	S.F. KOKTULI	C	47.6	1.04401	265.	0.040	0.00383	6.58	0.1549	0.0000	0.0000	0.62	1.65
7	S.F. KOKTULI	C	45.7	1.04402	261.	0.040	0.00251	6.58	0.1549	0.0000	0.0000	0.65	1.65
8	S.F. KOKTULI	C	44.8	1.04405	258.	0.040	0.00272	6.58	0.1549	0.0000	0.0000	0.66	1.65
9	S.F. KOKTULI	C	43.9	1.04395	256.	0.040	0.00086	6.58	0.1549	0.0000	0.0000	0.68	1.65
10	S.F. KOKTULI	Q	43.6	1.04395	256.	0.040	0.00086	6.58	0.1549	0.0000	0.0000	0.68	1.65
11	S.F. KOKTULI	C	41.1	1.04384	254.	0.040	0.00053	6.58	0.1549	0.0000	0.0000	0.69	1.65
12	S.F. KOKTULI	C	40.0	1.04390	254.	0.040	0.00054	6.58	0.1549	0.0000	0.0000	0.69	1.65
13	S.F. KOKTULI	C	38.4	1.04395	250.	0.040	0.00175	6.58	0.1549	0.0000	0.0000	0.72	1.65
14	S.F. KOKTULI	Q	35.8	1.04395	250.	0.040	0.00175	6.58	0.1549	0.0000	0.0000	0.72	1.65
15	S.F. KOKTULI	B	34.3										
16	TRIBUTARY 119	H	36.1	1.04402	250.	0.040	0.00401	8.70	0.1549	0.0000	0.0000	0.72	1.65
17	TRIBUTARY 119	T	34.3										
18	S.F. KOKTULI	J	34.3	1.04395	246.	0.040	0.00145	11.88	0.1549	0.0000	0.0000	0.75	1.65
19	S.F. KOKTULI	C	34.1	1.04385	240.	0.040	0.00180	12.13	0.1549	0.0000	0.0000	0.78	1.65
20	S.F. KOKTULI	Q	34.0	1.04385	240.	0.040	0.00180	12.13	0.1549	0.0000	0.0000	0.78	1.65
21	S.F. KOKTULI	Q	29.3	1.04385	240.	0.040	0.00180	12.13	0.1549	0.0000	0.0000	0.78	1.65
22	S.F. KOKTULI	C	27.6	1.04368	231.	0.040	0.00273	12.56	0.1549	0.0000	0.0000	0.85	1.65
23	S.F. KOKTULI	C	25.1	1.04358	225.	0.040	0.00166	12.90	0.1549	0.0000	0.0000	0.89	1.65
24	S.F. KOKTULI	Q	24.9	1.04358	225.	0.040	0.00166	12.90	0.1549	0.0000	0.0000	0.89	1.65
25	S.F. KOKTULI	C	21.9	1.04361	220.	0.040	0.00201	13.27	0.1549	0.0000	0.0000	0.91	1.65
26	S.F. KOKTULI	C	20.1	1.04377	213.	0.040	0.00231	13.64	0.1549	0.0000	0.0000	0.96	1.65
27	S.F. KOKTULI	C	15.4	1.04379	205.	0.040	0.00189	14.16	0.1549	0.0000	0.0000	1.02	1.65
28	S.F. KOKTULI	Q	13.9	1.04379	205.	0.040	0.00189	14.16	0.1549	0.0000	0.0000	1.02	1.65
29	S.F. KOKTULI	C	12.5	1.04374	199.	0.040	0.00167	14.28	0.1549	0.0000	0.0000	1.05	1.65
30	S.F. KOKTULI	C	9.2	1.04378	195.	0.040	0.00172	14.41	0.1549	0.0000	0.0000	1.08	1.65
31	S.F. KOKTULI	C	7.9	1.04386	191.	0.040	0.00245	14.51	0.1549	0.0000	0.0000	1.11	1.65
32	S.F. KOKTULI	C	5.1	1.04397	184.	0.040	0.00000	14.64	0.1549	0.0000	0.0000	1.16	1.65
33	S.F. KOKTULI	C	5.1	1.04418	176.	0.040	0.00121	15.22	0.1549	0.0000	0.0000	1.20	1.65
34	S.F. KOKTULI	Q	3.0	1.04418	176.	0.040	0.00121	15.22	0.1549	0.0000	0.0000	1.20	1.65
35	S.F. KOKTULI	Q	0.1	1.04418	176.	0.040	0.00121	15.22	0.1549	0.0000	0.0000	1.20	1.65
36	S.F. KOKTULI	E	0.0										

NORMAL COMPLETION OF 'ADDHYD'.

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****************************************** TABLE IV: HYDROLOGY WITH MISSING FLOWS ADDED ******************************************
    BEGIN HYDROLOGY VERIFICATION OF 'HYDFIL' PROGRAM. THE PURPOSE OF THIS PROGRAM IS:
       (1) FILL IN IS HISTORICAL FLOWS WITH A 'BEST' ESTIMATE BASED ON AVAILABLE DATA;
       (2) FLAG ANY MISSING, BUT NECESSARY, INITIAL WATER TEMPERATURES WITH A '-1.';
       (3) FILL IN ANY MISSING LATERAL INFLOW WATER TEMPERATURES WITH THE LOCAL MEAN ANNUAL AIR TEMPERATURES;
       (4) CREATE THE UNFORMATTED 'KHYDR2&3' FILES.
 THIS VERIFICATION IS A FORMATTED VERSIONOF THE 'KHYDR4' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTT
       1.      0.      0.    142.     35.     27.     15.      6.     36.      0.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
 SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
 S.F. KOKTULI        54.7     0.0
 TRIBUTARY 119       36.1    34.3
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
1	S.F. KOKTULI	H	54.7	2007	17-May	1.245	3.45	4.45	1	1.245	0.000:	HYDROLOGY GAGE SK100F
					18-May	1.395	4.22	5.22	1	1.395	0.000:	
					19-May	1.175	4.84	5.84	1	1.175	0.000:	
					20-May	1.125	4.52	5.52	1	1.125	0.000:	
					21-May	1.024	5.53	6.53	1	1.024	0.000:	
					22-May	1.060	5.45	6.45	1	1.060	0.000:	
					23-May	1.121	5.62	6.62	1	1.121	0.000:	
					24-May	1.221	5.50	6.50	1	1.221	0.000:	
					25-May	1.438	6.27	7.27	1	1.438	0.000:	
					26-May	1.312	6.53	7.53	1	1.312	0.000:	
					27-May	1.193	7.27	8.27	1	1.193	0.000:	
					28-May	1.078	7.36	8.36	1	1.078	0.000:	
					29-May	1.051	7.67	8.67	1	1.051	0.000:	
					30-May	0.888	8.28	9.28	1	0.888	0.000:	
					31-May	0.820	7.66	8.66	1	0.820	0.000:	
					1-Jun	0.732	7.24	8.24	1	0.732	0.000:	
					2-Jun	0.758	7.24	8.24	1	0.758	0.000:	
					3-Jun	0.723	8.69	9.69	1	0.723	0.000:	
					4-Jun	0.725	7.43	8.43	1	0.725	0.000:	
					5-Jun	0.956	7.08	8.08	1	0.956	0.000:	
					6-Jun	0.969	8.36	9.36	1	0.969	0.000:	
					7-Jun	0.870	8.93	9.93	1	0.870	0.000:	
					8-Jun	0.780	8.66	9.66	1	0.780	0.000:	
					9-Jun	0.748	8.90	9.90	1	0.748	0.000:	
					10-Jun	0.700	9.06	10.06	1	0.700	0.000:	
					11-Jun	0.599	9.58	10.58	1	0.599	0.000:	
					12-Jun	0.665	9.40	10.40	1	0.665	0.000:	
					13-Jun	0.633	9.93	10.93	1	0.633	0.000:	
					14-Jun	0.620	10.36	11.36	1	0.620	0.000:	
					15-Jun	0.665	11.51	12.51	1	0.665	0.000:	
					16-Jun	0.555	10.71	11.71	1	0.555	0.000:	
					17-Jun	0.622	9.49	10.49	1	0.622	0.000:	
					18-Jun	0.650	11.68	12.68	1	0.650	0.000:	
					19-Jun	0.709	11.55	12.55	1	0.709	0.000:	
					20-Jun	0.634	9.47	10.47	1	0.634	0.000:	
					21-Jun	0.500	11.84	12.84	1	0.500	0.000:	
					22-Jun	0.460	9.31	10.31	1	0.460	0.000:	
					23-Jun	0.740	7.29	8.29	1	0.740	0.000:	
					24-Jun	1.373	8.37	9.37	1	1.373	0.000:	
					25-Jun	1.016	8.66	9.66	1	1.016	0.000:	
					26-Jun	0.839	9.96	10.96	1	0.839	0.000:	
					27-Jun	0.669	12.07	13.07	1	0.669	0.000:	
					28-Jun	0.607	12.08	13.08	1	0.607	0.000:	
					29-Jun	0.560	13.08	14.08	1	0.560	0.000:	
					30-Jun	0.508	13.58	14.58	1	0.508	0.000:	
					1-Jul	0.513	13.32	14.32	1	0.513	0.000:	

2-Jul	0.475	14.16	15.16	1	0.475	0.000:
3-Jul	0.416	15.27	16.27	1	0.416	0.000:
4-Jul	0.544	12.41	13.41	1	0.544	0.000:
5-Jul	0.623	13.06	14.06	1	0.623	0.000:
6-Jul	0.588	12.52	13.52	1	0.588	0.000:
7-Jul	0.530	13.72	14.72	1	0.530	0.000:
8-Jul	0.492	13.78	14.78	1	0.492	0.000:
9-Jul	0.508	13.67	14.67	1	0.508	0.000:
10-Jul	0.447	14.12	15.12	1	0.447	0.000:
11-Jul	0.390	14.84	15.84	1	0.390	0.000:
12-Jul	0.416	15.11	16.11	1	0.416	0.000:
13-Jul	0.421	12.94	13.94	1	0.421	0.000:
14-Jul	0.473	13.21	14.21	1	0.473	0.000:
15-Jul	0.489	13.54	14.54	1	0.489	0.000:
16-Jul	0.459	14.37	15.37	1	0.459	0.000:
17-Jul	0.345	15.99	16.99	1	0.345	0.000:
18-Jul	0.330	14.45	15.45	1	0.330	0.000:
19-Jul	0.357	14.64	15.64	1	0.357	0.000:
20-Jul	0.325	17.49	18.49	1	0.325	0.000:
21-Jul	0.275	15.18	16.18	1	0.275	0.000:
22-Jul	0.299	11.11	12.11	1	0.299	0.000:
23-Jul	0.407	10.94	11.94	1	0.407	0.000:
24-Jul	0.501	11.51	12.51	1	0.501	0.000:
25-Jul	0.501	13.04	14.04	1	0.501	0.000:
26-Jul	0.400	14.75	15.75	1	0.400	0.000:
27-Jul	0.380	17.26	18.26	1	0.380	0.000:
28-Jul	0.305	17.75	18.75	1	0.305	0.000:
29-Jul	0.325	17.31	18.31	1	0.325	0.000:
30-Jul	0.261	16.76	17.76	1	0.261	0.000:
31-Jul	0.217	14.99	15.99	1	0.217	0.000:
1-Aug	0.197	11.99	12.99	1	0.197	0.000:
2-Aug	0.221	10.93	11.93	1	0.221	0.000:
3-Aug	0.280	11.04	12.04	1	0.280	0.000:
4-Aug	0.335	11.18	12.18	1	0.335	0.000:
5-Aug	0.512	10.96	11.96	1	0.512	0.000:
6-Aug	0.858	12.04	13.04	1	0.858	0.000:
7-Aug	0.622	13.30	14.30	1	0.622	0.000:
8-Aug	0.378	13.05	14.05	1	0.378	0.000:
9-Aug	0.295	14.53	15.53	1	0.295	0.000:
10-Aug	0.285	16.52	17.52	1	0.285	0.000:
11-Aug	0.284	16.70	17.70	1	0.284	0.000:
12-Aug	0.269	17.61	18.61	1	0.269	0.000:
13-Aug	0.264	18.10	19.10	1	0.264	0.000:
14-Aug	0.248	14.24	15.24	1	0.248	0.000:
15-Aug	0.368	12.38	13.38	1	0.368	0.000:
16-Aug	0.279	14.10	15.10	1	0.279	0.000:
17-Aug	0.252	14.01	15.01	1	0.252	0.000:
18-Aug	0.255	11.86	12.86	1	0.255	0.000:
19-Aug	0.397	11.17	12.17	1	0.397	0.000:
20-Aug	0.414	11.48	12.48	1	0.414	0.000:
21-Aug	0.422	11.06	12.06	1	0.422	0.000:

22-Aug	0.426	10.90	11.90	1	0.426	0.000:
23-Aug	0.426	11.71	12.71	1	0.426	0.000:
24-Aug	0.414	12.56	13.56	1	0.414	0.000:
25-Aug	0.418	14.01	15.01	1	0.418	0.000:
26-Aug	0.402	13.33	14.33	1	0.402	0.000:
27-Aug	0.389	13.64	14.64	1	0.389	0.000:
28-Aug	0.377	13.99	14.99	1	0.377	0.000:
29-Aug	0.368	14.52	15.52	1	0.368	0.000:
30-Aug	0.368	12.40	13.40	1	0.368	0.000:
31-Aug	0.377	12.65	13.65	1	0.377	0.000:
1-Sep	0.385	12.70	13.70	1	0.385	0.000:
2-Sep	0.377	12.14	13.14	1	0.377	0.000:
3-Sep	0.414	10.54	11.54	1	0.414	0.000:
4-Sep	0.489	10.20	11.20	1	0.489	0.000:
5-Sep	0.451	11.39	12.39	1	0.451	0.000:
6-Sep	0.551	10.91	11.91	1	0.551	0.000:
7-Sep	0.526	9.53	10.53	1	0.526	0.000:
8-Sep	1.903	9.64	10.64	1	1.903	0.000:
9-Sep	1.700	10.32	11.32	1	1.700	0.000:
10-Sep	1.356	10.29	11.29	1	1.356	0.000:
11-Sep	1.190	7.75	8.75	1	1.190	0.000:
12-Sep	1.986	8.34	9.34	1	1.986	0.000:
13-Sep	1.858	8.26	9.26	1	1.858	0.000:
14-Sep	1.820	8.33	9.33	1	1.820	0.000:
15-Sep	1.571	7.72	8.72	1	1.571	0.000:
16-Sep	1.372	7.84	8.84	1	1.372	0.000:
17-Sep	1.256	7.63	8.63	1	1.256	0.000:
18-Sep	1.405	7.51	8.51	1	1.405	0.000:
19-Sep	2.671	7.95	8.95	1	2.671	0.000:
20-Sep	2.787	7.29	8.29	1	2.787	0.000:
21-Sep	2.575	7.35	8.35	1	2.575	0.000:
22-Sep	2.210	6.53	7.53	1	2.210	0.000:
23-Sep	2.389	6.56	7.56	1	2.389	0.000:
24-Sep	2.405	6.43	7.43	1	2.405	0.000:
25-Sep	2.496	6.12	7.12	1	2.496	0.000:
26-Sep	2.235	6.11	7.11	1	2.235	0.000:
27-Sep	2.019	5.95	6.95	1	2.019	0.000:
28-Sep	2.567	5.53	6.53	1	2.567	0.000:
29-Sep	2.368	5.37	6.37	1	2.368	0.000:
30-Sep	2.600	5.24	6.24	1	2.600	0.000:
1-Oct	2.563	5.33	6.33	1	2.563	0.000:
2-Oct	2.285	4.60	5.60	1	2.285	0.000:
3-Oct	2.032	3.51	4.51	1	2.032	0.000:
4-Oct	1.941	3.07	4.07	1	1.941	0.000:
5-Oct	3.687	2.40	3.40	1	3.687	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
2	S.F. KOKTULI	Q	51.1	2007	17-May	2.565		4.45	1	2.565	0.000:	HYDROLOGY NODE SK100LF2
					18-May	2.841		5.22	1	2.841	0.000:	
					19-May	2.435		5.84	1	2.435	0.000:	
					20-May	2.341		5.52	1	2.341	0.000:	
					21-May	2.152		6.53	1	2.152	0.000:	
					22-May	2.220		6.45	1	2.220	0.000:	
					23-May	2.334		6.62	1	2.334	0.000:	
					24-May	2.521		6.50	1	2.521	0.000:	
					25-May	2.920		7.27	1	2.920	0.000:	
					26-May	2.689		7.53	1	2.689	0.000:	
					27-May	2.469		8.27	1	2.469	0.000:	
					28-May	2.252		8.36	1	2.252	0.000:	
					29-May	2.203		8.67	1	2.203	0.000:	
					30-May	1.894		9.28	1	1.894	0.000:	
					31-May	1.762		8.66	1	1.762	0.000:	
					1-Jun	1.591		8.24	1	1.591	0.000:	
					2-Jun	1.642		8.24	1	1.642	0.000:	
					3-Jun	1.573		9.69	1	1.573	0.000:	
					4-Jun	1.577		8.43	1	1.577	0.000:	
					5-Jun	2.022		8.08	1	2.022	0.000:	
					6-Jun	2.047		9.36	1	2.047	0.000:	
					7-Jun	1.858		9.93	1	1.858	0.000:	
					8-Jun	1.684		9.66	1	1.684	0.000:	
					9-Jun	1.621		9.90	1	1.621	0.000:	
					10-Jun	1.529		10.06	1	1.529	0.000:	
					11-Jun	1.329		10.58	1	1.329	0.000:	
					12-Jun	1.459		10.40	1	1.459	0.000:	
					13-Jun	1.395		10.93	1	1.395	0.000:	
					14-Jun	1.370		11.36	1	1.370	0.000:	
					15-Jun	1.459		12.51	1	1.459	0.000:	
					16-Jun	1.240		11.71	1	1.240	0.000:	
					17-Jun	1.374		10.49	1	1.374	0.000:	
					18-Jun	1.430		12.68	1	1.430	0.000:	
					19-Jun	1.545		12.55	1	1.545	0.000:	
					20-Jun	1.397		10.47	1	1.397	0.000:	
					21-Jun	1.129		12.84	1	1.129	0.000:	
					22-Jun	1.048		10.31	1	1.048	0.000:	
					23-Jun	1.606		8.29	1	1.606	0.000:	
					24-Jun	2.801		9.37	1	2.801	0.000:	
					25-Jun	2.137		9.66	1	2.137	0.000:	
					26-Jun	1.798		10.96	1	1.798	0.000:	
					27-Jun	1.467		13.07	1	1.467	0.000:	
					28-Jun	1.344		13.08	1	1.344	0.000:	
					29-Jun	1.250		14.08	1	1.250	0.000:	
					30-Jun	1.145		14.58	1	1.145	0.000:	
					1-Jul	1.155		14.32	1	1.155	0.000:	

2-Jul	1.078	15.16	1	1.078	0.000:
3-Jul	0.956	16.27	1	0.956	0.000:
4-Jul	1.218	13.41	1	1.218	0.000:
5-Jul	1.377	14.06	1	1.377	0.000:
6-Jul	1.305	13.52	1	1.305	0.000:
7-Jul	1.190	14.72	1	1.190	0.000:
8-Jul	1.113	14.78	1	1.113	0.000:
9-Jul	1.146	14.67	1	1.146	0.000:
10-Jul	1.020	15.12	1	1.020	0.000:
11-Jul	0.903	15.84	1	0.903	0.000:
12-Jul	0.957	16.11	1	0.957	0.000:
13-Jul	0.967	13.94	1	0.967	0.000:
14-Jul	1.073	14.21	1	1.073	0.000:
15-Jul	1.107	14.54	1	1.107	0.000:
16-Jul	1.045	15.37	1	1.045	0.000:
17-Jul	0.809	16.99	1	0.809	0.000:
18-Jul	0.777	15.45	1	0.777	0.000:
19-Jul	0.833	15.64	1	0.833	0.000:
20-Jul	0.766	18.49	1	0.766	0.000:
21-Jul	0.624	16.18	1	0.624	0.000:
22-Jul	0.711	12.11	1	0.711	0.000:
23-Jul	0.937	11.94	1	0.937	0.000:
24-Jul	1.131	12.51	1	1.131	0.000:
25-Jul	1.130	14.04	1	1.130	0.000:
26-Jul	0.923	15.75	1	0.923	0.000:
27-Jul	0.882	18.26	1	0.882	0.000:
28-Jul	0.724	18.75	1	0.724	0.000:
29-Jul	0.767	18.31	1	0.767	0.000:
30-Jul	0.565	17.76	1	0.565	0.000:
31-Jul	0.400	15.99	1	0.400	0.000:
1-Aug	0.333	12.99	1	0.333	0.000:
2-Aug	0.414	11.93	1	0.414	0.000:
3-Aug	0.645	12.04	1	0.645	0.000:
4-Aug	0.786	12.18	1	0.786	0.000:
5-Aug	1.152	11.96	1	1.152	0.000:
6-Aug	1.836	13.04	1	1.836	0.000:
7-Aug	1.373	14.30	1	1.373	0.000:
8-Aug	0.879	14.05	1	0.879	0.000:
9-Aug	0.702	15.53	1	0.702	0.000:
10-Aug	0.667	17.52	1	0.667	0.000:
11-Aug	0.663	17.70	1	0.663	0.000:
12-Aug	0.599	18.61	1	0.599	0.000:
13-Aug	0.578	19.10	1	0.578	0.000:
14-Aug	0.516	15.24	1	0.516	0.000:
15-Aug	0.857	13.38	1	0.857	0.000:
16-Aug	0.642	15.10	1	0.642	0.000:
17-Aug	0.531	15.01	1	0.531	0.000:
18-Aug	0.540	12.86	1	0.540	0.000:
19-Aug	0.918	12.17	1	0.918	0.000:
20-Aug	0.952	12.48	1	0.952	0.000:
21-Aug	0.969	12.06	1	0.969	0.000:

22-Aug	0.978	11.90	1	0.978	0.000:
23-Aug	0.978	12.71	1	0.978	0.000:
24-Aug	0.952	13.56	1	0.952	0.000:
25-Aug	0.961	15.01	1	0.961	0.000:
26-Aug	0.927	14.33	1	0.927	0.000:
27-Aug	0.901	14.64	1	0.901	0.000:
28-Aug	0.875	14.99	1	0.875	0.000:
29-Aug	0.857	15.52	1	0.857	0.000:
30-Aug	0.857	13.40	1	0.857	0.000:
31-Aug	0.875	13.65	1	0.875	0.000:
1-Sep	0.892	13.70	1	0.892	0.000:
2-Sep	0.875	13.14	1	0.875	0.000:
3-Sep	0.952	11.54	1	0.952	0.000:
4-Sep	1.106	11.20	1	1.106	0.000:
5-Sep	1.029	12.39	1	1.029	0.000:
6-Sep	1.232	11.91	1	1.232	0.000:
7-Sep	1.181	10.53	1	1.181	0.000:
8-Sep	3.758	10.64	1	3.758	0.000:
9-Sep	3.395	11.32	1	3.395	0.000:
10-Sep	2.769	11.29	1	2.769	0.000:
11-Sep	2.462	8.75	1	2.462	0.000:
12-Sep	3.905	9.34	1	3.905	0.000:
13-Sep	3.677	9.26	1	3.677	0.000:
14-Sep	3.611	9.33	1	3.611	0.000:
15-Sep	3.163	8.72	1	3.163	0.000:
16-Sep	2.800	8.84	1	2.800	0.000:
17-Sep	2.586	8.63	1	2.586	0.000:
18-Sep	2.861	8.51	1	2.861	0.000:
19-Sep	5.098	8.95	1	5.098	0.000:
20-Sep	5.297	8.29	1	5.297	0.000:
21-Sep	4.934	8.35	1	4.934	0.000:
22-Sep	4.300	7.53	1	4.300	0.000:
23-Sep	4.611	7.56	1	4.611	0.000:
24-Sep	4.640	7.43	1	4.640	0.000:
25-Sep	4.798	7.12	1	4.798	0.000:
26-Sep	4.343	7.11	1	4.343	0.000:
27-Sep	3.964	6.95	1	3.964	0.000:
28-Sep	4.919	6.53	1	4.919	0.000:
29-Sep	4.575	6.37	1	4.575	0.000:
30-Sep	4.977	6.24	1	4.977	0.000:
1-Oct	4.912	6.33	1	4.912	0.000:
2-Oct	4.430	5.60	1	4.430	0.000:
3-Oct	3.986	4.51	1	3.986	0.000:
4-Oct	3.825	4.07	1	3.825	0.000:
5-Oct	6.815	3.40	1	6.815	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. POINTS (C)	NO. OF FLOW	MEAN (CMS)	STD.: DEV.: (CMS):	REMARKS
3	S.F. KOKTULI	Q	43.6	2007	17-May	1.953	4.45	1	1.953	0.000:	HYDROLOGY NODE SK100LF4	
					18-May	2.307	5.22	1	2.307	0.000:		
					19-May	1.669	5.84	1	1.669	0.000:		
					20-May	1.627	5.52	1	1.627	0.000:		
					21-May	1.298	6.53	1	1.298	0.000:		
					22-May	1.223	6.45	1	1.223	0.000:		
					23-May	1.311	6.62	1	1.311	0.000:		
					24-May	1.430	6.50	1	1.430	0.000:		
					25-May	1.645	7.27	1	1.645	0.000:		
					26-May	1.540	7.53	1	1.540	0.000:		
					27-May	1.347	8.27	1	1.347	0.000:		
					28-May	1.179	8.36	1	1.179	0.000:		
					29-May	0.987	8.67	1	0.987	0.000:		
					30-May	0.778	9.28	1	0.778	0.000:		
					31-May	0.641	8.66	1	0.641	0.000:		
					1-Jun	0.552	8.24	1	0.552	0.000:		
					2-Jun	0.493	8.24	1	0.493	0.000:		
					3-Jun	0.435	9.69	1	0.435	0.000:		
					4-Jun	0.455	8.43	1	0.455	0.000:		
					5-Jun	0.783	8.08	1	0.783	0.000:		
					6-Jun	0.824	9.36	1	0.824	0.000:		
					7-Jun	0.621	9.93	1	0.621	0.000:		
					8-Jun	0.415	9.66	1	0.415	0.000:		
					9-Jun	0.333	9.90	1	0.333	0.000:		
					10-Jun	0.309	10.06	1	0.309	0.000:		
					11-Jun	0.249	10.58	1	0.249	0.000:		
					12-Jun	0.210	10.40	1	0.210	0.000:		
					13-Jun	0.195	10.93	1	0.195	0.000:		
					14-Jun	0.176	11.36	1	0.176	0.000:		
					15-Jun	0.176	12.51	1	0.176	0.000:		
					16-Jun	0.156	11.71	1	0.156	0.000:		
					17-Jun	0.136	10.49	1	0.136	0.000:		
					18-Jun	0.163	12.68	1	0.163	0.000:		
					19-Jun	0.145	12.55	1	0.145	0.000:		
					20-Jun	0.135	10.47	1	0.135	0.000:		
					21-Jun	0.087	12.84	1	0.087	0.000:		
					22-Jun	0.039	10.31	1	0.039	0.000:		
					23-Jun	0.254	8.29	1	0.254	0.000:		
					24-Jun	1.071	9.37	1	1.071	0.000:		
					25-Jun	0.671	9.66	1	0.671	0.000:		
					26-Jun	0.355	10.96	1	0.355	0.000:		
					27-Jun	0.214	13.07	1	0.214	0.000:		
					28-Jun	0.124	13.08	1	0.124	0.000:		
					29-Jun	0.098	14.08	1	0.098	0.000:		
					30-Jun	0.061	14.58	1	0.061	0.000:		
					1-Jul	0.047	14.32	1	0.047	0.000:		

2-Jul	0.032	15.16	1	0.032	0.000:
3-Jul	0.016	16.27	1	0.016	0.000:
4-Jul	0.031	13.41	1	0.031	0.000:
5-Jul	0.102	14.06	1	0.102	0.000:
6-Jul	0.067	13.52	1	0.067	0.000:
7-Jul	0.054	14.72	1	0.054	0.000:
8-Jul	0.038	14.78	1	0.038	0.000:
9-Jul	0.029	14.67	1	0.029	0.000:
10-Jul	0.025	15.12	1	0.025	0.000:
11-Jul	0.001	15.84	1	0.001	0.000:
12-Jul	0.001	16.11	1	0.001	0.000:
13-Jul	0.001	13.94	1	0.001	0.000:
14-Jul	0.017	14.21	1	0.017	0.000:
15-Jul	0.015	14.54	1	0.015	0.000:
16-Jul	0.006	15.37	1	0.006	0.000:
17-Jul	0.002	16.99	1	0.002	0.000:
18-Jul	0.001	15.45	1	0.001	0.000:
19-Jul	0.001	15.64	1	0.001	0.000:
20-Jul	0.001	18.49	1	0.001	0.000:
21-Jul	0.001	16.18	1	0.001	0.000:
22-Jul	0.001	12.11	1	0.001	0.000:
23-Jul	0.001	11.94	1	0.001	0.000:
24-Jul	0.006	12.51	1	0.006	0.000:
25-Jul	0.046	14.04	1	0.046	0.000:
26-Jul	0.009	15.75	1	0.009	0.000:
27-Jul	0.001	18.26	1	0.001	0.000:
28-Jul	0.001	18.75	1	0.001	0.000:
29-Jul	0.001	18.31	1	0.001	0.000:
30-Jul	0.001	17.76	1	0.001	0.000:
31-Jul	0.001	15.99	1	0.001	0.000:
1-Aug	0.001	12.99	1	0.001	0.000:
2-Aug	0.001	11.93	1	0.001	0.000:
3-Aug	0.001	12.04	1	0.001	0.000:
4-Aug	0.002	12.18	1	0.002	0.000:
5-Aug	0.012	11.96	1	0.012	0.000:
6-Aug	0.222	13.04	1	0.222	0.000:
7-Aug	0.148	14.30	1	0.148	0.000:
8-Aug	0.044	14.05	1	0.044	0.000:
9-Aug	0.002	15.53	1	0.002	0.000:
10-Aug	0.001	17.52	1	0.001	0.000:
11-Aug	0.001	17.70	1	0.001	0.000:
12-Aug	0.001	18.61	1	0.001	0.000:
13-Aug	0.001	19.10	1	0.001	0.000:
14-Aug	0.001	15.24	1	0.001	0.000:
15-Aug	0.001	13.38	1	0.001	0.000:
16-Aug	0.001	15.10	1	0.001	0.000:
17-Aug	0.001	15.01	1	0.001	0.000:
18-Aug	0.001	12.86	1	0.001	0.000:
19-Aug	0.001	12.17	1	0.001	0.000:
20-Aug	0.001	12.48	1	0.001	0.000:
21-Aug	0.001	12.06	1	0.001	0.000:

22-Aug	0.001	11.90	1	0.001	0.000:
23-Aug	0.004	12.71	1	0.004	0.000:
24-Aug	0.032	13.56	1	0.032	0.000:
25-Aug	0.019	15.01	1	0.019	0.000:
26-Aug	0.001	14.33	1	0.001	0.000:
27-Aug	0.001	14.64	1	0.001	0.000:
28-Aug	0.001	14.99	1	0.001	0.000:
29-Aug	0.001	15.52	1	0.001	0.000:
30-Aug	0.001	13.40	1	0.001	0.000:
31-Aug	0.001	13.65	1	0.001	0.000:
1-Sep	0.001	13.70	1	0.001	0.000:
2-Sep	0.001	13.14	1	0.001	0.000:
3-Sep	0.001	11.54	1	0.001	0.000:
4-Sep	0.002	11.20	1	0.002	0.000:
5-Sep	0.001	12.39	1	0.001	0.000:
6-Sep	0.026	11.91	1	0.026	0.000:
7-Sep	0.030	10.53	1	0.030	0.000:
8-Sep	1.152	10.64	1	1.152	0.000:
9-Sep	2.224	11.32	1	2.224	0.000:
10-Sep	1.663	11.29	1	1.663	0.000:
11-Sep	1.027	8.75	1	1.027	0.000:
12-Sep	2.407	9.34	1	2.407	0.000:
13-Sep	2.825	9.26	1	2.825	0.000:
14-Sep	2.845	9.33	1	2.845	0.000:
15-Sep	2.287	8.72	1	2.287	0.000:
16-Sep	1.665	8.84	1	1.665	0.000:
17-Sep	1.373	8.63	1	1.373	0.000:
18-Sep	1.359	8.51	1	1.359	0.000:
19-Sep	4.159	8.95	1	4.159	0.000:
20-Sep	5.216	8.29	1	5.216	0.000:
21-Sep	5.564	8.35	1	5.564	0.000:
22-Sep	4.270	7.53	1	4.270	0.000:
23-Sep	4.089	7.56	1	4.089	0.000:
24-Sep	4.142	7.43	1	4.142	0.000:
25-Sep	4.329	7.12	1	4.329	0.000:
26-Sep	3.845	7.11	1	3.845	0.000:
27-Sep	3.136	6.95	1	3.136	0.000:
28-Sep	3.532	6.53	1	3.532	0.000:
29-Sep	4.375	6.37	1	4.375	0.000:
30-Sep	4.108	6.24	1	4.108	0.000:
1-Oct	4.708	6.33	1	4.708	0.000:
2-Oct	4.029	5.60	1	4.029	0.000:
3-Oct	3.243	4.51	1	3.243	0.000:
4-Oct	2.735	4.07	1	2.735	0.000:
5-Oct	5.969	3.40	1	5.969	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
4	S.F. KOKTULI	Q	35.8	2007	17-May	2.608		3.80	1	2.608	0.000:	HYDROLOGY GAGE SK100C
					18-May	2.974		3.51	1	2.974	0.000:	
					19-May	2.303		3.60	1	2.303	0.000:	
					20-May	2.257		3.74	1	2.257	0.000:	
					21-May	1.888		4.24	1	1.888	0.000:	
					22-May	1.802		4.40	1	1.802	0.000:	
					23-May	1.903		4.12	1	1.903	0.000:	
					24-May	2.038		4.30	1	2.038	0.000:	
					25-May	2.277		4.30	1	2.277	0.000:	
					26-May	2.161		4.34	1	2.161	0.000:	
					27-May	1.945		4.15	1	1.945	0.000:	
					28-May	1.750		4.41	1	1.750	0.000:	
					29-May	1.521		4.65	1	1.521	0.000:	
					30-May	1.260		4.79	1	1.260	0.000:	
					31-May	1.081		4.75	1	1.081	0.000:	
					1-Jun	0.961		5.13	1	0.961	0.000:	
					2-Jun	0.879		5.40	1	0.879	0.000:	
					3-Jun	0.796		5.63	1	0.796	0.000:	
					4-Jun	0.825		5.57	1	0.825	0.000:	
					5-Jun	1.267		5.86	1	1.267	0.000:	
					6-Jun	1.319		5.62	1	1.319	0.000:	
					7-Jun	1.055		5.12	1	1.055	0.000:	
					8-Jun	0.767		4.82	1	0.767	0.000:	
					9-Jun	0.645		5.22	1	0.645	0.000:	
					10-Jun	0.608		4.98	1	0.608	0.000:	
					11-Jun	0.513		4.82	1	0.513	0.000:	
					12-Jun	0.447		4.92	1	0.447	0.000:	
					13-Jun	0.422		4.86	1	0.422	0.000:	
					14-Jun	0.389		4.61	1	0.389	0.000:	
					15-Jun	0.390		4.28	1	0.390	0.000:	
					16-Jun	0.354		4.26	1	0.354	0.000:	
					17-Jun	0.318		3.96	1	0.318	0.000:	
					18-Jun	0.367		4.20	1	0.367	0.000:	
					19-Jun	0.335		4.05	1	0.335	0.000:	
					20-Jun	0.316		3.94	1	0.316	0.000:	
					21-Jun	0.223		4.27	1	0.223	0.000:	
					22-Jun	0.119		5.01	1	0.119	0.000:	
					23-Jun	0.520		5.17	1	0.520	0.000:	
					24-Jun	1.623		5.03	1	1.623	0.000:	
					25-Jun	1.121		5.10	1	1.121	0.000:	
					26-Jun	0.679		5.03	1	0.679	0.000:	
					27-Jun	0.454		4.33	1	0.454	0.000:	
					28-Jun	0.296		3.66	1	0.296	0.000:	
					29-Jun	0.246		3.30	1	0.246	0.000:	
					30-Jun	0.169		2.89	1	0.169	0.000:	
					1-Jul	0.138		2.67	1	0.138	0.000:	

2-Jul	0.101	3.01	1	0.101	0.000:
3-Jul	0.058	3.24	1	0.058	0.000:
4-Jul	0.099	3.53	1	0.099	0.000:
5-Jul	0.253	3.85	1	0.253	0.000:
6-Jul	0.181	3.82	1	0.181	0.000:
7-Jul	0.152	3.71	1	0.152	0.000:
8-Jul	0.117	3.30	1	0.117	0.000:
9-Jul	0.093	3.33	1	0.093	0.000:
10-Jul	0.083	3.23	1	0.083	0.000:
11-Jul	0.006	3.32	1	0.006	0.000:
12-Jul	0.004	3.38	1	0.004	0.000:
13-Jul	0.006	3.74	1	0.006	0.000:
14-Jul	0.062	3.45	1	0.062	0.000:
15-Jul	0.057	3.44	1	0.057	0.000:
16-Jul	0.028	3.31	1	0.028	0.000:
17-Jul	0.007	2.99	1	0.007	0.000:
18-Jul	0.003	2.85	1	0.003	0.000:
19-Jul	0.003	3.23	1	0.003	0.000:
20-Jul	0.003	3.39	1	0.003	0.000:
21-Jul	0.003	3.60	1	0.003	0.000:
22-Jul	0.004	3.98	1	0.004	0.000:
23-Jul	0.006	4.05	1	0.006	0.000:
24-Jul	0.029	3.50	1	0.029	0.000:
25-Jul	0.135	3.33	1	0.135	0.000:
26-Jul	0.039	2.86	1	0.039	0.000:
27-Jul	0.003	2.24	1	0.003	0.000:
28-Jul	0.003	2.05	1	0.003	0.000:
29-Jul	0.003	2.82	1	0.003	0.000:
30-Jul	0.003	3.27	1	0.003	0.000:
31-Jul	0.003	3.80	1	0.003	0.000:
1-Aug	0.003	4.55	1	0.003	0.000:
2-Aug	0.003	5.08	1	0.003	0.000:
3-Aug	0.003	4.80	1	0.003	0.000:
4-Aug	0.008	4.77	1	0.008	0.000:
5-Aug	0.046	4.73	1	0.046	0.000:
6-Aug	0.469	4.68	1	0.469	0.000:
7-Aug	0.340	4.02	1	0.340	0.000:
8-Aug	0.132	3.60	1	0.132	0.000:
9-Aug	0.009	2.94	1	0.009	0.000:
10-Aug	0.004	2.60	1	0.004	0.000:
11-Aug	0.004	2.13	1	0.004	0.000:
12-Aug	0.004	2.73	1	0.004	0.000:
13-Aug	0.004	2.98	1	0.004	0.000:
14-Aug	0.004	3.41	1	0.004	0.000:
15-Aug	0.005	3.92	1	0.005	0.000:
16-Aug	0.004	4.48	1	0.004	0.000:
17-Aug	0.004	4.54	1	0.004	0.000:
18-Aug	0.005	5.27	1	0.005	0.000:
19-Aug	0.005	5.65	1	0.005	0.000:
20-Aug	0.006	5.73	1	0.006	0.000:
21-Aug	0.006	5.67	1	0.006	0.000:

22-Aug	0.006	5.38	1	0.006	0.000:
23-Aug	0.018	4.92	1	0.018	0.000:
24-Aug	0.102	4.69	1	0.102	0.000:
25-Aug	0.067	4.17	1	0.067	0.000:
26-Aug	0.005	3.75	1	0.005	0.000:
27-Aug	0.005	4.18	1	0.005	0.000:
28-Aug	0.004	4.10	1	0.004	0.000:
29-Aug	0.004	3.84	1	0.004	0.000:
30-Aug	0.004	4.03	1	0.004	0.000:
31-Aug	0.004	4.69	1	0.004	0.000:
1-Sep	0.004	4.29	1	0.004	0.000:
2-Sep	0.004	4.51	1	0.004	0.000:
3-Sep	0.006	5.03	1	0.006	0.000:
4-Sep	0.007	5.54	1	0.007	0.000:
5-Sep	0.006	5.53	1	0.006	0.000:
6-Sep	0.085	6.13	1	0.085	0.000:
7-Sep	0.097	6.44	1	0.097	0.000:
8-Sep	1.719	6.44	1	1.719	0.000:
9-Sep	2.889	6.48	1	2.889	0.000:
10-Sep	2.297	6.64	1	2.297	0.000:
11-Sep	1.570	6.68	1	1.570	0.000:
12-Sep	3.076	6.55	1	3.076	0.000:
13-Sep	3.490	6.55	1	3.490	0.000:
14-Sep	3.510	6.31	1	3.510	0.000:
15-Sep	2.954	6.20	1	2.954	0.000:
16-Sep	2.299	5.95	1	2.299	0.000:
17-Sep	1.974	6.16	1	1.974	0.000:
18-Sep	1.958	6.35	1	1.958	0.000:
19-Sep	4.737	6.46	1	4.737	0.000:
20-Sep	5.665	6.41	1	5.665	0.000:
21-Sep	5.962	6.37	1	5.962	0.000:
22-Sep	4.837	6.21	1	4.837	0.000:
23-Sep	4.674	6.03	1	4.674	0.000:
24-Sep	4.722	5.97	1	4.722	0.000:
25-Sep	4.890	5.98	1	4.890	0.000:
26-Sep	4.452	5.96	1	4.452	0.000:
27-Sep	3.791	5.69	1	3.791	0.000:
28-Sep	4.164	5.67	1	4.164	0.000:
29-Sep	4.931	5.64	1	4.931	0.000:
30-Sep	4.691	5.65	1	4.691	0.000:
1-Oct	5.224	5.46	1	5.224	0.000:
2-Oct	4.620	5.64	1	4.620	0.000:
3-Oct	3.893	5.41	1	3.893	0.000:
4-Oct	3.403	5.14	1	3.403	0.000:
5-Oct	6.301	5.29	1	6.301	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
5	S.F. KOKTULI	B	34.3	2007	17-May	2.493			1	2.493	0.000:	CONFLUENCE WITH TRIBUTARY SFK
					18-May	2.886			1	2.886	0.000:	1.119
					19-May	2.283			1	2.283	0.000:	
					20-May	2.248			1	2.248	0.000:	
					21-May	1.922			1	1.922	0.000:	
					22-May	1.838			1	1.838	0.000:	
					23-May	1.924			1	1.924	0.000:	
					24-May	2.046			1	2.046	0.000:	
					25-May	2.275			1	2.275	0.000:	
					26-May	2.175			1	2.175	0.000:	
					27-May	1.992			1	1.992	0.000:	
					28-May	1.817			1	1.817	0.000:	
					29-May	1.607			1	1.607	0.000:	
					30-May	1.358			1	1.358	0.000:	
					31-May	1.183			1	1.183	0.000:	
					1-Jun	1.076			1	1.076	0.000:	
					2-Jun	1.005			1	1.005	0.000:	
					3-Jun	0.933			1	0.933	0.000:	
					4-Jun	0.951			1	0.951	0.000:	
					5-Jun	1.354			1	1.354	0.000:	
					6-Jun	1.415			1	1.415	0.000:	
					7-Jun	1.169			1	1.169	0.000:	
					8-Jun	0.909			1	0.909	0.000:	
					9-Jun	0.798			1	0.798	0.000:	
					10-Jun	0.762			1	0.762	0.000:	
					11-Jun	0.670			1	0.670	0.000:	
					12-Jun	0.608			1	0.608	0.000:	
					13-Jun	0.584			1	0.584	0.000:	
					14-Jun	0.551			1	0.551	0.000:	
					15-Jun	0.552			1	0.552	0.000:	
					16-Jun	0.517			1	0.517	0.000:	
					17-Jun	0.480			1	0.480	0.000:	
					18-Jun	0.529			1	0.529	0.000:	
					19-Jun	0.497			1	0.497	0.000:	
					20-Jun	0.478			1	0.478	0.000:	
					21-Jun	0.382			1	0.382	0.000:	
					22-Jun	0.274			1	0.274	0.000:	
					23-Jun	0.627			1	0.627	0.000:	
					24-Jun	1.692			1	1.692	0.000:	
					25-Jun	1.230			1	1.230	0.000:	
					26-Jun	0.830			1	0.830	0.000:	
					27-Jun	0.616			1	0.616	0.000:	
					28-Jun	0.458			1	0.458	0.000:	
					29-Jun	0.406			1	0.406	0.000:	
					30-Jun	0.326			1	0.326	0.000:	
					1-Jul	0.291			1	0.291	0.000:	

2-Jul	0.249	1	0.249	0.000:
3-Jul	0.201	1	0.201	0.000:
4-Jul	0.259	1	0.259	0.000:
5-Jul	0.414	1	0.414	0.000:
6-Jul	0.340	1	0.340	0.000:
7-Jul	0.307	1	0.307	0.000:
8-Jul	0.272	1	0.272	0.000:
9-Jul	0.243	1	0.243	0.000:
10-Jul	0.231	1	0.231	0.000:
11-Jul	0.141	1	0.141	0.000:
12-Jul	0.139	1	0.139	0.000:
13-Jul	0.158	1	0.158	0.000:
14-Jul	0.215	1	0.215	0.000:
15-Jul	0.204	1	0.204	0.000:
16-Jul	0.167	1	0.167	0.000:
17-Jul	0.140	1	0.140	0.000:
18-Jul	0.133	1	0.133	0.000:
19-Jul	0.133	1	0.133	0.000:
20-Jul	0.130	1	0.130	0.000:
21-Jul	0.128	1	0.128	0.000:
22-Jul	0.138	1	0.138	0.000:
23-Jul	0.157	1	0.157	0.000:
24-Jul	0.180	1	0.180	0.000:
25-Jul	0.288	1	0.288	0.000:
26-Jul	0.177	1	0.177	0.000:
27-Jul	0.131	1	0.131	0.000:
28-Jul	0.128	1	0.128	0.000:
29-Jul	0.126	1	0.126	0.000:
30-Jul	0.127	1	0.127	0.000:
31-Jul	0.126	1	0.126	0.000:
1-Aug	0.125	1	0.125	0.000:
2-Aug	0.129	1	0.129	0.000:
3-Aug	0.132	1	0.132	0.000:
4-Aug	0.166	1	0.166	0.000:
5-Aug	0.208	1	0.208	0.000:
6-Aug	0.618	1	0.618	0.000:
7-Aug	0.502	1	0.502	0.000:
8-Aug	0.288	1	0.288	0.000:
9-Aug	0.153	1	0.153	0.000:
10-Aug	0.143	1	0.143	0.000:
11-Aug	0.141	1	0.141	0.000:
12-Aug	0.141	1	0.141	0.000:
13-Aug	0.138	1	0.138	0.000:
14-Aug	0.146	1	0.146	0.000:
15-Aug	0.150	1	0.150	0.000:
16-Aug	0.145	1	0.145	0.000:
17-Aug	0.141	1	0.141	0.000:
18-Aug	0.154	1	0.154	0.000:
19-Aug	0.151	1	0.151	0.000:
20-Aug	0.156	1	0.156	0.000:
21-Aug	0.159	1	0.159	0.000:

22-Aug	0.159	1	0.159	0.000:
23-Aug	0.176	1	0.176	0.000:
24-Aug	0.260	1	0.260	0.000:
25-Aug	0.224	1	0.224	0.000:
26-Aug	0.151	1	0.151	0.000:
27-Aug	0.148	1	0.148	0.000:
28-Aug	0.146	1	0.146	0.000:
29-Aug	0.144	1	0.144	0.000:
30-Aug	0.143	1	0.143	0.000:
31-Aug	0.143	1	0.143	0.000:
1-Sep	0.145	1	0.145	0.000:
2-Sep	0.144	1	0.144	0.000:
3-Sep	0.160	1	0.160	0.000:
4-Sep	0.165	1	0.165	0.000:
5-Sep	0.159	1	0.159	0.000:
6-Sep	0.247	1	0.247	0.000:
7-Sep	0.260	1	0.260	0.000:
8-Sep	1.491	1	1.491	0.000:
9-Sep	2.813	1	2.813	0.000:
10-Sep	2.310	1	2.310	0.000:
11-Sep	1.622	1	1.622	0.000:
12-Sep	2.824	1	2.824	0.000:
13-Sep	3.334	1	3.334	0.000:
14-Sep	3.362	1	3.362	0.000:
15-Sep	2.903	1	2.903	0.000:
16-Sep	2.315	1	2.315	0.000:
17-Sep	2.015	1	2.015	0.000:
18-Sep	1.925	1	1.925	0.000:
19-Sep	4.216	1	4.216	0.000:
20-Sep	5.051	1	5.051	0.000:
21-Sep	5.509	1	5.509	0.000:
22-Sep	4.573	1	4.573	0.000:
23-Sep	4.375	1	4.375	0.000:
24-Sep	4.408	1	4.408	0.000:
25-Sep	4.564	1	4.564	0.000:
26-Sep	4.241	1	4.241	0.000:
27-Sep	3.670	1	3.670	0.000:
28-Sep	3.888	1	3.888	0.000:
29-Sep	4.684	1	4.684	0.000:
30-Sep	4.355	1	4.355	0.000:
1-Oct	4.903	1	4.903	0.000:
2-Oct	4.404	1	4.404	0.000:
3-Oct	3.777	1	3.777	0.000:
4-Oct	3.323	1	3.323	0.000:
5-Oct	5.611	1	5.611	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. TEMPERATURE (C)	LATERAL TEMPERATURE (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
6	TRIBUTARY 119	H	36.1	2007	17-May	3.103	1.46	3.80	1	3.103	0.000:	HYDROLOGY GAGE SK119A
					18-May	2.420	1.78	3.51	1	2.420	0.000:	
					19-May	2.178	2.03	3.60	1	2.178	0.000:	
					20-May	2.064	2.07	3.74	1	2.064	0.000:	
					21-May	1.758	2.43	4.24	1	1.758	0.000:	
					22-May	1.805	2.13	4.40	1	1.805	0.000:	
					23-May	1.944	2.24	4.12	1	1.944	0.000:	
					24-May	2.032	2.27	4.30	1	2.032	0.000:	
					25-May	1.940	2.10	4.30	1	1.940	0.000:	
					26-May	1.808	2.48	4.34	1	1.808	0.000:	
					27-May	1.460	3.33	4.15	1	1.460	0.000:	
					28-May	1.266	3.45	4.41	1	1.266	0.000:	
					29-May	1.039	3.35	4.65	1	1.039	0.000:	
					30-May	0.923	3.74	4.79	1	0.923	0.000:	
					31-May	0.937	3.58	4.75	1	0.937	0.000:	
					1-Jun	0.869	3.80	5.13	1	0.869	0.000:	
					2-Jun	0.813	4.22	5.40	1	0.813	0.000:	
					3-Jun	0.754	4.71	5.63	1	0.754	0.000:	
					4-Jun	0.862	4.36	5.57	1	0.862	0.000:	
					5-Jun	1.266	4.26	5.86	1	1.266	0.000:	
					6-Jun	0.944	5.58	5.62	1	0.944	0.000:	
					7-Jun	0.792	5.16	5.12	1	0.792	0.000:	
					8-Jun	0.690	4.92	4.82	1	0.690	0.000:	
					9-Jun	0.616	4.83	5.22	1	0.616	0.000:	
					10-Jun	0.656	7.31	4.98	1	0.656	0.000:	
					11-Jun	0.654	7.11	4.82	1	0.654	0.000:	
					12-Jun	0.582	5.47	4.92	1	0.582	0.000:	
					13-Jun	0.522	5.63	4.86	1	0.522	0.000:	
					14-Jun	0.550	6.67	4.61	1	0.550	0.000:	
					15-Jun	0.562	8.71	4.28	1	0.562	0.000:	
					16-Jun	0.540	8.53	4.26	1	0.540	0.000:	
					17-Jun	0.643	6.82	3.96	1	0.643	0.000:	
					18-Jun	0.553	7.45	4.20	1	0.553	0.000:	
					19-Jun	0.538	9.39	4.05	1	0.538	0.000:	
					20-Jun	0.518	10.70	3.94	1	0.518	0.000:	
					21-Jun	0.468	9.93	4.27	1	0.468	0.000:	
					22-Jun	0.477	7.45	5.01	1	0.477	0.000:	
					23-Jun	1.402	5.84	5.17	1	1.402	0.000:	
					24-Jun	1.338	5.64	5.03	1	1.338	0.000:	
					25-Jun	0.777	6.13	5.10	1	0.777	0.000:	
					26-Jun	0.623	7.06	5.03	1	0.623	0.000:	
					27-Jun	0.548	7.93	4.33	1	0.548	0.000:	
					28-Jun	0.533	7.33	3.66	1	0.533	0.000:	
					29-Jun	0.491	8.14	3.30	1	0.491	0.000:	
					30-Jun	0.454	8.24	2.89	1	0.454	0.000:	
					1-Jul	0.424	7.87	2.67	1	0.424	0.000:	

2-Jul	0.398	8.41	3.01	1	0.398	0.000:
3-Jul	0.382	9.51	3.24	1	0.382	0.000:
4-Jul	0.620	8.36	3.53	1	0.620	0.000:
5-Jul	0.502	8.19	3.85	1	0.502	0.000:
6-Jul	0.485	7.97	3.82	1	0.485	0.000:
7-Jul	0.426	8.05	3.71	1	0.426	0.000:
8-Jul	0.482	8.03	3.30	1	0.482	0.000:
9-Jul	0.432	8.19	3.33	1	0.432	0.000:
10-Jul	0.400	8.17	3.23	1	0.400	0.000:
11-Jul	0.365	9.55	3.32	1	0.365	0.000:
12-Jul	0.386	8.74	3.38	1	0.386	0.000:
13-Jul	0.593	7.55	3.74	1	0.593	0.000:
14-Jul	0.503	7.73	3.45	1	0.503	0.000:
15-Jul	0.424	8.37	3.44	1	0.424	0.000:
16-Jul	0.381	9.00	3.31	1	0.381	0.000:
17-Jul	0.350	9.86	2.99	1	0.350	0.000:
18-Jul	0.341	9.34	2.85	1	0.341	0.000:
19-Jul	0.338	8.75	3.23	1	0.338	0.000:
20-Jul	0.319	10.38	3.39	1	0.319	0.000:
21-Jul	0.307	9.46	3.60	1	0.307	0.000:
22-Jul	0.374	7.65	3.98	1	0.374	0.000:
23-Jul	0.567	7.43	4.05	1	0.567	0.000:
24-Jul	0.512	7.86	3.50	1	0.512	0.000:
25-Jul	0.427	8.99	3.33	1	0.427	0.000:
26-Jul	0.359	9.90	2.86	1	0.359	0.000:
27-Jul	0.325	11.13	2.24	1	0.325	0.000:
28-Jul	0.307	11.42	2.05	1	0.307	0.000:
29-Jul	0.296	11.27	2.82	1	0.296	0.000:
30-Jul	0.302	10.42	3.27	1	0.302	0.000:
31-Jul	0.298	9.63	3.80	1	0.298	0.000:
1-Aug	0.291	8.72	4.55	1	0.291	0.000:
2-Aug	0.315	8.34	5.08	1	0.315	0.000:
3-Aug	0.334	8.45	4.80	1	0.334	0.000:
4-Aug	0.779	8.19	4.77	1	0.779	0.000:
5-Aug	0.871	8.23	4.73	1	0.871	0.000:
6-Aug	0.872	8.96	4.68	1	0.872	0.000:
7-Aug	0.567	9.14	4.02	1	0.567	0.000:
8-Aug	0.490	9.72	3.60	1	0.490	0.000:
9-Aug	0.445	10.12	2.94	1	0.445	0.000:
10-Aug	0.415	9.91	2.60	1	0.415	0.000:
11-Aug	0.396	9.56	2.13	1	0.396	0.000:
12-Aug	0.397	10.27	2.73	1	0.397	0.000:
13-Aug	0.379	11.16	2.98	1	0.379	0.000:
14-Aug	0.441	9.49	3.41	1	0.441	0.000:
15-Aug	0.481	8.75	3.92	1	0.481	0.000:
16-Aug	0.436	9.19	4.48	1	0.436	0.000:
17-Aug	0.396	9.08	4.54	1	0.396	0.000:
18-Aug	0.534	8.41	5.27	1	0.534	0.000:
19-Aug	0.500	8.82	5.65	1	0.500	0.000:
20-Aug	0.564	8.70	5.73	1	0.564	0.000:
21-Aug	0.605	7.88	5.67	1	0.605	0.000:

22-Aug	0.605	7.93	5.38	1	0.605	0.000:
23-Aug	0.642	8.11	4.92	1	0.642	0.000:
24-Aug	0.564	8.78	4.69	1	0.564	0.000:
25-Aug	0.562	8.97	4.17	1	0.562	0.000:
26-Aug	0.499	7.94	3.75	1	0.499	0.000:
27-Aug	0.468	8.32	4.18	1	0.468	0.000:
28-Aug	0.439	8.40	4.10	1	0.439	0.000:
29-Aug	0.424	9.76	3.84	1	0.424	0.000:
30-Aug	0.416	9.04	4.03	1	0.416	0.000:
31-Aug	0.421	8.54	4.69	1	0.421	0.000:
1-Sep	0.438	8.05	4.29	1	0.438	0.000:
2-Sep	0.422	8.47	4.51	1	0.422	0.000:
3-Sep	0.626	7.90	5.03	1	0.626	0.000:
4-Sep	0.735	7.84	5.54	1	0.735	0.000:
5-Sep	0.607	7.96	5.53	1	0.607	0.000:
6-Sep	0.757	7.62	6.13	1	0.757	0.000:
7-Sep	0.808	7.34	6.44	1	0.808	0.000:
8-Sep	5.271	8.05	6.44	1	5.271	0.000:
9-Sep	2.354	7.67	6.48	1	2.354	0.000:
10-Sep	1.681	7.24	6.64	1	1.681	0.000:
11-Sep	1.732	6.74	6.68	1	1.732	0.000:
12-Sep	4.166	7.41	6.55	1	4.166	0.000:
13-Sep	2.718	6.68	6.55	1	2.718	0.000:
14-Sep	2.593	6.48	6.31	1	2.593	0.000:
15-Sep	1.956	5.89	6.20	1	1.956	0.000:
16-Sep	1.649	6.06	5.95	1	1.649	0.000:
17-Sep	1.539	5.93	6.16	1	1.539	0.000:
18-Sep	2.712	6.31	6.35	1	2.712	0.000:
19-Sep	5.097	6.93	6.46	1	5.097	0.000:
20-Sep	4.991	6.51	6.41	1	4.991	0.000:
21-Sep	3.246	6.29	6.37	1	3.246	0.000:
22-Sep	2.533	5.40	6.21	1	2.533	0.000:
23-Sep	3.056	5.80	6.03	1	3.056	0.000:
24-Sep	3.155	5.75	5.97	1	3.155	0.000:
25-Sep	3.103	5.64	5.98	1	3.103	0.000:
26-Sep	2.361	5.42	5.96	1	2.361	0.000:
27-Sep	2.001	5.05	5.69	1	2.001	0.000:
28-Sep	3.330	5.11	5.67	1	3.330	0.000:
29-Sep	2.265	4.99	5.64	1	2.265	0.000:
30-Sep	3.408	5.02	5.65	1	3.408	0.000:
1-Oct	2.728	5.02	5.46	1	2.728	0.000:
2-Oct	2.249	4.42	5.64	1	2.249	0.000:
3-Oct	1.837	3.99	5.41	1	1.837	0.000:
4-Oct	1.881	3.56	5.14	1	1.881	0.000:
5-Oct	5.004	3.66	5.29	1	5.004	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
7	TRIBUTARY 119	T	34.3	2007	17-May	3.065			1	3.065	0.000:	CONFLUENCE WITH SOUTH FORK KO
					18-May	2.390			1	2.390	0.000:	KTULI RIVER
					19-May	2.172			1	2.172	0.000:	
					20-May	2.061			1	2.061	0.000:	
					21-May	1.769			1	1.769	0.000:	
					22-May	1.817			1	1.817	0.000:	
					23-May	1.951			1	1.951	0.000:	
					24-May	2.034			1	2.034	0.000:	
					25-May	1.939			1	1.939	0.000:	
					26-May	1.813			1	1.813	0.000:	
					27-May	1.476			1	1.476	0.000:	
					28-May	1.288			1	1.288	0.000:	
					29-May	1.067			1	1.067	0.000:	
					30-May	0.955			1	0.955	0.000:	
					31-May	0.971			1	0.971	0.000:	
					1-Jun	0.908			1	0.908	0.000:	
					2-Jun	0.855			1	0.855	0.000:	
					3-Jun	0.800			1	0.800	0.000:	
					4-Jun	0.904			1	0.904	0.000:	
					5-Jun	1.295			1	1.295	0.000:	
					6-Jun	0.976			1	0.976	0.000:	
					7-Jun	0.830			1	0.830	0.000:	
					8-Jun	0.738			1	0.738	0.000:	
					9-Jun	0.667			1	0.667	0.000:	
					10-Jun	0.707			1	0.707	0.000:	
					11-Jun	0.707			1	0.707	0.000:	
					12-Jun	0.635			1	0.635	0.000:	
					13-Jun	0.576			1	0.576	0.000:	
					14-Jun	0.604			1	0.604	0.000:	
					15-Jun	0.616			1	0.616	0.000:	
					16-Jun	0.594			1	0.594	0.000:	
					17-Jun	0.697			1	0.697	0.000:	
					18-Jun	0.607			1	0.607	0.000:	
					19-Jun	0.592			1	0.592	0.000:	
					20-Jun	0.572			1	0.572	0.000:	
					21-Jun	0.521			1	0.521	0.000:	
					22-Jun	0.529			1	0.529	0.000:	
					23-Jun	1.438			1	1.438	0.000:	
					24-Jun	1.361			1	1.361	0.000:	
					25-Jun	0.814			1	0.814	0.000:	
					26-Jun	0.673			1	0.673	0.000:	
					27-Jun	0.601			1	0.601	0.000:	
					28-Jun	0.587			1	0.587	0.000:	
					29-Jun	0.545			1	0.545	0.000:	
					30-Jun	0.507			1	0.507	0.000:	
					1-Jul	0.475			1	0.475	0.000:	

2-Jul	0.447	1	0.447	0.000:
3-Jul	0.429	1	0.429	0.000:
4-Jul	0.673	1	0.673	0.000:
5-Jul	0.556	1	0.556	0.000:
6-Jul	0.538	1	0.538	0.000:
7-Jul	0.478	1	0.478	0.000:
8-Jul	0.533	1	0.533	0.000:
9-Jul	0.482	1	0.482	0.000:
10-Jul	0.450	1	0.450	0.000:
11-Jul	0.410	1	0.410	0.000:
12-Jul	0.431	1	0.431	0.000:
13-Jul	0.643	1	0.643	0.000:
14-Jul	0.554	1	0.554	0.000:
15-Jul	0.473	1	0.473	0.000:
16-Jul	0.428	1	0.428	0.000:
17-Jul	0.395	1	0.395	0.000:
18-Jul	0.384	1	0.384	0.000:
19-Jul	0.382	1	0.382	0.000:
20-Jul	0.361	1	0.361	0.000:
21-Jul	0.348	1	0.348	0.000:
22-Jul	0.419	1	0.419	0.000:
23-Jul	0.618	1	0.618	0.000:
24-Jul	0.563	1	0.563	0.000:
25-Jul	0.478	1	0.478	0.000:
26-Jul	0.406	1	0.406	0.000:
27-Jul	0.367	1	0.367	0.000:
28-Jul	0.348	1	0.348	0.000:
29-Jul	0.336	1	0.336	0.000:
30-Jul	0.343	1	0.343	0.000:
31-Jul	0.339	1	0.339	0.000:
1-Aug	0.332	1	0.332	0.000:
2-Aug	0.357	1	0.357	0.000:
3-Aug	0.377	1	0.377	0.000:
4-Aug	0.832	1	0.832	0.000:
5-Aug	0.925	1	0.925	0.000:
6-Aug	0.922	1	0.922	0.000:
7-Aug	0.622	1	0.622	0.000:
8-Aug	0.542	1	0.542	0.000:
9-Aug	0.493	1	0.493	0.000:
10-Aug	0.461	1	0.461	0.000:
11-Aug	0.442	1	0.442	0.000:
12-Aug	0.443	1	0.443	0.000:
13-Aug	0.424	1	0.424	0.000:
14-Aug	0.488	1	0.488	0.000:
15-Aug	0.529	1	0.529	0.000:
16-Aug	0.483	1	0.483	0.000:
17-Aug	0.441	1	0.441	0.000:
18-Aug	0.583	1	0.583	0.000:
19-Aug	0.549	1	0.549	0.000:
20-Aug	0.615	1	0.615	0.000:
21-Aug	0.656	1	0.656	0.000:

22-Aug	0.656	1	0.656	0.000:
23-Aug	0.695	1	0.695	0.000:
24-Aug	0.617	1	0.617	0.000:
25-Aug	0.615	1	0.615	0.000:
26-Aug	0.547	1	0.547	0.000:
27-Aug	0.516	1	0.516	0.000:
28-Aug	0.486	1	0.486	0.000:
29-Aug	0.471	1	0.471	0.000:
30-Aug	0.462	1	0.462	0.000:
31-Aug	0.467	1	0.467	0.000:
1-Sep	0.485	1	0.485	0.000:
2-Sep	0.469	1	0.469	0.000:
3-Sep	0.678	1	0.678	0.000:
4-Sep	0.787	1	0.787	0.000:
5-Sep	0.658	1	0.658	0.000:
6-Sep	0.811	1	0.811	0.000:
7-Sep	0.862	1	0.862	0.000:
8-Sep	5.195	1	5.195	0.000:
9-Sep	2.328	1	2.328	0.000:
10-Sep	1.685	1	1.685	0.000:
11-Sep	1.749	1	1.749	0.000:
12-Sep	4.083	1	4.083	0.000:
13-Sep	2.666	1	2.666	0.000:
14-Sep	2.544	1	2.544	0.000:
15-Sep	1.939	1	1.939	0.000:
16-Sep	1.654	1	1.654	0.000:
17-Sep	1.553	1	1.553	0.000:
18-Sep	2.701	1	2.701	0.000:
19-Sep	4.923	1	4.923	0.000:
20-Sep	4.787	1	4.787	0.000:
21-Sep	3.095	1	3.095	0.000:
22-Sep	2.445	1	2.445	0.000:
23-Sep	2.956	1	2.956	0.000:
24-Sep	3.050	1	3.050	0.000:
25-Sep	2.994	1	2.994	0.000:
26-Sep	2.291	1	2.291	0.000:
27-Sep	1.960	1	1.960	0.000:
28-Sep	3.238	1	3.238	0.000:
29-Sep	2.182	1	2.182	0.000:
30-Sep	3.296	1	3.296	0.000:
1-Oct	2.621	1	2.621	0.000:
2-Oct	2.177	1	2.177	0.000:
3-Oct	1.798	1	1.798	0.000:
4-Oct	1.855	1	1.855	0.000:
5-Oct	4.774	1	4.774	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
8	S.F. KOKTULI	J	34.3	2007	17-May	5.558		3.80	1	5.558	0.000:	CONFLUENCE WITH TRIBUTARY SFK
					18-May	5.276		3.51	1	5.276	0.000:	1.119
					19-May	4.455		3.60	1	4.455	0.000:	
					20-May	4.310		3.74	1	4.310	0.000:	
					21-May	3.691		4.24	1	3.691	0.000:	
					22-May	3.655		4.40	1	3.655	0.000:	
					23-May	3.875		4.12	1	3.875	0.000:	
					24-May	4.080		4.30	1	4.080	0.000:	
					25-May	4.214		4.30	1	4.214	0.000:	
					26-May	3.988		4.34	1	3.988	0.000:	
					27-May	3.467		4.15	1	3.467	0.000:	
					28-May	3.105		4.41	1	3.105	0.000:	
					29-May	2.675		4.65	1	2.675	0.000:	
					30-May	2.313		4.79	1	2.313	0.000:	
					31-May	2.154		4.75	1	2.154	0.000:	
					1-Jun	1.984		5.13	1	1.984	0.000:	
					2-Jun	1.860		5.40	1	1.860	0.000:	
					3-Jun	1.732		5.63	1	1.732	0.000:	
					4-Jun	1.855		5.57	1	1.855	0.000:	
					5-Jun	2.649		5.86	1	2.649	0.000:	
					6-Jun	2.391		5.62	1	2.391	0.000:	
					7-Jun	1.998		5.12	1	1.998	0.000:	
					8-Jun	1.647		4.82	1	1.647	0.000:	
					9-Jun	1.465		5.22	1	1.465	0.000:	
					10-Jun	1.468		4.98	1	1.468	0.000:	
					11-Jun	1.377		4.82	1	1.377	0.000:	
					12-Jun	1.243		4.92	1	1.243	0.000:	
					13-Jun	1.160		4.86	1	1.160	0.000:	
					14-Jun	1.155		4.61	1	1.155	0.000:	
					15-Jun	1.167		4.28	1	1.167	0.000:	
					16-Jun	1.111		4.26	1	1.111	0.000:	
					17-Jun	1.177		3.96	1	1.177	0.000:	
					18-Jun	1.137		4.20	1	1.137	0.000:	
					19-Jun	1.089		4.05	1	1.089	0.000:	
					20-Jun	1.050		3.94	1	1.050	0.000:	
					21-Jun	0.903		4.27	1	0.903	0.000:	
					22-Jun	0.803		5.01	1	0.803	0.000:	
					23-Jun	2.064		5.17	1	2.064	0.000:	
					24-Jun	3.053		5.03	1	3.053	0.000:	
					25-Jun	2.043		5.10	1	2.043	0.000:	
					26-Jun	1.503		5.03	1	1.503	0.000:	
					27-Jun	1.217		4.33	1	1.217	0.000:	
					28-Jun	1.046		3.66	1	1.046	0.000:	
					29-Jun	0.951		3.30	1	0.951	0.000:	
					30-Jun	0.832		2.89	1	0.832	0.000:	
					1-Jul	0.766		2.67	1	0.766	0.000:	

2-Jul	0.696	3.01	1	0.696	0.000:
3-Jul	0.630	3.24	1	0.630	0.000:
4-Jul	0.932	3.53	1	0.932	0.000:
5-Jul	0.970	3.85	1	0.970	0.000:
6-Jul	0.878	3.82	1	0.878	0.000:
7-Jul	0.784	3.71	1	0.784	0.000:
8-Jul	0.806	3.30	1	0.806	0.000:
9-Jul	0.725	3.33	1	0.725	0.000:
10-Jul	0.680	3.23	1	0.680	0.000:
11-Jul	0.551	3.32	1	0.551	0.000:
12-Jul	0.570	3.38	1	0.570	0.000:
13-Jul	0.802	3.74	1	0.802	0.000:
14-Jul	0.769	3.45	1	0.769	0.000:
15-Jul	0.677	3.44	1	0.677	0.000:
16-Jul	0.595	3.31	1	0.595	0.000:
17-Jul	0.535	2.99	1	0.535	0.000:
18-Jul	0.517	2.85	1	0.517	0.000:
19-Jul	0.514	3.23	1	0.514	0.000:
20-Jul	0.491	3.39	1	0.491	0.000:
21-Jul	0.476	3.60	1	0.476	0.000:
22-Jul	0.557	3.98	1	0.557	0.000:
23-Jul	0.774	4.05	1	0.774	0.000:
24-Jul	0.743	3.50	1	0.743	0.000:
25-Jul	0.766	3.33	1	0.766	0.000:
26-Jul	0.583	2.86	1	0.583	0.000:
27-Jul	0.498	2.24	1	0.498	0.000:
28-Jul	0.476	2.05	1	0.476	0.000:
29-Jul	0.462	2.82	1	0.462	0.000:
30-Jul	0.470	3.27	1	0.470	0.000:
31-Jul	0.465	3.80	1	0.465	0.000:
1-Aug	0.457	4.55	1	0.457	0.000:
2-Aug	0.486	5.08	1	0.486	0.000:
3-Aug	0.509	4.80	1	0.509	0.000:
4-Aug	0.997	4.77	1	0.997	0.000:
5-Aug	1.133	4.73	1	1.133	0.000:
6-Aug	1.540	4.68	1	1.540	0.000:
7-Aug	1.124	4.02	1	1.124	0.000:
8-Aug	0.830	3.60	1	0.830	0.000:
9-Aug	0.647	2.94	1	0.647	0.000:
10-Aug	0.604	2.60	1	0.604	0.000:
11-Aug	0.582	2.13	1	0.582	0.000:
12-Aug	0.584	2.73	1	0.584	0.000:
13-Aug	0.563	2.98	1	0.563	0.000:
14-Aug	0.633	3.41	1	0.633	0.000:
15-Aug	0.679	3.92	1	0.679	0.000:
16-Aug	0.628	4.48	1	0.628	0.000:
17-Aug	0.582	4.54	1	0.582	0.000:
18-Aug	0.737	5.27	1	0.737	0.000:
19-Aug	0.701	5.65	1	0.701	0.000:
20-Aug	0.771	5.73	1	0.771	0.000:
21-Aug	0.815	5.67	1	0.815	0.000:

22-Aug	0.815	5.38	1	0.815	0.000:
23-Aug	0.871	4.92	1	0.871	0.000:
24-Aug	0.877	4.69	1	0.877	0.000:
25-Aug	0.839	4.17	1	0.839	0.000:
26-Aug	0.699	3.75	1	0.699	0.000:
27-Aug	0.665	4.18	1	0.665	0.000:
28-Aug	0.632	4.10	1	0.632	0.000:
29-Aug	0.615	3.84	1	0.615	0.000:
30-Aug	0.605	4.03	1	0.605	0.000:
31-Aug	0.610	4.69	1	0.610	0.000:
1-Sep	0.630	4.29	1	0.630	0.000:
2-Sep	0.612	4.51	1	0.612	0.000:
3-Sep	0.838	5.03	1	0.838	0.000:
4-Sep	0.952	5.54	1	0.952	0.000:
5-Sep	0.817	5.53	1	0.817	0.000:
6-Sep	1.059	6.13	1	1.059	0.000:
7-Sep	1.122	6.44	1	1.122	0.000:
8-Sep	6.686	6.44	1	6.686	0.000:
9-Sep	5.141	6.48	1	5.141	0.000:
10-Sep	3.995	6.64	1	3.995	0.000:
11-Sep	3.372	6.68	1	3.372	0.000:
12-Sep	6.907	6.55	1	6.907	0.000:
13-Sep	6.000	6.55	1	6.000	0.000:
14-Sep	5.906	6.31	1	5.906	0.000:
15-Sep	4.843	6.20	1	4.843	0.000:
16-Sep	3.968	5.95	1	3.968	0.000:
17-Sep	3.568	6.16	1	3.568	0.000:
18-Sep	4.626	6.35	1	4.626	0.000:
19-Sep	9.139	6.46	1	9.139	0.000:
20-Sep	9.837	6.41	1	9.837	0.000:
21-Sep	8.605	6.37	1	8.605	0.000:
22-Sep	7.018	6.21	1	7.018	0.000:
23-Sep	7.331	6.03	1	7.331	0.000:
24-Sep	7.459	5.97	1	7.459	0.000:
25-Sep	7.559	5.98	1	7.559	0.000:
26-Sep	6.532	5.96	1	6.532	0.000:
27-Sep	5.630	5.69	1	5.630	0.000:
28-Sep	7.126	5.67	1	7.126	0.000:
29-Sep	6.866	5.64	1	6.866	0.000:
30-Sep	7.651	5.65	1	7.651	0.000:
1-Oct	7.524	5.46	1	7.524	0.000:
2-Oct	6.581	5.64	1	6.581	0.000:
3-Oct	5.575	5.41	1	5.575	0.000:
4-Oct	5.178	5.14	1	5.178	0.000:
5-Oct	10.385	5.29	1	10.385	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW INIT. (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
9	S.F. KOKTULI	Q	34.0	2007	17-May	5.466		3.80	1	5.466	0.000:	HYDROLOGY NODE SK100LF6
					18-May	5.205		3.51	1	5.205	0.000:	
					19-May	4.439		3.60	1	4.439	0.000:	
					20-May	4.302		3.74	1	4.302	0.000:	
					21-May	3.718		4.24	1	3.718	0.000:	
					22-May	3.684		4.40	1	3.684	0.000:	
					23-May	3.893		4.12	1	3.893	0.000:	
					24-May	4.086		4.30	1	4.086	0.000:	
					25-May	4.213		4.30	1	4.213	0.000:	
					26-May	3.999		4.34	1	3.999	0.000:	
					27-May	3.505		4.15	1	3.505	0.000:	
					28-May	3.159		4.41	1	3.159	0.000:	
					29-May	2.744		4.65	1	2.744	0.000:	
					30-May	2.392		4.79	1	2.392	0.000:	
					31-May	2.236		4.75	1	2.236	0.000:	
					1-Jun	2.076		5.13	1	2.076	0.000:	
					2-Jun	1.961		5.40	1	1.961	0.000:	
					3-Jun	1.843		5.63	1	1.843	0.000:	
					4-Jun	1.957		5.57	1	1.957	0.000:	
					5-Jun	2.719		5.86	1	2.719	0.000:	
					6-Jun	2.468		5.62	1	2.468	0.000:	
					7-Jun	2.090		5.12	1	2.090	0.000:	
					8-Jun	1.762		4.82	1	1.762	0.000:	
					9-Jun	1.589		5.22	1	1.589	0.000:	
					10-Jun	1.592		4.98	1	1.592	0.000:	
					11-Jun	1.503		4.82	1	1.503	0.000:	
					12-Jun	1.373		4.92	1	1.373	0.000:	
					13-Jun	1.290		4.86	1	1.290	0.000:	
					14-Jun	1.286		4.61	1	1.286	0.000:	
					15-Jun	1.298		4.28	1	1.298	0.000:	
					16-Jun	1.242		4.26	1	1.242	0.000:	
					17-Jun	1.307		3.96	1	1.307	0.000:	
					18-Jun	1.268		4.20	1	1.268	0.000:	
					19-Jun	1.220		4.05	1	1.220	0.000:	
					20-Jun	1.180		3.94	1	1.180	0.000:	
					21-Jun	1.032		4.27	1	1.032	0.000:	
					22-Jun	0.928		5.01	1	0.928	0.000:	
					23-Jun	2.150		5.17	1	2.150	0.000:	
					24-Jun	3.109		5.03	1	3.109	0.000:	
					25-Jun	2.131		5.10	1	2.131	0.000:	
					26-Jun	1.625		5.03	1	1.625	0.000:	
					27-Jun	1.347		4.33	1	1.347	0.000:	
					28-Jun	1.176		3.66	1	1.176	0.000:	
					29-Jun	1.081		3.30	1	1.081	0.000:	
					30-Jun	0.959		2.89	1	0.959	0.000:	
					1-Jul	0.890		2.67	1	0.890	0.000:	

2-Jul	0.816	3.01	1	0.816	0.000:
3-Jul	0.746	3.24	1	0.746	0.000:
4-Jul	1.061	3.53	1	1.061	0.000:
5-Jul	1.100	3.85	1	1.100	0.000:
6-Jul	1.005	3.82	1	1.005	0.000:
7-Jul	0.909	3.71	1	0.909	0.000:
8-Jul	0.931	3.30	1	0.931	0.000:
9-Jul	0.847	3.33	1	0.847	0.000:
10-Jul	0.799	3.23	1	0.799	0.000:
11-Jul	0.660	3.32	1	0.660	0.000:
12-Jul	0.679	3.38	1	0.679	0.000:
13-Jul	0.924	3.74	1	0.924	0.000:
14-Jul	0.893	3.45	1	0.893	0.000:
15-Jul	0.796	3.44	1	0.796	0.000:
16-Jul	0.708	3.31	1	0.708	0.000:
17-Jul	0.642	2.99	1	0.642	0.000:
18-Jul	0.621	2.85	1	0.621	0.000:
19-Jul	0.618	3.23	1	0.618	0.000:
20-Jul	0.593	3.39	1	0.593	0.000:
21-Jul	0.576	3.60	1	0.576	0.000:
22-Jul	0.665	3.98	1	0.665	0.000:
23-Jul	0.896	4.05	1	0.896	0.000:
24-Jul	0.865	3.50	1	0.865	0.000:
25-Jul	0.890	3.33	1	0.890	0.000:
26-Jul	0.695	2.86	1	0.695	0.000:
27-Jul	0.601	2.24	1	0.601	0.000:
28-Jul	0.576	2.05	1	0.576	0.000:
29-Jul	0.561	2.82	1	0.561	0.000:
30-Jul	0.569	3.27	1	0.569	0.000:
31-Jul	0.564	3.80	1	0.564	0.000:
1-Aug	0.555	4.55	1	0.555	0.000:
2-Aug	0.587	5.08	1	0.587	0.000:
3-Aug	0.613	4.80	1	0.613	0.000:
4-Aug	1.125	4.77	1	1.125	0.000:
5-Aug	1.264	4.73	1	1.264	0.000:
6-Aug	1.661	4.68	1	1.661	0.000:
7-Aug	1.255	4.02	1	1.255	0.000:
8-Aug	0.956	3.60	1	0.956	0.000:
9-Aug	0.763	2.94	1	0.763	0.000:
10-Aug	0.715	2.60	1	0.715	0.000:
11-Aug	0.693	2.13	1	0.693	0.000:
12-Aug	0.694	2.73	1	0.694	0.000:
13-Aug	0.671	2.98	1	0.671	0.000:
14-Aug	0.747	3.41	1	0.747	0.000:
15-Aug	0.796	3.92	1	0.796	0.000:
16-Aug	0.742	4.48	1	0.742	0.000:
17-Aug	0.692	4.54	1	0.692	0.000:
18-Aug	0.857	5.27	1	0.857	0.000:
19-Aug	0.819	5.65	1	0.819	0.000:
20-Aug	0.892	5.73	1	0.892	0.000:
21-Aug	0.938	5.67	1	0.938	0.000:

22-Aug	0.938	5.38	1	0.938	0.000:
23-Aug	0.998	4.92	1	0.998	0.000:
24-Aug	1.005	4.69	1	1.005	0.000:
25-Aug	0.965	4.17	1	0.965	0.000:
26-Aug	0.817	3.75	1	0.817	0.000:
27-Aug	0.780	4.18	1	0.780	0.000:
28-Aug	0.746	4.10	1	0.746	0.000:
29-Aug	0.727	3.84	1	0.727	0.000:
30-Aug	0.716	4.03	1	0.716	0.000:
31-Aug	0.723	4.69	1	0.723	0.000:
1-Sep	0.744	4.29	1	0.744	0.000:
2-Sep	0.725	4.51	1	0.725	0.000:
3-Sep	0.962	5.03	1	0.962	0.000:
4-Sep	1.078	5.54	1	1.078	0.000:
5-Sep	0.940	5.53	1	0.940	0.000:
6-Sep	1.189	6.13	1	1.189	0.000:
7-Sep	1.252	6.44	1	1.252	0.000:
8-Sep	6.503	6.44	1	6.503	0.000:
9-Sep	5.079	6.48	1	5.079	0.000:
10-Sep	4.006	6.64	1	4.006	0.000:
11-Sep	3.414	6.68	1	3.414	0.000:
12-Sep	6.704	6.55	1	6.704	0.000:
13-Sep	5.873	6.55	1	5.873	0.000:
14-Sep	5.787	6.31	1	5.787	0.000:
15-Sep	4.801	6.20	1	4.801	0.000:
16-Sep	3.981	5.95	1	3.981	0.000:
17-Sep	3.601	6.16	1	3.601	0.000:
18-Sep	4.599	6.35	1	4.599	0.000:
19-Sep	8.719	6.46	1	8.719	0.000:
20-Sep	9.342	6.41	1	9.342	0.000:
21-Sep	8.240	6.37	1	8.240	0.000:
22-Sep	6.806	6.21	1	6.806	0.000:
23-Sep	7.090	6.03	1	7.090	0.000:
24-Sep	7.206	5.97	1	7.206	0.000:
25-Sep	7.297	5.98	1	7.297	0.000:
26-Sep	6.361	5.96	1	6.361	0.000:
27-Sep	5.532	5.69	1	5.532	0.000:
28-Sep	6.903	5.67	1	6.903	0.000:
29-Sep	6.667	5.64	1	6.667	0.000:
30-Sep	7.380	5.65	1	7.380	0.000:
1-Oct	7.265	5.46	1	7.265	0.000:
2-Oct	6.406	5.64	1	6.406	0.000:
3-Oct	5.481	5.41	1	5.481	0.000:
4-Oct	5.113	5.14	1	5.113	0.000:
5-Oct	9.829	5.29	1	9.829	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
10	S.F. KOKTULI	Q	29.3	2007	17-May	7.093		5.94	1	7.093	0.000:	HYDROLOGY GAGE SK100B1
					18-May	7.155		5.99	1	7.155	0.000:	
					19-May	5.931		6.36	1	5.931	0.000:	
					20-May	5.884		6.63	1	5.884	0.000:	
					21-May	5.100		7.39	1	5.100	0.000:	
					22-May	5.002		7.73	1	5.002	0.000:	
					23-May	5.112		7.16	1	5.112	0.000:	
					24-May	5.433		7.30	1	5.433	0.000:	
					25-May	5.605		7.12	1	5.605	0.000:	
					26-May	5.447		6.81	1	5.447	0.000:	
					27-May	4.742		6.53	1	4.742	0.000:	
					28-May	4.338		7.06	1	4.338	0.000:	
					29-May	3.818		7.25	1	3.818	0.000:	
					30-May	3.353		7.54	1	3.353	0.000:	
					31-May	3.200		7.84	1	3.200	0.000:	
					1-Jun	3.011		8.44	1	3.011	0.000:	
					2-Jun	2.858		8.57	1	2.858	0.000:	
					3-Jun	2.693		8.32	1	2.693	0.000:	
					4-Jun	2.712		8.03	1	2.712	0.000:	
					5-Jun	3.446		8.21	1	3.446	0.000:	
					6-Jun	3.239		7.85	1	3.239	0.000:	
					7-Jun	2.900		7.36	1	2.900	0.000:	
					8-Jun	2.562		7.54	1	2.562	0.000:	
					9-Jun	2.350		8.40	1	2.350	0.000:	
					10-Jun	2.290		8.58	1	2.290	0.000:	
					11-Jun	2.224		8.64	1	2.224	0.000:	
					12-Jun	2.071		9.09	1	2.071	0.000:	
					13-Jun	1.954		9.15	1	1.954	0.000:	
					14-Jun	1.901		9.10	1	1.901	0.000:	
					15-Jun	1.871		8.97	1	1.871	0.000:	
					16-Jun	1.842		9.14	1	1.842	0.000:	
					17-Jun	1.898		9.08	1	1.898	0.000:	
					18-Jun	1.880		9.85	1	1.880	0.000:	
					19-Jun	1.789		10.19	1	1.789	0.000:	
					20-Jun	1.738		10.35	1	1.738	0.000:	
					21-Jun	1.608		10.31	1	1.608	0.000:	
					22-Jun	1.508		10.46	1	1.508	0.000:	
					23-Jun	2.555		10.39	1	2.555	0.000:	
					24-Jun	4.028		9.38	1	4.028	0.000:	
					25-Jun	3.059		9.00	1	3.059	0.000:	
					26-Jun	2.500		9.61	1	2.500	0.000:	
					27-Jun	2.171		9.12	1	2.171	0.000:	
					28-Jun	1.945		8.98	1	1.945	0.000:	
					29-Jun	1.815		9.74	1	1.815	0.000:	
					30-Jun	1.661		9.65	1	1.661	0.000:	
					1-Jul	1.560		9.62	1	1.560	0.000:	

2-Jul	1.486	10.98	1	1.486	0.000:
3-Jul	1.422	10.79	1	1.422	0.000:
4-Jul	1.631	10.49	1	1.631	0.000:
5-Jul	1.700	10.77	1	1.700	0.000:
6-Jul	1.631	10.87	1	1.631	0.000:
7-Jul	1.534	10.02	1	1.534	0.000:
8-Jul	1.528	10.03	1	1.528	0.000:
9-Jul	1.464	9.87	1	1.464	0.000:
10-Jul	1.414	10.20	1	1.414	0.000:
11-Jul	1.350	9.97	1	1.350	0.000:
12-Jul	1.326	10.17	1	1.326	0.000:
13-Jul	1.556	10.70	1	1.556	0.000:
14-Jul	1.503	11.10	1	1.503	0.000:
15-Jul	1.407	10.65	1	1.407	0.000:
16-Jul	1.347	10.87	1	1.347	0.000:
17-Jul	1.294	10.92	1	1.294	0.000:
18-Jul	1.262	10.72	1	1.262	0.000:
19-Jul	1.255	11.22	1	1.255	0.000:
20-Jul	1.226	11.37	1	1.226	0.000:
21-Jul	1.195	11.09	1	1.195	0.000:
22-Jul	1.251	10.92	1	1.251	0.000:
23-Jul	1.418	10.47	1	1.418	0.000:
24-Jul	1.416	9.71	1	1.416	0.000:
25-Jul	1.357	9.93	1	1.357	0.000:
26-Jul	1.283	9.91	1	1.283	0.000:
27-Jul	1.215	10.45	1	1.215	0.000:
28-Jul	1.178	11.06	1	1.178	0.000:
29-Jul	1.151	11.74	1	1.151	0.000:
30-Jul	1.134	11.91	1	1.134	0.000:
31-Jul	1.119	12.01	1	1.119	0.000:
1-Aug	1.100	12.12	1	1.100	0.000:
2-Aug	1.112	12.09	1	1.112	0.000:
3-Aug	1.136	11.70	1	1.136	0.000:
4-Aug	1.493	11.14	1	1.493	0.000:
5-Aug	1.709	10.57	1	1.709	0.000:
6-Aug	2.070	10.20	1	2.070	0.000:
7-Aug	1.784	9.51	1	1.784	0.000:
8-Aug	1.539	9.35	1	1.539	0.000:
9-Aug	1.396	9.45	1	1.396	0.000:
10-Aug	1.321	9.86	1	1.321	0.000:
11-Aug	1.271	10.00	1	1.271	0.000:
12-Aug	1.253	11.31	1	1.253	0.000:
13-Aug	1.220	11.50	1	1.220	0.000:
14-Aug	1.251	11.48	1	1.251	0.000:
15-Aug	1.322	12.11	1	1.322	0.000:
16-Aug	1.271	12.25	1	1.271	0.000:
17-Aug	1.214	11.08	1	1.214	0.000:
18-Aug	1.330	11.60	1	1.330	0.000:
19-Aug	1.362	12.40	1	1.362	0.000:
20-Aug	1.410	12.18	1	1.410	0.000:
21-Aug	1.458	11.96	1	1.458	0.000:

22-Aug	1.487	12.17	1	1.487	0.000:
23-Aug	1.519	11.74	1	1.519	0.000:
24-Aug	1.458	11.13	1	1.458	0.000:
25-Aug	1.477	10.60	1	1.477	0.000:
26-Aug	1.402	10.12	1	1.402	0.000:
27-Aug	1.353	10.29	1	1.353	0.000:
28-Aug	1.304	10.10	1	1.304	0.000:
29-Aug	1.263	10.14	1	1.263	0.000:
30-Aug	1.241	10.63	1	1.241	0.000:
31-Aug	1.233	11.53	1	1.233	0.000:
1-Sep	1.250	11.15	1	1.250	0.000:
2-Sep	1.230	10.84	1	1.230	0.000:
3-Sep	1.370	10.48	1	1.370	0.000:
4-Sep	1.690	10.14	1	1.690	0.000:
5-Sep	1.561	9.78	1	1.561	0.000:
6-Sep	2.040	10.04	1	2.040	0.000:
7-Sep	1.911	10.49	1	1.911	0.000:
8-Sep	8.545	10.55	1	8.545	0.000:
9-Sep	7.678	10.34	1	7.678	0.000:
10-Sep	5.906	10.01	1	5.906	0.000:
11-Sep	4.988	9.92	1	4.988	0.000:
12-Sep	9.431	9.45	1	9.431	0.000:
13-Sep	8.611	8.96	1	8.611	0.000:
14-Sep	8.476	8.66	1	8.476	0.000:
15-Sep	7.090	8.58	1	7.090	0.000:
16-Sep	5.958	8.37	1	5.958	0.000:
17-Sep	5.369	8.61	1	5.369	0.000:
18-Sep	6.058	8.95	1	6.058	0.000:
19-Sep	13.863	9.00	1	13.863	0.000:
20-Sep	14.652	8.67	1	14.652	0.000:
21-Sep	13.107	8.40	1	13.107	0.000:
22-Sep	10.586	8.12	1	10.586	0.000:
23-Sep	11.057	7.84	1	11.057	0.000:
24-Sep	11.171	7.64	1	11.171	0.000:
25-Sep	11.595	7.63	1	11.595	0.000:
26-Sep	10.074	7.54	1	10.074	0.000:
27-Sep	8.729	7.06	1	8.729	0.000:
28-Sep	11.016	7.02	1	11.016	0.000:
29-Sep	10.507	7.05	1	10.507	0.000:
30-Sep	11.698	7.08	1	11.698	0.000:
1-Oct	11.685	6.70	1	11.685	0.000:
2-Oct	10.259	6.81	1	10.259	0.000:
3-Oct	8.732	6.50	1	8.732	0.000:
4-Oct	8.051	5.79	1	8.051	0.000:
5-Oct	17.085	6.20	1	17.085	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. POINTS (C)	NO. OF FLOW	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
11	S.F. KOKTULI	Q	24.9	2007	17-May	9.118	5.94	1	9.118	0.000:	HYDROLOGY GAGE SK100B	
					18-May	9.203	5.99	1	9.203	0.000:		
					19-May	7.985	6.36	1	7.985	0.000:		
					20-May	7.957	6.63	1	7.957	0.000:		
					21-May	7.079	7.39	1	7.079	0.000:		
					22-May	6.966	7.73	1	6.966	0.000:		
					23-May	7.108	7.16	1	7.108	0.000:		
					24-May	7.646	7.30	1	7.646	0.000:		
					25-May	7.900	7.12	1	7.900	0.000:		
					26-May	7.759	6.81	1	7.759	0.000:		
					27-May	6.853	6.53	1	6.853	0.000:		
					28-May	6.286	7.06	1	6.286	0.000:		
					29-May	5.522	7.25	1	5.522	0.000:		
					30-May	4.899	7.54	1	4.899	0.000:		
					31-May	4.672	7.84	1	4.672	0.000:		
					1-Jun	4.417	8.44	1	4.417	0.000:		
					2-Jun	4.219	8.57	1	4.219	0.000:		
					3-Jun	3.993	8.32	1	3.993	0.000:		
					4-Jun	3.993	8.03	1	3.993	0.000:		
					5-Jun	4.899	8.21	1	4.899	0.000:		
					6-Jun	4.559	7.85	1	4.559	0.000:		
					7-Jun	4.078	7.36	1	4.078	0.000:		
					8-Jun	3.653	7.54	1	3.653	0.000:		
					9-Jun	3.370	8.40	1	3.370	0.000:		
					10-Jun	3.200	8.58	1	3.200	0.000:		
					11-Jun	3.143	8.64	1	3.143	0.000:		
					12-Jun	3.087	9.09	1	3.087	0.000:		
					13-Jun	2.945	9.15	1	2.945	0.000:		
					14-Jun	2.888	9.10	1	2.888	0.000:		
					15-Jun	2.832	8.97	1	2.832	0.000:		
					16-Jun	2.832	9.14	1	2.832	0.000:		
					17-Jun	3.002	9.08	1	3.002	0.000:		
					18-Jun	2.945	9.85	1	2.945	0.000:		
					19-Jun	2.775	10.19	1	2.775	0.000:		
					20-Jun	2.718	10.35	1	2.718	0.000:		
					21-Jun	2.549	10.31	1	2.549	0.000:		
					22-Jun	2.492	10.46	1	2.492	0.000:		
					23-Jun	4.248	10.39	1	4.248	0.000:		
					24-Jun	6.286	9.38	1	6.286	0.000:		
					25-Jun	4.786	9.00	1	4.786	0.000:		
					26-Jun	3.936	9.61	1	3.936	0.000:		
					27-Jun	3.455	9.12	1	3.455	0.000:		
					28-Jun	3.115	8.98	1	3.115	0.000:		
					29-Jun	2.917	9.74	1	2.917	0.000:		
					30-Jun	2.718	9.65	1	2.718	0.000:		
					1-Jul	2.549	9.62	1	2.549	0.000:		

2-Jul	2.379	10.98	1	2.379	0.000:
3-Jul	2.265	10.79	1	2.265	0.000:
4-Jul	2.633	10.49	1	2.633	0.000:
5-Jul	2.633	10.77	1	2.633	0.000:
6-Jul	2.520	10.87	1	2.520	0.000:
7-Jul	2.350	10.02	1	2.350	0.000:
8-Jul	2.435	10.03	1	2.435	0.000:
9-Jul	2.237	9.87	1	2.237	0.000:
10-Jul	2.180	10.20	1	2.180	0.000:
11-Jul	2.095	9.97	1	2.095	0.000:
12-Jul	2.067	10.17	1	2.067	0.000:
13-Jul	2.492	10.70	1	2.492	0.000:
14-Jul	2.379	11.10	1	2.379	0.000:
15-Jul	2.209	10.65	1	2.209	0.000:
16-Jul	2.067	10.87	1	2.067	0.000:
17-Jul	1.982	10.92	1	1.982	0.000:
18-Jul	1.926	10.72	1	1.926	0.000:
19-Jul	1.897	11.22	1	1.897	0.000:
20-Jul	1.841	11.37	1	1.841	0.000:
21-Jul	1.841	11.09	1	1.841	0.000:
22-Jul	2.010	10.92	1	2.010	0.000:
23-Jul	2.237	10.47	1	2.237	0.000:
24-Jul	2.152	9.71	1	2.152	0.000:
25-Jul	2.039	9.93	1	2.039	0.000:
26-Jul	1.954	9.91	1	1.954	0.000:
27-Jul	1.812	10.45	1	1.812	0.000:
28-Jul	1.756	11.06	1	1.756	0.000:
29-Jul	1.699	11.74	1	1.699	0.000:
30-Jul	1.671	11.91	1	1.671	0.000:
31-Jul	1.642	12.01	1	1.642	0.000:
1-Aug	1.642	12.12	1	1.642	0.000:
2-Aug	1.671	12.09	1	1.671	0.000:
3-Aug	1.699	11.70	1	1.699	0.000:
4-Aug	2.237	11.14	1	2.237	0.000:
5-Aug	2.520	10.57	1	2.520	0.000:
6-Aug	2.860	10.20	1	2.860	0.000:
7-Aug	2.464	9.51	1	2.464	0.000:
8-Aug	2.180	9.35	1	2.180	0.000:
9-Aug	1.982	9.45	1	1.982	0.000:
10-Aug	1.869	9.86	1	1.869	0.000:
11-Aug	1.812	10.00	1	1.812	0.000:
12-Aug	1.784	11.31	1	1.784	0.000:
13-Aug	1.727	11.50	1	1.727	0.000:
14-Aug	1.812	11.48	1	1.812	0.000:
15-Aug	1.954	12.11	1	1.954	0.000:
16-Aug	1.897	12.25	1	1.897	0.000:
17-Aug	1.784	11.08	1	1.784	0.000:
18-Aug	2.039	11.60	1	2.039	0.000:
19-Aug	2.039	12.40	1	2.039	0.000:
20-Aug	2.152	12.18	1	2.152	0.000:
21-Aug	2.209	11.96	1	2.209	0.000:

22-Aug	2.237	12.17	1	2.237	0.000:
23-Aug	2.237	11.74	1	2.237	0.000:
24-Aug	2.152	11.13	1	2.152	0.000:
25-Aug	2.180	10.60	1	2.180	0.000:
26-Aug	2.067	10.12	1	2.067	0.000:
27-Aug	1.982	10.29	1	1.982	0.000:
28-Aug	1.897	10.10	1	1.897	0.000:
29-Aug	1.841	10.14	1	1.841	0.000:
30-Aug	1.841	10.63	1	1.841	0.000:
31-Aug	1.897	11.53	1	1.897	0.000:
1-Sep	1.954	11.15	1	1.954	0.000:
2-Sep	1.897	10.84	1	1.897	0.000:
3-Sep	2.152	10.48	1	2.152	0.000:
4-Sep	2.662	10.14	1	2.662	0.000:
5-Sep	2.407	9.78	1	2.407	0.000:
6-Sep	3.087	10.04	1	3.087	0.000:
7-Sep	2.917	10.49	1	2.917	0.000:
8-Sep	12.318	10.55	1	12.318	0.000:
9-Sep	10.930	10.34	1	10.930	0.000:
10-Sep	8.580	10.01	1	8.580	0.000:
11-Sep	7.447	9.92	1	7.447	0.000:
12-Sep	12.884	9.45	1	12.884	0.000:
13-Sep	12.006	8.96	1	12.006	0.000:
14-Sep	11.751	8.66	1	11.751	0.000:
15-Sep	10.052	8.58	1	10.052	0.000:
16-Sep	8.693	8.37	1	8.693	0.000:
17-Sep	7.900	8.61	1	7.900	0.000:
18-Sep	8.920	8.95	1	8.920	0.000:
19-Sep	17.556	9.00	1	17.556	0.000:
20-Sep	18.349	8.67	1	18.349	0.000:
21-Sep	16.905	8.40	1	16.905	0.000:
22-Sep	14.413	8.12	1	14.413	0.000:
23-Sep	15.631	7.84	1	15.631	0.000:
24-Sep	15.744	7.64	1	15.744	0.000:
25-Sep	16.367	7.63	1	16.367	0.000:
26-Sep	14.583	7.54	1	14.583	0.000:
27-Sep	13.111	7.06	1	13.111	0.000:
28-Sep	16.849	7.02	1	16.849	0.000:
29-Sep	15.489	7.05	1	15.489	0.000:
30-Sep	17.075	7.08	1	17.075	0.000:
1-Oct	16.820	6.70	1	16.820	0.000:
2-Oct	14.923	6.81	1	14.923	0.000:
3-Oct	13.196	6.50	1	13.196	0.000:
4-Oct	12.573	5.79	1	12.573	0.000:
5-Oct	24.494	6.20	1	24.494	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
12	S.F. KOKTULI	Q	13.9	2007	17-May	7.857		5.94	1	7.857	0.000:	HYDROLOGY NODE FRS-3
					18-May	7.933		5.99	1	7.933	0.000:	
					19-May	6.847		6.36	1	6.847	0.000:	
					20-May	6.822		6.63	1	6.822	0.000:	
					21-May	6.042		7.39	1	6.042	0.000:	
					22-May	5.942		7.73	1	5.942	0.000:	
					23-May	6.067		7.16	1	6.067	0.000:	
					24-May	6.545		7.30	1	6.545	0.000:	
					25-May	6.771		7.12	1	6.771	0.000:	
					26-May	6.645		6.81	1	6.645	0.000:	
					27-May	5.842		6.53	1	5.842	0.000:	
					28-May	5.341		7.06	1	5.341	0.000:	
					29-May	4.669		7.25	1	4.669	0.000:	
					30-May	4.123		7.54	1	4.123	0.000:	
					31-May	3.925		7.84	1	3.925	0.000:	
					1-Jun	3.703		8.44	1	3.703	0.000:	
					2-Jun	3.531		8.57	1	3.531	0.000:	
					3-Jun	3.334		8.32	1	3.334	0.000:	
					4-Jun	3.334		8.03	1	3.334	0.000:	
					5-Jun	4.123		8.21	1	4.123	0.000:	
					6-Jun	3.827		7.85	1	3.827	0.000:	
					7-Jun	3.408		7.36	1	3.408	0.000:	
					8-Jun	3.040		7.54	1	3.040	0.000:	
					9-Jun	2.796		8.40	1	2.796	0.000:	
					10-Jun	2.650		8.58	1	2.650	0.000:	
					11-Jun	2.601		8.64	1	2.601	0.000:	
					12-Jun	2.553		9.09	1	2.553	0.000:	
					13-Jun	2.431		9.15	1	2.431	0.000:	
					14-Jun	2.383		9.10	1	2.383	0.000:	
					15-Jun	2.334		8.97	1	2.334	0.000:	
					16-Jun	2.334		9.14	1	2.334	0.000:	
					17-Jun	2.480		9.08	1	2.480	0.000:	
					18-Jun	2.431		9.85	1	2.431	0.000:	
					19-Jun	2.286		10.19	1	2.286	0.000:	
					20-Jun	2.237		10.35	1	2.237	0.000:	
					21-Jun	2.092		10.31	1	2.092	0.000:	
					22-Jun	2.044		10.46	1	2.044	0.000:	
					23-Jun	3.556		10.39	1	3.556	0.000:	
					24-Jun	5.341		9.38	1	5.341	0.000:	
					25-Jun	4.024		9.00	1	4.024	0.000:	
					26-Jun	3.285		9.61	1	3.285	0.000:	
					27-Jun	2.869		9.12	1	2.869	0.000:	
					28-Jun	2.577		8.98	1	2.577	0.000:	
					29-Jun	2.407		9.74	1	2.407	0.000:	
					30-Jun	2.237		9.65	1	2.237	0.000:	
					1-Jul	2.092		9.62	1	2.092	0.000:	

2-Jul	1.948	10.98	1	1.948	0.000:
3-Jul	1.852	10.79	1	1.852	0.000:
4-Jul	2.165	10.49	1	2.165	0.000:
5-Jul	2.165	10.77	1	2.165	0.000:
6-Jul	2.068	10.87	1	2.068	0.000:
7-Jul	1.924	10.02	1	1.924	0.000:
8-Jul	1.996	10.03	1	1.996	0.000:
9-Jul	1.828	9.87	1	1.828	0.000:
10-Jul	1.780	10.20	1	1.780	0.000:
11-Jul	1.708	9.97	1	1.708	0.000:
12-Jul	1.684	10.17	1	1.684	0.000:
13-Jul	2.044	10.70	1	2.044	0.000:
14-Jul	1.948	11.10	1	1.948	0.000:
15-Jul	1.804	10.65	1	1.804	0.000:
16-Jul	1.684	10.87	1	1.684	0.000:
17-Jul	1.612	10.92	1	1.612	0.000:
18-Jul	1.564	10.72	1	1.564	0.000:
19-Jul	1.536	11.22	1	1.536	0.000:
20-Jul	1.466	11.37	1	1.466	0.000:
21-Jul	1.466	11.09	1	1.466	0.000:
22-Jul	1.636	10.92	1	1.636	0.000:
23-Jul	1.828	10.47	1	1.828	0.000:
24-Jul	1.756	9.71	1	1.756	0.000:
25-Jul	1.660	9.93	1	1.660	0.000:
26-Jul	1.588	9.91	1	1.588	0.000:
27-Jul	1.428	10.45	1	1.428	0.000:
28-Jul	1.351	11.06	1	1.351	0.000:
29-Jul	1.276	11.74	1	1.276	0.000:
30-Jul	1.240	11.91	1	1.240	0.000:
31-Jul	1.204	12.01	1	1.204	0.000:
1-Aug	1.204	12.12	1	1.204	0.000:
2-Aug	1.240	12.09	1	1.240	0.000:
3-Aug	1.276	11.70	1	1.276	0.000:
4-Aug	1.828	11.14	1	1.828	0.000:
5-Aug	2.068	10.57	1	2.068	0.000:
6-Aug	2.358	10.20	1	2.358	0.000:
7-Aug	2.020	9.51	1	2.020	0.000:
8-Aug	1.780	9.35	1	1.780	0.000:
9-Aug	1.612	9.45	1	1.612	0.000:
10-Aug	1.506	9.86	1	1.506	0.000:
11-Aug	1.428	10.00	1	1.428	0.000:
12-Aug	1.389	11.31	1	1.389	0.000:
13-Aug	1.314	11.50	1	1.314	0.000:
14-Aug	1.428	11.48	1	1.428	0.000:
15-Aug	1.588	12.11	1	1.588	0.000:
16-Aug	1.536	12.25	1	1.536	0.000:
17-Aug	1.389	11.08	1	1.389	0.000:
18-Aug	1.660	11.60	1	1.660	0.000:
19-Aug	1.660	12.40	1	1.660	0.000:
20-Aug	1.756	12.18	1	1.756	0.000:
21-Aug	1.804	11.96	1	1.804	0.000:

22-Aug	1.828	12.17	1	1.828	0.000:
23-Aug	1.828	11.74	1	1.828	0.000:
24-Aug	1.756	11.13	1	1.756	0.000:
25-Aug	1.780	10.60	1	1.780	0.000:
26-Aug	1.684	10.12	1	1.684	0.000:
27-Aug	1.612	10.29	1	1.612	0.000:
28-Aug	1.536	10.10	1	1.536	0.000:
29-Aug	1.466	10.14	1	1.466	0.000:
30-Aug	1.466	10.63	1	1.466	0.000:
31-Aug	1.536	11.53	1	1.536	0.000:
1-Sep	1.588	11.15	1	1.588	0.000:
2-Sep	1.536	10.84	1	1.536	0.000:
3-Sep	1.756	10.48	1	1.756	0.000:
4-Sep	2.189	10.14	1	2.189	0.000:
5-Sep	1.972	9.78	1	1.972	0.000:
6-Sep	2.553	10.04	1	2.553	0.000:
7-Sep	2.407	10.49	1	2.407	0.000:
8-Sep	10.737	10.55	1	10.737	0.000:
9-Sep	9.484	10.34	1	9.484	0.000:
10-Sep	7.377	10.01	1	7.377	0.000:
11-Sep	6.369	9.92	1	6.369	0.000:
12-Sep	11.250	9.45	1	11.250	0.000:
13-Sep	10.455	8.96	1	10.455	0.000:
14-Sep	10.225	8.66	1	10.225	0.000:
15-Sep	8.695	8.58	1	8.695	0.000:
16-Sep	7.478	8.37	1	7.478	0.000:
17-Sep	6.771	8.61	1	6.771	0.000:
18-Sep	7.680	8.95	1	7.680	0.000:
19-Sep	15.511	9.00	1	15.511	0.000:
20-Sep	16.238	8.67	1	16.238	0.000:
21-Sep	14.914	8.40	1	14.914	0.000:
22-Sep	12.639	8.12	1	12.639	0.000:
23-Sep	13.749	7.84	1	13.749	0.000:
24-Sep	13.852	7.64	1	13.852	0.000:
25-Sep	14.422	7.63	1	14.422	0.000:
26-Sep	12.793	7.54	1	12.793	0.000:
27-Sep	11.455	7.06	1	11.455	0.000:
28-Sep	14.862	7.02	1	14.862	0.000:
29-Sep	13.619	7.05	1	13.619	0.000:
30-Sep	15.070	7.08	1	15.070	0.000:
1-Oct	14.836	6.70	1	14.836	0.000:
2-Oct	13.103	6.81	1	13.103	0.000:
3-Oct	11.532	6.50	1	11.532	0.000:
4-Oct	10.968	5.79	1	10.968	0.000:
5-Oct	21.916	6.20	1	21.916	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
13	S.F. KOKTULI	Q	3.0	2007	17-May	6.719		5.94	1	6.719	0.000:	HYDROLOGY NODE FRS-2
					18-May	7.047		5.99	1	7.047	0.000:	
					19-May	6.242		6.36	1	6.242	0.000:	
					20-May	6.261		6.63	1	6.261	0.000:	
					21-May	5.879		7.39	1	5.879	0.000:	
					22-May	5.818		7.73	1	5.818	0.000:	
					23-May	5.784		7.16	1	5.784	0.000:	
					24-May	6.254		7.30	1	6.254	0.000:	
					25-May	6.483		7.12	1	6.483	0.000:	
					26-May	6.371		6.81	1	6.371	0.000:	
					27-May	5.929		6.53	1	5.929	0.000:	
					28-May	5.645		7.06	1	5.645	0.000:	
					29-May	5.308		7.25	1	5.308	0.000:	
					30-May	5.109		7.54	1	5.109	0.000:	
					31-May	4.992		7.84	1	4.992	0.000:	
					1-Jun	4.860		8.44	1	4.860	0.000:	
					2-Jun	4.746		8.57	1	4.746	0.000:	
					3-Jun	4.592		8.32	1	4.592	0.000:	
					4-Jun	4.542		8.03	1	4.542	0.000:	
					5-Jun	4.939		8.21	1	4.939	0.000:	
					6-Jun	4.875		7.85	1	4.875	0.000:	
					7-Jun	4.633		7.36	1	4.633	0.000:	
					8-Jun	4.384		7.54	1	4.384	0.000:	
					9-Jun	4.189		8.40	1	4.189	0.000:	
					10-Jun	4.063		8.58	1	4.063	0.000:	
					11-Jun	4.051		8.64	1	4.051	0.000:	
					12-Jun	3.956		9.09	1	3.956	0.000:	
					13-Jun	3.862		9.15	1	3.862	0.000:	
					14-Jun	3.892		9.10	1	3.892	0.000:	
					15-Jun	3.841		8.97	1	3.841	0.000:	
					16-Jun	3.887		9.14	1	3.887	0.000:	
					17-Jun	3.995		9.08	1	3.995	0.000:	
					18-Jun	4.039		9.85	1	4.039	0.000:	
					19-Jun	3.864		10.19	1	3.864	0.000:	
					20-Jun	3.808		10.35	1	3.808	0.000:	
					21-Jun	3.703		10.31	1	3.703	0.000:	
					22-Jun	3.696		10.46	1	3.696	0.000:	
					23-Jun	4.428		10.39	1	4.428	0.000:	
					24-Jun	5.823		9.38	1	5.823	0.000:	
					25-Jun	5.130		9.00	1	5.130	0.000:	
					26-Jun	4.707		9.61	1	4.707	0.000:	
					27-Jun	4.411		9.12	1	4.411	0.000:	
					28-Jun	4.247		8.98	1	4.247	0.000:	
					29-Jun	4.089		9.74	1	4.089	0.000:	
					30-Jun	3.934		9.65	1	3.934	0.000:	
					1-Jul	3.787		9.62	1	3.787	0.000:	

2-Jul	3.661	10.98	1	3.661	0.000:
3-Jul	3.547	10.79	1	3.547	0.000:
4-Jul	3.960	10.49	1	3.960	0.000:
5-Jul	3.915	10.77	1	3.915	0.000:
6-Jul	3.770	10.87	1	3.770	0.000:
7-Jul	3.637	10.02	1	3.637	0.000:
8-Jul	3.705	10.03	1	3.705	0.000:
9-Jul	3.576	9.87	1	3.576	0.000:
10-Jul	3.463	10.20	1	3.463	0.000:
11-Jul	3.361	9.97	1	3.361	0.000:
12-Jul	3.198	10.17	1	3.198	0.000:
13-Jul	3.695	10.70	1	3.695	0.000:
14-Jul	3.728	11.10	1	3.728	0.000:
15-Jul	3.474	10.65	1	3.474	0.000:
16-Jul	3.309	10.87	1	3.309	0.000:
17-Jul	3.014	10.92	1	3.014	0.000:
18-Jul	2.781	10.72	1	2.781	0.000:
19-Jul	2.846	11.22	1	2.846	0.000:
20-Jul	2.767	11.37	1	2.767	0.000:
21-Jul	2.795	11.09	1	2.795	0.000:
22-Jul	3.443	10.92	1	3.443	0.000:
23-Jul	3.634	10.47	1	3.634	0.000:
24-Jul	3.576	9.71	1	3.576	0.000:
25-Jul	3.467	9.93	1	3.467	0.000:
26-Jul	3.202	9.91	1	3.202	0.000:
27-Jul	2.805	10.45	1	2.805	0.000:
28-Jul	2.528	11.06	1	2.528	0.000:
29-Jul	2.424	11.74	1	2.424	0.000:
30-Jul	2.396	11.91	1	2.396	0.000:
31-Jul	2.328	12.01	1	2.328	0.000:
1-Aug	2.212	12.12	1	2.212	0.000:
2-Aug	2.215	12.09	1	2.215	0.000:
3-Aug	2.372	11.70	1	2.372	0.000:
4-Aug	3.269	11.14	1	3.269	0.000:
5-Aug	3.658	10.57	1	3.658	0.000:
6-Aug	3.746	10.20	1	3.746	0.000:
7-Aug	3.584	9.51	1	3.584	0.000:
8-Aug	3.348	9.35	1	3.348	0.000:
9-Aug	2.848	9.45	1	2.848	0.000:
10-Aug	2.509	9.86	1	2.509	0.000:
11-Aug	2.310	10.00	1	2.310	0.000:
12-Aug	2.268	11.31	1	2.268	0.000:
13-Aug	2.145	11.50	1	2.145	0.000:
14-Aug	2.304	11.48	1	2.304	0.000:
15-Aug	3.119	12.11	1	3.119	0.000:
16-Aug	2.917	12.25	1	2.917	0.000:
17-Aug	2.370	11.08	1	2.370	0.000:
18-Aug	2.655	11.60	1	2.655	0.000:
19-Aug	3.365	12.40	1	3.365	0.000:
20-Aug	3.391	12.18	1	3.391	0.000:
21-Aug	3.369	11.96	1	3.369	0.000:

22-Aug	3.432	12.17	1	3.432	0.000:
23-Aug	3.411	11.74	1	3.411	0.000:
24-Aug	3.396	11.13	1	3.396	0.000:
25-Aug	3.489	10.60	1	3.489	0.000:
26-Aug	3.308	10.12	1	3.308	0.000:
27-Aug	2.978	10.29	1	2.978	0.000:
28-Aug	2.693	10.10	1	2.693	0.000:
29-Aug	2.478	10.14	1	2.478	0.000:
30-Aug	2.344	10.63	1	2.344	0.000:
31-Aug	2.410	11.53	1	2.410	0.000:
1-Sep	3.060	11.15	1	3.060	0.000:
2-Sep	2.718	10.84	1	2.718	0.000:
3-Sep	2.864	10.48	1	2.864	0.000:
4-Sep	3.774	10.14	1	3.774	0.000:
5-Sep	3.524	9.78	1	3.524	0.000:
6-Sep	3.916	10.04	1	3.916	0.000:
7-Sep	4.008	10.49	1	4.008	0.000:
8-Sep	7.286	10.55	1	7.286	0.000:
9-Sep	8.366	10.34	1	8.366	0.000:
10-Sep	6.910	10.01	1	6.910	0.000:
11-Sep	6.278	9.92	1	6.278	0.000:
12-Sep	8.061	9.45	1	8.061	0.000:
13-Sep	8.097	8.96	1	8.097	0.000:
14-Sep	7.955	8.66	1	7.955	0.000:
15-Sep	7.316	8.58	1	7.316	0.000:
16-Sep	6.701	8.37	1	6.701	0.000:
17-Sep	6.329	8.61	1	6.329	0.000:
18-Sep	6.430	8.95	1	6.430	0.000:
19-Sep	9.832	9.00	1	9.832	0.000:
20-Sep	9.797	8.67	1	9.797	0.000:
21-Sep	9.745	8.40	1	9.745	0.000:
22-Sep	8.571	8.12	1	8.571	0.000:
23-Sep	9.138	7.84	1	9.138	0.000:
24-Sep	9.056	7.64	1	9.056	0.000:
25-Sep	9.464	7.63	1	9.464	0.000:
26-Sep	8.884	7.54	1	8.884	0.000:
27-Sep	8.251	7.06	1	8.251	0.000:
28-Sep	9.420	7.02	1	9.420	0.000:
29-Sep	9.405	7.05	1	9.405	0.000:
30-Sep	9.271	7.08	1	9.271	0.000:
1-Oct	9.678	6.70	1	9.678	0.000:
2-Oct	8.964	6.81	1	8.964	0.000:
3-Oct	8.300	6.50	1	8.300	0.000:
4-Oct	7.901	5.79	1	7.901	0.000:
5-Oct	11.528	6.20	1	11.528	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. TEMPERATURE (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
14	S.F. KOKTULI	Q	0.1	2007	17-May	11.153		5.94	1	11.153	0.000:	HYDROLOGY GAGE SK100A
					18-May	12.037		5.99	1	12.037	0.000:	
					19-May	9.911		6.36	1	9.911	0.000:	
					20-May	9.960		6.63	1	9.960	0.000:	
					21-May	9.003		7.39	1	9.003	0.000:	
					22-May	8.855		7.73	1	8.855	0.000:	
					23-May	8.771		7.16	1	8.771	0.000:	
					24-May	9.942		7.30	1	9.942	0.000:	
					25-May	10.531		7.12	1	10.531	0.000:	
					26-May	10.240		6.81	1	10.240	0.000:	
					27-May	9.126		6.53	1	9.126	0.000:	
					28-May	8.435		7.06	1	8.435	0.000:	
					29-May	7.644		7.25	1	7.644	0.000:	
					30-May	7.189		7.54	1	7.189	0.000:	
					31-May	6.928		7.84	1	6.928	0.000:	
					1-Jun	6.637		8.44	1	6.637	0.000:	
					2-Jun	6.389		8.57	1	6.389	0.000:	
					3-Jun	6.059		8.32	1	6.059	0.000:	
					4-Jun	5.955		8.03	1	5.955	0.000:	
					5-Jun	6.810		8.21	1	6.810	0.000:	
					6-Jun	6.670		7.85	1	6.670	0.000:	
					7-Jun	6.147		7.36	1	6.147	0.000:	
					8-Jun	5.626		7.54	1	5.626	0.000:	
					9-Jun	5.230		8.40	1	5.230	0.000:	
					10-Jun	4.981		8.58	1	4.981	0.000:	
					11-Jun	4.957		8.64	1	4.957	0.000:	
					12-Jun	4.772		9.09	1	4.772	0.000:	
					13-Jun	4.591		9.15	1	4.591	0.000:	
					14-Jun	4.650		9.10	1	4.650	0.000:	
					15-Jun	4.551		8.97	1	4.551	0.000:	
					16-Jun	4.639		9.14	1	4.639	0.000:	
					17-Jun	4.848		9.08	1	4.848	0.000:	
					18-Jun	4.933		9.85	1	4.933	0.000:	
					19-Jun	4.596		10.19	1	4.596	0.000:	
					20-Jun	4.488		10.35	1	4.488	0.000:	
					21-Jun	4.292		10.31	1	4.292	0.000:	
					22-Jun	4.279		10.46	1	4.279	0.000:	
					23-Jun	5.718		10.39	1	5.718	0.000:	
					24-Jun	8.866		9.38	1	8.866	0.000:	
					25-Jun	7.238		9.00	1	7.238	0.000:	
					26-Jun	6.305		9.61	1	6.305	0.000:	
					27-Jun	5.681		9.12	1	5.681	0.000:	
					28-Jun	5.347		8.98	1	5.347	0.000:	
					29-Jun	5.032		9.74	1	5.032	0.000:	
					30-Jun	4.730		9.65	1	4.730	0.000:	
					1-Jul	4.450		9.62	1	4.450	0.000:	

2-Jul	4.215	10.98	1	4.215	0.000:
3-Jul	4.007	10.79	1	4.007	0.000:
4-Jul	4.779	10.49	1	4.779	0.000:
5-Jul	4.693	10.77	1	4.693	0.000:
6-Jul	4.417	10.87	1	4.417	0.000:
7-Jul	4.170	10.02	1	4.170	0.000:
8-Jul	4.296	10.03	1	4.296	0.000:
9-Jul	4.059	9.87	1	4.059	0.000:
10-Jul	3.856	10.20	1	3.856	0.000:
11-Jul	3.675	9.97	1	3.675	0.000:
12-Jul	3.523	10.17	1	3.523	0.000:
13-Jul	4.277	10.70	1	4.277	0.000:
14-Jul	4.340	11.10	1	4.340	0.000:
15-Jul	3.875	10.65	1	3.875	0.000:
16-Jul	3.606	10.87	1	3.606	0.000:
17-Jul	3.421	10.92	1	3.421	0.000:
18-Jul	3.287	10.72	1	3.287	0.000:
19-Jul	3.325	11.22	1	3.325	0.000:
20-Jul	3.279	11.37	1	3.279	0.000:
21-Jul	3.295	11.09	1	3.295	0.000:
22-Jul	3.820	10.92	1	3.820	0.000:
23-Jul	4.166	10.47	1	4.166	0.000:
24-Jul	4.059	9.71	1	4.059	0.000:
25-Jul	3.862	9.93	1	3.862	0.000:
26-Jul	3.525	9.91	1	3.525	0.000:
27-Jul	3.302	10.45	1	3.302	0.000:
28-Jul	3.135	11.06	1	3.135	0.000:
29-Jul	3.071	11.74	1	3.071	0.000:
30-Jul	3.053	11.91	1	3.053	0.000:
31-Jul	3.010	12.01	1	3.010	0.000:
1-Aug	2.934	12.12	1	2.934	0.000:
2-Aug	2.936	12.09	1	2.936	0.000:
3-Aug	3.038	11.70	1	3.038	0.000:
4-Aug	3.562	11.14	1	3.562	0.000:
5-Aug	4.210	10.57	1	4.210	0.000:
6-Aug	4.372	10.20	1	4.372	0.000:
7-Aug	4.073	9.51	1	4.073	0.000:
8-Aug	3.653	9.35	1	3.653	0.000:
9-Aug	3.326	9.45	1	3.326	0.000:
10-Aug	3.124	9.86	1	3.124	0.000:
11-Aug	2.998	10.00	1	2.998	0.000:
12-Aug	2.971	11.31	1	2.971	0.000:
13-Aug	2.890	11.50	1	2.890	0.000:
14-Aug	2.994	11.48	1	2.994	0.000:
15-Aug	3.480	12.11	1	3.480	0.000:
16-Aug	3.366	12.25	1	3.366	0.000:
17-Aug	3.037	11.08	1	3.037	0.000:
18-Aug	3.212	11.60	1	3.212	0.000:
19-Aug	3.682	12.40	1	3.682	0.000:
20-Aug	3.728	12.18	1	3.728	0.000:
21-Aug	3.690	11.96	1	3.690	0.000:

22-Aug	3.800	12.17	1	3.800	0.000:
23-Aug	3.763	11.74	1	3.763	0.000:
24-Aug	3.737	11.13	1	3.737	0.000:
25-Aug	3.902	10.60	1	3.902	0.000:
26-Aug	3.605	10.12	1	3.605	0.000:
27-Aug	3.401	10.29	1	3.401	0.000:
28-Aug	3.235	10.10	1	3.235	0.000:
29-Aug	3.104	10.14	1	3.104	0.000:
30-Aug	3.020	10.63	1	3.020	0.000:
31-Aug	3.062	11.53	1	3.062	0.000:
1-Sep	3.447	11.15	1	3.447	0.000:
2-Sep	3.250	10.84	1	3.250	0.000:
3-Sep	3.336	10.48	1	3.336	0.000:
4-Sep	4.426	10.14	1	4.426	0.000:
5-Sep	3.965	9.78	1	3.965	0.000:
6-Sep	4.696	10.04	1	4.696	0.000:
7-Sep	4.874	10.49	1	4.874	0.000:
8-Sep	12.698	10.55	1	12.698	0.000:
9-Sep	15.848	10.34	1	15.848	0.000:
10-Sep	11.665	10.01	1	11.665	0.000:
11-Sep	10.001	9.92	1	10.001	0.000:
12-Sep	14.932	9.45	1	14.932	0.000:
13-Sep	15.038	8.96	1	15.038	0.000:
14-Sep	14.619	8.66	1	14.619	0.000:
15-Sep	12.782	8.58	1	12.782	0.000:
16-Sep	11.104	8.37	1	11.104	0.000:
17-Sep	10.134	8.61	1	10.134	0.000:
18-Sep	10.395	8.95	1	10.395	0.000:
19-Sep	20.524	9.00	1	20.524	0.000:
20-Sep	20.409	8.67	1	20.409	0.000:
21-Sep	20.236	8.40	1	20.236	0.000:
22-Sep	16.475	8.12	1	16.475	0.000:
23-Sep	18.255	7.84	1	18.255	0.000:
24-Sep	17.991	7.64	1	17.991	0.000:
25-Sep	19.308	7.63	1	19.308	0.000:
26-Sep	17.448	7.54	1	17.448	0.000:
27-Sep	15.498	7.06	1	15.498	0.000:
28-Sep	19.166	7.02	1	19.166	0.000:
29-Sep	19.117	7.05	1	19.117	0.000:
30-Sep	18.682	7.08	1	18.682	0.000:
1-Oct	20.011	6.70	1	20.011	0.000:
2-Oct	17.701	6.81	1	17.701	0.000:
3-Oct	15.647	6.50	1	15.647	0.000:
4-Oct	14.459	5.79	1	14.459	0.000:
5-Oct	26.487	6.20	1	26.487	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
15	S.F. KOKTULI	E	0.0	2007	17-May	11.215			1	11.215	0.000:	CONFLUENCE WITH NORTH FORK KO
					18-May	12.104			1	12.104	0.000:	KTULI RIVER
					19-May	9.966			1	9.966	0.000:	
					20-May	10.015			1	10.015	0.000:	
					21-May	9.053			1	9.053	0.000:	
					22-May	8.904			1	8.904	0.000:	
					23-May	8.820			1	8.820	0.000:	
					24-May	9.997			1	9.997	0.000:	
					25-May	10.589			1	10.589	0.000:	
					26-May	10.297			1	10.297	0.000:	
					27-May	9.176			1	9.176	0.000:	
					28-May	8.482			1	8.482	0.000:	
					29-May	7.686			1	7.686	0.000:	
					30-May	7.229			1	7.229	0.000:	
					31-May	6.966			1	6.966	0.000:	
					1-Jun	6.674			1	6.674	0.000:	
					2-Jun	6.424			1	6.424	0.000:	
					3-Jun	6.093			1	6.093	0.000:	
					4-Jun	5.988			1	5.988	0.000:	
					5-Jun	6.848			1	6.848	0.000:	
					6-Jun	6.707			1	6.707	0.000:	
					7-Jun	6.181			1	6.181	0.000:	
					8-Jun	5.657			1	5.657	0.000:	
					9-Jun	5.259			1	5.259	0.000:	
					10-Jun	5.009			1	5.009	0.000:	
					11-Jun	4.984			1	4.984	0.000:	
					12-Jun	4.799			1	4.799	0.000:	
					13-Jun	4.617			1	4.617	0.000:	
					14-Jun	4.676			1	4.676	0.000:	
					15-Jun	4.577			1	4.577	0.000:	
					16-Jun	4.665			1	4.665	0.000:	
					17-Jun	4.875			1	4.875	0.000:	
					18-Jun	4.960			1	4.960	0.000:	
					19-Jun	4.621			1	4.621	0.000:	
					20-Jun	4.513			1	4.513	0.000:	
					21-Jun	4.316			1	4.316	0.000:	
					22-Jun	4.303			1	4.303	0.000:	
					23-Jun	5.749			1	5.749	0.000:	
					24-Jun	8.916			1	8.916	0.000:	
					25-Jun	7.278			1	7.278	0.000:	
					26-Jun	6.340			1	6.340	0.000:	
					27-Jun	5.713			1	5.713	0.000:	
					28-Jun	5.376			1	5.376	0.000:	
					29-Jun	5.060			1	5.060	0.000:	
					30-Jun	4.757			1	4.757	0.000:	
					1-Jul	4.474			1	4.474	0.000:	

2-Jul	4.238		1	4.238	0.000:
3-Jul	4.029		1	4.029	0.000:
4-Jul	4.805		1	4.805	0.000:
5-Jul	4.719		1	4.719	0.000:
6-Jul	4.442		1	4.442	0.000:
7-Jul	4.193		1	4.193	0.000:
8-Jul	4.320		1	4.320	0.000:
9-Jul	4.082		1	4.082	0.000:
10-Jul	3.877		1	3.877	0.000:
11-Jul	3.695		1	3.695	0.000:
12-Jul	3.543		1	3.543	0.000:
13-Jul	4.301		1	4.301	0.000:
14-Jul	4.364		1	4.364	0.000:
15-Jul	3.896		1	3.896	0.000:
16-Jul	3.626		1	3.626	0.000:
17-Jul	3.440		1	3.440	0.000:
18-Jul	3.305		1	3.305	0.000:
19-Jul	3.344		1	3.344	0.000:
20-Jul	3.297		1	3.297	0.000:
21-Jul	3.314		1	3.314	0.000:
22-Jul	3.841		1	3.841	0.000:
23-Jul	4.189		1	4.189	0.000:
24-Jul	4.081		1	4.081	0.000:
25-Jul	3.884		1	3.884	0.000:
26-Jul	3.545		1	3.545	0.000:
27-Jul	3.320		1	3.320	0.000:
28-Jul	3.152		1	3.152	0.000:
29-Jul	3.088		1	3.088	0.000:
30-Jul	3.070		1	3.070	0.000:
31-Jul	3.026		1	3.026	0.000:
1-Aug	2.950		1	2.950	0.000:
2-Aug	2.952		1	2.952	0.000:
3-Aug	3.054		1	3.054	0.000:
4-Aug	3.582		1	3.582	0.000:
5-Aug	4.233		1	4.233	0.000:
6-Aug	4.396		1	4.396	0.000:
7-Aug	4.096		1	4.096	0.000:
8-Aug	3.673		1	3.673	0.000:
9-Aug	3.345		1	3.345	0.000:
10-Aug	3.141		1	3.141	0.000:
11-Aug	3.015		1	3.015	0.000:
12-Aug	2.988		1	2.988	0.000:
13-Aug	2.906		1	2.906	0.000:
14-Aug	3.011		1	3.011	0.000:
15-Aug	3.499		1	3.499	0.000:
16-Aug	3.385		1	3.385	0.000:
17-Aug	3.054		1	3.054	0.000:
18-Aug	3.230		1	3.230	0.000:
19-Aug	3.702		1	3.702	0.000:
20-Aug	3.749		1	3.749	0.000:
21-Aug	3.710		1	3.710	0.000:

22-Aug	3.821	1	3.821	0.000:
23-Aug	3.784	1	3.784	0.000:
24-Aug	3.758	1	3.758	0.000:
25-Aug	3.924	1	3.924	0.000:
26-Aug	3.625	1	3.625	0.000:
27-Aug	3.420	1	3.420	0.000:
28-Aug	3.253	1	3.253	0.000:
29-Aug	3.122	1	3.122	0.000:
30-Aug	3.037	1	3.037	0.000:
31-Aug	3.079	1	3.079	0.000:
1-Sep	3.466	1	3.466	0.000:
2-Sep	3.268	1	3.268	0.000:
3-Sep	3.354	1	3.354	0.000:
4-Sep	4.450	1	4.450	0.000:
5-Sep	3.987	1	3.987	0.000:
6-Sep	4.722	1	4.722	0.000:
7-Sep	4.901	1	4.901	0.000:
8-Sep	12.768	1	12.768	0.000:
9-Sep	15.936	1	15.936	0.000:
10-Sep	11.730	1	11.730	0.000:
11-Sep	10.057	1	10.057	0.000:
12-Sep	15.015	1	15.015	0.000:
13-Sep	15.122	1	15.122	0.000:
14-Sep	14.700	1	14.700	0.000:
15-Sep	12.853	1	12.853	0.000:
16-Sep	11.166	1	11.166	0.000:
17-Sep	10.190	1	10.190	0.000:
18-Sep	10.452	1	10.452	0.000:
19-Sep	20.638	1	20.638	0.000:
20-Sep	20.523	1	20.523	0.000:
21-Sep	20.349	1	20.349	0.000:
22-Sep	16.566	1	16.566	0.000:
23-Sep	18.357	1	18.357	0.000:
24-Sep	18.091	1	18.091	0.000:
25-Sep	19.416	1	19.416	0.000:
26-Sep	17.545	1	17.545	0.000:
27-Sep	15.584	1	15.584	0.000:
28-Sep	19.273	1	19.273	0.000:
29-Sep	19.223	1	19.223	0.000:
30-Sep	18.786	1	18.786	0.000:
1-Oct	20.123	1	20.123	0.000:
2-Oct	17.800	1	17.800	0.000:
3-Oct	15.734	1	15.734	0.000:
4-Oct	14.539	1	14.539	0.000:
5-Oct	26.634	1	26.634	0.000:

NORMAL COMPLETION OF 'HYDFIL'.

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****************************************** TABLE V: HYDROLOGY WITH LATERAL FLOWS ADDED ******************************************
    BEGIN HYDROLOGY VERIFICATION OF 'LATFLO' PROGRAM. THE PURPOSE OF THIS PROGRAM IS:
       (1) COMPUTE LATERAL FLOWS FOR UPSTREAM NODES;
       (2) CREATE THE FINAL UNFORMATTED HYDROLOGY FILE.
 THIS VERIFICATION IS A FORMATTED VERSION OF THE 'KHYDR5' OR 'KHYDROL' FILE.

                            ** JOB CONTROL DATA **
 JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     35.     27.     15.      6.     36.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
 SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
 S.F. KOKTULI        54.7     0.0
 TRIBUTARY 119       36.1    34.3
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
```

YEAR: 2007 TIME PERIOD: 17-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.245	0.3691	3.45	4.45:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.565	-0.0820		4.45:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.953	0.0837		4.45:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.608	-0.0748		3.80:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.493			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.103	-0.0213	1.46	3.80:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	3.065			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.558	-0.3580		3.80:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.466	0.3420		3.80:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	7.093	0.4641		5.94:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	9.118	-0.1147		5.94:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	7.857	-0.1041		5.94:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.719	1.5482		5.94:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	11.153	0.5741		5.94:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	11.215			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.395	0.4044	4.22	5.22:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.841	-0.0716		5.22:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.307	0.0853		5.22:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.974	-0.0577		3.51:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.886			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.420	-0.0168	1.78	3.51:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.390			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.276	-0.2763		3.51:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.205	0.4098		3.51:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	7.155	0.4694		5.99:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	9.203	-0.1156		5.99:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	7.933	-0.0810		5.99:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	7.047	1.7423		5.99:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	12.037	0.6204		5.99:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	12.104			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.175	0.3523	4.84	5.84:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.435	-0.1027		5.84:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.669	0.0811		5.84:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.303	-0.0130		3.60:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.283			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.178	-0.0034	2.03	3.60:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.172			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	4.455	-0.0623		3.60:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.439	0.3136		3.60:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.931	0.4708		6.36:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.985	-0.1035		6.36:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.847	-0.0553		6.36:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.242	1.2811		6.36:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	9.911	0.5093		6.36:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	9.966			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.125	0.3400	4.52	5.52:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.341	-0.0957		5.52:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.627	0.0806		5.52:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.257	-0.0061		3.74:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.248			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.064	-0.0017	2.07	3.74:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.061			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	4.310	-0.0311		3.74:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.302	0.3325		3.74:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.884	0.4751		6.63:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.957	-0.1033		6.63:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.822	-0.0513		6.63:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.261	1.2916		6.63:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	9.960	0.5093		6.63:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	10.015			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.024	0.3154	5.53	6.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.152	-0.1145		6.53:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.298	0.0755		6.53:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.888	0.0220		4.24:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.922			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.758	0.0062	2.43	4.24:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.769			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.691	0.1051		4.24:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.718	0.2905		4.24:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.100	0.4536		7.39:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.079	-0.0944		7.39:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.042	-0.0149		7.39:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.879	1.0908		7.39:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	9.003	0.4630		7.39:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	9.053			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.060	0.3244	5.45	6.45:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.220	-0.1336		6.45:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.223	0.0740		6.45:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.802	0.0233		4.40:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.838			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.805	0.0067	2.13	4.40:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.817			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.655	0.1128		4.40:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.684	0.2770		4.40:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.002	0.4501		7.73:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	6.966	-0.0932		7.73:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	5.942	-0.0113		7.73:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.818	1.0604		7.73:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	8.855	0.4537		7.73:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	8.904			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.121	0.3392	5.62	6.62:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.334	-0.1372		6.62:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.311	0.0757		6.62:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.903	0.0138		4.12:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.924			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.944	0.0039	2.24	4.12:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.951			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.875	0.0700		4.12:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.893	0.2562		4.12:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.112	0.4575		7.16:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.108	-0.0947		7.16:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.067	-0.0259		7.16:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.784	1.0429		7.16:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	8.771	0.4537		7.16:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	8.820			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.221	0.3635	5.50	6.50:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.521	-0.1463		6.50:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.430	0.0778		6.50:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.038	0.0050		4.30:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.046			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.032	0.0011	2.27	4.30:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.034			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	4.080	0.0233		4.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.086	0.2831		4.30:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.433	0.5072		7.30:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.646	-0.1002		7.30:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.545	-0.0266		7.30:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.254	1.2877		7.30:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	9.942	0.5093		7.30:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	9.997			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.438	0.4144	6.27	7.27:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.920	-0.1709		7.27:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.645	0.0808		7.27:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.277	-0.0014		4.30:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.275			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.940	-0.0006	2.10	4.30:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.939			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	4.214	-0.0039		4.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.213	0.2926		4.30:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.605	0.5260		7.12:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.900	-0.1027		7.12:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.771	-0.0263		7.12:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.483	1.4134		7.12:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	10.531	0.5370		7.12:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	10.589			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.312	0.3851	6.53	7.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.689	-0.1541		7.53:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.540	0.0794		7.53:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.161	0.0089		4.34:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.175			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.808	0.0028	2.48	4.34:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.813			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.988	0.0428		4.34:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.999	0.3043		4.34:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.447	0.5299		6.81:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.759	-0.1014		6.81:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.645	-0.0251		6.81:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.371	1.3509		6.81:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	10.240	0.5278		6.81:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	10.297			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.193	0.3568	7.27	8.27:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.469	-0.1504		8.27:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.347	0.0764		8.27:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.945	0.0308		4.15:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.992			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.460	0.0090	3.33	4.15:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.476			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.467	0.1479		4.15:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.505	0.2600		4.15:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	4.742	0.4838		6.53:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	6.853	-0.0920		6.53:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	5.842	0.0080		6.53:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.929	1.1163		6.53:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	9.126	0.4630		6.53:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	9.176			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.078	0.3283	7.36	8.36:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.252	-0.1439		8.36:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.179	0.0730		8.36:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.750	0.0434		4.41:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.817			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.266	0.0123	3.45	4.41:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.288			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.105	0.2101		4.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.159	0.2478		4.41:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	4.338	0.4465		7.06:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	6.286	-0.0860		7.06:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	5.341	0.0278		7.06:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.645	0.9742		7.06:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	8.435	0.4352		7.06:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	8.482			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.051	0.3221	7.67	8.67:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.203	-0.1630		8.67:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.987	0.0683		8.67:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.521	0.0558		4.65:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.607			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.039	0.0157	3.35	4.65:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.067			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.675	0.2685		4.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.744	0.2257		4.65:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.818	0.3906		7.25:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	5.522	-0.0776		7.25:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	4.669	0.0584		7.25:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.308	0.8156		7.25:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	7.644	0.3889		7.25:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	7.686			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.888	0.2813	8.28	9.28:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.894	-0.1497		9.28:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.778	0.0616		9.28:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.260	0.0639		4.79:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.358			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.923	0.0179	3.74	4.79:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.955			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.313	0.3074		4.79:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.392	0.2020		4.79:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.353	0.3543		7.54:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.899	-0.0706		7.54:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	4.123	0.0902		7.54:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.109	0.7263		7.54:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	7.189	0.3704		7.54:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	7.229			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 31-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.820	0.2634	7.66	8.66:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.762	-0.1503		8.66:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.641	0.0563		8.66:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.081	0.0662		4.75:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.183			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.937	0.0190	3.58	4.75:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.971			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.154	0.3191		4.75:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.236	0.2026		4.75:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.200	0.3374		7.84:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.672	-0.0680		7.84:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.925	0.0976		7.84:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.992	0.6760		7.84:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.928	0.3519		7.84:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.966			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.732	0.2402	7.24	8.24:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.591	-0.1393		8.24:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.552	0.0523		8.24:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.961	0.0747		5.13:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.076			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.869	0.0218	3.80	5.13:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.908			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.984	0.3580		5.13:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.076	0.1965		5.13:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.011	0.3223		8.44:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.417	-0.0650		8.44:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.703	0.1058		8.44:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.860	0.6205		8.44:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.637	0.3426		8.44:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.674			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.758	0.2472	7.24	8.24:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.642	-0.1541		8.24:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.493	0.0493		8.24:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.879	0.0824		5.40:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.005			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.813	0.0235	4.22	5.40:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.855			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.860	0.3930		5.40:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.961	0.1885		5.40:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.858	0.3119		8.57:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.219	-0.0626		8.57:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.531	0.1111		8.57:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.746	0.5737		8.57:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.389	0.3241		8.57:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.424			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.723	0.2377	8.69	9.69:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.573	-0.1526		9.69:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.435	0.0462		9.69:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.796	0.0892		5.63:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.933			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.754	0.0258	4.71	5.63:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.800			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.732	0.4319		5.63:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.843	0.1786		5.63:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.693	0.2980		8.32:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.993	-0.0600		8.32:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.334	0.1150		8.32:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.592	0.5122		8.32:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.059	0.3148		8.32:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.093			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.725	0.2383	7.43	8.43:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.577	-0.1505		8.43:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.455	0.0473		8.43:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.825	0.0823		5.57:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.951			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.862	0.0235	4.36	5.57:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.904			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.855	0.3969		5.57:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.957	0.1587		5.57:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.712	0.2936		8.03:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.993	-0.0600		8.03:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.334	0.1105		8.03:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.542	0.4934		8.03:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.955	0.3056		8.03:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.988			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.956	0.2981	7.08	8.08:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.022	-0.1661		8.08:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.783	0.0618		8.08:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.267	0.0569		5.86:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.354			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.266	0.0162	4.26	5.86:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.295			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.649	0.2724		5.86:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.719	0.1528		5.86:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.446	0.3330		8.21:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.899	-0.0706		8.21:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	4.123	0.0746		8.21:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.939	0.6533		8.21:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.810	0.3519		8.21:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.848			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.969	0.3015	8.36	9.36:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.047	-0.1639		9.36:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.824	0.0633		9.36:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.319	0.0624		5.62:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.415			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.944	0.0179	5.58	5.62:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.976			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.391	0.2996		5.62:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.468	0.1620		5.62:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.239	0.3025		7.85:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.559	-0.0666		7.85:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.827	0.0958		7.85:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.875	0.6267		7.85:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.670	0.3426		7.85:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.707			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.870	0.2763	8.93	9.93:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.858	-0.1658		9.93:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.621	0.0555		9.93:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.055	0.0740		5.12:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.169			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.792	0.0213	5.16	5.12:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.830			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.998	0.3580		5.12:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.090	0.1702		5.12:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.900	0.2700		7.36:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.078	-0.0610		7.36:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.408	0.1120		7.36:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.633	0.5286		7.36:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.147	0.3148		7.36:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.181			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.780	0.2528	8.66	9.66:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.684	-0.1702		9.66:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.415	0.0450		9.66:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.767	0.0928		4.82:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.909			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.690	0.0269	4.92	4.82:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.738			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.647	0.4475		4.82:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.762	0.1681		4.82:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.562	0.2501		7.54:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.653	-0.0558		7.54:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.040	0.1229		7.54:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.384	0.4337		7.54:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.626	0.2870		7.54:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.657			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.748	0.2441	8.90	9.90:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.621	-0.1727		9.90:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.333	0.0398		9.90:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.645	0.0999		5.22:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.798			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.616	0.0286	4.83	5.22:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.667			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.465	0.4825		5.22:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.589	0.1599		5.22:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.350	0.2338		8.40:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.370	-0.0522		8.40:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.796	0.1274		8.40:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.189	0.3635		8.40:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.230	0.2685		8.40:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.259			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.700	0.2318	9.06	10.06:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.529	-0.1635		10.06:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.309	0.0382		10.06:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.608	0.1001		4.98:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.762			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.656	0.0286	7.31	4.98:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.707			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.468	0.4825		4.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.592	0.1467		4.98:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.290	0.2086		8.58:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.200	-0.0500		8.58:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.650	0.1292		8.58:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.063	0.3205		8.58:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.981	0.2593		8.58:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.009			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.599	0.2041	9.58	10.58:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.329	-0.1447		10.58:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.249	0.0337		10.58:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.513	0.1022		4.82:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.670			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.654	0.0297	7.11	4.82:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.707			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.377	0.4903		4.82:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.503	0.1515		4.82:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.224	0.2106		8.64:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.143	-0.0493		8.64:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.601	0.1326		8.64:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.051	0.3163		8.64:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.957	0.2500		8.64:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.984			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.665	0.2220	9.40	10.40:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.459	-0.1675		10.40:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.210	0.0304		10.40:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.447	0.1047		4.92:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.608			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.582	0.0297	5.47	4.92:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.635			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.243	0.5058		4.92:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.373	0.1467		4.92:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.071	0.2329		9.09:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.087	-0.0486		9.09:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.553	0.1283		9.09:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.956	0.2849		9.09:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.772	0.2500		9.09:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.799			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.633	0.2131	9.93	10.93:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.395	-0.1609		10.93:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.195	0.0290		10.93:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.422	0.1057		4.86:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.584			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.522	0.0302	5.63	4.86:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.576			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.160	0.5058		4.86:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.290	0.1396		4.86:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.954	0.2271		9.15:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.945	-0.0468		9.15:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.431	0.1309		9.15:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.862	0.2545		9.15:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.591	0.2407		9.15:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.617			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.620	0.2097	10.36	11.36:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.370	-0.1601		11.36:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.176	0.0273		11.36:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.389	0.1054		4.61:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.551			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.550	0.0302	6.67	4.61:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.604			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.155	0.5097		4.61:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.286	0.1293		4.61:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.901	0.2262		9.10:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.888	-0.0460		9.10:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.383	0.1380		9.10:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.892	0.2647		9.10:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.650	0.2407		9.10:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.676			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.665	0.2220	11.51	12.51:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.459	-0.1720		12.51:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.176	0.0273		12.51:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.390	0.1058		4.28:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.552			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.562	0.0302	8.71	4.28:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.616			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.167	0.5097		4.28:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.298	0.1204		4.28:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.871	0.2203		8.97:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.832	-0.0453		8.97:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.334	0.1378		8.97:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.841	0.2479		8.97:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.551	0.2407		8.97:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.577			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.555	0.1916	10.71	11.71:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.240	-0.1453		11.71:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.156	0.0253		11.71:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.354	0.1061		4.26:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.517			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.540	0.0302	8.53	4.26:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.594			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.111	0.5097		4.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.242	0.1261		4.26:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.842	0.2269		9.14:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.832	-0.0453		9.14:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.334	0.1420		9.14:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.887	0.2626		9.14:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.639	0.2407		9.14:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.665			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.622	0.2103	9.49	10.49:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.374	-0.1659		10.49:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.136	0.0233		10.49:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.318	0.1054		3.96:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.480			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.643	0.0302	6.82	3.96:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.697			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.177	0.5058		3.96:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.307	0.1242		3.96:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.898	0.2530		9.08:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.002	-0.0475		9.08:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.480	0.1385		9.08:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.995	0.2978		9.08:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.848	0.2500		9.08:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.875			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.650	0.2181	11.68	12.68:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.430	-0.1698		12.68:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.163	0.0261		12.68:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.367	0.1055		4.20:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.529			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.553	0.0302	7.45	4.20:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.607			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.137	0.5097		4.20:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.268	0.1286		4.20:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.880	0.2441		9.85:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.945	-0.0468		9.85:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.431	0.1470		9.85:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.039	0.3122		9.85:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.933	0.2500		9.85:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.960			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.709	0.2338	11.55	12.55:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.545	-0.1877		12.55:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.145	0.0242		12.55:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.335	0.1057		4.05:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.497			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.538	0.0302	9.39	4.05:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.592			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.089	0.5097		4.05:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.220	0.1196		4.05:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.789	0.2260		10.19:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.775	-0.0445		10.19:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.286	0.1443		10.19:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.864	0.2556		10.19:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.596	0.2315		10.19:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.621			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.634	0.2134	9.47	10.47:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.397	-0.1692		10.47:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.135	0.0231		10.47:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.316	0.1058		3.94:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.478			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.518	0.0302	10.70	3.94:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.572			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.050	0.5058		3.94:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.180	0.1173		3.94:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.738	0.2246		10.35:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.718	-0.0438		10.35:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.237	0.1437		10.35:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.808	0.2374		10.35:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.488	0.2315		10.35:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.513			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.500	0.1759	11.84	12.84:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.129	-0.1397		12.84:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.087	0.0174		12.84:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.223	0.1039		4.27:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.382			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.468	0.0297	9.93	4.27:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.521			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.903	0.5019		4.27:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.032	0.1211		4.27:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.608	0.2157		10.31:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.549	-0.0416		10.31:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.092	0.1473		10.31:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.703	0.2057		10.31:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.292	0.2222		10.31:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.316			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.460	0.1644	9.31	10.31:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.048	-0.1352		10.31:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.039	0.0102		10.31:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.119	0.1010		5.01:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.274			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.477	0.0291	7.45	5.01:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.529			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.803	0.4864		5.01:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.928	0.1219		5.01:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.508	0.2255		10.46:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.492	-0.0408		10.46:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.044	0.1511		10.46:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.696	0.2036		10.46:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.279	0.2222		10.46:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.303			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.740	0.2422	7.29	8.29:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.606	-0.1813		8.29:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.254	0.0341		8.29:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.520	0.0695		5.17:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.627			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.402	0.0202	5.84	5.17:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.438			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.064	0.3346		5.17:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.150	0.0851		5.17:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.555	0.3880		10.39:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.248	-0.0630		10.39:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.556	0.0797		10.39:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.428	0.4504		10.39:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.718	0.2870		10.39:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.749			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.373	0.3993	8.37	9.37:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.801	-0.2319		9.37:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.071	0.0705		9.37:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.623	0.0449		5.03:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.692			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.338	0.0129	5.64	5.03:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.361			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.053	0.2179		5.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.109	0.1931		5.03:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	4.028	0.5175		9.38:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	6.286	-0.0860		9.38:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	5.341	0.0441		9.38:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.823	1.0625		9.38:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	8.866	0.4630		9.38:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	8.916			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.016	0.3135	8.66	9.66:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.137	-0.1966		9.66:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.671	0.0576		9.66:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.121	0.0710		5.10:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.230			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.777	0.0207	6.13	5.10:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.814			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	2.043	0.3424		5.10:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	2.131	0.1950		5.10:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	3.059	0.3958		9.00:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	4.786	-0.0693		9.00:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	4.024	0.1011		9.00:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	5.130	0.7360		9.00:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	7.238	0.3704		9.00:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	7.278			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.839	0.2682	9.96	10.96:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.798	-0.1934		10.96:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.355	0.0413		10.96:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.679	0.0984		5.03:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.830			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.623	0.0280	7.06	5.03:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.673			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.503	0.4747		5.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.625	0.1839		5.03:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.500	0.3291		9.61:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.936	-0.0592		9.61:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	3.285	0.1300		9.61:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.707	0.5580		9.61:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	6.305	0.3241		9.61:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	6.340			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.669	0.2232	12.07	13.07:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.467	-0.1680		13.07:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.214	0.0307		13.07:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.454	0.1054		4.33:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.616			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.548	0.0297	7.93	4.33:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.601			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.217	0.5058		4.33:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.347	0.1732		4.33:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.171	0.2943		9.12:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.455	-0.0533		9.12:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.869	0.1410		9.12:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.411	0.4434		9.12:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.681	0.2963		9.12:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.713			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.607	0.2061	12.08	13.08:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.344	-0.1635		13.08:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.124	0.0220		13.08:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.296	0.1054		3.66:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.458			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.533	0.0302	7.33	3.66:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.587			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.046	0.5058		3.66:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.176	0.1616		3.66:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.945	0.2682		8.98:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.115	-0.0490		8.98:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.577	0.1527		8.98:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.247	0.3841		8.98:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.347	0.2685		8.98:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.376			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.560	0.1930	13.08	14.08:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.250	-0.1544		14.08:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.098	0.0189		14.08:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.246	0.1045		3.30:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.406			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.491	0.0302	8.14	3.30:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.545			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.951	0.5058		3.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.081	0.1543		3.30:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.815	0.2526		9.74:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.917	-0.0464		9.74:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.407	0.1538		9.74:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.089	0.3293		9.74:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	5.032	0.2593		9.74:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	5.060			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.508	0.1781	13.58	14.58:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.145	-0.1453		14.58:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.061	0.0138		14.58:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.169	0.1022		2.89:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.326			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.454	0.0297	8.24	2.89:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.507			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.832	0.4942		2.89:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.959	0.1475		2.89:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.661	0.2423		9.65:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.718	-0.0438		9.65:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.237	0.1552		9.65:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.934	0.2779		9.65:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.730	0.2500		9.65:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.757			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.513	0.1795	13.32	14.32:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.155	-0.1485		14.32:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.047	0.0116		14.32:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.138	0.1000		2.67:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.291			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.424	0.0286	7.87	2.67:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.475			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.766	0.4825		2.67:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.890	0.1408		2.67:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.560	0.2267		9.62:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.549	-0.0416		9.62:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.092	0.1550		9.62:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.787	0.2315		9.62:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.450	0.2222		9.62:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.474			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.475	0.1686	14.16	15.16:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.078	-0.1403		15.16:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.032	0.0088		15.16:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.101	0.0967		3.01:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.249			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.398	0.0274	8.41	3.01:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.447			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.696	0.4669		3.01:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.816	0.1408		3.01:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.486	0.2047		10.98:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.379	-0.0392		10.98:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.948	0.1566		10.98:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.661	0.1934		10.98:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.215	0.2130		10.98:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.238			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.416	0.1510	15.27	16.27:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.956	-0.1261		16.27:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.016	0.0054		16.27:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.058	0.0934		3.24:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.201			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.382	0.0263	9.51	3.24:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.429			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.630	0.4514		3.24:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.746	0.1421		3.24:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.422	0.1932		10.79:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.265	-0.0376		10.79:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.852	0.1550		10.79:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.547	0.1606		10.79:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.007	0.2037		10.79:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.029			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.544	0.1885	12.41	13.41:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.218	-0.1591		13.41:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.031	0.0087		13.41:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.099	0.1045		3.53:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.259			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.620	0.0297	8.36	3.53:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.673			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.932	0.5019		3.53:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.061	0.1198		3.53:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.631	0.2297		10.49:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.633	-0.0426		10.49:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.165	0.1641		10.49:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.960	0.2860		10.49:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.779	0.2407		10.49:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.805			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.623	0.2109	13.06	14.06:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.377	-0.1709		14.06:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.102	0.0193		14.06:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.253	0.1048		3.85:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.414			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.502	0.0302	8.19	3.85:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.556			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.970	0.5058		3.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.100	0.1261		3.85:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.700	0.2138		10.77:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.633	-0.0426		10.77:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.165	0.1600		10.77:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.915	0.2716		10.77:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.693	0.2407		10.77:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.719			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.588	0.2005	12.52	13.52:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.305	-0.1660		13.52:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.067	0.0146		13.52:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.181	0.1035		3.82:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.340			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.485	0.0297	7.97	3.82:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.538			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.878	0.4942		3.82:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.005	0.1316		3.82:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.631	0.2038		10.87:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.520	-0.0411		10.87:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.068	0.1556		10.87:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.770	0.2259		10.87:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.417	0.2315		10.87:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.442			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.530	0.1846	13.72	14.72:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.190	-0.1523		14.72:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.054	0.0126		14.72:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.152	0.1007		3.71:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.307			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.426	0.0291	8.05	3.71:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.478			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.784	0.4864		3.71:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.909	0.1314		3.71:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.534	0.1870		10.02:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.350	-0.0388		10.02:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.924	0.1566		10.02:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.637	0.1861		10.02:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.170	0.2130		10.02:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.193			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.492	0.1737	13.78	14.78:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.113	-0.1441		14.78:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.038	0.0100		14.78:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.117	0.1011		3.30:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.272			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.482	0.0286	8.03	3.30:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.533			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.806	0.4864		3.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.931	0.1255		3.30:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.528	0.2079		10.03:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.435	-0.0399		10.03:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.996	0.1563		10.03:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.705	0.2064		10.03:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.296	0.2222		10.03:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.320			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.508	0.1784	13.67	14.67:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.146	-0.1498		14.67:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.029	0.0082		14.67:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.093	0.0979		3.33:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.243			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.432	0.0280	8.19	3.33:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.482			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.725	0.4747		3.33:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.847	0.1297		3.33:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.464	0.1772		9.87:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.237	-0.0372		9.87:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.828	0.1598		9.87:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.576	0.1686		9.87:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.059	0.2130		9.87:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.082			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.447	0.1602	14.12	15.12:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.020	-0.1334		15.12:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.025	0.0075		15.12:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.083	0.0962		3.23:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.231			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.400	0.0280	8.17	3.23:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.450			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.680	0.4630		3.23:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.799	0.1293		3.23:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.414	0.1756		10.20:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.180	-0.0364		10.20:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.780	0.1539		10.20:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.463	0.1372		10.20:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.856	0.1944		10.20:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.877			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.390	0.1435	14.84	15.84:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.903	-0.1209		15.84:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		15.84:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0880		3.32:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.141			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.365	0.0252	9.55	3.32:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.410			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.551	0.4241		3.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.660	0.1450		3.32:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.350	0.1708		9.97:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.095	-0.0352		9.97:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.708	0.1512		9.97:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.361	0.1096		9.97:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.675	0.1852		9.97:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.695			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.416	0.1513	15.11	16.11:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.957	-0.1282		16.11:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		16.11:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0881		3.38:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.139			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.386	0.0252	8.74	3.38:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.431			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.570	0.4241		3.38:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.679	0.1360		3.38:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.326	0.1698		10.17:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.067	-0.0348		10.17:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.684	0.1384		10.17:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.198	0.1135		10.17:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.523	0.1852		10.17:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.543			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.421	0.1527	12.94	13.94:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.967	-0.1295		13.94:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		13.94:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0991		3.74:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.158			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.593	0.0280	7.55	3.74:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.643			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.802	0.4747		3.74:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.924	0.1328		3.74:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.556	0.2145		10.70:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.492	-0.0408		10.70:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.044	0.1510		10.70:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.695	0.2032		10.70:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.277	0.2222		10.70:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.301			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.473	0.1678	13.21	14.21:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.073	-0.1416		14.21:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.017	0.0057		14.21:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.062	0.1000		3.45:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.215			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.503	0.0286	7.73	3.45:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.554			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.769	0.4825		3.45:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.893	0.1282		3.45:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.503	0.2008		11.10:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.379	-0.0392		11.10:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.948	0.1628		11.10:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.728	0.2137		11.10:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.340	0.2222		11.10:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.364			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.489	0.1728	13.54	14.54:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.107	-0.1463		14.54:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.015	0.0053		14.54:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.057	0.0958		3.44:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.204			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.424	0.0274	8.37	3.44:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.473			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.677	0.4630		3.44:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.796	0.1284		3.44:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.407	0.1838		10.65:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.209	-0.0369		10.65:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.804	0.1527		10.65:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.474	0.1400		10.65:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.875	0.1944		10.65:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.896			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.459	0.1639	14.37	15.37:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.045	-0.1393		15.37:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.006	0.0027		15.37:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.028	0.0909		3.31:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.167			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.381	0.0263	9.00	3.31:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.428			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.595	0.4397		3.31:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.708	0.1343		3.31:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.347	0.1650		10.87:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.067	-0.0348		10.87:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.684	0.1486		10.87:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.309	0.1037		10.87:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.606	0.1852		10.87:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.626			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.345	0.1298	15.99	16.99:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.809	-0.1083		16.99:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.002	0.0007		16.99:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.007	0.0869		2.99:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.140			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.350	0.0252	9.86	2.99:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.395			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.535	0.4163		2.99:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.642	0.1370		2.99:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.294	0.1577		10.92:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.982	-0.0337		10.92:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.612	0.1282		10.92:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.014	0.1421		10.92:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.421	0.1759		10.92:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.440			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.330	0.1250	14.45	15.45:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.777	-0.1041		15.45:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		15.45:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0845		2.85:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.133			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.341	0.0241	9.34	2.85:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.384			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.517	0.4047		2.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.621	0.1347		2.85:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.262	0.1522		10.72:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.926	-0.0329		10.72:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.564	0.1113		10.72:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.781	0.1767		10.72:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.287	0.1667		10.72:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.305			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.357	0.1331	14.64	15.64:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.833	-0.1116		15.64:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		15.64:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0845		3.23:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.133			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.338	0.0246	8.75	3.23:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.382			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.514	0.4047		3.23:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.618	0.1339		3.23:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.255	0.1471		11.22:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.897	-0.0328		11.22:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.536	0.1198		11.22:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.846	0.1672		11.22:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.325	0.1759		11.22:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.344			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.325	0.1233	17.49	18.49:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.766	-0.1026		18.49:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		18.49:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0827		3.39:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.130			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.319	0.0235	10.38	3.39:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.361			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.491	0.3969		3.39:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.593	0.1330		3.39:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.226	0.1410		11.37:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.841	-0.0341		11.37:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.466	0.1190		11.37:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.767	0.1788		11.37:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.279	0.1667		11.37:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.297			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.275	0.0976	15.18	16.18:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.624	-0.0836		16.18:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		16.18:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0814		3.60:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.128			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.307	0.0230	9.46	3.60:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.348			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.476	0.3891		3.60:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.576	0.1301		3.60:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.195	0.1481		11.09:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.841	-0.0341		11.09:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.466	0.1215		11.09:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.795	0.1746		11.09:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.295	0.1759		11.09:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.314			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.299	0.1152	11.11	12.11:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.711	-0.0952		12.11:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		12.11:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0875		3.98:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.138			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.374	0.0252	7.65	3.98:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.419			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.557	0.4202		3.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.665	0.1232		3.98:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.251	0.1740		10.92:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.010	-0.0340		10.92:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.636	0.1652		10.92:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.443	0.1316		10.92:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.820	0.1944		10.92:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.841			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.407	0.1482	10.94	11.94:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.937	-0.1254		11.94:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		11.94:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0987		4.05:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.157			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.567	0.0286	7.43	4.05:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.618			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.774	0.4747		4.05:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.896	0.1097		4.05:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.418	0.1877		10.47:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.237	-0.0372		10.47:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.828	0.1651		10.47:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.634	0.1858		10.47:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.166	0.2130		10.47:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.189			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.501	0.1762	11.51	12.51:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.131	-0.1508		12.51:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.006	0.0028		12.51:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.029	0.0988		3.50:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.180			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.512	0.0286	7.86	3.50:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.563			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.743	0.4747		3.50:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.865	0.1158		3.50:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.416	0.1687		9.71:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.152	-0.0360		9.71:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.756	0.1664		9.71:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.576	0.1686		9.71:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.059	0.2037		9.71:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.081			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.501	0.1759	13.04	14.04:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.130	-0.1453		14.04:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.046	0.0114		14.04:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.135	0.0999		3.33:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.288			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.427	0.0286	8.99	3.33:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.478			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.766	0.4825		3.33:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.890	0.0982		3.33:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.357	0.1563		9.93:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.039	-0.0345		9.93:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.660	0.1652		9.93:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.467	0.1379		9.93:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.862	0.2037		9.93:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.884			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.400	0.1463	14.75	15.75:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.923	-0.1225		15.75:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.009	0.0037		15.75:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.039	0.0902		2.86:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.177			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.359	0.0263	9.90	2.86:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.406			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.583	0.4358		2.86:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.695	0.1236		2.86:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.283	0.1538		9.91:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.954	-0.0333		9.91:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.588	0.1476		9.91:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.202	0.1128		9.91:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.525	0.1852		9.91:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.545			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.380	0.1404	17.26	18.26:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.882	-0.1181		18.26:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		18.26:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0833		2.24:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.131			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.325	0.0235	11.13	2.24:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.367			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.498	0.4008		2.24:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.601	0.1290		2.24:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.215	0.1368		10.45:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.812	-0.0349		10.45:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.428	0.1259		10.45:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.805	0.1735		10.45:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.302	0.1667		10.45:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.320			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.305	0.1172	17.75	18.75:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.724	-0.0970		18.75:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		18.75:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0814		2.05:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.128			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.307	0.0230	11.42	2.05:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.348			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.476	0.3891		2.05:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.576	0.1265		2.05:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.178	0.1325		11.06:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.756	-0.0369		11.06:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.351	0.1076		11.06:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.528	0.2119		11.06:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.135	0.1574		11.06:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.152			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.325	0.1236	17.31	18.31:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.767	-0.1027		18.31:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		18.31:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0802		2.82:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.126			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.296	0.0224	11.27	2.82:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.336			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.462	0.3852		2.82:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.561	0.1240		2.82:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.151	0.1256		11.74:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.699	-0.0385		11.74:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.276	0.1050		11.74:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.424	0.2259		11.74:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.071	0.1574		11.74:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.088			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.261	0.0850	16.76	17.76:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.565	-0.0757		17.76:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		17.76:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0808		3.27:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.127			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.302	0.0230	10.42	3.27:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.343			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.470	0.3852		3.27:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.569	0.1187		3.27:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.134	0.1231		11.91:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.671	-0.0392		11.91:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.240	0.1057		11.91:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.396	0.2294		11.91:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.053	0.1574		11.91:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.070			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 31-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.217	0.0512	14.99	15.99:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.400	-0.0535		15.99:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		15.99:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0802		3.80:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.126			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.298	0.0230	9.63	3.80:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.339			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.465	0.3852		3.80:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.564	0.1166		3.80:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.119	0.1199		12.01:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.642	-0.0399		12.01:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.204	0.1028		12.01:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.328	0.2381		12.01:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.010	0.1481		12.01:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.026			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.197	0.0380	11.99	12.99:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.333	-0.0446		12.99:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		12.99:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0796		4.55:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.125			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.291	0.0230	8.72	4.55:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.332			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.457	0.3813		4.55:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.555	0.1145		4.55:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.100	0.1242		12.12:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.642	-0.0399		12.12:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.204	0.0922		12.12:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.212	0.2521		12.12:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	2.934	0.1481		12.12:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	2.950			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.221	0.0540	10.93	11.93:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.414	-0.0554		11.93:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		11.93:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0820		5.08:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.129			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.315	0.0235	8.34	5.08:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.357			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.486	0.3930		5.08:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.587	0.1103		5.08:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.112	0.1281		12.09:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.671	-0.0392		12.09:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.240	0.0892		12.09:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.215	0.2517		12.09:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	2.936	0.1481		12.09:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	2.952			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.280	0.1021	11.04	12.04:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.645	-0.0864		12.04:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0003		12.04:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.003	0.0839		4.80:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.132			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.334	0.0241	8.45	4.80:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.377			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.509	0.4047		4.80:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.613	0.1099		4.80:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.136	0.1290		11.70:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.699	-0.0385		11.70:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.276	0.1002		11.70:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.372	0.2325		11.70:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.038	0.1481		11.70:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.054			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.335	0.1261	11.18	12.18:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.786	-0.1051		12.18:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.002	0.0008		12.18:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.008	0.1031		4.77:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.166			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.779	0.0297	8.19	4.77:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.832			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.997	0.4981		4.77:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.125	0.0773		4.77:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.493	0.1705		11.14:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.237	-0.0372		11.14:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.828	0.1318		11.14:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.269	0.1023		11.14:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.562	0.1852		11.14:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.582			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.512	0.1790	10.96	11.96:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.152	-0.1529		11.96:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.012	0.0043		11.96:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.046	0.1059		4.73:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.208			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.871	0.0302	8.23	4.73:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.925			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.133	0.5097		4.73:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.264	0.0935		4.73:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.709	0.1859		10.57:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.520	-0.0411		10.57:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.068	0.1454		10.57:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.658	0.1927		10.57:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.210	0.2130		10.57:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.233			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.858	0.2735	12.04	13.04:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.836	-0.2163		13.04:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.222	0.0315		13.04:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.469	0.0972		4.68:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.618			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.872	0.0280	8.96	4.68:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.922			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.540	0.4708		4.68:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.661	0.0860		4.68:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.070	0.1811		10.20:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.860	-0.0457		10.20:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.358	0.1269		10.20:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.746	0.2186		10.20:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.372	0.2222		10.20:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.396			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.622	0.2100	13.30	14.30:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.373	-0.1642		14.30:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.148	0.0245		14.30:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.340	0.1056		4.02:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.502			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.567	0.0308	9.14	4.02:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.622			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.124	0.5097		4.02:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.255	0.1112		4.02:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.784	0.1559		9.51:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.464	-0.0404		9.51:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.020	0.1430		9.51:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.584	0.1707		9.51:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.073	0.2130		9.51:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.096			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.378	0.1401	13.05	14.05:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.879	-0.1119		14.05:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.044	0.0111		14.05:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.132	0.1020		3.60:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.288			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.490	0.0291	9.72	3.60:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.542			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.830	0.4903		3.60:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.956	0.1225		3.60:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.539	0.1469		9.35:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.180	-0.0364		9.35:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.780	0.1434		9.35:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.348	0.1065		9.35:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.653	0.1852		9.35:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.673			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.295	0.1138	14.53	15.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.702	-0.0938		15.53:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.002	0.0009		15.53:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.009	0.0940		2.94:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.153			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.445	0.0269	10.12	2.94:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.493			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.647	0.4514		2.94:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.763	0.1330		2.94:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.396	0.1343		9.45:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.982	-0.0337		9.45:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.612	0.1130		9.45:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.848	0.1669		9.45:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.326	0.1759		9.45:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.345			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.285	0.1068	16.52	17.52:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.667	-0.0893		17.52:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		17.52:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0905		2.60:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.143			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.415	0.0258	9.91	2.60:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.461			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.604	0.4319		2.60:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.715	0.1274		2.60:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.321	0.1256		9.86:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.869	-0.0330		9.86:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.506	0.0917		9.86:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.509	0.2147		9.86:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.124	0.1574		9.86:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.141			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.284	0.1060	16.70	17.70:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.663	-0.0888		17.70:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		17.70:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0893		2.13:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.141			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.396	0.0258	9.56	2.13:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.442			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.582	0.4319		2.13:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.693	0.1215		2.13:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.271	0.1240		10.00:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.812	-0.0349		10.00:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.428	0.0807		10.00:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.310	0.2402		10.00:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	2.998	0.1574		10.00:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.015			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.269	0.0923	17.61	18.61:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.599	-0.0802		18.61:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		18.61:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0893		2.73:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.141			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.397	0.0258	10.27	2.73:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.443			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.584	0.4280		2.73:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.694	0.1175		2.73:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.253	0.1217		11.31:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.784	-0.0359		11.31:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.389	0.0804		11.31:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.268	0.2455		11.31:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	2.971	0.1574		11.31:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	2.988			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.264	0.0878	18.10	19.10:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.578	-0.0774		19.10:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		19.10:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0875		2.98:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.138			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.379	0.0252	11.16	2.98:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.424			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.563	0.4202		2.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.671	0.1154		2.98:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.220	0.1162		11.50:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.727	-0.0376		11.50:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.314	0.0760		11.50:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.145	0.2601		11.50:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	2.890	0.1481		11.50:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	2.906			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.248	0.0749	14.24	15.24:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.516	-0.0690		15.24:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		15.24:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0923		3.41:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.146			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.441	0.0263	9.49	3.41:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.488			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.633	0.4436		3.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.747	0.1059		3.41:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.251	0.1286		11.48:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.812	-0.0349		11.48:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.428	0.0801		11.48:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.304	0.2409		11.48:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	2.994	0.1574		11.48:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.011			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.368	0.1367	12.38	13.38:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.857	-0.1147		13.38:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0005		13.38:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.005	0.0946		3.92:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.150			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.481	0.0269	8.75	3.92:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.529			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.679	0.4553		3.92:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.796	0.1106		3.92:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.322	0.1449		12.11:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.954	-0.0333		12.11:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.588	0.1400		12.11:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.119	0.1260		12.11:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.480	0.1759		12.11:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.499			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.279	0.1015	14.10	15.10:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.642	-0.0859		15.10:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		15.10:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0917		4.48:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.145			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.436	0.0263	9.19	4.48:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.483			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.628	0.4436		4.48:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.742	0.1112		4.48:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.271	0.1435		12.25:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.897	-0.0328		12.25:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.536	0.1263		12.25:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.917	0.1568		12.25:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.366	0.1759		12.25:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.385			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.252	0.0780	14.01	15.01:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.531	-0.0711		15.01:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		15.01:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0893		4.54:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.141			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.396	0.0252	9.08	4.54:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.441			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.582	0.4280		4.54:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.692	0.1097		4.54:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.214	0.1306		11.08:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.784	-0.0359		11.08:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.389	0.0897		11.08:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.370	0.2329		11.08:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.037	0.1574		11.08:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.054			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.255	0.0797	11.86	12.86:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.540	-0.0722		12.86:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0005		12.86:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.005	0.0969		5.27:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.154			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.534	0.0274	8.41	5.27:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.583			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.737	0.4669		5.27:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.857	0.0994		5.27:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.330	0.1625		11.60:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.039	-0.0345		11.60:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.660	0.0910		11.60:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.655	0.1945		11.60:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.212	0.1667		11.60:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.230			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.397	0.1457	11.17	12.17:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.918	-0.1229		12.17:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0005		12.17:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.005	0.0952		5.65:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.151			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.500	0.0274	8.82	5.65:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.549			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.701	0.4591		5.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.819	0.1141		5.65:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.362	0.1552		12.40:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.039	-0.0345		12.40:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.660	0.1559		12.40:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.365	0.1107		12.40:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.682	0.1852		12.40:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.702			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.414	0.1504	11.48	12.48:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.952	-0.1275		12.48:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		12.48:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0980		5.73:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.156			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.564	0.0286	8.70	5.73:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.615			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.771	0.4708		5.73:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.892	0.1089		5.73:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.410	0.1701		12.18:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.152	-0.0360		12.18:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.756	0.1495		12.18:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.391	0.1177		12.18:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.728	0.1944		12.18:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.749			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.422	0.1530	11.06	12.06:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.969	-0.1297		12.06:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		12.06:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0997		5.67:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.159			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.605	0.0286	7.88	5.67:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.656			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.815	0.4786		5.67:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.938	0.1093		5.67:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.458	0.1721		11.96:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.209	-0.0369		11.96:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.804	0.1431		11.96:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.369	0.1121		11.96:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.690	0.1852		11.96:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.710			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.426	0.1544	10.90	11.90:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.978	-0.1309		11.90:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		11.90:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0997		5.38:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.159			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.605	0.0286	7.93	5.38:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.656			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.815	0.4786		5.38:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.938	0.1154		5.38:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.487	0.1719		12.17:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.237	-0.0372		12.17:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.828	0.1467		12.17:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.432	0.1285		12.17:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.800	0.1944		12.17:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.821			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.426	0.1544	11.71	12.71:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.978	-0.1306		12.71:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.004	0.0018		12.71:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.018	0.1030		4.92:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.176			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.642	0.0297	8.11	4.92:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.695			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.871	0.4942		4.92:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.998	0.1095		4.92:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.519	0.1646		11.74:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.237	-0.0372		11.74:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.828	0.1448		11.74:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.411	0.1229		11.74:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.763	0.1944		11.74:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.784			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.414	0.1504	12.56	13.56:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.952	-0.1233		13.56:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.032	0.0089		13.56:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.102	0.1030		4.69:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.260			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.564	0.0297	8.78	4.69:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.617			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.877	0.4981		4.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.005	0.0952		4.69:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.458	0.1591		11.13:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.152	-0.0360		11.13:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.756	0.1500		11.13:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.396	0.1191		11.13:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.737	0.1944		11.13:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.758			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.418	0.1518	14.01	15.01:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.961	-0.1263		15.01:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.019	0.0062		15.01:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.067	0.1022		4.17:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.224			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.562	0.0297	8.97	4.17:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.615			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.839	0.4903		4.17:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.965	0.1076		4.17:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.477	0.1611		10.60:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.180	-0.0364		10.60:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.780	0.1563		10.60:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.489	0.1442		10.60:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.902	0.2037		10.60:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.924			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.402	0.1468	13.33	14.33:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.927	-0.1241		14.33:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0005		14.33:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.005	0.0952		3.75:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.151			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.499	0.0269	7.94	3.75:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.547			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.699	0.4591		3.75:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.817	0.1230		3.75:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.402	0.1524		10.12:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.067	-0.0348		10.12:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.684	0.1485		10.12:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.308	0.1037		10.12:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.605	0.1852		10.12:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.625			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.389	0.1432	13.64	14.64:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.901	-0.1206		14.64:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0005		14.64:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.005	0.0934		4.18:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.148			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.468	0.0269	8.32	4.18:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.516			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.665	0.4475		4.18:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.780	0.1204		4.18:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.353	0.1442		10.29:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.982	-0.0337		10.29:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.612	0.1249		10.29:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.978	0.1477		10.29:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.401	0.1759		10.29:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.420			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.377	0.1393	13.99	14.99:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.875	-0.1172		14.99:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		14.99:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0923		4.10:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.146			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.439	0.0263	8.40	4.10:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.486			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.632	0.4436		4.10:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.746	0.1173		4.10:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.304	0.1359		10.10:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.897	-0.0328		10.10:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.536	0.1058		10.10:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.693	0.1892		10.10:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.235	0.1667		10.10:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.253			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.368	0.1367	14.52	15.52:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.857	-0.1148		15.52:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		15.52:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0911		3.84:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.144			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.424	0.0263	9.76	3.84:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.471			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.615	0.4358		3.84:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.727	0.1127		3.84:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.263	0.1325		10.14:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.841	-0.0341		10.14:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.466	0.0925		10.14:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.478	0.2186		10.14:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.104	0.1667		10.14:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.122			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.368	0.1367	12.40	13.40:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.857	-0.1148		13.40:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		13.40:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0905		4.03:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.143			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.416	0.0258	9.04	4.03:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.462			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.605	0.4319		4.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.716	0.1103		4.03:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.241	0.1375		10.63:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.841	-0.0341		10.63:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.466	0.0803		10.63:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.344	0.2360		10.63:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.020	0.1574		10.63:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.037			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 31-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.377	0.1393	12.65	13.65:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.875	-0.1172		13.65:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		13.65:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0905		4.69:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.143			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.421	0.0258	8.54	4.69:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.467			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.610	0.4397		4.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.723	0.1072		4.69:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.233	0.1522		11.53:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.897	-0.0328		11.53:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.536	0.0799		11.53:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.410	0.2277		11.53:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.062	0.1574		11.53:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.079			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.385	0.1418	12.70	13.70:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.892	-0.1195		13.70:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		13.70:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0917		4.29:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.145			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.438	0.0263	8.05	4.29:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.485			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.630	0.4436		4.29:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.744	0.1063		4.29:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.250	0.1614		11.15:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.954	-0.0333		11.15:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.588	0.1346		11.15:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.060	0.1351		11.15:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.447	0.1759		11.15:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.466			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.377	0.1393	12.14	13.14:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.875	-0.1172		13.14:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0004		13.14:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.004	0.0911		4.51:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.144			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.422	0.0263	8.47	4.51:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.469			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.612	0.4397		4.51:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.725	0.1061		4.51:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.230	0.1529		10.84:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	1.897	-0.0328		10.84:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.536	0.1081		10.84:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.718	0.1858		10.84:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.250	0.1667		10.84:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.268			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.414	0.1504	10.54	11.54:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	0.952	-0.1274		11.54:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		11.54:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.1002		5.03:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.160			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.626	0.0291	7.90	5.03:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.678			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.838	0.4825		5.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.962	0.0858		5.03:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.370	0.1792		10.48:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.152	-0.0360		10.48:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.756	0.1013		10.48:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	2.864	0.1648		10.48:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.336	0.1667		10.48:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.354			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.489	0.1725	10.20	11.20:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.106	-0.1481		11.20:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.002	0.0007		11.20:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.007	0.1028		5.54:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.165			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.735	0.0291	7.84	5.54:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.787			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.952	0.4903		5.54:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.078	0.1286		5.54:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.690	0.2228		10.14:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.662	-0.0430		10.14:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.189	0.1449		10.14:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.774	0.2277		10.14:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.426	0.2222		10.14:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.450			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE-- INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.451	0.1616	11.39	12.39:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.029	-0.1378		12.39:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.001	0.0006		12.39:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.006	0.0997		5.53:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.159			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.607	0.0286	7.96	5.53:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.658			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	0.817	0.4786		5.53:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	0.940	0.1305		5.53:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.561	0.1939		9.78:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.407	-0.0396		9.78:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	1.972	0.1419		9.78:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.524	0.1540		9.78:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	3.965	0.2037		9.78:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	3.987			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.551	0.1904	10.91	11.91:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.232	-0.1617		11.91:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.026	0.0076		11.91:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.085	0.1055		6.13:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.247			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.757	0.0302	7.62	6.13:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.811			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.059	0.5058		6.13:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.189	0.1789		6.13:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	2.040	0.2400		10.04:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	3.087	-0.0486		10.04:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.553	0.1246		10.04:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	3.916	0.2723		10.04:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.696	0.2407		10.04:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.722			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	0.526	0.1832	9.53	10.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	1.181	-0.1543		10.53:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	0.030	0.0085		10.53:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	0.097	0.1061		6.44:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	0.260			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	0.808	0.0302	7.34	6.44:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	0.862			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	1.122	0.5058		6.44:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	1.252	0.1385		6.44:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	1.911	0.2306		10.49:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	2.917	-0.0464		10.49:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	2.407	0.1464		10.49:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	4.008	0.3024		10.49:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	4.874	0.2500		10.49:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	4.901			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.903	0.5187	9.64	10.64:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.758	-0.3493		10.64:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.152	0.0724		10.64:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.719	-0.1487		6.44:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.491			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	5.271	-0.0426	8.05	6.44:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	5.195			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	6.686	-0.7121		6.44:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.503	0.4292		6.44:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	8.545	0.8648		10.55:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	12.318	-0.1439		10.55:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	10.737	-0.3156		10.55:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	7.286	1.8897		10.55:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	12.698	0.6481		10.55:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	12.768			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.700	0.4740	10.32	11.32:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.395	-0.1570		11.32:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.224	0.0850		11.32:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.889	-0.0496		6.48:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.813			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.354	-0.0146	7.67	6.48:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.328			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.141	-0.2412		6.48:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.079	0.5462		6.48:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	7.678	0.7454		10.34:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	10.930	-0.1316		10.34:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	9.484	-0.1022		10.34:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.366	2.6124		10.34:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	15.848	0.8148		10.34:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	15.936			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.356	0.3951	10.29	11.29:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.769	-0.1483		11.29:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.663	0.0810		11.29:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.297	0.0085		6.64:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.310			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.681	0.0022	7.24	6.64:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.685			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.995	0.0428		6.64:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.006	0.3993		6.64:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.906	0.6129		10.01:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	8.580	-0.1095		10.01:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	7.377	-0.0427		10.01:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.910	1.6603		10.01:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	11.665	0.6018		10.01:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	11.730			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.190	0.3557	7.75	8.75:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.462	-0.1923		8.75:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.027	0.0693		8.75:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.570	0.0339		6.68:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.622			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.732	0.0095	6.74	6.68:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.749			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.372	0.1634		6.68:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.414	0.3308		6.68:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	4.988	0.5636		9.92:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.447	-0.0981		9.92:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.369	-0.0083		9.92:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.278	1.2999		9.92:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	10.001	0.5185		9.92:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	10.057			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.986	0.5366	8.34	9.34:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.905	-0.2008		9.34:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.407	0.0855		9.34:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	3.076	-0.1642		6.55:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.824			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	4.166	-0.0465	7.41	6.55:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	4.083			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	6.907	-0.7899		6.55:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.704	0.5731		6.55:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	9.431	0.7914		9.45:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	12.884	-0.1487		9.45:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	11.250	-0.2916		9.45:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.061	2.3991		9.45:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	14.932	0.7685		9.45:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	15.015			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.858	0.5087	8.26	9.26:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.677	-0.1142		9.26:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.825	0.0850		9.26:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	3.490	-0.1020		6.55:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	3.334			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.718	-0.0291	6.68	6.55:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.666			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	6.000	-0.4942		6.55:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.873	0.5755		6.55:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	8.611	0.7781		8.96:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	12.006	-0.1411		8.96:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	10.455	-0.2156		8.96:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.097	2.4235		8.96:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	15.038	0.7778		8.96:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	15.122			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.820	0.5008	8.33	9.33:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.611	-0.1027		9.33:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.845	0.0850		9.33:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	3.510	-0.0962		6.31:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	3.362			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.593	-0.0274	6.48	6.31:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.544			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.906	-0.4630		6.31:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.787	0.5652		6.31:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	8.476	0.7506		8.66:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	11.751	-0.1389		8.66:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	10.225	-0.2076		8.66:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	7.955	2.3268		8.66:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	14.619	0.7500		8.66:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	14.700			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.571	0.4452	7.72	8.72:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.163	-0.1174		8.72:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.287	0.0852		8.72:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.954	-0.0335		6.20:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.903			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.956	-0.0095	5.89	6.20:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.939			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	4.843	-0.1634		6.20:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.801	0.4811		6.20:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	7.090	0.6789		8.58:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	10.052	-0.1235		8.58:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	8.695	-0.1261		8.58:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	7.316	1.9085		8.58:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	12.782	0.6574		8.58:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	12.853			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.372	0.3993	7.84	8.84:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.800	-0.1521		8.84:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.665	0.0810		8.84:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	2.299	0.0102		5.95:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.315			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.649	0.0028	6.06	5.95:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.654			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.968	0.0506		5.95:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.981	0.4155		5.95:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.958	0.6269		8.37:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	8.693	-0.1106		8.37:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	7.478	-0.0710		8.37:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.701	1.5374		8.37:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	11.104	0.5741		8.37:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	11.166			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.256	0.3719	7.63	8.63:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.586	-0.1626		8.63:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.373	0.0768		8.63:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.974	0.0266		6.16:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	2.015			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.539	0.0078	5.93	6.16:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.553			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	3.568	0.1284		6.16:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	3.601	0.3716		6.16:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	5.369	0.5801		8.61:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	7.900	-0.1027		8.61:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	6.771	-0.0404		8.61:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.329	1.3286		8.61:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	10.134	0.5185		8.61:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	10.190			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.405	0.4072	7.51	8.51:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	2.861	-0.2014		8.51:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	1.359	0.0766		8.51:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	1.958	-0.0216		6.35:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	1.925			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.712	-0.0062	6.31	6.35:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.701			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	4.626	-0.1051		6.35:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	4.599	0.3066		6.35:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	6.058	0.6560		8.95:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	8.920	-0.1128		8.95:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	7.680	-0.1143		8.95:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	6.430	1.3844		8.95:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	10.395	0.5278		8.95:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	10.452			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.671	0.6787	7.95	8.95:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	5.098	-0.1259		8.95:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.159	0.0739		8.95:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.737	-0.3398		6.46:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.216			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	5.097	-0.0974	6.93	6.46:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	4.923			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	9.139	-1.6342		6.46:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	8.719	1.0811		6.46:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	13.863	0.8464		9.00:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	17.556	-0.1861		9.00:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	15.511	-0.5193		9.00:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.832	3.7332		9.00:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	20.524	1.0556		9.00:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	20.638			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.787	0.7019	7.29	8.29:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	5.297	-0.0109		8.29:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	5.216	0.0574		8.29:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	5.665	-0.4004		6.41:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	5.051			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	4.991	-0.1142	6.51	6.41:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	4.787			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	9.837	-1.9261		6.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	9.342	1.1160		6.41:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	14.652	0.8474		8.67:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	18.349	-0.1921		8.67:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	16.238	-0.5890		8.67:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.797	3.7053		8.67:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	20.409	1.0556		8.67:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	20.523			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.575	0.6597	7.35	8.35:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.934	0.0845		8.35:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	5.564	0.0508		8.35:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	5.962	-0.2950		6.37:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	5.509			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.246	-0.0845	6.29	6.37:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	3.095			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	8.605	-1.4202		6.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	8.240	1.0229		6.37:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	13.107	0.8705		8.40:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	16.905	-0.1812		8.40:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	14.914	-0.4727		8.40:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.745	3.6631		8.40:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	20.236	1.0463		8.40:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	20.349			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.210	0.5845	6.53	7.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.300	-0.0040		7.53:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.270	0.0724		7.53:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.837	-0.1722		6.21:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.573			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.533	-0.0493	5.40	6.21:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.445			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.018	-0.8249		6.21:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.806	0.7945		6.21:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	10.586	0.8771		8.12:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	14.413	-0.1614		8.12:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	12.639	-0.3720		8.12:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.571	2.7598		8.12:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	16.475	0.8426		8.12:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	16.566			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.389	0.6214	6.56	7.56:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.611	-0.0700		7.56:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.089	0.0748		7.56:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.674	-0.1948		6.03:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.375			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.056	-0.0560	5.80	6.03:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.956			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.331	-0.9377		6.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	7.090	0.8338		6.03:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	11.057	1.0484		7.84:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	15.631	-0.1712		7.84:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	13.749	-0.4216		7.84:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.138	3.1833		7.84:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	18.255	0.9445		7.84:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	18.357			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.405	0.6250	6.43	7.43:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.640	-0.0667		7.43:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.142	0.0741		7.43:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.722	-0.2048		5.97:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.408			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.155	-0.0588	5.75	5.97:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	3.050			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.459	-0.9844		5.97:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	7.206	0.8333		5.97:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	11.171	1.0481		7.64:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	15.744	-0.1722		7.64:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	13.852	-0.4386		7.64:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.056	3.1198		7.64:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	17.991	0.9259		7.64:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	18.091			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.496	0.6437	6.12	7.12:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.798	-0.0628		7.12:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.329	0.0716		7.12:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.890	-0.2124		5.98:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.564			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.103	-0.0610	5.64	5.98:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.994			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.559	-1.0195		5.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	7.297	0.9033		5.98:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	11.595	1.0937		7.63:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	16.367	-0.1770		7.63:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	14.422	-0.4534		7.63:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.464	3.4372		7.63:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	19.308	1.0000		7.63:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	19.416			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.235	0.5895	6.11	7.11:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.343	-0.0668		7.11:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	3.845	0.0776		7.11:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.452	-0.1377		5.96:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.241			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.361	-0.0392	5.42	5.96:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.291			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	6.532	-0.6654		5.96:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.361	0.7804		5.96:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	10.074	1.0335		7.54:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	14.583	-0.1629		7.54:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	12.793	-0.3574		7.54:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.884	2.9902		7.54:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	17.448	0.8981		7.54:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	17.545			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.019	0.5439	5.95	6.95:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.964	-0.1110		6.95:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	3.136	0.0836		6.95:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	3.791	-0.0787		5.69:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	3.670			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.001	-0.0230	5.05	5.69:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.960			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.630	-0.3813		5.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.532	0.6719		5.69:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	8.729	1.0044		7.06:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	13.111	-0.1507		7.06:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	11.455	-0.2930		7.06:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.251	2.5304		7.06:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	15.498	0.7963		7.06:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	15.584			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.567	0.6577	5.53	6.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.919	-0.1859		6.53:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	3.532	0.0807		6.53:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.164	-0.1800		5.67:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	3.888			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.330	-0.0515	5.11	5.67:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	3.238			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.126	-0.8677		5.67:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.903	0.8644		5.67:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	11.016	1.3369		7.02:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	16.849	-0.1808		7.02:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	14.862	-0.4976		7.02:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.420	3.4029		7.02:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	19.166	0.9907		7.02:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	19.273			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.368	0.6172	5.37	6.37:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.575	-0.0268		6.37:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.375	0.0710		6.37:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.931	-0.1609		5.64:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.684			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.265	-0.0465	4.99	5.64:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.182			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	6.866	-0.7743		5.64:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.667	0.8071		5.64:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	10.507	1.1419		7.05:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	15.489	-0.1702		7.05:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	13.619	-0.3853		7.05:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.405	3.3911		7.05:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	19.117	0.9815		7.05:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	19.223			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.600	0.6647	5.24	6.24:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.977	-0.1165		6.24:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.108	0.0746		6.24:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.691	-0.2193		5.65:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.355			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	3.408	-0.0627	5.02	5.65:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	3.296			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.651	-1.0545		5.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	7.380	0.9075		5.65:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	11.698	1.2324		7.08:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	17.075	-0.1824		7.08:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	15.070	-0.5303		7.08:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.271	3.2860		7.08:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	18.682	0.9630		7.08:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	18.786			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.563	0.6569	5.33	6.33:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.912	-0.0274		6.33:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.708	0.0660		6.33:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	5.224	-0.2096		5.46:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.903			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.728	-0.0599	5.02	5.46:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.621			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	7.524	-1.0078		5.46:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	7.265	0.9290		5.46:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	11.685	1.1769		6.70:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	16.820	-0.1805		6.70:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	14.836	-0.4717		6.70:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	9.678	3.6079		6.70:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	20.011	1.0370		6.70:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	20.123			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.285	0.5998	4.60	5.60:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	4.430	-0.0537		5.60:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	4.029	0.0755		5.60:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	4.620	-0.1410		5.64:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	4.404			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	2.249	-0.0403	4.42	5.64:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	2.177			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	6.581	-0.6809		5.64:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	6.406	0.8098		5.64:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	10.259	1.0690		6.81:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	14.923	-0.1656		6.81:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	13.103	-0.3785		6.81:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.964	3.0506		6.81:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	17.701	0.9167		6.81:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	17.800			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	2.032	0.5464	3.51	4.51:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.986	-0.0996		4.51:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	3.243	0.0830		4.51:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	3.893	-0.0753		5.41:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	3.777			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.837	-0.0218	3.99	5.41:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.798			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.575	-0.3658		5.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.481	0.6833		5.41:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	8.732	1.0231		6.50:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	13.196	-0.1514		6.50:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	11.532	-0.2955		6.50:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	8.300	2.5653		6.50:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	15.647	0.8056		6.50:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	15.734			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	1.941	0.5268	3.07	4.07:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	3.825	-0.1461		4.07:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	2.735	0.0853		4.07:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	3.403	-0.0519		5.14:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	3.323			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	1.881	-0.0146	3.56	5.14:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	1.855			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	5.178	-0.2529		5.14:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	5.113	0.6175		5.14:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	8.051	1.0364		5.79:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	12.573	-0.1460		5.79:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	10.968	-0.2804		5.79:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	7.901	2.2898		5.79:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	14.459	0.7407		5.79:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	14.539			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	S.F. KOKTULI	H	54.7	3.687	0.8747	2.40	3.40:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	Q	51.1	6.815	-0.1135		3.40:	HYDROLOGY NODE SK100LF2
3	S.F. KOKTULI	Q	43.6	5.969	0.0425		3.40:	HYDROLOGY NODE SK100LF4
4	S.F. KOKTULI	Q	35.8	6.301	-0.4501		5.29:	HYDROLOGY GAGE SK100C
5	S.F. KOKTULI	B	34.3	5.611			:	CONFLUENCE WITH TRIBUTARY SFK 1.119
6	TRIBUTARY 119	H	36.1	5.004	-0.1288	3.66	5.29:	HYDROLOGY GAGE SK119A
7	TRIBUTARY 119	T	34.3	4.774			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
8	S.F. KOKTULI	J	34.3	10.385	-2.1634		5.29:	CONFLUENCE WITH TRIBUTARY SFK 1.119
9	S.F. KOKTULI	Q	34.0	9.829	1.5250		5.29:	HYDROLOGY NODE SK100LF6
10	S.F. KOKTULI	Q	29.3	17.085	1.6981		6.20:	HYDROLOGY GAGE SK100B1
11	S.F. KOKTULI	Q	24.9	24.494	-0.2346		6.20:	HYDROLOGY GAGE SK100B
12	S.F. KOKTULI	Q	13.9	21.916	-0.9499		6.20:	HYDROLOGY NODE FRS-3
13	S.F. KOKTULI	Q	3.0	11.528	5.2231		6.20:	HYDROLOGY NODE FRS-2
14	S.F. KOKTULI	Q	0.1	26.487	1.3611		6.20:	HYDROLOGY GAGE SK100A
15	S.F. KOKTULI	E	0.0	26.634			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

NORMAL COMPLETION OF 'LATFLO'.

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************************************ TABLE VI: COMPOSITE-STR. GEOM., HYDR., & MET. MERGED ************************************
    BEGIN FINAL HYDROLOGY, STREAM GEOMETRY, ANDLOCAL METEOROLOGY VERIFICATION FOR THE COMPOSITE NETWORK. THE PURPOSE OF
 THIS PROGRAM IS TO:
       (1) GENERATE THE SOLAR DATA;
       (2) GENERATE THE SHADE DATA;
       (3) DETERMINE THE LOCAL METEOROLOGY FOR EACH NODE;
       (4) COMPLETE THE HYDROLOGY DATA AT EACH NON-HYDROLOGY NODE;
       (5) MERGE ALL DATA AT EACH COMPOSITE NODE FOR ALL YEARS AND TIME PERIODS INTO A SINGLE DIRECT-ACCESS FILE.
 THIS VERIFICATION IS A TRUNCATED VERSION CONTAININGTHE NEWLY CREATED DATA FOR 'KMERGE'.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTF
       1.      0.      0.    142.     35.     27.     15.      6.     36.      2.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
 SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
 S.F. KOKTULI        54.7     0.0
 TRIBUTARY 119       36.1    34.3
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
     NORMAL COMPLETION OF 'METROL'.
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CALIBRATION FACTORS FOR SOLAR RADIATION AT GROUND LEVEL: LAT(RAD)=1.04551 ELEV(M)= 474. AVG. ANN. AIR TEMP(C)= -0.75
METEOROLOGY FILE: SOUTH FORK KOKTULI RIVER, ALASKA

TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)
17-May	0.7341	18-May	0.7966	19-May	0.7213	20-May	0.5058	21-May	0.8673	22-May	0.3972	23-May	0.3305	24-May	0.1910
25-May	0.2225	26-May	0.3179	27-May	0.6792	28-May	0.6214	29-May	0.5489	30-May	0.4606	31-May	0.3260	1-Jun	0.2732
2-Jun	0.3796	3-Jun	0.4658	4-Jun	0.2900	5-Jun	0.3807	6-Jun	0.7655	7-Jun	0.6531	8-Jun	0.5541	9-Jun	0.4422
10-Jun	0.7418	11-Jun	0.6966	12-Jun	0.2199	13-Jun	0.3727	14-Jun	0.4319	15-Jun	0.8408	16-Jun	0.6845	17-Jun	0.3880
18-Jun	0.4562	19-Jun	0.8143	20-Jun	0.7893	21-Jun	0.6153	22-Jun	0.1642	23-Jun	0.1058	24-Jun	0.3032	25-Jun	0.3558
26-Jun	0.7614	27-Jun	0.7608	28-Jun	0.2507	29-Jun	0.8273	30-Jun	0.4855	1-Jul	0.4081	2-Jul	0.5728	3-Jul	0.5348
4-Jul	0.2959	5-Jul	0.4220	6-Jul	0.4073	7-Jul	0.4661	8-Jul	0.2868	9-Jul	0.5104	10-Jul	0.4404	11-Jul	0.8225
12-Jul	0.4833	13-Jul	0.2183	14-Jul	0.3597	15-Jul	0.3410	16-Jul	0.5774	17-Jul	0.8515	18-Jul	0.3346	19-Jul	0.3879
20-Jul	0.5408	21-Jul	0.2589	22-Jul	0.1629	23-Jul	0.1673	24-Jul	0.3335	25-Jul	0.4105	26-Jul	0.6173	27-Jul	0.5660
28-Jul	0.7702	29-Jul	0.6732	30-Jul	0.3614	31-Jul	0.3085	1-Aug	0.2088	2-Aug	0.1733	3-Aug	0.1976	4-Aug	0.0933
5-Aug	0.2049	6-Aug	0.6458	7-Aug	0.7468	8-Aug	0.5677	9-Aug	0.8716	10-Aug	0.8782	11-Aug	0.5945	12-Aug	0.4442
13-Aug	0.7199	14-Aug	0.2529	15-Aug	0.2711	16-Aug	0.7356	17-Aug	0.4375	18-Aug	0.2371	19-Aug	0.4147	20-Aug	0.2402
21-Aug	0.1177	22-Aug	0.1231	23-Aug	0.3347	24-Aug	0.4671	25-Aug	0.5974	26-Aug	0.6063	27-Aug	0.6815	28-Aug	0.8575
29-Aug	0.7016	30-Aug	0.5199	31-Aug	0.6487	1-Sep	0.4342	2-Sep	0.4799	3-Sep	0.5288	4-Sep	0.5781	5-Sep	0.5713
6-Sep	0.4451	7-Sep	0.1620	8-Sep	0.1422	9-Sep	0.3372	10-Sep	0.5770	11-Sep	0.1473	12-Sep	0.6518	13-Sep	0.2573
14-Sep	0.5209	15-Sep	0.8021	16-Sep	0.6822	17-Sep	0.3928	18-Sep	0.1443	19-Sep	0.2878	20-Sep	0.2923	21-Sep	0.7042
22-Sep	0.2895	23-Sep	0.2963	24-Sep	0.2825	25-Sep	0.4454	26-Sep	0.4541	27-Sep	0.4151	28-Sep	0.2295	29-Sep	0.5265
30-Sep	0.2182	1-Oct	0.4750	2-Oct	0.3852	3-Oct	0.7475	4-Oct	0.1025	5-Oct	0.4770				

YEAR: 2007 TIME PERIOD: 17-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.15	0.773	5.30	1.000	979.	231.4	0.2261	16.951	1.245	3.45	0.3691	4.45
2	S.F. KOKTULI	C	53.3	5.20	0.771	5.30	1.000	979.	231.4	0.2137	16.948	1.745		0.3691	4.45
3	S.F. KOKTULI	C	51.2	5.23	0.769	5.30	1.000	980.	231.4	0.1913	16.946	2.517		0.3691	4.45
4	S.F. KOKTULI	Q	51.1	5.23	0.769	5.30	1.000	980.	231.4	0.1913	16.946	2.565		-0.0820	4.45
5	S.F. KOKTULI	C	49.4	5.26	0.768	5.30	1.000	981.	231.4	0.1624	16.945	2.427		-0.0820	4.45
6	S.F. KOKTULI	C	47.6	5.30	0.766	5.30	1.000	981.	231.4	0.1555	16.945	2.275		-0.0820	4.45
7	S.F. KOKTULI	C	45.7	5.33	0.765	5.30	1.000	982.	231.3	0.1761	16.945	2.123		-0.0820	4.45
8	S.F. KOKTULI	C	44.8	5.34	0.764	5.30	1.000	982.	231.3	0.1556	16.945	2.049		-0.0820	4.45
9	S.F. KOKTULI	C	43.9	5.36	0.763	5.30	1.000	982.	231.3	0.1992	16.944	1.978		-0.0820	4.45
10	S.F. KOKTULI	Q	43.6	5.36	0.763	5.30	1.000	982.	231.3	0.1992	16.944	1.953		0.0837	4.45
11	S.F. KOKTULI	C	41.1	5.37	0.763	5.30	1.000	983.	231.4	0.1554	16.942	2.167		0.0837	4.45
12	S.F. KOKTULI	C	40.0	5.37	0.763	5.30	1.000	983.	231.3	0.2037	16.943	2.260		0.0837	4.45
13	S.F. KOKTULI	C	38.4	5.40	0.762	5.30	1.000	983.	231.3	0.1553	16.944	2.394		0.0837	4.45
14	S.F. KOKTULI	Q	35.8	5.40	0.762	5.30	1.000	983.	231.3	0.1553	16.944	2.608		-0.0748	3.80
15	S.F. KOKTULI	B	34.3									2.493			
16	TRIBUTARY 119	H	36.1	5.40	0.762	5.30	1.000	983.	231.3	0.1784	16.945	3.103	1.46	-0.0213	3.80
17	TRIBUTARY 119	T	34.3									3.065			
18	S.F. KOKTULI	J	34.3	5.43	0.761	5.30	1.000	984.	231.3	0.1319	16.944	5.558		-0.3580	3.80
19	S.F. KOKTULI	C	34.1	5.46	0.759	5.30	1.000	984.	231.3	0.0851	16.943	5.509		-0.3580	3.80
20	S.F. KOKTULI	Q	34.0	5.46	0.759	5.30	1.000	984.	231.3	0.0851	16.943	5.466		0.3420	3.80
21	S.F. KOKTULI	Q	29.3	5.46	0.759	5.30	1.000	984.	231.3	0.0851	16.943	7.093		0.4641	5.94
22	S.F. KOKTULI	C	27.6	5.53	0.756	5.30	1.000	985.	231.3	0.0854	16.940	7.872		0.4641	5.94
23	S.F. KOKTULI	C	25.1	5.57	0.754	5.30	1.000	986.	231.3	0.0694	16.939	9.023		0.4641	5.94
24	S.F. KOKTULI	Q	24.9	5.57	0.754	5.30	1.000	986.	231.3	0.0694	16.939	9.118		-0.1147	5.94
25	S.F. KOKTULI	C	21.9	5.59	0.753	5.30	1.000	987.	231.3	0.0888	16.940	8.768		-0.1147	5.94
26	S.F. KOKTULI	C	20.1	5.64	0.751	5.30	1.000	987.	231.3	0.0671	16.941	8.566		-0.1147	5.94
27	S.F. KOKTULI	C	15.4	5.70	0.749	5.30	1.000	988.	231.3	0.0649	16.942	8.023		-0.1147	5.94
28	S.F. KOKTULI	Q	13.9	5.70	0.749	5.30	1.000	988.	231.3	0.0649	16.942	7.857		-0.1041	5.94
29	S.F. KOKTULI	C	12.5	5.73	0.747	5.30	1.000	989.	231.3	0.0613	16.941	7.711		-0.1041	5.94
30	S.F. KOKTULI	C	9.2	5.76	0.746	5.30	1.000	990.	231.2	0.0785	16.942	7.370		-0.1041	5.94
31	S.F. KOKTULI	C	7.9	5.79	0.745	5.30	1.000	990.	231.2	0.0610	16.943	7.231		-0.1041	5.94
32	S.F. KOKTULI	C	5.1	5.84	0.743	5.30	1.000	991.	231.2	0.0663	16.944	6.941		-0.1041	5.94
33	S.F. KOKTULI	C	5.1	5.88	0.741	5.30	1.000	992.	231.2	0.0777	16.947	6.941		-0.1041	5.94
34	S.F. KOKTULI	Q	3.0	5.88	0.741	5.30	1.000	992.	231.2	0.0777	16.947	6.719		1.5482	5.94
35	S.F. KOKTULI	Q	0.1	5.88	0.741	5.30	1.000	992.	231.2	0.0777	16.947	11.153		0.5741	5.94
36	S.F. KOKTULI	E	0.0									11.215			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.95	0.633	3.12	1.000	979.	254.3	0.2254	17.024	1.395	4.22	0.4044	5.22
2	S.F. KOKTULI	C	53.3	6.00	0.631	3.12	1.000	979.	254.3	0.2129	17.022	1.943		0.4044	5.22
3	S.F. KOKTULI	C	51.2	6.03	0.630	3.12	1.000	980.	254.3	0.1908	17.020	2.789		0.4044	5.22
4	S.F. KOKTULI	Q	51.1	6.03	0.630	3.12	1.000	980.	254.3	0.1908	17.020	2.841		-0.0716	5.22
5	S.F. KOKTULI	C	49.4	6.06	0.629	3.12	1.000	981.	254.3	0.1620	17.018	2.721		-0.0716	5.22
6	S.F. KOKTULI	C	47.6	6.10	0.628	3.12	1.000	981.	254.3	0.1552	17.018	2.588		-0.0716	5.22
7	S.F. KOKTULI	C	45.7	6.13	0.627	3.12	1.000	982.	254.2	0.1756	17.018	2.455		-0.0716	5.22
8	S.F. KOKTULI	C	44.8	6.14	0.626	3.12	1.000	982.	254.2	0.1554	17.018	2.391		-0.0716	5.22
9	S.F. KOKTULI	C	43.9	6.16	0.625	3.12	1.000	982.	254.2	0.1987	17.017	2.329		-0.0716	5.22
10	S.F. KOKTULI	Q	43.6	6.16	0.625	3.12	1.000	982.	254.2	0.1987	17.017	2.307		0.0853	5.22
11	S.F. KOKTULI	C	41.1	6.17	0.625	3.12	1.000	983.	254.3	0.1551	17.016	2.525		0.0853	5.22
12	S.F. KOKTULI	C	40.0	6.17	0.625	3.12	1.000	983.	254.2	0.2031	17.016	2.620		0.0853	5.22
13	S.F. KOKTULI	C	38.4	6.20	0.624	3.12	1.000	983.	254.2	0.1550	17.017	2.757		0.0853	5.22
14	S.F. KOKTULI	Q	35.8	6.20	0.624	3.12	1.000	983.	254.2	0.1550	17.017	2.974		-0.0577	3.51
15	S.F. KOKTULI	B	34.3									2.886			
16	TRIBUTARY 119	H	36.1	6.20	0.624	3.12	1.000	983.	254.2	0.1780	17.018	2.420	1.78	-0.0168	3.51
17	TRIBUTARY 119	T	34.3									2.390			
18	S.F. KOKTULI	J	34.3	6.23	0.623	3.12	1.000	984.	254.2	0.1315	17.017	5.276		-0.2763	3.51
19	S.F. KOKTULI	C	34.1	6.26	0.622	3.12	1.000	984.	254.2	0.0851	17.016	5.238		-0.2763	3.51
20	S.F. KOKTULI	Q	34.0	6.26	0.622	3.12	1.000	984.	254.2	0.0851	17.016	5.205		0.4098	3.51
21	S.F. KOKTULI	Q	29.3	6.26	0.622	3.12	1.000	984.	254.2	0.0851	17.016	7.155		0.4694	5.99
22	S.F. KOKTULI	C	27.6	6.33	0.619	3.12	1.000	985.	254.2	0.0853	17.014	7.943		0.4694	5.99
23	S.F. KOKTULI	C	25.1	6.37	0.618	3.12	1.000	986.	254.2	0.0693	17.012	9.107		0.4694	5.99
24	S.F. KOKTULI	Q	24.9	6.37	0.618	3.12	1.000	986.	254.2	0.0693	17.012	9.203		-0.1156	5.99
25	S.F. KOKTULI	C	21.9	6.39	0.617	3.12	1.000	987.	254.2	0.0886	17.013	8.851		-0.1156	5.99
26	S.F. KOKTULI	C	20.1	6.44	0.615	3.12	1.000	987.	254.2	0.0669	17.015	8.647		-0.1156	5.99
27	S.F. KOKTULI	C	15.4	6.50	0.613	3.12	1.000	988.	254.2	0.0648	17.015	8.101		-0.1156	5.99
28	S.F. KOKTULI	Q	13.9	6.50	0.613	3.12	1.000	988.	254.2	0.0648	17.015	7.933		-0.0810	5.99
29	S.F. KOKTULI	C	12.5	6.53	0.612	3.12	1.000	989.	254.1	0.0612	17.014	7.820		-0.0810	5.99
30	S.F. KOKTULI	C	9.2	6.56	0.611	3.12	1.000	990.	254.1	0.0783	17.015	7.554		-0.0810	5.99
31	S.F. KOKTULI	C	7.9	6.59	0.610	3.12	1.000	990.	254.1	0.0610	17.016	7.446		-0.0810	5.99
32	S.F. KOKTULI	C	5.1	6.64	0.608	3.12	1.000	991.	254.1	0.0662	17.017	7.220		-0.0810	5.99
33	S.F. KOKTULI	C	5.1	6.68	0.607	3.12	1.000	992.	254.0	0.0775	17.020	7.220		-0.0810	5.99
34	S.F. KOKTULI	Q	3.0	6.68	0.607	3.12	1.000	992.	254.0	0.0775	17.020	7.047		1.7423	5.99
35	S.F. KOKTULI	Q	0.1	6.68	0.607	3.12	1.000	992.	254.0	0.0775	17.020	12.037		0.6204	5.99
36	S.F. KOKTULI	E	0.0									12.104			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.78	0.642	3.66	1.000	979.	230.5	0.2247	17.096	1.175	4.84	0.3523	5.84
2	S.F. KOKTULI	C	53.3	7.83	0.641	3.66	1.000	979.	230.5	0.2122	17.094	1.652		0.3523	5.84
3	S.F. KOKTULI	C	51.2	7.86	0.639	3.66	1.000	980.	230.5	0.1902	17.092	2.390		0.3523	5.84
4	S.F. KOKTULI	Q	51.1	7.86	0.639	3.66	1.000	980.	230.5	0.1902	17.092	2.435		-0.1027	5.84
5	S.F. KOKTULI	C	49.4	7.89	0.638	3.66	1.000	981.	230.5	0.1617	17.090	2.262		-0.1027	5.84
6	S.F. KOKTULI	C	47.6	7.93	0.637	3.66	1.000	981.	230.5	0.1550	17.090	2.072		-0.1027	5.84
7	S.F. KOKTULI	C	45.7	7.96	0.636	3.66	1.000	982.	230.5	0.1752	17.090	1.882		-0.1027	5.84
8	S.F. KOKTULI	C	44.8	7.97	0.635	3.66	1.000	982.	230.5	0.1551	17.090	1.789		-0.1027	5.84
9	S.F. KOKTULI	C	43.9	7.99	0.635	3.66	1.000	982.	230.5	0.1982	17.089	1.700		-0.1027	5.84
10	S.F. KOKTULI	Q	43.6	7.99	0.635	3.66	1.000	982.	230.5	0.1982	17.089	1.669		0.0811	5.84
11	S.F. KOKTULI	C	41.1	8.00	0.634	3.66	1.000	983.	230.5	0.1549	17.088	1.876		0.0811	5.84
12	S.F. KOKTULI	C	40.0	8.00	0.634	3.66	1.000	983.	230.5	0.2026	17.088	1.966		0.0811	5.84
13	S.F. KOKTULI	C	38.4	8.03	0.633	3.66	1.000	983.	230.5	0.1548	17.089	2.096		0.0811	5.84
14	S.F. KOKTULI	Q	35.8	8.03	0.633	3.66	1.000	983.	230.5	0.1548	17.089	2.303		-0.0130	3.60
15	S.F. KOKTULI	B	34.3									2.283			
16	TRIBUTARY 119	H	36.1	8.03	0.633	3.66	1.000	983.	230.5	0.1776	17.090	2.178	2.03	-0.0034	3.60
17	TRIBUTARY 119	T	34.3									2.172			
18	S.F. KOKTULI	J	34.3	8.06	0.632	3.66	1.000	984.	230.5	0.1311	17.089	4.455		-0.0623	3.60
19	S.F. KOKTULI	C	34.1	8.09	0.631	3.66	1.000	984.	230.5	0.0850	17.088	4.446		-0.0623	3.60
20	S.F. KOKTULI	Q	34.0	8.09	0.631	3.66	1.000	984.	230.5	0.0850	17.088	4.439		0.3136	3.60
21	S.F. KOKTULI	Q	29.3	8.09	0.631	3.66	1.000	984.	230.5	0.0850	17.088	5.931		0.4708	6.36
22	S.F. KOKTULI	C	27.6	8.16	0.629	3.66	1.000	985.	230.5	0.0852	17.085	6.721		0.4708	6.36
23	S.F. KOKTULI	C	25.1	8.20	0.627	3.66	1.000	986.	230.5	0.0693	17.084	7.889		0.4708	6.36
24	S.F. KOKTULI	Q	24.9	8.20	0.627	3.66	1.000	986.	230.5	0.0693	17.084	7.985		-0.1035	6.36
25	S.F. KOKTULI	C	21.9	8.22	0.626	3.66	1.000	987.	230.4	0.0884	17.084	7.669		-0.1035	6.36
26	S.F. KOKTULI	C	20.1	8.27	0.624	3.66	1.000	987.	230.4	0.0668	17.087	7.487		-0.1035	6.36
27	S.F. KOKTULI	C	15.4	8.33	0.622	3.66	1.000	988.	230.4	0.0647	17.087	6.997		-0.1035	6.36
28	S.F. KOKTULI	Q	13.9	8.33	0.622	3.66	1.000	988.	230.4	0.0647	17.087	6.847		-0.0553	6.36
29	S.F. KOKTULI	C	12.5	8.36	0.621	3.66	1.000	989.	230.4	0.0612	17.086	6.770		-0.0553	6.36
30	S.F. KOKTULI	C	9.2	8.39	0.620	3.66	1.000	990.	230.4	0.0781	17.087	6.588		-0.0553	6.36
31	S.F. KOKTULI	C	7.9	8.42	0.619	3.66	1.000	990.	230.4	0.0609	17.088	6.514		-0.0553	6.36
32	S.F. KOKTULI	C	5.1	8.47	0.617	3.66	1.000	991.	230.3	0.0661	17.089	6.360		-0.0553	6.36
33	S.F. KOKTULI	C	5.1	8.51	0.616	3.66	1.000	992.	230.3	0.0773	17.092	6.360		-0.0553	6.36
34	S.F. KOKTULI	Q	3.0	8.51	0.616	3.66	1.000	992.	230.3	0.0773	17.092	6.242		1.2811	6.36
35	S.F. KOKTULI	Q	0.1	8.51	0.616	3.66	1.000	992.	230.3	0.0773	17.092	9.911		0.5093	6.36
36	S.F. KOKTULI	E	0.0									9.966			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.71	0.661	3.47	1.000	979.	162.8	0.2240	17.167	1.125	4.52	0.3400	5.52
2	S.F. KOKTULI	C	53.3	6.76	0.659	3.47	1.000	979.	162.8	0.2114	17.165	1.585		0.3400	5.52
3	S.F. KOKTULI	C	51.2	6.79	0.658	3.47	1.000	980.	162.8	0.1897	17.162	2.297		0.3400	5.52
4	S.F. KOKTULI	Q	51.1	6.79	0.658	3.47	1.000	980.	162.8	0.1897	17.162	2.341		-0.0957	5.52
5	S.F. KOKTULI	C	49.4	6.82	0.657	3.47	1.000	981.	162.8	0.1614	17.161	2.180		-0.0957	5.52
6	S.F. KOKTULI	C	47.6	6.86	0.655	3.47	1.000	981.	162.8	0.1548	17.161	2.003		-0.0957	5.52
7	S.F. KOKTULI	C	45.7	6.89	0.654	3.47	1.000	982.	162.8	0.1748	17.161	1.825		-0.0957	5.52
8	S.F. KOKTULI	C	44.8	6.90	0.654	3.47	1.000	982.	162.8	0.1549	17.161	1.739		-0.0957	5.52
9	S.F. KOKTULI	C	43.9	6.92	0.653	3.47	1.000	982.	162.8	0.1977	17.160	1.656		-0.0957	5.52
10	S.F. KOKTULI	Q	43.6	6.92	0.653	3.47	1.000	982.	162.8	0.1977	17.160	1.627		0.0806	5.52
11	S.F. KOKTULI	C	41.1	6.93	0.653	3.47	1.000	983.	162.8	0.1546	17.158	1.833		0.0806	5.52
12	S.F. KOKTULI	C	40.0	6.93	0.652	3.47	1.000	983.	162.8	0.2021	17.159	1.922		0.0806	5.52
13	S.F. KOKTULI	C	38.4	6.96	0.651	3.47	1.000	983.	162.8	0.1545	17.160	2.052		0.0806	5.52
14	S.F. KOKTULI	Q	35.8	6.96	0.651	3.47	1.000	983.	162.8	0.1545	17.160	2.257		-0.0061	3.74
15	S.F. KOKTULI	B	34.3									2.248			
16	TRIBUTARY 119	H	36.1	6.96	0.651	3.47	1.000	983.	162.8	0.1772	17.161	2.064	2.07	-0.0017	3.74
17	TRIBUTARY 119	T	34.3									2.061			
18	S.F. KOKTULI	J	34.3	6.99	0.651	3.47	1.000	984.	162.8	0.1308	17.160	4.310		-0.0311	3.74
19	S.F. KOKTULI	C	34.1	7.02	0.649	3.47	1.000	984.	162.8	0.0850	17.159	4.306		-0.0311	3.74
20	S.F. KOKTULI	Q	34.0	7.02	0.649	3.47	1.000	984.	162.8	0.0850	17.159	4.302		0.3325	3.74
21	S.F. KOKTULI	Q	29.3	7.02	0.649	3.47	1.000	984.	162.8	0.0850	17.159	5.884		0.4751	6.63
22	S.F. KOKTULI	C	27.6	7.09	0.647	3.47	1.000	985.	162.8	0.0851	17.156	6.681		0.4751	6.63
23	S.F. KOKTULI	C	25.1	7.13	0.645	3.47	1.000	986.	162.8	0.0692	17.155	7.860		0.4751	6.63
24	S.F. KOKTULI	Q	24.9	7.13	0.645	3.47	1.000	986.	162.8	0.0692	17.155	7.957		-0.1033	6.63
25	S.F. KOKTULI	C	21.9	7.15	0.644	3.47	1.000	987.	162.8	0.0882	17.155	7.642		-0.1033	6.63
26	S.F. KOKTULI	C	20.1	7.20	0.642	3.47	1.000	987.	162.8	0.0667	17.157	7.460		-0.1033	6.63
27	S.F. KOKTULI	C	15.4	7.26	0.640	3.47	1.000	988.	162.8	0.0646	17.158	6.972		-0.1033	6.63
28	S.F. KOKTULI	Q	13.9	7.26	0.640	3.47	1.000	988.	162.8	0.0646	17.158	6.822		-0.0513	6.63
29	S.F. KOKTULI	C	12.5	7.29	0.639	3.47	1.000	989.	162.8	0.0611	17.157	6.750		-0.0513	6.63
30	S.F. KOKTULI	C	9.2	7.32	0.638	3.47	1.000	990.	162.7	0.0779	17.158	6.582		-0.0513	6.63
31	S.F. KOKTULI	C	7.9	7.35	0.637	3.47	1.000	990.	162.7	0.0609	17.159	6.513		-0.0513	6.63
32	S.F. KOKTULI	C	5.1	7.40	0.635	3.47	1.000	991.	162.7	0.0659	17.160	6.370		-0.0513	6.63
33	S.F. KOKTULI	C	5.1	7.44	0.633	3.47	1.000	992.	162.7	0.0772	17.163	6.370		-0.0513	6.63
34	S.F. KOKTULI	Q	3.0	7.44	0.633	3.47	1.000	992.	162.7	0.0772	17.163	6.261		1.2916	6.63
35	S.F. KOKTULI	Q	0.1	7.44	0.633	3.47	1.000	992.	162.7	0.0772	17.163	9.960		0.5093	6.63
36	S.F. KOKTULI	E	0.0									10.015			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.48	0.531	4.27	1.000	979.	282.7	0.2234	17.237	1.024	5.53	0.3154	6.53
2	S.F. KOKTULI	C	53.3	7.53	0.529	4.27	1.000	979.	282.7	0.2107	17.234	1.451		0.3154	6.53
3	S.F. KOKTULI	C	51.2	7.56	0.528	4.27	1.000	980.	282.7	0.1891	17.232	2.111		0.3154	6.53
4	S.F. KOKTULI	Q	51.1	7.56	0.528	4.27	1.000	980.	282.7	0.1891	17.232	2.152		-0.1145	6.53
5	S.F. KOKTULI	C	49.4	7.59	0.527	4.27	1.000	981.	282.7	0.1611	17.231	1.960		-0.1145	6.53
6	S.F. KOKTULI	C	47.6	7.63	0.526	4.27	1.000	981.	282.7	0.1545	17.230	1.747		-0.1145	6.53
7	S.F. KOKTULI	C	45.7	7.66	0.525	4.27	1.000	982.	282.7	0.1744	17.231	1.535		-0.1145	6.53
8	S.F. KOKTULI	C	44.8	7.67	0.525	4.27	1.000	982.	282.7	0.1547	17.231	1.432		-0.1145	6.53
9	S.F. KOKTULI	C	43.9	7.69	0.524	4.27	1.000	982.	282.7	0.1972	17.229	1.333		-0.1145	6.53
10	S.F. KOKTULI	Q	43.6	7.69	0.524	4.27	1.000	982.	282.7	0.1972	17.229	1.298		0.0755	6.53
11	S.F. KOKTULI	C	41.1	7.70	0.524	4.27	1.000	983.	282.7	0.1544	17.228	1.491		0.0755	6.53
12	S.F. KOKTULI	C	40.0	7.70	0.524	4.27	1.000	983.	282.7	0.2017	17.229	1.575		0.0755	6.53
13	S.F. KOKTULI	C	38.4	7.73	0.523	4.27	1.000	983.	282.7	0.1543	17.230	1.696		0.0755	6.53
14	S.F. KOKTULI	Q	35.8	7.73	0.523	4.27	1.000	983.	282.7	0.1543	17.230	1.888		0.0220	4.24
15	S.F. KOKTULI	B	34.3									1.922			
16	TRIBUTARY 119	H	36.1	7.73	0.523	4.27	1.000	983.	282.7	0.1768	17.230	1.758	2.43	0.0062	4.24
17	TRIBUTARY 119	T	34.3									1.769			
18	S.F. KOKTULI	J	34.3	7.76	0.522	4.27	1.000	984.	282.7	0.1304	17.229	3.691		0.1051	4.24
19	S.F. KOKTULI	C	34.1	7.79	0.521	4.27	1.000	984.	282.7	0.0850	17.228	3.705		0.1051	4.24
20	S.F. KOKTULI	Q	34.0	7.79	0.521	4.27	1.000	984.	282.7	0.0850	17.228	3.718		0.2905	4.24
21	S.F. KOKTULI	Q	29.3	7.79	0.521	4.27	1.000	984.	282.7	0.0850	17.228	5.100		0.4536	7.39
22	S.F. KOKTULI	C	27.6	7.86	0.519	4.27	1.000	985.	282.7	0.0850	17.226	5.861		0.4536	7.39
23	S.F. KOKTULI	C	25.1	7.90	0.518	4.27	1.000	986.	282.7	0.0691	17.224	6.986		0.4536	7.39
24	S.F. KOKTULI	Q	24.9	7.90	0.518	4.27	1.000	986.	282.7	0.0691	17.224	7.079		-0.0944	7.39
25	S.F. KOKTULI	C	21.9	7.92	0.517	4.27	1.000	987.	282.6	0.0880	17.225	6.791		-0.0944	7.39
26	S.F. KOKTULI	C	20.1	7.97	0.516	4.27	1.000	987.	282.6	0.0667	17.227	6.625		-0.0944	7.39
27	S.F. KOKTULI	C	15.4	8.03	0.514	4.27	1.000	988.	282.6	0.0645	17.227	6.179		-0.0944	7.39
28	S.F. KOKTULI	Q	13.9	8.03	0.514	4.27	1.000	988.	282.6	0.0645	17.227	6.042		-0.0149	7.39
29	S.F. KOKTULI	C	12.5	8.06	0.513	4.27	1.000	989.	282.6	0.0611	17.226	6.021		-0.0149	7.39
30	S.F. KOKTULI	C	9.2	8.09	0.512	4.27	1.000	990.	282.6	0.0777	17.227	5.972		-0.0149	7.39
31	S.F. KOKTULI	C	7.9	8.12	0.511	4.27	1.000	990.	282.5	0.0608	17.228	5.952		-0.0149	7.39
32	S.F. KOKTULI	C	5.1	8.17	0.510	4.27	1.000	991.	282.5	0.0658	17.230	5.911		-0.0149	7.39
33	S.F. KOKTULI	C	5.1	8.21	0.509	4.27	1.000	992.	282.5	0.0770	17.233	5.911		-0.0149	7.39
34	S.F. KOKTULI	Q	3.0	8.21	0.509	4.27	1.000	992.	282.5	0.0770	17.233	5.879		1.0908	7.39
35	S.F. KOKTULI	Q	0.1	8.21	0.509	4.27	1.000	992.	282.5	0.0770	17.233	9.003		0.4630	7.39
36	S.F. KOKTULI	E	0.0									9.053			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.08	0.577	6.92	1.000	979.	129.9	0.2227	17.305	1.060	5.45	0.3244	6.45
2	S.F. KOKTULI	C	53.3	7.13	0.576	6.92	1.000	979.	129.9	0.2100	17.303	1.499		0.3244	6.45
3	S.F. KOKTULI	C	51.2	7.16	0.575	6.92	1.000	980.	129.9	0.1886	17.300	2.178		0.3244	6.45
4	S.F. KOKTULI	Q	51.1	7.16	0.575	6.92	1.000	980.	129.9	0.1886	17.300	2.220		-0.1336	6.45
5	S.F. KOKTULI	C	49.4	7.19	0.574	6.92	1.000	981.	129.9	0.1609	17.299	1.996		-0.1336	6.45
6	S.F. KOKTULI	C	47.6	7.23	0.572	6.92	1.000	981.	129.9	0.1543	17.298	1.748		-0.1336	6.45
7	S.F. KOKTULI	C	45.7	7.26	0.571	6.92	1.000	982.	129.9	0.1740	17.299	1.500		-0.1336	6.45
8	S.F. KOKTULI	C	44.8	7.27	0.571	6.92	1.000	982.	129.9	0.1545	17.299	1.380		-0.1336	6.45
9	S.F. KOKTULI	C	43.9	7.29	0.570	6.92	1.000	982.	129.9	0.1967	17.298	1.264		-0.1336	6.45
10	S.F. KOKTULI	Q	43.6	7.29	0.570	6.92	1.000	982.	129.9	0.1967	17.298	1.223		0.0740	6.45
11	S.F. KOKTULI	C	41.1	7.30	0.570	6.92	1.000	983.	129.9	0.1542	17.296	1.413		0.0740	6.45
12	S.F. KOKTULI	C	40.0	7.30	0.570	6.92	1.000	983.	129.9	0.2012	17.297	1.495		0.0740	6.45
13	S.F. KOKTULI	C	38.4	7.33	0.569	6.92	1.000	983.	129.9	0.1541	17.298	1.613		0.0740	6.45
14	S.F. KOKTULI	Q	35.8	7.33	0.569	6.92	1.000	983.	129.9	0.1541	17.298	1.802		0.0233	4.40
15	S.F. KOKTULI	B	34.3									1.838			
16	TRIBUTARY 119	H	36.1	7.33	0.569	6.92	1.000	983.	129.9	0.1764	17.299	1.805	2.13	0.0067	4.40
17	TRIBUTARY 119	T	34.3									1.817			
18	S.F. KOKTULI	J	34.3	7.36	0.568	6.92	1.000	984.	129.9	0.1301	17.298	3.655		0.1128	4.40
19	S.F. KOKTULI	C	34.1	7.39	0.567	6.92	1.000	984.	129.9	0.0849	17.296	3.671		0.1128	4.40
20	S.F. KOKTULI	Q	34.0	7.39	0.567	6.92	1.000	984.	129.9	0.0849	17.296	3.684		0.2770	4.40
21	S.F. KOKTULI	Q	29.3	7.39	0.567	6.92	1.000	984.	129.9	0.0849	17.296	5.002		0.4501	7.73
22	S.F. KOKTULI	C	27.6	7.46	0.565	6.92	1.000	985.	129.9	0.0849	17.294	5.757		0.4501	7.73
23	S.F. KOKTULI	C	25.1	7.50	0.563	6.92	1.000	986.	129.9	0.0691	17.292	6.874		0.4501	7.73
24	S.F. KOKTULI	Q	24.9	7.50	0.563	6.92	1.000	986.	129.9	0.0691	17.292	6.966		-0.0932	7.73
25	S.F. KOKTULI	C	21.9	7.52	0.563	6.92	1.000	987.	129.9	0.0878	17.293	6.682		-0.0932	7.73
26	S.F. KOKTULI	C	20.1	7.57	0.561	6.92	1.000	987.	129.9	0.0666	17.295	6.517		-0.0932	7.73
27	S.F. KOKTULI	C	15.4	7.63	0.559	6.92	1.000	988.	129.9	0.0644	17.295	6.077		-0.0932	7.73
28	S.F. KOKTULI	Q	13.9	7.63	0.559	6.92	1.000	988.	129.9	0.0644	17.295	5.942		-0.0113	7.73
29	S.F. KOKTULI	C	12.5	7.66	0.558	6.92	1.000	989.	129.9	0.0611	17.295	5.926		-0.0113	7.73
30	S.F. KOKTULI	C	9.2	7.69	0.557	6.92	1.000	990.	129.9	0.0775	17.295	5.889		-0.0113	7.73
31	S.F. KOKTULI	C	7.9	7.72	0.556	6.92	1.000	990.	129.9	0.0608	17.296	5.874		-0.0113	7.73
32	S.F. KOKTULI	C	5.1	7.77	0.555	6.92	1.000	991.	129.8	0.0657	17.298	5.842		-0.0113	7.73
33	S.F. KOKTULI	C	5.1	7.81	0.553	6.92	1.000	992.	129.8	0.0768	17.301	5.842		-0.0113	7.73
34	S.F. KOKTULI	Q	3.0	7.81	0.553	6.92	1.000	992.	129.8	0.0768	17.301	5.818		1.0604	7.73
35	S.F. KOKTULI	Q	0.1	7.81	0.553	6.92	1.000	992.	129.8	0.0768	17.301	8.855		0.4537	7.73
36	S.F. KOKTULI	E	0.0									8.904			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.29	0.670	7.60	1.000	979.	108.0	0.2221	17.372	1.121	5.62	0.3392	6.62
2	S.F. KOKTULI	C	53.3	7.34	0.668	7.60	1.000	979.	108.0	0.2094	17.370	1.580		0.3392	6.62
3	S.F. KOKTULI	C	51.2	7.37	0.667	7.60	1.000	980.	108.0	0.1882	17.367	2.290		0.3392	6.62
4	S.F. KOKTULI	Q	51.1	7.37	0.667	7.60	1.000	980.	108.0	0.1882	17.367	2.334		-0.1372	6.62
5	S.F. KOKTULI	C	49.4	7.40	0.666	7.60	1.000	981.	108.0	0.1606	17.366	2.103		-0.1372	6.62
6	S.F. KOKTULI	C	47.6	7.44	0.665	7.60	1.000	981.	108.0	0.1542	17.365	1.849		-0.1372	6.62
7	S.F. KOKTULI	C	45.7	7.47	0.663	7.60	1.000	982.	108.0	0.1737	17.366	1.595		-0.1372	6.62
8	S.F. KOKTULI	C	44.8	7.48	0.663	7.60	1.000	982.	108.0	0.1543	17.366	1.471		-0.1372	6.62
9	S.F. KOKTULI	C	43.9	7.50	0.662	7.60	1.000	982.	108.0	0.1962	17.364	1.353		-0.1372	6.62
10	S.F. KOKTULI	Q	43.6	7.50	0.662	7.60	1.000	982.	108.0	0.1962	17.364	1.311		0.0757	6.62
11	S.F. KOKTULI	C	41.1	7.51	0.662	7.60	1.000	983.	108.0	0.1540	17.363	1.504		0.0757	6.62
12	S.F. KOKTULI	C	40.0	7.51	0.662	7.60	1.000	983.	108.0	0.2007	17.364	1.588		0.0757	6.62
13	S.F. KOKTULI	C	38.4	7.54	0.661	7.60	1.000	983.	108.0	0.1539	17.365	1.710		0.0757	6.62
14	S.F. KOKTULI	Q	35.8	7.54	0.661	7.60	1.000	983.	108.0	0.1539	17.365	1.903		0.0138	4.12
15	S.F. KOKTULI	B	34.3									1.924			
16	TRIBUTARY 119	H	36.1	7.54	0.661	7.60	1.000	983.	108.0	0.1760	17.366	1.944	2.24	0.0039	4.12
17	TRIBUTARY 119	T	34.3									1.951			
18	S.F. KOKTULI	J	34.3	7.57	0.660	7.60	1.000	984.	108.0	0.1298	17.364	3.875		0.0700	4.12
19	S.F. KOKTULI	C	34.1	7.60	0.658	7.60	1.000	984.	108.0	0.0849	17.363	3.885		0.0700	4.12
20	S.F. KOKTULI	Q	34.0	7.60	0.658	7.60	1.000	984.	108.0	0.0849	17.363	3.893		0.2562	4.12
21	S.F. KOKTULI	Q	29.3	7.60	0.658	7.60	1.000	984.	108.0	0.0849	17.363	5.112		0.4575	7.16
22	S.F. KOKTULI	C	27.6	7.67	0.656	7.60	1.000	985.	108.0	0.0848	17.361	5.880		0.4575	7.16
23	S.F. KOKTULI	C	25.1	7.71	0.654	7.60	1.000	986.	108.0	0.0690	17.359	7.015		0.4575	7.16
24	S.F. KOKTULI	Q	24.9	7.71	0.654	7.60	1.000	986.	108.0	0.0690	17.359	7.108		-0.0947	7.16
25	S.F. KOKTULI	C	21.9	7.73	0.653	7.60	1.000	987.	107.9	0.0876	17.360	6.819		-0.0947	7.16
26	S.F. KOKTULI	C	20.1	7.78	0.651	7.60	1.000	987.	107.9	0.0666	17.362	6.652		-0.0947	7.16
27	S.F. KOKTULI	C	15.4	7.84	0.649	7.60	1.000	988.	107.9	0.0644	17.362	6.204		-0.0947	7.16
28	S.F. KOKTULI	Q	13.9	7.84	0.649	7.60	1.000	988.	107.9	0.0644	17.362	6.067		-0.0259	7.16
29	S.F. KOKTULI	C	12.5	7.87	0.648	7.60	1.000	989.	107.9	0.0611	17.361	6.031		-0.0259	7.16
30	S.F. KOKTULI	C	9.2	7.90	0.647	7.60	1.000	990.	107.9	0.0774	17.362	5.946		-0.0259	7.16
31	S.F. KOKTULI	C	7.9	7.93	0.646	7.60	1.000	990.	107.9	0.0608	17.363	5.911		-0.0259	7.16
32	S.F. KOKTULI	C	5.1	7.98	0.644	7.60	1.000	991.	107.9	0.0656	17.365	5.839		-0.0259	7.16
33	S.F. KOKTULI	C	5.1	8.02	0.642	7.60	1.000	992.	107.9	0.0766	17.368	5.839		-0.0259	7.16
34	S.F. KOKTULI	Q	3.0	8.02	0.642	7.60	1.000	992.	107.9	0.0766	17.368	5.784		1.0429	7.16
35	S.F. KOKTULI	Q	0.1	8.02	0.642	7.60	1.000	992.	107.9	0.0766	17.368	8.771		0.4537	7.16
36	S.F. KOKTULI	E	0.0									8.820			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.25	0.838	7.47	1.000	979.	62.2	0.2215	17.438	1.221	5.50	0.3635	6.50
2	S.F. KOKTULI	C	53.3	6.30	0.836	7.47	1.000	979.	62.2	0.2087	17.435	1.713		0.3635	6.50
3	S.F. KOKTULI	C	51.2	6.33	0.834	7.47	1.000	980.	62.2	0.1877	17.433	2.474		0.3635	6.50
4	S.F. KOKTULI	Q	51.1	6.33	0.834	7.47	1.000	980.	62.2	0.1877	17.433	2.521		-0.1463	6.50
5	S.F. KOKTULI	C	49.4	6.36	0.833	7.47	1.000	981.	62.2	0.1604	17.431	2.275		-0.1463	6.50
6	S.F. KOKTULI	C	47.6	6.40	0.831	7.47	1.000	981.	62.2	0.1540	17.431	2.004		-0.1463	6.50
7	S.F. KOKTULI	C	45.7	6.43	0.829	7.47	1.000	982.	62.2	0.1733	17.431	1.733		-0.1463	6.50
8	S.F. KOKTULI	C	44.8	6.44	0.829	7.47	1.000	982.	62.2	0.1542	17.431	1.601		-0.1463	6.50
9	S.F. KOKTULI	C	43.9	6.46	0.828	7.47	1.000	982.	62.2	0.1957	17.430	1.475		-0.1463	6.50
10	S.F. KOKTULI	Q	43.6	6.46	0.828	7.47	1.000	982.	62.2	0.1957	17.430	1.430		0.0778	6.50
11	S.F. KOKTULI	C	41.1	6.47	0.827	7.47	1.000	983.	62.2	0.1539	17.428	1.629		0.0778	6.50
12	S.F. KOKTULI	C	40.0	6.47	0.827	7.47	1.000	983.	62.2	0.2003	17.429	1.715		0.0778	6.50
13	S.F. KOKTULI	C	38.4	6.50	0.826	7.47	1.000	983.	62.2	0.1537	17.430	1.840		0.0778	6.50
14	S.F. KOKTULI	Q	35.8	6.50	0.826	7.47	1.000	983.	62.2	0.1537	17.430	2.038		0.0050	4.30
15	S.F. KOKTULI	B	34.3									2.046			
16	TRIBUTARY 119	H	36.1	6.50	0.826	7.47	1.000	983.	62.2	0.1756	17.431	2.032	2.27	0.0011	4.30
17	TRIBUTARY 119	T	34.3									2.034			
18	S.F. KOKTULI	J	34.3	6.53	0.825	7.47	1.000	984.	62.2	0.1295	17.430	4.080		0.0233	4.30
19	S.F. KOKTULI	C	34.1	6.56	0.823	7.47	1.000	984.	62.2	0.0849	17.428	4.083		0.0233	4.30
20	S.F. KOKTULI	Q	34.0	6.56	0.823	7.47	1.000	984.	62.2	0.0849	17.428	4.086		0.2831	4.30
21	S.F. KOKTULI	Q	29.3	6.56	0.823	7.47	1.000	984.	62.2	0.0849	17.428	5.433		0.5072	7.30
22	S.F. KOKTULI	C	27.6	6.63	0.820	7.47	1.000	985.	62.2	0.0848	17.426	6.284		0.5072	7.30
23	S.F. KOKTULI	C	25.1	6.67	0.818	7.47	1.000	986.	62.2	0.0690	17.424	7.543		0.5072	7.30
24	S.F. KOKTULI	Q	24.9	6.67	0.818	7.47	1.000	986.	62.2	0.0690	17.424	7.646		-0.1002	7.30
25	S.F. KOKTULI	C	21.9	6.69	0.817	7.47	1.000	987.	62.2	0.0874	17.425	7.341		-0.1002	7.30
26	S.F. KOKTULI	C	20.1	6.74	0.814	7.47	1.000	987.	62.2	0.0666	17.427	7.164		-0.1002	7.30
27	S.F. KOKTULI	C	15.4	6.80	0.812	7.47	1.000	988.	62.2	0.0644	17.427	6.690		-0.1002	7.30
28	S.F. KOKTULI	Q	13.9	6.80	0.812	7.47	1.000	988.	62.2	0.0644	17.427	6.545		-0.0266	7.30
29	S.F. KOKTULI	C	12.5	6.83	0.810	7.47	1.000	989.	62.2	0.0611	17.427	6.508		-0.0266	7.30
30	S.F. KOKTULI	C	9.2	6.86	0.809	7.47	1.000	990.	62.2	0.0772	17.427	6.421		-0.0266	7.30
31	S.F. KOKTULI	C	7.9	6.89	0.807	7.47	1.000	990.	62.2	0.0608	17.429	6.385		-0.0266	7.30
32	S.F. KOKTULI	C	5.1	6.94	0.805	7.47	1.000	991.	62.2	0.0655	17.430	6.311		-0.0266	7.30
33	S.F. KOKTULI	C	5.1	6.98	0.803	7.47	1.000	992.	62.2	0.0765	17.433	6.311		-0.0266	7.30
34	S.F. KOKTULI	Q	3.0	6.98	0.803	7.47	1.000	992.	62.2	0.0765	17.433	6.254		1.2877	7.30
35	S.F. KOKTULI	Q	0.1	6.98	0.803	7.47	1.000	992.	62.2	0.0765	17.433	9.942		0.5093	7.30
36	S.F. KOKTULI	E	0.0									9.997			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.79	0.884	2.90	1.000	979.	72.3	0.2209	17.502	1.438	6.27	0.4144	7.27
2	S.F. KOKTULI	C	53.3	7.84	0.882	2.90	1.000	979.	72.3	0.2081	17.499	1.999		0.4144	7.27
3	S.F. KOKTULI	C	51.2	7.87	0.880	2.90	1.000	980.	72.3	0.1873	17.497	2.867		0.4144	7.27
4	S.F. KOKTULI	Q	51.1	7.87	0.880	2.90	1.000	980.	72.3	0.1873	17.497	2.920		-0.1709	7.27
5	S.F. KOKTULI	C	49.4	7.90	0.879	2.90	1.000	981.	72.3	0.1602	17.495	2.633		-0.1709	7.27
6	S.F. KOKTULI	C	47.6	7.94	0.877	2.90	1.000	981.	72.3	0.1538	17.495	2.316		-0.1709	7.27
7	S.F. KOKTULI	C	45.7	7.97	0.875	2.90	1.000	982.	72.3	0.1730	17.495	1.999		-0.1709	7.27
8	S.F. KOKTULI	C	44.8	7.98	0.875	2.90	1.000	982.	72.3	0.1540	17.495	1.845		-0.1709	7.27
9	S.F. KOKTULI	C	43.9	8.00	0.874	2.90	1.000	982.	72.3	0.1953	17.494	1.698		-0.1709	7.27
10	S.F. KOKTULI	Q	43.6	8.00	0.874	2.90	1.000	982.	72.3	0.1953	17.494	1.645		0.0808	7.27
11	S.F. KOKTULI	C	41.1	8.01	0.873	2.90	1.000	983.	72.3	0.1537	17.492	1.852		0.0808	7.27
12	S.F. KOKTULI	C	40.0	8.01	0.873	2.90	1.000	983.	72.3	0.1999	17.493	1.941		0.0808	7.27
13	S.F. KOKTULI	C	38.4	8.04	0.872	2.90	1.000	983.	72.3	0.1535	17.494	2.071		0.0808	7.27
14	S.F. KOKTULI	Q	35.8	8.04	0.872	2.90	1.000	983.	72.3	0.1535	17.494	2.277		-0.0014	4.30
15	S.F. KOKTULI	B	34.3									2.275			
16	TRIBUTARY 119	H	36.1	8.04	0.872	2.90	1.000	983.	72.3	0.1753	17.495	1.940	2.10	-0.0006	4.30
17	TRIBUTARY 119	T	34.3									1.939			
18	S.F. KOKTULI	J	34.3	8.07	0.870	2.90	1.000	984.	72.3	0.1292	17.494	4.214		-0.0039	4.30
19	S.F. KOKTULI	C	34.1	8.10	0.868	2.90	1.000	984.	72.3	0.0849	17.492	4.213		-0.0039	4.30
20	S.F. KOKTULI	Q	34.0	8.10	0.868	2.90	1.000	984.	72.3	0.0849	17.492	4.213		0.2926	4.30
21	S.F. KOKTULI	Q	29.3	8.10	0.868	2.90	1.000	984.	72.3	0.0849	17.492	5.605		0.5260	7.12
22	S.F. KOKTULI	C	27.6	8.17	0.865	2.90	1.000	985.	72.3	0.0847	17.490	6.488		0.5260	7.12
23	S.F. KOKTULI	C	25.1	8.21	0.863	2.90	1.000	986.	72.3	0.0690	17.488	7.793		0.5260	7.12
24	S.F. KOKTULI	Q	24.9	8.21	0.863	2.90	1.000	986.	72.3	0.0690	17.488	7.900		-0.1027	7.12
25	S.F. KOKTULI	C	21.9	8.23	0.862	2.90	1.000	987.	72.3	0.0872	17.489	7.587		-0.1027	7.12
26	S.F. KOKTULI	C	20.1	8.28	0.859	2.90	1.000	987.	72.3	0.0666	17.491	7.405		-0.1027	7.12
27	S.F. KOKTULI	C	15.4	8.34	0.857	2.90	1.000	988.	72.3	0.0644	17.491	6.920		-0.1027	7.12
28	S.F. KOKTULI	Q	13.9	8.34	0.857	2.90	1.000	988.	72.3	0.0644	17.491	6.771		-0.0263	7.12
29	S.F. KOKTULI	C	12.5	8.37	0.855	2.90	1.000	989.	72.3	0.0611	17.490	6.734		-0.0263	7.12
30	S.F. KOKTULI	C	9.2	8.40	0.854	2.90	1.000	990.	72.2	0.0770	17.491	6.648		-0.0263	7.12
31	S.F. KOKTULI	C	7.9	8.43	0.852	2.90	1.000	990.	72.2	0.0607	17.492	6.613		-0.0263	7.12
32	S.F. KOKTULI	C	5.1	8.48	0.850	2.90	1.000	991.	72.2	0.0653	17.494	6.539		-0.0263	7.12
33	S.F. KOKTULI	C	5.1	8.52	0.848	2.90	1.000	992.	72.2	0.0763	17.497	6.539		-0.0263	7.12
34	S.F. KOKTULI	Q	3.0	8.52	0.848	2.90	1.000	992.	72.2	0.0763	17.497	6.483		1.4134	7.12
35	S.F. KOKTULI	Q	0.1	8.52	0.848	2.90	1.000	992.	72.2	0.0763	17.497	10.531		0.5370	7.12
36	S.F. KOKTULI	E	0.0									10.589			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.18	0.884	5.49	1.000	979.	104.3	0.2204	17.564	1.312	6.53	0.3851	7.53
2	S.F. KOKTULI	C	53.3	6.23	0.882	5.49	1.000	979.	104.3	0.2075	17.561	1.833		0.3851	7.53
3	S.F. KOKTULI	C	51.2	6.26	0.880	5.49	1.000	980.	104.3	0.1868	17.559	2.639		0.3851	7.53
4	S.F. KOKTULI	Q	51.1	6.26	0.880	5.49	1.000	980.	104.3	0.1868	17.559	2.689		-0.1541	7.53
5	S.F. KOKTULI	C	49.4	6.29	0.879	5.49	1.000	981.	104.3	0.1600	17.558	2.430		-0.1541	7.53
6	S.F. KOKTULI	C	47.6	6.33	0.877	5.49	1.000	981.	104.3	0.1537	17.557	2.145		-0.1541	7.53
7	S.F. KOKTULI	C	45.7	6.36	0.875	5.49	1.000	982.	104.3	0.1727	17.557	1.859		-0.1541	7.53
8	S.F. KOKTULI	C	44.8	6.37	0.875	5.49	1.000	982.	104.3	0.1539	17.558	1.720		-0.1541	7.53
9	S.F. KOKTULI	C	43.9	6.39	0.874	5.49	1.000	982.	104.3	0.1949	17.556	1.587		-0.1541	7.53
10	S.F. KOKTULI	Q	43.6	6.39	0.874	5.49	1.000	982.	104.3	0.1949	17.556	1.540		0.0794	7.53
11	S.F. KOKTULI	C	41.1	6.40	0.873	5.49	1.000	983.	104.3	0.1536	17.554	1.743		0.0794	7.53
12	S.F. KOKTULI	C	40.0	6.40	0.873	5.49	1.000	983.	104.3	0.1995	17.555	1.831		0.0794	7.53
13	S.F. KOKTULI	C	38.4	6.43	0.872	5.49	1.000	983.	104.3	0.1534	17.556	1.959		0.0794	7.53
14	S.F. KOKTULI	Q	35.8	6.43	0.872	5.49	1.000	983.	104.3	0.1534	17.556	2.161		0.0089	4.34
15	S.F. KOKTULI	B	34.3									2.175			
16	TRIBUTARY 119	H	36.1	6.43	0.872	5.49	1.000	983.	104.3	0.1749	17.557	1.808	2.48	0.0028	4.34
17	TRIBUTARY 119	T	34.3									1.813			
18	S.F. KOKTULI	J	34.3	6.46	0.871	5.49	1.000	984.	104.3	0.1289	17.556	3.988		0.0428	4.34
19	S.F. KOKTULI	C	34.1	6.49	0.869	5.49	1.000	984.	104.3	0.0849	17.555	3.994		0.0428	4.34
20	S.F. KOKTULI	Q	34.0	6.49	0.869	5.49	1.000	984.	104.3	0.0849	17.555	3.999		0.3043	4.34
21	S.F. KOKTULI	Q	29.3	6.49	0.869	5.49	1.000	984.	104.3	0.0849	17.555	5.447		0.5299	6.81
22	S.F. KOKTULI	C	27.6	6.56	0.865	5.49	1.000	985.	104.3	0.0847	17.552	6.336		0.5299	6.81
23	S.F. KOKTULI	C	25.1	6.60	0.863	5.49	1.000	986.	104.3	0.0689	17.550	7.651		0.5299	6.81
24	S.F. KOKTULI	Q	24.9	6.60	0.863	5.49	1.000	986.	104.3	0.0689	17.550	7.759		-0.1014	6.81
25	S.F. KOKTULI	C	21.9	6.62	0.862	5.49	1.000	987.	104.3	0.0870	17.551	7.450		-0.1014	6.81
26	S.F. KOKTULI	C	20.1	6.67	0.860	5.49	1.000	987.	104.3	0.0665	17.553	7.271		-0.1014	6.81
27	S.F. KOKTULI	C	15.4	6.73	0.857	5.49	1.000	988.	104.3	0.0644	17.554	6.792		-0.1014	6.81
28	S.F. KOKTULI	Q	13.9	6.73	0.857	5.49	1.000	988.	104.3	0.0644	17.554	6.645		-0.0251	6.81
29	S.F. KOKTULI	C	12.5	6.76	0.855	5.49	1.000	989.	104.3	0.0611	17.553	6.610		-0.0251	6.81
30	S.F. KOKTULI	C	9.2	6.79	0.854	5.49	1.000	990.	104.3	0.0769	17.553	6.528		-0.0251	6.81
31	S.F. KOKTULI	C	7.9	6.82	0.852	5.49	1.000	990.	104.3	0.0607	17.555	6.494		-0.0251	6.81
32	S.F. KOKTULI	C	5.1	6.87	0.850	5.49	1.000	991.	104.2	0.0653	17.557	6.424		-0.0251	6.81
33	S.F. KOKTULI	C	5.1	6.91	0.848	5.49	1.000	992.	104.2	0.0762	17.560	6.424		-0.0251	6.81
34	S.F. KOKTULI	Q	3.0	6.91	0.848	5.49	1.000	992.	104.2	0.0762	17.560	6.371		1.3509	6.81
35	S.F. KOKTULI	Q	0.1	6.91	0.848	5.49	1.000	992.	104.2	0.0762	17.560	10.240		0.5278	6.81
36	S.F. KOKTULI	E	0.0									10.297			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.07	0.801	5.63	1.000	979.	225.2	0.2198	17.625	1.193	7.27	0.3568	8.27
2	S.F. KOKTULI	C	53.3	6.12	0.798	5.63	1.000	979.	225.2	0.2069	17.622	1.676		0.3568	8.27
3	S.F. KOKTULI	C	51.2	6.15	0.797	5.63	1.000	980.	225.2	0.1864	17.620	2.423		0.3568	8.27
4	S.F. KOKTULI	Q	51.1	6.15	0.797	5.63	1.000	980.	225.2	0.1864	17.620	2.469		-0.1504	8.27
5	S.F. KOKTULI	C	49.4	6.18	0.796	5.63	1.000	981.	225.2	0.1598	17.618	2.216		-0.1504	8.27
6	S.F. KOKTULI	C	47.6	6.22	0.794	5.63	1.000	981.	225.1	0.1535	17.618	1.937		-0.1504	8.27
7	S.F. KOKTULI	C	45.7	6.25	0.792	5.63	1.000	982.	225.1	0.1724	17.618	1.659		-0.1504	8.27
8	S.F. KOKTULI	C	44.8	6.26	0.792	5.63	1.000	982.	225.1	0.1537	17.618	1.523		-0.1504	8.27
9	S.F. KOKTULI	C	43.9	6.28	0.791	5.63	1.000	982.	225.1	0.1945	17.617	1.393		-0.1504	8.27
10	S.F. KOKTULI	Q	43.6	6.28	0.791	5.63	1.000	982.	225.1	0.1945	17.617	1.347		0.0764	8.27
11	S.F. KOKTULI	C	41.1	6.29	0.791	5.63	1.000	983.	225.1	0.1534	17.615	1.543		0.0764	8.27
12	S.F. KOKTULI	C	40.0	6.29	0.790	5.63	1.000	983.	225.1	0.1991	17.616	1.627		0.0764	8.27
13	S.F. KOKTULI	C	38.4	6.32	0.789	5.63	1.000	983.	225.1	0.1532	17.617	1.750		0.0764	8.27
14	S.F. KOKTULI	Q	35.8	6.32	0.789	5.63	1.000	983.	225.1	0.1532	17.617	1.945		0.0308	4.15
15	S.F. KOKTULI	B	34.3									1.992			
16	TRIBUTARY 119	H	36.1	6.32	0.789	5.63	1.000	983.	225.1	0.1746	17.618	1.460	3.33	0.0090	4.15
17	TRIBUTARY 119	T	34.3									1.476			
18	S.F. KOKTULI	J	34.3	6.35	0.788	5.63	1.000	984.	225.1	0.1286	17.617	3.467		0.1479	4.15
19	S.F. KOKTULI	C	34.1	6.38	0.786	5.63	1.000	984.	225.1	0.0849	17.615	3.487		0.1479	4.15
20	S.F. KOKTULI	Q	34.0	6.38	0.786	5.63	1.000	984.	225.1	0.0849	17.615	3.505		0.2600	4.15
21	S.F. KOKTULI	Q	29.3	6.38	0.786	5.63	1.000	984.	225.1	0.0849	17.615	4.742		0.4838	6.53
22	S.F. KOKTULI	C	27.6	6.45	0.783	5.63	1.000	985.	225.1	0.0846	17.613	5.554		0.4838	6.53
23	S.F. KOKTULI	C	25.1	6.49	0.782	5.63	1.000	986.	225.1	0.0689	17.611	6.754		0.4838	6.53
24	S.F. KOKTULI	Q	24.9	6.49	0.782	5.63	1.000	986.	225.1	0.0689	17.611	6.853		-0.0920	6.53
25	S.F. KOKTULI	C	21.9	6.51	0.780	5.63	1.000	987.	225.1	0.0869	17.612	6.573		-0.0920	6.53
26	S.F. KOKTULI	C	20.1	6.56	0.778	5.63	1.000	987.	225.1	0.0665	17.614	6.410		-0.0920	6.53
27	S.F. KOKTULI	C	15.4	6.62	0.776	5.63	1.000	988.	225.0	0.0643	17.614	5.975		-0.0920	6.53
28	S.F. KOKTULI	Q	13.9	6.62	0.776	5.63	1.000	988.	225.0	0.0643	17.614	5.842		0.0080	6.53
29	S.F. KOKTULI	C	12.5	6.65	0.774	5.63	1.000	989.	225.0	0.0611	17.613	5.853		0.0080	6.53
30	S.F. KOKTULI	C	9.2	6.68	0.773	5.63	1.000	990.	225.0	0.0767	17.614	5.879		0.0080	6.53
31	S.F. KOKTULI	C	7.9	6.71	0.772	5.63	1.000	990.	225.0	0.0607	17.616	5.890		0.0080	6.53
32	S.F. KOKTULI	C	5.1	6.76	0.769	5.63	1.000	991.	225.0	0.0652	17.617	5.912		0.0080	6.53
33	S.F. KOKTULI	C	5.1	6.80	0.767	5.63	1.000	992.	225.0	0.0760	17.621	5.912		0.0080	6.53
34	S.F. KOKTULI	Q	3.0	6.80	0.767	5.63	1.000	992.	225.0	0.0760	17.621	5.929		1.1163	6.53
35	S.F. KOKTULI	Q	0.1	6.80	0.767	5.63	1.000	992.	225.0	0.0760	17.621	9.126		0.4630	6.53
36	S.F. KOKTULI	E	0.0									9.176			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.35	0.763	5.39	1.000	979.	207.8	0.2193	17.684	1.078	7.36	0.3283	8.36
2	S.F. KOKTULI	C	53.3	5.40	0.761	5.39	1.000	979.	207.8	0.2063	17.681	1.523		0.3283	8.36
3	S.F. KOKTULI	C	51.2	5.43	0.760	5.39	1.000	980.	207.8	0.1860	17.679	2.210		0.3283	8.36
4	S.F. KOKTULI	Q	51.1	5.43	0.760	5.39	1.000	980.	207.8	0.1860	17.679	2.252		-0.1439	8.36
5	S.F. KOKTULI	C	49.4	5.46	0.759	5.39	1.000	981.	207.8	0.1596	17.677	2.010		-0.1439	8.36
6	S.F. KOKTULI	C	47.6	5.50	0.757	5.39	1.000	981.	207.8	0.1534	17.677	1.744		-0.1439	8.36
7	S.F. KOKTULI	C	45.7	5.53	0.756	5.39	1.000	982.	207.8	0.1722	17.677	1.477		-0.1439	8.36
8	S.F. KOKTULI	C	44.8	5.54	0.755	5.39	1.000	982.	207.8	0.1536	17.678	1.347		-0.1439	8.36
9	S.F. KOKTULI	C	43.9	5.56	0.754	5.39	1.000	982.	207.8	0.1941	17.676	1.223		-0.1439	8.36
10	S.F. KOKTULI	Q	43.6	5.56	0.754	5.39	1.000	982.	207.8	0.1941	17.676	1.179		0.0730	8.36
11	S.F. KOKTULI	C	41.1	5.57	0.754	5.39	1.000	983.	207.8	0.1533	17.674	1.366		0.0730	8.36
12	S.F. KOKTULI	C	40.0	5.57	0.754	5.39	1.000	983.	207.8	0.1987	17.675	1.447		0.0730	8.36
13	S.F. KOKTULI	C	38.4	5.60	0.752	5.39	1.000	983.	207.8	0.1531	17.676	1.564		0.0730	8.36
14	S.F. KOKTULI	Q	35.8	5.60	0.752	5.39	1.000	983.	207.8	0.1531	17.676	1.750		0.0434	4.41
15	S.F. KOKTULI	B	34.3									1.817			
16	TRIBUTARY 119	H	36.1	5.60	0.752	5.39	1.000	983.	207.7	0.1743	17.677	1.266	3.45	0.0123	4.41
17	TRIBUTARY 119	T	34.3									1.288			
18	S.F. KOKTULI	J	34.3	5.63	0.751	5.39	1.000	984.	207.7	0.1283	17.676	3.105		0.2101	4.41
19	S.F. KOKTULI	C	34.1	5.66	0.750	5.39	1.000	984.	207.7	0.0849	17.674	3.134		0.2101	4.41
20	S.F. KOKTULI	Q	34.0	5.66	0.750	5.39	1.000	984.	207.7	0.0849	17.674	3.159		0.2478	4.41
21	S.F. KOKTULI	Q	29.3	5.66	0.750	5.39	1.000	984.	207.7	0.0849	17.674	4.338		0.4465	7.06
22	S.F. KOKTULI	C	27.6	5.73	0.747	5.39	1.000	985.	207.7	0.0846	17.672	5.087		0.4465	7.06
23	S.F. KOKTULI	C	25.1	5.77	0.745	5.39	1.000	986.	207.7	0.0689	17.670	6.195		0.4465	7.06
24	S.F. KOKTULI	Q	24.9	5.77	0.745	5.39	1.000	986.	207.7	0.0689	17.670	6.286		-0.0860	7.06
25	S.F. KOKTULI	C	21.9	5.79	0.744	5.39	1.000	987.	207.7	0.0867	17.670	6.024		-0.0860	7.06
26	S.F. KOKTULI	C	20.1	5.84	0.742	5.39	1.000	987.	207.7	0.0665	17.673	5.872		-0.0860	7.06
27	S.F. KOKTULI	C	15.4	5.90	0.740	5.39	1.000	988.	207.7	0.0643	17.673	5.466		-0.0860	7.06
28	S.F. KOKTULI	Q	13.9	5.90	0.740	5.39	1.000	988.	207.7	0.0643	17.673	5.341		0.0278	7.06
29	S.F. KOKTULI	C	12.5	5.93	0.738	5.39	1.000	989.	207.7	0.0611	17.672	5.380		0.0278	7.06
30	S.F. KOKTULI	C	9.2	5.96	0.737	5.39	1.000	990.	207.7	0.0766	17.673	5.471		0.0278	7.06
31	S.F. KOKTULI	C	7.9	5.99	0.736	5.39	1.000	990.	207.6	0.0607	17.675	5.508		0.0278	7.06
32	S.F. KOKTULI	C	5.1	6.04	0.734	5.39	1.000	991.	207.6	0.0651	17.676	5.586		0.0278	7.06
33	S.F. KOKTULI	C	5.1	6.08	0.732	5.39	1.000	992.	207.6	0.0759	17.680	5.586		0.0278	7.06
34	S.F. KOKTULI	Q	3.0	6.08	0.732	5.39	1.000	992.	207.6	0.0759	17.680	5.645		0.9742	7.06
35	S.F. KOKTULI	Q	0.1	6.08	0.732	5.39	1.000	992.	207.6	0.0759	17.680	8.435		0.4352	7.06
36	S.F. KOKTULI	E	0.0									8.482			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.50	0.661	3.56	1.000	979.	184.9	0.2188	17.742	1.051	7.67	0.3221	8.67
2	S.F. KOKTULI	C	53.3	6.55	0.659	3.56	1.000	979.	184.9	0.2058	17.739	1.487		0.3221	8.67
3	S.F. KOKTULI	C	51.2	6.58	0.658	3.56	1.000	980.	184.9	0.1857	17.736	2.161		0.3221	8.67
4	S.F. KOKTULI	Q	51.1	6.58	0.658	3.56	1.000	980.	184.9	0.1857	17.736	2.203		-0.1630	8.67
5	S.F. KOKTULI	C	49.4	6.61	0.657	3.56	1.000	981.	184.9	0.1594	17.735	1.929		-0.1630	8.67
6	S.F. KOKTULI	C	47.6	6.65	0.655	3.56	1.000	981.	184.9	0.1533	17.734	1.627		-0.1630	8.67
7	S.F. KOKTULI	C	45.7	6.68	0.654	3.56	1.000	982.	184.9	0.1719	17.734	1.325		-0.1630	8.67
8	S.F. KOKTULI	C	44.8	6.69	0.654	3.56	1.000	982.	184.9	0.1535	17.735	1.178		-0.1630	8.67
9	S.F. KOKTULI	C	43.9	6.71	0.653	3.56	1.000	982.	184.9	0.1937	17.733	1.037		-0.1630	8.67
10	S.F. KOKTULI	Q	43.6	6.71	0.653	3.56	1.000	982.	184.9	0.1937	17.733	0.987		0.0683	8.67
11	S.F. KOKTULI	C	41.1	6.72	0.653	3.56	1.000	983.	184.9	0.1532	17.731	1.162		0.0683	8.67
12	S.F. KOKTULI	C	40.0	6.72	0.652	3.56	1.000	983.	184.9	0.1983	17.732	1.238		0.0683	8.67
13	S.F. KOKTULI	C	38.4	6.75	0.651	3.56	1.000	983.	184.9	0.1529	17.733	1.347		0.0683	8.67
14	S.F. KOKTULI	Q	35.8	6.75	0.651	3.56	1.000	983.	184.9	0.1529	17.733	1.521		0.0558	4.65
15	S.F. KOKTULI	B	34.3									1.607			
16	TRIBUTARY 119	H	36.1	6.75	0.652	3.56	1.000	983.	184.9	0.1740	17.734	1.039	3.35	0.0157	4.65
17	TRIBUTARY 119	T	34.3									1.067			
18	S.F. KOKTULI	J	34.3	6.78	0.651	3.56	1.000	984.	184.9	0.1281	17.733	2.675		0.2685	4.65
19	S.F. KOKTULI	C	34.1	6.81	0.649	3.56	1.000	984.	184.9	0.0850	17.732	2.712		0.2685	4.65
20	S.F. KOKTULI	Q	34.0	6.81	0.649	3.56	1.000	984.	184.9	0.0850	17.732	2.744		0.2257	4.65
21	S.F. KOKTULI	Q	29.3	6.81	0.649	3.56	1.000	984.	184.9	0.0850	17.732	3.818		0.3906	7.25
22	S.F. KOKTULI	C	27.6	6.88	0.647	3.56	1.000	985.	184.9	0.0846	17.729	4.473		0.3906	7.25
23	S.F. KOKTULI	C	25.1	6.92	0.645	3.56	1.000	986.	184.9	0.0688	17.727	5.442		0.3906	7.25
24	S.F. KOKTULI	Q	24.9	6.92	0.645	3.56	1.000	986.	184.9	0.0688	17.727	5.522		-0.0776	7.25
25	S.F. KOKTULI	C	21.9	6.94	0.644	3.56	1.000	987.	184.9	0.0866	17.728	5.286		-0.0776	7.25
26	S.F. KOKTULI	C	20.1	6.99	0.642	3.56	1.000	987.	184.8	0.0665	17.730	5.148		-0.0776	7.25
27	S.F. KOKTULI	C	15.4	7.05	0.640	3.56	1.000	988.	184.8	0.0643	17.731	4.782		-0.0776	7.25
28	S.F. KOKTULI	Q	13.9	7.05	0.640	3.56	1.000	988.	184.8	0.0643	17.731	4.669		0.0584	7.25
29	S.F. KOKTULI	C	12.5	7.08	0.639	3.56	1.000	989.	184.8	0.0612	17.730	4.751		0.0584	7.25
30	S.F. KOKTULI	C	9.2	7.11	0.638	3.56	1.000	990.	184.8	0.0764	17.730	4.942		0.0584	7.25
31	S.F. KOKTULI	C	7.9	7.14	0.637	3.56	1.000	990.	184.8	0.0607	17.732	5.021		0.0584	7.25
32	S.F. KOKTULI	C	5.1	7.19	0.635	3.56	1.000	991.	184.8	0.0651	17.734	5.183		0.0584	7.25
33	S.F. KOKTULI	C	5.1	7.23	0.633	3.56	1.000	992.	184.8	0.0758	17.737	5.183		0.0584	7.25
34	S.F. KOKTULI	Q	3.0	7.23	0.633	3.56	1.000	992.	184.8	0.0758	17.737	5.308		0.8156	7.25
35	S.F. KOKTULI	Q	0.1	7.23	0.633	3.56	1.000	992.	184.8	0.0758	17.737	7.644		0.3889	7.25
36	S.F. KOKTULI	E	0.0									7.686			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.31	0.735	3.34	1.000	979.	154.7	0.2183	17.797	0.888	8.28	0.2813	9.28
2	S.F. KOKTULI	C	53.3	7.36	0.733	3.34	1.000	979.	154.7	0.2053	17.794	1.269		0.2813	9.28
3	S.F. KOKTULI	C	51.2	7.39	0.732	3.34	1.000	980.	154.7	0.1854	17.792	1.858		0.2813	9.28
4	S.F. KOKTULI	Q	51.1	7.39	0.732	3.34	1.000	980.	154.7	0.1854	17.792	1.894		-0.1497	9.28
5	S.F. KOKTULI	C	49.4	7.42	0.731	3.34	1.000	981.	154.7	0.1592	17.790	1.643		-0.1497	9.28
6	S.F. KOKTULI	C	47.6	7.46	0.729	3.34	1.000	981.	154.7	0.1532	17.790	1.365		-0.1497	9.28
7	S.F. KOKTULI	C	45.7	7.49	0.728	3.34	1.000	982.	154.7	0.1717	17.790	1.088		-0.1497	9.28
8	S.F. KOKTULI	C	44.8	7.50	0.727	3.34	1.000	982.	154.7	0.1534	17.790	0.953		-0.1497	9.28
9	S.F. KOKTULI	C	43.9	7.52	0.727	3.34	1.000	982.	154.7	0.1934	17.789	0.824		-0.1497	9.28
10	S.F. KOKTULI	Q	43.6	7.52	0.727	3.34	1.000	982.	154.7	0.1934	17.789	0.778		0.0616	9.28
11	S.F. KOKTULI	C	41.1	7.53	0.726	3.34	1.000	983.	154.7	0.1530	17.787	0.935		0.0616	9.28
12	S.F. KOKTULI	C	40.0	7.53	0.726	3.34	1.000	983.	154.7	0.1980	17.788	1.004		0.0616	9.28
13	S.F. KOKTULI	C	38.4	7.56	0.725	3.34	1.000	983.	154.7	0.1528	17.789	1.103		0.0616	9.28
14	S.F. KOKTULI	Q	35.8	7.56	0.725	3.34	1.000	983.	154.7	0.1528	17.789	1.260		0.0639	4.79
15	S.F. KOKTULI	B	34.3									1.358			
16	TRIBUTARY 119	H	36.1	7.56	0.725	3.34	1.000	983.	154.7	0.1737	17.790	0.923	3.74	0.0179	4.79
17	TRIBUTARY 119	T	34.3									0.955			
18	S.F. KOKTULI	J	34.3	7.59	0.724	3.34	1.000	984.	154.7	0.1278	17.789	2.313		0.3074	4.79
19	S.F. KOKTULI	C	34.1	7.62	0.722	3.34	1.000	984.	154.7	0.0850	17.787	2.355		0.3074	4.79
20	S.F. KOKTULI	Q	34.0	7.62	0.722	3.34	1.000	984.	154.7	0.0850	17.787	2.392		0.2020	4.79
21	S.F. KOKTULI	Q	29.3	7.62	0.722	3.34	1.000	984.	154.7	0.0850	17.787	3.353		0.3543	7.54
22	S.F. KOKTULI	C	27.6	7.69	0.720	3.34	1.000	985.	154.7	0.0846	17.784	3.948		0.3543	7.54
23	S.F. KOKTULI	C	25.1	7.73	0.718	3.34	1.000	986.	154.7	0.0688	17.782	4.827		0.3543	7.54
24	S.F. KOKTULI	Q	24.9	7.73	0.718	3.34	1.000	986.	154.7	0.0688	17.782	4.899		-0.0706	7.54
25	S.F. KOKTULI	C	21.9	7.75	0.717	3.34	1.000	987.	154.7	0.0864	17.783	4.684		-0.0706	7.54
26	S.F. KOKTULI	C	20.1	7.80	0.715	3.34	1.000	987.	154.6	0.0665	17.786	4.559		-0.0706	7.54
27	S.F. KOKTULI	C	15.4	7.86	0.713	3.34	1.000	988.	154.6	0.0643	17.786	4.225		-0.0706	7.54
28	S.F. KOKTULI	Q	13.9	7.86	0.713	3.34	1.000	988.	154.6	0.0643	17.786	4.123		0.0902	7.54
29	S.F. KOKTULI	C	12.5	7.89	0.711	3.34	1.000	989.	154.6	0.0612	17.785	4.249		0.0902	7.54
30	S.F. KOKTULI	C	9.2	7.92	0.710	3.34	1.000	990.	154.6	0.0763	17.786	4.545		0.0902	7.54
31	S.F. KOKTULI	C	7.9	7.95	0.709	3.34	1.000	990.	154.6	0.0607	17.787	4.665		0.0902	7.54
32	S.F. KOKTULI	C	5.1	8.00	0.707	3.34	1.000	991.	154.6	0.0650	17.789	4.917		0.0902	7.54
33	S.F. KOKTULI	C	5.1	8.04	0.705	3.34	1.000	992.	154.6	0.0756	17.792	4.917		0.0902	7.54
34	S.F. KOKTULI	Q	3.0	8.04	0.705	3.34	1.000	992.	154.6	0.0756	17.792	5.109		0.7263	7.54
35	S.F. KOKTULI	Q	0.1	8.04	0.705	3.34	1.000	992.	154.6	0.0756	17.792	7.189		0.3704	7.54
36	S.F. KOKTULI	E	0.0									7.229			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.69	0.773	4.60	1.000	979.	109.9	0.2179	17.851	0.820	7.66	0.2634	8.66
2	S.F. KOKTULI	C	53.3	6.74	0.771	4.60	1.000	979.	109.9	0.2048	17.848	1.177		0.2634	8.66
3	S.F. KOKTULI	C	51.2	6.77	0.769	4.60	1.000	980.	109.9	0.1850	17.845	1.728		0.2634	8.66
4	S.F. KOKTULI	Q	51.1	6.77	0.769	4.60	1.000	980.	109.9	0.1850	17.845	1.762		-0.1503	8.66
5	S.F. KOKTULI	C	49.4	6.80	0.768	4.60	1.000	981.	109.9	0.1591	17.844	1.509		-0.1503	8.66
6	S.F. KOKTULI	C	47.6	6.84	0.766	4.60	1.000	981.	109.8	0.1531	17.843	1.231		-0.1503	8.66
7	S.F. KOKTULI	C	45.7	6.87	0.765	4.60	1.000	982.	109.8	0.1714	17.844	0.952		-0.1503	8.66
8	S.F. KOKTULI	C	44.8	6.88	0.764	4.60	1.000	982.	109.8	0.1533	17.844	0.817		-0.1503	8.66
9	S.F. KOKTULI	C	43.9	6.90	0.763	4.60	1.000	982.	109.8	0.1930	17.842	0.687		-0.1503	8.66
10	S.F. KOKTULI	Q	43.6	6.90	0.763	4.60	1.000	982.	109.8	0.1930	17.842	0.641		0.0563	8.66
11	S.F. KOKTULI	C	41.1	6.91	0.763	4.60	1.000	983.	109.8	0.1529	17.840	0.785		0.0563	8.66
12	S.F. KOKTULI	C	40.0	6.91	0.763	4.60	1.000	983.	109.8	0.1976	17.841	0.847		0.0563	8.66
13	S.F. KOKTULI	C	38.4	6.94	0.762	4.60	1.000	983.	109.8	0.1527	17.842	0.938		0.0563	8.66
14	S.F. KOKTULI	Q	35.8	6.94	0.762	4.60	1.000	983.	109.8	0.1527	17.842	1.081		0.0662	4.75
15	S.F. KOKTULI	B	34.3									1.183			
16	TRIBUTARY 119	H	36.1	6.94	0.762	4.60	1.000	983.	109.8	0.1734	17.843	0.937	3.58	0.0190	4.75
17	TRIBUTARY 119	T	34.3									0.971			
18	S.F. KOKTULI	J	34.3	6.97	0.761	4.60	1.000	984.	109.8	0.1276	17.842	2.154		0.3191	4.75
19	S.F. KOKTULI	C	34.1	7.00	0.759	4.60	1.000	984.	109.8	0.0851	17.841	2.198		0.3191	4.75
20	S.F. KOKTULI	Q	34.0	7.00	0.759	4.60	1.000	984.	109.8	0.0851	17.841	2.236		0.2026	4.75
21	S.F. KOKTULI	Q	29.3	7.00	0.759	4.60	1.000	984.	109.8	0.0851	17.841	3.200		0.3374	7.84
22	S.F. KOKTULI	C	27.6	7.07	0.756	4.60	1.000	985.	109.8	0.0846	17.838	3.766		0.3374	7.84
23	S.F. KOKTULI	C	25.1	7.11	0.754	4.60	1.000	986.	109.8	0.0688	17.836	4.603		0.3374	7.84
24	S.F. KOKTULI	Q	24.9	7.11	0.754	4.60	1.000	986.	109.8	0.0688	17.836	4.672		-0.0680	7.84
25	S.F. KOKTULI	C	21.9	7.13	0.753	4.60	1.000	987.	109.8	0.0863	17.837	4.465		-0.0680	7.84
26	S.F. KOKTULI	C	20.1	7.18	0.751	4.60	1.000	987.	109.8	0.0665	17.839	4.345		-0.0680	7.84
27	S.F. KOKTULI	C	15.4	7.24	0.749	4.60	1.000	988.	109.8	0.0643	17.840	4.024		-0.0680	7.84
28	S.F. KOKTULI	Q	13.9	7.24	0.749	4.60	1.000	988.	109.8	0.0643	17.840	3.925		0.0976	7.84
29	S.F. KOKTULI	C	12.5	7.27	0.747	4.60	1.000	989.	109.8	0.0612	17.839	4.062		0.0976	7.84
30	S.F. KOKTULI	C	9.2	7.30	0.746	4.60	1.000	990.	109.8	0.0762	17.839	4.381		0.0976	7.84
31	S.F. KOKTULI	C	7.9	7.33	0.745	4.60	1.000	990.	109.8	0.0607	17.841	4.512		0.0976	7.84
32	S.F. KOKTULI	C	5.1	7.38	0.743	4.60	1.000	991.	109.8	0.0650	17.843	4.784		0.0976	7.84
33	S.F. KOKTULI	C	5.1	7.42	0.741	4.60	1.000	992.	109.8	0.0755	17.846	4.784		0.0976	7.84
34	S.F. KOKTULI	Q	3.0	7.42	0.741	4.60	1.000	992.	109.8	0.0755	17.846	4.992		0.6760	7.84
35	S.F. KOKTULI	Q	0.1	7.42	0.741	4.60	1.000	992.	109.8	0.0755	17.846	6.928		0.3519	7.84
36	S.F. KOKTULI	E	0.0									6.966			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.42	0.773	5.33	1.000	979.	92.5	0.2174	17.903	0.732	7.24	0.2402	8.24
2	S.F. KOKTULI	C	53.3	6.47	0.771	5.33	1.000	979.	92.5	0.2043	17.900	1.057		0.2402	8.24
3	S.F. KOKTULI	C	51.2	6.50	0.769	5.33	1.000	980.	92.5	0.1847	17.897	1.560		0.2402	8.24
4	S.F. KOKTULI	Q	51.1	6.50	0.769	5.33	1.000	980.	92.5	0.1847	17.897	1.591		-0.1393	8.24
5	S.F. KOKTULI	C	49.4	6.53	0.768	5.33	1.000	981.	92.5	0.1590	17.895	1.357		-0.1393	8.24
6	S.F. KOKTULI	C	47.6	6.57	0.766	5.33	1.000	981.	92.5	0.1530	17.895	1.099		-0.1393	8.24
7	S.F. KOKTULI	C	45.7	6.60	0.765	5.33	1.000	982.	92.5	0.1712	17.895	0.841		-0.1393	8.24
8	S.F. KOKTULI	C	44.8	6.61	0.764	5.33	1.000	982.	92.5	0.1532	17.896	0.715		-0.1393	8.24
9	S.F. KOKTULI	C	43.9	6.63	0.763	5.33	1.000	982.	92.5	0.1927	17.894	0.595		-0.1393	8.24
10	S.F. KOKTULI	Q	43.6	6.63	0.763	5.33	1.000	982.	92.5	0.1927	17.894	0.552		0.0523	8.24
11	S.F. KOKTULI	C	41.1	6.64	0.763	5.33	1.000	983.	92.5	0.1528	17.892	0.686		0.0523	8.24
12	S.F. KOKTULI	C	40.0	6.64	0.763	5.33	1.000	983.	92.5	0.1973	17.893	0.744		0.0523	8.24
13	S.F. KOKTULI	C	38.4	6.67	0.762	5.33	1.000	983.	92.4	0.1526	17.894	0.828		0.0523	8.24
14	S.F. KOKTULI	Q	35.8	6.67	0.762	5.33	1.000	983.	92.4	0.1526	17.894	0.961		0.0747	5.13
15	S.F. KOKTULI	B	34.3									1.076			
16	TRIBUTARY 119	H	36.1	6.67	0.762	5.33	1.000	983.	92.4	0.1731	17.895	0.869	3.80	0.0218	5.13
17	TRIBUTARY 119	T	34.3									0.908			
18	S.F. KOKTULI	J	34.3	6.70	0.761	5.33	1.000	984.	92.4	0.1274	17.894	1.984		0.3580	5.13
19	S.F. KOKTULI	C	34.1	6.73	0.759	5.33	1.000	984.	92.4	0.0851	17.892	2.033		0.3580	5.13
20	S.F. KOKTULI	Q	34.0	6.73	0.759	5.33	1.000	984.	92.4	0.0851	17.892	2.076		0.1965	5.13
21	S.F. KOKTULI	Q	29.3	6.73	0.759	5.33	1.000	984.	92.4	0.0851	17.892	3.011		0.3223	8.44
22	S.F. KOKTULI	C	27.6	6.80	0.756	5.33	1.000	985.	92.4	0.0846	17.889	3.552		0.3223	8.44
23	S.F. KOKTULI	C	25.1	6.84	0.754	5.33	1.000	986.	92.4	0.0688	17.888	4.351		0.3223	8.44
24	S.F. KOKTULI	Q	24.9	6.84	0.754	5.33	1.000	986.	92.4	0.0688	17.888	4.417		-0.0650	8.44
25	S.F. KOKTULI	C	21.9	6.86	0.753	5.33	1.000	987.	92.4	0.0862	17.888	4.219		-0.0650	8.44
26	S.F. KOKTULI	C	20.1	6.91	0.751	5.33	1.000	987.	92.4	0.0665	17.891	4.104		-0.0650	8.44
27	S.F. KOKTULI	C	15.4	6.97	0.749	5.33	1.000	988.	92.4	0.0643	17.891	3.797		-0.0650	8.44
28	S.F. KOKTULI	Q	13.9	6.97	0.749	5.33	1.000	988.	92.4	0.0643	17.891	3.703		0.1058	8.44
29	S.F. KOKTULI	C	12.5	7.00	0.747	5.33	1.000	989.	92.4	0.0612	17.890	3.851		0.1058	8.44
30	S.F. KOKTULI	C	9.2	7.03	0.746	5.33	1.000	990.	92.4	0.0761	17.891	4.198		0.1058	8.44
31	S.F. KOKTULI	C	7.9	7.06	0.745	5.33	1.000	990.	92.4	0.0607	17.892	4.339		0.1058	8.44
32	S.F. KOKTULI	C	5.1	7.11	0.743	5.33	1.000	991.	92.4	0.0649	17.894	4.634		0.1058	8.44
33	S.F. KOKTULI	C	5.1	7.15	0.741	5.33	1.000	992.	92.4	0.0754	17.898	4.634		0.1058	8.44
34	S.F. KOKTULI	Q	3.0	7.15	0.741	5.33	1.000	992.	92.4	0.0754	17.898	4.860		0.6205	8.44
35	S.F. KOKTULI	Q	0.1	7.15	0.741	5.33	1.000	992.	92.4	0.0754	17.898	6.637		0.3426	8.44
36	S.F. KOKTULI	E	0.0									6.674			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.83	0.735	3.39	1.000	979.	129.1	0.2170	17.953	0.758	7.24	0.2472	8.24
2	S.F. KOKTULI	C	53.3	6.88	0.733	3.39	1.000	979.	129.1	0.2038	17.949	1.093		0.2472	8.24
3	S.F. KOKTULI	C	51.2	6.91	0.732	3.39	1.000	980.	129.1	0.1845	17.947	1.610		0.2472	8.24
4	S.F. KOKTULI	Q	51.1	6.91	0.732	3.39	1.000	980.	129.1	0.1845	17.947	1.642		-0.1541	8.24
5	S.F. KOKTULI	C	49.4	6.94	0.731	3.39	1.000	981.	129.1	0.1588	17.945	1.383		-0.1541	8.24
6	S.F. KOKTULI	C	47.6	6.98	0.729	3.39	1.000	981.	129.1	0.1529	17.945	1.097		-0.1541	8.24
7	S.F. KOKTULI	C	45.7	7.01	0.728	3.39	1.000	982.	129.1	0.1710	17.945	0.812		-0.1541	8.24
8	S.F. KOKTULI	C	44.8	7.02	0.727	3.39	1.000	982.	129.1	0.1531	17.945	0.673		-0.1541	8.24
9	S.F. KOKTULI	C	43.9	7.04	0.727	3.39	1.000	982.	129.1	0.1924	17.943	0.540		-0.1541	8.24
10	S.F. KOKTULI	Q	43.6	7.04	0.727	3.39	1.000	982.	129.1	0.1924	17.943	0.493		0.0493	8.24
11	S.F. KOKTULI	C	41.1	7.05	0.726	3.39	1.000	983.	129.1	0.1527	17.942	0.619		0.0493	8.24
12	S.F. KOKTULI	C	40.0	7.05	0.726	3.39	1.000	983.	129.1	0.1970	17.943	0.673		0.0493	8.24
13	S.F. KOKTULI	C	38.4	7.08	0.725	3.39	1.000	983.	129.1	0.1525	17.944	0.753		0.0493	8.24
14	S.F. KOKTULI	Q	35.8	7.08	0.725	3.39	1.000	983.	129.1	0.1525	17.944	0.879		0.0824	5.40
15	S.F. KOKTULI	B	34.3									1.005			
16	TRIBUTARY 119	H	36.1	7.08	0.725	3.39	1.000	983.	129.1	0.1729	17.945	0.813	4.22	0.0235	5.40
17	TRIBUTARY 119	T	34.3									0.855			
18	S.F. KOKTULI	J	34.3	7.11	0.724	3.39	1.000	984.	129.1	0.1271	17.944	1.860		0.3930	5.40
19	S.F. KOKTULI	C	34.1	7.14	0.722	3.39	1.000	984.	129.1	0.0852	17.942	1.914		0.3930	5.40
20	S.F. KOKTULI	Q	34.0	7.14	0.722	3.39	1.000	984.	129.1	0.0852	17.942	1.961		0.1885	5.40
21	S.F. KOKTULI	Q	29.3	7.14	0.722	3.39	1.000	984.	129.1	0.0852	17.942	2.858		0.3119	8.57
22	S.F. KOKTULI	C	27.6	7.21	0.720	3.39	1.000	985.	129.1	0.0846	17.939	3.381		0.3119	8.57
23	S.F. KOKTULI	C	25.1	7.25	0.718	3.39	1.000	986.	129.1	0.0688	17.937	4.155		0.3119	8.57
24	S.F. KOKTULI	Q	24.9	7.25	0.718	3.39	1.000	986.	129.1	0.0688	17.937	4.219		-0.0626	8.57
25	S.F. KOKTULI	C	21.9	7.27	0.717	3.39	1.000	987.	129.0	0.0860	17.938	4.028		-0.0626	8.57
26	S.F. KOKTULI	C	20.1	7.32	0.715	3.39	1.000	987.	129.0	0.0665	17.940	3.918		-0.0626	8.57
27	S.F. KOKTULI	C	15.4	7.38	0.713	3.39	1.000	988.	129.0	0.0643	17.941	3.622		-0.0626	8.57
28	S.F. KOKTULI	Q	13.9	7.38	0.713	3.39	1.000	988.	129.0	0.0643	17.941	3.531		0.1111	8.57
29	S.F. KOKTULI	C	12.5	7.41	0.711	3.39	1.000	989.	129.0	0.0612	17.940	3.687		0.1111	8.57
30	S.F. KOKTULI	C	9.2	7.44	0.710	3.39	1.000	990.	129.0	0.0759	17.941	4.051		0.1111	8.57
31	S.F. KOKTULI	C	7.9	7.47	0.709	3.39	1.000	990.	129.0	0.0606	17.942	4.199		0.1111	8.57
32	S.F. KOKTULI	C	5.1	7.52	0.707	3.39	1.000	991.	129.0	0.0649	17.944	4.509		0.1111	8.57
33	S.F. KOKTULI	C	5.1	7.56	0.705	3.39	1.000	992.	129.0	0.0753	17.948	4.509		0.1111	8.57
34	S.F. KOKTULI	Q	3.0	7.56	0.705	3.39	1.000	992.	129.0	0.0753	17.948	4.746		0.5737	8.57
35	S.F. KOKTULI	Q	0.1	7.56	0.705	3.39	1.000	992.	129.0	0.0753	17.948	6.389		0.3241	8.57
36	S.F. KOKTULI	E	0.0									6.424			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.47	0.717	2.15	1.000	979.	158.4	0.2166	18.000	0.723	8.69	0.2377	9.69
2	S.F. KOKTULI	C	53.3	8.52	0.715	2.15	1.000	979.	158.4	0.2034	17.997	1.045		0.2377	9.69
3	S.F. KOKTULI	C	51.2	8.55	0.714	2.15	1.000	980.	158.4	0.1842	17.994	1.542		0.2377	9.69
4	S.F. KOKTULI	Q	51.1	8.55	0.714	2.15	1.000	980.	158.4	0.1842	17.994	1.573		-0.1526	9.69
5	S.F. KOKTULI	C	49.4	8.58	0.712	2.15	1.000	981.	158.4	0.1587	17.993	1.317		-0.1526	9.69
6	S.F. KOKTULI	C	47.6	8.62	0.711	2.15	1.000	981.	158.4	0.1528	17.992	1.034		-0.1526	9.69
7	S.F. KOKTULI	C	45.7	8.65	0.710	2.15	1.000	982.	158.4	0.1708	17.992	0.751		-0.1526	9.69
8	S.F. KOKTULI	C	44.8	8.66	0.709	2.15	1.000	982.	158.4	0.1530	17.993	0.614		-0.1526	9.69
9	S.F. KOKTULI	C	43.9	8.68	0.708	2.15	1.000	982.	158.4	0.1921	17.991	0.482		-0.1526	9.69
10	S.F. KOKTULI	Q	43.6	8.68	0.708	2.15	1.000	982.	158.4	0.1921	17.991	0.435		0.0462	9.69
11	S.F. KOKTULI	C	41.1	8.69	0.708	2.15	1.000	983.	158.4	0.1527	17.989	0.553		0.0462	9.69
12	S.F. KOKTULI	C	40.0	8.69	0.708	2.15	1.000	983.	158.4	0.1967	17.990	0.604		0.0462	9.69
13	S.F. KOKTULI	C	38.4	8.72	0.707	2.15	1.000	983.	158.4	0.1524	17.991	0.678		0.0462	9.69
14	S.F. KOKTULI	Q	35.8	8.72	0.707	2.15	1.000	983.	158.4	0.1524	17.991	0.796		0.0892	5.63
15	S.F. KOKTULI	B	34.3									0.933			
16	TRIBUTARY 119	H	36.1	8.72	0.707	2.15	1.000	983.	158.4	0.1726	17.992	0.754	4.71	0.0258	5.63
17	TRIBUTARY 119	T	34.3									0.800			
18	S.F. KOKTULI	J	34.3	8.75	0.706	2.15	1.000	984.	158.4	0.1269	17.991	1.732		0.4319	5.63
19	S.F. KOKTULI	C	34.1	8.78	0.704	2.15	1.000	984.	158.4	0.0852	17.989	1.792		0.4319	5.63
20	S.F. KOKTULI	Q	34.0	8.78	0.704	2.15	1.000	984.	158.4	0.0852	17.989	1.843		0.1786	5.63
21	S.F. KOKTULI	Q	29.3	8.78	0.704	2.15	1.000	984.	158.4	0.0852	17.989	2.693		0.2980	8.32
22	S.F. KOKTULI	C	27.6	8.85	0.701	2.15	1.000	985.	158.3	0.0846	17.987	3.193		0.2980	8.32
23	S.F. KOKTULI	C	25.1	8.89	0.700	2.15	1.000	986.	158.3	0.0687	17.985	3.932		0.2980	8.32
24	S.F. KOKTULI	Q	24.9	8.89	0.700	2.15	1.000	986.	158.3	0.0687	17.985	3.993		-0.0600	8.32
25	S.F. KOKTULI	C	21.9	8.91	0.699	2.15	1.000	987.	158.3	0.0859	17.985	3.810		-0.0600	8.32
26	S.F. KOKTULI	C	20.1	8.96	0.697	2.15	1.000	987.	158.3	0.0664	17.988	3.704		-0.0600	8.32
27	S.F. KOKTULI	C	15.4	9.02	0.694	2.15	1.000	988.	158.3	0.0643	17.988	3.421		-0.0600	8.32
28	S.F. KOKTULI	Q	13.9	9.02	0.694	2.15	1.000	988.	158.3	0.0643	17.988	3.334		0.1150	8.32
29	S.F. KOKTULI	C	12.5	9.05	0.693	2.15	1.000	989.	158.3	0.0613	17.987	3.495		0.1150	8.32
30	S.F. KOKTULI	C	9.2	9.08	0.692	2.15	1.000	990.	158.3	0.0758	17.988	3.872		0.1150	8.32
31	S.F. KOKTULI	C	7.9	9.11	0.691	2.15	1.000	990.	158.3	0.0606	17.990	4.026		0.1150	8.32
32	S.F. KOKTULI	C	5.1	9.16	0.689	2.15	1.000	991.	158.3	0.0649	17.992	4.347		0.1150	8.32
33	S.F. KOKTULI	C	5.1	9.20	0.687	2.15	1.000	992.	158.2	0.0752	17.995	4.347		0.1150	8.32
34	S.F. KOKTULI	Q	3.0	9.20	0.687	2.15	1.000	992.	158.2	0.0752	17.995	4.592		0.5122	8.32
35	S.F. KOKTULI	Q	0.1	9.20	0.687	2.15	1.000	992.	158.2	0.0752	17.995	6.059		0.3148	8.32
36	S.F. KOKTULI	E	0.0									6.093			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.04	0.875	4.54	1.000	979.	98.0	0.2162	18.046	0.725	7.43	0.2383	8.43
2	S.F. KOKTULI	C	53.3	8.09	0.873	4.54	1.000	979.	98.0	0.2030	18.043	1.048		0.2383	8.43
3	S.F. KOKTULI	C	51.2	8.12	0.871	4.54	1.000	980.	98.0	0.1840	18.040	1.546		0.2383	8.43
4	S.F. KOKTULI	Q	51.1	8.12	0.871	4.54	1.000	980.	98.0	0.1840	18.040	1.577		-0.1505	8.43
5	S.F. KOKTULI	C	49.4	8.15	0.870	4.54	1.000	981.	98.0	0.1586	18.038	1.324		-0.1505	8.43
6	S.F. KOKTULI	C	47.6	8.19	0.868	4.54	1.000	981.	98.0	0.1527	18.038	1.045		-0.1505	8.43
7	S.F. KOKTULI	C	45.7	8.22	0.866	4.54	1.000	982.	97.9	0.1706	18.038	0.766		-0.1505	8.43
8	S.F. KOKTULI	C	44.8	8.23	0.865	4.54	1.000	982.	97.9	0.1530	18.038	0.631		-0.1505	8.43
9	S.F. KOKTULI	C	43.9	8.25	0.865	4.54	1.000	982.	97.9	0.1918	18.037	0.501		-0.1505	8.43
10	S.F. KOKTULI	Q	43.6	8.25	0.865	4.54	1.000	982.	97.9	0.1918	18.037	0.455		0.0473	8.43
11	S.F. KOKTULI	C	41.1	8.26	0.864	4.54	1.000	983.	97.9	0.1526	18.035	0.576		0.0473	8.43
12	S.F. KOKTULI	C	40.0	8.26	0.864	4.54	1.000	983.	97.9	0.1964	18.036	0.628		0.0473	8.43
13	S.F. KOKTULI	C	38.4	8.29	0.863	4.54	1.000	983.	97.9	0.1523	18.037	0.704		0.0473	8.43
14	S.F. KOKTULI	Q	35.8	8.29	0.863	4.54	1.000	983.	97.9	0.1523	18.037	0.825		0.0823	5.57
15	S.F. KOKTULI	B	34.3									0.951			
16	TRIBUTARY 119	H	36.1	8.29	0.863	4.54	1.000	983.	97.9	0.1724	18.038	0.862	4.36	0.0235	5.57
17	TRIBUTARY 119	T	34.3									0.904			
18	S.F. KOKTULI	J	34.3	8.32	0.861	4.54	1.000	984.	97.9	0.1267	18.037	1.855		0.3969	5.57
19	S.F. KOKTULI	C	34.1	8.35	0.859	4.54	1.000	984.	97.9	0.0853	18.035	1.910		0.3969	5.57
20	S.F. KOKTULI	Q	34.0	8.35	0.859	4.54	1.000	984.	97.9	0.0853	18.035	1.957		0.1587	5.57
21	S.F. KOKTULI	Q	29.3	8.35	0.859	4.54	1.000	984.	97.9	0.0853	18.035	2.712		0.2936	8.03
22	S.F. KOKTULI	C	27.6	8.42	0.856	4.54	1.000	985.	97.9	0.0846	18.032	3.205		0.2936	8.03
23	S.F. KOKTULI	C	25.1	8.46	0.854	4.54	1.000	986.	97.9	0.0687	18.030	3.933		0.2936	8.03
24	S.F. KOKTULI	Q	24.9	8.46	0.854	4.54	1.000	986.	97.9	0.0687	18.030	3.993		-0.0600	8.03
25	S.F. KOKTULI	C	21.9	8.48	0.853	4.54	1.000	987.	97.9	0.0858	18.031	3.810		-0.0600	8.03
26	S.F. KOKTULI	C	20.1	8.53	0.850	4.54	1.000	987.	97.9	0.0664	18.033	3.704		-0.0600	8.03
27	S.F. KOKTULI	C	15.4	8.59	0.848	4.54	1.000	988.	97.9	0.0643	18.034	3.421		-0.0600	8.03
28	S.F. KOKTULI	Q	13.9	8.59	0.848	4.54	1.000	988.	97.9	0.0643	18.034	3.334		0.1105	8.03
29	S.F. KOKTULI	C	12.5	8.62	0.846	4.54	1.000	989.	97.9	0.0613	18.033	3.489		0.1105	8.03
30	S.F. KOKTULI	C	9.2	8.65	0.845	4.54	1.000	990.	97.9	0.0757	18.034	3.851		0.1105	8.03
31	S.F. KOKTULI	C	7.9	8.68	0.843	4.54	1.000	990.	97.9	0.0606	18.035	3.999		0.1105	8.03
32	S.F. KOKTULI	C	5.1	8.73	0.841	4.54	1.000	991.	97.9	0.0648	18.037	4.306		0.1105	8.03
33	S.F. KOKTULI	C	5.1	8.77	0.839	4.54	1.000	992.	97.9	0.0751	18.041	4.306		0.1105	8.03
34	S.F. KOKTULI	Q	3.0	8.77	0.839	4.54	1.000	992.	97.9	0.0751	18.041	4.542		0.4934	8.03
35	S.F. KOKTULI	Q	0.1	8.77	0.839	4.54	1.000	992.	97.9	0.0751	18.041	5.955		0.3056	8.03
36	S.F. KOKTULI	E	0.0									5.988			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.51	0.829	8.03	1.000	979.	130.0	0.2158	18.089	0.956	7.08	0.2981	8.08
2	S.F. KOKTULI	C	53.3	6.56	0.826	8.03	1.000	979.	130.0	0.2026	18.086	1.360		0.2981	8.08
3	S.F. KOKTULI	C	51.2	6.59	0.825	8.03	1.000	980.	130.0	0.1837	18.083	1.984		0.2981	8.08
4	S.F. KOKTULI	Q	51.1	6.59	0.825	8.03	1.000	980.	130.0	0.1837	18.083	2.022		-0.1661	8.08
5	S.F. KOKTULI	C	49.4	6.62	0.823	8.03	1.000	981.	130.0	0.1586	18.081	1.743		-0.1661	8.08
6	S.F. KOKTULI	C	47.6	6.66	0.822	8.03	1.000	981.	130.0	0.1527	18.081	1.435		-0.1661	8.08
7	S.F. KOKTULI	C	45.7	6.69	0.820	8.03	1.000	982.	130.0	0.1705	18.081	1.127		-0.1661	8.08
8	S.F. KOKTULI	C	44.8	6.70	0.819	8.03	1.000	982.	130.0	0.1529	18.082	0.977		-0.1661	8.08
9	S.F. KOKTULI	C	43.9	6.72	0.819	8.03	1.000	982.	130.0	0.1915	18.080	0.834		-0.1661	8.08
10	S.F. KOKTULI	Q	43.6	6.72	0.819	8.03	1.000	982.	130.0	0.1915	18.080	0.783		0.0618	8.08
11	S.F. KOKTULI	C	41.1	6.73	0.818	8.03	1.000	983.	130.0	0.1525	18.078	0.941		0.0618	8.08
12	S.F. KOKTULI	C	40.0	6.73	0.818	8.03	1.000	983.	130.0	0.1962	18.079	1.010		0.0618	8.08
13	S.F. KOKTULI	C	38.4	6.76	0.817	8.03	1.000	983.	130.0	0.1523	18.080	1.109		0.0618	8.08
14	S.F. KOKTULI	Q	35.8	6.76	0.817	8.03	1.000	983.	130.0	0.1523	18.080	1.267		0.0569	5.86
15	S.F. KOKTULI	B	34.3									1.354			
16	TRIBUTARY 119	H	36.1	6.76	0.817	8.03	1.000	983.	130.0	0.1722	18.081	1.266	4.26	0.0162	5.86
17	TRIBUTARY 119	T	34.3									1.295			
18	S.F. KOKTULI	J	34.3	6.79	0.816	8.03	1.000	984.	130.0	0.1266	18.080	2.649		0.2724	5.86
19	S.F. KOKTULI	C	34.1	6.82	0.814	8.03	1.000	984.	130.0	0.0853	18.078	2.687		0.2724	5.86
20	S.F. KOKTULI	Q	34.0	6.82	0.814	8.03	1.000	984.	130.0	0.0853	18.078	2.719		0.1528	5.86
21	S.F. KOKTULI	Q	29.3	6.82	0.814	8.03	1.000	984.	130.0	0.0853	18.078	3.446		0.3330	8.21
22	S.F. KOKTULI	C	27.6	6.89	0.811	8.03	1.000	985.	130.0	0.0846	18.075	4.005		0.3330	8.21
23	S.F. KOKTULI	C	25.1	6.93	0.809	8.03	1.000	986.	130.0	0.0687	18.073	4.831		0.3330	8.21
24	S.F. KOKTULI	Q	24.9	6.93	0.809	8.03	1.000	986.	130.0	0.0687	18.073	4.899		-0.0706	8.21
25	S.F. KOKTULI	C	21.9	6.95	0.807	8.03	1.000	987.	130.0	0.0857	18.074	4.684		-0.0706	8.21
26	S.F. KOKTULI	C	20.1	7.00	0.805	8.03	1.000	987.	130.0	0.0664	18.077	4.559		-0.0706	8.21
27	S.F. KOKTULI	C	15.4	7.06	0.803	8.03	1.000	988.	129.9	0.0643	18.077	4.225		-0.0706	8.21
28	S.F. KOKTULI	Q	13.9	7.06	0.803	8.03	1.000	988.	129.9	0.0643	18.077	4.123		0.0746	8.21
29	S.F. KOKTULI	C	12.5	7.09	0.801	8.03	1.000	989.	129.9	0.0613	18.076	4.227		0.0746	8.21
30	S.F. KOKTULI	C	9.2	7.12	0.800	8.03	1.000	990.	129.9	0.0756	18.077	4.472		0.0746	8.21
31	S.F. KOKTULI	C	7.9	7.15	0.798	8.03	1.000	990.	129.9	0.0606	18.078	4.572		0.0746	8.21
32	S.F. KOKTULI	C	5.1	7.20	0.796	8.03	1.000	991.	129.9	0.0648	18.080	4.780		0.0746	8.21
33	S.F. KOKTULI	C	5.1	7.24	0.794	8.03	1.000	992.	129.9	0.0750	18.084	4.780		0.0746	8.21
34	S.F. KOKTULI	Q	3.0	7.24	0.794	8.03	1.000	992.	129.9	0.0750	18.084	4.939		0.6533	8.21
35	S.F. KOKTULI	Q	0.1	7.24	0.794	8.03	1.000	992.	129.9	0.0750	18.084	6.810		0.3519	8.21
36	S.F. KOKTULI	E	0.0									6.848			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.42	0.708	4.97	1.000	979.	262.8	0.2155	18.130	0.969	8.36	0.3015	9.36
2	S.F. KOKTULI	C	53.3	8.47	0.706	4.97	1.000	979.	262.8	0.2023	18.127	1.377		0.3015	9.36
3	S.F. KOKTULI	C	51.2	8.50	0.704	4.97	1.000	980.	262.8	0.1835	18.124	2.008		0.3015	9.36
4	S.F. KOKTULI	Q	51.1	8.50	0.704	4.97	1.000	980.	262.8	0.1835	18.124	2.047		-0.1639	9.36
5	S.F. KOKTULI	C	49.4	8.53	0.703	4.97	1.000	981.	262.8	0.1586	18.122	1.772		-0.1639	9.36
6	S.F. KOKTULI	C	47.6	8.57	0.702	4.97	1.000	981.	262.8	0.1526	18.122	1.468		-0.1639	9.36
7	S.F. KOKTULI	C	45.7	8.60	0.700	4.97	1.000	982.	262.8	0.1703	18.122	1.164		-0.1639	9.36
8	S.F. KOKTULI	C	44.8	8.61	0.700	4.97	1.000	982.	262.7	0.1529	18.123	1.016		-0.1639	9.36
9	S.F. KOKTULI	C	43.9	8.63	0.699	4.97	1.000	982.	262.7	0.1913	18.121	0.875		-0.1639	9.36
10	S.F. KOKTULI	Q	43.6	8.63	0.699	4.97	1.000	982.	262.7	0.1913	18.121	0.824		0.0633	9.36
11	S.F. KOKTULI	C	41.1	8.64	0.699	4.97	1.000	983.	262.8	0.1525	18.119	0.986		0.0633	9.36
12	S.F. KOKTULI	C	40.0	8.64	0.698	4.97	1.000	983.	262.7	0.1959	18.120	1.056		0.0633	9.36
13	S.F. KOKTULI	C	38.4	8.67	0.697	4.97	1.000	983.	262.7	0.1523	18.121	1.158		0.0633	9.36
14	S.F. KOKTULI	Q	35.8	8.67	0.697	4.97	1.000	983.	262.7	0.1523	18.121	1.319		0.0624	5.62
15	S.F. KOKTULI	B	34.3									1.415			
16	TRIBUTARY 119	H	36.1	8.67	0.697	4.97	1.000	983.	262.7	0.1720	18.122	0.944	5.58	0.0179	5.62
17	TRIBUTARY 119	T	34.3									0.976			
18	S.F. KOKTULI	J	34.3	8.70	0.696	4.97	1.000	984.	262.7	0.1264	18.121	2.391		0.2996	5.62
19	S.F. KOKTULI	C	34.1	8.73	0.695	4.97	1.000	984.	262.7	0.0854	18.119	2.432		0.2996	5.62
20	S.F. KOKTULI	Q	34.0	8.73	0.695	4.97	1.000	984.	262.7	0.0854	18.119	2.468		0.1620	5.62
21	S.F. KOKTULI	Q	29.3	8.73	0.695	4.97	1.000	984.	262.7	0.0854	18.119	3.239		0.3025	7.85
22	S.F. KOKTULI	C	27.6	8.80	0.692	4.97	1.000	985.	262.7	0.0846	18.116	3.747		0.3025	7.85
23	S.F. KOKTULI	C	25.1	8.84	0.691	4.97	1.000	986.	262.7	0.0687	18.114	4.497		0.3025	7.85
24	S.F. KOKTULI	Q	24.9	8.84	0.691	4.97	1.000	986.	262.7	0.0687	18.114	4.559		-0.0666	7.85
25	S.F. KOKTULI	C	21.9	8.86	0.689	4.97	1.000	987.	262.7	0.0856	18.115	4.356		-0.0666	7.85
26	S.F. KOKTULI	C	20.1	8.91	0.688	4.97	1.000	987.	262.7	0.0664	18.117	4.238		-0.0666	7.85
27	S.F. KOKTULI	C	15.4	8.97	0.685	4.97	1.000	988.	262.6	0.0643	18.118	3.924		-0.0666	7.85
28	S.F. KOKTULI	Q	13.9	8.97	0.685	4.97	1.000	988.	262.6	0.0643	18.118	3.827		0.0958	7.85
29	S.F. KOKTULI	C	12.5	9.00	0.684	4.97	1.000	989.	262.6	0.0613	18.117	3.961		0.0958	7.85
30	S.F. KOKTULI	C	9.2	9.03	0.683	4.97	1.000	990.	262.6	0.0756	18.118	4.275		0.0958	7.85
31	S.F. KOKTULI	C	7.9	9.06	0.682	4.97	1.000	990.	262.6	0.0606	18.119	4.404		0.0958	7.85
32	S.F. KOKTULI	C	5.1	9.11	0.680	4.97	1.000	991.	262.6	0.0648	18.121	4.671		0.0958	7.85
33	S.F. KOKTULI	C	5.1	9.15	0.678	4.97	1.000	992.	262.5	0.0749	18.125	4.671		0.0958	7.85
34	S.F. KOKTULI	Q	3.0	9.15	0.678	4.97	1.000	992.	262.5	0.0749	18.125	4.875		0.6267	7.85
35	S.F. KOKTULI	Q	0.1	9.15	0.678	4.97	1.000	992.	262.5	0.0749	18.125	6.670		0.3426	7.85
36	S.F. KOKTULI	E	0.0									6.707			

YEAR: 2007 TIME PERIOD: 7-Jun PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.54	0.652	6.67	1.000	979.	226.2	0.2151	18.169	0.870	8.93	0.2763	9.93
2	S.F. KOKTULI	C	53.3	7.59	0.650	6.67	1.000	979.	226.2	0.2019	18.166	1.244		0.2763	9.93
3	S.F. KOKTULI	C	51.2	7.62	0.649	6.67	1.000	980.	226.2	0.1833	18.163	1.822		0.2763	9.93
4	S.F. KOKTULI	Q	51.1	7.62	0.649	6.67	1.000	980.	226.2	0.1833	18.163	1.858		-0.1658	9.93
5	S.F. KOKTULI	C	49.4	7.65	0.648	6.67	1.000	981.	226.2	0.1585	18.161	1.579		-0.1658	9.93
6	S.F. KOKTULI	C	47.6	7.69	0.646	6.67	1.000	981.	226.2	0.1526	18.160	1.272		-0.1658	9.93
7	S.F. KOKTULI	C	45.7	7.72	0.645	6.67	1.000	982.	226.1	0.1702	18.161	0.965		-0.1658	9.93
8	S.F. KOKTULI	C	44.8	7.73	0.644	6.67	1.000	982.	226.1	0.1528	18.161	0.816		-0.1658	9.93
9	S.F. KOKTULI	C	43.9	7.75	0.644	6.67	1.000	982.	226.1	0.1911	18.159	0.672		-0.1658	9.93
10	S.F. KOKTULI	Q	43.6	7.75	0.644	6.67	1.000	982.	226.1	0.1911	18.159	0.621		0.0555	9.93
11	S.F. KOKTULI	C	41.1	7.76	0.643	6.67	1.000	983.	226.1	0.1524	18.157	0.763		0.0555	9.93
12	S.F. KOKTULI	C	40.0	7.76	0.643	6.67	1.000	983.	226.1	0.1957	18.158	0.825		0.0555	9.93
13	S.F. KOKTULI	C	38.4	7.79	0.642	6.67	1.000	983.	226.1	0.1523	18.160	0.914		0.0555	9.93
14	S.F. KOKTULI	Q	35.8	7.79	0.642	6.67	1.000	983.	226.1	0.1523	18.160	1.055		0.0740	5.12
15	S.F. KOKTULI	B	34.3									1.169			
16	TRIBUTARY 119	H	36.1	7.79	0.642	6.67	1.000	983.	226.1	0.1718	18.161	0.792	5.16	0.0213	5.12
17	TRIBUTARY 119	T	34.3									0.830			
18	S.F. KOKTULI	J	34.3	7.82	0.641	6.67	1.000	984.	226.1	0.1262	18.159	1.998		0.3580	5.12
19	S.F. KOKTULI	C	34.1	7.85	0.640	6.67	1.000	984.	226.1	0.0854	18.158	2.047		0.3580	5.12
20	S.F. KOKTULI	Q	34.0	7.85	0.640	6.67	1.000	984.	226.1	0.0854	18.158	2.090		0.1702	5.12
21	S.F. KOKTULI	Q	29.3	7.85	0.640	6.67	1.000	984.	226.1	0.0854	18.158	2.900		0.2700	7.36
22	S.F. KOKTULI	C	27.6	7.92	0.638	6.67	1.000	985.	226.1	0.0847	18.155	3.353		0.2700	7.36
23	S.F. KOKTULI	C	25.1	7.96	0.636	6.67	1.000	986.	226.1	0.0687	18.153	4.023		0.2700	7.36
24	S.F. KOKTULI	Q	24.9	7.96	0.636	6.67	1.000	986.	226.1	0.0687	18.153	4.078		-0.0610	7.36
25	S.F. KOKTULI	C	21.9	7.98	0.635	6.67	1.000	987.	226.1	0.0855	18.153	3.892		-0.0610	7.36
26	S.F. KOKTULI	C	20.1	8.03	0.633	6.67	1.000	987.	226.1	0.0664	18.156	3.785		-0.0610	7.36
27	S.F. KOKTULI	C	15.4	8.09	0.631	6.67	1.000	988.	226.1	0.0643	18.157	3.496		-0.0610	7.36
28	S.F. KOKTULI	Q	13.9	8.09	0.631	6.67	1.000	988.	226.1	0.0643	18.157	3.408		0.1120	7.36
29	S.F. KOKTULI	C	12.5	8.12	0.630	6.67	1.000	989.	226.0	0.0613	18.156	3.565		0.1120	7.36
30	S.F. KOKTULI	C	9.2	8.15	0.629	6.67	1.000	990.	226.0	0.0755	18.156	3.932		0.1120	7.36
31	S.F. KOKTULI	C	7.9	8.18	0.628	6.67	1.000	990.	226.0	0.0606	18.158	4.082		0.1120	7.36
32	S.F. KOKTULI	C	5.1	8.23	0.626	6.67	1.000	991.	226.0	0.0647	18.160	4.394		0.1120	7.36
33	S.F. KOKTULI	C	5.1	8.27	0.625	6.67	1.000	992.	226.0	0.0748	18.164	4.394		0.1120	7.36
34	S.F. KOKTULI	Q	3.0	8.27	0.625	6.67	1.000	992.	226.0	0.0748	18.164	4.633		0.5286	7.36
35	S.F. KOKTULI	Q	0.1	8.27	0.625	6.67	1.000	992.	226.0	0.0748	18.164	6.147		0.3148	7.36
36	S.F. KOKTULI	E	0.0									6.181			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.99	0.717	4.70	1.000	979.	192.3	0.2148	18.205	0.780	8.66	0.2528	9.66
2	S.F. KOKTULI	C	53.3	6.04	0.715	4.70	1.000	979.	192.3	0.2016	18.202	1.122		0.2528	9.66
3	S.F. KOKTULI	C	51.2	6.07	0.714	4.70	1.000	980.	192.3	0.1831	18.199	1.651		0.2528	9.66
4	S.F. KOKTULI	Q	51.1	6.07	0.714	4.70	1.000	980.	192.3	0.1831	18.199	1.684		-0.1702	9.66
5	S.F. KOKTULI	C	49.4	6.10	0.712	4.70	1.000	981.	192.3	0.1585	18.197	1.398		-0.1702	9.66
6	S.F. KOKTULI	C	47.6	6.14	0.711	4.70	1.000	981.	192.3	0.1525	18.197	1.083		-0.1702	9.66
7	S.F. KOKTULI	C	45.7	6.17	0.710	4.70	1.000	982.	192.3	0.1701	18.197	0.767		-0.1702	9.66
8	S.F. KOKTULI	C	44.8	6.18	0.709	4.70	1.000	982.	192.3	0.1528	18.198	0.614		-0.1702	9.66
9	S.F. KOKTULI	C	43.9	6.20	0.708	4.70	1.000	982.	192.3	0.1908	18.196	0.467		-0.1702	9.66
10	S.F. KOKTULI	Q	43.6	6.20	0.708	4.70	1.000	982.	192.3	0.1908	18.196	0.415		0.0450	9.66
11	S.F. KOKTULI	C	41.1	6.21	0.708	4.70	1.000	983.	192.3	0.1523	18.194	0.530		0.0450	9.66
12	S.F. KOKTULI	C	40.0	6.21	0.708	4.70	1.000	983.	192.3	0.1955	18.195	0.580		0.0450	9.66
13	S.F. KOKTULI	C	38.4	6.24	0.707	4.70	1.000	983.	192.3	0.1523	18.196	0.652		0.0450	9.66
14	S.F. KOKTULI	Q	35.8	6.24	0.707	4.70	1.000	983.	192.3	0.1523	18.196	0.767		0.0928	4.82
15	S.F. KOKTULI	B	34.3									0.909			
16	TRIBUTARY 119	H	36.1	6.24	0.707	4.70	1.000	983.	192.3	0.1716	18.197	0.690	4.92	0.0269	4.82
17	TRIBUTARY 119	T	34.3									0.738			
18	S.F. KOKTULI	J	34.3	6.27	0.706	4.70	1.000	984.	192.3	0.1261	18.196	1.647		0.4475	4.82
19	S.F. KOKTULI	C	34.1	6.30	0.704	4.70	1.000	984.	192.2	0.0855	18.194	1.709		0.4475	4.82
20	S.F. KOKTULI	Q	34.0	6.30	0.704	4.70	1.000	984.	192.2	0.0855	18.194	1.762		0.1681	4.82
21	S.F. KOKTULI	Q	29.3	6.30	0.704	4.70	1.000	984.	192.2	0.0855	18.194	2.562		0.2501	7.54
22	S.F. KOKTULI	C	27.6	6.37	0.701	4.70	1.000	985.	192.2	0.0847	18.191	2.982		0.2501	7.54
23	S.F. KOKTULI	C	25.1	6.41	0.700	4.70	1.000	986.	192.2	0.0687	18.189	3.602		0.2501	7.54
24	S.F. KOKTULI	Q	24.9	6.41	0.700	4.70	1.000	986.	192.2	0.0687	18.189	3.653		-0.0558	7.54
25	S.F. KOKTULI	C	21.9	6.43	0.699	4.70	1.000	987.	192.2	0.0854	18.190	3.483		-0.0558	7.54
26	S.F. KOKTULI	C	20.1	6.48	0.697	4.70	1.000	987.	192.2	0.0664	18.192	3.384		-0.0558	7.54
27	S.F. KOKTULI	C	15.4	6.54	0.694	4.70	1.000	988.	192.2	0.0643	18.193	3.121		-0.0558	7.54
28	S.F. KOKTULI	Q	13.9	6.54	0.694	4.70	1.000	988.	192.2	0.0643	18.193	3.040		0.1229	7.54
29	S.F. KOKTULI	C	12.5	6.57	0.693	4.70	1.000	989.	192.2	0.0613	18.192	3.212		0.1229	7.54
30	S.F. KOKTULI	C	9.2	6.60	0.692	4.70	1.000	990.	192.2	0.0754	18.193	3.615		0.1229	7.54
31	S.F. KOKTULI	C	7.9	6.63	0.691	4.70	1.000	990.	192.2	0.0606	18.194	3.779		0.1229	7.54
32	S.F. KOKTULI	C	5.1	6.68	0.689	4.70	1.000	991.	192.1	0.0647	18.196	4.122		0.1229	7.54
33	S.F. KOKTULI	C	5.1	6.72	0.687	4.70	1.000	992.	192.1	0.0748	18.200	4.122		0.1229	7.54
34	S.F. KOKTULI	Q	3.0	6.72	0.687	4.70	1.000	992.	192.1	0.0748	18.200	4.384		0.4337	7.54
35	S.F. KOKTULI	Q	0.1	6.72	0.687	4.70	1.000	992.	192.1	0.0748	18.200	5.626		0.2870	7.54
36	S.F. KOKTULI	E	0.0									5.657			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.79	0.773	3.11	1.000	979.	152.9	0.2146	18.239	0.748	8.90	0.2441	9.90
2	S.F. KOKTULI	C	53.3	6.84	0.771	3.11	1.000	979.	152.9	0.2013	18.236	1.079		0.2441	9.90
3	S.F. KOKTULI	C	51.2	6.87	0.769	3.11	1.000	980.	152.9	0.1830	18.233	1.590		0.2441	9.90
4	S.F. KOKTULI	Q	51.1	6.87	0.769	3.11	1.000	980.	152.9	0.1830	18.233	1.621		-0.1727	9.90
5	S.F. KOKTULI	C	49.4	6.90	0.768	3.11	1.000	981.	152.9	0.1585	18.231	1.331		-0.1727	9.90
6	S.F. KOKTULI	C	47.6	6.94	0.766	3.11	1.000	981.	152.9	0.1525	18.231	1.011		-0.1727	9.90
7	S.F. KOKTULI	C	45.7	6.97	0.765	3.11	1.000	982.	152.9	0.1700	18.231	0.691		-0.1727	9.90
8	S.F. KOKTULI	C	44.8	6.98	0.764	3.11	1.000	982.	152.9	0.1527	18.231	0.535		-0.1727	9.90
9	S.F. KOKTULI	C	43.9	7.00	0.763	3.11	1.000	982.	152.9	0.1906	18.229	0.386		-0.1727	9.90
10	S.F. KOKTULI	Q	43.6	7.00	0.763	3.11	1.000	982.	152.9	0.1906	18.229	0.333		0.0398	9.90
11	S.F. KOKTULI	C	41.1	7.01	0.763	3.11	1.000	983.	152.9	0.1523	18.227	0.435		0.0398	9.90
12	S.F. KOKTULI	C	40.0	7.01	0.763	3.11	1.000	983.	152.9	0.1953	18.229	0.479		0.0398	9.90
13	S.F. KOKTULI	C	38.4	7.04	0.762	3.11	1.000	983.	152.9	0.1523	18.230	0.543		0.0398	9.90
14	S.F. KOKTULI	Q	35.8	7.04	0.762	3.11	1.000	983.	152.9	0.1523	18.230	0.645		0.0999	5.22
15	S.F. KOKTULI	B	34.3									0.798			
16	TRIBUTARY 119	H	36.1	7.04	0.762	3.11	1.000	983.	152.9	0.1714	18.231	0.616	4.83	0.0286	5.22
17	TRIBUTARY 119	T	34.3									0.667			
18	S.F. KOKTULI	J	34.3	7.07	0.761	3.11	1.000	984.	152.9	0.1259	18.230	1.465		0.4825	5.22
19	S.F. KOKTULI	C	34.1	7.10	0.759	3.11	1.000	984.	152.9	0.0855	18.228	1.532		0.4825	5.22
20	S.F. KOKTULI	Q	34.0	7.10	0.759	3.11	1.000	984.	152.9	0.0855	18.228	1.589		0.1599	5.22
21	S.F. KOKTULI	Q	29.3	7.10	0.759	3.11	1.000	984.	152.9	0.0855	18.228	2.350		0.2338	8.40
22	S.F. KOKTULI	C	27.6	7.17	0.756	3.11	1.000	985.	152.9	0.0847	18.225	2.742		0.2338	8.40
23	S.F. KOKTULI	C	25.1	7.21	0.754	3.11	1.000	986.	152.9	0.0687	18.223	3.322		0.2338	8.40
24	S.F. KOKTULI	Q	24.9	7.21	0.754	3.11	1.000	986.	152.9	0.0687	18.223	3.370		-0.0522	8.40
25	S.F. KOKTULI	C	21.9	7.23	0.753	3.11	1.000	987.	152.9	0.0853	18.223	3.211		-0.0522	8.40
26	S.F. KOKTULI	C	20.1	7.28	0.751	3.11	1.000	987.	152.8	0.0664	18.226	3.119		-0.0522	8.40
27	S.F. KOKTULI	C	15.4	7.34	0.749	3.11	1.000	988.	152.8	0.0643	18.227	2.872		-0.0522	8.40
28	S.F. KOKTULI	Q	13.9	7.34	0.749	3.11	1.000	988.	152.8	0.0643	18.227	2.796		0.1274	8.40
29	S.F. KOKTULI	C	12.5	7.37	0.747	3.11	1.000	989.	152.8	0.0614	18.226	2.974		0.1274	8.40
30	S.F. KOKTULI	C	9.2	7.40	0.746	3.11	1.000	990.	152.8	0.0753	18.226	3.392		0.1274	8.40
31	S.F. KOKTULI	C	7.9	7.43	0.745	3.11	1.000	990.	152.8	0.0606	18.228	3.562		0.1274	8.40
32	S.F. KOKTULI	C	5.1	7.48	0.743	3.11	1.000	991.	152.8	0.0647	18.230	3.917		0.1274	8.40
33	S.F. KOKTULI	C	5.1	7.52	0.740	3.11	1.000	992.	152.8	0.0747	18.234	3.917		0.1274	8.40
34	S.F. KOKTULI	Q	3.0	7.52	0.740	3.11	1.000	992.	152.8	0.0747	18.234	4.189		0.3635	8.40
35	S.F. KOKTULI	Q	0.1	7.52	0.740	3.11	1.000	992.	152.8	0.0747	18.234	5.230		0.2685	8.40
36	S.F. KOKTULI	E	0.0									5.259			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.73	0.614	5.15	1.000	979.	255.5	0.2143	18.271	0.700	9.06	0.2318	10.06
2	S.F. KOKTULI	C	53.3	12.78	0.613	5.15	1.000	979.	255.5	0.2011	18.267	1.014		0.2318	10.06
3	S.F. KOKTULI	C	51.2	12.81	0.612	5.15	1.000	980.	255.5	0.1828	18.264	1.499		0.2318	10.06
4	S.F. KOKTULI	Q	51.1	12.81	0.612	5.15	1.000	980.	255.5	0.1828	18.264	1.529		-0.1635	10.06
5	S.F. KOKTULI	C	49.4	12.84	0.611	5.15	1.000	981.	255.5	0.1585	18.263	1.254		-0.1635	10.06
6	S.F. KOKTULI	C	47.6	12.88	0.609	5.15	1.000	981.	255.4	0.1524	18.262	0.951		-0.1635	10.06
7	S.F. KOKTULI	C	45.7	12.91	0.608	5.15	1.000	982.	255.4	0.1700	18.262	0.648		-0.1635	10.06
8	S.F. KOKTULI	C	44.8	12.92	0.608	5.15	1.000	982.	255.4	0.1527	18.263	0.501		-0.1635	10.06
9	S.F. KOKTULI	C	43.9	12.94	0.607	5.15	1.000	982.	255.4	0.1905	18.261	0.360		-0.1635	10.06
10	S.F. KOKTULI	Q	43.6	12.94	0.607	5.15	1.000	982.	255.4	0.1905	18.261	0.309		0.0382	10.06
11	S.F. KOKTULI	C	41.1	12.95	0.607	5.15	1.000	983.	255.4	0.1523	18.259	0.407		0.0382	10.06
12	S.F. KOKTULI	C	40.0	12.95	0.606	5.15	1.000	983.	255.4	0.1951	18.260	0.450		0.0382	10.06
13	S.F. KOKTULI	C	38.4	12.98	0.606	5.15	1.000	983.	255.4	0.1523	18.261	0.511		0.0382	10.06
14	S.F. KOKTULI	Q	35.8	12.98	0.606	5.15	1.000	983.	255.4	0.1523	18.261	0.608		0.1001	4.98
15	S.F. KOKTULI	B	34.3									0.762			
16	TRIBUTARY 119	H	36.1	12.98	0.606	5.15	1.000	983.	255.4	0.1713	18.262	0.656	7.31	0.0286	4.98
17	TRIBUTARY 119	T	34.3									0.707			
18	S.F. KOKTULI	J	34.3	13.01	0.605	5.15	1.000	984.	255.4	0.1258	18.261	1.468		0.4825	4.98
19	S.F. KOKTULI	C	34.1	13.04	0.603	5.15	1.000	984.	255.4	0.0856	18.259	1.535		0.4825	4.98
20	S.F. KOKTULI	Q	34.0	13.04	0.603	5.15	1.000	984.	255.4	0.0856	18.259	1.592		0.1467	4.98
21	S.F. KOKTULI	Q	29.3	13.04	0.603	5.15	1.000	984.	255.4	0.0856	18.259	2.290		0.2086	8.58
22	S.F. KOKTULI	C	27.6	13.11	0.601	5.15	1.000	985.	255.4	0.0847	18.256	2.640		0.2086	8.58
23	S.F. KOKTULI	C	25.1	13.15	0.600	5.15	1.000	986.	255.4	0.0687	18.254	3.157		0.2086	8.58
24	S.F. KOKTULI	Q	24.9	13.15	0.600	5.15	1.000	986.	255.4	0.0687	18.254	3.200		-0.0500	8.58
25	S.F. KOKTULI	C	21.9	13.17	0.599	5.15	1.000	987.	255.4	0.0853	18.255	3.048		-0.0500	8.58
26	S.F. KOKTULI	C	20.1	13.22	0.597	5.15	1.000	987.	255.3	0.0664	18.257	2.959		-0.0500	8.58
27	S.F. KOKTULI	C	15.4	13.28	0.595	5.15	1.000	988.	255.3	0.0643	18.258	2.723		-0.0500	8.58
28	S.F. KOKTULI	Q	13.9	13.28	0.595	5.15	1.000	988.	255.3	0.0643	18.258	2.650		0.1292	8.58
29	S.F. KOKTULI	C	12.5	13.31	0.594	5.15	1.000	989.	255.3	0.0614	18.257	2.831		0.1292	8.58
30	S.F. KOKTULI	C	9.2	13.34	0.593	5.15	1.000	990.	255.3	0.0753	18.258	3.254		0.1292	8.58
31	S.F. KOKTULI	C	7.9	13.37	0.592	5.15	1.000	990.	255.3	0.0607	18.259	3.427		0.1292	8.58
32	S.F. KOKTULI	C	5.1	13.42	0.590	5.15	1.000	991.	255.3	0.0647	18.261	3.788		0.1292	8.58
33	S.F. KOKTULI	C	5.1	13.46	0.589	5.15	1.000	992.	255.2	0.0746	18.265	3.788		0.1292	8.58
34	S.F. KOKTULI	Q	3.0	13.46	0.589	5.15	1.000	992.	255.2	0.0746	18.265	4.063		0.3205	8.58
35	S.F. KOKTULI	Q	0.1	13.46	0.589	5.15	1.000	992.	255.2	0.0746	18.265	4.981		0.2593	8.58
36	S.F. KOKTULI	E	0.0									5.009			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.16	0.829	4.80	1.000	979.	239.9	0.2140	18.300	0.599	9.58	0.2041	10.58
2	S.F. KOKTULI	C	53.3	8.21	0.826	4.80	1.000	979.	239.9	0.2009	18.296	0.875		0.2041	10.58
3	S.F. KOKTULI	C	51.2	8.24	0.825	4.80	1.000	980.	239.9	0.1827	18.293	1.303		0.2041	10.58
4	S.F. KOKTULI	Q	51.1	8.24	0.825	4.80	1.000	980.	239.9	0.1827	18.293	1.329		-0.1447	10.58
5	S.F. KOKTULI	C	49.4	8.27	0.823	4.80	1.000	981.	239.9	0.1584	18.291	1.086		-0.1447	10.58
6	S.F. KOKTULI	C	47.6	8.31	0.822	4.80	1.000	981.	239.9	0.1524	18.291	0.817		-0.1447	10.58
7	S.F. KOKTULI	C	45.7	8.34	0.820	4.80	1.000	982.	239.9	0.1699	18.291	0.549		-0.1447	10.58
8	S.F. KOKTULI	C	44.8	8.35	0.819	4.80	1.000	982.	239.9	0.1526	18.292	0.419		-0.1447	10.58
9	S.F. KOKTULI	C	43.9	8.37	0.819	4.80	1.000	982.	239.9	0.1903	18.290	0.294		-0.1447	10.58
10	S.F. KOKTULI	Q	43.6	8.37	0.819	4.80	1.000	982.	239.9	0.1903	18.290	0.249		0.0337	10.58
11	S.F. KOKTULI	C	41.1	8.38	0.818	4.80	1.000	983.	239.9	0.1522	18.288	0.336		0.0337	10.58
12	S.F. KOKTULI	C	40.0	8.38	0.818	4.80	1.000	983.	239.9	0.1949	18.289	0.373		0.0337	10.58
13	S.F. KOKTULI	C	38.4	8.41	0.817	4.80	1.000	983.	239.9	0.1523	18.290	0.427		0.0337	10.58
14	S.F. KOKTULI	Q	35.8	8.41	0.817	4.80	1.000	983.	239.9	0.1523	18.290	0.513		0.1022	4.82
15	S.F. KOKTULI	B	34.3									0.670			
16	TRIBUTARY 119	H	36.1	8.41	0.817	4.80	1.000	983.	239.8	0.1711	18.291	0.654	7.11	0.0297	4.82
17	TRIBUTARY 119	T	34.3									0.707			
18	S.F. KOKTULI	J	34.3	8.44	0.815	4.80	1.000	984.	239.8	0.1257	18.290	1.377		0.4903	4.82
19	S.F. KOKTULI	C	34.1	8.47	0.814	4.80	1.000	984.	239.8	0.0856	18.288	1.445		0.4903	4.82
20	S.F. KOKTULI	Q	34.0	8.47	0.814	4.80	1.000	984.	239.8	0.0856	18.288	1.503		0.1515	4.82
21	S.F. KOKTULI	Q	29.3	8.47	0.814	4.80	1.000	984.	239.8	0.0856	18.288	2.224		0.2106	8.64
22	S.F. KOKTULI	C	27.6	8.54	0.811	4.80	1.000	985.	239.8	0.0847	18.285	2.577		0.2106	8.64
23	S.F. KOKTULI	C	25.1	8.58	0.809	4.80	1.000	986.	239.8	0.0687	18.283	3.100		0.2106	8.64
24	S.F. KOKTULI	Q	24.9	8.58	0.809	4.80	1.000	986.	239.8	0.0687	18.283	3.143		-0.0493	8.64
25	S.F. KOKTULI	C	21.9	8.60	0.807	4.80	1.000	987.	239.8	0.0852	18.283	2.993		-0.0493	8.64
26	S.F. KOKTULI	C	20.1	8.65	0.805	4.80	1.000	987.	239.8	0.0664	18.286	2.906		-0.0493	8.64
27	S.F. KOKTULI	C	15.4	8.71	0.803	4.80	1.000	988.	239.8	0.0643	18.287	2.673		-0.0493	8.64
28	S.F. KOKTULI	Q	13.9	8.71	0.803	4.80	1.000	988.	239.8	0.0643	18.287	2.601		0.1326	8.64
29	S.F. KOKTULI	C	12.5	8.74	0.801	4.80	1.000	989.	239.8	0.0614	18.286	2.787		0.1326	8.64
30	S.F. KOKTULI	C	9.2	8.77	0.800	4.80	1.000	990.	239.7	0.0752	18.287	3.221		0.1326	8.64
31	S.F. KOKTULI	C	7.9	8.80	0.798	4.80	1.000	990.	239.7	0.0607	18.288	3.399		0.1326	8.64
32	S.F. KOKTULI	C	5.1	8.85	0.796	4.80	1.000	991.	239.7	0.0647	18.290	3.768		0.1326	8.64
33	S.F. KOKTULI	C	5.1	8.89	0.794	4.80	1.000	992.	239.7	0.0746	18.294	3.768		0.1326	8.64
34	S.F. KOKTULI	Q	3.0	8.89	0.794	4.80	1.000	992.	239.7	0.0746	18.294	4.051		0.3163	8.64
35	S.F. KOKTULI	Q	0.1	8.89	0.794	4.80	1.000	992.	239.7	0.0746	18.294	4.957		0.2500	8.64
36	S.F. KOKTULI	E	0.0									4.984			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.25	0.894	2.65	1.000	979.	76.0	0.2138	18.326	0.665	9.40	0.2220	10.40
2	S.F. KOKTULI	C	53.3	6.30	0.891	2.65	1.000	979.	76.0	0.2007	18.322	0.966		0.2220	10.40
3	S.F. KOKTULI	C	51.2	6.33	0.890	2.65	1.000	980.	76.0	0.1825	18.319	1.430		0.2220	10.40
4	S.F. KOKTULI	Q	51.1	6.33	0.890	2.65	1.000	980.	76.0	0.1825	18.319	1.459		-0.1675	10.40
5	S.F. KOKTULI	C	49.4	6.36	0.888	2.65	1.000	981.	76.0	0.1584	18.318	1.178		-0.1675	10.40
6	S.F. KOKTULI	C	47.6	6.40	0.886	2.65	1.000	981.	76.0	0.1524	18.317	0.867		-0.1675	10.40
7	S.F. KOKTULI	C	45.7	6.43	0.885	2.65	1.000	982.	76.0	0.1698	18.317	0.557		-0.1675	10.40
8	S.F. KOKTULI	C	44.8	6.44	0.884	2.65	1.000	982.	76.0	0.1526	18.318	0.406		-0.1675	10.40
9	S.F. KOKTULI	C	43.9	6.46	0.883	2.65	1.000	982.	76.0	0.1901	18.316	0.261		-0.1675	10.40
10	S.F. KOKTULI	Q	43.6	6.46	0.883	2.65	1.000	982.	76.0	0.1901	18.316	0.210		0.0304	10.40
11	S.F. KOKTULI	C	41.1	6.47	0.883	2.65	1.000	983.	76.0	0.1522	18.314	0.287		0.0304	10.40
12	S.F. KOKTULI	C	40.0	6.47	0.882	2.65	1.000	983.	76.0	0.1948	18.315	0.321		0.0304	10.40
13	S.F. KOKTULI	C	38.4	6.50	0.881	2.65	1.000	983.	76.0	0.1524	18.316	0.370		0.0304	10.40
14	S.F. KOKTULI	Q	35.8	6.50	0.881	2.65	1.000	983.	76.0	0.1524	18.316	0.447		0.1047	4.92
15	S.F. KOKTULI	B	34.3									0.608			
16	TRIBUTARY 119	H	36.1	6.50	0.881	2.65	1.000	983.	76.0	0.1710	18.317	0.582	5.47	0.0297	4.92
17	TRIBUTARY 119	T	34.3									0.635			
18	S.F. KOKTULI	J	34.3	6.53	0.880	2.65	1.000	984.	76.0	0.1256	18.316	1.243		0.5058	4.92
19	S.F. KOKTULI	C	34.1	6.56	0.878	2.65	1.000	984.	76.0	0.0856	18.314	1.313		0.5058	4.92
20	S.F. KOKTULI	Q	34.0	6.56	0.878	2.65	1.000	984.	76.0	0.0856	18.314	1.373		0.1467	4.92
21	S.F. KOKTULI	Q	29.3	6.56	0.878	2.65	1.000	984.	76.0	0.0856	18.314	2.071		0.2329	9.09
22	S.F. KOKTULI	C	27.6	6.63	0.875	2.65	1.000	985.	76.0	0.0847	18.311	2.462		0.2329	9.09
23	S.F. KOKTULI	C	25.1	6.67	0.872	2.65	1.000	986.	76.0	0.0687	18.309	3.039		0.2329	9.09
24	S.F. KOKTULI	Q	24.9	6.67	0.872	2.65	1.000	986.	76.0	0.0687	18.309	3.087		-0.0486	9.09
25	S.F. KOKTULI	C	21.9	6.69	0.871	2.65	1.000	987.	76.0	0.0851	18.310	2.939		-0.0486	9.09
26	S.F. KOKTULI	C	20.1	6.74	0.869	2.65	1.000	987.	76.0	0.0664	18.312	2.853		-0.0486	9.09
27	S.F. KOKTULI	C	15.4	6.80	0.866	2.65	1.000	988.	76.0	0.0643	18.313	2.623		-0.0486	9.09
28	S.F. KOKTULI	Q	13.9	6.80	0.866	2.65	1.000	988.	76.0	0.0643	18.313	2.553		0.1283	9.09
29	S.F. KOKTULI	C	12.5	6.83	0.864	2.65	1.000	989.	76.0	0.0614	18.312	2.733		0.1283	9.09
30	S.F. KOKTULI	C	9.2	6.86	0.863	2.65	1.000	990.	76.0	0.0751	18.313	3.153		0.1283	9.09
31	S.F. KOKTULI	C	7.9	6.89	0.861	2.65	1.000	990.	75.9	0.0607	18.314	3.325		0.1283	9.09
32	S.F. KOKTULI	C	5.1	6.94	0.859	2.65	1.000	991.	75.9	0.0647	18.316	3.682		0.1283	9.09
33	S.F. KOKTULI	C	5.1	6.98	0.856	2.65	1.000	992.	75.9	0.0745	18.320	3.682		0.1283	9.09
34	S.F. KOKTULI	Q	3.0	6.98	0.856	2.65	1.000	992.	75.9	0.0745	18.320	3.956		0.2849	9.09
35	S.F. KOKTULI	Q	0.1	6.98	0.856	2.65	1.000	992.	75.9	0.0745	18.320	4.772		0.2500	9.09
36	S.F. KOKTULI	E	0.0									4.799			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.44	0.773	2.55	1.000	979.	129.1	0.2136	18.350	0.633	9.93	0.2131	10.93
2	S.F. KOKTULI	C	53.3	8.49	0.771	2.55	1.000	979.	129.1	0.2005	18.346	0.922		0.2131	10.93
3	S.F. KOKTULI	C	51.2	8.52	0.769	2.55	1.000	980.	129.1	0.1824	18.343	1.368		0.2131	10.93
4	S.F. KOKTULI	Q	51.1	8.52	0.769	2.55	1.000	980.	129.1	0.1824	18.343	1.395		-0.1609	10.93
5	S.F. KOKTULI	C	49.4	8.55	0.768	2.55	1.000	981.	129.1	0.1584	18.341	1.125		-0.1609	10.93
6	S.F. KOKTULI	C	47.6	8.59	0.766	2.55	1.000	981.	129.1	0.1523	18.341	0.826		-0.1609	10.93
7	S.F. KOKTULI	C	45.7	8.62	0.765	2.55	1.000	982.	129.1	0.1698	18.341	0.528		-0.1609	10.93
8	S.F. KOKTULI	C	44.8	8.63	0.764	2.55	1.000	982.	129.1	0.1526	18.341	0.383		-0.1609	10.93
9	S.F. KOKTULI	C	43.9	8.65	0.763	2.55	1.000	982.	129.1	0.1900	18.339	0.244		-0.1609	10.93
10	S.F. KOKTULI	Q	43.6	8.65	0.763	2.55	1.000	982.	129.1	0.1900	18.339	0.195		0.0290	10.93
11	S.F. KOKTULI	C	41.1	8.66	0.763	2.55	1.000	983.	129.1	0.1522	18.337	0.269		0.0290	10.93
12	S.F. KOKTULI	C	40.0	8.66	0.763	2.55	1.000	983.	129.1	0.1947	18.338	0.301		0.0290	10.93
13	S.F. KOKTULI	C	38.4	8.69	0.762	2.55	1.000	983.	129.1	0.1524	18.340	0.348		0.0290	10.93
14	S.F. KOKTULI	Q	35.8	8.69	0.762	2.55	1.000	983.	129.1	0.1524	18.340	0.422		0.1057	4.86
15	S.F. KOKTULI	B	34.3									0.584			
16	TRIBUTARY 119	H	36.1	8.69	0.762	2.55	1.000	983.	129.1	0.1709	18.341	0.522	5.63	0.0302	4.86
17	TRIBUTARY 119	T	34.3									0.576			
18	S.F. KOKTULI	J	34.3	8.72	0.761	2.55	1.000	984.	129.1	0.1255	18.340	1.160		0.5058	4.86
19	S.F. KOKTULI	C	34.1	8.75	0.759	2.55	1.000	984.	129.1	0.0857	18.338	1.230		0.5058	4.86
20	S.F. KOKTULI	Q	34.0	8.75	0.759	2.55	1.000	984.	129.1	0.0857	18.338	1.290		0.1396	4.86
21	S.F. KOKTULI	Q	29.3	8.75	0.759	2.55	1.000	984.	129.1	0.0857	18.338	1.954		0.2271	9.15
22	S.F. KOKTULI	C	27.6	8.82	0.756	2.55	1.000	985.	129.1	0.0847	18.334	2.335		0.2271	9.15
23	S.F. KOKTULI	C	25.1	8.86	0.754	2.55	1.000	986.	129.1	0.0687	18.332	2.899		0.2271	9.15
24	S.F. KOKTULI	Q	24.9	8.86	0.754	2.55	1.000	986.	129.1	0.0687	18.332	2.945		-0.0468	9.15
25	S.F. KOKTULI	C	21.9	8.88	0.753	2.55	1.000	987.	129.1	0.0851	18.333	2.802		-0.0468	9.15
26	S.F. KOKTULI	C	20.1	8.93	0.751	2.55	1.000	987.	129.0	0.0664	18.336	2.720		-0.0468	9.15
27	S.F. KOKTULI	C	15.4	8.99	0.749	2.55	1.000	988.	129.0	0.0643	18.336	2.499		-0.0468	9.15
28	S.F. KOKTULI	Q	13.9	8.99	0.749	2.55	1.000	988.	129.0	0.0643	18.336	2.431		0.1309	9.15
29	S.F. KOKTULI	C	12.5	9.02	0.747	2.55	1.000	989.	129.0	0.0614	18.335	2.614		0.1309	9.15
30	S.F. KOKTULI	C	9.2	9.05	0.746	2.55	1.000	990.	129.0	0.0751	18.336	3.043		0.1309	9.15
31	S.F. KOKTULI	C	7.9	9.08	0.745	2.55	1.000	990.	129.0	0.0607	18.338	3.218		0.1309	9.15
32	S.F. KOKTULI	C	5.1	9.13	0.742	2.55	1.000	991.	129.0	0.0646	18.340	3.583		0.1309	9.15
33	S.F. KOKTULI	C	5.1	9.17	0.740	2.55	1.000	992.	129.0	0.0745	18.344	3.583		0.1309	9.15
34	S.F. KOKTULI	Q	3.0	9.17	0.740	2.55	1.000	992.	129.0	0.0745	18.344	3.862		0.2545	9.15
35	S.F. KOKTULI	Q	0.1	9.17	0.740	2.55	1.000	992.	129.0	0.0745	18.344	4.591		0.2407	9.15
36	S.F. KOKTULI	E	0.0									4.617			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.85	0.717	3.36	1.000	979.	149.3	0.2135	18.371	0.620	10.36	0.2097	11.36
2	S.F. KOKTULI	C	53.3	10.90	0.715	3.36	1.000	979.	149.3	0.2004	18.367	0.904		0.2097	11.36
3	S.F. KOKTULI	C	51.2	10.93	0.714	3.36	1.000	980.	149.3	0.1823	18.364	1.343		0.2097	11.36
4	S.F. KOKTULI	Q	51.1	10.93	0.714	3.36	1.000	980.	149.3	0.1823	18.364	1.370		-0.1601	11.36
5	S.F. KOKTULI	C	49.4	10.96	0.712	3.36	1.000	981.	149.2	0.1584	18.362	1.101		-0.1601	11.36
6	S.F. KOKTULI	C	47.6	11.00	0.711	3.36	1.000	981.	149.2	0.1523	18.362	0.804		-0.1601	11.36
7	S.F. KOKTULI	C	45.7	11.03	0.709	3.36	1.000	982.	149.2	0.1697	18.362	0.508		-0.1601	11.36
8	S.F. KOKTULI	C	44.8	11.04	0.709	3.36	1.000	982.	149.2	0.1526	18.362	0.363		-0.1601	11.36
9	S.F. KOKTULI	C	43.9	11.06	0.708	3.36	1.000	982.	149.2	0.1899	18.360	0.225		-0.1601	11.36
10	S.F. KOKTULI	Q	43.6	11.06	0.708	3.36	1.000	982.	149.2	0.1899	18.360	0.176		0.0273	11.36
11	S.F. KOKTULI	C	41.1	11.07	0.708	3.36	1.000	983.	149.2	0.1522	18.358	0.246		0.0273	11.36
12	S.F. KOKTULI	C	40.0	11.07	0.708	3.36	1.000	983.	149.2	0.1945	18.359	0.276		0.0273	11.36
13	S.F. KOKTULI	C	38.4	11.10	0.706	3.36	1.000	983.	149.2	0.1524	18.361	0.320		0.0273	11.36
14	S.F. KOKTULI	Q	35.8	11.10	0.706	3.36	1.000	983.	149.2	0.1524	18.361	0.389		0.1054	4.61
15	S.F. KOKTULI	B	34.3									0.551			
16	TRIBUTARY 119	H	36.1	11.10	0.707	3.36	1.000	983.	149.2	0.1708	18.362	0.550	6.67	0.0302	4.61
17	TRIBUTARY 119	T	34.3									0.604			
18	S.F. KOKTULI	J	34.3	11.13	0.706	3.36	1.000	984.	149.2	0.1254	18.360	1.155		0.5097	4.61
19	S.F. KOKTULI	C	34.1	11.16	0.704	3.36	1.000	984.	149.2	0.0857	18.359	1.225		0.5097	4.61
20	S.F. KOKTULI	Q	34.0	11.16	0.704	3.36	1.000	984.	149.2	0.0857	18.359	1.286		0.1293	4.61
21	S.F. KOKTULI	Q	29.3	11.16	0.704	3.36	1.000	984.	149.2	0.0857	18.359	1.901		0.2262	9.10
22	S.F. KOKTULI	C	27.6	11.23	0.701	3.36	1.000	985.	149.2	0.0847	18.355	2.281		0.2262	9.10
23	S.F. KOKTULI	C	25.1	11.27	0.700	3.36	1.000	986.	149.2	0.0687	18.353	2.842		0.2262	9.10
24	S.F. KOKTULI	Q	24.9	11.27	0.700	3.36	1.000	986.	149.2	0.0687	18.353	2.888		-0.0460	9.10
25	S.F. KOKTULI	C	21.9	11.29	0.699	3.36	1.000	987.	149.2	0.0850	18.354	2.748		-0.0460	9.10
26	S.F. KOKTULI	C	20.1	11.34	0.697	3.36	1.000	987.	149.2	0.0664	18.357	2.667		-0.0460	9.10
27	S.F. KOKTULI	C	15.4	11.40	0.694	3.36	1.000	988.	149.2	0.0643	18.357	2.450		-0.0460	9.10
28	S.F. KOKTULI	Q	13.9	11.40	0.694	3.36	1.000	988.	149.2	0.0643	18.357	2.383		0.1380	9.10
29	S.F. KOKTULI	C	12.5	11.43	0.693	3.36	1.000	989.	149.2	0.0614	18.356	2.576		0.1380	9.10
30	S.F. KOKTULI	C	9.2	11.46	0.692	3.36	1.000	990.	149.2	0.0750	18.357	3.028		0.1380	9.10
31	S.F. KOKTULI	C	7.9	11.49	0.691	3.36	1.000	990.	149.1	0.0607	18.359	3.213		0.1380	9.10
32	S.F. KOKTULI	C	5.1	11.54	0.689	3.36	1.000	991.	149.1	0.0646	18.361	3.598		0.1380	9.10
33	S.F. KOKTULI	C	5.1	11.58	0.687	3.36	1.000	992.	149.1	0.0744	18.365	3.598		0.1380	9.10
34	S.F. KOKTULI	Q	3.0	11.58	0.687	3.36	1.000	992.	149.1	0.0744	18.365	3.892		0.2647	9.10
35	S.F. KOKTULI	Q	0.1	11.58	0.687	3.36	1.000	992.	149.1	0.0744	18.365	4.650		0.2407	9.10
36	S.F. KOKTULI	E	0.0									4.676			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	14.53	0.568	5.05	1.000	979.	291.2	0.2133	18.389	0.665	11.51	0.2220	12.51
2	S.F. KOKTULI	C	53.3	14.58	0.566	5.05	1.000	979.	291.2	0.2003	18.385	0.966		0.2220	12.51
3	S.F. KOKTULI	C	51.2	14.61	0.565	5.05	1.000	980.	291.2	0.1822	18.382	1.430		0.2220	12.51
4	S.F. KOKTULI	Q	51.1	14.61	0.565	5.05	1.000	980.	291.2	0.1822	18.382	1.459		-0.1720	12.51
5	S.F. KOKTULI	C	49.4	14.64	0.564	5.05	1.000	981.	291.2	0.1584	18.380	1.170		-0.1720	12.51
6	S.F. KOKTULI	C	47.6	14.68	0.563	5.05	1.000	981.	291.2	0.1523	18.380	0.851		-0.1720	12.51
7	S.F. KOKTULI	C	45.7	14.71	0.562	5.05	1.000	982.	291.1	0.1697	18.380	0.532		-0.1720	12.51
8	S.F. KOKTULI	C	44.8	14.72	0.562	5.05	1.000	982.	291.1	0.1525	18.381	0.377		-0.1720	12.51
9	S.F. KOKTULI	C	43.9	14.74	0.561	5.05	1.000	982.	291.1	0.1898	18.379	0.229		-0.1720	12.51
10	S.F. KOKTULI	Q	43.6	14.74	0.561	5.05	1.000	982.	291.1	0.1898	18.379	0.176		0.0273	12.51
11	S.F. KOKTULI	C	41.1	14.75	0.561	5.05	1.000	983.	291.1	0.1522	18.376	0.246		0.0273	12.51
12	S.F. KOKTULI	C	40.0	14.75	0.561	5.05	1.000	983.	291.1	0.1944	18.378	0.276		0.0273	12.51
13	S.F. KOKTULI	C	38.4	14.78	0.560	5.05	1.000	983.	291.1	0.1524	18.379	0.320		0.0273	12.51
14	S.F. KOKTULI	Q	35.8	14.78	0.560	5.05	1.000	983.	291.1	0.1524	18.379	0.390		0.1058	4.28
15	S.F. KOKTULI	B	34.3									0.552			
16	TRIBUTARY 119	H	36.1	14.78	0.560	5.05	1.000	983.	291.1	0.1707	18.380	0.562	8.71	0.0302	4.28
17	TRIBUTARY 119	T	34.3									0.616			
18	S.F. KOKTULI	J	34.3	14.81	0.559	5.05	1.000	984.	291.1	0.1253	18.379	1.167		0.5097	4.28
19	S.F. KOKTULI	C	34.1	14.84	0.558	5.05	1.000	984.	291.1	0.0857	18.377	1.237		0.5097	4.28
20	S.F. KOKTULI	Q	34.0	14.84	0.558	5.05	1.000	984.	291.1	0.0857	18.377	1.298		0.1204	4.28
21	S.F. KOKTULI	Q	29.3	14.84	0.558	5.05	1.000	984.	291.1	0.0857	18.377	1.871		0.2203	8.97
22	S.F. KOKTULI	C	27.6	14.91	0.556	5.05	1.000	985.	291.1	0.0847	18.374	2.241		0.2203	8.97
23	S.F. KOKTULI	C	25.1	14.95	0.554	5.05	1.000	986.	291.1	0.0687	18.371	2.787		0.2203	8.97
24	S.F. KOKTULI	Q	24.9	14.95	0.554	5.05	1.000	986.	291.1	0.0687	18.371	2.832		-0.0453	8.97
25	S.F. KOKTULI	C	21.9	14.97	0.553	5.05	1.000	987.	291.1	0.0850	18.372	2.694		-0.0453	8.97
26	S.F. KOKTULI	C	20.1	15.02	0.552	5.05	1.000	987.	291.0	0.0664	18.375	2.614		-0.0453	8.97
27	S.F. KOKTULI	C	15.4	15.08	0.550	5.05	1.000	988.	291.0	0.0643	18.376	2.400		-0.0453	8.97
28	S.F. KOKTULI	Q	13.9	15.08	0.550	5.05	1.000	988.	291.0	0.0643	18.376	2.334		0.1378	8.97
29	S.F. KOKTULI	C	12.5	15.11	0.549	5.05	1.000	989.	291.0	0.0615	18.374	2.527		0.1378	8.97
30	S.F. KOKTULI	C	9.2	15.14	0.548	5.05	1.000	990.	291.0	0.0750	18.375	2.978		0.1378	8.97
31	S.F. KOKTULI	C	7.9	15.17	0.547	5.05	1.000	990.	291.0	0.0607	18.377	3.163		0.1378	8.97
32	S.F. KOKTULI	C	5.1	15.22	0.546	5.05	1.000	991.	290.9	0.0646	18.379	3.547		0.1378	8.97
33	S.F. KOKTULI	C	5.1	15.26	0.544	5.05	1.000	992.	290.9	0.0744	18.383	3.547		0.1378	8.97
34	S.F. KOKTULI	Q	3.0	15.26	0.544	5.05	1.000	992.	290.9	0.0744	18.383	3.841		0.2479	8.97
35	S.F. KOKTULI	Q	0.1	15.26	0.544	5.05	1.000	992.	290.9	0.0744	18.383	4.551		0.2407	8.97
36	S.F. KOKTULI	E	0.0									4.577			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.37	0.605	6.53	1.000	979.	238.1	0.2132	18.404	0.555	10.71	0.1916	11.71
2	S.F. KOKTULI	C	53.3	12.42	0.603	6.53	1.000	979.	238.1	0.2002	18.401	0.814		0.1916	11.71
3	S.F. KOKTULI	C	51.2	12.45	0.602	6.53	1.000	980.	238.1	0.1822	18.398	1.215		0.1916	11.71
4	S.F. KOKTULI	Q	51.1	12.45	0.602	6.53	1.000	980.	238.1	0.1822	18.398	1.240		-0.1453	11.71
5	S.F. KOKTULI	C	49.4	12.48	0.601	6.53	1.000	981.	238.1	0.1584	18.396	0.996		-0.1453	11.71
6	S.F. KOKTULI	C	47.6	12.52	0.600	6.53	1.000	981.	238.1	0.1523	18.395	0.726		-0.1453	11.71
7	S.F. KOKTULI	C	45.7	12.55	0.599	6.53	1.000	982.	238.1	0.1697	18.396	0.457		-0.1453	11.71
8	S.F. KOKTULI	C	44.8	12.56	0.598	6.53	1.000	982.	238.0	0.1525	18.396	0.326		-0.1453	11.71
9	S.F. KOKTULI	C	43.9	12.58	0.598	6.53	1.000	982.	238.0	0.1897	18.394	0.201		-0.1453	11.71
10	S.F. KOKTULI	Q	43.6	12.58	0.598	6.53	1.000	982.	238.0	0.1897	18.394	0.156		0.0253	11.71
11	S.F. KOKTULI	C	41.1	12.59	0.597	6.53	1.000	983.	238.0	0.1523	18.392	0.221		0.0253	11.71
12	S.F. KOKTULI	C	40.0	12.59	0.597	6.53	1.000	983.	238.0	0.1943	18.393	0.249		0.0253	11.71
13	S.F. KOKTULI	C	38.4	12.62	0.596	6.53	1.000	983.	238.0	0.1524	18.394	0.290		0.0253	11.71
14	S.F. KOKTULI	Q	35.8	12.62	0.596	6.53	1.000	983.	238.0	0.1524	18.394	0.354		0.1061	4.26
15	S.F. KOKTULI	B	34.3									0.517			
16	TRIBUTARY 119	H	36.1	12.62	0.596	6.53	1.000	983.	238.0	0.1706	18.395	0.540	8.53	0.0302	4.26
17	TRIBUTARY 119	T	34.3									0.594			
18	S.F. KOKTULI	J	34.3	12.65	0.596	6.53	1.000	984.	238.0	0.1253	18.394	1.111		0.5097	4.26
19	S.F. KOKTULI	C	34.1	12.68	0.594	6.53	1.000	984.	238.0	0.0857	18.392	1.181		0.5097	4.26
20	S.F. KOKTULI	Q	34.0	12.68	0.594	6.53	1.000	984.	238.0	0.0857	18.392	1.242		0.1261	4.26
21	S.F. KOKTULI	Q	29.3	12.68	0.594	6.53	1.000	984.	238.0	0.0857	18.392	1.842		0.2269	9.14
22	S.F. KOKTULI	C	27.6	12.75	0.592	6.53	1.000	985.	238.0	0.0847	18.389	2.223		0.2269	9.14
23	S.F. KOKTULI	C	25.1	12.79	0.591	6.53	1.000	986.	238.0	0.0687	18.387	2.786		0.2269	9.14
24	S.F. KOKTULI	Q	24.9	12.79	0.591	6.53	1.000	986.	238.0	0.0687	18.387	2.832		-0.0453	9.14
25	S.F. KOKTULI	C	21.9	12.81	0.590	6.53	1.000	987.	238.0	0.0849	18.388	2.694		-0.0453	9.14
26	S.F. KOKTULI	C	20.1	12.86	0.588	6.53	1.000	987.	238.0	0.0664	18.391	2.614		-0.0453	9.14
27	S.F. KOKTULI	C	15.4	12.92	0.586	6.53	1.000	988.	237.9	0.0643	18.391	2.400		-0.0453	9.14
28	S.F. KOKTULI	Q	13.9	12.92	0.586	6.53	1.000	988.	237.9	0.0643	18.391	2.334		0.1420	9.14
29	S.F. KOKTULI	C	12.5	12.95	0.585	6.53	1.000	989.	237.9	0.0615	18.390	2.533		0.1420	9.14
30	S.F. KOKTULI	C	9.2	12.98	0.584	6.53	1.000	990.	237.9	0.0750	18.391	2.998		0.1420	9.14
31	S.F. KOKTULI	C	7.9	13.01	0.583	6.53	1.000	990.	237.9	0.0607	18.392	3.188		0.1420	9.14
32	S.F. KOKTULI	C	5.1	13.06	0.581	6.53	1.000	991.	237.9	0.0646	18.395	3.584		0.1420	9.14
33	S.F. KOKTULI	C	5.1	13.10	0.580	6.53	1.000	992.	237.9	0.0743	18.399	3.584		0.1420	9.14
34	S.F. KOKTULI	Q	3.0	13.10	0.580	6.53	1.000	992.	237.9	0.0743	18.399	3.887		0.2626	9.14
35	S.F. KOKTULI	Q	0.1	13.10	0.580	6.53	1.000	992.	237.9	0.0743	18.399	4.639		0.2407	9.14
36	S.F. KOKTULI	E	0.0									4.665			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.43	0.856	3.59	1.000	979.	134.6	0.2131	18.417	0.622	9.49	0.2103	10.49
2	S.F. KOKTULI	C	53.3	7.48	0.854	3.59	1.000	979.	134.6	0.2001	18.413	0.907		0.2103	10.49
3	S.F. KOKTULI	C	51.2	7.51	0.853	3.59	1.000	980.	134.6	0.1821	18.410	1.347		0.2103	10.49
4	S.F. KOKTULI	Q	51.1	7.51	0.853	3.59	1.000	980.	134.6	0.1821	18.410	1.374		-0.1659	10.49
5	S.F. KOKTULI	C	49.4	7.54	0.851	3.59	1.000	981.	134.6	0.1584	18.409	1.095		-0.1659	10.49
6	S.F. KOKTULI	C	47.6	7.58	0.849	3.59	1.000	981.	134.6	0.1523	18.408	0.788		-0.1659	10.49
7	S.F. KOKTULI	C	45.7	7.61	0.848	3.59	1.000	982.	134.6	0.1696	18.408	0.480		-0.1659	10.49
8	S.F. KOKTULI	C	44.8	7.62	0.847	3.59	1.000	982.	134.6	0.1525	18.409	0.331		-0.1659	10.49
9	S.F. KOKTULI	C	43.9	7.64	0.846	3.59	1.000	982.	134.6	0.1896	18.407	0.187		-0.1659	10.49
10	S.F. KOKTULI	Q	43.6	7.64	0.846	3.59	1.000	982.	134.6	0.1896	18.407	0.136		0.0233	10.49
11	S.F. KOKTULI	C	41.1	7.65	0.846	3.59	1.000	983.	134.6	0.1523	18.405	0.196		0.0233	10.49
12	S.F. KOKTULI	C	40.0	7.65	0.845	3.59	1.000	983.	134.6	0.1943	18.406	0.222		0.0233	10.49
13	S.F. KOKTULI	C	38.4	7.68	0.844	3.59	1.000	983.	134.6	0.1524	18.407	0.259		0.0233	10.49
14	S.F. KOKTULI	Q	35.8	7.68	0.844	3.59	1.000	983.	134.6	0.1524	18.407	0.318		0.1054	3.96
15	S.F. KOKTULI	B	34.3									0.480			
16	TRIBUTARY 119	H	36.1	7.68	0.844	3.59	1.000	983.	134.6	0.1706	18.408	0.643	6.82	0.0302	3.96
17	TRIBUTARY 119	T	34.3									0.697			
18	S.F. KOKTULI	J	34.3	7.71	0.843	3.59	1.000	984.	134.6	0.1252	18.407	1.177		0.5058	3.96
19	S.F. KOKTULI	C	34.1	7.74	0.841	3.59	1.000	984.	134.6	0.0857	18.405	1.247		0.5058	3.96
20	S.F. KOKTULI	Q	34.0	7.74	0.841	3.59	1.000	984.	134.6	0.0857	18.405	1.307		0.1242	3.96
21	S.F. KOKTULI	Q	29.3	7.74	0.841	3.59	1.000	984.	134.6	0.0857	18.405	1.898		0.2530	9.08
22	S.F. KOKTULI	C	27.6	7.81	0.838	3.59	1.000	985.	134.6	0.0847	18.402	2.323		0.2530	9.08
23	S.F. KOKTULI	C	25.1	7.85	0.836	3.59	1.000	986.	134.6	0.0687	18.399	2.950		0.2530	9.08
24	S.F. KOKTULI	Q	24.9	7.85	0.836	3.59	1.000	986.	134.6	0.0687	18.399	3.002		-0.0475	9.08
25	S.F. KOKTULI	C	21.9	7.87	0.835	3.59	1.000	987.	134.6	0.0849	18.400	2.857		-0.0475	9.08
26	S.F. KOKTULI	C	20.1	7.92	0.832	3.59	1.000	987.	134.5	0.0665	18.403	2.773		-0.0475	9.08
27	S.F. KOKTULI	C	15.4	7.98	0.830	3.59	1.000	988.	134.5	0.0643	18.404	2.549		-0.0475	9.08
28	S.F. KOKTULI	Q	13.9	7.98	0.830	3.59	1.000	988.	134.5	0.0643	18.404	2.480		0.1385	9.08
29	S.F. KOKTULI	C	12.5	8.01	0.828	3.59	1.000	989.	134.5	0.0615	18.403	2.674		0.1385	9.08
30	S.F. KOKTULI	C	9.2	8.04	0.827	3.59	1.000	990.	134.5	0.0749	18.403	3.128		0.1385	9.08
31	S.F. KOKTULI	C	7.9	8.07	0.825	3.59	1.000	990.	134.5	0.0607	18.405	3.313		0.1385	9.08
32	S.F. KOKTULI	C	5.1	8.12	0.823	3.59	1.000	991.	134.5	0.0646	18.407	3.700		0.1385	9.08
33	S.F. KOKTULI	C	5.1	8.16	0.821	3.59	1.000	992.	134.5	0.0743	18.411	3.700		0.1385	9.08
34	S.F. KOKTULI	Q	3.0	8.16	0.821	3.59	1.000	992.	134.5	0.0743	18.411	3.995		0.2978	9.08
35	S.F. KOKTULI	Q	0.1	8.16	0.821	3.59	1.000	992.	134.5	0.0743	18.411	4.848		0.2500	9.08
36	S.F. KOKTULI	E	0.0									4.875			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.18	0.801	2.23	1.000	979.	157.5	0.2130	18.427	0.650	11.68	0.2181	12.68
2	S.F. KOKTULI	C	53.3	10.23	0.798	2.23	1.000	979.	157.5	0.2001	18.423	0.945		0.2181	12.68
3	S.F. KOKTULI	C	51.2	10.26	0.797	2.23	1.000	980.	157.5	0.1821	18.420	1.402		0.2181	12.68
4	S.F. KOKTULI	Q	51.1	10.26	0.797	2.23	1.000	980.	157.5	0.1821	18.420	1.430		-0.1698	12.68
5	S.F. KOKTULI	C	49.4	10.29	0.796	2.23	1.000	981.	157.5	0.1584	18.418	1.145		-0.1698	12.68
6	S.F. KOKTULI	C	47.6	10.33	0.794	2.23	1.000	981.	157.5	0.1523	18.418	0.830		-0.1698	12.68
7	S.F. KOKTULI	C	45.7	10.36	0.792	2.23	1.000	982.	157.5	0.1696	18.418	0.515		-0.1698	12.68
8	S.F. KOKTULI	C	44.8	10.37	0.792	2.23	1.000	982.	157.5	0.1525	18.419	0.362		-0.1698	12.68
9	S.F. KOKTULI	C	43.9	10.39	0.791	2.23	1.000	982.	157.5	0.1896	18.417	0.215		-0.1698	12.68
10	S.F. KOKTULI	Q	43.6	10.39	0.791	2.23	1.000	982.	157.5	0.1896	18.417	0.163		0.0261	12.68
11	S.F. KOKTULI	C	41.1	10.40	0.791	2.23	1.000	983.	157.5	0.1523	18.414	0.230		0.0261	12.68
12	S.F. KOKTULI	C	40.0	10.40	0.790	2.23	1.000	983.	157.5	0.1942	18.416	0.259		0.0261	12.68
13	S.F. KOKTULI	C	38.4	10.43	0.789	2.23	1.000	983.	157.5	0.1524	18.417	0.301		0.0261	12.68
14	S.F. KOKTULI	Q	35.8	10.43	0.789	2.23	1.000	983.	157.5	0.1524	18.417	0.367		0.1055	4.20
15	S.F. KOKTULI	B	34.3									0.529			
16	TRIBUTARY 119	H	36.1	10.43	0.789	2.23	1.000	983.	157.5	0.1705	18.418	0.553	7.45	0.0302	4.20
17	TRIBUTARY 119	T	34.3									0.607			
18	S.F. KOKTULI	J	34.3	10.46	0.788	2.23	1.000	984.	157.5	0.1252	18.417	1.137		0.5097	4.20
19	S.F. KOKTULI	C	34.1	10.49	0.786	2.23	1.000	984.	157.4	0.0858	18.415	1.207		0.5097	4.20
20	S.F. KOKTULI	Q	34.0	10.49	0.786	2.23	1.000	984.	157.4	0.0858	18.415	1.268		0.1286	4.20
21	S.F. KOKTULI	Q	29.3	10.49	0.786	2.23	1.000	984.	157.4	0.0858	18.415	1.880		0.2441	9.85
22	S.F. KOKTULI	C	27.6	10.56	0.783	2.23	1.000	985.	157.4	0.0848	18.411	2.290		0.2441	9.85
23	S.F. KOKTULI	C	25.1	10.60	0.782	2.23	1.000	986.	157.4	0.0687	18.409	2.895		0.2441	9.85
24	S.F. KOKTULI	Q	24.9	10.60	0.782	2.23	1.000	986.	157.4	0.0687	18.409	2.945		-0.0468	9.85
25	S.F. KOKTULI	C	21.9	10.62	0.780	2.23	1.000	987.	157.4	0.0849	18.410	2.802		-0.0468	9.85
26	S.F. KOKTULI	C	20.1	10.67	0.778	2.23	1.000	987.	157.4	0.0665	18.413	2.720		-0.0468	9.85
27	S.F. KOKTULI	C	15.4	10.73	0.776	2.23	1.000	988.	157.4	0.0643	18.414	2.499		-0.0468	9.85
28	S.F. KOKTULI	Q	13.9	10.73	0.776	2.23	1.000	988.	157.4	0.0643	18.414	2.431		0.1470	9.85
29	S.F. KOKTULI	C	12.5	10.76	0.774	2.23	1.000	989.	157.4	0.0615	18.412	2.637		0.1470	9.85
30	S.F. KOKTULI	C	9.2	10.79	0.773	2.23	1.000	990.	157.4	0.0749	18.413	3.119		0.1470	9.85
31	S.F. KOKTULI	C	7.9	10.82	0.771	2.23	1.000	990.	157.4	0.0607	18.415	3.316		0.1470	9.85
32	S.F. KOKTULI	C	5.1	10.87	0.769	2.23	1.000	991.	157.4	0.0646	18.417	3.726		0.1470	9.85
33	S.F. KOKTULI	C	5.1	10.91	0.767	2.23	1.000	992.	157.3	0.0743	18.421	3.726		0.1470	9.85
34	S.F. KOKTULI	Q	3.0	10.91	0.767	2.23	1.000	992.	157.3	0.0743	18.421	4.039		0.3122	9.85
35	S.F. KOKTULI	Q	0.1	10.91	0.767	2.23	1.000	992.	157.3	0.0743	18.421	4.933		0.2500	9.85
36	S.F. KOKTULI	E	0.0									4.960			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	15.02	0.670	5.12	1.000	979.	279.3	0.2129	18.434	0.709	11.55	0.2338	12.55
2	S.F. KOKTULI	C	53.3	15.07	0.668	5.12	1.000	979.	279.3	0.2000	18.430	1.026		0.2338	12.55
3	S.F. KOKTULI	C	51.2	15.10	0.667	5.12	1.000	980.	279.3	0.1820	18.427	1.515		0.2338	12.55
4	S.F. KOKTULI	Q	51.1	15.10	0.667	5.12	1.000	980.	279.3	0.1820	18.427	1.545		-0.1877	12.55
5	S.F. KOKTULI	C	49.4	15.13	0.666	5.12	1.000	981.	279.3	0.1584	18.426	1.230		-0.1877	12.55
6	S.F. KOKTULI	C	47.6	15.17	0.665	5.12	1.000	981.	279.2	0.1523	18.425	0.882		-0.1877	12.55
7	S.F. KOKTULI	C	45.7	15.20	0.663	5.12	1.000	982.	279.2	0.1696	18.425	0.534		-0.1877	12.55
8	S.F. KOKTULI	C	44.8	15.21	0.663	5.12	1.000	982.	279.2	0.1525	18.426	0.365		-0.1877	12.55
9	S.F. KOKTULI	C	43.9	15.23	0.662	5.12	1.000	982.	279.2	0.1895	18.424	0.203		-0.1877	12.55
10	S.F. KOKTULI	Q	43.6	15.23	0.662	5.12	1.000	982.	279.2	0.1895	18.424	0.145		0.0242	12.55
11	S.F. KOKTULI	C	41.1	15.24	0.662	5.12	1.000	983.	279.2	0.1523	18.422	0.207		0.0242	12.55
12	S.F. KOKTULI	C	40.0	15.24	0.662	5.12	1.000	983.	279.2	0.1942	18.423	0.234		0.0242	12.55
13	S.F. KOKTULI	C	38.4	15.27	0.661	5.12	1.000	983.	279.2	0.1524	18.424	0.273		0.0242	12.55
14	S.F. KOKTULI	Q	35.8	15.27	0.661	5.12	1.000	983.	279.2	0.1524	18.424	0.335		0.1057	4.05
15	S.F. KOKTULI	B	34.3									0.497			
16	TRIBUTARY 119	H	36.1	15.27	0.661	5.12	1.000	983.	279.2	0.1705	18.425	0.538	9.39	0.0302	4.05
17	TRIBUTARY 119	T	34.3									0.592			
18	S.F. KOKTULI	J	34.3	15.30	0.660	5.12	1.000	984.	279.2	0.1251	18.424	1.089		0.5097	4.05
19	S.F. KOKTULI	C	34.1	15.33	0.658	5.12	1.000	984.	279.2	0.0858	18.422	1.159		0.5097	4.05
20	S.F. KOKTULI	Q	34.0	15.33	0.658	5.12	1.000	984.	279.2	0.0858	18.422	1.220		0.1196	4.05
21	S.F. KOKTULI	Q	29.3	15.33	0.658	5.12	1.000	984.	279.2	0.0858	18.422	1.789		0.2260	10.19
22	S.F. KOKTULI	C	27.6	15.40	0.656	5.12	1.000	985.	279.2	0.0848	18.419	2.168		0.2260	10.19
23	S.F. KOKTULI	C	25.1	15.44	0.654	5.12	1.000	986.	279.2	0.0687	18.416	2.729		0.2260	10.19
24	S.F. KOKTULI	Q	24.9	15.44	0.654	5.12	1.000	986.	279.2	0.0687	18.416	2.775		-0.0445	10.19
25	S.F. KOKTULI	C	21.9	15.46	0.653	5.12	1.000	987.	279.1	0.0849	18.417	2.639		-0.0445	10.19
26	S.F. KOKTULI	C	20.1	15.51	0.651	5.12	1.000	987.	279.1	0.0665	18.420	2.561		-0.0445	10.19
27	S.F. KOKTULI	C	15.4	15.57	0.649	5.12	1.000	988.	279.1	0.0643	18.421	2.351		-0.0445	10.19
28	S.F. KOKTULI	Q	13.9	15.57	0.649	5.12	1.000	988.	279.1	0.0643	18.421	2.286		0.1443	10.19
29	S.F. KOKTULI	C	12.5	15.60	0.648	5.12	1.000	989.	279.1	0.0615	18.420	2.488		0.1443	10.19
30	S.F. KOKTULI	C	9.2	15.63	0.647	5.12	1.000	990.	279.1	0.0749	18.420	2.961		0.1443	10.19
31	S.F. KOKTULI	C	7.9	15.66	0.646	5.12	1.000	990.	279.0	0.0607	18.422	3.154		0.1443	10.19
32	S.F. KOKTULI	C	5.1	15.71	0.644	5.12	1.000	991.	279.0	0.0646	18.424	3.556		0.1443	10.19
33	S.F. KOKTULI	C	5.1	15.75	0.642	5.12	1.000	992.	279.0	0.0743	18.428	3.556		0.1443	10.19
34	S.F. KOKTULI	Q	3.0	15.75	0.642	5.12	1.000	992.	279.0	0.0743	18.428	3.864		0.2556	10.19
35	S.F. KOKTULI	Q	0.1	15.75	0.642	5.12	1.000	992.	279.0	0.0743	18.428	4.596		0.2315	10.19
36	S.F. KOKTULI	E	0.0									4.621			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	17.24	0.521	7.01	1.000	979.	272.9	0.2129	18.438	0.634	9.47	0.2134	10.47
2	S.F. KOKTULI	C	53.3	17.29	0.520	7.01	1.000	979.	272.9	0.2000	18.435	0.923		0.2134	10.47
3	S.F. KOKTULI	C	51.2	17.32	0.519	7.01	1.000	980.	272.9	0.1820	18.432	1.369		0.2134	10.47
4	S.F. KOKTULI	Q	51.1	17.32	0.519	7.01	1.000	980.	272.9	0.1820	18.432	1.397		-0.1692	10.47
5	S.F. KOKTULI	C	49.4	17.35	0.518	7.01	1.000	981.	272.9	0.1584	18.430	1.113		-0.1692	10.47
6	S.F. KOKTULI	C	47.6	17.39	0.517	7.01	1.000	981.	272.8	0.1523	18.429	0.799		-0.1692	10.47
7	S.F. KOKTULI	C	45.7	17.42	0.516	7.01	1.000	982.	272.8	0.1696	18.429	0.485		-0.1692	10.47
8	S.F. KOKTULI	C	44.8	17.43	0.515	7.01	1.000	982.	272.8	0.1525	18.430	0.333		-0.1692	10.47
9	S.F. KOKTULI	C	43.9	17.45	0.515	7.01	1.000	982.	272.8	0.1895	18.428	0.187		-0.1692	10.47
10	S.F. KOKTULI	Q	43.6	17.45	0.515	7.01	1.000	982.	272.8	0.1895	18.428	0.135		0.0231	10.47
11	S.F. KOKTULI	C	41.1	17.46	0.515	7.01	1.000	983.	272.8	0.1523	18.426	0.194		0.0231	10.47
12	S.F. KOKTULI	C	40.0	17.46	0.515	7.01	1.000	983.	272.8	0.1942	18.427	0.220		0.0231	10.47
13	S.F. KOKTULI	C	38.4	17.49	0.514	7.01	1.000	983.	272.8	0.1524	18.428	0.257		0.0231	10.47
14	S.F. KOKTULI	Q	35.8	17.49	0.514	7.01	1.000	983.	272.8	0.1524	18.428	0.316		0.1058	3.94
15	S.F. KOKTULI	B	34.3									0.478			
16	TRIBUTARY 119	H	36.1	17.49	0.514	7.01	1.000	983.	272.8	0.1705	18.429	0.518	10.70	0.0302	3.94
17	TRIBUTARY 119	T	34.3									0.572			
18	S.F. KOKTULI	J	34.3	17.52	0.513	7.01	1.000	984.	272.8	0.1251	18.428	1.050		0.5058	3.94
19	S.F. KOKTULI	C	34.1	17.55	0.512	7.01	1.000	984.	272.8	0.0858	18.426	1.120		0.5058	3.94
20	S.F. KOKTULI	Q	34.0	17.55	0.512	7.01	1.000	984.	272.8	0.0858	18.426	1.180		0.1173	3.94
21	S.F. KOKTULI	Q	29.3	17.55	0.512	7.01	1.000	984.	272.8	0.0858	18.426	1.738		0.2246	10.35
22	S.F. KOKTULI	C	27.6	17.62	0.510	7.01	1.000	985.	272.8	0.0848	18.423	2.115		0.2246	10.35
23	S.F. KOKTULI	C	25.1	17.66	0.509	7.01	1.000	986.	272.8	0.0687	18.421	2.672		0.2246	10.35
24	S.F. KOKTULI	Q	24.9	17.66	0.509	7.01	1.000	986.	272.8	0.0687	18.421	2.718		-0.0438	10.35
25	S.F. KOKTULI	C	21.9	17.68	0.508	7.01	1.000	987.	272.8	0.0849	18.421	2.585		-0.0438	10.35
26	S.F. KOKTULI	C	20.1	17.73	0.507	7.01	1.000	987.	272.7	0.0665	18.424	2.507		-0.0438	10.35
27	S.F. KOKTULI	C	15.4	17.79	0.505	7.01	1.000	988.	272.7	0.0643	18.425	2.300		-0.0438	10.35
28	S.F. KOKTULI	Q	13.9	17.79	0.505	7.01	1.000	988.	272.7	0.0643	18.425	2.237		0.1437	10.35
29	S.F. KOKTULI	C	12.5	17.82	0.504	7.01	1.000	989.	272.7	0.0615	18.424	2.438		0.1437	10.35
30	S.F. KOKTULI	C	9.2	17.85	0.503	7.01	1.000	990.	272.7	0.0749	18.425	2.909		0.1437	10.35
31	S.F. KOKTULI	C	7.9	17.88	0.502	7.01	1.000	990.	272.7	0.0607	18.426	3.101		0.1437	10.35
32	S.F. KOKTULI	C	5.1	17.93	0.501	7.01	1.000	991.	272.6	0.0646	18.429	3.502		0.1437	10.35
33	S.F. KOKTULI	C	5.1	17.97	0.499	7.01	1.000	992.	272.6	0.0743	18.433	3.502		0.1437	10.35
34	S.F. KOKTULI	Q	3.0	17.97	0.499	7.01	1.000	992.	272.6	0.0743	18.433	3.808		0.2374	10.35
35	S.F. KOKTULI	Q	0.1	17.97	0.499	7.01	1.000	992.	272.6	0.0743	18.433	4.488		0.2315	10.35
36	S.F. KOKTULI	E	0.0									4.513			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	14.38	0.586	7.43	1.000	979.	213.4	0.2129	18.440	0.500	11.84	0.1759	12.84
2	S.F. KOKTULI	C	53.3	14.43	0.585	7.43	1.000	979.	213.4	0.2000	18.436	0.738		0.1759	12.84
3	S.F. KOKTULI	C	51.2	14.46	0.584	7.43	1.000	980.	213.4	0.1820	18.433	1.106		0.1759	12.84
4	S.F. KOKTULI	Q	51.1	14.46	0.584	7.43	1.000	980.	213.4	0.1820	18.433	1.129		-0.1397	12.84
5	S.F. KOKTULI	C	49.4	14.49	0.583	7.43	1.000	981.	213.3	0.1584	18.431	0.894		-0.1397	12.84
6	S.F. KOKTULI	C	47.6	14.53	0.581	7.43	1.000	981.	213.3	0.1523	18.431	0.635		-0.1397	12.84
7	S.F. KOKTULI	C	45.7	14.56	0.580	7.43	1.000	982.	213.3	0.1696	18.431	0.376		-0.1397	12.84
8	S.F. KOKTULI	C	44.8	14.57	0.580	7.43	1.000	982.	213.3	0.1525	18.431	0.250		-0.1397	12.84
9	S.F. KOKTULI	C	43.9	14.59	0.579	7.43	1.000	982.	213.3	0.1895	18.429	0.130		-0.1397	12.84
10	S.F. KOKTULI	Q	43.6	14.59	0.579	7.43	1.000	982.	213.3	0.1895	18.429	0.087		0.0174	12.84
11	S.F. KOKTULI	C	41.1	14.60	0.579	7.43	1.000	983.	213.3	0.1523	18.427	0.131		0.0174	12.84
12	S.F. KOKTULI	C	40.0	14.60	0.579	7.43	1.000	983.	213.3	0.1941	18.428	0.150		0.0174	12.84
13	S.F. KOKTULI	C	38.4	14.63	0.578	7.43	1.000	983.	213.3	0.1524	18.430	0.178		0.0174	12.84
14	S.F. KOKTULI	Q	35.8	14.63	0.578	7.43	1.000	983.	213.3	0.1524	18.430	0.223		0.1039	4.27
15	S.F. KOKTULI	B	34.3									0.382			
16	TRIBUTARY 119	H	36.1	14.63	0.578	7.43	1.000	983.	213.3	0.1705	18.431	0.468	9.93	0.0297	4.27
17	TRIBUTARY 119	T	34.3									0.521			
18	S.F. KOKTULI	J	34.3	14.66	0.577	7.43	1.000	984.	213.3	0.1251	18.429	0.903		0.5019	4.27
19	S.F. KOKTULI	C	34.1	14.69	0.576	7.43	1.000	984.	213.3	0.0858	18.428	0.972		0.5019	4.27
20	S.F. KOKTULI	Q	34.0	14.69	0.576	7.43	1.000	984.	213.3	0.0858	18.428	1.032		0.1211	4.27
21	S.F. KOKTULI	Q	29.3	14.69	0.576	7.43	1.000	984.	213.3	0.0858	18.428	1.608		0.2157	10.31
22	S.F. KOKTULI	C	27.6	14.76	0.574	7.43	1.000	985.	213.3	0.0848	18.424	1.970		0.2157	10.31
23	S.F. KOKTULI	C	25.1	14.80	0.572	7.43	1.000	986.	213.3	0.0687	18.422	2.505		0.2157	10.31
24	S.F. KOKTULI	Q	24.9	14.80	0.572	7.43	1.000	986.	213.3	0.0687	18.422	2.549		-0.0416	10.31
25	S.F. KOKTULI	C	21.9	14.82	0.571	7.43	1.000	987.	213.3	0.0849	18.423	2.422		-0.0416	10.31
26	S.F. KOKTULI	C	20.1	14.87	0.570	7.43	1.000	987.	213.2	0.0665	18.426	2.349		-0.0416	10.31
27	S.F. KOKTULI	C	15.4	14.93	0.568	7.43	1.000	988.	213.2	0.0643	18.426	2.152		-0.0416	10.31
28	S.F. KOKTULI	Q	13.9	14.93	0.568	7.43	1.000	988.	213.2	0.0643	18.426	2.092		0.1473	10.31
29	S.F. KOKTULI	C	12.5	14.96	0.567	7.43	1.000	989.	213.2	0.0615	18.425	2.298		0.1473	10.31
30	S.F. KOKTULI	C	9.2	14.99	0.566	7.43	1.000	990.	213.2	0.0749	18.426	2.781		0.1473	10.31
31	S.F. KOKTULI	C	7.9	15.02	0.565	7.43	1.000	990.	213.2	0.0607	18.428	2.978		0.1473	10.31
32	S.F. KOKTULI	C	5.1	15.07	0.563	7.43	1.000	991.	213.2	0.0646	18.430	3.389		0.1473	10.31
33	S.F. KOKTULI	C	5.1	15.11	0.562	7.43	1.000	992.	213.2	0.0743	18.434	3.389		0.1473	10.31
34	S.F. KOKTULI	Q	3.0	15.11	0.562	7.43	1.000	992.	213.2	0.0743	18.434	3.703		0.2057	10.31
35	S.F. KOKTULI	Q	0.1	15.11	0.562	7.43	1.000	992.	213.2	0.0743	18.434	4.292		0.2222	10.31
36	S.F. KOKTULI	E	0.0									4.316			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.47	0.922	2.63	1.000	979.	56.8	0.2129	18.438	0.460	9.31	0.1644	10.31
2	S.F. KOKTULI	C	53.3	7.52	0.919	2.63	1.000	979.	56.8	0.2000	18.435	0.683		0.1644	10.31
3	S.F. KOKTULI	C	51.2	7.55	0.918	2.63	1.000	980.	56.8	0.1820	18.432	1.027		0.1644	10.31
4	S.F. KOKTULI	Q	51.1	7.55	0.918	2.63	1.000	980.	56.8	0.1820	18.432	1.048		-0.1352	10.31
5	S.F. KOKTULI	C	49.4	7.58	0.916	2.63	1.000	981.	56.8	0.1584	18.430	0.821		-0.1352	10.31
6	S.F. KOKTULI	C	47.6	7.62	0.914	2.63	1.000	981.	56.8	0.1523	18.429	0.570		-0.1352	10.31
7	S.F. KOKTULI	C	45.7	7.65	0.912	2.63	1.000	982.	56.8	0.1696	18.429	0.319		-0.1352	10.31
8	S.F. KOKTULI	C	44.8	7.66	0.911	2.63	1.000	982.	56.8	0.1525	18.430	0.198		-0.1352	10.31
9	S.F. KOKTULI	C	43.9	7.68	0.911	2.63	1.000	982.	56.8	0.1895	18.428	0.081		-0.1352	10.31
10	S.F. KOKTULI	Q	43.6	7.68	0.911	2.63	1.000	982.	56.8	0.1895	18.428	0.039		0.0102	10.31
11	S.F. KOKTULI	C	41.1	7.69	0.910	2.63	1.000	983.	56.8	0.1523	18.426	0.065		0.0102	10.31
12	S.F. KOKTULI	C	40.0	7.69	0.910	2.63	1.000	983.	56.8	0.1942	18.427	0.077		0.0102	10.31
13	S.F. KOKTULI	C	38.4	7.72	0.908	2.63	1.000	983.	56.8	0.1524	18.428	0.093		0.0102	10.31
14	S.F. KOKTULI	Q	35.8	7.72	0.908	2.63	1.000	983.	56.8	0.1524	18.428	0.119		0.1010	5.01
15	S.F. KOKTULI	B	34.3									0.274			
16	TRIBUTARY 119	H	36.1	7.72	0.908	2.63	1.000	983.	56.8	0.1705	18.429	0.477	7.45	0.0291	5.01
17	TRIBUTARY 119	T	34.3									0.529			
18	S.F. KOKTULI	J	34.3	7.75	0.907	2.63	1.000	984.	56.8	0.1251	18.428	0.803		0.4864	5.01
19	S.F. KOKTULI	C	34.1	7.78	0.905	2.63	1.000	984.	56.8	0.0858	18.426	0.870		0.4864	5.01
20	S.F. KOKTULI	Q	34.0	7.78	0.905	2.63	1.000	984.	56.8	0.0858	18.426	0.928		0.1219	5.01
21	S.F. KOKTULI	Q	29.3	7.78	0.905	2.63	1.000	984.	56.8	0.0858	18.426	1.508		0.2255	10.46
22	S.F. KOKTULI	C	27.6	7.85	0.902	2.63	1.000	985.	56.8	0.0848	18.423	1.886		0.2255	10.46
23	S.F. KOKTULI	C	25.1	7.89	0.900	2.63	1.000	986.	56.8	0.0687	18.421	2.446		0.2255	10.46
24	S.F. KOKTULI	Q	24.9	7.89	0.900	2.63	1.000	986.	56.8	0.0687	18.421	2.492		-0.0408	10.46
25	S.F. KOKTULI	C	21.9	7.91	0.898	2.63	1.000	987.	56.7	0.0849	18.421	2.368		-0.0408	10.46
26	S.F. KOKTULI	C	20.1	7.96	0.896	2.63	1.000	987.	56.7	0.0665	18.424	2.296		-0.0408	10.46
27	S.F. KOKTULI	C	15.4	8.02	0.893	2.63	1.000	988.	56.7	0.0643	18.425	2.103		-0.0408	10.46
28	S.F. KOKTULI	Q	13.9	8.02	0.893	2.63	1.000	988.	56.7	0.0643	18.425	2.044		0.1511	10.46
29	S.F. KOKTULI	C	12.5	8.05	0.891	2.63	1.000	989.	56.7	0.0615	18.424	2.255		0.1511	10.46
30	S.F. KOKTULI	C	9.2	8.08	0.890	2.63	1.000	990.	56.7	0.0749	18.425	2.750		0.1511	10.46
31	S.F. KOKTULI	C	7.9	8.11	0.888	2.63	1.000	990.	56.7	0.0607	18.426	2.953		0.1511	10.46
32	S.F. KOKTULI	C	5.1	8.16	0.886	2.63	1.000	991.	56.7	0.0646	18.429	3.374		0.1511	10.46
33	S.F. KOKTULI	C	5.1	8.20	0.883	2.63	1.000	992.	56.7	0.0743	18.433	3.374		0.1511	10.46
34	S.F. KOKTULI	Q	3.0	8.20	0.883	2.63	1.000	992.	56.7	0.0743	18.433	3.696		0.2036	10.46
35	S.F. KOKTULI	Q	0.1	8.20	0.883	2.63	1.000	992.	56.7	0.0743	18.433	4.279		0.2222	10.46
36	S.F. KOKTULI	E	0.0									4.303			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.04	0.922	8.88	1.000	979.	36.6	0.2129	18.434	0.740	7.29	0.2422	8.29
2	S.F. KOKTULI	C	53.3	7.09	0.919	8.88	1.000	979.	36.6	0.2000	18.430	1.068		0.2422	8.29
3	S.F. KOKTULI	C	51.2	7.12	0.918	8.88	1.000	980.	36.6	0.1820	18.427	1.575		0.2422	8.29
4	S.F. KOKTULI	Q	51.1	7.12	0.918	8.88	1.000	980.	36.6	0.1820	18.427	1.606		-0.1813	8.29
5	S.F. KOKTULI	C	49.4	7.15	0.916	8.88	1.000	981.	36.6	0.1584	18.426	1.301		-0.1813	8.29
6	S.F. KOKTULI	C	47.6	7.19	0.914	8.88	1.000	981.	36.6	0.1523	18.425	0.965		-0.1813	8.29
7	S.F. KOKTULI	C	45.7	7.22	0.912	8.88	1.000	982.	36.6	0.1696	18.425	0.629		-0.1813	8.29
8	S.F. KOKTULI	C	44.8	7.23	0.911	8.88	1.000	982.	36.6	0.1525	18.426	0.466		-0.1813	8.29
9	S.F. KOKTULI	C	43.9	7.25	0.911	8.88	1.000	982.	36.6	0.1895	18.424	0.309		-0.1813	8.29
10	S.F. KOKTULI	Q	43.6	7.25	0.911	8.88	1.000	982.	36.6	0.1895	18.424	0.254		0.0341	8.29
11	S.F. KOKTULI	C	41.1	7.26	0.910	8.88	1.000	983.	36.6	0.1523	18.422	0.341		0.0341	8.29
12	S.F. KOKTULI	C	40.0	7.26	0.910	8.88	1.000	983.	36.6	0.1942	18.423	0.379		0.0341	8.29
13	S.F. KOKTULI	C	38.4	7.29	0.908	8.88	1.000	983.	36.6	0.1524	18.424	0.433		0.0341	8.29
14	S.F. KOKTULI	Q	35.8	7.29	0.908	8.88	1.000	983.	36.6	0.1524	18.424	0.520		0.0695	5.17
15	S.F. KOKTULI	B	34.3									0.627			
16	TRIBUTARY 119	H	36.1	7.29	0.908	8.88	1.000	983.	36.6	0.1705	18.425	1.402	5.84	0.0202	5.17
17	TRIBUTARY 119	T	34.3									1.438			
18	S.F. KOKTULI	J	34.3	7.32	0.907	8.88	1.000	984.	36.6	0.1251	18.424	2.064		0.3346	5.17
19	S.F. KOKTULI	C	34.1	7.35	0.905	8.88	1.000	984.	36.6	0.0858	18.422	2.110		0.3346	5.17
20	S.F. KOKTULI	Q	34.0	7.35	0.905	8.88	1.000	984.	36.6	0.0858	18.422	2.150		0.0851	5.17
21	S.F. KOKTULI	Q	29.3	7.35	0.905	8.88	1.000	984.	36.6	0.0858	18.422	2.555		0.3880	10.39
22	S.F. KOKTULI	C	27.6	7.42	0.902	8.88	1.000	985.	36.6	0.0848	18.419	3.206		0.3880	10.39
23	S.F. KOKTULI	C	25.1	7.46	0.900	8.88	1.000	986.	36.6	0.0687	18.416	4.169		0.3880	10.39
24	S.F. KOKTULI	Q	24.9	7.46	0.900	8.88	1.000	986.	36.6	0.0687	18.416	4.248		-0.0630	10.39
25	S.F. KOKTULI	C	21.9	7.48	0.898	8.88	1.000	987.	36.6	0.0849	18.417	4.056		-0.0630	10.39
26	S.F. KOKTULI	C	20.1	7.53	0.896	8.88	1.000	987.	36.6	0.0665	18.420	3.945		-0.0630	10.39
27	S.F. KOKTULI	C	15.4	7.59	0.893	8.88	1.000	988.	36.6	0.0643	18.421	3.647		-0.0630	10.39
28	S.F. KOKTULI	Q	13.9	7.59	0.893	8.88	1.000	988.	36.6	0.0643	18.421	3.556		0.0797	10.39
29	S.F. KOKTULI	C	12.5	7.62	0.891	8.88	1.000	989.	36.6	0.0615	18.420	3.668		0.0797	10.39
30	S.F. KOKTULI	C	9.2	7.65	0.890	8.88	1.000	990.	36.6	0.0749	18.420	3.929		0.0797	10.39
31	S.F. KOKTULI	C	7.9	7.68	0.888	8.88	1.000	990.	36.6	0.0607	18.422	4.036		0.0797	10.39
32	S.F. KOKTULI	C	5.1	7.73	0.886	8.88	1.000	991.	36.6	0.0646	18.424	4.258		0.0797	10.39
33	S.F. KOKTULI	C	5.1	7.77	0.883	8.88	1.000	992.	36.6	0.0743	18.428	4.258		0.0797	10.39
34	S.F. KOKTULI	Q	3.0	7.77	0.883	8.88	1.000	992.	36.6	0.0743	18.428	4.428		0.4504	10.39
35	S.F. KOKTULI	Q	0.1	7.77	0.883	8.88	1.000	992.	36.6	0.0743	18.428	5.718		0.2870	10.39
36	S.F. KOKTULI	E	0.0									5.749			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.42	0.838	6.97	1.000	979.	105.3	0.2130	18.427	1.373	8.37	0.3993	9.37
2	S.F. KOKTULI	C	53.3	7.47	0.836	6.97	1.000	979.	105.3	0.2001	18.423	1.914		0.3993	9.37
3	S.F. KOKTULI	C	51.2	7.50	0.834	6.97	1.000	980.	105.3	0.1821	18.420	2.749		0.3993	9.37
4	S.F. KOKTULI	Q	51.1	7.50	0.834	6.97	1.000	980.	105.3	0.1821	18.420	2.801		-0.2319	9.37
5	S.F. KOKTULI	C	49.4	7.53	0.833	6.97	1.000	981.	105.3	0.1584	18.418	2.411		-0.2319	9.37
6	S.F. KOKTULI	C	47.6	7.57	0.831	6.97	1.000	981.	105.3	0.1523	18.418	1.982		-0.2319	9.37
7	S.F. KOKTULI	C	45.7	7.60	0.829	6.97	1.000	982.	105.3	0.1696	18.418	1.552		-0.2319	9.37
8	S.F. KOKTULI	C	44.8	7.61	0.829	6.97	1.000	982.	105.3	0.1525	18.419	1.343		-0.2319	9.37
9	S.F. KOKTULI	C	43.9	7.63	0.828	6.97	1.000	982.	105.3	0.1896	18.417	1.143		-0.2319	9.37
10	S.F. KOKTULI	Q	43.6	7.63	0.828	6.97	1.000	982.	105.3	0.1896	18.417	1.071		0.0705	9.37
11	S.F. KOKTULI	C	41.1	7.64	0.827	6.97	1.000	983.	105.3	0.1523	18.414	1.252		0.0705	9.37
12	S.F. KOKTULI	C	40.0	7.64	0.827	6.97	1.000	983.	105.3	0.1942	18.416	1.330		0.0705	9.37
13	S.F. KOKTULI	C	38.4	7.67	0.826	6.97	1.000	983.	105.3	0.1524	18.417	1.443		0.0705	9.37
14	S.F. KOKTULI	Q	35.8	7.67	0.826	6.97	1.000	983.	105.3	0.1524	18.417	1.623		0.0449	5.03
15	S.F. KOKTULI	B	34.3									1.692			
16	TRIBUTARY 119	H	36.1	7.67	0.826	6.97	1.000	983.	105.3	0.1705	18.418	1.338	5.64	0.0129	5.03
17	TRIBUTARY 119	T	34.3									1.361			
18	S.F. KOKTULI	J	34.3	7.70	0.825	6.97	1.000	984.	105.3	0.1252	18.417	3.053		0.2179	5.03
19	S.F. KOKTULI	C	34.1	7.73	0.823	6.97	1.000	984.	105.3	0.0858	18.415	3.083		0.2179	5.03
20	S.F. KOKTULI	Q	34.0	7.73	0.823	6.97	1.000	984.	105.3	0.0858	18.415	3.109		0.1931	5.03
21	S.F. KOKTULI	Q	29.3	7.73	0.823	6.97	1.000	984.	105.3	0.0858	18.415	4.028		0.5175	9.38
22	S.F. KOKTULI	C	27.6	7.80	0.820	6.97	1.000	985.	105.3	0.0848	18.411	4.896		0.5175	9.38
23	S.F. KOKTULI	C	25.1	7.84	0.818	6.97	1.000	986.	105.3	0.0687	18.409	6.180		0.5175	9.38
24	S.F. KOKTULI	Q	24.9	7.84	0.818	6.97	1.000	986.	105.3	0.0687	18.409	6.286		-0.0860	9.38
25	S.F. KOKTULI	C	21.9	7.86	0.817	6.97	1.000	987.	105.3	0.0849	18.410	6.024		-0.0860	9.38
26	S.F. KOKTULI	C	20.1	7.91	0.814	6.97	1.000	987.	105.3	0.0665	18.413	5.872		-0.0860	9.38
27	S.F. KOKTULI	C	15.4	7.97	0.812	6.97	1.000	988.	105.2	0.0643	18.414	5.466		-0.0860	9.38
28	S.F. KOKTULI	Q	13.9	7.97	0.812	6.97	1.000	988.	105.2	0.0643	18.414	5.341		0.0441	9.38
29	S.F. KOKTULI	C	12.5	8.00	0.810	6.97	1.000	989.	105.2	0.0615	18.412	5.403		0.0441	9.38
30	S.F. KOKTULI	C	9.2	8.03	0.809	6.97	1.000	990.	105.2	0.0749	18.413	5.547		0.0441	9.38
31	S.F. KOKTULI	C	7.9	8.06	0.807	6.97	1.000	990.	105.2	0.0607	18.415	5.606		0.0441	9.38
32	S.F. KOKTULI	C	5.1	8.11	0.805	6.97	1.000	991.	105.2	0.0646	18.417	5.729		0.0441	9.38
33	S.F. KOKTULI	C	5.1	8.15	0.803	6.97	1.000	992.	105.2	0.0743	18.421	5.729		0.0441	9.38
34	S.F. KOKTULI	Q	3.0	8.15	0.803	6.97	1.000	992.	105.2	0.0743	18.421	5.823		1.0625	9.38
35	S.F. KOKTULI	Q	0.1	8.15	0.803	6.97	1.000	992.	105.2	0.0743	18.421	8.866		0.4630	9.38
36	S.F. KOKTULI	E	0.0									8.916			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.83	0.801	6.74	1.000	979.	123.6	0.2131	18.417	1.016	8.66	0.3135	9.66
2	S.F. KOKTULI	C	53.3	7.88	0.798	6.74	1.000	979.	123.6	0.2001	18.413	1.440		0.3135	9.66
3	S.F. KOKTULI	C	51.2	7.91	0.797	6.74	1.000	980.	123.6	0.1821	18.410	2.097		0.3135	9.66
4	S.F. KOKTULI	Q	51.1	7.91	0.797	6.74	1.000	980.	123.6	0.1821	18.410	2.137		-0.1966	9.66
5	S.F. KOKTULI	C	49.4	7.94	0.796	6.74	1.000	981.	123.6	0.1584	18.409	1.807		-0.1966	9.66
6	S.F. KOKTULI	C	47.6	7.98	0.794	6.74	1.000	981.	123.6	0.1523	18.408	1.442		-0.1966	9.66
7	S.F. KOKTULI	C	45.7	8.01	0.792	6.74	1.000	982.	123.6	0.1696	18.408	1.078		-0.1966	9.66
8	S.F. KOKTULI	C	44.8	8.02	0.792	6.74	1.000	982.	123.6	0.1525	18.409	0.901		-0.1966	9.66
9	S.F. KOKTULI	C	43.9	8.04	0.791	6.74	1.000	982.	123.6	0.1896	18.407	0.731		-0.1966	9.66
10	S.F. KOKTULI	Q	43.6	8.04	0.791	6.74	1.000	982.	123.6	0.1896	18.407	0.671		0.0576	9.66
11	S.F. KOKTULI	C	41.1	8.05	0.791	6.74	1.000	983.	123.6	0.1523	18.405	0.818		0.0576	9.66
12	S.F. KOKTULI	C	40.0	8.05	0.790	6.74	1.000	983.	123.6	0.1943	18.406	0.882		0.0576	9.66
13	S.F. KOKTULI	C	38.4	8.08	0.789	6.74	1.000	983.	123.6	0.1524	18.407	0.974		0.0576	9.66
14	S.F. KOKTULI	Q	35.8	8.08	0.789	6.74	1.000	983.	123.6	0.1524	18.407	1.121		0.0710	5.10
15	S.F. KOKTULI	B	34.3									1.230			
16	TRIBUTARY 119	H	36.1	8.08	0.789	6.74	1.000	983.	123.6	0.1706	18.408	0.777	6.13	0.0207	5.10
17	TRIBUTARY 119	T	34.3									0.814			
18	S.F. KOKTULI	J	34.3	8.11	0.788	6.74	1.000	984.	123.6	0.1252	18.407	2.043		0.3424	5.10
19	S.F. KOKTULI	C	34.1	8.14	0.786	6.74	1.000	984.	123.6	0.0857	18.405	2.090		0.3424	5.10
20	S.F. KOKTULI	Q	34.0	8.14	0.786	6.74	1.000	984.	123.6	0.0857	18.405	2.131		0.1950	5.10
21	S.F. KOKTULI	Q	29.3	8.14	0.786	6.74	1.000	984.	123.6	0.0857	18.405	3.059		0.3958	9.00
22	S.F. KOKTULI	C	27.6	8.21	0.783	6.74	1.000	985.	123.6	0.0847	18.402	3.723		0.3958	9.00
23	S.F. KOKTULI	C	25.1	8.25	0.782	6.74	1.000	986.	123.6	0.0687	18.399	4.705		0.3958	9.00
24	S.F. KOKTULI	Q	24.9	8.25	0.782	6.74	1.000	986.	123.6	0.0687	18.399	4.786		-0.0693	9.00
25	S.F. KOKTULI	C	21.9	8.27	0.780	6.74	1.000	987.	123.6	0.0849	18.400	4.575		-0.0693	9.00
26	S.F. KOKTULI	C	20.1	8.32	0.778	6.74	1.000	987.	123.6	0.0665	18.403	4.452		-0.0693	9.00
27	S.F. KOKTULI	C	15.4	8.38	0.776	6.74	1.000	988.	123.5	0.0643	18.404	4.125		-0.0693	9.00
28	S.F. KOKTULI	Q	13.9	8.38	0.776	6.74	1.000	988.	123.5	0.0643	18.404	4.024		0.1011	9.00
29	S.F. KOKTULI	C	12.5	8.41	0.774	6.74	1.000	989.	123.5	0.0615	18.403	4.166		0.1011	9.00
30	S.F. KOKTULI	C	9.2	8.44	0.773	6.74	1.000	990.	123.5	0.0749	18.403	4.497		0.1011	9.00
31	S.F. KOKTULI	C	7.9	8.47	0.772	6.74	1.000	990.	123.5	0.0607	18.405	4.632		0.1011	9.00
32	S.F. KOKTULI	C	5.1	8.52	0.769	6.74	1.000	991.	123.5	0.0646	18.407	4.914		0.1011	9.00
33	S.F. KOKTULI	C	5.1	8.56	0.767	6.74	1.000	992.	123.5	0.0743	18.411	4.914		0.1011	9.00
34	S.F. KOKTULI	Q	3.0	8.56	0.767	6.74	1.000	992.	123.5	0.0743	18.411	5.130		0.7360	9.00
35	S.F. KOKTULI	Q	0.1	8.56	0.767	6.74	1.000	992.	123.5	0.0743	18.411	7.238		0.3704	9.00
36	S.F. KOKTULI	E	0.0									7.278			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.23	0.680	3.45	1.000	979.	264.6	0.2132	18.404	0.839	9.96	0.2682	10.96
2	S.F. KOKTULI	C	53.3	10.28	0.678	3.45	1.000	979.	264.6	0.2002	18.401	1.202		0.2682	10.96
3	S.F. KOKTULI	C	51.2	10.31	0.677	3.45	1.000	980.	264.6	0.1822	18.398	1.763		0.2682	10.96
4	S.F. KOKTULI	Q	51.1	10.31	0.677	3.45	1.000	980.	264.6	0.1822	18.398	1.798		-0.1934	10.96
5	S.F. KOKTULI	C	49.4	10.34	0.675	3.45	1.000	981.	264.6	0.1584	18.396	1.473		-0.1934	10.96
6	S.F. KOKTULI	C	47.6	10.38	0.674	3.45	1.000	981.	264.6	0.1523	18.395	1.115		-0.1934	10.96
7	S.F. KOKTULI	C	45.7	10.41	0.673	3.45	1.000	982.	264.6	0.1697	18.396	0.756		-0.1934	10.96
8	S.F. KOKTULI	C	44.8	10.42	0.672	3.45	1.000	982.	264.6	0.1525	18.396	0.582		-0.1934	10.96
9	S.F. KOKTULI	C	43.9	10.44	0.671	3.45	1.000	982.	264.6	0.1897	18.394	0.415		-0.1934	10.96
10	S.F. KOKTULI	Q	43.6	10.44	0.671	3.45	1.000	982.	264.6	0.1897	18.394	0.355		0.0413	10.96
11	S.F. KOKTULI	C	41.1	10.45	0.671	3.45	1.000	983.	264.6	0.1523	18.392	0.461		0.0413	10.96
12	S.F. KOKTULI	C	40.0	10.45	0.671	3.45	1.000	983.	264.6	0.1943	18.393	0.507		0.0413	10.96
13	S.F. KOKTULI	C	38.4	10.48	0.670	3.45	1.000	983.	264.6	0.1524	18.394	0.573		0.0413	10.96
14	S.F. KOKTULI	Q	35.8	10.48	0.670	3.45	1.000	983.	264.6	0.1524	18.394	0.679		0.0984	5.03
15	S.F. KOKTULI	B	34.3									0.830			
16	TRIBUTARY 119	H	36.1	10.48	0.670	3.45	1.000	983.	264.6	0.1706	18.395	0.623	7.06	0.0280	5.03
17	TRIBUTARY 119	T	34.3									0.673			
18	S.F. KOKTULI	J	34.3	10.51	0.669	3.45	1.000	984.	264.6	0.1253	18.394	1.503		0.4747	5.03
19	S.F. KOKTULI	C	34.1	10.54	0.667	3.45	1.000	984.	264.6	0.0857	18.392	1.569		0.4747	5.03
20	S.F. KOKTULI	Q	34.0	10.54	0.667	3.45	1.000	984.	264.6	0.0857	18.392	1.625		0.1839	5.03
21	S.F. KOKTULI	Q	29.3	10.54	0.667	3.45	1.000	984.	264.6	0.0857	18.392	2.500		0.3291	9.61
22	S.F. KOKTULI	C	27.6	10.61	0.665	3.45	1.000	985.	264.6	0.0847	18.389	3.052		0.3291	9.61
23	S.F. KOKTULI	C	25.1	10.65	0.663	3.45	1.000	986.	264.5	0.0687	18.387	3.869		0.3291	9.61
24	S.F. KOKTULI	Q	24.9	10.65	0.663	3.45	1.000	986.	264.5	0.0687	18.387	3.936		-0.0592	9.61
25	S.F. KOKTULI	C	21.9	10.67	0.662	3.45	1.000	987.	264.5	0.0849	18.388	3.756		-0.0592	9.61
26	S.F. KOKTULI	C	20.1	10.72	0.660	3.45	1.000	987.	264.5	0.0664	18.391	3.651		-0.0592	9.61
27	S.F. KOKTULI	C	15.4	10.78	0.658	3.45	1.000	988.	264.5	0.0643	18.391	3.371		-0.0592	9.61
28	S.F. KOKTULI	Q	13.9	10.78	0.658	3.45	1.000	988.	264.5	0.0643	18.391	3.285		0.1300	9.61
29	S.F. KOKTULI	C	12.5	10.81	0.657	3.45	1.000	989.	264.5	0.0615	18.390	3.467		0.1300	9.61
30	S.F. KOKTULI	C	9.2	10.84	0.656	3.45	1.000	990.	264.5	0.0750	18.391	3.893		0.1300	9.61
31	S.F. KOKTULI	C	7.9	10.87	0.655	3.45	1.000	990.	264.4	0.0607	18.392	4.067		0.1300	9.61
32	S.F. KOKTULI	C	5.1	10.92	0.653	3.45	1.000	991.	264.4	0.0646	18.395	4.430		0.1300	9.61
33	S.F. KOKTULI	C	5.1	10.96	0.651	3.45	1.000	992.	264.4	0.0743	18.399	4.430		0.1300	9.61
34	S.F. KOKTULI	Q	3.0	10.96	0.651	3.45	1.000	992.	264.4	0.0743	18.399	4.707		0.5580	9.61
35	S.F. KOKTULI	Q	0.1	10.96	0.651	3.45	1.000	992.	264.4	0.0743	18.399	6.305		0.3241	9.61
36	S.F. KOKTULI	E	0.0									6.340			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.75	0.642	3.24	1.000	979.	262.8	0.2133	18.389	0.669	12.07	0.2232	13.07
2	S.F. KOKTULI	C	53.3	12.80	0.641	3.24	1.000	979.	262.8	0.2003	18.385	0.971		0.2232	13.07
3	S.F. KOKTULI	C	51.2	12.83	0.639	3.24	1.000	980.	262.8	0.1822	18.382	1.438		0.2232	13.07
4	S.F. KOKTULI	Q	51.1	12.83	0.639	3.24	1.000	980.	262.8	0.1822	18.382	1.467		-0.1680	13.07
5	S.F. KOKTULI	C	49.4	12.86	0.638	3.24	1.000	981.	262.8	0.1584	18.380	1.185		-0.1680	13.07
6	S.F. KOKTULI	C	47.6	12.90	0.637	3.24	1.000	981.	262.8	0.1523	18.380	0.873		-0.1680	13.07
7	S.F. KOKTULI	C	45.7	12.93	0.636	3.24	1.000	982.	262.8	0.1697	18.380	0.562		-0.1680	13.07
8	S.F. KOKTULI	C	44.8	12.94	0.635	3.24	1.000	982.	262.8	0.1525	18.381	0.411		-0.1680	13.07
9	S.F. KOKTULI	C	43.9	12.96	0.635	3.24	1.000	982.	262.8	0.1898	18.379	0.265		-0.1680	13.07
10	S.F. KOKTULI	Q	43.6	12.96	0.635	3.24	1.000	982.	262.8	0.1898	18.379	0.214		0.0307	13.07
11	S.F. KOKTULI	C	41.1	12.97	0.634	3.24	1.000	983.	262.8	0.1522	18.376	0.292		0.0307	13.07
12	S.F. KOKTULI	C	40.0	12.97	0.634	3.24	1.000	983.	262.8	0.1944	18.378	0.327		0.0307	13.07
13	S.F. KOKTULI	C	38.4	13.00	0.633	3.24	1.000	983.	262.7	0.1524	18.379	0.376		0.0307	13.07
14	S.F. KOKTULI	Q	35.8	13.00	0.633	3.24	1.000	983.	262.7	0.1524	18.379	0.454		0.1054	4.33
15	S.F. KOKTULI	B	34.3									0.616			
16	TRIBUTARY 119	H	36.1	13.00	0.633	3.24	1.000	983.	262.7	0.1707	18.380	0.548	7.93	0.0297	4.33
17	TRIBUTARY 119	T	34.3									0.601			
18	S.F. KOKTULI	J	34.3	13.03	0.632	3.24	1.000	984.	262.7	0.1253	18.379	1.217		0.5058	4.33
19	S.F. KOKTULI	C	34.1	13.06	0.631	3.24	1.000	984.	262.7	0.0857	18.377	1.287		0.5058	4.33
20	S.F. KOKTULI	Q	34.0	13.06	0.631	3.24	1.000	984.	262.7	0.0857	18.377	1.347		0.1732	4.33
21	S.F. KOKTULI	Q	29.3	13.06	0.631	3.24	1.000	984.	262.7	0.0857	18.377	2.171		0.2943	9.12
22	S.F. KOKTULI	C	27.6	13.13	0.628	3.24	1.000	985.	262.7	0.0847	18.374	2.665		0.2943	9.12
23	S.F. KOKTULI	C	25.1	13.17	0.627	3.24	1.000	986.	262.7	0.0687	18.371	3.395		0.2943	9.12
24	S.F. KOKTULI	Q	24.9	13.17	0.627	3.24	1.000	986.	262.7	0.0687	18.371	3.455		-0.0533	9.12
25	S.F. KOKTULI	C	21.9	13.19	0.626	3.24	1.000	987.	262.7	0.0850	18.372	3.293		-0.0533	9.12
26	S.F. KOKTULI	C	20.1	13.24	0.624	3.24	1.000	987.	262.7	0.0664	18.375	3.198		-0.0533	9.12
27	S.F. KOKTULI	C	15.4	13.30	0.622	3.24	1.000	988.	262.6	0.0643	18.376	2.946		-0.0533	9.12
28	S.F. KOKTULI	Q	13.9	13.30	0.622	3.24	1.000	988.	262.6	0.0643	18.376	2.869		0.1410	9.12
29	S.F. KOKTULI	C	12.5	13.33	0.621	3.24	1.000	989.	262.6	0.0615	18.374	3.066		0.1410	9.12
30	S.F. KOKTULI	C	9.2	13.36	0.620	3.24	1.000	990.	262.6	0.0750	18.375	3.528		0.1410	9.12
31	S.F. KOKTULI	C	7.9	13.39	0.619	3.24	1.000	990.	262.6	0.0607	18.377	3.717		0.1410	9.12
32	S.F. KOKTULI	C	5.1	13.44	0.617	3.24	1.000	991.	262.6	0.0646	18.379	4.110		0.1410	9.12
33	S.F. KOKTULI	C	5.1	13.48	0.616	3.24	1.000	992.	262.5	0.0744	18.383	4.110		0.1410	9.12
34	S.F. KOKTULI	Q	3.0	13.48	0.616	3.24	1.000	992.	262.5	0.0744	18.383	4.411		0.4434	9.12
35	S.F. KOKTULI	Q	0.1	13.48	0.616	3.24	1.000	992.	262.5	0.0744	18.383	5.681		0.2963	9.12
36	S.F. KOKTULI	E	0.0									5.713			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.73	0.829	2.48	1.000	979.	86.1	0.2135	18.371	0.607	12.08	0.2061	13.08
2	S.F. KOKTULI	C	53.3	9.78	0.826	2.48	1.000	979.	86.1	0.2004	18.367	0.886		0.2061	13.08
3	S.F. KOKTULI	C	51.2	9.81	0.825	2.48	1.000	980.	86.1	0.1823	18.364	1.317		0.2061	13.08
4	S.F. KOKTULI	Q	51.1	9.81	0.825	2.48	1.000	980.	86.1	0.1823	18.364	1.344		-0.1635	13.08
5	S.F. KOKTULI	C	49.4	9.84	0.823	2.48	1.000	981.	86.1	0.1584	18.362	1.069		-0.1635	13.08
6	S.F. KOKTULI	C	47.6	9.88	0.822	2.48	1.000	981.	86.1	0.1523	18.362	0.766		-0.1635	13.08
7	S.F. KOKTULI	C	45.7	9.91	0.820	2.48	1.000	982.	86.1	0.1697	18.362	0.463		-0.1635	13.08
8	S.F. KOKTULI	C	44.8	9.92	0.819	2.48	1.000	982.	86.1	0.1526	18.362	0.316		-0.1635	13.08
9	S.F. KOKTULI	C	43.9	9.94	0.819	2.48	1.000	982.	86.1	0.1899	18.360	0.175		-0.1635	13.08
10	S.F. KOKTULI	Q	43.6	9.94	0.819	2.48	1.000	982.	86.1	0.1899	18.360	0.124		0.0220	13.08
11	S.F. KOKTULI	C	41.1	9.95	0.818	2.48	1.000	983.	86.1	0.1522	18.358	0.181		0.0220	13.08
12	S.F. KOKTULI	C	40.0	9.95	0.818	2.48	1.000	983.	86.1	0.1945	18.359	0.205		0.0220	13.08
13	S.F. KOKTULI	C	38.4	9.98	0.817	2.48	1.000	983.	86.1	0.1524	18.361	0.240		0.0220	13.08
14	S.F. KOKTULI	Q	35.8	9.98	0.817	2.48	1.000	983.	86.1	0.1524	18.361	0.296		0.1054	3.66
15	S.F. KOKTULI	B	34.3									0.458			
16	TRIBUTARY 119	H	36.1	9.98	0.817	2.48	1.000	983.	86.1	0.1708	18.362	0.533	7.33	0.0302	3.66
17	TRIBUTARY 119	T	34.3									0.587			
18	S.F. KOKTULI	J	34.3	10.01	0.815	2.48	1.000	984.	86.0	0.1254	18.360	1.046		0.5058	3.66
19	S.F. KOKTULI	C	34.1	10.04	0.814	2.48	1.000	984.	86.0	0.0857	18.359	1.116		0.5058	3.66
20	S.F. KOKTULI	Q	34.0	10.04	0.814	2.48	1.000	984.	86.0	0.0857	18.359	1.176		0.1616	3.66
21	S.F. KOKTULI	Q	29.3	10.04	0.814	2.48	1.000	984.	86.0	0.0857	18.359	1.945		0.2682	8.98
22	S.F. KOKTULI	C	27.6	10.11	0.811	2.48	1.000	985.	86.0	0.0847	18.355	2.395		0.2682	8.98
23	S.F. KOKTULI	C	25.1	10.15	0.809	2.48	1.000	986.	86.0	0.0687	18.353	3.060		0.2682	8.98
24	S.F. KOKTULI	Q	24.9	10.15	0.809	2.48	1.000	986.	86.0	0.0687	18.353	3.115		-0.0490	8.98
25	S.F. KOKTULI	C	21.9	10.17	0.807	2.48	1.000	987.	86.0	0.0850	18.354	2.966		-0.0490	8.98
26	S.F. KOKTULI	C	20.1	10.22	0.805	2.48	1.000	987.	86.0	0.0664	18.357	2.879		-0.0490	8.98
27	S.F. KOKTULI	C	15.4	10.28	0.803	2.48	1.000	988.	86.0	0.0643	18.357	2.648		-0.0490	8.98
28	S.F. KOKTULI	Q	13.9	10.28	0.803	2.48	1.000	988.	86.0	0.0643	18.357	2.577		0.1527	8.98
29	S.F. KOKTULI	C	12.5	10.31	0.801	2.48	1.000	989.	86.0	0.0614	18.356	2.791		0.1527	8.98
30	S.F. KOKTULI	C	9.2	10.34	0.800	2.48	1.000	990.	86.0	0.0750	18.357	3.291		0.1527	8.98
31	S.F. KOKTULI	C	7.9	10.37	0.798	2.48	1.000	990.	86.0	0.0607	18.359	3.496		0.1527	8.98
32	S.F. KOKTULI	C	5.1	10.42	0.796	2.48	1.000	991.	86.0	0.0646	18.361	3.921		0.1527	8.98
33	S.F. KOKTULI	C	5.1	10.46	0.794	2.48	1.000	992.	86.0	0.0744	18.365	3.921		0.1527	8.98
34	S.F. KOKTULI	Q	3.0	10.46	0.794	2.48	1.000	992.	86.0	0.0744	18.365	4.247		0.3841	8.98
35	S.F. KOKTULI	Q	0.1	10.46	0.794	2.48	1.000	992.	86.0	0.0744	18.365	5.347		0.2685	8.98
36	S.F. KOKTULI	E	0.0									5.376			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.74	0.689	3.69	1.000	979.	284.8	0.2136	18.350	0.560	13.08	0.1930	14.08
2	S.F. KOKTULI	C	53.3	11.79	0.687	3.69	1.000	979.	284.8	0.2005	18.346	0.821		0.1930	14.08
3	S.F. KOKTULI	C	51.2	11.82	0.686	3.69	1.000	980.	284.8	0.1824	18.343	1.225		0.1930	14.08
4	S.F. KOKTULI	Q	51.1	11.82	0.686	3.69	1.000	980.	284.8	0.1824	18.343	1.250		-0.1544	14.08
5	S.F. KOKTULI	C	49.4	11.85	0.685	3.69	1.000	981.	284.8	0.1584	18.341	0.991		-0.1544	14.08
6	S.F. KOKTULI	C	47.6	11.89	0.683	3.69	1.000	981.	284.7	0.1523	18.341	0.704		-0.1544	14.08
7	S.F. KOKTULI	C	45.7	11.92	0.682	3.69	1.000	982.	284.7	0.1698	18.341	0.418		-0.1544	14.08
8	S.F. KOKTULI	C	44.8	11.93	0.681	3.69	1.000	982.	284.7	0.1526	18.341	0.279		-0.1544	14.08
9	S.F. KOKTULI	C	43.9	11.95	0.681	3.69	1.000	982.	284.7	0.1900	18.339	0.146		-0.1544	14.08
10	S.F. KOKTULI	Q	43.6	11.95	0.681	3.69	1.000	982.	284.7	0.1900	18.339	0.098		0.0189	14.08
11	S.F. KOKTULI	C	41.1	11.96	0.680	3.69	1.000	983.	284.7	0.1522	18.337	0.146		0.0189	14.08
12	S.F. KOKTULI	C	40.0	11.96	0.680	3.69	1.000	983.	284.7	0.1947	18.338	0.167		0.0189	14.08
13	S.F. KOKTULI	C	38.4	11.99	0.679	3.69	1.000	983.	284.7	0.1524	18.340	0.198		0.0189	14.08
14	S.F. KOKTULI	Q	35.8	11.99	0.679	3.69	1.000	983.	284.7	0.1524	18.340	0.246		0.1045	3.30
15	S.F. KOKTULI	B	34.3									0.406			
16	TRIBUTARY 119	H	36.1	11.99	0.679	3.69	1.000	983.	284.7	0.1709	18.341	0.491	8.14	0.0302	3.30
17	TRIBUTARY 119	T	34.3									0.545			
18	S.F. KOKTULI	J	34.3	12.02	0.678	3.69	1.000	984.	284.7	0.1255	18.340	0.951		0.5058	3.30
19	S.F. KOKTULI	C	34.1	12.05	0.676	3.69	1.000	984.	284.7	0.0857	18.338	1.021		0.5058	3.30
20	S.F. KOKTULI	Q	34.0	12.05	0.676	3.69	1.000	984.	284.7	0.0857	18.338	1.081		0.1543	3.30
21	S.F. KOKTULI	Q	29.3	12.05	0.676	3.69	1.000	984.	284.7	0.0857	18.338	1.815		0.2526	9.74
22	S.F. KOKTULI	C	27.6	12.12	0.674	3.69	1.000	985.	284.7	0.0847	18.334	2.239		0.2526	9.74
23	S.F. KOKTULI	C	25.1	12.16	0.672	3.69	1.000	986.	284.7	0.0687	18.332	2.865		0.2526	9.74
24	S.F. KOKTULI	Q	24.9	12.16	0.672	3.69	1.000	986.	284.7	0.0687	18.332	2.917		-0.0464	9.74
25	S.F. KOKTULI	C	21.9	12.18	0.671	3.69	1.000	987.	284.7	0.0851	18.333	2.776		-0.0464	9.74
26	S.F. KOKTULI	C	20.1	12.23	0.669	3.69	1.000	987.	284.6	0.0664	18.336	2.694		-0.0464	9.74
27	S.F. KOKTULI	C	15.4	12.29	0.667	3.69	1.000	988.	284.6	0.0643	18.336	2.474		-0.0464	9.74
28	S.F. KOKTULI	Q	13.9	12.29	0.667	3.69	1.000	988.	284.6	0.0643	18.336	2.407		0.1538	9.74
29	S.F. KOKTULI	C	12.5	12.32	0.666	3.69	1.000	989.	284.6	0.0614	18.335	2.622		0.1538	9.74
30	S.F. KOKTULI	C	9.2	12.35	0.665	3.69	1.000	990.	284.6	0.0751	18.336	3.126		0.1538	9.74
31	S.F. KOKTULI	C	7.9	12.38	0.664	3.69	1.000	990.	284.6	0.0607	18.338	3.332		0.1538	9.74
32	S.F. KOKTULI	C	5.1	12.43	0.662	3.69	1.000	991.	284.5	0.0646	18.340	3.761		0.1538	9.74
33	S.F. KOKTULI	C	5.1	12.47	0.660	3.69	1.000	992.	284.5	0.0745	18.344	3.761		0.1538	9.74
34	S.F. KOKTULI	Q	3.0	12.47	0.660	3.69	1.000	992.	284.5	0.0745	18.344	4.089		0.3293	9.74
35	S.F. KOKTULI	Q	0.1	12.47	0.660	3.69	1.000	992.	284.5	0.0745	18.344	5.032		0.2593	9.74
36	S.F. KOKTULI	E	0.0									5.060			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.42	0.829	2.91	1.000	979.	165.7	0.2138	18.326	0.508	13.58	0.1781	14.58
2	S.F. KOKTULI	C	53.3	10.47	0.826	2.91	1.000	979.	165.7	0.2007	18.322	0.749		0.1781	14.58
3	S.F. KOKTULI	C	51.2	10.50	0.825	2.91	1.000	980.	165.7	0.1825	18.319	1.122		0.1781	14.58
4	S.F. KOKTULI	Q	51.1	10.50	0.825	2.91	1.000	980.	165.7	0.1825	18.319	1.145		-0.1453	14.58
5	S.F. KOKTULI	C	49.4	10.53	0.823	2.91	1.000	981.	165.7	0.1584	18.318	0.901		-0.1453	14.58
6	S.F. KOKTULI	C	47.6	10.57	0.822	2.91	1.000	981.	165.7	0.1524	18.317	0.632		-0.1453	14.58
7	S.F. KOKTULI	C	45.7	10.60	0.820	2.91	1.000	982.	165.7	0.1698	18.317	0.362		-0.1453	14.58
8	S.F. KOKTULI	C	44.8	10.61	0.819	2.91	1.000	982.	165.7	0.1526	18.318	0.231		-0.1453	14.58
9	S.F. KOKTULI	C	43.9	10.63	0.819	2.91	1.000	982.	165.7	0.1901	18.316	0.106		-0.1453	14.58
10	S.F. KOKTULI	Q	43.6	10.63	0.819	2.91	1.000	982.	165.7	0.1901	18.316	0.061		0.0138	14.58
11	S.F. KOKTULI	C	41.1	10.64	0.818	2.91	1.000	983.	165.7	0.1522	18.314	0.097		0.0138	14.58
12	S.F. KOKTULI	C	40.0	10.64	0.818	2.91	1.000	983.	165.7	0.1948	18.315	0.112		0.0138	14.58
13	S.F. KOKTULI	C	38.4	10.67	0.817	2.91	1.000	983.	165.7	0.1524	18.316	0.134		0.0138	14.58
14	S.F. KOKTULI	Q	35.8	10.67	0.817	2.91	1.000	983.	165.7	0.1524	18.316	0.169		0.1022	2.89
15	S.F. KOKTULI	B	34.3									0.326			
16	TRIBUTARY 119	H	36.1	10.67	0.817	2.91	1.000	983.	165.7	0.1710	18.317	0.454	8.24	0.0297	2.89
17	TRIBUTARY 119	T	34.3									0.507			
18	S.F. KOKTULI	J	34.3	10.70	0.815	2.91	1.000	984.	165.7	0.1256	18.316	0.832		0.4942	2.89
19	S.F. KOKTULI	C	34.1	10.73	0.814	2.91	1.000	984.	165.7	0.0856	18.314	0.900		0.4942	2.89
20	S.F. KOKTULI	Q	34.0	10.73	0.814	2.91	1.000	984.	165.7	0.0856	18.314	0.959		0.1475	2.89
21	S.F. KOKTULI	Q	29.3	10.73	0.814	2.91	1.000	984.	165.7	0.0856	18.314	1.661		0.2423	9.65
22	S.F. KOKTULI	C	27.6	10.80	0.811	2.91	1.000	985.	165.7	0.0847	18.311	2.068		0.2423	9.65
23	S.F. KOKTULI	C	25.1	10.84	0.809	2.91	1.000	986.	165.7	0.0687	18.309	2.669		0.2423	9.65
24	S.F. KOKTULI	Q	24.9	10.84	0.809	2.91	1.000	986.	165.7	0.0687	18.309	2.718		-0.0438	9.65
25	S.F. KOKTULI	C	21.9	10.86	0.807	2.91	1.000	987.	165.7	0.0851	18.310	2.585		-0.0438	9.65
26	S.F. KOKTULI	C	20.1	10.91	0.805	2.91	1.000	987.	165.6	0.0664	18.312	2.507		-0.0438	9.65
27	S.F. KOKTULI	C	15.4	10.97	0.803	2.91	1.000	988.	165.6	0.0643	18.313	2.300		-0.0438	9.65
28	S.F. KOKTULI	Q	13.9	10.97	0.803	2.91	1.000	988.	165.6	0.0643	18.313	2.237		0.1552	9.65
29	S.F. KOKTULI	C	12.5	11.00	0.801	2.91	1.000	989.	165.6	0.0614	18.312	2.454		0.1552	9.65
30	S.F. KOKTULI	C	9.2	11.03	0.800	2.91	1.000	990.	165.6	0.0751	18.313	2.963		0.1552	9.65
31	S.F. KOKTULI	C	7.9	11.06	0.798	2.91	1.000	990.	165.6	0.0607	18.314	3.171		0.1552	9.65
32	S.F. KOKTULI	C	5.1	11.11	0.796	2.91	1.000	991.	165.6	0.0647	18.316	3.603		0.1552	9.65
33	S.F. KOKTULI	C	5.1	11.15	0.794	2.91	1.000	992.	165.6	0.0745	18.320	3.603		0.1552	9.65
34	S.F. KOKTULI	Q	3.0	11.15	0.794	2.91	1.000	992.	165.6	0.0745	18.320	3.934		0.2779	9.65
35	S.F. KOKTULI	Q	0.1	11.15	0.794	2.91	1.000	992.	165.6	0.0745	18.320	4.730		0.2500	9.65
36	S.F. KOKTULI	E	0.0									4.757			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.62	0.763	3.20	1.000	979.	139.2	0.2140	18.300	0.513	13.32	0.1795	14.32
2	S.F. KOKTULI	C	53.3	11.67	0.761	3.20	1.000	979.	139.2	0.2009	18.296	0.756		0.1795	14.32
3	S.F. KOKTULI	C	51.2	11.70	0.760	3.20	1.000	980.	139.2	0.1827	18.293	1.132		0.1795	14.32
4	S.F. KOKTULI	Q	51.1	11.70	0.760	3.20	1.000	980.	139.2	0.1827	18.293	1.155		-0.1485	14.32
5	S.F. KOKTULI	C	49.4	11.73	0.759	3.20	1.000	981.	139.2	0.1584	18.291	0.905		-0.1485	14.32
6	S.F. KOKTULI	C	47.6	11.77	0.757	3.20	1.000	981.	139.2	0.1524	18.291	0.630		-0.1485	14.32
7	S.F. KOKTULI	C	45.7	11.80	0.756	3.20	1.000	982.	139.2	0.1699	18.291	0.355		-0.1485	14.32
8	S.F. KOKTULI	C	44.8	11.81	0.755	3.20	1.000	982.	139.2	0.1526	18.292	0.221		-0.1485	14.32
9	S.F. KOKTULI	C	43.9	11.83	0.754	3.20	1.000	982.	139.2	0.1903	18.290	0.093		-0.1485	14.32
10	S.F. KOKTULI	Q	43.6	11.83	0.754	3.20	1.000	982.	139.2	0.1903	18.290	0.047		0.0116	14.32
11	S.F. KOKTULI	C	41.1	11.84	0.754	3.20	1.000	983.	139.2	0.1522	18.288	0.077		0.0116	14.32
12	S.F. KOKTULI	C	40.0	11.84	0.754	3.20	1.000	983.	139.1	0.1949	18.289	0.090		0.0116	14.32
13	S.F. KOKTULI	C	38.4	11.87	0.752	3.20	1.000	983.	139.1	0.1523	18.290	0.108		0.0116	14.32
14	S.F. KOKTULI	Q	35.8	11.87	0.752	3.20	1.000	983.	139.1	0.1523	18.290	0.138		0.1000	2.67
15	S.F. KOKTULI	B	34.3									0.291			
16	TRIBUTARY 119	H	36.1	11.87	0.752	3.20	1.000	983.	139.1	0.1711	18.291	0.424	7.87	0.0286	2.67
17	TRIBUTARY 119	T	34.3									0.475			
18	S.F. KOKTULI	J	34.3	11.90	0.751	3.20	1.000	984.	139.1	0.1257	18.290	0.766		0.4825	2.67
19	S.F. KOKTULI	C	34.1	11.93	0.750	3.20	1.000	984.	139.1	0.0856	18.288	0.833		0.4825	2.67
20	S.F. KOKTULI	Q	34.0	11.93	0.750	3.20	1.000	984.	139.1	0.0856	18.288	0.890		0.1408	2.67
21	S.F. KOKTULI	Q	29.3	11.93	0.750	3.20	1.000	984.	139.1	0.0856	18.288	1.560		0.2267	9.62
22	S.F. KOKTULI	C	27.6	12.00	0.747	3.20	1.000	985.	139.1	0.0847	18.285	1.940		0.2267	9.62
23	S.F. KOKTULI	C	25.1	12.04	0.745	3.20	1.000	986.	139.1	0.0687	18.283	2.503		0.2267	9.62
24	S.F. KOKTULI	Q	24.9	12.04	0.745	3.20	1.000	986.	139.1	0.0687	18.283	2.549		-0.0416	9.62
25	S.F. KOKTULI	C	21.9	12.06	0.744	3.20	1.000	987.	139.1	0.0852	18.283	2.422		-0.0416	9.62
26	S.F. KOKTULI	C	20.1	12.11	0.742	3.20	1.000	987.	139.1	0.0664	18.286	2.349		-0.0416	9.62
27	S.F. KOKTULI	C	15.4	12.17	0.740	3.20	1.000	988.	139.1	0.0643	18.287	2.152		-0.0416	9.62
28	S.F. KOKTULI	Q	13.9	12.17	0.740	3.20	1.000	988.	139.1	0.0643	18.287	2.092		0.1550	9.62
29	S.F. KOKTULI	C	12.5	12.20	0.738	3.20	1.000	989.	139.1	0.0614	18.286	2.309		0.1550	9.62
30	S.F. KOKTULI	C	9.2	12.23	0.737	3.20	1.000	990.	139.1	0.0752	18.287	2.817		0.1550	9.62
31	S.F. KOKTULI	C	7.9	12.26	0.736	3.20	1.000	990.	139.1	0.0607	18.288	3.024		0.1550	9.62
32	S.F. KOKTULI	C	5.1	12.31	0.733	3.20	1.000	991.	139.1	0.0647	18.290	3.457		0.1550	9.62
33	S.F. KOKTULI	C	5.1	12.35	0.731	3.20	1.000	992.	139.0	0.0746	18.294	3.457		0.1550	9.62
34	S.F. KOKTULI	Q	3.0	12.35	0.731	3.20	1.000	992.	139.0	0.0746	18.294	3.787		0.2315	9.62
35	S.F. KOKTULI	Q	0.1	12.35	0.731	3.20	1.000	992.	139.0	0.0746	18.294	4.450		0.2222	9.62
36	S.F. KOKTULI	E	0.0									4.474			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.58	0.726	2.67	1.000	979.	194.1	0.2143	18.271	0.475	14.16	0.1686	15.16
2	S.F. KOKTULI	C	53.3	13.63	0.724	2.67	1.000	979.	194.1	0.2011	18.267	0.703		0.1686	15.16
3	S.F. KOKTULI	C	51.2	13.66	0.723	2.67	1.000	980.	194.1	0.1828	18.264	1.056		0.1686	15.16
4	S.F. KOKTULI	Q	51.1	13.66	0.723	2.67	1.000	980.	194.1	0.1828	18.264	1.078		-0.1403	15.16
5	S.F. KOKTULI	C	49.4	13.69	0.722	2.67	1.000	981.	194.1	0.1585	18.263	0.842		-0.1403	15.16
6	S.F. KOKTULI	C	47.6	13.73	0.720	2.67	1.000	981.	194.1	0.1524	18.262	0.582		-0.1403	15.16
7	S.F. KOKTULI	C	45.7	13.76	0.719	2.67	1.000	982.	194.1	0.1700	18.262	0.322		-0.1403	15.16
8	S.F. KOKTULI	C	44.8	13.77	0.718	2.67	1.000	982.	194.1	0.1527	18.263	0.196		-0.1403	15.16
9	S.F. KOKTULI	C	43.9	13.79	0.717	2.67	1.000	982.	194.1	0.1905	18.261	0.075		-0.1403	15.16
10	S.F. KOKTULI	Q	43.6	13.79	0.717	2.67	1.000	982.	194.1	0.1905	18.261	0.032		0.0088	15.16
11	S.F. KOKTULI	C	41.1	13.80	0.717	2.67	1.000	983.	194.1	0.1523	18.259	0.054		0.0088	15.16
12	S.F. KOKTULI	C	40.0	13.80	0.717	2.67	1.000	983.	194.1	0.1951	18.260	0.064		0.0088	15.16
13	S.F. KOKTULI	C	38.4	13.83	0.716	2.67	1.000	983.	194.1	0.1523	18.261	0.078		0.0088	15.16
14	S.F. KOKTULI	Q	35.8	13.83	0.716	2.67	1.000	983.	194.1	0.1523	18.261	0.101		0.0967	3.01
15	S.F. KOKTULI	B	34.3									0.249			
16	TRIBUTARY 119	H	36.1	13.83	0.716	2.67	1.000	983.	194.1	0.1713	18.262	0.398	8.41	0.0274	3.01
17	TRIBUTARY 119	T	34.3									0.447			
18	S.F. KOKTULI	J	34.3	13.86	0.715	2.67	1.000	984.	194.1	0.1258	18.261	0.696		0.4669	3.01
19	S.F. KOKTULI	C	34.1	13.89	0.713	2.67	1.000	984.	194.0	0.0856	18.259	0.760		0.4669	3.01
20	S.F. KOKTULI	Q	34.0	13.89	0.713	2.67	1.000	984.	194.0	0.0856	18.259	0.816		0.1408	3.01
21	S.F. KOKTULI	Q	29.3	13.89	0.713	2.67	1.000	984.	194.0	0.0856	18.259	1.486		0.2047	10.98
22	S.F. KOKTULI	C	27.6	13.96	0.710	2.67	1.000	985.	194.0	0.0847	18.256	1.829		0.2047	10.98
23	S.F. KOKTULI	C	25.1	14.00	0.709	2.67	1.000	986.	194.0	0.0687	18.254	2.337		0.2047	10.98
24	S.F. KOKTULI	Q	24.9	14.00	0.709	2.67	1.000	986.	194.0	0.0687	18.254	2.379		-0.0392	10.98
25	S.F. KOKTULI	C	21.9	14.02	0.708	2.67	1.000	987.	194.0	0.0853	18.255	2.260		-0.0392	10.98
26	S.F. KOKTULI	C	20.1	14.07	0.706	2.67	1.000	987.	194.0	0.0664	18.257	2.190		-0.0392	10.98
27	S.F. KOKTULI	C	15.4	14.13	0.703	2.67	1.000	988.	194.0	0.0643	18.258	2.005		-0.0392	10.98
28	S.F. KOKTULI	Q	13.9	14.13	0.703	2.67	1.000	988.	194.0	0.0643	18.258	1.948		0.1566	10.98
29	S.F. KOKTULI	C	12.5	14.16	0.702	2.67	1.000	989.	194.0	0.0614	18.257	2.167		0.1566	10.98
30	S.F. KOKTULI	C	9.2	14.19	0.701	2.67	1.000	990.	194.0	0.0753	18.258	2.680		0.1566	10.98
31	S.F. KOKTULI	C	7.9	14.22	0.700	2.67	1.000	990.	194.0	0.0607	18.259	2.890		0.1566	10.98
32	S.F. KOKTULI	C	5.1	14.27	0.698	2.67	1.000	991.	193.9	0.0647	18.261	3.327		0.1566	10.98
33	S.F. KOKTULI	C	5.1	14.31	0.696	2.67	1.000	992.	193.9	0.0746	18.265	3.327		0.1566	10.98
34	S.F. KOKTULI	Q	3.0	14.31	0.696	2.67	1.000	992.	193.9	0.0746	18.265	3.661		0.1934	10.98
35	S.F. KOKTULI	Q	0.1	14.31	0.696	2.67	1.000	992.	193.9	0.0746	18.265	4.215		0.2130	10.98
36	S.F. KOKTULI	E	0.0									4.238			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.75	0.745	2.90	1.000	979.	180.4	0.2146	18.239	0.416	15.27	0.1510	16.27
2	S.F. KOKTULI	C	53.3	13.80	0.743	2.90	1.000	979.	180.4	0.2013	18.236	0.620		0.1510	16.27
3	S.F. KOKTULI	C	51.2	13.83	0.741	2.90	1.000	980.	180.4	0.1830	18.233	0.937		0.1510	16.27
4	S.F. KOKTULI	Q	51.1	13.83	0.741	2.90	1.000	980.	180.4	0.1830	18.233	0.956		-0.1261	16.27
5	S.F. KOKTULI	C	49.4	13.86	0.740	2.90	1.000	981.	180.4	0.1585	18.231	0.744		-0.1261	16.27
6	S.F. KOKTULI	C	47.6	13.90	0.738	2.90	1.000	981.	180.3	0.1525	18.231	0.510		-0.1261	16.27
7	S.F. KOKTULI	C	45.7	13.93	0.737	2.90	1.000	982.	180.3	0.1700	18.231	0.277		-0.1261	16.27
8	S.F. KOKTULI	C	44.8	13.94	0.736	2.90	1.000	982.	180.3	0.1527	18.231	0.163		-0.1261	16.27
9	S.F. KOKTULI	C	43.9	13.96	0.736	2.90	1.000	982.	180.3	0.1906	18.229	0.054		-0.1261	16.27
10	S.F. KOKTULI	Q	43.6	13.96	0.736	2.90	1.000	982.	180.3	0.1906	18.229	0.016		0.0054	16.27
11	S.F. KOKTULI	C	41.1	13.97	0.735	2.90	1.000	983.	180.3	0.1523	18.227	0.029		0.0054	16.27
12	S.F. KOKTULI	C	40.0	13.97	0.735	2.90	1.000	983.	180.3	0.1953	18.229	0.035		0.0054	16.27
13	S.F. KOKTULI	C	38.4	14.00	0.734	2.90	1.000	983.	180.3	0.1523	18.230	0.044		0.0054	16.27
14	S.F. KOKTULI	Q	35.8	14.00	0.734	2.90	1.000	983.	180.3	0.1523	18.230	0.058		0.0934	3.24
15	S.F. KOKTULI	B	34.3									0.201			
16	TRIBUTARY 119	H	36.1	14.00	0.734	2.90	1.000	983.	180.3	0.1714	18.231	0.382	9.51	0.0263	3.24
17	TRIBUTARY 119	T	34.3									0.429			
18	S.F. KOKTULI	J	34.3	14.03	0.733	2.90	1.000	984.	180.3	0.1259	18.230	0.630		0.4514	3.24
19	S.F. KOKTULI	C	34.1	14.06	0.731	2.90	1.000	984.	180.3	0.0855	18.228	0.692		0.4514	3.24
20	S.F. KOKTULI	Q	34.0	14.06	0.731	2.90	1.000	984.	180.3	0.0855	18.228	0.746		0.1421	3.24
21	S.F. KOKTULI	Q	29.3	14.06	0.731	2.90	1.000	984.	180.3	0.0855	18.228	1.422		0.1932	10.79
22	S.F. KOKTULI	C	27.6	14.13	0.729	2.90	1.000	985.	180.3	0.0847	18.225	1.746		0.1932	10.79
23	S.F. KOKTULI	C	25.1	14.17	0.727	2.90	1.000	986.	180.3	0.0687	18.223	2.226		0.1932	10.79
24	S.F. KOKTULI	Q	24.9	14.17	0.727	2.90	1.000	986.	180.3	0.0687	18.223	2.265		-0.0376	10.79
25	S.F. KOKTULI	C	21.9	14.19	0.726	2.90	1.000	987.	180.3	0.0853	18.223	2.150		-0.0376	10.79
26	S.F. KOKTULI	C	20.1	14.24	0.724	2.90	1.000	987.	180.3	0.0664	18.226	2.084		-0.0376	10.79
27	S.F. KOKTULI	C	15.4	14.30	0.721	2.90	1.000	988.	180.3	0.0643	18.227	1.906		-0.0376	10.79
28	S.F. KOKTULI	Q	13.9	14.30	0.721	2.90	1.000	988.	180.3	0.0643	18.227	1.852		0.1550	10.79
29	S.F. KOKTULI	C	12.5	14.33	0.720	2.90	1.000	989.	180.2	0.0614	18.226	2.069		0.1550	10.79
30	S.F. KOKTULI	C	9.2	14.36	0.719	2.90	1.000	990.	180.2	0.0753	18.226	2.577		0.1550	10.79
31	S.F. KOKTULI	C	7.9	14.39	0.718	2.90	1.000	990.	180.2	0.0606	18.228	2.784		0.1550	10.79
32	S.F. KOKTULI	C	5.1	14.44	0.716	2.90	1.000	991.	180.2	0.0647	18.230	3.217		0.1550	10.79
33	S.F. KOKTULI	C	5.1	14.48	0.714	2.90	1.000	992.	180.2	0.0747	18.234	3.217		0.1550	10.79
34	S.F. KOKTULI	Q	3.0	14.48	0.714	2.90	1.000	992.	180.2	0.0747	18.234	3.547		0.1606	10.79
35	S.F. KOKTULI	Q	0.1	14.48	0.714	2.90	1.000	992.	180.2	0.0747	18.234	4.007		0.2037	10.79
36	S.F. KOKTULI	E	0.0									4.029			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.98	0.847	3.78	1.000	979.	99.8	0.2148	18.205	0.544	12.41	0.1885	13.41
2	S.F. KOKTULI	C	53.3	11.03	0.845	3.78	1.000	979.	99.8	0.2016	18.202	0.799		0.1885	13.41
3	S.F. KOKTULI	C	51.2	11.06	0.843	3.78	1.000	980.	99.8	0.1831	18.199	1.194		0.1885	13.41
4	S.F. KOKTULI	Q	51.1	11.06	0.843	3.78	1.000	980.	99.8	0.1831	18.199	1.218		-0.1591	13.41
5	S.F. KOKTULI	C	49.4	11.09	0.842	3.78	1.000	981.	99.8	0.1585	18.197	0.951		-0.1591	13.41
6	S.F. KOKTULI	C	47.6	11.13	0.840	3.78	1.000	981.	99.8	0.1525	18.197	0.656		-0.1591	13.41
7	S.F. KOKTULI	C	45.7	11.16	0.838	3.78	1.000	982.	99.8	0.1701	18.197	0.361		-0.1591	13.41
8	S.F. KOKTULI	C	44.8	11.17	0.838	3.78	1.000	982.	99.8	0.1528	18.198	0.217		-0.1591	13.41
9	S.F. KOKTULI	C	43.9	11.19	0.837	3.78	1.000	982.	99.8	0.1908	18.196	0.080		-0.1591	13.41
10	S.F. KOKTULI	Q	43.6	11.19	0.837	3.78	1.000	982.	99.8	0.1908	18.196	0.031		0.0087	13.41
11	S.F. KOKTULI	C	41.1	11.20	0.836	3.78	1.000	983.	99.8	0.1523	18.194	0.053		0.0087	13.41
12	S.F. KOKTULI	C	40.0	11.20	0.836	3.78	1.000	983.	99.8	0.1955	18.195	0.063		0.0087	13.41
13	S.F. KOKTULI	C	38.4	11.23	0.835	3.78	1.000	983.	99.8	0.1523	18.196	0.077		0.0087	13.41
14	S.F. KOKTULI	Q	35.8	11.23	0.835	3.78	1.000	983.	99.8	0.1523	18.196	0.099		0.1045	3.53
15	S.F. KOKTULI	B	34.3									0.259			
16	TRIBUTARY 119	H	36.1	11.23	0.835	3.78	1.000	983.	99.8	0.1716	18.197	0.620	8.36	0.0297	3.53
17	TRIBUTARY 119	T	34.3									0.673			
18	S.F. KOKTULI	J	34.3	11.26	0.834	3.78	1.000	984.	99.8	0.1261	18.196	0.932		0.5019	3.53
19	S.F. KOKTULI	C	34.1	11.29	0.832	3.78	1.000	984.	99.8	0.0855	18.194	1.001		0.5019	3.53
20	S.F. KOKTULI	Q	34.0	11.29	0.832	3.78	1.000	984.	99.8	0.0855	18.194	1.061		0.1198	3.53
21	S.F. KOKTULI	Q	29.3	11.29	0.832	3.78	1.000	984.	99.8	0.0855	18.194	1.631		0.2297	10.49
22	S.F. KOKTULI	C	27.6	11.36	0.829	3.78	1.000	985.	99.8	0.0847	18.191	2.016		0.2297	10.49
23	S.F. KOKTULI	C	25.1	11.40	0.827	3.78	1.000	986.	99.8	0.0687	18.189	2.586		0.2297	10.49
24	S.F. KOKTULI	Q	24.9	11.40	0.827	3.78	1.000	986.	99.8	0.0687	18.189	2.633		-0.0426	10.49
25	S.F. KOKTULI	C	21.9	11.42	0.826	3.78	1.000	987.	99.8	0.0854	18.190	2.503		-0.0426	10.49
26	S.F. KOKTULI	C	20.1	11.47	0.823	3.78	1.000	987.	99.7	0.0664	18.192	2.428		-0.0426	10.49
27	S.F. KOKTULI	C	15.4	11.53	0.821	3.78	1.000	988.	99.7	0.0643	18.193	2.227		-0.0426	10.49
28	S.F. KOKTULI	Q	13.9	11.53	0.821	3.78	1.000	988.	99.7	0.0643	18.193	2.165		0.1641	10.49
29	S.F. KOKTULI	C	12.5	11.56	0.819	3.78	1.000	989.	99.7	0.0613	18.192	2.395		0.1641	10.49
30	S.F. KOKTULI	C	9.2	11.59	0.818	3.78	1.000	990.	99.7	0.0754	18.193	2.933		0.1641	10.49
31	S.F. KOKTULI	C	7.9	11.62	0.816	3.78	1.000	990.	99.7	0.0606	18.194	3.152		0.1641	10.49
32	S.F. KOKTULI	C	5.1	11.67	0.814	3.78	1.000	991.	99.7	0.0647	18.196	3.610		0.1641	10.49
33	S.F. KOKTULI	C	5.1	11.71	0.812	3.78	1.000	992.	99.7	0.0748	18.200	3.610		0.1641	10.49
34	S.F. KOKTULI	Q	3.0	11.71	0.812	3.78	1.000	992.	99.7	0.0748	18.200	3.960		0.2860	10.49
35	S.F. KOKTULI	Q	0.1	11.71	0.812	3.78	1.000	992.	99.7	0.0748	18.200	4.779		0.2407	10.49
36	S.F. KOKTULI	E	0.0									4.805			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.63	0.819	3.23	1.000	979.	141.9	0.2151	18.169	0.623	13.06	0.2109	14.06
2	S.F. KOKTULI	C	53.3	11.68	0.817	3.23	1.000	979.	141.9	0.2019	18.166	0.908		0.2109	14.06
3	S.F. KOKTULI	C	51.2	11.71	0.816	3.23	1.000	980.	141.9	0.1833	18.163	1.350		0.2109	14.06
4	S.F. KOKTULI	Q	51.1	11.71	0.816	3.23	1.000	980.	141.9	0.1833	18.163	1.377		-0.1709	14.06
5	S.F. KOKTULI	C	49.4	11.74	0.814	3.23	1.000	981.	141.9	0.1585	18.161	1.090		-0.1709	14.06
6	S.F. KOKTULI	C	47.6	11.78	0.812	3.23	1.000	981.	141.9	0.1526	18.160	0.773		-0.1709	14.06
7	S.F. KOKTULI	C	45.7	11.81	0.811	3.23	1.000	982.	141.9	0.1702	18.161	0.456		-0.1709	14.06
8	S.F. KOKTULI	C	44.8	11.82	0.810	3.23	1.000	982.	141.9	0.1528	18.161	0.302		-0.1709	14.06
9	S.F. KOKTULI	C	43.9	11.84	0.809	3.23	1.000	982.	141.9	0.1911	18.159	0.154		-0.1709	14.06
10	S.F. KOKTULI	Q	43.6	11.84	0.809	3.23	1.000	982.	141.9	0.1911	18.159	0.102		0.0193	14.06
11	S.F. KOKTULI	C	41.1	11.85	0.809	3.23	1.000	983.	141.9	0.1524	18.157	0.151		0.0193	14.06
12	S.F. KOKTULI	C	40.0	11.85	0.809	3.23	1.000	983.	141.9	0.1957	18.158	0.173		0.0193	14.06
13	S.F. KOKTULI	C	38.4	11.88	0.807	3.23	1.000	983.	141.9	0.1523	18.160	0.204		0.0193	14.06
14	S.F. KOKTULI	Q	35.8	11.88	0.807	3.23	1.000	983.	141.9	0.1523	18.160	0.253		0.1048	3.85
15	S.F. KOKTULI	B	34.3									0.414			
16	TRIBUTARY 119	H	36.1	11.88	0.807	3.23	1.000	983.	141.9	0.1718	18.161	0.502	8.19	0.0302	3.85
17	TRIBUTARY 119	T	34.3									0.556			
18	S.F. KOKTULI	J	34.3	11.91	0.806	3.23	1.000	984.	141.9	0.1262	18.159	0.970		0.5058	3.85
19	S.F. KOKTULI	C	34.1	11.94	0.804	3.23	1.000	984.	141.9	0.0854	18.158	1.040		0.5058	3.85
20	S.F. KOKTULI	Q	34.0	11.94	0.804	3.23	1.000	984.	141.9	0.0854	18.158	1.100		0.1261	3.85
21	S.F. KOKTULI	Q	29.3	11.94	0.804	3.23	1.000	984.	141.9	0.0854	18.158	1.700		0.2138	10.77
22	S.F. KOKTULI	C	27.6	12.01	0.802	3.23	1.000	985.	141.9	0.0847	18.155	2.059		0.2138	10.77
23	S.F. KOKTULI	C	25.1	12.05	0.800	3.23	1.000	986.	141.9	0.0687	18.153	2.589		0.2138	10.77
24	S.F. KOKTULI	Q	24.9	12.05	0.800	3.23	1.000	986.	141.9	0.0687	18.153	2.633		-0.0426	10.77
25	S.F. KOKTULI	C	21.9	12.07	0.798	3.23	1.000	987.	141.8	0.0855	18.153	2.503		-0.0426	10.77
26	S.F. KOKTULI	C	20.1	12.12	0.796	3.23	1.000	987.	141.8	0.0664	18.156	2.428		-0.0426	10.77
27	S.F. KOKTULI	C	15.4	12.18	0.794	3.23	1.000	988.	141.8	0.0643	18.157	2.227		-0.0426	10.77
28	S.F. KOKTULI	Q	13.9	12.18	0.794	3.23	1.000	988.	141.8	0.0643	18.157	2.165		0.1600	10.77
29	S.F. KOKTULI	C	12.5	12.21	0.792	3.23	1.000	989.	141.8	0.0613	18.156	2.389		0.1600	10.77
30	S.F. KOKTULI	C	9.2	12.24	0.791	3.23	1.000	990.	141.8	0.0755	18.156	2.913		0.1600	10.77
31	S.F. KOKTULI	C	7.9	12.27	0.789	3.23	1.000	990.	141.8	0.0606	18.158	3.128		0.1600	10.77
32	S.F. KOKTULI	C	5.1	12.32	0.787	3.23	1.000	991.	141.8	0.0647	18.160	3.574		0.1600	10.77
33	S.F. KOKTULI	C	5.1	12.36	0.785	3.23	1.000	992.	141.8	0.0748	18.164	3.574		0.1600	10.77
34	S.F. KOKTULI	Q	3.0	12.36	0.785	3.23	1.000	992.	141.8	0.0748	18.164	3.915		0.2716	10.77
35	S.F. KOKTULI	Q	0.1	12.36	0.785	3.23	1.000	992.	141.8	0.0748	18.164	4.693		0.2407	10.77
36	S.F. KOKTULI	E	0.0									4.719			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.20	0.773	2.37	1.000	979.	137.3	0.2155	18.130	0.588	12.52	0.2005	13.52
2	S.F. KOKTULI	C	53.3	11.25	0.771	2.37	1.000	979.	137.3	0.2023	18.127	0.859		0.2005	13.52
3	S.F. KOKTULI	C	51.2	11.28	0.769	2.37	1.000	980.	137.3	0.1835	18.124	1.279		0.2005	13.52
4	S.F. KOKTULI	Q	51.1	11.28	0.769	2.37	1.000	980.	137.3	0.1835	18.124	1.305		-0.1660	13.52
5	S.F. KOKTULI	C	49.4	11.31	0.768	2.37	1.000	981.	137.3	0.1586	18.122	1.026		-0.1660	13.52
6	S.F. KOKTULI	C	47.6	11.35	0.766	2.37	1.000	981.	137.3	0.1526	18.122	0.718		-0.1660	13.52
7	S.F. KOKTULI	C	45.7	11.38	0.765	2.37	1.000	982.	137.3	0.1703	18.122	0.411		-0.1660	13.52
8	S.F. KOKTULI	C	44.8	11.39	0.764	2.37	1.000	982.	137.3	0.1529	18.123	0.261		-0.1660	13.52
9	S.F. KOKTULI	C	43.9	11.41	0.763	2.37	1.000	982.	137.3	0.1913	18.121	0.118		-0.1660	13.52
10	S.F. KOKTULI	Q	43.6	11.41	0.763	2.37	1.000	982.	137.3	0.1913	18.121	0.067		0.0146	13.52
11	S.F. KOKTULI	C	41.1	11.42	0.763	2.37	1.000	983.	137.3	0.1525	18.119	0.104		0.0146	13.52
12	S.F. KOKTULI	C	40.0	11.42	0.763	2.37	1.000	983.	137.3	0.1959	18.120	0.120		0.0146	13.52
13	S.F. KOKTULI	C	38.4	11.45	0.762	2.37	1.000	983.	137.3	0.1523	18.121	0.144		0.0146	13.52
14	S.F. KOKTULI	Q	35.8	11.45	0.762	2.37	1.000	983.	137.3	0.1523	18.121	0.181		0.1035	3.82
15	S.F. KOKTULI	B	34.3									0.340			
16	TRIBUTARY 119	H	36.1	11.45	0.762	2.37	1.000	983.	137.3	0.1720	18.122	0.485	7.97	0.0297	3.82
17	TRIBUTARY 119	T	34.3									0.538			
18	S.F. KOKTULI	J	34.3	11.48	0.760	2.37	1.000	984.	137.3	0.1264	18.121	0.878		0.4942	3.82
19	S.F. KOKTULI	C	34.1	11.51	0.759	2.37	1.000	984.	137.3	0.0854	18.119	0.946		0.4942	3.82
20	S.F. KOKTULI	Q	34.0	11.51	0.759	2.37	1.000	984.	137.3	0.0854	18.119	1.005		0.1316	3.82
21	S.F. KOKTULI	Q	29.3	11.51	0.759	2.37	1.000	984.	137.3	0.0854	18.119	1.631		0.2038	10.87
22	S.F. KOKTULI	C	27.6	11.58	0.756	2.37	1.000	985.	137.3	0.0846	18.116	1.973		0.2038	10.87
23	S.F. KOKTULI	C	25.1	11.62	0.754	2.37	1.000	986.	137.3	0.0687	18.114	2.478		0.2038	10.87
24	S.F. KOKTULI	Q	24.9	11.62	0.754	2.37	1.000	986.	137.3	0.0687	18.114	2.520		-0.0411	10.87
25	S.F. KOKTULI	C	21.9	11.64	0.753	2.37	1.000	987.	137.3	0.0856	18.115	2.395		-0.0411	10.87
26	S.F. KOKTULI	C	20.1	11.69	0.751	2.37	1.000	987.	137.3	0.0664	18.117	2.322		-0.0411	10.87
27	S.F. KOKTULI	C	15.4	11.75	0.749	2.37	1.000	988.	137.3	0.0643	18.118	2.128		-0.0411	10.87
28	S.F. KOKTULI	Q	13.9	11.75	0.749	2.37	1.000	988.	137.3	0.0643	18.118	2.068		0.1556	10.87
29	S.F. KOKTULI	C	12.5	11.78	0.747	2.37	1.000	989.	137.2	0.0613	18.117	2.286		0.1556	10.87
30	S.F. KOKTULI	C	9.2	11.81	0.746	2.37	1.000	990.	137.2	0.0756	18.118	2.796		0.1556	10.87
31	S.F. KOKTULI	C	7.9	11.84	0.745	2.37	1.000	990.	137.2	0.0606	18.119	3.004		0.1556	10.87
32	S.F. KOKTULI	C	5.1	11.89	0.742	2.37	1.000	991.	137.2	0.0648	18.121	3.438		0.1556	10.87
33	S.F. KOKTULI	C	5.1	11.93	0.740	2.37	1.000	992.	137.2	0.0749	18.125	3.438		0.1556	10.87
34	S.F. KOKTULI	Q	3.0	11.93	0.740	2.37	1.000	992.	137.2	0.0749	18.125	3.770		0.2259	10.87
35	S.F. KOKTULI	Q	0.1	11.93	0.740	2.37	1.000	992.	137.2	0.0749	18.125	4.417		0.2315	10.87
36	S.F. KOKTULI	E	0.0									4.442			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	14.01	0.605	2.32	1.000	979.	157.5	0.2158	18.089	0.530	13.72	0.1846	14.72
2	S.F. KOKTULI	C	53.3	14.06	0.603	2.32	1.000	979.	157.5	0.2026	18.086	0.780		0.1846	14.72
3	S.F. KOKTULI	C	51.2	14.09	0.602	2.32	1.000	980.	157.5	0.1837	18.083	1.166		0.1846	14.72
4	S.F. KOKTULI	Q	51.1	14.09	0.602	2.32	1.000	980.	157.5	0.1837	18.083	1.190		-0.1523	14.72
5	S.F. KOKTULI	C	49.4	14.12	0.601	2.32	1.000	981.	157.5	0.1586	18.081	0.934		-0.1523	14.72
6	S.F. KOKTULI	C	47.6	14.16	0.600	2.32	1.000	981.	157.5	0.1527	18.081	0.652		-0.1523	14.72
7	S.F. KOKTULI	C	45.7	14.19	0.599	2.32	1.000	982.	157.5	0.1705	18.081	0.369		-0.1523	14.72
8	S.F. KOKTULI	C	44.8	14.20	0.598	2.32	1.000	982.	157.5	0.1529	18.082	0.232		-0.1523	14.72
9	S.F. KOKTULI	C	43.9	14.22	0.598	2.32	1.000	982.	157.5	0.1915	18.080	0.100		-0.1523	14.72
10	S.F. KOKTULI	Q	43.6	14.22	0.598	2.32	1.000	982.	157.5	0.1915	18.080	0.054		0.0126	14.72
11	S.F. KOKTULI	C	41.1	14.23	0.597	2.32	1.000	983.	157.5	0.1525	18.078	0.086		0.0126	14.72
12	S.F. KOKTULI	C	40.0	14.23	0.597	2.32	1.000	983.	157.5	0.1962	18.079	0.100		0.0126	14.72
13	S.F. KOKTULI	C	38.4	14.26	0.596	2.32	1.000	983.	157.4	0.1523	18.080	0.120		0.0126	14.72
14	S.F. KOKTULI	Q	35.8	14.26	0.596	2.32	1.000	983.	157.4	0.1523	18.080	0.152		0.1007	3.71
15	S.F. KOKTULI	B	34.3									0.307			
16	TRIBUTARY 119	H	36.1	14.26	0.596	2.32	1.000	983.	157.4	0.1722	18.081	0.426	8.05	0.0291	3.71
17	TRIBUTARY 119	T	34.3									0.478			
18	S.F. KOKTULI	J	34.3	14.29	0.596	2.32	1.000	984.	157.4	0.1266	18.080	0.784		0.4864	3.71
19	S.F. KOKTULI	C	34.1	14.32	0.594	2.32	1.000	984.	157.4	0.0853	18.078	0.851		0.4864	3.71
20	S.F. KOKTULI	Q	34.0	14.32	0.594	2.32	1.000	984.	157.4	0.0853	18.078	0.909		0.1314	3.71
21	S.F. KOKTULI	Q	29.3	14.32	0.594	2.32	1.000	984.	157.4	0.0853	18.078	1.534		0.1870	10.02
22	S.F. KOKTULI	C	27.6	14.39	0.592	2.32	1.000	985.	157.4	0.0846	18.075	1.848		0.1870	10.02
23	S.F. KOKTULI	C	25.1	14.43	0.591	2.32	1.000	986.	157.4	0.0687	18.073	2.312		0.1870	10.02
24	S.F. KOKTULI	Q	24.9	14.43	0.591	2.32	1.000	986.	157.4	0.0687	18.073	2.350		-0.0388	10.02
25	S.F. KOKTULI	C	21.9	14.45	0.590	2.32	1.000	987.	157.4	0.0857	18.074	2.232		-0.0388	10.02
26	S.F. KOKTULI	C	20.1	14.50	0.588	2.32	1.000	987.	157.4	0.0664	18.077	2.163		-0.0388	10.02
27	S.F. KOKTULI	C	15.4	14.56	0.586	2.32	1.000	988.	157.4	0.0643	18.077	1.980		-0.0388	10.02
28	S.F. KOKTULI	Q	13.9	14.56	0.586	2.32	1.000	988.	157.4	0.0643	18.077	1.924		0.1566	10.02
29	S.F. KOKTULI	C	12.5	14.59	0.585	2.32	1.000	989.	157.4	0.0613	18.076	2.143		0.1566	10.02
30	S.F. KOKTULI	C	9.2	14.62	0.584	2.32	1.000	990.	157.4	0.0756	18.077	2.656		0.1566	10.02
31	S.F. KOKTULI	C	7.9	14.65	0.583	2.32	1.000	990.	157.4	0.0606	18.078	2.866		0.1566	10.02
32	S.F. KOKTULI	C	5.1	14.70	0.581	2.32	1.000	991.	157.3	0.0648	18.080	3.303		0.1566	10.02
33	S.F. KOKTULI	C	5.1	14.74	0.580	2.32	1.000	992.	157.3	0.0750	18.084	3.303		0.1566	10.02
34	S.F. KOKTULI	Q	3.0	14.74	0.580	2.32	1.000	992.	157.3	0.0750	18.084	3.637		0.1861	10.02
35	S.F. KOKTULI	Q	0.1	14.74	0.580	2.32	1.000	992.	157.3	0.0750	18.084	4.170		0.2130	10.02
36	S.F. KOKTULI	E	0.0									4.193			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.25	0.884	3.21	1.000	979.	95.2	0.2162	18.046	0.492	13.78	0.1737	14.78
2	S.F. KOKTULI	C	53.3	11.30	0.882	3.21	1.000	979.	95.2	0.2030	18.043	0.727		0.1737	14.78
3	S.F. KOKTULI	C	51.2	11.33	0.880	3.21	1.000	980.	95.2	0.1840	18.040	1.091		0.1737	14.78
4	S.F. KOKTULI	Q	51.1	11.33	0.880	3.21	1.000	980.	95.2	0.1840	18.040	1.113		-0.1441	14.78
5	S.F. KOKTULI	C	49.4	11.36	0.879	3.21	1.000	981.	95.2	0.1586	18.038	0.871		-0.1441	14.78
6	S.F. KOKTULI	C	47.6	11.40	0.877	3.21	1.000	981.	95.2	0.1527	18.038	0.604		-0.1441	14.78
7	S.F. KOKTULI	C	45.7	11.43	0.875	3.21	1.000	982.	95.2	0.1706	18.038	0.337		-0.1441	14.78
8	S.F. KOKTULI	C	44.8	11.44	0.875	3.21	1.000	982.	95.2	0.1530	18.038	0.207		-0.1441	14.78
9	S.F. KOKTULI	C	43.9	11.46	0.874	3.21	1.000	982.	95.2	0.1918	18.037	0.083		-0.1441	14.78
10	S.F. KOKTULI	Q	43.6	11.46	0.874	3.21	1.000	982.	95.2	0.1918	18.037	0.038		0.0100	14.78
11	S.F. KOKTULI	C	41.1	11.47	0.873	3.21	1.000	983.	95.2	0.1526	18.035	0.064		0.0100	14.78
12	S.F. KOKTULI	C	40.0	11.47	0.873	3.21	1.000	983.	95.2	0.1964	18.036	0.075		0.0100	14.78
13	S.F. KOKTULI	C	38.4	11.50	0.872	3.21	1.000	983.	95.2	0.1523	18.037	0.091		0.0100	14.78
14	S.F. KOKTULI	Q	35.8	11.50	0.872	3.21	1.000	983.	95.2	0.1523	18.037	0.117		0.1011	3.30
15	S.F. KOKTULI	B	34.3									0.272			
16	TRIBUTARY 119	H	36.1	11.50	0.872	3.21	1.000	983.	95.2	0.1724	18.038	0.482	8.03	0.0286	3.30
17	TRIBUTARY 119	T	34.3									0.533			
18	S.F. KOKTULI	J	34.3	11.53	0.870	3.21	1.000	984.	95.2	0.1267	18.037	0.806		0.4864	3.30
19	S.F. KOKTULI	C	34.1	11.56	0.868	3.21	1.000	984.	95.2	0.0853	18.035	0.873		0.4864	3.30
20	S.F. KOKTULI	Q	34.0	11.56	0.868	3.21	1.000	984.	95.2	0.0853	18.035	0.931		0.1255	3.30
21	S.F. KOKTULI	Q	29.3	11.56	0.868	3.21	1.000	984.	95.2	0.0853	18.035	1.528		0.2079	10.03
22	S.F. KOKTULI	C	27.6	11.63	0.865	3.21	1.000	985.	95.2	0.0846	18.032	1.877		0.2079	10.03
23	S.F. KOKTULI	C	25.1	11.67	0.863	3.21	1.000	986.	95.2	0.0687	18.030	2.393		0.2079	10.03
24	S.F. KOKTULI	Q	24.9	11.67	0.863	3.21	1.000	986.	95.2	0.0687	18.030	2.435		-0.0399	10.03
25	S.F. KOKTULI	C	21.9	11.69	0.862	3.21	1.000	987.	95.2	0.0858	18.031	2.313		-0.0399	10.03
26	S.F. KOKTULI	C	20.1	11.74	0.859	3.21	1.000	987.	95.2	0.0664	18.033	2.243		-0.0399	10.03
27	S.F. KOKTULI	C	15.4	11.80	0.857	3.21	1.000	988.	95.1	0.0643	18.034	2.054		-0.0399	10.03
28	S.F. KOKTULI	Q	13.9	11.80	0.857	3.21	1.000	988.	95.1	0.0643	18.034	1.996		0.1563	10.03
29	S.F. KOKTULI	C	12.5	11.83	0.855	3.21	1.000	989.	95.1	0.0613	18.033	2.215		0.1563	10.03
30	S.F. KOKTULI	C	9.2	11.86	0.854	3.21	1.000	990.	95.1	0.0757	18.034	2.727		0.1563	10.03
31	S.F. KOKTULI	C	7.9	11.89	0.852	3.21	1.000	990.	95.1	0.0606	18.035	2.936		0.1563	10.03
32	S.F. KOKTULI	C	5.1	11.94	0.850	3.21	1.000	991.	95.1	0.0648	18.037	3.372		0.1563	10.03
33	S.F. KOKTULI	C	5.1	11.98	0.847	3.21	1.000	992.	95.1	0.0751	18.041	3.372		0.1563	10.03
34	S.F. KOKTULI	Q	3.0	11.98	0.847	3.21	1.000	992.	95.1	0.0751	18.041	3.705		0.2064	10.03
35	S.F. KOKTULI	Q	0.1	11.98	0.847	3.21	1.000	992.	95.1	0.0751	18.041	4.296		0.2222	10.03
36	S.F. KOKTULI	E	0.0									4.320			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.11	0.726	2.97	1.000	979.	171.2	0.2166	18.000	0.508	13.67	0.1784	14.67
2	S.F. KOKTULI	C	53.3	11.16	0.724	2.97	1.000	979.	171.2	0.2034	17.997	0.750		0.1784	14.67
3	S.F. KOKTULI	C	51.2	11.19	0.723	2.97	1.000	980.	171.2	0.1842	17.994	1.123		0.1784	14.67
4	S.F. KOKTULI	Q	51.1	11.19	0.723	2.97	1.000	980.	171.2	0.1842	17.994	1.146		-0.1498	14.67
5	S.F. KOKTULI	C	49.4	11.22	0.722	2.97	1.000	981.	171.2	0.1587	17.993	0.894		-0.1498	14.67
6	S.F. KOKTULI	C	47.6	11.26	0.720	2.97	1.000	981.	171.2	0.1528	17.992	0.617		-0.1498	14.67
7	S.F. KOKTULI	C	45.7	11.29	0.719	2.97	1.000	982.	171.2	0.1708	17.992	0.339		-0.1498	14.67
8	S.F. KOKTULI	C	44.8	11.30	0.718	2.97	1.000	982.	171.2	0.1530	17.993	0.204		-0.1498	14.67
9	S.F. KOKTULI	C	43.9	11.32	0.717	2.97	1.000	982.	171.2	0.1921	17.991	0.075		-0.1498	14.67
10	S.F. KOKTULI	Q	43.6	11.32	0.717	2.97	1.000	982.	171.2	0.1921	17.991	0.029		0.0082	14.67
11	S.F. KOKTULI	C	41.1	11.33	0.717	2.97	1.000	983.	171.2	0.1527	17.989	0.050		0.0082	14.67
12	S.F. KOKTULI	C	40.0	11.33	0.717	2.97	1.000	983.	171.2	0.1967	17.990	0.059		0.0082	14.67
13	S.F. KOKTULI	C	38.4	11.36	0.716	2.97	1.000	983.	171.2	0.1524	17.991	0.072		0.0082	14.67
14	S.F. KOKTULI	Q	35.8	11.36	0.716	2.97	1.000	983.	171.2	0.1524	17.991	0.093		0.0979	3.33
15	S.F. KOKTULI	B	34.3									0.243			
16	TRIBUTARY 119	H	36.1	11.36	0.716	2.97	1.000	983.	171.2	0.1726	17.992	0.432	8.19	0.0280	3.33
17	TRIBUTARY 119	T	34.3									0.482			
18	S.F. KOKTULI	J	34.3	11.39	0.715	2.97	1.000	984.	171.2	0.1269	17.991	0.725		0.4747	3.33
19	S.F. KOKTULI	C	34.1	11.42	0.713	2.97	1.000	984.	171.2	0.0852	17.989	0.791		0.4747	3.33
20	S.F. KOKTULI	Q	34.0	11.42	0.713	2.97	1.000	984.	171.2	0.0852	17.989	0.847		0.1297	3.33
21	S.F. KOKTULI	Q	29.3	11.42	0.713	2.97	1.000	984.	171.2	0.0852	17.989	1.464		0.1772	9.87
22	S.F. KOKTULI	C	27.6	11.49	0.710	2.97	1.000	985.	171.1	0.0846	17.987	1.761		0.1772	9.87
23	S.F. KOKTULI	C	25.1	11.53	0.709	2.97	1.000	986.	171.1	0.0687	17.985	2.201		0.1772	9.87
24	S.F. KOKTULI	Q	24.9	11.53	0.709	2.97	1.000	986.	171.1	0.0687	17.985	2.237		-0.0372	9.87
25	S.F. KOKTULI	C	21.9	11.55	0.708	2.97	1.000	987.	171.1	0.0859	17.985	2.124		-0.0372	9.87
26	S.F. KOKTULI	C	20.1	11.60	0.706	2.97	1.000	987.	171.1	0.0664	17.988	2.058		-0.0372	9.87
27	S.F. KOKTULI	C	15.4	11.66	0.703	2.97	1.000	988.	171.1	0.0643	17.988	1.882		-0.0372	9.87
28	S.F. KOKTULI	Q	13.9	11.66	0.703	2.97	1.000	988.	171.1	0.0643	17.988	1.828		0.1598	9.87
29	S.F. KOKTULI	C	12.5	11.69	0.702	2.97	1.000	989.	171.1	0.0613	17.987	2.052		0.1598	9.87
30	S.F. KOKTULI	C	9.2	11.72	0.701	2.97	1.000	990.	171.1	0.0758	17.988	2.575		0.1598	9.87
31	S.F. KOKTULI	C	7.9	11.75	0.700	2.97	1.000	990.	171.1	0.0606	17.990	2.790		0.1598	9.87
32	S.F. KOKTULI	C	5.1	11.80	0.698	2.97	1.000	991.	171.1	0.0649	17.992	3.235		0.1598	9.87
33	S.F. KOKTULI	C	5.1	11.84	0.696	2.97	1.000	992.	171.0	0.0752	17.995	3.235		0.1598	9.87
34	S.F. KOKTULI	Q	3.0	11.84	0.696	2.97	1.000	992.	171.0	0.0752	17.995	3.576		0.1686	9.87
35	S.F. KOKTULI	Q	0.1	11.84	0.696	2.97	1.000	992.	171.0	0.0752	17.995	4.059		0.2130	9.87
36	S.F. KOKTULI	E	0.0									4.082			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.46	0.726	3.31	1.000	979.	146.5	0.2170	17.953	0.447	14.12	0.1602	15.12
2	S.F. KOKTULI	C	53.3	12.51	0.724	3.31	1.000	979.	146.5	0.2038	17.949	0.664		0.1602	15.12
3	S.F. KOKTULI	C	51.2	12.54	0.723	3.31	1.000	980.	146.5	0.1845	17.947	0.999		0.1602	15.12
4	S.F. KOKTULI	Q	51.1	12.54	0.723	3.31	1.000	980.	146.5	0.1845	17.947	1.020		-0.1334	15.12
5	S.F. KOKTULI	C	49.4	12.57	0.722	3.31	1.000	981.	146.5	0.1588	17.945	0.796		-0.1334	15.12
6	S.F. KOKTULI	C	47.6	12.61	0.720	3.31	1.000	981.	146.5	0.1529	17.945	0.549		-0.1334	15.12
7	S.F. KOKTULI	C	45.7	12.64	0.719	3.31	1.000	982.	146.5	0.1710	17.945	0.301		-0.1334	15.12
8	S.F. KOKTULI	C	44.8	12.65	0.718	3.31	1.000	982.	146.4	0.1531	17.945	0.181		-0.1334	15.12
9	S.F. KOKTULI	C	43.9	12.67	0.717	3.31	1.000	982.	146.5	0.1924	17.943	0.066		-0.1334	15.12
10	S.F. KOKTULI	Q	43.6	12.67	0.717	3.31	1.000	982.	146.5	0.1924	17.943	0.025		0.0075	15.12
11	S.F. KOKTULI	C	41.1	12.68	0.717	3.31	1.000	983.	146.5	0.1527	17.942	0.044		0.0075	15.12
12	S.F. KOKTULI	C	40.0	12.68	0.717	3.31	1.000	983.	146.4	0.1970	17.943	0.052		0.0075	15.12
13	S.F. KOKTULI	C	38.4	12.71	0.716	3.31	1.000	983.	146.4	0.1525	17.944	0.064		0.0075	15.12
14	S.F. KOKTULI	Q	35.8	12.71	0.716	3.31	1.000	983.	146.4	0.1525	17.944	0.083		0.0962	3.23
15	S.F. KOKTULI	B	34.3									0.231			
16	TRIBUTARY 119	H	36.1	12.71	0.716	3.31	1.000	983.	146.4	0.1729	17.945	0.400	8.17	0.0280	3.23
17	TRIBUTARY 119	T	34.3									0.450			
18	S.F. KOKTULI	J	34.3	12.74	0.715	3.31	1.000	984.	146.4	0.1271	17.944	0.680		0.4630	3.23
19	S.F. KOKTULI	C	34.1	12.77	0.713	3.31	1.000	984.	146.4	0.0852	17.942	0.744		0.4630	3.23
20	S.F. KOKTULI	Q	34.0	12.77	0.713	3.31	1.000	984.	146.4	0.0852	17.942	0.799		0.1293	3.23
21	S.F. KOKTULI	Q	29.3	12.77	0.713	3.31	1.000	984.	146.4	0.0852	17.942	1.414		0.1756	10.20
22	S.F. KOKTULI	C	27.6	12.84	0.710	3.31	1.000	985.	146.4	0.0846	17.939	1.709		0.1756	10.20
23	S.F. KOKTULI	C	25.1	12.88	0.709	3.31	1.000	986.	146.4	0.0688	17.937	2.144		0.1756	10.20
24	S.F. KOKTULI	Q	24.9	12.88	0.709	3.31	1.000	986.	146.4	0.0688	17.937	2.180		-0.0364	10.20
25	S.F. KOKTULI	C	21.9	12.90	0.708	3.31	1.000	987.	146.4	0.0860	17.938	2.069		-0.0364	10.20
26	S.F. KOKTULI	C	20.1	12.95	0.706	3.31	1.000	987.	146.4	0.0665	17.940	2.005		-0.0364	10.20
27	S.F. KOKTULI	C	15.4	13.01	0.703	3.31	1.000	988.	146.4	0.0643	17.941	1.833		-0.0364	10.20
28	S.F. KOKTULI	Q	13.9	13.01	0.703	3.31	1.000	988.	146.4	0.0643	17.941	1.780		0.1539	10.20
29	S.F. KOKTULI	C	12.5	13.04	0.702	3.31	1.000	989.	146.4	0.0612	17.940	1.995		0.1539	10.20
30	S.F. KOKTULI	C	9.2	13.07	0.701	3.31	1.000	990.	146.4	0.0759	17.941	2.500		0.1539	10.20
31	S.F. KOKTULI	C	7.9	13.10	0.700	3.31	1.000	990.	146.4	0.0606	17.942	2.706		0.1539	10.20
32	S.F. KOKTULI	C	5.1	13.15	0.698	3.31	1.000	991.	146.3	0.0649	17.944	3.135		0.1539	10.20
33	S.F. KOKTULI	C	5.1	13.19	0.696	3.31	1.000	992.	146.3	0.0753	17.948	3.135		0.1539	10.20
34	S.F. KOKTULI	Q	3.0	13.19	0.696	3.31	1.000	992.	146.3	0.0753	17.948	3.463		0.1372	10.20
35	S.F. KOKTULI	Q	0.1	13.19	0.696	3.31	1.000	992.	146.3	0.0753	17.948	3.856		0.1944	10.20
36	S.F. KOKTULI	E	0.0									3.877			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.43	0.680	4.36	1.000	979.	273.7	0.2174	17.903	0.390	14.84	0.1435	15.84
2	S.F. KOKTULI	C	53.3	12.48	0.678	4.36	1.000	979.	273.7	0.2043	17.900	0.584		0.1435	15.84
3	S.F. KOKTULI	C	51.2	12.51	0.677	4.36	1.000	980.	273.7	0.1847	17.897	0.884		0.1435	15.84
4	S.F. KOKTULI	Q	51.1	12.51	0.677	4.36	1.000	980.	273.7	0.1847	17.897	0.903		-0.1209	15.84
5	S.F. KOKTULI	C	49.4	12.54	0.675	4.36	1.000	981.	273.7	0.1590	17.895	0.700		-0.1209	15.84
6	S.F. KOKTULI	C	47.6	12.58	0.674	4.36	1.000	981.	273.7	0.1530	17.895	0.476		-0.1209	15.84
7	S.F. KOKTULI	C	45.7	12.61	0.673	4.36	1.000	982.	273.7	0.1712	17.895	0.252		-0.1209	15.84
8	S.F. KOKTULI	C	44.8	12.62	0.672	4.36	1.000	982.	273.7	0.1532	17.896	0.143		-0.1209	15.84
9	S.F. KOKTULI	C	43.9	12.64	0.671	4.36	1.000	982.	273.7	0.1927	17.894	0.038		-0.1209	15.84
10	S.F. KOKTULI	Q	43.6	12.64	0.671	4.36	1.000	982.	273.7	0.1927	17.894	0.001		0.0006	15.84
11	S.F. KOKTULI	C	41.1	12.65	0.671	4.36	1.000	983.	273.7	0.1528	17.892	0.003		0.0006	15.84
12	S.F. KOKTULI	C	40.0	12.65	0.671	4.36	1.000	983.	273.7	0.1973	17.893	0.004		0.0006	15.84
13	S.F. KOKTULI	C	38.4	12.68	0.670	4.36	1.000	983.	273.7	0.1526	17.894	0.005		0.0006	15.84
14	S.F. KOKTULI	Q	35.8	12.68	0.670	4.36	1.000	983.	273.7	0.1526	17.894	0.006		0.0880	3.32
15	S.F. KOKTULI	B	34.3									0.141			
16	TRIBUTARY 119	H	36.1	12.68	0.670	4.36	1.000	983.	273.7	0.1731	17.895	0.365	9.55	0.0252	3.32
17	TRIBUTARY 119	T	34.3									0.410			
18	S.F. KOKTULI	J	34.3	12.71	0.669	4.36	1.000	984.	273.7	0.1274	17.894	0.551		0.4241	3.32
19	S.F. KOKTULI	C	34.1	12.74	0.667	4.36	1.000	984.	273.6	0.0851	17.892	0.610		0.4241	3.32
20	S.F. KOKTULI	Q	34.0	12.74	0.667	4.36	1.000	984.	273.6	0.0851	17.892	0.660		0.1450	3.32
21	S.F. KOKTULI	Q	29.3	12.74	0.667	4.36	1.000	984.	273.6	0.0851	17.892	1.350		0.1708	9.97
22	S.F. KOKTULI	C	27.6	12.81	0.665	4.36	1.000	985.	273.6	0.0846	17.889	1.637		0.1708	9.97
23	S.F. KOKTULI	C	25.1	12.85	0.663	4.36	1.000	986.	273.6	0.0688	17.888	2.060		0.1708	9.97
24	S.F. KOKTULI	Q	24.9	12.85	0.663	4.36	1.000	986.	273.6	0.0688	17.888	2.095		-0.0352	9.97
25	S.F. KOKTULI	C	21.9	12.87	0.662	4.36	1.000	987.	273.6	0.0862	17.888	1.988		-0.0352	9.97
26	S.F. KOKTULI	C	20.1	12.92	0.660	4.36	1.000	987.	273.6	0.0665	17.891	1.925		-0.0352	9.97
27	S.F. KOKTULI	C	15.4	12.98	0.658	4.36	1.000	988.	273.6	0.0643	17.891	1.759		-0.0352	9.97
28	S.F. KOKTULI	Q	13.9	12.98	0.658	4.36	1.000	988.	273.6	0.0643	17.891	1.708		0.1512	9.97
29	S.F. KOKTULI	C	12.5	13.01	0.657	4.36	1.000	989.	273.6	0.0612	17.890	1.920		0.1512	9.97
30	S.F. KOKTULI	C	9.2	13.04	0.656	4.36	1.000	990.	273.5	0.0761	17.891	2.415		0.1512	9.97
31	S.F. KOKTULI	C	7.9	13.07	0.655	4.36	1.000	990.	273.5	0.0607	17.892	2.617		0.1512	9.97
32	S.F. KOKTULI	C	5.1	13.12	0.653	4.36	1.000	991.	273.5	0.0649	17.894	3.039		0.1512	9.97
33	S.F. KOKTULI	C	5.1	13.16	0.651	4.36	1.000	992.	273.5	0.0754	17.898	3.039		0.1512	9.97
34	S.F. KOKTULI	Q	3.0	13.16	0.651	4.36	1.000	992.	273.5	0.0754	17.898	3.361		0.1096	9.97
35	S.F. KOKTULI	Q	0.1	13.16	0.651	4.36	1.000	992.	273.5	0.0754	17.898	3.675		0.1852	9.97
36	S.F. KOKTULI	E	0.0									3.695			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.84	0.773	2.49	1.000	979.	159.3	0.2179	17.851	0.416	15.11	0.1513	16.11
2	S.F. KOKTULI	C	53.3	11.89	0.771	2.49	1.000	979.	159.3	0.2048	17.848	0.621		0.1513	16.11
3	S.F. KOKTULI	C	51.2	11.92	0.769	2.49	1.000	980.	159.3	0.1850	17.845	0.937		0.1513	16.11
4	S.F. KOKTULI	Q	51.1	11.92	0.769	2.49	1.000	980.	159.3	0.1850	17.845	0.957		-0.1282	16.11
5	S.F. KOKTULI	C	49.4	11.95	0.768	2.49	1.000	981.	159.3	0.1591	17.844	0.742		-0.1282	16.11
6	S.F. KOKTULI	C	47.6	11.99	0.766	2.49	1.000	981.	159.3	0.1531	17.843	0.504		-0.1282	16.11
7	S.F. KOKTULI	C	45.7	12.02	0.765	2.49	1.000	982.	159.3	0.1714	17.844	0.266		-0.1282	16.11
8	S.F. KOKTULI	C	44.8	12.03	0.764	2.49	1.000	982.	159.3	0.1533	17.844	0.151		-0.1282	16.11
9	S.F. KOKTULI	C	43.9	12.05	0.763	2.49	1.000	982.	159.3	0.1930	17.842	0.040		-0.1282	16.11
10	S.F. KOKTULI	Q	43.6	12.05	0.763	2.49	1.000	982.	159.3	0.1930	17.842	0.001		0.0004	16.11
11	S.F. KOKTULI	C	41.1	12.06	0.763	2.49	1.000	983.	159.3	0.1529	17.840	0.002		0.0004	16.11
12	S.F. KOKTULI	C	40.0	12.06	0.763	2.49	1.000	983.	159.3	0.1976	17.841	0.002		0.0004	16.11
13	S.F. KOKTULI	C	38.4	12.09	0.762	2.49	1.000	983.	159.2	0.1527	17.842	0.003		0.0004	16.11
14	S.F. KOKTULI	Q	35.8	12.09	0.762	2.49	1.000	983.	159.2	0.1527	17.842	0.004		0.0881	3.38
15	S.F. KOKTULI	B	34.3									0.139			
16	TRIBUTARY 119	H	36.1	12.09	0.762	2.49	1.000	983.	159.2	0.1734	17.843	0.386	8.74	0.0252	3.38
17	TRIBUTARY 119	T	34.3									0.431			
18	S.F. KOKTULI	J	34.3	12.12	0.760	2.49	1.000	984.	159.2	0.1276	17.842	0.570		0.4241	3.38
19	S.F. KOKTULI	C	34.1	12.15	0.759	2.49	1.000	984.	159.2	0.0851	17.841	0.629		0.4241	3.38
20	S.F. KOKTULI	Q	34.0	12.15	0.759	2.49	1.000	984.	159.2	0.0851	17.841	0.679		0.1360	3.38
21	S.F. KOKTULI	Q	29.3	12.15	0.759	2.49	1.000	984.	159.2	0.0851	17.841	1.326		0.1698	10.17
22	S.F. KOKTULI	C	27.6	12.22	0.756	2.49	1.000	985.	159.2	0.0846	17.838	1.611		0.1698	10.17
23	S.F. KOKTULI	C	25.1	12.26	0.754	2.49	1.000	986.	159.2	0.0688	17.836	2.032		0.1698	10.17
24	S.F. KOKTULI	Q	24.9	12.26	0.754	2.49	1.000	986.	159.2	0.0688	17.836	2.067		-0.0348	10.17
25	S.F. KOKTULI	C	21.9	12.28	0.753	2.49	1.000	987.	159.2	0.0863	17.837	1.961		-0.0348	10.17
26	S.F. KOKTULI	C	20.1	12.33	0.751	2.49	1.000	987.	159.2	0.0665	17.839	1.899		-0.0348	10.17
27	S.F. KOKTULI	C	15.4	12.39	0.749	2.49	1.000	988.	159.2	0.0643	17.840	1.735		-0.0348	10.17
28	S.F. KOKTULI	Q	13.9	12.39	0.749	2.49	1.000	988.	159.2	0.0643	17.840	1.684		0.1384	10.17
29	S.F. KOKTULI	C	12.5	12.42	0.747	2.49	1.000	989.	159.2	0.0612	17.839	1.878		0.1384	10.17
30	S.F. KOKTULI	C	9.2	12.45	0.746	2.49	1.000	990.	159.2	0.0762	17.839	2.331		0.1384	10.17
31	S.F. KOKTULI	C	7.9	12.48	0.745	2.49	1.000	990.	159.2	0.0607	17.841	2.517		0.1384	10.17
32	S.F. KOKTULI	C	5.1	12.53	0.742	2.49	1.000	991.	159.1	0.0650	17.843	2.903		0.1384	10.17
33	S.F. KOKTULI	C	5.1	12.57	0.740	2.49	1.000	992.	159.1	0.0755	17.846	2.903		0.1384	10.17
34	S.F. KOKTULI	Q	3.0	12.57	0.740	2.49	1.000	992.	159.1	0.0755	17.846	3.198		0.1135	10.17
35	S.F. KOKTULI	Q	0.1	12.57	0.740	2.49	1.000	992.	159.1	0.0755	17.846	3.523		0.1852	10.17
36	S.F. KOKTULI	E	0.0									3.543			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.68	0.922	2.56	1.000	979.	71.4	0.2183	17.797	0.421	12.94	0.1527	13.94
2	S.F. KOKTULI	C	53.3	9.73	0.919	2.56	1.000	979.	71.4	0.2053	17.794	0.628		0.1527	13.94
3	S.F. KOKTULI	C	51.2	9.76	0.917	2.56	1.000	980.	71.4	0.1854	17.792	0.947		0.1527	13.94
4	S.F. KOKTULI	Q	51.1	9.76	0.917	2.56	1.000	980.	71.4	0.1854	17.792	0.967		-0.1295	13.94
5	S.F. KOKTULI	C	49.4	9.79	0.916	2.56	1.000	981.	71.4	0.1592	17.790	0.750		-0.1295	13.94
6	S.F. KOKTULI	C	47.6	9.83	0.914	2.56	1.000	981.	71.4	0.1532	17.790	0.509		-0.1295	13.94
7	S.F. KOKTULI	C	45.7	9.86	0.912	2.56	1.000	982.	71.4	0.1717	17.790	0.270		-0.1295	13.94
8	S.F. KOKTULI	C	44.8	9.87	0.911	2.56	1.000	982.	71.4	0.1534	17.790	0.153		-0.1295	13.94
9	S.F. KOKTULI	C	43.9	9.89	0.911	2.56	1.000	982.	71.4	0.1934	17.789	0.041		-0.1295	13.94
10	S.F. KOKTULI	Q	43.6	9.89	0.911	2.56	1.000	982.	71.4	0.1934	17.789	0.001		0.0006	13.94
11	S.F. KOKTULI	C	41.1	9.90	0.910	2.56	1.000	983.	71.4	0.1530	17.787	0.003		0.0006	13.94
12	S.F. KOKTULI	C	40.0	9.90	0.910	2.56	1.000	983.	71.4	0.1980	17.788	0.004		0.0006	13.94
13	S.F. KOKTULI	C	38.4	9.93	0.908	2.56	1.000	983.	71.4	0.1528	17.789	0.004		0.0006	13.94
14	S.F. KOKTULI	Q	35.8	9.93	0.908	2.56	1.000	983.	71.4	0.1528	17.789	0.006		0.0991	3.74
15	S.F. KOKTULI	B	34.3									0.158			
16	TRIBUTARY 119	H	36.1	9.93	0.908	2.56	1.000	983.	71.4	0.1737	17.790	0.593	7.55	0.0280	3.74
17	TRIBUTARY 119	T	34.3									0.643			
18	S.F. KOKTULI	J	34.3	9.96	0.907	2.56	1.000	984.	71.4	0.1278	17.789	0.802		0.4747	3.74
19	S.F. KOKTULI	C	34.1	9.99	0.905	2.56	1.000	984.	71.4	0.0850	17.787	0.868		0.4747	3.74
20	S.F. KOKTULI	Q	34.0	9.99	0.905	2.56	1.000	984.	71.4	0.0850	17.787	0.924		0.1328	3.74
21	S.F. KOKTULI	Q	29.3	9.99	0.905	2.56	1.000	984.	71.4	0.0850	17.787	1.556		0.2145	10.70
22	S.F. KOKTULI	C	27.6	10.06	0.902	2.56	1.000	985.	71.4	0.0846	17.784	1.916		0.2145	10.70
23	S.F. KOKTULI	C	25.1	10.10	0.900	2.56	1.000	986.	71.4	0.0688	17.782	2.448		0.2145	10.70
24	S.F. KOKTULI	Q	24.9	10.10	0.900	2.56	1.000	986.	71.4	0.0688	17.782	2.492		-0.0408	10.70
25	S.F. KOKTULI	C	21.9	10.12	0.898	2.56	1.000	987.	71.4	0.0864	17.783	2.368		-0.0408	10.70
26	S.F. KOKTULI	C	20.1	10.17	0.896	2.56	1.000	987.	71.4	0.0665	17.786	2.296		-0.0408	10.70
27	S.F. KOKTULI	C	15.4	10.23	0.893	2.56	1.000	988.	71.4	0.0643	17.786	2.103		-0.0408	10.70
28	S.F. KOKTULI	Q	13.9	10.23	0.893	2.56	1.000	988.	71.4	0.0643	17.786	2.044		0.1510	10.70
29	S.F. KOKTULI	C	12.5	10.26	0.891	2.56	1.000	989.	71.4	0.0612	17.785	2.255		0.1510	10.70
30	S.F. KOKTULI	C	9.2	10.29	0.890	2.56	1.000	990.	71.3	0.0763	17.786	2.750		0.1510	10.70
31	S.F. KOKTULI	C	7.9	10.32	0.888	2.56	1.000	990.	71.3	0.0607	17.787	2.952		0.1510	10.70
32	S.F. KOKTULI	C	5.1	10.37	0.886	2.56	1.000	991.	71.3	0.0650	17.789	3.373		0.1510	10.70
33	S.F. KOKTULI	C	5.1	10.41	0.883	2.56	1.000	992.	71.3	0.0756	17.792	3.373		0.1510	10.70
34	S.F. KOKTULI	Q	3.0	10.41	0.883	2.56	1.000	992.	71.3	0.0756	17.792	3.695		0.2032	10.70
35	S.F. KOKTULI	Q	0.1	10.41	0.883	2.56	1.000	992.	71.3	0.0756	17.792	4.277		0.2222	10.70
36	S.F. KOKTULI	E	0.0									4.301			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.56	0.875	2.79	1.000	979.	117.2	0.2188	17.742	0.473	13.21	0.1678	14.21
2	S.F. KOKTULI	C	53.3	10.61	0.873	2.79	1.000	979.	117.2	0.2058	17.739	0.700		0.1678	14.21
3	S.F. KOKTULI	C	51.2	10.64	0.871	2.79	1.000	980.	117.2	0.1857	17.736	1.051		0.1678	14.21
4	S.F. KOKTULI	Q	51.1	10.64	0.871	2.79	1.000	980.	117.2	0.1857	17.736	1.073		-0.1416	14.21
5	S.F. KOKTULI	C	49.4	10.67	0.870	2.79	1.000	981.	117.2	0.1594	17.735	0.835		-0.1416	14.21
6	S.F. KOKTULI	C	47.6	10.71	0.868	2.79	1.000	981.	117.1	0.1533	17.734	0.573		-0.1416	14.21
7	S.F. KOKTULI	C	45.7	10.74	0.866	2.79	1.000	982.	117.1	0.1719	17.734	0.310		-0.1416	14.21
8	S.F. KOKTULI	C	44.8	10.75	0.865	2.79	1.000	982.	117.1	0.1535	17.735	0.183		-0.1416	14.21
9	S.F. KOKTULI	C	43.9	10.77	0.865	2.79	1.000	982.	117.1	0.1937	17.733	0.060		-0.1416	14.21
10	S.F. KOKTULI	Q	43.6	10.77	0.865	2.79	1.000	982.	117.1	0.1937	17.733	0.017		0.0057	14.21
11	S.F. KOKTULI	C	41.1	10.78	0.864	2.79	1.000	983.	117.1	0.1532	17.731	0.032		0.0057	14.21
12	S.F. KOKTULI	C	40.0	10.78	0.864	2.79	1.000	983.	117.1	0.1983	17.732	0.038		0.0057	14.21
13	S.F. KOKTULI	C	38.4	10.81	0.862	2.79	1.000	983.	117.1	0.1529	17.733	0.047		0.0057	14.21
14	S.F. KOKTULI	Q	35.8	10.81	0.862	2.79	1.000	983.	117.1	0.1529	17.733	0.062		0.1000	3.45
15	S.F. KOKTULI	B	34.3									0.215			
16	TRIBUTARY 119	H	36.1	10.81	0.862	2.79	1.000	983.	117.1	0.1740	17.734	0.503	7.73	0.0286	3.45
17	TRIBUTARY 119	T	34.3									0.554			
18	S.F. KOKTULI	J	34.3	10.84	0.861	2.79	1.000	984.	117.1	0.1281	17.733	0.769		0.4825	3.45
19	S.F. KOKTULI	C	34.1	10.87	0.859	2.79	1.000	984.	117.1	0.0850	17.732	0.836		0.4825	3.45
20	S.F. KOKTULI	Q	34.0	10.87	0.859	2.79	1.000	984.	117.1	0.0850	17.732	0.893		0.1282	3.45
21	S.F. KOKTULI	Q	29.3	10.87	0.859	2.79	1.000	984.	117.1	0.0850	17.732	1.503		0.2008	11.10
22	S.F. KOKTULI	C	27.6	10.94	0.856	2.79	1.000	985.	117.1	0.0846	17.729	1.840		0.2008	11.10
23	S.F. KOKTULI	C	25.1	10.98	0.854	2.79	1.000	986.	117.1	0.0688	17.727	2.338		0.2008	11.10
24	S.F. KOKTULI	Q	24.9	10.98	0.854	2.79	1.000	986.	117.1	0.0688	17.727	2.379		-0.0392	11.10
25	S.F. KOKTULI	C	21.9	11.00	0.853	2.79	1.000	987.	117.1	0.0866	17.728	2.260		-0.0392	11.10
26	S.F. KOKTULI	C	20.1	11.05	0.850	2.79	1.000	987.	117.1	0.0665	17.730	2.190		-0.0392	11.10
27	S.F. KOKTULI	C	15.4	11.11	0.848	2.79	1.000	988.	117.1	0.0643	17.731	2.005		-0.0392	11.10
28	S.F. KOKTULI	Q	13.9	11.11	0.848	2.79	1.000	988.	117.1	0.0643	17.731	1.948		0.1628	11.10
29	S.F. KOKTULI	C	12.5	11.14	0.846	2.79	1.000	989.	117.1	0.0612	17.730	2.176		0.1628	11.10
30	S.F. KOKTULI	C	9.2	11.17	0.845	2.79	1.000	990.	117.1	0.0764	17.730	2.709		0.1628	11.10
31	S.F. KOKTULI	C	7.9	11.20	0.843	2.79	1.000	990.	117.1	0.0607	17.732	2.927		0.1628	11.10
32	S.F. KOKTULI	C	5.1	11.25	0.841	2.79	1.000	991.	117.1	0.0651	17.734	3.381		0.1628	11.10
33	S.F. KOKTULI	C	5.1	11.29	0.839	2.79	1.000	992.	117.0	0.0758	17.737	3.381		0.1628	11.10
34	S.F. KOKTULI	Q	3.0	11.29	0.839	2.79	1.000	992.	117.0	0.0758	17.737	3.728		0.2137	11.10
35	S.F. KOKTULI	Q	0.1	11.29	0.839	2.79	1.000	992.	117.0	0.0758	17.737	4.340		0.2222	11.10
36	S.F. KOKTULI	E	0.0									4.364			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.27	0.819	3.18	1.000	979.	110.7	0.2193	17.684	0.489	13.54	0.1728	14.54
2	S.F. KOKTULI	C	53.3	11.32	0.817	3.18	1.000	979.	110.7	0.2063	17.681	0.723		0.1728	14.54
3	S.F. KOKTULI	C	51.2	11.35	0.816	3.18	1.000	980.	110.7	0.1860	17.679	1.085		0.1728	14.54
4	S.F. KOKTULI	Q	51.1	11.35	0.816	3.18	1.000	980.	110.7	0.1860	17.679	1.107		-0.1463	14.54
5	S.F. KOKTULI	C	49.4	11.38	0.814	3.18	1.000	981.	110.7	0.1596	17.677	0.861		-0.1463	14.54
6	S.F. KOKTULI	C	47.6	11.42	0.812	3.18	1.000	981.	110.7	0.1534	17.677	0.590		-0.1463	14.54
7	S.F. KOKTULI	C	45.7	11.45	0.811	3.18	1.000	982.	110.7	0.1722	17.677	0.319		-0.1463	14.54
8	S.F. KOKTULI	C	44.8	11.46	0.810	3.18	1.000	982.	110.7	0.1536	17.678	0.187		-0.1463	14.54
9	S.F. KOKTULI	C	43.9	11.48	0.809	3.18	1.000	982.	110.7	0.1941	17.676	0.060		-0.1463	14.54
10	S.F. KOKTULI	Q	43.6	11.48	0.809	3.18	1.000	982.	110.7	0.1941	17.676	0.015		0.0053	14.54
11	S.F. KOKTULI	C	41.1	11.49	0.809	3.18	1.000	983.	110.7	0.1533	17.674	0.029		0.0053	14.54
12	S.F. KOKTULI	C	40.0	11.49	0.809	3.18	1.000	983.	110.7	0.1987	17.675	0.035		0.0053	14.54
13	S.F. KOKTULI	C	38.4	11.52	0.807	3.18	1.000	983.	110.7	0.1531	17.676	0.043		0.0053	14.54
14	S.F. KOKTULI	Q	35.8	11.52	0.807	3.18	1.000	983.	110.7	0.1531	17.676	0.057		0.0958	3.44
15	S.F. KOKTULI	B	34.3									0.204			
16	TRIBUTARY 119	H	36.1	11.52	0.807	3.18	1.000	983.	110.7	0.1743	17.677	0.424	8.37	0.0274	3.44
17	TRIBUTARY 119	T	34.3									0.473			
18	S.F. KOKTULI	J	34.3	11.55	0.806	3.18	1.000	984.	110.7	0.1283	17.676	0.677		0.4630	3.44
19	S.F. KOKTULI	C	34.1	11.58	0.804	3.18	1.000	984.	110.7	0.0849	17.674	0.741		0.4630	3.44
20	S.F. KOKTULI	Q	34.0	11.58	0.804	3.18	1.000	984.	110.7	0.0849	17.674	0.796		0.1284	3.44
21	S.F. KOKTULI	Q	29.3	11.58	0.804	3.18	1.000	984.	110.7	0.0849	17.674	1.407		0.1838	10.65
22	S.F. KOKTULI	C	27.6	11.65	0.802	3.18	1.000	985.	110.7	0.0846	17.672	1.715		0.1838	10.65
23	S.F. KOKTULI	C	25.1	11.69	0.800	3.18	1.000	986.	110.7	0.0689	17.670	2.172		0.1838	10.65
24	S.F. KOKTULI	Q	24.9	11.69	0.800	3.18	1.000	986.	110.7	0.0689	17.670	2.209		-0.0369	10.65
25	S.F. KOKTULI	C	21.9	11.71	0.798	3.18	1.000	987.	110.7	0.0867	17.670	2.097		-0.0369	10.65
26	S.F. KOKTULI	C	20.1	11.76	0.796	3.18	1.000	987.	110.7	0.0665	17.673	2.032		-0.0369	10.65
27	S.F. KOKTULI	C	15.4	11.82	0.794	3.18	1.000	988.	110.7	0.0643	17.673	1.857		-0.0369	10.65
28	S.F. KOKTULI	Q	13.9	11.82	0.794	3.18	1.000	988.	110.7	0.0643	17.673	1.804		0.1527	10.65
29	S.F. KOKTULI	C	12.5	11.85	0.792	3.18	1.000	989.	110.7	0.0611	17.672	2.018		0.1527	10.65
30	S.F. KOKTULI	C	9.2	11.88	0.791	3.18	1.000	990.	110.7	0.0766	17.673	2.518		0.1527	10.65
31	S.F. KOKTULI	C	7.9	11.91	0.789	3.18	1.000	990.	110.7	0.0607	17.675	2.723		0.1527	10.65
32	S.F. KOKTULI	C	5.1	11.96	0.787	3.18	1.000	991.	110.6	0.0651	17.676	3.148		0.1527	10.65
33	S.F. KOKTULI	C	5.1	12.00	0.785	3.18	1.000	992.	110.6	0.0759	17.680	3.148		0.1527	10.65
34	S.F. KOKTULI	Q	3.0	12.00	0.785	3.18	1.000	992.	110.6	0.0759	17.680	3.474		0.1400	10.65
35	S.F. KOKTULI	Q	0.1	12.00	0.785	3.18	1.000	992.	110.6	0.0759	17.680	3.875		0.1944	10.65
36	S.F. KOKTULI	E	0.0									3.896			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.42	0.763	4.91	1.000	979.	186.7	0.2198	17.625	0.459	14.37	0.1639	15.37
2	S.F. KOKTULI	C	53.3	12.47	0.761	4.91	1.000	979.	186.7	0.2069	17.622	0.681		0.1639	15.37
3	S.F. KOKTULI	C	51.2	12.50	0.760	4.91	1.000	980.	186.7	0.1864	17.620	1.024		0.1639	15.37
4	S.F. KOKTULI	Q	51.1	12.50	0.760	4.91	1.000	980.	186.7	0.1864	17.620	1.045		-0.1393	15.37
5	S.F. KOKTULI	C	49.4	12.53	0.759	4.91	1.000	981.	186.7	0.1598	17.618	0.811		-0.1393	15.37
6	S.F. KOKTULI	C	47.6	12.57	0.757	4.91	1.000	981.	186.7	0.1535	17.618	0.553		-0.1393	15.37
7	S.F. KOKTULI	C	45.7	12.60	0.756	4.91	1.000	982.	186.7	0.1724	17.618	0.295		-0.1393	15.37
8	S.F. KOKTULI	C	44.8	12.61	0.755	4.91	1.000	982.	186.7	0.1537	17.618	0.169		-0.1393	15.37
9	S.F. KOKTULI	C	43.9	12.63	0.754	4.91	1.000	982.	186.7	0.1945	17.617	0.049		-0.1393	15.37
10	S.F. KOKTULI	Q	43.6	12.63	0.754	4.91	1.000	982.	186.7	0.1945	17.617	0.006		0.0027	15.37
11	S.F. KOKTULI	C	41.1	12.64	0.754	4.91	1.000	983.	186.7	0.1534	17.615	0.013		0.0027	15.37
12	S.F. KOKTULI	C	40.0	12.64	0.754	4.91	1.000	983.	186.7	0.1991	17.616	0.016		0.0027	15.37
13	S.F. KOKTULI	C	38.4	12.67	0.752	4.91	1.000	983.	186.7	0.1532	17.617	0.021		0.0027	15.37
14	S.F. KOKTULI	Q	35.8	12.67	0.752	4.91	1.000	983.	186.7	0.1532	17.617	0.028		0.0909	3.31
15	S.F. KOKTULI	B	34.3									0.167			
16	TRIBUTARY 119	H	36.1	12.67	0.752	4.91	1.000	983.	186.7	0.1746	17.618	0.381	9.00	0.0263	3.31
17	TRIBUTARY 119	T	34.3									0.428			
18	S.F. KOKTULI	J	34.3	12.70	0.751	4.91	1.000	984.	186.7	0.1286	17.617	0.595		0.4397	3.31
19	S.F. KOKTULI	C	34.1	12.73	0.750	4.91	1.000	984.	186.6	0.0849	17.615	0.656		0.4397	3.31
20	S.F. KOKTULI	Q	34.0	12.73	0.750	4.91	1.000	984.	186.6	0.0849	17.615	0.708		0.1343	3.31
21	S.F. KOKTULI	Q	29.3	12.73	0.750	4.91	1.000	984.	186.6	0.0849	17.615	1.347		0.1650	10.87
22	S.F. KOKTULI	C	27.6	12.80	0.747	4.91	1.000	985.	186.6	0.0846	17.613	1.624		0.1650	10.87
23	S.F. KOKTULI	C	25.1	12.84	0.745	4.91	1.000	986.	186.6	0.0689	17.611	2.033		0.1650	10.87
24	S.F. KOKTULI	Q	24.9	12.84	0.745	4.91	1.000	986.	186.6	0.0689	17.611	2.067		-0.0348	10.87
25	S.F. KOKTULI	C	21.9	12.86	0.744	4.91	1.000	987.	186.6	0.0869	17.612	1.961		-0.0348	10.87
26	S.F. KOKTULI	C	20.1	12.91	0.742	4.91	1.000	987.	186.6	0.0665	17.614	1.899		-0.0348	10.87
27	S.F. KOKTULI	C	15.4	12.97	0.739	4.91	1.000	988.	186.6	0.0643	17.614	1.735		-0.0348	10.87
28	S.F. KOKTULI	Q	13.9	12.97	0.739	4.91	1.000	988.	186.6	0.0643	17.614	1.684		0.1486	10.87
29	S.F. KOKTULI	C	12.5	13.00	0.738	4.91	1.000	989.	186.6	0.0611	17.613	1.892		0.1486	10.87
30	S.F. KOKTULI	C	9.2	13.03	0.737	4.91	1.000	990.	186.6	0.0767	17.614	2.379		0.1486	10.87
31	S.F. KOKTULI	C	7.9	13.06	0.736	4.91	1.000	990.	186.6	0.0607	17.616	2.578		0.1486	10.87
32	S.F. KOKTULI	C	5.1	13.11	0.733	4.91	1.000	991.	186.5	0.0652	17.617	2.992		0.1486	10.87
33	S.F. KOKTULI	C	5.1	13.15	0.731	4.91	1.000	992.	186.5	0.0760	17.621	2.992		0.1486	10.87
34	S.F. KOKTULI	Q	3.0	13.15	0.731	4.91	1.000	992.	186.5	0.0760	17.621	3.309		0.1037	10.87
35	S.F. KOKTULI	Q	0.1	13.15	0.731	4.91	1.000	992.	186.5	0.0760	17.621	3.606		0.1852	10.87
36	S.F. KOKTULI	E	0.0									3.626			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.64	0.726	3.65	1.000	979.	273.6	0.2204	17.564	0.345	15.99	0.1298	16.99
2	S.F. KOKTULI	C	53.3	13.69	0.724	3.65	1.000	979.	273.6	0.2075	17.561	0.521		0.1298	16.99
3	S.F. KOKTULI	C	51.2	13.72	0.723	3.65	1.000	980.	273.6	0.1868	17.559	0.792		0.1298	16.99
4	S.F. KOKTULI	Q	51.1	13.72	0.723	3.65	1.000	980.	273.6	0.1868	17.559	0.809		-0.1083	16.99
5	S.F. KOKTULI	C	49.4	13.75	0.722	3.65	1.000	981.	273.6	0.1600	17.558	0.627		-0.1083	16.99
6	S.F. KOKTULI	C	47.6	13.79	0.720	3.65	1.000	981.	273.6	0.1537	17.557	0.426		-0.1083	16.99
7	S.F. KOKTULI	C	45.7	13.82	0.719	3.65	1.000	982.	273.6	0.1727	17.557	0.226		-0.1083	16.99
8	S.F. KOKTULI	C	44.8	13.83	0.718	3.65	1.000	982.	273.6	0.1539	17.558	0.128		-0.1083	16.99
9	S.F. KOKTULI	C	43.9	13.85	0.717	3.65	1.000	982.	273.6	0.1949	17.556	0.035		-0.1083	16.99
10	S.F. KOKTULI	Q	43.6	13.85	0.717	3.65	1.000	982.	273.6	0.1949	17.556	0.002		0.0007	16.99
11	S.F. KOKTULI	C	41.1	13.86	0.717	3.65	1.000	983.	273.6	0.1536	17.554	0.003		0.0007	16.99
12	S.F. KOKTULI	C	40.0	13.86	0.717	3.65	1.000	983.	273.6	0.1995	17.555	0.004		0.0007	16.99
13	S.F. KOKTULI	C	38.4	13.89	0.716	3.65	1.000	983.	273.6	0.1534	17.556	0.005		0.0007	16.99
14	S.F. KOKTULI	Q	35.8	13.89	0.716	3.65	1.000	983.	273.6	0.1534	17.556	0.007		0.0869	2.99
15	S.F. KOKTULI	B	34.3									0.140			
16	TRIBUTARY 119	H	36.1	13.89	0.716	3.65	1.000	983.	273.6	0.1749	17.557	0.350	9.86	0.0252	2.99
17	TRIBUTARY 119	T	34.3									0.395			
18	S.F. KOKTULI	J	34.3	13.92	0.715	3.65	1.000	984.	273.6	0.1289	17.556	0.535		0.4163	2.99
19	S.F. KOKTULI	C	34.1	13.95	0.713	3.65	1.000	984.	273.6	0.0849	17.555	0.592		0.4163	2.99
20	S.F. KOKTULI	Q	34.0	13.95	0.713	3.65	1.000	984.	273.6	0.0849	17.555	0.642		0.1370	2.99
21	S.F. KOKTULI	Q	29.3	13.95	0.713	3.65	1.000	984.	273.6	0.0849	17.555	1.294		0.1577	10.92
22	S.F. KOKTULI	C	27.6	14.02	0.710	3.65	1.000	985.	273.5	0.0847	17.552	1.559		0.1577	10.92
23	S.F. KOKTULI	C	25.1	14.06	0.709	3.65	1.000	986.	273.5	0.0689	17.550	1.950		0.1577	10.92
24	S.F. KOKTULI	Q	24.9	14.06	0.709	3.65	1.000	986.	273.5	0.0689	17.550	1.982		-0.0337	10.92
25	S.F. KOKTULI	C	21.9	14.08	0.708	3.65	1.000	987.	273.5	0.0870	17.551	1.879		-0.0337	10.92
26	S.F. KOKTULI	C	20.1	14.13	0.706	3.65	1.000	987.	273.5	0.0665	17.553	1.820		-0.0337	10.92
27	S.F. KOKTULI	C	15.4	14.19	0.703	3.65	1.000	988.	273.5	0.0644	17.554	1.661		-0.0337	10.92
28	S.F. KOKTULI	Q	13.9	14.19	0.703	3.65	1.000	988.	273.5	0.0644	17.554	1.612		0.1282	10.92
29	S.F. KOKTULI	C	12.5	14.22	0.702	3.65	1.000	989.	273.5	0.0611	17.553	1.791		0.1282	10.92
30	S.F. KOKTULI	C	9.2	14.25	0.701	3.65	1.000	990.	273.4	0.0769	17.553	2.211		0.1282	10.92
31	S.F. KOKTULI	C	7.9	14.28	0.700	3.65	1.000	990.	273.4	0.0607	17.555	2.383		0.1282	10.92
32	S.F. KOKTULI	C	5.1	14.33	0.698	3.65	1.000	991.	273.4	0.0653	17.557	2.741		0.1282	10.92
33	S.F. KOKTULI	C	5.1	14.37	0.696	3.65	1.000	992.	273.4	0.0762	17.560	2.741		0.1282	10.92
34	S.F. KOKTULI	Q	3.0	14.37	0.696	3.65	1.000	992.	273.4	0.0762	17.560	3.014		0.1421	10.92
35	S.F. KOKTULI	Q	0.1	14.37	0.696	3.65	1.000	992.	273.4	0.0762	17.560	3.421		0.1759	10.92
36	S.F. KOKTULI	E	0.0									3.440			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.82	0.801	2.55	1.000	979.	107.1	0.2209	17.502	0.330	14.45	0.1250	15.45
2	S.F. KOKTULI	C	53.3	11.87	0.798	2.55	1.000	979.	107.1	0.2081	17.499	0.499		0.1250	15.45
3	S.F. KOKTULI	C	51.2	11.90	0.797	2.55	1.000	980.	107.1	0.1873	17.497	0.761		0.1250	15.45
4	S.F. KOKTULI	Q	51.1	11.90	0.797	2.55	1.000	980.	107.1	0.1873	17.497	0.777		-0.1041	15.45
5	S.F. KOKTULI	C	49.4	11.93	0.796	2.55	1.000	981.	107.1	0.1602	17.495	0.602		-0.1041	15.45
6	S.F. KOKTULI	C	47.6	11.97	0.794	2.55	1.000	981.	107.1	0.1538	17.495	0.409		-0.1041	15.45
7	S.F. KOKTULI	C	45.7	12.00	0.792	2.55	1.000	982.	107.0	0.1730	17.495	0.216		-0.1041	15.45
8	S.F. KOKTULI	C	44.8	12.01	0.792	2.55	1.000	982.	107.0	0.1540	17.495	0.123		-0.1041	15.45
9	S.F. KOKTULI	C	43.9	12.03	0.791	2.55	1.000	982.	107.0	0.1953	17.494	0.033		-0.1041	15.45
10	S.F. KOKTULI	Q	43.6	12.03	0.791	2.55	1.000	982.	107.0	0.1953	17.494	0.001		0.0003	15.45
11	S.F. KOKTULI	C	41.1	12.04	0.790	2.55	1.000	983.	107.1	0.1537	17.492	0.002		0.0003	15.45
12	S.F. KOKTULI	C	40.0	12.04	0.790	2.55	1.000	983.	107.0	0.1999	17.493	0.002		0.0003	15.45
13	S.F. KOKTULI	C	38.4	12.07	0.789	2.55	1.000	983.	107.0	0.1535	17.494	0.003		0.0003	15.45
14	S.F. KOKTULI	Q	35.8	12.07	0.789	2.55	1.000	983.	107.0	0.1535	17.494	0.003		0.0845	2.85
15	S.F. KOKTULI	B	34.3									0.133			
16	TRIBUTARY 119	H	36.1	12.07	0.789	2.55	1.000	983.	107.0	0.1753	17.495	0.341	9.34	0.0241	2.85
17	TRIBUTARY 119	T	34.3									0.384			
18	S.F. KOKTULI	J	34.3	12.10	0.788	2.55	1.000	984.	107.0	0.1292	17.494	0.517		0.4047	2.85
19	S.F. KOKTULI	C	34.1	12.13	0.786	2.55	1.000	984.	107.0	0.0849	17.492	0.573		0.4047	2.85
20	S.F. KOKTULI	Q	34.0	12.13	0.786	2.55	1.000	984.	107.0	0.0849	17.492	0.621		0.1347	2.85
21	S.F. KOKTULI	Q	29.3	12.13	0.786	2.55	1.000	984.	107.0	0.0849	17.492	1.262		0.1522	10.72
22	S.F. KOKTULI	C	27.6	12.20	0.783	2.55	1.000	985.	107.0	0.0847	17.490	1.517		0.1522	10.72
23	S.F. KOKTULI	C	25.1	12.24	0.782	2.55	1.000	986.	107.0	0.0690	17.488	1.895		0.1522	10.72
24	S.F. KOKTULI	Q	24.9	12.24	0.782	2.55	1.000	986.	107.0	0.0690	17.488	1.926		-0.0329	10.72
25	S.F. KOKTULI	C	21.9	12.26	0.780	2.55	1.000	987.	107.0	0.0872	17.489	1.826		-0.0329	10.72
26	S.F. KOKTULI	C	20.1	12.31	0.778	2.55	1.000	987.	107.0	0.0666	17.491	1.767		-0.0329	10.72
27	S.F. KOKTULI	C	15.4	12.37	0.776	2.55	1.000	988.	107.0	0.0644	17.491	1.612		-0.0329	10.72
28	S.F. KOKTULI	Q	13.9	12.37	0.776	2.55	1.000	988.	107.0	0.0644	17.491	1.564		0.1113	10.72
29	S.F. KOKTULI	C	12.5	12.40	0.774	2.55	1.000	989.	107.0	0.0611	17.490	1.720		0.1113	10.72
30	S.F. KOKTULI	C	9.2	12.43	0.773	2.55	1.000	990.	107.0	0.0770	17.491	2.084		0.1113	10.72
31	S.F. KOKTULI	C	7.9	12.46	0.771	2.55	1.000	990.	107.0	0.0607	17.492	2.233		0.1113	10.72
32	S.F. KOKTULI	C	5.1	12.51	0.769	2.55	1.000	991.	107.0	0.0653	17.494	2.544		0.1113	10.72
33	S.F. KOKTULI	C	5.1	12.55	0.767	2.55	1.000	992.	107.0	0.0763	17.497	2.544		0.1113	10.72
34	S.F. KOKTULI	Q	3.0	12.55	0.767	2.55	1.000	992.	107.0	0.0763	17.497	2.781		0.1767	10.72
35	S.F. KOKTULI	Q	0.1	12.55	0.767	2.55	1.000	992.	107.0	0.0763	17.497	3.287		0.1667	10.72
36	S.F. KOKTULI	E	0.0									3.305			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.31	0.726	1.92	1.000	979.	123.5	0.2215	17.438	0.357	14.64	0.1331	15.64
2	S.F. KOKTULI	C	53.3	13.36	0.724	1.92	1.000	979.	123.5	0.2087	17.435	0.537		0.1331	15.64
3	S.F. KOKTULI	C	51.2	13.39	0.723	1.92	1.000	980.	123.5	0.1877	17.433	0.816		0.1331	15.64
4	S.F. KOKTULI	Q	51.1	13.39	0.723	1.92	1.000	980.	123.5	0.1877	17.433	0.833		-0.1116	15.64
5	S.F. KOKTULI	C	49.4	13.42	0.722	1.92	1.000	981.	123.5	0.1604	17.431	0.646		-0.1116	15.64
6	S.F. KOKTULI	C	47.6	13.46	0.720	1.92	1.000	981.	123.5	0.1540	17.431	0.439		-0.1116	15.64
7	S.F. KOKTULI	C	45.7	13.49	0.719	1.92	1.000	982.	123.5	0.1733	17.431	0.232		-0.1116	15.64
8	S.F. KOKTULI	C	44.8	13.50	0.718	1.92	1.000	982.	123.5	0.1542	17.431	0.131		-0.1116	15.64
9	S.F. KOKTULI	C	43.9	13.52	0.717	1.92	1.000	982.	123.5	0.1957	17.430	0.035		-0.1116	15.64
10	S.F. KOKTULI	Q	43.6	13.52	0.717	1.92	1.000	982.	123.5	0.1957	17.430	0.001		0.0003	15.64
11	S.F. KOKTULI	C	41.1	13.53	0.717	1.92	1.000	983.	123.5	0.1539	17.428	0.002		0.0003	15.64
12	S.F. KOKTULI	C	40.0	13.53	0.717	1.92	1.000	983.	123.5	0.2003	17.429	0.002		0.0003	15.64
13	S.F. KOKTULI	C	38.4	13.56	0.716	1.92	1.000	983.	123.5	0.1537	17.430	0.003		0.0003	15.64
14	S.F. KOKTULI	Q	35.8	13.56	0.716	1.92	1.000	983.	123.5	0.1537	17.430	0.003		0.0845	3.23
15	S.F. KOKTULI	B	34.3									0.133			
16	TRIBUTARY 119	H	36.1	13.56	0.716	1.92	1.000	983.	123.5	0.1756	17.431	0.338	8.75	0.0246	3.23
17	TRIBUTARY 119	T	34.3									0.382			
18	S.F. KOKTULI	J	34.3	13.59	0.715	1.92	1.000	984.	123.5	0.1295	17.430	0.514		0.4047	3.23
19	S.F. KOKTULI	C	34.1	13.62	0.713	1.92	1.000	984.	123.5	0.0849	17.428	0.570		0.4047	3.23
20	S.F. KOKTULI	Q	34.0	13.62	0.713	1.92	1.000	984.	123.5	0.0849	17.428	0.618		0.1339	3.23
21	S.F. KOKTULI	Q	29.3	13.62	0.713	1.92	1.000	984.	123.5	0.0849	17.428	1.255		0.1471	11.22
22	S.F. KOKTULI	C	27.6	13.69	0.710	1.92	1.000	985.	123.5	0.0848	17.426	1.502		0.1471	11.22
23	S.F. KOKTULI	C	25.1	13.73	0.709	1.92	1.000	986.	123.5	0.0690	17.424	1.867		0.1471	11.22
24	S.F. KOKTULI	Q	24.9	13.73	0.709	1.92	1.000	986.	123.5	0.0690	17.424	1.897		-0.0328	11.22
25	S.F. KOKTULI	C	21.9	13.75	0.708	1.92	1.000	987.	123.5	0.0874	17.425	1.797		-0.0328	11.22
26	S.F. KOKTULI	C	20.1	13.80	0.706	1.92	1.000	987.	123.5	0.0666	17.427	1.739		-0.0328	11.22
27	S.F. KOKTULI	C	15.4	13.86	0.703	1.92	1.000	988.	123.5	0.0644	17.427	1.584		-0.0328	11.22
28	S.F. KOKTULI	Q	13.9	13.86	0.703	1.92	1.000	988.	123.5	0.0644	17.427	1.536		0.1198	11.22
29	S.F. KOKTULI	C	12.5	13.89	0.702	1.92	1.000	989.	123.5	0.0611	17.427	1.704		0.1198	11.22
30	S.F. KOKTULI	C	9.2	13.92	0.701	1.92	1.000	990.	123.4	0.0772	17.427	2.096		0.1198	11.22
31	S.F. KOKTULI	C	7.9	13.95	0.700	1.92	1.000	990.	123.4	0.0608	17.429	2.257		0.1198	11.22
32	S.F. KOKTULI	C	5.1	14.00	0.698	1.92	1.000	991.	123.4	0.0655	17.430	2.591		0.1198	11.22
33	S.F. KOKTULI	C	5.1	14.04	0.696	1.92	1.000	992.	123.4	0.0765	17.433	2.591		0.1198	11.22
34	S.F. KOKTULI	Q	3.0	14.04	0.696	1.92	1.000	992.	123.4	0.0765	17.433	2.846		0.1672	11.22
35	S.F. KOKTULI	Q	0.1	14.04	0.696	1.92	1.000	992.	123.4	0.0765	17.433	3.325		0.1759	11.22
36	S.F. KOKTULI	E	0.0									3.344			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	15.13	0.717	3.07	1.000	979.	170.2	0.2221	17.372	0.325	17.49	0.1233	18.49
2	S.F. KOKTULI	C	53.3	15.18	0.715	3.07	1.000	979.	170.2	0.2094	17.370	0.492		0.1233	18.49
3	S.F. KOKTULI	C	51.2	15.21	0.714	3.07	1.000	980.	170.2	0.1882	17.367	0.750		0.1233	18.49
4	S.F. KOKTULI	Q	51.1	15.21	0.714	3.07	1.000	980.	170.2	0.1882	17.367	0.766		-0.1026	18.49
5	S.F. KOKTULI	C	49.4	15.24	0.712	3.07	1.000	981.	170.2	0.1606	17.366	0.594		-0.1026	18.49
6	S.F. KOKTULI	C	47.6	15.28	0.711	3.07	1.000	981.	170.2	0.1542	17.365	0.403		-0.1026	18.49
7	S.F. KOKTULI	C	45.7	15.31	0.709	3.07	1.000	982.	170.1	0.1737	17.366	0.213		-0.1026	18.49
8	S.F. KOKTULI	C	44.8	15.32	0.709	3.07	1.000	982.	170.1	0.1543	17.366	0.121		-0.1026	18.49
9	S.F. KOKTULI	C	43.9	15.34	0.708	3.07	1.000	982.	170.1	0.1962	17.364	0.032		-0.1026	18.49
10	S.F. KOKTULI	Q	43.6	15.34	0.708	3.07	1.000	982.	170.1	0.1962	17.364	0.001		0.0003	18.49
11	S.F. KOKTULI	C	41.1	15.35	0.708	3.07	1.000	983.	170.2	0.1540	17.363	0.002		0.0003	18.49
12	S.F. KOKTULI	C	40.0	15.35	0.708	3.07	1.000	983.	170.1	0.2007	17.364	0.002		0.0003	18.49
13	S.F. KOKTULI	C	38.4	15.38	0.706	3.07	1.000	983.	170.1	0.1539	17.365	0.002		0.0003	18.49
14	S.F. KOKTULI	Q	35.8	15.38	0.706	3.07	1.000	983.	170.1	0.1539	17.365	0.003		0.0827	3.39
15	S.F. KOKTULI	B	34.3									0.130			
16	TRIBUTARY 119	H	36.1	15.38	0.706	3.07	1.000	983.	170.1	0.1760	17.366	0.319	10.38	0.0235	3.39
17	TRIBUTARY 119	T	34.3									0.361			
18	S.F. KOKTULI	J	34.3	15.41	0.705	3.07	1.000	984.	170.1	0.1298	17.364	0.491		0.3969	3.39
19	S.F. KOKTULI	C	34.1	15.44	0.704	3.07	1.000	984.	170.1	0.0849	17.363	0.546		0.3969	3.39
20	S.F. KOKTULI	Q	34.0	15.44	0.704	3.07	1.000	984.	170.1	0.0849	17.363	0.593		0.1330	3.39
21	S.F. KOKTULI	Q	29.3	15.44	0.704	3.07	1.000	984.	170.1	0.0849	17.363	1.226		0.1410	11.37
22	S.F. KOKTULI	C	27.6	15.51	0.701	3.07	1.000	985.	170.1	0.0848	17.361	1.463		0.1410	11.37
23	S.F. KOKTULI	C	25.1	15.55	0.700	3.07	1.000	986.	170.1	0.0690	17.359	1.812		0.1410	11.37
24	S.F. KOKTULI	Q	24.9	15.55	0.700	3.07	1.000	986.	170.1	0.0690	17.359	1.841		-0.0341	11.37
25	S.F. KOKTULI	C	21.9	15.57	0.698	3.07	1.000	987.	170.1	0.0876	17.360	1.737		-0.0341	11.37
26	S.F. KOKTULI	C	20.1	15.62	0.697	3.07	1.000	987.	170.1	0.0666	17.362	1.677		-0.0341	11.37
27	S.F. KOKTULI	C	15.4	15.68	0.694	3.07	1.000	988.	170.1	0.0644	17.362	1.515		-0.0341	11.37
28	S.F. KOKTULI	Q	13.9	15.68	0.694	3.07	1.000	988.	170.1	0.0644	17.362	1.466		0.1190	11.37
29	S.F. KOKTULI	C	12.5	15.71	0.693	3.07	1.000	989.	170.1	0.0611	17.361	1.633		0.1190	11.37
30	S.F. KOKTULI	C	9.2	15.74	0.692	3.07	1.000	990.	170.1	0.0774	17.362	2.022		0.1190	11.37
31	S.F. KOKTULI	C	7.9	15.77	0.691	3.07	1.000	990.	170.0	0.0608	17.363	2.182		0.1190	11.37
32	S.F. KOKTULI	C	5.1	15.82	0.689	3.07	1.000	991.	170.0	0.0656	17.365	2.513		0.1190	11.37
33	S.F. KOKTULI	C	5.1	15.86	0.687	3.07	1.000	992.	170.0	0.0766	17.368	2.513		0.1190	11.37
34	S.F. KOKTULI	Q	3.0	15.86	0.687	3.07	1.000	992.	170.0	0.0766	17.368	2.767		0.1788	11.37
35	S.F. KOKTULI	Q	0.1	15.86	0.687	3.07	1.000	992.	170.0	0.0766	17.368	3.279		0.1667	11.37
36	S.F. KOKTULI	E	0.0									3.297			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.95	0.903	4.55	1.000	979.	81.4	0.2227	17.305	0.275	15.18	0.0976	16.18
2	S.F. KOKTULI	C	53.3	10.00	0.901	4.55	1.000	979.	81.4	0.2100	17.303	0.407		0.0976	16.18
3	S.F. KOKTULI	C	51.2	10.03	0.899	4.55	1.000	980.	81.4	0.1886	17.300	0.611		0.0976	16.18
4	S.F. KOKTULI	Q	51.1	10.03	0.899	4.55	1.000	980.	81.4	0.1886	17.300	0.624		-0.0836	16.18
5	S.F. KOKTULI	C	49.4	10.06	0.897	4.55	1.000	981.	81.4	0.1609	17.299	0.484		-0.0836	16.18
6	S.F. KOKTULI	C	47.6	10.10	0.895	4.55	1.000	981.	81.4	0.1543	17.298	0.329		-0.0836	16.18
7	S.F. KOKTULI	C	45.7	10.13	0.894	4.55	1.000	982.	81.4	0.1740	17.299	0.174		-0.0836	16.18
8	S.F. KOKTULI	C	44.8	10.14	0.893	4.55	1.000	982.	81.4	0.1545	17.299	0.099		-0.0836	16.18
9	S.F. KOKTULI	C	43.9	10.16	0.892	4.55	1.000	982.	81.4	0.1967	17.298	0.026		-0.0836	16.18
10	S.F. KOKTULI	Q	43.6	10.16	0.892	4.55	1.000	982.	81.4	0.1967	17.298	0.001		0.0003	16.18
11	S.F. KOKTULI	C	41.1	10.17	0.892	4.55	1.000	983.	81.4	0.1542	17.296	0.001		0.0003	16.18
12	S.F. KOKTULI	C	40.0	10.17	0.891	4.55	1.000	983.	81.4	0.2012	17.297	0.002		0.0003	16.18
13	S.F. KOKTULI	C	38.4	10.20	0.890	4.55	1.000	983.	81.4	0.1541	17.298	0.002		0.0003	16.18
14	S.F. KOKTULI	Q	35.8	10.20	0.890	4.55	1.000	983.	81.4	0.1541	17.298	0.003		0.0814	3.60
15	S.F. KOKTULI	B	34.3									0.128			
16	TRIBUTARY 119	H	36.1	10.20	0.890	4.55	1.000	983.	81.4	0.1764	17.299	0.307	9.46	0.0230	3.60
17	TRIBUTARY 119	T	34.3									0.348			
18	S.F. KOKTULI	J	34.3	10.23	0.889	4.55	1.000	984.	81.4	0.1301	17.298	0.476		0.3891	3.60
19	S.F. KOKTULI	C	34.1	10.26	0.887	4.55	1.000	984.	81.4	0.0849	17.296	0.530		0.3891	3.60
20	S.F. KOKTULI	Q	34.0	10.26	0.887	4.55	1.000	984.	81.4	0.0849	17.296	0.576		0.1301	3.60
21	S.F. KOKTULI	Q	29.3	10.26	0.887	4.55	1.000	984.	81.4	0.0849	17.296	1.195		0.1481	11.09
22	S.F. KOKTULI	C	27.6	10.33	0.884	4.55	1.000	985.	81.4	0.0849	17.294	1.443		0.1481	11.09
23	S.F. KOKTULI	C	25.1	10.37	0.882	4.55	1.000	986.	81.4	0.0691	17.292	1.811		0.1481	11.09
24	S.F. KOKTULI	Q	24.9	10.37	0.882	4.55	1.000	986.	81.4	0.0691	17.292	1.841		-0.0341	11.09
25	S.F. KOKTULI	C	21.9	10.39	0.880	4.55	1.000	987.	81.4	0.0878	17.293	1.737		-0.0341	11.09
26	S.F. KOKTULI	C	20.1	10.44	0.878	4.55	1.000	987.	81.4	0.0666	17.295	1.677		-0.0341	11.09
27	S.F. KOKTULI	C	15.4	10.50	0.875	4.55	1.000	988.	81.4	0.0644	17.295	1.515		-0.0341	11.09
28	S.F. KOKTULI	Q	13.9	10.50	0.875	4.55	1.000	988.	81.4	0.0644	17.295	1.466		0.1215	11.09
29	S.F. KOKTULI	C	12.5	10.53	0.873	4.55	1.000	989.	81.4	0.0611	17.295	1.636		0.1215	11.09
30	S.F. KOKTULI	C	9.2	10.56	0.872	4.55	1.000	990.	81.4	0.0775	17.295	2.034		0.1215	11.09
31	S.F. KOKTULI	C	7.9	10.59	0.870	4.55	1.000	990.	81.4	0.0608	17.296	2.197		0.1215	11.09
32	S.F. KOKTULI	C	5.1	10.64	0.868	4.55	1.000	991.	81.4	0.0657	17.298	2.536		0.1215	11.09
33	S.F. KOKTULI	C	5.1	10.68	0.865	4.55	1.000	992.	81.3	0.0768	17.301	2.536		0.1215	11.09
34	S.F. KOKTULI	Q	3.0	10.68	0.865	4.55	1.000	992.	81.3	0.0768	17.301	2.795		0.1746	11.09
35	S.F. KOKTULI	Q	0.1	10.68	0.865	4.55	1.000	992.	81.3	0.0768	17.301	3.295		0.1759	11.09
36	S.F. KOKTULI	E	0.0									3.314			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.91	0.931	3.56	1.000	979.	51.2	0.2234	17.237	0.299	11.11	0.1152	12.11
2	S.F. KOKTULI	C	53.3	7.96	0.928	3.56	1.000	979.	51.2	0.2107	17.234	0.455		0.1152	12.11
3	S.F. KOKTULI	C	51.2	7.99	0.927	3.56	1.000	980.	51.2	0.1891	17.232	0.696		0.1152	12.11
4	S.F. KOKTULI	Q	51.1	7.99	0.927	3.56	1.000	980.	51.2	0.1891	17.232	0.711		-0.0952	12.11
5	S.F. KOKTULI	C	49.4	8.02	0.925	3.56	1.000	981.	51.2	0.1611	17.231	0.551		-0.0952	12.11
6	S.F. KOKTULI	C	47.6	8.06	0.923	3.56	1.000	981.	51.2	0.1545	17.230	0.375		-0.0952	12.11
7	S.F. KOKTULI	C	45.7	8.09	0.921	3.56	1.000	982.	51.2	0.1744	17.231	0.198		-0.0952	12.11
8	S.F. KOKTULI	C	44.8	8.10	0.921	3.56	1.000	982.	51.2	0.1547	17.231	0.112		-0.0952	12.11
9	S.F. KOKTULI	C	43.9	8.12	0.920	3.56	1.000	982.	51.2	0.1972	17.229	0.030		-0.0952	12.11
10	S.F. KOKTULI	Q	43.6	8.12	0.920	3.56	1.000	982.	51.2	0.1972	17.229	0.001		0.0004	12.11
11	S.F. KOKTULI	C	41.1	8.13	0.919	3.56	1.000	983.	51.2	0.1544	17.228	0.002		0.0004	12.11
12	S.F. KOKTULI	C	40.0	8.13	0.919	3.56	1.000	983.	51.2	0.2017	17.229	0.002		0.0004	12.11
13	S.F. KOKTULI	C	38.4	8.16	0.918	3.56	1.000	983.	51.2	0.1543	17.230	0.003		0.0004	12.11
14	S.F. KOKTULI	Q	35.8	8.16	0.918	3.56	1.000	983.	51.2	0.1543	17.230	0.004		0.0875	3.98
15	S.F. KOKTULI	B	34.3									0.138			
16	TRIBUTARY 119	H	36.1	8.16	0.918	3.56	1.000	983.	51.2	0.1768	17.230	0.374	7.65	0.0252	3.98
17	TRIBUTARY 119	T	34.3									0.419			
18	S.F. KOKTULI	J	34.3	8.19	0.916	3.56	1.000	984.	51.2	0.1304	17.229	0.557		0.4202	3.98
19	S.F. KOKTULI	C	34.1	8.22	0.914	3.56	1.000	984.	51.2	0.0850	17.228	0.615		0.4202	3.98
20	S.F. KOKTULI	Q	34.0	8.22	0.914	3.56	1.000	984.	51.2	0.0850	17.228	0.665		0.1232	3.98
21	S.F. KOKTULI	Q	29.3	8.22	0.914	3.56	1.000	984.	51.2	0.0850	17.228	1.251		0.1740	10.92
22	S.F. KOKTULI	C	27.6	8.29	0.911	3.56	1.000	985.	51.2	0.0850	17.226	1.543		0.1740	10.92
23	S.F. KOKTULI	C	25.1	8.33	0.909	3.56	1.000	986.	51.2	0.0691	17.224	1.975		0.1740	10.92
24	S.F. KOKTULI	Q	24.9	8.33	0.909	3.56	1.000	986.	51.2	0.0691	17.224	2.010		-0.0340	10.92
25	S.F. KOKTULI	C	21.9	8.35	0.907	3.56	1.000	987.	51.2	0.0880	17.225	1.906		-0.0340	10.92
26	S.F. KOKTULI	C	20.1	8.40	0.905	3.56	1.000	987.	51.2	0.0667	17.227	1.846		-0.0340	10.92
27	S.F. KOKTULI	C	15.4	8.46	0.902	3.56	1.000	988.	51.2	0.0645	17.227	1.685		-0.0340	10.92
28	S.F. KOKTULI	Q	13.9	8.46	0.902	3.56	1.000	988.	51.2	0.0645	17.227	1.636		0.1652	10.92
29	S.F. KOKTULI	C	12.5	8.49	0.900	3.56	1.000	989.	51.2	0.0611	17.226	1.867		0.1652	10.92
30	S.F. KOKTULI	C	9.2	8.52	0.899	3.56	1.000	990.	51.2	0.0777	17.227	2.409		0.1652	10.92
31	S.F. KOKTULI	C	7.9	8.55	0.897	3.56	1.000	990.	51.2	0.0608	17.228	2.630		0.1652	10.92
32	S.F. KOKTULI	C	5.1	8.60	0.895	3.56	1.000	991.	51.2	0.0658	17.230	3.091		0.1652	10.92
33	S.F. KOKTULI	C	5.1	8.64	0.892	3.56	1.000	992.	51.2	0.0770	17.233	3.091		0.1652	10.92
34	S.F. KOKTULI	Q	3.0	8.64	0.892	3.56	1.000	992.	51.2	0.0770	17.233	3.443		0.1316	10.92
35	S.F. KOKTULI	Q	0.1	8.64	0.892	3.56	1.000	992.	51.2	0.0770	17.233	3.820		0.1944	10.92
36	S.F. KOKTULI	E	0.0									3.841			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.77	0.931	4.17	1.000	979.	52.1	0.2240	17.167	0.407	10.94	0.1482	11.94
2	S.F. KOKTULI	C	53.3	8.82	0.928	4.17	1.000	979.	52.1	0.2114	17.165	0.608		0.1482	11.94
3	S.F. KOKTULI	C	51.2	8.85	0.927	4.17	1.000	980.	52.1	0.1897	17.162	0.918		0.1482	11.94
4	S.F. KOKTULI	Q	51.1	8.85	0.927	4.17	1.000	980.	52.1	0.1897	17.162	0.937		-0.1254	11.94
5	S.F. KOKTULI	C	49.4	8.88	0.925	4.17	1.000	981.	52.1	0.1614	17.161	0.726		-0.1254	11.94
6	S.F. KOKTULI	C	47.6	8.92	0.923	4.17	1.000	981.	52.1	0.1548	17.161	0.494		-0.1254	11.94
7	S.F. KOKTULI	C	45.7	8.95	0.921	4.17	1.000	982.	52.1	0.1748	17.161	0.261		-0.1254	11.94
8	S.F. KOKTULI	C	44.8	8.96	0.921	4.17	1.000	982.	52.1	0.1549	17.161	0.148		-0.1254	11.94
9	S.F. KOKTULI	C	43.9	8.98	0.920	4.17	1.000	982.	52.1	0.1977	17.160	0.040		-0.1254	11.94
10	S.F. KOKTULI	Q	43.6	8.98	0.920	4.17	1.000	982.	52.1	0.1977	17.160	0.001		0.0006	11.94
11	S.F. KOKTULI	C	41.1	8.99	0.919	4.17	1.000	983.	52.1	0.1546	17.158	0.003		0.0006	11.94
12	S.F. KOKTULI	C	40.0	8.99	0.919	4.17	1.000	983.	52.1	0.2021	17.159	0.003		0.0006	11.94
13	S.F. KOKTULI	C	38.4	9.02	0.918	4.17	1.000	983.	52.1	0.1545	17.160	0.004		0.0006	11.94
14	S.F. KOKTULI	Q	35.8	9.02	0.918	4.17	1.000	983.	52.1	0.1545	17.160	0.006		0.0987	4.05
15	S.F. KOKTULI	B	34.3									0.157			
16	TRIBUTARY 119	H	36.1	9.02	0.918	4.17	1.000	983.	52.1	0.1772	17.161	0.567	7.43	0.0286	4.05
17	TRIBUTARY 119	T	34.3									0.618			
18	S.F. KOKTULI	J	34.3	9.05	0.916	4.17	1.000	984.	52.1	0.1308	17.160	0.774		0.4747	4.05
19	S.F. KOKTULI	C	34.1	9.08	0.914	4.17	1.000	984.	52.1	0.0850	17.159	0.840		0.4747	4.05
20	S.F. KOKTULI	Q	34.0	9.08	0.914	4.17	1.000	984.	52.1	0.0850	17.159	0.896		0.1097	4.05
21	S.F. KOKTULI	Q	29.3	9.08	0.914	4.17	1.000	984.	52.1	0.0850	17.159	1.418		0.1877	10.47
22	S.F. KOKTULI	C	27.6	9.15	0.911	4.17	1.000	985.	52.1	0.0851	17.156	1.733		0.1877	10.47
23	S.F. KOKTULI	C	25.1	9.19	0.909	4.17	1.000	986.	52.1	0.0692	17.155	2.199		0.1877	10.47
24	S.F. KOKTULI	Q	24.9	9.19	0.909	4.17	1.000	986.	52.1	0.0692	17.155	2.237		-0.0372	10.47
25	S.F. KOKTULI	C	21.9	9.21	0.907	4.17	1.000	987.	52.1	0.0882	17.155	2.124		-0.0372	10.47
26	S.F. KOKTULI	C	20.1	9.26	0.905	4.17	1.000	987.	52.1	0.0667	17.157	2.058		-0.0372	10.47
27	S.F. KOKTULI	C	15.4	9.32	0.902	4.17	1.000	988.	52.1	0.0646	17.158	1.882		-0.0372	10.47
28	S.F. KOKTULI	Q	13.9	9.32	0.902	4.17	1.000	988.	52.1	0.0646	17.158	1.828		0.1651	10.47
29	S.F. KOKTULI	C	12.5	9.35	0.900	4.17	1.000	989.	52.1	0.0611	17.157	2.059		0.1651	10.47
30	S.F. KOKTULI	C	9.2	9.38	0.899	4.17	1.000	990.	52.1	0.0779	17.158	2.600		0.1651	10.47
31	S.F. KOKTULI	C	7.9	9.41	0.897	4.17	1.000	990.	52.1	0.0609	17.159	2.821		0.1651	10.47
32	S.F. KOKTULI	C	5.1	9.46	0.895	4.17	1.000	991.	52.1	0.0659	17.160	3.282		0.1651	10.47
33	S.F. KOKTULI	C	5.1	9.50	0.892	4.17	1.000	992.	52.1	0.0772	17.163	3.282		0.1651	10.47
34	S.F. KOKTULI	Q	3.0	9.50	0.892	4.17	1.000	992.	52.1	0.0772	17.163	3.634		0.1858	10.47
35	S.F. KOKTULI	Q	0.1	9.50	0.892	4.17	1.000	992.	52.1	0.0772	17.163	4.166		0.2130	10.47
36	S.F. KOKTULI	E	0.0									4.189			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.49	0.838	5.26	1.000	979.	103.3	0.2247	17.096	0.501	11.51	0.1762	12.51
2	S.F. KOKTULI	C	53.3	10.54	0.836	5.26	1.000	979.	103.3	0.2122	17.094	0.740		0.1762	12.51
3	S.F. KOKTULI	C	51.2	10.57	0.834	5.26	1.000	980.	103.3	0.1902	17.092	1.108		0.1762	12.51
4	S.F. KOKTULI	Q	51.1	10.57	0.834	5.26	1.000	980.	103.3	0.1902	17.092	1.131		-0.1508	12.51
5	S.F. KOKTULI	C	49.4	10.60	0.833	5.26	1.000	981.	103.3	0.1617	17.090	0.878		-0.1508	12.51
6	S.F. KOKTULI	C	47.6	10.64	0.831	5.26	1.000	981.	103.3	0.1550	17.090	0.598		-0.1508	12.51
7	S.F. KOKTULI	C	45.7	10.67	0.829	5.26	1.000	982.	103.3	0.1752	17.090	0.319		-0.1508	12.51
8	S.F. KOKTULI	C	44.8	10.68	0.829	5.26	1.000	982.	103.3	0.1551	17.090	0.183		-0.1508	12.51
9	S.F. KOKTULI	C	43.9	10.70	0.828	5.26	1.000	982.	103.3	0.1982	17.089	0.053		-0.1508	12.51
10	S.F. KOKTULI	Q	43.6	10.70	0.828	5.26	1.000	982.	103.3	0.1982	17.089	0.006		0.0028	12.51
11	S.F. KOKTULI	C	41.1	10.71	0.827	5.26	1.000	983.	103.3	0.1549	17.088	0.014		0.0028	12.51
12	S.F. KOKTULI	C	40.0	10.71	0.827	5.26	1.000	983.	103.3	0.2026	17.088	0.017		0.0028	12.51
13	S.F. KOKTULI	C	38.4	10.74	0.826	5.26	1.000	983.	103.3	0.1548	17.089	0.021		0.0028	12.51
14	S.F. KOKTULI	Q	35.8	10.74	0.826	5.26	1.000	983.	103.3	0.1548	17.089	0.029		0.0988	3.50
15	S.F. KOKTULI	B	34.3									0.180			
16	TRIBUTARY 119	H	36.1	10.74	0.826	5.26	1.000	983.	103.3	0.1776	17.090	0.512	7.86	0.0286	3.50
17	TRIBUTARY 119	T	34.3									0.563			
18	S.F. KOKTULI	J	34.3	10.77	0.825	5.26	1.000	984.	103.3	0.1311	17.089	0.743		0.4747	3.50
19	S.F. KOKTULI	C	34.1	10.80	0.823	5.26	1.000	984.	103.3	0.0850	17.088	0.809		0.4747	3.50
20	S.F. KOKTULI	Q	34.0	10.80	0.823	5.26	1.000	984.	103.3	0.0850	17.088	0.865		0.1158	3.50
21	S.F. KOKTULI	Q	29.3	10.80	0.823	5.26	1.000	984.	103.3	0.0850	17.088	1.416		0.1687	9.71
22	S.F. KOKTULI	C	27.6	10.87	0.820	5.26	1.000	985.	103.3	0.0852	17.085	1.699		0.1687	9.71
23	S.F. KOKTULI	C	25.1	10.91	0.818	5.26	1.000	986.	103.3	0.0693	17.084	2.118		0.1687	9.71
24	S.F. KOKTULI	Q	24.9	10.91	0.818	5.26	1.000	986.	103.3	0.0693	17.084	2.152		-0.0360	9.71
25	S.F. KOKTULI	C	21.9	10.93	0.816	5.26	1.000	987.	103.3	0.0884	17.084	2.042		-0.0360	9.71
26	S.F. KOKTULI	C	20.1	10.98	0.814	5.26	1.000	987.	103.3	0.0668	17.087	1.979		-0.0360	9.71
27	S.F. KOKTULI	C	15.4	11.04	0.812	5.26	1.000	988.	103.3	0.0647	17.087	1.808		-0.0360	9.71
28	S.F. KOKTULI	Q	13.9	11.04	0.812	5.26	1.000	988.	103.3	0.0647	17.087	1.756		0.1664	9.71
29	S.F. KOKTULI	C	12.5	11.07	0.810	5.26	1.000	989.	103.3	0.0612	17.086	1.989		0.1664	9.71
30	S.F. KOKTULI	C	9.2	11.10	0.809	5.26	1.000	990.	103.3	0.0781	17.087	2.534		0.1664	9.71
31	S.F. KOKTULI	C	7.9	11.13	0.807	5.26	1.000	990.	103.3	0.0609	17.088	2.757		0.1664	9.71
32	S.F. KOKTULI	C	5.1	11.18	0.805	5.26	1.000	991.	103.3	0.0661	17.089	3.221		0.1664	9.71
33	S.F. KOKTULI	C	5.1	11.22	0.803	5.26	1.000	992.	103.2	0.0773	17.092	3.221		0.1664	9.71
34	S.F. KOKTULI	Q	3.0	11.22	0.803	5.26	1.000	992.	103.2	0.0773	17.092	3.576		0.1686	9.71
35	S.F. KOKTULI	Q	0.1	11.22	0.803	5.26	1.000	992.	103.2	0.0773	17.092	4.059		0.2037	9.71
36	S.F. KOKTULI	E	0.0									4.081			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	14.23	0.614	3.83	1.000	979.	127.1	0.2254	17.024	0.501	13.04	0.1759	14.04
2	S.F. KOKTULI	C	53.3	14.28	0.613	3.83	1.000	979.	127.1	0.2129	17.022	0.739		0.1759	14.04
3	S.F. KOKTULI	C	51.2	14.31	0.612	3.83	1.000	980.	127.1	0.1908	17.020	1.107		0.1759	14.04
4	S.F. KOKTULI	Q	51.1	14.31	0.612	3.83	1.000	980.	127.1	0.1908	17.020	1.130		-0.1453	14.04
5	S.F. KOKTULI	C	49.4	14.34	0.611	3.83	1.000	981.	127.1	0.1620	17.018	0.886		-0.1453	14.04
6	S.F. KOKTULI	C	47.6	14.38	0.609	3.83	1.000	981.	127.1	0.1552	17.018	0.616		-0.1453	14.04
7	S.F. KOKTULI	C	45.7	14.41	0.608	3.83	1.000	982.	127.1	0.1756	17.018	0.347		-0.1453	14.04
8	S.F. KOKTULI	C	44.8	14.42	0.608	3.83	1.000	982.	127.1	0.1554	17.018	0.216		-0.1453	14.04
9	S.F. KOKTULI	C	43.9	14.44	0.607	3.83	1.000	982.	127.1	0.1987	17.017	0.090		-0.1453	14.04
10	S.F. KOKTULI	Q	43.6	14.44	0.607	3.83	1.000	982.	127.1	0.1987	17.017	0.046		0.0114	14.04
11	S.F. KOKTULI	C	41.1	14.45	0.607	3.83	1.000	983.	127.1	0.1551	17.016	0.075		0.0114	14.04
12	S.F. KOKTULI	C	40.0	14.45	0.606	3.83	1.000	983.	127.1	0.2031	17.016	0.087		0.0114	14.04
13	S.F. KOKTULI	C	38.4	14.48	0.606	3.83	1.000	983.	127.1	0.1550	17.017	0.106		0.0114	14.04
14	S.F. KOKTULI	Q	35.8	14.48	0.606	3.83	1.000	983.	127.1	0.1550	17.017	0.135		0.0999	3.33
15	S.F. KOKTULI	B	34.3									0.288			
16	TRIBUTARY 119	H	36.1	14.48	0.606	3.83	1.000	983.	127.1	0.1780	17.018	0.427	8.99	0.0286	3.33
17	TRIBUTARY 119	T	34.3									0.478			
18	S.F. KOKTULI	J	34.3	14.51	0.605	3.83	1.000	984.	127.1	0.1315	17.017	0.766		0.4825	3.33
19	S.F. KOKTULI	C	34.1	14.54	0.603	3.83	1.000	984.	127.1	0.0851	17.016	0.833		0.4825	3.33
20	S.F. KOKTULI	Q	34.0	14.54	0.603	3.83	1.000	984.	127.1	0.0851	17.016	0.890		0.0982	3.33
21	S.F. KOKTULI	Q	29.3	14.54	0.603	3.83	1.000	984.	127.1	0.0851	17.016	1.357		0.1563	9.93
22	S.F. KOKTULI	C	27.6	14.61	0.601	3.83	1.000	985.	127.1	0.0853	17.014	1.619		0.1563	9.93
23	S.F. KOKTULI	C	25.1	14.65	0.600	3.83	1.000	986.	127.1	0.0693	17.012	2.007		0.1563	9.93
24	S.F. KOKTULI	Q	24.9	14.65	0.600	3.83	1.000	986.	127.1	0.0693	17.012	2.039		-0.0345	9.93
25	S.F. KOKTULI	C	21.9	14.67	0.599	3.83	1.000	987.	127.1	0.0886	17.013	1.934		-0.0345	9.93
26	S.F. KOKTULI	C	20.1	14.72	0.597	3.83	1.000	987.	127.1	0.0669	17.015	1.873		-0.0345	9.93
27	S.F. KOKTULI	C	15.4	14.78	0.595	3.83	1.000	988.	127.1	0.0648	17.015	1.710		-0.0345	9.93
28	S.F. KOKTULI	Q	13.9	14.78	0.595	3.83	1.000	988.	127.1	0.0648	17.015	1.660		0.1652	9.93
29	S.F. KOKTULI	C	12.5	14.81	0.594	3.83	1.000	989.	127.0	0.0612	17.014	1.891		0.1652	9.93
30	S.F. KOKTULI	C	9.2	14.84	0.593	3.83	1.000	990.	127.0	0.0783	17.015	2.433		0.1652	9.93
31	S.F. KOKTULI	C	7.9	14.87	0.592	3.83	1.000	990.	127.0	0.0610	17.016	2.654		0.1652	9.93
32	S.F. KOKTULI	C	5.1	14.92	0.590	3.83	1.000	991.	127.0	0.0662	17.017	3.115		0.1652	9.93
33	S.F. KOKTULI	C	5.1	14.96	0.589	3.83	1.000	992.	127.0	0.0775	17.020	3.115		0.1652	9.93
34	S.F. KOKTULI	Q	3.0	14.96	0.589	3.83	1.000	992.	127.0	0.0775	17.020	3.467		0.1379	9.93
35	S.F. KOKTULI	Q	0.1	14.96	0.589	3.83	1.000	992.	127.0	0.0775	17.020	3.862		0.2037	9.93
36	S.F. KOKTULI	E	0.0									3.884			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	16.13	0.624	2.44	1.000	979.	188.3	0.2261	16.951	0.400	14.75	0.1463	15.75
2	S.F. KOKTULI	C	53.3	16.18	0.622	2.44	1.000	979.	188.4	0.2137	16.948	0.598		0.1463	15.75
3	S.F. KOKTULI	C	51.2	16.21	0.621	2.44	1.000	980.	188.4	0.1913	16.946	0.904		0.1463	15.75
4	S.F. KOKTULI	Q	51.1	16.21	0.621	2.44	1.000	980.	188.4	0.1913	16.946	0.923		-0.1225	15.75
5	S.F. KOKTULI	C	49.4	16.24	0.620	2.44	1.000	981.	188.4	0.1624	16.945	0.717		-0.1225	15.75
6	S.F. KOKTULI	C	47.6	16.28	0.618	2.44	1.000	981.	188.3	0.1555	16.945	0.490		-0.1225	15.75
7	S.F. KOKTULI	C	45.7	16.31	0.617	2.44	1.000	982.	188.3	0.1761	16.945	0.263		-0.1225	15.75
8	S.F. KOKTULI	C	44.8	16.32	0.617	2.44	1.000	982.	188.3	0.1556	16.945	0.153		-0.1225	15.75
9	S.F. KOKTULI	C	43.9	16.34	0.616	2.44	1.000	982.	188.3	0.1992	16.944	0.047		-0.1225	15.75
10	S.F. KOKTULI	Q	43.6	16.34	0.616	2.44	1.000	982.	188.3	0.1992	16.944	0.009		0.0037	15.75
11	S.F. KOKTULI	C	41.1	16.35	0.616	2.44	1.000	983.	188.3	0.1554	16.942	0.019		0.0037	15.75
12	S.F. KOKTULI	C	40.0	16.35	0.616	2.44	1.000	983.	188.3	0.2037	16.943	0.023		0.0037	15.75
13	S.F. KOKTULI	C	38.4	16.38	0.615	2.44	1.000	983.	188.3	0.1553	16.944	0.029		0.0037	15.75
14	S.F. KOKTULI	Q	35.8	16.38	0.615	2.44	1.000	983.	188.3	0.1553	16.944	0.039		0.0902	2.86
15	S.F. KOKTULI	B	34.3									0.177			
16	TRIBUTARY 119	H	36.1	16.38	0.615	2.44	1.000	983.	188.3	0.1784	16.945	0.359	9.90	0.0263	2.86
17	TRIBUTARY 119	T	34.3									0.406			
18	S.F. KOKTULI	J	34.3	16.41	0.614	2.44	1.000	984.	188.3	0.1319	16.944	0.583		0.4358	2.86
19	S.F. KOKTULI	C	34.1	16.44	0.612	2.44	1.000	984.	188.3	0.0851	16.943	0.643		0.4358	2.86
20	S.F. KOKTULI	Q	34.0	16.44	0.612	2.44	1.000	984.	188.3	0.0851	16.943	0.695		0.1236	2.86
21	S.F. KOKTULI	Q	29.3	16.44	0.612	2.44	1.000	984.	188.3	0.0851	16.943	1.283		0.1538	9.91
22	S.F. KOKTULI	C	27.6	16.51	0.610	2.44	1.000	985.	188.3	0.0854	16.940	1.541		0.1538	9.91
23	S.F. KOKTULI	C	25.1	16.55	0.609	2.44	1.000	986.	188.3	0.0694	16.939	1.923		0.1538	9.91
24	S.F. KOKTULI	Q	24.9	16.55	0.609	2.44	1.000	986.	188.3	0.0694	16.939	1.954		-0.0333	9.91
25	S.F. KOKTULI	C	21.9	16.57	0.608	2.44	1.000	987.	188.3	0.0888	16.940	1.853		-0.0333	9.91
26	S.F. KOKTULI	C	20.1	16.62	0.606	2.44	1.000	987.	188.3	0.0671	16.941	1.794		-0.0333	9.91
27	S.F. KOKTULI	C	15.4	16.68	0.604	2.44	1.000	988.	188.3	0.0649	16.942	1.636		-0.0333	9.91
28	S.F. KOKTULI	Q	13.9	16.68	0.604	2.44	1.000	988.	188.3	0.0649	16.942	1.588		0.1476	9.91
29	S.F. KOKTULI	C	12.5	16.71	0.603	2.44	1.000	989.	188.3	0.0613	16.941	1.795		0.1476	9.91
30	S.F. KOKTULI	C	9.2	16.74	0.602	2.44	1.000	990.	188.2	0.0785	16.942	2.278		0.1476	9.91
31	S.F. KOKTULI	C	7.9	16.77	0.601	2.44	1.000	990.	188.2	0.0610	16.943	2.476		0.1476	9.91
32	S.F. KOKTULI	C	5.1	16.82	0.599	2.44	1.000	991.	188.2	0.0663	16.944	2.887		0.1476	9.91
33	S.F. KOKTULI	C	5.1	16.86	0.598	2.44	1.000	992.	188.2	0.0777	16.947	2.887		0.1476	9.91
34	S.F. KOKTULI	Q	3.0	16.86	0.598	2.44	1.000	992.	188.2	0.0777	16.947	3.202		0.1128	9.91
35	S.F. KOKTULI	Q	0.1	16.86	0.598	2.44	1.000	992.	188.2	0.0777	16.947	3.525		0.1852	9.91
36	S.F. KOKTULI	E	0.0									3.545			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	18.12	0.670	3.26	1.000	979.	169.1	0.2268	16.876	0.380	17.26	0.1404	18.26
2	S.F. KOKTULI	C	53.3	18.17	0.668	3.26	1.000	979.	169.1	0.2145	16.874	0.570		0.1404	18.26
3	S.F. KOKTULI	C	51.2	18.20	0.667	3.26	1.000	980.	169.1	0.1919	16.872	0.864		0.1404	18.26
4	S.F. KOKTULI	Q	51.1	18.20	0.667	3.26	1.000	980.	169.1	0.1919	16.872	0.882		-0.1181	18.26
5	S.F. KOKTULI	C	49.4	18.23	0.666	3.26	1.000	981.	169.1	0.1627	16.871	0.684		-0.1181	18.26
6	S.F. KOKTULI	C	47.6	18.27	0.665	3.26	1.000	981.	169.1	0.1557	16.870	0.464		-0.1181	18.26
7	S.F. KOKTULI	C	45.7	18.30	0.663	3.26	1.000	982.	169.1	0.1765	16.871	0.246		-0.1181	18.26
8	S.F. KOKTULI	C	44.8	18.31	0.663	3.26	1.000	982.	169.1	0.1559	16.871	0.139		-0.1181	18.26
9	S.F. KOKTULI	C	43.9	18.33	0.662	3.26	1.000	982.	169.1	0.1998	16.870	0.037		-0.1181	18.26
10	S.F. KOKTULI	Q	43.6	18.33	0.662	3.26	1.000	982.	169.1	0.1998	16.870	0.001		0.0003	18.26
11	S.F. KOKTULI	C	41.1	18.34	0.662	3.26	1.000	983.	169.1	0.1556	16.868	0.002		0.0003	18.26
12	S.F. KOKTULI	C	40.0	18.34	0.662	3.26	1.000	983.	169.1	0.2042	16.869	0.002		0.0003	18.26
13	S.F. KOKTULI	C	38.4	18.37	0.661	3.26	1.000	983.	169.1	0.1556	16.870	0.002		0.0003	18.26
14	S.F. KOKTULI	Q	35.8	18.37	0.661	3.26	1.000	983.	169.1	0.1556	16.870	0.003		0.0833	2.24
15	S.F. KOKTULI	B	34.3									0.131			
16	TRIBUTARY 119	H	36.1	18.37	0.661	3.26	1.000	983.	169.1	0.1789	16.871	0.325	11.13	0.0235	2.24
17	TRIBUTARY 119	T	34.3									0.367			
18	S.F. KOKTULI	J	34.3	18.40	0.660	3.26	1.000	984.	169.1	0.1322	16.870	0.498		0.4008	2.24
19	S.F. KOKTULI	C	34.1	18.43	0.658	3.26	1.000	984.	169.1	0.0852	16.868	0.553		0.4008	2.24
20	S.F. KOKTULI	Q	34.0	18.43	0.658	3.26	1.000	984.	169.1	0.0852	16.868	0.601		0.1290	2.24
21	S.F. KOKTULI	Q	29.3	18.43	0.658	3.26	1.000	984.	169.1	0.0852	16.868	1.215		0.1368	10.45
22	S.F. KOKTULI	C	27.6	18.50	0.656	3.26	1.000	985.	169.1	0.0855	16.866	1.445		0.1368	10.45
23	S.F. KOKTULI	C	25.1	18.54	0.654	3.26	1.000	986.	169.1	0.0695	16.865	1.784		0.1368	10.45
24	S.F. KOKTULI	Q	24.9	18.54	0.654	3.26	1.000	986.	169.1	0.0695	16.865	1.812		-0.0349	10.45
25	S.F. KOKTULI	C	21.9	18.56	0.653	3.26	1.000	987.	169.1	0.0890	16.865	1.706		-0.0349	10.45
26	S.F. KOKTULI	C	20.1	18.61	0.651	3.26	1.000	987.	169.0	0.0672	16.867	1.644		-0.0349	10.45
27	S.F. KOKTULI	C	15.4	18.67	0.649	3.26	1.000	988.	169.0	0.0650	16.868	1.479		-0.0349	10.45
28	S.F. KOKTULI	Q	13.9	18.67	0.649	3.26	1.000	988.	169.0	0.0650	16.868	1.428		0.1259	10.45
29	S.F. KOKTULI	C	12.5	18.70	0.648	3.26	1.000	989.	169.0	0.0614	16.867	1.604		0.1259	10.45
30	S.F. KOKTULI	C	9.2	18.73	0.647	3.26	1.000	990.	169.0	0.0787	16.867	2.017		0.1259	10.45
31	S.F. KOKTULI	C	7.9	18.76	0.646	3.26	1.000	990.	169.0	0.0611	16.869	2.186		0.1259	10.45
32	S.F. KOKTULI	C	5.1	18.81	0.644	3.26	1.000	991.	169.0	0.0665	16.870	2.537		0.1259	10.45
33	S.F. KOKTULI	C	5.1	18.85	0.642	3.26	1.000	992.	168.9	0.0779	16.873	2.537		0.1259	10.45
34	S.F. KOKTULI	Q	3.0	18.85	0.642	3.26	1.000	992.	168.9	0.0779	16.873	2.805		0.1735	10.45
35	S.F. KOKTULI	Q	0.1	18.85	0.642	3.26	1.000	992.	168.9	0.0779	16.873	3.302		0.1667	10.45
36	S.F. KOKTULI	E	0.0									3.320			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	15.08	0.763	6.32	1.000	979.	229.4	0.2276	16.801	0.305	17.75	0.1172	18.75
2	S.F. KOKTULI	C	53.3	15.13	0.761	6.32	1.000	979.	229.4	0.2153	16.799	0.464		0.1172	18.75
3	S.F. KOKTULI	C	51.2	15.16	0.760	6.32	1.000	980.	229.4	0.1925	16.797	0.709		0.1172	18.75
4	S.F. KOKTULI	Q	51.1	15.16	0.760	6.32	1.000	980.	229.4	0.1925	16.797	0.724		-0.0970	18.75
5	S.F. KOKTULI	C	49.4	15.19	0.759	6.32	1.000	981.	229.4	0.1631	16.796	0.561		-0.0970	18.75
6	S.F. KOKTULI	C	47.6	15.23	0.757	6.32	1.000	981.	229.4	0.1560	16.795	0.381		-0.0970	18.75
7	S.F. KOKTULI	C	45.7	15.26	0.755	6.32	1.000	982.	229.4	0.1770	16.795	0.202		-0.0970	18.75
8	S.F. KOKTULI	C	44.8	15.27	0.755	6.32	1.000	982.	229.4	0.1561	16.796	0.114		-0.0970	18.75
9	S.F. KOKTULI	C	43.9	15.29	0.754	6.32	1.000	982.	229.4	0.2004	16.794	0.030		-0.0970	18.75
10	S.F. KOKTULI	Q	43.6	15.29	0.754	6.32	1.000	982.	229.4	0.2004	16.794	0.001		0.0003	18.75
11	S.F. KOKTULI	C	41.1	15.30	0.754	6.32	1.000	983.	229.4	0.1559	16.793	0.001		0.0003	18.75
12	S.F. KOKTULI	C	40.0	15.30	0.753	6.32	1.000	983.	229.4	0.2048	16.794	0.002		0.0003	18.75
13	S.F. KOKTULI	C	38.4	15.33	0.752	6.32	1.000	983.	229.4	0.1559	16.794	0.002		0.0003	18.75
14	S.F. KOKTULI	Q	35.8	15.33	0.752	6.32	1.000	983.	229.4	0.1559	16.794	0.003		0.0814	2.05
15	S.F. KOKTULI	B	34.3									0.128			
16	TRIBUTARY 119	H	36.1	15.33	0.752	6.32	1.000	983.	229.4	0.1794	16.795	0.307	11.42	0.0230	2.05
17	TRIBUTARY 119	T	34.3									0.348			
18	S.F. KOKTULI	J	34.3	15.36	0.751	6.32	1.000	984.	229.4	0.1326	16.794	0.476		0.3891	2.05
19	S.F. KOKTULI	C	34.1	15.39	0.750	6.32	1.000	984.	229.4	0.0853	16.793	0.530		0.3891	2.05
20	S.F. KOKTULI	Q	34.0	15.39	0.750	6.32	1.000	984.	229.4	0.0853	16.793	0.576		0.1265	2.05
21	S.F. KOKTULI	Q	29.3	15.39	0.750	6.32	1.000	984.	229.4	0.0853	16.793	1.178		0.1325	11.06
22	S.F. KOKTULI	C	27.6	15.46	0.747	6.32	1.000	985.	229.4	0.0856	16.791	1.400		0.1325	11.06
23	S.F. KOKTULI	C	25.1	15.50	0.745	6.32	1.000	986.	229.4	0.0695	16.790	1.729		0.1325	11.06
24	S.F. KOKTULI	Q	24.9	15.50	0.745	6.32	1.000	986.	229.4	0.0695	16.790	1.756		-0.0369	11.06
25	S.F. KOKTULI	C	21.9	15.52	0.744	6.32	1.000	987.	229.4	0.0893	16.790	1.644		-0.0369	11.06
26	S.F. KOKTULI	C	20.1	15.57	0.742	6.32	1.000	987.	229.3	0.0673	16.792	1.579		-0.0369	11.06
27	S.F. KOKTULI	C	15.4	15.63	0.739	6.32	1.000	988.	229.3	0.0651	16.792	1.404		-0.0369	11.06
28	S.F. KOKTULI	Q	13.9	15.63	0.739	6.32	1.000	988.	229.3	0.0651	16.792	1.351		0.1076	11.06
29	S.F. KOKTULI	C	12.5	15.66	0.738	6.32	1.000	989.	229.3	0.0615	16.792	1.502		0.1076	11.06
30	S.F. KOKTULI	C	9.2	15.69	0.737	6.32	1.000	990.	229.3	0.0789	16.792	1.854		0.1076	11.06
31	S.F. KOKTULI	C	7.9	15.72	0.736	6.32	1.000	990.	229.3	0.0611	16.793	1.998		0.1076	11.06
32	S.F. KOKTULI	C	5.1	15.77	0.733	6.32	1.000	991.	229.2	0.0667	16.795	2.299		0.1076	11.06
33	S.F. KOKTULI	C	5.1	15.81	0.731	6.32	1.000	992.	229.2	0.0781	16.797	2.299		0.1076	11.06
34	S.F. KOKTULI	Q	3.0	15.81	0.731	6.32	1.000	992.	229.2	0.0781	16.797	2.528		0.2119	11.06
35	S.F. KOKTULI	Q	0.1	15.81	0.731	6.32	1.000	992.	229.2	0.0781	16.797	3.135		0.1574	11.06
36	S.F. KOKTULI	E	0.0									3.152			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	14.53	0.782	5.44	1.000	979.	199.2	0.2284	16.725	0.325	17.31	0.1236	18.31
2	S.F. KOKTULI	C	53.3	14.58	0.780	5.44	1.000	979.	199.2	0.2161	16.722	0.492		0.1236	18.31
3	S.F. KOKTULI	C	51.2	14.61	0.778	5.44	1.000	980.	199.2	0.1931	16.720	0.751		0.1236	18.31
4	S.F. KOKTULI	Q	51.1	14.61	0.778	5.44	1.000	980.	199.2	0.1931	16.720	0.767		-0.1027	18.31
5	S.F. KOKTULI	C	49.4	14.64	0.777	5.44	1.000	981.	199.2	0.1634	16.719	0.594		-0.1027	18.31
6	S.F. KOKTULI	C	47.6	14.68	0.775	5.44	1.000	981.	199.2	0.1563	16.719	0.404		-0.1027	18.31
7	S.F. KOKTULI	C	45.7	14.71	0.774	5.44	1.000	982.	199.2	0.1776	16.719	0.214		-0.1027	18.31
8	S.F. KOKTULI	C	44.8	14.72	0.773	5.44	1.000	982.	199.2	0.1564	16.719	0.121		-0.1027	18.31
9	S.F. KOKTULI	C	43.9	14.74	0.773	5.44	1.000	982.	199.2	0.2010	16.718	0.032		-0.1027	18.31
10	S.F. KOKTULI	Q	43.6	14.74	0.773	5.44	1.000	982.	199.2	0.2010	16.718	0.001		0.0003	18.31
11	S.F. KOKTULI	C	41.1	14.75	0.772	5.44	1.000	983.	199.2	0.1562	16.717	0.001		0.0003	18.31
12	S.F. KOKTULI	C	40.0	14.75	0.772	5.44	1.000	983.	199.2	0.2054	16.717	0.002		0.0003	18.31
13	S.F. KOKTULI	C	38.4	14.78	0.771	5.44	1.000	983.	199.2	0.1562	16.718	0.002		0.0003	18.31
14	S.F. KOKTULI	Q	35.8	14.78	0.771	5.44	1.000	983.	199.2	0.1562	16.718	0.003		0.0802	2.82
15	S.F. KOKTULI	B	34.3									0.126			
16	TRIBUTARY 119	H	36.1	14.78	0.771	5.44	1.000	983.	199.2	0.1798	16.719	0.296	11.27	0.0224	2.82
17	TRIBUTARY 119	T	34.3									0.336			
18	S.F. KOKTULI	J	34.3	14.81	0.770	5.44	1.000	984.	199.2	0.1330	16.718	0.462		0.3852	2.82
19	S.F. KOKTULI	C	34.1	14.84	0.768	5.44	1.000	984.	199.2	0.0853	16.717	0.515		0.3852	2.82
20	S.F. KOKTULI	Q	34.0	14.84	0.768	5.44	1.000	984.	199.2	0.0853	16.717	0.561		0.1240	2.82
21	S.F. KOKTULI	Q	29.3	14.84	0.768	5.44	1.000	984.	199.2	0.0853	16.717	1.151		0.1256	11.74
22	S.F. KOKTULI	C	27.6	14.91	0.765	5.44	1.000	985.	199.2	0.0858	16.715	1.362		0.1256	11.74
23	S.F. KOKTULI	C	25.1	14.95	0.763	5.44	1.000	986.	199.2	0.0696	16.713	1.673		0.1256	11.74
24	S.F. KOKTULI	Q	24.9	14.95	0.763	5.44	1.000	986.	199.2	0.0696	16.713	1.699		-0.0385	11.74
25	S.F. KOKTULI	C	21.9	14.97	0.762	5.44	1.000	987.	199.2	0.0895	16.714	1.582		-0.0385	11.74
26	S.F. KOKTULI	C	20.1	15.02	0.760	5.44	1.000	987.	199.1	0.0675	16.716	1.514		-0.0385	11.74
27	S.F. KOKTULI	C	15.4	15.08	0.757	5.44	1.000	988.	199.1	0.0653	16.716	1.332		-0.0385	11.74
28	S.F. KOKTULI	Q	13.9	15.08	0.757	5.44	1.000	988.	199.1	0.0653	16.716	1.276		0.1050	11.74
29	S.F. KOKTULI	C	12.5	15.11	0.756	5.44	1.000	989.	199.1	0.0616	16.715	1.423		0.1050	11.74
30	S.F. KOKTULI	C	9.2	15.14	0.755	5.44	1.000	990.	199.1	0.0792	16.716	1.767		0.1050	11.74
31	S.F. KOKTULI	C	7.9	15.17	0.753	5.44	1.000	990.	199.1	0.0612	16.717	1.908		0.1050	11.74
32	S.F. KOKTULI	C	5.1	15.22	0.751	5.44	1.000	991.	199.1	0.0668	16.718	2.200		0.1050	11.74
33	S.F. KOKTULI	C	5.1	15.26	0.749	5.44	1.000	992.	199.0	0.0783	16.721	2.200		0.1050	11.74
34	S.F. KOKTULI	Q	3.0	15.26	0.749	5.44	1.000	992.	199.0	0.0783	16.721	2.424		0.2259	11.74
35	S.F. KOKTULI	Q	0.1	15.26	0.749	5.44	1.000	992.	199.0	0.0783	16.721	3.071		0.1574	11.74
36	S.F. KOKTULI	E	0.0									3.088			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.13	0.866	3.74	1.000	979.	106.0	0.2291	16.647	0.261	16.76	0.0850	17.76
2	S.F. KOKTULI	C	53.3	13.18	0.863	3.74	1.000	979.	106.0	0.2170	16.645	0.376		0.0850	17.76
3	S.F. KOKTULI	C	51.2	13.21	0.862	3.74	1.000	980.	106.0	0.1938	16.643	0.554		0.0850	17.76
4	S.F. KOKTULI	Q	51.1	13.21	0.862	3.74	1.000	980.	106.0	0.1938	16.643	0.565		-0.0757	17.76
5	S.F. KOKTULI	C	49.4	13.24	0.860	3.74	1.000	981.	106.0	0.1638	16.642	0.438		-0.0757	17.76
6	S.F. KOKTULI	C	47.6	13.28	0.858	3.74	1.000	981.	106.0	0.1566	16.641	0.298		-0.0757	17.76
7	S.F. KOKTULI	C	45.7	13.31	0.857	3.74	1.000	982.	106.0	0.1782	16.642	0.157		-0.0757	17.76
8	S.F. KOKTULI	C	44.8	13.32	0.856	3.74	1.000	982.	106.0	0.1567	16.642	0.089		-0.0757	17.76
9	S.F. KOKTULI	C	43.9	13.34	0.855	3.74	1.000	982.	106.0	0.2016	16.641	0.024		-0.0757	17.76
10	S.F. KOKTULI	Q	43.6	13.34	0.855	3.74	1.000	982.	106.0	0.2016	16.641	0.001		0.0003	17.76
11	S.F. KOKTULI	C	41.1	13.35	0.855	3.74	1.000	983.	106.0	0.1565	16.639	0.001		0.0003	17.76
12	S.F. KOKTULI	C	40.0	13.35	0.855	3.74	1.000	983.	106.0	0.2059	16.640	0.002		0.0003	17.76
13	S.F. KOKTULI	C	38.4	13.38	0.853	3.74	1.000	983.	106.0	0.1565	16.641	0.002		0.0003	17.76
14	S.F. KOKTULI	Q	35.8	13.38	0.853	3.74	1.000	983.	106.0	0.1565	16.641	0.003		0.0808	3.27
15	S.F. KOKTULI	B	34.3									0.127			
16	TRIBUTARY 119	H	36.1	13.38	0.853	3.74	1.000	983.	106.0	0.1803	16.642	0.302	10.42	0.0230	3.27
17	TRIBUTARY 119	T	34.3									0.343			
18	S.F. KOKTULI	J	34.3	13.41	0.852	3.74	1.000	984.	106.0	0.1334	16.641	0.470		0.3852	3.27
19	S.F. KOKTULI	C	34.1	13.44	0.850	3.74	1.000	984.	106.0	0.0854	16.640	0.523		0.3852	3.27
20	S.F. KOKTULI	Q	34.0	13.44	0.850	3.74	1.000	984.	106.0	0.0854	16.640	0.569		0.1187	3.27
21	S.F. KOKTULI	Q	29.3	13.44	0.850	3.74	1.000	984.	106.0	0.0854	16.640	1.134		0.1231	11.91
22	S.F. KOKTULI	C	27.6	13.51	0.847	3.74	1.000	985.	106.0	0.0859	16.638	1.341		0.1231	11.91
23	S.F. KOKTULI	C	25.1	13.55	0.845	3.74	1.000	986.	106.0	0.0697	16.636	1.646		0.1231	11.91
24	S.F. KOKTULI	Q	24.9	13.55	0.845	3.74	1.000	986.	106.0	0.0697	16.636	1.671		-0.0392	11.91
25	S.F. KOKTULI	C	21.9	13.57	0.844	3.74	1.000	987.	106.0	0.0898	16.637	1.552		-0.0392	11.91
26	S.F. KOKTULI	C	20.1	13.62	0.841	3.74	1.000	987.	106.0	0.0676	16.639	1.482		-0.0392	11.91
27	S.F. KOKTULI	C	15.4	13.68	0.839	3.74	1.000	988.	105.9	0.0654	16.639	1.297		-0.0392	11.91
28	S.F. KOKTULI	Q	13.9	13.68	0.839	3.74	1.000	988.	105.9	0.0654	16.639	1.240		0.1057	11.91
29	S.F. KOKTULI	C	12.5	13.71	0.837	3.74	1.000	989.	105.9	0.0617	16.638	1.388		0.1057	11.91
30	S.F. KOKTULI	C	9.2	13.74	0.836	3.74	1.000	990.	105.9	0.0794	16.639	1.734		0.1057	11.91
31	S.F. KOKTULI	C	7.9	13.77	0.834	3.74	1.000	990.	105.9	0.0612	16.640	1.876		0.1057	11.91
32	S.F. KOKTULI	C	5.1	13.82	0.832	3.74	1.000	991.	105.9	0.0670	16.641	2.171		0.1057	11.91
33	S.F. KOKTULI	C	5.1	13.86	0.830	3.74	1.000	992.	105.9	0.0785	16.644	2.171		0.1057	11.91
34	S.F. KOKTULI	Q	3.0	13.86	0.830	3.74	1.000	992.	105.9	0.0785	16.644	2.396		0.2294	11.91
35	S.F. KOKTULI	Q	0.1	13.86	0.830	3.74	1.000	992.	105.9	0.0785	16.644	3.053		0.1574	11.91
36	S.F. KOKTULI	E	0.0									3.070			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.18	0.884	5.03	1.000	979.	90.4	0.2299	16.569	0.217	14.99	0.0512	15.99
2	S.F. KOKTULI	C	53.3	11.23	0.882	5.03	1.000	979.	90.4	0.2178	16.567	0.286		0.0512	15.99
3	S.F. KOKTULI	C	51.2	11.26	0.880	5.03	1.000	980.	90.5	0.1945	16.565	0.393		0.0512	15.99
4	S.F. KOKTULI	Q	51.1	11.26	0.880	5.03	1.000	980.	90.5	0.1945	16.565	0.400		-0.0535	15.99
5	S.F. KOKTULI	C	49.4	11.29	0.879	5.03	1.000	981.	90.5	0.1643	16.564	0.310		-0.0535	15.99
6	S.F. KOKTULI	C	47.6	11.33	0.877	5.03	1.000	981.	90.4	0.1570	16.563	0.211		-0.0535	15.99
7	S.F. KOKTULI	C	45.7	11.36	0.875	5.03	1.000	982.	90.4	0.1789	16.564	0.112		-0.0535	15.99
8	S.F. KOKTULI	C	44.8	11.37	0.875	5.03	1.000	982.	90.4	0.1571	16.564	0.063		-0.0535	15.99
9	S.F. KOKTULI	C	43.9	11.39	0.874	5.03	1.000	982.	90.4	0.2022	16.563	0.017		-0.0535	15.99
10	S.F. KOKTULI	Q	43.6	11.39	0.874	5.03	1.000	982.	90.4	0.2022	16.563	0.001		0.0003	15.99
11	S.F. KOKTULI	C	41.1	11.40	0.873	5.03	1.000	983.	90.4	0.1569	16.561	0.001		0.0003	15.99
12	S.F. KOKTULI	C	40.0	11.40	0.873	5.03	1.000	983.	90.4	0.2065	16.562	0.002		0.0003	15.99
13	S.F. KOKTULI	C	38.4	11.43	0.872	5.03	1.000	983.	90.4	0.1569	16.563	0.002		0.0003	15.99
14	S.F. KOKTULI	Q	35.8	11.43	0.872	5.03	1.000	983.	90.4	0.1569	16.563	0.003		0.0802	3.80
15	S.F. KOKTULI	B	34.3									0.126			
16	TRIBUTARY 119	H	36.1	11.43	0.872	5.03	1.000	983.	90.4	0.1808	16.563	0.298	9.63	0.0230	3.80
17	TRIBUTARY 119	T	34.3									0.339			
18	S.F. KOKTULI	J	34.3	11.46	0.870	5.03	1.000	984.	90.4	0.1339	16.563	0.465		0.3852	3.80
19	S.F. KOKTULI	C	34.1	11.49	0.868	5.03	1.000	984.	90.4	0.0855	16.561	0.518		0.3852	3.80
20	S.F. KOKTULI	Q	34.0	11.49	0.868	5.03	1.000	984.	90.4	0.0855	16.561	0.564		0.1166	3.80
21	S.F. KOKTULI	Q	29.3	11.49	0.868	5.03	1.000	984.	90.4	0.0855	16.561	1.119		0.1199	12.01
22	S.F. KOKTULI	C	27.6	11.56	0.865	5.03	1.000	985.	90.4	0.0861	16.559	1.320		0.1199	12.01
23	S.F. KOKTULI	C	25.1	11.60	0.863	5.03	1.000	986.	90.4	0.0698	16.558	1.618		0.1199	12.01
24	S.F. KOKTULI	Q	24.9	11.60	0.863	5.03	1.000	986.	90.4	0.0698	16.558	1.642		-0.0399	12.01
25	S.F. KOKTULI	C	21.9	11.62	0.862	5.03	1.000	987.	90.4	0.0900	16.559	1.521		-0.0399	12.01
26	S.F. KOKTULI	C	20.1	11.67	0.859	5.03	1.000	987.	90.4	0.0678	16.560	1.450		-0.0399	12.01
27	S.F. KOKTULI	C	15.4	11.73	0.857	5.03	1.000	988.	90.4	0.0655	16.561	1.262		-0.0399	12.01
28	S.F. KOKTULI	Q	13.9	11.73	0.857	5.03	1.000	988.	90.4	0.0655	16.561	1.204		0.1028	12.01
29	S.F. KOKTULI	C	12.5	11.76	0.855	5.03	1.000	989.	90.4	0.0619	16.560	1.348		0.1028	12.01
30	S.F. KOKTULI	C	9.2	11.79	0.854	5.03	1.000	990.	90.4	0.0796	16.561	1.685		0.1028	12.01
31	S.F. KOKTULI	C	7.9	11.82	0.852	5.03	1.000	990.	90.4	0.0614	16.562	1.822		0.1028	12.01
32	S.F. KOKTULI	C	5.1	11.87	0.850	5.03	1.000	991.	90.4	0.0672	16.563	2.109		0.1028	12.01
33	S.F. KOKTULI	C	5.1	11.91	0.847	5.03	1.000	992.	90.4	0.0788	16.565	2.109		0.1028	12.01
34	S.F. KOKTULI	Q	3.0	11.91	0.847	5.03	1.000	992.	90.4	0.0788	16.565	2.328		0.2381	12.01
35	S.F. KOKTULI	Q	0.1	11.91	0.847	5.03	1.000	992.	90.4	0.0788	16.565	3.010		0.1481	12.01
36	S.F. KOKTULI	E	0.0									3.026			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.79	0.856	9.75	1.000	979.	61.2	0.2308	16.490	0.197	11.99	0.0380	12.99
2	S.F. KOKTULI	C	53.3	9.84	0.854	9.75	1.000	979.	61.2	0.2187	16.488	0.248		0.0380	12.99
3	S.F. KOKTULI	C	51.2	9.87	0.853	9.75	1.000	980.	61.2	0.1951	16.486	0.328		0.0380	12.99
4	S.F. KOKTULI	Q	51.1	9.87	0.853	9.75	1.000	980.	61.2	0.1951	16.486	0.333		-0.0446	12.99
5	S.F. KOKTULI	C	49.4	9.90	0.851	9.75	1.000	981.	61.2	0.1647	16.485	0.258		-0.0446	12.99
6	S.F. KOKTULI	C	47.6	9.94	0.849	9.75	1.000	981.	61.2	0.1573	16.484	0.176		-0.0446	12.99
7	S.F. KOKTULI	C	45.7	9.97	0.848	9.75	1.000	982.	61.2	0.1795	16.484	0.093		-0.0446	12.99
8	S.F. KOKTULI	C	44.8	9.98	0.847	9.75	1.000	982.	61.2	0.1574	16.485	0.053		-0.0446	12.99
9	S.F. KOKTULI	C	43.9	10.00	0.846	9.75	1.000	982.	61.2	0.2029	16.484	0.014		-0.0446	12.99
10	S.F. KOKTULI	Q	43.6	10.00	0.846	9.75	1.000	982.	61.2	0.2029	16.484	0.001		0.0003	12.99
11	S.F. KOKTULI	C	41.1	10.01	0.846	9.75	1.000	983.	61.2	0.1572	16.482	0.001		0.0003	12.99
12	S.F. KOKTULI	C	40.0	10.01	0.845	9.75	1.000	983.	61.2	0.2072	16.483	0.002		0.0003	12.99
13	S.F. KOKTULI	C	38.4	10.04	0.844	9.75	1.000	983.	61.2	0.1572	16.484	0.002		0.0003	12.99
14	S.F. KOKTULI	Q	35.8	10.04	0.844	9.75	1.000	983.	61.2	0.1572	16.484	0.003		0.0796	4.55
15	S.F. KOKTULI	B	34.3									0.125			
16	TRIBUTARY 119	H	36.1	10.04	0.844	9.75	1.000	983.	61.2	0.1813	16.484	0.291	8.72	0.0230	4.55
17	TRIBUTARY 119	T	34.3									0.332			
18	S.F. KOKTULI	J	34.3	10.07	0.843	9.75	1.000	984.	61.2	0.1343	16.484	0.457		0.3813	4.55
19	S.F. KOKTULI	C	34.1	10.10	0.841	9.75	1.000	984.	61.2	0.0856	16.482	0.510		0.3813	4.55
20	S.F. KOKTULI	Q	34.0	10.10	0.841	9.75	1.000	984.	61.2	0.0856	16.482	0.555		0.1145	4.55
21	S.F. KOKTULI	Q	29.3	10.10	0.841	9.75	1.000	984.	61.2	0.0856	16.482	1.100		0.1242	12.12
22	S.F. KOKTULI	C	27.6	10.17	0.838	9.75	1.000	985.	61.2	0.0862	16.480	1.308		0.1242	12.12
23	S.F. KOKTULI	C	25.1	10.21	0.836	9.75	1.000	986.	61.2	0.0699	16.479	1.617		0.1242	12.12
24	S.F. KOKTULI	Q	24.9	10.21	0.836	9.75	1.000	986.	61.2	0.0699	16.479	1.642		-0.0399	12.12
25	S.F. KOKTULI	C	21.9	10.23	0.835	9.75	1.000	987.	61.2	0.0903	16.480	1.521		-0.0399	12.12
26	S.F. KOKTULI	C	20.1	10.28	0.832	9.75	1.000	987.	61.2	0.0679	16.481	1.450		-0.0399	12.12
27	S.F. KOKTULI	C	15.4	10.34	0.830	9.75	1.000	988.	61.2	0.0657	16.482	1.262		-0.0399	12.12
28	S.F. KOKTULI	Q	13.9	10.34	0.830	9.75	1.000	988.	61.2	0.0657	16.482	1.204		0.0922	12.12
29	S.F. KOKTULI	C	12.5	10.37	0.828	9.75	1.000	989.	61.2	0.0620	16.481	1.333		0.0922	12.12
30	S.F. KOKTULI	C	9.2	10.40	0.827	9.75	1.000	990.	61.2	0.0799	16.482	1.635		0.0922	12.12
31	S.F. KOKTULI	C	7.9	10.43	0.825	9.75	1.000	990.	61.2	0.0615	16.483	1.759		0.0922	12.12
32	S.F. KOKTULI	C	5.1	10.48	0.823	9.75	1.000	991.	61.2	0.0674	16.484	2.015		0.0922	12.12
33	S.F. KOKTULI	C	5.1	10.52	0.821	9.75	1.000	992.	61.1	0.0790	16.486	2.015		0.0922	12.12
34	S.F. KOKTULI	Q	3.0	10.52	0.821	9.75	1.000	992.	61.1	0.0790	16.486	2.212		0.2521	12.12
35	S.F. KOKTULI	Q	0.1	10.52	0.821	9.75	1.000	992.	61.1	0.0790	16.486	2.934		0.1481	12.12
36	S.F. KOKTULI	E	0.0									2.950			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.80	0.903	10.30	1.000	979.	50.2	0.2316	16.410	0.221	10.93	0.0540	11.93
2	S.F. KOKTULI	C	53.3	9.85	0.901	10.30	1.000	979.	50.2	0.2196	16.408	0.294		0.0540	11.93
3	S.F. KOKTULI	C	51.2	9.88	0.899	10.30	1.000	980.	50.2	0.1958	16.406	0.407		0.0540	11.93
4	S.F. KOKTULI	Q	51.1	9.88	0.899	10.30	1.000	980.	50.2	0.1958	16.406	0.414		-0.0554	11.93
5	S.F. KOKTULI	C	49.4	9.91	0.897	10.30	1.000	981.	50.2	0.1652	16.405	0.321		-0.0554	11.93
6	S.F. KOKTULI	C	47.6	9.95	0.895	10.30	1.000	981.	50.2	0.1577	16.404	0.218		-0.0554	11.93
7	S.F. KOKTULI	C	45.7	9.98	0.894	10.30	1.000	982.	50.2	0.1802	16.405	0.116		-0.0554	11.93
8	S.F. KOKTULI	C	44.8	9.99	0.893	10.30	1.000	982.	50.2	0.1578	16.405	0.066		-0.0554	11.93
9	S.F. KOKTULI	C	43.9	10.01	0.892	10.30	1.000	982.	50.2	0.2035	16.404	0.018		-0.0554	11.93
10	S.F. KOKTULI	Q	43.6	10.01	0.892	10.30	1.000	982.	50.2	0.2035	16.404	0.001		0.0003	11.93
11	S.F. KOKTULI	C	41.1	10.02	0.892	10.30	1.000	983.	50.2	0.1576	16.402	0.002		0.0003	11.93
12	S.F. KOKTULI	C	40.0	10.02	0.891	10.30	1.000	983.	50.2	0.2078	16.403	0.002		0.0003	11.93
13	S.F. KOKTULI	C	38.4	10.05	0.890	10.30	1.000	983.	50.2	0.1576	16.404	0.002		0.0003	11.93
14	S.F. KOKTULI	Q	35.8	10.05	0.890	10.30	1.000	983.	50.2	0.1576	16.404	0.003		0.0820	5.08
15	S.F. KOKTULI	B	34.3									0.129			
16	TRIBUTARY 119	H	36.1	10.05	0.890	10.30	1.000	983.	50.2	0.1819	16.405	0.315	8.34	0.0235	5.08
17	TRIBUTARY 119	T	34.3									0.357			
18	S.F. KOKTULI	J	34.3	10.08	0.889	10.30	1.000	984.	50.2	0.1347	16.404	0.486		0.3930	5.08
19	S.F. KOKTULI	C	34.1	10.11	0.887	10.30	1.000	984.	50.2	0.0857	16.403	0.540		0.3930	5.08
20	S.F. KOKTULI	Q	34.0	10.11	0.887	10.30	1.000	984.	50.2	0.0857	16.403	0.587		0.1103	5.08
21	S.F. KOKTULI	Q	29.3	10.11	0.887	10.30	1.000	984.	50.2	0.0857	16.403	1.112		0.1281	12.09
22	S.F. KOKTULI	C	27.6	10.18	0.884	10.30	1.000	985.	50.2	0.0864	16.401	1.327		0.1281	12.09
23	S.F. KOKTULI	C	25.1	10.22	0.882	10.30	1.000	986.	50.2	0.0701	16.399	1.645		0.1281	12.09
24	S.F. KOKTULI	Q	24.9	10.22	0.882	10.30	1.000	986.	50.2	0.0701	16.399	1.671		-0.0392	12.09
25	S.F. KOKTULI	C	21.9	10.24	0.880	10.30	1.000	987.	50.2	0.0905	16.400	1.552		-0.0392	12.09
26	S.F. KOKTULI	C	20.1	10.29	0.878	10.30	1.000	987.	50.2	0.0681	16.402	1.482		-0.0392	12.09
27	S.F. KOKTULI	C	15.4	10.35	0.875	10.30	1.000	988.	50.2	0.0659	16.402	1.297		-0.0392	12.09
28	S.F. KOKTULI	Q	13.9	10.35	0.875	10.30	1.000	988.	50.2	0.0659	16.402	1.240		0.0892	12.09
29	S.F. KOKTULI	C	12.5	10.38	0.873	10.30	1.000	989.	50.2	0.0621	16.401	1.365		0.0892	12.09
30	S.F. KOKTULI	C	9.2	10.41	0.872	10.30	1.000	990.	50.2	0.0801	16.402	1.657		0.0892	12.09
31	S.F. KOKTULI	C	7.9	10.44	0.870	10.30	1.000	990.	50.2	0.0617	16.403	1.776		0.0892	12.09
32	S.F. KOKTULI	C	5.1	10.49	0.868	10.30	1.000	991.	50.2	0.0676	16.404	2.025		0.0892	12.09
33	S.F. KOKTULI	C	5.1	10.53	0.865	10.30	1.000	992.	50.2	0.0792	16.406	2.025		0.0892	12.09
34	S.F. KOKTULI	Q	3.0	10.53	0.865	10.30	1.000	992.	50.2	0.0792	16.406	2.215		0.2517	12.09
35	S.F. KOKTULI	Q	0.1	10.53	0.865	10.30	1.000	992.	50.2	0.0792	16.406	2.936		0.1481	12.09
36	S.F. KOKTULI	E	0.0									2.952			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.61	0.903	7.57	1.000	979.	56.6	0.2325	16.329	0.280	11.04	0.1021	12.04
2	S.F. KOKTULI	C	53.3	10.66	0.901	7.57	1.000	979.	56.6	0.2206	16.327	0.418		0.1021	12.04
3	S.F. KOKTULI	C	51.2	10.69	0.899	7.57	1.000	980.	56.6	0.1965	16.325	0.632		0.1021	12.04
4	S.F. KOKTULI	Q	51.1	10.69	0.899	7.57	1.000	980.	56.6	0.1965	16.325	0.645		-0.0864	12.04
5	S.F. KOKTULI	C	49.4	10.72	0.897	7.57	1.000	981.	56.6	0.1656	16.324	0.500		-0.0864	12.04
6	S.F. KOKTULI	C	47.6	10.76	0.895	7.57	1.000	981.	56.6	0.1581	16.324	0.340		-0.0864	12.04
7	S.F. KOKTULI	C	45.7	10.79	0.894	7.57	1.000	982.	56.6	0.1809	16.324	0.180		-0.0864	12.04
8	S.F. KOKTULI	C	44.8	10.80	0.893	7.57	1.000	982.	56.6	0.1581	16.324	0.102		-0.0864	12.04
9	S.F. KOKTULI	C	43.9	10.82	0.892	7.57	1.000	982.	56.6	0.2042	16.323	0.027		-0.0864	12.04
10	S.F. KOKTULI	Q	43.6	10.82	0.892	7.57	1.000	982.	56.6	0.2042	16.323	0.001		0.0003	12.04
11	S.F. KOKTULI	C	41.1	10.83	0.892	7.57	1.000	983.	56.6	0.1580	16.322	0.002		0.0003	12.04
12	S.F. KOKTULI	C	40.0	10.83	0.891	7.57	1.000	983.	56.6	0.2084	16.322	0.002		0.0003	12.04
13	S.F. KOKTULI	C	38.4	10.86	0.890	7.57	1.000	983.	56.6	0.1580	16.323	0.003		0.0003	12.04
14	S.F. KOKTULI	Q	35.8	10.86	0.890	7.57	1.000	983.	56.6	0.1580	16.323	0.003		0.0839	4.80
15	S.F. KOKTULI	B	34.3									0.132			
16	TRIBUTARY 119	H	36.1	10.86	0.890	7.57	1.000	983.	56.6	0.1824	16.324	0.334	8.45	0.0241	4.80
17	TRIBUTARY 119	T	34.3									0.377			
18	S.F. KOKTULI	J	34.3	10.89	0.889	7.57	1.000	984.	56.6	0.1352	16.323	0.509		0.4047	4.80
19	S.F. KOKTULI	C	34.1	10.92	0.887	7.57	1.000	984.	56.6	0.0858	16.322	0.565		0.4047	4.80
20	S.F. KOKTULI	Q	34.0	10.92	0.887	7.57	1.000	984.	56.6	0.0858	16.322	0.613		0.1099	4.80
21	S.F. KOKTULI	Q	29.3	10.92	0.887	7.57	1.000	984.	56.6	0.0858	16.322	1.136		0.1290	11.70
22	S.F. KOKTULI	C	27.6	10.99	0.884	7.57	1.000	985.	56.6	0.0866	16.320	1.353		0.1290	11.70
23	S.F. KOKTULI	C	25.1	11.03	0.881	7.57	1.000	986.	56.6	0.0703	16.319	1.673		0.1290	11.70
24	S.F. KOKTULI	Q	24.9	11.03	0.881	7.57	1.000	986.	56.6	0.0703	16.319	1.699		-0.0385	11.70
25	S.F. KOKTULI	C	21.9	11.05	0.880	7.57	1.000	987.	56.6	0.0908	16.319	1.582		-0.0385	11.70
26	S.F. KOKTULI	C	20.1	11.10	0.878	7.57	1.000	987.	56.6	0.0683	16.321	1.514		-0.0385	11.70
27	S.F. KOKTULI	C	15.4	11.16	0.875	7.57	1.000	988.	56.6	0.0660	16.321	1.332		-0.0385	11.70
28	S.F. KOKTULI	Q	13.9	11.16	0.875	7.57	1.000	988.	56.6	0.0660	16.321	1.276		0.1002	11.70
29	S.F. KOKTULI	C	12.5	11.19	0.873	7.57	1.000	989.	56.6	0.0623	16.321	1.416		0.1002	11.70
30	S.F. KOKTULI	C	9.2	11.22	0.872	7.57	1.000	990.	56.6	0.0804	16.321	1.745		0.1002	11.70
31	S.F. KOKTULI	C	7.9	11.25	0.870	7.57	1.000	990.	56.6	0.0618	16.322	1.879		0.1002	11.70
32	S.F. KOKTULI	C	5.1	11.30	0.868	7.57	1.000	991.	56.6	0.0679	16.323	2.158		0.1002	11.70
33	S.F. KOKTULI	C	5.1	11.34	0.865	7.57	1.000	992.	56.6	0.0795	16.326	2.158		0.1002	11.70
34	S.F. KOKTULI	Q	3.0	11.34	0.865	7.57	1.000	992.	56.6	0.0795	16.326	2.372		0.2325	11.70
35	S.F. KOKTULI	Q	0.1	11.34	0.865	7.57	1.000	992.	56.6	0.0795	16.326	3.038		0.1481	11.70
36	S.F. KOKTULI	E	0.0									3.054			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.47	0.931	9.21	1.000	979.	26.5	0.2333	16.247	0.335	11.18	0.1261	12.18
2	S.F. KOKTULI	C	53.3	10.52	0.928	9.21	1.000	979.	26.5	0.2215	16.245	0.506		0.1261	12.18
3	S.F. KOKTULI	C	51.2	10.55	0.927	9.21	1.000	980.	26.5	0.1973	16.244	0.770		0.1261	12.18
4	S.F. KOKTULI	Q	51.1	10.55	0.927	9.21	1.000	980.	26.5	0.1973	16.244	0.786		-0.1051	12.18
5	S.F. KOKTULI	C	49.4	10.58	0.925	9.21	1.000	981.	26.5	0.1661	16.243	0.609		-0.1051	12.18
6	S.F. KOKTULI	C	47.6	10.62	0.923	9.21	1.000	981.	26.5	0.1585	16.242	0.414		-0.1051	12.18
7	S.F. KOKTULI	C	45.7	10.65	0.921	9.21	1.000	982.	26.5	0.1816	16.243	0.220		-0.1051	12.18
8	S.F. KOKTULI	C	44.8	10.66	0.921	9.21	1.000	982.	26.5	0.1585	16.243	0.125		-0.1051	12.18
9	S.F. KOKTULI	C	43.9	10.68	0.920	9.21	1.000	982.	26.5	0.2049	16.242	0.034		-0.1051	12.18
10	S.F. KOKTULI	Q	43.6	10.68	0.920	9.21	1.000	982.	26.5	0.2049	16.242	0.002		0.0008	12.18
11	S.F. KOKTULI	C	41.1	10.69	0.919	9.21	1.000	983.	26.5	0.1584	16.240	0.004		0.0008	12.18
12	S.F. KOKTULI	C	40.0	10.69	0.919	9.21	1.000	983.	26.5	0.2091	16.241	0.005		0.0008	12.18
13	S.F. KOKTULI	C	38.4	10.72	0.918	9.21	1.000	983.	26.5	0.1585	16.242	0.006		0.0008	12.18
14	S.F. KOKTULI	Q	35.8	10.72	0.918	9.21	1.000	983.	26.5	0.1585	16.242	0.008		0.1031	4.77
15	S.F. KOKTULI	B	34.3									0.166			
16	TRIBUTARY 119	H	36.1	10.72	0.918	9.21	1.000	983.	26.5	0.1830	16.242	0.779	8.19	0.0297	4.77
17	TRIBUTARY 119	T	34.3									0.832			
18	S.F. KOKTULI	J	34.3	10.75	0.916	9.21	1.000	984.	26.5	0.1357	16.242	0.997		0.4981	4.77
19	S.F. KOKTULI	C	34.1	10.78	0.914	9.21	1.000	984.	26.5	0.0860	16.241	1.066		0.4981	4.77
20	S.F. KOKTULI	Q	34.0	10.78	0.914	9.21	1.000	984.	26.5	0.0860	16.241	1.125		0.0773	4.77
21	S.F. KOKTULI	Q	29.3	10.78	0.914	9.21	1.000	984.	26.5	0.0860	16.241	1.493		0.1705	11.14
22	S.F. KOKTULI	C	27.6	10.85	0.911	9.21	1.000	985.	26.5	0.0868	16.239	1.779		0.1705	11.14
23	S.F. KOKTULI	C	25.1	10.89	0.909	9.21	1.000	986.	26.5	0.0705	16.238	2.202		0.1705	11.14
24	S.F. KOKTULI	Q	24.9	10.89	0.909	9.21	1.000	986.	26.5	0.0705	16.238	2.237		-0.0372	11.14
25	S.F. KOKTULI	C	21.9	10.91	0.907	9.21	1.000	987.	26.5	0.0911	16.238	2.124		-0.0372	11.14
26	S.F. KOKTULI	C	20.1	10.96	0.905	9.21	1.000	987.	26.5	0.0685	16.240	2.058		-0.0372	11.14
27	S.F. KOKTULI	C	15.4	11.02	0.902	9.21	1.000	988.	26.5	0.0662	16.240	1.882		-0.0372	11.14
28	S.F. KOKTULI	Q	13.9	11.02	0.902	9.21	1.000	988.	26.5	0.0662	16.240	1.828		0.1318	11.14
29	S.F. KOKTULI	C	12.5	11.05	0.900	9.21	1.000	989.	26.5	0.0624	16.239	2.012		0.1318	11.14
30	S.F. KOKTULI	C	9.2	11.08	0.899	9.21	1.000	990.	26.5	0.0807	16.240	2.444		0.1318	11.14
31	S.F. KOKTULI	C	7.9	11.11	0.897	9.21	1.000	990.	26.5	0.0620	16.241	2.621		0.1318	11.14
32	S.F. KOKTULI	C	5.1	11.16	0.895	9.21	1.000	991.	26.5	0.0681	16.242	2.988		0.1318	11.14
33	S.F. KOKTULI	C	5.1	11.20	0.892	9.21	1.000	992.	26.5	0.0797	16.244	2.988		0.1318	11.14
34	S.F. KOKTULI	Q	3.0	11.20	0.892	9.21	1.000	992.	26.5	0.0797	16.244	3.269		0.1023	11.14
35	S.F. KOKTULI	Q	0.1	11.20	0.892	9.21	1.000	992.	26.5	0.0797	16.244	3.562		0.1852	11.14
36	S.F. KOKTULI	E	0.0									3.582			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.10	0.922	8.54	1.000	979.	57.5	0.2342	16.165	0.512	10.96	0.1790	11.96
2	S.F. KOKTULI	C	53.3	11.15	0.919	8.54	1.000	979.	57.5	0.2225	16.163	0.754		0.1790	11.96
3	S.F. KOKTULI	C	51.2	11.18	0.917	8.54	1.000	980.	57.5	0.1980	16.162	1.129		0.1790	11.96
4	S.F. KOKTULI	Q	51.1	11.18	0.917	8.54	1.000	980.	57.5	0.1980	16.162	1.152		-0.1529	11.96
5	S.F. KOKTULI	C	49.4	11.21	0.916	8.54	1.000	981.	57.5	0.1667	16.161	0.895		-0.1529	11.96
6	S.F. KOKTULI	C	47.6	11.25	0.914	8.54	1.000	981.	57.5	0.1589	16.160	0.612		-0.1529	11.96
7	S.F. KOKTULI	C	45.7	11.28	0.912	8.54	1.000	982.	57.5	0.1824	16.160	0.328		-0.1529	11.96
8	S.F. KOKTULI	C	44.8	11.29	0.911	8.54	1.000	982.	57.5	0.1589	16.161	0.191		-0.1529	11.96
9	S.F. KOKTULI	C	43.9	11.31	0.911	8.54	1.000	982.	57.5	0.2056	16.160	0.059		-0.1529	11.96
10	S.F. KOKTULI	Q	43.6	11.31	0.911	8.54	1.000	982.	57.5	0.2056	16.160	0.012		0.0043	11.96
11	S.F. KOKTULI	C	41.1	11.32	0.910	8.54	1.000	983.	57.5	0.1589	16.158	0.023		0.0043	11.96
12	S.F. KOKTULI	C	40.0	11.32	0.910	8.54	1.000	983.	57.5	0.2098	16.159	0.028		0.0043	11.96
13	S.F. KOKTULI	C	38.4	11.35	0.908	8.54	1.000	983.	57.5	0.1589	16.160	0.035		0.0043	11.96
14	S.F. KOKTULI	Q	35.8	11.35	0.908	8.54	1.000	983.	57.5	0.1589	16.160	0.046		0.1059	4.73
15	S.F. KOKTULI	B	34.3									0.208			
16	TRIBUTARY 119	H	36.1	11.35	0.908	8.54	1.000	983.	57.5	0.1835	16.160	0.871	8.23	0.0302	4.73
17	TRIBUTARY 119	T	34.3									0.925			
18	S.F. KOKTULI	J	34.3	11.38	0.907	8.54	1.000	984.	57.5	0.1361	16.160	1.133		0.5097	4.73
19	S.F. KOKTULI	C	34.1	11.41	0.905	8.54	1.000	984.	57.5	0.0861	16.159	1.203		0.5097	4.73
20	S.F. KOKTULI	Q	34.0	11.41	0.905	8.54	1.000	984.	57.5	0.0861	16.159	1.264		0.0935	4.73
21	S.F. KOKTULI	Q	29.3	11.41	0.905	8.54	1.000	984.	57.5	0.0861	16.159	1.709		0.1859	10.57
22	S.F. KOKTULI	C	27.6	11.48	0.902	8.54	1.000	985.	57.5	0.0871	16.157	2.021		0.1859	10.57
23	S.F. KOKTULI	C	25.1	11.52	0.900	8.54	1.000	986.	57.5	0.0708	16.156	2.482		0.1859	10.57
24	S.F. KOKTULI	Q	24.9	11.52	0.900	8.54	1.000	986.	57.5	0.0708	16.156	2.520		-0.0411	10.57
25	S.F. KOKTULI	C	21.9	11.54	0.898	8.54	1.000	987.	57.5	0.0914	16.156	2.395		-0.0411	10.57
26	S.F. KOKTULI	C	20.1	11.59	0.896	8.54	1.000	987.	57.5	0.0687	16.158	2.322		-0.0411	10.57
27	S.F. KOKTULI	C	15.4	11.65	0.893	8.54	1.000	988.	57.5	0.0664	16.158	2.128		-0.0411	10.57
28	S.F. KOKTULI	Q	13.9	11.65	0.893	8.54	1.000	988.	57.5	0.0664	16.158	2.068		0.1454	10.57
29	S.F. KOKTULI	C	12.5	11.68	0.891	8.54	1.000	989.	57.5	0.0626	16.157	2.272		0.1454	10.57
30	S.F. KOKTULI	C	9.2	11.71	0.890	8.54	1.000	990.	57.5	0.0809	16.158	2.748		0.1454	10.57
31	S.F. KOKTULI	C	7.9	11.74	0.888	8.54	1.000	990.	57.5	0.0622	16.159	2.943		0.1454	10.57
32	S.F. KOKTULI	C	5.1	11.79	0.886	8.54	1.000	991.	57.5	0.0684	16.160	3.348		0.1454	10.57
33	S.F. KOKTULI	C	5.1	11.83	0.883	8.54	1.000	992.	57.4	0.0799	16.162	3.348		0.1454	10.57
34	S.F. KOKTULI	Q	3.0	11.83	0.883	8.54	1.000	992.	57.4	0.0799	16.162	3.658		0.1927	10.57
35	S.F. KOKTULI	Q	0.1	11.83	0.883	8.54	1.000	992.	57.4	0.0799	16.162	4.210		0.2130	10.57
36	S.F. KOKTULI	E	0.0									4.233			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.28	0.782	8.02	1.000	979.	181.6	0.2352	16.082	0.858	12.04	0.2735	13.04
2	S.F. KOKTULI	C	53.3	11.33	0.780	8.02	1.000	979.	181.6	0.2235	16.080	1.228		0.2735	13.04
3	S.F. KOKTULI	C	51.2	11.36	0.778	8.02	1.000	980.	181.6	0.1988	16.079	1.801		0.2735	13.04
4	S.F. KOKTULI	Q	51.1	11.36	0.778	8.02	1.000	980.	181.6	0.1988	16.079	1.836		-0.2163	13.04
5	S.F. KOKTULI	C	49.4	11.39	0.777	8.02	1.000	981.	181.6	0.1673	16.078	1.473		-0.2163	13.04
6	S.F. KOKTULI	C	47.6	11.43	0.775	8.02	1.000	981.	181.6	0.1593	16.077	1.072		-0.2163	13.04
7	S.F. KOKTULI	C	45.7	11.46	0.774	8.02	1.000	982.	181.6	0.1832	16.078	0.671		-0.2163	13.04
8	S.F. KOKTULI	C	44.8	11.47	0.773	8.02	1.000	982.	181.6	0.1594	16.078	0.476		-0.2163	13.04
9	S.F. KOKTULI	C	43.9	11.49	0.773	8.02	1.000	982.	181.6	0.2063	16.077	0.289		-0.2163	13.04
10	S.F. KOKTULI	Q	43.6	11.49	0.773	8.02	1.000	982.	181.6	0.2063	16.077	0.222		0.0315	13.04
11	S.F. KOKTULI	C	41.1	11.50	0.772	8.02	1.000	983.	181.6	0.1593	16.076	0.303		0.0315	13.04
12	S.F. KOKTULI	C	40.0	11.50	0.772	8.02	1.000	983.	181.6	0.2105	16.076	0.338		0.0315	13.04
13	S.F. KOKTULI	C	38.4	11.53	0.771	8.02	1.000	983.	181.6	0.1594	16.077	0.389		0.0315	13.04
14	S.F. KOKTULI	Q	35.8	11.53	0.771	8.02	1.000	983.	181.6	0.1594	16.077	0.469		0.0972	4.68
15	S.F. KOKTULI	B	34.3									0.618			
16	TRIBUTARY 119	H	36.1	11.53	0.771	8.02	1.000	983.	181.6	0.1841	16.078	0.872	8.96	0.0280	4.68
17	TRIBUTARY 119	T	34.3									0.922			
18	S.F. KOKTULI	J	34.3	11.56	0.770	8.02	1.000	984.	181.6	0.1366	16.077	1.540		0.4708	4.68
19	S.F. KOKTULI	C	34.1	11.59	0.768	8.02	1.000	984.	181.6	0.0863	16.076	1.605		0.4708	4.68
20	S.F. KOKTULI	Q	34.0	11.59	0.768	8.02	1.000	984.	181.6	0.0863	16.076	1.661		0.0860	4.68
21	S.F. KOKTULI	Q	29.3	11.59	0.768	8.02	1.000	984.	181.6	0.0863	16.076	2.070		0.1811	10.20
22	S.F. KOKTULI	C	27.6	11.66	0.765	8.02	1.000	985.	181.6	0.0874	16.074	2.374		0.1811	10.20
23	S.F. KOKTULI	C	25.1	11.70	0.763	8.02	1.000	986.	181.6	0.0710	16.073	2.823		0.1811	10.20
24	S.F. KOKTULI	Q	24.9	11.70	0.763	8.02	1.000	986.	181.6	0.0710	16.073	2.860		-0.0457	10.20
25	S.F. KOKTULI	C	21.9	11.72	0.762	8.02	1.000	987.	181.6	0.0917	16.073	2.721		-0.0457	10.20
26	S.F. KOKTULI	C	20.1	11.77	0.760	8.02	1.000	987.	181.5	0.0689	16.075	2.640		-0.0457	10.20
27	S.F. KOKTULI	C	15.4	11.83	0.758	8.02	1.000	988.	181.5	0.0666	16.075	2.424		-0.0457	10.20
28	S.F. KOKTULI	Q	13.9	11.83	0.758	8.02	1.000	988.	181.5	0.0666	16.075	2.358		0.1269	10.20
29	S.F. KOKTULI	C	12.5	11.86	0.756	8.02	1.000	989.	181.5	0.0627	16.075	2.536		0.1269	10.20
30	S.F. KOKTULI	C	9.2	11.89	0.755	8.02	1.000	990.	181.5	0.0812	16.075	2.951		0.1269	10.20
31	S.F. KOKTULI	C	7.9	11.92	0.754	8.02	1.000	990.	181.5	0.0624	16.076	3.122		0.1269	10.20
32	S.F. KOKTULI	C	5.1	11.97	0.751	8.02	1.000	991.	181.5	0.0686	16.077	3.475		0.1269	10.20
33	S.F. KOKTULI	C	5.1	12.01	0.749	8.02	1.000	992.	181.4	0.0802	16.079	3.475		0.1269	10.20
34	S.F. KOKTULI	Q	3.0	12.01	0.749	8.02	1.000	992.	181.4	0.0802	16.079	3.746		0.2186	10.20
35	S.F. KOKTULI	Q	0.1	12.01	0.749	8.02	1.000	992.	181.4	0.0802	16.079	4.372		0.2222	10.20
36	S.F. KOKTULI	E	0.0									4.396			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.02	0.754	6.89	1.000	979.	208.0	0.2361	15.999	0.622	13.30	0.2100	14.30
2	S.F. KOKTULI	C	53.3	12.07	0.752	6.89	1.000	979.	208.0	0.2245	15.997	0.906		0.2100	14.30
3	S.F. KOKTULI	C	51.2	12.10	0.751	6.89	1.000	980.	208.0	0.1996	15.995	1.346		0.2100	14.30
4	S.F. KOKTULI	Q	51.1	12.10	0.751	6.89	1.000	980.	208.0	0.1996	15.995	1.373		-0.1642	14.30
5	S.F. KOKTULI	C	49.4	12.13	0.749	6.89	1.000	981.	208.0	0.1680	15.994	1.097		-0.1642	14.30
6	S.F. KOKTULI	C	47.6	12.17	0.748	6.89	1.000	981.	208.0	0.1598	15.994	0.793		-0.1642	14.30
7	S.F. KOKTULI	C	45.7	12.20	0.746	6.89	1.000	982.	208.0	0.1841	15.994	0.488		-0.1642	14.30
8	S.F. KOKTULI	C	44.8	12.21	0.746	6.89	1.000	982.	208.0	0.1599	15.994	0.340		-0.1642	14.30
9	S.F. KOKTULI	C	43.9	12.23	0.745	6.89	1.000	982.	208.0	0.2071	15.993	0.198		-0.1642	14.30
10	S.F. KOKTULI	Q	43.6	12.23	0.745	6.89	1.000	982.	208.0	0.2071	15.993	0.148		0.0245	14.30
11	S.F. KOKTULI	C	41.1	12.24	0.745	6.89	1.000	983.	208.0	0.1598	15.992	0.211		0.0245	14.30
12	S.F. KOKTULI	C	40.0	12.24	0.744	6.89	1.000	983.	208.0	0.2112	15.993	0.238		0.0245	14.30
13	S.F. KOKTULI	C	38.4	12.27	0.743	6.89	1.000	983.	208.0	0.1599	15.994	0.277		0.0245	14.30
14	S.F. KOKTULI	Q	35.8	12.27	0.743	6.89	1.000	983.	208.0	0.1599	15.994	0.340		0.1056	4.02
15	S.F. KOKTULI	B	34.3									0.502			
16	TRIBUTARY 119	H	36.1	12.27	0.743	6.89	1.000	983.	208.0	0.1847	15.994	0.567	9.14	0.0308	4.02
17	TRIBUTARY 119	T	34.3									0.622			
18	S.F. KOKTULI	J	34.3	12.30	0.742	6.89	1.000	984.	208.0	0.1371	15.993	1.124		0.5097	4.02
19	S.F. KOKTULI	C	34.1	12.33	0.740	6.89	1.000	984.	208.0	0.0864	15.992	1.194		0.5097	4.02
20	S.F. KOKTULI	Q	34.0	12.33	0.740	6.89	1.000	984.	208.0	0.0864	15.992	1.255		0.1112	4.02
21	S.F. KOKTULI	Q	29.3	12.33	0.740	6.89	1.000	984.	208.0	0.0864	15.992	1.784		0.1559	9.51
22	S.F. KOKTULI	C	27.6	12.40	0.738	6.89	1.000	985.	208.0	0.0876	15.991	2.046		0.1559	9.51
23	S.F. KOKTULI	C	25.1	12.44	0.736	6.89	1.000	986.	208.0	0.0712	15.990	2.432		0.1559	9.51
24	S.F. KOKTULI	Q	24.9	12.44	0.736	6.89	1.000	986.	208.0	0.0712	15.990	2.464		-0.0404	9.51
25	S.F. KOKTULI	C	21.9	12.46	0.735	6.89	1.000	987.	208.0	0.0920	15.990	2.341		-0.0404	9.51
26	S.F. KOKTULI	C	20.1	12.51	0.733	6.89	1.000	987.	208.0	0.0691	15.992	2.270		-0.0404	9.51
27	S.F. KOKTULI	C	15.4	12.57	0.730	6.89	1.000	988.	207.9	0.0668	15.992	2.079		-0.0404	9.51
28	S.F. KOKTULI	Q	13.9	12.57	0.730	6.89	1.000	988.	207.9	0.0668	15.992	2.020		0.1430	9.51
29	S.F. KOKTULI	C	12.5	12.60	0.729	6.89	1.000	989.	207.9	0.0629	15.991	2.220		0.1430	9.51
30	S.F. KOKTULI	C	9.2	12.63	0.728	6.89	1.000	990.	207.9	0.0815	15.992	2.689		0.1430	9.51
31	S.F. KOKTULI	C	7.9	12.66	0.727	6.89	1.000	990.	207.9	0.0626	15.993	2.880		0.1430	9.51
32	S.F. KOKTULI	C	5.1	12.71	0.725	6.89	1.000	991.	207.9	0.0689	15.994	3.279		0.1430	9.51
33	S.F. KOKTULI	C	5.1	12.75	0.723	6.89	1.000	992.	207.8	0.0805	15.996	3.279		0.1430	9.51
34	S.F. KOKTULI	Q	3.0	12.75	0.723	6.89	1.000	992.	207.8	0.0805	15.996	3.584		0.1707	9.51
35	S.F. KOKTULI	Q	0.1	12.75	0.723	6.89	1.000	992.	207.8	0.0805	15.996	4.073		0.2130	9.51
36	S.F. KOKTULI	E	0.0									4.096			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.35	0.745	4.94	1.000	979.	156.0	0.2371	15.915	0.378	13.05	0.1401	14.05
2	S.F. KOKTULI	C	53.3	13.40	0.743	4.94	1.000	979.	156.0	0.2256	15.913	0.568		0.1401	14.05
3	S.F. KOKTULI	C	51.2	13.43	0.741	4.94	1.000	980.	156.0	0.2004	15.911	0.861		0.1401	14.05
4	S.F. KOKTULI	Q	51.1	13.43	0.741	4.94	1.000	980.	156.0	0.2004	15.911	0.879		-0.1119	14.05
5	S.F. KOKTULI	C	49.4	13.46	0.740	4.94	1.000	981.	156.0	0.1688	15.910	0.691		-0.1119	14.05
6	S.F. KOKTULI	C	47.6	13.50	0.738	4.94	1.000	981.	156.0	0.1603	15.910	0.484		-0.1119	14.05
7	S.F. KOKTULI	C	45.7	13.53	0.737	4.94	1.000	982.	156.0	0.1850	15.910	0.276		-0.1119	14.05
8	S.F. KOKTULI	C	44.8	13.54	0.736	4.94	1.000	982.	156.0	0.1606	15.910	0.176		-0.1119	14.05
9	S.F. KOKTULI	C	43.9	13.56	0.736	4.94	1.000	982.	156.0	0.2078	15.909	0.079		-0.1119	14.05
10	S.F. KOKTULI	Q	43.6	13.56	0.736	4.94	1.000	982.	156.0	0.2078	15.909	0.044		0.0111	14.05
11	S.F. KOKTULI	C	41.1	13.57	0.735	4.94	1.000	983.	156.0	0.1603	15.908	0.073		0.0111	14.05
12	S.F. KOKTULI	C	40.0	13.57	0.735	4.94	1.000	983.	156.0	0.2119	15.909	0.085		0.0111	14.05
13	S.F. KOKTULI	C	38.4	13.60	0.734	4.94	1.000	983.	156.0	0.1604	15.910	0.103		0.0111	14.05
14	S.F. KOKTULI	Q	35.8	13.60	0.734	4.94	1.000	983.	156.0	0.1604	15.910	0.132		0.1020	3.60
15	S.F. KOKTULI	B	34.3									0.288			
16	TRIBUTARY 119	H	36.1	13.60	0.734	4.94	1.000	983.	156.0	0.1853	15.910	0.490	9.72	0.0291	3.60
17	TRIBUTARY 119	T	34.3									0.542			
18	S.F. KOKTULI	J	34.3	13.63	0.733	4.94	1.000	984.	156.0	0.1376	15.909	0.830		0.4903	3.60
19	S.F. KOKTULI	C	34.1	13.66	0.731	4.94	1.000	984.	156.0	0.0866	15.909	0.898		0.4903	3.60
20	S.F. KOKTULI	Q	34.0	13.66	0.731	4.94	1.000	984.	156.0	0.0866	15.909	0.956		0.1225	3.60
21	S.F. KOKTULI	Q	29.3	13.66	0.731	4.94	1.000	984.	156.0	0.0866	15.909	1.539		0.1469	9.35
22	S.F. KOKTULI	C	27.6	13.73	0.729	4.94	1.000	985.	156.0	0.0879	15.907	1.786		0.1469	9.35
23	S.F. KOKTULI	C	25.1	13.77	0.727	4.94	1.000	986.	156.0	0.0715	15.906	2.150		0.1469	9.35
24	S.F. KOKTULI	Q	24.9	13.77	0.727	4.94	1.000	986.	156.0	0.0715	15.906	2.180		-0.0364	9.35
25	S.F. KOKTULI	C	21.9	13.79	0.726	4.94	1.000	987.	156.0	0.0923	15.906	2.069		-0.0364	9.35
26	S.F. KOKTULI	C	20.1	13.84	0.724	4.94	1.000	987.	155.9	0.0693	15.908	2.005		-0.0364	9.35
27	S.F. KOKTULI	C	15.4	13.90	0.721	4.94	1.000	988.	155.9	0.0670	15.908	1.833		-0.0364	9.35
28	S.F. KOKTULI	Q	13.9	13.90	0.721	4.94	1.000	988.	155.9	0.0670	15.908	1.780		0.1434	9.35
29	S.F. KOKTULI	C	12.5	13.93	0.720	4.94	1.000	989.	155.9	0.0631	15.907	1.981		0.1434	9.35
30	S.F. KOKTULI	C	9.2	13.96	0.719	4.94	1.000	990.	155.9	0.0818	15.908	2.450		0.1434	9.35
31	S.F. KOKTULI	C	7.9	13.99	0.718	4.94	1.000	990.	155.9	0.0628	15.909	2.643		0.1434	9.35
32	S.F. KOKTULI	C	5.1	14.04	0.716	4.94	1.000	991.	155.9	0.0692	15.910	3.042		0.1434	9.35
33	S.F. KOKTULI	C	5.1	14.08	0.714	4.94	1.000	992.	155.8	0.0807	15.912	3.042		0.1434	9.35
34	S.F. KOKTULI	Q	3.0	14.08	0.714	4.94	1.000	992.	155.8	0.0807	15.912	3.348		0.1065	9.35
35	S.F. KOKTULI	Q	0.1	14.08	0.714	4.94	1.000	992.	155.8	0.0807	15.912	3.653		0.1852	9.35
36	S.F. KOKTULI	E	0.0									3.673			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	15.31	0.670	2.81	1.000	979.	237.1	0.2380	15.830	0.295	14.53	0.1138	15.53
2	S.F. KOKTULI	C	53.3	15.36	0.668	2.81	1.000	979.	237.1	0.2267	15.828	0.449		0.1138	15.53
3	S.F. KOKTULI	C	51.2	15.39	0.667	2.81	1.000	980.	237.1	0.2012	15.827	0.687		0.1138	15.53
4	S.F. KOKTULI	Q	51.1	15.39	0.667	2.81	1.000	980.	237.1	0.2012	15.827	0.702		-0.0938	15.53
5	S.F. KOKTULI	C	49.4	15.42	0.666	2.81	1.000	981.	237.1	0.1696	15.826	0.544		-0.0938	15.53
6	S.F. KOKTULI	C	47.6	15.46	0.665	2.81	1.000	981.	237.1	0.1610	15.825	0.370		-0.0938	15.53
7	S.F. KOKTULI	C	45.7	15.49	0.663	2.81	1.000	982.	237.1	0.1859	15.826	0.196		-0.0938	15.53
8	S.F. KOKTULI	C	44.8	15.50	0.663	2.81	1.000	982.	237.1	0.1613	15.826	0.112		-0.0938	15.53
9	S.F. KOKTULI	C	43.9	15.52	0.662	2.81	1.000	982.	237.1	0.2086	15.825	0.031		-0.0938	15.53
10	S.F. KOKTULI	Q	43.6	15.52	0.662	2.81	1.000	982.	237.1	0.2086	15.825	0.002		0.0009	15.53
11	S.F. KOKTULI	C	41.1	15.53	0.662	2.81	1.000	983.	237.1	0.1608	15.824	0.004		0.0009	15.53
12	S.F. KOKTULI	C	40.0	15.53	0.662	2.81	1.000	983.	237.1	0.2127	15.824	0.005		0.0009	15.53
13	S.F. KOKTULI	C	38.4	15.56	0.661	2.81	1.000	983.	237.1	0.1610	15.825	0.007		0.0009	15.53
14	S.F. KOKTULI	Q	35.8	15.56	0.661	2.81	1.000	983.	237.1	0.1610	15.825	0.009		0.0940	2.94
15	S.F. KOKTULI	B	34.3									0.153			
16	TRIBUTARY 119	H	36.1	15.56	0.661	2.81	1.000	983.	237.1	0.1859	15.826	0.445	10.12	0.0269	2.94
17	TRIBUTARY 119	T	34.3									0.493			
18	S.F. KOKTULI	J	34.3	15.59	0.660	2.81	1.000	984.	237.1	0.1381	15.825	0.647		0.4514	2.94
19	S.F. KOKTULI	C	34.1	15.62	0.658	2.81	1.000	984.	237.1	0.0868	15.824	0.709		0.4514	2.94
20	S.F. KOKTULI	Q	34.0	15.62	0.658	2.81	1.000	984.	237.1	0.0868	15.824	0.763		0.1330	2.94
21	S.F. KOKTULI	Q	29.3	15.62	0.658	2.81	1.000	984.	237.1	0.0868	15.824	1.396		0.1343	9.45
22	S.F. KOKTULI	C	27.6	15.69	0.656	2.81	1.000	985.	237.1	0.0882	15.822	1.621		0.1343	9.45
23	S.F. KOKTULI	C	25.1	15.73	0.654	2.81	1.000	986.	237.1	0.0718	15.821	1.955		0.1343	9.45
24	S.F. KOKTULI	Q	24.9	15.73	0.654	2.81	1.000	986.	237.1	0.0718	15.821	1.982		-0.0337	9.45
25	S.F. KOKTULI	C	21.9	15.75	0.653	2.81	1.000	987.	237.1	0.0926	15.822	1.879		-0.0337	9.45
26	S.F. KOKTULI	C	20.1	15.80	0.651	2.81	1.000	987.	237.0	0.0695	15.823	1.820		-0.0337	9.45
27	S.F. KOKTULI	C	15.4	15.86	0.649	2.81	1.000	988.	237.0	0.0672	15.823	1.661		-0.0337	9.45
28	S.F. KOKTULI	Q	13.9	15.86	0.649	2.81	1.000	988.	237.0	0.0672	15.823	1.612		0.1130	9.45
29	S.F. KOKTULI	C	12.5	15.89	0.648	2.81	1.000	989.	237.0	0.0633	15.823	1.770		0.1130	9.45
30	S.F. KOKTULI	C	9.2	15.92	0.647	2.81	1.000	990.	237.0	0.0821	15.823	2.140		0.1130	9.45
31	S.F. KOKTULI	C	7.9	15.95	0.646	2.81	1.000	990.	237.0	0.0630	15.824	2.292		0.1130	9.45
32	S.F. KOKTULI	C	5.1	16.00	0.644	2.81	1.000	991.	236.9	0.0696	15.825	2.607		0.1130	9.45
33	S.F. KOKTULI	C	5.1	16.04	0.642	2.81	1.000	992.	236.9	0.0810	15.827	2.607		0.1130	9.45
34	S.F. KOKTULI	Q	3.0	16.04	0.642	2.81	1.000	992.	236.9	0.0810	15.827	2.848		0.1669	9.45
35	S.F. KOKTULI	Q	0.1	16.04	0.642	2.81	1.000	992.	236.9	0.0810	15.827	3.326		0.1759	9.45
36	S.F. KOKTULI	E	0.0									3.345			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	17.28	0.549	2.77	1.000	979.	237.9	0.2390	15.745	0.285	16.52	0.1068	17.52
2	S.F. KOKTULI	C	53.3	17.33	0.548	2.77	1.000	979.	237.9	0.2277	15.743	0.430		0.1068	17.52
3	S.F. KOKTULI	C	51.2	17.36	0.547	2.77	1.000	980.	238.0	0.2021	15.742	0.653		0.1068	17.52
4	S.F. KOKTULI	Q	51.1	17.36	0.547	2.77	1.000	980.	238.0	0.2021	15.742	0.667		-0.0893	17.52
5	S.F. KOKTULI	C	49.4	17.39	0.546	2.77	1.000	981.	238.0	0.1704	15.741	0.517		-0.0893	17.52
6	S.F. KOKTULI	C	47.6	17.43	0.545	2.77	1.000	981.	238.0	0.1618	15.740	0.351		-0.0893	17.52
7	S.F. KOKTULI	C	45.7	17.46	0.544	2.77	1.000	982.	237.9	0.1868	15.741	0.186		-0.0893	17.52
8	S.F. KOKTULI	C	44.8	17.47	0.543	2.77	1.000	982.	237.9	0.1621	15.741	0.106		-0.0893	17.52
9	S.F. KOKTULI	C	43.9	17.49	0.543	2.77	1.000	982.	237.9	0.2094	15.740	0.028		-0.0893	17.52
10	S.F. KOKTULI	Q	43.6	17.49	0.543	2.77	1.000	982.	237.9	0.2094	15.740	0.001		0.0004	17.52
11	S.F. KOKTULI	C	41.1	17.50	0.542	2.77	1.000	983.	238.0	0.1616	15.739	0.002		0.0004	17.52
12	S.F. KOKTULI	C	40.0	17.50	0.542	2.77	1.000	983.	238.0	0.2134	15.739	0.002		0.0004	17.52
13	S.F. KOKTULI	C	38.4	17.53	0.541	2.77	1.000	983.	237.9	0.1615	15.740	0.003		0.0004	17.52
14	S.F. KOKTULI	Q	35.8	17.53	0.541	2.77	1.000	983.	237.9	0.1615	15.740	0.004		0.0905	2.60
15	S.F. KOKTULI	B	34.3									0.143			
16	TRIBUTARY 119	H	36.1	17.53	0.541	2.77	1.000	983.	237.9	0.1866	15.740	0.415	9.91	0.0258	2.60
17	TRIBUTARY 119	T	34.3									0.461			
18	S.F. KOKTULI	J	34.3	17.56	0.541	2.77	1.000	984.	237.9	0.1387	15.740	0.604		0.4319	2.60
19	S.F. KOKTULI	C	34.1	17.59	0.539	2.77	1.000	984.	237.9	0.0871	15.739	0.664		0.4319	2.60
20	S.F. KOKTULI	Q	34.0	17.59	0.539	2.77	1.000	984.	237.9	0.0871	15.739	0.715		0.1274	2.60
21	S.F. KOKTULI	Q	29.3	17.59	0.539	2.77	1.000	984.	237.9	0.0871	15.739	1.321		0.1256	9.86
22	S.F. KOKTULI	C	27.6	17.66	0.537	2.77	1.000	985.	237.9	0.0886	15.737	1.532		0.1256	9.86
23	S.F. KOKTULI	C	25.1	17.70	0.536	2.77	1.000	986.	237.9	0.0721	15.736	1.843		0.1256	9.86
24	S.F. KOKTULI	Q	24.9	17.70	0.536	2.77	1.000	986.	237.9	0.0721	15.736	1.869		-0.0330	9.86
25	S.F. KOKTULI	C	21.9	17.72	0.535	2.77	1.000	987.	237.9	0.0930	15.737	1.768		-0.0330	9.86
26	S.F. KOKTULI	C	20.1	17.77	0.534	2.77	1.000	987.	237.9	0.0698	15.738	1.710		-0.0330	9.86
27	S.F. KOKTULI	C	15.4	17.83	0.532	2.77	1.000	988.	237.9	0.0675	15.738	1.554		-0.0330	9.86
28	S.F. KOKTULI	Q	13.9	17.83	0.532	2.77	1.000	988.	237.9	0.0675	15.738	1.506		0.0917	9.86
29	S.F. KOKTULI	C	12.5	17.86	0.531	2.77	1.000	989.	237.9	0.0635	15.738	1.634		0.0917	9.86
30	S.F. KOKTULI	C	9.2	17.89	0.530	2.77	1.000	990.	237.8	0.0824	15.738	1.935		0.0917	9.86
31	S.F. KOKTULI	C	7.9	17.92	0.529	2.77	1.000	990.	237.8	0.0633	15.739	2.058		0.0917	9.86
32	S.F. KOKTULI	C	5.1	17.97	0.528	2.77	1.000	991.	237.8	0.0699	15.740	2.313		0.0917	9.86
33	S.F. KOKTULI	C	5.1	18.01	0.526	2.77	1.000	992.	237.7	0.0813	15.742	2.313		0.0917	9.86
34	S.F. KOKTULI	Q	3.0	18.01	0.526	2.77	1.000	992.	237.7	0.0813	15.742	2.509		0.2147	9.86
35	S.F. KOKTULI	Q	0.1	18.01	0.526	2.77	1.000	992.	237.7	0.0813	15.742	3.124		0.1574	9.86
36	S.F. KOKTULI	E	0.0									3.141			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	16.54	0.624	1.74	1.000	979.	158.6	0.2400	15.659	0.284	16.70	0.1060	17.70
2	S.F. KOKTULI	C	53.3	16.59	0.622	1.74	1.000	979.	158.6	0.2289	15.657	0.428		0.1060	17.70
3	S.F. KOKTULI	C	51.2	16.62	0.621	1.74	1.000	980.	158.6	0.2030	15.656	0.649		0.1060	17.70
4	S.F. KOKTULI	Q	51.1	16.62	0.621	1.74	1.000	980.	158.6	0.2030	15.656	0.663		-0.0888	17.70
5	S.F. KOKTULI	C	49.4	16.65	0.620	1.74	1.000	981.	158.6	0.1712	15.655	0.514		-0.0888	17.70
6	S.F. KOKTULI	C	47.6	16.69	0.618	1.74	1.000	981.	158.6	0.1625	15.655	0.349		-0.0888	17.70
7	S.F. KOKTULI	C	45.7	16.72	0.617	1.74	1.000	982.	158.6	0.1878	15.655	0.185		-0.0888	17.70
8	S.F. KOKTULI	C	44.8	16.73	0.617	1.74	1.000	982.	158.6	0.1628	15.655	0.105		-0.0888	17.70
9	S.F. KOKTULI	C	43.9	16.75	0.616	1.74	1.000	982.	158.6	0.2102	15.654	0.028		-0.0888	17.70
10	S.F. KOKTULI	Q	43.6	16.75	0.616	1.74	1.000	982.	158.6	0.2102	15.654	0.001		0.0004	17.70
11	S.F. KOKTULI	C	41.1	16.76	0.616	1.74	1.000	983.	158.6	0.1624	15.653	0.002		0.0004	17.70
12	S.F. KOKTULI	C	40.0	16.76	0.616	1.74	1.000	983.	158.6	0.2142	15.654	0.002		0.0004	17.70
13	S.F. KOKTULI	C	38.4	16.79	0.615	1.74	1.000	983.	158.6	0.1621	15.654	0.003		0.0004	17.70
14	S.F. KOKTULI	Q	35.8	16.79	0.615	1.74	1.000	983.	158.6	0.1621	15.654	0.004		0.0893	2.13
15	S.F. KOKTULI	B	34.3									0.141			
16	TRIBUTARY 119	H	36.1	16.79	0.615	1.74	1.000	983.	158.6	0.1872	15.655	0.396	9.56	0.0258	2.13
17	TRIBUTARY 119	T	34.3									0.442			
18	S.F. KOKTULI	J	34.3	16.82	0.614	1.74	1.000	984.	158.6	0.1392	15.654	0.582		0.4319	2.13
19	S.F. KOKTULI	C	34.1	16.85	0.612	1.74	1.000	984.	158.6	0.0874	15.653	0.642		0.4319	2.13
20	S.F. KOKTULI	Q	34.0	16.85	0.612	1.74	1.000	984.	158.6	0.0874	15.653	0.693		0.1215	2.13
21	S.F. KOKTULI	Q	29.3	16.85	0.612	1.74	1.000	984.	158.6	0.0874	15.653	1.271		0.1240	10.00
22	S.F. KOKTULI	C	27.6	16.92	0.610	1.74	1.000	985.	158.6	0.0889	15.652	1.479		0.1240	10.00
23	S.F. KOKTULI	C	25.1	16.96	0.609	1.74	1.000	986.	158.6	0.0723	15.651	1.787		0.1240	10.00
24	S.F. KOKTULI	Q	24.9	16.96	0.609	1.74	1.000	986.	158.6	0.0723	15.651	1.812		-0.0349	10.00
25	S.F. KOKTULI	C	21.9	16.98	0.608	1.74	1.000	987.	158.6	0.0933	15.651	1.706		-0.0349	10.00
26	S.F. KOKTULI	C	20.1	17.03	0.606	1.74	1.000	987.	158.5	0.0700	15.653	1.644		-0.0349	10.00
27	S.F. KOKTULI	C	15.4	17.09	0.604	1.74	1.000	988.	158.5	0.0677	15.653	1.479		-0.0349	10.00
28	S.F. KOKTULI	Q	13.9	17.09	0.604	1.74	1.000	988.	158.5	0.0677	15.653	1.428		0.0807	10.00
29	S.F. KOKTULI	C	12.5	17.12	0.603	1.74	1.000	989.	158.5	0.0637	15.652	1.541		0.0807	10.00
30	S.F. KOKTULI	C	9.2	17.15	0.602	1.74	1.000	990.	158.5	0.0827	15.653	1.805		0.0807	10.00
31	S.F. KOKTULI	C	7.9	17.18	0.601	1.74	1.000	990.	158.5	0.0635	15.653	1.913		0.0807	10.00
32	S.F. KOKTULI	C	5.1	17.23	0.599	1.74	1.000	991.	158.5	0.0702	15.654	2.138		0.0807	10.00
33	S.F. KOKTULI	C	5.1	17.27	0.598	1.74	1.000	992.	158.4	0.0815	15.656	2.138		0.0807	10.00
34	S.F. KOKTULI	Q	3.0	17.27	0.598	1.74	1.000	992.	158.4	0.0815	15.656	2.310		0.2402	10.00
35	S.F. KOKTULI	Q	0.1	17.27	0.598	1.74	1.000	992.	158.4	0.0815	15.656	2.998		0.1574	10.00
36	S.F. KOKTULI	E	0.0									3.015			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	17.85	0.819	2.31	1.000	979.	113.9	0.2411	15.573	0.269	17.61	0.0923	18.61
2	S.F. KOKTULI	C	53.3	17.90	0.817	2.31	1.000	979.	113.9	0.2300	15.571	0.394		0.0923	18.61
3	S.F. KOKTULI	C	51.2	17.93	0.815	2.31	1.000	980.	113.9	0.2039	15.570	0.587		0.0923	18.61
4	S.F. KOKTULI	Q	51.1	17.93	0.815	2.31	1.000	980.	113.9	0.2039	15.570	0.599		-0.0802	18.61
5	S.F. KOKTULI	C	49.4	17.96	0.814	2.31	1.000	981.	113.9	0.1721	15.569	0.464		-0.0802	18.61
6	S.F. KOKTULI	C	47.6	18.00	0.812	2.31	1.000	981.	113.9	0.1634	15.569	0.316		-0.0802	18.61
7	S.F. KOKTULI	C	45.7	18.03	0.811	2.31	1.000	982.	113.9	0.1888	15.569	0.167		-0.0802	18.61
8	S.F. KOKTULI	C	44.8	18.04	0.810	2.31	1.000	982.	113.9	0.1637	15.569	0.095		-0.0802	18.61
9	S.F. KOKTULI	C	43.9	18.06	0.809	2.31	1.000	982.	113.9	0.2111	15.568	0.026		-0.0802	18.61
10	S.F. KOKTULI	Q	43.6	18.06	0.809	2.31	1.000	982.	113.9	0.2111	15.568	0.001		0.0004	18.61
11	S.F. KOKTULI	C	41.1	18.07	0.809	2.31	1.000	983.	113.9	0.1632	15.567	0.002		0.0004	18.61
12	S.F. KOKTULI	C	40.0	18.07	0.809	2.31	1.000	983.	113.9	0.2150	15.568	0.002		0.0004	18.61
13	S.F. KOKTULI	C	38.4	18.10	0.807	2.31	1.000	983.	113.9	0.1629	15.568	0.003		0.0004	18.61
14	S.F. KOKTULI	Q	35.8	18.10	0.807	2.31	1.000	983.	113.9	0.1629	15.568	0.004		0.0893	2.73
15	S.F. KOKTULI	B	34.3									0.141			
16	TRIBUTARY 119	H	36.1	18.10	0.807	2.31	1.000	983.	113.9	0.1879	15.569	0.397	10.27	0.0258	2.73
17	TRIBUTARY 119	T	34.3									0.443			
18	S.F. KOKTULI	J	34.3	18.13	0.806	2.31	1.000	984.	113.9	0.1397	15.568	0.584		0.4280	2.73
19	S.F. KOKTULI	C	34.1	18.16	0.804	2.31	1.000	984.	113.9	0.0877	15.567	0.643		0.4280	2.73
20	S.F. KOKTULI	Q	34.0	18.16	0.804	2.31	1.000	984.	113.9	0.0877	15.567	0.694		0.1175	2.73
21	S.F. KOKTULI	Q	29.3	18.16	0.804	2.31	1.000	984.	113.9	0.0877	15.567	1.253		0.1217	11.31
22	S.F. KOKTULI	C	27.6	18.23	0.801	2.31	1.000	985.	113.9	0.0893	15.566	1.457		0.1217	11.31
23	S.F. KOKTULI	C	25.1	18.27	0.800	2.31	1.000	986.	113.9	0.0727	15.565	1.759		0.1217	11.31
24	S.F. KOKTULI	Q	24.9	18.27	0.800	2.31	1.000	986.	113.9	0.0727	15.565	1.784		-0.0359	11.31
25	S.F. KOKTULI	C	21.9	18.29	0.798	2.31	1.000	987.	113.9	0.0936	15.565	1.674		-0.0359	11.31
26	S.F. KOKTULI	C	20.1	18.34	0.796	2.31	1.000	987.	113.8	0.0704	15.567	1.611		-0.0359	11.31
27	S.F. KOKTULI	C	15.4	18.40	0.794	2.31	1.000	988.	113.8	0.0681	15.567	1.441		-0.0359	11.31
28	S.F. KOKTULI	Q	13.9	18.40	0.794	2.31	1.000	988.	113.8	0.0681	15.567	1.389		0.0804	11.31
29	S.F. KOKTULI	C	12.5	18.43	0.792	2.31	1.000	989.	113.8	0.0639	15.566	1.502		0.0804	11.31
30	S.F. KOKTULI	C	9.2	18.46	0.791	2.31	1.000	990.	113.8	0.0831	15.567	1.765		0.0804	11.31
31	S.F. KOKTULI	C	7.9	18.49	0.789	2.31	1.000	990.	113.8	0.0637	15.567	1.873		0.0804	11.31
32	S.F. KOKTULI	C	5.1	18.54	0.787	2.31	1.000	991.	113.8	0.0706	15.568	2.097		0.0804	11.31
33	S.F. KOKTULI	C	5.1	18.58	0.785	2.31	1.000	992.	113.8	0.0818	15.570	2.097		0.0804	11.31
34	S.F. KOKTULI	Q	3.0	18.58	0.785	2.31	1.000	992.	113.8	0.0818	15.570	2.268		0.2455	11.31
35	S.F. KOKTULI	Q	0.1	18.58	0.785	2.31	1.000	992.	113.8	0.0818	15.570	2.971		0.1574	11.31
36	S.F. KOKTULI	E	0.0									2.988			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	18.69	0.763	2.68	1.000	979.	183.0	0.2421	15.486	0.264	18.10	0.0878	19.10
2	S.F. KOKTULI	C	53.3	18.74	0.761	2.68	1.000	979.	183.1	0.2312	15.485	0.383		0.0878	19.10
3	S.F. KOKTULI	C	51.2	18.77	0.760	2.68	1.000	980.	183.1	0.2048	15.483	0.567		0.0878	19.10
4	S.F. KOKTULI	Q	51.1	18.77	0.760	2.68	1.000	980.	183.1	0.2048	15.483	0.578		-0.0774	19.10
5	S.F. KOKTULI	C	49.4	18.80	0.759	2.68	1.000	981.	183.1	0.1730	15.482	0.448		-0.0774	19.10
6	S.F. KOKTULI	C	47.6	18.84	0.757	2.68	1.000	981.	183.1	0.1642	15.482	0.305		-0.0774	19.10
7	S.F. KOKTULI	C	45.7	18.87	0.755	2.68	1.000	982.	183.1	0.1898	15.482	0.161		-0.0774	19.10
8	S.F. KOKTULI	C	44.8	18.88	0.755	2.68	1.000	982.	183.0	0.1645	15.482	0.091		-0.0774	19.10
9	S.F. KOKTULI	C	43.9	18.90	0.754	2.68	1.000	982.	183.1	0.2119	15.482	0.025		-0.0774	19.10
10	S.F. KOKTULI	Q	43.6	18.90	0.754	2.68	1.000	982.	183.1	0.2119	15.482	0.001		0.0004	19.10
11	S.F. KOKTULI	C	41.1	18.91	0.754	2.68	1.000	983.	183.1	0.1640	15.481	0.002		0.0004	19.10
12	S.F. KOKTULI	C	40.0	18.91	0.753	2.68	1.000	983.	183.1	0.2158	15.481	0.002		0.0004	19.10
13	S.F. KOKTULI	C	38.4	18.94	0.752	2.68	1.000	983.	183.0	0.1638	15.482	0.003		0.0004	19.10
14	S.F. KOKTULI	Q	35.8	18.94	0.752	2.68	1.000	983.	183.0	0.1638	15.482	0.004		0.0875	2.98
15	S.F. KOKTULI	B	34.3									0.138			
16	TRIBUTARY 119	H	36.1	18.94	0.752	2.68	1.000	983.	183.0	0.1885	15.482	0.379	11.16	0.0252	2.98
17	TRIBUTARY 119	T	34.3									0.424			
18	S.F. KOKTULI	J	34.3	18.97	0.751	2.68	1.000	984.	183.0	0.1403	15.482	0.563		0.4202	2.98
19	S.F. KOKTULI	C	34.1	19.00	0.749	2.68	1.000	984.	183.0	0.0880	15.481	0.621		0.4202	2.98
20	S.F. KOKTULI	Q	34.0	19.00	0.749	2.68	1.000	984.	183.0	0.0880	15.481	0.671		0.1154	2.98
21	S.F. KOKTULI	Q	29.3	19.00	0.749	2.68	1.000	984.	183.0	0.0880	15.481	1.220		0.1162	11.50
22	S.F. KOKTULI	C	27.6	19.07	0.747	2.68	1.000	985.	183.0	0.0897	15.479	1.415		0.1162	11.50
23	S.F. KOKTULI	C	25.1	19.11	0.745	2.68	1.000	986.	183.0	0.0730	15.478	1.703		0.1162	11.50
24	S.F. KOKTULI	Q	24.9	19.11	0.745	2.68	1.000	986.	183.0	0.0730	15.478	1.727		-0.0376	11.50
25	S.F. KOKTULI	C	21.9	19.13	0.744	2.68	1.000	987.	183.0	0.0940	15.479	1.612		-0.0376	11.50
26	S.F. KOKTULI	C	20.1	19.18	0.742	2.68	1.000	987.	183.0	0.0707	15.480	1.546		-0.0376	11.50
27	S.F. KOKTULI	C	15.4	19.24	0.739	2.68	1.000	988.	183.0	0.0684	15.480	1.368		-0.0376	11.50
28	S.F. KOKTULI	Q	13.9	19.24	0.739	2.68	1.000	988.	183.0	0.0684	15.480	1.314		0.0760	11.50
29	S.F. KOKTULI	C	12.5	19.27	0.738	2.68	1.000	989.	183.0	0.0642	15.480	1.420		0.0760	11.50
30	S.F. KOKTULI	C	9.2	19.30	0.737	2.68	1.000	990.	183.0	0.0834	15.480	1.669		0.0760	11.50
31	S.F. KOKTULI	C	7.9	19.33	0.735	2.68	1.000	990.	182.9	0.0640	15.481	1.771		0.0760	11.50
32	S.F. KOKTULI	C	5.1	19.38	0.733	2.68	1.000	991.	182.9	0.0709	15.482	1.983		0.0760	11.50
33	S.F. KOKTULI	C	5.1	19.42	0.731	2.68	1.000	992.	182.9	0.0821	15.484	1.983		0.0760	11.50
34	S.F. KOKTULI	Q	3.0	19.42	0.731	2.68	1.000	992.	182.9	0.0821	15.484	2.145		0.2601	11.50
35	S.F. KOKTULI	Q	0.1	19.42	0.731	2.68	1.000	992.	182.9	0.0821	15.484	2.890		0.1481	11.50
36	S.F. KOKTULI	E	0.0									2.906			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.66	0.903	4.14	1.000	979.	65.6	0.2432	15.399	0.248	14.24	0.0749	15.24
2	S.F. KOKTULI	C	53.3	9.71	0.901	4.14	1.000	979.	65.6	0.2324	15.398	0.349		0.0749	15.24
3	S.F. KOKTULI	C	51.2	9.74	0.899	4.14	1.000	980.	65.6	0.2057	15.396	0.506		0.0749	15.24
4	S.F. KOKTULI	Q	51.1	9.74	0.899	4.14	1.000	980.	65.6	0.2057	15.396	0.516		-0.0690	15.24
5	S.F. KOKTULI	C	49.4	9.77	0.897	4.14	1.000	981.	65.6	0.1739	15.395	0.400		-0.0690	15.24
6	S.F. KOKTULI	C	47.6	9.81	0.895	4.14	1.000	981.	65.6	0.1651	15.395	0.272		-0.0690	15.24
7	S.F. KOKTULI	C	45.7	9.84	0.894	4.14	1.000	982.	65.6	0.1909	15.395	0.144		-0.0690	15.24
8	S.F. KOKTULI	C	44.8	9.85	0.893	4.14	1.000	982.	65.6	0.1654	15.396	0.082		-0.0690	15.24
9	S.F. KOKTULI	C	43.9	9.87	0.892	4.14	1.000	982.	65.6	0.2128	15.395	0.022		-0.0690	15.24
10	S.F. KOKTULI	Q	43.6	9.87	0.892	4.14	1.000	982.	65.6	0.2128	15.395	0.001		0.0004	15.24
11	S.F. KOKTULI	C	41.1	9.88	0.892	4.14	1.000	983.	65.6	0.1649	15.394	0.002		0.0004	15.24
12	S.F. KOKTULI	C	40.0	9.88	0.891	4.14	1.000	983.	65.6	0.2167	15.394	0.003		0.0004	15.24
13	S.F. KOKTULI	C	38.4	9.91	0.890	4.14	1.000	983.	65.6	0.1647	15.395	0.003		0.0004	15.24
14	S.F. KOKTULI	Q	35.8	9.91	0.890	4.14	1.000	983.	65.6	0.1647	15.395	0.004		0.0923	3.41
15	S.F. KOKTULI	B	34.3									0.146			
16	TRIBUTARY 119	H	36.1	9.91	0.890	4.14	1.000	983.	65.6	0.1892	15.395	0.441	9.49	0.0263	3.41
17	TRIBUTARY 119	T	34.3									0.488			
18	S.F. KOKTULI	J	34.3	9.94	0.889	4.14	1.000	984.	65.6	0.1409	15.395	0.633		0.4436	3.41
19	S.F. KOKTULI	C	34.1	9.97	0.887	4.14	1.000	984.	65.6	0.0884	15.394	0.694		0.4436	3.41
20	S.F. KOKTULI	Q	34.0	9.97	0.887	4.14	1.000	984.	65.6	0.0884	15.394	0.747		0.1059	3.41
21	S.F. KOKTULI	Q	29.3	9.97	0.887	4.14	1.000	984.	65.6	0.0884	15.394	1.251		0.1286	11.48
22	S.F. KOKTULI	C	27.6	10.04	0.884	4.14	1.000	985.	65.6	0.0901	15.392	1.467		0.1286	11.48
23	S.F. KOKTULI	C	25.1	10.08	0.882	4.14	1.000	986.	65.6	0.0733	15.392	1.786		0.1286	11.48
24	S.F. KOKTULI	Q	24.9	10.08	0.882	4.14	1.000	986.	65.6	0.0733	15.392	1.812		-0.0349	11.48
25	S.F. KOKTULI	C	21.9	10.10	0.880	4.14	1.000	987.	65.6	0.0943	15.392	1.706		-0.0349	11.48
26	S.F. KOKTULI	C	20.1	10.15	0.878	4.14	1.000	987.	65.5	0.0711	15.393	1.644		-0.0349	11.48
27	S.F. KOKTULI	C	15.4	10.21	0.875	4.14	1.000	988.	65.5	0.0688	15.393	1.479		-0.0349	11.48
28	S.F. KOKTULI	Q	13.9	10.21	0.875	4.14	1.000	988.	65.5	0.0688	15.393	1.428		0.0801	11.48
29	S.F. KOKTULI	C	12.5	10.24	0.873	4.14	1.000	989.	65.5	0.0644	15.393	1.540		0.0801	11.48
30	S.F. KOKTULI	C	9.2	10.27	0.872	4.14	1.000	990.	65.5	0.0837	15.393	1.803		0.0801	11.48
31	S.F. KOKTULI	C	7.9	10.30	0.870	4.14	1.000	990.	65.5	0.0643	15.394	1.910		0.0801	11.48
32	S.F. KOKTULI	C	5.1	10.35	0.868	4.14	1.000	991.	65.5	0.0713	15.395	2.133		0.0801	11.48
33	S.F. KOKTULI	C	5.1	10.39	0.865	4.14	1.000	992.	65.5	0.0824	15.397	2.133		0.0801	11.48
34	S.F. KOKTULI	Q	3.0	10.39	0.865	4.14	1.000	992.	65.5	0.0824	15.397	2.304		0.2409	11.48
35	S.F. KOKTULI	Q	0.1	10.39	0.865	4.14	1.000	992.	65.5	0.0824	15.397	2.994		0.1574	11.48
36	S.F. KOKTULI	E	0.0									3.011			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.64	0.912	4.67	1.000	979.	69.2	0.2443	15.312	0.368	12.38	0.1367	13.38
2	S.F. KOKTULI	C	53.3	10.69	0.910	4.67	1.000	979.	69.2	0.2336	15.310	0.553		0.1367	13.38
3	S.F. KOKTULI	C	51.2	10.72	0.908	4.67	1.000	980.	69.2	0.2067	15.309	0.839		0.1367	13.38
4	S.F. KOKTULI	Q	51.1	10.72	0.908	4.67	1.000	980.	69.2	0.2067	15.309	0.857		-0.1147	13.38
5	S.F. KOKTULI	C	49.4	10.75	0.907	4.67	1.000	981.	69.2	0.1749	15.308	0.664		-0.1147	13.38
6	S.F. KOKTULI	C	47.6	10.79	0.905	4.67	1.000	981.	69.2	0.1660	15.308	0.451		-0.1147	13.38
7	S.F. KOKTULI	C	45.7	10.82	0.903	4.67	1.000	982.	69.2	0.1920	15.308	0.239		-0.1147	13.38
8	S.F. KOKTULI	C	44.8	10.83	0.902	4.67	1.000	982.	69.2	0.1663	15.308	0.135		-0.1147	13.38
9	S.F. KOKTULI	C	43.9	10.85	0.901	4.67	1.000	982.	69.2	0.2137	15.307	0.036		-0.1147	13.38
10	S.F. KOKTULI	Q	43.6	10.85	0.901	4.67	1.000	982.	69.2	0.2137	15.307	0.001		0.0005	13.38
11	S.F. KOKTULI	C	41.1	10.86	0.901	4.67	1.000	983.	69.2	0.1659	15.306	0.002		0.0005	13.38
12	S.F. KOKTULI	C	40.0	10.86	0.901	4.67	1.000	983.	69.2	0.2175	15.307	0.003		0.0005	13.38
13	S.F. KOKTULI	C	38.4	10.89	0.899	4.67	1.000	983.	69.2	0.1656	15.307	0.004		0.0005	13.38
14	S.F. KOKTULI	Q	35.8	10.89	0.899	4.67	1.000	983.	69.2	0.1656	15.307	0.005		0.0946	3.92
15	S.F. KOKTULI	B	34.3									0.150			
16	TRIBUTARY 119	H	36.1	10.89	0.899	4.67	1.000	983.	69.2	0.1899	15.308	0.481	8.75	0.0269	3.92
17	TRIBUTARY 119	T	34.3									0.529			
18	S.F. KOKTULI	J	34.3	10.92	0.898	4.67	1.000	984.	69.2	0.1414	15.307	0.679		0.4553	3.92
19	S.F. KOKTULI	C	34.1	10.95	0.896	4.67	1.000	984.	69.2	0.0888	15.307	0.742		0.4553	3.92
20	S.F. KOKTULI	Q	34.0	10.95	0.896	4.67	1.000	984.	69.2	0.0888	15.307	0.796		0.1106	3.92
21	S.F. KOKTULI	Q	29.3	10.95	0.896	4.67	1.000	984.	69.2	0.0888	15.307	1.322		0.1449	12.11
22	S.F. KOKTULI	C	27.6	11.02	0.893	4.67	1.000	985.	69.2	0.0906	15.305	1.565		0.1449	12.11
23	S.F. KOKTULI	C	25.1	11.06	0.891	4.67	1.000	986.	69.2	0.0736	15.304	1.924		0.1449	12.11
24	S.F. KOKTULI	Q	24.9	11.06	0.891	4.67	1.000	986.	69.2	0.0736	15.304	1.954		-0.0333	12.11
25	S.F. KOKTULI	C	21.9	11.08	0.889	4.67	1.000	987.	69.2	0.0947	15.305	1.853		-0.0333	12.11
26	S.F. KOKTULI	C	20.1	11.13	0.887	4.67	1.000	987.	69.2	0.0715	15.306	1.794		-0.0333	12.11
27	S.F. KOKTULI	C	15.4	11.19	0.884	4.67	1.000	988.	69.2	0.0691	15.306	1.636		-0.0333	12.11
28	S.F. KOKTULI	Q	13.9	11.19	0.884	4.67	1.000	988.	69.2	0.0691	15.306	1.588		0.1400	12.11
29	S.F. KOKTULI	C	12.5	11.22	0.882	4.67	1.000	989.	69.2	0.0647	15.306	1.784		0.1400	12.11
30	S.F. KOKTULI	C	9.2	11.25	0.881	4.67	1.000	990.	69.1	0.0841	15.306	2.243		0.1400	12.11
31	S.F. KOKTULI	C	7.9	11.28	0.879	4.67	1.000	990.	69.1	0.0646	15.307	2.430		0.1400	12.11
32	S.F. KOKTULI	C	5.1	11.33	0.877	4.67	1.000	991.	69.1	0.0717	15.308	2.821		0.1400	12.11
33	S.F. KOKTULI	C	5.1	11.37	0.874	4.67	1.000	992.	69.1	0.0827	15.309	2.821		0.1400	12.11
34	S.F. KOKTULI	Q	3.0	11.37	0.874	4.67	1.000	992.	69.1	0.0827	15.309	3.119		0.1260	12.11
35	S.F. KOKTULI	Q	0.1	11.37	0.874	4.67	1.000	992.	69.1	0.0827	15.309	3.480		0.1759	12.11
36	S.F. KOKTULI	E	0.0									3.499			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.16	0.791	1.89	1.000	979.	185.6	0.2455	15.224	0.279	14.10	0.1015	15.10
2	S.F. KOKTULI	C	53.3	13.21	0.789	1.89	1.000	979.	185.6	0.2348	15.222	0.416		0.1015	15.10
3	S.F. KOKTULI	C	51.2	13.24	0.788	1.89	1.000	980.	185.6	0.2076	15.221	0.629		0.1015	15.10
4	S.F. KOKTULI	Q	51.1	13.24	0.788	1.89	1.000	980.	185.6	0.2076	15.221	0.642		-0.0859	15.10
5	S.F. KOKTULI	C	49.4	13.27	0.786	1.89	1.000	981.	185.6	0.1759	15.220	0.498		-0.0859	15.10
6	S.F. KOKTULI	C	47.6	13.31	0.785	1.89	1.000	981.	185.6	0.1670	15.220	0.338		-0.0859	15.10
7	S.F. KOKTULI	C	45.7	13.34	0.783	1.89	1.000	982.	185.6	0.1931	15.220	0.179		-0.0859	15.10
8	S.F. KOKTULI	C	44.8	13.35	0.782	1.89	1.000	982.	185.6	0.1672	15.220	0.102		-0.0859	15.10
9	S.F. KOKTULI	C	43.9	13.37	0.782	1.89	1.000	982.	185.6	0.2146	15.220	0.027		-0.0859	15.10
10	S.F. KOKTULI	Q	43.6	13.37	0.782	1.89	1.000	982.	185.6	0.2146	15.220	0.001		0.0004	15.10
11	S.F. KOKTULI	C	41.1	13.38	0.781	1.89	1.000	983.	185.6	0.1668	15.219	0.002		0.0004	15.10
12	S.F. KOKTULI	C	40.0	13.38	0.781	1.89	1.000	983.	185.6	0.2184	15.219	0.003		0.0004	15.10
13	S.F. KOKTULI	C	38.4	13.41	0.780	1.89	1.000	983.	185.6	0.1666	15.220	0.003		0.0004	15.10
14	S.F. KOKTULI	Q	35.8	13.41	0.780	1.89	1.000	983.	185.6	0.1666	15.220	0.004		0.0917	4.48
15	S.F. KOKTULI	B	34.3									0.145			
16	TRIBUTARY 119	H	36.1	13.41	0.780	1.89	1.000	983.	185.6	0.1906	15.220	0.436	9.19	0.0263	4.48
17	TRIBUTARY 119	T	34.3									0.483			
18	S.F. KOKTULI	J	34.3	13.44	0.779	1.89	1.000	984.	185.6	0.1420	15.220	0.628		0.4436	4.48
19	S.F. KOKTULI	C	34.1	13.47	0.777	1.89	1.000	984.	185.6	0.0892	15.219	0.689		0.4436	4.48
20	S.F. KOKTULI	Q	34.0	13.47	0.777	1.89	1.000	984.	185.6	0.0892	15.219	0.742		0.1112	4.48
21	S.F. KOKTULI	Q	29.3	13.47	0.777	1.89	1.000	984.	185.6	0.0892	15.219	1.271		0.1435	12.25
22	S.F. KOKTULI	C	27.6	13.54	0.774	1.89	1.000	985.	185.6	0.0910	15.217	1.512		0.1435	12.25
23	S.F. KOKTULI	C	25.1	13.58	0.772	1.89	1.000	986.	185.6	0.0740	15.217	1.868		0.1435	12.25
24	S.F. KOKTULI	Q	24.9	13.58	0.772	1.89	1.000	986.	185.6	0.0740	15.217	1.897		-0.0328	12.25
25	S.F. KOKTULI	C	21.9	13.60	0.771	1.89	1.000	987.	185.6	0.0951	15.217	1.797		-0.0328	12.25
26	S.F. KOKTULI	C	20.1	13.65	0.769	1.89	1.000	987.	185.6	0.0719	15.218	1.739		-0.0328	12.25
27	S.F. KOKTULI	C	15.4	13.71	0.767	1.89	1.000	988.	185.6	0.0695	15.218	1.584		-0.0328	12.25
28	S.F. KOKTULI	Q	13.9	13.71	0.767	1.89	1.000	988.	185.6	0.0695	15.218	1.536		0.1263	12.25
29	S.F. KOKTULI	C	12.5	13.74	0.765	1.89	1.000	989.	185.6	0.0649	15.218	1.713		0.1263	12.25
30	S.F. KOKTULI	C	9.2	13.77	0.764	1.89	1.000	990.	185.6	0.0844	15.218	2.126		0.1263	12.25
31	S.F. KOKTULI	C	7.9	13.80	0.762	1.89	1.000	990.	185.5	0.0649	15.219	2.296		0.1263	12.25
32	S.F. KOKTULI	C	5.1	13.85	0.760	1.89	1.000	991.	185.5	0.0721	15.220	2.648		0.1263	12.25
33	S.F. KOKTULI	C	5.1	13.89	0.758	1.89	1.000	992.	185.5	0.0830	15.221	2.648		0.1263	12.25
34	S.F. KOKTULI	Q	3.0	13.89	0.758	1.89	1.000	992.	185.5	0.0830	15.221	2.917		0.1568	12.25
35	S.F. KOKTULI	Q	0.1	13.89	0.758	1.89	1.000	992.	185.5	0.0830	15.221	3.366		0.1759	12.25
36	S.F. KOKTULI	E	0.0									3.385			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.56	0.773	5.57	1.000	979.	110.1	0.2466	15.135	0.252	14.01	0.0780	15.01
2	S.F. KOKTULI	C	53.3	11.61	0.771	5.57	1.000	979.	110.1	0.2361	15.134	0.358		0.0780	15.01
3	S.F. KOKTULI	C	51.2	11.64	0.769	5.57	1.000	980.	110.1	0.2086	15.133	0.521		0.0780	15.01
4	S.F. KOKTULI	Q	51.1	11.64	0.769	5.57	1.000	980.	110.1	0.2086	15.133	0.531		-0.0711	15.01
5	S.F. KOKTULI	C	49.4	11.67	0.768	5.57	1.000	981.	110.1	0.1770	15.132	0.412		-0.0711	15.01
6	S.F. KOKTULI	C	47.6	11.71	0.766	5.57	1.000	981.	110.1	0.1680	15.132	0.280		-0.0711	15.01
7	S.F. KOKTULI	C	45.7	11.74	0.765	5.57	1.000	982.	110.1	0.1942	15.132	0.148		-0.0711	15.01
8	S.F. KOKTULI	C	44.8	11.75	0.764	5.57	1.000	982.	110.1	0.1682	15.132	0.084		-0.0711	15.01
9	S.F. KOKTULI	C	43.9	11.77	0.763	5.57	1.000	982.	110.1	0.2155	15.131	0.023		-0.0711	15.01
10	S.F. KOKTULI	Q	43.6	11.77	0.763	5.57	1.000	982.	110.1	0.2155	15.131	0.001		0.0004	15.01
11	S.F. KOKTULI	C	41.1	11.78	0.763	5.57	1.000	983.	110.1	0.1678	15.131	0.002		0.0004	15.01
12	S.F. KOKTULI	C	40.0	11.78	0.763	5.57	1.000	983.	110.1	0.2192	15.131	0.002		0.0004	15.01
13	S.F. KOKTULI	C	38.4	11.81	0.762	5.57	1.000	983.	110.1	0.1677	15.132	0.003		0.0004	15.01
14	S.F. KOKTULI	Q	35.8	11.81	0.762	5.57	1.000	983.	110.1	0.1677	15.132	0.004		0.0893	4.54
15	S.F. KOKTULI	B	34.3									0.141			
16	TRIBUTARY 119	H	36.1	11.81	0.762	5.57	1.000	983.	110.1	0.1914	15.132	0.396	9.08	0.0252	4.54
17	TRIBUTARY 119	T	34.3									0.441			
18	S.F. KOKTULI	J	34.3	11.84	0.760	5.57	1.000	984.	110.1	0.1426	15.131	0.582		0.4280	4.54
19	S.F. KOKTULI	C	34.1	11.87	0.759	5.57	1.000	984.	110.1	0.0896	15.131	0.641		0.4280	4.54
20	S.F. KOKTULI	Q	34.0	11.87	0.759	5.57	1.000	984.	110.1	0.0896	15.131	0.692		0.1097	4.54
21	S.F. KOKTULI	Q	29.3	11.87	0.759	5.57	1.000	984.	110.1	0.0896	15.131	1.214		0.1306	11.08
22	S.F. KOKTULI	C	27.6	11.94	0.756	5.57	1.000	985.	110.1	0.0915	15.129	1.433		0.1306	11.08
23	S.F. KOKTULI	C	25.1	11.98	0.754	5.57	1.000	986.	110.1	0.0744	15.129	1.757		0.1306	11.08
24	S.F. KOKTULI	Q	24.9	11.98	0.754	5.57	1.000	986.	110.1	0.0744	15.129	1.784		-0.0359	11.08
25	S.F. KOKTULI	C	21.9	12.00	0.753	5.57	1.000	987.	110.1	0.0954	15.129	1.674		-0.0359	11.08
26	S.F. KOKTULI	C	20.1	12.05	0.751	5.57	1.000	987.	110.0	0.0723	15.130	1.611		-0.0359	11.08
27	S.F. KOKTULI	C	15.4	12.11	0.749	5.57	1.000	988.	110.0	0.0699	15.130	1.441		-0.0359	11.08
28	S.F. KOKTULI	Q	13.9	12.11	0.749	5.57	1.000	988.	110.0	0.0699	15.130	1.389		0.0897	11.08
29	S.F. KOKTULI	C	12.5	12.14	0.747	5.57	1.000	989.	110.0	0.0652	15.130	1.515		0.0897	11.08
30	S.F. KOKTULI	C	9.2	12.17	0.746	5.57	1.000	990.	110.0	0.0848	15.130	1.808		0.0897	11.08
31	S.F. KOKTULI	C	7.9	12.20	0.745	5.57	1.000	990.	110.0	0.0652	15.131	1.929		0.0897	11.08
32	S.F. KOKTULI	C	5.1	12.25	0.742	5.57	1.000	991.	110.0	0.0725	15.132	2.179		0.0897	11.08
33	S.F. KOKTULI	C	5.1	12.29	0.740	5.57	1.000	992.	110.0	0.0834	15.133	2.179		0.0897	11.08
34	S.F. KOKTULI	Q	3.0	12.29	0.740	5.57	1.000	992.	110.0	0.0834	15.133	2.370		0.2329	11.08
35	S.F. KOKTULI	Q	0.1	12.29	0.740	5.57	1.000	992.	110.0	0.0834	15.133	3.037		0.1574	11.08
36	S.F. KOKTULI	E	0.0									3.054			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.61	0.791	12.55	1.000	979.	59.1	0.2478	15.047	0.255	11.86	0.0797	12.86
2	S.F. KOKTULI	C	53.3	10.66	0.789	12.55	1.000	979.	59.1	0.2374	15.046	0.363		0.0797	12.86
3	S.F. KOKTULI	C	51.2	10.69	0.788	12.55	1.000	980.	59.1	0.2097	15.044	0.530		0.0797	12.86
4	S.F. KOKTULI	Q	51.1	10.69	0.788	12.55	1.000	980.	59.1	0.2097	15.044	0.540		-0.0722	12.86
5	S.F. KOKTULI	C	49.4	10.72	0.786	12.55	1.000	981.	59.1	0.1781	15.044	0.419		-0.0722	12.86
6	S.F. KOKTULI	C	47.6	10.76	0.785	12.55	1.000	981.	59.1	0.1690	15.043	0.285		-0.0722	12.86
7	S.F. KOKTULI	C	45.7	10.79	0.783	12.55	1.000	982.	59.1	0.1954	15.044	0.151		-0.0722	12.86
8	S.F. KOKTULI	C	44.8	10.80	0.783	12.55	1.000	982.	59.1	0.1692	15.044	0.086		-0.0722	12.86
9	S.F. KOKTULI	C	43.9	10.82	0.782	12.55	1.000	982.	59.1	0.2164	15.043	0.023		-0.0722	12.86
10	S.F. KOKTULI	Q	43.6	10.82	0.782	12.55	1.000	982.	59.1	0.2164	15.043	0.001		0.0005	12.86
11	S.F. KOKTULI	C	41.1	10.83	0.781	12.55	1.000	983.	59.1	0.1689	15.042	0.003		0.0005	12.86
12	S.F. KOKTULI	C	40.0	10.83	0.781	12.55	1.000	983.	59.1	0.2202	15.043	0.003		0.0005	12.86
13	S.F. KOKTULI	C	38.4	10.86	0.780	12.55	1.000	983.	59.1	0.1687	15.043	0.004		0.0005	12.86
14	S.F. KOKTULI	Q	35.8	10.86	0.780	12.55	1.000	983.	59.1	0.1687	15.043	0.005		0.0969	5.27
15	S.F. KOKTULI	B	34.3									0.154			
16	TRIBUTARY 119	H	36.1	10.86	0.780	12.55	1.000	983.	59.1	0.1921	15.044	0.534	8.41	0.0274	5.27
17	TRIBUTARY 119	T	34.3									0.583			
18	S.F. KOKTULI	J	34.3	10.89	0.779	12.55	1.000	984.	59.1	0.1432	15.043	0.737		0.4669	5.27
19	S.F. KOKTULI	C	34.1	10.92	0.777	12.55	1.000	984.	59.1	0.0900	15.042	0.801		0.4669	5.27
20	S.F. KOKTULI	Q	34.0	10.92	0.777	12.55	1.000	984.	59.1	0.0900	15.042	0.857		0.0994	5.27
21	S.F. KOKTULI	Q	29.3	10.92	0.777	12.55	1.000	984.	59.1	0.0900	15.042	1.330		0.1625	11.60
22	S.F. KOKTULI	C	27.6	10.99	0.774	12.55	1.000	985.	59.1	0.0921	15.041	1.603		0.1625	11.60
23	S.F. KOKTULI	C	25.1	11.03	0.772	12.55	1.000	986.	59.1	0.0748	15.040	2.006		0.1625	11.60
24	S.F. KOKTULI	Q	24.9	11.03	0.772	12.55	1.000	986.	59.1	0.0748	15.040	2.039		-0.0345	11.60
25	S.F. KOKTULI	C	21.9	11.05	0.771	12.55	1.000	987.	59.1	0.0958	15.041	1.934		-0.0345	11.60
26	S.F. KOKTULI	C	20.1	11.10	0.769	12.55	1.000	987.	59.1	0.0727	15.042	1.873		-0.0345	11.60
27	S.F. KOKTULI	C	15.4	11.16	0.767	12.55	1.000	988.	59.1	0.0703	15.042	1.710		-0.0345	11.60
28	S.F. KOKTULI	Q	13.9	11.16	0.767	12.55	1.000	988.	59.1	0.0703	15.042	1.660		0.0910	11.60
29	S.F. KOKTULI	C	12.5	11.19	0.765	12.55	1.000	989.	59.1	0.0656	15.041	1.787		0.0910	11.60
30	S.F. KOKTULI	C	9.2	11.22	0.764	12.55	1.000	990.	59.1	0.0852	15.042	2.085		0.0910	11.60
31	S.F. KOKTULI	C	7.9	11.25	0.762	12.55	1.000	990.	59.1	0.0656	15.042	2.207		0.0910	11.60
32	S.F. KOKTULI	C	5.1	11.30	0.760	12.55	1.000	991.	59.1	0.0729	15.043	2.461		0.0910	11.60
33	S.F. KOKTULI	C	5.1	11.34	0.758	12.55	1.000	992.	59.1	0.0837	15.045	2.461		0.0910	11.60
34	S.F. KOKTULI	Q	3.0	11.34	0.758	12.55	1.000	992.	59.1	0.0837	15.045	2.655		0.1945	11.60
35	S.F. KOKTULI	Q	0.1	11.34	0.758	12.55	1.000	992.	59.1	0.0837	15.045	3.212		0.1667	11.60
36	S.F. KOKTULI	E	0.0									3.230			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.56	0.745	9.46	1.000	979.	101.8	0.2490	14.958	0.397	11.17	0.1457	12.17
2	S.F. KOKTULI	C	53.3	12.61	0.743	9.46	1.000	979.	101.8	0.2387	14.957	0.594		0.1457	12.17
3	S.F. KOKTULI	C	51.2	12.64	0.741	9.46	1.000	980.	101.8	0.2107	14.956	0.899		0.1457	12.17
4	S.F. KOKTULI	Q	51.1	12.64	0.741	9.46	1.000	980.	101.8	0.2107	14.956	0.918		-0.1229	12.17
5	S.F. KOKTULI	C	49.4	12.67	0.740	9.46	1.000	981.	101.8	0.1792	14.955	0.711		-0.1229	12.17
6	S.F. KOKTULI	C	47.6	12.71	0.738	9.46	1.000	981.	101.8	0.1701	14.955	0.484		-0.1229	12.17
7	S.F. KOKTULI	C	45.7	12.74	0.737	9.46	1.000	982.	101.8	0.1966	14.955	0.256		-0.1229	12.17
8	S.F. KOKTULI	C	44.8	12.75	0.736	9.46	1.000	982.	101.8	0.1703	14.955	0.145		-0.1229	12.17
9	S.F. KOKTULI	C	43.9	12.77	0.736	9.46	1.000	982.	101.8	0.2174	14.954	0.039		-0.1229	12.17
10	S.F. KOKTULI	Q	43.6	12.77	0.736	9.46	1.000	982.	101.8	0.2174	14.954	0.001		0.0005	12.17
11	S.F. KOKTULI	C	41.1	12.78	0.735	9.46	1.000	983.	101.8	0.1700	14.954	0.002		0.0005	12.17
12	S.F. KOKTULI	C	40.0	12.78	0.735	9.46	1.000	983.	101.8	0.2211	14.954	0.003		0.0005	12.17
13	S.F. KOKTULI	C	38.4	12.81	0.734	9.46	1.000	983.	101.8	0.1698	14.954	0.004		0.0005	12.17
14	S.F. KOKTULI	Q	35.8	12.81	0.734	9.46	1.000	983.	101.8	0.1698	14.954	0.005		0.0952	5.65
15	S.F. KOKTULI	B	34.3									0.151			
16	TRIBUTARY 119	H	36.1	12.81	0.734	9.46	1.000	983.	101.8	0.1928	14.955	0.500	8.82	0.0274	5.65
17	TRIBUTARY 119	T	34.3									0.549			
18	S.F. KOKTULI	J	34.3	12.84	0.733	9.46	1.000	984.	101.8	0.1439	14.954	0.701		0.4591	5.65
19	S.F. KOKTULI	C	34.1	12.87	0.731	9.46	1.000	984.	101.8	0.0905	14.954	0.764		0.4591	5.65
20	S.F. KOKTULI	Q	34.0	12.87	0.731	9.46	1.000	984.	101.8	0.0905	14.954	0.819		0.1141	5.65
21	S.F. KOKTULI	Q	29.3	12.87	0.731	9.46	1.000	984.	101.8	0.0905	14.954	1.362		0.1552	12.40
22	S.F. KOKTULI	C	27.6	12.94	0.729	9.46	1.000	985.	101.8	0.0926	14.952	1.622		0.1552	12.40
23	S.F. KOKTULI	C	25.1	12.98	0.727	9.46	1.000	986.	101.8	0.0752	14.952	2.007		0.1552	12.40
24	S.F. KOKTULI	Q	24.9	12.98	0.727	9.46	1.000	986.	101.8	0.0752	14.952	2.039		-0.0345	12.40
25	S.F. KOKTULI	C	21.9	13.00	0.726	9.46	1.000	987.	101.8	0.0962	14.952	1.934		-0.0345	12.40
26	S.F. KOKTULI	C	20.1	13.05	0.724	9.46	1.000	987.	101.8	0.0732	14.953	1.873		-0.0345	12.40
27	S.F. KOKTULI	C	15.4	13.11	0.721	9.46	1.000	988.	101.8	0.0707	14.953	1.710		-0.0345	12.40
28	S.F. KOKTULI	Q	13.9	13.11	0.721	9.46	1.000	988.	101.8	0.0707	14.953	1.660		0.1559	12.40
29	S.F. KOKTULI	C	12.5	13.14	0.720	9.46	1.000	989.	101.8	0.0660	14.953	1.878		0.1559	12.40
30	S.F. KOKTULI	C	9.2	13.17	0.719	9.46	1.000	990.	101.8	0.0856	14.953	2.389		0.1559	12.40
31	S.F. KOKTULI	C	7.9	13.20	0.718	9.46	1.000	990.	101.8	0.0660	14.954	2.598		0.1559	12.40
32	S.F. KOKTULI	C	5.1	13.25	0.716	9.46	1.000	991.	101.7	0.0733	14.955	3.033		0.1559	12.40
33	S.F. KOKTULI	C	5.1	13.29	0.714	9.46	1.000	992.	101.7	0.0840	14.956	3.033		0.1559	12.40
34	S.F. KOKTULI	Q	3.0	13.29	0.714	9.46	1.000	992.	101.7	0.0840	14.956	3.365		0.1107	12.40
35	S.F. KOKTULI	Q	0.1	13.29	0.714	9.46	1.000	992.	101.7	0.0840	14.956	3.682		0.1852	12.40
36	S.F. KOKTULI	E	0.0									3.702			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.54	0.866	5.83	1.000	979.	58.1	0.2502	14.869	0.414	11.48	0.1504	12.48
2	S.F. KOKTULI	C	53.3	10.59	0.863	5.83	1.000	979.	58.1	0.2400	14.868	0.618		0.1504	12.48
3	S.F. KOKTULI	C	51.2	10.62	0.862	5.83	1.000	980.	58.2	0.2118	14.867	0.933		0.1504	12.48
4	S.F. KOKTULI	Q	51.1	10.62	0.862	5.83	1.000	980.	58.2	0.2118	14.867	0.952		-0.1275	12.48
5	S.F. KOKTULI	C	49.4	10.65	0.860	5.83	1.000	981.	58.2	0.1805	14.866	0.738		-0.1275	12.48
6	S.F. KOKTULI	C	47.6	10.69	0.858	5.83	1.000	981.	58.2	0.1712	14.866	0.502		-0.1275	12.48
7	S.F. KOKTULI	C	45.7	10.72	0.857	5.83	1.000	982.	58.2	0.1978	14.866	0.265		-0.1275	12.48
8	S.F. KOKTULI	C	44.8	10.73	0.856	5.83	1.000	982.	58.1	0.1714	14.866	0.151		-0.1275	12.48
9	S.F. KOKTULI	C	43.9	10.75	0.855	5.83	1.000	982.	58.2	0.2184	14.865	0.040		-0.1275	12.48
10	S.F. KOKTULI	Q	43.6	10.75	0.855	5.83	1.000	982.	58.2	0.2184	14.865	0.001		0.0006	12.48
11	S.F. KOKTULI	C	41.1	10.76	0.855	5.83	1.000	983.	58.2	0.1711	14.864	0.003		0.0006	12.48
12	S.F. KOKTULI	C	40.0	10.76	0.855	5.83	1.000	983.	58.2	0.2220	14.865	0.003		0.0006	12.48
13	S.F. KOKTULI	C	38.4	10.79	0.853	5.83	1.000	983.	58.1	0.1710	14.865	0.004		0.0006	12.48
14	S.F. KOKTULI	Q	35.8	10.79	0.853	5.83	1.000	983.	58.1	0.1710	14.865	0.006		0.0980	5.73
15	S.F. KOKTULI	B	34.3									0.156			
16	TRIBUTARY 119	H	36.1	10.79	0.853	5.83	1.000	983.	58.1	0.1936	14.866	0.564	8.70	0.0286	5.73
17	TRIBUTARY 119	T	34.3									0.615			
18	S.F. KOKTULI	J	34.3	10.82	0.852	5.83	1.000	984.	58.1	0.1445	14.865	0.771		0.4708	5.73
19	S.F. KOKTULI	C	34.1	10.85	0.850	5.83	1.000	984.	58.1	0.0909	14.865	0.836		0.4708	5.73
20	S.F. KOKTULI	Q	34.0	10.85	0.850	5.83	1.000	984.	58.1	0.0909	14.865	0.892		0.1089	5.73
21	S.F. KOKTULI	Q	29.3	10.85	0.850	5.83	1.000	984.	58.1	0.0909	14.865	1.410		0.1701	12.18
22	S.F. KOKTULI	C	27.6	10.92	0.847	5.83	1.000	985.	58.2	0.0932	14.863	1.695		0.1701	12.18
23	S.F. KOKTULI	C	25.1	10.96	0.845	5.83	1.000	986.	58.2	0.0757	14.863	2.117		0.1701	12.18
24	S.F. KOKTULI	Q	24.9	10.96	0.845	5.83	1.000	986.	58.2	0.0757	14.863	2.152		-0.0360	12.18
25	S.F. KOKTULI	C	21.9	10.98	0.844	5.83	1.000	987.	58.2	0.0966	14.863	2.042		-0.0360	12.18
26	S.F. KOKTULI	C	20.1	11.03	0.841	5.83	1.000	987.	58.1	0.0736	14.864	1.979		-0.0360	12.18
27	S.F. KOKTULI	C	15.4	11.09	0.839	5.83	1.000	988.	58.1	0.0712	14.864	1.808		-0.0360	12.18
28	S.F. KOKTULI	Q	13.9	11.09	0.839	5.83	1.000	988.	58.1	0.0712	14.864	1.756		0.1495	12.18
29	S.F. KOKTULI	C	12.5	11.12	0.837	5.83	1.000	989.	58.1	0.0665	14.864	1.965		0.1495	12.18
30	S.F. KOKTULI	C	9.2	11.15	0.836	5.83	1.000	990.	58.1	0.0860	14.864	2.455		0.1495	12.18
31	S.F. KOKTULI	C	7.9	11.18	0.834	5.83	1.000	990.	58.1	0.0664	14.865	2.655		0.1495	12.18
32	S.F. KOKTULI	C	5.1	11.23	0.832	5.83	1.000	991.	58.1	0.0738	14.865	3.072		0.1495	12.18
33	S.F. KOKTULI	C	5.1	11.27	0.830	5.83	1.000	992.	58.1	0.0843	14.867	3.072		0.1495	12.18
34	S.F. KOKTULI	Q	3.0	11.27	0.830	5.83	1.000	992.	58.1	0.0843	14.867	3.391		0.1177	12.18
35	S.F. KOKTULI	Q	0.1	11.27	0.830	5.83	1.000	992.	58.1	0.0843	14.867	3.728		0.1944	12.18
36	S.F. KOKTULI	E	0.0									3.749			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.84	0.894	6.00	1.000	979.	28.2	0.2514	14.779	0.422	11.06	0.1530	12.06
2	S.F. KOKTULI	C	53.3	9.89	0.891	6.00	1.000	979.	28.2	0.2414	14.778	0.629		0.1530	12.06
3	S.F. KOKTULI	C	51.2	9.92	0.890	6.00	1.000	980.	28.2	0.2129	14.777	0.949		0.1530	12.06
4	S.F. KOKTULI	Q	51.1	9.92	0.890	6.00	1.000	980.	28.2	0.2129	14.777	0.969		-0.1297	12.06
5	S.F. KOKTULI	C	49.4	9.95	0.888	6.00	1.000	981.	28.2	0.1819	14.777	0.751		-0.1297	12.06
6	S.F. KOKTULI	C	47.6	9.99	0.886	6.00	1.000	981.	28.2	0.1724	14.776	0.511		-0.1297	12.06
7	S.F. KOKTULI	C	45.7	10.02	0.885	6.00	1.000	982.	28.2	0.1991	14.776	0.270		-0.1297	12.06
8	S.F. KOKTULI	C	44.8	10.03	0.884	6.00	1.000	982.	28.2	0.1726	14.777	0.153		-0.1297	12.06
9	S.F. KOKTULI	C	43.9	10.05	0.883	6.00	1.000	982.	28.2	0.2194	14.776	0.041		-0.1297	12.06
10	S.F. KOKTULI	Q	43.6	10.05	0.883	6.00	1.000	982.	28.2	0.2194	14.776	0.001		0.0006	12.06
11	S.F. KOKTULI	C	41.1	10.06	0.882	6.00	1.000	983.	28.2	0.1723	14.775	0.003		0.0006	12.06
12	S.F. KOKTULI	C	40.0	10.06	0.882	6.00	1.000	983.	28.2	0.2230	14.776	0.004		0.0006	12.06
13	S.F. KOKTULI	C	38.4	10.09	0.881	6.00	1.000	983.	28.2	0.1722	14.776	0.005		0.0006	12.06
14	S.F. KOKTULI	Q	35.8	10.09	0.881	6.00	1.000	983.	28.2	0.1722	14.776	0.006		0.0997	5.67
15	S.F. KOKTULI	B	34.3									0.159			
16	TRIBUTARY 119	H	36.1	10.09	0.881	6.00	1.000	983.	28.2	0.1944	14.776	0.605	7.88	0.0286	5.67
17	TRIBUTARY 119	T	34.3									0.656			
18	S.F. KOKTULI	J	34.3	10.12	0.880	6.00	1.000	984.	28.2	0.1451	14.776	0.815		0.4786	5.67
19	S.F. KOKTULI	C	34.1	10.15	0.878	6.00	1.000	984.	28.2	0.0914	14.775	0.881		0.4786	5.67
20	S.F. KOKTULI	Q	34.0	10.15	0.878	6.00	1.000	984.	28.2	0.0914	14.775	0.938		0.1093	5.67
21	S.F. KOKTULI	Q	29.3	10.15	0.878	6.00	1.000	984.	28.2	0.0914	14.775	1.458		0.1721	11.96
22	S.F. KOKTULI	C	27.6	10.22	0.874	6.00	1.000	985.	28.2	0.0938	14.774	1.747		0.1721	11.96
23	S.F. KOKTULI	C	25.1	10.26	0.872	6.00	1.000	986.	28.2	0.0762	14.773	2.174		0.1721	11.96
24	S.F. KOKTULI	Q	24.9	10.26	0.872	6.00	1.000	986.	28.2	0.0762	14.773	2.209		-0.0369	11.96
25	S.F. KOKTULI	C	21.9	10.28	0.871	6.00	1.000	987.	28.2	0.0971	14.774	2.097		-0.0369	11.96
26	S.F. KOKTULI	C	20.1	10.33	0.869	6.00	1.000	987.	28.2	0.0741	14.775	2.032		-0.0369	11.96
27	S.F. KOKTULI	C	15.4	10.39	0.866	6.00	1.000	988.	28.1	0.0716	14.775	1.857		-0.0369	11.96
28	S.F. KOKTULI	Q	13.9	10.39	0.866	6.00	1.000	988.	28.1	0.0716	14.775	1.804		0.1431	11.96
29	S.F. KOKTULI	C	12.5	10.42	0.864	6.00	1.000	989.	28.1	0.0669	14.775	2.004		0.1431	11.96
30	S.F. KOKTULI	C	9.2	10.45	0.863	6.00	1.000	990.	28.1	0.0864	14.775	2.473		0.1431	11.96
31	S.F. KOKTULI	C	7.9	10.48	0.861	6.00	1.000	990.	28.1	0.0669	14.775	2.665		0.1431	11.96
32	S.F. KOKTULI	C	5.1	10.53	0.859	6.00	1.000	991.	28.1	0.0742	14.776	3.064		0.1431	11.96
33	S.F. KOKTULI	C	5.1	10.57	0.856	6.00	1.000	992.	28.1	0.0847	14.778	3.064		0.1431	11.96
34	S.F. KOKTULI	Q	3.0	10.57	0.856	6.00	1.000	992.	28.1	0.0847	14.778	3.369		0.1121	11.96
35	S.F. KOKTULI	Q	0.1	10.57	0.856	6.00	1.000	992.	28.1	0.0847	14.778	3.690		0.1852	11.96
36	S.F. KOKTULI	E	0.0									3.710			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.70	0.922	5.83	1.000	979.	29.0	0.2527	14.690	0.426	10.90	0.1544	11.90
2	S.F. KOKTULI	C	53.3	9.75	0.919	5.83	1.000	979.	29.0	0.2428	14.689	0.635		0.1544	11.90
3	S.F. KOKTULI	C	51.2	9.78	0.917	5.83	1.000	980.	29.1	0.2140	14.688	0.958		0.1544	11.90
4	S.F. KOKTULI	Q	51.1	9.78	0.917	5.83	1.000	980.	29.1	0.2140	14.688	0.978		-0.1309	11.90
5	S.F. KOKTULI	C	49.4	9.81	0.916	5.83	1.000	981.	29.1	0.1833	14.687	0.758		-0.1309	11.90
6	S.F. KOKTULI	C	47.6	9.85	0.914	5.83	1.000	981.	29.1	0.1736	14.687	0.515		-0.1309	11.90
7	S.F. KOKTULI	C	45.7	9.88	0.912	5.83	1.000	982.	29.1	0.2004	14.687	0.273		-0.1309	11.90
8	S.F. KOKTULI	C	44.8	9.89	0.911	5.83	1.000	982.	29.1	0.1737	14.687	0.155		-0.1309	11.90
9	S.F. KOKTULI	C	43.9	9.91	0.911	5.83	1.000	982.	29.1	0.2204	14.686	0.042		-0.1309	11.90
10	S.F. KOKTULI	Q	43.6	9.91	0.911	5.83	1.000	982.	29.1	0.2204	14.686	0.001		0.0006	11.90
11	S.F. KOKTULI	C	41.1	9.92	0.910	5.83	1.000	983.	29.1	0.1735	14.686	0.003		0.0006	11.90
12	S.F. KOKTULI	C	40.0	9.92	0.910	5.83	1.000	983.	29.1	0.2240	14.686	0.004		0.0006	11.90
13	S.F. KOKTULI	C	38.4	9.95	0.908	5.83	1.000	983.	29.1	0.1734	14.686	0.005		0.0006	11.90
14	S.F. KOKTULI	Q	35.8	9.95	0.908	5.83	1.000	983.	29.1	0.1734	14.686	0.006		0.0997	5.38
15	S.F. KOKTULI	B	34.3									0.159			
16	TRIBUTARY 119	H	36.1	9.95	0.908	5.83	1.000	983.	29.0	0.1952	14.687	0.605	7.93	0.0286	5.38
17	TRIBUTARY 119	T	34.3									0.656			
18	S.F. KOKTULI	J	34.3	9.98	0.907	5.83	1.000	984.	29.0	0.1458	14.686	0.815		0.4786	5.38
19	S.F. KOKTULI	C	34.1	10.01	0.905	5.83	1.000	984.	29.1	0.0919	14.686	0.881		0.4786	5.38
20	S.F. KOKTULI	Q	34.0	10.01	0.905	5.83	1.000	984.	29.1	0.0919	14.686	0.938		0.1154	5.38
21	S.F. KOKTULI	Q	29.3	10.01	0.905	5.83	1.000	984.	29.1	0.0919	14.686	1.487		0.1719	12.17
22	S.F. KOKTULI	C	27.6	10.08	0.902	5.83	1.000	985.	29.1	0.0944	14.685	1.775		0.1719	12.17
23	S.F. KOKTULI	C	25.1	10.12	0.900	5.83	1.000	986.	29.1	0.0768	14.684	2.202		0.1719	12.17
24	S.F. KOKTULI	Q	24.9	10.12	0.900	5.83	1.000	986.	29.1	0.0768	14.684	2.237		-0.0372	12.17
25	S.F. KOKTULI	C	21.9	10.14	0.898	5.83	1.000	987.	29.1	0.0975	14.684	2.124		-0.0372	12.17
26	S.F. KOKTULI	C	20.1	10.19	0.896	5.83	1.000	987.	29.0	0.0746	14.685	2.058		-0.0372	12.17
27	S.F. KOKTULI	C	15.4	10.25	0.893	5.83	1.000	988.	29.0	0.0721	14.685	1.882		-0.0372	12.17
28	S.F. KOKTULI	Q	13.9	10.25	0.893	5.83	1.000	988.	29.0	0.0721	14.685	1.828		0.1467	12.17
29	S.F. KOKTULI	C	12.5	10.28	0.891	5.83	1.000	989.	29.0	0.0674	14.685	2.033		0.1467	12.17
30	S.F. KOKTULI	C	9.2	10.31	0.890	5.83	1.000	990.	29.0	0.0868	14.685	2.514		0.1467	12.17
31	S.F. KOKTULI	C	7.9	10.34	0.888	5.83	1.000	990.	29.0	0.0673	14.686	2.710		0.1467	12.17
32	S.F. KOKTULI	C	5.1	10.39	0.886	5.83	1.000	991.	29.0	0.0747	14.687	3.119		0.1467	12.17
33	S.F. KOKTULI	C	5.1	10.43	0.883	5.83	1.000	992.	29.0	0.0850	14.688	3.119		0.1467	12.17
34	S.F. KOKTULI	Q	3.0	10.43	0.883	5.83	1.000	992.	29.0	0.0850	14.688	3.432		0.1285	12.17
35	S.F. KOKTULI	Q	0.1	10.43	0.883	5.83	1.000	992.	29.0	0.0850	14.688	3.800		0.1944	12.17
36	S.F. KOKTULI	E	0.0									3.821			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.80	0.856	3.13	1.000	979.	78.0	0.2540	14.600	0.426	11.71	0.1544	12.71
2	S.F. KOKTULI	C	53.3	10.85	0.854	3.13	1.000	979.	78.0	0.2442	14.599	0.635		0.1544	12.71
3	S.F. KOKTULI	C	51.2	10.88	0.853	3.13	1.000	980.	78.0	0.2152	14.598	0.958		0.1544	12.71
4	S.F. KOKTULI	Q	51.1	10.88	0.853	3.13	1.000	980.	78.0	0.2152	14.598	0.978		-0.1306	12.71
5	S.F. KOKTULI	C	49.4	10.91	0.851	3.13	1.000	981.	78.0	0.1847	14.597	0.759		-0.1306	12.71
6	S.F. KOKTULI	C	47.6	10.95	0.849	3.13	1.000	981.	78.0	0.1749	14.597	0.517		-0.1306	12.71
7	S.F. KOKTULI	C	45.7	10.98	0.848	3.13	1.000	982.	78.0	0.2017	14.597	0.275		-0.1306	12.71
8	S.F. KOKTULI	C	44.8	10.99	0.847	3.13	1.000	982.	78.0	0.1750	14.597	0.157		-0.1306	12.71
9	S.F. KOKTULI	C	43.9	11.01	0.846	3.13	1.000	982.	78.0	0.2215	14.597	0.044		-0.1306	12.71
10	S.F. KOKTULI	Q	43.6	11.01	0.846	3.13	1.000	982.	78.0	0.2215	14.597	0.004		0.0018	12.71
11	S.F. KOKTULI	C	41.1	11.02	0.846	3.13	1.000	983.	78.1	0.1748	14.596	0.009		0.0018	12.71
12	S.F. KOKTULI	C	40.0	11.02	0.845	3.13	1.000	983.	78.0	0.2250	14.596	0.011		0.0018	12.71
13	S.F. KOKTULI	C	38.4	11.05	0.844	3.13	1.000	983.	78.0	0.1747	14.597	0.013		0.0018	12.71
14	S.F. KOKTULI	Q	35.8	11.05	0.844	3.13	1.000	983.	78.0	0.1747	14.597	0.018		0.1030	4.92
15	S.F. KOKTULI	B	34.3									0.176			
16	TRIBUTARY 119	H	36.1	11.05	0.844	3.13	1.000	983.	78.0	0.1960	14.597	0.642	8.11	0.0297	4.92
17	TRIBUTARY 119	T	34.3									0.695			
18	S.F. KOKTULI	J	34.3	11.08	0.843	3.13	1.000	984.	78.0	0.1465	14.597	0.871		0.4942	4.92
19	S.F. KOKTULI	C	34.1	11.11	0.841	3.13	1.000	984.	78.0	0.0925	14.596	0.939		0.4942	4.92
20	S.F. KOKTULI	Q	34.0	11.11	0.841	3.13	1.000	984.	78.0	0.0925	14.596	0.998		0.1095	4.92
21	S.F. KOKTULI	Q	29.3	11.11	0.841	3.13	1.000	984.	78.0	0.0925	14.596	1.519		0.1646	11.74
22	S.F. KOKTULI	C	27.6	11.18	0.838	3.13	1.000	985.	78.0	0.0951	14.595	1.795		0.1646	11.74
23	S.F. KOKTULI	C	25.1	11.22	0.836	3.13	1.000	986.	78.1	0.0774	14.594	2.203		0.1646	11.74
24	S.F. KOKTULI	Q	24.9	11.22	0.836	3.13	1.000	986.	78.1	0.0774	14.594	2.237		-0.0372	11.74
25	S.F. KOKTULI	C	21.9	11.24	0.835	3.13	1.000	987.	78.0	0.0979	14.595	2.124		-0.0372	11.74
26	S.F. KOKTULI	C	20.1	11.29	0.832	3.13	1.000	987.	78.0	0.0751	14.595	2.058		-0.0372	11.74
27	S.F. KOKTULI	C	15.4	11.35	0.830	3.13	1.000	988.	78.0	0.0727	14.596	1.882		-0.0372	11.74
28	S.F. KOKTULI	Q	13.9	11.35	0.830	3.13	1.000	988.	78.0	0.0727	14.596	1.828		0.1448	11.74
29	S.F. KOKTULI	C	12.5	11.38	0.828	3.13	1.000	989.	78.0	0.0679	14.595	2.031		0.1448	11.74
30	S.F. KOKTULI	C	9.2	11.41	0.827	3.13	1.000	990.	78.0	0.0872	14.596	2.505		0.1448	11.74
31	S.F. KOKTULI	C	7.9	11.44	0.825	3.13	1.000	990.	78.0	0.0678	14.596	2.699		0.1448	11.74
32	S.F. KOKTULI	C	5.1	11.49	0.823	3.13	1.000	991.	78.0	0.0752	14.597	3.102		0.1448	11.74
33	S.F. KOKTULI	C	5.1	11.53	0.821	3.13	1.000	992.	78.0	0.0854	14.598	3.102		0.1448	11.74
34	S.F. KOKTULI	Q	3.0	11.53	0.821	3.13	1.000	992.	78.0	0.0854	14.598	3.411		0.1229	11.74
35	S.F. KOKTULI	Q	0.1	11.53	0.821	3.13	1.000	992.	78.0	0.0854	14.598	3.763		0.1944	11.74
36	S.F. KOKTULI	E	0.0									3.784			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.48	0.828	3.26	1.000	979.	107.0	0.2553	14.510	0.414	12.56	0.1504	13.56
2	S.F. KOKTULI	C	53.3	12.53	0.826	3.26	1.000	979.	107.0	0.2457	14.509	0.618		0.1504	13.56
3	S.F. KOKTULI	C	51.2	12.56	0.825	3.26	1.000	980.	107.0	0.2163	14.508	0.933		0.1504	13.56
4	S.F. KOKTULI	Q	51.1	12.56	0.825	3.26	1.000	980.	107.0	0.2163	14.508	0.952		-0.1233	13.56
5	S.F. KOKTULI	C	49.4	12.59	0.823	3.26	1.000	981.	107.0	0.1862	14.507	0.745		-0.1233	13.56
6	S.F. KOKTULI	C	47.6	12.63	0.821	3.26	1.000	981.	107.0	0.1762	14.507	0.516		-0.1233	13.56
7	S.F. KOKTULI	C	45.7	12.66	0.820	3.26	1.000	982.	107.0	0.2030	14.507	0.288		-0.1233	13.56
8	S.F. KOKTULI	C	44.8	12.67	0.819	3.26	1.000	982.	107.0	0.1763	14.507	0.177		-0.1233	13.56
9	S.F. KOKTULI	C	43.9	12.69	0.819	3.26	1.000	982.	107.0	0.2226	14.507	0.070		-0.1233	13.56
10	S.F. KOKTULI	Q	43.6	12.69	0.819	3.26	1.000	982.	107.0	0.2226	14.507	0.032		0.0089	13.56
11	S.F. KOKTULI	C	41.1	12.70	0.818	3.26	1.000	983.	107.0	0.1761	14.506	0.055		0.0089	13.56
12	S.F. KOKTULI	C	40.0	12.70	0.818	3.26	1.000	983.	107.0	0.2260	14.506	0.065		0.0089	13.56
13	S.F. KOKTULI	C	38.4	12.73	0.817	3.26	1.000	983.	107.0	0.1761	14.507	0.079		0.0089	13.56
14	S.F. KOKTULI	Q	35.8	12.73	0.817	3.26	1.000	983.	107.0	0.1761	14.507	0.102		0.1030	4.69
15	S.F. KOKTULI	B	34.3									0.260			
16	TRIBUTARY 119	H	36.1	12.73	0.817	3.26	1.000	983.	107.0	0.1969	14.507	0.564	8.78	0.0297	4.69
17	TRIBUTARY 119	T	34.3									0.617			
18	S.F. KOKTULI	J	34.3	12.76	0.815	3.26	1.000	984.	107.0	0.1471	14.507	0.877		0.4981	4.69
19	S.F. KOKTULI	C	34.1	12.79	0.814	3.26	1.000	984.	107.0	0.0932	14.506	0.946		0.4981	4.69
20	S.F. KOKTULI	Q	34.0	12.79	0.814	3.26	1.000	984.	107.0	0.0932	14.506	1.005		0.0952	4.69
21	S.F. KOKTULI	Q	29.3	12.79	0.814	3.26	1.000	984.	107.0	0.0932	14.506	1.458		0.1591	11.13
22	S.F. KOKTULI	C	27.6	12.86	0.811	3.26	1.000	985.	107.0	0.0958	14.505	1.725		0.1591	11.13
23	S.F. KOKTULI	C	25.1	12.90	0.809	3.26	1.000	986.	107.0	0.0780	14.504	2.120		0.1591	11.13
24	S.F. KOKTULI	Q	24.9	12.90	0.809	3.26	1.000	986.	107.0	0.0780	14.504	2.152		-0.0360	11.13
25	S.F. KOKTULI	C	21.9	12.92	0.807	3.26	1.000	987.	107.0	0.0983	14.505	2.042		-0.0360	11.13
26	S.F. KOKTULI	C	20.1	12.97	0.805	3.26	1.000	987.	107.0	0.0757	14.505	1.979		-0.0360	11.13
27	S.F. KOKTULI	C	15.4	13.03	0.803	3.26	1.000	988.	107.0	0.0732	14.506	1.808		-0.0360	11.13
28	S.F. KOKTULI	Q	13.9	13.03	0.803	3.26	1.000	988.	107.0	0.0732	14.506	1.756		0.1500	11.13
29	S.F. KOKTULI	C	12.5	13.06	0.801	3.26	1.000	989.	107.0	0.0684	14.505	1.966		0.1500	11.13
30	S.F. KOKTULI	C	9.2	13.09	0.800	3.26	1.000	990.	107.0	0.0876	14.506	2.457		0.1500	11.13
31	S.F. KOKTULI	C	7.9	13.12	0.798	3.26	1.000	990.	107.0	0.0683	14.506	2.658		0.1500	11.13
32	S.F. KOKTULI	C	5.1	13.17	0.796	3.26	1.000	991.	107.0	0.0757	14.507	3.076		0.1500	11.13
33	S.F. KOKTULI	C	5.1	13.21	0.794	3.26	1.000	992.	106.9	0.0858	14.508	3.076		0.1500	11.13
34	S.F. KOKTULI	Q	3.0	13.21	0.794	3.26	1.000	992.	106.9	0.0858	14.508	3.396		0.1191	11.13
35	S.F. KOKTULI	Q	0.1	13.21	0.794	3.26	1.000	992.	106.9	0.0858	14.508	3.737		0.1944	11.13
36	S.F. KOKTULI	E	0.0									3.758			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.13	0.847	2.90	1.000	979.	135.1	0.2566	14.419	0.418	14.01	0.1518	15.01
2	S.F. KOKTULI	C	53.3	12.18	0.845	2.90	1.000	979.	135.1	0.2472	14.418	0.624		0.1518	15.01
3	S.F. KOKTULI	C	51.2	12.21	0.843	2.90	1.000	980.	135.1	0.2175	14.417	0.941		0.1518	15.01
4	S.F. KOKTULI	Q	51.1	12.21	0.843	2.90	1.000	980.	135.1	0.2175	14.417	0.961		-0.1263	15.01
5	S.F. KOKTULI	C	49.4	12.24	0.842	2.90	1.000	981.	135.1	0.1877	14.417	0.749		-0.1263	15.01
6	S.F. KOKTULI	C	47.6	12.28	0.840	2.90	1.000	981.	135.1	0.1775	14.417	0.515		-0.1263	15.01
7	S.F. KOKTULI	C	45.7	12.31	0.838	2.90	1.000	982.	135.1	0.2044	14.417	0.281		-0.1263	15.01
8	S.F. KOKTULI	C	44.8	12.32	0.838	2.90	1.000	982.	135.1	0.1776	14.417	0.167		-0.1263	15.01
9	S.F. KOKTULI	C	43.9	12.34	0.837	2.90	1.000	982.	135.1	0.2237	14.416	0.058		-0.1263	15.01
10	S.F. KOKTULI	Q	43.6	12.34	0.837	2.90	1.000	982.	135.1	0.2237	14.416	0.019		0.0062	15.01
11	S.F. KOKTULI	C	41.1	12.35	0.836	2.90	1.000	983.	135.1	0.1774	14.416	0.035		0.0062	15.01
12	S.F. KOKTULI	C	40.0	12.35	0.836	2.90	1.000	983.	135.1	0.2270	14.416	0.042		0.0062	15.01
13	S.F. KOKTULI	C	38.4	12.38	0.835	2.90	1.000	983.	135.1	0.1775	14.416	0.051		0.0062	15.01
14	S.F. KOKTULI	Q	35.8	12.38	0.835	2.90	1.000	983.	135.1	0.1775	14.416	0.067		0.1022	4.17
15	S.F. KOKTULI	B	34.3									0.224			
16	TRIBUTARY 119	H	36.1	12.38	0.835	2.90	1.000	983.	135.1	0.1977	14.417	0.562	8.97	0.0297	4.17
17	TRIBUTARY 119	T	34.3									0.615			
18	S.F. KOKTULI	J	34.3	12.41	0.834	2.90	1.000	984.	135.1	0.1478	14.416	0.839		0.4903	4.17
19	S.F. KOKTULI	C	34.1	12.44	0.832	2.90	1.000	984.	135.1	0.0938	14.416	0.907		0.4903	4.17
20	S.F. KOKTULI	Q	34.0	12.44	0.832	2.90	1.000	984.	135.1	0.0938	14.416	0.965		0.1076	4.17
21	S.F. KOKTULI	Q	29.3	12.44	0.832	2.90	1.000	984.	135.1	0.0938	14.416	1.477		0.1611	10.60
22	S.F. KOKTULI	C	27.6	12.51	0.829	2.90	1.000	985.	135.1	0.0965	14.415	1.747		0.1611	10.60
23	S.F. KOKTULI	C	25.1	12.55	0.827	2.90	1.000	986.	135.1	0.0786	14.414	2.147		0.1611	10.60
24	S.F. KOKTULI	Q	24.9	12.55	0.827	2.90	1.000	986.	135.1	0.0786	14.414	2.180		-0.0364	10.60
25	S.F. KOKTULI	C	21.9	12.57	0.826	2.90	1.000	987.	135.1	0.0988	14.414	2.069		-0.0364	10.60
26	S.F. KOKTULI	C	20.1	12.62	0.823	2.90	1.000	987.	135.1	0.0763	14.415	2.005		-0.0364	10.60
27	S.F. KOKTULI	C	15.4	12.68	0.821	2.90	1.000	988.	135.0	0.0738	14.415	1.833		-0.0364	10.60
28	S.F. KOKTULI	Q	13.9	12.68	0.821	2.90	1.000	988.	135.0	0.0738	14.415	1.780		0.1563	10.60
29	S.F. KOKTULI	C	12.5	12.71	0.819	2.90	1.000	989.	135.0	0.0689	14.415	1.999		0.1563	10.60
30	S.F. KOKTULI	C	9.2	12.74	0.818	2.90	1.000	990.	135.0	0.0880	14.415	2.511		0.1563	10.60
31	S.F. KOKTULI	C	7.9	12.77	0.816	2.90	1.000	990.	135.0	0.0688	14.416	2.720		0.1563	10.60
32	S.F. KOKTULI	C	5.1	12.82	0.814	2.90	1.000	991.	135.0	0.0762	14.416	3.156		0.1563	10.60
33	S.F. KOKTULI	C	5.1	12.86	0.812	2.90	1.000	992.	135.0	0.0861	14.418	3.156		0.1563	10.60
34	S.F. KOKTULI	Q	3.0	12.86	0.812	2.90	1.000	992.	135.0	0.0861	14.418	3.489		0.1442	10.60
35	S.F. KOKTULI	Q	0.1	12.86	0.812	2.90	1.000	992.	135.0	0.0861	14.418	3.902		0.2037	10.60
36	S.F. KOKTULI	E	0.0									3.924			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.98	0.726	3.28	1.000	979.	136.8	0.2580	14.329	0.402	13.33	0.1468	14.33
2	S.F. KOKTULI	C	53.3	12.03	0.724	3.28	1.000	979.	136.8	0.2487	14.328	0.601		0.1468	14.33
3	S.F. KOKTULI	C	51.2	12.06	0.723	3.28	1.000	980.	136.8	0.2188	14.327	0.908		0.1468	14.33
4	S.F. KOKTULI	Q	51.1	12.06	0.723	3.28	1.000	980.	136.8	0.2188	14.327	0.927		-0.1241	14.33
5	S.F. KOKTULI	C	49.4	12.09	0.722	3.28	1.000	981.	136.9	0.1894	14.326	0.718		-0.1241	14.33
6	S.F. KOKTULI	C	47.6	12.13	0.720	3.28	1.000	981.	136.8	0.1789	14.326	0.488		-0.1241	14.33
7	S.F. KOKTULI	C	45.7	12.16	0.719	3.28	1.000	982.	136.8	0.2059	14.326	0.258		-0.1241	14.33
8	S.F. KOKTULI	C	44.8	12.17	0.718	3.28	1.000	982.	136.8	0.1790	14.326	0.147		-0.1241	14.33
9	S.F. KOKTULI	C	43.9	12.19	0.717	3.28	1.000	982.	136.8	0.2248	14.326	0.039		-0.1241	14.33
10	S.F. KOKTULI	Q	43.6	12.19	0.717	3.28	1.000	982.	136.8	0.2248	14.326	0.001		0.0005	14.33
11	S.F. KOKTULI	C	41.1	12.20	0.717	3.28	1.000	983.	136.9	0.1789	14.325	0.002		0.0005	14.33
12	S.F. KOKTULI	C	40.0	12.20	0.717	3.28	1.000	983.	136.9	0.2281	14.326	0.003		0.0005	14.33
13	S.F. KOKTULI	C	38.4	12.23	0.716	3.28	1.000	983.	136.8	0.1789	14.326	0.004		0.0005	14.33
14	S.F. KOKTULI	Q	35.8	12.23	0.716	3.28	1.000	983.	136.8	0.1789	14.326	0.005		0.0952	3.75
15	S.F. KOKTULI	B	34.3									0.151			
16	TRIBUTARY 119	H	36.1	12.23	0.716	3.28	1.000	983.	136.8	0.1986	14.326	0.499	7.94	0.0269	3.75
17	TRIBUTARY 119	T	34.3									0.547			
18	S.F. KOKTULI	J	34.3	12.26	0.715	3.28	1.000	984.	136.8	0.1485	14.326	0.699		0.4591	3.75
19	S.F. KOKTULI	C	34.1	12.29	0.713	3.28	1.000	984.	136.8	0.0945	14.325	0.762		0.4591	3.75
20	S.F. KOKTULI	Q	34.0	12.29	0.713	3.28	1.000	984.	136.8	0.0945	14.325	0.817		0.1230	3.75
21	S.F. KOKTULI	Q	29.3	12.29	0.713	3.28	1.000	984.	136.8	0.0945	14.325	1.402		0.1524	10.12
22	S.F. KOKTULI	C	27.6	12.36	0.710	3.28	1.000	985.	136.9	0.0972	14.324	1.658		0.1524	10.12
23	S.F. KOKTULI	C	25.1	12.40	0.709	3.28	1.000	986.	136.9	0.0792	14.324	2.036		0.1524	10.12
24	S.F. KOKTULI	Q	24.9	12.40	0.709	3.28	1.000	986.	136.9	0.0792	14.324	2.067		-0.0348	10.12
25	S.F. KOKTULI	C	21.9	12.42	0.708	3.28	1.000	987.	136.8	0.0993	14.324	1.961		-0.0348	10.12
26	S.F. KOKTULI	C	20.1	12.47	0.706	3.28	1.000	987.	136.8	0.0770	14.325	1.899		-0.0348	10.12
27	S.F. KOKTULI	C	15.4	12.53	0.703	3.28	1.000	988.	136.8	0.0744	14.325	1.735		-0.0348	10.12
28	S.F. KOKTULI	Q	13.9	12.53	0.703	3.28	1.000	988.	136.8	0.0744	14.325	1.684		0.1485	10.12
29	S.F. KOKTULI	C	12.5	12.56	0.702	3.28	1.000	989.	136.8	0.0694	14.325	1.892		0.1485	10.12
30	S.F. KOKTULI	C	9.2	12.59	0.701	3.28	1.000	990.	136.8	0.0885	14.325	2.378		0.1485	10.12
31	S.F. KOKTULI	C	7.9	12.62	0.700	3.28	1.000	990.	136.8	0.0694	14.325	2.577		0.1485	10.12
32	S.F. KOKTULI	C	5.1	12.67	0.698	3.28	1.000	991.	136.8	0.0767	14.326	2.991		0.1485	10.12
33	S.F. KOKTULI	C	5.1	12.71	0.696	3.28	1.000	992.	136.7	0.0865	14.327	2.991		0.1485	10.12
34	S.F. KOKTULI	Q	3.0	12.71	0.696	3.28	1.000	992.	136.7	0.0865	14.327	3.308		0.1037	10.12
35	S.F. KOKTULI	Q	0.1	12.71	0.696	3.28	1.000	992.	136.7	0.0865	14.327	3.605		0.1852	10.12
36	S.F. KOKTULI	E	0.0									3.625			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	13.56	0.633	2.76	1.000	979.	152.1	0.2594	14.238	0.389	13.64	0.1432	14.64
2	S.F. KOKTULI	C	53.3	13.61	0.631	2.76	1.000	979.	152.2	0.2503	14.237	0.583		0.1432	14.64
3	S.F. KOKTULI	C	51.2	13.64	0.630	2.76	1.000	980.	152.2	0.2200	14.236	0.883		0.1432	14.64
4	S.F. KOKTULI	Q	51.1	13.64	0.630	2.76	1.000	980.	152.2	0.2200	14.236	0.901		-0.1206	14.64
5	S.F. KOKTULI	C	49.4	13.67	0.629	2.76	1.000	981.	152.2	0.1911	14.236	0.698		-0.1206	14.64
6	S.F. KOKTULI	C	47.6	13.71	0.628	2.76	1.000	981.	152.2	0.1804	14.235	0.475		-0.1206	14.64
7	S.F. KOKTULI	C	45.7	13.74	0.627	2.76	1.000	982.	152.2	0.2073	14.236	0.251		-0.1206	14.64
8	S.F. KOKTULI	C	44.8	13.75	0.626	2.76	1.000	982.	152.2	0.1807	14.236	0.142		-0.1206	14.64
9	S.F. KOKTULI	C	43.9	13.77	0.625	2.76	1.000	982.	152.2	0.2259	14.235	0.038		-0.1206	14.64
10	S.F. KOKTULI	Q	43.6	13.77	0.625	2.76	1.000	982.	152.2	0.2259	14.235	0.001		0.0005	14.64
11	S.F. KOKTULI	C	41.1	13.78	0.625	2.76	1.000	983.	152.2	0.1803	14.235	0.002		0.0005	14.64
12	S.F. KOKTULI	C	40.0	13.78	0.625	2.76	1.000	983.	152.2	0.2292	14.235	0.003		0.0005	14.64
13	S.F. KOKTULI	C	38.4	13.81	0.624	2.76	1.000	983.	152.2	0.1804	14.235	0.004		0.0005	14.64
14	S.F. KOKTULI	Q	35.8	13.81	0.624	2.76	1.000	983.	152.2	0.1804	14.235	0.005		0.0934	4.18
15	S.F. KOKTULI	B	34.3									0.148			
16	TRIBUTARY 119	H	36.1	13.81	0.624	2.76	1.000	983.	152.2	0.1994	14.236	0.468	8.32	0.0269	4.18
17	TRIBUTARY 119	T	34.3									0.516			
18	S.F. KOKTULI	J	34.3	13.84	0.623	2.76	1.000	984.	152.2	0.1492	14.235	0.665		0.4475	4.18
19	S.F. KOKTULI	C	34.1	13.87	0.622	2.76	1.000	984.	152.2	0.0953	14.235	0.727		0.4475	4.18
20	S.F. KOKTULI	Q	34.0	13.87	0.622	2.76	1.000	984.	152.2	0.0953	14.235	0.780		0.1204	4.18
21	S.F. KOKTULI	Q	29.3	13.87	0.622	2.76	1.000	984.	152.2	0.0953	14.235	1.353		0.1442	10.29
22	S.F. KOKTULI	C	27.6	13.94	0.619	2.76	1.000	985.	152.2	0.0980	14.234	1.595		0.1442	10.29
23	S.F. KOKTULI	C	25.1	13.98	0.618	2.76	1.000	986.	152.2	0.0799	14.233	1.953		0.1442	10.29
24	S.F. KOKTULI	Q	24.9	13.98	0.618	2.76	1.000	986.	152.2	0.0799	14.233	1.982		-0.0337	10.29
25	S.F. KOKTULI	C	21.9	14.00	0.617	2.76	1.000	987.	152.2	0.0997	14.233	1.879		-0.0337	10.29
26	S.F. KOKTULI	C	20.1	14.05	0.615	2.76	1.000	987.	152.2	0.0776	14.234	1.820		-0.0337	10.29
27	S.F. KOKTULI	C	15.4	14.11	0.613	2.76	1.000	988.	152.1	0.0750	14.234	1.661		-0.0337	10.29
28	S.F. KOKTULI	Q	13.9	14.11	0.613	2.76	1.000	988.	152.1	0.0750	14.234	1.612		0.1249	10.29
29	S.F. KOKTULI	C	12.5	14.14	0.612	2.76	1.000	989.	152.1	0.0700	14.234	1.787		0.1249	10.29
30	S.F. KOKTULI	C	9.2	14.17	0.611	2.76	1.000	990.	152.1	0.0889	14.234	2.196		0.1249	10.29
31	S.F. KOKTULI	C	7.9	14.20	0.610	2.76	1.000	990.	152.1	0.0699	14.235	2.363		0.1249	10.29
32	S.F. KOKTULI	C	5.1	14.25	0.608	2.76	1.000	991.	152.1	0.0772	14.235	2.712		0.1249	10.29
33	S.F. KOKTULI	C	5.1	14.29	0.607	2.76	1.000	992.	152.0	0.0869	14.236	2.712		0.1249	10.29
34	S.F. KOKTULI	Q	3.0	14.29	0.607	2.76	1.000	992.	152.0	0.0869	14.236	2.978		0.1477	10.29
35	S.F. KOKTULI	Q	0.1	14.29	0.607	2.76	1.000	992.	152.0	0.0869	14.236	3.401		0.1759	10.29
36	S.F. KOKTULI	E	0.0									3.420			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	14.60	0.577	3.06	1.000	979.	189.2	0.2608	14.147	0.377	13.99	0.1393	14.99
2	S.F. KOKTULI	C	53.3	14.65	0.576	3.06	1.000	979.	189.2	0.2519	14.146	0.566		0.1393	14.99
3	S.F. KOKTULI	C	51.2	14.68	0.575	3.06	1.000	980.	189.2	0.2213	14.145	0.857		0.1393	14.99
4	S.F. KOKTULI	Q	51.1	14.68	0.575	3.06	1.000	980.	189.2	0.2213	14.145	0.875		-0.1172	14.99
5	S.F. KOKTULI	C	49.4	14.71	0.574	3.06	1.000	981.	189.2	0.1929	14.145	0.678		-0.1172	14.99
6	S.F. KOKTULI	C	47.6	14.75	0.572	3.06	1.000	981.	189.2	0.1820	14.145	0.461		-0.1172	14.99
7	S.F. KOKTULI	C	45.7	14.78	0.571	3.06	1.000	982.	189.2	0.2088	14.145	0.244		-0.1172	14.99
8	S.F. KOKTULI	C	44.8	14.79	0.571	3.06	1.000	982.	189.2	0.1824	14.145	0.138		-0.1172	14.99
9	S.F. KOKTULI	C	43.9	14.81	0.570	3.06	1.000	982.	189.2	0.2271	14.144	0.037		-0.1172	14.99
10	S.F. KOKTULI	Q	43.6	14.81	0.570	3.06	1.000	982.	189.2	0.2271	14.144	0.001		0.0004	14.99
11	S.F. KOKTULI	C	41.1	14.82	0.570	3.06	1.000	983.	189.2	0.1818	14.144	0.002		0.0004	14.99
12	S.F. KOKTULI	C	40.0	14.82	0.570	3.06	1.000	983.	189.2	0.2303	14.144	0.003		0.0004	14.99
13	S.F. KOKTULI	C	38.4	14.85	0.569	3.06	1.000	983.	189.2	0.1820	14.144	0.003		0.0004	14.99
14	S.F. KOKTULI	Q	35.8	14.85	0.569	3.06	1.000	983.	189.2	0.1820	14.144	0.004		0.0923	4.10
15	S.F. KOKTULI	B	34.3									0.146			
16	TRIBUTARY 119	H	36.1	14.85	0.569	3.06	1.000	983.	189.2	0.2003	14.145	0.439	8.40	0.0263	4.10
17	TRIBUTARY 119	T	34.3									0.486			
18	S.F. KOKTULI	J	34.3	14.88	0.568	3.06	1.000	984.	189.2	0.1500	14.144	0.632		0.4436	4.10
19	S.F. KOKTULI	C	34.1	14.91	0.567	3.06	1.000	984.	189.2	0.0960	14.144	0.693		0.4436	4.10
20	S.F. KOKTULI	Q	34.0	14.91	0.567	3.06	1.000	984.	189.2	0.0960	14.144	0.746		0.1173	4.10
21	S.F. KOKTULI	Q	29.3	14.91	0.567	3.06	1.000	984.	189.2	0.0960	14.144	1.304		0.1359	10.10
22	S.F. KOKTULI	C	27.6	14.98	0.565	3.06	1.000	985.	189.2	0.0988	14.143	1.532		0.1359	10.10
23	S.F. KOKTULI	C	25.1	15.02	0.563	3.06	1.000	986.	189.2	0.0805	14.142	1.869		0.1359	10.10
24	S.F. KOKTULI	Q	24.9	15.02	0.563	3.06	1.000	986.	189.2	0.0805	14.142	1.897		-0.0328	10.10
25	S.F. KOKTULI	C	21.9	15.04	0.562	3.06	1.000	987.	189.2	0.1002	14.143	1.797		-0.0328	10.10
26	S.F. KOKTULI	C	20.1	15.09	0.561	3.06	1.000	987.	189.2	0.0783	14.143	1.739		-0.0328	10.10
27	S.F. KOKTULI	C	15.4	15.15	0.559	3.06	1.000	988.	189.2	0.0757	14.144	1.584		-0.0328	10.10
28	S.F. KOKTULI	Q	13.9	15.15	0.559	3.06	1.000	988.	189.2	0.0757	14.144	1.536		0.1058	10.10
29	S.F. KOKTULI	C	12.5	15.18	0.558	3.06	1.000	989.	189.2	0.0706	14.143	1.684		0.1058	10.10
30	S.F. KOKTULI	C	9.2	15.21	0.557	3.06	1.000	990.	189.2	0.0894	14.144	2.031		0.1058	10.10
31	S.F. KOKTULI	C	7.9	15.24	0.556	3.06	1.000	990.	189.1	0.0705	14.144	2.172		0.1058	10.10
32	S.F. KOKTULI	C	5.1	15.29	0.555	3.06	1.000	991.	189.1	0.0778	14.145	2.467		0.1058	10.10
33	S.F. KOKTULI	C	5.1	15.33	0.553	3.06	1.000	992.	189.0	0.0873	14.146	2.467		0.1058	10.10
34	S.F. KOKTULI	Q	3.0	15.33	0.553	3.06	1.000	992.	189.0	0.0873	14.146	2.693		0.1892	10.10
35	S.F. KOKTULI	Q	0.1	15.33	0.553	3.06	1.000	992.	189.0	0.0873	14.146	3.235		0.1667	10.10
36	S.F. KOKTULI	E	0.0									3.253			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	12.70	0.819	5.73	1.000	979.	150.2	0.2623	14.056	0.368	14.52	0.1367	15.52
2	S.F. KOKTULI	C	53.3	12.75	0.817	5.73	1.000	979.	150.2	0.2535	14.055	0.553		0.1367	15.52
3	S.F. KOKTULI	C	51.2	12.78	0.816	5.73	1.000	980.	150.2	0.2226	14.054	0.839		0.1367	15.52
4	S.F. KOKTULI	Q	51.1	12.78	0.816	5.73	1.000	980.	150.2	0.2226	14.054	0.857		-0.1148	15.52
5	S.F. KOKTULI	C	49.4	12.81	0.814	5.73	1.000	981.	150.2	0.1947	14.054	0.664		-0.1148	15.52
6	S.F. KOKTULI	C	47.6	12.85	0.812	5.73	1.000	981.	150.2	0.1838	14.054	0.451		-0.1148	15.52
7	S.F. KOKTULI	C	45.7	12.88	0.811	5.73	1.000	982.	150.2	0.2104	14.054	0.239		-0.1148	15.52
8	S.F. KOKTULI	C	44.8	12.89	0.810	5.73	1.000	982.	150.2	0.1842	14.054	0.135		-0.1148	15.52
9	S.F. KOKTULI	C	43.9	12.91	0.809	5.73	1.000	982.	150.2	0.2283	14.053	0.036		-0.1148	15.52
10	S.F. KOKTULI	Q	43.6	12.91	0.809	5.73	1.000	982.	150.2	0.2283	14.053	0.001		0.0004	15.52
11	S.F. KOKTULI	C	41.1	12.92	0.809	5.73	1.000	983.	150.2	0.1836	14.053	0.002		0.0004	15.52
12	S.F. KOKTULI	C	40.0	12.92	0.809	5.73	1.000	983.	150.2	0.2314	14.053	0.003		0.0004	15.52
13	S.F. KOKTULI	C	38.4	12.95	0.807	5.73	1.000	983.	150.2	0.1836	14.053	0.003		0.0004	15.52
14	S.F. KOKTULI	Q	35.8	12.95	0.807	5.73	1.000	983.	150.2	0.1836	14.053	0.004		0.0911	3.84
15	S.F. KOKTULI	B	34.3									0.144			
16	TRIBUTARY 119	H	36.1	12.95	0.807	5.73	1.000	983.	150.2	0.2013	14.054	0.424	9.76	0.0263	3.84
17	TRIBUTARY 119	T	34.3									0.471			
18	S.F. KOKTULI	J	34.3	12.98	0.806	5.73	1.000	984.	150.2	0.1507	14.053	0.615		0.4358	3.84
19	S.F. KOKTULI	C	34.1	13.01	0.804	5.73	1.000	984.	150.2	0.0968	14.053	0.675		0.4358	3.84
20	S.F. KOKTULI	Q	34.0	13.01	0.804	5.73	1.000	984.	150.2	0.0968	14.053	0.727		0.1127	3.84
21	S.F. KOKTULI	Q	29.3	13.01	0.804	5.73	1.000	984.	150.2	0.0968	14.053	1.263		0.1325	10.14
22	S.F. KOKTULI	C	27.6	13.08	0.802	5.73	1.000	985.	150.2	0.0996	14.052	1.485		0.1325	10.14
23	S.F. KOKTULI	C	25.1	13.12	0.800	5.73	1.000	986.	150.2	0.0813	14.052	1.814		0.1325	10.14
24	S.F. KOKTULI	Q	24.9	13.12	0.800	5.73	1.000	986.	150.2	0.0813	14.052	1.841		-0.0341	10.14
25	S.F. KOKTULI	C	21.9	13.14	0.798	5.73	1.000	987.	150.2	0.1007	14.052	1.737		-0.0341	10.14
26	S.F. KOKTULI	C	20.1	13.19	0.796	5.73	1.000	987.	150.2	0.0790	14.053	1.677		-0.0341	10.14
27	S.F. KOKTULI	C	15.4	13.25	0.794	5.73	1.000	988.	150.2	0.0764	14.053	1.515		-0.0341	10.14
28	S.F. KOKTULI	Q	13.9	13.25	0.794	5.73	1.000	988.	150.2	0.0764	14.053	1.466		0.0925	10.14
29	S.F. KOKTULI	C	12.5	13.28	0.792	5.73	1.000	989.	150.2	0.0712	14.052	1.596		0.0925	10.14
30	S.F. KOKTULI	C	9.2	13.31	0.791	5.73	1.000	990.	150.1	0.0899	14.053	1.899		0.0925	10.14
31	S.F. KOKTULI	C	7.9	13.34	0.789	5.73	1.000	990.	150.1	0.0712	14.053	2.023		0.0925	10.14
32	S.F. KOKTULI	C	5.1	13.39	0.787	5.73	1.000	991.	150.1	0.0783	14.054	2.281		0.0925	10.14
33	S.F. KOKTULI	C	5.1	13.43	0.785	5.73	1.000	992.	150.0	0.0877	14.055	2.281		0.0925	10.14
34	S.F. KOKTULI	Q	3.0	13.43	0.785	5.73	1.000	992.	150.0	0.0877	14.055	2.478		0.2186	10.14
35	S.F. KOKTULI	Q	0.1	13.43	0.785	5.73	1.000	992.	150.0	0.0877	14.055	3.104		0.1667	10.14
36	S.F. KOKTULI	E	0.0									3.122			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.61	0.810	3.78	1.000	979.	110.3	0.2637	13.965	0.368	12.40	0.1367	13.40
2	S.F. KOKTULI	C	53.3	11.66	0.808	3.78	1.000	979.	110.3	0.2552	13.964	0.553		0.1367	13.40
3	S.F. KOKTULI	C	51.2	11.69	0.806	3.78	1.000	980.	110.3	0.2239	13.963	0.839		0.1367	13.40
4	S.F. KOKTULI	Q	51.1	11.69	0.806	3.78	1.000	980.	110.3	0.2239	13.963	0.857		-0.1148	13.40
5	S.F. KOKTULI	C	49.4	11.72	0.805	3.78	1.000	981.	110.3	0.1966	13.963	0.664		-0.1148	13.40
6	S.F. KOKTULI	C	47.6	11.76	0.803	3.78	1.000	981.	110.3	0.1857	13.963	0.451		-0.1148	13.40
7	S.F. KOKTULI	C	45.7	11.79	0.802	3.78	1.000	982.	110.3	0.2120	13.963	0.239		-0.1148	13.40
8	S.F. KOKTULI	C	44.8	11.80	0.801	3.78	1.000	982.	110.3	0.1860	13.963	0.135		-0.1148	13.40
9	S.F. KOKTULI	C	43.9	11.82	0.800	3.78	1.000	982.	110.3	0.2295	13.962	0.036		-0.1148	13.40
10	S.F. KOKTULI	Q	43.6	11.82	0.800	3.78	1.000	982.	110.3	0.2295	13.962	0.001		0.0004	13.40
11	S.F. KOKTULI	C	41.1	11.83	0.800	3.78	1.000	983.	110.3	0.1855	13.962	0.002		0.0004	13.40
12	S.F. KOKTULI	C	40.0	11.83	0.799	3.78	1.000	983.	110.3	0.2326	13.962	0.002		0.0004	13.40
13	S.F. KOKTULI	C	38.4	11.86	0.798	3.78	1.000	983.	110.3	0.1853	13.962	0.003		0.0004	13.40
14	S.F. KOKTULI	Q	35.8	11.86	0.798	3.78	1.000	983.	110.3	0.1853	13.962	0.004		0.0905	4.03
15	S.F. KOKTULI	B	34.3									0.143			
16	TRIBUTARY 119	H	36.1	11.86	0.798	3.78	1.000	983.	110.3	0.2022	13.963	0.416	9.04	0.0258	4.03
17	TRIBUTARY 119	T	34.3									0.462			
18	S.F. KOKTULI	J	34.3	11.89	0.797	3.78	1.000	984.	110.3	0.1515	13.962	0.605		0.4319	4.03
19	S.F. KOKTULI	C	34.1	11.92	0.795	3.78	1.000	984.	110.3	0.0977	13.962	0.665		0.4319	4.03
20	S.F. KOKTULI	Q	34.0	11.92	0.795	3.78	1.000	984.	110.3	0.0977	13.962	0.716		0.1103	4.03
21	S.F. KOKTULI	Q	29.3	11.92	0.795	3.78	1.000	984.	110.3	0.0977	13.962	1.241		0.1375	10.63
22	S.F. KOKTULI	C	27.6	11.99	0.792	3.78	1.000	985.	110.3	0.1005	13.961	1.472		0.1375	10.63
23	S.F. KOKTULI	C	25.1	12.03	0.791	3.78	1.000	986.	110.3	0.0820	13.961	1.813		0.1375	10.63
24	S.F. KOKTULI	Q	24.9	12.03	0.791	3.78	1.000	986.	110.3	0.0820	13.961	1.841		-0.0341	10.63
25	S.F. KOKTULI	C	21.9	12.05	0.789	3.78	1.000	987.	110.3	0.1012	13.961	1.737		-0.0341	10.63
26	S.F. KOKTULI	C	20.1	12.10	0.787	3.78	1.000	987.	110.3	0.0798	13.961	1.677		-0.0341	10.63
27	S.F. KOKTULI	C	15.4	12.16	0.785	3.78	1.000	988.	110.3	0.0771	13.962	1.515		-0.0341	10.63
28	S.F. KOKTULI	Q	13.9	12.16	0.785	3.78	1.000	988.	110.3	0.0771	13.962	1.466		0.0803	10.63
29	S.F. KOKTULI	C	12.5	12.19	0.783	3.78	1.000	989.	110.3	0.0718	13.961	1.578		0.0803	10.63
30	S.F. KOKTULI	C	9.2	12.22	0.782	3.78	1.000	990.	110.3	0.0904	13.961	1.841		0.0803	10.63
31	S.F. KOKTULI	C	7.9	12.25	0.780	3.78	1.000	990.	110.3	0.0718	13.962	1.949		0.0803	10.63
32	S.F. KOKTULI	C	5.1	12.30	0.778	3.78	1.000	991.	110.3	0.0789	13.962	2.173		0.0803	10.63
33	S.F. KOKTULI	C	5.1	12.34	0.776	3.78	1.000	992.	110.2	0.0881	13.963	2.173		0.0803	10.63
34	S.F. KOKTULI	Q	3.0	12.34	0.776	3.78	1.000	992.	110.2	0.0881	13.963	2.344		0.2360	10.63
35	S.F. KOKTULI	Q	0.1	12.34	0.776	3.78	1.000	992.	110.2	0.0881	13.963	3.020		0.1574	10.63
36	S.F. KOKTULI	E	0.0									3.037			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	11.61	0.819	2.29	1.000	979.	135.5	0.2653	13.873	0.377	12.65	0.1393	13.65
2	S.F. KOKTULI	C	53.3	11.66	0.817	2.29	1.000	979.	135.5	0.2569	13.873	0.566		0.1393	13.65
3	S.F. KOKTULI	C	51.2	11.69	0.816	2.29	1.000	980.	135.6	0.2253	13.872	0.857		0.1393	13.65
4	S.F. KOKTULI	Q	51.1	11.69	0.816	2.29	1.000	980.	135.6	0.2253	13.872	0.875		-0.1172	13.65
5	S.F. KOKTULI	C	49.4	11.72	0.814	2.29	1.000	981.	135.6	0.1985	13.871	0.678		-0.1172	13.65
6	S.F. KOKTULI	C	47.6	11.76	0.812	2.29	1.000	981.	135.6	0.1877	13.871	0.461		-0.1172	13.65
7	S.F. KOKTULI	C	45.7	11.79	0.811	2.29	1.000	982.	135.6	0.2136	13.871	0.244		-0.1172	13.65
8	S.F. KOKTULI	C	44.8	11.80	0.810	2.29	1.000	982.	135.6	0.1880	13.871	0.138		-0.1172	13.65
9	S.F. KOKTULI	C	43.9	11.82	0.809	2.29	1.000	982.	135.6	0.2308	13.871	0.037		-0.1172	13.65
10	S.F. KOKTULI	Q	43.6	11.82	0.809	2.29	1.000	982.	135.6	0.2308	13.871	0.001		0.0004	13.65
11	S.F. KOKTULI	C	41.1	11.83	0.809	2.29	1.000	983.	135.6	0.1875	13.871	0.002		0.0004	13.65
12	S.F. KOKTULI	C	40.0	11.83	0.809	2.29	1.000	983.	135.6	0.2337	13.871	0.002		0.0004	13.65
13	S.F. KOKTULI	C	38.4	11.86	0.807	2.29	1.000	983.	135.6	0.1872	13.871	0.003		0.0004	13.65
14	S.F. KOKTULI	Q	35.8	11.86	0.807	2.29	1.000	983.	135.6	0.1872	13.871	0.004		0.0905	4.69
15	S.F. KOKTULI	B	34.3									0.143			
16	TRIBUTARY 119	H	36.1	11.86	0.807	2.29	1.000	983.	135.6	0.2031	13.871	0.421	8.54	0.0258	4.69
17	TRIBUTARY 119	T	34.3									0.467			
18	S.F. KOKTULI	J	34.3	11.89	0.806	2.29	1.000	984.	135.6	0.1522	13.871	0.610		0.4397	4.69
19	S.F. KOKTULI	C	34.1	11.92	0.804	2.29	1.000	984.	135.6	0.0986	13.871	0.671		0.4397	4.69
20	S.F. KOKTULI	Q	34.0	11.92	0.804	2.29	1.000	984.	135.6	0.0986	13.871	0.723		0.1072	4.69
21	S.F. KOKTULI	Q	29.3	11.92	0.804	2.29	1.000	984.	135.6	0.0986	13.871	1.233		0.1522	11.53
22	S.F. KOKTULI	C	27.6	11.99	0.802	2.29	1.000	985.	135.6	0.1014	13.870	1.488		0.1522	11.53
23	S.F. KOKTULI	C	25.1	12.03	0.800	2.29	1.000	986.	135.6	0.0829	13.869	1.866		0.1522	11.53
24	S.F. KOKTULI	Q	24.9	12.03	0.800	2.29	1.000	986.	135.6	0.0829	13.869	1.897		-0.0328	11.53
25	S.F. KOKTULI	C	21.9	12.05	0.798	2.29	1.000	987.	135.6	0.1017	13.870	1.797		-0.0328	11.53
26	S.F. KOKTULI	C	20.1	12.10	0.796	2.29	1.000	987.	135.5	0.0806	13.870	1.739		-0.0328	11.53
27	S.F. KOKTULI	C	15.4	12.16	0.794	2.29	1.000	988.	135.5	0.0779	13.870	1.584		-0.0328	11.53
28	S.F. KOKTULI	Q	13.9	12.16	0.794	2.29	1.000	988.	135.5	0.0779	13.870	1.536		0.0799	11.53
29	S.F. KOKTULI	C	12.5	12.19	0.792	2.29	1.000	989.	135.5	0.0725	13.870	1.648		0.0799	11.53
30	S.F. KOKTULI	C	9.2	12.22	0.791	2.29	1.000	990.	135.5	0.0909	13.870	1.910		0.0799	11.53
31	S.F. KOKTULI	C	7.9	12.25	0.789	2.29	1.000	990.	135.5	0.0726	13.871	2.017		0.0799	11.53
32	S.F. KOKTULI	C	5.1	12.30	0.787	2.29	1.000	991.	135.5	0.0795	13.871	2.240		0.0799	11.53
33	S.F. KOKTULI	C	5.1	12.34	0.785	2.29	1.000	992.	135.4	0.0885	13.872	2.240		0.0799	11.53
34	S.F. KOKTULI	Q	3.0	12.34	0.785	2.29	1.000	992.	135.4	0.0885	13.872	2.410		0.2277	11.53
35	S.F. KOKTULI	Q	0.1	12.34	0.785	2.29	1.000	992.	135.4	0.0885	13.872	3.062		0.1574	11.53
36	S.F. KOKTULI	E	0.0									3.079			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.64	0.866	3.16	1.000	979.	89.4	0.2668	13.782	0.385	12.70	0.1418	13.70
2	S.F. KOKTULI	C	53.3	10.69	0.863	3.16	1.000	979.	89.4	0.2586	13.781	0.577		0.1418	13.70
3	S.F. KOKTULI	C	51.2	10.72	0.862	3.16	1.000	980.	89.4	0.2267	13.780	0.874		0.1418	13.70
4	S.F. KOKTULI	Q	51.1	10.72	0.862	3.16	1.000	980.	89.4	0.2267	13.780	0.892		-0.1195	13.70
5	S.F. KOKTULI	C	49.4	10.75	0.860	3.16	1.000	981.	89.4	0.2005	13.780	0.691		-0.1195	13.70
6	S.F. KOKTULI	C	47.6	10.79	0.858	3.16	1.000	981.	89.4	0.1897	13.780	0.470		-0.1195	13.70
7	S.F. KOKTULI	C	45.7	10.82	0.857	3.16	1.000	982.	89.4	0.2152	13.780	0.249		-0.1195	13.70
8	S.F. KOKTULI	C	44.8	10.83	0.856	3.16	1.000	982.	89.4	0.1900	13.780	0.141		-0.1195	13.70
9	S.F. KOKTULI	C	43.9	10.85	0.855	3.16	1.000	982.	89.4	0.2320	13.780	0.038		-0.1195	13.70
10	S.F. KOKTULI	Q	43.6	10.85	0.855	3.16	1.000	982.	89.4	0.2320	13.780	0.001		0.0004	13.70
11	S.F. KOKTULI	C	41.1	10.86	0.855	3.16	1.000	983.	89.4	0.1895	13.779	0.002		0.0004	13.70
12	S.F. KOKTULI	C	40.0	10.86	0.855	3.16	1.000	983.	89.4	0.2349	13.779	0.003		0.0004	13.70
13	S.F. KOKTULI	C	38.4	10.89	0.853	3.16	1.000	983.	89.4	0.1892	13.780	0.003		0.0004	13.70
14	S.F. KOKTULI	Q	35.8	10.89	0.853	3.16	1.000	983.	89.4	0.1892	13.780	0.004		0.0917	4.29
15	S.F. KOKTULI	B	34.3									0.145			
16	TRIBUTARY 119	H	36.1	10.89	0.853	3.16	1.000	983.	89.4	0.2041	13.780	0.438	8.05	0.0263	4.29
17	TRIBUTARY 119	T	34.3									0.485			
18	S.F. KOKTULI	J	34.3	10.92	0.852	3.16	1.000	984.	89.4	0.1530	13.780	0.630		0.4436	4.29
19	S.F. KOKTULI	C	34.1	10.95	0.850	3.16	1.000	984.	89.4	0.0995	13.779	0.691		0.4436	4.29
20	S.F. KOKTULI	Q	34.0	10.95	0.850	3.16	1.000	984.	89.4	0.0995	13.779	0.744		0.1063	4.29
21	S.F. KOKTULI	Q	29.3	10.95	0.850	3.16	1.000	984.	89.4	0.0995	13.779	1.250		0.1614	11.15
22	S.F. KOKTULI	C	27.6	11.02	0.847	3.16	1.000	985.	89.4	0.1023	13.779	1.521		0.1614	11.15
23	S.F. KOKTULI	C	25.1	11.06	0.845	3.16	1.000	986.	89.4	0.0837	13.778	1.921		0.1614	11.15
24	S.F. KOKTULI	Q	24.9	11.06	0.845	3.16	1.000	986.	89.4	0.0837	13.778	1.954		-0.0333	11.15
25	S.F. KOKTULI	C	21.9	11.08	0.844	3.16	1.000	987.	89.4	0.1022	13.778	1.853		-0.0333	11.15
26	S.F. KOKTULI	C	20.1	11.13	0.841	3.16	1.000	987.	89.4	0.0814	13.779	1.794		-0.0333	11.15
27	S.F. KOKTULI	C	15.4	11.19	0.839	3.16	1.000	988.	89.4	0.0787	13.779	1.636		-0.0333	11.15
28	S.F. KOKTULI	Q	13.9	11.19	0.839	3.16	1.000	988.	89.4	0.0787	13.779	1.588		0.1346	11.15
29	S.F. KOKTULI	C	12.5	11.22	0.837	3.16	1.000	989.	89.4	0.0732	13.779	1.776		0.1346	11.15
30	S.F. KOKTULI	C	9.2	11.25	0.836	3.16	1.000	990.	89.4	0.0914	13.779	2.217		0.1346	11.15
31	S.F. KOKTULI	C	7.9	11.28	0.834	3.16	1.000	990.	89.4	0.0733	13.779	2.398		0.1346	11.15
32	S.F. KOKTULI	C	5.1	11.33	0.832	3.16	1.000	991.	89.4	0.0801	13.780	2.773		0.1346	11.15
33	S.F. KOKTULI	C	5.1	11.37	0.830	3.16	1.000	992.	89.3	0.0889	13.781	2.773		0.1346	11.15
34	S.F. KOKTULI	Q	3.0	11.37	0.830	3.16	1.000	992.	89.3	0.0889	13.781	3.060		0.1351	11.15
35	S.F. KOKTULI	Q	0.1	11.37	0.830	3.16	1.000	992.	89.3	0.0889	13.781	3.447		0.1759	11.15
36	S.F. KOKTULI	E	0.0									3.466			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.27	0.866	2.34	1.000	979.	97.5	0.2684	13.690	0.377	12.14	0.1393	13.14
2	S.F. KOKTULI	C	53.3	10.32	0.863	2.34	1.000	979.	97.5	0.2604	13.689	0.566		0.1393	13.14
3	S.F. KOKTULI	C	51.2	10.35	0.862	2.34	1.000	980.	97.5	0.2281	13.689	0.857		0.1393	13.14
4	S.F. KOKTULI	Q	51.1	10.35	0.862	2.34	1.000	980.	97.5	0.2281	13.689	0.875		-0.1172	13.14
5	S.F. KOKTULI	C	49.4	10.38	0.860	2.34	1.000	981.	97.5	0.2025	13.688	0.678		-0.1172	13.14
6	S.F. KOKTULI	C	47.6	10.42	0.858	2.34	1.000	981.	97.5	0.1918	13.688	0.461		-0.1172	13.14
7	S.F. KOKTULI	C	45.7	10.45	0.857	2.34	1.000	982.	97.5	0.2169	13.688	0.244		-0.1172	13.14
8	S.F. KOKTULI	C	44.8	10.46	0.856	2.34	1.000	982.	97.5	0.1920	13.688	0.138		-0.1172	13.14
9	S.F. KOKTULI	C	43.9	10.48	0.855	2.34	1.000	982.	97.5	0.2333	13.688	0.037		-0.1172	13.14
10	S.F. KOKTULI	Q	43.6	10.48	0.855	2.34	1.000	982.	97.5	0.2333	13.688	0.001		0.0004	13.14
11	S.F. KOKTULI	C	41.1	10.49	0.855	2.34	1.000	983.	97.5	0.1916	13.688	0.002		0.0004	13.14
12	S.F. KOKTULI	C	40.0	10.49	0.855	2.34	1.000	983.	97.5	0.2362	13.688	0.003		0.0004	13.14
13	S.F. KOKTULI	C	38.4	10.52	0.853	2.34	1.000	983.	97.5	0.1913	13.688	0.003		0.0004	13.14
14	S.F. KOKTULI	Q	35.8	10.52	0.853	2.34	1.000	983.	97.5	0.1913	13.688	0.004		0.0911	4.51
15	S.F. KOKTULI	B	34.3									0.144			
16	TRIBUTARY 119	H	36.1	10.52	0.853	2.34	1.000	983.	97.5	0.2051	13.688	0.422	8.47	0.0263	4.51
17	TRIBUTARY 119	T	34.3									0.469			
18	S.F. KOKTULI	J	34.3	10.55	0.852	2.34	1.000	984.	97.5	0.1538	13.688	0.612		0.4397	4.51
19	S.F. KOKTULI	C	34.1	10.58	0.850	2.34	1.000	984.	97.5	0.1005	13.688	0.673		0.4397	4.51
20	S.F. KOKTULI	Q	34.0	10.58	0.850	2.34	1.000	984.	97.5	0.1005	13.688	0.725		0.1061	4.51
21	S.F. KOKTULI	Q	29.3	10.58	0.850	2.34	1.000	984.	97.5	0.1005	13.688	1.230		0.1529	10.84
22	S.F. KOKTULI	C	27.6	10.65	0.847	2.34	1.000	985.	97.5	0.1033	13.687	1.487		0.1529	10.84
23	S.F. KOKTULI	C	25.1	10.69	0.845	2.34	1.000	986.	97.5	0.0846	13.687	1.866		0.1529	10.84
24	S.F. KOKTULI	Q	24.9	10.69	0.845	2.34	1.000	986.	97.5	0.0846	13.687	1.897		-0.0328	10.84
25	S.F. KOKTULI	C	21.9	10.71	0.844	2.34	1.000	987.	97.5	0.1027	13.687	1.797		-0.0328	10.84
26	S.F. KOKTULI	C	20.1	10.76	0.841	2.34	1.000	987.	97.5	0.0822	13.687	1.739		-0.0328	10.84
27	S.F. KOKTULI	C	15.4	10.82	0.839	2.34	1.000	988.	97.5	0.0794	13.687	1.584		-0.0328	10.84
28	S.F. KOKTULI	Q	13.9	10.82	0.839	2.34	1.000	988.	97.5	0.0794	13.687	1.536		0.1081	10.84
29	S.F. KOKTULI	C	12.5	10.85	0.837	2.34	1.000	989.	97.5	0.0739	13.687	1.687		0.1081	10.84
30	S.F. KOKTULI	C	9.2	10.88	0.836	2.34	1.000	990.	97.5	0.0919	13.687	2.041		0.1081	10.84
31	S.F. KOKTULI	C	7.9	10.91	0.834	2.34	1.000	990.	97.4	0.0741	13.688	2.186		0.1081	10.84
32	S.F. KOKTULI	C	5.1	10.96	0.832	2.34	1.000	991.	97.4	0.0808	13.688	2.488		0.1081	10.84
33	S.F. KOKTULI	C	5.1	11.00	0.830	2.34	1.000	992.	97.4	0.0893	13.689	2.488		0.1081	10.84
34	S.F. KOKTULI	Q	3.0	11.00	0.830	2.34	1.000	992.	97.4	0.0893	13.689	2.718		0.1858	10.84
35	S.F. KOKTULI	Q	0.1	11.00	0.830	2.34	1.000	992.	97.4	0.0893	13.689	3.250		0.1667	10.84
36	S.F. KOKTULI	E	0.0									3.268			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.44	0.782	5.84	1.000	979.	106.4	0.2700	13.598	0.414	10.54	0.1504	11.54
2	S.F. KOKTULI	C	53.3	10.49	0.780	5.84	1.000	979.	106.4	0.2622	13.598	0.618		0.1504	11.54
3	S.F. KOKTULI	C	51.2	10.52	0.778	5.84	1.000	980.	106.5	0.2296	13.597	0.933		0.1504	11.54
4	S.F. KOKTULI	Q	51.1	10.52	0.778	5.84	1.000	980.	106.5	0.2296	13.597	0.952		-0.1274	11.54
5	S.F. KOKTULI	C	49.4	10.55	0.777	5.84	1.000	981.	106.5	0.2046	13.597	0.738		-0.1274	11.54
6	S.F. KOKTULI	C	47.6	10.59	0.775	5.84	1.000	981.	106.5	0.1939	13.597	0.502		-0.1274	11.54
7	S.F. KOKTULI	C	45.7	10.62	0.774	5.84	1.000	982.	106.5	0.2187	13.597	0.265		-0.1274	11.54
8	S.F. KOKTULI	C	44.8	10.63	0.773	5.84	1.000	982.	106.4	0.1942	13.597	0.151		-0.1274	11.54
9	S.F. KOKTULI	C	43.9	10.65	0.773	5.84	1.000	982.	106.5	0.2347	13.596	0.041		-0.1274	11.54
10	S.F. KOKTULI	Q	43.6	10.65	0.773	5.84	1.000	982.	106.5	0.2347	13.596	0.001		0.0006	11.54
11	S.F. KOKTULI	C	41.1	10.66	0.772	5.84	1.000	983.	106.5	0.1937	13.596	0.003		0.0006	11.54
12	S.F. KOKTULI	C	40.0	10.66	0.772	5.84	1.000	983.	106.5	0.2374	13.596	0.004		0.0006	11.54
13	S.F. KOKTULI	C	38.4	10.69	0.771	5.84	1.000	983.	106.5	0.1935	13.596	0.005		0.0006	11.54
14	S.F. KOKTULI	Q	35.8	10.69	0.771	5.84	1.000	983.	106.5	0.1935	13.596	0.006		0.1002	5.03
15	S.F. KOKTULI	B	34.3									0.160			
16	TRIBUTARY 119	H	36.1	10.69	0.771	5.84	1.000	983.	106.4	0.2061	13.597	0.626	7.90	0.0291	5.03
17	TRIBUTARY 119	T	34.3									0.678			
18	S.F. KOKTULI	J	34.3	10.72	0.770	5.84	1.000	984.	106.5	0.1546	13.596	0.838		0.4825	5.03
19	S.F. KOKTULI	C	34.1	10.75	0.768	5.84	1.000	984.	106.5	0.1015	13.596	0.905		0.4825	5.03
20	S.F. KOKTULI	Q	34.0	10.75	0.768	5.84	1.000	984.	106.5	0.1015	13.596	0.962		0.0858	5.03
21	S.F. KOKTULI	Q	29.3	10.75	0.768	5.84	1.000	984.	106.5	0.1015	13.596	1.370		0.1792	10.48
22	S.F. KOKTULI	C	27.6	10.82	0.765	5.84	1.000	985.	106.5	0.1043	13.595	1.671		0.1792	10.48
23	S.F. KOKTULI	C	25.1	10.86	0.763	5.84	1.000	986.	106.5	0.0855	13.595	2.115		0.1792	10.48
24	S.F. KOKTULI	Q	24.9	10.86	0.763	5.84	1.000	986.	106.5	0.0855	13.595	2.152		-0.0360	10.48
25	S.F. KOKTULI	C	21.9	10.88	0.762	5.84	1.000	987.	106.5	0.1033	13.595	2.042		-0.0360	10.48
26	S.F. KOKTULI	C	20.1	10.93	0.760	5.84	1.000	987.	106.4	0.0831	13.596	1.979		-0.0360	10.48
27	S.F. KOKTULI	C	15.4	10.99	0.758	5.84	1.000	988.	106.4	0.0803	13.596	1.808		-0.0360	10.48
28	S.F. KOKTULI	Q	13.9	10.99	0.758	5.84	1.000	988.	106.4	0.0803	13.596	1.756		0.1013	10.48
29	S.F. KOKTULI	C	12.5	11.02	0.756	5.84	1.000	989.	106.4	0.0747	13.596	1.898		0.1013	10.48
30	S.F. KOKTULI	C	9.2	11.05	0.755	5.84	1.000	990.	106.4	0.0924	13.596	2.230		0.1013	10.48
31	S.F. KOKTULI	C	7.9	11.08	0.754	5.84	1.000	990.	106.4	0.0748	13.596	2.366		0.1013	10.48
32	S.F. KOKTULI	C	5.1	11.13	0.751	5.84	1.000	991.	106.4	0.0814	13.597	2.648		0.1013	10.48
33	S.F. KOKTULI	C	5.1	11.17	0.749	5.84	1.000	992.	106.4	0.0898	13.597	2.648		0.1013	10.48
34	S.F. KOKTULI	Q	3.0	11.17	0.749	5.84	1.000	992.	106.4	0.0898	13.597	2.864		0.1648	10.48
35	S.F. KOKTULI	Q	0.1	11.17	0.749	5.84	1.000	992.	106.4	0.0898	13.597	3.336		0.1667	10.48
36	S.F. KOKTULI	E	0.0									3.354			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.62	0.689	3.42	1.000	979.	115.4	0.2716	13.507	0.489	10.20	0.1725	11.20
2	S.F. KOKTULI	C	53.3	10.67	0.687	3.42	1.000	979.	115.4	0.2640	13.506	0.723		0.1725	11.20
3	S.F. KOKTULI	C	51.2	10.70	0.686	3.42	1.000	980.	115.4	0.2311	13.505	1.084		0.1725	11.20
4	S.F. KOKTULI	Q	51.1	10.70	0.686	3.42	1.000	980.	115.4	0.2311	13.505	1.106		-0.1481	11.20
5	S.F. KOKTULI	C	49.4	10.73	0.685	3.42	1.000	981.	115.4	0.2068	13.505	0.857		-0.1481	11.20
6	S.F. KOKTULI	C	47.6	10.77	0.683	3.42	1.000	981.	115.4	0.1961	13.505	0.583		-0.1481	11.20
7	S.F. KOKTULI	C	45.7	10.80	0.682	3.42	1.000	982.	115.4	0.2205	13.505	0.308		-0.1481	11.20
8	S.F. KOKTULI	C	44.8	10.81	0.681	3.42	1.000	982.	115.4	0.1964	13.505	0.175		-0.1481	11.20
9	S.F. KOKTULI	C	43.9	10.83	0.681	3.42	1.000	982.	115.4	0.2360	13.505	0.047		-0.1481	11.20
10	S.F. KOKTULI	Q	43.6	10.83	0.681	3.42	1.000	982.	115.4	0.2360	13.505	0.002		0.0007	11.20
11	S.F. KOKTULI	C	41.1	10.84	0.680	3.42	1.000	983.	115.4	0.1960	13.504	0.004		0.0007	11.20
12	S.F. KOKTULI	C	40.0	10.84	0.680	3.42	1.000	983.	115.4	0.2387	13.505	0.004		0.0007	11.20
13	S.F. KOKTULI	C	38.4	10.87	0.679	3.42	1.000	983.	115.4	0.1958	13.505	0.006		0.0007	11.20
14	S.F. KOKTULI	Q	35.8	10.87	0.679	3.42	1.000	983.	115.4	0.1958	13.505	0.007		0.1028	5.54
15	S.F. KOKTULI	B	34.3									0.165			
16	TRIBUTARY 119	H	36.1	10.87	0.679	3.42	1.000	983.	115.4	0.2071	13.505	0.735	7.84	0.0291	5.54
17	TRIBUTARY 119	T	34.3									0.787			
18	S.F. KOKTULI	J	34.3	10.90	0.678	3.42	1.000	984.	115.4	0.1554	13.505	0.952		0.4903	5.54
19	S.F. KOKTULI	C	34.1	10.93	0.676	3.42	1.000	984.	115.4	0.1026	13.504	1.020		0.4903	5.54
20	S.F. KOKTULI	Q	34.0	10.93	0.676	3.42	1.000	984.	115.4	0.1026	13.504	1.078		0.1286	5.54
21	S.F. KOKTULI	Q	29.3	10.93	0.676	3.42	1.000	984.	115.4	0.1026	13.504	1.690		0.2228	10.14
22	S.F. KOKTULI	C	27.6	11.00	0.674	3.42	1.000	985.	115.4	0.1054	13.504	2.064		0.2228	10.14
23	S.F. KOKTULI	C	25.1	11.04	0.672	3.42	1.000	986.	115.4	0.0865	13.503	2.617		0.2228	10.14
24	S.F. KOKTULI	Q	24.9	11.04	0.672	3.42	1.000	986.	115.4	0.0865	13.503	2.662		-0.0430	10.14
25	S.F. KOKTULI	C	21.9	11.06	0.671	3.42	1.000	987.	115.4	0.1038	13.504	2.531		-0.0430	10.14
26	S.F. KOKTULI	C	20.1	11.11	0.669	3.42	1.000	987.	115.4	0.0840	13.504	2.455		-0.0430	10.14
27	S.F. KOKTULI	C	15.4	11.17	0.667	3.42	1.000	988.	115.4	0.0811	13.504	2.251		-0.0430	10.14
28	S.F. KOKTULI	Q	13.9	11.17	0.667	3.42	1.000	988.	115.4	0.0811	13.504	2.189		0.1449	10.14
29	S.F. KOKTULI	C	12.5	11.20	0.666	3.42	1.000	989.	115.4	0.0756	13.504	2.392		0.1449	10.14
30	S.F. KOKTULI	C	9.2	11.23	0.665	3.42	1.000	990.	115.4	0.0930	13.504	2.867		0.1449	10.14
31	S.F. KOKTULI	C	7.9	11.26	0.664	3.42	1.000	990.	115.4	0.0757	13.504	3.061		0.1449	10.14
32	S.F. KOKTULI	C	5.1	11.31	0.662	3.42	1.000	991.	115.3	0.0821	13.505	3.465		0.1449	10.14
33	S.F. KOKTULI	C	5.1	11.35	0.660	3.42	1.000	992.	115.3	0.0902	13.506	3.465		0.1449	10.14
34	S.F. KOKTULI	Q	3.0	11.35	0.660	3.42	1.000	992.	115.3	0.0902	13.506	3.774		0.2277	10.14
35	S.F. KOKTULI	Q	0.1	11.35	0.660	3.42	1.000	992.	115.3	0.0902	13.506	4.426		0.2222	10.14
36	S.F. KOKTULI	E	0.0									4.450			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.64	0.745	3.39	1.000	979.	111.7	0.2732	13.415	0.451	11.39	0.1616	12.39
2	S.F. KOKTULI	C	53.3	10.69	0.743	3.39	1.000	979.	111.7	0.2659	13.414	0.670		0.1616	12.39
3	S.F. KOKTULI	C	51.2	10.72	0.741	3.39	1.000	980.	111.7	0.2327	13.414	1.008		0.1616	12.39
4	S.F. KOKTULI	Q	51.1	10.72	0.741	3.39	1.000	980.	111.7	0.2327	13.414	1.029		-0.1378	12.39
5	S.F. KOKTULI	C	49.4	10.75	0.740	3.39	1.000	981.	111.7	0.2090	13.413	0.798		-0.1378	12.39
6	S.F. KOKTULI	C	47.6	10.79	0.738	3.39	1.000	981.	111.7	0.1985	13.413	0.542		-0.1378	12.39
7	S.F. KOKTULI	C	45.7	10.82	0.737	3.39	1.000	982.	111.7	0.2223	13.413	0.287		-0.1378	12.39
8	S.F. KOKTULI	C	44.8	10.83	0.736	3.39	1.000	982.	111.7	0.1987	13.413	0.163		-0.1378	12.39
9	S.F. KOKTULI	C	43.9	10.85	0.736	3.39	1.000	982.	111.7	0.2374	13.413	0.044		-0.1378	12.39
10	S.F. KOKTULI	Q	43.6	10.85	0.736	3.39	1.000	982.	111.7	0.2374	13.413	0.001		0.0006	12.39
11	S.F. KOKTULI	C	41.1	10.86	0.735	3.39	1.000	983.	111.7	0.1983	13.413	0.003		0.0006	12.39
12	S.F. KOKTULI	C	40.0	10.86	0.735	3.39	1.000	983.	111.7	0.2400	13.413	0.004		0.0006	12.39
13	S.F. KOKTULI	C	38.4	10.89	0.734	3.39	1.000	983.	111.7	0.1982	13.413	0.005		0.0006	12.39
14	S.F. KOKTULI	Q	35.8	10.89	0.734	3.39	1.000	983.	111.7	0.1982	13.413	0.006		0.0997	5.53
15	S.F. KOKTULI	B	34.3									0.159			
16	TRIBUTARY 119	H	36.1	10.89	0.734	3.39	1.000	983.	111.7	0.2082	13.413	0.607	7.96	0.0286	5.53
17	TRIBUTARY 119	T	34.3									0.658			
18	S.F. KOKTULI	J	34.3	10.92	0.733	3.39	1.000	984.	111.7	0.1562	13.413	0.817		0.4786	5.53
19	S.F. KOKTULI	C	34.1	10.95	0.731	3.39	1.000	984.	111.7	0.1037	13.413	0.883		0.4786	5.53
20	S.F. KOKTULI	Q	34.0	10.95	0.731	3.39	1.000	984.	111.7	0.1037	13.413	0.940		0.1305	5.53
21	S.F. KOKTULI	Q	29.3	10.95	0.731	3.39	1.000	984.	111.7	0.1037	13.413	1.561		0.1939	9.78
22	S.F. KOKTULI	C	27.6	11.02	0.729	3.39	1.000	985.	111.7	0.1065	13.412	1.886		0.1939	9.78
23	S.F. KOKTULI	C	25.1	11.06	0.727	3.39	1.000	986.	111.8	0.0875	13.412	2.367		0.1939	9.78
24	S.F. KOKTULI	Q	24.9	11.06	0.727	3.39	1.000	986.	111.8	0.0875	13.412	2.407		-0.0396	9.78
25	S.F. KOKTULI	C	21.9	11.08	0.726	3.39	1.000	987.	111.7	0.1044	13.412	2.286		-0.0396	9.78
26	S.F. KOKTULI	C	20.1	11.13	0.724	3.39	1.000	987.	111.7	0.0849	13.412	2.216		-0.0396	9.78
27	S.F. KOKTULI	C	15.4	11.19	0.721	3.39	1.000	988.	111.7	0.0820	13.412	2.029		-0.0396	9.78
28	S.F. KOKTULI	Q	13.9	11.19	0.721	3.39	1.000	988.	111.7	0.0820	13.412	1.972		0.1419	9.78
29	S.F. KOKTULI	C	12.5	11.22	0.720	3.39	1.000	989.	111.7	0.0765	13.412	2.171		0.1419	9.78
30	S.F. KOKTULI	C	9.2	11.25	0.719	3.39	1.000	990.	111.7	0.0935	13.412	2.636		0.1419	9.78
31	S.F. KOKTULI	C	7.9	11.28	0.718	3.39	1.000	990.	111.7	0.0766	13.413	2.826		0.1419	9.78
32	S.F. KOKTULI	C	5.1	11.33	0.716	3.39	1.000	991.	111.7	0.0828	13.413	3.221		0.1419	9.78
33	S.F. KOKTULI	C	5.1	11.37	0.714	3.39	1.000	992.	111.6	0.0907	13.414	3.221		0.1419	9.78
34	S.F. KOKTULI	Q	3.0	11.37	0.714	3.39	1.000	992.	111.6	0.0907	13.414	3.524		0.1540	9.78
35	S.F. KOKTULI	Q	0.1	11.37	0.714	3.39	1.000	992.	111.6	0.0907	13.414	3.965		0.2037	9.78
36	S.F. KOKTULI	E	0.0									3.987			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.17	0.829	2.89	1.000	979.	85.5	0.2749	13.323	0.551	10.91	0.1904	11.91
2	S.F. KOKTULI	C	53.3	9.22	0.826	2.89	1.000	979.	85.5	0.2678	13.322	0.809		0.1904	11.91
3	S.F. KOKTULI	C	51.2	9.25	0.825	2.89	1.000	980.	85.5	0.2342	13.322	1.207		0.1904	11.91
4	S.F. KOKTULI	Q	51.1	9.25	0.825	2.89	1.000	980.	85.5	0.2342	13.322	1.232		-0.1617	11.91
5	S.F. KOKTULI	C	49.4	9.28	0.823	2.89	1.000	981.	85.5	0.2113	13.321	0.960		-0.1617	11.91
6	S.F. KOKTULI	C	47.6	9.32	0.822	2.89	1.000	981.	85.5	0.2009	13.321	0.660		-0.1617	11.91
7	S.F. KOKTULI	C	45.7	9.35	0.820	2.89	1.000	982.	85.5	0.2242	13.321	0.361		-0.1617	11.91
8	S.F. KOKTULI	C	44.8	9.36	0.819	2.89	1.000	982.	85.5	0.2011	13.321	0.215		-0.1617	11.91
9	S.F. KOKTULI	C	43.9	9.38	0.819	2.89	1.000	982.	85.5	0.2388	13.321	0.075		-0.1617	11.91
10	S.F. KOKTULI	Q	43.6	9.38	0.819	2.89	1.000	982.	85.5	0.2388	13.321	0.026		0.0076	11.91
11	S.F. KOKTULI	C	41.1	9.39	0.818	2.89	1.000	983.	85.6	0.2007	13.321	0.045		0.0076	11.91
12	S.F. KOKTULI	C	40.0	9.39	0.818	2.89	1.000	983.	85.5	0.2413	13.321	0.054		0.0076	11.91
13	S.F. KOKTULI	C	38.4	9.42	0.817	2.89	1.000	983.	85.5	0.2007	13.321	0.066		0.0076	11.91
14	S.F. KOKTULI	Q	35.8	9.42	0.817	2.89	1.000	983.	85.5	0.2007	13.321	0.085		0.1055	6.13
15	S.F. KOKTULI	B	34.3									0.247			
16	TRIBUTARY 119	H	36.1	9.42	0.817	2.89	1.000	983.	85.5	0.2092	13.321	0.757	7.62	0.0302	6.13
17	TRIBUTARY 119	T	34.3									0.811			
18	S.F. KOKTULI	J	34.3	9.45	0.815	2.89	1.000	984.	85.5	0.1571	13.321	1.059		0.5058	6.13
19	S.F. KOKTULI	C	34.1	9.48	0.814	2.89	1.000	984.	85.5	0.1049	13.321	1.129		0.5058	6.13
20	S.F. KOKTULI	Q	34.0	9.48	0.814	2.89	1.000	984.	85.5	0.1049	13.321	1.189		0.1789	6.13
21	S.F. KOKTULI	Q	29.3	9.48	0.814	2.89	1.000	984.	85.5	0.1049	13.321	2.040		0.2400	10.04
22	S.F. KOKTULI	C	27.6	9.55	0.811	2.89	1.000	985.	85.6	0.1076	13.320	2.443		0.2400	10.04
23	S.F. KOKTULI	C	25.1	9.59	0.809	2.89	1.000	986.	85.6	0.0886	13.320	3.038		0.2400	10.04
24	S.F. KOKTULI	Q	24.9	9.59	0.809	2.89	1.000	986.	85.6	0.0886	13.320	3.087		-0.0486	10.04
25	S.F. KOKTULI	C	21.9	9.61	0.807	2.89	1.000	987.	85.6	0.1050	13.320	2.939		-0.0486	10.04
26	S.F. KOKTULI	C	20.1	9.66	0.805	2.89	1.000	987.	85.5	0.0858	13.320	2.853		-0.0486	10.04
27	S.F. KOKTULI	C	15.4	9.72	0.803	2.89	1.000	988.	85.5	0.0829	13.321	2.623		-0.0486	10.04
28	S.F. KOKTULI	Q	13.9	9.72	0.803	2.89	1.000	988.	85.5	0.0829	13.321	2.553		0.1246	10.04
29	S.F. KOKTULI	C	12.5	9.75	0.801	2.89	1.000	989.	85.5	0.0774	13.320	2.727		0.1246	10.04
30	S.F. KOKTULI	C	9.2	9.78	0.800	2.89	1.000	990.	85.5	0.0941	13.321	3.136		0.1246	10.04
31	S.F. KOKTULI	C	7.9	9.81	0.798	2.89	1.000	990.	85.5	0.0775	13.321	3.303		0.1246	10.04
32	S.F. KOKTULI	C	5.1	9.86	0.796	2.89	1.000	991.	85.5	0.0835	13.321	3.650		0.1246	10.04
33	S.F. KOKTULI	C	5.1	9.90	0.794	2.89	1.000	992.	85.4	0.0911	13.322	3.650		0.1246	10.04
34	S.F. KOKTULI	Q	3.0	9.90	0.794	2.89	1.000	992.	85.4	0.0911	13.322	3.916		0.2723	10.04
35	S.F. KOKTULI	Q	0.1	9.90	0.794	2.89	1.000	992.	85.4	0.0911	13.322	4.696		0.2407	10.04
36	S.F. KOKTULI	E	0.0									4.722			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.93	0.856	10.84	1.000	979.	30.6	0.2767	13.231	0.526	9.53	0.1832	10.53
2	S.F. KOKTULI	C	53.3	8.98	0.854	10.84	1.000	979.	30.6	0.2698	13.230	0.774		0.1832	10.53
3	S.F. KOKTULI	C	51.2	9.01	0.853	10.84	1.000	980.	30.6	0.2358	13.230	1.157		0.1832	10.53
4	S.F. KOKTULI	Q	51.1	9.01	0.853	10.84	1.000	980.	30.6	0.2358	13.230	1.181		-0.1543	10.53
5	S.F. KOKTULI	C	49.4	9.04	0.851	10.84	1.000	981.	30.6	0.2137	13.229	0.922		-0.1543	10.53
6	S.F. KOKTULI	C	47.6	9.08	0.849	10.84	1.000	981.	30.6	0.2034	13.229	0.636		-0.1543	10.53
7	S.F. KOKTULI	C	45.7	9.11	0.848	10.84	1.000	982.	30.6	0.2262	13.229	0.350		-0.1543	10.53
8	S.F. KOKTULI	C	44.8	9.12	0.847	10.84	1.000	982.	30.6	0.2035	13.229	0.211		-0.1543	10.53
9	S.F. KOKTULI	C	43.9	9.14	0.846	10.84	1.000	982.	30.6	0.2403	13.229	0.078		-0.1543	10.53
10	S.F. KOKTULI	Q	43.6	9.14	0.846	10.84	1.000	982.	30.6	0.2403	13.229	0.030		0.0085	10.53
11	S.F. KOKTULI	C	41.1	9.15	0.846	10.84	1.000	983.	30.6	0.2033	13.229	0.052		0.0085	10.53
12	S.F. KOKTULI	C	40.0	9.15	0.845	10.84	1.000	983.	30.6	0.2427	13.229	0.062		0.0085	10.53
13	S.F. KOKTULI	C	38.4	9.18	0.844	10.84	1.000	983.	30.6	0.2032	13.229	0.075		0.0085	10.53
14	S.F. KOKTULI	Q	35.8	9.18	0.844	10.84	1.000	983.	30.6	0.2032	13.229	0.097		0.1061	6.44
15	S.F. KOKTULI	B	34.3									0.260			
16	TRIBUTARY 119	H	36.1	9.18	0.844	10.84	1.000	983.	30.6	0.2103	13.229	0.808	7.34	0.0302	6.44
17	TRIBUTARY 119	T	34.3									0.862			
18	S.F. KOKTULI	J	34.3	9.21	0.843	10.84	1.000	984.	30.6	0.1579	13.229	1.122		0.5058	6.44
19	S.F. KOKTULI	C	34.1	9.24	0.841	10.84	1.000	984.	30.6	0.1061	13.229	1.192		0.5058	6.44
20	S.F. KOKTULI	Q	34.0	9.24	0.841	10.84	1.000	984.	30.6	0.1061	13.229	1.252		0.1385	6.44
21	S.F. KOKTULI	Q	29.3	9.24	0.841	10.84	1.000	984.	30.6	0.1061	13.229	1.911		0.2306	10.49
22	S.F. KOKTULI	C	27.6	9.31	0.838	10.84	1.000	985.	30.6	0.1088	13.228	2.298		0.2306	10.49
23	S.F. KOKTULI	C	25.1	9.35	0.836	10.84	1.000	986.	30.6	0.0897	13.228	2.870		0.2306	10.49
24	S.F. KOKTULI	Q	24.9	9.35	0.836	10.84	1.000	986.	30.6	0.0897	13.228	2.917		-0.0464	10.49
25	S.F. KOKTULI	C	21.9	9.37	0.835	10.84	1.000	987.	30.6	0.1056	13.228	2.776		-0.0464	10.49
26	S.F. KOKTULI	C	20.1	9.42	0.832	10.84	1.000	987.	30.6	0.0868	13.229	2.694		-0.0464	10.49
27	S.F. KOKTULI	C	15.4	9.48	0.830	10.84	1.000	988.	30.6	0.0838	13.229	2.474		-0.0464	10.49
28	S.F. KOKTULI	Q	13.9	9.48	0.830	10.84	1.000	988.	30.6	0.0838	13.229	2.407		0.1464	10.49
29	S.F. KOKTULI	C	12.5	9.51	0.828	10.84	1.000	989.	30.6	0.0784	13.228	2.612		0.1464	10.49
30	S.F. KOKTULI	C	9.2	9.54	0.827	10.84	1.000	990.	30.6	0.0947	13.229	3.092		0.1464	10.49
31	S.F. KOKTULI	C	7.9	9.57	0.825	10.84	1.000	990.	30.6	0.0784	13.229	3.288		0.1464	10.49
32	S.F. KOKTULI	C	5.1	9.62	0.823	10.84	1.000	991.	30.6	0.0842	13.229	3.696		0.1464	10.49
33	S.F. KOKTULI	C	5.1	9.66	0.821	10.84	1.000	992.	30.6	0.0916	13.230	3.696		0.1464	10.49
34	S.F. KOKTULI	Q	3.0	9.66	0.821	10.84	1.000	992.	30.6	0.0916	13.230	4.008		0.3024	10.49
35	S.F. KOKTULI	Q	0.1	9.66	0.821	10.84	1.000	992.	30.6	0.0916	13.230	4.874		0.2500	10.49
36	S.F. KOKTULI	E	0.0									4.901			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.87	0.912	7.62	1.000	979.	26.1	0.2784	13.138	1.903	9.64	0.5187	10.64
2	S.F. KOKTULI	C	53.3	10.92	0.910	7.62	1.000	979.	26.1	0.2718	13.138	2.605		0.5187	10.64
3	S.F. KOKTULI	C	51.2	10.95	0.908	7.62	1.000	980.	26.1	0.2375	13.137	3.691		0.5187	10.64
4	S.F. KOKTULI	Q	51.1	10.95	0.908	7.62	1.000	980.	26.1	0.2375	13.137	3.758		-0.3493	10.64
5	S.F. KOKTULI	C	49.4	10.98	0.907	7.62	1.000	981.	26.1	0.2161	13.137	3.171		-0.3493	10.64
6	S.F. KOKTULI	C	47.6	11.02	0.905	7.62	1.000	981.	26.1	0.2059	13.137	2.523		-0.3493	10.64
7	S.F. KOKTULI	C	45.7	11.05	0.903	7.62	1.000	982.	26.1	0.2282	13.137	1.876		-0.3493	10.64
8	S.F. KOKTULI	C	44.8	11.06	0.902	7.62	1.000	982.	26.1	0.2062	13.137	1.561		-0.3493	10.64
9	S.F. KOKTULI	C	43.9	11.08	0.901	7.62	1.000	982.	26.1	0.2418	13.137	1.260		-0.3493	10.64
10	S.F. KOKTULI	Q	43.6	11.08	0.901	7.62	1.000	982.	26.1	0.2418	13.137	1.152		0.0724	10.64
11	S.F. KOKTULI	C	41.1	11.09	0.901	7.62	1.000	983.	26.1	0.2058	13.137	1.338		0.0724	10.64
12	S.F. KOKTULI	C	40.0	11.09	0.901	7.62	1.000	983.	26.1	0.2441	13.137	1.418		0.0724	10.64
13	S.F. KOKTULI	C	38.4	11.12	0.899	7.62	1.000	983.	26.1	0.2058	13.137	1.534		0.0724	10.64
14	S.F. KOKTULI	Q	35.8	11.12	0.899	7.62	1.000	983.	26.1	0.2058	13.137	1.719		-0.1487	6.44
15	S.F. KOKTULI	B	34.3									1.491			
16	TRIBUTARY 119	H	36.1	11.12	0.899	7.62	1.000	983.	26.1	0.2114	13.137	5.271	8.05	-0.0426	6.44
17	TRIBUTARY 119	T	34.3									5.195			
18	S.F. KOKTULI	J	34.3	11.15	0.898	7.62	1.000	984.	26.1	0.1588	13.137	6.686		-0.7121	6.44
19	S.F. KOKTULI	C	34.1	11.18	0.896	7.62	1.000	984.	26.1	0.1074	13.137	6.588		-0.7121	6.44
20	S.F. KOKTULI	Q	34.0	11.18	0.896	7.62	1.000	984.	26.1	0.1074	13.137	6.503		0.4292	6.44
21	S.F. KOKTULI	Q	29.3	11.18	0.896	7.62	1.000	984.	26.1	0.1074	13.137	8.545		0.8648	10.55
22	S.F. KOKTULI	C	27.6	11.25	0.893	7.62	1.000	985.	26.1	0.1100	13.136	9.996		0.8648	10.55
23	S.F. KOKTULI	C	25.1	11.29	0.891	7.62	1.000	986.	26.1	0.0908	13.136	12.142		0.8648	10.55
24	S.F. KOKTULI	Q	24.9	11.29	0.891	7.62	1.000	986.	26.1	0.0908	13.136	12.318		-0.1439	10.55
25	S.F. KOKTULI	C	21.9	11.31	0.889	7.62	1.000	987.	26.1	0.1062	13.136	11.880		-0.1439	10.55
26	S.F. KOKTULI	C	20.1	11.36	0.887	7.62	1.000	987.	26.1	0.0878	13.136	11.625		-0.1439	10.55
27	S.F. KOKTULI	C	15.4	11.42	0.884	7.62	1.000	988.	26.1	0.0847	13.137	10.946		-0.1439	10.55
28	S.F. KOKTULI	Q	13.9	11.42	0.884	7.62	1.000	988.	26.1	0.0847	13.137	10.737		-0.3156	10.55
29	S.F. KOKTULI	C	12.5	11.45	0.882	7.62	1.000	989.	26.1	0.0794	13.136	10.295		-0.3156	10.55
30	S.F. KOKTULI	C	9.2	11.48	0.881	7.62	1.000	990.	26.1	0.0953	13.137	9.261		-0.3156	10.55
31	S.F. KOKTULI	C	7.9	11.51	0.879	7.62	1.000	990.	26.1	0.0794	13.137	8.839		-0.3156	10.55
32	S.F. KOKTULI	C	5.1	11.56	0.877	7.62	1.000	991.	26.1	0.0849	13.137	7.959		-0.3156	10.55
33	S.F. KOKTULI	C	5.1	11.60	0.874	7.62	1.000	992.	26.0	0.0921	13.138	7.959		-0.3156	10.55
34	S.F. KOKTULI	Q	3.0	11.60	0.874	7.62	1.000	992.	26.0	0.0921	13.138	7.286		1.8897	10.55
35	S.F. KOKTULI	Q	0.1	11.60	0.874	7.62	1.000	992.	26.0	0.0921	13.138	12.698		0.6481	10.55
36	S.F. KOKTULI	E	0.0									12.768			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.26	0.884	3.01	1.000	979.	61.1	0.2802	13.046	1.700	10.32	0.4740	11.32
2	S.F. KOKTULI	C	53.3	10.31	0.882	3.01	1.000	979.	61.1	0.2739	13.046	2.342		0.4740	11.32
3	S.F. KOKTULI	C	51.2	10.34	0.880	3.01	1.000	980.	61.1	0.2392	13.045	3.334		0.4740	11.32
4	S.F. KOKTULI	Q	51.1	10.34	0.880	3.01	1.000	980.	61.1	0.2392	13.045	3.395		-0.1570	11.32
5	S.F. KOKTULI	C	49.4	10.37	0.879	3.01	1.000	981.	61.1	0.2187	13.045	3.131		-0.1570	11.32
6	S.F. KOKTULI	C	47.6	10.41	0.877	3.01	1.000	981.	61.1	0.2087	13.045	2.840		-0.1570	11.32
7	S.F. KOKTULI	C	45.7	10.44	0.875	3.01	1.000	982.	61.1	0.2302	13.045	2.549		-0.1570	11.32
8	S.F. KOKTULI	C	44.8	10.45	0.875	3.01	1.000	982.	61.1	0.2091	13.045	2.408		-0.1570	11.32
9	S.F. KOKTULI	C	43.9	10.47	0.874	3.01	1.000	982.	61.1	0.2433	13.045	2.272		-0.1570	11.32
10	S.F. KOKTULI	Q	43.6	10.47	0.874	3.01	1.000	982.	61.1	0.2433	13.045	2.224		0.0850	11.32
11	S.F. KOKTULI	C	41.1	10.48	0.873	3.01	1.000	983.	61.1	0.2085	13.045	2.441		0.0850	11.32
12	S.F. KOKTULI	C	40.0	10.48	0.873	3.01	1.000	983.	61.1	0.2455	13.045	2.535		0.0850	11.32
13	S.F. KOKTULI	C	38.4	10.51	0.872	3.01	1.000	983.	61.1	0.2086	13.045	2.672		0.0850	11.32
14	S.F. KOKTULI	Q	35.8	10.51	0.872	3.01	1.000	983.	61.1	0.2086	13.045	2.889		-0.0496	6.48
15	S.F. KOKTULI	B	34.3									2.813			
16	TRIBUTARY 119	H	36.1	10.51	0.872	3.01	1.000	983.	61.1	0.2125	13.045	2.354	7.67	-0.0146	6.48
17	TRIBUTARY 119	T	34.3									2.328			
18	S.F. KOKTULI	J	34.3	10.54	0.870	3.01	1.000	984.	61.1	0.1597	13.045	5.141		-0.2412	6.48
19	S.F. KOKTULI	C	34.1	10.57	0.868	3.01	1.000	984.	61.1	0.1087	13.045	5.108		-0.2412	6.48
20	S.F. KOKTULI	Q	34.0	10.57	0.868	3.01	1.000	984.	61.1	0.1087	13.045	5.079		0.5462	6.48
21	S.F. KOKTULI	Q	29.3	10.57	0.868	3.01	1.000	984.	61.1	0.1087	13.045	7.678		0.7454	10.34
22	S.F. KOKTULI	C	27.6	10.64	0.865	3.01	1.000	985.	61.1	0.1112	13.044	8.929		0.7454	10.34
23	S.F. KOKTULI	C	25.1	10.68	0.863	3.01	1.000	986.	61.1	0.0919	13.044	10.778		0.7454	10.34
24	S.F. KOKTULI	Q	24.9	10.68	0.863	3.01	1.000	986.	61.1	0.0919	13.044	10.930		-0.1316	10.34
25	S.F. KOKTULI	C	21.9	10.70	0.862	3.01	1.000	987.	61.1	0.1068	13.044	10.529		-0.1316	10.34
26	S.F. KOKTULI	C	20.1	10.75	0.859	3.01	1.000	987.	61.1	0.0888	13.044	10.297		-0.1316	10.34
27	S.F. KOKTULI	C	15.4	10.81	0.857	3.01	1.000	988.	61.1	0.0857	13.044	9.675		-0.1316	10.34
28	S.F. KOKTULI	Q	13.9	10.81	0.857	3.01	1.000	988.	61.1	0.0857	13.044	9.484		-0.1022	10.34
29	S.F. KOKTULI	C	12.5	10.84	0.855	3.01	1.000	989.	61.1	0.0805	13.044	9.341		-0.1022	10.34
30	S.F. KOKTULI	C	9.2	10.87	0.854	3.01	1.000	990.	61.1	0.0959	13.044	9.006		-0.1022	10.34
31	S.F. KOKTULI	C	7.9	10.90	0.852	3.01	1.000	990.	61.1	0.0804	13.045	8.869		-0.1022	10.34
32	S.F. KOKTULI	C	5.1	10.95	0.850	3.01	1.000	991.	61.0	0.0857	13.045	8.584		-0.1022	10.34
33	S.F. KOKTULI	C	5.1	10.99	0.847	3.01	1.000	992.	61.0	0.0926	13.045	8.584		-0.1022	10.34
34	S.F. KOKTULI	Q	3.0	10.99	0.847	3.01	1.000	992.	61.0	0.0926	13.045	8.366		2.6124	10.34
35	S.F. KOKTULI	Q	0.1	10.99	0.847	3.01	1.000	992.	61.0	0.0926	13.045	15.848		0.8148	10.34
36	S.F. KOKTULI	E	0.0									15.936			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	10.08	0.838	5.71	1.000	979.	103.2	0.2821	12.954	1.356	10.29	0.3951	11.29
2	S.F. KOKTULI	C	53.3	10.13	0.836	5.71	1.000	979.	103.2	0.2760	12.953	1.891		0.3951	11.29
3	S.F. KOKTULI	C	51.2	10.16	0.834	5.71	1.000	980.	103.2	0.2409	12.953	2.718		0.3951	11.29
4	S.F. KOKTULI	Q	51.1	10.16	0.834	5.71	1.000	980.	103.2	0.2409	12.953	2.769		-0.1483	11.29
5	S.F. KOKTULI	C	49.4	10.19	0.833	5.71	1.000	981.	103.2	0.2212	12.953	2.520		-0.1483	11.29
6	S.F. KOKTULI	C	47.6	10.23	0.831	5.71	1.000	981.	103.2	0.2117	12.953	2.245		-0.1483	11.29
7	S.F. KOKTULI	C	45.7	10.26	0.829	5.71	1.000	982.	103.2	0.2323	12.953	1.970		-0.1483	11.29
8	S.F. KOKTULI	C	44.8	10.27	0.829	5.71	1.000	982.	103.2	0.2120	12.953	1.837		-0.1483	11.29
9	S.F. KOKTULI	C	43.9	10.29	0.828	5.71	1.000	982.	103.2	0.2448	12.953	1.709		-0.1483	11.29
10	S.F. KOKTULI	Q	43.6	10.29	0.828	5.71	1.000	982.	103.2	0.2448	12.953	1.663		0.0810	11.29
11	S.F. KOKTULI	C	41.1	10.30	0.827	5.71	1.000	983.	103.3	0.2114	12.952	1.870		0.0810	11.29
12	S.F. KOKTULI	C	40.0	10.30	0.827	5.71	1.000	983.	103.2	0.2469	12.953	1.960		0.0810	11.29
13	S.F. KOKTULI	C	38.4	10.33	0.826	5.71	1.000	983.	103.2	0.2114	12.953	2.090		0.0810	11.29
14	S.F. KOKTULI	Q	35.8	10.33	0.826	5.71	1.000	983.	103.2	0.2114	12.953	2.297		0.0085	6.64
15	S.F. KOKTULI	B	34.3									2.310			
16	TRIBUTARY 119	H	36.1	10.33	0.826	5.71	1.000	983.	103.2	0.2137	12.953	1.681	7.24	0.0022	6.64
17	TRIBUTARY 119	T	34.3									1.685			
18	S.F. KOKTULI	J	34.3	10.36	0.825	5.71	1.000	984.	103.2	0.1606	12.953	3.995		0.0428	6.64
19	S.F. KOKTULI	C	34.1	10.39	0.823	5.71	1.000	984.	103.2	0.1101	12.952	4.001		0.0428	6.64
20	S.F. KOKTULI	Q	34.0	10.39	0.823	5.71	1.000	984.	103.2	0.1101	12.952	4.006		0.3993	6.64
21	S.F. KOKTULI	Q	29.3	10.39	0.823	5.71	1.000	984.	103.2	0.1101	12.952	5.906		0.6129	10.01
22	S.F. KOKTULI	C	27.6	10.46	0.820	5.71	1.000	985.	103.3	0.1125	12.952	6.934		0.6129	10.01
23	S.F. KOKTULI	C	25.1	10.50	0.818	5.71	1.000	986.	103.3	0.0931	12.952	8.455		0.6129	10.01
24	S.F. KOKTULI	Q	24.9	10.50	0.818	5.71	1.000	986.	103.3	0.0931	12.952	8.580		-0.1095	10.01
25	S.F. KOKTULI	C	21.9	10.52	0.816	5.71	1.000	987.	103.3	0.1074	12.952	8.246		-0.1095	10.01
26	S.F. KOKTULI	C	20.1	10.57	0.814	5.71	1.000	987.	103.2	0.0899	12.952	8.053		-0.1095	10.01
27	S.F. KOKTULI	C	15.4	10.63	0.812	5.71	1.000	988.	103.2	0.0867	12.952	7.536		-0.1095	10.01
28	S.F. KOKTULI	Q	13.9	10.63	0.812	5.71	1.000	988.	103.2	0.0867	12.952	7.377		-0.0427	10.01
29	S.F. KOKTULI	C	12.5	10.66	0.810	5.71	1.000	989.	103.2	0.0815	12.952	7.317		-0.0427	10.01
30	S.F. KOKTULI	C	9.2	10.69	0.809	5.71	1.000	990.	103.2	0.0965	12.952	7.177		-0.0427	10.01
31	S.F. KOKTULI	C	7.9	10.72	0.807	5.71	1.000	990.	103.2	0.0814	12.952	7.120		-0.0427	10.01
32	S.F. KOKTULI	C	5.1	10.77	0.805	5.71	1.000	991.	103.2	0.0865	12.953	7.001		-0.0427	10.01
33	S.F. KOKTULI	C	5.1	10.81	0.803	5.71	1.000	992.	103.1	0.0930	12.953	7.001		-0.0427	10.01
34	S.F. KOKTULI	Q	3.0	10.81	0.803	5.71	1.000	992.	103.1	0.0930	12.953	6.910		1.6603	10.01
35	S.F. KOKTULI	Q	0.1	10.81	0.803	5.71	1.000	992.	103.1	0.0930	12.953	11.665		0.6018	10.01
36	S.F. KOKTULI	E	0.0									11.730			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.69	0.847	15.23	1.000	979.	26.0	0.2839	12.861	1.190	7.75	0.3557	8.75
2	S.F. KOKTULI	C	53.3	8.74	0.845	15.23	1.000	979.	26.0	0.2781	12.861	1.672		0.3557	8.75
3	S.F. KOKTULI	C	51.2	8.77	0.843	15.23	1.000	980.	26.0	0.2427	12.861	2.416		0.3557	8.75
4	S.F. KOKTULI	Q	51.1	8.77	0.843	15.23	1.000	980.	26.0	0.2427	12.861	2.462		-0.1923	8.75
5	S.F. KOKTULI	C	49.4	8.80	0.842	15.23	1.000	981.	26.0	0.2239	12.861	2.139		-0.1923	8.75
6	S.F. KOKTULI	C	47.6	8.84	0.840	15.23	1.000	981.	26.0	0.2147	12.861	1.782		-0.1923	8.75
7	S.F. KOKTULI	C	45.7	8.87	0.839	15.23	1.000	982.	26.0	0.2345	12.861	1.426		-0.1923	8.75
8	S.F. KOKTULI	C	44.8	8.88	0.838	15.23	1.000	982.	26.0	0.2151	12.861	1.253		-0.1923	8.75
9	S.F. KOKTULI	C	43.9	8.90	0.837	15.23	1.000	982.	26.0	0.2464	12.860	1.086		-0.1923	8.75
10	S.F. KOKTULI	Q	43.6	8.90	0.837	15.23	1.000	982.	26.0	0.2464	12.860	1.027		0.0693	8.75
11	S.F. KOKTULI	C	41.1	8.91	0.837	15.23	1.000	983.	26.0	0.2145	12.860	1.205		0.0693	8.75
12	S.F. KOKTULI	C	40.0	8.91	0.836	15.23	1.000	983.	26.0	0.2484	12.860	1.282		0.0693	8.75
13	S.F. KOKTULI	C	38.4	8.94	0.835	15.23	1.000	983.	26.0	0.2143	12.860	1.393		0.0693	8.75
14	S.F. KOKTULI	Q	35.8	8.94	0.835	15.23	1.000	983.	26.0	0.2143	12.860	1.570		0.0339	6.68
15	S.F. KOKTULI	B	34.3									1.622			
16	TRIBUTARY 119	H	36.1	8.94	0.835	15.23	1.000	983.	26.0	0.2149	12.861	1.732	6.74	0.0095	6.68
17	TRIBUTARY 119	T	34.3									1.749			
18	S.F. KOKTULI	J	34.3	8.97	0.834	15.23	1.000	984.	26.0	0.1615	12.860	3.372		0.1634	6.68
19	S.F. KOKTULI	C	34.1	9.00	0.832	15.23	1.000	984.	26.0	0.1115	12.860	3.395		0.1634	6.68
20	S.F. KOKTULI	Q	34.0	9.00	0.832	15.23	1.000	984.	26.0	0.1115	12.860	3.414		0.3308	6.68
21	S.F. KOKTULI	Q	29.3	9.00	0.832	15.23	1.000	984.	26.0	0.1115	12.860	4.988		0.5636	9.92
22	S.F. KOKTULI	C	27.6	9.07	0.829	15.23	1.000	985.	26.0	0.1139	12.860	5.934		0.5636	9.92
23	S.F. KOKTULI	C	25.1	9.11	0.827	15.23	1.000	986.	26.0	0.0944	12.860	7.332		0.5636	9.92
24	S.F. KOKTULI	Q	24.9	9.11	0.827	15.23	1.000	986.	26.0	0.0944	12.860	7.447		-0.0981	9.92
25	S.F. KOKTULI	C	21.9	9.13	0.826	15.23	1.000	987.	26.0	0.1080	12.860	7.148		-0.0981	9.92
26	S.F. KOKTULI	C	20.1	9.18	0.823	15.23	1.000	987.	26.0	0.0909	12.860	6.975		-0.0981	9.92
27	S.F. KOKTULI	C	15.4	9.24	0.821	15.23	1.000	988.	26.0	0.0878	12.860	6.511		-0.0981	9.92
28	S.F. KOKTULI	Q	13.9	9.24	0.821	15.23	1.000	988.	26.0	0.0878	12.860	6.369		-0.0083	9.92
29	S.F. KOKTULI	C	12.5	9.27	0.819	15.23	1.000	989.	26.0	0.0827	12.860	6.357		-0.0083	9.92
30	S.F. KOKTULI	C	9.2	9.30	0.818	15.23	1.000	990.	26.0	0.0972	12.860	6.330		-0.0083	9.92
31	S.F. KOKTULI	C	7.9	9.33	0.816	15.23	1.000	990.	26.0	0.0824	12.860	6.319		-0.0083	9.92
32	S.F. KOKTULI	C	5.1	9.38	0.814	15.23	1.000	991.	26.0	0.0873	12.860	6.296		-0.0083	9.92
33	S.F. KOKTULI	C	5.1	9.42	0.812	15.23	1.000	992.	26.0	0.0936	12.861	6.296		-0.0083	9.92
34	S.F. KOKTULI	Q	3.0	9.42	0.812	15.23	1.000	992.	26.0	0.0936	12.861	6.278		1.2999	9.92
35	S.F. KOKTULI	Q	0.1	9.42	0.812	15.23	1.000	992.	26.0	0.0936	12.861	10.001		0.5185	9.92
36	S.F. KOKTULI	E	0.0									10.057			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	9.26	0.838	5.74	1.000	979.	112.9	0.2859	12.769	1.986	8.34	0.5366	9.34
2	S.F. KOKTULI	C	53.3	9.31	0.836	5.74	1.000	979.	112.9	0.2803	12.769	2.713		0.5366	9.34
3	S.F. KOKTULI	C	51.2	9.34	0.834	5.74	1.000	980.	112.9	0.2445	12.768	3.836		0.5366	9.34
4	S.F. KOKTULI	Q	51.1	9.34	0.834	5.74	1.000	980.	112.9	0.2445	12.768	3.905		-0.2008	9.34
5	S.F. KOKTULI	C	49.4	9.37	0.833	5.74	1.000	981.	112.9	0.2266	12.768	3.568		-0.2008	9.34
6	S.F. KOKTULI	C	47.6	9.41	0.831	5.74	1.000	981.	112.9	0.2179	12.768	3.195		-0.2008	9.34
7	S.F. KOKTULI	C	45.7	9.44	0.829	5.74	1.000	982.	112.9	0.2367	12.768	2.823		-0.2008	9.34
8	S.F. KOKTULI	C	44.8	9.45	0.829	5.74	1.000	982.	112.9	0.2182	12.768	2.642		-0.2008	9.34
9	S.F. KOKTULI	C	43.9	9.47	0.828	5.74	1.000	982.	112.9	0.2480	12.768	2.469		-0.2008	9.34
10	S.F. KOKTULI	Q	43.6	9.47	0.828	5.74	1.000	982.	112.9	0.2480	12.768	2.407		0.0855	9.34
11	S.F. KOKTULI	C	41.1	9.48	0.827	5.74	1.000	983.	113.0	0.2177	12.768	2.626		0.0855	9.34
12	S.F. KOKTULI	C	40.0	9.48	0.827	5.74	1.000	983.	112.9	0.2499	12.768	2.721		0.0855	9.34
13	S.F. KOKTULI	C	38.4	9.51	0.826	5.74	1.000	983.	112.9	0.2175	12.768	2.858		0.0855	9.34
14	S.F. KOKTULI	Q	35.8	9.51	0.826	5.74	1.000	983.	112.9	0.2175	12.768	3.076		-0.1642	6.55
15	S.F. KOKTULI	B	34.3									2.824			
16	TRIBUTARY 119	H	36.1	9.51	0.826	5.74	1.000	983.	112.9	0.2161	12.768	4.166	7.41	-0.0465	6.55
17	TRIBUTARY 119	T	34.3									4.083			
18	S.F. KOKTULI	J	34.3	9.54	0.825	5.74	1.000	984.	112.9	0.1624	12.768	6.907		-0.7899	6.55
19	S.F. KOKTULI	C	34.1	9.57	0.823	5.74	1.000	984.	112.9	0.1131	12.768	6.798		-0.7899	6.55
20	S.F. KOKTULI	Q	34.0	9.57	0.823	5.74	1.000	984.	112.9	0.1131	12.768	6.704		0.5731	6.55
21	S.F. KOKTULI	Q	29.3	9.57	0.823	5.74	1.000	984.	112.9	0.1131	12.768	9.431		0.7914	9.45
22	S.F. KOKTULI	C	27.6	9.64	0.820	5.74	1.000	985.	113.0	0.1153	12.768	10.759		0.7914	9.45
23	S.F. KOKTULI	C	25.1	9.68	0.818	5.74	1.000	986.	113.0	0.0957	12.768	12.723		0.7914	9.45
24	S.F. KOKTULI	Q	24.9	9.68	0.818	5.74	1.000	986.	113.0	0.0957	12.768	12.884		-0.1487	9.45
25	S.F. KOKTULI	C	21.9	9.70	0.816	5.74	1.000	987.	113.0	0.1087	12.768	12.431		-0.1487	9.45
26	S.F. KOKTULI	C	20.1	9.75	0.814	5.74	1.000	987.	112.9	0.0921	12.768	12.168		-0.1487	9.45
27	S.F. KOKTULI	C	15.4	9.81	0.812	5.74	1.000	988.	112.9	0.0889	12.768	11.466		-0.1487	9.45
28	S.F. KOKTULI	Q	13.9	9.81	0.812	5.74	1.000	988.	112.9	0.0889	12.768	11.250		-0.2916	9.45
29	S.F. KOKTULI	C	12.5	9.84	0.810	5.74	1.000	989.	112.9	0.0838	12.768	10.842		-0.2916	9.45
30	S.F. KOKTULI	C	9.2	9.87	0.809	5.74	1.000	990.	112.9	0.0978	12.768	9.886		-0.2916	9.45
31	S.F. KOKTULI	C	7.9	9.90	0.807	5.74	1.000	990.	112.9	0.0835	12.768	9.496		-0.2916	9.45
32	S.F. KOKTULI	C	5.1	9.95	0.805	5.74	1.000	991.	112.9	0.0882	12.768	8.683		-0.2916	9.45
33	S.F. KOKTULI	C	5.1	9.99	0.803	5.74	1.000	992.	112.8	0.0941	12.769	8.683		-0.2916	9.45
34	S.F. KOKTULI	Q	3.0	9.99	0.803	5.74	1.000	992.	112.8	0.0941	12.769	8.061		2.3991	9.45
35	S.F. KOKTULI	Q	0.1	9.99	0.803	5.74	1.000	992.	112.8	0.0941	12.769	14.932		0.7685	9.45
36	S.F. KOKTULI	E	0.0									15.015			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.58	0.894	2.98	1.000	979.	43.9	0.2878	12.677	1.858	8.26	0.5087	9.26
2	S.F. KOKTULI	C	53.3	7.63	0.891	2.98	1.000	979.	43.9	0.2826	12.676	2.547		0.5087	9.26
3	S.F. KOKTULI	C	51.2	7.66	0.890	2.98	1.000	980.	43.9	0.2463	12.676	3.611		0.5087	9.26
4	S.F. KOKTULI	Q	51.1	7.66	0.890	2.98	1.000	980.	43.9	0.2463	12.676	3.677		-0.1142	9.26
5	S.F. KOKTULI	C	49.4	7.69	0.888	2.98	1.000	981.	43.9	0.2295	12.676	3.485		-0.1142	9.26
6	S.F. KOKTULI	C	47.6	7.73	0.886	2.98	1.000	981.	43.9	0.2212	12.676	3.273		-0.1142	9.26
7	S.F. KOKTULI	C	45.7	7.76	0.885	2.98	1.000	982.	43.9	0.2389	12.676	3.062		-0.1142	9.26
8	S.F. KOKTULI	C	44.8	7.77	0.884	2.98	1.000	982.	43.9	0.2215	12.676	2.959		-0.1142	9.26
9	S.F. KOKTULI	C	43.9	7.79	0.883	2.98	1.000	982.	43.9	0.2497	12.676	2.860		-0.1142	9.26
10	S.F. KOKTULI	Q	43.6	7.79	0.883	2.98	1.000	982.	43.9	0.2497	12.676	2.825		0.0850	9.26
11	S.F. KOKTULI	C	41.1	7.80	0.882	2.98	1.000	983.	43.9	0.2210	12.676	3.043		0.0850	9.26
12	S.F. KOKTULI	C	40.0	7.80	0.882	2.98	1.000	983.	43.9	0.2515	12.676	3.137		0.0850	9.26
13	S.F. KOKTULI	C	38.4	7.83	0.881	2.98	1.000	983.	43.9	0.2208	12.676	3.273		0.0850	9.26
14	S.F. KOKTULI	Q	35.8	7.83	0.881	2.98	1.000	983.	43.9	0.2208	12.676	3.490		-0.1020	6.55
15	S.F. KOKTULI	B	34.3									3.334			
16	TRIBUTARY 119	H	36.1	7.83	0.881	2.98	1.000	983.	43.9	0.2173	12.676	2.718	6.68	-0.0291	6.55
17	TRIBUTARY 119	T	34.3									2.666			
18	S.F. KOKTULI	J	34.3	7.86	0.880	2.98	1.000	984.	43.9	0.1634	12.676	6.000		-0.4942	6.55
19	S.F. KOKTULI	C	34.1	7.89	0.878	2.98	1.000	984.	43.9	0.1146	12.676	5.932		-0.4942	6.55
20	S.F. KOKTULI	Q	34.0	7.89	0.878	2.98	1.000	984.	43.9	0.1146	12.676	5.873		0.5755	6.55
21	S.F. KOKTULI	Q	29.3	7.89	0.878	2.98	1.000	984.	43.9	0.1146	12.676	8.611		0.7781	8.96
22	S.F. KOKTULI	C	27.6	7.96	0.874	2.98	1.000	985.	43.9	0.1167	12.675	9.917		0.7781	8.96
23	S.F. KOKTULI	C	25.1	8.00	0.872	2.98	1.000	986.	43.9	0.0970	12.675	11.847		0.7781	8.96
24	S.F. KOKTULI	Q	24.9	8.00	0.872	2.98	1.000	986.	43.9	0.0970	12.675	12.006		-0.1411	8.96
25	S.F. KOKTULI	C	21.9	8.02	0.871	2.98	1.000	987.	43.9	0.1094	12.675	11.576		-0.1411	8.96
26	S.F. KOKTULI	C	20.1	8.07	0.869	2.98	1.000	987.	43.9	0.0932	12.676	11.327		-0.1411	8.96
27	S.F. KOKTULI	C	15.4	8.13	0.866	2.98	1.000	988.	43.9	0.0900	12.676	10.660		-0.1411	8.96
28	S.F. KOKTULI	Q	13.9	8.13	0.866	2.98	1.000	988.	43.9	0.0900	12.676	10.455		-0.2156	8.96
29	S.F. KOKTULI	C	12.5	8.16	0.864	2.98	1.000	989.	43.9	0.0850	12.676	10.153		-0.2156	8.96
30	S.F. KOKTULI	C	9.2	8.19	0.863	2.98	1.000	990.	43.9	0.0985	12.676	9.447		-0.2156	8.96
31	S.F. KOKTULI	C	7.9	8.22	0.861	2.98	1.000	990.	43.9	0.0847	12.676	9.158		-0.2156	8.96
32	S.F. KOKTULI	C	5.1	8.27	0.859	2.98	1.000	991.	43.8	0.0890	12.676	8.557		-0.2156	8.96
33	S.F. KOKTULI	C	5.1	8.31	0.856	2.98	1.000	992.	43.8	0.0946	12.676	8.557		-0.2156	8.96
34	S.F. KOKTULI	Q	3.0	8.31	0.856	2.98	1.000	992.	43.8	0.0946	12.676	8.097		2.4235	8.96
35	S.F. KOKTULI	Q	0.1	8.31	0.856	2.98	1.000	992.	43.8	0.0946	12.676	15.038		0.7778	8.96
36	S.F. KOKTULI	E	0.0									15.122			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.17	0.838	3.29	1.000	979.	87.6	0.2898	12.584	1.820	8.33	0.5008	9.33
2	S.F. KOKTULI	C	53.3	7.22	0.836	3.29	1.000	979.	87.7	0.2849	12.584	2.498		0.5008	9.33
3	S.F. KOKTULI	C	51.2	7.25	0.834	3.29	1.000	980.	87.7	0.2482	12.584	3.546		0.5008	9.33
4	S.F. KOKTULI	Q	51.1	7.25	0.834	3.29	1.000	980.	87.7	0.2482	12.584	3.611		-0.1027	9.33
5	S.F. KOKTULI	C	49.4	7.28	0.833	3.29	1.000	981.	87.7	0.2324	12.584	3.438		-0.1027	9.33
6	S.F. KOKTULI	C	47.6	7.32	0.831	3.29	1.000	981.	87.7	0.2247	12.584	3.248		-0.1027	9.33
7	S.F. KOKTULI	C	45.7	7.35	0.829	3.29	1.000	982.	87.7	0.2413	12.584	3.058		-0.1027	9.33
8	S.F. KOKTULI	C	44.8	7.36	0.829	3.29	1.000	982.	87.7	0.2249	12.584	2.965		-0.1027	9.33
9	S.F. KOKTULI	C	43.9	7.38	0.828	3.29	1.000	982.	87.7	0.2514	12.583	2.876		-0.1027	9.33
10	S.F. KOKTULI	Q	43.6	7.38	0.828	3.29	1.000	982.	87.7	0.2514	12.583	2.845		0.0850	9.33
11	S.F. KOKTULI	C	41.1	7.39	0.827	3.29	1.000	983.	87.7	0.2245	12.583	3.062		0.0850	9.33
12	S.F. KOKTULI	C	40.0	7.39	0.827	3.29	1.000	983.	87.7	0.2530	12.583	3.156		0.0850	9.33
13	S.F. KOKTULI	C	38.4	7.42	0.826	3.29	1.000	983.	87.7	0.2243	12.583	3.293		0.0850	9.33
14	S.F. KOKTULI	Q	35.8	7.42	0.826	3.29	1.000	983.	87.7	0.2243	12.583	3.510		-0.0962	6.31
15	S.F. KOKTULI	B	34.3									3.362			
16	TRIBUTARY 119	H	36.1	7.42	0.826	3.29	1.000	983.	87.7	0.2185	12.584	2.593	6.48	-0.0274	6.31
17	TRIBUTARY 119	T	34.3									2.544			
18	S.F. KOKTULI	J	34.3	7.45	0.825	3.29	1.000	984.	87.7	0.1643	12.583	5.906		-0.4630	6.31
19	S.F. KOKTULI	C	34.1	7.48	0.823	3.29	1.000	984.	87.7	0.1163	12.583	5.842		-0.4630	6.31
20	S.F. KOKTULI	Q	34.0	7.48	0.823	3.29	1.000	984.	87.7	0.1163	12.583	5.787		0.5652	6.31
21	S.F. KOKTULI	Q	29.3	7.48	0.823	3.29	1.000	984.	87.7	0.1163	12.583	8.476		0.7506	8.66
22	S.F. KOKTULI	C	27.6	7.55	0.820	3.29	1.000	985.	87.7	0.1182	12.583	9.736		0.7506	8.66
23	S.F. KOKTULI	C	25.1	7.59	0.818	3.29	1.000	986.	87.7	0.0983	12.583	11.598		0.7506	8.66
24	S.F. KOKTULI	Q	24.9	7.59	0.818	3.29	1.000	986.	87.7	0.0983	12.583	11.751		-0.1389	8.66
25	S.F. KOKTULI	C	21.9	7.61	0.817	3.29	1.000	987.	87.7	0.1101	12.583	11.328		-0.1389	8.66
26	S.F. KOKTULI	C	20.1	7.66	0.814	3.29	1.000	987.	87.7	0.0944	12.583	11.083		-0.1389	8.66
27	S.F. KOKTULI	C	15.4	7.72	0.812	3.29	1.000	988.	87.7	0.0911	12.583	10.426		-0.1389	8.66
28	S.F. KOKTULI	Q	13.9	7.72	0.812	3.29	1.000	988.	87.7	0.0911	12.583	10.225		-0.2076	8.66
29	S.F. KOKTULI	C	12.5	7.75	0.810	3.29	1.000	989.	87.7	0.0864	12.583	9.934		-0.2076	8.66
30	S.F. KOKTULI	C	9.2	7.78	0.809	3.29	1.000	990.	87.7	0.0992	12.583	9.254		-0.2076	8.66
31	S.F. KOKTULI	C	7.9	7.81	0.807	3.29	1.000	990.	87.6	0.0858	12.583	8.976		-0.2076	8.66
32	S.F. KOKTULI	C	5.1	7.86	0.805	3.29	1.000	991.	87.6	0.0899	12.584	8.398		-0.2076	8.66
33	S.F. KOKTULI	C	5.1	7.90	0.803	3.29	1.000	992.	87.6	0.0951	12.584	8.398		-0.2076	8.66
34	S.F. KOKTULI	Q	3.0	7.90	0.803	3.29	1.000	992.	87.6	0.0951	12.584	7.955		2.3268	8.66
35	S.F. KOKTULI	Q	0.1	7.90	0.803	3.29	1.000	992.	87.6	0.0951	12.584	14.619		0.7500	8.66
36	S.F. KOKTULI	E	0.0									14.700			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.39	0.801	6.74	1.000	979.	133.1	0.2918	12.492	1.571	7.72	0.4452	8.72
2	S.F. KOKTULI	C	53.3	6.44	0.798	6.74	1.000	979.	133.2	0.2873	12.491	2.174		0.4452	8.72
3	S.F. KOKTULI	C	51.2	6.47	0.797	6.74	1.000	980.	133.2	0.2502	12.491	3.106		0.4452	8.72
4	S.F. KOKTULI	Q	51.1	6.47	0.797	6.74	1.000	980.	133.2	0.2502	12.491	3.163		-0.1174	8.72
5	S.F. KOKTULI	C	49.4	6.50	0.796	6.74	1.000	981.	133.2	0.2354	12.491	2.966		-0.1174	8.72
6	S.F. KOKTULI	C	47.6	6.54	0.794	6.74	1.000	981.	133.2	0.2282	12.491	2.748		-0.1174	8.72
7	S.F. KOKTULI	C	45.7	6.57	0.792	6.74	1.000	982.	133.2	0.2437	12.491	2.531		-0.1174	8.72
8	S.F. KOKTULI	C	44.8	6.58	0.792	6.74	1.000	982.	133.2	0.2285	12.491	2.425		-0.1174	8.72
9	S.F. KOKTULI	C	43.9	6.60	0.791	6.74	1.000	982.	133.2	0.2531	12.491	2.323		-0.1174	8.72
10	S.F. KOKTULI	Q	43.6	6.60	0.791	6.74	1.000	982.	133.2	0.2531	12.491	2.287		0.0852	8.72
11	S.F. KOKTULI	C	41.1	6.61	0.791	6.74	1.000	983.	133.2	0.2280	12.491	2.506		0.0852	8.72
12	S.F. KOKTULI	C	40.0	6.61	0.790	6.74	1.000	983.	133.2	0.2546	12.491	2.600		0.0852	8.72
13	S.F. KOKTULI	C	38.4	6.64	0.789	6.74	1.000	983.	133.2	0.2279	12.491	2.737		0.0852	8.72
14	S.F. KOKTULI	Q	35.8	6.64	0.789	6.74	1.000	983.	133.2	0.2279	12.491	2.954		-0.0335	6.20
15	S.F. KOKTULI	B	34.3									2.903			
16	TRIBUTARY 119	H	36.1	6.64	0.789	6.74	1.000	983.	133.2	0.2198	12.491	1.956	5.89	-0.0095	6.20
17	TRIBUTARY 119	T	34.3									1.939			
18	S.F. KOKTULI	J	34.3	6.67	0.788	6.74	1.000	984.	133.2	0.1653	12.491	4.843		-0.1634	6.20
19	S.F. KOKTULI	C	34.1	6.70	0.786	6.74	1.000	984.	133.2	0.1180	12.491	4.820		-0.1634	6.20
20	S.F. KOKTULI	Q	34.0	6.70	0.786	6.74	1.000	984.	133.2	0.1180	12.491	4.801		0.4811	6.20
21	S.F. KOKTULI	Q	29.3	6.70	0.786	6.74	1.000	984.	133.2	0.1180	12.491	7.090		0.6789	8.58
22	S.F. KOKTULI	C	27.6	6.77	0.783	6.74	1.000	985.	133.2	0.1198	12.491	8.229		0.6789	8.58
23	S.F. KOKTULI	C	25.1	6.81	0.782	6.74	1.000	986.	133.3	0.0997	12.491	9.914		0.6789	8.58
24	S.F. KOKTULI	Q	24.9	6.81	0.782	6.74	1.000	986.	133.3	0.0997	12.491	10.052		-0.1235	8.58
25	S.F. KOKTULI	C	21.9	6.83	0.780	6.74	1.000	987.	133.2	0.1108	12.491	9.676		-0.1235	8.58
26	S.F. KOKTULI	C	20.1	6.88	0.778	6.74	1.000	987.	133.2	0.0957	12.491	9.458		-0.1235	8.58
27	S.F. KOKTULI	C	15.4	6.94	0.776	6.74	1.000	988.	133.2	0.0923	12.491	8.874		-0.1235	8.58
28	S.F. KOKTULI	Q	13.9	6.94	0.776	6.74	1.000	988.	133.2	0.0923	12.491	8.695		-0.1261	8.58
29	S.F. KOKTULI	C	12.5	6.97	0.774	6.74	1.000	989.	133.2	0.0878	12.491	8.518		-0.1261	8.58
30	S.F. KOKTULI	C	9.2	7.00	0.773	6.74	1.000	990.	133.2	0.0999	12.491	8.105		-0.1261	8.58
31	S.F. KOKTULI	C	7.9	7.03	0.772	6.74	1.000	990.	133.1	0.0870	12.491	7.936		-0.1261	8.58
32	S.F. KOKTULI	C	5.1	7.08	0.769	6.74	1.000	991.	133.1	0.0908	12.491	7.585		-0.1261	8.58
33	S.F. KOKTULI	C	5.1	7.12	0.767	6.74	1.000	992.	133.1	0.0957	12.491	7.585		-0.1261	8.58
34	S.F. KOKTULI	Q	3.0	7.12	0.767	6.74	1.000	992.	133.1	0.0957	12.491	7.316		1.9085	8.58
35	S.F. KOKTULI	Q	0.1	7.12	0.767	6.74	1.000	992.	133.1	0.0957	12.491	12.782		0.6574	8.58
36	S.F. KOKTULI	E	0.0									12.853			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.75	0.791	4.72	1.000	979.	110.7	0.2939	12.399	1.372	7.84	0.3993	8.84
2	S.F. KOKTULI	C	53.3	7.80	0.789	4.72	1.000	979.	110.7	0.2897	12.399	1.913		0.3993	8.84
3	S.F. KOKTULI	C	51.2	7.83	0.788	4.72	1.000	980.	110.7	0.2522	12.399	2.748		0.3993	8.84
4	S.F. KOKTULI	Q	51.1	7.83	0.788	4.72	1.000	980.	110.7	0.2522	12.399	2.800		-0.1521	8.84
5	S.F. KOKTULI	C	49.4	7.86	0.786	4.72	1.000	981.	110.7	0.2384	12.399	2.544		-0.1521	8.84
6	S.F. KOKTULI	C	47.6	7.90	0.785	4.72	1.000	981.	110.7	0.2319	12.399	2.262		-0.1521	8.84
7	S.F. KOKTULI	C	45.7	7.93	0.783	4.72	1.000	982.	110.7	0.2461	12.399	1.981		-0.1521	8.84
8	S.F. KOKTULI	C	44.8	7.94	0.783	4.72	1.000	982.	110.7	0.2323	12.399	1.843		-0.1521	8.84
9	S.F. KOKTULI	C	43.9	7.96	0.782	4.72	1.000	982.	110.8	0.2549	12.399	1.712		-0.1521	8.84
10	S.F. KOKTULI	Q	43.6	7.96	0.782	4.72	1.000	982.	110.8	0.2549	12.399	1.665		0.0810	8.84
11	S.F. KOKTULI	C	41.1	7.97	0.781	4.72	1.000	983.	110.8	0.2317	12.399	1.873		0.0810	8.84
12	S.F. KOKTULI	C	40.0	7.97	0.781	4.72	1.000	983.	110.8	0.2563	12.399	1.962		0.0810	8.84
13	S.F. KOKTULI	C	38.4	8.00	0.780	4.72	1.000	983.	110.7	0.2317	12.399	2.092		0.0810	8.84
14	S.F. KOKTULI	Q	35.8	8.00	0.780	4.72	1.000	983.	110.7	0.2317	12.399	2.299		0.0102	5.95
15	S.F. KOKTULI	B	34.3									2.315			
16	TRIBUTARY 119	H	36.1	8.00	0.780	4.72	1.000	983.	110.7	0.2211	12.399	1.649	6.06	0.0028	5.95
17	TRIBUTARY 119	T	34.3									1.654			
18	S.F. KOKTULI	J	34.3	8.03	0.779	4.72	1.000	984.	110.7	0.1663	12.399	3.968		0.0506	5.95
19	S.F. KOKTULI	C	34.1	8.06	0.777	4.72	1.000	984.	110.8	0.1197	12.399	3.975		0.0506	5.95
20	S.F. KOKTULI	Q	34.0	8.06	0.777	4.72	1.000	984.	110.8	0.1197	12.399	3.981		0.4155	5.95
21	S.F. KOKTULI	Q	29.3	8.06	0.777	4.72	1.000	984.	110.8	0.1197	12.399	5.958		0.6269	8.37
22	S.F. KOKTULI	C	27.6	8.13	0.774	4.72	1.000	985.	110.8	0.1214	12.398	7.010		0.6269	8.37
23	S.F. KOKTULI	C	25.1	8.17	0.772	4.72	1.000	986.	110.8	0.1012	12.398	8.565		0.6269	8.37
24	S.F. KOKTULI	Q	24.9	8.17	0.772	4.72	1.000	986.	110.8	0.1012	12.398	8.693		-0.1106	8.37
25	S.F. KOKTULI	C	21.9	8.19	0.771	4.72	1.000	987.	110.8	0.1115	12.398	8.356		-0.1106	8.37
26	S.F. KOKTULI	C	20.1	8.24	0.769	4.72	1.000	987.	110.7	0.0969	12.399	8.161		-0.1106	8.37
27	S.F. KOKTULI	C	15.4	8.30	0.767	4.72	1.000	988.	110.7	0.0935	12.399	7.638		-0.1106	8.37
28	S.F. KOKTULI	Q	13.9	8.30	0.767	4.72	1.000	988.	110.7	0.0935	12.399	7.478		-0.0710	8.37
29	S.F. KOKTULI	C	12.5	8.33	0.765	4.72	1.000	989.	110.7	0.0892	12.398	7.379		-0.0710	8.37
30	S.F. KOKTULI	C	9.2	8.36	0.764	4.72	1.000	990.	110.7	0.1006	12.399	7.146		-0.0710	8.37
31	S.F. KOKTULI	C	7.9	8.39	0.763	4.72	1.000	990.	110.7	0.0883	12.399	7.051		-0.0710	8.37
32	S.F. KOKTULI	C	5.1	8.44	0.760	4.72	1.000	991.	110.7	0.0918	12.399	6.852		-0.0710	8.37
33	S.F. KOKTULI	C	5.1	8.48	0.758	4.72	1.000	992.	110.6	0.0962	12.399	6.852		-0.0710	8.37
34	S.F. KOKTULI	Q	3.0	8.48	0.758	4.72	1.000	992.	110.6	0.0962	12.399	6.701		1.5374	8.37
35	S.F. KOKTULI	Q	0.1	8.48	0.758	4.72	1.000	992.	110.6	0.0962	12.399	11.104		0.5741	8.37
36	S.F. KOKTULI	E	0.0									11.166			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.21	0.838	2.74	1.000	979.	62.4	0.2960	12.307	1.256	7.63	0.3719	8.63
2	S.F. KOKTULI	C	53.3	7.26	0.836	2.74	1.000	979.	62.4	0.2921	12.307	1.760		0.3719	8.63
3	S.F. KOKTULI	C	51.2	7.29	0.834	2.74	1.000	980.	62.5	0.2542	12.306	2.538		0.3719	8.63
4	S.F. KOKTULI	Q	51.1	7.29	0.834	2.74	1.000	980.	62.5	0.2542	12.306	2.586		-0.1626	8.63
5	S.F. KOKTULI	C	49.4	7.32	0.833	2.74	1.000	981.	62.5	0.2416	12.306	2.313		-0.1626	8.63
6	S.F. KOKTULI	C	47.6	7.36	0.831	2.74	1.000	981.	62.5	0.2359	12.306	2.011		-0.1626	8.63
7	S.F. KOKTULI	C	45.7	7.39	0.829	2.74	1.000	982.	62.5	0.2487	12.306	1.710		-0.1626	8.63
8	S.F. KOKTULI	C	44.8	7.40	0.829	2.74	1.000	982.	62.5	0.2361	12.306	1.563		-0.1626	8.63
9	S.F. KOKTULI	C	43.9	7.42	0.828	2.74	1.000	982.	62.5	0.2567	12.306	1.423		-0.1626	8.63
10	S.F. KOKTULI	Q	43.6	7.42	0.828	2.74	1.000	982.	62.5	0.2567	12.306	1.373		0.0768	8.63
11	S.F. KOKTULI	C	41.1	7.43	0.827	2.74	1.000	983.	62.5	0.2357	12.306	1.570		0.0768	8.63
12	S.F. KOKTULI	C	40.0	7.43	0.827	2.74	1.000	983.	62.5	0.2580	12.306	1.655		0.0768	8.63
13	S.F. KOKTULI	C	38.4	7.46	0.826	2.74	1.000	983.	62.5	0.2356	12.306	1.778		0.0768	8.63
14	S.F. KOKTULI	Q	35.8	7.46	0.826	2.74	1.000	983.	62.5	0.2356	12.306	1.974		0.0266	6.16
15	S.F. KOKTULI	B	34.3									2.015			
16	TRIBUTARY 119	H	36.1	7.46	0.826	2.74	1.000	983.	62.4	0.2224	12.306	1.539	5.93	0.0078	6.16
17	TRIBUTARY 119	T	34.3									1.553			
18	S.F. KOKTULI	J	34.3	7.49	0.825	2.74	1.000	984.	62.5	0.1673	12.306	3.568		0.1284	6.16
19	S.F. KOKTULI	C	34.1	7.52	0.823	2.74	1.000	984.	62.5	0.1216	12.306	3.586		0.1284	6.16
20	S.F. KOKTULI	Q	34.0	7.52	0.823	2.74	1.000	984.	62.5	0.1216	12.306	3.601		0.3716	6.16
21	S.F. KOKTULI	Q	29.3	7.52	0.823	2.74	1.000	984.	62.5	0.1216	12.306	5.369		0.5801	8.61
22	S.F. KOKTULI	C	27.6	7.59	0.820	2.74	1.000	985.	62.5	0.1230	12.306	6.342		0.5801	8.61
23	S.F. KOKTULI	C	25.1	7.63	0.818	2.74	1.000	986.	62.5	0.1027	12.306	7.782		0.5801	8.61
24	S.F. KOKTULI	Q	24.9	7.63	0.818	2.74	1.000	986.	62.5	0.1027	12.306	7.900		-0.1027	8.61
25	S.F. KOKTULI	C	21.9	7.65	0.817	2.74	1.000	987.	62.5	0.1122	12.306	7.587		-0.1027	8.61
26	S.F. KOKTULI	C	20.1	7.70	0.814	2.74	1.000	987.	62.5	0.0982	12.306	7.405		-0.1027	8.61
27	S.F. KOKTULI	C	15.4	7.76	0.812	2.74	1.000	988.	62.4	0.0948	12.306	6.920		-0.1027	8.61
28	S.F. KOKTULI	Q	13.9	7.76	0.812	2.74	1.000	988.	62.4	0.0948	12.306	6.771		-0.0404	8.61
29	S.F. KOKTULI	C	12.5	7.79	0.810	2.74	1.000	989.	62.5	0.0907	12.306	6.714		-0.0404	8.61
30	S.F. KOKTULI	C	9.2	7.82	0.809	2.74	1.000	990.	62.4	0.1013	12.306	6.582		-0.0404	8.61
31	S.F. KOKTULI	C	7.9	7.85	0.807	2.74	1.000	990.	62.4	0.0895	12.306	6.528		-0.0404	8.61
32	S.F. KOKTULI	C	5.1	7.90	0.805	2.74	1.000	991.	62.4	0.0927	12.306	6.415		-0.0404	8.61
33	S.F. KOKTULI	C	5.1	7.94	0.803	2.74	1.000	992.	62.4	0.0968	12.306	6.415		-0.0404	8.61
34	S.F. KOKTULI	Q	3.0	7.94	0.803	2.74	1.000	992.	62.4	0.0968	12.306	6.329		1.3286	8.61
35	S.F. KOKTULI	Q	0.1	7.94	0.803	2.74	1.000	992.	62.4	0.0968	12.306	10.134		0.5185	8.61
36	S.F. KOKTULI	E	0.0									10.190			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.98	0.875	10.01	1.000	979.	22.3	0.2982	12.214	1.405	7.51	0.4072	8.51
2	S.F. KOKTULI	C	53.3	9.03	0.873	10.01	1.000	979.	22.3	0.2947	12.214	1.956		0.4072	8.51
3	S.F. KOKTULI	C	51.2	9.06	0.871	10.01	1.000	980.	22.3	0.2563	12.214	2.808		0.4072	8.51
4	S.F. KOKTULI	Q	51.1	9.06	0.871	10.01	1.000	980.	22.3	0.2563	12.214	2.861		-0.2014	8.51
5	S.F. KOKTULI	C	49.4	9.09	0.870	10.01	1.000	981.	22.3	0.2449	12.214	2.523		-0.2014	8.51
6	S.F. KOKTULI	C	47.6	9.13	0.868	10.01	1.000	981.	22.3	0.2399	12.214	2.149		-0.2014	8.51
7	S.F. KOKTULI	C	45.7	9.16	0.866	10.01	1.000	982.	22.3	0.2513	12.214	1.776		-0.2014	8.51
8	S.F. KOKTULI	C	44.8	9.17	0.865	10.01	1.000	982.	22.3	0.2401	12.214	1.595		-0.2014	8.51
9	S.F. KOKTULI	C	43.9	9.19	0.865	10.01	1.000	982.	22.3	0.2585	12.214	1.421		-0.2014	8.51
10	S.F. KOKTULI	Q	43.6	9.19	0.865	10.01	1.000	982.	22.3	0.2585	12.214	1.359		0.0766	8.51
11	S.F. KOKTULI	C	41.1	9.20	0.864	10.01	1.000	983.	22.3	0.2397	12.214	1.555		0.0766	8.51
12	S.F. KOKTULI	C	40.0	9.20	0.864	10.01	1.000	983.	22.3	0.2597	12.214	1.640		0.0766	8.51
13	S.F. KOKTULI	C	38.4	9.23	0.863	10.01	1.000	983.	22.3	0.2396	12.214	1.763		0.0766	8.51
14	S.F. KOKTULI	Q	35.8	9.23	0.863	10.01	1.000	983.	22.3	0.2396	12.214	1.958		-0.0216	6.35
15	S.F. KOKTULI	B	34.3									1.925			
16	TRIBUTARY 119	H	36.1	9.23	0.863	10.01	1.000	983.	22.3	0.2237	12.214	2.712	6.31	-0.0062	6.35
17	TRIBUTARY 119	T	34.3									2.701			
18	S.F. KOKTULI	J	34.3	9.26	0.861	10.01	1.000	984.	22.3	0.1683	12.214	4.626		-0.1051	6.35
19	S.F. KOKTULI	C	34.1	9.29	0.859	10.01	1.000	984.	22.3	0.1235	12.214	4.612		-0.1051	6.35
20	S.F. KOKTULI	Q	34.0	9.29	0.859	10.01	1.000	984.	22.3	0.1235	12.214	4.599		0.3066	6.35
21	S.F. KOKTULI	Q	29.3	9.29	0.859	10.01	1.000	984.	22.3	0.1235	12.214	6.058		0.6560	8.95
22	S.F. KOKTULI	C	27.6	9.36	0.856	10.01	1.000	985.	22.3	0.1248	12.214	7.159		0.6560	8.95
23	S.F. KOKTULI	C	25.1	9.40	0.854	10.01	1.000	986.	22.3	0.1042	12.214	8.786		0.6560	8.95
24	S.F. KOKTULI	Q	24.9	9.40	0.854	10.01	1.000	986.	22.3	0.1042	12.214	8.920		-0.1128	8.95
25	S.F. KOKTULI	C	21.9	9.42	0.853	10.01	1.000	987.	22.3	0.1129	12.214	8.576		-0.1128	8.95
26	S.F. KOKTULI	C	20.1	9.47	0.850	10.01	1.000	987.	22.3	0.0996	12.214	8.377		-0.1128	8.95
27	S.F. KOKTULI	C	15.4	9.53	0.848	10.01	1.000	988.	22.3	0.0961	12.214	7.844		-0.1128	8.95
28	S.F. KOKTULI	Q	13.9	9.53	0.848	10.01	1.000	988.	22.3	0.0961	12.214	7.680		-0.1143	8.95
29	S.F. KOKTULI	C	12.5	9.56	0.846	10.01	1.000	989.	22.3	0.0923	12.214	7.520		-0.1143	8.95
30	S.F. KOKTULI	C	9.2	9.59	0.845	10.01	1.000	990.	22.3	0.1021	12.214	7.146		-0.1143	8.95
31	S.F. KOKTULI	C	7.9	9.62	0.843	10.01	1.000	990.	22.3	0.0909	12.214	6.992		-0.1143	8.95
32	S.F. KOKTULI	C	5.1	9.67	0.841	10.01	1.000	991.	22.3	0.0937	12.214	6.674		-0.1143	8.95
33	S.F. KOKTULI	C	5.1	9.71	0.839	10.01	1.000	992.	22.3	0.0974	12.214	6.674		-0.1143	8.95
34	S.F. KOKTULI	Q	3.0	9.71	0.839	10.01	1.000	992.	22.3	0.0974	12.214	6.430		1.3844	8.95
35	S.F. KOKTULI	Q	0.1	9.71	0.839	10.01	1.000	992.	22.3	0.0974	12.214	10.395		0.5278	8.95
36	S.F. KOKTULI	E	0.0									10.452			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	8.54	0.884	6.38	1.000	979.	43.6	0.3004	12.122	2.671	7.95	0.6787	8.95
2	S.F. KOKTULI	C	53.3	8.59	0.882	6.38	1.000	979.	43.6	0.2972	12.121	3.590		0.6787	8.95
3	S.F. KOKTULI	C	51.2	8.62	0.880	6.38	1.000	980.	43.6	0.2585	12.121	5.010		0.6787	8.95
4	S.F. KOKTULI	Q	51.1	8.62	0.880	6.38	1.000	980.	43.6	0.2585	12.121	5.098		-0.1259	8.95
5	S.F. KOKTULI	C	49.4	8.65	0.879	6.38	1.000	981.	43.6	0.2483	12.121	4.887		-0.1259	8.95
6	S.F. KOKTULI	C	47.6	8.69	0.877	6.38	1.000	981.	43.6	0.2441	12.121	4.653		-0.1259	8.95
7	S.F. KOKTULI	C	45.7	8.72	0.875	6.38	1.000	982.	43.6	0.2539	12.121	4.420		-0.1259	8.95
8	S.F. KOKTULI	C	44.8	8.73	0.875	6.38	1.000	982.	43.6	0.2442	12.121	4.306		-0.1259	8.95
9	S.F. KOKTULI	C	43.9	8.75	0.874	6.38	1.000	982.	43.6	0.2604	12.121	4.198		-0.1259	8.95
10	S.F. KOKTULI	Q	43.6	8.75	0.874	6.38	1.000	982.	43.6	0.2604	12.121	4.159		0.0739	8.95
11	S.F. KOKTULI	C	41.1	8.76	0.873	6.38	1.000	983.	43.6	0.2439	12.121	4.348		0.0739	8.95
12	S.F. KOKTULI	C	40.0	8.76	0.873	6.38	1.000	983.	43.6	0.2614	12.121	4.430		0.0739	8.95
13	S.F. KOKTULI	C	38.4	8.79	0.872	6.38	1.000	983.	43.6	0.2438	12.121	4.549		0.0739	8.95
14	S.F. KOKTULI	Q	35.8	8.79	0.872	6.38	1.000	983.	43.6	0.2438	12.121	4.737		-0.3398	6.46
15	S.F. KOKTULI	B	34.3									4.216			
16	TRIBUTARY 119	H	36.1	8.79	0.872	6.38	1.000	983.	43.6	0.2251	12.121	5.097	6.93	-0.0974	6.46
17	TRIBUTARY 119	T	34.3									4.923			
18	S.F. KOKTULI	J	34.3	8.82	0.870	6.38	1.000	984.	43.6	0.1694	12.121	9.139		-1.6342	6.46
19	S.F. KOKTULI	C	34.1	8.85	0.868	6.38	1.000	984.	43.6	0.1255	12.121	8.913		-1.6342	6.46
20	S.F. KOKTULI	Q	34.0	8.85	0.868	6.38	1.000	984.	43.6	0.1255	12.121	8.719		1.0811	6.46
21	S.F. KOKTULI	Q	29.3	8.85	0.868	6.38	1.000	984.	43.6	0.1255	12.121	13.863		0.8464	9.00
22	S.F. KOKTULI	C	27.6	8.92	0.865	6.38	1.000	985.	43.6	0.1266	12.121	15.283		0.8464	9.00
23	S.F. KOKTULI	C	25.1	8.96	0.863	6.38	1.000	986.	43.7	0.1058	12.121	17.383		0.8464	9.00
24	S.F. KOKTULI	Q	24.9	8.96	0.863	6.38	1.000	986.	43.7	0.1058	12.121	17.556		-0.1861	9.00
25	S.F. KOKTULI	C	21.9	8.98	0.862	6.38	1.000	987.	43.6	0.1137	12.121	16.989		-0.1861	9.00
26	S.F. KOKTULI	C	20.1	9.03	0.859	6.38	1.000	987.	43.6	0.1010	12.121	16.660		-0.1861	9.00
27	S.F. KOKTULI	C	15.4	9.09	0.857	6.38	1.000	988.	43.6	0.0974	12.121	15.781		-0.1861	9.00
28	S.F. KOKTULI	Q	13.9	9.09	0.857	6.38	1.000	988.	43.6	0.0974	12.121	15.511		-0.5193	9.00
29	S.F. KOKTULI	C	12.5	9.12	0.855	6.38	1.000	989.	43.6	0.0939	12.121	14.784		-0.5193	9.00
30	S.F. KOKTULI	C	9.2	9.15	0.854	6.38	1.000	990.	43.6	0.1029	12.121	13.083		-0.5193	9.00
31	S.F. KOKTULI	C	7.9	9.18	0.852	6.38	1.000	990.	43.6	0.0922	12.121	12.387		-0.5193	9.00
32	S.F. KOKTULI	C	5.1	9.23	0.850	6.38	1.000	991.	43.6	0.0947	12.121	10.939		-0.5193	9.00
33	S.F. KOKTULI	C	5.1	9.27	0.848	6.38	1.000	992.	43.6	0.0979	12.121	10.939		-0.5193	9.00
34	S.F. KOKTULI	Q	3.0	9.27	0.848	6.38	1.000	992.	43.6	0.0979	12.121	9.832		3.7332	9.00
35	S.F. KOKTULI	Q	0.1	9.27	0.848	6.38	1.000	992.	43.6	0.0979	12.121	20.524		1.0556	9.00
36	S.F. KOKTULI	E	0.0									20.638			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.53	0.884	6.13	1.000	979.	43.6	0.3027	12.029	2.787	7.29	0.7019	8.29
2	S.F. KOKTULI	C	53.3	7.58	0.882	6.13	1.000	979.	43.6	0.2999	12.029	3.737		0.7019	8.29
3	S.F. KOKTULI	C	51.2	7.61	0.880	6.13	1.000	980.	43.6	0.2607	12.029	5.206		0.7019	8.29
4	S.F. KOKTULI	Q	51.1	7.61	0.880	6.13	1.000	980.	43.6	0.2607	12.029	5.297		-0.0109	8.29
5	S.F. KOKTULI	C	49.4	7.64	0.879	6.13	1.000	981.	43.6	0.2518	12.029	5.279		-0.0109	8.29
6	S.F. KOKTULI	C	47.6	7.68	0.877	6.13	1.000	981.	43.6	0.2484	12.029	5.259		-0.0109	8.29
7	S.F. KOKTULI	C	45.7	7.71	0.875	6.13	1.000	982.	43.6	0.2567	12.029	5.239		-0.0109	8.29
8	S.F. KOKTULI	C	44.8	7.72	0.875	6.13	1.000	982.	43.6	0.2485	12.029	5.229		-0.0109	8.29
9	S.F. KOKTULI	C	43.9	7.74	0.874	6.13	1.000	982.	43.6	0.2624	12.029	5.219		-0.0109	8.29
10	S.F. KOKTULI	Q	43.6	7.74	0.874	6.13	1.000	982.	43.6	0.2624	12.029	5.216		0.0574	8.29
11	S.F. KOKTULI	C	41.1	7.75	0.873	6.13	1.000	983.	43.6	0.2483	12.029	5.363		0.0574	8.29
12	S.F. KOKTULI	C	40.0	7.75	0.873	6.13	1.000	983.	43.6	0.2632	12.029	5.427		0.0574	8.29
13	S.F. KOKTULI	C	38.4	7.78	0.872	6.13	1.000	983.	43.6	0.2483	12.029	5.519		0.0574	8.29
14	S.F. KOKTULI	Q	35.8	7.78	0.872	6.13	1.000	983.	43.6	0.2483	12.029	5.665		-0.4004	6.41
15	S.F. KOKTULI	B	34.3									5.051			
16	TRIBUTARY 119	H	36.1	7.78	0.872	6.13	1.000	983.	43.6	0.2265	12.029	4.991	6.51	-0.1142	6.41
17	TRIBUTARY 119	T	34.3									4.787			
18	S.F. KOKTULI	J	34.3	7.81	0.870	6.13	1.000	984.	43.6	0.1704	12.029	9.837		-1.9261	6.41
19	S.F. KOKTULI	C	34.1	7.84	0.868	6.13	1.000	984.	43.6	0.1276	12.029	9.571		-1.9261	6.41
20	S.F. KOKTULI	Q	34.0	7.84	0.868	6.13	1.000	984.	43.6	0.1276	12.029	9.342		1.1160	6.41
21	S.F. KOKTULI	Q	29.3	7.84	0.868	6.13	1.000	984.	43.6	0.1276	12.029	14.652		0.8474	8.67
22	S.F. KOKTULI	C	27.6	7.91	0.865	6.13	1.000	985.	43.6	0.1284	12.029	16.074		0.8474	8.67
23	S.F. KOKTULI	C	25.1	7.95	0.863	6.13	1.000	986.	43.6	0.1075	12.029	18.176		0.8474	8.67
24	S.F. KOKTULI	Q	24.9	7.95	0.863	6.13	1.000	986.	43.6	0.1075	12.029	18.349		-0.1921	8.67
25	S.F. KOKTULI	C	21.9	7.97	0.862	6.13	1.000	987.	43.6	0.1145	12.029	17.764		-0.1921	8.67
26	S.F. KOKTULI	C	20.1	8.02	0.860	6.13	1.000	987.	43.6	0.1025	12.029	17.424		-0.1921	8.67
27	S.F. KOKTULI	C	15.4	8.08	0.857	6.13	1.000	988.	43.6	0.0988	12.029	16.517		-0.1921	8.67
28	S.F. KOKTULI	Q	13.9	8.08	0.857	6.13	1.000	988.	43.6	0.0988	12.029	16.238		-0.5890	8.67
29	S.F. KOKTULI	C	12.5	8.11	0.855	6.13	1.000	989.	43.6	0.0956	12.029	15.413		-0.5890	8.67
30	S.F. KOKTULI	C	9.2	8.14	0.854	6.13	1.000	990.	43.6	0.1037	12.029	13.484		-0.5890	8.67
31	S.F. KOKTULI	C	7.9	8.17	0.852	6.13	1.000	990.	43.6	0.0936	12.029	12.695		-0.5890	8.67
32	S.F. KOKTULI	C	5.1	8.22	0.850	6.13	1.000	991.	43.6	0.0958	12.029	11.053		-0.5890	8.67
33	S.F. KOKTULI	C	5.1	8.26	0.848	6.13	1.000	992.	43.5	0.0985	12.029	11.053		-0.5890	8.67
34	S.F. KOKTULI	Q	3.0	8.26	0.848	6.13	1.000	992.	43.5	0.0985	12.029	9.797		3.7053	8.67
35	S.F. KOKTULI	Q	0.1	8.26	0.848	6.13	1.000	992.	43.5	0.0985	12.029	20.409		1.0556	8.67
36	S.F. KOKTULI	E	0.0									20.523			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	7.76	0.847	4.89	1.000	979.	103.0	0.3050	11.936	2.575	7.35	0.6597	8.35
2	S.F. KOKTULI	C	53.3	7.81	0.845	4.89	1.000	979.	103.0	0.3026	11.936	3.468		0.6597	8.35
3	S.F. KOKTULI	C	51.2	7.84	0.843	4.89	1.000	980.	103.1	0.2629	11.936	4.849		0.6597	8.35
4	S.F. KOKTULI	Q	51.1	7.84	0.843	4.89	1.000	980.	103.1	0.2629	11.936	4.934		0.0845	8.35
5	S.F. KOKTULI	C	49.4	7.87	0.842	4.89	1.000	981.	103.1	0.2554	11.936	5.076		0.0845	8.35
6	S.F. KOKTULI	C	47.6	7.91	0.840	4.89	1.000	981.	103.1	0.2529	11.936	5.232		0.0845	8.35
7	S.F. KOKTULI	C	45.7	7.94	0.839	4.89	1.000	982.	103.1	0.2595	11.936	5.389		0.0845	8.35
8	S.F. KOKTULI	C	44.8	7.95	0.838	4.89	1.000	982.	103.1	0.2529	11.936	5.465		0.0845	8.35
9	S.F. KOKTULI	C	43.9	7.97	0.837	4.89	1.000	982.	103.1	0.2644	11.936	5.538		0.0845	8.35
10	S.F. KOKTULI	Q	43.6	7.97	0.837	4.89	1.000	982.	103.1	0.2644	11.936	5.564		0.0508	8.35
11	S.F. KOKTULI	C	41.1	7.98	0.837	4.89	1.000	983.	103.1	0.2528	11.936	5.694		0.0508	8.35
12	S.F. KOKTULI	C	40.0	7.98	0.836	4.89	1.000	983.	103.1	0.2651	11.936	5.750		0.0508	8.35
13	S.F. KOKTULI	C	38.4	8.01	0.835	4.89	1.000	983.	103.1	0.2529	11.936	5.832		0.0508	8.35
14	S.F. KOKTULI	Q	35.8	8.01	0.835	4.89	1.000	983.	103.1	0.2529	11.936	5.962		-0.2950	6.37
15	S.F. KOKTULI	B	34.3									5.509			
16	TRIBUTARY 119	H	36.1	8.01	0.835	4.89	1.000	983.	103.1	0.2279	11.936	3.246	6.29	-0.0845	6.37
17	TRIBUTARY 119	T	34.3									3.095			
18	S.F. KOKTULI	J	34.3	8.04	0.834	4.89	1.000	984.	103.1	0.1715	11.936	8.605		-1.4202	6.37
19	S.F. KOKTULI	C	34.1	8.07	0.832	4.89	1.000	984.	103.1	0.1298	11.936	8.409		-1.4202	6.37
20	S.F. KOKTULI	Q	34.0	8.07	0.832	4.89	1.000	984.	103.1	0.1298	11.936	8.240		1.0229	6.37
21	S.F. KOKTULI	Q	29.3	8.07	0.832	4.89	1.000	984.	103.1	0.1298	11.936	13.107		0.8705	8.40
22	S.F. KOKTULI	C	27.6	8.14	0.829	4.89	1.000	985.	103.1	0.1304	11.936	14.568		0.8705	8.40
23	S.F. KOKTULI	C	25.1	8.18	0.827	4.89	1.000	986.	103.1	0.1092	11.936	16.727		0.8705	8.40
24	S.F. KOKTULI	Q	24.9	8.18	0.827	4.89	1.000	986.	103.1	0.1092	11.936	16.905		-0.1812	8.40
25	S.F. KOKTULI	C	21.9	8.20	0.826	4.89	1.000	987.	103.1	0.1153	11.936	16.353		-0.1812	8.40
26	S.F. KOKTULI	C	20.1	8.25	0.823	4.89	1.000	987.	103.1	0.1039	11.936	16.033		-0.1812	8.40
27	S.F. KOKTULI	C	15.4	8.31	0.821	4.89	1.000	988.	103.1	0.1002	11.936	15.177		-0.1812	8.40
28	S.F. KOKTULI	Q	13.9	8.31	0.821	4.89	1.000	988.	103.1	0.1002	11.936	14.914		-0.4727	8.40
29	S.F. KOKTULI	C	12.5	8.34	0.819	4.89	1.000	989.	103.1	0.0973	11.936	14.252		-0.4727	8.40
30	S.F. KOKTULI	C	9.2	8.37	0.818	4.89	1.000	990.	103.1	0.1045	11.936	12.704		-0.4727	8.40
31	S.F. KOKTULI	C	7.9	8.40	0.816	4.89	1.000	990.	103.0	0.0951	11.936	12.070		-0.4727	8.40
32	S.F. KOKTULI	C	5.1	8.45	0.814	4.89	1.000	991.	103.0	0.0969	11.936	10.753		-0.4727	8.40
33	S.F. KOKTULI	C	5.1	8.49	0.812	4.89	1.000	992.	103.0	0.0992	11.936	10.753		-0.4727	8.40
34	S.F. KOKTULI	Q	3.0	8.49	0.812	4.89	1.000	992.	103.0	0.0992	11.936	9.745		3.6631	8.40
35	S.F. KOKTULI	Q	0.1	8.49	0.812	4.89	1.000	992.	103.0	0.0992	11.936	20.236		1.0463	8.40
36	S.F. KOKTULI	E	0.0									20.349			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.53	0.838	5.59	1.000	979.	41.7	0.3073	11.844	2.210	6.53	0.5845	7.53
2	S.F. KOKTULI	C	53.3	6.58	0.836	5.59	1.000	979.	41.7	0.3054	11.844	3.001		0.5845	7.53
3	S.F. KOKTULI	C	51.2	6.61	0.834	5.59	1.000	980.	41.7	0.2652	11.844	4.225		0.5845	7.53
4	S.F. KOKTULI	Q	51.1	6.61	0.834	5.59	1.000	980.	41.7	0.2652	11.844	4.300		-0.0040	7.53
5	S.F. KOKTULI	C	49.4	6.64	0.833	5.59	1.000	981.	41.7	0.2591	11.844	4.293		-0.0040	7.53
6	S.F. KOKTULI	C	47.6	6.68	0.831	5.59	1.000	981.	41.7	0.2575	11.844	4.286		-0.0040	7.53
7	S.F. KOKTULI	C	45.7	6.71	0.829	5.59	1.000	982.	41.7	0.2624	11.844	4.279		-0.0040	7.53
8	S.F. KOKTULI	C	44.8	6.72	0.829	5.59	1.000	982.	41.7	0.2575	11.844	4.275		-0.0040	7.53
9	S.F. KOKTULI	C	43.9	6.74	0.828	5.59	1.000	982.	41.7	0.2664	11.844	4.272		-0.0040	7.53
10	S.F. KOKTULI	Q	43.6	6.74	0.828	5.59	1.000	982.	41.7	0.2664	11.844	4.270		0.0724	7.53
11	S.F. KOKTULI	C	41.1	6.75	0.827	5.59	1.000	983.	41.7	0.2574	11.844	4.456		0.0724	7.53
12	S.F. KOKTULI	C	40.0	6.75	0.827	5.59	1.000	983.	41.7	0.2670	11.844	4.536		0.0724	7.53
13	S.F. KOKTULI	C	38.4	6.78	0.826	5.59	1.000	983.	41.7	0.2576	11.844	4.652		0.0724	7.53
14	S.F. KOKTULI	Q	35.8	6.78	0.826	5.59	1.000	983.	41.7	0.2576	11.844	4.837		-0.1722	6.21
15	S.F. KOKTULI	B	34.3									4.573			
16	TRIBUTARY 119	H	36.1	6.78	0.826	5.59	1.000	983.	41.7	0.2294	11.844	2.533	5.40	-0.0493	6.21
17	TRIBUTARY 119	T	34.3									2.445			
18	S.F. KOKTULI	J	34.3	6.81	0.825	5.59	1.000	984.	41.7	0.1726	11.844	7.018		-0.8249	6.21
19	S.F. KOKTULI	C	34.1	6.84	0.823	5.59	1.000	984.	41.7	0.1320	11.844	6.904		-0.8249	6.21
20	S.F. KOKTULI	Q	34.0	6.84	0.823	5.59	1.000	984.	41.7	0.1320	11.844	6.806		0.7945	6.21
21	S.F. KOKTULI	Q	29.3	6.84	0.823	5.59	1.000	984.	41.7	0.1320	11.844	10.586		0.8771	8.12
22	S.F. KOKTULI	C	27.6	6.91	0.820	5.59	1.000	985.	41.7	0.1324	11.844	12.058		0.8771	8.12
23	S.F. KOKTULI	C	25.1	6.95	0.818	5.59	1.000	986.	41.7	0.1109	11.844	14.234		0.8771	8.12
24	S.F. KOKTULI	Q	24.9	6.95	0.818	5.59	1.000	986.	41.7	0.1109	11.844	14.413		-0.1614	8.12
25	S.F. KOKTULI	C	21.9	6.97	0.817	5.59	1.000	987.	41.7	0.1161	11.844	13.921		-0.1614	8.12
26	S.F. KOKTULI	C	20.1	7.02	0.814	5.59	1.000	987.	41.7	0.1055	11.844	13.636		-0.1614	8.12
27	S.F. KOKTULI	C	15.4	7.08	0.812	5.59	1.000	988.	41.7	0.1017	11.844	12.873		-0.1614	8.12
28	S.F. KOKTULI	Q	13.9	7.08	0.812	5.59	1.000	988.	41.7	0.1017	11.844	12.639		-0.3720	8.12
29	S.F. KOKTULI	C	12.5	7.11	0.810	5.59	1.000	989.	41.7	0.0992	11.844	12.118		-0.3720	8.12
30	S.F. KOKTULI	C	9.2	7.14	0.809	5.59	1.000	990.	41.7	0.1053	11.844	10.900		-0.3720	8.12
31	S.F. KOKTULI	C	7.9	7.17	0.807	5.59	1.000	990.	41.7	0.0966	11.844	10.401		-0.3720	8.12
32	S.F. KOKTULI	C	5.1	7.22	0.805	5.59	1.000	991.	41.7	0.0980	11.844	9.364		-0.3720	8.12
33	S.F. KOKTULI	C	5.1	7.26	0.803	5.59	1.000	992.	41.7	0.0998	11.844	9.364		-0.3720	8.12
34	S.F. KOKTULI	Q	3.0	7.26	0.803	5.59	1.000	992.	41.7	0.0998	11.844	8.571		2.7598	8.12
35	S.F. KOKTULI	Q	0.1	7.26	0.803	5.59	1.000	992.	41.7	0.0998	11.844	16.475		0.8426	8.12
36	S.F. KOKTULI	E	0.0									16.566			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.68	0.875	3.86	1.000	979.	41.6	0.3097	11.751	2.389	6.56	0.6214	7.56
2	S.F. KOKTULI	C	53.3	6.73	0.873	3.86	1.000	979.	41.7	0.3082	11.751	3.230		0.6214	7.56
3	S.F. KOKTULI	C	51.2	6.76	0.871	3.86	1.000	980.	41.7	0.2676	11.751	4.531		0.6214	7.56
4	S.F. KOKTULI	Q	51.1	6.76	0.871	3.86	1.000	980.	41.7	0.2676	11.751	4.611		-0.0700	7.56
5	S.F. KOKTULI	C	49.4	6.79	0.870	3.86	1.000	981.	41.7	0.2629	11.751	4.493		-0.0700	7.56
6	S.F. KOKTULI	C	47.6	6.83	0.868	3.86	1.000	981.	41.7	0.2622	11.751	4.363		-0.0700	7.56
7	S.F. KOKTULI	C	45.7	6.86	0.866	3.86	1.000	982.	41.7	0.2654	11.751	4.234		-0.0700	7.56
8	S.F. KOKTULI	C	44.8	6.87	0.865	3.86	1.000	982.	41.7	0.2622	11.751	4.171		-0.0700	7.56
9	S.F. KOKTULI	C	43.9	6.89	0.865	3.86	1.000	982.	41.7	0.2685	11.752	4.110		-0.0700	7.56
10	S.F. KOKTULI	Q	43.6	6.89	0.865	3.86	1.000	982.	41.7	0.2685	11.752	4.089		0.0748	7.56
11	S.F. KOKTULI	C	41.1	6.90	0.864	3.86	1.000	983.	41.7	0.2622	11.752	4.280		0.0748	7.56
12	S.F. KOKTULI	C	40.0	6.90	0.864	3.86	1.000	983.	41.7	0.2689	11.752	4.363		0.0748	7.56
13	S.F. KOKTULI	C	38.4	6.93	0.863	3.86	1.000	983.	41.7	0.2624	11.752	4.483		0.0748	7.56
14	S.F. KOKTULI	Q	35.8	6.93	0.863	3.86	1.000	983.	41.7	0.2624	11.752	4.674		-0.1948	6.03
15	S.F. KOKTULI	B	34.3									4.375			
16	TRIBUTARY 119	H	36.1	6.93	0.863	3.86	1.000	983.	41.7	0.2308	11.751	3.056	5.80	-0.0560	6.03
17	TRIBUTARY 119	T	34.3									2.956			
18	S.F. KOKTULI	J	34.3	6.96	0.861	3.86	1.000	984.	41.7	0.1737	11.752	7.331		-0.9377	6.03
19	S.F. KOKTULI	C	34.1	6.99	0.859	3.86	1.000	984.	41.7	0.1344	11.752	7.202		-0.9377	6.03
20	S.F. KOKTULI	Q	34.0	6.99	0.859	3.86	1.000	984.	41.7	0.1344	11.752	7.090		0.8338	6.03
21	S.F. KOKTULI	Q	29.3	6.99	0.859	3.86	1.000	984.	41.7	0.1344	11.752	11.057		1.0484	7.84
22	S.F. KOKTULI	C	27.6	7.06	0.856	3.86	1.000	985.	41.7	0.1344	11.752	12.816		1.0484	7.84
23	S.F. KOKTULI	C	25.1	7.10	0.854	3.86	1.000	986.	41.7	0.1127	11.752	15.417		1.0484	7.84
24	S.F. KOKTULI	Q	24.9	7.10	0.854	3.86	1.000	986.	41.7	0.1127	11.752	15.631		-0.1712	7.84
25	S.F. KOKTULI	C	21.9	7.12	0.853	3.86	1.000	987.	41.7	0.1169	11.752	15.109		-0.1712	7.84
26	S.F. KOKTULI	C	20.1	7.17	0.850	3.86	1.000	987.	41.7	0.1071	11.752	14.807		-0.1712	7.84
27	S.F. KOKTULI	C	15.4	7.23	0.848	3.86	1.000	988.	41.7	0.1032	11.752	13.997		-0.1712	7.84
28	S.F. KOKTULI	Q	13.9	7.23	0.848	3.86	1.000	988.	41.7	0.1032	11.752	13.749		-0.4216	7.84
29	S.F. KOKTULI	C	12.5	7.26	0.846	3.86	1.000	989.	41.7	0.1010	11.752	13.159		-0.4216	7.84
30	S.F. KOKTULI	C	9.2	7.29	0.845	3.86	1.000	990.	41.7	0.1062	11.752	11.777		-0.4216	7.84
31	S.F. KOKTULI	C	7.9	7.32	0.843	3.86	1.000	990.	41.7	0.0982	11.752	11.212		-0.4216	7.84
32	S.F. KOKTULI	C	5.1	7.37	0.841	3.86	1.000	991.	41.6	0.0992	11.751	10.037		-0.4216	7.84
33	S.F. KOKTULI	C	5.1	7.41	0.839	3.86	1.000	992.	41.6	0.1004	11.751	10.037		-0.4216	7.84
34	S.F. KOKTULI	Q	3.0	7.41	0.839	3.86	1.000	992.	41.6	0.1004	11.751	9.138		3.1833	7.84
35	S.F. KOKTULI	Q	0.1	7.41	0.839	3.86	1.000	992.	41.6	0.1004	11.751	18.255		0.9445	7.84
36	S.F. KOKTULI	E	0.0									18.357			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	6.13	0.875	4.27	1.000	979.	38.9	0.3122	11.659	2.405	6.43	0.6250	7.43
2	S.F. KOKTULI	C	53.3	6.18	0.873	4.27	1.000	979.	38.9	0.3111	11.659	3.251		0.6250	7.43
3	S.F. KOKTULI	C	51.2	6.21	0.871	4.27	1.000	980.	39.0	0.2700	11.659	4.559		0.6250	7.43
4	S.F. KOKTULI	Q	51.1	6.21	0.871	4.27	1.000	980.	39.0	0.2700	11.659	4.640		-0.0667	7.43
5	S.F. KOKTULI	C	49.4	6.24	0.870	4.27	1.000	981.	39.0	0.2668	11.659	4.528		-0.0667	7.43
6	S.F. KOKTULI	C	47.6	6.28	0.868	4.27	1.000	981.	39.0	0.2672	11.659	4.404		-0.0667	7.43
7	S.F. KOKTULI	C	45.7	6.31	0.866	4.27	1.000	982.	39.0	0.2685	11.659	4.280		-0.0667	7.43
8	S.F. KOKTULI	C	44.8	6.32	0.865	4.27	1.000	982.	39.0	0.2670	11.659	4.220		-0.0667	7.43
9	S.F. KOKTULI	C	43.9	6.34	0.865	4.27	1.000	982.	39.0	0.2706	11.659	4.163		-0.0667	7.43
10	S.F. KOKTULI	Q	43.6	6.34	0.865	4.27	1.000	982.	39.0	0.2706	11.659	4.142		0.0741	7.43
11	S.F. KOKTULI	C	41.1	6.35	0.864	4.27	1.000	983.	39.0	0.2672	11.659	4.332		0.0741	7.43
12	S.F. KOKTULI	C	40.0	6.35	0.864	4.27	1.000	983.	39.0	0.2708	11.659	4.414		0.0741	7.43
13	S.F. KOKTULI	C	38.4	6.38	0.863	4.27	1.000	983.	39.0	0.2673	11.659	4.533		0.0741	7.43
14	S.F. KOKTULI	Q	35.8	6.38	0.863	4.27	1.000	983.	39.0	0.2673	11.659	4.722		-0.2048	5.97
15	S.F. KOKTULI	B	34.3									4.408			
16	TRIBUTARY 119	H	36.1	6.38	0.863	4.27	1.000	983.	39.0	0.2323	11.659	3.155	5.75	-0.0588	5.97
17	TRIBUTARY 119	T	34.3									3.050			
18	S.F. KOKTULI	J	34.3	6.41	0.861	4.27	1.000	984.	39.0	0.1748	11.659	7.459		-0.9844	5.97
19	S.F. KOKTULI	C	34.1	6.44	0.859	4.27	1.000	984.	39.0	0.1369	11.659	7.323		-0.9844	5.97
20	S.F. KOKTULI	Q	34.0	6.44	0.859	4.27	1.000	984.	39.0	0.1369	11.659	7.206		0.8333	5.97
21	S.F. KOKTULI	Q	29.3	6.44	0.859	4.27	1.000	984.	39.0	0.1369	11.659	11.171		1.0481	7.64
22	S.F. KOKTULI	C	27.6	6.51	0.856	4.27	1.000	985.	39.0	0.1366	11.659	12.930		1.0481	7.64
23	S.F. KOKTULI	C	25.1	6.55	0.854	4.27	1.000	986.	39.0	0.1146	11.659	15.530		1.0481	7.64
24	S.F. KOKTULI	Q	24.9	6.55	0.854	4.27	1.000	986.	39.0	0.1146	11.659	15.744		-0.1722	7.64
25	S.F. KOKTULI	C	21.9	6.57	0.853	4.27	1.000	987.	39.0	0.1178	11.659	15.219		-0.1722	7.64
26	S.F. KOKTULI	C	20.1	6.62	0.850	4.27	1.000	987.	39.0	0.1087	11.659	14.915		-0.1722	7.64
27	S.F. KOKTULI	C	15.4	6.68	0.848	4.27	1.000	988.	39.0	0.1048	11.659	14.102		-0.1722	7.64
28	S.F. KOKTULI	Q	13.9	6.68	0.848	4.27	1.000	988.	39.0	0.1048	11.659	13.852		-0.4386	7.64
29	S.F. KOKTULI	C	12.5	6.71	0.846	4.27	1.000	989.	39.0	0.1029	11.659	13.238		-0.4386	7.64
30	S.F. KOKTULI	C	9.2	6.74	0.845	4.27	1.000	990.	39.0	0.1070	11.659	11.801		-0.4386	7.64
31	S.F. KOKTULI	C	7.9	6.77	0.843	4.27	1.000	990.	39.0	0.0998	11.659	11.214		-0.4386	7.64
32	S.F. KOKTULI	C	5.1	6.82	0.841	4.27	1.000	991.	38.9	0.1004	11.659	9.991		-0.4386	7.64
33	S.F. KOKTULI	C	5.1	6.86	0.839	4.27	1.000	992.	38.9	0.1011	11.659	9.991		-0.4386	7.64
34	S.F. KOKTULI	Q	3.0	6.86	0.839	4.27	1.000	992.	38.9	0.1011	11.659	9.056		3.1198	7.64
35	S.F. KOKTULI	Q	0.1	6.86	0.839	4.27	1.000	992.	38.9	0.1011	11.659	17.991		0.9259	7.64
36	S.F. KOKTULI	E	0.0									18.091			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.72	0.884	4.82	1.000	979.	60.1	0.3147	11.566	2.496	6.12	0.6437	7.12
2	S.F. KOKTULI	C	53.3	5.77	0.882	4.82	1.000	979.	60.1	0.3141	11.566	3.368		0.6437	7.12
3	S.F. KOKTULI	C	51.2	5.80	0.880	4.82	1.000	980.	60.1	0.2725	11.566	4.715		0.6437	7.12
4	S.F. KOKTULI	Q	51.1	5.80	0.880	4.82	1.000	980.	60.1	0.2725	11.566	4.798		-0.0628	7.12
5	S.F. KOKTULI	C	49.4	5.83	0.879	4.82	1.000	981.	60.1	0.2709	11.567	4.692		-0.0628	7.12
6	S.F. KOKTULI	C	47.6	5.87	0.877	4.82	1.000	981.	60.1	0.2722	11.567	4.576		-0.0628	7.12
7	S.F. KOKTULI	C	45.7	5.90	0.875	4.82	1.000	982.	60.1	0.2717	11.567	4.460		-0.0628	7.12
8	S.F. KOKTULI	C	44.8	5.91	0.875	4.82	1.000	982.	60.1	0.2720	11.567	4.403		-0.0628	7.12
9	S.F. KOKTULI	C	43.9	5.93	0.874	4.82	1.000	982.	60.2	0.2728	11.567	4.349		-0.0628	7.12
10	S.F. KOKTULI	Q	43.6	5.93	0.874	4.82	1.000	982.	60.2	0.2728	11.567	4.329		0.0716	7.12
11	S.F. KOKTULI	C	41.1	5.94	0.873	4.82	1.000	983.	60.2	0.2722	11.567	4.513		0.0716	7.12
12	S.F. KOKTULI	C	40.0	5.94	0.873	4.82	1.000	983.	60.2	0.2729	11.567	4.592		0.0716	7.12
13	S.F. KOKTULI	C	38.4	5.97	0.872	4.82	1.000	983.	60.1	0.2724	11.567	4.707		0.0716	7.12
14	S.F. KOKTULI	Q	35.8	5.97	0.872	4.82	1.000	983.	60.1	0.2724	11.567	4.890		-0.2124	5.98
15	S.F. KOKTULI	B	34.3									4.564			
16	TRIBUTARY 119	H	36.1	5.97	0.872	4.82	1.000	983.	60.1	0.2339	11.567	3.103	5.64	-0.0610	5.98
17	TRIBUTARY 119	T	34.3									2.994			
18	S.F. KOKTULI	J	34.3	6.00	0.871	4.82	1.000	984.	60.1	0.1760	11.567	7.559		-1.0195	5.98
19	S.F. KOKTULI	C	34.1	6.03	0.869	4.82	1.000	984.	60.2	0.1394	11.567	7.418		-1.0195	5.98
20	S.F. KOKTULI	Q	34.0	6.03	0.869	4.82	1.000	984.	60.2	0.1394	11.567	7.297		0.9033	5.98
21	S.F. KOKTULI	Q	29.3	6.03	0.869	4.82	1.000	984.	60.2	0.1394	11.567	11.595		1.0937	7.63
22	S.F. KOKTULI	C	27.6	6.10	0.865	4.82	1.000	985.	60.2	0.1388	11.567	13.430		1.0937	7.63
23	S.F. KOKTULI	C	25.1	6.14	0.863	4.82	1.000	986.	60.2	0.1165	11.567	16.144		1.0937	7.63
24	S.F. KOKTULI	Q	24.9	6.14	0.863	4.82	1.000	986.	60.2	0.1165	11.567	16.367		-0.1770	7.63
25	S.F. KOKTULI	C	21.9	6.16	0.862	4.82	1.000	987.	60.2	0.1186	11.567	15.828		-0.1770	7.63
26	S.F. KOKTULI	C	20.1	6.21	0.860	4.82	1.000	987.	60.2	0.1104	11.567	15.515		-0.1770	7.63
27	S.F. KOKTULI	C	15.4	6.27	0.857	4.82	1.000	988.	60.1	0.1064	11.567	14.679		-0.1770	7.63
28	S.F. KOKTULI	Q	13.9	6.27	0.857	4.82	1.000	988.	60.1	0.1064	11.567	14.422		-0.4534	7.63
29	S.F. KOKTULI	C	12.5	6.30	0.855	4.82	1.000	989.	60.1	0.1049	11.567	13.787		-0.4534	7.63
30	S.F. KOKTULI	C	9.2	6.33	0.854	4.82	1.000	990.	60.1	0.1079	11.567	12.302		-0.4534	7.63
31	S.F. KOKTULI	C	7.9	6.36	0.852	4.82	1.000	990.	60.1	0.1015	11.567	11.695		-0.4534	7.63
32	S.F. KOKTULI	C	5.1	6.41	0.850	4.82	1.000	991.	60.1	0.1016	11.567	10.431		-0.4534	7.63
33	S.F. KOKTULI	C	5.1	6.45	0.848	4.82	1.000	992.	60.1	0.1017	11.566	10.431		-0.4534	7.63
34	S.F. KOKTULI	Q	3.0	6.45	0.848	4.82	1.000	992.	60.1	0.1017	11.566	9.464		3.4372	7.63
35	S.F. KOKTULI	Q	0.1	6.45	0.848	4.82	1.000	992.	60.1	0.1017	11.566	19.308		1.0000	7.63
36	S.F. KOKTULI	E	0.0									19.416			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.47	0.875	2.88	1.000	979.	60.0	0.3173	11.474	2.235	6.11	0.5895	7.11
2	S.F. KOKTULI	C	53.3	5.52	0.873	2.88	1.000	979.	60.0	0.3171	11.474	3.033		0.5895	7.11
3	S.F. KOKTULI	C	51.2	5.55	0.871	2.88	1.000	980.	60.1	0.2751	11.474	4.267		0.5895	7.11
4	S.F. KOKTULI	Q	51.1	5.55	0.871	2.88	1.000	980.	60.1	0.2751	11.474	4.343		-0.0668	7.11
5	S.F. KOKTULI	C	49.4	5.58	0.870	2.88	1.000	981.	60.1	0.2751	11.474	4.231		-0.0668	7.11
6	S.F. KOKTULI	C	47.6	5.62	0.868	2.88	1.000	981.	60.1	0.2774	11.474	4.107		-0.0668	7.11
7	S.F. KOKTULI	C	45.7	5.65	0.866	2.88	1.000	982.	60.1	0.2749	11.474	3.983		-0.0668	7.11
8	S.F. KOKTULI	C	44.8	5.66	0.865	2.88	1.000	982.	60.1	0.2772	11.474	3.923		-0.0668	7.11
9	S.F. KOKTULI	C	43.9	5.68	0.865	2.88	1.000	982.	60.1	0.2750	11.474	3.865		-0.0668	7.11
10	S.F. KOKTULI	Q	43.6	5.68	0.865	2.88	1.000	982.	60.1	0.2750	11.474	3.845		0.0776	7.11
11	S.F. KOKTULI	C	41.1	5.69	0.864	2.88	1.000	983.	60.1	0.2774	11.474	4.043		0.0776	7.11
12	S.F. KOKTULI	C	40.0	5.69	0.864	2.88	1.000	983.	60.1	0.2749	11.474	4.129		0.0776	7.11
13	S.F. KOKTULI	C	38.4	5.72	0.863	2.88	1.000	983.	60.1	0.2776	11.474	4.254		0.0776	7.11
14	S.F. KOKTULI	Q	35.8	5.72	0.863	2.88	1.000	983.	60.1	0.2776	11.474	4.452		-0.1377	5.96
15	S.F. KOKTULI	B	34.3									4.241			
16	TRIBUTARY 119	H	36.1	5.72	0.863	2.88	1.000	983.	60.1	0.2355	11.474	2.361	5.42	-0.0392	5.96
17	TRIBUTARY 119	T	34.3									2.291			
18	S.F. KOKTULI	J	34.3	5.75	0.861	2.88	1.000	984.	60.1	0.1772	11.474	6.532		-0.6654	5.96
19	S.F. KOKTULI	C	34.1	5.78	0.859	2.88	1.000	984.	60.1	0.1421	11.474	6.440		-0.6654	5.96
20	S.F. KOKTULI	Q	34.0	5.78	0.859	2.88	1.000	984.	60.1	0.1421	11.474	6.361		0.7804	5.96
21	S.F. KOKTULI	Q	29.3	5.78	0.859	2.88	1.000	984.	60.1	0.1421	11.474	10.074		1.0335	7.54
22	S.F. KOKTULI	C	27.6	5.85	0.856	2.88	1.000	985.	60.1	0.1411	11.475	11.808		1.0335	7.54
23	S.F. KOKTULI	C	25.1	5.89	0.854	2.88	1.000	986.	60.1	0.1185	11.475	14.372		1.0335	7.54
24	S.F. KOKTULI	Q	24.9	5.89	0.854	2.88	1.000	986.	60.1	0.1185	11.475	14.583		-0.1629	7.54
25	S.F. KOKTULI	C	21.9	5.91	0.853	2.88	1.000	987.	60.1	0.1195	11.475	14.087		-0.1629	7.54
26	S.F. KOKTULI	C	20.1	5.96	0.850	2.88	1.000	987.	60.1	0.1122	11.474	13.799		-0.1629	7.54
27	S.F. KOKTULI	C	15.4	6.02	0.848	2.88	1.000	988.	60.1	0.1081	11.474	13.029		-0.1629	7.54
28	S.F. KOKTULI	Q	13.9	6.02	0.848	2.88	1.000	988.	60.1	0.1081	11.474	12.793		-0.3574	7.54
29	S.F. KOKTULI	C	12.5	6.05	0.846	2.88	1.000	989.	60.1	0.1069	11.475	12.293		-0.3574	7.54
30	S.F. KOKTULI	C	9.2	6.08	0.845	2.88	1.000	990.	60.1	0.1089	11.474	11.122		-0.3574	7.54
31	S.F. KOKTULI	C	7.9	6.11	0.843	2.88	1.000	990.	60.1	0.1032	11.474	10.643		-0.3574	7.54
32	S.F. KOKTULI	C	5.1	6.16	0.841	2.88	1.000	991.	60.0	0.1029	11.474	9.646		-0.3574	7.54
33	S.F. KOKTULI	C	5.1	6.20	0.839	2.88	1.000	992.	60.0	0.1024	11.474	9.646		-0.3574	7.54
34	S.F. KOKTULI	Q	3.0	6.20	0.839	2.88	1.000	992.	60.0	0.1024	11.474	8.884		2.9902	7.54
35	S.F. KOKTULI	Q	0.1	6.20	0.839	2.88	1.000	992.	60.0	0.1024	11.474	17.448		0.8981	7.54
36	S.F. KOKTULI	E	0.0									17.545			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.12	0.857	6.01	1.000	979.	53.8	0.3199	11.381	2.019	5.95	0.5439	6.95
2	S.F. KOKTULI	C	53.3	5.17	0.854	6.01	1.000	979.	53.8	0.3203	11.381	2.755		0.5439	6.95
3	S.F. KOKTULI	C	51.2	5.20	0.853	6.01	1.000	980.	53.8	0.2777	11.382	3.894		0.5439	6.95
4	S.F. KOKTULI	Q	51.1	5.20	0.853	6.01	1.000	980.	53.8	0.2777	11.382	3.964		-0.1110	6.95
5	S.F. KOKTULI	C	49.4	5.23	0.851	6.01	1.000	981.	53.8	0.2795	11.382	3.778		-0.1110	6.95
6	S.F. KOKTULI	C	47.6	5.27	0.849	6.01	1.000	981.	53.8	0.2827	11.382	3.572		-0.1110	6.95
7	S.F. KOKTULI	C	45.7	5.30	0.848	6.01	1.000	982.	53.8	0.2783	11.382	3.366		-0.1110	6.95
8	S.F. KOKTULI	C	44.8	5.31	0.847	6.01	1.000	982.	53.8	0.2825	11.382	3.266		-0.1110	6.95
9	S.F. KOKTULI	C	43.9	5.33	0.846	6.01	1.000	982.	53.8	0.2773	11.382	3.170		-0.1110	6.95
10	S.F. KOKTULI	Q	43.6	5.33	0.846	6.01	1.000	982.	53.8	0.2773	11.382	3.136		0.0836	6.95
11	S.F. KOKTULI	C	41.1	5.34	0.846	6.01	1.000	983.	53.8	0.2827	11.382	3.350		0.0836	6.95
12	S.F. KOKTULI	C	40.0	5.34	0.846	6.01	1.000	983.	53.8	0.2770	11.382	3.443		0.0836	6.95
13	S.F. KOKTULI	C	38.4	5.37	0.844	6.01	1.000	983.	53.8	0.2829	11.382	3.577		0.0836	6.95
14	S.F. KOKTULI	Q	35.8	5.37	0.844	6.01	1.000	983.	53.8	0.2829	11.382	3.791		-0.0787	5.69
15	S.F. KOKTULI	B	34.3									3.670			
16	TRIBUTARY 119	H	36.1	5.37	0.844	6.01	1.000	983.	53.8	0.2371	11.382	2.001	5.05	-0.0230	5.69
17	TRIBUTARY 119	T	34.3									1.960			
18	S.F. KOKTULI	J	34.3	5.40	0.843	6.01	1.000	984.	53.8	0.1784	11.382	5.630		-0.3813	5.69
19	S.F. KOKTULI	C	34.1	5.43	0.841	6.01	1.000	984.	53.8	0.1449	11.382	5.577		-0.3813	5.69
20	S.F. KOKTULI	Q	34.0	5.43	0.841	6.01	1.000	984.	53.8	0.1449	11.382	5.532		0.6719	5.69
21	S.F. KOKTULI	Q	29.3	5.43	0.841	6.01	1.000	984.	53.8	0.1449	11.382	8.729		1.0044	7.06
22	S.F. KOKTULI	C	27.6	5.50	0.838	6.01	1.000	985.	53.8	0.1435	11.382	10.414		1.0044	7.06
23	S.F. KOKTULI	C	25.1	5.54	0.836	6.01	1.000	986.	53.9	0.1206	11.382	12.906		1.0044	7.06
24	S.F. KOKTULI	Q	24.9	5.54	0.836	6.01	1.000	986.	53.9	0.1206	11.382	13.111		-0.1507	7.06
25	S.F. KOKTULI	C	21.9	5.56	0.835	6.01	1.000	987.	53.8	0.1205	11.382	12.652		-0.1507	7.06
26	S.F. KOKTULI	C	20.1	5.61	0.832	6.01	1.000	987.	53.8	0.1140	11.382	12.386		-0.1507	7.06
27	S.F. KOKTULI	C	15.4	5.67	0.830	6.01	1.000	988.	53.8	0.1098	11.382	11.673		-0.1507	7.06
28	S.F. KOKTULI	Q	13.9	5.67	0.830	6.01	1.000	988.	53.8	0.1098	11.382	11.455		-0.2930	7.06
29	S.F. KOKTULI	C	12.5	5.70	0.828	6.01	1.000	989.	53.8	0.1089	11.382	11.045		-0.2930	7.06
30	S.F. KOKTULI	C	9.2	5.73	0.827	6.01	1.000	990.	53.8	0.1098	11.382	10.085		-0.2930	7.06
31	S.F. KOKTULI	C	7.9	5.76	0.825	6.01	1.000	990.	53.8	0.1050	11.382	9.692		-0.2930	7.06
32	S.F. KOKTULI	C	5.1	5.81	0.823	6.01	1.000	991.	53.8	0.1042	11.382	8.876		-0.2930	7.06
33	S.F. KOKTULI	C	5.1	5.85	0.821	6.01	1.000	992.	53.8	0.1031	11.382	8.876		-0.2930	7.06
34	S.F. KOKTULI	Q	3.0	5.85	0.821	6.01	1.000	992.	53.8	0.1031	11.382	8.251		2.5304	7.06
35	S.F. KOKTULI	Q	0.1	5.85	0.821	6.01	1.000	992.	53.8	0.1031	11.382	15.498		0.7963	7.06
36	S.F. KOKTULI	E	0.0									15.584			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	4.68	0.884	6.26	1.000	979.	29.1	0.3226	11.289	2.567	5.53	0.6577	6.53
2	S.F. KOKTULI	C	53.3	4.73	0.882	6.26	1.000	979.	29.1	0.3235	11.289	3.458		0.6577	6.53
3	S.F. KOKTULI	C	51.2	4.76	0.880	6.26	1.000	980.	29.1	0.2804	11.289	4.834		0.6577	6.53
4	S.F. KOKTULI	Q	51.1	4.76	0.880	6.26	1.000	980.	29.1	0.2804	11.289	4.919		-0.1859	6.53
5	S.F. KOKTULI	C	49.4	4.79	0.879	6.26	1.000	981.	29.1	0.2839	11.289	4.607		-0.1859	6.53
6	S.F. KOKTULI	C	47.6	4.83	0.877	6.26	1.000	981.	29.1	0.2882	11.289	4.262		-0.1859	6.53
7	S.F. KOKTULI	C	45.7	4.86	0.875	6.26	1.000	982.	29.1	0.2818	11.289	3.918		-0.1859	6.53
8	S.F. KOKTULI	C	44.8	4.87	0.875	6.26	1.000	982.	29.1	0.2880	11.289	3.750		-0.1859	6.53
9	S.F. KOKTULI	C	43.9	4.89	0.874	6.26	1.000	982.	29.1	0.2797	11.290	3.589		-0.1859	6.53
10	S.F. KOKTULI	Q	43.6	4.89	0.874	6.26	1.000	982.	29.1	0.2797	11.290	3.532		0.0807	6.53
11	S.F. KOKTULI	C	41.1	4.90	0.873	6.26	1.000	983.	29.1	0.2882	11.290	3.739		0.0807	6.53
12	S.F. KOKTULI	C	40.0	4.90	0.873	6.26	1.000	983.	29.1	0.2792	11.290	3.828		0.0807	6.53
13	S.F. KOKTULI	C	38.4	4.93	0.872	6.26	1.000	983.	29.1	0.2884	11.290	3.958		0.0807	6.53
14	S.F. KOKTULI	Q	35.8	4.93	0.872	6.26	1.000	983.	29.1	0.2884	11.290	4.164		-0.1800	5.67
15	S.F. KOKTULI	B	34.3									3.888			
16	TRIBUTARY 119	H	36.1	4.93	0.872	6.26	1.000	983.	29.1	0.2387	11.289	3.330	5.11	-0.0515	5.67
17	TRIBUTARY 119	T	34.3									3.238			
18	S.F. KOKTULI	J	34.3	4.96	0.871	6.26	1.000	984.	29.1	0.1796	11.290	7.126		-0.8677	5.67
19	S.F. KOKTULI	C	34.1	4.99	0.869	6.26	1.000	984.	29.1	0.1478	11.290	7.006		-0.8677	5.67
20	S.F. KOKTULI	Q	34.0	4.99	0.869	6.26	1.000	984.	29.1	0.1478	11.290	6.903		0.8644	5.67
21	S.F. KOKTULI	Q	29.3	4.99	0.869	6.26	1.000	984.	29.1	0.1478	11.290	11.016		1.3369	7.02
22	S.F. KOKTULI	C	27.6	5.06	0.865	6.26	1.000	985.	29.1	0.1460	11.290	13.259		1.3369	7.02
23	S.F. KOKTULI	C	25.1	5.10	0.863	6.26	1.000	986.	29.1	0.1227	11.290	16.576		1.3369	7.02
24	S.F. KOKTULI	Q	24.9	5.10	0.863	6.26	1.000	986.	29.1	0.1227	11.290	16.849		-0.1808	7.02
25	S.F. KOKTULI	C	21.9	5.12	0.862	6.26	1.000	987.	29.1	0.1214	11.290	16.298		-0.1808	7.02
26	S.F. KOKTULI	C	20.1	5.17	0.860	6.26	1.000	987.	29.1	0.1159	11.290	15.979		-0.1808	7.02
27	S.F. KOKTULI	C	15.4	5.23	0.857	6.26	1.000	988.	29.1	0.1116	11.290	15.124		-0.1808	7.02
28	S.F. KOKTULI	Q	13.9	5.23	0.857	6.26	1.000	988.	29.1	0.1116	11.290	14.862		-0.4976	7.02
29	S.F. KOKTULI	C	12.5	5.26	0.855	6.26	1.000	989.	29.1	0.1110	11.290	14.165		-0.4976	7.02
30	S.F. KOKTULI	C	9.2	5.29	0.854	6.26	1.000	990.	29.1	0.1108	11.290	12.535		-0.4976	7.02
31	S.F. KOKTULI	C	7.9	5.32	0.852	6.26	1.000	990.	29.1	0.1068	11.290	11.868		-0.4976	7.02
32	S.F. KOKTULI	C	5.1	5.37	0.850	6.26	1.000	991.	29.1	0.1055	11.289	10.481		-0.4976	7.02
33	S.F. KOKTULI	C	5.1	5.41	0.848	6.26	1.000	992.	29.0	0.1038	11.289	10.481		-0.4976	7.02
34	S.F. KOKTULI	Q	3.0	5.41	0.848	6.26	1.000	992.	29.0	0.1038	11.289	9.420		3.4029	7.02
35	S.F. KOKTULI	Q	0.1	5.41	0.848	6.26	1.000	992.	29.0	0.1038	11.289	19.166		0.9907	7.02
36	S.F. KOKTULI	E	0.0									19.273			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	5.37	0.866	3.08	1.000	979.	65.1	0.3253	11.196	2.368	5.37	0.6172	6.37
2	S.F. KOKTULI	C	53.3	5.42	0.863	3.08	1.000	979.	65.1	0.3268	11.197	3.204		0.6172	6.37
3	S.F. KOKTULI	C	51.2	5.45	0.862	3.08	1.000	980.	65.1	0.2832	11.197	4.495		0.6172	6.37
4	S.F. KOKTULI	Q	51.1	5.45	0.862	3.08	1.000	980.	65.1	0.2832	11.197	4.575		-0.0268	6.37
5	S.F. KOKTULI	C	49.4	5.48	0.861	3.08	1.000	981.	65.1	0.2886	11.197	4.530		-0.0268	6.37
6	S.F. KOKTULI	C	47.6	5.52	0.859	3.08	1.000	981.	65.1	0.2938	11.197	4.480		-0.0268	6.37
7	S.F. KOKTULI	C	45.7	5.55	0.857	3.08	1.000	982.	65.1	0.2853	11.197	4.431		-0.0268	6.37
8	S.F. KOKTULI	C	44.8	5.56	0.856	3.08	1.000	982.	65.1	0.2936	11.197	4.407		-0.0268	6.37
9	S.F. KOKTULI	C	43.9	5.58	0.855	3.08	1.000	982.	65.1	0.2821	11.197	4.384		-0.0268	6.37
10	S.F. KOKTULI	Q	43.6	5.58	0.855	3.08	1.000	982.	65.1	0.2821	11.197	4.375		0.0710	6.37
11	S.F. KOKTULI	C	41.1	5.59	0.855	3.08	1.000	983.	65.1	0.2938	11.197	4.557		0.0710	6.37
12	S.F. KOKTULI	C	40.0	5.59	0.855	3.08	1.000	983.	65.1	0.2814	11.197	4.636		0.0710	6.37
13	S.F. KOKTULI	C	38.4	5.62	0.853	3.08	1.000	983.	65.1	0.2940	11.197	4.750		0.0710	6.37
14	S.F. KOKTULI	Q	35.8	5.62	0.853	3.08	1.000	983.	65.1	0.2940	11.197	4.931		-0.1609	5.64
15	S.F. KOKTULI	B	34.3									4.684			
16	TRIBUTARY 119	H	36.1	5.62	0.853	3.08	1.000	983.	65.1	0.2404	11.197	2.265	4.99	-0.0465	5.64
17	TRIBUTARY 119	T	34.3									2.182			
18	S.F. KOKTULI	J	34.3	5.65	0.852	3.08	1.000	984.	65.1	0.1808	11.197	6.866		-0.7743	5.64
19	S.F. KOKTULI	C	34.1	5.68	0.850	3.08	1.000	984.	65.1	0.1508	11.197	6.759		-0.7743	5.64
20	S.F. KOKTULI	Q	34.0	5.68	0.850	3.08	1.000	984.	65.1	0.1508	11.197	6.667		0.8071	5.64
21	S.F. KOKTULI	Q	29.3	5.68	0.850	3.08	1.000	984.	65.1	0.1508	11.197	10.507		1.1419	7.05
22	S.F. KOKTULI	C	27.6	5.75	0.847	3.08	1.000	985.	65.1	0.1486	11.198	12.423		1.1419	7.05
23	S.F. KOKTULI	C	25.1	5.79	0.845	3.08	1.000	986.	65.2	0.1250	11.198	15.256		1.1419	7.05
24	S.F. KOKTULI	Q	24.9	5.79	0.845	3.08	1.000	986.	65.2	0.1250	11.198	15.489		-0.1702	7.05
25	S.F. KOKTULI	C	21.9	5.81	0.844	3.08	1.000	987.	65.2	0.1224	11.198	14.971		-0.1702	7.05
26	S.F. KOKTULI	C	20.1	5.86	0.841	3.08	1.000	987.	65.1	0.1178	11.198	14.670		-0.1702	7.05
27	S.F. KOKTULI	C	15.4	5.92	0.839	3.08	1.000	988.	65.1	0.1135	11.198	13.866		-0.1702	7.05
28	S.F. KOKTULI	Q	13.9	5.92	0.839	3.08	1.000	988.	65.1	0.1135	11.198	13.619		-0.3853	7.05
29	S.F. KOKTULI	C	12.5	5.95	0.837	3.08	1.000	989.	65.1	0.1132	11.198	13.080		-0.3853	7.05
30	S.F. KOKTULI	C	9.2	5.98	0.836	3.08	1.000	990.	65.1	0.1118	11.198	11.817		-0.3853	7.05
31	S.F. KOKTULI	C	7.9	6.01	0.834	3.08	1.000	990.	65.1	0.1087	11.197	11.301		-0.3853	7.05
32	S.F. KOKTULI	C	5.1	6.06	0.832	3.08	1.000	991.	65.1	0.1069	11.197	10.227		-0.3853	7.05
33	S.F. KOKTULI	C	5.1	6.10	0.830	3.08	1.000	992.	65.0	0.1045	11.197	10.227		-0.3853	7.05
34	S.F. KOKTULI	Q	3.0	6.10	0.830	3.08	1.000	992.	65.0	0.1045	11.197	9.405		3.3911	7.05
35	S.F. KOKTULI	Q	0.1	6.10	0.830	3.08	1.000	992.	65.0	0.1045	11.197	19.117		0.9815	7.05
36	S.F. KOKTULI	E	0.0									19.223			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	4.40	0.912	4.09	1.000	979.	26.3	0.3281	11.104	2.600	5.24	0.6647	6.24
2	S.F. KOKTULI	C	53.3	4.45	0.910	4.09	1.000	979.	26.3	0.3301	11.104	3.500		0.6647	6.24
3	S.F. KOKTULI	C	51.2	4.48	0.908	4.09	1.000	980.	26.4	0.2861	11.105	4.891		0.6647	6.24
4	S.F. KOKTULI	Q	51.1	4.48	0.908	4.09	1.000	980.	26.4	0.2861	11.105	4.977		-0.1165	6.24
5	S.F. KOKTULI	C	49.4	4.51	0.907	4.09	1.000	981.	26.4	0.2934	11.105	4.781		-0.1165	6.24
6	S.F. KOKTULI	C	47.6	4.55	0.905	4.09	1.000	981.	26.4	0.2995	11.105	4.565		-0.1165	6.24
7	S.F. KOKTULI	C	45.7	4.58	0.903	4.09	1.000	982.	26.4	0.2890	11.105	4.349		-0.1165	6.24
8	S.F. KOKTULI	C	44.8	4.59	0.902	4.09	1.000	982.	26.4	0.2993	11.105	4.244		-0.1165	6.24
9	S.F. KOKTULI	C	43.9	4.61	0.901	4.09	1.000	982.	26.4	0.2846	11.105	4.144		-0.1165	6.24
10	S.F. KOKTULI	Q	43.6	4.61	0.901	4.09	1.000	982.	26.4	0.2846	11.105	4.108		0.0746	6.24
11	S.F. KOKTULI	C	41.1	4.62	0.901	4.09	1.000	983.	26.4	0.2995	11.105	4.299		0.0746	6.24
12	S.F. KOKTULI	C	40.0	4.62	0.901	4.09	1.000	983.	26.4	0.2836	11.105	4.381		0.0746	6.24
13	S.F. KOKTULI	C	38.4	4.65	0.899	4.09	1.000	983.	26.4	0.2997	11.105	4.501		0.0746	6.24
14	S.F. KOKTULI	Q	35.8	4.65	0.899	4.09	1.000	983.	26.4	0.2997	11.105	4.691		-0.2193	5.65
15	S.F. KOKTULI	B	34.3									4.355			
16	TRIBUTARY 119	H	36.1	4.65	0.899	4.09	1.000	983.	26.4	0.2421	11.105	3.408	5.02	-0.0627	5.65
17	TRIBUTARY 119	T	34.3									3.296			
18	S.F. KOKTULI	J	34.3	4.68	0.898	4.09	1.000	984.	26.4	0.1821	11.105	7.651		-1.0545	5.65
19	S.F. KOKTULI	C	34.1	4.71	0.896	4.09	1.000	984.	26.4	0.1539	11.105	7.505		-1.0545	5.65
20	S.F. KOKTULI	Q	34.0	4.71	0.896	4.09	1.000	984.	26.4	0.1539	11.105	7.380		0.9075	5.65
21	S.F. KOKTULI	Q	29.3	4.71	0.896	4.09	1.000	984.	26.4	0.1539	11.105	11.698		1.2324	7.08
22	S.F. KOKTULI	C	27.6	4.78	0.893	4.09	1.000	985.	26.4	0.1513	11.106	13.766		1.2324	7.08
23	S.F. KOKTULI	C	25.1	4.82	0.891	4.09	1.000	986.	26.4	0.1272	11.106	16.824		1.2324	7.08
24	S.F. KOKTULI	Q	24.9	4.82	0.891	4.09	1.000	986.	26.4	0.1272	11.106	17.075		-0.1824	7.08
25	S.F. KOKTULI	C	21.9	4.84	0.889	4.09	1.000	987.	26.4	0.1233	11.106	16.519		-0.1824	7.08
26	S.F. KOKTULI	C	20.1	4.89	0.887	4.09	1.000	987.	26.4	0.1198	11.105	16.197		-0.1824	7.08
27	S.F. KOKTULI	C	15.4	4.95	0.884	4.09	1.000	988.	26.4	0.1154	11.105	15.335		-0.1824	7.08
28	S.F. KOKTULI	Q	13.9	4.95	0.884	4.09	1.000	988.	26.4	0.1154	11.105	15.070		-0.5303	7.08
29	S.F. KOKTULI	C	12.5	4.98	0.882	4.09	1.000	989.	26.4	0.1154	11.105	14.328		-0.5303	7.08
30	S.F. KOKTULI	C	9.2	5.01	0.881	4.09	1.000	990.	26.4	0.1128	11.105	12.590		-0.5303	7.08
31	S.F. KOKTULI	C	7.9	5.04	0.879	4.09	1.000	990.	26.4	0.1107	11.105	11.880		-0.5303	7.08
32	S.F. KOKTULI	C	5.1	5.09	0.877	4.09	1.000	991.	26.3	0.1083	11.105	10.402		-0.5303	7.08
33	S.F. KOKTULI	C	5.1	5.13	0.874	4.09	1.000	992.	26.3	0.1052	11.104	10.402		-0.5303	7.08
34	S.F. KOKTULI	Q	3.0	5.13	0.874	4.09	1.000	992.	26.3	0.1052	11.104	9.271		3.2860	7.08
35	S.F. KOKTULI	Q	0.1	5.13	0.874	4.09	1.000	992.	26.3	0.1052	11.104	18.682		0.9630	7.08
36	S.F. KOKTULI	E	0.0									18.786			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	4.48	0.875	4.39	1.000	979.	56.1	0.3310	11.012	2.563	5.33	0.6569	6.33
2	S.F. KOKTULI	C	53.3	4.53	0.873	4.39	1.000	979.	56.1	0.3336	11.012	3.452		0.6569	6.33
3	S.F. KOKTULI	C	51.2	4.56	0.871	4.39	1.000	980.	56.1	0.2890	11.012	4.827		0.6569	6.33
4	S.F. KOKTULI	Q	51.1	4.56	0.871	4.39	1.000	980.	56.1	0.2890	11.012	4.912		-0.0274	6.33
5	S.F. KOKTULI	C	49.4	4.59	0.870	4.39	1.000	981.	56.2	0.2983	11.013	4.866		-0.0274	6.33
6	S.F. KOKTULI	C	47.6	4.63	0.868	4.39	1.000	981.	56.2	0.3054	11.013	4.815		-0.0274	6.33
7	S.F. KOKTULI	C	45.7	4.66	0.866	4.39	1.000	982.	56.2	0.2928	11.013	4.765		-0.0274	6.33
8	S.F. KOKTULI	C	44.8	4.67	0.865	4.39	1.000	982.	56.2	0.3052	11.013	4.740		-0.0274	6.33
9	S.F. KOKTULI	C	43.9	4.69	0.865	4.39	1.000	982.	56.2	0.2871	11.013	4.716		-0.0274	6.33
10	S.F. KOKTULI	Q	43.6	4.69	0.865	4.39	1.000	982.	56.2	0.2871	11.013	4.708		0.0660	6.33
11	S.F. KOKTULI	C	41.1	4.70	0.864	4.39	1.000	983.	56.2	0.3054	11.013	4.877		0.0660	6.33
12	S.F. KOKTULI	C	40.0	4.70	0.864	4.39	1.000	983.	56.2	0.2860	11.013	4.950		0.0660	6.33
13	S.F. KOKTULI	C	38.4	4.73	0.863	4.39	1.000	983.	56.2	0.3056	11.013	5.056		0.0660	6.33
14	S.F. KOKTULI	Q	35.8	4.73	0.863	4.39	1.000	983.	56.2	0.3056	11.013	5.224		-0.2096	5.46
15	S.F. KOKTULI	B	34.3									4.903			
16	TRIBUTARY 119	H	36.1	4.73	0.863	4.39	1.000	983.	56.2	0.2439	11.013	2.728	5.02	-0.0599	5.46
17	TRIBUTARY 119	T	34.3									2.621			
18	S.F. KOKTULI	J	34.3	4.76	0.861	4.39	1.000	984.	56.2	0.1833	11.013	7.524		-1.0078	5.46
19	S.F. KOKTULI	C	34.1	4.79	0.859	4.39	1.000	984.	56.2	0.1572	11.013	7.385		-1.0078	5.46
20	S.F. KOKTULI	Q	34.0	4.79	0.859	4.39	1.000	984.	56.2	0.1572	11.013	7.265		0.9290	5.46
21	S.F. KOKTULI	Q	29.3	4.79	0.859	4.39	1.000	984.	56.2	0.1572	11.013	11.685		1.1769	6.70
22	S.F. KOKTULI	C	27.6	4.86	0.856	4.39	1.000	985.	56.2	0.1541	11.013	13.660		1.1769	6.70
23	S.F. KOKTULI	C	25.1	4.90	0.854	4.39	1.000	986.	56.2	0.1296	11.014	16.580		1.1769	6.70
24	S.F. KOKTULI	Q	24.9	4.90	0.854	4.39	1.000	986.	56.2	0.1296	11.014	16.820		-0.1805	6.70
25	S.F. KOKTULI	C	21.9	4.92	0.853	4.39	1.000	987.	56.2	0.1243	11.014	16.270		-0.1805	6.70
26	S.F. KOKTULI	C	20.1	4.97	0.851	4.39	1.000	987.	56.2	0.1219	11.013	15.951		-0.1805	6.70
27	S.F. KOKTULI	C	15.4	5.03	0.848	4.39	1.000	988.	56.2	0.1174	11.013	15.098		-0.1805	6.70
28	S.F. KOKTULI	Q	13.9	5.03	0.848	4.39	1.000	988.	56.2	0.1174	11.013	14.836		-0.4717	6.70
29	S.F. KOKTULI	C	12.5	5.06	0.846	4.39	1.000	989.	56.2	0.1177	11.013	14.176		-0.4717	6.70
30	S.F. KOKTULI	C	9.2	5.09	0.845	4.39	1.000	990.	56.2	0.1138	11.013	12.631		-0.4717	6.70
31	S.F. KOKTULI	C	7.9	5.12	0.843	4.39	1.000	990.	56.1	0.1128	11.013	11.999		-0.4717	6.70
32	S.F. KOKTULI	C	5.1	5.17	0.841	4.39	1.000	991.	56.1	0.1098	11.013	10.684		-0.4717	6.70
33	S.F. KOKTULI	C	5.1	5.21	0.839	4.39	1.000	992.	56.1	0.1060	11.012	10.684		-0.4717	6.70
34	S.F. KOKTULI	Q	3.0	5.21	0.839	4.39	1.000	992.	56.1	0.1060	11.012	9.678		3.6079	6.70
35	S.F. KOKTULI	Q	0.1	5.21	0.839	4.39	1.000	992.	56.1	0.1060	11.012	20.011		1.0370	6.70
36	S.F. KOKTULI	E	0.0									20.123			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	2.95	0.866	8.61	1.000	979.	44.6	0.3340	10.919	2.285	4.60	0.5998	5.60
2	S.F. KOKTULI	C	53.3	3.00	0.864	8.61	1.000	979.	44.7	0.3371	10.920	3.097		0.5998	5.60
3	S.F. KOKTULI	C	51.2	3.03	0.862	8.61	1.000	980.	44.7	0.2920	10.920	4.353		0.5998	5.60
4	S.F. KOKTULI	Q	51.1	3.03	0.862	8.61	1.000	980.	44.7	0.2920	10.920	4.430		-0.0537	5.60
5	S.F. KOKTULI	C	49.4	3.06	0.861	8.61	1.000	981.	44.7	0.3034	10.920	4.340		-0.0537	5.60
6	S.F. KOKTULI	C	47.6	3.10	0.859	8.61	1.000	981.	44.7	0.3114	10.920	4.240		-0.0537	5.60
7	S.F. KOKTULI	C	45.7	3.13	0.857	8.61	1.000	982.	44.7	0.2967	10.920	4.141		-0.0537	5.60
8	S.F. KOKTULI	C	44.8	3.14	0.856	8.61	1.000	982.	44.7	0.3112	10.920	4.092		-0.0537	5.60
9	S.F. KOKTULI	C	43.9	3.16	0.855	8.61	1.000	982.	44.7	0.2897	10.921	4.046		-0.0537	5.60
10	S.F. KOKTULI	Q	43.6	3.16	0.855	8.61	1.000	982.	44.7	0.2897	10.921	4.029		0.0755	5.60
11	S.F. KOKTULI	C	41.1	3.17	0.855	8.61	1.000	983.	44.7	0.3114	10.921	4.223		0.0755	5.60
12	S.F. KOKTULI	C	40.0	3.17	0.855	8.61	1.000	983.	44.7	0.2883	10.921	4.306		0.0755	5.60
13	S.F. KOKTULI	C	38.4	3.20	0.853	8.61	1.000	983.	44.7	0.3117	10.921	4.427		0.0755	5.60
14	S.F. KOKTULI	Q	35.8	3.20	0.853	8.61	1.000	983.	44.7	0.3117	10.921	4.620		-0.1410	5.64
15	S.F. KOKTULI	B	34.3									4.404			
16	TRIBUTARY 119	H	36.1	3.20	0.853	8.61	1.000	983.	44.7	0.2456	10.920	2.249	4.42	-0.0403	5.64
17	TRIBUTARY 119	T	34.3									2.177			
18	S.F. KOKTULI	J	34.3	3.23	0.852	8.61	1.000	984.	44.7	0.1846	10.921	6.581		-0.6809	5.64
19	S.F. KOKTULI	C	34.1	3.26	0.850	8.61	1.000	984.	44.7	0.1606	10.921	6.487		-0.6809	5.64
20	S.F. KOKTULI	Q	34.0	3.26	0.850	8.61	1.000	984.	44.7	0.1606	10.921	6.406		0.8098	5.64
21	S.F. KOKTULI	Q	29.3	3.26	0.850	8.61	1.000	984.	44.7	0.1606	10.921	10.259		1.0690	6.81
22	S.F. KOKTULI	C	27.6	3.33	0.847	8.61	1.000	985.	44.7	0.1570	10.921	12.053		1.0690	6.81
23	S.F. KOKTULI	C	25.1	3.37	0.845	8.61	1.000	986.	44.7	0.1321	10.922	14.705		1.0690	6.81
24	S.F. KOKTULI	Q	24.9	3.37	0.845	8.61	1.000	986.	44.7	0.1321	10.922	14.923		-0.1656	6.81
25	S.F. KOKTULI	C	21.9	3.39	0.844	8.61	1.000	987.	44.7	0.1254	10.921	14.418		-0.1656	6.81
26	S.F. KOKTULI	C	20.1	3.44	0.841	8.61	1.000	987.	44.7	0.1240	10.921	14.126		-0.1656	6.81
27	S.F. KOKTULI	C	15.4	3.50	0.839	8.61	1.000	988.	44.7	0.1194	10.921	13.343		-0.1656	6.81
28	S.F. KOKTULI	Q	13.9	3.50	0.839	8.61	1.000	988.	44.7	0.1194	10.921	13.103		-0.3785	6.81
29	S.F. KOKTULI	C	12.5	3.53	0.837	8.61	1.000	989.	44.7	0.1200	10.921	12.573		-0.3785	6.81
30	S.F. KOKTULI	C	9.2	3.56	0.836	8.61	1.000	990.	44.7	0.1149	10.921	11.333		-0.3785	6.81
31	S.F. KOKTULI	C	7.9	3.59	0.834	8.61	1.000	990.	44.7	0.1149	10.921	10.826		-0.3785	6.81
32	S.F. KOKTULI	C	5.1	3.64	0.832	8.61	1.000	991.	44.7	0.1114	10.921	9.771		-0.3785	6.81
33	S.F. KOKTULI	C	5.1	3.68	0.830	8.61	1.000	992.	44.6	0.1067	10.920	9.771		-0.3785	6.81
34	S.F. KOKTULI	Q	3.0	3.68	0.830	8.61	1.000	992.	44.6	0.1067	10.920	8.964		3.0506	6.81
35	S.F. KOKTULI	Q	0.1	3.68	0.830	8.61	1.000	992.	44.6	0.1067	10.920	17.701		0.9167	6.81
36	S.F. KOKTULI	E	0.0									17.800			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	2.70	0.829	6.40	1.000	979.	84.8	0.3370	10.827	2.032	3.51	0.5464	4.51
2	S.F. KOKTULI	C	53.3	2.75	0.826	6.40	1.000	979.	84.8	0.3408	10.828	2.772		0.5464	4.51
3	S.F. KOKTULI	C	51.2	2.78	0.825	6.40	1.000	980.	84.8	0.2951	10.828	3.916		0.5464	4.51
4	S.F. KOKTULI	Q	51.1	2.78	0.825	6.40	1.000	980.	84.8	0.2951	10.828	3.986		-0.0996	4.51
5	S.F. KOKTULI	C	49.4	2.81	0.824	6.40	1.000	981.	84.9	0.3087	10.828	3.819		-0.0996	4.51
6	S.F. KOKTULI	C	47.6	2.85	0.822	6.40	1.000	981.	84.9	0.3176	10.828	3.634		-0.0996	4.51
7	S.F. KOKTULI	C	45.7	2.88	0.820	6.40	1.000	982.	84.9	0.3007	10.828	3.450		-0.0996	4.51
8	S.F. KOKTULI	C	44.8	2.89	0.819	6.40	1.000	982.	84.9	0.3174	10.828	3.360		-0.0996	4.51
9	S.F. KOKTULI	C	43.9	2.91	0.819	6.40	1.000	982.	84.9	0.2924	10.829	3.274		-0.0996	4.51
10	S.F. KOKTULI	Q	43.6	2.91	0.819	6.40	1.000	982.	84.9	0.2924	10.829	3.243		0.0830	4.51
11	S.F. KOKTULI	C	41.1	2.92	0.818	6.40	1.000	983.	84.9	0.3176	10.829	3.456		0.0830	4.51
12	S.F. KOKTULI	C	40.0	2.92	0.818	6.40	1.000	983.	84.9	0.2908	10.829	3.548		0.0830	4.51
13	S.F. KOKTULI	C	38.4	2.95	0.817	6.40	1.000	983.	84.9	0.3179	10.828	3.681		0.0830	4.51
14	S.F. KOKTULI	Q	35.8	2.95	0.817	6.40	1.000	983.	84.9	0.3179	10.828	3.893		-0.0753	5.41
15	S.F. KOKTULI	B	34.3									3.777			
16	TRIBUTARY 119	H	36.1	2.95	0.817	6.40	1.000	983.	84.9	0.2475	10.828	1.837	3.99	-0.0218	5.41
17	TRIBUTARY 119	T	34.3									1.798			
18	S.F. KOKTULI	J	34.3	2.98	0.816	6.40	1.000	984.	84.9	0.1859	10.828	5.575		-0.3658	5.41
19	S.F. KOKTULI	C	34.1	3.01	0.814	6.40	1.000	984.	84.9	0.1642	10.829	5.525		-0.3658	5.41
20	S.F. KOKTULI	Q	34.0	3.01	0.814	6.40	1.000	984.	84.9	0.1642	10.829	5.481		0.6833	5.41
21	S.F. KOKTULI	Q	29.3	3.01	0.814	6.40	1.000	984.	84.9	0.1642	10.829	8.732		1.0231	6.50
22	S.F. KOKTULI	C	27.6	3.08	0.811	6.40	1.000	985.	84.9	0.1600	10.829	10.449		1.0231	6.50
23	S.F. KOKTULI	C	25.1	3.12	0.809	6.40	1.000	986.	84.9	0.1346	10.830	12.987		1.0231	6.50
24	S.F. KOKTULI	Q	24.9	3.12	0.809	6.40	1.000	986.	84.9	0.1346	10.830	13.196		-0.1514	6.50
25	S.F. KOKTULI	C	21.9	3.14	0.808	6.40	1.000	987.	84.9	0.1264	10.829	12.735		-0.1514	6.50
26	S.F. KOKTULI	C	20.1	3.19	0.805	6.40	1.000	987.	84.9	0.1263	10.829	12.467		-0.1514	6.50
27	S.F. KOKTULI	C	15.4	3.25	0.803	6.40	1.000	988.	84.9	0.1216	10.829	11.752		-0.1514	6.50
28	S.F. KOKTULI	Q	13.9	3.25	0.803	6.40	1.000	988.	84.9	0.1216	10.829	11.532		-0.2955	6.50
29	S.F. KOKTULI	C	12.5	3.28	0.801	6.40	1.000	989.	84.9	0.1224	10.829	11.118		-0.2955	6.50
30	S.F. KOKTULI	C	9.2	3.31	0.800	6.40	1.000	990.	84.9	0.1160	10.829	10.150		-0.2955	6.50
31	S.F. KOKTULI	C	7.9	3.34	0.799	6.40	1.000	990.	84.8	0.1171	10.829	9.754		-0.2955	6.50
32	S.F. KOKTULI	C	5.1	3.39	0.796	6.40	1.000	991.	84.8	0.1130	10.828	8.930		-0.2955	6.50
33	S.F. KOKTULI	C	5.1	3.43	0.794	6.40	1.000	992.	84.8	0.1075	10.828	8.930		-0.2955	6.50
34	S.F. KOKTULI	Q	3.0	3.43	0.794	6.40	1.000	992.	84.8	0.1075	10.828	8.300		2.5653	6.50
35	S.F. KOKTULI	Q	0.1	3.43	0.794	6.40	1.000	992.	84.8	0.1075	10.828	15.647		0.8056	6.50
36	S.F. KOKTULI	E	0.0									15.734			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	2.14	0.847	8.71	1.000	979.	11.3	0.3401	10.735	1.941	3.07	0.5268	4.07
2	S.F. KOKTULI	C	53.3	2.19	0.845	8.71	1.000	979.	11.3	0.3445	10.735	2.654		0.5268	4.07
3	S.F. KOKTULI	C	51.2	2.22	0.843	8.71	1.000	980.	11.4	0.2983	10.736	3.757		0.5268	4.07
4	S.F. KOKTULI	Q	51.1	2.22	0.843	8.71	1.000	980.	11.4	0.2983	10.736	3.825		-0.1461	4.07
5	S.F. KOKTULI	C	49.4	2.25	0.842	8.71	1.000	981.	11.4	0.3141	10.736	3.580		-0.1461	4.07
6	S.F. KOKTULI	C	47.6	2.29	0.840	8.71	1.000	981.	11.4	0.3240	10.736	3.309		-0.1461	4.07
7	S.F. KOKTULI	C	45.7	2.32	0.839	8.71	1.000	982.	11.4	0.3048	10.736	3.038		-0.1461	4.07
8	S.F. KOKTULI	C	44.8	2.33	0.838	8.71	1.000	982.	11.4	0.3238	10.736	2.906		-0.1461	4.07
9	S.F. KOKTULI	C	43.9	2.35	0.837	8.71	1.000	982.	11.4	0.2951	10.736	2.780		-0.1461	4.07
10	S.F. KOKTULI	Q	43.6	2.35	0.837	8.71	1.000	982.	11.4	0.2951	10.736	2.735		0.0853	4.07
11	S.F. KOKTULI	C	41.1	2.36	0.837	8.71	1.000	983.	11.4	0.3240	10.737	2.954		0.0853	4.07
12	S.F. KOKTULI	C	40.0	2.36	0.836	8.71	1.000	983.	11.4	0.2933	10.737	3.048		0.0853	4.07
13	S.F. KOKTULI	C	38.4	2.39	0.835	8.71	1.000	983.	11.4	0.3242	10.736	3.185		0.0853	4.07
14	S.F. KOKTULI	Q	35.8	2.39	0.835	8.71	1.000	983.	11.4	0.3242	10.736	3.403		-0.0519	5.14
15	S.F. KOKTULI	B	34.3									3.323			
16	TRIBUTARY 119	H	36.1	2.39	0.835	8.71	1.000	983.	11.4	0.2493	10.736	1.881	3.56	-0.0146	5.14
17	TRIBUTARY 119	T	34.3									1.855			
18	S.F. KOKTULI	J	34.3	2.42	0.834	8.71	1.000	984.	11.4	0.1873	10.736	5.178		-0.2529	5.14
19	S.F. KOKTULI	C	34.1	2.45	0.832	8.71	1.000	984.	11.4	0.1679	10.737	5.143		-0.2529	5.14
20	S.F. KOKTULI	Q	34.0	2.45	0.832	8.71	1.000	984.	11.4	0.1679	10.737	5.113		0.6175	5.14
21	S.F. KOKTULI	Q	29.3	2.45	0.832	8.71	1.000	984.	11.4	0.1679	10.737	8.051		1.0364	5.79
22	S.F. KOKTULI	C	27.6	2.52	0.829	8.71	1.000	985.	11.4	0.1631	10.737	9.790		1.0364	5.79
23	S.F. KOKTULI	C	25.1	2.56	0.827	8.71	1.000	986.	11.4	0.1372	10.738	12.362		1.0364	5.79
24	S.F. KOKTULI	Q	24.9	2.56	0.827	8.71	1.000	986.	11.4	0.1372	10.738	12.573		-0.1460	5.79
25	S.F. KOKTULI	C	21.9	2.58	0.826	8.71	1.000	987.	11.4	0.1275	10.737	12.128		-0.1460	5.79
26	S.F. KOKTULI	C	20.1	2.63	0.823	8.71	1.000	987.	11.4	0.1286	10.737	11.870		-0.1460	5.79
27	S.F. KOKTULI	C	15.4	2.69	0.821	8.71	1.000	988.	11.4	0.1238	10.737	11.180		-0.1460	5.79
28	S.F. KOKTULI	Q	13.9	2.69	0.821	8.71	1.000	988.	11.4	0.1238	10.737	10.968		-0.2804	5.79
29	S.F. KOKTULI	C	12.5	2.72	0.819	8.71	1.000	989.	11.4	0.1249	10.737	10.575		-0.2804	5.79
30	S.F. KOKTULI	C	9.2	2.75	0.818	8.71	1.000	990.	11.4	0.1171	10.737	9.657		-0.2804	5.79
31	S.F. KOKTULI	C	7.9	2.78	0.816	8.71	1.000	990.	11.4	0.1194	10.737	9.281		-0.2804	5.79
32	S.F. KOKTULI	C	5.1	2.83	0.814	8.71	1.000	991.	11.3	0.1146	10.736	8.499		-0.2804	5.79
33	S.F. KOKTULI	C	5.1	2.87	0.812	8.71	1.000	992.	11.3	0.1083	10.736	8.499		-0.2804	5.79
34	S.F. KOKTULI	Q	3.0	2.87	0.812	8.71	1.000	992.	11.3	0.1083	10.736	7.901		2.2898	5.79
35	S.F. KOKTULI	Q	0.1	2.87	0.812	8.71	1.000	992.	11.3	0.1083	10.736	14.459		0.7407	5.79
36	S.F. KOKTULI	E	0.0									14.539			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	S.F. KOKTULI	H	54.7	1.76	0.894	8.32	1.000	979.	51.4	0.3432	10.643	3.687	2.40	0.8747	3.40
2	S.F. KOKTULI	C	53.3	1.81	0.891	8.32	1.000	979.	51.4	0.3483	10.643	4.871		0.8747	3.40
3	S.F. KOKTULI	C	51.2	1.84	0.890	8.32	1.000	980.	51.4	0.3016	10.644	6.702		0.8747	3.40
4	S.F. KOKTULI	Q	51.1	1.84	0.890	8.32	1.000	980.	51.4	0.3016	10.644	6.815		-0.1135	3.40
5	S.F. KOKTULI	C	49.4	1.87	0.888	8.32	1.000	981.	51.5	0.3198	10.644	6.624		-0.1135	3.40
6	S.F. KOKTULI	C	47.6	1.91	0.886	8.32	1.000	981.	51.5	0.3306	10.644	6.414		-0.1135	3.40
7	S.F. KOKTULI	C	45.7	1.94	0.885	8.32	1.000	982.	51.5	0.3091	10.644	6.204		-0.1135	3.40
8	S.F. KOKTULI	C	44.8	1.95	0.884	8.32	1.000	982.	51.4	0.3303	10.644	6.101		-0.1135	3.40
9	S.F. KOKTULI	C	43.9	1.97	0.883	8.32	1.000	982.	51.5	0.2979	10.645	6.003		-0.1135	3.40
10	S.F. KOKTULI	Q	43.6	1.97	0.883	8.32	1.000	982.	51.5	0.2979	10.645	5.969		0.0425	3.40
11	S.F. KOKTULI	C	41.1	1.98	0.883	8.32	1.000	983.	51.5	0.3305	10.645	6.077		0.0425	3.40
12	S.F. KOKTULI	C	40.0	1.98	0.882	8.32	1.000	983.	51.5	0.2958	10.645	6.125		0.0425	3.40
13	S.F. KOKTULI	C	38.4	2.01	0.881	8.32	1.000	983.	51.5	0.3308	10.644	6.193		0.0425	3.40
14	S.F. KOKTULI	Q	35.8	2.01	0.881	8.32	1.000	983.	51.5	0.3308	10.644	6.301		-0.4501	5.29
15	S.F. KOKTULI	B	34.3									5.611			
16	TRIBUTARY 119	H	36.1	2.01	0.881	8.32	1.000	983.	51.4	0.2512	10.644	5.004	3.66	-0.1288	5.29
17	TRIBUTARY 119	T	34.3									4.774			
18	S.F. KOKTULI	J	34.3	2.04	0.880	8.32	1.000	984.	51.5	0.1887	10.645	10.385		-2.1634	5.29
19	S.F. KOKTULI	C	34.1	2.07	0.878	8.32	1.000	984.	51.5	0.1718	10.645	10.086		-2.1634	5.29
20	S.F. KOKTULI	Q	34.0	2.07	0.878	8.32	1.000	984.	51.5	0.1718	10.645	9.829		1.5250	5.29
21	S.F. KOKTULI	Q	29.3	2.07	0.878	8.32	1.000	984.	51.5	0.1718	10.645	17.085		1.6981	6.20
22	S.F. KOKTULI	C	27.6	2.14	0.875	8.32	1.000	985.	51.5	0.1664	10.645	19.934		1.6981	6.20
23	S.F. KOKTULI	C	25.1	2.18	0.873	8.32	1.000	986.	51.5	0.1400	10.646	24.148		1.6981	6.20
24	S.F. KOKTULI	Q	24.9	2.18	0.873	8.32	1.000	986.	51.5	0.1400	10.646	24.494		-0.2346	6.20
25	S.F. KOKTULI	C	21.9	2.20	0.871	8.32	1.000	987.	51.5	0.1286	10.646	23.779		-0.2346	6.20
26	S.F. KOKTULI	C	20.1	2.25	0.869	8.32	1.000	987.	51.5	0.1309	10.645	23.365		-0.2346	6.20
27	S.F. KOKTULI	C	15.4	2.31	0.866	8.32	1.000	988.	51.5	0.1261	10.645	22.256		-0.2346	6.20
28	S.F. KOKTULI	Q	13.9	2.31	0.866	8.32	1.000	988.	51.5	0.1261	10.645	21.916		-0.9499	6.20
29	S.F. KOKTULI	C	12.5	2.34	0.864	8.32	1.000	989.	51.5	0.1274	10.645	20.586		-0.9499	6.20
30	S.F. KOKTULI	C	9.2	2.37	0.863	8.32	1.000	990.	51.5	0.1183	10.645	17.474		-0.9499	6.20
31	S.F. KOKTULI	C	7.9	2.40	0.861	8.32	1.000	990.	51.4	0.1217	10.645	16.201		-0.9499	6.20
32	S.F. KOKTULI	C	5.1	2.45	0.859	8.32	1.000	991.	51.4	0.1163	10.644	13.553		-0.9499	6.20
33	S.F. KOKTULI	C	5.1	2.49	0.857	8.32	1.000	992.	51.4	0.1091	10.644	13.553		-0.9499	6.20
34	S.F. KOKTULI	Q	3.0	2.49	0.857	8.32	1.000	992.	51.4	0.1091	10.644	11.528		5.2231	6.20
35	S.F. KOKTULI	Q	0.1	2.49	0.857	8.32	1.000	992.	51.4	0.1091	10.644	26.487		1.3611	6.20
36	S.F. KOKTULI	E	0.0									26.634			

NORMAL COMPLETION OF 'METROL'.

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****************************************** TABLE VIII: WATER TEMPERATURE DATA ******************************************
    BEGIN INSTREAM WATER TEMPERATURE CALCULATIONS VERIFICATION OF 'NETWRK' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
       (1) DETERMINE THE PREDICTED WATER TEMPERATURE FOR EACH YEAR & TIME PERIOD AT EVERY NODE IN THE COMPOSITE NETWORK;
       (2) GENERATE THE VERIFICATION TABLE;
       (3) GENERATE THE UNFORMATTED OUTPUT FILE FOR THE OUTPUT REPORT GENERATOR AND/OR LINKAGE TO OTHER PROGRAMS.
 THIS VERIFICATION IS THE FORMATTED VERSION OF 'KTRNSPT' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: SOUTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTF
       1.      0.      0.    142.     35.     27.     15.      6.     36.      2.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 SFKTME.DAT      SFKMET.DAT      SFKSKL.DAT      SFKSTR.DAT      SFKSTD.DAT
 SFKHDR.DAT      SFKHYD.DAT      SFKSHD.DAT
 S.F. KOKTULI        54.7     0.0
 TRIBUTARY 119       36.1    34.3
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	3.45	3.45	5.59:	8.00	29.59	-0.370:	11.48	32.71:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		3.91	6.26:	7.96	29.57	-0.372:	11.48	32.72:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		4.25	5.92:	8.11	29.70	-0.377:	11.68	32.93:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		4.26	5.84:	8.11	29.70	-0.377:	11.69	32.93:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		4.39	6.00:	8.35	29.90	-0.382:	11.99	33.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		4.55	6.37:	8.50	30.04	-0.385:	12.15	33.41:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		4.71	6.74:	8.26	29.84	-0.383:	11.87	33.14:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		4.79	6.61:	8.39	29.95	-0.385:	12.05	33.32:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		4.87	6.78:	7.99	29.63	-0.380:	11.56	32.83:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		4.89	6.29:	7.99	29.63	-0.380:	11.56	32.83:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.03	6.36:	8.21	29.81	-0.384:	11.89	33.16:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.09	6.30:	7.95	29.60	-0.381:	11.51	32.79:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.15	6.28:	8.36	29.94	-0.387:	12.02	33.30:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.26	6.79:	8.37	29.95	-0.388:	12.03	33.32:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.36	6.91:			:	12.03	33.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	1.46	1.46	3.07:	8.44	30.01	-0.363:	12.03	33.31:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		1.73	3.90:			:	12.03	33.31:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		3.36	5.25:	8.49	30.05	-0.376:	12.20	33.49:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		3.37	4.92:	8.79	30.31	-0.381:	12.61	33.93:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		3.38	5.12:	8.79	30.31	-0.381:	12.61	33.93:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		3.87	5.40:	8.84	30.35	-0.385:	12.65	33.97:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.19	5.65:	9.02	30.52	-0.391:	12.81	34.16:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		4.57	6.11:	8.99	30.50	-0.393:	12.84	34.19:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		4.59	5.99:	9.00	30.51	-0.393:	12.84	34.19:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		4.78	6.19:	8.95	30.47	-0.394:	12.74	34.09:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		4.88	6.37:	9.11	30.62	-0.397:	12.95	34.33:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.19	6.82:	9.07	30.60	-0.399:	12.92	34.30:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.28	6.87:	9.06	30.59	-0.399:	12.91	34.30:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.37	6.97:	9.07	30.60	-0.400:	12.93	34.32:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.59	7.16:	8.99	30.54	-0.400:	12.81	34.20:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.67	7.25:	9.17	30.70	-0.404:	13.02	34.44:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.86	7.63:	8.88	30.47	-0.401:	12.75	34.15:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.86	7.63:	8.98	30.56	-0.402:	12.80	34.22:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.99	7.51:	8.97	30.55	-0.403:	12.80	34.22:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.09	7.29:	9.04	30.61	-0.405:	12.86	34.28:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.09	7.31:	9.04	30.61	-0.405:	12.86	34.28:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	4.22	4.22	6.45:	9.70	24.33	-0.299:	13.96	27.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		4.66	7.19:	9.63	24.30	-0.300:	13.95	27.53:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		4.99	6.75:	9.83	24.43	-0.304:	14.21	27.75:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.00	6.66:	9.83	24.43	-0.304:	14.21	27.76:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.13	6.81:	10.15	24.65	-0.309:	14.59	28.09:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.27	7.19:	10.35	24.79	-0.312:	14.80	28.28:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.43	7.57:	10.03	24.58	-0.309:	14.44	27.97:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.50	7.39:	10.20	24.70	-0.312:	14.67	28.17:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.57	7.57:	9.65	24.33	-0.306:	14.03	27.62:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.59	7.02:	9.65	24.33	-0.306:	14.03	27.62:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.74	7.09:	9.94	24.53	-0.310:	14.44	27.98:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.79	7.03:	9.59	24.30	-0.306:	13.96	27.56:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.86	7.01:	10.14	24.66	-0.313:	14.62	28.13:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.98	7.57:	10.16	24.68	-0.314:	14.63	28.15:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.07	7.69:			:	14.63	28.15:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	1.78	1.78	3.66:	10.11	24.64	-0.291:	14.50	28.04:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.10	4.77:			:	14.50	28.04:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.27	6.36:	10.27	24.76	-0.306:	14.82	28.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.29	6.02:	10.67	25.04	-0.311:	15.33	28.79:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.30	6.25:	10.67	25.04	-0.311:	15.33	28.79:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.49	6.16:	10.74	25.09	-0.313:	15.39	28.84:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.76	6.36:	10.96	25.25	-0.317:	15.58	29.03:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.08	6.78:	10.93	25.24	-0.318:	15.61	29.06:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.10	6.64:	10.93	25.24	-0.319:	15.62	29.07:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.30	6.86:	10.85	25.19	-0.319:	15.48	28.94:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.41	7.06:	11.07	25.35	-0.322:	15.74	29.19:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.75	7.55:	11.01	25.31	-0.323:	15.70	29.16:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.85	7.61:	11.00	25.31	-0.324:	15.69	29.16:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.95	7.71:	11.00	25.31	-0.324:	15.71	29.18:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.18	7.92:	10.89	25.24	-0.324:	15.55	29.03:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.28	8.01:	11.13	25.41	-0.328:	15.82	29.29:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.48	8.43:	10.76	25.16	-0.324:	15.48	28.98:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.48	8.43:	10.87	25.24	-0.326:	15.53	29.03:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.63	8.28:	10.86	25.24	-0.327:	15.53	29.03:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.50	7.78:	10.95	25.30	-0.327:	15.61	29.10:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.50	7.81:	10.95	25.30	-0.327:	15.61	29.10:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	4.84	4.84	7.03:	9.96	26.18	-0.331:	13.72	29.25:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.31	7.77:	9.92	26.16	-0.334:	13.72	29.26:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.65	7.38:	10.08	26.28	-0.338:	13.93	29.46:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.67	7.30:	10.08	26.29	-0.338:	13.94	29.46:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.81	7.48:	10.33	26.48	-0.342:	14.25	29.75:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.98	7.89:	10.49	26.60	-0.345:	14.41	29.91:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.16	8.32:	10.23	26.41	-0.343:	14.11	29.64:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.24	8.19:	10.36	26.51	-0.345:	14.30	29.81:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.33	8.39:	9.94	26.20	-0.340:	13.79	29.35:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.36	7.86:	9.94	26.20	-0.340:	13.79	29.34:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.51	7.93:	10.18	26.38	-0.345:	14.14	29.67:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.58	7.86:	9.90	26.17	-0.341:	13.74	29.30:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.65	7.84:	10.33	26.50	-0.347:	14.27	29.80:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.76	8.38:	10.35	26.51	-0.348:	14.28	29.81:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.87	8.49:			:	14.28	29.81:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.03	2.03	3.85:	10.34	26.50	-0.320:	14.21	29.74:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.38	4.95:			:	14.21	29.74:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.68	6.76:	10.46	26.60	-0.337:	14.46	29.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.69	6.40:	10.79	26.85	-0.341:	14.89	30.40:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.69	6.61:	10.79	26.85	-0.341:	14.89	30.40:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.90	6.57:	10.84	26.89	-0.343:	14.93	30.44:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.21	6.79:	11.02	27.04	-0.348:	15.10	30.61:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.57	7.23:	11.01	27.04	-0.350:	15.14	30.66:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.59	7.10:	11.01	27.04	-0.350:	15.14	30.66:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.82	7.34:	10.95	27.00	-0.351:	15.03	30.56:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.94	7.55:	11.13	27.15	-0.354:	15.25	30.78:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.31	8.06:	11.09	27.12	-0.356:	15.22	30.76:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.43	8.14:	11.08	27.12	-0.356:	15.21	30.75:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.54	8.25:	11.09	27.13	-0.357:	15.23	30.78:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.79	8.47:	11.00	27.06	-0.358:	15.10	30.66:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.89	8.56:	11.20	27.22	-0.361:	15.33	30.89:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.11	8.98:	10.90	27.00	-0.358:	15.05	30.61:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.11	8.98:	10.99	27.08	-0.360:	15.10	30.67:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.27	8.85:	10.99	27.07	-0.361:	15.09	30.67:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.08	8.37:	11.06	27.12	-0.360:	15.15	30.72:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.08	8.39:	11.06	27.12	-0.360:	15.15	30.72:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	4.52	4.52	6.34:	7.24	23.81	-0.288:	10.50	25.98:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		4.90	6.74:	7.16	23.77	-0.289:	10.47	25.97:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.17	6.46:	7.28	23.84	-0.292:	10.63	26.09:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.18	6.39:	7.28	23.85	-0.292:	10.63	26.09:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.25	6.50:	7.47	23.97	-0.294:	10.87	26.27:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.33	6.75:	7.62	24.07	-0.297:	11.03	26.40:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.42	7.02:	7.40	23.93	-0.295:	10.78	26.21:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.46	6.91:	7.49	23.99	-0.296:	10.91	26.31:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.50	7.03:	7.15	23.79	-0.292:	10.50	26.01:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.51	6.63:	7.15	23.79	-0.292:	10.50	26.01:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.60	6.66:	7.29	23.88	-0.294:	10.73	26.19:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.64	6.59:	7.12	23.77	-0.293:	10.46	25.98:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.68	6.57:	7.46	23.98	-0.297:	10.88	26.30:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.75	6.95:	7.47	23.99	-0.297:	10.89	26.31:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.79	7.00:			:	10.89	26.31:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.07	2.07	3.57:	7.52	24.02	-0.278:	10.88	26.30:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.30	4.20:			:	10.88	26.30:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.12	5.66:	7.53	24.03	-0.289:	11.01	26.40:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.13	5.39:	7.76	24.18	-0.292:	11.33	26.65:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.14	5.53:	7.76	24.18	-0.292:	11.33	26.65:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.29	5.49:	7.83	24.22	-0.293:	11.38	26.69:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.64	5.78:	8.03	24.36	-0.297:	11.57	26.85:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.03	6.22:	7.97	24.33	-0.299:	11.56	26.84:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.05	6.13:	7.98	24.33	-0.299:	11.56	26.85:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.16	6.26:	7.96	24.33	-0.300:	11.50	26.81:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.23	6.39:	8.10	24.42	-0.302:	11.68	26.95:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.42	6.70:	8.05	24.39	-0.302:	11.63	26.92:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.48	6.72:	8.04	24.39	-0.302:	11.63	26.92:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.54	6.78:	8.04	24.39	-0.303:	11.64	26.93:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.67	6.89:	7.99	24.37	-0.303:	11.55	26.87:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.72	6.94:	8.16	24.48	-0.305:	11.75	27.03:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.83	7.21:	7.84	24.29	-0.302:	11.45	26.80:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.83	7.21:	7.98	24.38	-0.304:	11.55	26.89:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.91	7.08:	7.98	24.38	-0.304:	11.55	26.88:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.24	7.18:	8.05	24.42	-0.307:	11.61	26.93:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.25	7.19:	8.05	24.42	-0.307:	11.61	26.93:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	5.53	5.53	8.13:	10.05	28.15-0.367:		14.12	31.82:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.02	8.93:	10.05	28.16-0.370:		14.17	31.88:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.36	8.44:	10.23	28.31-0.375:		14.41	32.13:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.38	8.35:	10.24	28.31-0.375:		14.41	32.13:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.52	8.57:	10.50	28.53-0.380:		14.74	32.48:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.71	9.05:	10.64	28.65-0.384:		14.88	32.64:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.91	9.56:	10.38	28.45-0.381:		14.59	32.33:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.00	9.42:	10.54	28.57-0.384:		14.79	32.55:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.10	9.67:	10.10	28.22-0.378:		14.27	32.01:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.13	9.04:	10.10	28.22-0.378:		14.26	32.00:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.28	9.07:	10.40	28.47-0.384:		14.67	32.43:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.35	8.98:	10.06	28.19-0.379:		14.21	31.96:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.41	8.91:	10.52	28.57-0.387:		14.78	32.54:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.52	9.53:	10.53	28.58-0.388:		14.79	32.56:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.58	9.58:			:	14.79	32.56:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.43	2.43	4.67:	10.47	28.53-0.352:		14.66	32.42:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.90	6.08:			:	14.66	32.42:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.34	7.90:	10.69	28.71-0.375:		15.00	32.79:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.38	7.51:	11.06	29.03-0.381:		15.48	33.31:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.41	7.79:	11.06	29.03-0.381:		15.48	33.31:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.64	7.70:	11.11	29.07-0.383:		15.52	33.36:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.02	7.96:	11.26	29.22-0.388:		15.66	33.52:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.44	8.45:	11.29	29.25-0.392:		15.74	33.62:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.47	8.30:	11.30	29.25-0.392:		15.74	33.62:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.70	8.55:	11.21	29.18-0.392:		15.61	33.47:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.84	8.78:	11.41	29.36-0.396:		15.84	33.75:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.23	9.35:	11.38	29.34-0.399:		15.83	33.74:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.35	9.41:	11.37	29.34-0.400:		15.82	33.73:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.45	9.51:	11.39	29.36-0.401:		15.85	33.77:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.71	9.72:	11.28	29.28-0.401:		15.70	33.61:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.80	9.79:	11.49	29.46-0.405:		15.94	33.88:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.02	10.22:	11.23	29.24-0.402:		15.69	33.61:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.02	10.22:	11.29	29.30-0.403:		15.71	33.64:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.17	10.04:	11.29	29.30-0.405:		15.71	33.64:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.05	9.59:	11.34	29.35-0.404:		15.75	33.69:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.05	9.62:	11.34	29.35-0.404:		15.75	33.69:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	5.45	5.45	7.19:	5.14	31.78	-0.408:	7.71	34.03:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.72	7.30:	5.08	31.74	-0.409:	7.68	34.01:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.90	7.07:	5.15	31.80	-0.412:	7.77	34.10:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.91	7.01:	5.15	31.80	-0.412:	7.77	34.10:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.88	7.03:	5.26	31.90	-0.414:	7.91	34.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.85	7.16:	5.36	31.99	-0.415:	8.01	34.35:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.82	7.30:	5.22	31.88	-0.412:	7.86	34.21:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.80	7.18:	5.26	31.92	-0.413:	7.93	34.28:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.78	7.25:	5.08	31.78	-0.410:	7.70	34.07:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.77	6.91:	5.08	31.78	-0.410:	7.70	34.07:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.79	6.87:	5.15	31.83	-0.411:	7.82	34.18:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.80	6.77:	5.07	31.77	-0.410:	7.68	34.05:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.81	6.72:	5.25	31.93	-0.413:	7.92	34.29:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.84	7.01:	5.27	31.94	-0.413:	7.93	34.30:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.78	6.96:			:	7.93	34.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.13	2.13	3.64:	5.33	31.99	-0.386:	7.96	34.32:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.36	4.11:			:	7.96	34.32:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.08	5.54:	5.30	31.97	-0.400:	8.00	34.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.09	5.30:	5.43	32.08	-0.402:	8.18	34.55:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.10	5.42:	5.43	32.09	-0.402:	8.18	34.55:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.31	5.47:	5.47	32.12	-0.404:	8.22	34.59:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.77	5.86:	5.62	32.26	-0.410:	8.36	34.74:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.27	6.39:	5.58	32.24	-0.414:	8.35	34.74:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.30	6.32:	5.58	32.24	-0.413:	8.35	34.74:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.32	6.35:	5.60	32.26	-0.415:	8.34	34.74:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.33	6.43:	5.68	32.34	-0.416:	8.45	34.86:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.36	6.56:	5.65	32.33	-0.415:	8.42	34.85:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.37	6.54:	5.65	32.33	-0.417:	8.42	34.84:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.38	6.55:	5.65	32.34	-0.417:	8.43	34.86:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.40	6.55:	5.64	32.34	-0.415:	8.40	34.84:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.41	6.56:	5.75	32.44	-0.418:	8.53	34.97:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.43	6.70:	5.55	32.28	-0.412:	8.33	34.79:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.43	6.70:	5.66	32.38	-0.416:	8.42	34.89:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.45	6.54:	5.66	32.38	-0.416:	8.42	34.89:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.20	7.09:	5.71	32.42	-0.423:	8.46	34.93:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.21	7.11:	5.71	32.42	-0.423:	8.46	34.93:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	5.62	5.62	7.16:	5.47	33.87-0.445:		7.70	35.97:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.89	7.30:	5.41	33.83-0.444:		7.65	35.94:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.08	7.12:	5.46	33.88-0.446:		7.72	36.02:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.09	7.07:	5.46	33.88-0.447:		7.73	36.02:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.06	7.08:	5.55	33.97-0.448:		7.84	36.14:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.04	7.19:	5.64	34.06-0.449:		7.93	36.25:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.01	7.32:	5.52	33.96-0.447:		7.80	36.12:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.00	7.22:	5.55	33.99-0.447:		7.85	36.18:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.98	7.27:	5.40	33.86-0.444:		7.66	35.99:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.97	6.98:	5.40	33.86-0.445:		7.66	35.99:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.00	6.95:	5.43	33.90-0.445:		7.74	36.07:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.01	6.86:	5.39	33.86-0.445:		7.65	35.98:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.02	6.83:	5.54	34.00-0.447:		7.85	36.18:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.04	7.08:	5.55	34.01-0.447:		7.86	36.20:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.00	7.04:			:	7.86	36.20:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.24	2.24	3.57:	5.63	34.08-0.417:		7.90	36.25:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.48	4.03:			:	7.90	36.25:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.23	5.52:	5.57	34.03-0.432:		7.90	36.25:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.23	5.31:	5.67	34.13-0.434:		8.04	36.40:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.24	5.41:	5.67	34.13-0.434:		8.04	36.40:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.37	5.41:	5.70	34.16-0.436:		8.07	36.43:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.77	5.74:	5.85	34.30-0.442:		8.21	36.59:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.18	6.20:	5.80	34.27-0.444:		8.19	36.58:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.21	6.13:	5.80	34.28-0.445:		8.19	36.58:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.25	6.18:	5.83	34.31-0.445:		8.19	36.59:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.27	6.26:	5.90	34.38-0.447:		8.28	36.70:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.34	6.41:	5.87	34.37-0.447:		8.26	36.69:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.35	6.41:	5.87	34.37-0.447:		8.26	36.69:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.37	6.43:	5.87	34.38-0.447:		8.27	36.70:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.41	6.45:	5.87	34.39-0.448:		8.25	36.69:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.43	6.47:	5.97	34.48-0.450:		8.36	36.82:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.47	6.61:	5.78	34.32-0.446:		8.18	36.64:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.47	6.61:	5.89	34.44-0.448:		8.27	36.75:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.49	6.49:	5.89	34.44-0.449:		8.27	36.75:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.06	6.87:	5.94	34.48-0.458:		8.31	36.79:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.06	6.89:	5.94	34.48-0.458:		8.31	36.79:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7	5.50	5.50	6.66	4.79	32.94	-0.425	6.54	34.48	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3		5.75	6.78	4.70	32.88	-0.425	6.46	34.42	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2		5.92	6.67	4.72	32.91	-0.427	6.50	34.47	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1		5.93	6.63	4.73	32.91	-0.427	6.50	34.47	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4		5.88	6.62	4.79	32.97	-0.428	6.58	34.55	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6		5.82	6.66	4.88	33.05	-0.429	6.67	34.64	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7		5.77	6.72	4.77	32.97	-0.427	6.56	34.54	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8		5.74	6.63	4.78	32.98	-0.426	6.58	34.57	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9		5.71	6.65	4.67	32.89	-0.424	6.44	34.45	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6		5.70	6.43	4.66	32.89	-0.424	6.44	34.45	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1		5.70	6.40	4.65	32.88	-0.424	6.45	34.46	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0		5.71	6.32	4.66	32.89	-0.424	6.44	34.44	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4		5.71	6.30	4.76	32.98	-0.426	6.57	34.57	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8		5.72	6.48	4.77	32.99	-0.426	6.58	34.58	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3		5.67	6.44				6.58	34.58	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1	2.27	2.27	3.28	4.88	33.08	-0.400	6.67	34.67	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3		2.44	3.57				6.67	34.67	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3		4.06	5.01	4.76	32.99	-0.412	6.58	34.59	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1		4.06	4.85	4.81	33.03	-0.413	6.65	34.67	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0		4.07	4.91	4.81	33.03	-0.413	6.65	34.67	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3		4.20	4.94	4.84	33.07	-0.415	6.69	34.70	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6		4.62	5.32	5.00	33.21	-0.421	6.84	34.86	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1		5.06	5.78	4.93	33.17	-0.421	6.79	34.82	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9		5.09	5.74	4.93	33.17	-0.421	6.79	34.82	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9		5.08	5.75	4.98	33.22	-0.428	6.83	34.87	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1		5.08	5.79	5.03	33.27	-0.415	6.89	34.94	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4		5.07	5.84	5.00	33.26	-0.418	6.86	34.92	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9		5.07	5.83	4.99	33.25	-0.434	6.86	34.92	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5		5.07	5.83	4.99	33.26	-0.415	6.86	34.93	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2		5.06	5.81	5.01	33.28	-0.447	6.87	34.95	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9		5.06	5.81	5.10	33.36	-0.400	6.96	35.04	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1		5.06	5.89	4.89	33.20	-0.421	6.76	34.87	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1		5.06	5.89	5.03	33.33	-0.450	6.89	35.00	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0		5.06	5.78	5.03	33.33	-0.485	6.89	35.00	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1		5.85	6.43	5.08	33.37	-0.433	6.94	35.05	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0		5.86	6.44	5.08	33.37	-0.433	6.94	35.05	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	6.27	6.27	7.28:	6.89	22.00-0.269:		8.95	23.19:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.56	7.49:	6.72	21.92-0.268:		8.81	23.11:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.78	7.42:	6.76	21.94 0.059:		8.87	23.15:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.78	7.38:	6.77	21.94-0.402:		8.87	23.15:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.78	7.41:	6.87	22.01-0.268:		9.00	23.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.79	7.52:	7.01	22.09-0.271:		9.14	23.33:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.79	7.64:	6.80	21.98 1.109:		8.92	23.20:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.79	7.57:	6.82	21.99-0.215:		8.97	23.22:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.79	7.62:	6.60	21.87-0.266:		8.71	23.07:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.79	7.41:	6.60	21.87-0.268:		8.71	23.07:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.83	7.42:	6.59	21.87-0.269:		8.75	23.10:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.85	7.37:	6.58	21.86-0.268:		8.69	23.06:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.87	7.36:	6.77	21.97-0.275:		8.92	23.20:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.90	7.55:	6.78	21.98-0.277:		8.93	23.21:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.90	7.55:			:	8.93	23.21:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.10	2.10	3.02:	6.90	22.04-0.249:		9.02	23.27:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.31	3.41:			:	9.02	23.27:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.78	5.65:	6.75	21.97-0.260:		8.93	23.22:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.79	5.49:	6.83	22.01-0.261:		9.06	23.30:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.79	5.56:	6.83	22.01-0.261:		9.06	23.30:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.81	5.48:	6.89	22.05-0.261:		9.12	23.33:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.16	5.79:	7.12	22.18-0.265:		9.33	23.48:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.53	6.18:	7.00	22.12-0.266:		9.24	23.43:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.56	6.14:	7.01	22.12-0.266:		9.25	23.43:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.61	6.20:	7.07	22.16-0.267:		9.28	23.46:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.64	6.28:	7.14	22.20-0.268:		9.37	23.52:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.73	6.43:	7.07	22.17-0.268:		9.31	23.49:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.76	6.44:	7.06	22.17-0.268:		9.31	23.49:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.79	6.47:	7.05	22.17-0.268:		9.30	23.48:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.85	6.51:	7.06	22.18-0.268:		9.29	23.49:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.87	6.54:	7.19	22.25-0.270:		9.43	23.58:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.93	6.67:	6.85	22.08-0.266:		9.11	23.38:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.93	6.67:	7.05	22.19-0.269:		9.29	23.50:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.96	6.60:	7.05	22.19-0.269:		9.29	23.50:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.43	6.93:	7.13	22.24-0.272:		9.37	23.55:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.43	6.94:	7.13	22.24-0.272:		9.37	23.55:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	6.53	6.53	7.81:	6.22	28.75	-0.374:	8.34	30.43:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.79	7.96:	6.12	28.69	-0.374:	8.27	30.38:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.99	7.82:	6.18	28.74	-0.376:	8.35	30.45:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.99	7.77:	6.18	28.74	-0.377:	8.35	30.45:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.97	7.78:	6.29	28.83	-0.378:	8.49	30.58:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.94	7.87:	6.40	28.92	-0.379:	8.60	30.68:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.91	7.98:	6.24	28.80	-0.377:	8.42	30.54:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.90	7.89:	6.28	28.83	-0.377:	8.48	30.59:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.88	7.93:	6.07	28.69	-0.374:	8.24	30.39:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.87	7.67:	6.07	28.69	-0.374:	8.24	30.39:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.89	7.65:	6.11	28.72	-0.375:	8.33	30.47:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.90	7.58:	6.06	28.68	-0.374:	8.22	30.38:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.91	7.55:	6.25	28.83	-0.377:	8.46	30.58:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.92	7.77:	6.26	28.84	-0.377:	8.47	30.59:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.88	7.73:			:	8.47	30.59:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	2.48	2.48	3.66:	6.32	28.88	-0.347:	8.50	30.62:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		2.72	4.11:			:	8.50	30.62:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.99	6.09:	6.27	28.85	-0.364:	8.51	30.63:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.00	5.90:	6.38	28.94	-0.365:	8.67	30.78:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.00	5.99:	6.38	28.94	-0.365:	8.67	30.78:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.96	5.83:	6.43	28.97	-0.366:	8.72	30.81:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.25	6.06:	6.60	29.12	-0.370:	8.88	30.97:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.56	6.40:	6.54	29.08	-0.371:	8.85	30.95:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.58	6.34:	6.55	29.08	-0.372:	8.85	30.95:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.63	6.40:	6.57	29.11	-0.372:	8.86	30.96:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.65	6.48:	6.65	29.18	-0.374:	8.96	31.06:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.74	6.64:	6.61	29.16	-0.374:	8.92	31.04:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.76	6.64:	6.61	29.16	-0.374:	8.92	31.04:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.78	6.66:	6.60	29.16	-0.374:	8.92	31.05:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.83	6.70:	6.60	29.16	-0.374:	8.90	31.03:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.86	6.72:	6.72	29.26	-0.376:	9.03	31.15:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.90	6.86:	6.47	29.08	-0.373:	8.79	30.95:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.90	6.86:	6.61	29.20	-0.375:	8.91	31.07:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.94	6.76:	6.61	29.19	-0.375:	8.91	31.07:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.28	6.94:	6.67	29.24	-0.378:	8.97	31.12:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.29	6.96:	6.67	29.24	-0.378:	8.97	31.12:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.27	7.27	9.24:	8.65	31.11-0.424:		11.67	33.98:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.61	9.55:	8.62	31.09-0.426:		11.67	34.00:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.85	9.27:	8.75	31.21-0.430:		11.84	34.18:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.86	9.20:	8.75	31.21-0.430:		11.84	34.18:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.90	9.30:	8.95	31.39-0.434:		12.08	34.44:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.95	9.56:	9.06	31.51-0.436:		12.21	34.58:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.01	9.84:	8.85	31.32-0.433:		11.97	34.34:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.03	9.73:	8.95	31.42-0.435:		12.11	34.49:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.06	9.87:	8.63	31.13-0.430:		11.72	34.08:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.07	9.44:	8.63	31.13-0.430:		11.71	34.08:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.14	9.43:	8.82	31.31-0.434:		11.99	34.37:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.17	9.35:	8.60	31.11-0.430:		11.68	34.04:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.20	9.29:	8.94	31.41-0.436:		12.09	34.49:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.25	9.70:	8.95	31.42-0.437:		12.10	34.50:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.19	9.62:		:		12.10	34.50:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.33	3.33	5.23:	8.89	31.38-0.397:		12.01	34.39:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.76	6.21:		:		12.01	34.39:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.30	8.17:	9.05	31.52-0.423:		12.25	34.66:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.30	7.89:	9.31	31.76-0.427:		12.59	35.04:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.30	8.05:	9.31	31.76-0.427:		12.59	35.04:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.10	7.65:	9.35	31.80-0.426:		12.63	35.08:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.27	7.73:	9.50	31.94-0.430:		12.76	35.24:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.46	7.97:	9.51	31.96-0.432:		12.81	35.31:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.48	7.85:	9.51	31.97-0.432:		12.82	35.31:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.65	8.04:	9.47	31.93-0.432:		12.73	35.22:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.74	8.21:	9.61	32.07-0.436:		12.91	35.43:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.02	8.62:	9.59	32.06-0.438:		12.89	35.42:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.11	8.67:	9.58	32.06-0.438:		12.89	35.42:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.19	8.75:	9.59	32.08-0.439:		12.91	35.45:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.37	8.88:	9.53	32.03-0.440:		12.82	35.36:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.44	8.94:	9.69	32.18-0.443:		13.00	35.57:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.60	9.24:	9.47	31.98-0.440:		12.79	35.33:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.60	9.24:	9.55	32.07-0.442:		12.84	35.40:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.70	9.11:	9.55	32.07-0.443:		12.84	35.40:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.39	8.57:	9.60	32.11-0.441:		12.88	35.45:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.39	8.58:	9.60	32.11-0.441:		12.88	35.45:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	7.36	7.36	9.33:	7.44	29.41-0.389:		10.45	32.01:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.65	9.48:	7.41	29.39-0.395:		10.46	32.02:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.85	9.19:	7.53	29.49-0.399:		10.62	32.18:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.86	9.13:	7.53	29.50-0.400:		10.62	32.18:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.84	9.18:	7.72	29.65-0.399:		10.85	32.41:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.84	9.38:	7.83	29.75-0.306:		10.97	32.53:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.84	9.60:	7.63	29.59-0.401:		10.74	32.32:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.83	9.47:	7.72	29.67-0.405:		10.87	32.45:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.83	9.57:	7.42	29.43-0.397:		10.50	32.10:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.82	9.16:	7.41	29.43-0.397:		10.50	32.10:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.86	9.11:	7.60	29.58-0.401:		10.76	32.34:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.88	9.02:	7.39	29.41-0.397:		10.47	32.07:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.89	8.95:	7.71	29.67-0.401:		10.86	32.45:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.92	9.31:	7.72	29.68-0.401:		10.87	32.46:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.79	9.17:			:	10.87	32.46:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.45	3.45	5.38:	7.67	29.64-0.369:		10.78	32.37:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.81	6.15:			:	10.78	32.37:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.14	7.92:	7.81	29.76-0.390:		11.01	32.60:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.13	7.65:	8.06	29.97-0.394:		11.34	32.93:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.12	7.79:	8.06	29.97-0.394:		11.34	32.93:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.90	7.37:	8.10	30.00-0.393:		11.37	32.96:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.14	7.53:	8.25	30.14-0.397:		11.51	33.11:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.39	7.82:	8.26	30.15-0.399:		11.56	33.17:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.41	7.72:	8.26	30.15-0.399:		11.56	33.17:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.52	7.84:	8.22	30.13-0.400:		11.48	33.10:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.58	7.98:	8.36	30.25-0.402:		11.65	33.28:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.76	8.28:	8.33	30.24-0.403:		11.64	33.28:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.81	8.30:	8.33	30.24-0.404:		11.64	33.27:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.86	8.35:	8.34	30.26-0.404:		11.65	33.30:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.98	8.41:	8.29	30.22-0.404:		11.57	33.22:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.02	8.45:	8.45	30.36-0.407:		11.75	33.41:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.12	8.68:	8.22	30.18-0.404:		11.54	33.20:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.12	8.68:	8.31	30.26-0.405:		11.59	33.27:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.18	8.51:	8.31	30.26-0.406:		11.59	33.27:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.20	8.31:	8.35	30.30-0.407:		11.63	33.31:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.20	8.33:	8.35	30.30-0.407:		11.63	33.31:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.67	7.67	9.57:	7.75	24.38-0.311:		10.97	26.62:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.96	9.72:	7.70	24.36-0.317:		10.95	26.62:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.16	9.43:	7.82	24.44-0.320:		11.12	26.74:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.17	9.36:	7.82	24.44-0.319:		11.12	26.75:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.16	9.42:	8.01	24.56-0.324:		11.35	26.93:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.15	9.63:	8.12	24.64-0.345:		11.47	27.03:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.15	9.88:	7.90	24.50-0.320:		11.22	26.84:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.14	9.76:	7.99	24.56-0.321:		11.35	26.94:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.14	9.88:	7.68	24.37-0.318:		10.97	26.65:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.13	9.47:	7.67	24.37-0.318:		10.97	26.65:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.17	9.41:	7.85	24.48-0.320:		11.23	26.85:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.19	9.31:	7.65	24.35-0.318:		10.93	26.63:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.20	9.24:	7.97	24.56-0.322:		11.34	26.94:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.24	9.60:	7.99	24.57-0.322:		11.35	26.95:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.04	9.39:			:	11.35	26.95:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.35	3.35	5.30:	7.93	24.53-0.293:		11.25	26.87:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.74	6.12:			:	11.25	26.87:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.32	8.08:	8.07	24.63-0.312:		11.49	27.06:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.31	7.80:	8.32	24.80-0.315:		11.81	27.33:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.29	7.93:	8.32	24.80-0.314:		11.81	27.33:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.06	7.50:	8.36	24.83-0.314:		11.85	27.36:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.31	7.65:	8.52	24.94-0.317:		12.00	27.49:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.56	7.95:	8.52	24.95-0.319:		12.04	27.53:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.58	7.84:	8.53	24.95-0.319:		12.04	27.53:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.68	7.97:	8.49	24.93-0.319:		11.97	27.48:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.74	8.10:	8.63	25.03-0.321:		12.14	27.62:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.92	8.41:	8.60	25.02-0.322:		12.12	27.61:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.97	8.43:	8.60	25.02-0.322:		12.12	27.61:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.03	8.47:	8.61	25.03-0.322:		12.14	27.63:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.14	8.52:	8.56	25.00-0.323:		12.06	27.58:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.19	8.56:	8.73	25.12-0.325:		12.25	27.73:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.28	8.77:	8.48	24.96-0.322:		12.01	27.55:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.28	8.77:	8.58	25.04-0.324:		12.08	27.61:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.34	8.60:	8.58	25.04-0.324:		12.08	27.61:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.37	8.43:	8.63	25.07-0.325:		12.12	27.64:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.37	8.45:	8.63	25.07-0.325:		12.12	27.64:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	8.28	8.28	10.05:	7.98	23.89	-0.312:	10.85	25.82:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.56	10.16:	7.93	23.87	-0.313:	10.84	25.82:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.75	9.91:	8.03	23.93	-0.315:	10.97	25.92:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.76	9.85:	8.03	23.93	-0.315:	10.97	25.93:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.73	9.89:	8.18	24.03	-0.317:	11.17	26.07:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.70	10.06:	8.28	24.10	-0.318:	11.27	26.16:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.68	10.28:	8.09	23.99	-0.316:	11.06	26.01:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.66	10.16:	8.16	24.03	-0.316:	11.16	26.08:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.64	10.27:	7.91	23.88	-0.313:	10.85	25.86:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.63	9.89:	7.91	23.88	-0.313:	10.85	25.85:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.67	9.83:	8.05	23.96	-0.315:	11.06	26.01:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.68	9.73:	7.89	23.87	-0.313:	10.82	25.84:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.69	9.67:	8.15	24.03	-0.317:	11.15	26.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.72	9.99:	8.17	24.04	-0.317:	11.17	26.10:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.41	9.66:			:	11.17	26.10:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.74	3.74	5.53:	8.14	24.02	-0.288:	11.10	26.04:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.15	6.29:			:	11.10	26.04:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.65	8.27:	8.24	24.09	-0.305:	11.28	26.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.62	7.99:	8.44	24.22	-0.308:	11.55	26.40:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.60	8.10:	8.44	24.22	-0.307:	11.55	26.40:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.32	7.63:	8.48	24.25	-0.306:	11.59	26.43:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.57	7.80:	8.63	24.36	-0.309:	11.73	26.54:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.83	8.10:	8.62	24.36	-0.311:	11.76	26.57:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.85	8.00:	8.63	24.36	-0.311:	11.76	26.57:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.95	8.12:	8.61	24.35	-0.311:	11.71	26.54:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.01	8.25:	8.72	24.43	-0.313:	11.86	26.66:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.19	8.54:	8.70	24.43	-0.314:	11.84	26.65:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.24	8.56:	8.69	24.42	-0.314:	11.84	26.65:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.29	8.60:	8.71	24.44	-0.315:	11.86	26.67:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.41	8.65:	8.68	24.43	-0.315:	11.80	26.63:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.45	8.67:	8.83	24.53	-0.317:	11.97	26.77:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.54	8.86:	8.59	24.38	-0.315:	11.74	26.60:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.54	8.86:	8.70	24.46	-0.316:	11.83	26.67:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.59	8.70:	8.71	24.46	-0.317:	11.83	26.67:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.63	8.58:	8.75	24.49	-0.317:	11.87	26.70:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.63	8.59:	8.75	24.49	-0.317:	11.87	26.70:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	7.66	7.66	9.20:	6.01	26.17-0.340:		8.32	27.80:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.87	9.19:	5.96	26.14-0.341:		8.29	27.79:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.01	8.98:	6.02	26.19-0.343:		8.37	27.86:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.02	8.93:	6.02	26.19-0.343:		8.38	27.86:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.93	8.90:	6.11	26.26-0.344:		8.50	27.96:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.82	8.96:	6.19	26.31-0.344:		8.58	28.02:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.71	9.04:	6.05	26.23-0.341:		8.43	27.92:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.64	8.92:	6.08	26.26-0.341:		8.48	27.96:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.57	8.96:	5.94	26.16-0.339:		8.30	27.82:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.54	8.65:	5.94	26.16-0.339:		8.29	27.82:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.54	8.57:	6.00	26.20-0.340:		8.40	27.90:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.54	8.47:	5.93	26.16-0.339:		8.28	27.81:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.54	8.40:	6.08	26.27-0.341:		8.49	27.97:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.54	8.64:	6.10	26.27-0.341:		8.50	27.98:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.23	8.30:			:	8.50	27.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.58	3.58	5.09:	6.12	26.29-0.316:		8.49	27.98:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.85	5.54:			:	8.49	27.98:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.71	7.05:	6.13	26.30-0.329:		8.56	28.04:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.69	6.83:	6.24	26.38-0.331:		8.72	28.17:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.68	6.91:	6.24	26.38-0.331:		8.73	28.17:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.49	6.56:	6.28	26.41-0.330:		8.76	28.20:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.86	6.86:	6.42	26.51-0.334:		8.89	28.31:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.23	7.26:	6.40	26.50-0.339:		8.89	28.32:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.25	7.19:	6.40	26.51-0.335:		8.90	28.32:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.26	7.22:	6.41	26.52-0.334:		8.89	28.32:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.27	7.28:	6.49	26.58-0.337:		8.99	28.40:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.30	7.40:	6.47	26.58-0.336:		8.97	28.40:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.30	7.39:	6.46	26.57-0.338:		8.97	28.40:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.36	7.42:	6.48	26.59-0.340:		8.98	28.42:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.47	7.48:	6.48	26.60-0.689:		8.97	28.41:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.51	7.51:	6.59	26.68-0.336:		9.09	28.51:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.59	7.66:	6.39	26.55-0.340:		8.90	28.37:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.59	7.66:	6.51	26.64-0.342:		9.00	28.46:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.63	7.54:	6.52	26.64-0.344:		9.01	28.46:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.95	7.73:	6.55	26.67-0.343:		9.04	28.49:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.96	7.74:	6.55	26.67-0.343:		9.04	28.49:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	7.24	7.24	8.73:	5.17	27.57	-0.357:	7.29	29.12:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.42	8.67:	5.13	27.55	-0.358:	7.26	29.10:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.53	8.47:	5.17	27.59	-0.359:	7.32	29.16:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.54	8.42:	5.18	27.59	-0.360:	7.32	29.16:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.41	8.36:	5.24	27.64	-0.360:	7.42	29.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.27	8.37:	5.31	27.70	-0.359:	7.49	29.30:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.11	8.39:	5.20	27.63	-0.357:	7.37	29.22:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.02	8.25:	5.22	27.65	-0.357:	7.41	29.25:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.92	8.26:	5.12	27.58	-0.354:	7.27	29.15:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.88	7.98:	5.12	27.58	-0.354:	7.27	29.14:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.88	7.89:	5.15	27.60	-0.355:	7.34	29.20:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.88	7.79:	5.12	27.58	-0.354:	7.26	29.14:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.88	7.73:	5.23	27.66	-0.356:	7.42	29.27:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.88	7.94:	5.24	27.67	-0.356:	7.43	29.28:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.59	7.63:			:	7.43	29.28:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.80	3.80	5.25:	5.28	27.69	-0.336:	7.44	29.29:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.01	5.55:			:	7.44	29.29:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.41	6.68:	5.26	27.69	-0.345:	7.47	29.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.40	6.48:	5.34	27.75	-0.339:	7.59	29.42:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.40	6.55:	5.34	27.75	-0.350:	7.59	29.42:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.31	6.32:	5.38	27.78	-0.331:	7.63	29.45:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.77	6.71:	5.51	27.88	-0.352:	7.75	29.56:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.22	7.18:	5.48	27.87	-0.354:	7.74	29.56:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.25	7.12:	5.48	27.87	-0.355:	7.75	29.56:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.19	7.08:	5.51	27.89	-0.355:	7.75	29.57:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.16	7.11:	5.57	27.95	-0.355:	7.83	29.65:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.09	7.12:	5.55	27.95	-0.355:	7.82	29.65:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.06	7.08:	5.55	27.94	-0.355:	7.82	29.65:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.13	7.13:	5.56	27.96	-0.355:	7.83	29.67:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.26	7.20:	5.58	27.98	-0.356:	7.83	29.67:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.30	7.24:	5.67	28.05	-0.358:	7.94	29.76:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.39	7.38:	5.49	27.93	-0.356:	7.77	29.64:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.39	7.38:	5.61	28.03	-0.357:	7.87	29.73:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.44	7.28:	5.62	28.03	-0.358:	7.88	29.73:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.91	7.63:	5.65	28.05	-0.362:	7.91	29.76:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.91	7.65:	5.65	28.05	-0.362:	7.91	29.76:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C)	AVG. DAILY K1 /S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.24	7.24	8.92:	6.67	23.25-0.293:		9.31	24.90:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.51	9.02:	6.63	23.23-0.294:		9.29	24.89:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.69	8.78:	6.71	23.28-0.296:		9.40	24.97:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.70	8.72:	6.71	23.28-0.296:		9.41	24.97:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.66	8.76:	6.83	23.35-0.297:		9.56	25.08:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.61	8.92:	6.90	23.40-0.298:		9.64	25.14:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.56	9.13:	6.75	23.32-0.296:		9.46	25.03:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.53	9.03:	6.79	23.34-0.296:		9.53	25.08:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.49	9.15:	6.61	23.24-0.294:		9.30	24.92:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.47	8.81:	6.61	23.24-0.294:		9.30	24.92:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.51	8.72:	6.70	23.30-0.295:		9.46	25.03:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.52	8.62:	6.60	23.24-0.294:		9.28	24.91:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.53	8.54:	6.79	23.35-0.296:		9.54	25.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.55	8.84:	6.80	23.36-0.296:		9.55	25.10:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.24	8.48:			:	9.55	25.10:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.22	4.22	5.90:	6.81	23.37-0.278:		9.53	25.08:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.51	6.39:			:	9.53	25.08:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.99	7.52:	6.87	23.40-0.288:		9.65	25.17:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.98	7.27:	7.02	23.50-0.290:		9.86	25.33:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.97	7.36:	7.02	23.50-0.290:		9.87	25.33:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.93	7.13:	7.06	23.52-0.290:		9.90	25.35:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.36	7.48:	7.20	23.62-0.294:		10.04	25.46:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.80	7.94:	7.19	23.62-0.297:		10.06	25.48:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.83	7.86:	7.19	23.62-0.296:		10.06	25.48:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.85	7.91:	7.19	23.62-0.297:		10.03	25.46:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.86	7.99:	7.29	23.69-0.298:		10.15	25.55:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.91	8.14:	7.27	23.68-0.297:		10.14	25.55:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.92	8.13:	7.26	23.68-0.298:		10.13	25.55:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.00	8.18:	7.28	23.69-0.298:		10.15	25.57:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.16	8.26:	7.27	23.69-0.297:		10.12	25.55:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.21	8.30:	7.40	23.78-0.302:		10.27	25.66:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.31	8.48:	7.18	23.65-0.299:		10.06	25.52:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.31	8.48:	7.30	23.73-0.527:		10.15	25.59:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.37	8.35:	7.31	23.73-0.290:		10.16	25.60:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.67	8.52:	7.34	23.76-0.304:		10.19	25.62:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.67	8.53:	7.34	23.76-0.304:		10.19	25.62:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: /S/C):	MAX. DAILY K1: (C)	REMARKS
1	S.F. KOKTULI	H	54.7:	8.69	8.69	10.56:	9.35	21.16	-0.271:	12.39	22.98:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.02	10.77:	9.32	21.15	-0.272:	12.40	22.99:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.24	10.49:	9.43	21.21	-0.273:	12.54	23.09:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.25	10.43:	9.43	21.21	-0.274:	12.55	23.09:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.26	10.53:	9.59	21.30	-0.276:	12.75	23.23:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.28	10.80:	9.67	21.35	-0.277:	12.84	23.29:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.30	11.14:	9.48	21.25	-0.273:	12.62	23.15:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.31	11.08:	9.55	21.29	-0.276:	12.72	23.22:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.32	11.29:	9.30	21.16	-0.322:	12.41	23.02:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.32	10.89:	9.30	21.15	-0.389:	12.41	23.02:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.39	10.81:	9.46	21.25	-0.288:	12.65	23.17:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.42	10.70:	9.28	21.15	-0.274:	12.39	23.00:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.44	10.62:	9.55	21.30	-0.282:	12.73	23.23:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.48	10.99:	9.56	21.30	-0.272:	12.74	23.24:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.92	10.37:			:	12.74	23.24:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.71	4.71	6.59:	9.54	21.29	-0.254:	12.68	23.20:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.18	7.46:			:	12.68	23.20:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.20	9.03:	9.67	21.37	-0.267:	12.89	23.34:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.16	8.69:	9.89	21.49	-0.269:	13.18	23.55:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.13	8.80:	9.89	21.49	-0.268:	13.19	23.55:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.01	8.44:	9.93	21.52	-0.268:	13.23	23.57:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.32	8.65:	10.08	21.61	-0.271:	13.36	23.68:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.63	9.00:	10.09	21.62	-0.273:	13.41	23.71:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.65	8.89:	10.09	21.62	-0.273:	13.41	23.71:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.80	9.06:	10.06	21.61	-0.274:	13.35	23.67:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.88	9.22:	10.18	21.69	-0.275:	13.50	23.79:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.13	9.59:	10.16	21.68	-0.276:	13.49	23.78:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.20	9.63:	10.16	21.68	-0.277:	13.49	23.78:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.27	9.67:	10.18	21.69	-0.277:	13.51	23.80:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.42	9.72:	10.15	21.68	-0.278:	13.45	23.77:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.46	9.75:	10.31	21.77	-0.280:	13.63	23.89:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.56	9.93:	10.07	21.64	-0.278:	13.40	23.74:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.56	9.93:	10.18	21.71	-0.279:	13.48	23.80:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.62	9.76:	10.18	21.71	-0.279:	13.49	23.80:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.62	9.63:	10.22	21.73	-0.280:	13.52	23.83:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.63	9.64:	10.22	21.73	-0.280:	13.52	23.83:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.43	7.43	8.85:	7.60	27.10-0.359:		9.61	28.63:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.74	9.04:	7.56	27.07-0.361:		9.59	28.62:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.94	8.89:	7.61	27.12-0.361:		9.66	28.68:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.95	8.85:	7.61	27.12-0.361:		9.66	28.68:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.93	8.90:	7.68	27.18-0.363:		9.76	28.77:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.91	9.05:	7.74	27.23-0.362:		9.82	28.83:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.90	9.24:	7.63	27.15-0.362:		9.70	28.73:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.89	9.19:	7.65	27.17-0.362:		9.74	28.77:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.87	9.29:	7.54	27.09-0.360:		9.59	28.65:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.86	9.03:	7.54	27.09-0.360:		9.59	28.65:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.92	8.99:	7.59	27.13-0.361:		9.68	28.72:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.94	8.90:	7.54	27.09-0.361:		9.59	28.65:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.96	8.86:	7.66	27.19-0.362:		9.75	28.78:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.99	9.10:	7.67	27.19-0.362:		9.76	28.79:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.65	8.73:		:		9.76	28.79:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.36	4.36	5.74:	7.71	27.22-0.339:		9.77	28.81:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.75	6.33:		:		9.77	28.81:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.24	7.56:	7.71	27.22-0.351:		9.82	28.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.23	7.34:	7.80	27.30-0.352:		9.95	28.97:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.22	7.41:	7.80	27.30-0.352:		9.96	28.97:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.28	7.33:	7.83	27.32-0.353:		9.98	28.99:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.61	7.59:	7.95	27.42-0.357:		10.10	29.10:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.94	7.95:	7.93	27.41-0.359:		10.10	29.11:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.97	7.88:	7.94	27.42-0.359:		10.11	29.11:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.04	7.97:	7.95	27.43-0.360:		10.10	29.11:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.08	8.07:	8.02	27.49-0.361:		10.19	29.19:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.21	8.28:	8.00	27.49-0.362:		10.18	29.19:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.25	8.30:	8.00	27.49-0.362:		10.18	29.19:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.31	8.34:	8.01	27.50-0.363:		10.19	29.21:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.44	8.41:	8.02	27.52-0.364:		10.19	29.21:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.48	8.44:	8.12	27.59-0.365:		10.30	29.31:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.57	8.58:	7.95	27.48-0.364:		10.13	29.18:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.57	8.58:	8.06	27.57-0.365:		10.23	29.27:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.62	8.48:	8.07	27.57-0.365:		10.23	29.27:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.74	8.50:	8.09	27.59-0.367:		10.26	29.29:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.74	8.51:	8.09	27.59-0.367:		10.26	29.29:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.08	7.08	8.62:	6.42	35.92	-0.492:	8.46	38.03:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.33	8.71:	6.39	35.90	-0.493:	8.45	38.02:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.49	8.54:	6.44	35.96	-0.496:	8.52	38.11:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.50	8.49:	6.45	35.97	-0.496:	8.53	38.12:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.44	8.50:	6.54	36.06	-0.497:	8.64	38.25:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.38	8.59:	6.60	36.14	-0.498:	8.71	38.34:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.31	8.70:	6.49	36.04	-0.495:	8.59	38.21:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.27	8.61:	6.53	36.08	-0.496:	8.64	38.27:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.24	8.66:	6.39	35.95	-0.492:	8.47	38.09:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.22	8.38:	6.39	35.94	-0.492:	8.47	38.09:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.24	8.33:	6.45	36.01	-0.494:	8.57	38.21:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.24	8.24:	6.38	35.94	-0.492:	8.46	38.08:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.25	8.18:	6.53	36.09	-0.495:	8.64	38.29:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.27	8.43:	6.54	36.10	-0.496:	8.65	38.30:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.13	8.28:			:	8.65	38.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.26	4.26	5.72:	6.57	36.13	-0.468:	8.66	38.31:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.52	6.16:			:	8.66	38.31:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.86	7.24:	6.58	36.15	-0.483:	8.73	38.39:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.86	7.05:	6.70	36.27	-0.485:	8.88	38.57:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.86	7.14:	6.70	36.28	-0.485:	8.88	38.57:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.99	7.16:	6.72	36.30	-0.487:	8.90	38.59:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.33	7.42:	6.83	36.42	-0.492:	9.01	38.73:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.67	7.79:	6.82	36.43	-0.497:	9.02	38.76:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.69	7.72:	6.82	36.43	-0.499:	9.02	38.76:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.70	7.75:	6.83	36.44	-0.498:	9.01	38.75:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.71	7.82:	6.90	36.53	-0.496:	9.10	38.87:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.74	7.93:	6.89	36.53	-0.497:	9.09	38.88:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.74	7.92:	6.89	36.53	-0.500:	9.09	38.88:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.79	7.95:	6.91	36.55	-0.495:	9.11	38.91:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.87	7.99:	6.90	36.56	-0.429:	9.09	38.89:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.90	8.01:	7.00	36.66	-0.505:	9.20	39.02:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.96	8.15:	6.85	36.53	-0.504:	9.06	38.88:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.96	8.15:	6.94	36.63	-0.348:	9.13	38.97:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.00	8.03:	6.94	36.63	-0.492:	9.13	38.98:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.31	8.21:	6.97	36.66	-0.505:	9.16	39.00:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.32	8.22:	6.97	36.66	-0.505:	9.16	39.00:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.36	8.36	10.54:	11.08	31.26	-0.441:	14.18	34.41:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.79	11.08:	11.09	31.27	-0.444:	14.22	34.47:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.09	10.76:	11.23	31.41	-0.449:	14.39	34.67:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.10	10.69:	11.23	31.41	-0.450:	14.40	34.67:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.20	10.88:	11.43	31.61	-0.454:	14.64	34.95:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.33	11.28:	11.53	31.71	-0.457:	14.74	35.08:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.48	11.74:	11.32	31.52	-0.455:	14.51	34.82:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.55	11.68:	11.43	31.62	-0.457:	14.65	34.99:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.63	11.92:	11.11	31.32	-0.452:	14.27	34.56:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.66	11.45:	11.11	31.32	-0.452:	14.27	34.56:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.78	11.45:	11.34	31.54	-0.458:	14.58	34.90:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.83	11.35:	11.08	31.30	-0.453:	14.23	34.52:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.88	11.28:	11.43	31.63	-0.460:	14.65	35.00:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.96	11.77:	11.44	31.64	-0.461:	14.66	35.01:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.75	11.53:			:	14.66	35.01:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.58	5.58	7.83:	11.35	31.56	-0.423:	14.54	34.86:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.20	9.14:			:	14.54	34.86:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.30	10.56:	11.58	31.78	-0.449:	14.86	35.24:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.28	10.24:	11.87	32.07	-0.454:	15.21	35.66:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.26	10.40:	11.87	32.07	-0.454:	15.21	35.66:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.21	10.15:	11.90	32.09	-0.454:	15.23	35.69:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.35	10.18:	12.01	32.21	-0.457:	15.34	35.83:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.50	10.40:	12.06	32.27	-0.459:	15.43	35.94:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.51	10.26:	12.06	32.28	-0.460:	15.43	35.94:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.79	10.55:	12.00	32.21	-0.461:	15.33	35.83:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.95	10.79:	12.15	32.37	-0.465:	15.51	36.05:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.38	11.37:	12.14	32.38	-0.469:	15.51	36.06:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.51	11.46:	12.14	32.37	-0.470:	15.51	36.06:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.58	11.49:	12.16	32.40	-0.471:	15.54	36.10:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.72	11.53:	12.10	32.35	-0.471:	15.45	36.00:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.76	11.55:	12.26	32.51	-0.474:	15.62	36.22:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.86	11.77:	12.08	32.34	-0.472:	15.45	36.02:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.86	11.77:	12.13	32.40	-0.473:	15.47	36.06:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.92	11.54:	12.13	32.40	-0.473:	15.48	36.06:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.52	10.96:	12.16	32.43	-0.470:	15.50	36.09:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.52	10.97:	12.16	32.43	-0.470:	15.50	36.09:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	8.93	8.93	11.04:	8.41	33.96	-0.485:	11.20	36.88:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.19	11.11:	8.41	33.98	-0.487:	11.23	36.93:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.36	10.83:	8.52	34.09	-0.491:	11.37	37.09:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.37	10.76:	8.52	34.09	-0.491:	11.37	37.09:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.32	10.80:	8.68	34.25	-0.493:	11.56	37.32:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.28	11.00:	8.75	34.33	-0.495:	11.65	37.42:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.23	11.22:	8.59	34.18	-0.491:	11.47	37.22:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.20	11.11:	8.67	34.26	-0.492:	11.57	37.35:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.17	11.23:	8.44	34.04	-0.488:	11.29	37.02:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.15	10.84:	8.43	34.04	-0.487:	11.28	37.02:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.17	10.75:	8.61	34.21	-0.491:	11.52	37.29:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.19	10.64:	8.42	34.02	-0.487:	11.26	36.99:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.19	10.54:	8.68	34.28	-0.492:	11.58	37.37:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.22	10.90:	8.69	34.29	-0.493:	11.59	37.38:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.79	10.45:			:	11.59	37.38:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.16	5.16	7.36:	8.63	34.23	-0.454:	11.50	37.27:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.62	8.23:			:	11.50	37.27:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.48	9.53:	8.80	34.41	-0.478:	11.74	37.56:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.43	9.24:	9.02	34.63	-0.482:	12.02	37.90:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.39	9.35:	9.02	34.63	-0.482:	12.02	37.90:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.10	8.86:	9.04	34.66	-0.479:	12.04	37.93:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.24	8.92:	9.15	34.78	-0.483:	12.14	38.06:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.40	9.14:	9.19	34.82	-0.485:	12.21	38.15:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.42	9.02:	9.19	34.83	-0.485:	12.21	38.15:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.58	9.21:	9.14	34.79	-0.486:	12.14	38.08:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.68	9.37:	9.27	34.92	-0.489:	12.29	38.26:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.93	9.76:	9.26	34.93	-0.492:	12.29	38.28:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.01	9.80:	9.26	34.93	-0.492:	12.29	38.28:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.05	9.81:	9.28	34.96	-0.493:	12.32	38.32:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.13	9.79:	9.25	34.93	-0.493:	12.25	38.25:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.16	9.80:	9.38	35.07	-0.496:	12.40	38.43:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.21	9.96:	9.23	34.93	-0.494:	12.26	38.27:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.21	9.96:	9.29	35.00	-0.495:	12.29	38.33:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.25	9.74:	9.29	35.00	-0.495:	12.29	38.33:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.11	9.45:	9.31	35.03	-0.494:	12.31	38.35:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.11	9.46:	9.31	35.03	-0.494:	12.31	38.35:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.66	8.66	10.66:	7.42	27.42-0.371:	10.28	29.68:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.89	10.64:	7.41	27.43-0.373:	10.30	29.71:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.04	10.35:	7.52	27.51-0.375:	10.44	29.84:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.05	10.29:	7.52	27.51-0.376:	10.44	29.84:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.97	10.31:	7.67	27.63-0.377:	10.63	30.01:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.88	10.48:	7.75	27.69-0.378:	10.72	30.09:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.79	10.68:	7.57	27.57-0.374:	10.52	29.92:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.72	10.57:	7.65	27.63-0.375:	10.63	30.02:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.66	10.70:	7.42	27.46-0.371:	10.34	29.77:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.62	10.32:	7.41	27.46-0.371:	10.34	29.77:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.62	10.18:	7.58	27.59-0.373:	10.57	29.97:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.63	10.06:	7.40	27.45-0.371:	10.31	29.75:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.63	9.95:	7.65	27.64-0.374:	10.63	30.03:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.65	10.29:	7.66	27.65-0.375:	10.64	30.04:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.98	9.57:		:	10.64	30.04:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.92	4.92	7.03:	7.62	27.62-0.348:	10.56	29.97:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.24	7.63:		:	10.56	29.97:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.75	8.70:	7.78	27.74-0.363:	10.80	30.19:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.69	8.38:	8.00	27.91-0.365:	11.08	30.44:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.64	8.47:	8.00	27.91-0.365:	11.08	30.44:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.33	7.94:	8.03	27.93-0.363:	11.11	30.47:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.58	8.10:	8.14	28.03-0.367:	11.22	30.58:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.84	8.41:	8.18	28.06-0.369:	11.28	30.64:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.86	8.30:	8.18	28.06-0.369:	11.29	30.65:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.97	8.43:	8.14	28.04-0.370:	11.22	30.59:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.03	8.57:	8.26	28.14-0.372:	11.37	30.73:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.21	8.88:	8.26	28.15-0.373:	11.37	30.75:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.27	8.90:	8.25	28.15-0.373:	11.37	30.74:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.33	8.92:	8.28	28.17-0.374:	11.39	30.77:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.44	8.93:	8.24	28.15-0.374:	11.34	30.73:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.48	8.95:	8.38	28.26-0.377:	11.49	30.87:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.56	9.11:	8.21	28.14-0.375:	11.33	30.73:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.56	9.11:	8.28	28.20-0.376:	11.37	30.79:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.60	8.91:	8.29	28.21-0.376:	11.38	30.79:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.63	8.81:	8.31	28.22-0.377:	11.40	30.81:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.63	8.82:	8.31	28.22-0.377:	11.40	30.81:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.90	8.90	10.66:	7.79	23.11	-0.302:	10.53	24.86:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.14	10.69:	7.76	23.10	-0.303:	10.53	24.87:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.31	10.44:	7.86	23.16	-0.305:	10.65	24.96:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.32	10.38:	7.86	23.16	-0.306:	10.65	24.96:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.25	10.41:	7.99	23.24	-0.307:	10.82	25.09:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.18	10.57:	8.06	23.29	-0.307:	10.90	25.15:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.09	10.79:	7.89	23.19	-0.305:	10.71	25.01:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.03	10.70:	7.94	23.23	-0.305:	10.79	25.08:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.97	10.85:	7.74	23.11	-0.302:	10.53	24.90:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.93	10.50:	7.73	23.11	-0.302:	10.53	24.90:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.94	10.36:	7.87	23.19	-0.303:	10.73	25.04:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.95	10.24:	7.72	23.10	-0.302:	10.51	24.88:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.94	10.13:	7.94	23.24	-0.304:	10.80	25.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.96	10.44:	7.95	23.24	-0.305:	10.81	25.09:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.18	9.60:			:	10.81	25.09:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.83	4.83	6.73:	7.94	23.23	-0.281:	10.75	25.06:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.20	7.36:			:	10.75	25.06:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.82	8.58:	8.06	23.31	-0.294:	10.95	25.20:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.76	8.26:	8.24	23.43	-0.295:	11.20	25.38:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.71	8.33:	8.25	23.43	-0.295:	11.20	25.39:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.48	7.88:	8.28	23.45	-0.294:	11.24	25.41:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.83	8.14:	8.41	23.53	-0.298:	11.35	25.50:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.18	8.53:	8.42	23.55	-0.300:	11.40	25.54:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.21	8.44:	8.42	23.55	-0.300:	11.40	25.54:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.30	8.56:	8.40	23.54	-0.300:	11.35	25.51:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.35	8.68:	8.51	23.61	-0.302:	11.49	25.62:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.51	8.95:	8.50	23.62	-0.302:	11.48	25.62:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.55	8.97:	8.50	23.61	-0.303:	11.48	25.62:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.64	9.02:	8.52	23.63	-0.303:	11.50	25.64:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.81	9.08:	8.50	23.62	-0.304:	11.46	25.62:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.86	9.11:	8.63	23.71	-0.306:	11.61	25.73:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.96	9.28:	8.44	23.60	-0.304:	11.43	25.61:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.96	9.28:	8.54	23.67	-0.306:	11.50	25.66:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.02	9.12:	8.54	23.67	-0.306:	11.51	25.67:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.12	9.12:	8.57	23.68	-0.307:	11.53	25.68:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.12	9.13:	8.57	23.68	-0.307:	11.53	25.68:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.06	9.06	11.31:	13.35	34.14	-0.500:	16.19	37.50:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.66	12.25:	13.38	34.18	-0.506:	16.24	37.58:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.07	11.99:	13.50	34.32	-0.513:	16.39	37.78:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.08	11.91:	13.50	34.32	-0.513:	16.39	37.78:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.30	12.25:	13.66	34.51	-0.518:	16.59	38.04:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.58	12.87:	13.73	34.59	-0.523:	16.67	38.15:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.93	13.61:	13.57	34.42	-0.523:	16.48	37.92:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.13	13.72:	13.66	34.52	-0.526:	16.60	38.07:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.35	14.20:	13.41	34.25	-0.524:	16.30	37.69:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.43	13.84:	13.41	34.25	-0.524:	16.30	37.69:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.64	13.83:	13.62	34.48	-0.531:	16.57	38.04:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.72	13.74:	13.39	34.23	-0.527:	16.27	37.65:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.77	13.63:	13.67	34.54	-0.533:	16.61	38.10:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.88	14.14:	13.67	34.55	-0.534:	16.62	38.11:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.69	12.92:			:	16.62	38.11:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.31	7.31	9.64:	13.61	34.48	-0.489:	16.52	37.98:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.11	11.30:			:	16.52	37.98:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.45	12.15:	13.82	34.72	-0.513:	16.81	38.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.29	11.65:	14.07	35.00	-0.517:	17.11	38.78:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.17	11.72:	14.07	35.00	-0.516:	17.11	38.78:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		9.06	11.31:	14.09	35.03	-0.515:	17.13	38.81:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.35	11.48:	14.18	35.14	-0.520:	17.22	38.94:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.67	11.87:	14.24	35.22	-0.524:	17.31	39.07:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.70	11.72:	14.24	35.22	-0.524:	17.31	39.07:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.20	12.23:	14.18	35.16	-0.528:	17.22	38.95:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.49	12.59:	14.31	35.31	-0.534:	17.37	39.18:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.22	13.44:	14.32	35.33	-0.541:	17.38	39.20:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.44	13.60:	14.32	35.33	-0.544:	17.38	39.20:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.45	13.57:	14.34	35.37	-0.544:	17.41	39.25:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.49	13.47:	14.29	35.31	-0.544:	17.34	39.15:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.51	13.45:	14.42	35.47	-0.547:	17.49	39.36:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.55	13.59:	14.29	35.33	-0.544:	17.36	39.20:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.55	13.59:	14.33	35.38	-0.545:	17.38	39.23:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.58	13.31:	14.34	35.39	-0.546:	17.38	39.23:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.29	12.91:	14.35	35.40	-0.543:	17.39	39.25:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.29	12.92:	14.35	35.40	-0.543:	17.39	39.25:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.58	9.58	11.79:	11.14	30.76-0.443:		13.95	33.55:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.99	12.21:	11.17	30.80-0.447:		14.01	33.63:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.27	11.95:	11.30	30.92-0.451:		14.17	33.80:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.28	11.88:	11.30	30.92-0.452:		14.17	33.81:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.35	12.07:	11.47	31.08-0.455:		14.38	34.04:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.45	12.47:	11.54	31.15-0.457:		14.46	34.13:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.58	12.96:	11.37	31.01-0.455:		14.27	33.93:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.64	12.97:	11.47	31.10-0.458:		14.39	34.07:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.72	13.29:	11.21	30.87-0.454:		14.08	33.73:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.74	12.95:	11.21	30.87-0.454:		14.08	33.73:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.83	12.84:	11.43	31.07-0.459:		14.36	34.04:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.87	12.75:	11.19	30.85-0.454:		14.05	33.70:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.89	12.61:	11.47	31.11-0.460:		14.40	34.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.95	13.04:	11.48	31.12-0.461:		14.41	34.10:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.59	11.64:			:	14.41	34.10:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.11	7.11	9.33:	11.43	31.07-0.427:		14.32	34.00:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.56	10.30:			:	14.32	34.00:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.55	10.96:	11.64	31.28-0.443:		14.62	34.33:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.40	10.49:	11.90	31.53-0.446:		14.93	34.70:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.28	10.55:	11.90	31.53-0.445:		14.94	34.70:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.98	9.97:	11.93	31.55-0.443:		14.96	34.73:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.32	10.21:	12.02	31.66-0.448:		15.05	34.85:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.68	10.62:	12.08	31.72-0.452:		15.14	34.96:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.70	10.49:	12.08	31.72-0.452:		15.14	34.96:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.06	10.86:	12.02	31.67-0.454:		15.05	34.86:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.25	11.13:	12.16	31.81-0.458:		15.22	35.06:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.78	11.78:	12.16	31.82-0.463:		15.22	35.08:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.93	11.89:	12.16	31.82-0.464:		15.22	35.08:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.98	11.89:	12.19	31.85-0.465:		15.25	35.12:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.08	11.86:	12.14	31.81-0.465:		15.18	35.04:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.11	11.85:	12.28	31.95-0.468:		15.34	35.23:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.18	12.01:	12.13	31.82-0.466:		15.20	35.08:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.18	12.01:	12.18	31.87-0.467:		15.22	35.11:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.22	11.77:	12.18	31.88-0.467:		15.22	35.11:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.10	11.54:	12.20	31.89-0.466:		15.24	35.13:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.10	11.54:	12.20	31.89-0.466:		15.24	35.13:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.40	9.40	10.67:	5.42	20.56	-0.259:	7.45	21.60:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.52	10.51:	5.35	20.54	-0.259:	7.40	21.58:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.59	10.32:	5.39	20.56	-0.260:	7.46	21.61:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.60	10.27:	5.40	20.56	-0.260:	7.47	21.62:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.41	10.15:	5.45	20.59	-0.259:	7.55	21.66:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.17	10.08:	5.50	20.62	-0.259:	7.60	21.70:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.87	10.00:	5.38	20.57	-0.256:	7.47	21.63:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.68	9.82:	5.38	20.57	-0.255:	7.48	21.64:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.44	9.76:	5.30	20.53	-0.253:	7.37	21.58:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.33	9.48:	5.29	20.53	-0.252:	7.37	21.58:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.20	9.25:	5.32	20.54	-0.252:	7.43	21.61:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.17	9.11:	5.30	20.54	-0.252:	7.37	21.58:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.12	9.00:	5.38	20.58	-0.252:	7.49	21.65:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.08	9.14:	5.39	20.58	-0.252:	7.50	21.65:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.06	8.06:			:	7.50	21.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.47	5.47	6.81:	5.45	20.61	-0.359:	7.54	21.68:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.42	6.77:			:	7.54	21.68:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.23	7.40:	5.42	20.60	-0.244:	7.56	21.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.15	7.13:	5.49	20.64	-0.244:	7.66	21.75:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.09	7.14:	5.49	20.64	-0.244:	7.66	21.75:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.64	6.55:	5.53	20.66	-0.241:	7.70	21.77:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.16	7.00:	5.66	20.73	-0.246:	7.83	21.85:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.66	7.51:	5.63	20.72	-0.247:	7.82	21.85:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.69	7.47:	5.63	20.72	-0.248:	7.82	21.85:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.61	7.41:	5.66	20.74	-0.248:	7.83	21.87:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.57	7.42:	5.72	20.77	-0.248:	7.91	21.91:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.46	7.39:	5.70	20.77	-0.247:	7.90	21.91:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.42	7.34:	5.70	20.77	-0.247:	7.89	21.91:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.56	7.45:	5.71	20.78	-0.248:	7.91	21.93:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.81	7.62:	5.74	20.80	-0.249:	7.93	21.94:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.89	7.69:	5.84	20.85	-0.251:	8.03	22.00:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.03	7.87:	5.65	20.77	-0.249:	7.85	21.91:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.03	7.87:	5.78	20.84	-0.251:	7.97	21.98:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.10	7.81:	5.79	20.84	-0.251:	7.98	21.98:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.36	8.00:	5.81	20.85	-0.253:	8.00	21.99:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.36	8.01:	5.81	20.85	-0.253:	8.00	21.99:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.93	9.93	11.60:	8.49	21.88	-0.289:	11.03	23.41:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.16	11.60:	8.46	21.86	-0.289:	11.02	23.41:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.31	11.36:	8.54	21.91	-0.291:	11.13	23.49:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.32	11.31:	8.54	21.92	-0.291:	11.13	23.49:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.23	11.32:	8.65	21.98	-0.292:	11.27	23.58:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.13	11.45:	8.70	22.02	-0.292:	11.34	23.63:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.00	11.64:	8.55	21.94	-0.290:	11.17	23.53:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.92	11.55:	8.59	21.96	-0.290:	11.23	23.57:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.81	11.70:	8.43	21.87	-0.287:	11.03	23.44:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.76	11.40:	8.43	21.87	-0.287:	11.02	23.44:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.74	11.21:	8.54	21.93	-0.288:	11.19	23.54:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.74	11.09:	8.42	21.87	-0.287:	11.01	23.43:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.72	10.97:	8.59	21.97	-0.289:	11.24	23.58:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.73	11.24:	8.60	21.97	-0.289:	11.25	23.59:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.30	9.74:			:	11.25	23.59:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.63	5.63	7.43:	8.61	21.98	-0.267:	11.23	23.57:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.92	7.94:			:	11.23	23.57:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.12	8.84:	8.70	22.03	-0.276:	11.38	23.68:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.00	8.46:	8.85	22.12	-0.277:	11.58	23.82:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.91	8.48:	8.85	22.12	-0.276:	11.59	23.82:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.57	7.92:	8.88	22.14	-0.275:	11.62	23.84:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.09	8.33:	9.00	22.22	-0.279:	11.73	23.93:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.59	8.85:	9.01	22.23	-0.281:	11.77	23.96:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.62	8.77:	9.02	22.23	-0.282:	11.77	23.96:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.73	8.91:	9.01	22.23	-0.282:	11.74	23.94:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.80	9.04:	9.10	22.29	-0.284:	11.86	24.03:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.98	9.33:	9.09	22.29	-0.284:	11.85	24.03:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.03	9.36:	9.09	22.29	-0.285:	11.85	24.03:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.15	9.44:	9.11	22.31	-0.285:	11.87	24.05:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.37	9.55:	9.10	22.31	-0.287:	11.85	24.04:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.44	9.60:	9.22	22.38	-0.288:	11.99	24.13:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.57	9.78:	9.04	22.28	-0.287:	11.81	24.02:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.57	9.78:	9.15	22.35	-0.288:	11.89	24.08:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.64	9.65:	9.15	22.35	-0.288:	11.90	24.09:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.75	9.68:	9.17	22.36	-0.290:	11.91	24.10:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.75	9.69:	9.17	22.36	-0.290:	11.91	24.10:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.36	10.36	12.15:	10.54	25.66-0.358:	13.03	27.60:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.67	12.33:	10.53	25.66-0.361:	13.05	27.62:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.88	12.11:	10.61	25.73-0.364:	13.15	27.71:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.89	12.05:	10.61	25.73-0.365:	13.16	27.71:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.87	12.14:	10.72	25.81-0.363:	13.30	27.84:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.86	12.38:	10.78	25.86-0.356:	13.36	27.89:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.85	12.71:	10.64	25.76-0.363:	13.20	27.77:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.84	12.70:	10.69	25.80-0.368:	13.27	27.83:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.82	12.94:	10.53	25.68-0.362:	13.07	27.66:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.81	12.68:	10.52	25.68-0.361:	13.06	27.66:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.86	12.55:	10.65	25.77-0.363:	13.24	27.80:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.89	12.44:	10.52	25.68-0.362:	13.05	27.65:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.89	12.33:	10.69	25.81-0.366:	13.28	27.84:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.92	12.65:	10.70	25.82-0.364:	13.29	27.85:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.08	10.75:		:	13.29	27.85:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.67	6.67	8.55:	10.70	25.82-0.337:	13.26	27.83:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.04	9.29:		:	13.26	27.83:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.01	9.99:	10.80	25.90-0.347:	13.43	27.97:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.83	9.52:	10.96	26.02-0.348:	13.64	28.16:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.70	9.51:	10.97	26.02-0.347:	13.64	28.16:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.40	8.98:	10.99	26.04-0.346:	13.67	28.18:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.88	9.34:	11.10	26.13-0.350:	13.77	28.28:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.35	9.83:	11.12	26.15-0.354:	13.82	28.33:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.38	9.74:	11.12	26.15-0.354:	13.82	28.33:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.63	10.01:	11.11	26.15-0.355:	13.78	28.30:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.78	10.23:	11.20	26.22-0.358:	13.89	28.41:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.17	10.73:	11.20	26.23-0.360:	13.90	28.42:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.29	10.82:	11.20	26.23-0.361:	13.89	28.42:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.38	10.85:	11.22	26.25-0.362:	13.92	28.45:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.54	10.89:	11.21	26.24-0.363:	13.89	28.42:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.58	10.91:	11.32	26.34-0.365:	14.02	28.54:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.68	11.07:	11.17	26.23-0.363:	13.87	28.42:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.68	11.07:	11.25	26.30-0.365:	13.93	28.48:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.73	10.90:	11.26	26.30-0.365:	13.94	28.48:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.74	10.82:	11.27	26.31-0.365:	13.95	28.50:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.74	10.83:	11.27	26.31-0.365:	13.95	28.50:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: (C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.51	11.51	13.89:	15.14	35.81	-0.556:	18.04	39.59:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.09	14.79:	15.18	35.87	-0.563:	18.10	39.70:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.47	14.51:	15.31	36.03	-0.570:	18.26	39.93:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.49	14.43:	15.31	36.04	-0.570:	18.27	39.93:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.69	14.77:	15.48	36.25	-0.577:	18.47	40.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.95	15.41:	15.55	36.34	-0.581:	18.55	40.35:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.30	16.18:	15.38	36.14	-0.581:	18.36	40.09:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.49	16.33:	15.48	36.26	-0.585:	18.48	40.27:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.74	16.89:	15.22	35.95	-0.582:	18.17	39.83:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.83	16.62:	15.22	35.95	-0.583:	18.17	39.82:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.04	16.59:	15.45	36.23	-0.591:	18.46	40.24:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.13	16.53:	15.20	35.93	-0.586:	18.14	39.78:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.15	16.37:	15.48	36.28	-0.593:	18.49	40.29:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.26	16.86:	15.49	36.29	-0.595:	18.50	40.30:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		11.55	14.28:			:	18.50	40.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.71	8.71	11.22:	15.42	36.20	-0.534:	18.40	40.15:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.55	13.12:			:	18.40	40.15:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.50	13.68:	15.67	36.51	-0.557:	18.72	40.63:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		10.20	13.00:	15.93	36.85	-0.560:	19.04	41.12:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.97	13.00:	15.93	36.85	-0.558:	19.04	41.12:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		9.97	12.65:	15.95	36.87	-0.558:	19.06	41.15:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		10.32	12.82:	16.03	36.98	-0.564:	19.13	41.27:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.68	13.21:	16.11	37.09	-0.569:	19.24	41.44:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.70	13.06:	16.11	37.10	-0.570:	19.24	41.45:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.39	13.73:	16.04	37.01	-0.575:	19.14	41.30:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.77	14.17:	16.18	37.19	-0.583:	19.31	41.56:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		12.74	15.24:	16.19	37.22	-0.594:	19.32	41.59:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		13.01	15.46:	16.19	37.21	-0.597:	19.32	41.59:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.96	15.34:	16.22	37.26	-0.597:	19.35	41.64:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.89	15.12:	16.16	37.19	-0.595:	19.27	41.53:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.88	15.06:	16.29	37.37	-0.598:	19.42	41.76:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.87	15.16:	16.18	37.23	-0.595:	19.31	41.60:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.87	15.16:	16.20	37.27	-0.596:	19.31	41.61:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.88	14.82:	16.20	37.27	-0.596:	19.31	41.61:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.64	14.48:	16.21	37.28	-0.593:	19.32	41.63:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.63	14.48:	16.21	37.28	-0.593:	19.32	41.63:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 (J/M2/S/C) C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.71	10.71	12.93:	12.07	37.42-0.572:	14.65	40.70:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.14	13.38:	12.10	37.47-0.578:	14.71	40.78:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.41	13.17:	12.21	37.60-0.583:	14.83	40.96:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.42	13.10:	12.21	37.60-0.583:	14.83	40.97:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.49	13.29:	12.34	37.76-0.587:	14.99	41.20:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.59	13.68:	12.39	37.84-0.590:	15.06	41.30:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.72	14.12:	12.27	37.69-0.588:	14.91	41.10:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.78	14.17:	12.34	37.78-0.591:	15.01	41.24:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.86	14.46:	12.15	37.56-0.587:	14.77	40.92:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.88	14.25:	12.15	37.56-0.588:	14.77	40.91:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.95	14.15:	12.32	37.77-0.592:	14.99	41.22:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.00	14.09:	12.14	37.55-0.589:	14.75	40.89:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.99	13.94:	12.35	37.81-0.593:	15.02	41.27:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.06	14.30:	12.36	37.82-0.594:	15.03	41.28:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.75	12.07:		:	15.03	41.28:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.53	8.53	10.80:	12.32	37.77-0.554:	14.96	41.18:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.91	11.74:		:	14.96	41.18:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.30	11.89:	12.50	37.99-0.566:	15.20	41.53:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.03	11.35:	12.70	38.24-0.568:	15.45	41.90:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.83	11.32:	12.70	38.24-0.566:	15.45	41.90:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.57	10.80:	12.72	38.27-0.563:	15.47	41.92:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.03	11.10:	12.80	38.38-0.570:	15.55	42.05:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.46	11.54:	12.86	38.46-0.576:	15.63	42.18:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.49	11.42:	12.86	38.46-0.577:	15.63	42.18:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.95	11.88:	12.81	38.41-0.581:	15.56	42.08:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.19	12.19:	12.92	38.56-0.586:	15.69	42.29:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.83	12.93:	12.93	38.58-0.593:	15.71	42.32:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.00	13.06:	12.93	38.58-0.595:	15.71	42.32:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.02	13.02:	12.95	38.62-0.596:	15.73	42.37:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.05	12.91:	12.92	38.58-0.596:	15.68	42.29:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.06	12.89:	13.03	38.73-0.599:	15.81	42.49:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.09	13.00:	12.93	38.61-0.596:	15.70	42.35:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.09	13.00:	12.97	38.67-0.597:	15.72	42.39:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.12	12.75:	12.97	38.68-0.598:	15.73	42.39:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.00	12.54:	12.98	38.69-0.597:	15.74	42.41:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.00	12.54:	12.98	38.69-0.597:	15.74	42.41:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.49	9.49	11.15:	8.14	24.72	-0.333:	10.49	26.35:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.71	11.15:	8.12	24.71	-0.335:	10.49	26.36:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.86	10.93:	8.20	24.77	-0.337:	10.59	26.44:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.87	10.87:	8.20	24.77	-0.337:	10.59	26.44:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.77	10.88:	8.30	24.84	-0.337:	10.72	26.55:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.66	11.00:	8.35	24.88	-0.337:	10.78	26.60:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.53	11.18:	8.21	24.79	-0.335:	10.63	26.49:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.43	11.11:	8.25	24.82	-0.335:	10.69	26.54:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.31	11.24:	8.11	24.73	-0.332:	10.50	26.40:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.24	11.00:	8.11	24.73	-0.331:	10.50	26.40:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.19	10.80:	8.21	24.80	-0.332:	10.66	26.51:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.19	10.68:	8.10	24.73	-0.331:	10.49	26.39:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.17	10.55:	8.26	24.83	-0.333:	10.70	26.55:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.18	10.81:	8.26	24.84	-0.333:	10.71	26.55:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.38	8.93:			:	10.71	26.55:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.82	6.82	8.50:	8.30	24.86	-0.319:	10.71	26.56:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.78	8.59:			:	10.71	26.56:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.03	8.73:	8.37	24.91	-0.321:	10.84	26.66:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.86	8.31:	8.51	25.01	-0.322:	11.04	26.82:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.74	8.29:	8.52	25.02	-0.321:	11.04	26.82:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.27	7.64:	8.54	25.03	-0.318:	11.07	26.84:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.88	8.14:	8.66	25.12	-0.324:	11.18	26.94:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.44	8.71:	8.67	25.14	-0.327:	11.22	26.98:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.48	8.64:	8.68	25.14	-0.328:	11.22	26.98:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.59	8.76:	8.67	25.14	-0.328:	11.19	26.96:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.65	8.89:	8.76	25.20	-0.330:	11.30	27.05:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.82	9.17:	8.75	25.21	-0.331:	11.30	27.06:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.87	9.19:	8.75	25.21	-0.331:	11.30	27.06:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.00	9.28:	8.77	25.23	-0.332:	11.32	27.08:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.22	9.39:	8.76	25.23	-0.333:	11.30	27.07:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.29	9.44:	8.88	25.31	-0.335:	11.43	27.17:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.41	9.62:	8.71	25.21	-0.335:	11.27	27.06:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.41	9.62:	8.81	25.28	-0.335:	11.34	27.12:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.48	9.49:	8.81	25.28	-0.335:	11.35	27.13:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.61	9.53:	8.83	25.29	-0.337:	11.37	27.14:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.61	9.54:	8.83	25.29	-0.337:	11.37	27.14:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.68	11.68	13.45:	11.29	22.54-0.313:	13.95	24.33:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.96	13.56:	11.27	22.54-0.315:	13.97	24.35:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.15	13.31:	11.37	22.60-0.317:	14.10	24.45:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.16	13.26:	11.38	22.61-0.317:	14.10	24.45:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.12	13.33:	11.51	22.69-0.319:	14.27	24.58:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.08	13.55:	11.57	22.74-0.319:	14.34	24.63:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.03	13.87:	11.40	22.63-0.317:	14.15	24.49:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.99	13.84:	11.46	22.67-0.317:	14.23	24.56:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.95	14.10:	11.25	22.55-0.314:	13.98	24.38:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.92	13.81:	11.25	22.54-0.314:	13.98	24.37:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.93	13.63:	11.41	22.64-0.316:	14.19	24.53:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.95	13.51:	11.24	22.54-0.314:	13.96	24.36:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.94	13.38:	11.45	22.68-0.317:	14.23	24.57:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.97	13.71:	11.46	22.68-0.317:	14.24	24.57:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.55	11.25:		:	14.24	24.57:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.45	7.45	9.34:	11.46	22.68-0.291:	14.21	24.55:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.66	9.91:		:	14.21	24.55:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.53	10.53:	11.60	22.77-0.299:	14.42	24.71:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.29	9.99:	11.79	22.90-0.300:	14.67	24.90:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.11	9.94:	11.80	22.90-0.299:	14.67	24.90:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.56	9.15:	11.83	22.92-0.296:	14.70	24.93:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.16	9.63:	11.94	23.00-0.301:	14.82	25.02:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.74	10.21:	11.98	23.03-0.304:	14.88	25.07:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.78	10.12:	11.98	23.03-0.305:	14.88	25.07:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.04	10.40:	11.95	23.01-0.306:	14.82	25.03:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.19	10.62:	12.06	23.09-0.308:	14.96	25.14:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.60	11.15:	12.05	23.09-0.310:	14.96	25.15:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.72	11.24:	12.05	23.09-0.311:	14.96	25.15:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.84	11.30:	12.07	23.11-0.312:	14.98	25.17:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.04	11.37:	12.05	23.10-0.313:	14.94	25.14:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.11	11.41:	12.19	23.20-0.315:	15.09	25.27:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.23	11.59:	12.00	23.08-0.313:	14.92	25.13:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.23	11.59:	12.09	23.14-0.314:	14.98	25.19:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.30	11.43:	12.10	23.15-0.315:	14.99	25.19:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.33	11.37:	12.12	23.16-0.315:	15.00	25.21:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.33	11.37:	12.12	23.16-0.315:	15.00	25.21:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.55	11.55	13.74:	16.15	37.33	-0.585:	18.80	41.01:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.20	14.81:	16.18	37.38	-0.593:	18.86	41.11:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.63	14.58:	16.30	37.55	-0.600:	19.01	41.34:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.65	14.50:	16.31	37.55	-0.601:	19.01	41.34:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.90	14.90:	16.47	37.76	-0.608:	19.21	41.64:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.24	15.60:	16.53	37.85	-0.613:	19.27	41.75:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.68	16.47:	16.36	37.64	-0.614:	19.09	41.48:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.94	16.70:	16.46	37.77	-0.620:	19.21	41.67:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		14.28	17.37:	16.22	37.46	-0.618:	18.92	41.23:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		14.43	17.19:	16.21	37.46	-0.619:	18.92	41.22:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.75	17.25:	16.43	37.73	-0.629:	19.19	41.64:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.86	17.23:	16.19	37.43	-0.624:	18.89	41.19:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.90	17.08:	16.46	37.78	-0.631:	19.22	41.68:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		15.02	17.56:	16.46	37.79	-0.633:	19.22	41.69:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		11.77	14.50:			:	19.22	41.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.39	9.39	11.74:	16.40	37.71	-0.567:	19.13	41.55:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.28	13.73:			:	19.13	41.55:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.96	14.08:	16.63	38.01	-0.590:	19.43	42.02:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		10.60	13.36:	16.88	38.35	-0.592:	19.73	42.50:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		10.33	13.32:	16.88	38.35	-0.589:	19.73	42.50:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		10.39	13.01:	16.90	38.37	-0.590:	19.75	42.53:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		10.93	13.36:	16.98	38.49	-0.598:	19.82	42.66:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		11.46	13.89:	17.05	38.60	-0.605:	19.92	42.83:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		11.50	13.75:	17.05	38.60	-0.606:	19.92	42.83:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		12.24	14.47:	16.99	38.52	-0.613:	19.83	42.69:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.65	14.94:	17.12	38.70	-0.621:	19.99	42.94:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.68	16.05:	17.13	38.73	-0.633:	20.00	42.97:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		13.97	16.28:	17.12	38.72	-0.637:	20.00	42.97:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		13.93	16.18:	17.15	38.77	-0.637:	20.03	43.03:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.89	15.98:	17.10	38.70	-0.635:	19.96	42.92:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.88	15.93:	17.23	38.88	-0.638:	20.10	43.15:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.89	16.03:	17.11	38.74	-0.636:	19.99	42.99:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.89	16.03:	17.14	38.78	-0.636:	19.99	43.00:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		13.90	15.73:	17.14	38.79	-0.637:	20.00	43.01:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.68	15.40:	17.15	38.80	-0.634:	20.01	43.02:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.67	15.41:	17.15	38.80	-0.634:	20.01	43.02:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.47	9.47	11.66:	15.52	43.76	-0.675:	18.00	47.81:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.35	13.24:	15.56	43.82	-0.687:	18.06	47.92:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.92	13.10:	15.66	43.98	-0.697:	18.18	48.15:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.95	13.02:	15.66	43.98	-0.698:	18.18	48.15:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.35	13.55:	15.79	44.19	-0.707:	18.34	48.45:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.88	14.42:	15.84	44.28	-0.715:	18.40	48.56:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.53	15.44:	15.72	44.10	-0.721:	18.26	48.31:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.91	15.76:	15.79	44.22	-0.728:	18.36	48.49:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.40	16.49:	15.60	43.93	-0.730:	18.12	48.08:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.60	16.38:	15.60	43.93	-0.733:	18.12	48.07:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.90	16.44:	15.78	44.19	-0.742:	18.34	48.47:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.00	16.42:	15.59	43.91	-0.738:	18.10	48.04:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.03	16.29:	15.80	44.24	-0.745:	18.37	48.52:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.15	16.72:	15.81	44.25	-0.747:	18.37	48.53:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		11.19	13.96:			:	18.37	48.53:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	10.70	10.70	13.00:	15.76	44.18	-0.697:	18.30	48.40:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		11.29	14.46:			:	18.30	48.40:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		11.24	14.24:	15.95	44.47	-0.710:	18.54	48.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		10.84	13.56:	16.15	44.80	-0.710:	18.79	49.32:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		10.54	13.47:	16.15	44.80	-0.706:	18.80	49.32:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		10.54	13.15:	16.17	44.83	-0.707:	18.81	49.34:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		11.10	13.51:	16.24	44.95	-0.716:	18.88	49.48:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		11.63	14.02:	16.30	45.06	-0.725:	18.96	49.65:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		11.66	13.90:	16.30	45.07	-0.726:	18.96	49.66:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		12.40	14.60:	16.25	44.99	-0.735:	18.89	49.53:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.79	15.05:	16.36	45.18	-0.744:	19.02	49.78:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.76	16.07:	16.37	45.21	-0.758:	19.04	49.82:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		14.02	16.28:	16.37	45.21	-0.762:	19.03	49.82:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		13.96	16.16:	16.40	45.26	-0.762:	19.06	49.88:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.88	15.94:	16.36	45.20	-0.759:	19.01	49.78:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.86	15.89:	16.47	45.38	-0.762:	19.13	50.02:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.85	15.97:	16.37	45.25	-0.760:	19.04	49.86:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.85	15.97:	16.40	45.30	-0.760:	19.05	49.89:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		13.86	15.68:	16.41	45.31	-0.761:	19.05	49.90:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.67	15.41:	16.41	45.32	-0.758:	19.06	49.91:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.67	15.41:	16.41	45.32	-0.758:	19.06	49.91:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.84	11.84	13.91:	12.74	41.30	-0.657:	15.04	44.61:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.24	14.30:	12.77	41.35	-0.663:	15.09	44.69:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.49	14.15:	12.85	41.47	-0.669:	15.19	44.86:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.50	14.09:	12.85	41.47	-0.668:	15.19	44.86:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.53	14.24:	12.95	41.62	-0.672:	15.32	45.07:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.59	14.55:	13.00	41.69	-0.673:	15.37	45.16:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.67	14.89:	12.90	41.57	-0.673:	15.26	44.99:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.71	14.92:	12.96	41.65	-0.675:	15.33	45.11:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.76	15.13:	12.81	41.46	-0.655:	15.15	44.83:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.77	15.02:	12.81	41.46	-0.659:	15.15	44.83:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.81	14.96:	12.95	41.64	-0.674:	15.33	45.10:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.85	14.95:	12.80	41.45	-0.676:	15.14	44.81:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.83	14.81:	12.97	41.68	-0.681:	15.35	45.15:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.89	15.07:	12.97	41.69	-0.679:	15.35	45.15:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.62	12.04:			:	15.35	45.15:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.93	9.93	12.06:	12.95	41.66	-0.638:	15.31	45.08:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.13	12.74:			:	15.31	45.08:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.91	12.44:	13.09	41.85	-0.642:	15.49	45.38:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.55	11.85:	13.25	42.08	-0.641:	15.70	45.72:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.28	11.75:	13.25	42.08	-0.638:	15.70	45.72:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		9.04	11.23:	13.27	42.10	-0.636:	15.71	45.74:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.69	11.71:	13.34	42.22	-0.645:	15.78	45.87:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.29	12.28:	13.39	42.30	-0.654:	15.85	45.99:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.32	12.19:	13.39	42.30	-0.655:	15.85	45.99:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.82	12.67:	13.36	42.26	-0.660:	15.80	45.92:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.08	12.99:	13.45	42.40	-0.666:	15.91	46.11:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.73	13.72:	13.46	42.43	-0.675:	15.93	46.14:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.90	13.85:	13.46	42.43	-0.677:	15.93	46.14:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.91	13.81:	13.48	42.47	-0.678:	15.95	46.19:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.94	13.70:	13.46	42.45	-0.678:	15.92	46.14:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.95	13.68:	13.56	42.59	-0.680:	16.02	46.32:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.98	13.77:	13.47	42.48	-0.678:	15.94	46.19:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.98	13.77:	13.51	42.55	-0.680:	15.96	46.25:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.01	13.55:	13.51	42.55	-0.680:	15.97	46.25:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.97	13.44:	13.52	42.56	-0.680:	15.97	46.26:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.97	13.44:	13.52	42.56	-0.680:	15.97	46.26:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	9.31	9.31	10.55:	5.94	20.76	-0.263:	7.71	21.68:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.41	10.39:	5.90	20.75	-0.263:	7.68	21.67:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.48	10.20:	5.92	20.76	-0.263:	7.72	21.69:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.48	10.16:	5.92	20.76	-0.263:	7.72	21.70:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.27	10.03:	5.95	20.78	-0.263:	7.76	21.72:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.99	9.92:	5.98	20.80	-0.261:	7.80	21.75:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.63	9.80:	5.90	20.77	-0.259:	7.72	21.71:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.38	9.61:	5.89	20.76	-0.257:	7.71	21.71:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.00	9.45:	5.87	20.75	-0.255:	7.67	21.69:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.77	9.22:	5.86	20.75	-0.254:	7.67	21.68:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.43	8.80:	5.86	20.75	-0.252:	7.69	21.70:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.37	8.66:	5.88	20.76	-0.252:	7.68	21.69:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.32	8.54:	5.89	20.77	-0.252:	7.72	21.72:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.28	8.65:	5.89	20.77	-0.252:	7.73	21.72:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.91	7.09:			:	7.73	21.72:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.45	7.45	8.69:	6.00	20.82	-0.254:	7.81	21.77:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.04	8.23:			:	7.81	21.77:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.66	7.84:	5.93	20.79	-0.249:	7.78	21.75:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.52	7.51:	5.95	20.81	-0.249:	7.83	21.79:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.42	7.46:	5.96	20.81	-0.249:	7.84	21.79:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.85	6.74:	5.99	20.83	-0.244:	7.87	21.81:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.73	7.53:	6.11	20.90	-0.252:	7.98	21.88:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.49	8.28:	6.08	20.89	-0.255:	7.97	21.88:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.53	8.26:	6.08	20.89	-0.255:	7.97	21.88:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.40	8.15:	6.12	20.91	-0.255:	8.00	21.90:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.33	8.12:	6.16	20.94	-0.255:	8.05	21.93:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.15	8.02:	6.15	20.94	-0.254:	8.05	21.94:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.09	7.95:	6.15	20.94	-0.254:	8.05	21.94:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.35	8.17:	6.17	20.95	-0.255:	8.07	21.95:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.77	8.49:	6.21	20.98	-0.258:	8.10	21.98:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.89	8.60:	6.29	21.02	-0.259:	8.19	22.03:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.08	8.82:	6.13	20.95	-0.258:	8.03	21.95:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.08	8.82:	6.26	21.02	-0.260:	8.16	22.02:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.19	8.80:	6.27	21.03	-0.260:	8.16	22.03:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.37	8.94:	6.28	21.03	-0.261:	8.18	22.04:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.37	8.95:	6.28	21.03	-0.261:	8.18	22.04:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	7.29	7.29	8.40:	5.56	37.39-0.513:		6.91	38.79:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.45	8.39:	5.51	37.36-0.514:		6.87	38.76:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.55	8.29:	5.53	37.38-0.515:		6.89	38.79:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.56	8.25:	5.53	37.38-0.515:		6.89	38.79:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.41	8.16:	5.54	37.41-0.514:		6.92	38.82:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.23	8.10:	5.58	37.45-0.513:		6.95	38.87:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.02	8.04:	5.53	37.41-0.510:		6.90	38.83:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.89	7.92:	5.51	37.40-0.508:		6.89	38.83:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.74	7.85:	5.51	37.40-0.506:		6.88	38.81:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.67	7.70:	5.50	37.40-0.506:		6.88	38.81:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.66	7.62:	5.48	37.38-0.505:		6.86	38.80:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.65	7.53:	5.52	37.41-0.506:		6.89	38.83:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.64	7.49:	5.53	37.43-0.506:		6.91	38.86:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.63	7.60:	5.53	37.44-0.506:		6.91	38.86:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.26	7.21:			:	6.91	38.86:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.84	5.84	6.80:	5.66	37.57-0.499:		7.04	39.00:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.81	6.78:			:	7.04	39.00:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.95	6.91:	5.54	37.46-0.499:		6.93	38.89:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.93	6.74:	5.55	37.48-0.499:		6.96	38.93:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.91	6.77:	5.56	37.48-0.499:		6.96	38.93:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.73	6.55:	5.57	37.49-0.496:		6.97	38.94:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.60	7.34:	5.67	37.61-0.508:		7.07	39.07:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.35	8.07:	5.64	37.60-0.515:		7.05	39.06:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.39	8.05:	5.64	37.60-0.516:		7.05	39.06:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.21	7.89:	5.69	37.65-0.515:		7.09	39.11:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.11	7.83:	5.72	37.69-0.514:		7.13	39.16:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.87	7.65:	5.71	37.70-0.512:		7.12	39.18:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.80	7.57:	5.71	37.70-0.511:		7.12	39.17:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.84	7.60:	5.72	37.72-0.512:		7.13	39.20:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.92	7.65:	5.75	37.76-0.513:		7.16	39.24:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.95	7.68:	5.80	37.82-0.515:		7.22	39.31:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.00	7.77:	5.69	37.73-0.513:		7.11	39.21:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.00	7.77:	5.80	37.84-0.515:		7.21	39.33:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.03	7.71:	5.80	37.85-0.515:		7.22	39.33:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.64	8.24:	5.82	37.86-0.522:		7.23	39.35:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.65	8.25:	5.82	37.86-0.522:		7.23	39.35:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.37	8.37	9.62:	6.93	33.45-0.466:		8.80	35.23:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.58	9.66:	6.84	33.38-0.467:		8.73	35.18:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.74	9.54:	6.89	33.43-0.469:		8.79	35.25:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.74	9.49:	6.90	33.43-0.469:		8.79	35.25:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.67	9.47:	6.98	33.52-0.470:		8.89	35.36:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.58	9.51:	7.06	33.60-0.470:		8.98	35.45:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.49	9.58:	6.92	33.48-0.467:		8.83	35.31:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.44	9.47:	6.94	33.50-0.467:		8.86	35.35:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.38	9.50:	6.79	33.37-0.464:		8.69	35.18:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.36	9.25:	6.79	33.37-0.463:		8.69	35.18:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.33	9.18:	6.83	33.41-0.464:		8.76	35.25:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.32	9.09:	6.78	33.37-0.463:		8.68	35.17:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.31	9.04:	6.92	33.50-0.465:		8.85	35.35:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.31	9.22:	6.93	33.51-0.465:		8.86	35.36:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.10	9.01:			:	8.86	35.36:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.64	5.64	6.92:	6.97	33.54-0.442:		8.88	35.38:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.75	7.13:			:	8.88	35.38:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.05	8.17:	6.95	33.53-0.453:		8.91	35.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.03	7.99:	7.04	33.63-0.773:		9.03	35.54:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.02	8.05:	7.04	33.63-0.521:		9.03	35.54:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.59	7.54:	7.07	33.65-0.452:		9.05	35.57:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.08	7.95:	7.21	33.79-0.461:		9.19	35.73:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.55	8.42:	7.18	33.78-0.463:		9.18	35.73:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.57	8.37:	7.19	33.78-0.463:		9.18	35.73:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.55	8.36:	7.21	33.81-0.463:		9.19	35.75:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.53	8.40:	7.28	33.88-0.465:		9.27	35.84:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.50	8.44:	7.25	33.88-0.464:		9.25	35.84:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.49	8.42:	7.25	33.87-0.463:		9.25	35.83:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.51	8.42:	7.26	33.89-0.465:		9.26	35.85:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.53	8.42:	7.26	33.90-0.465:		9.25	35.85:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.54	8.43:	7.36	33.99-0.467:		9.36	35.97:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.57	8.53:	7.17	33.83-0.463:		9.18	35.79:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.57	8.53:	7.29	33.95-0.466:		9.28	35.91:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.58	8.41:	7.29	33.95-0.465:		9.28	35.91:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.16	8.84:	7.33	33.99-0.471:		9.33	35.96:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.16	8.85:	7.33	33.99-0.471:		9.33	35.96:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.66	8.66	10.11:	7.39	33.22-0.467:		9.40	35.16:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.88	10.14:	7.34	33.18-0.468:		9.37	35.14:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.03	9.98:	7.40	33.24-0.470:		9.45	35.22:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.03	9.93:	7.40	33.25-0.470:		9.45	35.22:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.95	9.91:	7.49	33.33-0.471:		9.55	35.34:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.86	9.98:	7.56	33.40-0.471:		9.62	35.42:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.76	10.06:	7.43	33.29-0.468:		9.49	35.29:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.69	9.96:	7.46	33.32-0.468:		9.54	35.34:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.63	10.00:	7.32	33.20-0.465:		9.37	35.18:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.60	9.74:	7.32	33.20-0.465:		9.37	35.17:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.59	9.65:	7.38	33.26-0.466:		9.47	35.28:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.59	9.55:	7.32	33.20-0.465:		9.36	35.17:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.58	9.49:	7.46	33.34-0.467:		9.54	35.36:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.59	9.71:	7.47	33.34-0.467:		9.55	35.37:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.21	9.32:			:	9.55	35.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.13	6.13	7.71:	7.46	33.34-0.445:		9.52	35.34:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.27	7.96:			:	9.52	35.34:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.44	8.78:	7.51	33.39-0.465:		9.61	35.44:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.38	8.57:	7.61	33.49-0.458:		9.75	35.59:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.34	8.62:	7.61	33.49-0.459:		9.75	35.60:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.76	7.91:	7.64	33.52-0.454:		9.78	35.62:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.19	8.24:	7.76	33.64-0.460:		9.90	35.76:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.58	8.65:	7.76	33.65-0.464:		9.91	35.79:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.61	8.58:	7.76	33.65-0.464:		9.91	35.79:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.62	8.61:	7.77	33.67-0.463:		9.91	35.79:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.63	8.68:	7.84	33.75-0.465:		9.99	35.89:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.66	8.80:	7.83	33.75-0.465:		9.99	35.90:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.67	8.78:	7.83	33.75-0.464:		9.98	35.89:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.72	8.82:	7.84	33.77-0.470:		10.00	35.92:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.82	8.86:	7.84	33.77-0.602:		9.99	35.91:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.85	8.89:	7.94	33.87-0.470:		10.09	36.03:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.92	9.03:	7.78	33.74-0.470:		9.94	35.89:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.92	9.03:	7.88	33.84-0.478:		10.03	35.99:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.96	8.91:	7.88	33.84-0.468:		10.03	35.99:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.25	9.06:	7.91	33.87-0.472:		10.06	36.02:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.25	9.07:	7.91	33.87-0.472:		10.06	36.02:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	9.96	9.96	12.18:	13.17	28.03	-0.401:	16.35	31.01:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.42	12.80:	13.19	28.05	-0.404:	16.40	31.07:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.74	12.46:	13.33	28.18	-0.409:	16.59	31.26:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.75	12.38:	13.34	28.18	-0.409:	16.59	31.27:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.87	12.64:	13.54	28.36	-0.414:	16.83	31.53:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.04	13.16:	13.62	28.44	-0.416:	16.92	31.63:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.25	13.81:	13.40	28.25	-0.414:	16.68	31.38:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.36	13.85:	13.51	28.35	-0.417:	16.83	31.53:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.50	14.30:	13.20	28.08	-0.413:	16.45	31.14:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.55	13.87:	13.19	28.08	-0.413:	16.45	31.14:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.74	13.84:	13.45	28.30	-0.419:	16.77	31.48:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.82	13.74:	13.17	28.06	-0.415:	16.41	31.10:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.87	13.63:	13.51	28.36	-0.421:	16.82	31.54:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.97	14.16:	13.52	28.36	-0.422:	16.83	31.55:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.83	12.97:			:	16.83	31.55:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.06	7.06	9.51:	13.43	28.29	-0.384:	16.71	31.42:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.76	11.04:			:	16.71	31.42:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.45	12.11:	13.71	28.54	-0.406:	17.07	31.81:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.29	11.60:	14.01	28.81	-0.409:	17.44	32.21:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.17	11.69:	14.01	28.81	-0.408:	17.44	32.22:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.64	10.81:	14.05	28.84	-0.405:	17.47	32.25:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.08	11.08:	14.16	28.96	-0.410:	17.58	32.38:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.51	11.53:	14.24	29.03	-0.415:	17.69	32.50:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.54	11.39:	14.24	29.03	-0.415:	17.69	32.51:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.91	11.78:	14.16	28.97	-0.416:	17.58	32.39:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.12	12.07:	14.32	29.12	-0.421:	17.77	32.61:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.69	12.79:	14.32	29.12	-0.425:	17.77	32.62:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.87	12.91:	14.31	29.12	-0.427:	17.77	32.61:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.96	12.96:	14.34	29.15	-0.428:	17.80	32.65:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.15	13.01:	14.28	29.09	-0.428:	17.71	32.56:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.21	13.03:	14.44	29.25	-0.432:	17.89	32.77:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.33	13.27:	14.25	29.09	-0.429:	17.72	32.58:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.33	13.27:	14.31	29.14	-0.430:	17.74	32.61:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.41	13.03:	14.31	29.14	-0.431:	17.74	32.61:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.14	12.59:	14.34	29.17	-0.429:	17.77	32.64:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.14	12.60:	14.34	29.17	-0.429:	17.77	32.64:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.07	12.07	14.39:	14.81	28.72	-0.431:	17.93	31.82:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.54	15.01:	14.85	28.75	-0.435:	17.99	31.90:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.86	14.68:	14.99	28.89	-0.440:	18.17	32.10:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.87	14.60:	14.99	28.89	-0.441:	18.17	32.10:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.99	14.87:	15.18	29.07	-0.445:	18.40	32.36:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.16	15.41:	15.26	29.15	-0.448:	18.48	32.46:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.38	16.08:	15.06	28.97	-0.446:	18.27	32.22:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.50	16.16:	15.17	29.07	-0.449:	18.40	32.38:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.66	16.65:	14.87	28.80	-0.445:	18.05	31.99:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.71	16.29:	14.87	28.80	-0.446:	18.05	31.99:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.88	16.21:	15.13	29.04	-0.452:	18.37	32.34:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		13.95	16.12:	14.85	28.78	-0.447:	18.02	31.95:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		13.98	15.96:	15.17	29.08	-0.453:	18.41	32.39:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.08	16.47:	15.18	29.09	-0.454:	18.41	32.40:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		11.61	14.05:			:	18.41	32.40:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.93	7.93	10.42:	15.10	29.02	-0.404:	18.30	32.27:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.69	12.19:			:	18.30	32.27:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.17	13.13:	15.37	29.27	-0.425:	18.65	32.67:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.89	12.46:	15.66	29.55	-0.428:	19.01	33.09:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.68	12.47:	15.66	29.56	-0.426:	19.01	33.09:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.96	11.35:	15.69	29.59	-0.421:	19.04	33.12:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.38	11.59:	15.80	29.70	-0.426:	19.14	33.25:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.80	12.02:	15.88	29.78	-0.431:	19.25	33.38:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.82	11.87:	15.88	29.78	-0.431:	19.25	33.39:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.36	12.41:	15.80	29.71	-0.434:	19.14	33.27:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.66	12.79:	15.96	29.86	-0.439:	19.32	33.48:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.47	13.74:	15.96	29.87	-0.446:	19.33	33.50:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.71	13.92:	15.95	29.87	-0.448:	19.33	33.50:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.77	13.92:	15.98	29.90	-0.449:	19.36	33.54:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.90	13.88:	15.92	29.85	-0.449:	19.27	33.44:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.94	13.88:	16.08	30.01	-0.452:	19.45	33.65:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.02	14.08:	15.91	29.85	-0.450:	19.29	33.47:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.02	14.08:	15.95	29.90	-0.450:	19.30	33.49:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.08	13.80:	15.96	29.90	-0.451:	19.31	33.50:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.70	13.27:	15.98	29.92	-0.448:	19.32	33.52:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.70	13.28:	15.98	29.92	-0.448:	19.32	33.52:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.08	12.08	13.46:	8.49	21.67-0.297:		10.57	22.89:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.20	13.27:	8.44	21.65-0.297:		10.54	22.88:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.27	13.07:	8.49	21.68-0.298:		10.60	22.93:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.27	13.02:	8.49	21.68-0.298:		10.60	22.93:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.08	12.91:	8.55	21.72-0.298:		10.69	22.98:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.84	12.85:	8.59	21.75-0.297:		10.74	23.02:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.52	12.79:	8.47	21.68-0.294:		10.61	22.94:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.31	12.61:	8.48	21.69-0.293:		10.63	22.96:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.03	12.55:	8.40	21.65-0.290:		10.52	22.89:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.89	12.29:	8.39	21.64-0.289:		10.51	22.89:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.71	11.99:	8.43	21.67-0.289:		10.59	22.94:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.67	11.84:	8.40	21.65-0.288:		10.51	22.89:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.62	11.71:	8.48	21.70-0.289:		10.64	22.97:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.58	11.87:	8.49	21.70-0.289:		10.64	22.97:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.97	9.22:			:	10.64	22.97:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.33	7.33	8.78:	8.55	21.74-0.272:		10.68	23.00:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.16	8.69:			:	10.68	23.00:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.50	8.91:	8.54	21.74-0.273:		10.73	23.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.26	8.45:	8.62	21.79-0.272:		10.85	23.11:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.08	8.35:	8.63	21.79-0.271:		10.85	23.11:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.07	7.15:	8.67	21.81-0.267:		10.89	23.14:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.71	7.70:	8.79	21.89-0.271:		11.01	23.22:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.30	8.29:	8.78	21.88-0.274:		11.01	23.23:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.34	8.24:	8.78	21.89-0.274:		11.02	23.23:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.45	8.36:	8.80	21.90-0.275:		11.02	23.24:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.51	8.48:	8.86	21.94-0.276:		11.10	23.30:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.69	8.74:	8.85	21.94-0.277:		11.09	23.30:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.74	8.78:	8.84	21.94-0.277:		11.09	23.29:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.88	8.88:	8.86	21.95-0.278:		11.11	23.31:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.12	9.02:	8.88	21.97-0.279:		11.12	23.32:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.20	9.08:	8.99	22.03-0.281:		11.23	23.40:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.33	9.26:	8.80	21.93-0.280:		11.05	23.29:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.33	9.26:	8.93	22.01-0.281:		11.16	23.37:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.40	9.18:	8.93	22.02-0.282:		11.17	23.37:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.55	9.24:	8.96	22.03-0.283:		11.19	23.39:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.55	9.25:	8.96	22.03-0.283:		11.19	23.39:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.08	13.08	15.58:	14.68	30.25	-0.468:	17.83	33.60:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.50	16.04:	14.73	30.31	-0.473:	17.91	33.70:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.78	15.71:	14.88	30.47	-0.478:	18.09	33.92:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.79	15.64:	14.88	30.47	-0.478:	18.10	33.93:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.87	15.87:	15.08	30.67	-0.483:	18.33	34.21:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.99	16.38:	15.15	30.74	-0.485:	18.41	34.32:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.15	17.00:	14.96	30.56	-0.483:	18.20	34.07:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		14.23	17.09:	15.07	30.67	-0.486:	18.35	34.24:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		14.35	17.58:	14.78	30.39	-0.481:	17.99	33.82:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		14.39	17.35:	14.78	30.39	-0.483:	17.99	33.82:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.48	17.21:	15.05	30.65	-0.488:	18.33	34.22:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.56	17.16:	14.75	30.36	-0.485:	17.95	33.78:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.55	16.94:	15.08	30.69	-0.489:	18.35	34.26:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.64	17.41:	15.08	30.69	-0.490:	18.36	34.26:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.36	13.38:			:	18.36	34.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.14	8.14	10.77:	15.01	30.62	-0.432:	18.24	34.13:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.86	12.55:			:	18.24	34.13:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.50	12.91:	15.30	30.91	-0.448:	18.61	34.58:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.13	12.11:	15.60	31.22	-0.451:	18.99	35.05:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.85	12.09:	15.60	31.22	-0.449:	18.99	35.05:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.38	11.12:	15.63	31.25	-0.445:	19.01	35.08:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.13	11.63:	15.72	31.36	-0.453:	19.10	35.20:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.83	12.31:	15.81	31.46	-0.461:	19.22	35.36:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.87	12.16:	15.82	31.46	-0.461:	19.22	35.36:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.50	12.79:	15.73	31.37	-0.465:	19.11	35.22:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.85	13.22:	15.89	31.55	-0.471:	19.29	35.46:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.78	14.28:	15.89	31.56	-0.479:	19.30	35.48:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		12.05	14.49:	15.89	31.56	-0.482:	19.30	35.48:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.11	14.46:	15.92	31.60	-0.483:	19.34	35.53:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.23	14.38:	15.86	31.53	-0.483:	19.25	35.42:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.26	14.37:	16.02	31.70	-0.486:	19.42	35.65:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.34	14.55:	15.86	31.55	-0.484:	19.28	35.47:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.34	14.55:	15.89	31.59	-0.484:	19.28	35.48:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.40	14.24:	15.90	31.60	-0.485:	19.28	35.49:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.20	13.90:	15.91	31.61	-0.483:	19.30	35.50:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.19	13.91:	15.91	31.61	-0.483:	19.30	35.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.58	13.58	15.50:	11.66	25.02-0.372:	14.24	27.01:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.76	15.37:	11.67	25.03-0.373:	14.28	27.05:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.87	15.10:	11.77	25.11-0.376:	14.40	27.16:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.87	15.04:	11.78	25.11-0.376:	14.41	27.16:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.74	15.02:	11.90	25.20-0.376:	14.57	27.30:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.57	15.13:	11.95	25.25-0.376:	14.63	27.36:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.36	15.28:	11.81	25.15-0.372:	14.46	27.22:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.21	15.18:	11.87	25.19-0.372:	14.55	27.30:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.00	15.27:	11.69	25.06-0.368:	14.32	27.10:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.87	15.06:	11.69	25.06-0.367:	14.32	27.10:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.73	14.78:	11.84	25.18-0.368:	14.53	27.28:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.74	14.70:	11.68	25.06-0.366:	14.30	27.09:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.69	14.51:	11.87	25.20-0.368:	14.56	27.31:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.71	14.79:	11.88	25.21-0.369:	14.56	27.32:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.08	10.27:		:	14.56	27.32:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.24	8.24	10.26:	11.87	25.20-0.338:	14.52	27.28:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.28	10.69:		:	14.52	27.28:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.21	10.54:	12.02	25.31-0.340:	14.74	27.47:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.83	9.84:	12.21	25.46-0.340:	14.99	27.69:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.56	9.72:	12.21	25.46-0.339:	14.99	27.69:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.72	8.53:	12.24	25.48-0.334:	15.02	27.72:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.59	9.24:	12.35	25.57-0.341:	15.12	27.82:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.39	10.01:	12.39	25.61-0.346:	15.19	27.88:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.44	9.93:	12.39	25.61-0.347:	15.20	27.89:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.81	10.32:	12.36	25.59-0.349:	15.14	27.84:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.03	10.60:	12.47	25.68-0.352:	15.27	27.96:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.60	11.29:	12.47	25.68-0.355:	15.27	27.97:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.76	11.42:	12.46	25.68-0.356:	15.27	27.97:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.90	11.49:	12.49	25.71-0.358:	15.30	28.00:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.13	11.57:	12.47	25.69-0.359:	15.26	27.97:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.20	11.60:	12.60	25.79-0.361:	15.40	28.10:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.33	11.79:	12.44	25.68-0.360:	15.25	27.97:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.33	11.79:	12.51	25.74-0.361:	15.30	28.02:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.41	11.62:	12.52	25.75-0.361:	15.31	28.03:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.43	11.55:	12.53	25.76-0.362:	15.32	28.04:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.43	11.56:	12.53	25.76-0.362:	15.32	28.04:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	13.32	13.32	15.11:	11.27	25.68	-0.382:	13.65	27.56:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.48	14.98:	11.27	25.69	-0.383:	13.67	27.58:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.59	14.73:	11.35	25.75	-0.385:	13.77	27.67:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.59	14.67:	11.35	25.75	-0.385:	13.78	27.67:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.44	14.63:	11.45	25.83	-0.386:	13.90	27.79:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.26	14.70:	11.49	25.87	-0.385:	13.96	27.84:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.02	14.80:	11.37	25.78	-0.381:	13.82	27.72:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.85	14.68:	11.41	25.81	-0.380:	13.88	27.78:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.61	14.71:	11.28	25.72	-0.377:	13.70	27.63:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.45	14.52:	11.27	25.72	-0.376:	13.70	27.63:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.26	14.23:	11.39	25.80	-0.376:	13.86	27.77:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.26	14.15:	11.27	25.71	-0.374:	13.69	27.62:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.21	13.99:	11.42	25.83	-0.376:	13.89	27.79:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.22	14.22:	11.42	25.83	-0.376:	13.89	27.80:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.38	9.50:			:	13.89	27.80:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.87	7.87	9.78:	11.43	25.84	-0.346:	13.88	27.78:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.94	10.21:			:	13.88	27.78:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.73	9.94:	11.53	25.91	-0.347:	14.03	27.92:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.35	9.26:	11.67	26.03	-0.346:	14.23	28.10:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.09	9.13:	11.68	26.03	-0.344:	14.23	28.10:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.38	8.09:	11.71	26.05	-0.340:	14.26	28.12:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.32	8.86:	11.81	26.14	-0.348:	14.36	28.22:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.17	9.69:	11.83	26.16	-0.354:	14.41	28.27:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.22	9.62:	11.84	26.16	-0.354:	14.41	28.27:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.59	10.00:	11.82	26.16	-0.356:	14.37	28.24:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.80	10.28:	11.91	26.23	-0.359:	14.48	28.34:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.35	10.94:	11.91	26.24	-0.363:	14.49	28.36:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.52	11.06:	11.91	26.24	-0.364:	14.48	28.35:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.66	11.15:	11.93	26.26	-0.365:	14.51	28.38:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.91	11.25:	11.92	26.26	-0.367:	14.48	28.37:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.98	11.29:	12.03	26.35	-0.369:	14.61	28.48:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.11	11.47:	11.89	26.24	-0.368:	14.47	28.36:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.11	11.47:	11.97	26.31	-0.369:	14.53	28.42:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.19	11.32:	11.98	26.32	-0.369:	14.54	28.43:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.24	11.29:	11.99	26.33	-0.370:	14.55	28.44:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.24	11.30:	11.99	26.33	-0.370:	14.55	28.44:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.16	14.16	16.30:	14.45	26.31-0.401:		17.21	28.73:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.49	16.50:	14.48	26.34-0.545:		17.27	28.79:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.70	16.22:	14.59	26.43-0.414:		17.41	28.93:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.71	16.16:	14.59	26.43-0.410:		17.42	28.94:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.70	16.29:	14.74	26.56-0.448:		17.60	29.12:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.71	16.63:	14.79	26.60-0.424:		17.66	29.18:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.72	17.07:	14.64	26.48-0.420:		17.49	29.02:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		14.71	17.12:	14.72	26.55-1.787:		17.59	29.12:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		14.71	17.48:	14.51	26.38-0.409:		17.33	28.87:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		14.68	17.37:	14.50	26.38-0.409:		17.32	28.86:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.67	17.23:	14.70	26.54-0.402:		17.58	29.11:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.74	17.24:	14.49	26.37-0.408:		17.30	28.85:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.69	17.02:	14.72	26.56-0.370:		17.60	29.14:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.78	17.36:	14.72	26.56-0.426:		17.60	29.14:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.33	11.27:			:	17.60	29.14:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.41	8.41	10.68:	14.69	26.54-0.364:		17.54	29.08:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.96	12.03:			:	17.54	29.08:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.74	11.76:	14.88	26.70-0.369:		17.80	29.34:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.31	10.93:	15.10	26.89-0.370:		18.09	29.63:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.01	10.83:	15.11	26.89-0.368:		18.09	29.63:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.63	9.92:	15.14	26.92-0.366:		18.12	29.66:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.74	10.81:	15.23	27.00-0.374:		18.20	29.75:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.76	11.79:	15.29	27.06-0.382:		18.29	29.85:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.82	11.69:	15.29	27.06-0.383:		18.29	29.85:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.42	12.29:	15.24	27.02-0.386:		18.21	29.77:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.75	12.70:	15.36	27.13-0.391:		18.36	29.93:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.63	13.69:	15.36	27.14-0.397:		18.37	29.94:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.88	13.90:	15.36	27.14-0.399:		18.37	29.94:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.02	13.94:	15.39	27.17-0.400:		18.40	29.98:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.24	13.97:	15.35	27.14-0.402:		18.34	29.92:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.30	13.99:	15.49	27.26-0.404:		18.49	30.08:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.42	14.17:	15.34	27.14-0.403:		18.35	29.95:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.42	14.17:	15.40	27.19-0.404:		18.38	29.98:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.50	13.95:	15.41	27.20-0.404:		18.39	29.99:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.54	13.91:	15.42	27.21-0.405:		18.40	30.00:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.54	13.91:	15.42	27.21-0.405:		18.40	30.00:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	15.27	15.27	17.37:	14.22	26.96	-0.424:	16.84	29.30:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		15.49	17.34:	14.25	26.99	-0.426:	16.89	29.36:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		15.63	17.06:	14.35	27.08	-0.429:	17.02	29.49:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		15.63	17.01:	14.35	27.08	-0.429:	17.02	29.50:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		15.53	17.03:	14.48	27.19	-0.430:	17.19	29.66:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		15.41	17.22:	14.53	27.24	-0.430:	17.25	29.72:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		15.27	17.45:	14.40	27.13	-0.427:	17.09	29.58:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		15.15	17.40:	14.47	27.19	-0.427:	17.19	29.67:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		14.99	17.51:	14.29	27.04	-0.422:	16.95	29.44:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		14.83	17.29:	14.28	27.04	-0.421:	16.95	29.44:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.66	17.15:	14.45	27.18	-0.424:	17.18	29.67:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.73	17.23:	14.27	27.03	-0.420:	16.93	29.42:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.65	17.02:	14.47	27.20	-0.423:	17.20	29.69:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.75	17.29:	14.48	27.20	-0.423:	17.20	29.69:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.54	10.59:			:	17.20	29.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.51	9.51	11.69:	14.46	27.19	-0.383:	17.15	29.64:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.80	12.62:			:	17.15	29.64:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.08	11.97:	14.62	27.33	-0.383:	17.38	29.88:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.61	11.13:	14.82	27.51	-0.382:	17.64	30.14:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.29	11.00:	14.82	27.51	-0.380:	17.64	30.14:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.75	9.94:	14.85	27.54	-0.377:	17.67	30.17:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.80	10.79:	14.94	27.62	-0.385:	17.75	30.27:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.77	11.73:	14.99	27.67	-0.393:	17.83	30.35:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.83	11.64:	15.00	27.67	-0.394:	17.83	30.36:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.43	12.24:	14.95	27.64	-0.397:	17.76	30.29:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.77	12.65:	15.06	27.74	-0.402:	17.90	30.43:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.63	13.62:	15.07	27.75	-0.408:	17.91	30.45:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.89	13.82:	15.07	27.75	-0.410:	17.91	30.45:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.99	13.84:	15.09	27.78	-0.411:	17.94	30.49:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.17	13.83:	15.07	27.76	-0.412:	17.89	30.44:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.22	13.84:	15.19	27.87	-0.415:	18.03	30.59:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.32	13.99:	15.05	27.76	-0.413:	17.90	30.46:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.32	13.99:	15.11	27.82	-0.414:	17.93	30.50:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.38	13.77:	15.12	27.82	-0.415:	17.94	30.51:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.43	13.76:	15.13	27.83	-0.415:	17.95	30.52:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.43	13.77:	15.13	27.83	-0.415:	17.95	30.52:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.41	12.41	13.90:	10.13	26.68	-0.392:	12.11	28.26:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.56	13.78:	10.11	26.67	-0.393:	12.11	28.26:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.65	13.59:	10.16	26.72	-0.394:	12.18	28.33:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.65	13.54:	10.16	26.72	-0.394:	12.18	28.33:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.49	13.47:	10.22	26.77	-0.394:	12.27	28.41:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.28	13.46:	10.26	26.80	-0.393:	12.31	28.45:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.00	13.47:	10.16	26.74	-0.389:	12.20	28.36:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.80	13.33:	10.18	26.75	-0.388:	12.23	28.39:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.51	13.25:	10.10	26.69	-0.385:	12.12	28.30:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.30	13.04:	10.10	26.69	-0.383:	12.12	28.29:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.97	12.71:	10.15	26.74	-0.381:	12.21	28.38:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.96	12.65:	10.10	26.69	-0.380:	12.12	28.30:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.92	12.52:	10.18	26.76	-0.381:	12.24	28.41:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.92	12.68:	10.18	26.76	-0.381:	12.24	28.41:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.65	8.45:			:	12.24	28.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.36	8.36	9.83:	10.26	26.82	-0.364:	12.29	28.45:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.25	9.88:			:	12.29	28.45:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.81	9.48:	10.26	26.82	-0.360:	12.34	28.50:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.53	8.95:	10.35	26.90	-0.360:	12.47	28.62:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.32	8.84:	10.35	26.90	-0.358:	12.48	28.62:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.79	8.12:	10.38	26.92	-0.355:	12.50	28.64:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.68	8.89:	10.48	27.00	-0.363:	12.59	28.73:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.49	9.68:	10.48	27.02	-0.368:	12.62	28.76:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.54	9.63:	10.48	27.02	-0.369:	12.62	28.76:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.74	9.85:	10.49	27.03	-0.370:	12.61	28.76:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.86	10.02:	10.55	27.08	-0.372:	12.69	28.83:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.17	10.42:	10.55	27.09	-0.374:	12.69	28.84:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.26	10.49:	10.55	27.09	-0.375:	12.69	28.84:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.44	10.62:	10.57	27.11	-0.376:	12.72	28.87:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.75	10.80:	10.58	27.13	-0.379:	12.72	28.87:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.84	10.87:	10.67	27.20	-0.381:	12.82	28.97:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.98	11.05:	10.54	27.10	-0.380:	12.68	28.86:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.98	11.05:	10.63	27.18	-0.381:	12.76	28.94:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.07	10.96:	10.64	27.19	-0.382:	12.77	28.94:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.18	11.00:	10.66	27.20	-0.383:	12.79	28.96:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.18	11.01:	10.66	27.20	-0.383:	12.79	28.96:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	13.06	13.06	14.76:	11.84	26.21-0.390:		14.20	28.13:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.29	14.76:	11.83	26.20-0.392:		14.21	28.15:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.43	14.54:	11.91	26.27-0.394:		14.32	28.25:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.44	14.49:	11.91	26.27-0.394:		14.32	28.25:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.35	14.50:	12.02	26.36-0.395:		14.46	28.38:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.25	14.64:	12.07	26.40-0.395:		14.51	28.43:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.11	14.84:	11.93	26.30-0.392:		14.36	28.30:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.01	14.77:	11.97	26.34-0.392:		14.43	28.36:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.88	14.92:	11.82	26.22-0.389:		14.23	28.19:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.81	14.71:	11.82	26.22-0.388:		14.22	28.19:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.74	14.49:	11.94	26.31-0.389:		14.40	28.34:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.74	14.39:	11.81	26.22-0.387:		14.21	28.18:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.71	14.24:	11.98	26.35-0.390:		14.43	28.37:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.73	14.51:	11.98	26.35-0.390:		14.44	28.38:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.27	11.09:			:	14.44	28.38:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.19	8.19	10.02:	11.99	26.36-0.358:		14.41	28.36:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.36	10.55:			:	14.41	28.36:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.75	10.78:	12.08	26.43-0.363:		14.57	28.51:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.44	10.19:	12.24	26.56-0.363:		14.78	28.70:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.21	10.09:	12.24	26.56-0.361:		14.78	28.70:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.66	9.29:	12.27	26.58-0.358:		14.81	28.72:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.46	9.95:	12.37	26.67-0.365:		14.90	28.82:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.21	10.71:	12.39	26.69-0.370:		14.95	28.87:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.26	10.63:	12.39	26.70-0.371:		14.95	28.87:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.58	10.97:	12.37	26.69-0.373:		14.91	28.84:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.77	11.22:	12.47	26.76-0.375:		15.03	28.95:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.24	11.80:	12.47	26.77-0.379:		15.03	28.96:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.39	11.91:	12.46	26.77-0.380:		15.03	28.96:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.54	12.00:	12.49	26.79-0.381:		15.06	28.99:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.79	12.11:	12.48	26.79-0.383:		15.03	28.97:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.87	12.15:	12.59	26.88-0.385:		15.15	29.09:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.00	12.33:	12.44	26.77-0.384:		15.01	28.96:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.00	12.33:	12.52	26.85-0.385:		15.07	29.03:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.08	12.19:	12.53	26.85-0.386:		15.08	29.03:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.13	12.16:	12.54	26.86-0.386:		15.09	29.04:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.13	12.17:	12.54	26.86-0.386:		15.09	29.04:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.52	12.52	14.27:	11.17	22.92	-0.325:	13.74	24.67:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.75	14.27:	11.15	22.91	-0.326:	13.75	24.69:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.90	14.02:	11.24	22.97	-0.329:	13.86	24.77:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.90	13.96:	11.24	22.98	-0.329:	13.86	24.78:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.81	13.98:	11.35	23.05	-0.329:	14.01	24.89:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.70	14.14:	11.40	23.09	-0.329:	14.07	24.94:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.56	14.37:	11.25	22.99	-0.327:	13.90	24.82:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.46	14.33:	11.29	23.02	-0.326:	13.97	24.87:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.31	14.53:	11.14	22.93	-0.323:	13.76	24.72:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.21	14.34:	11.13	22.92	-0.323:	13.75	24.71:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.08	14.04:	11.26	23.00	-0.323:	13.94	24.85:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.08	13.92:	11.13	22.92	-0.322:	13.74	24.71:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.04	13.75:	11.29	23.03	-0.324:	13.97	24.88:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.05	14.03:	11.30	23.03	-0.324:	13.98	24.88:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.26	10.22:			:	13.98	24.88:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.97	7.97	9.86:	11.32	23.05	-0.300:	13.96	24.87:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.04	10.23:			:	13.96	24.87:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.12	10.23:	11.41	23.11	-0.302:	14.13	25.00:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.83	9.62:	11.57	23.22	-0.302:	14.35	25.17:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.62	9.54:	11.58	23.22	-0.301:	14.35	25.17:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.04	8.67:	11.61	23.24	-0.298:	14.38	25.20:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.92	9.41:	11.71	23.32	-0.304:	14.48	25.28:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.76	10.25:	11.74	23.34	-0.310:	14.53	25.33:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.81	10.17:	11.74	23.34	-0.310:	14.54	25.33:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.09	10.47:	11.72	23.33	-0.311:	14.49	25.30:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.25	10.69:	11.82	23.40	-0.313:	14.61	25.40:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.66	11.23:	11.81	23.41	-0.316:	14.61	25.40:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.79	11.32:	11.81	23.40	-0.316:	14.61	25.40:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.99	11.45:	11.84	23.42	-0.318:	14.64	25.43:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.33	11.63:	11.83	23.42	-0.320:	14.61	25.41:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.43	11.70:	11.95	23.51	-0.322:	14.75	25.52:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.59	11.92:	11.78	23.40	-0.321:	14.59	25.40:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.59	11.92:	11.87	23.47	-0.322:	14.65	25.46:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.69	11.78:	11.88	23.47	-0.323:	14.66	25.46:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.79	11.82:	11.89	23.48	-0.324:	14.67	25.47:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.80	11.82:	11.89	23.48	-0.324:	14.67	25.47:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	13.72	13.72	15.73:	12.76	23.81	-0.351:	15.57	25.90:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.97	15.74:	12.76	23.81	-0.352:	15.60	25.93:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.13	15.45:	12.86	23.88	-0.355:	15.72	26.04:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.13	15.38:	12.86	23.89	-0.355:	15.72	26.04:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.06	15.44:	12.98	23.97	-0.356:	15.88	26.18:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.97	15.65:	13.03	24.01	-0.356:	15.94	26.23:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.85	15.96:	12.89	23.92	-0.353:	15.78	26.09:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.77	15.93:	12.94	23.95	-0.353:	15.86	26.16:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.64	16.19:	12.77	23.84	-0.350:	15.63	25.98:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.56	16.01:	12.77	23.83	-0.349:	15.62	25.98:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.46	15.74:	12.91	23.94	-0.351:	15.83	26.15:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		13.47	15.64:	12.76	23.83	-0.349:	15.61	25.96:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		13.44	15.45:	12.94	23.96	-0.351:	15.86	26.18:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		13.47	15.77:	12.95	23.97	-0.351:	15.87	26.18:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.72	11.10:			:	15.87	26.18:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.05	8.05	10.21:	12.95	23.96	-0.317:	15.83	26.15:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.35	11.05:			:	15.83	26.15:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.51	11.09:	13.07	24.06	-0.322:	16.03	26.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.16	10.36:	13.26	24.19	-0.322:	16.28	26.53:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.92	10.28:	13.26	24.19	-0.320:	16.28	26.53:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.46	9.43:	13.29	24.21	-0.318:	16.31	26.55:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.24	10.05:	13.39	24.29	-0.324:	16.40	26.64:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.99	10.81:	13.42	24.32	-0.329:	16.46	26.70:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.04	10.70:	13.42	24.32	-0.329:	16.47	26.70:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.48	11.16:	13.39	24.30	-0.332:	16.41	26.66:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.74	11.49:	13.50	24.39	-0.334:	16.54	26.77:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.40	12.27:	13.50	24.39	-0.339:	16.54	26.78:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.59	12.43:	13.50	24.39	-0.340:	16.54	26.78:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.71	12.45:	13.52	24.41	-0.341:	16.57	26.81:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.89	12.46:	13.51	24.41	-0.342:	16.53	26.78:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.95	12.47:	13.63	24.50	-0.344:	16.67	26.91:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.05	12.63:	13.48	24.39	-0.342:	16.52	26.79:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.05	12.63:	13.55	24.45	-0.343:	16.57	26.83:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.11	12.42:	13.56	24.46	-0.344:	16.58	26.84:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.15	12.39:	13.57	24.47	-0.344:	16.59	26.85:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.15	12.40:	13.57	24.47	-0.344:	16.59	26.85:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.78	13.78	15.27:	10.56	25.20-0.376:		12.55	26.69:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.86	15.03:	10.54	25.20-0.376:		12.55	26.70:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.91	14.81:	10.59	25.24-0.377:		12.62	26.76:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.91	14.76:	10.59	25.24-0.377:		12.63	26.76:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.68	14.62:	10.66	25.29-0.376:		12.72	26.84:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.39	14.54:	10.69	25.32-0.375:		12.76	26.88:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.02	14.43:	10.60	25.26-0.371:		12.65	26.80:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.76	14.23:	10.61	25.27-0.369:		12.69	26.83:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.38	14.06:	10.54	25.22-0.365:		12.57	26.74:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.14	13.82:	10.53	25.21-0.363:		12.57	26.73:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.81	13.46:	10.59	25.26-0.362:		12.67	26.81:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.78	13.37:	10.54	25.22-0.361:		12.56	26.73:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.73	13.23:	10.62	25.28-0.362:		12.69	26.84:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.72	13.38:	10.62	25.28-0.362:		12.70	26.84:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.11	8.83:			:	12.70	26.84:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.03	8.03	9.56:	10.67	25.32-0.338:		12.72	26.87:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.00	9.74:			:	12.72	26.87:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.69	9.42:	10.69	25.34-0.336:		12.79	26.92:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.37	8.85:	10.78	25.41-0.335:		12.92	27.04:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.14	8.72:	10.78	25.41-0.333:		12.93	27.04:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.58	7.92:	10.81	25.43-0.330:		12.95	27.06:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.46	8.67:	10.91	25.51-0.337:		13.05	27.15:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.26	9.47:	10.91	25.52-0.342:		13.07	27.17:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.31	9.41:	10.92	25.52-0.343:		13.07	27.17:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.58	9.70:	10.92	25.53-0.344:		13.06	27.17:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.74	9.92:	10.99	25.58-0.346:		13.14	27.24:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.15	10.41:	10.98	25.59-0.349:		13.15	27.25:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.27	10.51:	10.98	25.58-0.350:		13.14	27.25:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.44	10.62:	11.00	25.60-0.351:		13.17	27.28:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.72	10.78:	11.02	25.62-0.353:		13.17	27.28:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.80	10.84:	11.11	25.69-0.355:		13.27	27.37:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.94	11.01:	10.97	25.60-0.354:		13.14	27.26:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.94	11.01:	11.07	25.67-0.355:		13.22	27.34:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.02	10.91:	11.07	25.68-0.356:		13.22	27.34:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.10	10.94:	11.09	25.69-0.357:		13.24	27.35:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.10	10.94:	11.09	25.69-0.357:		13.24	27.35:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.67	13.67	15.75:	11.59	25.17	-0.375:	14.40	27.36:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.83	15.58:	11.61	25.18	-0.377:	14.44	27.40:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.94	15.27:	11.71	25.26	-0.379:	14.57	27.52:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.94	15.21:	11.71	25.26	-0.379:	14.58	27.52:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.80	15.19:	11.85	25.36	-0.380:	14.75	27.68:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.62	15.32:	11.90	25.41	-0.379:	14.81	27.73:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.38	15.49:	11.75	25.30	-0.375:	14.64	27.59:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.21	15.39:	11.81	25.35	-0.375:	14.73	27.67:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.95	15.48:	11.62	25.22	-0.370:	14.48	27.46:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.75	15.24:	11.62	25.21	-0.369:	14.48	27.46:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.44	14.90:	11.79	25.34	-0.369:	14.71	27.66:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.47	14.89:	11.61	25.21	-0.367:	14.46	27.45:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.40	14.66:	11.82	25.36	-0.369:	14.74	27.69:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.45	14.96:	11.82	25.36	-0.369:	14.74	27.69:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.21	9.87:			:	14.74	27.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.19	8.19	10.40:	11.81	25.36	-0.341:	14.69	27.65:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.30	10.94:			:	14.69	27.65:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.94	10.58:	11.96	25.47	-0.341:	14.92	27.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.59	9.87:	12.16	25.62	-0.341:	15.19	28.09:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.35	9.80:	12.16	25.62	-0.340:	15.19	28.09:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.91	8.95:	12.19	25.65	-0.338:	15.22	28.12:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.74	9.62:	12.28	25.72	-0.344:	15.30	28.20:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.54	10.42:	12.33	25.76	-0.350:	15.38	28.28:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.59	10.32:	12.33	25.76	-0.350:	15.38	28.28:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.01	10.75:	12.29	25.74	-0.352:	15.31	28.22:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.25	11.06:	12.40	25.83	-0.356:	15.45	28.35:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.86	11.80:	12.41	25.84	-0.360:	15.46	28.37:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.04	11.94:	12.40	25.84	-0.361:	15.46	28.37:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.17	11.98:	12.43	25.87	-0.362:	15.49	28.40:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.38	12.00:	12.41	25.85	-0.363:	15.44	28.36:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.44	12.02:	12.53	25.95	-0.366:	15.59	28.49:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.55	12.18:	12.39	25.85	-0.364:	15.45	28.38:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.55	12.18:	12.45	25.90	-0.365:	15.49	28.42:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.61	11.96:	12.46	25.91	-0.366:	15.49	28.42:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.67	11.95:	12.47	25.92	-0.366:	15.50	28.43:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.67	11.96:	12.47	25.92	-0.366:	15.50	28.43:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.12	14.12	16.08:	11.85	26.48	-0.404:	14.36	28.56:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.25	15.86:	11.85	26.49	-0.405:	14.39	28.60:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.33	15.58:	11.94	26.56	-0.407:	14.50	28.70:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.33	15.53:	11.94	26.56	-0.407:	14.50	28.71:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.15	15.47:	12.04	26.65	-0.407:	14.64	28.84:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.92	15.52:	12.09	26.69	-0.406:	14.69	28.89:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.64	15.58:	11.97	26.60	-0.402:	14.56	28.77:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.43	15.44:	12.02	26.64	-0.401:	14.63	28.84:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.14	15.41:	11.88	26.53	-0.396:	14.44	28.67:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.92	15.16:	11.88	26.53	-0.395:	14.43	28.66:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.65	14.90:	12.00	26.63	-0.395:	14.62	28.83:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.67	14.89:	11.87	26.53	-0.393:	14.42	28.66:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.61	14.71:	12.03	26.65	-0.395:	14.64	28.86:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.66	14.94:	12.03	26.65	-0.395:	14.64	28.86:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.14	9.64:			:	14.64	28.86:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.17	8.17	10.22:	12.03	26.66	-0.363:	14.61	28.83:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.35	10.83:			:	14.61	28.83:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.95	10.44:	12.14	26.74	-0.363:	14.79	28.99:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.59	9.74:	12.29	26.87	-0.362:	15.00	29.20:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.33	9.63:	12.30	26.88	-0.361:	15.00	29.20:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.93	8.84:	12.32	26.90	-0.359:	15.03	29.22:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.86	9.61:	12.41	26.98	-0.366:	15.11	29.31:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.73	10.47:	12.44	27.01	-0.372:	15.17	29.37:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.78	10.38:	12.45	27.01	-0.373:	15.17	29.37:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.22	10.83:	12.42	26.99	-0.376:	15.12	29.33:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.47	11.14:	12.51	27.08	-0.379:	15.24	29.45:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.10	11.88:	12.52	27.09	-0.383:	15.25	29.46:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.28	12.03:	12.52	27.09	-0.385:	15.25	29.46:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.42	12.09:	12.54	27.11	-0.386:	15.28	29.50:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.65	12.14:	12.53	27.11	-0.387:	15.24	29.47:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.71	12.17:	12.64	27.20	-0.390:	15.37	29.59:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.83	12.33:	12.51	27.10	-0.389:	15.24	29.48:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.83	12.33:	12.58	27.17	-0.390:	15.29	29.53:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.89	12.15:	12.59	27.17	-0.390:	15.30	29.54:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.97	12.17:	12.59	27.18	-0.391:	15.30	29.54:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.97	12.17:	12.59	27.18	-0.391:	15.30	29.54:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2))	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	14.84	14.84	17.54:	14.38	32.42-0.527:	17.52	36.01:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		15.10	17.58:	14.45	32.49-0.530:	17.61	36.14:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		15.26	17.26:	14.59	32.65-0.535:	17.79	36.37:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		15.27	17.20:	14.59	32.65-0.535:	17.79	36.38:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		15.20	17.30:	14.78	32.85-0.538:	18.02	36.68:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		15.14	17.63:	14.83	32.92-0.540:	18.09	36.77:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		15.08	17.98:	14.68	32.76-0.535:	17.91	36.54:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		15.01	17.95:	14.78	32.88-0.537:	18.05	36.72:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		14.94	18.12:	14.52	32.60-0.530:	17.71	36.30:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		14.71	17.91:	14.52	32.60-0.531:	17.71	36.30:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.56	17.72:	14.78	32.87-0.532:	18.04	36.72:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.80	18.05:	14.50	32.58-0.529:	17.68	36.26:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.54	17.70:	14.79	32.89-0.533:	18.06	36.75:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.82	18.06:	14.79	32.89-0.517:	18.06	36.75:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.64	11.31:		:	18.06	36.75:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.55	9.55	12.35:	14.72	32.82-0.482:	17.94	36.60:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.11	13.85:		:	17.94	36.60:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.22	13.20:	14.98	33.10-0.484:	18.29	37.05:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.75	12.32:	15.27	33.42-0.486:	18.65	37.54:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.43	12.29:	15.27	33.42-0.483:	18.65	37.54:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.21	11.30:	15.30	33.45-0.481:	18.67	37.57:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.17	12.00:	15.37	33.54-0.491:	18.74	37.68:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.06	12.86:	15.45	33.65-0.501:	18.86	37.84:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.12	12.72:	15.46	33.65-0.502:	18.86	37.84:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.91	13.48:	15.37	33.56-0.508:	18.74	37.69:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.34	13.97:	15.52	33.73-0.515:	18.92	37.94:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		12.40	15.14:	15.53	33.76-0.526:	18.94	37.98:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		12.70	15.37:	15.53	33.76-0.529:	18.94	37.98:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.66	15.23:	15.57	33.80-0.529:	18.98	38.03:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.62	14.97:	15.50	33.73-0.527:	18.89	37.91:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.61	14.90:	15.65	33.90-0.530:	19.05	38.14:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.63	15.00:	15.53	33.78-0.528:	18.94	38.00:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.63	15.00:	15.55	33.80-0.528:	18.93	37.99:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.65	14.64:	15.55	33.81-0.528:	18.93	38.00:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.75	14.68:	15.56	33.82-0.530:	18.94	38.00:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.75	14.68:	15.56	33.82-0.530:	18.94	38.00:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	15.11	15.11	17.21:	12.34	24.09	-0.366:	15.11	26.17:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		15.21	16.90:	12.36	24.11	-0.367:	15.15	26.22:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		15.27	16.58:	12.46	24.19	-0.369:	15.29	26.33:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		15.27	16.52:	12.46	24.19	-0.369:	15.29	26.33:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		15.07	16.45:	12.59	24.28	-0.369:	15.46	26.48:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.81	16.50:	12.64	24.32	-0.368:	15.52	26.53:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.47	16.57:	12.50	24.23	-0.363:	15.36	26.40:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		14.22	16.41:	12.56	24.27	-0.362:	15.45	26.48:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.81	16.29:	12.39	24.15	-0.357:	15.21	26.28:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.15	15.97:	12.38	24.15	-0.353:	15.21	26.28:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.48	15.25:	12.54	24.26	-0.334:	15.44	26.47:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.63	15.48:	12.37	24.14	-0.349:	15.19	26.27:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.46	15.24:	12.56	24.28	-0.351:	15.46	26.49:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.64	15.49:	12.56	24.28	-0.347:	15.46	26.49:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.50	8.75:			:	15.46	26.49:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.74	8.74	10.93:	12.56	24.28	-0.327:	15.42	26.46:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.86	11.50:			:	15.42	26.46:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.04	10.83:	12.70	24.38	-0.324:	15.63	26.64:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.66	10.07:	12.90	24.53	-0.324:	15.90	26.87:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.40	9.99:	12.90	24.53	-0.323:	15.90	26.87:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.92	8.99:	12.93	24.55	-0.320:	15.93	26.90:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.88	9.78:	13.02	24.62	-0.327:	16.02	26.98:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.79	10.67:	13.07	24.66	-0.333:	16.09	27.05:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.84	10.57:	13.07	24.66	-0.334:	16.09	27.05:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.33	11.06:	13.03	24.64	-0.336:	16.02	27.00:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.60	11.41:	13.14	24.72	-0.339:	16.16	27.12:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.30	12.23:	13.14	24.73	-0.344:	16.17	27.14:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.50	12.39:	13.14	24.73	-0.345:	16.17	27.14:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.64	12.44:	13.17	24.76	-0.346:	16.20	27.17:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.87	12.48:	13.14	24.74	-0.347:	16.15	27.13:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.93	12.51:	13.27	24.84	-0.350:	16.29	27.25:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.05	12.68:	13.13	24.74	-0.349:	16.16	27.15:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.05	12.68:	13.19	24.79	-0.349:	16.20	27.18:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.12	12.47:	13.20	24.80	-0.350:	16.20	27.19:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.21	12.51:	13.21	24.80	-0.351:	16.21	27.19:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.21	12.51:	13.21	24.80	-0.351:	16.21	27.19:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	12.94	12.94	14.34:	8.56	21.95	-0.307:	10.50	23.10:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.95	14.00:	8.53	21.94	-0.307:	10.49	23.10:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.95	13.75:	8.57	21.96	-0.308:	10.54	23.14:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.95	13.70:	8.57	21.96	-0.308:	10.55	23.14:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.65	13.49:	8.61	21.99	-0.306:	10.61	23.19:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.26	13.30:	8.64	22.01	-0.304:	10.65	23.22:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.74	13.05:	8.56	21.97	-0.300:	10.56	23.16:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.37	12.76:	8.56	21.97	-0.298:	10.57	23.18:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.74	12.34:	8.52	21.95	-0.294:	10.50	23.13:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.85	11.83:	8.51	21.95	-0.289:	10.49	23.13:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.74	10.64:	8.54	21.96	-0.284:	10.56	23.17:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.75	10.70:	8.52	21.95	-0.282:	10.50	23.13:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.73	10.64:	8.56	21.98	-0.284:	10.58	23.19:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.75	10.71:	8.56	21.98	-0.284:	10.58	23.19:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		4.73	6.49:			:	10.58	23.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.55	7.55	8.85:	8.68	22.05	-0.278:	10.67	23.25:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.40	8.77:			:	10.67	23.25:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.86	8.31:	8.63	22.02	-0.274:	10.67	23.25:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.64	7.86:	8.68	22.06	-0.274:	10.77	23.32:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.47	7.77:	8.69	22.06	-0.273:	10.77	23.32:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.88	6.97:	8.72	22.08	-0.270:	10.80	23.34:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.88	7.87:	8.83	22.15	-0.276:	10.91	23.42:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.79	8.77:	8.81	22.15	-0.281:	10.91	23.42:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.85	8.74:	8.82	22.15	-0.281:	10.92	23.42:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.94	8.84:	8.84	22.17	-0.282:	10.92	23.43:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.99	8.95:	8.89	22.20	-0.283:	10.99	23.48:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.13	9.18:	8.88	22.20	-0.283:	10.99	23.49:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.18	9.20:	8.88	22.20	-0.284:	10.99	23.49:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.44	9.42:	8.90	22.22	-0.285:	11.01	23.51:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.86	9.73:	8.93	22.24	-0.283:	11.02	23.52:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.99	9.84:	9.02	22.29	-0.257:	11.12	23.59:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.19	10.07:	8.86	22.21	-0.289:	10.97	23.50:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.19	10.07:	8.98	22.28	-0.289:	11.08	23.57:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.31	10.04:	8.99	22.29	-0.291:	11.08	23.58:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.47	10.15:	9.00	22.30	-0.292:	11.10	23.58:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.47	10.16:	9.00	22.30	-0.292:	11.10	23.58:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.21	13.21	14.92:	10.59	23.89	-0.347:	12.93	25.55:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.34	14.73:	10.58	23.89	-0.348:	12.95	25.56:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.42	14.47:	10.65	23.94	-0.349:	13.05	25.64:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.42	14.42:	10.65	23.94	-0.349:	13.05	25.65:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.24	14.35:	10.74	24.00	-0.349:	13.17	25.75:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.00	14.36:	10.78	24.04	-0.348:	13.22	25.79:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.69	14.40:	10.66	23.96	-0.345:	13.09	25.69:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.47	14.25:	10.70	23.99	-0.344:	13.15	25.74:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.12	14.20:	10.58	23.91	-0.340:	12.98	25.61:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.83	13.89:	10.58	23.91	-0.338:	12.97	25.61:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.37	13.49:	10.67	23.98	-0.336:	13.13	25.73:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.38	13.49:	10.57	23.91	-0.335:	12.97	25.60:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.32	13.31:	10.70	24.00	-0.336:	13.15	25.75:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.36	13.52:	10.70	24.00	-0.336:	13.16	25.75:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.22	8.40:			:	13.16	25.75:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.73	7.73	9.46:	10.75	24.03	-0.314:	13.17	25.76:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.77	9.76:			:	13.17	25.76:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.34	9.38:	10.80	24.07	-0.313:	13.29	25.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.06	8.79:	10.93	24.16	-0.313:	13.48	26.01:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.86	8.71:	10.94	24.16	-0.312:	13.48	26.01:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.46	8.01:	10.97	24.18	-0.310:	13.51	26.03:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.53	8.93:	11.06	24.26	-0.317:	13.60	26.11:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.51	9.90:	11.08	24.28	-0.323:	13.65	26.15:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.57	9.84:	11.08	24.28	-0.324:	13.65	26.16:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.83	10.12:	11.07	24.28	-0.325:	13.61	26.13:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.98	10.33:	11.15	24.34	-0.327:	13.72	26.22:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.36	10.82:	11.15	24.35	-0.329:	13.72	26.23:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.48	10.91:	11.15	24.34	-0.330:	13.72	26.23:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.73	11.09:	11.18	24.36	-0.332:	13.75	26.26:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.14	11.34:	11.18	24.37	-0.335:	13.73	26.25:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.25	11.42:	11.28	24.45	-0.337:	13.85	26.35:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.44	11.65:	11.13	24.35	-0.336:	13.71	26.24:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.44	11.65:	11.23	24.42	-0.337:	13.78	26.30:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.55	11.55:	11.23	24.42	-0.338:	13.78	26.31:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.67	11.61:	11.25	24.43	-0.339:	13.80	26.32:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.67	11.61:	11.25	24.43	-0.339:	13.80	26.32:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.54	13.54	15.23:	10.53	25.09	-0.372:	12.81	26.79:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.63	14.98:	10.51	25.08	-0.372:	12.81	26.80:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.69	14.72:	10.58	25.13	-0.374:	12.90	26.88:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.70	14.67:	10.58	25.13	-0.374:	12.91	26.88:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.48	14.56:	10.66	25.19	-0.373:	13.02	26.98:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.21	14.53:	10.70	25.23	-0.372:	13.06	27.02:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.85	14.50:	10.59	25.16	-0.368:	12.94	26.92:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.60	14.32:	10.62	25.18	-0.366:	12.99	26.97:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.20	14.17:	10.52	25.11	-0.362:	12.84	26.85:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.85	13.80:	10.51	25.10	-0.359:	12.84	26.85:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.32	13.39:	10.60	25.16	-0.357:	12.97	26.96:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.33	13.39:	10.51	25.11	-0.356:	12.83	26.84:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.27	13.23:	10.62	25.19	-0.357:	12.99	26.98:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.30	13.41:	10.62	25.19	-0.357:	13.00	26.98:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.20	8.39:			:	13.00	26.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.37	8.37	10.15:	10.66	25.21	-0.338:	13.00	26.99:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.27	10.27:			:	13.00	26.99:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.65	9.71:	10.71	25.25	-0.334:	13.11	27.08:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.31	9.08:	10.82	25.34	-0.333:	13.28	27.22:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.07	8.96:	10.82	25.34	-0.332:	13.28	27.22:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.52	8.09:	10.85	25.36	-0.329:	13.31	27.25:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.51	8.94:	10.94	25.43	-0.336:	13.40	27.33:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.43	9.84:	10.96	25.45	-0.342:	13.44	27.37:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.48	9.78:	10.96	25.45	-0.343:	13.44	27.37:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.76	10.08:	10.95	25.45	-0.344:	13.41	27.35:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.92	10.30:	11.03	25.51	-0.346:	13.51	27.44:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.34	10.82:	11.03	25.52	-0.349:	13.51	27.45:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.46	10.91:	11.03	25.52	-0.350:	13.51	27.45:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.68	11.06:	11.05	25.54	-0.352:	13.54	27.48:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.02	11.25:	11.05	25.55	-0.354:	13.52	27.47:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.11	11.31:	11.15	25.62	-0.356:	13.63	27.56:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.27	11.51:	11.02	25.54	-0.355:	13.51	27.46:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.27	11.51:	11.11	25.61	-0.356:	13.57	27.53:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.36	11.39:	11.11	25.61	-0.357:	13.58	27.53:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.45	11.43:	11.12	25.62	-0.358:	13.59	27.54:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.45	11.44:	11.12	25.62	-0.358:	13.59	27.54:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.37	14.37	16.51:	12.76	32.69	-0.526:	15.33	35.51:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.52	16.35:	12.79	32.73	-0.528:	15.38	35.58:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.62	16.09:	12.89	32.83	-0.531:	15.51	35.74:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.62	16.03:	12.89	32.83	-0.531:	15.51	35.74:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.46	16.01:	13.01	32.97	-0.532:	15.67	35.94:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.28	16.12:	13.06	33.02	-0.531:	15.73	36.02:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.05	16.23:	12.94	32.90	-0.526:	15.58	35.85:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.88	16.12:	13.00	32.97	-0.526:	15.68	35.97:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.63	16.07:	12.83	32.80	-0.519:	15.45	35.70:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.34	15.67:	12.83	32.80	-0.517:	15.45	35.69:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.08	15.59:	12.99	32.96	-0.526:	15.67	35.96:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		13.19	15.78:	12.82	32.79	-0.515:	15.43	35.68:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		13.06	15.56:	13.01	32.99	-0.533:	15.69	35.99:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		13.20	15.80:	13.01	32.99	-0.519:	15.69	35.99:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.59	9.93:			:	15.69	35.99:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.00	9.00	11.27:	12.99	32.97	-0.478:	15.63	35.92:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.32	12.16:			:	15.63	35.92:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.55	11.54:	13.13	33.12	-0.477:	15.84	36.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.14	10.79:	13.32	33.33	-0.476:	16.10	36.50:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.85	10.70:	13.32	33.33	-0.474:	16.10	36.51:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.62	9.96:	13.34	33.35	-0.472:	16.12	36.53:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.67	10.81:	13.41	33.44	-0.483:	16.19	36.63:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.65	11.75:	13.46	33.50	-0.493:	16.26	36.73:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.71	11.66:	13.47	33.50	-0.494:	16.26	36.73:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.28	12.23:	13.42	33.46	-0.498:	16.19	36.65:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.59	12.59:	13.53	33.58	-0.503:	16.33	36.83:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.35	13.46:	13.54	33.60	-0.511:	16.34	36.86:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.56	13.62:	13.54	33.60	-0.513:	16.34	36.85:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.66	13.64:	13.56	33.64	-0.514:	16.37	36.90:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.82	13.61:	13.53	33.61	-0.515:	16.32	36.84:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.87	13.61:	13.64	33.73	-0.518:	16.45	37.01:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.95	13.75:	13.54	33.64	-0.517:	16.35	36.89:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.95	13.75:	13.58	33.69	-0.518:	16.37	36.92:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.00	13.51:	13.59	33.69	-0.518:	16.37	36.93:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.09	13.55:	13.59	33.70	-0.519:	16.37	36.93:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.09	13.55:	13.59	33.70	-0.519:	16.37	36.93:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	15.99	15.99	18.83:	16.05	31.48	-0.501:	19.33	35.25:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		16.31	19.00:	16.12	31.56	-0.525:	19.43	35.39:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		16.50	18.66:	16.28	31.73	-0.530:	19.63	35.65:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		16.51	18.60:	16.28	31.73	-0.531:	19.63	35.65:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		16.49	18.75:	16.48	31.95	-0.884:	19.88	35.98:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		16.49	19.17:	16.54	32.02	-0.524:	19.95	36.08:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		16.50	19.62:	16.37	31.85	-0.528:	19.76	35.83:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		16.47	19.63:	16.49	31.98	-0.731:	19.91	36.03:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		16.48	19.90:	16.21	31.68	-0.528:	19.55	35.57:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		16.34	19.68:	16.21	31.68	-0.524:	19.55	35.56:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		16.23	19.56:	16.48	31.97	-0.530:	19.91	36.03:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		16.50	19.92:	16.19	31.66	-0.528:	19.52	35.53:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		16.21	19.53:	16.50	31.99	-0.531:	19.93	36.06:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		16.51	19.93:	16.50	32.00	-0.907:	19.93	36.06:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.87	12.04:			:	19.93	36.06:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.86	9.86	12.77:	16.42	31.91	-0.470:	19.79	35.88:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.64	14.78:			:	19.79	35.88:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.65	14.06:	16.69	32.20	-0.473:	20.16	36.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.12	13.05:	17.00	32.55	-0.474:	20.55	36.91:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.76	13.03:	17.00	32.55	-0.471:	20.56	36.91:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.71	12.10:	17.03	32.58	-0.471:	20.58	36.94:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.85	12.94:	17.09	32.66	-0.483:	20.64	37.03:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.93	13.97:	17.18	32.77	-0.494:	20.76	37.21:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		11.00	13.82:	17.19	32.77	-0.495:	20.77	37.21:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.92	14.70:	17.09	32.67	-0.501:	20.63	37.04:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.41	15.25:	17.25	32.85	-0.509:	20.83	37.31:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.66	16.59:	17.26	32.88	-0.522:	20.85	37.34:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		14.00	16.86:	17.26	32.88	-0.525:	20.85	37.34:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		14.00	16.76:	17.30	32.92	-0.526:	20.88	37.40:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		14.02	16.55:	17.22	32.84	-0.524:	20.78	37.26:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		14.03	16.49:	17.37	33.01	-0.528:	20.95	37.50:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		14.07	16.63:	17.26	32.89	-0.526:	20.84	37.36:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		14.07	16.63:	17.26	32.91	-0.526:	20.81	37.33:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		14.10	16.26:	17.27	32.91	-0.526:	20.82	37.34:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		14.10	16.16:	17.28	32.92	-0.526:	20.82	37.34:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		14.10	16.16:	17.28	32.92	-0.526:	20.82	37.34:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.45	14.45	16.31:	10.77	23.25	-0.344:	13.16	24.89:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.44	15.87:	10.77	23.25	-0.344:	13.19	24.91:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.43	15.56:	10.84	23.30	-0.345:	13.28	24.98:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.43	15.51:	10.84	23.30	-0.345:	13.28	24.99:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.13	15.32:	10.92	23.35	-0.343:	13.40	25.07:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.74	15.19:	10.95	23.38	-0.341:	13.44	25.11:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.25	15.03:	10.86	23.33	-0.337:	13.33	25.03:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.90	14.78:	10.89	23.35	-0.335:	13.39	25.08:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.35	14.44:	10.80	23.29	-0.330:	13.24	24.97:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.57	14.01:	10.80	23.29	-0.325:	13.24	24.97:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.92	13.29:	10.88	23.34	-0.331:	13.38	25.07:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.99	13.43:	10.80	23.29	-0.320:	13.23	24.97:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.90	13.29:	10.90	23.36	-2.229:	13.40	25.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.00	13.45:	10.90	23.36	-0.322:	13.40	25.09:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		4.70	7.31:			:	13.40	25.09:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.34	9.34	11.23:	10.94	23.38	-0.313:	13.40	25.09:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.96	11.04:			:	13.40	25.09:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.86	10.08:	10.99	23.42	-0.305:	13.52	25.18:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.40	9.33:	11.10	23.50	-0.304:	13.69	25.32:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.08	9.14:	11.10	23.50	-0.302:	13.69	25.32:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.11	7.76:	11.14	23.52	-0.297:	13.72	25.35:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.18	8.70:	11.23	23.59	-0.304:	13.81	25.42:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.20	9.70:	11.24	23.60	-0.310:	13.85	25.46:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.26	9.64:	11.24	23.60	-0.311:	13.85	25.46:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.62	10.01:	11.24	23.61	-0.313:	13.82	25.44:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.81	10.27:	11.31	23.66	-0.315:	13.92	25.52:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.32	10.88:	11.31	23.67	-0.318:	13.93	25.53:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.47	11.00:	11.31	23.67	-0.319:	13.93	25.53:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.70	11.16:	11.33	23.69	-0.320:	13.95	25.56:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.07	11.39:	11.33	23.69	-0.323:	13.93	25.54:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.18	11.47:	11.43	23.76	-0.324:	14.04	25.63:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.36	11.70:	11.31	23.68	-0.324:	13.93	25.55:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.36	11.70:	11.39	23.74	-0.325:	13.98	25.60:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.47	11.58:	11.39	23.75	-0.326:	13.99	25.60:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.58	11.62:	11.40	23.75	-0.327:	14.00	25.61:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.59	11.63:	11.40	23.75	-0.327:	14.00	25.61:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.64	14.64	16.66:	12.14	22.05	-0.323:	14.85	23.85:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.76	16.42:	12.15	22.06	-0.324:	14.89	23.88:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.83	16.09:	12.23	22.11	-0.325:	15.00	23.97:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.83	16.04:	12.23	22.11	-0.325:	15.00	23.97:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.64	15.97:	12.33	22.18	-0.325:	15.15	24.08:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.39	16.03:	12.37	22.21	-0.324:	15.20	24.12:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.07	16.11:	12.26	22.14	-0.321:	15.06	24.02:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.83	15.98:	12.30	22.17	-0.320:	15.14	24.08:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.45	15.92:	12.17	22.09	-0.316:	14.94	23.94:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.85	15.61:	12.17	22.09	-0.312:	14.94	23.93:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.26	14.97:	12.29	22.16	-0.350:	15.12	24.07:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.37	15.16:	12.17	22.09	-0.308:	14.93	23.93:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.25	14.97:	12.31	22.18	-0.301:	15.14	24.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.38	15.17:	12.31	22.18	-0.301:	15.14	24.09:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.23	8.23:			:	15.14	24.09:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.75	8.75	10.85:	12.33	22.19	-0.291:	15.12	24.07:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.77	11.25:			:	15.12	24.07:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.87	10.49:	12.41	22.24	-0.287:	15.28	24.20:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.47	9.71:	12.56	22.34	-0.287:	15.50	24.36:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.19	9.59:	12.56	22.34	-0.285:	15.51	24.37:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.58	8.46:	12.60	22.37	-0.282:	15.54	24.39:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.69	9.42:	12.69	22.43	-0.289:	15.62	24.46:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.77	10.48:	12.71	22.45	-0.295:	15.68	24.51:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.84	10.41:	12.72	22.45	-0.296:	15.68	24.51:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.27	10.86:	12.70	22.44	-0.298:	15.63	24.47:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.52	11.18:	12.79	22.51	-0.300:	15.75	24.57:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.16	11.94:	12.79	22.51	-0.304:	15.76	24.58:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.34	12.08:	12.79	22.51	-0.305:	15.76	24.58:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.58	12.24:	12.81	22.53	-0.306:	15.79	24.61:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.96	12.45:	12.80	22.53	-0.308:	15.75	24.58:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.07	12.51:	12.91	22.60	-0.310:	15.88	24.68:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.26	12.75:	12.78	22.52	-0.310:	15.75	24.59:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.26	12.75:	12.85	22.58	-0.311:	15.80	24.63:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.36	12.60:	12.86	22.58	-0.312:	15.80	24.64:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.46	12.62:	12.87	22.59	-0.312:	15.81	24.65:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.47	12.63:	12.87	22.59	-0.312:	15.81	24.65:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	17.49	17.49	19.80:	14.72	28.01	-0.464:	17.48	30.64:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		17.51	19.35:	14.76	28.04	-0.465:	17.54	30.71:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		17.52	19.02:	14.86	28.14	-0.467:	17.68	30.85:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		17.52	18.97:	14.86	28.14	-0.467:	17.68	30.86:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		17.25	18.84:	14.99	28.26	-0.467:	17.85	31.04:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		16.92	18.83:	15.03	28.30	-0.465:	17.91	31.11:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		16.52	18.79:	14.92	28.20	-0.459:	17.76	30.96:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		16.25	18.59:	14.98	28.27	-0.458:	17.86	31.07:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		15.84	18.38:	14.81	28.12	-0.451:	17.62	30.82:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		15.24	18.05:	14.81	28.12	-0.446:	17.62	30.82:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.88	17.70:	14.98	28.26	-0.436:	17.86	31.07:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		15.04	17.88:	14.80	28.11	-0.445:	17.60	30.80:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.87	17.63:	14.99	28.28	-0.445:	17.87	31.09:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		15.05	17.89:	14.99	28.28	-0.452:	17.87	31.09:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.47	10.32:			:	17.87	31.09:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	10.38	10.38	12.76:	14.97	28.26	-0.409:	17.81	31.02:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.66	13.71:			:	17.81	31.02:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.55	12.82:	15.12	28.40	-0.405:	18.04	31.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.01	11.89:	15.31	28.58	-0.404:	18.31	31.56:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.65	11.75:	15.31	28.58	-0.401:	18.31	31.56:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.15	10.61:	15.34	28.61	-0.398:	18.33	31.59:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.26	11.52:	15.41	28.68	-0.407:	18.40	31.67:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.33	12.57:	15.46	28.73	-0.416:	18.48	31.76:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.40	12.46:	15.46	28.73	-0.417:	18.48	31.76:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.12	13.18:	15.42	28.70	-0.422:	18.40	31.68:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.52	13.64:	15.53	28.80	-0.427:	18.54	31.84:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		12.51	14.74:	15.54	28.82	-0.435:	18.56	31.87:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		12.79	14.97:	15.53	28.82	-0.437:	18.55	31.87:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.88	14.97:	15.56	28.85	-0.439:	18.59	31.91:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.04	14.94:	15.53	28.82	-0.439:	18.52	31.84:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.09	14.93:	15.64	28.93	-0.442:	18.66	31.99:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.18	15.09:	15.54	28.84	-0.441:	18.56	31.89:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.18	15.09:	15.58	28.88	-0.441:	18.57	31.91:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		13.24	14.84:	15.58	28.89	-0.442:	18.58	31.92:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.20	14.70:	15.59	28.90	-0.442:	18.58	31.93:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.20	14.71:	15.59	28.90	-0.442:	18.58	31.93:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	15.18	15.18	16.82:	8.99	28.17	-0.441:	10.89	29.74:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.69	15.76:	8.99	28.17	-0.437:	10.91	29.76:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.41	15.35:	9.03	28.21	-0.435:	10.97	29.81:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.40	15.31:	9.03	28.21	-0.435:	10.97	29.82:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.73	14.74:	9.07	28.25	-0.430:	11.04	29.88:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.92	14.13:	9.10	28.28	-0.423:	11.07	29.92:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.97	13.40:	9.06	28.25	-0.414:	11.01	29.87:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.37	12.88:	9.07	28.26	-0.410:	11.05	29.90:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.51	12.10:	9.03	28.24	-0.402:	10.97	29.84:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.58	11.52:	9.03	28.23	-0.395:	10.97	29.84:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.16	11.10:	9.06	28.26	-0.398:	11.04	29.91:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.19	11.11:	9.03	28.24	-0.393:	10.97	29.84:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.16	11.04:	9.08	28.28	-0.398:	11.06	29.93:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.20	11.12:	9.08	28.28	-0.392:	11.06	29.93:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.07	7.15:			:	11.06	29.93:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.46	9.46	11.11:	9.12	28.32	-0.396:	11.08	29.94:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.77	10.44:			:	11.08	29.94:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.77	9.55:	9.13	28.33	-0.383:	11.14	30.00:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.36	8.95:	9.19	28.38	-0.381:	11.24	30.10:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.08	8.76:	9.20	28.39	-0.379:	11.24	30.10:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.15	7.54:	9.22	28.41	-0.372:	11.27	30.12:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.20	8.47:	9.30	28.48	-0.381:	11.34	30.20:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.16	9.41:	9.31	28.49	-0.388:	11.37	30.23:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.22	9.37:	9.31	28.49	-0.389:	11.37	30.23:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.38	9.56:	9.32	28.51	-0.390:	11.36	30.23:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.47	9.70:	9.37	28.55	-0.391:	11.43	30.30:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.70	10.03:	9.38	28.57	-0.393:	11.44	30.32:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.76	10.07:	9.38	28.57	-0.394:	11.44	30.32:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.04	10.29:	9.40	28.59	-0.397:	11.47	30.35:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.46	10.58:	9.41	28.61	-0.385:	11.47	30.35:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.57	10.66:	9.48	28.67	-0.405:	11.55	30.43:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.75	10.87:	9.39	28.61	-0.401:	11.46	30.36:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.75	10.87:	9.47	28.68	-0.403:	11.53	30.43:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.84	10.79:	9.48	28.68	-0.404:	11.53	30.43:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.98	10.87:	9.48	28.69	-0.405:	11.54	30.44:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.99	10.88:	9.48	28.69	-0.405:	11.54	30.44:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.11	11.11	12.51:	6.29	23.50	-0.320:	8.06	24.58:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.96	11.99:	6.27	23.49	-0.318:	8.05	24.58:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.87	11.69:	6.29	23.51	-0.318:	8.08	24.61:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.87	11.65:	6.29	23.51	-0.318:	8.09	24.61:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.44	11.30:	6.30	23.52	-0.316:	8.12	24.63:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.90	10.95:	6.33	23.54	-0.312:	8.15	24.66:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.22	10.50:	6.29	23.52	-0.308:	8.10	24.63:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.76	10.11:	6.28	23.52	-0.305:	8.11	24.64:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.03	9.52:	6.28	23.52	-0.301:	8.08	24.63:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.12	8.92:	6.28	23.52	-0.295:	8.08	24.62:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.44	8.17:	6.27	23.52	-0.289:	8.10	24.64:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.41	8.20:	6.29	23.53	-0.293:	8.09	24.63:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.43	8.19:	6.29	23.53	-0.293:	8.12	24.66:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.42	8.21:	6.29	23.53	-0.293:	8.12	24.66:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		4.50	6.04:			:	8.12	24.66:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.65	7.65	9.01:	6.38	23.59	-0.300:	8.19	24.70:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.07	8.38:			:	8.19	24.70:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.43	7.80:	6.32	23.56	-0.294:	8.17	24.69:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.20	7.37:	6.33	23.57	-0.295:	8.22	24.73:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.03	7.26:	6.33	23.57	-0.290:	8.22	24.73:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.27	6.29:	6.37	23.59	-0.286:	8.25	24.75:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.33	7.26:	6.46	23.65	-0.290:	8.34	24.82:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.27	8.18:	6.44	23.65	-0.298:	8.34	24.83:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.32	8.16:	6.44	23.65	-0.298:	8.34	24.83:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.22	8.08:	6.48	23.68	-0.298:	8.37	24.85:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.16	8.07:	6.51	23.70	-0.298:	8.41	24.88:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.03	8.02:	6.51	23.71	-0.298:	8.42	24.90:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.99	7.97:	6.51	23.71	-0.297:	8.41	24.90:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.42	8.34:	6.53	23.73	-0.300:	8.44	24.92:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.04	8.85:	6.58	23.76	-0.304:	8.47	24.94:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.21	8.99:	6.64	23.80	-0.306:	8.54	25.00:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.46	9.26:	6.52	23.74	-0.306:	8.42	24.92:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.46	9.26:	6.64	23.81	-0.307:	8.53	25.00:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.59	9.25:	6.64	23.82	-0.308:	8.54	25.01:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.66	9.29:	6.65	23.82	-0.309:	8.55	25.01:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.67	9.30:	6.65	23.82	-0.309:	8.55	25.01:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	10.94	10.94	12.25:	7.26	25.80	-0.360:	8.96	27.00:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.94	11.95:	7.23	25.79	-0.360:	8.94	27.00:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.94	11.73:	7.25	25.81	-0.360:	8.98	27.03:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.94	11.68:	7.25	25.81	-0.360:	8.98	27.03:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.64	11.47:	7.26	25.83	-0.358:	9.02	27.06:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.26	11.26:	7.29	25.85	-0.356:	9.04	27.09:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.76	11.00:	7.24	25.82	-0.352:	8.99	27.05:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.41	10.72:	7.23	25.82	-0.349:	8.99	27.06:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.84	10.30:	7.22	25.82	-0.345:	8.96	27.04:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.10	9.83:	7.22	25.82	-0.340:	8.95	27.04:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.39	9.06:	7.21	25.81	-0.334:	8.98	27.05:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.36	9.08:	7.23	25.83	-0.332:	8.96	27.04:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.38	9.07:	7.23	25.83	-0.334:	9.00	27.07:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.37	9.09:	7.23	25.83	-0.333:	9.00	27.07:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		4.78	6.33:			:	9.00	27.07:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.43	7.43	8.66:	7.35	25.91	-0.340:	9.09	27.14:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.16	8.40:			:	9.09	27.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.68	7.99:	7.27	25.86	-0.332:	9.05	27.12:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.48	7.60:	7.29	25.88	-0.330:	9.10	27.16:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.33	7.51:	7.29	25.88	-0.330:	9.11	27.17:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.82	6.84:	7.32	25.90	-0.327:	9.13	27.18:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.71	7.64:	7.41	25.97	-0.333:	9.22	27.26:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.51	8.43:	7.39	25.97	-0.333:	9.22	27.27:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.56	8.40:	7.39	25.97	-0.338:	9.22	27.27:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.54	8.40:	7.43	26.00	-0.340:	9.24	27.29:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.53	8.45:	7.46	26.03	-0.354:	9.29	27.33:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.52	8.51:	7.46	26.04	-0.323:	9.29	27.35:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.51	8.49:	7.46	26.03	-0.363:	9.29	27.35:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.82	8.75:	7.48	26.05	-0.341:	9.31	27.37:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.29	9.11:	7.52	26.09	-0.345:	9.34	27.39:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.42	9.22:	7.58	26.13	-0.347:	9.42	27.46:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.62	9.44:	7.46	26.06	-0.347:	9.30	27.38:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.62	9.44:	7.58	26.15	-0.348:	9.40	27.46:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.72	9.41:	7.58	26.15	-0.349:	9.41	27.47:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.85	9.49:	7.59	26.16	-0.350:	9.42	27.47:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.85	9.50:	7.59	26.16	-0.350:	9.42	27.47:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.51	11.51	13.18:	9.58	30.81	-0.458:	11.68	32.78:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.65	13.05:	9.57	30.81	-0.459:	11.69	32.79:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.74	12.83:	9.62	30.86	-0.460:	11.76	32.88:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.74	12.78:	9.62	30.86	-0.460:	11.77	32.88:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.57	12.71:	9.69	30.92	-0.460:	11.86	32.98:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.36	12.73:	9.72	30.96	-0.459:	11.90	33.03:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.08	12.76:	9.64	30.90	-0.455:	11.80	32.93:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.88	12.63:	9.66	30.92	-0.453:	11.84	32.98:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.57	12.51:	9.58	30.85	-0.449:	11.72	32.86:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.25	12.10:	9.58	30.85	-0.446:	11.72	32.86:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.89	11.93:	9.64	30.91	-0.446:	11.83	32.97:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.92	12.02:	9.58	30.86	-0.443:	11.72	32.86:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.87	11.90:	9.66	30.93	-0.446:	11.85	33.00:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.93	12.03:	9.66	30.93	-0.445:	11.85	33.00:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.47	7.71:			:	11.85	33.00:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.86	7.86	9.56:	9.71	30.98	-0.428:	11.87	33.02:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.81	9.69:			:	11.87	33.02:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.25	9.21:	9.73	31.00	-0.424:	11.95	33.10:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.97	8.68:	9.82	31.09	-0.423:	12.09	33.25:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.77	8.60:	9.82	31.09	-0.421:	12.09	33.25:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.50	8.06:	9.85	31.11	-0.419:	12.11	33.27:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.28	8.73:	9.92	31.19	-0.427:	12.19	33.37:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.01	9.45:	9.94	31.21	-0.433:	12.22	33.41:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.06	9.39:	9.94	31.21	-0.434:	12.22	33.41:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.33	9.67:	9.94	31.22	-0.436:	12.20	33.39:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.47	9.88:	10.00	31.28	-0.438:	12.28	33.49:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.84	10.34:	10.01	31.30	-0.442:	12.29	33.51:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.94	10.42:	10.01	31.30	-0.442:	12.29	33.51:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.11	10.51:	10.03	31.33	-0.444:	12.32	33.54:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.36	10.61:	10.04	31.34	-0.446:	12.31	33.54:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.43	10.65:	10.12	31.42	-0.449:	12.41	33.64:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.54	10.79:	10.01	31.33	-0.447:	12.30	33.55:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.54	10.79:	10.09	31.41	-0.449:	12.36	33.62:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.60	10.65:	10.10	31.42	-0.450:	12.37	33.63:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.66	10.66:	10.11	31.43	-0.451:	12.38	33.64:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.66	10.66:	10.11	31.43	-0.451:	12.38	33.64:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.04	13.04	15.00:	11.66	28.04	-0.424:	14.24	30.34:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.24	14.94:	11.65	28.04	-0.426:	14.25	30.36:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.36	14.66:	11.72	28.11	-0.428:	14.35	30.47:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.37	14.60:	11.72	28.11	-0.428:	14.36	30.47:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.25	14.60:	11.81	28.18	-0.428:	14.48	30.60:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.10	14.74:	11.85	28.23	-0.428:	14.53	30.65:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.92	14.93:	11.74	28.14	-0.425:	14.40	30.53:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.78	14.85:	11.78	28.17	-0.424:	14.47	30.60:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.60	14.97:	11.66	28.08	-0.421:	14.30	30.43:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.48	14.80:	11.66	28.08	-0.420:	14.29	30.43:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.36	14.56:	11.76	28.16	-0.420:	14.45	30.59:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.37	14.50:	11.66	28.08	-0.419:	14.29	30.43:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.34	14.32:	11.78	28.19	-0.420:	14.48	30.62:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.36	14.59:	11.79	28.19	-0.420:	14.48	30.62:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.82	10.17:			:	14.48	30.62:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.99	8.99	11.07:	11.80	28.20	-0.394:	14.46	30.60:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.94	11.37:			:	14.46	30.60:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.52	10.92:	11.87	28.26	-0.392:	14.59	30.73:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.13	10.21:	11.99	28.37	-0.391:	14.78	30.93:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.85	10.09:	11.99	28.38	-0.389:	14.79	30.93:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.56	9.51:	12.01	28.39	-0.387:	14.81	30.95:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.29	10.09:	12.09	28.47	-0.394:	14.88	31.03:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.98	10.79:	12.12	28.49	-0.399:	14.93	31.09:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.03	10.69:	12.12	28.50	-0.400:	14.93	31.09:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.44	11.11:	12.10	28.49	-0.403:	14.89	31.05:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.67	11.41:	12.18	28.56	-0.405:	14.99	31.17:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.25	12.10:	12.19	28.58	-0.410:	15.00	31.19:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.41	12.23:	12.19	28.58	-0.411:	15.00	31.18:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.49	12.21:	12.21	28.60	-0.412:	15.03	31.22:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.61	12.15:	12.21	28.61	-0.413:	15.00	31.20:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.64	12.14:	12.30	28.69	-0.415:	15.12	31.32:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.71	12.25:	12.19	28.60	-0.414:	15.01	31.21:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.71	12.25:	12.26	28.67	-0.415:	15.05	31.27:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.75	12.03:	12.27	28.68	-0.415:	15.06	31.27:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.80	12.03:	12.28	28.68	-0.416:	15.07	31.28:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.80	12.04:	12.28	28.68	-0.416:	15.07	31.28:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C)	REMARKS
1	S.F. KOKTULI	H	54.7:	14.75	14.75	17.28:	15.46	26.27-0.406:		18.72	29.23:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		15.12	17.57:	15.49	26.30-0.410:		18.78	29.30:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		15.36	17.21:	15.62	26.41-0.415:		18.96	29.48:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		15.37	17.13:	15.62	26.41-0.412:		18.96	29.48:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		15.39	17.32:	15.78	26.55-0.416:		19.17	29.70:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		15.43	17.79:	15.83	26.60-0.418:		19.24	29.78:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		15.50	18.39:	15.68	26.48-0.417:		19.05	29.59:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		15.52	18.49:	15.77	26.55-0.418:		19.19	29.72:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		15.58	19.00:	15.55	26.37-0.405:		18.88	29.41:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		15.57	18.89:	15.54	26.37-0.518:		18.88	29.41:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		15.57	18.83:	15.75	26.54-0.420:		19.17	29.72:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		15.71	19.01:	15.53	26.36-0.416:		18.85	29.39:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		15.59	18.70:	15.77	26.56-0.415:		19.19	29.74:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		15.75	19.08:	15.77	26.56-0.408:		19.19	29.74:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.19	11.24:			:	19.19	29.74:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.90	9.90	12.57:	15.73	26.53-0.375:		19.10	29.64:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.26	13.84:			:	19.10	29.64:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.33	13.05:	15.91	26.68-0.373:		19.38	29.93:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.80	12.03:	16.15	26.89-0.373:		19.71	30.29:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.43	11.94:	16.15	26.90-0.371:		19.71	30.29:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.16	10.99:	16.18	26.92-0.370:		19.74	30.32:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.08	11.69:	16.26	26.99-0.377:		19.81	30.40:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.98	12.57:	16.32	27.05-0.384:		19.90	30.50:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.04	12.42:	16.32	27.05-0.384:		19.90	30.50:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.83	13.20:	16.26	27.00-0.389:		19.80	30.40:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.27	13.72:	16.38	27.12-0.394:		19.97	30.58:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		12.39	14.97:	16.39	27.13-0.403:		19.98	30.61:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		12.71	15.22:	16.39	27.13-0.405:		19.98	30.60:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.68	15.08:	16.42	27.16-0.405:		20.02	30.65:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.65	14.81:	16.37	27.12-0.404:		19.93	30.56:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.65	14.74:	16.51	27.25-0.407:		20.10	30.74:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.67	14.84:	16.38	27.14-0.405:		19.97	30.61:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.67	14.84:	16.42	27.18-0.405:		19.98	30.62:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.69	14.49:	16.43	27.19-0.406:		19.98	30.63:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.79	14.52:	16.44	27.19-0.406:		19.99	30.64:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.79	14.52:	16.44	27.19-0.406:		19.99	30.64:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	17.26	17.26	19.53:	16.70	30.61	-0.515:	19.44	33.63:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		17.51	19.57:	16.72	30.64	-0.518:	19.48	33.70:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		17.67	19.29:	16.83	30.75	-0.522:	19.62	33.87:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		17.67	19.23:	16.83	30.75	-0.522:	19.63	33.88:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		17.59	19.29:	16.95	30.88	-0.523:	19.80	34.09:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		17.50	19.55:	16.99	30.94	-0.524:	19.85	34.16:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		17.40	19.84:	16.88	30.82	-0.520:	19.71	33.99:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		17.31	19.81:	16.94	30.89	-0.520:	19.81	34.12:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		17.20	19.95:	16.78	30.72	-0.516:	19.57	33.83:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		16.96	19.75:	16.78	30.72	-0.512:	19.57	33.82:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		16.80	19.59:	16.93	30.88	-0.520:	19.80	34.11:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		16.96	19.81:	16.77	30.71	-0.511:	19.55	33.81:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		16.79	19.56:	16.95	30.90	-0.517:	19.82	34.13:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		16.97	19.82:	16.95	30.90	-0.444:	19.82	34.13:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.38	10.77:			:	19.82	34.13:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	11.13	11.13	13.53:	16.92	30.88	-0.462:	19.75	34.05:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		11.58	14.90:			:	19.75	34.05:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.21	13.82:	17.06	31.02	-0.457:	19.97	34.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.51	12.70:	17.25	31.23	-0.455:	20.23	34.66:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.04	12.49:	17.25	31.23	-0.451:	20.23	34.66:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.58	11.33:	17.28	31.25	-0.447:	20.26	34.69:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.70	12.23:	17.34	31.33	-0.458:	20.32	34.78:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.79	13.29:	17.39	31.39	-0.468:	20.39	34.88:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.86	13.16:	17.39	31.39	-0.468:	20.39	34.88:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.86	14.14:	17.35	31.35	-0.476:	20.32	34.78:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.41	14.74:	17.45	31.46	-0.483:	20.45	34.96:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.76	16.17:	17.46	31.48	-0.496:	20.47	34.99:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		14.13	16.48:	17.46	31.48	-0.499:	20.46	34.99:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		14.06	16.32:	17.48	31.52	-0.499:	20.50	35.03:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.98	16.05:	17.45	31.48	-0.498:	20.43	34.96:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.97	15.98:	17.56	31.60	-0.500:	20.57	35.13:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.98	16.06:	17.46	31.51	-0.498:	20.47	35.01:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.98	16.06:	17.50	31.55	-0.499:	20.48	35.03:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		14.00	15.74:	17.50	31.56	-0.499:	20.48	35.04:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.88	15.53:	17.51	31.57	-0.498:	20.49	35.05:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.88	15.54:	17.51	31.57	-0.498:	20.49	35.05:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	17.75	17.75	20.25:	15.48	41.06	-0.738:	18.17	45.17:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		17.69	19.70:	15.52	41.14	-0.738:	18.24	45.30:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		17.67	19.46:	15.64	41.30	-0.741:	18.39	45.56:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		17.67	19.43:	15.64	41.30	-0.741:	18.39	45.56:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		17.36	19.26:	15.77	41.51	-0.740:	18.58	45.88:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		17.02	19.23:	15.82	41.58	-0.737:	18.63	45.99:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		16.66	19.13:	15.71	41.43	-0.728:	18.49	45.76:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		16.42	18.92:	15.80	41.56	-0.727:	18.61	45.96:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		16.14	18.78:	15.61	41.30	-0.718:	18.35	45.53:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		15.75	18.49:	15.61	41.29	-0.710:	18.35	45.53:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		15.65	18.39:	15.79	41.56	-0.712:	18.61	45.97:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		15.83	18.65:	15.60	41.28	-0.714:	18.33	45.50:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		15.64	18.37:	15.81	41.59	-0.715:	18.63	46.00:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		15.84	18.66:	15.81	41.59	-0.784:	18.63	46.00:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.82	11.60:			:	18.63	46.00:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	11.42	11.42	13.99:	15.75	41.51	-0.658:	18.53	45.83:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		11.84	15.31:			:	18.53	45.83:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.49	14.31:	15.93	41.77	-0.651:	18.78	46.27:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.75	13.28:	16.14	42.08	-0.648:	19.07	46.79:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.25	13.10:	16.14	42.09	-0.642:	19.08	46.79:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.99	12.14:	16.16	42.11	-0.639:	19.09	46.82:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		10.23	13.11:	16.21	42.21	-0.656:	19.14	46.92:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		11.38	14.18:	16.28	42.31	-0.672:	19.23	47.09:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		11.46	14.07:	16.28	42.31	-0.673:	19.23	47.09:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		12.47	15.03:	16.22	42.23	-0.684:	19.14	46.93:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.99	15.58:	16.33	42.40	-0.694:	19.29	47.20:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		14.19	16.83:	16.34	42.44	-0.711:	19.31	47.25:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		14.50	17.07:	16.34	42.44	-0.715:	19.30	47.25:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		14.42	16.93:	16.37	42.49	-0.715:	19.34	47.31:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		14.34	16.68:	16.32	42.42	-0.713:	19.26	47.18:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		14.32	16.61:	16.43	42.59	-0.715:	19.39	47.42:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		14.32	16.70:	16.36	42.49	-0.713:	19.32	47.30:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		14.32	16.70:	16.37	42.52	-0.714:	19.31	47.29:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		14.33	16.38:	16.37	42.53	-0.714:	19.31	47.29:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		14.06	15.99:	16.38	42.54	-0.710:	19.32	47.31:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		14.06	16.00:	16.38	42.54	-0.710:	19.32	47.31:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	17.31	17.31	19.72:	14.80	36.87	-0.645:	17.48	40.43:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		17.27	19.19:	14.84	36.92	-0.645:	17.54	40.53:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		17.25	18.91:	14.95	37.06	-0.648:	17.69	40.75:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		17.26	18.87:	14.95	37.06	-0.648:	17.69	40.75:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		16.95	18.71:	15.08	37.23	-0.647:	17.87	41.02:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		16.61	18.68:	15.12	37.29	-0.644:	17.93	41.11:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		16.21	18.59:	15.02	37.17	-0.636:	17.79	40.91:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		15.95	18.37:	15.09	37.26	-0.634:	17.90	41.08:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		15.60	18.17:	14.92	37.05	-0.626:	17.65	40.72:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		15.13	17.87:	14.92	37.05	-0.619:	17.65	40.72:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.97	17.70:	15.09	37.26	-0.625:	17.90	41.08:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		15.13	17.94:	14.91	37.04	-0.619:	17.64	40.69:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.95	17.66:	15.10	37.29	-0.622:	17.91	41.11:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		15.14	17.95:	15.10	37.29	-0.602:	17.91	41.11:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.82	11.14:			:	17.91	41.11:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	11.27	11.27	13.78:	15.06	37.23	-0.578:	17.82	40.98:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		11.52	14.76:			:	17.82	40.98:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.24	13.77:	15.22	37.43	-0.571:	18.07	41.34:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.57	12.81:	15.41	37.69	-0.568:	18.34	41.76:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.12	12.64:	15.42	37.70	-0.563:	18.35	41.77:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.77	11.64:	15.44	37.72	-0.560:	18.36	41.79:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		10.00	12.62:	15.49	37.81	-0.574:	18.42	41.89:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		11.15	13.71:	15.55	37.89	-0.588:	18.50	42.02:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		11.22	13.61:	15.55	37.89	-0.589:	18.50	42.03:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		12.07	14.44:	15.50	37.83	-0.598:	18.41	41.90:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.52	14.93:	15.60	37.97	-0.605:	18.55	42.12:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.57	16.07:	15.62	38.00	-0.618:	18.57	42.16:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		13.85	16.29:	15.62	38.00	-0.621:	18.57	42.16:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		13.86	16.23:	15.64	38.04	-0.622:	18.61	42.22:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.91	16.09:	15.60	37.99	-0.622:	18.53	42.11:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.92	16.05:	15.71	38.13	-0.625:	18.66	42.32:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.96	16.16:	15.63	38.05	-0.623:	18.59	42.21:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.96	16.16:	15.65	38.08	-0.624:	18.58	42.21:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		13.99	15.88:	15.66	38.09	-0.624:	18.58	42.22:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.78	15.54:	15.67	38.10	-0.622:	18.59	42.23:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.78	15.55:	15.67	38.10	-0.622:	18.59	42.23:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	16.76	16.76	18.68:	12.35	28.32-0.463:		14.58	30.35:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		16.44	17.83:	12.36	28.34-0.460:		14.61	30.38:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		16.25	17.46:	12.41	28.39-0.460:		14.70	30.48:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		16.24	17.42:	12.41	28.39-0.460:		14.70	30.48:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		15.73	17.03:	12.48	28.45-0.456:		14.81	30.59:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		15.13	16.68:	12.52	28.49-0.451:		14.86	30.64:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.43	16.26:	12.46	28.44-0.444:		14.77	30.56:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		14.00	15.89:	12.49	28.47-0.441:		14.83	30.62:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.40	15.43:	12.41	28.41-0.434:		14.69	30.49:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.75	15.03:	12.41	28.41-0.429:		14.69	30.49:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.51	14.79:	12.49	28.47-0.301:		14.83	30.63:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.58	14.87:	12.41	28.41-0.425:		14.69	30.48:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.50	14.73:	12.50	28.49 0.000:		14.85	30.65:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.59	14.88:	12.50	28.49-0.439:		14.85	30.65:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.77	8.58:			:	14.85	30.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	10.42	10.42	12.35:	12.52	28.51-0.411:		14.83	30.63:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.15	12.36:			:	14.83	30.63:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.96	11.34:	12.57	28.56-0.401:		14.95	30.75:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.43	10.53:	12.68	28.66-0.399:		15.12	30.93:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.07	10.32:	12.68	28.66-0.396:		15.12	30.93:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.39	9.23:	12.71	28.68-0.392:		15.15	30.95:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.53	10.22:	12.78	28.75-0.401:		15.21	31.03:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.62	11.29:	12.80	28.78-0.410:		15.26	31.08:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.69	11.23:	12.80	28.78-0.410:		15.26	31.08:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.18	11.74:	12.79	28.77-0.414:		15.22	31.05:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.45	12.07:	12.86	28.84-0.417:		15.32	31.15:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.12	12.86:	12.86	28.85-0.423:		15.33	31.17:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.31	13.01:	12.86	28.85-0.424:		15.33	31.17:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.52	13.14:	12.88	28.88-0.426:		15.35	31.21:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.83	13.29:	12.88	28.88-0.429:		15.33	31.18:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.92	13.34:	12.96	28.95-0.431:		15.43	31.29:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.05	13.52:	12.88	28.89-0.431:		15.34	31.21:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.05	13.52:	12.94	28.95-0.432:		15.38	31.26:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.13	13.37:	12.94	28.95-0.432:		15.39	31.26:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.17	13.30:	12.96	28.96-0.433:		15.40	31.27:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.18	13.31:	12.96	28.96-0.433:		15.40	31.27:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.99	14.99	16.82:	10.21	30.66	-0.489:	12.24	32.57:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.33	15.63:	10.22	30.67	-0.483:	12.26	32.60:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.91	15.14:	10.26	30.71	-0.480:	12.33	32.67:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.90	15.10:	10.26	30.71	-0.479:	12.33	32.67:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.22	14.55:	10.31	30.76	-0.474:	12.41	32.76:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.48	14.03:	10.34	30.80	-0.467:	12.45	32.81:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.71	13.48:	10.30	30.77	-0.460:	12.39	32.76:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.29	13.12:	10.32	30.79	-0.456:	12.44	32.81:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.79	12.74:	10.28	30.76	-0.451:	12.34	32.72:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.41	12.47:	10.28	30.76	-0.452:	12.34	32.72:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.38	12.44:	10.33	30.80	-0.468:	12.44	32.82:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.42	12.48:	10.28	30.76	-0.451:	12.34	32.72:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.37	12.39:	10.34	30.82	-0.567:	12.46	32.84:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.43	12.50:	10.34	30.82	-0.446:	12.46	32.84:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.68	8.05:			:	12.46	32.84:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.63	9.63	11.42:	10.37	30.85	-0.442:	12.46	32.84:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.20	11.11:			:	12.46	32.84:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.24	10.28:	10.40	30.88	-0.431:	12.54	32.93:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.82	9.65:	10.47	30.95	-0.429:	12.67	33.07:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.53	9.48:	10.48	30.95	-0.427:	12.67	33.07:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.92	8.53:	10.50	30.97	-0.422:	12.69	33.09:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.99	9.48:	10.57	31.05	-0.432:	12.76	33.17:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.00	10.47:	10.58	31.07	-0.441:	12.79	33.21:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.07	10.43:	10.58	31.07	-0.441:	12.79	33.21:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.33	10.72:	10.58	31.08	-0.443:	12.77	33.20:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.48	10.92:	10.63	31.13	-0.446:	12.85	33.29:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.83	11.39:	10.64	31.15	-0.449:	12.86	33.31:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.93	11.47:	10.64	31.15	-0.450:	12.86	33.31:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.21	11.68:	10.66	31.18	-0.452:	12.89	33.34:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.62	11.94:	10.67	31.19	-0.474:	12.87	33.34:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.72	12.01:	10.74	31.25	-0.165:	12.95	33.43:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.88	12.21:	10.67	31.20	-0.460:	12.89	33.37:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.88	12.21:	10.73	31.27	-0.457:	12.93	33.42:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.97	12.09:	10.74	31.27	-0.461:	12.94	33.43:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.16	12.18:	10.75	31.28	-0.463:	12.95	33.44:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.16	12.18:	10.75	31.28	-0.463:	12.95	33.44:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.99	11.99	13.53:	8.09	42.63-0.669:		9.68	44.70:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.10	12.22:	8.09	42.65-0.657:		9.70	44.73:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.57	11.74:	8.11	42.68-0.650:		9.73	44.78:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.55	11.71:	8.11	42.68-0.650:		9.73	44.78:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.87	11.13:	8.12	42.71-0.641:		9.76	44.84:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.22	10.62:	8.15	42.75-0.633:		9.79	44.89:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.67	10.19:	8.15	42.76-0.626:		9.78	44.88:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.44	10.00:	8.15	42.77-0.624:		9.79	44.91:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.24	9.85:	8.16	42.78-0.624:		9.77	44.89:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.17	9.78:	8.16	42.78-0.130:		9.77	44.89:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.21	9.83:	8.16	42.79-0.620:		9.80	44.93:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.21	9.86:	8.16	42.80-0.608:		9.78	44.90:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.22	9.83:	8.18	42.82-0.657:		9.82	44.96:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.23	9.87:	8.18	42.82-0.645:		9.82	44.97:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.85	7.67:		:		9.82	44.97:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.72	8.72	10.24:	8.21	42.87-0.628:		9.84	45.00:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.13	9.65:		:		9.84	45.00:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.50	9.11:	8.20	42.86-0.613:		9.86	45.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.22	8.72:	8.23	42.90-0.610:		9.91	45.11:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.02	8.59:	8.23	42.90-0.608:		9.91	45.11:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.58	7.95:	8.24	42.92-0.603:		9.93	45.14:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.60	8.86:	8.30	43.02-0.617:		9.99	45.24:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.49	9.72:	8.31	43.04-0.630:		10.00	45.27:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.54	9.69:	8.31	43.04-0.629:		10.01	45.27:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.48	9.67:	8.33	43.07-0.631:		10.02	45.30:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.46	9.70:	8.36	43.13-0.639:		10.06	45.37:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.42	9.75:	8.37	43.16-0.595:		10.08	45.41:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.41	9.74:	8.37	43.16-0.681:		10.07	45.41:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.73	10.00:	8.39	43.19-0.633:		10.10	45.45:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.17	10.33:	8.41	43.23-0.639:		10.11	45.47:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.28	10.42:	8.45	43.29-0.642:		10.15	45.55:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.43	10.60:	8.42	43.26-0.643:		10.12	45.52:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.43	10.60:	8.48	43.35-0.644:		10.17	45.60:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.50	10.53:	8.48	43.35-0.645:		10.18	45.61:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.92	10.84:	8.49	43.36-0.651:		10.18	45.62:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.92	10.85:	8.49	43.36-0.651:		10.18	45.62:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY (J/M2(J/M2/S/C) TE	(J/M2(J/M2/S/C) K1	(J/M2(J/M2/S/C) K2	EQUILIBRIUM PARAMETERS MAX. DAILY (J/M2/S/C) TE	(J/M2/S/C) K1	REMARKS
1	S.F. KOKTULI	H	54.7	10.93	10.93	12.33	8.33	44.55	-0.688	9.78	46.53	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3		10.50	11.62	8.33	44.56	-0.682	9.79	46.56	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2		10.26	11.35	8.34	44.59	-0.679	9.82	46.60	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1		10.25	11.32	8.34	44.59	-0.679	9.82	46.60	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4		9.78	10.93	8.35	44.61	-0.673	9.84	46.65	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6		9.30	10.58	8.37	44.65	-0.667	9.87	46.70	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7		8.87	10.26	8.37	44.67	-0.661	9.86	46.70	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8		8.68	10.09	8.37	44.67	-0.660	9.87	46.72	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9		8.48	9.94	8.39	44.69	-0.661	9.86	46.71	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6		8.40	9.88	8.39	44.69	-1.011	9.86	46.71	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1		8.43	9.90	8.38	44.68	-0.665	9.88	46.74	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0		8.42	9.92	8.39	44.71	-0.554	9.87	46.73	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4		8.43	9.91	8.40	44.72	-0.703	9.89	46.77	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8		8.43	9.93	8.40	44.72	-0.606	9.89	46.77	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3		6.28	7.93				9.89	46.77	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1	8.34	8.34	9.73	8.44	44.78	-0.650	9.93	46.82	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3		8.06	9.48				9.93	46.82	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3		7.58	9.07	8.42	44.75	-0.646	9.93	46.83	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1		7.36	8.73	8.43	44.78	-0.643	9.96	46.89	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0		7.20	8.63	8.43	44.79	-0.641	9.97	46.90	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3		6.95	8.21	8.45	44.81	-0.639	9.98	46.92	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6		7.92	9.07	8.51	44.90	-0.652	10.04	47.02	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1		8.73	9.86	8.51	44.92	-0.664	10.05	47.05	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9		8.78	9.84	8.51	44.92	-0.664	10.05	47.05	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9		8.71	9.80	8.54	44.96	-0.661	10.07	47.09	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1		8.68	9.82	8.56	45.01	-0.664	10.10	47.15	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4		8.63	9.85	8.57	45.05	-0.670	10.12	47.20	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9		8.62	9.84	8.57	45.05	-0.654	10.12	47.19	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5		8.90	10.07	8.59	45.08	-0.668	10.14	47.24	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2		9.29	10.37	8.62	45.12	-0.674	10.16	47.27	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9		9.38	10.45	8.65	45.18	-0.675	10.20	47.34	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1		9.52	10.60	8.62	45.15	-0.677	10.17	47.31	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1		9.52	10.60	8.68	45.25	-0.678	10.22	47.40	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0		9.59	10.55	8.68	45.25	-0.679	10.22	47.41	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1		9.99	10.85	8.69	45.26	-0.685	10.23	47.42	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0		9.99	10.86	8.69	45.26	-0.685	10.23	47.42	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY (J/M2(J/M2/:S/C) TE	AVG. DAILY K1	AVG. DAILY K2: S/C2)	MAX. DAILY (J/M2: C) TE	MAX. DAILY K1: S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	11.04	11.04	12.49:	9.13	37.38	-0.568:	10.71	39.20:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.03	12.24:	9.13	37.39	-0.568:	10.72	39.22:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.03	12.06:	9.15	37.42	-0.568:	10.76	39.27:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.03	12.02:	9.15	37.42	-0.568:	10.76	39.27:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.74	11.83:	9.16	37.45	-0.565:	10.79	39.32:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.41	11.66:	9.19	37.48	-0.562:	10.82	39.37:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.04	11.47:	9.17	37.47	-0.557:	10.79	39.34:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.82	11.29:	9.17	37.48	-0.555:	10.81	39.36:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.53	11.07:	9.17	37.48	-0.552:	10.78	39.33:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.27	10.88:	9.17	37.48	-0.555:	10.78	39.33:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.21	10.82:	9.17	37.48	-0.568:	10.81	39.37:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.21	10.84:	9.18	37.49	-0.476:	10.78	39.34:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.22	10.80:	9.18	37.51	-0.599:	10.82	39.40:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.22	10.86:	9.18	37.51	-0.566:	10.82	39.40:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.20	7.99:			:	10.82	39.40:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.45	8.45	9.90:	9.23	37.56	-0.541:	10.86	39.44:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.31	9.84:			:	10.86	39.44:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.76	9.36:	9.21	37.55	-0.534:	10.87	39.45:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.50	8.94:	9.23	37.58	-0.531:	10.92	39.53:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.32	8.83:	9.24	37.58	-0.530:	10.92	39.53:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.08	8.37:	9.25	37.60	-0.528:	10.94	39.55:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.02	9.21:	9.32	37.69	-0.539:	11.00	39.65:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.85	10.02:	9.32	37.70	-0.548:	11.01	39.67:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.90	9.99:	9.32	37.70	-0.548:	11.01	39.67:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.99	10.10:	9.34	37.73	-0.549:	11.03	39.69:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.04	10.20:	9.37	37.78	-0.551:	11.07	39.76:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.15	10.40:	9.38	37.80	-0.553:	11.08	39.79:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.18	10.42:	9.38	37.80	-0.552:	11.08	39.79:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.44	10.63:	9.40	37.83	-0.570:	11.10	39.82:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.80	10.88:	9.42	37.87	-0.561:	11.12	39.85:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.89	10.95:	9.46	37.92	-0.562:	11.17	39.92:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.03	11.12:	9.42	37.88	-0.563:	11.12	39.87:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.03	11.12:	9.48	37.97	-0.564:	11.18	39.96:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.10	11.04:	9.49	37.97	-0.565:	11.18	39.96:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.33	11.19:	9.50	37.98	-0.568:	11.19	39.97:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.34	11.20:	9.50	37.98	-0.568:	11.19	39.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY (J/M2(J/M2/S/C) TE	AVG. DAILY (J/M2(J/M2/S/C) K1	AVG. DAILY (J/M2(J/M2/S/C) K2	MAX. DAILY (J/M2: (C) /S/C): TE	MAX. DAILY (J/M2: (C) /S/C): K1	REMARKS
1	S.F. KOKTULI	H	54.7:	11.18	11.18	12.35:	8.77	41.88	-0.647:	10.04	43.51:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.12	12.05:	8.76	41.88	-0.646:	10.03	43.51:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.08	11.89:	8.76	41.89	-0.645:	10.04	43.54:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.08	11.85:	8.76	41.89	-0.646:	10.04	43.54:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.74	11.59:	8.76	41.90	-0.641:	10.05	43.55:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.34	11.31:	8.77	41.93	-0.636:	10.07	43.59:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.89	10.99:	8.77	41.94	-0.630:	10.06	43.59:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.62	10.77:	8.75	41.92	-0.627:	10.05	43.58:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.25	10.44:	8.78	41.96	-0.623:	10.07	43.61:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.96	10.24:	8.78	41.96	-0.617:	10.07	43.61:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.88	10.13:	8.75	41.92	-0.617:	10.05	43.59:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.84	10.11:	8.79	41.98	-0.590:	10.08	43.63:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.88	10.14:	8.77	41.96	-0.615:	10.07	43.63:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.85	10.13:	8.77	41.96	-0.624:	10.07	43.63:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.02	7.42:			:	10.07	43.63:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.19	8.19	9.22:	8.87	42.09	-0.612:	10.17	43.75:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.10	9.19:			:	10.17	43.75:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.77	8.90:	8.79	41.99	-0.605:	10.10	43.67:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.58	8.58:	8.78	41.99	-0.602:	10.10	43.69:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.45	8.49:	8.78	41.99	-0.601:	10.11	43.69:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.35	8.31:	8.79	42.01	-0.600:	10.12	43.70:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.07	8.96:	8.86	42.11	-0.610:	10.19	43.82:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.71	9.60:	8.85	42.10	-0.615:	10.18	43.82:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.75	9.57:	8.85	42.10	-0.621:	10.18	43.82:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.77	9.61:	8.89	42.16	-0.619:	10.21	43.88:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.78	9.66:	8.90	42.20	-0.616:	10.24	43.92:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.82	9.75:	8.91	42.22	-0.623:	10.25	43.95:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.83	9.76:	8.91	42.22	-0.618:	10.25	43.95:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.04	9.93:	8.93	42.25	-0.624:	10.26	43.98:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.34	10.16:	8.97	42.31	-0.628:	10.30	44.04:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.43	10.23:	9.00	42.36	-0.631:	10.33	44.10:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.56	10.38:	8.94	42.30	-0.630:	10.28	44.04:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.56	10.38:	9.02	42.42	-0.633:	10.36	44.16:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.62	10.34:	9.03	42.42	-0.633:	10.36	44.16:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.66	10.35:	9.03	42.43	-0.634:	10.37	44.17:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.66	10.35:	9.03	42.43	-0.634:	10.37	44.17:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.96	10.96	12.27:	9.88	41.22-0.637:	11.39	43.20:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.14	12.28:	9.86	41.21-0.638:	11.39	43.20:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.25	12.16:	9.88	41.25-0.640:	11.42	43.26:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.25	12.13:	9.88	41.25-0.640:	11.42	43.26:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.11	12.06:	9.90	41.28-0.639:	11.46	43.33:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.93	12.05:	9.93	41.32-0.638:	11.49	43.38:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.72	12.04:	9.89	41.28-0.634:	11.45	43.32:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.58	11.93:	9.88	41.28-0.632:	11.46	43.34:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.36	11.82:	9.87	41.28-0.629:	11.42	43.29:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.20	11.64:	9.87	41.27-0.627:	11.42	43.29:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.11	11.59:	9.87	41.28-0.627:	11.45	43.34:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.10	11.61:	9.88	41.29-0.625:	11.42	43.30:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.09	11.56:	9.89	41.31-0.626:	11.47	43.37:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.10	11.62:	9.90	41.31-0.626:	11.47	43.37:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.72	8.38:		:	11.47	43.37:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.23	8.23	9.43:	9.99	41.43-0.606:	11.54	43.48:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.31	9.64:		:	11.54	43.48:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.02	9.41:	9.93	41.37-0.602:	11.52	43.45:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.85	9.06:	9.96	41.41-0.600:	11.58	43.54:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.72	9.00:	9.96	41.42-0.599:	11.58	43.55:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.74	8.90:	9.98	41.43-0.600:	11.59	43.56:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.36	9.45:	10.05	41.54-0.609:	11.66	43.68:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.95	10.04:	10.04	41.54-0.616:	11.67	43.70:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.99	9.99:	10.04	41.54-0.616:	11.67	43.70:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.16	10.18:	10.07	41.59-0.619:	11.68	43.72:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.26	10.32:	10.10	41.64-0.621:	11.73	43.80:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.49	10.62:	10.11	41.66-0.624:	11.74	43.83:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.55	10.67:	10.10	41.66-0.624:	11.74	43.83:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.69	10.76:	10.12	41.69-0.626:	11.76	43.87:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.90	10.89:	10.15	41.73-0.631:	11.77	43.89:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.96	10.93:	10.19	41.80-0.632:	11.83	43.98:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.06	11.06:	10.12	41.72-0.646:	11.76	43.90:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.06	11.06:	10.20	41.84-0.629:	11.83	44.01:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.12	10.97:	10.20	41.84-0.632:	11.83	44.01:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.18	11.00:	10.21	41.85-0.569:	11.84	44.02:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.18	11.00:	10.21	41.85-0.569:	11.84	44.02:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	12.04	12.04	14.08:	11.23	41.29	-0.656:	13.85	44.94:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.27	14.10:	11.22	41.29	-0.659:	13.86	44.98:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.42	13.84:	11.31	41.42	-0.663:	14.00	45.19:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.42	13.79:	11.32	41.42	-0.663:	14.00	45.19:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.35	13.82:	11.43	41.58	-0.665:	14.17	45.46:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.26	14.02:	11.49	41.66	-0.666:	14.23	45.57:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.16	14.26:	11.35	41.50	-0.661:	14.07	45.33:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.08	14.18:	11.42	41.58	-0.661:	14.17	45.49:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.00	14.35:	11.25	41.37	-0.656:	13.93	45.13:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.95	14.07:	11.25	41.37	-0.655:	13.93	45.12:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.93	13.91:	11.39	41.55	-0.658:	14.14	45.45:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.95	13.83:	11.24	41.37	-0.655:	13.91	45.11:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.93	13.67:	11.42	41.61	-0.660:	14.18	45.51:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.96	14.01:	11.43	41.61	-0.660:	14.18	45.52:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.18	12.29:			:	14.18	45.52:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.96	8.96	11.06:	11.42	41.60	-0.622:	14.13	45.44:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.12	11.55:			:	14.13	45.44:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.55	11.85:	11.51	41.73	-0.631:	14.30	45.72:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.36	11.38:	11.68	41.96	-0.633:	14.56	46.12:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.22	11.42:	11.68	41.97	-0.632:	14.56	46.12:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		9.10	11.16:	11.69	41.98	-0.630:	14.57	46.14:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.47	11.41:	11.76	42.09	-0.637:	14.63	46.26:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.85	11.83:	11.80	42.14	-0.642:	14.69	46.37:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.87	11.72:	11.80	42.14	-0.643:	14.69	46.37:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.16	12.02:	11.76	42.11	-0.645:	14.62	46.27:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.31	12.24:	11.86	42.25	-0.650:	14.75	46.48:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.70	12.75:	11.87	42.27	-0.655:	14.77	46.52:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.81	12.82:	11.87	42.27	-0.656:	14.77	46.52:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.86	12.82:	11.89	42.31	-0.658:	14.80	46.58:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.95	12.78:	11.86	42.28	-0.658:	14.74	46.49:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.98	12.77:	11.96	42.42	-0.661:	14.86	46.70:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.03	12.91:	11.87	42.31	-0.659:	14.77	46.56:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.03	12.91:	11.91	42.38	-0.661:	14.78	46.60:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.07	12.67:	11.91	42.39	-0.661:	14.79	46.60:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.05	12.57:	11.92	42.40	-0.661:	14.79	46.62:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.05	12.57:	11.92	42.40	-0.661:	14.79	46.62:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.30	13.30	15.70:	12.30	38.90	-0.630:	15.25	42.90:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.51	15.64:	12.31	38.93	-0.633:	15.29	42.97:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.64	15.33:	12.42	39.08	-0.638:	15.46	43.22:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.64	15.27:	12.42	39.08	-0.638:	15.46	43.22:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.54	15.31:	12.56	39.26	-0.640:	15.66	43.53:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.43	15.53:	12.62	39.34	-0.640:	15.73	43.65:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.30	15.78:	12.48	39.17	-0.635:	15.55	43.38:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.21	15.68:	12.57	39.28	-0.636:	15.68	43.59:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.11	15.86:	12.37	39.04	-0.630:	15.40	43.16:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.05	15.56:	12.37	39.04	-0.629:	15.40	43.16:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.04	15.39:	12.55	39.26	-0.633:	15.67	43.57:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		13.07	15.33:	12.36	39.03	-0.629:	15.38	43.14:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		13.04	15.13:	12.58	39.31	-0.634:	15.69	43.62:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		13.08	15.52:	12.58	39.31	-0.635:	15.70	43.62:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.19	12.78:			:	15.70	43.62:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.14	9.14	11.66:	12.54	39.26	-0.587:	15.60	43.47:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.39	12.47:			:	15.60	43.47:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.75	12.61:	12.68	39.45	-0.597:	15.84	43.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.44	11.99:	12.89	39.73	-0.598:	16.15	44.33:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.20	11.99:	12.90	39.73	-0.596:	16.15	44.34:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.93	11.44:	12.91	39.75	-0.593:	16.17	44.36:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.38	11.75:	12.97	39.85	-0.600:	16.22	44.46:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.85	12.27:	13.02	39.92	-0.606:	16.31	44.60:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.89	12.14:	13.02	39.92	-0.607:	16.31	44.60:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.38	12.63:	12.97	39.86	-0.611:	16.21	44.46:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.64	12.95:	13.08	40.01	-0.617:	16.37	44.71:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.29	13.73:	13.09	40.04	-0.625:	16.38	44.75:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.47	13.86:	13.09	40.04	-0.628:	16.38	44.75:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.45	13.77:	13.12	40.09	-0.628:	16.42	44.82:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.43	13.58:	13.08	40.04	-0.627:	16.34	44.70:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.43	13.52:	13.19	40.19	-0.630:	16.48	44.93:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.44	13.63:	13.09	40.07	-0.627:	16.38	44.78:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.44	13.63:	13.13	40.13	-0.628:	16.38	44.80:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.46	13.31:	13.13	40.14	-0.628:	16.39	44.81:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.44	13.21:	13.14	40.14	-0.628:	16.39	44.81:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.43	13.21:	13.14	40.14	-0.628:	16.39	44.81:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	13.05	13.05	15.40:	12.59	32.62	-0.510:	15.41	35.72:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.31	15.45:	12.61	32.64	-0.514:	15.45	35.78:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.46	15.15:	12.70	32.74	-0.517:	15.59	35.95:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.47	15.09:	12.70	32.75	-0.517:	15.59	35.96:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.39	15.16:	12.81	32.86	-0.518:	15.76	36.17:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.31	15.42:	12.86	32.92	-0.519:	15.82	36.25:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.22	15.71:	12.75	32.82	-0.516:	15.67	36.08:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.15	15.66:	12.82	32.89	-0.517:	15.79	36.22:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.07	15.87:	12.67	32.74	-0.512:	15.55	35.93:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.01	15.68:	12.67	32.74	-0.512:	15.55	35.93:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.01	15.55:	12.81	32.88	-0.513:	15.78	36.21:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		13.06	15.55:	12.66	32.74	-0.512:	15.54	35.92:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		13.02	15.33:	12.83	32.91	-0.513:	15.80	36.24:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		13.08	15.67:	12.83	32.91	-0.516:	15.80	36.25:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.37	11.19:			:	15.80	36.25:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.72	9.72	12.02:	12.82	32.91	-0.483:	15.74	36.17:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.76	12.52:			:	15.74	36.17:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.28	12.06:	12.92	33.01	-0.481:	15.94	36.42:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.88	11.32:	13.10	33.20	-0.481:	16.20	36.75:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.60	11.25:	13.10	33.20	-0.478:	16.20	36.75:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.17	10.45:	13.12	33.22	-0.475:	16.22	36.78:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.77	10.91:	13.19	33.31	-0.481:	16.28	36.87:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.37	11.54:	13.22	33.35	-0.488:	16.35	36.96:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.41	11.42:	13.22	33.35	-0.488:	16.35	36.96:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.97	11.97:	13.19	33.32	-0.492:	16.28	36.87:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.27	12.34:	13.28	33.43	-0.497:	16.41	37.05:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.02	13.21:	13.29	33.45	-0.504:	16.42	37.08:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.23	13.37:	13.29	33.45	-0.506:	16.42	37.08:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.22	13.28:	13.32	33.48	-0.507:	16.46	37.13:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.22	13.11:	13.29	33.46	-0.507:	16.40	37.06:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.23	13.06:	13.40	33.58	-0.509:	16.53	37.23:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.25	13.16:	13.29	33.48	-0.507:	16.42	37.10:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.25	13.16:	13.34	33.54	-0.508:	16.44	37.14:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.27	12.87:	13.35	33.54	-0.508:	16.45	37.15:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.35	12.89:	13.35	33.55	-0.509:	16.45	37.15:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.34	12.89:	13.35	33.55	-0.509:	16.45	37.15:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.53	14.53	17.88:	16.31	28.45-0.446:	20.35	32.66:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		15.05	18.52:	16.37	28.50-0.452:	20.44	32.78:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		15.36	18.03:	16.54	28.67-0.458:	20.69	33.07:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		15.38	17.96:	16.54	28.67-0.458:	20.69	33.07:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		15.50	18.30:	16.75	28.87-0.463:	20.99	33.44:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		15.69	19.05:	16.82	28.95-0.466:	21.08	33.55:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		15.94	19.94:	16.63	28.77-0.465:	20.83	33.26:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		16.06	20.08:	16.78	28.91-0.468:	21.04	33.51:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		16.30	20.79:	16.48	28.64-0.467:	20.62	33.00:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		16.39	20.53:	16.48	28.63-0.476:	20.61	33.00:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		16.44	20.60:	16.77	28.91-0.471:	21.04	33.52:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		16.72	21.02:	16.47	28.62-0.469:	20.59	32.97:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		16.43	20.56:	16.79	28.93-0.472:	21.05	33.53:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		16.74	21.03:	16.79	28.93-0.488:	21.05	33.54:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.56	12.31:		:	21.05	33.54:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	10.12	10.12	13.30:	16.72	28.86-0.418:	20.90	33.35:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.63	15.09:		:	20.90	33.35:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.65	14.41:	16.96	29.10-0.418:	21.28	33.82:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.15	13.31:	17.29	29.42-0.420:	21.75	34.41:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.80	13.37:	17.29	29.42-0.417:	21.75	34.41:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.67	12.35:	17.31	29.45-0.417:	21.77	34.44:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.51	12.95:	17.38	29.52-0.424:	21.82	34.52:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.38	13.84:	17.46	29.60-0.432:	21.95	34.69:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.43	13.63:	17.46	29.60-0.433:	21.95	34.69:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.38	14.54:	17.36	29.51-0.439:	21.79	34.49:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.89	15.13:	17.52	29.68-0.446:	22.01	34.78:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.21	16.60:	17.54	29.70-0.457:	22.03	34.81:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		13.58	16.88:	17.54	29.70-0.460:	22.03	34.81:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		13.55	16.74:	17.57	29.74-0.461:	22.07	34.87:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.54	16.46:	17.49	29.66-0.459:	21.94	34.70:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.53	16.38:	17.65	29.82-0.462:	22.14	34.96:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.56	16.55:	17.52	29.70-0.460:	22.01	34.80:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.56	16.55:	17.53	29.72-0.460:	21.98	34.77:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		13.59	16.08:	17.54	29.72-0.460:	21.98	34.77:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.44	15.79:	17.55	29.73-0.459:	21.99	34.78:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.43	15.79:	17.55	29.73-0.459:	21.99	34.78:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	16.52	16.52	19.97:	16.73	28.68	-0.466:	20.86	33.08:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		16.86	20.18:	16.79	28.74	-0.475:	20.95	33.20:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		17.06	19.68:	16.96	28.91	-0.479:	21.20	33.50:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		17.07	19.61:	16.96	28.91	-0.485:	21.20	33.50:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		17.05	19.82:	17.16	29.11	-0.486:	21.49	33.86:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		17.07	20.39:	17.23	29.18	-0.486:	21.58	33.98:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		17.11	21.03:	17.05	29.01	-0.475:	21.34	33.68:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		17.10	21.05:	17.19	29.15	-0.487:	21.55	33.95:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		17.13	21.50:	16.91	28.88	-0.478:	21.13	33.43:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		17.00	21.22:	16.91	28.87	-0.483:	21.13	33.43:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		16.92	21.13:	17.19	29.15	-0.480:	21.55	33.95:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		17.19	21.55:	16.89	28.86	-0.476:	21.10	33.40:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		16.90	21.10:	17.20	29.16	-0.482:	21.56	33.97:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		17.21	21.56:	17.20	29.16	0.973:	21.56	33.97:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.44	12.58:			:	21.56	33.97:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.91	9.91	13.22:	17.13	29.10	-0.420:	21.41	33.78:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.58	15.34:			:	21.41	33.78:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.60	14.68:	17.37	29.33	-0.422:	21.79	34.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.07	13.51:	17.69	29.65	-0.423:	22.24	34.85:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.70	13.58:	17.69	29.65	-0.421:	22.25	34.86:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.70	12.61:	17.72	29.68	-0.421:	22.27	34.88:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.65	13.29:	17.78	29.75	-0.429:	22.32	34.96:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.64	14.29:	17.86	29.84	-0.438:	22.44	35.13:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.70	14.08:	17.86	29.84	-0.439:	22.44	35.13:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.72	15.05:	17.77	29.74	-0.446:	22.29	34.93:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.27	15.67:	17.92	29.91	-0.453:	22.50	35.22:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.66	17.21:	17.94	29.93	-0.465:	22.52	35.25:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		14.05	17.50:	17.94	29.93	-0.468:	22.52	35.25:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		14.08	17.42:	17.97	29.97	-0.469:	22.57	35.32:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		14.15	17.24:	17.89	29.89	-0.468:	22.43	35.14:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		14.18	17.18:	18.04	30.05	-0.472:	22.63	35.40:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		14.24	17.40:	17.92	29.94	-0.470:	22.50	35.25:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		14.24	17.40:	17.93	29.95	-0.470:	22.47	35.21:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		14.29	16.94:	17.94	29.96	-0.471:	22.47	35.21:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.87	16.33:	17.95	29.97	-0.467:	22.48	35.23:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.86	16.34:	17.95	29.97	-0.467:	22.48	35.23:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	16.70	16.70	19.55:	15.10	23.35-0.362:		18.80	26.25:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		16.85	19.32:	15.12	23.37-0.364:		18.86	26.31:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		16.94	18.85:	15.25	23.47-0.366:		19.05	26.49:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		16.95	18.78:	15.25	23.47-0.366:		19.06	26.49:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		16.79	18.81:	15.40	23.58-0.367:		19.29	26.70:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		16.60	19.09:	15.45	23.62-0.367:		19.36	26.77:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		16.37	19.44:	15.31	23.52-0.363:		19.16	26.59:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		16.20	19.37:	15.40	23.59-0.363:		19.32	26.73:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		15.96	19.60:	15.20	23.45-0.359:		19.00	26.45:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		15.56	19.35:	15.20	23.45-0.356:		18.99	26.45:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		15.27	19.02:	15.39	23.59-0.352:		19.31	26.73:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		15.45	19.33:	15.19	23.44-0.355:		18.98	26.43:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		15.26	19.00:	15.41	23.60-0.360:		19.33	26.75:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		15.47	19.35:	15.41	23.60-0.333:		19.33	26.75:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.10	9.73:				19.33	26.75:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.56	9.56	12.28:	15.40	23.59-0.321:		19.24	26.67:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.78	13.36:				19.24	26.67:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.66	12.51:	15.54	23.70-0.317:		19.52	26.92:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.12	11.40:	15.77	23.87-0.317:		19.88	27.26:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.75	11.33:	15.78	23.87-0.315:		19.88	27.26:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.33	10.21:	15.81	23.90-0.313:		19.91	27.29:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.31	10.98:	15.88	23.96-0.320:		19.97	27.35:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.32	12.00:	15.93	24.00-0.326:		20.06	27.44:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.38	11.85:	15.93	24.00-0.326:		20.06	27.45:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.17	12.64:	15.88	23.96-0.330:		19.95	27.35:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.61	13.17:	16.00	24.06-0.335:		20.13	27.52:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.75	14.48:	16.00	24.07-0.342:		20.14	27.53:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		12.08	14.74:	16.00	24.07-0.344:		20.14	27.53:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.23	14.79:	16.03	24.09-0.345:		20.18	27.57:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		12.49	14.84:	15.98	24.06-0.346:		20.08	27.48:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.57	14.85:	16.11	24.16-0.348:		20.25	27.64:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.72	15.12:	15.99	24.07-0.348:		20.12	27.53:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.72	15.12:	16.03	24.11-0.348:		20.13	27.54:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.82	14.81:	16.04	24.11-0.349:		20.13	27.54:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.50	14.31:	16.05	24.12-0.347:		20.14	27.56:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.50	14.32:	16.05	24.12-0.347:		20.14	27.56:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	17.61	17.61	19.77:	16.62	26.74	-0.438:	19.26	29.19:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		17.78	19.70:	16.63	26.76	-0.440:	19.29	29.24:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		17.89	19.40:	16.71	26.83	-0.442:	19.42	29.37:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		17.89	19.35:	16.71	26.83	-0.442:	19.42	29.37:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		17.75	19.36:	16.80	26.91	-0.443:	19.57	29.52:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		17.60	19.53:	16.84	26.95	-0.442:	19.62	29.59:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		17.42	19.74:	16.75	26.88	-0.439:	19.49	29.46:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		17.29	19.67:	16.81	26.93	-0.439:	19.59	29.56:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		17.11	19.77:	16.69	26.83	-0.436:	19.39	29.36:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		16.86	19.56:	16.69	26.83	-0.434:	19.39	29.36:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		16.74	19.41:	16.80	26.93	-0.418:	19.59	29.56:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		16.84	19.61:	16.69	26.83	-0.432:	19.38	29.35:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		16.73	19.40:	16.82	26.94	-0.427:	19.61	29.58:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		16.86	19.62:	16.82	26.94	-0.434:	19.61	29.58:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.20	9.83:			:	19.61	29.58:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	10.27	10.27	12.33:	16.84	26.96	-0.385:	19.57	29.55:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		10.73	13.53:			:	19.57	29.55:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.63	12.64:	16.91	27.03	-0.382:	19.74	29.72:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.08	11.65:	17.05	27.16	-0.380:	19.97	29.97:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.70	11.49:	17.05	27.16	-0.377:	19.97	29.97:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.55	10.80:	17.08	27.18	-0.377:	20.00	29.99:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.63	11.70:	17.15	27.25	-0.385:	20.06	30.07:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.72	12.80:	17.17	27.28	-0.393:	20.12	30.13:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.80	12.70:	17.17	27.28	-0.394:	20.12	30.13:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.67	13.57:	17.15	27.26	-0.400:	20.06	30.07:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		12.16	14.12:	17.23	27.34	-0.405:	20.18	30.21:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		13.38	15.45:	17.24	27.35	-0.414:	20.19	30.22:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		13.73	15.75:	17.24	27.35	-0.417:	20.19	30.22:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		13.86	15.81:	17.26	27.37	-0.418:	20.22	30.26:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		14.09	15.88:	17.24	27.36	-0.420:	20.16	30.20:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		14.16	15.90:	17.33	27.45	-0.422:	20.28	30.34:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		14.29	16.12:	17.24	27.37	-0.421:	20.19	30.24:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		14.29	16.12:	17.29	27.42	-0.422:	20.21	30.27:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		14.38	15.91:	17.29	27.42	-0.423:	20.21	30.28:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		14.00	15.39:	17.31	27.44	-0.420:	20.23	30.29:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		14.00	15.39:	17.31	27.44	-0.420:	20.23	30.29:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	18.10	18.10	20.92:	18.58	30.12-0.512:		21.87	33.88:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		18.45	21.21:	18.61	30.17-0.513:		21.93	33.97:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		18.67	20.87:	18.74	30.30-0.509:		22.13	34.21:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		18.67	20.82:	18.74	30.31-0.529:		22.13	34.22:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		18.68	21.01:	18.89	30.47-0.525:		22.35	34.51:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		18.72	21.48:	18.95	30.53-0.524:		22.43	34.61:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		18.78	22.00:	18.81	30.40-0.505:		22.24	34.37:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		18.79	22.02:	18.92	30.51-0.527:		22.40	34.58:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		18.84	22.36:	18.71	30.29-0.522:		22.09	34.18:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		18.76	22.13:	18.71	30.29-0.519:		22.08	34.18:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		18.72	22.09:	18.91	30.51-0.525:		22.40	34.59:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		18.92	22.40:	18.70	30.28-0.522:		22.07	34.16:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		18.71	22.07:	18.93	30.53-0.527:		22.42	34.61:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		18.93	22.42:	18.93	30.53 0.000:		22.42	34.61:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.33	12.59:			:	22.42	34.61:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	11.16	11.16	13.89:	18.89	30.49-0.454:		22.31	34.48:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		11.96	16.00:			:	22.31	34.48:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		10.80	15.13:	19.06	30.67-0.455:		22.60	34.85:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		10.18	13.97:	19.30	30.93-0.454:		22.96	35.34:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.76	13.91:	19.30	30.93-0.451:		22.96	35.34:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		9.97	13.29:	19.33	30.96-0.453:		22.98	35.37:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		11.09	14.15:	19.38	31.03-0.463:		23.03	35.44:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		12.22	15.27:	19.44	31.10-0.474:		23.13	35.58:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		12.29	15.11:	19.44	31.10-0.474:		23.13	35.58:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		13.41	16.19:	19.38	31.03-0.483:		23.02	35.43:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		14.02	16.87:	19.50	31.17-0.491:		23.19	35.66:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		15.54	18.50:	19.51	31.19-0.505:		23.20	35.70:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		15.96	18.84:	19.51	31.19-0.509:		23.20	35.69:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		16.01	18.80:	19.54	31.23-0.510:		23.24	35.75:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		16.12	18.70:	19.48	31.17-0.510:		23.14	35.61:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		16.15	18.66:	19.60	31.30-0.513:		23.30	35.83:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		16.22	18.87:	19.51	31.21-0.512:		23.20	35.70:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		16.22	18.87:	19.53	31.23-0.512:		23.18	35.69:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		16.28	18.51:	19.53	31.24-0.513:		23.18	35.69:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		15.51	17.56:	19.54	31.25-0.506:		23.20	35.71:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		15.51	17.57:	19.54	31.25-0.506:		23.20	35.71:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: (C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.24	14.24	15.98:	8.24	26.39-0.398:		10.34	27.97:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.69	14.89:	8.23	26.39-0.394:		10.35	27.99:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.35	14.38:	8.25	26.42-0.391:		10.41	28.04:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.34	14.34:	8.25	26.42-0.391:		10.41	28.04:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.65	13.76:	8.28	26.44-0.386:		10.47	28.10:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.83	13.18:	8.31	26.47-0.380:		10.51	28.13:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.88	12.51:	8.28	26.45-0.373:		10.45	28.09:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.31	12.02:	8.28	26.46-0.368:		10.49	28.12:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.50	11.38:	8.27	26.45-0.362:		10.42	28.07:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.75	10.90:	8.27	26.45-0.357:		10.42	28.07:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.46	10.52:	8.28	26.46-0.354:		10.49	28.13:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.46	10.60:	8.28	26.46-0.356:		10.42	28.08:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.45	10.53:	8.30	26.48-0.354:		10.51	28.15:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.46	10.60:	8.30	26.48-0.354:		10.51	28.15:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		4.58	6.60:			:	10.51	28.15:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.49	9.49	11.06:	8.38	26.54-0.364:		10.55	28.19:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.75	10.30:			:	10.55	28.19:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.81	9.47:	8.34	26.52-0.352:		10.58	28.21:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.41	8.84:	8.38	26.55-0.350:		10.69	28.31:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.13	8.66:	8.39	26.55-0.348:		10.69	28.31:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.16	7.49:	8.41	26.57-0.342:		10.71	28.33:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.07	8.30:	8.49	26.64-0.349:		10.79	28.40:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.94	9.17:	8.48	26.64-0.355:		10.80	28.42:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.00	9.13:	8.48	26.64-0.355:		10.80	28.42:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.07	9.22:	8.51	26.66-0.356:		10.80	28.42:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.11	9.32:	8.55	26.70-0.357:		10.87	28.49:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.21	9.54:	8.55	26.71-0.357:		10.88	28.50:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.24	9.56:	8.55	26.71-0.357:		10.88	28.50:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.49	9.75:	8.57	26.73-0.352:		10.90	28.53:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.89	10.05:	8.59	26.75-0.362:		10.90	28.53:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.01	10.14:	8.65	26.79-0.364:		10.98	28.60:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.21	10.38:	8.57	26.75-0.364:		10.90	28.54:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.21	10.38:	8.65	26.81-0.366:		10.96	28.60:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.31	10.31:	8.65	26.82-0.366:		10.96	28.60:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.71	10.59:	8.67	26.83-0.370:		10.98	28.62:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.72	10.61:	8.67	26.83-0.370:		10.98	28.62:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.38	12.38	13.99:	9.41	28.87	-0.430:	11.46	30.63:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.39	13.67:	9.40	28.86	-0.430:	11.46	30.64:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.40	13.40:	9.43	28.90	-0.431:	11.52	30.70:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.40	13.35:	9.44	28.90	-0.431:	11.53	30.70:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.12	13.17:	9.47	28.93	-0.429:	11.60	30.78:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.76	13.05:	9.50	28.96	-0.426:	11.64	30.82:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.31	12.90:	9.44	28.92	-0.422:	11.56	30.75:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.01	12.67:	9.45	28.93	-0.419:	11.59	30.79:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.53	12.40:	9.42	28.91	-0.415:	11.51	30.71:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.94	12.03:	9.42	28.91	-0.410:	11.51	30.71:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.53	11.56:	9.44	28.93	-0.416:	11.59	30.78:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.54	11.64:	9.43	28.92	-0.411:	11.51	30.72:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.52	11.57:	9.46	28.95	-0.418:	11.60	30.81:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.55	11.66:	9.46	28.95	-0.411:	11.60	30.81:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.32	7.40:			:	11.60	30.81:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.75	8.75	10.31:	9.53	29.01	-0.402:	11.65	30.85:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.48	10.12:			:	11.65	30.85:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.78	9.52:	9.51	28.99	-0.394:	11.68	30.88:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.47	8.97:	9.55	29.04	-0.393:	11.79	30.99:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.25	8.86:	9.55	29.04	-0.391:	11.79	31.00:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.72	8.10:	9.58	29.06	-0.388:	11.81	31.01:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.73	9.00:	9.66	29.13	-0.396:	11.89	31.10:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.69	9.94:	9.65	29.14	-0.404:	11.91	31.12:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.75	9.90:	9.65	29.14	-0.404:	11.91	31.12:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.88	10.05:	9.67	29.16	-0.405:	11.90	31.12:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.95	10.19:	9.71	29.20	-0.407:	11.97	31.20:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.14	10.47:	9.72	29.22	-0.408:	11.98	31.22:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.19	10.51:	9.72	29.22	-0.408:	11.98	31.21:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.53	10.78:	9.74	29.24	-0.411:	12.01	31.24:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.04	11.14:	9.76	29.26	-0.417:	12.01	31.25:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.18	11.25:	9.83	29.32	-0.419:	12.09	31.33:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.39	11.49:	9.73	29.25	-0.418:	11.99	31.25:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.39	11.49:	9.82	29.33	-0.420:	12.06	31.33:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.50	11.42:	9.82	29.34	-0.421:	12.07	31.33:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.59	11.47:	9.83	29.35	-0.422:	12.08	31.34:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.59	11.47:	9.83	29.35	-0.422:	12.08	31.34:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	14.10	14.10	17.30:	14.53	23.51	-0.348:	18.72	26.84:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.45	17.54:	14.57	23.54	-0.352:	18.80	26.92:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.67	17.01:	14.73	23.66	-0.368:	19.05	27.15:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.68	16.94:	14.74	23.66	-0.339:	19.05	27.15:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.68	17.16:	14.92	23.80	-0.356:	19.34	27.41:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.72	17.76:	14.99	23.85	-0.358:	19.43	27.51:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.77	18.52:	14.81	23.73	-0.337:	19.18	27.27:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		14.78	18.61:	14.94	23.82	-0.360:	19.39	27.47:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		14.83	19.27:	14.68	23.64	-0.353:	18.98	27.10:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		14.75	19.05:	14.68	23.64	-0.355:	18.98	27.10:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		14.69	18.99:	14.93	23.82	-0.357:	19.39	27.47:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		14.94	19.39:	14.67	23.63	-0.355:	18.96	27.08:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		14.68	18.96:	14.95	23.84	-0.358:	19.40	27.49:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		14.95	19.40:	14.95	23.84	0.000:	19.40	27.49:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.82	11.62:			:	19.40	27.49:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.19	9.19	12.17:	14.92	23.81	-0.322:	19.28	27.38:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.62	13.52:			:	19.28	27.38:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.97	13.08:	15.12	23.96	-0.324:	19.65	27.72:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.64	12.16:	15.42	24.19	-0.326:	20.11	28.17:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.41	12.27:	15.42	24.19	-0.324:	20.11	28.17:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.59	11.72:	15.45	24.21	-0.326:	20.13	28.19:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.63	12.50:	15.52	24.27	-0.333:	20.19	28.25:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		10.65	13.50:	15.59	24.33	-0.340:	20.31	28.38:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.72	13.34:	15.60	24.33	-0.340:	20.32	28.38:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		11.30	13.93:	15.52	24.27	-0.343:	20.17	28.24:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		11.62	14.35:	15.66	24.39	-0.347:	20.38	28.46:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		12.46	15.39:	15.67	24.40	-0.353:	20.40	28.48:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		12.70	15.56:	15.67	24.40	-0.354:	20.40	28.48:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		12.86	15.59:	15.71	24.43	-0.356:	20.45	28.53:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		13.13	15.57:	15.64	24.38	-0.357:	20.32	28.41:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		13.20	15.55:	15.80	24.51	-0.359:	20.52	28.61:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		13.33	15.79:	15.65	24.40	-0.358:	20.37	28.47:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		13.33	15.79:	15.69	24.44	-0.359:	20.36	28.47:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		13.41	15.43:	15.70	24.44	-0.359:	20.37	28.47:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		13.46	15.36:	15.71	24.45	-0.360:	20.38	28.48:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		13.46	15.36:	15.71	24.45	-0.360:	20.38	28.48:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.01	14.01	16.25:	10.05	32.19	-0.508:	12.61	34.79:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.65	15.34:	10.06	32.21	-0.505:	12.64	34.83:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.43	14.92:	10.12	32.27	-0.504:	12.74	34.95:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.43	14.87:	10.12	32.27	-0.504:	12.74	34.95:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.91	14.50:	10.18	32.34	-0.500:	12.86	35.09:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.32	14.21:	10.22	32.38	-0.494:	12.91	35.15:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.67	13.89:	10.16	32.33	-0.487:	12.81	35.05:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.29	13.57:	10.20	32.37	-0.484:	12.89	35.14:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.79	13.26:	10.13	32.31	-0.478:	12.75	34.98:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.34	12.95:	10.13	32.31	-0.473:	12.74	34.98:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.23	12.78:	10.20	32.38	-0.556:	12.90	35.15:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.29	12.94:	10.13	32.31	-0.472:	12.74	34.98:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.22	12.78:	10.22	32.40	-2.696:	12.91	35.17:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.30	12.95:	10.22	32.40	-0.467:	12.91	35.17:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.13	8.96:			:	12.91	35.17:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.08	9.08	11.21:	10.25	32.43	-0.464:	12.90	35.16:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.92	11.23:			:	12.90	35.16:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.24	10.68:	10.29	32.47	-0.457:	13.02	35.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.93	10.09:	10.39	32.58	-0.457:	13.21	35.52:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.71	10.03:	10.39	32.58	-0.455:	13.22	35.53:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.40	9.36:	10.41	32.60	-0.452:	13.23	35.55:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.23	10.04:	10.48	32.68	-0.461:	13.29	35.63:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.01	10.81:	10.50	32.71	-0.468:	13.34	35.69:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.05	10.73:	10.50	32.71	-0.469:	13.34	35.69:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.30	11.00:	10.49	32.71	-0.471:	13.30	35.65:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.44	11.21:	10.56	32.78	-0.473:	13.40	35.78:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.77	11.67:	10.57	32.80	-0.477:	13.42	35.81:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.86	11.74:	10.57	32.80	-0.477:	13.42	35.81:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.02	11.84:	10.59	32.83	-0.479:	13.45	35.85:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.29	11.95:	10.59	32.83	-0.481:	13.41	35.81:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.36	11.98:	10.66	32.91	-0.484:	13.51	35.93:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.48	12.17:	10.59	32.85	-0.485:	13.43	35.85:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.48	12.17:	10.64	32.91	-0.484:	13.47	35.90:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.54	11.98:	10.65	32.92	-0.490:	13.47	35.91:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.66	11.97:	10.66	32.93	-1.970:	13.48	35.92:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.67	11.98:	10.66	32.93	-1.970:	13.48	35.92:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.86	11.86	13.44:	8.33	51.15-0.819:		9.97	53.79:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.28	12.44:	8.33	51.18-0.809:		9.99	53.83:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.97	12.12:	8.35	51.21-0.805:		10.02	53.90:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.96	12.09:	8.35	51.21-0.805:		10.02	53.90:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.36	11.59:	8.36	51.25-0.795:		10.05	53.97:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		9.73	11.12:	8.39	51.30-0.786:		10.08	54.03:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.15	10.67:	8.38	51.30-0.776:		10.06	54.01:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.87	10.43:	8.38	51.31-0.772:		10.08	54.05:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.57	10.20:	8.39	51.33-0.766:		10.06	54.01:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.42	10.09:	8.39	51.32-0.774:		10.06	54.01:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.46	10.13:	8.39	51.33-0.768:		10.09	54.07:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.46	10.14:	8.40	51.34-0.761:		10.06	54.03:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.46	10.10:	8.41	51.37-0.742:		10.11	54.11:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.47	10.17:	8.41	51.37-0.765:		10.11	54.11:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.41	8.25:			:	10.11	54.11:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.41	8.41	9.91:	8.46	51.45-0.791:		10.14	54.17:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.19	9.72:			:	10.14	54.17:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.82	9.41:	8.43	51.42-0.757:		10.15	54.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.63	9.09:	8.45	51.47-0.755:		10.20	54.30:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.49	9.02:	8.46	51.47-0.753:		10.20	54.30:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.29	8.68:	8.47	51.49-0.751:		10.22	54.32:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.12	9.40:	8.53	51.60-0.765:		10.27	54.44:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.81	10.07:	8.53	51.62-0.775:		10.29	54.48:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.85	10.03:	8.53	51.62-0.776:		10.29	54.49:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.77	9.98:	8.56	51.67-0.774:		10.30	54.52:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.74	10.00:	8.58	51.73-0.776:		10.34	54.61:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.68	10.02:	8.60	51.78-0.781:		10.36	54.66:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.67	10.00:	8.60	51.78-0.764:		10.36	54.66:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.85	10.14:	8.61	51.82-0.779:		10.38	54.71:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.12	10.33:	8.64	51.86-0.784:		10.39	54.73:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.19	10.38:	8.67	51.93-0.786:		10.44	54.82:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.31	10.53:	8.64	51.89-0.787:		10.40	54.78:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.31	10.53:	8.70	52.00-0.789:		10.45	54.89:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.36	10.45:	8.70	52.01-0.790:		10.46	54.89:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.59	10.60:	8.70	52.02-0.793:		10.46	54.90:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.59	10.61:	8.70	52.02-0.793:		10.46	54.90:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.17	11.17	13.06:	10.39	44.77	-0.704:	12.50	47.88:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.36	13.05:	10.40	44.79	-0.707:	12.52	47.92:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.47	12.86:	10.44	44.86	-0.709:	12.59	48.06:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.47	12.82:	10.44	44.86	-0.710:	12.59	48.06:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.34	12.79:	10.49	44.94	-0.709:	12.68	48.20:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.18	12.88:	10.52	44.99	-0.708:	12.72	48.28:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.00	12.95:	10.47	44.93	-0.704:	12.64	48.16:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.88	12.87:	10.49	44.97	-0.702:	12.70	48.25:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.72	12.84:	10.45	44.91	-0.699:	12.60	48.10:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.54	12.69:	10.44	44.91	-0.696:	12.59	48.10:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.48	12.63:	10.49	44.97	-0.382:	12.69	48.26:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.52	12.71:	10.45	44.92	-0.702:	12.59	48.10:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.48	12.61:	10.51	45.00	-0.684:	12.71	48.30:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.53	12.73:	10.51	45.00	-0.575:	12.71	48.30:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.29	9.79:			:	12.71	48.30:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.82	8.82	10.70:	10.54	45.06	-0.676:	12.72	48.30:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.99	11.07:			:	12.72	48.30:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.61	10.78:	10.56	45.09	-0.673:	12.79	48.43:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.40	10.37:	10.63	45.20	-0.673:	12.93	48.66:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.26	10.35:	10.63	45.20	-0.671:	12.93	48.66:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.31	10.11:	10.64	45.22	-0.672:	12.94	48.68:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.20	10.86:	10.71	45.32	-0.685:	13.00	48.79:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.99	11.62:	10.72	45.36	-0.696:	13.03	48.86:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		10.03	11.57:	10.72	45.36	-0.697:	13.03	48.86:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.18	11.73:	10.73	45.37	-0.699:	13.01	48.84:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.25	11.86:	10.77	45.46	-0.702:	13.09	48.98:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.43	12.14:	10.79	45.49	-0.704:	13.11	49.02:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.48	12.17:	10.79	45.49	-0.705:	13.10	49.02:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.72	12.33:	10.81	45.53	-0.716:	13.13	49.08:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.05	12.51:	10.82	45.55	-0.715:	13.12	49.06:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.14	12.55:	10.88	45.65	-0.717:	13.20	49.20:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.26	12.71:	10.82	45.57	-0.717:	13.13	49.11:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.26	12.71:	10.87	45.67	-0.719:	13.17	49.19:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.32	12.56:	10.88	45.68	-0.720:	13.18	49.20:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.34	12.55:	10.88	45.68	-0.720:	13.18	49.20:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.34	12.55:	10.88	45.68	-0.720:	13.18	49.20:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.48	11.48	12.99:	8.72	31.77	-0.472:	10.64	33.58:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.51	12.72:	8.71	31.76	-0.472:	10.63	33.59:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.52	12.47:	8.73	31.79	-0.473:	10.68	33.64:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.53	12.43:	8.73	31.79	-0.473:	10.69	33.65:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.26	12.26:	8.75	31.81	-0.471:	10.74	33.70:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.92	12.13:	8.77	31.84	-0.468:	10.77	33.75:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.49	11.98:	8.73	31.81	-0.463:	10.71	33.69:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.20	11.77:	8.72	31.81	-0.460:	10.73	33.71:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.75	11.51:	8.72	31.81	-0.456:	10.68	33.66:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.21	11.16:	8.71	31.81	-0.451:	10.67	33.66:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.82	10.73:	8.71	31.81	-0.447:	10.72	33.71:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.81	10.78:	8.72	31.82	-0.446:	10.68	33.67:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.82	10.74:	8.73	31.83	-0.444:	10.74	33.74:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.82	10.79:	8.73	31.83	-0.448:	10.74	33.74:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.53	8.35:			:	10.74	33.74:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.70	8.70	10.15:	8.82	31.91	-0.450:	10.80	33.80:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.49	9.97:			:	10.80	33.80:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.10	9.64:	8.77	31.87	-0.442:	10.80	33.81:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.92	9.26:	8.80	31.90	-0.441:	10.88	33.89:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.79	9.21:	8.80	31.90	-0.440:	10.88	33.90:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.42	8.66:	8.82	31.92	-0.438:	10.90	33.92:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.28	9.42:	8.90	32.01	-0.446:	10.98	34.01:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.06	10.19:	8.89	32.01	-0.451:	10.99	34.03:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.11	10.15:	8.89	32.01	-0.454:	10.99	34.03:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.07	10.14:	8.92	32.04	-0.450:	11.00	34.04:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.06	10.18:	8.95	32.08	-0.454:	11.05	34.11:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.03	10.25:	8.96	32.10	-0.447:	11.06	34.13:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.03	10.23:	8.95	32.09	-0.448:	11.06	34.13:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.33	10.47:	8.97	32.12	-0.457:	11.08	34.16:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.79	10.81:	9.00	32.15	-0.462:	11.10	34.18:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.92	10.91:	9.06	32.21	-0.464:	11.17	34.26:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.11	11.12:	8.97	32.14	-0.464:	11.08	34.18:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.11	11.12:	9.06	32.23	-0.466:	11.16	34.26:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.20	11.06:	9.07	32.24	-0.467:	11.16	34.27:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.26	11.08:	9.07	32.24	-0.467:	11.17	34.28:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.26	11.08:	9.07	32.24	-0.467:	11.17	34.28:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.06	11.06	12.25:	7.59	31.27-0.457:		9.12	32.64:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.03	11.95:	7.56	31.26-0.456:		9.10	32.63:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.00	11.72:	7.55	31.26-0.456:		9.11	32.64:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.00	11.68:	7.56	31.26-0.456:		9.11	32.65:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.68	11.43:	7.55	31.26-0.452:		9.12	32.66:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.26	11.18:	7.56	31.28-0.449:		9.14	32.69:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.74	10.87:	7.55	31.28-0.444:		9.11	32.67:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.39	10.59:	7.51	31.25-0.440:		9.09	32.66:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.83	10.17:	7.55	31.29-0.436:		9.11	32.67:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.18	9.73:	7.55	31.29-0.430:		9.10	32.67:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.69	9.19:	7.50	31.25-0.424:		9.08	32.65:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.63	9.18:	7.56	31.30-0.437:		9.12	32.69:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.69	9.21:	7.52	31.27-0.423:		9.10	32.68:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.64	9.19:	7.52	31.27-0.419:		9.10	32.68:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.15	7.50:			:	9.10	32.68:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.88	7.88	8.99:	7.64	31.37-0.430:		9.21	32.78:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.68	8.79:			:	9.21	32.78:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.39	8.54:	7.54	31.29-0.426:		9.13	32.71:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.26	8.25:	7.51	31.28-0.423:		9.14	32.72:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.16	8.20:	7.51	31.28-0.421:		9.14	32.73:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.80	7.71:	7.53	31.30-0.419:		9.16	32.74:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.65	8.48:	7.62	31.38-0.463:		9.24	32.84:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.42	9.25:	7.59	31.37-0.433:		9.23	32.83:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.46	9.22:	7.59	31.37-0.434:		9.23	32.83:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.34	9.12:	7.64	31.42-0.433:		9.27	32.88:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.27	9.10:	7.66	31.44-0.433:		9.29	32.91:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.12	9.02:	7.66	31.45-0.432:		9.30	32.93:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.08	8.97:	7.66	31.45-0.432:		9.30	32.93:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.41	9.26:	7.67	31.47-0.434:		9.31	32.95:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.91	9.67:	7.72	31.52-0.440:		9.36	32.99:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.05	9.79:	7.76	31.56-0.441:		9.40	33.04:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.26	10.02:	7.68	31.50-0.442:		9.32	32.98:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.26	10.02:	7.78	31.60-0.444:		9.42	33.08:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.37	10.01:	7.79	31.60-0.445:		9.42	33.08:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.42	10.04:	7.79	31.61-0.445:		9.43	33.09:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.43	10.04:	7.79	31.61-0.445:		9.43	33.09:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.90	10.90	12.08:	7.69	30.87	-0.448:	9.21	32.21:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.90	11.82:	7.66	30.86	-0.448:	9.19	32.21:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.90	11.61:	7.65	30.86	-0.448:	9.21	32.22:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.89	11.57:	7.66	30.86	-0.448:	9.21	32.23:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.60	11.35:	7.65	30.86	-0.445:	9.22	32.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.21	11.13:	7.66	30.88	-0.442:	9.24	32.27:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.73	10.86:	7.65	30.87	-0.437:	9.21	32.25:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.40	10.60:	7.61	30.85	-0.434:	9.19	32.24:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.88	10.23:	7.65	30.88	-0.430:	9.21	32.25:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.26	9.81:	7.65	30.88	-0.425:	9.20	32.25:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.78	9.29:	7.60	30.85	-0.422:	9.19	32.23:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.73	9.27:	7.66	30.89	-0.408:	9.21	32.26:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.78	9.30:	7.62	30.87	-0.419:	9.21	32.26:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.74	9.29:	7.62	30.87	-0.417:	9.21	32.26:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.96	7.32:			:	9.21	32.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.93	7.93	9.03:	7.74	30.97	-0.424:	9.31	32.35:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.72	8.82:			:	9.31	32.35:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.37	8.53:	7.64	30.89	-0.418:	9.24	32.29:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.23	8.21:	7.61	30.88	-0.416:	9.25	32.31:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.12	8.15:	7.62	30.88	-0.415:	9.25	32.31:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.70	7.59:	7.64	30.90	-0.412:	9.27	32.33:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.59	8.41:	7.72	30.98	-0.416:	9.35	32.42:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.41	9.23:	7.70	30.97	-0.427:	9.34	32.42:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.46	9.22:	7.70	30.97	-0.427:	9.34	32.42:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.36	9.13:	7.75	31.02	-0.427:	9.38	32.46:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.30	9.12:	7.76	31.04	-0.427:	9.40	32.49:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.17	9.06:	7.76	31.05	-0.426:	9.41	32.51:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.14	9.02:	7.76	31.05	-0.426:	9.41	32.51:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.49	9.32:	7.78	31.07	-0.429:	9.42	32.53:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.03	9.77:	7.83	31.12	-0.434:	9.46	32.58:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.17	9.90:	7.86	31.16	-0.436:	9.51	32.63:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.40	10.14:	7.78	31.09	-0.437:	9.43	32.56:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.40	10.14:	7.88	31.19	-0.438:	9.53	32.66:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.52	10.14:	7.89	31.20	-0.440:	9.53	32.67:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.60	10.20:	7.89	31.20	-0.440:	9.54	32.67:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.61	10.21:	7.89	31.20	-0.440:	9.54	32.67:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.71	11.71	13.48:	9.32	24.12	-0.340:	11.92	25.93:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.84	13.30:	9.30	24.11	-0.340:	11.92	25.94:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.92	13.00:	9.35	24.14	-0.341:	12.02	26.02:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.92	12.95:	9.35	24.14	-0.341:	12.02	26.02:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.74	12.88:	9.39	24.18	-0.341:	12.12	26.10:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.50	12.93:	9.43	24.21	-0.340:	12.17	26.15:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.19	13.03:	9.35	24.16	-0.336:	12.05	26.05:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.96	12.90:	9.35	24.17	-0.335:	12.10	26.10:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.59	12.96:	9.30	24.14	-0.332:	11.97	26.00:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.17	12.45:	9.30	24.13	-0.329:	11.97	26.00:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.62	12.17:	9.34	24.16	-0.326:	12.09	26.09:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.63	12.24:	9.31	24.14	-0.325:	11.97	26.00:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.60	12.09:	9.36	24.18	-0.327:	12.11	26.11:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.63	12.26:	9.36	24.18	-0.327:	12.11	26.11:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.03	8.23:			:	12.11	26.11:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.11	8.11	9.74:	9.47	24.25	-0.319:	12.17	26.16:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.04	9.79:			:	12.17	26.16:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.63	9.48:	9.43	24.23	-0.315:	12.23	26.21:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.45	9.00:	9.50	24.28	-0.315:	12.40	26.34:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.31	8.99:	9.50	24.28	-0.314:	12.40	26.35:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.03	8.47:	9.53	24.30	-0.313:	12.42	26.36:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.86	9.19:	9.62	24.37	-0.319:	12.51	26.44:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.68	10.01:	9.61	24.37	-0.324:	12.53	26.47:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.73	9.94:	9.62	24.37	-0.324:	12.53	26.47:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.83	10.07:	9.63	24.39	-0.325:	12.51	26.46:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.88	10.19:	9.68	24.43	-0.326:	12.60	26.53:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.03	10.46:	9.68	24.43	-0.327:	12.61	26.55:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.08	10.48:	9.68	24.43	-0.327:	12.61	26.54:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.37	10.70:	9.70	24.45	-0.329:	12.64	26.57:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.82	11.00:	9.72	24.47	-0.325:	12.62	26.56:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.95	11.10:	9.81	24.53	-0.331:	12.73	26.66:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.16	11.35:	9.67	24.45	-0.334:	12.60	26.56:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.16	11.35:	9.78	24.52	-0.336:	12.68	26.63:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.27	11.25:	9.78	24.53	-0.336:	12.68	26.63:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.36	11.30:	9.79	24.53	-0.337:	12.69	26.64:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.37	11.31:	9.79	24.53	-0.337:	12.69	26.64:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	12.56	12.56	14.67:	11.50	26.04-0.383:		14.46	28.47:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.78	14.64:	11.48	26.04-0.385:		14.47	28.49:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.92	14.30:	11.56	26.10-0.387:		14.62	28.62:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.92	14.24:	11.56	26.11-0.387:		14.62	28.63:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.82	14.28:	11.64	26.17-0.387:		14.76	28.76:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.69	14.49:	11.68	26.21-0.387:		14.83	28.83:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.53	14.80:	11.58	26.14-0.384:		14.67	28.69:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.41	14.75:	11.62	26.17-0.384:		14.77	28.78:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.25	15.05:	11.52	26.09-0.381:		14.57	28.60:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.14	14.86:	11.52	26.09-0.380:		14.57	28.60:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.06	14.59:	11.60	26.16-0.381:		14.76	28.77:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.08	14.52:	11.52	26.10-0.380:		14.56	28.60:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.05	14.30:	11.63	26.18-0.382:		14.78	28.80:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.08	14.64:	11.63	26.18-0.382:		14.78	28.80:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.92	10.37:			:	14.78	28.80:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.78	8.78	10.80:	11.69	26.23-0.359:		14.79	28.80:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.85	11.18:			:	14.79	28.80:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.57	10.94:	11.72	26.26-0.358:		14.93	28.94:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.32	10.32:	11.85	26.36-0.358:		15.18	29.17:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.13	10.31:	11.85	26.36-0.357:		15.18	29.18:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.03	9.93:	11.87	26.38-0.357:		15.20	29.19:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.76	10.51:	11.95	26.45-0.363:		15.27	29.27:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.47	11.23:	11.97	26.47-0.368:		15.33	29.33:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.52	11.13:	11.97	26.47-0.368:		15.33	29.33:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.81	11.45:	11.96	26.47-0.370:		15.27	29.28:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.98	11.69:	12.04	26.53-0.372:		15.39	29.40:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.40	12.26:	12.04	26.54-0.375:		15.40	29.42:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.53	12.34:	12.04	26.54-0.376:		15.40	29.42:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.69	12.42:	12.06	26.56-0.378:		15.44	29.46:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.94	12.48:	12.06	26.57-0.380:		15.39	29.42:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.02	12.51:	12.16	26.65-0.382:		15.52	29.55:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.14	12.69:	12.03	26.55-0.381:		15.39	29.43:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.14	12.69:	12.11	26.63-0.382:		15.44	29.49:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.20	12.48:	12.12	26.63-0.382:		15.45	29.49:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.28	12.50:	12.13	26.64-0.383:		15.46	29.50:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.28	12.51:	12.13	26.64-0.383:		15.46	29.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	14.01	14.01	16.46:	12.19	25.37	-0.382:	15.69	28.23:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.18	16.27:	12.19	25.38	-0.383:	15.72	28.26:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.28	15.84:	12.30	25.46	-0.386:	15.91	28.45:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.28	15.78:	12.31	25.46	-0.386:	15.92	28.45:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.13	15.80:	12.42	25.55	-0.386:	16.11	28.63:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.95	16.02:	12.47	25.60	-0.386:	16.19	28.71:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.71	16.35:	12.33	25.50	-0.382:	15.99	28.52:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.54	16.27:	12.40	25.55	-0.382:	16.13	28.66:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.30	16.58:	12.25	25.44	-0.378:	15.85	28.41:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.09	16.33:	12.25	25.44	-0.376:	15.85	28.40:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.85	16.00:	12.39	25.54	-0.376:	16.12	28.65:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.89	16.00:	12.25	25.44	-0.374:	15.84	28.40:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.83	15.70:	12.41	25.56	-0.376:	16.14	28.68:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.89	16.10:	12.41	25.57	-0.377:	16.14	28.68:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.37	10.53:			:	16.14	28.68:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.97	8.97	11.32:	12.45	25.60	-0.350:	16.11	28.65:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.05	11.86:			:	16.11	28.65:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.60	11.50:	12.54	25.67	-0.349:	16.35	28.87:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.30	10.77:	12.73	25.81	-0.350:	16.68	29.19:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.08	10.79:	12.73	25.81	-0.348:	16.68	29.19:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.91	10.21:	12.75	25.83	-0.348:	16.70	29.21:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.64	10.77:	12.83	25.90	-0.353:	16.77	29.29:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.36	11.51:	12.87	25.93	-0.359:	16.85	29.37:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.41	11.38:	12.87	25.93	-0.359:	16.85	29.37:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.81	11.80:	12.84	25.92	-0.361:	16.77	29.30:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.03	12.11:	12.93	26.00	-0.364:	16.92	29.45:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.61	12.85:	12.94	26.01	-0.368:	16.93	29.47:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.78	12.97:	12.94	26.01	-0.369:	16.93	29.47:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.90	12.98:	12.97	26.03	-0.371:	16.97	29.52:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.10	12.95:	12.95	26.02	-0.372:	16.90	29.45:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.15	12.95:	13.07	26.12	-0.374:	17.06	29.61:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.25	13.12:	12.92	26.01	-0.373:	16.91	29.47:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.25	13.12:	13.00	26.08	-0.374:	16.95	29.51:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.31	12.84:	13.00	26.08	-0.374:	16.95	29.52:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.37	12.84:	13.01	26.09	-0.375:	16.96	29.53:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.38	12.84:	13.01	26.09	-0.375:	16.96	29.53:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	13.33	13.33	15.91:	11.03	25.76	-0.383:	14.66	28.73:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.45	15.62:	11.03	25.77	-0.384:	14.69	28.76:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.52	15.15:	11.14	25.85	-0.386:	14.88	28.94:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.52	15.09:	11.14	25.85	-0.386:	14.89	28.94:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.33	15.07:	11.24	25.94	-0.386:	15.07	29.12:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.09	15.27:	11.30	25.98	-0.385:	15.15	29.20:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.79	15.55:	11.17	25.89	-0.381:	14.95	29.02:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.57	15.45:	11.23	25.94	-0.381:	15.10	29.16:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.22	15.65:	11.09	25.84	-0.376:	14.83	28.91:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.68	15.42:	11.09	25.84	-0.372:	14.83	28.91:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.19	14.86:	11.22	25.93	-0.340:	15.09	29.15:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.31	15.12:	11.09	25.84	-0.370:	14.82	28.90:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.18	14.86:	11.23	25.95	-0.354:	15.10	29.17:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.32	15.13:	11.23	25.95	-0.364:	15.10	29.17:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.49	9.23:			:	15.10	29.17:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.94	7.94	10.48:	11.28	25.98	-0.349:	15.08	29.15:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.09	11.10:			:	15.08	29.15:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.52	10.68:	11.36	26.05	-0.347:	15.31	29.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.25	9.96:	11.54	26.19	-0.348:	15.63	29.68:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.05	10.01:	11.54	26.19	-0.347:	15.64	29.68:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.88	9.31:	11.57	26.21	-0.346:	15.66	29.71:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.69	9.94:	11.65	26.28	-0.352:	15.72	29.78:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.49	10.74:	11.68	26.31	-0.358:	15.81	29.87:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.54	10.61:	11.68	26.31	-0.358:	15.81	29.87:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.93	11.02:	11.66	26.30	-0.361:	15.73	29.79:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.14	11.32:	11.75	26.38	-0.363:	15.88	29.94:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.69	12.05:	11.76	26.39	-0.367:	15.89	29.96:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.85	12.16:	11.75	26.39	-0.368:	15.89	29.96:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.01	12.20:	11.78	26.42	-0.370:	15.93	30.01:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.26	12.21:	11.77	26.41	-0.372:	15.86	29.94:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.33	12.22:	11.88	26.50	-0.374:	16.01	30.10:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.45	12.41:	11.75	26.40	-0.373:	15.88	29.97:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.45	12.41:	11.82	26.47	-0.374:	15.91	30.01:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.52	12.13:	11.83	26.47	-0.374:	15.92	30.02:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.60	12.15:	11.83	26.48	-0.375:	15.92	30.02:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.60	12.16:	11.83	26.48	-0.375:	15.92	30.02:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.64	13.64	16.50:	12.13	24.85	-0.369:	16.20	28.15:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		13.83	16.33:	12.13	24.86	-0.371:	16.24	28.19:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.94	15.81:	12.26	24.95	-0.374:	16.46	28.40:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.95	15.74:	12.26	24.96	-0.374:	16.46	28.40:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		13.81	15.81:	12.38	25.05	-0.374:	16.67	28.60:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		13.65	16.14:	12.44	25.10	-0.374:	16.76	28.69:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.45	16.62:	12.29	24.99	-0.370:	16.54	28.49:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.29	16.59:	12.37	25.06	-0.371:	16.71	28.64:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.06	17.02:	12.20	24.94	-0.366:	16.40	28.36:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.66	16.85:	12.20	24.93	-0.364:	16.39	28.35:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.28	16.42:	12.36	25.05	-0.364:	16.70	28.64:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.42	16.72:	12.20	24.93	-0.363:	16.38	28.35:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.27	16.41:	12.38	25.06	-0.367:	16.71	28.65:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.44	16.73:	12.38	25.07	-0.373:	16.71	28.65:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.06	10.31:			:	16.71	28.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.32	8.32	11.15:	12.41	25.09	-0.337:	16.67	28.62:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.57	12.04:			:	16.67	28.62:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.00	11.64:	12.52	25.18	-0.337:	16.95	28.89:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.73	10.85:	12.73	25.34	-0.338:	17.32	29.25:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.53	10.94:	12.74	25.34	-0.337:	17.33	29.25:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.48	10.25:	12.76	25.36	-0.337:	17.35	29.27:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.27	10.84:	12.84	25.42	-0.343:	17.41	29.34:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.06	11.64:	12.88	25.46	-0.349:	17.51	29.45:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.11	11.48:	12.88	25.46	-0.349:	17.51	29.45:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.57	11.96:	12.85	25.44	-0.351:	17.41	29.35:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.83	12.32:	12.95	25.52	-0.355:	17.58	29.52:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.48	13.17:	12.96	25.54	-0.359:	17.59	29.55:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.67	13.30:	12.96	25.54	-0.360:	17.59	29.54:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.80	13.31:	12.99	25.57	-0.362:	17.64	29.59:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.00	13.26:	12.96	25.55	-0.363:	17.55	29.51:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.06	13.25:	13.08	25.64	-0.365:	17.72	29.68:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.17	13.46:	12.95	25.55	-0.364:	17.58	29.55:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.17	13.46:	13.01	25.60	-0.364:	17.60	29.58:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.23	13.12:	13.02	25.61	-0.365:	17.60	29.58:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.28	13.06:	13.03	25.61	-0.366:	17.61	29.59:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.28	13.07:	13.03	25.61	-0.366:	17.61	29.59:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	13.99	13.99	17.29:	13.39	26.85	-0.411:	17.90	31.03:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.25	17.29:	13.41	26.87	-0.413:	17.95	31.10:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.41	16.69:	13.57	27.00	-0.417:	18.21	31.38:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.41	16.62:	13.57	27.00	-0.417:	18.22	31.39:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.34	16.78:	13.72	27.13	-0.419:	18.46	31.66:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.26	17.28:	13.79	27.19	-0.420:	18.57	31.78:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		14.18	17.95:	13.62	27.06	-0.416:	18.31	31.50:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		14.10	17.98:	13.73	27.15	-0.417:	18.51	31.73:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.99	18.58:	13.52	26.98	-0.413:	18.15	31.33:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		13.75	18.38:	13.51	26.98	-0.410:	18.15	31.33:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		13.55	18.16:	13.72	27.15	-0.412:	18.51	31.72:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		13.75	18.52:	13.51	26.97	-0.411:	18.13	31.31:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		13.55	18.14:	13.73	27.16	-0.411:	18.52	31.74:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		13.76	18.53:	13.73	27.16	-0.513:	18.52	31.74:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.45	11.65:			:	18.52	31.74:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.40	8.40	11.71:	13.74	27.16	-0.374:	18.45	31.66:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.91	13.21:			:	18.45	31.66:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.34	12.85:	13.91	27.32	-0.377:	18.81	32.06:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.04	11.94:	14.18	27.54	-0.379:	19.24	32.56:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.83	12.10:	14.18	27.54	-0.377:	19.25	32.57:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.05	11.50:	14.20	27.57	-0.379:	19.27	32.59:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.85	12.06:	14.27	27.63	-0.386:	19.31	32.65:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.65	12.87:	14.33	27.69	-0.392:	19.44	32.81:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.70	12.67:	14.33	27.69	-0.393:	19.44	32.81:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.33	13.31:	14.28	27.65	-0.396:	19.32	32.66:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.67	13.75:	14.40	27.76	-0.401:	19.51	32.89:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.54	14.83:	14.41	27.78	-0.408:	19.53	32.92:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.79	15.00:	14.41	27.78	-0.410:	19.53	32.92:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.85	14.95:	14.45	27.81	-0.411:	19.58	32.99:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.98	14.80:	14.39	27.77	-0.411:	19.46	32.85:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		12.02	14.76:	14.52	27.89	-0.413:	19.64	33.07:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		12.09	14.97:	14.40	27.79	-0.412:	19.51	32.93:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		12.09	14.97:	14.44	27.83	-0.413:	19.51	32.93:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		12.14	14.53:	14.45	27.84	-0.413:	19.51	32.93:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		12.05	14.28:	14.46	27.85	-0.413:	19.52	32.94:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		12.05	14.28:	14.46	27.85	-0.413:	19.52	32.94:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	14.52	14.52	17.08:	12.35	35.05	-0.572:	15.46	38.80:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		14.57	16.70:	12.36	35.07	-0.573:	15.50	38.85:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		14.59	16.30:	12.46	35.18	-0.575:	15.67	39.09:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		14.60	16.26:	12.46	35.19	-0.576:	15.68	39.09:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		14.35	16.18:	12.55	35.29	-0.575:	15.83	39.31:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		14.06	16.27:	12.60	35.36	-0.573:	15.91	39.42:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		13.72	16.39:	12.50	35.25	-0.566:	15.75	39.21:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		13.48	16.22:	12.56	35.32	-0.565:	15.87	39.38:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		13.15	16.20:	12.44	35.19	-0.559:	15.65	39.08:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.72	15.93:	12.44	35.19	-0.553:	15.65	39.08:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		12.50	15.66:	12.56	35.32	-0.533:	15.87	39.39:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		12.61	15.89:	12.44	35.19	-0.554:	15.64	39.07:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		12.50	15.66:	12.57	35.35	-0.545:	15.89	39.41:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		12.62	15.90:	12.57	35.35	-0.555:	15.89	39.41:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.41	10.33:			:	15.89	39.41:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.76	9.76	12.36:	12.59	35.37	-0.526:	15.85	39.37:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		9.85	12.93:			:	15.85	39.37:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.05	12.32:	12.69	35.48	-0.521:	16.08	39.68:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.64	11.56:	12.85	35.67	-0.520:	16.36	40.08:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.36	11.53:	12.85	35.67	-0.517:	16.36	40.08:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.22	10.88:	12.87	35.69	-0.516:	16.38	40.11:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		9.00	11.47:	12.93	35.77	-0.525:	16.43	40.18:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.74	12.21:	12.97	35.83	-0.534:	16.51	40.31:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.79	12.09:	12.97	35.83	-0.534:	16.51	40.31:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		10.36	12.66:	12.94	35.80	-0.540:	16.44	40.22:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.66	13.03:	13.03	35.91	-0.544:	16.57	40.41:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		11.38	13.89:	13.04	35.93	-0.552:	16.59	40.45:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		11.57	14.03:	13.04	35.93	-0.554:	16.59	40.45:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		11.62	14.00:	13.07	35.97	-0.556:	16.63	40.51:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.71	13.91:	13.04	35.95	-0.556:	16.56	40.42:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.73	13.88:	13.13	36.06	-0.558:	16.69	40.60:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.79	14.04:	13.05	35.98	-0.557:	16.60	40.49:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.79	14.04:	13.10	36.04	-0.558:	16.62	40.52:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.82	13.74:	13.10	36.04	-0.559:	16.62	40.53:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.67	13.44:	13.11	36.05	-0.557:	16.63	40.54:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.67	13.45:	13.11	36.05	-0.557:	16.63	40.54:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: (C) /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.40	12.40	14.70:	10.56	27.01	-0.399:	13.70	29.66:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.54	14.50:	10.56	27.02	-0.400:	13.72	29.69:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.62	14.10:	10.64	27.08	-0.401:	13.88	29.83:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.63	14.05:	10.64	27.08	-0.402:	13.88	29.84:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.45	14.03:	10.71	27.14	-0.401:	14.02	29.97:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.23	14.18:	10.76	27.18	-0.400:	14.08	30.04:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.96	14.42:	10.66	27.12	-0.397:	13.93	29.90:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.76	14.32:	10.70	27.15	-0.396:	14.04	30.00:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.45	14.49:	10.61	27.08	-0.392:	13.84	29.82:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		11.02	14.25:	10.61	27.08	-0.389:	13.84	29.82:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.68	13.87:	10.69	27.14	0.651:	14.03	30.00:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.75	14.06:	10.61	27.08	-0.390:	13.84	29.82:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.68	13.87:	10.71	27.16	-0.451:	14.05	30.02:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.77	14.07:	10.71	27.16	-0.376:	14.05	30.02:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.68	8.87:			:	14.05	30.02:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	9.04	9.04	11.37:	10.76	27.20	-0.376:	14.05	30.02:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.89	11.47:			:	14.05	30.02:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.13	10.86:	10.81	27.24	-0.370:	14.22	30.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.79	10.16:	10.93	27.35	-0.370:	14.47	30.44:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.55	10.12:	10.93	27.35	-0.368:	14.48	30.44:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.16	9.29:	10.96	27.37	-0.366:	14.50	30.46:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.99	9.96:	11.03	27.44	-0.373:	14.56	30.53:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.78	10.75:	11.05	27.46	-0.379:	14.63	30.61:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.83	10.65:	11.05	27.46	-0.379:	14.63	30.61:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.15	10.99:	11.05	27.46	-0.381:	14.57	30.56:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.32	11.24:	11.12	27.52	-0.384:	14.69	30.68:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.76	11.84:	11.12	27.54	-0.387:	14.71	30.70:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.88	11.93:	11.12	27.54	-0.388:	14.70	30.70:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.04	12.01:	11.15	27.56	-0.389:	14.74	30.74:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		10.29	12.11:	11.14	27.56	-0.391:	14.69	30.70:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		10.37	12.14:	11.22	27.63	-0.393:	14.81	30.82:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.50	12.36:	11.13	27.57	-0.393:	14.71	30.73:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.50	12.36:	11.20	27.63	-0.394:	14.74	30.77:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.58	12.14:	11.20	27.63	-0.394:	14.75	30.78:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.66	12.06:	11.21	27.64	-0.395:	14.76	30.79:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.66	12.07:	11.21	27.64	-0.395:	14.76	30.79:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1 /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.65	12.65	15.34:	11.62	22.95	-0.327:	15.65	25.85:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.88	15.29:	11.62	22.95	-0.328:	15.68	25.88:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		13.03	14.78:	11.75	23.04	-0.331:	15.91	26.08:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		13.03	14.72:	11.75	23.04	-0.331:	15.91	26.08:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.94	14.81:	11.86	23.11	-0.332:	16.11	26.25:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.82	15.18:	11.92	23.16	-0.332:	16.20	26.33:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		12.68	15.73:	11.77	23.07	-0.329:	15.98	26.15:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		12.57	15.75:	11.85	23.12	-0.329:	16.14	26.28:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		12.39	16.34:	11.69	23.02	-0.326:	15.85	26.04:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		12.07	16.22:	11.69	23.02	-0.325:	15.84	26.04:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		11.75	15.86:	11.83	23.11	-0.329:	16.13	26.28:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		11.88	16.15:	11.69	23.02	-0.324:	15.83	26.03:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		11.74	15.85:	11.85	23.12	-0.317:	16.15	26.29:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		11.90	16.16:	11.85	23.12	-0.347:	16.15	26.29:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.26	10.13:			:	16.15	26.29:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.54	8.54	11.27:	11.89	23.15	-0.306:	16.13	26.28:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.69	11.92:			:	16.13	26.28:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.12	11.50:	12.00	23.23	-0.305:	16.41	26.52:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.85	10.74:	12.20	23.36	-0.305:	16.78	26.84:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.67	10.82:	12.21	23.37	-0.304:	16.79	26.84:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.63	10.19:	12.23	23.38	-0.305:	16.81	26.87:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.58	10.93:	12.31	23.45	-0.311:	16.87	26.93:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		9.48	11.81:	12.35	23.48	-0.317:	16.98	27.02:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		9.53	11.67:	12.36	23.48	-0.317:	16.98	27.02:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		9.87	12.04:	12.33	23.46	-0.319:	16.88	26.95:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		10.05	12.32:	12.42	23.54	-0.321:	17.05	27.09:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		10.54	13.00:	12.43	23.55	-0.324:	17.06	27.12:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		10.68	13.10:	12.43	23.55	-0.325:	17.06	27.11:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		10.86	13.19:	12.46	23.57	-0.326:	17.11	27.16:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		11.16	13.30:	12.43	23.55	-0.328:	17.02	27.08:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		11.25	13.34:	12.54	23.63	-0.330:	17.18	27.23:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		11.42	13.62:	12.42	23.56	-0.329:	17.05	27.12:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		11.42	13.62:	12.48	23.60	-0.330:	17.07	27.14:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		11.51	13.34:	12.49	23.61	-0.331:	17.07	27.15:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		11.60	13.25:	12.50	23.62	-0.331:	17.09	27.16:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		11.61	13.26:	12.50	23.62	-0.331:	17.09	27.16:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.70	12.70	14.74:	9.57	24.37	-0.351:	12.56	26.53:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.75	14.40:	9.56	24.37	-0.351:	12.56	26.54:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.79	14.01:	9.62	24.41	-0.353:	12.70	26.65:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.79	13.96:	9.62	24.41	-0.353:	12.70	26.65:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.54	13.84:	9.67	24.46	-0.352:	12.82	26.75:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		12.22	13.85:	9.71	24.49	-0.350:	12.88	26.80:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.80	13.91:	9.63	24.43	-0.346:	12.74	26.70:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.51	13.73:	9.65	24.45	-0.344:	12.82	26.76:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		11.03	13.74:	9.58	24.41	-0.340:	12.66	26.64:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.34	13.42:	9.58	24.41	-0.335:	12.66	26.64:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.70	12.72:	9.63	24.44	-0.327:	12.81	26.76:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.75	12.87:	9.59	24.41	-0.330:	12.66	26.64:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.70	12.72:	9.65	24.46	-0.336:	12.83	26.78:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.76	12.88:	9.65	24.46	-0.326:	12.83	26.78:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.51	8.22:			:	12.83	26.78:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.05	8.05	10.10:	9.73	24.51	-0.323:	12.86	26.80:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.97	10.22:			:	12.86	26.80:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.41	9.76:	9.74	24.52	-0.319:	12.99	26.91:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.15	9.16:	9.83	24.59	-0.319:	13.21	27.09:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.98	9.15:	9.83	24.59	-0.318:	13.21	27.09:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.71	8.51:	9.86	24.61	-0.316:	13.23	27.11:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.67	9.31:	9.94	24.67	-0.323:	13.31	27.18:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.56	10.18:	9.95	24.69	-0.329:	13.36	27.23:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.61	10.10:	9.95	24.69	-0.329:	13.36	27.23:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.78	10.29:	9.96	24.70	-0.330:	13.33	27.21:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.87	10.46:	10.02	24.74	-0.332:	13.43	27.30:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.11	10.85:	10.02	24.75	-0.333:	13.44	27.32:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.18	10.89:	10.02	24.75	-0.334:	13.44	27.32:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.44	11.05:	10.05	24.77	-0.336:	13.48	27.35:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.83	11.26:	10.06	24.79	-0.339:	13.44	27.33:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.94	11.33:	10.14	24.85	-0.342:	13.56	27.43:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		10.11	11.55:	10.02	24.77	-0.344:	13.44	27.34:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		10.11	11.55:	10.11	24.84	0.000:	13.50	27.40:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.20	11.39:	10.12	24.85	-0.349:	13.51	27.40:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.30	11.42:	10.13	24.85	-0.344:	13.52	27.41:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.30	11.43:	10.13	24.85	-0.344:	13.52	27.41:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	12.14	12.14	14.35:	9.52	21.83	-0.302:	12.94	24.00:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		12.26	14.09:	9.50	21.83	-0.302:	12.95	24.01:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		12.33	13.66:	9.58	21.88	-0.303:	13.12	24.13:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		12.33	13.61:	9.58	21.88	-0.303:	13.12	24.14:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		12.13	13.56:	9.65	21.92	-0.303:	13.26	24.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.88	13.68:	9.69	21.95	-0.302:	13.33	24.29:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		11.55	13.91:	9.59	21.89	-0.299:	13.17	24.18:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		11.31	13.80:	9.62	21.91	-0.298:	13.27	24.25:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.91	14.05:	9.53	21.87	-0.295:	13.07	24.11:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.30	13.83:	9.53	21.86	-0.291:	13.07	24.11:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.65	13.12:	9.60	21.91	-0.321:	13.26	24.25:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.71	13.31:	9.54	21.87	-0.287:	13.06	24.11:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.64	13.11:	9.62	21.92	-0.198:	13.27	24.26:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.72	13.32:	9.62	21.92	-0.292:	13.27	24.26:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.59	8.50:			:	13.27	24.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.47	8.47	10.70:	9.70	21.97	-0.283:	13.30	24.28:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.28	10.70:			:	13.30	24.28:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.66	10.20:	9.73	21.99	-0.279:	13.48	24.42:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.39	9.54:	9.85	22.06	-0.279:	13.75	24.61:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.20	9.54:	9.85	22.06	-0.278:	13.75	24.62:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.81	8.73:	9.88	22.08	-0.276:	13.77	24.63:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.67	9.43:	9.97	22.14	-0.282:	13.85	24.70:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.47	10.22:	9.98	22.15	-0.286:	13.92	24.75:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.52	10.13:	9.98	22.15	-0.286:	13.92	24.75:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.69	10.32:	9.99	22.16	-0.287:	13.87	24.72:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.78	10.51:	10.05	22.20	-0.289:	13.99	24.82:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.03	10.92:	10.06	22.21	-0.290:	14.00	24.83:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.11	10.96:	10.06	22.21	-0.290:	14.00	24.83:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.31	11.09:	10.08	22.23	-0.292:	14.04	24.86:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.65	11.25:	10.08	22.24	-0.294:	13.99	24.83:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.75	11.30:	10.18	22.30	-0.295:	14.13	24.94:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.91	11.53:	10.05	22.23	-0.293:	13.99	24.84:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.91	11.53:	10.14	22.29	-0.297:	14.05	24.89:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		10.01	11.34:	10.14	22.29	-0.300:	14.05	24.89:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		10.15	11.37:	10.16	22.30	-0.789:	14.07	24.90:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		10.15	11.38:	10.16	22.30	-0.789:	14.07	24.90:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.54	10.54	12.75:	9.03	32.08	-0.470:	11.93	34.95:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.69	12.61:	9.02	32.08	-0.471:	11.94	34.98:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.79	12.24:	9.09	32.15	-0.473:	12.08	35.13:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.79	12.19:	9.09	32.15	-0.473:	12.08	35.13:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.63	12.18:	9.15	32.20	-0.472:	12.19	35.26:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.43	12.32:	9.18	32.25	-0.471:	12.25	35.33:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.18	12.54:	9.11	32.19	-0.468:	12.12	35.21:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.00	12.46:	9.14	32.21	-0.467:	12.20	35.30:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.74	12.57:	9.07	32.16	-0.463:	12.05	35.14:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.39	12.37:	9.07	32.16	-0.460:	12.05	35.13:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.15	12.08:	9.13	32.21	-0.426:	12.20	35.30:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.20	12.23:	9.07	32.16	-0.461:	12.05	35.14:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.14	12.09:	9.15	32.23	0.000:	12.21	35.32:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.21	12.24:	9.15	32.23	-0.480:	12.21	35.32:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.12	8.94:			:	12.21	35.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.90	7.90	9.98:	9.22	32.31	-0.449:	12.26	35.37:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.90	10.16:			:	12.26	35.37:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.56	9.93:	9.24	32.33	-0.447:	12.39	35.52:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.39	9.45:	9.34	32.43	-0.447:	12.60	35.76:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.27	9.50:	9.34	32.43	-0.446:	12.60	35.76:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.29	9.26:	9.35	32.44	-0.446:	12.61	35.78:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.01	9.81:	9.43	32.52	-0.454:	12.68	35.86:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.65	10.44:	9.45	32.55	-0.460:	12.74	35.94:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.69	10.34:	9.45	32.55	-0.460:	12.74	35.94:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.80	10.48:	9.45	32.56	-0.461:	12.70	35.91:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.87	10.62:	9.51	32.63	-0.463:	12.80	36.03:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.03	10.93:	9.52	32.65	-0.465:	12.82	36.06:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.07	10.95:	9.52	32.64	-0.465:	12.81	36.06:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.21	11.02:	9.54	32.67	-0.466:	12.85	36.11:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.44	11.10:	9.54	32.68	-0.468:	12.81	36.07:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.50	11.13:	9.62	32.76	-0.473:	12.92	36.20:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.61	11.32:	9.53	32.69	-0.468:	12.83	36.10:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.61	11.32:	9.60	32.76	-0.529:	12.87	36.16:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.67	11.11:	9.60	32.76	-0.484:	12.87	36.17:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.77	11.12:	9.61	32.77	-0.471:	12.88	36.18:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.77	11.13:	9.61	32.77	-0.471:	12.88	36.18:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.20	10.20	12.57:	8.90	24.71	-0.339:	12.61	27.45:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.42	12.50:	8.87	24.70	-0.340:	12.61	27.46:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.55	12.06:	8.96	24.77	-0.343:	12.80	27.62:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.56	12.00:	8.96	24.77	-0.343:	12.80	27.62:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.45	12.06:	9.04	24.82	-0.343:	12.95	27.75:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.32	12.34:	9.08	24.86	-0.343:	13.02	27.82:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.15	12.80:	8.97	24.79	-0.340:	12.84	27.67:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.01	12.81:	9.00	24.81	-0.340:	12.95	27.76:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.79	13.32:	8.91	24.75	-0.337:	12.74	27.59:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.44	12.87:	8.90	24.75	-0.334:	12.73	27.59:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.01	12.78:	8.98	24.80	-0.392:	12.93	27.76:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.08	12.97:	8.91	24.75	-0.331:	12.73	27.59:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.00	12.76:	9.00	24.82	0.000:	12.95	27.78:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.09	12.99:	9.00	24.82	-0.324:	12.95	27.78:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.31	9.40:			:	12.95	27.78:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.84	7.84	10.02:	9.12	24.90	-0.327:	13.02	27.83:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.83	10.23:			:	13.02	27.83:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.57	10.08:	9.14	24.91	-0.326:	13.20	27.99:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.45	9.59:	9.27	25.01	-0.327:	13.48	28.24:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.36	9.69:	9.27	25.01	-0.326:	13.49	28.24:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.14	9.11:	9.30	25.03	-0.325:	13.51	28.26:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.78	9.58:	9.40	25.11	-0.330:	13.59	28.34:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.37	10.17:	9.42	25.12	-0.334:	13.66	28.41:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.41	10.06:	9.42	25.13	-0.334:	13.67	28.41:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.51	10.19:	9.42	25.13	-0.335:	13.61	28.37:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.57	10.34:	9.49	25.19	-0.336:	13.74	28.49:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.72	10.67:	9.49	25.20	-0.337:	13.75	28.51:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.77	10.68:	9.49	25.19	-0.338:	13.75	28.50:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.92	10.75:	9.51	25.22	-0.339:	13.79	28.54:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.17	10.82:	9.51	25.22	-0.341:	13.73	28.50:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.25	10.85:	9.62	25.30	-0.343:	13.88	28.63:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.37	11.06:	9.47	25.20	-0.338:	13.73	28.51:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.37	11.06:	9.56	25.28	-0.342:	13.79	28.57:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.45	10.84:	9.57	25.28	-0.340:	13.79	28.57:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.55	10.85:	9.58	25.29	-0.355:	13.81	28.58:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.56	10.85:	9.58	25.29	-0.355:	13.81	28.58:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	11.39	11.39	13.74:	9.25	24.86	-0.351:	12.86	27.55:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.54	13.54:	9.23	24.85	-0.351:	12.86	27.57:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.63	13.09:	9.32	24.92	-0.353:	13.05	27.73:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.64	13.03:	9.32	24.92	-0.353:	13.05	27.73:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		11.47	13.03:	9.39	24.97	-0.353:	13.19	27.85:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		11.26	13.22:	9.44	25.01	-0.352:	13.26	27.92:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.99	13.54:	9.33	24.94	-0.349:	13.09	27.78:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.79	13.48:	9.36	24.96	-0.348:	13.19	27.87:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.45	13.81:	9.27	24.90	-0.344:	12.99	27.70:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.95	13.44:	9.27	24.90	-0.341:	12.99	27.70:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.39	13.04:	9.35	24.95	-0.349:	13.18	27.86:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.45	13.23:	9.27	24.91	-0.337:	12.99	27.70:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.38	13.03:	9.36	24.97	-0.551:	13.20	27.88:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.46	13.24:	9.36	24.97	-0.341:	13.20	27.88:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.39	9.45:			:	13.20	27.88:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.96	7.96	10.21:	9.46	25.04	-0.331:	13.26	27.93:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.97	10.45:			:	13.26	27.93:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.66	10.25:	9.49	25.06	-0.329:	13.44	28.09:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.52	9.73:	9.62	25.16	-0.330:	13.72	28.34:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.42	9.82:	9.62	25.16	-0.329:	13.72	28.34:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.20	9.19:	9.65	25.18	-0.328:	13.75	28.36:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.78	9.61:	9.74	25.25	-0.333:	13.82	28.44:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.33	10.17:	9.76	25.27	-0.337:	13.90	28.51:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.36	10.05:	9.76	25.27	-0.337:	13.90	28.51:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.51	10.23:	9.76	25.28	-0.338:	13.85	28.47:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.60	10.41:	9.83	25.33	-0.340:	13.97	28.58:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.82	10.80:	9.84	25.34	-0.341:	13.98	28.60:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.89	10.83:	9.83	25.34	-0.341:	13.98	28.60:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.02	10.88:	9.86	25.36	-0.343:	14.02	28.64:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.24	10.92:	9.86	25.37	-0.344:	13.97	28.60:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.31	10.93:	9.96	25.44	-0.346:	14.11	28.73:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.42	11.12:	9.82	25.35	-0.345:	13.97	28.61:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.42	11.12:	9.91	25.42	-0.346:	14.03	28.67:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.48	10.88:	9.92	25.43	-0.347:	14.03	28.68:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.55	10.88:	9.93	25.44	-0.347:	14.04	28.68:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.55	10.88:	9.93	25.44	-0.347:	14.04	28.68:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C2)	AVG. DAILY K1 (J/M2/ C) S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: (J/M2: C) S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	10.91	10.91	12.78:	7.87	22.52	-0.304:	11.12	24.57:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		11.04	12.57:	7.82	22.50	-0.305:	11.10	24.56:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		11.12	12.21:	7.88	22.54	-0.306:	11.25	24.67:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		11.12	12.17:	7.88	22.54	-0.306:	11.25	24.67:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.94	12.11:	7.94	22.57	-0.305:	11.36	24.75:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.70	12.18:	7.98	22.60	-0.304:	11.43	24.81:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.38	12.35:	7.87	22.54	-0.301:	11.27	24.70:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.15	12.23:	7.88	22.55	-0.300:	11.34	24.75:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.79	12.48:	7.81	22.51	-0.297:	11.18	24.64:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.51	12.27:	7.81	22.51	-0.295:	11.17	24.63:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.96	11.56:	7.85	22.54	-0.293:	11.31	24.73:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.92	11.40:	7.81	22.52	-0.292:	11.17	24.64:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.87	11.16:	7.87	22.56	-0.292:	11.34	24.76:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.86	11.47:	7.88	22.56	-0.292:	11.34	24.76:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.09	9.19:			:	11.34	24.76:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.62	7.62	9.38:	8.01	22.64	-0.287:	11.44	24.83:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.56	9.42:			:	11.44	24.83:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.45	9.36:	7.97	22.62	-0.286:	11.55	24.91:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.37	8.96:	8.06	22.67	-0.286:	11.77	25.07:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.31	9.04:	8.06	22.67	-0.286:	11.77	25.07:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.97	8.37:	8.10	22.70	-0.285:	11.81	25.10:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.51	8.80:	8.22	22.78	-0.289:	11.91	25.18:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.02	9.33:	8.21	22.77	-0.293:	11.95	25.21:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.05	9.25:	8.21	22.77	-0.294:	11.95	25.22:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.07	9.29:	8.23	22.79	-0.291:	11.93	25.20:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.08	9.37:	8.29	22.83	-0.291:	12.03	25.29:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.10	9.53:	8.28	22.83	-0.291:	12.03	25.29:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.11	9.52:	8.28	22.83	-0.294:	12.03	25.29:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.24	9.60:	8.29	22.85	-0.287:	12.06	25.32:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.46	9.71:	8.31	22.86	-0.298:	12.03	25.30:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.54	9.75:	8.41	22.92	-0.299:	12.16	25.40:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.66	9.95:	8.23	22.83	-0.295:	11.99	25.28:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.66	9.95:	8.35	22.90	-0.296:	12.08	25.36:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.74	9.80:	8.36	22.91	-0.297:	12.09	25.36:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.92	9.90:	8.38	22.92	-0.298:	12.10	25.37:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.93	9.91:	8.38	22.92	-0.298:	12.10	25.37:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	9.53	9.53	10.79:	6.86	44.23	-0.657:	8.41	46.24:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.52	10.54:	6.85	44.22	-0.656:	8.39	46.24:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		9.51	10.32:	6.84	44.23	-0.656:	8.41	46.27:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		9.51	10.28:	6.85	44.23	-0.656:	8.41	46.27:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		9.22	10.07:	6.85	44.25	-0.652:	8.43	46.31:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.85	9.86:	6.87	44.29	-0.648:	8.46	46.36:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.42	9.63:	6.85	44.27	-0.642:	8.43	46.33:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.15	9.42:	6.83	44.26	-0.638:	8.42	46.33:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.77	9.18:	6.85	44.28	-0.633:	8.42	46.33:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.55	8.98:	6.85	44.28	-0.630:	8.42	46.33:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.47	8.88:	6.83	44.26	-0.629:	8.42	46.33:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.44	8.82:	6.86	44.30	-0.629:	8.43	46.35:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.44	8.77:	6.85	44.30	-0.629:	8.44	46.37:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.41	8.83:	6.85	44.30	-0.629:	8.44	46.37:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.77	8.04:			:	8.44	46.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.34	7.34	8.52:	6.93	44.40	-0.630:	8.52	46.48:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.22	8.38:			:	8.52	46.48:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.11	8.31:	6.85	44.31	-0.626:	8.47	46.42:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.07	8.10:	6.84	44.31	-0.623:	8.49	46.46:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.04	8.12:	6.85	44.31	-0.622:	8.49	46.46:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.81	7.77:	6.86	44.33	-0.645:	8.51	46.48:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.39	8.27:	6.94	44.45	-0.630:	8.58	46.61:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.90	8.79:	6.92	44.44	-0.637:	8.58	46.61:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.93	8.75:	6.92	44.44	-0.637:	8.58	46.61:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.77	8.61:	6.96	44.50	-0.636:	8.61	46.67:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.69	8.57:	6.98	44.54	-0.635:	8.64	46.72:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.50	8.46:	6.99	44.57	-0.633:	8.65	46.76:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.45	8.40:	6.99	44.57	-0.633:	8.65	46.75:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.63	8.55:	7.00	44.60	-0.635:	8.66	46.79:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.92	8.76:	7.04	44.65	-0.640:	8.69	46.84:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.01	8.83:	7.08	44.71	-0.642:	8.74	46.91:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.14	8.99:	7.01	44.64	-0.642:	8.67	46.84:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.14	8.99:	7.09	44.77	-0.644:	8.75	46.97:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.21	8.94:	7.10	44.77	-0.645:	8.76	46.97:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.46	9.13:	7.11	44.78	-0.649:	8.77	46.98:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.46	9.14:	7.11	44.78	-0.649:	8.77	46.98:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	9.64	9.64	10.41:	9.20	37.61	-0.556:	10.65	39.29:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		9.89	10.57:	9.06	37.47	-0.556:	10.53	39.15:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.07	10.55:	9.06	37.47	-0.558:	10.54	39.17:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.08	10.52:	9.06	37.48	-0.558:	10.55	39.18:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.04	10.53:	9.10	37.53	-0.558:	10.59	39.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.00	10.58:	9.16	37.60	-0.559:	10.66	39.33:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		9.95	10.65:	9.03	37.47	-0.556:	10.53	39.18:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		9.92	10.60:	9.01	37.45	-0.555:	10.52	39.18:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		9.89	10.64:	8.93	37.38	-0.553:	10.43	39.08:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		9.87	10.47:	8.93	37.37	-0.553:	10.43	39.07:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		9.87	10.43:	8.89	37.33	-0.552:	10.41	39.05:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		9.86	10.36:	8.93	37.38	-0.553:	10.43	39.08:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		9.86	10.34:	8.98	37.44	-0.554:	10.50	39.17:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		9.86	10.47:	8.99	37.45	-0.554:	10.51	39.18:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		9.81	10.46:			:	10.51	39.18:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	8.05	8.05	8.59:	9.38	37.87	-0.543:	10.87	39.62:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		8.09	8.68:			:	10.87	39.62:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.48	9.08:	9.01	37.48	-0.539:	10.55	39.23:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.48	8.96:	9.02	37.49	-0.540:	10.59	39.29:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.48	9.00:	9.02	37.49	-0.539:	10.58	39.28:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.05	8.52:	9.07	37.55	-0.536:	10.63	39.34:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.42	8.86:	9.26	37.78	-0.544:	10.82	39.58:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.81	9.26:	9.15	37.66	-0.546:	10.72	39.48:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.84	9.24:	9.15	37.67	-0.547:	10.73	39.48:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.85	9.26:	9.22	37.75	-0.548:	10.79	39.56:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.86	9.30:	9.26	37.81	-0.549:	10.84	39.64:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.89	9.37:	9.20	37.76	-0.548:	10.78	39.59:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.90	9.37:	9.20	37.75	-0.548:	10.78	39.58:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.90	9.38:	9.17	37.74	-0.547:	10.76	39.57:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.92	9.41:	9.19	37.76	-0.548:	10.77	39.58:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.93	9.43:	9.26	37.85	-0.550:	10.85	39.69:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.95	9.52:	9.02	37.59	-0.561:	10.62	39.42:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.95	9.52:	9.17	37.77	-0.548:	10.76	39.61:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.96	9.47:	9.16	37.76	-0.547:	10.75	39.60:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.62	10.01:	9.23	37.84	-0.557:	10.82	39.67:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.62	10.02:	9.23	37.84	-0.557:	10.82	39.67:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	10.32	10.32	11.34:	8.89	23.48	-0.319:	11.50	25.23:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.55	11.44:	8.70	23.37	-0.318:	11.33	25.12:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.72	11.33:	8.73	23.39	-0.319:	11.43	25.19:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.73	11.30:	8.73	23.39	-0.320:	11.44	25.19:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.69	11.28:	8.84	23.47	-0.321:	11.58	25.30:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.64	11.32:	9.00	23.57	-0.322:	11.75	25.43:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.59	11.37:	8.78	23.44	-0.319:	11.51	25.26:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.56	11.27:	8.80	23.46	-0.319:	11.57	25.30:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.53	11.29:	8.56	23.31	-0.316:	11.28	25.10:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.52	11.07:	8.56	23.31	-0.316:	11.27	25.10:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.50	11.03:	8.53	23.29	-0.316:	11.31	25.13:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.50	10.97:	8.54	23.30	-0.316:	11.25	25.08:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.49	10.93:	8.73	23.42	-0.318:	11.50	25.27:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.49	11.09:	8.75	23.43	-0.318:	11.52	25.28:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.44	11.06:			:	11.52	25.28:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.67	7.67	8.60:	8.87	23.51	-0.303:	11.63	25.36:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.72	8.75:			:	11.63	25.36:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.21	10.01:	8.69	23.40	-0.310:	11.56	25.31:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.21	9.87:	8.75	23.44	-0.311:	11.72	25.43:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.21	9.95:	8.75	23.44	-0.310:	11.72	25.43:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.27	8.89:	8.86	23.50	-0.306:	11.82	25.50:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.56	9.14:	9.12	23.68	-0.311:	12.06	25.69:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.87	9.48:	8.97	23.59	-0.307:	11.96	25.62:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.89	9.44:	8.97	23.59	-0.320:	11.96	25.63:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.89	9.45:	9.05	23.65	-0.309:	12.01	25.66:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.90	9.49:	9.12	23.70	-0.312:	12.11	25.74:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.91	9.56:	9.03	23.64	-0.317:	12.03	25.69:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.91	9.55:	9.02	23.64	-0.309:	12.02	25.69:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.91	9.55:	8.99	23.63	-0.312:	12.01	25.68:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.91	9.55:	9.00	23.64	-0.308:	11.99	25.67:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.92	9.56:	9.15	23.73	-0.313:	12.15	25.80:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.92	9.65:	8.73	23.48	-0.310:	11.76	25.52:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.92	9.65:	8.96	23.63	-0.345:	11.96	25.67:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.93	9.55:	8.96	23.63	-0.246:	11.96	25.67:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.58	10.02:	9.10	23.72	-0.317:	12.09	25.76:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.58	10.04:	9.10	23.72	-0.317:	12.09	25.76:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C)	REMARKS
1	S.F. KOKTULI	H	54.7:	10.29	10.29	11.85:	9.30	31.93	-0.465:	12.26	34.89:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		10.52	11.92:	9.20	31.85	-0.466:	12.19	34.82:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		10.69	11.67:	9.27	31.92	-0.469:	12.34	34.99:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		10.70	11.63:	9.28	31.92	-0.469:	12.35	34.99:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		10.65	11.62:	9.37	32.02	-0.470:	12.48	35.15:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		10.59	11.71:	9.48	32.13	-0.471:	12.61	35.30:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		10.53	11.83:	9.33	31.99	-0.468:	12.42	35.09:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		10.50	11.69:	9.37	32.03	-0.469:	12.50	35.19:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		10.47	11.74:	9.19	31.87	-0.465:	12.26	34.93:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		10.46	11.40:	9.19	31.87	-0.465:	12.26	34.92:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		10.46	11.35:	9.21	31.90	-0.465:	12.37	35.04:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		10.45	11.26:	9.17	31.86	-0.465:	12.24	34.91:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		10.45	11.21:	9.34	32.02	-0.468:	12.48	35.18:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		10.46	11.47:	9.35	32.03	-0.468:	12.49	35.19:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		10.39	11.41:			:	12.49	35.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.24	7.24	8.76:	9.40	32.08	-0.440:	12.54	35.24:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.40	9.15:			:	12.54	35.24:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		9.13	10.45:	9.38	32.06	-0.456:	12.65	35.37:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		9.13	10.26:	9.49	32.17	-0.459:	12.87	35.63:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		9.13	10.38:	9.49	32.17	-0.458:	12.87	35.63:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		8.40	9.47:	9.55	32.23	-0.453:	12.92	35.68:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		8.66	9.67:	9.72	32.40	-0.458:	13.07	35.87:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.93	9.97:	9.66	32.35	-0.460:	13.07	35.87:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.95	9.90:	9.67	32.35	-0.460:	13.07	35.88:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.99	9.95:	9.70	32.39	-0.461:	13.07	35.88:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		9.01	10.03:	9.77	32.47	-0.462:	13.18	36.01:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		9.07	10.19:	9.73	32.44	-0.462:	13.15	35.99:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		9.09	10.19:	9.73	32.44	-0.462:	13.14	35.98:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		9.11	10.21:	9.72	32.44	-0.462:	13.16	36.01:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		9.15	10.23:	9.72	32.45	-0.462:	13.12	35.97:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		9.16	10.25:	9.83	32.56	-0.465:	13.25	36.13:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		9.20	10.41:	9.58	32.34	-0.460:	13.02	35.87:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		9.20	10.41:	9.73	32.48	-0.463:	13.13	36.01:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		9.23	10.26:	9.72	32.48	-0.464:	13.13	36.01:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		9.56	10.36:	9.79	32.54	-0.467:	13.19	36.08:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		9.56	10.38:	9.79	32.54	-0.467:	13.19	36.08:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.75	7.75	8.83:	6.76	56.36-0.827:		8.19	58.77:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.95	8.89:	6.72	56.31-0.829:		8.15	58.73:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.08	8.80:	6.71	56.32-0.832:		8.16	58.76:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.08	8.76:	6.72	56.32-0.832:		8.16	58.77:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.98	8.70:	6.74	56.38-0.831:		8.20	58.84:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.87	8.69:	6.79	56.47-0.830:		8.25	58.94:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.76	8.69:	6.74	56.41-0.827:		8.20	58.87:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.69	8.59:	6.74	56.40-0.826:		8.20	58.88:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.63	8.58:	6.71	56.36-0.824:		8.16	58.82:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.61	8.39:	6.70	56.36-0.823:		8.16	58.81:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.60	8.35:	6.68	56.33-0.822:		8.15	58.80:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.60	8.26:	6.71	56.37-0.823:		8.16	58.83:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.60	8.24:	6.74	56.44-0.824:		8.21	58.92:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.59	8.39:	6.75	56.45-0.824:		8.21	58.93:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.49	8.28:			:	8.21	58.93:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.74	6.74	7.74:	6.81	56.55-0.800:		8.27	59.04:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.75	7.77:			:	8.27	59.04:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.10	8.01:	6.72	56.41-0.815:		8.20	58.93:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.10	7.87:	6.72	56.43-0.815:		8.22	58.98:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.09	7.92:	6.72	56.43-0.816:		8.23	58.98:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.91	7.63:	6.75	56.48-0.812:		8.25	59.03:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.35	8.02:	6.85	56.68-0.824:		8.36	59.24:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.78	8.46:	6.82	56.63-0.830:		8.33	59.21:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.81	8.43:	6.82	56.64-0.830:		8.33	59.21:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.71	8.34:	6.86	56.72-0.830:		8.37	59.29:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.66	8.33:	6.89	56.79-0.830:		8.40	59.38:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.54	8.26:	6.88	56.80-0.828:		8.40	59.39:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.50	8.22:	6.88	56.79-0.827:		8.39	59.39:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.46	8.18:	6.88	56.81-0.827:		8.40	59.42:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.39	8.10:	6.91	56.87-0.826:		8.42	59.47:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.37	8.08:	6.95	56.96-0.827:		8.47	59.57:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.32	8.10:	6.85	56.81-0.823:		8.37	59.41:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.32	8.10:	6.94	56.99-0.826:		8.46	59.60:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.29	7.98:	6.94	56.99-0.826:		8.46	59.60:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.18	8.73:	6.97	57.04-0.842:		8.49	59.65:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.19	8.74:	6.97	57.04-0.842:		8.49	59.65:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 (J/M2/: S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: (J/M2: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.34	8.34	9.79:	8.90	31.66-0.442:		12.11	34.82:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.62	10.01:	8.75	31.53-0.439:		11.98	34.69:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.83	9.78:	8.83	31.61 0.000:		12.16	34.89:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.84	9.75:	8.83	31.61-1.215:		12.16	34.89:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.84	9.79:	8.95	31.72-0.454:		12.32	35.07:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.84	9.93:	9.09	31.86-0.450:		12.47	35.25:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.85	10.11:	8.88	31.68-0.470:		12.24	34.99:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.85	10.00:	8.93	31.72-0.454:		12.33	35.10:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.85	10.07:	8.69	31.51-0.443:		12.03	34.77:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.85	9.75:	8.68	31.51-0.445:		12.03	34.77:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.88	9.74:	8.71	31.53-0.444:		12.13	34.89:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.89	9.66:	8.66	31.50-0.441:		12.00	34.75:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.91	9.64:	8.87	31.68-0.422:		12.28	35.06:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.93	9.93:	8.88	31.69-0.454:		12.29	35.07:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.93	9.97:			:	12.29	35.07:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	7.41	7.41	8.55:	9.15	31.93-0.439:		12.53	35.34:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		7.47	8.79:			:	12.53	35.34:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		8.07	9.27:	8.96	31.77-0.441:		12.51	35.32:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		8.07	9.06:	9.09	31.90-0.443:		12.77	35.62:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		8.07	9.18:	9.09	31.90-0.443:		12.77	35.61:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.71	8.66:	9.17	31.97-0.442:		12.84	35.69:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.95	8.85:	9.39	32.18-0.448:		13.04	35.93:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		8.21	9.16:	9.29	32.10-0.448:		13.00	35.89:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		8.23	9.08:	9.29	32.10-0.448:		13.00	35.90:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		8.26	9.14:	9.34	32.15-0.449:		13.01	35.91:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		8.29	9.22:	9.42	32.24-0.451:		13.13	36.06:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		8.35	9.37:	9.35	32.18-0.450:		13.08	36.01:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		8.37	9.37:	9.35	32.18-0.451:		13.07	36.01:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		8.39	9.40:	9.33	32.17-0.450:		13.07	36.01:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		8.44	9.46:	9.31	32.15-0.450:		13.01	35.95:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		8.46	9.50:	9.44	32.28-0.453:		13.17	36.13:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		8.50	9.71:	9.11	31.99-0.448:		12.86	35.80:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		8.50	9.71:	9.28	32.16-0.450:		13.00	35.96:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		8.53	9.59:	9.27	32.15-0.450:		12.99	35.95:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.97	9.74:	9.36	32.24-0.456:		13.08	36.05:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.97	9.76:	9.36	32.24-0.456:		13.08	36.05:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	8.26	8.26	9.09:	5.94	21.72	-0.273:	8.35	23.06:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.47	9.18:	5.71	21.60	-0.271:	8.14	22.94:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.64	9.11:	5.70	21.60	-0.272:	8.19	22.98:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.64	9.09:	5.71	21.61	-0.272:	8.20	22.98:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.58	9.04:	5.83	21.67	-0.273:	8.34	23.07:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.52	9.04:	6.03	21.78	-0.275:	8.54	23.20:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.46	9.05:	5.80	21.67	-0.272:	8.30	23.06:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.43	8.95:	5.81	21.68	-0.272:	8.34	23.09:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.39	8.95:	5.53	21.53	-0.269:	8.03	22.90:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.38	8.78:	5.52	21.53	-0.269:	8.03	22.90:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.35	8.74:	5.45	21.50	-0.268:	8.01	22.89:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.34	8.68:	5.49	21.52	-0.269:	7.99	22.88:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.32	8.65:	5.71	21.63	-0.271:	8.25	23.04:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.30	8.75:	5.73	21.64	-0.271:	8.26	23.05:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.25	8.71:			:	8.26	23.05:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.68	6.68	7.42:	5.86	21.71	-0.264:	8.40	23.13:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.65	7.42:			:	8.40	23.13:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.54	8.14:	5.59	21.58	-0.265:	8.23	23.03:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.54	8.03:	5.62	21.60	-0.266:	8.34	23.10:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.53	8.08:	5.62	21.60	-0.266:	8.34	23.10:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.14	7.60:	5.74	21.65	-0.265:	8.45	23.17:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.35	7.78:	6.05	21.82	-0.269:	8.74	23.35:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.58	8.04:	5.84	21.72	-0.268:	8.58	23.26:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.60	8.00:	5.85	21.73	-0.268:	8.59	23.26:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.55	7.97:	5.95	21.78	-0.269:	8.66	23.31:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.53	7.97:	6.01	21.82	-0.270:	8.75	23.37:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.46	7.95:	5.90	21.77	-0.268:	8.65	23.32:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.44	7.92:	5.89	21.77	-0.268:	8.64	23.32:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.41	7.90:	5.84	21.75	-0.267:	8.61	23.30:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.36	7.85:	5.86	21.76	-0.267:	8.60	23.30:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.34	7.83:	6.00	21.84	-0.268:	8.75	23.40:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.29	7.87:	5.54	21.61	-0.264:	8.32	23.14:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.29	7.87:	5.79	21.74	-0.266:	8.55	23.29:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.25	7.75:	5.78	21.74	-0.266:	8.54	23.28:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.99	8.35:	5.93	21.81	-0.271:	8.68	23.36:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.99	8.36:	5.93	21.81	-0.271:	8.68	23.36:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	8.33	8.33	9.60:	6.55	22.90-0.293:	10.06	25.10:		HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.55	9.67:	6.35	22.79-0.292:	9.89	24.99:		STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.72	9.48:	6.41	22.83-0.294:	10.06	25.12:		STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.73	9.45:	6.42	22.84-0.294:	10.07	25.12:		HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.68	9.42:	6.56	22.92-0.295:	10.25	25.25:		STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.63	9.46:	6.77	23.04-0.297:	10.46	25.41:		STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.58	9.53:	6.52	22.91-0.294:	10.18	25.22:		STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.55	9.40:	6.57	22.94-0.295:	10.28	25.29:		STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.53	9.42:	6.24	22.76-0.291:	9.91	25.03:		STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.52	9.16:	6.24	22.76-0.291:	9.90	25.03:		HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.50	9.11:	6.23	22.75-0.291:	9.98	25.08:		STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.49	9.03:	6.21	22.74-0.290:	9.87	25.00:		STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.47	9.00:	6.47	22.89-0.293:	10.20	25.24:		STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.46	9.19:	6.49	22.90-0.293:	10.21	25.25:		HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.42	9.16:		:	10.21	25.25:		CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.48	6.48	7.63:	6.60	22.97-0.284:	10.34	25.33:		HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.48	7.75:		:	10.34	25.33:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.59	8.56:	6.46	22.89-0.288:	10.38	25.37:		CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.59	8.40:	6.58	22.96-0.290:	10.63	25.55:		STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.58	8.50:	6.58	22.96-0.289:	10.63	25.55:		HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.14	7.90:	6.68	23.02-0.288:	10.72	25.62:		HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.32	8.05:	6.97	23.20-0.292:	10.97	25.81:		STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.53	8.29:	6.81	23.11-0.292:	10.90	25.76:		STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.54	8.22:	6.82	23.12-0.292:	10.90	25.76:		HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.52	8.22:	6.89	23.16-0.292:	10.93	25.79:		STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.51	8.26:	6.98	23.22-0.293:	11.06	25.89:		STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.48	8.31:	6.88	23.17-0.292:	10.98	25.84:		STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.47	8.28:	6.87	23.17-0.292:	10.97	25.84:		HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.46	8.28:	6.84	23.15-0.292:	10.96	25.83:		STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.44	8.26:	6.83	23.15-0.291:	10.91	25.80:		STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.43	8.26:	6.98	23.24-0.293:	11.09	25.94:		STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.41	8.38:	6.55	23.00-0.288:	10.69	25.65:		STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.41	8.38:	6.78	23.14-0.291:	10.88	25.80:		STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.40	8.23:	6.77	23.14-0.291:	10.87	25.79:		HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.94	8.55:	6.90	23.21-0.295:	10.99	25.88:		HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.95	8.56:	6.90	23.21-0.295:	10.99	25.88:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 K2: S/C2):	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	7.72	7.72	9.54:	6.31	32.26-0.439:	10.01	35.80:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.94	9.57:	6.20	32.18-0.439:	9.93	35.72:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.10	9.24:	6.30	32.27-0.442:	10.15	35.96:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.10	9.19:	6.30	32.27-0.442:	10.15	35.96:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.04	9.17:	6.42	32.38-0.444:	10.30	36.13:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.98	9.25:	6.56	32.51-0.445:	10.45	36.30:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.92	9.37:	6.38	32.37-0.442:	10.25	36.09:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.89	9.20:	6.43	32.41-0.443:	10.34	36.20:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.86	9.24:	6.21	32.23-0.438:	10.06	35.90:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.84	8.86:	6.21	32.23-0.438:	10.06	35.90:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.82	8.80:	6.24	32.25-0.439:	10.17	36.02:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.82	8.69:	6.19	32.21-0.438:	10.04	35.88:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.81	8.64:	6.39	32.39-0.441:	10.31	36.17:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.80	8.92:	6.41	32.40-0.441:	10.32	36.19:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.76	8.89:		:	10.32	36.19:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.89	5.89	7.66:	6.47	32.46-0.426:	10.40	36.27:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.93	7.89:		:	10.40	36.27:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.02	8.49:	6.49	32.48-0.436:	10.60	36.50:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.02	8.30:	6.63	32.61-0.438:	10.89	36.83:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.02	8.44:	6.63	32.61-0.438:	10.89	36.83:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.73	7.94:	6.70	32.67-0.454:	10.95	36.89:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.98	8.11:	6.88	32.85-0.436:	11.11	37.09:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.24	8.42:	6.83	32.81-0.443:	11.13	37.12:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.26	8.33:	6.83	32.81-0.444:	11.13	37.12:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.24	8.33:	6.87	32.85-0.444:	11.12	37.12:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.23	8.39:	6.95	32.94-0.445:	11.25	37.27:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.21	8.48:	6.90	32.91-0.444:	11.22	37.25:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.20	8.45:	6.90	32.90-0.445:	11.21	37.25:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.19	8.45:	6.89	32.91-0.445:	11.23	37.27:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.17	8.43:	6.88	32.90-0.443:	11.17	37.22:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.17	8.44:	7.00	33.02-0.448:	11.32	37.40:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.16	8.60:	6.73	32.79-0.441:	11.07	37.12:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.16	8.60:	6.88	32.93-0.444:	11.19	37.26:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.15	8.39:	6.88	32.93-0.445:	11.19	37.26:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.73	8.67:	6.95	33.00-0.450:	11.25	37.34:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.73	8.69:	6.95	33.00-0.450:	11.25	37.34:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.84	7.84	9.53:	7.11	27.26-0.362:		10.81	30.21:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.09	9.63:	6.99	27.18-0.362:		10.72	30.13:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.27	9.33:	7.08	27.25-0.365:		10.93	30.32:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.28	9.29:	7.08	27.25-0.365:		10.93	30.33:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.24	9.30:	7.18	27.33-0.366:		11.07	30.46:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.20	9.42:	7.31	27.43-0.367:		11.20	30.59:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.16	9.58:	7.13	27.31-0.364:		11.00	30.41:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.14	9.43:	7.17	27.34-0.365:		11.08	30.48:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.12	9.50:	6.97	27.20-0.362:		10.82	30.26:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.11	9.13:	6.96	27.19-0.362:		10.82	30.26:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.12	9.08:	6.99	27.21-0.362:		10.92	30.34:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.12	8.98:	6.95	27.19-0.362:		10.81	30.24:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.12	8.93:	7.13	27.32-0.364:		11.05	30.47:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.13	9.22:	7.15	27.33-0.365:		11.06	30.48:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.09	9.18:			:	11.06	30.48:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.06	6.06	7.72:	7.22	27.39-0.351:		11.17	30.57:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.14	8.00:			:	11.17	30.57:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.28	8.69:	7.21	27.38-0.351:		11.34	30.73:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.27	8.49:	7.34	27.48-0.350:		11.61	30.99:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.28	8.63:	7.34	27.48-0.359:		11.61	30.99:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.86	7.99:	7.41	27.53-0.359:		11.67	31.05:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.09	8.15:	7.61	27.69-0.364:		11.84	31.22:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.33	8.43:	7.54	27.65-0.365:		11.85	31.24:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.35	8.34:	7.55	27.65-0.365:		11.86	31.24:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.36	8.37:	7.59	27.69-0.366:		11.86	31.25:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.36	8.45:	7.67	27.75-0.366:		11.98	31.37:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.38	8.58:	7.61	27.73-0.365:		11.94	31.34:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.39	8.56:	7.61	27.72-0.367:		11.94	31.34:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.40	8.57:	7.60	27.72-0.365:		11.95	31.36:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.41	8.57:	7.60	27.72-0.367:		11.90	31.32:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.41	8.58:	7.72	27.82-0.368:		12.06	31.47:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.43	8.74:	7.43	27.62-0.712:		11.79	31.23:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.43	8.74:	7.60	27.75-0.368:		11.92	31.36:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.43	8.56:	7.59	27.75-0.365:		11.92	31.36:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.80	8.68:	7.67	27.80-0.373:		11.98	31.42:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.80	8.69:	7.67	27.80-0.373:		11.98	31.42:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.63	7.63	8.83:	5.62	20.90-0.256:		8.74	22.58:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.85	8.88:	5.46	20.83-0.255:		8.60	22.51:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.01	8.71:	5.49	20.85-0.257:		8.73	22.59:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.02	8.68:	5.49	20.85-0.257:		8.73	22.59:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.95	8.65:	5.58	20.90-0.257:		8.85	22.66:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.88	8.69:	5.70	20.96-0.258:		8.98	22.74:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.80	8.75:	5.52	20.88-0.256:		8.77	22.63:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.75	8.63:	5.53	20.88-0.256:		8.81	22.65:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.71	8.65:	5.34	20.79-0.254:		8.59	22.52:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.69	8.39:	5.34	20.79-0.254:		8.59	22.52:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.67	8.33:	5.31	20.78-0.253:		8.62	22.54:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.67	8.24:	5.32	20.79-0.253:		8.57	22.52:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.66	8.21:	5.48	20.87-0.255:		8.78	22.64:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.65	8.38:	5.50	20.88-0.255:		8.79	22.65:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.56	8.29:			:	8.79	22.65:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.93	5.93	7.09:	5.59	20.92-0.248:		8.91	22.72:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.91	7.13:			:	8.91	22.72:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.84	7.79:	5.45	20.86-0.250:		8.92	22.73:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.84	7.63:	5.50	20.89-0.251:		9.09	22.83:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.83	7.71:	5.51	20.89-0.251:		9.09	22.83:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.53	7.26:	5.59	20.93-0.250:		9.16	22.88:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.82	7.50:	5.82	21.06-0.254:		9.38	23.02:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.12	7.82:	5.70	21.00-0.254:		9.32	22.99:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.14	7.77:	5.71	21.00-0.254:		9.33	22.99:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.09	7.73:	5.78	21.04-0.255:		9.37	23.02:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.06	7.75:	5.84	21.08-0.255:		9.46	23.08:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.98	7.75:	5.77	21.05-0.254:		9.40	23.06:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.96	7.71:	5.76	21.05-0.254:		9.40	23.05:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.93	7.69:	5.74	21.04-0.254:		9.39	23.05:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.88	7.62:	5.76	21.06-0.254:		9.38	23.05:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.86	7.60:	5.89	21.12-0.255:		9.53	23.15:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.82	7.66:	5.54	20.96-0.251:		9.20	22.95:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.82	7.66:	5.74	21.06-0.253:		9.38	23.07:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.78	7.49:	5.74	21.06-0.253:		9.38	23.07:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.42	7.97:	5.83	21.11-0.257:		9.46	23.12:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.42	7.99:	5.83	21.11-0.257:		9.46	23.12:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	7.51	7.51	8.40:	7.06	42.13-0.598:		8.53	43.96:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.76	8.55:	6.98	42.05-0.599:		8.46	43.88:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.93	8.50:	6.96	42.04-0.600:		8.47	43.90:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.94	8.47:	6.96	42.05-0.601:		8.47	43.90:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.89	8.45:	7.01	42.10-0.601:		8.52	43.97:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.84	8.48:	7.07	42.20-0.602:		8.59	44.07:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.79	8.53:	6.99	42.11-0.599:		8.50	43.97:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.76	8.46:	6.99	42.11-0.599:		8.50	43.98:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.73	8.48:	6.91	42.03-0.597:		8.43	43.89:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.72	8.30:	6.91	42.02-0.597:		8.42	43.88:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.72	8.28:	6.89	42.00-0.596:		8.41	43.87:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.72	8.21:	6.91	42.03-0.597:		8.42	43.89:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.72	8.19:	6.98	42.11-0.598:		8.50	43.99:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.73	8.33:	6.99	42.12-0.599:		8.51	44.00:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.69	8.30:			:	8.51	44.00:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.31	6.31	7.04:	7.11	42.27-0.585:		8.63	44.17:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.36	7.13:			:	8.63	44.17:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.91	7.62:	6.92	42.06 0.268:		8.48	43.98:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.91	7.48:	6.92	42.07-1.020:		8.50	44.02:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.91	7.53:	6.92	42.07-0.178:		8.50	44.02:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.79	7.34:	6.96	42.11-0.588:		8.53	44.06:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.11	7.62:	7.10	42.30-0.841:		8.68	44.26:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.44	7.96:	7.03	42.23-0.596:		8.62	44.20:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.46	7.93:	7.03	42.23-0.596:		8.62	44.20:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.43	7.91:	7.08	42.30-0.597:		8.67	44.27:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.42	7.93:	7.12	42.36-0.599:		8.71	44.34:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.39	7.95:	7.09	42.34-0.597:		8.68	44.33:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.38	7.93:	7.08	42.34-0.596:		8.68	44.32:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.36	7.92:	7.08	42.34-0.596:		8.68	44.33:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.34	7.89:	7.10	42.37-0.596:		8.69	44.36:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.33	7.90:	7.16	42.46-0.598:		8.76	44.46:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.32	7.95:	6.99	42.27-0.594:		8.60	44.26:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.32	7.95:	7.11	42.43-0.598:		8.71	44.43:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.30	7.86:	7.11	42.43-0.596:		8.71	44.43:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.89	8.33:	7.15	42.48-0.605:		8.75	44.48:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.90	8.34:	7.15	42.48-0.605:		8.75	44.48:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	S.F. KOKTULI	H	54.7:	7.95	7.95	8.74:	7.17	32.00	-0.439:	9.19	33.86:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		8.18	8.89:	6.95	31.82	-0.438:	8.99	33.67:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		8.36	8.84:	6.95	31.82	-0.439:	9.04	33.73:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		8.37	8.82:	6.95	31.83	-0.440:	9.04	33.73:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		8.34	8.80:	7.07	31.94	-0.441:	9.17	33.86:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		8.31	8.82:	7.27	32.12	-0.444:	9.36	34.06:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		8.28	8.86:	7.05	31.93	-0.440:	9.15	33.85:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		8.26	8.79:	7.08	31.96	-0.441:	9.18	33.89:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		8.25	8.79:	6.80	31.72	-0.436:	8.90	33.62:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		8.24	8.64:	6.79	31.72	-0.436:	8.90	33.62:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		8.22	8.61:	6.74	31.68	-0.435:	8.87	33.59:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		8.21	8.55:	6.76	31.70	-0.435:	8.86	33.59:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		8.20	8.53:	6.97	31.88	-0.438:	9.09	33.81:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		8.19	8.64:	6.98	31.89	-0.438:	9.09	33.82:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		8.16	8.64:			:	9.09	33.82:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.93	6.93	7.56:	7.22	32.10	-0.431:	9.35	34.07:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.94	7.62:			:	9.35	34.07:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.50	8.09:	6.88	31.81	-0.431:	9.10	33.83:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.50	7.98:	6.93	31.86	-0.432:	9.19	33.93:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.50	8.03:	6.92	31.86	-0.432:	9.19	33.92:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		7.09	7.53:	7.06	31.97	-0.469:	9.32	34.05:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.27	7.68:	7.34	32.23	-0.428:	9.58	34.33:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.47	7.92:	7.13	32.06	-0.435:	9.41	34.16:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.49	7.89:	7.13	32.06	-0.435:	9.41	34.17:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.48	7.88:	7.22	32.14	-0.436:	9.49	34.25:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.47	7.91:	7.29	32.21	-0.437:	9.57	34.34:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.46	7.94:	7.18	32.13	-0.436:	9.48	34.26:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.46	7.93:	7.18	32.13	-0.435:	9.47	34.25:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.45	7.93:	7.13	32.09	-0.434:	9.43	34.22:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.44	7.94:	7.12	32.09	-0.434:	9.41	34.21:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.44	7.94:	7.24	32.21	-0.438:	9.54	34.35:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.43	8.03:	6.84	31.87	-0.429:	9.17	33.99:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.43	8.03:	7.06	32.07	-0.433:	9.36	34.19:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.42	7.95:	7.04	32.05	-0.433:	9.35	34.18:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		8.21	8.57:	7.18	32.18	-0.442:	9.48	34.31:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		8.22	8.59:	7.18	32.18	-0.442:	9.48	34.31:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C)	REMARKS
1	S.F. KOKTULI	H	54.7:	7.29	7.29	8.07:	6.23	30.52-0.407:		8.33	32.30:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.52	8.20:	5.99	30.34-0.405:		8.11	32.11:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.69	8.16:	5.98	30.34-0.407:		8.16	32.17:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.70	8.14:	5.99	30.35-0.407:		8.16	32.17:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.67	8.11:	6.14	30.47-0.409:		8.32	32.31:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.64	8.12:	6.38	30.67-0.413:		8.55	32.54:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.62	8.15:	6.14	30.49-0.409:		8.32	32.33:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.61	8.08:	6.19	30.53-0.409:		8.37	32.38:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.60	8.08:	5.84	30.26-0.404:		8.02	32.08:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.59	7.94:	5.84	30.26-0.404:		8.02	32.08:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.56	7.90:	5.77	30.21-0.402:		7.98	32.04:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.54	7.85:	5.79	30.22-0.402:		7.98	32.04:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.53	7.83:	6.05	30.43-0.406:		8.24	32.28:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.50	7.92:	6.05	30.44-0.406:		8.25	32.28:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.48	7.92:			:	8.25	32.28:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.51	6.51	7.14:	6.25	30.59-0.401:		8.46	32.47:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.50	7.18:			:	8.46	32.47:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.00	7.56:	5.92	30.33-0.400:		8.22	32.26:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.00	7.46:	5.96	30.38-0.401:		8.32	32.36:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.00	7.51:	5.96	30.37-0.401:		8.31	32.36:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.75	7.16:	6.10	30.49-0.401:		8.45	32.48:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.90	7.30:	6.41	30.74-0.407:		8.74	32.76:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.09	7.52:	6.17	30.56-0.405:		8.54	32.59:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.11	7.49:	6.17	30.57-0.405:		8.55	32.59:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.08	7.47:	6.27	30.65-0.406:		8.63	32.67:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.07	7.49:	6.34	30.72-0.408:		8.71	32.76:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.04	7.50:	6.22	30.63-0.405:		8.61	32.68:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.03	7.47:	6.22	30.63-0.405:		8.60	32.67:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.02	7.47:	6.16	30.59-0.404:		8.56	32.64:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.99	7.46:	6.15	30.59-0.404:		8.54	32.63:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.97	7.46:	6.28	30.70-0.406:		8.67	32.76:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.95	7.53:	5.85	30.37-0.399:		8.27	32.40:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.95	7.53:	6.07	30.56-0.402:		8.48	32.60:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.92	7.44:	6.05	30.54-0.402:		8.46	32.58:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.79	8.14:	6.20	30.66-0.411:		8.60	32.71:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.79	8.15:	6.20	30.66-0.411:		8.60	32.71:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	7.35	7.35	8.61:	7.58	28.09-0.373:		11.13	31.04:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		7.61	8.80:	7.34	27.92-0.370:		10.92	30.86:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		7.81	8.62:	7.42	27.98-0.374:		11.13	31.05:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		7.82	8.59:	7.42	27.98-0.374:		11.13	31.06:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		7.82	8.58:	7.61	28.13-0.375:		11.32	31.24:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		7.84	8.66:	7.89	28.35-0.374:		11.58	31.49:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		7.85	8.75:	7.63	28.16-0.378:		11.33	31.26:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		7.86	8.64:	7.70	28.21-0.376:		11.42	31.34:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		7.86	8.67:	7.28	27.90-0.372:		11.00	30.97:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		7.86	8.44:	7.28	27.90-0.372:		11.00	30.97:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		7.86	8.43:	7.23	27.87-0.371:		11.00	30.96:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		7.86	8.36:	7.22	27.86-0.371:		10.95	30.92:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		7.85	8.35:	7.54	28.10-0.376:		11.27	31.22:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		7.86	8.54:	7.55	28.11-0.377:		11.28	31.23:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		7.85	8.57:			:	11.28	31.23:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	6.29	6.29	7.51:	7.59	28.14-0.366:		11.41	31.35:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		6.34	7.75:			:	11.41	31.35:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		7.31	8.27:	7.51	28.09-0.371:		11.52	31.45:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		7.31	8.15:	7.64	28.19-0.374:		11.77	31.70:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		7.31	8.26:	7.64	28.19-0.374:		11.76	31.70:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.98	7.74:	7.78	28.30-0.373:		11.90	31.82:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		7.13	7.87:	8.09	28.54-0.379:		12.17	32.10:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		7.31	8.10:	7.90	28.41-0.377:		12.07	32.01:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		7.32	8.03:	7.90	28.41-0.377:		12.07	32.02:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		7.33	8.06:	7.98	28.48-0.379:		12.13	32.07:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		7.34	8.12:	8.08	28.56-0.380:		12.25	32.20:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		7.37	8.23:	7.97	28.48-0.379:		12.16	32.12:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		7.38	8.21:	7.96	28.48-0.379:		12.15	32.12:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		7.39	8.24:	7.91	28.45-0.378:		12.12	32.09:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		7.41	8.28:	7.89	28.44-0.378:		12.08	32.06:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		7.42	8.31:	8.04	28.56-0.380:		12.24	32.23:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		7.44	8.49:	7.59	28.22-0.375:		11.84	31.84:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		7.44	8.49:	7.82	28.41-0.378:		12.03	32.04:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		7.45	8.38:	7.80	28.39-0.378:		12.02	32.02:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.94	8.58:	7.96	28.51-0.273:		12.16	32.16:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.94	8.60:	7.96	28.51-0.273:		12.16	32.16:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	6.53	6.53	7.37:	4.76	27.98-0.357:		7.01	29.64:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.74	7.47:	4.56	27.85-0.356:		6.82	29.50:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.91	7.40:	4.55	27.85-0.357:		6.87	29.54:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.92	7.38:	4.55	27.85-0.357:		6.87	29.54:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.87	7.33:	4.69	27.95-0.359:		7.01	29.66:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.82	7.32:	4.92	28.12-0.362:		7.23	29.84:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.78	7.33:	4.70	27.97-0.358:		7.02	29.68:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.75	7.25:	4.75	28.01-0.359:		7.07	29.72:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.73	7.24:	4.43	27.79-0.354:		6.76	29.48:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.72	7.09:	4.43	27.79-0.354:		6.76	29.48:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.69	7.05:	4.37	27.75-0.353:		6.72	29.45:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.67	6.99:	4.38	27.76-0.353:		6.72	29.45:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.65	6.96:	4.63	27.94-0.356:		6.96	29.65:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.62	7.05:	4.64	27.95-0.356:		6.97	29.66:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.58	7.03:		:		6.97	29.66:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.40	5.40	6.23:	4.62	27.93-0.348:		6.99	29.67:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.36	6.22:		:		6.99	29.67:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.16	6.75:	4.45	27.82-0.351:		6.91	29.62:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.16	6.66:	4.48	27.85-0.351:		7.00	29.69:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.15	6.71:	4.48	27.85-0.351:		7.00	29.69:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.09	6.54:	4.60	27.93-0.352:		7.11	29.78:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.31	6.74:	4.88	28.14-0.357:		7.38	30.01:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.55	7.00:	4.69	28.01-0.356:		7.23	29.90:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.56	6.97:	4.69	28.02-0.357:		7.23	29.90:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.51	6.92:	4.78	28.08-0.357:		7.31	29.96:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.48	6.93:	4.85	28.14-0.358:		7.39	30.04:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.40	6.89:	4.74	28.08-0.356:		7.30	29.98:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.37	6.85:	4.74	28.07-0.356:		7.29	29.97:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.35	6.83:	4.70	28.05-0.355:		7.26	29.95:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.28	6.78:	4.69	28.06-0.355:		7.25	29.95:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.25	6.77:	4.82	28.15-0.356:		7.38	30.06:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.20	6.80:	4.42	27.89-0.350:		7.01	29.78:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.20	6.80:	4.64	28.05-0.353:		7.21	29.95:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.14	6.67:	4.62	28.04-0.353:		7.20	29.94:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.03	7.40:	4.75	28.12-0.361:		7.31	30.03:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.03	7.41:	4.75	28.12-0.361:		7.31	30.03:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY (J/M2(J/M2/S/C) TE	AVG. DAILY (J/M2(J/M2/S/C) K1	AVG. DAILY (J/M2(J/M2/S/C) K2	MAX. DAILY (J/M2: (C) /S/C): TE	MAX. DAILY (J/M2: (C) /S/C): K1	REMARKS
1	S.F. KOKTULI	H	54.7:	6.56	6.56	7.32:	5.13	23.64	-0.292:	7.55	25.11:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.79	7.45:	4.86	23.50	-0.290:	7.30	24.96:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.96	7.41:	4.85	23.49	-0.291:	7.35	25.00:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.97	7.39:	4.86	23.50	-0.291:	7.36	25.00:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.93	7.36:	5.02	23.59	-0.293:	7.52	25.11:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.90	7.36:	5.27	23.74	-0.295:	7.76	25.28:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.86	7.39:	4.99	23.59	-0.292:	7.50	25.11:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.84	7.31:	5.04	23.62	-0.293:	7.54	25.14:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.83	7.31:	4.66	23.41	-0.288:	7.18	24.91:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.82	7.17:	4.66	23.41	-0.288:	7.18	24.91:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.79	7.13:	4.59	23.37	-0.287:	7.13	24.88:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.78	7.08:	4.61	23.38	-0.287:	7.13	24.88:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.77	7.06:	4.89	23.55	-0.291:	7.41	25.06:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.75	7.15:	4.91	23.55	-0.291:	7.42	25.07:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.72	7.14:			:	7.42	25.07:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.80	5.80	6.52:	4.96	23.58	-0.286:	7.53	25.14:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.77	6.52:			:	7.53	25.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.34	6.89:	4.70	23.44	-0.286:	7.38	25.05:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.34	6.80:	4.74	23.47	-0.286:	7.48	25.12:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.33	6.85:	4.73	23.47	-0.286:	7.48	25.12:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.16	6.58:	4.88	23.55	-0.287:	7.61	25.21:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.37	6.76:	5.23	23.76	-0.292:	7.94	25.44:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.59	7.00:	5.00	23.63	-0.291:	7.76	25.32:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.61	6.98:	5.00	23.64	-0.291:	7.77	25.33:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.57	6.95:	5.10	23.70	-0.292:	7.86	25.39:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.55	6.96:	5.18	23.75	-0.293:	7.95	25.46:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.50	6.94:	5.05	23.68	-0.291:	7.83	25.39:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.48	6.91:	5.04	23.68	-0.291:	7.82	25.38:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.46	6.90:	4.98	23.65	-0.290:	7.77	25.36:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.42	6.87:	4.97	23.65	-0.289:	7.76	25.35:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.40	6.86:	5.12	23.74	-0.291:	7.91	25.46:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.36	6.91:	4.62	23.46	-0.285:	7.44	25.16:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.36	6.91:	4.88	23.62	-0.288:	7.68	25.32:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.32	6.80:	4.86	23.61	-0.288:	7.67	25.31:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		7.03	7.37:	5.03	23.70	-0.294:	7.83	25.42:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		7.04	7.38:	5.03	23.70	-0.294:	7.83	25.42:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	6.43	6.43	7.17:	4.57	24.40-0.302:		6.90	25.85:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.65	7.29:	4.31	24.26-0.300:		6.65	25.69:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.82	7.25:	4.29	24.25-0.301:		6.70	25.73:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.82	7.23:	4.30	24.25-0.301:		6.71	25.73:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.78	7.19:	4.46	24.35-0.302:		6.86	25.84:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.73	7.18:	4.71	24.50-0.305:		7.10	26.01:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.69	7.19:	4.44	24.35-0.301:		6.84	25.84:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.67	7.12:	4.48	24.38-0.302:		6.89	25.87:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.64	7.11:	4.11	24.17-0.298:		6.53	25.64:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.63	6.97:	4.11	24.17-0.297:		6.53	25.64:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.60	6.93:	4.05	24.14-0.297:		6.48	25.61:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.58	6.87:	4.06	24.14-0.297:		6.49	25.62:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.56	6.85:	4.34	24.31-0.300:		6.76	25.80:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.54	6.93:	4.35	24.32-0.300:		6.77	25.81:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.50	6.91:		:		6.77	25.81:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.75	5.75	6.44:	4.41	24.35-0.296:		6.88	25.88:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.70	6.42:		:		6.88	25.88:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.18	6.71:	4.14	24.20-0.295:		6.71	25.77:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.17	6.62:	4.18	24.23-0.295:		6.81	25.84:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.17	6.66:	4.17	24.22-0.295:		6.80	25.84:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		6.02	6.42:	4.31	24.30-0.296:		6.94	25.93:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.21	6.59:	4.65	24.51-0.301:		7.26	26.15:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.42	6.81:	4.42	24.39-0.300:		7.08	26.04:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.43	6.79:	4.43	24.39-0.300:		7.08	26.04:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.39	6.75:	4.53	24.45-0.301:		7.17	26.11:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.36	6.75:	4.61	24.51-0.301:		7.26	26.18:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.29	6.72:	4.47	24.44-0.300:		7.14	26.11:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.27	6.68:	4.47	24.43-0.299:		7.14	26.10:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.24	6.67:	4.41	24.41-0.299:		7.09	26.08:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.18	6.62:	4.40	24.41-0.298:		7.07	26.07:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.16	6.61:	4.55	24.50-0.300:		7.22	26.18:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.11	6.64:	4.06	24.22-0.294:		6.77	25.88:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.11	6.64:	4.31	24.38-0.297:		7.00	26.05:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.05	6.53:	4.29	24.37-0.296:		6.99	26.03:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.79	7.11:	4.45	24.46-0.302:		7.14	26.14:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.79	7.13:	4.45	24.46-0.302:		7.14	26.14:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	6.12	6.12	7.04:	4.87	26.02	-0.325:	7.67	27.96:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.35	7.17:	4.62	25.87	-0.323:	7.44	27.79:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.53	7.07:	4.64	25.89	-0.325:	7.55	27.88:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.53	7.05:	4.64	25.89	-0.325:	7.56	27.88:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.50	7.02:	4.80	26.00	-0.327:	7.71	28.00:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.46	7.04:	5.04	26.16	-0.329:	7.94	28.18:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.43	7.08:	4.78	26.00	-0.326:	7.69	28.00:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.41	6.99:	4.83	26.03	-0.326:	7.74	28.04:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.40	6.99:	4.46	25.81	-0.322:	7.40	27.79:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.39	6.82:	4.46	25.81	-0.322:	7.40	27.79:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.36	6.79:	4.41	25.77	-0.321:	7.35	27.75:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.35	6.72:	4.41	25.78	-0.321:	7.35	27.76:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.34	6.70:	4.69	25.96	-0.324:	7.61	27.95:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.32	6.82:	4.70	25.96	-0.324:	7.62	27.96:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.29	6.81:			:	7.62	27.96:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.64	5.64	6.53:	4.76	26.00	-0.321:	7.76	28.07:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.61	6.55:			:	7.76	28.07:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		6.02	6.71:	4.56	25.88	-0.321:	7.71	28.04:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		6.02	6.61:	4.63	25.93	-0.322:	7.86	28.15:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		6.02	6.67:	4.63	25.93	-0.322:	7.86	28.15:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.94	6.47:	4.77	26.02	-0.323:	7.99	28.25:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.15	6.65:	5.10	26.24	-0.328:	8.30	28.50:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.38	6.90:	4.90	26.12	-0.327:	8.16	28.40:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.39	6.86:	4.90	26.12	-0.327:	8.16	28.41:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.36	6.83:	5.00	26.19	-0.328:	8.25	28.47:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.34	6.85:	5.08	26.25	-0.329:	8.34	28.56:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.29	6.85:	4.96	26.18	-0.327:	8.24	28.49:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.27	6.81:	4.95	26.18	-0.327:	8.23	28.48:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.25	6.81:	4.89	26.15	-0.326:	8.19	28.45:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.21	6.78:	4.88	26.15	-0.326:	8.17	28.45:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.19	6.78:	5.03	26.25	-0.328:	8.32	28.57:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.15	6.84:	4.56	25.96	-0.321:	7.89	28.24:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.15	6.84:	4.80	26.12	-0.324:	8.11	28.42:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.11	6.72:	4.78	26.11	-0.324:	8.10	28.41:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.84	7.26:	4.95	26.21	-0.331:	8.25	28.53:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.84	7.28:	4.95	26.21	-0.331:	8.25	28.53:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	6.11	6.11	7.04:	4.52	20.74-0.244:		7.78	22.44:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.34	7.16:	4.23	20.61-0.243:		7.51	22.29:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.52	7.06:	4.25	20.63-0.244:		7.65	22.38:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.52	7.04:	4.26	20.63-0.244:		7.66	22.38:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.49	7.01:	4.43	20.72-0.245:		7.82	22.48:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.45	7.03:	4.71	20.85-0.247:		8.07	22.63:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.42	7.06:	4.40	20.71-0.244:		7.80	22.47:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.40	6.97:	4.45	20.74-0.245:		7.84	22.50:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.38	6.97:	4.03	20.55-0.241:		7.46	22.29:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.37	6.80:	4.03	20.54-0.241:		7.46	22.29:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.35	6.77:	3.97	20.52-0.240:		7.40	22.25:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		6.34	6.70:	3.98	20.52-0.240:		7.41	22.26:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		6.33	6.69:	4.30	20.67-0.243:		7.70	22.43:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		6.31	6.81:	4.31	20.68-0.243:		7.71	22.43:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		6.29	6.79:			:	7.71	22.43:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.42	5.42	6.38:	4.31	20.68-0.239:		7.82	22.50:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.38	6.39:			:	7.82	22.50:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.97	6.65:	4.14	20.60-0.240:		7.83	22.51:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.96	6.56:	4.21	20.64-0.241:		8.00	22.61:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.96	6.63:	4.21	20.64-0.241:		8.00	22.61:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.89	6.42:	4.37	20.71-0.242:		8.14	22.69:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		6.11	6.61:	4.74	20.90-0.246:		8.49	22.90:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		6.34	6.86:	4.51	20.80-0.245:		8.35	22.83:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		6.35	6.82:	4.52	20.80-0.245:		8.35	22.83:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		6.32	6.79:	4.62	20.85-0.246:		8.45	22.89:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		6.29	6.81:	4.71	20.90-0.247:		8.55	22.96:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		6.24	6.80:	4.57	20.84-0.245:		8.43	22.89:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		6.22	6.77:	4.56	20.84-0.245:		8.42	22.89:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		6.20	6.76:	4.50	20.81-0.244:		8.37	22.86:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		6.15	6.72:	4.49	20.81-0.244:		8.36	22.86:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		6.13	6.72:	4.66	20.90-0.245:		8.53	22.97:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		6.09	6.77:	4.10	20.64-0.240:		8.03	22.68:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		6.09	6.77:	4.39	20.78-0.243:		8.29	22.83:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		6.04	6.65:	4.37	20.77-0.242:		8.27	22.83:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.73	7.15:	4.55	20.86-0.247:		8.44	22.92:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.74	7.17:	4.55	20.86-0.247:		8.44	22.92:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY (J/M2(J/M2/:C) /S/C) TE	AVG. DAILY K1 S/C2): K2:	MAX. DAILY (J/M2: C) /S/C): TE	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	5.95	5.95	6.94:	3.86	28.45-0.357:	6.45	30.37:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		6.16	7.00:	3.68	28.33-0.356:	6.28	30.24:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		6.31	6.88:	3.69	28.34-0.358:	6.37	30.32:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		6.32	6.86:	3.69	28.35-0.358:	6.38	30.32:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		6.25	6.81:	3.81	28.43-0.359:	6.48	30.41:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		6.18	6.80:	3.99	28.57-0.361:	6.65	30.55:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		6.12	6.82:	3.78	28.43-0.358:	6.47	30.42:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		6.09	6.72:	3.82	28.46-0.358:	6.49	30.44:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		6.05	6.71:	3.56	28.28-0.354:	6.26	30.26:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		6.04	6.52:	3.56	28.28-0.354:	6.26	30.26:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		6.00	6.47:	3.52	28.26-0.353:	6.22	30.23:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.98	6.39:	3.53	28.27-0.353:	6.23	30.24:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.96	6.36:	3.74	28.41-0.356:	6.42	30.39:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.93	6.47:	3.75	28.42-0.356:	6.43	30.40:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.88	6.43:		:	6.43	30.40:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.05	5.05	6.09:	3.73	28.41-0.349:	6.50	30.46:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.97	6.04:		:	6.50	30.46:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.56	6.29:	3.61	28.34-0.351:	6.50	30.47:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.56	6.20:	3.66	28.38-0.352:	6.61	30.56:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.56	6.26:	3.66	28.38-0.352:	6.61	30.56:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.49	6.06:	3.76	28.45-0.353:	6.71	30.64:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.71	6.24:	4.02	28.64-0.358:	6.95	30.85:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.92	6.47:	3.88	28.55-0.358:	6.87	30.79:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.94	6.43:	3.89	28.56-0.358:	6.87	30.80:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.87	6.38:	3.96	28.61-0.358:	6.94	30.86:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.84	6.38:	4.03	28.67-0.359:	7.02	30.93:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.74	6.33:	3.94	28.62-0.357:	6.95	30.89:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.71	6.29:	3.94	28.62-0.357:	6.94	30.88:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.68	6.27:	3.91	28.60-0.356:	6.92	30.87:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.60	6.20:	3.90	28.61-0.355:	6.91	30.87:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.57	6.18:	4.03	28.70-0.357:	7.04	30.98:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.50	6.22:	3.66	28.46-0.352:	6.70	30.72:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.50	6.22:	3.86	28.61-0.354:	6.89	30.88:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.44	6.07:	3.85	28.60-0.354:	6.88	30.87:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.14	6.59:	3.97	28.68-0.360:	6.99	30.96:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.14	6.60:	3.97	28.68-0.360:	6.99	30.96:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	5.53	5.53	6.21:	3.19	28.62	-0.355:	5.16	30.04:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.73	6.31:	2.95	28.47	-0.353:	4.94	29.88:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.89	6.27:	2.92	28.46	-0.354:	4.96	29.90:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.89	6.26:	2.93	28.46	-0.354:	4.96	29.91:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.83	6.21:	3.06	28.56	-0.355:	5.09	30.01:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.76	6.19:	3.26	28.70	-0.357:	5.27	30.16:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.70	6.18:	3.01	28.54	-0.353:	5.04	29.99:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.66	6.10:	3.04	28.57	-0.354:	5.07	30.01:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.63	6.09:	2.74	28.37	-0.349:	4.79	29.81:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.61	5.95:	2.74	28.37	-0.349:	4.79	29.81:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.56	5.89:	2.71	28.35	-0.348:	4.76	29.78:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.54	5.82:	2.71	28.35	-0.348:	4.76	29.79:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.51	5.79:	2.94	28.51	-0.351:	4.97	29.95:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.47	5.85:	2.95	28.52	-0.351:	4.99	29.96:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.41	5.81:			:	4.99	29.96:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.11	5.11	5.74:	3.02	28.56	-0.349:	5.10	30.05:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		5.03	5.66:			:	5.10	30.05:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.24	5.74:	2.74	28.38	-0.347:	4.90	29.90:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.23	5.65:	2.77	28.41	-0.347:	4.96	29.96:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.23	5.69:	2.77	28.41	-0.347:	4.96	29.95:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.27	5.63:	2.89	28.49	-0.349:	5.08	30.05:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.52	5.86:	3.21	28.72	-0.355:	5.38	30.29:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.77	6.12:	3.01	28.60	-0.354:	5.22	30.18:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.79	6.10:	3.02	28.60	-0.354:	5.23	30.18:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.72	6.03:	3.11	28.67	-0.355:	5.32	30.26:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.68	6.02:	3.19	28.73	-0.356:	5.40	30.33:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.57	5.94:	3.07	28.66	-0.353:	5.29	30.26:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.53	5.90:	3.06	28.66	-0.353:	5.28	30.25:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.49	5.87:	3.01	28.63	-0.352:	5.24	30.23:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.40	5.79:	3.00	28.63	-0.351:	5.23	30.23:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.36	5.77:	3.13	28.73	-0.353:	5.36	30.33:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.28	5.76:	2.69	28.45	-0.346:	4.95	30.03:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.28	5.76:	2.92	28.61	-0.349:	5.17	30.21:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.21	5.63:	2.90	28.60	-0.349:	5.15	30.20:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.05	6.34:	3.05	28.70	-0.357:	5.29	30.30:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.06	6.35:	3.05	28.70	-0.357:	5.29	30.30:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	5.37	5.37	6.33:	4.57	21.29-0.249:		8.02	23.16:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.61	6.48:	4.27	21.15-0.247:		7.74	23.00:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.80	6.37:	4.30	21.17-0.248:		7.90	23.10:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.81	6.35:	4.30	21.17-0.249:		7.91	23.10:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.78	6.33:	4.49	21.27-0.250:		8.07	23.20:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.76	6.36:	4.79	21.42-0.253:		8.33	23.36:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.75	6.41:	4.48	21.27-0.250:		8.07	23.21:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.73	6.33:	4.54	21.30-0.250:		8.09	23.23:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.72	6.33:	4.09	21.09-0.246:		7.72	23.01:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.72	6.16:	4.09	21.09-0.246:		7.72	23.01:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.71	6.14:	4.02	21.06-0.245:		7.62	22.95:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.70	6.07:	4.03	21.06-0.246:		7.67	22.98:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.70	6.07:	4.37	21.23-0.249:		7.94	23.14:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.69	6.20:	4.38	21.23-0.249:		7.95	23.15:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.67	6.19:		:		7.95	23.15:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.99	4.99	6.03:	4.33	21.21-0.245:		8.07	23.22:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.96	6.09:		:		8.07	23.22:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.45	6.16:	4.20	21.15-0.246:		8.14	23.27:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.45	6.08:	4.28	21.20-0.247:		8.31	23.38:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.44	6.15:	4.28	21.19-0.247:		8.31	23.38:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.47	6.03:	4.44	21.27-0.248:		8.45	23.47:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.70	6.22:	4.82	21.47-0.253:		8.81	23.69:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.93	6.48:	4.60	21.36-0.252:		8.68	23.62:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.94	6.44:	4.61	21.37-0.252:		8.69	23.63:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.92	6.42:	4.71	21.42-0.253:		8.79	23.69:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.90	6.45:	4.81	21.48-0.254:		8.89	23.76:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.86	6.46:	4.66	21.41-0.252:		8.77	23.70:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.85	6.43:	4.65	21.41-0.252:		8.76	23.69:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.84	6.43:	4.59	21.38-0.251:		8.71	23.66:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.80	6.40:	4.57	21.38-0.251:		8.70	23.66:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.79	6.41:	4.75	21.47-0.253:		8.87	23.77:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.76	6.49:	4.18	21.20-0.247:		8.36	23.46:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.76	6.49:	4.47	21.35-0.250:		8.63	23.64:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.73	6.37:	4.45	21.34-0.250:		8.62	23.63:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.36	6.80:	4.65	21.43-0.255:		8.80	23.74:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.37	6.82:	4.65	21.43-0.255:		8.80	23.74:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	5.24	5.24	5.83:	2.90	23.03	-0.270:	4.98	24.16:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.45	5.95:	2.61	22.88	-0.268:	4.70	24.01:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.62	5.95:	2.56	22.86	-0.269:	4.71	24.02:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.62	5.93:	2.56	22.86	-0.269:	4.71	24.02:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.57	5.89:	2.75	22.96	-0.270:	4.88	24.12:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.52	5.87:	3.02	23.11	-0.273:	5.14	24.28:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.47	5.87:	2.69	22.95	-0.269:	4.84	24.11:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.45	5.80:	2.76	22.98	-0.270:	4.89	24.14:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.42	5.79:	2.33	22.77	-0.265:	4.50	23.92:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.41	5.68:	2.33	22.77	-0.265:	4.50	23.92:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.36	5.63:	2.29	22.75	-0.265:	4.45	23.90:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.35	5.57:	2.27	22.74	-0.264:	4.45	23.90:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.32	5.55:	2.60	22.91	-0.267:	4.74	24.07:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.29	5.60:	2.62	22.92	-0.267:	4.76	24.08:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.25	5.57:			:	4.76	24.08:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.02	5.02	5.57:	2.65	22.94	-0.266:	4.86	24.14:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.95	5.49:			:	4.86	24.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.12	5.54:	2.30	22.77	-0.263:	4.60	23.99:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.11	5.46:	2.34	22.79	-0.264:	4.67	24.04:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.11	5.49:	2.33	22.79	-0.264:	4.66	24.03:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.20	5.50:	2.50	22.87	-0.266:	4.82	24.12:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.45	5.73:	2.88	23.08	-0.271:	5.19	24.35:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.70	5.99:	2.61	22.95	-0.269:	4.96	24.22:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.71	5.98:	2.62	22.95	-0.270:	4.97	24.23:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.65	5.92:	2.72	23.01	-0.270:	5.07	24.29:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.61	5.91:	2.81	23.06	-0.271:	5.17	24.36:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.52	5.83:	2.65	22.99	-0.269:	5.03	24.28:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.48	5.79:	2.65	22.99	-0.269:	5.02	24.28:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.45	5.77:	2.58	22.96	-0.268:	4.96	24.25:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.37	5.70:	2.55	22.95	-0.267:	4.93	24.24:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.33	5.67:	2.72	23.04	-0.269:	5.09	24.34:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.25	5.66:	2.16	22.77	-0.263:	4.57	24.05:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.25	5.66:	2.43	22.91	-0.265:	4.84	24.21:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.18	5.54:	2.41	22.90	-0.265:	4.82	24.19:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		6.06	6.31:	2.59	22.99	-0.271:	4.99	24.29:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		6.07	6.32:	2.59	22.99	-0.271:	4.99	24.29:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	5.33	5.33	6.20:	3.59	24.15	-0.289:	6.56	25.95:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		5.55	6.32:	3.31	24.00	-0.287:	6.29	25.79:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		5.72	6.23:	3.31	24.01	-0.288:	6.41	25.87:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		5.73	6.21:	3.32	24.01	-0.288:	6.42	25.88:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		5.69	6.17:	3.50	24.12	-0.290:	6.57	25.98:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		5.65	6.18:	3.79	24.29	-0.293:	6.81	26.15:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		5.61	6.19:	3.49	24.12	-0.289:	6.57	25.99:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		5.59	6.12:	3.55	24.16	-0.290:	6.60	26.01:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		5.57	6.11:	3.13	23.93	-0.285:	6.25	25.79:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		5.57	5.96:	3.12	23.93	-0.285:	6.25	25.79:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		5.54	5.92:	3.07	23.90	-0.284:	6.15	25.73:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		5.52	5.85:	3.06	23.90	-0.284:	6.19	25.76:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		5.50	5.83:	3.39	24.08	-0.288:	6.45	25.93:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		5.48	5.93:	3.40	24.09	-0.288:	6.46	25.93:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		5.45	5.91:			:	6.46	25.93:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	5.02	5.02	5.92:	3.37	24.07	-0.285:	6.58	26.02:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.96	5.90:			:	6.58	26.02:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		5.27	5.91:	3.20	23.98	-0.284:	6.57	26.01:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		5.27	5.83:	3.27	24.03	-0.285:	6.70	26.11:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		5.27	5.89:	3.26	24.02	-0.285:	6.70	26.11:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		5.26	5.75:	3.42	24.11	-0.287:	6.85	26.20:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		5.44	5.90:	3.78	24.32	-0.292:	7.19	26.45:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.63	6.11:	3.56	24.20	-0.290:	7.04	26.35:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.64	6.08:	3.56	24.21	-0.290:	7.05	26.36:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.60	6.04:	3.66	24.27	-0.291:	7.15	26.44:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		5.57	6.05:	3.75	24.33	-0.292:	7.24	26.51:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		5.51	6.03:	3.61	24.26	-0.290:	7.13	26.44:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		5.48	5.99:	3.61	24.25	-0.290:	7.12	26.43:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		5.46	5.98:	3.55	24.23	-0.289:	7.07	26.40:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		5.40	5.94:	3.53	24.22	-0.289:	7.06	26.40:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		5.38	5.93:	3.69	24.32	-0.290:	7.21	26.51:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		5.33	5.98:	3.16	24.03	-0.284:	6.74	26.20:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		5.33	5.98:	3.43	24.19	-0.287:	6.99	26.38:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		5.27	5.85:	3.41	24.18	-0.287:	6.97	26.36:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		5.96	6.35:	3.59	24.28	-0.292:	7.14	26.48:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		5.96	6.37:	3.59	24.28	-0.292:	7.14	26.48:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	4.60	4.60	5.51:	1.81	33.40-0.411:		4.10	35.31:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		4.78	5.54:	1.64	33.28-0.409:		3.93	35.18:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		4.91	5.43:	1.63	33.29-0.411:		4.00	35.24:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		4.92	5.41:	1.64	33.29-0.411:		4.00	35.25:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		4.83	5.33:	1.77	33.40-0.412:		4.11	35.35:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		4.74	5.29:	1.96	33.56-0.414:		4.28	35.51:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		4.66	5.26:	1.76	33.42-0.410:		4.12	35.38:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		4.62	5.16:	1.81	33.46-0.411:		4.14	35.40:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		4.58	5.13:	1.53	33.25-0.406:		3.91	35.20:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		4.56	4.98:	1.53	33.25-0.406:		3.91	35.20:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		4.49	4.90:	1.51	33.23-0.405:		3.86	35.16:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		4.46	4.81:	1.50	33.23-0.405:		3.88	35.18:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		4.42	4.77:	1.72	33.41-0.408:		4.06	35.35:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		4.37	4.84:	1.73	33.42-0.408:		4.07	35.36:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		4.31	4.79:			:	4.07	35.36:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	4.42	4.42	5.38:	1.67	33.37-0.407:		4.11	35.39:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		4.25	5.19:			:	4.11	35.39:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		4.29	4.92:	1.55	33.28-0.404:		4.09	35.38:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		4.28	4.85:	1.60	33.33-0.405:		4.17	35.46:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		4.28	4.90:	1.59	33.33-0.405:		4.16	35.46:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.61	5.10:	1.70	33.41-0.409:		4.26	35.54:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.87	5.33:	1.95	33.62-0.415:		4.50	35.78:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		5.14	5.62:	1.80	33.52-0.415:		4.40	35.70:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		5.16	5.59:	1.80	33.52-0.415:		4.41	35.71:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		5.04	5.48:	1.87	33.58-0.415:		4.48	35.78:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		4.98	5.46:	1.94	33.65-0.416:		4.55	35.86:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		4.81	5.33:	1.86	33.60-0.413:		4.48	35.81:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		4.75	5.26:	1.85	33.60-0.413:		4.48	35.81:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		4.69	5.22:	1.82	33.58-0.412:		4.45	35.79:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		4.56	5.09:	1.82	33.59-0.411:		4.45	35.80:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		4.50	5.06:	1.94	33.69-0.412:		4.56	35.91:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		4.39	5.03:	1.60	33.44-0.406:		4.25	35.64:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		4.39	5.03:	1.78	33.59-0.409:		4.44	35.82:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		4.28	4.85:	1.77	33.58-0.408:		4.42	35.81:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		5.42	5.82:	1.89	33.67-0.419:		4.53	35.91:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		5.42	5.83:	1.89	33.67-0.419:		4.53	35.91:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	S.F. KOKTULI	H	54.7:	3.51	3.51	4.81:	2.20	28.32	-0.333:	5.76	30.88:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		3.74	4.90:	2.02	28.20	-0.332:	5.58	30.75:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		3.91	4.69:	2.07	28.25	-0.334:	5.78	30.92:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		3.92	4.66:	2.08	28.25	-0.334:	5.79	30.92:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		3.87	4.63:	2.19	28.33	-0.335:	5.85	30.97:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		3.83	4.66:	2.37	28.45	-0.337:	5.98	31.09:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		3.78	4.72:	2.17	28.34	-0.334:	5.86	31.00:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		3.76	4.62:	2.20	28.35	-0.334:	5.83	30.98:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		3.74	4.61:	1.95	28.20	-0.331:	5.68	30.87:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		3.73	4.39:	1.94	28.20	-0.331:	5.68	30.87:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		3.71	4.34:	1.89	28.17	-0.330:	5.55	30.77:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		3.70	4.24:	1.92	28.18	-0.330:	5.66	30.85:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		3.68	4.23:	2.11	28.31	-0.333:	5.75	30.93:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		3.67	4.39:	2.12	28.32	-0.333:	5.76	30.94:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		3.64	4.37:			:	5.76	30.94:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.99	3.99	5.44:	2.14	28.33	-0.335:	6.01	31.14:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.87	5.36:			:	6.01	31.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		3.71	4.69:	2.11	28.31	-0.333:	6.18	31.28:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		3.71	4.61:	2.18	28.37	-0.334:	6.32	31.40:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		3.71	4.69:	2.18	28.37	-0.334:	6.32	31.40:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		4.23	5.00:	2.29	28.44	-0.339:	6.41	31.48:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.55	5.27:	2.55	28.63	-0.344:	6.67	31.71:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		4.88	5.62:	2.44	28.56	-0.345:	6.65	31.70:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		4.90	5.57:	2.44	28.57	-0.345:	6.65	31.71:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		4.82	5.51:	2.52	28.63	-0.346:	6.75	31.80:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		4.78	5.53:	2.59	28.68	-0.346:	6.82	31.86:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		4.66	5.48:	2.51	28.64	-0.345:	6.76	31.82:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		4.62	5.42:	2.50	28.64	-0.344:	6.75	31.82:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		4.58	5.40:	2.47	28.62	-0.344:	6.72	31.80:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		4.49	5.32:	2.47	28.63	-0.343:	6.74	31.83:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		4.45	5.31:	2.60	28.72	-0.344:	6.85	31.93:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		4.37	5.36:	2.23	28.49	-0.339:	6.54	31.67:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		4.37	5.36:	2.44	28.64	-0.342:	6.74	31.85:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		4.30	5.18:	2.43	28.63	-0.341:	6.73	31.85:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		5.25	5.88:	2.54	28.71	-0.349:	6.83	31.93:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		5.26	5.89:	2.54	28.71	-0.349:	6.83	31.93:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C):	REMARKS
1	S.F. KOKTULI	H	54.7:	3.07	3.07	3.73:	0.20	32.45-0.378:		1.82	33.65:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		3.24	3.79:	0.06	32.36-0.377:		1.68	33.56:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		3.37	3.74:	0.01	32.33-0.377:		1.65	33.54:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		3.38	3.72:	0.01	32.33-0.377:		1.65	33.55:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		3.28	3.63:	0.14	32.43-0.378:		1.77	33.65:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		3.17	3.57:	0.30	32.56-0.380:		1.92	33.78:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		3.07	3.52:	0.10	32.42-0.376:		1.74	33.64:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		3.01	3.43:	0.16	32.47-0.376:		1.79	33.69:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		2.96	3.39:	-0.10	32.29-0.372:		1.55	33.51:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		2.94	3.26:	-0.10	32.29-0.372:		1.55	33.51:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		2.87	3.18:	-0.07	32.31-0.372:		1.57	33.52:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		2.84	3.11:	-0.12	32.28-0.371:		1.53	33.50:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		2.80	3.07:	0.10	32.45-0.374:		1.74	33.66:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		2.76	3.12:	0.11	32.45-0.374:		1.75	33.67:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		2.68	3.05:			:	1.75	33.67:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.56	3.56	4.24:	-0.01	32.37-0.378:		1.66	33.60:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.31	3.94:			:	1.66	33.60:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		2.91	3.37:	-0.19	32.25-0.371:		1.51	33.49:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		2.90	3.29:	-0.16	32.28-0.371:		1.54	33.53:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		2.89	3.31:	-0.16	32.28-0.371:		1.54	33.53:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		3.45	3.79:	-0.08	32.33-0.376:		1.62	33.59:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		3.78	4.09:	0.14	32.51-0.382:		1.84	33.78:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		4.09	4.40:	0.00	32.42-0.382:		1.72	33.69:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		4.10	4.39:	0.00	32.42-0.383:		1.72	33.70:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		3.95	4.24:	0.06	32.47-0.382:		1.77	33.75:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		3.86	4.18:	0.13	32.53-0.382:		1.84	33.81:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		3.62	3.96:	0.05	32.49-0.380:		1.78	33.78:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		3.55	3.88:	0.05	32.49-0.379:		1.77	33.77:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		3.47	3.81:	0.03	32.49-0.378:		1.75	33.77:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		3.29	3.64:	0.02	32.49-0.376:		1.75	33.77:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		3.22	3.58:	0.13	32.58-0.378:		1.86	33.87:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		3.06	3.48:	-0.18	32.37-0.372:		1.56	33.65:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		3.06	3.48:	-0.01	32.50-0.374:		1.73	33.80:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		2.93	3.30:	-0.02	32.50-0.373:		1.72	33.79:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		4.08	4.35:	0.07	32.56-0.383:		1.81	33.86:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		4.09	4.36:	0.07	32.56-0.383:		1.81	33.86:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Oct PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2/S/C):	REMARKS
1	S.F. KOKTULI	H	54.7:	2.40	2.40	3.18:	1.28	32.31-0.376:		3.79	34.30:	HYDROLOGY GAGE SK100F
2	S.F. KOKTULI	C	53.3:		2.62	3.32:	0.99	32.11-0.373:		3.50	34.07:	STREAM GEOMETRY NODE SFKSG1
3	S.F. KOKTULI	C	51.2:		2.79	3.26:	0.99	32.12-0.375:		3.59	34.15:	STREAM GEOMETRY NODE SFKSG2
4	S.F. KOKTULI	Q	51.1:		2.80	3.24:	0.99	32.12-0.375:		3.60	34.15:	HYDROLOGY NODE SK100LF2
5	S.F. KOKTULI	C	49.4:		2.77	3.22:	1.17	32.26-0.377:		3.73	34.28:	STREAM GEOMETRY NODE SFKSG3
6	S.F. KOKTULI	C	47.6:		2.74	3.23:	1.43	32.46-0.381:		3.96	34.48:	STREAM GEOMETRY NODE SFKSG4
7	S.F. KOKTULI	C	45.7:		2.71	3.26:	1.13	32.25-0.376:		3.72	34.29:	STREAM GEOMETRY NODE SFKSG5
8	S.F. KOKTULI	C	44.8:		2.70	3.19:	1.19	32.30-0.377:		3.74	34.30:	STREAM GEOMETRY NODE SFKSG6
9	S.F. KOKTULI	C	43.9:		2.68	3.19:	0.79	32.01-0.371:		3.42	34.04:	STREAM GEOMETRY NODE SFKSG7
10	S.F. KOKTULI	Q	43.6:		2.68	3.05:	0.79	32.01-0.371:		3.42	34.04:	HYDROLOGY NODE SK100LF4
11	S.F. KOKTULI	C	41.1:		2.64	3.01:	0.74	31.98-0.370:		3.31	33.96:	STREAM GEOMETRY NODE SFKSG8
12	S.F. KOKTULI	C	40.0:		2.62	2.94:	0.73	31.97-0.370:		3.37	34.00:	STREAM GEOMETRY NODE SFKSG9
13	S.F. KOKTULI	C	38.4:		2.60	2.92:	1.03	32.19-0.374:		3.58	34.19:	STREAM GEOMETRY NODE SFKSG10
14	S.F. KOKTULI	Q	35.8:		2.57	3.00:	1.03	32.20-0.374:		3.59	34.20:	HYDROLOGY GAGE SK100C
15	S.F. KOKTULI	B	34.3:		2.54	3.00:			:	3.59	34.20:	CONFLUENCE WITH TRIBUTARY SFK 1.119
16	TRIBUTARY 119	H	36.1:	3.66	3.66	4.39:	1.16	32.29-0.384:		3.85	34.42:	HYDROLOGY GAGE SK119A
17	TRIBUTARY 119	T	34.3:		3.58	4.32:			:	3.85	34.42:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
18	S.F. KOKTULI	J	34.3:		3.02	3.61:	0.86	32.08-0.374:		3.69	34.29:	CONFLUENCE WITH TRIBUTARY SFK 1.119
19	S.F. KOKTULI	C	34.1:		3.01	3.52:	0.93	32.14-0.375:		3.79	34.38:	STREAM GEOMETRY NODE SFKSG11
20	S.F. KOKTULI	Q	34.0:		3.01	3.57:	0.93	32.14-0.375:		3.78	34.38:	HYDROLOGY NODE SK100LF6
21	S.F. KOKTULI	Q	29.3:		3.87	4.28:	1.11	32.27-0.385:		3.96	34.53:	HYDROLOGY GAGE SK100B1
22	S.F. KOKTULI	C	27.6:		4.16	4.55:	1.48	32.56-0.392:		4.31	34.85:	STREAM GEOMETRY NODE SFKSG12
23	S.F. KOKTULI	C	25.1:		4.46	4.87:	1.24	32.40-0.391:		4.14	34.71:	STREAM GEOMETRY NODE SFKSG13
24	S.F. KOKTULI	Q	24.9:		4.48	4.85:	1.25	32.40-0.391:		4.15	34.72:	HYDROLOGY GAGE SK100B
25	S.F. KOKTULI	C	21.9:		4.41	4.79:	1.35	32.48-0.392:		4.26	34.83:	STREAM GEOMETRY NODE SFKSG14
26	S.F. KOKTULI	C	20.1:		4.38	4.78:	1.45	32.57-0.394:		4.35	34.92:	STREAM GEOMETRY NODE SFKSG15
27	S.F. KOKTULI	C	15.4:		4.27	4.71:	1.30	32.48-0.390:		4.23	34.83:	STREAM GEOMETRY NODE SFKSG16
28	S.F. KOKTULI	Q	13.9:		4.23	4.66:	1.30	32.47-0.390:		4.22	34.82:	HYDROLOGY NODE FRS-3
29	S.F. KOKTULI	C	12.5:		4.20	4.64:	1.23	32.43-0.389:		4.15	34.77:	STREAM GEOMETRY NODE SFKSG17
30	S.F. KOKTULI	C	9.2:		4.11	4.57:	1.19	32.41-0.387:		4.14	34.76:	STREAM GEOMETRY NODE SFKSG18
31	S.F. KOKTULI	C	7.9:		4.07	4.55:	1.34	32.53-0.389:		4.27	34.89:	STREAM GEOMETRY NODE SFKSG19
32	S.F. KOKTULI	C	5.1:		3.98	4.57:	0.83	32.17-0.381:		3.81	34.50:	STREAM GEOMETRY NODE SFKSG20
33	S.F. KOKTULI	C	5.1:		3.98	4.57:	1.08	32.36-0.385:		4.05	34.73:	STREAM GEOMETRY NODE SFKSG21
34	S.F. KOKTULI	Q	3.0:		3.89	4.43:	1.05	32.34-0.384:		4.03	34.70:	HYDROLOGY NODE FRS-2
35	S.F. KOKTULI	Q	0.1:		5.11	5.45:	1.24	32.48-0.396:		4.21	34.86:	HYDROLOGY GAGE SK100A
36	S.F. KOKTULI	E	0.0:		5.11	5.47:	1.24	32.48-0.396:		4.21	34.86:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER

NORMAL COMPLETION OF 'TRNSPT'.

ATTACHMENT 9

SNTEMP Input Files
North Fork Koktuli River

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JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFFTFFFFFFF                                   FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    141.     33.     27.     12.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      6.      0.      0.      0.      0.      1.      1.      1.    141.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
N.F. KOKTULI        57.7     0.0
TRIBUTARY 119       38.4    36.5
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
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TIME PERIOD FILE: NORTH FORK KOKTULI RIVER, ALASKA - PEBBLE PROJECT

18-May	138.	138.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-May	139.	139.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-May	140.	140.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-May	141.	141.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-May	142.	142.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-May	143.	143.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-May	144.	144.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-May	145.	145.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-May	146.	146.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-May	147.	147.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-May	148.	148.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-May	149.	149.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-May	150.	150.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-May	151.	151.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Jun	152.	152.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Jun	153.	153.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Jun	154.	154.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Jun	155.	155.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Jun	156.	156.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Jun	157.	157.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Jun	158.	158.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Jun	159.	159.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Jun	160.	160.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Jun	161.	161.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Jun	162.	162.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Jun	163.	163.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Jun	164.	164.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Jun	165.	165.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Jun	166.	166.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Jun	167.	167.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Jun	168.	168.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Jun	169.	169.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Jun	170.	170.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Jun	171.	171.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Jun	172.	172.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Jun	173.	173.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Jun	174.	174.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Jun	175.	175.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Jun	176.	176.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Jun	177.	177.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Jun	178.	178.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Jun	179.	179.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Jun	180.	180.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Jun	181.	181.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Jul	182.	182.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Jul	183.	183.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Jul	184.	184.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Jul	185.	185.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Jul	186.	186.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Jul	187.	187.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Jul	188.	188.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Jul	189.	189.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Jul	190.	190.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Jul	191.	191.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Jul	192.	192.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Jul	193.	193.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Jul	194.	194.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Jul	195.	195.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Jul	196.	196.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Jul	197.	197.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Jul	198.	198.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Jul	199.	199.	1.	0.05	0.15	0.000	0.000	0.000	0.000

19-Jul	200.	200.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Jul	201.	201.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Jul	202.	202.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Jul	203.	203.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Jul	204.	204.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Jul	205.	205.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Jul	206.	206.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Jul	207.	207.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Jul	208.	208.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Jul	209.	209.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Jul	210.	210.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Jul	211.	211.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-Jul	212.	212.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Aug	213.	213.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Aug	214.	214.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Aug	215.	215.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Aug	216.	216.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Aug	217.	217.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Aug	218.	218.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Aug	219.	219.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Aug	220.	220.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Aug	221.	221.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Aug	222.	222.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Aug	223.	223.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Aug	224.	224.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Aug	225.	225.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Aug	226.	226.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Aug	227.	227.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Aug	228.	228.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Aug	229.	229.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Aug	230.	230.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Aug	231.	231.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Aug	232.	232.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Aug	233.	233.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Aug	234.	234.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Aug	235.	235.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Aug	236.	236.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Aug	237.	237.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Aug	238.	238.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Aug	239.	239.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Aug	240.	240.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Aug	241.	241.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Aug	242.	242.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-Aug	243.	243.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Sep	244.	244.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Sep	245.	245.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Sep	246.	246.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Sep	247.	247.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Sep	248.	248.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Sep	249.	249.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Sep	250.	250.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Sep	251.	251.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Sep	252.	252.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Sep	253.	253.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Sep	254.	254.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Sep	255.	255.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Sep	256.	256.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Sep	257.	257.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Sep	258.	258.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Sep	259.	259.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Sep	260.	260.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Sep	261.	261.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Sep	262.	262.	1.	0.05	0.15	0.000	0.000	0.000	0.000

20-Sep	263.	263.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Sep	264.	264.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Sep	265.	265.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Sep	266.	266.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Sep	267.	267.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Sep	268.	268.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Sep	269.	269.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Sep	270.	270.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Sep	271.	271.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Sep	272.	272.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Sep	273.	273.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Oct	274.	274.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Oct	275.	275.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Oct	276.	276.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Oct	277.	277.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Oct	278.	278.	1.	0.05	0.15	0.000	0.000	0.000	0.000

METEOROLOGY FILE: NORTH FORK KOKTULI RIVER, ALASKA

		1.04551	473.96	-0.75	PEBBLE 1 METEROLOGICAL STATION	
2007	18-May	4.73	3.60	0.68	1.000	278.7
	19-May	6.56	4.00	0.69	1.000	252.6
	20-May	5.49	3.25	0.71	1.000	178.7
	21-May	6.26	4.72	0.57	1.000	309.3
	22-May	5.86	8.00	0.62	1.000	142.3
	23-May	6.07	8.71	0.72	1.000	118.0
	24-May	5.03	9.07	0.90	1.000	68.2
	25-May	6.57	3.15	0.95	1.000	79.2
	26-May	4.96	6.22	0.95	1.000	114.2
	27-May	4.85	6.62	0.86	1.000	246.1
	28-May	4.13	6.35	0.82	1.000	227.5
	29-May	5.28	3.83	0.71	1.000	202.4
	30-May	6.09	3.84	0.79	1.000	169.3
	31-May	5.47	5.13	0.83	1.000	120.1
	1-Jun	5.20	6.12	0.83	1.000	101.9
	2-Jun	5.61	3.92	0.79	1.000	141.8
	3-Jun	7.25	2.31	0.77	1.000	173.5
	4-Jun	6.82	5.32	0.94	1.000	107.7
	5-Jun	5.29	9.44	0.89	1.000	142.9
	6-Jun	7.20	5.29	0.76	1.000	287.8
	7-Jun	6.32	7.67	0.70	1.000	247.5
	8-Jun	4.77	5.33	0.77	1.000	210.1
	9-Jun	5.57	3.49	0.83	1.000	167.1
	10-Jun	11.51	5.74	0.66	1.000	279.5
	11-Jun	6.94	5.43	0.89	1.000	262.2
	12-Jun	5.03	3.34	0.96	1.000	83.6
	13-Jun	7.22	2.74	0.83	1.000	141.0
	14-Jun	9.63	3.82	0.77	1.000	163.1
	15-Jun	13.31	6.23	0.61	1.000	318.3
	16-Jun	11.15	6.91	0.65	1.000	260.6
	17-Jun	6.21	3.71	0.92	1.000	147.2
	18-Jun	8.96	2.49	0.86	1.000	172.4
	19-Jun	13.80	6.31	0.72	1.000	305.2
	20-Jun	16.02	8.23	0.56	1.000	298.5
	21-Jun	13.16	7.51	0.63	1.000	233.9
	22-Jun	6.25	3.13	0.99	1.000	62.7
	23-Jun	5.82	10.47	0.99	1.000	40.8
	24-Jun	6.20	8.20	0.90	1.000	115.9
	25-Jun	6.61	7.88	0.86	1.000	135.3
	26-Jun	9.01	4.13	0.73	1.000	289.4
	27-Jun	11.53	3.57	0.69	1.000	287.2
	28-Jun	8.51	2.86	0.89	1.000	94.0
	29-Jun	10.52	3.91	0.74	1.000	311.1
	30-Jun	9.20	3.13	0.89	1.000	181.8
	1-Jul	10.40	3.39	0.82	1.000	152.6
	2-Jul	12.36	3.25	0.78	1.000	212.1
	3-Jul	12.53	3.34	0.80	1.000	197.5
	4-Jul	9.76	4.72	0.91	1.000	109.3
	5-Jul	10.41	3.79	0.88	1.000	155.8
	6-Jul	9.98	2.79	0.83	1.000	150.0
	7-Jul	12.79	2.32	0.65	1.000	172.6
	8-Jul	10.03	3.78	0.95	1.000	104.0
	9-Jul	9.89	3.61	0.78	1.000	187.1
	10-Jul	11.24	3.74	0.78	1.000	160.3
	11-Jul	11.21	5.11	0.73	1.000	299.7
	12-Jul	10.62	2.91	0.83	1.000	174.8
	13-Jul	8.46	3.26	0.99	1.000	78.3
	14-Jul	9.34	3.43	0.94	1.000	128.5
	15-Jul	10.05	3.41	0.88	1.000	121.8
	16-Jul	11.20	5.23	0.82	1.000	204.7
	17-Jul	12.42	4.21	0.78	1.000	299.3

18-Jul	10.60	3.11	0.86	1.000	117.2
19-Jul	12.09	2.27	0.78	1.000	135.4
20-Jul	13.91	2.94	0.77	1.000	186.9
21-Jul	8.73	4.26	0.97	1.000	89.8
22-Jul	6.69	4.42	1.00	1.000	56.1
23-Jul	7.55	4.84	1.00	1.000	57.2
24-Jul	9.27	5.97	0.90	1.000	113.5
25-Jul	13.01	4.68	0.66	1.000	139.7
26-Jul	14.91	2.92	0.67	1.000	206.9
27-Jul	16.90	3.98	0.72	1.000	185.0
28-Jul	13.86	6.16	0.82	1.000	251.9
29-Jul	13.31	5.53	0.84	1.000	218.2
30-Jul	11.91	3.65	0.93	1.000	116.9
31-Jul	9.96	5.60	0.95	1.000	99.7
1-Aug	8.57	11.07	0.92	1.000	67.9
2-Aug	8.58	11.91	0.97	1.000	55.7
3-Aug	9.39	8.76	0.97	1.000	62.2
4-Aug	9.25	10.49	1.00	1.000	29.0
5-Aug	9.88	9.62	0.99	1.000	63.4
6-Aug	10.06	9.19	0.84	1.000	199.1
7-Aug	10.80	7.89	0.81	1.000	228.2
8-Aug	12.13	5.60	0.80	1.000	171.7
9-Aug	14.09	3.41	0.72	1.000	260.9
10-Aug	16.06	3.02	0.59	1.000	261.5
11-Aug	15.32	2.09	0.67	1.000	174.9
12-Aug	16.63	2.85	0.88	1.000	125.9
13-Aug	17.47	3.17	0.82	1.000	201.6
14-Aug	8.44	4.52	0.97	1.000	72.3
15-Aug	9.42	5.84	0.98	1.000	76.0
16-Aug	11.94	2.18	0.85	1.000	204.0
17-Aug	10.34	6.53	0.83	1.000	121.7
18-Aug	9.39	14.56	0.85	1.000	65.4
19-Aug	11.34	11.52	0.80	1.000	112.9
20-Aug	9.32	6.69	0.93	1.000	64.4
21-Aug	8.62	6.99	0.96	1.000	31.4
22-Aug	8.48	6.96	0.99	1.000	32.4
23-Aug	9.58	3.74	0.92	1.000	86.7
24-Aug	11.26	4.15	0.89	1.000	118.7
25-Aug	10.91	3.34	0.91	1.000	149.7
26-Aug	10.76	3.83	0.78	1.000	151.9
27-Aug	12.34	3.18	0.68	1.000	168.5
28-Aug	13.38	3.21	0.62	1.000	209.7
29-Aug	11.48	6.87	0.88	1.000	166.1
30-Aug	10.39	4.41	0.87	1.000	122.8
31-Aug	10.39	2.55	0.88	1.000	150.8
1-Sep	9.42	3.30	0.93	1.000	99.1
2-Sep	9.05	2.30	0.93	1.000	108.1
3-Sep	9.22	4.67	0.84	1.000	118.1
4-Sep	9.40	3.36	0.74	1.000	128.0
5-Sep	9.42	3.37	0.80	1.000	124.0
6-Sep	7.95	3.32	0.89	1.000	95.9
7-Sep	7.71	12.51	0.92	1.000	34.1
8-Sep	9.65	8.90	0.98	1.000	29.3
9-Sep	9.04	3.76	0.95	1.000	68.2
10-Sep	8.86	6.25	0.90	1.000	115.6
11-Sep	7.47	17.33	0.91	1.000	29.6
12-Sep	8.04	6.85	0.90	1.000	126.4
13-Sep	6.36	3.69	0.96	1.000	49.3
14-Sep	5.95	3.44	0.90	1.000	98.0
15-Sep	5.17	7.28	0.86	1.000	149.1
16-Sep	6.53	5.19	0.85	1.000	124.5
17-Sep	5.99	3.37	0.90	1.000	70.0
18-Sep	7.76	11.35	0.94	1.000	25.0

19-Sep	7.32	7.49	0.95	1.000	49.2
20-Sep	6.31	6.94	0.95	1.000	49.7
21-Sep	6.54	5.62	0.91	1.000	116.6
22-Sep	5.31	6.10	0.90	1.000	47.8
23-Sep	5.46	4.52	0.94	1.000	47.2
24-Sep	4.91	5.17	0.94	1.000	44.9
25-Sep	4.50	5.82	0.95	1.000	68.7
26-Sep	4.25	3.30	0.94	1.000	68.4
27-Sep	3.90	6.58	0.92	1.000	61.0
28-Sep	3.46	7.34	0.95	1.000	33.2
29-Sep	4.15	3.69	0.93	1.000	74.2
30-Sep	3.18	4.80	0.98	1.000	30.0
1-Oct	3.26	5.33	0.94	1.000	64.0
2-Oct	1.73	10.21	0.93	1.000	51.5
3-Oct	1.48	7.10	0.89	1.000	97.1
4-Oct	0.92	9.61	0.91	1.000	13.2
5-Oct	0.54	9.59	0.96	1.000	59.4

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SKELETON NODE FILE: NORTH FORK KOKTULI RIVER, ALASKA
N.F. KOKTULI    H         57.670 HEADWATERS OF NORTH FORK KOKTULI RIVER
N.F. KOKTULI    C         55.746 STREAM GEOMETRY NODE NFKSG1
N.F. KOKTULI    C         48.167 STREAM GEOMETRY NODE NFKSG2
N.F. KOKTULI    C         44.767 STREAM GEOMETRY NODE NFKSG3
N.F. KOKTULI    C         42.076 STREAM GEOMETRY NODE NFKSG4
N.F. KOKTULI    C         41.231 STREAM GEOMETRY NODE NFKSG5
N.F. KOKTULI    C         39.774 STREAM GEOMETRY NODE NFKSG6
N.F. KOKTULI    C         38.552 STREAM GEOMETRY NODE NFKSG7
N.F. KOKTULI    Q         36.755 HYDROLOGY GAGE NK100C
N.F. KOKTULI    C         36.525 STREAM GEOMETRY NODE NFKSG8
N.F. KOKTULI    B         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
TRIBUTARY 119   H         38.358 HYDROLOGY GAGE NK119A
TRIBUTARY 119   T         36.519 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
N.F. KOKTULI    J         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
N.F. KOKTULI    Q         35.754 HYDROLOGY GAGE NK100B
N.F. KOKTULI    C         35.379 STREAM GEOMETRY NODE NFKSG9
N.F. KOKTULI    C         33.967 STREAM GEOMETRY NODE NFKSG10
N.F. KOKTULI    C         30.985 STREAM GEOMETRY NODE NFKSG11
N.F. KOKTULI    C         28.480 STREAM GEOMETRY NODE NFKSG12
N.F. KOKTULI    Q         27.934 HYDROLOGY NODE NK100LF3
N.F. KOKTULI    C         26.953 STREAM GEOMETRY NODE NFKSG13
N.F. KOKTULI    C         24.519 STREAM GEOMETRY NODE NFKSG14
N.F. KOKTULI    C         16.032 STREAM GEOMETRY NODE NFKSG15
N.F. KOKTULI    C         13.832 STREAM GEOMETRY NODE NFKSG16
N.F. KOKTULI    Q         13.700 HYDROLOGY GAGE NK100A1
N.F. KOKTULI    C         11.568 STREAM GEOMETRY NODE NFKSG17
N.F. KOKTULI    C          9.888 STREAM GEOMETRY NODE NFKSG18
N.F. KOKTULI    Q          9.306 HYDROLOGY NODE FRS-4
N.F. KOKTULI    C          7.557 STREAM GEOMETRY NODE NFKSG19
N.F. KOKTULI    C          6.188 STREAM GEOMETRY NODE NFKSG20
N.F. KOKTULI    Q          5.265 HYDROLOGY GAGE NK100A
N.F. KOKTULI    C          3.520 STREAM GEOMETRY NODE NFKSG21
N.F. KOKTULI    E          0.000 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
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STREAM GEOMETRY FILE: NORTH FORK KOKTULI RIVER, ALASKA

N.F. KOKTULI    H         57.670 HEADWATERS OF NORTH FORK KOKTULI RIVER
 1.04649  632.39   0.040    2.97  0.1549

N.F. KOKTULI    C         55.746 STREAM GEOMETRY NODE NFKSG1
 1.04633  425.28   0.040    4.90  0.1549

N.F. KOKTULI    C         48.167 STREAM GEOMETRY NODE NFKSG2
 1.04663  333.08   0.040    6.99  0.1549

N.F. KOKTULI    C         44.767 STREAM GEOMETRY NODE NFKSG3
 1.04633  327.21   0.040    8.11  0.1549

N.F. KOKTULI    C         42.076 STREAM GEOMETRY NODE NFKSG4
 1.04616  321.90   0.040    8.74  0.1549

N.F. KOKTULI    C         41.231 STREAM GEOMETRY NODE NFKSG5
 1.04621  320.84   0.040    9.15  0.1549

N.F. KOKTULI    C         39.774 STREAM GEOMETRY NODE NFKSG6
 1.04615  319.15   0.040    9.62  0.1549

N.F. KOKTULI    C         38.552 STREAM GEOMETRY NODE NFKSG7
 1.04603  317.82   0.040   10.19  0.1549

N.F. KOKTULI    C         36.525 STREAM GEOMETRY NODE NFKSG8
 1.04599  311.76   0.040   10.17  0.1549

N.F. KOKTULI    B         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
 1.04599  311.74

TRIBUTARY 119   H         38.358 HYDROLOGY GAGE NK119A
 1.04577  341.73   0.040    6.31  0.1549

TRIBUTARY 119   T         36.519 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
 1.04599  311.74

N.F. KOKTULI    J         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
 1.04599  311.74   0.040   10.17  0.1549

N.F. KOKTULI    C         35.379 STREAM GEOMETRY NODE NFKSG9
 1.04608  305.26   0.040   10.59  0.1549

N.F. KOKTULI    C         33.967 STREAM GEOMETRY NODE NFKSG10
 1.04609  298.61   0.040   11.32  0.1549

N.F. KOKTULI    C         30.985 STREAM GEOMETRY NODE NFKSG11
 1.04602  289.01   0.040   12.23  0.1549

N.F. KOKTULI    C         28.480 STREAM GEOMETRY NODE NFKSG12
 1.04588  282.00   0.040   12.87  0.1549

N.F. KOKTULI    C         26.953 STREAM GEOMETRY NODE NFKSG13
 1.04592  276.34   0.040   13.37  0.1549

N.F. KOKTULI    C         24.519 STREAM GEOMETRY NODE NFKSG14
 1.04579  267.97   0.040   14.76  0.1549

N.F. KOKTULI    C         16.032 STREAM GEOMETRY NODE NFKSG15
 1.04473  229.10   0.040   16.12  0.1549

N.F. KOKTULI    C         13.832 STREAM GEOMETRY NODE NFKSG16
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 1.04457  218.45   0.040   16.76  0.1549

N.F. KOKTULI    C         11.568 STREAM GEOMETRY NODE NFKSG17
 1.04452  209.23   0.040   17.39  0.1549

N.F. KOKTULI    C          9.888 STREAM GEOMETRY NODE NFKSG18
 1.04446  203.58   0.040   17.99  0.1549

N.F. KOKTULI    C          7.557 STREAM GEOMETRY NODE NFKSG19
 1.04453  194.95   0.040   18.46  0.1549

N.F. KOKTULI    C          6.188 STREAM GEOMETRY NODE NFKSG20
 1.04442  190.11   0.040   18.98  0.1549

N.F. KOKTULI    C          3.520 STREAM GEOMETRY NODE NFKSG21
 1.04446  182.00   0.040   19.76  0.1549

N.F. KOKTULI    E          0.000 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
 1.04431  173.35
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STUDY FILE: NORTH FORK KOKTULI RIVER, ALASKA
N.F. KOKTULI    H         57.670 HEADWATERS OF NORTH FORK KOKTULI RIVER
N.F. KOKTULI    B         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
TRIBUTARY 119   H         38.358 HYDROLOGY GAGE NK119A
TRIBUTARY 119   T         36.519 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
N.F. KOKTULI    J         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
N.F. KOKTULI    E          0.000 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
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HYDROLOGY NODE FILE: NORTH FORK KOKTULI RIVER, ALASKA
N.F. KOKTULI    H         57.670 HEADWATERS OF NORTH FORK KOKTULI RIVER
N.F. KOKTULI    Q         36.755 HYDROLOGY GAGE NK100C
N.F. KOKTULI    B         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
TRIBUTARY 119   H         38.358 HYDROLOGY GAGE NK119A
TRIBUTARY 119   T         36.519 CONFLUENCE WITH NORTH FORK KOKTULI RIVER
N.F. KOKTULI    J         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
N.F. KOKTULI    Q         35.754 HYDROLOGY GAGE NK100B
N.F. KOKTULI    Q         27.934 HYDROLOGY NODE NK100LF3
N.F. KOKTULI    Q         13.700 HYDROLOGY GAGE NK100A1
N.F. KOKTULI    Q          9.306 HYDROLOGY NODE FRS-4
N.F. KOKTULI    Q          5.265 HYDROLOGY GAGE NK100A
N.F. KOKTULI    E          0.000 CONFLUENCE WITH SOUTH FORK KOKTULI RIVER
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HYDROLOGY DATA FILE: NORTH FORK KOKTULI RIVER, ALASKA

N.F. KOKTULI H 57.670 HEADWATERS OF NORTH FORK KOKTULI RIVER

2007	18-May	0.1881	3.79	4.61
	19-May	0.1664	4.88	5.24
	20-May	0.1577	4.36	5.83
	21-May	0.1402	4.87	6.38
	22-May	0.1462	4.21	6.9
	23-May	0.1488	4.43	7.25
	24-May	0.1625	4.37	7.38
	25-May	0.1679	4.21	7.39
	26-May	0.164	4.59	7.47
	27-May	0.1514	5.19	7.73
	28-May	0.1378	5.88	8.19
	29-May	0.1198	5.72	8.72
	30-May	0.1076	6.40	9.26
	31-May	0.108	6.27	9.68
	1-Jun	0.1053	5.72	9.88
	2-Jun	0.1017	5.47	9.95
	3-Jun	0.0997	6.90	10.1
	4-Jun	0.1051	7.04	10.39
	5-Jun	0.1334	6.70	10.7
	6-Jun	0.1239	7.93	10.97
	7-Jun	0.1081	8.04	11.3
	8-Jun	0.0956	7.26	11.61
	9-Jun	0.0861	6.96	11.99
	10-Jun	0.0837	9.90	12.56
	11-Jun	0.0886	11.30	13.16
	12-Jun	0.0864	8.16	13.41
	13-Jun	0.0779	8.07	13.39
	14-Jun	0.0771	9.23	13.41
	15-Jun	0.0781	11.40	13.67
	16-Jun	0.0779	11.71	14.14
	17-Jun	0.0864	9.62	14.53
	18-Jun	0.0836	10.03	14.9
	19-Jun	0.0774	12.31	15.51
	20-Jun	0.0787	13.77	16.27
	21-Jun	0.076	13.05	16.58
	22-Jun	0.073	10.00	15.98
	23-Jun	0.1105	7.32	14.59
	24-Jun	0.2013	5.98	13.02
	25-Jun	0.1229	7.36	11.96
	26-Jun	0.095	9.04	11.58
	27-Jun	0.0807	10.85	11.91
	28-Jun	0.078	10.21	12.64
	29-Jun	0.0754	11.38	13.33
	30-Jun	0.0717	11.11	13.98
	1-Jul	0.0694	10.27	14.51
	2-Jul	0.0671	11.80	14.98
	3-Jul	0.0654	13.13	15.37
	4-Jul	0.0965	11.26	15.48
	5-Jul	0.0931	10.73	15.36
	6-Jul	0.0816	10.41	15.29
	7-Jul	0.0751	11.38	15.42
	8-Jul	0.079	11.76	15.67
	9-Jul	0.0744	10.86	15.89
	10-Jul	0.0694	10.82	16.18
	11-Jul	0.0658	12.83	16.56
	12-Jul	0.0635	12.96	16.8
	13-Jul	0.0723	10.55	16.69
	14-Jul	0.0734	10.74	16.32
	15-Jul	0.0672	10.40	15.96
	16-Jul	0.0633	11.46	15.87

17-Jul	0.0598	12.90	16.14
18-Jul	0.058	12.27	16.7
19-Jul	0.0574	11.78	17.13
20-Jul	0.0562	13.17	17.33
21-Jul	0.0655	11.57	17.15
22-Jul	0.0637	8.71	16.42
23-Jul	0.0766	8.44	15.39
24-Jul	0.0912	8.80	14.57
25-Jul	0.0754	10.30	14.38
26-Jul	0.0648	12.10	15
27-Jul	0.0601	14.21	16.39
28-Jul	0.0723	14.82	18.18
29-Jul	0.0643	14.50	19.87
30-Jul	0.0596	13.12	21.15
31-Jul	0.0581	12.55	21.77
1-Aug	0.0564	9.82	21.41
2-Aug	0.0556	8.68	20.09
3-Aug	0.0556	9.36	18.23
4-Aug	0.0845	8.84	16.29
5-Aug	0.1003	8.88	14.65
6-Aug	0.0968	9.50	13.6
7-Aug	0.0779	10.47	13.15
8-Aug	0.0687	11.15	13.14
9-Aug	0.0634	12.43	13.5
10-Aug	0.0594	13.59	14.29
11-Aug	0.057	13.45	15.38
12-Aug	0.0564	14.71	16.52
13-Aug	0.0556	15.02	17.6
14-Aug	0.056	11.98	18.54
15-Aug	0.0685	10.36	19.01
16-Aug	0.0645	12.02	19.33
17-Aug	0.0577	12.15	19.65
18-Aug	0.0595	9.13	19.48
19-Aug	0.061	9.28	18.78
20-Aug	0.0611	9.72	17.95
21-Aug	0.0629	8.93	17.01
22-Aug	0.0641	8.57	16
23-Aug	0.0736	8.86	15.11
24-Aug	0.069	9.90	14.63
25-Aug	0.0645	11.30	14.57
26-Aug	0.0613	10.69	14.7
27-Aug	0.059	11.26	14.86
28-Aug	0.0563	11.10	15.11
29-Aug	0.0551	11.26	15.53
30-Aug	0.0533	10.53	15.94
31-Aug	0.0543	10.25	16.22
1-Sep	0.0553	11.16	16.33
2-Sep	0.0533	11.04	15.97
3-Sep	0.055	8.67	15.24
4-Sep	0.0673	7.88	14.59
5-Sep	0.0605	8.99	14.31
6-Sep	0.0834	8.93	14.2
7-Sep	0.0758	7.73	13.93
8-Sep	0.1155	7.95	13.33
9-Sep	0.1674	8.42	12.63
10-Sep	0.1437	8.22	12.01
11-Sep	0.1198	6.46	11.42
12-Sep	0.1365	7.07	10.83
13-Sep	0.1679	6.73	10.31
14-Sep	0.1857	6.24	9.92
15-Sep	0.1616	5.48	9.7
16-Sep	0.1429	6.22	9.67
17-Sep	0.1334	6.08	9.7

	18-Sep	0.1222	6.04	9.66
	19-Sep	0.1978	6.23	9.47
	20-Sep	0.2054	5.75	9.15
	21-Sep	0.2427	5.77	8.79
	22-Sep	0.2142	4.72	8.45
	23-Sep	0.2382	4.68	8.19
	24-Sep	0.2232	4.73	7.99
	25-Sep	0.2304	4.44	7.81
	26-Sep	0.2214	4.36	7.64
	27-Sep	0.2083	4.15	7.45
	28-Sep	0.2337	3.36	7.24
	29-Sep	0.2655	3.40	7.04
	30-Sep	0.2319	3.59	6.86
	1-Oct	0.2557	3.44	6.61
	2-Oct	0.2402	2.67	6.21
	3-Oct	0.2284	1.70	5.62
	4-Oct	0.2131	1.20	4.92
	5-Oct	0.2731	0.35	4.13

N.F. KOKTULI Q 36.755 HYDROLOGY GAGE NK100C

2007	18-May	2.098	2.18
	19-May	1.856	2.49
	20-May	1.759	2.8
	21-May	1.564	3.11
	22-May	1.63	3.42
	23-May	1.659	3.69
	24-May	1.812	3.88
	25-May	1.872	4.02
	26-May	1.829	4.17
	27-May	1.688	4.36
	28-May	1.537	4.59
	29-May	1.336	4.82
	30-May	1.2	5.04
	31-May	1.204	5.2
	1-Jun	1.175	5.28
	2-Jun	1.135	5.31
	3-Jun	1.112	5.39
	4-Jun	1.172	5.55
	5-Jun	1.488	5.71
	6-Jun	1.382	5.86
	7-Jun	1.206	6.01
	8-Jun	1.066	6.13
	9-Jun	0.96	6.26
	10-Jun	0.934	6.45
	11-Jun	0.988	6.63
	12-Jun	0.964	6.63
	13-Jun	0.869	6.49
	14-Jun	0.86	6.36
	15-Jun	0.872	6.33
	16-Jun	0.869	6.41
	17-Jun	0.964	6.48
	18-Jun	0.932	6.57
	19-Jun	0.863	6.76
	20-Jun	0.878	7.05
	21-Jun	0.848	7.27
	22-Jun	0.815	7.26
	23-Jun	1.233	6.99
	24-Jun	2.245	6.61
	25-Jun	1.37	6.35
	26-Jun	1.06	6.27
	27-Jun	0.9	6.39
	28-Jun	0.87	6.62
	29-Jun	0.841	6.82

30-Jun	0.799	7.02
1-Jul	0.774	7.23
2-Jul	0.748	7.48
3-Jul	0.729	7.76
4-Jul	1.077	7.97
5-Jul	1.038	8.07
6-Jul	0.91	8.17
7-Jul	0.838	8.32
8-Jul	0.881	8.5
9-Jul	0.83	8.65
10-Jul	0.774	8.83
11-Jul	0.734	9.06
12-Jul	0.709	9.25
13-Jul	0.807	9.31
14-Jul	0.818	9.27
15-Jul	0.749	9.25
16-Jul	0.706	9.36
17-Jul	0.667	9.66
18-Jul	0.647	10.09
19-Jul	0.64	10.49
20-Jul	0.627	10.8
21-Jul	0.731	10.96
22-Jul	0.711	10.87
23-Jul	0.855	10.65
24-Jul	1.017	10.5
25-Jul	0.841	10.58
26-Jul	0.723	10.93
27-Jul	0.67	11.54
28-Jul	0.806	12.25
29-Jul	0.718	12.86
30-Jul	0.665	13.28
31-Jul	0.648	13.42
1-Aug	0.629	13.2
2-Aug	0.62	12.68
3-Aug	0.621	12.01
4-Aug	0.943	11.32
5-Aug	1.119	10.73
6-Aug	1.079	10.32
7-Aug	0.869	10.12
8-Aug	0.766	10.13
9-Aug	0.707	10.31
10-Aug	0.662	10.68
11-Aug	0.635	11.18
12-Aug	0.629	11.71
13-Aug	0.62	12.18
14-Aug	0.625	12.56
15-Aug	0.764	12.71
16-Aug	0.72	12.76
17-Aug	0.643	12.8
18-Aug	0.664	12.68
19-Aug	0.68	12.41
20-Aug	0.681	12.1
21-Aug	0.702	11.72
22-Aug	0.715	11.3
23-Aug	0.821	10.92
24-Aug	0.769	10.7
25-Aug	0.719	10.63
26-Aug	0.683	10.64
27-Aug	0.658	10.68
28-Aug	0.628	10.79
29-Aug	0.614	11.02
30-Aug	0.594	11.32
31-Aug	0.606	11.61

	1-Sep	0.617	11.81	
	2-Sep	0.595	11.76	
	3-Sep	0.613	11.5	
	4-Sep	0.751	11.21	
	5-Sep	0.675	11.03	
	6-Sep	0.93	10.91	
	7-Sep	0.846	10.7	
	8-Sep	1.288	10.35	
	9-Sep	1.867	9.94	
	10-Sep	1.603	9.53	
	11-Sep	1.336	9.14	
	12-Sep	1.523	8.78	
	13-Sep	1.873	8.45	
	14-Sep	2.071	8.19	
	15-Sep	1.803	8.03	
	16-Sep	1.594	7.97	
	17-Sep	1.488	7.96	
	18-Sep	1.363	7.92	
	19-Sep	2.206	7.81	
	20-Sep	2.291	7.62	
	21-Sep	2.707	7.39	
	22-Sep	2.388	7.17	
	23-Sep	2.656	6.97	
	24-Sep	2.489	6.81	
	25-Sep	2.57	6.66	
	26-Sep	2.469	6.51	
	27-Sep	2.324	6.36	
	28-Sep	2.606	6.18	
	29-Sep	2.961	6	
	30-Sep	2.586	5.81	
	1-Oct	2.852	5.56	
	2-Oct	2.679	5.24	
	3-Oct	2.548	4.84	
	4-Oct	2.377	4.38	
	5-Oct	3.046	3.88	
N.F. KOKTULI	B		36.519	CONFLUENCE WITH TRIBUTARY NFK 1.119
2007	18-May	2.272	2.18	
	19-May	2.009	2.49	
	20-May	1.903	2.8	
	21-May	1.691	3.11	
	22-May	1.763	3.42	
	23-May	1.795	3.69	
	24-May	1.961	3.88	
	25-May	2.026	4.02	
	26-May	1.979	4.17	
	27-May	1.826	4.36	
	28-May	1.662	4.59	
	29-May	1.444	4.82	
	30-May	1.296	5.04	
	31-May	1.301	5.2	
	1-Jun	1.268	5.28	
	2-Jun	1.225	5.31	
	3-Jun	1.2	5.39	
	4-Jun	1.265	5.55	
	5-Jun	1.608	5.71	
	6-Jun	1.493	5.86	
	7-Jun	1.302	6.01	
	8-Jun	1.151	6.13	
	9-Jun	1.036	6.26	
	10-Jun	1.007	6.45	
	11-Jun	1.066	6.63	
	12-Jun	1.04	6.63	

13-Jun	0.937	6.49
14-Jun	0.927	6.36
15-Jun	0.939	6.33
16-Jun	0.937	6.41
17-Jun	1.04	6.48
18-Jun	1.005	6.57
19-Jun	0.93	6.76
20-Jun	0.946	7.05
21-Jun	0.914	7.27
22-Jun	0.878	7.26
23-Jun	1.331	6.99
24-Jun	2.433	6.61
25-Jun	1.481	6.35
26-Jun	1.144	6.27
27-Jun	0.97	6.39
28-Jun	0.938	6.62
29-Jun	0.906	6.82
30-Jun	0.861	7.02
1-Jul	0.834	7.23
2-Jul	0.806	7.48
3-Jul	0.785	7.76
4-Jul	1.162	7.97
5-Jul	1.12	8.07
6-Jul	0.981	8.17
7-Jul	0.903	8.32
8-Jul	0.95	8.5
9-Jul	0.894	8.65
10-Jul	0.833	8.83
11-Jul	0.791	9.06
12-Jul	0.763	9.25
13-Jul	0.869	9.31
14-Jul	0.882	9.27
15-Jul	0.807	9.25
16-Jul	0.76	9.36
17-Jul	0.718	9.66
18-Jul	0.696	10.09
19-Jul	0.689	10.49
20-Jul	0.674	10.8
21-Jul	0.787	10.96
22-Jul	0.765	10.87
23-Jul	0.921	10.65
24-Jul	1.098	10.5
25-Jul	0.906	10.58
26-Jul	0.778	10.93
27-Jul	0.721	11.54
28-Jul	0.868	12.25
29-Jul	0.773	12.86
30-Jul	0.715	13.28
31-Jul	0.697	13.42
1-Aug	0.677	13.2
2-Aug	0.667	12.68
3-Aug	0.668	12.01
4-Aug	1.017	11.32
5-Aug	1.207	10.73
6-Aug	1.165	10.32
7-Aug	0.937	10.12
8-Aug	0.825	10.13
9-Aug	0.761	10.31
10-Aug	0.713	10.68
11-Aug	0.684	11.18
12-Aug	0.677	11.71
13-Aug	0.667	12.18
14-Aug	0.672	12.56

	15-Aug	0.823		12.71
	16-Aug	0.775		12.76
	17-Aug	0.692		12.8
	18-Aug	0.715		12.68
	19-Aug	0.732		12.41
	20-Aug	0.733		12.1
	21-Aug	0.756		11.72
	22-Aug	0.77		11.3
	23-Aug	0.884		10.92
	24-Aug	0.829		10.7
	25-Aug	0.775		10.63
	26-Aug	0.736		10.64
	27-Aug	0.708		10.68
	28-Aug	0.676		10.79
	29-Aug	0.661		11.02
	30-Aug	0.639		11.32
	31-Aug	0.651		11.61
	1-Sep	0.664		11.81
	2-Sep	0.64		11.76
	3-Sep	0.66		11.5
	4-Sep	0.808		11.21
	5-Sep	0.727		11.03
	6-Sep	1.003		10.91
	7-Sep	0.911		10.7
	8-Sep	1.391		10.35
	9-Sep	2.021		9.94
	10-Sep	1.733		9.53
	11-Sep	1.443		9.14
	12-Sep	1.646		8.78
	13-Sep	2.027		8.45
	14-Sep	2.243		8.19
	15-Sep	1.951		8.03
	16-Sep	1.723		7.97
	17-Sep	1.608		7.96
	18-Sep	1.472		7.92
	19-Sep	2.39		7.81
	20-Sep	2.483		7.62
	21-Sep	2.936		7.39
	22-Sep	2.589		7.17
	23-Sep	2.88		6.97
	24-Sep	2.699		6.81
	25-Sep	2.786		6.66
	26-Sep	2.677		6.51
	27-Sep	2.518		6.36
	28-Sep	2.826		6.18
	29-Sep	3.213		6
	30-Sep	2.804		5.81
	1-Oct	3.094		5.56
	2-Oct	2.905		5.24
	3-Oct	2.762		4.84
	4-Oct	2.576		4.38
	5-Oct	3.306		3.88

TRIBUTARY 119 H 38.358 HYDROLOGY GAGE NK119A

2007	18-May	1.878	1.03	2.18
	19-May	1.566	1.34	2.49
	20-May	1.368	1.22	2.8
	21-May	1.13	1.71	3.11
	22-May	1.271	1.50	3.42
	23-May	1.375	1.67	3.69
	24-May	1.713	1.74	3.88
	25-May	1.587	1.72	4.02
	26-May	1.471	2.12	4.17

27-May	1.205	2.44	4.36
28-May	1.	2.80	4.59
29-May	0.808	2.74	4.82
30-May	0.698	3.18	5.04
31-May	0.721	3.06	5.2
1-Jun	0.718	3.13	5.28
2-Jun	0.674	3.21	5.31
3-Jun	0.65	3.94	5.39
4-Jun	0.757	3.63	5.55
5-Jun	1.127	3.74	5.71
6-Jun	0.921	4.71	5.86
7-Jun	0.76	4.72	6.01
8-Jun	0.636	4.40	6.13
9-Jun	0.549	4.14	6.26
10-Jun	0.554	5.95	6.45
11-Jun	0.647	6.57	6.63
12-Jun	0.614	4.84	6.63
13-Jun	0.517	5.04	6.49
14-Jun	0.532	5.67	6.36
15-Jun	0.559	7.17	6.33
16-Jun	0.605	6.66	6.41
17-Jun	0.676	5.84	6.48
18-Jun	0.571	6.29	6.57
19-Jun	0.58	7.84	6.76
20-Jun	0.656	8.45	7.05
21-Jun	0.608	8.05	7.27
22-Jun	0.577	6.54	7.26
23-Jun	1.372	5.64	6.99
24-Jun	1.595	4.94	6.61
25-Jun	0.833	5.88	6.35
26-Jun	0.617	6.97	6.27
27-Jun	0.521	7.78	6.39
28-Jun	0.499	7.15	6.62
29-Jun	0.453	7.94	6.82
30-Jun	0.425	7.93	7.02
1-Jul	0.397	7.38	7.23
2-Jul	0.375	8.19	7.48
3-Jul	0.374	9.25	7.76
4-Jul	0.659	8.31	7.97
5-Jul	0.517	8.13	8.07
6-Jul	0.464	7.87	8.17
7-Jul	0.402	7.95	8.32
8-Jul	0.461	8.49	8.5
9-Jul	0.41	8.12	8.65
10-Jul	0.375	7.91	8.83
11-Jul	0.345	9.75	9.06
12-Jul	0.348	9.13	9.25
13-Jul	0.48	7.88	9.31
14-Jul	0.426	8.23	9.27
15-Jul	0.371	8.09	9.25
16-Jul	0.334	8.78	9.36
17-Jul	0.308	9.62	9.66
18-Jul	0.296	9.50	10.09
19-Jul	0.286	8.72	10.49
20-Jul	0.27	9.64	10.8
21-Jul	0.263	9.56	10.96
22-Jul	0.313	7.48	10.87
23-Jul	0.417	7.50	10.65
24-Jul	0.424	7.93	10.5
25-Jul	0.366	8.75	10.58
26-Jul	0.307	9.59	10.93
27-Jul	0.28	10.91	11.54
28-Jul	0.267	11.35	12.25

29-Jul	0.257	11.09	12.86
30-Jul	0.255	10.34	13.28
31-Jul	0.248	10.37	13.42
1-Aug	0.241	9.08	13.2
2-Aug	0.25	8.56	12.68
3-Aug	0.251	8.87	12.01
4-Aug	0.627	8.94	11.32
5-Aug	0.771	8.75	10.73
6-Aug	0.943	8.83	10.32
7-Aug	0.546	8.76	10.12
8-Aug	0.423	8.94	10.13
9-Aug	0.366	9.43	10.31
10-Aug	0.325	9.92	10.68
11-Aug	0.299	9.59	11.18
12-Aug	0.293	10.77	11.71
13-Aug	0.279	11.39	12.18
14-Aug	0.302	9.70	12.56
15-Aug	0.349	8.70	12.71
16-Aug	0.328	9.45	12.76
17-Aug	0.287	9.34	12.8
18-Aug	0.367	8.35	12.68
19-Aug	0.353	9.00	12.41
20-Aug	0.353	8.89	12.1
21-Aug	0.371	8.08	11.72
22-Aug	0.401	8.11	11.3
23-Aug	0.482	8.17	10.92
24-Aug	0.429	8.72	10.7
25-Aug	0.419	9.32	10.63
26-Aug	0.352	8.71	10.64
27-Aug	0.321	8.52	10.68
28-Aug	0.293	8.41	10.79
29-Aug	0.28	8.72	11.02
30-Aug	0.273	8.40	11.32
31-Aug	0.314	8.29	11.61
1-Sep	0.332	8.68	11.81
2-Sep	0.292	8.83	11.76
3-Sep	0.374	7.87	11.5
4-Sep	0.503	7.79	11.21
5-Sep	0.371	8.05	11.03
6-Sep	0.357	7.79	10.91
7-Sep	0.477	7.39	10.7
8-Sep	4.328	8.35	10.35
9-Sep	1.997	8.12	9.94
10-Sep	1.134	7.58	9.53
11-Sep	1.054	6.83	9.14
12-Sep	3.847	7.67	8.78
13-Sep	1.913	7.01	8.45
14-Sep	1.686	6.72	8.19
15-Sep	1.117	5.90	8.03
16-Sep	0.882	6.06	7.97
17-Sep	0.798	5.97	7.96
18-Sep	1.731	6.50	7.92
19-Sep	4.766	7.22	7.81
20-Sep	3.49	6.72	7.62
21-Sep	2.096	6.30	7.39
22-Sep	1.434	5.04	7.17
23-Sep	2.31	5.91	6.97
24-Sep	2.21	5.73	6.81
25-Sep	2.3	5.65	6.66
26-Sep	1.542	5.37	6.51
27-Sep	1.174	4.86	6.36
28-Sep	3.466	4.88	6.18
29-Sep	1.723	4.73	6

	30-Sep	2.394	4.79	5.81	
	1-Oct	1.952	4.78	5.56	
	2-Oct	1.431	4.17	5.24	
	3-Oct	1.096	3.76	4.84	
	4-Oct	1.206	2.98	4.38	
	5-Oct	5.125	2.53	3.88	
TRIBUTARY	119	T	36.519	CONFLUENCE WITH NORTH FORK KOKTULI RIVER	
2007	18-May	2.404		2.18	
	19-May	1.952		2.49	
	20-May	1.693		2.8	
	21-May	1.372		3.11	
	22-May	1.547		3.42	
	23-May	1.675		3.69	
	24-May	2.111		3.88	
	25-May	1.981		4.02	
	26-May	1.833		4.17	
	27-May	1.488		4.36	
	28-May	1.22		4.59	
	29-May	0.967		4.82	
	30-May	0.824		5.04	
	31-May	0.849		5.2	
	1-Jun	0.841		5.28	
	2-Jun	0.788		5.31	
	3-Jun	0.758		5.39	
	4-Jun	0.882		5.55	
	5-Jun	1.351		5.71	
	6-Jun	1.099		5.86	
	7-Jun	0.892		6.01	
	8-Jun	0.737		6.13	
	9-Jun	0.632		6.26	
	10-Jun	0.633		6.45	
	11-Jun	0.737		6.63	
	12-Jun	0.699		6.63	
	13-Jun	0.587		6.49	
	14-Jun	0.601		6.36	
	15-Jun	0.63		6.33	
	16-Jun	0.685		6.41	
	17-Jun	0.784		6.48	
	18-Jun	0.654		6.57	
	19-Jun	0.654		6.76	
	20-Jun	0.734		7.05	
	21-Jun	0.676		7.27	
	22-Jun	0.64		7.26	
	23-Jun	1.566		6.99	
	24-Jun	1.886		6.61	
	25-Jun	0.969		6.35	
	26-Jun	0.704		6.27	
	27-Jun	0.591		6.39	
	28-Jun	0.567		6.62	
	29-Jun	0.519		6.82	
	30-Jun	0.487		7.02	
	1-Jul	0.457		7.23	
	2-Jul	0.433		7.48	
	3-Jul	0.43		7.76	
	4-Jul	0.757		7.97	
	5-Jul	0.603		8.07	
	6-Jul	0.535		8.17	
	7-Jul	0.467		8.32	
	8-Jul	0.53		8.5	
	9-Jul	0.474		8.65	
	10-Jul	0.435		8.83	
	11-Jul	0.401		9.06	

12-Jul	0.403	9.25
13-Jul	0.542	9.31
14-Jul	0.489	9.27
15-Jul	0.429	9.25
16-Jul	0.388	9.36
17-Jul	0.359	9.66
18-Jul	0.346	10.09
19-Jul	0.334	10.49
20-Jul	0.317	10.8
21-Jul	0.32	10.96
22-Jul	0.368	10.87
23-Jul	0.484	10.65
24-Jul	0.504	10.5
25-Jul	0.431	10.58
26-Jul	0.363	10.93
27-Jul	0.331	11.54
28-Jul	0.329	12.25
29-Jul	0.312	12.86
30-Jul	0.306	13.28
31-Jul	0.297	13.42
1-Aug	0.289	13.2
2-Aug	0.297	12.68
3-Aug	0.298	12.01
4-Aug	0.721	11.32
5-Aug	0.922	10.73
6-Aug	1.104	10.32
7-Aug	0.618	10.12
8-Aug	0.482	10.13
9-Aug	0.42	10.31
10-Aug	0.376	10.68
11-Aug	0.347	11.18
12-Aug	0.34	11.71
13-Aug	0.326	12.18
14-Aug	0.35	12.56
15-Aug	0.408	12.71
16-Aug	0.383	12.76
17-Aug	0.336	12.8
18-Aug	0.418	12.68
19-Aug	0.405	12.41
20-Aug	0.405	12.1
21-Aug	0.425	11.72
22-Aug	0.456	11.3
23-Aug	0.546	10.92
24-Aug	0.488	10.7
25-Aug	0.474	10.63
26-Aug	0.404	10.64
27-Aug	0.371	10.68
28-Aug	0.34	10.79
29-Aug	0.327	11.02
30-Aug	0.318	11.32
31-Aug	0.36	11.61
1-Sep	0.379	11.81
2-Sep	0.337	11.76
3-Sep	0.42	11.5
4-Sep	0.561	11.21
5-Sep	0.422	11.03
6-Sep	0.43	10.91
7-Sep	0.543	10.7
8-Sep	4.983	10.35
9-Sep	2.477	9.94
10-Sep	1.417	9.53
11-Sep	1.291	9.14
12-Sep	4.894	8.78

	13-Sep	2.481	8.45	
	14-Sep	2.342	8.19	
	15-Sep	1.478	8.03	
	16-Sep	1.152	7.97	
	17-Sep	1.029	7.96	
	18-Sep	2.078	7.92	
	19-Sep	6.265	7.81	
	20-Sep	4.782	7.62	
	21-Sep	2.898	7.39	
	22-Sep	1.936	7.17	
	23-Sep	3.054	6.97	
	24-Sep	2.992	6.81	
	25-Sep	3.221	6.66	
	26-Sep	2.163	6.51	
	27-Sep	1.647	6.36	
	28-Sep	4.255	6.18	
	29-Sep	2.37	6	
	30-Sep	3.307	5.81	
	1-Oct	2.779	5.56	
	2-Oct	2.007	5.24	
	3-Oct	1.572	4.84	
	4-Oct	1.672	4.38	
	5-Oct	7.166	3.88	
N.F. KOKTULI	J		36.519	CONFLUENCE WITH TRIBUTARY NFK 1.119
2007	18-May	4.675	2.18	
	19-May	3.961	2.49	
	20-May	3.596	2.8	
	21-May	3.064	3.11	
	22-May	3.31	3.42	
	23-May	3.469	3.69	
	24-May	4.072	3.88	
	25-May	4.008	4.02	
	26-May	3.813	4.17	
	27-May	3.314	4.36	
	28-May	2.881	4.59	
	29-May	2.41	4.82	
	30-May	2.119	5.04	
	31-May	2.149	5.2	
	1-Jun	2.109	5.28	
	2-Jun	2.013	5.31	
	3-Jun	1.958	5.39	
	4-Jun	2.147	5.55	
	5-Jun	2.959	5.71	
	6-Jun	2.592	5.86	
	7-Jun	2.194	6.01	
	8-Jun	1.888	6.13	
	9-Jun	1.667	6.26	
	10-Jun	1.64	6.45	
	11-Jun	1.803	6.63	
	12-Jun	1.739	6.63	
	13-Jun	1.524	6.49	
	14-Jun	1.528	6.36	
	15-Jun	1.57	6.33	
	16-Jun	1.622	6.41	
	17-Jun	1.824	6.48	
	18-Jun	1.659	6.57	
	19-Jun	1.584	6.76	
	20-Jun	1.681	7.05	
	21-Jun	1.59	7.27	
	22-Jun	1.518	7.26	
	23-Jun	2.897	6.99	
	24-Jun	4.319	6.61	

25-Jun	2.449	6.35
26-Jun	1.848	6.27
27-Jun	1.561	6.39
28-Jun	1.506	6.62
29-Jun	1.425	6.82
30-Jun	1.348	7.02
1-Jul	1.29	7.23
2-Jul	1.239	7.48
3-Jul	1.215	7.76
4-Jul	1.918	7.97
5-Jul	1.724	8.07
6-Jul	1.516	8.17
7-Jul	1.369	8.32
8-Jul	1.48	8.5
9-Jul	1.369	8.65
10-Jul	1.269	8.83
11-Jul	1.192	9.06
12-Jul	1.166	9.25
13-Jul	1.412	9.31
14-Jul	1.371	9.27
15-Jul	1.235	9.25
16-Jul	1.148	9.36
17-Jul	1.077	9.66
18-Jul	1.041	10.09
19-Jul	1.023	10.49
20-Jul	0.992	10.8
21-Jul	1.107	10.96
22-Jul	1.133	10.87
23-Jul	1.405	10.65
24-Jul	1.601	10.5
25-Jul	1.338	10.58
26-Jul	1.141	10.93
27-Jul	1.052	11.54
28-Jul	1.197	12.25
29-Jul	1.084	12.86
30-Jul	1.021	13.28
31-Jul	0.995	13.42
1-Aug	0.966	13.2
2-Aug	0.964	12.68
3-Aug	0.965	12.01
4-Aug	1.738	11.32
5-Aug	2.129	10.73
6-Aug	2.269	10.32
7-Aug	1.555	10.12
8-Aug	1.307	10.13
9-Aug	1.182	10.31
10-Aug	1.089	10.68
11-Aug	1.031	11.18
12-Aug	1.018	11.71
13-Aug	0.993	12.18
14-Aug	1.022	12.56
15-Aug	1.231	12.71
16-Aug	1.158	12.76
17-Aug	1.028	12.8
18-Aug	1.132	12.68
19-Aug	1.137	12.41
20-Aug	1.138	12.1
21-Aug	1.181	11.72
22-Aug	1.226	11.3
23-Aug	1.43	10.92
24-Aug	1.317	10.7
25-Aug	1.249	10.63
26-Aug	1.14	10.64

	27-Aug	1.079		10.68
	28-Aug	1.016		10.79
	29-Aug	0.988		11.02
	30-Aug	0.957		11.32
	31-Aug	1.012		11.61
	1-Sep	1.043		11.81
	2-Sep	0.977		11.76
	3-Sep	1.08		11.5
	4-Sep	1.369		11.21
	5-Sep	1.149		11.03
	6-Sep	1.433		10.91
	7-Sep	1.454		10.7
	8-Sep	6.374		10.35
	9-Sep	4.498		9.94
	10-Sep	3.15		9.53
	11-Sep	2.734		9.14
	12-Sep	6.541		8.78
	13-Sep	4.508		8.45
	14-Sep	4.585		8.19
	15-Sep	3.429		8.03
	16-Sep	2.875		7.97
	17-Sep	2.638		7.96
	18-Sep	3.55		7.92
	19-Sep	8.655		7.81
	20-Sep	7.264		7.62
	21-Sep	5.834		7.39
	22-Sep	4.524		7.17
	23-Sep	5.935		6.97
	24-Sep	5.691		6.81
	25-Sep	6.007		6.66
	26-Sep	4.84		6.51
	27-Sep	4.165		6.36
	28-Sep	7.08		6.18
	29-Sep	5.584		6
	30-Sep	6.112		5.81
	1-Oct	5.873		5.56
	2-Oct	4.913		5.24
	3-Oct	4.334		4.84
	4-Oct	4.248		4.38
	5-Oct	10.472		3.88
N.F. KOKTULI	Q		35.754	HYDROLOGY GAGE NK100B
2007	18-May	4.85		2.36
	19-May	4.113		2.6
	20-May	3.741		2.89
	21-May	3.191		3.19
	22-May	3.443		3.54
	23-May	3.605		3.81
	24-May	4.221		3.85
	25-May	4.162		3.81
	26-May	3.963		3.88
	27-May	3.452		4.02
	28-May	3.006		4.19
	29-May	2.518		4.34
	30-May	2.215		4.53
	31-May	2.246		4.79
	1-Jun	2.203		4.96
	2-Jun	2.103		4.99
	3-Jun	2.046		4.99
	4-Jun	2.241		5.06
	5-Jun	3.08		5.2
	6-Jun	2.704		5.34
	7-Jun	2.29		5.56

8-Jun	1.972	5.81
9-Jun	1.743	6.16
10-Jun	1.713	6.57
11-Jun	1.88	6.98
12-Jun	1.814	7.41
13-Jun	1.591	7.8
14-Jun	1.595	8.14
15-Jun	1.638	8.31
16-Jun	1.69	8.22
17-Jun	1.9	8.2
18-Jun	1.732	8.45
19-Jun	1.651	8.82
20-Jun	1.749	9.09
21-Jun	1.656	9.05
22-Jun	1.581	8.61
23-Jun	2.995	8.03
24-Jun	4.506	7.48
25-Jun	2.56	7.08
26-Jun	1.932	6.68
27-Jun	1.631	6.26
28-Jun	1.573	5.72
29-Jun	1.49	5.07
30-Jun	1.41	4.79
1-Jul	1.35	4.81
2-Jul	1.297	5.11
3-Jul	1.271	5.75
4-Jul	2.004	6.36
5-Jul	1.806	6.62
6-Jul	1.587	6.58
7-Jul	1.434	6.47
8-Jul	1.548	6.37
9-Jul	1.433	6.21
10-Jul	1.328	6.13
11-Jul	1.248	6.33
12-Jul	1.22	6.73
13-Jul	1.474	7
14-Jul	1.434	6.89
15-Jul	1.293	6.46
16-Jul	1.202	5.98
17-Jul	1.128	5.83
18-Jul	1.091	6.15
19-Jul	1.072	6.61
20-Jul	1.039	7.26
21-Jul	1.163	8
22-Jul	1.187	8.33
23-Jul	1.472	8.02
24-Jul	1.681	7.18
25-Jul	1.403	6.13
26-Jul	1.196	5.14
27-Jul	1.103	4.58
28-Jul	1.26	4.76
29-Jul	1.14	5.91
30-Jul	1.072	7.82
31-Jul	1.044	9.89
1-Aug	1.014	11.38
2-Aug	1.011	11.95
3-Aug	1.012	11.64
4-Aug	1.812	10.63
5-Aug	2.218	9.15
6-Aug	2.354	7.53
7-Aug	1.623	5.96
8-Aug	1.366	4.57
9-Aug	1.236	3.45

	10-Aug	1.139		2.91
	11-Aug	1.079		3.07
	12-Aug	1.065		3.78
	13-Aug	1.04		5.03
	14-Aug	1.07		6.64
	15-Aug	1.29		7.69
	16-Aug	1.214		8.41
	17-Aug	1.077		9.24
	18-Aug	1.183		9.92
	19-Aug	1.189		10.29
	20-Aug	1.19		10.51
	21-Aug	1.235		10.33
	22-Aug	1.281		9.67
	23-Aug	1.494		8.75
	24-Aug	1.377		7.94
	25-Aug	1.304		7.35
	26-Aug	1.192		6.78
	27-Aug	1.129		6.18
	28-Aug	1.064		5.77
	29-Aug	1.034		5.87
	30-Aug	1.002		6.41
	31-Aug	1.057		7.14
	1-Sep	1.09		7.82
	2-Sep	1.022		8.1
	3-Sep	1.127		8.03
	4-Sep	1.427		8
	5-Sep	1.2		8.22
	6-Sep	1.506		8.64
	7-Sep	1.52		9
	8-Sep	6.477		9.02
	9-Sep	4.652		8.82
	10-Sep	3.281		8.57
	11-Sep	2.842		8.31
	12-Sep	6.664		8
	13-Sep	4.662		7.7
	14-Sep	4.757		7.42
	15-Sep	3.577		7.25
	16-Sep	3.005		7.28
	17-Sep	2.758		7.45
	18-Sep	3.66		7.59
	19-Sep	8.839		7.59
	20-Sep	7.456		7.4
	21-Sep	6.063		7.14
	22-Sep	4.724		6.91
	23-Sep	6.159		6.8
	24-Sep	5.9		6.73
	25-Sep	6.224		6.65
	26-Sep	5.047		6.54
	27-Sep	4.359		6.41
	28-Sep	7.3		6.26
	29-Sep	5.836		6.18
	30-Sep	6.33		6.2
	1-Oct	6.115		6.24
	2-Oct	5.139		6.21
	3-Oct	4.549		6.07
	4-Oct	4.447		5.85
	5-Oct	10.732		5.52
N.F. KOKTULI	Q		27.934	HYDROLOGY NODE NK100LF3
2007	18-May	6.526		2.36
	19-May	5.379		2.6
	20-May	4.811		2.89
	21-May	3.992		3.19

22-May	4.366	3.54
23-May	4.607	3.81
24-May	5.544	3.85
25-May	5.453	3.81
26-May	5.149	3.88
27-May	4.379	4.02
28-May	3.722	4.19
29-May	3.078	4.34
30-May	2.718	4.53
31-May	2.754	4.79
1-Jun	2.703	4.96
2-Jun	2.584	4.99
3-Jun	2.516	4.99
4-Jun	2.748	5.06
5-Jun	3.829	5.2
6-Jun	3.298	5.34
7-Jun	2.807	5.56
8-Jun	2.427	5.81
9-Jun	2.152	6.16
10-Jun	2.117	6.57
11-Jun	2.317	6.98
12-Jun	2.238	7.41
13-Jun	1.97	7.8
14-Jun	1.974	8.14
15-Jun	2.026	8.31
16-Jun	2.089	8.22
17-Jun	2.34	8.2
18-Jun	2.139	8.45
19-Jun	2.042	8.82
20-Jun	2.16	9.09
21-Jun	2.048	9.05
22-Jun	1.958	8.61
23-Jun	3.707	8.03
24-Jun	5.987	7.48
25-Jun	3.128	7.08
26-Jun	2.379	6.68
27-Jun	2.018	6.26
28-Jun	1.949	5.72
29-Jun	1.848	5.07
30-Jun	1.751	4.79
1-Jul	1.679	4.81
2-Jul	1.615	5.11
3-Jul	1.584	5.75
4-Jul	2.465	6.36
5-Jul	2.228	6.62
6-Jul	1.965	6.58
7-Jul	1.781	6.47
8-Jul	1.918	6.37
9-Jul	1.779	6.21
10-Jul	1.653	6.13
11-Jul	1.556	6.33
12-Jul	1.522	6.73
13-Jul	1.829	7
14-Jul	1.781	6.89
15-Jul	1.61	6.46
16-Jul	1.5	5.98
17-Jul	1.41	5.83
18-Jul	1.365	6.15
19-Jul	1.341	6.61
20-Jul	1.302	7.26
21-Jul	1.453	8
22-Jul	1.482	8.33
23-Jul	1.826	8.02

24-Jul	2.079	7.18
25-Jul	1.743	6.13
26-Jul	1.493	5.14
27-Jul	1.38	4.58
28-Jul	1.57	4.76
29-Jul	1.424	5.91
30-Jul	1.342	7.82
31-Jul	1.308	9.89
1-Aug	1.271	11.38
2-Aug	1.268	11.95
3-Aug	1.269	11.64
4-Aug	2.235	10.63
5-Aug	2.721	9.15
6-Aug	2.883	7.53
7-Aug	2.008	5.96
8-Aug	1.699	4.57
9-Aug	1.541	3.45
10-Aug	1.424	2.91
11-Aug	1.35	3.07
12-Aug	1.334	3.78
13-Aug	1.303	5.03
14-Aug	1.339	6.64
15-Aug	1.607	7.69
16-Aug	1.514	8.41
17-Aug	1.348	9.24
18-Aug	1.477	9.92
19-Aug	1.485	10.29
20-Aug	1.485	10.51
21-Aug	1.539	10.33
22-Aug	1.596	9.67
23-Aug	1.853	8.75
24-Aug	1.711	7.94
25-Aug	1.623	7.35
26-Aug	1.488	6.78
27-Aug	1.412	6.18
28-Aug	1.332	5.77
29-Aug	1.296	5.87
30-Aug	1.256	6.41
31-Aug	1.324	7.14
1-Sep	1.364	7.82
2-Sep	1.28	8.1
3-Sep	1.408	8.03
4-Sep	1.772	8
5-Sep	1.498	8.22
6-Sep	1.867	8.64
7-Sep	1.884	9
8-Sep	9.018	9.02
9-Sep	6.215	8.82
10-Sep	4.125	8.57
11-Sep	3.484	8.31
12-Sep	9.298	8
13-Sep	6.231	7.7
14-Sep	6.379	7.42
15-Sep	4.565	7.25
16-Sep	3.721	7.28
17-Sep	3.366	7.45
18-Sep	4.689	7.59
19-Sep	12.593	7.59
20-Sep	10.489	7.4
21-Sep	8.4	7.14
22-Sep	6.329	6.91
23-Sep	8.543	6.8
24-Sep	8.158	6.73

	25-Sep	8.639		6.65
	26-Sep	6.839		6.54
	27-Sep	5.758		6.41
	28-Sep	10.254		6.26
	29-Sep	8.062		6.18
	30-Sep	8.798		6.2
	1-Oct	8.477		6.24
	2-Oct	6.985		6.21
	3-Oct	6.053		6.07
	4-Oct	5.895		5.85
	5-Oct	15.511		5.52

N.F. KOKTULI Q 13.700 HYDROLOGY GAGE NK100A1

2007	18-May	13.24		5.12
	19-May	10.38		5.86
	20-May	10.51		6.59
	21-May	9.15		7.19
	22-May	9.32		7.65
	23-May	9.64		7.85
	24-May	11.91		7.74
	25-May	12.14		7.52
	26-May	11.21		7.44
	27-May	10.04		7.6
	28-May	8.96		7.97
	29-May	7.72		8.42
	30-May	6.45		8.95
	31-May	6.39		9.47
	1-Jun	6.28		9.79
	2-Jun	6.14		9.79
	3-Jun	5.75		9.61
	4-Jun	5.89		9.41
	5-Jun	7.95		9.22
	6-Jun	7.58		9.04
	7-Jun	6.36		8.87
	8-Jun	5.56		8.54
	9-Jun	4.95		8.1
	10-Jun	4.65		7.71
	11-Jun	4.92		7.4
	12-Jun	4.92		6.95
	13-Jun	4.43		6.25
	14-Jun	4.27		5.54
	15-Jun	4.27		5.04
	16-Jun	4.57		4.88
	17-Jun	5.17		5.02
	18-Jun	4.87		5.39
	19-Jun	4.57		6.14
	20-Jun	4.65		7.38
	21-Jun	4.49		8.95
	22-Jun	4.22		10.46
	23-Jun	6.59		11.44
	24-Jun	11.46		11.76
	25-Jun	7.43		11.65
	26-Jun	5.45		11.38
	27-Jun	4.6		11.33
	28-Jun	4.24		11.59
	29-Jun	4.08		11.94
	30-Jun	3.79		12.51
	1-Jul	3.63		13.2
	2-Jul	3.42		13.88
	3-Jul	3.26		14.52
	4-Jul	4.68		14.9
	5-Jul	5.03		14.86
	6-Jul	4.24		14.58

7-Jul	3.84	14.3
8-Jul	3.95	14.14
9-Jul	3.84	14.08
10-Jul	3.63	14.18
11-Jul	3.34	14.48
12-Jul	3.18	14.91
13-Jul	4.41	15.18
14-Jul	4.54	15.13
15-Jul	3.87	14.84
16-Jul	3.52	14.49
17-Jul	3.2	14.35
18-Jul	2.92	14.49
19-Jul	2.84	14.74
20-Jul	2.73	15.06
21-Jul	2.76	15.36
22-Jul	3.31	15.41
23-Jul	4.08	15.1
24-Jul	4.24	14.56
25-Jul	3.84	14.09
26-Jul	3.28	13.93
27-Jul	2.92	14.23
28-Jul	2.73	14.99
29-Jul	2.71	16.1
30-Jul	2.61	17.32
31-Jul	2.58	18.37
1-Aug	2.45	18.97
2-Aug	2.4	18.94
3-Aug	2.45	18.3
4-Aug	3.5	17.14
5-Aug	4.71	15.65
6-Aug	5.45	14.12
7-Aug	4.22	12.78
8-Aug	3.47	11.76
9-Aug	3.05	11.14
10-Aug	2.73	11.07
11-Aug	2.53	11.57
12-Aug	2.45	12.53
13-Aug	2.4	13.82
14-Aug	2.45	15.2
15-Aug	3.13	16.27
16-Aug	3.18	17.09
17-Aug	2.73	17.84
18-Aug	2.89	18.4
19-Aug	3.47	18.73
20-Aug	3.2	18.88
21-Aug	3.31	18.65
22-Aug	3.5	17.93
23-Aug	3.76	16.88
24-Aug	3.6	15.81
25-Aug	4.06	14.87
26-Aug	3.39	14.05
27-Aug	3.	13.39
28-Aug	2.73	13.04
29-Aug	2.55	13.1
30-Aug	2.48	13.43
31-Aug	2.61	13.82
1-Sep	2.76	14.1
2-Sep	2.58	14.11
3-Sep	2.66	13.9
4-Sep	3.92	13.7
5-Sep	3.5	13.62
6-Sep	3.36	13.63
7-Sep	3.6	13.56

	8-Sep	14.71	13.33
	9-Sep	14.96	13.04
	10-Sep	9.11	12.78
	11-Sep	7.04	12.52
	12-Sep	15.	12.14
	13-Sep	12.3	11.75
	14-Sep	11.79	11.4
	15-Sep	9.34	11.16
	16-Sep	7.69	11.08
	17-Sep	6.98	11.06
	18-Sep	7.66	10.88
	19-Sep	20.41	10.49
	20-Sep	18.13	9.97
	21-Sep	16.6	9.44
	22-Sep	11.95	8.99
	23-Sep	15.99	8.62
	24-Sep	14.71	8.36
	25-Sep	15.85	8.14
	26-Sep	13.2	7.93
	27-Sep	11.13	7.67
	28-Sep	17.53	7.4
	29-Sep	15.74	7.2
	30-Sep	15.08	7.15
	1-Oct	15.78	7.21
	2-Oct	13.1	7.36
	3-Oct	11.21	7.51
	4-Oct	10.19	7.63
	5-Oct	24.76	7.66

N.F. KOKTULI Q 9.306 HYDROLOGY NODE FRS-4

2007	18-May	13.64	5.12
	19-May	10.69	5.86
	20-May	10.82	6.59
	21-May	9.42	7.19
	22-May	9.6	7.65
	23-May	9.93	7.85
	24-May	12.27	7.74
	25-May	12.5	7.52
	26-May	11.55	7.44
	27-May	10.35	7.6
	28-May	9.23	7.97
	29-May	7.95	8.42
	30-May	6.64	8.95
	31-May	6.59	9.47
	1-Jun	6.47	9.79
	2-Jun	6.33	9.79
	3-Jun	5.93	9.61
	4-Jun	6.07	9.41
	5-Jun	8.19	9.22
	6-Jun	7.81	9.04
	7-Jun	6.56	8.87
	8-Jun	5.73	8.54
	9-Jun	5.1	8.1
	10-Jun	4.79	7.71
	11-Jun	5.07	7.4
	12-Jun	5.07	6.95
	13-Jun	4.57	6.25
	14-Jun	4.4	5.54
	15-Jun	4.4	5.04
	16-Jun	4.71	4.88
	17-Jun	5.33	5.02
	18-Jun	5.02	5.39
	19-Jun	4.71	6.14

20-Jun	4.79	7.38
21-Jun	4.63	8.95
22-Jun	4.35	10.46
23-Jun	6.79	11.44
24-Jun	11.8	11.76
25-Jun	7.66	11.65
26-Jun	5.61	11.38
27-Jun	4.74	11.33
28-Jun	4.38	11.59
29-Jun	4.21	11.94
30-Jun	3.9	12.51
1-Jul	3.74	13.2
2-Jul	3.52	13.88
3-Jul	3.36	14.52
4-Jul	4.82	14.9
5-Jul	5.19	14.86
6-Jul	4.38	14.58
7-Jul	3.96	14.3
8-Jul	4.07	14.14
9-Jul	3.96	14.08
10-Jul	3.74	14.18
11-Jul	3.44	14.48
12-Jul	3.28	14.91
13-Jul	4.54	15.18
14-Jul	4.68	15.13
15-Jul	3.99	14.84
16-Jul	3.63	14.49
17-Jul	3.3	14.35
18-Jul	3.01	14.49
19-Jul	2.93	14.74
20-Jul	2.82	15.06
21-Jul	2.85	15.36
22-Jul	3.41	15.41
23-Jul	4.21	15.1
24-Jul	4.38	14.56
25-Jul	3.96	14.09
26-Jul	3.39	13.93
27-Jul	3.01	14.23
28-Jul	2.82	14.99
29-Jul	2.79	16.1
30-Jul	2.69	17.32
31-Jul	2.66	18.37
1-Aug	2.53	18.97
2-Aug	2.47	18.94
3-Aug	2.53	18.3
4-Aug	3.6	17.14
5-Aug	4.85	15.65
6-Aug	5.61	14.12
7-Aug	4.35	12.78
8-Aug	3.58	11.76
9-Aug	3.14	11.14
10-Aug	2.82	11.07
11-Aug	2.61	11.57
12-Aug	2.53	12.53
13-Aug	2.47	13.82
14-Aug	2.53	15.2
15-Aug	3.22	16.27
16-Aug	3.28	17.09
17-Aug	2.82	17.84
18-Aug	2.98	18.4
19-Aug	3.58	18.73
20-Aug	3.3	18.88
21-Aug	3.41	18.65

	22-Aug	3.6	17.93
	23-Aug	3.88	16.88
	24-Aug	3.71	15.81
	25-Aug	4.18	14.87
	26-Aug	3.49	14.05
	27-Aug	3.09	13.39
	28-Aug	2.82	13.04
	29-Aug	2.63	13.1
	30-Aug	2.55	13.43
	31-Aug	2.69	13.82
	1-Sep	2.85	14.1
	2-Sep	2.66	14.11
	3-Sep	2.74	13.9
	4-Sep	4.04	13.7
	5-Sep	3.6	13.62
	6-Sep	3.47	13.63
	7-Sep	3.71	13.56
	8-Sep	15.14	13.33
	9-Sep	15.41	13.04
	10-Sep	9.38	12.78
	11-Sep	7.25	12.52
	12-Sep	15.45	12.14
	13-Sep	12.67	11.75
	14-Sep	12.14	11.4
	15-Sep	9.62	11.16
	16-Sep	7.92	11.08
	17-Sep	7.19	11.06
	18-Sep	7.89	10.88
	19-Sep	21.01	10.49
	20-Sep	18.67	9.97
	21-Sep	17.09	9.44
	22-Sep	12.31	8.99
	23-Sep	16.46	8.62
	24-Sep	15.14	8.36
	25-Sep	16.32	8.14
	26-Sep	13.6	7.93
	27-Sep	11.46	7.67
	28-Sep	18.05	7.4
	29-Sep	16.2	7.2
	30-Sep	15.53	7.15
	1-Oct	16.24	7.21
	2-Oct	13.5	7.36
	3-Oct	11.55	7.51
	4-Oct	10.5	7.63
	5-Oct	25.48	7.66

N.F. KOKTULI Q 5.265 HYDROLOGY GAGE NK100A

2007	18-May	15.63	5.12
	19-May	11.67	5.86
	20-May	11.84	6.59
	21-May	10.02	7.19
	22-May	10.25	7.65
	23-May	10.68	7.85
	24-May	13.76	7.74
	25-May	14.07	7.52
	26-May	12.80	7.44
	27-May	11.21	7.6
	28-May	9.77	7.97
	29-May	8.44	8.42
	30-May	7.16	8.95
	31-May	7.11	9.47
	1-Jun	6.99	9.79
	2-Jun	6.85	9.79

3-Jun	6.46	9.61
4-Jun	6.60	9.41
5-Jun	8.66	9.22
6-Jun	8.30	9.04
7-Jun	7.08	8.87
8-Jun	6.26	8.54
9-Jun	5.64	8.1
10-Jun	5.32	7.71
11-Jun	5.61	7.4
12-Jun	5.61	6.95
13-Jun	5.10	6.25
14-Jun	4.93	5.54
15-Jun	4.93	5.04
16-Jun	5.24	4.88
17-Jun	5.86	5.02
18-Jun	5.55	5.39
19-Jun	5.24	6.14
20-Jun	5.32	7.38
21-Jun	5.15	8.95
22-Jun	4.87	10.46
23-Jun	7.31	11.44
24-Jun	13.14	11.76
25-Jun	8.16	11.65
26-Jun	6.14	11.38
27-Jun	5.27	11.33
28-Jun	4.90	11.59
29-Jun	4.73	11.94
30-Jun	4.42	12.51
1-Jul	4.25	13.2
2-Jul	4.02	13.88
3-Jul	3.85	14.52
4-Jul	5.35	14.9
5-Jul	5.72	14.86
6-Jul	4.90	14.58
7-Jul	4.47	14.3
8-Jul	4.59	14.14
9-Jul	4.47	14.08
10-Jul	4.25	14.18
11-Jul	3.94	14.48
12-Jul	3.77	14.91
13-Jul	5.07	15.18
14-Jul	5.21	15.13
15-Jul	4.50	14.84
16-Jul	4.13	14.49
17-Jul	3.79	14.35
18-Jul	3.48	14.49
19-Jul	3.40	14.74
20-Jul	3.28	15.06
21-Jul	3.31	15.36
22-Jul	3.91	15.41
23-Jul	4.73	15.1
24-Jul	4.90	14.56
25-Jul	4.47	14.09
26-Jul	3.88	13.93
27-Jul	3.48	14.23
28-Jul	3.28	14.99
29-Jul	3.26	16.1
30-Jul	3.14	17.32
31-Jul	3.11	18.37
1-Aug	2.97	18.97
2-Aug	2.92	18.94
3-Aug	2.97	18.3
4-Aug	4.11	17.14

5-Aug	5.38	15.65
6-Aug	6.14	14.12
7-Aug	4.87	12.78
8-Aug	4.08	11.76
9-Aug	3.62	11.14
10-Aug	3.28	11.07
11-Aug	3.06	11.57
12-Aug	2.97	12.53
13-Aug	2.92	13.82
14-Aug	2.97	15.2
15-Aug	3.71	16.27
16-Aug	3.77	17.09
17-Aug	3.28	17.84
18-Aug	3.45	18.4
19-Aug	4.08	18.73
20-Aug	3.79	18.88
21-Aug	3.91	18.65
22-Aug	4.11	17.93
23-Aug	4.39	16.88
24-Aug	4.22	15.81
25-Aug	4.70	14.87
26-Aug	3.99	14.05
27-Aug	3.57	13.39
28-Aug	3.28	13.04
29-Aug	3.09	13.1
30-Aug	3.00	13.43
31-Aug	3.14	13.82
1-Sep	3.31	14.1
2-Sep	3.11	14.11
3-Sep	3.20	13.9
4-Sep	4.56	13.7
5-Sep	4.11	13.62
6-Sep	3.96	13.63
7-Sep	4.22	13.56
8-Sep	17.73	13.33
9-Sep	18.09	13.04
10-Sep	9.97	12.78
11-Sep	7.76	12.52
12-Sep	18.15	12.14
13-Sep	14.30	11.75
14-Sep	13.59	11.4
15-Sep	10.28	11.16
16-Sep	8.41	11.08
17-Sep	7.70	11.06
18-Sep	8.38	10.88
19-Sep	26.28	10.49
20-Sep	22.80	9.97
21-Sep	20.50	9.44
22-Sep	13.82	8.99
23-Sep	19.60	8.62
24-Sep	17.73	8.36
25-Sep	19.40	8.14
26-Sep	15.57	7.93
27-Sep	12.69	7.67
28-Sep	21.89	7.4
29-Sep	19.23	7.2
30-Sep	18.26	7.15
1-Oct	19.28	7.21
2-Oct	15.43	7.36
3-Oct	12.80	7.51
4-Oct	11.41	7.63
5-Oct	33.13	7.66

N.F. KOKTULI	E		0.000	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER	
2007	18-May	18.23		5.12	
	19-May	12.94		5.86	
	20-May	13.16		6.59	
	21-May	10.8		7.19	
	22-May	11.1		7.65	
	23-May	11.64		7.85	
	24-May	15.71		7.74	
	25-May	16.13		7.52	
	26-May	14.43		7.44	
	27-May	12.34		7.6	
	28-May	10.48		7.97	
	29-May	9.07		8.42	
	30-May	7.84		8.95	
	31-May	7.79		9.47	
	1-Jun	7.68		9.79	
	2-Jun	7.54		9.79	
	3-Jun	7.15		9.61	
	4-Jun	7.29		9.41	
	5-Jun	9.29		9.22	
	6-Jun	8.94		9.04	
	7-Jun	7.76		8.87	
	8-Jun	6.95		8.54	
	9-Jun	6.33		8.1	
	10-Jun	6.01		7.71	
	11-Jun	6.3		7.4	
	12-Jun	6.3		6.95	
	13-Jun	5.78		6.25	
	14-Jun	5.61		5.54	
	15-Jun	5.61		5.04	
	16-Jun	5.93		4.88	
	17-Jun	6.56		5.02	
	18-Jun	6.24		5.39	
	19-Jun	5.93		6.14	
	20-Jun	6.01		7.38	
	21-Jun	5.84		8.95	
	22-Jun	5.55		10.46	
	23-Jun	7.98		11.44	
	24-Jun	14.88		11.76	
	25-Jun	8.8		11.65	
	26-Jun	6.84		11.38	
	27-Jun	5.96		11.33	
	28-Jun	5.58		11.59	
	29-Jun	5.41		11.94	
	30-Jun	5.09		12.51	
	1-Jul	4.91		13.2	
	2-Jul	4.67		13.88	
	3-Jul	4.49		14.52	
	4-Jul	6.04		14.9	
	5-Jul	6.41		14.86	
	6-Jul	5.58		14.58	
	7-Jul	5.14		14.3	
	8-Jul	5.26		14.14	
	9-Jul	5.14		14.08	
	10-Jul	4.91		14.18	
	11-Jul	4.58		14.48	
	12-Jul	4.4		14.91	
	13-Jul	5.75		15.18	
	14-Jul	5.9		15.13	
	15-Jul	5.17		14.84	
	16-Jul	4.79		14.49	
	17-Jul	4.43		14.35	
	18-Jul	4.1		14.49	

19-Jul	4.01	14.74
20-Jul	3.89	15.06
21-Jul	3.92	15.36
22-Jul	4.55	15.41
23-Jul	5.41	15.1
24-Jul	5.58	14.56
25-Jul	5.14	14.09
26-Jul	4.52	13.93
27-Jul	4.1	14.23
28-Jul	3.89	14.99
29-Jul	3.86	16.1
30-Jul	3.74	17.32
31-Jul	3.71	18.37
1-Aug	3.55	18.97
2-Aug	3.49	18.94
3-Aug	3.55	18.3
4-Aug	4.76	17.14
5-Aug	6.07	15.65
6-Aug	6.84	14.12
7-Aug	5.55	12.78
8-Aug	4.73	11.76
9-Aug	4.25	11.14
10-Aug	3.89	11.07
11-Aug	3.65	11.57
12-Aug	3.55	12.53
13-Aug	3.49	13.82
14-Aug	3.55	15.2
15-Aug	4.34	16.27
16-Aug	4.4	17.09
17-Aug	3.89	17.84
18-Aug	4.07	18.4
19-Aug	4.73	18.73
20-Aug	4.43	18.88
21-Aug	4.55	18.65
22-Aug	4.76	17.93
23-Aug	5.06	16.88
24-Aug	4.88	15.81
25-Aug	5.38	14.87
26-Aug	4.64	14.05
27-Aug	4.19	13.39
28-Aug	3.89	13.04
29-Aug	3.68	13.1
30-Aug	3.58	13.43
31-Aug	3.74	13.82
1-Sep	3.92	14.1
2-Sep	3.71	14.11
3-Sep	3.8	13.9
4-Sep	5.23	13.7
5-Sep	4.76	13.62
6-Sep	4.61	13.63
7-Sep	4.88	13.56
8-Sep	21.09	13.33
9-Sep	21.6	13.04
10-Sep	10.73	12.78
11-Sep	8.42	12.52
12-Sep	21.68	12.14
13-Sep	16.43	11.75
14-Sep	15.48	11.4
15-Sep	11.13	11.16
16-Sep	9.04	11.08
17-Sep	8.36	11.06
18-Sep	9.02	10.88
19-Sep	33.14	10.49

20-Sep	28.17	9.97
21-Sep	24.94	9.44
22-Sep	15.78	8.99
23-Sep	23.68	8.62
24-Sep	21.09	8.36
25-Sep	23.4	8.14
26-Sep	18.15	7.93
27-Sep	14.28	7.67
28-Sep	26.89	7.4
29-Sep	23.17	7.2
30-Sep	21.83	7.15
1-Oct	23.25	7.21
2-Oct	17.96	7.36
3-Oct	14.43	7.51
4-Oct	12.6	7.63
5-Oct	43.1	7.66

```
SHADE FILE: NORTH FORK KOKTULI RIVER, ALASKA

N.F. KOKTULI    H         57.670 HEADWATERS OF NORTH FORK KOKTULI RIVER
 1.04649  0.9639    2.92
 0.30000      2.     1.5      0.     0.4     0.6
 0.30000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         55.746 STREAM GEOMETRY NODE NFKSG1
 1.04633 -1.1489    5.58
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         48.167 STREAM GEOMETRY NODE NFKSG2
 1.04663  0.4325    8.65
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         44.767 STREAM GEOMETRY NODE NFKSG3
 1.04633  0.9652   10.36
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         42.076 STREAM GEOMETRY NODE NFKSG4
 1.04616 -0.8322   11.35
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         41.231 STREAM GEOMETRY NODE NFKSG5
 1.04621  1.2203   11.99
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         39.774 STREAM GEOMETRY NODE NFKSG6
 1.04615  0.2370   12.74
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         38.552 STREAM GEOMETRY NODE NFKSG7
 1.04603  1.3797   13.65
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         36.525 STREAM GEOMETRY NODE NFKSG8
 1.04599 -0.7983   14.54
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

TRIBUTARY 119   H         38.358 HYDROLOGY GAGE NK119A
 1.04577 -0.4550    7.36
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    J         36.519 CONFLUENCE WITH TRIBUTARY NFK 1.119
 1.04599 -0.7983   14.54
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         35.379 STREAM GEOMETRY NODE NFKSG9
 1.04608 -1.5312   15.26
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         33.967 STREAM GEOMETRY NODE NFKSG10
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 1.04609  1.3450   16.49
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         30.985 STREAM GEOMETRY NODE NFKSG11
 1.04602  0.7717   18.02
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         28.480 STREAM GEOMETRY NODE NFKSG12
 1.04588 -1.3176   19.15
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         26.953 STREAM GEOMETRY NODE NFKSG13
 1.04592  1.0354   20.26
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         24.519 STREAM GEOMETRY NODE NFKSG14
 1.04579  0.3630   23.32
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         16.032 STREAM GEOMETRY NODE NFKSG15
 1.04473  1.0518   26.31
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         13.832 STREAM GEOMETRY NODE NFKSG16
 1.04457  1.4512   27.56
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C         11.568 STREAM GEOMETRY NODE NFKSG17
 1.04452  1.2123   28.66
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C          9.888 STREAM GEOMETRY NODE NFKSG18
 1.04446 -1.2632   29.79
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C          7.557 STREAM GEOMETRY NODE NFKSG19
 1.04453  1.0356   30.82
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C          6.188 STREAM GEOMETRY NODE NFKSG20
 1.04442 -1.4137   31.95
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6

N.F. KOKTULI    C          3.520 STREAM GEOMETRY NODE NFKSG21
 1.04446  1.0982   33.68
 0.10000      2.     1.5      0.     0.4     0.6
 0.10000      2.     1.5      0.     0.4     0.6
```

ATTACHMENT 10

SNTEMP Output Files
North Fork Koktuli River

JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT

VERIFICATION TABLE REQUESTS

TABLE NMB.	TABLES	T/F
1	STREAM GEOMETRY AFTER 'M' NODES MERGED	T
2	STREAM GEOMETRY AFTER '0' NODES MERGED	T
3	STREAM GEOMETRY AFTER HYDROLOGY NODES MERGED	T
4	HYDROLOGY WITH MISSING FLOWS ADDED	T
5	HYDROLOGY WITH LATERAL FLOWS ADDED	T
6	COMPOSITE-STR. GEOM., HYDR., & MET. MERGED	T
7	WATER TEMPERATURE REGRESSION STATISTICS	T
8	WATER TEMPERATURE DATA	T
9	VALIDATION STATISTICS	T
10	JOB CONTROL FILE	T

NODE INFORMATION
NETWORK NODES

	B	C	D	E	A	J	K	M	O	P	Q	R	S	T	V
SPATIAL OUTPUT REQUESTS	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NUMBER	1	21	0	1	2	1	0	0	0	0	6	0	0	0	0

NUMBER OF SKELETON SUBNETWORK NODES (H,B,T,J,S,E) = 33

NUMBER OF STREAM GEOMETRY SUBNETWORK NODES (H,J,S,C) = 27

NUMBER OF HYDROLOGY SUBNETWORK NODES (Q,D,P,R,V,K) = 12

NUMBER OF COMPOSITE NETWORK NODES = 0

NUMBER OF NODES REQUIRING REGRESSION ANALYSIS = 0

NUMBER OF STUDY SUBNETWORK NODES (H,B,T,J,S,E,O) = 6

```
MISC. CONTROL FLAGS        T/F
--------------------

HYDROLOGY WARNING MESSAGE   T
 SUPPRESSION FLAG

REGRESSION NEED FLAG        T

SHADE DATA AVAILABLE        T

GLOBAL SHADE MODE           T


                                  TEMPORAL INFORMATION
                                  --------------------

                                        YEARLY
                                         ------

NUMBER OF YEARS OF HISTORICAL DATA =    1          FIRST YEAR OF HISTORICAL DATA=   0

NUMBER OF YEARS OF SYNTHETIC DATA =    0

STARTING YEAR SEQUENCE NUMBER OF OUTPUT =    1     LAST YEAR SEQUENCE NUMBER OF OUTPUT =   1


                                    BY TIME PERIOD
                                      --------------

FIRST TIME PERIOD SEQUENCE NUMBER OF OUTPUT =    1    LAST TIME PERIOD SEQUENCE NUMBER OF OUTPUT = 141

STARTING TIME PERIOD SEQUENCE NUMBER =    0       LAST TIME PERIOD SEQUENCE NUMBER FOR =    0
 FOR AIR TEMPERATURE CORRECTION                       AIR TEMPERATURE CORRECTION

NUMBER OF TIME PERIODS PER YEAR =  141


USER SUPPLIED EVAPORATION FACTORS
---------------------------------

    EFA =  0.0000 (-)

    EFB =  0.0000 (1/MPS)

    EFC =  0.0000 (1/SQ.RT.(MPS))

USER SUPPLIED BOWEN RATIO
-------------------------

   BOWEN RATIO=   0.0000 (-)
```

GLOBAL CALIBRATION PARAMETERS

AIR TEMPERATURE CALIBRATION CONSTANT =	0.000 (C)
AIR TEMPERATURE CALIBRATION COEFFICIENT =	0.0000 (-)
WIND SPEED CALIBRATION CONSTANT =	0.000 (MPS)
WIND SPEED CALIBRATION COEFFICIENT =	0.0000 (-)
HUMIDITY CALIBRATION CONSTANT =	0.000 (DEC. OF RH)
HUMIDITY CALIBRATION COEFFICIENT =	0.0000 (-)
SUNSHINE CALIBRATION CONSTANT =	0.000 (DEC. OF S/SO)
SUNSHINE CALIBRATION COEFFICIENT =	0.0000 (-)
SOLAR CALIBRATION CONSTANT =	0.000 (J/SQ*M/S)
SOLAR CALIBRATION COEFFICIENT =	0.0000 (-)

AIR TEMPERATURE CORRECTION FACTORS

1ST ELEVATION =	0.000 (M)
1ST FACTOR =	0.0000 (C/M)
2ND ELEVATION =	0.000 (M)
2ND FACTOR =	0.0000 (C/M)
3RD ELEVATION =	0.000 (M)
3RD FACTOR =	0.0000 (C/M)
4TH ELEVATION =	0.000 (M)
4TH FACTOR =	0.0000 (C/M)
5TH ELEVATION =	0.000 (M)
5TH FACTOR =	0.0000 (C/M)

MAXIMUM DAILY
AIR TEMPERATURE REGRESSION COEFFICIENTS

A0 = 0.000 (C)

A1 = 0.0000 (C PER HSX)

A2 = 0.000 (C PER RH)

A3 = 0.0000 (C PER S/SO)

STREAM SPACIAL OUTPUT REQUEST

NAME	FROM (KM)	TO (KM)
N.F. KOKTULI	57.7	0.0
TRIBUTARY 119	38.4	36.5
STR. NAME # 3	0.0	0.0
STR. NAME # 4	0.0	0.0
STR. NAME # 5	0.0	0.0
STR. NAME # 6	0.0	0.0
STR. NAME # 7	0.0	0.0
STR. NAME # 8	0.0	0.0
STR. NAME # 9	0.0	0.0
STR. NAME # 10	0.0	0.0

STREAM NETWORK FILES	NAMES
TIME PERIOD	NFKTME.DAT
METEOROLOGY	NFKMET.DAT
SKELETON NETWORK	NFKSKL.DAT
STREAM GEOMETRY	NFKSTR.DAT

```
          STUDY       NFKSTD.DAT
HYDROLOGY DATA        NFKHDR.DAT
HYDROLOGY NODE        NFKHYD.DAT
          SHADE       NFKSHD.DAT
```

```
**************************************** TABLE I: STREAM GEOMETRY AFTER 'M' NODES MERGED ****************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDCHG' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1) ADD'M' NODES TO THE STREAM GEOMETRY ('KGNSTRG') FILE WHEN THE ELEVATION BETWEEN THE UPSTREAM & DOWNSTREAM SUBREACH
     NODES WOULD OTHERWISE EXCEED 300 METERS;
      (2) CALCULATE THE AVERAGE LATITUDES & ELEVATIONS FOR THE REACH;
      (3) CALCULATE THE STREAM GRADIENT & STREAMBED TEMPERATURE;
      (4) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF 'KSTRMGM'.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    141.     33.     27.     12.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      6.      0.      0.      0.      0.      1.      1.      1.    141.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
N.F. KOKTULI        57.7     0.0
TRIBUTARY 119       38.4    36.5
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	-STREAM WIDTH- EXP. (----)	----SHADE---- MIN. (DEC)	----SHADE---- MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	N.F. KOKTULI	H	57.7	1.04641	529.	0.040	0.10765	2.97	0.1549	0.0000	0.0000	-1.11	1.65
2	N.F. KOKTULI	C	55.7	1.04648	379.	0.040	0.01217	4.90	0.1549	0.0000	0.0000	-0.13	1.65
3	N.F. KOKTULI	C	48.2	1.04648	330.	0.040	0.00173	6.99	0.1549	0.0000	0.0000	0.19	1.65
4	N.F. KOKTULI	C	44.8	1.04624	325.	0.040	0.00197	8.11	0.1549	0.0000	0.0000	0.23	1.65
5	N.F. KOKTULI	C	42.1	1.04619	321.	0.040	0.00125	8.74	0.1549	0.0000	0.0000	0.25	1.65
6	N.F. KOKTULI	C	41.2	1.04618	320.	0.040	0.00116	9.15	0.1549	0.0000	0.0000	0.26	1.65
7	N.F. KOKTULI	C	39.8	1.04609	318.	0.040	0.00109	9.62	0.1549	0.0000	0.0000	0.27	1.65
8	N.F. KOKTULI	C	38.6	1.04601	315.	0.040	0.00299	10.19	0.1549	0.0000	0.0000	0.29	1.65
9	N.F. KOKTULI	C	36.5	1.04599	312.	0.040	0.00334	10.17	0.1549	0.0000	0.0000	0.31	1.65
10	N.F. KOKTULI	B	36.5										
11	TRIBUTARY 119	H	38.4	1.04588	327.	0.040	0.01631	6.31	0.1549	0.0000	0.0000	0.22	1.65
12	TRIBUTARY 119	T	36.5										
13	N.F. KOKTULI	J	36.5	1.04604	308.	0.040	0.00568	10.17	0.1549	0.0000	0.0000	0.34	1.65
14	N.F. KOKTULI	C	35.4	1.04609	302.	0.040	0.00471	10.59	0.1549	0.0000	0.0000	0.38	1.65
15	N.F. KOKTULI	C	34.0	1.04606	294.	0.040	0.00322	11.32	0.1549	0.0000	0.0000	0.43	1.65
16	N.F. KOKTULI	C	31.0	1.04595	286.	0.040	0.00280	12.23	0.1549	0.0000	0.0000	0.49	1.65
17	N.F. KOKTULI	C	28.5	1.04590	279.	0.040	0.00371	12.87	0.1549	0.0000	0.0000	0.53	1.65
18	N.F. KOKTULI	C	27.0	1.04586	272.	0.040	0.00344	13.37	0.1549	0.0000	0.0000	0.57	1.65
19	N.F. KOKTULI	C	24.5	1.04526	249.	0.040	0.00458	14.76	0.1549	0.0000	0.0000	0.73	1.65
20	N.F. KOKTULI	C	16.0	1.04465	224.	0.040	0.00484	16.12	0.1549	0.0000	0.0000	0.89	1.65
21	N.F. KOKTULI	C	13.8	1.04454	214.	0.040	0.00407	16.76	0.1549	0.0000	0.0000	0.96	1.65
22	N.F. KOKTULI	C	11.6	1.04449	206.	0.040	0.00336	17.39	0.1549	0.0000	0.0000	1.01	1.65
23	N.F. KOKTULI	C	9.9	1.04450	199.	0.040	0.00370	17.99	0.1549	0.0000	0.0000	1.05	1.65
24	N.F. KOKTULI	C	7.6	1.04448	193.	0.040	0.00354	18.46	0.1549	0.0000	0.0000	1.10	1.65
25	N.F. KOKTULI	C	6.2	1.04444	186.	0.040	0.00304	18.98	0.1549	0.0000	0.0000	1.14	1.65
26	N.F. KOKTULI	C	3.5	1.04438	178.	0.040	0.00246	19.76	0.1549	0.0000	0.0000	1.19	1.65
27	N.F. KOKTULI	E	0.0										

NORMAL COMPLETION OF 'ADDCHG'.

```
****************************************** TABLE II: STREAM GEOMETRY AFTER 'O' NODES MERGED ******************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDOUT' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1)MERGE THE OUTPUT ('O') NODES FROM THE STUDY ('KGNSTDY') FILE WITH THE STREAM GEOMETRY ('KSTRMGM') FILE;
      (2) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF THE 'KSTRMGM' FILE.

                            ** JOB CONTROL DATA **
JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    141.     33.     27.     12.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      6.      0.      0.      0.      0.      1.      1.      1.    141.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
N.F. KOKTULI        57.7     0.0
TRIBUTARY 119       38.4    36.5
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	-STREAM WIDTH- EXP. (----)	----SHADE---- MIN. (DEC)	----SHADE---- MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	N.F. KOKTULI	H	57.7	1.04641	529.	0.040	0.10765	2.97	0.1549	0.0000	0.0000	-1.11	1.65
2	N.F. KOKTULI	C	55.7	1.04648	379.	0.040	0.01217	4.90	0.1549	0.0000	0.0000	-0.13	1.65
3	N.F. KOKTULI	C	48.2	1.04648	330.	0.040	0.00173	6.99	0.1549	0.0000	0.0000	0.19	1.65
4	N.F. KOKTULI	C	44.8	1.04624	325.	0.040	0.00197	8.11	0.1549	0.0000	0.0000	0.23	1.65
5	N.F. KOKTULI	C	42.1	1.04619	321.	0.040	0.00125	8.74	0.1549	0.0000	0.0000	0.25	1.65
6	N.F. KOKTULI	C	41.2	1.04618	320.	0.040	0.00116	9.15	0.1549	0.0000	0.0000	0.26	1.65
7	N.F. KOKTULI	C	39.8	1.04609	318.	0.040	0.00109	9.62	0.1549	0.0000	0.0000	0.27	1.65
8	N.F. KOKTULI	C	38.6	1.04601	315.	0.040	0.00299	10.19	0.1549	0.0000	0.0000	0.29	1.65
9	N.F. KOKTULI	C	36.5	1.04599	312.	0.040	0.00334	10.17	0.1549	0.0000	0.0000	0.31	1.65
10	N.F. KOKTULI	B	36.5	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
11	TRIBUTARY 119	H	38.4	1.04588	327.	0.040	0.01631	6.31	0.1549	0.0000	0.0000	0.22	1.65
12	TRIBUTARY 119	T	36.5	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
13	N.F. KOKTULI	J	36.5	1.04604	308.	0.040	0.00568	10.17	0.1549	0.0000	0.0000	0.34	1.65
14	N.F. KOKTULI	C	35.4	1.04609	302.	0.040	0.00471	10.59	0.1549	0.0000	0.0000	0.38	1.65
15	N.F. KOKTULI	C	34.0	1.04606	294.	0.040	0.00322	11.32	0.1549	0.0000	0.0000	0.43	1.65
16	N.F. KOKTULI	C	31.0	1.04595	286.	0.040	0.00280	12.23	0.1549	0.0000	0.0000	0.49	1.65
17	N.F. KOKTULI	C	28.5	1.04590	279.	0.040	0.00371	12.87	0.1549	0.0000	0.0000	0.53	1.65
18	N.F. KOKTULI	C	27.0	1.04586	272.	0.040	0.00344	13.37	0.1549	0.0000	0.0000	0.57	1.65
19	N.F. KOKTULI	C	24.5	1.04526	249.	0.040	0.00458	14.76	0.1549	0.0000	0.0000	0.73	1.65
20	N.F. KOKTULI	C	16.0	1.04465	224.	0.040	0.00484	16.12	0.1549	0.0000	0.0000	0.89	1.65
21	N.F. KOKTULI	C	13.8	1.04454	214.	0.040	0.00407	16.76	0.1549	0.0000	0.0000	0.96	1.65
22	N.F. KOKTULI	C	11.6	1.04449	206.	0.040	0.00336	17.39	0.1549	0.0000	0.0000	1.01	1.65
23	N.F. KOKTULI	C	9.9	1.04450	199.	0.040	0.00370	17.99	0.1549	0.0000	0.0000	1.05	1.65
24	N.F. KOKTULI	C	7.6	1.04448	193.	0.040	0.00354	18.46	0.1549	0.0000	0.0000	1.10	1.65
25	N.F. KOKTULI	C	6.2	1.04444	186.	0.040	0.00304	18.98	0.1549	0.0000	0.0000	1.14	1.65
26	N.F. KOKTULI	C	3.5	1.04438	178.	0.040	0.00246	19.76	0.1549	0.0000	0.0000	1.19	1.65
27	N.F. KOKTULI	E	0.0	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00

NORMAL COMPLETION OF 'ADDOUT'.

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********************************** TABLE III: STREAM GEOMETRY AFTER HYDROLOGY NODES MERGED ************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDHYD' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1)MERGE THE HYDROLOGY ('D', 'K', 'P', 'Q', 'R', AND 'V') NODES FROM THE HYDROLOGY ('KGNSHDR') FILE WITH THE STREAM
          GEOMETRY ('KSTRMGM') FILE;
      (2) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF THE 'KSTRMGM' FILE.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    141.     33.     27.     12.      6.      0.      0.
      1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
      6.      0.      0.      0.      0.      1.      1.      1.    141.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
N.F. KOKTULI        57.7     0.0
TRIBUTARY 119       38.4    36.5
 STR. NAME #   3     0.0     0.0
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

PAGE NO. 1

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	EXP. (----)	----SHADE---- MIN. (DEC)	MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	N.F. KOKTULI	H	57.7	1.04641	529.	0.040	0.10765	2.97	0.1549	0.0000	0.0000	-1.11	1.65
2	N.F. KOKTULI	C	55.7	1.04648	379.	0.040	0.01217	4.90	0.1549	0.0000	0.0000	-0.13	1.65
3	N.F. KOKTULI	C	48.2	1.04648	330.	0.040	0.00173	6.99	0.1549	0.0000	0.0000	0.19	1.65
4	N.F. KOKTULI	C	44.8	1.04624	325.	0.040	0.00197	8.11	0.1549	0.0000	0.0000	0.23	1.65
5	N.F. KOKTULI	C	42.1	1.04619	321.	0.040	0.00125	8.74	0.1549	0.0000	0.0000	0.25	1.65
6	N.F. KOKTULI	C	41.2	1.04618	320.	0.040	0.00116	9.15	0.1549	0.0000	0.0000	0.26	1.65
7	N.F. KOKTULI	C	39.8	1.04609	318.	0.040	0.00109	9.62	0.1549	0.0000	0.0000	0.27	1.65
8	N.F. KOKTULI	C	38.6	1.04601	315.	0.040	0.00299	10.19	0.1549	0.0000	0.0000	0.29	1.65
9	N.F. KOKTULI	Q	36.8	1.04601	315.	0.040	0.00299	10.19	0.1549	0.0000	0.0000	0.29	1.65
10	N.F. KOKTULI	C	36.5	1.04599	312.	0.040	0.00334	10.17	0.1549	0.0000	0.0000	0.31	1.65
11	N.F. KOKTULI	B	36.5										
12	TRIBUTARY 119	H	38.4	1.04588	327.	0.040	0.01631	6.31	0.1549	0.0000	0.0000	0.22	1.65
13	TRIBUTARY 119	T	36.5										
14	N.F. KOKTULI	J	36.5	1.04604	308.	0.040	0.00568	10.17	0.1549	0.0000	0.0000	0.34	1.65
15	N.F. KOKTULI	Q	35.8	1.04604	308.	0.040	0.00568	10.17	0.1549	0.0000	0.0000	0.34	1.65
16	N.F. KOKTULI	C	35.4	1.04609	302.	0.040	0.00471	10.59	0.1549	0.0000	0.0000	0.38	1.65
17	N.F. KOKTULI	C	34.0	1.04606	294.	0.040	0.00322	11.32	0.1549	0.0000	0.0000	0.43	1.65
18	N.F. KOKTULI	C	31.0	1.04595	286.	0.040	0.00280	12.23	0.1549	0.0000	0.0000	0.49	1.65
19	N.F. KOKTULI	C	28.5	1.04590	279.	0.040	0.00371	12.87	0.1549	0.0000	0.0000	0.53	1.65
20	N.F. KOKTULI	Q	27.9	1.04590	279.	0.040	0.00371	12.87	0.1549	0.0000	0.0000	0.53	1.65
21	N.F. KOKTULI	C	27.0	1.04586	272.	0.040	0.00344	13.37	0.1549	0.0000	0.0000	0.57	1.65
22	N.F. KOKTULI	C	24.5	1.04526	249.	0.040	0.00458	14.76	0.1549	0.0000	0.0000	0.73	1.65
23	N.F. KOKTULI	C	16.0	1.04465	224.	0.040	0.00484	16.12	0.1549	0.0000	0.0000	0.89	1.65
24	N.F. KOKTULI	C	13.8	1.04454	214.	0.040	0.00407	16.76	0.1549	0.0000	0.0000	0.96	1.65
25	N.F. KOKTULI	Q	13.7	1.04454	214.	0.040	0.00407	16.76	0.1549	0.0000	0.0000	0.96	1.65
26	N.F. KOKTULI	C	11.6	1.04449	206.	0.040	0.00336	17.39	0.1549	0.0000	0.0000	1.01	1.65
27	N.F. KOKTULI	C	9.9	1.04450	199.	0.040	0.00370	17.99	0.1549	0.0000	0.0000	1.05	1.65
28	N.F. KOKTULI	Q	9.3	1.04450	199.	0.040	0.00370	17.99	0.1549	0.0000	0.0000	1.05	1.65
29	N.F. KOKTULI	C	7.6	1.04448	193.	0.040	0.00354	18.46	0.1549	0.0000	0.0000	1.10	1.65
30	N.F. KOKTULI	C	6.2	1.04444	186.	0.040	0.00304	18.98	0.1549	0.0000	0.0000	1.14	1.65
31	N.F. KOKTULI	Q	5.3	1.04444	186.	0.040	0.00304	18.98	0.1549	0.0000	0.0000	1.14	1.65
32	N.F. KOKTULI	C	3.5	1.04438	178.	0.040	0.00246	19.76	0.1549	0.0000	0.0000	1.19	1.65
33	N.F. KOKTULI	E	0.0										

NORMAL COMPLETION OF 'ADDHYD'.

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****************************************** TABLE IV: HYDROLOGY WITH MISSING FLOWS ADDED ******************************************
    BEGIN HYDROLOGY VERIFICATION OF 'HYDFIL' PROGRAM. THE PURPOSE OF THIS PROGRAM IS:
       (1) FILL IN IS HISTORICAL FLOWS WITH A 'BEST' ESTIMATE BASED ON AVAILABLE DATA;
       (2) FLAG ANY MISSING, BUT NECESSARY, INITIAL WATER TEMPERATURES WITH A '-1.';
       (3) FILL IN ANY MISSING LATERAL INFLOW WATER TEMPERATURES WITH THE LOCAL MEAN ANNUAL AIR TEMPERATURES;
       (4) CREATE THE UNFORMATTED 'KHYDR2&3' FILES.
 THIS VERIFICATION IS A FORMATTED VERSIONOF THE 'KHYDR4' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTT
       1.      0.      0.    141.     33.     27.     12.      6.     33.      0.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       6.      0.      0.      0.      0.      1.      1.      1.    141.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
 NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
 N.F. KOKTULI        57.7     0.0
 TRIBUTARY 119       38.4    36.5
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS)	REMARKS
1	N.F. KOKTULI	H	57.7	2007	18-May	0.188	3.79	4.61	1	0.188	0.000:	HEADWATERS OF NORTH FORK KOKT
					19-May	0.166	4.88	5.24	1	0.166	0.000:	ULI RIVER
					20-May	0.158	4.36	5.83	1	0.158	0.000:	
					21-May	0.140	4.87	6.38	1	0.140	0.000:	
					22-May	0.146	4.21	6.90	1	0.146	0.000:	
					23-May	0.149	4.43	7.25	1	0.149	0.000:	
					24-May	0.162	4.37	7.38	1	0.162	0.000:	
					25-May	0.168	4.21	7.39	1	0.168	0.000:	
					26-May	0.164	4.59	7.47	1	0.164	0.000:	
					27-May	0.151	5.19	7.73	1	0.151	0.000:	
					28-May	0.138	5.88	8.19	1	0.138	0.000:	
					29-May	0.120	5.72	8.72	1	0.120	0.000:	
					30-May	0.108	6.40	9.26	1	0.108	0.000:	
					31-May	0.108	6.27	9.68	1	0.108	0.000:	
					1-Jun	0.105	5.72	9.88	1	0.105	0.000:	
					2-Jun	0.102	5.47	9.95	1	0.102	0.000:	
					3-Jun	0.100	6.90	10.10	1	0.100	0.000:	
					4-Jun	0.105	7.04	10.39	1	0.105	0.000:	
					5-Jun	0.133	6.70	10.70	1	0.133	0.000:	
					6-Jun	0.124	7.93	10.97	1	0.124	0.000:	
					7-Jun	0.108	8.04	11.30	1	0.108	0.000:	
					8-Jun	0.096	7.26	11.61	1	0.096	0.000:	
					9-Jun	0.086	6.96	11.99	1	0.086	0.000:	
					10-Jun	0.084	9.90	12.56	1	0.084	0.000:	
					11-Jun	0.089	11.30	13.16	1	0.089	0.000:	
					12-Jun	0.086	8.16	13.41	1	0.086	0.000:	
					13-Jun	0.078	8.07	13.39	1	0.078	0.000:	
					14-Jun	0.077	9.23	13.41	1	0.077	0.000:	
					15-Jun	0.078	11.40	13.67	1	0.078	0.000:	
					16-Jun	0.078	11.71	14.14	1	0.078	0.000:	
					17-Jun	0.086	9.62	14.53	1	0.086	0.000:	
					18-Jun	0.084	10.03	14.90	1	0.084	0.000:	
					19-Jun	0.077	12.31	15.51	1	0.077	0.000:	
					20-Jun	0.079	13.77	16.27	1	0.079	0.000:	
					21-Jun	0.076	13.05	16.58	1	0.076	0.000:	
					22-Jun	0.073	10.00	15.98	1	0.073	0.000:	
					23-Jun	0.111	7.32	14.59	1	0.111	0.000:	
					24-Jun	0.201	5.98	13.02	1	0.201	0.000:	
					25-Jun	0.123	7.36	11.96	1	0.123	0.000:	
					26-Jun	0.095	9.04	11.58	1	0.095	0.000:	
					27-Jun	0.081	10.85	11.91	1	0.081	0.000:	
					28-Jun	0.078	10.21	12.64	1	0.078	0.000:	
					29-Jun	0.075	11.38	13.33	1	0.075	0.000:	
					30-Jun	0.072	11.11	13.98	1	0.072	0.000:	
					1-Jul	0.069	10.27	14.51	1	0.069	0.000:	
					2-Jul	0.067	11.80	14.98	1	0.067	0.000:	

3-Jul	0.065	13.13	15.37	1	0.065	0.000:
4-Jul	0.097	11.26	15.48	1	0.097	0.000:
5-Jul	0.093	10.73	15.36	1	0.093	0.000:
6-Jul	0.082	10.41	15.29	1	0.082	0.000:
7-Jul	0.075	11.38	15.42	1	0.075	0.000:
8-Jul	0.079	11.76	15.67	1	0.079	0.000:
9-Jul	0.074	10.86	15.89	1	0.074	0.000:
10-Jul	0.069	10.82	16.18	1	0.069	0.000:
11-Jul	0.066	12.83	16.56	1	0.066	0.000:
12-Jul	0.064	12.96	16.80	1	0.064	0.000:
13-Jul	0.072	10.55	16.69	1	0.072	0.000:
14-Jul	0.073	10.74	16.32	1	0.073	0.000:
15-Jul	0.067	10.40	15.96	1	0.067	0.000:
16-Jul	0.063	11.46	15.87	1	0.063	0.000:
17-Jul	0.060	12.90	16.14	1	0.060	0.000:
18-Jul	0.058	12.27	16.70	1	0.058	0.000:
19-Jul	0.057	11.78	17.13	1	0.057	0.000:
20-Jul	0.056	13.17	17.33	1	0.056	0.000:
21-Jul	0.065	11.57	17.15	1	0.065	0.000:
22-Jul	0.064	8.71	16.42	1	0.064	0.000:
23-Jul	0.077	8.44	15.39	1	0.077	0.000:
24-Jul	0.091	8.80	14.57	1	0.091	0.000:
25-Jul	0.075	10.30	14.38	1	0.075	0.000:
26-Jul	0.065	12.10	15.00	1	0.065	0.000:
27-Jul	0.060	14.21	16.39	1	0.060	0.000:
28-Jul	0.072	14.82	18.18	1	0.072	0.000:
29-Jul	0.064	14.50	19.87	1	0.064	0.000:
30-Jul	0.060	13.12	21.15	1	0.060	0.000:
31-Jul	0.058	12.55	21.77	1	0.058	0.000:
1-Aug	0.056	9.82	21.41	1	0.056	0.000:
2-Aug	0.056	8.68	20.09	1	0.056	0.000:
3-Aug	0.056	9.36	18.23	1	0.056	0.000:
4-Aug	0.084	8.84	16.29	1	0.084	0.000:
5-Aug	0.100	8.88	14.65	1	0.100	0.000:
6-Aug	0.097	9.50	13.60	1	0.097	0.000:
7-Aug	0.078	10.47	13.15	1	0.078	0.000:
8-Aug	0.069	11.15	13.14	1	0.069	0.000:
9-Aug	0.063	12.43	13.50	1	0.063	0.000:
10-Aug	0.059	13.59	14.29	1	0.059	0.000:
11-Aug	0.057	13.45	15.38	1	0.057	0.000:
12-Aug	0.056	14.71	16.52	1	0.056	0.000:
13-Aug	0.056	15.02	17.60	1	0.056	0.000:
14-Aug	0.056	11.98	18.54	1	0.056	0.000:
15-Aug	0.068	10.36	19.01	1	0.068	0.000:
16-Aug	0.064	12.02	19.33	1	0.064	0.000:
17-Aug	0.058	12.15	19.65	1	0.058	0.000:
18-Aug	0.060	9.13	19.48	1	0.060	0.000:
19-Aug	0.061	9.28	18.78	1	0.061	0.000:
20-Aug	0.061	9.72	17.95	1	0.061	0.000:
21-Aug	0.063	8.93	17.01	1	0.063	0.000:
22-Aug	0.064	8.57	16.00	1	0.064	0.000:

23-Aug	0.074	8.86	15.11	1	0.074	0.000:
24-Aug	0.069	9.90	14.63	1	0.069	0.000:
25-Aug	0.064	11.30	14.57	1	0.064	0.000:
26-Aug	0.061	10.69	14.70	1	0.061	0.000:
27-Aug	0.059	11.26	14.86	1	0.059	0.000:
28-Aug	0.056	11.10	15.11	1	0.056	0.000:
29-Aug	0.055	11.26	15.53	1	0.055	0.000:
30-Aug	0.053	10.53	15.94	1	0.053	0.000:
31-Aug	0.054	10.25	16.22	1	0.054	0.000:
1-Sep	0.055	11.16	16.33	1	0.055	0.000:
2-Sep	0.053	11.04	15.97	1	0.053	0.000:
3-Sep	0.055	8.67	15.24	1	0.055	0.000:
4-Sep	0.067	7.88	14.59	1	0.067	0.000:
5-Sep	0.060	8.99	14.31	1	0.060	0.000:
6-Sep	0.083	8.93	14.20	1	0.083	0.000:
7-Sep	0.076	7.73	13.93	1	0.076	0.000:
8-Sep	0.116	7.95	13.33	1	0.116	0.000:
9-Sep	0.167	8.42	12.63	1	0.167	0.000:
10-Sep	0.144	8.22	12.01	1	0.144	0.000:
11-Sep	0.120	6.46	11.42	1	0.120	0.000:
12-Sep	0.137	7.07	10.83	1	0.137	0.000:
13-Sep	0.168	6.73	10.31	1	0.168	0.000:
14-Sep	0.186	6.24	9.92	1	0.186	0.000:
15-Sep	0.162	5.48	9.70	1	0.162	0.000:
16-Sep	0.143	6.22	9.67	1	0.143	0.000:
17-Sep	0.133	6.08	9.70	1	0.133	0.000:
18-Sep	0.122	6.04	9.66	1	0.122	0.000:
19-Sep	0.198	6.23	9.47	1	0.198	0.000:
20-Sep	0.205	5.75	9.15	1	0.205	0.000:
21-Sep	0.243	5.77	8.79	1	0.243	0.000:
22-Sep	0.214	4.72	8.45	1	0.214	0.000:
23-Sep	0.238	4.68	8.19	1	0.238	0.000:
24-Sep	0.223	4.73	7.99	1	0.223	0.000:
25-Sep	0.230	4.44	7.81	1	0.230	0.000:
26-Sep	0.221	4.36	7.64	1	0.221	0.000:
27-Sep	0.208	4.15	7.45	1	0.208	0.000:
28-Sep	0.234	3.36	7.24	1	0.234	0.000:
29-Sep	0.266	3.40	7.04	1	0.266	0.000:
30-Sep	0.232	3.59	6.86	1	0.232	0.000:
1-Oct	0.256	3.44	6.61	1	0.256	0.000:
2-Oct	0.240	2.67	6.21	1	0.240	0.000:
3-Oct	0.228	1.70	5.62	1	0.228	0.000:
4-Oct	0.213	1.20	4.92	1	0.213	0.000:
5-Oct	0.273	0.35	4.13	1	0.273	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
2	N.F. KOKTULI	Q	36.8	2007	18-May	2.098		2.18	1	2.098	0.000:	HYDROLOGY GAGE NK100C
					19-May	1.856		2.49	1	1.856	0.000:	
					20-May	1.759		2.80	1	1.759	0.000:	
					21-May	1.564		3.11	1	1.564	0.000:	
					22-May	1.630		3.42	1	1.630	0.000:	
					23-May	1.659		3.69	1	1.659	0.000:	
					24-May	1.812		3.88	1	1.812	0.000:	
					25-May	1.872		4.02	1	1.872	0.000:	
					26-May	1.829		4.17	1	1.829	0.000:	
					27-May	1.688		4.36	1	1.688	0.000:	
					28-May	1.537		4.59	1	1.537	0.000:	
					29-May	1.336		4.82	1	1.336	0.000:	
					30-May	1.200		5.04	1	1.200	0.000:	
					31-May	1.204		5.20	1	1.204	0.000:	
					1-Jun	1.175		5.28	1	1.175	0.000:	
					2-Jun	1.135		5.31	1	1.135	0.000:	
					3-Jun	1.112		5.39	1	1.112	0.000:	
					4-Jun	1.172		5.55	1	1.172	0.000:	
					5-Jun	1.488		5.71	1	1.488	0.000:	
					6-Jun	1.382		5.86	1	1.382	0.000:	
					7-Jun	1.206		6.01	1	1.206	0.000:	
					8-Jun	1.066		6.13	1	1.066	0.000:	
					9-Jun	0.960		6.26	1	0.960	0.000:	
					10-Jun	0.934		6.45	1	0.934	0.000:	
					11-Jun	0.988		6.63	1	0.988	0.000:	
					12-Jun	0.964		6.63	1	0.964	0.000:	
					13-Jun	0.869		6.49	1	0.869	0.000:	
					14-Jun	0.860		6.36	1	0.860	0.000:	
					15-Jun	0.872		6.33	1	0.872	0.000:	
					16-Jun	0.869		6.41	1	0.869	0.000:	
					17-Jun	0.964		6.48	1	0.964	0.000:	
					18-Jun	0.932		6.57	1	0.932	0.000:	
					19-Jun	0.863		6.76	1	0.863	0.000:	
					20-Jun	0.878		7.05	1	0.878	0.000:	
					21-Jun	0.848		7.27	1	0.848	0.000:	
					22-Jun	0.815		7.26	1	0.815	0.000:	
					23-Jun	1.233		6.99	1	1.233	0.000:	
					24-Jun	2.245		6.61	1	2.245	0.000:	
					25-Jun	1.370		6.35	1	1.370	0.000:	
					26-Jun	1.060		6.27	1	1.060	0.000:	
					27-Jun	0.900		6.39	1	0.900	0.000:	
					28-Jun	0.870		6.62	1	0.870	0.000:	
					29-Jun	0.841		6.82	1	0.841	0.000:	
					30-Jun	0.799		7.02	1	0.799	0.000:	
					1-Jul	0.774		7.23	1	0.774	0.000:	
					2-Jul	0.748		7.48	1	0.748	0.000:	

3-Jul	0.729	7.76	1	0.729	0.000:
4-Jul	1.077	7.97	1	1.077	0.000:
5-Jul	1.038	8.07	1	1.038	0.000:
6-Jul	0.910	8.17	1	0.910	0.000:
7-Jul	0.838	8.32	1	0.838	0.000:
8-Jul	0.881	8.50	1	0.881	0.000:
9-Jul	0.830	8.65	1	0.830	0.000:
10-Jul	0.774	8.83	1	0.774	0.000:
11-Jul	0.734	9.06	1	0.734	0.000:
12-Jul	0.709	9.25	1	0.709	0.000:
13-Jul	0.807	9.31	1	0.807	0.000:
14-Jul	0.818	9.27	1	0.818	0.000:
15-Jul	0.749	9.25	1	0.749	0.000:
16-Jul	0.706	9.36	1	0.706	0.000:
17-Jul	0.667	9.66	1	0.667	0.000:
18-Jul	0.647	10.09	1	0.647	0.000:
19-Jul	0.640	10.49	1	0.640	0.000:
20-Jul	0.627	10.80	1	0.627	0.000:
21-Jul	0.731	10.96	1	0.731	0.000:
22-Jul	0.711	10.87	1	0.711	0.000:
23-Jul	0.855	10.65	1	0.855	0.000:
24-Jul	1.017	10.50	1	1.017	0.000:
25-Jul	0.841	10.58	1	0.841	0.000:
26-Jul	0.723	10.93	1	0.723	0.000:
27-Jul	0.670	11.54	1	0.670	0.000:
28-Jul	0.806	12.25	1	0.806	0.000:
29-Jul	0.718	12.86	1	0.718	0.000:
30-Jul	0.665	13.28	1	0.665	0.000:
31-Jul	0.648	13.42	1	0.648	0.000:
1-Aug	0.629	13.20	1	0.629	0.000:
2-Aug	0.620	12.68	1	0.620	0.000:
3-Aug	0.621	12.01	1	0.621	0.000:
4-Aug	0.943	11.32	1	0.943	0.000:
5-Aug	1.119	10.73	1	1.119	0.000:
6-Aug	1.079	10.32	1	1.079	0.000:
7-Aug	0.869	10.12	1	0.869	0.000:
8-Aug	0.766	10.13	1	0.766	0.000:
9-Aug	0.707	10.31	1	0.707	0.000:
10-Aug	0.662	10.68	1	0.662	0.000:
11-Aug	0.635	11.18	1	0.635	0.000:
12-Aug	0.629	11.71	1	0.629	0.000:
13-Aug	0.620	12.18	1	0.620	0.000:
14-Aug	0.625	12.56	1	0.625	0.000:
15-Aug	0.764	12.71	1	0.764	0.000:
16-Aug	0.720	12.76	1	0.720	0.000:
17-Aug	0.643	12.80	1	0.643	0.000:
18-Aug	0.664	12.68	1	0.664	0.000:
19-Aug	0.680	12.41	1	0.680	0.000:
20-Aug	0.681	12.10	1	0.681	0.000:
21-Aug	0.702	11.72	1	0.702	0.000:
22-Aug	0.715	11.30	1	0.715	0.000:

23-Aug	0.821	10.92	1	0.821	0.000:
24-Aug	0.769	10.70	1	0.769	0.000:
25-Aug	0.719	10.63	1	0.719	0.000:
26-Aug	0.683	10.64	1	0.683	0.000:
27-Aug	0.658	10.68	1	0.658	0.000:
28-Aug	0.628	10.79	1	0.628	0.000:
29-Aug	0.614	11.02	1	0.614	0.000:
30-Aug	0.594	11.32	1	0.594	0.000:
31-Aug	0.606	11.61	1	0.606	0.000:
1-Sep	0.617	11.81	1	0.617	0.000:
2-Sep	0.595	11.76	1	0.595	0.000:
3-Sep	0.613	11.50	1	0.613	0.000:
4-Sep	0.751	11.21	1	0.751	0.000:
5-Sep	0.675	11.03	1	0.675	0.000:
6-Sep	0.930	10.91	1	0.930	0.000:
7-Sep	0.846	10.70	1	0.846	0.000:
8-Sep	1.288	10.35	1	1.288	0.000:
9-Sep	1.867	9.94	1	1.867	0.000:
10-Sep	1.603	9.53	1	1.603	0.000:
11-Sep	1.336	9.14	1	1.336	0.000:
12-Sep	1.523	8.78	1	1.523	0.000:
13-Sep	1.873	8.45	1	1.873	0.000:
14-Sep	2.071	8.19	1	2.071	0.000:
15-Sep	1.803	8.03	1	1.803	0.000:
16-Sep	1.594	7.97	1	1.594	0.000:
17-Sep	1.488	7.96	1	1.488	0.000:
18-Sep	1.363	7.92	1	1.363	0.000:
19-Sep	2.206	7.81	1	2.206	0.000:
20-Sep	2.291	7.62	1	2.291	0.000:
21-Sep	2.707	7.39	1	2.707	0.000:
22-Sep	2.388	7.17	1	2.388	0.000:
23-Sep	2.656	6.97	1	2.656	0.000:
24-Sep	2.489	6.81	1	2.489	0.000:
25-Sep	2.570	6.66	1	2.570	0.000:
26-Sep	2.469	6.51	1	2.469	0.000:
27-Sep	2.324	6.36	1	2.324	0.000:
28-Sep	2.606	6.18	1	2.606	0.000:
29-Sep	2.961	6.00	1	2.961	0.000:
30-Sep	2.586	5.81	1	2.586	0.000:
1-Oct	2.852	5.56	1	2.852	0.000:
2-Oct	2.679	5.24	1	2.679	0.000:
3-Oct	2.548	4.84	1	2.548	0.000:
4-Oct	2.377	4.38	1	2.377	0.000:
5-Oct	3.046	3.88	1	3.046	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
3	N.F. KOKTULI	B	36.5	2007	18-May	2.272			1	2.272	0.000:	CONFLUENCE WITH TRIBUTARY NFK
					19-May	2.009			1	2.009	0.000:	1.119
					20-May	1.903			1	1.903	0.000:	
					21-May	1.691			1	1.691	0.000:	
					22-May	1.763			1	1.763	0.000:	
					23-May	1.795			1	1.795	0.000:	
					24-May	1.961			1	1.961	0.000:	
					25-May	2.026			1	2.026	0.000:	
					26-May	1.979			1	1.979	0.000:	
					27-May	1.826			1	1.826	0.000:	
					28-May	1.662			1	1.662	0.000:	
					29-May	1.444			1	1.444	0.000:	
					30-May	1.296			1	1.296	0.000:	
					31-May	1.301			1	1.301	0.000:	
					1-Jun	1.268			1	1.268	0.000:	
					2-Jun	1.225			1	1.225	0.000:	
					3-Jun	1.200			1	1.200	0.000:	
					4-Jun	1.265			1	1.265	0.000:	
					5-Jun	1.608			1	1.608	0.000:	
					6-Jun	1.493			1	1.493	0.000:	
					7-Jun	1.302			1	1.302	0.000:	
					8-Jun	1.151			1	1.151	0.000:	
					9-Jun	1.036			1	1.036	0.000:	
					10-Jun	1.007			1	1.007	0.000:	
					11-Jun	1.066			1	1.066	0.000:	
					12-Jun	1.040			1	1.040	0.000:	
					13-Jun	0.937			1	0.937	0.000:	
					14-Jun	0.927			1	0.927	0.000:	
					15-Jun	0.939			1	0.939	0.000:	
					16-Jun	0.937			1	0.937	0.000:	
					17-Jun	1.040			1	1.040	0.000:	
					18-Jun	1.005			1	1.005	0.000:	
					19-Jun	0.930			1	0.930	0.000:	
					20-Jun	0.946			1	0.946	0.000:	
					21-Jun	0.914			1	0.914	0.000:	
					22-Jun	0.878			1	0.878	0.000:	
					23-Jun	1.331			1	1.331	0.000:	
					24-Jun	2.433			1	2.433	0.000:	
					25-Jun	1.481			1	1.481	0.000:	
					26-Jun	1.144			1	1.144	0.000:	
					27-Jun	0.970			1	0.970	0.000:	
					28-Jun	0.938			1	0.938	0.000:	
					29-Jun	0.906			1	0.906	0.000:	
					30-Jun	0.861			1	0.861	0.000:	
					1-Jul	0.834			1	0.834	0.000:	
					2-Jul	0.806			1	0.806	0.000:	

3-Jul	0.785	1	0.785	0.000:
4-Jul	1.162	1	1.162	0.000:
5-Jul	1.120	1	1.120	0.000:
6-Jul	0.981	1	0.981	0.000:
7-Jul	0.903	1	0.903	0.000:
8-Jul	0.950	1	0.950	0.000:
9-Jul	0.894	1	0.894	0.000:
10-Jul	0.833	1	0.833	0.000:
11-Jul	0.791	1	0.791	0.000:
12-Jul	0.763	1	0.763	0.000:
13-Jul	0.869	1	0.869	0.000:
14-Jul	0.882	1	0.882	0.000:
15-Jul	0.807	1	0.807	0.000:
16-Jul	0.760	1	0.760	0.000:
17-Jul	0.718	1	0.718	0.000:
18-Jul	0.696	1	0.696	0.000:
19-Jul	0.689	1	0.689	0.000:
20-Jul	0.674	1	0.674	0.000:
21-Jul	0.787	1	0.787	0.000:
22-Jul	0.765	1	0.765	0.000:
23-Jul	0.921	1	0.921	0.000:
24-Jul	1.098	1	1.098	0.000:
25-Jul	0.906	1	0.906	0.000:
26-Jul	0.778	1	0.778	0.000:
27-Jul	0.721	1	0.721	0.000:
28-Jul	0.868	1	0.868	0.000:
29-Jul	0.773	1	0.773	0.000:
30-Jul	0.715	1	0.715	0.000:
31-Jul	0.697	1	0.697	0.000:
1-Aug	0.677	1	0.677	0.000:
2-Aug	0.667	1	0.667	0.000:
3-Aug	0.668	1	0.668	0.000:
4-Aug	1.017	1	1.017	0.000:
5-Aug	1.207	1	1.207	0.000:
6-Aug	1.165	1	1.165	0.000:
7-Aug	0.937	1	0.937	0.000:
8-Aug	0.825	1	0.825	0.000:
9-Aug	0.761	1	0.761	0.000:
10-Aug	0.713	1	0.713	0.000:
11-Aug	0.684	1	0.684	0.000:
12-Aug	0.677	1	0.677	0.000:
13-Aug	0.667	1	0.667	0.000:
14-Aug	0.672	1	0.672	0.000:
15-Aug	0.823	1	0.823	0.000:
16-Aug	0.775	1	0.775	0.000:
17-Aug	0.692	1	0.692	0.000:
18-Aug	0.715	1	0.715	0.000:
19-Aug	0.732	1	0.732	0.000:
20-Aug	0.733	1	0.733	0.000:
21-Aug	0.756	1	0.756	0.000:
22-Aug	0.770	1	0.770	0.000:

23-Aug	0.884		1	0.884	0.000:
24-Aug	0.829		1	0.829	0.000:
25-Aug	0.775		1	0.775	0.000:
26-Aug	0.736		1	0.736	0.000:
27-Aug	0.708		1	0.708	0.000:
28-Aug	0.676		1	0.676	0.000:
29-Aug	0.661		1	0.661	0.000:
30-Aug	0.639		1	0.639	0.000:
31-Aug	0.651		1	0.651	0.000:
1-Sep	0.664		1	0.664	0.000:
2-Sep	0.640		1	0.640	0.000:
3-Sep	0.660		1	0.660	0.000:
4-Sep	0.808		1	0.808	0.000:
5-Sep	0.727		1	0.727	0.000:
6-Sep	1.003		1	1.003	0.000:
7-Sep	0.911		1	0.911	0.000:
8-Sep	1.391		1	1.391	0.000:
9-Sep	2.021		1	2.021	0.000:
10-Sep	1.733		1	1.733	0.000:
11-Sep	1.443		1	1.443	0.000:
12-Sep	1.646		1	1.646	0.000:
13-Sep	2.027		1	2.027	0.000:
14-Sep	2.243		1	2.243	0.000:
15-Sep	1.951		1	1.951	0.000:
16-Sep	1.723		1	1.723	0.000:
17-Sep	1.608		1	1.608	0.000:
18-Sep	1.472		1	1.472	0.000:
19-Sep	2.390		1	2.390	0.000:
20-Sep	2.483		1	2.483	0.000:
21-Sep	2.936		1	2.936	0.000:
22-Sep	2.589		1	2.589	0.000:
23-Sep	2.880		1	2.880	0.000:
24-Sep	2.699		1	2.699	0.000:
25-Sep	2.786		1	2.786	0.000:
26-Sep	2.677		1	2.677	0.000:
27-Sep	2.518		1	2.518	0.000:
28-Sep	2.826		1	2.826	0.000:
29-Sep	3.213		1	3.213	0.000:
30-Sep	2.804		1	2.804	0.000:
1-Oct	3.094		1	3.094	0.000:
2-Oct	2.905		1	2.905	0.000:
3-Oct	2.762		1	2.762	0.000:
4-Oct	2.576		1	2.576	0.000:
5-Oct	3.306		1	3.306	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
4	TRIBUTARY 119	H	38.4	2007	18-May	1.878	1.03	2.18	1	1.878	0.000:	HYDROLOGY GAGE NK119A
					19-May	1.566	1.34	2.49	1	1.566	0.000:	
					20-May	1.368	1.22	2.80	1	1.368	0.000:	
					21-May	1.130	1.71	3.11	1	1.130	0.000:	
					22-May	1.271	1.50	3.42	1	1.271	0.000:	
					23-May	1.375	1.67	3.69	1	1.375	0.000:	
					24-May	1.713	1.74	3.88	1	1.713	0.000:	
					25-May	1.587	1.72	4.02	1	1.587	0.000:	
					26-May	1.471	2.12	4.17	1	1.471	0.000:	
					27-May	1.205	2.44	4.36	1	1.205	0.000:	
					28-May	1.000	2.80	4.59	1	1.000	0.000:	
					29-May	0.808	2.74	4.82	1	0.808	0.000:	
					30-May	0.698	3.18	5.04	1	0.698	0.000:	
					31-May	0.721	3.06	5.20	1	0.721	0.000:	
					1-Jun	0.718	3.13	5.28	1	0.718	0.000:	
					2-Jun	0.674	3.21	5.31	1	0.674	0.000:	
					3-Jun	0.650	3.94	5.39	1	0.650	0.000:	
					4-Jun	0.757	3.63	5.55	1	0.757	0.000:	
					5-Jun	1.127	3.74	5.71	1	1.127	0.000:	
					6-Jun	0.921	4.71	5.86	1	0.921	0.000:	
					7-Jun	0.760	4.72	6.01	1	0.760	0.000:	
					8-Jun	0.636	4.40	6.13	1	0.636	0.000:	
					9-Jun	0.549	4.14	6.26	1	0.549	0.000:	
					10-Jun	0.554	5.95	6.45	1	0.554	0.000:	
					11-Jun	0.647	6.57	6.63	1	0.647	0.000:	
					12-Jun	0.614	4.84	6.63	1	0.614	0.000:	
					13-Jun	0.517	5.04	6.49	1	0.517	0.000:	
					14-Jun	0.532	5.67	6.36	1	0.532	0.000:	
					15-Jun	0.559	7.17	6.33	1	0.559	0.000:	
					16-Jun	0.605	6.66	6.41	1	0.605	0.000:	
					17-Jun	0.676	5.84	6.48	1	0.676	0.000:	
					18-Jun	0.571	6.29	6.57	1	0.571	0.000:	
					19-Jun	0.580	7.84	6.76	1	0.580	0.000:	
					20-Jun	0.656	8.45	7.05	1	0.656	0.000:	
					21-Jun	0.608	8.05	7.27	1	0.608	0.000:	
					22-Jun	0.577	6.54	7.26	1	0.577	0.000:	
					23-Jun	1.372	5.64	6.99	1	1.372	0.000:	
					24-Jun	1.595	4.94	6.61	1	1.595	0.000:	
					25-Jun	0.833	5.88	6.35	1	0.833	0.000:	
					26-Jun	0.617	6.97	6.27	1	0.617	0.000:	
					27-Jun	0.521	7.78	6.39	1	0.521	0.000:	
					28-Jun	0.499	7.15	6.62	1	0.499	0.000:	
					29-Jun	0.453	7.94	6.82	1	0.453	0.000:	
					30-Jun	0.425	7.93	7.02	1	0.425	0.000:	
					1-Jul	0.397	7.38	7.23	1	0.397	0.000:	
					2-Jul	0.375	8.19	7.48	1	0.375	0.000:	

3-Jul	0.374	9.25	7.76	1	0.374	0.000:
4-Jul	0.659	8.31	7.97	1	0.659	0.000:
5-Jul	0.517	8.13	8.07	1	0.517	0.000:
6-Jul	0.464	7.87	8.17	1	0.464	0.000:
7-Jul	0.402	7.95	8.32	1	0.402	0.000:
8-Jul	0.461	8.49	8.50	1	0.461	0.000:
9-Jul	0.410	8.12	8.65	1	0.410	0.000:
10-Jul	0.375	7.91	8.83	1	0.375	0.000:
11-Jul	0.345	9.75	9.06	1	0.345	0.000:
12-Jul	0.348	9.13	9.25	1	0.348	0.000:
13-Jul	0.480	7.88	9.31	1	0.480	0.000:
14-Jul	0.426	8.23	9.27	1	0.426	0.000:
15-Jul	0.371	8.09	9.25	1	0.371	0.000:
16-Jul	0.334	8.78	9.36	1	0.334	0.000:
17-Jul	0.308	9.62	9.66	1	0.308	0.000:
18-Jul	0.296	9.50	10.09	1	0.296	0.000:
19-Jul	0.286	8.72	10.49	1	0.286	0.000:
20-Jul	0.270	9.64	10.80	1	0.270	0.000:
21-Jul	0.263	9.56	10.96	1	0.263	0.000:
22-Jul	0.313	7.48	10.87	1	0.313	0.000:
23-Jul	0.417	7.50	10.65	1	0.417	0.000:
24-Jul	0.424	7.93	10.50	1	0.424	0.000:
25-Jul	0.366	8.75	10.58	1	0.366	0.000:
26-Jul	0.307	9.59	10.93	1	0.307	0.000:
27-Jul	0.280	10.91	11.54	1	0.280	0.000:
28-Jul	0.267	11.35	12.25	1	0.267	0.000:
29-Jul	0.257	11.09	12.86	1	0.257	0.000:
30-Jul	0.255	10.34	13.28	1	0.255	0.000:
31-Jul	0.248	10.37	13.42	1	0.248	0.000:
1-Aug	0.241	9.08	13.20	1	0.241	0.000:
2-Aug	0.250	8.56	12.68	1	0.250	0.000:
3-Aug	0.251	8.87	12.01	1	0.251	0.000:
4-Aug	0.627	8.94	11.32	1	0.627	0.000:
5-Aug	0.771	8.75	10.73	1	0.771	0.000:
6-Aug	0.943	8.83	10.32	1	0.943	0.000:
7-Aug	0.546	8.76	10.12	1	0.546	0.000:
8-Aug	0.423	8.94	10.13	1	0.423	0.000:
9-Aug	0.366	9.43	10.31	1	0.366	0.000:
10-Aug	0.325	9.92	10.68	1	0.325	0.000:
11-Aug	0.299	9.59	11.18	1	0.299	0.000:
12-Aug	0.293	10.77	11.71	1	0.293	0.000:
13-Aug	0.279	11.39	12.18	1	0.279	0.000:
14-Aug	0.302	9.70	12.56	1	0.302	0.000:
15-Aug	0.349	8.70	12.71	1	0.349	0.000:
16-Aug	0.328	9.45	12.76	1	0.328	0.000:
17-Aug	0.287	9.34	12.80	1	0.287	0.000:
18-Aug	0.367	8.35	12.68	1	0.367	0.000:
19-Aug	0.353	9.00	12.41	1	0.353	0.000:
20-Aug	0.353	8.89	12.10	1	0.353	0.000:
21-Aug	0.371	8.08	11.72	1	0.371	0.000:
22-Aug	0.401	8.11	11.30	1	0.401	0.000:

23-Aug	0.482	8.17	10.92	1	0.482	0.000:
24-Aug	0.429	8.72	10.70	1	0.429	0.000:
25-Aug	0.419	9.32	10.63	1	0.419	0.000:
26-Aug	0.352	8.71	10.64	1	0.352	0.000:
27-Aug	0.321	8.52	10.68	1	0.321	0.000:
28-Aug	0.293	8.41	10.79	1	0.293	0.000:
29-Aug	0.280	8.72	11.02	1	0.280	0.000:
30-Aug	0.273	8.40	11.32	1	0.273	0.000:
31-Aug	0.314	8.29	11.61	1	0.314	0.000:
1-Sep	0.332	8.68	11.81	1	0.332	0.000:
2-Sep	0.292	8.83	11.76	1	0.292	0.000:
3-Sep	0.374	7.87	11.50	1	0.374	0.000:
4-Sep	0.503	7.79	11.21	1	0.503	0.000:
5-Sep	0.371	8.05	11.03	1	0.371	0.000:
6-Sep	0.357	7.79	10.91	1	0.357	0.000:
7-Sep	0.477	7.39	10.70	1	0.477	0.000:
8-Sep	4.328	8.35	10.35	1	4.328	0.000:
9-Sep	1.997	8.12	9.94	1	1.997	0.000:
10-Sep	1.134	7.58	9.53	1	1.134	0.000:
11-Sep	1.054	6.83	9.14	1	1.054	0.000:
12-Sep	3.847	7.67	8.78	1	3.847	0.000:
13-Sep	1.913	7.01	8.45	1	1.913	0.000:
14-Sep	1.686	6.72	8.19	1	1.686	0.000:
15-Sep	1.117	5.90	8.03	1	1.117	0.000:
16-Sep	0.882	6.06	7.97	1	0.882	0.000:
17-Sep	0.798	5.97	7.96	1	0.798	0.000:
18-Sep	1.731	6.50	7.92	1	1.731	0.000:
19-Sep	4.766	7.22	7.81	1	4.766	0.000:
20-Sep	3.490	6.72	7.62	1	3.490	0.000:
21-Sep	2.096	6.30	7.39	1	2.096	0.000:
22-Sep	1.434	5.04	7.17	1	1.434	0.000:
23-Sep	2.310	5.91	6.97	1	2.310	0.000:
24-Sep	2.210	5.73	6.81	1	2.210	0.000:
25-Sep	2.300	5.65	6.66	1	2.300	0.000:
26-Sep	1.542	5.37	6.51	1	1.542	0.000:
27-Sep	1.174	4.86	6.36	1	1.174	0.000:
28-Sep	3.466	4.88	6.18	1	3.466	0.000:
29-Sep	1.723	4.73	6.00	1	1.723	0.000:
30-Sep	2.394	4.79	5.81	1	2.394	0.000:
1-Oct	1.952	4.78	5.56	1	1.952	0.000:
2-Oct	1.431	4.17	5.24	1	1.431	0.000:
3-Oct	1.096	3.76	4.84	1	1.096	0.000:
4-Oct	1.206	2.98	4.38	1	1.206	0.000:
5-Oct	5.125	2.53	3.88	1	5.125	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
5	TRIBUTARY 119	T	36.5	2007	18-May	2.404			1	2.404	0.000:	CONFLUENCE WITH NORTH FORK KO
					19-May	1.952			1	1.952	0.000:	KTULI RIVER
					20-May	1.693			1	1.693	0.000:	
					21-May	1.372			1	1.372	0.000:	
					22-May	1.547			1	1.547	0.000:	
					23-May	1.675			1	1.675	0.000:	
					24-May	2.111			1	2.111	0.000:	
					25-May	1.981			1	1.981	0.000:	
					26-May	1.833			1	1.833	0.000:	
					27-May	1.488			1	1.488	0.000:	
					28-May	1.220			1	1.220	0.000:	
					29-May	0.967			1	0.967	0.000:	
					30-May	0.824			1	0.824	0.000:	
					31-May	0.849			1	0.849	0.000:	
					1-Jun	0.841			1	0.841	0.000:	
					2-Jun	0.788			1	0.788	0.000:	
					3-Jun	0.758			1	0.758	0.000:	
					4-Jun	0.882			1	0.882	0.000:	
					5-Jun	1.351			1	1.351	0.000:	
					6-Jun	1.099			1	1.099	0.000:	
					7-Jun	0.892			1	0.892	0.000:	
					8-Jun	0.737			1	0.737	0.000:	
					9-Jun	0.632			1	0.632	0.000:	
					10-Jun	0.633			1	0.633	0.000:	
					11-Jun	0.737			1	0.737	0.000:	
					12-Jun	0.699			1	0.699	0.000:	
					13-Jun	0.587			1	0.587	0.000:	
					14-Jun	0.601			1	0.601	0.000:	
					15-Jun	0.630			1	0.630	0.000:	
					16-Jun	0.685			1	0.685	0.000:	
					17-Jun	0.784			1	0.784	0.000:	
					18-Jun	0.654			1	0.654	0.000:	
					19-Jun	0.654			1	0.654	0.000:	
					20-Jun	0.734			1	0.734	0.000:	
					21-Jun	0.676			1	0.676	0.000:	
					22-Jun	0.640			1	0.640	0.000:	
					23-Jun	1.566			1	1.566	0.000:	
					24-Jun	1.886			1	1.886	0.000:	
					25-Jun	0.969			1	0.969	0.000:	
					26-Jun	0.704			1	0.704	0.000:	
					27-Jun	0.591			1	0.591	0.000:	
					28-Jun	0.567			1	0.567	0.000:	
					29-Jun	0.519			1	0.519	0.000:	
					30-Jun	0.487			1	0.487	0.000:	
					1-Jul	0.457			1	0.457	0.000:	
					2-Jul	0.433			1	0.433	0.000:	

3-Jul	0.430	1	0.430	0.000:
4-Jul	0.757	1	0.757	0.000:
5-Jul	0.603	1	0.603	0.000:
6-Jul	0.535	1	0.535	0.000:
7-Jul	0.467	1	0.467	0.000:
8-Jul	0.530	1	0.530	0.000:
9-Jul	0.474	1	0.474	0.000:
10-Jul	0.435	1	0.435	0.000:
11-Jul	0.401	1	0.401	0.000:
12-Jul	0.403	1	0.403	0.000:
13-Jul	0.542	1	0.542	0.000:
14-Jul	0.489	1	0.489	0.000:
15-Jul	0.429	1	0.429	0.000:
16-Jul	0.388	1	0.388	0.000:
17-Jul	0.359	1	0.359	0.000:
18-Jul	0.346	1	0.346	0.000:
19-Jul	0.334	1	0.334	0.000:
20-Jul	0.317	1	0.317	0.000:
21-Jul	0.320	1	0.320	0.000:
22-Jul	0.368	1	0.368	0.000:
23-Jul	0.484	1	0.484	0.000:
24-Jul	0.504	1	0.504	0.000:
25-Jul	0.431	1	0.431	0.000:
26-Jul	0.363	1	0.363	0.000:
27-Jul	0.331	1	0.331	0.000:
28-Jul	0.329	1	0.329	0.000:
29-Jul	0.312	1	0.312	0.000:
30-Jul	0.306	1	0.306	0.000:
31-Jul	0.297	1	0.297	0.000:
1-Aug	0.289	1	0.289	0.000:
2-Aug	0.297	1	0.297	0.000:
3-Aug	0.298	1	0.298	0.000:
4-Aug	0.721	1	0.721	0.000:
5-Aug	0.922	1	0.922	0.000:
6-Aug	1.104	1	1.104	0.000:
7-Aug	0.618	1	0.618	0.000:
8-Aug	0.482	1	0.482	0.000:
9-Aug	0.420	1	0.420	0.000:
10-Aug	0.376	1	0.376	0.000:
11-Aug	0.347	1	0.347	0.000:
12-Aug	0.340	1	0.340	0.000:
13-Aug	0.326	1	0.326	0.000:
14-Aug	0.350	1	0.350	0.000:
15-Aug	0.408	1	0.408	0.000:
16-Aug	0.383	1	0.383	0.000:
17-Aug	0.336	1	0.336	0.000:
18-Aug	0.418	1	0.418	0.000:
19-Aug	0.405	1	0.405	0.000:
20-Aug	0.405	1	0.405	0.000:
21-Aug	0.425	1	0.425	0.000:
22-Aug	0.456	1	0.456	0.000:

23-Aug	0.546	1	0.546	0.000:
24-Aug	0.488	1	0.488	0.000:
25-Aug	0.474	1	0.474	0.000:
26-Aug	0.404	1	0.404	0.000:
27-Aug	0.371	1	0.371	0.000:
28-Aug	0.340	1	0.340	0.000:
29-Aug	0.327	1	0.327	0.000:
30-Aug	0.318	1	0.318	0.000:
31-Aug	0.360	1	0.360	0.000:
1-Sep	0.379	1	0.379	0.000:
2-Sep	0.337	1	0.337	0.000:
3-Sep	0.420	1	0.420	0.000:
4-Sep	0.561	1	0.561	0.000:
5-Sep	0.422	1	0.422	0.000:
6-Sep	0.430	1	0.430	0.000:
7-Sep	0.543	1	0.543	0.000:
8-Sep	4.983	1	4.983	0.000:
9-Sep	2.477	1	2.477	0.000:
10-Sep	1.417	1	1.417	0.000:
11-Sep	1.291	1	1.291	0.000:
12-Sep	4.894	1	4.894	0.000:
13-Sep	2.481	1	2.481	0.000:
14-Sep	2.342	1	2.342	0.000:
15-Sep	1.478	1	1.478	0.000:
16-Sep	1.152	1	1.152	0.000:
17-Sep	1.029	1	1.029	0.000:
18-Sep	2.078	1	2.078	0.000:
19-Sep	6.265	1	6.265	0.000:
20-Sep	4.782	1	4.782	0.000:
21-Sep	2.898	1	2.898	0.000:
22-Sep	1.936	1	1.936	0.000:
23-Sep	3.054	1	3.054	0.000:
24-Sep	2.992	1	2.992	0.000:
25-Sep	3.221	1	3.221	0.000:
26-Sep	2.163	1	2.163	0.000:
27-Sep	1.647	1	1.647	0.000:
28-Sep	4.255	1	4.255	0.000:
29-Sep	2.370	1	2.370	0.000:
30-Sep	3.307	1	3.307	0.000:
1-Oct	2.779	1	2.779	0.000:
2-Oct	2.007	1	2.007	0.000:
3-Oct	1.572	1	1.572	0.000:
4-Oct	1.672	1	1.672	0.000:
5-Oct	7.166	1	7.166	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. TEMPERATURE (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
6	N.F. KOKTULI	J	36.5	2007	18-May	4.675		2.18	1	4.675	0.000:	CONFLUENCE WITH TRIBUTARY NFK
					19-May	3.961		2.49	1	3.961	0.000:	1.119
					20-May	3.596		2.80	1	3.596	0.000:	
					21-May	3.064		3.11	1	3.064	0.000:	
					22-May	3.310		3.42	1	3.310	0.000:	
					23-May	3.469		3.69	1	3.469	0.000:	
					24-May	4.072		3.88	1	4.072	0.000:	
					25-May	4.008		4.02	1	4.008	0.000:	
					26-May	3.813		4.17	1	3.813	0.000:	
					27-May	3.314		4.36	1	3.314	0.000:	
					28-May	2.881		4.59	1	2.881	0.000:	
					29-May	2.410		4.82	1	2.410	0.000:	
					30-May	2.119		5.04	1	2.119	0.000:	
					31-May	2.149		5.20	1	2.149	0.000:	
					1-Jun	2.109		5.28	1	2.109	0.000:	
					2-Jun	2.013		5.31	1	2.013	0.000:	
					3-Jun	1.958		5.39	1	1.958	0.000:	
					4-Jun	2.147		5.55	1	2.147	0.000:	
					5-Jun	2.959		5.71	1	2.959	0.000:	
					6-Jun	2.592		5.86	1	2.592	0.000:	
					7-Jun	2.194		6.01	1	2.194	0.000:	
					8-Jun	1.888		6.13	1	1.888	0.000:	
					9-Jun	1.667		6.26	1	1.667	0.000:	
					10-Jun	1.640		6.45	1	1.640	0.000:	
					11-Jun	1.803		6.63	1	1.803	0.000:	
					12-Jun	1.739		6.63	1	1.739	0.000:	
					13-Jun	1.524		6.49	1	1.524	0.000:	
					14-Jun	1.528		6.36	1	1.528	0.000:	
					15-Jun	1.570		6.33	1	1.570	0.000:	
					16-Jun	1.622		6.41	1	1.622	0.000:	
					17-Jun	1.824		6.48	1	1.824	0.000:	
					18-Jun	1.659		6.57	1	1.659	0.000:	
					19-Jun	1.584		6.76	1	1.584	0.000:	
					20-Jun	1.681		7.05	1	1.681	0.000:	
					21-Jun	1.590		7.27	1	1.590	0.000:	
					22-Jun	1.518		7.26	1	1.518	0.000:	
					23-Jun	2.897		6.99	1	2.897	0.000:	
					24-Jun	4.319		6.61	1	4.319	0.000:	
					25-Jun	2.449		6.35	1	2.449	0.000:	
					26-Jun	1.848		6.27	1	1.848	0.000:	
					27-Jun	1.561		6.39	1	1.561	0.000:	
					28-Jun	1.506		6.62	1	1.506	0.000:	
					29-Jun	1.425		6.82	1	1.425	0.000:	
					30-Jun	1.348		7.02	1	1.348	0.000:	
					1-Jul	1.290		7.23	1	1.290	0.000:	
					2-Jul	1.239		7.48	1	1.239	0.000:	

3-Jul	1.215	7.76	1	1.215	0.000:
4-Jul	1.918	7.97	1	1.918	0.000:
5-Jul	1.724	8.07	1	1.724	0.000:
6-Jul	1.516	8.17	1	1.516	0.000:
7-Jul	1.369	8.32	1	1.369	0.000:
8-Jul	1.480	8.50	1	1.480	0.000:
9-Jul	1.369	8.65	1	1.369	0.000:
10-Jul	1.269	8.83	1	1.269	0.000:
11-Jul	1.192	9.06	1	1.192	0.000:
12-Jul	1.166	9.25	1	1.166	0.000:
13-Jul	1.412	9.31	1	1.412	0.000:
14-Jul	1.371	9.27	1	1.371	0.000:
15-Jul	1.235	9.25	1	1.235	0.000:
16-Jul	1.148	9.36	1	1.148	0.000:
17-Jul	1.077	9.66	1	1.077	0.000:
18-Jul	1.041	10.09	1	1.041	0.000:
19-Jul	1.023	10.49	1	1.023	0.000:
20-Jul	0.992	10.80	1	0.992	0.000:
21-Jul	1.107	10.96	1	1.107	0.000:
22-Jul	1.133	10.87	1	1.133	0.000:
23-Jul	1.405	10.65	1	1.405	0.000:
24-Jul	1.601	10.50	1	1.601	0.000:
25-Jul	1.338	10.58	1	1.338	0.000:
26-Jul	1.141	10.93	1	1.141	0.000:
27-Jul	1.052	11.54	1	1.052	0.000:
28-Jul	1.197	12.25	1	1.197	0.000:
29-Jul	1.084	12.86	1	1.084	0.000:
30-Jul	1.021	13.28	1	1.021	0.000:
31-Jul	0.995	13.42	1	0.995	0.000:
1-Aug	0.966	13.20	1	0.966	0.000:
2-Aug	0.964	12.68	1	0.964	0.000:
3-Aug	0.965	12.01	1	0.965	0.000:
4-Aug	1.738	11.32	1	1.738	0.000:
5-Aug	2.129	10.73	1	2.129	0.000:
6-Aug	2.269	10.32	1	2.269	0.000:
7-Aug	1.555	10.12	1	1.555	0.000:
8-Aug	1.307	10.13	1	1.307	0.000:
9-Aug	1.182	10.31	1	1.182	0.000:
10-Aug	1.089	10.68	1	1.089	0.000:
11-Aug	1.031	11.18	1	1.031	0.000:
12-Aug	1.018	11.71	1	1.018	0.000:
13-Aug	0.993	12.18	1	0.993	0.000:
14-Aug	1.022	12.56	1	1.022	0.000:
15-Aug	1.231	12.71	1	1.231	0.000:
16-Aug	1.158	12.76	1	1.158	0.000:
17-Aug	1.028	12.80	1	1.028	0.000:
18-Aug	1.132	12.68	1	1.132	0.000:
19-Aug	1.137	12.41	1	1.137	0.000:
20-Aug	1.138	12.10	1	1.138	0.000:
21-Aug	1.181	11.72	1	1.181	0.000:
22-Aug	1.226	11.30	1	1.226	0.000:

23-Aug	1.430	10.92	1	1.430	0.000:
24-Aug	1.317	10.70	1	1.317	0.000:
25-Aug	1.249	10.63	1	1.249	0.000:
26-Aug	1.140	10.64	1	1.140	0.000:
27-Aug	1.079	10.68	1	1.079	0.000:
28-Aug	1.016	10.79	1	1.016	0.000:
29-Aug	0.988	11.02	1	0.988	0.000:
30-Aug	0.957	11.32	1	0.957	0.000:
31-Aug	1.012	11.61	1	1.012	0.000:
1-Sep	1.043	11.81	1	1.043	0.000:
2-Sep	0.977	11.76	1	0.977	0.000:
3-Sep	1.080	11.50	1	1.080	0.000:
4-Sep	1.369	11.21	1	1.369	0.000:
5-Sep	1.149	11.03	1	1.149	0.000:
6-Sep	1.433	10.91	1	1.433	0.000:
7-Sep	1.454	10.70	1	1.454	0.000:
8-Sep	6.374	10.35	1	6.374	0.000:
9-Sep	4.498	9.94	1	4.498	0.000:
10-Sep	3.150	9.53	1	3.150	0.000:
11-Sep	2.734	9.14	1	2.734	0.000:
12-Sep	6.541	8.78	1	6.541	0.000:
13-Sep	4.508	8.45	1	4.508	0.000:
14-Sep	4.585	8.19	1	4.585	0.000:
15-Sep	3.429	8.03	1	3.429	0.000:
16-Sep	2.875	7.97	1	2.875	0.000:
17-Sep	2.638	7.96	1	2.638	0.000:
18-Sep	3.550	7.92	1	3.550	0.000:
19-Sep	8.655	7.81	1	8.655	0.000:
20-Sep	7.264	7.62	1	7.264	0.000:
21-Sep	5.834	7.39	1	5.834	0.000:
22-Sep	4.524	7.17	1	4.524	0.000:
23-Sep	5.935	6.97	1	5.935	0.000:
24-Sep	5.691	6.81	1	5.691	0.000:
25-Sep	6.007	6.66	1	6.007	0.000:
26-Sep	4.840	6.51	1	4.840	0.000:
27-Sep	4.165	6.36	1	4.165	0.000:
28-Sep	7.080	6.18	1	7.080	0.000:
29-Sep	5.584	6.00	1	5.584	0.000:
30-Sep	6.112	5.81	1	6.112	0.000:
1-Oct	5.873	5.56	1	5.873	0.000:
2-Oct	4.913	5.24	1	4.913	0.000:
3-Oct	4.334	4.84	1	4.334	0.000:
4-Oct	4.248	4.38	1	4.248	0.000:
5-Oct	10.472	3.88	1	10.472	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
7	N.F. KOKTULI	Q	35.8	2007	18-May	4.850		2.36	1	4.850	0.000:	HYDROLOGY GAGE NK100B
					19-May	4.113		2.60	1	4.113	0.000:	
					20-May	3.741		2.89	1	3.741	0.000:	
					21-May	3.191		3.19	1	3.191	0.000:	
					22-May	3.443		3.54	1	3.443	0.000:	
					23-May	3.605		3.81	1	3.605	0.000:	
					24-May	4.221		3.85	1	4.221	0.000:	
					25-May	4.162		3.81	1	4.162	0.000:	
					26-May	3.963		3.88	1	3.963	0.000:	
					27-May	3.452		4.02	1	3.452	0.000:	
					28-May	3.006		4.19	1	3.006	0.000:	
					29-May	2.518		4.34	1	2.518	0.000:	
					30-May	2.215		4.53	1	2.215	0.000:	
					31-May	2.246		4.79	1	2.246	0.000:	
					1-Jun	2.203		4.96	1	2.203	0.000:	
					2-Jun	2.103		4.99	1	2.103	0.000:	
					3-Jun	2.046		4.99	1	2.046	0.000:	
					4-Jun	2.241		5.06	1	2.241	0.000:	
					5-Jun	3.080		5.20	1	3.080	0.000:	
					6-Jun	2.704		5.34	1	2.704	0.000:	
					7-Jun	2.290		5.56	1	2.290	0.000:	
					8-Jun	1.972		5.81	1	1.972	0.000:	
					9-Jun	1.743		6.16	1	1.743	0.000:	
					10-Jun	1.713		6.57	1	1.713	0.000:	
					11-Jun	1.880		6.98	1	1.880	0.000:	
					12-Jun	1.814		7.41	1	1.814	0.000:	
					13-Jun	1.591		7.80	1	1.591	0.000:	
					14-Jun	1.595		8.14	1	1.595	0.000:	
					15-Jun	1.638		8.31	1	1.638	0.000:	
					16-Jun	1.690		8.22	1	1.690	0.000:	
					17-Jun	1.900		8.20	1	1.900	0.000:	
					18-Jun	1.732		8.45	1	1.732	0.000:	
					19-Jun	1.651		8.82	1	1.651	0.000:	
					20-Jun	1.749		9.09	1	1.749	0.000:	
					21-Jun	1.656		9.05	1	1.656	0.000:	
					22-Jun	1.581		8.61	1	1.581	0.000:	
					23-Jun	2.995		8.03	1	2.995	0.000:	
					24-Jun	4.506		7.48	1	4.506	0.000:	
					25-Jun	2.560		7.08	1	2.560	0.000:	
					26-Jun	1.932		6.68	1	1.932	0.000:	
					27-Jun	1.631		6.26	1	1.631	0.000:	
					28-Jun	1.573		5.72	1	1.573	0.000:	
					29-Jun	1.490		5.07	1	1.490	0.000:	
					30-Jun	1.410		4.79	1	1.410	0.000:	
					1-Jul	1.350		4.81	1	1.350	0.000:	
					2-Jul	1.297		5.11	1	1.297	0.000:	

3-Jul	1.271	5.75	1	1.271	0.000:
4-Jul	2.004	6.36	1	2.004	0.000:
5-Jul	1.806	6.62	1	1.806	0.000:
6-Jul	1.587	6.58	1	1.587	0.000:
7-Jul	1.434	6.47	1	1.434	0.000:
8-Jul	1.548	6.37	1	1.548	0.000:
9-Jul	1.433	6.21	1	1.433	0.000:
10-Jul	1.328	6.13	1	1.328	0.000:
11-Jul	1.248	6.33	1	1.248	0.000:
12-Jul	1.220	6.73	1	1.220	0.000:
13-Jul	1.474	7.00	1	1.474	0.000:
14-Jul	1.434	6.89	1	1.434	0.000:
15-Jul	1.293	6.46	1	1.293	0.000:
16-Jul	1.202	5.98	1	1.202	0.000:
17-Jul	1.128	5.83	1	1.128	0.000:
18-Jul	1.091	6.15	1	1.091	0.000:
19-Jul	1.072	6.61	1	1.072	0.000:
20-Jul	1.039	7.26	1	1.039	0.000:
21-Jul	1.163	8.00	1	1.163	0.000:
22-Jul	1.187	8.33	1	1.187	0.000:
23-Jul	1.472	8.02	1	1.472	0.000:
24-Jul	1.681	7.18	1	1.681	0.000:
25-Jul	1.403	6.13	1	1.403	0.000:
26-Jul	1.196	5.14	1	1.196	0.000:
27-Jul	1.103	4.58	1	1.103	0.000:
28-Jul	1.260	4.76	1	1.260	0.000:
29-Jul	1.140	5.91	1	1.140	0.000:
30-Jul	1.072	7.82	1	1.072	0.000:
31-Jul	1.044	9.89	1	1.044	0.000:
1-Aug	1.014	11.38	1	1.014	0.000:
2-Aug	1.011	11.95	1	1.011	0.000:
3-Aug	1.012	11.64	1	1.012	0.000:
4-Aug	1.812	10.63	1	1.812	0.000:
5-Aug	2.218	9.15	1	2.218	0.000:
6-Aug	2.354	7.53	1	2.354	0.000:
7-Aug	1.623	5.96	1	1.623	0.000:
8-Aug	1.366	4.57	1	1.366	0.000:
9-Aug	1.236	3.45	1	1.236	0.000:
10-Aug	1.139	2.91	1	1.139	0.000:
11-Aug	1.079	3.07	1	1.079	0.000:
12-Aug	1.065	3.78	1	1.065	0.000:
13-Aug	1.040	5.03	1	1.040	0.000:
14-Aug	1.070	6.64	1	1.070	0.000:
15-Aug	1.290	7.69	1	1.290	0.000:
16-Aug	1.214	8.41	1	1.214	0.000:
17-Aug	1.077	9.24	1	1.077	0.000:
18-Aug	1.183	9.92	1	1.183	0.000:
19-Aug	1.189	10.29	1	1.189	0.000:
20-Aug	1.190	10.51	1	1.190	0.000:
21-Aug	1.235	10.33	1	1.235	0.000:
22-Aug	1.281	9.67	1	1.281	0.000:

23-Aug	1.494	8.75	1	1.494	0.000:
24-Aug	1.377	7.94	1	1.377	0.000:
25-Aug	1.304	7.35	1	1.304	0.000:
26-Aug	1.192	6.78	1	1.192	0.000:
27-Aug	1.129	6.18	1	1.129	0.000:
28-Aug	1.064	5.77	1	1.064	0.000:
29-Aug	1.034	5.87	1	1.034	0.000:
30-Aug	1.002	6.41	1	1.002	0.000:
31-Aug	1.057	7.14	1	1.057	0.000:
1-Sep	1.090	7.82	1	1.090	0.000:
2-Sep	1.022	8.10	1	1.022	0.000:
3-Sep	1.127	8.03	1	1.127	0.000:
4-Sep	1.427	8.00	1	1.427	0.000:
5-Sep	1.200	8.22	1	1.200	0.000:
6-Sep	1.506	8.64	1	1.506	0.000:
7-Sep	1.520	9.00	1	1.520	0.000:
8-Sep	6.477	9.02	1	6.477	0.000:
9-Sep	4.652	8.82	1	4.652	0.000:
10-Sep	3.281	8.57	1	3.281	0.000:
11-Sep	2.842	8.31	1	2.842	0.000:
12-Sep	6.664	8.00	1	6.664	0.000:
13-Sep	4.662	7.70	1	4.662	0.000:
14-Sep	4.757	7.42	1	4.757	0.000:
15-Sep	3.577	7.25	1	3.577	0.000:
16-Sep	3.005	7.28	1	3.005	0.000:
17-Sep	2.758	7.45	1	2.758	0.000:
18-Sep	3.660	7.59	1	3.660	0.000:
19-Sep	8.839	7.59	1	8.839	0.000:
20-Sep	7.456	7.40	1	7.456	0.000:
21-Sep	6.063	7.14	1	6.063	0.000:
22-Sep	4.724	6.91	1	4.724	0.000:
23-Sep	6.159	6.80	1	6.159	0.000:
24-Sep	5.900	6.73	1	5.900	0.000:
25-Sep	6.224	6.65	1	6.224	0.000:
26-Sep	5.047	6.54	1	5.047	0.000:
27-Sep	4.359	6.41	1	4.359	0.000:
28-Sep	7.300	6.26	1	7.300	0.000:
29-Sep	5.836	6.18	1	5.836	0.000:
30-Sep	6.330	6.20	1	6.330	0.000:
1-Oct	6.115	6.24	1	6.115	0.000:
2-Oct	5.139	6.21	1	5.139	0.000:
3-Oct	4.549	6.07	1	4.549	0.000:
4-Oct	4.447	5.85	1	4.447	0.000:
5-Oct	10.732	5.52	1	10.732	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
8	N.F. KOKTULI	Q	27.9	2007	18-May	6.526		2.36	1	6.526	0.000:	HYDROLOGY NODE NK100LF3
					19-May	5.379		2.60	1	5.379	0.000:	
					20-May	4.811		2.89	1	4.811	0.000:	
					21-May	3.992		3.19	1	3.992	0.000:	
					22-May	4.366		3.54	1	4.366	0.000:	
					23-May	4.607		3.81	1	4.607	0.000:	
					24-May	5.544		3.85	1	5.544	0.000:	
					25-May	5.453		3.81	1	5.453	0.000:	
					26-May	5.149		3.88	1	5.149	0.000:	
					27-May	4.379		4.02	1	4.379	0.000:	
					28-May	3.722		4.19	1	3.722	0.000:	
					29-May	3.078		4.34	1	3.078	0.000:	
					30-May	2.718		4.53	1	2.718	0.000:	
					31-May	2.754		4.79	1	2.754	0.000:	
					1-Jun	2.703		4.96	1	2.703	0.000:	
					2-Jun	2.584		4.99	1	2.584	0.000:	
					3-Jun	2.516		4.99	1	2.516	0.000:	
					4-Jun	2.748		5.06	1	2.748	0.000:	
					5-Jun	3.829		5.20	1	3.829	0.000:	
					6-Jun	3.298		5.34	1	3.298	0.000:	
					7-Jun	2.807		5.56	1	2.807	0.000:	
					8-Jun	2.427		5.81	1	2.427	0.000:	
					9-Jun	2.152		6.16	1	2.152	0.000:	
					10-Jun	2.117		6.57	1	2.117	0.000:	
					11-Jun	2.317		6.98	1	2.317	0.000:	
					12-Jun	2.238		7.41	1	2.238	0.000:	
					13-Jun	1.970		7.80	1	1.970	0.000:	
					14-Jun	1.974		8.14	1	1.974	0.000:	
					15-Jun	2.026		8.31	1	2.026	0.000:	
					16-Jun	2.089		8.22	1	2.089	0.000:	
					17-Jun	2.340		8.20	1	2.340	0.000:	
					18-Jun	2.139		8.45	1	2.139	0.000:	
					19-Jun	2.042		8.82	1	2.042	0.000:	
					20-Jun	2.160		9.09	1	2.160	0.000:	
					21-Jun	2.048		9.05	1	2.048	0.000:	
					22-Jun	1.958		8.61	1	1.958	0.000:	
					23-Jun	3.707		8.03	1	3.707	0.000:	
					24-Jun	5.987		7.48	1	5.987	0.000:	
					25-Jun	3.128		7.08	1	3.128	0.000:	
					26-Jun	2.379		6.68	1	2.379	0.000:	
					27-Jun	2.018		6.26	1	2.018	0.000:	
					28-Jun	1.949		5.72	1	1.949	0.000:	
					29-Jun	1.848		5.07	1	1.848	0.000:	
					30-Jun	1.751		4.79	1	1.751	0.000:	
					1-Jul	1.679		4.81	1	1.679	0.000:	
					2-Jul	1.615		5.11	1	1.615	0.000:	

3-Jul	1.584	5.75	1	1.584	0.000:
4-Jul	2.465	6.36	1	2.465	0.000:
5-Jul	2.228	6.62	1	2.228	0.000:
6-Jul	1.965	6.58	1	1.965	0.000:
7-Jul	1.781	6.47	1	1.781	0.000:
8-Jul	1.918	6.37	1	1.918	0.000:
9-Jul	1.779	6.21	1	1.779	0.000:
10-Jul	1.653	6.13	1	1.653	0.000:
11-Jul	1.556	6.33	1	1.556	0.000:
12-Jul	1.522	6.73	1	1.522	0.000:
13-Jul	1.829	7.00	1	1.829	0.000:
14-Jul	1.781	6.89	1	1.781	0.000:
15-Jul	1.610	6.46	1	1.610	0.000:
16-Jul	1.500	5.98	1	1.500	0.000:
17-Jul	1.410	5.83	1	1.410	0.000:
18-Jul	1.365	6.15	1	1.365	0.000:
19-Jul	1.341	6.61	1	1.341	0.000:
20-Jul	1.302	7.26	1	1.302	0.000:
21-Jul	1.453	8.00	1	1.453	0.000:
22-Jul	1.482	8.33	1	1.482	0.000:
23-Jul	1.826	8.02	1	1.826	0.000:
24-Jul	2.079	7.18	1	2.079	0.000:
25-Jul	1.743	6.13	1	1.743	0.000:
26-Jul	1.493	5.14	1	1.493	0.000:
27-Jul	1.380	4.58	1	1.380	0.000:
28-Jul	1.570	4.76	1	1.570	0.000:
29-Jul	1.424	5.91	1	1.424	0.000:
30-Jul	1.342	7.82	1	1.342	0.000:
31-Jul	1.308	9.89	1	1.308	0.000:
1-Aug	1.271	11.38	1	1.271	0.000:
2-Aug	1.268	11.95	1	1.268	0.000:
3-Aug	1.269	11.64	1	1.269	0.000:
4-Aug	2.235	10.63	1	2.235	0.000:
5-Aug	2.721	9.15	1	2.721	0.000:
6-Aug	2.883	7.53	1	2.883	0.000:
7-Aug	2.008	5.96	1	2.008	0.000:
8-Aug	1.699	4.57	1	1.699	0.000:
9-Aug	1.541	3.45	1	1.541	0.000:
10-Aug	1.424	2.91	1	1.424	0.000:
11-Aug	1.350	3.07	1	1.350	0.000:
12-Aug	1.334	3.78	1	1.334	0.000:
13-Aug	1.303	5.03	1	1.303	0.000:
14-Aug	1.339	6.64	1	1.339	0.000:
15-Aug	1.607	7.69	1	1.607	0.000:
16-Aug	1.514	8.41	1	1.514	0.000:
17-Aug	1.348	9.24	1	1.348	0.000:
18-Aug	1.477	9.92	1	1.477	0.000:
19-Aug	1.485	10.29	1	1.485	0.000:
20-Aug	1.485	10.51	1	1.485	0.000:
21-Aug	1.539	10.33	1	1.539	0.000:
22-Aug	1.596	9.67	1	1.596	0.000:

23-Aug	1.853	8.75	1	1.853	0.000:
24-Aug	1.711	7.94	1	1.711	0.000:
25-Aug	1.623	7.35	1	1.623	0.000:
26-Aug	1.488	6.78	1	1.488	0.000:
27-Aug	1.412	6.18	1	1.412	0.000:
28-Aug	1.332	5.77	1	1.332	0.000:
29-Aug	1.296	5.87	1	1.296	0.000:
30-Aug	1.256	6.41	1	1.256	0.000:
31-Aug	1.324	7.14	1	1.324	0.000:
1-Sep	1.364	7.82	1	1.364	0.000:
2-Sep	1.280	8.10	1	1.280	0.000:
3-Sep	1.408	8.03	1	1.408	0.000:
4-Sep	1.772	8.00	1	1.772	0.000:
5-Sep	1.498	8.22	1	1.498	0.000:
6-Sep	1.867	8.64	1	1.867	0.000:
7-Sep	1.884	9.00	1	1.884	0.000:
8-Sep	9.018	9.02	1	9.018	0.000:
9-Sep	6.215	8.82	1	6.215	0.000:
10-Sep	4.125	8.57	1	4.125	0.000:
11-Sep	3.484	8.31	1	3.484	0.000:
12-Sep	9.298	8.00	1	9.298	0.000:
13-Sep	6.231	7.70	1	6.231	0.000:
14-Sep	6.379	7.42	1	6.379	0.000:
15-Sep	4.565	7.25	1	4.565	0.000:
16-Sep	3.721	7.28	1	3.721	0.000:
17-Sep	3.366	7.45	1	3.366	0.000:
18-Sep	4.689	7.59	1	4.689	0.000:
19-Sep	12.593	7.59	1	12.593	0.000:
20-Sep	10.489	7.40	1	10.489	0.000:
21-Sep	8.400	7.14	1	8.400	0.000:
22-Sep	6.329	6.91	1	6.329	0.000:
23-Sep	8.543	6.80	1	8.543	0.000:
24-Sep	8.158	6.73	1	8.158	0.000:
25-Sep	8.639	6.65	1	8.639	0.000:
26-Sep	6.839	6.54	1	6.839	0.000:
27-Sep	5.758	6.41	1	5.758	0.000:
28-Sep	10.254	6.26	1	10.254	0.000:
29-Sep	8.062	6.18	1	8.062	0.000:
30-Sep	8.798	6.20	1	8.798	0.000:
1-Oct	8.477	6.24	1	8.477	0.000:
2-Oct	6.985	6.21	1	6.985	0.000:
3-Oct	6.053	6.07	1	6.053	0.000:
4-Oct	5.895	5.85	1	5.895	0.000:
5-Oct	15.511	5.52	1	15.511	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
9	N.F. KOKTULI	Q	13.7	2007	18-May	13.240		5.12	1	13.240	0.000:	HYDROLOGY GAGE NK100A1
					19-May	10.380		5.86	1	10.380	0.000:	
					20-May	10.510		6.59	1	10.510	0.000:	
					21-May	9.150		7.19	1	9.150	0.000:	
					22-May	9.320		7.65	1	9.320	0.000:	
					23-May	9.640		7.85	1	9.640	0.000:	
					24-May	11.910		7.74	1	11.910	0.000:	
					25-May	12.140		7.52	1	12.140	0.000:	
					26-May	11.210		7.44	1	11.210	0.000:	
					27-May	10.040		7.60	1	10.040	0.000:	
					28-May	8.960		7.97	1	8.960	0.000:	
					29-May	7.720		8.42	1	7.720	0.000:	
					30-May	6.450		8.95	1	6.450	0.000:	
					31-May	6.390		9.47	1	6.390	0.000:	
					1-Jun	6.280		9.79	1	6.280	0.000:	
					2-Jun	6.140		9.79	1	6.140	0.000:	
					3-Jun	5.750		9.61	1	5.750	0.000:	
					4-Jun	5.890		9.41	1	5.890	0.000:	
					5-Jun	7.950		9.22	1	7.950	0.000:	
					6-Jun	7.580		9.04	1	7.580	0.000:	
					7-Jun	6.360		8.87	1	6.360	0.000:	
					8-Jun	5.560		8.54	1	5.560	0.000:	
					9-Jun	4.950		8.10	1	4.950	0.000:	
					10-Jun	4.650		7.71	1	4.650	0.000:	
					11-Jun	4.920		7.40	1	4.920	0.000:	
					12-Jun	4.920		6.95	1	4.920	0.000:	
					13-Jun	4.430		6.25	1	4.430	0.000:	
					14-Jun	4.270		5.54	1	4.270	0.000:	
					15-Jun	4.270		5.04	1	4.270	0.000:	
					16-Jun	4.570		4.88	1	4.570	0.000:	
					17-Jun	5.170		5.02	1	5.170	0.000:	
					18-Jun	4.870		5.39	1	4.870	0.000:	
					19-Jun	4.570		6.14	1	4.570	0.000:	
					20-Jun	4.650		7.38	1	4.650	0.000:	
					21-Jun	4.490		8.95	1	4.490	0.000:	
					22-Jun	4.220		10.46	1	4.220	0.000:	
					23-Jun	6.590		11.44	1	6.590	0.000:	
					24-Jun	11.460		11.76	1	11.460	0.000:	
					25-Jun	7.430		11.65	1	7.430	0.000:	
					26-Jun	5.450		11.38	1	5.450	0.000:	
					27-Jun	4.600		11.33	1	4.600	0.000:	
					28-Jun	4.240		11.59	1	4.240	0.000:	
					29-Jun	4.080		11.94	1	4.080	0.000:	
					30-Jun	3.790		12.51	1	3.790	0.000:	
					1-Jul	3.630		13.20	1	3.630	0.000:	
					2-Jul	3.420		13.88	1	3.420	0.000:	

3-Jul	3.260	14.52	1	3.260	0.000:
4-Jul	4.680	14.90	1	4.680	0.000:
5-Jul	5.030	14.86	1	5.030	0.000:
6-Jul	4.240	14.58	1	4.240	0.000:
7-Jul	3.840	14.30	1	3.840	0.000:
8-Jul	3.950	14.14	1	3.950	0.000:
9-Jul	3.840	14.08	1	3.840	0.000:
10-Jul	3.630	14.18	1	3.630	0.000:
11-Jul	3.340	14.48	1	3.340	0.000:
12-Jul	3.180	14.91	1	3.180	0.000:
13-Jul	4.410	15.18	1	4.410	0.000:
14-Jul	4.540	15.13	1	4.540	0.000:
15-Jul	3.870	14.84	1	3.870	0.000:
16-Jul	3.520	14.49	1	3.520	0.000:
17-Jul	3.200	14.35	1	3.200	0.000:
18-Jul	2.920	14.49	1	2.920	0.000:
19-Jul	2.840	14.74	1	2.840	0.000:
20-Jul	2.730	15.06	1	2.730	0.000:
21-Jul	2.760	15.36	1	2.760	0.000:
22-Jul	3.310	15.41	1	3.310	0.000:
23-Jul	4.080	15.10	1	4.080	0.000:
24-Jul	4.240	14.56	1	4.240	0.000:
25-Jul	3.840	14.09	1	3.840	0.000:
26-Jul	3.280	13.93	1	3.280	0.000:
27-Jul	2.920	14.23	1	2.920	0.000:
28-Jul	2.730	14.99	1	2.730	0.000:
29-Jul	2.710	16.10	1	2.710	0.000:
30-Jul	2.610	17.32	1	2.610	0.000:
31-Jul	2.580	18.37	1	2.580	0.000:
1-Aug	2.450	18.97	1	2.450	0.000:
2-Aug	2.400	18.94	1	2.400	0.000:
3-Aug	2.450	18.30	1	2.450	0.000:
4-Aug	3.500	17.14	1	3.500	0.000:
5-Aug	4.710	15.65	1	4.710	0.000:
6-Aug	5.450	14.12	1	5.450	0.000:
7-Aug	4.220	12.78	1	4.220	0.000:
8-Aug	3.470	11.76	1	3.470	0.000:
9-Aug	3.050	11.14	1	3.050	0.000:
10-Aug	2.730	11.07	1	2.730	0.000:
11-Aug	2.530	11.57	1	2.530	0.000:
12-Aug	2.450	12.53	1	2.450	0.000:
13-Aug	2.400	13.82	1	2.400	0.000:
14-Aug	2.450	15.20	1	2.450	0.000:
15-Aug	3.130	16.27	1	3.130	0.000:
16-Aug	3.180	17.09	1	3.180	0.000:
17-Aug	2.730	17.84	1	2.730	0.000:
18-Aug	2.890	18.40	1	2.890	0.000:
19-Aug	3.470	18.73	1	3.470	0.000:
20-Aug	3.200	18.88	1	3.200	0.000:
21-Aug	3.310	18.65	1	3.310	0.000:
22-Aug	3.500	17.93	1	3.500	0.000:

23-Aug	3.760	16.88	1	3.760	0.000:
24-Aug	3.600	15.81	1	3.600	0.000:
25-Aug	4.060	14.87	1	4.060	0.000:
26-Aug	3.390	14.05	1	3.390	0.000:
27-Aug	3.000	13.39	1	3.000	0.000:
28-Aug	2.730	13.04	1	2.730	0.000:
29-Aug	2.550	13.10	1	2.550	0.000:
30-Aug	2.480	13.43	1	2.480	0.000:
31-Aug	2.610	13.82	1	2.610	0.000:
1-Sep	2.760	14.10	1	2.760	0.000:
2-Sep	2.580	14.11	1	2.580	0.000:
3-Sep	2.660	13.90	1	2.660	0.000:
4-Sep	3.920	13.70	1	3.920	0.000:
5-Sep	3.500	13.62	1	3.500	0.000:
6-Sep	3.360	13.63	1	3.360	0.000:
7-Sep	3.600	13.56	1	3.600	0.000:
8-Sep	14.710	13.33	1	14.710	0.000:
9-Sep	14.960	13.04	1	14.960	0.000:
10-Sep	9.110	12.78	1	9.110	0.000:
11-Sep	7.040	12.52	1	7.040	0.000:
12-Sep	15.000	12.14	1	15.000	0.000:
13-Sep	12.300	11.75	1	12.300	0.000:
14-Sep	11.790	11.40	1	11.790	0.000:
15-Sep	9.340	11.16	1	9.340	0.000:
16-Sep	7.690	11.08	1	7.690	0.000:
17-Sep	6.980	11.06	1	6.980	0.000:
18-Sep	7.660	10.88	1	7.660	0.000:
19-Sep	20.410	10.49	1	20.410	0.000:
20-Sep	18.130	9.97	1	18.130	0.000:
21-Sep	16.600	9.44	1	16.600	0.000:
22-Sep	11.950	8.99	1	11.950	0.000:
23-Sep	15.990	8.62	1	15.990	0.000:
24-Sep	14.710	8.36	1	14.710	0.000:
25-Sep	15.850	8.14	1	15.850	0.000:
26-Sep	13.200	7.93	1	13.200	0.000:
27-Sep	11.130	7.67	1	11.130	0.000:
28-Sep	17.530	7.40	1	17.530	0.000:
29-Sep	15.740	7.20	1	15.740	0.000:
30-Sep	15.080	7.15	1	15.080	0.000:
1-Oct	15.780	7.21	1	15.780	0.000:
2-Oct	13.100	7.36	1	13.100	0.000:
3-Oct	11.210	7.51	1	11.210	0.000:
4-Oct	10.190	7.63	1	10.190	0.000:
5-Oct	24.760	7.66	1	24.760	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
10	N.F. KOKTULI	Q	9.3	2007	18-May	13.640		5.12	1	13.640	0.000:	HYDROLOGY NODE FRS-4
					19-May	10.690		5.86	1	10.690	0.000:	
					20-May	10.820		6.59	1	10.820	0.000:	
					21-May	9.420		7.19	1	9.420	0.000:	
					22-May	9.600		7.65	1	9.600	0.000:	
					23-May	9.930		7.85	1	9.930	0.000:	
					24-May	12.270		7.74	1	12.270	0.000:	
					25-May	12.500		7.52	1	12.500	0.000:	
					26-May	11.550		7.44	1	11.550	0.000:	
					27-May	10.350		7.60	1	10.350	0.000:	
					28-May	9.230		7.97	1	9.230	0.000:	
					29-May	7.950		8.42	1	7.950	0.000:	
					30-May	6.640		8.95	1	6.640	0.000:	
					31-May	6.590		9.47	1	6.590	0.000:	
					1-Jun	6.470		9.79	1	6.470	0.000:	
					2-Jun	6.330		9.79	1	6.330	0.000:	
					3-Jun	5.930		9.61	1	5.930	0.000:	
					4-Jun	6.070		9.41	1	6.070	0.000:	
					5-Jun	8.190		9.22	1	8.190	0.000:	
					6-Jun	7.810		9.04	1	7.810	0.000:	
					7-Jun	6.560		8.87	1	6.560	0.000:	
					8-Jun	5.730		8.54	1	5.730	0.000:	
					9-Jun	5.100		8.10	1	5.100	0.000:	
					10-Jun	4.790		7.71	1	4.790	0.000:	
					11-Jun	5.070		7.40	1	5.070	0.000:	
					12-Jun	5.070		6.95	1	5.070	0.000:	
					13-Jun	4.570		6.25	1	4.570	0.000:	
					14-Jun	4.400		5.54	1	4.400	0.000:	
					15-Jun	4.400		5.04	1	4.400	0.000:	
					16-Jun	4.710		4.88	1	4.710	0.000:	
					17-Jun	5.330		5.02	1	5.330	0.000:	
					18-Jun	5.020		5.39	1	5.020	0.000:	
					19-Jun	4.710		6.14	1	4.710	0.000:	
					20-Jun	4.790		7.38	1	4.790	0.000:	
					21-Jun	4.630		8.95	1	4.630	0.000:	
					22-Jun	4.350		10.46	1	4.350	0.000:	
					23-Jun	6.790		11.44	1	6.790	0.000:	
					24-Jun	11.800		11.76	1	11.800	0.000:	
					25-Jun	7.660		11.65	1	7.660	0.000:	
					26-Jun	5.610		11.38	1	5.610	0.000:	
					27-Jun	4.740		11.33	1	4.740	0.000:	
					28-Jun	4.380		11.59	1	4.380	0.000:	
					29-Jun	4.210		11.94	1	4.210	0.000:	
					30-Jun	3.900		12.51	1	3.900	0.000:	
					1-Jul	3.740		13.20	1	3.740	0.000:	
					2-Jul	3.520		13.88	1	3.520	0.000:	

3-Jul	3.360	14.52	1	3.360	0.000:
4-Jul	4.820	14.90	1	4.820	0.000:
5-Jul	5.190	14.86	1	5.190	0.000:
6-Jul	4.380	14.58	1	4.380	0.000:
7-Jul	3.960	14.30	1	3.960	0.000:
8-Jul	4.070	14.14	1	4.070	0.000:
9-Jul	3.960	14.08	1	3.960	0.000:
10-Jul	3.740	14.18	1	3.740	0.000:
11-Jul	3.440	14.48	1	3.440	0.000:
12-Jul	3.280	14.91	1	3.280	0.000:
13-Jul	4.540	15.18	1	4.540	0.000:
14-Jul	4.680	15.13	1	4.680	0.000:
15-Jul	3.990	14.84	1	3.990	0.000:
16-Jul	3.630	14.49	1	3.630	0.000:
17-Jul	3.300	14.35	1	3.300	0.000:
18-Jul	3.010	14.49	1	3.010	0.000:
19-Jul	2.930	14.74	1	2.930	0.000:
20-Jul	2.820	15.06	1	2.820	0.000:
21-Jul	2.850	15.36	1	2.850	0.000:
22-Jul	3.410	15.41	1	3.410	0.000:
23-Jul	4.210	15.10	1	4.210	0.000:
24-Jul	4.380	14.56	1	4.380	0.000:
25-Jul	3.960	14.09	1	3.960	0.000:
26-Jul	3.390	13.93	1	3.390	0.000:
27-Jul	3.010	14.23	1	3.010	0.000:
28-Jul	2.820	14.99	1	2.820	0.000:
29-Jul	2.790	16.10	1	2.790	0.000:
30-Jul	2.690	17.32	1	2.690	0.000:
31-Jul	2.660	18.37	1	2.660	0.000:
1-Aug	2.530	18.97	1	2.530	0.000:
2-Aug	2.470	18.94	1	2.470	0.000:
3-Aug	2.530	18.30	1	2.530	0.000:
4-Aug	3.600	17.14	1	3.600	0.000:
5-Aug	4.850	15.65	1	4.850	0.000:
6-Aug	5.610	14.12	1	5.610	0.000:
7-Aug	4.350	12.78	1	4.350	0.000:
8-Aug	3.580	11.76	1	3.580	0.000:
9-Aug	3.140	11.14	1	3.140	0.000:
10-Aug	2.820	11.07	1	2.820	0.000:
11-Aug	2.610	11.57	1	2.610	0.000:
12-Aug	2.530	12.53	1	2.530	0.000:
13-Aug	2.470	13.82	1	2.470	0.000:
14-Aug	2.530	15.20	1	2.530	0.000:
15-Aug	3.220	16.27	1	3.220	0.000:
16-Aug	3.280	17.09	1	3.280	0.000:
17-Aug	2.820	17.84	1	2.820	0.000:
18-Aug	2.980	18.40	1	2.980	0.000:
19-Aug	3.580	18.73	1	3.580	0.000:
20-Aug	3.300	18.88	1	3.300	0.000:
21-Aug	3.410	18.65	1	3.410	0.000:
22-Aug	3.600	17.93	1	3.600	0.000:

23-Aug	3.880	16.88	1	3.880	0.000:
24-Aug	3.710	15.81	1	3.710	0.000:
25-Aug	4.180	14.87	1	4.180	0.000:
26-Aug	3.490	14.05	1	3.490	0.000:
27-Aug	3.090	13.39	1	3.090	0.000:
28-Aug	2.820	13.04	1	2.820	0.000:
29-Aug	2.630	13.10	1	2.630	0.000:
30-Aug	2.550	13.43	1	2.550	0.000:
31-Aug	2.690	13.82	1	2.690	0.000:
1-Sep	2.850	14.10	1	2.850	0.000:
2-Sep	2.660	14.11	1	2.660	0.000:
3-Sep	2.740	13.90	1	2.740	0.000:
4-Sep	4.040	13.70	1	4.040	0.000:
5-Sep	3.600	13.62	1	3.600	0.000:
6-Sep	3.470	13.63	1	3.470	0.000:
7-Sep	3.710	13.56	1	3.710	0.000:
8-Sep	15.140	13.33	1	15.140	0.000:
9-Sep	15.410	13.04	1	15.410	0.000:
10-Sep	9.380	12.78	1	9.380	0.000:
11-Sep	7.250	12.52	1	7.250	0.000:
12-Sep	15.450	12.14	1	15.450	0.000:
13-Sep	12.670	11.75	1	12.670	0.000:
14-Sep	12.140	11.40	1	12.140	0.000:
15-Sep	9.620	11.16	1	9.620	0.000:
16-Sep	7.920	11.08	1	7.920	0.000:
17-Sep	7.190	11.06	1	7.190	0.000:
18-Sep	7.890	10.88	1	7.890	0.000:
19-Sep	21.010	10.49	1	21.010	0.000:
20-Sep	18.670	9.97	1	18.670	0.000:
21-Sep	17.090	9.44	1	17.090	0.000:
22-Sep	12.310	8.99	1	12.310	0.000:
23-Sep	16.460	8.62	1	16.460	0.000:
24-Sep	15.140	8.36	1	15.140	0.000:
25-Sep	16.320	8.14	1	16.320	0.000:
26-Sep	13.600	7.93	1	13.600	0.000:
27-Sep	11.460	7.67	1	11.460	0.000:
28-Sep	18.050	7.40	1	18.050	0.000:
29-Sep	16.200	7.20	1	16.200	0.000:
30-Sep	15.530	7.15	1	15.530	0.000:
1-Oct	16.240	7.21	1	16.240	0.000:
2-Oct	13.500	7.36	1	13.500	0.000:
3-Oct	11.550	7.51	1	11.550	0.000:
4-Oct	10.500	7.63	1	10.500	0.000:
5-Oct	25.480	7.66	1	25.480	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
11	N.F. KOKTULI	Q	5.3	2007	18-May	15.630		5.12	1	15.630	0.000:	HYDROLOGY GAGE NK100A
					19-May	11.670		5.86	1	11.670	0.000:	
					20-May	11.840		6.59	1	11.840	0.000:	
					21-May	10.020		7.19	1	10.020	0.000:	
					22-May	10.250		7.65	1	10.250	0.000:	
					23-May	10.680		7.85	1	10.680	0.000:	
					24-May	13.760		7.74	1	13.760	0.000:	
					25-May	14.070		7.52	1	14.070	0.000:	
					26-May	12.800		7.44	1	12.800	0.000:	
					27-May	11.210		7.60	1	11.210	0.000:	
					28-May	9.770		7.97	1	9.770	0.000:	
					29-May	8.440		8.42	1	8.440	0.000:	
					30-May	7.160		8.95	1	7.160	0.000:	
					31-May	7.110		9.47	1	7.110	0.000:	
					1-Jun	6.990		9.79	1	6.990	0.000:	
					2-Jun	6.850		9.79	1	6.850	0.000:	
					3-Jun	6.460		9.61	1	6.460	0.000:	
					4-Jun	6.600		9.41	1	6.600	0.000:	
					5-Jun	8.660		9.22	1	8.660	0.000:	
					6-Jun	8.300		9.04	1	8.300	0.000:	
					7-Jun	7.080		8.87	1	7.080	0.000:	
					8-Jun	6.260		8.54	1	6.260	0.000:	
					9-Jun	5.640		8.10	1	5.640	0.000:	
					10-Jun	5.320		7.71	1	5.320	0.000:	
					11-Jun	5.610		7.40	1	5.610	0.000:	
					12-Jun	5.610		6.95	1	5.610	0.000:	
					13-Jun	5.100		6.25	1	5.100	0.000:	
					14-Jun	4.930		5.54	1	4.930	0.000:	
					15-Jun	4.930		5.04	1	4.930	0.000:	
					16-Jun	5.240		4.88	1	5.240	0.000:	
					17-Jun	5.860		5.02	1	5.860	0.000:	
					18-Jun	5.550		5.39	1	5.550	0.000:	
					19-Jun	5.240		6.14	1	5.240	0.000:	
					20-Jun	5.320		7.38	1	5.320	0.000:	
					21-Jun	5.150		8.95	1	5.150	0.000:	
					22-Jun	4.870		10.46	1	4.870	0.000:	
					23-Jun	7.310		11.44	1	7.310	0.000:	
					24-Jun	13.140		11.76	1	13.140	0.000:	
					25-Jun	8.160		11.65	1	8.160	0.000:	
					26-Jun	6.140		11.38	1	6.140	0.000:	
					27-Jun	5.270		11.33	1	5.270	0.000:	
					28-Jun	4.900		11.59	1	4.900	0.000:	
					29-Jun	4.730		11.94	1	4.730	0.000:	
					30-Jun	4.420		12.51	1	4.420	0.000:	
					1-Jul	4.250		13.20	1	4.250	0.000:	
					2-Jul	4.020		13.88	1	4.020	0.000:	

3-Jul	3.850	14.52	1	3.850	0.000:
4-Jul	5.350	14.90	1	5.350	0.000:
5-Jul	5.720	14.86	1	5.720	0.000:
6-Jul	4.900	14.58	1	4.900	0.000:
7-Jul	4.470	14.30	1	4.470	0.000:
8-Jul	4.590	14.14	1	4.590	0.000:
9-Jul	4.470	14.08	1	4.470	0.000:
10-Jul	4.250	14.18	1	4.250	0.000:
11-Jul	3.940	14.48	1	3.940	0.000:
12-Jul	3.770	14.91	1	3.770	0.000:
13-Jul	5.070	15.18	1	5.070	0.000:
14-Jul	5.210	15.13	1	5.210	0.000:
15-Jul	4.500	14.84	1	4.500	0.000:
16-Jul	4.130	14.49	1	4.130	0.000:
17-Jul	3.790	14.35	1	3.790	0.000:
18-Jul	3.480	14.49	1	3.480	0.000:
19-Jul	3.400	14.74	1	3.400	0.000:
20-Jul	3.280	15.06	1	3.280	0.000:
21-Jul	3.310	15.36	1	3.310	0.000:
22-Jul	3.910	15.41	1	3.910	0.000:
23-Jul	4.730	15.10	1	4.730	0.000:
24-Jul	4.900	14.56	1	4.900	0.000:
25-Jul	4.470	14.09	1	4.470	0.000:
26-Jul	3.880	13.93	1	3.880	0.000:
27-Jul	3.480	14.23	1	3.480	0.000:
28-Jul	3.280	14.99	1	3.280	0.000:
29-Jul	3.260	16.10	1	3.260	0.000:
30-Jul	3.140	17.32	1	3.140	0.000:
31-Jul	3.110	18.37	1	3.110	0.000:
1-Aug	2.970	18.97	1	2.970	0.000:
2-Aug	2.920	18.94	1	2.920	0.000:
3-Aug	2.970	18.30	1	2.970	0.000:
4-Aug	4.110	17.14	1	4.110	0.000:
5-Aug	5.380	15.65	1	5.380	0.000:
6-Aug	6.140	14.12	1	6.140	0.000:
7-Aug	4.870	12.78	1	4.870	0.000:
8-Aug	4.080	11.76	1	4.080	0.000:
9-Aug	3.620	11.14	1	3.620	0.000:
10-Aug	3.280	11.07	1	3.280	0.000:
11-Aug	3.060	11.57	1	3.060	0.000:
12-Aug	2.970	12.53	1	2.970	0.000:
13-Aug	2.920	13.82	1	2.920	0.000:
14-Aug	2.970	15.20	1	2.970	0.000:
15-Aug	3.710	16.27	1	3.710	0.000:
16-Aug	3.770	17.09	1	3.770	0.000:
17-Aug	3.280	17.84	1	3.280	0.000:
18-Aug	3.450	18.40	1	3.450	0.000:
19-Aug	4.080	18.73	1	4.080	0.000:
20-Aug	3.790	18.88	1	3.790	0.000:
21-Aug	3.910	18.65	1	3.910	0.000:
22-Aug	4.110	17.93	1	4.110	0.000:

23-Aug	4.390	16.88	1	4.390	0.000:
24-Aug	4.220	15.81	1	4.220	0.000:
25-Aug	4.700	14.87	1	4.700	0.000:
26-Aug	3.990	14.05	1	3.990	0.000:
27-Aug	3.570	13.39	1	3.570	0.000:
28-Aug	3.280	13.04	1	3.280	0.000:
29-Aug	3.090	13.10	1	3.090	0.000:
30-Aug	3.000	13.43	1	3.000	0.000:
31-Aug	3.140	13.82	1	3.140	0.000:
1-Sep	3.310	14.10	1	3.310	0.000:
2-Sep	3.110	14.11	1	3.110	0.000:
3-Sep	3.200	13.90	1	3.200	0.000:
4-Sep	4.560	13.70	1	4.560	0.000:
5-Sep	4.110	13.62	1	4.110	0.000:
6-Sep	3.960	13.63	1	3.960	0.000:
7-Sep	4.220	13.56	1	4.220	0.000:
8-Sep	17.730	13.33	1	17.730	0.000:
9-Sep	18.090	13.04	1	18.090	0.000:
10-Sep	9.970	12.78	1	9.970	0.000:
11-Sep	7.760	12.52	1	7.760	0.000:
12-Sep	18.150	12.14	1	18.150	0.000:
13-Sep	14.300	11.75	1	14.300	0.000:
14-Sep	13.590	11.40	1	13.590	0.000:
15-Sep	10.280	11.16	1	10.280	0.000:
16-Sep	8.410	11.08	1	8.410	0.000:
17-Sep	7.700	11.06	1	7.700	0.000:
18-Sep	8.380	10.88	1	8.380	0.000:
19-Sep	26.280	10.49	1	26.280	0.000:
20-Sep	22.800	9.97	1	22.800	0.000:
21-Sep	20.500	9.44	1	20.500	0.000:
22-Sep	13.820	8.99	1	13.820	0.000:
23-Sep	19.600	8.62	1	19.600	0.000:
24-Sep	17.730	8.36	1	17.730	0.000:
25-Sep	19.400	8.14	1	19.400	0.000:
26-Sep	15.570	7.93	1	15.570	0.000:
27-Sep	12.690	7.67	1	12.690	0.000:
28-Sep	21.890	7.40	1	21.890	0.000:
29-Sep	19.230	7.20	1	19.230	0.000:
30-Sep	18.260	7.15	1	18.260	0.000:
1-Oct	19.280	7.21	1	19.280	0.000:
2-Oct	15.430	7.36	1	15.430	0.000:
3-Oct	12.800	7.51	1	12.800	0.000:
4-Oct	11.410	7.63	1	11.410	0.000:
5-Oct	33.130	7.66	1	33.130	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
12	N.F. KOKTULI	E	0.0	2007	18-May	18.230			1	18.230	0.000:	CONFLUENCE WITH SOUTH FORK KO
					19-May	12.940			1	12.940	0.000:	KTULI RIVER
					20-May	13.160			1	13.160	0.000:	
					21-May	10.800			1	10.800	0.000:	
					22-May	11.100			1	11.100	0.000:	
					23-May	11.640			1	11.640	0.000:	
					24-May	15.710			1	15.710	0.000:	
					25-May	16.130			1	16.130	0.000:	
					26-May	14.430			1	14.430	0.000:	
					27-May	12.340			1	12.340	0.000:	
					28-May	10.480			1	10.480	0.000:	
					29-May	9.070			1	9.070	0.000:	
					30-May	7.840			1	7.840	0.000:	
					31-May	7.790			1	7.790	0.000:	
					1-Jun	7.680			1	7.680	0.000:	
					2-Jun	7.540			1	7.540	0.000:	
					3-Jun	7.150			1	7.150	0.000:	
					4-Jun	7.290			1	7.290	0.000:	
					5-Jun	9.290			1	9.290	0.000:	
					6-Jun	8.940			1	8.940	0.000:	
					7-Jun	7.760			1	7.760	0.000:	
					8-Jun	6.950			1	6.950	0.000:	
					9-Jun	6.330			1	6.330	0.000:	
					10-Jun	6.010			1	6.010	0.000:	
					11-Jun	6.300			1	6.300	0.000:	
					12-Jun	6.300			1	6.300	0.000:	
					13-Jun	5.780			1	5.780	0.000:	
					14-Jun	5.610			1	5.610	0.000:	
					15-Jun	5.610			1	5.610	0.000:	
					16-Jun	5.930			1	5.930	0.000:	
					17-Jun	6.560			1	6.560	0.000:	
					18-Jun	6.240			1	6.240	0.000:	
					19-Jun	5.930			1	5.930	0.000:	
					20-Jun	6.010			1	6.010	0.000:	
					21-Jun	5.840			1	5.840	0.000:	
					22-Jun	5.550			1	5.550	0.000:	
					23-Jun	7.980			1	7.980	0.000:	
					24-Jun	14.880			1	14.880	0.000:	
					25-Jun	8.800			1	8.800	0.000:	
					26-Jun	6.840			1	6.840	0.000:	
					27-Jun	5.960			1	5.960	0.000:	
					28-Jun	5.580			1	5.580	0.000:	
					29-Jun	5.410			1	5.410	0.000:	
					30-Jun	5.090			1	5.090	0.000:	
					1-Jul	4.910			1	4.910	0.000:	
					2-Jul	4.670			1	4.670	0.000:	

3-Jul	4.490	1	4.490	0.000:
4-Jul	6.040	1	6.040	0.000:
5-Jul	6.410	1	6.410	0.000:
6-Jul	5.580	1	5.580	0.000:
7-Jul	5.140	1	5.140	0.000:
8-Jul	5.260	1	5.260	0.000:
9-Jul	5.140	1	5.140	0.000:
10-Jul	4.910	1	4.910	0.000:
11-Jul	4.580	1	4.580	0.000:
12-Jul	4.400	1	4.400	0.000:
13-Jul	5.750	1	5.750	0.000:
14-Jul	5.900	1	5.900	0.000:
15-Jul	5.170	1	5.170	0.000:
16-Jul	4.790	1	4.790	0.000:
17-Jul	4.430	1	4.430	0.000:
18-Jul	4.100	1	4.100	0.000:
19-Jul	4.010	1	4.010	0.000:
20-Jul	3.890	1	3.890	0.000:
21-Jul	3.920	1	3.920	0.000:
22-Jul	4.550	1	4.550	0.000:
23-Jul	5.410	1	5.410	0.000:
24-Jul	5.580	1	5.580	0.000:
25-Jul	5.140	1	5.140	0.000:
26-Jul	4.520	1	4.520	0.000:
27-Jul	4.100	1	4.100	0.000:
28-Jul	3.890	1	3.890	0.000:
29-Jul	3.860	1	3.860	0.000:
30-Jul	3.740	1	3.740	0.000:
31-Jul	3.710	1	3.710	0.000:
1-Aug	3.550	1	3.550	0.000:
2-Aug	3.490	1	3.490	0.000:
3-Aug	3.550	1	3.550	0.000:
4-Aug	4.760	1	4.760	0.000:
5-Aug	6.070	1	6.070	0.000:
6-Aug	6.840	1	6.840	0.000:
7-Aug	5.550	1	5.550	0.000:
8-Aug	4.730	1	4.730	0.000:
9-Aug	4.250	1	4.250	0.000:
10-Aug	3.890	1	3.890	0.000:
11-Aug	3.650	1	3.650	0.000:
12-Aug	3.550	1	3.550	0.000:
13-Aug	3.490	1	3.490	0.000:
14-Aug	3.550	1	3.550	0.000:
15-Aug	4.340	1	4.340	0.000:
16-Aug	4.400	1	4.400	0.000:
17-Aug	3.890	1	3.890	0.000:
18-Aug	4.070	1	4.070	0.000:
19-Aug	4.730	1	4.730	0.000:
20-Aug	4.430	1	4.430	0.000:
21-Aug	4.550	1	4.550	0.000:
22-Aug	4.760	1	4.760	0.000:

```
                                                  23-Aug   5.060                    1   5.060   0.000:
                                                  24-Aug   4.880                    1   4.880   0.000:
                                                  25-Aug   5.380                    1   5.380   0.000:
                                                  26-Aug   4.640                    1   4.640   0.000:
                                                  27-Aug   4.190                    1   4.190   0.000:
                                                  28-Aug   3.890                    1   3.890   0.000:
                                                  29-Aug   3.680                    1   3.680   0.000:
                                                  30-Aug   3.580                    1   3.580   0.000:
                                                  31-Aug   3.740                    1   3.740   0.000:
                                                   1-Sep   3.920                    1   3.920   0.000:
                                                   2-Sep   3.710                    1   3.710   0.000:
                                                   3-Sep   3.800                    1   3.800   0.000:
                                                   4-Sep   5.230                    1   5.230   0.000:
                                                   5-Sep   4.760                    1   4.760   0.000:
                                                   6-Sep   4.610                    1   4.610   0.000:
                                                   7-Sep   4.880                    1   4.880   0.000:
                                                   8-Sep  21.090                    1  21.090   0.000:
                                                   9-Sep  21.600                    1  21.600   0.000:
                                                  10-Sep  10.730                    1  10.730   0.000:
                                                  11-Sep   8.420                    1   8.420   0.000:
                                                  12-Sep  21.680                    1  21.680   0.000:
                                                  13-Sep  16.430                    1  16.430   0.000:
                                                  14-Sep  15.480                    1  15.480   0.000:
                                                  15-Sep  11.130                    1  11.130   0.000:
                                                  16-Sep   9.040                    1   9.040   0.000:
                                                  17-Sep   8.360                    1   8.360   0.000:
                                                  18-Sep   9.020                    1   9.020   0.000:
                                                  19-Sep  33.140                    1  33.140   0.000:
                                                  20-Sep  28.170                    1  28.170   0.000:
                                                  21-Sep  24.940                    1  24.940   0.000:
                                                  22-Sep  15.780                    1  15.780   0.000:
                                                  23-Sep  23.680                    1  23.680   0.000:
                                                  24-Sep  21.090                    1  21.090   0.000:
                                                  25-Sep  23.400                    1  23.400   0.000:
                                                  26-Sep  18.150                    1  18.150   0.000:
                                                  27-Sep  14.280                    1  14.280   0.000:
                                                  28-Sep  26.890                    1  26.890   0.000:
                                                  29-Sep  23.170                    1  23.170   0.000:
                                                  30-Sep  21.830                    1  21.830   0.000:
                                                   1-Oct  23.250                    1  23.250   0.000:
                                                   2-Oct  17.960                    1  17.960   0.000:
                                                   3-Oct  14.430                    1  14.430   0.000:
                                                   4-Oct  12.600                    1  12.600   0.000:
                                                   5-Oct  43.100                    1  43.100   0.000:
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    NORMAL COMPLETION OF 'HYDFIL'.
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****************************************** TABLE V: HYDROLOGY WITH LATERAL FLOWS ADDED ******************************************
    BEGIN HYDROLOGY VERIFICATION OF 'LATFLO' PROGRAM. THE PURPOSE OF THIS PROGRAM IS:
       (1) COMPUTE LATERAL FLOWS FOR UPSTREAM NODES;
       (2) CREATE THE FINAL UNFORMATTED HYDROLOGY FILE.
 THIS VERIFICATION IS A FORMATTED VERSION OF THE 'KHYDR5' OR 'KHYDROL' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
       1.      0.      0.    141.     33.     27.     12.      6.     33.      0.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       6.      0.      0.      0.      0.      1.      1.      1.    141.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
 NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
 N.F. KOKTULI        57.7     0.0
 TRIBUTARY 119       38.4    36.5
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
```

YEAR: 2007 TIME PERIOD: 18-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.188	0.0913	3.79	4.61:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.098	0.7373		2.18:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.272			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.878	0.2860	1.03	2.18:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.404			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.675	0.2288		2.18:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.850	0.2143		2.36:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.526	0.4717		2.36:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	13.240	0.0910		5.12:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	13.640	0.4925		5.12:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	15.630	0.4938		5.12:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	18.230			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.166	0.0808	4.88	5.24:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.856	0.6483		2.49:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.009			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.566	0.2099	1.34	2.49:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.952			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.961	0.1987		2.49:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.113	0.1619		2.60:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.379	0.3513		2.60:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	10.380	0.0706		5.86:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	10.690	0.2425		5.86:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	11.670	0.2412		5.86:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	12.940			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.158	0.0766	4.36	5.83:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.759	0.6102		2.80:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.903			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.368	0.1767	1.22	2.80:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.693			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.596	0.1895		2.80:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.741	0.1368		2.89:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.811	0.4004		2.89:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	10.510	0.0706		6.59:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	10.820	0.2524		6.59:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	11.840	0.2507		6.59:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	13.160			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.140	0.0681	4.87	6.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.564	0.5381		3.11:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.691			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.130	0.1316	1.71	3.11:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.372			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.064	0.1660		3.11:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.191	0.1024		3.19:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.992	0.3624		3.19:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	9.150	0.0614		7.19:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	9.420	0.1485		7.19:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	10.020	0.1481		7.19:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	10.800			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.146	0.0709	4.21	6.90:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.630	0.5636		3.42:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.763			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.271	0.1501	1.50	3.42:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.547			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.310	0.1739		3.42:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.443	0.1180		3.54:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.366	0.3480		3.54:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	9.320	0.0637		7.65:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	9.600	0.1609		7.65:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	10.250	0.1614		7.65:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	11.100			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.149	0.0722	4.43	7.25:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.659	0.5763		3.69:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.795			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.375	0.1631	1.67	3.69:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.675			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.469	0.1778		3.69:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.605	0.1281		3.81:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.607	0.3536		3.81:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	9.640	0.0660		7.85:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	9.930	0.1856		7.85:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	10.680	0.1823		7.85:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	11.640			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.162	0.0789	4.37	7.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.812	0.6314		3.88:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.961			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.713	0.2164	1.74	3.88:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.111			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.072	0.1948		3.88:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.221	0.1692		3.85:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.544	0.4472		3.85:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.910	0.0819		7.74:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	12.270	0.3687		7.74:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	13.760	0.3704		7.74:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	15.710			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.168	0.0815	4.21	7.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.872	0.6525		4.02:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.026			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.587	0.2142	1.72	4.02:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.981			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.008	0.2013		4.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.162	0.1651		3.81:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.453	0.4698		3.81:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	12.140	0.0819		7.52:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	12.500	0.3885		7.52:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	14.070	0.3913		7.52:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	16.130			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.164	0.0796	4.59	7.47:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.829	0.6356		4.17:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.979			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.471	0.1968	2.12	4.17:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.833			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.813	0.1961		4.17:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.963	0.1517		3.88:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.149	0.4258		3.88:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.210	0.0774		7.44:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	11.550	0.3093		7.44:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	12.800	0.3096		7.44:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	14.430			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.151	0.0735	5.19	7.73:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.688	0.5847		4.36:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.826			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.205	0.1539	2.44	4.36:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.488			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.314	0.1804		4.36:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.452	0.1185		4.02:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.379	0.3977		4.02:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	10.040	0.0706		7.60:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	10.350	0.2128		7.60:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	11.210	0.2146		7.60:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	12.340			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.138	0.0669	5.88	8.19:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.537	0.5297		4.59:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.662			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.000	0.1196	2.80	4.59:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.220			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.881	0.1634		4.59:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.006	0.0916		4.19:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.722	0.3680		4.19:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	8.960	0.0614		7.97:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	9.230	0.1336		7.97:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	9.770	0.1349		7.97:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	10.480			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.120	0.0581	5.72	8.72:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.336	0.4576		4.82:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.444			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.808	0.0865	2.74	4.82:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.967			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.410	0.1412		4.82:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.518	0.0716		4.34:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.078	0.3261		4.34:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.720	0.0523		8.42:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.950	0.1213		8.42:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	8.440	0.1197		8.42:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	9.070			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.108	0.0522	6.40	9.26:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.200	0.4068		5.04:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.296			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.698	0.0685	3.18	5.04:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.824			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.119	0.1255		5.04:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.215	0.0643		4.53:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.718	0.2622		4.53:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.450	0.0432		8.95:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.640	0.1287		8.95:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	7.160	0.1292		8.95:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.840			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 31-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.108	0.0524	6.27	9.68:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.204	0.4110		5.20:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.301			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.721	0.0696	3.06	5.20:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.849			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.149	0.1268		5.20:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.246	0.0650		4.79:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.754	0.2554		4.79:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.390	0.0455		9.47:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.590	0.1287		9.47:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	7.110	0.1292		9.47:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.790			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.105	0.0511	5.72	9.88:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.175	0.3941		5.28:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.268			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.718	0.0669	3.13	5.28:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.841			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.109	0.1229		5.28:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.203	0.0639		4.96:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.703	0.2513		4.96:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.280	0.0432		9.79:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.470	0.1287		9.79:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.990	0.1311		9.79:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.680			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.102	0.0494	5.47	9.95:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.135	0.3814		5.31:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.225			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.674	0.0620	3.21	5.31:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.788			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.013	0.1176		5.31:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.103	0.0615		4.99:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.584	0.2498		4.99:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.140	0.0432		9.79:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.330	0.1287		9.79:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.850	0.1311		9.79:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.540			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.100	0.0484	6.90	10.10:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.112	0.3729		5.39:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.200			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.650	0.0587	3.94	5.39:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.758			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.958	0.1150		5.39:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.046	0.0601		4.99:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.516	0.2272		4.99:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.750	0.0410		9.61:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.930	0.1312		9.61:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.460	0.1311		9.61:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.150			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.105	0.0510	7.04	10.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.172	0.3941		5.55:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.265			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.757	0.0680	3.63	5.55:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.882			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.147	0.1229		5.55:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.241	0.0648		5.06:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.748	0.2207		5.06:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.890	0.0410		9.41:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.070	0.1312		9.41:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.600	0.1311		9.41:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.290			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.133	0.0648	6.70	10.70:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.488	0.5085		5.71:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.608			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.127	0.1218	3.74	5.71:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.351			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.959	0.1582		5.71:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.080	0.0958		5.20:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.829	0.2895		5.20:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.950	0.0546		9.22:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	8.190	0.1163		9.22:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	8.660	0.1197		9.22:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	9.290			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.124	0.0602	7.93	10.97:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.382	0.4703		5.86:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.493			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.921	0.0968	4.71	5.86:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.099			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.592	0.1464		5.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.704	0.0760		5.34:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.298	0.3008		5.34:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.580	0.0523		9.04:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.810	0.1213		9.04:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	8.300	0.1216		9.04:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	8.940			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.108	0.0525	8.04	11.30:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.206	0.4068		6.01:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.302			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.760	0.0718	4.72	6.01:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.892			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.194	0.1255		6.01:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.290	0.0661		5.56:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.807	0.2496		5.56:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.360	0.0455		8.87:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.560	0.1287		8.87:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	7.080	0.1292		8.87:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.760			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.096	0.0464	7.26	11.61:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.066	0.3602		6.13:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.151			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.636	0.0549	4.40	6.13:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.737			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.888	0.1098		6.13:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.972	0.0582		5.81:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.427	0.2201		5.81:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.560	0.0387		8.54:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.730	0.1312		8.54:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.260	0.1311		8.54:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.950			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.086	0.0418	6.96	11.99:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.960	0.3220		6.26:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.036			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.549	0.0451	4.14	6.26:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.632			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.667	0.0993		6.26:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.743	0.0523		6.16:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.152	0.1966		6.16:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.950	0.0341		8.10:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.100	0.1336		8.10:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.640	0.1311		8.10:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.330			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.084	0.0407	9.90	12.56:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.934	0.3093		6.45:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.007			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.554	0.0430	5.95	6.45:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.633			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.640	0.0954		6.45:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.713	0.0517		6.57:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.117	0.1780		6.57:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.650	0.0319		7.71:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.790	0.1312		7.71:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.320	0.1311		7.71:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.010			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.089	0.0430	11.30	13.16:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.988	0.3305		6.63:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.066			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.647	0.0489	6.57	6.63:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.737			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.803	0.1007		6.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.880	0.0559		6.98:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.317	0.1829		6.98:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.920	0.0341		7.40:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.070	0.1336		7.40:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.610	0.1311		7.40:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.300			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.086	0.0420	8.16	13.41:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.964	0.3220		6.63:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.040			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.614	0.0462	4.84	6.63:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.699			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.739	0.0980		6.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.814	0.0542		7.41:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.238	0.1884		7.41:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.920	0.0341		6.95:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.070	0.1336		6.95:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.610	0.1311		6.95:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.300			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.078	0.0378	8.07	13.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.869	0.2881		6.49:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.937			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.517	0.0381	5.04	6.49:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.587			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.524	0.0876		6.49:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.591	0.0485		7.80:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.970	0.1728		7.80:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.430	0.0319		6.25:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.570	0.1312		6.25:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.100	0.1292		6.25:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.780			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.077	0.0374	9.23	13.41:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.860	0.2839		6.36:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.927			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.532	0.0375	5.67	6.36:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.601			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.528	0.0876		6.36:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.595	0.0485		8.14:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.974	0.1613		8.14:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.270	0.0296		5.54:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.400	0.1312		5.54:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.930	0.1292		5.54:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.610			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.078	0.0380	11.40	13.67:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.872	0.2839		6.33:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.939			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.559	0.0386	7.17	6.33:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.630			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.570	0.0889		6.33:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.638	0.0496		8.31:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.026	0.1577		8.31:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.270	0.0296		5.04:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.400	0.1312		5.04:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.930	0.1292		5.04:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.610			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.078	0.0378	11.71	14.14:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.869	0.2881		6.41:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.937			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.605	0.0435	6.66	6.41:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.685			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.622	0.0889		6.41:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.690	0.0510		8.22:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.089	0.1743		8.22:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.570	0.0319		4.88:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.710	0.1312		4.88:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.240	0.1311		4.88:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.930			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.086	0.0420	9.62	14.53:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.964	0.3220		6.48:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.040			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.676	0.0587	5.84	6.48:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.784			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.824	0.0993		6.48:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.900	0.0563		8.20:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.340	0.1988		8.20:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.170	0.0364		5.02:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.330	0.1312		5.02:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.860	0.1330		5.02:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.560			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.084	0.0406	10.03	14.90:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.932	0.3093		6.57:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.005			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.571	0.0451	6.29	6.57:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.654			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.659	0.0954		6.57:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.732	0.0520		8.45:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.139	0.1919		8.45:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.870	0.0341		5.39:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.020	0.1312		5.39:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.550	0.1311		5.39:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.240			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.077	0.0376	12.31	15.51:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.863	0.2839		6.76:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.930			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.580	0.0402	7.84	6.76:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.654			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.584	0.0876		6.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.651	0.0500		8.82:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.042	0.1776		8.82:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.570	0.0319		6.14:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.710	0.1312		6.14:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.240	0.1311		6.14:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.930			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.079	0.0382	13.77	16.27:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.878	0.2881		7.05:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.946			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.656	0.0424	8.45	7.05:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.734			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.681	0.0889		7.05:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.749	0.0526		9.09:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.160	0.1749		9.09:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.650	0.0319		7.38:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.790	0.1312		7.38:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.320	0.1311		7.38:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.010			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.076	0.0369	13.05	16.58:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.848	0.2797		7.27:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.914			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.608	0.0370	8.05	7.27:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.676			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.590	0.0863		7.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.656	0.0501		9.05:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.048	0.1716		9.05:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.490	0.0319		8.95:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.630	0.1287		8.95:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.150	0.1311		8.95:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.840			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.073	0.0355	10.00	15.98:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.815	0.2669		7.26:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.878			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.577	0.0343	6.54	7.26:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.640			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.518	0.0824		7.26:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.581	0.0482		8.61:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.958	0.1589		8.61:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.220	0.0296		10.46:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.350	0.1287		10.46:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.870	0.1292		10.46:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.111	0.0537	7.32	14.59:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.233	0.4153		6.99:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.331			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.372	0.1055	5.64	6.99:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.566			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.897	0.1281		6.99:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.995	0.0910		8.03:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.707	0.2025		8.03:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.590	0.0455		11.44:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	6.790	0.1287		11.44:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	7.310	0.1273		11.44:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	7.980			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.201	0.0977	5.98	13.02:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.245	0.7966		6.61:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.433			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.595	0.1582	4.94	6.61:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.886			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.319	0.2444		6.61:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.506	0.1894		7.48:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.987	0.3845		7.48:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.460	0.0774		11.76:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	11.800	0.3316		11.76:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	13.140	0.3305		11.76:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	14.880			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.123	0.0596	7.36	11.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.370	0.4703		6.35:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.481			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.833	0.0740	5.88	6.35:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.969			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.449	0.1451		6.35:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.560	0.0726		7.08:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.128	0.3022		7.08:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.430	0.0523		11.65:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.660	0.1237		11.65:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	8.160	0.1216		11.65:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	8.800			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.095	0.0461	9.04	11.58:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.060	0.3559		6.27:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.144			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.617	0.0473	6.97	6.27:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.704			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.848	0.1098		6.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.932	0.0572		6.68:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.379	0.2158		6.68:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.450	0.0364		11.38:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.610	0.1312		11.38:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.140	0.1330		11.38:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.840			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.081	0.0392	10.85	11.91:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.900	0.2966		6.39:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.970			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.521	0.0381	7.78	6.39:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.591			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.561	0.0915		6.39:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.631	0.0495		6.26:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.018	0.1814		6.26:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.600	0.0319		11.33:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.740	0.1312		11.33:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.270	0.1311		11.33:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.960			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.078	0.0379	10.21	12.64:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.870	0.2881		6.62:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.938			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.499	0.0370	7.15	6.62:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.567			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.506	0.0876		6.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.573	0.0481		5.72:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.949	0.1610		5.72:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.240	0.0319		11.59:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.380	0.1287		11.59:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.900	0.1292		11.59:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.580			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.075	0.0366	11.38	13.33:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.841	0.2754		6.82:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.906			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.453	0.0359	7.94	6.82:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.519			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.425	0.0850		6.82:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.490	0.0458		5.07:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.848	0.1568		5.07:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.080	0.0296		11.94:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.210	0.1287		11.94:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.730	0.1292		11.94:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.410			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.072	0.0348	11.11	13.98:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.799	0.2627		7.02:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.861			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.425	0.0337	7.93	7.02:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.487			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.348	0.0810		7.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.410	0.0436		4.79:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.751	0.1432		4.79:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.790	0.0250		12.51:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.900	0.1287		12.51:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.420	0.1273		12.51:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.090			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.069	0.0337	10.27	14.51:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.774	0.2542		7.23:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.834			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.397	0.0326	7.38	7.23:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.457			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.290	0.0784		7.23:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.350	0.0421		4.81:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.679	0.1371		4.81:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.630	0.0250		13.20:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.740	0.1262		13.20:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.250	0.1254		13.20:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.910			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.067	0.0326	11.80	14.98:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.748	0.2458		7.48:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.806			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.375	0.0315	8.19	7.48:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.433			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.239	0.0758		7.48:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.297	0.0407		5.11:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.615	0.1268		5.11:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.420	0.0228		13.88:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.520	0.1237		13.88:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.020	0.1235		13.88:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.670			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.065	0.0317	13.13	15.37:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.729	0.2373		7.76:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.785			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.374	0.0305	9.25	7.76:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.430			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.215	0.0732		7.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.271	0.0400		5.75:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.584	0.1177		5.75:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.260	0.0228		14.52:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.360	0.1213		14.52:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.850	0.1216		14.52:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.490			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.097	0.0469	11.26	15.48:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.077	0.3602		7.97:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.162			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.659	0.0533	8.31	7.97:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.757			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.918	0.1124		7.97:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.004	0.0590		6.36:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.465	0.1556		6.36:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.680	0.0319		14.90:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.820	0.1312		14.90:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.350	0.1311		14.90:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.040			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.093	0.0452	10.73	15.36:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.038	0.3475		8.07:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.120			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.517	0.0468	8.13	8.07:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.603			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.724	0.1072		8.07:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.806	0.0540		6.62:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.228	0.1969		6.62:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.030	0.0364		14.86:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.190	0.1312		14.86:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.720	0.1311		14.86:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.410			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.082	0.0396	10.41	15.29:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.910	0.3008		8.17:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.981			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.464	0.0386	7.87	8.17:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.535			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.516	0.0928		8.17:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.587	0.0483		6.58:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.965	0.1598		6.58:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.240	0.0319		14.58:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.380	0.1287		14.58:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.900	0.1292		14.58:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.580			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.075	0.0365	11.38	15.42:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.838	0.2754		8.32:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.903			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.402	0.0353	7.95	8.32:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.467			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.369	0.0850		8.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.434	0.0444		6.47:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.781	0.1447		6.47:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.840	0.0273		14.30:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.960	0.1262		14.30:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.470	0.1273		14.30:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.140			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.079	0.0383	11.76	15.67:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.881	0.2924		8.50:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.950			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.461	0.0375	8.49	8.50:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.530			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.480	0.0889		8.50:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.548	0.0473		6.37:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.918	0.1428		6.37:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.950	0.0273		14.14:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.070	0.1287		14.14:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.590	0.1273		14.14:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.260			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.074	0.0361	10.86	15.89:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.830	0.2712		8.65:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.894			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.410	0.0348	8.12	8.65:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.474			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.369	0.0837		8.65:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.433	0.0442		6.21:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.779	0.1448		6.21:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.840	0.0273		14.08:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.960	0.1262		14.08:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.470	0.1273		14.08:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.140			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.069	0.0337	10.82	16.18:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.774	0.2500		8.83:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.833			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.375	0.0326	7.91	8.83:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.435			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.269	0.0771		8.83:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.328	0.0416		6.13:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.653	0.1389		6.13:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.630	0.0250		14.18:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.740	0.1262		14.18:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.250	0.1254		14.18:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.910			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.066	0.0319	12.83	16.56:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.734	0.2415		9.06:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.791			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.345	0.0305	9.75	9.06:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.401			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.192	0.0732		9.06:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.248	0.0394		6.33:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.556	0.1253		6.33:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.340	0.0228		14.48:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.440	0.1237		14.48:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.940	0.1216		14.48:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.580			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.064	0.0309	12.96	16.80:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.709	0.2288		9.25:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.763			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.348	0.0299	9.13	9.25:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.403			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.166	0.0706		9.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.220	0.0386		6.73:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.522	0.1165		6.73:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.180	0.0228		14.91:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.280	0.1213		14.91:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.770	0.1197		14.91:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.400			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.072	0.0351	10.55	16.69:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.807	0.2627		9.31:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.869			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.480	0.0337	7.88	9.31:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.542			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.412	0.0810		9.31:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.474	0.0454		7.00:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.829	0.1813		7.00:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.410	0.0296		15.18:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.540	0.1312		15.18:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.070	0.1292		15.18:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.750			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.073	0.0356	10.74	16.32:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.818	0.2712		9.27:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.882			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.426	0.0343	8.23	9.27:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.489			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.371	0.0824		9.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.434	0.0444		6.89:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.781	0.1938		6.89:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.540	0.0319		15.13:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.680	0.1312		15.13:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.210	0.1311		15.13:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.900			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.067	0.0326	10.40	15.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.749	0.2458		9.25:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.807			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.371	0.0315	8.09	9.25:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.429			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.235	0.0758		9.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.293	0.0405		6.46:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.610	0.1588		6.46:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.870	0.0273		14.84:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.990	0.1262		14.84:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.500	0.1273		14.84:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.170			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.063	0.0307	11.46	15.87:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.706	0.2288		9.36:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.760			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.334	0.0294	8.78	9.36:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.388			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.148	0.0706		9.36:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.202	0.0381		5.98:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.500	0.1419		5.98:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.520	0.0250		14.49:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.630	0.1237		14.49:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.130	0.1254		14.49:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.790			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.060	0.0290	12.90	16.14:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.667	0.2161		9.66:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.718			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.308	0.0277	9.62	9.66:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.359			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.077	0.0667		9.66:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.128	0.0361		5.83:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.410	0.1258		5.83:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.200	0.0228		14.35:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.300	0.1213		14.35:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.790	0.1216		14.35:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.430			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.058	0.0282	12.27	16.70:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.647	0.2076		10.09:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.696			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.296	0.0272	9.50	10.09:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.346			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.041	0.0654		10.09:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.091	0.0350		6.15:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.365	0.1092		6.15:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.920	0.0205		14.49:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.010	0.1163		14.49:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.480	0.1178		14.49:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.100			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.057	0.0279	11.78	17.13:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.640	0.2076		10.49:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.689			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.286	0.0261	8.72	10.49:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.334			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.023	0.0641		10.49:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.072	0.0344		6.61:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.341	0.1053		6.61:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.840	0.0205		14.74:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.930	0.1163		14.74:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.400	0.1159		14.74:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.010			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0273	13.17	17.33:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.627	0.1992		10.80:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.674			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.270	0.0256	9.64	10.80:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.317			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.992	0.0614		10.80:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.039	0.0336		7.26:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.302	0.1003		7.26:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.730	0.0205		15.06:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.820	0.1138		15.06:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.280	0.1159		15.06:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.890			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.065	0.0318	11.57	17.15:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.731	0.2373		10.96:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.787			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.263	0.0310	9.56	10.96:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.320			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.107	0.0732		10.96:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.163	0.0371		8.00:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.453	0.0918		8.00:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.760	0.0205		15.36:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.850	0.1138		15.36:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.310	0.1159		15.36:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.920			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.064	0.0309	8.71	16.42:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.711	0.2288		10.87:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.765			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.313	0.0299	7.48	10.87:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.368			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.133	0.0706		10.87:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.187	0.0377		8.33:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.482	0.1284		8.33:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.310	0.0228		15.41:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.410	0.1237		15.41:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.910	0.1216		15.41:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.077	0.0372	8.44	15.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.855	0.2797		10.65:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.921			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.417	0.0364	7.50	10.65:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.484			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.405	0.0876		10.65:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.472	0.0453		8.02:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.826	0.1584		8.02:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.080	0.0296		15.10:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.210	0.1287		15.10:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.730	0.1292		15.10:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.410			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.091	0.0443	8.80	14.57:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.017	0.3432		10.50:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.098			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.424	0.0435	7.93	10.50:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.504			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.601	0.1046		10.50:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.681	0.0509		7.18:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.079	0.1518		7.18:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.240	0.0319		14.56:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.380	0.1287		14.56:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.900	0.1292		14.56:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.580			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.075	0.0366	10.30	14.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.841	0.2754		10.58:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.906			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.366	0.0353	8.75	10.58:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.431			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.338	0.0850		10.58:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.403	0.0435		6.13:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.743	0.1473		6.13:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.840	0.0273		14.09:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.960	0.1262		14.09:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.470	0.1273		14.09:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.140			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.065	0.0315	12.10	15.00:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.723	0.2331		10.93:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.778			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.307	0.0305	9.59	10.93:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.363			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.141	0.0719		10.93:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.196	0.0380		5.14:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.493	0.1255		5.14:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.280	0.0250		13.93:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.390	0.1213		13.93:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.880	0.1216		13.93:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.520			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.060	0.0292	14.21	16.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.670	0.2161		11.54:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.721			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.280	0.0277	10.91	11.54:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.331			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.052	0.0667		11.54:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.103	0.0354		4.58:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.380	0.1082		4.58:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.920	0.0205		14.23:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.010	0.1163		14.23:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.480	0.1178		14.23:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.100			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.072	0.0351	14.82	18.18:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.806	0.2627		12.25:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.868			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.267	0.0337	11.35	12.25:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.329			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.197	0.0824		12.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.260	0.0396		4.76:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.570	0.0815		4.76:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.730	0.0205		14.99:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.820	0.1138		14.99:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.280	0.1159		14.99:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.890			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.064	0.0313	14.50	19.87:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.718	0.2331		12.86:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.773			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.257	0.0299	11.09	12.86:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.312			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.084	0.0732		12.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.140	0.0363		5.91:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.424	0.0903		5.91:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.710	0.0182		16.10:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.790	0.1163		16.10:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.260	0.1140		16.10:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.860			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.060	0.0289	13.12	21.15:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.665	0.2119		13.28:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.715			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.255	0.0277	10.34	13.28:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.306			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.021	0.0667		13.28:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.072	0.0345		7.82:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.342	0.0891		7.82:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.610	0.0182		17.32:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.690	0.1114		17.32:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.140	0.1140		17.32:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.740			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 31-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.058	0.0282	12.55	21.77:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.648	0.2076		13.42:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.697			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.248	0.0266	10.37	13.42:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.297			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.995	0.0641		13.42:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.044	0.0338		9.89:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.308	0.0894		9.89:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.580	0.0182		18.37:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.660	0.1114		18.37:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.110	0.1140		18.37:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.710			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0274	9.82	21.41:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.629	0.2034		13.20:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.677			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.241	0.0261	9.08	13.20:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.289			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.966	0.0627		13.20:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.014	0.0329		11.38:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.271	0.0828		11.38:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.450	0.0182		18.97:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.530	0.1089		18.97:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	2.970	0.1102		18.97:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0270	8.68	20.09:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.620	0.1992		12.68:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.667			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.250	0.0256	8.56	12.68:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.297			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.964	0.0614		12.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.011	0.0329		11.95:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.268	0.0795		11.95:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.400	0.0159		18.94:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.470	0.1114		18.94:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	2.920	0.1083		18.94:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.490			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0270	9.36	18.23:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.621	0.1992		12.01:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.668			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.251	0.0256	8.87	12.01:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.298			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.965	0.0614		12.01:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.012	0.0329		11.64:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.269	0.0830		11.64:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.450	0.0182		18.30:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.530	0.1089		18.30:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	2.970	0.1102		18.30:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.084	0.0410	8.84	16.29:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.943	0.3136		11.32:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.017			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.627	0.0511	8.94	11.32:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.721			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.738	0.0967		11.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.812	0.0541		10.63:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.235	0.0889		10.63:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.500	0.0228		17.14:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.600	0.1262		17.14:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.110	0.1235		17.14:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.760			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.100	0.0487	8.88	14.65:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.119	0.3729		10.73:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.207			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.771	0.0821	8.75	10.73:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.922			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.129	0.1163		10.73:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.218	0.0643		9.15:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.721	0.1397		9.15:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.710	0.0319		15.65:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.850	0.1312		15.65:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	5.380	0.1311		15.65:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.070			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.097	0.0470	9.50	13.60:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.079	0.3644		10.32:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.165			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.943	0.0875	8.83	10.32:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.104			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.269	0.1111		10.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.354	0.0676		7.53:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.883	0.1803		7.53:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	5.450	0.0364		14.12:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	5.610	0.1312		14.12:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	6.140	0.1330		14.12:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	6.840			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.078	0.0378	10.47	13.15:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.869	0.2881		10.12:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.937			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.546	0.0392	8.76	10.12:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.618			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.555	0.0889		10.12:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.623	0.0492		5.96:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	2.008	0.1554		5.96:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.220	0.0296		12.78:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.350	0.1287		12.78:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.870	0.1292		12.78:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.069	0.0333	11.15	13.14:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.766	0.2500		10.13:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.825			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.423	0.0321	8.94	10.13:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.482			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.307	0.0771		10.13:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.366	0.0426		4.57:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.699	0.1244		4.57:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.470	0.0250		11.76:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.580	0.1237		11.76:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.080	0.1235		11.76:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.730			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.063	0.0308	12.43	13.50:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.707	0.2288		10.31:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.761			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.366	0.0294	9.43	10.31:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.420			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.182	0.0706		10.31:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.236	0.0390		3.45:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.541	0.1060		3.45:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.050	0.0205		11.14:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.140	0.1188		11.14:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.620	0.1197		11.14:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.250			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.059	0.0288	13.59	14.29:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.662	0.2161		10.68:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.713			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.325	0.0277	9.92	10.68:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.376			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.089	0.0654		10.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.139	0.0364		2.91:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.424	0.0918		2.91:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.730	0.0205		11.07:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.820	0.1138		11.07:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.280	0.1159		11.07:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.890			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.057	0.0276	13.45	15.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.635	0.2076		11.18:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.684			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.299	0.0261	9.59	11.18:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.347			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.031	0.0627		11.18:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.079	0.0347		3.07:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.350	0.0829		3.07:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.530	0.0182		11.57:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.610	0.1114		11.57:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.060	0.1121		11.57:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.650			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Aug

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	FLOW INIT. (CMS)	FLOW LATERAL (CMS/KM)	TEMPERATURE INIT. (C)	TEMPERATURE LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0274	14.71	16.52:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.629	0.2034		11.71:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.677			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.293	0.0256	10.77	11.71:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.340			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.018	0.0614		11.71:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.065	0.0344		3.78:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.334	0.0784		3.78:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.450	0.0182		12.53:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.530	0.1089		12.53:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	2.970	0.1102		12.53:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0270	15.02	17.60:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.620	0.1992		12.18:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.667			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.279	0.0256	11.39	12.18:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.326			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.993	0.0614		12.18:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.040	0.0336		5.03:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.303	0.0771		5.03:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.400	0.0159		13.82:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.470	0.1114		13.82:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	2.920	0.1083		13.82:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.490			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0272	11.98	18.54:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.625	0.1992		12.56:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.672			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.302	0.0261	9.70	12.56:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.350			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.022	0.0627		12.56:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.070	0.0344		6.64:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.339	0.0781		6.64:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.450	0.0182		15.20:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.530	0.1089		15.20:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	2.970	0.1102		15.20:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.068	0.0333	10.36	19.01:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.764	0.2500		12.71:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.823			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.349	0.0321	8.70	12.71:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.408			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.231	0.0771		12.71:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.290	0.0405		7.69:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.607	0.1070		7.69:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.130	0.0205		16.27:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.220	0.1213		16.27:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.710	0.1197		16.27:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.340			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.064	0.0313	12.02	19.33:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.720	0.2331		12.76:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.775			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.328	0.0299	9.45	12.76:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.383			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.158	0.0732		12.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.214	0.0384		8.41:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.514	0.1170		8.41:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.180	0.0228		17.09:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.280	0.1213		17.09:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.770	0.1197		17.09:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.400			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.058	0.0280	12.15	19.65:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.643	0.2076		12.80:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.692			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.287	0.0266	9.34	12.80:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.336			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.028	0.0641		12.80:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.077	0.0347		9.24:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.348	0.0971		9.24:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.730	0.0205		17.84:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.820	0.1138		17.84:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.280	0.1159		17.84:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.890			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.060	0.0289	9.13	19.48:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.664	0.2161		12.68:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.715			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.367	0.0277	8.35	12.68:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.418			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.132	0.0667		12.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.183	0.0376		9.92:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.477	0.0993		9.92:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.890	0.0205		18.40:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.980	0.1163		18.40:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.450	0.1178		18.40:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.070			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.061	0.0296	9.28	18.78:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.680	0.2203		12.41:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.732			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.353	0.0283	9.00	12.41:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.405			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.137	0.0680		12.41:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.189	0.0379		10.29:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.485	0.1395		10.29:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.470	0.0250		18.73:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.580	0.1237		18.73:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.080	0.1235		18.73:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.730			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.061	0.0296	9.72	17.95:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.681	0.2203		12.10:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.733			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.353	0.0283	8.89	12.10:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.405			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.138	0.0680		12.10:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.190	0.0377		10.51:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.485	0.1205		10.51:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.200	0.0228		18.88:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.300	0.1213		18.88:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.790	0.1216		18.88:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.430			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.063	0.0306	8.93	17.01:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.702	0.2288		11.72:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.756			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.371	0.0294	8.08	11.72:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.425			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.181	0.0706		11.72:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.235	0.0389		10.33:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.539	0.1244		10.33:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.310	0.0228		18.65:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.410	0.1237		18.65:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.910	0.1216		18.65:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.550			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.064	0.0311	8.57	16.00:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.715	0.2331		11.30:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.770			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.401	0.0299	8.11	11.30:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.456			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.226	0.0719		11.30:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.281	0.0403		9.67:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.596	0.1338		9.67:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.500	0.0228		17.93:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.600	0.1262		17.93:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.110	0.1235		17.93:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.760			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.074	0.0357	8.86	15.11:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.821	0.2669		10.92:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.884			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.482	0.0348	8.17	10.92:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.546			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.430	0.0837		10.92:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.494	0.0459		8.75:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.853	0.1340		8.75:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.760	0.0273		16.88:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.880	0.1262		16.88:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.390	0.1273		16.88:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.060			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.069	0.0335	9.90	14.63:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.769	0.2542		10.70:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.829			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.429	0.0321	8.72	10.70:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.488			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.317	0.0784		10.70:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.377	0.0427		7.94:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.711	0.1327		7.94:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.600	0.0250		15.81:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.710	0.1262		15.81:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.220	0.1254		15.81:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.880			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.064	0.0313	11.30	14.57:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.719	0.2373		10.63:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.775			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.419	0.0299	9.32	10.63:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.474			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.249	0.0719		10.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.304	0.0408		7.35:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.623	0.1712		7.35:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	4.060	0.0273		14.87:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.180	0.1287		14.87:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.700	0.1292		14.87:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.380			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.061	0.0297	10.69	14.70:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.683	0.2246		10.64:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.736			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.352	0.0283	8.71	10.64:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.404			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.140	0.0680		10.64:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.192	0.0379		6.78:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.488	0.1336		6.78:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.390	0.0228		14.05:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.490	0.1237		14.05:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.990	0.1235		14.05:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.640			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.059	0.0286	11.26	14.86:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.658	0.2119		10.68:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.708			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.321	0.0272	8.52	10.68:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.371			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.079	0.0654		10.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.129	0.0362		6.18:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.412	0.1116		6.18:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.000	0.0205		13.39:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.090	0.1188		13.39:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.570	0.1178		13.39:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.190			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.056	0.0273	11.10	15.11:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.628	0.2034		10.79:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.676			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.293	0.0256	8.41	10.79:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.340			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.016	0.0627		10.79:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.064	0.0343		5.77:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.332	0.0982		5.77:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.730	0.0205		13.04:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.820	0.1138		13.04:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.280	0.1159		13.04:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.890			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.055	0.0267	11.26	15.53:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.614	0.1992		11.02:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.661			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.280	0.0256	8.72	11.02:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.327			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.988	0.0601		11.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.034	0.0335		5.87:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.296	0.0881		5.87:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.550	0.0182		13.10:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.630	0.1138		13.10:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.090	0.1121		13.10:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.680			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.053	0.0259	10.53	15.94:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.594	0.1907		11.32:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.639			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.273	0.0245	8.40	11.32:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.318			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.957	0.0588		11.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.002	0.0325		6.41:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.256	0.0860		6.41:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.480	0.0159		13.43:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.550	0.1114		13.43:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.000	0.1102		13.43:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.580			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 31-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.054	0.0264	10.25	16.22:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.606	0.1907		11.61:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.651			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.314	0.0250	8.29	11.61:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.360			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.012	0.0588		11.61:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.057	0.0341		7.14:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.324	0.0903		7.14:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.610	0.0182		13.82:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.690	0.1114		13.82:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.140	0.1140		13.82:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.740			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.055	0.0269	11.16	16.33:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.617	0.1992		11.81:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.664			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.332	0.0256	8.68	11.81:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.379			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.043	0.0614		11.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.090	0.0350		7.82:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.364	0.0981		7.82:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.760	0.0205		14.10:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.850	0.1138		14.10:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.310	0.1159		14.10:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.920			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.053	0.0259	11.04	15.97:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.595	0.1907		11.76:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.640			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.292	0.0245	8.83	11.76:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.337			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	0.977	0.0588		11.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.022	0.0330		8.10:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.280	0.0913		8.10:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.580	0.0182		14.11:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.660	0.1114		14.11:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.110	0.1140		14.11:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.710			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.055	0.0267	8.67	15.24:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.613	0.1992		11.50:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.660			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.374	0.0250	7.87	11.50:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.420			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.080	0.0614		11.50:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.127	0.0359		8.03:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.408	0.0880		8.03:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	2.660	0.0182		13.90:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	2.740	0.1138		13.90:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.200	0.1140		13.90:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	3.800			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.067	0.0327	7.88	14.59:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.751	0.2415		11.21:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.808			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.503	0.0315	7.79	11.21:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.561			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.369	0.0758		11.21:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.427	0.0441		8.00:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.772	0.1509		8.00:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.920	0.0273		13.70:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	4.040	0.1287		13.70:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.560	0.1273		13.70:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	5.230			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.060	0.0294	8.99	14.31:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.675	0.2203		11.03:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.727			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.371	0.0277	8.05	11.03:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.422			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.149	0.0667		11.03:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.200	0.0381		8.22:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.498	0.1406		8.22:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.500	0.0228		13.62:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.600	0.1262		13.62:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.110	0.1235		13.62:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.760			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 6-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.083	0.0405	8.93	14.20:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.930	0.3093		10.91:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.003			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.357	0.0397	7.79	10.91:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.430			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.433	0.0954		10.91:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.506	0.0462		8.64:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.867	0.1049		8.64:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.360	0.0250		13.63:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.470	0.1213		13.63:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	3.960	0.1235		13.63:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.610			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 7-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.076	0.0368	7.73	13.93:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	0.846	0.2754		10.70:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	0.911			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.477	0.0359	7.39	10.70:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	0.543			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	1.454	0.0863		10.70:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	1.520	0.0465		9.00:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	1.884	0.1206		9.00:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	3.600	0.0250		13.56:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	3.710	0.1262		13.56:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	4.220	0.1254		13.56:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	4.880			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 8-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.116	0.0561	7.95	13.33:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.288	0.4364		10.35:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.391			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	4.328	0.3562	8.35	10.35:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	4.983			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	6.374	0.1346		10.35:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.477	0.3249		9.02:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	9.018	0.3999		9.02:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	14.710	0.0979		13.33:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	15.140	0.6409		13.33:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	17.730	0.6382		13.33:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	21.090			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 9-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.167	0.0813	8.42	12.63:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.867	0.6525		9.94:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.021			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.997	0.2610	8.12	9.94:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.477			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.498	0.2013		9.94:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.652	0.1999		8.82:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.215	0.6144		8.82:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	14.960	0.1024		13.04:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	15.410	0.6632		13.04:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	18.090	0.6667		13.04:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	21.600			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 10-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.144	0.0698	8.22	12.01:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.603	0.5508		9.53:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.733			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.134	0.1539	7.58	9.53:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.417			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.150	0.1712		9.53:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.281	0.1079		8.57:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.125	0.3502		8.57:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	9.110	0.0614		12.78:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	9.380	0.1460		12.78:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	9.970	0.1443		12.78:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	10.730			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 11-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.120	0.0581	6.46	11.42:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.336	0.4534		9.14:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.443			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.054	0.1289	6.83	9.14:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.291			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.734	0.1412		9.14:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.842	0.0821		8.31:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.484	0.2498		8.31:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.040	0.0478		12.52:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.250	0.1262		12.52:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	7.760	0.1254		12.52:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	8.420			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 12-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.137	0.0663	7.07	10.83:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.523	0.5212		8.78:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.646			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	3.847	0.5693	7.67	8.78:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	4.894			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	6.541	0.1608		8.78:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.664	0.3368		8.00:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	9.298	0.4006		8.00:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	15.000	0.1024		12.14:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	15.450	0.6682		12.14:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	18.150	0.6705		12.14:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	21.680			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 13-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.168	0.0815	6.73	10.31:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.873	0.6525		8.45:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.027			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.913	0.3089	7.01	8.45:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.481			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.508	0.2013		8.45:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.662	0.2006		7.70:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.231	0.4264		7.70:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	12.300	0.0842		11.75:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	12.670	0.4034		11.75:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	14.300	0.4046		11.75:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	16.430			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 14-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.186	0.0901	6.24	9.92:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.071	0.7288		8.19:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.243			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.686	0.3567	6.72	8.19:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.342			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.585	0.2248		8.19:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.757	0.2074		7.42:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.379	0.3801		7.42:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.790	0.0797		11.40:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	12.140	0.3588		11.40:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	13.590	0.3590		11.40:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	15.480			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 15-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.162	0.0785	5.48	9.70:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.803	0.6271		8.03:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.951			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.117	0.1963	5.90	8.03:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.478			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.429	0.1935		8.03:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.577	0.1263		7.25:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.565	0.3355		7.25:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	9.340	0.0637		11.16:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	9.620	0.1633		11.16:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	10.280	0.1614		11.16:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	11.130			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 16-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.143	0.0694	6.22	9.67:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.594	0.5466		7.97:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.723			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.882	0.1468	6.06	7.97:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.152			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.875	0.1699		7.97:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.005	0.0916		7.28:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.721	0.2788		7.28:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.690	0.0523		11.08:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.920	0.1213		11.08:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	8.410	0.1197		11.08:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	9.040			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 17-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.133	0.0648	6.08	9.70:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.488	0.5085		7.96:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.608			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	0.798	0.1256	5.97	7.96:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.029			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	2.638	0.1569		7.96:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	2.758	0.0777		7.45:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	3.366	0.2539		7.45:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	6.980	0.0478		11.06:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.190	0.1262		11.06:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	7.700	0.1254		11.06:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	8.360			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 18-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.122	0.0593	6.04	9.66:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	1.363	0.4619		7.92:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	1.472			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.731	0.1887	6.50	7.92:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.078			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	3.550	0.1438		7.92:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	3.660	0.1316		7.59:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	4.689	0.2087		7.59:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	7.660	0.0523		10.88:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	7.890	0.1213		10.88:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	8.380	0.1216		10.88:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	9.020			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 19-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.198	0.0960	6.23	9.47:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.206	0.7797		7.81:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.390			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	4.766	0.8151	7.22	7.81:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	6.265			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	8.655	0.2405		7.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	8.839	0.4801		7.59:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	12.593	0.5492		7.59:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	20.410	0.1365		10.49:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	21.010	1.3041		10.49:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	26.280	1.3029		10.49:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	33.140			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 20-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.205	0.0997	5.75	9.15:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.291	0.8136		7.62:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.483			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	3.490	0.7026	6.72	7.62:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	4.782			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	7.264	0.2510		7.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	7.456	0.3879		7.40:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	10.489	0.5368		7.40:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	18.130	0.1229		9.97:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	18.670	1.0220		9.97:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	22.800	1.0199		9.97:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	28.170			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 21-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.243	0.1178	5.77	8.79:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.707	0.9703		7.39:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.936			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	2.096	0.4361	6.30	7.39:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.898			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	5.834	0.2993		7.39:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.063	0.2988		7.14:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.400	0.5761		7.14:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	16.600	0.1115		9.44:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	17.090	0.8439		9.44:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	20.500	0.8433		9.44:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	24.940			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 22-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.214	0.1039	4.72	8.45:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.388	0.8517		7.17:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.589			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.434	0.2730	5.04	7.17:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.936			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.524	0.2614		7.17:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.724	0.2052		6.91:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.329	0.3949		6.91:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.950	0.0819		8.99:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	12.310	0.3737		8.99:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	13.820	0.3723		8.99:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	15.780			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 23-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.238	0.1156	4.68	8.19:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.656	0.9492		6.97:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.880			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	2.310	0.4046	5.91	6.97:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	3.054			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	5.935	0.2928		6.97:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.159	0.3049		6.80:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.543	0.5232		6.80:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	15.990	0.1070		8.62:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	16.460	0.7770		8.62:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	19.600	0.7749		8.62:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	23.680			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 24-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.223	0.1083	4.73	7.99:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.489	0.8898		6.81:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.699			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	2.210	0.4252	5.73	6.81:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.992			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	5.691	0.2732		6.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	5.900	0.2887		6.73:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.158	0.4603		6.73:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	14.710	0.0979		8.36:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	15.140	0.6409		8.36:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	17.730	0.6382		8.36:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	21.090			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 25-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.230	0.1119	4.44	7.81:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.570	0.9153		6.66:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.786			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	2.300	0.5008	5.65	6.66:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	3.221			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	6.007	0.2837		6.66:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.224	0.3088		6.65:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.639	0.5066		6.65:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	15.850	0.1070		8.14:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	16.320	0.7622		8.14:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	19.400	0.7597		8.14:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	23.400			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 26-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.221	0.1075	4.36	7.64:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.469	0.8814		6.51:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.677			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.542	0.3377	5.37	6.51:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.163			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.840	0.2706		6.51:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	5.047	0.2292		6.54:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.839	0.4469		6.54:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	13.200	0.0910		7.93:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	13.600	0.4875		7.93:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	15.570	0.4900		7.93:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	18.150			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 27-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.208	0.1012	4.15	7.45:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.324	0.8220		6.36:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.518			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.174	0.2572	4.86	6.36:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.647			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.165	0.2536		6.36:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.359	0.1789		6.41:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.758	0.3774		6.41:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.130	0.0751		7.67:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	11.460	0.3044		7.67:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	12.690	0.3020		7.67:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	14.280			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 28-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.234	0.1134	3.36	7.24:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.606	0.9322		6.18:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.826			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	3.466	0.4290	4.88	6.18:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	4.255			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	7.080	0.2876		6.18:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	7.300	0.3777		6.26:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	10.254	0.5112		6.26:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	17.530	0.1183		7.40:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	18.050	0.9503		7.40:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	21.890	0.9497		7.40:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	26.890			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 29-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.266	0.1289	3.40	7.04:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.961	1.0678		6.00:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	3.213			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.723	0.3518	4.73	6.00:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.370			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	5.584	0.3294		6.00:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	5.836	0.2847		6.18:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.062	0.5394		6.18:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	15.740	0.1047		7.20:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	16.200	0.7498		7.20:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	19.230	0.7483		7.20:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	23.170			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 30-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.232	0.1126	3.59	6.86:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.586	0.9237		5.81:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.804			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	2.394	0.4965	4.79	5.81:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	3.307			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	6.112	0.2850		5.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.330	0.3156		6.20:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.798	0.4413		6.20:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	15.080	0.1024		7.15:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	15.530	0.6756		7.15:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	18.260	0.6781		7.15:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	21.830			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 1-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.256	0.1241	3.44	6.61:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.852	1.0254		5.56:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	3.094			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.952	0.4497	4.78	5.56:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.779			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	5.873	0.3163		5.56:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	6.115	0.3020		6.24:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	8.477	0.5131		6.24:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	15.780	0.1047		7.21:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	16.240	0.7523		7.21:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	19.280	0.7540		7.21:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	23.250			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 2-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.240	0.1166	2.67	6.21:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.679	0.9576		5.24:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.905			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.431	0.3132	4.17	5.24:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	2.007			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.913	0.2954		5.24:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	5.139	0.2361		6.21:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.985	0.4296		6.21:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	13.100	0.0910		7.36:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	13.500	0.4776		7.36:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	15.430	0.4805		7.36:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	17.960			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 3-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.228	0.1109	1.70	5.62:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.548	0.9068		4.84:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.762			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.096	0.2588	3.76	4.84:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.572			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.334	0.2810		4.84:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.549	0.1923		6.07:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	6.053	0.3623		6.07:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	11.210	0.0774		7.51:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	11.550	0.3093		7.51:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	12.800	0.3096		7.51:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	14.430			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 4-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.213	0.1035	1.20	4.92:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	2.377	0.8432		4.38:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	2.576			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	1.206	0.2534	2.98	4.38:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	1.672			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	4.248	0.2601		4.38:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	4.447	0.1852		5.85:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	5.895	0.3017		5.85:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	10.190	0.0706		7.63:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	10.500	0.2252		7.63:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	11.410	0.2260		7.63:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	12.600			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

YEAR: 2007 TIME PERIOD: 5-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.273	0.1326	0.35	4.13:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	Q	36.8	3.046	1.1017		3.88:	HYDROLOGY GAGE NK100C
3	N.F. KOKTULI	B	36.5	3.306			:	CONFLUENCE WITH TRIBUTARY NFK 1.119
4	TRIBUTARY 119	H	38.4	5.125	1.1098	2.53	3.88:	HYDROLOGY GAGE NK119A
5	TRIBUTARY 119	T	36.5	7.166			:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
6	N.F. KOKTULI	J	36.5	10.472	0.3399		3.88:	CONFLUENCE WITH TRIBUTARY NFK 1.119
7	N.F. KOKTULI	Q	35.8	10.732	0.6111		5.52:	HYDROLOGY GAGE NK100B
8	N.F. KOKTULI	Q	27.9	15.511	0.6498		5.52:	HYDROLOGY NODE NK100LF3
9	N.F. KOKTULI	Q	13.7	24.760	0.1639		7.66:	HYDROLOGY GAGE NK100A1
10	N.F. KOKTULI	Q	9.3	25.480	1.8931		7.66:	HYDROLOGY NODE FRS-4
11	N.F. KOKTULI	Q	5.3	33.130	1.8936		7.66:	HYDROLOGY GAGE NK100A
12	N.F. KOKTULI	E	0.0	43.100			:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

NORMAL COMPLETION OF 'LATFLO'.

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************************************ TABLE VI: COMPOSITE-STR. GEOM., HYDR., & MET. MERGED ************************************
    BEGIN FINAL HYDROLOGY, STREAM GEOMETRY, ANDLOCAL METEOROLOGY VERIFICATION FOR THE COMPOSITE NETWORK. THE PURPOSE OF
 THIS PROGRAM IS TO:
       (1) GENERATE THE SOLAR DATA;
       (2) GENERATE THE SHADE DATA;
       (3) DETERMINE THE LOCAL METEOROLOGY FOR EACH NODE;
       (4) COMPLETE THE HYDROLOGY DATA AT EACH NON-HYDROLOGY NODE;
       (5) MERGE ALL DATA AT EACH COMPOSITE NODE FOR ALL YEARS AND TIME PERIODS INTO A SINGLE DIRECT-ACCESS FILE.
 THIS VERIFICATION IS A TRUNCATED VERSION CONTAININGTHE NEWLY CREATED DATA FOR 'KMERGE'.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTF
       1.      0.      0.    141.     33.     27.     12.      6.     33.      2.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       6.      0.      0.      0.      0.      1.      1.      1.    141.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
 NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
 N.F. KOKTULI        57.7     0.0
 TRIBUTARY 119       38.4    36.5
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
     NORMAL COMPLETION OF 'METROL'.
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CALIBRATION FACTORS FOR SOLAR RADIATION AT GROUND LEVEL: LAT(RAD)=1.04551 ELEV(M)= 474. AVG. ANN. AIR TEMP(C)= -0.75
METEOROLOGY FILE: NORTH FORK KOKTULI RIVER, ALASKA

TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)
18-May	0.7966	19-May	0.7213	20-May	0.5058	21-May	0.8673	22-May	0.3972	23-May	0.3305	24-May	0.1910	25-May	0.2225
26-May	0.3179	27-May	0.6792	28-May	0.6214	29-May	0.5489	30-May	0.4606	31-May	0.3260	1-Jun	0.2732	2-Jun	0.3796
3-Jun	0.4658	4-Jun	0.2900	5-Jun	0.3807	6-Jun	0.7655	7-Jun	0.6531	8-Jun	0.5541	9-Jun	0.4422	10-Jun	0.7418
11-Jun	0.6966	12-Jun	0.2199	13-Jun	0.3727	14-Jun	0.4319	15-Jun	0.8408	16-Jun	0.6845	17-Jun	0.3880	18-Jun	0.4562
19-Jun	0.8143	20-Jun	0.7893	21-Jun	0.6153	22-Jun	0.1642	23-Jun	0.1058	24-Jun	0.3032	25-Jun	0.3558	26-Jun	0.7614
27-Jun	0.7608	28-Jun	0.2507	29-Jun	0.8273	30-Jun	0.4855	1-Jul	0.4081	2-Jul	0.5728	3-Jul	0.5348	4-Jul	0.2959
5-Jul	0.4220	6-Jul	0.4073	7-Jul	0.4661	8-Jul	0.2868	9-Jul	0.5104	10-Jul	0.4404	11-Jul	0.8225	12-Jul	0.4833
13-Jul	0.2183	14-Jul	0.3597	15-Jul	0.3410	16-Jul	0.5774	17-Jul	0.8515	18-Jul	0.3346	19-Jul	0.3879	20-Jul	0.5408
21-Jul	0.2589	22-Jul	0.1629	23-Jul	0.1673	24-Jul	0.3335	25-Jul	0.4105	26-Jul	0.6173	27-Jul	0.5660	28-Jul	0.7702
29-Jul	0.6732	30-Jul	0.3614	31-Jul	0.3085	1-Aug	0.2088	2-Aug	0.1733	3-Aug	0.1976	4-Aug	0.0933	5-Aug	0.2049
6-Aug	0.6458	7-Aug	0.7468	8-Aug	0.5677	9-Aug	0.8716	10-Aug	0.8782	11-Aug	0.5945	12-Aug	0.4442	13-Aug	0.7199
14-Aug	0.2529	15-Aug	0.2711	16-Aug	0.7356	17-Aug	0.4375	18-Aug	0.2371	19-Aug	0.4147	20-Aug	0.2402	21-Aug	0.1177
22-Aug	0.1231	23-Aug	0.3347	24-Aug	0.4671	25-Aug	0.5974	26-Aug	0.6063	27-Aug	0.6815	28-Aug	0.8575	29-Aug	0.7016
30-Aug	0.5199	31-Aug	0.6487	1-Sep	0.4342	2-Sep	0.4799	3-Sep	0.5288	4-Sep	0.5781	5-Sep	0.5713	6-Sep	0.4451
7-Sep	0.1620	8-Sep	0.1422	9-Sep	0.3372	10-Sep	0.5770	11-Sep	0.1473	12-Sep	0.6518	13-Sep	0.2573	14-Sep	0.5209
15-Sep	0.8021	16-Sep	0.6822	17-Sep	0.3928	18-Sep	0.1443	19-Sep	0.2878	20-Sep	0.2923	21-Sep	0.7042	22-Sep	0.2895
23-Sep	0.2963	24-Sep	0.2825	25-Sep	0.4454	26-Sep	0.4541	27-Sep	0.4151	28-Sep	0.2295	29-Sep	0.5265	30-Sep	0.2182
1-Oct	0.4750	2-Oct	0.3852	3-Oct	0.7475	4-Oct	0.1025	5-Oct	0.4770						

YEAR: 2007 TIME PERIOD: 18-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.37	0.694	3.60	1.000	950.	254.6	0.4700	17.051	0.188	3.79	0.0913	4.61
2	N.F. KOKTULI	C	55.7	5.35	0.656	3.60	1.000	968.	254.2	0.2470	17.052	0.364		0.0913	4.61
3	N.F. KOKTULI	C	48.2	5.67	0.644	3.60	1.000	974.	254.1	0.2121	17.052	1.056		0.0913	4.61
4	N.F. KOKTULI	C	44.8	5.71	0.642	3.60	1.000	974.	254.1	0.1498	17.048	1.366		0.0913	4.61
5	N.F. KOKTULI	C	42.1	5.73	0.641	3.60	1.000	975.	254.1	0.1460	17.048	1.612		0.0913	4.61
6	N.F. KOKTULI	C	41.2	5.74	0.641	3.60	1.000	975.	254.1	0.1208	17.047	1.689		0.0913	4.61
7	N.F. KOKTULI	C	39.8	5.75	0.641	3.60	1.000	975.	254.1	0.1607	17.046	1.822		0.0913	4.61
8	N.F. KOKTULI	C	38.6	5.77	0.640	3.60	1.000	975.	254.1	0.1037	17.045	1.934		0.0913	4.61
9	N.F. KOKTULI	Q	36.8	5.77	0.640	3.60	1.000	975.	254.1	0.1037	17.045	2.098		0.7373	2.18
10	N.F. KOKTULI	C	36.5	5.79	0.639	3.60	1.000	976.	254.1	0.1196	17.045	2.268		0.7373	2.18
11	N.F. KOKTULI	B	36.5									2.272			
12	TRIBUTARY 119	H	38.4	5.70	0.643	3.60	1.000	974.	254.2	0.2421	17.043	1.878	1.03	0.2860	2.18
13	TRIBUTARY 119	T	36.5									2.404			
14	N.F. KOKTULI	J	36.5	5.82	0.638	3.60	1.000	976.	254.1	0.1196	17.045	4.675		0.2288	2.18
15	N.F. KOKTULI	Q	35.8	5.82	0.638	3.60	1.000	976.	254.1	0.1196	17.045	4.850		0.2143	2.36
16	N.F. KOKTULI	C	35.4	5.86	0.637	3.60	1.000	977.	254.1	0.0929	17.046	4.930		0.2143	2.36
17	N.F. KOKTULI	C	34.0	5.91	0.635	3.60	1.000	978.	254.1	0.0885	17.046	5.233		0.2143	2.36
18	N.F. KOKTULI	C	31.0	5.97	0.633	3.60	1.000	979.	254.1	0.1014	17.044	5.872		0.2143	2.36
19	N.F. KOKTULI	C	28.5	6.01	0.631	3.60	1.000	980.	254.1	0.0785	17.044	6.409		0.2143	2.36
20	N.F. KOKTULI	Q	27.9	6.01	0.631	3.60	1.000	980.	254.1	0.0785	17.044	6.526		0.4717	2.36
21	N.F. KOKTULI	C	27.0	6.05	0.629	3.60	1.000	980.	254.1	0.0821	17.043	6.989		0.4717	2.36
22	N.F. KOKTULI	C	24.5	6.21	0.624	3.60	1.000	983.	254.1	0.1005	17.035	8.137		0.4717	2.36
23	N.F. KOKTULI	C	16.0	6.37	0.618	3.60	1.000	986.	254.1	0.0662	17.027	12.140		0.4717	2.36
24	N.F. KOKTULI	C	13.8	6.44	0.615	3.60	1.000	987.	254.1	0.0509	17.025	13.178		0.4717	2.36
25	N.F. KOKTULI	Q	13.7	6.44	0.615	3.60	1.000	987.	254.1	0.0509	17.025	13.240		0.0910	5.12
26	N.F. KOKTULI	C	11.6	6.49	0.614	3.60	1.000	988.	254.1	0.0514	17.024	13.434		0.0910	5.12
27	N.F. KOKTULI	C	9.9	6.53	0.612	3.60	1.000	989.	254.1	0.0489	17.025	13.587		0.0910	5.12
28	N.F. KOKTULI	Q	9.3	6.53	0.612	3.60	1.000	989.	254.1	0.0489	17.025	13.640		0.4925	5.12
29	N.F. KOKTULI	C	7.6	6.58	0.610	3.60	1.000	990.	254.0	0.0509	17.024	14.501		0.4925	5.12
30	N.F. KOKTULI	C	6.2	6.62	0.609	3.60	1.000	991.	254.0	0.0447	17.024	15.175		0.4925	5.12
31	N.F. KOKTULI	Q	5.3	6.62	0.609	3.60	1.000	991.	254.0	0.0447	17.024	15.630		0.4938	5.12
32	N.F. KOKTULI	C	3.5	6.67	0.607	3.60	1.000	992.	254.0	0.0459	17.023	16.492		0.4938	5.12
33	N.F. KOKTULI	E	0.0									18.230			

YEAR: 2007 TIME PERIOD: 19-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.20	0.705	4.00	1.000	950.	230.8	0.4688	17.123	0.166	4.88	0.0808	5.24
2	N.F. KOKTULI	C	55.7	7.18	0.665	4.00	1.000	968.	230.5	0.2464	17.124	0.322		0.0808	5.24
3	N.F. KOKTULI	C	48.2	7.50	0.653	4.00	1.000	974.	230.4	0.2116	17.124	0.934		0.0808	5.24
4	N.F. KOKTULI	C	44.8	7.54	0.652	4.00	1.000	974.	230.4	0.1495	17.121	1.209		0.0808	5.24
5	N.F. KOKTULI	C	42.1	7.56	0.651	4.00	1.000	975.	230.4	0.1455	17.120	1.426		0.0808	5.24
6	N.F. KOKTULI	C	41.2	7.57	0.650	4.00	1.000	975.	230.4	0.1206	17.120	1.494		0.0808	5.24
7	N.F. KOKTULI	C	39.8	7.58	0.650	4.00	1.000	975.	230.4	0.1603	17.119	1.612		0.0808	5.24
8	N.F. KOKTULI	C	38.6	7.60	0.649	4.00	1.000	975.	230.4	0.1037	17.118	1.711		0.0808	5.24
9	N.F. KOKTULI	Q	36.8	7.60	0.649	4.00	1.000	975.	230.4	0.1037	17.118	1.856		0.6483	2.49
10	N.F. KOKTULI	C	36.5	7.62	0.648	4.00	1.000	976.	230.4	0.1193	17.117	2.005		0.6483	2.49
11	N.F. KOKTULI	B	36.5									2.009			
12	TRIBUTARY 119	H	38.4	7.53	0.652	4.00	1.000	974.	230.4	0.2416	17.116	1.566	1.34	0.2099	2.49
13	TRIBUTARY 119	T	36.5									1.952			
14	N.F. KOKTULI	J	36.5	7.65	0.648	4.00	1.000	976.	230.4	0.1193	17.118	3.961		0.1987	2.49
15	N.F. KOKTULI	Q	35.8	7.65	0.648	4.00	1.000	976.	230.4	0.1193	17.118	4.113		0.1619	2.60
16	N.F. KOKTULI	C	35.4	7.69	0.646	4.00	1.000	977.	230.4	0.0928	17.119	4.174		0.1619	2.60
17	N.F. KOKTULI	C	34.0	7.74	0.644	4.00	1.000	978.	230.4	0.0885	17.118	4.402		0.1619	2.60
18	N.F. KOKTULI	C	31.0	7.80	0.642	4.00	1.000	979.	230.3	0.1011	17.117	4.885		0.1619	2.60
19	N.F. KOKTULI	C	28.5	7.84	0.640	4.00	1.000	980.	230.3	0.0784	17.116	5.291		0.1619	2.60
20	N.F. KOKTULI	Q	27.9	7.84	0.640	4.00	1.000	980.	230.3	0.0784	17.116	5.379		0.3513	2.60
21	N.F. KOKTULI	C	27.0	7.88	0.639	4.00	1.000	980.	230.3	0.0820	17.116	5.724		0.3513	2.60
22	N.F. KOKTULI	C	24.5	8.04	0.633	4.00	1.000	983.	230.3	0.1001	17.107	6.579		0.3513	2.60
23	N.F. KOKTULI	C	16.0	8.20	0.627	4.00	1.000	986.	230.4	0.0661	17.099	9.561		0.3513	2.60
24	N.F. KOKTULI	C	13.8	8.27	0.624	4.00	1.000	987.	230.3	0.0509	17.097	10.334		0.3513	2.60
25	N.F. KOKTULI	Q	13.7	8.27	0.624	4.00	1.000	987.	230.3	0.0509	17.097	10.380		0.0706	5.86
26	N.F. KOKTULI	C	11.6	8.32	0.623	4.00	1.000	988.	230.3	0.0513	17.097	10.530		0.0706	5.86
27	N.F. KOKTULI	C	9.9	8.36	0.621	4.00	1.000	989.	230.3	0.0488	17.097	10.649		0.0706	5.86
28	N.F. KOKTULI	Q	9.3	8.36	0.621	4.00	1.000	989.	230.3	0.0488	17.097	10.690		0.2425	5.86
29	N.F. KOKTULI	C	7.6	8.41	0.619	4.00	1.000	990.	230.3	0.0508	17.096	11.114		0.2425	5.86
30	N.F. KOKTULI	C	6.2	8.45	0.618	4.00	1.000	991.	230.3	0.0446	17.096	11.446		0.2425	5.86
31	N.F. KOKTULI	Q	5.3	8.45	0.618	4.00	1.000	991.	230.3	0.0446	17.096	11.670		0.2412	5.86
32	N.F. KOKTULI	C	3.5	8.50	0.616	4.00	1.000	992.	230.3	0.0459	17.095	12.091		0.2412	5.86
33	N.F. KOKTULI	E	0.0									12.940			

YEAR: 2007 TIME PERIOD: 20-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.13	0.725	3.25	1.000	950.	163.0	0.4677	17.195	0.158	4.36	0.0766	5.83
2	N.F. KOKTULI	C	55.7	6.11	0.685	3.25	1.000	968.	162.8	0.2458	17.196	0.305		0.0766	5.83
3	N.F. KOKTULI	C	48.2	6.43	0.672	3.25	1.000	974.	162.8	0.2111	17.196	0.885		0.0766	5.83
4	N.F. KOKTULI	C	44.8	6.47	0.670	3.25	1.000	974.	162.8	0.1492	17.192	1.146		0.0766	5.83
5	N.F. KOKTULI	C	42.1	6.49	0.670	3.25	1.000	975.	162.8	0.1452	17.192	1.352		0.0766	5.83
6	N.F. KOKTULI	C	41.2	6.50	0.669	3.25	1.000	975.	162.8	0.1204	17.191	1.416		0.0766	5.83
7	N.F. KOKTULI	C	39.8	6.51	0.669	3.25	1.000	975.	162.8	0.1599	17.190	1.528		0.0766	5.83
8	N.F. KOKTULI	C	38.6	6.53	0.668	3.25	1.000	975.	162.8	0.1036	17.189	1.621		0.0766	5.83
9	N.F. KOKTULI	Q	36.8	6.53	0.668	3.25	1.000	975.	162.8	0.1036	17.189	1.759		0.6102	2.80
10	N.F. KOKTULI	C	36.5	6.55	0.667	3.25	1.000	976.	162.8	0.1190	17.189	1.899		0.6102	2.80
11	N.F. KOKTULI	B	36.5									1.903			
12	TRIBUTARY 119	H	38.4	6.46	0.671	3.25	1.000	974.	162.8	0.2411	17.187	1.368	1.22	0.1767	2.80
13	TRIBUTARY 119	T	36.5									1.693			
14	N.F. KOKTULI	J	36.5	6.58	0.666	3.25	1.000	976.	162.8	0.1190	17.189	3.596		0.1895	2.80
15	N.F. KOKTULI	Q	35.8	6.58	0.666	3.25	1.000	976.	162.8	0.1190	17.189	3.741		0.1368	2.89
16	N.F. KOKTULI	C	35.4	6.62	0.665	3.25	1.000	977.	162.7	0.0928	17.190	3.792		0.1368	2.89
17	N.F. KOKTULI	C	34.0	6.67	0.663	3.25	1.000	978.	162.7	0.0884	17.190	3.986		0.1368	2.89
18	N.F. KOKTULI	C	31.0	6.73	0.661	3.25	1.000	979.	162.7	0.1008	17.188	4.394		0.1368	2.89
19	N.F. KOKTULI	C	28.5	6.77	0.659	3.25	1.000	980.	162.7	0.0784	17.187	4.736		0.1368	2.89
20	N.F. KOKTULI	Q	27.9	6.77	0.659	3.25	1.000	980.	162.7	0.0784	17.187	4.811		0.4004	2.89
21	N.F. KOKTULI	C	27.0	6.81	0.657	3.25	1.000	980.	162.7	0.0819	17.187	5.204		0.4004	2.89
22	N.F. KOKTULI	C	24.5	6.97	0.651	3.25	1.000	983.	162.7	0.0998	17.178	6.178		0.4004	2.89
23	N.F. KOKTULI	C	16.0	7.13	0.645	3.25	1.000	986.	162.7	0.0661	17.170	9.576		0.4004	2.89
24	N.F. KOKTULI	C	13.8	7.20	0.643	3.25	1.000	987.	162.7	0.0509	17.168	10.457		0.4004	2.89
25	N.F. KOKTULI	Q	13.7	7.20	0.643	3.25	1.000	987.	162.7	0.0509	17.168	10.510		0.0706	6.59
26	N.F. KOKTULI	C	11.6	7.25	0.641	3.25	1.000	988.	162.7	0.0513	17.168	10.660		0.0706	6.59
27	N.F. KOKTULI	C	9.9	7.29	0.639	3.25	1.000	989.	162.7	0.0488	17.168	10.779		0.0706	6.59
28	N.F. KOKTULI	Q	9.3	7.29	0.639	3.25	1.000	989.	162.7	0.0488	17.168	10.820		0.2524	6.59
29	N.F. KOKTULI	C	7.6	7.34	0.637	3.25	1.000	990.	162.7	0.0507	17.167	11.261		0.2524	6.59
30	N.F. KOKTULI	C	6.2	7.38	0.636	3.25	1.000	991.	162.7	0.0446	17.167	11.607		0.2524	6.59
31	N.F. KOKTULI	Q	5.3	7.38	0.636	3.25	1.000	991.	162.7	0.0446	17.167	11.840		0.2507	6.59
32	N.F. KOKTULI	C	3.5	7.43	0.634	3.25	1.000	992.	162.7	0.0458	17.166	12.277		0.2507	6.59
33	N.F. KOKTULI	E	0.0									13.160			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.90	0.582	4.72	1.000	950.	283.1	0.4667	17.265	0.140	4.87	0.0681	6.38
2	N.F. KOKTULI	C	55.7	6.88	0.550	4.72	1.000	968.	282.7	0.2453	17.266	0.271		0.0681	6.38
3	N.F. KOKTULI	C	48.2	7.20	0.539	4.72	1.000	974.	282.6	0.2107	17.266	0.787		0.0681	6.38
4	N.F. KOKTULI	C	44.8	7.24	0.538	4.72	1.000	974.	282.6	0.1489	17.263	1.019		0.0681	6.38
5	N.F. KOKTULI	C	42.1	7.26	0.538	4.72	1.000	975.	282.6	0.1448	17.262	1.202		0.0681	6.38
6	N.F. KOKTULI	C	41.2	7.27	0.537	4.72	1.000	975.	282.6	0.1203	17.262	1.259		0.0681	6.38
7	N.F. KOKTULI	C	39.8	7.28	0.537	4.72	1.000	975.	282.6	0.1595	17.260	1.358		0.0681	6.38
8	N.F. KOKTULI	C	38.6	7.30	0.536	4.72	1.000	975.	282.6	0.1036	17.259	1.442		0.0681	6.38
9	N.F. KOKTULI	Q	36.8	7.30	0.536	4.72	1.000	975.	282.6	0.1036	17.259	1.564		0.5381	3.11
10	N.F. KOKTULI	C	36.5	7.32	0.536	4.72	1.000	976.	282.6	0.1187	17.259	1.688		0.5381	3.11
11	N.F. KOKTULI	B	36.5									1.691			
12	TRIBUTARY 119	H	38.4	7.23	0.539	4.72	1.000	974.	282.6	0.2406	17.257	1.130	1.71	0.1316	3.11
13	TRIBUTARY 119	T	36.5									1.372			
14	N.F. KOKTULI	J	36.5	7.35	0.535	4.72	1.000	976.	282.6	0.1187	17.260	3.064		0.1660	3.11
15	N.F. KOKTULI	Q	35.8	7.35	0.535	4.72	1.000	976.	282.6	0.1187	17.260	3.191		0.1024	3.19
16	N.F. KOKTULI	C	35.4	7.39	0.534	4.72	1.000	977.	282.6	0.0928	17.260	3.229		0.1024	3.19
17	N.F. KOKTULI	C	34.0	7.44	0.532	4.72	1.000	978.	282.5	0.0885	17.260	3.374		0.1024	3.19
18	N.F. KOKTULI	C	31.0	7.50	0.530	4.72	1.000	979.	282.5	0.1006	17.258	3.679		0.1024	3.19
19	N.F. KOKTULI	C	28.5	7.54	0.529	4.72	1.000	980.	282.5	0.0784	17.258	3.936		0.1024	3.19
20	N.F. KOKTULI	Q	27.9	7.54	0.529	4.72	1.000	980.	282.5	0.0784	17.258	3.992		0.3624	3.19
21	N.F. KOKTULI	C	27.0	7.58	0.528	4.72	1.000	980.	282.5	0.0818	17.257	4.347		0.3624	3.19
22	N.F. KOKTULI	C	24.5	7.74	0.523	4.72	1.000	983.	282.5	0.0994	17.248	5.229		0.3624	3.19
23	N.F. KOKTULI	C	16.0	7.90	0.518	4.72	1.000	986.	282.5	0.0661	17.239	8.305		0.3624	3.19
24	N.F. KOKTULI	C	13.8	7.97	0.516	4.72	1.000	987.	282.5	0.0508	17.238	9.102		0.3624	3.19
25	N.F. KOKTULI	Q	13.7	7.97	0.516	4.72	1.000	987.	282.5	0.0508	17.238	9.150		0.0614	7.19
26	N.F. KOKTULI	C	11.6	8.02	0.514	4.72	1.000	988.	282.5	0.0512	17.237	9.281		0.0614	7.19
27	N.F. KOKTULI	C	9.9	8.06	0.513	4.72	1.000	989.	282.5	0.0487	17.237	9.384		0.0614	7.19
28	N.F. KOKTULI	Q	9.3	8.06	0.513	4.72	1.000	989.	282.5	0.0487	17.237	9.420		0.1485	7.19
29	N.F. KOKTULI	C	7.6	8.11	0.512	4.72	1.000	990.	282.5	0.0506	17.237	9.680		0.1485	7.19
30	N.F. KOKTULI	C	6.2	8.15	0.510	4.72	1.000	991.	282.5	0.0446	17.236	9.883		0.1485	7.19
31	N.F. KOKTULI	Q	5.3	8.15	0.510	4.72	1.000	991.	282.5	0.0446	17.236	10.020		0.1481	7.19
32	N.F. KOKTULI	C	3.5	8.20	0.509	4.72	1.000	992.	282.5	0.0458	17.236	10.279		0.1481	7.19
33	N.F. KOKTULI	E	0.0									10.800			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.50	0.633	8.00	1.000	950.	130.1	0.4656	17.334	0.146	4.21	0.0709	6.90
2	N.F. KOKTULI	C	55.7	6.48	0.598	8.00	1.000	968.	129.9	0.2447	17.335	0.283		0.0709	6.90
3	N.F. KOKTULI	C	48.2	6.80	0.587	8.00	1.000	974.	129.9	0.2103	17.335	0.820		0.0709	6.90
4	N.F. KOKTULI	C	44.8	6.84	0.585	8.00	1.000	974.	129.9	0.1486	17.331	1.062		0.0709	6.90
5	N.F. KOKTULI	C	42.1	6.86	0.585	8.00	1.000	975.	129.9	0.1445	17.330	1.253		0.0709	6.90
6	N.F. KOKTULI	C	41.2	6.87	0.584	8.00	1.000	975.	129.9	0.1202	17.330	1.312		0.0709	6.90
7	N.F. KOKTULI	C	39.8	6.88	0.584	8.00	1.000	975.	129.9	0.1592	17.329	1.416		0.0709	6.90
8	N.F. KOKTULI	C	38.6	6.90	0.583	8.00	1.000	975.	129.9	0.1036	17.328	1.503		0.0709	6.90
9	N.F. KOKTULI	Q	36.8	6.90	0.583	8.00	1.000	975.	129.9	0.1036	17.328	1.630		0.5636	3.42
10	N.F. KOKTULI	C	36.5	6.92	0.583	8.00	1.000	976.	129.9	0.1184	17.328	1.760		0.5636	3.42
11	N.F. KOKTULI	B	36.5									1.763			
12	TRIBUTARY 119	H	38.4	6.83	0.586	8.00	1.000	974.	129.9	0.2402	17.326	1.271	1.50	0.1501	3.42
13	TRIBUTARY 119	T	36.5									1.547			
14	N.F. KOKTULI	J	36.5	6.95	0.582	8.00	1.000	976.	129.9	0.1184	17.328	3.310		0.1739	3.42
15	N.F. KOKTULI	Q	35.8	6.95	0.582	8.00	1.000	976.	129.9	0.1184	17.328	3.443		0.1180	3.54
16	N.F. KOKTULI	C	35.4	6.99	0.580	8.00	1.000	977.	129.9	0.0928	17.329	3.487		0.1180	3.54
17	N.F. KOKTULI	C	34.0	7.04	0.579	8.00	1.000	978.	129.9	0.0885	17.329	3.654		0.1180	3.54
18	N.F. KOKTULI	C	31.0	7.10	0.577	8.00	1.000	979.	129.9	0.1004	17.327	4.006		0.1180	3.54
19	N.F. KOKTULI	C	28.5	7.14	0.575	8.00	1.000	980.	129.8	0.0784	17.326	4.302		0.1180	3.54
20	N.F. KOKTULI	Q	27.9	7.14	0.575	8.00	1.000	980.	129.8	0.0784	17.326	4.366		0.3480	3.54
21	N.F. KOKTULI	C	27.0	7.18	0.574	8.00	1.000	980.	129.8	0.0818	17.326	4.707		0.3480	3.54
22	N.F. KOKTULI	C	24.5	7.34	0.569	8.00	1.000	983.	129.8	0.0991	17.317	5.555		0.3480	3.54
23	N.F. KOKTULI	C	16.0	7.50	0.563	8.00	1.000	986.	129.8	0.0661	17.308	8.508		0.3480	3.54
24	N.F. KOKTULI	C	13.8	7.57	0.561	8.00	1.000	987.	129.8	0.0508	17.306	9.274		0.3480	3.54
25	N.F. KOKTULI	Q	13.7	7.57	0.561	8.00	1.000	987.	129.8	0.0508	17.306	9.320		0.0637	7.65
26	N.F. KOKTULI	C	11.6	7.62	0.560	8.00	1.000	988.	129.8	0.0512	17.306	9.456		0.0637	7.65
27	N.F. KOKTULI	C	9.9	7.66	0.558	8.00	1.000	989.	129.8	0.0487	17.306	9.563		0.0637	7.65
28	N.F. KOKTULI	Q	9.3	7.66	0.558	8.00	1.000	989.	129.8	0.0487	17.306	9.600		0.1609	7.65
29	N.F. KOKTULI	C	7.6	7.71	0.557	8.00	1.000	990.	129.8	0.0506	17.305	9.881		0.1609	7.65
30	N.F. KOKTULI	C	6.2	7.75	0.555	8.00	1.000	991.	129.8	0.0446	17.305	10.102		0.1609	7.65
31	N.F. KOKTULI	Q	5.3	7.75	0.555	8.00	1.000	991.	129.8	0.0446	17.305	10.250		0.1614	7.65
32	N.F. KOKTULI	C	3.5	7.80	0.553	8.00	1.000	992.	129.8	0.0458	17.304	10.532		0.1614	7.65
33	N.F. KOKTULI	E	0.0									11.100			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.71	0.735	8.71	1.000	950.	108.1	0.4646	17.401	0.149	4.43	0.0722	7.25
2	N.F. KOKTULI	C	55.7	6.69	0.694	8.71	1.000	968.	108.0	0.2442	17.402	0.288		0.0722	7.25
3	N.F. KOKTULI	C	48.2	7.01	0.681	8.71	1.000	974.	107.9	0.2099	17.402	0.835		0.0722	7.25
4	N.F. KOKTULI	C	44.8	7.05	0.680	8.71	1.000	974.	107.9	0.1483	17.399	1.080		0.0722	7.25
5	N.F. KOKTULI	C	42.1	7.07	0.679	8.71	1.000	975.	107.9	0.1441	17.398	1.275		0.0722	7.25
6	N.F. KOKTULI	C	41.2	7.08	0.679	8.71	1.000	975.	107.9	0.1200	17.398	1.336		0.0722	7.25
7	N.F. KOKTULI	C	39.8	7.09	0.678	8.71	1.000	975.	107.9	0.1588	17.396	1.441		0.0722	7.25
8	N.F. KOKTULI	C	38.6	7.11	0.677	8.71	1.000	975.	107.9	0.1036	17.395	1.529		0.0722	7.25
9	N.F. KOKTULI	Q	36.8	7.11	0.677	8.71	1.000	975.	107.9	0.1036	17.395	1.659		0.5763	3.69
10	N.F. KOKTULI	C	36.5	7.13	0.677	8.71	1.000	976.	107.9	0.1182	17.395	1.792		0.5763	3.69
11	N.F. KOKTULI	B	36.5									1.795			
12	TRIBUTARY 119	H	38.4	7.04	0.680	8.71	1.000	974.	108.0	0.2397	17.393	1.375	1.67	0.1631	3.69
13	TRIBUTARY 119	T	36.5									1.675			
14	N.F. KOKTULI	J	36.5	7.16	0.676	8.71	1.000	976.	107.9	0.1182	17.396	3.469		0.1778	3.69
15	N.F. KOKTULI	Q	35.8	7.16	0.676	8.71	1.000	976.	107.9	0.1182	17.396	3.605		0.1281	3.81
16	N.F. KOKTULI	C	35.4	7.20	0.674	8.71	1.000	977.	107.9	0.0928	17.396	3.653		0.1281	3.81
17	N.F. KOKTULI	C	34.0	7.25	0.672	8.71	1.000	978.	107.9	0.0885	17.396	3.834		0.1281	3.81
18	N.F. KOKTULI	C	31.0	7.31	0.670	8.71	1.000	979.	107.9	0.1001	17.394	4.216		0.1281	3.81
19	N.F. KOKTULI	C	28.5	7.35	0.668	8.71	1.000	980.	107.9	0.0784	17.394	4.537		0.1281	3.81
20	N.F. KOKTULI	Q	27.9	7.35	0.668	8.71	1.000	980.	107.9	0.0784	17.394	4.607		0.3536	3.81
21	N.F. KOKTULI	C	27.0	7.39	0.666	8.71	1.000	980.	107.9	0.0817	17.393	4.954		0.3536	3.81
22	N.F. KOKTULI	C	24.5	7.55	0.660	8.71	1.000	983.	107.9	0.0988	17.384	5.815		0.3536	3.81
23	N.F. KOKTULI	C	16.0	7.71	0.654	8.71	1.000	986.	107.9	0.0661	17.375	8.815		0.3536	3.81
24	N.F. KOKTULI	C	13.8	7.78	0.652	8.71	1.000	987.	107.9	0.0508	17.373	9.593		0.3536	3.81
25	N.F. KOKTULI	Q	13.7	7.78	0.652	8.71	1.000	987.	107.9	0.0508	17.373	9.640		0.0660	7.85
26	N.F. KOKTULI	C	11.6	7.83	0.650	8.71	1.000	988.	107.9	0.0511	17.373	9.781		0.0660	7.85
27	N.F. KOKTULI	C	9.9	7.87	0.648	8.71	1.000	989.	107.9	0.0487	17.373	9.892		0.0660	7.85
28	N.F. KOKTULI	Q	9.3	7.87	0.648	8.71	1.000	989.	107.9	0.0487	17.373	9.930		0.1856	7.85
29	N.F. KOKTULI	C	7.6	7.92	0.646	8.71	1.000	990.	107.9	0.0505	17.372	10.255		0.1856	7.85
30	N.F. KOKTULI	C	6.2	7.96	0.645	8.71	1.000	991.	107.9	0.0446	17.372	10.509		0.1856	7.85
31	N.F. KOKTULI	Q	5.3	7.96	0.645	8.71	1.000	991.	107.9	0.0446	17.372	10.680		0.1823	7.85
32	N.F. KOKTULI	C	3.5	8.01	0.643	8.71	1.000	992.	107.9	0.0457	17.371	10.998		0.1823	7.85
33	N.F. KOKTULI	E	0.0									11.640			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.67	0.919	9.07	1.000	950.	62.3	0.4632	17.467	0.162	4.37	0.0789	7.38
2	N.F. KOKTULI	C	55.7	5.65	0.868	9.07	1.000	968.	62.2	0.2438	17.468	0.314		0.0789	7.38
3	N.F. KOKTULI	C	48.2	5.97	0.852	9.07	1.000	974.	62.2	0.2095	17.468	0.912		0.0789	7.38
4	N.F. KOKTULI	C	44.8	6.01	0.850	9.07	1.000	974.	62.2	0.1481	17.465	1.180		0.0789	7.38
5	N.F. KOKTULI	C	42.1	6.03	0.849	9.07	1.000	975.	62.2	0.1438	17.464	1.392		0.0789	7.38
6	N.F. KOKTULI	C	41.2	6.04	0.848	9.07	1.000	975.	62.2	0.1199	17.464	1.459		0.0789	7.38
7	N.F. KOKTULI	C	39.8	6.05	0.848	9.07	1.000	975.	62.2	0.1585	17.462	1.574		0.0789	7.38
8	N.F. KOKTULI	C	38.6	6.07	0.847	9.07	1.000	975.	62.2	0.1036	17.461	1.670		0.0789	7.38
9	N.F. KOKTULI	Q	36.8	6.07	0.847	9.07	1.000	975.	62.2	0.1036	17.461	1.812		0.6314	3.88
10	N.F. KOKTULI	C	36.5	6.09	0.846	9.07	1.000	976.	62.2	0.1179	17.461	1.957		0.6314	3.88
11	N.F. KOKTULI	B	36.5									1.961			
12	TRIBUTARY 119	H	38.4	6.00	0.851	9.07	1.000	974.	62.2	0.2393	17.459	1.713	1.74	0.2164	3.88
13	TRIBUTARY 119	T	36.5									2.111			
14	N.F. KOKTULI	J	36.5	6.12	0.845	9.07	1.000	976.	62.2	0.1179	17.462	4.072		0.1948	3.88
15	N.F. KOKTULI	Q	35.8	6.12	0.845	9.07	1.000	976.	62.2	0.1179	17.462	4.221		0.1692	3.85
16	N.F. KOKTULI	C	35.4	6.16	0.843	9.07	1.000	977.	62.2	0.0928	17.462	4.284		0.1692	3.85
17	N.F. KOKTULI	C	34.0	6.21	0.840	9.07	1.000	978.	62.2	0.0885	17.462	4.523		0.1692	3.85
18	N.F. KOKTULI	C	31.0	6.27	0.837	9.07	1.000	979.	62.2	0.0999	17.460	5.028		0.1692	3.85
19	N.F. KOKTULI	C	28.5	6.31	0.835	9.07	1.000	980.	62.2	0.0785	17.460	5.452		0.1692	3.85
20	N.F. KOKTULI	Q	27.9	6.31	0.835	9.07	1.000	980.	62.2	0.0785	17.460	5.544		0.4472	3.85
21	N.F. KOKTULI	C	27.0	6.35	0.833	9.07	1.000	980.	62.2	0.0817	17.459	5.983		0.4472	3.85
22	N.F. KOKTULI	C	24.5	6.51	0.825	9.07	1.000	983.	62.2	0.0985	17.450	7.071		0.4472	3.85
23	N.F. KOKTULI	C	16.0	6.67	0.818	9.07	1.000	986.	62.2	0.0660	17.440	10.867		0.4472	3.85
24	N.F. KOKTULI	C	13.8	6.74	0.815	9.07	1.000	987.	62.2	0.0508	17.439	11.851		0.4472	3.85
25	N.F. KOKTULI	Q	13.7	6.74	0.815	9.07	1.000	987.	62.2	0.0508	17.439	11.910		0.0819	7.74
26	N.F. KOKTULI	C	11.6	6.79	0.812	9.07	1.000	988.	62.2	0.0511	17.438	12.085		0.0819	7.74
27	N.F. KOKTULI	C	9.9	6.83	0.810	9.07	1.000	989.	62.2	0.0487	17.438	12.222		0.0819	7.74
28	N.F. KOKTULI	Q	9.3	6.83	0.810	9.07	1.000	989.	62.2	0.0487	17.438	12.270		0.3687	7.74
29	N.F. KOKTULI	C	7.6	6.88	0.808	9.07	1.000	990.	62.2	0.0504	17.438	12.915		0.3687	7.74
30	N.F. KOKTULI	C	6.2	6.92	0.806	9.07	1.000	991.	62.2	0.0446	17.437	13.420		0.3687	7.74
31	N.F. KOKTULI	Q	5.3	6.92	0.806	9.07	1.000	991.	62.2	0.0446	17.437	13.760		0.3704	7.74
32	N.F. KOKTULI	C	3.5	6.97	0.803	9.07	1.000	992.	62.2	0.0457	17.436	14.406		0.3704	7.74
33	N.F. KOKTULI	E	0.0									15.710			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.21	0.970	3.15	1.000	950.	72.4	0.4619	17.532	0.168	4.21	0.0815	7.39
2	N.F. KOKTULI	C	55.7	7.19	0.916	3.15	1.000	968.	72.3	0.2433	17.533	0.325		0.0815	7.39
3	N.F. KOKTULI	C	48.2	7.51	0.899	3.15	1.000	974.	72.3	0.2091	17.533	0.942		0.0815	7.39
4	N.F. KOKTULI	C	44.8	7.55	0.897	3.15	1.000	974.	72.3	0.1478	17.529	1.219		0.0815	7.39
5	N.F. KOKTULI	C	42.1	7.57	0.896	3.15	1.000	975.	72.3	0.1435	17.528	1.438		0.0815	7.39
6	N.F. KOKTULI	C	41.2	7.58	0.896	3.15	1.000	975.	72.3	0.1198	17.528	1.507		0.0815	7.39
7	N.F. KOKTULI	C	39.8	7.59	0.895	3.15	1.000	975.	72.3	0.1582	17.527	1.626		0.0815	7.39
8	N.F. KOKTULI	C	38.6	7.61	0.894	3.15	1.000	975.	72.3	0.1036	17.526	1.726		0.0815	7.39
9	N.F. KOKTULI	Q	36.8	7.61	0.894	3.15	1.000	975.	72.3	0.1036	17.526	1.872		0.6525	4.02
10	N.F. KOKTULI	C	36.5	7.63	0.893	3.15	1.000	976.	72.3	0.1177	17.525	2.022		0.6525	4.02
11	N.F. KOKTULI	B	36.5									2.026			
12	TRIBUTARY 119	H	38.4	7.54	0.898	3.15	1.000	974.	72.3	0.2389	17.524	1.587	1.72	0.2142	4.02
13	TRIBUTARY 119	T	36.5									1.981			
14	N.F. KOKTULI	J	36.5	7.66	0.892	3.15	1.000	976.	72.3	0.1177	17.526	4.008		0.2013	4.02
15	N.F. KOKTULI	Q	35.8	7.66	0.892	3.15	1.000	976.	72.3	0.1177	17.526	4.162		0.1651	3.81
16	N.F. KOKTULI	C	35.4	7.70	0.889	3.15	1.000	977.	72.3	0.0928	17.527	4.224		0.1651	3.81
17	N.F. KOKTULI	C	34.0	7.75	0.887	3.15	1.000	978.	72.3	0.0886	17.526	4.457		0.1651	3.81
18	N.F. KOKTULI	C	31.0	7.81	0.884	3.15	1.000	979.	72.3	0.0997	17.525	4.949		0.1651	3.81
19	N.F. KOKTULI	C	28.5	7.85	0.882	3.15	1.000	980.	72.2	0.0786	17.524	5.363		0.1651	3.81
20	N.F. KOKTULI	Q	27.9	7.85	0.882	3.15	1.000	980.	72.2	0.0786	17.524	5.453		0.4698	3.81
21	N.F. KOKTULI	C	27.0	7.89	0.879	3.15	1.000	980.	72.2	0.0816	17.523	5.914		0.4698	3.81
22	N.F. KOKTULI	C	24.5	8.05	0.871	3.15	1.000	983.	72.2	0.0982	17.514	7.057		0.4698	3.81
23	N.F. KOKTULI	C	16.0	8.21	0.863	3.15	1.000	986.	72.2	0.0660	17.505	11.044		0.4698	3.81
24	N.F. KOKTULI	C	13.8	8.28	0.860	3.15	1.000	987.	72.2	0.0508	17.503	12.078		0.4698	3.81
25	N.F. KOKTULI	Q	13.7	8.28	0.860	3.15	1.000	987.	72.2	0.0508	17.503	12.140		0.0819	7.52
26	N.F. KOKTULI	C	11.6	8.33	0.857	3.15	1.000	988.	72.2	0.0510	17.502	12.315		0.0819	7.52
27	N.F. KOKTULI	C	9.9	8.37	0.855	3.15	1.000	989.	72.2	0.0487	17.502	12.452		0.0819	7.52
28	N.F. KOKTULI	Q	9.3	8.37	0.855	3.15	1.000	989.	72.2	0.0487	17.502	12.500		0.3885	7.52
29	N.F. KOKTULI	C	7.6	8.42	0.853	3.15	1.000	990.	72.2	0.0504	17.502	13.180		0.3885	7.52
30	N.F. KOKTULI	C	6.2	8.46	0.851	3.15	1.000	991.	72.2	0.0446	17.501	13.711		0.3885	7.52
31	N.F. KOKTULI	Q	5.3	8.46	0.851	3.15	1.000	991.	72.2	0.0446	17.501	14.070		0.3913	7.52
32	N.F. KOKTULI	C	3.5	8.51	0.848	3.15	1.000	992.	72.2	0.0457	17.500	14.753		0.3913	7.52
33	N.F. KOKTULI	E	0.0									16.130			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.60	0.970	6.22	1.000	950.	104.5	0.4607	17.595	0.164	4.59	0.0796	7.47
2	N.F. KOKTULI	C	55.7	5.58	0.916	6.22	1.000	968.	104.3	0.2429	17.596	0.317		0.0796	7.47
3	N.F. KOKTULI	C	48.2	5.90	0.899	6.22	1.000	974.	104.3	0.2087	17.596	0.921		0.0796	7.47
4	N.F. KOKTULI	C	44.8	5.94	0.897	6.22	1.000	974.	104.3	0.1476	17.592	1.191		0.0796	7.47
5	N.F. KOKTULI	C	42.1	5.96	0.896	6.22	1.000	975.	104.3	0.1433	17.591	1.405		0.0796	7.47
6	N.F. KOKTULI	C	41.2	5.97	0.896	6.22	1.000	975.	104.3	0.1197	17.591	1.473		0.0796	7.47
7	N.F. KOKTULI	C	39.8	5.98	0.895	6.22	1.000	975.	104.3	0.1579	17.590	1.589		0.0796	7.47
8	N.F. KOKTULI	C	38.6	6.00	0.894	6.22	1.000	975.	104.3	0.1036	17.589	1.686		0.0796	7.47
9	N.F. KOKTULI	Q	36.8	6.00	0.894	6.22	1.000	975.	104.3	0.1036	17.589	1.829		0.6356	4.17
10	N.F. KOKTULI	C	36.5	6.02	0.893	6.22	1.000	976.	104.3	0.1175	17.588	1.975		0.6356	4.17
11	N.F. KOKTULI	B	36.5									1.979			
12	TRIBUTARY 119	H	38.4	5.93	0.898	6.22	1.000	974.	104.3	0.2384	17.586	1.471	2.12	0.1968	4.17
13	TRIBUTARY 119	T	36.5									1.833			
14	N.F. KOKTULI	J	36.5	6.05	0.892	6.22	1.000	976.	104.3	0.1175	17.589	3.813		0.1961	4.17
15	N.F. KOKTULI	Q	35.8	6.05	0.892	6.22	1.000	976.	104.3	0.1175	17.589	3.963		0.1517	3.88
16	N.F. KOKTULI	C	35.4	6.09	0.889	6.22	1.000	977.	104.3	0.0928	17.590	4.020		0.1517	3.88
17	N.F. KOKTULI	C	34.0	6.14	0.887	6.22	1.000	978.	104.3	0.0886	17.589	4.234		0.1517	3.88
18	N.F. KOKTULI	C	31.0	6.20	0.884	6.22	1.000	979.	104.3	0.0996	17.588	4.686		0.1517	3.88
19	N.F. KOKTULI	C	28.5	6.24	0.882	6.22	1.000	980.	104.3	0.0786	17.587	5.066		0.1517	3.88
20	N.F. KOKTULI	Q	27.9	6.24	0.882	6.22	1.000	980.	104.3	0.0786	17.587	5.149		0.4258	3.88
21	N.F. KOKTULI	C	27.0	6.28	0.879	6.22	1.000	980.	104.3	0.0816	17.586	5.567		0.4258	3.88
22	N.F. KOKTULI	C	24.5	6.44	0.871	6.22	1.000	983.	104.3	0.0979	17.577	6.603		0.4258	3.88
23	N.F. KOKTULI	C	16.0	6.60	0.863	6.22	1.000	986.	104.3	0.0660	17.567	10.217		0.4258	3.88
24	N.F. KOKTULI	C	13.8	6.67	0.860	6.22	1.000	987.	104.3	0.0507	17.565	11.154		0.4258	3.88
25	N.F. KOKTULI	Q	13.7	6.67	0.860	6.22	1.000	987.	104.3	0.0507	17.565	11.210		0.0774	7.44
26	N.F. KOKTULI	C	11.6	6.72	0.857	6.22	1.000	988.	104.3	0.0510	17.565	11.375		0.0774	7.44
27	N.F. KOKTULI	C	9.9	6.76	0.855	6.22	1.000	989.	104.2	0.0487	17.565	11.505		0.0774	7.44
28	N.F. KOKTULI	Q	9.3	6.76	0.855	6.22	1.000	989.	104.2	0.0487	17.565	11.550		0.3093	7.44
29	N.F. KOKTULI	C	7.6	6.81	0.853	6.22	1.000	990.	104.2	0.0504	17.564	12.091		0.3093	7.44
30	N.F. KOKTULI	C	6.2	6.85	0.851	6.22	1.000	991.	104.2	0.0446	17.564	12.514		0.3093	7.44
31	N.F. KOKTULI	Q	5.3	6.85	0.851	6.22	1.000	991.	104.2	0.0446	17.564	12.800		0.3096	7.44
32	N.F. KOKTULI	C	3.5	6.90	0.848	6.22	1.000	992.	104.2	0.0457	17.563	13.340		0.3096	7.44
33	N.F. KOKTULI	E	0.0									14.430			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.49	0.878	6.62	1.000	950.	225.5	0.4595	17.656	0.151	5.19	0.0735	7.73
2	N.F. KOKTULI	C	55.7	5.47	0.829	6.62	1.000	968.	225.2	0.2425	17.657	0.293		0.0735	7.73
3	N.F. KOKTULI	C	48.2	5.79	0.814	6.62	1.000	974.	225.1	0.2083	17.657	0.850		0.0735	7.73
4	N.F. KOKTULI	C	44.8	5.83	0.812	6.62	1.000	974.	225.1	0.1473	17.654	1.099		0.0735	7.73
5	N.F. KOKTULI	C	42.1	5.85	0.811	6.62	1.000	975.	225.1	0.1430	17.653	1.297		0.0735	7.73
6	N.F. KOKTULI	C	41.2	5.86	0.811	6.62	1.000	975.	225.1	0.1196	17.653	1.359		0.0735	7.73
7	N.F. KOKTULI	C	39.8	5.87	0.810	6.62	1.000	975.	225.1	0.1576	17.651	1.466		0.0735	7.73
8	N.F. KOKTULI	C	38.6	5.89	0.809	6.62	1.000	975.	225.1	0.1036	17.650	1.556		0.0735	7.73
9	N.F. KOKTULI	Q	36.8	5.89	0.809	6.62	1.000	975.	225.1	0.1036	17.650	1.688		0.5847	4.36
10	N.F. KOKTULI	C	36.5	5.91	0.808	6.62	1.000	976.	225.1	0.1173	17.649	1.822		0.5847	4.36
11	N.F. KOKTULI	B	36.5									1.826			
12	TRIBUTARY 119	H	38.4	5.82	0.813	6.62	1.000	974.	225.1	0.2381	17.648	1.205	2.44	0.1539	4.36
13	TRIBUTARY 119	T	36.5									1.488			
14	N.F. KOKTULI	J	36.5	5.94	0.807	6.62	1.000	976.	225.1	0.1173	17.650	3.314		0.1804	4.36
15	N.F. KOKTULI	Q	35.8	5.94	0.807	6.62	1.000	976.	225.1	0.1173	17.650	3.452		0.1185	4.02
16	N.F. KOKTULI	C	35.4	5.98	0.805	6.62	1.000	977.	225.1	0.0928	17.651	3.496		0.1185	4.02
17	N.F. KOKTULI	C	34.0	6.03	0.803	6.62	1.000	978.	225.0	0.0887	17.651	3.664		0.1185	4.02
18	N.F. KOKTULI	C	31.0	6.09	0.800	6.62	1.000	979.	225.0	0.0994	17.649	4.017		0.1185	4.02
19	N.F. KOKTULI	C	28.5	6.13	0.798	6.62	1.000	980.	225.0	0.0787	17.648	4.314		0.1185	4.02
20	N.F. KOKTULI	Q	27.9	6.13	0.798	6.62	1.000	980.	225.0	0.0787	17.648	4.379		0.3977	4.02
21	N.F. KOKTULI	C	27.0	6.17	0.796	6.62	1.000	980.	225.0	0.0815	17.647	4.769		0.3977	4.02
22	N.F. KOKTULI	C	24.5	6.33	0.789	6.62	1.000	983.	225.0	0.0977	17.638	5.737		0.3977	4.02
23	N.F. KOKTULI	C	16.0	6.49	0.781	6.62	1.000	986.	225.0	0.0661	17.628	9.113		0.3977	4.02
24	N.F. KOKTULI	C	13.8	6.56	0.778	6.62	1.000	987.	225.0	0.0507	17.626	9.988		0.3977	4.02
25	N.F. KOKTULI	Q	13.7	6.56	0.778	6.62	1.000	987.	225.0	0.0507	17.626	10.040		0.0706	7.60
26	N.F. KOKTULI	C	11.6	6.61	0.776	6.62	1.000	988.	225.0	0.0510	17.625	10.190		0.0706	7.60
27	N.F. KOKTULI	C	9.9	6.65	0.774	6.62	1.000	989.	225.0	0.0487	17.626	10.309		0.0706	7.60
28	N.F. KOKTULI	Q	9.3	6.65	0.774	6.62	1.000	989.	225.0	0.0487	17.626	10.350		0.2128	7.60
29	N.F. KOKTULI	C	7.6	6.70	0.772	6.62	1.000	990.	225.0	0.0503	17.625	10.722		0.2128	7.60
30	N.F. KOKTULI	C	6.2	6.74	0.770	6.62	1.000	991.	225.0	0.0446	17.625	11.014		0.2128	7.60
31	N.F. KOKTULI	Q	5.3	6.74	0.770	6.62	1.000	991.	225.0	0.0446	17.625	11.210		0.2146	7.60
32	N.F. KOKTULI	C	3.5	6.79	0.768	6.62	1.000	992.	224.9	0.0456	17.624	11.585		0.2146	7.60
33	N.F. KOKTULI	E	0.0									12.340			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	3.77	0.837	6.35	1.000	950.	208.1	0.4584	17.716	0.138	5.88	0.0669	8.19
2	N.F. KOKTULI	C	55.7	4.75	0.791	6.35	1.000	968.	207.8	0.2421	17.717	0.267		0.0669	8.19
3	N.F. KOKTULI	C	48.2	5.07	0.776	6.35	1.000	974.	207.7	0.2080	17.717	0.774		0.0669	8.19
4	N.F. KOKTULI	C	44.8	5.11	0.774	6.35	1.000	974.	207.7	0.1471	17.713	1.001		0.0669	8.19
5	N.F. KOKTULI	C	42.1	5.13	0.773	6.35	1.000	975.	207.7	0.1428	17.712	1.181		0.0669	8.19
6	N.F. KOKTULI	C	41.2	5.14	0.773	6.35	1.000	975.	207.7	0.1195	17.712	1.238		0.0669	8.19
7	N.F. KOKTULI	C	39.8	5.15	0.773	6.35	1.000	975.	207.7	0.1573	17.711	1.335		0.0669	8.19
8	N.F. KOKTULI	C	38.6	5.17	0.771	6.35	1.000	975.	207.7	0.1036	17.709	1.417		0.0669	8.19
9	N.F. KOKTULI	Q	36.8	5.17	0.771	6.35	1.000	975.	207.7	0.1036	17.709	1.537		0.5297	4.59
10	N.F. KOKTULI	C	36.5	5.19	0.771	6.35	1.000	976.	207.7	0.1171	17.709	1.659		0.5297	4.59
11	N.F. KOKTULI	B	36.5									1.662			
12	TRIBUTARY 119	H	38.4	5.10	0.775	6.35	1.000	974.	207.8	0.2377	17.707	1.000	2.80	0.1196	4.59
13	TRIBUTARY 119	T	36.5									1.220			
14	N.F. KOKTULI	J	36.5	5.22	0.770	6.35	1.000	976.	207.7	0.1171	17.710	2.881		0.1634	4.59
15	N.F. KOKTULI	Q	35.8	5.22	0.770	6.35	1.000	976.	207.7	0.1171	17.710	3.006		0.0916	4.19
16	N.F. KOKTULI	C	35.4	5.26	0.768	6.35	1.000	977.	207.7	0.0928	17.711	3.040		0.0916	4.19
17	N.F. KOKTULI	C	34.0	5.31	0.765	6.35	1.000	978.	207.7	0.0887	17.710	3.170		0.0916	4.19
18	N.F. KOKTULI	C	31.0	5.37	0.763	6.35	1.000	979.	207.7	0.0992	17.708	3.443		0.0916	4.19
19	N.F. KOKTULI	C	28.5	5.41	0.761	6.35	1.000	980.	207.7	0.0787	17.708	3.672		0.0916	4.19
20	N.F. KOKTULI	Q	27.9	5.41	0.761	6.35	1.000	980.	207.7	0.0787	17.708	3.722		0.3680	4.19
21	N.F. KOKTULI	C	27.0	5.45	0.759	6.35	1.000	980.	207.7	0.0815	17.707	4.083		0.3680	4.19
22	N.F. KOKTULI	C	24.5	5.61	0.752	6.35	1.000	983.	207.7	0.0974	17.697	4.979		0.3680	4.19
23	N.F. KOKTULI	C	16.0	5.77	0.745	6.35	1.000	986.	207.7	0.0661	17.687	8.102		0.3680	4.19
24	N.F. KOKTULI	C	13.8	5.84	0.742	6.35	1.000	987.	207.6	0.0507	17.686	8.911		0.3680	4.19
25	N.F. KOKTULI	Q	13.7	5.84	0.742	6.35	1.000	987.	207.6	0.0507	17.686	8.960		0.0614	7.97
26	N.F. KOKTULI	C	11.6	5.89	0.740	6.35	1.000	988.	207.6	0.0510	17.685	9.091		0.0614	7.97
27	N.F. KOKTULI	C	9.9	5.93	0.738	6.35	1.000	989.	207.6	0.0487	17.685	9.194		0.0614	7.97
28	N.F. KOKTULI	Q	9.3	5.93	0.738	6.35	1.000	989.	207.6	0.0487	17.685	9.230		0.1336	7.97
29	N.F. KOKTULI	C	7.6	5.98	0.736	6.35	1.000	990.	207.6	0.0503	17.684	9.464		0.1336	7.97
30	N.F. KOKTULI	C	6.2	6.02	0.734	6.35	1.000	991.	207.6	0.0446	17.684	9.647		0.1336	7.97
31	N.F. KOKTULI	Q	5.3	6.02	0.734	6.35	1.000	991.	207.6	0.0446	17.684	9.770		0.1349	7.97
32	N.F. KOKTULI	C	3.5	6.07	0.732	6.35	1.000	992.	207.6	0.0456	17.683	10.005		0.1349	7.97
33	N.F. KOKTULI	E	0.0									10.480			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.92	0.725	3.83	1.000	950.	185.2	0.4573	17.774	0.120	5.72	0.0581	8.72
2	N.F. KOKTULI	C	55.7	5.90	0.685	3.83	1.000	968.	184.9	0.2417	17.775	0.232		0.0581	8.72
3	N.F. KOKTULI	C	48.2	6.22	0.672	3.83	1.000	974.	184.9	0.2076	17.775	0.672		0.0581	8.72
4	N.F. KOKTULI	C	44.8	6.26	0.670	3.83	1.000	974.	184.9	0.1469	17.771	0.870		0.0581	8.72
5	N.F. KOKTULI	C	42.1	6.28	0.670	3.83	1.000	975.	184.9	0.1425	17.770	1.027		0.0581	8.72
6	N.F. KOKTULI	C	41.2	6.29	0.669	3.83	1.000	975.	184.9	0.1195	17.770	1.076		0.0581	8.72
7	N.F. KOKTULI	C	39.8	6.30	0.669	3.83	1.000	975.	184.9	0.1570	17.768	1.160		0.0581	8.72
8	N.F. KOKTULI	C	38.6	6.32	0.668	3.83	1.000	975.	184.9	0.1036	17.767	1.232		0.0581	8.72
9	N.F. KOKTULI	Q	36.8	6.32	0.668	3.83	1.000	975.	184.9	0.1036	17.767	1.336		0.4576	4.82
10	N.F. KOKTULI	C	36.5	6.34	0.667	3.83	1.000	976.	184.9	0.1169	17.767	1.441		0.4576	4.82
11	N.F. KOKTULI	B	36.5									1.444			
12	TRIBUTARY 119	H	38.4	6.25	0.671	3.83	1.000	974.	184.9	0.2373	17.765	0.808	2.74	0.0865	4.82
13	TRIBUTARY 119	T	36.5									0.967			
14	N.F. KOKTULI	J	36.5	6.37	0.666	3.83	1.000	976.	184.9	0.1169	17.768	2.410		0.1412	4.82
15	N.F. KOKTULI	Q	35.8	6.37	0.666	3.83	1.000	976.	184.9	0.1169	17.768	2.518		0.0716	4.34
16	N.F. KOKTULI	C	35.4	6.41	0.665	3.83	1.000	977.	184.8	0.0928	17.768	2.545		0.0716	4.34
17	N.F. KOKTULI	C	34.0	6.46	0.663	3.83	1.000	978.	184.8	0.0887	17.768	2.646		0.0716	4.34
18	N.F. KOKTULI	C	31.0	6.52	0.661	3.83	1.000	979.	184.8	0.0991	17.766	2.860		0.0716	4.34
19	N.F. KOKTULI	C	28.5	6.56	0.659	3.83	1.000	980.	184.8	0.0788	17.765	3.039		0.0716	4.34
20	N.F. KOKTULI	Q	27.9	6.56	0.659	3.83	1.000	980.	184.8	0.0788	17.765	3.078		0.3261	4.34
21	N.F. KOKTULI	C	27.0	6.60	0.657	3.83	1.000	980.	184.8	0.0815	17.765	3.398		0.3261	4.34
22	N.F. KOKTULI	C	24.5	6.76	0.651	3.83	1.000	983.	184.8	0.0972	17.755	4.192		0.3261	4.34
23	N.F. KOKTULI	C	16.0	6.92	0.645	3.83	1.000	986.	184.8	0.0661	17.745	6.959		0.3261	4.34
24	N.F. KOKTULI	C	13.8	6.99	0.643	3.83	1.000	987.	184.8	0.0507	17.743	7.677		0.3261	4.34
25	N.F. KOKTULI	Q	13.7	6.99	0.643	3.83	1.000	987.	184.8	0.0507	17.743	7.720		0.0523	8.42
26	N.F. KOKTULI	C	11.6	7.04	0.641	3.83	1.000	988.	184.8	0.0510	17.742	7.832		0.0523	8.42
27	N.F. KOKTULI	C	9.9	7.08	0.639	3.83	1.000	989.	184.8	0.0487	17.742	7.920		0.0523	8.42
28	N.F. KOKTULI	Q	9.3	7.08	0.639	3.83	1.000	989.	184.8	0.0487	17.742	7.950		0.1213	8.42
29	N.F. KOKTULI	C	7.6	7.13	0.637	3.83	1.000	990.	184.8	0.0503	17.742	8.162		0.1213	8.42
30	N.F. KOKTULI	C	6.2	7.17	0.636	3.83	1.000	991.	184.8	0.0446	17.741	8.328		0.1213	8.42
31	N.F. KOKTULI	Q	5.3	7.17	0.636	3.83	1.000	991.	184.8	0.0446	17.741	8.440		0.1197	8.42
32	N.F. KOKTULI	C	3.5	7.22	0.634	3.83	1.000	992.	184.7	0.0456	17.740	8.649		0.1197	8.42
33	N.F. KOKTULI	E	0.0									9.070			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.73	0.807	3.84	1.000	950.	155.0	0.4563	17.830	0.108	6.40	0.0522	9.26
2	N.F. KOKTULI	C	55.7	6.71	0.762	3.84	1.000	968.	154.7	0.2413	17.831	0.208		0.0522	9.26
3	N.F. KOKTULI	C	48.2	7.03	0.748	3.84	1.000	974.	154.7	0.2073	17.831	0.604		0.0522	9.26
4	N.F. KOKTULI	C	44.8	7.07	0.746	3.84	1.000	974.	154.7	0.1468	17.827	0.782		0.0522	9.26
5	N.F. KOKTULI	C	42.1	7.09	0.745	3.84	1.000	975.	154.7	0.1423	17.826	0.922		0.0522	9.26
6	N.F. KOKTULI	C	41.2	7.10	0.745	3.84	1.000	975.	154.7	0.1194	17.826	0.966		0.0522	9.26
7	N.F. KOKTULI	C	39.8	7.11	0.744	3.84	1.000	975.	154.7	0.1567	17.824	1.042		0.0522	9.26
8	N.F. KOKTULI	C	38.6	7.13	0.743	3.84	1.000	975.	154.7	0.1036	17.823	1.106		0.0522	9.26
9	N.F. KOKTULI	Q	36.8	7.13	0.743	3.84	1.000	975.	154.7	0.1036	17.823	1.200		0.4068	5.04
10	N.F. KOKTULI	C	36.5	7.15	0.742	3.84	1.000	976.	154.7	0.1168	17.823	1.294		0.4068	5.04
11	N.F. KOKTULI	B	36.5									1.296			
12	TRIBUTARY 119	H	38.4	7.06	0.747	3.84	1.000	974.	154.7	0.2370	17.821	0.698	3.18	0.0685	5.04
13	TRIBUTARY 119	T	36.5									0.824			
14	N.F. KOKTULI	J	36.5	7.18	0.741	3.84	1.000	976.	154.7	0.1168	17.824	2.119		0.1255	5.04
15	N.F. KOKTULI	Q	35.8	7.18	0.741	3.84	1.000	976.	154.7	0.1168	17.824	2.215		0.0643	4.53
16	N.F. KOKTULI	C	35.4	7.22	0.740	3.84	1.000	977.	154.6	0.0929	17.824	2.239		0.0643	4.53
17	N.F. KOKTULI	C	34.0	7.27	0.737	3.84	1.000	978.	154.6	0.0888	17.824	2.330		0.0643	4.53
18	N.F. KOKTULI	C	31.0	7.33	0.735	3.84	1.000	979.	154.6	0.0990	17.822	2.522		0.0643	4.53
19	N.F. KOKTULI	C	28.5	7.37	0.733	3.84	1.000	980.	154.6	0.0789	17.821	2.683		0.0643	4.53
20	N.F. KOKTULI	Q	27.9	7.37	0.733	3.84	1.000	980.	154.6	0.0789	17.821	2.718		0.2622	4.53
21	N.F. KOKTULI	C	27.0	7.41	0.731	3.84	1.000	980.	154.6	0.0815	17.821	2.975		0.2622	4.53
22	N.F. KOKTULI	C	24.5	7.57	0.725	3.84	1.000	983.	154.6	0.0969	17.811	3.613		0.2622	4.53
23	N.F. KOKTULI	C	16.0	7.73	0.718	3.84	1.000	986.	154.6	0.0662	17.800	5.839		0.2622	4.53
24	N.F. KOKTULI	C	13.8	7.80	0.715	3.84	1.000	987.	154.6	0.0507	17.799	6.415		0.2622	4.53
25	N.F. KOKTULI	Q	13.7	7.80	0.715	3.84	1.000	987.	154.6	0.0507	17.799	6.450		0.0432	8.95
26	N.F. KOKTULI	C	11.6	7.85	0.713	3.84	1.000	988.	154.6	0.0510	17.798	6.542		0.0432	8.95
27	N.F. KOKTULI	C	9.9	7.89	0.711	3.84	1.000	989.	154.6	0.0488	17.798	6.615		0.0432	8.95
28	N.F. KOKTULI	Q	9.3	7.89	0.711	3.84	1.000	989.	154.6	0.0488	17.798	6.640		0.1287	8.95
29	N.F. KOKTULI	C	7.6	7.94	0.709	3.84	1.000	990.	154.6	0.0503	17.797	6.865		0.1287	8.95
30	N.F. KOKTULI	C	6.2	7.98	0.707	3.84	1.000	991.	154.6	0.0447	17.797	7.041		0.1287	8.95
31	N.F. KOKTULI	Q	5.3	7.98	0.707	3.84	1.000	991.	154.6	0.0447	17.797	7.160		0.1292	8.95
32	N.F. KOKTULI	C	3.5	8.03	0.705	3.84	1.000	992.	154.6	0.0456	17.796	7.385		0.1292	8.95
33	N.F. KOKTULI	E	0.0									7.840			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.11	0.848	5.13	1.000	950.	110.0	0.4554	17.884	0.108	6.27	0.0524	9.68
2	N.F. KOKTULI	C	55.7	6.09	0.800	5.13	1.000	968.	109.9	0.2410	17.885	0.209		0.0524	9.68
3	N.F. KOKTULI	C	48.2	6.41	0.785	5.13	1.000	974.	109.8	0.2070	17.885	0.606		0.0524	9.68
4	N.F. KOKTULI	C	44.8	6.45	0.784	5.13	1.000	974.	109.8	0.1466	17.881	0.784		0.0524	9.68
5	N.F. KOKTULI	C	42.1	6.47	0.783	5.13	1.000	975.	109.8	0.1421	17.880	0.925		0.0524	9.68
6	N.F. KOKTULI	C	41.2	6.48	0.782	5.13	1.000	975.	109.8	0.1193	17.880	0.969		0.0524	9.68
7	N.F. KOKTULI	C	39.8	6.49	0.782	5.13	1.000	975.	109.8	0.1565	17.879	1.046		0.0524	9.68
8	N.F. KOKTULI	C	38.6	6.51	0.781	5.13	1.000	975.	109.8	0.1036	17.877	1.110		0.0524	9.68
9	N.F. KOKTULI	Q	36.8	6.51	0.781	5.13	1.000	975.	109.8	0.1036	17.877	1.204		0.4110	5.20
10	N.F. KOKTULI	C	36.5	6.53	0.780	5.13	1.000	976.	109.8	0.1166	17.877	1.299		0.4110	5.20
11	N.F. KOKTULI	B	36.5									1.301			
12	TRIBUTARY 119	H	38.4	6.44	0.784	5.13	1.000	974.	109.8	0.2366	17.875	0.721	3.06	0.0696	5.20
13	TRIBUTARY 119	T	36.5									0.849			
14	N.F. KOKTULI	J	36.5	6.56	0.779	5.13	1.000	976.	109.8	0.1166	17.878	2.149		0.1268	5.20
15	N.F. KOKTULI	Q	35.8	6.56	0.779	5.13	1.000	976.	109.8	0.1166	17.878	2.246		0.0650	4.79
16	N.F. KOKTULI	C	35.4	6.60	0.777	5.13	1.000	977.	109.8	0.0929	17.878	2.270		0.0650	4.79
17	N.F. KOKTULI	C	34.0	6.65	0.775	5.13	1.000	978.	109.8	0.0888	17.878	2.362		0.0650	4.79
18	N.F. KOKTULI	C	31.0	6.71	0.772	5.13	1.000	979.	109.8	0.0989	17.876	2.556		0.0650	4.79
19	N.F. KOKTULI	C	28.5	6.75	0.770	5.13	1.000	980.	109.8	0.0789	17.875	2.719		0.0650	4.79
20	N.F. KOKTULI	Q	27.9	6.75	0.770	5.13	1.000	980.	109.8	0.0789	17.875	2.754		0.2554	4.79
21	N.F. KOKTULI	C	27.0	6.79	0.768	5.13	1.000	980.	109.8	0.0815	17.875	3.005		0.2554	4.79
22	N.F. KOKTULI	C	24.5	6.95	0.761	5.13	1.000	983.	109.8	0.0967	17.864	3.626		0.2554	4.79
23	N.F. KOKTULI	C	16.0	7.11	0.754	5.13	1.000	986.	109.8	0.0662	17.854	5.794		0.2554	4.79
24	N.F. KOKTULI	C	13.8	7.18	0.751	5.13	1.000	987.	109.8	0.0507	17.852	6.356		0.2554	4.79
25	N.F. KOKTULI	Q	13.7	7.18	0.751	5.13	1.000	987.	109.8	0.0507	17.852	6.390		0.0455	9.47
26	N.F. KOKTULI	C	11.6	7.23	0.749	5.13	1.000	988.	109.8	0.0510	17.851	6.487		0.0455	9.47
27	N.F. KOKTULI	C	9.9	7.27	0.747	5.13	1.000	989.	109.8	0.0488	17.851	6.564		0.0455	9.47
28	N.F. KOKTULI	Q	9.3	7.27	0.747	5.13	1.000	989.	109.8	0.0488	17.851	6.590		0.1287	9.47
29	N.F. KOKTULI	C	7.6	7.32	0.745	5.13	1.000	990.	109.8	0.0502	17.851	6.815		0.1287	9.47
30	N.F. KOKTULI	C	6.2	7.36	0.743	5.13	1.000	991.	109.8	0.0447	17.851	6.991		0.1287	9.47
31	N.F. KOKTULI	Q	5.3	7.36	0.743	5.13	1.000	991.	109.8	0.0447	17.851	7.110		0.1292	9.47
32	N.F. KOKTULI	C	3.5	7.41	0.741	5.13	1.000	992.	109.8	0.0456	17.850	7.335		0.1292	9.47
33	N.F. KOKTULI	E	0.0									7.790			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.84	0.848	6.12	1.000	950.	92.6	0.4544	17.936	0.105	5.72	0.0511	9.88
2	N.F. KOKTULI	C	55.7	5.82	0.800	6.12	1.000	968.	92.5	0.2407	17.937	0.204		0.0511	9.88
3	N.F. KOKTULI	C	48.2	6.14	0.785	6.12	1.000	974.	92.4	0.2067	17.937	0.591		0.0511	9.88
4	N.F. KOKTULI	C	44.8	6.18	0.784	6.12	1.000	974.	92.4	0.1464	17.933	0.765		0.0511	9.88
5	N.F. KOKTULI	C	42.1	6.20	0.783	6.12	1.000	975.	92.4	0.1419	17.932	0.903		0.0511	9.88
6	N.F. KOKTULI	C	41.2	6.21	0.782	6.12	1.000	975.	92.4	0.1193	17.932	0.946		0.0511	9.88
7	N.F. KOKTULI	C	39.8	6.22	0.782	6.12	1.000	975.	92.4	0.1562	17.931	1.021		0.0511	9.88
8	N.F. KOKTULI	C	38.6	6.24	0.781	6.12	1.000	975.	92.4	0.1036	17.929	1.083		0.0511	9.88
9	N.F. KOKTULI	Q	36.8	6.24	0.781	6.12	1.000	975.	92.4	0.1036	17.929	1.175		0.3941	5.28
10	N.F. KOKTULI	C	36.5	6.26	0.780	6.12	1.000	976.	92.4	0.1165	17.929	1.266		0.3941	5.28
11	N.F. KOKTULI	B	36.5									1.268			
12	TRIBUTARY 119	H	38.4	6.17	0.784	6.12	1.000	974.	92.5	0.2363	17.927	0.718	3.13	0.0669	5.28
13	TRIBUTARY 119	T	36.5									0.841			
14	N.F. KOKTULI	J	36.5	6.29	0.779	6.12	1.000	976.	92.4	0.1165	17.930	2.109		0.1229	5.28
15	N.F. KOKTULI	Q	35.8	6.29	0.779	6.12	1.000	976.	92.4	0.1165	17.930	2.203		0.0639	4.96
16	N.F. KOKTULI	C	35.4	6.33	0.777	6.12	1.000	977.	92.4	0.0929	17.931	2.227		0.0639	4.96
17	N.F. KOKTULI	C	34.0	6.38	0.775	6.12	1.000	978.	92.4	0.0889	17.930	2.317		0.0639	4.96
18	N.F. KOKTULI	C	31.0	6.44	0.772	6.12	1.000	979.	92.4	0.0987	17.928	2.508		0.0639	4.96
19	N.F. KOKTULI	C	28.5	6.48	0.770	6.12	1.000	980.	92.4	0.0790	17.927	2.668		0.0639	4.96
20	N.F. KOKTULI	Q	27.9	6.48	0.770	6.12	1.000	980.	92.4	0.0790	17.927	2.703		0.2513	4.96
21	N.F. KOKTULI	C	27.0	6.52	0.768	6.12	1.000	980.	92.4	0.0815	17.927	2.950		0.2513	4.96
22	N.F. KOKTULI	C	24.5	6.68	0.761	6.12	1.000	983.	92.4	0.0965	17.916	3.561		0.2513	4.96
23	N.F. KOKTULI	C	16.0	6.84	0.754	6.12	1.000	986.	92.4	0.0662	17.906	5.694		0.2513	4.96
24	N.F. KOKTULI	C	13.8	6.91	0.751	6.12	1.000	987.	92.4	0.0507	17.904	6.247		0.2513	4.96
25	N.F. KOKTULI	Q	13.7	6.91	0.751	6.12	1.000	987.	92.4	0.0507	17.904	6.280		0.0432	9.79
26	N.F. KOKTULI	C	11.6	6.96	0.749	6.12	1.000	988.	92.4	0.0510	17.903	6.372		0.0432	9.79
27	N.F. KOKTULI	C	9.9	7.00	0.747	6.12	1.000	989.	92.4	0.0488	17.903	6.445		0.0432	9.79
28	N.F. KOKTULI	Q	9.3	7.00	0.747	6.12	1.000	989.	92.4	0.0488	17.903	6.470		0.1287	9.79
29	N.F. KOKTULI	C	7.6	7.05	0.745	6.12	1.000	990.	92.4	0.0502	17.903	6.695		0.1287	9.79
30	N.F. KOKTULI	C	6.2	7.09	0.743	6.12	1.000	991.	92.4	0.0447	17.902	6.871		0.1287	9.79
31	N.F. KOKTULI	Q	5.3	7.09	0.743	6.12	1.000	991.	92.4	0.0447	17.902	6.990		0.1311	9.79
32	N.F. KOKTULI	C	3.5	7.14	0.741	6.12	1.000	992.	92.4	0.0456	17.901	7.219		0.1311	9.79
33	N.F. KOKTULI	E	0.0									7.680			

YEAR: 2007 TIME PERIOD: 2-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.25	0.807	3.92	1.000	950.	129.3	0.4536	17.986	0.102	5.47	0.0494	9.95
2	N.F. KOKTULI	C	55.7	6.23	0.762	3.92	1.000	968.	129.1	0.2404	17.988	0.197		0.0494	9.95
3	N.F. KOKTULI	C	48.2	6.55	0.748	3.92	1.000	974.	129.1	0.2064	17.988	0.571		0.0494	9.95
4	N.F. KOKTULI	C	44.8	6.59	0.746	3.92	1.000	974.	129.1	0.1463	17.984	0.739		0.0494	9.95
5	N.F. KOKTULI	C	42.1	6.61	0.745	3.92	1.000	975.	129.1	0.1417	17.983	0.872		0.0494	9.95
6	N.F. KOKTULI	C	41.2	6.62	0.745	3.92	1.000	975.	129.1	0.1192	17.982	0.914		0.0494	9.95
7	N.F. KOKTULI	C	39.8	6.63	0.744	3.92	1.000	975.	129.1	0.1560	17.981	0.986		0.0494	9.95
8	N.F. KOKTULI	C	38.6	6.65	0.743	3.92	1.000	975.	129.1	0.1037	17.979	1.046		0.0494	9.95
9	N.F. KOKTULI	Q	36.8	6.65	0.743	3.92	1.000	975.	129.1	0.1037	17.979	1.135		0.3814	5.31
10	N.F. KOKTULI	C	36.5	6.67	0.742	3.92	1.000	976.	129.1	0.1163	17.979	1.223		0.3814	5.31
11	N.F. KOKTULI	B	36.5									1.225			
12	TRIBUTARY 119	H	38.4	6.58	0.747	3.92	1.000	974.	129.1	0.2360	17.977	0.674	3.21	0.0620	5.31
13	TRIBUTARY 119	T	36.5									0.788			
14	N.F. KOKTULI	J	36.5	6.70	0.741	3.92	1.000	976.	129.1	0.1163	17.980	2.013		0.1176	5.31
15	N.F. KOKTULI	Q	35.8	6.70	0.741	3.92	1.000	976.	129.1	0.1163	17.980	2.103		0.0615	4.99
16	N.F. KOKTULI	C	35.4	6.74	0.740	3.92	1.000	977.	129.0	0.0929	17.981	2.126		0.0615	4.99
17	N.F. KOKTULI	C	34.0	6.79	0.737	3.92	1.000	978.	129.0	0.0889	17.980	2.213		0.0615	4.99
18	N.F. KOKTULI	C	31.0	6.85	0.735	3.92	1.000	979.	129.0	0.0986	17.978	2.396		0.0615	4.99
19	N.F. KOKTULI	C	28.5	6.89	0.733	3.92	1.000	980.	129.0	0.0791	17.978	2.550		0.0615	4.99
20	N.F. KOKTULI	Q	27.9	6.89	0.733	3.92	1.000	980.	129.0	0.0791	17.978	2.584		0.2498	4.99
21	N.F. KOKTULI	C	27.0	6.93	0.731	3.92	1.000	980.	129.0	0.0815	17.977	2.829		0.2498	4.99
22	N.F. KOKTULI	C	24.5	7.09	0.725	3.92	1.000	983.	129.0	0.0963	17.966	3.437		0.2498	4.99
23	N.F. KOKTULI	C	16.0	7.25	0.718	3.92	1.000	986.	129.0	0.0663	17.956	5.557		0.2498	4.99
24	N.F. KOKTULI	C	13.8	7.32	0.715	3.92	1.000	987.	129.0	0.0507	17.954	6.107		0.2498	4.99
25	N.F. KOKTULI	Q	13.7	7.32	0.715	3.92	1.000	987.	129.0	0.0507	17.954	6.140		0.0432	9.79
26	N.F. KOKTULI	C	11.6	7.37	0.713	3.92	1.000	988.	129.0	0.0510	17.953	6.232		0.0432	9.79
27	N.F. KOKTULI	C	9.9	7.41	0.711	3.92	1.000	989.	129.0	0.0488	17.953	6.305		0.0432	9.79
28	N.F. KOKTULI	Q	9.3	7.41	0.711	3.92	1.000	989.	129.0	0.0488	17.953	6.330		0.1287	9.79
29	N.F. KOKTULI	C	7.6	7.46	0.709	3.92	1.000	990.	129.0	0.0502	17.953	6.555		0.1287	9.79
30	N.F. KOKTULI	C	6.2	7.50	0.707	3.92	1.000	991.	129.0	0.0447	17.952	6.731		0.1287	9.79
31	N.F. KOKTULI	Q	5.3	7.50	0.707	3.92	1.000	991.	129.0	0.0447	17.952	6.850		0.1311	9.79
32	N.F. KOKTULI	C	3.5	7.55	0.705	3.92	1.000	992.	129.0	0.0455	17.951	7.079		0.1311	9.79
33	N.F. KOKTULI	E	0.0									7.540			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.89	0.786	2.31	1.000	950.	158.7	0.4528	18.035	0.100	6.90	0.0484	10.10
2	N.F. KOKTULI	C	55.7	7.87	0.743	2.31	1.000	968.	158.4	0.2401	18.036	0.193		0.0484	10.10
3	N.F. KOKTULI	C	48.2	8.19	0.729	2.31	1.000	974.	158.4	0.2062	18.036	0.560		0.0484	10.10
4	N.F. KOKTULI	C	44.8	8.23	0.727	2.31	1.000	974.	158.4	0.1461	18.032	0.724		0.0484	10.10
5	N.F. KOKTULI	C	42.1	8.25	0.726	2.31	1.000	975.	158.4	0.1415	18.031	0.854		0.0484	10.10
6	N.F. KOKTULI	C	41.2	8.26	0.726	2.31	1.000	975.	158.4	0.1192	18.031	0.895		0.0484	10.10
7	N.F. KOKTULI	C	39.8	8.27	0.725	2.31	1.000	975.	158.4	0.1558	18.029	0.966		0.0484	10.10
8	N.F. KOKTULI	C	38.6	8.29	0.724	2.31	1.000	975.	158.4	0.1037	18.027	1.025		0.0484	10.10
9	N.F. KOKTULI	Q	36.8	8.29	0.724	2.31	1.000	975.	158.4	0.1037	18.027	1.112		0.3729	5.39
10	N.F. KOKTULI	C	36.5	8.31	0.724	2.31	1.000	976.	158.4	0.1162	18.027	1.198		0.3729	5.39
11	N.F. KOKTULI	B	36.5									1.200			
12	TRIBUTARY 119	H	38.4	8.22	0.728	2.31	1.000	974.	158.4	0.2357	18.025	0.650	3.94	0.0587	5.39
13	TRIBUTARY 119	T	36.5									0.758			
14	N.F. KOKTULI	J	36.5	8.34	0.723	2.31	1.000	976.	158.4	0.1162	18.028	1.958		0.1150	5.39
15	N.F. KOKTULI	Q	35.8	8.34	0.723	2.31	1.000	976.	158.4	0.1162	18.028	2.046		0.0601	4.99
16	N.F. KOKTULI	C	35.4	8.38	0.721	2.31	1.000	977.	158.3	0.0930	18.029	2.069		0.0601	4.99
17	N.F. KOKTULI	C	34.0	8.43	0.719	2.31	1.000	978.	158.3	0.0890	18.028	2.153		0.0601	4.99
18	N.F. KOKTULI	C	31.0	8.49	0.716	2.31	1.000	979.	158.3	0.0985	18.026	2.333		0.0601	4.99
19	N.F. KOKTULI	C	28.5	8.53	0.715	2.31	1.000	980.	158.3	0.0791	18.026	2.483		0.0601	4.99
20	N.F. KOKTULI	Q	27.9	8.53	0.715	2.31	1.000	980.	158.3	0.0791	18.026	2.516		0.2272	4.99
21	N.F. KOKTULI	C	27.0	8.57	0.713	2.31	1.000	980.	158.3	0.0815	18.025	2.739		0.2272	4.99
22	N.F. KOKTULI	C	24.5	8.73	0.706	2.31	1.000	983.	158.3	0.0961	18.014	3.292		0.2272	4.99
23	N.F. KOKTULI	C	16.0	8.89	0.700	2.31	1.000	986.	158.3	0.0663	18.003	5.220		0.2272	4.99
24	N.F. KOKTULI	C	13.8	8.96	0.697	2.31	1.000	987.	158.3	0.0507	18.002	5.720		0.2272	4.99
25	N.F. KOKTULI	Q	13.7	8.96	0.697	2.31	1.000	987.	158.3	0.0507	18.002	5.750		0.0410	9.61
26	N.F. KOKTULI	C	11.6	9.01	0.695	2.31	1.000	988.	158.3	0.0510	18.001	5.837		0.0410	9.61
27	N.F. KOKTULI	C	9.9	9.05	0.693	2.31	1.000	989.	158.3	0.0488	18.001	5.906		0.0410	9.61
28	N.F. KOKTULI	Q	9.3	9.05	0.693	2.31	1.000	989.	158.3	0.0488	18.001	5.930		0.1312	9.61
29	N.F. KOKTULI	C	7.6	9.10	0.691	2.31	1.000	990.	158.3	0.0502	18.000	6.159		0.1312	9.61
30	N.F. KOKTULI	C	6.2	9.14	0.689	2.31	1.000	991.	158.2	0.0447	18.000	6.339		0.1312	9.61
31	N.F. KOKTULI	Q	5.3	9.14	0.689	2.31	1.000	991.	158.2	0.0447	18.000	6.460		0.1311	9.61
32	N.F. KOKTULI	C	3.5	9.19	0.687	2.31	1.000	992.	158.2	0.0455	17.999	6.689		0.1311	9.61
33	N.F. KOKTULI	E	0.0									7.150			

YEAR: 2007 TIME PERIOD: 4-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.46	0.960	5.32	1.000	950.	98.1	0.4520	18.081	0.105	7.04	0.0510	10.39
2	N.F. KOKTULI	C	55.7	7.44	0.906	5.32	1.000	968.	98.0	0.2399	18.082	0.203		0.0510	10.39
3	N.F. KOKTULI	C	48.2	7.76	0.890	5.32	1.000	974.	97.9	0.2059	18.082	0.590		0.0510	10.39
4	N.F. KOKTULI	C	44.8	7.80	0.888	5.32	1.000	974.	97.9	0.1460	18.078	0.763		0.0510	10.39
5	N.F. KOKTULI	C	42.1	7.82	0.887	5.32	1.000	975.	97.9	0.1414	18.077	0.901		0.0510	10.39
6	N.F. KOKTULI	C	41.2	7.83	0.886	5.32	1.000	975.	97.9	0.1191	18.076	0.944		0.0510	10.39
7	N.F. KOKTULI	C	39.8	7.84	0.886	5.32	1.000	975.	97.9	0.1556	18.075	1.018		0.0510	10.39
8	N.F. KOKTULI	C	38.6	7.86	0.884	5.32	1.000	975.	97.9	0.1037	18.073	1.080		0.0510	10.39
9	N.F. KOKTULI	Q	36.8	7.86	0.884	5.32	1.000	975.	97.9	0.1037	18.073	1.172		0.3941	5.55
10	N.F. KOKTULI	C	36.5	7.88	0.883	5.32	1.000	976.	97.9	0.1161	18.073	1.263		0.3941	5.55
11	N.F. KOKTULI	B	36.5									1.265			
12	TRIBUTARY 119	H	38.4	7.79	0.888	5.32	1.000	974.	98.0	0.2354	18.071	0.757	3.63	0.0680	5.55
13	TRIBUTARY 119	T	36.5									0.882			
14	N.F. KOKTULI	J	36.5	7.91	0.882	5.32	1.000	976.	97.9	0.1161	18.074	2.147		0.1229	5.55
15	N.F. KOKTULI	Q	35.8	7.91	0.882	5.32	1.000	976.	97.9	0.1161	18.074	2.241		0.0648	5.06
16	N.F. KOKTULI	C	35.4	7.95	0.880	5.32	1.000	977.	97.9	0.0930	18.075	2.265		0.0648	5.06
17	N.F. KOKTULI	C	34.0	8.00	0.877	5.32	1.000	978.	97.9	0.0890	18.074	2.357		0.0648	5.06
18	N.F. KOKTULI	C	31.0	8.06	0.874	5.32	1.000	979.	97.9	0.0985	18.072	2.550		0.0648	5.06
19	N.F. KOKTULI	C	28.5	8.10	0.872	5.32	1.000	980.	97.9	0.0792	18.071	2.713		0.0648	5.06
20	N.F. KOKTULI	Q	27.9	8.10	0.872	5.32	1.000	980.	97.9	0.0792	18.071	2.748		0.2207	5.06
21	N.F. KOKTULI	C	27.0	8.14	0.870	5.32	1.000	980.	97.9	0.0815	18.071	2.965		0.2207	5.06
22	N.F. KOKTULI	C	24.5	8.30	0.862	5.32	1.000	983.	97.9	0.0959	18.060	3.502		0.2207	5.06
23	N.F. KOKTULI	C	16.0	8.46	0.854	5.32	1.000	986.	97.9	0.0664	18.049	5.375		0.2207	5.06
24	N.F. KOKTULI	C	13.8	8.53	0.851	5.32	1.000	987.	97.9	0.0508	18.047	5.861		0.2207	5.06
25	N.F. KOKTULI	Q	13.7	8.53	0.851	5.32	1.000	987.	97.9	0.0508	18.047	5.890		0.0410	9.41
26	N.F. KOKTULI	C	11.6	8.58	0.848	5.32	1.000	988.	97.9	0.0510	18.046	5.977		0.0410	9.41
27	N.F. KOKTULI	C	9.9	8.62	0.846	5.32	1.000	989.	97.9	0.0488	18.046	6.046		0.0410	9.41
28	N.F. KOKTULI	Q	9.3	8.62	0.846	5.32	1.000	989.	97.9	0.0488	18.046	6.070		0.1312	9.41
29	N.F. KOKTULI	C	7.6	8.67	0.844	5.32	1.000	990.	97.9	0.0502	18.046	6.299		0.1312	9.41
30	N.F. KOKTULI	C	6.2	8.71	0.842	5.32	1.000	991.	97.9	0.0447	18.045	6.479		0.1312	9.41
31	N.F. KOKTULI	Q	5.3	8.71	0.842	5.32	1.000	991.	97.9	0.0447	18.045	6.600		0.1311	9.41
32	N.F. KOKTULI	C	3.5	8.76	0.839	5.32	1.000	992.	97.9	0.0455	18.044	6.829		0.1311	9.41
33	N.F. KOKTULI	E	0.0									7.290			

YEAR: 2007 TIME PERIOD: 5-Jun PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.93	0.909	9.44	1.000	950.	130.2	0.4513	18.124	0.133	6.70	0.0648	10.70
2	N.F. KOKTULI	C	55.7	5.91	0.858	9.44	1.000	968.	130.1	0.2396	18.126	0.258		0.0648	10.70
3	N.F. KOKTULI	C	48.2	6.23	0.842	9.44	1.000	974.	130.0	0.2057	18.126	0.749		0.0648	10.70
4	N.F. KOKTULI	C	44.8	6.27	0.840	9.44	1.000	974.	130.0	0.1459	18.121	0.969		0.0648	10.70
5	N.F. KOKTULI	C	42.1	6.29	0.839	9.44	1.000	975.	130.0	0.1413	18.120	1.143		0.0648	10.70
6	N.F. KOKTULI	C	41.2	6.30	0.839	9.44	1.000	975.	130.0	0.1191	18.120	1.198		0.0648	10.70
7	N.F. KOKTULI	C	39.8	6.31	0.838	9.44	1.000	975.	130.0	0.1554	18.118	1.292		0.0648	10.70
8	N.F. KOKTULI	C	38.6	6.33	0.837	9.44	1.000	975.	130.0	0.1037	18.117	1.372		0.0648	10.70
9	N.F. KOKTULI	Q	36.8	6.33	0.837	9.44	1.000	975.	130.0	0.1037	18.117	1.488		0.5085	5.71
10	N.F. KOKTULI	C	36.5	6.35	0.836	9.44	1.000	976.	130.0	0.1160	18.117	1.605		0.5085	5.71
11	N.F. KOKTULI	B	36.5									1.608			
12	TRIBUTARY 119	H	38.4	6.26	0.841	9.44	1.000	974.	130.0	0.2352	18.115	1.127	3.74	0.1218	5.71
13	TRIBUTARY 119	T	36.5									1.351			
14	N.F. KOKTULI	J	36.5	6.38	0.835	9.44	1.000	976.	130.0	0.1160	18.117	2.959		0.1582	5.71
15	N.F. KOKTULI	Q	35.8	6.38	0.835	9.44	1.000	976.	130.0	0.1160	18.117	3.080		0.0958	5.20
16	N.F. KOKTULI	C	35.4	6.42	0.833	9.44	1.000	977.	130.0	0.0930	18.118	3.116		0.0958	5.20
17	N.F. KOKTULI	C	34.0	6.47	0.831	9.44	1.000	978.	130.0	0.0891	18.118	3.251		0.0958	5.20
18	N.F. KOKTULI	C	31.0	6.53	0.828	9.44	1.000	979.	130.0	0.0984	18.116	3.537		0.0958	5.20
19	N.F. KOKTULI	C	28.5	6.57	0.826	9.44	1.000	980.	130.0	0.0792	18.115	3.777		0.0958	5.20
20	N.F. KOKTULI	Q	27.9	6.57	0.826	9.44	1.000	980.	130.0	0.0792	18.115	3.829		0.2895	5.20
21	N.F. KOKTULI	C	27.0	6.61	0.824	9.44	1.000	980.	129.9	0.0816	18.114	4.113		0.2895	5.20
22	N.F. KOKTULI	C	24.5	6.77	0.816	9.44	1.000	983.	129.9	0.0957	18.103	4.818		0.2895	5.20
23	N.F. KOKTULI	C	16.0	6.93	0.809	9.44	1.000	986.	129.9	0.0664	18.092	7.275		0.2895	5.20
24	N.F. KOKTULI	C	13.8	7.00	0.806	9.44	1.000	987.	129.9	0.0508	18.091	7.912		0.2895	5.20
25	N.F. KOKTULI	Q	13.7	7.00	0.806	9.44	1.000	987.	129.9	0.0508	18.091	7.950		0.0546	9.22
26	N.F. KOKTULI	C	11.6	7.05	0.803	9.44	1.000	988.	129.9	0.0511	18.090	8.066		0.0546	9.22
27	N.F. KOKTULI	C	9.9	7.09	0.801	9.44	1.000	989.	129.9	0.0488	18.090	8.158		0.0546	9.22
28	N.F. KOKTULI	Q	9.3	7.09	0.801	9.44	1.000	989.	129.9	0.0488	18.090	8.190		0.1163	9.22
29	N.F. KOKTULI	C	7.6	7.14	0.799	9.44	1.000	990.	129.9	0.0502	18.089	8.393		0.1163	9.22
30	N.F. KOKTULI	C	6.2	7.18	0.797	9.44	1.000	991.	129.9	0.0447	18.089	8.553		0.1163	9.22
31	N.F. KOKTULI	Q	5.3	7.18	0.797	9.44	1.000	991.	129.9	0.0447	18.089	8.660		0.1197	9.22
32	N.F. KOKTULI	C	3.5	7.23	0.794	9.44	1.000	992.	129.9	0.0455	18.088	8.869		0.1197	9.22
33	N.F. KOKTULI	E	0.0									9.290			

YEAR: 2007 TIME PERIOD: 6-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.84	0.776	5.29	1.000	950.	263.2	0.4506	18.166	0.124	7.93	0.0602	10.97
2	N.F. KOKTULI	C	55.7	7.82	0.733	5.29	1.000	968.	262.9	0.2394	18.167	0.240		0.0602	10.97
3	N.F. KOKTULI	C	48.2	8.14	0.719	5.29	1.000	974.	262.7	0.2054	18.167	0.696		0.0602	10.97
4	N.F. KOKTULI	C	44.8	8.18	0.718	5.29	1.000	974.	262.7	0.1457	18.163	0.900		0.0602	10.97
5	N.F. KOKTULI	C	42.1	8.20	0.717	5.29	1.000	975.	262.7	0.1412	18.162	1.062		0.0602	10.97
6	N.F. KOKTULI	C	41.2	8.21	0.716	5.29	1.000	975.	262.7	0.1191	18.162	1.113		0.0602	10.97
7	N.F. KOKTULI	C	39.8	8.22	0.716	5.29	1.000	975.	262.7	0.1552	18.160	1.200		0.0602	10.97
8	N.F. KOKTULI	C	38.6	8.24	0.715	5.29	1.000	975.	262.7	0.1038	18.158	1.274		0.0602	10.97
9	N.F. KOKTULI	Q	36.8	8.24	0.715	5.29	1.000	975.	262.7	0.1038	18.158	1.382		0.4703	5.86
10	N.F. KOKTULI	C	36.5	8.26	0.714	5.29	1.000	976.	262.7	0.1159	18.158	1.490		0.4703	5.86
11	N.F. KOKTULI	B	36.5									1.493			
12	TRIBUTARY 119	H	38.4	8.17	0.718	5.29	1.000	974.	262.8	0.2349	18.156	0.921	4.71	0.0968	5.86
13	TRIBUTARY 119	T	36.5									1.099			
14	N.F. KOKTULI	J	36.5	8.29	0.713	5.29	1.000	976.	262.7	0.1159	18.159	2.592		0.1464	5.86
15	N.F. KOKTULI	Q	35.8	8.29	0.713	5.29	1.000	976.	262.7	0.1159	18.159	2.704		0.0760	5.34
16	N.F. KOKTULI	C	35.4	8.33	0.711	5.29	1.000	977.	262.7	0.0930	18.160	2.732		0.0760	5.34
17	N.F. KOKTULI	C	34.0	8.38	0.709	5.29	1.000	978.	262.7	0.0891	18.159	2.840		0.0760	5.34
18	N.F. KOKTULI	C	31.0	8.44	0.707	5.29	1.000	979.	262.7	0.0983	18.157	3.066		0.0760	5.34
19	N.F. KOKTULI	C	28.5	8.48	0.705	5.29	1.000	980.	262.7	0.0793	18.156	3.257		0.0760	5.34
20	N.F. KOKTULI	Q	27.9	8.48	0.705	5.29	1.000	980.	262.7	0.0793	18.156	3.298		0.3008	5.34
21	N.F. KOKTULI	C	27.0	8.52	0.703	5.29	1.000	980.	262.7	0.0816	18.156	3.593		0.3008	5.34
22	N.F. KOKTULI	C	24.5	8.68	0.697	5.29	1.000	983.	262.6	0.0955	18.145	4.325		0.3008	5.34
23	N.F. KOKTULI	C	16.0	8.84	0.690	5.29	1.000	986.	262.6	0.0664	18.134	6.878		0.3008	5.34
24	N.F. KOKTULI	C	13.8	8.91	0.688	5.29	1.000	987.	262.6	0.0508	18.132	7.540		0.3008	5.34
25	N.F. KOKTULI	Q	13.7	8.91	0.688	5.29	1.000	987.	262.6	0.0508	18.132	7.580		0.0523	9.04
26	N.F. KOKTULI	C	11.6	8.96	0.686	5.29	1.000	988.	262.6	0.0511	18.131	7.692		0.0523	9.04
27	N.F. KOKTULI	C	9.9	9.00	0.684	5.29	1.000	989.	262.6	0.0488	18.131	7.780		0.0523	9.04
28	N.F. KOKTULI	Q	9.3	9.00	0.684	5.29	1.000	989.	262.6	0.0488	18.131	7.810		0.1213	9.04
29	N.F. KOKTULI	C	7.6	9.05	0.682	5.29	1.000	990.	262.6	0.0502	18.130	8.022		0.1213	9.04
30	N.F. KOKTULI	C	6.2	9.09	0.681	5.29	1.000	991.	262.5	0.0447	18.130	8.188		0.1213	9.04
31	N.F. KOKTULI	Q	5.3	9.09	0.681	5.29	1.000	991.	262.5	0.0447	18.130	8.300		0.1216	9.04
32	N.F. KOKTULI	C	3.5	9.14	0.678	5.29	1.000	992.	262.5	0.0455	18.129	8.512		0.1216	9.04
33	N.F. KOKTULI	E	0.0									8.940			

YEAR: 2007 TIME PERIOD: 7-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.96	0.715	7.67	1.000	950.	226.5	0.4500	18.205	0.108	8.04	0.0525	11.30
2	N.F. KOKTULI	C	55.7	6.94	0.675	7.67	1.000	968.	226.2	0.2392	18.206	0.209		0.0525	11.30
3	N.F. KOKTULI	C	48.2	7.26	0.662	7.67	1.000	974.	226.1	0.2052	18.206	0.607		0.0525	11.30
4	N.F. KOKTULI	C	44.8	7.30	0.661	7.67	1.000	974.	226.1	0.1456	18.202	0.785		0.0525	11.30
5	N.F. KOKTULI	C	42.1	7.32	0.660	7.67	1.000	975.	226.1	0.1411	18.201	0.927		0.0525	11.30
6	N.F. KOKTULI	C	41.2	7.33	0.660	7.67	1.000	975.	226.1	0.1191	18.201	0.971		0.0525	11.30
7	N.F. KOKTULI	C	39.8	7.34	0.659	7.67	1.000	975.	226.1	0.1550	18.199	1.048		0.0525	11.30
8	N.F. KOKTULI	C	38.6	7.36	0.659	7.67	1.000	975.	226.1	0.1038	18.197	1.112		0.0525	11.30
9	N.F. KOKTULI	Q	36.8	7.36	0.659	7.67	1.000	975.	226.1	0.1038	18.197	1.206		0.4068	6.01
10	N.F. KOKTULI	C	36.5	7.38	0.658	7.67	1.000	976.	226.1	0.1158	18.197	1.300		0.4068	6.01
11	N.F. KOKTULI	B	36.5									1.302			
12	TRIBUTARY 119	H	38.4	7.29	0.662	7.67	1.000	974.	226.2	0.2347	18.195	0.760	4.72	0.0718	6.01
13	TRIBUTARY 119	T	36.5									0.892			
14	N.F. KOKTULI	J	36.5	7.41	0.657	7.67	1.000	976.	226.1	0.1158	18.198	2.194		0.1255	6.01
15	N.F. KOKTULI	Q	35.8	7.41	0.657	7.67	1.000	976.	226.1	0.1158	18.198	2.290		0.0661	5.56
16	N.F. KOKTULI	C	35.4	7.45	0.655	7.67	1.000	977.	226.1	0.0931	18.199	2.315		0.0661	5.56
17	N.F. KOKTULI	C	34.0	7.50	0.653	7.67	1.000	978.	226.1	0.0891	18.198	2.408		0.0661	5.56
18	N.F. KOKTULI	C	31.0	7.56	0.651	7.67	1.000	979.	226.1	0.0982	18.196	2.605		0.0661	5.56
19	N.F. KOKTULI	C	28.5	7.60	0.650	7.67	1.000	980.	226.1	0.0793	18.195	2.771		0.0661	5.56
20	N.F. KOKTULI	Q	27.9	7.60	0.650	7.67	1.000	980.	226.1	0.0793	18.195	2.807		0.2496	5.56
21	N.F. KOKTULI	C	27.0	7.64	0.648	7.67	1.000	980.	226.1	0.0816	18.195	3.052		0.2496	5.56
22	N.F. KOKTULI	C	24.5	7.80	0.642	7.67	1.000	983.	226.1	0.0954	18.184	3.659		0.2496	5.56
23	N.F. KOKTULI	C	16.0	7.96	0.636	7.67	1.000	986.	226.0	0.0665	18.172	5.778		0.2496	5.56
24	N.F. KOKTULI	C	13.8	8.03	0.634	7.67	1.000	987.	226.0	0.0509	18.170	6.327		0.2496	5.56
25	N.F. KOKTULI	Q	13.7	8.03	0.634	7.67	1.000	987.	226.0	0.0509	18.170	6.360		0.0455	8.87
26	N.F. KOKTULI	C	11.6	8.08	0.632	7.67	1.000	988.	226.0	0.0511	18.169	6.457		0.0455	8.87
27	N.F. KOKTULI	C	9.9	8.12	0.630	7.67	1.000	989.	226.0	0.0489	18.169	6.534		0.0455	8.87
28	N.F. KOKTULI	Q	9.3	8.12	0.630	7.67	1.000	989.	226.0	0.0489	18.169	6.560		0.1287	8.87
29	N.F. KOKTULI	C	7.6	8.17	0.628	7.67	1.000	990.	226.0	0.0501	18.169	6.785		0.1287	8.87
30	N.F. KOKTULI	C	6.2	8.21	0.627	7.67	1.000	991.	226.0	0.0448	18.168	6.961		0.1287	8.87
31	N.F. KOKTULI	Q	5.3	8.21	0.627	7.67	1.000	991.	226.0	0.0448	18.168	7.080		0.1292	8.87
32	N.F. KOKTULI	C	3.5	8.26	0.625	7.67	1.000	992.	226.0	0.0455	18.167	7.305		0.1292	8.87
33	N.F. KOKTULI	E	0.0									7.760			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.41	0.786	5.33	1.000	950.	192.6	0.4494	18.242	0.096	7.26	0.0464	11.61
2	N.F. KOKTULI	C	55.7	5.39	0.743	5.33	1.000	968.	192.4	0.2390	18.243	0.185		0.0464	11.61
3	N.F. KOKTULI	C	48.2	5.71	0.729	5.33	1.000	974.	192.3	0.2050	18.243	0.537		0.0464	11.61
4	N.F. KOKTULI	C	44.8	5.75	0.727	5.33	1.000	974.	192.3	0.1455	18.239	0.694		0.0464	11.61
5	N.F. KOKTULI	C	42.1	5.77	0.726	5.33	1.000	975.	192.3	0.1410	18.237	0.819		0.0464	11.61
6	N.F. KOKTULI	C	41.2	5.78	0.726	5.33	1.000	975.	192.3	0.1191	18.237	0.858		0.0464	11.61
7	N.F. KOKTULI	C	39.8	5.79	0.725	5.33	1.000	975.	192.3	0.1548	18.236	0.926		0.0464	11.61
8	N.F. KOKTULI	C	38.6	5.81	0.724	5.33	1.000	975.	192.3	0.1038	18.234	0.983		0.0464	11.61
9	N.F. KOKTULI	Q	36.8	5.81	0.724	5.33	1.000	975.	192.3	0.1038	18.234	1.066		0.3602	6.13
10	N.F. KOKTULI	C	36.5	5.83	0.724	5.33	1.000	976.	192.3	0.1157	18.234	1.149		0.3602	6.13
11	N.F. KOKTULI	B	36.5									1.151			
12	TRIBUTARY 119	H	38.4	5.74	0.728	5.33	1.000	974.	192.3	0.2345	18.232	0.636	4.40	0.0549	6.13
13	TRIBUTARY 119	T	36.5									0.737			
14	N.F. KOKTULI	J	36.5	5.86	0.723	5.33	1.000	976.	192.3	0.1157	18.235	1.888		0.1098	6.13
15	N.F. KOKTULI	Q	35.8	5.86	0.723	5.33	1.000	976.	192.3	0.1157	18.235	1.972		0.0582	5.81
16	N.F. KOKTULI	C	35.4	5.90	0.721	5.33	1.000	977.	192.2	0.0931	18.236	1.994		0.0582	5.81
17	N.F. KOKTULI	C	34.0	5.95	0.719	5.33	1.000	978.	192.2	0.0892	18.235	2.076		0.0582	5.81
18	N.F. KOKTULI	C	31.0	6.01	0.716	5.33	1.000	979.	192.2	0.0982	18.233	2.249		0.0582	5.81
19	N.F. KOKTULI	C	28.5	6.05	0.715	5.33	1.000	980.	192.2	0.0794	18.232	2.395		0.0582	5.81
20	N.F. KOKTULI	Q	27.9	6.05	0.715	5.33	1.000	980.	192.2	0.0794	18.232	2.427		0.2201	5.81
21	N.F. KOKTULI	C	27.0	6.09	0.713	5.33	1.000	980.	192.2	0.0816	18.231	2.643		0.2201	5.81
22	N.F. KOKTULI	C	24.5	6.25	0.706	5.33	1.000	983.	192.2	0.0952	18.220	3.179		0.2201	5.81
23	N.F. KOKTULI	C	16.0	6.41	0.700	5.33	1.000	986.	192.2	0.0665	18.209	5.047		0.2201	5.81
24	N.F. KOKTULI	C	13.8	6.48	0.697	5.33	1.000	987.	192.2	0.0509	18.207	5.531		0.2201	5.81
25	N.F. KOKTULI	Q	13.7	6.48	0.697	5.33	1.000	987.	192.2	0.0509	18.207	5.560		0.0387	8.54
26	N.F. KOKTULI	C	11.6	6.53	0.695	5.33	1.000	988.	192.2	0.0511	18.206	5.642		0.0387	8.54
27	N.F. KOKTULI	C	9.9	6.57	0.693	5.33	1.000	989.	192.1	0.0489	18.206	5.707		0.0387	8.54
28	N.F. KOKTULI	Q	9.3	6.57	0.693	5.33	1.000	989.	192.1	0.0489	18.206	5.730		0.1312	8.54
29	N.F. KOKTULI	C	7.6	6.62	0.691	5.33	1.000	990.	192.1	0.0501	18.205	5.959		0.1312	8.54
30	N.F. KOKTULI	C	6.2	6.66	0.690	5.33	1.000	991.	192.1	0.0448	18.205	6.139		0.1312	8.54
31	N.F. KOKTULI	Q	5.3	6.66	0.690	5.33	1.000	991.	192.1	0.0448	18.205	6.260		0.1311	8.54
32	N.F. KOKTULI	C	3.5	6.71	0.687	5.33	1.000	992.	192.1	0.0455	18.204	6.489		0.1311	8.54
33	N.F. KOKTULI	E	0.0									6.950			

YEAR: 2007 TIME PERIOD: 9-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.21	0.848	3.49	1.000	950.	153.2	0.4488	18.276	0.086	6.96	0.0418	11.99
2	N.F. KOKTULI	C	55.7	6.19	0.800	3.49	1.000	968.	153.0	0.2388	18.277	0.166		0.0418	11.99
3	N.F. KOKTULI	C	48.2	6.51	0.785	3.49	1.000	974.	152.9	0.2049	18.277	0.483		0.0418	11.99
4	N.F. KOKTULI	C	44.8	6.55	0.784	3.49	1.000	974.	152.9	0.1455	18.273	0.625		0.0418	11.99
5	N.F. KOKTULI	C	42.1	6.57	0.783	3.49	1.000	975.	152.9	0.1409	18.272	0.738		0.0418	11.99
6	N.F. KOKTULI	C	41.2	6.58	0.782	3.49	1.000	975.	152.9	0.1191	18.271	0.773		0.0418	11.99
7	N.F. KOKTULI	C	39.8	6.59	0.782	3.49	1.000	975.	152.9	0.1547	18.270	0.834		0.0418	11.99
8	N.F. KOKTULI	C	38.6	6.61	0.781	3.49	1.000	975.	152.9	0.1038	18.268	0.885		0.0418	11.99
9	N.F. KOKTULI	Q	36.8	6.61	0.781	3.49	1.000	975.	152.9	0.1038	18.268	0.960		0.3220	6.26
10	N.F. KOKTULI	C	36.5	6.63	0.780	3.49	1.000	976.	152.9	0.1156	18.268	1.034		0.3220	6.26
11	N.F. KOKTULI	B	36.5									1.036			
12	TRIBUTARY 119	H	38.4	6.54	0.784	3.49	1.000	974.	152.9	0.2343	18.266	0.549	4.14	0.0451	6.26
13	TRIBUTARY 119	T	36.5									0.632			
14	N.F. KOKTULI	J	36.5	6.66	0.779	3.49	1.000	976.	152.9	0.1156	18.269	1.667		0.0993	6.26
15	N.F. KOKTULI	Q	35.8	6.66	0.779	3.49	1.000	976.	152.9	0.1156	18.269	1.743		0.0523	6.16
16	N.F. KOKTULI	C	35.4	6.70	0.777	3.49	1.000	977.	152.9	0.0931	18.270	1.763		0.0523	6.16
17	N.F. KOKTULI	C	34.0	6.75	0.775	3.49	1.000	978.	152.9	0.0892	18.269	1.836		0.0523	6.16
18	N.F. KOKTULI	C	31.0	6.81	0.772	3.49	1.000	979.	152.9	0.0981	18.267	1.992		0.0523	6.16
19	N.F. KOKTULI	C	28.5	6.85	0.770	3.49	1.000	980.	152.9	0.0794	18.266	2.123		0.0523	6.16
20	N.F. KOKTULI	Q	27.9	6.85	0.770	3.49	1.000	980.	152.9	0.0794	18.266	2.152		0.1966	6.16
21	N.F. KOKTULI	C	27.0	6.89	0.768	3.49	1.000	980.	152.8	0.0816	18.265	2.345		0.1966	6.16
22	N.F. KOKTULI	C	24.5	7.05	0.761	3.49	1.000	983.	152.8	0.0951	18.254	2.823		0.1966	6.16
23	N.F. KOKTULI	C	16.0	7.21	0.754	3.49	1.000	986.	152.8	0.0665	18.243	4.492		0.1966	6.16
24	N.F. KOKTULI	C	13.8	7.28	0.751	3.49	1.000	987.	152.8	0.0509	18.241	4.924		0.1966	6.16
25	N.F. KOKTULI	Q	13.7	7.28	0.751	3.49	1.000	987.	152.8	0.0509	18.241	4.950		0.0341	8.10
26	N.F. KOKTULI	C	11.6	7.33	0.749	3.49	1.000	988.	152.8	0.0511	18.240	5.023		0.0341	8.10
27	N.F. KOKTULI	C	9.9	7.37	0.747	3.49	1.000	989.	152.8	0.0489	18.240	5.080		0.0341	8.10
28	N.F. KOKTULI	Q	9.3	7.37	0.747	3.49	1.000	989.	152.8	0.0489	18.240	5.100		0.1336	8.10
29	N.F. KOKTULI	C	7.6	7.42	0.745	3.49	1.000	990.	152.8	0.0501	18.239	5.334		0.1336	8.10
30	N.F. KOKTULI	C	6.2	7.46	0.743	3.49	1.000	991.	152.8	0.0448	18.239	5.517		0.1336	8.10
31	N.F. KOKTULI	Q	5.3	7.46	0.743	3.49	1.000	991.	152.8	0.0448	18.239	5.640		0.1311	8.10
32	N.F. KOKTULI	C	3.5	7.51	0.741	3.49	1.000	992.	152.8	0.0455	18.238	5.869		0.1311	8.10
33	N.F. KOKTULI	E	0.0									6.330			

YEAR: 2007 TIME PERIOD: 10-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.15	0.674	5.74	1.000	950.	255.9	0.4483	18.308	0.084	9.90	0.0407	12.56
2	N.F. KOKTULI	C	55.7	12.13	0.636	5.74	1.000	968.	255.6	0.2387	18.309	0.162		0.0407	12.56
3	N.F. KOKTULI	C	48.2	12.45	0.625	5.74	1.000	974.	255.4	0.2047	18.309	0.470		0.0407	12.56
4	N.F. KOKTULI	C	44.8	12.49	0.623	5.74	1.000	974.	255.4	0.1454	18.304	0.608		0.0407	12.56
5	N.F. KOKTULI	C	42.1	12.51	0.622	5.74	1.000	975.	255.4	0.1408	18.303	0.718		0.0407	12.56
6	N.F. KOKTULI	C	41.2	12.52	0.622	5.74	1.000	975.	255.4	0.1191	18.303	0.752		0.0407	12.56
7	N.F. KOKTULI	C	39.8	12.53	0.622	5.74	1.000	975.	255.4	0.1546	18.301	0.811		0.0407	12.56
8	N.F. KOKTULI	C	38.6	12.55	0.621	5.74	1.000	975.	255.4	0.1039	18.300	0.861		0.0407	12.56
9	N.F. KOKTULI	Q	36.8	12.55	0.621	5.74	1.000	975.	255.4	0.1039	18.300	0.934		0.3093	6.45
10	N.F. KOKTULI	C	36.5	12.57	0.620	5.74	1.000	976.	255.4	0.1155	18.300	1.005		0.3093	6.45
11	N.F. KOKTULI	B	36.5									1.007			
12	TRIBUTARY 119	H	38.4	12.48	0.624	5.74	1.000	974.	255.5	0.2341	18.297	0.554	5.95	0.0430	6.45
13	TRIBUTARY 119	T	36.5									0.633			
14	N.F. KOKTULI	J	36.5	12.60	0.619	5.74	1.000	976.	255.4	0.1155	18.300	1.640		0.0954	6.45
15	N.F. KOKTULI	Q	35.8	12.60	0.619	5.74	1.000	976.	255.4	0.1155	18.300	1.713		0.0517	6.57
16	N.F. KOKTULI	C	35.4	12.64	0.618	5.74	1.000	977.	255.4	0.0931	18.301	1.732		0.0517	6.57
17	N.F. KOKTULI	C	34.0	12.69	0.616	5.74	1.000	978.	255.4	0.0893	18.301	1.805		0.0517	6.57
18	N.F. KOKTULI	C	31.0	12.75	0.614	5.74	1.000	979.	255.4	0.0980	18.299	1.959		0.0517	6.57
19	N.F. KOKTULI	C	28.5	12.79	0.612	5.74	1.000	980.	255.4	0.0795	18.298	2.089		0.0517	6.57
20	N.F. KOKTULI	Q	27.9	12.79	0.612	5.74	1.000	980.	255.4	0.0795	18.298	2.117		0.1780	6.57
21	N.F. KOKTULI	C	27.0	12.83	0.611	5.74	1.000	980.	255.3	0.0816	18.297	2.292		0.1780	6.57
22	N.F. KOKTULI	C	24.5	12.99	0.605	5.74	1.000	983.	255.3	0.0950	18.286	2.725		0.1780	6.57
23	N.F. KOKTULI	C	16.0	13.15	0.600	5.74	1.000	986.	255.3	0.0666	18.274	4.235		0.1780	6.57
24	N.F. KOKTULI	C	13.8	13.22	0.597	5.74	1.000	987.	255.3	0.0509	18.272	4.627		0.1780	6.57
25	N.F. KOKTULI	Q	13.7	13.22	0.597	5.74	1.000	987.	255.3	0.0509	18.272	4.650		0.0319	7.71
26	N.F. KOKTULI	C	11.6	13.27	0.596	5.74	1.000	988.	255.3	0.0511	18.271	4.718		0.0319	7.71
27	N.F. KOKTULI	C	9.9	13.31	0.594	5.74	1.000	989.	255.3	0.0489	18.271	4.771		0.0319	7.71
28	N.F. KOKTULI	Q	9.3	13.31	0.594	5.74	1.000	989.	255.3	0.0489	18.271	4.790		0.1312	7.71
29	N.F. KOKTULI	C	7.6	13.36	0.592	5.74	1.000	990.	255.2	0.0501	18.271	5.019		0.1312	7.71
30	N.F. KOKTULI	C	6.2	13.40	0.591	5.74	1.000	991.	255.2	0.0448	18.270	5.199		0.1312	7.71
31	N.F. KOKTULI	Q	5.3	13.40	0.591	5.74	1.000	991.	255.2	0.0448	18.270	5.320		0.1311	7.71
32	N.F. KOKTULI	C	3.5	13.45	0.589	5.74	1.000	992.	255.2	0.0455	18.269	5.549		0.1311	7.71
33	N.F. KOKTULI	E	0.0									6.010			

YEAR: 2007 TIME PERIOD: 11-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.58	0.909	5.43	1.000	950.	240.3	0.4479	18.337	0.089	11.30	0.0430	13.16
2	N.F. KOKTULI	C	55.7	7.56	0.858	5.43	1.000	968.	240.0	0.2385	18.338	0.171		0.0430	13.16
3	N.F. KOKTULI	C	48.2	7.88	0.842	5.43	1.000	974.	239.9	0.2045	18.338	0.497		0.0430	13.16
4	N.F. KOKTULI	C	44.8	7.92	0.840	5.43	1.000	974.	239.9	0.1453	18.334	0.643		0.0430	13.16
5	N.F. KOKTULI	C	42.1	7.94	0.839	5.43	1.000	975.	239.9	0.1407	18.332	0.759		0.0430	13.16
6	N.F. KOKTULI	C	41.2	7.95	0.839	5.43	1.000	975.	239.9	0.1191	18.332	0.796		0.0430	13.16
7	N.F. KOKTULI	C	39.8	7.96	0.838	5.43	1.000	975.	239.9	0.1544	18.331	0.858		0.0430	13.16
8	N.F. KOKTULI	C	38.6	7.98	0.837	5.43	1.000	975.	239.9	0.1039	18.329	0.911		0.0430	13.16
9	N.F. KOKTULI	Q	36.8	7.98	0.837	5.43	1.000	975.	239.9	0.1039	18.329	0.988		0.3305	6.63
10	N.F. KOKTULI	C	36.5	8.00	0.836	5.43	1.000	976.	239.9	0.1155	18.329	1.064		0.3305	6.63
11	N.F. KOKTULI	B	36.5									1.066			
12	TRIBUTARY 119	H	38.4	7.91	0.841	5.43	1.000	974.	239.9	0.2339	18.327	0.647	6.57	0.0489	6.63
13	TRIBUTARY 119	T	36.5									0.737			
14	N.F. KOKTULI	J	36.5	8.03	0.835	5.43	1.000	976.	239.9	0.1155	18.330	1.803		0.1007	6.63
15	N.F. KOKTULI	Q	35.8	8.03	0.835	5.43	1.000	976.	239.9	0.1155	18.330	1.880		0.0559	6.98
16	N.F. KOKTULI	C	35.4	8.07	0.833	5.43	1.000	977.	239.8	0.0932	18.331	1.901		0.0559	6.98
17	N.F. KOKTULI	C	34.0	8.12	0.831	5.43	1.000	978.	239.8	0.0893	18.330	1.980		0.0559	6.98
18	N.F. KOKTULI	C	31.0	8.18	0.828	5.43	1.000	979.	239.8	0.0980	18.328	2.147		0.0559	6.98
19	N.F. KOKTULI	C	28.5	8.22	0.826	5.43	1.000	980.	239.8	0.0795	18.327	2.286		0.0559	6.98
20	N.F. KOKTULI	Q	27.9	8.22	0.826	5.43	1.000	980.	239.8	0.0795	18.327	2.317		0.1829	6.98
21	N.F. KOKTULI	C	27.0	8.26	0.824	5.43	1.000	980.	239.8	0.0816	18.326	2.496		0.1829	6.98
22	N.F. KOKTULI	C	24.5	8.42	0.816	5.43	1.000	983.	239.8	0.0949	18.315	2.942		0.1829	6.98
23	N.F. KOKTULI	C	16.0	8.58	0.809	5.43	1.000	986.	239.8	0.0666	18.303	4.494		0.1829	6.98
24	N.F. KOKTULI	C	13.8	8.65	0.805	5.43	1.000	987.	239.7	0.0510	18.301	4.896		0.1829	6.98
25	N.F. KOKTULI	Q	13.7	8.65	0.805	5.43	1.000	987.	239.7	0.0510	18.301	4.920		0.0341	7.40
26	N.F. KOKTULI	C	11.6	8.70	0.803	5.43	1.000	988.	239.7	0.0511	18.300	4.993		0.0341	7.40
27	N.F. KOKTULI	C	9.9	8.74	0.801	5.43	1.000	989.	239.7	0.0489	18.300	5.050		0.0341	7.40
28	N.F. KOKTULI	Q	9.3	8.74	0.801	5.43	1.000	989.	239.7	0.0489	18.300	5.070		0.1336	7.40
29	N.F. KOKTULI	C	7.6	8.79	0.799	5.43	1.000	990.	239.7	0.0501	18.300	5.304		0.1336	7.40
30	N.F. KOKTULI	C	6.2	8.83	0.797	5.43	1.000	991.	239.7	0.0448	18.299	5.487		0.1336	7.40
31	N.F. KOKTULI	Q	5.3	8.83	0.797	5.43	1.000	991.	239.7	0.0448	18.299	5.610		0.1311	7.40
32	N.F. KOKTULI	C	3.5	8.88	0.794	5.43	1.000	992.	239.7	0.0455	18.298	5.839		0.1311	7.40
33	N.F. KOKTULI	E	0.0									6.300			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.67	0.980	3.34	1.000	950.	76.1	0.4475	18.363	0.086	8.16	0.0420	13.41
2	N.F. KOKTULI	C	55.7	5.65	0.926	3.34	1.000	968.	76.0	0.2384	18.365	0.167		0.0420	13.41
3	N.F. KOKTULI	C	48.2	5.97	0.908	3.34	1.000	974.	76.0	0.2044	18.365	0.485		0.0420	13.41
4	N.F. KOKTULI	C	44.8	6.01	0.907	3.34	1.000	974.	76.0	0.1453	18.360	0.628		0.0420	13.41
5	N.F. KOKTULI	C	42.1	6.03	0.905	3.34	1.000	975.	76.0	0.1406	18.359	0.741		0.0420	13.41
6	N.F. KOKTULI	C	41.2	6.04	0.905	3.34	1.000	975.	76.0	0.1191	18.359	0.776		0.0420	13.41
7	N.F. KOKTULI	C	39.8	6.05	0.904	3.34	1.000	975.	76.0	0.1543	18.357	0.837		0.0420	13.41
8	N.F. KOKTULI	C	38.6	6.07	0.903	3.34	1.000	975.	76.0	0.1039	18.356	0.889		0.0420	13.41
9	N.F. KOKTULI	Q	36.8	6.07	0.903	3.34	1.000	975.	76.0	0.1039	18.356	0.964		0.3220	6.63
10	N.F. KOKTULI	C	36.5	6.09	0.902	3.34	1.000	976.	76.0	0.1154	18.355	1.038		0.3220	6.63
11	N.F. KOKTULI	B	36.5									1.040			
12	TRIBUTARY 119	H	38.4	6.00	0.907	3.34	1.000	974.	76.0	0.2338	18.353	0.614	4.84	0.0462	6.63
13	TRIBUTARY 119	T	36.5									0.699			
14	N.F. KOKTULI	J	36.5	6.12	0.901	3.34	1.000	976.	76.0	0.1154	18.356	1.739		0.0980	6.63
15	N.F. KOKTULI	Q	35.8	6.12	0.901	3.34	1.000	976.	76.0	0.1154	18.356	1.814		0.0542	7.41
16	N.F. KOKTULI	C	35.4	6.16	0.899	3.34	1.000	977.	76.0	0.0932	18.357	1.834		0.0542	7.41
17	N.F. KOKTULI	C	34.0	6.21	0.896	3.34	1.000	978.	76.0	0.0893	18.356	1.911		0.0542	7.41
18	N.F. KOKTULI	C	31.0	6.27	0.893	3.34	1.000	979.	76.0	0.0979	18.354	2.073		0.0542	7.41
19	N.F. KOKTULI	C	28.5	6.31	0.891	3.34	1.000	980.	76.0	0.0796	18.353	2.208		0.0542	7.41
20	N.F. KOKTULI	Q	27.9	6.31	0.891	3.34	1.000	980.	76.0	0.0796	18.353	2.238		0.1884	7.41
21	N.F. KOKTULI	C	27.0	6.35	0.889	3.34	1.000	980.	76.0	0.0816	18.353	2.423		0.1884	7.41
22	N.F. KOKTULI	C	24.5	6.51	0.881	3.34	1.000	983.	76.0	0.0948	18.341	2.881		0.1884	7.41
23	N.F. KOKTULI	C	16.0	6.67	0.872	3.34	1.000	986.	76.0	0.0666	18.329	4.481		0.1884	7.41
24	N.F. KOKTULI	C	13.8	6.74	0.869	3.34	1.000	987.	75.9	0.0510	18.327	4.895		0.1884	7.41
25	N.F. KOKTULI	Q	13.7	6.74	0.869	3.34	1.000	987.	75.9	0.0510	18.327	4.920		0.0341	6.95
26	N.F. KOKTULI	C	11.6	6.79	0.866	3.34	1.000	988.	75.9	0.0511	18.326	4.993		0.0341	6.95
27	N.F. KOKTULI	C	9.9	6.83	0.864	3.34	1.000	989.	75.9	0.0489	18.326	5.050		0.0341	6.95
28	N.F. KOKTULI	Q	9.3	6.83	0.864	3.34	1.000	989.	75.9	0.0489	18.326	5.070		0.1336	6.95
29	N.F. KOKTULI	C	7.6	6.88	0.862	3.34	1.000	990.	75.9	0.0501	18.326	5.304		0.1336	6.95
30	N.F. KOKTULI	C	6.2	6.92	0.860	3.34	1.000	991.	75.9	0.0448	18.325	5.487		0.1336	6.95
31	N.F. KOKTULI	Q	5.3	6.92	0.860	3.34	1.000	991.	75.9	0.0448	18.325	5.610		0.1311	6.95
32	N.F. KOKTULI	C	3.5	6.97	0.857	3.34	1.000	992.	75.9	0.0455	18.324	5.839		0.1311	6.95
33	N.F. KOKTULI	E	0.0									6.300			

YEAR: 2007 TIME PERIOD: 13-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.86	0.848	2.74	1.000	950.	129.3	0.4471	18.387	0.078	8.07	0.0378	13.39
2	N.F. KOKTULI	C	55.7	7.84	0.800	2.74	1.000	968.	129.2	0.2383	18.389	0.151		0.0378	13.39
3	N.F. KOKTULI	C	48.2	8.16	0.785	2.74	1.000	974.	129.1	0.2043	18.389	0.437		0.0378	13.39
4	N.F. KOKTULI	C	44.8	8.20	0.784	2.74	1.000	974.	129.1	0.1453	18.384	0.566		0.0378	13.39
5	N.F. KOKTULI	C	42.1	8.22	0.783	2.74	1.000	975.	129.1	0.1406	18.383	0.668		0.0378	13.39
6	N.F. KOKTULI	C	41.2	8.23	0.782	2.74	1.000	975.	129.1	0.1192	18.383	0.700		0.0378	13.39
7	N.F. KOKTULI	C	39.8	8.24	0.782	2.74	1.000	975.	129.1	0.1542	18.381	0.755		0.0378	13.39
8	N.F. KOKTULI	C	38.6	8.26	0.781	2.74	1.000	975.	129.1	0.1039	18.379	0.801		0.0378	13.39
9	N.F. KOKTULI	Q	36.8	8.26	0.781	2.74	1.000	975.	129.1	0.1039	18.379	0.869		0.2881	6.49
10	N.F. KOKTULI	C	36.5	8.28	0.780	2.74	1.000	976.	129.1	0.1154	18.379	0.935		0.2881	6.49
11	N.F. KOKTULI	B	36.5									0.937			
12	TRIBUTARY 119	H	38.4	8.19	0.784	2.74	1.000	974.	129.1	0.2337	18.377	0.517	5.04	0.0381	6.49
13	TRIBUTARY 119	T	36.5									0.587			
14	N.F. KOKTULI	J	36.5	8.31	0.779	2.74	1.000	976.	129.1	0.1154	18.380	1.524		0.0876	6.49
15	N.F. KOKTULI	Q	35.8	8.31	0.779	2.74	1.000	976.	129.1	0.1154	18.380	1.591		0.0485	7.80
16	N.F. KOKTULI	C	35.4	8.35	0.777	2.74	1.000	977.	129.1	0.0932	18.381	1.609		0.0485	7.80
17	N.F. KOKTULI	C	34.0	8.40	0.775	2.74	1.000	978.	129.1	0.0894	18.380	1.678		0.0485	7.80
18	N.F. KOKTULI	C	31.0	8.46	0.772	2.74	1.000	979.	129.1	0.0979	18.378	1.822		0.0485	7.80
19	N.F. KOKTULI	C	28.5	8.50	0.770	2.74	1.000	980.	129.1	0.0796	18.377	1.944		0.0485	7.80
20	N.F. KOKTULI	Q	27.9	8.50	0.770	2.74	1.000	980.	129.1	0.0796	18.377	1.970		0.1728	7.80
21	N.F. KOKTULI	C	27.0	8.54	0.768	2.74	1.000	980.	129.1	0.0817	18.376	2.140		0.1728	7.80
22	N.F. KOKTULI	C	24.5	8.70	0.761	2.74	1.000	983.	129.0	0.0947	18.365	2.560		0.1728	7.80
23	N.F. KOKTULI	C	16.0	8.86	0.754	2.74	1.000	986.	129.0	0.0666	18.353	4.027		0.1728	7.80
24	N.F. KOKTULI	C	13.8	8.93	0.751	2.74	1.000	987.	129.0	0.0510	18.351	4.407		0.1728	7.80
25	N.F. KOKTULI	Q	13.7	8.93	0.751	2.74	1.000	987.	129.0	0.0510	18.351	4.430		0.0319	6.25
26	N.F. KOKTULI	C	11.6	8.98	0.749	2.74	1.000	988.	129.0	0.0511	18.350	4.498		0.0319	6.25
27	N.F. KOKTULI	C	9.9	9.02	0.747	2.74	1.000	989.	129.0	0.0489	18.350	4.551		0.0319	6.25
28	N.F. KOKTULI	Q	9.3	9.02	0.747	2.74	1.000	989.	129.0	0.0489	18.350	4.570		0.1312	6.25
29	N.F. KOKTULI	C	7.6	9.07	0.745	2.74	1.000	990.	129.0	0.0501	18.350	4.799		0.1312	6.25
30	N.F. KOKTULI	C	6.2	9.11	0.743	2.74	1.000	991.	129.0	0.0449	18.349	4.979		0.1312	6.25
31	N.F. KOKTULI	Q	5.3	9.11	0.743	2.74	1.000	991.	129.0	0.0449	18.349	5.100		0.1292	6.25
32	N.F. KOKTULI	C	3.5	9.16	0.741	2.74	1.000	992.	129.0	0.0455	18.348	5.325		0.1292	6.25
33	N.F. KOKTULI	E	0.0									5.780			

YEAR: 2007 TIME PERIOD: 14-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.27	0.786	3.82	1.000	950.	149.5	0.4468	18.408	0.077	9.23	0.0374	13.41
2	N.F. KOKTULI	C	55.7	10.25	0.742	3.82	1.000	968.	149.3	0.2382	18.410	0.149		0.0374	13.41
3	N.F. KOKTULI	C	48.2	10.57	0.729	3.82	1.000	974.	149.2	0.2042	18.410	0.433		0.0374	13.41
4	N.F. KOKTULI	C	44.8	10.61	0.727	3.82	1.000	974.	149.2	0.1452	18.405	0.560		0.0374	13.41
5	N.F. KOKTULI	C	42.1	10.63	0.726	3.82	1.000	975.	149.2	0.1405	18.404	0.661		0.0374	13.41
6	N.F. KOKTULI	C	41.2	10.64	0.726	3.82	1.000	975.	149.2	0.1192	18.404	0.692		0.0374	13.41
7	N.F. KOKTULI	C	39.8	10.65	0.725	3.82	1.000	975.	149.2	0.1541	18.402	0.747		0.0374	13.41
8	N.F. KOKTULI	C	38.6	10.67	0.724	3.82	1.000	975.	149.2	0.1039	18.401	0.793		0.0374	13.41
9	N.F. KOKTULI	Q	36.8	10.67	0.724	3.82	1.000	975.	149.2	0.1039	18.401	0.860		0.2839	6.36
10	N.F. KOKTULI	C	36.5	10.69	0.724	3.82	1.000	976.	149.2	0.1154	18.400	0.925		0.2839	6.36
11	N.F. KOKTULI	B	36.5									0.927			
12	TRIBUTARY 119	H	38.4	10.60	0.728	3.82	1.000	974.	149.3	0.2335	18.398	0.532	5.67	0.0375	6.36
13	TRIBUTARY 119	T	36.5									0.601			
14	N.F. KOKTULI	J	36.5	10.72	0.723	3.82	1.000	976.	149.2	0.1154	18.401	1.528		0.0876	6.36
15	N.F. KOKTULI	Q	35.8	10.72	0.723	3.82	1.000	976.	149.2	0.1154	18.401	1.595		0.0485	8.14
16	N.F. KOKTULI	C	35.4	10.76	0.721	3.82	1.000	977.	149.2	0.0933	18.402	1.613		0.0485	8.14
17	N.F. KOKTULI	C	34.0	10.81	0.719	3.82	1.000	978.	149.2	0.0894	18.401	1.682		0.0485	8.14
18	N.F. KOKTULI	C	31.0	10.87	0.716	3.82	1.000	979.	149.2	0.0979	18.399	1.826		0.0485	8.14
19	N.F. KOKTULI	C	28.5	10.91	0.715	3.82	1.000	980.	149.2	0.0796	18.398	1.948		0.0485	8.14
20	N.F. KOKTULI	Q	27.9	10.91	0.715	3.82	1.000	980.	149.2	0.0796	18.398	1.974		0.1613	8.14
21	N.F. KOKTULI	C	27.0	10.95	0.713	3.82	1.000	980.	149.2	0.0817	18.397	2.132		0.1613	8.14
22	N.F. KOKTULI	C	24.5	11.11	0.706	3.82	1.000	983.	149.2	0.0946	18.386	2.525		0.1613	8.14
23	N.F. KOKTULI	C	16.0	11.27	0.699	3.82	1.000	986.	149.2	0.0667	18.374	3.894		0.1613	8.14
24	N.F. KOKTULI	C	13.8	11.34	0.697	3.82	1.000	987.	149.2	0.0510	18.372	4.249		0.1613	8.14
25	N.F. KOKTULI	Q	13.7	11.34	0.697	3.82	1.000	987.	149.2	0.0510	18.372	4.270		0.0296	5.54
26	N.F. KOKTULI	C	11.6	11.39	0.695	3.82	1.000	988.	149.1	0.0511	18.371	4.333		0.0296	5.54
27	N.F. KOKTULI	C	9.9	11.43	0.693	3.82	1.000	989.	149.1	0.0489	18.371	4.383		0.0296	5.54
28	N.F. KOKTULI	Q	9.3	11.43	0.693	3.82	1.000	989.	149.1	0.0489	18.371	4.400		0.1312	5.54
29	N.F. KOKTULI	C	7.6	11.48	0.691	3.82	1.000	990.	149.1	0.0501	18.371	4.629		0.1312	5.54
30	N.F. KOKTULI	C	6.2	11.52	0.689	3.82	1.000	991.	149.1	0.0449	18.370	4.809		0.1312	5.54
31	N.F. KOKTULI	Q	5.3	11.52	0.689	3.82	1.000	991.	149.1	0.0449	18.370	4.930		0.1292	5.54
32	N.F. KOKTULI	C	3.5	11.57	0.687	3.82	1.000	992.	149.1	0.0455	18.369	5.155		0.1292	5.54
33	N.F. KOKTULI	E	0.0									5.610			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.95	0.623	6.23	1.000	950.	291.7	0.4465	18.427	0.078	11.40	0.0380	13.67
2	N.F. KOKTULI	C	55.7	13.93	0.588	6.23	1.000	968.	291.3	0.2381	18.428	0.151		0.0380	13.67
3	N.F. KOKTULI	C	48.2	14.25	0.577	6.23	1.000	974.	291.2	0.2041	18.428	0.439		0.0380	13.67
4	N.F. KOKTULI	C	44.8	14.29	0.576	6.23	1.000	974.	291.2	0.1452	18.424	0.568		0.0380	13.67
5	N.F. KOKTULI	C	42.1	14.31	0.575	6.23	1.000	975.	291.2	0.1405	18.422	0.670		0.0380	13.67
6	N.F. KOKTULI	C	41.2	14.32	0.575	6.23	1.000	975.	291.2	0.1192	18.422	0.702		0.0380	13.67
7	N.F. KOKTULI	C	39.8	14.33	0.575	6.23	1.000	975.	291.2	0.1540	18.420	0.757		0.0380	13.67
8	N.F. KOKTULI	C	38.6	14.35	0.574	6.23	1.000	975.	291.2	0.1040	18.419	0.804		0.0380	13.67
9	N.F. KOKTULI	Q	36.8	14.35	0.574	6.23	1.000	975.	291.2	0.1040	18.419	0.872		0.2839	6.33
10	N.F. KOKTULI	C	36.5	14.37	0.573	6.23	1.000	976.	291.1	0.1153	18.419	0.937		0.2839	6.33
11	N.F. KOKTULI	B	36.5									0.939			
12	TRIBUTARY 119	H	38.4	14.28	0.576	6.23	1.000	974.	291.2	0.2334	18.416	0.559	7.17	0.0386	6.33
13	TRIBUTARY 119	T	36.5									0.630			
14	N.F. KOKTULI	J	36.5	14.40	0.572	6.23	1.000	976.	291.1	0.1153	18.419	1.570		0.0889	6.33
15	N.F. KOKTULI	Q	35.8	14.40	0.572	6.23	1.000	976.	291.1	0.1153	18.419	1.638		0.0496	8.31
16	N.F. KOKTULI	C	35.4	14.44	0.571	6.23	1.000	977.	291.1	0.0933	18.420	1.657		0.0496	8.31
17	N.F. KOKTULI	C	34.0	14.49	0.569	6.23	1.000	978.	291.1	0.0894	18.420	1.727		0.0496	8.31
18	N.F. KOKTULI	C	31.0	14.55	0.567	6.23	1.000	979.	291.1	0.0978	18.418	1.875		0.0496	8.31
19	N.F. KOKTULI	C	28.5	14.59	0.566	6.23	1.000	980.	291.1	0.0797	18.417	1.999		0.0496	8.31
20	N.F. KOKTULI	Q	27.9	14.59	0.566	6.23	1.000	980.	291.1	0.0797	18.417	2.026		0.1577	8.31
21	N.F. KOKTULI	C	27.0	14.63	0.565	6.23	1.000	980.	291.1	0.0817	18.416	2.181		0.1577	8.31
22	N.F. KOKTULI	C	24.5	14.79	0.559	6.23	1.000	983.	291.0	0.0945	18.404	2.564		0.1577	8.31
23	N.F. KOKTULI	C	16.0	14.95	0.554	6.23	1.000	986.	291.0	0.0667	18.392	3.902		0.1577	8.31
24	N.F. KOKTULI	C	13.8	15.02	0.552	6.23	1.000	987.	291.0	0.0510	18.390	4.249		0.1577	8.31
25	N.F. KOKTULI	Q	13.7	15.02	0.552	6.23	1.000	987.	291.0	0.0510	18.390	4.270		0.0296	5.04
26	N.F. KOKTULI	C	11.6	15.07	0.550	6.23	1.000	988.	291.0	0.0512	18.389	4.333		0.0296	5.04
27	N.F. KOKTULI	C	9.9	15.11	0.549	6.23	1.000	989.	290.9	0.0489	18.389	4.383		0.0296	5.04
28	N.F. KOKTULI	Q	9.3	15.11	0.549	6.23	1.000	989.	290.9	0.0489	18.389	4.400		0.1312	5.04
29	N.F. KOKTULI	C	7.6	15.16	0.547	6.23	1.000	990.	290.9	0.0501	18.389	4.629		0.1312	5.04
30	N.F. KOKTULI	C	6.2	15.20	0.546	6.23	1.000	991.	290.9	0.0449	18.388	4.809		0.1312	5.04
31	N.F. KOKTULI	Q	5.3	15.20	0.546	6.23	1.000	991.	290.9	0.0449	18.388	4.930		0.1292	5.04
32	N.F. KOKTULI	C	3.5	15.25	0.544	6.23	1.000	992.	290.9	0.0455	18.387	5.155		0.1292	5.04
33	N.F. KOKTULI	E	0.0									5.610			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.79	0.664	6.91	1.000	950.	238.5	0.4463	18.442	0.078	11.71	0.0378	14.14
2	N.F. KOKTULI	C	55.7	11.77	0.627	6.91	1.000	968.	238.2	0.2380	18.444	0.151		0.0378	14.14
3	N.F. KOKTULI	C	48.2	12.09	0.615	6.91	1.000	974.	238.1	0.2040	18.444	0.437		0.0378	14.14
4	N.F. KOKTULI	C	44.8	12.13	0.614	6.91	1.000	974.	238.1	0.1452	18.439	0.566		0.0378	14.14
5	N.F. KOKTULI	C	42.1	12.15	0.613	6.91	1.000	975.	238.1	0.1405	18.438	0.668		0.0378	14.14
6	N.F. KOKTULI	C	41.2	12.16	0.613	6.91	1.000	975.	238.1	0.1192	18.438	0.700		0.0378	14.14
7	N.F. KOKTULI	C	39.8	12.17	0.612	6.91	1.000	975.	238.1	0.1540	18.436	0.755		0.0378	14.14
8	N.F. KOKTULI	C	38.6	12.19	0.611	6.91	1.000	975.	238.1	0.1040	18.435	0.801		0.0378	14.14
9	N.F. KOKTULI	Q	36.8	12.19	0.611	6.91	1.000	975.	238.1	0.1040	18.435	0.869		0.2881	6.41
10	N.F. KOKTULI	C	36.5	12.21	0.611	6.91	1.000	976.	238.1	0.1153	18.434	0.935		0.2881	6.41
11	N.F. KOKTULI	B	36.5									0.937			
12	TRIBUTARY 119	H	38.4	12.12	0.614	6.91	1.000	974.	238.1	0.2333	18.432	0.605	6.66	0.0435	6.41
13	TRIBUTARY 119	T	36.5									0.685			
14	N.F. KOKTULI	J	36.5	12.24	0.610	6.91	1.000	976.	238.0	0.1153	18.435	1.622		0.0889	6.41
15	N.F. KOKTULI	Q	35.8	12.24	0.610	6.91	1.000	976.	238.0	0.1153	18.435	1.690		0.0510	8.22
16	N.F. KOKTULI	C	35.4	12.28	0.608	6.91	1.000	977.	238.0	0.0933	18.436	1.709		0.0510	8.22
17	N.F. KOKTULI	C	34.0	12.33	0.607	6.91	1.000	978.	238.0	0.0894	18.435	1.781		0.0510	8.22
18	N.F. KOKTULI	C	31.0	12.39	0.605	6.91	1.000	979.	238.0	0.0978	18.433	1.933		0.0510	8.22
19	N.F. KOKTULI	C	28.5	12.43	0.603	6.91	1.000	980.	238.0	0.0797	18.432	2.061		0.0510	8.22
20	N.F. KOKTULI	Q	27.9	12.43	0.603	6.91	1.000	980.	238.0	0.0797	18.432	2.089		0.1743	8.22
21	N.F. KOKTULI	C	27.0	12.47	0.602	6.91	1.000	980.	238.0	0.0817	18.431	2.260		0.1743	8.22
22	N.F. KOKTULI	C	24.5	12.63	0.596	6.91	1.000	983.	238.0	0.0944	18.420	2.684		0.1743	8.22
23	N.F. KOKTULI	C	16.0	12.79	0.590	6.91	1.000	986.	237.9	0.0667	18.408	4.164		0.1743	8.22
24	N.F. KOKTULI	C	13.8	12.86	0.588	6.91	1.000	987.	237.9	0.0511	18.406	4.547		0.1743	8.22
25	N.F. KOKTULI	Q	13.7	12.86	0.588	6.91	1.000	987.	237.9	0.0511	18.406	4.570		0.0319	4.88
26	N.F. KOKTULI	C	11.6	12.91	0.587	6.91	1.000	988.	237.9	0.0512	18.405	4.638		0.0319	4.88
27	N.F. KOKTULI	C	9.9	12.95	0.585	6.91	1.000	989.	237.9	0.0489	18.405	4.691		0.0319	4.88
28	N.F. KOKTULI	Q	9.3	12.95	0.585	6.91	1.000	989.	237.9	0.0489	18.405	4.710		0.1312	4.88
29	N.F. KOKTULI	C	7.6	13.00	0.583	6.91	1.000	990.	237.9	0.0501	18.404	4.939		0.1312	4.88
30	N.F. KOKTULI	C	6.2	13.04	0.582	6.91	1.000	991.	237.9	0.0449	18.404	5.119		0.1312	4.88
31	N.F. KOKTULI	Q	5.3	13.04	0.582	6.91	1.000	991.	237.9	0.0449	18.404	5.240		0.1311	4.88
32	N.F. KOKTULI	C	3.5	13.09	0.580	6.91	1.000	992.	237.9	0.0455	18.403	5.469		0.1311	4.88
33	N.F. KOKTULI	E	0.0									5.930			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.85	0.940	3.71	1.000	950.	134.9	0.4461	18.455	0.086	9.62	0.0420	14.53
2	N.F. KOKTULI	C	55.7	6.83	0.887	3.71	1.000	968.	134.7	0.2380	18.457	0.167		0.0420	14.53
3	N.F. KOKTULI	C	48.2	7.15	0.871	3.71	1.000	974.	134.6	0.2039	18.457	0.485		0.0420	14.53
4	N.F. KOKTULI	C	44.8	7.19	0.869	3.71	1.000	974.	134.6	0.1452	18.452	0.628		0.0420	14.53
5	N.F. KOKTULI	C	42.1	7.21	0.868	3.71	1.000	975.	134.6	0.1404	18.451	0.741		0.0420	14.53
6	N.F. KOKTULI	C	41.2	7.22	0.867	3.71	1.000	975.	134.6	0.1192	18.451	0.776		0.0420	14.53
7	N.F. KOKTULI	C	39.8	7.23	0.867	3.71	1.000	975.	134.6	0.1539	18.449	0.837		0.0420	14.53
8	N.F. KOKTULI	C	38.6	7.25	0.866	3.71	1.000	975.	134.6	0.1040	18.447	0.889		0.0420	14.53
9	N.F. KOKTULI	Q	36.8	7.25	0.866	3.71	1.000	975.	134.6	0.1040	18.447	0.964		0.3220	6.48
10	N.F. KOKTULI	C	36.5	7.27	0.865	3.71	1.000	976.	134.6	0.1153	18.447	1.038		0.3220	6.48
11	N.F. KOKTULI	B	36.5									1.040			
12	TRIBUTARY 119	H	38.4	7.18	0.869	3.71	1.000	974.	134.6	0.2333	18.445	0.676	5.84	0.0587	6.48
13	TRIBUTARY 119	T	36.5									0.784			
14	N.F. KOKTULI	J	36.5	7.30	0.863	3.71	1.000	976.	134.6	0.1153	18.448	1.824		0.0993	6.48
15	N.F. KOKTULI	Q	35.8	7.30	0.863	3.71	1.000	976.	134.6	0.1153	18.448	1.900		0.0563	8.20
16	N.F. KOKTULI	C	35.4	7.34	0.861	3.71	1.000	977.	134.6	0.0934	18.449	1.921		0.0563	8.20
17	N.F. KOKTULI	C	34.0	7.39	0.859	3.71	1.000	978.	134.6	0.0895	18.448	2.001		0.0563	8.20
18	N.F. KOKTULI	C	31.0	7.45	0.856	3.71	1.000	979.	134.6	0.0978	18.446	2.168		0.0563	8.20
19	N.F. KOKTULI	C	28.5	7.49	0.854	3.71	1.000	980.	134.6	0.0797	18.445	2.309		0.0563	8.20
20	N.F. KOKTULI	Q	27.9	7.49	0.854	3.71	1.000	980.	134.6	0.0797	18.445	2.340		0.1988	8.20
21	N.F. KOKTULI	C	27.0	7.53	0.851	3.71	1.000	980.	134.5	0.0817	18.444	2.535		0.1988	8.20
22	N.F. KOKTULI	C	24.5	7.69	0.844	3.71	1.000	983.	134.5	0.0944	18.433	3.019		0.1988	8.20
23	N.F. KOKTULI	C	16.0	7.85	0.836	3.71	1.000	986.	134.5	0.0667	18.421	4.706		0.1988	8.20
24	N.F. KOKTULI	C	13.8	7.92	0.833	3.71	1.000	987.	134.5	0.0511	18.418	5.144		0.1988	8.20
25	N.F. KOKTULI	Q	13.7	7.92	0.833	3.71	1.000	987.	134.5	0.0511	18.418	5.170		0.0364	5.02
26	N.F. KOKTULI	C	11.6	7.97	0.830	3.71	1.000	988.	134.5	0.0512	18.417	5.248		0.0364	5.02
27	N.F. KOKTULI	C	9.9	8.01	0.828	3.71	1.000	989.	134.5	0.0490	18.417	5.309		0.0364	5.02
28	N.F. KOKTULI	Q	9.3	8.01	0.828	3.71	1.000	989.	134.5	0.0490	18.417	5.330		0.1312	5.02
29	N.F. KOKTULI	C	7.6	8.06	0.826	3.71	1.000	990.	134.5	0.0501	18.417	5.559		0.1312	5.02
30	N.F. KOKTULI	C	6.2	8.10	0.824	3.71	1.000	991.	134.5	0.0449	18.416	5.739		0.1312	5.02
31	N.F. KOKTULI	Q	5.3	8.10	0.824	3.71	1.000	991.	134.5	0.0449	18.416	5.860		0.1330	5.02
32	N.F. KOKTULI	C	3.5	8.15	0.821	3.71	1.000	992.	134.5	0.0455	18.415	6.092		0.1330	5.02
33	N.F. KOKTULI	E	0.0									6.560			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.60	0.878	2.49	1.000	950.	157.8	0.4460	18.465	0.084	10.03	0.0406	14.90
2	N.F. KOKTULI	C	55.7	9.58	0.829	2.49	1.000	968.	157.6	0.2379	18.467	0.162		0.0406	14.90
3	N.F. KOKTULI	C	48.2	9.90	0.814	2.49	1.000	974.	157.5	0.2039	18.467	0.469		0.0406	14.90
4	N.F. KOKTULI	C	44.8	9.94	0.812	2.49	1.000	974.	157.5	0.1451	18.462	0.607		0.0406	14.90
5	N.F. KOKTULI	C	42.1	9.96	0.811	2.49	1.000	975.	157.5	0.1404	18.461	0.716		0.0406	14.90
6	N.F. KOKTULI	C	41.2	9.97	0.811	2.49	1.000	975.	157.5	0.1192	18.461	0.750		0.0406	14.90
7	N.F. KOKTULI	C	39.8	9.98	0.810	2.49	1.000	975.	157.5	0.1539	18.459	0.810		0.0406	14.90
8	N.F. KOKTULI	C	38.6	10.00	0.809	2.49	1.000	975.	157.5	0.1040	18.457	0.859		0.0406	14.90
9	N.F. KOKTULI	Q	36.8	10.00	0.809	2.49	1.000	975.	157.5	0.1040	18.457	0.932		0.3093	6.57
10	N.F. KOKTULI	C	36.5	10.02	0.808	2.49	1.000	976.	157.5	0.1153	18.457	1.003		0.3093	6.57
11	N.F. KOKTULI	B	36.5									1.005			
12	TRIBUTARY 119	H	38.4	9.93	0.813	2.49	1.000	974.	157.5	0.2332	18.455	0.571	6.29	0.0451	6.57
13	TRIBUTARY 119	T	36.5									0.654			
14	N.F. KOKTULI	J	36.5	10.05	0.807	2.49	1.000	976.	157.5	0.1153	18.458	1.659		0.0954	6.57
15	N.F. KOKTULI	Q	35.8	10.05	0.807	2.49	1.000	976.	157.5	0.1153	18.458	1.732		0.0520	8.45
16	N.F. KOKTULI	C	35.4	10.09	0.805	2.49	1.000	977.	157.5	0.0934	18.459	1.752		0.0520	8.45
17	N.F. KOKTULI	C	34.0	10.14	0.803	2.49	1.000	978.	157.4	0.0895	18.458	1.825		0.0520	8.45
18	N.F. KOKTULI	C	31.0	10.20	0.800	2.49	1.000	979.	157.4	0.0978	18.456	1.980		0.0520	8.45
19	N.F. KOKTULI	C	28.5	10.24	0.798	2.49	1.000	980.	157.4	0.0797	18.455	2.111		0.0520	8.45
20	N.F. KOKTULI	Q	27.9	10.24	0.798	2.49	1.000	980.	157.4	0.0797	18.455	2.139		0.1919	8.45
21	N.F. KOKTULI	C	27.0	10.28	0.796	2.49	1.000	980.	157.4	0.0817	18.454	2.327		0.1919	8.45
22	N.F. KOKTULI	C	24.5	10.44	0.789	2.49	1.000	983.	157.4	0.0944	18.442	2.794		0.1919	8.45
23	N.F. KOKTULI	C	16.0	10.60	0.781	2.49	1.000	986.	157.4	0.0667	18.430	4.423		0.1919	8.45
24	N.F. KOKTULI	C	13.8	10.67	0.778	2.49	1.000	987.	157.4	0.0511	18.428	4.845		0.1919	8.45
25	N.F. KOKTULI	Q	13.7	10.67	0.778	2.49	1.000	987.	157.4	0.0511	18.428	4.870		0.0341	5.39
26	N.F. KOKTULI	C	11.6	10.72	0.776	2.49	1.000	988.	157.4	0.0512	18.427	4.943		0.0341	5.39
27	N.F. KOKTULI	C	9.9	10.76	0.774	2.49	1.000	989.	157.4	0.0490	18.427	5.000		0.0341	5.39
28	N.F. KOKTULI	Q	9.3	10.76	0.774	2.49	1.000	989.	157.4	0.0490	18.427	5.020		0.1312	5.39
29	N.F. KOKTULI	C	7.6	10.81	0.772	2.49	1.000	990.	157.4	0.0501	18.427	5.249		0.1312	5.39
30	N.F. KOKTULI	C	6.2	10.85	0.770	2.49	1.000	991.	157.3	0.0449	18.426	5.429		0.1312	5.39
31	N.F. KOKTULI	Q	5.3	10.85	0.770	2.49	1.000	991.	157.3	0.0449	18.426	5.550		0.1311	5.39
32	N.F. KOKTULI	C	3.5	10.90	0.768	2.49	1.000	992.	157.3	0.0455	18.425	5.779		0.1311	5.39
33	N.F. KOKTULI	E	0.0									6.240			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	13.44	0.735	6.31	1.000	950.	279.8	0.4459	18.472	0.077	12.31	0.0376	15.51
2	N.F. KOKTULI	C	55.7	14.42	0.694	6.31	1.000	968.	279.4	0.2379	18.474	0.150		0.0376	15.51
3	N.F. KOKTULI	C	48.2	14.74	0.681	6.31	1.000	974.	279.3	0.2038	18.474	0.434		0.0376	15.51
4	N.F. KOKTULI	C	44.8	14.78	0.680	6.31	1.000	974.	279.3	0.1451	18.469	0.562		0.0376	15.51
5	N.F. KOKTULI	C	42.1	14.80	0.679	6.31	1.000	975.	279.2	0.1404	18.468	0.663		0.0376	15.51
6	N.F. KOKTULI	C	41.2	14.81	0.679	6.31	1.000	975.	279.2	0.1192	18.468	0.695		0.0376	15.51
7	N.F. KOKTULI	C	39.8	14.82	0.678	6.31	1.000	975.	279.2	0.1539	18.466	0.750		0.0376	15.51
8	N.F. KOKTULI	C	38.6	14.84	0.677	6.31	1.000	975.	279.2	0.1040	18.465	0.796		0.0376	15.51
9	N.F. KOKTULI	Q	36.8	14.84	0.677	6.31	1.000	975.	279.2	0.1040	18.465	0.863		0.2839	6.76
10	N.F. KOKTULI	C	36.5	14.86	0.677	6.31	1.000	976.	279.2	0.1153	18.464	0.928		0.2839	6.76
11	N.F. KOKTULI	B	36.5									0.930			
12	TRIBUTARY 119	H	38.4	14.77	0.680	6.31	1.000	974.	279.3	0.2332	18.462	0.580	7.84	0.0402	6.76
13	TRIBUTARY 119	T	36.5									0.654			
14	N.F. KOKTULI	J	36.5	14.89	0.676	6.31	1.000	976.	279.2	0.1153	18.465	1.584		0.0876	6.76
15	N.F. KOKTULI	Q	35.8	14.89	0.676	6.31	1.000	976.	279.2	0.1153	18.465	1.651		0.0500	8.82
16	N.F. KOKTULI	C	35.4	14.93	0.674	6.31	1.000	977.	279.2	0.0934	18.466	1.670		0.0500	8.82
17	N.F. KOKTULI	C	34.0	14.98	0.672	6.31	1.000	978.	279.2	0.0895	18.465	1.740		0.0500	8.82
18	N.F. KOKTULI	C	31.0	15.04	0.670	6.31	1.000	979.	279.2	0.0978	18.463	1.889		0.0500	8.82
19	N.F. KOKTULI	C	28.5	15.08	0.668	6.31	1.000	980.	279.2	0.0797	18.462	2.015		0.0500	8.82
20	N.F. KOKTULI	Q	27.9	15.08	0.668	6.31	1.000	980.	279.2	0.0797	18.462	2.042		0.1776	8.82
21	N.F. KOKTULI	C	27.0	15.12	0.666	6.31	1.000	980.	279.1	0.0817	18.461	2.216		0.1776	8.82
22	N.F. KOKTULI	C	24.5	15.28	0.660	6.31	1.000	983.	279.1	0.0943	18.450	2.649		0.1776	8.82
23	N.F. KOKTULI	C	16.0	15.44	0.654	6.31	1.000	986.	279.1	0.0667	18.438	4.156		0.1776	8.82
24	N.F. KOKTULI	C	13.8	15.51	0.652	6.31	1.000	987.	279.1	0.0511	18.435	4.547		0.1776	8.82
25	N.F. KOKTULI	Q	13.7	15.51	0.652	6.31	1.000	987.	279.1	0.0511	18.435	4.570		0.0319	6.14
26	N.F. KOKTULI	C	11.6	15.56	0.650	6.31	1.000	988.	279.0	0.0512	18.434	4.638		0.0319	6.14
27	N.F. KOKTULI	C	9.9	15.60	0.648	6.31	1.000	989.	279.0	0.0490	18.434	4.691		0.0319	6.14
28	N.F. KOKTULI	Q	9.3	15.60	0.648	6.31	1.000	989.	279.0	0.0490	18.434	4.710		0.1312	6.14
29	N.F. KOKTULI	C	7.6	15.65	0.646	6.31	1.000	990.	279.0	0.0501	18.434	4.939		0.1312	6.14
30	N.F. KOKTULI	C	6.2	15.69	0.645	6.31	1.000	991.	279.0	0.0449	18.433	5.119		0.1312	6.14
31	N.F. KOKTULI	Q	5.3	15.69	0.645	6.31	1.000	991.	279.0	0.0449	18.433	5.240		0.1311	6.14
32	N.F. KOKTULI	C	3.5	15.74	0.643	6.31	1.000	992.	279.0	0.0455	18.432	5.469		0.1311	6.14
33	N.F. KOKTULI	E	0.0									5.930			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	15.66	0.572	8.23	1.000	950.	273.4	0.4458	18.477	0.079	13.77	0.0382	16.27
2	N.F. KOKTULI	C	55.7	16.64	0.540	8.23	1.000	968.	273.0	0.2379	18.478	0.152		0.0382	16.27
3	N.F. KOKTULI	C	48.2	16.96	0.530	8.23	1.000	974.	272.9	0.2038	18.478	0.442		0.0382	16.27
4	N.F. KOKTULI	C	44.8	17.00	0.529	8.23	1.000	974.	272.9	0.1451	18.473	0.572		0.0382	16.27
5	N.F. KOKTULI	C	42.1	17.02	0.528	8.23	1.000	975.	272.8	0.1404	18.472	0.675		0.0382	16.27
6	N.F. KOKTULI	C	41.2	17.03	0.528	8.23	1.000	975.	272.8	0.1192	18.472	0.707		0.0382	16.27
7	N.F. KOKTULI	C	39.8	17.04	0.528	8.23	1.000	975.	272.8	0.1538	18.470	0.763		0.0382	16.27
8	N.F. KOKTULI	C	38.6	17.06	0.527	8.23	1.000	975.	272.8	0.1040	18.469	0.809		0.0382	16.27
9	N.F. KOKTULI	Q	36.8	17.06	0.527	8.23	1.000	975.	272.8	0.1040	18.469	0.878		0.2881	7.05
10	N.F. KOKTULI	C	36.5	17.08	0.526	8.23	1.000	976.	272.8	0.1153	18.468	0.944		0.2881	7.05
11	N.F. KOKTULI	B	36.5									0.946			
12	TRIBUTARY 119	H	38.4	16.99	0.529	8.23	1.000	974.	272.9	0.2331	18.466	0.656	8.45	0.0424	7.05
13	TRIBUTARY 119	T	36.5									0.734			
14	N.F. KOKTULI	J	36.5	17.11	0.525	8.23	1.000	976.	272.8	0.1153	18.469	1.681		0.0889	7.05
15	N.F. KOKTULI	Q	35.8	17.11	0.525	8.23	1.000	976.	272.8	0.1153	18.469	1.749		0.0526	9.09
16	N.F. KOKTULI	C	35.4	17.15	0.524	8.23	1.000	977.	272.8	0.0934	18.470	1.769		0.0526	9.09
17	N.F. KOKTULI	C	34.0	17.20	0.523	8.23	1.000	978.	272.8	0.0895	18.470	1.843		0.0526	9.09
18	N.F. KOKTULI	C	31.0	17.26	0.521	8.23	1.000	979.	272.8	0.0978	18.468	2.000		0.0526	9.09
19	N.F. KOKTULI	C	28.5	17.30	0.520	8.23	1.000	980.	272.8	0.0797	18.467	2.131		0.0526	9.09
20	N.F. KOKTULI	Q	27.9	17.30	0.520	8.23	1.000	980.	272.8	0.0797	18.467	2.160		0.1749	9.09
21	N.F. KOKTULI	C	27.0	17.34	0.518	8.23	1.000	980.	272.7	0.0817	18.466	2.332		0.1749	9.09
22	N.F. KOKTULI	C	24.5	17.50	0.514	8.23	1.000	983.	272.7	0.0943	18.454	2.757		0.1749	9.09
23	N.F. KOKTULI	C	16.0	17.66	0.509	8.23	1.000	986.	272.7	0.0667	18.442	4.242		0.1749	9.09
24	N.F. KOKTULI	C	13.8	17.73	0.507	8.23	1.000	987.	272.7	0.0511	18.440	4.627		0.1749	9.09
25	N.F. KOKTULI	Q	13.7	17.73	0.507	8.23	1.000	987.	272.7	0.0511	18.440	4.650		0.0319	7.38
26	N.F. KOKTULI	C	11.6	17.78	0.505	8.23	1.000	988.	272.7	0.0512	18.439	4.718		0.0319	7.38
27	N.F. KOKTULI	C	9.9	17.82	0.504	8.23	1.000	989.	272.6	0.0490	18.439	4.771		0.0319	7.38
28	N.F. KOKTULI	Q	9.3	17.82	0.504	8.23	1.000	989.	272.6	0.0490	18.439	4.790		0.1312	7.38
29	N.F. KOKTULI	C	7.6	17.87	0.503	8.23	1.000	990.	272.6	0.0501	18.438	5.019		0.1312	7.38
30	N.F. KOKTULI	C	6.2	17.91	0.501	8.23	1.000	991.	272.6	0.0449	18.438	5.199		0.1312	7.38
31	N.F. KOKTULI	Q	5.3	17.91	0.501	8.23	1.000	991.	272.6	0.0449	18.438	5.320		0.1311	7.38
32	N.F. KOKTULI	C	3.5	17.96	0.500	8.23	1.000	992.	272.6	0.0455	18.437	5.549		0.1311	7.38
33	N.F. KOKTULI	E	0.0									6.010			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.80	0.643	7.51	1.000	950.	213.7	0.4458	18.478	0.076	13.05	0.0369	16.58
2	N.F. KOKTULI	C	55.7	13.78	0.607	7.51	1.000	968.	213.4	0.2379	18.480	0.147		0.0369	16.58
3	N.F. KOKTULI	C	48.2	14.10	0.596	7.51	1.000	974.	213.3	0.2038	18.480	0.427		0.0369	16.58
4	N.F. KOKTULI	C	44.8	14.14	0.595	7.51	1.000	974.	213.3	0.1451	18.475	0.552		0.0369	16.58
5	N.F. KOKTULI	C	42.1	14.16	0.594	7.51	1.000	975.	213.3	0.1404	18.474	0.652		0.0369	16.58
6	N.F. KOKTULI	C	41.2	14.17	0.594	7.51	1.000	975.	213.3	0.1192	18.474	0.683		0.0369	16.58
7	N.F. KOKTULI	C	39.8	14.18	0.593	7.51	1.000	975.	213.3	0.1538	18.472	0.737		0.0369	16.58
8	N.F. KOKTULI	C	38.6	14.20	0.593	7.51	1.000	975.	213.3	0.1040	18.470	0.782		0.0369	16.58
9	N.F. KOKTULI	Q	36.8	14.20	0.593	7.51	1.000	975.	213.3	0.1040	18.470	0.848		0.2797	7.27
10	N.F. KOKTULI	C	36.5	14.22	0.592	7.51	1.000	976.	213.3	0.1153	18.470	0.912		0.2797	7.27
11	N.F. KOKTULI	B	36.5									0.914			
12	TRIBUTARY 119	H	38.4	14.13	0.595	7.51	1.000	974.	213.4	0.2331	18.468	0.608	8.05	0.0370	7.27
13	TRIBUTARY 119	T	36.5									0.676			
14	N.F. KOKTULI	J	36.5	14.25	0.591	7.51	1.000	976.	213.3	0.1153	18.471	1.590		0.0863	7.27
15	N.F. KOKTULI	Q	35.8	14.25	0.591	7.51	1.000	976.	213.3	0.1153	18.471	1.656		0.0501	9.05
16	N.F. KOKTULI	C	35.4	14.29	0.590	7.51	1.000	977.	213.3	0.0934	18.472	1.675		0.0501	9.05
17	N.F. KOKTULI	C	34.0	14.34	0.588	7.51	1.000	978.	213.3	0.0895	18.471	1.746		0.0501	9.05
18	N.F. KOKTULI	C	31.0	14.40	0.586	7.51	1.000	979.	213.3	0.0978	18.469	1.895		0.0501	9.05
19	N.F. KOKTULI	C	28.5	14.44	0.585	7.51	1.000	980.	213.3	0.0797	18.468	2.021		0.0501	9.05
20	N.F. KOKTULI	Q	27.9	14.44	0.585	7.51	1.000	980.	213.3	0.0797	18.468	2.048		0.1716	9.05
21	N.F. KOKTULI	C	27.0	14.48	0.583	7.51	1.000	980.	213.3	0.0817	18.467	2.216		0.1716	9.05
22	N.F. KOKTULI	C	24.5	14.64	0.578	7.51	1.000	983.	213.2	0.0943	18.455	2.634		0.1716	9.05
23	N.F. KOKTULI	C	16.0	14.80	0.572	7.51	1.000	986.	213.2	0.0667	18.443	4.090		0.1716	9.05
24	N.F. KOKTULI	C	13.8	14.87	0.570	7.51	1.000	987.	213.2	0.0511	18.441	4.467		0.1716	9.05
25	N.F. KOKTULI	Q	13.7	14.87	0.570	7.51	1.000	987.	213.2	0.0511	18.441	4.490		0.0319	8.95
26	N.F. KOKTULI	C	11.6	14.92	0.568	7.51	1.000	988.	213.2	0.0512	18.440	4.558		0.0319	8.95
27	N.F. KOKTULI	C	9.9	14.96	0.567	7.51	1.000	989.	213.2	0.0490	18.440	4.611		0.0319	8.95
28	N.F. KOKTULI	Q	9.3	14.96	0.567	7.51	1.000	989.	213.2	0.0490	18.440	4.630		0.1287	8.95
29	N.F. KOKTULI	C	7.6	15.01	0.565	7.51	1.000	990.	213.2	0.0501	18.440	4.855		0.1287	8.95
30	N.F. KOKTULI	C	6.2	15.05	0.564	7.51	1.000	991.	213.2	0.0449	18.439	5.031		0.1287	8.95
31	N.F. KOKTULI	Q	5.3	15.05	0.564	7.51	1.000	991.	213.2	0.0449	18.439	5.150		0.1311	8.95
32	N.F. KOKTULI	C	3.5	15.10	0.562	7.51	1.000	992.	213.1	0.0455	18.438	5.379		0.1311	8.95
33	N.F. KOKTULI	E	0.0									5.840			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.89	1.000	3.13	1.000	950.	56.9	0.4458	18.477	0.073	10.00	0.0355	15.98
2	N.F. KOKTULI	C	55.7	6.87	0.955	3.13	1.000	968.	56.8	0.2379	18.478	0.141		0.0355	15.98
3	N.F. KOKTULI	C	48.2	7.19	0.937	3.13	1.000	974.	56.8	0.2038	18.478	0.410		0.0355	15.98
4	N.F. KOKTULI	C	44.8	7.23	0.935	3.13	1.000	974.	56.8	0.1451	18.473	0.531		0.0355	15.98
5	N.F. KOKTULI	C	42.1	7.25	0.934	3.13	1.000	975.	56.8	0.1404	18.472	0.626		0.0355	15.98
6	N.F. KOKTULI	C	41.2	7.26	0.933	3.13	1.000	975.	56.8	0.1192	18.472	0.656		0.0355	15.98
7	N.F. KOKTULI	C	39.8	7.27	0.933	3.13	1.000	975.	56.8	0.1538	18.470	0.708		0.0355	15.98
8	N.F. KOKTULI	C	38.6	7.29	0.931	3.13	1.000	975.	56.8	0.1040	18.469	0.751		0.0355	15.98
9	N.F. KOKTULI	Q	36.8	7.29	0.931	3.13	1.000	975.	56.8	0.1040	18.469	0.815		0.2669	7.26
10	N.F. KOKTULI	C	36.5	7.31	0.930	3.13	1.000	976.	56.8	0.1153	18.468	0.876		0.2669	7.26
11	N.F. KOKTULI	B	36.5									0.878			
12	TRIBUTARY 119	H	38.4	7.22	0.936	3.13	1.000	974.	56.8	0.2331	18.466	0.577	6.54	0.0343	7.26
13	TRIBUTARY 119	T	36.5									0.640			
14	N.F. KOKTULI	J	36.5	7.34	0.929	3.13	1.000	976.	56.8	0.1153	18.469	1.518		0.0824	7.26
15	N.F. KOKTULI	Q	35.8	7.34	0.929	3.13	1.000	976.	56.8	0.1153	18.469	1.581		0.0482	8.61
16	N.F. KOKTULI	C	35.4	7.38	0.927	3.13	1.000	977.	56.8	0.0934	18.470	1.599		0.0482	8.61
17	N.F. KOKTULI	C	34.0	7.43	0.924	3.13	1.000	978.	56.8	0.0895	18.470	1.667		0.0482	8.61
18	N.F. KOKTULI	C	31.0	7.49	0.921	3.13	1.000	979.	56.8	0.0978	18.468	1.811		0.0482	8.61
19	N.F. KOKTULI	C	28.5	7.53	0.919	3.13	1.000	980.	56.7	0.0797	18.467	1.932		0.0482	8.61
20	N.F. KOKTULI	Q	27.9	7.53	0.919	3.13	1.000	980.	56.7	0.0797	18.467	1.958		0.1589	8.61
21	N.F. KOKTULI	C	27.0	7.57	0.916	3.13	1.000	980.	56.7	0.0817	18.466	2.114		0.1589	8.61
22	N.F. KOKTULI	C	24.5	7.73	0.908	3.13	1.000	983.	56.7	0.0943	18.454	2.501		0.1589	8.61
23	N.F. KOKTULI	C	16.0	7.89	0.899	3.13	1.000	986.	56.7	0.0667	18.442	3.849		0.1589	8.61
24	N.F. KOKTULI	C	13.8	7.96	0.896	3.13	1.000	987.	56.7	0.0511	18.440	4.199		0.1589	8.61
25	N.F. KOKTULI	Q	13.7	7.96	0.896	3.13	1.000	987.	56.7	0.0511	18.440	4.220		0.0296	10.46
26	N.F. KOKTULI	C	11.6	8.01	0.893	3.13	1.000	988.	56.7	0.0512	18.439	4.283		0.0296	10.46
27	N.F. KOKTULI	C	9.9	8.05	0.891	3.13	1.000	989.	56.7	0.0490	18.439	4.333		0.0296	10.46
28	N.F. KOKTULI	Q	9.3	8.05	0.891	3.13	1.000	989.	56.7	0.0490	18.439	4.350		0.1287	10.46
29	N.F. KOKTULI	C	7.6	8.10	0.889	3.13	1.000	990.	56.7	0.0501	18.438	4.575		0.1287	10.46
30	N.F. KOKTULI	C	6.2	8.14	0.886	3.13	1.000	991.	56.7	0.0449	18.438	4.751		0.1287	10.46
31	N.F. KOKTULI	Q	5.3	8.14	0.886	3.13	1.000	991.	56.7	0.0449	18.438	4.870		0.1292	10.46
32	N.F. KOKTULI	C	3.5	8.19	0.884	3.13	1.000	992.	56.7	0.0455	18.437	5.095		0.1292	10.46
33	N.F. KOKTULI	E	0.0									5.550			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.46	1.000	10.47	1.000	950.	36.7	0.4459	18.472	0.111	7.32	0.0537	14.59
2	N.F. KOKTULI	C	55.7	6.44	0.955	10.47	1.000	968.	36.6	0.2379	18.474	0.214		0.0537	14.59
3	N.F. KOKTULI	C	48.2	6.76	0.937	10.47	1.000	974.	36.6	0.2038	18.474	0.621		0.0537	14.59
4	N.F. KOKTULI	C	44.8	6.80	0.935	10.47	1.000	974.	36.6	0.1451	18.469	0.803		0.0537	14.59
5	N.F. KOKTULI	C	42.1	6.82	0.934	10.47	1.000	975.	36.6	0.1404	18.468	0.947		0.0537	14.59
6	N.F. KOKTULI	C	41.2	6.83	0.933	10.47	1.000	975.	36.6	0.1192	18.468	0.993		0.0537	14.59
7	N.F. KOKTULI	C	39.8	6.84	0.933	10.47	1.000	975.	36.6	0.1539	18.466	1.071		0.0537	14.59
8	N.F. KOKTULI	C	38.6	6.86	0.931	10.47	1.000	975.	36.6	0.1040	18.465	1.137		0.0537	14.59
9	N.F. KOKTULI	Q	36.8	6.86	0.931	10.47	1.000	975.	36.6	0.1040	18.465	1.233		0.4153	6.99
10	N.F. KOKTULI	C	36.5	6.88	0.930	10.47	1.000	976.	36.6	0.1153	18.464	1.329		0.4153	6.99
11	N.F. KOKTULI	B	36.5									1.331			
12	TRIBUTARY 119	H	38.4	6.79	0.936	10.47	1.000	974.	36.6	0.2332	18.462	1.372	5.64	0.1055	6.99
13	TRIBUTARY 119	T	36.5									1.566			
14	N.F. KOKTULI	J	36.5	6.91	0.929	10.47	1.000	976.	36.6	0.1153	18.465	2.897		0.1281	6.99
15	N.F. KOKTULI	Q	35.8	6.91	0.929	10.47	1.000	976.	36.6	0.1153	18.465	2.995		0.0910	8.03
16	N.F. KOKTULI	C	35.4	6.95	0.927	10.47	1.000	977.	36.6	0.0934	18.466	3.029		0.0910	8.03
17	N.F. KOKTULI	C	34.0	7.00	0.924	10.47	1.000	978.	36.6	0.0895	18.465	3.158		0.0910	8.03
18	N.F. KOKTULI	C	31.0	7.06	0.921	10.47	1.000	979.	36.6	0.0978	18.463	3.429		0.0910	8.03
19	N.F. KOKTULI	C	28.5	7.10	0.919	10.47	1.000	980.	36.6	0.0797	18.462	3.657		0.0910	8.03
20	N.F. KOKTULI	Q	27.9	7.10	0.919	10.47	1.000	980.	36.6	0.0797	18.462	3.707		0.2025	8.03
21	N.F. KOKTULI	C	27.0	7.14	0.916	10.47	1.000	980.	36.6	0.0817	18.461	3.906		0.2025	8.03
22	N.F. KOKTULI	C	24.5	7.30	0.908	10.47	1.000	983.	36.6	0.0943	18.450	4.399		0.2025	8.03
23	N.F. KOKTULI	C	16.0	7.46	0.899	10.47	1.000	986.	36.6	0.0667	18.438	6.118		0.2025	8.03
24	N.F. KOKTULI	C	13.8	7.53	0.896	10.47	1.000	987.	36.6	0.0511	18.435	6.563		0.2025	8.03
25	N.F. KOKTULI	Q	13.7	7.53	0.896	10.47	1.000	987.	36.6	0.0511	18.435	6.590		0.0455	11.44
26	N.F. KOKTULI	C	11.6	7.58	0.893	10.47	1.000	988.	36.6	0.0512	18.434	6.687		0.0455	11.44
27	N.F. KOKTULI	C	9.9	7.62	0.891	10.47	1.000	989.	36.6	0.0490	18.434	6.764		0.0455	11.44
28	N.F. KOKTULI	Q	9.3	7.62	0.891	10.47	1.000	989.	36.6	0.0490	18.434	6.790		0.1287	11.44
29	N.F. KOKTULI	C	7.6	7.67	0.889	10.47	1.000	990.	36.6	0.0501	18.434	7.015		0.1287	11.44
30	N.F. KOKTULI	C	6.2	7.71	0.887	10.47	1.000	991.	36.6	0.0449	18.433	7.191		0.1287	11.44
31	N.F. KOKTULI	Q	5.3	7.71	0.887	10.47	1.000	991.	36.6	0.0449	18.433	7.310		0.1273	11.44
32	N.F. KOKTULI	C	3.5	7.76	0.884	10.47	1.000	992.	36.6	0.0455	18.432	7.532		0.1273	11.44
33	N.F. KOKTULI	E	0.0									7.980			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.84	0.919	8.20	1.000	950.	105.5	0.4460	18.465	0.201	5.98	0.0977	13.02
2	N.F. KOKTULI	C	55.7	6.82	0.868	8.20	1.000	968.	105.3	0.2379	18.467	0.389		0.0977	13.02
3	N.F. KOKTULI	C	48.2	7.14	0.852	8.20	1.000	974.	105.3	0.2039	18.467	1.130		0.0977	13.02
4	N.F. KOKTULI	C	44.8	7.18	0.850	8.20	1.000	974.	105.3	0.1451	18.462	1.462		0.0977	13.02
5	N.F. KOKTULI	C	42.1	7.20	0.849	8.20	1.000	975.	105.3	0.1404	18.461	1.725		0.0977	13.02
6	N.F. KOKTULI	C	41.2	7.21	0.848	8.20	1.000	975.	105.3	0.1192	18.461	1.808		0.0977	13.02
7	N.F. KOKTULI	C	39.8	7.22	0.848	8.20	1.000	975.	105.3	0.1539	18.459	1.950		0.0977	13.02
8	N.F. KOKTULI	C	38.6	7.24	0.847	8.20	1.000	975.	105.3	0.1040	18.457	2.069		0.0977	13.02
9	N.F. KOKTULI	Q	36.8	7.24	0.847	8.20	1.000	975.	105.3	0.1040	18.457	2.245		0.7966	6.61
10	N.F. KOKTULI	C	36.5	7.26	0.846	8.20	1.000	976.	105.3	0.1153	18.457	2.428		0.7966	6.61
11	N.F. KOKTULI	B	36.5									2.433			
12	TRIBUTARY 119	H	38.4	7.17	0.851	8.20	1.000	974.	105.3	0.2332	18.455	1.595	4.94	0.1582	6.61
13	TRIBUTARY 119	T	36.5									1.886			
14	N.F. KOKTULI	J	36.5	7.29	0.845	8.20	1.000	976.	105.3	0.1153	18.458	4.319		0.2444	6.61
15	N.F. KOKTULI	Q	35.8	7.29	0.845	8.20	1.000	976.	105.3	0.1153	18.458	4.506		0.1894	7.48
16	N.F. KOKTULI	C	35.4	7.33	0.843	8.20	1.000	977.	105.3	0.0934	18.459	4.577		0.1894	7.48
17	N.F. KOKTULI	C	34.0	7.38	0.840	8.20	1.000	978.	105.3	0.0895	18.458	4.844		0.1894	7.48
18	N.F. KOKTULI	C	31.0	7.44	0.837	8.20	1.000	979.	105.3	0.0978	18.456	5.409		0.1894	7.48
19	N.F. KOKTULI	C	28.5	7.48	0.835	8.20	1.000	980.	105.3	0.0797	18.455	5.884		0.1894	7.48
20	N.F. KOKTULI	Q	27.9	7.48	0.835	8.20	1.000	980.	105.3	0.0797	18.455	5.987		0.3845	7.48
21	N.F. KOKTULI	C	27.0	7.52	0.833	8.20	1.000	980.	105.3	0.0817	18.454	6.364		0.3845	7.48
22	N.F. KOKTULI	C	24.5	7.68	0.825	8.20	1.000	983.	105.2	0.0944	18.442	7.300		0.3845	7.48
23	N.F. KOKTULI	C	16.0	7.84	0.818	8.20	1.000	986.	105.2	0.0667	18.430	10.563		0.3845	7.48
24	N.F. KOKTULI	C	13.8	7.91	0.815	8.20	1.000	987.	105.2	0.0511	18.428	11.409		0.3845	7.48
25	N.F. KOKTULI	Q	13.7	7.91	0.815	8.20	1.000	987.	105.2	0.0511	18.428	11.460		0.0774	11.76
26	N.F. KOKTULI	C	11.6	7.96	0.812	8.20	1.000	988.	105.2	0.0512	18.427	11.625		0.0774	11.76
27	N.F. KOKTULI	C	9.9	8.00	0.810	8.20	1.000	989.	105.2	0.0490	18.427	11.755		0.0774	11.76
28	N.F. KOKTULI	Q	9.3	8.00	0.810	8.20	1.000	989.	105.2	0.0490	18.427	11.800		0.3316	11.76
29	N.F. KOKTULI	C	7.6	8.05	0.808	8.20	1.000	990.	105.2	0.0501	18.427	12.380		0.3316	11.76
30	N.F. KOKTULI	C	6.2	8.09	0.806	8.20	1.000	991.	105.2	0.0449	18.426	12.834		0.3316	11.76
31	N.F. KOKTULI	Q	5.3	8.09	0.806	8.20	1.000	991.	105.2	0.0449	18.426	13.140		0.3305	11.76
32	N.F. KOKTULI	C	3.5	8.14	0.803	8.20	1.000	992.	105.2	0.0455	18.425	13.717		0.3305	11.76
33	N.F. KOKTULI	E	0.0									14.880			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.25	0.878	7.88	1.000	950.	123.8	0.4461	18.455	0.123	7.36	0.0596	11.96
2	N.F. KOKTULI	C	55.7	7.23	0.829	7.88	1.000	968.	123.7	0.2380	18.457	0.238		0.0596	11.96
3	N.F. KOKTULI	C	48.2	7.55	0.814	7.88	1.000	974.	123.6	0.2039	18.457	0.690		0.0596	11.96
4	N.F. KOKTULI	C	44.8	7.59	0.812	7.88	1.000	974.	123.6	0.1452	18.452	0.892		0.0596	11.96
5	N.F. KOKTULI	C	42.1	7.61	0.811	7.88	1.000	975.	123.6	0.1404	18.451	1.053		0.0596	11.96
6	N.F. KOKTULI	C	41.2	7.62	0.811	7.88	1.000	975.	123.6	0.1192	18.451	1.103		0.0596	11.96
7	N.F. KOKTULI	C	39.8	7.63	0.810	7.88	1.000	975.	123.6	0.1539	18.449	1.190		0.0596	11.96
8	N.F. KOKTULI	C	38.6	7.65	0.809	7.88	1.000	975.	123.6	0.1040	18.447	1.263		0.0596	11.96
9	N.F. KOKTULI	Q	36.8	7.65	0.809	7.88	1.000	975.	123.6	0.1040	18.447	1.370		0.4703	6.35
10	N.F. KOKTULI	C	36.5	7.67	0.808	7.88	1.000	976.	123.6	0.1153	18.447	1.478		0.4703	6.35
11	N.F. KOKTULI	B	36.5									1.481			
12	TRIBUTARY 119	H	38.4	7.58	0.813	7.88	1.000	974.	123.6	0.2333	18.445	0.833	5.88	0.0740	6.35
13	TRIBUTARY 119	T	36.5									0.969			
14	N.F. KOKTULI	J	36.5	7.70	0.807	7.88	1.000	976.	123.6	0.1153	18.448	2.449		0.1451	6.35
15	N.F. KOKTULI	Q	35.8	7.70	0.807	7.88	1.000	976.	123.6	0.1153	18.448	2.560		0.0726	7.08
16	N.F. KOKTULI	C	35.4	7.74	0.805	7.88	1.000	977.	123.6	0.0934	18.449	2.587		0.0726	7.08
17	N.F. KOKTULI	C	34.0	7.79	0.803	7.88	1.000	978.	123.6	0.0895	18.448	2.690		0.0726	7.08
18	N.F. KOKTULI	C	31.0	7.85	0.800	7.88	1.000	979.	123.6	0.0978	18.446	2.906		0.0726	7.08
19	N.F. KOKTULI	C	28.5	7.89	0.798	7.88	1.000	980.	123.6	0.0797	18.445	3.088		0.0726	7.08
20	N.F. KOKTULI	Q	27.9	7.89	0.798	7.88	1.000	980.	123.6	0.0797	18.445	3.128		0.3022	7.08
21	N.F. KOKTULI	C	27.0	7.93	0.796	7.88	1.000	980.	123.6	0.0817	18.444	3.424		0.3022	7.08
22	N.F. KOKTULI	C	24.5	8.09	0.789	7.88	1.000	983.	123.6	0.0944	18.433	4.160		0.3022	7.08
23	N.F. KOKTULI	C	16.0	8.25	0.781	7.88	1.000	986.	123.5	0.0667	18.421	6.725		0.3022	7.08
24	N.F. KOKTULI	C	13.8	8.32	0.778	7.88	1.000	987.	123.5	0.0511	18.418	7.390		0.3022	7.08
25	N.F. KOKTULI	Q	13.7	8.32	0.778	7.88	1.000	987.	123.5	0.0511	18.418	7.430		0.0523	11.65
26	N.F. KOKTULI	C	11.6	8.37	0.776	7.88	1.000	988.	123.5	0.0512	18.417	7.542		0.0523	11.65
27	N.F. KOKTULI	C	9.9	8.41	0.774	7.88	1.000	989.	123.5	0.0490	18.417	7.630		0.0523	11.65
28	N.F. KOKTULI	Q	9.3	8.41	0.774	7.88	1.000	989.	123.5	0.0490	18.417	7.660		0.1237	11.65
29	N.F. KOKTULI	C	7.6	8.46	0.772	7.88	1.000	990.	123.5	0.0501	18.417	7.876		0.1237	11.65
30	N.F. KOKTULI	C	6.2	8.50	0.770	7.88	1.000	991.	123.5	0.0449	18.416	8.046		0.1237	11.65
31	N.F. KOKTULI	Q	5.3	8.50	0.770	7.88	1.000	991.	123.5	0.0449	18.416	8.160		0.1216	11.65
32	N.F. KOKTULI	C	3.5	8.55	0.768	7.88	1.000	992.	123.5	0.0455	18.415	8.372		0.1216	11.65
33	N.F. KOKTULI	E	0.0									8.800			

YEAR: 2007 TIME PERIOD: 26-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.65	0.746	4.13	1.000	950.	265.1	0.4463	18.442	0.095	9.04	0.0461	11.58
2	N.F. KOKTULI	C	55.7	9.63	0.704	4.13	1.000	968.	264.7	0.2380	18.444	0.184		0.0461	11.58
3	N.F. KOKTULI	C	48.2	9.95	0.691	4.13	1.000	974.	264.6	0.2040	18.444	0.533		0.0461	11.58
4	N.F. KOKTULI	C	44.8	9.99	0.689	4.13	1.000	974.	264.6	0.1452	18.439	0.690		0.0461	11.58
5	N.F. KOKTULI	C	42.1	10.01	0.688	4.13	1.000	975.	264.6	0.1405	18.438	0.814		0.0461	11.58
6	N.F. KOKTULI	C	41.2	10.02	0.688	4.13	1.000	975.	264.6	0.1192	18.438	0.853		0.0461	11.58
7	N.F. KOKTULI	C	39.8	10.03	0.688	4.13	1.000	975.	264.6	0.1540	18.436	0.921		0.0461	11.58
8	N.F. KOKTULI	C	38.6	10.05	0.687	4.13	1.000	975.	264.6	0.1040	18.435	0.977		0.0461	11.58
9	N.F. KOKTULI	Q	36.8	10.05	0.687	4.13	1.000	975.	264.6	0.1040	18.435	1.060		0.3559	6.27
10	N.F. KOKTULI	C	36.5	10.07	0.686	4.13	1.000	976.	264.6	0.1153	18.434	1.142		0.3559	6.27
11	N.F. KOKTULI	B	36.5									1.144			
12	TRIBUTARY 119	H	38.4	9.98	0.690	4.13	1.000	974.	264.6	0.2333	18.432	0.617	6.97	0.0473	6.27
13	TRIBUTARY 119	T	36.5									0.704			
14	N.F. KOKTULI	J	36.5	10.10	0.685	4.13	1.000	976.	264.6	0.1153	18.435	1.848		0.1098	6.27
15	N.F. KOKTULI	Q	35.8	10.10	0.685	4.13	1.000	976.	264.6	0.1153	18.435	1.932		0.0572	6.68
16	N.F. KOKTULI	C	35.4	10.14	0.683	4.13	1.000	977.	264.6	0.0933	18.436	1.953		0.0572	6.68
17	N.F. KOKTULI	C	34.0	10.19	0.681	4.13	1.000	978.	264.6	0.0894	18.435	2.034		0.0572	6.68
18	N.F. KOKTULI	C	31.0	10.25	0.679	4.13	1.000	979.	264.5	0.0978	18.433	2.205		0.0572	6.68
19	N.F. KOKTULI	C	28.5	10.29	0.677	4.13	1.000	980.	264.5	0.0797	18.432	2.348		0.0572	6.68
20	N.F. KOKTULI	Q	27.9	10.29	0.677	4.13	1.000	980.	264.5	0.0797	18.432	2.379		0.2158	6.68
21	N.F. KOKTULI	C	27.0	10.33	0.676	4.13	1.000	980.	264.5	0.0817	18.431	2.591		0.2158	6.68
22	N.F. KOKTULI	C	24.5	10.49	0.670	4.13	1.000	983.	264.5	0.0944	18.420	3.116		0.2158	6.68
23	N.F. KOKTULI	C	16.0	10.65	0.663	4.13	1.000	986.	264.5	0.0667	18.408	4.947		0.2158	6.68
24	N.F. KOKTULI	C	13.8	10.72	0.661	4.13	1.000	987.	264.5	0.0511	18.406	5.422		0.2158	6.68
25	N.F. KOKTULI	Q	13.7	10.72	0.661	4.13	1.000	987.	264.5	0.0511	18.406	5.450		0.0364	11.38
26	N.F. KOKTULI	C	11.6	10.77	0.659	4.13	1.000	988.	264.4	0.0512	18.405	5.528		0.0364	11.38
27	N.F. KOKTULI	C	9.9	10.81	0.657	4.13	1.000	989.	264.4	0.0489	18.405	5.589		0.0364	11.38
28	N.F. KOKTULI	Q	9.3	10.81	0.657	4.13	1.000	989.	264.4	0.0489	18.405	5.610		0.1312	11.38
29	N.F. KOKTULI	C	7.6	10.86	0.655	4.13	1.000	990.	264.4	0.0501	18.404	5.839		0.1312	11.38
30	N.F. KOKTULI	C	6.2	10.90	0.654	4.13	1.000	991.	264.4	0.0449	18.404	6.019		0.1312	11.38
31	N.F. KOKTULI	Q	5.3	10.90	0.654	4.13	1.000	991.	264.4	0.0449	18.404	6.140		0.1330	11.38
32	N.F. KOKTULI	C	3.5	10.95	0.652	4.13	1.000	992.	264.4	0.0455	18.403	6.372		0.1330	11.38
33	N.F. KOKTULI	E	0.0									6.840			

YEAR: 2007 TIME PERIOD: 27-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.17	0.705	3.57	1.000	950.	263.3	0.4465	18.427	0.081	10.85	0.0392	11.91
2	N.F. KOKTULI	C	55.7	12.15	0.665	3.57	1.000	968.	262.9	0.2381	18.428	0.156		0.0392	11.91
3	N.F. KOKTULI	C	48.2	12.47	0.653	3.57	1.000	974.	262.8	0.2041	18.428	0.453		0.0392	11.91
4	N.F. KOKTULI	C	44.8	12.51	0.652	3.57	1.000	974.	262.8	0.1452	18.424	0.586		0.0392	11.91
5	N.F. KOKTULI	C	42.1	12.53	0.651	3.57	1.000	975.	262.8	0.1405	18.422	0.692		0.0392	11.91
6	N.F. KOKTULI	C	41.2	12.54	0.650	3.57	1.000	975.	262.8	0.1192	18.422	0.725		0.0392	11.91
7	N.F. KOKTULI	C	39.8	12.55	0.650	3.57	1.000	975.	262.8	0.1540	18.420	0.782		0.0392	11.91
8	N.F. KOKTULI	C	38.6	12.57	0.649	3.57	1.000	975.	262.8	0.1040	18.419	0.830		0.0392	11.91
9	N.F. KOKTULI	Q	36.8	12.57	0.649	3.57	1.000	975.	262.8	0.1040	18.419	0.900		0.2966	6.39
10	N.F. KOKTULI	C	36.5	12.59	0.648	3.57	1.000	976.	262.8	0.1153	18.419	0.968		0.2966	6.39
11	N.F. KOKTULI	B	36.5									0.970			
12	TRIBUTARY 119	H	38.4	12.50	0.652	3.57	1.000	974.	262.8	0.2334	18.416	0.521	7.78	0.0381	6.39
13	TRIBUTARY 119	T	36.5									0.591			
14	N.F. KOKTULI	J	36.5	12.62	0.648	3.57	1.000	976.	262.8	0.1153	18.419	1.561		0.0915	6.39
15	N.F. KOKTULI	Q	35.8	12.62	0.648	3.57	1.000	976.	262.8	0.1153	18.419	1.631		0.0495	6.26
16	N.F. KOKTULI	C	35.4	12.66	0.646	3.57	1.000	977.	262.7	0.0933	18.420	1.650		0.0495	6.26
17	N.F. KOKTULI	C	34.0	12.71	0.644	3.57	1.000	978.	262.7	0.0894	18.420	1.719		0.0495	6.26
18	N.F. KOKTULI	C	31.0	12.77	0.642	3.57	1.000	979.	262.7	0.0978	18.418	1.867		0.0495	6.26
19	N.F. KOKTULI	C	28.5	12.81	0.640	3.57	1.000	980.	262.7	0.0797	18.417	1.991		0.0495	6.26
20	N.F. KOKTULI	Q	27.9	12.81	0.640	3.57	1.000	980.	262.7	0.0797	18.417	2.018		0.1814	6.26
21	N.F. KOKTULI	C	27.0	12.85	0.639	3.57	1.000	980.	262.7	0.0817	18.416	2.196		0.1814	6.26
22	N.F. KOKTULI	C	24.5	13.01	0.633	3.57	1.000	983.	262.7	0.0945	18.404	2.637		0.1814	6.26
23	N.F. KOKTULI	C	16.0	13.17	0.627	3.57	1.000	986.	262.6	0.0667	18.392	4.177		0.1814	6.26
24	N.F. KOKTULI	C	13.8	13.24	0.624	3.57	1.000	987.	262.6	0.0510	18.390	4.576		0.1814	6.26
25	N.F. KOKTULI	Q	13.7	13.24	0.624	3.57	1.000	987.	262.6	0.0510	18.390	4.600		0.0319	11.33
26	N.F. KOKTULI	C	11.6	13.29	0.623	3.57	1.000	988.	262.6	0.0512	18.389	4.668		0.0319	11.33
27	N.F. KOKTULI	C	9.9	13.33	0.621	3.57	1.000	989.	262.6	0.0489	18.389	4.721		0.0319	11.33
28	N.F. KOKTULI	Q	9.3	13.33	0.621	3.57	1.000	989.	262.6	0.0489	18.389	4.740		0.1312	11.33
29	N.F. KOKTULI	C	7.6	13.38	0.619	3.57	1.000	990.	262.6	0.0501	18.389	4.969		0.1312	11.33
30	N.F. KOKTULI	C	6.2	13.42	0.618	3.57	1.000	991.	262.6	0.0449	18.388	5.149		0.1312	11.33
31	N.F. KOKTULI	Q	5.3	13.42	0.618	3.57	1.000	991.	262.6	0.0449	18.388	5.270		0.1311	11.33
32	N.F. KOKTULI	C	3.5	13.47	0.616	3.57	1.000	992.	262.5	0.0455	18.387	5.499		0.1311	11.33
33	N.F. KOKTULI	E	0.0									5.960			

YEAR: 2007 TIME PERIOD: 28-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.15	0.909	2.86	1.000	950.	86.2	0.4468	18.408	0.078	10.21	0.0379	12.64
2	N.F. KOKTULI	C	55.7	9.13	0.858	2.86	1.000	968.	86.1	0.2382	18.410	0.151		0.0379	12.64
3	N.F. KOKTULI	C	48.2	9.45	0.842	2.86	1.000	974.	86.1	0.2042	18.410	0.438		0.0379	12.64
4	N.F. KOKTULI	C	44.8	9.49	0.840	2.86	1.000	974.	86.1	0.1452	18.405	0.567		0.0379	12.64
5	N.F. KOKTULI	C	42.1	9.51	0.839	2.86	1.000	975.	86.1	0.1405	18.404	0.669		0.0379	12.64
6	N.F. KOKTULI	C	41.2	9.52	0.839	2.86	1.000	975.	86.1	0.1192	18.404	0.701		0.0379	12.64
7	N.F. KOKTULI	C	39.8	9.53	0.838	2.86	1.000	975.	86.1	0.1541	18.402	0.756		0.0379	12.64
8	N.F. KOKTULI	C	38.6	9.55	0.837	2.86	1.000	975.	86.1	0.1039	18.401	0.802		0.0379	12.64
9	N.F. KOKTULI	Q	36.8	9.55	0.837	2.86	1.000	975.	86.1	0.1039	18.401	0.870		0.2881	6.62
10	N.F. KOKTULI	C	36.5	9.57	0.836	2.86	1.000	976.	86.1	0.1154	18.400	0.936		0.2881	6.62
11	N.F. KOKTULI	B	36.5									0.938			
12	TRIBUTARY 119	H	38.4	9.48	0.841	2.86	1.000	974.	86.1	0.2335	18.398	0.499	7.15	0.0370	6.62
13	TRIBUTARY 119	T	36.5									0.567			
14	N.F. KOKTULI	J	36.5	9.60	0.835	2.86	1.000	976.	86.1	0.1154	18.401	1.506		0.0876	6.62
15	N.F. KOKTULI	Q	35.8	9.60	0.835	2.86	1.000	976.	86.1	0.1154	18.401	1.573		0.0481	5.72
16	N.F. KOKTULI	C	35.4	9.64	0.833	2.86	1.000	977.	86.0	0.0933	18.402	1.591		0.0481	5.72
17	N.F. KOKTULI	C	34.0	9.69	0.831	2.86	1.000	978.	86.0	0.0894	18.401	1.659		0.0481	5.72
18	N.F. KOKTULI	C	31.0	9.75	0.828	2.86	1.000	979.	86.0	0.0979	18.399	1.802		0.0481	5.72
19	N.F. KOKTULI	C	28.5	9.79	0.826	2.86	1.000	980.	86.0	0.0796	18.398	1.923		0.0481	5.72
20	N.F. KOKTULI	Q	27.9	9.79	0.826	2.86	1.000	980.	86.0	0.0796	18.398	1.949		0.1610	5.72
21	N.F. KOKTULI	C	27.0	9.83	0.824	2.86	1.000	980.	86.0	0.0817	18.397	2.107		0.1610	5.72
22	N.F. KOKTULI	C	24.5	9.99	0.816	2.86	1.000	983.	86.0	0.0946	18.386	2.499		0.1610	5.72
23	N.F. KOKTULI	C	16.0	10.15	0.809	2.86	1.000	986.	86.0	0.0667	18.374	3.865		0.1610	5.72
24	N.F. KOKTULI	C	13.8	10.22	0.805	2.86	1.000	987.	86.0	0.0510	18.372	4.219		0.1610	5.72
25	N.F. KOKTULI	Q	13.7	10.22	0.805	2.86	1.000	987.	86.0	0.0510	18.372	4.240		0.0319	11.59
26	N.F. KOKTULI	C	11.6	10.27	0.803	2.86	1.000	988.	86.0	0.0511	18.371	4.308		0.0319	11.59
27	N.F. KOKTULI	C	9.9	10.31	0.801	2.86	1.000	989.	86.0	0.0489	18.371	4.361		0.0319	11.59
28	N.F. KOKTULI	Q	9.3	10.31	0.801	2.86	1.000	989.	86.0	0.0489	18.371	4.380		0.1287	11.59
29	N.F. KOKTULI	C	7.6	10.36	0.799	2.86	1.000	990.	86.0	0.0501	18.371	4.605		0.1287	11.59
30	N.F. KOKTULI	C	6.2	10.40	0.797	2.86	1.000	991.	86.0	0.0449	18.370	4.781		0.1287	11.59
31	N.F. KOKTULI	Q	5.3	10.40	0.797	2.86	1.000	991.	86.0	0.0449	18.370	4.900		0.1292	11.59
32	N.F. KOKTULI	C	3.5	10.45	0.794	2.86	1.000	992.	86.0	0.0455	18.369	5.125		0.1292	11.59
33	N.F. KOKTULI	E	0.0									5.580			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.16	0.756	3.91	1.000	950.	285.3	0.4471	18.387	0.075	11.38	0.0366	13.33
2	N.F. KOKTULI	C	55.7	11.14	0.714	3.91	1.000	968.	284.9	0.2383	18.389	0.146		0.0366	13.33
3	N.F. KOKTULI	C	48.2	11.46	0.700	3.91	1.000	974.	284.7	0.2043	18.389	0.423		0.0366	13.33
4	N.F. KOKTULI	C	44.8	11.50	0.699	3.91	1.000	974.	284.7	0.1453	18.384	0.548		0.0366	13.33
5	N.F. KOKTULI	C	42.1	11.52	0.698	3.91	1.000	975.	284.7	0.1406	18.383	0.646		0.0366	13.33
6	N.F. KOKTULI	C	41.2	11.53	0.698	3.91	1.000	975.	284.7	0.1192	18.383	0.677		0.0366	13.33
7	N.F. KOKTULI	C	39.8	11.54	0.697	3.91	1.000	975.	284.7	0.1542	18.381	0.730		0.0366	13.33
8	N.F. KOKTULI	C	38.6	11.56	0.696	3.91	1.000	975.	284.7	0.1039	18.379	0.775		0.0366	13.33
9	N.F. KOKTULI	Q	36.8	11.56	0.696	3.91	1.000	975.	284.7	0.1039	18.379	0.841		0.2754	6.82
10	N.F. KOKTULI	C	36.5	11.58	0.695	3.91	1.000	976.	284.7	0.1154	18.379	0.904		0.2754	6.82
11	N.F. KOKTULI	B	36.5									0.906			
12	TRIBUTARY 119	H	38.4	11.49	0.699	3.91	1.000	974.	284.8	0.2337	18.377	0.453	7.94	0.0359	6.82
13	TRIBUTARY 119	T	36.5									0.519			
14	N.F. KOKTULI	J	36.5	11.61	0.694	3.91	1.000	976.	284.7	0.1154	18.380	1.425		0.0850	6.82
15	N.F. KOKTULI	Q	35.8	11.61	0.694	3.91	1.000	976.	284.7	0.1154	18.380	1.490		0.0458	5.07
16	N.F. KOKTULI	C	35.4	11.65	0.693	3.91	1.000	977.	284.7	0.0932	18.381	1.507		0.0458	5.07
17	N.F. KOKTULI	C	34.0	11.70	0.691	3.91	1.000	978.	284.7	0.0894	18.380	1.572		0.0458	5.07
18	N.F. KOKTULI	C	31.0	11.76	0.688	3.91	1.000	979.	284.7	0.0979	18.378	1.708		0.0458	5.07
19	N.F. KOKTULI	C	28.5	11.80	0.687	3.91	1.000	980.	284.7	0.0796	18.377	1.823		0.0458	5.07
20	N.F. KOKTULI	Q	27.9	11.80	0.687	3.91	1.000	980.	284.7	0.0796	18.377	1.848		0.1568	5.07
21	N.F. KOKTULI	C	27.0	11.84	0.685	3.91	1.000	980.	284.6	0.0817	18.376	2.002		0.1568	5.07
22	N.F. KOKTULI	C	24.5	12.00	0.679	3.91	1.000	983.	284.6	0.0947	18.365	2.383		0.1568	5.07
23	N.F. KOKTULI	C	16.0	12.16	0.672	3.91	1.000	986.	284.6	0.0666	18.353	3.714		0.1568	5.07
24	N.F. KOKTULI	C	13.8	12.23	0.670	3.91	1.000	987.	284.6	0.0510	18.351	4.059		0.1568	5.07
25	N.F. KOKTULI	Q	13.7	12.23	0.670	3.91	1.000	987.	284.6	0.0510	18.351	4.080		0.0296	11.94
26	N.F. KOKTULI	C	11.6	12.28	0.668	3.91	1.000	988.	284.6	0.0511	18.350	4.143		0.0296	11.94
27	N.F. KOKTULI	C	9.9	12.32	0.666	3.91	1.000	989.	284.5	0.0489	18.350	4.193		0.0296	11.94
28	N.F. KOKTULI	Q	9.3	12.32	0.666	3.91	1.000	989.	284.5	0.0489	18.350	4.210		0.1287	11.94
29	N.F. KOKTULI	C	7.6	12.37	0.664	3.91	1.000	990.	284.5	0.0501	18.350	4.435		0.1287	11.94
30	N.F. KOKTULI	C	6.2	12.41	0.663	3.91	1.000	991.	284.5	0.0449	18.349	4.611		0.1287	11.94
31	N.F. KOKTULI	Q	5.3	12.41	0.663	3.91	1.000	991.	284.5	0.0449	18.349	4.730		0.1292	11.94
32	N.F. KOKTULI	C	3.5	12.46	0.660	3.91	1.000	992.	284.5	0.0455	18.348	4.955		0.1292	11.94
33	N.F. KOKTULI	E	0.0									5.410			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.84	0.909	3.13	1.000	950.	166.0	0.4475	18.363	0.072	11.11	0.0348	13.98
2	N.F. KOKTULI	C	55.7	9.82	0.858	3.13	1.000	968.	165.8	0.2384	18.365	0.139		0.0348	13.98
3	N.F. KOKTULI	C	48.2	10.14	0.842	3.13	1.000	974.	165.7	0.2044	18.365	0.402		0.0348	13.98
4	N.F. KOKTULI	C	44.8	10.18	0.840	3.13	1.000	974.	165.7	0.1453	18.360	0.520		0.0348	13.98
5	N.F. KOKTULI	C	42.1	10.20	0.839	3.13	1.000	975.	165.7	0.1406	18.359	0.614		0.0348	13.98
6	N.F. KOKTULI	C	41.2	10.21	0.839	3.13	1.000	975.	165.7	0.1191	18.359	0.643		0.0348	13.98
7	N.F. KOKTULI	C	39.8	10.22	0.838	3.13	1.000	975.	165.7	0.1543	18.357	0.694		0.0348	13.98
8	N.F. KOKTULI	C	38.6	10.24	0.837	3.13	1.000	975.	165.7	0.1039	18.356	0.737		0.0348	13.98
9	N.F. KOKTULI	Q	36.8	10.24	0.837	3.13	1.000	975.	165.7	0.1039	18.356	0.799		0.2627	7.02
10	N.F. KOKTULI	C	36.5	10.26	0.836	3.13	1.000	976.	165.7	0.1154	18.355	0.859		0.2627	7.02
11	N.F. KOKTULI	B	36.5									0.861			
12	TRIBUTARY 119	H	38.4	10.17	0.841	3.13	1.000	974.	165.7	0.2338	18.353	0.425	7.93	0.0337	7.02
13	TRIBUTARY 119	T	36.5									0.487			
14	N.F. KOKTULI	J	36.5	10.29	0.835	3.13	1.000	976.	165.7	0.1154	18.356	1.348		0.0810	7.02
15	N.F. KOKTULI	Q	35.8	10.29	0.835	3.13	1.000	976.	165.7	0.1154	18.356	1.410		0.0436	4.79
16	N.F. KOKTULI	C	35.4	10.33	0.833	3.13	1.000	977.	165.7	0.0932	18.357	1.426		0.0436	4.79
17	N.F. KOKTULI	C	34.0	10.38	0.831	3.13	1.000	978.	165.7	0.0893	18.356	1.488		0.0436	4.79
18	N.F. KOKTULI	C	31.0	10.44	0.828	3.13	1.000	979.	165.7	0.0979	18.354	1.618		0.0436	4.79
19	N.F. KOKTULI	C	28.5	10.48	0.826	3.13	1.000	980.	165.7	0.0796	18.353	1.727		0.0436	4.79
20	N.F. KOKTULI	Q	27.9	10.48	0.826	3.13	1.000	980.	165.7	0.0796	18.353	1.751		0.1432	4.79
21	N.F. KOKTULI	C	27.0	10.52	0.824	3.13	1.000	980.	165.6	0.0816	18.353	1.892		0.1432	4.79
22	N.F. KOKTULI	C	24.5	10.68	0.816	3.13	1.000	983.	165.6	0.0948	18.341	2.240		0.1432	4.79
23	N.F. KOKTULI	C	16.0	10.84	0.809	3.13	1.000	986.	165.6	0.0666	18.329	3.456		0.1432	4.79
24	N.F. KOKTULI	C	13.8	10.91	0.805	3.13	1.000	987.	165.6	0.0510	18.327	3.771		0.1432	4.79
25	N.F. KOKTULI	Q	13.7	10.91	0.805	3.13	1.000	987.	165.6	0.0510	18.327	3.790		0.0250	12.51
26	N.F. KOKTULI	C	11.6	10.96	0.803	3.13	1.000	988.	165.6	0.0511	18.326	3.843		0.0250	12.51
27	N.F. KOKTULI	C	9.9	11.00	0.801	3.13	1.000	989.	165.6	0.0489	18.326	3.885		0.0250	12.51
28	N.F. KOKTULI	Q	9.3	11.00	0.801	3.13	1.000	989.	165.6	0.0489	18.326	3.900		0.1287	12.51
29	N.F. KOKTULI	C	7.6	11.05	0.799	3.13	1.000	990.	165.6	0.0501	18.326	4.125		0.1287	12.51
30	N.F. KOKTULI	C	6.2	11.09	0.797	3.13	1.000	991.	165.6	0.0448	18.325	4.301		0.1287	12.51
31	N.F. KOKTULI	Q	5.3	11.09	0.797	3.13	1.000	991.	165.6	0.0448	18.325	4.420		0.1273	12.51
32	N.F. KOKTULI	C	3.5	11.14	0.794	3.13	1.000	992.	165.6	0.0455	18.324	4.642		0.1273	12.51
33	N.F. KOKTULI	E	0.0									5.090			

YEAR: 2007 TIME PERIOD: 1-Jul PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.04	0.837	3.39	1.000	950.	139.4	0.4479	18.337	0.069	10.27	0.0337	14.51
2	N.F. KOKTULI	C	55.7	11.02	0.791	3.39	1.000	968.	139.2	0.2385	18.338	0.134		0.0337	14.51
3	N.F. KOKTULI	C	48.2	11.34	0.776	3.39	1.000	974.	139.2	0.2045	18.338	0.390		0.0337	14.51
4	N.F. KOKTULI	C	44.8	11.38	0.774	3.39	1.000	974.	139.2	0.1453	18.334	0.504		0.0337	14.51
5	N.F. KOKTULI	C	42.1	11.40	0.773	3.39	1.000	975.	139.2	0.1407	18.332	0.595		0.0337	14.51
6	N.F. KOKTULI	C	41.2	11.41	0.773	3.39	1.000	975.	139.2	0.1191	18.332	0.623		0.0337	14.51
7	N.F. KOKTULI	C	39.8	11.42	0.772	3.39	1.000	975.	139.2	0.1544	18.331	0.672		0.0337	14.51
8	N.F. KOKTULI	C	38.6	11.44	0.771	3.39	1.000	975.	139.2	0.1039	18.329	0.713		0.0337	14.51
9	N.F. KOKTULI	Q	36.8	11.44	0.771	3.39	1.000	975.	139.2	0.1039	18.329	0.774		0.2542	7.23
10	N.F. KOKTULI	C	36.5	11.46	0.770	3.39	1.000	976.	139.2	0.1155	18.329	0.832		0.2542	7.23
11	N.F. KOKTULI	B	36.5									0.834			
12	TRIBUTARY 119	H	38.4	11.37	0.775	3.39	1.000	974.	139.2	0.2339	18.327	0.397	7.38	0.0326	7.23
13	TRIBUTARY 119	T	36.5									0.457			
14	N.F. KOKTULI	J	36.5	11.49	0.770	3.39	1.000	976.	139.1	0.1155	18.330	1.290		0.0784	7.23
15	N.F. KOKTULI	Q	35.8	11.49	0.770	3.39	1.000	976.	139.1	0.1155	18.330	1.350		0.0421	4.81
16	N.F. KOKTULI	C	35.4	11.53	0.768	3.39	1.000	977.	139.1	0.0932	18.331	1.366		0.0421	4.81
17	N.F. KOKTULI	C	34.0	11.58	0.765	3.39	1.000	978.	139.1	0.0893	18.330	1.425		0.0421	4.81
18	N.F. KOKTULI	C	31.0	11.64	0.763	3.39	1.000	979.	139.1	0.0980	18.328	1.551		0.0421	4.81
19	N.F. KOKTULI	C	28.5	11.68	0.761	3.39	1.000	980.	139.1	0.0795	18.327	1.656		0.0421	4.81
20	N.F. KOKTULI	Q	27.9	11.68	0.761	3.39	1.000	980.	139.1	0.0795	18.327	1.679		0.1371	4.81
21	N.F. KOKTULI	C	27.0	11.72	0.759	3.39	1.000	980.	139.1	0.0816	18.326	1.813		0.1371	4.81
22	N.F. KOKTULI	C	24.5	11.88	0.752	3.39	1.000	983.	139.1	0.0949	18.315	2.147		0.1371	4.81
23	N.F. KOKTULI	C	16.0	12.04	0.745	3.39	1.000	986.	139.1	0.0666	18.303	3.310		0.1371	4.81
24	N.F. KOKTULI	C	13.8	12.11	0.742	3.39	1.000	987.	139.1	0.0510	18.301	3.612		0.1371	4.81
25	N.F. KOKTULI	Q	13.7	12.11	0.742	3.39	1.000	987.	139.1	0.0510	18.301	3.630		0.0250	13.20
26	N.F. KOKTULI	C	11.6	12.16	0.740	3.39	1.000	988.	139.1	0.0511	18.300	3.683		0.0250	13.20
27	N.F. KOKTULI	C	9.9	12.20	0.738	3.39	1.000	989.	139.1	0.0489	18.300	3.725		0.0250	13.20
28	N.F. KOKTULI	Q	9.3	12.20	0.738	3.39	1.000	989.	139.1	0.0489	18.300	3.740		0.1262	13.20
29	N.F. KOKTULI	C	7.6	12.25	0.736	3.39	1.000	990.	139.0	0.0501	18.300	3.961		0.1262	13.20
30	N.F. KOKTULI	C	6.2	12.29	0.734	3.39	1.000	991.	139.0	0.0448	18.299	4.134		0.1262	13.20
31	N.F. KOKTULI	Q	5.3	12.29	0.734	3.39	1.000	991.	139.0	0.0448	18.299	4.250		0.1254	13.20
32	N.F. KOKTULI	C	3.5	12.34	0.732	3.39	1.000	992.	139.0	0.0455	18.298	4.469		0.1254	13.20
33	N.F. KOKTULI	E	0.0									4.910			

YEAR: 2007 TIME PERIOD: 2-Jul PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.00	0.797	3.25	1.000	950.	194.5	0.4483	18.308	0.067	11.80	0.0326	14.98
2	N.F. KOKTULI	C	55.7	12.98	0.752	3.25	1.000	968.	194.2	0.2387	18.309	0.130		0.0326	14.98
3	N.F. KOKTULI	C	48.2	13.30	0.738	3.25	1.000	974.	194.1	0.2047	18.309	0.376		0.0326	14.98
4	N.F. KOKTULI	C	44.8	13.34	0.737	3.25	1.000	974.	194.1	0.1454	18.304	0.487		0.0326	14.98
5	N.F. KOKTULI	C	42.1	13.36	0.736	3.25	1.000	975.	194.1	0.1408	18.303	0.575		0.0326	14.98
6	N.F. KOKTULI	C	41.2	13.37	0.735	3.25	1.000	975.	194.1	0.1191	18.303	0.602		0.0326	14.98
7	N.F. KOKTULI	C	39.8	13.38	0.735	3.25	1.000	975.	194.1	0.1546	18.301	0.650		0.0326	14.98
8	N.F. KOKTULI	C	38.6	13.40	0.734	3.25	1.000	975.	194.1	0.1039	18.300	0.689		0.0326	14.98
9	N.F. KOKTULI	Q	36.8	13.40	0.734	3.25	1.000	975.	194.1	0.1039	18.300	0.748		0.2458	7.48
10	N.F. KOKTULI	C	36.5	13.42	0.733	3.25	1.000	976.	194.1	0.1155	18.300	0.805		0.2458	7.48
11	N.F. KOKTULI	B	36.5									0.806			
12	TRIBUTARY 119	H	38.4	13.33	0.737	3.25	1.000	974.	194.1	0.2341	18.297	0.375	8.19	0.0315	7.48
13	TRIBUTARY 119	T	36.5									0.433			
14	N.F. KOKTULI	J	36.5	13.45	0.732	3.25	1.000	976.	194.1	0.1155	18.300	1.239		0.0758	7.48
15	N.F. KOKTULI	Q	35.8	13.45	0.732	3.25	1.000	976.	194.1	0.1155	18.300	1.297		0.0407	5.11
16	N.F. KOKTULI	C	35.4	13.49	0.730	3.25	1.000	977.	194.1	0.0931	18.301	1.312		0.0407	5.11
17	N.F. KOKTULI	C	34.0	13.54	0.728	3.25	1.000	978.	194.0	0.0893	18.301	1.370		0.0407	5.11
18	N.F. KOKTULI	C	31.0	13.60	0.726	3.25	1.000	979.	194.0	0.0980	18.299	1.491		0.0407	5.11
19	N.F. KOKTULI	C	28.5	13.64	0.724	3.25	1.000	980.	194.0	0.0795	18.298	1.593		0.0407	5.11
20	N.F. KOKTULI	Q	27.9	13.64	0.724	3.25	1.000	980.	194.0	0.0795	18.298	1.615		0.1268	5.11
21	N.F. KOKTULI	C	27.0	13.68	0.722	3.25	1.000	980.	194.0	0.0816	18.297	1.739		0.1268	5.11
22	N.F. KOKTULI	C	24.5	13.84	0.715	3.25	1.000	983.	194.0	0.0950	18.286	2.048		0.1268	5.11
23	N.F. KOKTULI	C	16.0	14.00	0.709	3.25	1.000	986.	194.0	0.0666	18.274	3.124		0.1268	5.11
24	N.F. KOKTULI	C	13.8	14.07	0.706	3.25	1.000	987.	194.0	0.0509	18.272	3.403		0.1268	5.11
25	N.F. KOKTULI	Q	13.7	14.07	0.706	3.25	1.000	987.	194.0	0.0509	18.272	3.420		0.0228	13.88
26	N.F. KOKTULI	C	11.6	14.12	0.704	3.25	1.000	988.	194.0	0.0511	18.271	3.469		0.0228	13.88
27	N.F. KOKTULI	C	9.9	14.16	0.702	3.25	1.000	989.	193.9	0.0489	18.271	3.507		0.0228	13.88
28	N.F. KOKTULI	Q	9.3	14.16	0.702	3.25	1.000	989.	193.9	0.0489	18.271	3.520		0.1237	13.88
29	N.F. KOKTULI	C	7.6	14.21	0.700	3.25	1.000	990.	193.9	0.0501	18.271	3.736		0.1237	13.88
30	N.F. KOKTULI	C	6.2	14.25	0.698	3.25	1.000	991.	193.9	0.0448	18.270	3.906		0.1237	13.88
31	N.F. KOKTULI	Q	5.3	14.25	0.698	3.25	1.000	991.	193.9	0.0448	18.270	4.020		0.1235	13.88
32	N.F. KOKTULI	C	3.5	14.30	0.696	3.25	1.000	992.	193.9	0.0455	18.269	4.235		0.1235	13.88
33	N.F. KOKTULI	E	0.0									4.670			

YEAR: 2007 TIME PERIOD: 3-Jul PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.17	0.817	3.34	1.000	950.	180.7	0.4488	18.276	0.065	13.13	0.0317	15.37
2	N.F. KOKTULI	C	55.7	13.15	0.771	3.34	1.000	968.	180.4	0.2388	18.277	0.126		0.0317	15.37
3	N.F. KOKTULI	C	48.2	13.47	0.757	3.34	1.000	974.	180.3	0.2049	18.277	0.367		0.0317	15.37
4	N.F. KOKTULI	C	44.8	13.51	0.755	3.34	1.000	974.	180.3	0.1455	18.273	0.475		0.0317	15.37
5	N.F. KOKTULI	C	42.1	13.53	0.754	3.34	1.000	975.	180.3	0.1409	18.272	0.560		0.0317	15.37
6	N.F. KOKTULI	C	41.2	13.54	0.754	3.34	1.000	975.	180.3	0.1191	18.271	0.587		0.0317	15.37
7	N.F. KOKTULI	C	39.8	13.55	0.754	3.34	1.000	975.	180.3	0.1547	18.270	0.633		0.0317	15.37
8	N.F. KOKTULI	C	38.6	13.57	0.753	3.34	1.000	975.	180.3	0.1038	18.268	0.672		0.0317	15.37
9	N.F. KOKTULI	Q	36.8	13.57	0.753	3.34	1.000	975.	180.3	0.1038	18.268	0.729		0.2373	7.76
10	N.F. KOKTULI	C	36.5	13.59	0.752	3.34	1.000	976.	180.3	0.1156	18.268	0.784		0.2373	7.76
11	N.F. KOKTULI	B	36.5									0.785			
12	TRIBUTARY 119	H	38.4	13.50	0.756	3.34	1.000	974.	180.4	0.2343	18.266	0.374	9.25	0.0305	7.76
13	TRIBUTARY 119	T	36.5									0.430			
14	N.F. KOKTULI	J	36.5	13.62	0.751	3.34	1.000	976.	180.3	0.1156	18.269	1.215		0.0732	7.76
15	N.F. KOKTULI	Q	35.8	13.62	0.751	3.34	1.000	976.	180.3	0.1156	18.269	1.271		0.0400	5.75
16	N.F. KOKTULI	C	35.4	13.66	0.749	3.34	1.000	977.	180.3	0.0931	18.270	1.286		0.0400	5.75
17	N.F. KOKTULI	C	34.0	13.71	0.747	3.34	1.000	978.	180.3	0.0892	18.269	1.343		0.0400	5.75
18	N.F. KOKTULI	C	31.0	13.77	0.744	3.34	1.000	979.	180.3	0.0981	18.267	1.462		0.0400	5.75
19	N.F. KOKTULI	C	28.5	13.81	0.742	3.34	1.000	980.	180.3	0.0794	18.266	1.562		0.0400	5.75
20	N.F. KOKTULI	Q	27.9	13.81	0.742	3.34	1.000	980.	180.3	0.0794	18.266	1.584		0.1177	5.75
21	N.F. KOKTULI	C	27.0	13.85	0.740	3.34	1.000	980.	180.3	0.0816	18.265	1.700		0.1177	5.75
22	N.F. KOKTULI	C	24.5	14.01	0.734	3.34	1.000	983.	180.3	0.0951	18.254	1.986		0.1177	5.75
23	N.F. KOKTULI	C	16.0	14.17	0.727	3.34	1.000	986.	180.2	0.0665	18.243	2.985		0.1177	5.75
24	N.F. KOKTULI	C	13.8	14.24	0.724	3.34	1.000	987.	180.2	0.0509	18.241	3.244		0.1177	5.75
25	N.F. KOKTULI	Q	13.7	14.24	0.724	3.34	1.000	987.	180.2	0.0509	18.241	3.260		0.0228	14.52
26	N.F. KOKTULI	C	11.6	14.29	0.722	3.34	1.000	988.	180.2	0.0511	18.240	3.309		0.0228	14.52
27	N.F. KOKTULI	C	9.9	14.33	0.720	3.34	1.000	989.	180.2	0.0489	18.240	3.347		0.0228	14.52
28	N.F. KOKTULI	Q	9.3	14.33	0.720	3.34	1.000	989.	180.2	0.0489	18.240	3.360		0.1213	14.52
29	N.F. KOKTULI	C	7.6	14.38	0.718	3.34	1.000	990.	180.2	0.0501	18.239	3.572		0.1213	14.52
30	N.F. KOKTULI	C	6.2	14.42	0.716	3.34	1.000	991.	180.2	0.0448	18.239	3.738		0.1213	14.52
31	N.F. KOKTULI	Q	5.3	14.42	0.716	3.34	1.000	991.	180.2	0.0448	18.239	3.850		0.1216	14.52
32	N.F. KOKTULI	C	3.5	14.47	0.714	3.34	1.000	992.	180.2	0.0455	18.238	4.062		0.1216	14.52
33	N.F. KOKTULI	E	0.0									4.490			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.40	0.929	4.72	1.000	950.	100.0	0.4494	18.242	0.097	11.26	0.0469	15.48
2	N.F. KOKTULI	C	55.7	10.38	0.877	4.72	1.000	968.	99.8	0.2390	18.243	0.187		0.0469	15.48
3	N.F. KOKTULI	C	48.2	10.70	0.861	4.72	1.000	974.	99.8	0.2050	18.243	0.542		0.0469	15.48
4	N.F. KOKTULI	C	44.8	10.74	0.859	4.72	1.000	974.	99.8	0.1455	18.239	0.701		0.0469	15.48
5	N.F. KOKTULI	C	42.1	10.76	0.858	4.72	1.000	975.	99.8	0.1410	18.237	0.828		0.0469	15.48
6	N.F. KOKTULI	C	41.2	10.77	0.858	4.72	1.000	975.	99.8	0.1191	18.237	0.867		0.0469	15.48
7	N.F. KOKTULI	C	39.8	10.78	0.857	4.72	1.000	975.	99.8	0.1548	18.236	0.935		0.0469	15.48
8	N.F. KOKTULI	C	38.6	10.80	0.856	4.72	1.000	975.	99.8	0.1038	18.234	0.993		0.0469	15.48
9	N.F. KOKTULI	Q	36.8	10.80	0.856	4.72	1.000	975.	99.8	0.1038	18.234	1.077		0.3602	7.97
10	N.F. KOKTULI	C	36.5	10.82	0.855	4.72	1.000	976.	99.8	0.1157	18.234	1.160		0.3602	7.97
11	N.F. KOKTULI	B	36.5									1.162			
12	TRIBUTARY 119	H	38.4	10.73	0.860	4.72	1.000	974.	99.8	0.2345	18.232	0.659	8.31	0.0533	7.97
13	TRIBUTARY 119	T	36.5									0.757			
14	N.F. KOKTULI	J	36.5	10.85	0.854	4.72	1.000	976.	99.8	0.1157	18.235	1.918		0.1124	7.97
15	N.F. KOKTULI	Q	35.8	10.85	0.854	4.72	1.000	976.	99.8	0.1157	18.235	2.004		0.0590	6.36
16	N.F. KOKTULI	C	35.4	10.89	0.852	4.72	1.000	977.	99.8	0.0931	18.236	2.026		0.0590	6.36
17	N.F. KOKTULI	C	34.0	10.94	0.849	4.72	1.000	978.	99.8	0.0892	18.235	2.109		0.0590	6.36
18	N.F. KOKTULI	C	31.0	11.00	0.847	4.72	1.000	979.	99.8	0.0982	18.233	2.285		0.0590	6.36
19	N.F. KOKTULI	C	28.5	11.04	0.844	4.72	1.000	980.	99.7	0.0794	18.232	2.433		0.0590	6.36
20	N.F. KOKTULI	Q	27.9	11.04	0.844	4.72	1.000	980.	99.7	0.0794	18.232	2.465		0.1556	6.36
21	N.F. KOKTULI	C	27.0	11.08	0.842	4.72	1.000	980.	99.7	0.0816	18.231	2.618		0.1556	6.36
22	N.F. KOKTULI	C	24.5	11.24	0.835	4.72	1.000	983.	99.7	0.0952	18.220	2.996		0.1556	6.36
23	N.F. KOKTULI	C	16.0	11.40	0.827	4.72	1.000	986.	99.7	0.0665	18.209	4.317		0.1556	6.36
24	N.F. KOKTULI	C	13.8	11.47	0.824	4.72	1.000	987.	99.7	0.0509	18.207	4.659		0.1556	6.36
25	N.F. KOKTULI	Q	13.7	11.47	0.824	4.72	1.000	987.	99.7	0.0509	18.207	4.680		0.0319	14.90
26	N.F. KOKTULI	C	11.6	11.52	0.821	4.72	1.000	988.	99.7	0.0511	18.206	4.748		0.0319	14.90
27	N.F. KOKTULI	C	9.9	11.56	0.819	4.72	1.000	989.	99.7	0.0489	18.206	4.801		0.0319	14.90
28	N.F. KOKTULI	Q	9.3	11.56	0.819	4.72	1.000	989.	99.7	0.0489	18.206	4.820		0.1312	14.90
29	N.F. KOKTULI	C	7.6	11.61	0.817	4.72	1.000	990.	99.7	0.0501	18.205	5.049		0.1312	14.90
30	N.F. KOKTULI	C	6.2	11.65	0.815	4.72	1.000	991.	99.7	0.0448	18.205	5.229		0.1312	14.90
31	N.F. KOKTULI	Q	5.3	11.65	0.815	4.72	1.000	991.	99.7	0.0448	18.205	5.350		0.1311	14.90
32	N.F. KOKTULI	C	3.5	11.70	0.812	4.72	1.000	992.	99.7	0.0455	18.204	5.579		0.1311	14.90
33	N.F. KOKTULI	E	0.0									6.040			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.05	0.899	3.79	1.000	950.	142.2	0.4500	18.205	0.093	10.73	0.0452	15.36
2	N.F. KOKTULI	C	55.7	11.03	0.849	3.79	1.000	968.	142.0	0.2392	18.206	0.180		0.0452	15.36
3	N.F. KOKTULI	C	48.2	11.35	0.833	3.79	1.000	974.	141.9	0.2052	18.206	0.522		0.0452	15.36
4	N.F. KOKTULI	C	44.8	11.39	0.831	3.79	1.000	974.	141.9	0.1456	18.202	0.676		0.0452	15.36
5	N.F. KOKTULI	C	42.1	11.41	0.830	3.79	1.000	975.	141.9	0.1411	18.201	0.798		0.0452	15.36
6	N.F. KOKTULI	C	41.2	11.42	0.829	3.79	1.000	975.	141.9	0.1191	18.201	0.836		0.0452	15.36
7	N.F. KOKTULI	C	39.8	11.43	0.829	3.79	1.000	975.	141.9	0.1550	18.199	0.902		0.0452	15.36
8	N.F. KOKTULI	C	38.6	11.45	0.828	3.79	1.000	975.	141.9	0.1038	18.197	0.957		0.0452	15.36
9	N.F. KOKTULI	Q	36.8	11.45	0.828	3.79	1.000	975.	141.9	0.1038	18.197	1.038		0.3475	8.07
10	N.F. KOKTULI	C	36.5	11.47	0.827	3.79	1.000	976.	141.9	0.1158	18.197	1.118		0.3475	8.07
11	N.F. KOKTULI	B	36.5									1.120			
12	TRIBUTARY 119	H	38.4	11.38	0.832	3.79	1.000	974.	141.9	0.2347	18.195	0.517	8.13	0.0468	8.07
13	TRIBUTARY 119	T	36.5									0.603			
14	N.F. KOKTULI	J	36.5	11.50	0.826	3.79	1.000	976.	141.9	0.1158	18.198	1.724		0.1072	8.07
15	N.F. KOKTULI	Q	35.8	11.50	0.826	3.79	1.000	976.	141.9	0.1158	18.198	1.806		0.0540	6.62
16	N.F. KOKTULI	C	35.4	11.54	0.824	3.79	1.000	977.	141.9	0.0931	18.199	1.826		0.0540	6.62
17	N.F. KOKTULI	C	34.0	11.59	0.821	3.79	1.000	978.	141.9	0.0891	18.198	1.902		0.0540	6.62
18	N.F. KOKTULI	C	31.0	11.65	0.819	3.79	1.000	979.	141.8	0.0982	18.196	2.063		0.0540	6.62
19	N.F. KOKTULI	C	28.5	11.69	0.817	3.79	1.000	980.	141.8	0.0793	18.195	2.199		0.0540	6.62
20	N.F. KOKTULI	Q	27.9	11.69	0.817	3.79	1.000	980.	141.8	0.0793	18.195	2.228		0.1969	6.62
21	N.F. KOKTULI	C	27.0	11.73	0.814	3.79	1.000	980.	141.8	0.0816	18.195	2.421		0.1969	6.62
22	N.F. KOKTULI	C	24.5	11.89	0.807	3.79	1.000	983.	141.8	0.0954	18.184	2.900		0.1969	6.62
23	N.F. KOKTULI	C	16.0	12.05	0.799	3.79	1.000	986.	141.8	0.0665	18.172	4.571		0.1969	6.62
24	N.F. KOKTULI	C	13.8	12.12	0.796	3.79	1.000	987.	141.8	0.0509	18.170	5.004		0.1969	6.62
25	N.F. KOKTULI	Q	13.7	12.12	0.796	3.79	1.000	987.	141.8	0.0509	18.170	5.030		0.0364	14.86
26	N.F. KOKTULI	C	11.6	12.17	0.794	3.79	1.000	988.	141.8	0.0511	18.169	5.108		0.0364	14.86
27	N.F. KOKTULI	C	9.9	12.21	0.792	3.79	1.000	989.	141.8	0.0489	18.169	5.169		0.0364	14.86
28	N.F. KOKTULI	Q	9.3	12.21	0.792	3.79	1.000	989.	141.8	0.0489	18.169	5.190		0.1312	14.86
29	N.F. KOKTULI	C	7.6	12.26	0.790	3.79	1.000	990.	141.8	0.0501	18.169	5.419		0.1312	14.86
30	N.F. KOKTULI	C	6.2	12.30	0.788	3.79	1.000	991.	141.8	0.0448	18.168	5.599		0.1312	14.86
31	N.F. KOKTULI	Q	5.3	12.30	0.788	3.79	1.000	991.	141.8	0.0448	18.168	5.720		0.1311	14.86
32	N.F. KOKTULI	C	3.5	12.35	0.785	3.79	1.000	992.	141.8	0.0455	18.167	5.949		0.1311	14.86
33	N.F. KOKTULI	E	0.0									6.410			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.62	0.848	2.79	1.000	950.	137.6	0.4506	18.166	0.082	10.41	0.0396	15.29
2	N.F. KOKTULI	C	55.7	10.60	0.800	2.79	1.000	968.	137.4	0.2394	18.167	0.158		0.0396	15.29
3	N.F. KOKTULI	C	48.2	10.92	0.785	2.79	1.000	974.	137.3	0.2054	18.167	0.458		0.0396	15.29
4	N.F. KOKTULI	C	44.8	10.96	0.784	2.79	1.000	974.	137.3	0.1457	18.163	0.593		0.0396	15.29
5	N.F. KOKTULI	C	42.1	10.98	0.783	2.79	1.000	975.	137.3	0.1412	18.162	0.699		0.0396	15.29
6	N.F. KOKTULI	C	41.2	10.99	0.782	2.79	1.000	975.	137.3	0.1191	18.162	0.733		0.0396	15.29
7	N.F. KOKTULI	C	39.8	11.00	0.782	2.79	1.000	975.	137.3	0.1552	18.160	0.790		0.0396	15.29
8	N.F. KOKTULI	C	38.6	11.02	0.781	2.79	1.000	975.	137.3	0.1038	18.158	0.839		0.0396	15.29
9	N.F. KOKTULI	Q	36.8	11.02	0.781	2.79	1.000	975.	137.3	0.1038	18.158	0.910		0.3008	8.17
10	N.F. KOKTULI	C	36.5	11.04	0.780	2.79	1.000	976.	137.3	0.1159	18.158	0.979		0.3008	8.17
11	N.F. KOKTULI	B	36.5									0.981			
12	TRIBUTARY 119	H	38.4	10.95	0.784	2.79	1.000	974.	137.3	0.2349	18.156	0.464	7.87	0.0386	8.17
13	TRIBUTARY 119	T	36.5									0.535			
14	N.F. KOKTULI	J	36.5	11.07	0.779	2.79	1.000	976.	137.3	0.1159	18.159	1.516		0.0928	8.17
15	N.F. KOKTULI	Q	35.8	11.07	0.779	2.79	1.000	976.	137.3	0.1159	18.159	1.587		0.0483	6.58
16	N.F. KOKTULI	C	35.4	11.11	0.777	2.79	1.000	977.	137.3	0.0930	18.160	1.605		0.0483	6.58
17	N.F. KOKTULI	C	34.0	11.16	0.775	2.79	1.000	978.	137.3	0.0891	18.159	1.673		0.0483	6.58
18	N.F. KOKTULI	C	31.0	11.22	0.772	2.79	1.000	979.	137.3	0.0983	18.157	1.818		0.0483	6.58
19	N.F. KOKTULI	C	28.5	11.26	0.770	2.79	1.000	980.	137.3	0.0793	18.156	1.939		0.0483	6.58
20	N.F. KOKTULI	Q	27.9	11.26	0.770	2.79	1.000	980.	137.3	0.0793	18.156	1.965		0.1598	6.58
21	N.F. KOKTULI	C	27.0	11.30	0.768	2.79	1.000	980.	137.3	0.0816	18.156	2.122		0.1598	6.58
22	N.F. KOKTULI	C	24.5	11.46	0.761	2.79	1.000	983.	137.3	0.0955	18.145	2.511		0.1598	6.58
23	N.F. KOKTULI	C	16.0	11.62	0.754	2.79	1.000	986.	137.2	0.0664	18.134	3.867		0.1598	6.58
24	N.F. KOKTULI	C	13.8	11.69	0.751	2.79	1.000	987.	137.2	0.0508	18.132	4.219		0.1598	6.58
25	N.F. KOKTULI	Q	13.7	11.69	0.751	2.79	1.000	987.	137.2	0.0508	18.132	4.240		0.0319	14.58
26	N.F. KOKTULI	C	11.6	11.74	0.749	2.79	1.000	988.	137.2	0.0511	18.131	4.308		0.0319	14.58
27	N.F. KOKTULI	C	9.9	11.78	0.747	2.79	1.000	989.	137.2	0.0488	18.131	4.361		0.0319	14.58
28	N.F. KOKTULI	Q	9.3	11.78	0.747	2.79	1.000	989.	137.2	0.0488	18.131	4.380		0.1287	14.58
29	N.F. KOKTULI	C	7.6	11.83	0.745	2.79	1.000	990.	137.2	0.0502	18.130	4.605		0.1287	14.58
30	N.F. KOKTULI	C	6.2	11.87	0.743	2.79	1.000	991.	137.2	0.0447	18.130	4.781		0.1287	14.58
31	N.F. KOKTULI	Q	5.3	11.87	0.743	2.79	1.000	991.	137.2	0.0447	18.130	4.900		0.1292	14.58
32	N.F. KOKTULI	C	3.5	11.92	0.741	2.79	1.000	992.	137.2	0.0455	18.129	5.125		0.1292	14.58
33	N.F. KOKTULI	E	0.0									5.580			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.43	0.664	2.32	1.000	950.	157.7	0.4513	18.124	0.075	11.38	0.0365	15.42
2	N.F. KOKTULI	C	55.7	13.41	0.627	2.32	1.000	968.	157.5	0.2396	18.126	0.145		0.0365	15.42
3	N.F. KOKTULI	C	48.2	13.73	0.615	2.32	1.000	974.	157.5	0.2057	18.126	0.422		0.0365	15.42
4	N.F. KOKTULI	C	44.8	13.77	0.614	2.32	1.000	974.	157.5	0.1459	18.121	0.546		0.0365	15.42
5	N.F. KOKTULI	C	42.1	13.79	0.613	2.32	1.000	975.	157.5	0.1413	18.120	0.644		0.0365	15.42
6	N.F. KOKTULI	C	41.2	13.80	0.613	2.32	1.000	975.	157.4	0.1191	18.120	0.675		0.0365	15.42
7	N.F. KOKTULI	C	39.8	13.81	0.612	2.32	1.000	975.	157.5	0.1554	18.118	0.728		0.0365	15.42
8	N.F. KOKTULI	C	38.6	13.83	0.611	2.32	1.000	975.	157.4	0.1037	18.117	0.772		0.0365	15.42
9	N.F. KOKTULI	Q	36.8	13.83	0.611	2.32	1.000	975.	157.4	0.1037	18.117	0.838		0.2754	8.32
10	N.F. KOKTULI	C	36.5	13.85	0.611	2.32	1.000	976.	157.4	0.1160	18.117	0.901		0.2754	8.32
11	N.F. KOKTULI	B	36.5									0.903			
12	TRIBUTARY 119	H	38.4	13.76	0.614	2.32	1.000	974.	157.5	0.2352	18.115	0.402	7.95	0.0353	8.32
13	TRIBUTARY 119	T	36.5									0.467			
14	N.F. KOKTULI	J	36.5	13.88	0.610	2.32	1.000	976.	157.4	0.1160	18.117	1.369		0.0850	8.32
15	N.F. KOKTULI	Q	35.8	13.88	0.610	2.32	1.000	976.	157.4	0.1160	18.117	1.434		0.0444	6.47
16	N.F. KOKTULI	C	35.4	13.92	0.608	2.32	1.000	977.	157.4	0.0930	18.118	1.451		0.0444	6.47
17	N.F. KOKTULI	C	34.0	13.97	0.607	2.32	1.000	978.	157.4	0.0891	18.118	1.513		0.0444	6.47
18	N.F. KOKTULI	C	31.0	14.03	0.605	2.32	1.000	979.	157.4	0.0984	18.116	1.646		0.0444	6.47
19	N.F. KOKTULI	C	28.5	14.07	0.603	2.32	1.000	980.	157.4	0.0792	18.115	1.757		0.0444	6.47
20	N.F. KOKTULI	Q	27.9	14.07	0.603	2.32	1.000	980.	157.4	0.0792	18.115	1.781		0.1447	6.47
21	N.F. KOKTULI	C	27.0	14.11	0.602	2.32	1.000	980.	157.4	0.0816	18.114	1.923		0.1447	6.47
22	N.F. KOKTULI	C	24.5	14.27	0.596	2.32	1.000	983.	157.4	0.0957	18.103	2.275		0.1447	6.47
23	N.F. KOKTULI	C	16.0	14.43	0.590	2.32	1.000	986.	157.4	0.0664	18.092	3.503		0.1447	6.47
24	N.F. KOKTULI	C	13.8	14.50	0.588	2.32	1.000	987.	157.4	0.0508	18.091	3.821		0.1447	6.47
25	N.F. KOKTULI	Q	13.7	14.50	0.588	2.32	1.000	987.	157.4	0.0508	18.091	3.840		0.0273	14.30
26	N.F. KOKTULI	C	11.6	14.55	0.587	2.32	1.000	988.	157.4	0.0511	18.090	3.898		0.0273	14.30
27	N.F. KOKTULI	C	9.9	14.59	0.585	2.32	1.000	989.	157.3	0.0488	18.090	3.944		0.0273	14.30
28	N.F. KOKTULI	Q	9.3	14.59	0.585	2.32	1.000	989.	157.3	0.0488	18.090	3.960		0.1262	14.30
29	N.F. KOKTULI	C	7.6	14.64	0.583	2.32	1.000	990.	157.3	0.0502	18.089	4.181		0.1262	14.30
30	N.F. KOKTULI	C	6.2	14.68	0.582	2.32	1.000	991.	157.3	0.0447	18.089	4.354		0.1262	14.30
31	N.F. KOKTULI	Q	5.3	14.68	0.582	2.32	1.000	991.	157.3	0.0447	18.089	4.470		0.1273	14.30
32	N.F. KOKTULI	C	3.5	14.73	0.580	2.32	1.000	992.	157.3	0.0455	18.088	4.692		0.1273	14.30
33	N.F. KOKTULI	E	0.0									5.140			

YEAR: 2007 TIME PERIOD: 8-Jul PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.67	0.970	3.78	1.000	950.	95.4	0.4520	18.081	0.079	11.76	0.0383	15.67
2	N.F. KOKTULI	C	55.7	10.65	0.916	3.78	1.000	968.	95.2	0.2399	18.082	0.153		0.0383	15.67
3	N.F. KOKTULI	C	48.2	10.97	0.899	3.78	1.000	974.	95.2	0.2059	18.082	0.443		0.0383	15.67
4	N.F. KOKTULI	C	44.8	11.01	0.897	3.78	1.000	974.	95.2	0.1460	18.078	0.574		0.0383	15.67
5	N.F. KOKTULI	C	42.1	11.03	0.896	3.78	1.000	975.	95.2	0.1414	18.077	0.677		0.0383	15.67
6	N.F. KOKTULI	C	41.2	11.04	0.895	3.78	1.000	975.	95.2	0.1191	18.076	0.709		0.0383	15.67
7	N.F. KOKTULI	C	39.8	11.05	0.895	3.78	1.000	975.	95.2	0.1556	18.075	0.765		0.0383	15.67
8	N.F. KOKTULI	C	38.6	11.07	0.894	3.78	1.000	975.	95.2	0.1037	18.073	0.812		0.0383	15.67
9	N.F. KOKTULI	Q	36.8	11.07	0.894	3.78	1.000	975.	95.2	0.1037	18.073	0.881		0.2924	8.50
10	N.F. KOKTULI	C	36.5	11.09	0.893	3.78	1.000	976.	95.2	0.1161	18.073	0.948		0.2924	8.50
11	N.F. KOKTULI	B	36.5									0.950			
12	TRIBUTARY 119	H	38.4	11.00	0.898	3.78	1.000	974.	95.2	0.2354	18.071	0.461	8.49	0.0375	8.50
13	TRIBUTARY 119	T	36.5									0.530			
14	N.F. KOKTULI	J	36.5	11.12	0.892	3.78	1.000	976.	95.2	0.1161	18.074	1.480		0.0889	8.50
15	N.F. KOKTULI	Q	35.8	11.12	0.892	3.78	1.000	976.	95.2	0.1161	18.074	1.548		0.0473	6.37
16	N.F. KOKTULI	C	35.4	11.16	0.889	3.78	1.000	977.	95.2	0.0930	18.075	1.566		0.0473	6.37
17	N.F. KOKTULI	C	34.0	11.21	0.887	3.78	1.000	978.	95.2	0.0890	18.074	1.633		0.0473	6.37
18	N.F. KOKTULI	C	31.0	11.27	0.884	3.78	1.000	979.	95.2	0.0985	18.072	1.774		0.0473	6.37
19	N.F. KOKTULI	C	28.5	11.31	0.882	3.78	1.000	980.	95.2	0.0792	18.071	1.892		0.0473	6.37
20	N.F. KOKTULI	Q	27.9	11.31	0.882	3.78	1.000	980.	95.2	0.0792	18.071	1.918		0.1428	6.37
21	N.F. KOKTULI	C	27.0	11.35	0.879	3.78	1.000	980.	95.2	0.0815	18.071	2.058		0.1428	6.37
22	N.F. KOKTULI	C	24.5	11.51	0.871	3.78	1.000	983.	95.1	0.0959	18.060	2.406		0.1428	6.37
23	N.F. KOKTULI	C	16.0	11.67	0.863	3.78	1.000	986.	95.1	0.0664	18.049	3.617		0.1428	6.37
24	N.F. KOKTULI	C	13.8	11.74	0.860	3.78	1.000	987.	95.1	0.0508	18.047	3.931		0.1428	6.37
25	N.F. KOKTULI	Q	13.7	11.74	0.860	3.78	1.000	987.	95.1	0.0508	18.047	3.950		0.0273	14.14
26	N.F. KOKTULI	C	11.6	11.79	0.857	3.78	1.000	988.	95.1	0.0510	18.046	4.008		0.0273	14.14
27	N.F. KOKTULI	C	9.9	11.83	0.855	3.78	1.000	989.	95.1	0.0488	18.046	4.054		0.0273	14.14
28	N.F. KOKTULI	Q	9.3	11.83	0.855	3.78	1.000	989.	95.1	0.0488	18.046	4.070		0.1287	14.14
29	N.F. KOKTULI	C	7.6	11.88	0.853	3.78	1.000	990.	95.1	0.0502	18.046	4.295		0.1287	14.14
30	N.F. KOKTULI	C	6.2	11.92	0.851	3.78	1.000	991.	95.1	0.0447	18.045	4.471		0.1287	14.14
31	N.F. KOKTULI	Q	5.3	11.92	0.851	3.78	1.000	991.	95.1	0.0447	18.045	4.590		0.1273	14.14
32	N.F. KOKTULI	C	3.5	11.97	0.848	3.78	1.000	992.	95.1	0.0455	18.044	4.812		0.1273	14.14
33	N.F. KOKTULI	E	0.0									5.260			

YEAR: 2007 TIME PERIOD: 9-Jul PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.53	0.797	3.61	1.000	950.	171.5	0.4528	18.035	0.074	10.86	0.0361	15.89
2	N.F. KOKTULI	C	55.7	10.51	0.752	3.61	1.000	968.	171.2	0.2401	18.036	0.144		0.0361	15.89
3	N.F. KOKTULI	C	48.2	10.83	0.738	3.61	1.000	974.	171.2	0.2062	18.036	0.418		0.0361	15.89
4	N.F. KOKTULI	C	44.8	10.87	0.737	3.61	1.000	974.	171.2	0.1461	18.032	0.541		0.0361	15.89
5	N.F. KOKTULI	C	42.1	10.89	0.736	3.61	1.000	975.	171.2	0.1415	18.031	0.638		0.0361	15.89
6	N.F. KOKTULI	C	41.2	10.90	0.735	3.61	1.000	975.	171.2	0.1192	18.031	0.668		0.0361	15.89
7	N.F. KOKTULI	C	39.8	10.91	0.735	3.61	1.000	975.	171.2	0.1558	18.029	0.721		0.0361	15.89
8	N.F. KOKTULI	C	38.6	10.93	0.734	3.61	1.000	975.	171.2	0.1037	18.027	0.765		0.0361	15.89
9	N.F. KOKTULI	Q	36.8	10.93	0.734	3.61	1.000	975.	171.2	0.1037	18.027	0.830		0.2712	8.65
10	N.F. KOKTULI	C	36.5	10.95	0.733	3.61	1.000	976.	171.2	0.1162	18.027	0.892		0.2712	8.65
11	N.F. KOKTULI	B	36.5									0.894			
12	TRIBUTARY 119	H	38.4	10.86	0.737	3.61	1.000	974.	171.2	0.2357	18.025	0.410	8.12	0.0348	8.65
13	TRIBUTARY 119	T	36.5									0.474			
14	N.F. KOKTULI	J	36.5	10.98	0.732	3.61	1.000	976.	171.2	0.1162	18.028	1.369		0.0837	8.65
15	N.F. KOKTULI	Q	35.8	10.98	0.732	3.61	1.000	976.	171.2	0.1162	18.028	1.433		0.0442	6.21
16	N.F. KOKTULI	C	35.4	11.02	0.730	3.61	1.000	977.	171.1	0.0930	18.029	1.450		0.0442	6.21
17	N.F. KOKTULI	C	34.0	11.07	0.728	3.61	1.000	978.	171.1	0.0890	18.028	1.512		0.0442	6.21
18	N.F. KOKTULI	C	31.0	11.13	0.726	3.61	1.000	979.	171.1	0.0985	18.026	1.644		0.0442	6.21
19	N.F. KOKTULI	C	28.5	11.17	0.724	3.61	1.000	980.	171.1	0.0791	18.026	1.755		0.0442	6.21
20	N.F. KOKTULI	Q	27.9	11.17	0.724	3.61	1.000	980.	171.1	0.0791	18.026	1.779		0.1448	6.21
21	N.F. KOKTULI	C	27.0	11.21	0.722	3.61	1.000	980.	171.1	0.0815	18.025	1.921		0.1448	6.21
22	N.F. KOKTULI	C	24.5	11.37	0.715	3.61	1.000	983.	171.1	0.0961	18.014	2.273		0.1448	6.21
23	N.F. KOKTULI	C	16.0	11.53	0.709	3.61	1.000	986.	171.1	0.0663	18.003	3.502		0.1448	6.21
24	N.F. KOKTULI	C	13.8	11.60	0.706	3.61	1.000	987.	171.1	0.0507	18.002	3.821		0.1448	6.21
25	N.F. KOKTULI	Q	13.7	11.60	0.706	3.61	1.000	987.	171.1	0.0507	18.002	3.840		0.0273	14.08
26	N.F. KOKTULI	C	11.6	11.65	0.704	3.61	1.000	988.	171.1	0.0510	18.001	3.898		0.0273	14.08
27	N.F. KOKTULI	C	9.9	11.69	0.702	3.61	1.000	989.	171.1	0.0488	18.001	3.944		0.0273	14.08
28	N.F. KOKTULI	Q	9.3	11.69	0.702	3.61	1.000	989.	171.1	0.0488	18.001	3.960		0.1262	14.08
29	N.F. KOKTULI	C	7.6	11.74	0.700	3.61	1.000	990.	171.0	0.0502	18.000	4.181		0.1262	14.08
30	N.F. KOKTULI	C	6.2	11.78	0.698	3.61	1.000	991.	171.0	0.0447	18.000	4.354		0.1262	14.08
31	N.F. KOKTULI	Q	5.3	11.78	0.698	3.61	1.000	991.	171.0	0.0447	18.000	4.470		0.1273	14.08
32	N.F. KOKTULI	C	3.5	11.83	0.696	3.61	1.000	992.	171.0	0.0455	17.999	4.692		0.1273	14.08
33	N.F. KOKTULI	E	0.0									5.140			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.88	0.797	3.74	1.000	950.	146.7	0.4536	17.986	0.069	10.82	0.0337	16.18
2	N.F. KOKTULI	C	55.7	11.86	0.752	3.74	1.000	968.	146.5	0.2404	17.988	0.134		0.0337	16.18
3	N.F. KOKTULI	C	48.2	12.18	0.738	3.74	1.000	974.	146.4	0.2064	17.988	0.390		0.0337	16.18
4	N.F. KOKTULI	C	44.8	12.22	0.737	3.74	1.000	974.	146.4	0.1463	17.984	0.504		0.0337	16.18
5	N.F. KOKTULI	C	42.1	12.24	0.736	3.74	1.000	975.	146.4	0.1417	17.983	0.595		0.0337	16.18
6	N.F. KOKTULI	C	41.2	12.25	0.735	3.74	1.000	975.	146.4	0.1192	17.982	0.623		0.0337	16.18
7	N.F. KOKTULI	C	39.8	12.26	0.735	3.74	1.000	975.	146.4	0.1560	17.981	0.672		0.0337	16.18
8	N.F. KOKTULI	C	38.6	12.28	0.734	3.74	1.000	975.	146.4	0.1037	17.979	0.713		0.0337	16.18
9	N.F. KOKTULI	Q	36.8	12.28	0.734	3.74	1.000	975.	146.4	0.1037	17.979	0.774		0.2500	8.83
10	N.F. KOKTULI	C	36.5	12.30	0.733	3.74	1.000	976.	146.4	0.1163	17.979	0.831		0.2500	8.83
11	N.F. KOKTULI	B	36.5									0.833			
12	TRIBUTARY 119	H	38.4	12.21	0.737	3.74	1.000	974.	146.5	0.2360	17.977	0.375	7.91	0.0326	8.83
13	TRIBUTARY 119	T	36.5									0.435			
14	N.F. KOKTULI	J	36.5	12.33	0.732	3.74	1.000	976.	146.4	0.1163	17.980	1.269		0.0771	8.83
15	N.F. KOKTULI	Q	35.8	12.33	0.732	3.74	1.000	976.	146.4	0.1163	17.980	1.328		0.0416	6.13
16	N.F. KOKTULI	C	35.4	12.37	0.730	3.74	1.000	977.	146.4	0.0929	17.981	1.344		0.0416	6.13
17	N.F. KOKTULI	C	34.0	12.42	0.728	3.74	1.000	978.	146.4	0.0889	17.980	1.402		0.0416	6.13
18	N.F. KOKTULI	C	31.0	12.48	0.726	3.74	1.000	979.	146.4	0.0986	17.978	1.526		0.0416	6.13
19	N.F. KOKTULI	C	28.5	12.52	0.724	3.74	1.000	980.	146.4	0.0791	17.978	1.630		0.0416	6.13
20	N.F. KOKTULI	Q	27.9	12.52	0.724	3.74	1.000	980.	146.4	0.0791	17.978	1.653		0.1389	6.13
21	N.F. KOKTULI	C	27.0	12.56	0.722	3.74	1.000	980.	146.4	0.0815	17.977	1.789		0.1389	6.13
22	N.F. KOKTULI	C	24.5	12.72	0.715	3.74	1.000	983.	146.4	0.0963	17.966	2.127		0.1389	6.13
23	N.F. KOKTULI	C	16.0	12.88	0.709	3.74	1.000	986.	146.4	0.0663	17.956	3.306		0.1389	6.13
24	N.F. KOKTULI	C	13.8	12.95	0.706	3.74	1.000	987.	146.4	0.0507	17.954	3.612		0.1389	6.13
25	N.F. KOKTULI	Q	13.7	12.95	0.706	3.74	1.000	987.	146.4	0.0507	17.954	3.630		0.0250	14.18
26	N.F. KOKTULI	C	11.6	13.00	0.704	3.74	1.000	988.	146.4	0.0510	17.953	3.683		0.0250	14.18
27	N.F. KOKTULI	C	9.9	13.04	0.702	3.74	1.000	989.	146.3	0.0488	17.953	3.725		0.0250	14.18
28	N.F. KOKTULI	Q	9.3	13.04	0.702	3.74	1.000	989.	146.3	0.0488	17.953	3.740		0.1262	14.18
29	N.F. KOKTULI	C	7.6	13.09	0.700	3.74	1.000	990.	146.3	0.0502	17.953	3.961		0.1262	14.18
30	N.F. KOKTULI	C	6.2	13.13	0.698	3.74	1.000	991.	146.3	0.0447	17.952	4.134		0.1262	14.18
31	N.F. KOKTULI	Q	5.3	13.13	0.698	3.74	1.000	991.	146.3	0.0447	17.952	4.250		0.1254	14.18
32	N.F. KOKTULI	C	3.5	13.18	0.696	3.74	1.000	992.	146.3	0.0455	17.951	4.469		0.1254	14.18
33	N.F. KOKTULI	E	0.0									4.910			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.85	0.746	5.11	1.000	950.	274.2	0.4544	17.936	0.066	12.83	0.0319	16.56
2	N.F. KOKTULI	C	55.7	11.83	0.704	5.11	1.000	968.	273.8	0.2407	17.937	0.127		0.0319	16.56
3	N.F. KOKTULI	C	48.2	12.15	0.691	5.11	1.000	974.	273.7	0.2067	17.937	0.369		0.0319	16.56
4	N.F. KOKTULI	C	44.8	12.19	0.689	5.11	1.000	974.	273.7	0.1464	17.933	0.478		0.0319	16.56
5	N.F. KOKTULI	C	42.1	12.21	0.688	5.11	1.000	975.	273.7	0.1419	17.932	0.564		0.0319	16.56
6	N.F. KOKTULI	C	41.2	12.22	0.688	5.11	1.000	975.	273.7	0.1193	17.932	0.591		0.0319	16.56
7	N.F. KOKTULI	C	39.8	12.23	0.688	5.11	1.000	975.	273.7	0.1562	17.931	0.638		0.0319	16.56
8	N.F. KOKTULI	C	38.6	12.25	0.687	5.11	1.000	975.	273.7	0.1036	17.929	0.677		0.0319	16.56
9	N.F. KOKTULI	Q	36.8	12.25	0.687	5.11	1.000	975.	273.7	0.1036	17.929	0.734		0.2415	9.06
10	N.F. KOKTULI	C	36.5	12.27	0.686	5.11	1.000	976.	273.7	0.1165	17.929	0.790		0.2415	9.06
11	N.F. KOKTULI	B	36.5									0.791			
12	TRIBUTARY 119	H	38.4	12.18	0.690	5.11	1.000	974.	273.7	0.2363	17.927	0.345	9.75	0.0305	9.06
13	TRIBUTARY 119	T	36.5									0.401			
14	N.F. KOKTULI	J	36.5	12.30	0.685	5.11	1.000	976.	273.6	0.1165	17.930	1.192		0.0732	9.06
15	N.F. KOKTULI	Q	35.8	12.30	0.685	5.11	1.000	976.	273.6	0.1165	17.930	1.248		0.0394	6.33
16	N.F. KOKTULI	C	35.4	12.34	0.683	5.11	1.000	977.	273.6	0.0929	17.931	1.263		0.0394	6.33
17	N.F. KOKTULI	C	34.0	12.39	0.681	5.11	1.000	978.	273.6	0.0889	17.930	1.318		0.0394	6.33
18	N.F. KOKTULI	C	31.0	12.45	0.679	5.11	1.000	979.	273.6	0.0987	17.928	1.436		0.0394	6.33
19	N.F. KOKTULI	C	28.5	12.49	0.677	5.11	1.000	980.	273.6	0.0790	17.927	1.534		0.0394	6.33
20	N.F. KOKTULI	Q	27.9	12.49	0.677	5.11	1.000	980.	273.6	0.0790	17.927	1.556		0.1253	6.33
21	N.F. KOKTULI	C	27.0	12.53	0.676	5.11	1.000	980.	273.6	0.0815	17.927	1.679		0.1253	6.33
22	N.F. KOKTULI	C	24.5	12.69	0.669	5.11	1.000	983.	273.6	0.0965	17.916	1.984		0.1253	6.33
23	N.F. KOKTULI	C	16.0	12.85	0.663	5.11	1.000	986.	273.5	0.0662	17.906	3.048		0.1253	6.33
24	N.F. KOKTULI	C	13.8	12.92	0.661	5.11	1.000	987.	273.5	0.0507	17.904	3.323		0.1253	6.33
25	N.F. KOKTULI	Q	13.7	12.92	0.661	5.11	1.000	987.	273.5	0.0507	17.904	3.340		0.0228	14.48
26	N.F. KOKTULI	C	11.6	12.97	0.659	5.11	1.000	988.	273.5	0.0510	17.903	3.389		0.0228	14.48
27	N.F. KOKTULI	C	9.9	13.01	0.657	5.11	1.000	989.	273.5	0.0488	17.903	3.427		0.0228	14.48
28	N.F. KOKTULI	Q	9.3	13.01	0.657	5.11	1.000	989.	273.5	0.0488	17.903	3.440		0.1237	14.48
29	N.F. KOKTULI	C	7.6	13.06	0.655	5.11	1.000	990.	273.5	0.0502	17.903	3.656		0.1237	14.48
30	N.F. KOKTULI	C	6.2	13.10	0.654	5.11	1.000	991.	273.5	0.0447	17.902	3.826		0.1237	14.48
31	N.F. KOKTULI	Q	5.3	13.10	0.654	5.11	1.000	991.	273.5	0.0447	17.902	3.940		0.1216	14.48
32	N.F. KOKTULI	C	3.5	13.15	0.652	5.11	1.000	992.	273.4	0.0456	17.901	4.152		0.1216	14.48
33	N.F. KOKTULI	E	0.0									4.580			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.26	0.848	2.91	1.000	950.	159.5	0.4554	17.884	0.064	12.96	0.0309	16.80
2	N.F. KOKTULI	C	55.7	11.24	0.800	2.91	1.000	968.	159.3	0.2410	17.885	0.123		0.0309	16.80
3	N.F. KOKTULI	C	48.2	11.56	0.785	2.91	1.000	974.	159.2	0.2070	17.885	0.357		0.0309	16.80
4	N.F. KOKTULI	C	44.8	11.60	0.784	2.91	1.000	974.	159.2	0.1466	17.881	0.462		0.0309	16.80
5	N.F. KOKTULI	C	42.1	11.62	0.783	2.91	1.000	975.	159.2	0.1421	17.880	0.545		0.0309	16.80
6	N.F. KOKTULI	C	41.2	11.63	0.782	2.91	1.000	975.	159.2	0.1193	17.880	0.571		0.0309	16.80
7	N.F. KOKTULI	C	39.8	11.64	0.782	2.91	1.000	975.	159.2	0.1565	17.879	0.616		0.0309	16.80
8	N.F. KOKTULI	C	38.6	11.66	0.781	2.91	1.000	975.	159.2	0.1036	17.877	0.654		0.0309	16.80
9	N.F. KOKTULI	Q	36.8	11.66	0.781	2.91	1.000	975.	159.2	0.1036	17.877	0.709		0.2288	9.25
10	N.F. KOKTULI	C	36.5	11.68	0.780	2.91	1.000	976.	159.2	0.1166	17.877	0.762		0.2288	9.25
11	N.F. KOKTULI	B	36.5									0.763			
12	TRIBUTARY 119	H	38.4	11.59	0.784	2.91	1.000	974.	159.3	0.2366	17.875	0.348	9.13	0.0299	9.25
13	TRIBUTARY 119	T	36.5									0.403			
14	N.F. KOKTULI	J	36.5	11.71	0.779	2.91	1.000	976.	159.2	0.1166	17.878	1.166		0.0706	9.25
15	N.F. KOKTULI	Q	35.8	11.71	0.779	2.91	1.000	976.	159.2	0.1166	17.878	1.220		0.0386	6.73
16	N.F. KOKTULI	C	35.4	11.75	0.777	2.91	1.000	977.	159.2	0.0929	17.878	1.234		0.0386	6.73
17	N.F. KOKTULI	C	34.0	11.80	0.775	2.91	1.000	978.	159.2	0.0888	17.878	1.289		0.0386	6.73
18	N.F. KOKTULI	C	31.0	11.86	0.772	2.91	1.000	979.	159.2	0.0989	17.876	1.404		0.0386	6.73
19	N.F. KOKTULI	C	28.5	11.90	0.770	2.91	1.000	980.	159.2	0.0789	17.875	1.501		0.0386	6.73
20	N.F. KOKTULI	Q	27.9	11.90	0.770	2.91	1.000	980.	159.2	0.0789	17.875	1.522		0.1165	6.73
21	N.F. KOKTULI	C	27.0	11.94	0.768	2.91	1.000	980.	159.2	0.0815	17.875	1.636		0.1165	6.73
22	N.F. KOKTULI	C	24.5	12.10	0.761	2.91	1.000	983.	159.2	0.0967	17.864	1.920		0.1165	6.73
23	N.F. KOKTULI	C	16.0	12.26	0.754	2.91	1.000	986.	159.2	0.0662	17.854	2.908		0.1165	6.73
24	N.F. KOKTULI	C	13.8	12.33	0.751	2.91	1.000	987.	159.2	0.0507	17.852	3.165		0.1165	6.73
25	N.F. KOKTULI	Q	13.7	12.33	0.751	2.91	1.000	987.	159.2	0.0507	17.852	3.180		0.0228	14.91
26	N.F. KOKTULI	C	11.6	12.38	0.749	2.91	1.000	988.	159.1	0.0510	17.851	3.229		0.0228	14.91
27	N.F. KOKTULI	C	9.9	12.42	0.747	2.91	1.000	989.	159.1	0.0488	17.851	3.267		0.0228	14.91
28	N.F. KOKTULI	Q	9.3	12.42	0.747	2.91	1.000	989.	159.1	0.0488	17.851	3.280		0.1213	14.91
29	N.F. KOKTULI	C	7.6	12.47	0.745	2.91	1.000	990.	159.1	0.0502	17.851	3.492		0.1213	14.91
30	N.F. KOKTULI	C	6.2	12.51	0.743	2.91	1.000	991.	159.1	0.0447	17.851	3.658		0.1213	14.91
31	N.F. KOKTULI	Q	5.3	12.51	0.743	2.91	1.000	991.	159.1	0.0447	17.851	3.770		0.1197	14.91
32	N.F. KOKTULI	C	3.5	12.56	0.741	2.91	1.000	992.	159.1	0.0456	17.850	3.979		0.1197	14.91
33	N.F. KOKTULI	E	0.0									4.400			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.10	1.000	3.26	1.000	950.	71.6	0.4563	17.830	0.072	10.55	0.0351	16.69
2	N.F. KOKTULI	C	55.7	9.08	0.955	3.26	1.000	968.	71.4	0.2413	17.831	0.140		0.0351	16.69
3	N.F. KOKTULI	C	48.2	9.40	0.937	3.26	1.000	974.	71.4	0.2073	17.831	0.406		0.0351	16.69
4	N.F. KOKTULI	C	44.8	9.44	0.935	3.26	1.000	974.	71.4	0.1468	17.827	0.526		0.0351	16.69
5	N.F. KOKTULI	C	42.1	9.46	0.934	3.26	1.000	975.	71.4	0.1423	17.826	0.620		0.0351	16.69
6	N.F. KOKTULI	C	41.2	9.47	0.933	3.26	1.000	975.	71.4	0.1194	17.826	0.650		0.0351	16.69
7	N.F. KOKTULI	C	39.8	9.48	0.933	3.26	1.000	975.	71.4	0.1567	17.824	0.701		0.0351	16.69
8	N.F. KOKTULI	C	38.6	9.50	0.931	3.26	1.000	975.	71.4	0.1036	17.823	0.744		0.0351	16.69
9	N.F. KOKTULI	Q	36.8	9.50	0.931	3.26	1.000	975.	71.4	0.1036	17.823	0.807		0.2627	9.31
10	N.F. KOKTULI	C	36.5	9.52	0.930	3.26	1.000	976.	71.4	0.1168	17.823	0.867		0.2627	9.31
11	N.F. KOKTULI	B	36.5									0.869			
12	TRIBUTARY 119	H	38.4	9.43	0.936	3.26	1.000	974.	71.4	0.2370	17.821	0.480	7.88	0.0337	9.31
13	TRIBUTARY 119	T	36.5									0.542			
14	N.F. KOKTULI	J	36.5	9.55	0.929	3.26	1.000	976.	71.4	0.1168	17.824	1.412		0.0810	9.31
15	N.F. KOKTULI	Q	35.8	9.55	0.929	3.26	1.000	976.	71.4	0.1168	17.824	1.474		0.0454	7.00
16	N.F. KOKTULI	C	35.4	9.59	0.927	3.26	1.000	977.	71.4	0.0929	17.824	1.491		0.0454	7.00
17	N.F. KOKTULI	C	34.0	9.64	0.924	3.26	1.000	978.	71.4	0.0888	17.824	1.555		0.0454	7.00
18	N.F. KOKTULI	C	31.0	9.70	0.921	3.26	1.000	979.	71.4	0.0990	17.822	1.690		0.0454	7.00
19	N.F. KOKTULI	C	28.5	9.74	0.919	3.26	1.000	980.	71.4	0.0789	17.821	1.804		0.0454	7.00
20	N.F. KOKTULI	Q	27.9	9.74	0.919	3.26	1.000	980.	71.4	0.0789	17.821	1.829		0.1813	7.00
21	N.F. KOKTULI	C	27.0	9.78	0.916	3.26	1.000	980.	71.4	0.0815	17.821	2.007		0.1813	7.00
22	N.F. KOKTULI	C	24.5	9.94	0.908	3.26	1.000	983.	71.3	0.0969	17.811	2.448		0.1813	7.00
23	N.F. KOKTULI	C	16.0	10.10	0.899	3.26	1.000	986.	71.3	0.0662	17.800	3.987		0.1813	7.00
24	N.F. KOKTULI	C	13.8	10.17	0.896	3.26	1.000	987.	71.3	0.0507	17.799	4.386		0.1813	7.00
25	N.F. KOKTULI	Q	13.7	10.17	0.896	3.26	1.000	987.	71.3	0.0507	17.799	4.410		0.0296	15.18
26	N.F. KOKTULI	C	11.6	10.22	0.893	3.26	1.000	988.	71.3	0.0510	17.798	4.473		0.0296	15.18
27	N.F. KOKTULI	C	9.9	10.26	0.891	3.26	1.000	989.	71.3	0.0488	17.798	4.523		0.0296	15.18
28	N.F. KOKTULI	Q	9.3	10.26	0.891	3.26	1.000	989.	71.3	0.0488	17.798	4.540		0.1312	15.18
29	N.F. KOKTULI	C	7.6	10.31	0.889	3.26	1.000	990.	71.3	0.0503	17.797	4.769		0.1312	15.18
30	N.F. KOKTULI	C	6.2	10.35	0.886	3.26	1.000	991.	71.3	0.0447	17.797	4.949		0.1312	15.18
31	N.F. KOKTULI	Q	5.3	10.35	0.886	3.26	1.000	991.	71.3	0.0447	17.797	5.070		0.1292	15.18
32	N.F. KOKTULI	C	3.5	10.40	0.884	3.26	1.000	992.	71.3	0.0456	17.796	5.295		0.1292	15.18
33	N.F. KOKTULI	E	0.0									5.750			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.98	0.960	3.43	1.000	950.	117.4	0.4573	17.774	0.073	10.74	0.0356	16.32
2	N.F. KOKTULI	C	55.7	9.96	0.906	3.43	1.000	968.	117.2	0.2417	17.775	0.142		0.0356	16.32
3	N.F. KOKTULI	C	48.2	10.28	0.890	3.43	1.000	974.	117.1	0.2076	17.775	0.412		0.0356	16.32
4	N.F. KOKTULI	C	44.8	10.32	0.888	3.43	1.000	974.	117.1	0.1469	17.771	0.533		0.0356	16.32
5	N.F. KOKTULI	C	42.1	10.34	0.887	3.43	1.000	975.	117.1	0.1425	17.770	0.629		0.0356	16.32
6	N.F. KOKTULI	C	41.2	10.35	0.886	3.43	1.000	975.	117.1	0.1195	17.770	0.659		0.0356	16.32
7	N.F. KOKTULI	C	39.8	10.36	0.886	3.43	1.000	975.	117.1	0.1570	17.768	0.711		0.0356	16.32
8	N.F. KOKTULI	C	38.6	10.38	0.884	3.43	1.000	975.	117.1	0.1036	17.767	0.754		0.0356	16.32
9	N.F. KOKTULI	Q	36.8	10.38	0.884	3.43	1.000	975.	117.1	0.1036	17.767	0.818		0.2712	9.27
10	N.F. KOKTULI	C	36.5	10.40	0.883	3.43	1.000	976.	117.1	0.1169	17.767	0.880		0.2712	9.27
11	N.F. KOKTULI	B	36.5									0.882			
12	TRIBUTARY 119	H	38.4	10.31	0.888	3.43	1.000	974.	117.1	0.2373	17.765	0.426	8.23	0.0343	9.27
13	TRIBUTARY 119	T	36.5									0.489			
14	N.F. KOKTULI	J	36.5	10.43	0.882	3.43	1.000	976.	117.1	0.1169	17.768	1.371		0.0824	9.27
15	N.F. KOKTULI	Q	35.8	10.43	0.882	3.43	1.000	976.	117.1	0.1169	17.768	1.434		0.0444	6.89
16	N.F. KOKTULI	C	35.4	10.47	0.880	3.43	1.000	977.	117.1	0.0928	17.768	1.451		0.0444	6.89
17	N.F. KOKTULI	C	34.0	10.52	0.877	3.43	1.000	978.	117.1	0.0887	17.768	1.513		0.0444	6.89
18	N.F. KOKTULI	C	31.0	10.58	0.874	3.43	1.000	979.	117.1	0.0991	17.766	1.646		0.0444	6.89
19	N.F. KOKTULI	C	28.5	10.62	0.872	3.43	1.000	980.	117.1	0.0788	17.765	1.757		0.0444	6.89
20	N.F. KOKTULI	Q	27.9	10.62	0.872	3.43	1.000	980.	117.1	0.0788	17.765	1.781		0.1938	6.89
21	N.F. KOKTULI	C	27.0	10.66	0.870	3.43	1.000	980.	117.1	0.0815	17.765	1.971		0.1938	6.89
22	N.F. KOKTULI	C	24.5	10.82	0.862	3.43	1.000	983.	117.1	0.0972	17.755	2.443		0.1938	6.89
23	N.F. KOKTULI	C	16.0	10.98	0.854	3.43	1.000	986.	117.1	0.0661	17.745	4.088		0.1938	6.89
24	N.F. KOKTULI	C	13.8	11.05	0.851	3.43	1.000	987.	117.1	0.0507	17.743	4.514		0.1938	6.89
25	N.F. KOKTULI	Q	13.7	11.05	0.851	3.43	1.000	987.	117.1	0.0507	17.743	4.540		0.0319	15.13
26	N.F. KOKTULI	C	11.6	11.10	0.848	3.43	1.000	988.	117.1	0.0510	17.742	4.608		0.0319	15.13
27	N.F. KOKTULI	C	9.9	11.14	0.846	3.43	1.000	989.	117.1	0.0487	17.742	4.661		0.0319	15.13
28	N.F. KOKTULI	Q	9.3	11.14	0.846	3.43	1.000	989.	117.1	0.0487	17.742	4.680		0.1312	15.13
29	N.F. KOKTULI	C	7.6	11.19	0.844	3.43	1.000	990.	117.0	0.0503	17.742	4.909		0.1312	15.13
30	N.F. KOKTULI	C	6.2	11.23	0.842	3.43	1.000	991.	117.0	0.0446	17.741	5.089		0.1312	15.13
31	N.F. KOKTULI	Q	5.3	11.23	0.842	3.43	1.000	991.	117.0	0.0446	17.741	5.210		0.1311	15.13
32	N.F. KOKTULI	C	3.5	11.28	0.839	3.43	1.000	992.	117.0	0.0456	17.740	5.439		0.1311	15.13
33	N.F. KOKTULI	E	0.0									5.900			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.69	0.899	3.41	1.000	950.	110.9	0.4584	17.716	0.067	10.40	0.0326	15.96
2	N.F. KOKTULI	C	55.7	10.67	0.849	3.41	1.000	968.	110.8	0.2421	17.717	0.130		0.0326	15.96
3	N.F. KOKTULI	C	48.2	10.99	0.833	3.41	1.000	974.	110.7	0.2080	17.717	0.377		0.0326	15.96
4	N.F. KOKTULI	C	44.8	11.03	0.831	3.41	1.000	974.	110.7	0.1471	17.713	0.488		0.0326	15.96
5	N.F. KOKTULI	C	42.1	11.05	0.830	3.41	1.000	975.	110.7	0.1428	17.712	0.576		0.0326	15.96
6	N.F. KOKTULI	C	41.2	11.06	0.830	3.41	1.000	975.	110.7	0.1195	17.712	0.603		0.0326	15.96
7	N.F. KOKTULI	C	39.8	11.07	0.829	3.41	1.000	975.	110.7	0.1573	17.711	0.651		0.0326	15.96
8	N.F. KOKTULI	C	38.6	11.09	0.828	3.41	1.000	975.	110.7	0.1036	17.709	0.690		0.0326	15.96
9	N.F. KOKTULI	Q	36.8	11.09	0.828	3.41	1.000	975.	110.7	0.1036	17.709	0.749		0.2458	9.25
10	N.F. KOKTULI	C	36.5	11.11	0.827	3.41	1.000	976.	110.7	0.1171	17.709	0.806		0.2458	9.25
11	N.F. KOKTULI	B	36.5									0.807			
12	TRIBUTARY 119	H	38.4	11.02	0.832	3.41	1.000	974.	110.7	0.2377	17.707	0.371	8.09	0.0315	9.25
13	TRIBUTARY 119	T	36.5									0.429			
14	N.F. KOKTULI	J	36.5	11.14	0.826	3.41	1.000	976.	110.7	0.1171	17.710	1.235		0.0758	9.25
15	N.F. KOKTULI	Q	35.8	11.14	0.826	3.41	1.000	976.	110.7	0.1171	17.710	1.293		0.0405	6.46
16	N.F. KOKTULI	C	35.4	11.18	0.824	3.41	1.000	977.	110.7	0.0928	17.711	1.308		0.0405	6.46
17	N.F. KOKTULI	C	34.0	11.23	0.821	3.41	1.000	978.	110.7	0.0887	17.710	1.365		0.0405	6.46
18	N.F. KOKTULI	C	31.0	11.29	0.819	3.41	1.000	979.	110.7	0.0992	17.708	1.486		0.0405	6.46
19	N.F. KOKTULI	C	28.5	11.33	0.817	3.41	1.000	980.	110.7	0.0787	17.708	1.588		0.0405	6.46
20	N.F. KOKTULI	Q	27.9	11.33	0.817	3.41	1.000	980.	110.7	0.0787	17.708	1.610		0.1588	6.46
21	N.F. KOKTULI	C	27.0	11.37	0.814	3.41	1.000	980.	110.7	0.0815	17.707	1.766		0.1588	6.46
22	N.F. KOKTULI	C	24.5	11.53	0.807	3.41	1.000	983.	110.7	0.0974	17.697	2.152		0.1588	6.46
23	N.F. KOKTULI	C	16.0	11.69	0.799	3.41	1.000	986.	110.7	0.0661	17.687	3.500		0.1588	6.46
24	N.F. KOKTULI	C	13.8	11.76	0.796	3.41	1.000	987.	110.7	0.0507	17.686	3.849		0.1588	6.46
25	N.F. KOKTULI	Q	13.7	11.76	0.796	3.41	1.000	987.	110.7	0.0507	17.686	3.870		0.0273	14.84
26	N.F. KOKTULI	C	11.6	11.81	0.794	3.41	1.000	988.	110.7	0.0510	17.685	3.928		0.0273	14.84
27	N.F. KOKTULI	C	9.9	11.85	0.792	3.41	1.000	989.	110.6	0.0487	17.685	3.974		0.0273	14.84
28	N.F. KOKTULI	Q	9.3	11.85	0.792	3.41	1.000	989.	110.6	0.0487	17.685	3.990		0.1262	14.84
29	N.F. KOKTULI	C	7.6	11.90	0.790	3.41	1.000	990.	110.6	0.0503	17.684	4.211		0.1262	14.84
30	N.F. KOKTULI	C	6.2	11.94	0.788	3.41	1.000	991.	110.6	0.0446	17.684	4.384		0.1262	14.84
31	N.F. KOKTULI	Q	5.3	11.94	0.788	3.41	1.000	991.	110.6	0.0446	17.684	4.500		0.1273	14.84
32	N.F. KOKTULI	C	3.5	11.99	0.785	3.41	1.000	992.	110.6	0.0456	17.683	4.722		0.1273	14.84
33	N.F. KOKTULI	E	0.0									5.170			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.84	0.837	5.23	1.000	950.	187.0	0.4595	17.656	0.063	11.46	0.0307	15.87
2	N.F. KOKTULI	C	55.7	11.82	0.791	5.23	1.000	968.	186.7	0.2425	17.657	0.122		0.0307	15.87
3	N.F. KOKTULI	C	48.2	12.14	0.776	5.23	1.000	974.	186.6	0.2083	17.657	0.355		0.0307	15.87
4	N.F. KOKTULI	C	44.8	12.18	0.774	5.23	1.000	974.	186.6	0.1473	17.654	0.460		0.0307	15.87
5	N.F. KOKTULI	C	42.1	12.20	0.773	5.23	1.000	975.	186.6	0.1430	17.653	0.542		0.0307	15.87
6	N.F. KOKTULI	C	41.2	12.21	0.773	5.23	1.000	975.	186.6	0.1196	17.653	0.568		0.0307	15.87
7	N.F. KOKTULI	C	39.8	12.22	0.772	5.23	1.000	975.	186.6	0.1576	17.651	0.613		0.0307	15.87
8	N.F. KOKTULI	C	38.6	12.24	0.771	5.23	1.000	975.	186.6	0.1036	17.650	0.651		0.0307	15.87
9	N.F. KOKTULI	Q	36.8	12.24	0.771	5.23	1.000	975.	186.6	0.1036	17.650	0.706		0.2288	9.36
10	N.F. KOKTULI	C	36.5	12.26	0.770	5.23	1.000	976.	186.6	0.1173	17.649	0.759		0.2288	9.36
11	N.F. KOKTULI	B	36.5									0.760			
12	TRIBUTARY 119	H	38.4	12.17	0.775	5.23	1.000	974.	186.7	0.2381	17.648	0.334	8.78	0.0294	9.36
13	TRIBUTARY 119	T	36.5									0.388			
14	N.F. KOKTULI	J	36.5	12.29	0.770	5.23	1.000	976.	186.6	0.1173	17.650	1.148		0.0706	9.36
15	N.F. KOKTULI	Q	35.8	12.29	0.770	5.23	1.000	976.	186.6	0.1173	17.650	1.202		0.0381	5.98
16	N.F. KOKTULI	C	35.4	12.33	0.768	5.23	1.000	977.	186.6	0.0928	17.651	1.216		0.0381	5.98
17	N.F. KOKTULI	C	34.0	12.38	0.765	5.23	1.000	978.	186.6	0.0887	17.651	1.270		0.0381	5.98
18	N.F. KOKTULI	C	31.0	12.44	0.763	5.23	1.000	979.	186.6	0.0994	17.649	1.384		0.0381	5.98
19	N.F. KOKTULI	C	28.5	12.48	0.761	5.23	1.000	980.	186.6	0.0787	17.648	1.479		0.0381	5.98
20	N.F. KOKTULI	Q	27.9	12.48	0.761	5.23	1.000	980.	186.6	0.0787	17.648	1.500		0.1419	5.98
21	N.F. KOKTULI	C	27.0	12.52	0.759	5.23	1.000	980.	186.6	0.0815	17.647	1.639		0.1419	5.98
22	N.F. KOKTULI	C	24.5	12.68	0.752	5.23	1.000	983.	186.6	0.0977	17.638	1.985		0.1419	5.98
23	N.F. KOKTULI	C	16.0	12.84	0.745	5.23	1.000	986.	186.6	0.0661	17.628	3.189		0.1419	5.98
24	N.F. KOKTULI	C	13.8	12.91	0.742	5.23	1.000	987.	186.6	0.0507	17.626	3.501		0.1419	5.98
25	N.F. KOKTULI	Q	13.7	12.91	0.742	5.23	1.000	987.	186.6	0.0507	17.626	3.520		0.0250	14.49
26	N.F. KOKTULI	C	11.6	12.96	0.740	5.23	1.000	988.	186.5	0.0510	17.625	3.573		0.0250	14.49
27	N.F. KOKTULI	C	9.9	13.00	0.738	5.23	1.000	989.	186.5	0.0487	17.626	3.615		0.0250	14.49
28	N.F. KOKTULI	Q	9.3	13.00	0.738	5.23	1.000	989.	186.5	0.0487	17.626	3.630		0.1237	14.49
29	N.F. KOKTULI	C	7.6	13.05	0.736	5.23	1.000	990.	186.5	0.0503	17.625	3.846		0.1237	14.49
30	N.F. KOKTULI	C	6.2	13.09	0.734	5.23	1.000	991.	186.5	0.0446	17.625	4.016		0.1237	14.49
31	N.F. KOKTULI	Q	5.3	13.09	0.734	5.23	1.000	991.	186.5	0.0446	17.625	4.130		0.1254	14.49
32	N.F. KOKTULI	C	3.5	13.14	0.732	5.23	1.000	992.	186.5	0.0456	17.624	4.349		0.1254	14.49
33	N.F. KOKTULI	E	0.0									4.790			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.06	0.797	4.21	1.000	950.	274.1	0.4607	17.595	0.060	12.90	0.0290	16.14
2	N.F. KOKTULI	C	55.7	13.04	0.752	4.21	1.000	968.	273.7	0.2429	17.596	0.116		0.0290	16.14
3	N.F. KOKTULI	C	48.2	13.36	0.738	4.21	1.000	974.	273.5	0.2087	17.596	0.336		0.0290	16.14
4	N.F. KOKTULI	C	44.8	13.40	0.737	4.21	1.000	974.	273.5	0.1476	17.592	0.434		0.0290	16.14
5	N.F. KOKTULI	C	42.1	13.42	0.736	4.21	1.000	975.	273.5	0.1433	17.591	0.513		0.0290	16.14
6	N.F. KOKTULI	C	41.2	13.43	0.735	4.21	1.000	975.	273.5	0.1197	17.591	0.537		0.0290	16.14
7	N.F. KOKTULI	C	39.8	13.44	0.735	4.21	1.000	975.	273.5	0.1579	17.590	0.579		0.0290	16.14
8	N.F. KOKTULI	C	38.6	13.46	0.734	4.21	1.000	975.	273.5	0.1036	17.589	0.615		0.0290	16.14
9	N.F. KOKTULI	Q	36.8	13.46	0.734	4.21	1.000	975.	273.5	0.1036	17.589	0.667		0.2161	9.66
10	N.F. KOKTULI	C	36.5	13.48	0.733	4.21	1.000	976.	273.5	0.1175	17.588	0.717		0.2161	9.66
11	N.F. KOKTULI	B	36.5									0.718			
12	TRIBUTARY 119	H	38.4	13.39	0.737	4.21	1.000	974.	273.6	0.2384	17.586	0.308	9.62	0.0277	9.66
13	TRIBUTARY 119	T	36.5									0.359			
14	N.F. KOKTULI	J	36.5	13.51	0.732	4.21	1.000	976.	273.5	0.1175	17.589	1.077		0.0667	9.66
15	N.F. KOKTULI	Q	35.8	13.51	0.732	4.21	1.000	976.	273.5	0.1175	17.589	1.128		0.0361	5.83
16	N.F. KOKTULI	C	35.4	13.55	0.730	4.21	1.000	977.	273.5	0.0928	17.590	1.142		0.0361	5.83
17	N.F. KOKTULI	C	34.0	13.60	0.728	4.21	1.000	978.	273.5	0.0886	17.589	1.192		0.0361	5.83
18	N.F. KOKTULI	C	31.0	13.66	0.726	4.21	1.000	979.	273.5	0.0996	17.588	1.300		0.0361	5.83
19	N.F. KOKTULI	C	28.5	13.70	0.724	4.21	1.000	980.	273.5	0.0786	17.587	1.390		0.0361	5.83
20	N.F. KOKTULI	Q	27.9	13.70	0.724	4.21	1.000	980.	273.5	0.0786	17.587	1.410		0.1258	5.83
21	N.F. KOKTULI	C	27.0	13.74	0.722	4.21	1.000	980.	273.4	0.0816	17.586	1.533		0.1258	5.83
22	N.F. KOKTULI	C	24.5	13.90	0.715	4.21	1.000	983.	273.4	0.0979	17.577	1.839		0.1258	5.83
23	N.F. KOKTULI	C	16.0	14.06	0.709	4.21	1.000	986.	273.4	0.0660	17.567	2.907		0.1258	5.83
24	N.F. KOKTULI	C	13.8	14.13	0.706	4.21	1.000	987.	273.4	0.0507	17.565	3.183		0.1258	5.83
25	N.F. KOKTULI	Q	13.7	14.13	0.706	4.21	1.000	987.	273.4	0.0507	17.565	3.200		0.0228	14.35
26	N.F. KOKTULI	C	11.6	14.18	0.704	4.21	1.000	988.	273.4	0.0510	17.565	3.249		0.0228	14.35
27	N.F. KOKTULI	C	9.9	14.22	0.702	4.21	1.000	989.	273.4	0.0487	17.565	3.287		0.0228	14.35
28	N.F. KOKTULI	Q	9.3	14.22	0.702	4.21	1.000	989.	273.4	0.0487	17.565	3.300		0.1213	14.35
29	N.F. KOKTULI	C	7.6	14.27	0.700	4.21	1.000	990.	273.4	0.0504	17.564	3.512		0.1213	14.35
30	N.F. KOKTULI	C	6.2	14.31	0.698	4.21	1.000	991.	273.4	0.0446	17.564	3.678		0.1213	14.35
31	N.F. KOKTULI	Q	5.3	14.31	0.698	4.21	1.000	991.	273.4	0.0446	17.564	3.790		0.1216	14.35
32	N.F. KOKTULI	C	3.5	14.36	0.696	4.21	1.000	992.	273.3	0.0457	17.563	4.002		0.1216	14.35
33	N.F. KOKTULI	E	0.0									4.430			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.24	0.878	3.11	1.000	950.	107.2	0.4619	17.532	0.058	12.27	0.0282	16.70
2	N.F. KOKTULI	C	55.7	11.22	0.829	3.11	1.000	968.	107.1	0.2433	17.533	0.112		0.0282	16.70
3	N.F. KOKTULI	C	48.2	11.54	0.814	3.11	1.000	974.	107.0	0.2091	17.533	0.326		0.0282	16.70
4	N.F. KOKTULI	C	44.8	11.58	0.812	3.11	1.000	974.	107.0	0.1478	17.529	0.421		0.0282	16.70
5	N.F. KOKTULI	C	42.1	11.60	0.811	3.11	1.000	975.	107.0	0.1435	17.528	0.497		0.0282	16.70
6	N.F. KOKTULI	C	41.2	11.61	0.811	3.11	1.000	975.	107.0	0.1198	17.528	0.521		0.0282	16.70
7	N.F. KOKTULI	C	39.8	11.62	0.810	3.11	1.000	975.	107.0	0.1582	17.527	0.562		0.0282	16.70
8	N.F. KOKTULI	C	38.6	11.64	0.809	3.11	1.000	975.	107.0	0.1036	17.526	0.596		0.0282	16.70
9	N.F. KOKTULI	Q	36.8	11.64	0.809	3.11	1.000	975.	107.0	0.1036	17.526	0.647		0.2076	10.09
10	N.F. KOKTULI	C	36.5	11.66	0.808	3.11	1.000	976.	107.0	0.1177	17.525	0.695		0.2076	10.09
11	N.F. KOKTULI	B	36.5									0.696			
12	TRIBUTARY 119	H	38.4	11.57	0.813	3.11	1.000	974.	107.0	0.2389	17.524	0.296	9.50	0.0272	10.09
13	TRIBUTARY 119	T	36.5									0.346			
14	N.F. KOKTULI	J	36.5	11.69	0.807	3.11	1.000	976.	107.0	0.1177	17.526	1.041		0.0654	10.09
15	N.F. KOKTULI	Q	35.8	11.69	0.807	3.11	1.000	976.	107.0	0.1177	17.526	1.091		0.0350	6.15
16	N.F. KOKTULI	C	35.4	11.73	0.805	3.11	1.000	977.	107.0	0.0928	17.527	1.104		0.0350	6.15
17	N.F. KOKTULI	C	34.0	11.78	0.803	3.11	1.000	978.	107.0	0.0886	17.526	1.154		0.0350	6.15
18	N.F. KOKTULI	C	31.0	11.84	0.800	3.11	1.000	979.	107.0	0.0997	17.525	1.258		0.0350	6.15
19	N.F. KOKTULI	C	28.5	11.88	0.798	3.11	1.000	980.	107.0	0.0786	17.524	1.346		0.0350	6.15
20	N.F. KOKTULI	Q	27.9	11.88	0.798	3.11	1.000	980.	107.0	0.0786	17.524	1.365		0.1092	6.15
21	N.F. KOKTULI	C	27.0	11.92	0.796	3.11	1.000	980.	107.0	0.0816	17.523	1.472		0.1092	6.15
22	N.F. KOKTULI	C	24.5	12.08	0.789	3.11	1.000	983.	107.0	0.0982	17.514	1.738		0.1092	6.15
23	N.F. KOKTULI	C	16.0	12.24	0.781	3.11	1.000	986.	107.0	0.0660	17.505	2.665		0.1092	6.15
24	N.F. KOKTULI	C	13.8	12.31	0.778	3.11	1.000	987.	107.0	0.0508	17.503	2.906		0.1092	6.15
25	N.F. KOKTULI	Q	13.7	12.31	0.778	3.11	1.000	987.	107.0	0.0508	17.503	2.920		0.0205	14.49
26	N.F. KOKTULI	C	11.6	12.36	0.776	3.11	1.000	988.	107.0	0.0510	17.502	2.964		0.0205	14.49
27	N.F. KOKTULI	C	9.9	12.40	0.774	3.11	1.000	989.	107.0	0.0487	17.502	2.998		0.0205	14.49
28	N.F. KOKTULI	Q	9.3	12.40	0.774	3.11	1.000	989.	107.0	0.0487	17.502	3.010		0.1163	14.49
29	N.F. KOKTULI	C	7.6	12.45	0.772	3.11	1.000	990.	107.0	0.0504	17.502	3.213		0.1163	14.49
30	N.F. KOKTULI	C	6.2	12.49	0.770	3.11	1.000	991.	107.0	0.0446	17.501	3.373		0.1163	14.49
31	N.F. KOKTULI	Q	5.3	12.49	0.770	3.11	1.000	991.	107.0	0.0446	17.501	3.480		0.1178	14.49
32	N.F. KOKTULI	C	3.5	12.54	0.768	3.11	1.000	992.	107.0	0.0457	17.500	3.685		0.1178	14.49
33	N.F. KOKTULI	E	0.0									4.100			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.73	0.797	2.27	1.000	950.	123.7	0.4632	17.467	0.057	11.78	0.0279	17.13
2	N.F. KOKTULI	C	55.7	12.71	0.752	2.27	1.000	968.	123.5	0.2438	17.468	0.111		0.0279	17.13
3	N.F. KOKTULI	C	48.2	13.03	0.738	2.27	1.000	974.	123.5	0.2095	17.468	0.322		0.0279	17.13
4	N.F. KOKTULI	C	44.8	13.07	0.737	2.27	1.000	974.	123.5	0.1481	17.465	0.417		0.0279	17.13
5	N.F. KOKTULI	C	42.1	13.09	0.736	2.27	1.000	975.	123.5	0.1438	17.464	0.492		0.0279	17.13
6	N.F. KOKTULI	C	41.2	13.10	0.735	2.27	1.000	975.	123.5	0.1199	17.464	0.515		0.0279	17.13
7	N.F. KOKTULI	C	39.8	13.11	0.735	2.27	1.000	975.	123.5	0.1585	17.462	0.556		0.0279	17.13
8	N.F. KOKTULI	C	38.6	13.13	0.734	2.27	1.000	975.	123.5	0.1036	17.461	0.590		0.0279	17.13
9	N.F. KOKTULI	Q	36.8	13.13	0.734	2.27	1.000	975.	123.5	0.1036	17.461	0.640		0.2076	10.49
10	N.F. KOKTULI	C	36.5	13.15	0.733	2.27	1.000	976.	123.5	0.1179	17.461	0.688		0.2076	10.49
11	N.F. KOKTULI	B	36.5									0.689			
12	TRIBUTARY 119	H	38.4	13.06	0.737	2.27	1.000	974.	123.5	0.2393	17.459	0.286	8.72	0.0261	10.49
13	TRIBUTARY 119	T	36.5									0.334			
14	N.F. KOKTULI	J	36.5	13.18	0.732	2.27	1.000	976.	123.5	0.1179	17.462	1.023		0.0641	10.49
15	N.F. KOKTULI	Q	35.8	13.18	0.732	2.27	1.000	976.	123.5	0.1179	17.462	1.072		0.0344	6.61
16	N.F. KOKTULI	C	35.4	13.22	0.730	2.27	1.000	977.	123.5	0.0928	17.462	1.085		0.0344	6.61
17	N.F. KOKTULI	C	34.0	13.27	0.728	2.27	1.000	978.	123.5	0.0885	17.462	1.133		0.0344	6.61
18	N.F. KOKTULI	C	31.0	13.33	0.726	2.27	1.000	979.	123.5	0.0999	17.460	1.236		0.0344	6.61
19	N.F. KOKTULI	C	28.5	13.37	0.724	2.27	1.000	980.	123.4	0.0785	17.460	1.322		0.0344	6.61
20	N.F. KOKTULI	Q	27.9	13.37	0.724	2.27	1.000	980.	123.4	0.0785	17.460	1.341		0.1053	6.61
21	N.F. KOKTULI	C	27.0	13.41	0.722	2.27	1.000	980.	123.4	0.0817	17.459	1.444		0.1053	6.61
22	N.F. KOKTULI	C	24.5	13.57	0.715	2.27	1.000	983.	123.4	0.0985	17.450	1.701		0.1053	6.61
23	N.F. KOKTULI	C	16.0	13.73	0.709	2.27	1.000	986.	123.4	0.0660	17.440	2.594		0.1053	6.61
24	N.F. KOKTULI	C	13.8	13.80	0.706	2.27	1.000	987.	123.4	0.0508	17.439	2.826		0.1053	6.61
25	N.F. KOKTULI	Q	13.7	13.80	0.706	2.27	1.000	987.	123.4	0.0508	17.439	2.840		0.0205	14.74
26	N.F. KOKTULI	C	11.6	13.85	0.704	2.27	1.000	988.	123.4	0.0511	17.438	2.884		0.0205	14.74
27	N.F. KOKTULI	C	9.9	13.89	0.702	2.27	1.000	989.	123.4	0.0487	17.438	2.918		0.0205	14.74
28	N.F. KOKTULI	Q	9.3	13.89	0.702	2.27	1.000	989.	123.4	0.0487	17.438	2.930		0.1163	14.74
29	N.F. KOKTULI	C	7.6	13.94	0.700	2.27	1.000	990.	123.4	0.0504	17.438	3.133		0.1163	14.74
30	N.F. KOKTULI	C	6.2	13.98	0.698	2.27	1.000	991.	123.4	0.0446	17.437	3.293		0.1163	14.74
31	N.F. KOKTULI	Q	5.3	13.98	0.698	2.27	1.000	991.	123.4	0.0446	17.437	3.400		0.1159	14.74
32	N.F. KOKTULI	C	3.5	14.03	0.696	2.27	1.000	992.	123.4	0.0457	17.436	3.602		0.1159	14.74
33	N.F. KOKTULI	E	0.0									4.010			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	13.55	0.786	2.94	1.000	950.	170.4	0.4646	17.401	0.056	13.17	0.0273	17.33
2	N.F. KOKTULI	C	55.7	14.53	0.742	2.94	1.000	968.	170.2	0.2442	17.402	0.109		0.0273	17.33
3	N.F. KOKTULI	C	48.2	14.85	0.729	2.94	1.000	974.	170.1	0.2099	17.402	0.316		0.0273	17.33
4	N.F. KOKTULI	C	44.8	14.89	0.727	2.94	1.000	974.	170.1	0.1483	17.399	0.408		0.0273	17.33
5	N.F. KOKTULI	C	42.1	14.91	0.726	2.94	1.000	975.	170.1	0.1441	17.398	0.482		0.0273	17.33
6	N.F. KOKTULI	C	41.2	14.92	0.726	2.94	1.000	975.	170.1	0.1200	17.398	0.505		0.0273	17.33
7	N.F. KOKTULI	C	39.8	14.93	0.725	2.94	1.000	975.	170.1	0.1588	17.396	0.545		0.0273	17.33
8	N.F. KOKTULI	C	38.6	14.95	0.724	2.94	1.000	975.	170.1	0.1036	17.395	0.578		0.0273	17.33
9	N.F. KOKTULI	Q	36.8	14.95	0.724	2.94	1.000	975.	170.1	0.1036	17.395	0.627		0.1992	10.80
10	N.F. KOKTULI	C	36.5	14.97	0.723	2.94	1.000	976.	170.1	0.1182	17.395	0.673		0.1992	10.80
11	N.F. KOKTULI	B	36.5									0.674			
12	TRIBUTARY 119	H	38.4	14.88	0.728	2.94	1.000	974.	170.1	0.2397	17.393	0.270	9.64	0.0256	10.80
13	TRIBUTARY 119	T	36.5									0.317			
14	N.F. KOKTULI	J	36.5	15.00	0.723	2.94	1.000	976.	170.1	0.1182	17.396	0.992		0.0614	10.80
15	N.F. KOKTULI	Q	35.8	15.00	0.723	2.94	1.000	976.	170.1	0.1182	17.396	1.039		0.0336	7.26
16	N.F. KOKTULI	C	35.4	15.04	0.721	2.94	1.000	977.	170.1	0.0928	17.396	1.052		0.0336	7.26
17	N.F. KOKTULI	C	34.0	15.09	0.719	2.94	1.000	978.	170.1	0.0885	17.396	1.099		0.0336	7.26
18	N.F. KOKTULI	C	31.0	15.15	0.716	2.94	1.000	979.	170.1	0.1001	17.394	1.199		0.0336	7.26
19	N.F. KOKTULI	C	28.5	15.19	0.714	2.94	1.000	980.	170.1	0.0784	17.394	1.284		0.0336	7.26
20	N.F. KOKTULI	Q	27.9	15.19	0.714	2.94	1.000	980.	170.1	0.0784	17.394	1.302		0.1003	7.26
21	N.F. KOKTULI	C	27.0	15.23	0.713	2.94	1.000	980.	170.0	0.0817	17.393	1.400		0.1003	7.26
22	N.F. KOKTULI	C	24.5	15.39	0.706	2.94	1.000	983.	170.0	0.0988	17.384	1.645		0.1003	7.26
23	N.F. KOKTULI	C	16.0	15.55	0.699	2.94	1.000	986.	170.0	0.0661	17.375	2.496		0.1003	7.26
24	N.F. KOKTULI	C	13.8	15.62	0.697	2.94	1.000	987.	170.0	0.0508	17.373	2.717		0.1003	7.26
25	N.F. KOKTULI	Q	13.7	15.62	0.697	2.94	1.000	987.	170.0	0.0508	17.373	2.730		0.0205	15.06
26	N.F. KOKTULI	C	11.6	15.67	0.695	2.94	1.000	988.	170.0	0.0511	17.373	2.774		0.0205	15.06
27	N.F. KOKTULI	C	9.9	15.71	0.693	2.94	1.000	989.	170.0	0.0487	17.373	2.808		0.0205	15.06
28	N.F. KOKTULI	Q	9.3	15.71	0.693	2.94	1.000	989.	170.0	0.0487	17.373	2.820		0.1138	15.06
29	N.F. KOKTULI	C	7.6	15.76	0.691	2.94	1.000	990.	170.0	0.0505	17.372	3.019		0.1138	15.06
30	N.F. KOKTULI	C	6.2	15.80	0.689	2.94	1.000	991.	170.0	0.0446	17.372	3.175		0.1138	15.06
31	N.F. KOKTULI	Q	5.3	15.80	0.689	2.94	1.000	991.	170.0	0.0446	17.372	3.280		0.1159	15.06
32	N.F. KOKTULI	C	3.5	15.85	0.687	2.94	1.000	992.	170.0	0.0457	17.371	3.482		0.1159	15.06
33	N.F. KOKTULI	E	0.0									3.890			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.37	0.991	4.26	1.000	950.	81.5	0.4656	17.334	0.065	11.57	0.0318	17.15
2	N.F. KOKTULI	C	55.7	9.35	0.935	4.26	1.000	968.	81.4	0.2447	17.335	0.127		0.0318	17.15
3	N.F. KOKTULI	C	48.2	9.67	0.918	4.26	1.000	974.	81.4	0.2103	17.335	0.368		0.0318	17.15
4	N.F. KOKTULI	C	44.8	9.71	0.916	4.26	1.000	974.	81.4	0.1486	17.331	0.476		0.0318	17.15
5	N.F. KOKTULI	C	42.1	9.73	0.915	4.26	1.000	975.	81.4	0.1445	17.330	0.562		0.0318	17.15
6	N.F. KOKTULI	C	41.2	9.74	0.914	4.26	1.000	975.	81.4	0.1202	17.330	0.589		0.0318	17.15
7	N.F. KOKTULI	C	39.8	9.75	0.914	4.26	1.000	975.	81.4	0.1592	17.329	0.635		0.0318	17.15
8	N.F. KOKTULI	C	38.6	9.77	0.913	4.26	1.000	975.	81.4	0.1036	17.328	0.674		0.0318	17.15
9	N.F. KOKTULI	Q	36.8	9.77	0.913	4.26	1.000	975.	81.4	0.1036	17.328	0.731		0.2373	10.96
10	N.F. KOKTULI	C	36.5	9.79	0.911	4.26	1.000	976.	81.4	0.1184	17.328	0.786		0.2373	10.96
11	N.F. KOKTULI	B	36.5									0.787			
12	TRIBUTARY 119	H	38.4	9.70	0.917	4.26	1.000	974.	81.4	0.2402	17.326	0.263	9.56	0.0310	10.96
13	TRIBUTARY 119	T	36.5									0.320			
14	N.F. KOKTULI	J	36.5	9.82	0.910	4.26	1.000	976.	81.4	0.1184	17.328	1.107		0.0732	10.96
15	N.F. KOKTULI	Q	35.8	9.82	0.910	4.26	1.000	976.	81.4	0.1184	17.328	1.163		0.0371	8.00
16	N.F. KOKTULI	C	35.4	9.86	0.908	4.26	1.000	977.	81.4	0.0928	17.329	1.177		0.0371	8.00
17	N.F. KOKTULI	C	34.0	9.91	0.905	4.26	1.000	978.	81.4	0.0885	17.329	1.229		0.0371	8.00
18	N.F. KOKTULI	C	31.0	9.97	0.902	4.26	1.000	979.	81.4	0.1004	17.327	1.340		0.0371	8.00
19	N.F. KOKTULI	C	28.5	10.01	0.900	4.26	1.000	980.	81.4	0.0784	17.326	1.433		0.0371	8.00
20	N.F. KOKTULI	Q	27.9	10.01	0.900	4.26	1.000	980.	81.4	0.0784	17.326	1.453		0.0918	8.00
21	N.F. KOKTULI	C	27.0	10.05	0.898	4.26	1.000	980.	81.4	0.0818	17.326	1.543		0.0918	8.00
22	N.F. KOKTULI	C	24.5	10.21	0.890	4.26	1.000	983.	81.4	0.0991	17.317	1.767		0.0918	8.00
23	N.F. KOKTULI	C	16.0	10.37	0.881	4.26	1.000	986.	81.4	0.0661	17.308	2.546		0.0918	8.00
24	N.F. KOKTULI	C	13.8	10.44	0.878	4.26	1.000	987.	81.4	0.0508	17.306	2.748		0.0918	8.00
25	N.F. KOKTULI	Q	13.7	10.44	0.878	4.26	1.000	987.	81.4	0.0508	17.306	2.760		0.0205	15.36
26	N.F. KOKTULI	C	11.6	10.49	0.875	4.26	1.000	988.	81.4	0.0512	17.306	2.804		0.0205	15.36
27	N.F. KOKTULI	C	9.9	10.53	0.873	4.26	1.000	989.	81.3	0.0487	17.306	2.838		0.0205	15.36
28	N.F. KOKTULI	Q	9.3	10.53	0.873	4.26	1.000	989.	81.3	0.0487	17.306	2.850		0.1138	15.36
29	N.F. KOKTULI	C	7.6	10.58	0.871	4.26	1.000	990.	81.3	0.0506	17.305	3.049		0.1138	15.36
30	N.F. KOKTULI	C	6.2	10.62	0.869	4.26	1.000	991.	81.3	0.0446	17.305	3.205		0.1138	15.36
31	N.F. KOKTULI	Q	5.3	10.62	0.869	4.26	1.000	991.	81.3	0.0446	17.305	3.310		0.1159	15.36
32	N.F. KOKTULI	C	3.5	10.67	0.866	4.26	1.000	992.	81.3	0.0458	17.304	3.512		0.1159	15.36
33	N.F. KOKTULI	E	0.0									3.920			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.33	1.000	4.42	1.000	950.	51.4	0.4667	17.265	0.064	8.71	0.0309	16.42
2	N.F. KOKTULI	C	55.7	7.31	0.964	4.42	1.000	968.	51.2	0.2453	17.266	0.123		0.0309	16.42
3	N.F. KOKTULI	C	48.2	7.63	0.946	4.42	1.000	974.	51.2	0.2107	17.266	0.358		0.0309	16.42
4	N.F. KOKTULI	C	44.8	7.67	0.944	4.42	1.000	974.	51.2	0.1489	17.263	0.463		0.0309	16.42
5	N.F. KOKTULI	C	42.1	7.69	0.943	4.42	1.000	975.	51.2	0.1448	17.262	0.546		0.0309	16.42
6	N.F. KOKTULI	C	41.2	7.70	0.943	4.42	1.000	975.	51.2	0.1203	17.262	0.572		0.0309	16.42
7	N.F. KOKTULI	C	39.8	7.71	0.942	4.42	1.000	975.	51.2	0.1595	17.260	0.618		0.0309	16.42
8	N.F. KOKTULI	C	38.6	7.73	0.941	4.42	1.000	975.	51.2	0.1036	17.259	0.655		0.0309	16.42
9	N.F. KOKTULI	Q	36.8	7.73	0.941	4.42	1.000	975.	51.2	0.1036	17.259	0.711		0.2288	10.87
10	N.F. KOKTULI	C	36.5	7.75	0.940	4.42	1.000	976.	51.2	0.1187	17.259	0.764		0.2288	10.87
11	N.F. KOKTULI	B	36.5									0.765			
12	TRIBUTARY 119	H	38.4	7.66	0.945	4.42	1.000	974.	51.2	0.2406	17.257	0.313	7.48	0.0299	10.87
13	TRIBUTARY 119	T	36.5									0.368			
14	N.F. KOKTULI	J	36.5	7.78	0.939	4.42	1.000	976.	51.2	0.1187	17.260	1.133		0.0706	10.87
15	N.F. KOKTULI	Q	35.8	7.78	0.939	4.42	1.000	976.	51.2	0.1187	17.260	1.187		0.0377	8.33
16	N.F. KOKTULI	C	35.4	7.82	0.936	4.42	1.000	977.	51.2	0.0928	17.260	1.201		0.0377	8.33
17	N.F. KOKTULI	C	34.0	7.87	0.933	4.42	1.000	978.	51.2	0.0885	17.260	1.254		0.0377	8.33
18	N.F. KOKTULI	C	31.0	7.93	0.930	4.42	1.000	979.	51.2	0.1006	17.258	1.367		0.0377	8.33
19	N.F. KOKTULI	C	28.5	7.97	0.928	4.42	1.000	980.	51.2	0.0784	17.258	1.461		0.0377	8.33
20	N.F. KOKTULI	Q	27.9	7.97	0.928	4.42	1.000	980.	51.2	0.0784	17.258	1.482		0.1284	8.33
21	N.F. KOKTULI	C	27.0	8.01	0.926	4.42	1.000	980.	51.2	0.0818	17.257	1.608		0.1284	8.33
22	N.F. KOKTULI	C	24.5	8.17	0.917	4.42	1.000	983.	51.2	0.0994	17.248	1.921		0.1284	8.33
23	N.F. KOKTULI	C	16.0	8.33	0.908	4.42	1.000	986.	51.2	0.0661	17.239	3.011		0.1284	8.33
24	N.F. KOKTULI	C	13.8	8.40	0.905	4.42	1.000	987.	51.2	0.0508	17.238	3.293		0.1284	8.33
25	N.F. KOKTULI	Q	13.7	8.40	0.905	4.42	1.000	987.	51.2	0.0508	17.238	3.310		0.0228	15.41
26	N.F. KOKTULI	C	11.6	8.45	0.902	4.42	1.000	988.	51.2	0.0512	17.237	3.359		0.0228	15.41
27	N.F. KOKTULI	C	9.9	8.49	0.900	4.42	1.000	989.	51.2	0.0487	17.237	3.397		0.0228	15.41
28	N.F. KOKTULI	Q	9.3	8.49	0.900	4.42	1.000	989.	51.2	0.0487	17.237	3.410		0.1237	15.41
29	N.F. KOKTULI	C	7.6	8.54	0.898	4.42	1.000	990.	51.2	0.0506	17.237	3.626		0.1237	15.41
30	N.F. KOKTULI	C	6.2	8.58	0.895	4.42	1.000	991.	51.2	0.0446	17.236	3.796		0.1237	15.41
31	N.F. KOKTULI	Q	5.3	8.58	0.895	4.42	1.000	991.	51.2	0.0446	17.236	3.910		0.1216	15.41
32	N.F. KOKTULI	C	3.5	8.63	0.893	4.42	1.000	992.	51.2	0.0458	17.236	4.122		0.1216	15.41
33	N.F. KOKTULI	E	0.0									4.550			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	7.19	1.000	4.84	1.000	950.	52.3	0.4677	17.195	0.077	8.44	0.0372	15.39
2	N.F. KOKTULI	C	55.7	8.17	0.964	4.84	1.000	968.	52.1	0.2458	17.196	0.148		0.0372	15.39
3	N.F. KOKTULI	C	48.2	8.49	0.946	4.84	1.000	974.	52.1	0.2111	17.196	0.430		0.0372	15.39
4	N.F. KOKTULI	C	44.8	8.53	0.944	4.84	1.000	974.	52.1	0.1492	17.192	0.557		0.0372	15.39
5	N.F. KOKTULI	C	42.1	8.55	0.943	4.84	1.000	975.	52.1	0.1452	17.192	0.657		0.0372	15.39
6	N.F. KOKTULI	C	41.2	8.56	0.943	4.84	1.000	975.	52.1	0.1204	17.191	0.688		0.0372	15.39
7	N.F. KOKTULI	C	39.8	8.57	0.942	4.84	1.000	975.	52.1	0.1599	17.190	0.743		0.0372	15.39
8	N.F. KOKTULI	C	38.6	8.59	0.941	4.84	1.000	975.	52.1	0.1036	17.189	0.788		0.0372	15.39
9	N.F. KOKTULI	Q	36.8	8.59	0.941	4.84	1.000	975.	52.1	0.1036	17.189	0.855		0.2797	10.65
10	N.F. KOKTULI	C	36.5	8.61	0.940	4.84	1.000	976.	52.1	0.1190	17.189	0.919		0.2797	10.65
11	N.F. KOKTULI	B	36.5									0.921			
12	TRIBUTARY 119	H	38.4	8.52	0.945	4.84	1.000	974.	52.1	0.2411	17.187	0.417	7.50	0.0364	10.65
13	TRIBUTARY 119	T	36.5									0.484			
14	N.F. KOKTULI	J	36.5	8.64	0.938	4.84	1.000	976.	52.1	0.1190	17.189	1.405		0.0876	10.65
15	N.F. KOKTULI	Q	35.8	8.64	0.938	4.84	1.000	976.	52.1	0.1190	17.189	1.472		0.0453	8.02
16	N.F. KOKTULI	C	35.4	8.68	0.936	4.84	1.000	977.	52.1	0.0928	17.190	1.489		0.0453	8.02
17	N.F. KOKTULI	C	34.0	8.73	0.933	4.84	1.000	978.	52.1	0.0884	17.190	1.553		0.0453	8.02
18	N.F. KOKTULI	C	31.0	8.79	0.930	4.84	1.000	979.	52.1	0.1008	17.188	1.688		0.0453	8.02
19	N.F. KOKTULI	C	28.5	8.83	0.928	4.84	1.000	980.	52.1	0.0784	17.187	1.801		0.0453	8.02
20	N.F. KOKTULI	Q	27.9	8.83	0.928	4.84	1.000	980.	52.1	0.0784	17.187	1.826		0.1584	8.02
21	N.F. KOKTULI	C	27.0	8.87	0.926	4.84	1.000	980.	52.1	0.0819	17.187	1.981		0.1584	8.02
22	N.F. KOKTULI	C	24.5	9.03	0.917	4.84	1.000	983.	52.1	0.0998	17.178	2.367		0.1584	8.02
23	N.F. KOKTULI	C	16.0	9.19	0.908	4.84	1.000	986.	52.1	0.0661	17.170	3.711		0.1584	8.02
24	N.F. KOKTULI	C	13.8	9.26	0.905	4.84	1.000	987.	52.1	0.0509	17.168	4.059		0.1584	8.02
25	N.F. KOKTULI	Q	13.7	9.26	0.905	4.84	1.000	987.	52.1	0.0509	17.168	4.080		0.0296	15.10
26	N.F. KOKTULI	C	11.6	9.31	0.902	4.84	1.000	988.	52.1	0.0513	17.168	4.143		0.0296	15.10
27	N.F. KOKTULI	C	9.9	9.35	0.900	4.84	1.000	989.	52.1	0.0488	17.168	4.193		0.0296	15.10
28	N.F. KOKTULI	Q	9.3	9.35	0.900	4.84	1.000	989.	52.1	0.0488	17.168	4.210		0.1287	15.10
29	N.F. KOKTULI	C	7.6	9.40	0.898	4.84	1.000	990.	52.1	0.0507	17.167	4.435		0.1287	15.10
30	N.F. KOKTULI	C	6.2	9.44	0.895	4.84	1.000	991.	52.1	0.0446	17.167	4.611		0.1287	15.10
31	N.F. KOKTULI	Q	5.3	9.44	0.895	4.84	1.000	991.	52.1	0.0446	17.167	4.730		0.1292	15.10
32	N.F. KOKTULI	C	3.5	9.49	0.893	4.84	1.000	992.	52.1	0.0458	17.166	4.955		0.1292	15.10
33	N.F. KOKTULI	E	0.0									5.410			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.91	0.919	5.97	1.000	950.	103.5	0.4688	17.123	0.091	8.80	0.0443	14.57
2	N.F. KOKTULI	C	55.7	9.89	0.868	5.97	1.000	968.	103.3	0.2464	17.124	0.176		0.0443	14.57
3	N.F. KOKTULI	C	48.2	10.21	0.852	5.97	1.000	974.	103.3	0.2116	17.124	0.512		0.0443	14.57
4	N.F. KOKTULI	C	44.8	10.25	0.850	5.97	1.000	974.	103.3	0.1495	17.121	0.662		0.0443	14.57
5	N.F. KOKTULI	C	42.1	10.27	0.849	5.97	1.000	975.	103.3	0.1455	17.120	0.781		0.0443	14.57
6	N.F. KOKTULI	C	41.2	10.28	0.848	5.97	1.000	975.	103.3	0.1206	17.120	0.819		0.0443	14.57
7	N.F. KOKTULI	C	39.8	10.29	0.848	5.97	1.000	975.	103.3	0.1603	17.119	0.883		0.0443	14.57
8	N.F. KOKTULI	C	38.6	10.31	0.847	5.97	1.000	975.	103.3	0.1037	17.118	0.937		0.0443	14.57
9	N.F. KOKTULI	Q	36.8	10.31	0.847	5.97	1.000	975.	103.3	0.1037	17.118	1.017		0.3432	10.50
10	N.F. KOKTULI	C	36.5	10.33	0.846	5.97	1.000	976.	103.3	0.1193	17.117	1.096		0.3432	10.50
11	N.F. KOKTULI	B	36.5									1.098			
12	TRIBUTARY 119	H	38.4	10.24	0.851	5.97	1.000	974.	103.3	0.2416	17.116	0.424	7.93	0.0435	10.50
13	TRIBUTARY 119	T	36.5									0.504			
14	N.F. KOKTULI	J	36.5	10.36	0.845	5.97	1.000	976.	103.3	0.1193	17.118	1.601		0.1046	10.50
15	N.F. KOKTULI	Q	35.8	10.36	0.845	5.97	1.000	976.	103.3	0.1193	17.118	1.681		0.0509	7.18
16	N.F. KOKTULI	C	35.4	10.40	0.843	5.97	1.000	977.	103.3	0.0928	17.119	1.700		0.0509	7.18
17	N.F. KOKTULI	C	34.0	10.45	0.840	5.97	1.000	978.	103.3	0.0885	17.118	1.772		0.0509	7.18
18	N.F. KOKTULI	C	31.0	10.51	0.837	5.97	1.000	979.	103.3	0.1011	17.117	1.924		0.0509	7.18
19	N.F. KOKTULI	C	28.5	10.55	0.835	5.97	1.000	980.	103.3	0.0784	17.116	2.051		0.0509	7.18
20	N.F. KOKTULI	Q	27.9	10.55	0.835	5.97	1.000	980.	103.3	0.0784	17.116	2.079		0.1518	7.18
21	N.F. KOKTULI	C	27.0	10.59	0.833	5.97	1.000	980.	103.3	0.0820	17.116	2.228		0.1518	7.18
22	N.F. KOKTULI	C	24.5	10.75	0.825	5.97	1.000	983.	103.3	0.1001	17.107	2.597		0.1518	7.18
23	N.F. KOKTULI	C	16.0	10.91	0.818	5.97	1.000	986.	103.3	0.0661	17.099	3.886		0.1518	7.18
24	N.F. KOKTULI	C	13.8	10.98	0.814	5.97	1.000	987.	103.3	0.0509	17.097	4.220		0.1518	7.18
25	N.F. KOKTULI	Q	13.7	10.98	0.814	5.97	1.000	987.	103.3	0.0509	17.097	4.240		0.0319	14.56
26	N.F. KOKTULI	C	11.6	11.03	0.812	5.97	1.000	988.	103.3	0.0513	17.097	4.308		0.0319	14.56
27	N.F. KOKTULI	C	9.9	11.07	0.810	5.97	1.000	989.	103.3	0.0488	17.097	4.361		0.0319	14.56
28	N.F. KOKTULI	Q	9.3	11.07	0.810	5.97	1.000	989.	103.3	0.0488	17.097	4.380		0.1287	14.56
29	N.F. KOKTULI	C	7.6	11.12	0.808	5.97	1.000	990.	103.2	0.0508	17.096	4.605		0.1287	14.56
30	N.F. KOKTULI	C	6.2	11.16	0.806	5.97	1.000	991.	103.2	0.0446	17.096	4.781		0.1287	14.56
31	N.F. KOKTULI	Q	5.3	11.16	0.806	5.97	1.000	991.	103.2	0.0446	17.096	4.900		0.1292	14.56
32	N.F. KOKTULI	C	3.5	11.21	0.803	5.97	1.000	992.	103.2	0.0459	17.095	5.125		0.1292	14.56
33	N.F. KOKTULI	E	0.0									5.580			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.65	0.674	4.68	1.000	950.	127.3	0.4700	17.051	0.075	10.30	0.0366	14.38
2	N.F. KOKTULI	C	55.7	13.63	0.636	4.68	1.000	968.	127.1	0.2470	17.052	0.146		0.0366	14.38
3	N.F. KOKTULI	C	48.2	13.95	0.625	4.68	1.000	974.	127.0	0.2121	17.052	0.423		0.0366	14.38
4	N.F. KOKTULI	C	44.8	13.99	0.623	4.68	1.000	974.	127.1	0.1498	17.048	0.548		0.0366	14.38
5	N.F. KOKTULI	C	42.1	14.01	0.622	4.68	1.000	975.	127.1	0.1460	17.048	0.646		0.0366	14.38
6	N.F. KOKTULI	C	41.2	14.02	0.622	4.68	1.000	975.	127.1	0.1208	17.047	0.677		0.0366	14.38
7	N.F. KOKTULI	C	39.8	14.03	0.622	4.68	1.000	975.	127.1	0.1607	17.046	0.730		0.0366	14.38
8	N.F. KOKTULI	C	38.6	14.05	0.621	4.68	1.000	975.	127.1	0.1037	17.045	0.775		0.0366	14.38
9	N.F. KOKTULI	Q	36.8	14.05	0.621	4.68	1.000	975.	127.1	0.1037	17.045	0.841		0.2754	10.58
10	N.F. KOKTULI	C	36.5	14.07	0.620	4.68	1.000	976.	127.1	0.1196	17.045	0.904		0.2754	10.58
11	N.F. KOKTULI	B	36.5									0.906			
12	TRIBUTARY 119	H	38.4	13.98	0.624	4.68	1.000	974.	127.1	0.2421	17.043	0.366	8.75	0.0353	10.58
13	TRIBUTARY 119	T	36.5									0.431			
14	N.F. KOKTULI	J	36.5	14.10	0.619	4.68	1.000	976.	127.0	0.1196	17.045	1.338		0.0850	10.58
15	N.F. KOKTULI	Q	35.8	14.10	0.619	4.68	1.000	976.	127.0	0.1196	17.045	1.403		0.0435	6.13
16	N.F. KOKTULI	C	35.4	14.14	0.618	4.68	1.000	977.	127.0	0.0929	17.046	1.419		0.0435	6.13
17	N.F. KOKTULI	C	34.0	14.19	0.616	4.68	1.000	978.	127.0	0.0885	17.046	1.481		0.0435	6.13
18	N.F. KOKTULI	C	31.0	14.25	0.614	4.68	1.000	979.	127.0	0.1014	17.044	1.610		0.0435	6.13
19	N.F. KOKTULI	C	28.5	14.29	0.612	4.68	1.000	980.	127.0	0.0785	17.044	1.719		0.0435	6.13
20	N.F. KOKTULI	Q	27.9	14.29	0.612	4.68	1.000	980.	127.0	0.0785	17.044	1.743		0.1473	6.13
21	N.F. KOKTULI	C	27.0	14.33	0.611	4.68	1.000	980.	127.0	0.0821	17.043	1.888		0.1473	6.13
22	N.F. KOKTULI	C	24.5	14.49	0.605	4.68	1.000	983.	127.0	0.1005	17.035	2.246		0.1473	6.13
23	N.F. KOKTULI	C	16.0	14.65	0.600	4.68	1.000	986.	127.0	0.0662	17.027	3.496		0.1473	6.13
24	N.F. KOKTULI	C	13.8	14.72	0.597	4.68	1.000	987.	127.0	0.0509	17.025	3.821		0.1473	6.13
25	N.F. KOKTULI	Q	13.7	14.72	0.597	4.68	1.000	987.	127.0	0.0509	17.025	3.840		0.0273	14.09
26	N.F. KOKTULI	C	11.6	14.77	0.596	4.68	1.000	988.	127.0	0.0514	17.024	3.898		0.0273	14.09
27	N.F. KOKTULI	C	9.9	14.81	0.594	4.68	1.000	989.	127.0	0.0489	17.025	3.944		0.0273	14.09
28	N.F. KOKTULI	Q	9.3	14.81	0.594	4.68	1.000	989.	127.0	0.0489	17.025	3.960		0.1262	14.09
29	N.F. KOKTULI	C	7.6	14.86	0.592	4.68	1.000	990.	127.0	0.0509	17.024	4.181		0.1262	14.09
30	N.F. KOKTULI	C	6.2	14.90	0.591	4.68	1.000	991.	127.0	0.0447	17.024	4.354		0.1262	14.09
31	N.F. KOKTULI	Q	5.3	14.90	0.591	4.68	1.000	991.	127.0	0.0447	17.024	4.470		0.1273	14.09
32	N.F. KOKTULI	C	3.5	14.95	0.589	4.68	1.000	992.	127.0	0.0459	17.023	4.692		0.1273	14.09
33	N.F. KOKTULI	E	0.0									5.140			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	14.55	0.684	2.92	1.000	950.	188.6	0.4711	16.977	0.065	12.10	0.0315	15.00
2	N.F. KOKTULI	C	55.7	15.53	0.646	2.92	1.000	968.	188.3	0.2476	16.978	0.125		0.0315	15.00
3	N.F. KOKTULI	C	48.2	15.85	0.634	2.92	1.000	974.	188.3	0.2126	16.978	0.364		0.0315	15.00
4	N.F. KOKTULI	C	44.8	15.89	0.633	2.92	1.000	974.	188.3	0.1502	16.975	0.471		0.0315	15.00
5	N.F. KOKTULI	C	42.1	15.91	0.632	2.92	1.000	975.	188.3	0.1464	16.974	0.556		0.0315	15.00
6	N.F. KOKTULI	C	41.2	15.92	0.632	2.92	1.000	975.	188.3	0.1209	16.974	0.582		0.0315	15.00
7	N.F. KOKTULI	C	39.8	15.93	0.631	2.92	1.000	975.	188.3	0.1611	16.973	0.628		0.0315	15.00
8	N.F. KOKTULI	C	38.6	15.95	0.630	2.92	1.000	975.	188.3	0.1037	16.971	0.666		0.0315	15.00
9	N.F. KOKTULI	Q	36.8	15.95	0.630	2.92	1.000	975.	188.3	0.1037	16.971	0.723		0.2331	10.93
10	N.F. KOKTULI	C	36.5	15.97	0.630	2.92	1.000	976.	188.3	0.1200	16.971	0.777		0.2331	10.93
11	N.F. KOKTULI	B	36.5									0.778			
12	TRIBUTARY 119	H	38.4	15.88	0.633	2.92	1.000	974.	188.3	0.2426	16.970	0.307	9.59	0.0305	10.93
13	TRIBUTARY 119	T	36.5									0.363			
14	N.F. KOKTULI	J	36.5	16.00	0.629	2.92	1.000	976.	188.3	0.1200	16.972	1.141		0.0719	10.93
15	N.F. KOKTULI	Q	35.8	16.00	0.629	2.92	1.000	976.	188.3	0.1200	16.972	1.196		0.0380	5.14
16	N.F. KOKTULI	C	35.4	16.04	0.627	2.92	1.000	977.	188.2	0.0929	16.972	1.210		0.0380	5.14
17	N.F. KOKTULI	C	34.0	16.09	0.625	2.92	1.000	978.	188.2	0.0886	16.972	1.264		0.0380	5.14
18	N.F. KOKTULI	C	31.0	16.15	0.623	2.92	1.000	979.	188.2	0.1017	16.971	1.377		0.0380	5.14
19	N.F. KOKTULI	C	28.5	16.19	0.622	2.92	1.000	980.	188.2	0.0785	16.970	1.472		0.0380	5.14
20	N.F. KOKTULI	Q	27.9	16.19	0.622	2.92	1.000	980.	188.2	0.0785	16.970	1.493		0.1255	5.14
21	N.F. KOKTULI	C	27.0	16.23	0.620	2.92	1.000	980.	188.2	0.0822	16.969	1.616		0.1255	5.14
22	N.F. KOKTULI	C	24.5	16.39	0.614	2.92	1.000	983.	188.2	0.1008	16.961	1.922		0.1255	5.14
23	N.F. KOKTULI	C	16.0	16.55	0.609	2.92	1.000	986.	188.2	0.0662	16.953	2.987		0.1255	5.14
24	N.F. KOKTULI	C	13.8	16.62	0.606	2.92	1.000	987.	188.2	0.0510	16.952	3.263		0.1255	5.14
25	N.F. KOKTULI	Q	13.7	16.62	0.606	2.92	1.000	987.	188.2	0.0510	16.952	3.280		0.0250	13.93
26	N.F. KOKTULI	C	11.6	16.67	0.605	2.92	1.000	988.	188.2	0.0514	16.951	3.333		0.0250	13.93
27	N.F. KOKTULI	C	9.9	16.71	0.603	2.92	1.000	989.	188.2	0.0489	16.951	3.375		0.0250	13.93
28	N.F. KOKTULI	Q	9.3	16.71	0.603	2.92	1.000	989.	188.2	0.0489	16.951	3.390		0.1213	13.93
29	N.F. KOKTULI	C	7.6	16.76	0.601	2.92	1.000	990.	188.2	0.0510	16.951	3.602		0.1213	13.93
30	N.F. KOKTULI	C	6.2	16.80	0.600	2.92	1.000	991.	188.2	0.0447	16.950	3.768		0.1213	13.93
31	N.F. KOKTULI	Q	5.3	16.80	0.600	2.92	1.000	991.	188.2	0.0447	16.950	3.880		0.1216	13.93
32	N.F. KOKTULI	C	3.5	16.85	0.598	2.92	1.000	992.	188.2	0.0460	16.950	4.092		0.1216	13.93
33	N.F. KOKTULI	E	0.0									4.520			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	16.54	0.735	3.98	1.000	950.	169.4	0.4724	16.902	0.060	14.21	0.0292	16.39
2	N.F. KOKTULI	C	55.7	17.52	0.694	3.98	1.000	968.	169.1	0.2482	16.903	0.116		0.0292	16.39
3	N.F. KOKTULI	C	48.2	17.84	0.681	3.98	1.000	974.	169.0	0.2131	16.903	0.337		0.0292	16.39
4	N.F. KOKTULI	C	44.8	17.88	0.680	3.98	1.000	974.	169.0	0.1506	16.900	0.436		0.0292	16.39
5	N.F. KOKTULI	C	42.1	17.90	0.679	3.98	1.000	975.	169.0	0.1468	16.899	0.515		0.0292	16.39
6	N.F. KOKTULI	C	41.2	17.91	0.679	3.98	1.000	975.	169.0	0.1211	16.899	0.539		0.0292	16.39
7	N.F. KOKTULI	C	39.8	17.92	0.678	3.98	1.000	975.	169.0	0.1615	16.898	0.582		0.0292	16.39
8	N.F. KOKTULI	C	38.6	17.94	0.677	3.98	1.000	975.	169.0	0.1038	16.897	0.618		0.0292	16.39
9	N.F. KOKTULI	Q	36.8	17.94	0.677	3.98	1.000	975.	169.0	0.1038	16.897	0.670		0.2161	11.54
10	N.F. KOKTULI	C	36.5	17.96	0.676	3.98	1.000	976.	169.0	0.1203	16.896	0.720		0.2161	11.54
11	N.F. KOKTULI	B	36.5									0.721			
12	TRIBUTARY 119	H	38.4	17.87	0.680	3.98	1.000	974.	169.1	0.2432	16.895	0.280	10.91	0.0277	11.54
13	TRIBUTARY 119	T	36.5									0.331			
14	N.F. KOKTULI	J	36.5	17.99	0.676	3.98	1.000	976.	169.0	0.1203	16.897	1.052		0.0667	11.54
15	N.F. KOKTULI	Q	35.8	17.99	0.676	3.98	1.000	976.	169.0	0.1203	16.897	1.103		0.0354	4.58
16	N.F. KOKTULI	C	35.4	18.03	0.674	3.98	1.000	977.	169.0	0.0929	16.898	1.116		0.0354	4.58
17	N.F. KOKTULI	C	34.0	18.08	0.672	3.98	1.000	978.	169.0	0.0887	16.897	1.166		0.0354	4.58
18	N.F. KOKTULI	C	31.0	18.14	0.670	3.98	1.000	979.	169.0	0.1020	16.896	1.272		0.0354	4.58
19	N.F. KOKTULI	C	28.5	18.18	0.668	3.98	1.000	980.	169.0	0.0785	16.895	1.361		0.0354	4.58
20	N.F. KOKTULI	Q	27.9	18.18	0.668	3.98	1.000	980.	169.0	0.0785	16.895	1.380		0.1082	4.58
21	N.F. KOKTULI	C	27.0	18.22	0.666	3.98	1.000	980.	169.0	0.0823	16.895	1.486		0.1082	4.58
22	N.F. KOKTULI	C	24.5	18.38	0.660	3.98	1.000	983.	169.0	0.1012	16.887	1.749		0.1082	4.58
23	N.F. KOKTULI	C	16.0	18.54	0.654	3.98	1.000	986.	169.0	0.0662	16.879	2.668		0.1082	4.58
24	N.F. KOKTULI	C	13.8	18.61	0.651	3.98	1.000	987.	169.0	0.0510	16.877	2.906		0.1082	4.58
25	N.F. KOKTULI	Q	13.7	18.61	0.651	3.98	1.000	987.	169.0	0.0510	16.877	2.920		0.0205	14.23
26	N.F. KOKTULI	C	11.6	18.66	0.650	3.98	1.000	988.	169.0	0.0515	16.877	2.964		0.0205	14.23
27	N.F. KOKTULI	C	9.9	18.70	0.648	3.98	1.000	989.	169.0	0.0490	16.877	2.998		0.0205	14.23
28	N.F. KOKTULI	Q	9.3	18.70	0.648	3.98	1.000	989.	169.0	0.0490	16.877	3.010		0.1163	14.23
29	N.F. KOKTULI	C	7.6	18.75	0.646	3.98	1.000	990.	168.9	0.0511	16.877	3.213		0.1163	14.23
30	N.F. KOKTULI	C	6.2	18.79	0.645	3.98	1.000	991.	168.9	0.0447	16.876	3.373		0.1163	14.23
31	N.F. KOKTULI	Q	5.3	18.79	0.645	3.98	1.000	991.	168.9	0.0447	16.876	3.480		0.1178	14.23
32	N.F. KOKTULI	C	3.5	18.84	0.642	3.98	1.000	992.	168.9	0.0460	16.875	3.685		0.1178	14.23
33	N.F. KOKTULI	E	0.0									4.100			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	13.50	0.837	6.16	1.000	950.	229.8	0.4736	16.826	0.072	14.82	0.0351	18.18
2	N.F. KOKTULI	C	55.7	14.48	0.791	6.16	1.000	968.	229.4	0.2489	16.827	0.140		0.0351	18.18
3	N.F. KOKTULI	C	48.2	14.80	0.776	6.16	1.000	974.	229.3	0.2136	16.827	0.406		0.0351	18.18
4	N.F. KOKTULI	C	44.8	14.84	0.774	6.16	1.000	974.	229.3	0.1511	16.824	0.525		0.0351	18.18
5	N.F. KOKTULI	C	42.1	14.86	0.773	6.16	1.000	975.	229.3	0.1473	16.823	0.619		0.0351	18.18
6	N.F. KOKTULI	C	41.2	14.87	0.773	6.16	1.000	975.	229.3	0.1213	16.823	0.649		0.0351	18.18
7	N.F. KOKTULI	C	39.8	14.88	0.772	6.16	1.000	975.	229.3	0.1619	16.822	0.700		0.0351	18.18
8	N.F. KOKTULI	C	38.6	14.90	0.771	6.16	1.000	975.	229.3	0.1040	16.821	0.743		0.0351	18.18
9	N.F. KOKTULI	Q	36.8	14.90	0.771	6.16	1.000	975.	229.3	0.1040	16.821	0.806		0.2627	12.25
10	N.F. KOKTULI	C	36.5	14.92	0.770	6.16	1.000	976.	229.3	0.1207	16.821	0.866		0.2627	12.25
11	N.F. KOKTULI	B	36.5									0.868			
12	TRIBUTARY 119	H	38.4	14.83	0.775	6.16	1.000	974.	229.3	0.2437	16.819	0.267	11.35	0.0337	12.25
13	TRIBUTARY 119	T	36.5									0.329			
14	N.F. KOKTULI	J	36.5	14.95	0.770	6.16	1.000	976.	229.3	0.1207	16.821	1.197		0.0824	12.25
15	N.F. KOKTULI	Q	35.8	14.95	0.770	6.16	1.000	976.	229.3	0.1207	16.821	1.260		0.0396	4.76
16	N.F. KOKTULI	C	35.4	14.99	0.768	6.16	1.000	977.	229.3	0.0930	16.822	1.275		0.0396	4.76
17	N.F. KOKTULI	C	34.0	15.04	0.765	6.16	1.000	978.	229.3	0.0887	16.821	1.331		0.0396	4.76
18	N.F. KOKTULI	C	31.0	15.10	0.763	6.16	1.000	979.	229.2	0.1023	16.820	1.449		0.0396	4.76
19	N.F. KOKTULI	C	28.5	15.14	0.761	6.16	1.000	980.	229.2	0.0786	16.819	1.548		0.0396	4.76
20	N.F. KOKTULI	Q	27.9	15.14	0.761	6.16	1.000	980.	229.2	0.0786	16.819	1.570		0.0815	4.76
21	N.F. KOKTULI	C	27.0	15.18	0.759	6.16	1.000	980.	229.2	0.0824	16.819	1.650		0.0815	4.76
22	N.F. KOKTULI	C	24.5	15.34	0.752	6.16	1.000	983.	229.2	0.1016	16.811	1.848		0.0815	4.76
23	N.F. KOKTULI	C	16.0	15.50	0.745	6.16	1.000	986.	229.3	0.0663	16.803	2.540		0.0815	4.76
24	N.F. KOKTULI	C	13.8	15.57	0.742	6.16	1.000	987.	229.2	0.0510	16.802	2.719		0.0815	4.76
25	N.F. KOKTULI	Q	13.7	15.57	0.742	6.16	1.000	987.	229.2	0.0510	16.802	2.730		0.0205	14.99
26	N.F. KOKTULI	C	11.6	15.62	0.740	6.16	1.000	988.	229.2	0.0516	16.801	2.774		0.0205	14.99
27	N.F. KOKTULI	C	9.9	15.66	0.738	6.16	1.000	989.	229.2	0.0491	16.801	2.808		0.0205	14.99
28	N.F. KOKTULI	Q	9.3	15.66	0.738	6.16	1.000	989.	229.2	0.0491	16.801	2.820		0.1138	14.99
29	N.F. KOKTULI	C	7.6	15.71	0.736	6.16	1.000	990.	229.2	0.0512	16.801	3.019		0.1138	14.99
30	N.F. KOKTULI	C	6.2	15.75	0.734	6.16	1.000	991.	229.2	0.0447	16.801	3.175		0.1138	14.99
31	N.F. KOKTULI	Q	5.3	15.75	0.734	6.16	1.000	991.	229.2	0.0447	16.801	3.280		0.1159	14.99
32	N.F. KOKTULI	C	3.5	15.80	0.732	6.16	1.000	992.	229.2	0.0461	16.800	3.482		0.1159	14.99
33	N.F. KOKTULI	E	0.0									3.890			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	12.95	0.858	5.53	1.000	950.	199.5	0.4747	16.749	0.064	14.50	0.0313	19.87
2	N.F. KOKTULI	C	55.7	13.93	0.810	5.53	1.000	968.	199.2	0.2498	16.750	0.124		0.0313	19.87
3	N.F. KOKTULI	C	48.2	14.25	0.795	5.53	1.000	974.	199.1	0.2141	16.750	0.361		0.0313	19.87
4	N.F. KOKTULI	C	44.8	14.29	0.793	5.53	1.000	974.	199.1	0.1515	16.747	0.468		0.0313	19.87
5	N.F. KOKTULI	C	42.1	14.31	0.792	5.53	1.000	975.	199.1	0.1478	16.746	0.552		0.0313	19.87
6	N.F. KOKTULI	C	41.2	14.32	0.792	5.53	1.000	975.	199.1	0.1215	16.746	0.578		0.0313	19.87
7	N.F. KOKTULI	C	39.8	14.33	0.791	5.53	1.000	975.	199.1	0.1623	16.745	0.624		0.0313	19.87
8	N.F. KOKTULI	C	38.6	14.35	0.790	5.53	1.000	975.	199.1	0.1041	16.744	0.662		0.0313	19.87
9	N.F. KOKTULI	Q	36.8	14.35	0.790	5.53	1.000	975.	199.1	0.1041	16.744	0.718		0.2331	12.86
10	N.F. KOKTULI	C	36.5	14.37	0.789	5.53	1.000	976.	199.1	0.1211	16.744	0.772		0.2331	12.86
11	N.F. KOKTULI	B	36.5									0.773			
12	TRIBUTARY 119	H	38.4	14.28	0.794	5.53	1.000	974.	199.2	0.2443	16.742	0.257	11.09	0.0299	12.86
13	TRIBUTARY 119	T	36.5									0.312			
14	N.F. KOKTULI	J	36.5	14.40	0.788	5.53	1.000	976.	199.1	0.1211	16.744	1.084		0.0732	12.86
15	N.F. KOKTULI	Q	35.8	14.40	0.788	5.53	1.000	976.	199.1	0.1211	16.744	1.140		0.0363	5.91
16	N.F. KOKTULI	C	35.4	14.44	0.786	5.53	1.000	977.	199.1	0.0931	16.745	1.154		0.0363	5.91
17	N.F. KOKTULI	C	34.0	14.49	0.784	5.53	1.000	978.	199.1	0.0888	16.744	1.205		0.0363	5.91
18	N.F. KOKTULI	C	31.0	14.55	0.781	5.53	1.000	979.	199.1	0.1027	16.743	1.313		0.0363	5.91
19	N.F. KOKTULI	C	28.5	14.59	0.779	5.53	1.000	980.	199.1	0.0786	16.743	1.404		0.0363	5.91
20	N.F. KOKTULI	Q	27.9	14.59	0.779	5.53	1.000	980.	199.1	0.0786	16.743	1.424		0.0903	5.91
21	N.F. KOKTULI	C	27.0	14.63	0.777	5.53	1.000	980.	199.1	0.0825	16.742	1.513		0.0903	5.91
22	N.F. KOKTULI	C	24.5	14.79	0.770	5.53	1.000	983.	199.1	0.1020	16.734	1.733		0.0903	5.91
23	N.F. KOKTULI	C	16.0	14.95	0.763	5.53	1.000	986.	199.1	0.0663	16.727	2.499		0.0903	5.91
24	N.F. KOKTULI	C	13.8	15.02	0.760	5.53	1.000	987.	199.1	0.0511	16.726	2.698		0.0903	5.91
25	N.F. KOKTULI	Q	13.7	15.02	0.760	5.53	1.000	987.	199.1	0.0511	16.726	2.710		0.0182	16.10
26	N.F. KOKTULI	C	11.6	15.07	0.758	5.53	1.000	988.	199.1	0.0517	16.725	2.749		0.0182	16.10
27	N.F. KOKTULI	C	9.9	15.11	0.756	5.53	1.000	989.	199.0	0.0492	16.725	2.779		0.0182	16.10
28	N.F. KOKTULI	Q	9.3	15.11	0.756	5.53	1.000	989.	199.0	0.0492	16.725	2.790		0.1163	16.10
29	N.F. KOKTULI	C	7.6	15.16	0.754	5.53	1.000	990.	199.0	0.0513	16.725	2.993		0.1163	16.10
30	N.F. KOKTULI	C	6.2	15.20	0.752	5.53	1.000	991.	199.0	0.0447	16.724	3.153		0.1163	16.10
31	N.F. KOKTULI	Q	5.3	15.20	0.752	5.53	1.000	991.	199.0	0.0447	16.724	3.260		0.1140	16.10
32	N.F. KOKTULI	C	3.5	15.25	0.750	5.53	1.000	992.	199.0	0.0462	16.724	3.459		0.1140	16.10
33	N.F. KOKTULI	E	0.0									3.860			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.55	0.950	3.65	1.000	950.	106.1	0.4756	16.671	0.060	13.12	0.0289	21.15
2	N.F. KOKTULI	C	55.7	12.53	0.897	3.65	1.000	968.	106.0	0.2507	16.672	0.115		0.0289	21.15
3	N.F. KOKTULI	C	48.2	12.85	0.880	3.65	1.000	974.	105.9	0.2146	16.672	0.335		0.0289	21.15
4	N.F. KOKTULI	C	44.8	12.89	0.878	3.65	1.000	974.	105.9	0.1520	16.669	0.433		0.0289	21.15
5	N.F. KOKTULI	C	42.1	12.91	0.877	3.65	1.000	975.	105.9	0.1483	16.668	0.511		0.0289	21.15
6	N.F. KOKTULI	C	41.2	12.92	0.877	3.65	1.000	975.	105.9	0.1218	16.668	0.535		0.0289	21.15
7	N.F. KOKTULI	C	39.8	12.93	0.876	3.65	1.000	975.	105.9	0.1628	16.667	0.578		0.0289	21.15
8	N.F. KOKTULI	C	38.6	12.95	0.875	3.65	1.000	975.	105.9	0.1043	16.666	0.613		0.0289	21.15
9	N.F. KOKTULI	Q	36.8	12.95	0.875	3.65	1.000	975.	105.9	0.1043	16.666	0.665		0.2119	13.28
10	N.F. KOKTULI	C	36.5	12.97	0.874	3.65	1.000	976.	105.9	0.1215	16.666	0.714		0.2119	13.28
11	N.F. KOKTULI	B	36.5									0.715			
12	TRIBUTARY 119	H	38.4	12.88	0.879	3.65	1.000	974.	106.0	0.2449	16.664	0.255	10.34	0.0277	13.28
13	TRIBUTARY 119	T	36.5									0.306			
14	N.F. KOKTULI	J	36.5	13.00	0.873	3.65	1.000	976.	105.9	0.1215	16.666	1.021		0.0667	13.28
15	N.F. KOKTULI	Q	35.8	13.00	0.873	3.65	1.000	976.	105.9	0.1215	16.666	1.072		0.0345	7.82
16	N.F. KOKTULI	C	35.4	13.04	0.871	3.65	1.000	977.	105.9	0.0931	16.667	1.085		0.0345	7.82
17	N.F. KOKTULI	C	34.0	13.09	0.868	3.65	1.000	978.	105.9	0.0889	16.667	1.134		0.0345	7.82
18	N.F. KOKTULI	C	31.0	13.15	0.865	3.65	1.000	979.	105.9	0.1030	16.665	1.237		0.0345	7.82
19	N.F. KOKTULI	C	28.5	13.19	0.863	3.65	1.000	980.	105.9	0.0787	16.665	1.323		0.0345	7.82
20	N.F. KOKTULI	Q	27.9	13.19	0.863	3.65	1.000	980.	105.9	0.0787	16.665	1.342		0.0891	7.82
21	N.F. KOKTULI	C	27.0	13.23	0.861	3.65	1.000	980.	105.9	0.0827	16.664	1.429		0.0891	7.82
22	N.F. KOKTULI	C	24.5	13.39	0.853	3.65	1.000	983.	105.9	0.1024	16.657	1.646		0.0891	7.82
23	N.F. KOKTULI	C	16.0	13.55	0.845	3.65	1.000	986.	105.9	0.0664	16.649	2.402		0.0891	7.82
24	N.F. KOKTULI	C	13.8	13.62	0.842	3.65	1.000	987.	105.9	0.0511	16.648	2.598		0.0891	7.82
25	N.F. KOKTULI	Q	13.7	13.62	0.842	3.65	1.000	987.	105.9	0.0511	16.648	2.610		0.0182	17.32
26	N.F. KOKTULI	C	11.6	13.67	0.839	3.65	1.000	988.	105.9	0.0518	16.647	2.649		0.0182	17.32
27	N.F. KOKTULI	C	9.9	13.71	0.837	3.65	1.000	989.	105.9	0.0492	16.647	2.679		0.0182	17.32
28	N.F. KOKTULI	Q	9.3	13.71	0.837	3.65	1.000	989.	105.9	0.0492	16.647	2.690		0.1114	17.32
29	N.F. KOKTULI	C	7.6	13.76	0.835	3.65	1.000	990.	105.9	0.0514	16.647	2.885		0.1114	17.32
30	N.F. KOKTULI	C	6.2	13.80	0.833	3.65	1.000	991.	105.9	0.0448	16.647	3.037		0.1114	17.32
31	N.F. KOKTULI	Q	5.3	13.80	0.833	3.65	1.000	991.	105.9	0.0448	16.647	3.140		0.1140	17.32
32	N.F. KOKTULI	C	3.5	13.85	0.830	3.65	1.000	992.	105.9	0.0463	16.646	3.339		0.1140	17.32
33	N.F. KOKTULI	E	0.0									3.740			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.60	0.970	5.60	1.000	950.	90.6	0.4766	16.592	0.058	12.55	0.0282	21.77
2	N.F. KOKTULI	C	55.7	10.58	0.916	5.60	1.000	968.	90.4	0.2517	16.593	0.112		0.0282	21.77
3	N.F. KOKTULI	C	48.2	10.90	0.899	5.60	1.000	974.	90.4	0.2152	16.593	0.326		0.0282	21.77
4	N.F. KOKTULI	C	44.8	10.94	0.897	5.60	1.000	974.	90.4	0.1525	16.590	0.422		0.0282	21.77
5	N.F. KOKTULI	C	42.1	10.96	0.896	5.60	1.000	975.	90.4	0.1488	16.589	0.498		0.0282	21.77
6	N.F. KOKTULI	C	41.2	10.97	0.895	5.60	1.000	975.	90.4	0.1220	16.589	0.522		0.0282	21.77
7	N.F. KOKTULI	C	39.8	10.98	0.895	5.60	1.000	975.	90.4	0.1632	16.588	0.563		0.0282	21.77
8	N.F. KOKTULI	C	38.6	11.00	0.894	5.60	1.000	975.	90.4	0.1045	16.587	0.597		0.0282	21.77
9	N.F. KOKTULI	Q	36.8	11.00	0.894	5.60	1.000	975.	90.4	0.1045	16.587	0.648		0.2076	13.42
10	N.F. KOKTULI	C	36.5	11.02	0.893	5.60	1.000	976.	90.4	0.1219	16.587	0.696		0.2076	13.42
11	N.F. KOKTULI	B	36.5									0.697			
12	TRIBUTARY 119	H	38.4	10.93	0.898	5.60	1.000	974.	90.4	0.2455	16.586	0.248	10.37	0.0266	13.42
13	TRIBUTARY 119	T	36.5									0.297			
14	N.F. KOKTULI	J	36.5	11.05	0.892	5.60	1.000	976.	90.4	0.1219	16.588	0.995		0.0641	13.42
15	N.F. KOKTULI	Q	35.8	11.05	0.892	5.60	1.000	976.	90.4	0.1219	16.588	1.044		0.0338	9.89
16	N.F. KOKTULI	C	35.4	11.09	0.889	5.60	1.000	977.	90.4	0.0932	16.588	1.057		0.0338	9.89
17	N.F. KOKTULI	C	34.0	11.14	0.887	5.60	1.000	978.	90.4	0.0891	16.588	1.104		0.0338	9.89
18	N.F. KOKTULI	C	31.0	11.20	0.884	5.60	1.000	979.	90.4	0.1034	16.587	1.205		0.0338	9.89
19	N.F. KOKTULI	C	28.5	11.24	0.882	5.60	1.000	980.	90.4	0.0787	16.586	1.290		0.0338	9.89
20	N.F. KOKTULI	Q	27.9	11.24	0.882	5.60	1.000	980.	90.4	0.0787	16.586	1.308		0.0894	9.89
21	N.F. KOKTULI	C	27.0	11.28	0.879	5.60	1.000	980.	90.4	0.0828	16.585	1.396		0.0894	9.89
22	N.F. KOKTULI	C	24.5	11.44	0.871	5.60	1.000	983.	90.4	0.1028	16.578	1.613		0.0894	9.89
23	N.F. KOKTULI	C	16.0	11.60	0.863	5.60	1.000	986.	90.4	0.0665	16.571	2.372		0.0894	9.89
24	N.F. KOKTULI	C	13.8	11.67	0.860	5.60	1.000	987.	90.4	0.0512	16.570	2.568		0.0894	9.89
25	N.F. KOKTULI	Q	13.7	11.67	0.860	5.60	1.000	987.	90.4	0.0512	16.570	2.580		0.0182	18.37
26	N.F. KOKTULI	C	11.6	11.72	0.857	5.60	1.000	988.	90.4	0.0519	16.569	2.619		0.0182	18.37
27	N.F. KOKTULI	C	9.9	11.76	0.855	5.60	1.000	989.	90.4	0.0493	16.569	2.649		0.0182	18.37
28	N.F. KOKTULI	Q	9.3	11.76	0.855	5.60	1.000	989.	90.4	0.0493	16.569	2.660		0.1114	18.37
29	N.F. KOKTULI	C	7.6	11.81	0.853	5.60	1.000	990.	90.4	0.0516	16.569	2.855		0.1114	18.37
30	N.F. KOKTULI	C	6.2	11.85	0.851	5.60	1.000	991.	90.4	0.0448	16.568	3.007		0.1114	18.37
31	N.F. KOKTULI	Q	5.3	11.85	0.851	5.60	1.000	991.	90.4	0.0448	16.568	3.110		0.1140	18.37
32	N.F. KOKTULI	C	3.5	11.90	0.848	5.60	1.000	992.	90.4	0.0464	16.568	3.309		0.1140	18.37
33	N.F. KOKTULI	E	0.0									3.710			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.21	0.940	11.07	1.000	950.	61.3	0.4775	16.513	0.056	9.82	0.0274	21.41
2	N.F. KOKTULI	C	55.7	9.19	0.887	11.07	1.000	968.	61.2	0.2526	16.513	0.109		0.0274	21.41
3	N.F. KOKTULI	C	48.2	9.51	0.871	11.07	1.000	974.	61.2	0.2157	16.513	0.317		0.0274	21.41
4	N.F. KOKTULI	C	44.8	9.55	0.869	11.07	1.000	974.	61.2	0.1530	16.511	0.410		0.0274	21.41
5	N.F. KOKTULI	C	42.1	9.57	0.868	11.07	1.000	975.	61.2	0.1493	16.510	0.483		0.0274	21.41
6	N.F. KOKTULI	C	41.2	9.58	0.867	11.07	1.000	975.	61.2	0.1222	16.510	0.506		0.0274	21.41
7	N.F. KOKTULI	C	39.8	9.59	0.867	11.07	1.000	975.	61.2	0.1637	16.509	0.546		0.0274	21.41
8	N.F. KOKTULI	C	38.6	9.61	0.865	11.07	1.000	975.	61.2	0.1047	16.508	0.580		0.0274	21.41
9	N.F. KOKTULI	Q	36.8	9.61	0.865	11.07	1.000	975.	61.2	0.1047	16.508	0.629		0.2034	13.20
10	N.F. KOKTULI	C	36.5	9.63	0.864	11.07	1.000	976.	61.2	0.1224	16.508	0.676		0.2034	13.20
11	N.F. KOKTULI	B	36.5									0.677			
12	TRIBUTARY 119	H	38.4	9.54	0.869	11.07	1.000	974.	61.2	0.2461	16.506	0.241	9.08	0.0261	13.20
13	TRIBUTARY 119	T	36.5									0.289			
14	N.F. KOKTULI	J	36.5	9.66	0.863	11.07	1.000	976.	61.2	0.1224	16.508	0.966		0.0627	13.20
15	N.F. KOKTULI	Q	35.8	9.66	0.863	11.07	1.000	976.	61.2	0.1224	16.508	1.014		0.0329	11.38
16	N.F. KOKTULI	C	35.4	9.70	0.861	11.07	1.000	977.	61.2	0.0933	16.509	1.026		0.0329	11.38
17	N.F. KOKTULI	C	34.0	9.75	0.859	11.07	1.000	978.	61.2	0.0892	16.508	1.073		0.0329	11.38
18	N.F. KOKTULI	C	31.0	9.81	0.856	11.07	1.000	979.	61.2	0.1038	16.507	1.171		0.0329	11.38
19	N.F. KOKTULI	C	28.5	9.85	0.854	11.07	1.000	980.	61.2	0.0788	16.506	1.253		0.0329	11.38
20	N.F. KOKTULI	Q	27.9	9.85	0.854	11.07	1.000	980.	61.2	0.0788	16.506	1.271		0.0828	11.38
21	N.F. KOKTULI	C	27.0	9.89	0.851	11.07	1.000	980.	61.1	0.0830	16.506	1.352		0.0828	11.38
22	N.F. KOKTULI	C	24.5	10.05	0.844	11.07	1.000	983.	61.2	0.1032	16.499	1.554		0.0828	11.38
23	N.F. KOKTULI	C	16.0	10.21	0.836	11.07	1.000	986.	61.2	0.0665	16.492	2.257		0.0828	11.38
24	N.F. KOKTULI	C	13.8	10.28	0.833	11.07	1.000	987.	61.2	0.0513	16.491	2.439		0.0828	11.38
25	N.F. KOKTULI	Q	13.7	10.28	0.833	11.07	1.000	987.	61.2	0.0513	16.491	2.450		0.0182	18.97
26	N.F. KOKTULI	C	11.6	10.33	0.830	11.07	1.000	988.	61.2	0.0520	16.490	2.489		0.0182	18.97
27	N.F. KOKTULI	C	9.9	10.37	0.828	11.07	1.000	989.	61.2	0.0494	16.490	2.519		0.0182	18.97
28	N.F. KOKTULI	Q	9.3	10.37	0.828	11.07	1.000	989.	61.2	0.0494	16.490	2.530		0.1089	18.97
29	N.F. KOKTULI	C	7.6	10.42	0.826	11.07	1.000	990.	61.1	0.0517	16.490	2.720		0.1089	18.97
30	N.F. KOKTULI	C	6.2	10.46	0.824	11.07	1.000	991.	61.1	0.0449	16.489	2.870		0.1089	18.97
31	N.F. KOKTULI	Q	5.3	10.46	0.824	11.07	1.000	991.	61.1	0.0449	16.489	2.970		0.1102	18.97
32	N.F. KOKTULI	C	3.5	10.51	0.821	11.07	1.000	992.	61.1	0.0465	16.489	3.162		0.1102	18.97
33	N.F. KOKTULI	E	0.0									3.550			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.22	0.991	11.91	1.000	950.	50.3	0.4784	16.432	0.056	8.68	0.0270	20.09
2	N.F. KOKTULI	C	55.7	9.20	0.935	11.91	1.000	968.	50.2	0.2537	16.433	0.108		0.0270	20.09
3	N.F. KOKTULI	C	48.2	9.52	0.918	11.91	1.000	974.	50.2	0.2163	16.433	0.312		0.0270	20.09
4	N.F. KOKTULI	C	44.8	9.56	0.916	11.91	1.000	974.	50.2	0.1536	16.430	0.404		0.0270	20.09
5	N.F. KOKTULI	C	42.1	9.58	0.915	11.91	1.000	975.	50.2	0.1499	16.429	0.476		0.0270	20.09
6	N.F. KOKTULI	C	41.2	9.59	0.914	11.91	1.000	975.	50.2	0.1225	16.429	0.499		0.0270	20.09
7	N.F. KOKTULI	C	39.8	9.60	0.914	11.91	1.000	975.	50.2	0.1642	16.428	0.539		0.0270	20.09
8	N.F. KOKTULI	C	38.6	9.62	0.913	11.91	1.000	975.	50.2	0.1049	16.427	0.572		0.0270	20.09
9	N.F. KOKTULI	Q	36.8	9.62	0.913	11.91	1.000	975.	50.2	0.1049	16.427	0.620		0.1992	12.68
10	N.F. KOKTULI	C	36.5	9.64	0.911	11.91	1.000	976.	50.2	0.1228	16.427	0.666		0.1992	12.68
11	N.F. KOKTULI	B	36.5									0.667			
12	TRIBUTARY 119	H	38.4	9.55	0.917	11.91	1.000	974.	50.2	0.2467	16.426	0.250	8.56	0.0256	12.68
13	TRIBUTARY 119	T	36.5									0.297			
14	N.F. KOKTULI	J	36.5	9.67	0.910	11.91	1.000	976.	50.2	0.1228	16.428	0.964		0.0614	12.68
15	N.F. KOKTULI	Q	35.8	9.67	0.910	11.91	1.000	976.	50.2	0.1228	16.428	1.011		0.0329	11.95
16	N.F. KOKTULI	C	35.4	9.71	0.908	11.91	1.000	977.	50.2	0.0934	16.428	1.023		0.0329	11.95
17	N.F. KOKTULI	C	34.0	9.76	0.905	11.91	1.000	978.	50.2	0.0893	16.428	1.070		0.0329	11.95
18	N.F. KOKTULI	C	31.0	9.82	0.902	11.91	1.000	979.	50.2	0.1042	16.427	1.168		0.0329	11.95
19	N.F. KOKTULI	C	28.5	9.86	0.900	11.91	1.000	980.	50.2	0.0789	16.426	1.250		0.0329	11.95
20	N.F. KOKTULI	Q	27.9	9.86	0.900	11.91	1.000	980.	50.2	0.0789	16.426	1.268		0.0795	11.95
21	N.F. KOKTULI	C	27.0	9.90	0.898	11.91	1.000	980.	50.2	0.0831	16.426	1.346		0.0795	11.95
22	N.F. KOKTULI	C	24.5	10.06	0.890	11.91	1.000	983.	50.2	0.1036	16.419	1.540		0.0795	11.95
23	N.F. KOKTULI	C	16.0	10.22	0.881	11.91	1.000	986.	50.2	0.0666	16.412	2.215		0.0795	11.95
24	N.F. KOKTULI	C	13.8	10.29	0.878	11.91	1.000	987.	50.2	0.0513	16.411	2.390		0.0795	11.95
25	N.F. KOKTULI	Q	13.7	10.29	0.878	11.91	1.000	987.	50.2	0.0513	16.411	2.400		0.0159	18.94
26	N.F. KOKTULI	C	11.6	10.34	0.875	11.91	1.000	988.	50.2	0.0521	16.410	2.434		0.0159	18.94
27	N.F. KOKTULI	C	9.9	10.38	0.873	11.91	1.000	989.	50.2	0.0495	16.410	2.461		0.0159	18.94
28	N.F. KOKTULI	Q	9.3	10.38	0.873	11.91	1.000	989.	50.2	0.0495	16.410	2.470		0.1114	18.94
29	N.F. KOKTULI	C	7.6	10.43	0.871	11.91	1.000	990.	50.2	0.0518	16.410	2.665		0.1114	18.94
30	N.F. KOKTULI	C	6.2	10.47	0.869	11.91	1.000	991.	50.2	0.0449	16.409	2.817		0.1114	18.94
31	N.F. KOKTULI	Q	5.3	10.47	0.869	11.91	1.000	991.	50.2	0.0449	16.409	2.920		0.1083	18.94
32	N.F. KOKTULI	C	3.5	10.52	0.866	11.91	1.000	992.	50.2	0.0467	16.409	3.109		0.1083	18.94
33	N.F. KOKTULI	E	0.0									3.490			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.03	0.991	8.76	1.000	950.	56.7	0.4794	16.351	0.056	9.36	0.0270	18.23
2	N.F. KOKTULI	C	55.7	10.01	0.935	8.76	1.000	968.	56.6	0.2547	16.351	0.108		0.0270	18.23
3	N.F. KOKTULI	C	48.2	10.33	0.918	8.76	1.000	974.	56.6	0.2169	16.351	0.312		0.0270	18.23
4	N.F. KOKTULI	C	44.8	10.37	0.916	8.76	1.000	974.	56.6	0.1542	16.349	0.404		0.0270	18.23
5	N.F. KOKTULI	C	42.1	10.39	0.915	8.76	1.000	975.	56.6	0.1505	16.348	0.477		0.0270	18.23
6	N.F. KOKTULI	C	41.2	10.40	0.914	8.76	1.000	975.	56.6	0.1228	16.348	0.500		0.0270	18.23
7	N.F. KOKTULI	C	39.8	10.41	0.914	8.76	1.000	975.	56.6	0.1647	16.347	0.539		0.0270	18.23
8	N.F. KOKTULI	C	38.6	10.43	0.913	8.76	1.000	975.	56.6	0.1051	16.346	0.572		0.0270	18.23
9	N.F. KOKTULI	Q	36.8	10.43	0.913	8.76	1.000	975.	56.6	0.1051	16.346	0.621		0.1992	12.01
10	N.F. KOKTULI	C	36.5	10.45	0.911	8.76	1.000	976.	56.6	0.1233	16.346	0.667		0.1992	12.01
11	N.F. KOKTULI	B	36.5									0.668			
12	TRIBUTARY 119	H	38.4	10.36	0.917	8.76	1.000	974.	56.6	0.2473	16.345	0.251	8.87	0.0256	12.01
13	TRIBUTARY 119	T	36.5									0.298			
14	N.F. KOKTULI	J	36.5	10.48	0.910	8.76	1.000	976.	56.6	0.1233	16.346	0.965		0.0614	12.01
15	N.F. KOKTULI	Q	35.8	10.48	0.910	8.76	1.000	976.	56.6	0.1233	16.346	1.012		0.0329	11.64
16	N.F. KOKTULI	C	35.4	10.52	0.908	8.76	1.000	977.	56.6	0.0935	16.347	1.024		0.0329	11.64
17	N.F. KOKTULI	C	34.0	10.57	0.905	8.76	1.000	978.	56.6	0.0895	16.347	1.071		0.0329	11.64
18	N.F. KOKTULI	C	31.0	10.63	0.902	8.76	1.000	979.	56.6	0.1046	16.346	1.169		0.0329	11.64
19	N.F. KOKTULI	C	28.5	10.67	0.900	8.76	1.000	980.	56.6	0.0790	16.345	1.251		0.0329	11.64
20	N.F. KOKTULI	Q	27.9	10.67	0.900	8.76	1.000	980.	56.6	0.0790	16.345	1.269		0.0830	11.64
21	N.F. KOKTULI	C	27.0	10.71	0.898	8.76	1.000	980.	56.6	0.0833	16.344	1.350		0.0830	11.64
22	N.F. KOKTULI	C	24.5	10.87	0.890	8.76	1.000	983.	56.6	0.1041	16.338	1.552		0.0830	11.64
23	N.F. KOKTULI	C	16.0	11.03	0.881	8.76	1.000	986.	56.6	0.0667	16.331	2.257		0.0830	11.64
24	N.F. KOKTULI	C	13.8	11.10	0.878	8.76	1.000	987.	56.6	0.0514	16.330	2.439		0.0830	11.64
25	N.F. KOKTULI	Q	13.7	11.10	0.878	8.76	1.000	987.	56.6	0.0514	16.330	2.450		0.0182	18.30
26	N.F. KOKTULI	C	11.6	11.15	0.875	8.76	1.000	988.	56.6	0.0522	16.329	2.489		0.0182	18.30
27	N.F. KOKTULI	C	9.9	11.19	0.873	8.76	1.000	989.	56.6	0.0496	16.329	2.519		0.0182	18.30
28	N.F. KOKTULI	Q	9.3	11.19	0.873	8.76	1.000	989.	56.6	0.0496	16.329	2.530		0.1089	18.30
29	N.F. KOKTULI	C	7.6	11.24	0.871	8.76	1.000	990.	56.6	0.0520	16.329	2.720		0.1089	18.30
30	N.F. KOKTULI	C	6.2	11.28	0.869	8.76	1.000	991.	56.6	0.0449	16.329	2.870		0.1089	18.30
31	N.F. KOKTULI	Q	5.3	11.28	0.869	8.76	1.000	991.	56.6	0.0449	16.329	2.970		0.1102	18.30
32	N.F. KOKTULI	C	3.5	11.33	0.866	8.76	1.000	992.	56.6	0.0468	16.328	3.162		0.1102	18.30
33	N.F. KOKTULI	E	0.0									3.550			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.89	1.000	10.49	1.000	950.	26.5	0.4803	16.269	0.084	8.84	0.0410	16.29
2	N.F. KOKTULI	C	55.7	9.87	0.964	10.49	1.000	968.	26.5	0.2559	16.269	0.163		0.0410	16.29
3	N.F. KOKTULI	C	48.2	10.19	0.946	10.49	1.000	974.	26.5	0.2175	16.269	0.475		0.0410	16.29
4	N.F. KOKTULI	C	44.8	10.23	0.944	10.49	1.000	974.	26.5	0.1548	16.267	0.614		0.0410	16.29
5	N.F. KOKTULI	C	42.1	10.25	0.943	10.49	1.000	975.	26.5	0.1510	16.266	0.725		0.0410	16.29
6	N.F. KOKTULI	C	41.2	10.26	0.943	10.49	1.000	975.	26.5	0.1231	16.266	0.759		0.0410	16.29
7	N.F. KOKTULI	C	39.8	10.27	0.942	10.49	1.000	975.	26.5	0.1652	16.265	0.819		0.0410	16.29
8	N.F. KOKTULI	C	38.6	10.29	0.941	10.49	1.000	975.	26.5	0.1054	16.264	0.869		0.0410	16.29
9	N.F. KOKTULI	Q	36.8	10.29	0.941	10.49	1.000	975.	26.5	0.1054	16.264	0.943		0.3136	11.32
10	N.F. KOKTULI	C	36.5	10.31	0.940	10.49	1.000	976.	26.5	0.1238	16.264	1.015		0.3136	11.32
11	N.F. KOKTULI	B	36.5									1.017			
12	TRIBUTARY 119	H	38.4	10.22	0.945	10.49	1.000	974.	26.5	0.2480	16.263	0.627	8.94	0.0511	11.32
13	TRIBUTARY 119	T	36.5									0.721			
14	N.F. KOKTULI	J	36.5	10.34	0.938	10.49	1.000	976.	26.5	0.1238	16.265	1.738		0.0967	11.32
15	N.F. KOKTULI	Q	35.8	10.34	0.938	10.49	1.000	976.	26.5	0.1238	16.265	1.812		0.0541	10.63
16	N.F. KOKTULI	C	35.4	10.38	0.936	10.49	1.000	977.	26.5	0.0936	16.265	1.832		0.0541	10.63
17	N.F. KOKTULI	C	34.0	10.43	0.933	10.49	1.000	978.	26.5	0.0896	16.265	1.909		0.0541	10.63
18	N.F. KOKTULI	C	31.0	10.49	0.930	10.49	1.000	979.	26.5	0.1050	16.264	2.070		0.0541	10.63
19	N.F. KOKTULI	C	28.5	10.53	0.928	10.49	1.000	980.	26.4	0.0791	16.263	2.205		0.0541	10.63
20	N.F. KOKTULI	Q	27.9	10.53	0.928	10.49	1.000	980.	26.4	0.0791	16.263	2.235		0.0889	10.63
21	N.F. KOKTULI	C	27.0	10.57	0.925	10.49	1.000	980.	26.4	0.0835	16.263	2.322		0.0889	10.63
22	N.F. KOKTULI	C	24.5	10.73	0.917	10.49	1.000	983.	26.5	0.1045	16.256	2.538		0.0889	10.63
23	N.F. KOKTULI	C	16.0	10.89	0.908	10.49	1.000	986.	26.5	0.0668	16.249	3.293		0.0889	10.63
24	N.F. KOKTULI	C	13.8	10.96	0.905	10.49	1.000	987.	26.5	0.0515	16.248	3.488		0.0889	10.63
25	N.F. KOKTULI	Q	13.7	10.96	0.905	10.49	1.000	987.	26.5	0.0515	16.248	3.500		0.0228	17.14
26	N.F. KOKTULI	C	11.6	11.01	0.902	10.49	1.000	988.	26.5	0.0523	16.248	3.549		0.0228	17.14
27	N.F. KOKTULI	C	9.9	11.05	0.900	10.49	1.000	989.	26.5	0.0497	16.248	3.587		0.0228	17.14
28	N.F. KOKTULI	Q	9.3	11.05	0.900	10.49	1.000	989.	26.5	0.0497	16.248	3.600		0.1262	17.14
29	N.F. KOKTULI	C	7.6	11.10	0.898	10.49	1.000	990.	26.4	0.0521	16.247	3.821		0.1262	17.14
30	N.F. KOKTULI	C	6.2	11.14	0.895	10.49	1.000	991.	26.4	0.0450	16.247	3.994		0.1262	17.14
31	N.F. KOKTULI	Q	5.3	11.14	0.895	10.49	1.000	991.	26.4	0.0450	16.247	4.110		0.1235	17.14
32	N.F. KOKTULI	C	3.5	11.19	0.893	10.49	1.000	992.	26.4	0.0469	16.246	4.325		0.1235	17.14
33	N.F. KOKTULI	E	0.0									4.760			

YEAR: 2007 TIME PERIOD: 5-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.52	1.000	9.62	1.000	950.	57.6	0.4813	16.186	0.100	8.88	0.0487	14.65
2	N.F. KOKTULI	C	55.7	10.50	0.955	9.62	1.000	968.	57.5	0.2570	16.187	0.194		0.0487	14.65
3	N.F. KOKTULI	C	48.2	10.82	0.937	9.62	1.000	974.	57.5	0.2181	16.187	0.563		0.0487	14.65
4	N.F. KOKTULI	C	44.8	10.86	0.935	9.62	1.000	974.	57.5	0.1554	16.184	0.729		0.0487	14.65
5	N.F. KOKTULI	C	42.1	10.88	0.934	9.62	1.000	975.	57.5	0.1517	16.184	0.860		0.0487	14.65
6	N.F. KOKTULI	C	41.2	10.89	0.933	9.62	1.000	975.	57.5	0.1235	16.183	0.901		0.0487	14.65
7	N.F. KOKTULI	C	39.8	10.90	0.933	9.62	1.000	975.	57.5	0.1657	16.182	0.972		0.0487	14.65
8	N.F. KOKTULI	C	38.6	10.92	0.931	9.62	1.000	975.	57.5	0.1056	16.182	1.031		0.0487	14.65
9	N.F. KOKTULI	Q	36.8	10.92	0.931	9.62	1.000	975.	57.5	0.1056	16.182	1.119		0.3729	10.73
10	N.F. KOKTULI	C	36.5	10.94	0.930	9.62	1.000	976.	57.5	0.1243	16.181	1.205		0.3729	10.73
11	N.F. KOKTULI	B	36.5									1.207			
12	TRIBUTARY 119	H	38.4	10.85	0.936	9.62	1.000	974.	57.5	0.2487	16.180	0.771	8.75	0.0821	10.73
13	TRIBUTARY 119	T	36.5									0.922			
14	N.F. KOKTULI	J	36.5	10.97	0.929	9.62	1.000	976.	57.5	0.1243	16.182	2.129		0.1163	10.73
15	N.F. KOKTULI	Q	35.8	10.97	0.929	9.62	1.000	976.	57.5	0.1243	16.182	2.218		0.0643	9.15
16	N.F. KOKTULI	C	35.4	11.01	0.927	9.62	1.000	977.	57.5	0.0937	16.182	2.242		0.0643	9.15
17	N.F. KOKTULI	C	34.0	11.06	0.924	9.62	1.000	978.	57.4	0.0898	16.182	2.333		0.0643	9.15
18	N.F. KOKTULI	C	31.0	11.12	0.921	9.62	1.000	979.	57.4	0.1055	16.181	2.525		0.0643	9.15
19	N.F. KOKTULI	C	28.5	11.16	0.919	9.62	1.000	980.	57.4	0.0792	16.180	2.686		0.0643	9.15
20	N.F. KOKTULI	Q	27.9	11.16	0.919	9.62	1.000	980.	57.4	0.0792	16.180	2.721		0.1397	9.15
21	N.F. KOKTULI	C	27.0	11.20	0.916	9.62	1.000	980.	57.4	0.0838	16.180	2.858		0.1397	9.15
22	N.F. KOKTULI	C	24.5	11.36	0.908	9.62	1.000	983.	57.5	0.1050	16.174	3.198		0.1397	9.15
23	N.F. KOKTULI	C	16.0	11.52	0.899	9.62	1.000	986.	57.5	0.0670	16.167	4.384		0.1397	9.15
24	N.F. KOKTULI	C	13.8	11.59	0.896	9.62	1.000	987.	57.5	0.0516	16.166	4.692		0.1397	9.15
25	N.F. KOKTULI	Q	13.7	11.59	0.896	9.62	1.000	987.	57.5	0.0516	16.166	4.710		0.0319	15.65
26	N.F. KOKTULI	C	11.6	11.64	0.893	9.62	1.000	988.	57.5	0.0524	16.165	4.778		0.0319	15.65
27	N.F. KOKTULI	C	9.9	11.68	0.891	9.62	1.000	989.	57.4	0.0498	16.165	4.831		0.0319	15.65
28	N.F. KOKTULI	Q	9.3	11.68	0.891	9.62	1.000	989.	57.4	0.0498	16.165	4.850		0.1312	15.65
29	N.F. KOKTULI	C	7.6	11.73	0.889	9.62	1.000	990.	57.4	0.0523	16.165	5.079		0.1312	15.65
30	N.F. KOKTULI	C	6.2	11.77	0.886	9.62	1.000	991.	57.4	0.0451	16.165	5.259		0.1312	15.65
31	N.F. KOKTULI	Q	5.3	11.77	0.886	9.62	1.000	991.	57.4	0.0451	16.165	5.380		0.1311	15.65
32	N.F. KOKTULI	C	3.5	11.82	0.884	9.62	1.000	992.	57.4	0.0470	16.164	5.609		0.1311	15.65
33	N.F. KOKTULI	E	0.0									6.070			

YEAR: 2007 TIME PERIOD: 6-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.70	0.858	9.19	1.000	950.	181.8	0.4823	16.103	0.097	9.50	0.0470	13.60
2	N.F. KOKTULI	C	55.7	10.68	0.810	9.19	1.000	968.	181.5	0.2582	16.103	0.187		0.0470	13.60
3	N.F. KOKTULI	C	48.2	11.00	0.795	9.19	1.000	974.	181.4	0.2188	16.103	0.543		0.0470	13.60
4	N.F. KOKTULI	C	44.8	11.04	0.793	9.19	1.000	974.	181.5	0.1561	16.101	0.703		0.0470	13.60
5	N.F. KOKTULI	C	42.1	11.06	0.792	9.19	1.000	975.	181.5	0.1523	16.100	0.829		0.0470	13.60
6	N.F. KOKTULI	C	41.2	11.07	0.792	9.19	1.000	975.	181.5	0.1240	16.100	0.869		0.0470	13.60
7	N.F. KOKTULI	C	39.8	11.08	0.791	9.19	1.000	975.	181.5	0.1662	16.099	0.937		0.0470	13.60
8	N.F. KOKTULI	C	38.6	11.10	0.790	9.19	1.000	975.	181.5	0.1059	16.098	0.995		0.0470	13.60
9	N.F. KOKTULI	Q	36.8	11.10	0.790	9.19	1.000	975.	181.5	0.1059	16.098	1.079		0.3644	10.32
10	N.F. KOKTULI	C	36.5	11.12	0.789	9.19	1.000	976.	181.5	0.1248	16.098	1.163		0.3644	10.32
11	N.F. KOKTULI	B	36.5									1.165			
12	TRIBUTARY 119	H	38.4	11.03	0.794	9.19	1.000	974.	181.5	0.2494	16.097	0.943	8.83	0.0875	10.32
13	TRIBUTARY 119	T	36.5									1.104			
14	N.F. KOKTULI	J	36.5	11.15	0.788	9.19	1.000	976.	181.5	0.1248	16.099	2.269		0.1111	10.32
15	N.F. KOKTULI	Q	35.8	11.15	0.788	9.19	1.000	976.	181.5	0.1248	16.099	2.354		0.0676	7.53
16	N.F. KOKTULI	C	35.4	11.19	0.786	9.19	1.000	977.	181.4	0.0939	16.099	2.379		0.0676	7.53
17	N.F. KOKTULI	C	34.0	11.24	0.784	9.19	1.000	978.	181.4	0.0900	16.099	2.475		0.0676	7.53
18	N.F. KOKTULI	C	31.0	11.30	0.781	9.19	1.000	979.	181.4	0.1059	16.098	2.677		0.0676	7.53
19	N.F. KOKTULI	C	28.5	11.34	0.779	9.19	1.000	980.	181.4	0.0793	16.097	2.846		0.0676	7.53
20	N.F. KOKTULI	Q	27.9	11.34	0.779	9.19	1.000	980.	181.4	0.0793	16.097	2.883		0.1803	7.53
21	N.F. KOKTULI	C	27.0	11.38	0.777	9.19	1.000	980.	181.4	0.0840	16.097	3.060		0.1803	7.53
22	N.F. KOKTULI	C	24.5	11.54	0.770	9.19	1.000	983.	181.4	0.1055	16.090	3.499		0.1803	7.53
23	N.F. KOKTULI	C	16.0	11.70	0.763	9.19	1.000	986.	181.5	0.0671	16.084	5.029		0.1803	7.53
24	N.F. KOKTULI	C	13.8	11.77	0.760	9.19	1.000	987.	181.5	0.0517	16.083	5.426		0.1803	7.53
25	N.F. KOKTULI	Q	13.7	11.77	0.760	9.19	1.000	987.	181.5	0.0517	16.083	5.450		0.0364	14.12
26	N.F. KOKTULI	C	11.6	11.82	0.758	9.19	1.000	988.	181.5	0.0525	16.082	5.528		0.0364	14.12
27	N.F. KOKTULI	C	9.9	11.86	0.756	9.19	1.000	989.	181.4	0.0500	16.083	5.589		0.0364	14.12
28	N.F. KOKTULI	Q	9.3	11.86	0.756	9.19	1.000	989.	181.4	0.0500	16.083	5.610		0.1312	14.12
29	N.F. KOKTULI	C	7.6	11.91	0.754	9.19	1.000	990.	181.4	0.0525	16.082	5.839		0.1312	14.12
30	N.F. KOKTULI	C	6.2	11.95	0.752	9.19	1.000	991.	181.4	0.0452	16.082	6.019		0.1312	14.12
31	N.F. KOKTULI	Q	5.3	11.95	0.752	9.19	1.000	991.	181.4	0.0452	16.082	6.140		0.1330	14.12
32	N.F. KOKTULI	C	3.5	12.00	0.750	9.19	1.000	992.	181.4	0.0472	16.081	6.372		0.1330	14.12
33	N.F. KOKTULI	E	0.0									6.840			

YEAR: 2007 TIME PERIOD: 7-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.44	0.827	7.89	1.000	950.	208.2	0.4833	16.019	0.078	10.47	0.0378	13.15
2	N.F. KOKTULI	C	55.7	11.42	0.781	7.89	1.000	968.	207.9	0.2594	16.019	0.151		0.0378	13.15
3	N.F. KOKTULI	C	48.2	11.74	0.766	7.89	1.000	974.	207.8	0.2194	16.019	0.437		0.0378	13.15
4	N.F. KOKTULI	C	44.8	11.78	0.765	7.89	1.000	974.	207.8	0.1568	16.017	0.566		0.0378	13.15
5	N.F. KOKTULI	C	42.1	11.80	0.764	7.89	1.000	975.	207.8	0.1529	16.016	0.668		0.0378	13.15
6	N.F. KOKTULI	C	41.2	11.81	0.764	7.89	1.000	975.	207.8	0.1244	16.016	0.700		0.0378	13.15
7	N.F. KOKTULI	C	39.8	11.82	0.763	7.89	1.000	975.	207.9	0.1667	16.015	0.755		0.0378	13.15
8	N.F. KOKTULI	C	38.6	11.84	0.762	7.89	1.000	975.	207.9	0.1062	16.014	0.801		0.0378	13.15
9	N.F. KOKTULI	Q	36.8	11.84	0.762	7.89	1.000	975.	207.9	0.1062	16.014	0.869		0.2881	10.12
10	N.F. KOKTULI	C	36.5	11.86	0.761	7.89	1.000	976.	207.9	0.1254	16.014	0.935		0.2881	10.12
11	N.F. KOKTULI	B	36.5									0.937			
12	TRIBUTARY 119	H	38.4	11.77	0.765	7.89	1.000	974.	207.9	0.2501	16.013	0.546	8.76	0.0392	10.12
13	TRIBUTARY 119	T	36.5									0.618			
14	N.F. KOKTULI	J	36.5	11.89	0.760	7.89	1.000	976.	207.8	0.1254	16.015	1.555		0.0889	10.12
15	N.F. KOKTULI	Q	35.8	11.89	0.760	7.89	1.000	976.	207.8	0.1254	16.015	1.623		0.0492	5.96
16	N.F. KOKTULI	C	35.4	11.93	0.758	7.89	1.000	977.	207.8	0.0940	16.015	1.641		0.0492	5.96
17	N.F. KOKTULI	C	34.0	11.98	0.756	7.89	1.000	978.	207.8	0.0902	16.015	1.711		0.0492	5.96
18	N.F. KOKTULI	C	31.0	12.04	0.753	7.89	1.000	979.	207.8	0.1064	16.014	1.858		0.0492	5.96
19	N.F. KOKTULI	C	28.5	12.08	0.752	7.89	1.000	980.	207.8	0.0794	16.013	1.981		0.0492	5.96
20	N.F. KOKTULI	Q	27.9	12.08	0.752	7.89	1.000	980.	207.8	0.0794	16.013	2.008		0.1554	5.96
21	N.F. KOKTULI	C	27.0	12.12	0.750	7.89	1.000	980.	207.8	0.0843	16.013	2.160		0.1554	5.96
22	N.F. KOKTULI	C	24.5	12.28	0.743	7.89	1.000	983.	207.8	0.1060	16.007	2.539		0.1554	5.96
23	N.F. KOKTULI	C	16.0	12.44	0.736	7.89	1.000	986.	207.9	0.0673	16.001	3.858		0.1554	5.96
24	N.F. KOKTULI	C	13.8	12.51	0.733	7.89	1.000	987.	207.9	0.0518	15.999	4.199		0.1554	5.96
25	N.F. KOKTULI	Q	13.7	12.51	0.733	7.89	1.000	987.	207.9	0.0518	15.999	4.220		0.0296	12.78
26	N.F. KOKTULI	C	11.6	12.56	0.731	7.89	1.000	988.	207.8	0.0527	15.999	4.283		0.0296	12.78
27	N.F. KOKTULI	C	9.9	12.60	0.729	7.89	1.000	989.	207.8	0.0501	15.999	4.333		0.0296	12.78
28	N.F. KOKTULI	Q	9.3	12.60	0.729	7.89	1.000	989.	207.8	0.0501	15.999	4.350		0.1287	12.78
29	N.F. KOKTULI	C	7.6	12.65	0.727	7.89	1.000	990.	207.8	0.0527	15.999	4.575		0.1287	12.78
30	N.F. KOKTULI	C	6.2	12.69	0.725	7.89	1.000	991.	207.8	0.0453	15.998	4.751		0.1287	12.78
31	N.F. KOKTULI	Q	5.3	12.69	0.725	7.89	1.000	991.	207.8	0.0453	15.998	4.870		0.1292	12.78
32	N.F. KOKTULI	C	3.5	12.74	0.723	7.89	1.000	992.	207.8	0.0473	15.998	5.095		0.1292	12.78
33	N.F. KOKTULI	E	0.0									5.550			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.77	0.817	5.60	1.000	950.	156.1	0.4843	15.934	0.069	11.15	0.0333	13.14
2	N.F. KOKTULI	C	55.7	12.75	0.771	5.60	1.000	968.	155.9	0.2607	15.935	0.133		0.0333	13.14
3	N.F. KOKTULI	C	48.2	13.07	0.757	5.60	1.000	974.	155.8	0.2201	15.935	0.386		0.0333	13.14
4	N.F. KOKTULI	C	44.8	13.11	0.755	5.60	1.000	974.	155.8	0.1575	15.932	0.499		0.0333	13.14
5	N.F. KOKTULI	C	42.1	13.13	0.754	5.60	1.000	975.	155.8	0.1536	15.932	0.589		0.0333	13.14
6	N.F. KOKTULI	C	41.2	13.14	0.754	5.60	1.000	975.	155.8	0.1249	15.932	0.617		0.0333	13.14
7	N.F. KOKTULI	C	39.8	13.15	0.754	5.60	1.000	975.	155.8	0.1673	15.931	0.665		0.0333	13.14
8	N.F. KOKTULI	C	38.6	13.17	0.753	5.60	1.000	975.	155.8	0.1065	15.930	0.706		0.0333	13.14
9	N.F. KOKTULI	Q	36.8	13.17	0.753	5.60	1.000	975.	155.8	0.1065	15.930	0.766		0.2500	10.13
10	N.F. KOKTULI	C	36.5	13.19	0.752	5.60	1.000	976.	155.8	0.1259	15.930	0.823		0.2500	10.13
11	N.F. KOKTULI	B	36.5									0.825			
12	TRIBUTARY 119	H	38.4	13.10	0.756	5.60	1.000	974.	155.9	0.2508	15.929	0.423	8.94	0.0321	10.13
13	TRIBUTARY 119	T	36.5									0.482			
14	N.F. KOKTULI	J	36.5	13.22	0.751	5.60	1.000	976.	155.8	0.1259	15.930	1.307		0.0771	10.13
15	N.F. KOKTULI	Q	35.8	13.22	0.751	5.60	1.000	976.	155.8	0.1259	15.930	1.366		0.0426	4.57
16	N.F. KOKTULI	C	35.4	13.26	0.749	5.60	1.000	977.	155.8	0.0942	15.931	1.382		0.0426	4.57
17	N.F. KOKTULI	C	34.0	13.31	0.747	5.60	1.000	978.	155.8	0.0904	15.930	1.442		0.0426	4.57
18	N.F. KOKTULI	C	31.0	13.37	0.744	5.60	1.000	979.	155.8	0.1069	15.929	1.569		0.0426	4.57
19	N.F. KOKTULI	C	28.5	13.41	0.742	5.60	1.000	980.	155.8	0.0796	15.929	1.676		0.0426	4.57
20	N.F. KOKTULI	Q	27.9	13.41	0.742	5.60	1.000	980.	155.8	0.0796	15.929	1.699		0.1244	4.57
21	N.F. KOKTULI	C	27.0	13.45	0.740	5.60	1.000	980.	155.8	0.0846	15.928	1.821		0.1244	4.57
22	N.F. KOKTULI	C	24.5	13.61	0.734	5.60	1.000	983.	155.8	0.1064	15.922	2.124		0.1244	4.57
23	N.F. KOKTULI	C	16.0	13.77	0.727	5.60	1.000	986.	155.9	0.0675	15.916	3.180		0.1244	4.57
24	N.F. KOKTULI	C	13.8	13.84	0.724	5.60	1.000	987.	155.8	0.0519	15.915	3.454		0.1244	4.57
25	N.F. KOKTULI	Q	13.7	13.84	0.724	5.60	1.000	987.	155.8	0.0519	15.915	3.470		0.0250	11.76
26	N.F. KOKTULI	C	11.6	13.89	0.722	5.60	1.000	988.	155.8	0.0529	15.915	3.523		0.0250	11.76
27	N.F. KOKTULI	C	9.9	13.93	0.720	5.60	1.000	989.	155.8	0.0502	15.915	3.565		0.0250	11.76
28	N.F. KOKTULI	Q	9.3	13.93	0.720	5.60	1.000	989.	155.8	0.0502	15.915	3.580		0.1237	11.76
29	N.F. KOKTULI	C	7.6	13.98	0.718	5.60	1.000	990.	155.8	0.0529	15.915	3.796		0.1237	11.76
30	N.F. KOKTULI	C	6.2	14.02	0.716	5.60	1.000	991.	155.8	0.0454	15.914	3.966		0.1237	11.76
31	N.F. KOKTULI	Q	5.3	14.02	0.716	5.60	1.000	991.	155.8	0.0454	15.914	4.080		0.1235	11.76
32	N.F. KOKTULI	C	3.5	14.07	0.714	5.60	1.000	992.	155.8	0.0475	15.914	4.295		0.1235	11.76
33	N.F. KOKTULI	E	0.0									4.730			

YEAR: 2007 TIME PERIOD: 9-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	13.73	0.735	3.41	1.000	950.	237.3	0.4855	15.849	0.063	12.43	0.0308	13.50
2	N.F. KOKTULI	C	55.7	14.71	0.694	3.41	1.000	968.	237.0	0.2620	15.849	0.123		0.0308	13.50
3	N.F. KOKTULI	C	48.2	15.03	0.681	3.41	1.000	974.	236.8	0.2208	15.849	0.356		0.0308	13.50
4	N.F. KOKTULI	C	44.8	15.07	0.680	3.41	1.000	974.	236.9	0.1583	15.847	0.460		0.0308	13.50
5	N.F. KOKTULI	C	42.1	15.09	0.679	3.41	1.000	975.	236.9	0.1543	15.847	0.543		0.0308	13.50
6	N.F. KOKTULI	C	41.2	15.10	0.679	3.41	1.000	975.	236.9	0.1254	15.846	0.569		0.0308	13.50
7	N.F. KOKTULI	C	39.8	15.11	0.678	3.41	1.000	975.	236.9	0.1678	15.846	0.614		0.0308	13.50
8	N.F. KOKTULI	C	38.6	15.13	0.677	3.41	1.000	975.	236.9	0.1068	15.845	0.652		0.0308	13.50
9	N.F. KOKTULI	Q	36.8	15.13	0.677	3.41	1.000	975.	236.9	0.1068	15.845	0.707		0.2288	10.31
10	N.F. KOKTULI	C	36.5	15.15	0.677	3.41	1.000	976.	236.9	0.1265	15.845	0.760		0.2288	10.31
11	N.F. KOKTULI	B	36.5									0.761			
12	TRIBUTARY 119	H	38.4	15.06	0.680	3.41	1.000	974.	236.9	0.2515	15.844	0.366	9.43	0.0294	10.31
13	TRIBUTARY 119	T	36.5									0.420			
14	N.F. KOKTULI	J	36.5	15.18	0.676	3.41	1.000	976.	236.9	0.1265	15.845	1.182		0.0706	10.31
15	N.F. KOKTULI	Q	35.8	15.18	0.676	3.41	1.000	976.	236.9	0.1265	15.845	1.236		0.0390	3.45
16	N.F. KOKTULI	C	35.4	15.22	0.674	3.41	1.000	977.	236.8	0.0944	15.846	1.251		0.0390	3.45
17	N.F. KOKTULI	C	34.0	15.27	0.672	3.41	1.000	978.	236.8	0.0906	15.845	1.306		0.0390	3.45
18	N.F. KOKTULI	C	31.0	15.33	0.670	3.41	1.000	979.	236.8	0.1074	15.844	1.422		0.0390	3.45
19	N.F. KOKTULI	C	28.5	15.37	0.668	3.41	1.000	980.	236.8	0.0797	15.844	1.520		0.0390	3.45
20	N.F. KOKTULI	Q	27.9	15.37	0.668	3.41	1.000	980.	236.8	0.0797	15.844	1.541		0.1060	3.45
21	N.F. KOKTULI	C	27.0	15.41	0.666	3.41	1.000	980.	236.8	0.0849	15.843	1.645		0.1060	3.45
22	N.F. KOKTULI	C	24.5	15.57	0.660	3.41	1.000	983.	236.9	0.1070	15.838	1.903		0.1060	3.45
23	N.F. KOKTULI	C	16.0	15.73	0.654	3.41	1.000	986.	236.9	0.0677	15.832	2.803		0.1060	3.45
24	N.F. KOKTULI	C	13.8	15.80	0.652	3.41	1.000	987.	236.9	0.0520	15.831	3.036		0.1060	3.45
25	N.F. KOKTULI	Q	13.7	15.80	0.652	3.41	1.000	987.	236.9	0.0520	15.831	3.050		0.0205	11.14
26	N.F. KOKTULI	C	11.6	15.85	0.650	3.41	1.000	988.	236.9	0.0531	15.830	3.094		0.0205	11.14
27	N.F. KOKTULI	C	9.9	15.89	0.648	3.41	1.000	989.	236.9	0.0504	15.830	3.128		0.0205	11.14
28	N.F. KOKTULI	Q	9.3	15.89	0.648	3.41	1.000	989.	236.9	0.0504	15.830	3.140		0.1188	11.14
29	N.F. KOKTULI	C	7.6	15.94	0.646	3.41	1.000	990.	236.9	0.0532	15.830	3.348		0.1188	11.14
30	N.F. KOKTULI	C	6.2	15.98	0.645	3.41	1.000	991.	236.9	0.0456	15.830	3.510		0.1188	11.14
31	N.F. KOKTULI	Q	5.3	15.98	0.645	3.41	1.000	991.	236.9	0.0456	15.830	3.620		0.1197	11.14
32	N.F. KOKTULI	C	3.5	16.03	0.643	3.41	1.000	992.	236.8	0.0477	15.829	3.829		0.1197	11.14
33	N.F. KOKTULI	E	0.0									4.250			

YEAR: 2007 TIME PERIOD: 10-Aug PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	15.70	0.603	3.02	1.000	950.	238.2	0.4866	15.763	0.059	13.59	0.0288	14.29
2	N.F. KOKTULI	C	55.7	16.68	0.569	3.02	1.000	968.	237.8	0.2634	15.764	0.115		0.0288	14.29
3	N.F. KOKTULI	C	48.2	17.00	0.558	3.02	1.000	974.	237.7	0.2215	15.764	0.333		0.0288	14.29
4	N.F. KOKTULI	C	44.8	17.04	0.557	3.02	1.000	974.	237.7	0.1590	15.761	0.431		0.0288	14.29
5	N.F. KOKTULI	C	42.1	17.06	0.556	3.02	1.000	975.	237.7	0.1550	15.761	0.509		0.0288	14.29
6	N.F. KOKTULI	C	41.2	17.07	0.556	3.02	1.000	975.	237.7	0.1259	15.761	0.533		0.0288	14.29
7	N.F. KOKTULI	C	39.8	17.08	0.556	3.02	1.000	975.	237.7	0.1684	15.760	0.575		0.0288	14.29
8	N.F. KOKTULI	C	38.6	17.10	0.555	3.02	1.000	975.	237.7	0.1072	15.759	0.610		0.0288	14.29
9	N.F. KOKTULI	Q	36.8	17.10	0.555	3.02	1.000	975.	237.7	0.1072	15.759	0.662		0.2161	10.68
10	N.F. KOKTULI	C	36.5	17.12	0.554	3.02	1.000	976.	237.7	0.1271	15.759	0.712		0.2161	10.68
11	N.F. KOKTULI	B	36.5									0.713			
12	TRIBUTARY 119	H	38.4	17.03	0.558	3.02	1.000	974.	237.8	0.2522	15.758	0.325	9.92	0.0277	10.68
13	TRIBUTARY 119	T	36.5									0.376			
14	N.F. KOKTULI	J	36.5	17.15	0.554	3.02	1.000	976.	237.7	0.1271	15.759	1.089		0.0654	10.68
15	N.F. KOKTULI	Q	35.8	17.15	0.554	3.02	1.000	976.	237.7	0.1271	15.759	1.139		0.0364	2.91
16	N.F. KOKTULI	C	35.4	17.19	0.552	3.02	1.000	977.	237.7	0.0947	15.760	1.153		0.0364	2.91
17	N.F. KOKTULI	C	34.0	17.24	0.551	3.02	1.000	978.	237.7	0.0908	15.760	1.204		0.0364	2.91
18	N.F. KOKTULI	C	31.0	17.30	0.549	3.02	1.000	979.	237.7	0.1079	15.759	1.313		0.0364	2.91
19	N.F. KOKTULI	C	28.5	17.34	0.547	3.02	1.000	980.	237.7	0.0799	15.758	1.404		0.0364	2.91
20	N.F. KOKTULI	Q	27.9	17.34	0.547	3.02	1.000	980.	237.7	0.0799	15.758	1.424		0.0918	2.91
21	N.F. KOKTULI	C	27.0	17.38	0.546	3.02	1.000	980.	237.7	0.0852	15.758	1.514		0.0918	2.91
22	N.F. KOKTULI	C	24.5	17.54	0.541	3.02	1.000	983.	237.7	0.1075	15.752	1.737		0.0918	2.91
23	N.F. KOKTULI	C	16.0	17.70	0.536	3.02	1.000	986.	237.8	0.0678	15.746	2.516		0.0918	2.91
24	N.F. KOKTULI	C	13.8	17.77	0.534	3.02	1.000	987.	237.8	0.0522	15.745	2.718		0.0918	2.91
25	N.F. KOKTULI	Q	13.7	17.77	0.534	3.02	1.000	987.	237.8	0.0522	15.745	2.730		0.0205	11.07
26	N.F. KOKTULI	C	11.6	17.82	0.532	3.02	1.000	988.	237.7	0.0533	15.745	2.774		0.0205	11.07
27	N.F. KOKTULI	C	9.9	17.86	0.531	3.02	1.000	989.	237.7	0.0505	15.745	2.808		0.0205	11.07
28	N.F. KOKTULI	Q	9.3	17.86	0.531	3.02	1.000	989.	237.7	0.0505	15.745	2.820		0.1138	11.07
29	N.F. KOKTULI	C	7.6	17.91	0.530	3.02	1.000	990.	237.7	0.0534	15.745	3.019		0.1138	11.07
30	N.F. KOKTULI	C	6.2	17.95	0.528	3.02	1.000	991.	237.7	0.0457	15.744	3.175		0.1138	11.07
31	N.F. KOKTULI	Q	5.3	17.95	0.528	3.02	1.000	991.	237.7	0.0457	15.744	3.280		0.1159	11.07
32	N.F. KOKTULI	C	3.5	18.00	0.526	3.02	1.000	992.	237.7	0.0479	15.744	3.482		0.1159	11.07
33	N.F. KOKTULI	E	0.0									3.890			

YEAR: 2007 TIME PERIOD: 11-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	14.96	0.684	2.09	1.000	950.	158.7	0.4878	15.677	0.057	13.45	0.0276	15.38
2	N.F. KOKTULI	C	55.7	15.94	0.646	2.09	1.000	968.	158.5	0.2648	15.677	0.110		0.0276	15.38
3	N.F. KOKTULI	C	48.2	16.26	0.634	2.09	1.000	974.	158.4	0.2222	15.677	0.320		0.0276	15.38
4	N.F. KOKTULI	C	44.8	16.30	0.633	2.09	1.000	974.	158.4	0.1598	15.675	0.414		0.0276	15.38
5	N.F. KOKTULI	C	42.1	16.32	0.632	2.09	1.000	975.	158.4	0.1557	15.675	0.488		0.0276	15.38
6	N.F. KOKTULI	C	41.2	16.33	0.632	2.09	1.000	975.	158.4	0.1264	15.675	0.511		0.0276	15.38
7	N.F. KOKTULI	C	39.8	16.34	0.631	2.09	1.000	975.	158.4	0.1690	15.674	0.552		0.0276	15.38
8	N.F. KOKTULI	C	38.6	16.36	0.630	2.09	1.000	975.	158.4	0.1075	15.673	0.585		0.0276	15.38
9	N.F. KOKTULI	Q	36.8	16.36	0.630	2.09	1.000	975.	158.4	0.1075	15.673	0.635		0.2076	11.18
10	N.F. KOKTULI	C	36.5	16.38	0.630	2.09	1.000	976.	158.4	0.1277	15.673	0.683		0.2076	11.18
11	N.F. KOKTULI	B	36.5									0.684			
12	TRIBUTARY 119	H	38.4	16.29	0.633	2.09	1.000	974.	158.5	0.2530	15.672	0.299	9.59	0.0261	11.18
13	TRIBUTARY 119	T	36.5									0.347			
14	N.F. KOKTULI	J	36.5	16.41	0.629	2.09	1.000	976.	158.4	0.1277	15.673	1.031		0.0627	11.18
15	N.F. KOKTULI	Q	35.8	16.41	0.629	2.09	1.000	976.	158.4	0.1277	15.673	1.079		0.0347	3.07
16	N.F. KOKTULI	C	35.4	16.45	0.627	2.09	1.000	977.	158.4	0.0950	15.674	1.092		0.0347	3.07
17	N.F. KOKTULI	C	34.0	16.50	0.625	2.09	1.000	978.	158.4	0.0911	15.673	1.141		0.0347	3.07
18	N.F. KOKTULI	C	31.0	16.56	0.623	2.09	1.000	979.	158.4	0.1085	15.673	1.244		0.0347	3.07
19	N.F. KOKTULI	C	28.5	16.60	0.622	2.09	1.000	980.	158.4	0.0801	15.672	1.331		0.0347	3.07
20	N.F. KOKTULI	Q	27.9	16.60	0.622	2.09	1.000	980.	158.4	0.0801	15.672	1.350		0.0829	3.07
21	N.F. KOKTULI	C	27.0	16.64	0.620	2.09	1.000	980.	158.4	0.0855	15.672	1.431		0.0829	3.07
22	N.F. KOKTULI	C	24.5	16.80	0.614	2.09	1.000	983.	158.4	0.1080	15.666	1.633		0.0829	3.07
23	N.F. KOKTULI	C	16.0	16.96	0.609	2.09	1.000	986.	158.5	0.0681	15.661	2.337		0.0829	3.07
24	N.F. KOKTULI	C	13.8	17.03	0.606	2.09	1.000	987.	158.5	0.0524	15.660	2.519		0.0829	3.07
25	N.F. KOKTULI	Q	13.7	17.03	0.606	2.09	1.000	987.	158.5	0.0524	15.660	2.530		0.0182	11.57
26	N.F. KOKTULI	C	11.6	17.08	0.605	2.09	1.000	988.	158.4	0.0535	15.659	2.569		0.0182	11.57
27	N.F. KOKTULI	C	9.9	17.12	0.603	2.09	1.000	989.	158.4	0.0507	15.659	2.599		0.0182	11.57
28	N.F. KOKTULI	Q	9.3	17.12	0.603	2.09	1.000	989.	158.4	0.0507	15.659	2.610		0.1114	11.57
29	N.F. KOKTULI	C	7.6	17.17	0.601	2.09	1.000	990.	158.4	0.0536	15.659	2.805		0.1114	11.57
30	N.F. KOKTULI	C	6.2	17.21	0.600	2.09	1.000	991.	158.4	0.0459	15.659	2.957		0.1114	11.57
31	N.F. KOKTULI	Q	5.3	17.21	0.600	2.09	1.000	991.	158.4	0.0459	15.659	3.060		0.1121	11.57
32	N.F. KOKTULI	C	3.5	17.26	0.598	2.09	1.000	992.	158.4	0.0481	15.658	3.256		0.1121	11.57
33	N.F. KOKTULI	E	0.0									3.650			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	16.27	0.899	2.85	1.000	950.	114.0	0.4891	15.590	0.056	14.71	0.0274	16.52
2	N.F. KOKTULI	C	55.7	17.25	0.849	2.85	1.000	968.	113.8	0.2663	15.591	0.109		0.0274	16.52
3	N.F. KOKTULI	C	48.2	17.57	0.833	2.85	1.000	974.	113.7	0.2229	15.591	0.317		0.0274	16.52
4	N.F. KOKTULI	C	44.8	17.61	0.831	2.85	1.000	974.	113.8	0.1607	15.589	0.410		0.0274	16.52
5	N.F. KOKTULI	C	42.1	17.63	0.830	2.85	1.000	975.	113.8	0.1565	15.588	0.483		0.0274	16.52
6	N.F. KOKTULI	C	41.2	17.64	0.829	2.85	1.000	975.	113.8	0.1270	15.588	0.506		0.0274	16.52
7	N.F. KOKTULI	C	39.8	17.65	0.829	2.85	1.000	975.	113.8	0.1696	15.587	0.546		0.0274	16.52
8	N.F. KOKTULI	C	38.6	17.67	0.828	2.85	1.000	975.	113.8	0.1079	15.586	0.580		0.0274	16.52
9	N.F. KOKTULI	Q	36.8	17.67	0.828	2.85	1.000	975.	113.8	0.1079	15.586	0.629		0.2034	11.71
10	N.F. KOKTULI	C	36.5	17.69	0.827	2.85	1.000	976.	113.8	0.1283	15.586	0.676		0.2034	11.71
11	N.F. KOKTULI	B	36.5									0.677			
12	TRIBUTARY 119	H	38.4	17.60	0.832	2.85	1.000	974.	113.8	0.2538	15.585	0.293	10.77	0.0256	11.71
13	TRIBUTARY 119	T	36.5									0.340			
14	N.F. KOKTULI	J	36.5	17.72	0.826	2.85	1.000	976.	113.8	0.1283	15.587	1.018		0.0614	11.71
15	N.F. KOKTULI	Q	35.8	17.72	0.826	2.85	1.000	976.	113.8	0.1283	15.587	1.065		0.0344	3.78
16	N.F. KOKTULI	C	35.4	17.76	0.824	2.85	1.000	977.	113.7	0.0954	15.587	1.078		0.0344	3.78
17	N.F. KOKTULI	C	34.0	17.81	0.821	2.85	1.000	978.	113.7	0.0913	15.587	1.126		0.0344	3.78
18	N.F. KOKTULI	C	31.0	17.87	0.819	2.85	1.000	979.	113.7	0.1090	15.586	1.229		0.0344	3.78
19	N.F. KOKTULI	C	28.5	17.91	0.817	2.85	1.000	980.	113.7	0.0803	15.586	1.315		0.0344	3.78
20	N.F. KOKTULI	Q	27.9	17.91	0.817	2.85	1.000	980.	113.7	0.0803	15.586	1.334		0.0784	3.78
21	N.F. KOKTULI	C	27.0	17.95	0.814	2.85	1.000	980.	113.7	0.0859	15.585	1.411		0.0784	3.78
22	N.F. KOKTULI	C	24.5	18.11	0.807	2.85	1.000	983.	113.8	0.1085	15.580	1.602		0.0784	3.78
23	N.F. KOKTULI	C	16.0	18.27	0.799	2.85	1.000	986.	113.8	0.0683	15.574	2.267		0.0784	3.78
24	N.F. KOKTULI	C	13.8	18.34	0.796	2.85	1.000	987.	113.8	0.0527	15.573	2.440		0.0784	3.78
25	N.F. KOKTULI	Q	13.7	18.34	0.796	2.85	1.000	987.	113.8	0.0527	15.573	2.450		0.0182	12.53
26	N.F. KOKTULI	C	11.6	18.39	0.794	2.85	1.000	988.	113.8	0.0538	15.573	2.489		0.0182	12.53
27	N.F. KOKTULI	C	9.9	18.43	0.792	2.85	1.000	989.	113.8	0.0509	15.573	2.519		0.0182	12.53
28	N.F. KOKTULI	Q	9.3	18.43	0.792	2.85	1.000	989.	113.8	0.0509	15.573	2.530		0.1089	12.53
29	N.F. KOKTULI	C	7.6	18.48	0.790	2.85	1.000	990.	113.8	0.0539	15.573	2.720		0.1089	12.53
30	N.F. KOKTULI	C	6.2	18.52	0.788	2.85	1.000	991.	113.7	0.0460	15.572	2.870		0.1089	12.53
31	N.F. KOKTULI	Q	5.3	18.52	0.788	2.85	1.000	991.	113.7	0.0460	15.572	2.970		0.1102	12.53
32	N.F. KOKTULI	C	3.5	18.57	0.785	2.85	1.000	992.	113.7	0.0483	15.572	3.162		0.1102	12.53
33	N.F. KOKTULI	E	0.0									3.550			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	17.11	0.837	3.17	1.000	950.	183.2	0.4904	15.503	0.056	15.02	0.0270	17.60
2	N.F. KOKTULI	C	55.7	18.09	0.791	3.17	1.000	968.	182.9	0.2679	15.504	0.108		0.0270	17.60
3	N.F. KOKTULI	C	48.2	18.41	0.776	3.17	1.000	974.	182.8	0.2236	15.504	0.312		0.0270	17.60
4	N.F. KOKTULI	C	44.8	18.45	0.774	3.17	1.000	974.	182.9	0.1615	15.501	0.404		0.0270	17.60
5	N.F. KOKTULI	C	42.1	18.47	0.773	3.17	1.000	975.	182.9	0.1572	15.501	0.476		0.0270	17.60
6	N.F. KOKTULI	C	41.2	18.48	0.773	3.17	1.000	975.	182.9	0.1276	15.501	0.499		0.0270	17.60
7	N.F. KOKTULI	C	39.8	18.49	0.772	3.17	1.000	975.	182.9	0.1702	15.500	0.539		0.0270	17.60
8	N.F. KOKTULI	C	38.6	18.51	0.771	3.17	1.000	975.	182.9	0.1083	15.499	0.572		0.0270	17.60
9	N.F. KOKTULI	Q	36.8	18.51	0.771	3.17	1.000	975.	182.9	0.1083	15.499	0.620		0.1992	12.18
10	N.F. KOKTULI	C	36.5	18.53	0.770	3.17	1.000	976.	182.9	0.1290	15.499	0.666		0.1992	12.18
11	N.F. KOKTULI	B	36.5									0.667			
12	TRIBUTARY 119	H	38.4	18.44	0.775	3.17	1.000	974.	182.9	0.2545	15.498	0.279	11.39	0.0256	12.18
13	TRIBUTARY 119	T	36.5									0.326			
14	N.F. KOKTULI	J	36.5	18.56	0.769	3.17	1.000	976.	182.9	0.1290	15.500	0.993		0.0614	12.18
15	N.F. KOKTULI	Q	35.8	18.56	0.769	3.17	1.000	976.	182.9	0.1290	15.500	1.040		0.0336	5.03
16	N.F. KOKTULI	C	35.4	18.60	0.768	3.17	1.000	977.	182.8	0.0958	15.500	1.053		0.0336	5.03
17	N.F. KOKTULI	C	34.0	18.65	0.765	3.17	1.000	978.	182.8	0.0916	15.500	1.100		0.0336	5.03
18	N.F. KOKTULI	C	31.0	18.71	0.763	3.17	1.000	979.	182.8	0.1096	15.499	1.200		0.0336	5.03
19	N.F. KOKTULI	C	28.5	18.75	0.761	3.17	1.000	980.	182.8	0.0806	15.498	1.285		0.0336	5.03
20	N.F. KOKTULI	Q	27.9	18.75	0.761	3.17	1.000	980.	182.8	0.0806	15.498	1.303		0.0771	5.03
21	N.F. KOKTULI	C	27.0	18.79	0.759	3.17	1.000	980.	182.8	0.0862	15.498	1.379		0.0771	5.03
22	N.F. KOKTULI	C	24.5	18.95	0.752	3.17	1.000	983.	182.9	0.1091	15.493	1.566		0.0771	5.03
23	N.F. KOKTULI	C	16.0	19.11	0.745	3.17	1.000	986.	182.9	0.0685	15.488	2.220		0.0771	5.03
24	N.F. KOKTULI	C	13.8	19.18	0.742	3.17	1.000	987.	182.9	0.0529	15.487	2.390		0.0771	5.03
25	N.F. KOKTULI	Q	13.7	19.18	0.742	3.17	1.000	987.	182.9	0.0529	15.487	2.400		0.0159	13.82
26	N.F. KOKTULI	C	11.6	19.23	0.740	3.17	1.000	988.	182.9	0.0540	15.486	2.434		0.0159	13.82
27	N.F. KOKTULI	C	9.9	19.27	0.738	3.17	1.000	989.	182.9	0.0512	15.486	2.461		0.0159	13.82
28	N.F. KOKTULI	Q	9.3	19.27	0.738	3.17	1.000	989.	182.9	0.0512	15.486	2.470		0.1114	13.82
29	N.F. KOKTULI	C	7.6	19.32	0.736	3.17	1.000	990.	182.9	0.0542	15.486	2.665		0.1114	13.82
30	N.F. KOKTULI	C	6.2	19.36	0.734	3.17	1.000	991.	182.9	0.0462	15.486	2.817		0.1114	13.82
31	N.F. KOKTULI	Q	5.3	19.36	0.734	3.17	1.000	991.	182.9	0.0462	15.486	2.920		0.1083	13.82
32	N.F. KOKTULI	C	3.5	19.41	0.732	3.17	1.000	992.	182.8	0.0485	15.485	3.109		0.1083	13.82
33	N.F. KOKTULI	E	0.0									3.490			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.08	0.991	4.52	1.000	950.	65.6	0.4917	15.415	0.056	11.98	0.0272	18.54
2	N.F. KOKTULI	C	55.7	9.06	0.935	4.52	1.000	968.	65.5	0.2697	15.416	0.108		0.0272	18.54
3	N.F. KOKTULI	C	48.2	9.38	0.918	4.52	1.000	974.	65.5	0.2244	15.416	0.315		0.0272	18.54
4	N.F. KOKTULI	C	44.8	9.42	0.916	4.52	1.000	974.	65.5	0.1624	15.414	0.407		0.0272	18.54
5	N.F. KOKTULI	C	42.1	9.44	0.915	4.52	1.000	975.	65.5	0.1580	15.413	0.480		0.0272	18.54
6	N.F. KOKTULI	C	41.2	9.45	0.914	4.52	1.000	975.	65.5	0.1282	15.413	0.503		0.0272	18.54
7	N.F. KOKTULI	C	39.8	9.46	0.914	4.52	1.000	975.	65.5	0.1708	15.413	0.543		0.0272	18.54
8	N.F. KOKTULI	C	38.6	9.48	0.913	4.52	1.000	975.	65.5	0.1087	15.412	0.576		0.0272	18.54
9	N.F. KOKTULI	Q	36.8	9.48	0.913	4.52	1.000	975.	65.5	0.1087	15.412	0.625		0.1992	12.56
10	N.F. KOKTULI	C	36.5	9.50	0.911	4.52	1.000	976.	65.5	0.1297	15.412	0.671		0.1992	12.56
11	N.F. KOKTULI	B	36.5									0.672			
12	TRIBUTARY 119	H	38.4	9.41	0.917	4.52	1.000	974.	65.5	0.2554	15.411	0.302	9.70	0.0261	12.56
13	TRIBUTARY 119	T	36.5									0.350			
14	N.F. KOKTULI	J	36.5	9.53	0.910	4.52	1.000	976.	65.5	0.1297	15.412	1.022		0.0627	12.56
15	N.F. KOKTULI	Q	35.8	9.53	0.910	4.52	1.000	976.	65.5	0.1297	15.412	1.070		0.0344	6.64
16	N.F. KOKTULI	C	35.4	9.57	0.908	4.52	1.000	977.	65.5	0.0961	15.413	1.083		0.0344	6.64
17	N.F. KOKTULI	C	34.0	9.62	0.905	4.52	1.000	978.	65.5	0.0919	15.412	1.131		0.0344	6.64
18	N.F. KOKTULI	C	31.0	9.68	0.902	4.52	1.000	979.	65.5	0.1102	15.411	1.234		0.0344	6.64
19	N.F. KOKTULI	C	28.5	9.72	0.900	4.52	1.000	980.	65.5	0.0809	15.411	1.320		0.0344	6.64
20	N.F. KOKTULI	Q	27.9	9.72	0.900	4.52	1.000	980.	65.5	0.0809	15.411	1.339		0.0781	6.64
21	N.F. KOKTULI	C	27.0	9.76	0.898	4.52	1.000	980.	65.5	0.0866	15.411	1.416		0.0781	6.64
22	N.F. KOKTULI	C	24.5	9.92	0.890	4.52	1.000	983.	65.5	0.1096	15.406	1.606		0.0781	6.64
23	N.F. KOKTULI	C	16.0	10.08	0.881	4.52	1.000	986.	65.5	0.0688	15.401	2.268		0.0781	6.64
24	N.F. KOKTULI	C	13.8	10.15	0.878	4.52	1.000	987.	65.5	0.0531	15.400	2.440		0.0781	6.64
25	N.F. KOKTULI	Q	13.7	10.15	0.878	4.52	1.000	987.	65.5	0.0531	15.400	2.450		0.0182	15.20
26	N.F. KOKTULI	C	11.6	10.20	0.875	4.52	1.000	988.	65.5	0.0542	15.399	2.489		0.0182	15.20
27	N.F. KOKTULI	C	9.9	10.24	0.873	4.52	1.000	989.	65.5	0.0514	15.399	2.519		0.0182	15.20
28	N.F. KOKTULI	Q	9.3	10.24	0.873	4.52	1.000	989.	65.5	0.0514	15.399	2.530		0.1089	15.20
29	N.F. KOKTULI	C	7.6	10.29	0.871	4.52	1.000	990.	65.5	0.0544	15.399	2.720		0.1089	15.20
30	N.F. KOKTULI	C	6.2	10.33	0.869	4.52	1.000	991.	65.5	0.0464	15.399	2.870		0.1089	15.20
31	N.F. KOKTULI	Q	5.3	10.33	0.869	4.52	1.000	991.	65.5	0.0464	15.399	2.970		0.1102	15.20
32	N.F. KOKTULI	C	3.5	10.38	0.866	4.52	1.000	992.	65.5	0.0488	15.398	3.162		0.1102	15.20
33	N.F. KOKTULI	E	0.0									3.550			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.06	1.000	5.84	1.000	950.	69.2	0.4931	15.327	0.068	10.36	0.0333	19.01
2	N.F. KOKTULI	C	55.7	10.04	0.945	5.84	1.000	968.	69.1	0.2714	15.328	0.132		0.0333	19.01
3	N.F. KOKTULI	C	48.2	10.36	0.927	5.84	1.000	974.	69.1	0.2251	15.328	0.385		0.0333	19.01
4	N.F. KOKTULI	C	44.8	10.40	0.925	5.84	1.000	974.	69.1	0.1633	15.326	0.498		0.0333	19.01
5	N.F. KOKTULI	C	42.1	10.42	0.924	5.84	1.000	975.	69.1	0.1588	15.326	0.587		0.0333	19.01
6	N.F. KOKTULI	C	41.2	10.43	0.924	5.84	1.000	975.	69.1	0.1289	15.326	0.615		0.0333	19.01
7	N.F. KOKTULI	C	39.8	10.44	0.923	5.84	1.000	975.	69.1	0.1714	15.325	0.664		0.0333	19.01
8	N.F. KOKTULI	C	38.6	10.46	0.922	5.84	1.000	975.	69.1	0.1092	15.324	0.704		0.0333	19.01
9	N.F. KOKTULI	Q	36.8	10.46	0.922	5.84	1.000	975.	69.1	0.1092	15.324	0.764		0.2500	12.71
10	N.F. KOKTULI	C	36.5	10.48	0.921	5.84	1.000	976.	69.1	0.1303	15.324	0.821		0.2500	12.71
11	N.F. KOKTULI	B	36.5									0.823			
12	TRIBUTARY 119	H	38.4	10.39	0.926	5.84	1.000	974.	69.1	0.2562	15.323	0.349	8.70	0.0321	12.71
13	TRIBUTARY 119	T	36.5									0.408			
14	N.F. KOKTULI	J	36.5	10.51	0.920	5.84	1.000	976.	69.1	0.1303	15.324	1.231		0.0771	12.71
15	N.F. KOKTULI	Q	35.8	10.51	0.920	5.84	1.000	976.	69.1	0.1303	15.324	1.290		0.0405	7.69
16	N.F. KOKTULI	C	35.4	10.55	0.917	5.84	1.000	977.	69.1	0.0966	15.325	1.305		0.0405	7.69
17	N.F. KOKTULI	C	34.0	10.60	0.915	5.84	1.000	978.	69.1	0.0923	15.324	1.362		0.0405	7.69
18	N.F. KOKTULI	C	31.0	10.66	0.912	5.84	1.000	979.	69.1	0.1108	15.324	1.483		0.0405	7.69
19	N.F. KOKTULI	C	28.5	10.70	0.909	5.84	1.000	980.	69.1	0.0812	15.323	1.585		0.0405	7.69
20	N.F. KOKTULI	Q	27.9	10.70	0.909	5.84	1.000	980.	69.1	0.0812	15.323	1.607		0.1070	7.69
21	N.F. KOKTULI	C	27.0	10.74	0.907	5.84	1.000	980.	69.1	0.0871	15.323	1.712		0.1070	7.69
22	N.F. KOKTULI	C	24.5	10.90	0.899	5.84	1.000	983.	69.1	0.1102	15.318	1.972		0.1070	7.69
23	N.F. KOKTULI	C	16.0	11.06	0.890	5.84	1.000	986.	69.1	0.0691	15.313	2.880		0.1070	7.69
24	N.F. KOKTULI	C	13.8	11.13	0.887	5.84	1.000	987.	69.1	0.0534	15.312	3.116		0.1070	7.69
25	N.F. KOKTULI	Q	13.7	11.13	0.887	5.84	1.000	987.	69.1	0.0534	15.312	3.130		0.0205	16.27
26	N.F. KOKTULI	C	11.6	11.18	0.884	5.84	1.000	988.	69.1	0.0545	15.312	3.174		0.0205	16.27
27	N.F. KOKTULI	C	9.9	11.22	0.882	5.84	1.000	989.	69.1	0.0517	15.312	3.208		0.0205	16.27
28	N.F. KOKTULI	Q	9.3	11.22	0.882	5.84	1.000	989.	69.1	0.0517	15.312	3.220		0.1213	16.27
29	N.F. KOKTULI	C	7.6	11.27	0.880	5.84	1.000	990.	69.1	0.0547	15.312	3.432		0.1213	16.27
30	N.F. KOKTULI	C	6.2	11.31	0.877	5.84	1.000	991.	69.1	0.0466	15.311	3.598		0.1213	16.27
31	N.F. KOKTULI	Q	5.3	11.31	0.877	5.84	1.000	991.	69.1	0.0466	15.311	3.710		0.1197	16.27
32	N.F. KOKTULI	C	3.5	11.36	0.875	5.84	1.000	992.	69.1	0.0490	15.311	3.919		0.1197	16.27
33	N.F. KOKTULI	E	0.0									4.340			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.58	0.868	2.18	1.000	950.	185.7	0.4945	15.239	0.064	12.02	0.0313	19.33
2	N.F. KOKTULI	C	55.7	12.56	0.820	2.18	1.000	968.	185.5	0.2733	15.240	0.125		0.0313	19.33
3	N.F. KOKTULI	C	48.2	12.88	0.804	2.18	1.000	974.	185.4	0.2259	15.240	0.362		0.0313	19.33
4	N.F. KOKTULI	C	44.8	12.92	0.803	2.18	1.000	974.	185.4	0.1642	15.238	0.469		0.0313	19.33
5	N.F. KOKTULI	C	42.1	12.94	0.802	2.18	1.000	975.	185.4	0.1597	15.237	0.553		0.0313	19.33
6	N.F. KOKTULI	C	41.2	12.95	0.801	2.18	1.000	975.	185.4	0.1295	15.237	0.580		0.0313	19.33
7	N.F. KOKTULI	C	39.8	12.96	0.801	2.18	1.000	975.	185.4	0.1721	15.237	0.625		0.0313	19.33
8	N.F. KOKTULI	C	38.6	12.98	0.800	2.18	1.000	975.	185.4	0.1096	15.236	0.664		0.0313	19.33
9	N.F. KOKTULI	Q	36.8	12.98	0.800	2.18	1.000	975.	185.4	0.1096	15.236	0.720		0.2331	12.76
10	N.F. KOKTULI	C	36.5	13.00	0.799	2.18	1.000	976.	185.4	0.1310	15.236	0.774		0.2331	12.76
11	N.F. KOKTULI	B	36.5									0.775			
12	TRIBUTARY 119	H	38.4	12.91	0.803	2.18	1.000	974.	185.5	0.2570	15.235	0.328	9.45	0.0299	12.76
13	TRIBUTARY 119	T	36.5									0.383			
14	N.F. KOKTULI	J	36.5	13.03	0.798	2.18	1.000	976.	185.4	0.1310	15.236	1.158		0.0732	12.76
15	N.F. KOKTULI	Q	35.8	13.03	0.798	2.18	1.000	976.	185.4	0.1310	15.236	1.214		0.0384	8.41
16	N.F. KOKTULI	C	35.4	13.07	0.796	2.18	1.000	977.	185.4	0.0970	15.236	1.228		0.0384	8.41
17	N.F. KOKTULI	C	34.0	13.12	0.793	2.18	1.000	978.	185.4	0.0928	15.236	1.283		0.0384	8.41
18	N.F. KOKTULI	C	31.0	13.18	0.791	2.18	1.000	979.	185.4	0.1115	15.235	1.397		0.0384	8.41
19	N.F. KOKTULI	C	28.5	13.22	0.789	2.18	1.000	980.	185.4	0.0815	15.235	1.493		0.0384	8.41
20	N.F. KOKTULI	Q	27.9	13.22	0.789	2.18	1.000	980.	185.4	0.0815	15.235	1.514		0.1170	8.41
21	N.F. KOKTULI	C	27.0	13.26	0.787	2.18	1.000	980.	185.4	0.0875	15.235	1.629		0.1170	8.41
22	N.F. KOKTULI	C	24.5	13.42	0.780	2.18	1.000	983.	185.4	0.1108	15.230	1.914		0.1170	8.41
23	N.F. KOKTULI	C	16.0	13.58	0.772	2.18	1.000	986.	185.5	0.0694	15.225	2.907		0.1170	8.41
24	N.F. KOKTULI	C	13.8	13.65	0.769	2.18	1.000	987.	185.5	0.0536	15.224	3.165		0.1170	8.41
25	N.F. KOKTULI	Q	13.7	13.65	0.769	2.18	1.000	987.	185.5	0.0536	15.224	3.180		0.0228	17.09
26	N.F. KOKTULI	C	11.6	13.70	0.767	2.18	1.000	988.	185.5	0.0548	15.224	3.229		0.0228	17.09
27	N.F. KOKTULI	C	9.9	13.74	0.765	2.18	1.000	989.	185.4	0.0519	15.224	3.267		0.0228	17.09
28	N.F. KOKTULI	Q	9.3	13.74	0.765	2.18	1.000	989.	185.4	0.0519	15.224	3.280		0.1213	17.09
29	N.F. KOKTULI	C	7.6	13.79	0.763	2.18	1.000	990.	185.4	0.0550	15.224	3.492		0.1213	17.09
30	N.F. KOKTULI	C	6.2	13.83	0.761	2.18	1.000	991.	185.4	0.0468	15.223	3.658		0.1213	17.09
31	N.F. KOKTULI	Q	5.3	13.83	0.761	2.18	1.000	991.	185.4	0.0468	15.223	3.770		0.1197	17.09
32	N.F. KOKTULI	C	3.5	13.88	0.759	2.18	1.000	992.	185.4	0.0493	15.223	3.979		0.1197	17.09
33	N.F. KOKTULI	E	0.0									4.400			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.98	0.848	6.53	1.000	950.	110.1	0.4960	15.150	0.058	12.15	0.0280	19.65
2	N.F. KOKTULI	C	55.7	10.96	0.800	6.53	1.000	968.	110.0	0.2752	15.151	0.112		0.0280	19.65
3	N.F. KOKTULI	C	48.2	11.28	0.785	6.53	1.000	974.	109.9	0.2267	15.151	0.324		0.0280	19.65
4	N.F. KOKTULI	C	44.8	11.32	0.784	6.53	1.000	974.	109.9	0.1652	15.149	0.419		0.0280	19.65
5	N.F. KOKTULI	C	42.1	11.34	0.783	6.53	1.000	975.	109.9	0.1605	15.149	0.494		0.0280	19.65
6	N.F. KOKTULI	C	41.2	11.35	0.782	6.53	1.000	975.	109.9	0.1302	15.149	0.518		0.0280	19.65
7	N.F. KOKTULI	C	39.8	11.36	0.782	6.53	1.000	975.	109.9	0.1727	15.148	0.559		0.0280	19.65
8	N.F. KOKTULI	C	38.6	11.38	0.781	6.53	1.000	975.	109.9	0.1101	15.147	0.593		0.0280	19.65
9	N.F. KOKTULI	Q	36.8	11.38	0.781	6.53	1.000	975.	109.9	0.1101	15.147	0.643		0.2076	12.80
10	N.F. KOKTULI	C	36.5	11.40	0.780	6.53	1.000	976.	109.9	0.1318	15.147	0.691		0.2076	12.80
11	N.F. KOKTULI	B	36.5									0.692			
12	TRIBUTARY 119	H	38.4	11.31	0.784	6.53	1.000	974.	110.0	0.2579	15.146	0.287	9.34	0.0266	12.80
13	TRIBUTARY 119	T	36.5									0.336			
14	N.F. KOKTULI	J	36.5	11.43	0.779	6.53	1.000	976.	109.9	0.1318	15.147	1.028		0.0641	12.80
15	N.F. KOKTULI	Q	35.8	11.43	0.779	6.53	1.000	976.	109.9	0.1318	15.147	1.077		0.0347	9.24
16	N.F. KOKTULI	C	35.4	11.47	0.777	6.53	1.000	977.	109.9	0.0974	15.148	1.090		0.0347	9.24
17	N.F. KOKTULI	C	34.0	11.52	0.775	6.53	1.000	978.	109.9	0.0932	15.148	1.139		0.0347	9.24
18	N.F. KOKTULI	C	31.0	11.58	0.772	6.53	1.000	979.	109.9	0.1121	15.147	1.242		0.0347	9.24
19	N.F. KOKTULI	C	28.5	11.62	0.770	6.53	1.000	980.	109.9	0.0819	15.146	1.329		0.0347	9.24
20	N.F. KOKTULI	Q	27.9	11.62	0.770	6.53	1.000	980.	109.9	0.0819	15.146	1.348		0.0971	9.24
21	N.F. KOKTULI	C	27.0	11.66	0.768	6.53	1.000	980.	109.9	0.0880	15.146	1.443		0.0971	9.24
22	N.F. KOKTULI	C	24.5	11.82	0.761	6.53	1.000	983.	109.9	0.1114	15.142	1.680		0.0971	9.24
23	N.F. KOKTULI	C	16.0	11.98	0.754	6.53	1.000	986.	110.0	0.0698	15.137	2.504		0.0971	9.24
24	N.F. KOKTULI	C	13.8	12.05	0.751	6.53	1.000	987.	110.0	0.0539	15.136	2.717		0.0971	9.24
25	N.F. KOKTULI	Q	13.7	12.05	0.751	6.53	1.000	987.	110.0	0.0539	15.136	2.730		0.0205	17.84
26	N.F. KOKTULI	C	11.6	12.10	0.749	6.53	1.000	988.	110.0	0.0551	15.136	2.774		0.0205	17.84
27	N.F. KOKTULI	C	9.9	12.14	0.747	6.53	1.000	989.	110.0	0.0522	15.136	2.808		0.0205	17.84
28	N.F. KOKTULI	Q	9.3	12.14	0.747	6.53	1.000	989.	110.0	0.0522	15.136	2.820		0.1138	17.84
29	N.F. KOKTULI	C	7.6	12.19	0.745	6.53	1.000	990.	110.0	0.0553	15.136	3.019		0.1138	17.84
30	N.F. KOKTULI	C	6.2	12.23	0.743	6.53	1.000	991.	110.0	0.0470	15.135	3.175		0.1138	17.84
31	N.F. KOKTULI	Q	5.3	12.23	0.743	6.53	1.000	991.	110.0	0.0470	15.135	3.280		0.1159	17.84
32	N.F. KOKTULI	C	3.5	12.28	0.741	6.53	1.000	992.	110.0	0.0495	15.135	3.482		0.1159	17.84
33	N.F. KOKTULI	E	0.0									3.890			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.03	0.868	14.56	1.000	950.	59.1	0.4975	15.061	0.060	9.13	0.0289	19.48
2	N.F. KOKTULI	C	55.7	10.01	0.820	14.56	1.000	968.	59.0	0.2772	15.062	0.115		0.0289	19.48
3	N.F. KOKTULI	C	48.2	10.33	0.804	14.56	1.000	974.	59.0	0.2275	15.062	0.334		0.0289	19.48
4	N.F. KOKTULI	C	44.8	10.37	0.803	14.56	1.000	974.	59.0	0.1662	15.060	0.432		0.0289	19.48
5	N.F. KOKTULI	C	42.1	10.39	0.802	14.56	1.000	975.	59.0	0.1614	15.060	0.510		0.0289	19.48
6	N.F. KOKTULI	C	41.2	10.40	0.801	14.56	1.000	975.	59.0	0.1310	15.060	0.535		0.0289	19.48
7	N.F. KOKTULI	C	39.8	10.41	0.801	14.56	1.000	975.	59.0	0.1734	15.059	0.577		0.0289	19.48
8	N.F. KOKTULI	C	38.6	10.43	0.800	14.56	1.000	975.	59.0	0.1108	15.058	0.612		0.0289	19.48
9	N.F. KOKTULI	Q	36.8	10.43	0.800	14.56	1.000	975.	59.0	0.1108	15.058	0.664		0.2161	12.68
10	N.F. KOKTULI	C	36.5	10.45	0.799	14.56	1.000	976.	59.0	0.1325	15.058	0.714		0.2161	12.68
11	N.F. KOKTULI	B	36.5									0.715			
12	TRIBUTARY 119	H	38.4	10.36	0.803	14.56	1.000	974.	59.0	0.2587	15.057	0.367	8.35	0.0277	12.68
13	TRIBUTARY 119	T	36.5									0.418			
14	N.F. KOKTULI	J	36.5	10.48	0.798	14.56	1.000	976.	59.0	0.1325	15.059	1.132		0.0667	12.68
15	N.F. KOKTULI	Q	35.8	10.48	0.798	14.56	1.000	976.	59.0	0.1325	15.059	1.183		0.0376	9.92
16	N.F. KOKTULI	C	35.4	10.52	0.796	14.56	1.000	977.	59.0	0.0979	15.059	1.197		0.0376	9.92
17	N.F. KOKTULI	C	34.0	10.57	0.793	14.56	1.000	978.	59.0	0.0937	15.059	1.250		0.0376	9.92
18	N.F. KOKTULI	C	31.0	10.63	0.791	14.56	1.000	979.	59.0	0.1128	15.058	1.362		0.0376	9.92
19	N.F. KOKTULI	C	28.5	10.67	0.789	14.56	1.000	980.	59.0	0.0823	15.058	1.456		0.0376	9.92
20	N.F. KOKTULI	Q	27.9	10.67	0.789	14.56	1.000	980.	59.0	0.0823	15.058	1.477		0.0993	9.92
21	N.F. KOKTULI	C	27.0	10.71	0.787	14.56	1.000	980.	59.0	0.0885	15.057	1.574		0.0993	9.92
22	N.F. KOKTULI	C	24.5	10.87	0.780	14.56	1.000	983.	59.0	0.1120	15.053	1.816		0.0993	9.92
23	N.F. KOKTULI	C	16.0	11.03	0.772	14.56	1.000	986.	59.1	0.0701	15.048	2.659		0.0993	9.92
24	N.F. KOKTULI	C	13.8	11.10	0.769	14.56	1.000	987.	59.1	0.0542	15.047	2.877		0.0993	9.92
25	N.F. KOKTULI	Q	13.7	11.10	0.769	14.56	1.000	987.	59.1	0.0542	15.047	2.890		0.0205	18.40
26	N.F. KOKTULI	C	11.6	11.15	0.767	14.56	1.000	988.	59.1	0.0554	15.047	2.934		0.0205	18.40
27	N.F. KOKTULI	C	9.9	11.19	0.765	14.56	1.000	989.	59.1	0.0525	15.047	2.968		0.0205	18.40
28	N.F. KOKTULI	Q	9.3	11.19	0.765	14.56	1.000	989.	59.1	0.0525	15.047	2.980		0.1163	18.40
29	N.F. KOKTULI	C	7.6	11.24	0.763	14.56	1.000	990.	59.0	0.0556	15.047	3.183		0.1163	18.40
30	N.F. KOKTULI	C	6.2	11.28	0.761	14.56	1.000	991.	59.0	0.0472	15.047	3.343		0.1163	18.40
31	N.F. KOKTULI	Q	5.3	11.28	0.761	14.56	1.000	991.	59.0	0.0472	15.047	3.450		0.1178	18.40
32	N.F. KOKTULI	C	3.5	11.33	0.759	14.56	1.000	992.	59.0	0.0498	15.046	3.655		0.1178	18.40
33	N.F. KOKTULI	E	0.0									4.070			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.98	0.817	11.52	1.000	950.	101.8	0.4990	14.972	0.061	9.28	0.0296	18.78
2	N.F. KOKTULI	C	55.7	11.96	0.771	11.52	1.000	968.	101.7	0.2792	14.973	0.118		0.0296	18.78
3	N.F. KOKTULI	C	48.2	12.28	0.757	11.52	1.000	974.	101.7	0.2283	14.973	0.342		0.0296	18.78
4	N.F. KOKTULI	C	44.8	12.32	0.755	11.52	1.000	974.	101.7	0.1672	14.971	0.443		0.0296	18.78
5	N.F. KOKTULI	C	42.1	12.34	0.754	11.52	1.000	975.	101.7	0.1623	14.970	0.523		0.0296	18.78
6	N.F. KOKTULI	C	41.2	12.35	0.754	11.52	1.000	975.	101.7	0.1318	14.970	0.548		0.0296	18.78
7	N.F. KOKTULI	C	39.8	12.36	0.754	11.52	1.000	975.	101.7	0.1741	14.970	0.591		0.0296	18.78
8	N.F. KOKTULI	C	38.6	12.38	0.753	11.52	1.000	975.	101.7	0.1114	14.969	0.627		0.0296	18.78
9	N.F. KOKTULI	Q	36.8	12.38	0.753	11.52	1.000	975.	101.7	0.1114	14.969	0.680		0.2203	12.41
10	N.F. KOKTULI	C	36.5	12.40	0.752	11.52	1.000	976.	101.7	0.1333	14.969	0.731		0.2203	12.41
11	N.F. KOKTULI	B	36.5									0.732			
12	TRIBUTARY 119	H	38.4	12.31	0.756	11.52	1.000	974.	101.7	0.2596	14.968	0.353	9.00	0.0283	12.41
13	TRIBUTARY 119	T	36.5									0.405			
14	N.F. KOKTULI	J	36.5	12.43	0.751	11.52	1.000	976.	101.7	0.1333	14.969	1.137		0.0680	12.41
15	N.F. KOKTULI	Q	35.8	12.43	0.751	11.52	1.000	976.	101.7	0.1333	14.969	1.189		0.0379	10.29
16	N.F. KOKTULI	C	35.4	12.47	0.749	11.52	1.000	977.	101.7	0.0984	14.970	1.203		0.0379	10.29
17	N.F. KOKTULI	C	34.0	12.52	0.747	11.52	1.000	978.	101.7	0.0942	14.969	1.257		0.0379	10.29
18	N.F. KOKTULI	C	31.0	12.58	0.744	11.52	1.000	979.	101.7	0.1134	14.969	1.370		0.0379	10.29
19	N.F. KOKTULI	C	28.5	12.62	0.742	11.52	1.000	980.	101.7	0.0827	14.968	1.464		0.0379	10.29
20	N.F. KOKTULI	Q	27.9	12.62	0.742	11.52	1.000	980.	101.7	0.0827	14.968	1.485		0.1395	10.29
21	N.F. KOKTULI	C	27.0	12.66	0.740	11.52	1.000	980.	101.7	0.0890	14.968	1.622		0.1395	10.29
22	N.F. KOKTULI	C	24.5	12.82	0.734	11.52	1.000	983.	101.7	0.1126	14.964	1.961		0.1395	10.29
23	N.F. KOKTULI	C	16.0	12.98	0.727	11.52	1.000	986.	101.7	0.0705	14.959	3.145		0.1395	10.29
24	N.F. KOKTULI	C	13.8	13.05	0.724	11.52	1.000	987.	101.7	0.0544	14.959	3.452		0.1395	10.29
25	N.F. KOKTULI	Q	13.7	13.05	0.724	11.52	1.000	987.	101.7	0.0544	14.959	3.470		0.0250	18.73
26	N.F. KOKTULI	C	11.6	13.10	0.722	11.52	1.000	988.	101.7	0.0557	14.958	3.523		0.0250	18.73
27	N.F. KOKTULI	C	9.9	13.14	0.720	11.52	1.000	989.	101.7	0.0528	14.958	3.565		0.0250	18.73
28	N.F. KOKTULI	Q	9.3	13.14	0.720	11.52	1.000	989.	101.7	0.0528	14.958	3.580		0.1237	18.73
29	N.F. KOKTULI	C	7.6	13.19	0.718	11.52	1.000	990.	101.7	0.0560	14.958	3.796		0.1237	18.73
30	N.F. KOKTULI	C	6.2	13.23	0.716	11.52	1.000	991.	101.7	0.0475	14.958	3.966		0.1237	18.73
31	N.F. KOKTULI	Q	5.3	13.23	0.716	11.52	1.000	991.	101.7	0.0475	14.958	4.080		0.1235	18.73
32	N.F. KOKTULI	C	3.5	13.28	0.714	11.52	1.000	992.	101.7	0.0501	14.957	4.295		0.1235	18.73
33	N.F. KOKTULI	E	0.0									4.730			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.96	0.950	6.69	1.000	950.	58.2	0.5006	14.882	0.061	9.72	0.0296	17.95
2	N.F. KOKTULI	C	55.7	9.94	0.897	6.69	1.000	968.	58.1	0.2814	14.883	0.118		0.0296	17.95
3	N.F. KOKTULI	C	48.2	10.26	0.880	6.69	1.000	974.	58.1	0.2292	14.883	0.343		0.0296	17.95
4	N.F. KOKTULI	C	44.8	10.30	0.878	6.69	1.000	974.	58.1	0.1682	14.881	0.444		0.0296	17.95
5	N.F. KOKTULI	C	42.1	10.32	0.877	6.69	1.000	975.	58.1	0.1632	14.881	0.523		0.0296	17.95
6	N.F. KOKTULI	C	41.2	10.33	0.877	6.69	1.000	975.	58.1	0.1327	14.881	0.548		0.0296	17.95
7	N.F. KOKTULI	C	39.8	10.34	0.876	6.69	1.000	975.	58.1	0.1747	14.880	0.592		0.0296	17.95
8	N.F. KOKTULI	C	38.6	10.36	0.875	6.69	1.000	975.	58.1	0.1121	14.880	0.628		0.0296	17.95
9	N.F. KOKTULI	Q	36.8	10.36	0.875	6.69	1.000	975.	58.1	0.1121	14.880	0.681		0.2203	12.10
10	N.F. KOKTULI	C	36.5	10.38	0.874	6.69	1.000	976.	58.1	0.1341	14.879	0.732		0.2203	12.10
11	N.F. KOKTULI	B	36.5									0.733			
12	TRIBUTARY 119	H	38.4	10.29	0.879	6.69	1.000	974.	58.1	0.2605	14.879	0.353	8.89	0.0283	12.10
13	TRIBUTARY 119	T	36.5									0.405			
14	N.F. KOKTULI	J	36.5	10.41	0.873	6.69	1.000	976.	58.1	0.1341	14.880	1.138		0.0680	12.10
15	N.F. KOKTULI	Q	35.8	10.41	0.873	6.69	1.000	976.	58.1	0.1341	14.880	1.190		0.0377	10.51
16	N.F. KOKTULI	C	35.4	10.45	0.871	6.69	1.000	977.	58.1	0.0990	14.880	1.204		0.0377	10.51
17	N.F. KOKTULI	C	34.0	10.50	0.868	6.69	1.000	978.	58.1	0.0947	14.880	1.257		0.0377	10.51
18	N.F. KOKTULI	C	31.0	10.56	0.865	6.69	1.000	979.	58.1	0.1141	14.879	1.370		0.0377	10.51
19	N.F. KOKTULI	C	28.5	10.60	0.863	6.69	1.000	980.	58.1	0.0831	14.879	1.464		0.0377	10.51
20	N.F. KOKTULI	Q	27.9	10.60	0.863	6.69	1.000	980.	58.1	0.0831	14.879	1.485		0.1205	10.51
21	N.F. KOKTULI	C	27.0	10.64	0.861	6.69	1.000	980.	58.1	0.0896	14.879	1.603		0.1205	10.51
22	N.F. KOKTULI	C	24.5	10.80	0.853	6.69	1.000	983.	58.1	0.1133	14.874	1.896		0.1205	10.51
23	N.F. KOKTULI	C	16.0	10.96	0.845	6.69	1.000	986.	58.1	0.0710	14.870	2.919		0.1205	10.51
24	N.F. KOKTULI	C	13.8	11.03	0.842	6.69	1.000	987.	58.1	0.0547	14.869	3.184		0.1205	10.51
25	N.F. KOKTULI	Q	13.7	11.03	0.842	6.69	1.000	987.	58.1	0.0547	14.869	3.200		0.0228	18.88
26	N.F. KOKTULI	C	11.6	11.08	0.839	6.69	1.000	988.	58.1	0.0561	14.869	3.249		0.0228	18.88
27	N.F. KOKTULI	C	9.9	11.12	0.837	6.69	1.000	989.	58.1	0.0531	14.869	3.287		0.0228	18.88
28	N.F. KOKTULI	Q	9.3	11.12	0.837	6.69	1.000	989.	58.1	0.0531	14.869	3.300		0.1213	18.88
29	N.F. KOKTULI	C	7.6	11.17	0.835	6.69	1.000	990.	58.1	0.0563	14.869	3.512		0.1213	18.88
30	N.F. KOKTULI	C	6.2	11.21	0.833	6.69	1.000	991.	58.1	0.0477	14.869	3.678		0.1213	18.88
31	N.F. KOKTULI	Q	5.3	11.21	0.833	6.69	1.000	991.	58.1	0.0477	14.869	3.790		0.1216	18.88
32	N.F. KOKTULI	C	3.5	11.26	0.830	6.69	1.000	992.	58.1	0.0504	14.868	4.002		0.1216	18.88
33	N.F. KOKTULI	E	0.0									4.430			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.26	0.980	6.99	1.000	950.	28.2	0.5022	14.792	0.063	8.93	0.0306	17.01
2	N.F. KOKTULI	C	55.7	9.24	0.926	6.99	1.000	968.	28.1	0.2836	14.793	0.122		0.0306	17.01
3	N.F. KOKTULI	C	48.2	9.56	0.908	6.99	1.000	974.	28.1	0.2300	14.793	0.353		0.0306	17.01
4	N.F. KOKTULI	C	44.8	9.60	0.907	6.99	1.000	974.	28.1	0.1693	14.791	0.457		0.0306	17.01
5	N.F. KOKTULI	C	42.1	9.62	0.905	6.99	1.000	975.	28.1	0.1642	14.791	0.539		0.0306	17.01
6	N.F. KOKTULI	C	41.2	9.63	0.905	6.99	1.000	975.	28.1	0.1336	14.791	0.565		0.0306	17.01
7	N.F. KOKTULI	C	39.8	9.64	0.904	6.99	1.000	975.	28.1	0.1754	14.790	0.610		0.0306	17.01
8	N.F. KOKTULI	C	38.6	9.66	0.903	6.99	1.000	975.	28.1	0.1128	14.790	0.647		0.0306	17.01
9	N.F. KOKTULI	Q	36.8	9.66	0.903	6.99	1.000	975.	28.1	0.1128	14.790	0.702		0.2288	11.72
10	N.F. KOKTULI	C	36.5	9.68	0.902	6.99	1.000	976.	28.1	0.1349	14.790	0.755		0.2288	11.72
11	N.F. KOKTULI	B	36.5									0.756			
12	TRIBUTARY 119	H	38.4	9.59	0.907	6.99	1.000	974.	28.1	0.2614	14.789	0.371	8.08	0.0294	11.72
13	TRIBUTARY 119	T	36.5									0.425			
14	N.F. KOKTULI	J	36.5	9.71	0.901	6.99	1.000	976.	28.1	0.1349	14.790	1.181		0.0706	11.72
15	N.F. KOKTULI	Q	35.8	9.71	0.901	6.99	1.000	976.	28.1	0.1349	14.790	1.235		0.0389	10.33
16	N.F. KOKTULI	C	35.4	9.75	0.899	6.99	1.000	977.	28.1	0.0995	14.790	1.250		0.0389	10.33
17	N.F. KOKTULI	C	34.0	9.80	0.896	6.99	1.000	978.	28.1	0.0953	14.790	1.304		0.0389	10.33
18	N.F. KOKTULI	C	31.0	9.86	0.893	6.99	1.000	979.	28.1	0.1149	14.789	1.420		0.0389	10.33
19	N.F. KOKTULI	C	28.5	9.90	0.891	6.99	1.000	980.	28.1	0.0835	14.789	1.518		0.0389	10.33
20	N.F. KOKTULI	Q	27.9	9.90	0.891	6.99	1.000	980.	28.1	0.0835	14.789	1.539		0.1244	10.33
21	N.F. KOKTULI	C	27.0	9.94	0.888	6.99	1.000	980.	28.1	0.0902	14.789	1.661		0.1244	10.33
22	N.F. KOKTULI	C	24.5	10.10	0.880	6.99	1.000	983.	28.1	0.1139	14.785	1.964		0.1244	10.33
23	N.F. KOKTULI	C	16.0	10.26	0.872	6.99	1.000	986.	28.1	0.0714	14.781	3.020		0.1244	10.33
24	N.F. KOKTULI	C	13.8	10.33	0.869	6.99	1.000	987.	28.1	0.0551	14.780	3.294		0.1244	10.33
25	N.F. KOKTULI	Q	13.7	10.33	0.869	6.99	1.000	987.	28.1	0.0551	14.780	3.310		0.0228	18.65
26	N.F. KOKTULI	C	11.6	10.38	0.866	6.99	1.000	988.	28.1	0.0564	14.780	3.359		0.0228	18.65
27	N.F. KOKTULI	C	9.9	10.42	0.864	6.99	1.000	989.	28.1	0.0534	14.780	3.397		0.0228	18.65
28	N.F. KOKTULI	Q	9.3	10.42	0.864	6.99	1.000	989.	28.1	0.0534	14.780	3.410		0.1237	18.65
29	N.F. KOKTULI	C	7.6	10.47	0.862	6.99	1.000	990.	28.1	0.0567	14.779	3.626		0.1237	18.65
30	N.F. KOKTULI	C	6.2	10.51	0.860	6.99	1.000	991.	28.1	0.0480	14.779	3.796		0.1237	18.65
31	N.F. KOKTULI	Q	5.3	10.51	0.860	6.99	1.000	991.	28.1	0.0480	14.779	3.910		0.1216	18.65
32	N.F. KOKTULI	C	3.5	10.56	0.857	6.99	1.000	992.	28.1	0.0508	14.779	4.122		0.1216	18.65
33	N.F. KOKTULI	E	0.0									4.550			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.12	1.000	6.96	1.000	950.	29.1	0.5039	14.702	0.064	8.57	0.0311	16.00
2	N.F. KOKTULI	C	55.7	9.10	0.955	6.96	1.000	968.	29.0	0.2859	14.703	0.124		0.0311	16.00
3	N.F. KOKTULI	C	48.2	9.42	0.937	6.96	1.000	974.	29.0	0.2309	14.703	0.360		0.0311	16.00
4	N.F. KOKTULI	C	44.8	9.46	0.935	6.96	1.000	974.	29.0	0.1704	14.701	0.466		0.0311	16.00
5	N.F. KOKTULI	C	42.1	9.48	0.934	6.96	1.000	975.	29.0	0.1652	14.701	0.549		0.0311	16.00
6	N.F. KOKTULI	C	41.2	9.49	0.933	6.96	1.000	975.	29.0	0.1346	14.701	0.576		0.0311	16.00
7	N.F. KOKTULI	C	39.8	9.50	0.933	6.96	1.000	975.	29.0	0.1762	14.700	0.621		0.0311	16.00
8	N.F. KOKTULI	C	38.6	9.52	0.931	6.96	1.000	975.	29.0	0.1136	14.700	0.659		0.0311	16.00
9	N.F. KOKTULI	Q	36.8	9.52	0.931	6.96	1.000	975.	29.0	0.1136	14.700	0.715		0.2331	11.30
10	N.F. KOKTULI	C	36.5	9.54	0.930	6.96	1.000	976.	29.0	0.1357	14.700	0.769		0.2331	11.30
11	N.F. KOKTULI	B	36.5									0.770			
12	TRIBUTARY 119	H	38.4	9.45	0.936	6.96	1.000	974.	29.0	0.2624	14.699	0.401	8.11	0.0299	11.30
13	TRIBUTARY 119	T	36.5									0.456			
14	N.F. KOKTULI	J	36.5	9.57	0.929	6.96	1.000	976.	29.0	0.1357	14.700	1.226		0.0719	11.30
15	N.F. KOKTULI	Q	35.8	9.57	0.929	6.96	1.000	976.	29.0	0.1357	14.700	1.281		0.0403	9.67
16	N.F. KOKTULI	C	35.4	9.61	0.927	6.96	1.000	977.	29.0	0.1001	14.700	1.296		0.0403	9.67
17	N.F. KOKTULI	C	34.0	9.66	0.924	6.96	1.000	978.	29.0	0.0958	14.700	1.353		0.0403	9.67
18	N.F. KOKTULI	C	31.0	9.72	0.921	6.96	1.000	979.	29.0	0.1156	14.699	1.473		0.0403	9.67
19	N.F. KOKTULI	C	28.5	9.76	0.919	6.96	1.000	980.	29.0	0.0840	14.699	1.574		0.0403	9.67
20	N.F. KOKTULI	Q	27.9	9.76	0.919	6.96	1.000	980.	29.0	0.0840	14.699	1.596		0.1338	9.67
21	N.F. KOKTULI	C	27.0	9.80	0.916	6.96	1.000	980.	29.0	0.0908	14.699	1.727		0.1338	9.67
22	N.F. KOKTULI	C	24.5	9.96	0.908	6.96	1.000	983.	29.0	0.1146	14.695	2.053		0.1338	9.67
23	N.F. KOKTULI	C	16.0	10.12	0.899	6.96	1.000	986.	29.0	0.0719	14.691	3.188		0.1338	9.67
24	N.F. KOKTULI	C	13.8	10.19	0.896	6.96	1.000	987.	29.0	0.0554	14.690	3.482		0.1338	9.67
25	N.F. KOKTULI	Q	13.7	10.19	0.896	6.96	1.000	987.	29.0	0.0554	14.690	3.500		0.0228	17.93
26	N.F. KOKTULI	C	11.6	10.24	0.893	6.96	1.000	988.	29.0	0.0568	14.690	3.549		0.0228	17.93
27	N.F. KOKTULI	C	9.9	10.28	0.891	6.96	1.000	989.	29.0	0.0537	14.690	3.587		0.0228	17.93
28	N.F. KOKTULI	Q	9.3	10.28	0.891	6.96	1.000	989.	29.0	0.0537	14.690	3.600		0.1262	17.93
29	N.F. KOKTULI	C	7.6	10.33	0.889	6.96	1.000	990.	29.0	0.0570	14.690	3.821		0.1262	17.93
30	N.F. KOKTULI	C	6.2	10.37	0.886	6.96	1.000	991.	29.0	0.0482	14.690	3.994		0.1262	17.93
31	N.F. KOKTULI	Q	5.3	10.37	0.886	6.96	1.000	991.	29.0	0.0482	14.690	4.110		0.1235	17.93
32	N.F. KOKTULI	C	3.5	10.42	0.884	6.96	1.000	992.	29.0	0.0511	14.689	4.325		0.1235	17.93
33	N.F. KOKTULI	E	0.0									4.760			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.22	0.940	3.74	1.000	950.	78.1	0.5056	14.612	0.074	8.86	0.0357	15.11
2	N.F. KOKTULI	C	55.7	10.20	0.887	3.74	1.000	968.	77.9	0.2882	14.612	0.142		0.0357	15.11
3	N.F. KOKTULI	C	48.2	10.52	0.871	3.74	1.000	974.	77.9	0.2318	14.612	0.413		0.0357	15.11
4	N.F. KOKTULI	C	44.8	10.56	0.869	3.74	1.000	974.	77.9	0.1715	14.611	0.535		0.0357	15.11
5	N.F. KOKTULI	C	42.1	10.58	0.868	3.74	1.000	975.	77.9	0.1661	14.611	0.631		0.0357	15.11
6	N.F. KOKTULI	C	41.2	10.59	0.867	3.74	1.000	975.	77.9	0.1356	14.611	0.661		0.0357	15.11
7	N.F. KOKTULI	C	39.8	10.60	0.867	3.74	1.000	975.	77.9	0.1769	14.610	0.713		0.0357	15.11
8	N.F. KOKTULI	C	38.6	10.62	0.865	3.74	1.000	975.	77.9	0.1144	14.609	0.757		0.0357	15.11
9	N.F. KOKTULI	Q	36.8	10.62	0.865	3.74	1.000	975.	77.9	0.1144	14.609	0.821		0.2669	10.92
10	N.F. KOKTULI	C	36.5	10.64	0.864	3.74	1.000	976.	77.9	0.1366	14.609	0.882		0.2669	10.92
11	N.F. KOKTULI	B	36.5									0.884			
12	TRIBUTARY 119	H	38.4	10.55	0.869	3.74	1.000	974.	77.9	0.2633	14.609	0.482	8.17	0.0348	10.92
13	TRIBUTARY 119	T	36.5									0.546			
14	N.F. KOKTULI	J	36.5	10.67	0.863	3.74	1.000	976.	77.9	0.1366	14.610	1.430		0.0837	10.92
15	N.F. KOKTULI	Q	35.8	10.67	0.863	3.74	1.000	976.	77.9	0.1366	14.610	1.494		0.0459	8.75
16	N.F. KOKTULI	C	35.4	10.71	0.861	3.74	1.000	977.	77.9	0.1007	14.610	1.511		0.0459	8.75
17	N.F. KOKTULI	C	34.0	10.76	0.859	3.74	1.000	978.	77.9	0.0964	14.610	1.576		0.0459	8.75
18	N.F. KOKTULI	C	31.0	10.82	0.856	3.74	1.000	979.	77.9	0.1164	14.609	1.713		0.0459	8.75
19	N.F. KOKTULI	C	28.5	10.86	0.854	3.74	1.000	980.	77.9	0.0845	14.609	1.828		0.0459	8.75
20	N.F. KOKTULI	Q	27.9	10.86	0.854	3.74	1.000	980.	77.9	0.0845	14.609	1.853		0.1340	8.75
21	N.F. KOKTULI	C	27.0	10.90	0.851	3.74	1.000	980.	77.9	0.0914	14.608	1.984		0.1340	8.75
22	N.F. KOKTULI	C	24.5	11.06	0.844	3.74	1.000	983.	77.9	0.1152	14.605	2.311		0.1340	8.75
23	N.F. KOKTULI	C	16.0	11.22	0.836	3.74	1.000	986.	78.0	0.0724	14.601	3.448		0.1340	8.75
24	N.F. KOKTULI	C	13.8	11.29	0.833	3.74	1.000	987.	78.0	0.0557	14.600	3.742		0.1340	8.75
25	N.F. KOKTULI	Q	13.7	11.29	0.833	3.74	1.000	987.	78.0	0.0557	14.600	3.760		0.0273	16.88
26	N.F. KOKTULI	C	11.6	11.34	0.830	3.74	1.000	988.	78.0	0.0572	14.600	3.818		0.0273	16.88
27	N.F. KOKTULI	C	9.9	11.38	0.828	3.74	1.000	989.	78.0	0.0541	14.600	3.864		0.0273	16.88
28	N.F. KOKTULI	Q	9.3	11.38	0.828	3.74	1.000	989.	78.0	0.0541	14.600	3.880		0.1262	16.88
29	N.F. KOKTULI	C	7.6	11.43	0.826	3.74	1.000	990.	78.0	0.0574	14.600	4.101		0.1262	16.88
30	N.F. KOKTULI	C	6.2	11.47	0.824	3.74	1.000	991.	78.0	0.0486	14.600	4.274		0.1262	16.88
31	N.F. KOKTULI	Q	5.3	11.47	0.824	3.74	1.000	991.	78.0	0.0486	14.600	4.390		0.1273	16.88
32	N.F. KOKTULI	C	3.5	11.52	0.821	3.74	1.000	992.	78.0	0.0514	14.599	4.612		0.1273	16.88
33	N.F. KOKTULI	E	0.0									5.060			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.90	0.909	4.15	1.000	950.	107.0	0.5073	14.521	0.069	9.90	0.0335	14.63
2	N.F. KOKTULI	C	55.7	11.88	0.858	4.15	1.000	968.	106.9	0.2906	14.522	0.133		0.0335	14.63
3	N.F. KOKTULI	C	48.2	12.20	0.842	4.15	1.000	974.	106.8	0.2327	14.522	0.387		0.0335	14.63
4	N.F. KOKTULI	C	44.8	12.24	0.840	4.15	1.000	974.	106.9	0.1727	14.520	0.501		0.0335	14.63
5	N.F. KOKTULI	C	42.1	12.26	0.839	4.15	1.000	975.	106.9	0.1672	14.520	0.591		0.0335	14.63
6	N.F. KOKTULI	C	41.2	12.27	0.839	4.15	1.000	975.	106.9	0.1366	14.520	0.619		0.0335	14.63
7	N.F. KOKTULI	C	39.8	12.28	0.838	4.15	1.000	975.	106.9	0.1776	14.519	0.668		0.0335	14.63
8	N.F. KOKTULI	C	38.6	12.30	0.837	4.15	1.000	975.	106.9	0.1152	14.519	0.709		0.0335	14.63
9	N.F. KOKTULI	Q	36.8	12.30	0.837	4.15	1.000	975.	106.9	0.1152	14.519	0.769		0.2542	10.70
10	N.F. KOKTULI	C	36.5	12.32	0.836	4.15	1.000	976.	106.9	0.1374	14.519	0.827		0.2542	10.70
11	N.F. KOKTULI	B	36.5									0.829			
12	TRIBUTARY 119	H	38.4	12.23	0.841	4.15	1.000	974.	106.9	0.2643	14.518	0.429	8.72	0.0321	10.70
13	TRIBUTARY 119	T	36.5									0.488			
14	N.F. KOKTULI	J	36.5	12.35	0.835	4.15	1.000	976.	106.9	0.1374	14.519	1.317		0.0784	10.70
15	N.F. KOKTULI	Q	35.8	12.35	0.835	4.15	1.000	976.	106.9	0.1374	14.519	1.377		0.0427	7.94
16	N.F. KOKTULI	C	35.4	12.39	0.833	4.15	1.000	977.	106.8	0.1013	14.519	1.393		0.0427	7.94
17	N.F. KOKTULI	C	34.0	12.44	0.831	4.15	1.000	978.	106.8	0.0971	14.519	1.453		0.0427	7.94
18	N.F. KOKTULI	C	31.0	12.50	0.828	4.15	1.000	979.	106.8	0.1171	14.519	1.581		0.0427	7.94
19	N.F. KOKTULI	C	28.5	12.54	0.826	4.15	1.000	980.	106.8	0.0850	14.518	1.688		0.0427	7.94
20	N.F. KOKTULI	Q	27.9	12.54	0.826	4.15	1.000	980.	106.8	0.0850	14.518	1.711		0.1327	7.94
21	N.F. KOKTULI	C	27.0	12.58	0.824	4.15	1.000	980.	106.8	0.0921	14.518	1.841		0.1327	7.94
22	N.F. KOKTULI	C	24.5	12.74	0.816	4.15	1.000	983.	106.9	0.1159	14.514	2.164		0.1327	7.94
23	N.F. KOKTULI	C	16.0	12.90	0.808	4.15	1.000	986.	106.9	0.0729	14.511	3.291		0.1327	7.94
24	N.F. KOKTULI	C	13.8	12.97	0.805	4.15	1.000	987.	106.9	0.0561	14.510	3.582		0.1327	7.94
25	N.F. KOKTULI	Q	13.7	12.97	0.805	4.15	1.000	987.	106.9	0.0561	14.510	3.600		0.0250	15.81
26	N.F. KOKTULI	C	11.6	13.02	0.803	4.15	1.000	988.	106.9	0.0576	14.510	3.653		0.0250	15.81
27	N.F. KOKTULI	C	9.9	13.06	0.801	4.15	1.000	989.	106.9	0.0545	14.510	3.695		0.0250	15.81
28	N.F. KOKTULI	Q	9.3	13.06	0.801	4.15	1.000	989.	106.9	0.0545	14.510	3.710		0.1262	15.81
29	N.F. KOKTULI	C	7.6	13.11	0.799	4.15	1.000	990.	106.9	0.0578	14.510	3.931		0.1262	15.81
30	N.F. KOKTULI	C	6.2	13.15	0.797	4.15	1.000	991.	106.9	0.0489	14.509	4.104		0.1262	15.81
31	N.F. KOKTULI	Q	5.3	13.15	0.797	4.15	1.000	991.	106.9	0.0489	14.509	4.220		0.1254	15.81
32	N.F. KOKTULI	C	3.5	13.20	0.794	4.15	1.000	992.	106.9	0.0518	14.509	4.439		0.1254	15.81
33	N.F. KOKTULI	E	0.0									4.880			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.55	0.929	3.34	1.000	950.	135.1	0.5090	14.431	0.064	11.30	0.0313	14.57
2	N.F. KOKTULI	C	55.7	11.53	0.877	3.34	1.000	968.	134.9	0.2930	14.431	0.125		0.0313	14.57
3	N.F. KOKTULI	C	48.2	11.85	0.861	3.34	1.000	974.	134.8	0.2336	14.431	0.362		0.0313	14.57
4	N.F. KOKTULI	C	44.8	11.89	0.859	3.34	1.000	974.	134.9	0.1738	14.430	0.468		0.0313	14.57
5	N.F. KOKTULI	C	42.1	11.91	0.858	3.34	1.000	975.	134.9	0.1682	14.429	0.552		0.0313	14.57
6	N.F. KOKTULI	C	41.2	11.92	0.858	3.34	1.000	975.	134.9	0.1377	14.429	0.579		0.0313	14.57
7	N.F. KOKTULI	C	39.8	11.93	0.857	3.34	1.000	975.	134.9	0.1784	14.429	0.625		0.0313	14.57
8	N.F. KOKTULI	C	38.6	11.95	0.856	3.34	1.000	975.	134.9	0.1160	14.428	0.663		0.0313	14.57
9	N.F. KOKTULI	Q	36.8	11.95	0.856	3.34	1.000	975.	134.9	0.1160	14.428	0.719		0.2373	10.63
10	N.F. KOKTULI	C	36.5	11.97	0.855	3.34	1.000	976.	134.9	0.1383	14.428	0.774		0.2373	10.63
11	N.F. KOKTULI	B	36.5									0.775			
12	TRIBUTARY 119	H	38.4	11.88	0.860	3.34	1.000	974.	134.9	0.2653	14.427	0.419	9.32	0.0299	10.63
13	TRIBUTARY 119	T	36.5									0.474			
14	N.F. KOKTULI	J	36.5	12.00	0.854	3.34	1.000	976.	134.9	0.1383	14.428	1.249		0.0719	10.63
15	N.F. KOKTULI	Q	35.8	12.00	0.854	3.34	1.000	976.	134.9	0.1383	14.428	1.304		0.0408	7.35
16	N.F. KOKTULI	C	35.4	12.04	0.852	3.34	1.000	977.	134.8	0.1020	14.429	1.319		0.0408	7.35
17	N.F. KOKTULI	C	34.0	12.09	0.849	3.34	1.000	978.	134.8	0.0977	14.428	1.377		0.0408	7.35
18	N.F. KOKTULI	C	31.0	12.15	0.846	3.34	1.000	979.	134.8	0.1180	14.428	1.499		0.0408	7.35
19	N.F. KOKTULI	C	28.5	12.19	0.844	3.34	1.000	980.	134.8	0.0855	14.428	1.601		0.0408	7.35
20	N.F. KOKTULI	Q	27.9	12.19	0.844	3.34	1.000	980.	134.8	0.0855	14.428	1.623		0.1712	7.35
21	N.F. KOKTULI	C	27.0	12.23	0.842	3.34	1.000	980.	134.8	0.0928	14.427	1.791		0.1712	7.35
22	N.F. KOKTULI	C	24.5	12.39	0.835	3.34	1.000	983.	134.9	0.1166	14.424	2.208		0.1712	7.35
23	N.F. KOKTULI	C	16.0	12.55	0.827	3.34	1.000	986.	134.9	0.0734	14.420	3.661		0.1712	7.35
24	N.F. KOKTULI	C	13.8	12.62	0.824	3.34	1.000	987.	135.0	0.0565	14.420	4.037		0.1712	7.35
25	N.F. KOKTULI	Q	13.7	12.62	0.824	3.34	1.000	987.	135.0	0.0565	14.420	4.060		0.0273	14.87
26	N.F. KOKTULI	C	11.6	12.67	0.821	3.34	1.000	988.	134.9	0.0581	14.419	4.118		0.0273	14.87
27	N.F. KOKTULI	C	9.9	12.71	0.819	3.34	1.000	989.	134.9	0.0549	14.419	4.164		0.0273	14.87
28	N.F. KOKTULI	Q	9.3	12.71	0.819	3.34	1.000	989.	134.9	0.0549	14.419	4.180		0.1287	14.87
29	N.F. KOKTULI	C	7.6	12.76	0.817	3.34	1.000	990.	134.9	0.0581	14.419	4.405		0.1287	14.87
30	N.F. KOKTULI	C	6.2	12.80	0.815	3.34	1.000	991.	134.9	0.0493	14.419	4.581		0.1287	14.87
31	N.F. KOKTULI	Q	5.3	12.80	0.815	3.34	1.000	991.	134.9	0.0493	14.419	4.700		0.1292	14.87
32	N.F. KOKTULI	C	3.5	12.85	0.812	3.34	1.000	992.	134.9	0.0521	14.419	4.925		0.1292	14.87
33	N.F. KOKTULI	E	0.0									5.380			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.40	0.797	3.83	1.000	950.	136.8	0.5106	14.339	0.061	10.69	0.0297	14.70
2	N.F. KOKTULI	C	55.7	11.38	0.752	3.83	1.000	968.	136.6	0.2955	14.340	0.118		0.0297	14.70
3	N.F. KOKTULI	C	48.2	11.70	0.738	3.83	1.000	974.	136.6	0.2346	14.340	0.344		0.0297	14.70
4	N.F. KOKTULI	C	44.8	11.74	0.737	3.83	1.000	974.	136.6	0.1751	14.339	0.445		0.0297	14.70
5	N.F. KOKTULI	C	42.1	11.76	0.736	3.83	1.000	975.	136.6	0.1693	14.338	0.525		0.0297	14.70
6	N.F. KOKTULI	C	41.2	11.77	0.735	3.83	1.000	975.	136.6	0.1388	14.338	0.550		0.0297	14.70
7	N.F. KOKTULI	C	39.8	11.78	0.735	3.83	1.000	975.	136.6	0.1791	14.338	0.593		0.0297	14.70
8	N.F. KOKTULI	C	38.6	11.80	0.734	3.83	1.000	975.	136.6	0.1169	14.337	0.630		0.0297	14.70
9	N.F. KOKTULI	Q	36.8	11.80	0.734	3.83	1.000	975.	136.6	0.1169	14.337	0.683		0.2246	10.64
10	N.F. KOKTULI	C	36.5	11.82	0.733	3.83	1.000	976.	136.6	0.1392	14.337	0.735		0.2246	10.64
11	N.F. KOKTULI	B	36.5									0.736			
12	TRIBUTARY 119	H	38.4	11.73	0.737	3.83	1.000	974.	136.7	0.2663	14.337	0.352	8.71	0.0283	10.64
13	TRIBUTARY 119	T	36.5									0.404			
14	N.F. KOKTULI	J	36.5	11.85	0.732	3.83	1.000	976.	136.6	0.1392	14.337	1.140		0.0680	10.64
15	N.F. KOKTULI	Q	35.8	11.85	0.732	3.83	1.000	976.	136.6	0.1392	14.337	1.192		0.0379	6.78
16	N.F. KOKTULI	C	35.4	11.89	0.730	3.83	1.000	977.	136.6	0.1027	14.338	1.206		0.0379	6.78
17	N.F. KOKTULI	C	34.0	11.94	0.728	3.83	1.000	978.	136.6	0.0984	14.338	1.260		0.0379	6.78
18	N.F. KOKTULI	C	31.0	12.00	0.726	3.83	1.000	979.	136.6	0.1188	14.337	1.373		0.0379	6.78
19	N.F. KOKTULI	C	28.5	12.04	0.724	3.83	1.000	980.	136.6	0.0862	14.337	1.467		0.0379	6.78
20	N.F. KOKTULI	Q	27.9	12.04	0.724	3.83	1.000	980.	136.6	0.0862	14.337	1.488		0.1336	6.78
21	N.F. KOKTULI	C	27.0	12.08	0.722	3.83	1.000	980.	136.6	0.0935	14.336	1.619		0.1336	6.78
22	N.F. KOKTULI	C	24.5	12.24	0.715	3.83	1.000	983.	136.6	0.1173	14.333	1.944		0.1336	6.78
23	N.F. KOKTULI	C	16.0	12.40	0.709	3.83	1.000	986.	136.7	0.0740	14.330	3.078		0.1336	6.78
24	N.F. KOKTULI	C	13.8	12.47	0.706	3.83	1.000	987.	136.7	0.0569	14.329	3.372		0.1336	6.78
25	N.F. KOKTULI	Q	13.7	12.47	0.706	3.83	1.000	987.	136.7	0.0569	14.329	3.390		0.0228	14.05
26	N.F. KOKTULI	C	11.6	12.52	0.704	3.83	1.000	988.	136.7	0.0586	14.329	3.439		0.0228	14.05
27	N.F. KOKTULI	C	9.9	12.56	0.702	3.83	1.000	989.	136.7	0.0554	14.329	3.477		0.0228	14.05
28	N.F. KOKTULI	Q	9.3	12.56	0.702	3.83	1.000	989.	136.7	0.0554	14.329	3.490		0.1237	14.05
29	N.F. KOKTULI	C	7.6	12.61	0.700	3.83	1.000	990.	136.7	0.0586	14.329	3.706		0.1237	14.05
30	N.F. KOKTULI	C	6.2	12.65	0.698	3.83	1.000	991.	136.7	0.0497	14.329	3.876		0.1237	14.05
31	N.F. KOKTULI	Q	5.3	12.65	0.698	3.83	1.000	991.	136.7	0.0497	14.329	3.990		0.1235	14.05
32	N.F. KOKTULI	C	3.5	12.70	0.696	3.83	1.000	992.	136.7	0.0525	14.328	4.205		0.1235	14.05
33	N.F. KOKTULI	E	0.0									4.640			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.98	0.694	3.18	1.000	950.	152.1	0.5123	14.248	0.059	11.26	0.0286	14.86
2	N.F. KOKTULI	C	55.7	12.96	0.656	3.18	1.000	968.	151.9	0.2980	14.249	0.114		0.0286	14.86
3	N.F. KOKTULI	C	48.2	13.28	0.643	3.18	1.000	974.	151.9	0.2355	14.249	0.331		0.0286	14.86
4	N.F. KOKTULI	C	44.8	13.32	0.642	3.18	1.000	974.	151.9	0.1763	14.247	0.429		0.0286	14.86
5	N.F. KOKTULI	C	42.1	13.34	0.641	3.18	1.000	975.	151.9	0.1704	14.247	0.506		0.0286	14.86
6	N.F. KOKTULI	C	41.2	13.35	0.641	3.18	1.000	975.	151.9	0.1400	14.247	0.530		0.0286	14.86
7	N.F. KOKTULI	C	39.8	13.36	0.641	3.18	1.000	975.	151.9	0.1799	14.247	0.572		0.0286	14.86
8	N.F. KOKTULI	C	38.6	13.38	0.640	3.18	1.000	975.	151.9	0.1178	14.246	0.607		0.0286	14.86
9	N.F. KOKTULI	Q	36.8	13.38	0.640	3.18	1.000	975.	151.9	0.1178	14.246	0.658		0.2119	10.68
10	N.F. KOKTULI	C	36.5	13.40	0.639	3.18	1.000	976.	151.9	0.1402	14.246	0.707		0.2119	10.68
11	N.F. KOKTULI	B	36.5									0.708			
12	TRIBUTARY 119	H	38.4	13.31	0.643	3.18	1.000	974.	152.0	0.2673	14.245	0.321	8.52	0.0272	10.68
13	TRIBUTARY 119	T	36.5									0.371			
14	N.F. KOKTULI	J	36.5	13.43	0.638	3.18	1.000	976.	151.9	0.1402	14.246	1.079		0.0654	10.68
15	N.F. KOKTULI	Q	35.8	13.43	0.638	3.18	1.000	976.	151.9	0.1402	14.246	1.129		0.0362	6.18
16	N.F. KOKTULI	C	35.4	13.47	0.637	3.18	1.000	977.	151.9	0.1034	14.247	1.143		0.0362	6.18
17	N.F. KOKTULI	C	34.0	13.52	0.635	3.18	1.000	978.	151.9	0.0991	14.246	1.194		0.0362	6.18
18	N.F. KOKTULI	C	31.0	13.58	0.633	3.18	1.000	979.	151.9	0.1196	14.246	1.302		0.0362	6.18
19	N.F. KOKTULI	C	28.5	13.62	0.631	3.18	1.000	980.	151.9	0.0868	14.246	1.392		0.0362	6.18
20	N.F. KOKTULI	Q	27.9	13.62	0.631	3.18	1.000	980.	151.9	0.0868	14.246	1.412		0.1116	6.18
21	N.F. KOKTULI	C	27.0	13.66	0.629	3.18	1.000	980.	151.9	0.0943	14.245	1.521		0.1116	6.18
22	N.F. KOKTULI	C	24.5	13.82	0.624	3.18	1.000	983.	151.9	0.1180	14.242	1.793		0.1116	6.18
23	N.F. KOKTULI	C	16.0	13.98	0.618	3.18	1.000	986.	152.0	0.0746	14.239	2.740		0.1116	6.18
24	N.F. KOKTULI	C	13.8	14.05	0.615	3.18	1.000	987.	152.0	0.0574	14.238	2.985		0.1116	6.18
25	N.F. KOKTULI	Q	13.7	14.05	0.615	3.18	1.000	987.	152.0	0.0574	14.238	3.000		0.0205	13.39
26	N.F. KOKTULI	C	11.6	14.10	0.614	3.18	1.000	988.	152.0	0.0590	14.238	3.044		0.0205	13.39
27	N.F. KOKTULI	C	9.9	14.14	0.612	3.18	1.000	989.	152.0	0.0558	14.238	3.078		0.0205	13.39
28	N.F. KOKTULI	Q	9.3	14.14	0.612	3.18	1.000	989.	152.0	0.0558	14.238	3.090		0.1188	13.39
29	N.F. KOKTULI	C	7.6	14.19	0.610	3.18	1.000	990.	152.0	0.0590	14.238	3.298		0.1188	13.39
30	N.F. KOKTULI	C	6.2	14.23	0.609	3.18	1.000	991.	152.0	0.0501	14.238	3.460		0.1188	13.39
31	N.F. KOKTULI	Q	5.3	14.23	0.609	3.18	1.000	991.	152.0	0.0501	14.238	3.570		0.1178	13.39
32	N.F. KOKTULI	C	3.5	14.28	0.607	3.18	1.000	992.	152.0	0.0529	14.237	3.775		0.1178	13.39
33	N.F. KOKTULI	E	0.0									4.190			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	13.02	0.633	3.21	1.000	950.	189.2	0.5141	14.157	0.056	11.10	0.0273	15.11
2	N.F. KOKTULI	C	55.7	14.00	0.598	3.21	1.000	968.	188.9	0.3006	14.157	0.109		0.0273	15.11
3	N.F. KOKTULI	C	48.2	14.32	0.587	3.21	1.000	974.	188.8	0.2365	14.157	0.316		0.0273	15.11
4	N.F. KOKTULI	C	44.8	14.36	0.585	3.21	1.000	974.	188.9	0.1776	14.156	0.409		0.0273	15.11
5	N.F. KOKTULI	C	42.1	14.38	0.585	3.21	1.000	975.	188.9	0.1715	14.156	0.483		0.0273	15.11
6	N.F. KOKTULI	C	41.2	14.39	0.584	3.21	1.000	975.	188.9	0.1412	14.156	0.506		0.0273	15.11
7	N.F. KOKTULI	C	39.8	14.40	0.584	3.21	1.000	975.	188.9	0.1807	14.155	0.545		0.0273	15.11
8	N.F. KOKTULI	C	38.6	14.42	0.583	3.21	1.000	975.	188.9	0.1188	14.155	0.579		0.0273	15.11
9	N.F. KOKTULI	Q	36.8	14.42	0.583	3.21	1.000	975.	188.9	0.1188	14.155	0.628		0.2034	10.79
10	N.F. KOKTULI	C	36.5	14.44	0.583	3.21	1.000	976.	188.9	0.1412	14.155	0.675		0.2034	10.79
11	N.F. KOKTULI	B	36.5									0.676			
12	TRIBUTARY 119	H	38.4	14.35	0.586	3.21	1.000	974.	188.9	0.2684	14.154	0.293	8.41	0.0256	10.79
13	TRIBUTARY 119	T	36.5									0.340			
14	N.F. KOKTULI	J	36.5	14.47	0.582	3.21	1.000	976.	188.9	0.1412	14.155	1.016		0.0627	10.79
15	N.F. KOKTULI	Q	35.8	14.47	0.582	3.21	1.000	976.	188.9	0.1412	14.155	1.064		0.0343	5.77
16	N.F. KOKTULI	C	35.4	14.51	0.580	3.21	1.000	977.	188.8	0.1042	14.155	1.077		0.0343	5.77
17	N.F. KOKTULI	C	34.0	14.56	0.579	3.21	1.000	978.	188.8	0.1000	14.155	1.125		0.0343	5.77
18	N.F. KOKTULI	C	31.0	14.62	0.577	3.21	1.000	979.	188.8	0.1205	14.155	1.227		0.0343	5.77
19	N.F. KOKTULI	C	28.5	14.66	0.575	3.21	1.000	980.	188.8	0.0875	14.154	1.313		0.0343	5.77
20	N.F. KOKTULI	Q	27.9	14.66	0.575	3.21	1.000	980.	188.8	0.0875	14.154	1.332		0.0982	5.77
21	N.F. KOKTULI	C	27.0	14.70	0.574	3.21	1.000	980.	188.8	0.0950	14.154	1.428		0.0982	5.77
22	N.F. KOKTULI	C	24.5	14.86	0.569	3.21	1.000	983.	188.9	0.1188	14.151	1.667		0.0982	5.77
23	N.F. KOKTULI	C	16.0	15.02	0.563	3.21	1.000	986.	189.0	0.0753	14.148	2.501		0.0982	5.77
24	N.F. KOKTULI	C	13.8	15.09	0.561	3.21	1.000	987.	189.0	0.0579	14.147	2.717		0.0982	5.77
25	N.F. KOKTULI	Q	13.7	15.09	0.561	3.21	1.000	987.	189.0	0.0579	14.147	2.730		0.0205	13.04
26	N.F. KOKTULI	C	11.6	15.14	0.559	3.21	1.000	988.	189.0	0.0595	14.147	2.774		0.0205	13.04
27	N.F. KOKTULI	C	9.9	15.18	0.558	3.21	1.000	989.	189.0	0.0563	14.147	2.808		0.0205	13.04
28	N.F. KOKTULI	Q	9.3	15.18	0.558	3.21	1.000	989.	189.0	0.0563	14.147	2.820		0.1138	13.04
29	N.F. KOKTULI	C	7.6	15.23	0.556	3.21	1.000	990.	189.0	0.0594	14.147	3.019		0.1138	13.04
30	N.F. KOKTULI	C	6.2	15.27	0.555	3.21	1.000	991.	189.0	0.0505	14.147	3.175		0.1138	13.04
31	N.F. KOKTULI	Q	5.3	15.27	0.555	3.21	1.000	991.	189.0	0.0505	14.147	3.280		0.1159	13.04
32	N.F. KOKTULI	C	3.5	15.32	0.553	3.21	1.000	992.	189.0	0.0533	14.147	3.482		0.1159	13.04
33	N.F. KOKTULI	E	0.0									3.890			

YEAR: 2007 TIME PERIOD: 29-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	11.12	0.899	6.87	1.000	950.	150.2	0.5159	14.065	0.055	11.26	0.0267	15.53
2	N.F. KOKTULI	C	55.7	12.10	0.849	6.87	1.000	968.	149.9	0.3031	14.066	0.107		0.0267	15.53
3	N.F. KOKTULI	C	48.2	12.42	0.833	6.87	1.000	974.	149.9	0.2375	14.066	0.309		0.0267	15.53
4	N.F. KOKTULI	C	44.8	12.46	0.831	6.87	1.000	974.	149.9	0.1789	14.065	0.400		0.0267	15.53
5	N.F. KOKTULI	C	42.1	12.48	0.830	6.87	1.000	975.	149.9	0.1727	14.064	0.472		0.0267	15.53
6	N.F. KOKTULI	C	41.2	12.49	0.829	6.87	1.000	975.	149.9	0.1425	14.064	0.494		0.0267	15.53
7	N.F. KOKTULI	C	39.8	12.50	0.829	6.87	1.000	975.	149.9	0.1815	14.064	0.533		0.0267	15.53
8	N.F. KOKTULI	C	38.6	12.52	0.828	6.87	1.000	975.	149.9	0.1198	14.063	0.566		0.0267	15.53
9	N.F. KOKTULI	Q	36.8	12.52	0.828	6.87	1.000	975.	149.9	0.1198	14.063	0.614		0.1992	11.02
10	N.F. KOKTULI	C	36.5	12.54	0.827	6.87	1.000	976.	149.9	0.1422	14.063	0.660		0.1992	11.02
11	N.F. KOKTULI	B	36.5									0.661			
12	TRIBUTARY 119	H	38.4	12.45	0.832	6.87	1.000	974.	150.0	0.2695	14.063	0.280	8.72	0.0256	11.02
13	TRIBUTARY 119	T	36.5									0.327			
14	N.F. KOKTULI	J	36.5	12.57	0.826	6.87	1.000	976.	149.9	0.1422	14.064	0.988		0.0601	11.02
15	N.F. KOKTULI	Q	35.8	12.57	0.826	6.87	1.000	976.	149.9	0.1422	14.064	1.034		0.0335	5.87
16	N.F. KOKTULI	C	35.4	12.61	0.824	6.87	1.000	977.	149.9	0.1051	14.064	1.047		0.0335	5.87
17	N.F. KOKTULI	C	34.0	12.66	0.821	6.87	1.000	978.	149.9	0.1008	14.064	1.094		0.0335	5.87
18	N.F. KOKTULI	C	31.0	12.72	0.819	6.87	1.000	979.	149.9	0.1214	14.063	1.194		0.0335	5.87
19	N.F. KOKTULI	C	28.5	12.76	0.817	6.87	1.000	980.	149.9	0.0882	14.063	1.278		0.0335	5.87
20	N.F. KOKTULI	Q	27.9	12.76	0.817	6.87	1.000	980.	149.9	0.0882	14.063	1.296		0.0881	5.87
21	N.F. KOKTULI	C	27.0	12.80	0.814	6.87	1.000	980.	149.9	0.0959	14.063	1.382		0.0881	5.87
22	N.F. KOKTULI	C	24.5	12.96	0.807	6.87	1.000	983.	150.0	0.1195	14.060	1.597		0.0881	5.87
23	N.F. KOKTULI	C	16.0	13.12	0.799	6.87	1.000	986.	150.0	0.0759	14.057	2.345		0.0881	5.87
24	N.F. KOKTULI	C	13.8	13.19	0.796	6.87	1.000	987.	150.0	0.0584	14.056	2.538		0.0881	5.87
25	N.F. KOKTULI	Q	13.7	13.19	0.796	6.87	1.000	987.	150.0	0.0584	14.056	2.550		0.0182	13.10
26	N.F. KOKTULI	C	11.6	13.24	0.794	6.87	1.000	988.	150.0	0.0601	14.056	2.589		0.0182	13.10
27	N.F. KOKTULI	C	9.9	13.28	0.792	6.87	1.000	989.	150.0	0.0568	14.056	2.619		0.0182	13.10
28	N.F. KOKTULI	Q	9.3	13.28	0.792	6.87	1.000	989.	150.0	0.0568	14.056	2.630		0.1138	13.10
29	N.F. KOKTULI	C	7.6	13.33	0.790	6.87	1.000	990.	150.0	0.0598	14.056	2.829		0.1138	13.10
30	N.F. KOKTULI	C	6.2	13.37	0.788	6.87	1.000	991.	150.0	0.0509	14.056	2.985		0.1138	13.10
31	N.F. KOKTULI	Q	5.3	13.37	0.788	6.87	1.000	991.	150.0	0.0509	14.056	3.090		0.1121	13.10
32	N.F. KOKTULI	C	3.5	13.42	0.785	6.87	1.000	992.	150.0	0.0537	14.056	3.286		0.1121	13.10
33	N.F. KOKTULI	E	0.0									3.680			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.03	0.889	4.41	1.000	950.	110.3	0.5177	13.974	0.053	10.53	0.0259	15.94
2	N.F. KOKTULI	C	55.7	11.01	0.839	4.41	1.000	968.	110.1	0.3057	13.974	0.103		0.0259	15.94
3	N.F. KOKTULI	C	48.2	11.33	0.823	4.41	1.000	974.	110.1	0.2385	13.974	0.299		0.0259	15.94
4	N.F. KOKTULI	C	44.8	11.37	0.822	4.41	1.000	974.	110.1	0.1803	13.973	0.387		0.0259	15.94
5	N.F. KOKTULI	C	42.1	11.39	0.821	4.41	1.000	975.	110.1	0.1739	13.973	0.456		0.0259	15.94
6	N.F. KOKTULI	C	41.2	11.40	0.820	4.41	1.000	975.	110.1	0.1438	13.973	0.478		0.0259	15.94
7	N.F. KOKTULI	C	39.8	11.41	0.820	4.41	1.000	975.	110.1	0.1823	13.972	0.516		0.0259	15.94
8	N.F. KOKTULI	C	38.6	11.43	0.818	4.41	1.000	975.	110.1	0.1209	13.972	0.548		0.0259	15.94
9	N.F. KOKTULI	Q	36.8	11.43	0.818	4.41	1.000	975.	110.1	0.1209	13.972	0.594		0.1907	11.32
10	N.F. KOKTULI	C	36.5	11.45	0.817	4.41	1.000	976.	110.1	0.1432	13.972	0.638		0.1907	11.32
11	N.F. KOKTULI	B	36.5									0.639			
12	TRIBUTARY 119	H	38.4	11.36	0.822	4.41	1.000	974.	110.1	0.2705	13.971	0.273	8.40	0.0245	11.32
13	TRIBUTARY 119	T	36.5									0.318			
14	N.F. KOKTULI	J	36.5	11.48	0.816	4.41	1.000	976.	110.1	0.1432	13.972	0.957		0.0588	11.32
15	N.F. KOKTULI	Q	35.8	11.48	0.816	4.41	1.000	976.	110.1	0.1432	13.972	1.002		0.0325	6.41
16	N.F. KOKTULI	C	35.4	11.52	0.814	4.41	1.000	977.	110.1	0.1061	13.972	1.014		0.0325	6.41
17	N.F. KOKTULI	C	34.0	11.57	0.812	4.41	1.000	978.	110.1	0.1017	13.972	1.060		0.0325	6.41
18	N.F. KOKTULI	C	31.0	11.63	0.809	4.41	1.000	979.	110.1	0.1223	13.972	1.157		0.0325	6.41
19	N.F. KOKTULI	C	28.5	11.67	0.807	4.41	1.000	980.	110.1	0.0890	13.971	1.238		0.0325	6.41
20	N.F. KOKTULI	Q	27.9	11.67	0.807	4.41	1.000	980.	110.1	0.0890	13.971	1.256		0.0860	6.41
21	N.F. KOKTULI	C	27.0	11.71	0.805	4.41	1.000	980.	110.1	0.0967	13.971	1.340		0.0860	6.41
22	N.F. KOKTULI	C	24.5	11.87	0.798	4.41	1.000	983.	110.1	0.1203	13.968	1.550		0.0860	6.41
23	N.F. KOKTULI	C	16.0	12.03	0.790	4.41	1.000	986.	110.2	0.0766	13.966	2.279		0.0860	6.41
24	N.F. KOKTULI	C	13.8	12.10	0.787	4.41	1.000	987.	110.2	0.0590	13.965	2.469		0.0860	6.41
25	N.F. KOKTULI	Q	13.7	12.10	0.787	4.41	1.000	987.	110.2	0.0590	13.965	2.480		0.0159	13.43
26	N.F. KOKTULI	C	11.6	12.15	0.785	4.41	1.000	988.	110.2	0.0606	13.965	2.514		0.0159	13.43
27	N.F. KOKTULI	C	9.9	12.19	0.783	4.41	1.000	989.	110.2	0.0573	13.965	2.541		0.0159	13.43
28	N.F. KOKTULI	Q	9.3	12.19	0.783	4.41	1.000	989.	110.2	0.0573	13.965	2.550		0.1114	13.43
29	N.F. KOKTULI	C	7.6	12.24	0.781	4.41	1.000	990.	110.2	0.0603	13.965	2.745		0.1114	13.43
30	N.F. KOKTULI	C	6.2	12.28	0.779	4.41	1.000	991.	110.2	0.0513	13.965	2.897		0.1114	13.43
31	N.F. KOKTULI	Q	5.3	12.28	0.779	4.41	1.000	991.	110.2	0.0513	13.965	3.000		0.1102	13.43
32	N.F. KOKTULI	C	3.5	12.33	0.776	4.41	1.000	992.	110.2	0.0542	13.964	3.192		0.1102	13.43
33	N.F. KOKTULI	E	0.0									3.580			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	10.03	0.899	2.55	1.000	950.	135.5	0.5196	13.882	0.054	10.25	0.0264	16.22
2	N.F. KOKTULI	C	55.7	11.01	0.849	2.55	1.000	968.	135.3	0.3084	13.882	0.105		0.0264	16.22
3	N.F. KOKTULI	C	48.2	11.33	0.833	2.55	1.000	974.	135.2	0.2396	13.882	0.305		0.0264	16.22
4	N.F. KOKTULI	C	44.8	11.37	0.831	2.55	1.000	974.	135.3	0.1817	13.881	0.395		0.0264	16.22
5	N.F. KOKTULI	C	42.1	11.39	0.830	2.55	1.000	975.	135.3	0.1751	13.881	0.466		0.0264	16.22
6	N.F. KOKTULI	C	41.2	11.40	0.829	2.55	1.000	975.	135.3	0.1452	13.881	0.488		0.0264	16.22
7	N.F. KOKTULI	C	39.8	11.41	0.829	2.55	1.000	975.	135.3	0.1832	13.880	0.526		0.0264	16.22
8	N.F. KOKTULI	C	38.6	11.43	0.828	2.55	1.000	975.	135.3	0.1221	13.880	0.559		0.0264	16.22
9	N.F. KOKTULI	Q	36.8	11.43	0.828	2.55	1.000	975.	135.3	0.1221	13.880	0.606		0.1907	11.61
10	N.F. KOKTULI	C	36.5	11.45	0.827	2.55	1.000	976.	135.3	0.1442	13.880	0.650		0.1907	11.61
11	N.F. KOKTULI	B	36.5									0.651			
12	TRIBUTARY 119	H	38.4	11.36	0.832	2.55	1.000	974.	135.3	0.2717	13.880	0.314	8.29	0.0250	11.61
13	TRIBUTARY 119	T	36.5									0.360			
14	N.F. KOKTULI	J	36.5	11.48	0.826	2.55	1.000	976.	135.3	0.1442	13.880	1.012		0.0588	11.61
15	N.F. KOKTULI	Q	35.8	11.48	0.826	2.55	1.000	976.	135.3	0.1442	13.880	1.057		0.0341	7.14
16	N.F. KOKTULI	C	35.4	11.52	0.824	2.55	1.000	977.	135.3	0.1071	13.880	1.070		0.0341	7.14
17	N.F. KOKTULI	C	34.0	11.57	0.821	2.55	1.000	978.	135.3	0.1027	13.880	1.118		0.0341	7.14
18	N.F. KOKTULI	C	31.0	11.63	0.819	2.55	1.000	979.	135.3	0.1233	13.880	1.220		0.0341	7.14
19	N.F. KOKTULI	C	28.5	11.67	0.817	2.55	1.000	980.	135.3	0.0897	13.880	1.305		0.0341	7.14
20	N.F. KOKTULI	Q	27.9	11.67	0.817	2.55	1.000	980.	135.3	0.0897	13.880	1.324		0.0903	7.14
21	N.F. KOKTULI	C	27.0	11.71	0.814	2.55	1.000	980.	135.3	0.0976	13.879	1.413		0.0903	7.14
22	N.F. KOKTULI	C	24.5	11.87	0.807	2.55	1.000	983.	135.3	0.1211	13.877	1.633		0.0903	7.14
23	N.F. KOKTULI	C	16.0	12.03	0.799	2.55	1.000	986.	135.4	0.0774	13.874	2.399		0.0903	7.14
24	N.F. KOKTULI	C	13.8	12.10	0.796	2.55	1.000	987.	135.4	0.0595	13.874	2.598		0.0903	7.14
25	N.F. KOKTULI	Q	13.7	12.10	0.796	2.55	1.000	987.	135.4	0.0595	13.874	2.610		0.0182	13.82
26	N.F. KOKTULI	C	11.6	12.15	0.794	2.55	1.000	988.	135.4	0.0611	13.873	2.649		0.0182	13.82
27	N.F. KOKTULI	C	9.9	12.19	0.792	2.55	1.000	989.	135.4	0.0579	13.873	2.679		0.0182	13.82
28	N.F. KOKTULI	Q	9.3	12.19	0.792	2.55	1.000	989.	135.4	0.0579	13.873	2.690		0.1114	13.82
29	N.F. KOKTULI	C	7.6	12.24	0.790	2.55	1.000	990.	135.4	0.0608	13.873	2.885		0.1114	13.82
30	N.F. KOKTULI	C	6.2	12.28	0.788	2.55	1.000	991.	135.4	0.0518	13.873	3.037		0.1114	13.82
31	N.F. KOKTULI	Q	5.3	12.28	0.788	2.55	1.000	991.	135.4	0.0518	13.873	3.140		0.1140	13.82
32	N.F. KOKTULI	C	3.5	12.33	0.785	2.55	1.000	992.	135.4	0.0546	13.873	3.339		0.1140	13.82
33	N.F. KOKTULI	E	0.0									3.740			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.06	0.950	3.30	1.000	950.	89.4	0.5215	13.790	0.055	11.16	0.0269	16.33
2	N.F. KOKTULI	C	55.7	10.04	0.897	3.30	1.000	968.	89.2	0.3112	13.790	0.107		0.0269	16.33
3	N.F. KOKTULI	C	48.2	10.36	0.880	3.30	1.000	974.	89.2	0.2406	13.790	0.311		0.0269	16.33
4	N.F. KOKTULI	C	44.8	10.40	0.878	3.30	1.000	974.	89.2	0.1831	13.789	0.402		0.0269	16.33
5	N.F. KOKTULI	C	42.1	10.42	0.877	3.30	1.000	975.	89.2	0.1763	13.789	0.474		0.0269	16.33
6	N.F. KOKTULI	C	41.2	10.43	0.877	3.30	1.000	975.	89.2	0.1466	13.789	0.497		0.0269	16.33
7	N.F. KOKTULI	C	39.8	10.44	0.876	3.30	1.000	975.	89.2	0.1840	13.789	0.536		0.0269	16.33
8	N.F. KOKTULI	C	38.6	10.46	0.875	3.30	1.000	975.	89.2	0.1233	13.788	0.569		0.0269	16.33
9	N.F. KOKTULI	Q	36.8	10.46	0.875	3.30	1.000	975.	89.2	0.1233	13.788	0.617		0.1992	11.81
10	N.F. KOKTULI	C	36.5	10.48	0.874	3.30	1.000	976.	89.2	0.1453	13.788	0.663		0.1992	11.81
11	N.F. KOKTULI	B	36.5									0.664			
12	TRIBUTARY 119	H	38.4	10.39	0.879	3.30	1.000	974.	89.3	0.2728	13.788	0.332	8.68	0.0256	11.81
13	TRIBUTARY 119	T	36.5									0.379			
14	N.F. KOKTULI	J	36.5	10.51	0.873	3.30	1.000	976.	89.2	0.1453	13.788	1.043		0.0614	11.81
15	N.F. KOKTULI	Q	35.8	10.51	0.873	3.30	1.000	976.	89.2	0.1453	13.788	1.090		0.0350	7.82
16	N.F. KOKTULI	C	35.4	10.55	0.871	3.30	1.000	977.	89.2	0.1082	13.789	1.103		0.0350	7.82
17	N.F. KOKTULI	C	34.0	10.60	0.868	3.30	1.000	978.	89.2	0.1036	13.788	1.153		0.0350	7.82
18	N.F. KOKTULI	C	31.0	10.66	0.865	3.30	1.000	979.	89.2	0.1242	13.788	1.257		0.0350	7.82
19	N.F. KOKTULI	C	28.5	10.70	0.863	3.30	1.000	980.	89.2	0.0906	13.788	1.345		0.0350	7.82
20	N.F. KOKTULI	Q	27.9	10.70	0.863	3.30	1.000	980.	89.2	0.0906	13.788	1.364		0.0981	7.82
21	N.F. KOKTULI	C	27.0	10.74	0.861	3.30	1.000	980.	89.2	0.0985	13.788	1.460		0.0981	7.82
22	N.F. KOKTULI	C	24.5	10.90	0.853	3.30	1.000	983.	89.3	0.1219	13.785	1.699		0.0981	7.82
23	N.F. KOKTULI	C	16.0	11.06	0.845	3.30	1.000	986.	89.3	0.0781	13.783	2.531		0.0981	7.82
24	N.F. KOKTULI	C	13.8	11.13	0.842	3.30	1.000	987.	89.3	0.0601	13.782	2.747		0.0981	7.82
25	N.F. KOKTULI	Q	13.7	11.13	0.842	3.30	1.000	987.	89.3	0.0601	13.782	2.760		0.0205	14.10
26	N.F. KOKTULI	C	11.6	11.18	0.839	3.30	1.000	988.	89.3	0.0617	13.782	2.804		0.0205	14.10
27	N.F. KOKTULI	C	9.9	11.22	0.837	3.30	1.000	989.	89.3	0.0584	13.782	2.838		0.0205	14.10
28	N.F. KOKTULI	Q	9.3	11.22	0.837	3.30	1.000	989.	89.3	0.0584	13.782	2.850		0.1138	14.10
29	N.F. KOKTULI	C	7.6	11.27	0.835	3.30	1.000	990.	89.3	0.0612	13.782	3.049		0.1138	14.10
30	N.F. KOKTULI	C	6.2	11.31	0.833	3.30	1.000	991.	89.3	0.0523	13.782	3.205		0.1138	14.10
31	N.F. KOKTULI	Q	5.3	11.31	0.833	3.30	1.000	991.	89.3	0.0523	13.782	3.310		0.1159	14.10
32	N.F. KOKTULI	C	3.5	11.36	0.830	3.30	1.000	992.	89.3	0.0551	13.781	3.512		0.1159	14.10
33	N.F. KOKTULI	E	0.0									3.920			

YEAR: 2007 TIME PERIOD: 2-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.69	0.950	2.30	1.000	950.	97.4	0.5235	13.698	0.053	11.04	0.0259	15.97
2	N.F. KOKTULI	C	55.7	9.67	0.897	2.30	1.000	968.	97.3	0.3140	13.698	0.103		0.0259	15.97
3	N.F. KOKTULI	C	48.2	9.99	0.880	2.30	1.000	974.	97.2	0.2417	13.698	0.299		0.0259	15.97
4	N.F. KOKTULI	C	44.8	10.03	0.878	2.30	1.000	974.	97.3	0.1846	13.697	0.387		0.0259	15.97
5	N.F. KOKTULI	C	42.1	10.05	0.877	2.30	1.000	975.	97.3	0.1776	13.697	0.457		0.0259	15.97
6	N.F. KOKTULI	C	41.2	10.06	0.877	2.30	1.000	975.	97.3	0.1481	13.697	0.479		0.0259	15.97
7	N.F. KOKTULI	C	39.8	10.07	0.876	2.30	1.000	975.	97.3	0.1849	13.697	0.517		0.0259	15.97
8	N.F. KOKTULI	C	38.6	10.09	0.875	2.30	1.000	975.	97.3	0.1246	13.696	0.548		0.0259	15.97
9	N.F. KOKTULI	Q	36.8	10.09	0.875	2.30	1.000	975.	97.3	0.1246	13.696	0.595		0.1907	11.76
10	N.F. KOKTULI	C	36.5	10.11	0.874	2.30	1.000	976.	97.3	0.1464	13.696	0.639		0.1907	11.76
11	N.F. KOKTULI	B	36.5									0.640			
12	TRIBUTARY 119	H	38.4	10.02	0.879	2.30	1.000	974.	97.3	0.2739	13.696	0.292	8.83	0.0245	11.76
13	TRIBUTARY 119	T	36.5									0.337			
14	N.F. KOKTULI	J	36.5	10.14	0.873	2.30	1.000	976.	97.3	0.1464	13.696	0.977		0.0588	11.76
15	N.F. KOKTULI	Q	35.8	10.14	0.873	2.30	1.000	976.	97.3	0.1464	13.696	1.022		0.0330	8.10
16	N.F. KOKTULI	C	35.4	10.18	0.871	2.30	1.000	977.	97.3	0.1093	13.697	1.034		0.0330	8.10
17	N.F. KOKTULI	C	34.0	10.23	0.868	2.30	1.000	978.	97.3	0.1047	13.696	1.081		0.0330	8.10
18	N.F. KOKTULI	C	31.0	10.29	0.865	2.30	1.000	979.	97.3	0.1252	13.696	1.179		0.0330	8.10
19	N.F. KOKTULI	C	28.5	10.33	0.863	2.30	1.000	980.	97.3	0.0915	13.696	1.262		0.0330	8.10
20	N.F. KOKTULI	Q	27.9	10.33	0.863	2.30	1.000	980.	97.3	0.0915	13.696	1.280		0.0913	8.10
21	N.F. KOKTULI	C	27.0	10.37	0.861	2.30	1.000	980.	97.3	0.0994	13.696	1.370		0.0913	8.10
22	N.F. KOKTULI	C	24.5	10.53	0.853	2.30	1.000	983.	97.3	0.1227	13.693	1.592		0.0913	8.10
23	N.F. KOKTULI	C	16.0	10.69	0.845	2.30	1.000	986.	97.4	0.0789	13.691	2.367		0.0913	8.10
24	N.F. KOKTULI	C	13.8	10.76	0.842	2.30	1.000	987.	97.4	0.0607	13.690	2.568		0.0913	8.10
25	N.F. KOKTULI	Q	13.7	10.76	0.842	2.30	1.000	987.	97.4	0.0607	13.690	2.580		0.0182	14.11
26	N.F. KOKTULI	C	11.6	10.81	0.839	2.30	1.000	988.	97.4	0.0623	13.690	2.619		0.0182	14.11
27	N.F. KOKTULI	C	9.9	10.85	0.837	2.30	1.000	989.	97.4	0.0590	13.690	2.649		0.0182	14.11
28	N.F. KOKTULI	Q	9.3	10.85	0.837	2.30	1.000	989.	97.4	0.0590	13.690	2.660		0.1114	14.11
29	N.F. KOKTULI	C	7.6	10.90	0.835	2.30	1.000	990.	97.4	0.0617	13.690	2.855		0.1114	14.11
30	N.F. KOKTULI	C	6.2	10.94	0.833	2.30	1.000	991.	97.4	0.0528	13.690	3.007		0.1114	14.11
31	N.F. KOKTULI	Q	5.3	10.94	0.833	2.30	1.000	991.	97.4	0.0528	13.690	3.110		0.1140	14.11
32	N.F. KOKTULI	C	3.5	10.99	0.830	2.30	1.000	992.	97.4	0.0555	13.690	3.309		0.1140	14.11
33	N.F. KOKTULI	E	0.0									3.710			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.86	0.858	4.67	1.000	950.	106.4	0.5255	13.606	0.055	8.67	0.0267	15.24
2	N.F. KOKTULI	C	55.7	9.84	0.810	4.67	1.000	968.	106.2	0.3169	13.606	0.106		0.0267	15.24
3	N.F. KOKTULI	C	48.2	10.16	0.795	4.67	1.000	974.	106.2	0.2428	13.606	0.309		0.0267	15.24
4	N.F. KOKTULI	C	44.8	10.20	0.793	4.67	1.000	974.	106.2	0.1861	13.605	0.399		0.0267	15.24
5	N.F. KOKTULI	C	42.1	10.22	0.792	4.67	1.000	975.	106.2	0.1789	13.605	0.471		0.0267	15.24
6	N.F. KOKTULI	C	41.2	10.23	0.792	4.67	1.000	975.	106.2	0.1496	13.605	0.494		0.0267	15.24
7	N.F. KOKTULI	C	39.8	10.24	0.791	4.67	1.000	975.	106.2	0.1858	13.604	0.532		0.0267	15.24
8	N.F. KOKTULI	C	38.6	10.26	0.790	4.67	1.000	975.	106.2	0.1259	13.604	0.565		0.0267	15.24
9	N.F. KOKTULI	Q	36.8	10.26	0.790	4.67	1.000	975.	106.2	0.1259	13.604	0.613		0.1992	11.50
10	N.F. KOKTULI	C	36.5	10.28	0.789	4.67	1.000	976.	106.2	0.1475	13.604	0.659		0.1992	11.50
11	N.F. KOKTULI	B	36.5									0.660			
12	TRIBUTARY 119	H	38.4	10.19	0.794	4.67	1.000	974.	106.3	0.2751	13.604	0.374	7.87	0.0250	11.50
13	TRIBUTARY 119	T	36.5									0.420			
14	N.F. KOKTULI	J	36.5	10.31	0.788	4.67	1.000	976.	106.2	0.1475	13.604	1.080		0.0614	11.50
15	N.F. KOKTULI	Q	35.8	10.31	0.788	4.67	1.000	976.	106.2	0.1475	13.604	1.127		0.0359	8.03
16	N.F. KOKTULI	C	35.4	10.35	0.786	4.67	1.000	977.	106.2	0.1104	13.604	1.140		0.0359	8.03
17	N.F. KOKTULI	C	34.0	10.40	0.784	4.67	1.000	978.	106.2	0.1057	13.604	1.191		0.0359	8.03
18	N.F. KOKTULI	C	31.0	10.46	0.781	4.67	1.000	979.	106.2	0.1262	13.604	1.298		0.0359	8.03
19	N.F. KOKTULI	C	28.5	10.50	0.779	4.67	1.000	980.	106.2	0.0924	13.604	1.388		0.0359	8.03
20	N.F. KOKTULI	Q	27.9	10.50	0.779	4.67	1.000	980.	106.2	0.0924	13.604	1.408		0.0880	8.03
21	N.F. KOKTULI	C	27.0	10.54	0.777	4.67	1.000	980.	106.2	0.1004	13.604	1.494		0.0880	8.03
22	N.F. KOKTULI	C	24.5	10.70	0.770	4.67	1.000	983.	106.3	0.1235	13.601	1.708		0.0880	8.03
23	N.F. KOKTULI	C	16.0	10.86	0.763	4.67	1.000	986.	106.3	0.0797	13.599	2.455		0.0880	8.03
24	N.F. KOKTULI	C	13.8	10.93	0.760	4.67	1.000	987.	106.3	0.0613	13.599	2.648		0.0880	8.03
25	N.F. KOKTULI	Q	13.7	10.93	0.760	4.67	1.000	987.	106.3	0.0613	13.599	2.660		0.0182	13.90
26	N.F. KOKTULI	C	11.6	10.98	0.758	4.67	1.000	988.	106.3	0.0629	13.598	2.699		0.0182	13.90
27	N.F. KOKTULI	C	9.9	11.02	0.756	4.67	1.000	989.	106.3	0.0596	13.599	2.729		0.0182	13.90
28	N.F. KOKTULI	Q	9.3	11.02	0.756	4.67	1.000	989.	106.3	0.0596	13.599	2.740		0.1138	13.90
29	N.F. KOKTULI	C	7.6	11.07	0.754	4.67	1.000	990.	106.3	0.0623	13.598	2.939		0.1138	13.90
30	N.F. KOKTULI	C	6.2	11.11	0.752	4.67	1.000	991.	106.3	0.0534	13.598	3.095		0.1138	13.90
31	N.F. KOKTULI	Q	5.3	11.11	0.752	4.67	1.000	991.	106.3	0.0534	13.598	3.200		0.1140	13.90
32	N.F. KOKTULI	C	3.5	11.16	0.750	4.67	1.000	992.	106.3	0.0560	13.598	3.399		0.1140	13.90
33	N.F. KOKTULI	E	0.0									3.800			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.04	0.756	3.36	1.000	950.	115.3	0.5276	13.513	0.067	7.88	0.0327	14.59
2	N.F. KOKTULI	C	55.7	10.02	0.714	3.36	1.000	968.	115.1	0.3198	13.514	0.130		0.0327	14.59
3	N.F. KOKTULI	C	48.2	10.34	0.700	3.36	1.000	974.	115.1	0.2439	13.514	0.378		0.0327	14.59
4	N.F. KOKTULI	C	44.8	10.38	0.699	3.36	1.000	974.	115.1	0.1877	13.513	0.489		0.0327	14.59
5	N.F. KOKTULI	C	42.1	10.40	0.698	3.36	1.000	975.	115.1	0.1803	13.513	0.577		0.0327	14.59
6	N.F. KOKTULI	C	41.2	10.41	0.698	3.36	1.000	975.	115.1	0.1512	13.513	0.605		0.0327	14.59
7	N.F. KOKTULI	C	39.8	10.42	0.697	3.36	1.000	975.	115.1	0.1867	13.512	0.652		0.0327	14.59
8	N.F. KOKTULI	C	38.6	10.44	0.696	3.36	1.000	975.	115.2	0.1273	13.512	0.692		0.0327	14.59
9	N.F. KOKTULI	Q	36.8	10.44	0.696	3.36	1.000	975.	115.2	0.1273	13.512	0.751		0.2415	11.21
10	N.F. KOKTULI	C	36.5	10.46	0.695	3.36	1.000	976.	115.2	0.1487	13.512	0.807		0.2415	11.21
11	N.F. KOKTULI	B	36.5									0.808			
12	TRIBUTARY 119	H	38.4	10.37	0.699	3.36	1.000	974.	115.2	0.2763	13.512	0.503	7.79	0.0315	11.21
13	TRIBUTARY 119	T	36.5									0.561			
14	N.F. KOKTULI	J	36.5	10.49	0.694	3.36	1.000	976.	115.1	0.1487	13.512	1.369		0.0758	11.21
15	N.F. KOKTULI	Q	35.8	10.49	0.694	3.36	1.000	976.	115.1	0.1487	13.512	1.427		0.0441	8.00
16	N.F. KOKTULI	C	35.4	10.53	0.693	3.36	1.000	977.	115.1	0.1116	13.512	1.444		0.0441	8.00
17	N.F. KOKTULI	C	34.0	10.58	0.691	3.36	1.000	978.	115.1	0.1069	13.512	1.506		0.0441	8.00
18	N.F. KOKTULI	C	31.0	10.64	0.688	3.36	1.000	979.	115.1	0.1273	13.512	1.637		0.0441	8.00
19	N.F. KOKTULI	C	28.5	10.68	0.687	3.36	1.000	980.	115.1	0.0933	13.512	1.748		0.0441	8.00
20	N.F. KOKTULI	Q	27.9	10.68	0.687	3.36	1.000	980.	115.1	0.0933	13.512	1.772		0.1509	8.00
21	N.F. KOKTULI	C	27.0	10.72	0.685	3.36	1.000	980.	115.1	0.1015	13.511	1.920		0.1509	8.00
22	N.F. KOKTULI	C	24.5	10.88	0.679	3.36	1.000	983.	115.2	0.1243	13.509	2.287		0.1509	8.00
23	N.F. KOKTULI	C	16.0	11.04	0.672	3.36	1.000	986.	115.3	0.0806	13.507	3.568		0.1509	8.00
24	N.F. KOKTULI	C	13.8	11.11	0.670	3.36	1.000	987.	115.3	0.0620	13.507	3.900		0.1509	8.00
25	N.F. KOKTULI	Q	13.7	11.11	0.670	3.36	1.000	987.	115.3	0.0620	13.507	3.920		0.0273	13.70
26	N.F. KOKTULI	C	11.6	11.16	0.668	3.36	1.000	988.	115.3	0.0635	13.507	3.978		0.0273	13.70
27	N.F. KOKTULI	C	9.9	11.20	0.666	3.36	1.000	989.	115.3	0.0602	13.507	4.024		0.0273	13.70
28	N.F. KOKTULI	Q	9.3	11.20	0.666	3.36	1.000	989.	115.3	0.0602	13.507	4.040		0.1287	13.70
29	N.F. KOKTULI	C	7.6	11.25	0.664	3.36	1.000	990.	115.3	0.0628	13.507	4.265		0.1287	13.70
30	N.F. KOKTULI	C	6.2	11.29	0.663	3.36	1.000	991.	115.3	0.0539	13.506	4.441		0.1287	13.70
31	N.F. KOKTULI	Q	5.3	11.29	0.663	3.36	1.000	991.	115.3	0.0539	13.506	4.560		0.1273	13.70
32	N.F. KOKTULI	C	3.5	11.34	0.660	3.36	1.000	992.	115.3	0.0565	13.506	4.782		0.1273	13.70
33	N.F. KOKTULI	E	0.0									5.230			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.06	0.817	3.37	1.000	950.	111.6	0.5297	13.421	0.060	8.99	0.0294	14.31
2	N.F. KOKTULI	C	55.7	10.04	0.771	3.37	1.000	968.	111.5	0.3229	13.421	0.117		0.0294	14.31
3	N.F. KOKTULI	C	48.2	10.36	0.757	3.37	1.000	974.	111.4	0.2450	13.421	0.340		0.0294	14.31
4	N.F. KOKTULI	C	44.8	10.40	0.755	3.37	1.000	974.	111.4	0.1893	13.421	0.440		0.0294	14.31
5	N.F. KOKTULI	C	42.1	10.42	0.754	3.37	1.000	975.	111.5	0.1817	13.420	0.519		0.0294	14.31
6	N.F. KOKTULI	C	41.2	10.43	0.754	3.37	1.000	975.	111.4	0.1528	13.420	0.543		0.0294	14.31
7	N.F. KOKTULI	C	39.8	10.44	0.754	3.37	1.000	975.	111.5	0.1876	13.420	0.586		0.0294	14.31
8	N.F. KOKTULI	C	38.6	10.46	0.753	3.37	1.000	975.	111.5	0.1287	13.420	0.622		0.0294	14.31
9	N.F. KOKTULI	Q	36.8	10.46	0.753	3.37	1.000	975.	111.5	0.1287	13.420	0.675		0.2203	11.03
10	N.F. KOKTULI	C	36.5	10.48	0.752	3.37	1.000	976.	111.5	0.1499	13.420	0.726		0.2203	11.03
11	N.F. KOKTULI	B	36.5									0.727			
12	TRIBUTARY 119	H	38.4	10.39	0.756	3.37	1.000	974.	111.5	0.2775	13.419	0.371	8.05	0.0277	11.03
13	TRIBUTARY 119	T	36.5									0.422			
14	N.F. KOKTULI	J	36.5	10.51	0.751	3.37	1.000	976.	111.5	0.1499	13.420	1.149		0.0667	11.03
15	N.F. KOKTULI	Q	35.8	10.51	0.751	3.37	1.000	976.	111.5	0.1499	13.420	1.200		0.0381	8.22
16	N.F. KOKTULI	C	35.4	10.55	0.749	3.37	1.000	977.	111.4	0.1128	13.420	1.214		0.0381	8.22
17	N.F. KOKTULI	C	34.0	10.60	0.747	3.37	1.000	978.	111.4	0.1081	13.420	1.268		0.0381	8.22
18	N.F. KOKTULI	C	31.0	10.66	0.744	3.37	1.000	979.	111.4	0.1284	13.420	1.382		0.0381	8.22
19	N.F. KOKTULI	C	28.5	10.70	0.742	3.37	1.000	980.	111.5	0.0944	13.419	1.477		0.0381	8.22
20	N.F. KOKTULI	Q	27.9	10.70	0.742	3.37	1.000	980.	111.5	0.0944	13.419	1.498		0.1406	8.22
21	N.F. KOKTULI	C	27.0	10.74	0.740	3.37	1.000	980.	111.5	0.1025	13.419	1.636		0.1406	8.22
22	N.F. KOKTULI	C	24.5	10.90	0.734	3.37	1.000	983.	111.5	0.1252	13.417	1.978		0.1406	8.22
23	N.F. KOKTULI	C	16.0	11.06	0.727	3.37	1.000	986.	111.6	0.0815	13.415	3.172		0.1406	8.22
24	N.F. KOKTULI	C	13.8	11.13	0.724	3.37	1.000	987.	111.6	0.0627	13.415	3.481		0.1406	8.22
25	N.F. KOKTULI	Q	13.7	11.13	0.724	3.37	1.000	987.	111.6	0.0627	13.415	3.500		0.0228	13.62
26	N.F. KOKTULI	C	11.6	11.18	0.722	3.37	1.000	988.	111.6	0.0642	13.415	3.549		0.0228	13.62
27	N.F. KOKTULI	C	9.9	11.22	0.720	3.37	1.000	989.	111.6	0.0608	13.415	3.587		0.0228	13.62
28	N.F. KOKTULI	Q	9.3	11.22	0.720	3.37	1.000	989.	111.6	0.0608	13.415	3.600		0.1262	13.62
29	N.F. KOKTULI	C	7.6	11.27	0.718	3.37	1.000	990.	111.6	0.0633	13.415	3.821		0.1262	13.62
30	N.F. KOKTULI	C	6.2	11.31	0.716	3.37	1.000	991.	111.6	0.0546	13.415	3.994		0.1262	13.62
31	N.F. KOKTULI	Q	5.3	11.31	0.716	3.37	1.000	991.	111.6	0.0546	13.415	4.110		0.1235	13.62
32	N.F. KOKTULI	C	3.5	11.36	0.714	3.37	1.000	992.	111.6	0.0570	13.414	4.325		0.1235	13.62
33	N.F. KOKTULI	E	0.0									4.760			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	7.59	0.909	3.32	1.000	950.	85.5	0.5319	13.329	0.083	8.93	0.0405	14.20
2	N.F. KOKTULI	C	55.7	8.57	0.858	3.32	1.000	968.	85.3	0.3259	13.329	0.161		0.0405	14.20
3	N.F. KOKTULI	C	48.2	8.89	0.842	3.32	1.000	974.	85.3	0.2462	13.329	0.468		0.0405	14.20
4	N.F. KOKTULI	C	44.8	8.93	0.840	3.32	1.000	974.	85.3	0.1910	13.328	0.606		0.0405	14.20
5	N.F. KOKTULI	C	42.1	8.95	0.839	3.32	1.000	975.	85.3	0.1831	13.328	0.715		0.0405	14.20
6	N.F. KOKTULI	C	41.2	8.96	0.839	3.32	1.000	975.	85.3	0.1545	13.328	0.749		0.0405	14.20
7	N.F. KOKTULI	C	39.8	8.97	0.838	3.32	1.000	975.	85.3	0.1885	13.328	0.808		0.0405	14.20
8	N.F. KOKTULI	C	38.6	8.99	0.837	3.32	1.000	975.	85.3	0.1302	13.327	0.857		0.0405	14.20
9	N.F. KOKTULI	Q	36.8	8.99	0.837	3.32	1.000	975.	85.3	0.1302	13.327	0.930		0.3093	10.91
10	N.F. KOKTULI	C	36.5	9.01	0.836	3.32	1.000	976.	85.3	0.1511	13.327	1.001		0.3093	10.91
11	N.F. KOKTULI	B	36.5									1.003			
12	TRIBUTARY 119	H	38.4	8.92	0.841	3.32	1.000	974.	85.4	0.2788	13.327	0.357	7.79	0.0397	10.91
13	TRIBUTARY 119	T	36.5									0.430			
14	N.F. KOKTULI	J	36.5	9.04	0.835	3.32	1.000	976.	85.3	0.1511	13.327	1.433		0.0954	10.91
15	N.F. KOKTULI	Q	35.8	9.04	0.835	3.32	1.000	976.	85.3	0.1511	13.327	1.506		0.0462	8.64
16	N.F. KOKTULI	C	35.4	9.08	0.833	3.32	1.000	977.	85.3	0.1141	13.328	1.523		0.0462	8.64
17	N.F. KOKTULI	C	34.0	9.13	0.831	3.32	1.000	978.	85.3	0.1093	13.328	1.588		0.0462	8.64
18	N.F. KOKTULI	C	31.0	9.19	0.828	3.32	1.000	979.	85.3	0.1295	13.327	1.726		0.0462	8.64
19	N.F. KOKTULI	C	28.5	9.23	0.826	3.32	1.000	980.	85.3	0.0954	13.327	1.842		0.0462	8.64
20	N.F. KOKTULI	Q	27.9	9.23	0.826	3.32	1.000	980.	85.3	0.0954	13.327	1.867		0.1049	8.64
21	N.F. KOKTULI	C	27.0	9.27	0.824	3.32	1.000	980.	85.3	0.1036	13.327	1.970		0.1049	8.64
22	N.F. KOKTULI	C	24.5	9.43	0.816	3.32	1.000	983.	85.4	0.1261	13.325	2.225		0.1049	8.64
23	N.F. KOKTULI	C	16.0	9.59	0.809	3.32	1.000	986.	85.4	0.0824	13.323	3.115		0.1049	8.64
24	N.F. KOKTULI	C	13.8	9.66	0.805	3.32	1.000	987.	85.4	0.0634	13.323	3.346		0.1049	8.64
25	N.F. KOKTULI	Q	13.7	9.66	0.805	3.32	1.000	987.	85.4	0.0634	13.323	3.360		0.0250	13.63
26	N.F. KOKTULI	C	11.6	9.71	0.803	3.32	1.000	988.	85.4	0.0648	13.323	3.413		0.0250	13.63
27	N.F. KOKTULI	C	9.9	9.75	0.801	3.32	1.000	989.	85.4	0.0615	13.323	3.455		0.0250	13.63
28	N.F. KOKTULI	Q	9.3	9.75	0.801	3.32	1.000	989.	85.4	0.0615	13.323	3.470		0.1213	13.63
29	N.F. KOKTULI	C	7.6	9.80	0.799	3.32	1.000	990.	85.4	0.0639	13.323	3.682		0.1213	13.63
30	N.F. KOKTULI	C	6.2	9.84	0.797	3.32	1.000	991.	85.4	0.0552	13.323	3.848		0.1213	13.63
31	N.F. KOKTULI	Q	5.3	9.84	0.797	3.32	1.000	991.	85.4	0.0552	13.323	3.960		0.1235	13.63
32	N.F. KOKTULI	C	3.5	9.89	0.794	3.32	1.000	992.	85.4	0.0576	13.322	4.175		0.1235	13.63
33	N.F. KOKTULI	E	0.0									4.610			

YEAR: 2007 TIME PERIOD: 7-Sep PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	7.35	0.940	12.51	1.000	950.	30.6	0.5341	13.236	0.076	7.73	0.0368	13.93
2	N.F. KOKTULI	C	55.7	8.33	0.887	12.51	1.000	968.	30.5	0.3291	13.236	0.147		0.0368	13.93
3	N.F. KOKTULI	C	48.2	8.65	0.871	12.51	1.000	974.	30.5	0.2474	13.236	0.426		0.0368	13.93
4	N.F. KOKTULI	C	44.8	8.69	0.869	12.51	1.000	974.	30.5	0.1926	13.236	0.551		0.0368	13.93
5	N.F. KOKTULI	C	42.1	8.71	0.868	12.51	1.000	975.	30.5	0.1845	13.235	0.650		0.0368	13.93
6	N.F. KOKTULI	C	41.2	8.72	0.867	12.51	1.000	975.	30.5	0.1562	13.235	0.681		0.0368	13.93
7	N.F. KOKTULI	C	39.8	8.73	0.867	12.51	1.000	975.	30.5	0.1894	13.235	0.735		0.0368	13.93
8	N.F. KOKTULI	C	38.6	8.75	0.866	12.51	1.000	975.	30.5	0.1318	13.235	0.780		0.0368	13.93
9	N.F. KOKTULI	Q	36.8	8.75	0.866	12.51	1.000	975.	30.5	0.1318	13.235	0.846		0.2754	10.70
10	N.F. KOKTULI	C	36.5	8.77	0.864	12.51	1.000	976.	30.5	0.1524	13.235	0.909		0.2754	10.70
11	N.F. KOKTULI	B	36.5									0.911			
12	TRIBUTARY 119	H	38.4	8.68	0.869	12.51	1.000	974.	30.5	0.2800	13.235	0.477	7.39	0.0359	10.70
13	TRIBUTARY 119	T	36.5									0.543			
14	N.F. KOKTULI	J	36.5	8.80	0.863	12.51	1.000	976.	30.5	0.1524	13.235	1.454		0.0863	10.70
15	N.F. KOKTULI	Q	35.8	8.80	0.863	12.51	1.000	976.	30.5	0.1524	13.235	1.520		0.0465	9.00
16	N.F. KOKTULI	C	35.4	8.84	0.861	12.51	1.000	977.	30.5	0.1155	13.235	1.537		0.0465	9.00
17	N.F. KOKTULI	C	34.0	8.89	0.859	12.51	1.000	978.	30.5	0.1106	13.235	1.603		0.0465	9.00
18	N.F. KOKTULI	C	31.0	8.95	0.856	12.51	1.000	979.	30.5	0.1306	13.235	1.742		0.0465	9.00
19	N.F. KOKTULI	C	28.5	8.99	0.854	12.51	1.000	980.	30.5	0.0965	13.235	1.859		0.0465	9.00
20	N.F. KOKTULI	Q	27.9	8.99	0.854	12.51	1.000	980.	30.5	0.0965	13.235	1.884		0.1206	9.00
21	N.F. KOKTULI	C	27.0	9.03	0.851	12.51	1.000	980.	30.5	0.1047	13.234	2.002		0.1206	9.00
22	N.F. KOKTULI	C	24.5	9.19	0.844	12.51	1.000	983.	30.5	0.1270	13.233	2.296		0.1206	9.00
23	N.F. KOKTULI	C	16.0	9.35	0.836	12.51	1.000	986.	30.6	0.0834	13.231	3.319		0.1206	9.00
24	N.F. KOKTULI	C	13.8	9.42	0.833	12.51	1.000	987.	30.6	0.0642	13.231	3.584		0.1206	9.00
25	N.F. KOKTULI	Q	13.7	9.42	0.833	12.51	1.000	987.	30.6	0.0642	13.231	3.600		0.0250	13.56
26	N.F. KOKTULI	C	11.6	9.47	0.830	12.51	1.000	988.	30.6	0.0655	13.231	3.653		0.0250	13.56
27	N.F. KOKTULI	C	9.9	9.51	0.828	12.51	1.000	989.	30.6	0.0622	13.231	3.695		0.0250	13.56
28	N.F. KOKTULI	Q	9.3	9.51	0.828	12.51	1.000	989.	30.6	0.0622	13.231	3.710		0.1262	13.56
29	N.F. KOKTULI	C	7.6	9.56	0.826	12.51	1.000	990.	30.6	0.0645	13.231	3.931		0.1262	13.56
30	N.F. KOKTULI	C	6.2	9.60	0.824	12.51	1.000	991.	30.6	0.0559	13.230	4.104		0.1262	13.56
31	N.F. KOKTULI	Q	5.3	9.60	0.824	12.51	1.000	991.	30.6	0.0559	13.230	4.220		0.1254	13.56
32	N.F. KOKTULI	C	3.5	9.65	0.821	12.51	1.000	992.	30.6	0.0581	13.230	4.439		0.1254	13.56
33	N.F. KOKTULI	E	0.0									4.880			

YEAR: 2007 TIME PERIOD: 8-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	9.29	1.000	8.90	1.000	950.	26.0	0.5363	13.143	0.116	7.95	0.0561	13.33
2	N.F. KOKTULI	C	55.7	10.27	0.945	8.90	1.000	968.	26.0	0.3324	13.144	0.223		0.0561	13.33
3	N.F. KOKTULI	C	48.2	10.59	0.927	8.90	1.000	974.	26.0	0.2486	13.144	0.648		0.0561	13.33
4	N.F. KOKTULI	C	44.8	10.63	0.925	8.90	1.000	974.	26.0	0.1944	13.143	0.839		0.0561	13.33
5	N.F. KOKTULI	C	42.1	10.65	0.924	8.90	1.000	975.	26.0	0.1860	13.143	0.990		0.0561	13.33
6	N.F. KOKTULI	C	41.2	10.66	0.924	8.90	1.000	975.	26.0	0.1580	13.143	1.037		0.0561	13.33
7	N.F. KOKTULI	C	39.8	10.67	0.923	8.90	1.000	975.	26.0	0.1904	13.143	1.119		0.0561	13.33
8	N.F. KOKTULI	C	38.6	10.69	0.922	8.90	1.000	975.	26.0	0.1335	13.142	1.187		0.0561	13.33
9	N.F. KOKTULI	Q	36.8	10.69	0.922	8.90	1.000	975.	26.0	0.1335	13.142	1.288		0.4364	10.35
10	N.F. KOKTULI	C	36.5	10.71	0.921	8.90	1.000	976.	26.0	0.1537	13.142	1.388		0.4364	10.35
11	N.F. KOKTULI	B	36.5									1.391			
12	TRIBUTARY 119	H	38.4	10.62	0.926	8.90	1.000	974.	26.0	0.2813	13.142	4.328	8.35	0.3562	10.35
13	TRIBUTARY 119	T	36.5									4.983			
14	N.F. KOKTULI	J	36.5	10.74	0.920	8.90	1.000	976.	26.0	0.1537	13.142	6.374		0.1346	10.35
15	N.F. KOKTULI	Q	35.8	10.74	0.920	8.90	1.000	976.	26.0	0.1537	13.142	6.477		0.3249	9.02
16	N.F. KOKTULI	C	35.4	10.78	0.917	8.90	1.000	977.	26.0	0.1169	13.143	6.599		0.3249	9.02
17	N.F. KOKTULI	C	34.0	10.83	0.915	8.90	1.000	978.	26.0	0.1120	13.143	7.058		0.3249	9.02
18	N.F. KOKTULI	C	31.0	10.89	0.912	8.90	1.000	979.	26.0	0.1318	13.142	8.027		0.3249	9.02
19	N.F. KOKTULI	C	28.5	10.93	0.909	8.90	1.000	980.	26.0	0.0977	13.142	8.841		0.3249	9.02
20	N.F. KOKTULI	Q	27.9	10.93	0.909	8.90	1.000	980.	26.0	0.0977	13.142	9.018		0.3999	9.02
21	N.F. KOKTULI	C	27.0	10.97	0.907	8.90	1.000	980.	26.0	0.1059	13.142	9.410		0.3999	9.02
22	N.F. KOKTULI	C	24.5	11.13	0.899	8.90	1.000	983.	26.0	0.1279	13.140	10.384		0.3999	9.02
23	N.F. KOKTULI	C	16.0	11.29	0.890	8.90	1.000	986.	26.0	0.0844	13.139	13.777		0.3999	9.02
24	N.F. KOKTULI	C	13.8	11.36	0.887	8.90	1.000	987.	26.0	0.0651	13.139	14.657		0.3999	9.02
25	N.F. KOKTULI	Q	13.7	11.36	0.887	8.90	1.000	987.	26.0	0.0651	13.139	14.710		0.0979	13.33
26	N.F. KOKTULI	C	11.6	11.41	0.884	8.90	1.000	988.	26.0	0.0662	13.138	14.919		0.0979	13.33
27	N.F. KOKTULI	C	9.9	11.45	0.882	8.90	1.000	989.	26.0	0.0629	13.138	15.083		0.0979	13.33
28	N.F. KOKTULI	Q	9.3	11.45	0.882	8.90	1.000	989.	26.0	0.0629	13.138	15.140		0.6409	13.33
29	N.F. KOKTULI	C	7.6	11.50	0.880	8.90	1.000	990.	26.0	0.0651	13.138	16.261		0.6409	13.33
30	N.F. KOKTULI	C	6.2	11.54	0.877	8.90	1.000	991.	26.0	0.0566	13.138	17.138		0.6409	13.33
31	N.F. KOKTULI	Q	5.3	11.54	0.877	8.90	1.000	991.	26.0	0.0566	13.138	17.730		0.6382	13.33
32	N.F. KOKTULI	C	3.5	11.59	0.875	8.90	1.000	992.	26.0	0.0587	13.138	18.844		0.6382	13.33
33	N.F. KOKTULI	E	0.0									21.090			

YEAR: 2007 TIME PERIOD: 9-Sep PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.68	0.970	3.76	1.000	950.	61.0	0.5387	13.051	0.167	8.42	0.0813	12.63
2	N.F. KOKTULI	C	55.7	9.66	0.916	3.76	1.000	968.	60.9	0.3357	13.051	0.324		0.0813	12.63
3	N.F. KOKTULI	C	48.2	9.98	0.899	3.76	1.000	974.	60.9	0.2498	13.051	0.940		0.0813	12.63
4	N.F. KOKTULI	C	44.8	10.02	0.897	3.76	1.000	974.	60.9	0.1962	13.050	1.216		0.0813	12.63
5	N.F. KOKTULI	C	42.1	10.04	0.896	3.76	1.000	975.	60.9	0.1876	13.050	1.435		0.0813	12.63
6	N.F. KOKTULI	C	41.2	10.05	0.895	3.76	1.000	975.	60.9	0.1599	13.050	1.503		0.0813	12.63
7	N.F. KOKTULI	C	39.8	10.06	0.895	3.76	1.000	975.	60.9	0.1914	13.050	1.622		0.0813	12.63
8	N.F. KOKTULI	C	38.6	10.08	0.894	3.76	1.000	975.	60.9	0.1352	13.050	1.721		0.0813	12.63
9	N.F. KOKTULI	Q	36.8	10.08	0.894	3.76	1.000	975.	60.9	0.1352	13.050	1.867		0.6525	9.94
10	N.F. KOKTULI	C	36.5	10.10	0.893	3.76	1.000	976.	60.9	0.1550	13.050	2.017		0.6525	9.94
11	N.F. KOKTULI	B	36.5									2.021			
12	TRIBUTARY 119	H	38.4	10.01	0.898	3.76	1.000	974.	61.0	0.2826	13.050	1.997	8.12	0.2610	9.94
13	TRIBUTARY 119	T	36.5									2.477			
14	N.F. KOKTULI	J	36.5	10.13	0.892	3.76	1.000	976.	60.9	0.1550	13.050	4.498		0.2013	9.94
15	N.F. KOKTULI	Q	35.8	10.13	0.892	3.76	1.000	976.	60.9	0.1550	13.050	4.652		0.1999	8.82
16	N.F. KOKTULI	C	35.4	10.17	0.889	3.76	1.000	977.	60.9	0.1183	13.050	4.727		0.1999	8.82
17	N.F. KOKTULI	C	34.0	10.22	0.887	3.76	1.000	978.	60.9	0.1134	13.050	5.009		0.1999	8.82
18	N.F. KOKTULI	C	31.0	10.28	0.884	3.76	1.000	979.	60.9	0.1330	13.050	5.605		0.1999	8.82
19	N.F. KOKTULI	C	28.5	10.32	0.882	3.76	1.000	980.	60.9	0.0989	13.050	6.106		0.1999	8.82
20	N.F. KOKTULI	Q	27.9	10.32	0.882	3.76	1.000	980.	60.9	0.0989	13.050	6.215		0.6144	8.82
21	N.F. KOKTULI	C	27.0	10.36	0.879	3.76	1.000	980.	60.9	0.1072	13.049	6.818		0.6144	8.82
22	N.F. KOKTULI	C	24.5	10.52	0.871	3.76	1.000	983.	61.0	0.1288	13.048	8.313		0.6144	8.82
23	N.F. KOKTULI	C	16.0	10.68	0.863	3.76	1.000	986.	61.0	0.0855	13.047	13.527		0.6144	8.82
24	N.F. KOKTULI	C	13.8	10.75	0.860	3.76	1.000	987.	61.0	0.0659	13.046	14.879		0.6144	8.82
25	N.F. KOKTULI	Q	13.7	10.75	0.860	3.76	1.000	987.	61.0	0.0659	13.046	14.960		0.1024	13.04
26	N.F. KOKTULI	C	11.6	10.80	0.857	3.76	1.000	988.	61.0	0.0669	13.046	15.178		0.1024	13.04
27	N.F. KOKTULI	C	9.9	10.84	0.855	3.76	1.000	989.	61.0	0.0636	13.046	15.350		0.1024	13.04
28	N.F. KOKTULI	Q	9.3	10.84	0.855	3.76	1.000	989.	61.0	0.0636	13.046	15.410		0.6632	13.04
29	N.F. KOKTULI	C	7.6	10.89	0.853	3.76	1.000	990.	61.0	0.0657	13.046	16.570		0.6632	13.04
30	N.F. KOKTULI	C	6.2	10.93	0.851	3.76	1.000	991.	61.0	0.0573	13.046	17.478		0.6632	13.04
31	N.F. KOKTULI	Q	5.3	10.93	0.851	3.76	1.000	991.	61.0	0.0573	13.046	18.090		0.6667	13.04
32	N.F. KOKTULI	C	3.5	10.98	0.848	3.76	1.000	992.	61.0	0.0593	13.046	19.253		0.6667	13.04
33	N.F. KOKTULI	E	0.0									21.600			

YEAR: 2007 TIME PERIOD: 10-Sep PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	8.50	0.919	6.25	1.000	950.	103.1	0.5411	12.958	0.144	8.22	0.0698	12.01
2	N.F. KOKTULI	C	55.7	9.48	0.868	6.25	1.000	968.	102.9	0.3391	12.958	0.278		0.0698	12.01
3	N.F. KOKTULI	C	48.2	9.80	0.852	6.25	1.000	974.	102.9	0.2510	12.958	0.807		0.0698	12.01
4	N.F. KOKTULI	C	44.8	9.84	0.850	6.25	1.000	974.	102.9	0.1980	12.958	1.044		0.0698	12.01
5	N.F. KOKTULI	C	42.1	9.86	0.849	6.25	1.000	975.	102.9	0.1891	12.958	1.232		0.0698	12.01
6	N.F. KOKTULI	C	41.2	9.87	0.848	6.25	1.000	975.	102.9	0.1618	12.958	1.291		0.0698	12.01
7	N.F. KOKTULI	C	39.8	9.88	0.848	6.25	1.000	975.	103.0	0.1923	12.957	1.392		0.0698	12.01
8	N.F. KOKTULI	C	38.6	9.90	0.847	6.25	1.000	975.	103.0	0.1370	12.957	1.478		0.0698	12.01
9	N.F. KOKTULI	Q	36.8	9.90	0.847	6.25	1.000	975.	103.0	0.1370	12.957	1.603		0.5508	9.53
10	N.F. KOKTULI	C	36.5	9.92	0.846	6.25	1.000	976.	103.0	0.1564	12.957	1.730		0.5508	9.53
11	N.F. KOKTULI	B	36.5									1.733			
12	TRIBUTARY 119	H	38.4	9.83	0.851	6.25	1.000	974.	103.0	0.2839	12.957	1.134	7.58	0.1539	9.53
13	TRIBUTARY 119	T	36.5									1.417			
14	N.F. KOKTULI	J	36.5	9.95	0.845	6.25	1.000	976.	103.0	0.1564	12.957	3.150		0.1712	9.53
15	N.F. KOKTULI	Q	35.8	9.95	0.845	6.25	1.000	976.	103.0	0.1564	12.957	3.281		0.1079	8.57
16	N.F. KOKTULI	C	35.4	9.99	0.843	6.25	1.000	977.	102.9	0.1199	12.957	3.321		0.1079	8.57
17	N.F. KOKTULI	C	34.0	10.04	0.840	6.25	1.000	978.	102.9	0.1149	12.957	3.474		0.1079	8.57
18	N.F. KOKTULI	C	31.0	10.10	0.837	6.25	1.000	979.	102.9	0.1343	12.957	3.796		0.1079	8.57
19	N.F. KOKTULI	C	28.5	10.14	0.835	6.25	1.000	980.	102.9	0.1002	12.957	4.066		0.1079	8.57
20	N.F. KOKTULI	Q	27.9	10.14	0.835	6.25	1.000	980.	102.9	0.1002	12.957	4.125		0.3502	8.57
21	N.F. KOKTULI	C	27.0	10.18	0.833	6.25	1.000	980.	102.9	0.1084	12.957	4.469		0.3502	8.57
22	N.F. KOKTULI	C	24.5	10.34	0.825	6.25	1.000	983.	103.0	0.1298	12.956	5.321		0.3502	8.57
23	N.F. KOKTULI	C	16.0	10.50	0.818	6.25	1.000	986.	103.1	0.0866	12.954	8.293		0.3502	8.57
24	N.F. KOKTULI	C	13.8	10.57	0.814	6.25	1.000	987.	103.1	0.0668	12.954	9.064		0.3502	8.57
25	N.F. KOKTULI	Q	13.7	10.57	0.814	6.25	1.000	987.	103.1	0.0668	12.954	9.110		0.0614	12.78
26	N.F. KOKTULI	C	11.6	10.62	0.812	6.25	1.000	988.	103.1	0.0677	12.954	9.241		0.0614	12.78
27	N.F. KOKTULI	C	9.9	10.66	0.810	6.25	1.000	989.	103.1	0.0644	12.954	9.344		0.0614	12.78
28	N.F. KOKTULI	Q	9.3	10.66	0.810	6.25	1.000	989.	103.1	0.0644	12.954	9.380		0.1460	12.78
29	N.F. KOKTULI	C	7.6	10.71	0.808	6.25	1.000	990.	103.1	0.0663	12.954	9.635		0.1460	12.78
30	N.F. KOKTULI	C	6.2	10.75	0.806	6.25	1.000	991.	103.1	0.0581	12.954	9.835		0.1460	12.78
31	N.F. KOKTULI	Q	5.3	10.75	0.806	6.25	1.000	991.	103.1	0.0581	12.954	9.970		0.1443	12.78
32	N.F. KOKTULI	C	3.5	10.80	0.803	6.25	1.000	992.	103.1	0.0599	12.954	10.222		0.1443	12.78
33	N.F. KOKTULI	E	0.0									10.730			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	7.11	0.929	17.33	1.000	950.	26.0	0.5435	12.865	0.120	6.46	0.0581	11.42
2	N.F. KOKTULI	C	55.7	8.09	0.878	17.33	1.000	968.	25.9	0.3425	12.865	0.232		0.0581	11.42
3	N.F. KOKTULI	C	48.2	8.41	0.861	17.33	1.000	974.	25.9	0.2523	12.865	0.672		0.0581	11.42
4	N.F. KOKTULI	C	44.8	8.45	0.859	17.33	1.000	974.	25.9	0.1999	12.865	0.870		0.0581	11.42
5	N.F. KOKTULI	C	42.1	8.47	0.858	17.33	1.000	975.	25.9	0.1908	12.865	1.027		0.0581	11.42
6	N.F. KOKTULI	C	41.2	8.48	0.858	17.33	1.000	975.	25.9	0.1638	12.865	1.076		0.0581	11.42
7	N.F. KOKTULI	C	39.8	8.49	0.857	17.33	1.000	975.	25.9	0.1934	12.865	1.160		0.0581	11.42
8	N.F. KOKTULI	C	38.6	8.51	0.856	17.33	1.000	975.	25.9	0.1389	12.865	1.232		0.0581	11.42
9	N.F. KOKTULI	Q	36.8	8.51	0.856	17.33	1.000	975.	25.9	0.1389	12.865	1.336		0.4534	9.14
10	N.F. KOKTULI	C	36.5	8.53	0.855	17.33	1.000	976.	25.9	0.1578	12.865	1.440		0.4534	9.14
11	N.F. KOKTULI	B	36.5									1.443			
12	TRIBUTARY 119	H	38.4	8.44	0.860	17.33	1.000	974.	26.0	0.2853	12.864	1.054	6.83	0.1289	9.14
13	TRIBUTARY 119	T	36.5									1.291			
14	N.F. KOKTULI	J	36.5	8.56	0.854	17.33	1.000	976.	25.9	0.1578	12.865	2.734		0.1412	9.14
15	N.F. KOKTULI	Q	35.8	8.56	0.854	17.33	1.000	976.	25.9	0.1578	12.865	2.842		0.0821	8.31
16	N.F. KOKTULI	C	35.4	8.60	0.852	17.33	1.000	977.	25.9	0.1216	12.865	2.873		0.0821	8.31
17	N.F. KOKTULI	C	34.0	8.65	0.849	17.33	1.000	978.	25.9	0.1164	12.865	2.989		0.0821	8.31
18	N.F. KOKTULI	C	31.0	8.71	0.847	17.33	1.000	979.	25.9	0.1355	12.864	3.234		0.0821	8.31
19	N.F. KOKTULI	C	28.5	8.75	0.844	17.33	1.000	980.	25.9	0.1016	12.864	3.439		0.0821	8.31
20	N.F. KOKTULI	Q	27.9	8.75	0.844	17.33	1.000	980.	25.9	0.1016	12.864	3.484		0.2498	8.31
21	N.F. KOKTULI	C	27.0	8.79	0.842	17.33	1.000	980.	25.9	0.1097	12.864	3.729		0.2498	8.31
22	N.F. KOKTULI	C	24.5	8.95	0.835	17.33	1.000	983.	26.0	0.1307	12.863	4.337		0.2498	8.31
23	N.F. KOKTULI	C	16.0	9.11	0.827	17.33	1.000	986.	26.0	0.0877	12.862	6.457		0.2498	8.31
24	N.F. KOKTULI	C	13.8	9.18	0.824	17.33	1.000	987.	26.0	0.0677	12.862	7.007		0.2498	8.31
25	N.F. KOKTULI	Q	13.7	9.18	0.824	17.33	1.000	987.	26.0	0.0677	12.862	7.040		0.0478	12.52
26	N.F. KOKTULI	C	11.6	9.23	0.821	17.33	1.000	988.	26.0	0.0685	12.862	7.142		0.0478	12.52
27	N.F. KOKTULI	C	9.9	9.27	0.819	17.33	1.000	989.	26.0	0.0651	12.862	7.222		0.0478	12.52
28	N.F. KOKTULI	Q	9.3	9.27	0.819	17.33	1.000	989.	26.0	0.0651	12.862	7.250		0.1262	12.52
29	N.F. KOKTULI	C	7.6	9.32	0.817	17.33	1.000	990.	26.0	0.0670	12.861	7.471		0.1262	12.52
30	N.F. KOKTULI	C	6.2	9.36	0.815	17.33	1.000	991.	26.0	0.0588	12.861	7.644		0.1262	12.52
31	N.F. KOKTULI	Q	5.3	9.36	0.815	17.33	1.000	991.	26.0	0.0588	12.861	7.760		0.1254	12.52
32	N.F. KOKTULI	C	3.5	9.41	0.812	17.33	1.000	992.	26.0	0.0605	12.861	7.979		0.1254	12.52
33	N.F. KOKTULI	E	0.0									8.420			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	7.68	0.919	6.85	1.000	950.	112.8	0.5460	12.773	0.137	7.07	0.0663	10.83
2	N.F. KOKTULI	C	55.7	8.66	0.868	6.85	1.000	968.	112.6	0.3459	12.773	0.264		0.0663	10.83
3	N.F. KOKTULI	C	48.2	8.98	0.852	6.85	1.000	974.	112.5	0.2536	12.773	0.766		0.0663	10.83
4	N.F. KOKTULI	C	44.8	9.02	0.850	6.85	1.000	974.	112.6	0.2018	12.772	0.992		0.0663	10.83
5	N.F. KOKTULI	C	42.1	9.04	0.849	6.85	1.000	975.	112.6	0.1924	12.772	1.170		0.0663	10.83
6	N.F. KOKTULI	C	41.2	9.05	0.848	6.85	1.000	975.	112.6	0.1658	12.772	1.226		0.0663	10.83
7	N.F. KOKTULI	C	39.8	9.06	0.848	6.85	1.000	975.	112.6	0.1944	12.772	1.323		0.0663	10.83
8	N.F. KOKTULI	C	38.6	9.08	0.847	6.85	1.000	975.	112.6	0.1408	12.772	1.404		0.0663	10.83
9	N.F. KOKTULI	Q	36.8	9.08	0.847	6.85	1.000	975.	112.6	0.1408	12.772	1.523		0.5212	8.78
10	N.F. KOKTULI	C	36.5	9.10	0.846	6.85	1.000	976.	112.6	0.1592	12.772	1.643		0.5212	8.78
11	N.F. KOKTULI	B	36.5									1.646			
12	TRIBUTARY 119	H	38.4	9.01	0.851	6.85	1.000	974.	112.6	0.2867	12.772	3.847	7.67	0.5693	8.78
13	TRIBUTARY 119	T	36.5									4.894			
14	N.F. KOKTULI	J	36.5	9.13	0.845	6.85	1.000	976.	112.6	0.1592	12.772	6.541		0.1608	8.78
15	N.F. KOKTULI	Q	35.8	9.13	0.845	6.85	1.000	976.	112.6	0.1592	12.772	6.664		0.3368	8.00
16	N.F. KOKTULI	C	35.4	9.17	0.843	6.85	1.000	977.	112.6	0.1234	12.772	6.790		0.3368	8.00
17	N.F. KOKTULI	C	34.0	9.22	0.840	6.85	1.000	978.	112.6	0.1180	12.772	7.266		0.3368	8.00
18	N.F. KOKTULI	C	31.0	9.28	0.837	6.85	1.000	979.	112.6	0.1368	12.772	8.270		0.3368	8.00
19	N.F. KOKTULI	C	28.5	9.32	0.835	6.85	1.000	980.	112.6	0.1030	12.772	9.114		0.3368	8.00
20	N.F. KOKTULI	Q	27.9	9.32	0.835	6.85	1.000	980.	112.6	0.1030	12.772	9.298		0.4006	8.00
21	N.F. KOKTULI	C	27.0	9.36	0.833	6.85	1.000	980.	112.6	0.1111	12.772	9.691		0.4006	8.00
22	N.F. KOKTULI	C	24.5	9.52	0.825	6.85	1.000	983.	112.7	0.1317	12.770	10.666		0.4006	8.00
23	N.F. KOKTULI	C	16.0	9.68	0.818	6.85	1.000	986.	112.8	0.0889	12.769	14.066		0.4006	8.00
24	N.F. KOKTULI	C	13.8	9.75	0.815	6.85	1.000	987.	112.8	0.0687	12.769	14.947		0.4006	8.00
25	N.F. KOKTULI	Q	13.7	9.75	0.815	6.85	1.000	987.	112.8	0.0687	12.769	15.000		0.1024	12.14
26	N.F. KOKTULI	C	11.6	9.80	0.812	6.85	1.000	988.	112.8	0.0693	12.769	15.218		0.1024	12.14
27	N.F. KOKTULI	C	9.9	9.84	0.810	6.85	1.000	989.	112.8	0.0659	12.769	15.390		0.1024	12.14
28	N.F. KOKTULI	Q	9.3	9.84	0.810	6.85	1.000	989.	112.8	0.0659	12.769	15.450		0.6682	12.14
29	N.F. KOKTULI	C	7.6	9.89	0.808	6.85	1.000	990.	112.8	0.0676	12.769	16.619		0.6682	12.14
30	N.F. KOKTULI	C	6.2	9.93	0.806	6.85	1.000	991.	112.8	0.0597	12.769	17.533		0.6682	12.14
31	N.F. KOKTULI	Q	5.3	9.93	0.806	6.85	1.000	991.	112.8	0.0597	12.769	18.150		0.6705	12.14
32	N.F. KOKTULI	C	3.5	9.98	0.803	6.85	1.000	992.	112.8	0.0611	12.769	19.320		0.6705	12.14
33	N.F. KOKTULI	E	0.0									21.680			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.00	0.980	3.69	1.000	950.	43.8	0.5486	12.680	0.168	6.73	0.0815	10.31
2	N.F. KOKTULI	C	55.7	6.98	0.926	3.69	1.000	968.	43.7	0.3495	12.680	0.325		0.0815	10.31
3	N.F. KOKTULI	C	48.2	7.30	0.908	3.69	1.000	974.	43.7	0.2549	12.680	0.943		0.0815	10.31
4	N.F. KOKTULI	C	44.8	7.34	0.907	3.69	1.000	974.	43.7	0.2038	12.679	1.220		0.0815	10.31
5	N.F. KOKTULI	C	42.1	7.36	0.905	3.69	1.000	975.	43.7	0.1941	12.679	1.439		0.0815	10.31
6	N.F. KOKTULI	C	41.2	7.37	0.905	3.69	1.000	975.	43.7	0.1680	12.679	1.508		0.0815	10.31
7	N.F. KOKTULI	C	39.8	7.38	0.904	3.69	1.000	975.	43.7	0.1954	12.679	1.627		0.0815	10.31
8	N.F. KOKTULI	C	38.6	7.40	0.903	3.69	1.000	975.	43.8	0.1428	12.679	1.726		0.0815	10.31
9	N.F. KOKTULI	Q	36.8	7.40	0.903	3.69	1.000	975.	43.8	0.1428	12.679	1.873		0.6525	8.45
10	N.F. KOKTULI	C	36.5	7.42	0.902	3.69	1.000	976.	43.8	0.1607	12.679	2.023		0.6525	8.45
11	N.F. KOKTULI	B	36.5									2.027			
12	TRIBUTARY 119	H	38.4	7.33	0.907	3.69	1.000	974.	43.8	0.2881	12.679	1.913	7.01	0.3089	8.45
13	TRIBUTARY 119	T	36.5									2.481			
14	N.F. KOKTULI	J	36.5	7.45	0.901	3.69	1.000	976.	43.7	0.1607	12.679	4.508		0.2013	8.45
15	N.F. KOKTULI	Q	35.8	7.45	0.901	3.69	1.000	976.	43.7	0.1607	12.679	4.662		0.2006	7.70
16	N.F. KOKTULI	C	35.4	7.49	0.899	3.69	1.000	977.	43.7	0.1252	12.679	4.737		0.2006	7.70
17	N.F. KOKTULI	C	34.0	7.54	0.896	3.69	1.000	978.	43.7	0.1197	12.679	5.021		0.2006	7.70
18	N.F. KOKTULI	C	31.0	7.60	0.893	3.69	1.000	979.	43.7	0.1382	12.679	5.619		0.2006	7.70
19	N.F. KOKTULI	C	28.5	7.64	0.891	3.69	1.000	980.	43.7	0.1044	12.679	6.121		0.2006	7.70
20	N.F. KOKTULI	Q	27.9	7.64	0.891	3.69	1.000	980.	43.7	0.1044	12.679	6.231		0.4264	7.70
21	N.F. KOKTULI	C	27.0	7.68	0.888	3.69	1.000	980.	43.7	0.1125	12.679	6.649		0.4264	7.70
22	N.F. KOKTULI	C	24.5	7.84	0.880	3.69	1.000	983.	43.8	0.1327	12.678	7.687		0.4264	7.70
23	N.F. KOKTULI	C	16.0	8.00	0.872	3.69	1.000	986.	43.8	0.0902	12.677	11.306		0.4264	7.70
24	N.F. KOKTULI	C	13.8	8.07	0.869	3.69	1.000	987.	43.8	0.0697	12.677	12.244		0.4264	7.70
25	N.F. KOKTULI	Q	13.7	8.07	0.869	3.69	1.000	987.	43.8	0.0697	12.677	12.300		0.0842	11.75
26	N.F. KOKTULI	C	11.6	8.12	0.866	3.69	1.000	988.	43.8	0.0701	12.677	12.480		0.0842	11.75
27	N.F. KOKTULI	C	9.9	8.16	0.864	3.69	1.000	989.	43.8	0.0668	12.677	12.621		0.0842	11.75
28	N.F. KOKTULI	Q	9.3	8.16	0.864	3.69	1.000	989.	43.8	0.0668	12.677	12.670		0.4034	11.75
29	N.F. KOKTULI	C	7.6	8.21	0.862	3.69	1.000	990.	43.8	0.0683	12.677	13.375		0.4034	11.75
30	N.F. KOKTULI	C	6.2	8.25	0.860	3.69	1.000	991.	43.8	0.0605	12.677	13.928		0.4034	11.75
31	N.F. KOKTULI	Q	5.3	8.25	0.860	3.69	1.000	991.	43.8	0.0605	12.677	14.300		0.4046	11.75
32	N.F. KOKTULI	C	3.5	8.30	0.857	3.69	1.000	992.	43.8	0.0618	12.677	15.006		0.4046	11.75
33	N.F. KOKTULI	E	0.0									16.430			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.59	0.919	3.44	1.000	950.	87.5	0.5512	12.587	0.186	6.24	0.0901	9.92
2	N.F. KOKTULI	C	55.7	6.57	0.868	3.44	1.000	968.	87.4	0.3531	12.587	0.359		0.0901	9.92
3	N.F. KOKTULI	C	48.2	6.89	0.852	3.44	1.000	974.	87.4	0.2563	12.587	1.042		0.0901	9.92
4	N.F. KOKTULI	C	44.8	6.93	0.850	3.44	1.000	974.	87.4	0.2059	12.587	1.349		0.0901	9.92
5	N.F. KOKTULI	C	42.1	6.95	0.849	3.44	1.000	975.	87.4	0.1959	12.587	1.591		0.0901	9.92
6	N.F. KOKTULI	C	41.2	6.96	0.848	3.44	1.000	975.	87.4	0.1702	12.587	1.668		0.0901	9.92
7	N.F. KOKTULI	C	39.8	6.97	0.848	3.44	1.000	975.	87.4	0.1965	12.586	1.799		0.0901	9.92
8	N.F. KOKTULI	C	38.6	6.99	0.847	3.44	1.000	975.	87.4	0.1449	12.586	1.909		0.0901	9.92
9	N.F. KOKTULI	Q	36.8	6.99	0.847	3.44	1.000	975.	87.4	0.1449	12.586	2.071		0.7288	8.19
10	N.F. KOKTULI	C	36.5	7.01	0.846	3.44	1.000	976.	87.4	0.1622	12.586	2.239		0.7288	8.19
11	N.F. KOKTULI	B	36.5									2.243			
12	TRIBUTARY 119	H	38.4	6.92	0.851	3.44	1.000	974.	87.5	0.2895	12.586	1.686	6.72	0.3567	8.19
13	TRIBUTARY 119	T	36.5									2.342			
14	N.F. KOKTULI	J	36.5	7.04	0.845	3.44	1.000	976.	87.4	0.1622	12.586	4.585		0.2248	8.19
15	N.F. KOKTULI	Q	35.8	7.04	0.845	3.44	1.000	976.	87.4	0.1622	12.586	4.757		0.2074	7.42
16	N.F. KOKTULI	C	35.4	7.08	0.843	3.44	1.000	977.	87.4	0.1271	12.586	4.835		0.2074	7.42
17	N.F. KOKTULI	C	34.0	7.13	0.840	3.44	1.000	978.	87.4	0.1214	12.586	5.128		0.2074	7.42
18	N.F. KOKTULI	C	31.0	7.19	0.837	3.44	1.000	979.	87.4	0.1396	12.586	5.746		0.2074	7.42
19	N.F. KOKTULI	C	28.5	7.23	0.835	3.44	1.000	980.	87.4	0.1060	12.586	6.266		0.2074	7.42
20	N.F. KOKTULI	Q	27.9	7.23	0.835	3.44	1.000	980.	87.4	0.1060	12.586	6.379		0.3801	7.42
21	N.F. KOKTULI	C	27.0	7.27	0.833	3.44	1.000	980.	87.4	0.1140	12.586	6.752		0.3801	7.42
22	N.F. KOKTULI	C	24.5	7.43	0.825	3.44	1.000	983.	87.5	0.1337	12.585	7.677		0.3801	7.42
23	N.F. KOKTULI	C	16.0	7.59	0.818	3.44	1.000	986.	87.6	0.0914	12.584	10.903		0.3801	7.42
24	N.F. KOKTULI	C	13.8	7.66	0.815	3.44	1.000	987.	87.6	0.0707	12.584	11.740		0.3801	7.42
25	N.F. KOKTULI	Q	13.7	7.66	0.815	3.44	1.000	987.	87.6	0.0707	12.584	11.790		0.0797	11.40
26	N.F. KOKTULI	C	11.6	7.71	0.812	3.44	1.000	988.	87.6	0.0710	12.584	11.960		0.0797	11.40
27	N.F. KOKTULI	C	9.9	7.75	0.810	3.44	1.000	989.	87.6	0.0676	12.584	12.094		0.0797	11.40
28	N.F. KOKTULI	Q	9.3	7.75	0.810	3.44	1.000	989.	87.6	0.0676	12.584	12.140		0.3588	11.40
29	N.F. KOKTULI	C	7.6	7.80	0.808	3.44	1.000	990.	87.6	0.0691	12.584	12.768		0.3588	11.40
30	N.F. KOKTULI	C	6.2	7.84	0.806	3.44	1.000	991.	87.6	0.0614	12.584	13.259		0.3588	11.40
31	N.F. KOKTULI	Q	5.3	7.84	0.806	3.44	1.000	991.	87.6	0.0614	12.584	13.590		0.3590	11.40
32	N.F. KOKTULI	C	3.5	7.89	0.803	3.44	1.000	992.	87.6	0.0625	12.584	14.216		0.3590	11.40
33	N.F. KOKTULI	E	0.0									15.480			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.81	0.878	7.28	1.000	950.	133.0	0.5539	12.494	0.162	5.48	0.0785	9.70
2	N.F. KOKTULI	C	55.7	5.79	0.829	7.28	1.000	968.	132.8	0.3568	12.494	0.313		0.0785	9.70
3	N.F. KOKTULI	C	48.2	6.11	0.814	7.28	1.000	974.	132.7	0.2577	12.494	0.907		0.0785	9.70
4	N.F. KOKTULI	C	44.8	6.15	0.812	7.28	1.000	974.	132.7	0.2080	12.494	1.174		0.0785	9.70
5	N.F. KOKTULI	C	42.1	6.17	0.811	7.28	1.000	975.	132.8	0.1977	12.494	1.385		0.0785	9.70
6	N.F. KOKTULI	C	41.2	6.18	0.811	7.28	1.000	975.	132.8	0.1724	12.494	1.452		0.0785	9.70
7	N.F. KOKTULI	C	39.8	6.19	0.810	7.28	1.000	975.	132.8	0.1976	12.494	1.566		0.0785	9.70
8	N.F. KOKTULI	C	38.6	6.21	0.809	7.28	1.000	975.	132.8	0.1471	12.493	1.662		0.0785	9.70
9	N.F. KOKTULI	Q	36.8	6.21	0.809	7.28	1.000	975.	132.8	0.1471	12.493	1.803		0.6271	8.03
10	N.F. KOKTULI	C	36.5	6.23	0.808	7.28	1.000	976.	132.8	0.1638	12.493	1.947		0.6271	8.03
11	N.F. KOKTULI	B	36.5									1.951			
12	TRIBUTARY 119	H	38.4	6.14	0.813	7.28	1.000	974.	132.8	0.2910	12.493	1.117	5.90	0.1963	8.03
13	TRIBUTARY 119	T	36.5									1.478			
14	N.F. KOKTULI	J	36.5	6.26	0.807	7.28	1.000	976.	132.8	0.1638	12.493	3.429		0.1935	8.03
15	N.F. KOKTULI	Q	35.8	6.26	0.807	7.28	1.000	976.	132.8	0.1638	12.493	3.577		0.1263	7.25
16	N.F. KOKTULI	C	35.4	6.30	0.805	7.28	1.000	977.	132.8	0.1291	12.494	3.624		0.1263	7.25
17	N.F. KOKTULI	C	34.0	6.35	0.803	7.28	1.000	978.	132.8	0.1232	12.493	3.803		0.1263	7.25
18	N.F. KOKTULI	C	31.0	6.41	0.800	7.28	1.000	979.	132.8	0.1410	12.493	4.180		0.1263	7.25
19	N.F. KOKTULI	C	28.5	6.45	0.798	7.28	1.000	980.	132.8	0.1076	12.493	4.496		0.1263	7.25
20	N.F. KOKTULI	Q	27.9	6.45	0.798	7.28	1.000	980.	132.8	0.1076	12.493	4.565		0.3355	7.25
21	N.F. KOKTULI	C	27.0	6.49	0.796	7.28	1.000	980.	132.8	0.1155	12.493	4.894		0.3355	7.25
22	N.F. KOKTULI	C	24.5	6.65	0.789	7.28	1.000	983.	132.9	0.1348	12.493	5.711		0.3355	7.25
23	N.F. KOKTULI	C	16.0	6.81	0.781	7.28	1.000	986.	133.0	0.0928	12.492	8.558		0.3355	7.25
24	N.F. KOKTULI	C	13.8	6.88	0.778	7.28	1.000	987.	133.0	0.0718	12.492	9.296		0.3355	7.25
25	N.F. KOKTULI	Q	13.7	6.88	0.778	7.28	1.000	987.	133.0	0.0718	12.492	9.340		0.0637	11.16
26	N.F. KOKTULI	C	11.6	6.93	0.776	7.28	1.000	988.	133.0	0.0718	12.492	9.476		0.0637	11.16
27	N.F. KOKTULI	C	9.9	6.97	0.774	7.28	1.000	989.	133.0	0.0685	12.492	9.583		0.0637	11.16
28	N.F. KOKTULI	Q	9.3	6.97	0.774	7.28	1.000	989.	133.0	0.0685	12.492	9.620		0.1633	11.16
29	N.F. KOKTULI	C	7.6	7.02	0.772	7.28	1.000	990.	133.0	0.0698	12.492	9.906		0.1633	11.16
30	N.F. KOKTULI	C	6.2	7.06	0.770	7.28	1.000	991.	133.0	0.0623	12.492	10.129		0.1633	11.16
31	N.F. KOKTULI	Q	5.3	7.06	0.770	7.28	1.000	991.	133.0	0.0623	12.492	10.280		0.1614	11.16
32	N.F. KOKTULI	C	3.5	7.11	0.768	7.28	1.000	992.	133.0	0.0632	12.492	10.562		0.1614	11.16
33	N.F. KOKTULI	E	0.0									11.130			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.17	0.868	5.19	1.000	950.	110.5	0.5566	12.401	0.143	6.22	0.0694	9.67
2	N.F. KOKTULI	C	55.7	7.15	0.820	5.19	1.000	968.	110.4	0.3607	12.401	0.276		0.0694	9.67
3	N.F. KOKTULI	C	48.2	7.47	0.804	5.19	1.000	974.	110.3	0.2591	12.401	0.802		0.0694	9.67
4	N.F. KOKTULI	C	44.8	7.51	0.803	5.19	1.000	974.	110.4	0.2102	12.401	1.038		0.0694	9.67
5	N.F. KOKTULI	C	42.1	7.53	0.802	5.19	1.000	975.	110.4	0.1995	12.401	1.225		0.0694	9.67
6	N.F. KOKTULI	C	41.2	7.54	0.801	5.19	1.000	975.	110.4	0.1748	12.401	1.283		0.0694	9.67
7	N.F. KOKTULI	C	39.8	7.55	0.801	5.19	1.000	975.	110.4	0.1987	12.401	1.385		0.0694	9.67
8	N.F. KOKTULI	C	38.6	7.57	0.800	5.19	1.000	975.	110.4	0.1493	12.401	1.469		0.0694	9.67
9	N.F. KOKTULI	Q	36.8	7.57	0.800	5.19	1.000	975.	110.4	0.1493	12.401	1.594		0.5466	7.97
10	N.F. KOKTULI	C	36.5	7.59	0.799	5.19	1.000	976.	110.4	0.1654	12.401	1.720		0.5466	7.97
11	N.F. KOKTULI	B	36.5									1.723			
12	TRIBUTARY 119	H	38.4	7.50	0.803	5.19	1.000	974.	110.4	0.2925	12.400	0.882	6.06	0.1468	7.97
13	TRIBUTARY 119	T	36.5									1.152			
14	N.F. KOKTULI	J	36.5	7.62	0.798	5.19	1.000	976.	110.4	0.1654	12.401	2.875		0.1699	7.97
15	N.F. KOKTULI	Q	35.8	7.62	0.798	5.19	1.000	976.	110.4	0.1654	12.401	3.005		0.0916	7.28
16	N.F. KOKTULI	C	35.4	7.66	0.796	5.19	1.000	977.	110.4	0.1312	12.401	3.039		0.0916	7.28
17	N.F. KOKTULI	C	34.0	7.71	0.793	5.19	1.000	978.	110.4	0.1251	12.401	3.169		0.0916	7.28
18	N.F. KOKTULI	C	31.0	7.77	0.791	5.19	1.000	979.	110.4	0.1425	12.401	3.442		0.0916	7.28
19	N.F. KOKTULI	C	28.5	7.81	0.789	5.19	1.000	980.	110.4	0.1092	12.400	3.671		0.0916	7.28
20	N.F. KOKTULI	Q	27.9	7.81	0.789	5.19	1.000	980.	110.4	0.1092	12.400	3.721		0.2788	7.28
21	N.F. KOKTULI	C	27.0	7.85	0.787	5.19	1.000	980.	110.4	0.1171	12.400	3.995		0.2788	7.28
22	N.F. KOKTULI	C	24.5	8.01	0.780	5.19	1.000	983.	110.5	0.1359	12.400	4.673		0.2788	7.28
23	N.F. KOKTULI	C	16.0	8.17	0.772	5.19	1.000	986.	110.6	0.0942	12.399	7.040		0.2788	7.28
24	N.F. KOKTULI	C	13.8	8.24	0.769	5.19	1.000	987.	110.6	0.0729	12.399	7.653		0.2788	7.28
25	N.F. KOKTULI	Q	13.7	8.24	0.769	5.19	1.000	987.	110.6	0.0729	12.399	7.690		0.0523	11.08
26	N.F. KOKTULI	C	11.6	8.29	0.767	5.19	1.000	988.	110.6	0.0728	12.399	7.802		0.0523	11.08
27	N.F. KOKTULI	C	9.9	8.33	0.765	5.19	1.000	989.	110.6	0.0694	12.399	7.890		0.0523	11.08
28	N.F. KOKTULI	Q	9.3	8.33	0.765	5.19	1.000	989.	110.6	0.0694	12.399	7.920		0.1213	11.08
29	N.F. KOKTULI	C	7.6	8.38	0.763	5.19	1.000	990.	110.6	0.0706	12.399	8.132		0.1213	11.08
30	N.F. KOKTULI	C	6.2	8.42	0.761	5.19	1.000	991.	110.6	0.0632	12.399	8.298		0.1213	11.08
31	N.F. KOKTULI	Q	5.3	8.42	0.761	5.19	1.000	991.	110.6	0.0632	12.399	8.410		0.1197	11.08
32	N.F. KOKTULI	C	3.5	8.47	0.759	5.19	1.000	992.	110.6	0.0640	12.399	8.619		0.1197	11.08
33	N.F. KOKTULI	E	0.0									9.040			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.63	0.919	3.37	1.000	950.	62.3	0.5595	12.308	0.133	6.08	0.0648	9.70
2	N.F. KOKTULI	C	55.7	6.61	0.868	3.37	1.000	968.	62.2	0.3646	12.308	0.258		0.0648	9.70
3	N.F. KOKTULI	C	48.2	6.93	0.852	3.37	1.000	974.	62.2	0.2605	12.308	0.749		0.0648	9.70
4	N.F. KOKTULI	C	44.8	6.97	0.850	3.37	1.000	974.	62.2	0.2124	12.308	0.969		0.0648	9.70
5	N.F. KOKTULI	C	42.1	6.99	0.849	3.37	1.000	975.	62.2	0.2014	12.308	1.143		0.0648	9.70
6	N.F. KOKTULI	C	41.2	7.00	0.848	3.37	1.000	975.	62.2	0.1772	12.308	1.198		0.0648	9.70
7	N.F. KOKTULI	C	39.8	7.01	0.848	3.37	1.000	975.	62.2	0.1998	12.308	1.292		0.0648	9.70
8	N.F. KOKTULI	C	38.6	7.03	0.847	3.37	1.000	975.	62.3	0.1517	12.308	1.372		0.0648	9.70
9	N.F. KOKTULI	Q	36.8	7.03	0.847	3.37	1.000	975.	62.3	0.1517	12.308	1.488		0.5085	7.96
10	N.F. KOKTULI	C	36.5	7.05	0.846	3.37	1.000	976.	62.3	0.1671	12.308	1.605		0.5085	7.96
11	N.F. KOKTULI	B	36.5									1.608			
12	TRIBUTARY 119	H	38.4	6.96	0.851	3.37	1.000	974.	62.3	0.2940	12.308	0.798	5.97	0.1256	7.96
13	TRIBUTARY 119	T	36.5									1.029			
14	N.F. KOKTULI	J	36.5	7.08	0.845	3.37	1.000	976.	62.2	0.1671	12.308	2.638		0.1569	7.96
15	N.F. KOKTULI	Q	35.8	7.08	0.845	3.37	1.000	976.	62.2	0.1671	12.308	2.758		0.0777	7.45
16	N.F. KOKTULI	C	35.4	7.12	0.843	3.37	1.000	977.	62.2	0.1334	12.308	2.787		0.0777	7.45
17	N.F. KOKTULI	C	34.0	7.17	0.840	3.37	1.000	978.	62.2	0.1271	12.308	2.897		0.0777	7.45
18	N.F. KOKTULI	C	31.0	7.23	0.837	3.37	1.000	979.	62.2	0.1440	12.308	3.129		0.0777	7.45
19	N.F. KOKTULI	C	28.5	7.27	0.835	3.37	1.000	980.	62.2	0.1110	12.308	3.324		0.0777	7.45
20	N.F. KOKTULI	Q	27.9	7.27	0.835	3.37	1.000	980.	62.2	0.1110	12.308	3.366		0.2539	7.45
21	N.F. KOKTULI	C	27.0	7.31	0.833	3.37	1.000	980.	62.2	0.1187	12.308	3.615		0.2539	7.45
22	N.F. KOKTULI	C	24.5	7.47	0.825	3.37	1.000	983.	62.3	0.1369	12.307	4.233		0.2539	7.45
23	N.F. KOKTULI	C	16.0	7.63	0.818	3.37	1.000	986.	62.4	0.0956	12.307	6.388		0.2539	7.45
24	N.F. KOKTULI	C	13.8	7.70	0.815	3.37	1.000	987.	62.4	0.0741	12.307	6.946		0.2539	7.45
25	N.F. KOKTULI	Q	13.7	7.70	0.815	3.37	1.000	987.	62.4	0.0741	12.307	6.980		0.0478	11.06
26	N.F. KOKTULI	C	11.6	7.75	0.812	3.37	1.000	988.	62.4	0.0737	12.307	7.082		0.0478	11.06
27	N.F. KOKTULI	C	9.9	7.79	0.810	3.37	1.000	989.	62.4	0.0703	12.307	7.162		0.0478	11.06
28	N.F. KOKTULI	Q	9.3	7.79	0.810	3.37	1.000	989.	62.4	0.0703	12.307	7.190		0.1262	11.06
29	N.F. KOKTULI	C	7.6	7.84	0.808	3.37	1.000	990.	62.4	0.0714	12.307	7.411		0.1262	11.06
30	N.F. KOKTULI	C	6.2	7.88	0.806	3.37	1.000	991.	62.4	0.0642	12.307	7.584		0.1262	11.06
31	N.F. KOKTULI	Q	5.3	7.88	0.806	3.37	1.000	991.	62.4	0.0642	12.307	7.700		0.1254	11.06
32	N.F. KOKTULI	C	3.5	7.93	0.803	3.37	1.000	992.	62.4	0.0647	12.307	7.919		0.1254	11.06
33	N.F. KOKTULI	E	0.0									8.360			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	7.40	0.960	11.35	1.000	950.	22.2	0.5624	12.215	0.122	6.04	0.0593	9.66
2	N.F. KOKTULI	C	55.7	8.38	0.906	11.35	1.000	968.	22.2	0.3686	12.215	0.236		0.0593	9.66
3	N.F. KOKTULI	C	48.2	8.70	0.890	11.35	1.000	974.	22.2	0.2619	12.215	0.686		0.0593	9.66
4	N.F. KOKTULI	C	44.8	8.74	0.888	11.35	1.000	974.	22.2	0.2147	12.215	0.888		0.0593	9.66
5	N.F. KOKTULI	C	42.1	8.76	0.887	11.35	1.000	975.	22.2	0.2034	12.215	1.047		0.0593	9.66
6	N.F. KOKTULI	C	41.2	8.77	0.886	11.35	1.000	975.	22.2	0.1797	12.215	1.097		0.0593	9.66
7	N.F. KOKTULI	C	39.8	8.78	0.886	11.35	1.000	975.	22.2	0.2009	12.215	1.184		0.0593	9.66
8	N.F. KOKTULI	C	38.6	8.80	0.884	11.35	1.000	975.	22.2	0.1541	12.215	1.256		0.0593	9.66
9	N.F. KOKTULI	Q	36.8	8.80	0.884	11.35	1.000	975.	22.2	0.1541	12.215	1.363		0.4619	7.92
10	N.F. KOKTULI	C	36.5	8.82	0.883	11.35	1.000	976.	22.2	0.1688	12.215	1.469		0.4619	7.92
11	N.F. KOKTULI	B	36.5									1.472			
12	TRIBUTARY 119	H	38.4	8.73	0.888	11.35	1.000	974.	22.2	0.2956	12.215	1.731	6.50	0.1887	7.92
13	TRIBUTARY 119	T	36.5									2.078			
14	N.F. KOKTULI	J	36.5	8.85	0.882	11.35	1.000	976.	22.2	0.1688	12.215	3.550		0.1438	7.92
15	N.F. KOKTULI	Q	35.8	8.85	0.882	11.35	1.000	976.	22.2	0.1688	12.215	3.660		0.1316	7.59
16	N.F. KOKTULI	C	35.4	8.89	0.880	11.35	1.000	977.	22.2	0.1356	12.215	3.709		0.1316	7.59
17	N.F. KOKTULI	C	34.0	8.94	0.877	11.35	1.000	978.	22.2	0.1292	12.215	3.895		0.1316	7.59
18	N.F. KOKTULI	C	31.0	9.00	0.874	11.35	1.000	979.	22.2	0.1455	12.215	4.288		0.1316	7.59
19	N.F. KOKTULI	C	28.5	9.04	0.872	11.35	1.000	980.	22.2	0.1128	12.215	4.617		0.1316	7.59
20	N.F. KOKTULI	Q	27.9	9.04	0.872	11.35	1.000	980.	22.2	0.1128	12.215	4.689		0.2087	7.59
21	N.F. KOKTULI	C	27.0	9.08	0.870	11.35	1.000	980.	22.2	0.1204	12.215	4.894		0.2087	7.59
22	N.F. KOKTULI	C	24.5	9.24	0.862	11.35	1.000	983.	22.2	0.1381	12.214	5.402		0.2087	7.59
23	N.F. KOKTULI	C	16.0	9.40	0.854	11.35	1.000	986.	22.2	0.0971	12.214	7.173		0.2087	7.59
24	N.F. KOKTULI	C	13.8	9.47	0.851	11.35	1.000	987.	22.2	0.0753	12.214	7.632		0.2087	7.59
25	N.F. KOKTULI	Q	13.7	9.47	0.851	11.35	1.000	987.	22.2	0.0753	12.214	7.660		0.0523	10.88
26	N.F. KOKTULI	C	11.6	9.52	0.848	11.35	1.000	988.	22.3	0.0747	12.214	7.772		0.0523	10.88
27	N.F. KOKTULI	C	9.9	9.56	0.846	11.35	1.000	989.	22.2	0.0713	12.214	7.860		0.0523	10.88
28	N.F. KOKTULI	Q	9.3	9.56	0.846	11.35	1.000	989.	22.2	0.0713	12.214	7.890		0.1213	10.88
29	N.F. KOKTULI	C	7.6	9.61	0.844	11.35	1.000	990.	22.2	0.0722	12.214	8.102		0.1213	10.88
30	N.F. KOKTULI	C	6.2	9.65	0.842	11.35	1.000	991.	22.2	0.0652	12.214	8.268		0.1213	10.88
31	N.F. KOKTULI	Q	5.3	9.65	0.842	11.35	1.000	991.	22.2	0.0652	12.214	8.380		0.1216	10.88
32	N.F. KOKTULI	C	3.5	9.70	0.839	11.35	1.000	992.	22.2	0.0655	12.214	8.592		0.1216	10.88
33	N.F. KOKTULI	E	0.0									9.020			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.96	0.970	7.49	1.000	950.	43.5	0.5654	12.122	0.198	6.23	0.0960	9.47
2	N.F. KOKTULI	C	55.7	7.94	0.916	7.49	1.000	968.	43.5	0.3728	12.122	0.383		0.0960	9.47
3	N.F. KOKTULI	C	48.2	8.26	0.899	7.49	1.000	974.	43.4	0.2634	12.122	1.110		0.0960	9.47
4	N.F. KOKTULI	C	44.8	8.30	0.897	7.49	1.000	974.	43.5	0.2171	12.122	1.437		0.0960	9.47
5	N.F. KOKTULI	C	42.1	8.32	0.896	7.49	1.000	975.	43.5	0.2054	12.122	1.695		0.0960	9.47
6	N.F. KOKTULI	C	41.2	8.33	0.896	7.49	1.000	975.	43.5	0.1824	12.122	1.776		0.0960	9.47
7	N.F. KOKTULI	C	39.8	8.34	0.895	7.49	1.000	975.	43.5	0.2021	12.122	1.916		0.0960	9.47
8	N.F. KOKTULI	C	38.6	8.36	0.894	7.49	1.000	975.	43.5	0.1566	12.122	2.033		0.0960	9.47
9	N.F. KOKTULI	Q	36.8	8.36	0.894	7.49	1.000	975.	43.5	0.1566	12.122	2.206		0.7797	7.81
10	N.F. KOKTULI	C	36.5	8.38	0.893	7.49	1.000	976.	43.5	0.1705	12.122	2.385		0.7797	7.81
11	N.F. KOKTULI	B	36.5									2.390			
12	TRIBUTARY 119	H	38.4	8.29	0.898	7.49	1.000	974.	43.5	0.2972	12.122	4.766	7.22	0.8151	7.81
13	TRIBUTARY 119	T	36.5									6.265			
14	N.F. KOKTULI	J	36.5	8.41	0.892	7.49	1.000	976.	43.5	0.1705	12.122	8.655		0.2405	7.81
15	N.F. KOKTULI	Q	35.8	8.41	0.892	7.49	1.000	976.	43.5	0.1705	12.122	8.839		0.4801	7.59
16	N.F. KOKTULI	C	35.4	8.45	0.889	7.49	1.000	977.	43.5	0.1380	12.122	9.019		0.4801	7.59
17	N.F. KOKTULI	C	34.0	8.50	0.887	7.49	1.000	978.	43.5	0.1313	12.122	9.697		0.4801	7.59
18	N.F. KOKTULI	C	31.0	8.56	0.884	7.49	1.000	979.	43.5	0.1471	12.122	11.128		0.4801	7.59
19	N.F. KOKTULI	C	28.5	8.60	0.882	7.49	1.000	980.	43.5	0.1147	12.122	12.331		0.4801	7.59
20	N.F. KOKTULI	Q	27.9	8.60	0.882	7.49	1.000	980.	43.5	0.1147	12.122	12.593		0.5492	7.59
21	N.F. KOKTULI	C	27.0	8.64	0.879	7.49	1.000	980.	43.5	0.1222	12.122	13.132		0.5492	7.59
22	N.F. KOKTULI	C	24.5	8.80	0.871	7.49	1.000	983.	43.5	0.1392	12.122	14.468		0.5492	7.59
23	N.F. KOKTULI	C	16.0	8.96	0.863	7.49	1.000	986.	43.6	0.0987	12.122	19.129		0.5492	7.59
24	N.F. KOKTULI	C	13.8	9.03	0.860	7.49	1.000	987.	43.6	0.0765	12.122	20.338		0.5492	7.59
25	N.F. KOKTULI	Q	13.7	9.03	0.860	7.49	1.000	987.	43.6	0.0765	12.122	20.410		0.1365	10.49
26	N.F. KOKTULI	C	11.6	9.08	0.857	7.49	1.000	988.	43.6	0.0757	12.122	20.701		0.1365	10.49
27	N.F. KOKTULI	C	9.9	9.12	0.855	7.49	1.000	989.	43.6	0.0723	12.122	20.931		0.1365	10.49
28	N.F. KOKTULI	Q	9.3	9.12	0.855	7.49	1.000	989.	43.6	0.0723	12.122	21.010		1.3041	10.49
29	N.F. KOKTULI	C	7.6	9.17	0.853	7.49	1.000	990.	43.6	0.0730	12.122	23.291		1.3041	10.49
30	N.F. KOKTULI	C	6.2	9.21	0.851	7.49	1.000	991.	43.6	0.0663	12.121	25.076		1.3041	10.49
31	N.F. KOKTULI	Q	5.3	9.21	0.851	7.49	1.000	991.	43.6	0.0663	12.121	26.280		1.3029	10.49
32	N.F. KOKTULI	C	3.5	9.26	0.848	7.49	1.000	992.	43.6	0.0663	12.121	28.554		1.3029	10.49
33	N.F. KOKTULI	E	0.0									33.140			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.95	0.970	6.94	1.000	950.	43.5	0.5684	12.029	0.205	5.75	0.0997	9.15
2	N.F. KOKTULI	C	55.7	6.93	0.916	6.94	1.000	968.	43.4	0.3770	12.029	0.397		0.0997	9.15
3	N.F. KOKTULI	C	48.2	7.25	0.899	6.94	1.000	974.	43.4	0.2649	12.029	1.153		0.0997	9.15
4	N.F. KOKTULI	C	44.8	7.29	0.897	6.94	1.000	974.	43.4	0.2196	12.029	1.492		0.0997	9.15
5	N.F. KOKTULI	C	42.1	7.31	0.896	6.94	1.000	975.	43.4	0.2074	12.029	1.760		0.0997	9.15
6	N.F. KOKTULI	C	41.2	7.32	0.896	6.94	1.000	975.	43.4	0.1850	12.029	1.845		0.0997	9.15
7	N.F. KOKTULI	C	39.8	7.33	0.895	6.94	1.000	975.	43.4	0.2033	12.029	1.990		0.0997	9.15
8	N.F. KOKTULI	C	38.6	7.35	0.894	6.94	1.000	975.	43.4	0.1593	12.029	2.112		0.0997	9.15
9	N.F. KOKTULI	Q	36.8	7.35	0.894	6.94	1.000	975.	43.4	0.1593	12.029	2.291		0.8136	7.62
10	N.F. KOKTULI	C	36.5	7.37	0.893	6.94	1.000	976.	43.4	0.1724	12.029	2.478		0.8136	7.62
11	N.F. KOKTULI	B	36.5									2.483			
12	TRIBUTARY 119	H	38.4	7.28	0.898	6.94	1.000	974.	43.4	0.2988	12.029	3.490	6.72	0.7026	7.62
13	TRIBUTARY 119	T	36.5									4.782			
14	N.F. KOKTULI	J	36.5	7.40	0.892	6.94	1.000	976.	43.4	0.1724	12.029	7.264		0.2510	7.62
15	N.F. KOKTULI	Q	35.8	7.40	0.892	6.94	1.000	976.	43.4	0.1724	12.029	7.456		0.3879	7.40
16	N.F. KOKTULI	C	35.4	7.44	0.889	6.94	1.000	977.	43.4	0.1405	12.029	7.601		0.3879	7.40
17	N.F. KOKTULI	C	34.0	7.49	0.887	6.94	1.000	978.	43.4	0.1335	12.029	8.149		0.3879	7.40
18	N.F. KOKTULI	C	31.0	7.55	0.884	6.94	1.000	979.	43.4	0.1488	12.029	9.306		0.3879	7.40
19	N.F. KOKTULI	C	28.5	7.59	0.882	6.94	1.000	980.	43.4	0.1167	12.029	10.277		0.3879	7.40
20	N.F. KOKTULI	Q	27.9	7.59	0.882	6.94	1.000	980.	43.4	0.1167	12.029	10.489		0.5368	7.40
21	N.F. KOKTULI	C	27.0	7.63	0.879	6.94	1.000	980.	43.4	0.1240	12.029	11.016		0.5368	7.40
22	N.F. KOKTULI	C	24.5	7.79	0.871	6.94	1.000	983.	43.5	0.1404	12.029	12.322		0.5368	7.40
23	N.F. KOKTULI	C	16.0	7.95	0.863	6.94	1.000	986.	43.5	0.1003	12.029	16.878		0.5368	7.40
24	N.F. KOKTULI	C	13.8	8.02	0.860	6.94	1.000	987.	43.5	0.0778	12.029	18.059		0.5368	7.40
25	N.F. KOKTULI	Q	13.7	8.02	0.860	6.94	1.000	987.	43.5	0.0778	12.029	18.130		0.1229	9.97
26	N.F. KOKTULI	C	11.6	8.07	0.857	6.94	1.000	988.	43.5	0.0767	12.029	18.392		0.1229	9.97
27	N.F. KOKTULI	C	9.9	8.11	0.855	6.94	1.000	989.	43.5	0.0734	12.029	18.598		0.1229	9.97
28	N.F. KOKTULI	Q	9.3	8.11	0.855	6.94	1.000	989.	43.5	0.0734	12.029	18.670		1.0220	9.97
29	N.F. KOKTULI	C	7.6	8.16	0.853	6.94	1.000	990.	43.5	0.0739	12.029	20.458		1.0220	9.97
30	N.F. KOKTULI	C	6.2	8.20	0.851	6.94	1.000	991.	43.5	0.0673	12.029	21.857		1.0220	9.97
31	N.F. KOKTULI	Q	5.3	8.20	0.851	6.94	1.000	991.	43.5	0.0673	12.029	22.800		1.0199	9.97
32	N.F. KOKTULI	C	3.5	8.25	0.848	6.94	1.000	992.	43.5	0.0671	12.029	24.580		1.0199	9.97
33	N.F. KOKTULI	E	0.0									28.170			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	6.18	0.929	5.62	1.000	950.	102.8	0.5715	11.936	0.243	5.77	0.1178	8.79
2	N.F. KOKTULI	C	55.7	7.16	0.878	5.62	1.000	968.	102.7	0.3814	11.936	0.469		0.1178	8.79
3	N.F. KOKTULI	C	48.2	7.48	0.861	5.62	1.000	974.	102.6	0.2665	11.936	1.362		0.1178	8.79
4	N.F. KOKTULI	C	44.8	7.52	0.859	5.62	1.000	974.	102.7	0.2221	11.936	1.763		0.1178	8.79
5	N.F. KOKTULI	C	42.1	7.54	0.858	5.62	1.000	975.	102.7	0.2096	11.936	2.080		0.1178	8.79
6	N.F. KOKTULI	C	41.2	7.55	0.858	5.62	1.000	975.	102.7	0.1878	11.936	2.180		0.1178	8.79
7	N.F. KOKTULI	C	39.8	7.56	0.857	5.62	1.000	975.	102.7	0.2045	11.936	2.351		0.1178	8.79
8	N.F. KOKTULI	C	38.6	7.58	0.856	5.62	1.000	975.	102.7	0.1620	11.936	2.495		0.1178	8.79
9	N.F. KOKTULI	Q	36.8	7.58	0.856	5.62	1.000	975.	102.7	0.1620	11.936	2.707		0.9703	7.39
10	N.F. KOKTULI	C	36.5	7.60	0.855	5.62	1.000	976.	102.7	0.1742	11.936	2.930		0.9703	7.39
11	N.F. KOKTULI	B	36.5									2.936			
12	TRIBUTARY 119	H	38.4	7.51	0.860	5.62	1.000	974.	102.7	0.3004	11.936	2.096	6.30	0.4361	7.39
13	TRIBUTARY 119	T	36.5									2.898			
14	N.F. KOKTULI	J	36.5	7.63	0.854	5.62	1.000	976.	102.7	0.1742	11.936	5.834		0.2993	7.39
15	N.F. KOKTULI	Q	35.8	7.63	0.854	5.62	1.000	976.	102.7	0.1742	11.936	6.063		0.2988	7.14
16	N.F. KOKTULI	C	35.4	7.67	0.852	5.62	1.000	977.	102.7	0.1431	11.936	6.175		0.2988	7.14
17	N.F. KOKTULI	C	34.0	7.72	0.849	5.62	1.000	978.	102.7	0.1359	11.936	6.597		0.2988	7.14
18	N.F. KOKTULI	C	31.0	7.78	0.847	5.62	1.000	979.	102.7	0.1504	11.936	7.488		0.2988	7.14
19	N.F. KOKTULI	C	28.5	7.82	0.844	5.62	1.000	980.	102.7	0.1187	11.936	8.237		0.2988	7.14
20	N.F. KOKTULI	Q	27.9	7.82	0.844	5.62	1.000	980.	102.7	0.1187	11.936	8.400		0.5761	7.14
21	N.F. KOKTULI	C	27.0	7.86	0.842	5.62	1.000	980.	102.7	0.1259	11.936	8.965		0.5761	7.14
22	N.F. KOKTULI	C	24.5	8.02	0.835	5.62	1.000	983.	102.8	0.1415	11.936	10.367		0.5761	7.14
23	N.F. KOKTULI	C	16.0	8.18	0.827	5.62	1.000	986.	102.9	0.1020	11.936	15.257		0.5761	7.14
24	N.F. KOKTULI	C	13.8	8.25	0.824	5.62	1.000	987.	102.9	0.0792	11.936	16.524		0.5761	7.14
25	N.F. KOKTULI	Q	13.7	8.25	0.824	5.62	1.000	987.	102.9	0.0792	11.936	16.600		0.1115	9.44
26	N.F. KOKTULI	C	11.6	8.30	0.821	5.62	1.000	988.	102.9	0.0778	11.936	16.838		0.1115	9.44
27	N.F. KOKTULI	C	9.9	8.34	0.819	5.62	1.000	989.	102.9	0.0745	11.936	17.025		0.1115	9.44
28	N.F. KOKTULI	Q	9.3	8.34	0.819	5.62	1.000	989.	102.9	0.0745	11.936	17.090		0.8439	9.44
29	N.F. KOKTULI	C	7.6	8.39	0.817	5.62	1.000	990.	102.9	0.0748	11.936	18.566		0.8439	9.44
30	N.F. KOKTULI	C	6.2	8.43	0.815	5.62	1.000	991.	102.9	0.0685	11.936	19.721		0.8439	9.44
31	N.F. KOKTULI	Q	5.3	8.43	0.815	5.62	1.000	991.	102.9	0.0685	11.936	20.500		0.8433	9.44
32	N.F. KOKTULI	C	3.5	8.48	0.812	5.62	1.000	992.	102.9	0.0680	11.936	21.972		0.8433	9.44
33	N.F. KOKTULI	E	0.0									24.940			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.95	0.919	6.10	1.000	950.	41.6	0.5747	11.843	0.214	4.72	0.1039	8.45
2	N.F. KOKTULI	C	55.7	5.93	0.868	6.10	1.000	968.	41.5	0.3859	11.843	0.414		0.1039	8.45
3	N.F. KOKTULI	C	48.2	6.25	0.852	6.10	1.000	974.	41.5	0.2680	11.843	1.202		0.1039	8.45
4	N.F. KOKTULI	C	44.8	6.29	0.850	6.10	1.000	974.	41.5	0.2247	11.843	1.555		0.1039	8.45
5	N.F. KOKTULI	C	42.1	6.31	0.849	6.10	1.000	975.	41.5	0.2117	11.843	1.835		0.1039	8.45
6	N.F. KOKTULI	C	41.2	6.32	0.848	6.10	1.000	975.	41.5	0.1907	11.843	1.923		0.1039	8.45
7	N.F. KOKTULI	C	39.8	6.33	0.848	6.10	1.000	975.	41.6	0.2057	11.843	2.074		0.1039	8.45
8	N.F. KOKTULI	C	38.6	6.35	0.847	6.10	1.000	975.	41.6	0.1648	11.843	2.201		0.1039	8.45
9	N.F. KOKTULI	Q	36.8	6.35	0.847	6.10	1.000	975.	41.6	0.1648	11.843	2.388		0.8517	7.17
10	N.F. KOKTULI	C	36.5	6.37	0.846	6.10	1.000	976.	41.6	0.1761	11.843	2.584		0.8517	7.17
11	N.F. KOKTULI	B	36.5									2.589			
12	TRIBUTARY 119	H	38.4	6.28	0.851	6.10	1.000	974.	41.6	0.3021	11.843	1.434	5.04	0.2730	7.17
13	TRIBUTARY 119	T	36.5									1.936			
14	N.F. KOKTULI	J	36.5	6.40	0.845	6.10	1.000	976.	41.6	0.1761	11.843	4.524		0.2614	7.17
15	N.F. KOKTULI	Q	35.8	6.40	0.845	6.10	1.000	976.	41.6	0.1761	11.843	4.724		0.2052	6.91
16	N.F. KOKTULI	C	35.4	6.44	0.843	6.10	1.000	977.	41.6	0.1458	11.843	4.801		0.2052	6.91
17	N.F. KOKTULI	C	34.0	6.49	0.840	6.10	1.000	978.	41.5	0.1383	11.843	5.091		0.2052	6.91
18	N.F. KOKTULI	C	31.0	6.55	0.837	6.10	1.000	979.	41.6	0.1522	11.843	5.703		0.2052	6.91
19	N.F. KOKTULI	C	28.5	6.59	0.835	6.10	1.000	980.	41.6	0.1209	11.843	6.217		0.2052	6.91
20	N.F. KOKTULI	Q	27.9	6.59	0.835	6.10	1.000	980.	41.6	0.1209	11.843	6.329		0.3949	6.91
21	N.F. KOKTULI	C	27.0	6.63	0.833	6.10	1.000	980.	41.6	0.1278	11.843	6.716		0.3949	6.91
22	N.F. KOKTULI	C	24.5	6.79	0.825	6.10	1.000	983.	41.6	0.1427	11.843	7.678		0.3949	6.91
23	N.F. KOKTULI	C	16.0	6.95	0.818	6.10	1.000	986.	41.6	0.1038	11.844	11.029		0.3949	6.91
24	N.F. KOKTULI	C	13.8	7.02	0.815	6.10	1.000	987.	41.7	0.0805	11.844	11.898		0.3949	6.91
25	N.F. KOKTULI	Q	13.7	7.02	0.815	6.10	1.000	987.	41.7	0.0805	11.844	11.950		0.0819	8.99
26	N.F. KOKTULI	C	11.6	7.07	0.812	6.10	1.000	988.	41.7	0.0789	11.844	12.125		0.0819	8.99
27	N.F. KOKTULI	C	9.9	7.11	0.810	6.10	1.000	989.	41.7	0.0756	11.844	12.262		0.0819	8.99
28	N.F. KOKTULI	Q	9.3	7.11	0.810	6.10	1.000	989.	41.7	0.0756	11.844	12.310		0.3737	8.99
29	N.F. KOKTULI	C	7.6	7.16	0.808	6.10	1.000	990.	41.6	0.0757	11.844	12.964		0.3737	8.99
30	N.F. KOKTULI	C	6.2	7.20	0.806	6.10	1.000	991.	41.6	0.0696	11.844	13.475		0.3737	8.99
31	N.F. KOKTULI	Q	5.3	7.20	0.806	6.10	1.000	991.	41.6	0.0696	11.844	13.820		0.3723	8.99
32	N.F. KOKTULI	C	3.5	7.25	0.803	6.10	1.000	992.	41.7	0.0689	11.844	14.470		0.3723	8.99
33	N.F. KOKTULI	E	0.0									15.780			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	5.10	0.960	4.52	1.000	950.	41.6	0.5777	11.750	0.238	4.68	0.1156	8.19
2	N.F. KOKTULI	C	55.7	6.08	0.906	4.52	1.000	968.	41.5	0.3905	11.750	0.461		0.1156	8.19
3	N.F. KOKTULI	C	48.2	6.40	0.890	4.52	1.000	974.	41.5	0.2696	11.750	1.337		0.1156	8.19
4	N.F. KOKTULI	C	44.8	6.44	0.888	4.52	1.000	974.	41.5	0.2273	11.750	1.730		0.1156	8.19
5	N.F. KOKTULI	C	42.1	6.46	0.887	4.52	1.000	975.	41.5	0.2140	11.750	2.041		0.1156	8.19
6	N.F. KOKTULI	C	41.2	6.47	0.886	4.52	1.000	975.	41.5	0.1937	11.750	2.139		0.1156	8.19
7	N.F. KOKTULI	C	39.8	6.48	0.886	4.52	1.000	975.	41.5	0.2069	11.750	2.307		0.1156	8.19
8	N.F. KOKTULI	C	38.6	6.50	0.884	4.52	1.000	975.	41.5	0.1678	11.750	2.448		0.1156	8.19
9	N.F. KOKTULI	Q	36.8	6.50	0.884	4.52	1.000	975.	41.5	0.1678	11.750	2.656		0.9492	6.97
10	N.F. KOKTULI	C	36.5	6.52	0.883	4.52	1.000	976.	41.5	0.1781	11.750	2.874		0.9492	6.97
11	N.F. KOKTULI	B	36.5									2.880			
12	TRIBUTARY 119	H	38.4	6.43	0.888	4.52	1.000	974.	41.5	0.3038	11.750	2.310	5.91	0.4046	6.97
13	TRIBUTARY 119	T	36.5									3.054			
14	N.F. KOKTULI	J	36.5	6.55	0.882	4.52	1.000	976.	41.5	0.1781	11.750	5.935		0.2928	6.97
15	N.F. KOKTULI	Q	35.8	6.55	0.882	4.52	1.000	976.	41.5	0.1781	11.750	6.159		0.3049	6.80
16	N.F. KOKTULI	C	35.4	6.59	0.880	4.52	1.000	977.	41.5	0.1486	11.750	6.273		0.3049	6.80
17	N.F. KOKTULI	C	34.0	6.64	0.877	4.52	1.000	978.	41.5	0.1408	11.750	6.704		0.3049	6.80
18	N.F. KOKTULI	C	31.0	6.70	0.874	4.52	1.000	979.	41.5	0.1540	11.750	7.613		0.3049	6.80
19	N.F. KOKTULI	C	28.5	6.74	0.872	4.52	1.000	980.	41.5	0.1231	11.750	8.377		0.3049	6.80
20	N.F. KOKTULI	Q	27.9	6.74	0.872	4.52	1.000	980.	41.5	0.1231	11.750	8.543		0.5232	6.80
21	N.F. KOKTULI	C	27.0	6.78	0.870	4.52	1.000	980.	41.5	0.1299	11.750	9.056		0.5232	6.80
22	N.F. KOKTULI	C	24.5	6.94	0.862	4.52	1.000	983.	41.6	0.1440	11.751	10.330		0.5232	6.80
23	N.F. KOKTULI	C	16.0	7.10	0.854	4.52	1.000	986.	41.6	0.1056	11.751	14.770		0.5232	6.80
24	N.F. KOKTULI	C	13.8	7.17	0.851	4.52	1.000	987.	41.6	0.0820	11.751	15.921		0.5232	6.80
25	N.F. KOKTULI	Q	13.7	7.17	0.851	4.52	1.000	987.	41.6	0.0820	11.751	15.990		0.1070	8.62
26	N.F. KOKTULI	C	11.6	7.22	0.848	4.52	1.000	988.	41.6	0.0801	11.751	16.218		0.1070	8.62
27	N.F. KOKTULI	C	9.9	7.26	0.846	4.52	1.000	989.	41.6	0.0767	11.751	16.398		0.1070	8.62
28	N.F. KOKTULI	Q	9.3	7.26	0.846	4.52	1.000	989.	41.6	0.0767	11.751	16.460		0.7770	8.62
29	N.F. KOKTULI	C	7.6	7.31	0.844	4.52	1.000	990.	41.6	0.0766	11.751	17.819		0.7770	8.62
30	N.F. KOKTULI	C	6.2	7.35	0.842	4.52	1.000	991.	41.6	0.0708	11.751	18.883		0.7770	8.62
31	N.F. KOKTULI	Q	5.3	7.35	0.842	4.52	1.000	991.	41.6	0.0708	11.751	19.600		0.7749	8.62
32	N.F. KOKTULI	C	3.5	7.40	0.839	4.52	1.000	992.	41.6	0.0698	11.751	20.952		0.7749	8.62
33	N.F. KOKTULI	E	0.0									23.680			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.55	0.960	5.17	1.000	950.	38.9	0.5808	11.657	0.223	4.73	0.1083	7.99
2	N.F. KOKTULI	C	55.7	5.53	0.906	5.17	1.000	968.	38.8	0.3952	11.657	0.432		0.1083	7.99
3	N.F. KOKTULI	C	48.2	5.85	0.890	5.17	1.000	974.	38.8	0.2713	11.657	1.253		0.1083	7.99
4	N.F. KOKTULI	C	44.8	5.89	0.888	5.17	1.000	974.	38.8	0.2301	11.657	1.621		0.1083	7.99
5	N.F. KOKTULI	C	42.1	5.91	0.887	5.17	1.000	975.	38.8	0.2163	11.657	1.913		0.1083	7.99
6	N.F. KOKTULI	C	41.2	5.92	0.886	5.17	1.000	975.	38.8	0.1968	11.657	2.004		0.1083	7.99
7	N.F. KOKTULI	C	39.8	5.93	0.886	5.17	1.000	975.	38.8	0.2082	11.657	2.162		0.1083	7.99
8	N.F. KOKTULI	C	38.6	5.95	0.884	5.17	1.000	975.	38.8	0.1708	11.657	2.294		0.1083	7.99
9	N.F. KOKTULI	Q	36.8	5.95	0.884	5.17	1.000	975.	38.8	0.1708	11.657	2.489		0.8898	6.81
10	N.F. KOKTULI	C	36.5	5.97	0.883	5.17	1.000	976.	38.8	0.1801	11.657	2.694		0.8898	6.81
11	N.F. KOKTULI	B	36.5									2.699			
12	TRIBUTARY 119	H	38.4	5.88	0.888	5.17	1.000	974.	38.8	0.3056	11.658	2.210	5.73	0.4252	6.81
13	TRIBUTARY 119	T	36.5									2.992			
14	N.F. KOKTULI	J	36.5	6.00	0.882	5.17	1.000	976.	38.8	0.1801	11.657	5.691		0.2732	6.81
15	N.F. KOKTULI	Q	35.8	6.00	0.882	5.17	1.000	976.	38.8	0.1801	11.657	5.900		0.2887	6.73
16	N.F. KOKTULI	C	35.4	6.04	0.880	5.17	1.000	977.	38.8	0.1515	11.657	6.008		0.2887	6.73
17	N.F. KOKTULI	C	34.0	6.09	0.877	5.17	1.000	978.	38.8	0.1434	11.657	6.416		0.2887	6.73
18	N.F. KOKTULI	C	31.0	6.15	0.874	5.17	1.000	979.	38.8	0.1558	11.657	7.277		0.2887	6.73
19	N.F. KOKTULI	C	28.5	6.19	0.872	5.17	1.000	980.	38.8	0.1255	11.658	8.000		0.2887	6.73
20	N.F. KOKTULI	Q	27.9	6.19	0.872	5.17	1.000	980.	38.8	0.1255	11.658	8.158		0.4603	6.73
21	N.F. KOKTULI	C	27.0	6.23	0.870	5.17	1.000	980.	38.8	0.1320	11.658	8.610		0.4603	6.73
22	N.F. KOKTULI	C	24.5	6.39	0.862	5.17	1.000	983.	38.9	0.1452	11.658	9.730		0.4603	6.73
23	N.F. KOKTULI	C	16.0	6.55	0.854	5.17	1.000	986.	38.9	0.1075	11.659	13.637		0.4603	6.73
24	N.F. KOKTULI	C	13.8	6.62	0.851	5.17	1.000	987.	38.9	0.0834	11.659	14.649		0.4603	6.73
25	N.F. KOKTULI	Q	13.7	6.62	0.851	5.17	1.000	987.	38.9	0.0834	11.659	14.710		0.0979	8.36
26	N.F. KOKTULI	C	11.6	6.67	0.848	5.17	1.000	988.	38.9	0.0813	11.659	14.919		0.0979	8.36
27	N.F. KOKTULI	C	9.9	6.71	0.846	5.17	1.000	989.	38.9	0.0779	11.659	15.083		0.0979	8.36
28	N.F. KOKTULI	Q	9.3	6.71	0.846	5.17	1.000	989.	38.9	0.0779	11.659	15.140		0.6409	8.36
29	N.F. KOKTULI	C	7.6	6.76	0.844	5.17	1.000	990.	38.9	0.0776	11.659	16.261		0.6409	8.36
30	N.F. KOKTULI	C	6.2	6.80	0.842	5.17	1.000	991.	38.9	0.0721	11.659	17.138		0.6409	8.36
31	N.F. KOKTULI	Q	5.3	6.80	0.842	5.17	1.000	991.	38.9	0.0721	11.659	17.730		0.6382	8.36
32	N.F. KOKTULI	C	3.5	6.85	0.839	5.17	1.000	992.	38.9	0.0708	11.659	18.844		0.6382	8.36
33	N.F. KOKTULI	E	0.0									21.090			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	4.14	0.970	5.82	1.000	950.	60.0	0.5840	11.564	0.230	4.44	0.1119	7.81
2	N.F. KOKTULI	C	55.7	5.12	0.916	5.82	1.000	968.	59.9	0.4001	11.564	0.446		0.1119	7.81
3	N.F. KOKTULI	C	48.2	5.44	0.899	5.82	1.000	974.	59.8	0.2730	11.564	1.293		0.1119	7.81
4	N.F. KOKTULI	C	44.8	5.48	0.897	5.82	1.000	974.	59.9	0.2329	11.564	1.674		0.1119	7.81
5	N.F. KOKTULI	C	42.1	5.50	0.896	5.82	1.000	975.	59.9	0.2186	11.564	1.975		0.1119	7.81
6	N.F. KOKTULI	C	41.2	5.51	0.896	5.82	1.000	975.	59.9	0.2000	11.564	2.069		0.1119	7.81
7	N.F. KOKTULI	C	39.8	5.52	0.895	5.82	1.000	975.	59.9	0.2095	11.565	2.232		0.1119	7.81
8	N.F. KOKTULI	C	38.6	5.54	0.894	5.82	1.000	975.	59.9	0.1740	11.565	2.369		0.1119	7.81
9	N.F. KOKTULI	Q	36.8	5.54	0.894	5.82	1.000	975.	59.9	0.1740	11.565	2.570		0.9153	6.66
10	N.F. KOKTULI	C	36.5	5.56	0.893	5.82	1.000	976.	59.9	0.1822	11.565	2.781		0.9153	6.66
11	N.F. KOKTULI	B	36.5									2.786			
12	TRIBUTARY 119	H	38.4	5.47	0.898	5.82	1.000	974.	59.9	0.3074	11.565	2.300	5.65	0.5008	6.66
13	TRIBUTARY 119	T	36.5									3.221			
14	N.F. KOKTULI	J	36.5	5.59	0.892	5.82	1.000	976.	59.9	0.1822	11.565	6.007		0.2837	6.66
15	N.F. KOKTULI	Q	35.8	5.59	0.892	5.82	1.000	976.	59.9	0.1822	11.565	6.224		0.3088	6.65
16	N.F. KOKTULI	C	35.4	5.63	0.889	5.82	1.000	977.	59.9	0.1546	11.565	6.340		0.3088	6.65
17	N.F. KOKTULI	C	34.0	5.68	0.887	5.82	1.000	978.	59.9	0.1461	11.565	6.776		0.3088	6.65
18	N.F. KOKTULI	C	31.0	5.74	0.884	5.82	1.000	979.	59.9	0.1577	11.565	7.697		0.3088	6.65
19	N.F. KOKTULI	C	28.5	5.78	0.882	5.82	1.000	980.	59.9	0.1280	11.565	8.470		0.3088	6.65
20	N.F. KOKTULI	Q	27.9	5.78	0.882	5.82	1.000	980.	59.9	0.1280	11.565	8.639		0.5066	6.65
21	N.F. KOKTULI	C	27.0	5.82	0.879	5.82	1.000	980.	59.9	0.1342	11.565	9.136		0.5066	6.65
22	N.F. KOKTULI	C	24.5	5.98	0.871	5.82	1.000	983.	60.0	0.1465	11.565	10.369		0.5066	6.65
23	N.F. KOKTULI	C	16.0	6.14	0.863	5.82	1.000	986.	60.0	0.1095	11.566	14.669		0.5066	6.65
24	N.F. KOKTULI	C	13.8	6.21	0.860	5.82	1.000	987.	60.0	0.0850	11.566	15.783		0.5066	6.65
25	N.F. KOKTULI	Q	13.7	6.21	0.860	5.82	1.000	987.	60.0	0.0850	11.566	15.850		0.1070	8.14
26	N.F. KOKTULI	C	11.6	6.26	0.857	5.82	1.000	988.	60.0	0.0825	11.566	16.078		0.1070	8.14
27	N.F. KOKTULI	C	9.9	6.30	0.855	5.82	1.000	989.	60.0	0.0792	11.566	16.258		0.1070	8.14
28	N.F. KOKTULI	Q	9.3	6.30	0.855	5.82	1.000	989.	60.0	0.0792	11.566	16.320		0.7622	8.14
29	N.F. KOKTULI	C	7.6	6.35	0.853	5.82	1.000	990.	60.0	0.0786	11.566	17.653		0.7622	8.14
30	N.F. KOKTULI	C	6.2	6.39	0.851	5.82	1.000	991.	60.0	0.0734	11.566	18.697		0.7622	8.14
31	N.F. KOKTULI	Q	5.3	6.39	0.851	5.82	1.000	991.	60.0	0.0734	11.566	19.400		0.7597	8.14
32	N.F. KOKTULI	C	3.5	6.44	0.848	5.82	1.000	992.	60.0	0.0718	11.566	20.726		0.7597	8.14
33	N.F. KOKTULI	E	0.0									23.400			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	3.89	0.960	3.30	1.000	950.	59.9	0.5872	11.471	0.221	4.36	0.1075	7.64
2	N.F. KOKTULI	C	55.7	4.87	0.906	3.30	1.000	968.	59.8	0.4051	11.471	0.428		0.1075	7.64
3	N.F. KOKTULI	C	48.2	5.19	0.890	3.30	1.000	974.	59.8	0.2747	11.471	1.243		0.1075	7.64
4	N.F. KOKTULI	C	44.8	5.23	0.888	3.30	1.000	974.	59.8	0.2358	11.471	1.608		0.1075	7.64
5	N.F. KOKTULI	C	42.1	5.25	0.887	3.30	1.000	975.	59.8	0.2211	11.472	1.897		0.1075	7.64
6	N.F. KOKTULI	C	41.2	5.26	0.886	3.30	1.000	975.	59.8	0.2034	11.472	1.988		0.1075	7.64
7	N.F. KOKTULI	C	39.8	5.27	0.886	3.30	1.000	975.	59.8	0.2108	11.472	2.145		0.1075	7.64
8	N.F. KOKTULI	C	38.6	5.29	0.884	3.30	1.000	975.	59.8	0.1773	11.472	2.276		0.1075	7.64
9	N.F. KOKTULI	Q	36.8	5.29	0.884	3.30	1.000	975.	59.8	0.1773	11.472	2.469		0.8814	6.51
10	N.F. KOKTULI	C	36.5	5.31	0.883	3.30	1.000	976.	59.8	0.1843	11.472	2.672		0.8814	6.51
11	N.F. KOKTULI	B	36.5									2.677			
12	TRIBUTARY 119	H	38.4	5.22	0.888	3.30	1.000	974.	59.8	0.3092	11.472	1.542	5.37	0.3377	6.51
13	TRIBUTARY 119	T	36.5									2.163			
14	N.F. KOKTULI	J	36.5	5.34	0.882	3.30	1.000	976.	59.8	0.1843	11.472	4.840		0.2706	6.51
15	N.F. KOKTULI	Q	35.8	5.34	0.882	3.30	1.000	976.	59.8	0.1843	11.472	5.047		0.2292	6.54
16	N.F. KOKTULI	C	35.4	5.38	0.880	3.30	1.000	977.	59.8	0.1577	11.472	5.133		0.2292	6.54
17	N.F. KOKTULI	C	34.0	5.43	0.877	3.30	1.000	978.	59.8	0.1490	11.472	5.457		0.2292	6.54
18	N.F. KOKTULI	C	31.0	5.49	0.874	3.30	1.000	979.	59.8	0.1597	11.472	6.140		0.2292	6.54
19	N.F. KOKTULI	C	28.5	5.53	0.872	3.30	1.000	980.	59.8	0.1305	11.472	6.714		0.2292	6.54
20	N.F. KOKTULI	Q	27.9	5.53	0.872	3.30	1.000	980.	59.8	0.1305	11.472	6.839		0.4469	6.54
21	N.F. KOKTULI	C	27.0	5.57	0.870	3.30	1.000	980.	59.8	0.1365	11.472	7.277		0.4469	6.54
22	N.F. KOKTULI	C	24.5	5.73	0.862	3.30	1.000	983.	59.9	0.1478	11.473	8.365		0.4469	6.54
23	N.F. KOKTULI	C	16.0	5.89	0.854	3.30	1.000	986.	60.0	0.1116	11.473	12.158		0.4469	6.54
24	N.F. KOKTULI	C	13.8	5.96	0.851	3.30	1.000	987.	60.0	0.0865	11.474	13.141		0.4469	6.54
25	N.F. KOKTULI	Q	13.7	5.96	0.851	3.30	1.000	987.	60.0	0.0865	11.474	13.200		0.0910	7.93
26	N.F. KOKTULI	C	11.6	6.01	0.848	3.30	1.000	988.	60.0	0.0838	11.474	13.394		0.0910	7.93
27	N.F. KOKTULI	C	9.9	6.05	0.846	3.30	1.000	989.	60.0	0.0805	11.474	13.547		0.0910	7.93
28	N.F. KOKTULI	Q	9.3	6.05	0.846	3.30	1.000	989.	60.0	0.0805	11.474	13.600		0.4875	7.93
29	N.F. KOKTULI	C	7.6	6.10	0.844	3.30	1.000	990.	60.0	0.0797	11.474	14.453		0.4875	7.93
30	N.F. KOKTULI	C	6.2	6.14	0.842	3.30	1.000	991.	60.0	0.0747	11.474	15.120		0.4875	7.93
31	N.F. KOKTULI	Q	5.3	6.14	0.842	3.30	1.000	991.	60.0	0.0747	11.474	15.570		0.4900	7.93
32	N.F. KOKTULI	C	3.5	6.19	0.839	3.30	1.000	992.	60.0	0.0728	11.474	16.425		0.4900	7.93
33	N.F. KOKTULI	E	0.0									18.150			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	3.54	0.940	6.58	1.000	950.	53.7	0.5906	11.378	0.208	4.15	0.1012	7.45
2	N.F. KOKTULI	C	55.7	4.52	0.887	6.58	1.000	968.	53.6	0.4102	11.378	0.403		0.1012	7.45
3	N.F. KOKTULI	C	48.2	4.84	0.871	6.58	1.000	974.	53.5	0.2764	11.378	1.170		0.1012	7.45
4	N.F. KOKTULI	C	44.8	4.88	0.869	6.58	1.000	974.	53.6	0.2388	11.379	1.514		0.1012	7.45
5	N.F. KOKTULI	C	42.1	4.90	0.868	6.58	1.000	975.	53.6	0.2236	11.379	1.786		0.1012	7.45
6	N.F. KOKTULI	C	41.2	4.91	0.867	6.58	1.000	975.	53.6	0.2068	11.379	1.871		0.1012	7.45
7	N.F. KOKTULI	C	39.8	4.92	0.867	6.58	1.000	975.	53.6	0.2121	11.379	2.019		0.1012	7.45
8	N.F. KOKTULI	C	38.6	4.94	0.866	6.58	1.000	975.	53.6	0.1808	11.379	2.142		0.1012	7.45
9	N.F. KOKTULI	Q	36.8	4.94	0.866	6.58	1.000	975.	53.6	0.1808	11.379	2.324		0.8220	6.36
10	N.F. KOKTULI	C	36.5	4.96	0.865	6.58	1.000	976.	53.6	0.1866	11.379	2.513		0.8220	6.36
11	N.F. KOKTULI	B	36.5									2.518			
12	TRIBUTARY 119	H	38.4	4.87	0.870	6.58	1.000	974.	53.6	0.3110	11.379	1.174	4.86	0.2572	6.36
13	TRIBUTARY 119	T	36.5									1.647			
14	N.F. KOKTULI	J	36.5	4.99	0.863	6.58	1.000	976.	53.6	0.1866	11.379	4.165		0.2536	6.36
15	N.F. KOKTULI	Q	35.8	4.99	0.863	6.58	1.000	976.	53.6	0.1866	11.379	4.359		0.1789	6.41
16	N.F. KOKTULI	C	35.4	5.03	0.861	6.58	1.000	977.	53.6	0.1610	11.379	4.426		0.1789	6.41
17	N.F. KOKTULI	C	34.0	5.08	0.859	6.58	1.000	978.	53.6	0.1520	11.379	4.679		0.1789	6.41
18	N.F. KOKTULI	C	31.0	5.14	0.856	6.58	1.000	979.	53.6	0.1617	11.379	5.212		0.1789	6.41
19	N.F. KOKTULI	C	28.5	5.18	0.854	6.58	1.000	980.	53.6	0.1332	11.379	5.660		0.1789	6.41
20	N.F. KOKTULI	Q	27.9	5.18	0.854	6.58	1.000	980.	53.6	0.1332	11.379	5.758		0.3774	6.41
21	N.F. KOKTULI	C	27.0	5.22	0.852	6.58	1.000	980.	53.6	0.1388	11.379	6.128		0.3774	6.41
22	N.F. KOKTULI	C	24.5	5.38	0.844	6.58	1.000	983.	53.7	0.1492	11.380	7.047		0.3774	6.41
23	N.F. KOKTULI	C	16.0	5.54	0.836	6.58	1.000	986.	53.7	0.1137	11.381	10.250		0.3774	6.41
24	N.F. KOKTULI	C	13.8	5.61	0.833	6.58	1.000	987.	53.7	0.0882	11.381	11.080		0.3774	6.41
25	N.F. KOKTULI	Q	13.7	5.61	0.833	6.58	1.000	987.	53.7	0.0882	11.381	11.130		0.0751	7.67
26	N.F. KOKTULI	C	11.6	5.66	0.830	6.58	1.000	988.	53.7	0.0851	11.381	11.290		0.0751	7.67
27	N.F. KOKTULI	C	9.9	5.70	0.828	6.58	1.000	989.	53.7	0.0818	11.381	11.416		0.0751	7.67
28	N.F. KOKTULI	Q	9.3	5.70	0.828	6.58	1.000	989.	53.7	0.0818	11.381	11.460		0.3044	7.67
29	N.F. KOKTULI	C	7.6	5.75	0.826	6.58	1.000	990.	53.7	0.0808	11.381	11.992		0.3044	7.67
30	N.F. KOKTULI	C	6.2	5.79	0.824	6.58	1.000	991.	53.7	0.0761	11.381	12.409		0.3044	7.67
31	N.F. KOKTULI	Q	5.3	5.79	0.824	6.58	1.000	991.	53.7	0.0761	11.381	12.690		0.3020	7.67
32	N.F. KOKTULI	C	3.5	5.84	0.821	6.58	1.000	992.	53.7	0.0739	11.381	13.217		0.3020	7.67
33	N.F. KOKTULI	E	0.0									14.280			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	3.10	0.970	7.34	1.000	950.	29.0	0.5940	11.285	0.234	3.36	0.1134	7.24
2	N.F. KOKTULI	C	55.7	4.08	0.916	7.34	1.000	968.	28.9	0.4155	11.285	0.452		0.1134	7.24
3	N.F. KOKTULI	C	48.2	4.40	0.899	7.34	1.000	974.	28.9	0.2782	11.285	1.312		0.1134	7.24
4	N.F. KOKTULI	C	44.8	4.44	0.897	7.34	1.000	974.	28.9	0.2420	11.286	1.697		0.1134	7.24
5	N.F. KOKTULI	C	42.1	4.46	0.896	7.34	1.000	975.	28.9	0.2262	11.286	2.002		0.1134	7.24
6	N.F. KOKTULI	C	41.2	4.47	0.896	7.34	1.000	975.	28.9	0.2104	11.286	2.098		0.1134	7.24
7	N.F. KOKTULI	C	39.8	4.48	0.895	7.34	1.000	975.	28.9	0.2135	11.286	2.264		0.1134	7.24
8	N.F. KOKTULI	C	38.6	4.50	0.894	7.34	1.000	975.	28.9	0.1843	11.286	2.402		0.1134	7.24
9	N.F. KOKTULI	Q	36.8	4.50	0.894	7.34	1.000	975.	28.9	0.1843	11.286	2.606		0.9322	6.18
10	N.F. KOKTULI	C	36.5	4.52	0.893	7.34	1.000	976.	29.0	0.1888	11.286	2.820		0.9322	6.18
11	N.F. KOKTULI	B	36.5									2.826			
12	TRIBUTARY 119	H	38.4	4.43	0.898	7.34	1.000	974.	29.0	0.3129	11.286	3.466	4.88	0.4290	6.18
13	TRIBUTARY 119	T	36.5									4.255			
14	N.F. KOKTULI	J	36.5	4.55	0.892	7.34	1.000	976.	28.9	0.1888	11.286	7.080		0.2876	6.18
15	N.F. KOKTULI	Q	35.8	4.55	0.892	7.34	1.000	976.	28.9	0.1888	11.286	7.300		0.3777	6.26
16	N.F. KOKTULI	C	35.4	4.59	0.889	7.34	1.000	977.	28.9	0.1644	11.286	7.442		0.3777	6.26
17	N.F. KOKTULI	C	34.0	4.64	0.887	7.34	1.000	978.	28.9	0.1551	11.286	7.975		0.3777	6.26
18	N.F. KOKTULI	C	31.0	4.70	0.884	7.34	1.000	979.	28.9	0.1638	11.286	9.101		0.3777	6.26
19	N.F. KOKTULI	C	28.5	4.74	0.882	7.34	1.000	980.	28.9	0.1360	11.286	10.048		0.3777	6.26
20	N.F. KOKTULI	Q	27.9	4.74	0.882	7.34	1.000	980.	28.9	0.1360	11.286	10.254		0.5112	6.26
21	N.F. KOKTULI	C	27.0	4.78	0.879	7.34	1.000	980.	28.9	0.1413	11.286	10.755		0.5112	6.26
22	N.F. KOKTULI	C	24.5	4.94	0.871	7.34	1.000	983.	29.0	0.1505	11.287	12.000		0.5112	6.26
23	N.F. KOKTULI	C	16.0	5.10	0.863	7.34	1.000	986.	29.0	0.1160	11.288	16.338		0.5112	6.26
24	N.F. KOKTULI	C	13.8	5.17	0.860	7.34	1.000	987.	29.0	0.0899	11.289	17.463		0.5112	6.26
25	N.F. KOKTULI	Q	13.7	5.17	0.860	7.34	1.000	987.	29.0	0.0899	11.289	17.530		0.1183	7.40
26	N.F. KOKTULI	C	11.6	5.22	0.857	7.34	1.000	988.	29.0	0.0865	11.289	17.782		0.1183	7.40
27	N.F. KOKTULI	C	9.9	5.26	0.855	7.34	1.000	989.	29.0	0.0832	11.289	17.981		0.1183	7.40
28	N.F. KOKTULI	Q	9.3	5.26	0.855	7.34	1.000	989.	29.0	0.0832	11.289	18.050		0.9503	7.40
29	N.F. KOKTULI	C	7.6	5.31	0.853	7.34	1.000	990.	29.0	0.0819	11.289	19.712		0.9503	7.40
30	N.F. KOKTULI	C	6.2	5.35	0.851	7.34	1.000	991.	29.0	0.0776	11.289	21.013		0.9503	7.40
31	N.F. KOKTULI	Q	5.3	5.35	0.851	7.34	1.000	991.	29.0	0.0776	11.289	21.890		0.9497	7.40
32	N.F. KOKTULI	C	3.5	5.40	0.848	7.34	1.000	992.	29.0	0.0750	11.289	23.547		0.9497	7.40
33	N.F. KOKTULI	E	0.0									26.890			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	3.79	0.950	3.69	1.000	950.	64.9	0.5976	11.193	0.266	3.40	0.1289	7.04
2	N.F. KOKTULI	C	55.7	4.77	0.897	3.69	1.000	968.	64.8	0.4207	11.193	0.513		0.1289	7.04
3	N.F. KOKTULI	C	48.2	5.09	0.880	3.69	1.000	974.	64.8	0.2800	11.193	1.490		0.1289	7.04
4	N.F. KOKTULI	C	44.8	5.13	0.878	3.69	1.000	974.	64.8	0.2452	11.193	1.928		0.1289	7.04
5	N.F. KOKTULI	C	42.1	5.15	0.877	3.69	1.000	975.	64.8	0.2289	11.193	2.275		0.1289	7.04
6	N.F. KOKTULI	C	41.2	5.16	0.877	3.69	1.000	975.	64.8	0.2141	11.193	2.384		0.1289	7.04
7	N.F. KOKTULI	C	39.8	5.17	0.876	3.69	1.000	975.	64.8	0.2149	11.193	2.572		0.1289	7.04
8	N.F. KOKTULI	C	38.6	5.19	0.875	3.69	1.000	975.	64.8	0.1881	11.193	2.729		0.1289	7.04
9	N.F. KOKTULI	Q	36.8	5.19	0.875	3.69	1.000	975.	64.8	0.1881	11.193	2.961		1.0678	6.00
10	N.F. KOKTULI	C	36.5	5.21	0.874	3.69	1.000	976.	64.8	0.1912	11.193	3.207		1.0678	6.00
11	N.F. KOKTULI	B	36.5									3.213			
12	TRIBUTARY 119	H	38.4	5.12	0.879	3.69	1.000	974.	64.9	0.3149	11.194	1.723	4.73	0.3518	6.00
13	TRIBUTARY 119	T	36.5									2.370			
14	N.F. KOKTULI	J	36.5	5.24	0.873	3.69	1.000	976.	64.8	0.1912	11.193	5.584		0.3294	6.00
15	N.F. KOKTULI	Q	35.8	5.24	0.873	3.69	1.000	976.	64.8	0.1912	11.193	5.836		0.2847	6.18
16	N.F. KOKTULI	C	35.4	5.28	0.871	3.69	1.000	977.	64.8	0.1680	11.193	5.943		0.2847	6.18
17	N.F. KOKTULI	C	34.0	5.33	0.868	3.69	1.000	978.	64.8	0.1583	11.193	6.345		0.2847	6.18
18	N.F. KOKTULI	C	31.0	5.39	0.865	3.69	1.000	979.	64.8	0.1659	11.194	7.194		0.2847	6.18
19	N.F. KOKTULI	C	28.5	5.43	0.863	3.69	1.000	980.	64.8	0.1389	11.194	7.907		0.2847	6.18
20	N.F. KOKTULI	Q	27.9	5.43	0.863	3.69	1.000	980.	64.8	0.1389	11.194	8.062		0.5394	6.18
21	N.F. KOKTULI	C	27.0	5.47	0.861	3.69	1.000	980.	64.8	0.1438	11.194	8.591		0.5394	6.18
22	N.F. KOKTULI	C	24.5	5.63	0.853	3.69	1.000	983.	64.9	0.1519	11.195	9.904		0.5394	6.18
23	N.F. KOKTULI	C	16.0	5.79	0.845	3.69	1.000	986.	65.0	0.1183	11.196	14.482		0.5394	6.18
24	N.F. KOKTULI	C	13.8	5.86	0.842	3.69	1.000	987.	65.0	0.0916	11.196	15.669		0.5394	6.18
25	N.F. KOKTULI	Q	13.7	5.86	0.842	3.69	1.000	987.	65.0	0.0916	11.196	15.740		0.1047	7.20
26	N.F. KOKTULI	C	11.6	5.91	0.839	3.69	1.000	988.	65.0	0.0879	11.196	15.963		0.1047	7.20
27	N.F. KOKTULI	C	9.9	5.95	0.837	3.69	1.000	989.	65.0	0.0846	11.196	16.139		0.1047	7.20
28	N.F. KOKTULI	Q	9.3	5.95	0.837	3.69	1.000	989.	65.0	0.0846	11.196	16.200		0.7498	7.20
29	N.F. KOKTULI	C	7.6	6.00	0.835	3.69	1.000	990.	65.0	0.0831	11.196	17.511		0.7498	7.20
30	N.F. KOKTULI	C	6.2	6.04	0.833	3.69	1.000	991.	65.0	0.0791	11.196	18.538		0.7498	7.20
31	N.F. KOKTULI	Q	5.3	6.04	0.833	3.69	1.000	991.	65.0	0.0791	11.196	19.230		0.7483	7.20
32	N.F. KOKTULI	C	3.5	6.09	0.830	3.69	1.000	992.	65.0	0.0761	11.196	20.536		0.7483	7.20
33	N.F. KOKTULI	E	0.0									23.170			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	2.82	1.000	4.80	1.000	950.	26.3	0.6012	11.100	0.232	3.59	0.1126	6.86
2	N.F. KOKTULI	C	55.7	3.80	0.945	4.80	1.000	968.	26.2	0.4260	11.100	0.448		0.1126	6.86
3	N.F. KOKTULI	C	48.2	4.12	0.927	4.80	1.000	974.	26.2	0.2818	11.100	1.302		0.1126	6.86
4	N.F. KOKTULI	C	44.8	4.16	0.925	4.80	1.000	974.	26.2	0.2485	11.100	1.684		0.1126	6.86
5	N.F. KOKTULI	C	42.1	4.18	0.924	4.80	1.000	975.	26.2	0.2316	11.100	1.987		0.1126	6.86
6	N.F. KOKTULI	C	41.2	4.19	0.924	4.80	1.000	975.	26.2	0.2179	11.100	2.082		0.1126	6.86
7	N.F. KOKTULI	C	39.8	4.20	0.923	4.80	1.000	975.	26.2	0.2163	11.101	2.246		0.1126	6.86
8	N.F. KOKTULI	C	38.6	4.22	0.922	4.80	1.000	975.	26.2	0.1919	11.101	2.384		0.1126	6.86
9	N.F. KOKTULI	Q	36.8	4.22	0.922	4.80	1.000	975.	26.2	0.1919	11.101	2.586		0.9237	5.81
10	N.F. KOKTULI	C	36.5	4.24	0.921	4.80	1.000	976.	26.2	0.1936	11.101	2.798		0.9237	5.81
11	N.F. KOKTULI	B	36.5									2.804			
12	TRIBUTARY 119	H	38.4	4.15	0.926	4.80	1.000	974.	26.3	0.3168	11.101	2.394	4.79	0.4965	5.81
13	TRIBUTARY 119	T	36.5									3.307			
14	N.F. KOKTULI	J	36.5	4.27	0.920	4.80	1.000	976.	26.2	0.1936	11.101	6.112		0.2850	5.81
15	N.F. KOKTULI	Q	35.8	4.27	0.920	4.80	1.000	976.	26.2	0.1936	11.101	6.330		0.3156	6.20
16	N.F. KOKTULI	C	35.4	4.31	0.917	4.80	1.000	977.	26.2	0.1716	11.101	6.448		0.3156	6.20
17	N.F. KOKTULI	C	34.0	4.36	0.915	4.80	1.000	978.	26.2	0.1617	11.101	6.894		0.3156	6.20
18	N.F. KOKTULI	C	31.0	4.42	0.912	4.80	1.000	979.	26.2	0.1682	11.101	7.835		0.3156	6.20
19	N.F. KOKTULI	C	28.5	4.46	0.910	4.80	1.000	980.	26.2	0.1420	11.101	8.626		0.3156	6.20
20	N.F. KOKTULI	Q	27.9	4.46	0.910	4.80	1.000	980.	26.2	0.1420	11.101	8.798		0.4413	6.20
21	N.F. KOKTULI	C	27.0	4.50	0.907	4.80	1.000	980.	26.2	0.1465	11.101	9.231		0.4413	6.20
22	N.F. KOKTULI	C	24.5	4.66	0.899	4.80	1.000	983.	26.3	0.1534	11.102	10.305		0.4413	6.20
23	N.F. KOKTULI	C	16.0	4.82	0.890	4.80	1.000	986.	26.3	0.1207	11.104	14.051		0.4413	6.20
24	N.F. KOKTULI	C	13.8	4.89	0.887	4.80	1.000	987.	26.3	0.0935	11.104	15.022		0.4413	6.20
25	N.F. KOKTULI	Q	13.7	4.89	0.887	4.80	1.000	987.	26.3	0.0935	11.104	15.080		0.1024	7.15
26	N.F. KOKTULI	C	11.6	4.94	0.884	4.80	1.000	988.	26.3	0.0894	11.104	15.298		0.1024	7.15
27	N.F. KOKTULI	C	9.9	4.98	0.882	4.80	1.000	989.	26.3	0.0861	11.104	15.470		0.1024	7.15
28	N.F. KOKTULI	Q	9.3	4.98	0.882	4.80	1.000	989.	26.3	0.0861	11.104	15.530		0.6756	7.15
29	N.F. KOKTULI	C	7.6	5.03	0.880	4.80	1.000	990.	26.3	0.0843	11.104	16.712		0.6756	7.15
30	N.F. KOKTULI	C	6.2	5.07	0.878	4.80	1.000	991.	26.3	0.0806	11.104	17.636		0.6756	7.15
31	N.F. KOKTULI	Q	5.3	5.07	0.878	4.80	1.000	991.	26.3	0.0806	11.104	18.260		0.6781	7.15
32	N.F. KOKTULI	C	3.5	5.12	0.875	4.80	1.000	992.	26.3	0.0773	11.104	19.443		0.6781	7.15
33	N.F. KOKTULI	E	0.0									21.830			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	2.90	0.960	5.33	1.000	950.	56.0	0.6050	11.007	0.256	3.44	0.1241	6.61
2	N.F. KOKTULI	C	55.7	3.88	0.906	5.33	1.000	968.	55.9	0.4316	11.007	0.495		0.1241	6.61
3	N.F. KOKTULI	C	48.2	4.20	0.890	5.33	1.000	974.	55.8	0.2837	11.007	1.435		0.1241	6.61
4	N.F. KOKTULI	C	44.8	4.24	0.888	5.33	1.000	974.	55.9	0.2519	11.007	1.857		0.1241	6.61
5	N.F. KOKTULI	C	42.1	4.26	0.887	5.33	1.000	975.	55.9	0.2344	11.008	2.191		0.1241	6.61
6	N.F. KOKTULI	C	41.2	4.27	0.886	5.33	1.000	975.	55.9	0.2219	11.008	2.296		0.1241	6.61
7	N.F. KOKTULI	C	39.8	4.28	0.886	5.33	1.000	975.	55.9	0.2177	11.008	2.477		0.1241	6.61
8	N.F. KOKTULI	C	38.6	4.30	0.884	5.33	1.000	975.	55.9	0.1960	11.008	2.629		0.1241	6.61
9	N.F. KOKTULI	Q	36.8	4.30	0.884	5.33	1.000	975.	55.9	0.1960	11.008	2.852		1.0254	5.56
10	N.F. KOKTULI	C	36.5	4.32	0.883	5.33	1.000	976.	55.9	0.1961	11.008	3.088		1.0254	5.56
11	N.F. KOKTULI	B	36.5									3.094			
12	TRIBUTARY 119	H	38.4	4.23	0.888	5.33	1.000	974.	55.9	0.3189	11.008	1.952	4.78	0.4497	5.56
13	TRIBUTARY 119	T	36.5									2.779			
14	N.F. KOKTULI	J	36.5	4.35	0.882	5.33	1.000	976.	55.9	0.1961	11.008	5.873		0.3163	5.56
15	N.F. KOKTULI	Q	35.8	4.35	0.882	5.33	1.000	976.	55.9	0.1961	11.008	6.115		0.3020	6.24
16	N.F. KOKTULI	C	35.4	4.39	0.880	5.33	1.000	977.	55.9	0.1754	11.008	6.228		0.3020	6.24
17	N.F. KOKTULI	C	34.0	4.44	0.877	5.33	1.000	978.	55.9	0.1652	11.008	6.655		0.3020	6.24
18	N.F. KOKTULI	C	31.0	4.50	0.874	5.33	1.000	979.	55.9	0.1705	11.008	7.555		0.3020	6.24
19	N.F. KOKTULI	C	28.5	4.54	0.872	5.33	1.000	980.	55.9	0.1451	11.008	8.312		0.3020	6.24
20	N.F. KOKTULI	Q	27.9	4.54	0.872	5.33	1.000	980.	55.9	0.1451	11.008	8.477		0.5131	6.24
21	N.F. KOKTULI	C	27.0	4.58	0.870	5.33	1.000	980.	55.9	0.1492	11.008	8.980		0.5131	6.24
22	N.F. KOKTULI	C	24.5	4.74	0.862	5.33	1.000	983.	56.0	0.1548	11.010	10.229		0.5131	6.24
23	N.F. KOKTULI	C	16.0	4.90	0.854	5.33	1.000	986.	56.0	0.1233	11.011	14.584		0.5131	6.24
24	N.F. KOKTULI	C	13.8	4.97	0.851	5.33	1.000	987.	56.1	0.0953	11.011	15.712		0.5131	6.24
25	N.F. KOKTULI	Q	13.7	4.97	0.851	5.33	1.000	987.	56.1	0.0953	11.011	15.780		0.1047	7.21
26	N.F. KOKTULI	C	11.6	5.02	0.848	5.33	1.000	988.	56.1	0.0909	11.012	16.003		0.1047	7.21
27	N.F. KOKTULI	C	9.9	5.06	0.846	5.33	1.000	989.	56.1	0.0876	11.011	16.179		0.1047	7.21
28	N.F. KOKTULI	Q	9.3	5.06	0.846	5.33	1.000	989.	56.1	0.0876	11.011	16.240		0.7523	7.21
29	N.F. KOKTULI	C	7.6	5.11	0.844	5.33	1.000	990.	56.0	0.0855	11.012	17.556		0.7523	7.21
30	N.F. KOKTULI	C	6.2	5.15	0.842	5.33	1.000	991.	56.1	0.0822	11.012	18.586		0.7523	7.21
31	N.F. KOKTULI	Q	5.3	5.15	0.842	5.33	1.000	991.	56.1	0.0822	11.012	19.280		0.7540	7.21
32	N.F. KOKTULI	C	3.5	5.20	0.839	5.33	1.000	992.	56.1	0.0785	11.012	20.596		0.7540	7.21
33	N.F. KOKTULI	E	0.0									23.250			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	1.37	0.950	10.21	1.000	950.	44.5	0.6089	10.914	0.240	2.67	0.1166	6.21
2	N.F. KOKTULI	C	55.7	2.35	0.897	10.21	1.000	968.	44.4	0.4372	10.914	0.465		0.1166	6.21
3	N.F. KOKTULI	C	48.2	2.67	0.880	10.21	1.000	974.	44.4	0.2857	10.914	1.348		0.1166	6.21
4	N.F. KOKTULI	C	44.8	2.71	0.878	10.21	1.000	974.	44.4	0.2554	10.915	1.745		0.1166	6.21
5	N.F. KOKTULI	C	42.1	2.73	0.877	10.21	1.000	975.	44.4	0.2373	10.915	2.059		0.1166	6.21
6	N.F. KOKTULI	C	41.2	2.74	0.877	10.21	1.000	975.	44.4	0.2260	10.915	2.157		0.1166	6.21
7	N.F. KOKTULI	C	39.8	2.75	0.876	10.21	1.000	975.	44.5	0.2192	10.915	2.327		0.1166	6.21
8	N.F. KOKTULI	C	38.6	2.77	0.875	10.21	1.000	975.	44.5	0.2001	10.915	2.469		0.1166	6.21
9	N.F. KOKTULI	Q	36.8	2.77	0.875	10.21	1.000	975.	44.5	0.2001	10.915	2.679		0.9576	5.24
10	N.F. KOKTULI	C	36.5	2.79	0.874	10.21	1.000	976.	44.5	0.1987	10.915	2.899		0.9576	5.24
11	N.F. KOKTULI	B	36.5									2.905			
12	TRIBUTARY 119	H	38.4	2.70	0.879	10.21	1.000	974.	44.5	0.3209	10.916	1.431	4.17	0.3132	5.24
13	TRIBUTARY 119	T	36.5									2.007			
14	N.F. KOKTULI	J	36.5	2.82	0.873	10.21	1.000	976.	44.5	0.1987	10.915	4.913		0.2954	5.24
15	N.F. KOKTULI	Q	35.8	2.82	0.873	10.21	1.000	976.	44.5	0.1987	10.915	5.139		0.2361	6.21
16	N.F. KOKTULI	C	35.4	2.86	0.871	10.21	1.000	977.	44.5	0.1794	10.915	5.228		0.2361	6.21
17	N.F. KOKTULI	C	34.0	2.91	0.868	10.21	1.000	978.	44.5	0.1688	10.915	5.561		0.2361	6.21
18	N.F. KOKTULI	C	31.0	2.97	0.865	10.21	1.000	979.	44.5	0.1728	10.916	6.265		0.2361	6.21
19	N.F. KOKTULI	C	28.5	3.01	0.863	10.21	1.000	980.	44.5	0.1485	10.916	6.856		0.2361	6.21
20	N.F. KOKTULI	Q	27.9	3.01	0.863	10.21	1.000	980.	44.5	0.1485	10.916	6.985		0.4296	6.21
21	N.F. KOKTULI	C	27.0	3.05	0.861	10.21	1.000	980.	44.5	0.1521	10.916	7.406		0.4296	6.21
22	N.F. KOKTULI	C	24.5	3.21	0.853	10.21	1.000	983.	44.5	0.1563	10.917	8.452		0.4296	6.21
23	N.F. KOKTULI	C	16.0	3.37	0.845	10.21	1.000	986.	44.6	0.1259	10.919	12.098		0.4296	6.21
24	N.F. KOKTULI	C	13.8	3.44	0.842	10.21	1.000	987.	44.6	0.0972	10.919	13.043		0.4296	6.21
25	N.F. KOKTULI	Q	13.7	3.44	0.842	10.21	1.000	987.	44.6	0.0972	10.919	13.100		0.0910	7.36
26	N.F. KOKTULI	C	11.6	3.49	0.839	10.21	1.000	988.	44.6	0.0925	10.919	13.294		0.0910	7.36
27	N.F. KOKTULI	C	9.9	3.53	0.837	10.21	1.000	989.	44.6	0.0892	10.919	13.447		0.0910	7.36
28	N.F. KOKTULI	Q	9.3	3.53	0.837	10.21	1.000	989.	44.6	0.0892	10.919	13.500		0.4776	7.36
29	N.F. KOKTULI	C	7.6	3.58	0.835	10.21	1.000	990.	44.6	0.0868	10.919	14.335		0.4776	7.36
30	N.F. KOKTULI	C	6.2	3.62	0.833	10.21	1.000	991.	44.6	0.0839	10.919	14.989		0.4776	7.36
31	N.F. KOKTULI	Q	5.3	3.62	0.833	10.21	1.000	991.	44.6	0.0839	10.919	15.430		0.4805	7.36
32	N.F. KOKTULI	C	3.5	3.67	0.830	10.21	1.000	992.	44.6	0.0798	10.919	16.269		0.4805	7.36
33	N.F. KOKTULI	E	0.0									17.960			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	1.12	0.909	7.10	1.000	950.	84.5	0.6128	10.822	0.228	1.70	0.1109	5.62
2	N.F. KOKTULI	C	55.7	2.10	0.858	7.10	1.000	968.	84.4	0.4431	10.822	0.442		0.1109	5.62
3	N.F. KOKTULI	C	48.2	2.42	0.842	7.10	1.000	974.	84.3	0.2876	10.822	1.282		0.1109	5.62
4	N.F. KOKTULI	C	44.8	2.46	0.840	7.10	1.000	974.	84.4	0.2590	10.822	1.659		0.1109	5.62
5	N.F. KOKTULI	C	42.1	2.48	0.839	7.10	1.000	975.	84.4	0.2403	10.822	1.958		0.1109	5.62
6	N.F. KOKTULI	C	41.2	2.49	0.839	7.10	1.000	975.	84.4	0.2303	10.822	2.052		0.1109	5.62
7	N.F. KOKTULI	C	39.8	2.50	0.839	7.10	1.000	975.	84.4	0.2207	10.823	2.213		0.1109	5.62
8	N.F. KOKTULI	C	38.6	2.52	0.837	7.10	1.000	975.	84.4	0.2045	10.823	2.349		0.1109	5.62
9	N.F. KOKTULI	Q	36.8	2.52	0.837	7.10	1.000	975.	84.4	0.2045	10.823	2.548		0.9068	4.84
10	N.F. KOKTULI	C	36.5	2.54	0.836	7.10	1.000	976.	84.4	0.2013	10.823	2.757		0.9068	4.84
11	N.F. KOKTULI	B	36.5									2.762			
12	TRIBUTARY 119	H	38.4	2.45	0.841	7.10	1.000	974.	84.5	0.3230	10.823	1.096	3.76	0.2588	4.84
13	TRIBUTARY 119	T	36.5									1.572			
14	N.F. KOKTULI	J	36.5	2.57	0.835	7.10	1.000	976.	84.4	0.2013	10.823	4.334		0.2810	4.84
15	N.F. KOKTULI	Q	35.8	2.57	0.835	7.10	1.000	976.	84.4	0.2013	10.823	4.549		0.1923	6.07
16	N.F. KOKTULI	C	35.4	2.61	0.833	7.10	1.000	977.	84.4	0.1836	10.823	4.621		0.1923	6.07
17	N.F. KOKTULI	C	34.0	2.66	0.831	7.10	1.000	978.	84.4	0.1726	10.823	4.893		0.1923	6.07
18	N.F. KOKTULI	C	31.0	2.72	0.828	7.10	1.000	979.	84.4	0.1752	10.823	5.466		0.1923	6.07
19	N.F. KOKTULI	C	28.5	2.76	0.826	7.10	1.000	980.	84.4	0.1519	10.823	5.948		0.1923	6.07
20	N.F. KOKTULI	Q	27.9	2.76	0.826	7.10	1.000	980.	84.4	0.1519	10.823	6.053		0.3623	6.07
21	N.F. KOKTULI	C	27.0	2.80	0.824	7.10	1.000	980.	84.4	0.1550	10.823	6.408		0.3623	6.07
22	N.F. KOKTULI	C	24.5	2.96	0.816	7.10	1.000	983.	84.6	0.1579	10.825	7.290		0.3623	6.07
23	N.F. KOKTULI	C	16.0	3.12	0.809	7.10	1.000	986.	84.7	0.1286	10.827	10.365		0.3623	6.07
24	N.F. KOKTULI	C	13.8	3.19	0.806	7.10	1.000	987.	84.7	0.0992	10.827	11.162		0.3623	6.07
25	N.F. KOKTULI	Q	13.7	3.19	0.806	7.10	1.000	987.	84.7	0.0992	10.827	11.210		0.0774	7.51
26	N.F. KOKTULI	C	11.6	3.24	0.803	7.10	1.000	988.	84.7	0.0941	10.827	11.375		0.0774	7.51
27	N.F. KOKTULI	C	9.9	3.28	0.801	7.10	1.000	989.	84.7	0.0909	10.827	11.505		0.0774	7.51
28	N.F. KOKTULI	Q	9.3	3.28	0.801	7.10	1.000	989.	84.7	0.0909	10.827	11.550		0.3093	7.51
29	N.F. KOKTULI	C	7.6	3.33	0.799	7.10	1.000	990.	84.7	0.0881	10.827	12.091		0.3093	7.51
30	N.F. KOKTULI	C	6.2	3.37	0.797	7.10	1.000	991.	84.7	0.0856	10.827	12.514		0.3093	7.51
31	N.F. KOKTULI	Q	5.3	3.37	0.797	7.10	1.000	991.	84.7	0.0856	10.827	12.800		0.3096	7.51
32	N.F. KOKTULI	C	3.5	3.42	0.794	7.10	1.000	992.	84.7	0.0811	10.827	13.340		0.3096	7.51
33	N.F. KOKTULI	E	0.0									14.430			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	0.56	0.929	9.61	1.000	950.	11.3	0.6169	10.729	0.213	1.20	0.1035	4.92
2	N.F. KOKTULI	C	55.7	1.54	0.878	9.61	1.000	968.	11.3	0.4491	10.729	0.412		0.1035	4.92
3	N.F. KOKTULI	C	48.2	1.86	0.861	9.61	1.000	974.	11.3	0.2896	10.729	1.196		0.1035	4.92
4	N.F. KOKTULI	C	44.8	1.90	0.859	9.61	1.000	974.	11.3	0.2628	10.730	1.548		0.1035	4.92
5	N.F. KOKTULI	C	42.1	1.92	0.858	9.61	1.000	975.	11.3	0.2434	10.730	1.826		0.1035	4.92
6	N.F. KOKTULI	C	41.2	1.93	0.858	9.61	1.000	975.	11.3	0.2348	10.730	1.914		0.1035	4.92
7	N.F. KOKTULI	C	39.8	1.94	0.857	9.61	1.000	975.	11.3	0.2222	10.730	2.065		0.1035	4.92
8	N.F. KOKTULI	C	38.6	1.96	0.856	9.61	1.000	975.	11.3	0.2090	10.730	2.191		0.1035	4.92
9	N.F. KOKTULI	Q	36.8	1.96	0.856	9.61	1.000	975.	11.3	0.2090	10.730	2.377		0.8432	4.38
10	N.F. KOKTULI	C	36.5	1.98	0.855	9.61	1.000	976.	11.3	0.2041	10.730	2.571		0.8432	4.38
11	N.F. KOKTULI	B	36.5									2.576			
12	TRIBUTARY 119	H	38.4	1.89	0.860	9.61	1.000	974.	11.3	0.3252	10.731	1.206	2.98	0.2534	4.38
13	TRIBUTARY 119	T	36.5									1.672			
14	N.F. KOKTULI	J	36.5	2.01	0.854	9.61	1.000	976.	11.3	0.2041	10.730	4.248		0.2601	4.38
15	N.F. KOKTULI	Q	35.8	2.01	0.854	9.61	1.000	976.	11.3	0.2041	10.730	4.447		0.1852	5.85
16	N.F. KOKTULI	C	35.4	2.05	0.852	9.61	1.000	977.	11.3	0.1879	10.730	4.516		0.1852	5.85
17	N.F. KOKTULI	C	34.0	2.10	0.849	9.61	1.000	978.	11.3	0.1766	10.730	4.778		0.1852	5.85
18	N.F. KOKTULI	C	31.0	2.16	0.847	9.61	1.000	979.	11.3	0.1778	10.731	5.330		0.1852	5.85
19	N.F. KOKTULI	C	28.5	2.20	0.845	9.61	1.000	980.	11.3	0.1556	10.731	5.794		0.1852	5.85
20	N.F. KOKTULI	Q	27.9	2.20	0.845	9.61	1.000	980.	11.3	0.1556	10.731	5.895		0.3017	5.85
21	N.F. KOKTULI	C	27.0	2.24	0.842	9.61	1.000	980.	11.3	0.1581	10.731	6.191		0.3017	5.85
22	N.F. KOKTULI	C	24.5	2.40	0.835	9.61	1.000	983.	11.3	0.1594	10.733	6.925		0.3017	5.85
23	N.F. KOKTULI	C	16.0	2.56	0.827	9.61	1.000	986.	11.3	0.1315	10.734	9.486		0.3017	5.85
24	N.F. KOKTULI	C	13.8	2.63	0.824	9.61	1.000	987.	11.3	0.1013	10.735	10.150		0.3017	5.85
25	N.F. KOKTULI	Q	13.7	2.63	0.824	9.61	1.000	987.	11.3	0.1013	10.735	10.190		0.0706	7.63
26	N.F. KOKTULI	C	11.6	2.68	0.821	9.61	1.000	988.	11.3	0.0958	10.735	10.340		0.0706	7.63
27	N.F. KOKTULI	C	9.9	2.72	0.819	9.61	1.000	989.	11.3	0.0926	10.735	10.459		0.0706	7.63
28	N.F. KOKTULI	Q	9.3	2.72	0.819	9.61	1.000	989.	11.3	0.0926	10.735	10.500		0.2252	7.63
29	N.F. KOKTULI	C	7.6	2.77	0.817	9.61	1.000	990.	11.3	0.0895	10.735	10.894		0.2252	7.63
30	N.F. KOKTULI	C	6.2	2.81	0.815	9.61	1.000	991.	11.3	0.0874	10.735	11.202		0.2252	7.63
31	N.F. KOKTULI	Q	5.3	2.81	0.815	9.61	1.000	991.	11.3	0.0874	10.735	11.410		0.2260	7.63
32	N.F. KOKTULI	C	3.5	2.86	0.812	9.61	1.000	992.	11.3	0.0825	10.735	11.804		0.2260	7.63
33	N.F. KOKTULI	E	0.0									12.600			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	N.F. KOKTULI	H	57.7	0.18	0.980	9.59	1.000	950.	51.2	0.6211	10.637	0.273	0.35	0.1326	4.13
2	N.F. KOKTULI	C	55.7	1.16	0.926	9.59	1.000	968.	51.1	0.4553	10.636	0.528		0.1326	4.13
3	N.F. KOKTULI	C	48.2	1.48	0.909	9.59	1.000	974.	51.1	0.2917	10.636	1.533		0.1326	4.13
4	N.F. KOKTULI	C	44.8	1.52	0.907	9.59	1.000	974.	51.2	0.2666	10.637	1.984		0.1326	4.13
5	N.F. KOKTULI	C	42.1	1.54	0.905	9.59	1.000	975.	51.2	0.2466	10.637	2.341		0.1326	4.13
6	N.F. KOKTULI	C	41.2	1.55	0.905	9.59	1.000	975.	51.2	0.2394	10.637	2.453		0.1326	4.13
7	N.F. KOKTULI	C	39.8	1.56	0.904	9.59	1.000	975.	51.2	0.2237	10.638	2.646		0.1326	4.13
8	N.F. KOKTULI	C	38.6	1.58	0.903	9.59	1.000	975.	51.2	0.2138	10.638	2.808		0.1326	4.13
9	N.F. KOKTULI	Q	36.8	1.58	0.903	9.59	1.000	975.	51.2	0.2138	10.638	3.046		1.1017	3.88
10	N.F. KOKTULI	C	36.5	1.60	0.902	9.59	1.000	976.	51.2	0.2069	10.638	3.299		1.1017	3.88
11	N.F. KOKTULI	B	36.5									3.306			
12	TRIBUTARY 119	H	38.4	1.51	0.907	9.59	1.000	974.	51.2	0.3274	10.638	5.125	2.53	1.1098	3.88
13	TRIBUTARY 119	T	36.5									7.166			
14	N.F. KOKTULI	J	36.5	1.63	0.901	9.59	1.000	976.	51.2	0.2069	10.638	10.472		0.3399	3.88
15	N.F. KOKTULI	Q	35.8	1.63	0.901	9.59	1.000	976.	51.2	0.2069	10.638	10.732		0.6111	5.52
16	N.F. KOKTULI	C	35.4	1.67	0.899	9.59	1.000	977.	51.2	0.1924	10.638	10.961		0.6111	5.52
17	N.F. KOKTULI	C	34.0	1.72	0.896	9.59	1.000	978.	51.2	0.1808	10.638	11.824		0.6111	5.52
18	N.F. KOKTULI	C	31.0	1.78	0.893	9.59	1.000	979.	51.2	0.1804	10.638	13.646		0.6111	5.52
19	N.F. KOKTULI	C	28.5	1.82	0.891	9.59	1.000	980.	51.2	0.1594	10.638	15.177		0.6111	5.52
20	N.F. KOKTULI	Q	27.9	1.82	0.891	9.59	1.000	980.	51.2	0.1594	10.638	15.511		0.6498	5.52
21	N.F. KOKTULI	C	27.0	1.86	0.889	9.59	1.000	980.	51.2	0.1613	10.638	16.148		0.6498	5.52
22	N.F. KOKTULI	C	24.5	2.02	0.881	9.59	1.000	983.	51.3	0.1610	10.640	17.730		0.6498	5.52
23	N.F. KOKTULI	C	16.0	2.18	0.872	9.59	1.000	986.	51.3	0.1345	10.642	23.245		0.6498	5.52
24	N.F. KOKTULI	C	13.8	2.25	0.869	9.59	1.000	987.	51.3	0.1033	10.643	24.674		0.6498	5.52
25	N.F. KOKTULI	Q	13.7	2.25	0.869	9.59	1.000	987.	51.3	0.1033	10.643	24.760		0.1639	7.66
26	N.F. KOKTULI	C	11.6	2.30	0.866	9.59	1.000	988.	51.4	0.0976	10.643	25.109		0.1639	7.66
27	N.F. KOKTULI	C	9.9	2.34	0.864	9.59	1.000	989.	51.3	0.0943	10.643	25.385		0.1639	7.66
28	N.F. KOKTULI	Q	9.3	2.34	0.864	9.59	1.000	989.	51.3	0.0943	10.643	25.480		1.8931	7.66
29	N.F. KOKTULI	C	7.6	2.39	0.862	9.59	1.000	990.	51.3	0.0909	10.643	28.791		1.8931	7.66
30	N.F. KOKTULI	C	6.2	2.43	0.860	9.59	1.000	991.	51.3	0.0892	10.643	31.383		1.8931	7.66
31	N.F. KOKTULI	Q	5.3	2.43	0.860	9.59	1.000	991.	51.3	0.0892	10.643	33.130		1.8936	7.66
32	N.F. KOKTULI	C	3.5	2.48	0.857	9.59	1.000	992.	51.4	0.0839	10.643	36.434		1.8936	7.66
33	N.F. KOKTULI	E	0.0									43.100			

NORMAL COMPLETION OF 'METROL'.

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****************************************** TABLE VIII: WATER TEMPERATURE DATA ******************************************
    BEGIN INSTREAM WATER TEMPERATURE CALCULATIONS VERIFICATION OF 'NETWRK' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
       (1) DETERMINE THE PREDICTED WATER TEMPERATURE FOR EACH YEAR & TIME PERIOD AT EVERY NODE IN THE COMPOSITE NETWORK;
       (2) GENERATE THE VERIFICATION TABLE;
       (3) GENERATE THE UNFORMATTED OUTPUT FILE FOR THE OUTPUT REPORT GENERATOR AND/OR LINKAGE TO OTHER PROGRAMS.
 THIS VERIFICATION IS THE FORMATTED VERSION OF 'KTRNSPT' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: NORTH FORK KOKTULI RIVER, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTF
       1.      0.      0.    141.     33.     27.     12.      6.     33.      2.
       1.     21.      0.      1.      2.      1.      0.      0.      0.      0.
       6.      0.      0.      0.      0.      1.      1.      1.    141.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 NFKTME.DAT      NFKMET.DAT      NFKSKL.DAT      NFKSTR.DAT      NFKSTD.DAT
 NFKHDR.DAT      NFKHYD.DAT      NFKSHD.DAT
 N.F. KOKTULI        57.7     0.0
 TRIBUTARY 119       38.4    36.5
  STR. NAME #   3     0.0     0.0
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	3.79	3.79	6.79:	9.71	25.57	-0.319:	12.88	28.05:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		4.60	8.37:	8.83	25.11	-0.313:	12.91	28.22:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		5.35	8.15:	8.94	25.24	-0.318:	13.14	28.48:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		5.55	7.62:	9.43	25.58	-0.326:	13.79	29.06:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		5.74	8.02:	9.43	25.58	-0.327:	13.80	29.08:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		5.80	7.90:	9.60	25.71	-0.329:	14.05	29.30:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		5.89	7.99:	9.32	25.51	-0.326:	13.66	28.95:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		5.96	7.93:	9.86	25.90	-0.334:	14.33	29.57:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.08	8.70:	9.87	25.91	-0.335:	14.34	29.58:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.81	8.38:	9.81	25.87	-0.332:	14.24	29.48:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.82	8.41:			:	14.24	29.48:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.03	1.03	3.28:	10.32	26.22	-0.311:	14.26	29.49:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		1.58	4.57:			:	14.26	29.49:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		3.64	6.44:	10.35	26.26	-0.326:	14.71	29.93:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		3.67	6.04:	10.38	26.28	-0.327:	14.73	29.95:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		3.69	6.05:	10.43	26.33	-0.328:	14.87	30.09:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		3.77	6.06:	10.28	26.22	-0.326:	14.75	29.99:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		3.92	5.96:	10.17	26.15	-0.325:	14.61	29.86:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.03	5.98:	10.48	26.39	-0.330:	14.97	30.21:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.06	6.25:	10.49	26.39	-0.331:	14.97	30.21:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.04	6.17:	10.46	26.38	-0.330:	14.94	30.19:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.03	6.01:	10.60	26.51	-0.332:	15.00	30.28:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.09	5.95:	11.15	26.96	-0.340:	15.61	30.90:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.13	6.14:	11.17	26.98	-0.340:	15.67	30.98:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.14	6.13:	11.17	26.98	-0.340:	15.68	30.98:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.32	6.29:	11.04	26.89	-0.339:	15.56	30.87:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.46	6.35:	11.13	26.96	-0.341:	15.65	30.96:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.52	6.50:	11.13	26.96	-0.342:	15.65	30.97:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.69	6.60:	11.12	26.97	-0.343:	15.64	30.96:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		4.81	6.68:	11.10	26.95	-0.343:	15.64	30.97:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		4.89	6.69:	11.11	26.96	-0.344:	15.65	30.98:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.02	6.78:	11.02	26.90	-0.344:	15.57	30.91:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.25	6.86:	11.02	26.90	-0.344:	15.57	30.91:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	4.88	4.88	7.64:	10.02	27.02	-0.349:	12.87	29.41:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.49	8.97:	9.30	26.64	-0.343:	12.93	29.62:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.12	8.78:	9.42	26.78	-0.348:	13.15	29.87:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.32	8.31:	9.82	27.09	-0.355:	13.70	30.39:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.51	8.69:	9.82	27.09	-0.357:	13.71	30.41:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.56	8.58:	9.97	27.21	-0.359:	13.91	30.61:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.66	8.66:	9.74	27.03	-0.356:	13.59	30.30:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.72	8.62:	10.18	27.38	-0.363:	14.16	30.85:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.84	9.33:	10.20	27.39	-0.364:	14.17	30.86:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.54	8.98:	10.15	27.36	-0.361:	14.08	30.78:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.54	9.01:			:	14.08	30.78:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.34	1.34	3.55:	10.53	27.64	-0.334:	14.06	30.75:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		1.93	4.92:			:	14.06	30.75:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.27	7.00:	10.59	27.70	-0.353:	14.47	31.17:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.30	6.62:	10.61	27.72	-0.353:	14.49	31.19:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.33	6.63:	10.66	27.76	-0.354:	14.61	31.31:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.41	6.66:	10.53	27.68	-0.353:	14.51	31.23:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.58	6.60:	10.45	27.62	-0.353:	14.40	31.12:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.71	6.65:	10.70	27.83	-0.357:	14.70	31.43:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.75	6.91:	10.71	27.83	-0.358:	14.70	31.43:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.73	6.84:	10.69	27.82	-0.357:	14.67	31.41:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.71	6.70:	10.81	27.95	-0.359:	14.74	31.50:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.79	6.67:	11.26	28.34	-0.366:	15.24	32.05:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.84	6.86:	11.28	28.37	-0.366:	15.30	32.13:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.84	6.85:	11.28	28.37	-0.366:	15.31	32.13:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.05	7.03:	11.19	28.30	-0.366:	15.22	32.05:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.21	7.12:	11.26	28.37	-0.369:	15.29	32.13:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.29	7.27:	11.26	28.37	-0.369:	15.30	32.13:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.47	7.40:	11.25	28.37	-0.370:	15.28	32.13:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.60	7.51:	11.24	28.37	-0.371:	15.29	32.14:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.68	7.54:	11.24	28.37	-0.372:	15.29	32.15:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.83	7.65:	11.18	28.33	-0.372:	15.23	32.09:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.11	7.80:	11.18	28.33	-0.372:	15.23	32.09:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	4.36	4.36	6.82:	8.24	23.55	-0.289:	10.82	25.28:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.33	8.06:	6.86	22.87	-0.279:	10.13	24.94:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		5.90	7.91:	6.90	22.94	-0.282:	10.25	25.07:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		5.99	7.48:	7.18	23.12	-0.286:	10.67	25.37:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.07	7.70:	7.17	23.11	-0.286:	10.68	25.38:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.09	7.60:	7.27	23.17	-0.287:	10.82	25.49:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.13	7.63:	7.12	23.08	-0.286:	10.59	25.32:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.16	7.58:	7.47	23.29	-0.290:	11.05	25.65:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.21	8.07:	7.48	23.30	-0.290:	11.06	25.66:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.96	7.79:	7.47	23.30	-0.289:	11.02	25.63:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.97	7.82:			:	11.02	25.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.22	1.22	3.12:	8.12	23.67	-0.271:	11.30	25.83:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		1.78	4.09:			:	11.30	25.83:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.00	6.06:	7.94	23.58	-0.283:	11.44	25.95:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.01	5.74:	7.96	23.60	-0.284:	11.46	25.96:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.02	5.75:	7.95	23.60	-0.284:	11.51	26.01:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.07	5.75:	7.81	23.52	-0.282:	11.39	25.93:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.16	5.67:	7.74	23.49	-0.282:	11.31	25.87:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.23	5.69:	7.97	23.63	-0.285:	11.57	26.07:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.25	5.88:	7.97	23.63	-0.285:	11.57	26.08:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.21	5.79:	7.97	23.63	-0.285:	11.56	26.07:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.15	5.62:	8.16	23.77	-0.287:	11.70	26.20:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.11	5.47:	8.61	24.09	-0.292:	12.20	26.61:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.14	5.60:	8.60	24.09	-0.292:	12.23	26.64:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.14	5.58:	8.61	24.09	-0.292:	12.23	26.65:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.29	5.72:	8.49	24.02	-0.291:	12.13	26.57:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.40	5.77:	8.57	24.08	-0.293:	12.20	26.64:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.45	5.88:	8.57	24.08	-0.293:	12.21	26.64:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.62	6.02:	8.57	24.09	-0.294:	12.20	26.64:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		4.75	6.12:	8.53	24.07	-0.294:	12.18	26.63:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		4.83	6.16:	8.54	24.07	-0.294:	12.19	26.64:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		4.97	6.28:	8.46	24.03	-0.294:	12.11	26.59:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.22	6.44:	8.46	24.03	-0.294:	12.11	26.59:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.87	4.87	7.97:	9.22	28.57-0.371:		12.38	31.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.00	9.76:	9.26	28.79-0.380:		13.19	32.36:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		7.00	10.09:	9.47	29.01-0.390:		13.49	32.73:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		7.23	9.60:	9.94	29.41-0.400:		14.12	33.39:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.44	10.04:	9.95	29.43-0.401:		14.14	33.43:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.49	9.92:	10.13	29.57-0.405:		14.37	33.68:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.60	10.02:	9.85	29.34-0.401:		14.01	33.28:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.66	9.95:	10.34	29.76-0.409:		14.61	33.95:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.79	10.74:	10.35	29.77-0.410:		14.62	33.96:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.46	10.37:	10.28	29.72-0.407:		14.52	33.85:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.47	10.40:			:	14.52	33.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.71	1.71	4.46:	10.16	29.60-0.364:		14.02	33.29:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		2.43	6.21:			:	14.02	33.29:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.21	8.52:	10.60	29.99-0.395:		14.79	34.16:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.24	8.11:	10.61	30.01-0.395:		14.81	34.17:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.27	8.13:	10.72	30.11-0.397:		14.98	34.38:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.38	8.19:	10.64	30.05-0.397:		14.93	34.33:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.61	8.17:	10.55	29.98-0.397:		14.81	34.21:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.78	8.25:	10.80	30.21-0.402:		15.10	34.54:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.82	8.56:	10.80	30.21-0.403:		15.10	34.54:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.74	8.39:	10.79	30.21-0.402:		15.08	34.53:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.60	8.07:	10.87	30.31-0.402:		15.10	34.58:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.49	7.77:	11.35	30.77-0.409:		15.63	35.23:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.52	7.97:	11.41	30.84-0.410:		15.74	35.36:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.53	7.95:	11.41	30.84-0.410:		15.74	35.36:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.77	8.16:	11.34	30.78-0.411:		15.67	35.30:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.95	8.25:	11.41	30.85-0.414:		15.74	35.38:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.03	8.42:	11.41	30.85-0.414:		15.74	35.39:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.23	8.58:	11.39	30.85-0.415:		15.73	35.38:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.38	8.70:	11.39	30.86-0.417:		15.74	35.41:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.47	8.74:	11.40	30.86-0.417:		15.75	35.41:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.65	8.88:	11.34	30.82-0.418:		15.70	35.36:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.97	9.06:	11.34	30.82-0.418:		15.70	35.36:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.21	4.21	6.27:	5.42	34.48	-0.445:	7.50	36.49:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.54	7.53:	4.58	33.99	-0.442:	7.03	36.27:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.00	7.71:	4.65	34.13	-0.448:	7.15	36.48:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		5.96	7.33:	4.78	34.26	-0.450:	7.36	36.70:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		5.93	7.40:	4.78	34.26	-0.449:	7.36	36.71:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		5.92	7.30:	4.82	34.30	-0.450:	7.43	36.79:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		5.91	7.27:	4.76	34.25	-0.449:	7.32	36.68:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		5.89	7.21:	4.94	34.42	-0.452:	7.56	36.93:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		5.87	7.51:	4.95	34.42	-0.452:	7.57	36.94:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.68	7.29:	4.96	34.44	-0.450:	7.56	36.94:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.67	7.31:			:	7.56	36.94:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.50	1.50	3.32:	5.45	34.86	-0.423:	7.87	37.23:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		2.07	4.13:			:	7.87	37.23:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		3.99	5.82:	5.26	34.71	-0.441:	7.84	37.24:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.00	5.57:	5.27	34.73	-0.441:	7.86	37.25:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.00	5.58:	5.25	34.72	-0.441:	7.87	37.28:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.03	5.57:	5.17	34.66	-0.439:	7.80	37.22:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.09	5.49:	5.15	34.66	-0.440:	7.77	37.20:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.13	5.49:	5.28	34.79	-0.442:	7.92	37.37:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.14	5.63:	5.29	34.79	-0.442:	7.93	37.38:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.13	5.58:	5.30	34.81	-0.442:	7.93	37.40:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.11	5.48:	5.47	35.01	-0.445:	8.08	37.59:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.14	5.43:	5.76	35.32	-0.451:	8.40	37.98:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.16	5.53:	5.75	35.34	-0.451:	8.41	38.02:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.16	5.51:	5.76	35.34	-0.451:	8.42	38.02:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.28	5.62:	5.70	35.30	-0.451:	8.36	37.97:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.36	5.66:	5.76	35.36	-0.453:	8.42	38.05:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.39	5.73:	5.76	35.37	-0.453:	8.42	38.05:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.53	5.85:	5.76	35.38	-0.454:	8.43	38.07:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		4.63	5.94:	5.74	35.38	-0.455:	8.42	38.07:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		4.69	5.97:	5.75	35.38	-0.455:	8.42	38.07:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		4.81	6.06:	5.71	35.36	-0.456:	8.39	38.05:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.01	6.20:	5.71	35.36	-0.456:	8.39	38.05:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.43	4.43	6.23:	5.88	36.80	-0.484:	7.69	38.71:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.85	7.62:	4.98	36.20	-0.480:	7.10	38.34:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.34	7.86:	5.03	36.35	-0.486:	7.20	38.54:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.30	7.52:	5.13	36.45	-0.488:	7.35	38.72:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.27	7.57:	5.12	36.45	-0.487:	7.35	38.72:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.26	7.48:	5.15	36.48	-0.488:	7.40	38.78:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.23	7.45:	5.11	36.45	-0.487:	7.33	38.70:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.21	7.39:	5.25	36.59	-0.489:	7.52	38.92:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.20	7.64:	5.26	36.60	-0.489:	7.53	38.93:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.00	7.42:	5.28	36.62	-0.488:	7.54	38.94:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.99	7.44:			:	7.54	38.94:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.67	1.67	3.27:	5.86	37.16	-0.459:	7.96	39.38:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		2.27	4.10:			:	7.96	39.38:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.20	5.83:	5.58	36.92	-0.476:	7.81	39.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.21	5.61:	5.59	36.93	-0.477:	7.83	39.27:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.22	5.61:	5.56	36.91	-0.476:	7.82	39.27:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.26	5.61:	5.48	36.84	-0.475:	7.75	39.21:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.32	5.57:	5.47	36.85	-0.475:	7.73	39.21:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.37	5.58:	5.58	36.97	-0.478:	7.86	39.37:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.38	5.70:	5.59	36.98	-0.478:	7.87	39.37:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.37	5.66:	5.60	37.00	-0.478:	7.88	39.39:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.37	5.59:	5.77	37.22	-0.482:	8.03	39.61:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.42	5.57:	6.04	37.53	-0.487:	8.32	39.99:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.44	5.66:	6.03	37.54	-0.487:	8.33	40.02:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.44	5.65:	6.03	37.54	-0.487:	8.33	40.02:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.56	5.75:	5.97	37.50	-0.487:	8.28	39.97:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.65	5.80:	6.03	37.57	-0.489:	8.34	40.05:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.67	5.87:	6.03	37.57	-0.489:	8.34	40.05:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.82	5.99:	6.04	37.59	-0.491:	8.34	40.08:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		4.92	6.09:	6.02	37.58	-0.492:	8.33	40.07:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		4.99	6.12:	6.02	37.59	-0.492:	8.33	40.08:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.11	6.23:	5.99	37.57	-0.493:	8.31	40.06:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.32	6.37:	5.99	37.57	-0.493:	8.31	40.06:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	4.37	4.37	5.79:	5.66	37.54	-0.494:	7.09	39.05:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.85	7.21:	4.41	36.61	-0.484:	6.06	38.24:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.28	7.41:	4.42	36.71	-0.488:	6.11	38.38:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.20	7.11:	4.45	36.75	-0.488:	6.17	38.46:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.14	7.10:	4.44	36.74	-0.487:	6.16	38.46:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.11	7.02:	4.44	36.75	-0.487:	6.18	38.47:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.07	6.96:	4.44	36.76	-0.487:	6.16	38.46:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.04	6.91:	4.53	36.84	-0.488:	6.28	38.59:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.00	7.06:	4.54	36.85	-0.488:	6.28	38.60:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.82	6.87:	4.58	36.90	-0.487:	6.31	38.63:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.82	6.89:			:	6.31	38.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.74	1.74	2.93:	5.45	37.72	-0.465:	7.08	39.43:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		2.32	3.62:			:	7.08	39.43:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.00	5.19:	4.92	37.23	-0.476:	6.64	38.99:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.02	5.02:	4.94	37.25	-0.476:	6.66	39.01:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.02	5.02:	4.86	37.19	-0.475:	6.60	38.96:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.05	5.01:	4.76	37.11	-0.473:	6.51	38.88:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.08	4.96:	4.76	37.13	-0.474:	6.51	38.89:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.10	4.96:	4.87	37.24	-0.476:	6.63	39.03:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.11	5.05:	4.87	37.24	-0.476:	6.63	39.03:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.11	5.02:	4.89	37.27	-0.477:	6.64	39.06:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.11	4.97:	5.10	37.53	-0.481:	6.85	39.33:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.16	4.97:	5.36	37.83	-0.486:	7.12	39.68:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.18	5.03:	5.32	37.81	-0.485:	7.10	39.67:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.18	5.02:	5.33	37.81	-0.485:	7.10	39.67:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.28	5.11:	5.26	37.76	-0.485:	7.04	39.62:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.34	5.15:	5.31	37.83	-0.487:	7.09	39.70:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.36	5.20:	5.32	37.83	-0.487:	7.10	39.70:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.55	5.36:	5.33	37.86	-0.489:	7.11	39.73:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		4.68	5.49:	5.30	37.84	-0.490:	7.08	39.71:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		4.77	5.55:	5.30	37.85	-0.490:	7.09	39.72:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		4.91	5.67:	5.26	37.83	-0.491:	7.06	39.69:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.15	5.86:	5.26	37.83	-0.491:	7.06	39.69:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C) /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	4.21	4.21	5.74:	8.75	23.58-0.289:	10.36	24.64:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.98	7.66:	6.41	22.34-0.273:	8.40	23.51:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.86	7.98:	6.31	22.34-0.277:	8.36	23.53:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.92	7.74:	6.37	22.38-0.278:	8.49	23.61:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.95	7.82:	6.35	22.37-0.277:	8.47	23.60:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.95	7.76:	6.36	22.37-0.278:	8.50	23.62:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.95	7.75:	6.34	22.37-0.277:	8.45	23.60:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.95	7.73:	6.51	22.46-0.279:	8.67	23.73:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.96	7.96:	6.52	22.47-0.280:	8.68	23.74:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.74	7.71:	6.57	22.50-0.280:	8.71	23.76:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.73	7.73:		:	8.71	23.76:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	1.72	1.72	2.82:	7.85	23.22-0.267:	9.80	24.45:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		2.37	3.63:		:	9.80	24.45:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.57	5.70:	7.11	22.81-0.273:	9.22	24.09:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.59	5.51:	7.13	22.82-0.273:	9.25	24.11:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.59	5.51:	7.01	22.76-0.272:	9.16	24.06:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.60	5.49:	6.83	22.66-0.270:	9.00	23.96:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.63	5.42:	6.81	22.66-0.270:	8.97	23.95:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.65	5.42:	6.98	22.76-0.272:	9.15	24.07:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.66	5.51:	6.98	22.76-0.272:	9.15	24.08:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.63	5.45:	6.99	22.77-0.272:	9.16	24.09:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.58	5.34:	7.28	22.96-0.275:	9.42	24.28:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.54	5.25:	7.67	23.21-0.279:	9.84	24.58:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.55	5.31:	7.59	23.18-0.278:	9.78	24.55:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.55	5.30:	7.60	23.18-0.278:	9.78	24.55:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.66	5.40:	7.46	23.11-0.277:	9.66	24.48:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.74	5.45:	7.54	23.16-0.279:	9.74	24.54:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.77	5.51:	7.54	23.16-0.279:	9.74	24.54:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.96	5.68:	7.55	23.17-0.280:	9.75	24.55:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.09	5.80:	7.48	23.14-0.280:	9.69	24.52:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.18	5.86:	7.49	23.15-0.280:	9.70	24.53:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.32	5.99:	7.41	23.10-0.280:	9.62	24.48:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.58	6.19:	7.41	23.10-0.280:	9.62	24.48:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.59	4.59	6.22:	7.08	31.12-0.404:		8.74	32.59:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.12	7.81:	5.72	30.23-0.394:		7.74	31.90:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.77	8.09:	5.73	30.30-0.399:		7.80	32.03:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.78	7.80:	5.84	30.40-0.401:		7.98	32.20:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.77	7.87:	5.83	30.40-0.401:		7.98	32.20:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.77	7.79:	5.86	30.43-0.401:		8.03	32.25:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.76	7.78:	5.82	30.39-0.400:		7.95	32.18:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.75	7.73:	5.99	30.54-0.403:		8.18	32.39:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.75	7.98:	6.00	30.55-0.403:		8.19	32.40:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.54	7.76:	6.03	30.57-0.402:		8.20	32.41:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.54	7.78:		:		8.20	32.41:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	2.12	2.12	3.49:	6.77	31.15-0.381:		8.76	32.91:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		2.73	4.29:		:		8.76	32.91:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.71	6.10:	6.41	30.88-0.394:		8.55	32.74:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.72	5.89:	6.43	30.89-0.394:		8.57	32.76:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.72	5.89:	6.37	30.86-0.393:		8.55	32.75:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.73	5.87:	6.26	30.78-0.392:		8.45	32.67:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.75	5.78:	6.24	30.77-0.392:		8.42	32.65:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.77	5.77:	6.38	30.90-0.394:		8.58	32.81:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.78	5.88:	6.39	30.90-0.394:		8.59	32.81:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.74	5.82:	6.39	30.92-0.394:		8.59	32.83:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.69	5.69:	6.60	31.12-0.397:		8.78	33.04:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.65	5.59:	6.93	31.43-0.402:		9.13	33.41:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.66	5.66:	6.90	31.42-0.401:		9.12	33.41:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.66	5.65:	6.90	31.42-0.401:		9.12	33.42:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.77	5.75:	6.81	31.36-0.401:		9.04	33.35:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.86	5.80:	6.88	31.43-0.402:		9.11	33.42:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.89	5.87:	6.88	31.43-0.403:		9.11	33.43:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.05	6.01:	6.89	31.45-0.404:		9.12	33.44:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.17	6.11:	6.85	31.43-0.404:		9.09	33.43:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.24	6.16:	6.86	31.43-0.405:		9.10	33.43:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.37	6.27:	6.81	31.40-0.405:		9.05	33.40:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.59	6.43:	6.81	31.40-0.405:		9.05	33.40:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	5.19	5.19	7.45:	8.19	33.24-0.444:	10.48	35.55:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.65	9.16:	7.84	33.14-0.451:	10.67	35.98:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		7.53	9.67:	7.98	33.34-0.461:	10.88	36.29:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		7.64	9.33:	8.30	33.65-0.468:	11.31	36.78:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.74	9.58:	8.30	33.66-0.469:	11.33	36.81:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.76	9.49:	8.41	33.77-0.471:	11.48	36.98:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.81	9.52:	8.24	33.61-0.469:	11.24	36.71:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.83	9.47:	8.58	33.94-0.475:	11.67	37.21:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.89	9.96:	8.59	33.95-0.476:	11.68	37.22:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.63	9.67:	8.56	33.93-0.473:	11.62	37.16:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.63	9.70:		:	11.62	37.16:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	2.44	2.44	4.56:	8.67	34.01-0.430:	11.46	36.95:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.17	5.83:		:	11.46	36.95:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.63	7.96:	8.86	34.22-0.460:	11.89	37.48:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.65	7.68:	8.88	34.24-0.461:	11.91	37.50:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.66	7.69:	8.92	34.29-0.462:	12.00	37.62:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.72	7.70:	8.85	34.23-0.461:	11.94	37.56:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.83	7.65:	8.79	34.19-0.461:	11.88	37.49:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.92	7.67:	8.98	34.38-0.465:	12.09	37.76:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.94	7.87:	8.98	34.39-0.465:	12.10	37.76:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.87	7.75:	8.98	34.40-0.465:	12.09	37.77:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.75	7.50:	9.10	34.55-0.466:	12.18	37.91:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.64	7.27:	9.50	34.99-0.472:	12.61	38.47:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.66	7.40:	9.53	35.04-0.473:	12.67	38.56:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.66	7.39:	9.53	35.04-0.473:	12.67	38.56:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.84	7.55:	9.46	34.98-0.474:	12.61	38.50:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.97	7.62:	9.53	35.06-0.476:	12.68	38.59:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.03	7.74:	9.53	35.06-0.477:	12.68	38.59:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.20	7.87:	9.53	35.07-0.478:	12.67	38.60:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.32	7.98:	9.52	35.07-0.479:	12.68	38.61:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.40	8.01:	9.52	35.07-0.480:	12.68	38.62:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.54	8.13:	9.48	35.04-0.480:	12.64	38.58:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.80	8.28:	9.48	35.04-0.480:	12.64	38.58:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	5.88	5.88	8.17:	7.00	31.41-0.418:		9.32	33.53:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.03	9.26:	6.64	31.33-0.421:		9.48	33.91:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		7.54	9.56:	6.78	31.52-0.428:		9.69	34.20:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		7.56	9.17:	7.08	31.78-0.433:		10.10	34.62:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.58	9.34:	7.09	31.79-0.434:		10.11	34.64:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.59	9.23:	7.19	31.88-0.436:		10.26	34.79:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.60	9.24:	7.03	31.75-0.433:		10.03	34.56:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.60	9.16:	7.35	32.03-0.437:		10.44	34.98:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.62	9.59:	7.36	32.04-0.438:		10.45	34.99:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.39	9.33:	7.34	32.02-0.420:		10.40	34.95:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.39	9.35:		:		10.40	34.95:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	2.80	2.80	4.97:	7.40	32.05-0.401:		10.21	34.72:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.42	5.98:		:		10.21	34.72:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.71	7.93:	7.61	32.27-0.427:		10.65	35.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.71	7.65:	7.63	32.28-0.427:		10.67	35.23:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.71	7.65:	7.67	32.33-0.428:		10.76	35.34:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.74	7.64:	7.60	32.28-0.427:		10.70	35.29:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.78	7.54:	7.56	32.25-0.426:		10.64	35.24:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.82	7.53:	7.73	32.42-0.430:		10.84	35.46:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.83	7.71:	7.73	32.42-0.430:		10.85	35.47:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.74	7.57:	7.74	32.43-0.429:		10.85	35.48:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.60	7.30:	7.86	32.58-0.430:		10.94	35.61:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.43	7.01:	8.25	32.97-0.435:		11.36	36.11:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.44	7.12:	8.28	33.02-0.436:		11.43	36.20:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.45	7.11:	8.29	33.02-0.436:		11.43	36.20:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.60	7.24:	8.22	32.97-0.436:		11.37	36.15:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.71	7.30:	8.28	33.04-0.438:		11.43	36.23:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.75	7.40:	8.29	33.04-0.439:		11.44	36.23:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.89	7.52:	8.28	33.05-0.440:		11.43	36.24:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.00	7.61:	8.27	33.05-0.441:		11.43	36.25:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.07	7.64:	8.28	33.05-0.441:		11.44	36.25:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.19	7.74:	8.23	33.02-0.441:		11.40	36.22:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.41	7.87:	8.23	33.02-0.441:		11.40	36.22:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	5.72	5.72	8.21:	7.65	24.84-0.315:		10.20	26.63:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.25	9.72:	7.10	24.64-0.318:		10.23	26.81:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.01	10.07:	7.23	24.78-0.324:		10.43	27.02:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.05	9.65:	7.54	24.98-0.328:		10.86	27.36:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.09	9.83:	7.55	24.99-0.329:		10.88	27.38:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.09	9.72:	7.65	25.06-0.330:		11.02	27.50:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.11	9.72:	7.49	24.95-0.328:		10.79	27.31:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.11	9.65:	7.83	25.18-0.333:		11.22	27.66:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.13	10.10:	7.84	25.19-0.333:		11.23	27.67:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.88	9.82:	7.82	25.18-0.348:		11.18	27.63:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.88	9.84:		:		11.18	27.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	2.74	2.74	4.99:	7.89	25.21-0.301:		10.97	27.45:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.40	6.08:		:		10.97	27.45:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.08	8.34:	8.11	25.38-0.323:		11.45	27.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.07	8.02:	8.13	25.39-0.323:		11.47	27.87:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.08	8.02:	8.17	25.42-0.324:		11.56	27.95:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.09	8.00:	8.09	25.38-0.323:		11.49	27.90:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.13	7.89:	8.03	25.35-0.322:		11.43	27.86:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.16	7.87:	8.22	25.48-0.325:		11.64	28.04:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.17	8.06:	8.22	25.48-0.325:		11.64	28.04:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.05	7.88:	8.23	25.49-0.324:		11.64	28.05:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.86	7.55:	8.37	25.61-0.325:		11.75	28.16:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.63	7.18:	8.79	25.93-0.329:		12.20	28.57:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.64	7.29:	8.82	25.96-0.329:		12.27	28.64:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.64	7.27:	8.82	25.96-0.329:		12.27	28.64:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.79	7.41:	8.74	25.92-0.329:		12.20	28.59:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.91	7.47:	8.81	25.97-0.331:		12.27	28.65:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.95	7.57:	8.81	25.98-0.331:		12.27	28.66:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.10	7.70:	8.81	25.98-0.332:		12.27	28.66:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.21	7.79:	8.79	25.98-0.333:		12.26	28.66:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.29	7.83:	8.80	25.98-0.333:		12.27	28.67:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.41	7.93:	8.75	25.95-0.333:		12.22	28.64:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.65	8.08:	8.75	25.95-0.333:		12.22	28.64:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	6.40	6.40	8.61:	7.93	25.05	-0.323:	10.18	26.65:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.84	9.99:	7.33	24.82	-0.325:	10.08	26.73:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.47	10.30:	7.44	24.94	-0.330:	10.26	26.92:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.47	9.91:	7.69	25.11	-0.333:	10.60	27.19:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.48	10.05:	7.69	25.11	-0.333:	10.61	27.20:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.48	9.94:	7.77	25.17	-0.334:	10.73	27.29:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.48	9.94:	7.64	25.09	-0.333:	10.54	27.15:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.47	9.87:	7.92	25.27	-0.336:	10.90	27.43:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.48	10.24:	7.93	25.28	-0.336:	10.90	27.44:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.22	9.96:	7.92	25.27	-0.334:	10.87	27.42:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.22	9.98:			:	10.87	27.42:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.18	3.18	5.24:	8.04	25.34	-0.306:	10.75	27.31:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.82	6.26:			:	10.75	27.31:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.51	8.54:	8.18	25.45	-0.327:	11.12	27.61:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.49	8.25:	8.20	25.46	-0.327:	11.13	27.62:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.49	8.25:	8.22	25.49	-0.327:	11.20	27.68:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.49	8.21:	8.15	25.45	-0.326:	11.14	27.65:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.49	8.09:	8.11	25.43	-0.326:	11.09	27.62:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.50	8.06:	8.27	25.54	-0.328:	11.27	27.77:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.51	8.22:	8.27	25.54	-0.328:	11.27	27.77:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.39	8.05:	8.28	25.56	-0.328:	11.28	27.78:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.20	7.75:	8.42	25.68	-0.328:	11.39	27.90:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.96	7.39:	8.77	25.95	-0.331:	11.78	28.25:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.96	7.49:	8.80	25.98	-0.331:	11.83	28.30:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.96	7.47:	8.80	25.98	-0.331:	11.83	28.30:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.12	7.62:	8.74	25.95	-0.332:	11.78	28.27:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.24	7.69:	8.80	26.00	-0.333:	11.84	28.33:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.28	7.78:	8.80	26.00	-0.334:	11.84	28.33:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.46	7.93:	8.80	26.01	-0.335:	11.84	28.34:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.58	8.04:	8.79	26.01	-0.335:	11.85	28.34:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.66	8.08:	8.80	26.01	-0.336:	11.85	28.35:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.81	8.20:	8.76	25.99	-0.336:	11.82	28.33:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.06	8.37:	8.76	25.99	-0.336:	11.82	28.33:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	6.27	6.27	8.12:	6.34	27.54-0.344:		8.20	28.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.77	9.36:	5.52	27.16-0.357:		7.74	28.78:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.15	9.58:	5.59	27.27-0.361:		7.86	28.93:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.03	9.19:	5.71	27.36-0.362:		8.05	29.10:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.94	9.18:	5.71	27.36-0.361:		8.06	29.10:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.91	9.08:	5.75	27.39-0.362:		8.12	29.15:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.86	9.02:	5.69	27.36-0.361:		8.03	29.08:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.81	8.94:	5.86	27.48-0.363:		8.25	29.26:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.76	9.15:	5.87	27.48-0.362:		8.26	29.27:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.55	8.92:	5.89	27.50-0.361:		8.26	29.27:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.54	8.94:		:		8.26	29.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.06	3.06	4.78:	6.20	27.70-0.335:		8.40	29.37:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.62	5.52:		:		8.40	29.37:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.00	7.59:	6.13	27.68-0.350:		8.49	29.47:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.97	7.36:	6.15	27.69-0.355:		8.50	29.48:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.96	7.34:	6.13	27.68-0.355:		8.52	29.50:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.92	7.28:	6.06	27.65-0.352:		8.46	29.46:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.85	7.12:	6.05	27.65-0.351:		8.44	29.46:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.81	7.05:	6.16	27.74-0.352:		8.57	29.57:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.80	7.16:	6.17	27.74-0.353:		8.57	29.57:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.73	7.05:	6.18	27.76-0.352:		8.59	29.59:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.60	6.84:	6.35	27.91-0.354:		8.73	29.74:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.45	6.61:	6.63	28.14-0.357:		9.04	30.04:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.45	6.67:	6.63	28.16-0.357:		9.07	30.07:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.45	6.66:	6.64	28.16-0.357:		9.07	30.07:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.57	6.76:	6.59	28.13-0.357:		9.03	30.04:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.65	6.81:	6.64	28.18-0.358:		9.08	30.10:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.68	6.88:	6.64	28.18-0.358:		9.08	30.10:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.84	7.01:	6.65	28.20-0.360:		9.09	30.12:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.95	7.12:	6.64	28.20-0.360:		9.08	30.12:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.02	7.16:	6.64	28.20-0.361:		9.09	30.12:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.15	7.27:	6.61	28.19-0.361:		9.06	30.11:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.37	7.42:	6.61	28.19-0.361:		9.06	30.11:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	5.72	5.72	7.44:	5.54	29.60	-0.382:	7.27	30.99:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.50	8.89:	4.73	29.21	-0.386:	6.75	30.78:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		7.90	9.21:	4.79	29.33	-0.390:	6.85	30.94:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		7.73	8.81:	4.88	29.40	-0.390:	6.99	31.06:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.60	8.75:	4.87	29.40	-0.389:	6.99	31.06:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.56	8.64:	4.89	29.42	-0.389:	7.04	31.10:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.48	8.56:	4.87	29.40	-0.388:	6.98	31.05:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.42	8.47:	4.99	29.50	-0.389:	7.14	31.20:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.35	8.63:	5.00	29.51	-0.388:	7.15	31.21:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.16	8.43:	5.02	29.53	-0.387:	7.16	31.22:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.16	8.45:			:	7.16	31.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.13	3.13	4.75:	5.38	29.77	-0.363:	7.38	31.39:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.62	5.36:			:	7.38	31.39:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.75	7.21:	5.25	29.70	-0.380:	7.38	31.41:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.71	7.00:	5.26	29.71	-0.380:	7.39	31.42:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.70	6.98:	5.24	29.70	-0.380:	7.39	31.43:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.65	6.91:	5.18	29.67	-0.379:	7.34	31.39:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.55	6.72:	5.18	29.68	-0.378:	7.33	31.40:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.48	6.64:	5.27	29.76	-0.379:	7.44	31.50:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.47	6.73:	5.27	29.76	-0.378:	7.44	31.51:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.42	6.64:	5.29	29.79	-0.380:	7.46	31.53:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.34	6.48:	5.46	29.95	-0.378:	7.62	31.70:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.23	6.31:	5.71	30.18	-0.383:	7.89	31.98:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.23	6.37:	5.71	30.19	-0.383:	7.91	32.00:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.23	6.35:	5.71	30.19	-0.383:	7.91	32.01:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.32	6.43:	5.67	30.17	-0.383:	7.87	31.98:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.39	6.46:	5.72	30.22	-0.384:	7.92	32.04:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.39	6.51:	5.73	30.22	-0.384:	7.92	32.04:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.55	6.64:	5.74	30.24	-0.387:	7.94	32.06:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.66	6.74:	5.72	30.24	-0.373:	7.93	32.06:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.73	6.79:	5.73	30.24	0.000:	7.93	32.07:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.85	6.89:	5.70	30.24	-0.387:	7.91	32.06:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.06	7.04:	5.70	30.24	-0.387:	7.91	32.06:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	5.47	5.47	7.53:	6.84	24.57-0.308:		8.94	25.98:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.59	9.47:	6.11	24.27-0.312:		8.62	25.92:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.45	10.06:	6.19	24.38-0.318:		8.77	26.07:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.40	9.67:	6.38	24.50-0.320:		9.04	26.27:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.35	9.73:	6.38	24.50-0.320:		9.05	26.28:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.34	9.62:	6.43	24.54-0.320:		9.14	26.34:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.30	9.58:	6.35	24.49-0.319:		9.00	26.25:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.27	9.50:	6.57	24.63-0.321:		9.29	26.46:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.24	9.78:	6.58	24.63-0.321:		9.29	26.47:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.00	9.53:	6.58	24.64-0.320:		9.28	26.46:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.00	9.54:			:	9.28	26.46:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.21	3.21	5.10:	6.81	24.77-0.295:		9.31	26.46:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.77	5.91:			:	9.31	26.46:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.35	8.12:	6.84	24.81-0.313:		9.52	26.64:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.31	7.86:	6.86	24.82-0.313:		9.54	26.65:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.31	7.85:	6.86	24.82-0.313:		9.57	26.68:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.28	7.79:	6.78	24.79-0.312:		9.52	26.65:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.23	7.63:	6.76	24.78-0.312:		9.48	26.64:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.20	7.57:	6.90	24.87-0.313:		9.64	26.76:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.20	7.70:	6.90	24.87-0.313:		9.64	26.76:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.12	7.57:	6.91	24.89-0.313:		9.65	26.77:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.97	7.33:	7.07	25.02-0.314:		9.79	26.90:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.80	7.06:	7.39	25.25-0.316:		10.14	27.20:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.80	7.14:	7.41	25.27-0.317:		10.18	27.24:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.80	7.13:	7.41	25.27-0.317:		10.18	27.24:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.93	7.24:	7.35	25.25-0.317:		10.13	27.21:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.02	7.29:	7.41	25.29-0.318:		10.19	27.26:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.05	7.36:	7.41	25.29-0.318:		10.19	27.26:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.22	7.51:	7.42	25.30-0.319:		10.20	27.27:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.34	7.62:	7.40	25.30-0.320:		10.19	27.28:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.42	7.66:	7.41	25.31-0.320:		10.20	27.28:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.56	7.78:	7.38	25.29-0.321:		10.17	27.27:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.81	7.95:	7.38	25.29-0.321:		10.17	27.27:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	6.90	6.90	9.25:	9.43	21.49	-0.271:	11.84	22.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.58	10.97:	8.81	21.27	-0.272:	11.76	23.03:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.46	11.38:	8.92	21.37	-0.279:	11.95	23.19:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.52	10.99:	9.21	21.53	-0.282:	12.35	23.46:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.56	11.17:	9.21	21.54	-0.282:	12.37	23.47:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.57	11.07:	9.31	21.59	-0.284:	12.50	23.57:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.59	11.08:	9.16	21.51	-0.281:	12.29	23.42:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.60	11.02:	9.47	21.69	-0.287:	12.69	23.70:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.62	11.44:	9.48	21.70	-0.289:	12.70	23.70:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.31	11.11:	9.47	21.69	-0.286:	12.66	23.68:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.31	11.13:			:	12.66	23.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.94	3.94	6.04:	9.56	21.73	-0.258:	12.49	23.55:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.53	7.10:			:	12.49	23.55:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.46	9.57:	9.75	21.86	-0.277:	12.92	23.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.42	9.24:	9.77	21.87	-0.277:	12.93	23.87:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.42	9.24:	9.80	21.89	-0.277:	13.01	23.93:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.42	9.20:	9.72	21.85	-0.276:	12.95	23.90:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.43	9.07:	9.68	21.83	-0.276:	12.89	23.86:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.45	9.04:	9.85	21.94	-0.278:	13.09	24.01:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.46	9.22:	9.85	21.94	-0.278:	13.09	24.01:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.32	9.03:	9.86	21.95	-0.277:	13.10	24.02:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.09	8.70:	10.00	22.05	-0.278:	13.20	24.11:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.80	8.30:	10.37	22.29	-0.280:	13.61	24.42:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.80	8.39:	10.40	22.32	-0.280:	13.68	24.48:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.80	8.38:	10.40	22.32	-0.280:	13.68	24.48:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.98	8.54:	10.34	22.28	-0.281:	13.62	24.44:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.12	8.63:	10.40	22.33	-0.282:	13.68	24.49:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.17	8.73:	10.40	22.33	-0.282:	13.68	24.50:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.37	8.90:	10.41	22.34	-0.283:	13.69	24.50:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.51	9.02:	10.39	22.34	-0.284:	13.69	24.51:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.60	9.07:	10.40	22.34	-0.285:	13.69	24.51:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.76	9.20:	10.36	22.32	-0.285:	13.66	24.49:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.04	9.39:	10.36	22.32	-0.285:	13.66	24.49:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	7.04	7.04	8.63:	7.94	29.29-0.396:		9.55	30.65:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.62	10.08:	7.16	28.87-0.396:		9.07	30.42:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.10	10.41:	7.23	28.99-0.401:		9.18	30.58:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.02	10.09:	7.33	29.07-0.402:		9.34	30.73:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.96	10.10:	7.33	29.08-0.401:		9.34	30.73:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.94	10.01:	7.36	29.10-0.402:		9.39	30.78:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.90	9.96:	7.32	29.07-0.401:		9.32	30.72:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.87	9.90:	7.46	29.19-0.403:		9.50	30.89:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.83	10.10:	7.47	29.19-0.402:		9.51	30.89:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.57	9.83:	7.48	29.21-0.401:		9.51	30.90:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.57	9.84:		:		9.51	30.90:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.63	3.63	5.14:	7.84	29.47-0.370:		9.73	31.07:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.23	6.00:		:		9.73	31.07:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.79	8.26:	7.72	29.40-0.390:		9.74	31.11:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.76	8.04:	7.73	29.41-0.391:		9.75	31.12:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.76	8.03:	7.71	29.40-0.390:		9.75	31.13:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.74	7.99:	7.65	29.36-0.389:		9.70	31.09:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.71	7.87:	7.64	29.37-0.389:		9.69	31.09:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.70	7.84:	7.74	29.46-0.390:		9.80	31.20:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.70	7.94:	7.74	29.46-0.390:		9.81	31.21:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.62	7.83:	7.76	29.48-0.390:		9.82	31.23:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.47	7.62:	7.91	29.64-0.391:		9.96	31.39:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.30	7.40:	8.16	29.87-0.394:		10.23	31.66:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.30	7.46:	8.16	29.88-0.394:		10.25	31.70:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.30	7.45:	8.16	29.88-0.394:		10.25	31.70:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.45	7.58:	8.12	29.86-0.394:		10.21	31.67:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.55	7.65:	8.17	29.91-0.396:		10.27	31.73:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.58	7.72:	8.17	29.91-0.396:		10.27	31.73:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.75	7.87:	8.18	29.93-0.397:		10.28	31.75:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.87	7.98:	8.17	29.93-0.398:		10.27	31.76:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.95	8.02:	8.17	29.93-0.399:		10.28	31.76:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.08	8.14:	8.15	29.92-0.400:		10.26	31.75:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.31	8.31:	8.15	29.92-0.400:		10.26	31.75:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	6.70	6.70	8.34:	6.44	39.36-0.548:		8.08	41.25:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.39	9.66:	5.89	39.07-0.556:		7.82	41.22:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.75	10.08:	5.99	39.26-0.562:		7.95	41.48:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.59	9.74:	6.12	39.41-0.563:		8.13	41.71:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.48	9.70:	6.12	39.42-0.562:		8.14	41.72:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.44	9.60:	6.15	39.46-0.562:		8.20	41.80:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.38	9.53:	6.10	39.41-0.560:		8.11	41.70:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.32	9.45:	6.26	39.58-0.563:		8.31	41.95:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.26	9.61:	6.26	39.59-0.563:		8.32	41.95:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.04	9.38:	6.28	39.61-0.560:		8.32	41.96:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.03	9.39:			:	8.32	41.96:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	3.74	3.74	5.32:	6.61	39.95-0.522:		8.52	42.18:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.27	6.03:			:	8.52	42.18:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.32	7.86:	6.51	39.87-0.545:		8.54	42.24:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.30	7.66:	6.52	39.89-0.548:		8.55	42.26:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.29	7.65:	6.51	39.89-0.546:		8.57	42.29:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.26	7.59:	6.45	39.84-0.542:		8.52	42.24:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.20	7.45:	6.45	39.85-0.545:		8.50	42.24:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.16	7.38:	6.55	39.98-0.546:		8.63	42.40:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.15	7.48:	6.56	39.98-0.546:		8.63	42.41:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.10	7.40:	6.57	40.01-0.545:		8.64	42.43:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.01	7.25:	6.71	40.22-0.547:		8.77	42.65:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.90	7.10:	6.96	40.54-0.552:		9.04	43.03:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.91	7.17:	6.97	40.57-0.552:		9.06	43.09:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.91	7.16:	6.97	40.57-0.552:		9.07	43.09:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.02	7.25:	6.93	40.54-0.552:		9.03	43.06:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.09	7.29:	6.98	40.61-0.554:		9.08	43.14:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.11	7.35:	6.98	40.61-0.555:		9.08	43.14:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.22	7.45:	6.99	40.64-0.556:		9.09	43.17:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.31	7.52:	6.98	40.64-0.557:		9.09	43.18:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.36	7.55:	6.98	40.64-0.557:		9.09	43.18:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.46	7.63:	6.96	40.64-0.558:		9.07	43.18:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.62	7.74:	6.96	40.64-0.558:		9.07	43.18:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	7.93	7.93	10.38:	10.34	31.27-0.441:		12.81	33.73:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.56	12.14:	10.44	31.56-0.457:		13.44	34.61:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		10.54	12.86:	10.64	31.81-0.465:		13.71	34.98:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		10.65	12.52:	11.03	32.19-0.478:		14.21	35.56:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		10.75	12.78:	11.05	32.21-0.478:		14.24	35.59:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.77	12.68:	11.18	32.34-0.482:		14.41	35.80:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.82	12.73:	10.97	32.14-0.479:		14.13	35.48:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.84	12.66:	11.36	32.52-0.486:		14.60	36.03:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.90	13.18:	11.37	32.53-0.487:		14.61	36.04:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.52	12.79:	11.33	32.49-0.482:		14.55	35.97:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.53	12.81:		:		14.55	35.97:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.71	4.71	7.07:	11.16	32.31-0.429:		14.12	35.45:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.37	8.49:		:		14.12	35.45:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		8.34	10.98:	11.57	32.74-0.467:		14.77	36.24:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.32	10.65:	11.59	32.76-0.467:		14.78	36.26:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.33	10.65:	11.67	32.84-0.469:		14.91	36.42:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.38	10.67:	11.61	32.80-0.468:		14.87	36.38:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.48	10.59:	11.55	32.75-0.468:		14.80	36.31:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.56	10.62:	11.74	32.95-0.472:		15.01	36.57:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.59	10.84:	11.75	32.95-0.472:		15.01	36.58:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.43	10.63:	11.75	32.96-0.471:		15.01	36.58:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.15	10.23:	11.83	33.08-0.470:		15.07	36.68:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.84	9.79:	12.22	33.51-0.475:		15.49	37.24:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.84	9.92:	12.28	33.59-0.476:		15.58	37.37:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.84	9.91:	12.28	33.59-0.476:		15.58	37.37:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.07	10.11:	12.23	33.54-0.477:		15.54	37.32:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.24	10.20:	12.29	33.61-0.480:		15.60	37.40:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.31	10.35:	12.29	33.61-0.480:		15.60	37.40:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.49	10.49:	12.29	33.62-0.482:		15.59	37.41:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.63	10.60:	12.29	33.63-0.483:		15.61	37.44:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.71	10.64:	12.29	33.63-0.484:		15.61	37.44:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.87	10.77:	12.26	33.61-0.485:		15.58	37.41:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.15	10.94:	12.26	33.61-0.485:		15.58	37.41:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.04	8.04	10.28:	7.53	35.59	-0.507:	9.77	38.00:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.36	11.13:	7.65	35.97	-0.523:	10.30	38.87:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.73	11.68:	7.84	36.24	-0.530:	10.54	39.24:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.63	11.31:	8.12	36.54	-0.535:	10.91	39.70:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.59	11.40:	8.13	36.56	-0.535:	10.93	39.73:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.57	11.30:	8.23	36.66	-0.537:	11.06	39.89:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.55	11.27:	8.08	36.51	-0.534:	10.86	39.64:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.51	11.18:	8.36	36.81	-0.539:	11.21	40.09:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.50	11.51:	8.37	36.82	-0.539:	11.22	40.09:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.22	11.23:	8.35	36.80	-0.536:	11.18	40.05:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.22	11.24:			:	11.18	40.05:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.72	4.72	6.99:	8.23	36.66	-0.488:	10.86	39.63:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.25	7.93:			:	10.86	39.63:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.61	9.89:	8.54	37.01	-0.523:	11.35	40.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.57	9.64:	8.55	37.02	-0.523:	11.36	40.29:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.57	9.63:	8.61	37.09	-0.524:	11.46	40.41:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.55	9.60:	8.57	37.07	-0.523:	11.43	40.40:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.54	9.46:	8.54	37.05	-0.522:	11.39	40.36:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.53	9.41:	8.68	37.22	-0.525:	11.56	40.58:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.54	9.58:	8.69	37.22	-0.525:	11.56	40.58:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.43	9.43:	8.69	37.24	-0.524:	11.56	40.60:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.25	9.15:	8.79	37.38	-0.524:	11.64	40.74:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.04	8.84:	9.10	37.76	-0.529:	11.98	41.22:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.05	8.95:	9.15	37.84	-0.530:	12.06	41.34:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.05	8.94:	9.15	37.84	-0.530:	12.06	41.34:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.21	9.08:	9.12	37.82	-0.531:	12.03	41.31:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.32	9.13:	9.17	37.88	-0.533:	12.08	41.39:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.37	9.23:	9.17	37.89	-0.534:	12.08	41.40:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.51	9.35:	9.18	37.90	-0.535:	12.09	41.41:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.61	9.43:	9.19	37.92	-0.536:	12.10	41.45:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.68	9.46:	9.19	37.93	-0.537:	12.11	41.45:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.80	9.54:	9.17	37.92	-0.538:	12.09	41.45:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.00	9.65:	9.17	37.92	-0.538:	12.09	41.45:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	7.26	7.26	9.53:	6.76	28.40-0.380:		9.05	30.24:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.07	10.84:	6.71	28.56-0.393:		9.45	30.78:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.62	11.46:	6.89	28.76-0.400:		9.68	31.06:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.49	11.03:	7.17	28.98-0.404:		10.06	31.41:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.41	11.08:	7.19	28.99-0.403:		10.08	31.43:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.38	10.96:	7.28	29.07-0.404:		10.21	31.55:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.34	10.92:	7.13	28.96-0.402:		10.01	31.37:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.29	10.81:	7.42	29.19-0.406:		10.37	31.71:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.25	11.12:	7.43	29.19-0.406:		10.38	31.71:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.99	10.85:	7.41	29.18-0.403:		10.34	31.68:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.99	10.86:			:	10.34	31.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.40	4.40	6.64:	7.33	29.10-0.368:		10.04	31.38:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.90	7.42:			:	10.04	31.38:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.39	9.52:	7.62	29.35-0.393:		10.53	31.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.35	9.25:	7.63	29.36-0.393:		10.54	31.87:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.33	9.24:	7.68	29.41-0.394:		10.63	31.97:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.29	9.17:	7.64	29.39-0.393:		10.60	31.95:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.22	8.98:	7.61	29.37-0.393:		10.56	31.92:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.18	8.90:	7.76	29.50-0.395:		10.73	32.09:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.18	9.05:	7.76	29.50-0.394:		10.73	32.09:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.09	8.92:	7.77	29.52-0.394:		10.74	32.11:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.94	8.66:	7.88	29.64-0.395:		10.82	32.22:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.75	8.37:	8.20	29.93-0.398:		11.18	32.60:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.75	8.47:	8.25	29.99-0.399:		11.26	32.69:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.75	8.46:	8.25	29.99-0.399:		11.26	32.69:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.86	8.56:	8.21	29.96-0.399:		11.23	32.67:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.94	8.58:	8.27	30.02-0.401:		11.28	32.73:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.97	8.67:	8.27	30.02-0.401:		11.28	32.73:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.09	8.76:	8.28	30.04-0.402:		11.29	32.75:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.18	8.82:	8.28	30.05-0.403:		11.30	32.77:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.23	8.84:	8.29	30.05-0.403:		11.31	32.77:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.32	8.91:	8.26	30.04-0.404:		11.29	32.77:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.49	8.98:	8.26	30.04-0.404:		11.29	32.77:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	6.96	6.96	9.12:	7.49	23.78	-0.306:	9.68	25.21:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.21	11.02:	7.17	23.73	-0.315:	9.79	25.44:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		10.06	11.74:	7.31	23.86	-0.322:	10.00	25.64:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.96	11.33:	7.55	24.02	-0.324:	10.34	25.89:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.89	11.38:	7.56	24.03	-0.324:	10.35	25.90:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.87	11.26:	7.64	24.08	-0.325:	10.46	25.98:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.82	11.22:	7.52	24.00	-0.323:	10.29	25.86:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.78	11.12:	7.78	24.17	-0.326:	10.62	26.11:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.74	11.41:	7.79	24.17	-0.326:	10.63	26.11:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.45	11.11:	7.78	24.17	-0.324:	10.60	26.09:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.45	11.12:			:	10.60	26.09:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.14	4.14	6.20:	7.80	24.17	-0.293:	10.41	25.94:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.73	7.09:			:	10.41	25.94:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.67	9.60:	8.00	24.32	-0.316:	10.81	26.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.61	9.32:	8.01	24.33	-0.315:	10.82	26.26:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.60	9.31:	8.05	24.35	-0.316:	10.89	26.32:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.57	9.25:	7.99	24.33	-0.315:	10.85	26.30:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.51	9.07:	7.97	24.32	-0.314:	10.81	26.28:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.47	8.99:	8.11	24.42	-0.316:	10.98	26.41:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.47	9.13:	8.11	24.42	-0.315:	10.98	26.41:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.38	9.01:	8.12	24.43	-0.315:	10.99	26.42:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.24	8.76:	8.25	24.54	-0.316:	11.10	26.53:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.06	8.49:	8.57	24.77	-0.319:	11.45	26.83:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.06	8.58:	8.61	24.81	-0.319:	11.51	26.89:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.06	8.57:	8.61	24.81	-0.319:	11.51	26.89:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.16	8.65:	8.56	24.78	-0.319:	11.47	26.86:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.23	8.67:	8.62	24.83	-0.320:	11.53	26.92:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.25	8.75:	8.62	24.83	-0.321:	11.53	26.92:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.35	8.82:	8.63	24.84	-0.321:	11.54	26.93:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.42	8.86:	8.63	24.85	-0.322:	11.55	26.94:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.46	8.87:	8.63	24.85	-0.322:	11.56	26.95:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.54	8.92:	8.61	24.84	-0.322:	11.53	26.94:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.66	8.96:	8.61	24.84	-0.322:	11.53	26.94:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	9.90	9.90	12.20:	12.15	34.53	-0.519:	14.44	37.20:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.43	13.92:	12.65	35.29	-0.545:	15.37	38.58:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.44	14.84:	12.88	35.61	-0.561:	15.65	39.02:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.57	14.61:	13.21	36.00	-0.570:	16.07	39.60:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.71	14.90:	13.23	36.02	-0.572:	16.10	39.64:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.74	14.82:	13.34	36.16	-0.575:	16.24	39.84:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.81	14.88:	13.16	35.95	-0.572:	16.01	39.53:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.83	14.82:	13.48	36.33	-0.579:	16.40	40.07:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.91	15.31:	13.49	36.33	-0.580:	16.40	40.07:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.44	14.86:	13.45	36.29	-0.574:	16.35	40.00:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.44	14.88:			:	16.35	40.00:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.95	5.95	8.38:	13.13	35.90	-0.501:	15.83	39.26:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.93	10.50:			:	15.83	39.26:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.31	13.19:	13.60	36.47	-0.554:	16.49	40.20:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.29	12.88:	13.61	36.48	-0.554:	16.49	40.21:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.32	12.90:	13.70	36.60	-0.556:	16.62	40.39:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.43	12.97:	13.68	36.59	-0.557:	16.61	40.39:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.64	13.01:	13.64	36.56	-0.559:	16.56	40.33:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.81	13.10:	13.79	36.74	-0.564:	16.73	40.58:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.85	13.33:	13.79	36.74	-0.564:	16.73	40.59:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.68	13.13:	13.80	36.76	-0.562:	16.74	40.60:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.42	12.76:	13.86	36.87	-0.561:	16.77	40.69:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.18	12.41:	14.15	37.26	-0.565:	17.10	41.20:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.21	12.57:	14.23	37.36	-0.567:	17.20	41.36:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.22	12.57:	14.23	37.36	-0.567:	17.20	41.36:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.50	12.81:	14.21	37.35	-0.570:	17.18	41.34:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.71	12.94:	14.25	37.41	-0.573:	17.23	41.42:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.81	13.10:	14.25	37.41	-0.574:	17.23	41.42:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.91	13.16:	14.26	37.43	-0.576:	17.24	41.44:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.98	13.20:	14.28	37.47	-0.577:	17.27	41.49:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.03	13.21:	14.28	37.47	-0.577:	17.27	41.49:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.12	13.25:	14.27	37.47	-0.578:	17.26	41.49:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.27	13.28:	14.27	37.47	-0.578:	17.26	41.49:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.30	11.30	13.51:	10.05	31.43	-0.473:	12.26	33.62:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.90	13.63:	10.44	32.00	-0.486:	13.10	34.73:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.99	14.01:	10.66	32.27	-0.492:	13.39	35.11:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.92	13.65:	11.00	32.61	-0.498:	13.83	35.62:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.91	13.80:	11.02	32.64	-0.498:	13.86	35.66:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.91	13.70:	11.14	32.75	-0.500:	14.01	35.83:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.91	13.70:	10.95	32.57	-0.497:	13.77	35.56:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.89	13.61:	11.29	32.91	-0.503:	14.18	36.04:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.90	14.00:	11.29	32.91	-0.503:	14.18	36.05:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.49	13.60:	11.26	32.88	-0.497:	14.13	35.99:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.49	13.61:			:	14.13	35.99:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.57	6.57	8.84:	11.01	32.62	-0.449:	13.66	35.42:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.05	9.90:			:	13.66	35.42:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.68	12.09:	11.44	33.07	-0.484:	14.29	36.19:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.62	11.81:	11.45	33.08	-0.484:	14.30	36.20:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.62	11.81:	11.53	33.17	-0.486:	14.42	36.35:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.64	11.80:	11.50	33.15	-0.485:	14.41	36.34:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.69	11.71:	11.46	33.12	-0.485:	14.36	36.29:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.73	11.70:	11.62	33.29	-0.488:	14.54	36.52:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.75	11.89:	11.62	33.29	-0.489:	14.54	36.52:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.64	11.74:	11.63	33.30	-0.488:	14.54	36.53:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.45	11.46:	11.70	33.41	-0.487:	14.59	36.62:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.24	11.16:	12.01	33.76	-0.491:	14.94	37.08:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.26	11.30:	12.08	33.85	-0.493:	15.04	37.22:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.26	11.29:	12.08	33.85	-0.493:	15.04	37.22:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.43	11.44:	12.05	33.83	-0.494:	15.01	37.20:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.56	11.50:	12.10	33.89	-0.496:	15.07	37.27:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.62	11.63:	12.10	33.89	-0.497:	15.07	37.27:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.68	11.65:	12.11	33.91	-0.498:	15.07	37.29:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.72	11.67:	12.13	33.94	-0.498:	15.10	37.33:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.75	11.65:	12.13	33.94	-0.499:	15.10	37.34:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.80	11.67:	12.12	33.93	-0.499:	15.09	37.33:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.89	11.66:	12.12	33.93	-0.499:	15.09	37.33:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	8.16	8.16	9.76:	6.03	22.51	-0.289:	7.66	23.45:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.20	11.26:	4.99	22.09	-0.289:	6.91	23.15:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		10.47	11.52:	5.03	22.16	-0.291:	6.99	23.25:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		10.17	11.03:	5.10	22.21	-0.290:	7.11	23.33:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.93	10.86:	5.09	22.20	-0.289:	7.11	23.33:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.86	10.73:	5.10	22.21	-0.289:	7.15	23.35:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.73	10.60:	5.09	22.21	-0.288:	7.10	23.33:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.63	10.47:	5.20	22.27	-0.288:	7.26	23.42:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.49	10.53:	5.21	22.28	-0.288:	7.27	23.43:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.22	10.26:	5.24	22.29	-0.286:	7.29	23.44:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.22	10.26:			:	7.29	23.44:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.84	4.84	6.27:	5.72	22.54	-0.268:	7.63	23.64:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.12	6.56:			:	7.63	23.64:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.57	8.78:	5.50	22.43	-0.280:	7.53	23.59:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.48	8.53:	5.51	22.44	-0.280:	7.54	23.60:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.45	8.50:	5.47	22.43	-0.279:	7.53	23.60:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.36	8.39:	5.40	22.39	-0.278:	7.46	23.57:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.18	8.14:	5.40	22.40	-0.277:	7.46	23.57:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.05	7.99:	5.49	22.46	-0.277:	7.57	23.64:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.02	8.05:	5.50	22.46	-0.277:	7.57	23.65:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.01	8.01:	5.51	22.48	-0.277:	7.59	23.66:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.97	7.91:	5.70	22.60	-0.279:	7.76	23.79:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.90	7.79:	5.95	22.76	-0.281:	8.03	23.99:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.89	7.83:	5.94	22.77	-0.281:	8.04	24.00:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.89	7.82:	5.94	22.77	-0.281:	8.04	24.00:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.85	7.77:	5.89	22.75	-0.280:	8.00	23.98:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.81	7.71:	5.95	22.79	-0.281:	8.06	24.02:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.79	7.73:	5.95	22.79	-0.281:	8.06	24.02:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.77	7.68:	5.96	22.80	-0.280:	8.07	24.04:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.75	7.65:	5.94	22.80	-0.280:	8.06	24.04:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.73	7.62:	5.95	22.80	-0.280:	8.07	24.04:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.71	7.58:	5.93	22.80	-0.280:	8.05	24.04:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.67	7.49:	5.93	22.80	-0.280:	8.05	24.04:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	8.07	8.07	10.11:	8.43	22.19-0.287:		10.49	23.46:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.42	12.08:	7.97	22.06-0.295:		10.43	23.55:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.24	12.78:	8.09	22.17-0.301:		10.61	23.71:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.11	12.36:	8.29	22.29-0.303:		10.89	23.90:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.01	12.36:	8.29	22.29-0.302:		10.91	23.91:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.98	12.25:	8.35	22.33-0.303:		11.00	23.97:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.92	12.18:	8.26	22.28-0.301:		10.86	23.88:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.86	12.09:	8.48	22.41-0.303:		11.14	24.08:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.80	12.32:	8.49	22.41-0.303:		11.15	24.08:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.45	11.96:	8.49	22.42-0.301:		11.13	24.07:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.45	11.98:		:		11.13	24.07:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.04	5.04	6.94:	8.62	22.48-0.273:		11.07	24.01:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.52	7.71:		:		11.07	24.01:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		8.55	10.33:	8.72	22.55-0.291:		11.34	24.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.47	10.03:	8.73	22.56-0.292:		11.36	24.23:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.46	10.02:	8.74	22.57-0.292:		11.41	24.27:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.45	9.98:	8.69	22.55-0.292:		11.36	24.24:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.43	9.85:	8.67	22.55-0.291:		11.33	24.23:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.41	9.80:	8.80	22.63-0.293:		11.48	24.34:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.41	9.93:	8.80	22.63-0.293:		11.49	24.34:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.38	9.85:	8.81	22.64-0.293:		11.50	24.36:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.32	9.70:	8.95	22.75-0.294:		11.62	24.46:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.27	9.56:	9.25	22.94-0.297:		11.94	24.71:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.28	9.65:	9.27	22.97-0.298:		11.99	24.76:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.28	9.64:	9.27	22.97-0.298:		12.00	24.76:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.30	9.66:	9.23	22.95-0.297:		11.96	24.74:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.32	9.63:	9.29	22.99-0.298:		12.01	24.78:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.33	9.69:	9.29	22.99-0.298:		12.01	24.78:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.27	9.61:	9.30	23.01-0.298:		12.03	24.80:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.24	9.56:	9.30	23.01-0.298:		12.03	24.81:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.22	9.51:	9.30	23.01-0.298:		12.04	24.81:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.18	9.45:	9.28	23.01-0.297:		12.02	24.81:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.13	9.32:	9.28	23.01-0.297:		12.02	24.81:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	9.23	9.23	11.24:	10.12	26.55	-0.370:	12.14	28.16:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.15	12.92:	9.97	26.59	-0.382:	12.36	28.50:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.87	13.57:	10.12	26.75	-0.390:	12.56	28.73:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.80	13.22:	10.33	26.92	-0.393:	12.84	28.98:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.76	13.29:	10.34	26.93	-0.392:	12.86	29.00:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.74	13.19:	10.40	26.98	-0.393:	12.95	29.09:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.72	13.16:	10.30	26.90	-0.392:	12.81	28.96:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.69	13.08:	10.52	27.08	-0.395:	13.09	29.21:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.67	13.37:	10.53	27.08	-0.395:	13.09	29.22:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.26	12.96:	10.52	27.08	-0.391:	13.07	29.20:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.25	12.98:			:	13.07	29.20:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.67	5.67	7.64:	10.55	27.09	-0.352:	12.92	29.05:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.25	8.72:			:	12.92	29.05:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.29	11.30:	10.71	27.23	-0.379:	13.25	29.36:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.21	11.00:	10.72	27.24	-0.379:	13.26	29.37:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.23	11.01:	10.75	27.27	-0.380:	13.32	29.44:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.28	11.02:	10.71	27.25	-0.379:	13.29	29.42:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.37	10.99:	10.70	27.24	-0.380:	13.27	29.40:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.44	11.02:	10.82	27.35	-0.382:	13.41	29.54:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.46	11.17:	10.82	27.35	-0.382:	13.41	29.54:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.42	11.10:	10.83	27.36	-0.382:	13.42	29.56:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.36	10.95:	10.95	27.48	-0.383:	13.51	29.67:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.34	10.84:	11.21	27.72	-0.387:	13.81	29.97:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.36	10.95:	11.25	27.76	-0.388:	13.87	30.04:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.37	10.94:	11.25	27.76	-0.388:	13.87	30.04:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.44	11.00:	11.22	27.74	-0.388:	13.84	30.02:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.49	11.01:	11.27	27.79	-0.389:	13.89	30.08:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.53	11.10:	11.27	27.79	-0.390:	13.90	30.08:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.43	10.98:	11.28	27.81	-0.389:	13.91	30.10:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.37	10.90:	11.29	27.82	-0.389:	13.92	30.12:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.34	10.83:	11.29	27.82	-0.389:	13.93	30.12:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.28	10.76:	11.28	27.82	-0.388:	13.91	30.12:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.19	10.59:	11.28	27.82	-0.388:	13.91	30.12:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.40	11.40	13.71:	13.42	37.66	-0.593:	15.73	40.72:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.76	15.28:	14.15	38.80	-0.627:	16.85	42.58:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.77	16.28:	14.39	39.19	-0.646:	17.15	43.11:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.93	16.12:	14.75	39.66	-0.657:	17.59	43.80:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.10	16.44:	14.77	39.70	-0.660:	17.62	43.86:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.14	16.38:	14.89	39.86	-0.664:	17.77	44.10:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.22	16.45:	14.70	39.61	-0.660:	17.53	43.72:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.25	16.39:	15.03	40.05	-0.669:	17.92	44.35:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.34	16.89:	15.03	40.06	-0.670:	17.93	44.36:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.76	16.36:	14.99	40.01	-0.661:	17.87	44.27:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.77	16.37:			:	17.87	44.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.17	7.17	9.64:	14.60	39.47	-0.574:	17.29	43.33:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.14	11.97:			:	17.29	43.33:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.50	14.59:	15.12	40.20	-0.636:	17.99	44.47:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.46	14.28:	15.13	40.21	-0.636:	18.00	44.48:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.51	14.32:	15.23	40.35	-0.639:	18.13	44.71:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.71	14.46:	15.22	40.35	-0.641:	18.13	44.72:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.06	14.62:	15.18	40.31	-0.645:	18.08	44.65:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		12.31	14.78:	15.33	40.52	-0.652:	18.25	44.94:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		12.37	15.03:	15.33	40.53	-0.653:	18.25	44.94:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		12.27	14.89:	15.33	40.54	-0.651:	18.25	44.95:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.12	14.64:	15.38	40.64	-0.651:	18.28	45.03:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.05	14.46:	15.67	41.08	-0.657:	18.60	45.60:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.11	14.65:	15.75	41.21	-0.660:	18.70	45.79:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.11	14.65:	15.75	41.21	-0.661:	18.70	45.80:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.36	14.85:	15.73	41.20	-0.663:	18.69	45.78:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.54	14.95:	15.78	41.27	-0.667:	18.74	45.87:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		12.64	15.12:	15.78	41.27	-0.668:	18.74	45.87:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		12.54	14.98:	15.79	41.29	-0.667:	18.74	45.89:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.47	14.90:	15.81	41.34	-0.667:	18.77	45.96:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.44	14.83:	15.81	41.34	-0.666:	18.78	45.96:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.39	14.75:	15.81	41.35	-0.666:	18.77	45.96:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.34	14.59:	15.81	41.35	-0.666:	18.77	45.96:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: C) /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.71	11.71	13.86:	11.06	37.12	-0.583:	13.21	39.75:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.59	14.26:	11.53	37.90	-0.604:	14.04	41.09:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.82	14.86:	11.75	38.23	-0.612:	14.30	41.53:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.76	14.59:	12.03	38.58	-0.618:	14.66	42.05:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.77	14.73:	12.05	38.61	-0.619:	14.68	42.09:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.76	14.65:	12.14	38.73	-0.621:	14.81	42.27:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.77	14.65:	12.00	38.55	-0.618:	14.62	42.00:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.75	14.57:	12.26	38.88	-0.624:	14.94	42.48:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.76	14.91:	12.27	38.89	-0.625:	14.95	42.48:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.27	14.46:	12.24	38.86	-0.602:	14.91	42.42:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.27	14.47:			:	14.91	42.42:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.66	6.66	8.92:	12.03	38.58	-0.549:	14.52	41.85:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.34	10.41:			:	14.52	41.85:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.19	12.75:	12.39	39.05	-0.596:	15.04	42.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.14	12.48:	12.39	39.05	-0.596:	15.04	42.63:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.17	12.50:	12.47	39.15	-0.598:	15.15	42.79:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.28	12.58:	12.45	39.15	-0.599:	15.14	42.79:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.49	12.63:	12.42	39.13	-0.600:	15.11	42.76:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.63	12.72:	12.55	39.30	-0.605:	15.26	42.99:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.67	12.91:	12.56	39.30	-0.606:	15.26	42.99:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.60	12.80:	12.56	39.33	-0.605:	15.26	43.01:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.49	12.60:	12.64	39.46	-0.606:	15.32	43.13:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.43	12.44:	12.90	39.84	-0.612:	15.61	43.61:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.47	12.59:	12.97	39.94	-0.614:	15.70	43.76:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.48	12.58:	12.97	39.94	-0.614:	15.70	43.76:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.62	12.70:	12.95	39.92	-0.615:	15.69	43.75:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.72	12.75:	13.00	39.99	-0.617:	15.73	43.83:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.79	12.87:	13.00	39.99	-0.618:	15.73	43.83:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.69	12.75:	13.01	40.02	-0.617:	15.74	43.86:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.63	12.68:	13.03	40.05	-0.617:	15.77	43.90:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.59	12.61:	13.03	40.06	-0.617:	15.77	43.91:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.54	12.53:	13.02	40.06	-0.616:	15.76	43.91:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.47	12.37:	13.02	40.06	-0.616:	15.76	43.91:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	9.62	9.62	11.51:	8.11	24.80	-0.340:	10.02	26.13:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.55	12.85:	7.68	24.67	-0.347:	9.96	26.24:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.93	13.30:	7.80	24.80	-0.352:	10.14	26.42:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.70	12.85:	7.99	24.93	-0.353:	10.41	26.63:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.53	12.78:	8.00	24.94	-0.351:	10.42	26.65:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.48	12.66:	8.06	24.98	-0.352:	10.51	26.72:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.39	12.56:	7.97	24.92	-0.350:	10.38	26.61:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.31	12.45:	8.19	25.07	-0.352:	10.65	26.83:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.21	12.62:	8.19	25.07	-0.352:	10.66	26.83:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.82	12.22:	8.19	25.08	-0.349:	10.65	26.83:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.81	12.23:			:	10.65	26.83:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.84	5.84	7.59:	8.40	25.20	-0.320:	10.67	26.83:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.13	8.05:			:	10.67	26.83:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		8.80	10.43:	8.44	25.24	-0.339:	10.87	27.00:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.70	10.14:	8.45	25.25	-0.338:	10.89	27.01:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.69	10.12:	8.46	25.27	-0.339:	10.93	27.05:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.66	10.07:	8.40	25.24	-0.338:	10.88	27.03:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.60	9.91:	8.38	25.23	-0.336:	10.85	27.01:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.56	9.84:	8.51	25.32	-0.325:	11.00	27.14:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.55	9.96:	8.51	25.33	-0.370:	11.00	27.14:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.52	9.89:	8.52	25.34	0.000:	11.01	27.15:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.47	9.76:	8.66	25.46	-0.339:	11.14	27.27:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.42	9.63:	8.96	25.69	-0.343:	11.46	27.55:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.43	9.71:	8.98	25.72	-0.343:	11.51	27.60:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.43	9.71:	8.98	25.72	-0.343:	11.51	27.61:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.41	9.68:	8.94	25.69	-0.343:	11.47	27.58:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.39	9.63:	8.99	25.74	-0.344:	11.52	27.63:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.41	9.69:	8.99	25.74	-0.343:	11.52	27.63:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.29	9.56:	9.00	25.75	-0.343:	11.53	27.65:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.22	9.47:	9.00	25.76	-0.342:	11.54	27.66:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.17	9.40:	9.00	25.76	-0.342:	11.54	27.66:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.09	9.30:	8.98	25.75	-0.341:	11.52	27.65:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.95	9.10:	8.98	25.75	-0.341:	11.52	27.65:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.03	10.03	12.12:	11.00	23.00	-0.315:	13.12	24.44:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.26	14.08:	10.72	22.94	-0.325:	13.28	24.69:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.19	14.85:	10.87	23.08	-0.333:	13.49	24.88:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.13	14.47:	11.13	23.25	-0.336:	13.85	25.16:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.08	14.55:	11.14	23.26	-0.336:	13.87	25.17:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.07	14.44:	11.23	23.32	-0.337:	13.99	25.26:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.04	14.41:	11.09	23.23	-0.335:	13.80	25.12:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.00	14.32:	11.37	23.42	-0.338:	14.15	25.39:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.98	14.62:	11.38	23.42	-0.338:	14.16	25.40:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.47	14.12:	11.37	23.42	-0.335:	14.13	25.38:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.47	14.14:			:	14.13	25.38:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.29	6.29	8.26:	11.39	23.42	-0.298:	13.93	25.21:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.76	9.20:			:	13.93	25.21:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.22	12.19:	11.60	23.57	-0.323:	14.34	25.55:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.10	11.83:	11.61	23.58	-0.323:	14.35	25.55:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.10	11.83:	11.65	23.61	-0.323:	14.43	25.62:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.11	11.81:	11.59	23.58	-0.323:	14.38	25.59:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.14	11.71:	11.56	23.57	-0.322:	14.34	25.57:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.16	11.69:	11.71	23.67	-0.324:	14.52	25.71:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.17	11.85:	11.71	23.67	-0.324:	14.52	25.71:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.09	11.72:	11.72	23.69	-0.324:	14.52	25.72:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.94	11.48:	11.85	23.79	-0.325:	14.63	25.82:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.79	11.22:	12.17	24.03	-0.328:	14.98	26.13:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.80	11.32:	12.21	24.07	-0.328:	15.05	26.19:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.80	11.31:	12.21	24.07	-0.328:	15.05	26.19:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.86	11.36:	12.16	24.04	-0.328:	15.01	26.16:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.91	11.36:	12.22	24.09	-0.329:	15.07	26.21:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.95	11.45:	12.22	24.09	-0.330:	15.07	26.22:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.85	11.34:	12.23	24.10	-0.329:	15.07	26.23:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.79	11.26:	12.23	24.10	-0.329:	15.08	26.24:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.75	11.19:	12.23	24.11	-0.328:	15.09	26.24:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.68	11.10:	12.21	24.10	-0.328:	15.06	26.23:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.58	10.92:	12.21	24.10	-0.328:	15.06	26.23:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	12.31	12.31	14.40:	14.56	39.40	-0.637:	16.65	42.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.10	16.34:	15.22	40.53	-0.678:	17.69	44.21:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		15.22	17.47:	15.46	40.93	-0.699:	17.97	44.75:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		15.35	17.34:	15.79	41.41	-0.710:	18.38	45.43:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		15.48	17.62:	15.81	41.44	-0.712:	18.41	45.49:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.51	17.56:	15.92	41.60	-0.717:	18.55	45.73:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.58	17.62:	15.75	41.36	-0.713:	18.33	45.36:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.59	17.56:	16.05	41.80	-0.721:	18.70	45.98:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.67	17.99:	16.05	41.80	-0.723:	18.70	45.99:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		15.00	17.39:	16.02	41.75	-0.712:	18.65	45.90:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		15.00	17.40:			:	18.65	45.90:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.84	7.84	10.11:	15.68	41.25	-0.613:	18.13	45.00:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.85	12.49:			:	18.13	45.00:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.46	15.38:	16.15	41.95	-0.682:	18.77	46.11:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.42	15.07:	16.15	41.96	-0.681:	18.77	46.12:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.47	15.11:	16.24	42.10	-0.684:	18.89	46.34:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.66	15.25:	16.23	42.10	-0.687:	18.89	46.35:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.02	15.42:	16.20	42.06	-0.690:	18.85	46.29:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.27	15.59:	16.34	42.28	-0.698:	19.01	46.57:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.33	15.82:	16.34	42.28	-0.698:	19.01	46.58:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.17	15.63:	16.35	42.30	-0.696:	19.01	46.59:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.93	15.29:	16.40	42.41	-0.695:	19.05	46.68:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.76	15.01:	16.67	42.86	-0.700:	19.36	47.26:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.81	15.18:	16.75	42.99	-0.703:	19.45	47.45:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.81	15.18:	16.75	42.99	-0.703:	19.46	47.46:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		13.09	15.41:	16.73	42.98	-0.706:	19.44	47.44:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		13.29	15.54:	16.78	43.05	-0.710:	19.48	47.53:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.40	15.70:	16.78	43.06	-0.712:	19.48	47.53:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.34	15.62:	16.78	43.08	-0.711:	19.49	47.55:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.32	15.58:	16.81	43.12	-0.712:	19.52	47.61:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.31	15.53:	16.81	43.12	-0.712:	19.52	47.62:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.29	15.48:	16.80	43.12	-0.711:	19.52	47.62:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.29	15.37:	16.80	43.12	-0.711:	19.52	47.62:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	13.77	13.77	15.80:	14.18	45.78	-0.778:	16.20	49.16:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.88	16.64:	14.76	46.97	-0.808:	17.10	51.05:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		15.39	17.46:	14.98	47.42	-0.830:	17.35	51.63:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		15.41	17.33:	15.25	47.88	-0.837:	17.69	52.29:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		15.47	17.51:	15.27	47.91	-0.841:	17.72	52.35:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.49	17.46:	15.36	48.07	-0.846:	17.84	52.57:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.52	17.49:	15.22	47.84	-0.841:	17.65	52.22:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.51	17.42:	15.47	48.27	-0.866:	17.96	52.83:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.55	17.75:	15.47	48.27	-0.844:	17.96	52.84:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		14.91	17.19:	15.44	48.23	-0.838:	17.92	52.76:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		14.91	17.19:			:	17.92	52.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.45	8.45	10.63:	15.21	47.81	-0.733:	17.53	51.97:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.33	12.75:			:	17.53	51.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.47	15.24:	15.57	48.44	-0.802:	18.03	52.98:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.43	14.98:	15.57	48.45	-0.802:	18.04	53.00:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.48	15.01:	15.65	48.59	-0.805:	18.14	53.21:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.65	15.15:	15.64	48.59	-0.808:	18.14	53.22:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.98	15.30:	15.61	48.57	-0.812:	18.11	53.17:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.21	15.46:	15.73	48.79	-0.820:	18.25	53.46:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.26	15.66:	15.74	48.79	-0.820:	18.25	53.46:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.13	15.50:	15.74	48.81	-0.819:	18.25	53.49:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.94	15.23:	15.80	48.96	-0.818:	18.30	53.61:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.82	15.03:	16.05	49.43	-0.824:	18.57	54.21:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.88	15.19:	16.11	49.56	-0.827:	18.65	54.40:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.88	15.19:	16.11	49.56	-0.827:	18.65	54.40:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		13.15	15.41:	16.10	49.56	-0.831:	18.64	54.39:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		13.34	15.54:	16.14	49.64	-0.835:	18.68	54.49:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.44	15.69:	16.14	49.64	-0.837:	18.68	54.49:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.42	15.64:	16.15	49.67	-0.837:	18.69	54.52:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.41	15.62:	16.17	49.72	-0.838:	18.72	54.59:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.41	15.58:	16.17	49.72	-0.838:	18.72	54.59:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.42	15.56:	16.17	49.73	-0.838:	18.72	54.60:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.45	15.49:	16.17	49.73	-0.838:	18.72	54.60:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	13.05	13.05	15.01:	11.97	40.16	-0.658:	13.93	42.84:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.25	15.50:	12.33	40.88	-0.684:	14.59	44.07:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.37	16.11:	12.52	41.22	-0.690:	14.83	44.51:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.21	15.84:	12.75	41.53	-0.694:	15.12	44.97:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.13	15.88:	12.77	41.56	-0.694:	15.14	45.01:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.11	15.80:	12.84	41.66	-0.696:	15.24	45.16:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.07	15.77:	12.73	41.51	-0.692:	15.09	44.93:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.03	15.68:	12.95	41.81	-0.697:	15.36	45.36:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.01	15.91:	12.95	41.82	-0.697:	15.36	45.36:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.47	15.43:	12.93	41.80	-0.689:	15.33	45.32:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.47	15.43:			:	15.33	45.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.05	8.05	10.13:	12.81	41.61	-0.617:	15.05	44.86:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.66	11.46:			:	15.05	44.86:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.42	13.74:	13.07	41.99	-0.665:	15.46	45.52:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.34	13.48:	13.07	42.00	-0.664:	15.46	45.53:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.36	13.49:	13.13	42.08	-0.666:	15.54	45.67:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.43	13.53:	13.11	42.08	-0.667:	15.54	45.67:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.56	13.53:	13.10	42.07	-0.668:	15.51	45.65:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.65	13.58:	13.21	42.24	-0.672:	15.64	45.87:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.68	13.75:	13.21	42.24	-0.672:	15.64	45.87:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.58	13.62:	13.22	42.26	-0.671:	15.65	45.89:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.42	13.38:	13.30	42.42	-0.672:	15.72	46.04:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.31	13.19:	13.54	42.79	-0.676:	15.98	46.51:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.34	13.31:	13.59	42.88	-0.678:	16.05	46.64:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.35	13.31:	13.59	42.89	-0.678:	16.05	46.64:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.52	13.46:	13.58	42.88	-0.680:	16.04	46.64:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.65	13.54:	13.62	42.95	-0.683:	16.08	46.72:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.70	13.63:	13.62	42.95	-0.684:	16.08	46.72:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.73	13.64:	13.63	42.98	-0.685:	16.09	46.75:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.76	13.65:	13.65	43.01	-0.686:	16.12	46.80:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.78	13.63:	13.65	43.01	-0.686:	16.12	46.80:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.81	13.63:	13.65	43.02	-0.686:	16.12	46.81:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.87	13.60:	13.65	43.02	-0.686:	16.12	46.81:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	10.00	10.00	11.45:	6.55	22.22-0.296:		8.01	23.07:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.11	12.89:	5.63	21.87-0.298:		7.32	22.80:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.13	13.02:	5.67	21.94-0.299:		7.39	22.89:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.70	12.46:	5.68	21.95-0.296:		7.45	22.93:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.37	12.18:	5.68	21.95-0.294:		7.45	22.93:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.27	12.04:	5.67	21.95-0.293:		7.46	22.94:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.10	11.86:	5.69	21.96-0.293:		7.45	22.94:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.96	11.71:	5.75	22.00-0.293:		7.55	23.00:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.77	11.68:	5.76	22.00-0.291:		7.55	23.00:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.44	11.35:	5.80	22.02-0.290:		7.58	23.02:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.43	11.35:			:	7.58	23.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.54	6.54	7.81:	6.36	22.31-0.276:		8.04	23.28:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.59	7.84:			:	8.04	23.28:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		8.81	9.87:	6.03	22.15-0.283:		7.81	23.16:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.67	9.60:	6.05	22.16-0.283:		7.82	23.16:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.63	9.56:	5.99	22.14-0.282:		7.79	23.15:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.50	9.41:	5.93	22.11-0.280:		7.73	23.13:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.24	9.09:	5.94	22.13-0.279:		7.74	23.14:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.06	8.90:	6.02	22.17-0.279:		7.83	23.20:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.02	8.94:	6.02	22.17-0.279:		7.83	23.20:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.00	8.89:	6.04	22.19-0.279:		7.85	23.22:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.94	8.78:	6.22	22.31-0.281:		8.03	23.35:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.83	8.63:	6.43	22.45-0.282:		8.26	23.51:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.82	8.66:	6.42	22.45-0.282:		8.26	23.52:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.82	8.65:	6.42	22.45-0.282:		8.26	23.52:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.78	8.61:	6.38	22.44-0.281:		8.22	23.50:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.75	8.55:	6.43	22.47-0.282:		8.28	23.54:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.72	8.56:	6.43	22.48-0.282:		8.28	23.54:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.79	8.61:	6.45	22.49-0.282:		8.30	23.56:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.84	8.65:	6.43	22.49-0.282:		8.29	23.56:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.87	8.66:	6.44	22.49-0.282:		8.29	23.57:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.92	8.69:	6.42	22.49-0.283:		8.28	23.57:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.99	8.72:	6.42	22.49-0.283:		8.28	23.57:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7	7.32	7.32	8.50	5.95	41.59	-0.590	7.13	43.00	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		10.11	10.67	5.30	41.18	-0.609	6.60	42.67	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		10.45	11.22	5.35	41.35	-0.614	6.67	42.87	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		10.03	10.77	5.34	41.35	-0.609	6.68	42.89	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		9.72	10.49	5.34	41.35	-0.605	6.67	42.89	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		9.62	10.37	5.33	41.34	-0.603	6.67	42.89	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		9.46	10.20	5.35	41.38	-0.602	6.69	42.91	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		9.34	10.07	5.39	41.42	-0.601	6.73	42.97	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		9.16	10.01	5.39	41.42	-0.599	6.74	42.98	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		8.93	9.78	5.43	41.47	-0.597	6.77	43.02	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		8.92	9.78				6.77	43.02	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	5.64	5.64	6.70	6.14	42.24	-0.575	7.42	43.80	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		5.84	6.90				7.42	43.80	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		7.26	8.22	5.66	41.74	-0.582	7.00	43.31	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		7.20	8.05	5.67	41.75	-0.582	7.01	43.32	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		7.18	8.04	5.62	41.71	-0.580	6.96	43.28	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		7.13	7.97	5.56	41.66	-0.578	6.91	43.23	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		7.02	7.81	5.57	41.69	-0.577	6.92	43.27	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		6.94	7.72	5.64	41.78	-0.578	6.99	43.36	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		6.93	7.76	5.64	41.78	-0.578	6.99	43.37	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		6.93	7.75	5.65	41.81	-0.578	7.01	43.40	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		6.94	7.73	5.82	42.05	-0.582	7.17	43.66	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		6.95	7.73	5.97	42.27	-0.586	7.33	43.91	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		6.95	7.77	5.95	42.28	-0.585	7.32	43.92	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		6.95	7.76	5.95	42.28	-0.585	7.32	43.92	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		6.94	7.75	5.93	42.27	-0.585	7.30	43.91	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		6.93	7.72	5.97	42.33	-0.586	7.35	43.98	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		6.91	7.73	5.97	42.33	-0.585	7.35	43.98	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		6.99	7.80	5.99	42.37	-0.587	7.37	44.02	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		7.05	7.85	5.98	42.37	-0.587	7.36	44.02	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		7.09	7.87	5.98	42.37	-0.588	7.36	44.03	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		7.14	7.92	5.97	42.38	-0.588	7.36	44.04	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		7.24	7.98	5.97	42.38	-0.588	7.36	44.04	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	5.98	5.98	7.45:	7.88	37.46-0.517:		9.37	39.13:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.23	10.48:	6.47	36.27-0.522:		8.23	38.11:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		10.67	11.70:	6.46	36.36-0.538:		8.27	38.24:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		10.59	11.44:	6.57	36.47-0.539:		8.41	38.41:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		10.49	11.39:	6.55	36.46-0.537:		8.41	38.41:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.45	11.30:	6.58	36.49-0.537:		8.45	38.45:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.39	11.23:	6.54	36.46-0.536:		8.39	38.39:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.33	11.15:	6.70	36.62-0.539:		8.58	38.61:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.25	11.25:	6.71	36.63-0.538:		8.59	38.62:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.93	10.92:	6.74	36.67-0.535:		8.61	38.65:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.92	10.93:				8.61	38.65:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.94	4.94	6.26:	7.39	37.31-0.497:		9.13	39.22:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.32	6.75:				9.13	39.22:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.91	9.10:	7.08	37.02-0.521:		8.93	39.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.84	8.87:	7.10	37.04-0.520:		8.95	39.04:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.83	8.85:	7.05	36.99-0.519:		8.92	39.01:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.78	8.78:	6.94	36.90-0.516:		8.82	38.92:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.70	8.61:	6.93	36.90-0.515:		8.81	38.92:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.63	8.52:	7.06	37.05-0.517:		8.95	39.09:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.62	8.59:	7.07	37.05-0.517:		8.95	39.10:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.60	8.55:	7.07	37.07-0.517:		8.96	39.11:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.56	8.47:	7.26	37.31-0.521:		9.14	39.36:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.50	8.38:	7.52	37.63-0.428:		9.42	39.73:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.50	8.43:	7.50	37.62 0.000:		9.41	39.74:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.50	8.42:	7.50	37.62 1.921:		9.41	39.74:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.56	8.47:	7.43	37.56-0.527:		9.35	39.68:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.60	8.48:	7.49	37.64-0.526:		9.40	39.77:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.60	8.52:	7.49	37.64-0.522:		9.41	39.77:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.78	8.68:	7.50	37.66-0.528:		9.42	39.79:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.91	8.79:	7.47	37.64-0.528:		9.40	39.78:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.99	8.84:	7.48	37.65-0.530:		9.40	39.79:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.12	8.96:	7.44	37.62-0.530:		9.37	39.76:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.35	9.13:	7.44	37.62-0.530:		9.37	39.76:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	7.36	7.36	8.99:	7.44	36.10	-0.504:	9.08	37.84:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.35	10.63:	6.86	35.77	-0.516:	8.76	37.75:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.88	11.17:	6.94	35.94	-0.524:	8.89	37.97:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.73	10.83:	7.07	36.07	-0.525:	9.06	38.18:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.60	10.78:	7.07	36.08	-0.523:	9.07	38.19:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.56	10.68:	7.10	36.12	-0.524:	9.12	38.25:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.50	10.61:	7.05	36.07	-0.522:	9.04	38.17:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.44	10.53:	7.21	36.23	-0.524:	9.23	38.39:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.37	10.67:	7.21	36.24	-0.524:	9.24	38.40:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.11	10.41:	7.23	36.26	-0.521:	9.24	38.41:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.11	10.42:			:	9.24	38.41:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.88	5.88	7.49:	7.46	36.47	-0.494:	9.35	38.50:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.09	7.82:			:	9.35	38.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.92	9.40:	7.44	36.47	-0.513:	9.44	38.64:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.84	9.16:	7.45	36.49	-0.512:	9.45	38.65:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.82	9.15:	7.44	36.49	-0.512:	9.47	38.68:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.77	9.08:	7.39	36.45	-0.511:	9.42	38.64:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.68	8.91:	7.38	36.46	-0.510:	9.41	38.64:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.62	8.83:	7.48	36.57	-0.510:	9.53	38.78:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.61	8.91:	7.49	36.57	-0.514:	9.53	38.79:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.56	8.83:	7.50	36.60	-0.519:	9.54	38.82:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.47	8.67:	7.65	36.80	-0.511:	9.68	39.02:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.37	8.50:	7.91	37.11	-0.517:	9.96	39.39:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.38	8.56:	7.92	37.14	-0.517:	9.99	39.44:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.38	8.55:	7.92	37.14	-0.517:	9.99	39.44:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.47	8.63:	7.88	37.11	-0.517:	9.95	39.41:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.53	8.66:	7.93	37.18	-0.519:	10.00	39.48:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.54	8.71:	7.93	37.18	-0.520:	10.01	39.49:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.67	8.82:	7.94	37.20	-0.521:	10.01	39.51:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.76	8.90:	7.93	37.20	-0.521:	10.01	39.51:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.82	8.93:	7.93	37.20	-0.527:	10.01	39.52:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.91	9.02:	7.91	37.19	0.000:	9.99	39.51:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.09	9.13:	7.91	37.19	0.000:	9.99	39.51:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: C) /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	9.04	9.04	11.53:	11.80	28.89	-0.412:	14.31	31.24:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.53	13.31:	12.23	29.43	-0.431:	15.24	32.36:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.60	14.10:	12.47	29.70	-0.444:	15.54	32.75:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.77	13.80:	12.88	30.08	-0.453:	16.06	33.32:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.93	14.13:	12.90	30.11	-0.455:	16.09	33.36:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.97	14.04:	13.04	30.24	-0.457:	16.27	33.56:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.05	14.11:	12.82	30.03	-0.454:	15.99	33.24:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.09	14.06:	13.21	30.40	-0.462:	16.46	33.78:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.18	14.63:	13.22	30.41	-0.462:	16.46	33.79:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.75	14.20:	13.18	30.37	-0.458:	16.40	33.72:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.75	14.22:			:	16.40	33.72:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.97	6.97	9.48:	12.80	30.01	-0.412:	15.79	33.01:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.49	10.85:			:	15.79	33.01:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.13	12.94:	13.37	30.56	-0.447:	16.57	33.92:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.07	12.59:	13.38	30.57	-0.447:	16.58	33.93:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.08	12.59:	13.48	30.67	-0.449:	16.72	34.10:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.15	12.62:	13.45	30.65	-0.449:	16.70	34.09:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.28	12.58:	13.40	30.61	-0.449:	16.64	34.02:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.39	12.62:	13.58	30.79	-0.453:	16.85	34.27:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.42	12.86:	13.58	30.79	-0.454:	16.85	34.27:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.25	12.63:	13.58	30.80	-0.452:	16.85	34.28:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.96	12.22:	13.65	30.90	-0.451:	16.89	34.36:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.64	11.77:	14.01	31.28	-0.455:	17.29	34.85:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.66	11.92:	14.09	31.37	-0.456:	17.40	35.00:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.66	11.92:	14.09	31.37	-0.456:	17.40	35.00:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.94	12.16:	14.05	31.34	-0.458:	17.36	34.97:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.15	12.29:	14.11	31.40	-0.461:	17.42	35.04:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.23	12.44:	14.11	31.40	-0.462:	17.42	35.04:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.47	12.63:	14.11	31.41	-0.464:	17.42	35.05:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.64	12.76:	14.13	31.44	-0.465:	17.45	35.09:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.74	12.81:	14.13	31.44	-0.467:	17.45	35.09:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.93	12.96:	14.11	31.43	-0.468:	17.43	35.08:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.26	13.16:	14.11	31.43	-0.468:	17.43	35.08:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.85	10.85	13.36:	13.51	28.50	-0.421:	16.03	30.90:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.73	14.70:	14.11	29.19	-0.438:	17.11	32.20:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.66	15.36:	14.36	29.47	-0.450:	17.43	32.60:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.89	15.09:	14.77	29.86	-0.460:	17.94	33.19:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.11	15.49:	14.80	29.89	-0.462:	17.97	33.23:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.17	15.41:	14.93	30.02	-0.465:	18.15	33.43:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.28	15.50:	14.71	29.81	-0.462:	17.87	33.11:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.33	15.46:	15.10	30.19	-0.470:	18.33	33.66:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.47	16.09:	15.10	30.19	-0.471:	18.34	33.66:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.96	15.60:	15.06	30.15	-0.466:	18.27	33.59:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.97	15.62:			:	18.27	33.59:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.78	7.78	10.35:	14.63	29.73	-0.416:	17.61	32.81:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.42	12.10:			:	17.61	32.81:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.25	14.29:	15.23	30.32	-0.454:	18.42	33.77:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.19	13.92:	15.24	30.33	-0.453:	18.43	33.78:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.21	13.93:	15.34	30.44	-0.456:	18.58	33.96:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.28	13.97:	15.32	30.43	-0.456:	18.57	33.96:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.45	13.94:	15.27	30.39	-0.456:	18.51	33.89:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.59	14.01:	15.45	30.57	-0.461:	18.71	34.14:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.63	14.26:	15.45	30.57	-0.461:	18.71	34.14:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.37	13.96:	15.45	30.58	-0.459:	18.71	34.15:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.96	13.43:	15.51	30.66	-0.456:	18.74	34.21:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.50	12.85:	15.85	31.03	-0.459:	19.12	34.70:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.52	13.01:	15.94	31.13	-0.461:	19.24	34.85:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.52	13.00:	15.94	31.13	-0.461:	19.24	34.85:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.89	13.32:	15.91	31.11	-0.463:	19.21	34.83:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.16	13.50:	15.96	31.17	-0.467:	19.26	34.90:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.27	13.68:	15.96	31.17	-0.468:	19.26	34.90:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.54	13.88:	15.97	31.18	-0.470:	19.26	34.91:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.73	14.03:	15.98	31.21	-0.472:	19.29	34.95:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.85	14.09:	15.99	31.21	-0.473:	19.30	34.96:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.05	14.25:	15.97	31.20	-0.475:	19.28	34.95:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.41	14.45:	15.97	31.20	-0.475:	19.28	34.95:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.21	10.21	11.88:	8.86	22.79-0.310:		10.55	23.86:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.09	12.41:	8.05	22.45-0.306:		10.04	23.67:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		10.99	12.25:	8.12	22.54-0.306:		10.15	23.79:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		10.80	11.83:	8.21	22.59-0.306:		10.30	23.89:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		10.67	11.77:	8.20	22.59-0.305:		10.30	23.89:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.63	11.66:	8.23	22.61-0.305:		10.35	23.92:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.56	11.58:	8.20	22.59-0.304:		10.29	23.88:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.50	11.49:	8.33	22.67-0.306:		10.46	24.00:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.43	11.66:	8.33	22.68-0.305:		10.47	24.01:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.12	11.34:	8.36	22.69-0.304:		10.48	24.02:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.12	11.35:		:		10.48	24.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.15	7.15	8.72:	8.67	22.86-0.290:		10.65	24.12:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.24	8.90:		:		10.65	24.12:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.03	10.42:	8.58	22.82-0.300:		10.69	24.16:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.91	10.14:	8.59	22.83-0.299:		10.70	24.17:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.87	10.10:	8.57	22.82-0.299:		10.70	24.17:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.73	9.93:	8.51	22.80-0.298:		10.65	24.15:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.47	9.60:	8.51	22.80-0.353:		10.64	24.15:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.31	9.42:	8.60	22.87-0.295:		10.76	24.23:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.28	9.50:	8.60	22.87-0.295:		10.76	24.23:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.10	9.29:	8.62	22.88-0.295:		10.77	24.25:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.78	8.91:	8.78	23.00-0.295:		10.92	24.37:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.32	8.41:	9.02	23.17-0.295:		11.18	24.58:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.29	8.43:	9.02	23.18-0.295:		11.20	24.60:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.28	8.42:	9.02	23.18-0.295:		11.21	24.60:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.44	8.56:	8.98	23.16-0.296:		11.17	24.58:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.56	8.64:	9.04	23.20-0.297:		11.22	24.63:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.60	8.72:	9.04	23.20-0.297:		11.23	24.63:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.85	8.94:	9.05	23.22-0.299:		11.24	24.64:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.02	9.10:	9.04	23.22-0.300:		11.24	24.65:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.13	9.17:	9.05	23.22-0.300:		11.24	24.65:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.32	9.33:	9.03	23.22-0.301:		11.23	24.65:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.63	9.57:	9.03	23.22-0.301:		11.23	24.65:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	11.38	11.38	13.93:	13.24	29.43	-0.442:	15.80	31.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.53	15.27:	14.06	30.36	-0.467:	17.12	33.58:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.49	16.18:	14.33	30.68	-0.481:	17.46	34.03:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.66	15.91:	14.77	31.12	-0.491:	18.00	34.69:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.85	16.28:	14.80	31.15	-0.493:	18.04	34.74:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.89	16.20:	14.95	31.31	-0.496:	18.23	34.97:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.98	16.28:	14.71	31.07	-0.493:	17.93	34.61:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.02	16.21:	15.12	31.48	-0.501:	18.41	35.21:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.13	16.81:	15.12	31.49	-0.502:	18.42	35.22:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.60	16.31:	15.07	31.44	-0.496:	18.34	35.12:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.61	16.33:			:	18.34	35.12:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.94	7.94	10.64:	14.52	30.87	-0.436:	17.56	34.16:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.68	12.55:			:	17.56	34.16:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.81	14.96:	15.22	31.59	-0.482:	18.48	35.29:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.74	14.60:	15.23	31.60	-0.482:	18.49	35.30:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.73	14.59:	15.35	31.74	-0.484:	18.65	35.52:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.74	14.57:	15.34	31.73	-0.484:	18.65	35.52:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.78	14.43:	15.29	31.69	-0.483:	18.58	35.45:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.84	14.42:	15.47	31.88	-0.487:	18.79	35.72:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.87	14.67:	15.47	31.88	-0.487:	18.79	35.72:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.53	14.31:	15.47	31.89	-0.484:	18.79	35.72:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.98	13.66:	15.51	31.96	-0.480:	18.80	35.77:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.36	12.93:	15.85	32.35	-0.481:	19.18	36.29:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.37	13.10:	15.95	32.46	-0.483:	19.31	36.46:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.37	13.10:	15.95	32.46	-0.483:	19.31	36.46:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.81	13.48:	15.92	32.44	-0.487:	19.29	36.44:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.13	13.70:	15.97	32.51	-0.491:	19.34	36.52:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.24	13.89:	15.97	32.51	-0.492:	19.34	36.52:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.58	14.14:	15.98	32.52	-0.495:	19.34	36.53:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.81	14.32:	16.00	32.56	-0.497:	19.38	36.59:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.96	14.40:	16.01	32.56	-0.499:	19.38	36.59:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.21	14.59:	15.99	32.55	-0.501:	19.37	36.58:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.64	14.84:	15.99	32.55	-0.501:	19.37	36.58:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.11	11.11	13.17:	11.10	25.10	-0.005:	13.17	26.68:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.36	14.13:	11.15	25.28	-0.369:	13.64	27.21:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.74	14.55:	11.33	25.45	-0.374:	13.88	27.45:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.68	14.18:	11.59	25.65	-0.378:	14.23	27.76:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.67	14.29:	11.60	25.67	-0.378:	14.25	27.78:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.66	14.19:	11.69	25.73	-0.379:	14.37	27.89:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.65	14.18:	11.56	25.63	-0.377:	14.18	27.73:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.62	14.10:	11.82	25.84	-0.381:	14.52	28.02:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.62	14.43:	11.83	25.84	-0.381:	14.53	28.03:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.19	14.01:	11.81	25.83	-0.377:	14.49	28.00:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.19	14.03:			:	14.49	28.00:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.93	7.93	10.04:	11.66	25.70	-0.346:	14.14	27.68:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.27	10.80:			:	14.14	27.68:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.77	12.86:	11.99	25.96	-0.370:	14.65	28.15:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.65	12.54:	12.00	25.97	-0.369:	14.66	28.15:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.61	12.49:	12.05	26.02	-0.369:	14.75	28.24:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.47	12.33:	12.02	26.00	-0.368:	14.73	28.23:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.24	11.99:	11.99	25.99	-0.366:	14.69	28.20:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.11	11.83:	12.13	26.10	-0.367:	14.85	28.35:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.09	11.97:	12.13	26.10	-0.367:	14.85	28.35:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.79	11.65:	12.14	26.12	-0.365:	14.86	28.37:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.27	11.05:	12.24	26.21	-0.363:	14.94	28.46:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.59	10.31:	12.52	26.46	-0.362:	15.26	28.77:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.56	10.39:	12.57	26.51	-0.363:	15.33	28.85:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.56	10.38:	12.57	26.51	-0.363:	15.34	28.85:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.87	10.67:	12.54	26.49	-0.364:	15.31	28.84:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.11	10.84:	12.59	26.54	-0.367:	15.36	28.89:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.19	10.98:	12.59	26.54	-0.367:	15.36	28.89:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.55	11.28:	12.61	26.55	-0.370:	15.37	28.91:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.80	11.49:	12.62	26.57	-0.372:	15.39	28.93:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.95	11.59:	12.62	26.57	-0.373:	15.40	28.94:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.21	11.80:	12.61	26.57	-0.375:	15.39	28.94:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.64	12.11:	12.61	26.57	-0.375:	15.39	28.94:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.27	10.27	12.21:	10.93	25.80	-0.366:	12.87	27.33:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.18	13.84:	10.81	25.86	-0.378:	13.12	27.68:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.82	14.47:	10.96	26.02	-0.385:	13.32	27.90:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.74	14.12:	11.15	26.17	-0.387:	13.59	28.14:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.68	14.17:	11.16	26.18	-0.387:	13.60	28.15:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.66	14.07:	11.23	26.23	-0.388:	13.70	28.23:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.63	14.04:	11.13	26.16	-0.386:	13.56	28.12:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.60	13.95:	11.34	26.32	-0.389:	13.82	28.35:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.57	14.23:	11.34	26.33	-0.389:	13.83	28.36:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.15	13.81:	11.34	26.33	-0.386:	13.81	28.34:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.15	13.83:			:	13.81	28.34:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.38	7.38	9.37:	11.29	26.27	-0.351:	13.59	28.13:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.86	10.27:			:	13.59	28.13:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.64	12.58:	11.50	26.45	-0.377:	13.96	28.48:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.52	12.26:	11.51	26.46	-0.376:	13.97	28.49:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.47	12.22:	11.55	26.49	-0.376:	14.04	28.55:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.31	12.04:	11.51	26.48	-0.375:	14.01	28.54:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.06	11.69:	11.50	26.48	-0.373:	13.99	28.53:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.92	11.52:	11.61	26.57	-0.373:	14.12	28.65:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.90	11.64:	11.62	26.57	-0.373:	14.13	28.66:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.60	11.32:	11.63	26.59	-0.371:	14.14	28.67:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.09	10.75:	11.74	26.70	-0.369:	14.23	28.78:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.44	10.04:	11.99	26.92	-0.368:	14.51	29.06:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.41	10.11:	12.03	26.96	-0.369:	14.57	29.12:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.41	10.10:	12.03	26.96	-0.369:	14.57	29.13:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.73	10.38:	12.00	26.95	-0.371:	14.55	29.11:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.96	10.56:	12.05	26.99	-0.373:	14.60	29.16:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.04	10.69:	12.05	26.99	-0.373:	14.60	29.17:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.43	11.02:	12.07	27.01	-0.376:	14.61	29.19:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.70	11.26:	12.07	27.02	-0.378:	14.63	29.21:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.86	11.37:	12.08	27.03	-0.380:	14.63	29.21:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.14	11.61:	12.07	27.03	-0.382:	14.63	29.21:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.60	11.96:	12.07	27.03	-0.382:	14.63	29.21:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.80	11.80	13.98:	13.42	27.31	-0.406:	15.61	29.26:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.43	15.58:	13.76	27.74	-0.424:	16.37	30.15:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.29	16.39:	13.97	27.96	-0.435:	16.63	30.46:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.34	16.11:	14.27	28.23	-0.433:	17.02	30.86:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.41	16.32:	14.28	28.25	-0.439:	17.05	30.89:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.43	16.23:	14.38	28.34	-0.471:	17.18	31.03:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.46	16.26:	14.23	28.20	-0.441:	16.97	30.82:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.47	16.19:	14.52	28.46	-0.433:	17.33	31.20:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.51	16.62:	14.52	28.46	-0.434:	17.34	31.20:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.98	16.11:	14.49	28.44	-0.442:	17.29	31.16:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.98	16.13:			:	17.29	31.16:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.19	8.19	10.50:	14.20	28.17	-0.392:	16.79	30.63:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.95	12.12:			:	16.79	30.63:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.22	14.73:	14.64	28.58	-0.430:	17.42	31.30:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.12	14.38:	14.65	28.59	-0.429:	17.43	31.31:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.09	14.35:	14.72	28.66	-0.430:	17.54	31.44:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.00	14.25:	14.70	28.65	-0.429:	17.53	31.43:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.89	14.00:	14.67	28.63	-0.428:	17.49	31.40:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.85	13.92:	14.81	28.76	-0.430:	17.66	31.58:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.86	14.10:	14.82	28.77	-0.430:	17.66	31.58:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.53	13.75:	14.82	28.78	-0.427:	17.66	31.59:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.98	13.14:	14.89	28.87	-0.424:	17.71	31.67:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.33	12.42:	15.17	29.15	-0.424:	18.03	32.04:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.33	12.54:	15.24	29.22	-0.425:	18.12	32.15:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.33	12.54:	15.24	29.22	-0.425:	18.12	32.15:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.76	12.92:	15.22	29.21	-0.428:	18.10	32.13:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.08	13.15:	15.26	29.26	-0.431:	18.15	32.19:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.19	13.33:	15.26	29.26	-0.432:	18.15	32.19:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.60	13.66:	15.28	29.28	-0.436:	18.16	32.21:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.88	13.90:	15.29	29.30	-0.438:	18.18	32.25:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.06	14.01:	15.30	29.30	-0.440:	18.19	32.25:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.35	14.25:	15.29	29.30	-0.442:	18.18	32.25:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.83	14.58:	15.29	29.30	-0.442:	18.18	32.25:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	13.13	13.13	15.21:	13.38	27.58	-0.422:	15.47	29.47:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.12	16.00:	13.65	27.96	-0.435:	16.14	30.27:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.52	16.50:	13.84	28.18	-0.442:	16.39	30.57:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.52	16.19:	14.12	28.42	-0.446:	16.75	30.94:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.55	16.36:	14.13	28.44	-0.447:	16.77	30.97:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.55	16.27:	14.22	28.52	-0.449:	16.89	31.10:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.57	16.28:	14.08	28.40	-0.446:	16.70	30.90:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.56	16.20:	14.35	28.64	-0.453:	17.04	31.25:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.59	16.58:	14.35	28.64	-0.451:	17.04	31.26:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		14.07	16.09:	14.33	28.62	-0.446:	17.00	31.22:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		14.07	16.11:			:	17.00	31.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.25	9.25	11.46:	14.09	28.40	-0.403:	16.57	30.76:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.77	12.66:			:	16.57	30.76:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.55	14.89:	14.47	28.76	-0.436:	17.13	31.36:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.42	14.55:	14.48	28.76	-0.435:	17.14	31.37:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.39	14.52:	14.55	28.83	-0.436:	17.24	31.48:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.29	14.40:	14.53	28.82	-0.434:	17.23	31.48:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.14	14.13:	14.50	28.81	-0.433:	17.19	31.45:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		12.07	14.02:	14.63	28.93	-0.435:	17.35	31.62:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		12.07	14.19:	14.63	28.93	-0.435:	17.35	31.62:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.78	13.88:	14.64	28.95	-0.432:	17.35	31.63:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.29	13.33:	14.72	29.04	-0.430:	17.41	31.72:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.70	12.69:	14.98	29.31	-0.429:	17.71	32.06:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.70	12.80:	15.04	29.37	-0.430:	17.79	32.17:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.70	12.79:	15.04	29.37	-0.430:	17.79	32.17:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.10	13.16:	15.02	29.36	-0.433:	17.78	32.16:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.40	13.38:	15.07	29.41	-0.437:	17.82	32.22:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.51	13.54:	15.07	29.41	-0.437:	17.82	32.22:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.92	13.88:	15.08	29.43	-0.441:	17.83	32.24:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.20	14.11:	15.10	29.45	-0.444:	17.86	32.27:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.37	14.22:	15.10	29.46	-0.445:	17.86	32.28:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.66	14.45:	15.09	29.46	-0.447:	17.86	32.28:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.12	14.78:	15.09	29.46	-0.447:	17.86	32.28:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.26	11.26	12.82:	10.39	29.54	-0.440:	11.96	30.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.95	14.08:	9.73	29.17	-0.443:	11.58	30.79:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.21	14.39:	9.80	29.29	-0.447:	11.69	30.96:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.00	14.00:	9.91	29.38	-0.447:	11.86	31.12:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.84	13.91:	9.91	29.39	-0.445:	11.86	31.12:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.79	13.81:	9.94	29.41	-0.445:	11.91	31.17:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.71	13.72:	9.90	29.38	-0.444:	11.84	31.11:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.64	13.62:	10.03	29.50	-0.446:	12.02	31.28:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.55	13.75:	10.04	29.51	-0.445:	12.02	31.29:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.17	13.37:	10.06	29.52	-0.442:	12.03	31.30:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.17	13.38:			:	12.03	31.30:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.31	8.31	9.83:	10.33	29.74	-0.414:	12.17	31.41:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.47	10.13:			:	12.17	31.41:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.71	12.10:	10.27	29.71	-0.433:	12.23	31.49:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.58	11.82:	10.28	29.72	-0.431:	12.24	31.50:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.53	11.76:	10.27	29.71	-0.430:	12.25	31.52:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.35	11.57:	10.21	29.68	-0.430:	12.20	31.48:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.04	11.19:	10.20	29.68	-0.429:	12.19	31.48:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.84	10.98:	10.30	29.77	-0.426:	12.30	31.60:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.81	11.05:	10.30	29.77	-0.426:	12.30	31.60:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.62	10.85:	10.31	29.79	-0.425:	12.31	31.62:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.28	10.47:	10.45	29.94	-0.424:	12.44	31.77:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.76	9.94:	10.66	30.15	-0.423:	12.67	32.03:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.72	9.96:	10.67	30.17	-0.423:	12.70	32.06:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.71	9.95:	10.67	30.17	-0.423:	12.70	32.07:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.92	10.14:	10.64	30.15	-0.424:	12.67	32.05:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.08	10.25:	10.68	30.20	-0.426:	12.72	32.10:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.11	10.33:	10.68	30.20	-0.427:	12.72	32.11:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.44	10.62:	10.70	30.23	-0.429:	12.73	32.13:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.67	10.83:	10.70	30.23	-0.431:	12.74	32.14:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.81	10.94:	10.70	30.23	-0.433:	12.74	32.14:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.05	11.15:	10.69	30.23	-0.435:	12.73	32.14:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.46	11.48:	10.69	30.23	-0.435:	12.73	32.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.73	10.73	12.57:	11.71	27.70	-0.404:	13.56	29.31:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.86	14.45:	11.32	27.54	-0.415:	13.55	29.46:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.66	15.16:	11.44	27.69	-0.423:	13.72	29.67:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.58	14.82:	11.64	27.86	-0.426:	14.00	29.93:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.52	14.86:	11.64	27.86	-0.425:	14.01	29.95:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.49	14.76:	11.71	27.92	-0.426:	14.10	30.03:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.46	14.73:	11.61	27.84	-0.424:	13.96	29.90:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.42	14.64:	11.83	28.02	-0.428:	14.24	30.17:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.39	14.89:	11.84	28.03	-0.427:	14.24	30.18:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.96	14.47:	11.83	28.03	-0.424:	14.23	30.16:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.96	14.48:			:	14.23	30.16:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.13	8.13	10.00:	11.84	28.02	-0.386:	14.06	29.98:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.53	10.76:			:	14.06	29.98:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.40	13.17:	12.03	28.20	-0.414:	14.41	30.34:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.27	12.86:	12.04	28.21	-0.413:	14.42	30.35:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.23	12.81:	12.06	28.23	-0.413:	14.47	30.41:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.09	12.66:	12.01	28.20	-0.412:	14.44	30.38:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.87	12.34:	11.99	28.19	-0.409:	14.41	30.36:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.73	12.18:	12.12	28.30	-0.410:	14.55	30.51:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.71	12.30:	12.12	28.31	-0.410:	14.55	30.51:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.44	12.00:	12.13	28.32	-0.408:	14.56	30.53:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.97	11.46:	12.25	28.45	-0.407:	14.66	30.65:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.35	10.77:	12.53	28.71	-0.406:	14.97	30.98:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.31	10.82:	12.56	28.75	-0.406:	15.02	31.04:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.31	10.81:	12.56	28.75	-0.406:	15.02	31.04:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.57	11.05:	12.52	28.72	-0.408:	14.99	31.02:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.77	11.19:	12.57	28.78	-0.410:	15.04	31.08:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.83	11.31:	12.57	28.78	-0.411:	15.04	31.08:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.16	11.60:	12.58	28.79	-0.413:	15.05	31.09:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.39	11.80:	12.58	28.80	-0.415:	15.06	31.11:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.54	11.91:	12.58	28.80	-0.416:	15.06	31.11:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.79	12.13:	12.56	28.79	-0.418:	15.04	31.11:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.22	12.46:	12.56	28.79	-0.418:	15.04	31.11:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.41	10.41	12.42:	11.00	23.95-0.334:	13.03	25.41:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.59	14.28:	10.62	23.83-0.343:	13.07	25.57:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.38	14.96:	10.75	23.96-0.350:	13.25	25.75:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.28	14.57:	10.96	24.10-0.353:	13.55	25.99:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.20	14.60:	10.96	24.11-0.352:	13.56	26.00:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.18	14.49:	11.03	24.16-0.353:	13.66	26.08:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.13	14.44:	10.93	24.09-0.351:	13.51	25.96:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.09	14.35:	11.16	24.25-0.354:	13.81	26.20:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.04	14.61:	11.17	24.25-0.354:	13.81	26.20:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.65	14.22:	11.16	24.25-0.351:	13.79	26.19:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.65	14.23:		:	13.79	26.19:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.87	7.87	9.85:	11.17	24.25-0.320:	13.60	26.03:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.25	10.55:		:	13.60	26.03:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.10	12.93:	11.37	24.40-0.344:	13.98	26.34:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.97	12.61:	11.38	24.40-0.342:	13.99	26.35:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.93	12.56:	11.40	24.43-0.343:	14.05	26.41:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.78	12.40:	11.35	24.40-0.341:	14.01	26.39:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.53	12.04:	11.33	24.39-0.339:	13.98	26.37:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.37	11.86:	11.46	24.49-0.340:	14.13	26.49:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.34	11.97:	11.46	24.49-0.340:	14.14	26.50:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.11	11.71:	11.47	24.50-0.338:	14.14	26.51:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.69	11.22:	11.60	24.61-0.337:	14.24	26.61:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.11	10.58:	11.87	24.83-0.337:	14.56	26.89:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.07	10.63:	11.91	24.86-0.337:	14.61	26.95:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.07	10.62:	11.91	24.86-0.337:	14.61	26.95:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.31	10.84:	11.87	24.84-0.338:	14.58	26.93:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.49	10.97:	11.92	24.89-0.340:	14.63	26.98:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.55	11.08:	11.92	24.89-0.341:	14.64	26.98:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.90	11.38:	11.94	24.90-0.343:	14.65	26.99:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.13	11.58:	11.94	24.91-0.345:	14.66	27.01:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.28	11.69:	11.94	24.91-0.346:	14.66	27.01:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.54	11.91:	11.92	24.91-0.347:	14.65	27.01:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.96	12.23:	11.92	24.91-0.347:	14.65	27.01:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.38	11.38	13.67:	12.49	23.42-0.332:	14.80	25.10:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.28	15.35:	12.33	23.44-0.342:	15.10	25.45:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.07	15.97:	12.48	23.58-0.349:	15.31	25.66:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.03	15.58:	12.74	23.76-0.352:	15.66	25.95:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.01	15.70:	12.75	23.77-0.352:	15.67	25.96:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.00	15.59:	12.83	23.83-0.354:	15.79	26.06:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.99	15.57:	12.70	23.74-0.352:	15.61	25.91:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.97	15.48:	12.96	23.92-0.355:	15.95	26.19:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.96	15.84:	12.97	23.93-0.355:	15.95	26.20:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.53	15.41:	12.96	23.92-0.352:	15.92	26.17:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.53	15.43:		:	15.92	26.17:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.95	7.95	10.24:	12.83	23.82-0.315:	15.58	25.88:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.55	11.41:		:	15.58	25.88:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.84	14.07:	13.14	24.05-0.343:	16.09	26.31:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.72	13.70:	13.16	24.06-0.343:	16.10	26.32:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.68	13.67:	13.20	24.10-0.343:	16.18	26.40:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.56	13.52:	13.16	24.08-0.342:	16.16	26.38:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.37	13.20:	13.13	24.07-0.340:	16.12	26.36:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.25	13.05:	13.27	24.17-0.341:	16.28	26.50:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.24	13.20:	13.27	24.17-0.341:	16.28	26.50:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.97	12.90:	13.28	24.18-0.339:	16.29	26.51:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.50	12.35:	13.39	24.28-0.338:	16.36	26.60:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.88	11.66:	13.68	24.50-0.338:	16.69	26.90:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.85	11.74:	13.72	24.55-0.338:	16.76	26.97:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.85	11.73:	13.72	24.55-0.338:	16.76	26.97:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.15	11.99:	13.69	24.53-0.340:	16.73	26.95:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.37	12.15:	13.74	24.57-0.342:	16.79	27.00:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.44	12.28:	13.74	24.57-0.342:	16.79	27.00:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.80	12.58:	13.75	24.59-0.345:	16.80	27.01:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.05	12.79:	13.76	24.60-0.346:	16.81	27.03:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.20	12.89:	13.76	24.60-0.347:	16.82	27.04:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.47	13.11:	13.75	24.60-0.349:	16.80	27.03:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.91	13.43:	13.75	24.60-0.349:	16.80	27.03:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.76	11.76	13.34:	10.71	26.87	-0.396:	12.30	28.16:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.28	14.42:	10.17	26.62	-0.400:	12.06	28.11:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.43	14.65:	10.26	26.73	-0.402:	12.19	28.28:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.21	14.24:	10.37	26.82	-0.402:	12.36	28.42:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.05	14.16:	10.37	26.82	-0.401:	12.36	28.43:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.00	14.06:	10.40	26.85	-0.401:	12.41	28.48:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.92	13.97:	10.35	26.82	-0.399:	12.34	28.41:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.86	13.87:	10.49	26.93	-0.401:	12.52	28.58:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.77	14.01:	10.50	26.93	-0.400:	12.53	28.58:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.42	13.66:	10.51	26.94	-0.398:	12.53	28.59:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.41	13.67:			:	12.53	28.59:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.49	8.49	10.09:	10.68	27.06	-0.371:	12.56	28.60:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.75	10.52:			:	12.56	28.60:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.10	12.54:	10.69	27.09	-0.390:	12.70	28.74:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.97	12.26:	10.70	27.10	-0.390:	12.71	28.75:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.91	12.21:	10.70	27.10	-0.390:	12.73	28.77:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.72	12.00:	10.65	27.07	-0.383:	12.70	28.75:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.38	11.59:	10.65	27.08	-0.384:	12.69	28.75:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.17	11.36:	10.74	27.16	-0.384:	12.79	28.85:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.13	11.43:	10.74	27.16	-0.384:	12.80	28.85:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.90	11.19:	10.76	27.18	-0.382:	12.81	28.87:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.49	10.73:	10.89	27.31	-0.381:	12.93	29.00:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.91	10.12:	11.10	27.50	-0.380:	13.17	29.24:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.87	10.15:	11.12	27.52	-0.380:	13.20	29.28:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.87	10.13:	11.12	27.52	-0.380:	13.20	29.28:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.09	10.34:	11.09	27.51	-0.381:	13.18	29.27:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.25	10.46:	11.14	27.55	-0.383:	13.23	29.32:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.30	10.55:	11.14	27.55	-0.384:	13.23	29.32:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.64	10.85:	11.15	27.58	-0.386:	13.24	29.34:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.87	11.06:	11.15	27.58	-0.388:	13.25	29.35:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.02	11.17:	11.16	27.58	-0.389:	13.25	29.36:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.26	11.38:	11.15	27.59	-0.391:	13.24	29.36:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.65	11.69:	11.15	27.59	-0.391:	13.24	29.36:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.86	10.86	13.05:	10.88	26.46	-0.499:	13.08	28.25:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.98	14.68:	10.94	26.66	-0.399:	13.58	28.85:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.70	15.49:	11.12	26.85	-0.407:	13.82	29.11:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.56	15.09:	11.38	27.06	-0.410:	14.17	29.45:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.48	15.14:	11.39	27.07	-0.410:	14.19	29.47:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.45	15.02:	11.48	27.14	-0.411:	14.31	29.58:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.41	14.98:	11.34	27.04	-0.409:	14.12	29.41:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.36	14.87:	11.61	27.25	-0.412:	14.46	29.73:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.32	15.17:	11.61	27.25	-0.412:	14.47	29.73:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.94	14.80:	11.59	27.24	-0.409:	14.43	29.70:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.94	14.81:			:	14.43	29.70:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.12	8.12	10.39:	11.41	27.09	-0.370:	14.04	29.32:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.60	11.27:			:	14.04	29.32:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.43	13.58:	11.76	27.38	-0.399:	14.58	29.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.32	13.27:	11.77	27.39	-0.399:	14.59	29.86:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.27	13.22:	11.83	27.44	-0.399:	14.69	29.95:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.10	13.04:	11.80	27.42	-0.397:	14.67	29.94:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.82	12.66:	11.77	27.41	-0.395:	14.63	29.91:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.66	12.47:	11.91	27.53	-0.396:	14.79	30.08:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.63	12.60:	11.91	27.53	-0.396:	14.79	30.08:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.37	12.31:	11.91	27.54	-0.394:	14.80	30.09:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.90	11.77:	12.00	27.64	-0.392:	14.86	30.18:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.29	11.10:	12.29	27.90	-0.391:	15.18	30.52:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.26	11.18:	12.34	27.95	-0.392:	15.26	30.60:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.26	11.17:	12.34	27.95	-0.392:	15.26	30.60:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.54	11.42:	12.31	27.94	-0.394:	15.24	30.59:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.75	11.56:	12.36	27.99	-0.396:	15.29	30.65:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.82	11.69:	12.36	27.99	-0.397:	15.29	30.65:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.18	11.99:	12.38	28.00	-0.400:	15.30	30.66:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.42	12.19:	12.39	28.02	-0.402:	15.32	30.69:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.57	12.29:	12.39	28.03	-0.403:	15.33	30.70:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.83	12.50:	12.38	28.02	-0.405:	15.31	30.69:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.26	12.80:	12.38	28.02	-0.405:	15.31	30.69:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.82	10.82	12.83:	11.38	27.27	-0.396:	13.39	28.98:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.17	14.76:	11.35	27.40	-0.415:	13.75	29.46:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.93	15.60:	11.50	27.58	-0.424:	13.96	29.71:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.80	15.23:	11.70	27.75	-0.426:	14.24	29.98:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.71	15.26:	11.71	27.76	-0.425:	14.26	30.00:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.68	15.15:	11.78	27.81	-0.426:	14.36	30.10:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.63	15.10:	11.68	27.73	-0.424:	14.21	29.95:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.58	15.00:	11.89	27.91	-0.427:	14.49	30.23:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.53	15.25:	11.90	27.92	-0.427:	14.49	30.23:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.16	14.89:	11.89	27.91	-0.423:	14.46	30.21:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.16	14.90:			:	14.46	30.21:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.91	7.91	10.02:	11.79	27.81	-0.381:	14.18	29.92:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.56	11.12:			:	14.18	29.92:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.57	13.59:	12.04	28.04	-0.413:	14.60	30.35:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.47	13.30:	12.05	28.05	-0.412:	14.61	30.35:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.42	13.25:	12.09	28.09	-0.413:	14.69	30.43:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.25	13.08:	12.06	28.08	-0.411:	14.67	30.43:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.98	12.71:	12.05	28.07	-0.408:	14.64	30.41:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.82	12.53:	12.16	28.17	-0.409:	14.78	30.55:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.80	12.65:	12.16	28.18	-0.409:	14.78	30.55:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.52	12.34:	12.18	28.19	-0.407:	14.79	30.57:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.03	11.79:	12.27	28.30	-0.404:	14.87	30.67:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.42	11.12:	12.53	28.54	-0.404:	15.16	30.98:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.39	11.19:	12.57	28.59	-0.404:	15.22	31.06:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.39	11.18:	12.57	28.59	-0.404:	15.22	31.06:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.69	11.45:	12.55	28.58	-0.406:	15.20	31.05:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.91	11.61:	12.59	28.63	-0.409:	15.25	31.10:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.98	11.74:	12.59	28.63	-0.409:	15.25	31.10:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.36	12.05:	12.61	28.65	-0.412:	15.26	31.12:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.62	12.27:	12.62	28.66	-0.415:	15.28	31.15:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.78	12.38:	12.62	28.67	-0.416:	15.29	31.15:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.05	12.61:	12.61	28.67	-0.418:	15.28	31.15:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.48	12.92:	12.61	28.67	-0.418:	15.28	31.15:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	12.83	12.83	15.30:	12.73	33.04	-0.522:	15.21	35.82:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.34	16.27:	13.59	34.15	-0.557:	16.55	37.69:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.98	17.36:	13.86	34.51	-0.570:	16.88	38.19:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.95	17.08:	14.24	34.94	-0.578:	17.37	38.86:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.98	17.30:	14.27	34.97	-0.579:	17.40	38.91:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.98	17.20:	14.40	35.13	-0.582:	17.57	39.15:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.00	17.23:	14.19	34.89	-0.577:	17.30	38.77:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.98	17.12:	14.54	35.30	-0.585:	17.74	39.39:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.01	17.56:	14.55	35.31	-0.586:	17.75	39.40:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		14.56	17.15:	14.49	35.25	-0.560:	17.67	39.29:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		14.56	17.15:			:	17.67	39.29:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.75	9.75	12.51:	13.96	34.63	-0.517:	16.91	38.23:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.43	14.02:			:	16.91	38.23:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		13.17	16.10:	14.61	35.39	-0.566:	17.77	39.44:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		13.07	15.82:	14.62	35.40	-0.565:	17.78	39.45:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.03	15.78:	14.74	35.54	-0.567:	17.94	39.69:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.92	15.68:	14.73	35.55	-0.566:	17.95	39.71:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.78	15.41:	14.69	35.51	-0.564:	17.89	39.63:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		12.71	15.29:	14.85	35.71	-0.567:	18.08	39.91:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		12.71	15.50:	14.85	35.71	-0.567:	18.08	39.92:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		12.40	15.17:	14.85	35.72	-0.563:	18.08	39.92:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.87	14.58:	14.88	35.78	-0.558:	18.08	39.95:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.30	13.93:	15.19	36.18	-0.559:	18.43	40.49:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.31	14.11:	15.28	36.30	-0.561:	18.54	40.68:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.32	14.11:	15.28	36.30	-0.561:	18.54	40.68:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.75	14.47:	15.26	36.30	-0.565:	18.53	40.67:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.06	14.69:	15.31	36.36	-0.570:	18.58	40.74:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		12.17	14.87:	15.31	36.36	-0.571:	18.58	40.75:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		12.56	15.16:	15.32	36.38	-0.576:	18.58	40.76:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.82	15.35:	15.35	36.42	-0.579:	18.62	40.83:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.98	15.45:	15.35	36.43	-0.581:	18.63	40.83:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.24	15.64:	15.34	36.43	-0.584:	18.62	40.84:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.66	15.88:	15.34	36.43	-0.584:	18.62	40.84:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	12.96	12.96	15.13:	11.64	24.78-0.367:	13.83	26.45:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.37	15.92:	11.78	25.02-0.379:	14.41	27.07:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.59	16.38:	11.96	25.19-0.384:	14.66	27.32:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.41	15.94:	12.22	25.38-0.386:	15.01	27.63:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.31	15.97:	12.23	25.40-0.385:	15.03	27.65:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.27	15.85:	12.31	25.46-0.386:	15.15	27.76:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.22	15.80:	12.18	25.36-0.384:	14.96	27.59:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.17	15.69:	12.44	25.56-0.388:	15.30	27.89:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.12	15.98:	12.44	25.56-0.387:	15.31	27.90:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.73	15.61:	12.42	25.55-0.384:	15.26	27.86:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.73	15.62:		:	15.26	27.86:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.13	9.13	11.41:	12.23	25.40-0.349:	14.86	27.49:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.57	12.22:		:	14.86	27.49:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.29	14.44:	12.58	25.67-0.375:	15.41	27.99:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.17	14.13:	12.59	25.68-0.375:	15.41	28.00:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.11	14.08:	12.65	25.73-0.376:	15.52	28.10:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.93	13.88:	12.62	25.72-0.374:	15.50	28.09:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.63	13.48:	12.60	25.71-0.371:	15.46	28.06:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.45	13.27:	12.73	25.81-0.372:	15.62	28.21:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.43	13.41:	12.73	25.81-0.372:	15.62	28.22:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.16	13.13:	12.74	25.83-0.370:	15.63	28.23:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.71	12.60:	12.82	25.91-0.368:	15.68	28.30:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.11	11.95:	13.10	26.15-0.368:	16.00	28.61:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.08	12.04:	13.15	26.20-0.368:	16.08	28.69:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.08	12.03:	13.15	26.20-0.368:	16.08	28.69:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.38	12.29:	13.13	26.19-0.370:	16.06	28.68:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.60	12.45:	13.17	26.23-0.372:	16.11	28.74:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.68	12.58:	13.18	26.23-0.373:	16.11	28.74:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.08	12.91:	13.19	26.25-0.376:	16.12	28.75:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.34	13.13:	13.20	26.27-0.378:	16.15	28.78:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.51	13.24:	13.21	26.27-0.379:	16.15	28.79:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.78	13.46:	13.20	26.27-0.381:	16.14	28.79:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.21	13.77:	13.20	26.27-0.381:	16.14	28.79:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.55	10.55	12.08:	8.91	24.01	-0.333:	10.45	25.05:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.93	13.89:	8.24	23.73	-0.341:	10.06	24.92:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.29	14.33:	8.31	23.82	-0.344:	10.17	25.04:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.96	13.85:	8.36	23.86	-0.343:	10.28	25.13:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.71	13.66:	8.36	23.86	-0.341:	10.28	25.13:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.63	13.53:	8.37	23.87	-0.341:	10.31	25.16:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.50	13.39:	8.36	23.86	-0.340:	10.27	25.13:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.39	13.26:	8.46	23.93	-0.340:	10.41	25.23:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.24	13.31:	8.46	23.93	-0.339:	10.42	25.23:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.97	13.04:	8.49	23.95	-0.338:	10.43	25.25:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.96	13.04:			:	10.43	25.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.88	7.88	9.34:	8.83	24.15	-0.316:	10.64	25.38:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.13	9.63:			:	10.64	25.38:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.48	11.72:	8.69	24.08	-0.330:	10.62	25.38:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.38	11.48:	8.70	24.09	-0.330:	10.63	25.39:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.31	11.41:	8.67	24.08	-0.329:	10.63	25.40:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.08	11.17:	8.62	24.05	-0.327:	10.59	25.37:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.67	10.70:	8.63	24.06	-0.324:	10.59	25.38:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.40	10.42:	8.71	24.12	-0.323:	10.68	25.46:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.35	10.46:	8.71	24.12	-0.323:	10.69	25.46:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.12	10.20:	8.73	24.14	-0.322:	10.70	25.48:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.71	9.74:	8.90	24.27	-0.323:	10.86	25.61:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.16	9.13:	9.13	24.45	-0.321:	11.12	25.83:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.11	9.14:	9.13	24.45	-0.321:	11.13	25.85:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.11	9.13:	9.13	24.46	-0.321:	11.13	25.85:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.26	9.27:	9.09	24.44	-0.321:	11.10	25.83:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.37	9.34:	9.14	24.48	-0.323:	11.15	25.87:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.39	9.40:	9.14	24.48	-0.323:	11.15	25.87:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.73	9.70:	9.16	24.50	-0.325:	11.17	25.89:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.96	9.92:	9.14	24.49	-0.327:	11.16	25.90:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.11	10.04:	9.15	24.50	-0.371:	11.17	25.90:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.35	10.26:	9.13	24.50	-0.329:	11.15	25.90:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.76	10.60:	9.13	24.50	-0.329:	11.15	25.90:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.74	10.74	12.55:	10.43	25.57	-0.365:	12.26	26.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.06	14.38:	10.11	25.48	-0.377:	12.31	27.15:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.67	15.06:	10.23	25.62	-0.383:	12.48	27.34:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.46	14.65:	10.39	25.74	-0.384:	12.72	27.55:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.31	14.59:	10.39	25.74	-0.383:	12.74	27.56:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.26	14.48:	10.44	25.78	-0.383:	12.82	27.63:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.18	14.39:	10.37	25.73	-0.381:	12.69	27.53:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.11	14.28:	10.55	25.86	-0.383:	12.94	27.74:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.02	14.46:	10.56	25.87	-0.383:	12.95	27.74:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.71	14.14:	10.56	25.87	-0.380:	12.93	27.73:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.70	14.15:			:	12.93	27.73:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.23	8.23	10.08:	10.61	25.90	-0.350:	12.81	27.61:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.64	10.69:			:	12.81	27.61:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.25	12.92:	10.73	26.00	-0.372:	13.09	27.87:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.15	12.65:	10.74	26.01	-0.371:	13.10	27.88:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.09	12.59:	10.76	26.03	-0.372:	13.16	27.93:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.90	12.39:	10.72	26.01	-0.372:	13.13	27.92:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.57	11.98:	10.71	26.01	-0.368:	13.11	27.90:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.36	11.75:	10.82	26.10	-0.367:	13.24	28.02:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.33	11.84:	10.82	26.10	-0.367:	13.24	28.02:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.02	11.50:	10.84	26.12	-0.365:	13.25	28.04:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.51	10.91:	10.97	26.24	-0.363:	13.36	28.16:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.87	10.19:	11.24	26.47	-0.363:	13.67	28.45:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.84	10.23:	11.27	26.50	-0.363:	13.72	28.50:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.83	10.22:	11.27	26.50	-0.363:	13.72	28.50:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.06	10.43:	11.23	26.48	-0.364:	13.69	28.48:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.23	10.55:	11.28	26.53	-0.366:	13.74	28.54:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.27	10.64:	11.28	26.53	-0.366:	13.74	28.54:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.62	10.95:	11.30	26.54	-0.369:	13.75	28.55:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.87	11.17:	11.29	26.55	-0.371:	13.76	28.57:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.02	11.28:	11.30	26.55	-0.372:	13.76	28.57:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.28	11.51:	11.28	26.55	-0.373:	13.75	28.57:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.72	11.86:	11.28	26.55	-0.373:	13.75	28.57:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.40	10.40	12.23:	10.39	25.47	0.112:	12.23	26.87:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.82	14.18:	10.10	25.41	-0.374:	12.30	27.08:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.37	14.81:	10.22	25.55	-0.379:	12.48	27.27:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.16	14.39:	10.36	25.66	-0.380:	12.70	27.45:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.02	14.34:	10.37	25.66	-0.379:	12.71	27.47:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.97	14.22:	10.41	25.70	-0.379:	12.78	27.53:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.89	14.15:	10.35	25.65	-0.378:	12.67	27.44:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.82	14.04:	10.51	25.77	-0.380:	12.90	27.63:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.74	14.23:	10.52	25.78	-0.379:	12.90	27.64:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.45	13.93:	10.52	25.78	-0.377:	12.89	27.63:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.44	13.94:			:	12.89	27.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.09	8.09	9.98:	10.57	25.80	-0.347:	12.76	27.51:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.56	10.67:			:	12.76	27.51:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.11	12.81:	10.68	25.90	-0.369:	13.04	27.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.01	12.55:	10.69	25.91	-0.368:	13.05	27.76:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.95	12.49:	10.71	25.93	-0.370:	13.10	27.81:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.74	12.28:	10.68	25.91	-0.373:	13.08	27.80:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.41	11.86:	10.67	25.92	-0.364:	13.06	27.79:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.20	11.63:	10.77	26.00	-0.364:	13.18	27.90:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.16	11.72:	10.77	26.00	-0.364:	13.18	27.91:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.87	11.40:	10.79	26.02	-0.362:	13.19	27.92:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.37	10.83:	10.91	26.13	-0.360:	13.30	28.04:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.75	10.13:	11.16	26.34	-0.360:	13.58	28.30:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.71	10.18:	11.18	26.37	-0.360:	13.63	28.35:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.71	10.17:	11.19	26.37	-0.360:	13.63	28.36:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.96	10.39:	11.16	26.36	-0.361:	13.60	28.34:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.14	10.52:	11.20	26.40	-0.363:	13.65	28.39:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.19	10.62:	11.21	26.40	-0.363:	13.65	28.39:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.57	10.96:	11.22	26.42	-0.366:	13.67	28.41:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.84	11.19:	11.22	26.43	-0.368:	13.68	28.43:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.00	11.31:	11.23	26.43	-0.369:	13.68	28.43:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.28	11.56:	11.22	26.43	-0.371:	13.67	28.43:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.73	11.92:	11.22	26.43	-0.371:	13.67	28.43:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	11.46	11.46	13.53:	11.88	32.57-0.498:	13.95	34.78:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.35	15.01:	12.28	33.16-0.526:	14.76	35.91:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.98	15.91:	12.47	33.43-0.536:	15.01	36.28:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.89	15.61:	12.72	33.70-0.541:	15.35	36.70:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.85	15.72:	12.74	33.72-0.541:	15.37	36.74:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.84	15.62:	12.82	33.81-0.542:	15.49	36.89:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.83	15.62:	12.69	33.67-0.539:	15.31	36.66:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.79	15.51:	12.94	33.94-0.544:	15.63	37.06:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.79	15.84:	12.94	33.94-0.544:	15.63	37.07:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.45	15.51:	12.91	33.92-0.540:	15.58	37.01:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.44	15.52:		:	15.58	37.01:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.78	8.78	11.09:	12.65	33.62-0.488:	15.12	36.42:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.55	12.43:		:	15.12	36.42:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.13	14.48:	13.03	34.05-0.529:	15.69	37.15:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.05	14.24:	13.04	34.05-0.528:	15.70	37.16:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.01	14.20:	13.11	34.14-0.529:	15.81	37.30:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.87	14.06:	13.10	34.14-0.527:	15.81	37.32:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.66	13.75:	13.07	34.12-0.525:	15.77	37.28:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.56	13.61:	13.20	34.27-0.526:	15.92	37.48:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.55	13.77:	13.20	34.27-0.526:	15.92	37.48:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.19	13.39:	13.21	34.29-0.523:	15.92	37.49:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.61	12.75:	13.27	34.39-0.518:	15.97	37.58:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.00	12.05:	13.54	34.71-0.518:	16.27	38.00:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.00	12.17:	13.59	34.79-0.519:	16.35	38.12:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.00	12.16:	13.60	34.79-0.519:	16.35	38.12:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.39	12.51:	13.58	34.78-0.522:	16.34	38.12:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.67	12.71:	13.62	34.84-0.526:	16.38	38.18:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.77	12.87:	13.62	34.84-0.527:	16.38	38.18:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.18	13.20:	13.64	34.86-0.532:	16.39	38.20:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.46	13.43:	13.65	34.89-0.535:	16.42	38.25:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.63	13.55:	13.66	34.90-0.537:	16.42	38.25:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.91	13.78:	13.65	34.90-0.540:	16.42	38.26:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.37	14.09:	13.65	34.90-0.540:	16.42	38.26:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	12.90	12.90	15.47:	14.35	31.56	-0.496:	16.92	34.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.54	17.03:	15.33	32.76	-0.532:	18.44	36.46:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		15.59	18.31:	15.61	33.12	-0.567:	18.79	36.97:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		15.70	18.07:	16.01	33.58	-0.560:	19.31	37.69:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		15.84	18.42:	16.04	33.61	-0.561:	19.35	37.74:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.87	18.33:	16.19	33.78	-0.565:	19.54	38.00:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.94	18.41:	15.95	33.52	-0.352:	19.24	37.59:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.95	18.30:	16.34	33.96	-0.569:	19.72	38.26:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		16.04	18.86:	16.34	33.96	-0.570:	19.72	38.26:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		15.58	18.44:	16.28	33.89	-0.564:	19.63	38.13:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		15.58	18.45:			:	19.63	38.13:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.62	9.62	12.52:	15.69	33.21	-0.492:	18.78	36.97:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.76	14.90:			:	18.78	36.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		13.97	17.27:	16.39	34.02	-0.549:	19.73	38.28:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		13.91	16.98:	16.39	34.03	-0.549:	19.73	38.28:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.89	16.96:	16.53	34.19	-0.551:	19.92	38.55:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.82	16.90:	16.53	34.20	-0.551:	19.93	38.58:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.76	16.67:	16.47	34.15	-0.549:	19.85	38.48:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.76	16.59:	16.65	34.36	-0.553:	20.06	38.78:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.77	16.85:	16.65	34.36	-0.553:	20.06	38.79:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.34	16.40:	16.65	34.36	-0.548:	20.05	38.78:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.65	15.65:	16.66	34.41	-0.541:	20.03	38.78:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.94	14.83:	16.99	34.82	-0.541:	20.41	39.36:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.97	15.03:	17.08	34.94	-0.544:	20.53	39.55:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.97	15.03:	17.08	34.94	-0.544:	20.53	39.55:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.50	15.48:	17.06	34.93	-0.549:	20.52	39.54:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.88	15.74:	17.11	35.00	-0.554:	20.57	39.61:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.01	15.95:	17.11	35.00	-0.555:	20.57	39.61:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.43	16.25:	17.12	35.01	-0.560:	20.57	39.63:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.71	16.46:	17.15	35.06	-0.563:	20.62	39.70:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.88	16.56:	17.15	35.06	-0.565:	20.62	39.70:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		14.16	16.76:	17.14	35.06	-0.568:	20.61	39.70:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.62	17.02:	17.14	35.06	-0.568:	20.61	39.70:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	12.27	12.27	14.15:	10.53	24.64-0.358:	12.42	26.02:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.83	15.05:	10.34	24.65-0.367:	12.60	26.30:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.85	15.32:	10.47	24.78-0.369:	12.78	26.49:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.57	14.84:	10.61	24.88-0.369:	13.00	26.67:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.38	14.76:	10.61	24.89-0.368:	13.01	26.68:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.33	14.63:	10.66	24.92-0.368:	13.08	26.74:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.24	14.54:	10.59	24.88-0.366:	12.97	26.65:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.15	14.42:	10.75	24.99-0.368:	13.20	26.84:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.06	14.60:	10.75	24.99-0.367:	13.20	26.84:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.81	14.34:	10.76	25.00-0.365:	13.18	26.83:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.80	14.35:		:	13.18	26.83:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.50	9.50	11.48:	10.76	24.99-0.343:	13.01	26.68:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.77	11.86:		:	13.01	26.68:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.81	13.54:	10.90	25.10-0.360:	13.32	26.94:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.69	13.28:	10.91	25.11-0.360:	13.33	26.95:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.60	13.19:	10.93	25.13-0.359:	13.38	27.00:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.32	12.91:	10.90	25.12-0.357:	13.37	27.00:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.85	12.37:	10.90	25.12-0.354:	13.35	26.99:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.57	12.07:	10.99	25.20-0.354:	13.47	27.09:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.52	12.15:	11.00	25.20-0.353:	13.47	27.10:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.23	11.84:	11.01	25.22-0.351:	13.48	27.11:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.72	11.28:	11.12	25.32-0.349:	13.57	27.21:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.05	10.57:	11.34	25.50-0.348:	13.83	27.45:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.02	10.62:	11.37	25.53-0.348:	13.88	27.50:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.01	10.61:	11.37	25.53-0.348:	13.88	27.50:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.28	10.85:	11.36	25.53-0.349:	13.87	27.50:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.47	10.99:	11.40	25.57-0.351:	13.91	27.54:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.53	11.09:	11.40	25.57-0.352:	13.91	27.54:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.94	11.45:	11.42	25.59-0.355:	13.93	27.56:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.22	11.69:	11.43	25.60-0.357:	13.95	27.58:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.39	11.81:	11.43	25.60-0.358:	13.95	27.59:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.67	12.05:	11.43	25.61-0.360:	13.95	27.59:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.11	12.38:	11.43	25.61-0.360:	13.95	27.59:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.78	11.78	13.91:	11.77	22.78	-0.612:	13.91	24.25:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.98	15.63:	11.67	22.84	-0.335:	14.26	24.63:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.65	16.36:	11.82	22.97	-0.341:	14.47	24.82:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.48	15.92:	12.00	23.10	-0.343:	14.75	25.04:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.36	15.92:	12.01	23.10	-0.342:	14.77	25.06:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.32	15.80:	12.07	23.15	-0.342:	14.87	25.13:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.26	15.74:	11.98	23.09	-0.341:	14.71	25.02:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.20	15.62:	12.18	23.22	-0.343:	15.00	25.24:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.13	15.89:	12.19	23.23	-0.343:	15.00	25.24:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.84	15.58:	12.18	23.22	-0.340:	14.97	25.22:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.83	15.59:			:	14.97	25.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.72	8.72	10.95:	12.10	23.16	-0.308:	14.68	24.98:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.43	12.01:			:	14.68	24.98:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.40	14.43:	12.33	23.33	-0.334:	15.11	25.33:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.31	14.14:	12.34	23.33	-0.298:	15.12	25.34:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.24	14.08:	12.38	23.36	-0.331:	15.20	25.41:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.01	13.84:	12.35	23.35	-0.331:	15.18	25.40:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.64	13.37:	12.33	23.35	-0.328:	15.15	25.38:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.42	13.12:	12.45	23.43	-0.328:	15.30	25.50:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.38	13.25:	12.45	23.43	-0.328:	15.30	25.50:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.10	12.94:	12.46	23.44	-0.326:	15.30	25.51:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.60	12.37:	12.56	23.53	-0.325:	15.38	25.59:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.94	11.66:	12.81	23.72	-0.324:	15.67	25.84:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.91	11.73:	12.85	23.75	-0.324:	15.73	25.90:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.91	11.72:	12.85	23.75	-0.324:	15.73	25.90:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.20	11.98:	12.83	23.75	-0.326:	15.71	25.90:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.41	12.13:	12.87	23.78	-0.328:	15.76	25.94:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.49	12.26:	12.88	23.78	-0.328:	15.76	25.94:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.89	12.60:	12.89	23.80	-0.331:	15.78	25.96:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.16	12.83:	12.90	23.81	-0.333:	15.80	25.98:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.33	12.94:	12.91	23.82	-0.334:	15.80	25.99:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.60	13.17:	12.90	23.82	-0.335:	15.80	25.99:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.04	13.48:	12.90	23.82	-0.335:	15.80	25.99:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	13.17	13.17	15.43:	14.01	26.71	-0.406:	16.28	28.71:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		15.06	17.02:	14.38	27.15	-0.427:	17.12	29.66:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		15.81	17.91:	14.58	27.37	-0.437:	17.39	29.97:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		15.76	17.57:	14.85	27.60	-0.441:	17.76	30.35:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		15.76	17.72:	14.86	27.61	-0.441:	17.78	30.38:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.75	17.61:	14.95	27.70	-0.443:	17.92	30.52:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.75	17.62:	14.81	27.57	-0.440:	17.71	30.30:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.73	17.51:	15.08	27.81	-0.445:	18.06	30.68:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.74	17.91:	15.08	27.81	-0.445:	18.07	30.68:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		15.37	17.56:	15.05	27.79	-0.442:	18.01	30.62:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		15.37	17.56:			:	18.01	30.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.64	9.64	12.13:	14.75	27.51	-0.391:	17.48	30.07:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.68	13.93:			:	17.48	30.07:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		13.85	16.38:	15.17	27.90	-0.431:	18.12	30.74:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		13.78	16.11:	15.18	27.90	-0.430:	18.13	30.75:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.74	16.06:	15.26	27.98	-0.431:	18.25	30.89:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.60	15.93:	15.24	27.98	-0.430:	18.25	30.89:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.41	15.61:	15.21	27.96	-0.428:	18.20	30.85:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.31	15.46:	15.35	28.08	-0.429:	18.37	31.03:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.30	15.64:	15.35	28.08	-0.429:	18.37	31.03:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.01	15.33:	15.35	28.09	-0.427:	18.37	31.04:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.51	14.77:	15.41	28.17	-0.424:	18.39	31.09:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.95	14.13:	15.68	28.43	-0.424:	18.71	31.45:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.95	14.27:	15.74	28.50	-0.425:	18.80	31.56:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.95	14.26:	15.74	28.50	-0.425:	18.80	31.56:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.35	14.61:	15.72	28.49	-0.428:	18.78	31.55:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.63	14.81:	15.77	28.54	-0.431:	18.83	31.61:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		12.73	14.97:	15.77	28.54	-0.431:	18.83	31.61:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.11	15.26:	15.78	28.56	-0.435:	18.84	31.62:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.36	15.46:	15.80	28.58	-0.437:	18.87	31.67:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.51	15.55:	15.81	28.59	-0.439:	18.88	31.67:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.77	15.74:	15.80	28.59	-0.441:	18.87	31.67:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.17	15.99:	15.80	28.59	-0.441:	18.87	31.67:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.57	11.57	13.15:	9.09	27.09	-0.396:	10.68	28.35:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.48	14.33:	8.67	26.95	-0.405:	10.56	28.42:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.40	14.53:	8.76	27.08	-0.406:	10.70	28.60:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.00	14.01:	8.84	27.14	-0.404:	10.84	28.72:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.72	13.81:	8.84	27.14	-0.401:	10.84	28.73:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.63	13.67:	8.86	27.16	-0.401:	10.89	28.76:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.49	13.53:	8.83	27.14	-0.400:	10.83	28.71:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.38	13.39:	8.94	27.22	-0.400:	10.98	28.85:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.23	13.45:	8.94	27.23	-0.399:	10.99	28.85:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.08	13.29:	8.96	27.24	-0.398:	10.99	28.86:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.07	13.30:			:	10.99	28.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.56	9.56	11.29:	9.02	27.27	-0.380:	10.92	28.78:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.69	11.32:			:	10.92	28.78:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.38	12.73:	9.09	27.35	-0.395:	11.12	28.97:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.26	12.52:	9.10	27.36	-0.394:	11.13	28.98:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.17	12.44:	9.10	27.36	-0.393:	11.15	29.01:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.87	12.14:	9.07	27.35	-0.390:	11.13	29.00:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.36	11.58:	9.08	27.37	-0.387:	11.13	29.01:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.04	11.25:	9.15	27.43	-0.385:	11.22	29.10:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.98	11.29:	9.16	27.43	-0.385:	11.23	29.10:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.82	11.12:	9.17	27.45	-0.384:	11.24	29.12:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.52	10.78:	9.30	27.57	-0.383:	11.35	29.24:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.07	10.32:	9.47	27.74	-0.383:	11.56	29.44:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.03	10.35:	9.49	27.76	-0.383:	11.59	29.49:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.03	10.34:	9.49	27.76	-0.382:	11.59	29.49:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.17	10.46:	9.48	27.76	-0.383:	11.58	29.49:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.26	10.52:	9.52	27.80	-0.384:	11.62	29.53:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.29	10.59:	9.52	27.80	-0.386:	11.62	29.53:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.68	10.93:	9.54	27.82	-0.391:	11.65	29.56:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.93	11.15:	9.55	27.84	-0.391:	11.66	29.58:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.08	11.26:	9.55	27.84	-0.392:	11.66	29.58:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.32	11.47:	9.55	27.85	-0.394:	11.67	29.60:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.70	11.76:	9.55	27.85	-0.394:	11.67	29.60:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	8.71	8.71	10.15:	6.59	25.78-0.347:		8.04	26.79:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.57	12.32:	6.06	25.61-0.361:		7.72	26.73:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.84	12.78:	6.13	25.71-0.363:		7.82	26.86:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.38	12.21:	6.13	25.71-0.360:		7.87	26.90:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.03	11.92:	6.13	25.72-0.357:		7.87	26.91:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.92	11.77:	6.12	25.71-0.357:		7.88	26.92:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.74	11.59:	6.14	25.73-0.356:		7.88	26.92:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.60	11.44:	6.18	25.76-0.355:		7.96	26.98:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.41	11.41:	6.19	25.76-0.354:		7.96	26.98:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.37	11.35:	6.22	25.79-0.354:		7.99	27.00:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.36	11.35:		:		7.99	27.00:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.48	7.48	8.94:	6.48	25.94-0.338:		8.15	27.10:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.79	9.12:		:		8.15	27.10:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.52	10.63:	6.37	25.89-0.350:		8.13	27.11:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.45	10.47:	6.38	25.90-0.350:		8.14	27.11:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.38	10.40:	6.35	25.88-0.349:		8.13	27.11:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.10	10.12:	6.31	25.87-0.346:		8.10	27.10:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.63	9.60:	6.33	25.89-0.343:		8.11	27.12:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.31	9.27:	6.39	25.94-0.342:		8.18	27.18:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.25	9.29:	6.39	25.94-0.342:		8.18	27.18:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.16	9.18:	6.41	25.96-0.341:		8.21	27.21:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.00	8.97:	6.58	26.10-0.342:		8.36	27.35:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.74	8.67:	6.75	26.24-0.343:		8.55	27.52:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.71	8.69:	6.74	26.25-0.343:		8.56	27.54:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.71	8.68:	6.74	26.25-0.343:		8.57	27.54:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.74	8.70:	6.73	26.25-0.343:		8.55	27.54:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.76	8.70:	6.77	26.28-0.343:		8.59	27.58:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.73	8.70:	6.77	26.28-0.343:		8.60	27.58:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.10	9.04:	6.79	26.31-0.346:		8.62	27.61:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.34	9.26:	6.79	26.31-0.347:		8.62	27.62:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.49	9.38:	6.79	26.32-0.348:		8.63	27.62:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.73	9.59:	6.79	26.33-0.350:		8.63	27.63:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.09	9.89:	6.79	26.33-0.350:		8.63	27.63:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7	8.44	8.44	9.84	7.62	27.68	-0.379	9.03	28.77	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		11.24	12.14	6.99	27.40	-0.391	8.61	28.62	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		11.79	12.75	7.04	27.50	-0.397	8.70	28.75	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		11.46	12.29	7.05	27.51	-0.394	8.75	28.80	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		11.19	12.08	7.05	27.51	-0.392	8.75	28.80	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		11.11	11.95	7.04	27.51	-0.391	8.76	28.81	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		10.98	11.81	7.06	27.52	-0.390	8.75	28.81	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		10.87	11.68	7.11	27.56	-0.390	8.84	28.88	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		10.71	11.70	7.11	27.57	-0.389	8.84	28.88	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		10.65	11.62	7.15	27.60	-0.389	8.87	28.91	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		10.64	11.63				8.87	28.91	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	7.50	7.50	8.89	7.46	27.81	-0.369	9.08	29.06	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		7.89	9.23				9.08	29.06	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		9.70	10.80	7.32	27.72	-0.384	9.03	29.04	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		9.65	10.65	7.33	27.73	-0.384	9.04	29.05	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		9.59	10.59	7.29	27.71	-0.383	9.02	29.05	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		9.37	10.36	7.25	27.69	-0.381	8.99	29.03	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		8.98	9.92	7.27	27.71	-0.378	9.00	29.05	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		8.72	9.66	7.32	27.76	-0.377	9.07	29.11	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		8.67	9.68	7.33	27.77	-0.377	9.07	29.12	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		8.56	9.55	7.35	27.79	-0.376	9.09	29.14	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		8.36	9.30	7.51	27.94	-0.377	9.25	29.30	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		8.06	8.96	7.69	28.11	-0.378	9.45	29.50	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		8.03	8.98	7.69	28.11	-0.377	9.46	29.51	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		8.03	8.96	7.69	28.11	-0.378	9.46	29.51	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		8.11	9.04	7.66	28.11	-0.377	9.44	29.51	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		8.16	9.06	7.71	28.15	-0.378	9.48	29.55	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		8.18	9.11	7.71	28.15	-0.379	9.49	29.55	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		8.48	9.39	7.73	28.17	-0.381	9.51	29.58	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		8.69	9.58	7.72	28.17	-0.382	9.50	29.59	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		8.81	9.68	7.72	28.18	-0.383	9.51	29.59	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		9.02	9.87	7.72	28.18	-0.385	9.50	29.60	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		9.36	10.15	7.72	28.18	-0.385	9.50	29.60	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	8.80	8.80	10.46:	9.65	32.71	-0.472:	11.31	34.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.37	12.70:	9.20	32.50	-0.488:	11.19	34.47:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.16	13.50:	9.30	32.65	-0.497:	11.34	34.69:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.99	13.14:	9.40	32.76	-0.498:	11.51	34.88:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.86	13.10:	9.40	32.77	-0.496:	11.51	34.89:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.82	12.99:	9.43	32.80	-0.496:	11.57	34.96:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.75	12.92:	9.39	32.76	-0.495:	11.49	34.87:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.68	12.82:	9.53	32.89	-0.497:	11.68	35.08:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.61	12.99:	9.53	32.90	-0.496:	11.69	35.09:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.49	12.86:	9.54	32.91	-0.495:	11.68	35.08:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.49	12.86:			:	11.68	35.08:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.93	7.93	9.72:	9.61	32.95	-0.463:	11.60	34.97:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.54	10.44:			:	11.60	34.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.57	12.11:	9.69	33.06	-0.489:	11.82	35.24:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.53	11.94:	9.70	33.07	-0.489:	11.83	35.25:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.48	11.89:	9.71	33.09	-0.489:	11.87	35.30:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.29	11.70:	9.67	33.06	-0.486:	11.84	35.29:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.97	11.31:	9.67	33.07	-0.482:	11.83	35.28:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.77	11.09:	9.76	33.17	-1.291:	11.94	35.41:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.73	11.17:	9.76	33.17	-0.473:	11.94	35.41:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.57	10.98:	9.77	33.19	-0.483:	11.95	35.44:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.26	10.63:	9.90	33.34	-0.480:	12.05	35.58:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.84	10.17:	10.10	33.58	-0.480:	12.29	35.88:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.82	10.22:	10.12	33.61	-0.481:	12.32	35.93:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.82	10.21:	10.12	33.61	-0.481:	12.32	35.94:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.00	10.38:	10.10	33.60	-0.482:	12.31	35.93:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.14	10.47:	10.14	33.65	-0.484:	12.35	35.99:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.18	10.56:	10.14	33.65	-0.484:	12.35	35.99:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.49	10.83:	10.16	33.68	-0.488:	12.37	36.01:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.70	11.01:	10.16	33.69	-0.490:	12.38	36.04:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.83	11.10:	10.16	33.70	-0.491:	12.38	36.04:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.04	11.29:	10.16	33.70	-0.490:	12.38	36.05:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.39	11.56:	10.16	33.70	-0.490:	12.38	36.05:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	10.30	10.30	12.33:	11.33	30.25	-0.445:	13.37	32.22:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.20	14.01:	11.14	30.26	-0.459:	13.57	32.60:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.83	14.62:	11.27	30.43	-0.467:	13.74	32.85:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.75	14.26:	11.41	30.57	-0.469:	13.98	33.10:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.70	14.33:	11.42	30.58	-0.469:	13.99	33.12:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.68	14.22:	11.47	30.63	-0.469:	14.07	33.21:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.66	14.19:	11.40	30.57	-0.468:	13.95	33.08:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.62	14.11:	11.56	30.73	-0.471:	14.19	33.34:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.60	14.40:	11.57	30.73	-0.470:	14.19	33.35:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.44	14.22:	11.57	30.73	-0.469:	14.17	33.32:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.43	14.23:			:	14.17	33.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.75	8.75	10.92:	11.54	30.69	-0.436:	13.96	33.08:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.42	11.90:			:	13.96	33.08:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.45	13.47:	11.71	30.87	-0.462:	14.30	33.47:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.43	13.27:	11.72	30.88	-0.463:	14.31	33.48:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.37	13.22:	11.75	30.91	-0.462:	14.37	33.56:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.19	13.03:	11.72	30.89	-0.460:	14.36	33.55:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.89	12.64:	11.71	30.89	-0.457:	14.33	33.53:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.71	12.44:	11.81	30.99	-0.458:	14.46	33.68:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.69	12.56:	11.81	31.00	-0.457:	14.46	33.68:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.40	12.25:	11.82	31.02	-0.455:	14.47	33.69:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.91	11.69:	11.93	31.14	-0.453:	14.54	33.81:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.30	11.02:	12.16	31.39	-0.452:	14.81	34.14:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.28	11.10:	12.19	31.43	-0.452:	14.86	34.20:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.28	11.08:	12.19	31.43	-0.452:	14.86	34.21:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.57	11.35:	12.17	31.42	-0.454:	14.85	34.19:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.79	11.50:	12.21	31.47	-0.457:	14.89	34.25:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.86	11.63:	12.21	31.47	-0.457:	14.89	34.25:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.22	11.93:	12.23	31.50	-0.461:	14.90	34.28:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.47	12.14:	12.23	31.51	-0.463:	14.92	34.30:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.62	12.24:	12.24	31.52	-0.465:	14.92	34.31:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.87	12.45:	12.23	31.52	-0.467:	14.92	34.31:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.29	12.76:	12.23	31.52	-0.467:	14.92	34.31:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	12.10	12.10	14.62:	14.48	27.02-0.404:	17.01	29.33:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.74	16.43:	14.85	27.48-0.423:	17.94	30.41:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.76	17.30:	15.05	27.70-0.434:	18.22	30.74:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.88	16.98:	15.35	27.97-0.441:	18.64	31.20:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.99	17.27:	15.36	27.98-0.442:	18.66	31.23:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.02	17.17:	15.47	28.08-0.444:	18.83	31.40:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.08	17.22:	15.30	27.93-0.441:	18.58	31.14:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.09	17.14:	15.61	28.21-0.447:	18.99	31.59:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.16	17.70:	15.62	28.21-0.448:	19.00	31.59:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		14.87	17.40:	15.57	28.18-0.445:	18.92	31.51:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		14.87	17.41:		:	18.92	31.51:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.59	9.59	12.34:	15.23	27.86-0.397:	18.31	30.84:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.66	14.32:		:	18.31	30.84:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		13.53	16.43:	15.71	28.30-0.436:	19.04	31.65:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		13.51	16.15:	15.71	28.31-0.436:	19.05	31.66:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.46	16.10:	15.81	28.40-0.437:	19.19	31.83:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.31	15.94:	15.79	28.39-0.435:	19.19	31.83:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.08	15.57:	15.75	28.36-0.433:	19.12	31.76:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		12.98	15.41:	15.90	28.50-0.434:	19.32	31.98:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		12.97	15.63:	15.90	28.51-0.434:	19.32	31.98:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		12.53	15.17:	15.90	28.51-0.431:	19.31	31.98:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.81	14.37:	15.95	28.58-0.426:	19.32	32.01:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.96	13.43:	16.25	28.89-0.424:	19.68	32.44:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.94	13.58:	16.32	28.95-0.425:	19.77	32.56:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.94	13.56:	16.32	28.95-0.425:	19.77	32.56:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.41	13.97:	16.30	28.94-0.428:	19.75	32.55:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.76	14.22:	16.34	28.99-0.432:	19.80	32.61:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.88	14.41:	16.34	28.99-0.433:	19.80	32.61:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		12.29	14.73:	16.35	29.01-0.436:	19.80	32.62:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.57	14.95:	16.37	29.03-0.439:	19.84	32.67:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.75	15.06:	16.38	29.04-0.441:	19.84	32.67:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.04	15.28:	16.37	29.04-0.443:	19.83	32.67:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.52	15.58:	16.37	29.04-0.443:	19.83	32.67:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	14.21	14.21	16.32:	15.81	32.24	-0.522:	17.92	34.67:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		15.45	17.66:	16.14	32.76	-0.542:	18.70	35.80:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		16.17	18.40:	16.32	33.02	-0.555:	18.94	36.16:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		16.26	18.17:	16.55	33.27	-0.560:	19.27	36.60:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		16.35	18.41:	16.56	33.29	-0.561:	19.28	36.63:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		16.37	18.33:	16.64	33.39	-0.562:	19.41	36.79:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		16.41	18.37:	16.52	33.25	-0.563:	19.22	36.54:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		16.42	18.30:	16.75	33.51	-0.566:	19.54	36.98:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		16.48	18.74:	16.75	33.52	-0.567:	19.55	36.98:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		16.13	18.41:	16.72	33.49	-0.562:	19.49	36.90:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		16.13	18.42:			:	19.49	36.90:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	10.91	10.91	13.31:	16.47	33.18	-0.503:	19.02	36.27:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		12.09	15.41:			:	19.02	36.27:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		14.86	17.47:	16.83	33.61	-0.551:	19.58	37.04:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		14.82	17.23:	16.84	33.62	-0.550:	19.59	37.05:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		14.76	17.16:	16.91	33.71	-0.551:	19.71	37.22:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		14.55	16.97:	16.90	33.71	-0.549:	19.71	37.23:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		14.27	16.58:	16.87	33.69	-0.545:	19.66	37.17:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		14.14	16.41:	16.99	33.83	-0.547:	19.82	37.39:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		14.13	16.59:	16.99	33.83	-0.546:	19.82	37.39:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.66	16.12:	17.00	33.85	-0.542:	19.81	37.39:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.88	15.30:	17.05	33.94	-0.535:	19.84	37.45:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.03	14.41:	17.29	34.25	-0.532:	20.13	37.88:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.04	14.56:	17.35	34.32	-0.533:	20.20	38.00:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.04	14.55:	17.35	34.32	-0.533:	20.21	38.00:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.62	15.06:	17.34	34.31	-0.538:	20.19	37.99:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		13.03	15.37:	17.38	34.37	-0.543:	20.24	38.06:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.18	15.58:	17.38	34.37	-0.545:	20.24	38.06:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.61	15.91:	17.39	34.39	-0.550:	20.24	38.08:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.90	16.14:	17.41	34.42	-0.553:	20.28	38.13:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		14.07	16.25:	17.41	34.43	-0.555:	20.28	38.13:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		14.36	16.47:	17.41	34.43	-0.558:	20.28	38.14:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.82	16.76:	17.41	34.43	-0.558:	20.28	38.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	14.82	14.82	17.00:	14.62	38.95-0.661:		16.80	42.01:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		16.14	17.81:	15.18	39.91-0.694:		17.85	43.85:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		16.57	18.71:	15.39	40.27-0.705:		18.13	44.37:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		16.50	18.45:	15.68	40.68-0.712:		18.52	45.02:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		16.49	18.62:	15.69	40.70-0.713:		18.54	45.06:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		16.49	18.53:	15.80	40.86-0.716:		18.70	45.32:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		16.49	18.55:	15.64	40.63-0.711:		18.46	44.94:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		16.47	18.43:	15.92	41.03-0.719:		18.84	45.58:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		16.48	18.82:	15.93	41.04-0.719:		18.85	45.58:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		16.16	18.52:	15.88	40.97-0.713:		18.77	45.46:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		16.16	18.52:		:		18.77	45.46:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	11.35	11.35	13.93:	15.46	40.37-0.638:		18.13	44.37:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		12.47	15.83:		:		18.13	44.37:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		15.14	17.78:	15.97	41.12-0.702:		18.86	45.61:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		15.05	17.57:	15.98	41.13-0.701:		18.86	45.62:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		14.96	17.48:	16.08	41.28-0.702:		19.01	45.88:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		14.67	17.24:	16.08	41.29-0.698:		19.02	45.91:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		14.25	16.75:	16.03	41.24-0.691:		18.95	45.81:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		14.03	16.50:	16.17	41.45-0.692:		19.13	46.12:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		14.01	16.68:	16.18	41.45-0.692:		19.13	46.12:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.74	16.41:	16.17	41.46-0.688:		19.12	46.12:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		13.28	15.93:	16.20	41.53-0.683:		19.11	46.13:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.75	15.41:	16.45	41.92-0.683:		19.42	46.70:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.78	15.61:	16.51	42.04-0.685:		19.51	46.88:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.83	15.65:	16.51	42.04-0.685:		19.51	46.88:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		13.35	16.08:	16.51	42.04-0.692:		19.51	46.88:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		13.72	16.34:	16.55	42.11-0.698:		19.55	46.96:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.84	16.52:	16.55	42.11-0.700:		19.55	46.97:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		14.21	16.80:	16.56	42.13-0.705:		19.55	46.98:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		14.46	16.97:	16.59	42.19-0.710:		19.59	47.07:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		14.60	17.06:	16.59	42.19-0.712:		19.60	47.07:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		14.84	17.22:	16.59	42.21-0.715:		19.60	47.08:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		15.19	17.41:	16.59	42.21-0.715:		19.60	47.08:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	14.50	14.50	16.64:	13.94	35.84	-0.595:	16.09	38.53:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		16.54	17.87:	14.43	36.62	-0.632:	17.05	40.06:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		16.97	18.87:	14.64	36.93	-0.643:	17.32	40.51:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		16.76	18.54:	14.89	37.26	-0.647:	17.69	41.05:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		16.66	18.60:	14.91	37.28	-0.646:	17.71	41.09:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		16.62	18.49:	15.00	37.41	-0.648:	17.85	41.30:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		16.58	18.47:	14.86	37.22	-0.643:	17.64	40.98:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		16.52	18.33:	15.12	37.56	-0.649:	17.99	41.52:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		16.48	18.63:	15.12	37.56	-0.649:	18.00	41.52:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		16.19	18.36:	15.08	37.51	-0.644:	17.93	41.42:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		16.18	18.35:			:	17.93	41.42:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	11.09	11.09	13.61:	14.72	37.05	-0.574:	17.35	40.55:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		12.19	15.30:			:	17.35	40.55:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		15.05	17.49:	15.18	37.64	-0.634:	18.01	41.56:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		14.95	17.27:	15.18	37.65	-0.632:	18.02	41.57:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		14.85	17.18:	15.27	37.77	-0.632:	18.16	41.79:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		14.53	16.91:	15.27	37.78	-0.628:	18.17	41.81:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		14.05	16.37:	15.23	37.74	-0.621:	18.11	41.73:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.79	16.08:	15.37	37.92	-0.621:	18.28	41.99:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.75	16.24:	15.37	37.92	-0.621:	18.28	42.00:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.43	15.92:	15.37	37.93	-0.617:	18.27	42.00:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.87	15.34:	15.41	38.01	-0.611:	18.27	42.03:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.23	14.68:	15.65	38.36	-0.609:	18.57	42.53:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.24	14.84:	15.71	38.46	-0.611:	18.66	42.68:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.24	14.84:	15.71	38.46	-0.611:	18.66	42.68:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.72	15.25:	15.71	38.46	-0.617:	18.66	42.68:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		13.06	15.49:	15.74	38.52	-0.622:	18.70	42.76:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.17	15.66:	15.75	38.52	-0.623:	18.70	42.76:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.62	16.01:	15.76	38.54	-0.629:	18.71	42.78:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.91	16.23:	15.78	38.59	-0.633:	18.75	42.85:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		14.08	16.34:	15.79	38.59	-0.635:	18.75	42.85:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		14.36	16.55:	15.79	38.61	-0.639:	18.75	42.86:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.78	16.80:	15.79	38.61	-0.639:	18.75	42.86:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	13.12	13.12	14.93:	12.15	27.60-0.422:	13.96	29.19:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		16.23	17.19:	12.03	27.65-0.447:	14.23	29.59:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		16.77	18.08:	12.16	27.81-0.454:	14.42	29.82:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		16.38	17.57:	12.29	27.93-0.453:	14.64	30.03:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		16.10	17.40:	12.29	27.93-0.450:	14.65	30.05:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		16.02	17.26:	12.34	27.97-0.450:	14.74	30.13:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.88	17.14:	12.27	27.92-0.448:	14.62	30.02:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.77	16.98:	12.43	28.06-0.449:	14.85	30.24:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.62	17.09:	12.43	28.06-0.448:	14.85	30.25:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		15.39	16.86:	12.43	28.06-0.446:	14.82	30.22:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		15.39	16.86:		:	14.82	30.22:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	10.34	10.34	12.36:	12.37	28.00-0.403:	14.58	29.97:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		11.14	13.32:		:	14.58	29.97:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		14.11	15.80:	12.55	28.17-0.437:	14.94	30.34:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		14.00	15.57:	12.56	28.17-0.436:	14.95	30.35:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.89	15.46:	12.59	28.21-0.436:	15.02	30.42:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.51	15.11:	12.57	28.20-0.432:	15.01	30.42:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.90	14.45:	12.56	28.20-0.426:	14.98	30.40:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		12.54	14.07:	12.65	28.29-0.420:	15.10	30.53:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		12.48	14.14:	12.66	28.29-0.427:	15.11	30.53:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		12.20	13.86:	12.67	28.30-0.423:	15.11	30.55:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.72	13.34:	12.76	28.41-0.420:	15.18	30.64:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.06	12.66:	12.96	28.61-0.418:	15.43	30.91:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.02	12.72:	12.99	28.64-0.418:	15.48	30.97:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.02	12.71:	12.99	28.65-0.418:	15.48	30.97:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.30	12.96:	12.98	28.64-0.421:	15.47	30.97:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.50	13.11:	13.02	28.69-0.423:	15.51	31.02:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.55	13.21:	13.02	28.69-0.423:	15.51	31.02:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		12.02	13.61:	13.04	28.71-0.427:	15.53	31.05:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.34	13.88:	13.05	28.73-0.430:	15.55	31.08:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.52	14.02:	13.06	28.73-0.432:	15.56	31.08:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.83	14.28:	13.06	28.74-0.434:	15.56	31.09:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.29	14.63:	13.06	28.74-0.434:	15.56	31.09:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2:	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C) /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	12.55	12.55	14.16:	10.02	31.93	-0.495:	11.64	33.53:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		15.69	16.13:	9.89	32.01	-0.525:	11.82	33.92:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		15.68	16.74:	10.02	32.20	-0.527:	11.99	34.17:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		15.08	16.13:	10.10	32.28	-0.523:	12.15	34.34:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.67	15.81:	10.10	32.29	-0.518:	12.15	34.35:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.55	15.66:	10.13	32.32	-0.517:	12.21	34.41:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.35	15.48:	10.10	32.29	-0.515:	12.13	34.33:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.20	15.30:	10.20	32.39	-0.515:	12.30	34.51:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.00	15.29:	10.21	32.40	-0.513:	12.30	34.52:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.86	15.15:	10.21	32.41	-0.512:	12.29	34.51:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.85	15.15:			:	12.29	34.51:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	10.37	10.37	12.19:	10.21	32.39	-0.480:	12.15	34.34:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.77	12.50:			:	12.15	34.34:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.92	14.34:	10.32	32.51	-0.504:	12.39	34.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.79	14.16:	10.33	32.52	-0.503:	12.40	34.63:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.69	14.06:	10.34	32.54	-0.502:	12.45	34.69:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.32	13.72:	10.33	32.54	-0.498:	12.44	34.70:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.73	13.10:	10.33	32.56	-0.492:	12.43	34.70:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.37	12.74:	10.40	32.63	-0.490:	12.53	34.81:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.31	12.78:	10.40	32.64	-0.490:	12.53	34.81:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.16	12.61:	10.42	32.66	-0.489:	12.54	34.84:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.88	12.30:	10.53	32.80	-0.488:	12.63	34.96:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.51	11.90:	10.70	32.99	-0.489:	12.83	35.22:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.48	11.96:	10.72	33.03	-0.488:	12.87	35.28:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.48	11.95:	10.72	33.03	-0.489:	12.88	35.29:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.62	12.07:	10.72	33.04	-0.497:	12.87	35.29:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.71	12.13:	10.75	33.08	-0.447:	12.91	35.35:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.71	12.17:	10.75	33.08	-0.503:	12.91	35.35:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.19	12.59:	10.77	33.11	-0.496:	12.93	35.38:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.50	12.86:	10.79	33.13	-0.499:	12.95	35.41:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.68	13.00:	10.79	33.14	-0.501:	12.95	35.41:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.97	13.25:	10.80	33.16	-0.504:	12.96	35.43:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.40	13.58:	10.80	33.16	-0.504:	12.96	35.43:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	9.82	9.82	11.16:	7.87	45.64	-0.699:	9.22	47.52:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.58	13.56:	7.82	45.90	-0.754:	9.33	48.03:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.18	13.98:	7.93	46.17	-0.751:	9.48	48.36:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.42	13.36:	7.96	46.22	-0.740:	9.54	48.46:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.94	12.95:	7.96	46.23	-0.732:	9.55	48.48:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.80	12.80:	7.96	46.23	-0.730:	9.56	48.51:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.59	12.61:	7.97	46.25	-0.727:	9.55	48.49:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.43	12.44:	8.01	46.30	-0.726:	9.62	48.59:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.22	12.33:	8.01	46.31	-0.723:	9.62	48.60:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.24	12.35:	8.03	46.34	-0.724:	9.63	48.62:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.23	12.34:			:	9.63	48.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.08	9.08	10.58:	8.09	46.40	-0.694:	9.62	48.57:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.35	10.64:			:	9.62	48.57:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.67	11.83:	8.11	46.45	-0.718:	9.70	48.74:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.58	11.74:	8.11	46.46	-0.716:	9.71	48.75:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.48	11.65:	8.11	46.47	-0.715:	9.72	48.79:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.17	11.37:	8.11	46.49	-0.710:	9.73	48.81:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.68	10.88:	8.13	46.54	-0.704:	9.74	48.85:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.39	10.60:	8.17	46.61	-0.701:	9.80	48.95:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.35	10.61:	8.17	46.61	-0.700:	9.80	48.95:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.34	10.60:	8.19	46.66	-0.701:	9.82	49.00:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.32	10.55:	8.31	46.87	-0.704:	9.92	49.21:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.28	10.49:	8.43	47.09	-0.707:	10.07	49.48:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.28	10.54:	8.45	47.14	-0.707:	10.10	49.55:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.28	10.53:	8.45	47.14	-0.707:	10.10	49.55:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.28	10.53:	8.45	47.17	-0.707:	10.10	49.58:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.27	10.50:	8.49	47.23	-0.708:	10.14	49.65:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.27	10.53:	8.49	47.23	-0.708:	10.14	49.65:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.77	10.98:	8.51	47.28	-0.716:	10.16	49.70:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.08	11.25:	8.52	47.31	-0.721:	10.18	49.74:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.24	11.39:	8.52	47.31	-0.723:	10.18	49.75:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.51	11.62:	8.54	47.35	-0.728:	10.20	49.79:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.85	11.90:	8.54	47.35	-0.728:	10.20	49.79:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.68	8.68	9.91:	8.15	48.44	-0.731:	9.38	50.28:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.72	12.88:	8.08	48.70	-0.792:	9.46	50.77:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.60	13.40:	8.20	48.98	-0.794:	9.60	51.11:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.94	12.85:	8.20	49.01	-0.783:	9.64	51.18:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.52	12.49:	8.21	49.02	-0.777:	9.65	51.20:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.41	12.37:	8.21	49.02	-0.775:	9.66	51.22:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.23	12.20:	8.22	49.04	-0.772:	9.65	51.22:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.09	12.06:	8.24	49.08	-0.771:	9.70	51.30:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.91	11.97:	8.25	49.09	-0.768:	9.70	51.31:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.93	11.98:	8.27	49.13	-0.769:	9.72	51.34:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.92	11.98:			:	9.72	51.34:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.56	8.56	9.93:	8.36	49.22	-0.735:	9.75	51.35:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.03	10.29:			:	9.75	51.35:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.34	11.46:	8.34	49.24	-0.762:	9.79	51.46:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.27	11.38:	8.35	49.25	-0.761:	9.80	51.47:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.21	11.32:	8.34	49.26	-0.760:	9.80	51.50:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.99	11.12:	8.34	49.28	-0.756:	9.81	51.52:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.64	10.77:	8.37	49.33	-0.752:	9.83	51.58:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.45	10.57:	8.40	49.40	-0.750:	9.87	51.66:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.41	10.59:	8.40	49.40	-0.749:	9.88	51.67:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.44	10.60:	8.42	49.45	-0.750:	9.90	51.72:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.48	10.62:	8.54	49.68	-0.754:	10.01	51.95:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.52	10.64:	8.65	49.90	-0.758:	10.13	52.22:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.52	10.68:	8.66	49.95	-0.759:	10.16	52.28:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.52	10.68:	8.66	49.95	-0.759:	10.16	52.29:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.48	10.64:	8.67	49.98	-0.759:	10.17	52.32:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.46	10.60:	8.70	50.04	-0.759:	10.20	52.39:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.41	10.58:	8.70	50.04	-0.759:	10.20	52.39:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.93	11.05:	8.73	50.10	-0.767:	10.23	52.45:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.24	11.33:	8.74	50.13	-0.772:	10.24	52.49:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.41	11.47:	8.74	50.13	-0.775:	10.25	52.49:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.65	11.69:	8.76	50.18	-0.779:	10.26	52.54:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.96	11.94:	8.76	50.18	-0.779:	10.26	52.54:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	9.36	9.36	10.67:	9.01	40.38	-0.606:	10.32	42.02:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.68	13.21:	8.87	40.48	-0.645:	10.36	42.36:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.79	13.76:	8.97	40.70	-0.650:	10.50	42.63:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.30	13.28:	8.99	40.74	-0.644:	10.56	42.72:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.98	13.02:	8.99	40.75	-0.639:	10.57	42.73:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.88	12.90:	8.99	40.75	-0.638:	10.58	42.76:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.73	12.76:	9.00	40.76	-0.636:	10.57	42.74:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.62	12.63:	9.04	40.81	-0.636:	10.64	42.84:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.47	12.62:	9.04	40.82	-0.634:	10.64	42.84:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.43	12.57:	9.06	40.85	-0.634:	10.65	42.86:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.42	12.57:			:	10.65	42.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.87	8.87	10.33:	9.16	40.94	-0.605:	10.67	42.85:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.36	10.79:			:	10.67	42.85:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.80	12.03:	9.15	40.96	-0.628:	10.73	42.98:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.73	11.92:	9.16	40.97	-0.627:	10.74	42.99:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.69	11.88:	9.15	40.97	-0.627:	10.75	43.02:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.53	11.72:	9.14	40.98	-0.624:	10.75	43.03:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.26	11.42:	9.16	41.02	-0.622:	10.77	43.07:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.10	11.26:	9.21	41.08	-0.621:	10.82	43.15:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.07	11.30:	9.21	41.08	-0.620:	10.82	43.15:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.08	11.29:	9.23	41.12	-0.621:	10.84	43.19:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.10	11.27:	9.35	41.31	-0.624:	10.95	43.38:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.12	11.27:	9.47	41.51	-0.627:	11.10	43.63:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.12	11.32:	9.48	41.55	-0.628:	11.12	43.68:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.12	11.32:	9.48	41.55	-0.628:	11.12	43.68:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.14	11.33:	9.49	41.56	-0.628:	11.13	43.71:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.15	11.32:	9.52	41.62	-0.629:	11.16	43.77:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.16	11.35:	9.52	41.62	-0.629:	11.16	43.77:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.60	11.74:	9.54	41.66	-0.635:	11.19	43.81:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.87	11.99:	9.55	41.69	-0.639:	11.20	43.85:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.02	12.11:	9.55	41.69	-0.641:	11.20	43.85:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.26	12.32:	9.57	41.72	-0.645:	11.22	43.89:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.58	12.58:	9.57	41.72	-0.645:	11.22	43.89:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	8.84	8.84	9.95	8.89	45.34	-0.694	10.00	46.92	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		11.83	12.45	8.58	45.24	-0.718	9.80	46.94	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		12.23	13.04	8.64	45.43	-0.726	9.88	47.17	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		11.86	12.63	8.62	45.42	-0.720	9.88	47.18	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		11.59	12.39	8.62	45.42	-0.716	9.88	47.19	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		11.51	12.28	8.60	45.40	-0.714	9.87	47.17	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		11.37	12.15	8.64	45.45	-0.713	9.90	47.21	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		11.27	12.04	8.64	45.47	-0.712	9.92	47.25	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		11.13	12.01	8.65	45.47	-0.710	9.92	47.26	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		11.08	11.95	8.68	45.53	-0.710	9.95	47.31	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		11.08	11.96				9.95	47.31	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	8.94	8.94	10.06	9.02	45.96	-0.701	10.24	47.71	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		9.23	10.32				10.24	47.71	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		10.31	11.28	8.82	45.72	-0.703	10.08	47.50	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		10.28	11.17	8.82	45.73	-0.702	10.09	47.51	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		10.25	11.13	8.79	45.69	-0.701	10.06	47.49	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		10.13	11.01	8.76	45.67	-0.699	10.04	47.47	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		9.92	10.76	8.79	45.73	-0.696	10.06	47.53	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		9.78	10.62	8.82	45.78	-0.695	10.10	47.60	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		9.75	10.65	8.82	45.79	-0.695	10.10	47.61	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		9.72	10.61	8.84	45.83	-0.695	10.13	47.65	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		9.66	10.54	8.98	46.07	-0.698	10.26	47.90	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		9.57	10.46	9.07	46.25	-0.699	10.37	48.11	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		9.56	10.49	9.07	46.27	-0.699	10.37	48.15	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		9.56	10.47	9.07	46.27	-0.699	10.37	48.15	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		9.59	10.50	9.07	46.29	-0.700	10.37	48.16	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		9.61	10.51	9.10	46.35	-0.701	10.41	48.23	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		9.59	10.51	9.10	46.35	-0.700	10.41	48.23	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		9.94	10.83	9.13	46.40	-0.706	10.43	48.28	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		10.17	11.04	9.13	46.41	-0.709	10.44	48.31	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		10.30	11.15	9.13	46.42	-0.711	10.44	48.31	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		10.50	11.33	9.14	46.45	-0.715	10.45	48.35	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		10.79	11.57	9.14	46.45	-0.715	10.45	48.35	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.88	8.88	10.13:	10.02	44.28	-0.671:	11.28	46.07:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.47	12.47:	9.61	44.02	-0.695:	11.06	46.04:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.15	13.18:	9.68	44.21	-0.707:	11.16	46.29:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.96	12.88:	9.71	44.26	-0.705:	11.22	46.39:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.80	12.78:	9.71	44.26	-0.703:	11.22	46.40:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.76	12.69:	9.71	44.26	-0.702:	11.24	46.43:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.68	12.61:	9.71	44.28	-0.701:	11.22	46.41:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.62	12.53:	9.76	44.35	-0.702:	11.31	46.54:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.54	12.61:	9.77	44.36	-0.701:	11.31	46.55:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.44	12.51:	9.80	44.40	-0.700:	11.33	46.57:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.44	12.51:			:	11.33	46.57:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.75	8.75	10.03:	10.12	44.82	-0.672:	11.56	46.90:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.21	10.55:			:	11.56	46.90:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.47	11.66:	9.96	44.63	-0.691:	11.48	46.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.46	11.53:	9.96	44.64	-0.691:	11.49	46.82:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.44	11.51:	9.94	44.62	-0.690:	11.48	46.83:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.35	11.41:	9.90	44.58	-0.687:	11.45	46.80:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.20	11.21:	9.91	44.62	-0.686:	11.46	46.82:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.10	11.10:	9.97	44.71	-0.686:	11.53	46.94:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.09	11.16:	9.97	44.71	-0.682:	11.53	46.94:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.04	11.09:	9.99	44.74	-0.684:	11.54	46.98:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.94	10.97:	10.12	44.97	-0.687:	11.66	47.21:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.82	10.84:	10.25	45.21	-0.690:	11.82	47.50:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.82	10.90:	10.25	45.23	-0.690:	11.83	47.54:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.82	10.89:	10.25	45.23	-0.690:	11.83	47.54:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.94	11.00:	10.24	45.23	-0.691:	11.83	47.54:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.03	11.06:	10.28	45.29	-0.694:	11.86	47.61:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.04	11.10:	10.28	45.29	-0.693:	11.86	47.62:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.29	11.32:	10.30	45.33	-2.619:	11.88	47.66:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.45	11.47:	10.30	45.35	-0.697:	11.89	47.68:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.56	11.55:	10.30	45.35	-0.702:	11.89	47.68:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.73	11.70:	10.30	45.37	-0.704:	11.89	47.71:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.01	11.92:	10.30	45.37	-0.704:	11.89	47.71:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	9.50	9.50	11.51	10.54	43.65	-0.670	12.55	46.58	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		11.40	13.17	10.66	44.10	-0.699	13.11	47.75	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		12.07	14.01	10.83	44.43	-0.714	13.35	48.23	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		12.02	13.73	11.02	44.71	-0.718	13.64	48.71	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		11.99	13.85	11.02	44.73	-0.718	13.65	48.74	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		11.98	13.75	11.10	44.84	-0.720	13.78	48.94	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		11.97	13.75	10.99	44.69	-0.717	13.60	48.66	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		11.94	13.65	11.20	44.99	-0.723	13.90	49.17	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		11.94	13.99	11.21	45.00	-0.723	13.91	49.18	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		11.80	13.84	11.18	44.97	-0.720	13.85	49.09	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		11.80	13.84				13.85	49.09	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	8.83	8.83	10.92	11.26	45.06	-0.681	13.70	48.81	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		9.29	11.65				13.70	48.81	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		10.58	12.77	11.35	45.22	-0.707	14.01	49.36	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		10.60	12.61	11.36	45.23	-0.708	14.02	49.37	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		10.58	12.59	11.41	45.32	-0.709	14.12	49.56	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		10.53	12.53	11.38	45.29	-0.707	14.10	49.54	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		10.44	12.34	11.35	45.26	-0.705	14.05	49.46	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		10.40	12.25	11.48	45.46	-0.708	14.21	49.75	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		10.39	12.41	11.48	45.46	-0.708	14.21	49.76	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		10.29	12.28	11.48	45.48	-0.707	14.21	49.76	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		10.10	12.02	11.56	45.63	-0.706	14.24	49.87	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		9.86	11.73	11.80	46.03	-0.710	14.54	50.43	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		9.87	11.86	11.83	46.11	-0.711	14.60	50.56	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		9.87	11.86	11.83	46.11	-0.711	14.60	50.56	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		10.09	12.05	11.81	46.09	-0.714	14.58	50.54	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		10.26	12.15	11.86	46.17	-0.717	14.63	50.63	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		10.30	12.26	11.86	46.17	-0.718	14.63	50.63	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		10.56	12.46	11.87	46.20	-0.722	14.63	50.66	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		10.73	12.61	11.88	46.23	-0.725	14.66	50.72	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		10.84	12.67	11.88	46.23	-0.726	14.66	50.72	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		11.03	12.82	11.87	46.24	-0.729	14.65	50.72	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		11.33	13.02	11.87	46.24	-0.729	14.65	50.72	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.47	10.47	12.73:	11.29	40.52	-0.630:	13.55	43.62:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.75	13.86:	11.68	41.30	-0.662:	14.46	45.26:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.32	14.68:	11.89	41.66	-0.670:	14.75	45.79:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.35	14.42:	12.13	41.99	-0.675:	15.11	46.37:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.40	14.64:	12.15	42.01	-0.678:	15.13	46.41:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.40	14.55:	12.25	42.15	-0.679:	15.28	46.66:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.43	14.59:	12.11	41.96	-0.676:	15.06	46.31:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.43	14.49:	12.36	42.31	-0.704:	15.43	46.90:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.46	14.94:	12.36	42.31	-0.680:	15.43	46.91:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.29	14.76:	12.32	42.26	-0.753:	15.35	46.78:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.29	14.76:			:	15.35	46.78:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.76	8.76	11.28:	12.14	41.99	-0.630:	14.91	46.05:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.42	12.48:			:	14.91	46.05:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.15	13.85:	12.45	42.44	-0.668:	15.46	46.98:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.18	13.68:	12.45	42.45	-0.669:	15.47	46.99:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.15	13.65:	12.54	42.58	-0.671:	15.62	47.24:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.08	13.59:	12.53	42.58	-0.670:	15.61	47.25:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.98	13.36:	12.49	42.53	-0.667:	15.54	47.15:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.93	13.26:	12.62	42.74	-0.670:	15.73	47.47:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.93	13.46:	12.63	42.74	-0.670:	15.73	47.47:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.70	13.20:	12.63	42.75	-0.667:	15.72	47.47:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.30	12.74:	12.67	42.86	-0.664:	15.73	47.52:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.87	12.21:	12.94	43.28	-0.665:	16.06	48.12:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.88	12.38:	13.00	43.37	-0.667:	16.14	48.28:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.88	12.38:	13.00	43.37	-0.667:	16.14	48.28:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.23	12.67:	12.98	43.37	-0.671:	16.13	48.27:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.48	12.83:	13.02	43.44	-0.675:	16.17	48.36:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.56	12.99:	13.02	43.44	-0.676:	16.17	48.36:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.87	13.22:	13.03	43.46	-0.681:	16.17	48.38:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.08	13.38:	13.06	43.51	-0.684:	16.21	48.45:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.21	13.46:	13.06	43.51	-0.686:	16.21	48.46:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.42	13.62:	13.05	43.52	-0.689:	16.21	48.46:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.77	13.82:	13.05	43.52	-0.689:	16.21	48.46:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.15	11.15	13.32:	11.95	33.85-0.519:	14.12	36.30:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.14	14.24:	12.11	34.23-0.619:	14.78	37.30:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.57	14.77:	12.29	34.48-0.541:	15.03	37.69:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.60	14.48:	12.48	34.70-0.552:	15.34	38.09:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.64	14.68:	12.49	34.71-0.543:	15.36	38.11:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.65	14.58:	12.57	34.80-0.556:	15.48	38.28:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.67	14.61:	12.46	34.69-0.546:	15.30	38.05:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.67	14.52:	12.67	34.92 0.000:	15.62	38.46:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.70	14.96:	12.68	34.93-0.578:	15.62	38.47:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.52	14.77:	12.65	34.90-0.548:	15.56	38.39:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.52	14.77:		:	15.56	38.39:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.94	8.94	11.32:	12.54	34.76-0.509:	15.21	37.92:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.64	12.52:		:	15.21	37.92:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.46	13.94:	12.78	35.05-0.539:	15.68	38.55:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.47	13.74:	12.79	35.06-0.540:	15.68	38.56:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.42	13.69:	12.85	35.14-0.541:	15.81	38.73:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.27	13.55:	12.83	35.13-0.539:	15.80	38.73:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.05	13.22:	12.80	35.11-0.536:	15.74	38.67:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.93	13.05:	12.93	35.25-0.537:	15.91	38.90:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.92	13.23:	12.93	35.25-0.537:	15.91	38.90:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.63	12.92:	12.93	35.27-0.534:	15.90	38.90:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.12	12.35:	13.00	35.38-0.530:	15.93	38.97:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.53	11.70:	13.24	35.68-0.529:	16.23	39.41:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.53	11.84:	13.28	35.75-0.530:	16.31	39.52:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.53	11.83:	13.29	35.75-0.530:	16.31	39.52:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.92	12.17:	13.27	35.74-0.534:	16.29	39.52:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.20	12.37:	13.31	35.80-0.538:	16.34	39.59:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.29	12.53:	13.31	35.80-0.539:	16.34	39.59:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.61	12.77:	13.32	35.82-0.542:	16.34	39.60:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.83	12.94:	13.34	35.85-0.545:	16.38	39.66:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.97	13.02:	13.35	35.86-0.547:	16.38	39.66:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.19	13.19:	13.34	35.86-0.549:	16.37	39.67:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.55	13.40:	13.34	35.86-0.549:	16.37	39.67:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	12.43	12.43	15.45:	14.83	29.13-0.446:	17.87	32.23:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.35	16.84:	15.59	29.99-0.467:	19.37	34.14:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.35	17.75:	15.87	30.33-0.482:	19.77	34.68:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.60	17.42:	16.25	30.71-0.492:	20.32	35.38:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		14.83	17.91:	16.27	30.73-0.494:	20.35	35.42:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		14.90	17.80:	16.43	30.90-0.498:	20.59	35.74:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.01	17.93:	16.20	30.66-0.495:	20.24	35.29:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.07	17.81:	16.59	31.07-0.503:	20.79	36.01:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.21	18.63:	16.59	31.07-0.504:	20.79	36.01:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		14.88	18.30:	16.51	30.99-0.499:	20.65	35.83:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		14.89	18.30:		:	20.65	35.83:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.43	9.43	12.74:	16.04	30.49-0.442:	19.81	34.74:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.53	15.21:		:	19.81	34.74:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		13.33	17.18:	16.64	31.13-0.487:	20.77	35.98:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		13.36	16.88:	16.65	31.13-0.488:	20.77	35.99:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.32	16.84:	16.80	31.30-0.490:	21.01	36.32:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.21	16.76:	16.79	31.30-0.489:	21.02	36.33:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.09	16.42:	16.71	31.22-0.487:	20.89	36.18:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.05	16.28:	16.91	31.44-0.490:	21.16	36.54:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.06	16.61:	16.91	31.44-0.490:	21.16	36.54:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		12.69	16.22:	16.90	31.43-0.487:	21.13	36.51:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.06	15.50:	16.90	31.46-0.481:	21.06	36.44:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.32	14.66:	17.24	31.85-0.481:	21.50	37.06:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.33	14.93:	17.33	31.95-0.483:	21.62	37.25:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.34	14.93:	17.33	31.95-0.483:	21.62	37.25:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.89	15.39:	17.31	31.94-0.487:	21.60	37.23:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.29	15.64:	17.35	31.99-0.492:	21.65	37.30:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		12.45	15.90:	17.35	31.99-0.493:	21.65	37.30:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		12.77	16.09:	17.36	32.00-0.496:	21.65	37.30:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.98	16.23:	17.39	32.05-0.499:	21.70	37.39:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.12	16.28:	17.40	32.06-0.500:	21.71	37.39:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.35	16.42:	17.38	32.05-0.502:	21.69	37.38:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		13.72	16.55:	17.38	32.05-0.502:	21.69	37.38:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	13.59	13.59	16.80:	15.38	28.18	-0.438:	18.60	31.40:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.24	17.81:	16.18	29.06	-0.457:	20.17	33.33:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		15.08	18.65:	16.47	29.39	-0.470:	20.58	33.88:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		15.32	18.28:	16.85	29.77	-0.480:	21.13	34.58:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		15.54	18.77:	16.87	29.79	-0.482:	21.17	34.63:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.60	18.65:	17.04	29.96	-0.486:	21.41	34.94:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.71	18.78:	16.81	29.72	-0.482:	21.06	34.49:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.77	18.65:	17.20	30.12	-0.490:	21.61	35.21:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.90	19.50:	17.20	30.13	-0.492:	21.62	35.22:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		15.55	19.15:	17.12	30.04	-0.487:	21.47	35.03:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		15.56	19.14:			:	21.47	35.03:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.92	9.92	13.44:	16.61	29.53	-0.429:	20.59	33.90:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		11.09	16.06:			:	20.59	33.90:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		14.01	18.08:	17.24	30.17	-0.475:	21.58	35.17:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		14.03	17.74:	17.25	30.18	-0.475:	21.59	35.18:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.97	17.69:	17.41	30.35	-0.478:	21.83	35.52:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.82	17.57:	17.40	30.34	-0.476:	21.84	35.53:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.63	17.16:	17.32	30.27	-0.473:	21.71	35.37:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.55	16.98:	17.52	30.48	-0.476:	21.99	35.74:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.55	17.33:	17.52	30.48	-0.476:	21.99	35.74:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.17	16.93:	17.51	30.48	-0.473:	21.96	35.71:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.52	16.20:	17.50	30.49	-0.467:	21.88	35.63:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		11.76	15.36:	17.85	30.87	-0.467:	22.32	36.24:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		11.78	15.65:	17.93	30.97	-0.468:	22.44	36.42:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		11.78	15.65:	17.93	30.97	-0.468:	22.44	36.42:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.38	16.13:	17.91	30.96	-0.473:	22.43	36.40:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.81	16.40:	17.96	31.02	-0.478:	22.48	36.48:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		12.96	16.65:	17.96	31.02	-0.479:	22.48	36.48:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.26	16.83:	17.96	31.03	-0.482:	22.47	36.48:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.47	16.95:	18.01	31.08	-0.485:	22.53	36.57:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.61	16.99:	18.01	31.08	-0.486:	22.53	36.57:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.82	17.11:	18.00	31.08	-0.488:	22.52	36.56:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.17	17.20:	18.00	31.08	-0.488:	22.52	36.56:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	13.45	13.45	16.25:	14.33	23.91	-0.355:	17.15	26.13:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.42	17.15:	14.56	24.20	-0.366:	18.08	27.05:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.93	17.61:	14.78	24.39	-0.374:	18.41	27.39:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		14.98	17.17:	15.04	24.59	-0.398:	18.83	27.78:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		15.05	17.44:	15.05	24.61	-0.713:	18.86	27.81:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		15.06	17.31:	15.17	24.69	-0.373:	19.04	27.98:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		15.10	17.36:	15.01	24.58	-0.383:	18.78	27.74:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		15.10	17.25:	15.30	24.80	-0.380:	19.22	28.15:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		15.15	17.86:	15.30	24.80	-0.384:	19.22	28.16:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		14.87	17.55:	15.26	24.77	-0.378:	19.12	28.06:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		14.87	17.56:			:	19.12	28.06:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.59	9.59	12.56:	15.01	24.57	-0.339:	18.53	27.50:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.58	14.39:			:	18.53	27.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		13.42	16.49:	15.40	24.88	-0.370:	19.24	28.19:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		13.41	16.18:	15.41	24.88	-0.370:	19.25	28.20:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		13.33	16.10:	15.50	24.96	-0.370:	19.43	28.37:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		13.06	15.85:	15.48	24.95	-0.368:	19.43	28.38:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.66	15.30:	15.43	24.92	-0.365:	19.33	28.29:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		12.45	15.01:	15.59	25.05	-0.366:	19.56	28.51:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		12.42	15.26:	15.59	25.05	-0.365:	19.56	28.52:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		12.06	14.88:	15.59	25.05	-0.363:	19.54	28.50:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.42	14.17:	15.64	25.11	-0.359:	19.52	28.51:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.58	13.29:	15.92	25.35	-0.358:	19.90	28.90:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.56	13.48:	15.98	25.41	-0.359:	19.99	29.00:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.57	13.47:	15.98	25.41	-0.359:	20.00	29.00:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.05	13.89:	15.96	25.40	-0.362:	19.98	28.99:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.41	14.13:	16.01	25.44	-0.365:	20.03	29.04:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.53	14.34:	16.01	25.44	-0.365:	20.03	29.04:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.87	14.56:	16.02	25.46	-0.368:	20.03	29.05:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		12.09	14.72:	16.05	25.48	-0.370:	20.08	29.10:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.23	14.78:	16.05	25.49	-0.371:	20.08	29.11:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.46	14.93:	16.04	25.49	-0.372:	20.07	29.10:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.83	15.10:	16.04	25.49	-0.372:	20.07	29.10:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	14.71	14.71	16.69:	16.23	28.32	-0.450:	18.22	30.26:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		15.78	17.83:	16.23	28.45	-0.459:	18.69	30.90:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		16.30	18.31:	16.39	28.64	-0.463:	18.93	31.20:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		16.37	18.04:	16.54	28.79	-0.471:	19.19	31.49:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		16.43	18.23:	16.55	28.79	-0.471:	19.20	31.51:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		16.44	18.15:	16.61	28.85	-0.469:	19.32	31.63:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		16.47	18.18:	16.53	28.78	-0.446:	19.16	31.46:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		16.48	18.11:	16.70	28.95	-0.475:	19.44	31.78:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		16.52	18.54:	16.71	28.95	-0.474:	19.44	31.78:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		16.18	18.19:	16.69	28.94	-0.471:	19.39	31.72:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		16.18	18.20:			:	19.39	31.72:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	10.77	10.77	12.96:	16.62	28.86	-0.424:	19.08	31.37:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		11.88	14.83:			:	19.08	31.37:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		14.73	17.06:	16.81	29.06	-0.460:	19.50	31.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		14.70	16.81:	16.82	29.07	-0.460:	19.51	31.86:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		14.62	16.73:	16.87	29.12	-0.460:	19.62	31.99:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		14.37	16.49:	16.85	29.11	-0.458:	19.61	31.99:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		14.01	16.02:	16.83	29.09	-0.454:	19.56	31.93:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.82	15.79:	16.94	29.21	-0.454:	19.71	32.12:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.80	15.96:	16.94	29.21	-0.454:	19.71	32.12:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.46	15.61:	16.94	29.22	-0.451:	19.71	32.12:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.87	14.97:	17.02	29.31	-0.448:	19.74	32.18:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.15	14.24:	17.22	29.54	-0.445:	20.01	32.51:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.16	14.39:	17.26	29.58	-0.446:	20.07	32.59:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.16	14.38:	17.26	29.58	-0.446:	20.07	32.59:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.69	14.86:	17.25	29.58	-0.450:	20.06	32.59:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		13.08	15.15:	17.29	29.62	-0.454:	20.11	32.64:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		13.21	15.34:	17.29	29.62	-0.456:	20.11	32.64:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.52	15.58:	17.30	29.64	-0.459:	20.12	32.66:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.74	15.74:	17.32	29.67	-0.461:	20.15	32.70:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.87	15.81:	17.32	29.67	-0.462:	20.15	32.71:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		14.08	15.96:	17.32	29.68	-0.464:	20.15	32.71:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.42	16.15:	17.32	29.68	-0.464:	20.15	32.71:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	15.02	15.02	17.49:	17.55	30.89-0.502:	20.02	33.70:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		16.64	19.38:	18.05	31.57-0.529:	21.14	35.26:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		17.70	20.42:	18.29	31.88-0.545:	21.49	35.76:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		17.87	20.18:	18.56	32.19-0.553:	21.90	36.33:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		18.01	20.53:	18.57	32.21-0.555:	21.92	36.37:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		18.05	20.43:	18.69	32.34-0.558:	22.11	36.62:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		18.12	20.52:	18.53	32.16-0.555:	21.85	36.27:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		18.15	20.42:	18.82	32.49-0.561:	22.27	36.86:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		18.24	21.03:	18.82	32.49-0.562:	22.28	36.86:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		17.81	20.63:	18.76	32.43-0.557:	22.17	36.71:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		17.82	20.62:		:	22.17	36.71:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	11.39	11.39	14.23:	18.42	32.03-0.486:	21.52	35.82:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		12.84	17.01:		:	21.52	35.82:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		16.18	19.43:	18.87	32.55-0.542:	22.26	36.85:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		16.16	19.14:	18.88	32.56-0.541:	22.27	36.86:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		16.10	19.09:	18.99	32.70-0.543:	22.46	37.13:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		15.94	18.95:	18.98	32.70-0.542:	22.47	37.15:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		15.73	18.59:	18.93	32.64-0.538:	22.37	37.02:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		15.65	18.43:	19.08	32.83-0.541:	22.59	37.33:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		15.66	18.70:	19.08	32.83-0.541:	22.59	37.33:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		15.33	18.37:	19.08	32.83-0.537:	22.57	37.31:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		14.78	17.76:	19.10	32.87-0.532:	22.53	37.28:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		14.19	17.13:	19.37	33.21-0.532:	22.88	37.81:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		14.23	17.38:	19.43	33.30-0.534:	22.98	37.96:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		14.24	17.37:	19.43	33.30-0.534:	22.98	37.96:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		14.84	17.88:	19.42	33.29-0.540:	22.97	37.95:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		15.27	18.18:	19.46	33.35-0.545:	23.01	38.03:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		15.44	18.42:	19.46	33.35-0.547:	23.01	38.03:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		15.73	18.61:	19.47	33.36-0.550:	23.01	38.03:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		15.93	18.73:	19.50	33.41-0.553:	23.06	38.11:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		16.05	18.78:	19.50	33.41-0.554:	23.07	38.12:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		16.25	18.90:	19.50	33.41-0.556:	23.06	38.11:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		16.57	19.01:	19.50	33.41-0.556:	23.06	38.11:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: (C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.98	11.98	13.64:	8.32	27.28-0.401:	9.99	28.59:		HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.96	14.68:	7.93	27.17-0.412:	9.94	28.73:		STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.52	14.66:	8.03	27.30-0.410:	10.10	28.92:		STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.97	14.01:	8.07	27.33-0.406:	10.22	29.02:		STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.59	13.71:	8.07	27.34-0.402:	10.22	29.03:		STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.47	13.55:	8.07	27.34-0.402:	10.27	29.07:		STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.29	13.37:	8.07	27.35-0.400:	10.22	29.03:		STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.14	13.20:	8.14	27.40-0.400:	10.35	29.14:		STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.95	13.23:	8.14	27.40-0.398:	10.36	29.15:		HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.91	13.17:	8.16	27.42-0.398:	10.35	29.15:		STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.90	13.17:		:	10.35	29.15:		CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.70	9.70	11.46:	8.34	27.54-0.384:	10.37	29.14:		HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.83	11.42:		:	10.37	29.14:		CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.19	12.57:	8.30	27.52-0.395:	10.48	29.26:		CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.11	12.39:	8.30	27.53-0.394:	10.49	29.26:		HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.99	12.27:	8.29	27.53-0.393:	10.52	29.30:		STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.57	11.87:	8.27	27.52-0.389:	10.50	29.29:		STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.86	11.12:	8.28	27.54-0.384:	10.50	29.30:		STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.43	10.68:	8.34	27.59-0.382:	10.59	29.39:		STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.35	10.71:	8.34	27.59-0.381:	10.59	29.39:		HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.14	10.49:	8.36	27.62-0.380:	10.60	29.41:		STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.76	10.07:	8.49	27.74-0.379:	10.71	29.53:		STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.17	9.48:	8.64	27.89-0.377:	10.91	29.73:		STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.12	9.51:	8.65	27.91-0.377:	10.94	29.77:		STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.12	9.50:	8.66	27.91-0.377:	10.94	29.77:		HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.27	9.64:	8.65	27.91-0.378:	10.93	29.77:		STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.38	9.71:	8.69	27.95-0.379:	10.97	29.82:		STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.42	9.79:	8.69	27.95-0.380:	10.97	29.82:		HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.88	10.19:	8.71	27.98-0.384:	11.00	29.84:		STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.18	10.45:	8.72	27.99-0.386:	11.01	29.86:		STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.35	10.59:	8.72	27.99-0.387:	11.02	29.87:		HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.63	10.83:	8.73	28.01-0.389:	11.02	29.88:		STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.05	11.16:	8.73	28.01-0.389:	11.02	29.88:		CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.36	10.36	11.92:	9.52	32.19	-0.477:	11.08	33.73:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.72	14.54:	9.13	32.04	-0.503:	11.01	33.86:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.21	15.30:	9.22	32.19	-0.510:	11.16	34.09:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.77	14.77:	9.27	32.24	-0.506:	11.28	34.21:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.44	14.52:	9.27	32.25	-0.503:	11.28	34.22:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.34	14.37:	9.28	32.26	-0.502:	11.32	34.27:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.18	14.22:	9.27	32.25	-0.500:	11.27	34.22:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.05	14.06:	9.34	32.33	-0.500:	11.41	34.37:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.87	14.10:	9.35	32.33	-0.498:	11.41	34.37:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.79	14.00:	9.37	32.35	-0.498:	11.41	34.37:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.78	14.00:			:	11.41	34.37:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.70	8.70	10.39:	9.52	32.47	-0.462:	11.41	34.35:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.35	11.04:			:	11.41	34.35:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.64	13.02:	9.50	32.48	-0.489:	11.53	34.50:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.59	12.85:	9.51	32.49	-0.489:	11.54	34.51:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.49	12.76:	9.50	32.49	-0.487:	11.57	34.55:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.16	12.44:	9.47	32.47	-0.484:	11.55	34.55:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.60	11.84:	9.48	32.50	-0.479:	11.55	34.55:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.26	11.48:	9.55	32.56	-0.476:	11.64	34.66:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.20	11.53:	9.55	32.57	-0.476:	11.64	34.66:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.00	11.33:	9.56	32.59	-0.475:	11.65	34.68:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.66	10.94:	9.69	32.75	-0.432:	11.76	34.83:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.16	10.43:	9.85	32.93	-0.472:	11.96	35.08:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.13	10.47:	9.86	32.95	-0.472:	11.99	35.12:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.13	10.46:	9.86	32.96	-0.472:	11.99	35.12:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.29	10.60:	9.85	32.96	-0.473:	11.98	35.13:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.41	10.68:	9.89	33.00	-0.475:	12.02	35.18:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.42	10.74:	9.89	33.00	-0.475:	12.02	35.18:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.85	11.12:	9.91	33.03	-0.491:	12.04	35.21:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.13	11.36:	9.92	33.05	-0.482:	12.05	35.24:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.29	11.50:	9.92	33.05	-0.483:	12.06	35.24:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.56	11.73:	9.92	33.07	-0.487:	12.06	35.26:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.97	12.05:	9.92	33.07	-0.487:	12.06	35.26:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	12.02	12.02	15.10:	13.61	23.71	-0.341:	16.73	26.13:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		15.33	17.89:	13.98	24.10	-0.369:	17.96	27.32:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		16.80	19.35:	14.26	24.34	-0.384:	18.40	27.76:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		16.73	18.88:	14.60	24.59	-0.389:	18.93	28.27:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		16.68	19.07:	14.61	24.61	-0.389:	18.96	28.30:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		16.66	18.91:	14.76	24.72	-0.391:	19.20	28.54:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		16.64	18.91:	14.56	24.57	-0.387:	18.87	28.21:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		16.59	18.74:	14.93	24.85	-0.393:	19.42	28.76:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		16.57	19.31:	14.94	24.86	-0.393:	19.43	28.76:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		16.27	19.00:	14.86	24.80	-0.389:	19.28	28.62:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		16.26	18.98:			:	19.28	28.62:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.45	9.45	12.73:	14.48	24.50	-0.337:	18.48	27.84:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		10.54	14.63:			:	18.48	27.84:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		14.37	17.54:	15.01	24.92	-0.377:	19.42	28.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		14.32	17.20:	15.02	24.93	-0.377:	19.42	28.76:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		14.27	17.14:	15.16	25.04	-0.379:	19.67	29.01:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		14.09	16.99:	15.14	25.03	-0.377:	19.66	29.02:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		13.80	16.53:	15.06	24.97	-0.374:	19.53	28.89:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		13.63	16.27:	15.26	25.14	-0.376:	19.82	29.18:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		13.60	16.55:	15.27	25.14	-0.375:	19.82	29.18:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		13.32	16.22:	15.25	25.13	-0.373:	19.78	29.15:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		12.82	15.60:	15.28	25.17	-0.370:	19.73	29.12:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		12.16	14.81:	15.64	25.48	-0.371:	20.20	29.62:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		12.13	15.01:	15.71	25.54	-0.372:	20.32	29.75:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		12.13	15.00:	15.71	25.54	-0.372:	20.32	29.75:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		12.47	15.28:	15.68	25.52	-0.373:	20.29	29.73:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		12.71	15.42:	15.73	25.57	-0.376:	20.35	29.79:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		12.79	15.59:	15.73	25.57	-0.377:	20.35	29.79:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		13.22	15.91:	15.74	25.58	-0.380:	20.34	29.79:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		13.50	16.12:	15.77	25.61	-0.382:	20.40	29.85:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		13.68	16.22:	15.78	25.61	-0.383:	20.40	29.86:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		13.97	16.43:	15.76	25.61	-0.385:	20.38	29.84:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		14.44	16.70:	15.76	25.61	-0.385:	20.38	29.84:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	12.15	12.15	14.12:	9.62	34.38-0.534:		11.60	36.51:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		14.54	15.30:	9.65	34.63-0.562:		12.03	37.23:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		14.33	15.78:	9.81	34.86-0.563:		12.27	37.59:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.82	15.23:	9.91	34.98-0.559:		12.48	37.84:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.49	15.02:	9.92	34.99-0.556:		12.49	37.87:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.39	14.87:	9.96	35.04-0.555:		12.58	37.98:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.24	14.74:	9.91	34.99-0.553:		12.46	37.84:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.11	14.57:	10.04	35.13-0.554:		12.69	38.11:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.96	14.69:	10.04	35.13-0.552:		12.69	38.12:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.87	14.59:	10.04	35.13-0.551:		12.65	38.07:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.86	14.58:			:	12.65	38.07:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.34	9.34	11.57:	10.00	35.07-0.513:		12.41	37.76:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.92	12.15:			:	12.41	37.76:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.90	13.79:	10.14	35.24-0.543:		12.75	38.20:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.83	13.63:	10.15	35.25-0.542:		12.75	38.20:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.75	13.55:	10.18	35.30-0.542:		12.84	38.32:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.48	13.30:	10.17	35.30-0.539:		12.84	38.33:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.03	12.80:	10.17	35.31-0.534:		12.81	38.31:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.76	12.51:	10.25	35.41-0.532:		12.94	38.48:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.72	12.61:	10.25	35.41-0.533:		12.94	38.48:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.59	12.46:	10.27	35.43-0.532:		12.94	38.49:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.36	12.17:	10.36	35.56 0.000:		12.99	38.59:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.07	11.83:	10.55	35.80-0.532:		13.24	38.94:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.07	11.93:	10.58	35.85-0.533:		13.30	39.03:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.07	11.93:	10.58	35.85-0.532:		13.30	39.03:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.24	12.08:	10.57	35.86-0.534:		13.30	39.04:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.36	12.14:	10.61	35.91-0.536:		13.34	39.10:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.40	12.24:	10.61	35.91-0.536:		13.34	39.10:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.87	12.63:	10.63	35.94-0.543:		13.35	39.13:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.17	12.88:	10.65	35.97-0.546:		13.38	39.18:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.34	13.01:	10.65	35.98-0.547:		13.38	39.18:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.63	13.24:	10.66	35.99-0.551:		13.39	39.20:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.05	13.54:	10.66	35.99-0.551:		13.39	39.20:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	9.13	9.13	10.52	8.04	55.88	-0.863	9.42	58.32	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		12.52	12.70	8.05	56.32	-0.926	9.60	59.08	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		12.13	13.07	8.17	56.66	-0.923	9.76	59.51	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		11.50	12.57	8.19	56.71	-0.912	9.82	59.63	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		11.12	12.25	8.19	56.73	-0.905	9.82	59.65	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		11.01	12.14	8.19	56.73	-0.903	9.84	59.69	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		10.85	11.99	8.20	56.75	-0.900	9.83	59.67	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		10.72	11.85	8.23	56.81	-0.899	9.89	59.79	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		10.57	11.81	8.23	56.82	-0.896	9.89	59.80	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		10.61	11.84	8.25	56.86	-0.897	9.90	59.82	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		10.61	11.84				9.90	59.82	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	8.35	8.35	9.88	8.36	57.00	-0.700	9.93	59.83	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		8.80	10.25				9.93	59.83	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		9.95	11.26	8.33	57.00	-0.888	9.97	59.97	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		9.92	11.20	8.33	57.01	-0.888	9.98	59.98	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		9.85	11.14	8.33	57.02	-0.886	10.00	60.03	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		9.61	10.93	8.33	57.04	-0.882	10.00	60.06	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		9.25	10.56	8.36	57.11	-0.876	10.02	60.12	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		9.05	10.36	8.39	57.19	-0.874	10.07	60.24	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		9.02	10.39	8.39	57.19	-0.873	10.07	60.24	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		9.00	10.36	8.42	57.25	-0.874	10.09	60.30	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		8.97	10.30	8.53	57.51	-0.878	10.19	60.56	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		8.95	10.26	8.64	57.78	-0.881	10.33	60.90	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		8.96	10.32	8.66	57.85	-0.882	10.36	60.98	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		8.97	10.32	8.66	57.85	-0.882	10.36	60.98	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		9.04	10.38	8.67	57.88	-0.883	10.37	61.02	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		9.08	10.40	8.70	57.96	-0.885	10.40	61.11	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		9.10	10.44	8.70	57.96	-0.886	10.40	61.11	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		9.57	10.86	8.72	58.02	-0.895	10.43	61.17	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		9.86	11.12	8.74	58.06	-0.901	10.44	61.22	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		10.02	11.25	8.74	58.06	-0.904	10.44	61.23	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		10.27	11.47	8.75	58.11	-0.909	10.46	61.28	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		10.60	11.73	8.75	58.11	-0.909	10.46	61.28	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	9.28	9.28	10.94:	9.90	49.91	-0.773:	11.56	52.64:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.01	13.76:	10.00	50.42	-0.837:	11.94	53.66:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.37	14.67:	10.15	50.77	-0.848:	12.15	54.14:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.93	14.28:	10.22	50.89	-0.843:	12.28	54.39:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.66	14.11:	10.22	50.91	-0.839:	12.29	54.42:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.58	14.00:	10.25	50.95	-0.838:	12.35	54.53:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.46	13.91:	10.22	50.92	-0.835:	12.28	54.41:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.36	13.77:	10.31	51.06	-0.836:	12.43	54.68:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.25	13.85:	10.31	51.06	-0.834:	12.43	54.69:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.19	13.79:	10.31	51.07	-0.833:	12.41	54.66:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.18	13.78:			:	12.41	54.66:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.00	9.00	10.89:	10.33	51.06	-0.782:	12.28	54.39:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.70	11.70:			:	12.28	54.39:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.30	13.04:	10.39	51.21	-0.821:	12.49	54.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.28	12.95:	10.40	51.22	-0.821:	12.49	54.81:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.23	12.91:	10.42	51.27	-0.821:	12.55	54.94:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.08	12.78:	10.42	51.29	-0.818:	12.55	54.97:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.84	12.50:	10.43	51.32	-0.815:	12.54	54.96:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.71	12.35:	10.49	51.43	-0.815:	12.64	55.15:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.69	12.44:	10.49	51.43	-0.813:	12.64	55.15:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.64	12.36:	10.51	51.48	-0.811:	12.65	55.19:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.56	12.21:	10.60	51.69	-0.770:	12.72	55.38:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.50	12.08:	10.76	52.02	-0.820:	12.92	55.81:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.52	12.18:	10.79	52.08	-0.821:	12.97	55.92:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.52	12.17:	10.79	52.09	-0.821:	12.97	55.92:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.68	12.30:	10.79	52.10	-0.818:	12.97	55.94:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.78	12.37:	10.83	52.18	-0.821:	13.00	56.03:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.81	12.44:	10.83	52.18	-0.581:	13.00	56.03:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.23	12.79:	10.85	52.22	-0.835:	13.02	56.07:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.49	13.02:	10.86	52.26	-0.840:	13.04	56.13:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.64	13.14:	10.86	52.27	-0.842:	13.04	56.14:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.88	13.34:	10.87	52.30	-0.847:	13.05	56.17:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.23	13.59:	10.87	52.30	-0.847:	13.05	56.17:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	9.72	9.72	11.25	8.75	33.98	-0.500	10.28	35.55	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		12.80	13.59	8.42	33.89	-0.525	10.22	35.72	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		13.00	14.11	8.51	34.05	-0.530	10.38	35.96	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		12.53	13.56	8.53	34.08	-0.525	10.45	36.05	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		12.19	13.30	8.53	34.09	-0.521	10.46	36.07	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		12.10	13.16	8.53	34.09	-0.520	10.49	36.10	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		11.94	13.01	8.54	34.10	-0.519	10.46	36.07	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		11.81	12.86	8.58	34.15	-0.518	10.56	36.18	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		11.64	12.89	8.59	34.15	-0.516	10.56	36.19	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		11.60	12.83	8.61	34.18	-0.517	10.57	36.20	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		11.59	12.83				10.57	36.20	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	8.89	8.89	10.52	8.81	34.35	-0.501	10.63	36.24	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		9.24	10.82				10.63	36.24	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		10.76	12.11	8.73	34.30	-0.510	10.68	36.33	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		10.70	11.96	8.74	34.31	-0.510	10.69	36.33	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		10.65	11.91	8.72	34.30	-0.509	10.71	36.37	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		10.46	11.72	8.70	34.30	-0.506	10.69	36.36	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		10.12	11.33	8.72	34.33	-0.504	10.70	36.38	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		9.91	11.11	8.77	34.39	-0.502	10.77	36.48	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		9.87	11.17	8.77	34.39	-0.502	10.77	36.48	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		9.84	11.11	8.79	34.42	-0.502	10.79	36.51	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		9.79	11.00	8.93	34.59	-0.504	10.91	36.67	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		9.71	10.86	9.08	34.78	-0.507	11.09	36.92	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		9.71	10.92	9.08	34.80	-0.507	11.12	36.96	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		9.71	10.91	9.09	34.80	-0.507	11.12	36.96	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		9.77	10.97	9.08	34.81	-0.507	11.11	36.97	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		9.81	10.98	9.12	34.85	-0.508	11.15	37.02	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		9.83	11.03	9.12	34.85	-0.508	11.15	37.02	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		10.27	11.43	9.14	34.89	-0.513	11.17	37.06	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		10.56	11.69	9.14	34.90	-0.516	11.18	37.08	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		10.73	11.82	9.15	34.90	-0.518	11.19	37.08	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		11.00	12.07	9.15	34.92	-0.521	11.19	37.10	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		11.42	12.40	9.15	34.92	-0.521	11.19	37.10	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.93	8.93	10.21:	7.90	34.02	-0.490:	9.18	35.30:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.96	12.63:	7.37	33.76	-0.511:	8.82	35.17:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.09	12.97:	7.42	33.88	-0.513:	8.91	35.34:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.60	12.40:	7.38	33.86	-0.507:	8.90	35.34:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.24	12.09:	7.38	33.86	-0.504:	8.90	35.35:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.13	11.95:	7.35	33.84	-0.502:	8.89	35.34:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.96	11.78:	7.40	33.89	-0.501:	8.92	35.37:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.83	11.64:	7.39	33.88	-0.500:	8.94	35.39:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.65	11.60:	7.39	33.88	-0.498:	8.94	35.40:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.64	11.58:	7.44	33.93	-0.499:	8.98	35.44:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.63	11.58:			:	8.98	35.44:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.08	8.08	9.38:	7.75	34.21	-0.480:	9.22	35.66:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.44	9.67:			:	9.22	35.66:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.84	10.89:	7.56	34.05	-0.493:	9.10	35.57:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.81	10.76:	7.57	34.06	-0.493:	9.10	35.57:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.75	10.71:	7.52	34.03	-0.491:	9.07	35.56:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.57	10.52:	7.50	34.02	-0.489:	9.06	35.55:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.24	10.15:	7.54	34.07	-0.487:	9.09	35.59:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.03	9.93:	7.56	34.10	-0.485:	9.12	35.64:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.99	9.96:	7.56	34.10	-0.485:	9.13	35.64:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.99	9.94:	7.59	34.14	-0.485:	9.15	35.68:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.99	9.90:	7.75	34.33	-0.488:	9.30	35.88:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.98	9.84:	7.86	34.48	-0.490:	9.44	36.06:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.97	9.88:	7.86	34.49	-0.490:	9.45	36.08:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.97	9.87:	7.86	34.49	-0.490:	9.45	36.09:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.99	9.88:	7.85	34.49	-0.490:	9.44	36.09:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.00	9.87:	7.89	34.54	-0.491:	9.48	36.14:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.96	9.87:	7.89	34.54	-0.491:	9.48	36.15:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.41	10.28:	7.92	34.58	-0.496:	9.51	36.18:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.70	10.55:	7.91	34.58	-0.498:	9.51	36.20:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.87	10.69:	7.92	34.59	-0.500:	9.51	36.20:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.14	10.94:	7.92	34.61	-0.503:	9.52	36.22:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.55	11.29:	7.92	34.61	-0.503:	9.52	36.22:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	8.57	8.57	9.84	7.94	33.98	-0.487	9.21	35.25	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		11.44	12.19	7.49	33.79	-0.506	8.93	35.19	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		11.67	12.57	7.53	33.91	-0.510	9.02	35.36	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		11.25	12.06	7.51	33.89	-0.505	9.02	35.37	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		10.93	11.80	7.50	33.89	-0.501	9.02	35.38	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		10.84	11.67	7.48	33.87	-0.500	9.01	35.37	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		10.69	11.51	7.52	33.91	-0.499	9.03	35.39	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		10.58	11.39	7.51	33.91	-0.498	9.05	35.42	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		10.42	11.38	7.52	33.92	-0.496	9.06	35.43	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		10.41	11.36	7.56	33.96	-0.497	9.09	35.47	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		10.40	11.36				9.09	35.47	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	8.11	8.11	9.38	7.89	34.25	-0.482	9.34	35.71	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		8.42	9.64				9.34	35.71	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		9.66	10.72	7.69	34.09	-0.492	9.22	35.60	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		9.63	10.59	7.70	34.10	-0.492	9.22	35.61	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		9.59	10.54	7.65	34.06	-0.491	9.20	35.59	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		9.41	10.36	7.62	34.05	-0.488	9.18	35.58	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		9.11	10.02	7.66	34.10	-0.486	9.21	35.63	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		8.91	9.81	7.69	34.13	-0.485	9.25	35.68	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		8.88	9.85	7.69	34.13	-0.485	9.25	35.68	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		8.86	9.81	7.72	34.17	-0.485	9.27	35.72	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		8.83	9.73	7.88	34.36	-0.488	9.43	35.92	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		8.78	9.64	8.00	34.52	-0.490	9.57	36.11	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		8.78	9.68	7.99	34.53	-0.489	9.58	36.13	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		8.78	9.67	7.99	34.53	-0.489	9.58	36.13	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		8.82	9.71	7.98	34.53	-0.490	9.57	36.13	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		8.85	9.71	8.02	34.58	-0.491	9.61	36.19	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		8.82	9.71	8.02	34.58	-0.490	9.61	36.19	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		9.24	10.10	8.05	34.62	-0.495	9.63	36.23	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		9.52	10.36	8.04	34.62	-0.498	9.64	36.24	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		9.69	10.50	8.04	34.62	-0.499	9.64	36.24	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		9.95	10.74	8.05	34.64	-0.502	9.65	36.26	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		10.35	11.08	8.05	34.64	-0.502	9.65	36.26	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.86	8.86	10.78:	9.60	25.91	-0.356:	11.55	27.41:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.62	13.17:	8.97	25.63	-0.367:	11.39	27.43:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.44	13.89:	9.06	25.74	-0.374:	11.59	27.64:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.25	13.45:	9.13	25.79	-0.374:	11.76	27.79:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.09	13.39:	9.13	25.79	-0.373:	11.76	27.80:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.04	13.26:	9.15	25.81	-0.373:	11.84	27.86:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.95	13.18:	9.13	25.80	-0.372:	11.75	27.79:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.88	13.06:	9.23	25.88	-0.373:	11.96	27.96:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.79	13.27:	9.24	25.88	-0.372:	11.96	27.97:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.68	13.15:	9.26	25.90	-0.372:	11.94	27.95:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.68	13.15:			:	11.94	27.95:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.17	8.17	10.03:	9.54	26.08	-0.351:	11.98	27.97:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.62	10.56:			:	11.98	27.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.51	12.16:	9.44	26.03	-0.366:	12.11	28.10:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.49	11.95:	9.45	26.04	-0.366:	12.12	28.11:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.45	11.91:	9.44	26.04	-0.365:	12.17	28.16:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.32	11.77:	9.40	26.01	-0.364:	12.14	28.14:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.09	11.45:	9.40	26.02	-0.362:	12.11	28.12:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.93	11.26:	9.48	26.09	-0.362:	12.25	28.24:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.90	11.37:	9.49	26.09	-0.362:	12.25	28.25:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.81	11.24:	9.50	26.11	-0.361:	12.25	28.26:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.64	11.00:	9.64	26.24	0.000:	12.35	28.36:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.39	10.69:	9.85	26.41	-0.363:	12.62	28.62:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.37	10.76:	9.85	26.43	-0.363:	12.65	28.66:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.37	10.75:	9.85	26.43	-0.363:	12.66	28.66:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.51	10.88:	9.83	26.42	-0.364:	12.63	28.65:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.61	10.93:	9.87	26.46	-0.365:	12.68	28.70:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.65	11.01:	9.87	26.46	-0.366:	12.68	28.70:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.02	11.34:	9.89	26.48	-0.372:	12.69	28.72:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.27	11.56:	9.89	26.49	-0.370:	12.71	28.74:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.43	11.68:	9.89	26.49	-0.371:	12.71	28.74:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.69	11.91:	9.88	26.49	-0.373:	12.70	28.74:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.11	12.24:	9.88	26.49	-0.373:	12.70	28.74:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	9.90	9.90	12.04:	11.30	28.52	-0.411:	13.46	30.47:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.13	14.05:	11.04	28.47	-0.425:	13.74	30.91:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.89	14.75:	11.20	28.66	-0.435:	14.02	31.24:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.81	14.37:	11.32	28.77	-0.436:	14.26	31.49:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.75	14.45:	11.33	28.78	-0.436:	14.28	31.51:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.73	14.33:	11.38	28.82	-0.436:	14.39	31.63:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.70	14.30:	11.32	28.77	-0.435:	14.25	31.48:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.66	14.20:	11.47	28.91	-0.437:	14.53	31.77:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.63	14.56:	11.48	28.91	-0.437:	14.54	31.78:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.47	14.38:	11.47	28.91	-0.436:	14.48	31.72:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.47	14.38:			:	14.48	31.72:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.72	8.72	10.94:	11.55	28.96	-0.406:	14.28	31.50:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.31	11.83:			:	14.28	31.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.30	13.43:	11.63	29.05	-0.428:	14.62	31.87:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.29	13.20:	11.64	29.06	-0.429:	14.63	31.88:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.25	13.17:	11.67	29.09	-0.429:	14.74	32.00:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.15	13.07:	11.63	29.07	-0.427:	14.72	31.99:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.98	12.78:	11.62	29.06	-0.426:	14.66	31.94:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.88	12.63:	11.73	29.17	-0.426:	14.83	32.12:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.87	12.79:	11.73	29.17	-0.426:	14.83	32.12:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.71	12.60:	11.73	29.18	-0.425:	14.83	32.12:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.43	12.23:	11.84	29.30	-0.425:	14.88	32.21:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.08	11.79:	12.07	29.53	-0.426:	15.19	32.56:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.07	11.91:	12.10	29.57	-0.426:	15.25	32.63:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.07	11.90:	12.10	29.57	-0.426:	15.25	32.64:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.31	12.11:	12.07	29.55	-0.428:	15.23	32.62:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.48	12.22:	12.12	29.60	-0.430:	15.27	32.68:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.53	12.32:	12.12	29.60	-0.430:	15.28	32.68:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.90	12.64:	12.13	29.62	-0.434:	15.28	32.70:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.16	12.85:	12.14	29.64	-0.436:	15.31	32.73:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.32	12.96:	12.15	29.64	-0.437:	15.32	32.74:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.57	13.17:	12.14	29.65	-0.440:	15.30	32.74:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.99	13.46:	12.14	29.65	-0.440:	15.30	32.74:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.30	11.30	13.84:	11.70	26.23	-0.382:	14.28	28.36:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.75	15.00:	11.68	26.35	-0.392:	14.95	29.12:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.21	15.48:	11.90	26.57	-0.399:	15.34	29.54:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.16	15.06:	12.09	26.73	-0.402:	15.69	29.88:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.13	15.22:	12.11	26.74	-0.402:	15.72	29.91:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.12	15.08:	12.19	26.81	-0.403:	15.88	30.08:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.11	15.09:	12.08	26.73	-0.401:	15.67	29.87:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.09	14.97:	12.32	26.92	-0.405:	16.06	30.26:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.09	15.47:	12.32	26.92	-0.405:	16.07	30.26:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.89	15.25:	12.29	26.90	-0.403:	15.97	30.17:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.89	15.25:			:	15.97	30.17:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	9.32	9.32	11.94:	12.24	26.85	-0.375:	15.56	29.75:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.83	12.84:			:	15.56	29.75:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.73	14.33:	12.45	27.03	-0.396:	16.11	30.32:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.71	14.06:	12.46	27.04	-0.396:	16.12	30.32:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.68	14.02:	12.53	27.10	-0.397:	16.29	30.50:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.56	13.91:	12.50	27.09	-0.396:	16.28	30.50:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.38	13.58:	12.46	27.06	-0.394:	16.18	30.41:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.27	13.40:	12.60	27.18	-0.395:	16.41	30.64:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.26	13.62:	12.61	27.19	-0.395:	16.41	30.64:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.96	13.27:	12.61	27.19	-0.393:	16.39	30.63:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.47	12.65:	12.69	27.29	-0.390:	16.41	30.67:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.91	11.91:	13.00	27.57	-0.391:	16.81	31.11:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.89	12.05:	13.04	27.61	-0.392:	16.90	31.21:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.89	12.04:	13.04	27.61	-0.392:	16.90	31.21:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.16	12.28:	13.01	27.59	-0.393:	16.87	31.19:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.36	12.40:	13.06	27.64	-0.395:	16.92	31.25:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.43	12.54:	13.06	27.64	-0.396:	16.92	31.25:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.78	12.82:	13.07	27.65	-0.399:	16.92	31.26:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.03	13.02:	13.08	27.67	-0.401:	16.96	31.30:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.18	13.12:	13.09	27.68	-0.402:	16.97	31.31:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.44	13.33:	13.07	27.67	-0.404:	16.94	31.29:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.87	13.61:	13.07	27.67	-0.404:	16.94	31.29:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	10.69	10.69	13.36:	10.45	26.83	-0.385:	13.16	29.08:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.33	14.50:	10.48	27.01	-0.400:	13.87	29.89:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.70	15.01:	10.71	27.23	-0.406:	14.26	30.32:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.58	14.54:	10.89	27.38	-0.408:	14.60	30.66:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.50	14.65:	10.90	27.40	-0.407:	14.63	30.69:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.47	14.51:	10.98	27.46	-0.409:	14.79	30.85:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.44	14.48:	10.88	27.39	-0.407:	14.59	30.65:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.39	14.35:	11.10	27.56	-0.410:	14.96	31.03:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.36	14.82:	11.11	27.57	-0.410:	14.97	31.03:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.21	14.64:	11.07	27.54	-0.408:	14.88	30.94:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.21	14.64:			:	14.88	30.94:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.71	8.71	11.55:	10.99	27.46	-0.380:	14.42	30.48:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.27	12.41:			:	14.42	30.48:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.17	13.85:	11.22	27.66	-0.386:	15.00	31.07:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.15	13.59:	11.23	27.67	-0.412:	15.01	31.08:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.10	13.54:	11.30	27.73	-0.401:	15.18	31.26:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.93	13.39:	11.27	27.72	-0.401:	15.18	31.26:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.67	12.99:	11.24	27.70	-0.398:	15.09	31.18:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.51	12.76:	11.38	27.82	-0.399:	15.30	31.41:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.49	12.98:	11.38	27.82	-0.399:	15.31	31.41:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.24	12.68:	11.38	27.83	-0.397:	15.29	31.40:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.82	12.14:	11.46	27.93	-0.395:	15.30	31.44:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.31	11.49:	11.74	28.18	-0.396:	15.68	31.86:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.30	11.64:	11.79	28.23	-0.396:	15.77	31.96:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.30	11.63:	11.79	28.23	-0.396:	15.77	31.96:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.55	11.85:	11.76	28.22	-0.398:	15.74	31.94:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.74	11.96:	11.81	28.27	-0.400:	15.80	32.01:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.80	12.10:	11.81	28.27	-0.401:	15.80	32.01:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.16	12.38:	11.82	28.29	-0.404:	15.80	32.02:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.40	12.57:	11.84	28.31	-0.406:	15.84	32.07:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.55	12.66:	11.85	28.31	-0.407:	15.84	32.07:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.80	12.84:	11.84	28.31	-0.409:	15.83	32.07:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.20	13.08:	11.84	28.31	-0.409:	15.83	32.07:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. TEMP. (C)	AVG. DAILY PRED. TEMP. (C)	MAX. PRED. TEMP. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.26	11.26	14.27:	11.40	25.48	-0.370:	14.44	27.94:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.80	15.38:	11.53	25.72	-0.381:	15.36	28.91:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.27	15.92:	11.80	25.97	-0.388:	15.82	29.39:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.21	15.45:	12.02	26.14	-0.391:	16.22	29.78:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.18	15.64:	12.03	26.16	-0.391:	16.25	29.81:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.16	15.48:	12.13	26.23	-0.392:	16.44	30.00:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.15	15.49:	12.01	26.14	-0.390:	16.20	29.77:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.12	15.35:	12.27	26.34	-0.394:	16.64	30.20:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.12	15.93:	12.27	26.34	-0.394:	16.64	30.20:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.93	15.72:	12.23	26.31	-0.392:	16.53	30.09:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.93	15.71:			:	16.53	30.09:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.52	8.52	11.72:	12.05	26.16	-0.358:	15.94	29.50:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.30	13.05:			:	15.94	29.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.68	14.80:	12.37	26.43	-0.385:	16.65	30.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.67	14.50:	12.38	26.43	-0.385:	16.66	30.23:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.62	14.44:	12.47	26.51	-0.386:	16.86	30.44:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.46	14.31:	12.45	26.50	-0.384:	16.86	30.45:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.21	13.89:	12.40	26.47	-0.382:	16.75	30.34:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.07	13.66:	12.56	26.60	-0.383:	17.00	30.60:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.05	13.92:	12.56	26.61	-0.383:	17.00	30.60:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.78	13.62:	12.56	26.61	-0.381:	16.97	30.58:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.33	13.04:	12.62	26.68	-0.379:	16.96	30.59:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.76	12.34:	12.92	26.94	-0.379:	17.36	31.03:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.75	12.53:	12.97	27.00	-0.380:	17.47	31.15:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.75	12.52:	12.97	27.00	-0.380:	17.47	31.15:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.07	12.79:	12.95	26.99	-0.382:	17.45	31.14:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.30	12.92:	13.00	27.03	-0.384:	17.50	31.20:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.37	13.08:	13.00	27.03	-0.385:	17.50	31.20:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.73	13.34:	13.01	27.05	-0.387:	17.50	31.21:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.97	13.51:	13.04	27.08	-0.390:	17.55	31.27:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.12	13.59:	13.04	27.08	-0.391:	17.56	31.27:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.36	13.76:	13.03	27.08	-0.392:	17.54	31.26:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.75	13.95:	13.03	27.08	-0.392:	17.54	31.26:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	11.10	11.10	14.51:	12.37	26.32	-0.382:	15.81	29.31:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.01	16.17:	12.82	26.82	-0.403:	17.15	30.78:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.89	17.10:	13.17	27.15	-0.416:	17.72	31.44:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.93	16.68:	13.45	27.39	-0.421:	18.21	31.97:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.98	16.99:	13.48	27.41	-0.422:	18.26	32.02:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.99	16.83:	13.61	27.53	-0.425:	18.49	32.29:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		14.01	16.88:	13.45	27.39	-0.422:	18.19	31.96:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		14.01	16.73:	13.77	27.66	-0.427:	18.71	32.54:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		14.05	17.48:	13.77	27.67	-0.427:	18.72	32.55:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.81	17.22:	13.70	27.61	-0.427:	18.57	32.38:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.81	17.20:			:	18.57	32.38:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.41	8.41	12.14:	13.34	27.30	-0.378:	17.75	31.46:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.50	14.20:			:	17.75	31.46:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		12.37	16.20:	13.83	27.72	-0.415:	18.68	32.51:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		12.37	15.87:	13.84	27.73	-0.415:	18.68	32.52:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		12.32	15.82:	13.97	27.85	-0.417:	18.95	32.82:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		12.19	15.73:	13.96	27.85	-0.416:	18.95	32.84:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		12.01	15.33:	13.89	27.80	-0.413:	18.81	32.69:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.91	15.12:	14.08	27.97	-0.415:	19.11	33.03:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.90	15.47:	14.08	27.97	-0.415:	19.11	33.03:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.63	15.15:	14.07	27.96	-0.413:	19.07	32.99:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		11.15	14.54:	14.10	28.01	-0.410:	19.00	32.94:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.59	13.83:	14.43	28.32	-0.411:	19.46	33.50:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.60	14.09:	14.50	28.40	-0.412:	19.59	33.67:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.60	14.09:	14.50	28.40	-0.412:	19.59	33.67:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		11.00	14.42:	14.48	28.39	-0.415:	19.57	33.65:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.29	14.57:	14.53	28.44	-0.418:	19.62	33.72:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.38	14.78:	14.53	28.44	-0.419:	19.62	33.72:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.73	15.00:	14.54	28.45	-0.421:	19.62	33.72:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.96	15.14:	14.58	28.49	-0.424:	19.68	33.81:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		12.10	15.20:	14.58	28.50	-0.425:	19.69	33.81:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.34	15.34:	14.57	28.50	-0.427:	19.67	33.80:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.71	15.47:	14.57	28.50	-0.427:	19.67	33.80:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. TEMP. (C)	AVG. DAILY PRED. TEMP. (C)	MAX. DAILY PRED. TEMP. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/C) S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.26	11.26	13.53:	11.50	37.50	-0.585:	13.78	40.37:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.00	14.81:	11.80	38.08	-0.613:	14.63	41.77:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.38	15.59:	12.04	38.46	-0.624:	15.02	42.41:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.27	15.32:	12.20	38.66	-0.627:	15.31	42.85:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.23	15.44:	12.22	38.68	-0.626:	15.34	42.90:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.21	15.33:	12.29	38.77	-0.628:	15.48	43.10:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.19	15.34:	12.21	38.67	-0.625:	15.31	42.85:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.15	15.21:	12.39	38.90	-0.630:	15.62	43.33:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.14	15.63:	12.39	38.91	-0.629:	15.62	43.33:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.97	15.45:	12.36	38.87	-0.626:	15.54	43.21:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.97	15.43:			:	15.54	43.21:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.72	8.72	11.41:	12.19	38.63	-0.573:	15.07	42.50:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.80	13.02:			:	15.07	42.50:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.92	14.63:	12.45	38.99	-0.616:	15.63	43.34:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.92	14.47:	12.46	39.00	-0.616:	15.63	43.35:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.86	14.42:	12.53	39.10	-0.617:	15.79	43.60:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.70	14.29:	12.53	39.11	-0.615:	15.80	43.63:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.47	13.95:	12.50	39.09	-0.612:	15.73	43.53:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.35	13.77:	12.62	39.25	-0.613:	15.91	43.82:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.34	13.98:	12.62	39.25	-0.613:	15.91	43.83:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		11.12	13.74:	12.62	39.26	-0.610:	15.90	43.81:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.76	13.31:	12.68	39.37	-0.607:	15.90	43.85:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.40	12.87:	12.90	39.69	-0.609:	16.21	44.37:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.43	13.07:	12.95	39.77	-0.610:	16.30	44.52:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.43	13.08:	12.95	39.77	-0.610:	16.30	44.52:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.81	13.40:	12.95	39.78	-0.615:	16.29	44.52:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		11.08	13.57:	12.98	39.84	-0.619:	16.33	44.60:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		11.16	13.73:	12.99	39.84	-0.620:	16.33	44.60:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		11.49	13.96:	13.00	39.87	-0.624:	16.34	44.63:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.71	14.11:	13.03	39.91	-0.628:	16.39	44.71:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.83	14.18:	13.03	39.92	-0.629:	16.39	44.71:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		12.03	14.32:	13.03	39.93	-0.632:	16.39	44.72:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		12.33	14.45:	13.03	39.93	-0.632:	16.39	44.72:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.53	10.53	12.85:	10.11	28.35	-0.412:	12.44	30.39:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.65	14.35:	10.09	28.51	-0.429:	12.99	31.09:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.96	14.92:	10.29	28.73	-0.435:	13.35	31.50:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.73	14.46:	10.41	28.84	-0.435:	13.61	31.76:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.58	14.46:	10.42	28.85	-0.434:	13.63	31.79:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.53	14.32:	10.47	28.89	-0.435:	13.75	31.91:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.45	14.26:	10.42	28.85	-0.433:	13.61	31.77:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.39	14.12:	10.57	28.98	-0.435:	13.90	32.06:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.31	14.46:	10.57	28.98	-0.434:	13.90	32.07:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.20	14.33:	10.56	28.98	-0.433:	13.83	32.00:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.20	14.32:			:	13.83	32.00:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.40	8.40	10.98:	10.52	28.92	-0.402:	13.48	31.63:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.15	11.95:			:	13.48	31.63:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.19	13.54:	10.68	29.08	-0.426:	13.94	32.12:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.17	13.33:	10.68	29.08	-0.427:	13.95	32.12:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.10	13.26:	10.73	29.13	-0.426:	14.08	32.27:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.86	13.05:	10.72	29.13	-0.424:	14.08	32.28:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.49	12.58:	10.70	29.12	-0.422:	14.02	32.22:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.28	12.31:	10.81	29.22	-0.421:	14.19	32.41:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.25	12.48:	10.81	29.22	-0.421:	14.20	32.41:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.05	12.26:	10.81	29.24	-0.419:	14.18	32.41:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.70	11.83:	10.91	29.34	-0.418:	14.22	32.47:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.27	11.33:	11.12	29.55	-0.418:	14.52	32.82:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.26	11.47:	11.15	29.60	-0.419:	14.60	32.91:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.27	11.47:	11.15	29.60	-0.419:	14.60	32.91:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.52	11.69:	11.14	29.60	-0.420:	14.59	32.91:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.70	11.79:	11.19	29.64	-0.423:	14.63	32.97:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.75	11.92:	11.19	29.64	-0.423:	14.63	32.97:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.12	12.20:	11.20	29.67	-0.426:	14.64	32.99:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.36	12.38:	11.22	29.69	-0.429:	14.68	33.04:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.50	12.47:	11.23	29.69	-0.430:	14.69	33.04:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.72	12.63:	11.23	29.71	-0.432:	14.68	33.05:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.06	12.82:	11.23	29.71	-0.432:	14.68	33.05:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	AVG. DAILY K1 /S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	10.25	10.25	13.17:	11.00	23.18	-0.319:	13.96	25.28:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.87	15.28:	11.07	23.36	-0.337:	14.86	26.12:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.76	16.18:	11.35	23.59	-0.347:	15.37	26.58:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		13.64	15.70:	11.56	23.73	-0.349:	15.77	26.92:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		13.56	15.82:	11.57	23.74	-0.348:	15.81	26.96:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		13.53	15.67:	11.67	23.81	-0.349:	16.00	27.12:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		13.49	15.64:	11.56	23.73	-0.347:	15.76	26.92:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		13.44	15.49:	11.80	23.90	-0.350:	16.20	27.30:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		13.40	16.02:	11.81	23.91	-0.350:	16.20	27.31:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		13.25	15.83:	11.77	23.88	-0.349:	16.09	27.21:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		13.24	15.82:			:	16.09	27.21:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.29	8.29	11.34:	11.63	23.78	-0.316:	15.51	26.70:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.13	12.64:			:	15.51	26.70:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.77	14.68:	11.92	23.98	-0.338:	16.22	27.33:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.77	14.39:	11.92	23.99	-0.338:	16.23	27.33:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.71	14.34:	12.01	24.06	-0.342:	16.44	27.52:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		11.54	14.19:	11.99	24.05	-0.341:	16.44	27.53:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		11.27	13.75:	11.94	24.02	-0.338:	16.32	27.44:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		11.10	13.51:	12.10	24.14	-0.339:	16.58	27.67:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		11.08	13.76:	12.10	24.14	-0.339:	16.58	27.67:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.89	13.53:	12.10	24.14	-0.337:	16.55	27.65:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		10.55	13.07:	12.17	24.21	-0.336:	16.54	27.66:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		10.09	12.51:	12.45	24.43	-0.337:	16.95	28.05:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		10.09	12.70:	12.51	24.48	-0.338:	17.06	28.16:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		10.09	12.69:	12.51	24.48	-0.338:	17.06	28.16:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		10.34	12.91:	12.49	24.47	-0.339:	17.04	28.15:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		10.53	13.01:	12.54	24.51	-0.341:	17.09	28.20:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		10.59	13.15:	12.54	24.51	-0.341:	17.09	28.20:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		10.93	13.40:	12.55	24.53	-0.344:	17.09	28.21:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		11.15	13.56:	12.58	24.55	-0.345:	17.15	28.27:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		11.29	13.63:	12.58	24.55	-0.346:	17.15	28.27:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		11.52	13.78:	12.57	24.55	-0.348:	17.14	28.27:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		11.87	13.95:	12.57	24.55	-0.348:	17.14	28.27:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C) /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	11.16	11.16	13.40:	9.44	24.48	-0.347:	11.71	26.10:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		13.01	14.54:	9.15	24.43	-0.356:	12.00	26.47:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		13.05	14.76:	9.31	24.58	-0.358:	12.33	26.78:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.74	14.20:	9.40	24.65	-0.357:	12.55	26.96:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.52	14.12:	9.41	24.66	-0.356:	12.57	26.98:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.45	13.96:	9.44	24.68	-0.356:	12.68	27.07:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.34	13.87:	9.41	24.66	-0.354:	12.56	26.97:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.25	13.72:	9.53	24.75	-0.355:	12.82	27.18:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.14	13.99:	9.54	24.75	-0.355:	12.82	27.19:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.06	13.88:	9.54	24.75	-0.354:	12.77	27.15:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.06	13.88:			:	12.77	27.15:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.68	8.68	10.98:	9.66	24.82	-0.333:	12.57	26.97:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.17	11.54:			:	12.57	26.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.01	13.03:	9.69	24.86	-0.349:	12.91	27.27:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.99	12.81:	9.70	24.87	-0.349:	12.92	27.27:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.92	12.74:	9.72	24.88	-0.349:	13.02	27.37:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.70	12.53:	9.69	24.87	-0.347:	13.01	27.36:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.32	12.05:	9.68	24.88	-0.344:	12.96	27.33:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.08	11.76:	9.78	24.95	-0.344:	13.12	27.47:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.04	11.91:	9.78	24.95	-0.345:	13.13	27.48:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.88	11.71:	9.79	24.96	-0.339:	13.12	27.48:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.59	11.34:	9.91	25.07	-0.343:	13.18	27.55:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.19	10.87:	10.12	25.24	-0.343:	13.48	27.83:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.17	10.97:	10.14	25.27	-0.343:	13.55	27.89:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.17	10.96:	10.14	25.27	-0.343:	13.55	27.89:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.32	11.10:	10.13	25.26	-0.343:	13.53	27.89:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.43	11.15:	10.17	25.30	-0.345:	13.58	27.94:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.47	11.25:	10.17	25.30	-0.345:	13.58	27.94:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.80	11.51:	10.19	25.32	-0.348:	13.59	27.95:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.02	11.69:	10.20	25.33	-0.351:	13.62	27.99:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.15	11.77:	10.21	25.34	-0.374:	13.63	27.99:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.37	11.94:	10.20	25.34	-0.353:	13.62	27.99:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.71	12.15:	10.20	25.34	-0.353:	13.62	27.99:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	11.04	11.04	13.58:	9.36	21.42	-0.291:	11.95	23.00:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		12.85	14.68:	9.07	21.38	-0.299:	12.37	23.40:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		12.98	14.88:	9.25	21.52	-0.301:	12.78	23.71:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		12.70	14.31:	9.38	21.60	-0.301:	13.06	23.91:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		12.51	14.27:	9.39	21.60	-0.300:	13.09	23.94:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		12.44	14.10:	9.44	21.63	-0.300:	13.22	24.03:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		12.35	14.02:	9.38	21.61	-0.299:	13.07	23.92:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		12.26	13.86:	9.54	21.70	-0.300:	13.39	24.15:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		12.16	14.21:	9.55	21.70	-0.300:	13.40	24.16:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		12.09	14.10:	9.54	21.70	-0.299:	13.33	24.11:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		12.08	14.10:			:	13.33	24.11:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.83	8.83	11.43:	9.59	21.72	-0.282:	12.99	23.86:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		9.29	11.94:			:	12.99	23.86:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		11.12	13.36:	9.70	21.79	-0.296:	13.47	24.22:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		11.09	13.10:	9.71	21.80	-0.296:	13.48	24.22:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		11.03	13.04:	9.74	21.83	-0.295:	13.62	24.33:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.81	12.83:	9.71	21.81	-0.294:	13.61	24.33:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		10.44	12.34:	9.70	21.81	-0.291:	13.53	24.28:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		10.20	12.05:	9.81	21.88	-0.291:	13.74	24.43:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		10.16	12.22:	9.81	21.88	-0.291:	13.74	24.43:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		10.01	12.03:	9.82	21.89	-0.290:	13.72	24.43:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.74	11.65:	9.93	21.98	-0.291:	13.77	24.48:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.33	11.17:	10.17	22.14	-0.291:	14.12	24.76:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.31	11.28:	10.20	22.17	-0.291:	14.20	24.82:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.31	11.28:	10.20	22.17	-0.291:	14.20	24.82:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.45	11.39:	10.18	22.16	-0.292:	14.18	24.82:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.54	11.43:	10.23	22.20	-0.293:	14.23	24.86:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.56	11.52:	10.23	22.20	-0.293:	14.23	24.86:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.90	11.78:	10.25	22.21	-0.295:	14.24	24.87:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		10.12	11.95:	10.26	22.23	-0.293:	14.28	24.91:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		10.25	12.03:	10.27	22.23	-0.161:	14.28	24.91:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.47	12.19:	10.26	22.23	-0.300:	14.27	24.91:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.81	12.39:	10.26	22.23	-0.300:	14.27	24.91:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	8.67	8.67	11.06:	8.75	28.05	-0.399:	11.16	30.07:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.37	13.15:	8.67	28.16	-0.410:	11.67	30.71:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.93	13.88:	8.87	28.38	-0.417:	12.05	31.13:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.68	13.39:	8.98	28.47	-0.417:	12.30	31.37:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.50	13.37:	8.99	28.48	-0.416:	12.32	31.40:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.44	13.22:	9.03	28.52	-0.416:	12.44	31.51:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.35	13.15:	8.98	28.48	-0.414:	12.31	31.39:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.28	13.00:	9.12	28.60	-0.416:	12.58	31.66:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.19	13.34:	9.13	28.60	-0.415:	12.59	31.66:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.17	13.28:	9.12	28.60	-0.415:	12.53	31.61:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.16	13.27:			:	12.53	31.61:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.87	7.87	10.37:	9.19	28.64	-0.390:	12.27	31.34:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.42	11.05:			:	12.27	31.34:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.10	12.41:	9.26	28.72	-0.409:	12.65	31.73:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.11	12.21:	9.27	28.72	-0.409:	12.66	31.74:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.07	12.17:	9.30	28.76	-0.409:	12.79	31.87:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.92	12.03:	9.28	28.75	-0.408:	12.78	31.88:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.67	11.66:	9.27	28.75	-0.405:	12.72	31.83:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.51	11.45:	9.37	28.84	-0.410:	12.90	32.01:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.48	11.62:	9.37	28.84	-0.408:	12.90	32.02:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.39	11.50:	9.38	28.86	-0.819:	12.89	32.01:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.23	11.25:	9.48	28.97	-0.405:	12.93	32.08:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.02	10.96:	9.69	29.17	-0.407:	13.23	32.42:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.02	11.10:	9.72	29.21	-0.407:	13.31	32.51:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.02	11.10:	9.72	29.21	-0.407:	13.31	32.51:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.15	11.21:	9.71	29.21	-0.408:	13.30	32.50:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.25	11.25:	9.76	29.25	-0.410:	13.35	32.56:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.27	11.34:	9.76	29.26	-0.410:	13.35	32.56:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.60	11.59:	9.78	29.28	-0.412:	13.36	32.58:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.82	11.76:	9.79	29.30	-0.317:	13.40	32.63:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.94	11.83:	9.80	29.30	-0.418:	13.40	32.63:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.15	11.98:	9.80	29.32	-0.417:	13.40	32.64:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.46	12.15:	9.80	29.32	-0.417:	13.40	32.64:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C)	REMARKS
1	N.F. KOKTULI	H	57.7:	7.88	7.88	10.66:	8.76	24.21	-0.320:	11.61	26.22:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.85	13.12:	8.43	24.14	-0.335:	12.03	26.69:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.85	13.97:	8.64	24.32	-0.344:	12.46	27.09:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.70	13.47:	8.77	24.42	-0.345:	12.77	27.34:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.57	13.51:	8.78	24.43	-0.344:	12.80	27.37:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.52	13.35:	8.84	24.46	-0.344:	12.95	27.49:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.45	13.29:	8.78	24.43	-0.343:	12.78	27.36:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.39	13.15:	8.96	24.55	-0.345:	13.13	27.65:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.31	13.56:	8.97	24.55	-0.345:	13.14	27.66:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.27	13.47:	8.96	24.55	-0.344:	13.06	27.60:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.26	13.47:			:	13.06	27.60:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.79	7.79	10.39:	9.13	24.64	-0.324:	12.80	27.37:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.25	11.02:			:	12.80	27.37:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.03	12.47:	9.15	24.68	-0.338:	13.23	27.74:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.05	12.20:	9.16	24.69	-0.339:	13.24	27.75:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.01	12.16:	9.19	24.72	-0.339:	13.39	27.88:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.88	12.03:	9.15	24.70	-0.338:	13.37	27.87:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.64	11.66:	9.13	24.69	-0.335:	13.28	27.81:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.49	11.44:	9.26	24.78	-0.337:	13.51	28.01:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.46	11.64:	9.26	24.78	-0.335:	13.51	28.01:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.34	11.46:	9.27	24.79	-0.322:	13.49	28.00:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.13	11.12:	9.39	24.90	-0.336:	13.53	28.06:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.83	10.69:	9.67	25.11	-0.337:	13.92	28.42:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.82	10.82:	9.69	25.14	-0.337:	14.00	28.51:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.82	10.81:	9.70	25.14	-0.338:	14.01	28.51:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.94	10.91:	9.66	25.13	-0.338:	13.97	28.49:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.03	10.93:	9.71	25.17	-0.339:	14.03	28.54:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.04	11.03:	9.71	25.17	-0.339:	14.03	28.54:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.31	11.23:	9.73	25.19	-0.341:	14.04	28.55:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.49	11.37:	9.74	25.20	-0.342:	14.07	28.59:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.60	11.43:	9.74	25.20	-0.343:	14.07	28.59:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.79	11.58:	9.72	25.20	-0.338:	14.05	28.59:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.10	11.75:	9.72	25.20	-0.338:	14.05	28.59:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.99	8.99	11.69:	9.01	24.40	-0.257:	11.76	26.37:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.24	13.41:	8.78	24.40	-0.342:	12.25	26.91:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.80	13.93:	9.00	24.59	-0.349:	12.70	27.32:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.63	13.43:	9.13	24.68	-0.349:	13.00	27.57:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.50	13.47:	9.14	24.69	-0.349:	13.03	27.60:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.46	13.32:	9.19	24.73	-0.349:	13.17	27.72:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.39	13.26:	9.14	24.69	-0.348:	13.01	27.58:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.33	13.12:	9.31	24.81	-0.350:	13.35	27.87:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.26	13.55:	9.31	24.81	-0.349:	13.35	27.87:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		11.21	13.45:	9.30	24.81	-0.349:	13.28	27.81:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		11.21	13.45:			:	13.28	27.81:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.05	8.05	10.77:	9.36	24.83	-0.329:	12.93	27.51:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.55	11.42:			:	12.93	27.51:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.23	12.71:	9.46	24.92	-0.344:	13.42	27.94:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.23	12.45:	9.47	24.93	-0.344:	13.43	27.95:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.19	12.41:	9.51	24.96	-0.345:	13.58	28.08:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		10.06	12.29:	9.48	24.95	-0.344:	13.57	28.08:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.84	11.92:	9.46	24.94	-0.342:	13.49	28.02:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.69	11.71:	9.58	25.03	-0.337:	13.71	28.21:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.67	11.91:	9.59	25.03	-0.338:	13.71	28.21:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.55	11.73:	9.59	25.04	-0.357:	13.69	28.21:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.33	11.37:	9.71	25.15	-0.342:	13.73	28.27:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.06	10.95:	9.98	25.36	-0.343:	14.11	28.62:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.05	11.09:	10.01	25.39	-0.344:	14.19	28.71:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.05	11.08:	10.01	25.39	-0.344:	14.20	28.71:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.18	11.19:	9.98	25.38	-0.344:	14.17	28.69:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.27	11.21:	10.03	25.42	-0.346:	14.22	28.75:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.29	11.30:	10.03	25.42	-0.346:	14.22	28.75:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.57	11.52:	10.05	25.44	-0.347:	14.23	28.76:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.76	11.66:	10.06	25.45	-0.350:	14.27	28.80:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.87	11.72:	10.06	25.46	-0.351:	14.27	28.81:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.06	11.86:	10.05	25.46	-1.644:	14.26	28.80:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.34	12.01:	10.05	25.46	-1.644:	14.26	28.80:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	K1 S/C2)	K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.93	8.93	11.21:	8.28	23.78	-0.318:	10.65	25.38:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		11.12	12.89:	7.44	23.41	-0.322:	10.45	25.38:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.63	13.21:	7.54	23.52	-0.327:	10.76	25.66:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.42	12.71:	7.62	23.57	-0.326:	10.98	25.82:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.24	12.66:	7.62	23.58	-0.325:	11.00	25.84:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.19	12.51:	7.65	23.59	-0.325:	11.10	25.91:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.09	12.42:	7.62	23.58	-0.324:	10.99	25.83:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.02	12.29:	7.75	23.66	-0.325:	11.27	26.04:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.91	12.56:	7.76	23.67	-0.325:	11.27	26.05:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.87	12.48:	7.78	23.68	-0.324:	11.23	26.02:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.86	12.48:			:	11.23	26.02:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.79	7.79	10.13:	7.92	23.76	-0.308:	11.03	25.86:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.29	10.57:			:	11.03	25.86:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		10.09	11.91:	7.97	23.80	-0.322:	11.41	26.15:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		10.07	11.69:	7.98	23.81	-0.322:	11.42	26.16:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		10.02	11.64:	7.97	23.81	-0.321:	11.51	26.24:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.84	11.47:	7.92	23.79	-0.320:	11.48	26.22:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.53	11.05:	7.91	23.79	-0.318:	11.42	26.19:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.32	10.79:	8.02	23.86	-0.318:	11.60	26.33:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.28	10.92:	8.02	23.86	-0.317:	11.60	26.33:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.19	10.81:	8.03	23.88	-0.317:	11.59	26.33:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.03	10.57:	8.17	23.99	-0.318:	11.67	26.41:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.73	10.24:	8.38	24.14	-0.319:	11.98	26.67:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.70	10.33:	8.39	24.16	-0.318:	12.03	26.73:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.70	10.32:	8.39	24.16	-0.319:	12.04	26.73:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.75	10.36:	8.36	24.15	-0.319:	12.01	26.72:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.79	10.34:	8.41	24.19	-0.319:	12.06	26.77:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.80	10.41:	8.41	24.19	-0.320:	12.06	26.77:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.04	10.60:	8.43	24.21	-0.321:	12.08	26.78:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.20	10.73:	8.43	24.22	-0.322:	12.10	26.81:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.30	10.79:	8.44	24.22	-0.323:	12.11	26.81:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.46	10.92:	8.43	24.22	-0.324:	12.10	26.81:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.72	11.06:	8.43	24.22	-0.324:	12.10	26.81:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	7.73	7.73	9.03:	6.93	48.39-0.710:		8.22	50.28:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		9.96	10.73:	6.62	48.34-0.734:		8.08	50.43:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.86	10.86:	6.68	48.54-0.734:		8.19	50.71:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.46	10.40:	6.67	48.54-0.728:		8.20	50.75:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.19	10.18:	6.66	48.55-0.724:		8.20	50.76:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.11	10.06:	6.65	48.53-0.722:		8.20	50.76:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.98	9.93:	6.68	48.57-0.721:		8.21	50.79:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.89	9.83:	6.68	48.58-0.720:		8.25	50.84:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.76	9.85:	6.68	48.59-0.718:		8.25	50.85:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.83	9.90:	6.72	48.65-0.720:		8.27	50.89:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.83	9.91:			:	8.27	50.89:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.39	7.39	8.74:	6.97	48.95-0.706:		8.45	51.12:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.66	8.94:			:	8.45	51.12:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		8.39	9.55:	6.83	48.80-0.717:		8.38	51.06:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.39	9.46:	6.83	48.81-0.717:		8.38	51.07:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.35	9.42:	6.80	48.78-0.715:		8.37	51.06:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.20	9.27:	6.78	48.78-0.713:		8.36	51.07:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.95	8.97:	6.82	48.85-0.710:		8.39	51.13:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.79	8.81:	6.84	48.90-0.708:		8.43	51.21:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.77	8.85:	6.84	48.90-0.708:		8.43	51.21:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.76	8.83:	6.87	48.95-0.709:		8.45	51.26:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.76	8.78:	7.01	49.21-0.713:		8.58	51.53:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.75	8.76:	7.12	49.42-0.716:		8.71	51.79:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.75	8.81:	7.12	49.45-0.716:		8.72	51.83:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.75	8.80:	7.12	49.45-0.716:		8.73	51.83:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.75	8.79:	7.12	49.47-0.716:		8.73	51.86:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.74	8.76:	7.15	49.53-0.717:		8.76	51.93:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.72	8.77:	7.15	49.54-0.716:		8.76	51.93:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.96	8.98:	7.18	49.59-0.720:		8.79	51.99:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.12	9.12:	7.18	49.61-0.723:		8.80	52.02:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.20	9.19:	7.18	49.61-0.724:		8.80	52.02:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.34	9.31:	7.20	49.65-0.727:		8.81	52.06:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.54	9.45:	7.20	49.65-0.727:		8.81	52.06:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	7.95	7.95	9.13:	9.64	41.57	-0.612:	10.83	43.14:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.49	11.55:	8.79	40.81	-0.623:	10.17	42.54:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.25	12.14:	8.78	40.89	-0.632:	10.21	42.68:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.09	11.83:	8.76	40.88	-0.630:	10.22	42.71:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		10.95	11.73:	8.75	40.87	-0.628:	10.22	42.71:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.91	11.65:	8.73	40.85	-0.626:	10.21	42.70:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.83	11.56:	8.76	40.89	-0.626:	10.22	42.73:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.78	11.49:	8.78	40.92	-0.626:	10.27	42.79:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.69	11.57:	8.79	40.93	-0.625:	10.27	42.80:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.64	11.49:	8.83	40.99	-0.625:	10.31	42.85:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.63	11.50:			:	10.31	42.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.35	8.35	9.03:	10.85	43.55	-0.648:	12.18	45.43:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.68	9.40:			:	12.18	45.43:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.10	9.86:	9.37	41.66	-0.620:	10.83	43.55:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.13	9.76:	9.38	41.67	-0.621:	10.84	43.57:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.13	9.75:	9.25	41.52	-0.616:	10.73	43.44:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.12	9.72:	9.11	41.36	-1.086:	10.60	43.28:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.11	9.65:	9.12	41.39	-0.828:	10.61	43.30:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.10	9.62:	9.23	41.54	-0.613:	10.73	43.47:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.10	9.68:	9.24	41.55	-0.614:	10.74	43.48:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.10	9.67:	9.24	41.56	-0.617:	10.74	43.50:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.10	9.64:	9.47	41.90	-0.622:	10.95	43.84:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.13	9.67:	9.65	42.16	-0.627:	11.15	44.15:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.14	9.72:	9.57	42.09	-0.625:	11.09	44.09:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.14	9.71:	9.57	42.09	-0.625:	11.09	44.09:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.21	9.78:	9.49	42.01	-0.625:	11.02	44.01:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.27	9.81:	9.55	42.09	-0.626:	11.08	44.10:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.27	9.84:	9.55	42.09	-0.626:	11.08	44.10:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.54	10.09:	9.57	42.13	-0.693:	11.10	44.14:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.73	10.26:	9.53	42.09	-0.630:	11.06	44.11:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.84	10.35:	9.54	42.11	-0.633:	11.07	44.12:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		10.03	10.52:	9.50	42.07	-0.634:	11.03	44.08:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.34	10.79:	9.50	42.07	-0.634:	11.03	44.08:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.42	8.42	10.11:	10.50	26.64	-0.367:	12.34	28.12:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.47	12.02:	8.40	25.29	-0.352:	10.77	27.01:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		11.29	12.38:	8.31	25.29	-0.357:	10.86	27.13:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		11.24	12.08:	8.35	25.32	-0.357:	11.00	27.25:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		11.18	12.08:	8.33	25.31	-0.356:	10.99	27.24:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		11.16	11.99:	8.33	25.31	-0.356:	11.04	27.28:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		11.11	11.95:	8.33	25.31	-0.356:	10.99	27.24:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		11.08	11.88:	8.46	25.40	-0.357:	11.21	27.42:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		11.03	12.08:	8.47	25.41	-0.357:	11.22	27.43:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.93	11.95:	8.52	25.45	-0.357:	11.23	27.44:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.92	11.96:			:	11.23	27.44:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	8.12	8.12	9.24:	10.00	26.48	-0.358:	12.38	28.37:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.52	9.66:			:	12.38	28.37:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.60	10.69:	9.07	25.83	-0.355:	11.74	27.86:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.60	10.51:	9.09	25.84	-0.356:	11.76	27.88:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.59	10.49:	8.96	25.76	-0.353:	11.71	27.84:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.53	10.41:	8.79	25.65	-0.351:	11.56	27.73:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.42	10.21:	8.77	25.65	-0.350:	11.51	27.70:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.35	10.10:	8.93	25.76	-0.351:	11.72	27.87:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.33	10.18:	8.94	25.77	-0.352:	11.72	27.88:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.28	10.10:	8.95	25.78	-0.352:	11.72	27.88:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.19	9.94:	9.25	26.02	-0.359:	11.97	28.12:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.06	9.74:	9.67	26.35	-0.360:	12.44	28.54:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.05	9.78:	9.58	26.29	-0.358:	12.40	28.51:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.05	9.77:	9.58	26.30	-0.358:	12.40	28.51:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.12	9.84:	9.44	26.20	-0.356:	12.27	28.41:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.17	9.85:	9.52	26.26	-0.358:	12.35	28.48:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.17	9.89:	9.52	26.27	-0.358:	12.35	28.49:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.43	10.13:	9.54	26.29	-0.360:	12.37	28.51:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.61	10.29:	9.47	26.24	-0.361:	12.32	28.47:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.72	10.37:	9.49	26.26	-0.363:	12.33	28.49:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.91	10.54:	9.39	26.20	-0.362:	12.25	28.42:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		10.22	10.79:	9.39	26.20	-0.362:	12.25	28.42:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	8.22	8.22	10.30:	9.81	33.71	-0.484:	11.96	36.00:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		10.06	12.01:	8.77	32.93	-0.481:	11.52	35.73:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		10.75	12.36:	8.87	33.09	-0.490:	11.83	36.15:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		10.71	12.01:	8.97	33.19	-0.491:	12.05	36.40:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		10.66	12.08:	8.97	33.20	-0.491:	12.07	36.43:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		10.64	11.97:	9.00	33.23	-0.491:	12.17	36.54:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		10.61	11.94:	8.97	33.20	-0.490:	12.06	36.43:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		10.58	11.86:	9.12	33.36	-0.493:	12.34	36.75:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		10.55	12.20:	9.13	33.36	-0.493:	12.34	36.76:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		10.46	12.07:	9.14	33.38	-0.492:	12.31	36.72:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		10.46	12.08:			:	12.31	36.72:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.58	7.58	9.44:	9.63	33.83	-0.474:	12.45	36.87:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		8.08	10.03:			:	12.45	36.87:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		9.39	11.16:	9.43	33.67	-0.464:	12.58	37.04:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		9.40	10.92:	9.45	33.68	-0.505:	12.59	37.05:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		9.39	10.91:	9.43	33.67	-0.455:	12.66	37.14:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		9.35	10.86:	9.34	33.60	-0.436:	12.59	37.08:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		9.29	10.67:	9.32	33.59	-0.517:	12.53	37.02:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		9.24	10.58:	9.45	33.73	-0.485:	12.73	37.26:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		9.24	10.73:	9.45	33.73	-0.488:	12.73	37.26:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		9.19	10.65:	9.46	33.74	-0.487:	12.72	37.26:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		9.11	10.46:	9.63	33.95	-0.488:	12.83	37.43:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		9.01	10.27:	9.92	34.27	-0.493:	13.20	37.91:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		9.02	10.37:	9.91	34.28	-0.493:	13.24	37.97:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		9.02	10.36:	9.91	34.28	-0.493:	13.24	37.98:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		9.11	10.44:	9.85	34.23	-0.493:	13.19	37.92:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		9.17	10.45:	9.91	34.30	-0.495:	13.25	38.00:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		9.18	10.52:	9.91	34.30	-0.495:	13.25	38.00:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		9.30	10.62:	9.91	34.31	-0.496:	13.25	38.01:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.39	10.69:	9.89	34.30	-0.496:	13.25	38.02:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.44	10.71:	9.89	34.30	-0.497:	13.25	38.03:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.54	10.79:	9.86	34.28	-0.498:	13.21	37.99:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.70	10.89:	9.86	34.28	-0.498:	13.21	37.99:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	TYPE	DIST.	OBS. (C)	PRED. (C)	PRED. MAX. (C)	AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	6.46	6.46	7.69:	6.88	61.64	-0.902:	8.10	63.96:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.56	9.50:	6.46	61.38	-0.926:	7.82	63.90:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.80	9.80:	6.50	61.62	-0.932:	7.91	64.22:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.56	9.46:	6.50	61.63	-0.927:	7.92	64.27:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.38	9.32:	6.49	61.63	-0.924:	7.92	64.28:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.33	9.23:	6.48	61.61	-0.922:	7.92	64.27:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.25	9.14:	6.50	61.66	-0.921:	7.93	64.31:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.18	9.06:	6.52	61.69	-0.921:	7.96	64.38:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.09	9.12:	6.52	61.70	-0.919:	7.97	64.39:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.13	9.14:	6.56	61.77	-0.921:	7.99	64.45:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.13	9.14:			:	7.99	64.45:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.83	6.83	8.03:	6.94	62.41	-0.907:	8.31	65.03:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.23	8.38:			:	8.31	65.03:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.70	8.78:	6.71	62.05	-0.919:	8.14	64.75:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.71	8.68:	6.71	62.06	-0.919:	8.14	64.76:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.69	8.66:	6.67	62.01	-0.917:	8.12	64.73:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.63	8.58:	6.64	61.98	-0.915:	8.09	64.71:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.51	8.41:	6.67	62.06	-0.914:	8.12	64.78:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.43	8.32:	6.70	62.14	-0.914:	8.16	64.89:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.42	8.37:	6.70	62.15	-0.913:	8.16	64.90:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.43	8.37:	6.73	62.21	-0.915:	8.19	64.96:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.45	8.35:	6.88	62.56	-0.920:	8.33	65.33:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.51	8.37:	7.00	62.87	-0.926:	8.47	65.69:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.52	8.42:	7.00	62.90	-0.926:	8.48	65.73:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.52	8.42:	7.00	62.90	-0.926:	8.48	65.74:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.54	8.43:	6.99	62.91	-0.926:	8.47	65.75:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.54	8.42:	7.03	63.00	-0.928:	8.51	65.85:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.53	8.43:	7.03	63.00	-0.927:	8.51	65.85:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.63	8.52:	7.04	63.05	-0.930:	8.53	65.91:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.69	8.58:	7.04	63.07	-0.931:	8.53	65.93:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.73	8.60:	7.04	63.07	-0.932:	8.53	65.93:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.80	8.66:	7.05	63.11	-0.933:	8.54	65.97:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.91	8.73:	7.05	63.11	-0.933:	8.54	65.97:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	7.07	7.07	9.27:	9.01	34.72-0.487:		11.27	37.16:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.95	11.06:	8.16	34.10-0.489:		11.04	37.13:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		9.70	11.47:	8.29	34.31-0.499:		11.42	37.65:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		9.69	11.14:	8.40	34.43-0.501:		11.65	37.93:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		9.67	11.24:	8.40	34.44-0.501:		11.68	37.97:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		9.65	11.13:	8.44	34.48-0.501:		11.78	38.09:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		9.64	11.11:	8.41	34.44-0.500:		11.68	37.97:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		9.62	11.04:	8.57	34.60-0.503:		11.96	38.31:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		9.60	11.43:	8.57	34.61-0.503:		11.97	38.32:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		9.53	11.31:	8.58	34.63-0.503:		11.93	38.28:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		9.53	11.33:			:	11.93	38.28:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.67	7.67	8.98:	10.44	36.54-0.522:		13.30	39.98:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.97	9.36:			:	13.30	39.98:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		8.36	9.86:	9.22	35.27-0.504:		12.50	38.99:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		8.38	9.67:	9.23	35.28-0.504:		12.52	39.00:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		8.38	9.66:	9.16	35.22-0.503:		12.54	39.04:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		8.37	9.62:	8.99	35.06-0.499:		12.40	38.89:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		8.36	9.47:	8.95	35.04-0.499:		12.32	38.80:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		8.35	9.41:	9.16	35.26-0.503:		12.60	39.15:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		8.35	9.54:	9.17	35.27-0.503:		12.61	39.16:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		8.35	9.52:	9.15	35.25-0.502:		12.56	39.12:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		8.34	9.47:	9.36	35.51-0.507:		12.71	39.34:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		8.37	9.48:	9.64	35.85-0.513:		13.08	39.86:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		8.39	9.60:	9.59	35.81-0.512:		13.09	39.88:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		8.40	9.59:	9.60	35.81-0.512:		13.09	39.88:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		8.48	9.67:	9.49	35.72-0.511:		13.00	39.78:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		8.55	9.69:	9.56	35.80-0.513:		13.07	39.88:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		8.56	9.75:	9.56	35.80-0.513:		13.07	39.88:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		8.82	9.96:	9.58	35.83-0.516:		13.08	39.91:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		9.00	10.11:	9.54	35.80-0.517:		13.07	39.90:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		9.11	10.18:	9.56	35.82-0.518:		13.09	39.92:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		9.30	10.33:	9.50	35.76-0.518:		13.03	39.86:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		9.60	10.54:	9.50	35.76-0.518:		13.03	39.86:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	6.73	6.73	8.28:	7.91	24.61	-0.318:	9.64	25.79:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.43	9.79:	5.46	23.27	-0.299:	7.66	24.60:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.98	9.89:	5.28	23.23	-0.301:	7.65	24.64:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.88	9.57:	5.28	23.23	-0.300:	7.73	24.70:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.79	9.53:	5.25	23.22	-0.299:	7.71	24.70:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.75	9.44:	5.22	23.21	-0.299:	7.73	24.71:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.70	9.38:	5.25	23.22	-0.299:	7.71	24.70:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.65	9.31:	5.34	23.28	-0.299:	7.88	24.81:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.58	9.45:	5.36	23.29	-0.299:	7.89	24.82:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.55	9.39:	5.43	23.33	-0.300:	7.93	24.85:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.54	9.40:			:	7.93	24.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.01	7.01	7.98:	7.07	24.29	-0.305:	9.29	25.75:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.33	8.24:			:	9.29	25.75:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.88	8.76:	6.02	23.67	-0.303:	8.50	25.23:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.87	8.60:	6.05	23.69	-0.303:	8.52	25.24:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.86	8.58:	5.88	23.60	-0.301:	8.41	25.18:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.81	8.51:	5.68	23.49	-0.298:	8.24	25.07:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.71	8.33:	5.68	23.50	-0.298:	8.21	25.06:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.63	8.23:	5.82	23.59	-0.299:	8.40	25.19:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.62	8.29:	5.83	23.59	-0.299:	8.41	25.20:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.60	8.25:	5.84	23.60	-0.299:	8.40	25.20:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.55	8.17:	6.15	23.81	-0.302:	8.67	25.41:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.48	8.06:	6.46	24.02	-0.305:	9.03	25.68:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.47	8.10:	6.35	23.97	-0.304:	8.97	25.65:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.47	8.09:	6.35	23.97	-0.304:	8.97	25.65:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.50	8.12:	6.22	23.90	-0.303:	8.85	25.57:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.53	8.12:	6.30	23.95	-0.304:	8.93	25.63:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.51	8.13:	6.30	23.95	-0.304:	8.93	25.64:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.70	8.31:	6.31	23.97	-0.305:	8.94	25.65:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.84	8.43:	6.24	23.93	-0.305:	8.88	25.62:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.92	8.49:	6.25	23.94	-0.305:	8.90	25.63:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.06	8.62:	6.17	23.90	-0.305:	8.82	25.58:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.30	8.81:	6.17	23.90	-0.305:	8.82	25.58:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	6.24	6.24	8.40:	8.36	24.18	-0.309:	10.83	25.89:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		8.05	10.03:	5.93	22.87	-0.292:	9.22	24.90:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.79	10.15:	5.89	22.89	-0.295:	9.49	25.13:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.76	9.80:	5.98	22.95	-0.296:	9.74	25.31:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.72	9.86:	5.96	22.95	-0.296:	9.75	25.32:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.70	9.75:	5.98	22.96	-0.296:	9.85	25.39:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.67	9.72:	5.96	22.95	-0.295:	9.75	25.32:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.64	9.65:	6.16	23.07	-0.298:	10.09	25.56:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.61	9.95:	6.18	23.07	-0.298:	10.10	25.57:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.56	9.87:	6.22	23.10	-0.298:	10.09	25.57:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.55	9.88:			:	10.09	25.57:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.72	6.72	8.24:	7.45	23.81	-0.301:	10.83	26.09:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.14	8.58:			:	10.83	26.09:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.83	9.22:	6.81	23.45	-0.300:	10.62	25.96:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.83	8.99:	6.84	23.46	-0.300:	10.65	25.97:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.82	8.97:	6.73	23.40	-0.299:	10.65	25.99:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.78	8.90:	6.53	23.30	-0.297:	10.50	25.88:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.69	8.69:	6.50	23.29	-0.296:	10.41	25.83:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.62	8.58:	6.70	23.41	-0.298:	10.70	26.04:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.61	8.70:	6.71	23.42	-0.298:	10.71	26.05:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.59	8.65:	6.70	23.42	-0.297:	10.67	26.03:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.54	8.54:	6.96	23.60	-0.300:	10.86	26.19:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.46	8.41:	7.32	23.84	-0.302:	11.31	26.56:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.45	8.49:	7.25	23.80	-0.302:	11.31	26.57:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.45	8.48:	7.25	23.80	-0.302:	11.31	26.57:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.50	8.53:	7.12	23.74	-0.302:	11.20	26.49:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.53	8.52:	7.20	23.79	-0.302:	11.28	26.56:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.53	8.56:	7.20	23.79	-0.302:	11.29	26.56:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.71	8.71:	7.21	23.80	-0.304:	11.29	26.57:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.83	8.82:	7.15	23.77	-0.304:	11.26	26.55:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.91	8.86:	7.16	23.78	-0.305:	11.27	26.56:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.04	8.97:	7.08	23.74	-0.305:	11.19	26.51:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.27	9.13:	7.08	23.74	-0.305:	11.19	26.51:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	5.48	5.48	8.00:	6.70	33.71	-0.449:	9.34	36.34:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.47	9.73:	5.65	33.02	-0.449:	9.06	36.29:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.22	10.10:	5.83	33.25	-0.459:	9.56	36.91:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.18	9.72:	5.96	33.38	-0.461:	9.85	37.23:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.12	9.80:	5.97	33.39	-0.460:	9.89	37.28:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.10	9.67:	6.02	33.44	-0.461:	10.01	37.42:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.07	9.64:	5.98	33.40	-0.460:	9.89	37.29:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.04	9.55:	6.17	33.58	-0.463:	10.23	37.68:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.00	9.96:	6.18	33.59	-0.463:	10.24	37.69:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.99	9.90:	6.19	33.60	-0.463:	10.19	37.64:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.98	9.91:			:	10.19	37.64:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.90	5.90	8.21:	6.54	33.90	-0.450:	10.10	37.51:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.43	8.68:			:	10.10	37.51:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.31	9.38:	6.49	33.88	-0.462:	10.47	37.95:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.33	9.12:	6.51	33.90	-0.463:	10.48	37.97:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.32	9.11:	6.51	33.90	-0.462:	10.59	38.11:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.28	9.06:	6.42	33.84	-0.461:	10.53	38.06:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.21	8.84:	6.39	33.82	-0.459:	10.45	37.97:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.16	8.73:	6.55	33.98	-0.462:	10.70	38.27:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.15	8.91:	6.56	33.99	-0.462:	10.70	38.28:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.14	8.85:	6.55	33.99	-0.462:	10.68	38.26:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.12	8.72:	6.71	34.18	-0.465:	10.77	38.40:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.10	8.60:	7.03	34.52	-0.459:	11.19	38.94:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.11	8.73:	7.04	34.54	-0.478:	11.26	39.05:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.11	8.73:	7.04	34.54	-0.473:	11.26	39.05:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.16	8.77:	6.98	34.50	-0.469:	11.21	39.00:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.20	8.75:	7.04	34.57	-0.473:	11.27	39.09:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.20	8.82:	7.04	34.57	-0.474:	11.27	39.09:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.30	8.90:	7.05	34.58	-0.473:	11.28	39.10:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.38	8.95:	7.03	34.58	-0.472:	11.28	39.12:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.42	8.97:	7.03	34.58	-0.473:	11.29	39.13:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.51	9.03:	7.00	34.56	-0.473:	11.25	39.10:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.65	9.08:	7.00	34.56	-0.473:	11.25	39.10:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	6.22	6.22	8.68:	7.73	28.75	-0.381:	10.35	30.97:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.90	10.18:	6.48	28.00	-0.375:	9.88	30.74:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.53	10.32:	6.61	28.16	-0.381:	10.34	31.22:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.50	9.94:	6.73	28.25	-0.383:	10.60	31.47:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.46	10.04:	6.73	28.26	-0.382:	10.64	31.51:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.45	9.91:	6.77	28.29	-0.383:	10.75	31.61:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.43	9.88:	6.73	28.26	-0.382:	10.65	31.52:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.40	9.81:	6.91	28.40	-0.385:	10.97	31.82:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.38	10.21:	6.92	28.41	-0.385:	10.98	31.83:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.33	10.12:	6.94	28.43	-0.385:	10.94	31.80:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.33	10.14:			:	10.94	31.80:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.06	6.06	8.29:	7.31	28.69	-0.373:	10.87	31.71:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.57	8.80:			:	10.87	31.71:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.62	9.61:	7.24	28.66	-0.383:	11.21	32.06:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.63	9.34:	7.26	28.67	-0.384:	11.23	32.08:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.62	9.33:	7.24	28.67	-0.384:	11.32	32.18:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.59	9.29:	7.15	28.61	-0.382:	11.26	32.13:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.54	9.09:	7.12	28.60	-0.381:	11.18	32.06:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.49	8.99:	7.27	28.72	-0.384:	11.42	32.30:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.49	9.17:	7.27	28.72	-0.384:	11.42	32.30:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.47	9.11:	7.27	28.73	-0.381:	11.40	32.29:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.43	8.96:	7.45	28.89	-0.219:	11.50	32.42:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.39	8.82:	7.75	29.16	-0.389:	11.91	32.86:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.39	8.94:	7.75	29.17	-0.389:	11.97	32.94:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.39	8.94:	7.75	29.17	-0.389:	11.98	32.94:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.46	8.99:	7.69	29.14	-0.389:	11.92	32.90:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.51	8.99:	7.75	29.19	-0.392:	11.99	32.97:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.51	9.05:	7.75	29.19	-0.390:	11.99	32.97:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.61	9.13:	7.76	29.21	-0.388:	11.99	32.98:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.68	9.19:	7.73	29.20	-0.378:	12.00	33.00:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.72	9.20:	7.74	29.20	-0.078:	12.00	33.00:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.80	9.26:	7.70	29.18	-0.399:	11.97	32.98:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.94	9.31:	7.70	29.18	-0.399:	11.97	32.98:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7	6.08	6.08	8.05	7.06	23.18	-0.290	9.24	24.55	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		7.79	9.51	5.14	22.25	-0.279	7.95	23.87	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		8.32	9.56	5.07	22.26	-0.281	8.15	24.04	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		8.23	9.19	5.10	22.29	-0.281	8.30	24.14	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		8.14	9.18	5.08	22.28	-0.280	8.30	24.15	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		8.10	9.07	5.08	22.28	-0.280	8.36	24.18	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		8.05	9.01	5.08	22.28	-0.279	8.31	24.15	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		8.00	8.93	5.20	22.35	-0.280	8.53	24.30	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		7.94	9.16	5.21	22.35	-0.280	8.54	24.31	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		7.92	9.11	5.26	22.38	-0.281	8.55	24.32	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		7.92	9.12				8.55	24.32	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	5.97	5.97	7.61	5.94	22.74	-0.322	8.88	24.51	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		6.39	7.94				8.88	24.51	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		7.32	8.66	5.61	22.58	-0.281	8.88	24.53	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		7.32	8.45	5.64	22.59	-0.281	8.90	24.54	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		7.30	8.44	5.54	22.55	-0.280	8.89	24.55	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		7.25	8.37	5.42	22.49	-0.279	8.80	24.49	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		7.14	8.17	5.42	22.49	-0.278	8.76	24.47	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		7.06	8.05	5.52	22.56	-0.279	8.93	24.59	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		7.05	8.16	5.53	22.56	-0.279	8.94	24.60	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		7.04	8.12	5.54	22.57	-0.279	8.93	24.60	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		7.02	8.03	5.77	22.72	-0.281	9.11	24.74	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		7.00	7.94	6.03	22.89	-0.284	9.46	25.00	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		7.00	8.01	5.99	22.88	-0.283	9.47	25.02	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		7.00	8.01	5.99	22.88	-0.283	9.47	25.02	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		7.02	8.02	5.92	22.85	-0.283	9.41	24.98	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		7.03	8.00	5.98	22.89	-0.283	9.47	25.03	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		7.01	8.03	5.98	22.89	-0.283	9.47	25.04	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		7.10	8.09	5.99	22.90	-0.284	9.48	25.05	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		7.16	8.15	5.95	22.88	-0.284	9.46	25.04	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		7.20	8.16	5.96	22.89	-0.284	9.46	25.04	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		7.26	8.21	5.91	22.87	-0.284	9.42	25.03	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		7.37	8.26	5.91	22.87	-0.284	9.42	25.03	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	6.04	6.04	7.27:	7.51	45.96-0.651:		8.75	47.68:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.82	8.99:	6.74	45.29-0.654:		8.14	47.16:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.29	9.25:	6.72	45.37-0.660:		8.18	47.32:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.18	8.97:	6.70	45.36-0.658:		8.19	47.35:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.08	8.91:	6.69	45.35-0.656:		8.18	47.34:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.05	8.83:	6.67	45.33-0.655:		8.17	47.34:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.00	8.77:	6.69	45.37-0.655:		8.19	47.36:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.96	8.72:	6.72	45.40-0.655:		8.23	47.42:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.91	8.83:	6.72	45.41-0.655:		8.23	47.43:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.89	8.79:	6.76	45.47-0.655:		8.27	47.49:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.89	8.80:			:	8.27	47.49:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.50	6.50	7.45:	7.60	46.53-0.659:		9.01	48.52:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.80	7.75:			:	9.01	48.52:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.25	8.19:	7.03	45.82-0.654:		8.52	47.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.26	8.05:	7.04	45.83-0.653:		8.53	47.87:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.26	8.05:	6.96	45.75-0.652:		8.47	47.80:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.26	8.03:	6.89	45.68-0.651:		8.41	47.73:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.25	7.96:	6.91	45.72-0.650:		8.43	47.78:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.25	7.93:	6.96	45.81-0.653:		8.49	47.88:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.25	8.00:	6.97	45.81-0.652:		8.50	47.89:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.25	7.99:	6.98	45.85-0.652:		8.51	47.93:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.26	7.97:	7.16	46.13-0.656:		8.68	48.22:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.31	8.02:	7.28	46.34-0.637:		8.82	48.48:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.32	8.07:	7.25	46.33-0.665:		8.80	48.48:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.32	8.06:	7.25	46.33-0.649:		8.80	48.48:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.37	8.10:	7.22	46.31-0.663:		8.78	48.46:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.40	8.11:	7.26	46.38-0.662:		8.82	48.54:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.39	8.14:	7.26	46.38-0.660:		8.82	48.54:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.47	8.21:	7.28	46.42-0.663:		8.84	48.58:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.53	8.26:	7.26	46.41-0.663:		8.83	48.58:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.56	8.28:	7.26	46.41-0.664:		8.83	48.58:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.63	8.33:	7.25	46.42-0.665:		8.82	48.59:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		7.73	8.40:	7.25	46.42-0.665:		8.82	48.59:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: (C) /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	6.23	6.23	7.66:	8.43	36.00	-0.498:	9.94	37.64:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.88	9.26:	6.63	34.47	-0.480:	8.49	36.31:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.48	9.45:	6.53	34.46	-0.483:	8.53	36.43:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.43	9.18:	6.54	34.48	-0.483:	8.59	36.51:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.38	9.18:	6.52	34.46	-0.482:	8.58	36.50:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.36	9.10:	6.50	34.45	-0.482:	8.60	36.52:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.32	9.06:	6.52	34.47	-0.482:	8.59	36.51:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.30	9.01:	6.60	34.55	-0.483:	8.72	36.66:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.26	9.18:	6.61	34.56	-0.483:	8.73	36.67:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.21	9.11:	6.66	34.61	-0.483:	8.77	36.71:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.21	9.12:			:	8.77	36.71:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	7.22	7.22	7.97:	9.14	37.09	-0.523:	10.96	39.18:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		7.40	8.14:			:	10.96	39.18:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.62	8.41:	7.45	35.38	-0.492:	9.51	37.53:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.62	8.27:	7.47	35.40	-0.493:	9.53	37.55:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.62	8.27:	7.29	35.23	-0.489:	9.40	37.41:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.61	8.23:	7.06	35.02	-0.485:	9.19	37.20:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.59	8.13:	7.05	35.03	-0.485:	9.17	37.19:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.58	8.09:	7.24	35.22	-0.488:	9.38	37.43:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.57	8.16:	7.25	35.23	-0.488:	9.39	37.45:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.57	8.14:	7.23	35.23	-0.487:	9.37	37.43:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.56	8.11:	7.53	35.55	-0.562:	9.64	37.77:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.57	8.11:	7.79	35.85	-0.500:	9.93	38.14:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.57	8.16:	7.67	35.75	-0.493:	9.84	38.06:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.57	8.15:	7.67	35.75	-0.489:	9.84	38.06:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.62	8.19:	7.53	35.62	-0.493:	9.72	37.93:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.64	8.20:	7.61	35.71	-0.524:	9.80	38.03:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.64	8.22:	7.61	35.72	-0.467:	9.80	38.03:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.91	8.46:	7.65	35.76	-0.499:	9.83	38.08:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		8.09	8.62:	7.58	35.71	-0.500:	9.79	38.04:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		8.19	8.69:	7.61	35.74	-0.501:	9.81	38.07:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		8.36	8.84:	7.53	35.67	-0.501:	9.73	38.00:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.62	9.05:	7.53	35.67	-0.501:	9.73	38.00:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	5.75	5.75	7.20:	7.69	33.68	-0.455:	9.25	35.23:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.44	8.80:	5.65	32.10	-0.434:	7.59	33.83:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.04	8.97:	5.51	32.07	-0.437:	7.62	33.93:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		7.97	8.69:	5.53	32.09	-0.436:	7.69	34.00:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.90	8.68:	5.50	32.07	-0.435:	7.67	34.00:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.88	8.60:	5.48	32.06	-0.435:	7.69	34.01:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.84	8.54:	5.50	32.07	-0.435:	7.68	34.01:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		7.80	8.49:	5.59	32.16	-0.436:	7.82	34.15:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		7.76	8.65:	5.60	32.17	-0.436:	7.84	34.16:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		7.73	8.59:	5.66	32.22	-0.437:	7.87	34.20:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		7.72	8.61:			:	7.87	34.20:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.72	6.72	7.56:	7.68	33.99	-0.463:	9.62	35.94:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.98	7.77:			:	9.62	35.94:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.24	8.06:	6.36	32.82	-0.444:	8.53	34.85:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.24	7.91:	6.38	32.84	-0.445:	8.55	34.87:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.23	7.90:	6.21	32.70	-0.442:	8.43	34.76:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.23	7.86:	6.00	32.53	-0.438:	8.24	34.59:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.20	7.77:	5.99	32.54	-0.438:	8.22	34.58:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.18	7.72:	6.16	32.70	-0.440:	8.42	34.79:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.18	7.78:	6.17	32.71	-0.441:	8.43	34.80:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.17	7.77:	6.16	32.71	-0.440:	8.42	34.79:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.17	7.73:	6.46	33.01	-0.445:	8.68	35.09:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.17	7.72:	6.73	33.29	-0.450:	9.00	35.45:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.17	7.77:	6.62	33.20	-0.449:	8.92	35.39:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.17	7.76:	6.62	33.21	-0.449:	8.92	35.39:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.19	7.78:	6.49	33.10	-0.446:	8.80	35.28:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.21	7.78:	6.57	33.18	-0.448:	8.88	35.37:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.20	7.80:	6.57	33.18	-0.448:	8.88	35.37:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.43	7.99:	6.60	33.22	-0.450:	8.91	35.41:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.57	8.12:	6.54	33.17	-0.450:	8.86	35.37:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.66	8.18:	6.56	33.19	-0.452:	8.88	35.40:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.80	8.31:	6.48	33.14	-0.451:	8.81	35.33:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.03	8.48:	6.48	33.14	-0.451:	8.81	35.33:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	5.77	5.77	7.89:	9.16	31.20	-0.420:	11.53	33.49:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		7.38	9.50:	6.84	29.46	-0.395:	10.02	32.19:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		8.10	9.56:	6.85	29.53	-0.401:	10.40	32.62:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		8.13	9.27:	6.95	29.62	-0.403:	10.63	32.86:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		8.13	9.38:	6.94	29.62	-0.403:	10.66	32.89:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		8.13	9.28:	6.96	29.64	-0.403:	10.75	32.98:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		8.13	9.27:	6.94	29.63	-0.403:	10.68	32.92:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		8.12	9.23:	7.15	29.79	-0.406:	11.00	33.23:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		8.12	9.58:	7.16	29.80	-0.406:	11.01	33.24:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		8.06	9.48:	7.20	29.84	-0.406:	11.01	33.25:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		8.05	9.50:			:	11.01	33.25:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	6.30	6.30	7.90:	8.29	30.72	-0.410:	11.61	33.83:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.66	8.25:			:	11.61	33.83:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		7.36	8.88:	7.76	30.29	-0.409:	11.51	33.76:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		7.37	8.64:	7.78	30.32	-0.410:	11.53	33.78:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		7.36	8.63:	7.69	30.25	-0.408:	11.54	33.80:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		7.36	8.59:	7.51	30.11	-0.406:	11.41	33.67:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		7.34	8.43:	7.48	30.10	-0.409:	11.33	33.61:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		7.33	8.37:	7.69	30.28	-0.408:	11.62	33.91:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		7.33	8.51:	7.70	30.28	-0.409:	11.63	33.92:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		7.32	8.47:	7.68	30.28	-0.408:	11.60	33.90:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		7.31	8.38:	7.95	30.54	-0.412:	11.79	34.14:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		7.31	8.32:	8.34	30.90	-0.418:	12.27	34.67:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		7.32	8.42:	8.27	30.86	-0.418:	12.28	34.70:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		7.32	8.42:	8.28	30.86	-0.418:	12.28	34.70:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		7.37	8.46:	8.15	30.76	-0.416:	12.17	34.59:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		7.41	8.46:	8.23	30.84	-0.417:	12.25	34.69:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		7.42	8.51:	8.23	30.84	-0.417:	12.25	34.69:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		7.59	8.64:	8.25	30.87	-0.419:	12.28	34.73:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		7.71	8.72:	8.20	30.83	-0.420:	12.25	34.70:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		7.77	8.75:	8.22	30.85	-0.421:	12.27	34.72:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		7.89	8.84:	8.13	30.79	-0.419:	12.19	34.66:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		8.08	8.93:	8.13	30.79	-0.419:	12.19	34.66:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C) S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.72	4.72	6.23:	6.71	30.48-0.394:		8.39	31.92:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.55	7.93:	4.29	28.85-0.371:		6.38	30.42:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		7.23	8.13:	4.09	28.78-0.374:		6.36	30.48:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		7.16	7.85:	4.10	28.79-0.373:		6.43	30.55:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		7.09	7.83:	4.07	28.77-0.372:		6.42	30.54:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		7.07	7.74:	4.05	28.76-0.372:		6.43	30.55:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		7.02	7.69:	4.06	28.77-0.371:		6.42	30.55:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.98	7.63:	4.17	28.85-0.373:		6.58	30.68:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.93	7.78:	4.18	28.86-0.372:		6.59	30.69:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.93	7.75:	4.24	28.91-0.373:		6.64	30.73:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.92	7.76:			:	6.64	30.73:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.04	5.04	6.19:	5.22	29.60-0.371:		7.38	31.33:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.58	6.64:			:	7.38	31.33:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.35	7.28:	4.69	29.23-0.375:		7.05	31.08:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.36	7.13:	4.71	29.25-0.376:		7.08	31.10:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.35	7.13:	4.58	29.16-0.374:		6.99	31.03:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.34	7.08:	4.42	29.06-0.372:		6.86	30.93:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.30	6.97:	4.42	29.08-0.371:		6.84	30.94:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.27	6.91:	4.54	29.17-0.373:		7.00	31.07:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.26	6.98:	4.55	29.17-0.373:		7.00	31.08:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.27	6.97:	4.56	29.19-0.373:		7.00	31.09:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.28	6.94:	4.82	29.42-0.377:		7.24	31.32:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.30	6.94:	5.07	29.64-0.381:		7.53	31.61:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.31	6.99:	4.99	29.59-0.380:		7.49	31.58:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.31	6.98:	4.99	29.59-0.380:		7.49	31.59:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.31	6.98:	4.89	29.53-0.378:		7.41	31.52:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.30	6.95:	4.96	29.59-0.379:		7.47	31.59:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.29	6.96:	4.96	29.59-0.379:		7.48	31.59:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.39	7.04:	4.97	29.61-0.380:		7.49	31.61:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.46	7.10:	4.92	29.58-0.380:		7.45	31.59:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.50	7.12:	4.93	29.59-0.380:		7.46	31.60:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.57	7.18:	4.87	29.56-0.380:		7.40	31.56:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.69	7.25:	4.87	29.56-0.380:		7.40	31.56:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	4.68	4.68	6.13	7.81	26.91	-0.341	9.51	28.20	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		6.47	7.84	4.65	24.99	-0.313	6.85	26.40	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		7.21	8.05	4.37	24.88	-0.314	6.78	26.42	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		7.19	7.81	4.38	24.89	-0.314	6.86	26.48	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		7.15	7.81	4.33	24.87	-0.313	6.84	26.47	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		7.13	7.75	4.31	24.86	-0.313	6.85	26.48	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		7.10	7.70	4.32	24.87	-0.313	6.84	26.47	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		7.07	7.66	4.46	24.95	-0.314	7.03	26.61	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		7.03	7.81	4.47	24.96	-0.314	7.05	26.62	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		7.01	7.77	4.55	25.01	-0.315	7.10	26.66	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		7.01	7.78				7.10	26.66	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	5.91	5.91	6.83	6.31	26.10	-0.330	8.56	27.70	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		6.17	7.03				8.56	27.70	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		6.58	7.39	5.23	25.43	-0.320	7.74	27.12	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		6.58	7.24	5.26	25.45	-0.321	7.77	27.14	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		6.58	7.23	5.07	25.34	-0.318	7.64	27.05	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		6.56	7.19	4.83	25.20	-0.315	7.43	26.91	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		6.53	7.09	4.82	25.21	-0.315	7.40	26.90	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		6.50	7.04	5.00	25.32	-0.317	7.62	27.06	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		6.50	7.10	5.01	25.33	-0.317	7.63	27.07	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		6.50	7.08	5.00	25.33	-0.317	7.61	27.07	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		6.49	7.04	5.34	25.57	-0.321	7.92	27.32	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		6.50	7.03	5.67	25.81	-0.325	8.29	27.62	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		6.50	7.07	5.54	25.74	-0.324	8.21	27.57	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		6.50	7.07	5.54	25.74	-0.324	8.21	27.57	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		6.51	7.07	5.38	25.65	-0.322	8.07	27.48	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		6.52	7.06	5.47	25.71	-0.323	8.15	27.55	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		6.51	7.07	5.47	25.71	-0.323	8.15	27.55	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		6.65	7.19	5.49	25.73	-0.324	8.18	27.58	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		6.74	7.27	5.41	25.69	-0.324	8.11	27.54	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		6.80	7.30	5.44	25.71	-0.324	8.14	27.55	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		6.89	7.38	5.34	25.65	-0.324	8.05	27.50	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		7.04	7.49	5.34	25.65	-0.324	8.05	27.50	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.73	4.73	6.17:	6.91	28.07-0.357:		8.57	29.37:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.36	7.68:	4.09	26.32-0.331:		6.19	27.74:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.94	7.77:	3.83	26.22-0.331:		6.14	27.76:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.88	7.51:	3.84	26.24-0.331:		6.20	27.82:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.81	7.49:	3.80	26.21-0.330:		6.18	27.81:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.79	7.41:	3.78	26.20-0.330:		6.19	27.81:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.75	7.36:	3.79	26.21-0.330:		6.19	27.81:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.71	7.31:	3.91	26.29-0.331:		6.35	27.94:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.67	7.45:	3.92	26.30-0.331:		6.37	27.95:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.66	7.42:	3.99	26.35-0.331:		6.42	27.99:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.65	7.43:			:	6.42	27.99:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.73	5.73	6.65:	5.62	27.40-0.351:		7.78	28.99:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		6.00	6.84:			:	7.78	28.99:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.31	7.12:	4.62	26.76-0.337:		7.02	28.43:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.31	6.97:	4.65	26.77-0.338:		7.04	28.45:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.31	6.96:	4.47	26.67-0.335:		6.92	28.37:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.30	6.93:	4.26	26.54-0.332:		6.73	28.24:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.27	6.83:	4.25	26.55-0.332:		6.71	28.23:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.24	6.78:	4.41	26.66-0.334:		6.90	28.38:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.24	6.84:	4.42	26.66-0.334:		6.91	28.39:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.24	6.83:	4.42	26.67-0.334:		6.90	28.39:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.24	6.80:	4.73	26.90-0.338:		7.18	28.64:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.25	6.79:	5.02	27.13-0.342:		7.51	28.92:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.26	6.83:	4.90	27.06-0.340:		7.44	28.87:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.26	6.83:	4.90	27.06-0.340:		7.44	28.88:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.25	6.82:	4.76	26.98-0.339:		7.31	28.79:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.25	6.79:	4.84	27.04-0.340:		7.39	28.86:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.23	6.81:	4.84	27.04-0.340:		7.40	28.86:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.35	6.90:	4.86	27.06-0.341:		7.42	28.89:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.43	6.97:	4.79	27.03-0.340:		7.36	28.85:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.48	7.00:	4.81	27.04-0.341:		7.38	28.86:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.56	7.06:	4.72	26.99-0.340:		7.30	28.82:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.68	7.14:	4.72	26.99-0.340:		7.30	28.82:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.44	4.44	6.12:	6.85	29.82-0.382:		8.76	31.43:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.14	7.70:	4.28	28.12-0.357:		6.76	29.96:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.79	7.82:	4.13	28.08-0.360:		6.90	30.14:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.76	7.56:	4.17	28.12-0.360:		7.02	30.24:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.71	7.57:	4.14	28.10-0.359:		7.02	30.25:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.69	7.49:	4.14	28.10-0.359:		7.06	30.28:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.66	7.44:	4.14	28.11-0.359:		7.04	30.27:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.63	7.40:	4.28	28.21-0.361:		7.25	30.44:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.59	7.60:	4.30	28.22-0.361:		7.26	30.45:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.58	7.56:	4.36	28.26-0.361:		7.30	30.49:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.58	7.58:			:	7.30	30.49:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.65	5.65	6.79:	5.84	29.31-0.377:		8.42	31.42:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.94	6.98:			:	8.42	31.42:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.23	7.26:	4.98	28.71-0.368:		7.88	30.97:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.23	7.08:	5.00	28.72-0.368:		7.90	30.99:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.24	7.07:	4.85	28.63-0.366:		7.82	30.93:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.23	7.04:	4.65	28.49-0.363:		7.65	30.80:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.22	6.93:	4.63	28.49-0.363:		7.62	30.79:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.21	6.89:	4.82	28.63-0.365:		7.85	30.99:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.20	6.97:	4.83	28.64-0.365:		7.86	31.00:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.21	6.96:	4.82	28.64-0.365:		7.84	30.99:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.22	6.93:	5.11	28.89-0.369:		8.09	31.24:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.25	6.93:	5.43	29.16-0.374:		8.47	31.61:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.26	6.99:	5.33	29.10-0.373:		8.43	31.58:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.26	6.99:	5.34	29.10-0.373:		8.43	31.59:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.26	6.99:	5.20	29.01-0.371:		8.32	31.49:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.26	6.96:	5.28	29.08-0.372:		8.40	31.58:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.25	6.99:	5.28	29.08-0.372:		8.40	31.58:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.37	7.08:	5.30	29.11-0.373:		8.42	31.61:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.45	7.14:	5.24	29.07-0.373:		8.38	31.58:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.50	7.16:	5.26	29.08-0.374:		8.40	31.59:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.58	7.22:	5.18	29.03-0.373:		8.32	31.54:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.71	7.29:	5.18	29.03-0.373:		8.32	31.54:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	4.36	4.36	6.13:	7.28	23.11-0.280:		9.46	24.49:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		6.03	7.66:	3.92	21.45-0.255:		6.84	23.00:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.70	7.70:	3.68	21.38-0.256:		6.99	23.14:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.67	7.44:	3.72	21.41-0.256:		7.14	23.23:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.63	7.47:	3.68	21.39-0.255:		7.14	23.23:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.62	7.39:	3.67	21.39-0.255:		7.18	23.26:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.59	7.35:	3.67	21.39-0.255:		7.16	23.25:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.56	7.30:	3.85	21.48-0.256:		7.42	23.41:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.53	7.51:	3.87	21.49-0.256:		7.44	23.42:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.51	7.47:	3.94	21.53-0.257:		7.48	23.45:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.51	7.49:			:	7.48	23.45:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	5.37	5.37	6.65:	5.25	22.17-0.260:		8.35	23.97:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.69	6.85:			:	8.35	23.97:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		6.14	7.20:	4.57	21.84-0.261:		8.06	23.80:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		6.14	7.01:	4.61	21.86-0.262:		8.10	23.82:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		6.14	7.01:	4.44	21.78-0.260:		8.01	23.78:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		6.13	6.97:	4.21	21.68-0.258:		7.83	23.67:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		6.10	6.85:	4.19	21.67-0.257:		7.78	23.65:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		6.08	6.80:	4.38	21.77-0.259:		8.04	23.82:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		6.08	6.89:	4.39	21.78-0.259:		8.05	23.82:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		6.08	6.87:	4.38	21.78-0.259:		8.03	23.82:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		6.10	6.83:	4.71	21.97-0.262:		8.30	24.01:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		6.13	6.83:	5.08	22.19-0.266:		8.74	24.32:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		6.13	6.89:	4.96	22.14-0.265:		8.71	24.30:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		6.13	6.89:	4.96	22.14-0.265:		8.71	24.31:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		6.14	6.88:	4.81	22.07-0.264:		8.58	24.23:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		6.13	6.86:	4.90	22.12-0.265:		8.67	24.29:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		6.12	6.88:	4.90	22.12-0.264:		8.67	24.30:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		6.20	6.94:	4.91	22.13-0.265:		8.68	24.31:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		6.26	6.98:	4.83	22.10-0.265:		8.63	24.28:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.30	6.99:	4.85	22.11-0.265:		8.64	24.29:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.36	7.03:	4.75	22.06-0.264:		8.56	24.24:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.45	7.07:	4.75	22.06-0.264:		8.56	24.24:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	4.15	4.15	5.82:	5.60	30.87-0.392:		7.47	32.46:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.75	7.25:	3.38	29.42-0.371:		5.73	31.20:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.27	7.29:	3.24	29.39-0.373:		5.86	31.38:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.20	6.99:	3.27	29.42-0.373:		5.96	31.47:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.12	6.98:	3.24	29.41-0.372:		5.96	31.48:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.09	6.89:	3.23	29.40-0.371:		5.98	31.50:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.04	6.83:	3.23	29.41-0.371:		5.98	31.50:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.01	6.77:	3.35	29.50-0.372:		6.15	31.65:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		5.95	6.95:	3.37	29.51-0.372:		6.16	31.66:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.96	6.93:	3.42	29.55-0.373:		6.20	31.70:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.96	6.95:			:	6.20	31.70:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.86	4.86	6.26:	4.15	30.06-0.375:		6.66	32.06:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.24	6.49:			:	6.66	32.06:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.67	6.77:	3.82	29.84-0.376:		6.57	32.01:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.67	6.59:	3.84	29.86-0.377:		6.59	32.03:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.67	6.59:	3.73	29.79-0.375:		6.54	31.99:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.66	6.54:	3.59	29.70-0.373:		6.43	31.91:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.61	6.41:	3.59	29.71-0.373:		6.41	31.91:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.58	6.35:	3.71	29.81-0.374:		6.58	32.06:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.57	6.43:	3.72	29.81-0.374:		6.58	32.07:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.58	6.43:	3.72	29.83-0.374:		6.58	32.08:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.61	6.40:	3.97	30.04-0.378:		6.80	32.30:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.65	6.41:	4.23	30.28-0.382:		7.11	32.61:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.66	6.47:	4.17	30.24-0.382:		7.10	32.62:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.66	6.47:	4.17	30.24-0.382:		7.10	32.62:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.64	6.44:	4.08	30.19-0.380:		7.03	32.56:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.62	6.40:	4.15	30.25-0.381:		7.10	32.63:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.60	6.41:	4.15	30.25-0.381:		7.10	32.64:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.65	6.45:	4.16	30.27-0.381:		7.11	32.66:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.69	6.47:	4.11	30.25-0.381:		7.08	32.64:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.71	6.47:	4.12	30.25-0.381:		7.09	32.65:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.74	6.49:	4.07	30.23-0.381:		7.04	32.62:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.80	6.49:	4.07	30.23-0.381:		7.04	32.62:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	3.36	3.36	4.68:	5.24	32.58	-0.410:	6.72	33.89:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.25	6.44:	2.75	30.86	-0.386:	4.56	32.25:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		5.94	6.70:	2.49	30.75	-0.387:	4.46	32.25:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		5.86	6.44:	2.50	30.76	-0.387:	4.50	32.30:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		5.78	6.39:	2.45	30.73	-0.385:	4.47	32.28:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		5.75	6.31:	2.43	30.72	-0.385:	4.47	32.28:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		5.70	6.25:	2.44	30.73	-0.385:	4.47	32.29:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		5.65	6.20:	2.54	30.81	-0.386:	4.60	32.40:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		5.59	6.29:	2.56	30.82	-0.386:	4.61	32.41:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.62	6.30:	2.62	30.87	-0.387:	4.67	32.46:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.61	6.31:			:	4.67	32.46:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.88	4.88	5.61:	4.75	32.50	-0.414:	6.57	34.09:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.11	5.80:			:	6.57	34.09:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.31	6.00:	3.30	31.39	-0.395:	5.32	33.01:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.32	5.87:	3.33	31.40	-0.395:	5.34	33.03:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.32	5.87:	3.15	31.28	-0.392:	5.20	32.91:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.34	5.87:	2.92	31.13	-0.389:	5.00	32.76:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.36	5.83:	2.92	31.13	-0.389:	4.99	32.76:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.37	5.81:	3.08	31.27	-0.392:	5.17	32.93:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.37	5.87:	3.09	31.28	-0.392:	5.18	32.94:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.38	5.87:	3.09	31.28	-0.392:	5.17	32.94:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.41	5.87:	3.39	31.55	-0.397:	5.46	33.23:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.45	5.91:	3.66	31.80	-0.401:	5.75	33.52:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.46	5.95:	3.53	31.71	-0.399:	5.66	33.46:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.45	5.93:	3.53	31.71	-0.399:	5.66	33.46:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.43	5.91:	3.39	31.62	-0.397:	5.53	33.36:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.42	5.88:	3.47	31.69	-0.398:	5.61	33.44:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.40	5.88:	3.47	31.69	-0.398:	5.61	33.44:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.52	5.99:	3.50	31.73	-0.399:	5.64	33.48:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.61	6.06:	3.43	31.69	-0.399:	5.59	33.45:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.66	6.09:	3.46	31.71	-0.400:	5.61	33.46:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.74	6.16:	3.37	31.66	-0.399:	5.54	33.41:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.87	6.25:	3.37	31.66	-0.399:	5.54	33.41:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	3.40	3.40	5.16:	7.75	24.50	-0.297:	9.96	26.03:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.29	6.98:	3.99	22.48	-0.266:	7.01	24.19:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		6.18	7.18:	3.73	22.40	-0.268:	7.20	24.36:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		6.20	6.97:	3.79	22.43	-0.269:	7.36	24.47:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		6.19	7.02:	3.74	22.41	-0.269:	7.36	24.47:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		6.18	6.95:	3.74	22.41	-0.268:	7.40	24.50:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		6.17	6.92:	3.74	22.41	-0.268:	7.40	24.50:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		6.15	6.90:	3.94	22.52	-0.270:	7.67	24.68:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		6.13	7.12:	3.96	22.53	-0.271:	7.69	24.69:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		6.11	7.07:	4.04	22.58	-0.271:	7.75	24.73:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		6.11	7.09:			:	7.75	24.73:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.73	4.73	6.04:	5.36	23.28	-0.277:	8.60	25.28:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.09	6.31:			:	8.60	25.28:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.67	6.76:	4.70	22.93	-0.276:	8.36	25.13:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.68	6.58:	4.74	22.95	-0.276:	8.39	25.16:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.68	6.57:	4.57	22.86	-0.274:	8.30	25.10:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.70	6.55:	4.32	22.74	-0.272:	8.10	24.98:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.71	6.46:	4.29	22.74	-0.272:	8.06	24.96:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.71	6.43:	4.51	22.86	-0.274:	8.34	25.15:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.71	6.53:	4.52	22.86	-0.274:	8.35	25.16:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.72	6.52:	4.51	22.87	-0.274:	8.32	25.15:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.75	6.50:	4.86	23.08	-0.278:	8.63	25.38:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.82	6.53:	5.26	23.33	-0.283:	9.10	25.73:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.84	6.60:	5.14	23.27	-0.281:	9.07	25.71:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.84	6.60:	5.14	23.27	-0.281:	9.07	25.72:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.84	6.60:	4.97	23.19	-0.279:	8.92	25.62:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.85	6.57:	5.06	23.24	-0.281:	9.02	25.70:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.84	6.60:	5.07	23.25	-0.280:	9.02	25.70:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.93	6.66:	5.09	23.27	-0.281:	9.05	25.72:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.99	6.70:	5.00	23.23	-0.281:	8.98	25.69:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		6.02	6.71:	5.03	23.24	-0.281:	9.01	25.70:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		6.08	6.75:	4.92	23.19	-0.280:	8.91	25.65:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		6.18	6.78:	4.92	23.19	-0.280:	8.91	25.65:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7:	3.59	3.59	4.85:	5.68	26.20	-0.319:	7.19	27.25:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.21	6.33:	2.44	24.42	-0.291:	4.33	25.52:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		5.78	6.44:	2.05	24.27	-0.289:	4.13	25.46:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		5.70	6.19:	2.05	24.27	-0.289:	4.17	25.49:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		5.62	6.15:	1.98	24.25	-0.288:	4.14	25.47:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		5.60	6.08:	1.96	24.23	-0.288:	4.13	25.47:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		5.55	6.02:	1.96	24.24	-0.287:	4.13	25.47:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		5.51	5.98:	2.09	24.31	-0.288:	4.29	25.57:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		5.45	6.06:	2.11	24.32	-0.288:	4.30	25.58:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.46	6.05:	2.18	24.36	-0.289:	4.37	25.63:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.45	6.06:			:	4.37	25.63:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.79	4.79	5.53:	4.13	25.46	-0.307:	6.08	26.72:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		5.05	5.70:			:	6.08	26.72:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.23	5.86:	2.91	24.77	-0.296:	5.06	26.07:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.23	5.74:	2.94	24.79	-0.296:	5.09	26.09:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.24	5.74:	2.73	24.68	-0.294:	4.92	25.98:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.26	5.73:	2.48	24.55	-0.291:	4.69	25.85:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.27	5.70:	2.46	24.55	-0.291:	4.67	25.85:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.28	5.68:	2.64	24.65	-0.293:	4.87	25.98:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.28	5.73:	2.65	24.66	-0.293:	4.88	25.99:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.29	5.73:	2.64	24.66	-0.293:	4.87	25.99:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.32	5.74:	2.97	24.88	-0.297:	5.18	26.22:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.37	5.78:	3.25	25.07	-0.300:	5.50	26.45:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.37	5.82:	3.09	24.99	-0.299:	5.38	26.39:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.36	5.80:	3.10	24.99	-0.299:	5.38	26.39:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.34	5.78:	2.94	24.91	-0.297:	5.24	26.31:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.32	5.74:	3.02	24.97	-0.298:	5.32	26.37:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.30	5.74:	3.02	24.97	-0.297:	5.33	26.37:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.39	5.81:	3.04	24.99	-0.298:	5.35	26.40:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.45	5.86:	2.96	24.95	-0.298:	5.28	26.36:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.48	5.88:	2.98	24.97	-0.298:	5.30	26.37:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.54	5.93:	2.88	24.92	-0.297:	5.21	26.33:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.63	5.99:	2.88	24.92	-0.297:	5.21	26.33:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	3.44	3.44	5.08:	6.14	27.94	-0.345:	8.11	29.46:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		5.05	6.57:	3.02	26.06	-0.315:	5.60	27.75:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		5.68	6.62:	2.78	25.98	-0.316:	5.74	27.91:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		5.64	6.38:	2.82	26.02	-0.317:	5.85	28.00:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		5.60	6.38:	2.78	25.99	-0.316:	5.85	28.00:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		5.58	6.31:	2.77	25.99	-0.316:	5.87	28.02:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		5.55	6.26:	2.77	25.99	-0.315:	5.88	28.03:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		5.52	6.23:	2.94	26.10	-0.317:	6.09	28.18:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		5.48	6.41:	2.96	26.11	-0.317:	6.10	28.19:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		5.48	6.37:	3.02	26.15	-0.318:	6.17	28.24:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		5.47	6.39:			:	6.17	28.24:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.78	4.78	5.95:	4.37	26.99	-0.331:	7.14	28.95:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.99	6.04:			:	7.14	28.95:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		5.25	6.23:	3.65	26.54	-0.324:	6.74	28.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		5.24	6.05:	3.68	26.56	-0.325:	6.77	28.70:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		5.25	6.05:	3.52	26.47	-0.323:	6.67	28.63:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		5.28	6.05:	3.30	26.34	-0.320:	6.49	28.51:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		5.32	6.00:	3.28	26.34	-0.320:	6.47	28.50:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		5.34	5.99:	3.47	26.47	-0.322:	6.70	28.68:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		5.34	6.08:	3.48	26.48	-0.323:	6.71	28.69:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		5.37	6.08:	3.47	26.48	-0.323:	6.69	28.68:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		5.42	6.09:	3.78	26.71	-0.327:	6.98	28.93:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		5.53	6.17:	4.12	26.96	-0.332:	7.37	29.27:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		5.55	6.24:	4.01	26.90	-0.331:	7.33	29.25:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		5.55	6.24:	4.01	26.90	-0.331:	7.33	29.25:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		5.54	6.23:	3.86	26.82	-0.329:	7.21	29.17:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		5.53	6.19:	3.95	26.88	-0.330:	7.29	29.24:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		5.51	6.21:	3.95	26.88	-0.330:	7.30	29.24:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		5.61	6.28:	3.97	26.90	-0.330:	7.32	29.27:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		5.67	6.33:	3.90	26.87	-0.330:	7.27	29.24:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		5.71	6.34:	3.92	26.88	-0.331:	7.29	29.25:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		5.78	6.38:	3.83	26.83	-0.330:	7.21	29.21:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		5.88	6.43:	3.83	26.83	-0.330:	7.21	29.21:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	N.F. KOKTULI	H	57.7:	2.67	2.67	4.20:	3.36	38.20-0.476:		5.03	39.89:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		4.32	5.65:	1.38	36.70-0.455:		3.41	38.56:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		4.78	5.70:	1.23	36.68-0.457:		3.49	38.74:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		4.66	5.39:	1.26	36.72-0.456:		3.56	38.82:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		4.55	5.33:	1.23	36.70-0.455:		3.55	38.82:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		4.52	5.24:	1.22	36.69-0.454:		3.56	38.83:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		4.45	5.16:	1.22	36.70-0.454:		3.57	38.84:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		4.40	5.10:	1.33	36.80-0.455:		3.70	38.98:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		4.33	5.23:	1.34	36.81-0.455:		3.71	38.99:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		4.37	5.24:	1.39	36.86-0.456:		3.76	39.04:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		4.37	5.26:			:	3.76	39.04:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	4.17	4.17	5.45:	2.11	37.46-0.467:		4.28	39.53:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		4.35	5.44:			:	4.28	39.53:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		4.36	5.33:	1.76	37.18-0.462:		4.11	39.40:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		4.35	5.17:	1.78	37.20-0.463:		4.13	39.42:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		4.36	5.18:	1.68	37.13-0.461:		4.06	39.37:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		4.39	5.17:	1.55	37.04-0.459:		3.96	39.28:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		4.42	5.12:	1.56	37.06-0.459:		3.96	39.30:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		4.42	5.10:	1.67	37.17-0.461:		4.10	39.45:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		4.42	5.18:	1.68	37.18-0.461:		4.11	39.46:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		4.46	5.20:	1.69	37.20-0.462:		4.11	39.48:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		4.55	5.24:	1.92	37.45-0.467:		4.34	39.76:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		4.69	5.36:	2.16	37.72-0.473:		4.61	40.09:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		4.71	5.42:	2.09	37.68-0.472:		4.59	40.09:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		4.71	5.42:	2.10	37.69-0.472:		4.59	40.10:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		4.65	5.36:	2.02	37.63-0.470:		4.53	40.04:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		4.60	5.29:	2.08	37.70-0.470:		4.59	40.12:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		4.57	5.28:	2.08	37.70-0.470:		4.59	40.13:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		4.65	5.35:	2.10	37.73-0.471:		4.61	40.16:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		4.71	5.40:	2.06	37.71-0.471:		4.58	40.15:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		4.75	5.41:	2.07	37.72-0.472:		4.59	40.16:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		4.80	5.45:	2.03	37.70-0.471:		4.56	40.14:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		4.89	5.49:	2.03	37.70-0.471:		4.56	40.14:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY WATER TEMP. OBS. (C)	AVG. DAILY WATER TEMP. PRED. (C)	MAX. DAILY WATER TEMP. PRED. (C)	AVG. DAILY EQUILIBRIUM PARAMETERS TE (J/M2(J/M2/S/C)	AVG. DAILY EQUILIBRIUM PARAMETERS K1 (C)	AVG. DAILY EQUILIBRIUM PARAMETERS K2: S/C2)	MAX. DAILY EQUILIBRIUM PARAMETERS TE (J/M2: (C)	MAX. DAILY EQUILIBRIUM PARAMETERS K1: /S/C)	REMARKS
1	N.F. KOKTULI	H	57.7	1.70	1.70	3.79	3.86	30.85	-0.367	6.25	32.82	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		3.63	5.52	1.59	29.46	-0.349	4.71	31.75	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		4.42	5.70	1.58	29.53	-0.355	5.19	32.23	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		4.39	5.44	1.64	29.58	-0.355	5.34	32.36	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		4.34	5.46	1.63	29.58	-0.355	5.39	32.41	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		4.32	5.37	1.63	29.58	-0.355	5.42	32.44	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		4.29	5.32	1.64	29.59	-0.354	5.46	32.47	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		4.26	5.28	1.79	29.70	-0.356	5.65	32.64	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		4.22	5.54	1.80	29.71	-0.356	5.67	32.65	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		4.25	5.53	1.86	29.75	-0.357	5.73	32.71	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		4.25	5.57				5.73	32.71	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	3.76	3.76	5.67	2.39	30.10	-0.361	5.84	32.78	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		4.00	5.68				5.84	32.78	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		4.16	5.61	2.25	30.03	-0.362	6.09	33.02	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		4.16	5.40	2.28	30.04	-0.362	6.11	33.04	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		4.18	5.41	2.19	29.99	-0.361	6.08	33.03	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		4.22	5.41	2.06	29.91	-0.360	6.00	32.97	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		4.29	5.36	2.05	29.92	-0.360	5.98	32.97	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		4.33	5.36	2.20	30.04	-0.362	6.19	33.16	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		4.33	5.49	2.20	30.04	-0.363	6.20	33.17	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		4.39	5.52	2.21	30.05	-0.363	6.19	33.17	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		4.49	5.56	2.45	30.26	-0.367	6.41	33.40	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		4.70	5.72	2.73	30.50	-0.373	6.76	33.76	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		4.73	5.83	2.69	30.49	-0.372	6.82	33.83	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		4.73	5.83	2.69	30.49	-0.372	6.82	33.83	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		4.70	5.80	2.61	30.44	-0.371	6.76	33.79	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		4.68	5.74	2.68	30.50	-0.372	6.83	33.87	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		4.65	5.76	2.68	30.51	-0.372	6.83	33.87	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		4.72	5.81	2.69	30.53	-0.372	6.85	33.90	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		4.77	5.84	2.65	30.51	-0.372	6.83	33.88	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		4.80	5.84	2.66	30.51	-0.372	6.83	33.89	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		4.85	5.87	2.61	30.49	-0.372	6.80	33.88	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		4.93	5.88	2.61	30.49	-0.372	6.80	33.88	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	N.F. KOKTULI	H	57.7:	1.20	1.20	2.43:	1.99	35.49-0.419:		3.34	36.68:	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7:		2.94	4.00:	-0.07	34.14-0.400:		1.46	35.35:	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2:		3.42	4.10:	-0.37	34.01-0.399:		1.24	35.27:	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8:		3.27	3.77:	-0.37	34.02-0.398:		1.26	35.29:	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1:		3.14	3.67:	-0.42	33.99-0.396:		1.21	35.26:	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2:		3.10	3.59:	-0.44	33.99-0.396:		1.20	35.26:	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8:		3.03	3.51:	-0.45	33.98-0.395:		1.19	35.25:	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6:		2.97	3.44:	-0.35	34.06-0.396:		1.29	35.34:	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8:		2.89	3.49:	-0.34	34.07-0.396:		1.31	35.35:	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5:		2.97	3.55:	-0.30	34.10-0.397:		1.35	35.39:	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5:		2.96	3.56:			:	1.35	35.39:	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4:	2.98	2.98	3.90:	0.48	34.67-0.409:		2.06	35.96:	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5:		3.21	3.98:			:	2.06	35.96:	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5:		3.06	3.73:	0.05	34.37-0.403:		1.68	35.68:	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8:		3.07	3.61:	0.07	34.39-0.403:		1.70	35.69:	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4:		3.08	3.63:	-0.04	34.32-0.402:		1.61	35.63:	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0:		3.13	3.65:	-0.17	34.24-0.400:		1.49	35.54:	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0:		3.19	3.66:	-0.17	34.26-0.401:		1.50	35.57:	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5:		3.21	3.67:	-0.08	34.33-0.402:		1.59	35.66:	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9:		3.22	3.72:	-0.08	34.34-0.402:		1.59	35.66:	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0:		3.27	3.76:	-0.07	34.36-0.403:		1.61	35.68:	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5:		3.37	3.83:	0.15	34.57-0.407:		1.83	35.92:	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0:		3.54	4.00:	0.34	34.77-0.411:		2.02	36.13:	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8:		3.55	4.04:	0.25	34.72-0.410:		1.95	36.09:	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7:		3.53	4.01:	0.25	34.72-0.410:		1.95	36.09:	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6:		3.46	3.93:	0.18	34.68-0.408:		1.89	36.06:	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9:		3.40	3.86:	0.24	34.74-0.409:		1.95	36.12:	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3:		3.34	3.83:	0.24	34.74-0.408:		1.95	36.12:	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6:		3.39	3.86:	0.25	34.76-0.409:		1.96	36.14:	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2:		3.42	3.89:	0.21	34.75-0.409:		1.93	36.13:	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3:		3.44	3.89:	0.22	34.75-0.409:		1.94	36.14:	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5:		3.47	3.92:	0.18	34.74-0.408:		1.90	36.12:	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0:		3.51	3.93:	0.18	34.74-0.408:		1.90	36.12:	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: S/C):	REMARKS
1	N.F. KOKTULI	H	57.7	0.35	0.35	1.92	2.98	36.31	-0.428	4.75	37.99	HEADWATERS OF NORTH FORK KOKTULI RIVER
2	N.F. KOKTULI	C	55.7		2.25	3.71	0.59	34.60	-0.404	2.80	36.44	STREAM GEOMETRY NODE NFKSG1
3	N.F. KOKTULI	C	48.2		3.04	3.98	0.42	34.56	-0.408	2.93	36.66	STREAM GEOMETRY NODE NFKSG2
4	N.F. KOKTULI	C	44.8		3.00	3.75	0.45	34.60	-0.408	3.01	36.75	STREAM GEOMETRY NODE NFKSG3
5	N.F. KOKTULI	C	42.1		2.96	3.75	0.42	34.58	-0.407	3.01	36.75	STREAM GEOMETRY NODE NFKSG4
6	N.F. KOKTULI	C	41.2		2.94	3.67	0.41	34.58	-0.407	3.02	36.76	STREAM GEOMETRY NODE NFKSG5
7	N.F. KOKTULI	C	39.8		2.90	3.62	0.41	34.58	-0.407	3.04	36.79	STREAM GEOMETRY NODE NFKSG6
8	N.F. KOKTULI	C	38.6		2.87	3.59	0.55	34.70	-0.409	3.19	36.93	STREAM GEOMETRY NODE NFKSG7
9	N.F. KOKTULI	Q	36.8		2.84	3.76	0.56	34.71	-0.409	3.21	36.94	HYDROLOGY GAGE NK100C
10	N.F. KOKTULI	C	36.5		2.90	3.79	0.61	34.75	-0.410	3.27	37.00	STREAM GEOMETRY NODE NFKSG8
11	N.F. KOKTULI	B	36.5		2.89	3.81				3.27	37.00	CONFLUENCE WITH TRIBUTARY NFK 1.119
12	TRIBUTARY 119	H	38.4	2.53	2.53	3.36	3.17	36.89	-0.450	5.48	39.14	HYDROLOGY GAGE NK119A
13	TRIBUTARY 119	T	36.5		2.92	3.67				5.48	39.14	CONFLUENCE WITH NORTH FORK KOKTULI RIVER
14	N.F. KOKTULI	J	36.5		2.91	3.72	1.51	35.48	-0.425	4.11	37.80	CONFLUENCE WITH TRIBUTARY NFK 1.119
15	N.F. KOKTULI	Q	35.8		2.92	3.58	1.54	35.50	-0.425	4.13	37.83	HYDROLOGY GAGE NK100B
16	N.F. KOKTULI	C	35.4		2.97	3.62	1.34	35.35	-0.422	3.97	37.69	STREAM GEOMETRY NODE NFKSG9
17	N.F. KOKTULI	C	34.0		3.13	3.74	1.07	35.15	-0.419	3.74	37.48	STREAM GEOMETRY NODE NFKSG10
18	N.F. KOKTULI	C	31.0		3.37	3.91	1.05	35.15	-0.421	3.73	37.48	STREAM GEOMETRY NODE NFKSG11
19	N.F. KOKTULI	C	28.5		3.53	4.04	1.28	35.36	-0.426	3.98	37.74	STREAM GEOMETRY NODE NFKSG12
20	N.F. KOKTULI	Q	27.9		3.56	4.13	1.30	35.37	-0.427	4.00	37.76	HYDROLOGY NODE NK100LF3
21	N.F. KOKTULI	C	27.0		3.61	4.17	1.27	35.36	-0.426	3.97	37.74	STREAM GEOMETRY NODE NFKSG13
22	N.F. KOKTULI	C	24.5		3.72	4.26	1.60	35.68	-0.433	4.29	38.10	STREAM GEOMETRY NODE NFKSG14
23	N.F. KOKTULI	C	16.0		3.98	4.52	1.90	35.98	-0.440	4.62	38.48	STREAM GEOMETRY NODE NFKSG15
24	N.F. KOKTULI	C	13.8		4.03	4.60	1.75	35.88	-0.438	4.54	38.41	STREAM GEOMETRY NODE NFKSG16
25	N.F. KOKTULI	Q	13.7		4.01	4.59	1.76	35.88	-0.438	4.54	38.42	HYDROLOGY GAGE NK100A1
26	N.F. KOKTULI	C	11.6		4.02	4.59	1.59	35.76	-0.435	4.40	38.29	STREAM GEOMETRY NODE NFKSG17
27	N.F. KOKTULI	C	9.9		4.02	4.57	1.68	35.85	-0.437	4.49	38.39	STREAM GEOMETRY NODE NFKSG18
28	N.F. KOKTULI	Q	9.3		4.00	4.58	1.68	35.85	-0.437	4.49	38.40	HYDROLOGY NODE FRS-4
29	N.F. KOKTULI	C	7.6		4.37	4.91	1.74	35.91	-0.441	4.55	38.47	STREAM GEOMETRY NODE NFKSG19
30	N.F. KOKTULI	C	6.2		4.60	5.12	1.67	35.87	-0.442	4.49	38.43	STREAM GEOMETRY NODE NFKSG20
31	N.F. KOKTULI	Q	5.3		4.73	5.23	1.71	35.90	-0.444	4.53	38.46	HYDROLOGY GAGE NK100A
32	N.F. KOKTULI	C	3.5		4.95	5.42	1.61	35.83	-0.444	4.45	38.40	STREAM GEOMETRY NODE NFKSG21
33	N.F. KOKTULI	E	0.0		5.28	5.69	1.61	35.83	-0.444	4.45	38.40	CONFLUENCE WITH SOUTH FORK KOKTULI RIVER

NORMAL COMPLETION OF 'TRNSPT'.

ATTACHMENT 11

SNTEMP Input Files
Upper Talarik Creek

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JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     10.     25.     19.     10.      0.      0.
      2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
UPPER TALARIK       61.4     0.0
TRIBUTARY 135       46.4    45.0
TRIBUTARY 119       25.1    24.7
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
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TIME PERIOD FILE: UPPER TALARIK CREEK, ALASKA - PEBBLE PROJECT

17-May	137.	137.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-May	138.	138.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-May	139.	139.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-May	140.	140.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-May	141.	141.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-May	142.	142.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-May	143.	143.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-May	144.	144.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-May	145.	145.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-May	146.	146.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-May	147.	147.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-May	148.	148.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-May	149.	149.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-May	150.	150.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-May	151.	151.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Jun	152.	152.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Jun	153.	153.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Jun	154.	154.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Jun	155.	155.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Jun	156.	156.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Jun	157.	157.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Jun	158.	158.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Jun	159.	159.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Jun	160.	160.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Jun	161.	161.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Jun	162.	162.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Jun	163.	163.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Jun	164.	164.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Jun	165.	165.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Jun	166.	166.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Jun	167.	167.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Jun	168.	168.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Jun	169.	169.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Jun	170.	170.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Jun	171.	171.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Jun	172.	172.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Jun	173.	173.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Jun	174.	174.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Jun	175.	175.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Jun	176.	176.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Jun	177.	177.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Jun	178.	178.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Jun	179.	179.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Jun	180.	180.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Jun	181.	181.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Jul	182.	182.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Jul	183.	183.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Jul	184.	184.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Jul	185.	185.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Jul	186.	186.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Jul	187.	187.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Jul	188.	188.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Jul	189.	189.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Jul	190.	190.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Jul	191.	191.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Jul	192.	192.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Jul	193.	193.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Jul	194.	194.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Jul	195.	195.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Jul	196.	196.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Jul	197.	197.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Jul	198.	198.	1.	0.05	0.15	0.000	0.000	0.000	0.000

18-Jul	199.	199.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Jul	200.	200.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Jul	201.	201.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Jul	202.	202.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Jul	203.	203.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Jul	204.	204.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Jul	205.	205.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Jul	206.	206.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Jul	207.	207.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Jul	208.	208.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Jul	209.	209.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Jul	210.	210.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Jul	211.	211.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-Jul	212.	212.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Aug	213.	213.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Aug	214.	214.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Aug	215.	215.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Aug	216.	216.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Aug	217.	217.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Aug	218.	218.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Aug	219.	219.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Aug	220.	220.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Aug	221.	221.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Aug	222.	222.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Aug	223.	223.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Aug	224.	224.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Aug	225.	225.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Aug	226.	226.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Aug	227.	227.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Aug	228.	228.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Aug	229.	229.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Aug	230.	230.	1.	0.05	0.15	0.000	0.000	0.000	0.000
19-Aug	231.	231.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Aug	232.	232.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Aug	233.	233.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Aug	234.	234.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Aug	235.	235.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Aug	236.	236.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Aug	237.	237.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Aug	238.	238.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Aug	239.	239.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Aug	240.	240.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Aug	241.	241.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Aug	242.	242.	1.	0.05	0.15	0.000	0.000	0.000	0.000
31-Aug	243.	243.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Sep	244.	244.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Sep	245.	245.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Sep	246.	246.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Sep	247.	247.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Sep	248.	248.	1.	0.05	0.15	0.000	0.000	0.000	0.000
6-Sep	249.	249.	1.	0.05	0.15	0.000	0.000	0.000	0.000
7-Sep	250.	250.	1.	0.05	0.15	0.000	0.000	0.000	0.000
8-Sep	251.	251.	1.	0.05	0.15	0.000	0.000	0.000	0.000
9-Sep	252.	252.	1.	0.05	0.15	0.000	0.000	0.000	0.000
10-Sep	253.	253.	1.	0.05	0.15	0.000	0.000	0.000	0.000
11-Sep	254.	254.	1.	0.05	0.15	0.000	0.000	0.000	0.000
12-Sep	255.	255.	1.	0.05	0.15	0.000	0.000	0.000	0.000
13-Sep	256.	256.	1.	0.05	0.15	0.000	0.000	0.000	0.000
14-Sep	257.	257.	1.	0.05	0.15	0.000	0.000	0.000	0.000
15-Sep	258.	258.	1.	0.05	0.15	0.000	0.000	0.000	0.000
16-Sep	259.	259.	1.	0.05	0.15	0.000	0.000	0.000	0.000
17-Sep	260.	260.	1.	0.05	0.15	0.000	0.000	0.000	0.000
18-Sep	261.	261.	1.	0.05	0.15	0.000	0.000	0.000	0.000

19-Sep	262.	262.	1.	0.05	0.15	0.000	0.000	0.000	0.000
20-Sep	263.	263.	1.	0.05	0.15	0.000	0.000	0.000	0.000
21-Sep	264.	264.	1.	0.05	0.15	0.000	0.000	0.000	0.000
22-Sep	265.	265.	1.	0.05	0.15	0.000	0.000	0.000	0.000
23-Sep	266.	266.	1.	0.05	0.15	0.000	0.000	0.000	0.000
24-Sep	267.	267.	1.	0.05	0.15	0.000	0.000	0.000	0.000
25-Sep	268.	268.	1.	0.05	0.15	0.000	0.000	0.000	0.000
26-Sep	269.	269.	1.	0.05	0.15	0.000	0.000	0.000	0.000
27-Sep	270.	270.	1.	0.05	0.15	0.000	0.000	0.000	0.000
28-Sep	271.	271.	1.	0.05	0.15	0.000	0.000	0.000	0.000
29-Sep	272.	272.	1.	0.05	0.15	0.000	0.000	0.000	0.000
30-Sep	273.	273.	1.	0.05	0.15	0.000	0.000	0.000	0.000
1-Oct	274.	274.	1.	0.05	0.15	0.000	0.000	0.000	0.000
2-Oct	275.	275.	1.	0.05	0.15	0.000	0.000	0.000	0.000
3-Oct	276.	276.	1.	0.05	0.15	0.000	0.000	0.000	0.000
4-Oct	277.	277.	1.	0.05	0.15	0.000	0.000	0.000	0.000
5-Oct	278.	278.	1.	0.05	0.15	0.000	0.000	0.000	0.000

METEOROLOGY FILE: UPPER TALARIK CREEK, ALASKA

		1.04551	473.96	-0.75	PEBBLE 1 METEROLOGICAL STATION	
2007	17-May	3.93	8.08	0.83	1.000	253.5
	18-May	4.73	4.38	0.68	1.000	278.7
	19-May	6.56	4.55	0.69	1.000	252.6
	20-May	5.49	2.90	0.71	1.000	178.7
	21-May	6.26	5.45	0.57	1.000	309.3
	22-May	5.86	9.77	0.62	1.000	142.3
	23-May	6.07	10.53	0.72	1.000	118.0
	24-May	5.03	11.69	0.90	1.000	68.2
	25-May	6.57	3.57	0.95	1.000	79.2
	26-May	4.96	7.42	0.95	1.000	114.2
	27-May	4.85	8.25	0.86	1.000	246.1
	28-May	4.13	7.92	0.82	1.000	227.5
	29-May	5.28	4.27	0.71	1.000	202.4
	30-May	6.09	4.66	0.79	1.000	169.3
	31-May	5.47	5.99	0.83	1.000	120.1
	1-Jun	5.20	7.41	0.83	1.000	101.9
	2-Jun	5.61	4.79	0.79	1.000	141.8
	3-Jun	7.25	2.58	0.77	1.000	173.5
	4-Jun	6.82	6.59	0.94	1.000	107.7
	5-Jun	5.29	11.74	0.89	1.000	142.9
	6-Jun	7.20	5.82	0.76	1.000	287.8
	7-Jun	6.32	9.30	0.70	1.000	247.5
	8-Jun	4.77	6.36	0.77	1.000	210.1
	9-Jun	5.57	4.11	0.83	1.000	167.1
	10-Jun	11.51	6.70	0.66	1.000	279.5
	11-Jun	6.94	6.46	0.89	1.000	262.2
	12-Jun	5.03	4.45	0.96	1.000	83.6
	13-Jun	7.22	3.04	0.83	1.000	141.0
	14-Jun	9.63	4.58	0.77	1.000	163.1
	15-Jun	13.31	8.16	0.61	1.000	318.3
	16-Jun	11.15	7.52	0.65	1.000	260.6
	17-Jun	6.21	3.91	0.92	1.000	147.2
	18-Jun	8.96	2.91	0.86	1.000	172.4
	19-Jun	13.80	8.26	0.72	1.000	305.2
	20-Jun	16.02	10.23	0.56	1.000	298.5
	21-Jun	13.16	7.63	0.63	1.000	233.9
	22-Jun	6.25	3.96	0.99	1.000	62.7
	23-Jun	5.82	13.07	0.99	1.000	40.8
	24-Jun	6.20	10.21	0.90	1.000	115.9
	25-Jun	6.61	9.73	0.86	1.000	135.3
	26-Jun	9.01	5.23	0.73	1.000	289.4
	27-Jun	11.53	4.12	0.69	1.000	287.2
	28-Jun	8.51	3.48	0.89	1.000	94.0
	29-Jun	10.52	4.27	0.74	1.000	311.1
	30-Jun	9.20	3.48	0.89	1.000	181.8
	1-Jul	10.40	3.71	0.82	1.000	152.6
	2-Jul	12.36	4.19	0.78	1.000	212.1
	3-Jul	12.53	4.05	0.80	1.000	197.5
	4-Jul	9.76	6.25	0.91	1.000	109.3
	5-Jul	10.41	4.71	0.88	1.000	155.8
	6-Jul	9.98	3.47	0.83	1.000	150.0
	7-Jul	12.79	2.32	0.65	1.000	172.6
	8-Jul	10.03	4.72	0.95	1.000	104.0
	9-Jul	9.89	4.66	0.78	1.000	187.1
	10-Jul	11.24	4.46	0.78	1.000	160.3
	11-Jul	11.21	6.33	0.73	1.000	299.7
	12-Jul	10.62	3.58	0.83	1.000	174.8
	13-Jul	8.46	4.40	0.99	1.000	78.3
	14-Jul	9.34	4.48	0.94	1.000	128.5
	15-Jul	10.05	3.79	0.88	1.000	121.8
	16-Jul	11.20	5.75	0.82	1.000	204.7

17-Jul	12.42	5.11	0.78	1.000	299.3
18-Jul	10.60	4.02	0.86	1.000	117.2
19-Jul	12.09	2.84	0.78	1.000	135.4
20-Jul	13.91	2.74	0.77	1.000	186.9
21-Jul	8.73	3.79	0.97	1.000	89.8
22-Jul	6.69	5.81	1.00	1.000	56.1
23-Jul	7.55	5.95	1.00	1.000	57.2
24-Jul	9.27	7.13	0.90	1.000	113.5
25-Jul	13.01	6.07	0.66	1.000	139.7
26-Jul	14.91	3.70	0.67	1.000	206.9
27-Jul	16.90	5.15	0.72	1.000	185.0
28-Jul	13.86	5.91	0.82	1.000	251.9
29-Jul	13.31	5.67	0.84	1.000	218.2
30-Jul	11.91	3.49	0.93	1.000	116.9
31-Jul	9.96	6.53	0.95	1.000	99.7
1-Aug	8.57	13.23	0.92	1.000	67.9
2-Aug	8.58	14.54	0.97	1.000	55.7
3-Aug	9.39	10.70	0.97	1.000	62.2
4-Aug	9.25	12.57	1.00	1.000	29.0
5-Aug	9.88	11.40	0.99	1.000	63.4
6-Aug	10.06	11.09	0.84	1.000	199.1
7-Aug	10.80	9.53	0.81	1.000	228.2
8-Aug	12.13	6.68	0.80	1.000	171.7
9-Aug	14.09	4.39	0.72	1.000	260.9
10-Aug	16.06	3.43	0.59	1.000	261.5
11-Aug	15.32	2.66	0.67	1.000	174.9
12-Aug	16.63	3.75	0.88	1.000	125.9
13-Aug	17.47	3.97	0.82	1.000	201.6
14-Aug	8.44	5.15	0.97	1.000	72.3
15-Aug	9.42	7.75	0.98	1.000	76.0
16-Aug	11.94	2.65	0.85	1.000	204.0
17-Aug	10.34	8.10	0.83	1.000	121.7
18-Aug	9.39	17.84	0.85	1.000	65.4
19-Aug	11.34	14.87	0.80	1.000	112.9
20-Aug	9.32	8.10	0.93	1.000	64.4
21-Aug	8.62	8.59	0.96	1.000	31.4
22-Aug	8.48	8.79	0.99	1.000	32.4
23-Aug	9.58	4.72	0.92	1.000	86.7
24-Aug	11.26	5.59	0.89	1.000	118.7
25-Aug	10.91	4.05	0.91	1.000	149.7
26-Aug	10.76	4.71	0.78	1.000	151.9
27-Aug	12.34	3.85	0.68	1.000	168.5
28-Aug	13.38	3.45	0.62	1.000	209.7
29-Aug	11.48	8.73	0.88	1.000	166.1
30-Aug	10.39	5.45	0.87	1.000	122.8
31-Aug	10.39	2.98	0.88	1.000	150.8
1-Sep	9.42	3.51	0.93	1.000	99.1
2-Sep	9.05	2.24	0.93	1.000	108.1
3-Sep	9.22	2.76	0.84	1.000	118.1
4-Sep	9.40	3.27	0.74	1.000	128.0
5-Sep	9.42	3.33	0.80	1.000	124.0
6-Sep	7.95	4.02	0.89	1.000	95.9
7-Sep	7.71	15.22	0.92	1.000	34.1
8-Sep	9.65	11.00	0.98	1.000	29.3
9-Sep	9.04	4.98	0.95	1.000	68.2
10-Sep	8.86	7.15	0.90	1.000	115.6
11-Sep	7.47	20.76	0.91	1.000	29.6
12-Sep	8.04	8.68	0.90	1.000	126.4
13-Sep	6.36	4.85	0.96	1.000	49.3
14-Sep	5.95	3.69	0.90	1.000	98.0
15-Sep	5.17	8.18	0.86	1.000	149.1
16-Sep	6.53	5.97	0.85	1.000	124.5
17-Sep	5.99	4.40	0.90	1.000	70.0

18-Sep	7.76	13.54	0.94	1.000	25.0
19-Sep	7.32	9.30	0.95	1.000	49.2
20-Sep	6.31	8.27	0.95	1.000	49.7
21-Sep	6.54	6.81	0.91	1.000	116.6
22-Sep	5.31	6.94	0.90	1.000	47.8
23-Sep	5.46	5.60	0.94	1.000	47.2
24-Sep	4.91	6.63	0.94	1.000	44.9
25-Sep	4.50	7.44	0.95	1.000	68.7
26-Sep	4.25	3.99	0.94	1.000	68.4
27-Sep	3.90	7.50	0.92	1.000	61.0
28-Sep	3.46	9.12	0.95	1.000	33.2
29-Sep	4.15	4.67	0.93	1.000	74.2
30-Sep	3.18	5.95	0.98	1.000	30.0
1-Oct	3.26	6.86	0.94	1.000	64.0
2-Oct	1.73	12.81	0.93	1.000	51.5
3-Oct	1.48	8.25	0.89	1.000	97.1
4-Oct	0.92	11.08	0.91	1.000	13.2
5-Oct	0.54	11.67	0.96	1.000	59.4

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SKELETON NODE FILE: UPPER TALARIK CREEK, ALASKA
UPPER TALARIK   H         62.380 HEADWATERS OF UPPER TALARIK CREEK
UPPER TALARIK   Q         59.973 HYDROLOGY GAGE UT100E
UPPER TALARIK   C         59.659 STREAM GEOMETRY NODE UTSG1
UPPER TALARIK   C         56.483 STREAM GEOMETRY NODE UTSG2
UPPER TALARIK   C         55.395 STREAM GEOMETRY NODE UTSG3
UPPER TALARIK   C         51.855 STREAM GEOMETRY NODE UTSG4
UPPER TALARIK   Q         51.621 HYDROLOGY GAGE UT100D
UPPER TALARIK   C         45.914 STREAM GEOMETRY NODE UTSG5
UPPER TALARIK   B         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
TRIBUTARY 135   H         46.371 HYDROLOGY GAGE UT135A
TRIBUTARY 135   T         45.050 CONFLUENCE WITH UPPER TALARIK CREEK
UPPER TALARIK   J         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
UPPER TALARIK   Q         44.631 HYDROLOGY GAGE UT100C2
UPPER TALARIK   C         38.357 STREAM GEOMETRY NODE UTSG6
UPPER TALARIK   Q         37.644 HYDROLOGY GAGE UT100C1
UPPER TALARIK   C         35.821 STREAM GEOMETRY NODE UTSG7
UPPER TALARIK   C         32.949 STREAM GEOMETRY NODE UTSG8
UPPER TALARIK   C         32.338 STREAM GEOMETRY NODE UTSG9
UPPER TALARIK   Q         29.309 HYDROLOGY GAGE UT100C
UPPER TALARIK   C         27.149 STREAM GEOMETRY NODE UTSG10
UPPER TALARIK   C         25.036 STREAM GEOMETRY NODE UTSG11
UPPER TALARIK   B         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
TRIBUTARY 119   H         25.057 HYDROLOGY GAGE UT119A
TRIBUTARY 119   T         24.738 CONFLUENCE WITH UPPER TALARIK CREEK
UPPER TALARIK   J         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
UPPER TALARIK   Q         24.500 HYDROLOGY GAGE UT100B
UPPER TALARIK   C         20.811 STREAM GEOMETRY NODE UTSG12
UPPER TALARIK   C         18.814 STREAM GEOMETRY NODE UTSG13
UPPER TALARIK   C         14.599 STREAM GEOMETRY NODE UTSG14
UPPER TALARIK   Q         14.359 HYDROLOGY GAGE UT100APC1
UPPER TALARIK   Q          9.846 HYDROLOGY GAGE UT100APC2
UPPER TALARIK   C          9.121 STREAM GEOMETRY NODE UTSG15
UPPER TALARIK   Q          2.240 HYDROLOGY GAGE UT100APC3
UPPER TALARIK   E          0.000 MOUTH OF UPPER TALARIK CREEK
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STREAM GEOMETRY FILE: UPPER TALARIK CREEK, ALASKA

UPPER TALARIK   H         62.380 HEADWATERS OF UPPER TALARIK CREEK
 1.04603  338.72   0.040    3.92  0.1549

UPPER TALARIK   C         59.659 STREAM GEOMETRY NODE UTSG1
 1.04575  290.96   0.040    6.84  0.1549

UPPER TALARIK   C         56.483 STREAM GEOMETRY NODE UTSG2
 1.04555  249.60   0.040    7.08  0.1549

UPPER TALARIK   C         55.395 STREAM GEOMETRY NODE UTSG3
 1.04562  243.45   0.040    7.40  0.1549

UPPER TALARIK   C         51.855 STREAM GEOMETRY NODE UTSG4
 1.04561  229.32   0.040    8.92  0.1549

UPPER TALARIK   C         45.914 STREAM GEOMETRY NODE UTSG5
 1.04521  209.78   0.040    9.37  0.1549

UPPER TALARIK   B         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
 1.04513  207.68

TRIBUTARY 135   H         46.371 HYDROLOGY GAGE UT135A
 1.04517  208.55   0.040    5.05  0.1549

TRIBUTARY 135   T         45.050 CONFLUENCE WITH UPPER TALARIK CREEK
 1.04513  207.68

UPPER TALARIK   J         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
 1.04513  207.68   0.040    9.37  0.1549

UPPER TALARIK   C         38.357 STREAM GEOMETRY NODE UTSG6
 1.04456  186.92   0.040   11.28  0.1549

UPPER TALARIK   C         35.821 STREAM GEOMETRY NODE UTSG7
 1.04424  174.00   0.040   11.39  0.1549

UPPER TALARIK   C         32.949 STREAM GEOMETRY NODE UTSG8
 1.04410  160.30   0.040   11.49  0.1549

UPPER TALARIK   C         32.338 STREAM GEOMETRY NODE UTSG9
 1.04403  156.79   0.040   11.75  0.1549

UPPER TALARIK   C         27.149 STREAM GEOMETRY NODE UTSG10
 1.04356  135.62   0.040   12.10  0.1549

UPPER TALARIK   C         25.036 STREAM GEOMETRY NODE UTSG11
 1.04353  129.12   0.040   12.61  0.1549

UPPER TALARIK   B         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
 1.04351  128.35

TRIBUTARY 119   H         25.057 HYDROLOGY GAGE UT119A
 1.04355  135.11   0.040   5.94  0.0000

TRIBUTARY 119   T         24.738 CONFLUENCE WITH UPPER TALARIK CREEK
 1.04351  128.35

UPPER TALARIK   J         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
 1.04351  128.35   0.040   12.61  0.1549

UPPER TALARIK   C         20.811 STREAM GEOMETRY NODE UTSG12
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 1.04309  107.91   0.040   13.23  0.1549

UPPER TALARIK   C         18.814 STREAM GEOMETRY NODE UTSG13
 1.04282   97.07   0.040   13.76  0.1549

UPPER TALARIK   C         14.599 STREAM GEOMETRY NODE UTSG14
 1.04230   74.59   0.040   14.69  0.1549

UPPER TALARIK   C          9.121 STREAM GEOMETRY NODE UTSG15
 1.04193   44.86   0.040   16.35  0.1549

UPPER TALARIK   E          0.000 MOUTH OF UPPER TALARIK CREEK
 1.04097   10.71
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STUDY FILE: UPPER TALARIK CREEK, ALASKA
UPPER TALARIK   H         62.380 HEADWATERS OF UPPER TALARIK CREEK
UPPER TALARIK   B         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
TRIBUTARY 135   H         46.371 HYDROLOGY GAGE UT135A
TRIBUTARY 135   T         45.050 CONFLUENCE WITH UPPER TALARIK CREEK
UPPER TALARIK   J         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
UPPER TALARIK   B         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
TRIBUTARY 119   H         25.057 HYDROLOGY GAGE UT119A
TRIBUTARY 119   T         24.738 CONFLUENCE WITH UPPER TALARIK CREEK
UPPER TALARIK   J         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
UPPER TALARIK   E          0.000 MOUTH OF UPPER TALARIK CREEK
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HYDROLOGY NODE FILE: UPPER TALARIK CREEK, ALASKA
UPPER TALARIK   H         62.380 HEADWATERS OF UPPER TALARIK CREEK
UPPER TALARIK   Q         59.973 HYDROLOGY GAGE UT100E
UPPER TALARIK   Q         51.621 HYDROLOGY GAGE UT100D
UPPER TALARIK   B         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
TRIBUTARY 135   H         46.371 HYDROLOGY GAGE UT135A
TRIBUTARY 135   T         45.050 CONFLUENCE WITH UPPER TALARIK CREEK
UPPER TALARIK   J         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
UPPER TALARIK   Q         44.631 HYDROLOGY GAGE UT100C2
UPPER TALARIK   Q         37.644 HYDROLOGY GAGE UT100C1
UPPER TALARIK   Q         29.309 HYDROLOGY GAGE UT100C
UPPER TALARIK   B         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
TRIBUTARY 119   H         25.057 HYDROLOGY GAGE UT119A
TRIBUTARY 119   T         24.738 CONFLUENCE WITH UPPER TALARIK CREEK
UPPER TALARIK   J         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
UPPER TALARIK   Q         24.500 HYDROLOGY GAGE UT100B
UPPER TALARIK   Q         14.359 HYDROLOGY GAGE UT100APC1
UPPER TALARIK   Q          9.846 HYDROLOGY GAGE UT100APC2
UPPER TALARIK   Q          2.240 HYDROLOGY GAGE UT100APC3
UPPER TALARIK   E          0.000 MOUTH OF UPPER TALARIK CREEK
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HYDROLOGY DATA FILE: UPPER TALARIK CREEK, ALASKA

UPPER TALARIK H 62.380 HEADWATERS OF UPPER TALARIK CREEK

2007	17-May	0.104	3.29	4.58	
	18-May	0.099	3.20	4.55	
	19-May	0.089	3.24	4.58	
	20-May	0.087	3.23	4.70	
	21-May	0.081	3.30	4.94	
	22-May	0.083	3.65	5.25	
	23-May	0.081	3.81	5.46	
	24-May	0.086	3.86	5.52	
	25-May	0.093	3.72	5.49	
	26-May	0.089	3.77	5.47	
	27-May	0.083	3.86	5.53	
	28-May	0.080	3.81	5.65	
	29-May	0.076	3.67	5.78	
	30-May	0.074	3.81	5.92	
	31-May	0.073	3.85	6.02	
	1-Jun	0.074	3.82	6.06	
	2-Jun	0.072	3.83	6.11	
	3-Jun	0.072	3.88	6.23	
	4-Jun	0.074	3.97	6.36	
	5-Jun	0.084	4.16	6.47	
	6-Jun	0.078	4.18	6.55	
	7-Jun	0.074	4.02	6.63	
	8-Jun	0.071	3.88	6.74	
	9-Jun	0.069	3.72	7.00	
	10-Jun	0.068	3.90	7.48	
	11-Jun	0.067	4.47	8.04	
	12-Jun	0.067	4.44	8.31	
	13-Jun	0.066	3.96	8.24	
	14-Jun	0.065	3.48	8.15	
	15-Jun	0.065	3.13	8.18	
	16-Jun	0.064	3.70	8.37	
	17-Jun	0.068	4.29	8.51	
	18-Jun	0.066	3.84	8.61	
	19-Jun	0.064	2.73	8.89	
	20-Jun	0.061	2.55	9.41	
	21-Jun	0.060	3.38	9.78	
	22-Jun	0.062	4.22	9.62	
	23-Jun	0.098	4.42	8.92	
	24-Jun	0.116	4.50	8.03	
	25-Jun	0.082	4.14	7.32	
	26-Jun	0.071	3.42	7.01	
	27-Jun	0.066	3.45	7.23	
	28-Jun	0.065	3.85	7.71	
	29-Jun	0.064	3.63	8.14	
	30-Jun	0.063	3.59	8.51	
	1-Jul	0.062	3.47	8.76	
	2-Jul	0.061	3.27	8.93	
	3-Jul	0.061	3.63	9.04	
	4-Jul	0.084	4.22	8.97	
	5-Jul	0.074	4.11	8.73	
	6-Jul	0.070	3.91	8.50	
	7-Jul	0.067	3.68	8.40	
	8-Jul	0.069	3.73	8.48	
	9-Jul	0.067	3.61	8.70	
	10-Jul	0.065	3.38	9.03	
	11-Jul	0.063	3.40	9.39	
	12-Jul	0.064	3.87	9.63	
	13-Jul	0.073	4.24	9.59	
	14-Jul	0.070	4.13	9.34	
	15-Jul	0.067	3.82	9.12	

16-Jul	0.064	3.26	9.09
17-Jul	0.062	2.99	9.31
18-Jul	0.062	3.47	9.65
19-Jul	0.061	3.57	9.82
20-Jul	0.073	3.89	9.90
21-Jul	0.075	4.46	9.89
22-Jul	0.072	4.54	9.55
23-Jul	0.099	4.54	8.90
24-Jul	0.089	4.37	8.30
25-Jul	0.075	4.01	8.03
26-Jul	0.067	3.33	8.26
27-Jul	0.065	2.81	9.11
28-Jul	0.067	3.04	10.47
29-Jul	0.064	3.42	11.99
30-Jul	0.064	3.78	13.28
31-Jul	0.064	3.79	14.03
1-Aug	0.064	3.51	14.02
2-Aug	0.065	3.30	13.29
3-Aug	0.066	3.75	12.21
4-Aug	0.102	4.65	11.16
5-Aug	0.097	4.86	10.33
6-Aug	0.087	4.47	9.75
7-Aug	0.072	3.84	9.33
8-Aug	0.067	3.37	8.97
9-Aug	0.064	2.92	8.58
10-Aug	0.063	2.71	8.28
11-Aug	0.063	2.72	8.21
12-Aug	0.064	2.34	8.47
13-Aug	0.064	2.60	9.22
14-Aug	0.068	3.97	10.29
15-Aug	0.072	4.27	11.11
16-Aug	0.068	3.93	11.68
17-Aug	0.065	3.61	12.12
18-Aug	0.067	3.25	12.24
19-Aug	0.065	3.20	11.98
20-Aug	0.071	3.97	11.55
21-Aug	0.073	4.37	10.92
22-Aug	0.077	4.53	10.17
23-Aug	0.086	4.62	9.47
24-Aug	0.072	4.28	8.96
25-Aug	0.070	3.95	8.63
26-Aug	0.065	3.52	8.37
27-Aug	0.064	3.25	8.21
28-Aug	0.062	3.00	8.25
29-Aug	0.061	3.10	8.56
30-Aug	0.061	3.44	8.99
31-Aug	0.061	3.60	9.29
1-Sep	0.061	3.78	9.42
2-Sep	0.061	4.07	9.40
3-Sep	0.066	4.21	9.26
4-Sep	0.068	4.16	9.07
5-Sep	0.065	4.06	8.91
6-Sep	0.067	4.19	8.79
7-Sep	0.079	4.73	8.67
8-Sep	0.164	5.89	8.52
9-Sep	0.129	5.98	8.37
10-Sep	0.100	5.22	8.23
11-Sep	0.091	5.05	8.09
12-Sep	0.174	5.88	7.90
13-Sep	0.133	6.01	7.63
14-Sep	0.154	5.57	7.30
15-Sep	0.112	4.88	7.00
16-Sep	0.099	4.54	6.82

	17-Sep	0.096	4.54	6.78
	18-Sep	0.128	4.99	6.80
	19-Sep	0.249	5.88	6.83
	20-Sep	0.220	6.00	6.78
	21-Sep	0.194	5.55	6.65
	22-Sep	0.160	4.96	6.50
	23-Sep	0.189	4.91	6.38
	24-Sep	0.178	4.93	6.28
	25-Sep	0.204	4.80	6.18
	26-Sep	0.179	4.59	6.07
	27-Sep	0.164	4.37	5.96
	28-Sep	0.226	4.30	5.85
	29-Sep	0.192	4.26	5.76
	30-Sep	0.219	4.36	5.66
	1-Oct	0.213	4.31	5.50
	2-Oct	0.185	4.02	5.23
	3-Oct	0.170	3.64	4.82
	4-Oct	0.169	3.31	4.29
	5-Oct	0.369	2.75	3.69

UPPER TALARIK Q 59.973 HYDROLOGY GAGE UT100E

2007	17-May	0.283	4.58
	18-May	0.270	4.55
	19-May	0.243	4.58
	20-May	0.236	4.70
	21-May	0.219	4.94
	22-May	0.226	5.25
	23-May	0.221	5.46
	24-May	0.234	5.52
	25-May	0.252	5.49
	26-May	0.243	5.47
	27-May	0.225	5.53
	28-May	0.217	5.65
	29-May	0.206	5.78
	30-May	0.200	5.92
	31-May	0.198	6.02
	1-Jun	0.200	6.06
	2-Jun	0.196	6.11
	3-Jun	0.195	6.23
	4-Jun	0.200	6.36
	5-Jun	0.228	6.47
	6-Jun	0.211	6.55
	7-Jun	0.200	6.63
	8-Jun	0.192	6.74
	9-Jun	0.187	7.00
	10-Jun	0.185	7.48
	11-Jun	0.182	8.04
	12-Jun	0.182	8.31
	13-Jun	0.179	8.24
	14-Jun	0.176	8.15
	15-Jun	0.176	8.18
	16-Jun	0.174	8.37
	17-Jun	0.185	8.51
	18-Jun	0.178	8.61
	19-Jun	0.173	8.89
	20-Jun	0.166	9.41
	21-Jun	0.164	9.78
	22-Jun	0.168	9.62
	23-Jun	0.265	8.92
	24-Jun	0.315	8.03
	25-Jun	0.223	7.32
	26-Jun	0.194	7.01
	27-Jun	0.180	7.23

28-Jun	0.177	7.71
29-Jun	0.174	8.14
30-Jun	0.171	8.51
1-Jul	0.169	8.76
2-Jul	0.167	8.93
3-Jul	0.166	9.04
4-Jul	0.228	8.97
5-Jul	0.201	8.73
6-Jul	0.189	8.50
7-Jul	0.181	8.40
8-Jul	0.188	8.48
9-Jul	0.181	8.70
10-Jul	0.176	9.03
11-Jul	0.171	9.39
12-Jul	0.175	9.63
13-Jul	0.198	9.59
14-Jul	0.189	9.34
15-Jul	0.181	9.12
16-Jul	0.174	9.09
17-Jul	0.169	9.31
18-Jul	0.168	9.65
19-Jul	0.167	9.82
20-Jul	0.199	9.90
21-Jul	0.205	9.89
22-Jul	0.195	9.55
23-Jul	0.268	8.90
24-Jul	0.242	8.30
25-Jul	0.204	8.03
26-Jul	0.182	8.26
27-Jul	0.177	9.11
28-Jul	0.181	10.47
29-Jul	0.174	11.99
30-Jul	0.173	13.28
31-Jul	0.174	14.03
1-Aug	0.174	14.02
2-Aug	0.177	13.29
3-Aug	0.180	12.21
4-Aug	0.278	11.16
5-Aug	0.263	10.33
6-Aug	0.236	9.75
7-Aug	0.195	9.33
8-Aug	0.181	8.97
9-Aug	0.175	8.58
10-Aug	0.172	8.28
11-Aug	0.171	8.21
12-Aug	0.174	8.47
13-Aug	0.174	9.22
14-Aug	0.184	10.29
15-Aug	0.195	11.11
16-Aug	0.186	11.68
17-Aug	0.176	12.12
18-Aug	0.183	12.24
19-Aug	0.177	11.98
20-Aug	0.194	11.55
21-Aug	0.198	10.92
22-Aug	0.208	10.17
23-Aug	0.234	9.47
24-Aug	0.197	8.96
25-Aug	0.189	8.63
26-Aug	0.176	8.37
27-Aug	0.173	8.21
28-Aug	0.168	8.25
29-Aug	0.167	8.56

	30-Aug	0.166		8.99
	31-Aug	0.166		9.29
	1-Sep	0.165		9.42
	2-Sep	0.166		9.40
	3-Sep	0.179		9.26
	4-Sep	0.185		9.07
	5-Sep	0.177		8.91
	6-Sep	0.182		8.79
	7-Sep	0.215		8.67
	8-Sep	0.445		8.52
	9-Sep	0.350		8.37
	10-Sep	0.271		8.23
	11-Sep	0.246		8.09
	12-Sep	0.474		7.90
	13-Sep	0.361		7.63
	14-Sep	0.419		7.30
	15-Sep	0.303		7.00
	16-Sep	0.270		6.82
	17-Sep	0.262		6.78
	18-Sep	0.347		6.80
	19-Sep	0.676		6.83
	20-Sep	0.599		6.78
	21-Sep	0.528		6.65
	22-Sep	0.434		6.50
	23-Sep	0.514		6.38
	24-Sep	0.484		6.28
	25-Sep	0.555		6.18
	26-Sep	0.486		6.07
	27-Sep	0.446		5.96
	28-Sep	0.614		5.85
	29-Sep	0.522		5.76
	30-Sep	0.594		5.66
	1-Oct	0.579		5.50
	2-Oct	0.504		5.23
	3-Oct	0.462		4.82
	4-Oct	0.458		4.29
	5-Oct	1.002		3.69

UPPER TALARIK Q 51.621 HYDROLOGY GAGE UT100D

2007	17-May	0.946	5.07
	18-May	0.924	5.02
	19-May	0.797	4.98
	20-May	0.794	4.95
	21-May	0.723	4.95
	22-May	0.751	4.95
	23-May	0.763	4.93
	24-May	0.826	4.91
	25-May	0.925	4.95
	26-May	0.887	5.06
	27-May	0.773	5.18
	28-May	0.704	5.26
	29-May	0.633	5.25
	30-May	0.608	5.21
	31-May	0.609	5.15
	1-Jun	0.607	5.11
	2-Jun	0.586	5.16
	3-Jun	0.587	5.31
	4-Jun	0.637	5.47
	5-Jun	0.855	5.59
	6-Jun	0.718	5.65
	7-Jun	0.627	5.64
	8-Jun	0.570	5.67
	9-Jun	0.538	5.88

10-Jun	0.548	6.31
11-Jun	0.537	6.73
12-Jun	0.514	6.92
13-Jun	0.488	7.00
14-Jun	0.493	7.21
15-Jun	0.496	7.56
16-Jun	0.479	7.93
17-Jun	0.550	8.23
18-Jun	0.518	8.56
19-Jun	0.501	9.02
20-Jun	0.480	9.45
21-Jun	0.449	9.43
22-Jun	0.458	8.81
23-Jun	0.845	7.81
24-Jun	1.093	6.85
25-Jun	0.681	6.22
26-Jun	0.550	6.02
27-Jun	0.488	6.23
28-Jun	0.470	6.64
29-Jun	0.452	7.03
30-Jun	0.431	7.34
1-Jul	0.422	7.54
2-Jul	0.409	7.70
3-Jul	0.401	7.80
4-Jul	0.695	7.75
5-Jul	0.594	7.53
6-Jul	0.522	7.36
7-Jul	0.476	7.34
8-Jul	0.513	7.50
9-Jul	0.474	7.79
10-Jul	0.443	8.18
11-Jul	0.415	8.58
12-Jul	0.419	8.79
13-Jul	0.534	8.73
14-Jul	0.505	8.56
15-Jul	0.455	8.53
16-Jul	0.423	8.75
17-Jul	0.395	9.11
18-Jul	0.386	9.38
19-Jul	0.389	9.35
20-Jul	0.420	9.09
21-Jul	0.454	8.68
22-Jul	0.441	8.14
23-Jul	0.749	7.66
24-Jul	0.691	7.45
25-Jul	0.572	7.64
26-Jul	0.467	8.24
27-Jul	0.426	9.13
28-Jul	0.435	10.06
29-Jul	0.395	10.65
30-Jul	0.386	10.68
31-Jul	0.383	10.16
1-Aug	0.375	9.30
2-Aug	0.385	8.47
3-Aug	0.399	7.99
4-Aug	0.892	7.89
5-Aug	0.801	8.02
6-Aug	0.722	8.19
7-Aug	0.529	8.28
8-Aug	0.455	8.31
9-Aug	0.417	8.33
10-Aug	0.391	8.40
11-Aug	0.375	8.55

	12-Aug	0.386	8.73	
	13-Aug	0.378	8.87	
	14-Aug	0.406	8.80	
	15-Aug	0.463	8.26	
	16-Aug	0.430	7.42	
	17-Aug	0.394	6.47	
	18-Aug	0.408	5.57	
	19-Aug	0.398	4.92	
	20-Aug	0.438	4.63	
	21-Aug	0.466	4.48	
	22-Aug	0.525	4.32	
	23-Aug	0.790	4.11	
	24-Aug	0.570	3.89	
	25-Aug	0.521	3.68	
	26-Aug	0.454	3.53	
	27-Aug	0.433	3.50	
	28-Aug	0.403	3.62	
	29-Aug	0.390	3.84	
	30-Aug	0.383	4.00	
	31-Aug	0.380	4.09	
	1-Sep	0.383	4.19	
	2-Sep	0.376	4.29	
	3-Sep	0.426	4.43	
	4-Sep	0.499	4.66	
	5-Sep	0.492	5.02	
	6-Sep	0.579	5.51	
	7-Sep	0.712	6.02	
	8-Sep	2.158	6.49	
	9-Sep	1.734	6.79	
	10-Sep	1.225	6.87	
	11-Sep	0.980	6.86	
	12-Sep	2.227	6.79	
	13-Sep	1.403	6.59	
	14-Sep	1.561	6.22	
	15-Sep	1.052	5.75	
	16-Sep	0.877	5.30	
	17-Sep	0.808	4.90	
	18-Sep	1.138	4.52	
	19-Sep	3.174	4.16	
	20-Sep	2.869	3.85	
	21-Sep	2.226	3.63	
	22-Sep	1.543	3.52	
	23-Sep	1.997	3.48	
	24-Sep	1.796	3.48	
	25-Sep	1.989	3.49	
	26-Sep	1.581	3.47	
	27-Sep	1.361	3.43	
	28-Sep	2.119	3.39	
	29-Sep	1.756	3.38	
	30-Sep	2.010	3.38	
	1-Oct	2.019	3.38	
	2-Oct	1.626	3.35	
	3-Oct	1.420	3.30	
	4-Oct	1.357	3.21	
	5-Oct	5.340	3.08	
UPPER TALARIK	B	45.050	CONFLUENCE WITH TRIBUTARY UT 1.135	
2007	17-May	3.749		
	18-May	3.876		
	19-May	3.193		
	20-May	3.155		
	21-May	2.822		
	22-May	2.948		

23-May	2.900
24-May	3.050
25-May	3.589
26-May	3.402
27-May	2.984
28-May	2.683
29-May	2.367
30-May	2.223
31-May	2.226
1-Jun	2.189
2-Jun	2.121
3-Jun	2.094
4-Jun	2.249
5-Jun	3.192
6-Jun	2.677
7-Jun	2.322
8-Jun	2.083
9-Jun	1.947
10-Jun	1.945
11-Jun	1.930
12-Jun	1.867
13-Jun	1.758
14-Jun	1.768
15-Jun	1.747
16-Jun	1.696
17-Jun	1.933
18-Jun	1.855
19-Jun	1.861
20-Jun	1.709
21-Jun	1.584
22-Jun	1.590
23-Jun	2.668
24-Jun	3.993
25-Jun	2.798
26-Jun	2.008
27-Jun	1.740
28-Jun	1.641
29-Jun	1.579
30-Jun	1.484
1-Jul	1.444
2-Jul	1.407
3-Jul	1.366
4-Jul	2.144
5-Jul	1.987
6-Jul	1.761
7-Jul	1.623
8-Jul	1.727
9-Jul	1.615
10-Jul	1.469
11-Jul	1.385
12-Jul	1.361
13-Jul	1.715
14-Jul	1.685
15-Jul	1.510
16-Jul	1.417
17-Jul	1.314
18-Jul	1.246
19-Jul	1.255
20-Jul	1.374
21-Jul	1.652
22-Jul	1.486
23-Jul	2.626
24-Jul	2.625

25-Jul	2.183
26-Jul	1.712
27-Jul	1.513
28-Jul	1.538
29-Jul	1.351
30-Jul	1.274
31-Jul	1.253
1-Aug	1.218
2-Aug	1.231
3-Aug	1.294
4-Aug	2.466
5-Aug	2.737
6-Aug	2.552
7-Aug	1.870
8-Aug	1.566
9-Aug	1.401
10-Aug	1.293
11-Aug	1.224
12-Aug	1.253
13-Aug	1.239
14-Aug	1.288
15-Aug	1.544
16-Aug	1.391
17-Aug	1.249
18-Aug	1.265
19-Aug	1.250
20-Aug	1.343
21-Aug	1.431
22-Aug	1.474
23-Aug	2.051
24-Aug	1.731
25-Aug	1.704
26-Aug	1.429
27-Aug	1.348
28-Aug	1.291
29-Aug	1.200
30-Aug	1.156
31-Aug	1.149
1-Sep	1.205
2-Sep	1.170
3-Sep	1.280
4-Sep	1.609
5-Sep	1.497
6-Sep	2.351
7-Sep	2.534
8-Sep	5.694
9-Sep	5.436
10-Sep	4.301
11-Sep	3.596
12-Sep	7.235
13-Sep	5.323
14-Sep	5.425
15-Sep	4.269
16-Sep	3.680
17-Sep	3.355
18-Sep	3.853
19-Sep	9.113
20-Sep	10.020
21-Sep	8.554
22-Sep	6.211
23-Sep	7.369
24-Sep	7.016
25-Sep	7.845

	26-Sep	6.493			
	27-Sep	5.644			
	28-Sep	7.267			
	29-Sep	7.022			
	30-Sep	7.347			
	1-Oct	7.969			
	2-Oct	6.610			
	3-Oct	5.889			
	4-Oct	5.382			
	5-Oct	11.559			
TRIBUTARY 135	H		46.371	HYDROLOGY GAGE UT135A	
2007	17-May	0.331	5.61	5.07	
	18-May	0.349	5.60	5.02	
	19-May	0.283	6.16	4.98	
	20-May	0.279	5.60	4.95	
	21-May	0.248	6.40	4.95	
	22-May	0.260	5.88	4.95	
	23-May	0.253	5.53	4.93	
	24-May	0.263	4.90	4.91	
	25-May	0.315	5.17	4.95	
	26-May	0.297	5.99	5.06	
	27-May	0.261	6.58	5.18	
	28-May	0.234	6.84	5.26	
	29-May	0.205	6.26	5.25	
	30-May	0.191	7.08	5.21	
	31-May	0.191	6.91	5.15	
	1-Jun	0.187	5.90	5.11	
	2-Jun	0.181	6.22	5.16	
	3-Jun	0.178	7.70	5.31	
	4-Jun	0.191	7.64	5.47	
	5-Jun	0.276	7.46	5.59	
	6-Jun	0.232	8.55	5.65	
	7-Jun	0.200	8.28	5.64	
	8-Jun	0.179	7.17	5.67	
	9-Jun	0.167	7.00	5.88	
	10-Jun	0.165	9.86	6.31	
	11-Jun	0.165	11.26	6.73	
	12-Jun	0.160	8.93	6.92	
	13-Jun	0.150	8.00	7.00	
	14-Jun	0.151	9.66	7.21	
	15-Jun	0.148	11.26	7.56	
	16-Jun	0.144	11.79	7.93	
	17-Jun	0.163	9.93	8.23	
	18-Jun	0.158	9.20	8.56	
	19-Jun	0.161	11.52	9.02	
	20-Jun	0.145	13.90	9.45	
	21-Jun	0.134	13.51	9.43	
	22-Jun	0.134	10.47	8.81	
	23-Jun	0.215	8.00	7.81	
	24-Jun	0.343	7.04	6.85	
	25-Jun	0.250	7.79	6.22	
	26-Jun	0.172	8.98	6.02	
	27-Jun	0.148	10.83	6.23	
	28-Jun	0.138	10.51	6.64	
	29-Jun	0.133	11.24	7.03	
	30-Jun	0.124	11.62	7.34	
	1-Jul	0.121	10.89	7.54	
	2-Jul	0.118	11.15	7.70	
	3-Jul	0.114	12.34	7.80	
	4-Jul	0.171	11.36	7.75	
	5-Jul	0.165	10.52	7.53	
	6-Jul	0.146	10.58	7.36	

7-Jul	0.136	10.82	7.34
8-Jul	0.144	11.02	7.50
9-Jul	0.135	10.90	7.79
10-Jul	0.121	11.27	8.18
11-Jul	0.115	12.65	8.58
12-Jul	0.111	12.87	8.79
13-Jul	0.140	11.16	8.73
14-Jul	0.139	10.95	8.56
15-Jul	0.125	10.74	8.53
16-Jul	0.118	11.35	8.75
17-Jul	0.109	13.17	9.11
18-Jul	0.102	12.98	9.38
19-Jul	0.102	11.85	9.35
20-Jul	0.113	12.40	9.09
21-Jul	0.142	11.49	8.68
22-Jul	0.124	9.73	8.14
23-Jul	0.222	8.92	7.66
24-Jul	0.229	9.04	7.45
25-Jul	0.190	10.10	7.64
26-Jul	0.147	11.47	8.24
27-Jul	0.129	13.57	9.13
28-Jul	0.130	14.83	10.06
29-Jul	0.113	15.08	10.65
30-Jul	0.105	14.37	10.68
31-Jul	0.103	13.16	10.16
1-Aug	0.100	11.08	9.30
2-Aug	0.100	9.93	8.47
3-Aug	0.106	10.53	7.99
4-Aug	0.186	10.50	7.89
5-Aug	0.229	10.34	8.02
6-Aug	0.216	11.22	8.19
7-Aug	0.159	11.93	8.28
8-Aug	0.131	12.90	8.31
9-Aug	0.116	13.81	8.33
10-Aug	0.107	14.07	8.40
11-Aug	0.100	13.65	8.55
12-Aug	0.103	14.05	8.73
13-Aug	0.102	14.68	8.87
14-Aug	0.104	13.61	8.80
15-Aug	0.128	11.41	8.26
16-Aug	0.114	12.16	7.42
17-Aug	0.101	12.11	6.47
18-Aug	0.101	10.60	5.57
19-Aug	0.101	10.69	4.92
20-Aug	0.107	10.97	4.63
21-Aug	0.114	10.34	4.48
22-Aug	0.112	9.90	4.32
23-Aug	0.149	9.84	4.11
24-Aug	0.137	10.66	3.89
25-Aug	0.140	11.46	3.68
26-Aug	0.115	10.70	3.53
27-Aug	0.108	10.83	3.50
28-Aug	0.105	10.95	3.62
29-Aug	0.096	12.36	3.84
30-Aug	0.091	12.06	4.00
31-Aug	0.091	11.45	4.09
1-Sep	0.097	10.99	4.19
2-Sep	0.094	10.55	4.29
3-Sep	0.101	10.22	4.43
4-Sep	0.131	9.47	4.66
5-Sep	0.119	10.28	5.02
6-Sep	0.209	9.47	5.51
7-Sep	0.215	8.99	6.02

	8-Sep	0.418	9.39	6.49
	9-Sep	0.438	9.48	6.79
	10-Sep	0.364	8.96	6.87
	11-Sep	0.309	8.62	6.86
	12-Sep	0.592	8.96	6.79
	13-Sep	0.463	8.75	6.59
	14-Sep	0.457	8.25	6.22
	15-Sep	0.380	7.59	5.75
	16-Sep	0.331	7.44	5.30
	17-Sep	0.301	7.68	4.90
	18-Sep	0.321	7.68	4.52
	19-Sep	0.702	8.02	4.16
	20-Sep	0.845	7.60	3.85
	21-Sep	0.748	7.42	3.63
	22-Sep	0.552	6.48	3.52
	23-Sep	0.635	6.64	3.48
	24-Sep	0.617	6.83	3.48
	25-Sep	0.692	6.56	3.49
	26-Sep	0.581	6.47	3.47
	27-Sep	0.506	6.03	3.43
	28-Sep	0.608	5.72	3.39
	29-Sep	0.622	5.45	3.38
	30-Sep	0.631	5.71	3.38
	1-Oct	0.703	5.71	3.38
	2-Oct	0.589	5.08	3.35
	3-Oct	0.528	4.16	3.30
	4-Oct	0.476	3.69	3.21
	5-Oct	0.735	3.62	3.08

TRIBUTARY 135 T 45.050 CONFLUENCE WITH UPPER TALARIK CREEK

2007	17-May	0.331	
	18-May	0.349	
	19-May	0.283	
	20-May	0.279	
	21-May	0.248	
	22-May	0.260	
	23-May	0.253	
	24-May	0.263	
	25-May	0.315	
	26-May	0.297	
	27-May	0.261	
	28-May	0.234	
	29-May	0.205	
	30-May	0.191	
	31-May	0.191	
	1-Jun	0.187	
	2-Jun	0.181	
	3-Jun	0.178	
	4-Jun	0.191	
	5-Jun	0.276	
	6-Jun	0.232	
	7-Jun	0.200	
	8-Jun	0.179	
	9-Jun	0.167	
	10-Jun	0.165	
	11-Jun	0.165	
	12-Jun	0.160	
	13-Jun	0.150	
	14-Jun	0.151	
	15-Jun	0.148	
	16-Jun	0.144	
	17-Jun	0.163	
	18-Jun	0.158	

19-Jun	0.161
20-Jun	0.145
21-Jun	0.134
22-Jun	0.134
23-Jun	0.215
24-Jun	0.343
25-Jun	0.250
26-Jun	0.172
27-Jun	0.148
28-Jun	0.138
29-Jun	0.133
30-Jun	0.124
1-Jul	0.121
2-Jul	0.118
3-Jul	0.114
4-Jul	0.171
5-Jul	0.165
6-Jul	0.146
7-Jul	0.136
8-Jul	0.144
9-Jul	0.135
10-Jul	0.121
11-Jul	0.115
12-Jul	0.111
13-Jul	0.140
14-Jul	0.139
15-Jul	0.125
16-Jul	0.118
17-Jul	0.109
18-Jul	0.102
19-Jul	0.102
20-Jul	0.113
21-Jul	0.142
22-Jul	0.124
23-Jul	0.222
24-Jul	0.229
25-Jul	0.190
26-Jul	0.147
27-Jul	0.129
28-Jul	0.130
29-Jul	0.113
30-Jul	0.105
31-Jul	0.103
1-Aug	0.100
2-Aug	0.100
3-Aug	0.106
4-Aug	0.186
5-Aug	0.229
6-Aug	0.216
7-Aug	0.159
8-Aug	0.131
9-Aug	0.116
10-Aug	0.107
11-Aug	0.100
12-Aug	0.103
13-Aug	0.102
14-Aug	0.104
15-Aug	0.128
16-Aug	0.114
17-Aug	0.101
18-Aug	0.101
19-Aug	0.101
20-Aug	0.107

	21-Aug	0.114		
	22-Aug	0.112		
	23-Aug	0.149		
	24-Aug	0.137		
	25-Aug	0.140		
	26-Aug	0.115		
	27-Aug	0.108		
	28-Aug	0.105		
	29-Aug	0.096		
	30-Aug	0.091		
	31-Aug	0.091		
	1-Sep	0.097		
	2-Sep	0.094		
	3-Sep	0.101		
	4-Sep	0.131		
	5-Sep	0.119		
	6-Sep	0.209		
	7-Sep	0.215		
	8-Sep	0.418		
	9-Sep	0.438		
	10-Sep	0.364		
	11-Sep	0.309		
	12-Sep	0.592		
	13-Sep	0.463		
	14-Sep	0.457		
	15-Sep	0.380		
	16-Sep	0.331		
	17-Sep	0.301		
	18-Sep	0.321		
	19-Sep	0.702		
	20-Sep	0.845		
	21-Sep	0.748		
	22-Sep	0.552		
	23-Sep	0.635		
	24-Sep	0.617		
	25-Sep	0.692		
	26-Sep	0.581		
	27-Sep	0.506		
	28-Sep	0.608		
	29-Sep	0.622		
	30-Sep	0.631		
	1-Oct	0.703		
	2-Oct	0.589		
	3-Oct	0.528		
	4-Oct	0.476		
	5-Oct	0.735		
UPPER TALARIK	J		45.050	CONFLUENCE WITH TRIBUTARY UT 1.135
2007	17-May	4.080	5.07	
	18-May	4.225	5.02	
	19-May	3.476	4.98	
	20-May	3.434	4.95	
	21-May	3.070	4.95	
	22-May	3.208	4.95	
	23-May	3.153	4.93	
	24-May	3.313	4.91	
	25-May	3.904	4.95	
	26-May	3.699	5.06	
	27-May	3.245	5.18	
	28-May	2.917	5.26	
	29-May	2.572	5.25	
	30-May	2.414	5.21	
	31-May	2.417	5.15	

1-Jun	2.376	5.11
2-Jun	2.302	5.16
3-Jun	2.272	5.31
4-Jun	2.440	5.47
5-Jun	3.468	5.59
6-Jun	2.909	5.65
7-Jun	2.522	5.64
8-Jun	2.262	5.67
9-Jun	2.114	5.88
10-Jun	2.110	6.31
11-Jun	2.095	6.73
12-Jun	2.027	6.92
13-Jun	1.908	7.00
14-Jun	1.919	7.21
15-Jun	1.895	7.56
16-Jun	1.840	7.93
17-Jun	2.096	8.23
18-Jun	2.013	8.56
19-Jun	2.022	9.02
20-Jun	1.854	9.45
21-Jun	1.718	9.43
22-Jun	1.724	8.81
23-Jun	2.883	7.81
24-Jun	4.336	6.85
25-Jun	3.048	6.22
26-Jun	2.180	6.02
27-Jun	1.888	6.23
28-Jun	1.779	6.64
29-Jun	1.712	7.03
30-Jun	1.608	7.34
1-Jul	1.565	7.54
2-Jul	1.525	7.70
3-Jul	1.480	7.80
4-Jul	2.315	7.75
5-Jul	2.152	7.53
6-Jul	1.907	7.36
7-Jul	1.759	7.34
8-Jul	1.871	7.50
9-Jul	1.750	7.79
10-Jul	1.590	8.18
11-Jul	1.500	8.58
12-Jul	1.472	8.79
13-Jul	1.855	8.73
14-Jul	1.824	8.56
15-Jul	1.635	8.53
16-Jul	1.535	8.75
17-Jul	1.423	9.11
18-Jul	1.348	9.38
19-Jul	1.357	9.35
20-Jul	1.487	9.09
21-Jul	1.794	8.68
22-Jul	1.610	8.14
23-Jul	2.848	7.66
24-Jul	2.854	7.45
25-Jul	2.373	7.64
26-Jul	1.859	8.24
27-Jul	1.642	9.13
28-Jul	1.668	10.06
29-Jul	1.464	10.65
30-Jul	1.379	10.68
31-Jul	1.356	10.16
1-Aug	1.318	9.30
2-Aug	1.331	8.47

3-Aug	1.400	7.99
4-Aug	2.652	7.89
5-Aug	2.966	8.02
6-Aug	2.768	8.19
7-Aug	2.029	8.28
8-Aug	1.697	8.31
9-Aug	1.517	8.33
10-Aug	1.400	8.40
11-Aug	1.324	8.55
12-Aug	1.356	8.73
13-Aug	1.341	8.87
14-Aug	1.392	8.80
15-Aug	1.672	8.26
16-Aug	1.505	7.42
17-Aug	1.350	6.47
18-Aug	1.366	5.57
19-Aug	1.351	4.92
20-Aug	1.450	4.63
21-Aug	1.545	4.48
22-Aug	1.586	4.32
23-Aug	2.200	4.11
24-Aug	1.868	3.89
25-Aug	1.844	3.68
26-Aug	1.544	3.53
27-Aug	1.456	3.50
28-Aug	1.396	3.62
29-Aug	1.296	3.84
30-Aug	1.247	4.00
31-Aug	1.240	4.09
1-Sep	1.302	4.19
2-Sep	1.264	4.29
3-Sep	1.381	4.43
4-Sep	1.740	4.66
5-Sep	1.616	5.02
6-Sep	2.560	5.51
7-Sep	2.749	6.02
8-Sep	6.112	6.49
9-Sep	5.874	6.79
10-Sep	4.665	6.87
11-Sep	3.905	6.86
12-Sep	7.827	6.79
13-Sep	5.786	6.59
14-Sep	5.882	6.22
15-Sep	4.649	5.75
16-Sep	4.011	5.30
17-Sep	3.656	4.90
18-Sep	4.174	4.52
19-Sep	9.815	4.16
20-Sep	10.865	3.85
21-Sep	9.302	3.63
22-Sep	6.763	3.52
23-Sep	8.004	3.48
24-Sep	7.633	3.48
25-Sep	8.537	3.49
26-Sep	7.074	3.47
27-Sep	6.150	3.43
28-Sep	7.875	3.39
29-Sep	7.644	3.38
30-Sep	7.978	3.38
1-Oct	8.672	3.38
2-Oct	7.199	3.35
3-Oct	6.417	3.30
4-Oct	5.858	3.21

	5-Oct	12.294		3.08
UPPER TALARIK	Q		44.631	HYDROLOGY GAGE UT100C2
2007	17-May	4.259		4.04
	18-May	4.413		4.40
	19-May	3.629		4.79
	20-May	3.584		5.24
	21-May	3.203		5.70
	22-May	3.347		6.12
	23-May	3.289		6.44
	24-May	3.454		6.63
	25-May	4.073		6.76
	26-May	3.859		6.87
	27-May	3.386		6.98
	28-May	3.043		7.10
	29-May	2.682		7.20
	30-May	2.516		7.31
	31-May	2.520		7.42
	1-Jun	2.477		7.52
	2-Jun	2.400		7.63
	3-Jun	2.368		7.75
	4-Jun	2.542		7.87
	5-Jun	3.617		7.94
	6-Jun	3.033		7.94
	7-Jun	2.630		7.88
	8-Jun	2.358		7.78
	9-Jun	2.203		7.68
	10-Jun	2.199		7.64
	11-Jun	2.183		7.63
	12-Jun	2.113		7.56
	13-Jun	1.989		7.38
	14-Jun	2.000		7.17
	15-Jun	1.974		7.00
	16-Jun	1.917		6.94
	17-Jun	2.184		6.97
	18-Jun	2.098		7.08
	19-Jun	2.108		7.33
	20-Jun	1.933		7.74
	21-Jun	1.790		8.19
	22-Jun	1.796		8.50
	23-Jun	2.999		8.55
	24-Jun	4.520		8.36
	25-Jun	3.183		8.01
	26-Jun	2.273		7.59
	27-Jun	1.968		7.24
	28-Jun	1.854		6.99
	29-Jun	1.784		6.82
	30-Jun	1.675		6.75
	1-Jul	1.630		6.77
	2-Jul	1.589		6.91
	3-Jul	1.541		7.16
	4-Jul	2.407		7.43
	5-Jul	2.240		7.60
	6-Jul	1.986		7.67
	7-Jul	1.831		7.66
	8-Jul	1.948		7.60
	9-Jul	1.823		7.53
	10-Jul	1.656		7.48
	11-Jul	1.561		7.50
	12-Jul	1.532		7.57
	13-Jul	1.930		7.62
	14-Jul	1.899		7.59
	15-Jul	1.702		7.55

16-Jul	1.598	7.58
17-Jul	1.481	7.79
18-Jul	1.402	8.21
19-Jul	1.413	8.71
20-Jul	1.547	9.21
21-Jul	1.870	9.55
22-Jul	1.676	9.60
23-Jul	2.967	9.33
24-Jul	2.977	8.84
25-Jul	2.476	8.33
26-Jul	1.938	8.00
27-Jul	1.711	8.00
28-Jul	1.738	8.36
29-Jul	1.525	8.98
30-Jul	1.436	9.71
31-Jul	1.411	10.38
1-Aug	1.371	10.86
2-Aug	1.385	11.09
3-Aug	1.457	11.06
4-Aug	2.752	10.82
5-Aug	3.089	10.40
6-Aug	2.885	9.87
7-Aug	2.114	9.25
8-Aug	1.768	8.62
9-Aug	1.580	8.05
10-Aug	1.457	7.66
11-Aug	1.378	7.56
12-Aug	1.411	7.77
13-Aug	1.395	8.28
14-Aug	1.448	8.99
15-Aug	1.740	9.73
16-Aug	1.566	10.43
17-Aug	1.405	11.11
18-Aug	1.421	11.70
19-Aug	1.405	12.20
20-Aug	1.508	12.58
21-Aug	1.606	12.79
22-Aug	1.647	12.79
23-Aug	2.280	12.60
24-Aug	1.942	12.25
25-Aug	1.919	11.80
26-Aug	1.606	11.31
27-Aug	1.514	10.85
28-Aug	1.453	10.51
29-Aug	1.347	10.33
30-Aug	1.297	10.28
31-Aug	1.289	10.32
1-Sep	1.355	10.43
2-Sep	1.314	10.56
3-Sep	1.435	10.69
4-Sep	1.811	10.81
5-Sep	1.680	10.90
6-Sep	2.673	10.96
7-Sep	2.865	10.98
8-Sep	6.337	10.98
9-Sep	6.109	11.01
10-Sep	4.860	11.09
11-Sep	4.072	11.26
12-Sep	8.145	11.49
13-Sep	6.036	11.77
14-Sep	6.127	12.05
15-Sep	4.854	12.36
16-Sep	4.189	12.69

	17-Sep	3.818	13.02
	18-Sep	4.346	13.30
	19-Sep	10.193	13.51
	20-Sep	11.320	13.62
	21-Sep	9.704	13.65
	22-Sep	7.060	13.61
	23-Sep	8.346	13.50
	24-Sep	7.965	13.32
	25-Sep	8.909	13.05
	26-Sep	7.386	12.71
	27-Sep	6.423	12.32
	28-Sep	8.203	11.90
	29-Sep	7.979	11.46
	30-Sep	8.317	11.01
	1-Oct	9.051	10.52
	2-Oct	7.516	9.97
	3-Oct	6.702	9.35
	4-Oct	6.114	8.67
	5-Oct	12.689	7.96

UPPER TALARIK Q 37.644 HYDROLOGY GAGE UT100C1

2007	17-May	3.800	4.04
	18-May	3.991	4.40
	19-May	3.448	4.79
	20-May	3.412	5.24
	21-May	3.145	5.70
	22-May	3.231	6.12
	23-May	3.187	6.44
	24-May	3.258	6.63
	25-May	3.636	6.76
	26-May	3.555	6.87
	27-May	3.254	6.98
	28-May	3.024	7.10
	29-May	2.759	7.20
	30-May	2.618	7.31
	31-May	2.601	7.42
	1-Jun	2.560	7.52
	2-Jun	2.505	7.63
	3-Jun	2.458	7.75
	4-Jun	2.559	7.87
	5-Jun	3.264	7.94
	6-Jun	2.955	7.94
	7-Jun	2.663	7.88
	8-Jun	2.454	7.78
	9-Jun	2.327	7.68
	10-Jun	2.298	7.64
	11-Jun	2.278	7.63
	12-Jun	2.217	7.56
	13-Jun	2.123	7.38
	14-Jun	2.120	7.17
	15-Jun	2.091	7.00
	16-Jun	2.033	6.94
	17-Jun	2.245	6.97
	18-Jun	2.185	7.08
	19-Jun	2.161	7.33
	20-Jun	2.011	7.74
	21-Jun	1.885	8.19
	22-Jun	1.884	8.50
	23-Jun	2.739	8.55
	24-Jun	3.918	8.36
	25-Jun	2.922	8.01
	26-Jun	2.399	7.59
	27-Jun	2.133	7.24

28-Jun	2.021	6.99
29-Jun	1.966	6.82
30-Jun	1.863	6.75
1-Jul	1.821	6.77
2-Jul	1.783	6.91
3-Jul	1.736	7.16
4-Jul	2.372	7.43
5-Jul	2.351	7.60
6-Jul	2.124	7.67
7-Jul	2.008	7.66
8-Jul	2.084	7.60
9-Jul	1.998	7.53
10-Jul	1.850	7.48
11-Jul	1.760	7.50
12-Jul	1.708	7.57
13-Jul	2.054	7.62
14-Jul	2.081	7.59
15-Jul	1.891	7.55
16-Jul	1.781	7.58
17-Jul	1.687	7.79
18-Jul	1.607	8.21
19-Jul	1.619	8.71
20-Jul	1.660	9.21
21-Jul	2.022	9.55
22-Jul	1.860	9.60
23-Jul	2.733	9.33
24-Jul	2.937	8.84
25-Jul	2.572	8.33
26-Jul	2.125	8.00
27-Jul	1.918	8.00
28-Jul	1.911	8.36
29-Jul	1.753	8.98
30-Jul	1.666	9.71
31-Jul	1.646	10.38
1-Aug	1.611	10.86
2-Aug	1.634	11.09
3-Aug	1.701	11.06
4-Aug	2.507	10.82
5-Aug	3.067	10.40
6-Aug	2.945	9.87
7-Aug	2.335	9.25
8-Aug	2.013	8.62
9-Aug	1.831	8.05
10-Aug	1.715	7.66
11-Aug	1.639	7.56
12-Aug	1.659	7.77
13-Aug	1.647	8.28
14-Aug	1.692	8.99
15-Aug	1.969	9.73
16-Aug	1.824	10.43
17-Aug	1.679	11.11
18-Aug	1.695	11.70
19-Aug	1.698	12.20
20-Aug	1.764	12.58
21-Aug	1.868	12.79
22-Aug	1.893	12.79
23-Aug	2.408	12.60
24-Aug	2.204	12.25
25-Aug	2.214	11.80
26-Aug	1.918	11.31
27-Aug	1.811	10.85
28-Aug	1.740	10.51
29-Aug	1.641	10.33

	30-Aug	1.591	10.28
	31-Aug	1.580	10.32
	1-Sep	1.638	10.43
	2-Sep	1.611	10.56
	3-Sep	1.742	10.69
	4-Sep	2.137	10.81
	5-Sep	2.231	10.90
	6-Sep	3.084	10.96
	7-Sep	3.155	10.98
	8-Sep	5.973	10.98
	9-Sep	5.986	11.01
	10-Sep	4.822	11.09
	11-Sep	4.033	11.26
	12-Sep	7.597	11.49
	13-Sep	5.876	11.77
	14-Sep	5.823	12.05
	15-Sep	4.744	12.36
	16-Sep	4.108	12.69
	17-Sep	3.792	13.02
	18-Sep	4.141	13.30
	19-Sep	9.310	13.51
	20-Sep	11.117	13.62
	21-Sep	9.574	13.65
	22-Sep	7.031	13.61
	23-Sep	7.890	13.50
	24-Sep	7.689	13.32
	25-Sep	8.577	13.05
	26-Sep	7.259	12.71
	27-Sep	6.263	12.32
	28-Sep	7.736	11.90
	29-Sep	7.733	11.46
	30-Sep	7.868	11.01
	1-Oct	8.746	10.52
	2-Oct	7.149	9.97
	3-Oct	6.423	9.35
	4-Oct	5.919	8.67
	5-Oct	11.833	7.96

UPPER TALARIK Q 29.309 HYDROLOGY GAGE UT100C

2007	17-May	5.163	5.07
	18-May	5.410	5.26
	19-May	4.722	5.47
	20-May	4.675	5.71
	21-May	4.347	5.94
	22-May	4.394	6.13
	23-May	4.325	6.24
	24-May	4.404	6.24
	25-May	4.860	6.19
	26-May	4.793	6.14
	27-May	4.440	6.09
	28-May	4.148	6.02
	29-May	3.821	5.90
	30-May	3.640	5.79
	31-May	3.604	5.71
	1-Jun	3.558	5.67
	2-Jun	3.454	5.66
	3-Jun	3.398	5.68
	4-Jun	3.482	5.73
	5-Jun	4.292	5.78
	6-Jun	3.960	5.81
	7-Jun	3.577	5.82
	8-Jun	3.347	5.82
	9-Jun	3.179	5.83

10-Jun	3.090	5.89
11-Jun	3.074	5.98
12-Jun	3.091	6.02
13-Jun	2.983	5.94
14-Jun	2.982	5.80
15-Jun	2.957	5.67
16-Jun	2.856	5.64
17-Jun	3.071	5.69
18-Jun	3.048	5.81
19-Jun	2.969	6.04
20-Jun	2.817	6.40
21-Jun	2.664	6.80
22-Jun	2.662	7.12
23-Jun	3.713	7.22
24-Jun	5.212	7.12
25-Jun	3.982	6.85
26-Jun	3.281	6.51
27-Jun	2.747	6.16
28-Jun	2.615	5.81
29-Jun	2.524	5.36
30-Jun	2.417	4.88
1-Jul	2.350	4.40
2-Jul	2.301	3.99
3-Jul	2.266	3.68
4-Jul	2.920	3.46
5-Jul	2.971	3.25
6-Jul	2.732	3.09
7-Jul	2.603	2.96
8-Jul	2.678	2.90
9-Jul	2.579	2.91
10-Jul	2.417	3.04
11-Jul	2.313	3.32
12-Jul	2.259	3.70
13-Jul	2.629	4.09
14-Jul	2.697	4.36
15-Jul	2.490	4.54
16-Jul	2.361	4.67
17-Jul	2.254	4.84
18-Jul	2.185	5.09
19-Jul	2.207	5.35
20-Jul	2.206	5.60
21-Jul	2.575	5.74
22-Jul	2.438	5.62
23-Jul	3.224	5.24
24-Jul	3.598	4.72
25-Jul	3.251	4.25
26-Jul	2.768	3.95
27-Jul	2.552	3.92
28-Jul	2.513	4.18
29-Jul	2.381	4.69
30-Jul	2.293	5.28
31-Jul	2.275	5.78
1-Aug	2.266	6.08
2-Aug	2.305	6.13
3-Aug	2.387	5.96
4-Aug	3.141	5.66
5-Aug	3.907	5.27
6-Aug	3.834	4.85
7-Aug	3.137	4.38
8-Aug	2.789	3.91
9-Aug	2.580	3.54
10-Aug	2.449	3.37
11-Aug	2.369	3.49

	12-Aug	2.378	3.88
	13-Aug	2.373	4.47
	14-Aug	2.408	5.09
	15-Aug	2.708	5.55
	16-Aug	2.566	5.84
	17-Aug	2.415	6.06
	18-Aug	2.469	6.20
	19-Aug	2.471	6.26
	20-Aug	2.561	6.25
	21-Aug	2.655	6.13
	22-Aug	2.678	5.86
	23-Aug	3.157	5.47
	24-Aug	2.974	4.99
	25-Aug	2.978	4.47
	26-Aug	2.709	3.97
	27-Aug	2.566	3.60
	28-Aug	2.486	3.43
	29-Aug	2.378	3.46
	30-Aug	2.321	3.67
	31-Aug	2.319	4.00
	1-Sep	2.359	4.45
	2-Sep	2.348	4.99
	3-Sep	2.505	5.57
	4-Sep	2.936	6.14
	5-Sep	3.126	6.65
	6-Sep	4.252	7.07
	7-Sep	4.260	7.36
	8-Sep	8.102	7.50
	9-Sep	7.854	7.53
	10-Sep	6.209	7.52
	11-Sep	5.127	7.50
	12-Sep	9.650	7.47
	13-Sep	7.575	7.42
	14-Sep	7.459	7.30
	15-Sep	6.060	7.12
	16-Sep	5.129	6.92
	17-Sep	4.714	6.70
	18-Sep	5.217	6.45
	19-Sep	12.208	6.20
	20-Sep	15.886	5.95
	21-Sep	13.583	5.73
	22-Sep	9.451	5.56
	23-Sep	10.469	5.41
	24-Sep	10.384	5.26
	25-Sep	11.741	5.11
	26-Sep	9.951	4.98
	27-Sep	8.448	4.91
	28-Sep	10.775	4.91
	29-Sep	10.884	4.97
	30-Sep	10.828	5.08
	1-Oct	12.305	5.18
	2-Oct	9.769	5.24
	3-Oct	8.684	5.22
	4-Oct	7.927	5.13
	5-Oct	18.115	4.99

UPPER TALARIK B 24.738 CONFLUENCE WITH TRIBUTARY UT 1.119

2007	17-May	6.027	
	18-May	6.309	
	19-May	5.530	
	20-May	5.475	
	21-May	5.109	
	22-May	5.132	

23-May	5.046
24-May	5.130
25-May	5.636
26-May	5.577
27-May	5.191
28-May	4.861
29-May	4.494
30-May	4.287
31-May	4.239
1-Jun	4.190
2-Jun	4.055
3-Jun	3.993
4-Jun	4.068
5-Jun	4.943
6-Jun	4.597
7-Jun	4.156
8-Jun	3.913
9-Jun	3.719
10-Jun	3.592
11-Jun	3.579
12-Jun	3.644
13-Jun	3.528
14-Jun	3.528
15-Jun	3.506
16-Jun	3.377
17-Jun	3.594
18-Jun	3.596
19-Jun	3.480
20-Jun	3.327
21-Jun	3.157
22-Jun	3.154
23-Jun	4.330
24-Jun	6.032
25-Jun	4.653
26-Jun	3.840
27-Jun	3.137
28-Jun	2.991
29-Jun	2.878
30-Jun	2.769
1-Jul	2.686
2-Jul	2.630
3-Jul	2.603
4-Jul	3.267
5-Jul	3.364
6-Jul	3.117
7-Jul	2.979
8-Jul	3.054
9-Jul	2.948
10-Jul	2.776
11-Jul	2.664
12-Jul	2.608
13-Jul	2.993
14-Jul	3.088
15-Jul	2.870
16-Jul	2.728
17-Jul	2.613
18-Jul	2.552
19-Jul	2.580
20-Jul	2.552
21-Jul	2.925
22-Jul	2.804
23-Jul	3.535
24-Jul	4.017

25-Jul	3.681
26-Jul	3.176
27-Jul	2.953
28-Jul	2.895
29-Jul	2.779
30-Jul	2.690
31-Jul	2.673
1-Aug	2.681
2-Aug	2.731
3-Aug	2.821
4-Aug	3.542
5-Aug	4.439
6-Aug	4.398
7-Aug	3.646
8-Aug	3.281
9-Aug	3.054
10-Aug	2.915
11-Aug	2.832
12-Aug	2.833
13-Aug	2.833
14-Aug	2.862
15-Aug	3.176
16-Aug	3.036
17-Aug	2.881
18-Aug	2.960
19-Aug	2.962
20-Aug	3.067
21-Aug	3.154
22-Aug	3.175
23-Aug	3.631
24-Aug	3.462
25-Aug	3.463
26-Aug	3.211
27-Aug	3.045
28-Aug	2.959
29-Aug	2.845
30-Aug	2.784
31-Aug	2.788
1-Sep	2.815
2-Sep	2.815
3-Sep	2.989
4-Sep	3.442
5-Sep	3.693
6-Sep	4.992
7-Sep	4.960
8-Sep	9.451
9-Sep	9.038
10-Sep	7.088
11-Sep	5.820
12-Sep	10.950
13-Sep	8.651
14-Sep	8.496
15-Sep	6.894
16-Sep	5.775
17-Sep	5.299
18-Sep	5.900
19-Sep	14.045
20-Sep	18.908
21-Sep	16.124
22-Sep	10.984
23-Sep	12.103
24-Sep	12.091
25-Sep	13.747

	26-Sep	11.656			
	27-Sep	9.833			
	28-Sep	12.701			
	29-Sep	12.881			
	30-Sep	12.705			
	1-Oct	14.561			
	2-Oct	11.429			
	3-Oct	10.118			
	4-Oct	9.200			
	5-Oct	22.096			
TRIBUTARY	119	H		25.057	HYDROLOGY GAGE UT119A
2007	17-May	0.667	5.08	5.07	
	18-May	0.667	4.91	5.26	
	19-May	0.658	4.70	5.47	
	20-May	0.656	4.85	5.71	
	21-May	0.656	5.07	5.94	
	22-May	0.663	4.61	6.13	
	23-May	0.665	4.70	6.24	
	24-May	0.665	4.60	6.24	
	25-May	0.667	4.49	6.19	
	26-May	0.668	4.65	6.14	
	27-May	0.660	5.36	6.09	
	28-May	0.652	4.97	6.02	
	29-May	0.653	4.89	5.90	
	30-May	0.663	4.90	5.79	
	31-May	0.655	4.54	5.71	
	1-Jun	0.647	4.56	5.67	
	2-Jun	0.643	4.94	5.66	
	3-Jun	0.648	5.42	5.68	
	4-Jun	0.659	4.86	5.73	
	5-Jun	0.658	4.93	5.78	
	6-Jun	0.665	5.62	5.81	
	7-Jun	0.656	4.93	5.82	
	8-Jun	0.645	4.86	5.82	
	9-Jun	0.642	4.67	5.83	
	10-Jun	0.658	6.05	5.89	
	11-Jun	0.643	5.81	5.98	
	12-Jun	0.631	4.84	6.02	
	13-Jun	0.635	4.87	5.94	
	14-Jun	0.635	5.37	5.80	
	15-Jun	0.628	6.28	5.67	
	16-Jun	0.617	6.00	5.64	
	17-Jun	0.627	5.09	5.69	
	18-Jun	0.624	5.47	5.81	
	19-Jun	0.627	6.36	6.04	
	20-Jun	0.639	6.79	6.40	
	21-Jun	0.640	6.28	6.80	
	22-Jun	0.643	4.93	7.12	
	23-Jun	0.707	4.76	7.22	
	24-Jun	0.693	4.91	7.12	
	25-Jun	0.664	5.06	6.85	
	26-Jun	0.662	5.34	6.51	
	27-Jun	0.666	5.64	6.16	
	28-Jun	0.670	5.15	5.81	
	29-Jun	0.672	5.64	5.36	
	30-Jun	0.668	5.31	4.88	
	1-Jul	0.667	5.13	4.40	
	2-Jul	0.666	5.39	3.99	
	3-Jul	0.665	5.70	3.68	
	4-Jul	0.679	5.33	3.46	
	5-Jul	0.665	5.07	3.25	
	6-Jul	0.657	5.19	3.09	

7-Jul	0.654	5.29	2.96
8-Jul	0.664	5.18	2.90
9-Jul	0.658	5.23	2.91
10-Jul	0.660	5.18	3.04
11-Jul	0.659	5.86	3.32
12-Jul	0.659	5.22	3.70
13-Jul	0.669	4.95	4.09
14-Jul	0.658	5.18	4.36
15-Jul	0.650	5.49	4.54
16-Jul	0.651	5.56	4.67
17-Jul	0.653	5.88	4.84
18-Jul	0.657	5.18	5.09
19-Jul	0.657	5.17	5.35
20-Jul	0.658	5.94	5.60
21-Jul	0.653	5.27	5.74
22-Jul	0.660	4.79	5.62
23-Jul	0.668	4.84	5.24
24-Jul	0.662	5.07	4.72
25-Jul	0.658	5.33	4.25
26-Jul	0.654	5.66	3.95
27-Jul	0.651	5.68	3.92
28-Jul	0.653	6.06	4.18
29-Jul	0.655	5.84	4.69
30-Jul	0.659	5.56	5.28
31-Jul	0.647	5.30	5.78
1-Aug	0.638	5.32	6.08
2-Aug	0.645	5.30	6.13
3-Aug	0.639	5.33	5.96
4-Aug	0.656	5.31	5.66
5-Aug	0.658	5.35	5.27
6-Aug	0.642	5.74	4.85
7-Aug	0.632	5.71	4.38
8-Aug	0.629	5.69	3.91
9-Aug	0.631	5.81	3.54
10-Aug	0.629	5.58	3.37
11-Aug	0.627	5.42	3.49
12-Aug	0.626	5.61	3.88
13-Aug	0.626	5.88	4.47
14-Aug	0.625	5.26	5.09
15-Aug	0.623	5.30	5.55
16-Aug	0.621	5.36	5.84
17-Aug	0.635	5.35	6.06
18-Aug	0.668	5.34	6.20
19-Aug	0.666	5.46	6.26
20-Aug	0.673	5.36	6.25
21-Aug	0.671	4.94	6.13
22-Aug	0.678	5.04	5.86
23-Aug	0.676	5.07	5.47
24-Aug	0.676	5.22	4.99
25-Aug	0.675	5.32	4.47
26-Aug	0.671	5.21	3.97
27-Aug	0.668	5.09	3.60
28-Aug	0.669	5.13	3.43
29-Aug	0.671	5.75	3.46
30-Aug	0.675	5.33	3.67
31-Aug	0.671	4.93	4.00
1-Sep	0.672	4.91	4.45
2-Sep	0.672	5.09	4.99
3-Sep	0.696	5.06	5.57
4-Sep	0.695	5.04	6.14
5-Sep	0.695	5.22	6.65
6-Sep	0.690	5.00	7.07
7-Sep	0.696	5.03	7.36

	8-Sep	0.786	5.65	7.50
	9-Sep	0.727	5.13	7.53
	10-Sep	0.710	5.15	7.52
	11-Sep	0.714	5.10	7.50
	12-Sep	0.762	5.48	7.47
	13-Sep	0.723	4.89	7.42
	14-Sep	0.738	4.83	7.30
	15-Sep	0.709	4.55	7.12
	16-Sep	0.704	4.76	6.92
	17-Sep	0.702	4.67	6.70
	18-Sep	0.748	5.12	6.45
	19-Sep	0.783	5.39	6.20
	20-Sep	0.870	5.44	5.95
	21-Sep	0.762	5.06	5.73
	22-Sep	0.744	4.46	5.56
	23-Sep	0.781	4.78	5.41
	24-Sep	0.732	4.75	5.26
	25-Sep	0.704	4.74	5.11
	26-Sep	0.686	4.58	4.98
	27-Sep	0.686	4.35	4.91
	28-Sep	0.734	4.51	4.91
	29-Sep	0.720	4.35	4.97
	30-Sep	0.733	4.44	5.08
	1-Oct	0.726	4.45	5.18
	2-Oct	0.718	4.09	5.24
	3-Oct	0.710	3.84	5.22
	4-Oct	0.730	3.74	5.13
	5-Oct	0.973	4.04	4.99

TRIBUTARY 119 T 24.738 CONFLUENCE WITH UPPER TALARIK CREEK

2007	17-May	0.667	
	18-May	0.667	
	19-May	0.658	
	20-May	0.656	
	21-May	0.656	
	22-May	0.663	
	23-May	0.665	
	24-May	0.665	
	25-May	0.667	
	26-May	0.668	
	27-May	0.660	
	28-May	0.652	
	29-May	0.653	
	30-May	0.663	
	31-May	0.655	
	1-Jun	0.647	
	2-Jun	0.643	
	3-Jun	0.648	
	4-Jun	0.659	
	5-Jun	0.658	
	6-Jun	0.665	
	7-Jun	0.656	
	8-Jun	0.645	
	9-Jun	0.642	
	10-Jun	0.658	
	11-Jun	0.643	
	12-Jun	0.631	
	13-Jun	0.635	
	14-Jun	0.635	
	15-Jun	0.628	
	16-Jun	0.617	
	17-Jun	0.627	
	18-Jun	0.624	

19-Jun	0.627
20-Jun	0.639
21-Jun	0.640
22-Jun	0.643
23-Jun	0.707
24-Jun	0.693
25-Jun	0.664
26-Jun	0.662
27-Jun	0.666
28-Jun	0.670
29-Jun	0.672
30-Jun	0.668
1-Jul	0.667
2-Jul	0.666
3-Jul	0.665
4-Jul	0.679
5-Jul	0.665
6-Jul	0.657
7-Jul	0.654
8-Jul	0.664
9-Jul	0.658
10-Jul	0.660
11-Jul	0.659
12-Jul	0.659
13-Jul	0.669
14-Jul	0.658
15-Jul	0.650
16-Jul	0.651
17-Jul	0.653
18-Jul	0.657
19-Jul	0.657
20-Jul	0.658
21-Jul	0.653
22-Jul	0.660
23-Jul	0.668
24-Jul	0.662
25-Jul	0.658
26-Jul	0.654
27-Jul	0.651
28-Jul	0.653
29-Jul	0.655
30-Jul	0.659
31-Jul	0.647
1-Aug	0.638
2-Aug	0.645
3-Aug	0.639
4-Aug	0.656
5-Aug	0.658
6-Aug	0.642
7-Aug	0.632
8-Aug	0.629
9-Aug	0.631
10-Aug	0.629
11-Aug	0.627
12-Aug	0.626
13-Aug	0.626
14-Aug	0.625
15-Aug	0.623
16-Aug	0.621
17-Aug	0.635
18-Aug	0.668
19-Aug	0.666
20-Aug	0.673

	21-Aug	0.671			
	22-Aug	0.678			
	23-Aug	0.676			
	24-Aug	0.676			
	25-Aug	0.675			
	26-Aug	0.671			
	27-Aug	0.668			
	28-Aug	0.669			
	29-Aug	0.671			
	30-Aug	0.675			
	31-Aug	0.671			
	1-Sep	0.672			
	2-Sep	0.672			
	3-Sep	0.696			
	4-Sep	0.695			
	5-Sep	0.695			
	6-Sep	0.690			
	7-Sep	0.696			
	8-Sep	0.786			
	9-Sep	0.727			
	10-Sep	0.710			
	11-Sep	0.714			
	12-Sep	0.762			
	13-Sep	0.723			
	14-Sep	0.738			
	15-Sep	0.709			
	16-Sep	0.704			
	17-Sep	0.702			
	18-Sep	0.748			
	19-Sep	0.783			
	20-Sep	0.870			
	21-Sep	0.762			
	22-Sep	0.744			
	23-Sep	0.781			
	24-Sep	0.732			
	25-Sep	0.704			
	26-Sep	0.686			
	27-Sep	0.686			
	28-Sep	0.734			
	29-Sep	0.720			
	30-Sep	0.733			
	1-Oct	0.726			
	2-Oct	0.718			
	3-Oct	0.710			
	4-Oct	0.730			
	5-Oct	0.973			
UPPER TALARIK	J		24.738	CONFLUENCE WITH TRIBUTARY UT 1.119	
2007	17-May	6.694		5.07	
	18-May	6.976		5.26	
	19-May	6.188		5.47	
	20-May	6.131		5.71	
	21-May	5.765		5.94	
	22-May	5.795		6.13	
	23-May	5.711		6.24	
	24-May	5.795		6.24	
	25-May	6.303		6.19	
	26-May	6.245		6.14	
	27-May	5.851		6.09	
	28-May	5.513		6.02	
	29-May	5.147		5.90	
	30-May	4.950		5.79	
	31-May	4.894		5.71	

1-Jun	4.837	5.67
2-Jun	4.698	5.66
3-Jun	4.641	5.68
4-Jun	4.727	5.73
5-Jun	5.601	5.78
6-Jun	5.262	5.81
7-Jun	4.812	5.82
8-Jun	4.558	5.82
9-Jun	4.361	5.83
10-Jun	4.250	5.89
11-Jun	4.222	5.98
12-Jun	4.275	6.02
13-Jun	4.163	5.94
14-Jun	4.163	5.80
15-Jun	4.134	5.67
16-Jun	3.994	5.64
17-Jun	4.221	5.69
18-Jun	4.220	5.81
19-Jun	4.107	6.04
20-Jun	3.966	6.40
21-Jun	3.797	6.80
22-Jun	3.797	7.12
23-Jun	5.037	7.22
24-Jun	6.725	7.12
25-Jun	5.317	6.85
26-Jun	4.502	6.51
27-Jun	3.803	6.16
28-Jun	3.661	5.81
29-Jun	3.550	5.36
30-Jun	3.437	4.88
1-Jul	3.353	4.40
2-Jul	3.296	3.99
3-Jul	3.268	3.68
4-Jul	3.946	3.46
5-Jul	4.029	3.25
6-Jul	3.774	3.09
7-Jul	3.633	2.96
8-Jul	3.718	2.90
9-Jul	3.606	2.91
10-Jul	3.436	3.04
11-Jul	3.323	3.32
12-Jul	3.267	3.70
13-Jul	3.662	4.09
14-Jul	3.746	4.36
15-Jul	3.520	4.54
16-Jul	3.379	4.67
17-Jul	3.266	4.84
18-Jul	3.209	5.09
19-Jul	3.237	5.35
20-Jul	3.210	5.60
21-Jul	3.578	5.74
22-Jul	3.464	5.62
23-Jul	4.203	5.24
24-Jul	4.679	4.72
25-Jul	4.339	4.25
26-Jul	3.830	3.95
27-Jul	3.604	3.92
28-Jul	3.548	4.18
29-Jul	3.434	4.69
30-Jul	3.349	5.28
31-Jul	3.320	5.78
1-Aug	3.319	6.08
2-Aug	3.376	6.13

3-Aug	3.460	5.96
4-Aug	4.198	5.66
5-Aug	5.097	5.27
6-Aug	5.040	4.85
7-Aug	4.278	4.38
8-Aug	3.910	3.91
9-Aug	3.685	3.54
10-Aug	3.544	3.37
11-Aug	3.459	3.49
12-Aug	3.459	3.88
13-Aug	3.459	4.47
14-Aug	3.487	5.09
15-Aug	3.799	5.55
16-Aug	3.657	5.84
17-Aug	3.516	6.06
18-Aug	3.628	6.20
19-Aug	3.628	6.26
20-Aug	3.740	6.25
21-Aug	3.825	6.13
22-Aug	3.853	5.86
23-Aug	4.307	5.47
24-Aug	4.138	4.99
25-Aug	4.138	4.47
26-Aug	3.882	3.97
27-Aug	3.713	3.60
28-Aug	3.628	3.43
29-Aug	3.516	3.46
30-Aug	3.459	3.67
31-Aug	3.459	4.00
1-Sep	3.487	4.45
2-Sep	3.487	4.99
3-Sep	3.685	5.57
4-Sep	4.137	6.14
5-Sep	4.388	6.65
6-Sep	5.682	7.07
7-Sep	5.656	7.36
8-Sep	10.237	7.50
9-Sep	9.765	7.53
10-Sep	7.798	7.52
11-Sep	6.534	7.50
12-Sep	11.712	7.47
13-Sep	9.374	7.42
14-Sep	9.234	7.30
15-Sep	7.603	7.12
16-Sep	6.479	6.92
17-Sep	6.001	6.70
18-Sep	6.648	6.45
19-Sep	14.828	6.20
20-Sep	19.778	5.95
21-Sep	16.886	5.73
22-Sep	11.728	5.56
23-Sep	12.884	5.41
24-Sep	12.823	5.26
25-Sep	14.451	5.11
26-Sep	12.342	4.98
27-Sep	10.519	4.91
28-Sep	13.435	4.91
29-Sep	13.601	4.97
30-Sep	13.438	5.08
1-Oct	15.287	5.18
2-Oct	12.147	5.24
3-Oct	10.828	5.22
4-Oct	9.930	5.13

	5-Oct	23.069	4.99	
UPPER TALARIK	Q	24.500	HYDROLOGY GAGE UT100B	
2007	17-May	6.739	5.07	
	18-May	7.023	5.26	
	19-May	6.230	5.47	
	20-May	6.173	5.71	
	21-May	5.805	5.94	
	22-May	5.833	6.13	
	23-May	5.748	6.24	
	24-May	5.833	6.24	
	25-May	6.343	6.19	
	26-May	6.286	6.14	
	27-May	5.890	6.09	
	28-May	5.550	6.02	
	29-May	5.182	5.90	
	30-May	4.984	5.79	
	31-May	4.927	5.71	
	1-Jun	4.870	5.67	
	2-Jun	4.729	5.66	
	3-Jun	4.672	5.68	
	4-Jun	4.757	5.73	
	5-Jun	5.635	5.78	
	6-Jun	5.295	5.81	
	7-Jun	4.842	5.82	
	8-Jun	4.587	5.82	
	9-Jun	4.389	5.83	
	10-Jun	4.276	5.89	
	11-Jun	4.248	5.98	
	12-Jun	4.304	6.02	
	13-Jun	4.191	5.94	
	14-Jun	4.191	5.80	
	15-Jun	4.163	5.67	
	16-Jun	4.021	5.64	
	17-Jun	4.248	5.69	
	18-Jun	4.248	5.81	
	19-Jun	4.134	6.04	
	20-Jun	3.993	6.40	
	21-Jun	3.823	6.80	
	22-Jun	3.823	7.12	
	23-Jun	5.069	7.22	
	24-Jun	6.768	7.12	
	25-Jun	5.352	6.85	
	26-Jun	4.531	6.51	
	27-Jun	3.823	6.16	
	28-Jun	3.681	5.81	
	29-Jun	3.568	5.36	
	30-Jun	3.455	4.88	
	1-Jul	3.370	4.40	
	2-Jul	3.313	3.99	
	3-Jul	3.285	3.68	
	4-Jul	3.964	3.46	
	5-Jul	4.049	3.25	
	6-Jul	3.794	3.09	
	7-Jul	3.653	2.96	
	8-Jul	3.738	2.90	
	9-Jul	3.625	2.91	
	10-Jul	3.455	3.04	
	11-Jul	3.341	3.32	
	12-Jul	3.285	3.70	
	13-Jul	3.681	4.09	
	14-Jul	3.766	4.36	
	15-Jul	3.540	4.54	

16-Jul	3.398	4.67
17-Jul	3.285	4.84
18-Jul	3.228	5.09
19-Jul	3.256	5.35
20-Jul	3.228	5.60
21-Jul	3.596	5.74
22-Jul	3.483	5.62
23-Jul	4.219	5.24
24-Jul	4.701	4.72
25-Jul	4.361	4.25
26-Jul	3.851	3.95
27-Jul	3.625	3.92
28-Jul	3.568	4.18
29-Jul	3.455	4.69
30-Jul	3.370	5.28
31-Jul	3.341	5.78
1-Aug	3.341	6.08
2-Aug	3.398	6.13
3-Aug	3.483	5.96
4-Aug	4.219	5.66
5-Aug	5.125	5.27
6-Aug	5.069	4.85
7-Aug	4.304	4.38
8-Aug	3.936	3.91
9-Aug	3.710	3.54
10-Aug	3.568	3.37
11-Aug	3.483	3.49
12-Aug	3.483	3.88
13-Aug	3.483	4.47
14-Aug	3.511	5.09
15-Aug	3.823	5.55
16-Aug	3.681	5.84
17-Aug	3.540	6.06
18-Aug	3.653	6.20
19-Aug	3.653	6.26
20-Aug	3.766	6.25
21-Aug	3.851	6.13
22-Aug	3.879	5.86
23-Aug	4.332	5.47
24-Aug	4.163	4.99
25-Aug	4.163	4.47
26-Aug	3.908	3.97
27-Aug	3.738	3.60
28-Aug	3.653	3.43
29-Aug	3.540	3.46
30-Aug	3.483	3.67
31-Aug	3.483	4.00
1-Sep	3.511	4.45
2-Sep	3.511	4.99
3-Sep	3.710	5.57
4-Sep	4.163	6.14
5-Sep	4.417	6.65
6-Sep	5.720	7.07
7-Sep	5.692	7.36
8-Sep	10.307	7.50
9-Sep	9.826	7.53
10-Sep	7.844	7.52
11-Sep	6.570	7.50
12-Sep	11.780	7.47
13-Sep	9.430	7.42
14-Sep	9.288	7.30
15-Sep	7.646	7.12
16-Sep	6.513	6.92

	17-Sep	6.031	6.70
	18-Sep	6.683	6.45
	19-Sep	14.923	6.20
	20-Sep	19.935	5.95
	21-Sep	17.018	5.73
	22-Sep	11.808	5.56
	23-Sep	12.969	5.41
	24-Sep	12.912	5.26
	25-Sep	14.555	5.11
	26-Sep	12.431	4.98
	27-Sep	10.591	4.91
	28-Sep	13.535	4.91
	29-Sep	13.705	4.97
	30-Sep	13.535	5.08
	1-Oct	15.404	5.18
	2-Oct	12.233	5.24
	3-Oct	10.902	5.22
	4-Oct	9.996	5.13
	5-Oct	23.276	4.99

UPPER TALARIK Q 14.359 HYDROLOGY GAGE UT100APC1

2007	17-May	7.748	5.07
	18-May	8.078	5.26
	19-May	7.153	5.47
	20-May	7.087	5.71
	21-May	6.658	5.94
	22-May	6.691	6.13
	23-May	6.592	6.24
	24-May	6.691	6.24
	25-May	7.285	6.19
	26-May	7.219	6.14
	27-May	6.757	6.09
	28-May	6.362	6.02
	29-May	5.934	5.90
	30-May	5.703	5.79
	31-May	5.637	5.71
	1-Jun	5.572	5.67
	2-Jun	5.407	5.66
	3-Jun	5.341	5.68
	4-Jun	5.440	5.73
	5-Jun	6.460	5.78
	6-Jun	6.065	5.81
	7-Jun	5.539	5.82
	8-Jun	5.243	5.82
	9-Jun	5.013	5.83
	10-Jun	4.882	5.89
	11-Jun	4.849	5.98
	12-Jun	4.915	6.02
	13-Jun	4.783	5.94
	14-Jun	4.783	5.80
	15-Jun	4.750	5.67
	16-Jun	4.586	5.64
	17-Jun	4.849	5.69
	18-Jun	4.849	5.81
	19-Jun	4.718	6.04
	20-Jun	4.554	6.40
	21-Jun	4.357	6.80
	22-Jun	4.357	7.12
	23-Jun	5.802	7.22
	24-Jun	7.781	7.12
	25-Jun	6.131	6.85
	26-Jun	5.177	6.51
	27-Jun	4.357	6.16

28-Jun	4.193	5.81
29-Jun	4.062	5.36
30-Jun	3.931	4.88
1-Jul	3.833	4.40
2-Jul	3.768	3.99
3-Jul	3.735	3.68
4-Jul	4.521	3.46
5-Jul	4.619	3.25
6-Jul	4.324	3.09
7-Jul	4.161	2.96
8-Jul	4.259	2.90
9-Jul	4.128	2.91
10-Jul	3.931	3.04
11-Jul	3.801	3.32
12-Jul	3.735	3.70
13-Jul	4.193	4.09
14-Jul	4.292	4.36
15-Jul	4.030	4.54
16-Jul	3.866	4.67
17-Jul	3.735	4.84
18-Jul	3.670	5.09
19-Jul	3.703	5.35
20-Jul	3.670	5.60
21-Jul	4.095	5.74
22-Jul	3.964	5.62
23-Jul	4.816	5.24
24-Jul	5.374	4.72
25-Jul	4.980	4.25
26-Jul	4.390	3.95
27-Jul	4.128	3.92
28-Jul	4.062	4.18
29-Jul	3.931	4.69
30-Jul	3.833	5.28
31-Jul	3.801	5.78
1-Aug	3.801	6.08
2-Aug	3.866	6.13
3-Aug	3.964	5.96
4-Aug	4.816	5.66
5-Aug	5.868	5.27
6-Aug	5.802	4.85
7-Aug	4.915	4.38
8-Aug	4.488	3.91
9-Aug	4.226	3.54
10-Aug	4.062	3.37
11-Aug	3.964	3.49
12-Aug	3.964	3.88
13-Aug	3.964	4.47
14-Aug	3.997	5.09
15-Aug	4.357	5.55
16-Aug	4.193	5.84
17-Aug	4.030	6.06
18-Aug	4.161	6.20
19-Aug	4.161	6.26
20-Aug	4.292	6.25
21-Aug	4.390	6.13
22-Aug	4.423	5.86
23-Aug	4.947	5.47
24-Aug	4.750	4.99
25-Aug	4.750	4.47
26-Aug	4.455	3.97
27-Aug	4.259	3.60
28-Aug	4.161	3.43
29-Aug	4.030	3.46

	30-Aug	3.964	3.67
	31-Aug	3.964	4.00
	1-Sep	3.997	4.45
	2-Sep	3.997	4.99
	3-Sep	4.226	5.57
	4-Sep	4.750	6.14
	5-Sep	5.046	6.65
	6-Sep	6.559	7.07
	7-Sep	6.526	7.36
	8-Sep	11.926	7.50
	9-Sep	11.361	7.53
	10-Sep	9.038	7.52
	11-Sep	7.549	7.50
	12-Sep	13.657	7.47
	13-Sep	10.896	7.42
	14-Sep	10.729	7.30
	15-Sep	8.806	7.12
	16-Sep	7.483	6.92
	17-Sep	6.922	6.70
	18-Sep	7.682	6.45
	19-Sep	17.364	6.20
	20-Sep	23.297	5.95
	21-Sep	19.841	5.73
	22-Sep	13.691	5.56
	23-Sep	15.058	5.41
	24-Sep	14.991	5.26
	25-Sep	16.929	5.11
	26-Sep	14.424	4.98
	27-Sep	12.259	4.91
	28-Sep	15.726	4.91
	29-Sep	15.926	4.97
	30-Sep	15.726	5.08
	1-Oct	17.932	5.18
	2-Oct	14.191	5.24
	3-Oct	12.625	5.22
	4-Oct	11.560	5.13
	5-Oct	27.266	4.99

UPPER TALARIK Q 9.846 HYDROLOGY GAGE UT100APC2

2007	17-May	6.847	5.07
	18-May	7.243	5.26
	19-May	6.151	5.47
	20-May	6.075	5.71
	21-May	5.586	5.94
	22-May	5.623	6.13
	23-May	5.512	6.24
	24-May	5.623	6.24
	25-May	6.304	6.19
	26-May	6.227	6.14
	27-May	5.698	6.09
	28-May	5.254	6.02
	29-May	4.785	5.90
	30-May	4.537	5.79
	31-May	4.467	5.71
	1-Jun	4.397	5.67
	2-Jun	4.223	5.66
	3-Jun	4.155	5.68
	4-Jun	4.258	5.73
	5-Jun	5.364	5.78
	6-Jun	4.928	5.81
	7-Jun	4.362	5.82
	8-Jun	4.052	5.82
	9-Jun	3.815	5.83

10-Jun	3.681	5.89
11-Jun	3.648	5.98
12-Jun	3.715	6.02
13-Jun	3.582	5.94
14-Jun	3.582	5.80
15-Jun	3.549	5.67
16-Jun	3.385	5.64
17-Jun	3.648	5.69
18-Jun	3.648	5.81
19-Jun	3.516	6.04
20-Jun	3.353	6.40
21-Jun	3.160	6.80
22-Jun	3.160	7.12
23-Jun	4.643	7.22
24-Jun	6.887	7.12
25-Jun	5.000	6.85
26-Jun	3.984	6.51
27-Jun	3.160	6.16
28-Jun	3.001	5.81
29-Jun	2.876	5.36
30-Jun	2.752	4.88
1-Jul	2.660	4.40
2-Jul	2.600	3.99
3-Jul	2.569	3.68
4-Jul	3.321	3.46
5-Jul	3.418	3.25
6-Jul	3.128	3.09
7-Jul	2.970	2.96
8-Jul	3.064	2.90
9-Jul	2.938	2.91
10-Jul	2.752	3.04
11-Jul	2.630	3.32
12-Jul	2.569	3.70
13-Jul	3.001	4.09
14-Jul	3.096	4.36
15-Jul	2.845	4.54
16-Jul	2.691	4.67
17-Jul	2.569	4.84
18-Jul	2.509	5.09
19-Jul	2.539	5.35
20-Jul	2.509	5.60
21-Jul	2.907	5.74
22-Jul	2.783	5.62
23-Jul	3.615	5.24
24-Jul	4.189	4.72
25-Jul	3.781	4.25
26-Jul	3.192	3.95
27-Jul	2.938	3.92
28-Jul	2.876	4.18
29-Jul	2.752	4.69
30-Jul	2.660	5.28
31-Jul	2.630	5.78
1-Aug	2.630	6.08
2-Aug	2.691	6.13
3-Aug	2.783	5.96
4-Aug	3.615	5.66
5-Aug	4.714	5.27
6-Aug	4.643	4.85
7-Aug	3.715	4.38
8-Aug	3.288	3.91
9-Aug	3.033	3.54
10-Aug	2.876	3.37
11-Aug	2.783	3.49

	12-Aug	2.783	3.88
	13-Aug	2.783	4.47
	14-Aug	2.814	5.09
	15-Aug	3.160	5.55
	16-Aug	3.001	5.84
	17-Aug	2.845	6.06
	18-Aug	2.970	6.20
	19-Aug	2.970	6.26
	20-Aug	3.096	6.25
	21-Aug	3.192	6.13
	22-Aug	3.224	5.86
	23-Aug	3.748	5.47
	24-Aug	3.549	4.99
	25-Aug	3.549	4.47
	26-Aug	3.256	3.97
	27-Aug	3.064	3.60
	28-Aug	2.970	3.43
	29-Aug	2.845	3.46
	30-Aug	2.783	3.67
	31-Aug	2.783	4.00
	1-Sep	2.814	4.45
	2-Sep	2.814	4.99
	3-Sep	3.033	5.57
	4-Sep	3.549	6.14
	5-Sep	3.849	6.65
	6-Sep	5.475	7.07
	7-Sep	5.438	7.36
	8-Sep	12.224	7.50
	9-Sep	11.452	7.53
	10-Sep	8.422	7.52
	11-Sep	6.613	7.50
	12-Sep	14.665	7.47
	13-Sep	10.826	7.42
	14-Sep	10.605	7.30
	15-Sep	8.133	7.12
	16-Sep	6.535	6.92
	17-Sep	5.885	6.70
	18-Sep	6.769	6.45
	19-Sep	20.249	6.20
	20-Sep	26.809	5.95
	21-Sep	23.250	5.73
	22-Sep	14.714	5.56
	23-Sep	16.721	5.41
	24-Sep	16.622	5.26
	25-Sep	19.570	5.11
	26-Sep	15.782	4.98
	27-Sep	12.684	4.91
	28-Sep	17.725	4.91
	29-Sep	18.029	4.97
	30-Sep	17.725	5.08
	1-Oct	21.145	5.18
	2-Oct	15.440	5.24
	3-Oct	13.195	5.22
	4-Oct	11.723	5.13
	5-Oct	30.823	4.99

UPPER TALARIK	Q		2.240	HYDROLOGY GAGE UT100APC3
2007	17-May	10.216		5.07
	18-May	10.648		5.26
	19-May	9.440		5.47
	20-May	9.353		5.71
	21-May	8.793		5.94
	22-May	8.836		6.13

23-May	8.706	6.24
24-May	8.836	6.24
25-May	9.612	6.19
26-May	9.526	6.14
27-May	8.922	6.09
28-May	8.404	6.02
29-May	7.844	5.90
30-May	7.542	5.79
31-May	7.456	5.71
1-Jun	7.370	5.67
2-Jun	7.155	5.66
3-Jun	7.068	5.68
4-Jun	7.198	5.73
5-Jun	8.534	5.78
6-Jun	8.016	5.81
7-Jun	7.327	5.82
8-Jun	6.939	5.82
9-Jun	6.638	5.83
10-Jun	6.466	5.89
11-Jun	6.423	5.98
12-Jun	6.509	6.02
13-Jun	6.336	5.94
14-Jun	6.336	5.80
15-Jun	6.293	5.67
16-Jun	6.078	5.64
17-Jun	6.423	5.69
18-Jun	6.423	5.81
19-Jun	6.250	6.04
20-Jun	6.035	6.40
21-Jun	5.777	6.80
22-Jun	5.777	7.12
23-Jun	7.672	7.22
24-Jun	10.259	7.12
25-Jun	8.103	6.85
26-Jun	6.853	6.51
27-Jun	5.777	6.16
28-Jun	5.562	5.81
29-Jun	5.390	5.36
30-Jun	5.218	4.88
1-Jul	5.089	4.40
2-Jul	5.003	3.99
3-Jul	4.960	3.68
4-Jul	5.992	3.46
5-Jul	6.121	3.25
6-Jul	5.734	3.09
7-Jul	5.519	2.96
8-Jul	5.648	2.90
9-Jul	5.476	2.91
10-Jul	5.218	3.04
11-Jul	5.046	3.32
12-Jul	4.960	3.70
13-Jul	5.562	4.09
14-Jul	5.691	4.36
15-Jul	5.347	4.54
16-Jul	5.132	4.67
17-Jul	4.960	4.84
18-Jul	4.874	5.09
19-Jul	4.917	5.35
20-Jul	4.874	5.60
21-Jul	5.433	5.74
22-Jul	5.261	5.62
23-Jul	6.379	5.24
24-Jul	7.112	4.72

25-Jul	6.595	4.25
26-Jul	5.820	3.95
27-Jul	5.476	3.92
28-Jul	5.390	4.18
29-Jul	5.218	4.69
30-Jul	5.089	5.28
31-Jul	5.046	5.78
1-Aug	5.046	6.08
2-Aug	5.132	6.13
3-Aug	5.261	5.96
4-Aug	6.379	5.66
5-Aug	7.758	5.27
6-Aug	7.672	4.85
7-Aug	6.509	4.38
8-Aug	5.949	3.91
9-Aug	5.605	3.54
10-Aug	5.390	3.37
11-Aug	5.261	3.49
12-Aug	5.261	3.88
13-Aug	5.261	4.47
14-Aug	5.304	5.09
15-Aug	5.777	5.55
16-Aug	5.562	5.84
17-Aug	5.347	6.06
18-Aug	5.519	6.20
19-Aug	5.519	6.26
20-Aug	5.691	6.25
21-Aug	5.820	6.13
22-Aug	5.863	5.86
23-Aug	6.552	5.47
24-Aug	6.293	4.99
25-Aug	6.293	4.47
26-Aug	5.906	3.97
27-Aug	5.648	3.60
28-Aug	5.519	3.43
29-Aug	5.347	3.46
30-Aug	5.261	3.67
31-Aug	5.261	4.00
1-Sep	5.304	4.45
2-Sep	5.304	4.99
3-Sep	5.605	5.57
4-Sep	6.293	6.14
5-Sep	6.681	6.65
6-Sep	8.663	7.07
7-Sep	8.620	7.36
8-Sep	15.661	7.50
9-Sep	14.926	7.53
10-Sep	11.900	7.52
11-Sep	9.957	7.50
12-Sep	17.912	7.47
13-Sep	14.321	7.42
14-Sep	14.104	7.30
15-Sep	11.598	7.12
16-Sep	9.871	6.92
17-Sep	9.138	6.70
18-Sep	10.130	6.45
19-Sep	22.721	6.20
20-Sep	30.400	5.95
21-Sep	25.930	5.73
22-Sep	17.955	5.56
23-Sep	19.731	5.41
24-Sep	19.644	5.26
25-Sep	22.157	5.11

	26-Sep	18.908	4.98	
	27-Sep	16.094	4.91	
	28-Sep	20.597	4.91	
	29-Sep	20.857	4.97	
	30-Sep	20.597	5.08	
	1-Oct	23.458	5.18	
	2-Oct	18.605	5.24	
	3-Oct	16.570	5.22	
	4-Oct	15.186	5.13	
	5-Oct	35.526	4.99	
UPPER TALARIK	E		0.000	MOUTH OF UPPER TALARIK CREEK
2007	17-May	10.566		
	18-May	11.013		
	19-May	9.763		
	20-May	9.673		
	21-May	9.094		
	22-May	9.138		
	23-May	9.004		
	24-May	9.138		
	25-May	9.941		
	26-May	9.852		
	27-May	9.227		
	28-May	8.691		
	29-May	8.112		
	30-May	7.799		
	31-May	7.710		
	1-Jun	7.622		
	2-Jun	7.399		
	3-Jun	7.309		
	4-Jun	7.444		
	5-Jun	8.826		
	6-Jun	8.290		
	7-Jun	7.577		
	8-Jun	7.176		
	9-Jun	6.864		
	10-Jun	6.686		
	11-Jun	6.642		
	12-Jun	6.731		
	13-Jun	6.552		
	14-Jun	6.552		
	15-Jun	6.507		
	16-Jun	6.285		
	17-Jun	6.642		
	18-Jun	6.642		
	19-Jun	6.463		
	20-Jun	6.240		
	21-Jun	5.974		
	22-Jun	5.974		
	23-Jun	7.934		
	24-Jun	10.610		
	25-Jun	8.380		
	26-Jun	7.087		
	27-Jun	5.974		
	28-Jun	5.751		
	29-Jun	5.573		
	30-Jun	5.395		
	1-Jul	5.262		
	2-Jul	5.173		
	3-Jul	5.129		
	4-Jul	6.196		
	5-Jul	6.330		
	6-Jul	5.929		

7-Jul	5.707
8-Jul	5.840
9-Jul	5.662
10-Jul	5.395
11-Jul	5.218
12-Jul	5.129
13-Jul	5.751
14-Jul	5.885
15-Jul	5.529
16-Jul	5.306
17-Jul	5.129
18-Jul	5.040
19-Jul	5.084
20-Jul	5.040
21-Jul	5.618
22-Jul	5.440
23-Jul	6.596
24-Jul	7.355
25-Jul	6.820
26-Jul	6.018
27-Jul	5.662
28-Jul	5.573
29-Jul	5.395
30-Jul	5.262
31-Jul	5.218
1-Aug	5.218
2-Aug	5.306
3-Aug	5.440
4-Aug	6.596
5-Aug	8.023
6-Aug	7.934
7-Aug	6.731
8-Aug	6.152
9-Aug	5.796
10-Aug	5.573
11-Aug	5.440
12-Aug	5.440
13-Aug	5.440
14-Aug	5.484
15-Aug	5.974
16-Aug	5.751
17-Aug	5.529
18-Aug	5.707
19-Aug	5.707
20-Aug	5.885
21-Aug	6.018
22-Aug	6.063
23-Aug	6.775
24-Aug	6.507
25-Aug	6.507
26-Aug	6.107
27-Aug	5.840
28-Aug	5.707
29-Aug	5.529
30-Aug	5.440
31-Aug	5.440
1-Sep	5.484
2-Sep	5.484
3-Sep	5.796
4-Sep	6.507
5-Sep	6.909
6-Sep	8.959
7-Sep	8.915

8-Sep	16.200
9-Sep	15.439
10-Sep	12.308
11-Sep	10.298
12-Sep	18.529
13-Sep	14.813
14-Sep	14.589
15-Sep	11.996
16-Sep	10.209
17-Sep	9.451
18-Sep	10.477
19-Sep	23.506
20-Sep	31.453
21-Sep	26.827
22-Sep	18.574
23-Sep	20.411
24-Sep	20.321
25-Sep	22.922
26-Sep	19.560
27-Sep	16.648
28-Sep	21.308
29-Sep	21.577
30-Sep	21.308
1-Oct	24.268
2-Oct	19.246
3-Oct	17.140
4-Oct	15.708
5-Oct	36.759

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SHADE FILE: UPPER TALARIK CREEK, ALASKA

UPPER TALARIK   H         62.380 HEADWATERS OF UPPER TALARIK CREEK
 1.04603 -0.4215    5.71
 0.30000      2.     1.5      0.     0.4     0.6
 0.30000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         59.659 STREAM GEOMETRY NODE UTSG1
 1.04575 -0.8747    6.51
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         56.483 STREAM GEOMETRY NODE UTSG2
 1.04555  0.9177    7.08
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         55.395 STREAM GEOMETRY NODE UTSG3
 1.04562 -1.5211    7.70
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         51.855 STREAM GEOMETRY NODE UTSG4
 1.04561 -0.6075    9.98
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         45.914 STREAM GEOMETRY NODE UTSG5
 1.04559 -0.0601   15.12
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

TRIBUTARY 135   H         46.371 HYDROLOGY GAGE UT135A
 1.04517  1.1503    7.01
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   J         45.050 CONFLUENCE WITH TRIBUTARY UT 1.135
 1.04513 -0.0601   15.12
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         38.357 STREAM GEOMETRY NODE UTSG6
 1.04456  0.0334   18.63
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         35.821 STREAM GEOMETRY NODE UTSG7
 1.04424  1.1909   19.04
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         32.949 STREAM GEOMETRY NODE UTSG8
 1.04410 -0.6804   19.34
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         32.338 STREAM GEOMETRY NODE UTSG9
 1.04403  0.5945   19.98
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         27.149 STREAM GEOMETRY NODE UTSG10
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 1.04356  1.4275   20.85
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         25.036 STREAM GEOMETRY NODE UTSG11
 1.04353  0.5953   22.07
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

TRIBUTARY 119   H         25.057 HYDROLOGY GAGE UT119A
 1.04355 -1.0000    5.94
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   J         24.738 CONFLUENCE WITH TRIBUTARY UT 1.119
 1.04351  0.5953   22.07
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         20.811 STREAM GEOMETRY NODE UTSG12
 1.04309 -0.3114   23.36
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         18.814 STREAM GEOMETRY NODE UTSG13
 1.04282  0.5178   24.49
 0.20000      2.     1.5      0.     0.4     0.6
 0.20000      2.     1.5      0.     0.4     0.6

UPPER TALARIK   C         14.599 STREAM GEOMETRY NODE UTSG14
 1.04230 -0.9630   26.46
 0.10000      4.     3.0     0.5     0.4     0.6
 0.10000      4.     3.0     0.5     0.4     0.6

UPPER TALARIK   C          9.121 STREAM GEOMETRY NODE UTSG15
 1.04193 -0.3675   29.94
 0.10000      4.     3.0     0.5     0.4     0.6
 0.10000      4.     3.0     0.5     0.4     0.6
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ATTACHMENT 12

SNTEMP Output Files
Upper Talarik Creek

JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
PEBBLE PROJECT

VERIFICATION TABLE REQUESTS

TABLE NMB.	TABLES	T/F
1	STREAM GEOMETRY AFTER 'M' NODES MERGED	T
2	STREAM GEOMETRY AFTER '0' NODES MERGED	T
3	STREAM GEOMETRY AFTER HYDROLOGY NODES MERGED	T
4	HYDROLOGY WITH MISSING FLOWS ADDED	T
5	HYDROLOGY WITH LATERAL FLOWS ADDED	T
6	COMPOSITE-STR. GEOM., HYDR., & MET. MERGED	T
7	WATER TEMPERATURE REGRESSION STATISTICS	T
8	WATER TEMPERATURE DATA	T
9	VALIDATION STATISTICS	T
10	JOB CONTROL FILE	T

NODE INFORMATION
NETWORK NODES

	B	C	D	E	A	J	K	M	O	P	Q	R	S	T	V
SPATIAL OUTPUT REQUESTS	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
NUMBER	2	15	0	1	3	2	0	0	2	0	9	0	0	0	0

NUMBER OF SKELETON SUBNETWORK NODES (H,B,T,J,S,E) = 10

NUMBER OF STREAM GEOMETRY SUBNETWORK NODES (H,J,S,C) = 25

NUMBER OF HYDROLOGY SUBNETWORK NODES (Q,D,P,R,V,K) = 19

NUMBER OF COMPOSITE NETWORK NODES = 0

NUMBER OF NODES REQUIRING REGRESSION ANALYSIS = 0

NUMBER OF STUDY SUBNETWORK NODES (H,B,T,J,S,E,O) = 10

```
MISC. CONTROL FLAGS        T/F
--------------------

HYDROLOGY WARNING MESSAGE   T
 SUPPRESSION FLAG

REGRESSION NEED FLAG        T

SHADE DATA AVAILABLE        T

GLOBAL SHADE MODE           T


                                  TEMPORAL INFORMATION
                                  --------------------

                                        YEARLY
                                         ------

NUMBER OF YEARS OF HISTORICAL DATA =    1          FIRST YEAR OF HISTORICAL DATA=   0

NUMBER OF YEARS OF SYNTHETIC DATA =    0

STARTING YEAR SEQUENCE NUMBER OF OUTPUT =    1     LAST YEAR SEQUENCE NUMBER OF OUTPUT =   1


                                    BY TIME PERIOD
                                      --------------

FIRST TIME PERIOD SEQUENCE NUMBER OF OUTPUT =    1    LAST TIME PERIOD SEQUENCE NUMBER OF OUTPUT = 142

STARTING TIME PERIOD SEQUENCE NUMBER =    0       LAST TIME PERIOD SEQUENCE NUMBER FOR =    0
 FOR AIR TEMPERATURE CORRECTION                     AIR TEMPERATURE CORRECTION

NUMBER OF TIME PERIODS PER YEAR =  142


USER SUPPLIED EVAPORATION FACTORS
---------------------------------

    EFA =  0.0000 (-)

    EFB =  0.0000 (1/MPS)

    EFC =  0.0000 (1/SQ.RT.(MPS))


USER SUPPLIED BOWEN RATIO
-------------------------

   BOWEN RATIO=   0.0000 (-)
```

GLOBAL CALIBRATION PARAMETERS

AIR TEMPERATURE CALIBRATION CONSTANT = 0.000 (C)

AIR TEMPERATURE CALIBRATION COEFFICIENT = 0.0000 (-)

WIND SPEED CALIBRATION CONSTANT = 0.000 (MPS)

WIND SPEED CALIBRATION COEFFICIENT = 0.0000 (-)

HUMIDITY CALIBRATION CONSTANT = 0.000 (DEC. OF RH)

HUMIDITY CALIBRATION COEFFICIENT = 0.0000 (-)

SUNSHINE CALIBRATION CONSTANT = 0.000 (DEC. OF S/SO)

SUNSHINE CALIBRATION COEFFICIENT = 0.0000 (-)

SOLAR CALIBRATION CONSTANT = 0.000 (J/SQ*M/S)

SOLAR CALIBRATION COEFFICIENT = 0.0000 (-)

AIR TEMPERATURE CORRECTION FACTORS

1ST ELEVATION = 0.000 (M)

1ST FACTOR = 0.0000 (C/M)

2ND ELEVATION = 0.000 (M)

2ND FACTOR = 0.0000 (C/M)

3RD ELEVATION = 0.000 (M)

3RD FACTOR = 0.0000 (C/M)

4TH ELEVATION = 0.000 (M)

4TH FACTOR = 0.0000 (C/M)

5TH ELEVATION = 0.000 (M)

5TH FACTOR = 0.0000 (C/M)

MAXIMUM DAILY
AIR TEMPERATURE REGRESSION COEFFICIENTS

A0 = 0.000 (C)

A1 = 0.0000 (C PER HSX)

A2 = 0.000 (C PER RH)

A3 = 0.0000 (C PER S/SO)

STREAM SPACIAL OUTPUT REQUEST

NAME	FROM (KM)	TO (KM)
UPPER TALARIK	61.4	0.0
TRIBUTARY 135	46.4	45.0
TRIBUTARY 119	25.1	24.7
STR. NAME # 4	0.0	0.0
STR. NAME # 5	0.0	0.0
STR. NAME # 6	0.0	0.0
STR. NAME # 7	0.0	0.0
STR. NAME # 8	0.0	0.0
STR. NAME # 9	0.0	0.0
STR. NAME # 10	0.0	0.0

STREAM NETWORK FILES	NAMES
TIME PERIOD	UTTME.DAT
METEOROLOGY	UTMET.DAT
SKELETON NETWORK	UTSKL.DAT
STREAM GEOMETRY	UTSTR.DAT

STUDY	UTSTD.DAT
HYDROLOGY DATA	UTHDR.DAT
HYDROLOGY NODE	UTHYD.DAT
SHADE	UTSHD.DAT

```
**************************************** TABLE I: STREAM GEOMETRY AFTER 'M' NODES MERGED ****************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDCHG' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1) ADD'M' NODES TO THE STREAM GEOMETRY ('KGNSTRG') FILE WHEN THE ELEVATION BETWEEN THE UPSTREAM & DOWNSTREAM SUBREACH
     NODES WOULD OTHERWISE EXCEED 300 METERS;
      (2) CALCULATE THE AVERAGE LATITUDES & ELEVATIONS FOR THE REACH;
      (3) CALCULATE THE STREAM GRADIENT & STREAMBED TEMPERATURE;
      (4) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF 'KSTRMGM'.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     10.     25.     19.     10.      0.      0.
      2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
UPPER TALARIK       61.4     0.0
TRIBUTARY 135       46.4    45.0
TRIBUTARY 119       25.1    24.7
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	-STREAM WIDTH- EXP. (----)	----SHADE---- MIN. (DEC)	----SHADE---- MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	UPPER TALARIK	H	62.4	1.04589	315.	0.040	0.01755	3.92	0.1549	0.0000	0.0000	0.29	1.65
2	UPPER TALARIK	C	59.7	1.04565	270.	0.040	0.01302	6.84	0.1549	0.0000	0.0000	0.59	1.65
3	UPPER TALARIK	C	56.5	1.04558	247.	0.040	0.00565	7.08	0.1549	0.0000	0.0000	0.74	1.65
4	UPPER TALARIK	C	55.4	1.04561	236.	0.040	0.00399	7.40	0.1549	0.0000	0.0000	0.81	1.65
5	UPPER TALARIK	C	51.9	1.04541	220.	0.040	0.00329	8.92	0.1549	0.0000	0.0000	0.92	1.65
6	UPPER TALARIK	C	45.9	1.04517	209.	0.040	0.00243	9.37	0.1549	0.0000	0.0000	0.99	1.65
7	UPPER TALARIK	B	45.0										
8	TRIBUTARY 135	H	46.4	1.04515	208.	0.040	0.00066	5.05	0.1549	0.0000	0.0000	0.99	1.65
9	TRIBUTARY 135	T	45.0										
10	UPPER TALARIK	J	45.0	1.04484	197.	0.040	0.00310	9.37	0.1549	0.0000	0.0000	1.06	1.65
11	UPPER TALARIK	C	38.4	1.04440	180.	0.040	0.00509	11.28	0.1549	0.0000	0.0000	1.18	1.65
12	UPPER TALARIK	C	35.8	1.04417	167.	0.040	0.00477	11.39	0.1549	0.0000	0.0000	1.26	1.65
13	UPPER TALARIK	C	32.9	1.04406	159.	0.040	0.00574	11.49	0.1549	0.0000	0.0000	1.32	1.65
14	UPPER TALARIK	C	32.3	1.04379	146.	0.040	0.00408	11.75	0.1549	0.0000	0.0000	1.40	1.65
15	UPPER TALARIK	C	27.1	1.04355	132.	0.040	0.00308	12.10	0.1549	0.0000	0.0000	1.49	1.65
16	UPPER TALARIK	C	25.0	1.04352	129.	0.040	0.00258	12.61	0.1549	0.0000	0.0000	1.51	1.65
17	UPPER TALARIK	B	24.7										
18	TRIBUTARY 119	H	25.1	1.04353	132.	0.040	0.02119	5.94	0.0000	0.0000	0.0000	1.50	1.65
19	TRIBUTARY 119	T	24.7										
20	UPPER TALARIK	J	24.7	1.04330	118.	0.040	0.00520	12.61	0.1549	0.0000	0.0000	1.58	1.65
21	UPPER TALARIK	C	20.8	1.04295	102.	0.040	0.00543	13.23	0.1549	0.0000	0.0000	1.69	1.65
22	UPPER TALARIK	C	18.8	1.04256	86.	0.040	0.00533	13.76	0.1549	0.0000	0.0000	1.80	1.65
23	UPPER TALARIK	C	14.6	1.04211	60.	0.040	0.00543	14.69	0.1549	0.0000	0.0000	1.97	1.65
24	UPPER TALARIK	C	9.1	1.04145	28.	0.040	0.00374	16.35	0.1549	0.0000	0.0000	2.18	1.65
25	UPPER TALARIK	E	0.0										

NORMAL COMPLETION OF 'ADDCHG'.

```
****************************************** TABLE II: STREAM GEOMETRY AFTER 'O' NODES MERGED ******************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDOUT' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1)MERGE THE OUTPUT ('O') NODES FROM THE STUDY ('KGNSTDY') FILE WITH THE STREAM GEOMETRY ('KSTRMGM') FILE;
      (2) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF THE 'KSTRMGM' FILE.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                    FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     10.     25.     19.     10.      0.      0.
      2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
UPPER TALARIK       61.4     0.0
TRIBUTARY 135       46.4    45.0
TRIBUTARY 119       25.1    24.7
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	-STREAM WIDTH- EXP. (----)	----SHADE---- MIN. (DEC)	----SHADE---- MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	UPPER TALARIK	H	62.4	1.04589	315.	0.040	0.01755	3.92	0.1549	0.0000	0.0000	0.29	1.65
2	UPPER TALARIK	C	59.7	1.04565	270.	0.040	0.01302	6.84	0.1549	0.0000	0.0000	0.59	1.65
3	UPPER TALARIK	C	56.5	1.04558	247.	0.040	0.00565	7.08	0.1549	0.0000	0.0000	0.74	1.65
4	UPPER TALARIK	C	55.4	1.04561	236.	0.040	0.00399	7.40	0.1549	0.0000	0.0000	0.81	1.65
5	UPPER TALARIK	C	51.9	1.04541	220.	0.040	0.00329	8.92	0.1549	0.0000	0.0000	0.92	1.65
6	UPPER TALARIK	C	45.9	1.04517	209.	0.040	0.00243	9.37	0.1549	0.0000	0.0000	0.99	1.65
7	UPPER TALARIK	B	45.0	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
8	TRIBUTARY 135	H	46.4	1.04515	208.	0.040	0.00066	5.05	0.1549	0.0000	0.0000	0.99	1.65
9	TRIBUTARY 135	T	45.0	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
10	UPPER TALARIK	J	45.0	1.04484	197.	0.040	0.00310	9.37	0.1549	0.0000	0.0000	1.06	1.65
11	UPPER TALARIK	C	38.4	1.04440	180.	0.040	0.00509	11.28	0.1549	0.0000	0.0000	1.18	1.65
12	UPPER TALARIK	C	35.8	1.04417	167.	0.040	0.00477	11.39	0.1549	0.0000	0.0000	1.26	1.65
13	UPPER TALARIK	C	32.9	1.04406	159.	0.040	0.00574	11.49	0.1549	0.0000	0.0000	1.32	1.65
14	UPPER TALARIK	C	32.3	1.04379	146.	0.040	0.00408	11.75	0.1549	0.0000	0.0000	1.40	1.65
15	UPPER TALARIK	C	27.1	1.04355	132.	0.040	0.00308	12.10	0.1549	0.0000	0.0000	1.49	1.65
16	UPPER TALARIK	C	25.0	1.04352	129.	0.040	0.00258	12.61	0.1549	0.0000	0.0000	1.51	1.65
17	UPPER TALARIK	B	24.7	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
18	TRIBUTARY 119	H	25.1	1.04353	132.	0.040	0.02119	5.94	0.0000	0.0000	0.0000	1.50	1.65
19	TRIBUTARY 119	T	24.7	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00
20	UPPER TALARIK	J	24.7	1.04330	118.	0.040	0.00520	12.61	0.1549	0.0000	0.0000	1.58	1.65
21	UPPER TALARIK	C	20.8	1.04295	102.	0.040	0.00543	13.23	0.1549	0.0000	0.0000	1.69	1.65
22	UPPER TALARIK	C	18.8	1.04256	86.	0.040	0.00533	13.76	0.1549	0.0000	0.0000	1.80	1.65
23	UPPER TALARIK	C	14.6	1.04211	60.	0.040	0.00543	14.69	0.1549	0.0000	0.0000	1.97	1.65
24	UPPER TALARIK	C	9.1	1.04145	28.	0.040	0.00374	16.35	0.1549	0.0000	0.0000	2.18	1.65
25	UPPER TALARIK	E	0.0	0.00000	0.	0.000	0.00000	0.00	0.0000	0.0000	0.0000	0.00	0.00

NORMAL COMPLETION OF 'ADDOUT'.

```
********************************** TABLE III: STREAM GEOMETRY AFTER HYDROLOGY NODES MERGED ************************************
   BEGIN STREAM GEOMETRY VERIFICATION OF 'ADDHYD' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
      (1)MERGE THE HYDROLOGY ('D', 'K', 'P', 'Q', 'R', AND 'V') NODES FROM THE HYDROLOGY ('KGNSHDR') FILE WITH THE STREAM
          GEOMETRY ('KSTRMGM') FILE;
      (2) CREATE THE UNFORMATTED 'KSTRMGM' FILE.
THIS VERIFICATION IS THE FORMATTED VERSION OF THE 'KSTRMGM' FILE.

                           ** JOB CONTROL DATA **
JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
PEBBLE PROJECT
TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTT
      1.      0.      0.    142.     10.     25.     19.     10.      0.      0.
      2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
      9.      0.      0.      0.      0.      1.      1.      1.    142.      0.
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
UPPER TALARIK       61.4     0.0
TRIBUTARY 135       46.4    45.0
TRIBUTARY 119       25.1    24.7
 STR. NAME #   4     0.0     0.0
 STR. NAME #   5     0.0     0.0
 STR. NAME #   6     0.0     0.0
 STR. NAME #   7     0.0     0.0
 STR. NAME #   8     0.0     0.0
 STR. NAME #   9     0.0     0.0
 STR. NAME #  10     0.0     0.0
```

PAGE NO. 1

NODE NO.	----STREAM----- NAME	NODE TYPE	DIST. (KM)	AVERAGE LAT. (RAD)	AVERAGE ELEV. (M)	N (----)	STR. GRAD. (M/M)	-STREAM WIDTH- COEF. (M)	EXP. (----)	----SHADE---- MIN. (DEC)	MAX. (DEC)	GRND. TEMP. (C)	THERM. GRAD. (J/M2/S/C)
1	UPPER TALARIK	H	62.4	1.04589	315.	0.040	0.01755	3.92	0.1549	0.0000	0.0000	0.29	1.65
2	UPPER TALARIK	Q	60.0	1.04589	315.	0.040	0.01755	3.92	0.1549	0.0000	0.0000	0.29	1.65
3	UPPER TALARIK	C	59.7	1.04565	270.	0.040	0.01302	6.84	0.1549	0.0000	0.0000	0.59	1.65
4	UPPER TALARIK	C	56.5	1.04558	247.	0.040	0.00565	7.08	0.1549	0.0000	0.0000	0.74	1.65
5	UPPER TALARIK	C	55.4	1.04561	236.	0.040	0.00399	7.40	0.1549	0.0000	0.0000	0.81	1.65
6	UPPER TALARIK	C	51.9	1.04541	220.	0.040	0.00329	8.92	0.1549	0.0000	0.0000	0.92	1.65
7	UPPER TALARIK	Q	51.6	1.04541	220.	0.040	0.00329	8.92	0.1549	0.0000	0.0000	0.92	1.65
8	UPPER TALARIK	C	45.9	1.04517	209.	0.040	0.00243	9.37	0.1549	0.0000	0.0000	0.99	1.65
9	UPPER TALARIK	B	45.0										
10	TRIBUTARY 135	H	46.4	1.04515	208.	0.040	0.00066	5.05	0.1549	0.0000	0.0000	0.99	1.65
11	TRIBUTARY 135	T	45.0										
12	UPPER TALARIK	J	45.0	1.04484	197.	0.040	0.00310	9.37	0.1549	0.0000	0.0000	1.06	1.65
13	UPPER TALARIK	Q	44.6	1.04484	197.	0.040	0.00310	9.37	0.1549	0.0000	0.0000	1.06	1.65
14	UPPER TALARIK	C	38.4	1.04440	180.	0.040	0.00509	11.28	0.1549	0.0000	0.0000	1.18	1.65
15	UPPER TALARIK	Q	37.6	1.04440	180.	0.040	0.00509	11.28	0.1549	0.0000	0.0000	1.18	1.65
16	UPPER TALARIK	C	35.8	1.04417	167.	0.040	0.00477	11.39	0.1549	0.0000	0.0000	1.26	1.65
17	UPPER TALARIK	C	32.9	1.04406	159.	0.040	0.00574	11.49	0.1549	0.0000	0.0000	1.32	1.65
18	UPPER TALARIK	C	32.3	1.04379	146.	0.040	0.00408	11.75	0.1549	0.0000	0.0000	1.40	1.65
19	UPPER TALARIK	Q	29.3	1.04379	146.	0.040	0.00408	11.75	0.1549	0.0000	0.0000	1.40	1.65
20	UPPER TALARIK	C	27.1	1.04355	132.	0.040	0.00308	12.10	0.1549	0.0000	0.0000	1.49	1.65
21	UPPER TALARIK	C	25.0	1.04352	129.	0.040	0.00258	12.61	0.1549	0.0000	0.0000	1.51	1.65
22	UPPER TALARIK	B	24.7										
23	TRIBUTARY 119	H	25.1	1.04353	132.	0.040	0.02119	5.94	0.0000	0.0000	0.0000	1.50	1.65
24	TRIBUTARY 119	T	24.7										
25	UPPER TALARIK	J	24.7	1.04330	118.	0.040	0.00520	12.61	0.1549	0.0000	0.0000	1.58	1.65
26	UPPER TALARIK	Q	24.5	1.04330	118.	0.040	0.00520	12.61	0.1549	0.0000	0.0000	1.58	1.65
27	UPPER TALARIK	C	20.8	1.04295	102.	0.040	0.00543	13.23	0.1549	0.0000	0.0000	1.69	1.65
28	UPPER TALARIK	C	18.8	1.04256	86.	0.040	0.00533	13.76	0.1549	0.0000	0.0000	1.80	1.65
29	UPPER TALARIK	C	14.6	1.04211	60.	0.040	0.00543	14.69	0.1549	0.0000	0.0000	1.97	1.65
30	UPPER TALARIK	Q	14.4	1.04211	60.	0.040	0.00543	14.69	0.1549	0.0000	0.0000	1.97	1.65
31	UPPER TALARIK	Q	9.8	1.04211	60.	0.040	0.00543	14.69	0.1549	0.0000	0.0000	1.97	1.65
32	UPPER TALARIK	C	9.1	1.04145	28.	0.040	0.00374	16.35	0.1549	0.0000	0.0000	2.18	1.65
33	UPPER TALARIK	Q	2.2	1.04145	28.	0.040	0.00374	16.35	0.1549	0.0000	0.0000	2.18	1.65
34	UPPER TALARIK	E	0.0										

NORMAL COMPLETION OF 'ADDHYD'.

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****************************************** TABLE IV: HYDROLOGY WITH MISSING FLOWS ADDED ******************************************
    BEGIN HYDROLOGY VERIFICATION OF 'HYDFIL' PROGRAM. THE PURPOSE OF THIS PROGRAM IS:
       (1) FILL IN IS HISTORICAL FLOWS WITH A 'BEST' ESTIMATE BASED ON AVAILABLE DATA;
       (2) FLAG ANY MISSING, BUT NECESSARY, INITIAL WATER TEMPERATURES WITH A '-1.';
       (3) FILL IN ANY MISSING LATERAL INFLOW WATER TEMPERATURES WITH THE LOCAL MEAN ANNUAL AIR TEMPERATURES;
       (4) CREATE THE UNFORMATTED 'KHYDR2&3' FILES.
 THIS VERIFICATION IS A FORMATTED VERSIONOF THE 'KHYDR4' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTT
       1.      0.      0.    142.     10.     25.     19.     10.     34.      0.
       2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
 UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
 UPPER TALARIK       61.4     0.0
 TRIBUTARY 135       46.4    45.0
 TRIBUTARY 119       25.1    24.7
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
```

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
1	UPPER TALARIK	H	62.4	2007	17-May	0.104	3.29	4.58	1	0.104	0.000:	HEADWATERS OF UPPER TALARIK C
					18-May	0.099	3.20	4.55	1	0.099	0.000:	REEK
					19-May	0.089	3.24	4.58	1	0.089	0.000:	
					20-May	0.087	3.23	4.70	1	0.087	0.000:	
					21-May	0.081	3.30	4.94	1	0.081	0.000:	
					22-May	0.083	3.65	5.25	1	0.083	0.000:	
					23-May	0.081	3.81	5.46	1	0.081	0.000:	
					24-May	0.086	3.86	5.52	1	0.086	0.000:	
					25-May	0.093	3.72	5.49	1	0.093	0.000:	
					26-May	0.089	3.77	5.47	1	0.089	0.000:	
					27-May	0.083	3.86	5.53	1	0.083	0.000:	
					28-May	0.080	3.81	5.65	1	0.080	0.000:	
					29-May	0.076	3.67	5.78	1	0.076	0.000:	
					30-May	0.074	3.81	5.92	1	0.074	0.000:	
					31-May	0.073	3.85	6.02	1	0.073	0.000:	
					1-Jun	0.074	3.82	6.06	1	0.074	0.000:	
					2-Jun	0.072	3.83	6.11	1	0.072	0.000:	
					3-Jun	0.072	3.88	6.23	1	0.072	0.000:	
					4-Jun	0.074	3.97	6.36	1	0.074	0.000:	
					5-Jun	0.084	4.16	6.47	1	0.084	0.000:	
					6-Jun	0.078	4.18	6.55	1	0.078	0.000:	
					7-Jun	0.074	4.02	6.63	1	0.074	0.000:	
					8-Jun	0.071	3.88	6.74	1	0.071	0.000:	
					9-Jun	0.069	3.72	7.00	1	0.069	0.000:	
					10-Jun	0.068	3.90	7.48	1	0.068	0.000:	
					11-Jun	0.067	4.47	8.04	1	0.067	0.000:	
					12-Jun	0.067	4.44	8.31	1	0.067	0.000:	
					13-Jun	0.066	3.96	8.24	1	0.066	0.000:	
					14-Jun	0.065	3.48	8.15	1	0.065	0.000:	
					15-Jun	0.065	3.13	8.18	1	0.065	0.000:	
					16-Jun	0.064	3.70	8.37	1	0.064	0.000:	
					17-Jun	0.068	4.29	8.51	1	0.068	0.000:	
					18-Jun	0.066	3.84	8.61	1	0.066	0.000:	
					19-Jun	0.064	2.73	8.89	1	0.064	0.000:	
					20-Jun	0.061	2.55	9.41	1	0.061	0.000:	
					21-Jun	0.060	3.38	9.78	1	0.060	0.000:	
					22-Jun	0.062	4.22	9.62	1	0.062	0.000:	
					23-Jun	0.098	4.42	8.92	1	0.098	0.000:	
					24-Jun	0.116	4.50	8.03	1	0.116	0.000:	
					25-Jun	0.082	4.14	7.32	1	0.082	0.000:	
					26-Jun	0.071	3.42	7.01	1	0.071	0.000:	
					27-Jun	0.066	3.45	7.23	1	0.066	0.000:	
					28-Jun	0.065	3.85	7.71	1	0.065	0.000:	
					29-Jun	0.064	3.63	8.14	1	0.064	0.000:	
					30-Jun	0.063	3.59	8.51	1	0.063	0.000:	
					1-Jul	0.062	3.47	8.76	1	0.062	0.000:	

2-Jul	0.061	3.27	8.93	1	0.061	0.000:
3-Jul	0.061	3.63	9.04	1	0.061	0.000:
4-Jul	0.084	4.22	8.97	1	0.084	0.000:
5-Jul	0.074	4.11	8.73	1	0.074	0.000:
6-Jul	0.070	3.91	8.50	1	0.070	0.000:
7-Jul	0.067	3.68	8.40	1	0.067	0.000:
8-Jul	0.069	3.73	8.48	1	0.069	0.000:
9-Jul	0.067	3.61	8.70	1	0.067	0.000:
10-Jul	0.065	3.38	9.03	1	0.065	0.000:
11-Jul	0.063	3.40	9.39	1	0.063	0.000:
12-Jul	0.064	3.87	9.63	1	0.064	0.000:
13-Jul	0.073	4.24	9.59	1	0.073	0.000:
14-Jul	0.070	4.13	9.34	1	0.070	0.000:
15-Jul	0.067	3.82	9.12	1	0.067	0.000:
16-Jul	0.064	3.26	9.09	1	0.064	0.000:
17-Jul	0.062	2.99	9.31	1	0.062	0.000:
18-Jul	0.062	3.47	9.65	1	0.062	0.000:
19-Jul	0.061	3.57	9.82	1	0.061	0.000:
20-Jul	0.073	3.89	9.90	1	0.073	0.000:
21-Jul	0.075	4.46	9.89	1	0.075	0.000:
22-Jul	0.072	4.54	9.55	1	0.072	0.000:
23-Jul	0.099	4.54	8.90	1	0.099	0.000:
24-Jul	0.089	4.37	8.30	1	0.089	0.000:
25-Jul	0.075	4.01	8.03	1	0.075	0.000:
26-Jul	0.067	3.33	8.26	1	0.067	0.000:
27-Jul	0.065	2.81	9.11	1	0.065	0.000:
28-Jul	0.067	3.04	10.47	1	0.067	0.000:
29-Jul	0.064	3.42	11.99	1	0.064	0.000:
30-Jul	0.064	3.78	13.28	1	0.064	0.000:
31-Jul	0.064	3.79	14.03	1	0.064	0.000:
1-Aug	0.064	3.51	14.02	1	0.064	0.000:
2-Aug	0.065	3.30	13.29	1	0.065	0.000:
3-Aug	0.066	3.75	12.21	1	0.066	0.000:
4-Aug	0.102	4.65	11.16	1	0.102	0.000:
5-Aug	0.097	4.86	10.33	1	0.097	0.000:
6-Aug	0.087	4.47	9.75	1	0.087	0.000:
7-Aug	0.072	3.84	9.33	1	0.072	0.000:
8-Aug	0.067	3.37	8.97	1	0.067	0.000:
9-Aug	0.064	2.92	8.58	1	0.064	0.000:
10-Aug	0.063	2.71	8.28	1	0.063	0.000:
11-Aug	0.063	2.72	8.21	1	0.063	0.000:
12-Aug	0.064	2.34	8.47	1	0.064	0.000:
13-Aug	0.064	2.60	9.22	1	0.064	0.000:
14-Aug	0.068	3.97	10.29	1	0.068	0.000:
15-Aug	0.072	4.27	11.11	1	0.072	0.000:
16-Aug	0.068	3.93	11.68	1	0.068	0.000:
17-Aug	0.065	3.61	12.12	1	0.065	0.000:
18-Aug	0.067	3.25	12.24	1	0.067	0.000:
19-Aug	0.065	3.20	11.98	1	0.065	0.000:
20-Aug	0.071	3.97	11.55	1	0.071	0.000:
21-Aug	0.073	4.37	10.92	1	0.073	0.000:

22-Aug	0.077	4.53	10.17	1	0.077	0.000:
23-Aug	0.086	4.62	9.47	1	0.086	0.000:
24-Aug	0.072	4.28	8.96	1	0.072	0.000:
25-Aug	0.070	3.95	8.63	1	0.070	0.000:
26-Aug	0.065	3.52	8.37	1	0.065	0.000:
27-Aug	0.064	3.25	8.21	1	0.064	0.000:
28-Aug	0.062	3.00	8.25	1	0.062	0.000:
29-Aug	0.061	3.10	8.56	1	0.061	0.000:
30-Aug	0.061	3.44	8.99	1	0.061	0.000:
31-Aug	0.061	3.60	9.29	1	0.061	0.000:
1-Sep	0.061	3.78	9.42	1	0.061	0.000:
2-Sep	0.061	4.07	9.40	1	0.061	0.000:
3-Sep	0.066	4.21	9.26	1	0.066	0.000:
4-Sep	0.068	4.16	9.07	1	0.068	0.000:
5-Sep	0.065	4.06	8.91	1	0.065	0.000:
6-Sep	0.067	4.19	8.79	1	0.067	0.000:
7-Sep	0.079	4.73	8.67	1	0.079	0.000:
8-Sep	0.164	5.89	8.52	1	0.164	0.000:
9-Sep	0.129	5.98	8.37	1	0.129	0.000:
10-Sep	0.100	5.22	8.23	1	0.100	0.000:
11-Sep	0.091	5.05	8.09	1	0.091	0.000:
12-Sep	0.174	5.88	7.90	1	0.174	0.000:
13-Sep	0.133	6.01	7.63	1	0.133	0.000:
14-Sep	0.154	5.57	7.30	1	0.154	0.000:
15-Sep	0.112	4.88	7.00	1	0.112	0.000:
16-Sep	0.099	4.54	6.82	1	0.099	0.000:
17-Sep	0.096	4.54	6.78	1	0.096	0.000:
18-Sep	0.128	4.99	6.80	1	0.128	0.000:
19-Sep	0.249	5.88	6.83	1	0.249	0.000:
20-Sep	0.220	6.00	6.78	1	0.220	0.000:
21-Sep	0.194	5.55	6.65	1	0.194	0.000:
22-Sep	0.160	4.96	6.50	1	0.160	0.000:
23-Sep	0.189	4.91	6.38	1	0.189	0.000:
24-Sep	0.178	4.93	6.28	1	0.178	0.000:
25-Sep	0.204	4.80	6.18	1	0.204	0.000:
26-Sep	0.179	4.59	6.07	1	0.179	0.000:
27-Sep	0.164	4.37	5.96	1	0.164	0.000:
28-Sep	0.226	4.30	5.85	1	0.226	0.000:
29-Sep	0.192	4.26	5.76	1	0.192	0.000:
30-Sep	0.219	4.36	5.66	1	0.219	0.000:
1-Oct	0.213	4.31	5.50	1	0.213	0.000:
2-Oct	0.185	4.02	5.23	1	0.185	0.000:
3-Oct	0.170	3.64	4.82	1	0.170	0.000:
4-Oct	0.169	3.31	4.29	1	0.169	0.000:
5-Oct	0.369	2.75	3.69	1	0.369	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
2	UPPER TALARIK	Q	60.0	2007	17-May	0.283		4.58	1	0.283	0.000:	HYDROLOGY GAGE UT100E
					18-May	0.270		4.55	1	0.270	0.000:	
					19-May	0.243		4.58	1	0.243	0.000:	
					20-May	0.236		4.70	1	0.236	0.000:	
					21-May	0.219		4.94	1	0.219	0.000:	
					22-May	0.226		5.25	1	0.226	0.000:	
					23-May	0.221		5.46	1	0.221	0.000:	
					24-May	0.234		5.52	1	0.234	0.000:	
					25-May	0.252		5.49	1	0.252	0.000:	
					26-May	0.243		5.47	1	0.243	0.000:	
					27-May	0.225		5.53	1	0.225	0.000:	
					28-May	0.217		5.65	1	0.217	0.000:	
					29-May	0.206		5.78	1	0.206	0.000:	
					30-May	0.200		5.92	1	0.200	0.000:	
					31-May	0.198		6.02	1	0.198	0.000:	
					1-Jun	0.200		6.06	1	0.200	0.000:	
					2-Jun	0.196		6.11	1	0.196	0.000:	
					3-Jun	0.195		6.23	1	0.195	0.000:	
					4-Jun	0.200		6.36	1	0.200	0.000:	
					5-Jun	0.228		6.47	1	0.228	0.000:	
					6-Jun	0.211		6.55	1	0.211	0.000:	
					7-Jun	0.200		6.63	1	0.200	0.000:	
					8-Jun	0.192		6.74	1	0.192	0.000:	
					9-Jun	0.187		7.00	1	0.187	0.000:	
					10-Jun	0.185		7.48	1	0.185	0.000:	
					11-Jun	0.182		8.04	1	0.182	0.000:	
					12-Jun	0.182		8.31	1	0.182	0.000:	
					13-Jun	0.179		8.24	1	0.179	0.000:	
					14-Jun	0.176		8.15	1	0.176	0.000:	
					15-Jun	0.176		8.18	1	0.176	0.000:	
					16-Jun	0.174		8.37	1	0.174	0.000:	
					17-Jun	0.185		8.51	1	0.185	0.000:	
					18-Jun	0.178		8.61	1	0.178	0.000:	
					19-Jun	0.173		8.89	1	0.173	0.000:	
					20-Jun	0.166		9.41	1	0.166	0.000:	
					21-Jun	0.164		9.78	1	0.164	0.000:	
					22-Jun	0.168		9.62	1	0.168	0.000:	
					23-Jun	0.265		8.92	1	0.265	0.000:	
					24-Jun	0.315		8.03	1	0.315	0.000:	
					25-Jun	0.223		7.32	1	0.223	0.000:	
					26-Jun	0.194		7.01	1	0.194	0.000:	
					27-Jun	0.180		7.23	1	0.180	0.000:	
					28-Jun	0.177		7.71	1	0.177	0.000:	
					29-Jun	0.174		8.14	1	0.174	0.000:	
					30-Jun	0.171		8.51	1	0.171	0.000:	
					1-Jul	0.169		8.76	1	0.169	0.000:	

2-Jul	0.167	8.93	1	0.167	0.000:
3-Jul	0.166	9.04	1	0.166	0.000:
4-Jul	0.228	8.97	1	0.228	0.000:
5-Jul	0.201	8.73	1	0.201	0.000:
6-Jul	0.189	8.50	1	0.189	0.000:
7-Jul	0.181	8.40	1	0.181	0.000:
8-Jul	0.188	8.48	1	0.188	0.000:
9-Jul	0.181	8.70	1	0.181	0.000:
10-Jul	0.176	9.03	1	0.176	0.000:
11-Jul	0.171	9.39	1	0.171	0.000:
12-Jul	0.175	9.63	1	0.175	0.000:
13-Jul	0.198	9.59	1	0.198	0.000:
14-Jul	0.189	9.34	1	0.189	0.000:
15-Jul	0.181	9.12	1	0.181	0.000:
16-Jul	0.174	9.09	1	0.174	0.000:
17-Jul	0.169	9.31	1	0.169	0.000:
18-Jul	0.168	9.65	1	0.168	0.000:
19-Jul	0.167	9.82	1	0.167	0.000:
20-Jul	0.199	9.90	1	0.199	0.000:
21-Jul	0.205	9.89	1	0.205	0.000:
22-Jul	0.195	9.55	1	0.195	0.000:
23-Jul	0.268	8.90	1	0.268	0.000:
24-Jul	0.242	8.30	1	0.242	0.000:
25-Jul	0.204	8.03	1	0.204	0.000:
26-Jul	0.182	8.26	1	0.182	0.000:
27-Jul	0.177	9.11	1	0.177	0.000:
28-Jul	0.181	10.47	1	0.181	0.000:
29-Jul	0.174	11.99	1	0.174	0.000:
30-Jul	0.173	13.28	1	0.173	0.000:
31-Jul	0.174	14.03	1	0.174	0.000:
1-Aug	0.174	14.02	1	0.174	0.000:
2-Aug	0.177	13.29	1	0.177	0.000:
3-Aug	0.180	12.21	1	0.180	0.000:
4-Aug	0.278	11.16	1	0.278	0.000:
5-Aug	0.263	10.33	1	0.263	0.000:
6-Aug	0.236	9.75	1	0.236	0.000:
7-Aug	0.195	9.33	1	0.195	0.000:
8-Aug	0.181	8.97	1	0.181	0.000:
9-Aug	0.175	8.58	1	0.175	0.000:
10-Aug	0.172	8.28	1	0.172	0.000:
11-Aug	0.171	8.21	1	0.171	0.000:
12-Aug	0.174	8.47	1	0.174	0.000:
13-Aug	0.174	9.22	1	0.174	0.000:
14-Aug	0.184	10.29	1	0.184	0.000:
15-Aug	0.195	11.11	1	0.195	0.000:
16-Aug	0.186	11.68	1	0.186	0.000:
17-Aug	0.176	12.12	1	0.176	0.000:
18-Aug	0.183	12.24	1	0.183	0.000:
19-Aug	0.177	11.98	1	0.177	0.000:
20-Aug	0.194	11.55	1	0.194	0.000:
21-Aug	0.198	10.92	1	0.198	0.000:

22-Aug	0.208	10.17	1	0.208	0.000:
23-Aug	0.234	9.47	1	0.234	0.000:
24-Aug	0.197	8.96	1	0.197	0.000:
25-Aug	0.189	8.63	1	0.189	0.000:
26-Aug	0.176	8.37	1	0.176	0.000:
27-Aug	0.173	8.21	1	0.173	0.000:
28-Aug	0.168	8.25	1	0.168	0.000:
29-Aug	0.167	8.56	1	0.167	0.000:
30-Aug	0.166	8.99	1	0.166	0.000:
31-Aug	0.166	9.29	1	0.166	0.000:
1-Sep	0.165	9.42	1	0.165	0.000:
2-Sep	0.166	9.40	1	0.166	0.000:
3-Sep	0.179	9.26	1	0.179	0.000:
4-Sep	0.185	9.07	1	0.185	0.000:
5-Sep	0.177	8.91	1	0.177	0.000:
6-Sep	0.182	8.79	1	0.182	0.000:
7-Sep	0.215	8.67	1	0.215	0.000:
8-Sep	0.445	8.52	1	0.445	0.000:
9-Sep	0.350	8.37	1	0.350	0.000:
10-Sep	0.271	8.23	1	0.271	0.000:
11-Sep	0.246	8.09	1	0.246	0.000:
12-Sep	0.474	7.90	1	0.474	0.000:
13-Sep	0.361	7.63	1	0.361	0.000:
14-Sep	0.419	7.30	1	0.419	0.000:
15-Sep	0.303	7.00	1	0.303	0.000:
16-Sep	0.270	6.82	1	0.270	0.000:
17-Sep	0.262	6.78	1	0.262	0.000:
18-Sep	0.347	6.80	1	0.347	0.000:
19-Sep	0.676	6.83	1	0.676	0.000:
20-Sep	0.599	6.78	1	0.599	0.000:
21-Sep	0.528	6.65	1	0.528	0.000:
22-Sep	0.434	6.50	1	0.434	0.000:
23-Sep	0.514	6.38	1	0.514	0.000:
24-Sep	0.484	6.28	1	0.484	0.000:
25-Sep	0.555	6.18	1	0.555	0.000:
26-Sep	0.486	6.07	1	0.486	0.000:
27-Sep	0.446	5.96	1	0.446	0.000:
28-Sep	0.614	5.85	1	0.614	0.000:
29-Sep	0.522	5.76	1	0.522	0.000:
30-Sep	0.594	5.66	1	0.594	0.000:
1-Oct	0.579	5.50	1	0.579	0.000:
2-Oct	0.504	5.23	1	0.504	0.000:
3-Oct	0.462	4.82	1	0.462	0.000:
4-Oct	0.458	4.29	1	0.458	0.000:
5-Oct	1.002	3.69	1	1.002	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW INIT. (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
3	UPPER TALARIK	Q	51.6	2007	17-May	0.946		5.07	1	0.946	0.000:	HYDROLOGY GAGE UT100D
					18-May	0.924		5.02	1	0.924	0.000:	
					19-May	0.797		4.98	1	0.797	0.000:	
					20-May	0.794		4.95	1	0.794	0.000:	
					21-May	0.723		4.95	1	0.723	0.000:	
					22-May	0.751		4.95	1	0.751	0.000:	
					23-May	0.763		4.93	1	0.763	0.000:	
					24-May	0.826		4.91	1	0.826	0.000:	
					25-May	0.925		4.95	1	0.925	0.000:	
					26-May	0.887		5.06	1	0.887	0.000:	
					27-May	0.773		5.18	1	0.773	0.000:	
					28-May	0.704		5.26	1	0.704	0.000:	
					29-May	0.633		5.25	1	0.633	0.000:	
					30-May	0.608		5.21	1	0.608	0.000:	
					31-May	0.609		5.15	1	0.609	0.000:	
					1-Jun	0.607		5.11	1	0.607	0.000:	
					2-Jun	0.586		5.16	1	0.586	0.000:	
					3-Jun	0.587		5.31	1	0.587	0.000:	
					4-Jun	0.637		5.47	1	0.637	0.000:	
					5-Jun	0.855		5.59	1	0.855	0.000:	
					6-Jun	0.718		5.65	1	0.718	0.000:	
					7-Jun	0.627		5.64	1	0.627	0.000:	
					8-Jun	0.570		5.67	1	0.570	0.000:	
					9-Jun	0.538		5.88	1	0.538	0.000:	
					10-Jun	0.548		6.31	1	0.548	0.000:	
					11-Jun	0.537		6.73	1	0.537	0.000:	
					12-Jun	0.514		6.92	1	0.514	0.000:	
					13-Jun	0.488		7.00	1	0.488	0.000:	
					14-Jun	0.493		7.21	1	0.493	0.000:	
					15-Jun	0.496		7.56	1	0.496	0.000:	
					16-Jun	0.479		7.93	1	0.479	0.000:	
					17-Jun	0.550		8.23	1	0.550	0.000:	
					18-Jun	0.518		8.56	1	0.518	0.000:	
					19-Jun	0.501		9.02	1	0.501	0.000:	
					20-Jun	0.480		9.45	1	0.480	0.000:	
					21-Jun	0.449		9.43	1	0.449	0.000:	
					22-Jun	0.458		8.81	1	0.458	0.000:	
					23-Jun	0.845		7.81	1	0.845	0.000:	
					24-Jun	1.093		6.85	1	1.093	0.000:	
					25-Jun	0.681		6.22	1	0.681	0.000:	
					26-Jun	0.550		6.02	1	0.550	0.000:	
					27-Jun	0.488		6.23	1	0.488	0.000:	
					28-Jun	0.470		6.64	1	0.470	0.000:	
					29-Jun	0.452		7.03	1	0.452	0.000:	
					30-Jun	0.431		7.34	1	0.431	0.000:	
					1-Jul	0.422		7.54	1	0.422	0.000:	

2-Jul	0.409	7.70	1	0.409	0.000:
3-Jul	0.401	7.80	1	0.401	0.000:
4-Jul	0.695	7.75	1	0.695	0.000:
5-Jul	0.594	7.53	1	0.594	0.000:
6-Jul	0.522	7.36	1	0.522	0.000:
7-Jul	0.476	7.34	1	0.476	0.000:
8-Jul	0.513	7.50	1	0.513	0.000:
9-Jul	0.474	7.79	1	0.474	0.000:
10-Jul	0.443	8.18	1	0.443	0.000:
11-Jul	0.415	8.58	1	0.415	0.000:
12-Jul	0.419	8.79	1	0.419	0.000:
13-Jul	0.534	8.73	1	0.534	0.000:
14-Jul	0.505	8.56	1	0.505	0.000:
15-Jul	0.455	8.53	1	0.455	0.000:
16-Jul	0.423	8.75	1	0.423	0.000:
17-Jul	0.395	9.11	1	0.395	0.000:
18-Jul	0.386	9.38	1	0.386	0.000:
19-Jul	0.389	9.35	1	0.389	0.000:
20-Jul	0.420	9.09	1	0.420	0.000:
21-Jul	0.454	8.68	1	0.454	0.000:
22-Jul	0.441	8.14	1	0.441	0.000:
23-Jul	0.749	7.66	1	0.749	0.000:
24-Jul	0.691	7.45	1	0.691	0.000:
25-Jul	0.572	7.64	1	0.572	0.000:
26-Jul	0.467	8.24	1	0.467	0.000:
27-Jul	0.426	9.13	1	0.426	0.000:
28-Jul	0.435	10.06	1	0.435	0.000:
29-Jul	0.395	10.65	1	0.395	0.000:
30-Jul	0.386	10.68	1	0.386	0.000:
31-Jul	0.383	10.16	1	0.383	0.000:
1-Aug	0.375	9.30	1	0.375	0.000:
2-Aug	0.385	8.47	1	0.385	0.000:
3-Aug	0.399	7.99	1	0.399	0.000:
4-Aug	0.892	7.89	1	0.892	0.000:
5-Aug	0.801	8.02	1	0.801	0.000:
6-Aug	0.722	8.19	1	0.722	0.000:
7-Aug	0.529	8.28	1	0.529	0.000:
8-Aug	0.455	8.31	1	0.455	0.000:
9-Aug	0.417	8.33	1	0.417	0.000:
10-Aug	0.391	8.40	1	0.391	0.000:
11-Aug	0.375	8.55	1	0.375	0.000:
12-Aug	0.386	8.73	1	0.386	0.000:
13-Aug	0.378	8.87	1	0.378	0.000:
14-Aug	0.406	8.80	1	0.406	0.000:
15-Aug	0.463	8.26	1	0.463	0.000:
16-Aug	0.430	7.42	1	0.430	0.000:
17-Aug	0.394	6.47	1	0.394	0.000:
18-Aug	0.408	5.57	1	0.408	0.000:
19-Aug	0.398	4.92	1	0.398	0.000:
20-Aug	0.438	4.63	1	0.438	0.000:
21-Aug	0.466	4.48	1	0.466	0.000:

22-Aug	0.525	4.32	1	0.525	0.000:
23-Aug	0.790	4.11	1	0.790	0.000:
24-Aug	0.570	3.89	1	0.570	0.000:
25-Aug	0.521	3.68	1	0.521	0.000:
26-Aug	0.454	3.53	1	0.454	0.000:
27-Aug	0.433	3.50	1	0.433	0.000:
28-Aug	0.403	3.62	1	0.403	0.000:
29-Aug	0.390	3.84	1	0.390	0.000:
30-Aug	0.383	4.00	1	0.383	0.000:
31-Aug	0.380	4.09	1	0.380	0.000:
1-Sep	0.383	4.19	1	0.383	0.000:
2-Sep	0.376	4.29	1	0.376	0.000:
3-Sep	0.426	4.43	1	0.426	0.000:
4-Sep	0.499	4.66	1	0.499	0.000:
5-Sep	0.492	5.02	1	0.492	0.000:
6-Sep	0.579	5.51	1	0.579	0.000:
7-Sep	0.712	6.02	1	0.712	0.000:
8-Sep	2.158	6.49	1	2.158	0.000:
9-Sep	1.734	6.79	1	1.734	0.000:
10-Sep	1.225	6.87	1	1.225	0.000:
11-Sep	0.980	6.86	1	0.980	0.000:
12-Sep	2.227	6.79	1	2.227	0.000:
13-Sep	1.403	6.59	1	1.403	0.000:
14-Sep	1.561	6.22	1	1.561	0.000:
15-Sep	1.052	5.75	1	1.052	0.000:
16-Sep	0.877	5.30	1	0.877	0.000:
17-Sep	0.808	4.90	1	0.808	0.000:
18-Sep	1.138	4.52	1	1.138	0.000:
19-Sep	3.174	4.16	1	3.174	0.000:
20-Sep	2.869	3.85	1	2.869	0.000:
21-Sep	2.226	3.63	1	2.226	0.000:
22-Sep	1.543	3.52	1	1.543	0.000:
23-Sep	1.997	3.48	1	1.997	0.000:
24-Sep	1.796	3.48	1	1.796	0.000:
25-Sep	1.989	3.49	1	1.989	0.000:
26-Sep	1.581	3.47	1	1.581	0.000:
27-Sep	1.361	3.43	1	1.361	0.000:
28-Sep	2.119	3.39	1	2.119	0.000:
29-Sep	1.756	3.38	1	1.756	0.000:
30-Sep	2.010	3.38	1	2.010	0.000:
1-Oct	2.019	3.38	1	2.019	0.000:
2-Oct	1.626	3.35	1	1.626	0.000:
3-Oct	1.420	3.30	1	1.420	0.000:
4-Oct	1.357	3.21	1	1.357	0.000:
5-Oct	5.340	3.08	1	5.340	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
4	UPPER TALARIK	B	45.0	2007	17-May	3.749			1	3.749	0.000:	CONFLUENCE WITH TRIBUTARY UT
					18-May	3.876			1	3.876	0.000:	1.135
					19-May	3.193			1	3.193	0.000:	
					20-May	3.155			1	3.155	0.000:	
					21-May	2.822			1	2.822	0.000:	
					22-May	2.948			1	2.948	0.000:	
					23-May	2.900			1	2.900	0.000:	
					24-May	3.050			1	3.050	0.000:	
					25-May	3.589			1	3.589	0.000:	
					26-May	3.402			1	3.402	0.000:	
					27-May	2.984			1	2.984	0.000:	
					28-May	2.683			1	2.683	0.000:	
					29-May	2.367			1	2.367	0.000:	
					30-May	2.223			1	2.223	0.000:	
					31-May	2.226			1	2.226	0.000:	
					1-Jun	2.189			1	2.189	0.000:	
					2-Jun	2.121			1	2.121	0.000:	
					3-Jun	2.094			1	2.094	0.000:	
					4-Jun	2.249			1	2.249	0.000:	
					5-Jun	3.192			1	3.192	0.000:	
					6-Jun	2.677			1	2.677	0.000:	
					7-Jun	2.322			1	2.322	0.000:	
					8-Jun	2.083			1	2.083	0.000:	
					9-Jun	1.947			1	1.947	0.000:	
					10-Jun	1.945			1	1.945	0.000:	
					11-Jun	1.930			1	1.930	0.000:	
					12-Jun	1.867			1	1.867	0.000:	
					13-Jun	1.758			1	1.758	0.000:	
					14-Jun	1.768			1	1.768	0.000:	
					15-Jun	1.747			1	1.747	0.000:	
					16-Jun	1.696			1	1.696	0.000:	
					17-Jun	1.933			1	1.933	0.000:	
					18-Jun	1.855			1	1.855	0.000:	
					19-Jun	1.861			1	1.861	0.000:	
					20-Jun	1.709			1	1.709	0.000:	
					21-Jun	1.584			1	1.584	0.000:	
					22-Jun	1.590			1	1.590	0.000:	
					23-Jun	2.668			1	2.668	0.000:	
					24-Jun	3.993			1	3.993	0.000:	
					25-Jun	2.798			1	2.798	0.000:	
					26-Jun	2.008			1	2.008	0.000:	
					27-Jun	1.740			1	1.740	0.000:	
					28-Jun	1.641			1	1.641	0.000:	
					29-Jun	1.579			1	1.579	0.000:	
					30-Jun	1.484			1	1.484	0.000:	
					1-Jul	1.444			1	1.444	0.000:	

2-Jul	1.407	1	1.407	0.000:
3-Jul	1.366	1	1.366	0.000:
4-Jul	2.144	1	2.144	0.000:
5-Jul	1.987	1	1.987	0.000:
6-Jul	1.761	1	1.761	0.000:
7-Jul	1.623	1	1.623	0.000:
8-Jul	1.727	1	1.727	0.000:
9-Jul	1.615	1	1.615	0.000:
10-Jul	1.469	1	1.469	0.000:
11-Jul	1.385	1	1.385	0.000:
12-Jul	1.361	1	1.361	0.000:
13-Jul	1.715	1	1.715	0.000:
14-Jul	1.685	1	1.685	0.000:
15-Jul	1.510	1	1.510	0.000:
16-Jul	1.417	1	1.417	0.000:
17-Jul	1.314	1	1.314	0.000:
18-Jul	1.246	1	1.246	0.000:
19-Jul	1.255	1	1.255	0.000:
20-Jul	1.374	1	1.374	0.000:
21-Jul	1.652	1	1.652	0.000:
22-Jul	1.486	1	1.486	0.000:
23-Jul	2.626	1	2.626	0.000:
24-Jul	2.625	1	2.625	0.000:
25-Jul	2.183	1	2.183	0.000:
26-Jul	1.712	1	1.712	0.000:
27-Jul	1.513	1	1.513	0.000:
28-Jul	1.538	1	1.538	0.000:
29-Jul	1.351	1	1.351	0.000:
30-Jul	1.274	1	1.274	0.000:
31-Jul	1.253	1	1.253	0.000:
1-Aug	1.218	1	1.218	0.000:
2-Aug	1.231	1	1.231	0.000:
3-Aug	1.294	1	1.294	0.000:
4-Aug	2.466	1	2.466	0.000:
5-Aug	2.737	1	2.737	0.000:
6-Aug	2.552	1	2.552	0.000:
7-Aug	1.870	1	1.870	0.000:
8-Aug	1.566	1	1.566	0.000:
9-Aug	1.401	1	1.401	0.000:
10-Aug	1.293	1	1.293	0.000:
11-Aug	1.224	1	1.224	0.000:
12-Aug	1.253	1	1.253	0.000:
13-Aug	1.239	1	1.239	0.000:
14-Aug	1.288	1	1.288	0.000:
15-Aug	1.544	1	1.544	0.000:
16-Aug	1.391	1	1.391	0.000:
17-Aug	1.249	1	1.249	0.000:
18-Aug	1.265	1	1.265	0.000:
19-Aug	1.250	1	1.250	0.000:
20-Aug	1.343	1	1.343	0.000:
21-Aug	1.431	1	1.431	0.000:

22-Aug	1.474	1	1.474	0.000:
23-Aug	2.051	1	2.051	0.000:
24-Aug	1.731	1	1.731	0.000:
25-Aug	1.704	1	1.704	0.000:
26-Aug	1.429	1	1.429	0.000:
27-Aug	1.348	1	1.348	0.000:
28-Aug	1.291	1	1.291	0.000:
29-Aug	1.200	1	1.200	0.000:
30-Aug	1.156	1	1.156	0.000:
31-Aug	1.149	1	1.149	0.000:
1-Sep	1.205	1	1.205	0.000:
2-Sep	1.170	1	1.170	0.000:
3-Sep	1.280	1	1.280	0.000:
4-Sep	1.609	1	1.609	0.000:
5-Sep	1.497	1	1.497	0.000:
6-Sep	2.351	1	2.351	0.000:
7-Sep	2.534	1	2.534	0.000:
8-Sep	5.694	1	5.694	0.000:
9-Sep	5.436	1	5.436	0.000:
10-Sep	4.301	1	4.301	0.000:
11-Sep	3.596	1	3.596	0.000:
12-Sep	7.235	1	7.235	0.000:
13-Sep	5.323	1	5.323	0.000:
14-Sep	5.425	1	5.425	0.000:
15-Sep	4.269	1	4.269	0.000:
16-Sep	3.680	1	3.680	0.000:
17-Sep	3.355	1	3.355	0.000:
18-Sep	3.853	1	3.853	0.000:
19-Sep	9.113	1	9.113	0.000:
20-Sep	10.020	1	10.020	0.000:
21-Sep	8.554	1	8.554	0.000:
22-Sep	6.211	1	6.211	0.000:
23-Sep	7.369	1	7.369	0.000:
24-Sep	7.016	1	7.016	0.000:
25-Sep	7.845	1	7.845	0.000:
26-Sep	6.493	1	6.493	0.000:
27-Sep	5.644	1	5.644	0.000:
28-Sep	7.267	1	7.267	0.000:
29-Sep	7.022	1	7.022	0.000:
30-Sep	7.347	1	7.347	0.000:
1-Oct	7.969	1	7.969	0.000:
2-Oct	6.610	1	6.610	0.000:
3-Oct	5.889	1	5.889	0.000:
4-Oct	5.382	1	5.382	0.000:
5-Oct	11.550	1	11.550	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
5	TRIBUTARY 135	H	46.4	2007	17-May	0.331	5.61	5.07	1	0.331	0.000:	HYDROLOGY GAGE UT135A
					18-May	0.349	5.60	5.02	1	0.349	0.000:	
					19-May	0.283	6.16	4.98	1	0.283	0.000:	
					20-May	0.279	5.60	4.95	1	0.279	0.000:	
					21-May	0.248	6.40	4.95	1	0.248	0.000:	
					22-May	0.260	5.88	4.95	1	0.260	0.000:	
					23-May	0.253	5.53	4.93	1	0.253	0.000:	
					24-May	0.263	4.90	4.91	1	0.263	0.000:	
					25-May	0.315	5.17	4.95	1	0.315	0.000:	
					26-May	0.297	5.99	5.06	1	0.297	0.000:	
					27-May	0.261	6.58	5.18	1	0.261	0.000:	
					28-May	0.234	6.84	5.26	1	0.234	0.000:	
					29-May	0.205	6.26	5.25	1	0.205	0.000:	
					30-May	0.191	7.08	5.21	1	0.191	0.000:	
					31-May	0.191	6.91	5.15	1	0.191	0.000:	
					1-Jun	0.187	5.90	5.11	1	0.187	0.000:	
					2-Jun	0.181	6.22	5.16	1	0.181	0.000:	
					3-Jun	0.178	7.70	5.31	1	0.178	0.000:	
					4-Jun	0.191	7.64	5.47	1	0.191	0.000:	
					5-Jun	0.276	7.46	5.59	1	0.276	0.000:	
					6-Jun	0.232	8.55	5.65	1	0.232	0.000:	
					7-Jun	0.200	8.28	5.64	1	0.200	0.000:	
					8-Jun	0.179	7.17	5.67	1	0.179	0.000:	
					9-Jun	0.167	7.00	5.88	1	0.167	0.000:	
					10-Jun	0.165	9.86	6.31	1	0.165	0.000:	
					11-Jun	0.165	11.26	6.73	1	0.165	0.000:	
					12-Jun	0.160	8.93	6.92	1	0.160	0.000:	
					13-Jun	0.150	8.00	7.00	1	0.150	0.000:	
					14-Jun	0.151	9.66	7.21	1	0.151	0.000:	
					15-Jun	0.148	11.26	7.56	1	0.148	0.000:	
					16-Jun	0.144	11.79	7.93	1	0.144	0.000:	
					17-Jun	0.163	9.93	8.23	1	0.163	0.000:	
					18-Jun	0.158	9.20	8.56	1	0.158	0.000:	
					19-Jun	0.161	11.52	9.02	1	0.161	0.000:	
					20-Jun	0.145	13.90	9.45	1	0.145	0.000:	
					21-Jun	0.134	13.51	9.43	1	0.134	0.000:	
					22-Jun	0.134	10.47	8.81	1	0.134	0.000:	
					23-Jun	0.215	8.00	7.81	1	0.215	0.000:	
					24-Jun	0.343	7.04	6.85	1	0.343	0.000:	
					25-Jun	0.250	7.79	6.22	1	0.250	0.000:	
					26-Jun	0.172	8.98	6.02	1	0.172	0.000:	
					27-Jun	0.148	10.83	6.23	1	0.148	0.000:	
					28-Jun	0.138	10.51	6.64	1	0.138	0.000:	
					29-Jun	0.133	11.24	7.03	1	0.133	0.000:	
					30-Jun	0.124	11.62	7.34	1	0.124	0.000:	
					1-Jul	0.121	10.89	7.54	1	0.121	0.000:	

2-Jul	0.118	11.15	7.70	1	0.118	0.000:
3-Jul	0.114	12.34	7.80	1	0.114	0.000:
4-Jul	0.171	11.36	7.75	1	0.171	0.000:
5-Jul	0.165	10.52	7.53	1	0.165	0.000:
6-Jul	0.146	10.58	7.36	1	0.146	0.000:
7-Jul	0.136	10.82	7.34	1	0.136	0.000:
8-Jul	0.144	11.02	7.50	1	0.144	0.000:
9-Jul	0.135	10.90	7.79	1	0.135	0.000:
10-Jul	0.121	11.27	8.18	1	0.121	0.000:
11-Jul	0.115	12.65	8.58	1	0.115	0.000:
12-Jul	0.111	12.87	8.79	1	0.111	0.000:
13-Jul	0.140	11.16	8.73	1	0.140	0.000:
14-Jul	0.139	10.95	8.56	1	0.139	0.000:
15-Jul	0.125	10.74	8.53	1	0.125	0.000:
16-Jul	0.118	11.35	8.75	1	0.118	0.000:
17-Jul	0.109	13.17	9.11	1	0.109	0.000:
18-Jul	0.102	12.98	9.38	1	0.102	0.000:
19-Jul	0.102	11.85	9.35	1	0.102	0.000:
20-Jul	0.113	12.40	9.09	1	0.113	0.000:
21-Jul	0.142	11.49	8.68	1	0.142	0.000:
22-Jul	0.124	9.73	8.14	1	0.124	0.000:
23-Jul	0.222	8.92	7.66	1	0.222	0.000:
24-Jul	0.229	9.04	7.45	1	0.229	0.000:
25-Jul	0.190	10.10	7.64	1	0.190	0.000:
26-Jul	0.147	11.47	8.24	1	0.147	0.000:
27-Jul	0.129	13.57	9.13	1	0.129	0.000:
28-Jul	0.130	14.83	10.06	1	0.130	0.000:
29-Jul	0.113	15.08	10.65	1	0.113	0.000:
30-Jul	0.105	14.37	10.68	1	0.105	0.000:
31-Jul	0.103	13.16	10.16	1	0.103	0.000:
1-Aug	0.100	11.08	9.30	1	0.100	0.000:
2-Aug	0.100	9.93	8.47	1	0.100	0.000:
3-Aug	0.106	10.53	7.99	1	0.106	0.000:
4-Aug	0.186	10.50	7.89	1	0.186	0.000:
5-Aug	0.229	10.34	8.02	1	0.229	0.000:
6-Aug	0.216	11.22	8.19	1	0.216	0.000:
7-Aug	0.159	11.93	8.28	1	0.159	0.000:
8-Aug	0.131	12.90	8.31	1	0.131	0.000:
9-Aug	0.116	13.81	8.33	1	0.116	0.000:
10-Aug	0.107	14.07	8.40	1	0.107	0.000:
11-Aug	0.100	13.65	8.55	1	0.100	0.000:
12-Aug	0.103	14.05	8.73	1	0.103	0.000:
13-Aug	0.102	14.68	8.87	1	0.102	0.000:
14-Aug	0.104	13.61	8.80	1	0.104	0.000:
15-Aug	0.128	11.41	8.26	1	0.128	0.000:
16-Aug	0.114	12.16	7.42	1	0.114	0.000:
17-Aug	0.101	12.11	6.47	1	0.101	0.000:
18-Aug	0.101	10.60	5.57	1	0.101	0.000:
19-Aug	0.101	10.69	4.92	1	0.101	0.000:
20-Aug	0.107	10.97	4.63	1	0.107	0.000:
21-Aug	0.114	10.34	4.48	1	0.114	0.000:

22-Aug	0.112	9.90	4.32	1	0.112	0.000:
23-Aug	0.149	9.84	4.11	1	0.149	0.000:
24-Aug	0.137	10.66	3.89	1	0.137	0.000:
25-Aug	0.140	11.46	3.68	1	0.140	0.000:
26-Aug	0.115	10.70	3.53	1	0.115	0.000:
27-Aug	0.108	10.83	3.50	1	0.108	0.000:
28-Aug	0.105	10.95	3.62	1	0.105	0.000:
29-Aug	0.096	12.36	3.84	1	0.096	0.000:
30-Aug	0.091	12.06	4.00	1	0.091	0.000:
31-Aug	0.091	11.45	4.09	1	0.091	0.000:
1-Sep	0.097	10.99	4.19	1	0.097	0.000:
2-Sep	0.094	10.55	4.29	1	0.094	0.000:
3-Sep	0.101	10.22	4.43	1	0.101	0.000:
4-Sep	0.131	9.47	4.66	1	0.131	0.000:
5-Sep	0.119	10.28	5.02	1	0.119	0.000:
6-Sep	0.209	9.47	5.51	1	0.209	0.000:
7-Sep	0.215	8.99	6.02	1	0.215	0.000:
8-Sep	0.418	9.39	6.49	1	0.418	0.000:
9-Sep	0.438	9.48	6.79	1	0.438	0.000:
10-Sep	0.364	8.96	6.87	1	0.364	0.000:
11-Sep	0.309	8.62	6.86	1	0.309	0.000:
12-Sep	0.592	8.96	6.79	1	0.592	0.000:
13-Sep	0.463	8.75	6.59	1	0.463	0.000:
14-Sep	0.457	8.25	6.22	1	0.457	0.000:
15-Sep	0.380	7.59	5.75	1	0.380	0.000:
16-Sep	0.331	7.44	5.30	1	0.331	0.000:
17-Sep	0.301	7.68	4.90	1	0.301	0.000:
18-Sep	0.321	7.68	4.52	1	0.321	0.000:
19-Sep	0.702	8.02	4.16	1	0.702	0.000:
20-Sep	0.845	7.60	3.85	1	0.845	0.000:
21-Sep	0.748	7.42	3.63	1	0.748	0.000:
22-Sep	0.552	6.48	3.52	1	0.552	0.000:
23-Sep	0.635	6.64	3.48	1	0.635	0.000:
24-Sep	0.617	6.83	3.48	1	0.617	0.000:
25-Sep	0.692	6.56	3.49	1	0.692	0.000:
26-Sep	0.581	6.47	3.47	1	0.581	0.000:
27-Sep	0.506	6.03	3.43	1	0.506	0.000:
28-Sep	0.608	5.72	3.39	1	0.608	0.000:
29-Sep	0.622	5.45	3.38	1	0.622	0.000:
30-Sep	0.631	5.71	3.38	1	0.631	0.000:
1-Oct	0.703	5.71	3.38	1	0.703	0.000:
2-Oct	0.589	5.08	3.35	1	0.589	0.000:
3-Oct	0.528	4.16	3.30	1	0.528	0.000:
4-Oct	0.476	3.69	3.21	1	0.476	0.000:
5-Oct	0.735	3.62	3.08	1	0.735	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
6	TRIBUTARY 135	T	45.0	2007	17-May	0.331			1	0.331	0.000:	CONFLUENCE WITH UPPER TALARIK
					18-May	0.349			1	0.349	0.000:	CREEK
					19-May	0.283			1	0.283	0.000:	
					20-May	0.279			1	0.279	0.000:	
					21-May	0.248			1	0.248	0.000:	
					22-May	0.260			1	0.260	0.000:	
					23-May	0.253			1	0.253	0.000:	
					24-May	0.263			1	0.263	0.000:	
					25-May	0.315			1	0.315	0.000:	
					26-May	0.297			1	0.297	0.000:	
					27-May	0.261			1	0.261	0.000:	
					28-May	0.234			1	0.234	0.000:	
					29-May	0.205			1	0.205	0.000:	
					30-May	0.191			1	0.191	0.000:	
					31-May	0.191			1	0.191	0.000:	
					1-Jun	0.187			1	0.187	0.000:	
					2-Jun	0.181			1	0.181	0.000:	
					3-Jun	0.178			1	0.178	0.000:	
					4-Jun	0.191			1	0.191	0.000:	
					5-Jun	0.276			1	0.276	0.000:	
					6-Jun	0.232			1	0.232	0.000:	
					7-Jun	0.200			1	0.200	0.000:	
					8-Jun	0.179			1	0.179	0.000:	
					9-Jun	0.167			1	0.167	0.000:	
					10-Jun	0.165			1	0.165	0.000:	
					11-Jun	0.165			1	0.165	0.000:	
					12-Jun	0.160			1	0.160	0.000:	
					13-Jun	0.150			1	0.150	0.000:	
					14-Jun	0.151			1	0.151	0.000:	
					15-Jun	0.148			1	0.148	0.000:	
					16-Jun	0.144			1	0.144	0.000:	
					17-Jun	0.163			1	0.163	0.000:	
					18-Jun	0.158			1	0.158	0.000:	
					19-Jun	0.161			1	0.161	0.000:	
					20-Jun	0.145			1	0.145	0.000:	
					21-Jun	0.134			1	0.134	0.000:	
					22-Jun	0.134			1	0.134	0.000:	
					23-Jun	0.215			1	0.215	0.000:	
					24-Jun	0.343			1	0.343	0.000:	
					25-Jun	0.250			1	0.250	0.000:	
					26-Jun	0.172			1	0.172	0.000:	
					27-Jun	0.148			1	0.148	0.000:	
					28-Jun	0.138			1	0.138	0.000:	
					29-Jun	0.133			1	0.133	0.000:	
					30-Jun	0.124			1	0.124	0.000:	
					1-Jul	0.121			1	0.121	0.000:	

2-Jul	0.118	1	0.118	0.000:
3-Jul	0.114	1	0.114	0.000:
4-Jul	0.171	1	0.171	0.000:
5-Jul	0.165	1	0.165	0.000:
6-Jul	0.146	1	0.146	0.000:
7-Jul	0.136	1	0.136	0.000:
8-Jul	0.144	1	0.144	0.000:
9-Jul	0.135	1	0.135	0.000:
10-Jul	0.121	1	0.121	0.000:
11-Jul	0.115	1	0.115	0.000:
12-Jul	0.111	1	0.111	0.000:
13-Jul	0.140	1	0.140	0.000:
14-Jul	0.139	1	0.139	0.000:
15-Jul	0.125	1	0.125	0.000:
16-Jul	0.118	1	0.118	0.000:
17-Jul	0.109	1	0.109	0.000:
18-Jul	0.102	1	0.102	0.000:
19-Jul	0.102	1	0.102	0.000:
20-Jul	0.113	1	0.113	0.000:
21-Jul	0.142	1	0.142	0.000:
22-Jul	0.124	1	0.124	0.000:
23-Jul	0.222	1	0.222	0.000:
24-Jul	0.229	1	0.229	0.000:
25-Jul	0.190	1	0.190	0.000:
26-Jul	0.147	1	0.147	0.000:
27-Jul	0.129	1	0.129	0.000:
28-Jul	0.130	1	0.130	0.000:
29-Jul	0.113	1	0.113	0.000:
30-Jul	0.105	1	0.105	0.000:
31-Jul	0.103	1	0.103	0.000:
1-Aug	0.100	1	0.100	0.000:
2-Aug	0.100	1	0.100	0.000:
3-Aug	0.106	1	0.106	0.000:
4-Aug	0.186	1	0.186	0.000:
5-Aug	0.229	1	0.229	0.000:
6-Aug	0.216	1	0.216	0.000:
7-Aug	0.159	1	0.159	0.000:
8-Aug	0.131	1	0.131	0.000:
9-Aug	0.116	1	0.116	0.000:
10-Aug	0.107	1	0.107	0.000:
11-Aug	0.100	1	0.100	0.000:
12-Aug	0.103	1	0.103	0.000:
13-Aug	0.102	1	0.102	0.000:
14-Aug	0.104	1	0.104	0.000:
15-Aug	0.128	1	0.128	0.000:
16-Aug	0.114	1	0.114	0.000:
17-Aug	0.101	1	0.101	0.000:
18-Aug	0.101	1	0.101	0.000:
19-Aug	0.101	1	0.101	0.000:
20-Aug	0.107	1	0.107	0.000:
21-Aug	0.114	1	0.114	0.000:

22-Aug	0.112	1	0.112	0.000:
23-Aug	0.149	1	0.149	0.000:
24-Aug	0.137	1	0.137	0.000:
25-Aug	0.140	1	0.140	0.000:
26-Aug	0.115	1	0.115	0.000:
27-Aug	0.108	1	0.108	0.000:
28-Aug	0.105	1	0.105	0.000:
29-Aug	0.096	1	0.096	0.000:
30-Aug	0.091	1	0.091	0.000:
31-Aug	0.091	1	0.091	0.000:
1-Sep	0.097	1	0.097	0.000:
2-Sep	0.094	1	0.094	0.000:
3-Sep	0.101	1	0.101	0.000:
4-Sep	0.131	1	0.131	0.000:
5-Sep	0.119	1	0.119	0.000:
6-Sep	0.209	1	0.209	0.000:
7-Sep	0.215	1	0.215	0.000:
8-Sep	0.418	1	0.418	0.000:
9-Sep	0.438	1	0.438	0.000:
10-Sep	0.364	1	0.364	0.000:
11-Sep	0.309	1	0.309	0.000:
12-Sep	0.592	1	0.592	0.000:
13-Sep	0.463	1	0.463	0.000:
14-Sep	0.457	1	0.457	0.000:
15-Sep	0.380	1	0.380	0.000:
16-Sep	0.331	1	0.331	0.000:
17-Sep	0.301	1	0.301	0.000:
18-Sep	0.321	1	0.321	0.000:
19-Sep	0.702	1	0.702	0.000:
20-Sep	0.845	1	0.845	0.000:
21-Sep	0.748	1	0.748	0.000:
22-Sep	0.552	1	0.552	0.000:
23-Sep	0.635	1	0.635	0.000:
24-Sep	0.617	1	0.617	0.000:
25-Sep	0.692	1	0.692	0.000:
26-Sep	0.581	1	0.581	0.000:
27-Sep	0.506	1	0.506	0.000:
28-Sep	0.608	1	0.608	0.000:
29-Sep	0.622	1	0.622	0.000:
30-Sep	0.631	1	0.631	0.000:
1-Oct	0.703	1	0.703	0.000:
2-Oct	0.589	1	0.589	0.000:
3-Oct	0.528	1	0.528	0.000:
4-Oct	0.476	1	0.476	0.000:
5-Oct	0.735	1	0.735	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
7	UPPER TALARIK	J	45.0	2007	17-May	4.080		5.07	1	4.080	0.000:	CONFLUENCE WITH TRIBUTARY UT
					18-May	4.225		5.02	1	4.225	0.000:	1.135
					19-May	3.476		4.98	1	3.476	0.000:	
					20-May	3.434		4.95	1	3.434	0.000:	
					21-May	3.070		4.95	1	3.070	0.000:	
					22-May	3.208		4.95	1	3.208	0.000:	
					23-May	3.153		4.93	1	3.153	0.000:	
					24-May	3.313		4.91	1	3.313	0.000:	
					25-May	3.904		4.95	1	3.904	0.000:	
					26-May	3.699		5.06	1	3.699	0.000:	
					27-May	3.245		5.18	1	3.245	0.000:	
					28-May	2.917		5.26	1	2.917	0.000:	
					29-May	2.572		5.25	1	2.572	0.000:	
					30-May	2.414		5.21	1	2.414	0.000:	
					31-May	2.417		5.15	1	2.417	0.000:	
					1-Jun	2.376		5.11	1	2.376	0.000:	
					2-Jun	2.302		5.16	1	2.302	0.000:	
					3-Jun	2.272		5.31	1	2.272	0.000:	
					4-Jun	2.440		5.47	1	2.440	0.000:	
					5-Jun	3.468		5.59	1	3.468	0.000:	
					6-Jun	2.909		5.65	1	2.909	0.000:	
					7-Jun	2.522		5.64	1	2.522	0.000:	
					8-Jun	2.262		5.67	1	2.262	0.000:	
					9-Jun	2.114		5.88	1	2.114	0.000:	
					10-Jun	2.110		6.31	1	2.110	0.000:	
					11-Jun	2.095		6.73	1	2.095	0.000:	
					12-Jun	2.027		6.92	1	2.027	0.000:	
					13-Jun	1.908		7.00	1	1.908	0.000:	
					14-Jun	1.919		7.21	1	1.919	0.000:	
					15-Jun	1.895		7.56	1	1.895	0.000:	
					16-Jun	1.840		7.93	1	1.840	0.000:	
					17-Jun	2.096		8.23	1	2.096	0.000:	
					18-Jun	2.013		8.56	1	2.013	0.000:	
					19-Jun	2.022		9.02	1	2.022	0.000:	
					20-Jun	1.854		9.45	1	1.854	0.000:	
					21-Jun	1.718		9.43	1	1.718	0.000:	
					22-Jun	1.724		8.81	1	1.724	0.000:	
					23-Jun	2.883		7.81	1	2.883	0.000:	
					24-Jun	4.336		6.85	1	4.336	0.000:	
					25-Jun	3.048		6.22	1	3.048	0.000:	
					26-Jun	2.180		6.02	1	2.180	0.000:	
					27-Jun	1.888		6.23	1	1.888	0.000:	
					28-Jun	1.779		6.64	1	1.779	0.000:	
					29-Jun	1.712		7.03	1	1.712	0.000:	
					30-Jun	1.608		7.34	1	1.608	0.000:	
					1-Jul	1.565		7.54	1	1.565	0.000:	

2-Jul	1.525	7.70	1	1.525	0.000:
3-Jul	1.480	7.80	1	1.480	0.000:
4-Jul	2.315	7.75	1	2.315	0.000:
5-Jul	2.152	7.53	1	2.152	0.000:
6-Jul	1.907	7.36	1	1.907	0.000:
7-Jul	1.759	7.34	1	1.759	0.000:
8-Jul	1.871	7.50	1	1.871	0.000:
9-Jul	1.750	7.79	1	1.750	0.000:
10-Jul	1.590	8.18	1	1.590	0.000:
11-Jul	1.500	8.58	1	1.500	0.000:
12-Jul	1.472	8.79	1	1.472	0.000:
13-Jul	1.855	8.73	1	1.855	0.000:
14-Jul	1.824	8.56	1	1.824	0.000:
15-Jul	1.635	8.53	1	1.635	0.000:
16-Jul	1.535	8.75	1	1.535	0.000:
17-Jul	1.423	9.11	1	1.423	0.000:
18-Jul	1.348	9.38	1	1.348	0.000:
19-Jul	1.357	9.35	1	1.357	0.000:
20-Jul	1.487	9.09	1	1.487	0.000:
21-Jul	1.794	8.68	1	1.794	0.000:
22-Jul	1.610	8.14	1	1.610	0.000:
23-Jul	2.848	7.66	1	2.848	0.000:
24-Jul	2.854	7.45	1	2.854	0.000:
25-Jul	2.373	7.64	1	2.373	0.000:
26-Jul	1.859	8.24	1	1.859	0.000:
27-Jul	1.642	9.13	1	1.642	0.000:
28-Jul	1.668	10.06	1	1.668	0.000:
29-Jul	1.464	10.65	1	1.464	0.000:
30-Jul	1.379	10.68	1	1.379	0.000:
31-Jul	1.356	10.16	1	1.356	0.000:
1-Aug	1.318	9.30	1	1.318	0.000:
2-Aug	1.331	8.47	1	1.331	0.000:
3-Aug	1.400	7.99	1	1.400	0.000:
4-Aug	2.652	7.89	1	2.652	0.000:
5-Aug	2.966	8.02	1	2.966	0.000:
6-Aug	2.768	8.19	1	2.768	0.000:
7-Aug	2.029	8.28	1	2.029	0.000:
8-Aug	1.697	8.31	1	1.697	0.000:
9-Aug	1.517	8.33	1	1.517	0.000:
10-Aug	1.400	8.40	1	1.400	0.000:
11-Aug	1.324	8.55	1	1.324	0.000:
12-Aug	1.356	8.73	1	1.356	0.000:
13-Aug	1.341	8.87	1	1.341	0.000:
14-Aug	1.392	8.80	1	1.392	0.000:
15-Aug	1.672	8.26	1	1.672	0.000:
16-Aug	1.505	7.42	1	1.505	0.000:
17-Aug	1.350	6.47	1	1.350	0.000:
18-Aug	1.366	5.57	1	1.366	0.000:
19-Aug	1.351	4.92	1	1.351	0.000:
20-Aug	1.450	4.63	1	1.450	0.000:
21-Aug	1.545	4.48	1	1.545	0.000:

22-Aug	1.586	4.32	1	1.586	0.000:
23-Aug	2.200	4.11	1	2.200	0.000:
24-Aug	1.868	3.89	1	1.868	0.000:
25-Aug	1.844	3.68	1	1.844	0.000:
26-Aug	1.544	3.53	1	1.544	0.000:
27-Aug	1.456	3.50	1	1.456	0.000:
28-Aug	1.396	3.62	1	1.396	0.000:
29-Aug	1.296	3.84	1	1.296	0.000:
30-Aug	1.247	4.00	1	1.247	0.000:
31-Aug	1.240	4.09	1	1.240	0.000:
1-Sep	1.302	4.19	1	1.302	0.000:
2-Sep	1.264	4.29	1	1.264	0.000:
3-Sep	1.381	4.43	1	1.381	0.000:
4-Sep	1.740	4.66	1	1.740	0.000:
5-Sep	1.616	5.02	1	1.616	0.000:
6-Sep	2.560	5.51	1	2.560	0.000:
7-Sep	2.749	6.02	1	2.749	0.000:
8-Sep	6.112	6.49	1	6.112	0.000:
9-Sep	5.874	6.79	1	5.874	0.000:
10-Sep	4.665	6.87	1	4.665	0.000:
11-Sep	3.905	6.86	1	3.905	0.000:
12-Sep	7.827	6.79	1	7.827	0.000:
13-Sep	5.786	6.59	1	5.786	0.000:
14-Sep	5.882	6.22	1	5.882	0.000:
15-Sep	4.649	5.75	1	4.649	0.000:
16-Sep	4.011	5.30	1	4.011	0.000:
17-Sep	3.656	4.90	1	3.656	0.000:
18-Sep	4.174	4.52	1	4.174	0.000:
19-Sep	9.815	4.16	1	9.815	0.000:
20-Sep	10.865	3.85	1	10.865	0.000:
21-Sep	9.302	3.63	1	9.302	0.000:
22-Sep	6.763	3.52	1	6.763	0.000:
23-Sep	8.004	3.48	1	8.004	0.000:
24-Sep	7.633	3.48	1	7.633	0.000:
25-Sep	8.537	3.49	1	8.537	0.000:
26-Sep	7.074	3.47	1	7.074	0.000:
27-Sep	6.150	3.43	1	6.150	0.000:
28-Sep	7.875	3.39	1	7.875	0.000:
29-Sep	7.644	3.38	1	7.644	0.000:
30-Sep	7.978	3.38	1	7.978	0.000:
1-Oct	8.672	3.38	1	8.672	0.000:
2-Oct	7.199	3.35	1	7.199	0.000:
3-Oct	6.417	3.30	1	6.417	0.000:
4-Oct	5.858	3.21	1	5.858	0.000:
5-Oct	12.294	3.08	1	12.294	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. TEMP (C)	LATERAL TEMP (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
8	UPPER TALARIK	Q	44.6	2007	17-May	4.259		4.04	1	4.259	0.000:	HYDROLOGY GAGE UT100C2
					18-May	4.413		4.40	1	4.413	0.000:	
					19-May	3.629		4.79	1	3.629	0.000:	
					20-May	3.584		5.24	1	3.584	0.000:	
					21-May	3.203		5.70	1	3.203	0.000:	
					22-May	3.347		6.12	1	3.347	0.000:	
					23-May	3.289		6.44	1	3.289	0.000:	
					24-May	3.454		6.63	1	3.454	0.000:	
					25-May	4.073		6.76	1	4.073	0.000:	
					26-May	3.859		6.87	1	3.859	0.000:	
					27-May	3.386		6.98	1	3.386	0.000:	
					28-May	3.043		7.10	1	3.043	0.000:	
					29-May	2.682		7.20	1	2.682	0.000:	
					30-May	2.516		7.31	1	2.516	0.000:	
					31-May	2.520		7.42	1	2.520	0.000:	
					1-Jun	2.477		7.52	1	2.477	0.000:	
					2-Jun	2.400		7.63	1	2.400	0.000:	
					3-Jun	2.368		7.75	1	2.368	0.000:	
					4-Jun	2.542		7.87	1	2.542	0.000:	
					5-Jun	3.617		7.94	1	3.617	0.000:	
					6-Jun	3.033		7.94	1	3.033	0.000:	
					7-Jun	2.630		7.88	1	2.630	0.000:	
					8-Jun	2.358		7.78	1	2.358	0.000:	
					9-Jun	2.203		7.68	1	2.203	0.000:	
					10-Jun	2.199		7.64	1	2.199	0.000:	
					11-Jun	2.183		7.63	1	2.183	0.000:	
					12-Jun	2.113		7.56	1	2.113	0.000:	
					13-Jun	1.989		7.38	1	1.989	0.000:	
					14-Jun	2.000		7.17	1	2.000	0.000:	
					15-Jun	1.974		7.00	1	1.974	0.000:	
					16-Jun	1.917		6.94	1	1.917	0.000:	
					17-Jun	2.184		6.97	1	2.184	0.000:	
					18-Jun	2.098		7.08	1	2.098	0.000:	
					19-Jun	2.108		7.33	1	2.108	0.000:	
					20-Jun	1.933		7.74	1	1.933	0.000:	
					21-Jun	1.790		8.19	1	1.790	0.000:	
					22-Jun	1.796		8.50	1	1.796	0.000:	
					23-Jun	2.999		8.55	1	2.999	0.000:	
					24-Jun	4.520		8.36	1	4.520	0.000:	
					25-Jun	3.183		8.01	1	3.183	0.000:	
					26-Jun	2.273		7.59	1	2.273	0.000:	
					27-Jun	1.968		7.24	1	1.968	0.000:	
					28-Jun	1.854		6.99	1	1.854	0.000:	
					29-Jun	1.784		6.82	1	1.784	0.000:	
					30-Jun	1.675		6.75	1	1.675	0.000:	
					1-Jul	1.630		6.77	1	1.630	0.000:	

2-Jul	1.589	6.91	1	1.589	0.000:
3-Jul	1.541	7.16	1	1.541	0.000:
4-Jul	2.407	7.43	1	2.407	0.000:
5-Jul	2.240	7.60	1	2.240	0.000:
6-Jul	1.986	7.67	1	1.986	0.000:
7-Jul	1.831	7.66	1	1.831	0.000:
8-Jul	1.948	7.60	1	1.948	0.000:
9-Jul	1.823	7.53	1	1.823	0.000:
10-Jul	1.656	7.48	1	1.656	0.000:
11-Jul	1.561	7.50	1	1.561	0.000:
12-Jul	1.532	7.57	1	1.532	0.000:
13-Jul	1.930	7.62	1	1.930	0.000:
14-Jul	1.899	7.59	1	1.899	0.000:
15-Jul	1.702	7.55	1	1.702	0.000:
16-Jul	1.598	7.58	1	1.598	0.000:
17-Jul	1.481	7.79	1	1.481	0.000:
18-Jul	1.402	8.21	1	1.402	0.000:
19-Jul	1.413	8.71	1	1.413	0.000:
20-Jul	1.547	9.21	1	1.547	0.000:
21-Jul	1.870	9.55	1	1.870	0.000:
22-Jul	1.676	9.60	1	1.676	0.000:
23-Jul	2.967	9.33	1	2.967	0.000:
24-Jul	2.977	8.84	1	2.977	0.000:
25-Jul	2.476	8.33	1	2.476	0.000:
26-Jul	1.938	8.00	1	1.938	0.000:
27-Jul	1.711	8.00	1	1.711	0.000:
28-Jul	1.738	8.36	1	1.738	0.000:
29-Jul	1.525	8.98	1	1.525	0.000:
30-Jul	1.436	9.71	1	1.436	0.000:
31-Jul	1.411	10.38	1	1.411	0.000:
1-Aug	1.371	10.86	1	1.371	0.000:
2-Aug	1.385	11.09	1	1.385	0.000:
3-Aug	1.457	11.06	1	1.457	0.000:
4-Aug	2.752	10.82	1	2.752	0.000:
5-Aug	3.089	10.40	1	3.089	0.000:
6-Aug	2.885	9.87	1	2.885	0.000:
7-Aug	2.114	9.25	1	2.114	0.000:
8-Aug	1.768	8.62	1	1.768	0.000:
9-Aug	1.580	8.05	1	1.580	0.000:
10-Aug	1.457	7.66	1	1.457	0.000:
11-Aug	1.378	7.56	1	1.378	0.000:
12-Aug	1.411	7.77	1	1.411	0.000:
13-Aug	1.395	8.28	1	1.395	0.000:
14-Aug	1.448	8.99	1	1.448	0.000:
15-Aug	1.740	9.73	1	1.740	0.000:
16-Aug	1.566	10.43	1	1.566	0.000:
17-Aug	1.405	11.11	1	1.405	0.000:
18-Aug	1.421	11.70	1	1.421	0.000:
19-Aug	1.405	12.20	1	1.405	0.000:
20-Aug	1.508	12.58	1	1.508	0.000:
21-Aug	1.606	12.79	1	1.606	0.000:

22-Aug	1.647	12.79	1	1.647	0.000:
23-Aug	2.280	12.60	1	2.280	0.000:
24-Aug	1.942	12.25	1	1.942	0.000:
25-Aug	1.919	11.80	1	1.919	0.000:
26-Aug	1.606	11.31	1	1.606	0.000:
27-Aug	1.514	10.85	1	1.514	0.000:
28-Aug	1.453	10.51	1	1.453	0.000:
29-Aug	1.347	10.33	1	1.347	0.000:
30-Aug	1.297	10.28	1	1.297	0.000:
31-Aug	1.289	10.32	1	1.289	0.000:
1-Sep	1.355	10.43	1	1.355	0.000:
2-Sep	1.314	10.56	1	1.314	0.000:
3-Sep	1.435	10.69	1	1.435	0.000:
4-Sep	1.811	10.81	1	1.811	0.000:
5-Sep	1.680	10.90	1	1.680	0.000:
6-Sep	2.673	10.96	1	2.673	0.000:
7-Sep	2.865	10.98	1	2.865	0.000:
8-Sep	6.337	10.98	1	6.337	0.000:
9-Sep	6.109	11.01	1	6.109	0.000:
10-Sep	4.860	11.09	1	4.860	0.000:
11-Sep	4.072	11.26	1	4.072	0.000:
12-Sep	8.145	11.49	1	8.145	0.000:
13-Sep	6.036	11.77	1	6.036	0.000:
14-Sep	6.127	12.05	1	6.127	0.000:
15-Sep	4.854	12.36	1	4.854	0.000:
16-Sep	4.189	12.69	1	4.189	0.000:
17-Sep	3.818	13.02	1	3.818	0.000:
18-Sep	4.346	13.30	1	4.346	0.000:
19-Sep	10.193	13.51	1	10.193	0.000:
20-Sep	11.320	13.62	1	11.320	0.000:
21-Sep	9.704	13.65	1	9.704	0.000:
22-Sep	7.060	13.61	1	7.060	0.000:
23-Sep	8.346	13.50	1	8.346	0.000:
24-Sep	7.965	13.32	1	7.965	0.000:
25-Sep	8.909	13.05	1	8.909	0.000:
26-Sep	7.386	12.71	1	7.386	0.000:
27-Sep	6.423	12.32	1	6.423	0.000:
28-Sep	8.203	11.90	1	8.203	0.000:
29-Sep	7.979	11.46	1	7.979	0.000:
30-Sep	8.317	11.01	1	8.317	0.000:
1-Oct	9.051	10.52	1	9.051	0.000:
2-Oct	7.516	9.97	1	7.516	0.000:
3-Oct	6.702	9.35	1	6.702	0.000:
4-Oct	6.114	8.67	1	6.114	0.000:
5-Oct	12.689	7.96	1	12.689	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW INIT. (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
9	UPPER TALARIK	Q	37.6	2007	17-May	3.800		4.04	1	3.800	0.000:	HYDROLOGY GAGE UT100C1
					18-May	3.991		4.40	1	3.991	0.000:	
					19-May	3.448		4.79	1	3.448	0.000:	
					20-May	3.412		5.24	1	3.412	0.000:	
					21-May	3.145		5.70	1	3.145	0.000:	
					22-May	3.231		6.12	1	3.231	0.000:	
					23-May	3.187		6.44	1	3.187	0.000:	
					24-May	3.258		6.63	1	3.258	0.000:	
					25-May	3.636		6.76	1	3.636	0.000:	
					26-May	3.555		6.87	1	3.555	0.000:	
					27-May	3.254		6.98	1	3.254	0.000:	
					28-May	3.024		7.10	1	3.024	0.000:	
					29-May	2.759		7.20	1	2.759	0.000:	
					30-May	2.618		7.31	1	2.618	0.000:	
					31-May	2.601		7.42	1	2.601	0.000:	
					1-Jun	2.560		7.52	1	2.560	0.000:	
					2-Jun	2.505		7.63	1	2.505	0.000:	
					3-Jun	2.458		7.75	1	2.458	0.000:	
					4-Jun	2.559		7.87	1	2.559	0.000:	
					5-Jun	3.264		7.94	1	3.264	0.000:	
					6-Jun	2.955		7.94	1	2.955	0.000:	
					7-Jun	2.663		7.88	1	2.663	0.000:	
					8-Jun	2.454		7.78	1	2.454	0.000:	
					9-Jun	2.327		7.68	1	2.327	0.000:	
					10-Jun	2.298		7.64	1	2.298	0.000:	
					11-Jun	2.278		7.63	1	2.278	0.000:	
					12-Jun	2.217		7.56	1	2.217	0.000:	
					13-Jun	2.123		7.38	1	2.123	0.000:	
					14-Jun	2.120		7.17	1	2.120	0.000:	
					15-Jun	2.091		7.00	1	2.091	0.000:	
					16-Jun	2.033		6.94	1	2.033	0.000:	
					17-Jun	2.245		6.97	1	2.245	0.000:	
					18-Jun	2.185		7.08	1	2.185	0.000:	
					19-Jun	2.161		7.33	1	2.161	0.000:	
					20-Jun	2.011		7.74	1	2.011	0.000:	
					21-Jun	1.885		8.19	1	1.885	0.000:	
					22-Jun	1.884		8.50	1	1.884	0.000:	
					23-Jun	2.739		8.55	1	2.739	0.000:	
					24-Jun	3.918		8.36	1	3.918	0.000:	
					25-Jun	2.922		8.01	1	2.922	0.000:	
					26-Jun	2.399		7.59	1	2.399	0.000:	
					27-Jun	2.133		7.24	1	2.133	0.000:	
					28-Jun	2.021		6.99	1	2.021	0.000:	
					29-Jun	1.966		6.82	1	1.966	0.000:	
					30-Jun	1.863		6.75	1	1.863	0.000:	
					1-Jul	1.821		6.77	1	1.821	0.000:	

2-Jul	1.783	6.91	1	1.783	0.000:
3-Jul	1.736	7.16	1	1.736	0.000:
4-Jul	2.372	7.43	1	2.372	0.000:
5-Jul	2.351	7.60	1	2.351	0.000:
6-Jul	2.124	7.67	1	2.124	0.000:
7-Jul	2.008	7.66	1	2.008	0.000:
8-Jul	2.084	7.60	1	2.084	0.000:
9-Jul	1.998	7.53	1	1.998	0.000:
10-Jul	1.850	7.48	1	1.850	0.000:
11-Jul	1.760	7.50	1	1.760	0.000:
12-Jul	1.708	7.57	1	1.708	0.000:
13-Jul	2.054	7.62	1	2.054	0.000:
14-Jul	2.081	7.59	1	2.081	0.000:
15-Jul	1.891	7.55	1	1.891	0.000:
16-Jul	1.781	7.58	1	1.781	0.000:
17-Jul	1.687	7.79	1	1.687	0.000:
18-Jul	1.607	8.21	1	1.607	0.000:
19-Jul	1.619	8.71	1	1.619	0.000:
20-Jul	1.660	9.21	1	1.660	0.000:
21-Jul	2.022	9.55	1	2.022	0.000:
22-Jul	1.860	9.60	1	1.860	0.000:
23-Jul	2.733	9.33	1	2.733	0.000:
24-Jul	2.937	8.84	1	2.937	0.000:
25-Jul	2.572	8.33	1	2.572	0.000:
26-Jul	2.125	8.00	1	2.125	0.000:
27-Jul	1.918	8.00	1	1.918	0.000:
28-Jul	1.911	8.36	1	1.911	0.000:
29-Jul	1.753	8.98	1	1.753	0.000:
30-Jul	1.666	9.71	1	1.666	0.000:
31-Jul	1.646	10.38	1	1.646	0.000:
1-Aug	1.611	10.86	1	1.611	0.000:
2-Aug	1.634	11.09	1	1.634	0.000:
3-Aug	1.701	11.06	1	1.701	0.000:
4-Aug	2.507	10.82	1	2.507	0.000:
5-Aug	3.067	10.40	1	3.067	0.000:
6-Aug	2.945	9.87	1	2.945	0.000:
7-Aug	2.335	9.25	1	2.335	0.000:
8-Aug	2.013	8.62	1	2.013	0.000:
9-Aug	1.831	8.05	1	1.831	0.000:
10-Aug	1.715	7.66	1	1.715	0.000:
11-Aug	1.639	7.56	1	1.639	0.000:
12-Aug	1.659	7.77	1	1.659	0.000:
13-Aug	1.647	8.28	1	1.647	0.000:
14-Aug	1.692	8.99	1	1.692	0.000:
15-Aug	1.969	9.73	1	1.969	0.000:
16-Aug	1.824	10.43	1	1.824	0.000:
17-Aug	1.679	11.11	1	1.679	0.000:
18-Aug	1.695	11.70	1	1.695	0.000:
19-Aug	1.698	12.20	1	1.698	0.000:
20-Aug	1.764	12.58	1	1.764	0.000:
21-Aug	1.868	12.79	1	1.868	0.000:

22-Aug	1.893	12.79	1	1.893	0.000:
23-Aug	2.408	12.60	1	2.408	0.000:
24-Aug	2.204	12.25	1	2.204	0.000:
25-Aug	2.214	11.80	1	2.214	0.000:
26-Aug	1.918	11.31	1	1.918	0.000:
27-Aug	1.811	10.85	1	1.811	0.000:
28-Aug	1.740	10.51	1	1.740	0.000:
29-Aug	1.641	10.33	1	1.641	0.000:
30-Aug	1.591	10.28	1	1.591	0.000:
31-Aug	1.580	10.32	1	1.580	0.000:
1-Sep	1.638	10.43	1	1.638	0.000:
2-Sep	1.611	10.56	1	1.611	0.000:
3-Sep	1.742	10.69	1	1.742	0.000:
4-Sep	2.137	10.81	1	2.137	0.000:
5-Sep	2.231	10.90	1	2.231	0.000:
6-Sep	3.084	10.96	1	3.084	0.000:
7-Sep	3.155	10.98	1	3.155	0.000:
8-Sep	5.973	10.98	1	5.973	0.000:
9-Sep	5.986	11.01	1	5.986	0.000:
10-Sep	4.822	11.09	1	4.822	0.000:
11-Sep	4.033	11.26	1	4.033	0.000:
12-Sep	7.597	11.49	1	7.597	0.000:
13-Sep	5.876	11.77	1	5.876	0.000:
14-Sep	5.823	12.05	1	5.823	0.000:
15-Sep	4.744	12.36	1	4.744	0.000:
16-Sep	4.108	12.69	1	4.108	0.000:
17-Sep	3.792	13.02	1	3.792	0.000:
18-Sep	4.141	13.30	1	4.141	0.000:
19-Sep	9.310	13.51	1	9.310	0.000:
20-Sep	11.117	13.62	1	11.117	0.000:
21-Sep	9.574	13.65	1	9.574	0.000:
22-Sep	7.031	13.61	1	7.031	0.000:
23-Sep	7.890	13.50	1	7.890	0.000:
24-Sep	7.689	13.32	1	7.689	0.000:
25-Sep	8.577	13.05	1	8.577	0.000:
26-Sep	7.259	12.71	1	7.259	0.000:
27-Sep	6.263	12.32	1	6.263	0.000:
28-Sep	7.736	11.90	1	7.736	0.000:
29-Sep	7.733	11.46	1	7.733	0.000:
30-Sep	7.868	11.01	1	7.868	0.000:
1-Oct	8.746	10.52	1	8.746	0.000:
2-Oct	7.149	9.97	1	7.149	0.000:
3-Oct	6.423	9.35	1	6.423	0.000:
4-Oct	5.919	8.67	1	5.919	0.000:
5-Oct	11.833	7.96	1	11.833	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
10	UPPER TALARIK	Q	29.3	2007	17-May	5.163		5.07	1	5.163	0.000:	HYDROLOGY GAGE UT100C
					18-May	5.410		5.26	1	5.410	0.000:	
					19-May	4.722		5.47	1	4.722	0.000:	
					20-May	4.675		5.71	1	4.675	0.000:	
					21-May	4.347		5.94	1	4.347	0.000:	
					22-May	4.394		6.13	1	4.394	0.000:	
					23-May	4.325		6.24	1	4.325	0.000:	
					24-May	4.404		6.24	1	4.404	0.000:	
					25-May	4.860		6.19	1	4.860	0.000:	
					26-May	4.793		6.14	1	4.793	0.000:	
					27-May	4.440		6.09	1	4.440	0.000:	
					28-May	4.148		6.02	1	4.148	0.000:	
					29-May	3.821		5.90	1	3.821	0.000:	
					30-May	3.640		5.79	1	3.640	0.000:	
					31-May	3.604		5.71	1	3.604	0.000:	
					1-Jun	3.558		5.67	1	3.558	0.000:	
					2-Jun	3.454		5.66	1	3.454	0.000:	
					3-Jun	3.398		5.68	1	3.398	0.000:	
					4-Jun	3.482		5.73	1	3.482	0.000:	
					5-Jun	4.292		5.78	1	4.292	0.000:	
					6-Jun	3.960		5.81	1	3.960	0.000:	
					7-Jun	3.577		5.82	1	3.577	0.000:	
					8-Jun	3.347		5.82	1	3.347	0.000:	
					9-Jun	3.179		5.83	1	3.179	0.000:	
					10-Jun	3.090		5.89	1	3.090	0.000:	
					11-Jun	3.074		5.98	1	3.074	0.000:	
					12-Jun	3.091		6.02	1	3.091	0.000:	
					13-Jun	2.983		5.94	1	2.983	0.000:	
					14-Jun	2.982		5.80	1	2.982	0.000:	
					15-Jun	2.957		5.67	1	2.957	0.000:	
					16-Jun	2.856		5.64	1	2.856	0.000:	
					17-Jun	3.071		5.69	1	3.071	0.000:	
					18-Jun	3.048		5.81	1	3.048	0.000:	
					19-Jun	2.969		6.04	1	2.969	0.000:	
					20-Jun	2.817		6.40	1	2.817	0.000:	
					21-Jun	2.664		6.80	1	2.664	0.000:	
					22-Jun	2.662		7.12	1	2.662	0.000:	
					23-Jun	3.713		7.22	1	3.713	0.000:	
					24-Jun	5.212		7.12	1	5.212	0.000:	
					25-Jun	3.982		6.85	1	3.982	0.000:	
					26-Jun	3.281		6.51	1	3.281	0.000:	
					27-Jun	2.747		6.16	1	2.747	0.000:	
					28-Jun	2.615		5.81	1	2.615	0.000:	
					29-Jun	2.524		5.36	1	2.524	0.000:	
					30-Jun	2.417		4.88	1	2.417	0.000:	
					1-Jul	2.350		4.40	1	2.350	0.000:	

2-Jul	2.301	3.99	1	2.301	0.000:
3-Jul	2.266	3.68	1	2.266	0.000:
4-Jul	2.920	3.46	1	2.920	0.000:
5-Jul	2.971	3.25	1	2.971	0.000:
6-Jul	2.732	3.09	1	2.732	0.000:
7-Jul	2.603	2.96	1	2.603	0.000:
8-Jul	2.678	2.90	1	2.678	0.000:
9-Jul	2.579	2.91	1	2.579	0.000:
10-Jul	2.417	3.04	1	2.417	0.000:
11-Jul	2.313	3.32	1	2.313	0.000:
12-Jul	2.259	3.70	1	2.259	0.000:
13-Jul	2.629	4.09	1	2.629	0.000:
14-Jul	2.697	4.36	1	2.697	0.000:
15-Jul	2.490	4.54	1	2.490	0.000:
16-Jul	2.361	4.67	1	2.361	0.000:
17-Jul	2.254	4.84	1	2.254	0.000:
18-Jul	2.185	5.09	1	2.185	0.000:
19-Jul	2.207	5.35	1	2.207	0.000:
20-Jul	2.206	5.60	1	2.206	0.000:
21-Jul	2.575	5.74	1	2.575	0.000:
22-Jul	2.438	5.62	1	2.438	0.000:
23-Jul	3.224	5.24	1	3.224	0.000:
24-Jul	3.598	4.72	1	3.598	0.000:
25-Jul	3.251	4.25	1	3.251	0.000:
26-Jul	2.768	3.95	1	2.768	0.000:
27-Jul	2.552	3.92	1	2.552	0.000:
28-Jul	2.513	4.18	1	2.513	0.000:
29-Jul	2.381	4.69	1	2.381	0.000:
30-Jul	2.293	5.28	1	2.293	0.000:
31-Jul	2.275	5.78	1	2.275	0.000:
1-Aug	2.266	6.08	1	2.266	0.000:
2-Aug	2.305	6.13	1	2.305	0.000:
3-Aug	2.387	5.96	1	2.387	0.000:
4-Aug	3.141	5.66	1	3.141	0.000:
5-Aug	3.907	5.27	1	3.907	0.000:
6-Aug	3.834	4.85	1	3.834	0.000:
7-Aug	3.137	4.38	1	3.137	0.000:
8-Aug	2.789	3.91	1	2.789	0.000:
9-Aug	2.580	3.54	1	2.580	0.000:
10-Aug	2.449	3.37	1	2.449	0.000:
11-Aug	2.369	3.49	1	2.369	0.000:
12-Aug	2.378	3.88	1	2.378	0.000:
13-Aug	2.373	4.47	1	2.373	0.000:
14-Aug	2.408	5.09	1	2.408	0.000:
15-Aug	2.708	5.55	1	2.708	0.000:
16-Aug	2.566	5.84	1	2.566	0.000:
17-Aug	2.415	6.06	1	2.415	0.000:
18-Aug	2.469	6.20	1	2.469	0.000:
19-Aug	2.471	6.26	1	2.471	0.000:
20-Aug	2.561	6.25	1	2.561	0.000:
21-Aug	2.655	6.13	1	2.655	0.000:

22-Aug	2.678	5.86	1	2.678	0.000:
23-Aug	3.157	5.47	1	3.157	0.000:
24-Aug	2.974	4.99	1	2.974	0.000:
25-Aug	2.978	4.47	1	2.978	0.000:
26-Aug	2.709	3.97	1	2.709	0.000:
27-Aug	2.566	3.60	1	2.566	0.000:
28-Aug	2.486	3.43	1	2.486	0.000:
29-Aug	2.378	3.46	1	2.378	0.000:
30-Aug	2.321	3.67	1	2.321	0.000:
31-Aug	2.319	4.00	1	2.319	0.000:
1-Sep	2.359	4.45	1	2.359	0.000:
2-Sep	2.348	4.99	1	2.348	0.000:
3-Sep	2.505	5.57	1	2.505	0.000:
4-Sep	2.936	6.14	1	2.936	0.000:
5-Sep	3.126	6.65	1	3.126	0.000:
6-Sep	4.252	7.07	1	4.252	0.000:
7-Sep	4.260	7.36	1	4.260	0.000:
8-Sep	8.102	7.50	1	8.102	0.000:
9-Sep	7.854	7.53	1	7.854	0.000:
10-Sep	6.209	7.52	1	6.209	0.000:
11-Sep	5.127	7.50	1	5.127	0.000:
12-Sep	9.650	7.47	1	9.650	0.000:
13-Sep	7.575	7.42	1	7.575	0.000:
14-Sep	7.459	7.30	1	7.459	0.000:
15-Sep	6.060	7.12	1	6.060	0.000:
16-Sep	5.129	6.92	1	5.129	0.000:
17-Sep	4.714	6.70	1	4.714	0.000:
18-Sep	5.217	6.45	1	5.217	0.000:
19-Sep	12.208	6.20	1	12.208	0.000:
20-Sep	15.886	5.95	1	15.886	0.000:
21-Sep	13.583	5.73	1	13.583	0.000:
22-Sep	9.451	5.56	1	9.451	0.000:
23-Sep	10.469	5.41	1	10.469	0.000:
24-Sep	10.384	5.26	1	10.384	0.000:
25-Sep	11.741	5.11	1	11.741	0.000:
26-Sep	9.951	4.98	1	9.951	0.000:
27-Sep	8.448	4.91	1	8.448	0.000:
28-Sep	10.775	4.91	1	10.775	0.000:
29-Sep	10.884	4.97	1	10.884	0.000:
30-Sep	10.828	5.08	1	10.828	0.000:
1-Oct	12.305	5.18	1	12.305	0.000:
2-Oct	9.769	5.24	1	9.769	0.000:
3-Oct	8.684	5.22	1	8.684	0.000:
4-Oct	7.927	5.13	1	7.927	0.000:
5-Oct	18.115	4.99	1	18.115	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
11	UPPER TALARIK	B	24.7	2007	17-May	6.027			1	6.027	0.000:	CONFLUENCE WITH TRIBUTARY UT
					18-May	6.309			1	6.309	0.000:	1.119
					19-May	5.530			1	5.530	0.000:	
					20-May	5.475			1	5.475	0.000:	
					21-May	5.109			1	5.109	0.000:	
					22-May	5.132			1	5.132	0.000:	
					23-May	5.046			1	5.046	0.000:	
					24-May	5.130			1	5.130	0.000:	
					25-May	5.636			1	5.636	0.000:	
					26-May	5.577			1	5.577	0.000:	
					27-May	5.191			1	5.191	0.000:	
					28-May	4.861			1	4.861	0.000:	
					29-May	4.494			1	4.494	0.000:	
					30-May	4.287			1	4.287	0.000:	
					31-May	4.239			1	4.239	0.000:	
					1-Jun	4.190			1	4.190	0.000:	
					2-Jun	4.055			1	4.055	0.000:	
					3-Jun	3.993			1	3.993	0.000:	
					4-Jun	4.068			1	4.068	0.000:	
					5-Jun	4.943			1	4.943	0.000:	
					6-Jun	4.597			1	4.597	0.000:	
					7-Jun	4.156			1	4.156	0.000:	
					8-Jun	3.913			1	3.913	0.000:	
					9-Jun	3.719			1	3.719	0.000:	
					10-Jun	3.592			1	3.592	0.000:	
					11-Jun	3.579			1	3.579	0.000:	
					12-Jun	3.644			1	3.644	0.000:	
					13-Jun	3.528			1	3.528	0.000:	
					14-Jun	3.528			1	3.528	0.000:	
					15-Jun	3.506			1	3.506	0.000:	
					16-Jun	3.377			1	3.377	0.000:	
					17-Jun	3.594			1	3.594	0.000:	
					18-Jun	3.596			1	3.596	0.000:	
					19-Jun	3.480			1	3.480	0.000:	
					20-Jun	3.327			1	3.327	0.000:	
					21-Jun	3.157			1	3.157	0.000:	
					22-Jun	3.154			1	3.154	0.000:	
					23-Jun	4.330			1	4.330	0.000:	
					24-Jun	6.032			1	6.032	0.000:	
					25-Jun	4.653			1	4.653	0.000:	
					26-Jun	3.840			1	3.840	0.000:	
					27-Jun	3.137			1	3.137	0.000:	
					28-Jun	2.991			1	2.991	0.000:	
					29-Jun	2.878			1	2.878	0.000:	
					30-Jun	2.769			1	2.769	0.000:	
					1-Jul	2.686			1	2.686	0.000:	

2-Jul	2.630		1	2.630	0.000:
3-Jul	2.603		1	2.603	0.000:
4-Jul	3.267		1	3.267	0.000:
5-Jul	3.364		1	3.364	0.000:
6-Jul	3.117		1	3.117	0.000:
7-Jul	2.979		1	2.979	0.000:
8-Jul	3.054		1	3.054	0.000:
9-Jul	2.948		1	2.948	0.000:
10-Jul	2.776		1	2.776	0.000:
11-Jul	2.664		1	2.664	0.000:
12-Jul	2.608		1	2.608	0.000:
13-Jul	2.993		1	2.993	0.000:
14-Jul	3.088		1	3.088	0.000:
15-Jul	2.870		1	2.870	0.000:
16-Jul	2.728		1	2.728	0.000:
17-Jul	2.613		1	2.613	0.000:
18-Jul	2.552		1	2.552	0.000:
19-Jul	2.580		1	2.580	0.000:
20-Jul	2.552		1	2.552	0.000:
21-Jul	2.925		1	2.925	0.000:
22-Jul	2.804		1	2.804	0.000:
23-Jul	3.535		1	3.535	0.000:
24-Jul	4.017		1	4.017	0.000:
25-Jul	3.681		1	3.681	0.000:
26-Jul	3.176		1	3.176	0.000:
27-Jul	2.953		1	2.953	0.000:
28-Jul	2.895		1	2.895	0.000:
29-Jul	2.779		1	2.779	0.000:
30-Jul	2.690		1	2.690	0.000:
31-Jul	2.673		1	2.673	0.000:
1-Aug	2.681		1	2.681	0.000:
2-Aug	2.731		1	2.731	0.000:
3-Aug	2.821		1	2.821	0.000:
4-Aug	3.542		1	3.542	0.000:
5-Aug	4.439		1	4.439	0.000:
6-Aug	4.398		1	4.398	0.000:
7-Aug	3.646		1	3.646	0.000:
8-Aug	3.281		1	3.281	0.000:
9-Aug	3.054		1	3.054	0.000:
10-Aug	2.915		1	2.915	0.000:
11-Aug	2.832		1	2.832	0.000:
12-Aug	2.833		1	2.833	0.000:
13-Aug	2.833		1	2.833	0.000:
14-Aug	2.862		1	2.862	0.000:
15-Aug	3.176		1	3.176	0.000:
16-Aug	3.036		1	3.036	0.000:
17-Aug	2.881		1	2.881	0.000:
18-Aug	2.960		1	2.960	0.000:
19-Aug	2.962		1	2.962	0.000:
20-Aug	3.067		1	3.067	0.000:
21-Aug	3.154		1	3.154	0.000:

22-Aug	3.175	1	3.175	0.000:
23-Aug	3.631	1	3.631	0.000:
24-Aug	3.462	1	3.462	0.000:
25-Aug	3.463	1	3.463	0.000:
26-Aug	3.211	1	3.211	0.000:
27-Aug	3.045	1	3.045	0.000:
28-Aug	2.959	1	2.959	0.000:
29-Aug	2.845	1	2.845	0.000:
30-Aug	2.784	1	2.784	0.000:
31-Aug	2.788	1	2.788	0.000:
1-Sep	2.815	1	2.815	0.000:
2-Sep	2.815	1	2.815	0.000:
3-Sep	2.989	1	2.989	0.000:
4-Sep	3.442	1	3.442	0.000:
5-Sep	3.693	1	3.693	0.000:
6-Sep	4.992	1	4.992	0.000:
7-Sep	4.960	1	4.960	0.000:
8-Sep	9.451	1	9.451	0.000:
9-Sep	9.038	1	9.038	0.000:
10-Sep	7.088	1	7.088	0.000:
11-Sep	5.820	1	5.820	0.000:
12-Sep	10.950	1	10.950	0.000:
13-Sep	8.651	1	8.651	0.000:
14-Sep	8.496	1	8.496	0.000:
15-Sep	6.894	1	6.894	0.000:
16-Sep	5.775	1	5.775	0.000:
17-Sep	5.299	1	5.299	0.000:
18-Sep	5.900	1	5.900	0.000:
19-Sep	14.045	1	14.045	0.000:
20-Sep	18.908	1	18.908	0.000:
21-Sep	16.124	1	16.124	0.000:
22-Sep	10.984	1	10.984	0.000:
23-Sep	12.103	1	12.103	0.000:
24-Sep	12.091	1	12.091	0.000:
25-Sep	13.747	1	13.747	0.000:
26-Sep	11.656	1	11.656	0.000:
27-Sep	9.833	1	9.833	0.000:
28-Sep	12.701	1	12.701	0.000:
29-Sep	12.881	1	12.881	0.000:
30-Sep	12.705	1	12.705	0.000:
1-Oct	14.561	1	14.561	0.000:
2-Oct	11.429	1	11.429	0.000:
3-Oct	10.118	1	10.118	0.000:
4-Oct	9.200	1	9.200	0.000:
5-Oct	22.096	1	22.096	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
12	TRIBUTARY 119	H	25.1	2007	17-May	0.667	5.08	5.07	1	0.667	0.000:	HYDROLOGY GAGE UT119A
					18-May	0.667	4.91	5.26	1	0.667	0.000:	
					19-May	0.658	4.70	5.47	1	0.658	0.000:	
					20-May	0.656	4.85	5.71	1	0.656	0.000:	
					21-May	0.656	5.07	5.94	1	0.656	0.000:	
					22-May	0.663	4.61	6.13	1	0.663	0.000:	
					23-May	0.665	4.70	6.24	1	0.665	0.000:	
					24-May	0.665	4.60	6.24	1	0.665	0.000:	
					25-May	0.667	4.49	6.19	1	0.667	0.000:	
					26-May	0.668	4.65	6.14	1	0.668	0.000:	
					27-May	0.660	5.36	6.09	1	0.660	0.000:	
					28-May	0.652	4.97	6.02	1	0.652	0.000:	
					29-May	0.653	4.89	5.90	1	0.653	0.000:	
					30-May	0.663	4.90	5.79	1	0.663	0.000:	
					31-May	0.655	4.54	5.71	1	0.655	0.000:	
					1-Jun	0.647	4.56	5.67	1	0.647	0.000:	
					2-Jun	0.643	4.94	5.66	1	0.643	0.000:	
					3-Jun	0.648	5.42	5.68	1	0.648	0.000:	
					4-Jun	0.659	4.86	5.73	1	0.659	0.000:	
					5-Jun	0.658	4.93	5.78	1	0.658	0.000:	
					6-Jun	0.665	5.62	5.81	1	0.665	0.000:	
					7-Jun	0.656	4.93	5.82	1	0.656	0.000:	
					8-Jun	0.645	4.86	5.82	1	0.645	0.000:	
					9-Jun	0.642	4.67	5.83	1	0.642	0.000:	
					10-Jun	0.658	6.05	5.89	1	0.658	0.000:	
					11-Jun	0.643	5.81	5.98	1	0.643	0.000:	
					12-Jun	0.631	4.84	6.02	1	0.631	0.000:	
					13-Jun	0.635	4.87	5.94	1	0.635	0.000:	
					14-Jun	0.635	5.37	5.80	1	0.635	0.000:	
					15-Jun	0.628	6.28	5.67	1	0.628	0.000:	
					16-Jun	0.617	6.00	5.64	1	0.617	0.000:	
					17-Jun	0.627	5.09	5.69	1	0.627	0.000:	
					18-Jun	0.624	5.47	5.81	1	0.624	0.000:	
					19-Jun	0.627	6.36	6.04	1	0.627	0.000:	
					20-Jun	0.639	6.79	6.40	1	0.639	0.000:	
					21-Jun	0.640	6.28	6.80	1	0.640	0.000:	
					22-Jun	0.643	4.93	7.12	1	0.643	0.000:	
					23-Jun	0.707	4.76	7.22	1	0.707	0.000:	
					24-Jun	0.693	4.91	7.12	1	0.693	0.000:	
					25-Jun	0.664	5.06	6.85	1	0.664	0.000:	
					26-Jun	0.662	5.34	6.51	1	0.662	0.000:	
					27-Jun	0.666	5.64	6.16	1	0.666	0.000:	
					28-Jun	0.670	5.15	5.81	1	0.670	0.000:	
					29-Jun	0.672	5.64	5.36	1	0.672	0.000:	
					30-Jun	0.668	5.31	4.88	1	0.668	0.000:	
					1-Jul	0.667	5.13	4.40	1	0.667	0.000:	

2-Jul	0.666	5.39	3.99	1	0.666	0.000:
3-Jul	0.665	5.70	3.68	1	0.665	0.000:
4-Jul	0.679	5.33	3.46	1	0.679	0.000:
5-Jul	0.665	5.07	3.25	1	0.665	0.000:
6-Jul	0.657	5.19	3.09	1	0.657	0.000:
7-Jul	0.654	5.29	2.96	1	0.654	0.000:
8-Jul	0.664	5.18	2.90	1	0.664	0.000:
9-Jul	0.658	5.23	2.91	1	0.658	0.000:
10-Jul	0.660	5.18	3.04	1	0.660	0.000:
11-Jul	0.659	5.86	3.32	1	0.659	0.000:
12-Jul	0.659	5.22	3.70	1	0.659	0.000:
13-Jul	0.669	4.95	4.09	1	0.669	0.000:
14-Jul	0.658	5.18	4.36	1	0.658	0.000:
15-Jul	0.650	5.49	4.54	1	0.650	0.000:
16-Jul	0.651	5.56	4.67	1	0.651	0.000:
17-Jul	0.653	5.88	4.84	1	0.653	0.000:
18-Jul	0.657	5.18	5.09	1	0.657	0.000:
19-Jul	0.657	5.17	5.35	1	0.657	0.000:
20-Jul	0.658	5.94	5.60	1	0.658	0.000:
21-Jul	0.653	5.27	5.74	1	0.653	0.000:
22-Jul	0.660	4.79	5.62	1	0.660	0.000:
23-Jul	0.668	4.84	5.24	1	0.668	0.000:
24-Jul	0.662	5.07	4.72	1	0.662	0.000:
25-Jul	0.658	5.33	4.25	1	0.658	0.000:
26-Jul	0.654	5.66	3.95	1	0.654	0.000:
27-Jul	0.651	5.68	3.92	1	0.651	0.000:
28-Jul	0.653	6.06	4.18	1	0.653	0.000:
29-Jul	0.655	5.84	4.69	1	0.655	0.000:
30-Jul	0.659	5.56	5.28	1	0.659	0.000:
31-Jul	0.647	5.30	5.78	1	0.647	0.000:
1-Aug	0.638	5.32	6.08	1	0.638	0.000:
2-Aug	0.645	5.30	6.13	1	0.645	0.000:
3-Aug	0.639	5.33	5.96	1	0.639	0.000:
4-Aug	0.656	5.31	5.66	1	0.656	0.000:
5-Aug	0.658	5.35	5.27	1	0.658	0.000:
6-Aug	0.642	5.74	4.85	1	0.642	0.000:
7-Aug	0.632	5.71	4.38	1	0.632	0.000:
8-Aug	0.629	5.69	3.91	1	0.629	0.000:
9-Aug	0.631	5.81	3.54	1	0.631	0.000:
10-Aug	0.629	5.58	3.37	1	0.629	0.000:
11-Aug	0.627	5.42	3.49	1	0.627	0.000:
12-Aug	0.626	5.61	3.88	1	0.626	0.000:
13-Aug	0.626	5.88	4.47	1	0.626	0.000:
14-Aug	0.625	5.26	5.09	1	0.625	0.000:
15-Aug	0.623	5.30	5.55	1	0.623	0.000:
16-Aug	0.621	5.36	5.84	1	0.621	0.000:
17-Aug	0.635	5.35	6.06	1	0.635	0.000:
18-Aug	0.668	5.34	6.20	1	0.668	0.000:
19-Aug	0.666	5.46	6.26	1	0.666	0.000:
20-Aug	0.673	5.36	6.25	1	0.673	0.000:
21-Aug	0.671	4.94	6.13	1	0.671	0.000:

22-Aug	0.678	5.04	5.86	1	0.678	0.000:
23-Aug	0.676	5.07	5.47	1	0.676	0.000:
24-Aug	0.676	5.22	4.99	1	0.676	0.000:
25-Aug	0.675	5.32	4.47	1	0.675	0.000:
26-Aug	0.671	5.21	3.97	1	0.671	0.000:
27-Aug	0.668	5.09	3.60	1	0.668	0.000:
28-Aug	0.669	5.13	3.43	1	0.669	0.000:
29-Aug	0.671	5.75	3.46	1	0.671	0.000:
30-Aug	0.675	5.33	3.67	1	0.675	0.000:
31-Aug	0.671	4.93	4.00	1	0.671	0.000:
1-Sep	0.672	4.91	4.45	1	0.672	0.000:
2-Sep	0.672	5.09	4.99	1	0.672	0.000:
3-Sep	0.696	5.06	5.57	1	0.696	0.000:
4-Sep	0.695	5.04	6.14	1	0.695	0.000:
5-Sep	0.695	5.22	6.65	1	0.695	0.000:
6-Sep	0.690	5.00	7.07	1	0.690	0.000:
7-Sep	0.696	5.03	7.36	1	0.696	0.000:
8-Sep	0.786	5.65	7.50	1	0.786	0.000:
9-Sep	0.727	5.13	7.53	1	0.727	0.000:
10-Sep	0.710	5.15	7.52	1	0.710	0.000:
11-Sep	0.714	5.10	7.50	1	0.714	0.000:
12-Sep	0.762	5.48	7.47	1	0.762	0.000:
13-Sep	0.723	4.89	7.42	1	0.723	0.000:
14-Sep	0.738	4.83	7.30	1	0.738	0.000:
15-Sep	0.709	4.55	7.12	1	0.709	0.000:
16-Sep	0.704	4.76	6.92	1	0.704	0.000:
17-Sep	0.702	4.67	6.70	1	0.702	0.000:
18-Sep	0.748	5.12	6.45	1	0.748	0.000:
19-Sep	0.783	5.39	6.20	1	0.783	0.000:
20-Sep	0.870	5.44	5.95	1	0.870	0.000:
21-Sep	0.762	5.06	5.73	1	0.762	0.000:
22-Sep	0.744	4.46	5.56	1	0.744	0.000:
23-Sep	0.781	4.78	5.41	1	0.781	0.000:
24-Sep	0.732	4.75	5.26	1	0.732	0.000:
25-Sep	0.704	4.74	5.11	1	0.704	0.000:
26-Sep	0.686	4.58	4.98	1	0.686	0.000:
27-Sep	0.686	4.35	4.91	1	0.686	0.000:
28-Sep	0.734	4.51	4.91	1	0.734	0.000:
29-Sep	0.720	4.35	4.97	1	0.720	0.000:
30-Sep	0.733	4.44	5.08	1	0.733	0.000:
1-Oct	0.726	4.45	5.18	1	0.726	0.000:
2-Oct	0.718	4.09	5.24	1	0.718	0.000:
3-Oct	0.710	3.84	5.22	1	0.710	0.000:
4-Oct	0.730	3.74	5.13	1	0.730	0.000:
5-Oct	0.973	4.04	4.99	1	0.973	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
13	TRIBUTARY 119	T	24.7	2007	17-May	0.667			1	0.667	0.000:	CONFLUENCE WITH UPPER TALARIK
					18-May	0.667			1	0.667	0.000:	CREEK
					19-May	0.658			1	0.658	0.000:	
					20-May	0.656			1	0.656	0.000:	
					21-May	0.656			1	0.656	0.000:	
					22-May	0.663			1	0.663	0.000:	
					23-May	0.665			1	0.665	0.000:	
					24-May	0.665			1	0.665	0.000:	
					25-May	0.667			1	0.667	0.000:	
					26-May	0.668			1	0.668	0.000:	
					27-May	0.660			1	0.660	0.000:	
					28-May	0.652			1	0.652	0.000:	
					29-May	0.653			1	0.653	0.000:	
					30-May	0.663			1	0.663	0.000:	
					31-May	0.655			1	0.655	0.000:	
					1-Jun	0.647			1	0.647	0.000:	
					2-Jun	0.643			1	0.643	0.000:	
					3-Jun	0.648			1	0.648	0.000:	
					4-Jun	0.659			1	0.659	0.000:	
					5-Jun	0.658			1	0.658	0.000:	
					6-Jun	0.665			1	0.665	0.000:	
					7-Jun	0.656			1	0.656	0.000:	
					8-Jun	0.645			1	0.645	0.000:	
					9-Jun	0.642			1	0.642	0.000:	
					10-Jun	0.658			1	0.658	0.000:	
					11-Jun	0.643			1	0.643	0.000:	
					12-Jun	0.631			1	0.631	0.000:	
					13-Jun	0.635			1	0.635	0.000:	
					14-Jun	0.635			1	0.635	0.000:	
					15-Jun	0.628			1	0.628	0.000:	
					16-Jun	0.617			1	0.617	0.000:	
					17-Jun	0.627			1	0.627	0.000:	
					18-Jun	0.624			1	0.624	0.000:	
					19-Jun	0.627			1	0.627	0.000:	
					20-Jun	0.639			1	0.639	0.000:	
					21-Jun	0.640			1	0.640	0.000:	
					22-Jun	0.643			1	0.643	0.000:	
					23-Jun	0.707			1	0.707	0.000:	
					24-Jun	0.693			1	0.693	0.000:	
					25-Jun	0.664			1	0.664	0.000:	
					26-Jun	0.662			1	0.662	0.000:	
					27-Jun	0.666			1	0.666	0.000:	
					28-Jun	0.670			1	0.670	0.000:	
					29-Jun	0.672			1	0.672	0.000:	
					30-Jun	0.668			1	0.668	0.000:	
					1-Jul	0.667			1	0.667	0.000:	

2-Jul	0.666	1	0.666	0.000:
3-Jul	0.665	1	0.665	0.000:
4-Jul	0.679	1	0.679	0.000:
5-Jul	0.665	1	0.665	0.000:
6-Jul	0.657	1	0.657	0.000:
7-Jul	0.654	1	0.654	0.000:
8-Jul	0.664	1	0.664	0.000:
9-Jul	0.658	1	0.658	0.000:
10-Jul	0.660	1	0.660	0.000:
11-Jul	0.659	1	0.659	0.000:
12-Jul	0.659	1	0.659	0.000:
13-Jul	0.669	1	0.669	0.000:
14-Jul	0.658	1	0.658	0.000:
15-Jul	0.650	1	0.650	0.000:
16-Jul	0.651	1	0.651	0.000:
17-Jul	0.653	1	0.653	0.000:
18-Jul	0.657	1	0.657	0.000:
19-Jul	0.657	1	0.657	0.000:
20-Jul	0.658	1	0.658	0.000:
21-Jul	0.653	1	0.653	0.000:
22-Jul	0.660	1	0.660	0.000:
23-Jul	0.668	1	0.668	0.000:
24-Jul	0.662	1	0.662	0.000:
25-Jul	0.658	1	0.658	0.000:
26-Jul	0.654	1	0.654	0.000:
27-Jul	0.651	1	0.651	0.000:
28-Jul	0.653	1	0.653	0.000:
29-Jul	0.655	1	0.655	0.000:
30-Jul	0.659	1	0.659	0.000:
31-Jul	0.647	1	0.647	0.000:
1-Aug	0.638	1	0.638	0.000:
2-Aug	0.645	1	0.645	0.000:
3-Aug	0.639	1	0.639	0.000:
4-Aug	0.656	1	0.656	0.000:
5-Aug	0.658	1	0.658	0.000:
6-Aug	0.642	1	0.642	0.000:
7-Aug	0.632	1	0.632	0.000:
8-Aug	0.629	1	0.629	0.000:
9-Aug	0.631	1	0.631	0.000:
10-Aug	0.629	1	0.629	0.000:
11-Aug	0.627	1	0.627	0.000:
12-Aug	0.626	1	0.626	0.000:
13-Aug	0.626	1	0.626	0.000:
14-Aug	0.625	1	0.625	0.000:
15-Aug	0.623	1	0.623	0.000:
16-Aug	0.621	1	0.621	0.000:
17-Aug	0.635	1	0.635	0.000:
18-Aug	0.668	1	0.668	0.000:
19-Aug	0.666	1	0.666	0.000:
20-Aug	0.673	1	0.673	0.000:
21-Aug	0.671	1	0.671	0.000:

22-Aug	0.678	1	0.678	0.000:
23-Aug	0.676	1	0.676	0.000:
24-Aug	0.676	1	0.676	0.000:
25-Aug	0.675	1	0.675	0.000:
26-Aug	0.671	1	0.671	0.000:
27-Aug	0.668	1	0.668	0.000:
28-Aug	0.669	1	0.669	0.000:
29-Aug	0.671	1	0.671	0.000:
30-Aug	0.675	1	0.675	0.000:
31-Aug	0.671	1	0.671	0.000:
1-Sep	0.672	1	0.672	0.000:
2-Sep	0.672	1	0.672	0.000:
3-Sep	0.696	1	0.696	0.000:
4-Sep	0.695	1	0.695	0.000:
5-Sep	0.695	1	0.695	0.000:
6-Sep	0.690	1	0.690	0.000:
7-Sep	0.696	1	0.696	0.000:
8-Sep	0.786	1	0.786	0.000:
9-Sep	0.727	1	0.727	0.000:
10-Sep	0.710	1	0.710	0.000:
11-Sep	0.714	1	0.714	0.000:
12-Sep	0.762	1	0.762	0.000:
13-Sep	0.723	1	0.723	0.000:
14-Sep	0.738	1	0.738	0.000:
15-Sep	0.709	1	0.709	0.000:
16-Sep	0.704	1	0.704	0.000:
17-Sep	0.702	1	0.702	0.000:
18-Sep	0.748	1	0.748	0.000:
19-Sep	0.783	1	0.783	0.000:
20-Sep	0.870	1	0.870	0.000:
21-Sep	0.762	1	0.762	0.000:
22-Sep	0.744	1	0.744	0.000:
23-Sep	0.781	1	0.781	0.000:
24-Sep	0.732	1	0.732	0.000:
25-Sep	0.704	1	0.704	0.000:
26-Sep	0.686	1	0.686	0.000:
27-Sep	0.686	1	0.686	0.000:
28-Sep	0.734	1	0.734	0.000:
29-Sep	0.720	1	0.720	0.000:
30-Sep	0.733	1	0.733	0.000:
1-Oct	0.726	1	0.726	0.000:
2-Oct	0.718	1	0.718	0.000:
3-Oct	0.710	1	0.710	0.000:
4-Oct	0.730	1	0.730	0.000:
5-Oct	0.973	1	0.973	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
14	UPPER TALARIK	J	24.7	2007	17-May	6.694		5.07	1	6.694	0.000:	CONFLUENCE WITH TRIBUTARY UT
					18-May	6.976		5.26	1	6.976	0.000:	1.119
					19-May	6.188		5.47	1	6.188	0.000:	
					20-May	6.131		5.71	1	6.131	0.000:	
					21-May	5.765		5.94	1	5.765	0.000:	
					22-May	5.795		6.13	1	5.795	0.000:	
					23-May	5.711		6.24	1	5.711	0.000:	
					24-May	5.795		6.24	1	5.795	0.000:	
					25-May	6.303		6.19	1	6.303	0.000:	
					26-May	6.245		6.14	1	6.245	0.000:	
					27-May	5.851		6.09	1	5.851	0.000:	
					28-May	5.513		6.02	1	5.513	0.000:	
					29-May	5.147		5.90	1	5.147	0.000:	
					30-May	4.950		5.79	1	4.950	0.000:	
					31-May	4.894		5.71	1	4.894	0.000:	
					1-Jun	4.837		5.67	1	4.837	0.000:	
					2-Jun	4.698		5.66	1	4.698	0.000:	
					3-Jun	4.641		5.68	1	4.641	0.000:	
					4-Jun	4.727		5.73	1	4.727	0.000:	
					5-Jun	5.601		5.78	1	5.601	0.000:	
					6-Jun	5.262		5.81	1	5.262	0.000:	
					7-Jun	4.812		5.82	1	4.812	0.000:	
					8-Jun	4.558		5.82	1	4.558	0.000:	
					9-Jun	4.361		5.83	1	4.361	0.000:	
					10-Jun	4.250		5.89	1	4.250	0.000:	
					11-Jun	4.222		5.98	1	4.222	0.000:	
					12-Jun	4.275		6.02	1	4.275	0.000:	
					13-Jun	4.163		5.94	1	4.163	0.000:	
					14-Jun	4.163		5.80	1	4.163	0.000:	
					15-Jun	4.134		5.67	1	4.134	0.000:	
					16-Jun	3.994		5.64	1	3.994	0.000:	
					17-Jun	4.221		5.69	1	4.221	0.000:	
					18-Jun	4.220		5.81	1	4.220	0.000:	
					19-Jun	4.107		6.04	1	4.107	0.000:	
					20-Jun	3.966		6.40	1	3.966	0.000:	
					21-Jun	3.797		6.80	1	3.797	0.000:	
					22-Jun	3.797		7.12	1	3.797	0.000:	
					23-Jun	5.037		7.22	1	5.037	0.000:	
					24-Jun	6.725		7.12	1	6.725	0.000:	
					25-Jun	5.317		6.85	1	5.317	0.000:	
					26-Jun	4.502		6.51	1	4.502	0.000:	
					27-Jun	3.803		6.16	1	3.803	0.000:	
					28-Jun	3.661		5.81	1	3.661	0.000:	
					29-Jun	3.550		5.36	1	3.550	0.000:	
					30-Jun	3.437		4.88	1	3.437	0.000:	
					1-Jul	3.353		4.40	1	3.353	0.000:	

2-Jul	3.296	3.99	1	3.296	0.000:
3-Jul	3.268	3.68	1	3.268	0.000:
4-Jul	3.946	3.46	1	3.946	0.000:
5-Jul	4.029	3.25	1	4.029	0.000:
6-Jul	3.774	3.09	1	3.774	0.000:
7-Jul	3.633	2.96	1	3.633	0.000:
8-Jul	3.718	2.90	1	3.718	0.000:
9-Jul	3.606	2.91	1	3.606	0.000:
10-Jul	3.436	3.04	1	3.436	0.000:
11-Jul	3.323	3.32	1	3.323	0.000:
12-Jul	3.267	3.70	1	3.267	0.000:
13-Jul	3.662	4.09	1	3.662	0.000:
14-Jul	3.746	4.36	1	3.746	0.000:
15-Jul	3.520	4.54	1	3.520	0.000:
16-Jul	3.379	4.67	1	3.379	0.000:
17-Jul	3.266	4.84	1	3.266	0.000:
18-Jul	3.209	5.09	1	3.209	0.000:
19-Jul	3.237	5.35	1	3.237	0.000:
20-Jul	3.210	5.60	1	3.210	0.000:
21-Jul	3.578	5.74	1	3.578	0.000:
22-Jul	3.464	5.62	1	3.464	0.000:
23-Jul	4.203	5.24	1	4.203	0.000:
24-Jul	4.679	4.72	1	4.679	0.000:
25-Jul	4.339	4.25	1	4.339	0.000:
26-Jul	3.830	3.95	1	3.830	0.000:
27-Jul	3.604	3.92	1	3.604	0.000:
28-Jul	3.548	4.18	1	3.548	0.000:
29-Jul	3.434	4.69	1	3.434	0.000:
30-Jul	3.349	5.28	1	3.349	0.000:
31-Jul	3.320	5.78	1	3.320	0.000:
1-Aug	3.319	6.08	1	3.319	0.000:
2-Aug	3.376	6.13	1	3.376	0.000:
3-Aug	3.460	5.96	1	3.460	0.000:
4-Aug	4.198	5.66	1	4.198	0.000:
5-Aug	5.097	5.27	1	5.097	0.000:
6-Aug	5.040	4.85	1	5.040	0.000:
7-Aug	4.278	4.38	1	4.278	0.000:
8-Aug	3.910	3.91	1	3.910	0.000:
9-Aug	3.685	3.54	1	3.685	0.000:
10-Aug	3.544	3.37	1	3.544	0.000:
11-Aug	3.459	3.49	1	3.459	0.000:
12-Aug	3.459	3.88	1	3.459	0.000:
13-Aug	3.459	4.47	1	3.459	0.000:
14-Aug	3.487	5.09	1	3.487	0.000:
15-Aug	3.799	5.55	1	3.799	0.000:
16-Aug	3.657	5.84	1	3.657	0.000:
17-Aug	3.516	6.06	1	3.516	0.000:
18-Aug	3.628	6.20	1	3.628	0.000:
19-Aug	3.628	6.26	1	3.628	0.000:
20-Aug	3.740	6.25	1	3.740	0.000:
21-Aug	3.825	6.13	1	3.825	0.000:

22-Aug	3.853	5.86	1	3.853	0.000:
23-Aug	4.307	5.47	1	4.307	0.000:
24-Aug	4.138	4.99	1	4.138	0.000:
25-Aug	4.138	4.47	1	4.138	0.000:
26-Aug	3.882	3.97	1	3.882	0.000:
27-Aug	3.713	3.60	1	3.713	0.000:
28-Aug	3.628	3.43	1	3.628	0.000:
29-Aug	3.516	3.46	1	3.516	0.000:
30-Aug	3.459	3.67	1	3.459	0.000:
31-Aug	3.459	4.00	1	3.459	0.000:
1-Sep	3.487	4.45	1	3.487	0.000:
2-Sep	3.487	4.99	1	3.487	0.000:
3-Sep	3.685	5.57	1	3.685	0.000:
4-Sep	4.137	6.14	1	4.137	0.000:
5-Sep	4.388	6.65	1	4.388	0.000:
6-Sep	5.682	7.07	1	5.682	0.000:
7-Sep	5.656	7.36	1	5.656	0.000:
8-Sep	10.237	7.50	1	10.237	0.000:
9-Sep	9.765	7.53	1	9.765	0.000:
10-Sep	7.798	7.52	1	7.798	0.000:
11-Sep	6.534	7.50	1	6.534	0.000:
12-Sep	11.712	7.47	1	11.712	0.000:
13-Sep	9.374	7.42	1	9.374	0.000:
14-Sep	9.234	7.30	1	9.234	0.000:
15-Sep	7.603	7.12	1	7.603	0.000:
16-Sep	6.479	6.92	1	6.479	0.000:
17-Sep	6.001	6.70	1	6.001	0.000:
18-Sep	6.648	6.45	1	6.648	0.000:
19-Sep	14.828	6.20	1	14.828	0.000:
20-Sep	19.778	5.95	1	19.778	0.000:
21-Sep	16.886	5.73	1	16.886	0.000:
22-Sep	11.728	5.56	1	11.728	0.000:
23-Sep	12.884	5.41	1	12.884	0.000:
24-Sep	12.823	5.26	1	12.823	0.000:
25-Sep	14.451	5.11	1	14.451	0.000:
26-Sep	12.342	4.98	1	12.342	0.000:
27-Sep	10.519	4.91	1	10.519	0.000:
28-Sep	13.435	4.91	1	13.435	0.000:
29-Sep	13.601	4.97	1	13.601	0.000:
30-Sep	13.438	5.08	1	13.438	0.000:
1-Oct	15.287	5.18	1	15.287	0.000:
2-Oct	12.147	5.24	1	12.147	0.000:
3-Oct	10.828	5.22	1	10.828	0.000:
4-Oct	9.930	5.13	1	9.930	0.000:
5-Oct	23.069	4.99	1	23.069	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW INIT. (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
15	UPPER TALARIK	Q	24.5	2007	17-May	6.739		5.07	1	6.739	0.000:	HYDROLOGY GAGE UT100B
					18-May	7.023		5.26	1	7.023	0.000:	
					19-May	6.230		5.47	1	6.230	0.000:	
					20-May	6.173		5.71	1	6.173	0.000:	
					21-May	5.805		5.94	1	5.805	0.000:	
					22-May	5.833		6.13	1	5.833	0.000:	
					23-May	5.748		6.24	1	5.748	0.000:	
					24-May	5.833		6.24	1	5.833	0.000:	
					25-May	6.343		6.19	1	6.343	0.000:	
					26-May	6.286		6.14	1	6.286	0.000:	
					27-May	5.890		6.09	1	5.890	0.000:	
					28-May	5.550		6.02	1	5.550	0.000:	
					29-May	5.182		5.90	1	5.182	0.000:	
					30-May	4.984		5.79	1	4.984	0.000:	
					31-May	4.927		5.71	1	4.927	0.000:	
					1-Jun	4.870		5.67	1	4.870	0.000:	
					2-Jun	4.729		5.66	1	4.729	0.000:	
					3-Jun	4.672		5.68	1	4.672	0.000:	
					4-Jun	4.757		5.73	1	4.757	0.000:	
					5-Jun	5.635		5.78	1	5.635	0.000:	
					6-Jun	5.295		5.81	1	5.295	0.000:	
					7-Jun	4.842		5.82	1	4.842	0.000:	
					8-Jun	4.587		5.82	1	4.587	0.000:	
					9-Jun	4.389		5.83	1	4.389	0.000:	
					10-Jun	4.276		5.89	1	4.276	0.000:	
					11-Jun	4.248		5.98	1	4.248	0.000:	
					12-Jun	4.304		6.02	1	4.304	0.000:	
					13-Jun	4.191		5.94	1	4.191	0.000:	
					14-Jun	4.191		5.80	1	4.191	0.000:	
					15-Jun	4.163		5.67	1	4.163	0.000:	
					16-Jun	4.021		5.64	1	4.021	0.000:	
					17-Jun	4.248		5.69	1	4.248	0.000:	
					18-Jun	4.248		5.81	1	4.248	0.000:	
					19-Jun	4.134		6.04	1	4.134	0.000:	
					20-Jun	3.993		6.40	1	3.993	0.000:	
					21-Jun	3.823		6.80	1	3.823	0.000:	
					22-Jun	3.823		7.12	1	3.823	0.000:	
					23-Jun	5.069		7.22	1	5.069	0.000:	
					24-Jun	6.768		7.12	1	6.768	0.000:	
					25-Jun	5.352		6.85	1	5.352	0.000:	
					26-Jun	4.531		6.51	1	4.531	0.000:	
					27-Jun	3.823		6.16	1	3.823	0.000:	
					28-Jun	3.681		5.81	1	3.681	0.000:	
					29-Jun	3.568		5.36	1	3.568	0.000:	
					30-Jun	3.455		4.88	1	3.455	0.000:	
					1-Jul	3.370		4.40	1	3.370	0.000:	

2-Jul	3.313	3.99	1	3.313	0.000:
3-Jul	3.285	3.68	1	3.285	0.000:
4-Jul	3.964	3.46	1	3.964	0.000:
5-Jul	4.049	3.25	1	4.049	0.000:
6-Jul	3.794	3.09	1	3.794	0.000:
7-Jul	3.653	2.96	1	3.653	0.000:
8-Jul	3.738	2.90	1	3.738	0.000:
9-Jul	3.625	2.91	1	3.625	0.000:
10-Jul	3.455	3.04	1	3.455	0.000:
11-Jul	3.341	3.32	1	3.341	0.000:
12-Jul	3.285	3.70	1	3.285	0.000:
13-Jul	3.681	4.09	1	3.681	0.000:
14-Jul	3.766	4.36	1	3.766	0.000:
15-Jul	3.540	4.54	1	3.540	0.000:
16-Jul	3.398	4.67	1	3.398	0.000:
17-Jul	3.285	4.84	1	3.285	0.000:
18-Jul	3.228	5.09	1	3.228	0.000:
19-Jul	3.256	5.35	1	3.256	0.000:
20-Jul	3.228	5.60	1	3.228	0.000:
21-Jul	3.596	5.74	1	3.596	0.000:
22-Jul	3.483	5.62	1	3.483	0.000:
23-Jul	4.219	5.24	1	4.219	0.000:
24-Jul	4.701	4.72	1	4.701	0.000:
25-Jul	4.361	4.25	1	4.361	0.000:
26-Jul	3.851	3.95	1	3.851	0.000:
27-Jul	3.625	3.92	1	3.625	0.000:
28-Jul	3.568	4.18	1	3.568	0.000:
29-Jul	3.455	4.69	1	3.455	0.000:
30-Jul	3.370	5.28	1	3.370	0.000:
31-Jul	3.341	5.78	1	3.341	0.000:
1-Aug	3.341	6.08	1	3.341	0.000:
2-Aug	3.398	6.13	1	3.398	0.000:
3-Aug	3.483	5.96	1	3.483	0.000:
4-Aug	4.219	5.66	1	4.219	0.000:
5-Aug	5.125	5.27	1	5.125	0.000:
6-Aug	5.069	4.85	1	5.069	0.000:
7-Aug	4.304	4.38	1	4.304	0.000:
8-Aug	3.936	3.91	1	3.936	0.000:
9-Aug	3.710	3.54	1	3.710	0.000:
10-Aug	3.568	3.37	1	3.568	0.000:
11-Aug	3.483	3.49	1	3.483	0.000:
12-Aug	3.483	3.88	1	3.483	0.000:
13-Aug	3.483	4.47	1	3.483	0.000:
14-Aug	3.511	5.09	1	3.511	0.000:
15-Aug	3.823	5.55	1	3.823	0.000:
16-Aug	3.681	5.84	1	3.681	0.000:
17-Aug	3.540	6.06	1	3.540	0.000:
18-Aug	3.653	6.20	1	3.653	0.000:
19-Aug	3.653	6.26	1	3.653	0.000:
20-Aug	3.766	6.25	1	3.766	0.000:
21-Aug	3.851	6.13	1	3.851	0.000:

22-Aug	3.879	5.86	1	3.879	0.000:
23-Aug	4.332	5.47	1	4.332	0.000:
24-Aug	4.163	4.99	1	4.163	0.000:
25-Aug	4.163	4.47	1	4.163	0.000:
26-Aug	3.908	3.97	1	3.908	0.000:
27-Aug	3.738	3.60	1	3.738	0.000:
28-Aug	3.653	3.43	1	3.653	0.000:
29-Aug	3.540	3.46	1	3.540	0.000:
30-Aug	3.483	3.67	1	3.483	0.000:
31-Aug	3.483	4.00	1	3.483	0.000:
1-Sep	3.511	4.45	1	3.511	0.000:
2-Sep	3.511	4.99	1	3.511	0.000:
3-Sep	3.710	5.57	1	3.710	0.000:
4-Sep	4.163	6.14	1	4.163	0.000:
5-Sep	4.417	6.65	1	4.417	0.000:
6-Sep	5.720	7.07	1	5.720	0.000:
7-Sep	5.692	7.36	1	5.692	0.000:
8-Sep	10.307	7.50	1	10.307	0.000:
9-Sep	9.826	7.53	1	9.826	0.000:
10-Sep	7.844	7.52	1	7.844	0.000:
11-Sep	6.570	7.50	1	6.570	0.000:
12-Sep	11.780	7.47	1	11.780	0.000:
13-Sep	9.430	7.42	1	9.430	0.000:
14-Sep	9.288	7.30	1	9.288	0.000:
15-Sep	7.646	7.12	1	7.646	0.000:
16-Sep	6.513	6.92	1	6.513	0.000:
17-Sep	6.031	6.70	1	6.031	0.000:
18-Sep	6.683	6.45	1	6.683	0.000:
19-Sep	14.923	6.20	1	14.923	0.000:
20-Sep	19.935	5.95	1	19.935	0.000:
21-Sep	17.018	5.73	1	17.018	0.000:
22-Sep	11.808	5.56	1	11.808	0.000:
23-Sep	12.969	5.41	1	12.969	0.000:
24-Sep	12.912	5.26	1	12.912	0.000:
25-Sep	14.555	5.11	1	14.555	0.000:
26-Sep	12.431	4.98	1	12.431	0.000:
27-Sep	10.591	4.91	1	10.591	0.000:
28-Sep	13.535	4.91	1	13.535	0.000:
29-Sep	13.705	4.97	1	13.705	0.000:
30-Sep	13.535	5.08	1	13.535	0.000:
1-Oct	15.404	5.18	1	15.404	0.000:
2-Oct	12.233	5.24	1	12.233	0.000:
3-Oct	10.902	5.22	1	10.902	0.000:
4-Oct	9.996	5.13	1	9.996	0.000:
5-Oct	23.276	4.99	1	23.276	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
16	UPPER TALARIK	Q	14.4	2007	17-May	7.748		5.07	1	7.748	0.000:	HYDROLOGY GAGE UT100APC1
					18-May	8.078		5.26	1	8.078	0.000:	
					19-May	7.153		5.47	1	7.153	0.000:	
					20-May	7.087		5.71	1	7.087	0.000:	
					21-May	6.658		5.94	1	6.658	0.000:	
					22-May	6.691		6.13	1	6.691	0.000:	
					23-May	6.592		6.24	1	6.592	0.000:	
					24-May	6.691		6.24	1	6.691	0.000:	
					25-May	7.285		6.19	1	7.285	0.000:	
					26-May	7.219		6.14	1	7.219	0.000:	
					27-May	6.757		6.09	1	6.757	0.000:	
					28-May	6.362		6.02	1	6.362	0.000:	
					29-May	5.934		5.90	1	5.934	0.000:	
					30-May	5.703		5.79	1	5.703	0.000:	
					31-May	5.637		5.71	1	5.637	0.000:	
					1-Jun	5.572		5.67	1	5.572	0.000:	
					2-Jun	5.407		5.66	1	5.407	0.000:	
					3-Jun	5.341		5.68	1	5.341	0.000:	
					4-Jun	5.440		5.73	1	5.440	0.000:	
					5-Jun	6.460		5.78	1	6.460	0.000:	
					6-Jun	6.065		5.81	1	6.065	0.000:	
					7-Jun	5.539		5.82	1	5.539	0.000:	
					8-Jun	5.243		5.82	1	5.243	0.000:	
					9-Jun	5.013		5.83	1	5.013	0.000:	
					10-Jun	4.882		5.89	1	4.882	0.000:	
					11-Jun	4.849		5.98	1	4.849	0.000:	
					12-Jun	4.915		6.02	1	4.915	0.000:	
					13-Jun	4.783		5.94	1	4.783	0.000:	
					14-Jun	4.783		5.80	1	4.783	0.000:	
					15-Jun	4.750		5.67	1	4.750	0.000:	
					16-Jun	4.586		5.64	1	4.586	0.000:	
					17-Jun	4.849		5.69	1	4.849	0.000:	
					18-Jun	4.849		5.81	1	4.849	0.000:	
					19-Jun	4.718		6.04	1	4.718	0.000:	
					20-Jun	4.554		6.40	1	4.554	0.000:	
					21-Jun	4.357		6.80	1	4.357	0.000:	
					22-Jun	4.357		7.12	1	4.357	0.000:	
					23-Jun	5.802		7.22	1	5.802	0.000:	
					24-Jun	7.781		7.12	1	7.781	0.000:	
					25-Jun	6.131		6.85	1	6.131	0.000:	
					26-Jun	5.177		6.51	1	5.177	0.000:	
					27-Jun	4.357		6.16	1	4.357	0.000:	
					28-Jun	4.193		5.81	1	4.193	0.000:	
					29-Jun	4.062		5.36	1	4.062	0.000:	
					30-Jun	3.931		4.88	1	3.931	0.000:	
					1-Jul	3.833		4.40	1	3.833	0.000:	

2-Jul	3.768	3.99	1	3.768	0.000:
3-Jul	3.735	3.68	1	3.735	0.000:
4-Jul	4.521	3.46	1	4.521	0.000:
5-Jul	4.619	3.25	1	4.619	0.000:
6-Jul	4.324	3.09	1	4.324	0.000:
7-Jul	4.161	2.96	1	4.161	0.000:
8-Jul	4.259	2.90	1	4.259	0.000:
9-Jul	4.128	2.91	1	4.128	0.000:
10-Jul	3.931	3.04	1	3.931	0.000:
11-Jul	3.801	3.32	1	3.801	0.000:
12-Jul	3.735	3.70	1	3.735	0.000:
13-Jul	4.193	4.09	1	4.193	0.000:
14-Jul	4.292	4.36	1	4.292	0.000:
15-Jul	4.030	4.54	1	4.030	0.000:
16-Jul	3.866	4.67	1	3.866	0.000:
17-Jul	3.735	4.84	1	3.735	0.000:
18-Jul	3.670	5.09	1	3.670	0.000:
19-Jul	3.703	5.35	1	3.703	0.000:
20-Jul	3.670	5.60	1	3.670	0.000:
21-Jul	4.095	5.74	1	4.095	0.000:
22-Jul	3.964	5.62	1	3.964	0.000:
23-Jul	4.816	5.24	1	4.816	0.000:
24-Jul	5.374	4.72	1	5.374	0.000:
25-Jul	4.980	4.25	1	4.980	0.000:
26-Jul	4.390	3.95	1	4.390	0.000:
27-Jul	4.128	3.92	1	4.128	0.000:
28-Jul	4.062	4.18	1	4.062	0.000:
29-Jul	3.931	4.69	1	3.931	0.000:
30-Jul	3.833	5.28	1	3.833	0.000:
31-Jul	3.801	5.78	1	3.801	0.000:
1-Aug	3.801	6.08	1	3.801	0.000:
2-Aug	3.866	6.13	1	3.866	0.000:
3-Aug	3.964	5.96	1	3.964	0.000:
4-Aug	4.816	5.66	1	4.816	0.000:
5-Aug	5.868	5.27	1	5.868	0.000:
6-Aug	5.802	4.85	1	5.802	0.000:
7-Aug	4.915	4.38	1	4.915	0.000:
8-Aug	4.488	3.91	1	4.488	0.000:
9-Aug	4.226	3.54	1	4.226	0.000:
10-Aug	4.062	3.37	1	4.062	0.000:
11-Aug	3.964	3.49	1	3.964	0.000:
12-Aug	3.964	3.88	1	3.964	0.000:
13-Aug	3.964	4.47	1	3.964	0.000:
14-Aug	3.997	5.09	1	3.997	0.000:
15-Aug	4.357	5.55	1	4.357	0.000:
16-Aug	4.193	5.84	1	4.193	0.000:
17-Aug	4.030	6.06	1	4.030	0.000:
18-Aug	4.161	6.20	1	4.161	0.000:
19-Aug	4.161	6.26	1	4.161	0.000:
20-Aug	4.292	6.25	1	4.292	0.000:
21-Aug	4.390	6.13	1	4.390	0.000:

22-Aug	4.423	5.86	1	4.423	0.000:
23-Aug	4.947	5.47	1	4.947	0.000:
24-Aug	4.750	4.99	1	4.750	0.000:
25-Aug	4.750	4.47	1	4.750	0.000:
26-Aug	4.455	3.97	1	4.455	0.000:
27-Aug	4.259	3.60	1	4.259	0.000:
28-Aug	4.161	3.43	1	4.161	0.000:
29-Aug	4.030	3.46	1	4.030	0.000:
30-Aug	3.964	3.67	1	3.964	0.000:
31-Aug	3.964	4.00	1	3.964	0.000:
1-Sep	3.997	4.45	1	3.997	0.000:
2-Sep	3.997	4.99	1	3.997	0.000:
3-Sep	4.226	5.57	1	4.226	0.000:
4-Sep	4.750	6.14	1	4.750	0.000:
5-Sep	5.046	6.65	1	5.046	0.000:
6-Sep	6.559	7.07	1	6.559	0.000:
7-Sep	6.526	7.36	1	6.526	0.000:
8-Sep	11.926	7.50	1	11.926	0.000:
9-Sep	11.361	7.53	1	11.361	0.000:
10-Sep	9.038	7.52	1	9.038	0.000:
11-Sep	7.549	7.50	1	7.549	0.000:
12-Sep	13.657	7.47	1	13.657	0.000:
13-Sep	10.896	7.42	1	10.896	0.000:
14-Sep	10.729	7.30	1	10.729	0.000:
15-Sep	8.806	7.12	1	8.806	0.000:
16-Sep	7.483	6.92	1	7.483	0.000:
17-Sep	6.922	6.70	1	6.922	0.000:
18-Sep	7.682	6.45	1	7.682	0.000:
19-Sep	17.364	6.20	1	17.364	0.000:
20-Sep	23.297	5.95	1	23.297	0.000:
21-Sep	19.841	5.73	1	19.841	0.000:
22-Sep	13.691	5.56	1	13.691	0.000:
23-Sep	15.058	5.41	1	15.058	0.000:
24-Sep	14.991	5.26	1	14.991	0.000:
25-Sep	16.929	5.11	1	16.929	0.000:
26-Sep	14.424	4.98	1	14.424	0.000:
27-Sep	12.259	4.91	1	12.259	0.000:
28-Sep	15.726	4.91	1	15.726	0.000:
29-Sep	15.926	4.97	1	15.926	0.000:
30-Sep	15.726	5.08	1	15.726	0.000:
1-Oct	17.932	5.18	1	17.932	0.000:
2-Oct	14.191	5.24	1	14.191	0.000:
3-Oct	12.625	5.22	1	12.625	0.000:
4-Oct	11.560	5.13	1	11.560	0.000:
5-Oct	27.266	4.99	1	27.266	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	FLOW (CMS)	INIT. --TEMPERATURE-- LATERAL (C)	INIT. (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
17	UPPER TALARIK	Q	9.8	2007	17-May	6.847		5.07	1	6.847	0.000:	HYDROLOGY GAGE UT100APC2
					18-May	7.243		5.26	1	7.243	0.000:	
					19-May	6.151		5.47	1	6.151	0.000:	
					20-May	6.075		5.71	1	6.075	0.000:	
					21-May	5.586		5.94	1	5.586	0.000:	
					22-May	5.623		6.13	1	5.623	0.000:	
					23-May	5.512		6.24	1	5.512	0.000:	
					24-May	5.623		6.24	1	5.623	0.000:	
					25-May	6.304		6.19	1	6.304	0.000:	
					26-May	6.227		6.14	1	6.227	0.000:	
					27-May	5.698		6.09	1	5.698	0.000:	
					28-May	5.254		6.02	1	5.254	0.000:	
					29-May	4.785		5.90	1	4.785	0.000:	
					30-May	4.537		5.79	1	4.537	0.000:	
					31-May	4.467		5.71	1	4.467	0.000:	
					1-Jun	4.397		5.67	1	4.397	0.000:	
					2-Jun	4.223		5.66	1	4.223	0.000:	
					3-Jun	4.155		5.68	1	4.155	0.000:	
					4-Jun	4.258		5.73	1	4.258	0.000:	
					5-Jun	5.364		5.78	1	5.364	0.000:	
					6-Jun	4.928		5.81	1	4.928	0.000:	
					7-Jun	4.362		5.82	1	4.362	0.000:	
					8-Jun	4.052		5.82	1	4.052	0.000:	
					9-Jun	3.815		5.83	1	3.815	0.000:	
					10-Jun	3.681		5.89	1	3.681	0.000:	
					11-Jun	3.648		5.98	1	3.648	0.000:	
					12-Jun	3.715		6.02	1	3.715	0.000:	
					13-Jun	3.582		5.94	1	3.582	0.000:	
					14-Jun	3.582		5.80	1	3.582	0.000:	
					15-Jun	3.549		5.67	1	3.549	0.000:	
					16-Jun	3.385		5.64	1	3.385	0.000:	
					17-Jun	3.648		5.69	1	3.648	0.000:	
					18-Jun	3.648		5.81	1	3.648	0.000:	
					19-Jun	3.516		6.04	1	3.516	0.000:	
					20-Jun	3.353		6.40	1	3.353	0.000:	
					21-Jun	3.160		6.80	1	3.160	0.000:	
					22-Jun	3.160		7.12	1	3.160	0.000:	
					23-Jun	4.643		7.22	1	4.643	0.000:	
					24-Jun	6.887		7.12	1	6.887	0.000:	
					25-Jun	5.000		6.85	1	5.000	0.000:	
					26-Jun	3.984		6.51	1	3.984	0.000:	
					27-Jun	3.160		6.16	1	3.160	0.000:	
					28-Jun	3.001		5.81	1	3.001	0.000:	
					29-Jun	2.876		5.36	1	2.876	0.000:	
					30-Jun	2.752		4.88	1	2.752	0.000:	
					1-Jul	2.660		4.40	1	2.660	0.000:	

2-Jul	2.600	3.99	1	2.600	0.000:
3-Jul	2.569	3.68	1	2.569	0.000:
4-Jul	3.321	3.46	1	3.321	0.000:
5-Jul	3.418	3.25	1	3.418	0.000:
6-Jul	3.128	3.09	1	3.128	0.000:
7-Jul	2.970	2.96	1	2.970	0.000:
8-Jul	3.064	2.90	1	3.064	0.000:
9-Jul	2.938	2.91	1	2.938	0.000:
10-Jul	2.752	3.04	1	2.752	0.000:
11-Jul	2.630	3.32	1	2.630	0.000:
12-Jul	2.569	3.70	1	2.569	0.000:
13-Jul	3.001	4.09	1	3.001	0.000:
14-Jul	3.096	4.36	1	3.096	0.000:
15-Jul	2.845	4.54	1	2.845	0.000:
16-Jul	2.691	4.67	1	2.691	0.000:
17-Jul	2.569	4.84	1	2.569	0.000:
18-Jul	2.509	5.09	1	2.509	0.000:
19-Jul	2.539	5.35	1	2.539	0.000:
20-Jul	2.509	5.60	1	2.509	0.000:
21-Jul	2.907	5.74	1	2.907	0.000:
22-Jul	2.783	5.62	1	2.783	0.000:
23-Jul	3.615	5.24	1	3.615	0.000:
24-Jul	4.189	4.72	1	4.189	0.000:
25-Jul	3.781	4.25	1	3.781	0.000:
26-Jul	3.192	3.95	1	3.192	0.000:
27-Jul	2.938	3.92	1	2.938	0.000:
28-Jul	2.876	4.18	1	2.876	0.000:
29-Jul	2.752	4.69	1	2.752	0.000:
30-Jul	2.660	5.28	1	2.660	0.000:
31-Jul	2.630	5.78	1	2.630	0.000:
1-Aug	2.630	6.08	1	2.630	0.000:
2-Aug	2.691	6.13	1	2.691	0.000:
3-Aug	2.783	5.96	1	2.783	0.000:
4-Aug	3.615	5.66	1	3.615	0.000:
5-Aug	4.714	5.27	1	4.714	0.000:
6-Aug	4.643	4.85	1	4.643	0.000:
7-Aug	3.715	4.38	1	3.715	0.000:
8-Aug	3.288	3.91	1	3.288	0.000:
9-Aug	3.033	3.54	1	3.033	0.000:
10-Aug	2.876	3.37	1	2.876	0.000:
11-Aug	2.783	3.49	1	2.783	0.000:
12-Aug	2.783	3.88	1	2.783	0.000:
13-Aug	2.783	4.47	1	2.783	0.000:
14-Aug	2.814	5.09	1	2.814	0.000:
15-Aug	3.160	5.55	1	3.160	0.000:
16-Aug	3.001	5.84	1	3.001	0.000:
17-Aug	2.845	6.06	1	2.845	0.000:
18-Aug	2.970	6.20	1	2.970	0.000:
19-Aug	2.970	6.26	1	2.970	0.000:
20-Aug	3.096	6.25	1	3.096	0.000:
21-Aug	3.192	6.13	1	3.192	0.000:

22-Aug	3.224	5.86	1	3.224	0.000:
23-Aug	3.748	5.47	1	3.748	0.000:
24-Aug	3.549	4.99	1	3.549	0.000:
25-Aug	3.549	4.47	1	3.549	0.000:
26-Aug	3.256	3.97	1	3.256	0.000:
27-Aug	3.064	3.60	1	3.064	0.000:
28-Aug	2.970	3.43	1	2.970	0.000:
29-Aug	2.845	3.46	1	2.845	0.000:
30-Aug	2.783	3.67	1	2.783	0.000:
31-Aug	2.783	4.00	1	2.783	0.000:
1-Sep	2.814	4.45	1	2.814	0.000:
2-Sep	2.814	4.99	1	2.814	0.000:
3-Sep	3.033	5.57	1	3.033	0.000:
4-Sep	3.549	6.14	1	3.549	0.000:
5-Sep	3.849	6.65	1	3.849	0.000:
6-Sep	5.475	7.07	1	5.475	0.000:
7-Sep	5.438	7.36	1	5.438	0.000:
8-Sep	12.224	7.50	1	12.224	0.000:
9-Sep	11.452	7.53	1	11.452	0.000:
10-Sep	8.422	7.52	1	8.422	0.000:
11-Sep	6.613	7.50	1	6.613	0.000:
12-Sep	14.665	7.47	1	14.665	0.000:
13-Sep	10.826	7.42	1	10.826	0.000:
14-Sep	10.605	7.30	1	10.605	0.000:
15-Sep	8.133	7.12	1	8.133	0.000:
16-Sep	6.535	6.92	1	6.535	0.000:
17-Sep	5.885	6.70	1	5.885	0.000:
18-Sep	6.769	6.45	1	6.769	0.000:
19-Sep	20.249	6.20	1	20.249	0.000:
20-Sep	26.809	5.95	1	26.809	0.000:
21-Sep	23.250	5.73	1	23.250	0.000:
22-Sep	14.714	5.56	1	14.714	0.000:
23-Sep	16.721	5.41	1	16.721	0.000:
24-Sep	16.622	5.26	1	16.622	0.000:
25-Sep	19.570	5.11	1	19.570	0.000:
26-Sep	15.782	4.98	1	15.782	0.000:
27-Sep	12.684	4.91	1	12.684	0.000:
28-Sep	17.725	4.91	1	17.725	0.000:
29-Sep	18.029	4.97	1	18.029	0.000:
30-Sep	17.725	5.08	1	17.725	0.000:
1-Oct	21.145	5.18	1	21.145	0.000:
2-Oct	15.440	5.24	1	15.440	0.000:
3-Oct	13.195	5.22	1	13.195	0.000:
4-Oct	11.723	5.13	1	11.723	0.000:
5-Oct	30.823	4.99	1	30.823	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
18	UPPER TALARIK	Q	2.2	2007	17-May	10.216		5.07	1	10.216	0.000:	HYDROLOGY GAGE UT100APC3
					18-May	10.648		5.26	1	10.648	0.000:	
					19-May	9.440		5.47	1	9.440	0.000:	
					20-May	9.353		5.71	1	9.353	0.000:	
					21-May	8.793		5.94	1	8.793	0.000:	
					22-May	8.836		6.13	1	8.836	0.000:	
					23-May	8.706		6.24	1	8.706	0.000:	
					24-May	8.836		6.24	1	8.836	0.000:	
					25-May	9.612		6.19	1	9.612	0.000:	
					26-May	9.526		6.14	1	9.526	0.000:	
					27-May	8.922		6.09	1	8.922	0.000:	
					28-May	8.404		6.02	1	8.404	0.000:	
					29-May	7.844		5.90	1	7.844	0.000:	
					30-May	7.542		5.79	1	7.542	0.000:	
					31-May	7.456		5.71	1	7.456	0.000:	
					1-Jun	7.370		5.67	1	7.370	0.000:	
					2-Jun	7.155		5.66	1	7.155	0.000:	
					3-Jun	7.068		5.68	1	7.068	0.000:	
					4-Jun	7.198		5.73	1	7.198	0.000:	
					5-Jun	8.534		5.78	1	8.534	0.000:	
					6-Jun	8.016		5.81	1	8.016	0.000:	
					7-Jun	7.327		5.82	1	7.327	0.000:	
					8-Jun	6.939		5.82	1	6.939	0.000:	
					9-Jun	6.638		5.83	1	6.638	0.000:	
					10-Jun	6.466		5.89	1	6.466	0.000:	
					11-Jun	6.423		5.98	1	6.423	0.000:	
					12-Jun	6.509		6.02	1	6.509	0.000:	
					13-Jun	6.336		5.94	1	6.336	0.000:	
					14-Jun	6.336		5.80	1	6.336	0.000:	
					15-Jun	6.293		5.67	1	6.293	0.000:	
					16-Jun	6.078		5.64	1	6.078	0.000:	
					17-Jun	6.423		5.69	1	6.423	0.000:	
					18-Jun	6.423		5.81	1	6.423	0.000:	
					19-Jun	6.250		6.04	1	6.250	0.000:	
					20-Jun	6.035		6.40	1	6.035	0.000:	
					21-Jun	5.777		6.80	1	5.777	0.000:	
					22-Jun	5.777		7.12	1	5.777	0.000:	
					23-Jun	7.672		7.22	1	7.672	0.000:	
					24-Jun	10.259		7.12	1	10.259	0.000:	
					25-Jun	8.103		6.85	1	8.103	0.000:	
					26-Jun	6.853		6.51	1	6.853	0.000:	
					27-Jun	5.777		6.16	1	5.777	0.000:	
					28-Jun	5.562		5.81	1	5.562	0.000:	
					29-Jun	5.390		5.36	1	5.390	0.000:	
					30-Jun	5.218		4.88	1	5.218	0.000:	
					1-Jul	5.089		4.40	1	5.089	0.000:	

2-Jul	5.003	3.99	1	5.003	0.000:
3-Jul	4.960	3.68	1	4.960	0.000:
4-Jul	5.992	3.46	1	5.992	0.000:
5-Jul	6.121	3.25	1	6.121	0.000:
6-Jul	5.734	3.09	1	5.734	0.000:
7-Jul	5.519	2.96	1	5.519	0.000:
8-Jul	5.648	2.90	1	5.648	0.000:
9-Jul	5.476	2.91	1	5.476	0.000:
10-Jul	5.218	3.04	1	5.218	0.000:
11-Jul	5.046	3.32	1	5.046	0.000:
12-Jul	4.960	3.70	1	4.960	0.000:
13-Jul	5.562	4.09	1	5.562	0.000:
14-Jul	5.691	4.36	1	5.691	0.000:
15-Jul	5.347	4.54	1	5.347	0.000:
16-Jul	5.132	4.67	1	5.132	0.000:
17-Jul	4.960	4.84	1	4.960	0.000:
18-Jul	4.874	5.09	1	4.874	0.000:
19-Jul	4.917	5.35	1	4.917	0.000:
20-Jul	4.874	5.60	1	4.874	0.000:
21-Jul	5.433	5.74	1	5.433	0.000:
22-Jul	5.261	5.62	1	5.261	0.000:
23-Jul	6.379	5.24	1	6.379	0.000:
24-Jul	7.112	4.72	1	7.112	0.000:
25-Jul	6.595	4.25	1	6.595	0.000:
26-Jul	5.820	3.95	1	5.820	0.000:
27-Jul	5.476	3.92	1	5.476	0.000:
28-Jul	5.390	4.18	1	5.390	0.000:
29-Jul	5.218	4.69	1	5.218	0.000:
30-Jul	5.089	5.28	1	5.089	0.000:
31-Jul	5.046	5.78	1	5.046	0.000:
1-Aug	5.046	6.08	1	5.046	0.000:
2-Aug	5.132	6.13	1	5.132	0.000:
3-Aug	5.261	5.96	1	5.261	0.000:
4-Aug	6.379	5.66	1	6.379	0.000:
5-Aug	7.758	5.27	1	7.758	0.000:
6-Aug	7.672	4.85	1	7.672	0.000:
7-Aug	6.509	4.38	1	6.509	0.000:
8-Aug	5.949	3.91	1	5.949	0.000:
9-Aug	5.605	3.54	1	5.605	0.000:
10-Aug	5.390	3.37	1	5.390	0.000:
11-Aug	5.261	3.49	1	5.261	0.000:
12-Aug	5.261	3.88	1	5.261	0.000:
13-Aug	5.261	4.47	1	5.261	0.000:
14-Aug	5.304	5.09	1	5.304	0.000:
15-Aug	5.777	5.55	1	5.777	0.000:
16-Aug	5.562	5.84	1	5.562	0.000:
17-Aug	5.347	6.06	1	5.347	0.000:
18-Aug	5.519	6.20	1	5.519	0.000:
19-Aug	5.519	6.26	1	5.519	0.000:
20-Aug	5.691	6.25	1	5.691	0.000:
21-Aug	5.820	6.13	1	5.820	0.000:

22-Aug	5.863	5.86	1	5.863	0.000:
23-Aug	6.552	5.47	1	6.552	0.000:
24-Aug	6.293	4.99	1	6.293	0.000:
25-Aug	6.293	4.47	1	6.293	0.000:
26-Aug	5.906	3.97	1	5.906	0.000:
27-Aug	5.648	3.60	1	5.648	0.000:
28-Aug	5.519	3.43	1	5.519	0.000:
29-Aug	5.347	3.46	1	5.347	0.000:
30-Aug	5.261	3.67	1	5.261	0.000:
31-Aug	5.261	4.00	1	5.261	0.000:
1-Sep	5.304	4.45	1	5.304	0.000:
2-Sep	5.304	4.99	1	5.304	0.000:
3-Sep	5.605	5.57	1	5.605	0.000:
4-Sep	6.293	6.14	1	6.293	0.000:
5-Sep	6.681	6.65	1	6.681	0.000:
6-Sep	8.663	7.07	1	8.663	0.000:
7-Sep	8.620	7.36	1	8.620	0.000:
8-Sep	15.661	7.50	1	15.661	0.000:
9-Sep	14.926	7.53	1	14.926	0.000:
10-Sep	11.900	7.52	1	11.900	0.000:
11-Sep	9.957	7.50	1	9.957	0.000:
12-Sep	17.912	7.47	1	17.912	0.000:
13-Sep	14.321	7.42	1	14.321	0.000:
14-Sep	14.104	7.30	1	14.104	0.000:
15-Sep	11.598	7.12	1	11.598	0.000:
16-Sep	9.871	6.92	1	9.871	0.000:
17-Sep	9.138	6.70	1	9.138	0.000:
18-Sep	10.130	6.45	1	10.130	0.000:
19-Sep	22.721	6.20	1	22.721	0.000:
20-Sep	30.400	5.95	1	30.400	0.000:
21-Sep	25.930	5.73	1	25.930	0.000:
22-Sep	17.955	5.56	1	17.955	0.000:
23-Sep	19.731	5.41	1	19.731	0.000:
24-Sep	19.644	5.26	1	19.644	0.000:
25-Sep	22.157	5.11	1	22.157	0.000:
26-Sep	18.908	4.98	1	18.908	0.000:
27-Sep	16.094	4.91	1	16.094	0.000:
28-Sep	20.597	4.91	1	20.597	0.000:
29-Sep	20.857	4.97	1	20.857	0.000:
30-Sep	20.597	5.08	1	20.597	0.000:
1-Oct	23.458	5.18	1	23.458	0.000:
2-Oct	18.605	5.24	1	18.605	0.000:
3-Oct	16.570	5.22	1	16.570	0.000:
4-Oct	15.186	5.13	1	15.186	0.000:
5-Oct	35.526	4.99	1	35.526	0.000:

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	YEAR	TIME PER.	INIT. FLOW (CMS)	--TEMPERATURE-- INIT. (C)	LATERAL (C)	NO. OF POINTS	MEAN FLOW (CMS)	STD.: DEV.: (CMS):	REMARKS
19	UPPER TALARIK	E	0.0	2007	17-May	10.566			1	10.566	0.000:	MOUTH OF UPPER TALARIK CREEK
					18-May	11.013			1	11.013	0.000:	
					19-May	9.763			1	9.763	0.000:	
					20-May	9.673			1	9.673	0.000:	
					21-May	9.094			1	9.094	0.000:	
					22-May	9.138			1	9.138	0.000:	
					23-May	9.004			1	9.004	0.000:	
					24-May	9.138			1	9.138	0.000:	
					25-May	9.941			1	9.941	0.000:	
					26-May	9.852			1	9.852	0.000:	
					27-May	9.227			1	9.227	0.000:	
					28-May	8.691			1	8.691	0.000:	
					29-May	8.112			1	8.112	0.000:	
					30-May	7.799			1	7.799	0.000:	
					31-May	7.710			1	7.710	0.000:	
					1-Jun	7.622			1	7.622	0.000:	
					2-Jun	7.399			1	7.399	0.000:	
					3-Jun	7.309			1	7.309	0.000:	
					4-Jun	7.444			1	7.444	0.000:	
					5-Jun	8.826			1	8.826	0.000:	
					6-Jun	8.290			1	8.290	0.000:	
					7-Jun	7.577			1	7.577	0.000:	
					8-Jun	7.176			1	7.176	0.000:	
					9-Jun	6.864			1	6.864	0.000:	
					10-Jun	6.686			1	6.686	0.000:	
					11-Jun	6.642			1	6.642	0.000:	
					12-Jun	6.731			1	6.731	0.000:	
					13-Jun	6.552			1	6.552	0.000:	
					14-Jun	6.552			1	6.552	0.000:	
					15-Jun	6.507			1	6.507	0.000:	
					16-Jun	6.285			1	6.285	0.000:	
					17-Jun	6.642			1	6.642	0.000:	
					18-Jun	6.642			1	6.642	0.000:	
					19-Jun	6.463			1	6.463	0.000:	
					20-Jun	6.240			1	6.240	0.000:	
					21-Jun	5.974			1	5.974	0.000:	
					22-Jun	5.974			1	5.974	0.000:	
					23-Jun	7.934			1	7.934	0.000:	
					24-Jun	10.610			1	10.610	0.000:	
					25-Jun	8.380			1	8.380	0.000:	
					26-Jun	7.087			1	7.087	0.000:	
					27-Jun	5.974			1	5.974	0.000:	
					28-Jun	5.751			1	5.751	0.000:	
					29-Jun	5.573			1	5.573	0.000:	
					30-Jun	5.395			1	5.395	0.000:	
					1-Jul	5.262			1	5.262	0.000:	

2-Jul	5.173	1	5.173	0.000:
3-Jul	5.129	1	5.129	0.000:
4-Jul	6.196	1	6.196	0.000:
5-Jul	6.330	1	6.330	0.000:
6-Jul	5.929	1	5.929	0.000:
7-Jul	5.707	1	5.707	0.000:
8-Jul	5.840	1	5.840	0.000:
9-Jul	5.662	1	5.662	0.000:
10-Jul	5.395	1	5.395	0.000:
11-Jul	5.218	1	5.218	0.000:
12-Jul	5.129	1	5.129	0.000:
13-Jul	5.751	1	5.751	0.000:
14-Jul	5.885	1	5.885	0.000:
15-Jul	5.529	1	5.529	0.000:
16-Jul	5.306	1	5.306	0.000:
17-Jul	5.129	1	5.129	0.000:
18-Jul	5.040	1	5.040	0.000:
19-Jul	5.084	1	5.084	0.000:
20-Jul	5.040	1	5.040	0.000:
21-Jul	5.618	1	5.618	0.000:
22-Jul	5.440	1	5.440	0.000:
23-Jul	6.596	1	6.596	0.000:
24-Jul	7.355	1	7.355	0.000:
25-Jul	6.820	1	6.820	0.000:
26-Jul	6.018	1	6.018	0.000:
27-Jul	5.662	1	5.662	0.000:
28-Jul	5.573	1	5.573	0.000:
29-Jul	5.395	1	5.395	0.000:
30-Jul	5.262	1	5.262	0.000:
31-Jul	5.218	1	5.218	0.000:
1-Aug	5.218	1	5.218	0.000:
2-Aug	5.306	1	5.306	0.000:
3-Aug	5.440	1	5.440	0.000:
4-Aug	6.596	1	6.596	0.000:
5-Aug	8.023	1	8.023	0.000:
6-Aug	7.934	1	7.934	0.000:
7-Aug	6.731	1	6.731	0.000:
8-Aug	6.152	1	6.152	0.000:
9-Aug	5.796	1	5.796	0.000:
10-Aug	5.573	1	5.573	0.000:
11-Aug	5.440	1	5.440	0.000:
12-Aug	5.440	1	5.440	0.000:
13-Aug	5.440	1	5.440	0.000:
14-Aug	5.484	1	5.484	0.000:
15-Aug	5.974	1	5.974	0.000:
16-Aug	5.751	1	5.751	0.000:
17-Aug	5.529	1	5.529	0.000:
18-Aug	5.707	1	5.707	0.000:
19-Aug	5.707	1	5.707	0.000:
20-Aug	5.885	1	5.885	0.000:
21-Aug	6.018	1	6.018	0.000:

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                                    22-Aug   6.063                    1   6.063   0.000:
                                    23-Aug   6.775                    1   6.775   0.000:
                                    24-Aug   6.507                    1   6.507   0.000:
                                    25-Aug   6.507                    1   6.507   0.000:
                                    26-Aug   6.107                    1   6.107   0.000:
                                    27-Aug   5.840                    1   5.840   0.000:
                                    28-Aug   5.707                    1   5.707   0.000:
                                    29-Aug   5.529                    1   5.529   0.000:
                                    30-Aug   5.440                    1   5.440   0.000:
                                    31-Aug   5.440                    1   5.440   0.000:
                                     1-Sep   5.484                    1   5.484   0.000:
                                     2-Sep   5.484                    1   5.484   0.000:
                                     3-Sep   5.796                    1   5.796   0.000:
                                     4-Sep   6.507                    1   6.507   0.000:
                                     5-Sep   6.909                    1   6.909   0.000:
                                     6-Sep   8.959                    1   8.959   0.000:
                                     7-Sep   8.915                    1   8.915   0.000:
                                     8-Sep  16.200                    1  16.200   0.000:
                                     9-Sep  15.439                    1  15.439   0.000:
                                    10-Sep  12.308                    1  12.308   0.000:
                                    11-Sep  10.298                    1  10.298   0.000:
                                    12-Sep  18.529                    1  18.529   0.000:
                                    13-Sep  14.813                    1  14.813   0.000:
                                    14-Sep  14.589                    1  14.589   0.000:
                                    15-Sep  11.996                    1  11.996   0.000:
                                    16-Sep  10.209                    1  10.209   0.000:
                                    17-Sep   9.451                    1   9.451   0.000:
                                    18-Sep  10.477                    1  10.477   0.000:
                                    19-Sep  23.506                    1  23.506   0.000:
                                    20-Sep  31.453                    1  31.453   0.000:
                                    21-Sep  26.827                    1  26.827   0.000:
                                    22-Sep  18.574                    1  18.574   0.000:
                                    23-Sep  20.411                    1  20.411   0.000:
                                    24-Sep  20.321                    1  20.321   0.000:
                                    25-Sep  22.922                    1  22.922   0.000:
                                    26-Sep  19.560                    1  19.560   0.000:
                                    27-Sep  16.648                    1  16.648   0.000:
                                    28-Sep  21.308                    1  21.308   0.000:
                                    29-Sep  21.577                    1  21.577   0.000:
                                    30-Sep  21.308                    1  21.308   0.000:
                                     1-Oct  24.268                    1  24.268   0.000:
                                     2-Oct  19.246                    1  19.246   0.000:
                                     3-Oct  17.140                    1  17.140   0.000:
                                     4-Oct  15.708                    1  15.708   0.000:
                                     5-Oct  36.759                    1  36.759   0.000:
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    NORMAL COMPLETION OF 'HYDFIL'.
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****************************************** TABLE V: HYDROLOGY WITH LATERAL FLOWS ADDED ******************************************
    BEGIN HYDROLOGY VERIFICATION OF 'LATFLO' PROGRAM. THE PURPOSE OF THIS PROGRAM IS:
       (1) COMPUTE LATERAL FLOWS FOR UPSTREAM NODES;
       (2) CREATE THE FINAL UNFORMATTED HYDROLOGY FILE.
 THIS VERIFICATION IS A FORMATTED VERSION OF THE 'KHYDR5' OR 'KHYDROL' FILE.

                            ** JOB CONTROL DATA **
 JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTT
       1.      0.      0.    142.     10.     25.     19.     10.     34.      0.
       2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
 UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
 UPPER TALARIK       61.4     0.0
 TRIBUTARY 135       46.4    45.0
 TRIBUTARY 119       25.1    24.7
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
```

YEAR: 2007 TIME PERIOD: 17-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.104	0.0744	3.29	4.58:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.283	0.0794		4.58:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.946	0.4266		5.07:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.749			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.331	0.0000	5.61	5.07:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.331			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.080	0.4272		5.07:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.259	-0.0657		4.04:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.800	0.1635		4.04:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	5.163	0.1890		5.07:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	6.027			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.667	0.0000	5.08	5.07:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.667			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.694	0.1891		5.07:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.739	0.0995		5.07:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.748	-0.1996		5.07:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.847	0.4429		5.07:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	10.216	0.1563		5.07:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	10.566			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 18-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.099	0.0710	3.20	4.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.270	0.0783		4.55:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.924	0.4492		5.02:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.876			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.349	0.0000	5.60	5.02:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.349			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.225	0.4487		5.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.413	-0.0604		4.40:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.991	0.1702		4.40:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	5.410	0.1967		5.26:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	6.309			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.667	0.0000	4.91	5.26:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.667			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.976	0.1975		5.26:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	7.023	0.1040		5.26:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	8.078	-0.1850		5.26:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	7.243	0.4477		5.26:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	10.648	0.1629		5.26:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	11.013			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 19-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.089	0.0640	3.24	4.58:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.243	0.0663		4.58:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.797	0.3646		4.98:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.193			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.283	0.0000	6.16	4.98:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.283			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.476	0.3652		4.98:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.629	-0.0259		4.79:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.448	0.1528		4.79:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.722	0.1768		5.47:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.530			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	4.70	5.47:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.188	0.1765		5.47:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.230	0.0910		5.47:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.153	-0.2220		5.47:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.151	0.4324		5.47:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.440	0.1442		5.47:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.763			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 20-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.087	0.0619	3.23	4.70:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.236	0.0668		4.70:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.794	0.3593		4.95:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.155			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.279	0.0000	5.60	4.95:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.279			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.434	0.3580		4.95:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.584	-0.0246		5.24:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.412	0.1515		5.24:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.675	0.1750		5.71:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.475			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.656	0.0000	4.85	5.71:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.656			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.131	0.1765		5.71:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.173	0.0901		5.71:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.087	-0.2242		5.71:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.075	0.4310		5.71:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.353	0.1429		5.71:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.673			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 21-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.081	0.0573	3.30	4.94:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.219	0.0603		4.94:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.723	0.3194		4.95:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.822			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.248	0.0000	6.40	4.95:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.248			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.070	0.3174		4.95:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.203	-0.0083		5.70:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.145	0.1442		5.70:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.347	0.1667		5.94:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.109			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.656	0.0000	5.07	5.94:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.656			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.765	0.1681		5.94:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.805	0.0841		5.94:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.658	-0.2375		5.94:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.586	0.4216		5.94:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.793	0.1344		5.94:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.094			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 22-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.083	0.0594	3.65	5.25:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.226	0.0629		5.25:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.751	0.3343		4.95:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.948			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.260	0.0000	5.88	4.95:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.260			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.208	0.3317		4.95:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.347	-0.0166		6.12:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.231	0.1395		6.12:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.394	0.1615		6.13:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.132			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.663	0.0000	4.61	6.13:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.663			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.795	0.1597		6.13:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.833	0.0846		6.13:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.691	-0.2366		6.13:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.623	0.4224		6.13:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.836	0.1348		6.13:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.138			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 23-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.081	0.0582	3.81	5.46:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.221	0.0649		5.46:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.763	0.3252		4.93:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.900			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.253	0.0000	5.53	4.93:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.253			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.153	0.3246		4.93:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.289	-0.0146		6.44:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.187	0.1365		6.44:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.325	0.1577		6.24:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.046			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.665	0.0000	4.70	6.24:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.665			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.711	0.1555		6.24:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.748	0.0832		6.24:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.592	-0.2393		6.24:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.512	0.4199		6.24:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.706	0.1330		6.24:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.004			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 24-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.086	0.0615	3.86	5.52:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.234	0.0709		5.52:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.826	0.3385		4.91:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.050			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.263	0.0000	4.90	4.91:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.263			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.313	0.3365		4.91:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.454	-0.0281		6.63:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.258	0.1375		6.63:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.404	0.1588		6.24:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.130			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.665	0.0000	4.60	6.24:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.665			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.795	0.1597		6.24:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.833	0.0846		6.24:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.691	-0.2366		6.24:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.623	0.4224		6.24:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.836	0.1348		6.24:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.138			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 25-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.093	0.0661	3.72	5.49:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.252	0.0806		5.49:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.925	0.4054		4.95:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.589			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.315	0.0000	5.17	4.95:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.315			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.904	0.4033		4.95:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.073	-0.0625		6.76:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.636	0.1469		6.76:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.860	0.1698		6.19:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.636			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.667	0.0000	4.49	6.19:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.667			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.303	0.1681		6.19:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.343	0.0929		6.19:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.285	-0.2174		6.19:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.304	0.4349		6.19:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.612	0.1469		6.19:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.941			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 26-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.089	0.0640	3.77	5.47:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.243	0.0771		5.47:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.887	0.3827		5.06:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.402			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.297	0.0000	5.99	5.06:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.297			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.699	0.3819		5.06:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.859	-0.0435		6.87:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.555	0.1485		6.87:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.793	0.1715		6.14:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.577			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.668	0.0000	4.65	6.14:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.668			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.245	0.1723		6.14:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.286	0.0920		6.14:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.219	-0.2198		6.14:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.227	0.4337		6.14:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.526	0.1455		6.14:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.852			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 27-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.083	0.0590	3.86	5.53:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.225	0.0656		5.53:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.773	0.3365		5.18:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.984			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.261	0.0000	6.58	5.18:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.261			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.245	0.3365		5.18:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.386	-0.0189		6.98:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.254	0.1423		6.98:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.440	0.1643		6.09:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.191			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.660	0.0000	5.36	6.09:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.660			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.851	0.1639		6.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.890	0.0855		6.09:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.757	-0.2347		6.09:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.698	0.4239		6.09:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.922	0.1362		6.09:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.227			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 28-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.080	0.0569	3.81	5.65:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.217	0.0583		5.65:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.704	0.3012		5.26:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.683			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.234	0.0000	6.84	5.26:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.234			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.917	0.3007		5.26:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.043	-0.0027		7.10:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.024	0.1349		7.10:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.148	0.1560		6.02:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.861			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.652	0.0000	4.97	6.02:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.652			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.513	0.1555		6.02:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.550	0.0801		6.02:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.362	-0.2455		6.02:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.254	0.4141		6.02:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.404	0.1281		6.02:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.691			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 29-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.076	0.0540	3.67	5.78:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.206	0.0511		5.78:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.633	0.2639		5.25:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.367			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.205	0.0000	6.26	5.25:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.205			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.572	0.2625		5.25:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.682	0.0110		7.20:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.759	0.1274		7.20:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.821	0.1472		5.90:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.494			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.653	0.0000	4.89	5.90:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.653			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.147	0.1471		5.90:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.182	0.0742		5.90:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.934	-0.2546		5.90:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.785	0.4022		5.90:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.844	0.1196		5.90:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.112			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 30-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.074	0.0523	3.81	5.92:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.200	0.0489		5.92:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.608	0.2458		5.21:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.223			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.191	0.0000	7.08	5.21:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.191			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.414	0.2434		5.21:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.516	0.0146		7.31:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.618	0.1226		7.31:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.640	0.1415		5.79:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.287			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.663	0.0000	4.90	5.79:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.663			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.950	0.1429		5.79:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.984	0.0709		5.79:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.703	-0.2584		5.79:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.537	0.3951		5.79:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.542	0.1147		5.79:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.799			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 31-May

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.073	0.0519	3.85	6.02:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.198	0.0492		6.02:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.609	0.2461		5.15:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.226			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.191	0.0000	6.91	5.15:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.191			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.417	0.2458		5.15:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.520	0.0116		7.42:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.601	0.1203		7.42:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.604	0.1389		5.71:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.239			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.655	0.0000	4.54	5.71:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.655			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.894	0.1387		5.71:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.927	0.0700		5.71:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.637	-0.2593		5.71:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.467	0.3930		5.71:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.456	0.1134		5.71:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.710			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 1-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.074	0.0523	3.82	6.06:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.200	0.0487		6.06:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.607	0.2408		5.11:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.189			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.187	0.0000	5.90	5.11:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.187			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.376	0.2411		5.11:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.477	0.0119		7.52:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.560	0.1197		7.52:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.558	0.1383		5.67:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.190			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.647	0.0000	4.56	5.67:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.647			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.837	0.1387		5.67:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.870	0.0692		5.67:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.572	-0.2604		5.67:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.397	0.3909		5.67:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.370	0.1125		5.67:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.622			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 2-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.072	0.0515	3.83	6.11:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.196	0.0467		6.11:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.586	0.2336		5.16:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.121			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.181	0.0000	6.22	5.16:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.181			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.302	0.2339		5.16:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.400	0.0150		7.63:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.505	0.1139		7.63:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.454	0.1315		5.66:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.055			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.643	0.0000	4.94	5.66:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.643			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.698	0.1303		5.66:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.729	0.0669		5.66:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.407	-0.2624		5.66:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.223	0.3855		5.66:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.155	0.1089		5.66:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.399			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 3-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.072	0.0511	3.88	6.23:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.195	0.0469		6.23:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.587	0.2293		5.31:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.094			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.178	0.0000	7.70	5.31:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.178			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.272	0.2291		5.31:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.368	0.0129		7.75:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.458	0.1128		7.75:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.398	0.1302		5.68:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.993			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.648	0.0000	5.42	5.68:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.648			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.641	0.1303		5.68:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.672	0.0660		5.68:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.341	-0.2628		5.68:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.155	0.3830		5.68:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.068	0.1076		5.68:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.309			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 4-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.074	0.0523	3.97	6.36:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.200	0.0523		6.36:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.637	0.2453		5.47:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.249			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.191	0.0000	7.64	5.47:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.191			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.440	0.2434		5.47:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.542	0.0024		7.87:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.559	0.1107		7.87:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.482	0.1282		5.73:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.068			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.659	0.0000	4.86	5.73:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.659			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.727	0.1260		5.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.757	0.0674		5.73:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.440	-0.2619		5.73:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.258	0.3865		5.73:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.198	0.1098		5.73:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.444			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 5-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.084	0.0598	4.16	6.47:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.228	0.0751		6.47:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.855	0.3557		5.59:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.192			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.276	0.0000	7.46	5.59:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.276			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.468	0.3556		5.59:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.617	-0.0505		7.94:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.264	0.1233		7.94:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.292	0.1424		5.78:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.943			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	4.93	5.78:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.601	0.1429		5.78:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.635	0.0814		5.78:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.460	-0.2429		5.78:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.364	0.4168		5.78:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.534	0.1304		5.78:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.826			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 6-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.078	0.0553	4.18	6.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.211	0.0607		6.55:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.718	0.2981		5.65:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.677			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.232	0.0000	8.55	5.65:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.232			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.909	0.2959		5.65:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.033	-0.0112		7.94:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.955	0.1206		7.94:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.960	0.1394		5.81:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.597			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.665	0.0000	5.62	5.81:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.665			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.262	0.1387		5.81:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.295	0.0759		5.81:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.065	-0.2519		5.81:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.928	0.4060		5.81:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.016	0.1223		5.81:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.290			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 7-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.074	0.0523	4.02	6.63:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.200	0.0511		6.63:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.627	0.2580		5.64:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.322			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.200	0.0000	8.28	5.64:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.200			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.522	0.2578		5.64:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.630	0.0047		7.88:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.663	0.1097		7.88:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.577	0.1267		5.82:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.156			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.656	0.0000	4.93	5.82:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.656			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.812	0.1261		5.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.842	0.0687		5.82:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.539	-0.2608		5.82:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.362	0.3898		5.82:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.327	0.1116		5.82:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.577			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 8-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.071	0.0503	3.88	6.74:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.192	0.0453		6.74:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.570	0.2303		5.67:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.083			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.179	0.0000	7.17	5.67:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.179			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.262	0.2291		5.67:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.358	0.0137		7.78:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.454	0.1071		7.78:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.347	0.1238		5.82:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.913			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.645	0.0000	4.86	5.82:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.645			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.558	0.1218		5.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.587	0.0647		5.82:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.243	-0.2639		5.82:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.052	0.3796		5.82:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.939	0.1058		5.82:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.176			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 9-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.069	0.0490	3.72	7.00:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.187	0.0420		7.00:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.538	0.2144		5.88:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.947			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.167	0.0000	7.00	5.88:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.167			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.114	0.2124		5.88:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.203	0.0177		7.68:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.327	0.1022		7.68:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.179	0.1181		5.83:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.719			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.642	0.0000	4.67	5.83:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.642			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.361	0.1176		5.83:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.389	0.0615		5.83:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.013	-0.2655		5.83:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.815	0.3712		5.83:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.638	0.1009		5.83:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.864			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 10-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.068	0.0486	3.90	7.48:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.185	0.0435		7.48:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.548	0.2126		6.31:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.945			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.165	0.0000	9.86	6.31:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.165			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.110	0.2124		6.31:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.199	0.0142		7.64:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.298	0.0950		7.64:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.090	0.1098		5.89:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.592			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	6.05	5.89:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.250	0.1092		5.89:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.276	0.0598		5.89:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.882	-0.2661		5.89:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.681	0.3662		5.89:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.466	0.0982		5.89:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.686			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 11-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0478	4.47	8.04:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.182	0.0425		8.04:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.537	0.2120		6.73:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.930			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.165	0.0000	11.26	6.73:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.165			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.095	0.2100		6.73:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.183	0.0136		7.63:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.278	0.0955		7.63:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.074	0.1105		5.98:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.579			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.643	0.0000	5.81	5.98:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.643			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.222	0.1092		5.98:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.248	0.0593		5.98:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.849	-0.2661		5.98:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.648	0.3648		5.98:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.423	0.0978		5.98:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.642			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 12-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0478	4.44	8.31:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.182	0.0398		8.31:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.514	0.2059		6.92:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.867			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.160	0.0000	8.93	6.92:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.160			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.027	0.2053		6.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.113	0.0149		7.56:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.217	0.1049		7.56:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.091	0.1210		6.02:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.644			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.631	0.0000	4.84	6.02:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.631			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.275	0.1218		6.02:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.304	0.0603		6.02:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.915	-0.2659		6.02:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.715	0.3673		6.02:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.509	0.0991		6.02:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.731			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 13-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.066	0.0469	3.96	8.24:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.179	0.0370		8.24:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.488	0.1933		7.00:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.758			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.150	0.0000	8.00	7.00:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.150			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.908	0.1933		7.00:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.989	0.0192		7.38:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.123	0.1032		7.38:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.983	0.1192		5.94:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.528			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.635	0.0000	4.87	5.94:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.635			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.163	0.1176		5.94:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.191	0.0584		5.94:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.783	-0.2661		5.94:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.582	0.3621		5.94:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.336	0.0964		5.94:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.552			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 14-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0461	3.48	8.15:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.176	0.0380		8.15:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.493	0.1940		7.21:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.768			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.151	0.0000	9.66	7.21:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.151			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.919	0.1933		7.21:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.000	0.0172		7.17:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.120	0.1034		7.17:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.982	0.1194		5.80:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.528			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.635	0.0000	5.37	5.80:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.635			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.163	0.1176		5.80:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.191	0.0584		5.80:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.783	-0.2661		5.80:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.582	0.3621		5.80:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.336	0.0964		5.80:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.552			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 15-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0461	3.13	8.18:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.176	0.0383		8.18:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.496	0.1904		7.56:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.747			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.148	0.0000	11.26	7.56:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.148			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.895	0.1885		7.56:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.974	0.0167		7.00:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.091	0.1039		7.00:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.957	0.1201		5.67:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.506			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.628	0.0000	6.28	5.67:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.628			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.134	0.1218		5.67:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.163	0.0579		5.67:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.750	-0.2661		5.67:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.549	0.3608		5.67:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.293	0.0955		5.67:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.507			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 16-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	3.70	8.37:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0365		8.37:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.479	0.1852		7.93:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.696			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.144	0.0000	11.79	7.93:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.144			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.840	0.1838		7.93:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.917	0.0166		6.94:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.033	0.0987		6.94:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.856	0.1140		5.64:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.377			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.617	0.0000	6.00	5.64:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.617			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.994	0.1134		5.64:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.021	0.0557		5.64:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.586	-0.2661		5.64:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.385	0.3541		5.64:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.078	0.0924		5.64:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.285			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 17-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.068	0.0486	4.29	8.51:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.185	0.0437		8.51:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.550	0.2105		8.23:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.933			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.163	0.0000	9.93	8.23:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.163			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.096	0.2100		8.23:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.184	0.0087		6.97:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.245	0.0991		6.97:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.071	0.1144		5.69:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.594			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.627	0.0000	5.09	5.69:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.627			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.221	0.1134		5.69:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.248	0.0593		5.69:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.849	-0.2661		5.69:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.648	0.3648		5.69:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.423	0.0978		5.69:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.642			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 18-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.066	0.0465	3.84	8.61:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.178	0.0407		8.61:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.518	0.2035		8.56:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.855			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.158	0.0000	9.20	8.56:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.158			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.013	0.2029		8.56:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.098	0.0125		7.08:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.185	0.1035		7.08:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.048	0.1199		5.81:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.596			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.624	0.0000	5.47	5.81:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.624			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.220	0.1176		5.81:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.248	0.0593		5.81:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.849	-0.2661		5.81:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.648	0.3648		5.81:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.423	0.0978		5.81:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.642			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 19-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0453	2.73	8.89:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.173	0.0393		8.89:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.501	0.2070		9.02:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.861			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.161	0.0000	11.52	9.02:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.161			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.022	0.2053		9.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.108	0.0076		7.33:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.161	0.0969		7.33:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.969	0.1118		6.04:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.480			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.627	0.0000	6.36	6.04:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.627			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.107	0.1134		6.04:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.134	0.0576		6.04:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.718	-0.2663		6.04:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.516	0.3595		6.04:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.250	0.0951		6.04:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.463			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 20-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0436	2.55	9.41:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.166	0.0376		9.41:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.480	0.1870		9.45:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.709			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.145	0.0000	13.90	9.45:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.145			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.854	0.1885		9.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.933	0.0112		7.74:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.011	0.0967		7.74:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.817	0.1116		6.40:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.327			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.639	0.0000	6.79	6.40:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.639			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.966	0.1134		6.40:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.993	0.0553		6.40:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.554	-0.2661		6.40:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.353	0.3526		6.40:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.035	0.0915		6.40:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.240			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 21-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.060	0.0432	3.38	9.78:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.164	0.0341		9.78:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.449	0.1727		9.43:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.584			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.134	0.0000	13.51	9.43:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.134			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.718	0.1718		9.43:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.790	0.0136		8.19:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.885	0.0935		8.19:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.664	0.1079		6.80:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.157			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.640	0.0000	6.28	6.80:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.640			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.797	0.1092		6.80:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.823	0.0527		6.80:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.357	-0.2652		6.80:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.160	0.3441		6.80:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.777	0.0879		6.80:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.974			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 22-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.062	0.0440	4.22	9.62:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.168	0.0347		9.62:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.458	0.1723		8.81:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.590			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.134	0.0000	10.47	8.81:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.134			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.724	0.1718		8.81:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.796	0.0126		8.50:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.884	0.0933		8.50:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.662	0.1076		7.12:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.154			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.643	0.0000	4.93	7.12:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.643			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.797	0.1092		7.12:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.823	0.0527		7.12:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.357	-0.2652		7.12:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.160	0.3441		7.12:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.777	0.0879		7.12:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.974			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 23-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.098	0.0694	4.42	8.92:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.265	0.0694		8.92:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.845	0.2774		7.81:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.668			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.215	0.0000	8.00	7.81:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.215			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.883	0.2769		7.81:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.999	-0.0372		8.55:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.739	0.1169		8.55:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.713	0.1350		7.22:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.330			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.707	0.0000	4.76	7.22:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.707			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.037	0.1345		7.22:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.069	0.0723		7.22:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.802	-0.2568		7.22:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.643	0.3982		7.22:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.672	0.1170		7.22:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.934			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 24-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.116	0.0827	4.50	8.03:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.315	0.0932		8.03:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.093	0.4413		6.85:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.993			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.343	0.0000	7.04	6.85:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.343			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.336	0.4391		6.85:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.520	-0.0862		8.36:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.918	0.1552		8.36:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	5.212	0.1794		7.12:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	6.032			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.693	0.0000	4.91	7.12:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.693			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.725	0.1807		7.12:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.768	0.0999		7.12:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.781	-0.1981		7.12:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.887	0.4433		7.12:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	10.259	0.1567		7.12:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	10.610			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 25-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.082	0.0586	4.14	7.32:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.223	0.0548		7.32:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.681	0.3222		6.22:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.798			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.250	0.0000	7.79	6.22:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.250			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.048	0.3222		6.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.183	-0.0374		8.01:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.922	0.1272		8.01:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.982	0.1468		6.85:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.653			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.664	0.0000	5.06	6.85:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.664			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.317	0.1471		6.85:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.352	0.0768		6.85:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.131	-0.2506		6.85:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.000	0.4080		6.85:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.103	0.1237		6.85:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.380			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 26-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.071	0.0511	3.42	7.01:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.194	0.0426		7.01:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.550	0.2219		6.02:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.008			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.172	0.0000	8.98	6.02:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.172			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.180	0.2220		6.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.273	0.0180		7.59:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.399	0.1058		7.59:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.281	0.1223		6.51:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.840			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.662	0.0000	5.34	6.51:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.662			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.502	0.1218		6.51:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.531	0.0637		6.51:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.177	-0.2643		6.51:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.984	0.3772		6.51:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.853	0.1045		6.51:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.087			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 27-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.066	0.0474	3.45	7.23:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.180	0.0369		7.23:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.488	0.1905		6.23:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.740			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.148	0.0000	10.83	6.23:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.148			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.888	0.1909		6.23:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.968	0.0236		7.24:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.133	0.0737		7.24:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.747	0.0853		6.16:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.137			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.666	0.0000	5.64	6.16:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.666			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.803	0.0840		6.16:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.823	0.0527		6.16:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.357	-0.2652		6.16:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.160	0.3441		6.16:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.777	0.0879		6.16:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.974			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 28-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0465	3.85	7.71:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.177	0.0351		7.71:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.470	0.1782		6.64:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.641			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.138	0.0000	10.51	6.64:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.138			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.779	0.1790		6.64:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.854	0.0239		6.99:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.021	0.0713		6.99:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.615	0.0823		5.81:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.991			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.670	0.0000	5.15	5.81:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.670			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.661	0.0840		5.81:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.681	0.0505		5.81:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.193	-0.2641		5.81:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.001	0.3367		5.81:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.562	0.0844		5.81:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.751			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 29-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	3.63	8.14:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0333		8.14:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.452	0.1715		7.03:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.579			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.133	0.0000	11.24	7.03:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.133			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.712	0.1718		7.03:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.784	0.0260		6.82:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.966	0.0669		6.82:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.524	0.0774		5.36:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.878			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.672	0.0000	5.64	5.36:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.672			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.550	0.0756		5.36:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.568	0.0487		5.36:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.062	-0.2628		5.36:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.876	0.3305		5.36:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.390	0.0817		5.36:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.573			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 30-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.063	0.0449	3.59	8.51:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.171	0.0311		8.51:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.431	0.1602		7.34:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.484			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.124	0.0000	11.62	7.34:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.124			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.608	0.1599		7.34:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.675	0.0269		6.75:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.863	0.0665		6.75:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.417	0.0770		4.88:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.769			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.668	0.0000	5.31	4.88:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.668			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.437	0.0756		4.88:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.455	0.0469		4.88:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.931	-0.2612		4.88:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.752	0.3242		4.88:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.218	0.0790		4.88:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.395			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 1-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.062	0.0445	3.47	8.76:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.169	0.0303		8.76:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.422	0.1555		7.54:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.444			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.121	0.0000	10.89	7.54:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.121			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.565	0.1551		7.54:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.630	0.0273		6.77:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.821	0.0635		6.77:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.350	0.0735		4.40:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.686			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.667	0.0000	5.13	4.40:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.667			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.353	0.0714		4.40:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.370	0.0457		4.40:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.833	-0.2599		4.40:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.660	0.3194		4.40:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.089	0.0772		4.40:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.262			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 2-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0440	3.27	8.93:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.167	0.0290		8.93:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.409	0.1519		7.70:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.407			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.118	0.0000	11.15	7.70:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.118			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.525	0.1527		7.70:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.589	0.0278		6.91:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.783	0.0621		6.91:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.301	0.0720		3.99:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.630			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.666	0.0000	5.39	3.99:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.666			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.296	0.0714		3.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.313	0.0449		3.99:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.768	-0.2588		3.99:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.600	0.3159		3.99:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.003	0.0759		3.99:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.173			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 3-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0436	3.63	9.04:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.166	0.0281		9.04:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.401	0.1469		7.80:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.366			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.114	0.0000	12.34	7.80:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.114			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.480	0.1456		7.80:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.541	0.0279		7.16:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.736	0.0636		7.16:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.266	0.0737		3.68:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.603			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.665	0.0000	5.70	3.68:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.665			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.268	0.0714		3.68:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.285	0.0444		3.68:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.735	-0.2584		3.68:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.569	0.3144		3.68:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	4.960	0.0754		3.68:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.129			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 4-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.084	0.0598	4.22	8.97:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.228	0.0559		8.97:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.695	0.2205		7.75:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.144			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.171	0.0000	11.36	7.75:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.171			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.315	0.2196		7.75:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.407	-0.0050		7.43:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.372	0.0657		7.43:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.920	0.0759		3.46:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.267			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.679	0.0000	5.33	3.46:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.679			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.946	0.0756		3.46:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.964	0.0549		3.46:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.521	-0.2659		3.46:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.321	0.3512		3.46:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.992	0.0911		3.46:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.196			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 5-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.074	0.0528	4.11	8.73:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.201	0.0471		8.73:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.594	0.2120		7.53:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.987			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.165	0.0000	10.52	7.53:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.165			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.152	0.2100		7.53:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.240	0.0159		7.60:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.351	0.0744		7.60:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.971	0.0860		3.25:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.364			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.665	0.0000	5.07	3.25:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.665			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.029	0.0840		3.25:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.049	0.0562		3.25:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.619	-0.2661		3.25:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.418	0.3554		3.25:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.121	0.0933		3.25:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.330			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 6-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.070	0.0494	3.91	8.50:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.189	0.0399		8.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.522	0.1886		7.36:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.761			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.146	0.0000	10.58	7.36:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.146			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.907	0.1885		7.36:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.986	0.0198		7.67:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.124	0.0729		7.67:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.732	0.0842		3.09:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.117			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.657	0.0000	5.19	3.09:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.657			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.774	0.0840		3.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.794	0.0523		3.09:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.324	-0.2650		3.09:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.128	0.3426		3.09:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.734	0.0871		3.09:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.929			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 7-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0474	3.68	8.40:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.181	0.0353		8.40:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.476	0.1746		7.34:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.623			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.136	0.0000	10.82	7.34:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.136			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.759	0.1718		7.34:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.831	0.0253		7.66:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.008	0.0714		7.66:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.603	0.0823		2.96:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.979			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.654	0.0000	5.29	2.96:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.654			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.633	0.0840		2.96:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.653	0.0501		2.96:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.161	-0.2639		2.96:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.970	0.3351		2.96:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.519	0.0839		2.96:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.707			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 8-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.069	0.0494	3.73	8.48:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.188	0.0389		8.48:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.513	0.1848		7.50:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.727			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.144	0.0000	11.02	7.50:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.144			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.871	0.1838		7.50:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.948	0.0195		7.60:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.084	0.0713		7.60:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.678	0.0823		2.90:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.054			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.664	0.0000	5.18	2.90:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.664			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.718	0.0840		2.90:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.738	0.0514		2.90:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.259	-0.2648		2.90:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.064	0.3397		2.90:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.648	0.0857		2.90:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.840			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 9-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0474	3.61	8.70:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.181	0.0351		8.70:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.474	0.1736		7.79:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.615			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.135	0.0000	10.90	7.79:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.135			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.750	0.1742		7.79:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.823	0.0250		7.53:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.998	0.0697		7.53:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.579	0.0807		2.91:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.948			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	5.23	2.91:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.606	0.0798		2.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.625	0.0496		2.91:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.128	-0.2637		2.91:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.938	0.3337		2.91:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.476	0.0830		2.91:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.662			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 10-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0461	3.38	9.03:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.176	0.0320		9.03:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.443	0.1561		8.18:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.469			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.121	0.0000	11.27	8.18:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.121			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.590	0.1575		8.18:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.656	0.0278		7.48:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.850	0.0680		7.48:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.417	0.0785		3.04:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.776			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.660	0.0000	5.18	3.04:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.660			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.436	0.0798		3.04:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.455	0.0469		3.04:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.931	-0.2612		3.04:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.752	0.3242		3.04:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.218	0.0790		3.04:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.395			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 11-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.063	0.0449	3.40	9.39:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.171	0.0292		9.39:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.415	0.1476		8.58:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.385			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.115	0.0000	12.65	8.58:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.115			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.500	0.1456		8.58:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.561	0.0285		7.50:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.760	0.0663		7.50:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.313	0.0768		3.32:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.664			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.659	0.0000	5.86	3.32:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.659			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.323	0.0756		3.32:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.341	0.0454		3.32:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.801	-0.2595		3.32:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.630	0.3176		3.32:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.046	0.0768		3.32:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.218			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 12-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0461	3.87	9.63:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.175	0.0292		9.63:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.419	0.1434		8.79:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.361			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.111	0.0000	12.87	8.79:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.111			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.472	0.1432		8.79:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.532	0.0252		7.57:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.708	0.0661		7.57:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.259	0.0764		3.70:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.608			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.659	0.0000	5.22	3.70:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.659			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.267	0.0756		3.70:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.285	0.0444		3.70:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.735	-0.2584		3.70:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.569	0.3144		3.70:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	4.960	0.0754		3.70:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.129			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 13-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.073	0.0519	4.24	9.59:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.198	0.0402		9.59:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.534	0.1797		8.73:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.715			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.140	0.0000	11.16	8.73:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.140			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.855	0.1790		8.73:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.930	0.0177		7.62:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.054	0.0690		7.62:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.629	0.0796		4.09:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.993			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.669	0.0000	4.95	4.09:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.669			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.662	0.0798		4.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.681	0.0505		4.09:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.193	-0.2641		4.09:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.001	0.3367		4.09:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.562	0.0844		4.09:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.751			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 14-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.070	0.0494	4.13	9.34:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.189	0.0378		9.34:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.505	0.1796		8.56:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.685			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.139	0.0000	10.95	8.56:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.139			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.824	0.1790		8.56:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.899	0.0260		7.59:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.081	0.0739		7.59:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.697	0.0855		4.36:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.088			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	5.18	4.36:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.746	0.0840		4.36:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.766	0.0519		4.36:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.292	-0.2650		4.36:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.096	0.3412		4.36:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.691	0.0866		4.36:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.885			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 15-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0474	3.82	9.12:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.181	0.0328		9.12:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.455	0.1606		8.53:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.510			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.125	0.0000	10.74	8.53:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.125			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.635	0.1599		8.53:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.702	0.0271		7.55:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.891	0.0719		7.55:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.490	0.0831		4.54:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.870			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.650	0.0000	5.49	4.54:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.650			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.520	0.0840		4.54:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.540	0.0483		4.54:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.030	-0.2626		4.54:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.845	0.3290		4.54:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.347	0.0812		4.54:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.529			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 16-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	3.26	9.09:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0298		9.09:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.423	0.1513		8.75:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.417			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.118	0.0000	11.35	8.75:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.118			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.535	0.1504		8.75:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.598	0.0262		7.58:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.781	0.0696		7.58:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.361	0.0803		4.67:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.728			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.651	0.0000	5.56	4.67:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.651			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.379	0.0798		4.67:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.398	0.0461		4.67:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.866	-0.2604		4.67:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.691	0.3209		4.67:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.132	0.0777		4.67:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.306			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 17-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.062	0.0445	2.99	9.31:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.169	0.0271		9.31:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.395	0.1399		9.11:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.314			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.109	0.0000	13.17	9.11:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.109			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.423	0.1384		9.11:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.481	0.0295		7.79:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.687	0.0680		7.79:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.254	0.0785		4.84:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.613			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.653	0.0000	5.88	4.84:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.653			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.266	0.0798		4.84:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.285	0.0444		4.84:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.735	-0.2584		4.84:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.569	0.3144		4.84:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	4.960	0.0754		4.84:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.129			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 18-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.062	0.0440	3.47	9.65:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.168	0.0261		9.65:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.386	0.1309		9.38:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.246			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.102	0.0000	12.98	9.38:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.102			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.348	0.1289		9.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.402	0.0293		8.21:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.607	0.0693		8.21:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.185	0.0803		5.09:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.552			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.657	0.0000	5.18	5.09:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.657			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.209	0.0798		5.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.228	0.0436		5.09:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.670	-0.2573		5.09:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.509	0.3109		5.09:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	4.874	0.0741		5.09:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.040			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 19-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0440	3.57	9.82:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.167	0.0266		9.82:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.389	0.1318		9.35:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.255			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.102	0.0000	11.85	9.35:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.102			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.357	0.1337		9.35:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.413	0.0295		8.71:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.619	0.0705		8.71:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.207	0.0816		5.35:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.580			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.657	0.0000	5.17	5.35:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.657			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.237	0.0798		5.35:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.256	0.0441		5.35:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.703	-0.2579		5.35:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.539	0.3126		5.35:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	4.917	0.0746		5.35:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.084			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 20-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.073	0.0523	3.89	9.90:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.199	0.0265		9.90:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.420	0.1452		9.09:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.374			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.113	0.0000	12.40	9.09:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.113			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.487	0.1432		9.09:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.547	0.0162		9.21:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.660	0.0655		9.21:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.206	0.0757		5.60:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.552			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	5.94	5.60:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.210	0.0756		5.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.228	0.0436		5.60:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.670	-0.2573		5.60:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.509	0.3109		5.60:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	4.874	0.0741		5.60:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.040			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 21-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.075	0.0540	4.46	9.89:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.205	0.0298		9.89:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.454	0.1823		8.68:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.652			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.142	0.0000	11.49	8.68:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.142			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.794	0.1814		8.68:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.870	0.0218		9.55:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.022	0.0663		9.55:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.575	0.0766		5.74:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.925			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.653	0.0000	5.27	5.74:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.653			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.578	0.0756		5.74:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.596	0.0492		5.74:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.095	-0.2632		5.74:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.907	0.3321		5.74:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.433	0.0826		5.74:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.618			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 22-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.072	0.0511	4.54	9.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.195	0.0295		9.55:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.441	0.1590		8.14:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.486			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.124	0.0000	9.73	8.14:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.124			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.610	0.1575		8.14:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.676	0.0263		9.60:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.860	0.0693		9.60:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.438	0.0801		5.62:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.804			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.660	0.0000	4.79	5.62:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.660			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.464	0.0798		5.62:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		5.62:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		5.62:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		5.62:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		5.62:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 23-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.099	0.0702	4.54	8.90:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.268	0.0576		8.90:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.749	0.2856		7.66:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.626			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.222	0.0000	8.92	7.66:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.222			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.848	0.2840		7.66:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.967	-0.0335		9.33:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.733	0.0589		9.33:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.224	0.0680		5.24:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.535			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.668	0.0000	4.84	5.24:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.668			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.203	0.0672		5.24:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.219	0.0589		5.24:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.816	-0.2661		5.24:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.615	0.3634		5.24:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.379	0.0969		5.24:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.596			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 24-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.089	0.0636	4.37	8.30:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.242	0.0538		8.30:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.691	0.2943		7.45:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.625			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.229	0.0000	9.04	7.45:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.229			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.854	0.2936		7.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.977	-0.0057		8.84:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.937	0.0793		8.84:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.598	0.0917		4.72:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.017			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.662	0.0000	5.07	4.72:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.662			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.679	0.0924		4.72:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.701	0.0664		4.72:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.374	-0.2626		4.72:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.189	0.3843		4.72:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.112	0.1085		4.72:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.355			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 25-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.075	0.0536	4.01	8.03:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.204	0.0441		8.03:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.572	0.2452		7.64:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.183			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.190	0.0000	10.10	7.64:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.190			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.373	0.2458		7.64:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.476	0.0137		8.33:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.572	0.0815		8.33:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.251	0.0941		4.25:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.681			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	5.33	4.25:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.339	0.0924		4.25:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.361	0.0610		4.25:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.980	-0.2657		4.25:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.781	0.3700		4.25:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.595	0.1004		4.25:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.820			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 26-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0478	3.33	8.26:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.182	0.0341		8.26:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.467	0.1895		8.24:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.712			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.147	0.0000	11.47	8.24:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.147			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.859	0.1885		8.24:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.938	0.0268		8.00:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.125	0.0771		8.00:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.768	0.0893		3.95:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.176			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.654	0.0000	5.66	3.95:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.654			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.830	0.0882		3.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.851	0.0532		3.95:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.390	-0.2655		3.95:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.192	0.3455		3.95:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.820	0.0884		3.95:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.018			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 27-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0465	2.81	9.11:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.177	0.0298		9.11:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.426	0.1654		9.13:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.513			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.129	0.0000	13.57	9.13:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.129			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.642	0.1647		9.13:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.711	0.0296		8.00:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.918	0.0761		8.00:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.552	0.0877		3.92:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.953			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.651	0.0000	5.68	3.92:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.651			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.604	0.0882		3.92:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.625	0.0496		3.92:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.128	-0.2637		3.92:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.938	0.3337		3.92:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.476	0.0830		3.92:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.662			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 28-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0474	3.04	10.47:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.181	0.0304		10.47:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.435	0.1679		10.06:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.538			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.130	0.0000	14.83	10.06:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.130			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.668	0.1671		10.06:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.738	0.0248		8.36:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.911	0.0722		8.36:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.513	0.0836		4.18:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.895			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.653	0.0000	6.06	4.18:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.653			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.548	0.0840		4.18:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.568	0.0487		4.18:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.062	-0.2628		4.18:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.876	0.3305		4.18:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.390	0.0817		4.18:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.573			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 29-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	3.42	11.99:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0265		11.99:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.395	0.1455		10.65:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.351			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.113	0.0000	15.08	10.65:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.113			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.464	0.1456		10.65:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.525	0.0326		8.98:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.753	0.0753		8.98:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.381	0.0871		4.69:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.779			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.655	0.0000	5.84	4.69:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.655			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.434	0.0882		4.69:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.455	0.0469		4.69:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.931	-0.2612		4.69:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.752	0.3242		4.69:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.218	0.0790		4.69:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.395			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 30-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0453	3.78	13.28:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.173	0.0255		13.28:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.386	0.1351		10.68:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.274			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.105	0.0000	14.37	10.68:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.105			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.379	0.1360		10.68:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.436	0.0329		9.71:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.666	0.0752		9.71:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.293	0.0869		5.28:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.690			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.659	0.0000	5.56	5.28:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.659			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.349	0.0882		5.28:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.370	0.0457		5.28:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.833	-0.2599		5.28:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.660	0.3194		5.28:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.089	0.0772		5.28:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.262			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 31-Jul

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	3.79	14.03:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0250		14.03:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.383	0.1324		10.16:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.253			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.103	0.0000	13.16	10.16:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.103			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.356	0.1313		10.16:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.411	0.0336		10.38:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.646	0.0755		10.38:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.275	0.0871		5.78:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.673			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.647	0.0000	5.30	5.78:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.647			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.320	0.0882		5.78:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.341	0.0454		5.78:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.801	-0.2595		5.78:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.630	0.3176		5.78:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.046	0.0768		5.78:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.218			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 1-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	3.51	14.02:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0241		14.02:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.375	0.1283		9.30:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.218			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.100	0.0000	11.08	9.30:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.100			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.318	0.1265		9.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.371	0.0343		10.86:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.611	0.0786		10.86:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.266	0.0908		6.08:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.681			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.638	0.0000	5.32	6.08:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.638			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.319	0.0924		6.08:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.341	0.0454		6.08:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.801	-0.2595		6.08:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.630	0.3176		6.08:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.046	0.0768		6.08:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.218			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 2-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0465	3.30	13.29:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.177	0.0249		13.29:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.385	0.1287		8.47:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.231			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.100	0.0000	9.93	8.47:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.100			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.331	0.1289		8.47:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.385	0.0356		11.09:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.634	0.0805		11.09:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.305	0.0932		6.13:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.731			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.645	0.0000	5.30	6.13:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.645			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.376	0.0924		6.13:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.398	0.0461		6.13:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.866	-0.2604		6.13:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.691	0.3209		6.13:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.132	0.0777		6.13:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.306			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 3-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.066	0.0474	3.75	12.21:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.180	0.0262		12.21:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.399	0.1362		7.99:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.294			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.106	0.0000	10.53	7.99:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.106			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.400	0.1360		7.99:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.457	0.0349		11.06:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.701	0.0823		11.06:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.387	0.0949		5.96:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.821			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.639	0.0000	5.33	5.96:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.639			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.460	0.0966		5.96:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		5.96:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		5.96:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		5.96:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		5.96:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 4-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.102	0.0731	4.65	11.16:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.278	0.0735		11.16:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.892	0.2395		7.89:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.466			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.186	0.0000	10.50	7.89:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.186			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.652	0.2387		7.89:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.752	-0.0351		10.82:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.507	0.0761		10.82:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.141	0.0877		5.66:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.542			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.656	0.0000	5.31	5.66:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.656			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.198	0.0882		5.66:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.219	0.0589		5.66:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.816	-0.2661		5.66:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.615	0.3634		5.66:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.379	0.0969		5.66:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.596			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 5-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.097	0.0690	4.86	10.33:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.263	0.0644		10.33:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.801	0.2946		8.02:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.737			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.229	0.0000	10.34	8.02:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.229			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.966	0.2936		8.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.089	-0.0031		10.40:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.067	0.1008		10.40:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.907	0.1164		5.27:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.439			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.658	0.0000	5.35	5.27:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.658			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.097	0.1176		5.27:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.125	0.0733		5.27:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.868	-0.2557		5.27:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.714	0.4002		5.27:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.758	0.1183		5.27:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.023			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 6-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.087	0.0619	4.47	9.75:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.236	0.0582		9.75:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.722	0.2785		8.19:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.552			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.216	0.0000	11.22	8.19:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.216			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.768	0.2792		8.19:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.885	0.0086		9.87:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.945	0.1067		9.87:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.834	0.1234		4.85:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.398			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.642	0.0000	5.74	4.85:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.642			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.040	0.1218		4.85:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.069	0.0723		4.85:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.802	-0.2568		4.85:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	4.643	0.3982		4.85:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	7.672	0.1170		4.85:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	7.934			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 7-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.072	0.0511	3.84	9.33:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.195	0.0400		9.33:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.529	0.2041		8.28:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.870			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.159	0.0000	11.93	8.28:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.159			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.029	0.2029		8.28:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.114	0.0316		9.25:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.335	0.0962		9.25:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.137	0.1114		4.38:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.646			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.632	0.0000	5.71	4.38:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.632			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.278	0.1092		4.38:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.304	0.0603		4.38:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.915	-0.2659		4.38:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.715	0.3673		4.38:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.509	0.0991		4.38:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.731			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 8-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0474	3.37	8.97:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.181	0.0328		8.97:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.455	0.1691		8.31:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.566			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.131	0.0000	12.90	8.31:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.131			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.697	0.1695		8.31:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.768	0.0351		8.62:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.013	0.0931		8.62:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.789	0.1076		3.91:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.281			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.629	0.0000	5.69	3.91:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.629			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.910	0.1092		3.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.936	0.0544		3.91:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.488	-0.2659		3.91:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.288	0.3499		3.91:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.949	0.0906		3.91:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.152			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 9-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0461	2.92	8.58:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.175	0.0290		8.58:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.417	0.1497		8.33:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.401			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.116	0.0000	13.81	8.33:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.116			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.517	0.1504		8.33:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.580	0.0359		8.05:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.831	0.0899		8.05:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.580	0.1037		3.54:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.054			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.631	0.0000	5.81	3.54:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.631			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.685	0.1050		3.54:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.710	0.0509		3.54:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.226	-0.2643		3.54:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.033	0.3382		3.54:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.605	0.0853		3.54:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.796			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 10-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.063	0.0453	2.71	8.28:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.172	0.0262		8.28:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.391	0.1373		8.40:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.293			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.107	0.0000	14.07	8.40:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.107			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.400	0.1360		8.40:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.457	0.0369		7.66:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.715	0.0881		7.66:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.449	0.1019		3.37:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.915			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.629	0.0000	5.58	3.37:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.629			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.544	0.1008		3.37:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.568	0.0487		3.37:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.062	-0.2628		3.37:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.876	0.3305		3.37:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.390	0.0817		3.37:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.573			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 11-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.063	0.0449	2.72	8.21:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.171	0.0244		8.21:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.375	0.1292		8.55:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.224			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.100	0.0000	13.65	8.55:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.100			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.324	0.1289		8.55:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.378	0.0374		7.56:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.639	0.0876		7.56:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.369	0.1013		3.49:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.832			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.627	0.0000	5.42	3.49:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.627			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.459	0.1008		3.49:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		3.49:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		3.49:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		3.49:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		3.49:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 12-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	2.34	8.47:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0254		8.47:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.386	0.1319		8.73:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.253			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.103	0.0000	14.05	8.73:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.103			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.356	0.1313		8.73:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.411	0.0355		7.77:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.659	0.0863		7.77:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.378	0.0995		3.88:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.833			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.626	0.0000	5.61	3.88:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.626			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.459	0.1008		3.88:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		3.88:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		3.88:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		3.88:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		3.88:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 13-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0457	2.60	9.22:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.174	0.0244		9.22:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.378	0.1310		8.87:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.239			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.102	0.0000	14.68	8.87:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.102			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.341	0.1289		8.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.395	0.0361		8.28:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.647	0.0871		8.28:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.373	0.1006		4.47:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.833			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.626	0.0000	5.88	4.47:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.626			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.459	0.1008		4.47:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		4.47:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		4.47:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		4.47:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		4.47:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 14-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.068	0.0482	3.97	10.29:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.184	0.0266		10.29:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.406	0.1342		8.80:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.288			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.104	0.0000	13.61	8.80:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.104			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.392	0.1337		8.80:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.448	0.0349		8.99:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.692	0.0859		8.99:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.408	0.0993		5.09:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.862			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.625	0.0000	5.26	5.09:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.625			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.487	0.1008		5.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.511	0.0479		5.09:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.997	-0.2621		5.09:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.814	0.3274		5.09:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.304	0.0804		5.09:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.484			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 15-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.072	0.0511	4.27	11.11:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.195	0.0321		11.11:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.463	0.1645		8.26:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.544			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.128	0.0000	11.41	8.26:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.128			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.672	0.1623		8.26:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.740	0.0328		9.73:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.969	0.0887		9.73:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.708	0.1024		5.55:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.176			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.623	0.0000	5.30	5.55:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.623			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.799	0.1008		5.55:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.823	0.0527		5.55:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.357	-0.2652		5.55:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.160	0.3441		5.55:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.777	0.0879		5.55:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.974			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 16-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.068	0.0490	3.93	11.68:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.186	0.0292		11.68:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.430	0.1462		7.42:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.391			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.114	0.0000	12.16	7.42:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.114			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.505	0.1456		7.42:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.566	0.0369		10.43:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.824	0.0890		10.43:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.566	0.1028		5.84:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.036			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.621	0.0000	5.36	5.84:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.621			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.657	0.1008		5.84:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.681	0.0505		5.84:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.193	-0.2641		5.84:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.001	0.3367		5.84:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.562	0.0844		5.84:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.751			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 17-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0461	3.61	12.12:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.176	0.0261		12.12:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.394	0.1301		6.47:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.249			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.101	0.0000	12.11	6.47:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.101			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.350	0.1313		6.47:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.405	0.0392		11.11:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.679	0.0883		11.11:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.415	0.1019		6.06:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.881			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.635	0.0000	5.35	6.06:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.635			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.516	0.1008		6.06:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.540	0.0483		6.06:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.030	-0.2626		6.06:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.845	0.3290		6.06:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.347	0.0812		6.06:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.529			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 18-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0482	3.25	12.24:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.183	0.0269		12.24:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.408	0.1304		5.57:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.265			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.101	0.0000	10.60	5.57:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.101			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.366	0.1313		5.57:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.421	0.0392		11.70:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.695	0.0929		11.70:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.469	0.1074		6.20:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.960			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.668	0.0000	5.34	6.20:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.668			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.628	0.1050		6.20:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.653	0.0501		6.20:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.161	-0.2639		6.20:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.970	0.3351		6.20:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.519	0.0839		6.20:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.707			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 19-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0465	3.20	11.98:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.177	0.0265		11.98:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.398	0.1297		4.92:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.250			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.101	0.0000	10.69	4.92:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.101			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.351	0.1289		4.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.405	0.0419		12.20:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.698	0.0927		12.20:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.471	0.1074		6.26:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.962			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.666	0.0000	5.46	6.26:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.666			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.628	0.1050		6.26:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.653	0.0501		6.26:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.161	-0.2639		6.26:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.970	0.3351		6.26:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.519	0.0839		6.26:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.707			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 20-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.071	0.0511	3.97	11.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.194	0.0292		11.55:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.438	0.1377		4.63:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.343			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.107	0.0000	10.97	4.63:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.107			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.450	0.1384		4.63:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.508	0.0366		12.58:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.764	0.0956		12.58:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.561	0.1107		6.25:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.067			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.673	0.0000	5.36	6.25:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.673			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.740	0.1092		6.25:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.766	0.0519		6.25:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.292	-0.2650		6.25:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.096	0.3412		6.25:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.691	0.0866		6.25:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.885			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 21-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.073	0.0519	4.37	10.92:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.198	0.0321		10.92:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.466	0.1469		4.48:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.431			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.114	0.0000	10.34	4.48:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.114			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.545	0.1456		4.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.606	0.0375		12.79:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.868	0.0944		12.79:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.655	0.1092		6.13:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.154			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.671	0.0000	4.94	6.13:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.671			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.825	0.1092		6.13:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.851	0.0532		6.13:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.390	-0.2655		6.13:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.192	0.3455		6.13:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.820	0.0884		6.13:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.018			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 22-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.077	0.0544	4.53	10.17:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.208	0.0380		10.17:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.525	0.1444		4.32:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.474			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.112	0.0000	9.90	4.32:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.112			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.586	0.1456		4.32:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.647	0.0352		12.79:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.893	0.0942		12.79:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.678	0.1087		5.86:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.175			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.678	0.0000	5.04	5.86:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.678			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.853	0.1092		5.86:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.879	0.0536		5.86:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.423	-0.2657		5.86:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.224	0.3470		5.86:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.863	0.0893		5.86:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.063			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 23-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.086	0.0615	4.62	9.47:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.234	0.0666		9.47:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.790	0.1919		4.11:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.051			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.149	0.0000	9.84	4.11:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.149			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.200	0.1909		4.11:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.280	0.0183		12.60:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.408	0.0899		12.60:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.157	0.1037		5.47:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.631			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.676	0.0000	5.07	5.47:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.676			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.307	0.1050		5.47:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.332	0.0606		5.47:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.947	-0.2657		5.47:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.748	0.3687		5.47:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.552	0.0996		5.47:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.775			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 24-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.072	0.0519	4.28	8.96:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.197	0.0447		8.96:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.570	0.1767		3.89:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.731			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.137	0.0000	10.66	3.89:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.137			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.868	0.1766		3.89:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.942	0.0375		12.25:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.204	0.0924		12.25:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.974	0.1068		4.99:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.462			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.676	0.0000	5.22	4.99:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.676			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.138	0.1050		4.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.163	0.0579		4.99:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.750	-0.2661		4.99:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.549	0.3608		4.99:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.293	0.0955		4.99:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.507			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 25-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.070	0.0494	3.95	8.63:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.189	0.0398		8.63:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.521	0.1800		3.68:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.704			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.140	0.0000	11.46	3.68:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.140			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.844	0.1790		3.68:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.919	0.0422		11.80:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.214	0.0917		11.80:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.978	0.1061		4.47:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.463			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.675	0.0000	5.32	4.47:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.675			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.138	0.1050		4.47:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.163	0.0579		4.47:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.750	-0.2661		4.47:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.549	0.3608		4.47:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.293	0.0955		4.47:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.507			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 26-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0461	3.52	8.37:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.176	0.0333		8.37:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.454	0.1484		3.53:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.429			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.115	0.0000	10.70	3.53:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.115			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.544	0.1480		3.53:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.606	0.0447		11.31:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.918	0.0949		11.31:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.709	0.1098		3.97:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.211			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.671	0.0000	5.21	3.97:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.671			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.882	0.1092		3.97:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.908	0.0539		3.97:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.455	-0.2657		3.97:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.256	0.3484		3.97:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.906	0.0897		3.97:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.107			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 27-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.064	0.0453	3.25	8.21:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.173	0.0311		8.21:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.433	0.1392		3.50:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.348			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.108	0.0000	10.83	3.50:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.108			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.456	0.1384		3.50:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.514	0.0425		10.85:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.811	0.0906		10.85:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.566	0.1048		3.60:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.045			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.668	0.0000	5.09	3.60:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.668			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.713	0.1050		3.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.738	0.0514		3.60:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.259	-0.2648		3.60:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.064	0.3397		3.60:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.648	0.0857		3.60:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.840			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 28-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.062	0.0440	3.00	8.25:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.168	0.0281		8.25:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.403	0.1351		3.62:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.291			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.105	0.0000	10.95	3.62:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.105			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.396	0.1360		3.62:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.453	0.0411		10.51:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.740	0.0895		10.51:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.486	0.1035		3.43:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.959			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.669	0.0000	5.13	3.43:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.669			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.628	0.1050		3.43:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.653	0.0501		3.43:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.161	-0.2639		3.43:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.970	0.3351		3.43:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.519	0.0839		3.43:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.707			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 29-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0440	3.10	8.56:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.167	0.0267		8.56:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.390	0.1233		3.84:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.200			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.096	0.0000	12.36	3.84:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.096			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.296	0.1217		3.84:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.347	0.0421		10.33:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.641	0.0884		10.33:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.378	0.1022		3.46:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.845			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.671	0.0000	5.75	3.46:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.671			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.516	0.1008		3.46:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.540	0.0483		3.46:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.030	-0.2626		3.46:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.845	0.3290		3.46:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.347	0.0812		3.46:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.529			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 30-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0436	3.44	8.99:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.166	0.0260		8.99:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.383	0.1176		4.00:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.156			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.091	0.0000	12.06	4.00:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.091			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.247	0.1193		4.00:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.297	0.0421		10.28:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.591	0.0876		10.28:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.321	0.1013		3.67:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.784			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.675	0.0000	5.33	3.67:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.675			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.459	0.1008		3.67:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		3.67:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		3.67:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		3.67:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		3.67:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 31-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0436	3.60	9.29:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.166	0.0256		9.29:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.380	0.1170		4.09:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.149			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.091	0.0000	11.45	4.09:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.091			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.240	0.1169		4.09:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.289	0.0416		10.32:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.580	0.0887		10.32:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.319	0.1026		4.00:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.788			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.671	0.0000	4.93	4.00:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.671			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.459	0.1008		4.00:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.483	0.0474		4.00:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.964	-0.2617		4.00:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.783	0.3258		4.00:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.261	0.0799		4.00:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.440			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 1-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0432	3.78	9.42:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.165	0.0261		9.42:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.383	0.1251		4.19:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.205			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.097	0.0000	10.99	4.19:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.097			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.302	0.1265		4.19:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.355	0.0405		10.43:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.638	0.0865		10.43:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.359	0.0998		4.45:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.815			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.672	0.0000	4.91	4.45:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.672			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.487	0.1008		4.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.511	0.0479		4.45:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.997	-0.2621		4.45:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.814	0.3274		4.45:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.304	0.0804		4.45:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.484			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 2-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.061	0.0436	4.07	9.40:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.166	0.0251		9.40:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.376	0.1208		4.29:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.170			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.094	0.0000	10.55	4.29:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.094			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.264	0.1193		4.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.314	0.0425		10.56:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.611	0.0884		10.56:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.348	0.1022		4.99:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.815			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.672	0.0000	5.09	4.99:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.672			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.487	0.1008		4.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.511	0.0479		4.99:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	3.997	-0.2621		4.99:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	2.814	0.3274		4.99:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.304	0.0804		4.99:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.484			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 3-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.066	0.0469	4.21	9.26:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.179	0.0296		9.26:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.426	0.1300		4.43:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.280			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.101	0.0000	10.22	4.43:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.101			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.381	0.1289		4.43:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.435	0.0439		10.69:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	1.742	0.0915		10.69:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.505	0.1059		5.57:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	2.989			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.696	0.0000	5.06	5.57:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.696			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	3.685	0.1050		5.57:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	3.710	0.0509		5.57:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.226	-0.2643		5.57:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.033	0.3382		5.57:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	5.605	0.0853		5.57:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	5.796			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 4-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.068	0.0486	4.16	9.07:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.185	0.0376		9.07:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.499	0.1689		4.66:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.609			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.131	0.0000	9.47	4.66:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.131			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.740	0.1695		4.66:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.811	0.0467		10.81:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.137	0.0959		10.81:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	2.936	0.1107		6.14:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.442			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.695	0.0000	5.04	6.14:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.695			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.137	0.1092		6.14:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.163	0.0579		6.14:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	4.750	-0.2661		6.14:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.549	0.3608		6.14:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.293	0.0955		6.14:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.507			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 5-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.065	0.0465	4.06	8.91:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.177	0.0377		8.91:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.492	0.1529		5.02:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	1.497			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.119	0.0000	10.28	5.02:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.119			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	1.616	0.1527		5.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	1.680	0.0789		10.90:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	2.231	0.1074		10.90:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	3.126	0.1240		6.65:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	3.693			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.695	0.0000	5.22	6.65:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.695			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	4.388	0.1218		6.65:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	4.417	0.0620		6.65:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	5.046	-0.2652		6.65:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	3.849	0.3723		6.65:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	6.681	0.1018		6.65:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	6.909			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 6-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.067	0.0478	4.19	8.79:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.182	0.0475		8.79:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.579	0.2697		5.51:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.351			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.209	0.0000	9.47	5.51:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.209			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.560	0.2697		5.51:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.673	0.0588		10.96:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.084	0.1401		10.96:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.252	0.1619		7.07:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.992			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.690	0.0000	5.00	7.07:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.690			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.682	0.1597		7.07:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.720	0.0827		7.07:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.559	-0.2402		7.07:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.475	0.4191		7.07:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.663	0.1321		7.07:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.959			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 7-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.079	0.0565	4.73	8.67:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.215	0.0595		8.67:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.712	0.2773		6.02:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	2.534			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.215	0.0000	8.99	6.02:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.215			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	2.749	0.2769		6.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	2.865	0.0415		10.98:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.155	0.1326		10.98:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.260	0.1531		7.36:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	4.960			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.696	0.0000	5.03	7.36:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.696			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	5.656	0.1513		7.36:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	5.692	0.0822		7.36:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.526	-0.2411		7.36:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.438	0.4184		7.36:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	8.620	0.1317		7.36:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	8.915			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 8-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.164	0.1167	5.89	8.52:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.445	0.2051		8.52:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.158	0.5381		6.49:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.694			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.418	0.0000	9.39	6.49:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.418			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	6.112	0.5370		6.49:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.337	-0.0521		10.98:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	5.973	0.2554		10.98:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	8.102	0.2951		7.50:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	9.451			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.786	0.0000	5.65	7.50:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.786			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	10.237	0.2941		7.50:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	10.307	0.1596		7.50:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	11.926	0.0660		7.50:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	12.224	0.4519		7.50:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	15.661	0.2406		7.50:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	16.200			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 9-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.129	0.0918	5.98	8.37:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.350	0.1657		8.37:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.734	0.5634		6.79:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.436			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.438	0.0000	9.48	6.79:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.438			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	5.874	0.5609		6.79:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.109	-0.0176		11.01:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	5.986	0.2241		11.01:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	7.854	0.2590		7.53:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	9.038			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.727	0.0000	5.13	7.53:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.727			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	9.765	0.2563		7.53:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	9.826	0.1514		7.53:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	11.361	0.0202		7.53:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	11.452	0.4567		7.53:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	14.926	0.2290		7.53:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	15.439			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 10-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.100	0.0710	5.22	8.23:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.271	0.1142		8.23:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.225	0.4681		6.87:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	4.301			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.364	0.0000	8.96	6.87:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.364			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.665	0.4654		6.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.860	-0.0054		11.09:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	4.822	0.1664		11.09:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	6.209	0.1923		7.52:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	7.088			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.710	0.0000	5.15	7.52:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.710			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	7.798	0.1933		7.52:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	7.844	0.1177		7.52:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	9.038	-0.1365		7.52:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	8.422	0.4573		7.52:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	11.900	0.1821		7.52:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	12.308			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 11-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.091	0.0644	5.05	8.09:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.246	0.0879		8.09:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.980	0.3981		6.86:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.596			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.309	0.0000	8.62	6.86:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.309			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.905	0.3986		6.86:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.072	-0.0056		11.26:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	4.033	0.1313		11.26:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	5.127	0.1516		7.50:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.820			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.714	0.0000	5.10	7.50:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.714			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.534	0.1513		7.50:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.570	0.0965		7.50:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.549	-0.2074		7.50:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.613	0.4397		7.50:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.957	0.1522		7.50:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	10.298			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 12-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.174	0.1246	5.88	7.90:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.474	0.2099		7.90:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.227	0.7621		6.79:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.235			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.592	0.0000	8.96	6.79:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.592			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.827	0.7590		6.79:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	8.145	-0.0784		11.49:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.597	0.2463		11.49:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	9.650	0.2844		7.47:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	10.950			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.762	0.0000	5.48	7.47:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.762			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	11.712	0.2857		7.47:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	11.780	0.1851		7.47:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	13.657	0.2234		7.47:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	14.665	0.4269		7.47:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	17.912	0.2754		7.47:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	18.529			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 13-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.133	0.0947	6.01	7.63:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.361	0.1248		7.63:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.403	0.5966		6.59:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.323			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.463	0.0000	8.75	6.59:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.463			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	5.786	0.5967		6.59:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.036	-0.0229		11.77:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	5.876	0.2038		11.77:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	7.575	0.2354		7.42:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	8.651			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.723	0.0000	4.89	7.42:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.723			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	9.374	0.2353		7.42:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	9.430	0.1446		7.42:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	10.896	-0.0155		7.42:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	10.826	0.4595		7.42:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	14.321	0.2196		7.42:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	14.813			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 14-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.154	0.1101	5.57	7.30:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.419	0.1367		7.30:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.561	0.5880		6.22:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.425			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.457	0.0000	8.25	6.22:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.457			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	5.882	0.5847		6.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.127	-0.0435		12.05:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	5.823	0.1963		12.05:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	7.459	0.2269		7.30:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	8.496			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.738	0.0000	4.83	7.30:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.738			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	9.234	0.2269		7.30:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	9.288	0.1421		7.30:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	10.729	-0.0275		7.30:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	10.605	0.4600		7.30:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	14.104	0.2165		7.30:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	14.589			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 15-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.112	0.0794	4.88	7.00:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.303	0.0897		7.00:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.052	0.4896		5.75:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	4.269			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.380	0.0000	7.59	5.75:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.380			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.649	0.4893		5.75:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.854	-0.0157		12.36:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	4.744	0.1579		12.36:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	6.060	0.1825		7.12:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	6.894			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.709	0.0000	4.55	7.12:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.709			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	7.603	0.1807		7.12:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	7.646	0.1144		7.12:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	8.806	-0.1491		7.12:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	8.133	0.4556		7.12:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	11.598	0.1777		7.12:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	11.996			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 16-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.099	0.0710	4.54	6.82:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.270	0.0727		6.82:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.877	0.4266		5.30:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.680			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.331	0.0000	7.44	5.30:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.331			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.011	0.4248		5.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.189	-0.0116		12.69:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	4.108	0.1225		12.69:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	5.129	0.1413		6.92:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.775			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.704	0.0000	4.76	6.92:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.704			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.479	0.1429		6.92:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.513	0.0957		6.92:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.483	-0.2101		6.92:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.535	0.4386		6.92:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.871	0.1509		6.92:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	10.209			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 17-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.096	0.0690	4.54	6.78:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.262	0.0654		6.78:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	0.808	0.3876		4.90:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.355			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.301	0.0000	7.68	4.90:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.301			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	3.656	0.3866		4.90:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	3.818	-0.0037		13.02:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	3.792	0.1106		13.02:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	4.714	0.1280		6.70:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.299			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.702	0.0000	4.67	6.70:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.702			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.001	0.1261		6.70:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.031	0.0879		6.70:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	6.922	-0.2298		6.70:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	5.885	0.4277		6.70:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	9.138	0.1397		6.70:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	9.451			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 18-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.128	0.0910	4.99	6.80:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.347	0.0947		6.80:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.138	0.4132		4.52:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	3.853			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.321	0.0000	7.68	4.52:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.321			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	4.174	0.4105		4.52:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	4.346	-0.0293		13.30:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	4.141	0.1291		13.30:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	5.217	0.1494		6.45:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	5.900			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.748	0.0000	5.12	6.45:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.748			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	6.648	0.1471		6.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	6.683	0.0985		6.45:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	7.682	-0.2023		6.45:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	6.769	0.4419		6.45:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	10.130	0.1549		6.45:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	10.477			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 19-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.249	0.1774	5.88	6.83:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.676	0.2991		6.83:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	3.174	0.9038		4.16:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	9.113			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.702	0.0000	8.02	4.16:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.702			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	9.815	0.9022		4.16:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	10.193	-0.1264		13.51:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	9.310	0.3477		13.51:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	12.208	0.4019		6.20:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	14.045			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.783	0.0000	5.39	6.20:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.783			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	14.828	0.3992		6.20:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	14.923	0.2407		6.20:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	17.364	0.6393		6.20:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	20.249	0.3250		6.20:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	22.721	0.3504		6.20:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	23.506			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 20-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.220	0.1575	6.00	6.78:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.599	0.2718		6.78:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.869	1.0883		3.85:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	10.020			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.845	0.0000	7.60	3.85:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.845			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	10.865	1.0859		3.85:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	11.320	-0.0291		13.62:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	11.117	0.5722		13.62:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	15.886	0.6611		5.95:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	18.908			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.870	0.0000	5.44	5.95:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.870			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	19.778	0.6597		5.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	19.935	0.3315		5.95:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	23.297	0.7782		5.95:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	26.809	0.4721		5.95:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	30.400	0.4701		5.95:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	31.453			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 21-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.194	0.1388	5.55	6.65:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.528	0.2033		6.65:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.226	0.9630		3.63:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	8.554			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.748	0.0000	7.42	3.63:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.748			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	9.302	0.9594		3.63:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	9.704	-0.0186		13.65:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	9.574	0.4810		13.65:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	13.583	0.5559		5.73:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	16.124			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.762	0.0000	5.06	5.73:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.762			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	16.886	0.5546		5.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	17.018	0.2784		5.73:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	19.841	0.7554		5.73:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	23.250	0.3524		5.73:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	25.930	0.4004		5.73:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	26.827			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 22-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.160	0.1138	4.96	6.50:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.434	0.1328		6.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.543	0.7104		3.52:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	6.211			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.552	0.0000	6.48	3.52:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.552			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	6.763	0.7088		3.52:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	7.060	-0.0042		13.61:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.031	0.2903		13.61:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	9.451	0.3354		5.56:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	10.984			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.744	0.0000	4.46	5.56:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.744			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	11.728	0.3361		5.56:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	11.808	0.1857		5.56:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	13.691	0.2267		5.56:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	14.714	0.4261		5.56:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	17.955	0.2763		5.56:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	18.574			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 23-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.189	0.1350	4.91	6.38:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.514	0.1776		6.38:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.997	0.8175		3.48:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.369			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.635	0.0000	6.64	3.48:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.635			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	8.004	0.8162		3.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	8.346	-0.0653		13.50:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.890	0.3094		13.50:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	10.469	0.3575		5.41:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	12.103			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.781	0.0000	4.78	5.41:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.781			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	12.884	0.3571		5.41:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	12.969	0.2060		5.41:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	15.058	0.3685		5.41:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	16.721	0.3957		5.41:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	19.731	0.3036		5.41:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	20.411			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 24-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.178	0.1271	4.93	6.28:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.484	0.1571		6.28:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.796	0.7944		3.48:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.016			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.617	0.0000	6.83	3.48:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.617			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.633	0.7924		3.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	7.965	-0.0395		13.32:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.689	0.3233		13.32:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	10.384	0.3734		5.26:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	12.091			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.732	0.0000	4.75	5.26:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.732			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	12.823	0.3739		5.26:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	12.912	0.2050		5.26:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	14.991	0.3614		5.26:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	16.622	0.3973		5.26:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	19.644	0.3022		5.26:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	20.321			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 25-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.204	0.1458	4.80	6.18:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.555	0.1717		6.18:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.989	0.8912		3.49:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.845			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.692	0.0000	6.56	3.49:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.692			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	8.537	0.8878		3.49:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	8.909	-0.0475		13.05:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	8.577	0.3796		13.05:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	11.741	0.4389		5.11:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	13.747			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.704	0.0000	4.74	5.11:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.704			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	14.451	0.4370		5.11:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	14.555	0.2341		5.11:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	16.929	0.5852		5.11:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	19.570	0.3401		5.11:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	22.157	0.3415		5.11:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	22.922			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 26-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.179	0.1275	4.59	6.07:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.486	0.1311		6.07:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.581	0.7475		3.47:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	6.493			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.581	0.0000	6.47	3.47:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.581			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.074	0.7446		3.47:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	7.386	-0.0182		12.71:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.259	0.3230		12.71:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	9.951	0.3730		4.98:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	11.656			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.686	0.0000	4.58	4.98:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.686			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	12.342	0.3739		4.98:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	12.431	0.1965		4.98:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	14.424	0.3009		4.98:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	15.782	0.4110		4.98:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	18.908	0.2911		4.98:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	19.560			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 27-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.164	0.1172	4.37	5.96:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.446	0.1096		5.96:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.361	0.6518		3.43:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.644			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.506	0.0000	6.03	3.43:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.506			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	6.150	0.6516		3.43:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.423	-0.0229		12.32:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	6.263	0.2621		12.32:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	8.448	0.3030		4.91:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	9.833			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.686	0.0000	4.35	4.91:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.686			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	10.519	0.3025		4.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	10.591	0.1645		4.91:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	12.259	0.0942		4.91:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	12.684	0.4483		4.91:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	16.094	0.2473		4.91:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	16.648			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 28-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.226	0.1612	4.30	5.85:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.614	0.1802		5.85:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.119	0.7834		3.39:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.267			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.608	0.0000	5.72	3.39:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.608			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.875	0.7828		3.39:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	8.203	-0.0668		11.90:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.736	0.3646		11.90:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	10.775	0.4214		4.91:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	12.701			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.734	0.0000	4.51	4.91:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.734			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	13.435	0.4202		4.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	13.535	0.2161		4.91:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	15.726	0.4429		4.91:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	17.725	0.3776		4.91:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	20.597	0.3174		4.91:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	21.308			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 29-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.192	0.1371	4.26	5.76:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.522	0.1477		5.76:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.756	0.8014		3.38:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.022			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.622	0.0000	5.45	3.38:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.622			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.644	0.7995		3.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	7.979	-0.0352		11.46:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.733	0.3780		11.46:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	10.884	0.4369		4.97:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	12.881			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.720	0.0000	4.35	4.97:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.720			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	13.601	0.4370		4.97:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	13.705	0.2190		4.97:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	15.926	0.4660		4.97:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	18.029	0.3718		4.97:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	20.857	0.3214		4.97:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	21.577			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 30-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.219	0.1558	4.36	5.66:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.594	0.1695		5.66:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.010	0.8122		3.38:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.347			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.631	0.0000	5.71	3.38:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.631			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.978	0.8091		3.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	8.317	-0.0643		11.01:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.868	0.3551		11.01:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	10.828	0.4106		5.08:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	12.705			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.733	0.0000	4.44	5.08:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.733			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	13.438	0.4076		5.08:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	13.535	0.2161		5.08:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	15.726	0.4429		5.08:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	17.725	0.3776		5.08:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	20.597	0.3174		5.08:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	21.308			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 1-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.213	0.1521	4.31	5.50:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.579	0.1724		5.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	2.019	0.9055		3.38:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	7.969			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.703	0.0000	5.71	3.38:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.703			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	8.672	0.9045		3.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	9.051	-0.0437		10.52:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	8.746	0.4270		10.52:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	12.305	0.4935		5.18:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	14.561			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.726	0.0000	4.45	5.18:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.726			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	15.287	0.4916		5.18:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	15.404	0.2493		5.18:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	17.932	0.7119		5.18:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	21.145	0.3041		5.18:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	23.458	0.3616		5.18:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	24.268			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 2-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.185	0.1325	4.02	5.23:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.504	0.1343		5.23:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.626	0.7585		3.35:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	6.610			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.589	0.0000	5.08	3.35:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.589			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	7.199	0.7566		3.35:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	7.516	-0.0525		9.97:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	7.149	0.3143		9.97:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	9.769	0.3632		5.24:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	11.429			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.718	0.0000	4.09	5.24:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.718			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	12.147	0.3613		5.24:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	12.233	0.1931		5.24:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	14.191	0.2768		5.24:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	15.440	0.4161		5.24:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	18.605	0.2862		5.24:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	19.246			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 3-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.170	0.1213	3.64	4.82:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.462	0.1147		4.82:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.420	0.6801		3.30:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.889			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.528	0.0000	4.16	3.30:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.528			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	6.417	0.6802		3.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.702	-0.0399		9.35:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	6.423	0.2713		9.35:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	8.684	0.3137		5.22:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	10.118			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.710	0.0000	3.84	5.22:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.710			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	10.828	0.3109		5.22:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	10.902	0.1699		5.22:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	12.625	0.1263		5.22:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	13.195	0.4437		5.22:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	16.570	0.2545		5.22:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	17.140			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 4-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.169	0.1201	3.31	4.29:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	0.458	0.1076		4.29:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	1.357	0.6125		3.21:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	5.382			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.476	0.0000	3.69	3.21:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.476			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	5.858	0.6110		3.21:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	6.114	-0.0279		8.67:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	5.919	0.2409		8.67:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	7.927	0.2785		5.13:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	9.200			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.730	0.0000	3.74	5.13:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.730			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	9.930	0.2773		5.13:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	9.996	0.1542		5.13:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	11.560	0.0361		5.13:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	11.723	0.4553		5.13:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	15.186	0.2330		5.13:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	15.708			:	MOUTH OF UPPER TALARIK CREEK

YEAR: 2007 TIME PERIOD: 5-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	-----FLOW----- INIT. (CMS)	LATERAL (CMS/KM)	--TEMPERATURE--: INIT. (C)	LATERAL: (C):	REMARKS
1	UPPER TALARIK	H	62.4	0.369	0.2630	2.75	3.69:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0	1.002	0.5194		3.69:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	Q	51.6	5.340	0.9451		3.08:	HYDROLOGY GAGE UT100D
4	UPPER TALARIK	B	45.0	11.550			:	CONFLUENCE WITH TRIBUTARY UT 1.135
5	TRIBUTARY 135	H	46.4	0.735	0.0000	3.62	3.08:	HYDROLOGY GAGE UT135A
6	TRIBUTARY 135	T	45.0	0.735			:	CONFLUENCE WITH UPPER TALARIK CREEK
7	UPPER TALARIK	J	45.0	12.294	0.9427		3.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
8	UPPER TALARIK	Q	44.6	12.689	-0.1225		7.96:	HYDROLOGY GAGE UT100C2
9	UPPER TALARIK	Q	37.6	11.833	0.7537		7.96:	HYDROLOGY GAGE UT100C1
10	UPPER TALARIK	Q	29.3	18.115	0.8709		4.99:	HYDROLOGY GAGE UT100C
11	UPPER TALARIK	B	24.7	22.096			:	CONFLUENCE WITH TRIBUTARY UT 1.119
12	TRIBUTARY 119	H	25.1	0.973	0.0000	4.04	4.99:	HYDROLOGY GAGE UT119A
13	TRIBUTARY 119	T	24.7	0.973			:	CONFLUENCE WITH UPPER TALARIK CREEK
14	UPPER TALARIK	J	24.7	23.069	0.8697		4.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
15	UPPER TALARIK	Q	24.5	23.276	0.3935		4.99:	HYDROLOGY GAGE UT100B
16	UPPER TALARIK	Q	14.4	27.266	0.7882		4.99:	HYDROLOGY GAGE UT100APC1
17	UPPER TALARIK	Q	9.8	30.823	0.6183		4.99:	HYDROLOGY GAGE UT100APC2
18	UPPER TALARIK	Q	2.2	35.526	0.5504		4.99:	HYDROLOGY GAGE UT100APC3
19	UPPER TALARIK	E	0.0	36.759			:	MOUTH OF UPPER TALARIK CREEK

NORMAL COMPLETION OF 'LATFLO'.

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************************************ TABLE VI: COMPOSITE-STR. GEOM., HYDR., & MET. MERGED ************************************
    BEGIN FINAL HYDROLOGY, STREAM GEOMETRY, ANDLOCAL METEOROLOGY VERIFICATION FOR THE COMPOSITE NETWORK. THE PURPOSE OF
 THIS PROGRAM IS TO:
       (1) GENERATE THE SOLAR DATA;
       (2) GENERATE THE SHADE DATA;
       (3) DETERMINE THE LOCAL METEOROLOGY FOR EACH NODE;
       (4) COMPLETE THE HYDROLOGY DATA AT EACH NON-HYDROLOGY NODE;
       (5) MERGE ALL DATA AT EACH COMPOSITE NODE FOR ALL YEARS AND TIME PERIODS INTO A SINGLE DIRECT-ACCESS FILE.
 THIS VERIFICATION IS A TRUNCATED VERSION CONTAININGTHE NEWLY CREATED DATA FOR 'KMERGE'.

                            ** JOB CONTROL DATA **
 JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTF
       1.      0.      0.    142.     10.     25.     19.     10.     34.      3.
       2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
 UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
 UPPER TALARIK       61.4     0.0
 TRIBUTARY 135       46.4    45.0
 TRIBUTARY 119       25.1    24.7
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
     NORMAL COMPLETION OF 'METROL'.
```

CALIBRATION FACTORS FOR SOLAR RADIATION AT GROUND LEVEL: LAT(RAD)=1.04551 ELEV(M)= 474. AVG. ANN. AIR TEMP(C)= -0.75
METEOROLOGY FILE: UPPER TALARIK CREEK, ALASKA

TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)	TIME PERIOD	SOLAR FACTOR (DEC)
17-May	0.7341	18-May	0.7966	19-May	0.7213	20-May	0.5058	21-May	0.8673	22-May	0.3972	23-May	0.3305	24-May	0.1910
25-May	0.2225	26-May	0.3179	27-May	0.6792	28-May	0.6214	29-May	0.5489	30-May	0.4606	31-May	0.3260	1-Jun	0.2732
2-Jun	0.3796	3-Jun	0.4658	4-Jun	0.2900	5-Jun	0.3807	6-Jun	0.7655	7-Jun	0.6531	8-Jun	0.5541	9-Jun	0.4422
10-Jun	0.7418	11-Jun	0.6966	12-Jun	0.2199	13-Jun	0.3727	14-Jun	0.4319	15-Jun	0.8408	16-Jun	0.6845	17-Jun	0.3880
18-Jun	0.4562	19-Jun	0.8143	20-Jun	0.7893	21-Jun	0.6153	22-Jun	0.1642	23-Jun	0.1058	24-Jun	0.3032	25-Jun	0.3558
26-Jun	0.7614	27-Jun	0.7608	28-Jun	0.2507	29-Jun	0.8273	30-Jun	0.4855	1-Jul	0.4081	2-Jul	0.5728	3-Jul	0.5348
4-Jul	0.2959	5-Jul	0.4220	6-Jul	0.4073	7-Jul	0.4661	8-Jul	0.2868	9-Jul	0.5104	10-Jul	0.4404	11-Jul	0.8225
12-Jul	0.4833	13-Jul	0.2183	14-Jul	0.3597	15-Jul	0.3410	16-Jul	0.5774	17-Jul	0.8515	18-Jul	0.3346	19-Jul	0.3879
20-Jul	0.5408	21-Jul	0.2589	22-Jul	0.1629	23-Jul	0.1673	24-Jul	0.3335	25-Jul	0.4105	26-Jul	0.6173	27-Jul	0.5660
28-Jul	0.7702	29-Jul	0.6732	30-Jul	0.3614	31-Jul	0.3085	1-Aug	0.2088	2-Aug	0.1733	3-Aug	0.1976	4-Aug	0.0933
5-Aug	0.2049	6-Aug	0.6458	7-Aug	0.7468	8-Aug	0.5677	9-Aug	0.8716	10-Aug	0.8782	11-Aug	0.5945	12-Aug	0.4442
13-Aug	0.7199	14-Aug	0.2529	15-Aug	0.2711	16-Aug	0.7356	17-Aug	0.4375	18-Aug	0.2371	19-Aug	0.4147	20-Aug	0.2402
21-Aug	0.1177	22-Aug	0.1231	23-Aug	0.3347	24-Aug	0.4671	25-Aug	0.5974	26-Aug	0.6063	27-Aug	0.6815	28-Aug	0.8575
29-Aug	0.7016	30-Aug	0.5199	31-Aug	0.6487	1-Sep	0.4342	2-Sep	0.4799	3-Sep	0.5288	4-Sep	0.5781	5-Sep	0.5713
6-Sep	0.4451	7-Sep	0.1620	8-Sep	0.1422	9-Sep	0.3372	10-Sep	0.5770	11-Sep	0.1473	12-Sep	0.6518	13-Sep	0.2573
14-Sep	0.5209	15-Sep	0.8021	16-Sep	0.6822	17-Sep	0.3928	18-Sep	0.1443	19-Sep	0.2878	20-Sep	0.2923	21-Sep	0.7042
22-Sep	0.2895	23-Sep	0.2963	24-Sep	0.2825	25-Sep	0.4454	26-Sep	0.4541	27-Sep	0.4151	28-Sep	0.2295	29-Sep	0.5265
30-Sep	0.2182	1-Oct	0.4750	2-Oct	0.3852	3-Oct	0.7475	4-Oct	0.1025	5-Oct	0.4770				

YEAR: 2007 TIME PERIOD: 17-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	4.97	0.781	8.08	1.000	975.	231.3	0.3184	16.970	0.104	3.29	0.0744	4.58
2	UPPER TALARIK	Q	60.0	4.97	0.781	8.08	1.000	975.	231.3	0.3184	16.970	0.283		0.0794	4.58
3	UPPER TALARIK	C	59.7	5.27	0.768	8.08	1.000	981.	231.2	0.2370	16.967	0.308		0.0794	4.58
4	UPPER TALARIK	C	56.5	5.42	0.761	8.08	1.000	983.	231.2	0.2159	16.966	0.560		0.0794	4.58
5	UPPER TALARIK	C	55.4	5.49	0.758	8.08	1.000	985.	231.1	0.1726	16.966	0.646		0.0794	4.58
6	UPPER TALARIK	C	51.9	5.60	0.753	8.08	1.000	987.	231.1	0.1787	16.963	0.927		0.0794	4.58
7	UPPER TALARIK	Q	51.6	5.60	0.753	8.08	1.000	987.	231.1	0.1787	16.963	0.946		0.4266	5.07
8	UPPER TALARIK	C	45.9	5.67	0.750	8.08	1.000	988.	231.1	0.1442	16.960	3.380		0.4266	5.07
9	UPPER TALARIK	B	45.0									3.749			
10	TRIBUTARY 135	H	46.4	5.67	0.750	8.08	1.000	988.	231.1	0.2007	16.960	0.331	5.61	0.0000	5.07
11	TRIBUTARY 135	T	45.0									0.331			
12	UPPER TALARIK	J	45.0	5.74	0.746	8.08	1.000	989.	231.1	0.1441	16.956	4.080		0.4272	5.07
13	UPPER TALARIK	Q	44.6	5.74	0.746	8.08	1.000	989.	231.1	0.1441	16.956	4.259		-0.0657	4.04
14	UPPER TALARIK	C	38.4	5.86	0.742	8.08	1.000	991.	231.1	0.1244	16.950	3.847		-0.0657	4.04
15	UPPER TALARIK	Q	37.6	5.86	0.742	8.08	1.000	991.	231.1	0.1244	16.950	3.800		0.1635	4.04
16	UPPER TALARIK	C	35.8	5.94	0.738	8.08	1.000	993.	231.1	0.0815	16.947	4.098		0.1635	4.04
17	UPPER TALARIK	C	32.9	6.00	0.735	8.08	1.000	994.	231.1	0.1004	16.945	4.568		0.1635	4.04
18	UPPER TALARIK	C	32.3	6.08	0.732	8.08	1.000	995.	231.1	0.1021	16.942	4.668		0.1635	4.04
19	UPPER TALARIK	Q	29.3	6.08	0.732	8.08	1.000	995.	231.1	0.1021	16.942	5.163		0.1890	5.07
20	UPPER TALARIK	C	27.1	6.17	0.728	8.08	1.000	997.	231.1	0.0714	16.939	5.571		0.1890	5.07
21	UPPER TALARIK	C	25.0	6.19	0.727	8.08	1.000	997.	231.1	0.0947	16.938	5.971		0.1890	5.07
22	UPPER TALARIK	B	24.7									6.027			
23	TRIBUTARY 119	H	25.1	6.18	0.728	8.08	1.000	997.	231.1	0.2451	16.938	0.667	5.08	0.0000	5.07
24	TRIBUTARY 119	T	24.7									0.667			
25	UPPER TALARIK	J	24.7	6.26	0.724	8.08	1.000	999.	231.1	0.0947	16.935	6.694		0.1891	5.07
26	UPPER TALARIK	Q	24.5	6.26	0.724	8.08	1.000	999.	231.1	0.0947	16.935	6.739		0.0995	5.07
27	UPPER TALARIK	C	20.8	6.37	0.720	8.08	1.000	1001.	231.1	0.1021	16.931	7.106		0.0995	5.07
28	UPPER TALARIK	C	18.8	6.48	0.715	8.08	1.000	1003.	231.1	0.0912	16.926	7.305		0.0995	5.07
29	UPPER TALARIK	C	14.6	6.65	0.708	8.08	1.000	1006.	231.1	0.1040	16.920	7.724		0.0995	5.07
30	UPPER TALARIK	Q	14.4	6.65	0.708	8.08	1.000	1006.	231.1	0.1040	16.920	7.748		-0.1996	5.07
31	UPPER TALARIK	Q	9.8	6.65	0.708	8.08	1.000	1006.	231.1	0.1040	16.920	6.847		0.4429	5.07
32	UPPER TALARIK	C	9.1	6.86	0.699	8.08	1.000	1010.	231.1	0.1138	16.911	7.168		0.4429	5.07
33	UPPER TALARIK	Q	2.2	6.86	0.699	8.08	1.000	1010.	231.1	0.1138	16.911	10.216		0.1563	5.07
34	UPPER TALARIK	E	0.0									10.566			

YEAR: 2007 TIME PERIOD: 18-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.77	0.640	4.38	1.000	975.	254.2	0.3177	17.044	0.099	3.20	0.0710	4.55
2	UPPER TALARIK	Q	60.0	5.77	0.640	4.38	1.000	975.	254.2	0.3177	17.044	0.270		0.0783	4.55
3	UPPER TALARIK	C	59.7	6.07	0.629	4.38	1.000	981.	254.1	0.2362	17.040	0.295		0.0783	4.55
4	UPPER TALARIK	C	56.5	6.22	0.623	4.38	1.000	983.	254.0	0.2153	17.039	0.543		0.0783	4.55
5	UPPER TALARIK	C	55.4	6.29	0.621	4.38	1.000	985.	254.0	0.1723	17.040	0.628		0.0783	4.55
6	UPPER TALARIK	C	51.9	6.40	0.617	4.38	1.000	987.	254.0	0.1783	17.037	0.906		0.0783	4.55
7	UPPER TALARIK	Q	51.6	6.40	0.617	4.38	1.000	987.	254.0	0.1783	17.037	0.924		0.4492	5.02
8	UPPER TALARIK	C	45.9	6.47	0.614	4.38	1.000	988.	254.0	0.1438	17.034	3.488		0.4492	5.02
9	UPPER TALARIK	B	45.0									3.876			
10	TRIBUTARY 135	H	46.4	6.47	0.614	4.38	1.000	988.	254.0	0.2002	17.033	0.349	5.60	0.0000	5.02
11	TRIBUTARY 135	T	45.0									0.349			
12	UPPER TALARIK	J	45.0	6.54	0.612	4.38	1.000	989.	254.0	0.1437	17.029	4.225		0.4487	5.02
13	UPPER TALARIK	Q	44.6	6.54	0.612	4.38	1.000	989.	254.0	0.1437	17.029	4.413		-0.0604	4.40
14	UPPER TALARIK	C	38.4	6.66	0.608	4.38	1.000	991.	254.0	0.1240	17.023	4.034		-0.0604	4.40
15	UPPER TALARIK	Q	37.6	6.66	0.608	4.38	1.000	991.	254.0	0.1240	17.023	3.991		0.1702	4.40
16	UPPER TALARIK	C	35.8	6.74	0.605	4.38	1.000	993.	254.0	0.0815	17.020	4.301		0.1702	4.40
17	UPPER TALARIK	C	32.9	6.80	0.603	4.38	1.000	994.	254.0	0.1000	17.019	4.790		0.1702	4.40
18	UPPER TALARIK	C	32.3	6.88	0.600	4.38	1.000	995.	254.0	0.1017	17.015	4.894		0.1702	4.40
19	UPPER TALARIK	Q	29.3	6.88	0.600	4.38	1.000	995.	254.0	0.1017	17.015	5.410		0.1967	5.26
20	UPPER TALARIK	C	27.1	6.97	0.597	4.38	1.000	997.	254.0	0.0714	17.012	5.835		0.1967	5.26
21	UPPER TALARIK	C	25.0	6.99	0.596	4.38	1.000	997.	254.0	0.0943	17.011	6.250		0.1967	5.26
22	UPPER TALARIK	B	24.7									6.309			
23	TRIBUTARY 119	H	25.1	6.98	0.596	4.38	1.000	997.	254.0	0.2444	17.011	0.667	4.91	0.0000	5.26
24	TRIBUTARY 119	T	24.7									0.667			
25	UPPER TALARIK	J	24.7	7.06	0.593	4.38	1.000	999.	254.0	0.0943	17.008	6.976		0.1975	5.26
26	UPPER TALARIK	Q	24.5	7.06	0.593	4.38	1.000	999.	254.0	0.0943	17.008	7.023		0.1040	5.26
27	UPPER TALARIK	C	20.8	7.17	0.590	4.38	1.000	1001.	254.0	0.1017	17.004	7.407		0.1040	5.26
28	UPPER TALARIK	C	18.8	7.28	0.586	4.38	1.000	1003.	254.0	0.0909	16.998	7.615		0.1040	5.26
29	UPPER TALARIK	C	14.6	7.45	0.580	4.38	1.000	1006.	254.0	0.1037	16.992	8.053		0.1040	5.26
30	UPPER TALARIK	Q	14.4	7.45	0.580	4.38	1.000	1006.	254.0	0.1037	16.992	8.078		-0.1850	5.26
31	UPPER TALARIK	Q	9.8	7.45	0.580	4.38	1.000	1006.	254.0	0.1037	16.992	7.243		0.4477	5.26
32	UPPER TALARIK	C	9.1	7.66	0.573	4.38	1.000	1010.	254.0	0.1135	16.983	7.568		0.4477	5.26
33	UPPER TALARIK	Q	2.2	7.66	0.573	4.38	1.000	1010.	254.0	0.1135	16.983	10.648		0.1629	5.26
34	UPPER TALARIK	E	0.0									11.013			

YEAR: 2007 TIME PERIOD: 19-May PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.60	0.649	4.55	1.000	975.	230.4	0.3171	17.116	0.089	3.24	0.0640	4.58
2	UPPER TALARIK	Q	60.0	7.60	0.649	4.55	1.000	975.	230.4	0.3171	17.116	0.243		0.0663	4.58
3	UPPER TALARIK	C	59.7	7.90	0.638	4.55	1.000	981.	230.3	0.2355	17.113	0.264		0.0663	4.58
4	UPPER TALARIK	C	56.5	8.05	0.632	4.55	1.000	983.	230.3	0.2146	17.112	0.474		0.0663	4.58
5	UPPER TALARIK	C	55.4	8.12	0.630	4.55	1.000	985.	230.3	0.1720	17.112	0.547		0.0663	4.58
6	UPPER TALARIK	C	51.9	8.23	0.626	4.55	1.000	987.	230.3	0.1778	17.109	0.781		0.0663	4.58
7	UPPER TALARIK	Q	51.6	8.23	0.626	4.55	1.000	987.	230.3	0.1778	17.109	0.797		0.3646	4.98
8	UPPER TALARIK	C	45.9	8.30	0.623	4.55	1.000	988.	230.3	0.1434	17.106	2.878		0.3646	4.98
9	UPPER TALARIK	B	45.0									3.193			
10	TRIBUTARY 135	H	46.4	8.30	0.623	4.55	1.000	988.	230.3	0.1998	17.106	0.283	6.16	0.0000	4.98
11	TRIBUTARY 135	T	45.0									0.283			
12	UPPER TALARIK	J	45.0	8.37	0.621	4.55	1.000	989.	230.3	0.1434	17.101	3.476		0.3652	4.98
13	UPPER TALARIK	Q	44.6	8.37	0.621	4.55	1.000	989.	230.3	0.1434	17.101	3.629		-0.0259	4.79
14	UPPER TALARIK	C	38.4	8.49	0.617	4.55	1.000	991.	230.3	0.1236	17.095	3.466		-0.0259	4.79
15	UPPER TALARIK	Q	37.6	8.49	0.617	4.55	1.000	991.	230.3	0.1236	17.095	3.448		0.1528	4.79
16	UPPER TALARIK	C	35.8	8.57	0.613	4.55	1.000	993.	230.3	0.0815	17.092	3.727		0.1528	4.79
17	UPPER TALARIK	C	32.9	8.63	0.611	4.55	1.000	994.	230.3	0.0997	17.091	4.166		0.1528	4.79
18	UPPER TALARIK	C	32.3	8.71	0.608	4.55	1.000	995.	230.3	0.1014	17.087	4.259		0.1528	4.79
19	UPPER TALARIK	Q	29.3	8.71	0.608	4.55	1.000	995.	230.3	0.1014	17.087	4.722		0.1768	5.47
20	UPPER TALARIK	C	27.1	8.80	0.605	4.55	1.000	997.	230.3	0.0715	17.084	5.104		0.1768	5.47
21	UPPER TALARIK	C	25.0	8.82	0.604	4.55	1.000	997.	230.3	0.0940	17.083	5.477		0.1768	5.47
22	UPPER TALARIK	B	24.7									5.530			
23	TRIBUTARY 119	H	25.1	8.81	0.605	4.55	1.000	997.	230.3	0.2437	17.083	0.658	4.70	0.0000	5.47
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	8.89	0.602	4.55	1.000	999.	230.3	0.0940	17.080	6.188		0.1765	5.47
26	UPPER TALARIK	Q	24.5	8.89	0.602	4.55	1.000	999.	230.3	0.0940	17.080	6.230		0.0910	5.47
27	UPPER TALARIK	C	20.8	9.00	0.598	4.55	1.000	1001.	230.3	0.1014	17.075	6.566		0.0910	5.47
28	UPPER TALARIK	C	18.8	9.11	0.595	4.55	1.000	1003.	230.3	0.0905	17.070	6.748		0.0910	5.47
29	UPPER TALARIK	C	14.6	9.28	0.589	4.55	1.000	1006.	230.3	0.1034	17.064	7.131		0.0910	5.47
30	UPPER TALARIK	Q	14.4	9.28	0.589	4.55	1.000	1006.	230.3	0.1034	17.064	7.153		-0.2220	5.47
31	UPPER TALARIK	Q	9.8	9.28	0.589	4.55	1.000	1006.	230.3	0.1034	17.064	6.151		0.4324	5.47
32	UPPER TALARIK	C	9.1	9.49	0.581	4.55	1.000	1010.	230.3	0.1133	17.055	6.465		0.4324	5.47
33	UPPER TALARIK	Q	2.2	9.49	0.581	4.55	1.000	1010.	230.3	0.1133	17.055	9.440		0.1442	5.47
34	UPPER TALARIK	E	0.0									9.763			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.53	0.668	2.90	1.000	975.	162.8	0.3165	17.187	0.087	3.23	0.0619	4.70
2	UPPER TALARIK	Q	60.0	6.53	0.668	2.90	1.000	975.	162.8	0.3165	17.187	0.236		0.0668	4.70
3	UPPER TALARIK	C	59.7	6.83	0.657	2.90	1.000	981.	162.7	0.2348	17.184	0.257		0.0668	4.70
4	UPPER TALARIK	C	56.5	6.98	0.651	2.90	1.000	983.	162.7	0.2140	17.183	0.469		0.0668	4.70
5	UPPER TALARIK	C	55.4	7.05	0.648	2.90	1.000	985.	162.7	0.1717	17.183	0.542		0.0668	4.70
6	UPPER TALARIK	C	51.9	7.16	0.644	2.90	1.000	987.	162.7	0.1773	17.181	0.778		0.0668	4.70
7	UPPER TALARIK	Q	51.6	7.16	0.644	2.90	1.000	987.	162.7	0.1773	17.181	0.794		0.3593	4.95
8	UPPER TALARIK	C	45.9	7.23	0.641	2.90	1.000	988.	162.7	0.1431	17.177	2.845		0.3593	4.95
9	UPPER TALARIK	B	45.0									3.155			
10	TRIBUTARY 135	H	46.4	7.23	0.641	2.90	1.000	988.	162.7	0.1994	17.177	0.279	5.60	0.0000	4.95
11	TRIBUTARY 135	T	45.0									0.279			
12	UPPER TALARIK	J	45.0	7.30	0.639	2.90	1.000	989.	162.7	0.1430	17.173	3.434		0.3580	4.95
13	UPPER TALARIK	Q	44.6	7.30	0.639	2.90	1.000	989.	162.7	0.1430	17.173	3.584		-0.0246	5.24
14	UPPER TALARIK	C	38.4	7.42	0.634	2.90	1.000	991.	162.7	0.1233	17.166	3.430		-0.0246	5.24
15	UPPER TALARIK	Q	37.6	7.42	0.634	2.90	1.000	991.	162.7	0.1233	17.166	3.412		0.1515	5.24
16	UPPER TALARIK	C	35.8	7.50	0.631	2.90	1.000	993.	162.7	0.0814	17.163	3.688		0.1515	5.24
17	UPPER TALARIK	C	32.9	7.56	0.629	2.90	1.000	994.	162.7	0.0994	17.162	4.123		0.1515	5.24
18	UPPER TALARIK	C	32.3	7.64	0.626	2.90	1.000	995.	162.7	0.1010	17.158	4.216		0.1515	5.24
19	UPPER TALARIK	Q	29.3	7.64	0.626	2.90	1.000	995.	162.7	0.1010	17.158	4.675		0.1750	5.71
20	UPPER TALARIK	C	27.1	7.73	0.623	2.90	1.000	997.	162.7	0.0715	17.154	5.053		0.1750	5.71
21	UPPER TALARIK	C	25.0	7.75	0.622	2.90	1.000	997.	162.7	0.0937	17.154	5.423		0.1750	5.71
22	UPPER TALARIK	B	24.7									5.475			
23	TRIBUTARY 119	H	25.1	7.74	0.623	2.90	1.000	997.	162.7	0.2431	17.154	0.656	4.85	0.0000	5.71
24	TRIBUTARY 119	T	24.7									0.656			
25	UPPER TALARIK	J	24.7	7.82	0.619	2.90	1.000	999.	162.7	0.0937	17.151	6.131		0.1765	5.71
26	UPPER TALARIK	Q	24.5	7.82	0.619	2.90	1.000	999.	162.7	0.0937	17.151	6.173		0.0901	5.71
27	UPPER TALARIK	C	20.8	7.93	0.616	2.90	1.000	1001.	162.7	0.1011	17.146	6.505		0.0901	5.71
28	UPPER TALARIK	C	18.8	8.04	0.612	2.90	1.000	1003.	162.7	0.0902	17.140	6.685		0.0901	5.71
29	UPPER TALARIK	C	14.6	8.21	0.606	2.90	1.000	1006.	162.7	0.1031	17.134	7.065		0.0901	5.71
30	UPPER TALARIK	Q	14.4	8.21	0.606	2.90	1.000	1006.	162.7	0.1031	17.134	7.087		-0.2242	5.71
31	UPPER TALARIK	Q	9.8	8.21	0.606	2.90	1.000	1006.	162.7	0.1031	17.134	6.075		0.4310	5.71
32	UPPER TALARIK	C	9.1	8.42	0.598	2.90	1.000	1010.	162.7	0.1130	17.125	6.387		0.4310	5.71
33	UPPER TALARIK	Q	2.2	8.42	0.598	2.90	1.000	1010.	162.7	0.1130	17.125	9.353		0.1429	5.71
34	UPPER TALARIK	E	0.0									9.673			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.30	0.536	5.45	1.000	975.	282.6	0.3159	17.257	0.081	3.30	0.0573	4.94
2	UPPER TALARIK	Q	60.0	7.30	0.536	5.45	1.000	975.	282.6	0.3159	17.257	0.219		0.0603	4.94
3	UPPER TALARIK	C	59.7	7.60	0.527	5.45	1.000	981.	282.5	0.2341	17.254	0.238		0.0603	4.94
4	UPPER TALARIK	C	56.5	7.75	0.522	5.45	1.000	983.	282.5	0.2134	17.253	0.430		0.0603	4.94
5	UPPER TALARIK	C	55.4	7.82	0.520	5.45	1.000	985.	282.5	0.1715	17.253	0.495		0.0603	4.94
6	UPPER TALARIK	C	51.9	7.93	0.517	5.45	1.000	987.	282.4	0.1769	17.250	0.709		0.0603	4.94
7	UPPER TALARIK	Q	51.6	7.93	0.517	5.45	1.000	987.	282.4	0.1769	17.250	0.723		0.3194	4.95
8	UPPER TALARIK	C	45.9	8.00	0.515	5.45	1.000	988.	282.4	0.1427	17.247	2.546		0.3194	4.95
9	UPPER TALARIK	B	45.0									2.822			
10	TRIBUTARY 135	H	46.4	8.00	0.515	5.45	1.000	988.	282.4	0.1990	17.247	0.248	6.40	0.0000	4.95
11	TRIBUTARY 135	T	45.0									0.248			
12	UPPER TALARIK	J	45.0	8.07	0.513	5.45	1.000	989.	282.5	0.1427	17.242	3.070		0.3174	4.95
13	UPPER TALARIK	Q	44.6	8.07	0.513	5.45	1.000	989.	282.5	0.1427	17.242	3.203		-0.0083	5.70
14	UPPER TALARIK	C	38.4	8.19	0.509	5.45	1.000	991.	282.5	0.1229	17.236	3.151		-0.0083	5.70
15	UPPER TALARIK	Q	37.6	8.19	0.509	5.45	1.000	991.	282.5	0.1229	17.236	3.145		0.1442	5.70
16	UPPER TALARIK	C	35.8	8.27	0.507	5.45	1.000	993.	282.5	0.0814	17.233	3.408		0.1442	5.70
17	UPPER TALARIK	C	32.9	8.33	0.505	5.45	1.000	994.	282.4	0.0991	17.231	3.822		0.1442	5.70
18	UPPER TALARIK	C	32.3	8.41	0.503	5.45	1.000	995.	282.4	0.1007	17.227	3.910		0.1442	5.70
19	UPPER TALARIK	Q	29.3	8.41	0.503	5.45	1.000	995.	282.4	0.1007	17.227	4.347		0.1667	5.94
20	UPPER TALARIK	C	27.1	8.50	0.500	5.45	1.000	997.	282.4	0.0716	17.224	4.707		0.1667	5.94
21	UPPER TALARIK	C	25.0	8.52	0.499	5.45	1.000	997.	282.4	0.0934	17.223	5.059		0.1667	5.94
22	UPPER TALARIK	B	24.7									5.109			
23	TRIBUTARY 119	H	25.1	8.51	0.500	5.45	1.000	997.	282.4	0.2424	17.223	0.656	5.07	0.0000	5.94
24	TRIBUTARY 119	T	24.7									0.656			
25	UPPER TALARIK	J	24.7	8.59	0.497	5.45	1.000	999.	282.4	0.0934	17.220	5.765		0.1681	5.94
26	UPPER TALARIK	Q	24.5	8.59	0.497	5.45	1.000	999.	282.4	0.0934	17.220	5.805		0.0841	5.94
27	UPPER TALARIK	C	20.8	8.70	0.494	5.45	1.000	1001.	282.4	0.1007	17.215	6.115		0.0841	5.94
28	UPPER TALARIK	C	18.8	8.81	0.491	5.45	1.000	1003.	282.4	0.0899	17.210	6.283		0.0841	5.94
29	UPPER TALARIK	C	14.6	8.98	0.486	5.45	1.000	1006.	282.4	0.1028	17.203	6.638		0.0841	5.94
30	UPPER TALARIK	Q	14.4	8.98	0.486	5.45	1.000	1006.	282.4	0.1028	17.203	6.658		-0.2375	5.94
31	UPPER TALARIK	Q	9.8	8.98	0.486	5.45	1.000	1006.	282.4	0.1028	17.203	5.586		0.4216	5.94
32	UPPER TALARIK	C	9.1	9.19	0.480	5.45	1.000	1010.	282.4	0.1128	17.194	5.892		0.4216	5.94
33	UPPER TALARIK	Q	2.2	9.19	0.480	5.45	1.000	1010.	282.4	0.1128	17.194	8.793		0.1344	5.94
34	UPPER TALARIK	E	0.0									9.094			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.90	0.583	9.77	1.000	975.	129.9	0.3153	17.326	0.083	3.65	0.0594	5.25
2	UPPER TALARIK	Q	60.0	6.90	0.583	9.77	1.000	975.	129.9	0.3153	17.326	0.226		0.0629	5.25
3	UPPER TALARIK	C	59.7	7.20	0.573	9.77	1.000	981.	129.8	0.2335	17.323	0.246		0.0629	5.25
4	UPPER TALARIK	C	56.5	7.35	0.568	9.77	1.000	983.	129.8	0.2128	17.322	0.445		0.0629	5.25
5	UPPER TALARIK	C	55.4	7.42	0.566	9.77	1.000	985.	129.8	0.1712	17.322	0.514		0.0629	5.25
6	UPPER TALARIK	C	51.9	7.53	0.562	9.77	1.000	987.	129.8	0.1764	17.319	0.736		0.0629	5.25
7	UPPER TALARIK	Q	51.6	7.53	0.562	9.77	1.000	987.	129.8	0.1764	17.319	0.751		0.3343	4.95
8	UPPER TALARIK	C	45.9	7.60	0.560	9.77	1.000	988.	129.8	0.1424	17.316	2.659		0.3343	4.95
9	UPPER TALARIK	B	45.0									2.948			
10	TRIBUTARY 135	H	46.4	7.60	0.560	9.77	1.000	988.	129.8	0.1987	17.315	0.260	5.88	0.0000	4.95
11	TRIBUTARY 135	T	45.0									0.260			
12	UPPER TALARIK	J	45.0	7.67	0.558	9.77	1.000	989.	129.8	0.1423	17.311	3.208		0.3317	4.95
13	UPPER TALARIK	Q	44.6	7.67	0.558	9.77	1.000	989.	129.8	0.1423	17.311	3.347		-0.0166	6.12
14	UPPER TALARIK	C	38.4	7.79	0.554	9.77	1.000	991.	129.8	0.1226	17.304	3.243		-0.0166	6.12
15	UPPER TALARIK	Q	37.6	7.79	0.554	9.77	1.000	991.	129.8	0.1226	17.304	3.231		0.1395	6.12
16	UPPER TALARIK	C	35.8	7.87	0.551	9.77	1.000	993.	129.8	0.0814	17.301	3.485		0.1395	6.12
17	UPPER TALARIK	C	32.9	7.93	0.549	9.77	1.000	994.	129.8	0.0989	17.299	3.886		0.1395	6.12
18	UPPER TALARIK	C	32.3	8.01	0.547	9.77	1.000	995.	129.8	0.1004	17.295	3.971		0.1395	6.12
19	UPPER TALARIK	Q	29.3	8.01	0.547	9.77	1.000	995.	129.8	0.1004	17.295	4.394		0.1615	6.13
20	UPPER TALARIK	C	27.1	8.10	0.544	9.77	1.000	997.	129.8	0.0717	17.292	4.743		0.1615	6.13
21	UPPER TALARIK	C	25.0	8.12	0.543	9.77	1.000	997.	129.8	0.0931	17.291	5.084		0.1615	6.13
22	UPPER TALARIK	B	24.7									5.132			
23	TRIBUTARY 119	H	25.1	8.11	0.544	9.77	1.000	997.	129.8	0.2418	17.292	0.663	4.61	0.0000	6.13
24	TRIBUTARY 119	T	24.7									0.663			
25	UPPER TALARIK	J	24.7	8.19	0.541	9.77	1.000	999.	129.8	0.0931	17.288	5.795		0.1597	6.13
26	UPPER TALARIK	Q	24.5	8.19	0.541	9.77	1.000	999.	129.8	0.0931	17.288	5.833		0.0846	6.13
27	UPPER TALARIK	C	20.8	8.30	0.538	9.77	1.000	1001.	129.8	0.1004	17.283	6.145		0.0846	6.13
28	UPPER TALARIK	C	18.8	8.41	0.534	9.77	1.000	1003.	129.8	0.0896	17.277	6.314		0.0846	6.13
29	UPPER TALARIK	C	14.6	8.58	0.529	9.77	1.000	1006.	129.8	0.1026	17.271	6.671		0.0846	6.13
30	UPPER TALARIK	Q	14.4	8.58	0.529	9.77	1.000	1006.	129.8	0.1026	17.271	6.691		-0.2366	6.13
31	UPPER TALARIK	Q	9.8	8.58	0.529	9.77	1.000	1006.	129.8	0.1026	17.271	5.623		0.4224	6.13
32	UPPER TALARIK	C	9.1	8.79	0.522	9.77	1.000	1010.	129.8	0.1125	17.261	5.929		0.4224	6.13
33	UPPER TALARIK	Q	2.2	8.79	0.522	9.77	1.000	1010.	129.8	0.1125	17.261	8.836		0.1348	6.13
34	UPPER TALARIK	E	0.0									9.138			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.11	0.677	10.53	1.000	975.	107.9	0.3147	17.393	0.081	3.81	0.0582	5.46
2	UPPER TALARIK	Q	60.0	7.11	0.677	10.53	1.000	975.	107.9	0.3147	17.393	0.221		0.0649	5.46
3	UPPER TALARIK	C	59.7	7.41	0.666	10.53	1.000	981.	107.9	0.2329	17.390	0.241		0.0649	5.46
4	UPPER TALARIK	C	56.5	7.56	0.660	10.53	1.000	983.	107.9	0.2124	17.389	0.447		0.0649	5.46
5	UPPER TALARIK	C	55.4	7.63	0.657	10.53	1.000	985.	107.9	0.1710	17.389	0.518		0.0649	5.46
6	UPPER TALARIK	C	51.9	7.74	0.653	10.53	1.000	987.	107.9	0.1760	17.386	0.748		0.0649	5.46
7	UPPER TALARIK	Q	51.6	7.74	0.653	10.53	1.000	987.	107.9	0.1760	17.386	0.763		0.3252	4.93
8	UPPER TALARIK	C	45.9	7.81	0.650	10.53	1.000	988.	107.9	0.1421	17.383	2.619		0.3252	4.93
9	UPPER TALARIK	B	45.0									2.900			
10	TRIBUTARY 135	H	46.4	7.81	0.650	10.53	1.000	988.	107.9	0.1983	17.382	0.253	5.53	0.0000	4.93
11	TRIBUTARY 135	T	45.0									0.253			
12	UPPER TALARIK	J	45.0	7.88	0.648	10.53	1.000	989.	107.9	0.1420	17.378	3.153		0.3246	4.93
13	UPPER TALARIK	Q	44.6	7.88	0.648	10.53	1.000	989.	107.9	0.1420	17.378	3.289		-0.0146	6.44
14	UPPER TALARIK	C	38.4	8.00	0.643	10.53	1.000	991.	107.9	0.1223	17.371	3.197		-0.0146	6.44
15	UPPER TALARIK	Q	37.6	8.00	0.643	10.53	1.000	991.	107.9	0.1223	17.371	3.187		0.1365	6.44
16	UPPER TALARIK	C	35.8	8.08	0.640	10.53	1.000	993.	107.9	0.0814	17.368	3.436		0.1365	6.44
17	UPPER TALARIK	C	32.9	8.14	0.638	10.53	1.000	994.	107.9	0.0986	17.366	3.828		0.1365	6.44
18	UPPER TALARIK	C	32.3	8.22	0.635	10.53	1.000	995.	107.9	0.1001	17.362	3.911		0.1365	6.44
19	UPPER TALARIK	Q	29.3	8.22	0.635	10.53	1.000	995.	107.9	0.1001	17.362	4.325		0.1577	6.24
20	UPPER TALARIK	C	27.1	8.31	0.632	10.53	1.000	997.	107.9	0.0717	17.358	4.666		0.1577	6.24
21	UPPER TALARIK	C	25.0	8.33	0.631	10.53	1.000	997.	107.9	0.0928	17.358	4.999		0.1577	6.24
22	UPPER TALARIK	B	24.7									5.046			
23	TRIBUTARY 119	H	25.1	8.32	0.631	10.53	1.000	997.	107.9	0.2412	17.358	0.665	4.70	0.0000	6.24
24	TRIBUTARY 119	T	24.7									0.665			
25	UPPER TALARIK	J	24.7	8.40	0.628	10.53	1.000	999.	107.9	0.0928	17.355	5.711		0.1555	6.24
26	UPPER TALARIK	Q	24.5	8.40	0.628	10.53	1.000	999.	107.9	0.0928	17.355	5.748		0.0832	6.24
27	UPPER TALARIK	C	20.8	8.51	0.624	10.53	1.000	1001.	107.9	0.1001	17.350	6.055		0.0832	6.24
28	UPPER TALARIK	C	18.8	8.62	0.620	10.53	1.000	1003.	107.9	0.0893	17.344	6.221		0.0832	6.24
29	UPPER TALARIK	C	14.6	8.79	0.614	10.53	1.000	1006.	107.9	0.1024	17.337	6.572		0.0832	6.24
30	UPPER TALARIK	Q	14.4	8.79	0.614	10.53	1.000	1006.	107.9	0.1024	17.337	6.592		-0.2393	6.24
31	UPPER TALARIK	Q	9.8	8.79	0.614	10.53	1.000	1006.	107.9	0.1024	17.337	5.512		0.4199	6.24
32	UPPER TALARIK	C	9.1	9.00	0.607	10.53	1.000	1010.	107.9	0.1123	17.328	5.816		0.4199	6.24
33	UPPER TALARIK	Q	2.2	9.00	0.607	10.53	1.000	1010.	107.9	0.1123	17.328	8.706		0.1330	6.24
34	UPPER TALARIK	E	0.0									9.004			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.07	0.847	11.69	1.000	975.	62.2	0.3141	17.459	0.086	3.86	0.0615	5.52
2	UPPER TALARIK	Q	60.0	6.07	0.847	11.69	1.000	975.	62.2	0.3141	17.459	0.234		0.0709	5.52
3	UPPER TALARIK	C	59.7	6.37	0.832	11.69	1.000	981.	62.2	0.2323	17.456	0.256		0.0709	5.52
4	UPPER TALARIK	C	56.5	6.52	0.825	11.69	1.000	983.	62.2	0.2119	17.455	0.481		0.0709	5.52
5	UPPER TALARIK	C	55.4	6.59	0.822	11.69	1.000	985.	62.2	0.1708	17.455	0.558		0.0709	5.52
6	UPPER TALARIK	C	51.9	6.70	0.816	11.69	1.000	987.	62.2	0.1756	17.452	0.809		0.0709	5.52
7	UPPER TALARIK	Q	51.6	6.70	0.816	11.69	1.000	987.	62.2	0.1756	17.452	0.826		0.3385	4.91
8	UPPER TALARIK	C	45.9	6.77	0.813	11.69	1.000	988.	62.2	0.1417	17.448	2.758		0.3385	4.91
9	UPPER TALARIK	B	45.0									3.050			
10	TRIBUTARY 135	H	46.4	6.77	0.813	11.69	1.000	988.	62.2	0.1980	17.448	0.263	4.90	0.0000	4.91
11	TRIBUTARY 135	T	45.0									0.263			
12	UPPER TALARIK	J	45.0	6.84	0.809	11.69	1.000	989.	62.2	0.1417	17.443	3.313		0.3365	4.91
13	UPPER TALARIK	Q	44.6	6.84	0.809	11.69	1.000	989.	62.2	0.1417	17.443	3.454		-0.0281	6.63
14	UPPER TALARIK	C	38.4	6.96	0.804	11.69	1.000	991.	62.2	0.1220	17.437	3.278		-0.0281	6.63
15	UPPER TALARIK	Q	37.6	6.96	0.804	11.69	1.000	991.	62.2	0.1220	17.437	3.258		0.1375	6.63
16	UPPER TALARIK	C	35.8	7.04	0.800	11.69	1.000	993.	62.2	0.0814	17.433	3.509		0.1375	6.63
17	UPPER TALARIK	C	32.9	7.10	0.797	11.69	1.000	994.	62.2	0.0983	17.432	3.904		0.1375	6.63
18	UPPER TALARIK	C	32.3	7.18	0.794	11.69	1.000	995.	62.2	0.0998	17.428	3.988		0.1375	6.63
19	UPPER TALARIK	Q	29.3	7.18	0.794	11.69	1.000	995.	62.2	0.0998	17.428	4.404		0.1588	6.24
20	UPPER TALARIK	C	27.1	7.27	0.790	11.69	1.000	997.	62.2	0.0718	17.424	4.747		0.1588	6.24
21	UPPER TALARIK	C	25.0	7.29	0.788	11.69	1.000	997.	62.2	0.0926	17.423	5.083		0.1588	6.24
22	UPPER TALARIK	B	24.7									5.130			
23	TRIBUTARY 119	H	25.1	7.28	0.789	11.69	1.000	997.	62.2	0.2407	17.424	0.665	4.60	0.0000	6.24
24	TRIBUTARY 119	T	24.7									0.665			
25	UPPER TALARIK	J	24.7	7.36	0.785	11.69	1.000	999.	62.2	0.0926	17.420	5.795		0.1597	6.24
26	UPPER TALARIK	Q	24.5	7.36	0.785	11.69	1.000	999.	62.2	0.0926	17.420	5.833		0.0846	6.24
27	UPPER TALARIK	C	20.8	7.47	0.781	11.69	1.000	1001.	62.2	0.0998	17.415	6.145		0.0846	6.24
28	UPPER TALARIK	C	18.8	7.58	0.776	11.69	1.000	1003.	62.2	0.0890	17.409	6.314		0.0846	6.24
29	UPPER TALARIK	C	14.6	7.75	0.768	11.69	1.000	1006.	62.2	0.1021	17.402	6.671		0.0846	6.24
30	UPPER TALARIK	Q	14.4	7.75	0.768	11.69	1.000	1006.	62.2	0.1021	17.402	6.691		-0.2366	6.24
31	UPPER TALARIK	Q	9.8	7.75	0.768	11.69	1.000	1006.	62.2	0.1021	17.402	5.623		0.4224	6.24
32	UPPER TALARIK	C	9.1	7.96	0.758	11.69	1.000	1010.	62.1	0.1121	17.392	5.929		0.4224	6.24
33	UPPER TALARIK	Q	2.2	7.96	0.758	11.69	1.000	1010.	62.1	0.1121	17.392	8.836		0.1348	6.24
34	UPPER TALARIK	E	0.0									9.138			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.61	0.894	3.57	1.000	975.	72.3	0.3136	17.524	0.093	3.72	0.0661	5.49
2	UPPER TALARIK	Q	60.0	7.61	0.894	3.57	1.000	975.	72.3	0.3136	17.524	0.252		0.0806	5.49
3	UPPER TALARIK	C	59.7	7.91	0.879	3.57	1.000	981.	72.2	0.2317	17.520	0.277		0.0806	5.49
4	UPPER TALARIK	C	56.5	8.06	0.871	3.57	1.000	983.	72.2	0.2115	17.519	0.533		0.0806	5.49
5	UPPER TALARIK	C	55.4	8.13	0.867	3.57	1.000	985.	72.2	0.1706	17.520	0.621		0.0806	5.49
6	UPPER TALARIK	C	51.9	8.24	0.862	3.57	1.000	987.	72.2	0.1752	17.516	0.906		0.0806	5.49
7	UPPER TALARIK	Q	51.6	8.24	0.862	3.57	1.000	987.	72.2	0.1752	17.516	0.925		0.4054	4.95
8	UPPER TALARIK	C	45.9	8.31	0.858	3.57	1.000	988.	72.2	0.1414	17.513	3.239		0.4054	4.95
9	UPPER TALARIK	B	45.0									3.589			
10	TRIBUTARY 135	H	46.4	8.31	0.858	3.57	1.000	988.	72.2	0.1977	17.512	0.315	5.17	0.0000	4.95
11	TRIBUTARY 135	T	45.0									0.315			
12	UPPER TALARIK	J	45.0	8.38	0.854	3.57	1.000	989.	72.2	0.1414	17.508	3.904		0.4033	4.95
13	UPPER TALARIK	Q	44.6	8.38	0.854	3.57	1.000	989.	72.2	0.1414	17.508	4.073		-0.0625	6.76
14	UPPER TALARIK	C	38.4	8.50	0.849	3.57	1.000	991.	72.2	0.1217	17.501	3.681		-0.0625	6.76
15	UPPER TALARIK	Q	37.6	8.50	0.849	3.57	1.000	991.	72.2	0.1217	17.501	3.636		0.1469	6.76
16	UPPER TALARIK	C	35.8	8.58	0.845	3.57	1.000	993.	72.2	0.0814	17.497	3.904		0.1469	6.76
17	UPPER TALARIK	C	32.9	8.64	0.842	3.57	1.000	994.	72.2	0.0981	17.496	4.325		0.1469	6.76
18	UPPER TALARIK	C	32.3	8.72	0.838	3.57	1.000	995.	72.2	0.0996	17.491	4.415		0.1469	6.76
19	UPPER TALARIK	Q	29.3	8.72	0.838	3.57	1.000	995.	72.2	0.0996	17.491	4.860		0.1698	6.19
20	UPPER TALARIK	C	27.1	8.81	0.833	3.57	1.000	997.	72.2	0.0719	17.488	5.227		0.1698	6.19
21	UPPER TALARIK	C	25.0	8.83	0.832	3.57	1.000	997.	72.2	0.0923	17.487	5.585		0.1698	6.19
22	UPPER TALARIK	B	24.7									5.636			
23	TRIBUTARY 119	H	25.1	8.82	0.833	3.57	1.000	997.	72.2	0.2401	17.487	0.667	4.49	0.0000	6.19
24	TRIBUTARY 119	T	24.7									0.667			
25	UPPER TALARIK	J	24.7	8.90	0.829	3.57	1.000	999.	72.2	0.0923	17.484	6.303		0.1681	6.19
26	UPPER TALARIK	Q	24.5	8.90	0.829	3.57	1.000	999.	72.2	0.0923	17.484	6.343		0.0929	6.19
27	UPPER TALARIK	C	20.8	9.01	0.824	3.57	1.000	1001.	72.2	0.0995	17.479	6.686		0.0929	6.19
28	UPPER TALARIK	C	18.8	9.12	0.819	3.57	1.000	1003.	72.2	0.0888	17.472	6.871		0.0929	6.19
29	UPPER TALARIK	C	14.6	9.29	0.810	3.57	1.000	1006.	72.2	0.1019	17.466	7.263		0.0929	6.19
30	UPPER TALARIK	Q	14.4	9.29	0.810	3.57	1.000	1006.	72.2	0.1019	17.466	7.285		-0.2174	6.19
31	UPPER TALARIK	Q	9.8	9.29	0.810	3.57	1.000	1006.	72.2	0.1019	17.466	6.304		0.4349	6.19
32	UPPER TALARIK	C	9.1	9.50	0.801	3.57	1.000	1010.	72.2	0.1119	17.456	6.619		0.4349	6.19
33	UPPER TALARIK	Q	2.2	9.50	0.801	3.57	1.000	1010.	72.2	0.1119	17.456	9.612		0.1469	6.19
34	UPPER TALARIK	E	0.0									9.941			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.00	0.894	7.42	1.000	975.	104.3	0.3130	17.587	0.089	3.77	0.0640	5.47
2	UPPER TALARIK	Q	60.0	6.00	0.894	7.42	1.000	975.	104.3	0.3130	17.587	0.243		0.0771	5.47
3	UPPER TALARIK	C	59.7	6.30	0.879	7.42	1.000	981.	104.3	0.2312	17.583	0.267		0.0771	5.47
4	UPPER TALARIK	C	56.5	6.45	0.871	7.42	1.000	983.	104.3	0.2111	17.582	0.512		0.0771	5.47
5	UPPER TALARIK	C	55.4	6.52	0.867	7.42	1.000	985.	104.2	0.1704	17.582	0.596		0.0771	5.47
6	UPPER TALARIK	C	51.9	6.63	0.862	7.42	1.000	987.	104.2	0.1749	17.579	0.869		0.0771	5.47
7	UPPER TALARIK	Q	51.6	6.63	0.862	7.42	1.000	987.	104.2	0.1749	17.579	0.887		0.3827	5.06
8	UPPER TALARIK	C	45.9	6.70	0.858	7.42	1.000	988.	104.2	0.1411	17.575	3.071		0.3827	5.06
9	UPPER TALARIK	B	45.0									3.402			
10	TRIBUTARY 135	H	46.4	6.70	0.858	7.42	1.000	988.	104.2	0.1974	17.575	0.297	5.99	0.0000	5.06
11	TRIBUTARY 135	T	45.0									0.297			
12	UPPER TALARIK	J	45.0	6.77	0.854	7.42	1.000	989.	104.2	0.1411	17.570	3.699		0.3819	5.06
13	UPPER TALARIK	Q	44.6	6.77	0.854	7.42	1.000	989.	104.2	0.1411	17.570	3.859		-0.0435	6.87
14	UPPER TALARIK	C	38.4	6.89	0.849	7.42	1.000	991.	104.2	0.1214	17.563	3.586		-0.0435	6.87
15	UPPER TALARIK	Q	37.6	6.89	0.849	7.42	1.000	991.	104.2	0.1214	17.563	3.555		0.1485	6.87
16	UPPER TALARIK	C	35.8	6.97	0.845	7.42	1.000	993.	104.2	0.0814	17.560	3.826		0.1485	6.87
17	UPPER TALARIK	C	32.9	7.03	0.842	7.42	1.000	994.	104.2	0.0979	17.558	4.252		0.1485	6.87
18	UPPER TALARIK	C	32.3	7.11	0.838	7.42	1.000	995.	104.2	0.0993	17.554	4.343		0.1485	6.87
19	UPPER TALARIK	Q	29.3	7.11	0.838	7.42	1.000	995.	104.2	0.0993	17.554	4.793		0.1715	6.14
20	UPPER TALARIK	C	27.1	7.20	0.833	7.42	1.000	997.	104.2	0.0719	17.550	5.163		0.1715	6.14
21	UPPER TALARIK	C	25.0	7.22	0.832	7.42	1.000	997.	104.2	0.0920	17.549	5.526		0.1715	6.14
22	UPPER TALARIK	B	24.7									5.577			
23	TRIBUTARY 119	H	25.1	7.21	0.833	7.42	1.000	997.	104.2	0.2396	17.550	0.668	4.65	0.0000	6.14
24	TRIBUTARY 119	T	24.7									0.668			
25	UPPER TALARIK	J	24.7	7.29	0.829	7.42	1.000	999.	104.2	0.0920	17.546	6.245		0.1723	6.14
26	UPPER TALARIK	Q	24.5	7.29	0.829	7.42	1.000	999.	104.2	0.0920	17.546	6.286		0.0920	6.14
27	UPPER TALARIK	C	20.8	7.40	0.824	7.42	1.000	1001.	104.2	0.0992	17.541	6.625		0.0920	6.14
28	UPPER TALARIK	C	18.8	7.51	0.819	7.42	1.000	1003.	104.2	0.0885	17.534	6.809		0.0920	6.14
29	UPPER TALARIK	C	14.6	7.68	0.810	7.42	1.000	1006.	104.2	0.1017	17.528	7.197		0.0920	6.14
30	UPPER TALARIK	Q	14.4	7.68	0.810	7.42	1.000	1006.	104.2	0.1017	17.528	7.219		-0.2198	6.14
31	UPPER TALARIK	Q	9.8	7.68	0.810	7.42	1.000	1006.	104.2	0.1017	17.528	6.227		0.4337	6.14
32	UPPER TALARIK	C	9.1	7.89	0.801	7.42	1.000	1010.	104.2	0.1116	17.517	6.541		0.4337	6.14
33	UPPER TALARIK	Q	2.2	7.89	0.801	7.42	1.000	1010.	104.2	0.1116	17.517	9.526		0.1455	6.14
34	UPPER TALARIK	E	0.0									9.852			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.89	0.809	8.25	1.000	975.	225.1	0.3125	17.648	0.083	3.86	0.0590	5.53
2	UPPER TALARIK	Q	60.0	5.89	0.809	8.25	1.000	975.	225.1	0.3125	17.648	0.225		0.0656	5.53
3	UPPER TALARIK	C	59.7	6.19	0.795	8.25	1.000	981.	225.0	0.2307	17.644	0.246		0.0656	5.53
4	UPPER TALARIK	C	56.5	6.34	0.788	8.25	1.000	983.	225.0	0.2107	17.643	0.454		0.0656	5.53
5	UPPER TALARIK	C	55.4	6.41	0.785	8.25	1.000	985.	225.0	0.1702	17.643	0.525		0.0656	5.53
6	UPPER TALARIK	C	51.9	6.52	0.780	8.25	1.000	987.	224.9	0.1745	17.640	0.758		0.0656	5.53
7	UPPER TALARIK	Q	51.6	6.52	0.780	8.25	1.000	987.	224.9	0.1745	17.640	0.773		0.3365	5.18
8	UPPER TALARIK	C	45.9	6.59	0.777	8.25	1.000	988.	224.9	0.1409	17.636	2.693		0.3365	5.18
9	UPPER TALARIK	B	45.0									2.984			
10	TRIBUTARY 135	H	46.4	6.59	0.777	8.25	1.000	988.	224.9	0.1971	17.636	0.261	6.58	0.0000	5.18
11	TRIBUTARY 135	T	45.0									0.261			
12	UPPER TALARIK	J	45.0	6.66	0.773	8.25	1.000	989.	224.9	0.1408	17.631	3.245		0.3365	5.18
13	UPPER TALARIK	Q	44.6	6.66	0.773	8.25	1.000	989.	224.9	0.1408	17.631	3.386		-0.0189	6.98
14	UPPER TALARIK	C	38.4	6.78	0.768	8.25	1.000	991.	224.9	0.1211	17.624	3.267		-0.0189	6.98
15	UPPER TALARIK	Q	37.6	6.78	0.768	8.25	1.000	991.	224.9	0.1211	17.624	3.254		0.1423	6.98
16	UPPER TALARIK	C	35.8	6.86	0.765	8.25	1.000	993.	224.9	0.0814	17.620	3.513		0.1423	6.98
17	UPPER TALARIK	C	32.9	6.92	0.762	8.25	1.000	994.	224.9	0.0976	17.619	3.922		0.1423	6.98
18	UPPER TALARIK	C	32.3	7.00	0.758	8.25	1.000	995.	224.9	0.0991	17.614	4.009		0.1423	6.98
19	UPPER TALARIK	Q	29.3	7.00	0.758	8.25	1.000	995.	224.9	0.0991	17.614	4.440		0.1643	6.09
20	UPPER TALARIK	C	27.1	7.09	0.754	8.25	1.000	997.	224.9	0.0720	17.610	4.795		0.1643	6.09
21	UPPER TALARIK	C	25.0	7.11	0.753	8.25	1.000	997.	224.9	0.0918	17.610	5.142		0.1643	6.09
22	UPPER TALARIK	B	24.7									5.191			
23	TRIBUTARY 119	H	25.1	7.10	0.754	8.25	1.000	997.	224.9	0.2391	17.610	0.660	5.36	0.0000	6.09
24	TRIBUTARY 119	T	24.7									0.660			
25	UPPER TALARIK	J	24.7	7.18	0.750	8.25	1.000	999.	224.9	0.0918	17.607	5.851		0.1639	6.09
26	UPPER TALARIK	Q	24.5	7.18	0.750	8.25	1.000	999.	224.9	0.0918	17.607	5.890		0.0855	6.09
27	UPPER TALARIK	C	20.8	7.29	0.746	8.25	1.000	1001.	224.9	0.0990	17.601	6.205		0.0855	6.09
28	UPPER TALARIK	C	18.8	7.40	0.741	8.25	1.000	1003.	224.9	0.0883	17.595	6.376		0.0855	6.09
29	UPPER TALARIK	C	14.6	7.57	0.734	8.25	1.000	1006.	224.9	0.1015	17.588	6.736		0.0855	6.09
30	UPPER TALARIK	Q	14.4	7.57	0.734	8.25	1.000	1006.	224.9	0.1015	17.588	6.757		-0.2347	6.09
31	UPPER TALARIK	Q	9.8	7.57	0.734	8.25	1.000	1006.	224.9	0.1015	17.588	5.698		0.4239	6.09
32	UPPER TALARIK	C	9.1	7.78	0.725	8.25	1.000	1010.	224.9	0.1114	17.577	6.005		0.4239	6.09
33	UPPER TALARIK	Q	2.2	7.78	0.725	8.25	1.000	1010.	224.9	0.1114	17.577	8.922		0.1362	6.09
34	UPPER TALARIK	E	0.0									9.227			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.17	0.771	7.92	1.000	975.	207.7	0.3121	17.707	0.080	3.81	0.0569	5.65
2	UPPER TALARIK	Q	60.0	5.17	0.771	7.92	1.000	975.	207.7	0.3121	17.707	0.217		0.0583	5.65
3	UPPER TALARIK	C	59.7	5.47	0.758	7.92	1.000	981.	207.7	0.2303	17.703	0.235		0.0583	5.65
4	UPPER TALARIK	C	56.5	5.62	0.752	7.92	1.000	983.	207.6	0.2103	17.702	0.420		0.0583	5.65
5	UPPER TALARIK	C	55.4	5.69	0.749	7.92	1.000	985.	207.6	0.1700	17.703	0.484		0.0583	5.65
6	UPPER TALARIK	C	51.9	5.80	0.744	7.92	1.000	987.	207.6	0.1741	17.700	0.690		0.0583	5.65
7	UPPER TALARIK	Q	51.6	5.80	0.744	7.92	1.000	987.	207.6	0.1741	17.700	0.704		0.3012	5.26
8	UPPER TALARIK	C	45.9	5.87	0.741	7.92	1.000	988.	207.6	0.1406	17.696	2.423		0.3012	5.26
9	UPPER TALARIK	B	45.0									2.683			
10	TRIBUTARY 135	H	46.4	5.87	0.741	7.92	1.000	988.	207.6	0.1968	17.695	0.234	6.84	0.0000	5.26
11	TRIBUTARY 135	T	45.0									0.234			
12	UPPER TALARIK	J	45.0	5.94	0.737	7.92	1.000	989.	207.6	0.1405	17.690	2.917		0.3007	5.26
13	UPPER TALARIK	Q	44.6	5.94	0.737	7.92	1.000	989.	207.6	0.1405	17.690	3.043		-0.0027	7.10
14	UPPER TALARIK	C	38.4	6.06	0.733	7.92	1.000	991.	207.6	0.1209	17.683	3.026		-0.0027	7.10
15	UPPER TALARIK	Q	37.6	6.06	0.733	7.92	1.000	991.	207.6	0.1209	17.683	3.024		0.1349	7.10
16	UPPER TALARIK	C	35.8	6.14	0.729	7.92	1.000	993.	207.6	0.0814	17.679	3.270		0.1349	7.10
17	UPPER TALARIK	C	32.9	6.20	0.727	7.92	1.000	994.	207.6	0.0974	17.678	3.657		0.1349	7.10
18	UPPER TALARIK	C	32.3	6.28	0.723	7.92	1.000	995.	207.6	0.0988	17.673	3.740		0.1349	7.10
19	UPPER TALARIK	Q	29.3	6.28	0.723	7.92	1.000	995.	207.6	0.0988	17.673	4.148		0.1560	6.02
20	UPPER TALARIK	C	27.1	6.37	0.719	7.92	1.000	997.	207.6	0.0721	17.669	4.485		0.1560	6.02
21	UPPER TALARIK	C	25.0	6.39	0.718	7.92	1.000	997.	207.6	0.0916	17.669	4.815		0.1560	6.02
22	UPPER TALARIK	B	24.7									4.861			
23	TRIBUTARY 119	H	25.1	6.38	0.719	7.92	1.000	997.	207.6	0.2387	17.669	0.652	4.97	0.0000	6.02
24	TRIBUTARY 119	T	24.7									0.652			
25	UPPER TALARIK	J	24.7	6.46	0.715	7.92	1.000	999.	207.6	0.0916	17.665	5.513		0.1555	6.02
26	UPPER TALARIK	Q	24.5	6.46	0.715	7.92	1.000	999.	207.6	0.0916	17.665	5.550		0.0801	6.02
27	UPPER TALARIK	C	20.8	6.57	0.711	7.92	1.000	1001.	207.6	0.0987	17.660	5.845		0.0801	6.02
28	UPPER TALARIK	C	18.8	6.68	0.707	7.92	1.000	1003.	207.5	0.0880	17.654	6.005		0.0801	6.02
29	UPPER TALARIK	C	14.6	6.85	0.700	7.92	1.000	1006.	207.5	0.1013	17.646	6.343		0.0801	6.02
30	UPPER TALARIK	Q	14.4	6.85	0.700	7.92	1.000	1006.	207.5	0.1013	17.646	6.362		-0.2455	6.02
31	UPPER TALARIK	Q	9.8	6.85	0.700	7.92	1.000	1006.	207.5	0.1013	17.646	5.254		0.4141	6.02
32	UPPER TALARIK	C	9.1	7.06	0.691	7.92	1.000	1010.	207.5	0.1113	17.636	5.554		0.4141	6.02
33	UPPER TALARIK	Q	2.2	7.06	0.691	7.92	1.000	1010.	207.5	0.1113	17.636	8.404		0.1281	6.02
34	UPPER TALARIK	E	0.0									8.691			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.32	0.668	4.27	1.000	975.	184.9	0.3116	17.765	0.076	3.67	0.0540	5.78
2	UPPER TALARIK	Q	60.0	6.32	0.668	4.27	1.000	975.	184.9	0.3116	17.765	0.206		0.0511	5.78
3	UPPER TALARIK	C	59.7	6.62	0.657	4.27	1.000	981.	184.8	0.2299	17.761	0.222		0.0511	5.78
4	UPPER TALARIK	C	56.5	6.77	0.651	4.27	1.000	983.	184.8	0.2100	17.760	0.384		0.0511	5.78
5	UPPER TALARIK	C	55.4	6.84	0.648	4.27	1.000	985.	184.8	0.1699	17.761	0.440		0.0511	5.78
6	UPPER TALARIK	C	51.9	6.95	0.644	4.27	1.000	987.	184.7	0.1738	17.757	0.621		0.0511	5.78
7	UPPER TALARIK	Q	51.6	6.95	0.644	4.27	1.000	987.	184.7	0.1738	17.757	0.633		0.2639	5.25
8	UPPER TALARIK	C	45.9	7.02	0.641	4.27	1.000	988.	184.7	0.1403	17.753	2.139		0.2639	5.25
9	UPPER TALARIK	B	45.0									2.367			
10	TRIBUTARY 135	H	46.4	7.02	0.641	4.27	1.000	988.	184.7	0.1966	17.753	0.205	6.26	0.0000	5.25
11	TRIBUTARY 135	T	45.0									0.205			
12	UPPER TALARIK	J	45.0	7.09	0.639	4.27	1.000	989.	184.7	0.1403	17.748	2.572		0.2625	5.25
13	UPPER TALARIK	Q	44.6	7.09	0.639	4.27	1.000	989.	184.7	0.1403	17.748	2.682		0.0110	7.20
14	UPPER TALARIK	C	38.4	7.21	0.634	4.27	1.000	991.	184.7	0.1206	17.741	2.751		0.0110	7.20
15	UPPER TALARIK	Q	37.6	7.21	0.634	4.27	1.000	991.	184.7	0.1206	17.741	2.759		0.1274	7.20
16	UPPER TALARIK	C	35.8	7.29	0.631	4.27	1.000	993.	184.7	0.0814	17.737	2.991		0.1274	7.20
17	UPPER TALARIK	C	32.9	7.35	0.629	4.27	1.000	994.	184.7	0.0972	17.735	3.357		0.1274	7.20
18	UPPER TALARIK	C	32.3	7.43	0.626	4.27	1.000	995.	184.7	0.0986	17.731	3.435		0.1274	7.20
19	UPPER TALARIK	Q	29.3	7.43	0.626	4.27	1.000	995.	184.7	0.0986	17.731	3.821		0.1472	5.90
20	UPPER TALARIK	C	27.1	7.52	0.623	4.27	1.000	997.	184.7	0.0721	17.727	4.139		0.1472	5.90
21	UPPER TALARIK	C	25.0	7.54	0.622	4.27	1.000	997.	184.7	0.0914	17.726	4.450		0.1472	5.90
22	UPPER TALARIK	B	24.7									4.494			
23	TRIBUTARY 119	H	25.1	7.53	0.623	4.27	1.000	997.	184.7	0.2382	17.726	0.653	4.89	0.0000	5.90
24	TRIBUTARY 119	T	24.7									0.653			
25	UPPER TALARIK	J	24.7	7.61	0.619	4.27	1.000	999.	184.7	0.0914	17.723	5.147		0.1471	5.90
26	UPPER TALARIK	Q	24.5	7.61	0.619	4.27	1.000	999.	184.7	0.0914	17.723	5.182		0.0742	5.90
27	UPPER TALARIK	C	20.8	7.72	0.616	4.27	1.000	1001.	184.7	0.0985	17.717	5.456		0.0742	5.90
28	UPPER TALARIK	C	18.8	7.83	0.612	4.27	1.000	1003.	184.7	0.0878	17.710	5.604		0.0742	5.90
29	UPPER TALARIK	C	14.6	8.00	0.606	4.27	1.000	1006.	184.7	0.1011	17.703	5.916		0.0742	5.90
30	UPPER TALARIK	Q	14.4	8.00	0.606	4.27	1.000	1006.	184.7	0.1011	17.703	5.934		-0.2546	5.90
31	UPPER TALARIK	Q	9.8	8.00	0.606	4.27	1.000	1006.	184.7	0.1011	17.703	4.785		0.4022	5.90
32	UPPER TALARIK	C	9.1	8.21	0.598	4.27	1.000	1010.	184.7	0.1111	17.692	5.077		0.4022	5.90
33	UPPER TALARIK	Q	2.2	8.21	0.598	4.27	1.000	1010.	184.7	0.1111	17.692	7.844		0.1196	5.90
34	UPPER TALARIK	E	0.0									8.112			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.13	0.743	4.66	1.000	975.	154.7	0.3111	17.821	0.074	3.81	0.0523	5.92
2	UPPER TALARIK	Q	60.0	7.13	0.743	4.66	1.000	975.	154.7	0.3111	17.821	0.200		0.0489	5.92
3	UPPER TALARIK	C	59.7	7.43	0.731	4.66	1.000	981.	154.6	0.2295	17.817	0.215		0.0489	5.92
4	UPPER TALARIK	C	56.5	7.58	0.724	4.66	1.000	983.	154.6	0.2096	17.816	0.370		0.0489	5.92
5	UPPER TALARIK	C	55.4	7.65	0.721	4.66	1.000	985.	154.6	0.1697	17.816	0.424		0.0489	5.92
6	UPPER TALARIK	C	51.9	7.76	0.717	4.66	1.000	987.	154.6	0.1735	17.813	0.597		0.0489	5.92
7	UPPER TALARIK	Q	51.6	7.76	0.717	4.66	1.000	987.	154.6	0.1735	17.813	0.608		0.2458	5.21
8	UPPER TALARIK	C	45.9	7.83	0.714	4.66	1.000	988.	154.6	0.1401	17.809	2.011		0.2458	5.21
9	UPPER TALARIK	B	45.0									2.223			
10	TRIBUTARY 135	H	46.4	7.83	0.713	4.66	1.000	988.	154.6	0.1963	17.809	0.191	7.08	0.0000	5.21
11	TRIBUTARY 135	T	45.0									0.191			
12	UPPER TALARIK	J	45.0	7.90	0.710	4.66	1.000	989.	154.6	0.1400	17.804	2.414		0.2434	5.21
13	UPPER TALARIK	Q	44.6	7.90	0.710	4.66	1.000	989.	154.6	0.1400	17.804	2.516		0.0146	7.31
14	UPPER TALARIK	C	38.4	8.02	0.706	4.66	1.000	991.	154.6	0.1204	17.796	2.608		0.0146	7.31
15	UPPER TALARIK	Q	37.6	8.02	0.706	4.66	1.000	991.	154.6	0.1204	17.796	2.618		0.1226	7.31
16	UPPER TALARIK	C	35.8	8.10	0.702	4.66	1.000	993.	154.6	0.0814	17.792	2.842		0.1226	7.31
17	UPPER TALARIK	C	32.9	8.16	0.700	4.66	1.000	994.	154.5	0.0970	17.791	3.194		0.1226	7.31
18	UPPER TALARIK	C	32.3	8.24	0.697	4.66	1.000	995.	154.5	0.0984	17.786	3.269		0.1226	7.31
19	UPPER TALARIK	Q	29.3	8.24	0.697	4.66	1.000	995.	154.5	0.0984	17.786	3.640		0.1415	5.79
20	UPPER TALARIK	C	27.1	8.33	0.693	4.66	1.000	997.	154.5	0.0722	17.782	3.946		0.1415	5.79
21	UPPER TALARIK	C	25.0	8.35	0.692	4.66	1.000	997.	154.5	0.0912	17.782	4.245		0.1415	5.79
22	UPPER TALARIK	B	24.7									4.287			
23	TRIBUTARY 119	H	25.1	8.34	0.693	4.66	1.000	997.	154.5	0.2378	17.782	0.663	4.90	0.0000	5.79
24	TRIBUTARY 119	T	24.7									0.663			
25	UPPER TALARIK	J	24.7	8.42	0.689	4.66	1.000	999.	154.5	0.0912	17.778	4.950		0.1429	5.79
26	UPPER TALARIK	Q	24.5	8.42	0.689	4.66	1.000	999.	154.5	0.0912	17.778	4.984		0.0709	5.79
27	UPPER TALARIK	C	20.8	8.53	0.685	4.66	1.000	1001.	154.5	0.0982	17.772	5.246		0.0709	5.79
28	UPPER TALARIK	C	18.8	8.64	0.681	4.66	1.000	1003.	154.5	0.0876	17.766	5.387		0.0709	5.79
29	UPPER TALARIK	C	14.6	8.81	0.674	4.66	1.000	1006.	154.5	0.1010	17.758	5.686		0.0709	5.79
30	UPPER TALARIK	Q	14.4	8.81	0.674	4.66	1.000	1006.	154.5	0.1010	17.758	5.703		-0.2584	5.79
31	UPPER TALARIK	Q	9.8	8.81	0.674	4.66	1.000	1006.	154.5	0.1010	17.758	4.537		0.3951	5.79
32	UPPER TALARIK	C	9.1	9.02	0.666	4.66	1.000	1010.	154.5	0.1109	17.747	4.823		0.3951	5.79
33	UPPER TALARIK	Q	2.2	9.02	0.666	4.66	1.000	1010.	154.5	0.1109	17.747	7.542		0.1147	5.79
34	UPPER TALARIK	E	0.0									7.799			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.51	0.781	5.99	1.000	975.	109.8	0.3107	17.875	0.073	3.85	0.0519	6.02
2	UPPER TALARIK	Q	60.0	6.51	0.781	5.99	1.000	975.	109.8	0.3107	17.875	0.198		0.0492	6.02
3	UPPER TALARIK	C	59.7	6.81	0.768	5.99	1.000	981.	109.8	0.2291	17.871	0.213		0.0492	6.02
4	UPPER TALARIK	C	56.5	6.96	0.761	5.99	1.000	983.	109.8	0.2093	17.870	0.370		0.0492	6.02
5	UPPER TALARIK	C	55.4	7.03	0.758	5.99	1.000	985.	109.8	0.1696	17.870	0.423		0.0492	6.02
6	UPPER TALARIK	C	51.9	7.14	0.753	5.99	1.000	987.	109.8	0.1732	17.867	0.597		0.0492	6.02
7	UPPER TALARIK	Q	51.6	7.14	0.753	5.99	1.000	987.	109.8	0.1732	17.867	0.609		0.2461	5.15
8	UPPER TALARIK	C	45.9	7.21	0.750	5.99	1.000	988.	109.8	0.1398	17.863	2.013		0.2461	5.15
9	UPPER TALARIK	B	45.0									2.226			
10	TRIBUTARY 135	H	46.4	7.21	0.750	5.99	1.000	988.	109.8	0.1961	17.863	0.191	6.91	0.0000	5.15
11	TRIBUTARY 135	T	45.0									0.191			
12	UPPER TALARIK	J	45.0	7.28	0.746	5.99	1.000	989.	109.8	0.1398	17.857	2.417		0.2458	5.15
13	UPPER TALARIK	Q	44.6	7.28	0.746	5.99	1.000	989.	109.8	0.1398	17.857	2.520		0.0116	7.42
14	UPPER TALARIK	C	38.4	7.40	0.742	5.99	1.000	991.	109.8	0.1201	17.850	2.593		0.0116	7.42
15	UPPER TALARIK	Q	37.6	7.40	0.742	5.99	1.000	991.	109.8	0.1201	17.850	2.601		0.1203	7.42
16	UPPER TALARIK	C	35.8	7.48	0.738	5.99	1.000	993.	109.7	0.0814	17.846	2.820		0.1203	7.42
17	UPPER TALARIK	C	32.9	7.54	0.735	5.99	1.000	994.	109.7	0.0969	17.844	3.166		0.1203	7.42
18	UPPER TALARIK	C	32.3	7.62	0.732	5.99	1.000	995.	109.7	0.0982	17.840	3.240		0.1203	7.42
19	UPPER TALARIK	Q	29.3	7.62	0.732	5.99	1.000	995.	109.7	0.0982	17.840	3.604		0.1389	5.71
20	UPPER TALARIK	C	27.1	7.71	0.728	5.99	1.000	997.	109.7	0.0723	17.835	3.904		0.1389	5.71
21	UPPER TALARIK	C	25.0	7.73	0.727	5.99	1.000	997.	109.7	0.0910	17.835	4.198		0.1389	5.71
22	UPPER TALARIK	B	24.7									4.239			
23	TRIBUTARY 119	H	25.1	7.72	0.728	5.99	1.000	997.	109.7	0.2374	17.835	0.655	4.54	0.0000	5.71
24	TRIBUTARY 119	T	24.7									0.655			
25	UPPER TALARIK	J	24.7	7.80	0.724	5.99	1.000	999.	109.7	0.0910	17.831	4.894		0.1387	5.71
26	UPPER TALARIK	Q	24.5	7.80	0.724	5.99	1.000	999.	109.7	0.0910	17.831	4.927		0.0700	5.71
27	UPPER TALARIK	C	20.8	7.91	0.720	5.99	1.000	1001.	109.7	0.0980	17.826	5.185		0.0700	5.71
28	UPPER TALARIK	C	18.8	8.02	0.715	5.99	1.000	1003.	109.7	0.0874	17.819	5.325		0.0700	5.71
29	UPPER TALARIK	C	14.6	8.19	0.708	5.99	1.000	1006.	109.7	0.1008	17.811	5.620		0.0700	5.71
30	UPPER TALARIK	Q	14.4	8.19	0.708	5.99	1.000	1006.	109.7	0.1008	17.811	5.637		-0.2593	5.71
31	UPPER TALARIK	Q	9.8	8.19	0.708	5.99	1.000	1006.	109.7	0.1008	17.811	4.467		0.3930	5.71
32	UPPER TALARIK	C	9.1	8.40	0.699	5.99	1.000	1010.	109.7	0.1107	17.800	4.752		0.3930	5.71
33	UPPER TALARIK	Q	2.2	8.40	0.699	5.99	1.000	1010.	109.7	0.1107	17.800	7.456		0.1134	5.71
34	UPPER TALARIK	E	0.0									7.710			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.24	0.781	7.41	1.000	975.	92.4	0.3103	17.927	0.074	3.82	0.0523	6.06
2	UPPER TALARIK	Q	60.0	6.24	0.781	7.41	1.000	975.	92.4	0.3103	17.927	0.200		0.0487	6.06
3	UPPER TALARIK	C	59.7	6.54	0.768	7.41	1.000	981.	92.4	0.2288	17.923	0.215		0.0487	6.06
4	UPPER TALARIK	C	56.5	6.69	0.761	7.41	1.000	983.	92.4	0.2090	17.922	0.370		0.0487	6.06
5	UPPER TALARIK	C	55.4	6.76	0.758	7.41	1.000	985.	92.4	0.1695	17.923	0.423		0.0487	6.06
6	UPPER TALARIK	C	51.9	6.87	0.753	7.41	1.000	987.	92.4	0.1729	17.919	0.596		0.0487	6.06
7	UPPER TALARIK	Q	51.6	6.87	0.753	7.41	1.000	987.	92.4	0.1729	17.919	0.607		0.2408	5.11
8	UPPER TALARIK	C	45.9	6.94	0.750	7.41	1.000	988.	92.4	0.1396	17.915	1.981		0.2408	5.11
9	UPPER TALARIK	B	45.0									2.189			
10	TRIBUTARY 135	H	46.4	6.94	0.750	7.41	1.000	988.	92.4	0.1959	17.915	0.187	5.90	0.0000	5.11
11	TRIBUTARY 135	T	45.0									0.187			
12	UPPER TALARIK	J	45.0	7.01	0.746	7.41	1.000	989.	92.4	0.1395	17.909	2.376		0.2411	5.11
13	UPPER TALARIK	Q	44.6	7.01	0.746	7.41	1.000	989.	92.4	0.1395	17.909	2.477		0.0119	7.52
14	UPPER TALARIK	C	38.4	7.13	0.742	7.41	1.000	991.	92.4	0.1199	17.902	2.552		0.0119	7.52
15	UPPER TALARIK	Q	37.6	7.13	0.742	7.41	1.000	991.	92.4	0.1199	17.902	2.560		0.1197	7.52
16	UPPER TALARIK	C	35.8	7.21	0.738	7.41	1.000	993.	92.4	0.0815	17.898	2.778		0.1197	7.52
17	UPPER TALARIK	C	32.9	7.27	0.735	7.41	1.000	994.	92.4	0.0967	17.896	3.122		0.1197	7.52
18	UPPER TALARIK	C	32.3	7.35	0.732	7.41	1.000	995.	92.4	0.0980	17.891	3.195		0.1197	7.52
19	UPPER TALARIK	Q	29.3	7.35	0.732	7.41	1.000	995.	92.4	0.0980	17.891	3.558		0.1383	5.67
20	UPPER TALARIK	C	27.1	7.44	0.728	7.41	1.000	997.	92.4	0.0724	17.887	3.857		0.1383	5.67
21	UPPER TALARIK	C	25.0	7.46	0.727	7.41	1.000	997.	92.4	0.0908	17.887	4.149		0.1383	5.67
22	UPPER TALARIK	B	24.7									4.190			
23	TRIBUTARY 119	H	25.1	7.45	0.728	7.41	1.000	997.	92.4	0.2371	17.887	0.647	4.56	0.0000	5.67
24	TRIBUTARY 119	T	24.7									0.647			
25	UPPER TALARIK	J	24.7	7.53	0.724	7.41	1.000	999.	92.4	0.0908	17.883	4.837		0.1387	5.67
26	UPPER TALARIK	Q	24.5	7.53	0.724	7.41	1.000	999.	92.4	0.0908	17.883	4.870		0.0692	5.67
27	UPPER TALARIK	C	20.8	7.64	0.720	7.41	1.000	1001.	92.4	0.0978	17.877	5.125		0.0692	5.67
28	UPPER TALARIK	C	18.8	7.75	0.715	7.41	1.000	1003.	92.4	0.0872	17.870	5.264		0.0692	5.67
29	UPPER TALARIK	C	14.6	7.92	0.708	7.41	1.000	1006.	92.3	0.1007	17.863	5.555		0.0692	5.67
30	UPPER TALARIK	Q	14.4	7.92	0.708	7.41	1.000	1006.	92.3	0.1007	17.863	5.572		-0.2604	5.67
31	UPPER TALARIK	Q	9.8	7.92	0.708	7.41	1.000	1006.	92.3	0.1007	17.863	4.397		0.3909	5.67
32	UPPER TALARIK	C	9.1	8.13	0.699	7.41	1.000	1010.	92.3	0.1106	17.851	4.680		0.3909	5.67
33	UPPER TALARIK	Q	2.2	8.13	0.699	7.41	1.000	1010.	92.3	0.1106	17.851	7.370		0.1125	5.67
34	UPPER TALARIK	E	0.0									7.622			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.65	0.743	4.79	1.000	975.	129.1	0.3099	17.977	0.072	3.83	0.0515	6.11
2	UPPER TALARIK	Q	60.0	6.65	0.743	4.79	1.000	975.	129.1	0.3099	17.977	0.196		0.0467	6.11
3	UPPER TALARIK	C	59.7	6.95	0.731	4.79	1.000	981.	129.0	0.2285	17.973	0.211		0.0467	6.11
4	UPPER TALARIK	C	56.5	7.10	0.724	4.79	1.000	983.	129.0	0.2087	17.972	0.359		0.0467	6.11
5	UPPER TALARIK	C	55.4	7.17	0.721	4.79	1.000	985.	129.0	0.1693	17.973	0.410		0.0467	6.11
6	UPPER TALARIK	C	51.9	7.28	0.717	4.79	1.000	987.	129.0	0.1726	17.969	0.575		0.0467	6.11
7	UPPER TALARIK	Q	51.6	7.28	0.717	4.79	1.000	987.	129.0	0.1726	17.969	0.586		0.2336	5.16
8	UPPER TALARIK	C	45.9	7.35	0.714	4.79	1.000	988.	129.0	0.1394	17.965	1.919		0.2336	5.16
9	UPPER TALARIK	B	45.0									2.121			
10	TRIBUTARY 135	H	46.4	7.35	0.713	4.79	1.000	988.	129.0	0.1957	17.964	0.181	6.22	0.0000	5.16
11	TRIBUTARY 135	T	45.0									0.181			
12	UPPER TALARIK	J	45.0	7.42	0.710	4.79	1.000	989.	129.0	0.1393	17.959	2.302		0.2339	5.16
13	UPPER TALARIK	Q	44.6	7.42	0.710	4.79	1.000	989.	129.0	0.1393	17.959	2.400		0.0150	7.63
14	UPPER TALARIK	C	38.4	7.54	0.706	4.79	1.000	991.	129.0	0.1197	17.951	2.494		0.0150	7.63
15	UPPER TALARIK	Q	37.6	7.54	0.706	4.79	1.000	991.	129.0	0.1197	17.951	2.505		0.1139	7.63
16	UPPER TALARIK	C	35.8	7.62	0.702	4.79	1.000	993.	129.0	0.0815	17.947	2.713		0.1139	7.63
17	UPPER TALARIK	C	32.9	7.68	0.700	4.79	1.000	994.	129.0	0.0966	17.946	3.040		0.1139	7.63
18	UPPER TALARIK	C	32.3	7.76	0.697	4.79	1.000	995.	129.0	0.0978	17.941	3.109		0.1139	7.63
19	UPPER TALARIK	Q	29.3	7.76	0.697	4.79	1.000	995.	129.0	0.0978	17.941	3.454		0.1315	5.66
20	UPPER TALARIK	C	27.1	7.85	0.693	4.79	1.000	997.	128.9	0.0724	17.937	3.738		0.1315	5.66
21	UPPER TALARIK	C	25.0	7.87	0.692	4.79	1.000	997.	128.9	0.0906	17.936	4.016		0.1315	5.66
22	UPPER TALARIK	B	24.7									4.055			
23	TRIBUTARY 119	H	25.1	7.86	0.693	4.79	1.000	997.	128.9	0.2367	17.936	0.643	4.94	0.0000	5.66
24	TRIBUTARY 119	T	24.7									0.643			
25	UPPER TALARIK	J	24.7	7.94	0.689	4.79	1.000	999.	128.9	0.0906	17.932	4.698		0.1303	5.66
26	UPPER TALARIK	Q	24.5	7.94	0.689	4.79	1.000	999.	128.9	0.0906	17.932	4.729		0.0669	5.66
27	UPPER TALARIK	C	20.8	8.05	0.685	4.79	1.000	1001.	128.9	0.0976	17.926	4.976		0.0669	5.66
28	UPPER TALARIK	C	18.8	8.16	0.681	4.79	1.000	1003.	128.9	0.0870	17.920	5.109		0.0669	5.66
29	UPPER TALARIK	C	14.6	8.33	0.674	4.79	1.000	1006.	128.9	0.1005	17.912	5.391		0.0669	5.66
30	UPPER TALARIK	Q	14.4	8.33	0.674	4.79	1.000	1006.	128.9	0.1005	17.912	5.407		-0.2624	5.66
31	UPPER TALARIK	Q	9.8	8.33	0.674	4.79	1.000	1006.	128.9	0.1005	17.912	4.223		0.3855	5.66
32	UPPER TALARIK	C	9.1	8.54	0.666	4.79	1.000	1010.	128.9	0.1104	17.901	4.502		0.3855	5.66
33	UPPER TALARIK	Q	2.2	8.54	0.666	4.79	1.000	1010.	128.9	0.1104	17.901	7.155		0.1089	5.66
34	UPPER TALARIK	E	0.0									7.399			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.29	0.724	2.58	1.000	975.	158.4	0.3095	18.025	0.072	3.88	0.0511	6.23
2	UPPER TALARIK	Q	60.0	8.29	0.724	2.58	1.000	975.	158.4	0.3095	18.025	0.195		0.0469	6.23
3	UPPER TALARIK	C	59.7	8.59	0.712	2.58	1.000	981.	158.3	0.2282	18.021	0.210		0.0469	6.23
4	UPPER TALARIK	C	56.5	8.74	0.706	2.58	1.000	983.	158.3	0.2085	18.020	0.359		0.0469	6.23
5	UPPER TALARIK	C	55.4	8.81	0.703	2.58	1.000	985.	158.3	0.1692	18.020	0.410		0.0469	6.23
6	UPPER TALARIK	C	51.9	8.92	0.698	2.58	1.000	987.	158.3	0.1723	18.017	0.576		0.0469	6.23
7	UPPER TALARIK	Q	51.6	8.92	0.698	2.58	1.000	987.	158.3	0.1723	18.017	0.587		0.2293	5.31
8	UPPER TALARIK	C	45.9	8.99	0.696	2.58	1.000	988.	158.2	0.1392	18.013	1.896		0.2293	5.31
9	UPPER TALARIK	B	45.0									2.094			
10	TRIBUTARY 135	H	46.4	8.99	0.695	2.58	1.000	988.	158.2	0.1955	18.012	0.178	7.70	0.0000	5.31
11	TRIBUTARY 135	T	45.0									0.178			
12	UPPER TALARIK	J	45.0	9.06	0.692	2.58	1.000	989.	158.2	0.1391	18.007	2.272		0.2291	5.31
13	UPPER TALARIK	Q	44.6	9.06	0.692	2.58	1.000	989.	158.2	0.1391	18.007	2.368		0.0129	7.75
14	UPPER TALARIK	C	38.4	9.18	0.688	2.58	1.000	991.	158.2	0.1195	17.999	2.449		0.0129	7.75
15	UPPER TALARIK	Q	37.6	9.18	0.688	2.58	1.000	991.	158.2	0.1195	17.999	2.458		0.1128	7.75
16	UPPER TALARIK	C	35.8	9.26	0.684	2.58	1.000	993.	158.2	0.0815	17.995	2.664		0.1128	7.75
17	UPPER TALARIK	C	32.9	9.32	0.682	2.58	1.000	994.	158.2	0.0964	17.993	2.987		0.1128	7.75
18	UPPER TALARIK	C	32.3	9.40	0.679	2.58	1.000	995.	158.2	0.0976	17.988	3.056		0.1128	7.75
19	UPPER TALARIK	Q	29.3	9.40	0.679	2.58	1.000	995.	158.2	0.0976	17.988	3.398		0.1302	5.68
20	UPPER TALARIK	C	27.1	9.49	0.675	2.58	1.000	997.	158.2	0.0725	17.984	3.679		0.1302	5.68
21	UPPER TALARIK	C	25.0	9.51	0.674	2.58	1.000	997.	158.2	0.0904	17.984	3.954		0.1302	5.68
22	UPPER TALARIK	B	24.7									3.993			
23	TRIBUTARY 119	H	25.1	9.50	0.675	2.58	1.000	997.	158.2	0.2364	17.984	0.648	5.42	0.0000	5.68
24	TRIBUTARY 119	T	24.7									0.648			
25	UPPER TALARIK	J	24.7	9.58	0.672	2.58	1.000	999.	158.2	0.0904	17.980	4.641		0.1303	5.68
26	UPPER TALARIK	Q	24.5	9.58	0.672	2.58	1.000	999.	158.2	0.0904	17.980	4.672		0.0660	5.68
27	UPPER TALARIK	C	20.8	9.69	0.668	2.58	1.000	1001.	158.2	0.0974	17.974	4.915		0.0660	5.68
28	UPPER TALARIK	C	18.8	9.80	0.663	2.58	1.000	1003.	158.2	0.0868	17.967	5.047		0.0660	5.68
29	UPPER TALARIK	C	14.6	9.97	0.657	2.58	1.000	1006.	158.2	0.1004	17.959	5.325		0.0660	5.68
30	UPPER TALARIK	Q	14.4	9.97	0.657	2.58	1.000	1006.	158.2	0.1004	17.959	5.341		-0.2628	5.68
31	UPPER TALARIK	Q	9.8	9.97	0.657	2.58	1.000	1006.	158.2	0.1004	17.959	4.155		0.3830	5.68
32	UPPER TALARIK	C	9.1	10.18	0.649	2.58	1.000	1010.	158.2	0.1103	17.948	4.433		0.3830	5.68
33	UPPER TALARIK	Q	2.2	10.18	0.649	2.58	1.000	1010.	158.2	0.1103	17.948	7.068		0.1076	5.68
34	UPPER TALARIK	E	0.0									7.309			

YEAR: 2007 TIME PERIOD: 4-Jun PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.86	0.884	6.59	1.000	975.	97.9	0.3092	18.071	0.074	3.97	0.0523	6.36
2	UPPER TALARIK	Q	60.0	7.86	0.884	6.59	1.000	975.	97.9	0.3092	18.071	0.200		0.0523	6.36
3	UPPER TALARIK	C	59.7	8.16	0.869	6.59	1.000	981.	97.9	0.2279	18.067	0.216		0.0523	6.36
4	UPPER TALARIK	C	56.5	8.31	0.861	6.59	1.000	983.	97.9	0.2082	18.066	0.383		0.0523	6.36
5	UPPER TALARIK	C	55.4	8.38	0.858	6.59	1.000	985.	97.9	0.1691	18.066	0.440		0.0523	6.36
6	UPPER TALARIK	C	51.9	8.49	0.853	6.59	1.000	987.	97.9	0.1721	18.063	0.625		0.0523	6.36
7	UPPER TALARIK	Q	51.6	8.49	0.853	6.59	1.000	987.	97.9	0.1721	18.063	0.637		0.2453	5.47
8	UPPER TALARIK	C	45.9	8.56	0.849	6.59	1.000	988.	97.9	0.1390	18.058	2.037		0.2453	5.47
9	UPPER TALARIK	B	45.0									2.249			
10	TRIBUTARY 135	H	46.4	8.56	0.849	6.59	1.000	988.	97.9	0.1953	18.058	0.191	7.64	0.0000	5.47
11	TRIBUTARY 135	T	45.0									0.191			
12	UPPER TALARIK	J	45.0	8.63	0.845	6.59	1.000	989.	97.9	0.1389	18.053	2.440		0.2434	5.47
13	UPPER TALARIK	Q	44.6	8.63	0.845	6.59	1.000	989.	97.9	0.1389	18.053	2.542		0.0024	7.87
14	UPPER TALARIK	C	38.4	8.75	0.840	6.59	1.000	991.	97.9	0.1193	18.045	2.557		0.0024	7.87
15	UPPER TALARIK	Q	37.6	8.75	0.840	6.59	1.000	991.	97.9	0.1193	18.045	2.559		0.1107	7.87
16	UPPER TALARIK	C	35.8	8.83	0.836	6.59	1.000	993.	97.9	0.0815	18.041	2.761		0.1107	7.87
17	UPPER TALARIK	C	32.9	8.89	0.833	6.59	1.000	994.	97.9	0.0963	18.039	3.079		0.1107	7.87
18	UPPER TALARIK	C	32.3	8.97	0.829	6.59	1.000	995.	97.9	0.0974	18.034	3.147		0.1107	7.87
19	UPPER TALARIK	Q	29.3	8.97	0.829	6.59	1.000	995.	97.9	0.0974	18.034	3.482		0.1282	5.73
20	UPPER TALARIK	C	27.1	9.06	0.825	6.59	1.000	997.	97.8	0.0726	18.029	3.759		0.1282	5.73
21	UPPER TALARIK	C	25.0	9.08	0.823	6.59	1.000	997.	97.8	0.0903	18.029	4.030		0.1282	5.73
22	UPPER TALARIK	B	24.7									4.068			
23	TRIBUTARY 119	H	25.1	9.07	0.824	6.59	1.000	997.	97.8	0.2362	18.029	0.659	4.86	0.0000	5.73
24	TRIBUTARY 119	T	24.7									0.659			
25	UPPER TALARIK	J	24.7	9.15	0.820	6.59	1.000	999.	97.8	0.0903	18.025	4.727		0.1260	5.73
26	UPPER TALARIK	Q	24.5	9.15	0.820	6.59	1.000	999.	97.8	0.0903	18.025	4.757		0.0674	5.73
27	UPPER TALARIK	C	20.8	9.26	0.815	6.59	1.000	1001.	97.8	0.0972	18.019	5.005		0.0674	5.73
28	UPPER TALARIK	C	18.8	9.37	0.810	6.59	1.000	1003.	97.8	0.0866	18.012	5.140		0.0674	5.73
29	UPPER TALARIK	C	14.6	9.54	0.802	6.59	1.000	1006.	97.8	0.1003	18.004	5.424		0.0674	5.73
30	UPPER TALARIK	Q	14.4	9.54	0.802	6.59	1.000	1006.	97.8	0.1003	18.004	5.440		-0.2619	5.73
31	UPPER TALARIK	Q	9.8	9.54	0.802	6.59	1.000	1006.	97.8	0.1003	18.004	4.258		0.3865	5.73
32	UPPER TALARIK	C	9.1	9.75	0.792	6.59	1.000	1010.	97.8	0.1101	17.993	4.538		0.3865	5.73
33	UPPER TALARIK	Q	2.2	9.75	0.792	6.59	1.000	1010.	97.8	0.1101	17.993	7.198		0.1098	5.73
34	UPPER TALARIK	E	0.0									7.444			

YEAR: 2007 TIME PERIOD: 5-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.33	0.837	11.74	1.000	975.	130.0	0.3088	18.115	0.084	4.16	0.0598	6.47
2	UPPER TALARIK	Q	60.0	6.33	0.837	11.74	1.000	975.	130.0	0.3088	18.115	0.228		0.0751	6.47
3	UPPER TALARIK	C	59.7	6.63	0.823	11.74	1.000	981.	130.0	0.2276	18.111	0.252		0.0751	6.47
4	UPPER TALARIK	C	56.5	6.78	0.816	11.74	1.000	983.	129.9	0.2080	18.109	0.490		0.0751	6.47
5	UPPER TALARIK	C	55.4	6.85	0.813	11.74	1.000	985.	129.9	0.1690	18.110	0.572		0.0751	6.47
6	UPPER TALARIK	C	51.9	6.96	0.807	11.74	1.000	987.	129.9	0.1719	18.106	0.837		0.0751	6.47
7	UPPER TALARIK	Q	51.6	6.96	0.807	11.74	1.000	987.	129.9	0.1719	18.106	0.855		0.3557	5.59
8	UPPER TALARIK	C	45.9	7.03	0.804	11.74	1.000	988.	129.9	0.1388	18.102	2.885		0.3557	5.59
9	UPPER TALARIK	B	45.0									3.192			
10	TRIBUTARY 135	H	46.4	7.03	0.804	11.74	1.000	988.	129.9	0.1952	18.101	0.276	7.46	0.0000	5.59
11	TRIBUTARY 135	T	45.0									0.276			
12	UPPER TALARIK	J	45.0	7.10	0.800	11.74	1.000	989.	129.9	0.1387	18.096	3.468		0.3556	5.59
13	UPPER TALARIK	Q	44.6	7.10	0.800	11.74	1.000	989.	129.9	0.1387	18.096	3.617		-0.0505	7.94
14	UPPER TALARIK	C	38.4	7.22	0.795	11.74	1.000	991.	129.9	0.1191	18.088	3.300		-0.0505	7.94
15	UPPER TALARIK	Q	37.6	7.22	0.795	11.74	1.000	991.	129.9	0.1191	18.088	3.264		0.1233	7.94
16	UPPER TALARIK	C	35.8	7.30	0.791	11.74	1.000	993.	129.9	0.0816	18.084	3.489		0.1233	7.94
17	UPPER TALARIK	C	32.9	7.36	0.789	11.74	1.000	994.	129.9	0.0962	18.082	3.843		0.1233	7.94
18	UPPER TALARIK	C	32.3	7.44	0.785	11.74	1.000	995.	129.9	0.0973	18.077	3.918		0.1233	7.94
19	UPPER TALARIK	Q	29.3	7.44	0.785	11.74	1.000	995.	129.9	0.0973	18.077	4.292		0.1424	5.78
20	UPPER TALARIK	C	27.1	7.53	0.781	11.74	1.000	997.	129.9	0.0726	18.073	4.600		0.1424	5.78
21	UPPER TALARIK	C	25.0	7.55	0.780	11.74	1.000	997.	129.9	0.0901	18.072	4.901		0.1424	5.78
22	UPPER TALARIK	B	24.7									4.943			
23	TRIBUTARY 119	H	25.1	7.54	0.781	11.74	1.000	997.	129.9	0.2359	18.072	0.658	4.93	0.0000	5.78
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	7.62	0.776	11.74	1.000	999.	129.9	0.0901	18.068	5.601		0.1429	5.78
26	UPPER TALARIK	Q	24.5	7.62	0.776	11.74	1.000	999.	129.9	0.0901	18.068	5.635		0.0814	5.78
27	UPPER TALARIK	C	20.8	7.73	0.772	11.74	1.000	1001.	129.9	0.0970	18.062	5.935		0.0814	5.78
28	UPPER TALARIK	C	18.8	7.84	0.767	11.74	1.000	1003.	129.8	0.0865	18.055	6.098		0.0814	5.78
29	UPPER TALARIK	C	14.6	8.01	0.759	11.74	1.000	1006.	129.8	0.1003	18.047	6.440		0.0814	5.78
30	UPPER TALARIK	Q	14.4	8.01	0.759	11.74	1.000	1006.	129.8	0.1003	18.047	6.460		-0.2429	5.78
31	UPPER TALARIK	Q	9.8	8.01	0.759	11.74	1.000	1006.	129.8	0.1003	18.047	5.364		0.4168	5.78
32	UPPER TALARIK	C	9.1	8.22	0.750	11.74	1.000	1010.	129.8	0.1100	18.035	5.666		0.4168	5.78
33	UPPER TALARIK	Q	2.2	8.22	0.750	11.74	1.000	1010.	129.8	0.1100	18.035	8.534		0.1304	5.78
34	UPPER TALARIK	E	0.0									8.826			

YEAR: 2007 TIME PERIOD: 6-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.24	0.715	5.82	1.000	975.	262.8	0.3085	18.156	0.078	4.18	0.0553	6.55
2	UPPER TALARIK	Q	60.0	8.24	0.715	5.82	1.000	975.	262.8	0.3085	18.156	0.211		0.0607	6.55
3	UPPER TALARIK	C	59.7	8.54	0.703	5.82	1.000	981.	262.7	0.2274	18.152	0.230		0.0607	6.55
4	UPPER TALARIK	C	56.5	8.69	0.697	5.82	1.000	983.	262.6	0.2078	18.151	0.423		0.0607	6.55
5	UPPER TALARIK	C	55.4	8.76	0.694	5.82	1.000	985.	262.6	0.1690	18.151	0.489		0.0607	6.55
6	UPPER TALARIK	C	51.9	8.87	0.689	5.82	1.000	987.	262.6	0.1716	18.147	0.704		0.0607	6.55
7	UPPER TALARIK	Q	51.6	8.87	0.689	5.82	1.000	987.	262.6	0.1716	18.147	0.718		0.2981	5.65
8	UPPER TALARIK	C	45.9	8.94	0.686	5.82	1.000	988.	262.6	0.1386	18.143	2.419		0.2981	5.65
9	UPPER TALARIK	B	45.0									2.677			
10	TRIBUTARY 135	H	46.4	8.94	0.686	5.82	1.000	988.	262.6	0.1950	18.143	0.232	8.55	0.0000	5.65
11	TRIBUTARY 135	T	45.0									0.232			
12	UPPER TALARIK	J	45.0	9.01	0.683	5.82	1.000	989.	262.5	0.1386	18.137	2.909		0.2959	5.65
13	UPPER TALARIK	Q	44.6	9.01	0.683	5.82	1.000	989.	262.5	0.1386	18.137	3.033		-0.0112	7.94
14	UPPER TALARIK	C	38.4	9.13	0.679	5.82	1.000	991.	262.5	0.1190	18.129	2.963		-0.0112	7.94
15	UPPER TALARIK	Q	37.6	9.13	0.679	5.82	1.000	991.	262.5	0.1190	18.129	2.955		0.1206	7.94
16	UPPER TALARIK	C	35.8	9.21	0.676	5.82	1.000	993.	262.5	0.0816	18.125	3.175		0.1206	7.94
17	UPPER TALARIK	C	32.9	9.27	0.673	5.82	1.000	994.	262.5	0.0961	18.123	3.521		0.1206	7.94
18	UPPER TALARIK	C	32.3	9.35	0.670	5.82	1.000	995.	262.5	0.0971	18.118	3.595		0.1206	7.94
19	UPPER TALARIK	Q	29.3	9.35	0.670	5.82	1.000	995.	262.5	0.0971	18.118	3.960		0.1394	5.81
20	UPPER TALARIK	C	27.1	9.44	0.667	5.82	1.000	997.	262.5	0.0727	18.113	4.261		0.1394	5.81
21	UPPER TALARIK	C	25.0	9.46	0.666	5.82	1.000	997.	262.5	0.0900	18.113	4.555		0.1394	5.81
22	UPPER TALARIK	B	24.7									4.597			
23	TRIBUTARY 119	H	25.1	9.45	0.666	5.82	1.000	997.	262.5	0.2357	18.113	0.665	5.62	0.0000	5.81
24	TRIBUTARY 119	T	24.7									0.665			
25	UPPER TALARIK	J	24.7	9.53	0.663	5.82	1.000	999.	262.5	0.0900	18.109	5.262		0.1387	5.81
26	UPPER TALARIK	Q	24.5	9.53	0.663	5.82	1.000	999.	262.5	0.0900	18.109	5.295		0.0759	5.81
27	UPPER TALARIK	C	20.8	9.64	0.659	5.82	1.000	1001.	262.5	0.0968	18.103	5.575		0.0759	5.81
28	UPPER TALARIK	C	18.8	9.75	0.655	5.82	1.000	1003.	262.4	0.0863	18.096	5.727		0.0759	5.81
29	UPPER TALARIK	C	14.6	9.92	0.648	5.82	1.000	1006.	262.4	0.1002	18.088	6.047		0.0759	5.81
30	UPPER TALARIK	Q	14.4	9.92	0.648	5.82	1.000	1006.	262.4	0.1002	18.088	6.065		-0.2519	5.81
31	UPPER TALARIK	Q	9.8	9.92	0.648	5.82	1.000	1006.	262.4	0.1002	18.088	4.928		0.4060	5.81
32	UPPER TALARIK	C	9.1	10.13	0.640	5.82	1.000	1010.	262.4	0.1099	18.076	5.222		0.4060	5.81
33	UPPER TALARIK	Q	2.2	10.13	0.640	5.82	1.000	1010.	262.4	0.1099	18.076	8.016		0.1223	5.81
34	UPPER TALARIK	E	0.0									8.290			

YEAR: 2007 TIME PERIOD: 7-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.36	0.659	9.30	1.000	975.	226.1	0.3082	18.195	0.074	4.02	0.0523	6.63
2	UPPER TALARIK	Q	60.0	7.36	0.659	9.30	1.000	975.	226.1	0.3082	18.195	0.200		0.0511	6.63
3	UPPER TALARIK	C	59.7	7.66	0.647	9.30	1.000	981.	226.1	0.2272	18.191	0.216		0.0511	6.63
4	UPPER TALARIK	C	56.5	7.81	0.642	9.30	1.000	983.	226.0	0.2076	18.190	0.378		0.0511	6.63
5	UPPER TALARIK	C	55.4	7.88	0.639	9.30	1.000	985.	226.0	0.1689	18.190	0.434		0.0511	6.63
6	UPPER TALARIK	C	51.9	7.99	0.635	9.30	1.000	987.	226.0	0.1714	18.186	0.615		0.0511	6.63
7	UPPER TALARIK	Q	51.6	7.99	0.635	9.30	1.000	987.	226.0	0.1714	18.186	0.627		0.2580	5.64
8	UPPER TALARIK	C	45.9	8.06	0.632	9.30	1.000	988.	226.0	0.1384	18.182	2.099		0.2580	5.64
9	UPPER TALARIK	B	45.0									2.322			
10	TRIBUTARY 135	H	46.4	8.06	0.632	9.30	1.000	988.	226.0	0.1949	18.182	0.200	8.28	0.0000	5.64
11	TRIBUTARY 135	T	45.0									0.200			
12	UPPER TALARIK	J	45.0	8.13	0.630	9.30	1.000	989.	226.0	0.1384	18.176	2.522		0.2578	5.64
13	UPPER TALARIK	Q	44.6	8.13	0.630	9.30	1.000	989.	226.0	0.1384	18.176	2.630		0.0047	7.88
14	UPPER TALARIK	C	38.4	8.25	0.625	9.30	1.000	991.	226.0	0.1188	18.168	2.660		0.0047	7.88
15	UPPER TALARIK	Q	37.6	8.25	0.625	9.30	1.000	991.	226.0	0.1188	18.168	2.663		0.1097	7.88
16	UPPER TALARIK	C	35.8	8.33	0.622	9.30	1.000	993.	226.0	0.0816	18.164	2.863		0.1097	7.88
17	UPPER TALARIK	C	32.9	8.39	0.620	9.30	1.000	994.	225.9	0.0960	18.162	3.178		0.1097	7.88
18	UPPER TALARIK	C	32.3	8.47	0.617	9.30	1.000	995.	225.9	0.0970	18.157	3.245		0.1097	7.88
19	UPPER TALARIK	Q	29.3	8.47	0.617	9.30	1.000	995.	225.9	0.0970	18.157	3.577		0.1267	5.82
20	UPPER TALARIK	C	27.1	8.56	0.614	9.30	1.000	997.	225.9	0.0727	18.152	3.851		0.1267	5.82
21	UPPER TALARIK	C	25.0	8.58	0.613	9.30	1.000	997.	225.9	0.0898	18.152	4.118		0.1267	5.82
22	UPPER TALARIK	B	24.7									4.156			
23	TRIBUTARY 119	H	25.1	8.57	0.614	9.30	1.000	997.	225.9	0.2356	18.152	0.656	4.93	0.0000	5.82
24	TRIBUTARY 119	T	24.7									0.656			
25	UPPER TALARIK	J	24.7	8.65	0.611	9.30	1.000	999.	225.9	0.0898	18.148	4.812		0.1261	5.82
26	UPPER TALARIK	Q	24.5	8.65	0.611	9.30	1.000	999.	225.9	0.0898	18.148	4.842		0.0687	5.82
27	UPPER TALARIK	C	20.8	8.76	0.607	9.30	1.000	1001.	225.9	0.0967	18.141	5.096		0.0687	5.82
28	UPPER TALARIK	C	18.8	8.87	0.603	9.30	1.000	1003.	225.9	0.0862	18.134	5.233		0.0687	5.82
29	UPPER TALARIK	C	14.6	9.04	0.597	9.30	1.000	1006.	225.9	0.1001	18.126	5.523		0.0687	5.82
30	UPPER TALARIK	Q	14.4	9.04	0.597	9.30	1.000	1006.	225.9	0.1001	18.126	5.539		-0.2608	5.82
31	UPPER TALARIK	Q	9.8	9.04	0.597	9.30	1.000	1006.	225.9	0.1001	18.126	4.362		0.3898	5.82
32	UPPER TALARIK	C	9.1	9.25	0.590	9.30	1.000	1010.	225.8	0.1097	18.114	4.645		0.3898	5.82
33	UPPER TALARIK	Q	2.2	9.25	0.590	9.30	1.000	1010.	225.8	0.1097	18.114	7.327		0.1116	5.82
34	UPPER TALARIK	E	0.0									7.577			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.81	0.724	6.36	1.000	975.	192.3	0.3079	18.232	0.071	3.88	0.0503	6.74
2	UPPER TALARIK	Q	60.0	5.81	0.724	6.36	1.000	975.	192.3	0.3079	18.232	0.192		0.0453	6.74
3	UPPER TALARIK	C	59.7	6.11	0.712	6.36	1.000	981.	192.2	0.2269	18.227	0.206		0.0453	6.74
4	UPPER TALARIK	C	56.5	6.26	0.706	6.36	1.000	983.	192.2	0.2074	18.226	0.350		0.0453	6.74
5	UPPER TALARIK	C	55.4	6.33	0.703	6.36	1.000	985.	192.2	0.1688	18.227	0.399		0.0453	6.74
6	UPPER TALARIK	C	51.9	6.44	0.698	6.36	1.000	987.	192.1	0.1712	18.223	0.559		0.0453	6.74
7	UPPER TALARIK	Q	51.6	6.44	0.698	6.36	1.000	987.	192.1	0.1712	18.223	0.570		0.2303	5.67
8	UPPER TALARIK	C	45.9	6.51	0.696	6.36	1.000	988.	192.1	0.1383	18.218	1.884		0.2303	5.67
9	UPPER TALARIK	B	45.0									2.083			
10	TRIBUTARY 135	H	46.4	6.51	0.695	6.36	1.000	988.	192.1	0.1948	18.218	0.179	7.17	0.0000	5.67
11	TRIBUTARY 135	T	45.0									0.179			
12	UPPER TALARIK	J	45.0	6.58	0.693	6.36	1.000	989.	192.1	0.1382	18.212	2.262		0.2291	5.67
13	UPPER TALARIK	Q	44.6	6.58	0.693	6.36	1.000	989.	192.1	0.1382	18.212	2.358		0.0137	7.78
14	UPPER TALARIK	C	38.4	6.70	0.688	6.36	1.000	991.	192.1	0.1186	18.204	2.444		0.0137	7.78
15	UPPER TALARIK	Q	37.6	6.70	0.688	6.36	1.000	991.	192.1	0.1186	18.204	2.454		0.1071	7.78
16	UPPER TALARIK	C	35.8	6.78	0.685	6.36	1.000	993.	192.1	0.0816	18.200	2.649		0.1071	7.78
17	UPPER TALARIK	C	32.9	6.84	0.682	6.36	1.000	994.	192.1	0.0959	18.198	2.957		0.1071	7.78
18	UPPER TALARIK	C	32.3	6.92	0.679	6.36	1.000	995.	192.1	0.0969	18.193	3.022		0.1071	7.78
19	UPPER TALARIK	Q	29.3	6.92	0.679	6.36	1.000	995.	192.1	0.0969	18.193	3.347		0.1238	5.82
20	UPPER TALARIK	C	27.1	7.01	0.675	6.36	1.000	997.	192.1	0.0728	18.188	3.614		0.1238	5.82
21	UPPER TALARIK	C	25.0	7.03	0.675	6.36	1.000	997.	192.1	0.0897	18.188	3.876		0.1238	5.82
22	UPPER TALARIK	B	24.7									3.913			
23	TRIBUTARY 119	H	25.1	7.02	0.675	6.36	1.000	997.	192.1	0.2354	18.188	0.645	4.86	0.0000	5.82
24	TRIBUTARY 119	T	24.7									0.645			
25	UPPER TALARIK	J	24.7	7.10	0.672	6.36	1.000	999.	192.1	0.0897	18.184	4.558		0.1218	5.82
26	UPPER TALARIK	Q	24.5	7.10	0.672	6.36	1.000	999.	192.1	0.0897	18.184	4.587		0.0647	5.82
27	UPPER TALARIK	C	20.8	7.21	0.668	6.36	1.000	1001.	192.1	0.0965	18.177	4.826		0.0647	5.82
28	UPPER TALARIK	C	18.8	7.32	0.664	6.36	1.000	1003.	192.1	0.0861	18.170	4.955		0.0647	5.82
29	UPPER TALARIK	C	14.6	7.49	0.657	6.36	1.000	1006.	192.0	0.1001	18.162	5.227		0.0647	5.82
30	UPPER TALARIK	Q	14.4	7.49	0.657	6.36	1.000	1006.	192.0	0.1001	18.162	5.243		-0.2639	5.82
31	UPPER TALARIK	Q	9.8	7.49	0.657	6.36	1.000	1006.	192.0	0.1001	18.162	4.052		0.3796	5.82
32	UPPER TALARIK	C	9.1	7.70	0.649	6.36	1.000	1010.	192.0	0.1096	18.150	4.327		0.3796	5.82
33	UPPER TALARIK	Q	2.2	7.70	0.649	6.36	1.000	1010.	192.0	0.1096	18.150	6.939		0.1058	5.82
34	UPPER TALARIK	E	0.0									7.176			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.61	0.781	4.11	1.000	975.	152.9	0.3077	18.266	0.069	3.72	0.0490	7.00
2	UPPER TALARIK	Q	60.0	6.61	0.781	4.11	1.000	975.	152.9	0.3077	18.266	0.187		0.0420	7.00
3	UPPER TALARIK	C	59.7	6.91	0.768	4.11	1.000	981.	152.8	0.2267	18.261	0.200		0.0420	7.00
4	UPPER TALARIK	C	56.5	7.06	0.761	4.11	1.000	983.	152.8	0.2072	18.260	0.334		0.0420	7.00
5	UPPER TALARIK	C	55.4	7.13	0.758	4.11	1.000	985.	152.8	0.1688	18.261	0.379		0.0420	7.00
6	UPPER TALARIK	C	51.9	7.24	0.753	4.11	1.000	987.	152.8	0.1711	18.257	0.528		0.0420	7.00
7	UPPER TALARIK	Q	51.6	7.24	0.753	4.11	1.000	987.	152.8	0.1711	18.257	0.538		0.2144	5.88
8	UPPER TALARIK	C	45.9	7.31	0.750	4.11	1.000	988.	152.8	0.1381	18.252	1.762		0.2144	5.88
9	UPPER TALARIK	B	45.0									1.947			
10	TRIBUTARY 135	H	46.4	7.31	0.750	4.11	1.000	988.	152.8	0.1946	18.252	0.167	7.00	0.0000	5.88
11	TRIBUTARY 135	T	45.0									0.167			
12	UPPER TALARIK	J	45.0	7.38	0.746	4.11	1.000	989.	152.8	0.1381	18.246	2.114		0.2124	5.88
13	UPPER TALARIK	Q	44.6	7.38	0.746	4.11	1.000	989.	152.8	0.1381	18.246	2.203		0.0177	7.68
14	UPPER TALARIK	C	38.4	7.50	0.742	4.11	1.000	991.	152.8	0.1185	18.238	2.314		0.0177	7.68
15	UPPER TALARIK	Q	37.6	7.50	0.742	4.11	1.000	991.	152.8	0.1185	18.238	2.327		0.1022	7.68
16	UPPER TALARIK	C	35.8	7.58	0.738	4.11	1.000	993.	152.8	0.0816	18.234	2.513		0.1022	7.68
17	UPPER TALARIK	C	32.9	7.64	0.735	4.11	1.000	994.	152.8	0.0958	18.232	2.807		0.1022	7.68
18	UPPER TALARIK	C	32.3	7.72	0.732	4.11	1.000	995.	152.8	0.0968	18.227	2.869		0.1022	7.68
19	UPPER TALARIK	Q	29.3	7.72	0.732	4.11	1.000	995.	152.8	0.0968	18.227	3.179		0.1181	5.83
20	UPPER TALARIK	C	27.1	7.81	0.728	4.11	1.000	997.	152.7	0.0728	18.222	3.434		0.1181	5.83
21	UPPER TALARIK	C	25.0	7.83	0.727	4.11	1.000	997.	152.7	0.0896	18.222	3.684		0.1181	5.83
22	UPPER TALARIK	B	24.7									3.719			
23	TRIBUTARY 119	H	25.1	7.82	0.728	4.11	1.000	997.	152.7	0.2352	18.222	0.642	4.67	0.0000	5.83
24	TRIBUTARY 119	T	24.7									0.642			
25	UPPER TALARIK	J	24.7	7.90	0.724	4.11	1.000	999.	152.7	0.0896	18.217	4.361		0.1176	5.83
26	UPPER TALARIK	Q	24.5	7.90	0.724	4.11	1.000	999.	152.7	0.0896	18.217	4.389		0.0615	5.83
27	UPPER TALARIK	C	20.8	8.01	0.720	4.11	1.000	1001.	152.7	0.0964	18.211	4.616		0.0615	5.83
28	UPPER TALARIK	C	18.8	8.12	0.715	4.11	1.000	1003.	152.7	0.0859	18.204	4.739		0.0615	5.83
29	UPPER TALARIK	C	14.6	8.29	0.708	4.11	1.000	1006.	152.7	0.1000	18.196	4.998		0.0615	5.83
30	UPPER TALARIK	Q	14.4	8.29	0.708	4.11	1.000	1006.	152.7	0.1000	18.196	5.013		-0.2655	5.83
31	UPPER TALARIK	Q	9.8	8.29	0.708	4.11	1.000	1006.	152.7	0.1000	18.196	3.815		0.3712	5.83
32	UPPER TALARIK	C	9.1	8.50	0.699	4.11	1.000	1010.	152.7	0.1095	18.183	4.084		0.3712	5.83
33	UPPER TALARIK	Q	2.2	8.50	0.699	4.11	1.000	1010.	152.7	0.1095	18.183	6.638		0.1009	5.83
34	UPPER TALARIK	E	0.0									6.864			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.55	0.621	6.70	1.000	975.	255.4	0.3074	18.298	0.068	3.90	0.0486	7.48
2	UPPER TALARIK	Q	60.0	12.55	0.621	6.70	1.000	975.	255.4	0.3074	18.298	0.185		0.0435	7.48
3	UPPER TALARIK	C	59.7	12.85	0.610	6.70	1.000	981.	255.4	0.2266	18.293	0.199		0.0435	7.48
4	UPPER TALARIK	C	56.5	13.00	0.605	6.70	1.000	983.	255.3	0.2071	18.292	0.337		0.0435	7.48
5	UPPER TALARIK	C	55.4	13.07	0.602	6.70	1.000	985.	255.3	0.1687	18.292	0.384		0.0435	7.48
6	UPPER TALARIK	C	51.9	13.18	0.599	6.70	1.000	987.	255.2	0.1709	18.289	0.538		0.0435	7.48
7	UPPER TALARIK	Q	51.6	13.18	0.599	6.70	1.000	987.	255.2	0.1709	18.289	0.548		0.2126	6.31
8	UPPER TALARIK	C	45.9	13.25	0.596	6.70	1.000	988.	255.2	0.1380	18.284	1.761		0.2126	6.31
9	UPPER TALARIK	B	45.0									1.945			
10	TRIBUTARY 135	H	46.4	13.25	0.596	6.70	1.000	988.	255.2	0.1945	18.284	0.165	9.86	0.0000	6.31
11	TRIBUTARY 135	T	45.0									0.165			
12	UPPER TALARIK	J	45.0	13.32	0.593	6.70	1.000	989.	255.2	0.1380	18.278	2.110		0.2124	6.31
13	UPPER TALARIK	Q	44.6	13.32	0.593	6.70	1.000	989.	255.2	0.1380	18.278	2.199		0.0142	7.64
14	UPPER TALARIK	C	38.4	13.44	0.590	6.70	1.000	991.	255.2	0.1184	18.269	2.288		0.0142	7.64
15	UPPER TALARIK	Q	37.6	13.44	0.590	6.70	1.000	991.	255.2	0.1184	18.269	2.298		0.0950	7.64
16	UPPER TALARIK	C	35.8	13.52	0.587	6.70	1.000	993.	255.2	0.0817	18.265	2.471		0.0950	7.64
17	UPPER TALARIK	C	32.9	13.58	0.585	6.70	1.000	994.	255.2	0.0957	18.263	2.744		0.0950	7.64
18	UPPER TALARIK	C	32.3	13.66	0.582	6.70	1.000	995.	255.2	0.0967	18.258	2.802		0.0950	7.64
19	UPPER TALARIK	Q	29.3	13.66	0.582	6.70	1.000	995.	255.2	0.0967	18.258	3.090		0.1098	5.89
20	UPPER TALARIK	C	27.1	13.75	0.579	6.70	1.000	997.	255.2	0.0729	18.253	3.327		0.1098	5.89
21	UPPER TALARIK	C	25.0	13.77	0.578	6.70	1.000	997.	255.2	0.0895	18.253	3.559		0.1098	5.89
22	UPPER TALARIK	B	24.7									3.592			
23	TRIBUTARY 119	H	25.1	13.76	0.579	6.70	1.000	997.	255.2	0.2351	18.253	0.658	6.05	0.0000	5.89
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	13.84	0.576	6.70	1.000	999.	255.1	0.0895	18.249	4.250		0.1092	5.89
26	UPPER TALARIK	Q	24.5	13.84	0.576	6.70	1.000	999.	255.1	0.0895	18.249	4.276		0.0598	5.89
27	UPPER TALARIK	C	20.8	13.95	0.572	6.70	1.000	1001.	255.1	0.0963	18.242	4.496		0.0598	5.89
28	UPPER TALARIK	C	18.8	14.06	0.569	6.70	1.000	1003.	255.1	0.0858	18.235	4.616		0.0598	5.89
29	UPPER TALARIK	C	14.6	14.23	0.563	6.70	1.000	1006.	255.1	0.0999	18.227	4.868		0.0598	5.89
30	UPPER TALARIK	Q	14.4	14.23	0.563	6.70	1.000	1006.	255.1	0.0999	18.227	4.882		-0.2661	5.89
31	UPPER TALARIK	Q	9.8	14.23	0.563	6.70	1.000	1006.	255.1	0.0999	18.227	3.681		0.3662	5.89
32	UPPER TALARIK	C	9.1	14.44	0.556	6.70	1.000	1010.	255.1	0.1094	18.214	3.946		0.3662	5.89
33	UPPER TALARIK	Q	2.2	14.44	0.556	6.70	1.000	1010.	255.1	0.1094	18.214	6.466		0.0982	5.89
34	UPPER TALARIK	E	0.0									6.686			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.98	0.837	6.46	1.000	975.	239.9	0.3072	18.327	0.067	4.47	0.0478	8.04
2	UPPER TALARIK	Q	60.0	7.98	0.837	6.46	1.000	975.	239.9	0.3072	18.327	0.182		0.0425	8.04
3	UPPER TALARIK	C	59.7	8.28	0.823	6.46	1.000	981.	239.8	0.2264	18.322	0.195		0.0425	8.04
4	UPPER TALARIK	C	56.5	8.43	0.816	6.46	1.000	983.	239.7	0.2069	18.321	0.330		0.0425	8.04
5	UPPER TALARIK	C	55.4	8.50	0.812	6.46	1.000	985.	239.7	0.1686	18.321	0.377		0.0425	8.04
6	UPPER TALARIK	C	51.9	8.61	0.807	6.46	1.000	987.	239.7	0.1708	18.318	0.527		0.0425	8.04
7	UPPER TALARIK	Q	51.6	8.61	0.807	6.46	1.000	987.	239.7	0.1708	18.318	0.537		0.2120	6.73
8	UPPER TALARIK	C	45.9	8.68	0.804	6.46	1.000	988.	239.7	0.1379	18.313	1.747		0.2120	6.73
9	UPPER TALARIK	B	45.0									1.930			
10	TRIBUTARY 135	H	46.4	8.68	0.804	6.46	1.000	988.	239.7	0.1944	18.313	0.165	11.26	0.0000	6.73
11	TRIBUTARY 135	T	45.0									0.165			
12	UPPER TALARIK	J	45.0	8.75	0.800	6.46	1.000	989.	239.7	0.1378	18.307	2.095		0.2100	6.73
13	UPPER TALARIK	Q	44.6	8.75	0.800	6.46	1.000	989.	239.7	0.1378	18.307	2.183		0.0136	7.63
14	UPPER TALARIK	C	38.4	8.87	0.795	6.46	1.000	991.	239.7	0.1183	18.298	2.268		0.0136	7.63
15	UPPER TALARIK	Q	37.6	8.87	0.795	6.46	1.000	991.	239.7	0.1183	18.298	2.278		0.0955	7.63
16	UPPER TALARIK	C	35.8	8.95	0.791	6.46	1.000	993.	239.7	0.0817	18.294	2.452		0.0955	7.63
17	UPPER TALARIK	C	32.9	9.01	0.789	6.46	1.000	994.	239.6	0.0957	18.292	2.726		0.0955	7.63
18	UPPER TALARIK	C	32.3	9.09	0.785	6.46	1.000	995.	239.6	0.0966	18.287	2.785		0.0955	7.63
19	UPPER TALARIK	Q	29.3	9.09	0.785	6.46	1.000	995.	239.6	0.0966	18.287	3.074		0.1105	5.98
20	UPPER TALARIK	C	27.1	9.18	0.781	6.46	1.000	997.	239.6	0.0729	18.282	3.313		0.1105	5.98
21	UPPER TALARIK	C	25.0	9.20	0.780	6.46	1.000	997.	239.6	0.0894	18.282	3.546		0.1105	5.98
22	UPPER TALARIK	B	24.7									3.579			
23	TRIBUTARY 119	H	25.1	9.19	0.780	6.46	1.000	997.	239.6	0.2349	18.282	0.643	5.81	0.0000	5.98
24	TRIBUTARY 119	T	24.7									0.643			
25	UPPER TALARIK	J	24.7	9.27	0.776	6.46	1.000	999.	239.6	0.0894	18.277	4.222		0.1092	5.98
26	UPPER TALARIK	Q	24.5	9.27	0.776	6.46	1.000	999.	239.6	0.0894	18.277	4.248		0.0593	5.98
27	UPPER TALARIK	C	20.8	9.38	0.772	6.46	1.000	1001.	239.6	0.0962	18.271	4.467		0.0593	5.98
28	UPPER TALARIK	C	18.8	9.49	0.767	6.46	1.000	1003.	239.6	0.0857	18.263	4.585		0.0593	5.98
29	UPPER TALARIK	C	14.6	9.66	0.759	6.46	1.000	1006.	239.5	0.0999	18.255	4.835		0.0593	5.98
30	UPPER TALARIK	Q	14.4	9.66	0.759	6.46	1.000	1006.	239.5	0.0999	18.255	4.849		-0.2661	5.98
31	UPPER TALARIK	Q	9.8	9.66	0.759	6.46	1.000	1006.	239.5	0.0999	18.255	3.648		0.3648	5.98
32	UPPER TALARIK	C	9.1	9.87	0.750	6.46	1.000	1010.	239.5	0.1094	18.243	3.913		0.3648	5.98
33	UPPER TALARIK	Q	2.2	9.87	0.750	6.46	1.000	1010.	239.5	0.1094	18.243	6.423		0.0978	5.98
34	UPPER TALARIK	E	0.0									6.642			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.07	0.903	4.45	1.000	975.	76.0	0.3070	18.353	0.067	4.44	0.0478	8.31
2	UPPER TALARIK	Q	60.0	6.07	0.903	4.45	1.000	975.	76.0	0.3070	18.353	0.182		0.0398	8.31
3	UPPER TALARIK	C	59.7	6.37	0.888	4.45	1.000	981.	76.0	0.2263	18.349	0.194		0.0398	8.31
4	UPPER TALARIK	C	56.5	6.52	0.880	4.45	1.000	983.	76.0	0.2068	18.347	0.321		0.0398	8.31
5	UPPER TALARIK	C	55.4	6.59	0.876	4.45	1.000	985.	75.9	0.1686	18.348	0.364		0.0398	8.31
6	UPPER TALARIK	C	51.9	6.70	0.871	4.45	1.000	987.	75.9	0.1706	18.344	0.505		0.0398	8.31
7	UPPER TALARIK	Q	51.6	6.70	0.871	4.45	1.000	987.	75.9	0.1706	18.344	0.514		0.2059	6.92
8	UPPER TALARIK	C	45.9	6.77	0.867	4.45	1.000	988.	75.9	0.1378	18.339	1.689		0.2059	6.92
9	UPPER TALARIK	B	45.0									1.867			
10	TRIBUTARY 135	H	46.4	6.77	0.867	4.45	1.000	988.	75.9	0.1944	18.339	0.160	8.93	0.0000	6.92
11	TRIBUTARY 135	T	45.0									0.160			
12	UPPER TALARIK	J	45.0	6.84	0.863	4.45	1.000	989.	75.9	0.1377	18.333	2.027		0.2053	6.92
13	UPPER TALARIK	Q	44.6	6.84	0.863	4.45	1.000	989.	75.9	0.1377	18.333	2.113		0.0149	7.56
14	UPPER TALARIK	C	38.4	6.96	0.858	4.45	1.000	991.	75.9	0.1182	18.325	2.206		0.0149	7.56
15	UPPER TALARIK	Q	37.6	6.96	0.858	4.45	1.000	991.	75.9	0.1182	18.325	2.217		0.1049	7.56
16	UPPER TALARIK	C	35.8	7.04	0.853	4.45	1.000	993.	75.9	0.0817	18.320	2.408		0.1049	7.56
17	UPPER TALARIK	C	32.9	7.10	0.851	4.45	1.000	994.	75.9	0.0956	18.318	2.709		0.1049	7.56
18	UPPER TALARIK	C	32.3	7.18	0.847	4.45	1.000	995.	75.9	0.0965	18.313	2.773		0.1049	7.56
19	UPPER TALARIK	Q	29.3	7.18	0.847	4.45	1.000	995.	75.9	0.0965	18.313	3.091		0.1210	6.02
20	UPPER TALARIK	C	27.1	7.27	0.842	4.45	1.000	997.	75.9	0.0730	18.308	3.352		0.1210	6.02
21	UPPER TALARIK	C	25.0	7.29	0.841	4.45	1.000	997.	75.9	0.0893	18.308	3.608		0.1210	6.02
22	UPPER TALARIK	B	24.7									3.644			
23	TRIBUTARY 119	H	25.1	7.28	0.842	4.45	1.000	997.	75.9	0.2348	18.308	0.631	4.84	0.0000	6.02
24	TRIBUTARY 119	T	24.7									0.631			
25	UPPER TALARIK	J	24.7	7.36	0.838	4.45	1.000	999.	75.9	0.0893	18.304	4.275		0.1218	6.02
26	UPPER TALARIK	Q	24.5	7.36	0.838	4.45	1.000	999.	75.9	0.0893	18.304	4.304		0.0603	6.02
27	UPPER TALARIK	C	20.8	7.47	0.833	4.45	1.000	1001.	75.9	0.0961	18.297	4.526		0.0603	6.02
28	UPPER TALARIK	C	18.8	7.58	0.827	4.45	1.000	1003.	75.9	0.0856	18.290	4.647		0.0603	6.02
29	UPPER TALARIK	C	14.6	7.75	0.819	4.45	1.000	1006.	75.9	0.0999	18.281	4.901		0.0603	6.02
30	UPPER TALARIK	Q	14.4	7.75	0.819	4.45	1.000	1006.	75.9	0.0999	18.281	4.915		-0.2659	6.02
31	UPPER TALARIK	Q	9.8	7.75	0.819	4.45	1.000	1006.	75.9	0.0999	18.281	3.715		0.3673	6.02
32	UPPER TALARIK	C	9.1	7.96	0.809	4.45	1.000	1010.	75.9	0.1093	18.269	3.981		0.3673	6.02
33	UPPER TALARIK	Q	2.2	7.96	0.809	4.45	1.000	1010.	75.9	0.1093	18.269	6.509		0.0991	6.02
34	UPPER TALARIK	E	0.0									6.731			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.26	0.781	3.04	1.000	975.	129.1	0.3069	18.377	0.066	3.96	0.0469	8.24
2	UPPER TALARIK	Q	60.0	8.26	0.781	3.04	1.000	975.	129.1	0.3069	18.377	0.179		0.0370	8.24
3	UPPER TALARIK	C	59.7	8.56	0.768	3.04	1.000	981.	129.1	0.2261	18.372	0.191		0.0370	8.24
4	UPPER TALARIK	C	56.5	8.71	0.761	3.04	1.000	983.	129.0	0.2067	18.371	0.308		0.0370	8.24
5	UPPER TALARIK	C	55.4	8.78	0.758	3.04	1.000	985.	129.0	0.1686	18.372	0.348		0.0370	8.24
6	UPPER TALARIK	C	51.9	8.89	0.753	3.04	1.000	987.	129.0	0.1705	18.368	0.479		0.0370	8.24
7	UPPER TALARIK	Q	51.6	8.89	0.753	3.04	1.000	987.	129.0	0.1705	18.368	0.488		0.1933	7.00
8	UPPER TALARIK	C	45.9	8.96	0.750	3.04	1.000	988.	129.0	0.1377	18.363	1.591		0.1933	7.00
9	UPPER TALARIK	B	45.0									1.758			
10	TRIBUTARY 135	H	46.4	8.96	0.750	3.04	1.000	988.	129.0	0.1943	18.363	0.150	8.00	0.0000	7.00
11	TRIBUTARY 135	T	45.0									0.150			
12	UPPER TALARIK	J	45.0	9.03	0.746	3.04	1.000	989.	129.0	0.1376	18.357	1.908		0.1933	7.00
13	UPPER TALARIK	Q	44.6	9.03	0.746	3.04	1.000	989.	129.0	0.1376	18.357	1.989		0.0192	7.38
14	UPPER TALARIK	C	38.4	9.15	0.742	3.04	1.000	991.	129.0	0.1181	18.348	2.109		0.0192	7.38
15	UPPER TALARIK	Q	37.6	9.15	0.742	3.04	1.000	991.	129.0	0.1181	18.348	2.123		0.1032	7.38
16	UPPER TALARIK	C	35.8	9.23	0.738	3.04	1.000	993.	129.0	0.0817	18.344	2.311		0.1032	7.38
17	UPPER TALARIK	C	32.9	9.29	0.735	3.04	1.000	994.	129.0	0.0956	18.342	2.607		0.1032	7.38
18	UPPER TALARIK	C	32.3	9.37	0.732	3.04	1.000	995.	129.0	0.0964	18.337	2.670		0.1032	7.38
19	UPPER TALARIK	Q	29.3	9.37	0.732	3.04	1.000	995.	129.0	0.0964	18.337	2.983		0.1192	5.94
20	UPPER TALARIK	C	27.1	9.46	0.728	3.04	1.000	997.	129.0	0.0730	18.332	3.241		0.1192	5.94
21	UPPER TALARIK	C	25.0	9.48	0.727	3.04	1.000	997.	129.0	0.0893	18.331	3.492		0.1192	5.94
22	UPPER TALARIK	B	24.7									3.528			
23	TRIBUTARY 119	H	25.1	9.47	0.728	3.04	1.000	997.	129.0	0.2347	18.331	0.635	4.87	0.0000	5.94
24	TRIBUTARY 119	T	24.7									0.635			
25	UPPER TALARIK	J	24.7	9.55	0.724	3.04	1.000	999.	128.9	0.0893	18.327	4.163		0.1176	5.94
26	UPPER TALARIK	Q	24.5	9.55	0.724	3.04	1.000	999.	128.9	0.0893	18.327	4.191		0.0584	5.94
27	UPPER TALARIK	C	20.8	9.66	0.720	3.04	1.000	1001.	128.9	0.0960	18.320	4.406		0.0584	5.94
28	UPPER TALARIK	C	18.8	9.77	0.715	3.04	1.000	1003.	128.9	0.0855	18.313	4.523		0.0584	5.94
29	UPPER TALARIK	C	14.6	9.94	0.708	3.04	1.000	1006.	128.9	0.0998	18.304	4.769		0.0584	5.94
30	UPPER TALARIK	Q	14.4	9.94	0.708	3.04	1.000	1006.	128.9	0.0998	18.304	4.783		-0.2661	5.94
31	UPPER TALARIK	Q	9.8	9.94	0.708	3.04	1.000	1006.	128.9	0.0998	18.304	3.582		0.3621	5.94
32	UPPER TALARIK	C	9.1	10.15	0.699	3.04	1.000	1010.	128.9	0.1092	18.292	3.845		0.3621	5.94
33	UPPER TALARIK	Q	2.2	10.15	0.699	3.04	1.000	1010.	128.9	0.1092	18.292	6.336		0.0964	5.94
34	UPPER TALARIK	E	0.0									6.552			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.67	0.724	4.58	1.000	975.	149.2	0.3067	18.398	0.065	3.48	0.0461	8.15
2	UPPER TALARIK	Q	60.0	10.67	0.724	4.58	1.000	975.	149.2	0.3067	18.398	0.176		0.0380	8.15
3	UPPER TALARIK	C	59.7	10.97	0.712	4.58	1.000	981.	149.2	0.2260	18.393	0.188		0.0380	8.15
4	UPPER TALARIK	C	56.5	11.12	0.706	4.58	1.000	983.	149.2	0.2066	18.392	0.308		0.0380	8.15
5	UPPER TALARIK	C	55.4	11.19	0.703	4.58	1.000	985.	149.1	0.1685	18.393	0.350		0.0380	8.15
6	UPPER TALARIK	C	51.9	11.30	0.698	4.58	1.000	987.	149.1	0.1704	18.389	0.484		0.0380	8.15
7	UPPER TALARIK	Q	51.6	11.30	0.698	4.58	1.000	987.	149.1	0.1704	18.389	0.493		0.1940	7.21
8	UPPER TALARIK	C	45.9	11.37	0.695	4.58	1.000	988.	149.1	0.1376	18.384	1.600		0.1940	7.21
9	UPPER TALARIK	B	45.0									1.768			
10	TRIBUTARY 135	H	46.4	11.37	0.695	4.58	1.000	988.	149.1	0.1942	18.384	0.151	9.66	0.0000	7.21
11	TRIBUTARY 135	T	45.0									0.151			
12	UPPER TALARIK	J	45.0	11.44	0.692	4.58	1.000	989.	149.1	0.1376	18.378	1.919		0.1933	7.21
13	UPPER TALARIK	Q	44.6	11.44	0.692	4.58	1.000	989.	149.1	0.1376	18.378	2.000		0.0172	7.17
14	UPPER TALARIK	C	38.4	11.56	0.688	4.58	1.000	991.	149.1	0.1180	18.369	2.108		0.0172	7.17
15	UPPER TALARIK	Q	37.6	11.56	0.688	4.58	1.000	991.	149.1	0.1180	18.369	2.120		0.1034	7.17
16	UPPER TALARIK	C	35.8	11.64	0.684	4.58	1.000	993.	149.1	0.0817	18.365	2.309		0.1034	7.17
17	UPPER TALARIK	C	32.9	11.70	0.682	4.58	1.000	994.	149.1	0.0955	18.363	2.606		0.1034	7.17
18	UPPER TALARIK	C	32.3	11.78	0.679	4.58	1.000	995.	149.1	0.0963	18.357	2.669		0.1034	7.17
19	UPPER TALARIK	Q	29.3	11.78	0.679	4.58	1.000	995.	149.1	0.0963	18.357	2.982		0.1194	5.80
20	UPPER TALARIK	C	27.1	11.87	0.675	4.58	1.000	997.	149.1	0.0731	18.353	3.240		0.1194	5.80
21	UPPER TALARIK	C	25.0	11.89	0.674	4.58	1.000	997.	149.1	0.0892	18.352	3.492		0.1194	5.80
22	UPPER TALARIK	B	24.7									3.528			
23	TRIBUTARY 119	H	25.1	11.88	0.675	4.58	1.000	997.	149.1	0.2346	18.352	0.635	5.37	0.0000	5.80
24	TRIBUTARY 119	T	24.7									0.635			
25	UPPER TALARIK	J	24.7	11.96	0.672	4.58	1.000	999.	149.1	0.0892	18.348	4.163		0.1176	5.80
26	UPPER TALARIK	Q	24.5	11.96	0.672	4.58	1.000	999.	149.1	0.0892	18.348	4.191		0.0584	5.80
27	UPPER TALARIK	C	20.8	12.07	0.668	4.58	1.000	1001.	149.1	0.0959	18.341	4.406		0.0584	5.80
28	UPPER TALARIK	C	18.8	12.18	0.663	4.58	1.000	1003.	149.0	0.0855	18.334	4.523		0.0584	5.80
29	UPPER TALARIK	C	14.6	12.35	0.657	4.58	1.000	1006.	149.0	0.0998	18.325	4.769		0.0584	5.80
30	UPPER TALARIK	Q	14.4	12.35	0.657	4.58	1.000	1006.	149.0	0.0998	18.325	4.783		-0.2661	5.80
31	UPPER TALARIK	Q	9.8	12.35	0.657	4.58	1.000	1006.	149.0	0.0998	18.325	3.582		0.3621	5.80
32	UPPER TALARIK	C	9.1	12.56	0.649	4.58	1.000	1010.	149.0	0.1092	18.313	3.845		0.3621	5.80
33	UPPER TALARIK	Q	2.2	12.56	0.649	4.58	1.000	1010.	149.0	0.1092	18.313	6.336		0.0964	5.80
34	UPPER TALARIK	E	0.0									6.552			

YEAR: 2007 TIME PERIOD: 15-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.35	0.574	8.16	1.000	975.	291.2	0.3066	18.417	0.065	3.13	0.0461	8.18
2	UPPER TALARIK	Q	60.0	14.35	0.574	8.16	1.000	975.	291.2	0.3066	18.417	0.176		0.0383	8.18
3	UPPER TALARIK	C	59.7	14.65	0.564	8.16	1.000	981.	291.1	0.2259	18.412	0.188		0.0383	8.18
4	UPPER TALARIK	C	56.5	14.80	0.559	8.16	1.000	983.	291.0	0.2065	18.411	0.310		0.0383	8.18
5	UPPER TALARIK	C	55.4	14.87	0.557	8.16	1.000	985.	291.0	0.1685	18.411	0.351		0.0383	8.18
6	UPPER TALARIK	C	51.9	14.98	0.553	8.16	1.000	987.	290.9	0.1703	18.407	0.487		0.0383	8.18
7	UPPER TALARIK	Q	51.6	14.98	0.553	8.16	1.000	987.	290.9	0.1703	18.407	0.496		0.1904	7.56
8	UPPER TALARIK	C	45.9	15.05	0.551	8.16	1.000	988.	290.9	0.1375	18.402	1.583		0.1904	7.56
9	UPPER TALARIK	B	45.0									1.747			
10	TRIBUTARY 135	H	46.4	15.05	0.551	8.16	1.000	988.	290.9	0.1942	18.402	0.148	11.26	0.0000	7.56
11	TRIBUTARY 135	T	45.0									0.148			
12	UPPER TALARIK	J	45.0	15.12	0.548	8.16	1.000	989.	290.9	0.1375	18.396	1.895		0.1885	7.56
13	UPPER TALARIK	Q	44.6	15.12	0.548	8.16	1.000	989.	290.9	0.1375	18.396	1.974		0.0167	7.00
14	UPPER TALARIK	C	38.4	15.24	0.545	8.16	1.000	991.	290.9	0.1179	18.387	2.079		0.0167	7.00
15	UPPER TALARIK	Q	37.6	15.24	0.545	8.16	1.000	991.	290.9	0.1179	18.387	2.091		0.1039	7.00
16	UPPER TALARIK	C	35.8	15.32	0.542	8.16	1.000	993.	290.9	0.0817	18.383	2.280		0.1039	7.00
17	UPPER TALARIK	C	32.9	15.38	0.540	8.16	1.000	994.	290.9	0.0955	18.381	2.579		0.1039	7.00
18	UPPER TALARIK	C	32.3	15.46	0.538	8.16	1.000	995.	290.9	0.0963	18.376	2.642		0.1039	7.00
19	UPPER TALARIK	Q	29.3	15.46	0.538	8.16	1.000	995.	290.9	0.0963	18.376	2.957		0.1201	5.67
20	UPPER TALARIK	C	27.1	15.55	0.535	8.16	1.000	997.	290.8	0.0731	18.371	3.216		0.1201	5.67
21	UPPER TALARIK	C	25.0	15.57	0.534	8.16	1.000	997.	290.8	0.0892	18.370	3.470		0.1201	5.67
22	UPPER TALARIK	B	24.7									3.506			
23	TRIBUTARY 119	H	25.1	15.56	0.535	8.16	1.000	997.	290.8	0.2345	18.371	0.628	6.28	0.0000	5.67
24	TRIBUTARY 119	T	24.7									0.628			
25	UPPER TALARIK	J	24.7	15.64	0.532	8.16	1.000	999.	290.8	0.0892	18.366	4.134		0.1218	5.67
26	UPPER TALARIK	Q	24.5	15.64	0.532	8.16	1.000	999.	290.8	0.0892	18.366	4.163		0.0579	5.67
27	UPPER TALARIK	C	20.8	15.75	0.529	8.16	1.000	1001.	290.8	0.0958	18.359	4.377		0.0579	5.67
28	UPPER TALARIK	C	18.8	15.86	0.526	8.16	1.000	1003.	290.8	0.0854	18.352	4.492		0.0579	5.67
29	UPPER TALARIK	C	14.6	16.03	0.520	8.16	1.000	1006.	290.7	0.0998	18.343	4.736		0.0579	5.67
30	UPPER TALARIK	Q	14.4	16.03	0.520	8.16	1.000	1006.	290.7	0.0998	18.343	4.750		-0.2661	5.67
31	UPPER TALARIK	Q	9.8	16.03	0.520	8.16	1.000	1006.	290.7	0.0998	18.343	3.549		0.3608	5.67
32	UPPER TALARIK	C	9.1	16.24	0.514	8.16	1.000	1010.	290.7	0.1091	18.331	3.811		0.3608	5.67
33	UPPER TALARIK	Q	2.2	16.24	0.514	8.16	1.000	1010.	290.7	0.1091	18.331	6.293		0.0955	5.67
34	UPPER TALARIK	E	0.0									6.507			

YEAR: 2007 TIME PERIOD: 16-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.19	0.611	7.52	1.000	975.	238.1	0.3065	18.432	0.064	3.70	0.0457	8.37
2	UPPER TALARIK	Q	60.0	12.19	0.611	7.52	1.000	975.	238.1	0.3065	18.432	0.174		0.0365	8.37
3	UPPER TALARIK	C	59.7	12.49	0.601	7.52	1.000	981.	238.0	0.2258	18.427	0.185		0.0365	8.37
4	UPPER TALARIK	C	56.5	12.64	0.596	7.52	1.000	983.	237.9	0.2064	18.426	0.301		0.0365	8.37
5	UPPER TALARIK	C	55.4	12.71	0.593	7.52	1.000	985.	237.9	0.1685	18.427	0.341		0.0365	8.37
6	UPPER TALARIK	C	51.9	12.82	0.590	7.52	1.000	987.	237.9	0.1702	18.423	0.470		0.0365	8.37
7	UPPER TALARIK	Q	51.6	12.82	0.590	7.52	1.000	987.	237.9	0.1702	18.423	0.479		0.1852	7.93
8	UPPER TALARIK	C	45.9	12.89	0.587	7.52	1.000	988.	237.9	0.1375	18.418	1.536		0.1852	7.93
9	UPPER TALARIK	B	45.0									1.696			
10	TRIBUTARY 135	H	46.4	12.89	0.587	7.52	1.000	988.	237.9	0.1941	18.418	0.144	11.79	0.0000	7.93
11	TRIBUTARY 135	T	45.0									0.144			
12	UPPER TALARIK	J	45.0	12.96	0.584	7.52	1.000	989.	237.9	0.1374	18.412	1.840		0.1838	7.93
13	UPPER TALARIK	Q	44.6	12.96	0.584	7.52	1.000	989.	237.9	0.1374	18.412	1.917		0.0166	6.94
14	UPPER TALARIK	C	38.4	13.08	0.581	7.52	1.000	991.	237.9	0.1178	18.403	2.021		0.0166	6.94
15	UPPER TALARIK	Q	37.6	13.08	0.581	7.52	1.000	991.	237.9	0.1178	18.403	2.033		0.0987	6.94
16	UPPER TALARIK	C	35.8	13.16	0.578	7.52	1.000	993.	237.8	0.0818	18.398	2.213		0.0987	6.94
17	UPPER TALARIK	C	32.9	13.22	0.576	7.52	1.000	994.	237.8	0.0955	18.396	2.497		0.0987	6.94
18	UPPER TALARIK	C	32.3	13.30	0.573	7.52	1.000	995.	237.8	0.0962	18.391	2.557		0.0987	6.94
19	UPPER TALARIK	Q	29.3	13.30	0.573	7.52	1.000	995.	237.8	0.0962	18.391	2.856		0.1140	5.64
20	UPPER TALARIK	C	27.1	13.39	0.570	7.52	1.000	997.	237.8	0.0731	18.386	3.102		0.1140	5.64
21	UPPER TALARIK	C	25.0	13.41	0.569	7.52	1.000	997.	237.8	0.0891	18.386	3.343		0.1140	5.64
22	UPPER TALARIK	B	24.7									3.377			
23	TRIBUTARY 119	H	25.1	13.40	0.570	7.52	1.000	997.	237.8	0.2345	18.386	0.617	6.00	0.0000	5.64
24	TRIBUTARY 119	T	24.7									0.617			
25	UPPER TALARIK	J	24.7	13.48	0.567	7.52	1.000	999.	237.8	0.0891	18.381	3.994		0.1134	5.64
26	UPPER TALARIK	Q	24.5	13.48	0.567	7.52	1.000	999.	237.8	0.0891	18.381	4.021		0.0557	5.64
27	UPPER TALARIK	C	20.8	13.59	0.564	7.52	1.000	1001.	237.8	0.0958	18.375	4.227		0.0557	5.64
28	UPPER TALARIK	C	18.8	13.70	0.560	7.52	1.000	1003.	237.8	0.0854	18.367	4.338		0.0557	5.64
29	UPPER TALARIK	C	14.6	13.87	0.554	7.52	1.000	1006.	237.7	0.0997	18.359	4.573		0.0557	5.64
30	UPPER TALARIK	Q	14.4	13.87	0.554	7.52	1.000	1006.	237.7	0.0997	18.359	4.586		-0.2661	5.64
31	UPPER TALARIK	Q	9.8	13.87	0.554	7.52	1.000	1006.	237.7	0.0997	18.359	3.385		0.3541	5.64
32	UPPER TALARIK	C	9.1	14.08	0.548	7.52	1.000	1010.	237.7	0.1091	18.346	3.642		0.3541	5.64
33	UPPER TALARIK	Q	2.2	14.08	0.548	7.52	1.000	1010.	237.7	0.1091	18.346	6.078		0.0924	5.64
34	UPPER TALARIK	E	0.0									6.285			

YEAR: 2007 TIME PERIOD: 17-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.25	0.866	3.91	1.000	975.	134.6	0.3064	18.445	0.068	4.29	0.0486	8.51
2	UPPER TALARIK	Q	60.0	7.25	0.866	3.91	1.000	975.	134.6	0.3064	18.445	0.185		0.0437	8.51
3	UPPER TALARIK	C	59.7	7.55	0.851	3.91	1.000	981.	134.5	0.2258	18.440	0.199		0.0437	8.51
4	UPPER TALARIK	C	56.5	7.70	0.843	3.91	1.000	983.	134.5	0.2064	18.439	0.338		0.0437	8.51
5	UPPER TALARIK	C	55.4	7.77	0.840	3.91	1.000	985.	134.5	0.1685	18.440	0.385		0.0437	8.51
6	UPPER TALARIK	C	51.9	7.88	0.834	3.91	1.000	987.	134.5	0.1702	18.435	0.540		0.0437	8.51
7	UPPER TALARIK	Q	51.6	7.88	0.834	3.91	1.000	987.	134.5	0.1702	18.435	0.550		0.2105	8.23
8	UPPER TALARIK	C	45.9	7.95	0.831	3.91	1.000	988.	134.5	0.1374	18.431	1.751		0.2105	8.23
9	UPPER TALARIK	B	45.0									1.933			
10	TRIBUTARY 135	H	46.4	7.95	0.831	3.91	1.000	988.	134.5	0.1941	18.430	0.163	9.93	0.0000	8.23
11	TRIBUTARY 135	T	45.0									0.163			
12	UPPER TALARIK	J	45.0	8.02	0.827	3.91	1.000	989.	134.5	0.1374	18.424	2.096		0.2100	8.23
13	UPPER TALARIK	Q	44.6	8.02	0.827	3.91	1.000	989.	134.5	0.1374	18.424	2.184		0.0087	6.97
14	UPPER TALARIK	C	38.4	8.14	0.822	3.91	1.000	991.	134.5	0.1178	18.416	2.239		0.0087	6.97
15	UPPER TALARIK	Q	37.6	8.14	0.822	3.91	1.000	991.	134.5	0.1178	18.416	2.245		0.0991	6.97
16	UPPER TALARIK	C	35.8	8.22	0.818	3.91	1.000	993.	134.5	0.0818	18.411	2.426		0.0991	6.97
17	UPPER TALARIK	C	32.9	8.28	0.815	3.91	1.000	994.	134.5	0.0954	18.409	2.710		0.0991	6.97
18	UPPER TALARIK	C	32.3	8.36	0.811	3.91	1.000	995.	134.5	0.0962	18.404	2.771		0.0991	6.97
19	UPPER TALARIK	Q	29.3	8.36	0.811	3.91	1.000	995.	134.5	0.0962	18.404	3.071		0.1144	5.69
20	UPPER TALARIK	C	27.1	8.45	0.807	3.91	1.000	997.	134.4	0.0731	18.399	3.318		0.1144	5.69
21	UPPER TALARIK	C	25.0	8.47	0.806	3.91	1.000	997.	134.4	0.0891	18.398	3.560		0.1144	5.69
22	UPPER TALARIK	B	24.7									3.594			
23	TRIBUTARY 119	H	25.1	8.46	0.807	3.91	1.000	997.	134.4	0.2344	18.399	0.627	5.09	0.0000	5.69
24	TRIBUTARY 119	T	24.7									0.627			
25	UPPER TALARIK	J	24.7	8.54	0.803	3.91	1.000	999.	134.4	0.0891	18.394	4.221		0.1134	5.69
26	UPPER TALARIK	Q	24.5	8.54	0.803	3.91	1.000	999.	134.4	0.0891	18.394	4.248		0.0593	5.69
27	UPPER TALARIK	C	20.8	8.65	0.798	3.91	1.000	1001.	134.4	0.0957	18.387	4.467		0.0593	5.69
28	UPPER TALARIK	C	18.8	8.76	0.793	3.91	1.000	1003.	134.4	0.0853	18.380	4.585		0.0593	5.69
29	UPPER TALARIK	C	14.6	8.93	0.785	3.91	1.000	1006.	134.4	0.0997	18.371	4.835		0.0593	5.69
30	UPPER TALARIK	Q	14.4	8.93	0.785	3.91	1.000	1006.	134.4	0.0997	18.371	4.849		-0.2661	5.69
31	UPPER TALARIK	Q	9.8	8.93	0.785	3.91	1.000	1006.	134.4	0.0997	18.371	3.648		0.3648	5.69
32	UPPER TALARIK	C	9.1	9.14	0.775	3.91	1.000	1010.	134.4	0.1090	18.358	3.913		0.3648	5.69
33	UPPER TALARIK	Q	2.2	9.14	0.775	3.91	1.000	1010.	134.4	0.1090	18.358	6.423		0.0978	5.69
34	UPPER TALARIK	E	0.0									6.642			

YEAR: 2007 TIME PERIOD: 18-Jun PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.00	0.809	2.91	1.000	975.	157.5	0.3063	18.455	0.066	3.84	0.0465	8.61
2	UPPER TALARIK	Q	60.0	10.00	0.809	2.91	1.000	975.	157.5	0.3063	18.455	0.178		0.0407	8.61
3	UPPER TALARIK	C	59.7	10.30	0.795	2.91	1.000	981.	157.4	0.2257	18.450	0.191		0.0407	8.61
4	UPPER TALARIK	C	56.5	10.45	0.788	2.91	1.000	983.	157.4	0.2063	18.449	0.320		0.0407	8.61
5	UPPER TALARIK	C	55.4	10.52	0.785	2.91	1.000	985.	157.4	0.1685	18.450	0.364		0.0407	8.61
6	UPPER TALARIK	C	51.9	10.63	0.780	2.91	1.000	987.	157.4	0.1701	18.445	0.508		0.0407	8.61
7	UPPER TALARIK	Q	51.6	10.63	0.780	2.91	1.000	987.	157.4	0.1701	18.445	0.518		0.2035	8.56
8	UPPER TALARIK	C	45.9	10.70	0.777	2.91	1.000	988.	157.4	0.1374	18.441	1.679		0.2035	8.56
9	UPPER TALARIK	B	45.0									1.855			
10	TRIBUTARY 135	H	46.4	10.70	0.777	2.91	1.000	988.	157.4	0.1940	18.440	0.158	9.20	0.0000	8.56
11	TRIBUTARY 135	T	45.0									0.158			
12	UPPER TALARIK	J	45.0	10.77	0.773	2.91	1.000	989.	157.3	0.1373	18.434	2.013		0.2029	8.56
13	UPPER TALARIK	Q	44.6	10.77	0.773	2.91	1.000	989.	157.3	0.1373	18.434	2.098		0.0125	7.08
14	UPPER TALARIK	C	38.4	10.89	0.768	2.91	1.000	991.	157.3	0.1178	18.426	2.176		0.0125	7.08
15	UPPER TALARIK	Q	37.6	10.89	0.768	2.91	1.000	991.	157.3	0.1178	18.426	2.185		0.1035	7.08
16	UPPER TALARIK	C	35.8	10.97	0.764	2.91	1.000	993.	157.3	0.0818	18.421	2.374		0.1035	7.08
17	UPPER TALARIK	C	32.9	11.03	0.762	2.91	1.000	994.	157.3	0.0954	18.419	2.671		0.1035	7.08
18	UPPER TALARIK	C	32.3	11.11	0.758	2.91	1.000	995.	157.3	0.0962	18.414	2.734		0.1035	7.08
19	UPPER TALARIK	Q	29.3	11.11	0.758	2.91	1.000	995.	157.3	0.0962	18.414	3.048		0.1199	5.81
20	UPPER TALARIK	C	27.1	11.20	0.754	2.91	1.000	997.	157.3	0.0732	18.409	3.307		0.1199	5.81
21	UPPER TALARIK	C	25.0	11.22	0.753	2.91	1.000	997.	157.3	0.0890	18.408	3.560		0.1199	5.81
22	UPPER TALARIK	B	24.7									3.596			
23	TRIBUTARY 119	H	25.1	11.21	0.754	2.91	1.000	997.	157.3	0.2344	18.408	0.624	5.47	0.0000	5.81
24	TRIBUTARY 119	T	24.7									0.624			
25	UPPER TALARIK	J	24.7	11.29	0.750	2.91	1.000	999.	157.3	0.0890	18.404	4.220		0.1176	5.81
26	UPPER TALARIK	Q	24.5	11.29	0.750	2.91	1.000	999.	157.3	0.0890	18.404	4.248		0.0593	5.81
27	UPPER TALARIK	C	20.8	11.40	0.746	2.91	1.000	1001.	157.3	0.0957	18.397	4.467		0.0593	5.81
28	UPPER TALARIK	C	18.8	11.51	0.741	2.91	1.000	1003.	157.3	0.0853	18.390	4.585		0.0593	5.81
29	UPPER TALARIK	C	14.6	11.68	0.734	2.91	1.000	1006.	157.2	0.0997	18.381	4.835		0.0593	5.81
30	UPPER TALARIK	Q	14.4	11.68	0.734	2.91	1.000	1006.	157.2	0.0997	18.381	4.849		-0.2661	5.81
31	UPPER TALARIK	Q	9.8	11.68	0.734	2.91	1.000	1006.	157.2	0.0997	18.381	3.648		0.3648	5.81
32	UPPER TALARIK	C	9.1	11.89	0.725	2.91	1.000	1010.	157.2	0.1090	18.368	3.913		0.3648	5.81
33	UPPER TALARIK	Q	2.2	11.89	0.725	2.91	1.000	1010.	157.2	0.1090	18.368	6.423		0.0978	5.81
34	UPPER TALARIK	E	0.0									6.642			

YEAR: 2007 TIME PERIOD: 19-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.84	0.677	8.26	1.000	975.	279.2	0.3062	18.462	0.064	2.73	0.0453	8.89
2	UPPER TALARIK	Q	60.0	14.84	0.677	8.26	1.000	975.	279.2	0.3062	18.462	0.173		0.0393	8.89
3	UPPER TALARIK	C	59.7	15.14	0.666	8.26	1.000	981.	279.1	0.2257	18.457	0.185		0.0393	8.89
4	UPPER TALARIK	C	56.5	15.29	0.660	8.26	1.000	983.	279.1	0.2063	18.456	0.310		0.0393	8.89
5	UPPER TALARIK	C	55.4	15.36	0.657	8.26	1.000	985.	279.1	0.1685	18.457	0.353		0.0393	8.89
6	UPPER TALARIK	C	51.9	15.47	0.653	8.26	1.000	987.	279.0	0.1701	18.453	0.492		0.0393	8.89
7	UPPER TALARIK	Q	51.6	15.47	0.653	8.26	1.000	987.	279.0	0.1701	18.453	0.501		0.2070	9.02
8	UPPER TALARIK	C	45.9	15.54	0.650	8.26	1.000	988.	279.0	0.1374	18.448	1.682		0.2070	9.02
9	UPPER TALARIK	B	45.0									1.861			
10	TRIBUTARY 135	H	46.4	15.54	0.650	8.26	1.000	988.	279.0	0.1940	18.447	0.161	11.52	0.0000	9.02
11	TRIBUTARY 135	T	45.0									0.161			
12	UPPER TALARIK	J	45.0	15.61	0.647	8.26	1.000	989.	279.0	0.1373	18.441	2.022		0.2053	9.02
13	UPPER TALARIK	Q	44.6	15.61	0.647	8.26	1.000	989.	279.0	0.1373	18.441	2.108		0.0076	7.33
14	UPPER TALARIK	C	38.4	15.73	0.643	8.26	1.000	991.	279.0	0.1177	18.433	2.156		0.0076	7.33
15	UPPER TALARIK	Q	37.6	15.73	0.643	8.26	1.000	991.	279.0	0.1177	18.433	2.161		0.0969	7.33
16	UPPER TALARIK	C	35.8	15.81	0.640	8.26	1.000	993.	279.0	0.0818	18.428	2.338		0.0969	7.33
17	UPPER TALARIK	C	32.9	15.87	0.638	8.26	1.000	994.	278.9	0.0954	18.426	2.616		0.0969	7.33
18	UPPER TALARIK	C	32.3	15.95	0.635	8.26	1.000	995.	278.9	0.0961	18.421	2.675		0.0969	7.33
19	UPPER TALARIK	Q	29.3	15.95	0.635	8.26	1.000	995.	278.9	0.0961	18.421	2.969		0.1118	6.04
20	UPPER TALARIK	C	27.1	16.04	0.631	8.26	1.000	997.	278.9	0.0732	18.416	3.210		0.1118	6.04
21	UPPER TALARIK	C	25.0	16.06	0.631	8.26	1.000	997.	278.9	0.0890	18.415	3.447		0.1118	6.04
22	UPPER TALARIK	B	24.7									3.480			
23	TRIBUTARY 119	H	25.1	16.05	0.631	8.26	1.000	997.	278.9	0.2343	18.416	0.627	6.36	0.0000	6.04
24	TRIBUTARY 119	T	24.7									0.627			
25	UPPER TALARIK	J	24.7	16.13	0.628	8.26	1.000	999.	278.9	0.0890	18.411	4.107		0.1134	6.04
26	UPPER TALARIK	Q	24.5	16.13	0.628	8.26	1.000	999.	278.9	0.0890	18.411	4.134		0.0576	6.04
27	UPPER TALARIK	C	20.8	16.24	0.624	8.26	1.000	1001.	278.9	0.0956	18.404	4.346		0.0576	6.04
28	UPPER TALARIK	C	18.8	16.35	0.620	8.26	1.000	1003.	278.9	0.0853	18.397	4.461		0.0576	6.04
29	UPPER TALARIK	C	14.6	16.52	0.614	8.26	1.000	1006.	278.8	0.0997	18.388	4.704		0.0576	6.04
30	UPPER TALARIK	Q	14.4	16.52	0.614	8.26	1.000	1006.	278.8	0.0997	18.388	4.718		-0.2663	6.04
31	UPPER TALARIK	Q	9.8	16.52	0.614	8.26	1.000	1006.	278.8	0.0997	18.388	3.516		0.3595	6.04
32	UPPER TALARIK	C	9.1	16.73	0.607	8.26	1.000	1010.	278.8	0.1090	18.375	3.777		0.3595	6.04
33	UPPER TALARIK	Q	2.2	16.73	0.607	8.26	1.000	1010.	278.8	0.1090	18.375	6.250		0.0951	6.04
34	UPPER TALARIK	E	0.0									6.463			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	17.06	0.527	10.23	1.000	975.	272.9	0.3062	18.466	0.061	2.55	0.0436	9.41
2	UPPER TALARIK	Q	60.0	17.06	0.527	10.23	1.000	975.	272.9	0.3062	18.466	0.166		0.0376	9.41
3	UPPER TALARIK	C	59.7	17.36	0.518	10.23	1.000	981.	272.8	0.2256	18.462	0.178		0.0376	9.41
4	UPPER TALARIK	C	56.5	17.51	0.513	10.23	1.000	983.	272.7	0.2063	18.460	0.297		0.0376	9.41
5	UPPER TALARIK	C	55.4	17.58	0.511	10.23	1.000	985.	272.7	0.1685	18.461	0.338		0.0376	9.41
6	UPPER TALARIK	C	51.9	17.69	0.508	10.23	1.000	987.	272.6	0.1700	18.457	0.471		0.0376	9.41
7	UPPER TALARIK	Q	51.6	17.69	0.508	10.23	1.000	987.	272.6	0.1700	18.457	0.480		0.1870	9.45
8	UPPER TALARIK	C	45.9	17.76	0.506	10.23	1.000	988.	272.6	0.1373	18.452	1.547		0.1870	9.45
9	UPPER TALARIK	B	45.0									1.709			
10	TRIBUTARY 135	H	46.4	17.76	0.506	10.23	1.000	988.	272.6	0.1940	18.452	0.145	13.90	0.0000	9.45
11	TRIBUTARY 135	T	45.0									0.145			
12	UPPER TALARIK	J	45.0	17.83	0.504	10.23	1.000	989.	272.6	0.1373	18.446	1.854		0.1885	9.45
13	UPPER TALARIK	Q	44.6	17.83	0.504	10.23	1.000	989.	272.6	0.1373	18.446	1.933		0.0112	7.74
14	UPPER TALARIK	C	38.4	17.95	0.500	10.23	1.000	991.	272.6	0.1177	18.437	2.003		0.0112	7.74
15	UPPER TALARIK	Q	37.6	17.95	0.500	10.23	1.000	991.	272.6	0.1177	18.437	2.011		0.0967	7.74
16	UPPER TALARIK	C	35.8	18.03	0.498	10.23	1.000	993.	272.6	0.0818	18.432	2.187		0.0967	7.74
17	UPPER TALARIK	C	32.9	18.09	0.496	10.23	1.000	994.	272.6	0.0954	18.430	2.465		0.0967	7.74
18	UPPER TALARIK	C	32.3	18.17	0.494	10.23	1.000	995.	272.6	0.0961	18.425	2.524		0.0967	7.74
19	UPPER TALARIK	Q	29.3	18.17	0.494	10.23	1.000	995.	272.6	0.0961	18.425	2.817		0.1116	6.40
20	UPPER TALARIK	C	27.1	18.26	0.491	10.23	1.000	997.	272.5	0.0732	18.420	3.058		0.1116	6.40
21	UPPER TALARIK	C	25.0	18.28	0.490	10.23	1.000	997.	272.5	0.0890	18.420	3.294		0.1116	6.40
22	UPPER TALARIK	B	24.7									3.327			
23	TRIBUTARY 119	H	25.1	18.27	0.491	10.23	1.000	997.	272.5	0.2343	18.420	0.639	6.79	0.0000	6.40
24	TRIBUTARY 119	T	24.7									0.639			
25	UPPER TALARIK	J	24.7	18.35	0.488	10.23	1.000	999.	272.5	0.0890	18.415	3.966		0.1134	6.40
26	UPPER TALARIK	Q	24.5	18.35	0.488	10.23	1.000	999.	272.5	0.0890	18.415	3.993		0.0553	6.40
27	UPPER TALARIK	C	20.8	18.46	0.485	10.23	1.000	1001.	272.5	0.0956	18.409	4.197		0.0553	6.40
28	UPPER TALARIK	C	18.8	18.57	0.482	10.23	1.000	1003.	272.5	0.0852	18.401	4.308		0.0553	6.40
29	UPPER TALARIK	C	14.6	18.74	0.478	10.23	1.000	1006.	272.4	0.0997	18.392	4.541		0.0553	6.40
30	UPPER TALARIK	Q	14.4	18.74	0.478	10.23	1.000	1006.	272.4	0.0997	18.392	4.554		-0.2661	6.40
31	UPPER TALARIK	Q	9.8	18.74	0.478	10.23	1.000	1006.	272.4	0.0997	18.392	3.353		0.3526	6.40
32	UPPER TALARIK	C	9.1	18.95	0.472	10.23	1.000	1010.	272.4	0.1090	18.379	3.609		0.3526	6.40
33	UPPER TALARIK	Q	2.2	18.95	0.472	10.23	1.000	1010.	272.4	0.1090	18.379	6.035		0.0915	6.40
34	UPPER TALARIK	E	0.0									6.240			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.20	0.593	7.63	1.000	975.	213.3	0.3062	18.468	0.060	3.38	0.0432	9.78
2	UPPER TALARIK	Q	60.0	14.20	0.593	7.63	1.000	975.	213.3	0.3062	18.468	0.164		0.0341	9.78
3	UPPER TALARIK	C	59.7	14.50	0.583	7.63	1.000	981.	213.3	0.2256	18.463	0.175		0.0341	9.78
4	UPPER TALARIK	C	56.5	14.65	0.577	7.63	1.000	983.	213.2	0.2063	18.462	0.283		0.0341	9.78
5	UPPER TALARIK	C	55.4	14.72	0.575	7.63	1.000	985.	213.2	0.1685	18.462	0.320		0.0341	9.78
6	UPPER TALARIK	C	51.9	14.83	0.571	7.63	1.000	987.	213.2	0.1700	18.458	0.441		0.0341	9.78
7	UPPER TALARIK	Q	51.6	14.83	0.571	7.63	1.000	987.	213.2	0.1700	18.458	0.449		0.1727	9.43
8	UPPER TALARIK	C	45.9	14.90	0.569	7.63	1.000	988.	213.2	0.1373	18.454	1.435		0.1727	9.43
9	UPPER TALARIK	B	45.0									1.584			
10	TRIBUTARY 135	H	46.4	14.90	0.569	7.63	1.000	988.	213.2	0.1940	18.453	0.134	13.51	0.0000	9.43
11	TRIBUTARY 135	T	45.0									0.134			
12	UPPER TALARIK	J	45.0	14.97	0.566	7.63	1.000	989.	213.2	0.1373	18.447	1.718		0.1718	9.43
13	UPPER TALARIK	Q	44.6	14.97	0.566	7.63	1.000	989.	213.2	0.1373	18.447	1.790		0.0136	8.19
14	UPPER TALARIK	C	38.4	15.09	0.563	7.63	1.000	991.	213.1	0.1177	18.438	1.875		0.0136	8.19
15	UPPER TALARIK	Q	37.6	15.09	0.563	7.63	1.000	991.	213.1	0.1177	18.438	1.885		0.0935	8.19
16	UPPER TALARIK	C	35.8	15.17	0.560	7.63	1.000	993.	213.1	0.0818	18.434	2.055		0.0935	8.19
17	UPPER TALARIK	C	32.9	15.23	0.558	7.63	1.000	994.	213.1	0.0954	18.432	2.324		0.0935	8.19
18	UPPER TALARIK	C	32.3	15.31	0.555	7.63	1.000	995.	213.1	0.0961	18.426	2.381		0.0935	8.19
19	UPPER TALARIK	Q	29.3	15.31	0.555	7.63	1.000	995.	213.1	0.0961	18.426	2.664		0.1079	6.80
20	UPPER TALARIK	C	27.1	15.40	0.553	7.63	1.000	997.	213.1	0.0732	18.421	2.897		0.1079	6.80
21	UPPER TALARIK	C	25.0	15.42	0.552	7.63	1.000	997.	213.1	0.0890	18.421	3.125		0.1079	6.80
22	UPPER TALARIK	B	24.7									3.157			
23	TRIBUTARY 119	H	25.1	15.41	0.552	7.63	1.000	997.	213.1	0.2343	18.421	0.640	6.28	0.0000	6.80
24	TRIBUTARY 119	T	24.7									0.640			
25	UPPER TALARIK	J	24.7	15.49	0.550	7.63	1.000	999.	213.1	0.0890	18.417	3.797		0.1092	6.80
26	UPPER TALARIK	Q	24.5	15.49	0.550	7.63	1.000	999.	213.1	0.0890	18.417	3.823		0.0527	6.80
27	UPPER TALARIK	C	20.8	15.60	0.546	7.63	1.000	1001.	213.1	0.0956	18.410	4.017		0.0527	6.80
28	UPPER TALARIK	C	18.8	15.71	0.543	7.63	1.000	1003.	213.1	0.0852	18.402	4.122		0.0527	6.80
29	UPPER TALARIK	C	14.6	15.88	0.537	7.63	1.000	1006.	213.0	0.0997	18.394	4.344		0.0527	6.80
30	UPPER TALARIK	Q	14.4	15.88	0.537	7.63	1.000	1006.	213.0	0.0997	18.394	4.357		-0.2652	6.80
31	UPPER TALARIK	Q	9.8	15.88	0.537	7.63	1.000	1006.	213.0	0.0997	18.394	3.160		0.3441	6.80
32	UPPER TALARIK	C	9.1	16.09	0.531	7.63	1.000	1010.	213.0	0.1090	18.381	3.409		0.3441	6.80
33	UPPER TALARIK	Q	2.2	16.09	0.531	7.63	1.000	1010.	213.0	0.1090	18.381	5.777		0.0879	6.80
34	UPPER TALARIK	E	0.0									5.974			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.29	0.931	3.96	1.000	975.	56.8	0.3062	18.466	0.062	4.22	0.0440	9.62
2	UPPER TALARIK	Q	60.0	7.29	0.931	3.96	1.000	975.	56.8	0.3062	18.466	0.168		0.0347	9.62
3	UPPER TALARIK	C	59.7	7.59	0.916	3.96	1.000	981.	56.7	0.2256	18.462	0.179		0.0347	9.62
4	UPPER TALARIK	C	56.5	7.74	0.907	3.96	1.000	983.	56.7	0.2063	18.460	0.289		0.0347	9.62
5	UPPER TALARIK	C	55.4	7.81	0.904	3.96	1.000	985.	56.7	0.1685	18.461	0.327		0.0347	9.62
6	UPPER TALARIK	C	51.9	7.92	0.898	3.96	1.000	987.	56.7	0.1700	18.457	0.450		0.0347	9.62
7	UPPER TALARIK	Q	51.6	7.92	0.898	3.96	1.000	987.	56.7	0.1700	18.457	0.458		0.1723	8.81
8	UPPER TALARIK	C	45.9	7.99	0.894	3.96	1.000	988.	56.7	0.1373	18.452	1.441		0.1723	8.81
9	UPPER TALARIK	B	45.0									1.590			
10	TRIBUTARY 135	H	46.4	7.99	0.894	3.96	1.000	988.	56.7	0.1940	18.452	0.134	10.47	0.0000	8.81
11	TRIBUTARY 135	T	45.0									0.134			
12	UPPER TALARIK	J	45.0	8.06	0.890	3.96	1.000	989.	56.7	0.1373	18.446	1.724		0.1718	8.81
13	UPPER TALARIK	Q	44.6	8.06	0.890	3.96	1.000	989.	56.7	0.1373	18.446	1.796		0.0126	8.50
14	UPPER TALARIK	C	38.4	8.18	0.885	3.96	1.000	991.	56.7	0.1177	18.437	1.875		0.0126	8.50
15	UPPER TALARIK	Q	37.6	8.18	0.885	3.96	1.000	991.	56.7	0.1177	18.437	1.884		0.0933	8.50
16	UPPER TALARIK	C	35.8	8.26	0.880	3.96	1.000	993.	56.7	0.0818	18.432	2.054		0.0933	8.50
17	UPPER TALARIK	C	32.9	8.32	0.877	3.96	1.000	994.	56.7	0.0954	18.430	2.322		0.0933	8.50
18	UPPER TALARIK	C	32.3	8.40	0.873	3.96	1.000	995.	56.7	0.0961	18.425	2.379		0.0933	8.50
19	UPPER TALARIK	Q	29.3	8.40	0.873	3.96	1.000	995.	56.7	0.0961	18.425	2.662		0.1076	7.12
20	UPPER TALARIK	C	27.1	8.49	0.868	3.96	1.000	997.	56.7	0.0732	18.420	2.894		0.1076	7.12
21	UPPER TALARIK	C	25.0	8.51	0.867	3.96	1.000	997.	56.7	0.0890	18.420	3.122		0.1076	7.12
22	UPPER TALARIK	B	24.7									3.154			
23	TRIBUTARY 119	H	25.1	8.50	0.868	3.96	1.000	997.	56.7	0.2343	18.420	0.643	4.93	0.0000	7.12
24	TRIBUTARY 119	T	24.7									0.643			
25	UPPER TALARIK	J	24.7	8.58	0.864	3.96	1.000	999.	56.7	0.0890	18.415	3.797		0.1092	7.12
26	UPPER TALARIK	Q	24.5	8.58	0.864	3.96	1.000	999.	56.7	0.0890	18.415	3.823		0.0527	7.12
27	UPPER TALARIK	C	20.8	8.69	0.859	3.96	1.000	1001.	56.7	0.0956	18.409	4.017		0.0527	7.12
28	UPPER TALARIK	C	18.8	8.80	0.853	3.96	1.000	1003.	56.7	0.0852	18.401	4.122		0.0527	7.12
29	UPPER TALARIK	C	14.6	8.97	0.845	3.96	1.000	1006.	56.7	0.0997	18.392	4.344		0.0527	7.12
30	UPPER TALARIK	Q	14.4	8.97	0.845	3.96	1.000	1006.	56.7	0.0997	18.392	4.357		-0.2652	7.12
31	UPPER TALARIK	Q	9.8	8.97	0.845	3.96	1.000	1006.	56.7	0.0997	18.392	3.160		0.3441	7.12
32	UPPER TALARIK	C	9.1	9.18	0.834	3.96	1.000	1010.	56.7	0.1090	18.379	3.409		0.3441	7.12
33	UPPER TALARIK	Q	2.2	9.18	0.834	3.96	1.000	1010.	56.7	0.1090	18.379	5.777		0.0879	7.12
34	UPPER TALARIK	E	0.0									5.974			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.86	0.931	13.07	1.000	975.	36.6	0.3062	18.462	0.098	4.42	0.0694	8.92
2	UPPER TALARIK	Q	60.0	6.86	0.931	13.07	1.000	975.	36.6	0.3062	18.462	0.265		0.0694	8.92
3	UPPER TALARIK	C	59.7	7.16	0.916	13.07	1.000	981.	36.6	0.2257	18.457	0.287		0.0694	8.92
4	UPPER TALARIK	C	56.5	7.31	0.907	13.07	1.000	983.	36.6	0.2063	18.456	0.507		0.0694	8.92
5	UPPER TALARIK	C	55.4	7.38	0.904	13.07	1.000	985.	36.6	0.1685	18.457	0.583		0.0694	8.92
6	UPPER TALARIK	C	51.9	7.49	0.898	13.07	1.000	987.	36.6	0.1701	18.453	0.829		0.0694	8.92
7	UPPER TALARIK	Q	51.6	7.49	0.898	13.07	1.000	987.	36.6	0.1701	18.453	0.845		0.2774	7.81
8	UPPER TALARIK	C	45.9	7.56	0.894	13.07	1.000	988.	36.6	0.1374	18.448	2.428		0.2774	7.81
9	UPPER TALARIK	B	45.0									2.668			
10	TRIBUTARY 135	H	46.4	7.56	0.894	13.07	1.000	988.	36.6	0.1940	18.447	0.215	8.00	0.0000	7.81
11	TRIBUTARY 135	T	45.0									0.215			
12	UPPER TALARIK	J	45.0	7.63	0.890	13.07	1.000	989.	36.6	0.1373	18.441	2.883		0.2769	7.81
13	UPPER TALARIK	Q	44.6	7.63	0.890	13.07	1.000	989.	36.6	0.1373	18.441	2.999		-0.0372	8.55
14	UPPER TALARIK	C	38.4	7.75	0.885	13.07	1.000	991.	36.6	0.1177	18.433	2.766		-0.0372	8.55
15	UPPER TALARIK	Q	37.6	7.75	0.885	13.07	1.000	991.	36.6	0.1177	18.433	2.739		0.1169	8.55
16	UPPER TALARIK	C	35.8	7.83	0.880	13.07	1.000	993.	36.6	0.0818	18.428	2.952		0.1169	8.55
17	UPPER TALARIK	C	32.9	7.89	0.877	13.07	1.000	994.	36.6	0.0954	18.426	3.288		0.1169	8.55
18	UPPER TALARIK	C	32.3	7.97	0.873	13.07	1.000	995.	36.6	0.0961	18.421	3.359		0.1169	8.55
19	UPPER TALARIK	Q	29.3	7.97	0.873	13.07	1.000	995.	36.6	0.0961	18.421	3.713		0.1350	7.22
20	UPPER TALARIK	C	27.1	8.06	0.868	13.07	1.000	997.	36.6	0.0732	18.416	4.005		0.1350	7.22
21	UPPER TALARIK	C	25.0	8.08	0.867	13.07	1.000	997.	36.6	0.0890	18.415	4.290		0.1350	7.22
22	UPPER TALARIK	B	24.7									4.330			
23	TRIBUTARY 119	H	25.1	8.07	0.868	13.07	1.000	997.	36.6	0.2343	18.416	0.707	4.76	0.0000	7.22
24	TRIBUTARY 119	T	24.7									0.707			
25	UPPER TALARIK	J	24.7	8.15	0.864	13.07	1.000	999.	36.6	0.0890	18.411	5.037		0.1345	7.22
26	UPPER TALARIK	Q	24.5	8.15	0.864	13.07	1.000	999.	36.6	0.0890	18.411	5.069		0.0723	7.22
27	UPPER TALARIK	C	20.8	8.26	0.859	13.07	1.000	1001.	36.6	0.0956	18.404	5.336		0.0723	7.22
28	UPPER TALARIK	C	18.8	8.37	0.853	13.07	1.000	1003.	36.6	0.0853	18.397	5.480		0.0723	7.22
29	UPPER TALARIK	C	14.6	8.54	0.845	13.07	1.000	1006.	36.6	0.0997	18.388	5.785		0.0723	7.22
30	UPPER TALARIK	Q	14.4	8.54	0.845	13.07	1.000	1006.	36.6	0.0997	18.388	5.802		-0.2568	7.22
31	UPPER TALARIK	Q	9.8	8.54	0.845	13.07	1.000	1006.	36.6	0.0997	18.388	4.643		0.3982	7.22
32	UPPER TALARIK	C	9.1	8.75	0.834	13.07	1.000	1010.	36.6	0.1090	18.375	4.932		0.3982	7.22
33	UPPER TALARIK	Q	2.2	8.75	0.834	13.07	1.000	1010.	36.6	0.1090	18.375	7.672		0.1170	7.22
34	UPPER TALARIK	E	0.0									7.934			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.24	0.847	10.21	1.000	975.	105.3	0.3063	18.455	0.116	4.50	0.0827	8.03
2	UPPER TALARIK	Q	60.0	7.24	0.847	10.21	1.000	975.	105.3	0.3063	18.455	0.315		0.0932	8.03
3	UPPER TALARIK	C	59.7	7.54	0.832	10.21	1.000	981.	105.3	0.2257	18.450	0.344		0.0932	8.03
4	UPPER TALARIK	C	56.5	7.69	0.825	10.21	1.000	983.	105.2	0.2063	18.449	0.640		0.0932	8.03
5	UPPER TALARIK	C	55.4	7.76	0.822	10.21	1.000	985.	105.2	0.1685	18.450	0.741		0.0932	8.03
6	UPPER TALARIK	C	51.9	7.87	0.816	10.21	1.000	987.	105.2	0.1701	18.445	1.071		0.0932	8.03
7	UPPER TALARIK	Q	51.6	7.87	0.816	10.21	1.000	987.	105.2	0.1701	18.445	1.093		0.4413	6.85
8	UPPER TALARIK	C	45.9	7.94	0.813	10.21	1.000	988.	105.2	0.1374	18.441	3.612		0.4413	6.85
9	UPPER TALARIK	B	45.0									3.993			
10	TRIBUTARY 135	H	46.4	7.94	0.813	10.21	1.000	988.	105.2	0.1940	18.440	0.343	7.04	0.0000	6.85
11	TRIBUTARY 135	T	45.0									0.343			
12	UPPER TALARIK	J	45.0	8.01	0.809	10.21	1.000	989.	105.2	0.1373	18.434	4.336		0.4391	6.85
13	UPPER TALARIK	Q	44.6	8.01	0.809	10.21	1.000	989.	105.2	0.1373	18.434	4.520		-0.0862	8.36
14	UPPER TALARIK	C	38.4	8.13	0.804	10.21	1.000	991.	105.2	0.1178	18.426	3.979		-0.0862	8.36
15	UPPER TALARIK	Q	37.6	8.13	0.804	10.21	1.000	991.	105.2	0.1178	18.426	3.918		0.1552	8.36
16	UPPER TALARIK	C	35.8	8.21	0.800	10.21	1.000	993.	105.2	0.0818	18.421	4.201		0.1552	8.36
17	UPPER TALARIK	C	32.9	8.27	0.797	10.21	1.000	994.	105.2	0.0954	18.419	4.647		0.1552	8.36
18	UPPER TALARIK	C	32.3	8.35	0.794	10.21	1.000	995.	105.2	0.0962	18.414	4.742		0.1552	8.36
19	UPPER TALARIK	Q	29.3	8.35	0.794	10.21	1.000	995.	105.2	0.0962	18.414	5.212		0.1794	7.12
20	UPPER TALARIK	C	27.1	8.44	0.789	10.21	1.000	997.	105.2	0.0732	18.409	5.599		0.1794	7.12
21	UPPER TALARIK	C	25.0	8.46	0.788	10.21	1.000	997.	105.2	0.0890	18.408	5.979		0.1794	7.12
22	UPPER TALARIK	B	24.7									6.032			
23	TRIBUTARY 119	H	25.1	8.45	0.789	10.21	1.000	997.	105.2	0.2344	18.408	0.693	4.91	0.0000	7.12
24	TRIBUTARY 119	T	24.7									0.693			
25	UPPER TALARIK	J	24.7	8.53	0.785	10.21	1.000	999.	105.2	0.0890	18.404	6.725		0.1807	7.12
26	UPPER TALARIK	Q	24.5	8.53	0.785	10.21	1.000	999.	105.2	0.0890	18.404	6.768		0.0999	7.12
27	UPPER TALARIK	C	20.8	8.64	0.780	10.21	1.000	1001.	105.2	0.0957	18.397	7.136		0.0999	7.12
28	UPPER TALARIK	C	18.8	8.75	0.776	10.21	1.000	1003.	105.2	0.0853	18.390	7.336		0.0999	7.12
29	UPPER TALARIK	C	14.6	8.92	0.768	10.21	1.000	1006.	105.1	0.0997	18.381	7.757		0.0999	7.12
30	UPPER TALARIK	Q	14.4	8.92	0.768	10.21	1.000	1006.	105.1	0.0997	18.381	7.781		-0.1981	7.12
31	UPPER TALARIK	Q	9.8	8.92	0.768	10.21	1.000	1006.	105.1	0.0997	18.381	6.887		0.4433	7.12
32	UPPER TALARIK	C	9.1	9.13	0.758	10.21	1.000	1010.	105.1	0.1090	18.368	7.208		0.4433	7.12
33	UPPER TALARIK	Q	2.2	9.13	0.758	10.21	1.000	1010.	105.1	0.1090	18.368	10.259		0.1567	7.12
34	UPPER TALARIK	E	0.0									10.610			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.65	0.809	9.73	1.000	975.	123.6	0.3064	18.445	0.082	4.14	0.0586	7.32
2	UPPER TALARIK	Q	60.0	7.65	0.809	9.73	1.000	975.	123.6	0.3064	18.445	0.223		0.0548	7.32
3	UPPER TALARIK	C	59.7	7.95	0.795	9.73	1.000	981.	123.6	0.2258	18.440	0.240		0.0548	7.32
4	UPPER TALARIK	C	56.5	8.10	0.788	9.73	1.000	983.	123.5	0.2064	18.439	0.414		0.0548	7.32
5	UPPER TALARIK	C	55.4	8.17	0.785	9.73	1.000	985.	123.5	0.1685	18.440	0.474		0.0548	7.32
6	UPPER TALARIK	C	51.9	8.28	0.780	9.73	1.000	987.	123.5	0.1702	18.435	0.668		0.0548	7.32
7	UPPER TALARIK	Q	51.6	8.28	0.780	9.73	1.000	987.	123.5	0.1702	18.435	0.681		0.3222	6.22
8	UPPER TALARIK	C	45.9	8.35	0.777	9.73	1.000	988.	123.5	0.1374	18.431	2.520		0.3222	6.22
9	UPPER TALARIK	B	45.0									2.798			
10	TRIBUTARY 135	H	46.4	8.35	0.777	9.73	1.000	988.	123.5	0.1941	18.430	0.250	7.79	0.0000	6.22
11	TRIBUTARY 135	T	45.0									0.250			
12	UPPER TALARIK	J	45.0	8.42	0.773	9.73	1.000	989.	123.5	0.1374	18.424	3.048		0.3222	6.22
13	UPPER TALARIK	Q	44.6	8.42	0.773	9.73	1.000	989.	123.5	0.1374	18.424	3.183		-0.0374	8.01
14	UPPER TALARIK	C	38.4	8.54	0.768	9.73	1.000	991.	123.5	0.1178	18.416	2.949		-0.0374	8.01
15	UPPER TALARIK	Q	37.6	8.54	0.768	9.73	1.000	991.	123.5	0.1178	18.416	2.922		0.1272	8.01
16	UPPER TALARIK	C	35.8	8.62	0.765	9.73	1.000	993.	123.5	0.0818	18.411	3.154		0.1272	8.01
17	UPPER TALARIK	C	32.9	8.68	0.762	9.73	1.000	994.	123.5	0.0954	18.409	3.519		0.1272	8.01
18	UPPER TALARIK	C	32.3	8.76	0.758	9.73	1.000	995.	123.5	0.0962	18.404	3.597		0.1272	8.01
19	UPPER TALARIK	Q	29.3	8.76	0.758	9.73	1.000	995.	123.5	0.0962	18.404	3.982		0.1468	6.85
20	UPPER TALARIK	C	27.1	8.85	0.754	9.73	1.000	997.	123.5	0.0731	18.399	4.299		0.1468	6.85
21	UPPER TALARIK	C	25.0	8.87	0.753	9.73	1.000	997.	123.5	0.0891	18.398	4.609		0.1468	6.85
22	UPPER TALARIK	B	24.7									4.653			
23	TRIBUTARY 119	H	25.1	8.86	0.754	9.73	1.000	997.	123.5	0.2344	18.399	0.664	5.06	0.0000	6.85
24	TRIBUTARY 119	T	24.7									0.664			
25	UPPER TALARIK	J	24.7	8.94	0.750	9.73	1.000	999.	123.5	0.0891	18.394	5.317		0.1471	6.85
26	UPPER TALARIK	Q	24.5	8.94	0.750	9.73	1.000	999.	123.5	0.0891	18.394	5.352		0.0768	6.85
27	UPPER TALARIK	C	20.8	9.05	0.746	9.73	1.000	1001.	123.5	0.0957	18.387	5.635		0.0768	6.85
28	UPPER TALARIK	C	18.8	9.16	0.741	9.73	1.000	1003.	123.4	0.0853	18.380	5.789		0.0768	6.85
29	UPPER TALARIK	C	14.6	9.33	0.734	9.73	1.000	1006.	123.4	0.0997	18.371	6.113		0.0768	6.85
30	UPPER TALARIK	Q	14.4	9.33	0.734	9.73	1.000	1006.	123.4	0.0997	18.371	6.131		-0.2506	6.85
31	UPPER TALARIK	Q	9.8	9.33	0.734	9.73	1.000	1006.	123.4	0.0997	18.371	5.000		0.4080	6.85
32	UPPER TALARIK	C	9.1	9.54	0.725	9.73	1.000	1010.	123.4	0.1090	18.358	5.296		0.4080	6.85
33	UPPER TALARIK	Q	2.2	9.54	0.725	9.73	1.000	1010.	123.4	0.1090	18.358	8.103		0.1237	6.85
34	UPPER TALARIK	E	0.0									8.380			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.05	0.687	5.23	1.000	975.	264.6	0.3065	18.432	0.071	3.42	0.0511	7.01
2	UPPER TALARIK	Q	60.0	10.05	0.687	5.23	1.000	975.	264.6	0.3065	18.432	0.194		0.0426	7.01
3	UPPER TALARIK	C	59.7	10.35	0.675	5.23	1.000	981.	264.5	0.2258	18.427	0.207		0.0426	7.01
4	UPPER TALARIK	C	56.5	10.50	0.669	5.23	1.000	983.	264.5	0.2064	18.426	0.343		0.0426	7.01
5	UPPER TALARIK	C	55.4	10.57	0.666	5.23	1.000	985.	264.4	0.1685	18.427	0.389		0.0426	7.01
6	UPPER TALARIK	C	51.9	10.68	0.662	5.23	1.000	987.	264.4	0.1702	18.423	0.540		0.0426	7.01
7	UPPER TALARIK	Q	51.6	10.68	0.662	5.23	1.000	987.	264.4	0.1702	18.423	0.550		0.2219	6.02
8	UPPER TALARIK	C	45.9	10.75	0.659	5.23	1.000	988.	264.4	0.1375	18.418	1.816		0.2219	6.02
9	UPPER TALARIK	B	45.0									2.008			
10	TRIBUTARY 135	H	46.4	10.75	0.659	5.23	1.000	988.	264.4	0.1941	18.418	0.172	8.98	0.0000	6.02
11	TRIBUTARY 135	T	45.0									0.172			
12	UPPER TALARIK	J	45.0	10.82	0.656	5.23	1.000	989.	264.4	0.1374	18.412	2.180		0.2220	6.02
13	UPPER TALARIK	Q	44.6	10.82	0.656	5.23	1.000	989.	264.4	0.1374	18.412	2.273		0.0180	7.59
14	UPPER TALARIK	C	38.4	10.94	0.652	5.23	1.000	991.	264.4	0.1178	18.403	2.386		0.0180	7.59
15	UPPER TALARIK	Q	37.6	10.94	0.652	5.23	1.000	991.	264.4	0.1178	18.403	2.399		0.1058	7.59
16	UPPER TALARIK	C	35.8	11.02	0.649	5.23	1.000	993.	264.4	0.0818	18.398	2.592		0.1058	7.59
17	UPPER TALARIK	C	32.9	11.08	0.647	5.23	1.000	994.	264.4	0.0955	18.396	2.896		0.1058	7.59
18	UPPER TALARIK	C	32.3	11.16	0.644	5.23	1.000	995.	264.3	0.0962	18.391	2.960		0.1058	7.59
19	UPPER TALARIK	Q	29.3	11.16	0.644	5.23	1.000	995.	264.3	0.0962	18.391	3.281		0.1223	6.51
20	UPPER TALARIK	C	27.1	11.25	0.640	5.23	1.000	997.	264.3	0.0731	18.386	3.545		0.1223	6.51
21	UPPER TALARIK	C	25.0	11.27	0.639	5.23	1.000	997.	264.3	0.0891	18.386	3.804		0.1223	6.51
22	UPPER TALARIK	B	24.7									3.840			
23	TRIBUTARY 119	H	25.1	11.26	0.640	5.23	1.000	997.	264.3	0.2345	18.386	0.662	5.34	0.0000	6.51
24	TRIBUTARY 119	T	24.7									0.662			
25	UPPER TALARIK	J	24.7	11.34	0.637	5.23	1.000	999.	264.3	0.0891	18.381	4.502		0.1218	6.51
26	UPPER TALARIK	Q	24.5	11.34	0.637	5.23	1.000	999.	264.3	0.0891	18.381	4.531		0.0637	6.51
27	UPPER TALARIK	C	20.8	11.45	0.633	5.23	1.000	1001.	264.3	0.0958	18.375	4.766		0.0637	6.51
28	UPPER TALARIK	C	18.8	11.56	0.629	5.23	1.000	1003.	264.3	0.0854	18.367	4.893		0.0637	6.51
29	UPPER TALARIK	C	14.6	11.73	0.623	5.23	1.000	1006.	264.2	0.0997	18.359	5.162		0.0637	6.51
30	UPPER TALARIK	Q	14.4	11.73	0.623	5.23	1.000	1006.	264.2	0.0997	18.359	5.177		-0.2643	6.51
31	UPPER TALARIK	Q	9.8	11.73	0.623	5.23	1.000	1006.	264.2	0.0997	18.359	3.984		0.3772	6.51
32	UPPER TALARIK	C	9.1	11.94	0.615	5.23	1.000	1010.	264.2	0.1091	18.346	4.257		0.3772	6.51
33	UPPER TALARIK	Q	2.2	11.94	0.615	5.23	1.000	1010.	264.2	0.1091	18.346	6.853		0.1045	6.51
34	UPPER TALARIK	E	0.0									7.087			

YEAR: 2007 TIME PERIOD: 27-Jun PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.57	0.649	4.12	1.000	975.	262.8	0.3066	18.417	0.066	3.45	0.0474	7.23
2	UPPER TALARIK	Q	60.0	12.57	0.649	4.12	1.000	975.	262.8	0.3066	18.417	0.180		0.0369	7.23
3	UPPER TALARIK	C	59.7	12.87	0.638	4.12	1.000	981.	262.7	0.2259	18.412	0.192		0.0369	7.23
4	UPPER TALARIK	C	56.5	13.02	0.632	4.12	1.000	983.	262.6	0.2065	18.411	0.309		0.0369	7.23
5	UPPER TALARIK	C	55.4	13.09	0.630	4.12	1.000	985.	262.6	0.1685	18.411	0.349		0.0369	7.23
6	UPPER TALARIK	C	51.9	13.20	0.626	4.12	1.000	987.	262.6	0.1703	18.407	0.479		0.0369	7.23
7	UPPER TALARIK	Q	51.6	13.20	0.626	4.12	1.000	987.	262.6	0.1703	18.407	0.488		0.1905	6.23
8	UPPER TALARIK	C	45.9	13.27	0.623	4.12	1.000	988.	262.6	0.1375	18.402	1.575		0.1905	6.23
9	UPPER TALARIK	B	45.0									1.740			
10	TRIBUTARY 135	H	46.4	13.27	0.623	4.12	1.000	988.	262.6	0.1942	18.402	0.148	10.83	0.0000	6.23
11	TRIBUTARY 135	T	45.0									0.148			
12	UPPER TALARIK	J	45.0	13.34	0.620	4.12	1.000	989.	262.6	0.1375	18.396	1.888		0.1909	6.23
13	UPPER TALARIK	Q	44.6	13.34	0.620	4.12	1.000	989.	262.6	0.1375	18.396	1.968		0.0236	7.24
14	UPPER TALARIK	C	38.4	13.46	0.616	4.12	1.000	991.	262.5	0.1179	18.387	2.116		0.0236	7.24
15	UPPER TALARIK	Q	37.6	13.46	0.616	4.12	1.000	991.	262.5	0.1179	18.387	2.133		0.0737	7.24
16	UPPER TALARIK	C	35.8	13.54	0.613	4.12	1.000	993.	262.5	0.0817	18.383	2.267		0.0737	7.24
17	UPPER TALARIK	C	32.9	13.60	0.611	4.12	1.000	994.	262.5	0.0955	18.381	2.479		0.0737	7.24
18	UPPER TALARIK	C	32.3	13.68	0.608	4.12	1.000	995.	262.5	0.0963	18.376	2.524		0.0737	7.24
19	UPPER TALARIK	Q	29.3	13.68	0.608	4.12	1.000	995.	262.5	0.0963	18.376	2.747		0.0853	6.16
20	UPPER TALARIK	C	27.1	13.77	0.605	4.12	1.000	997.	262.5	0.0731	18.371	2.931		0.0853	6.16
21	UPPER TALARIK	C	25.0	13.79	0.604	4.12	1.000	997.	262.5	0.0892	18.370	3.112		0.0853	6.16
22	UPPER TALARIK	B	24.7									3.137			
23	TRIBUTARY 119	H	25.1	13.78	0.605	4.12	1.000	997.	262.5	0.2345	18.371	0.666	5.64	0.0000	6.16
24	TRIBUTARY 119	T	24.7									0.666			
25	UPPER TALARIK	J	24.7	13.86	0.602	4.12	1.000	999.	262.5	0.0892	18.366	3.803		0.0840	6.16
26	UPPER TALARIK	Q	24.5	13.86	0.602	4.12	1.000	999.	262.5	0.0892	18.366	3.823		0.0527	6.16
27	UPPER TALARIK	C	20.8	13.97	0.598	4.12	1.000	1001.	262.4	0.0958	18.359	4.017		0.0527	6.16
28	UPPER TALARIK	C	18.8	14.08	0.594	4.12	1.000	1003.	262.4	0.0854	18.352	4.122		0.0527	6.16
29	UPPER TALARIK	C	14.6	14.25	0.589	4.12	1.000	1006.	262.4	0.0998	18.343	4.344		0.0527	6.16
30	UPPER TALARIK	Q	14.4	14.25	0.589	4.12	1.000	1006.	262.4	0.0998	18.343	4.357		-0.2652	6.16
31	UPPER TALARIK	Q	9.8	14.25	0.589	4.12	1.000	1006.	262.4	0.0998	18.343	3.160		0.3441	6.16
32	UPPER TALARIK	C	9.1	14.46	0.581	4.12	1.000	1010.	262.4	0.1091	18.331	3.409		0.3441	6.16
33	UPPER TALARIK	Q	2.2	14.46	0.581	4.12	1.000	1010.	262.4	0.1091	18.331	5.777		0.0879	6.16
34	UPPER TALARIK	E	0.0									5.974			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.55	0.837	3.48	1.000	975.	86.1	0.3067	18.398	0.065	3.85	0.0465	7.71
2	UPPER TALARIK	Q	60.0	9.55	0.837	3.48	1.000	975.	86.1	0.3067	18.398	0.177		0.0351	7.71
3	UPPER TALARIK	C	59.7	9.85	0.823	3.48	1.000	981.	86.0	0.2260	18.393	0.188		0.0351	7.71
4	UPPER TALARIK	C	56.5	10.00	0.816	3.48	1.000	983.	86.0	0.2066	18.392	0.299		0.0351	7.71
5	UPPER TALARIK	C	55.4	10.07	0.812	3.48	1.000	985.	86.0	0.1685	18.393	0.338		0.0351	7.71
6	UPPER TALARIK	C	51.9	10.18	0.807	3.48	1.000	987.	86.0	0.1704	18.389	0.462		0.0351	7.71
7	UPPER TALARIK	Q	51.6	10.18	0.807	3.48	1.000	987.	86.0	0.1704	18.389	0.470		0.1782	6.64
8	UPPER TALARIK	C	45.9	10.25	0.804	3.48	1.000	988.	86.0	0.1376	18.384	1.487		0.1782	6.64
9	UPPER TALARIK	B	45.0									1.641			
10	TRIBUTARY 135	H	46.4	10.25	0.804	3.48	1.000	988.	86.0	0.1942	18.384	0.138	10.51	0.0000	6.64
11	TRIBUTARY 135	T	45.0									0.138			
12	UPPER TALARIK	J	45.0	10.32	0.800	3.48	1.000	989.	86.0	0.1376	18.378	1.779		0.1790	6.64
13	UPPER TALARIK	Q	44.6	10.32	0.800	3.48	1.000	989.	86.0	0.1376	18.378	1.854		0.0239	6.99
14	UPPER TALARIK	C	38.4	10.44	0.795	3.48	1.000	991.	86.0	0.1180	18.369	2.004		0.0239	6.99
15	UPPER TALARIK	Q	37.6	10.44	0.795	3.48	1.000	991.	86.0	0.1180	18.369	2.021		0.0713	6.99
16	UPPER TALARIK	C	35.8	10.52	0.791	3.48	1.000	993.	86.0	0.0817	18.365	2.151		0.0713	6.99
17	UPPER TALARIK	C	32.9	10.58	0.789	3.48	1.000	994.	86.0	0.0955	18.363	2.356		0.0713	6.99
18	UPPER TALARIK	C	32.3	10.66	0.785	3.48	1.000	995.	86.0	0.0963	18.357	2.399		0.0713	6.99
19	UPPER TALARIK	Q	29.3	10.66	0.785	3.48	1.000	995.	86.0	0.0963	18.357	2.615		0.0823	5.81
20	UPPER TALARIK	C	27.1	10.75	0.781	3.48	1.000	997.	86.0	0.0731	18.353	2.793		0.0823	5.81
21	UPPER TALARIK	C	25.0	10.77	0.780	3.48	1.000	997.	86.0	0.0892	18.352	2.966		0.0823	5.81
22	UPPER TALARIK	B	24.7									2.991			
23	TRIBUTARY 119	H	25.1	10.76	0.780	3.48	1.000	997.	86.0	0.2346	18.352	0.670	5.15	0.0000	5.81
24	TRIBUTARY 119	T	24.7									0.670			
25	UPPER TALARIK	J	24.7	10.84	0.776	3.48	1.000	999.	86.0	0.0892	18.348	3.661		0.0840	5.81
26	UPPER TALARIK	Q	24.5	10.84	0.776	3.48	1.000	999.	86.0	0.0892	18.348	3.681		0.0505	5.81
27	UPPER TALARIK	C	20.8	10.95	0.772	3.48	1.000	1001.	86.0	0.0959	18.341	3.867		0.0505	5.81
28	UPPER TALARIK	C	18.8	11.06	0.767	3.48	1.000	1003.	85.9	0.0855	18.334	3.968		0.0505	5.81
29	UPPER TALARIK	C	14.6	11.23	0.759	3.48	1.000	1006.	85.9	0.0998	18.325	4.181		0.0505	5.81
30	UPPER TALARIK	Q	14.4	11.23	0.759	3.48	1.000	1006.	85.9	0.0998	18.325	4.193		-0.2641	5.81
31	UPPER TALARIK	Q	9.8	11.23	0.759	3.48	1.000	1006.	85.9	0.0998	18.325	3.001		0.3367	5.81
32	UPPER TALARIK	C	9.1	11.44	0.750	3.48	1.000	1010.	85.9	0.1092	18.313	3.245		0.3367	5.81
33	UPPER TALARIK	Q	2.2	11.44	0.750	3.48	1.000	1010.	85.9	0.1092	18.313	5.562		0.0844	5.81
34	UPPER TALARIK	E	0.0									5.751			

YEAR: 2007 TIME PERIOD: 29-Jun

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.56	0.696	4.27	1.000	975.	284.7	0.3069	18.377	0.064	3.63	0.0457	8.14
2	UPPER TALARIK	Q	60.0	11.56	0.696	4.27	1.000	975.	284.7	0.3069	18.377	0.174		0.0333	8.14
3	UPPER TALARIK	C	59.7	11.86	0.684	4.27	1.000	981.	284.6	0.2261	18.372	0.184		0.0333	8.14
4	UPPER TALARIK	C	56.5	12.01	0.678	4.27	1.000	983.	284.6	0.2067	18.371	0.290		0.0333	8.14
5	UPPER TALARIK	C	55.4	12.08	0.675	4.27	1.000	985.	284.6	0.1686	18.372	0.326		0.0333	8.14
6	UPPER TALARIK	C	51.9	12.19	0.671	4.27	1.000	987.	284.5	0.1705	18.368	0.444		0.0333	8.14
7	UPPER TALARIK	Q	51.6	12.19	0.671	4.27	1.000	987.	284.5	0.1705	18.368	0.452		0.1715	7.03
8	UPPER TALARIK	C	45.9	12.26	0.668	4.27	1.000	988.	284.5	0.1377	18.363	1.431		0.1715	7.03
9	UPPER TALARIK	B	45.0									1.579			
10	TRIBUTARY 135	H	46.4	12.26	0.668	4.27	1.000	988.	284.5	0.1943	18.363	0.133	11.24	0.0000	7.03
11	TRIBUTARY 135	T	45.0									0.133			
12	UPPER TALARIK	J	45.0	12.33	0.665	4.27	1.000	989.	284.5	0.1376	18.357	1.712		0.1718	7.03
13	UPPER TALARIK	Q	44.6	12.33	0.665	4.27	1.000	989.	284.5	0.1376	18.357	1.784		0.0260	6.82
14	UPPER TALARIK	C	38.4	12.45	0.661	4.27	1.000	991.	284.5	0.1181	18.348	1.947		0.0260	6.82
15	UPPER TALARIK	Q	37.6	12.45	0.661	4.27	1.000	991.	284.5	0.1181	18.348	1.966		0.0669	6.82
16	UPPER TALARIK	C	35.8	12.53	0.658	4.27	1.000	993.	284.5	0.0817	18.344	2.088		0.0669	6.82
17	UPPER TALARIK	C	32.9	12.59	0.656	4.27	1.000	994.	284.5	0.0956	18.342	2.280		0.0669	6.82
18	UPPER TALARIK	C	32.3	12.67	0.653	4.27	1.000	995.	284.4	0.0964	18.337	2.321		0.0669	6.82
19	UPPER TALARIK	Q	29.3	12.67	0.653	4.27	1.000	995.	284.4	0.0964	18.337	2.524		0.0774	5.36
20	UPPER TALARIK	C	27.1	12.76	0.649	4.27	1.000	997.	284.4	0.0730	18.332	2.691		0.0774	5.36
21	UPPER TALARIK	C	25.0	12.78	0.648	4.27	1.000	997.	284.4	0.0893	18.331	2.855		0.0774	5.36
22	UPPER TALARIK	B	24.7									2.878			
23	TRIBUTARY 119	H	25.1	12.77	0.649	4.27	1.000	997.	284.4	0.2347	18.331	0.672	5.64	0.0000	5.36
24	TRIBUTARY 119	T	24.7									0.672			
25	UPPER TALARIK	J	24.7	12.85	0.646	4.27	1.000	999.	284.4	0.0893	18.327	3.550		0.0756	5.36
26	UPPER TALARIK	Q	24.5	12.85	0.646	4.27	1.000	999.	284.4	0.0893	18.327	3.568		0.0487	5.36
27	UPPER TALARIK	C	20.8	12.96	0.642	4.27	1.000	1001.	284.4	0.0960	18.320	3.748		0.0487	5.36
28	UPPER TALARIK	C	18.8	13.07	0.638	4.27	1.000	1003.	284.4	0.0855	18.313	3.845		0.0487	5.36
29	UPPER TALARIK	C	14.6	13.24	0.631	4.27	1.000	1006.	284.3	0.0998	18.304	4.050		0.0487	5.36
30	UPPER TALARIK	Q	14.4	13.24	0.631	4.27	1.000	1006.	284.3	0.0998	18.304	4.062		-0.2628	5.36
31	UPPER TALARIK	Q	9.8	13.24	0.631	4.27	1.000	1006.	284.3	0.0998	18.304	2.876		0.3305	5.36
32	UPPER TALARIK	C	9.1	13.45	0.623	4.27	1.000	1010.	284.3	0.1092	18.292	3.116		0.3305	5.36
33	UPPER TALARIK	Q	2.2	13.45	0.623	4.27	1.000	1010.	284.3	0.1092	18.292	5.390		0.0817	5.36
34	UPPER TALARIK	E	0.0									5.573			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.24	0.837	3.48	1.000	975.	165.7	0.3070	18.353	0.063	3.59	0.0449	8.51
2	UPPER TALARIK	Q	60.0	10.24	0.837	3.48	1.000	975.	165.7	0.3070	18.353	0.171		0.0311	8.51
3	UPPER TALARIK	C	59.7	10.54	0.823	3.48	1.000	981.	165.7	0.2263	18.349	0.181		0.0311	8.51
4	UPPER TALARIK	C	56.5	10.69	0.816	3.48	1.000	983.	165.6	0.2068	18.347	0.280		0.0311	8.51
5	UPPER TALARIK	C	55.4	10.76	0.812	3.48	1.000	985.	165.6	0.1686	18.348	0.314		0.0311	8.51
6	UPPER TALARIK	C	51.9	10.87	0.807	3.48	1.000	987.	165.6	0.1706	18.344	0.424		0.0311	8.51
7	UPPER TALARIK	Q	51.6	10.87	0.807	3.48	1.000	987.	165.6	0.1706	18.344	0.431		0.1602	7.34
8	UPPER TALARIK	C	45.9	10.94	0.804	3.48	1.000	988.	165.6	0.1378	18.339	1.346		0.1602	7.34
9	UPPER TALARIK	B	45.0									1.484			
10	TRIBUTARY 135	H	46.4	10.94	0.804	3.48	1.000	988.	165.6	0.1944	18.339	0.124	11.62	0.0000	7.34
11	TRIBUTARY 135	T	45.0									0.124			
12	UPPER TALARIK	J	45.0	11.01	0.800	3.48	1.000	989.	165.6	0.1377	18.333	1.608		0.1599	7.34
13	UPPER TALARIK	Q	44.6	11.01	0.800	3.48	1.000	989.	165.6	0.1377	18.333	1.675		0.0269	6.75
14	UPPER TALARIK	C	38.4	11.13	0.795	3.48	1.000	991.	165.6	0.1182	18.325	1.844		0.0269	6.75
15	UPPER TALARIK	Q	37.6	11.13	0.795	3.48	1.000	991.	165.6	0.1182	18.325	1.863		0.0665	6.75
16	UPPER TALARIK	C	35.8	11.21	0.791	3.48	1.000	993.	165.6	0.0817	18.320	1.984		0.0665	6.75
17	UPPER TALARIK	C	32.9	11.27	0.789	3.48	1.000	994.	165.5	0.0956	18.318	2.175		0.0665	6.75
18	UPPER TALARIK	C	32.3	11.35	0.785	3.48	1.000	995.	165.5	0.0965	18.313	2.216		0.0665	6.75
19	UPPER TALARIK	Q	29.3	11.35	0.785	3.48	1.000	995.	165.5	0.0965	18.313	2.417		0.0770	4.88
20	UPPER TALARIK	C	27.1	11.44	0.781	3.48	1.000	997.	165.5	0.0730	18.308	2.583		0.0770	4.88
21	UPPER TALARIK	C	25.0	11.46	0.780	3.48	1.000	997.	165.5	0.0893	18.308	2.746		0.0770	4.88
22	UPPER TALARIK	B	24.7									2.769			
23	TRIBUTARY 119	H	25.1	11.45	0.780	3.48	1.000	997.	165.5	0.2348	18.308	0.668	5.31	0.0000	4.88
24	TRIBUTARY 119	T	24.7									0.668			
25	UPPER TALARIK	J	24.7	11.53	0.776	3.48	1.000	999.	165.5	0.0893	18.304	3.437		0.0756	4.88
26	UPPER TALARIK	Q	24.5	11.53	0.776	3.48	1.000	999.	165.5	0.0893	18.304	3.455		0.0469	4.88
27	UPPER TALARIK	C	20.8	11.64	0.772	3.48	1.000	1001.	165.5	0.0961	18.297	3.628		0.0469	4.88
28	UPPER TALARIK	C	18.8	11.75	0.767	3.48	1.000	1003.	165.5	0.0856	18.290	3.722		0.0469	4.88
29	UPPER TALARIK	C	14.6	11.92	0.759	3.48	1.000	1006.	165.5	0.0999	18.281	3.920		0.0469	4.88
30	UPPER TALARIK	Q	14.4	11.92	0.759	3.48	1.000	1006.	165.5	0.0999	18.281	3.931		-0.2612	4.88
31	UPPER TALARIK	Q	9.8	11.92	0.759	3.48	1.000	1006.	165.5	0.0999	18.281	2.752		0.3242	4.88
32	UPPER TALARIK	C	9.1	12.13	0.750	3.48	1.000	1010.	165.4	0.1093	18.269	2.987		0.3242	4.88
33	UPPER TALARIK	Q	2.2	12.13	0.750	3.48	1.000	1010.	165.4	0.1093	18.269	5.218		0.0790	4.88
34	UPPER TALARIK	E	0.0									5.395			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.44	0.771	3.71	1.000	975.	139.2	0.3072	18.327	0.062	3.47	0.0445	8.76
2	UPPER TALARIK	Q	60.0	11.44	0.771	3.71	1.000	975.	139.2	0.3072	18.327	0.169		0.0303	8.76
3	UPPER TALARIK	C	59.7	11.74	0.758	3.71	1.000	981.	139.1	0.2264	18.322	0.179		0.0303	8.76
4	UPPER TALARIK	C	56.5	11.89	0.751	3.71	1.000	983.	139.1	0.2069	18.321	0.275		0.0303	8.76
5	UPPER TALARIK	C	55.4	11.96	0.749	3.71	1.000	985.	139.1	0.1686	18.321	0.308		0.0303	8.76
6	UPPER TALARIK	C	51.9	12.07	0.744	3.71	1.000	987.	139.1	0.1708	18.318	0.415		0.0303	8.76
7	UPPER TALARIK	Q	51.6	12.07	0.744	3.71	1.000	987.	139.1	0.1708	18.318	0.422		0.1555	7.54
8	UPPER TALARIK	C	45.9	12.14	0.741	3.71	1.000	988.	139.0	0.1379	18.313	1.310		0.1555	7.54
9	UPPER TALARIK	B	45.0									1.444			
10	TRIBUTARY 135	H	46.4	12.14	0.740	3.71	1.000	988.	139.0	0.1944	18.313	0.121	10.89	0.0000	7.54
11	TRIBUTARY 135	T	45.0									0.121			
12	UPPER TALARIK	J	45.0	12.21	0.737	3.71	1.000	989.	139.0	0.1378	18.307	1.565		0.1551	7.54
13	UPPER TALARIK	Q	44.6	12.21	0.737	3.71	1.000	989.	139.0	0.1378	18.307	1.630		0.0273	6.77
14	UPPER TALARIK	C	38.4	12.33	0.733	3.71	1.000	991.	139.0	0.1183	18.298	1.802		0.0273	6.77
15	UPPER TALARIK	Q	37.6	12.33	0.733	3.71	1.000	991.	139.0	0.1183	18.298	1.821		0.0635	6.77
16	UPPER TALARIK	C	35.8	12.41	0.729	3.71	1.000	993.	139.0	0.0817	18.294	1.937		0.0635	6.77
17	UPPER TALARIK	C	32.9	12.47	0.726	3.71	1.000	994.	139.0	0.0957	18.292	2.119		0.0635	6.77
18	UPPER TALARIK	C	32.3	12.55	0.723	3.71	1.000	995.	139.0	0.0966	18.287	2.158		0.0635	6.77
19	UPPER TALARIK	Q	29.3	12.55	0.723	3.71	1.000	995.	139.0	0.0966	18.287	2.350		0.0735	4.40
20	UPPER TALARIK	C	27.1	12.64	0.719	3.71	1.000	997.	139.0	0.0729	18.282	2.509		0.0735	4.40
21	UPPER TALARIK	C	25.0	12.66	0.718	3.71	1.000	997.	139.0	0.0894	18.282	2.664		0.0735	4.40
22	UPPER TALARIK	B	24.7									2.686			
23	TRIBUTARY 119	H	25.1	12.65	0.719	3.71	1.000	997.	139.0	0.2349	18.282	0.667	5.13	0.0000	4.40
24	TRIBUTARY 119	T	24.7									0.667			
25	UPPER TALARIK	J	24.7	12.73	0.715	3.71	1.000	999.	139.0	0.0894	18.277	3.353		0.0714	4.40
26	UPPER TALARIK	Q	24.5	12.73	0.715	3.71	1.000	999.	139.0	0.0894	18.277	3.370		0.0457	4.40
27	UPPER TALARIK	C	20.8	12.84	0.711	3.71	1.000	1001.	139.0	0.0962	18.271	3.538		0.0457	4.40
28	UPPER TALARIK	C	18.8	12.95	0.706	3.71	1.000	1003.	139.0	0.0857	18.263	3.630		0.0457	4.40
29	UPPER TALARIK	C	14.6	13.12	0.699	3.71	1.000	1006.	139.0	0.0999	18.255	3.822		0.0457	4.40
30	UPPER TALARIK	Q	14.4	13.12	0.699	3.71	1.000	1006.	139.0	0.0999	18.255	3.833		-0.2599	4.40
31	UPPER TALARIK	Q	9.8	13.12	0.699	3.71	1.000	1006.	139.0	0.0999	18.255	2.660		0.3194	4.40
32	UPPER TALARIK	C	9.1	13.33	0.691	3.71	1.000	1010.	138.9	0.1094	18.243	2.892		0.3194	4.40
33	UPPER TALARIK	Q	2.2	13.33	0.691	3.71	1.000	1010.	138.9	0.1094	18.243	5.089		0.0772	4.40
34	UPPER TALARIK	E	0.0									5.262			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.40	0.734	4.19	1.000	975.	194.1	0.3074	18.298	0.061	3.27	0.0440	8.93
2	UPPER TALARIK	Q	60.0	13.40	0.734	4.19	1.000	975.	194.1	0.3074	18.298	0.167		0.0290	8.93
3	UPPER TALARIK	C	59.7	13.70	0.721	4.19	1.000	981.	194.0	0.2266	18.293	0.176		0.0290	8.93
4	UPPER TALARIK	C	56.5	13.85	0.715	4.19	1.000	983.	194.0	0.2071	18.292	0.268		0.0290	8.93
5	UPPER TALARIK	C	55.4	13.92	0.712	4.19	1.000	985.	194.0	0.1687	18.292	0.300		0.0290	8.93
6	UPPER TALARIK	C	51.9	14.03	0.707	4.19	1.000	987.	193.9	0.1709	18.289	0.402		0.0290	8.93
7	UPPER TALARIK	Q	51.6	14.03	0.707	4.19	1.000	987.	193.9	0.1709	18.289	0.409		0.1519	7.70
8	UPPER TALARIK	C	45.9	14.10	0.704	4.19	1.000	988.	193.9	0.1380	18.284	1.276		0.1519	7.70
9	UPPER TALARIK	B	45.0									1.407			
10	TRIBUTARY 135	H	46.4	14.10	0.704	4.19	1.000	988.	193.9	0.1945	18.284	0.118	11.15	0.0000	7.70
11	TRIBUTARY 135	T	45.0									0.118			
12	UPPER TALARIK	J	45.0	14.17	0.701	4.19	1.000	989.	193.9	0.1380	18.278	1.525		0.1527	7.70
13	UPPER TALARIK	Q	44.6	14.17	0.701	4.19	1.000	989.	193.9	0.1380	18.278	1.589		0.0278	6.91
14	UPPER TALARIK	C	38.4	14.29	0.697	4.19	1.000	991.	193.9	0.1184	18.269	1.763		0.0278	6.91
15	UPPER TALARIK	Q	37.6	14.29	0.697	4.19	1.000	991.	193.9	0.1184	18.269	1.783		0.0621	6.91
16	UPPER TALARIK	C	35.8	14.37	0.693	4.19	1.000	993.	193.9	0.0817	18.265	1.896		0.0621	6.91
17	UPPER TALARIK	C	32.9	14.43	0.691	4.19	1.000	994.	193.9	0.0957	18.263	2.075		0.0621	6.91
18	UPPER TALARIK	C	32.3	14.51	0.688	4.19	1.000	995.	193.9	0.0967	18.258	2.113		0.0621	6.91
19	UPPER TALARIK	Q	29.3	14.51	0.688	4.19	1.000	995.	193.9	0.0967	18.258	2.301		0.0720	3.99
20	UPPER TALARIK	C	27.1	14.60	0.684	4.19	1.000	997.	193.9	0.0729	18.253	2.456		0.0720	3.99
21	UPPER TALARIK	C	25.0	14.62	0.683	4.19	1.000	997.	193.9	0.0895	18.253	2.609		0.0720	3.99
22	UPPER TALARIK	B	24.7									2.630			
23	TRIBUTARY 119	H	25.1	14.61	0.684	4.19	1.000	997.	193.9	0.2351	18.253	0.666	5.39	0.0000	3.99
24	TRIBUTARY 119	T	24.7									0.666			
25	UPPER TALARIK	J	24.7	14.69	0.680	4.19	1.000	999.	193.8	0.0895	18.249	3.296		0.0714	3.99
26	UPPER TALARIK	Q	24.5	14.69	0.680	4.19	1.000	999.	193.8	0.0895	18.249	3.313		0.0449	3.99
27	UPPER TALARIK	C	20.8	14.80	0.676	4.19	1.000	1001.	193.8	0.0963	18.242	3.479		0.0449	3.99
28	UPPER TALARIK	C	18.8	14.91	0.672	4.19	1.000	1003.	193.8	0.0858	18.235	3.568		0.0449	3.99
29	UPPER TALARIK	C	14.6	15.08	0.665	4.19	1.000	1006.	193.8	0.0999	18.227	3.757		0.0449	3.99
30	UPPER TALARIK	Q	14.4	15.08	0.665	4.19	1.000	1006.	193.8	0.0999	18.227	3.768		-0.2588	3.99
31	UPPER TALARIK	Q	9.8	15.08	0.665	4.19	1.000	1006.	193.8	0.0999	18.227	2.600		0.3159	3.99
32	UPPER TALARIK	C	9.1	15.29	0.657	4.19	1.000	1010.	193.8	0.1094	18.214	2.829		0.3159	3.99
33	UPPER TALARIK	Q	2.2	15.29	0.657	4.19	1.000	1010.	193.8	0.1094	18.214	5.003		0.0759	3.99
34	UPPER TALARIK	E	0.0									5.173			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.57	0.753	4.05	1.000	975.	180.3	0.3077	18.266	0.061	3.63	0.0436	9.04
2	UPPER TALARIK	Q	60.0	13.57	0.753	4.05	1.000	975.	180.3	0.3077	18.266	0.166		0.0281	9.04
3	UPPER TALARIK	C	59.7	13.87	0.740	4.05	1.000	981.	180.3	0.2267	18.261	0.175		0.0281	9.04
4	UPPER TALARIK	C	56.5	14.02	0.733	4.05	1.000	983.	180.2	0.2072	18.260	0.264		0.0281	9.04
5	UPPER TALARIK	C	55.4	14.09	0.730	4.05	1.000	985.	180.2	0.1688	18.261	0.295		0.0281	9.04
6	UPPER TALARIK	C	51.9	14.20	0.726	4.05	1.000	987.	180.2	0.1711	18.257	0.394		0.0281	9.04
7	UPPER TALARIK	Q	51.6	14.20	0.726	4.05	1.000	987.	180.2	0.1711	18.257	0.401		0.1469	7.80
8	UPPER TALARIK	C	45.9	14.27	0.723	4.05	1.000	988.	180.2	0.1381	18.252	1.239		0.1469	7.80
9	UPPER TALARIK	B	45.0									1.366			
10	TRIBUTARY 135	H	46.4	14.27	0.722	4.05	1.000	988.	180.2	0.1946	18.252	0.114	12.34	0.0000	7.80
11	TRIBUTARY 135	T	45.0									0.114			
12	UPPER TALARIK	J	45.0	14.34	0.719	4.05	1.000	989.	180.2	0.1381	18.246	1.480		0.1456	7.80
13	UPPER TALARIK	Q	44.6	14.34	0.719	4.05	1.000	989.	180.2	0.1381	18.246	1.541		0.0279	7.16
14	UPPER TALARIK	C	38.4	14.46	0.715	4.05	1.000	991.	180.2	0.1185	18.238	1.716		0.0279	7.16
15	UPPER TALARIK	Q	37.6	14.46	0.715	4.05	1.000	991.	180.2	0.1185	18.238	1.736		0.0636	7.16
16	UPPER TALARIK	C	35.8	14.54	0.711	4.05	1.000	993.	180.2	0.0816	18.234	1.852		0.0636	7.16
17	UPPER TALARIK	C	32.9	14.60	0.709	4.05	1.000	994.	180.2	0.0958	18.232	2.035		0.0636	7.16
18	UPPER TALARIK	C	32.3	14.68	0.705	4.05	1.000	995.	180.1	0.0968	18.227	2.073		0.0636	7.16
19	UPPER TALARIK	Q	29.3	14.68	0.705	4.05	1.000	995.	180.1	0.0968	18.227	2.266		0.0737	3.68
20	UPPER TALARIK	C	27.1	14.77	0.702	4.05	1.000	997.	180.1	0.0728	18.222	2.425		0.0737	3.68
21	UPPER TALARIK	C	25.0	14.79	0.701	4.05	1.000	997.	180.1	0.0896	18.222	2.581		0.0737	3.68
22	UPPER TALARIK	B	24.7									2.603			
23	TRIBUTARY 119	H	25.1	14.78	0.701	4.05	1.000	997.	180.1	0.2352	18.222	0.665	5.70	0.0000	3.68
24	TRIBUTARY 119	T	24.7									0.665			
25	UPPER TALARIK	J	24.7	14.86	0.698	4.05	1.000	999.	180.1	0.0896	18.217	3.268		0.0714	3.68
26	UPPER TALARIK	Q	24.5	14.86	0.698	4.05	1.000	999.	180.1	0.0896	18.217	3.285		0.0444	3.68
27	UPPER TALARIK	C	20.8	14.97	0.694	4.05	1.000	1001.	180.1	0.0964	18.211	3.449		0.0444	3.68
28	UPPER TALARIK	C	18.8	15.08	0.689	4.05	1.000	1003.	180.1	0.0859	18.204	3.537		0.0444	3.68
29	UPPER TALARIK	C	14.6	15.25	0.682	4.05	1.000	1006.	180.1	0.1000	18.196	3.724		0.0444	3.68
30	UPPER TALARIK	Q	14.4	15.25	0.682	4.05	1.000	1006.	180.1	0.1000	18.196	3.735		-0.2584	3.68
31	UPPER TALARIK	Q	9.8	15.25	0.682	4.05	1.000	1006.	180.1	0.1000	18.196	2.569		0.3144	3.68
32	UPPER TALARIK	C	9.1	15.46	0.674	4.05	1.000	1010.	180.1	0.1095	18.183	2.797		0.3144	3.68
33	UPPER TALARIK	Q	2.2	15.46	0.674	4.05	1.000	1010.	180.1	0.1095	18.183	4.960		0.0754	3.68
34	UPPER TALARIK	E	0.0									5.129			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.80	0.856	6.25	1.000	975.	99.8	0.3079	18.232	0.084	4.22	0.0598	8.97
2	UPPER TALARIK	Q	60.0	10.80	0.856	6.25	1.000	975.	99.8	0.3079	18.232	0.228		0.0559	8.97
3	UPPER TALARIK	C	59.7	11.10	0.842	6.25	1.000	981.	99.7	0.2269	18.227	0.246		0.0559	8.97
4	UPPER TALARIK	C	56.5	11.25	0.834	6.25	1.000	983.	99.7	0.2074	18.226	0.423		0.0559	8.97
5	UPPER TALARIK	C	55.4	11.32	0.831	6.25	1.000	985.	99.7	0.1688	18.227	0.484		0.0559	8.97
6	UPPER TALARIK	C	51.9	11.43	0.825	6.25	1.000	987.	99.7	0.1712	18.223	0.682		0.0559	8.97
7	UPPER TALARIK	Q	51.6	11.43	0.825	6.25	1.000	987.	99.7	0.1712	18.223	0.695		0.2205	7.75
8	UPPER TALARIK	C	45.9	11.50	0.822	6.25	1.000	988.	99.7	0.1383	18.218	1.953		0.2205	7.75
9	UPPER TALARIK	B	45.0									2.144			
10	TRIBUTARY 135	H	46.4	11.50	0.822	6.25	1.000	988.	99.7	0.1948	18.218	0.171	11.36	0.0000	7.75
11	TRIBUTARY 135	T	45.0									0.171			
12	UPPER TALARIK	J	45.0	11.57	0.818	6.25	1.000	989.	99.7	0.1382	18.212	2.315		0.2196	7.75
13	UPPER TALARIK	Q	44.6	11.57	0.818	6.25	1.000	989.	99.7	0.1382	18.212	2.407		-0.0050	7.43
14	UPPER TALARIK	C	38.4	11.69	0.813	6.25	1.000	991.	99.7	0.1186	18.204	2.376		-0.0050	7.43
15	UPPER TALARIK	Q	37.6	11.69	0.813	6.25	1.000	991.	99.7	0.1186	18.204	2.372		0.0657	7.43
16	UPPER TALARIK	C	35.8	11.77	0.809	6.25	1.000	993.	99.7	0.0816	18.200	2.492		0.0657	7.43
17	UPPER TALARIK	C	32.9	11.83	0.806	6.25	1.000	994.	99.7	0.0959	18.198	2.681		0.0657	7.43
18	UPPER TALARIK	C	32.3	11.91	0.802	6.25	1.000	995.	99.7	0.0969	18.193	2.721		0.0657	7.43
19	UPPER TALARIK	Q	29.3	11.91	0.802	6.25	1.000	995.	99.7	0.0969	18.193	2.920		0.0759	3.46
20	UPPER TALARIK	C	27.1	12.00	0.798	6.25	1.000	997.	99.7	0.0728	18.188	3.084		0.0759	3.46
21	UPPER TALARIK	C	25.0	12.02	0.797	6.25	1.000	997.	99.7	0.0897	18.188	3.244		0.0759	3.46
22	UPPER TALARIK	B	24.7									3.267			
23	TRIBUTARY 119	H	25.1	12.01	0.798	6.25	1.000	997.	99.7	0.2354	18.188	0.679	5.33	0.0000	3.46
24	TRIBUTARY 119	T	24.7									0.679			
25	UPPER TALARIK	J	24.7	12.09	0.794	6.25	1.000	999.	99.7	0.0897	18.184	3.946		0.0756	3.46
26	UPPER TALARIK	Q	24.5	12.09	0.794	6.25	1.000	999.	99.7	0.0897	18.184	3.964		0.0549	3.46
27	UPPER TALARIK	C	20.8	12.20	0.789	6.25	1.000	1001.	99.7	0.0965	18.177	4.167		0.0549	3.46
28	UPPER TALARIK	C	18.8	12.31	0.784	6.25	1.000	1003.	99.7	0.0861	18.170	4.276		0.0549	3.46
29	UPPER TALARIK	C	14.6	12.48	0.776	6.25	1.000	1006.	99.6	0.1001	18.162	4.508		0.0549	3.46
30	UPPER TALARIK	Q	14.4	12.48	0.776	6.25	1.000	1006.	99.6	0.1001	18.162	4.521		-0.2659	3.46
31	UPPER TALARIK	Q	9.8	12.48	0.776	6.25	1.000	1006.	99.6	0.1001	18.162	3.321		0.3512	3.46
32	UPPER TALARIK	C	9.1	12.69	0.767	6.25	1.000	1010.	99.6	0.1096	18.150	3.576		0.3512	3.46
33	UPPER TALARIK	Q	2.2	12.69	0.767	6.25	1.000	1010.	99.6	0.1096	18.150	5.992		0.0911	3.46
34	UPPER TALARIK	E	0.0									6.196			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.45	0.828	4.71	1.000	975.	141.9	0.3082	18.195	0.074	4.11	0.0528	8.73
2	UPPER TALARIK	Q	60.0	11.45	0.828	4.71	1.000	975.	141.9	0.3082	18.195	0.201		0.0471	8.73
3	UPPER TALARIK	C	59.7	11.75	0.814	4.71	1.000	981.	141.8	0.2272	18.191	0.216		0.0471	8.73
4	UPPER TALARIK	C	56.5	11.90	0.806	4.71	1.000	983.	141.8	0.2076	18.190	0.365		0.0471	8.73
5	UPPER TALARIK	C	55.4	11.97	0.803	4.71	1.000	985.	141.8	0.1689	18.190	0.416		0.0471	8.73
6	UPPER TALARIK	C	51.9	12.08	0.798	4.71	1.000	987.	141.8	0.1714	18.186	0.583		0.0471	8.73
7	UPPER TALARIK	Q	51.6	12.08	0.798	4.71	1.000	987.	141.8	0.1714	18.186	0.594		0.2120	7.53
8	UPPER TALARIK	C	45.9	12.15	0.795	4.71	1.000	988.	141.8	0.1384	18.182	1.804		0.2120	7.53
9	UPPER TALARIK	B	45.0									1.987			
10	TRIBUTARY 135	H	46.4	12.15	0.795	4.71	1.000	988.	141.8	0.1949	18.182	0.165	10.52	0.0000	7.53
11	TRIBUTARY 135	T	45.0									0.165			
12	UPPER TALARIK	J	45.0	12.22	0.791	4.71	1.000	989.	141.8	0.1384	18.176	2.152		0.2100	7.53
13	UPPER TALARIK	Q	44.6	12.22	0.791	4.71	1.000	989.	141.8	0.1384	18.176	2.240		0.0159	7.60
14	UPPER TALARIK	C	38.4	12.34	0.786	4.71	1.000	991.	141.8	0.1188	18.168	2.340		0.0159	7.60
15	UPPER TALARIK	Q	37.6	12.34	0.786	4.71	1.000	991.	141.8	0.1188	18.168	2.351		0.0744	7.60
16	UPPER TALARIK	C	35.8	12.42	0.782	4.71	1.000	993.	141.8	0.0816	18.164	2.487		0.0744	7.60
17	UPPER TALARIK	C	32.9	12.48	0.780	4.71	1.000	994.	141.7	0.0960	18.162	2.700		0.0744	7.60
18	UPPER TALARIK	C	32.3	12.56	0.776	4.71	1.000	995.	141.7	0.0970	18.157	2.746		0.0744	7.60
19	UPPER TALARIK	Q	29.3	12.56	0.776	4.71	1.000	995.	141.7	0.0970	18.157	2.971		0.0860	3.25
20	UPPER TALARIK	C	27.1	12.65	0.772	4.71	1.000	997.	141.7	0.0727	18.152	3.157		0.0860	3.25
21	UPPER TALARIK	C	25.0	12.67	0.771	4.71	1.000	997.	141.7	0.0898	18.152	3.338		0.0860	3.25
22	UPPER TALARIK	B	24.7									3.364			
23	TRIBUTARY 119	H	25.1	12.66	0.772	4.71	1.000	997.	141.7	0.2356	18.152	0.665	5.07	0.0000	3.25
24	TRIBUTARY 119	T	24.7									0.665			
25	UPPER TALARIK	J	24.7	12.74	0.768	4.71	1.000	999.	141.7	0.0898	18.148	4.029		0.0840	3.25
26	UPPER TALARIK	Q	24.5	12.74	0.768	4.71	1.000	999.	141.7	0.0898	18.148	4.049		0.0562	3.25
27	UPPER TALARIK	C	20.8	12.85	0.763	4.71	1.000	1001.	141.7	0.0967	18.141	4.256		0.0562	3.25
28	UPPER TALARIK	C	18.8	12.96	0.758	4.71	1.000	1003.	141.7	0.0862	18.134	4.369		0.0562	3.25
29	UPPER TALARIK	C	14.6	13.13	0.751	4.71	1.000	1006.	141.7	0.1001	18.126	4.606		0.0562	3.25
30	UPPER TALARIK	Q	14.4	13.13	0.751	4.71	1.000	1006.	141.7	0.1001	18.126	4.619		-0.2661	3.25
31	UPPER TALARIK	Q	9.8	13.13	0.751	4.71	1.000	1006.	141.7	0.1001	18.126	3.418		0.3554	3.25
32	UPPER TALARIK	C	9.1	13.34	0.741	4.71	1.000	1010.	141.7	0.1097	18.114	3.676		0.3554	3.25
33	UPPER TALARIK	Q	2.2	13.34	0.741	4.71	1.000	1010.	141.7	0.1097	18.114	6.121		0.0933	3.25
34	UPPER TALARIK	E	0.0									6.330			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.02	0.781	3.47	1.000	975.	137.3	0.3085	18.156	0.070	3.91	0.0494	8.50
2	UPPER TALARIK	Q	60.0	11.02	0.781	3.47	1.000	975.	137.3	0.3085	18.156	0.189		0.0399	8.50
3	UPPER TALARIK	C	59.7	11.32	0.768	3.47	1.000	981.	137.3	0.2274	18.152	0.202		0.0399	8.50
4	UPPER TALARIK	C	56.5	11.47	0.761	3.47	1.000	983.	137.2	0.2078	18.151	0.328		0.0399	8.50
5	UPPER TALARIK	C	55.4	11.54	0.758	3.47	1.000	985.	137.2	0.1690	18.151	0.372		0.0399	8.50
6	UPPER TALARIK	C	51.9	11.65	0.753	3.47	1.000	987.	137.2	0.1716	18.147	0.513		0.0399	8.50
7	UPPER TALARIK	Q	51.6	11.65	0.753	3.47	1.000	987.	137.2	0.1716	18.147	0.522		0.1886	7.36
8	UPPER TALARIK	C	45.9	11.72	0.750	3.47	1.000	988.	137.2	0.1386	18.143	1.598		0.1886	7.36
9	UPPER TALARIK	B	45.0									1.761			
10	TRIBUTARY 135	H	46.4	11.72	0.749	3.47	1.000	988.	137.2	0.1950	18.143	0.146	10.58	0.0000	7.36
11	TRIBUTARY 135	T	45.0									0.146			
12	UPPER TALARIK	J	45.0	11.79	0.746	3.47	1.000	989.	137.2	0.1386	18.137	1.907		0.1885	7.36
13	UPPER TALARIK	Q	44.6	11.79	0.746	3.47	1.000	989.	137.2	0.1386	18.137	1.986		0.0198	7.67
14	UPPER TALARIK	C	38.4	11.91	0.742	3.47	1.000	991.	137.2	0.1190	18.129	2.110		0.0198	7.67
15	UPPER TALARIK	Q	37.6	11.91	0.742	3.47	1.000	991.	137.2	0.1190	18.129	2.124		0.0729	7.67
16	UPPER TALARIK	C	35.8	11.99	0.738	3.47	1.000	993.	137.2	0.0816	18.125	2.257		0.0729	7.67
17	UPPER TALARIK	C	32.9	12.05	0.735	3.47	1.000	994.	137.2	0.0961	18.123	2.466		0.0729	7.67
18	UPPER TALARIK	C	32.3	12.13	0.732	3.47	1.000	995.	137.2	0.0971	18.118	2.511		0.0729	7.67
19	UPPER TALARIK	Q	29.3	12.13	0.732	3.47	1.000	995.	137.2	0.0971	18.118	2.732		0.0842	3.09
20	UPPER TALARIK	C	27.1	12.22	0.728	3.47	1.000	997.	137.2	0.0727	18.113	2.914		0.0842	3.09
21	UPPER TALARIK	C	25.0	12.24	0.727	3.47	1.000	997.	137.2	0.0900	18.113	3.092		0.0842	3.09
22	UPPER TALARIK	B	24.7									3.117			
23	TRIBUTARY 119	H	25.1	12.23	0.728	3.47	1.000	997.	137.2	0.2357	18.113	0.657	5.19	0.0000	3.09
24	TRIBUTARY 119	T	24.7									0.657			
25	UPPER TALARIK	J	24.7	12.31	0.724	3.47	1.000	999.	137.2	0.0900	18.109	3.774		0.0840	3.09
26	UPPER TALARIK	Q	24.5	12.31	0.724	3.47	1.000	999.	137.2	0.0900	18.109	3.794		0.0523	3.09
27	UPPER TALARIK	C	20.8	12.42	0.720	3.47	1.000	1001.	137.1	0.0968	18.103	3.987		0.0523	3.09
28	UPPER TALARIK	C	18.8	12.53	0.715	3.47	1.000	1003.	137.1	0.0863	18.096	4.091		0.0523	3.09
29	UPPER TALARIK	C	14.6	12.70	0.708	3.47	1.000	1006.	137.1	0.1002	18.088	4.311		0.0523	3.09
30	UPPER TALARIK	Q	14.4	12.70	0.708	3.47	1.000	1006.	137.1	0.1002	18.088	4.324		-0.2650	3.09
31	UPPER TALARIK	Q	9.8	12.70	0.708	3.47	1.000	1006.	137.1	0.1002	18.088	3.128		0.3426	3.09
32	UPPER TALARIK	C	9.1	12.91	0.699	3.47	1.000	1010.	137.1	0.1099	18.076	3.376		0.3426	3.09
33	UPPER TALARIK	Q	2.2	12.91	0.699	3.47	1.000	1010.	137.1	0.1099	18.076	5.734		0.0871	3.09
34	UPPER TALARIK	E	0.0									5.929			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.83	0.611	2.32	1.000	975.	157.5	0.3088	18.115	0.067	3.68	0.0474	8.40
2	UPPER TALARIK	Q	60.0	13.83	0.611	2.32	1.000	975.	157.5	0.3088	18.115	0.181		0.0353	8.40
3	UPPER TALARIK	C	59.7	14.13	0.601	2.32	1.000	981.	157.4	0.2276	18.111	0.192		0.0353	8.40
4	UPPER TALARIK	C	56.5	14.28	0.596	2.32	1.000	983.	157.4	0.2080	18.109	0.304		0.0353	8.40
5	UPPER TALARIK	C	55.4	14.35	0.593	2.32	1.000	985.	157.4	0.1690	18.110	0.343		0.0353	8.40
6	UPPER TALARIK	C	51.9	14.46	0.589	2.32	1.000	987.	157.3	0.1719	18.106	0.468		0.0353	8.40
7	UPPER TALARIK	Q	51.6	14.46	0.589	2.32	1.000	987.	157.3	0.1719	18.106	0.476		0.1746	7.34
8	UPPER TALARIK	C	45.9	14.53	0.587	2.32	1.000	988.	157.3	0.1388	18.102	1.472		0.1746	7.34
9	UPPER TALARIK	B	45.0									1.623			
10	TRIBUTARY 135	H	46.4	14.53	0.587	2.32	1.000	988.	157.3	0.1952	18.101	0.136	10.82	0.0000	7.34
11	TRIBUTARY 135	T	45.0									0.136			
12	UPPER TALARIK	J	45.0	14.60	0.584	2.32	1.000	989.	157.3	0.1387	18.096	1.759		0.1718	7.34
13	UPPER TALARIK	Q	44.6	14.60	0.584	2.32	1.000	989.	157.3	0.1387	18.096	1.831		0.0253	7.66
14	UPPER TALARIK	C	38.4	14.72	0.581	2.32	1.000	991.	157.3	0.1191	18.088	1.990		0.0253	7.66
15	UPPER TALARIK	Q	37.6	14.72	0.581	2.32	1.000	991.	157.3	0.1191	18.088	2.008		0.0714	7.66
16	UPPER TALARIK	C	35.8	14.80	0.578	2.32	1.000	993.	157.3	0.0816	18.084	2.138		0.0714	7.66
17	UPPER TALARIK	C	32.9	14.86	0.576	2.32	1.000	994.	157.3	0.0962	18.082	2.343		0.0714	7.66
18	UPPER TALARIK	C	32.3	14.94	0.573	2.32	1.000	995.	157.3	0.0973	18.077	2.387		0.0714	7.66
19	UPPER TALARIK	Q	29.3	14.94	0.573	2.32	1.000	995.	157.3	0.0973	18.077	2.603		0.0823	2.96
20	UPPER TALARIK	C	27.1	15.03	0.570	2.32	1.000	997.	157.3	0.0726	18.073	2.781		0.0823	2.96
21	UPPER TALARIK	C	25.0	15.05	0.569	2.32	1.000	997.	157.3	0.0901	18.072	2.954		0.0823	2.96
22	UPPER TALARIK	B	24.7									2.979			
23	TRIBUTARY 119	H	25.1	15.04	0.570	2.32	1.000	997.	157.3	0.2359	18.072	0.654	5.29	0.0000	2.96
24	TRIBUTARY 119	T	24.7									0.654			
25	UPPER TALARIK	J	24.7	15.12	0.567	2.32	1.000	999.	157.3	0.0901	18.068	3.633		0.0840	2.96
26	UPPER TALARIK	Q	24.5	15.12	0.567	2.32	1.000	999.	157.3	0.0901	18.068	3.653		0.0501	2.96
27	UPPER TALARIK	C	20.8	15.23	0.564	2.32	1.000	1001.	157.3	0.0970	18.062	3.838		0.0501	2.96
28	UPPER TALARIK	C	18.8	15.34	0.560	2.32	1.000	1003.	157.3	0.0865	18.055	3.938		0.0501	2.96
29	UPPER TALARIK	C	14.6	15.51	0.554	2.32	1.000	1006.	157.2	0.1003	18.047	4.149		0.0501	2.96
30	UPPER TALARIK	Q	14.4	15.51	0.554	2.32	1.000	1006.	157.2	0.1003	18.047	4.161		-0.2639	2.96
31	UPPER TALARIK	Q	9.8	15.51	0.554	2.32	1.000	1006.	157.2	0.1003	18.047	2.970		0.3351	2.96
32	UPPER TALARIK	C	9.1	15.72	0.548	2.32	1.000	1010.	157.2	0.1100	18.035	3.213		0.3351	2.96
33	UPPER TALARIK	Q	2.2	15.72	0.548	2.32	1.000	1010.	157.2	0.1100	18.035	5.519		0.0839	2.96
34	UPPER TALARIK	E	0.0									5.707			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.07	0.894	4.72	1.000	975.	95.2	0.3092	18.071	0.069	3.73	0.0494	8.48
2	UPPER TALARIK	Q	60.0	11.07	0.894	4.72	1.000	975.	95.2	0.3092	18.071	0.188		0.0389	8.48
3	UPPER TALARIK	C	59.7	11.37	0.879	4.72	1.000	981.	95.2	0.2279	18.067	0.200		0.0389	8.48
4	UPPER TALARIK	C	56.5	11.52	0.871	4.72	1.000	983.	95.1	0.2082	18.066	0.324		0.0389	8.48
5	UPPER TALARIK	C	55.4	11.59	0.867	4.72	1.000	985.	95.1	0.1691	18.066	0.366		0.0389	8.48
6	UPPER TALARIK	C	51.9	11.70	0.862	4.72	1.000	987.	95.1	0.1721	18.063	0.504		0.0389	8.48
7	UPPER TALARIK	Q	51.6	11.70	0.862	4.72	1.000	987.	95.1	0.1721	18.063	0.513		0.1848	7.50
8	UPPER TALARIK	C	45.9	11.77	0.858	4.72	1.000	988.	95.1	0.1390	18.058	1.567		0.1848	7.50
9	UPPER TALARIK	B	45.0									1.727			
10	TRIBUTARY 135	H	46.4	11.77	0.858	4.72	1.000	988.	95.1	0.1953	18.058	0.144	11.02	0.0000	7.50
11	TRIBUTARY 135	T	45.0									0.144			
12	UPPER TALARIK	J	45.0	11.84	0.854	4.72	1.000	989.	95.1	0.1389	18.053	1.871		0.1838	7.50
13	UPPER TALARIK	Q	44.6	11.84	0.854	4.72	1.000	989.	95.1	0.1389	18.053	1.948		0.0195	7.60
14	UPPER TALARIK	C	38.4	11.96	0.849	4.72	1.000	991.	95.1	0.1193	18.045	2.070		0.0195	7.60
15	UPPER TALARIK	Q	37.6	11.96	0.849	4.72	1.000	991.	95.1	0.1193	18.045	2.084		0.0713	7.60
16	UPPER TALARIK	C	35.8	12.04	0.844	4.72	1.000	993.	95.1	0.0815	18.041	2.214		0.0713	7.60
17	UPPER TALARIK	C	32.9	12.10	0.842	4.72	1.000	994.	95.1	0.0963	18.039	2.419		0.0713	7.60
18	UPPER TALARIK	C	32.3	12.18	0.838	4.72	1.000	995.	95.1	0.0974	18.034	2.462		0.0713	7.60
19	UPPER TALARIK	Q	29.3	12.18	0.838	4.72	1.000	995.	95.1	0.0974	18.034	2.678		0.0823	2.90
20	UPPER TALARIK	C	27.1	12.27	0.833	4.72	1.000	997.	95.1	0.0726	18.029	2.856		0.0823	2.90
21	UPPER TALARIK	C	25.0	12.29	0.832	4.72	1.000	997.	95.1	0.0903	18.029	3.029		0.0823	2.90
22	UPPER TALARIK	B	24.7									3.054			
23	TRIBUTARY 119	H	25.1	12.28	0.833	4.72	1.000	997.	95.1	0.2362	18.029	0.664	5.18	0.0000	2.90
24	TRIBUTARY 119	T	24.7									0.664			
25	UPPER TALARIK	J	24.7	12.36	0.829	4.72	1.000	999.	95.1	0.0903	18.025	3.718		0.0840	2.90
26	UPPER TALARIK	Q	24.5	12.36	0.829	4.72	1.000	999.	95.1	0.0903	18.025	3.738		0.0514	2.90
27	UPPER TALARIK	C	20.8	12.47	0.824	4.72	1.000	1001.	95.1	0.0972	18.019	3.928		0.0514	2.90
28	UPPER TALARIK	C	18.8	12.58	0.818	4.72	1.000	1003.	95.1	0.0866	18.012	4.030		0.0514	2.90
29	UPPER TALARIK	C	14.6	12.75	0.810	4.72	1.000	1006.	95.1	0.1003	18.004	4.247		0.0514	2.90
30	UPPER TALARIK	Q	14.4	12.75	0.810	4.72	1.000	1006.	95.1	0.1003	18.004	4.259		-0.2648	2.90
31	UPPER TALARIK	Q	9.8	12.75	0.810	4.72	1.000	1006.	95.1	0.1003	18.004	3.064		0.3397	2.90
32	UPPER TALARIK	C	9.1	12.96	0.800	4.72	1.000	1010.	95.0	0.1101	17.993	3.310		0.3397	2.90
33	UPPER TALARIK	Q	2.2	12.96	0.800	4.72	1.000	1010.	95.0	0.1101	17.993	5.648		0.0857	2.90
34	UPPER TALARIK	E	0.0									5.840			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.93	0.734	4.66	1.000	975.	171.2	0.3095	18.025	0.067	3.61	0.0474	8.70
2	UPPER TALARIK	Q	60.0	10.93	0.734	4.66	1.000	975.	171.2	0.3095	18.025	0.181		0.0351	8.70
3	UPPER TALARIK	C	59.7	11.23	0.721	4.66	1.000	981.	171.1	0.2282	18.021	0.192		0.0351	8.70
4	UPPER TALARIK	C	56.5	11.38	0.715	4.66	1.000	983.	171.1	0.2085	18.020	0.303		0.0351	8.70
5	UPPER TALARIK	C	55.4	11.45	0.712	4.66	1.000	985.	171.1	0.1692	18.020	0.342		0.0351	8.70
6	UPPER TALARIK	C	51.9	11.56	0.707	4.66	1.000	987.	171.0	0.1723	18.017	0.466		0.0351	8.70
7	UPPER TALARIK	Q	51.6	11.56	0.707	4.66	1.000	987.	171.0	0.1723	18.017	0.474		0.1736	7.79
8	UPPER TALARIK	C	45.9	11.63	0.704	4.66	1.000	988.	171.0	0.1392	18.013	1.465		0.1736	7.79
9	UPPER TALARIK	B	45.0									1.615			
10	TRIBUTARY 135	H	46.4	11.63	0.704	4.66	1.000	988.	171.0	0.1955	18.012	0.135	10.90	0.0000	7.79
11	TRIBUTARY 135	T	45.0									0.135			
12	UPPER TALARIK	J	45.0	11.70	0.701	4.66	1.000	989.	171.0	0.1391	18.007	1.750		0.1742	7.79
13	UPPER TALARIK	Q	44.6	11.70	0.701	4.66	1.000	989.	171.0	0.1391	18.007	1.823		0.0250	7.53
14	UPPER TALARIK	C	38.4	11.82	0.697	4.66	1.000	991.	171.0	0.1195	17.999	1.980		0.0250	7.53
15	UPPER TALARIK	Q	37.6	11.82	0.697	4.66	1.000	991.	171.0	0.1195	17.999	1.998		0.0697	7.53
16	UPPER TALARIK	C	35.8	11.90	0.693	4.66	1.000	993.	171.0	0.0815	17.995	2.125		0.0697	7.53
17	UPPER TALARIK	C	32.9	11.96	0.691	4.66	1.000	994.	171.0	0.0964	17.993	2.325		0.0697	7.53
18	UPPER TALARIK	C	32.3	12.04	0.688	4.66	1.000	995.	171.0	0.0976	17.988	2.368		0.0697	7.53
19	UPPER TALARIK	Q	29.3	12.04	0.688	4.66	1.000	995.	171.0	0.0976	17.988	2.579		0.0807	2.91
20	UPPER TALARIK	C	27.1	12.13	0.684	4.66	1.000	997.	171.0	0.0725	17.984	2.753		0.0807	2.91
21	UPPER TALARIK	C	25.0	12.15	0.683	4.66	1.000	997.	171.0	0.0904	17.984	2.924		0.0807	2.91
22	UPPER TALARIK	B	24.7									2.948			
23	TRIBUTARY 119	H	25.1	12.14	0.684	4.66	1.000	997.	171.0	0.2364	17.984	0.658	5.23	0.0000	2.91
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	12.22	0.680	4.66	1.000	999.	171.0	0.0904	17.980	3.606		0.0798	2.91
26	UPPER TALARIK	Q	24.5	12.22	0.680	4.66	1.000	999.	171.0	0.0904	17.980	3.625		0.0496	2.91
27	UPPER TALARIK	C	20.8	12.33	0.676	4.66	1.000	1001.	171.0	0.0974	17.974	3.808		0.0496	2.91
28	UPPER TALARIK	C	18.8	12.44	0.672	4.66	1.000	1003.	171.0	0.0868	17.967	3.907		0.0496	2.91
29	UPPER TALARIK	C	14.6	12.61	0.665	4.66	1.000	1006.	171.0	0.1004	17.959	4.116		0.0496	2.91
30	UPPER TALARIK	Q	14.4	12.61	0.665	4.66	1.000	1006.	171.0	0.1004	17.959	4.128		-0.2637	2.91
31	UPPER TALARIK	Q	9.8	12.61	0.665	4.66	1.000	1006.	171.0	0.1004	17.959	2.938		0.3337	2.91
32	UPPER TALARIK	C	9.1	12.82	0.657	4.66	1.000	1010.	170.9	0.1103	17.948	3.180		0.3337	2.91
33	UPPER TALARIK	Q	2.2	12.82	0.657	4.66	1.000	1010.	170.9	0.1103	17.948	5.476		0.0830	2.91
34	UPPER TALARIK	E	0.0									5.662			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.28	0.734	4.46	1.000	975.	146.4	0.3099	17.977	0.065	3.38	0.0461	9.03
2	UPPER TALARIK	Q	60.0	12.28	0.734	4.46	1.000	975.	146.4	0.3099	17.977	0.176		0.0320	9.03
3	UPPER TALARIK	C	59.7	12.58	0.721	4.46	1.000	981.	146.4	0.2285	17.973	0.186		0.0320	9.03
4	UPPER TALARIK	C	56.5	12.73	0.715	4.46	1.000	983.	146.4	0.2087	17.972	0.288		0.0320	9.03
5	UPPER TALARIK	C	55.4	12.80	0.712	4.46	1.000	985.	146.4	0.1693	17.973	0.322		0.0320	9.03
6	UPPER TALARIK	C	51.9	12.91	0.707	4.46	1.000	987.	146.3	0.1726	17.969	0.436		0.0320	9.03
7	UPPER TALARIK	Q	51.6	12.91	0.707	4.46	1.000	987.	146.3	0.1726	17.969	0.443		0.1561	8.18
8	UPPER TALARIK	C	45.9	12.98	0.704	4.46	1.000	988.	146.3	0.1394	17.965	1.334		0.1561	8.18
9	UPPER TALARIK	B	45.0									1.469			
10	TRIBUTARY 135	H	46.4	12.98	0.704	4.46	1.000	988.	146.3	0.1957	17.964	0.121	11.27	0.0000	8.18
11	TRIBUTARY 135	T	45.0									0.121			
12	UPPER TALARIK	J	45.0	13.05	0.701	4.46	1.000	989.	146.3	0.1393	17.959	1.590		0.1575	8.18
13	UPPER TALARIK	Q	44.6	13.05	0.701	4.46	1.000	989.	146.3	0.1393	17.959	1.656		0.0278	7.48
14	UPPER TALARIK	C	38.4	13.17	0.697	4.46	1.000	991.	146.3	0.1197	17.951	1.830		0.0278	7.48
15	UPPER TALARIK	Q	37.6	13.17	0.697	4.46	1.000	991.	146.3	0.1197	17.951	1.850		0.0680	7.48
16	UPPER TALARIK	C	35.8	13.25	0.693	4.46	1.000	993.	146.3	0.0815	17.947	1.974		0.0680	7.48
17	UPPER TALARIK	C	32.9	13.31	0.691	4.46	1.000	994.	146.3	0.0966	17.946	2.169		0.0680	7.48
18	UPPER TALARIK	C	32.3	13.39	0.688	4.46	1.000	995.	146.3	0.0978	17.941	2.211		0.0680	7.48
19	UPPER TALARIK	Q	29.3	13.39	0.688	4.46	1.000	995.	146.3	0.0978	17.941	2.417		0.0785	3.04
20	UPPER TALARIK	C	27.1	13.48	0.684	4.46	1.000	997.	146.3	0.0724	17.937	2.587		0.0785	3.04
21	UPPER TALARIK	C	25.0	13.50	0.683	4.46	1.000	997.	146.3	0.0906	17.936	2.753		0.0785	3.04
22	UPPER TALARIK	B	24.7									2.776			
23	TRIBUTARY 119	H	25.1	13.49	0.684	4.46	1.000	997.	146.3	0.2367	17.936	0.660	5.18	0.0000	3.04
24	TRIBUTARY 119	T	24.7									0.660			
25	UPPER TALARIK	J	24.7	13.57	0.680	4.46	1.000	999.	146.3	0.0906	17.932	3.436		0.0798	3.04
26	UPPER TALARIK	Q	24.5	13.57	0.680	4.46	1.000	999.	146.3	0.0906	17.932	3.455		0.0469	3.04
27	UPPER TALARIK	C	20.8	13.68	0.676	4.46	1.000	1001.	146.3	0.0976	17.926	3.628		0.0469	3.04
28	UPPER TALARIK	C	18.8	13.79	0.672	4.46	1.000	1003.	146.3	0.0870	17.920	3.722		0.0469	3.04
29	UPPER TALARIK	C	14.6	13.96	0.665	4.46	1.000	1006.	146.3	0.1005	17.912	3.920		0.0469	3.04
30	UPPER TALARIK	Q	14.4	13.96	0.665	4.46	1.000	1006.	146.3	0.1005	17.912	3.931		-0.2612	3.04
31	UPPER TALARIK	Q	9.8	13.96	0.665	4.46	1.000	1006.	146.3	0.1005	17.912	2.752		0.3242	3.04
32	UPPER TALARIK	C	9.1	14.17	0.657	4.46	1.000	1010.	146.2	0.1104	17.901	2.987		0.3242	3.04
33	UPPER TALARIK	Q	2.2	14.17	0.657	4.46	1.000	1010.	146.2	0.1104	17.901	5.218		0.0790	3.04
34	UPPER TALARIK	E	0.0									5.395			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.25	0.687	6.33	1.000	975.	273.7	0.3103	17.927	0.063	3.40	0.0449	9.39
2	UPPER TALARIK	Q	60.0	12.25	0.687	6.33	1.000	975.	273.7	0.3103	17.927	0.171		0.0292	9.39
3	UPPER TALARIK	C	59.7	12.55	0.675	6.33	1.000	981.	273.6	0.2288	17.923	0.180		0.0292	9.39
4	UPPER TALARIK	C	56.5	12.70	0.669	6.33	1.000	983.	273.5	0.2090	17.922	0.273		0.0292	9.39
5	UPPER TALARIK	C	55.4	12.77	0.666	6.33	1.000	985.	273.5	0.1695	17.923	0.305		0.0292	9.39
6	UPPER TALARIK	C	51.9	12.88	0.662	6.33	1.000	987.	273.5	0.1729	17.919	0.408		0.0292	9.39
7	UPPER TALARIK	Q	51.6	12.88	0.662	6.33	1.000	987.	273.5	0.1729	17.919	0.415		0.1476	8.58
8	UPPER TALARIK	C	45.9	12.95	0.659	6.33	1.000	988.	273.5	0.1396	17.915	1.257		0.1476	8.58
9	UPPER TALARIK	B	45.0									1.385			
10	TRIBUTARY 135	H	46.4	12.95	0.659	6.33	1.000	988.	273.5	0.1959	17.915	0.115	12.65	0.0000	8.58
11	TRIBUTARY 135	T	45.0									0.115			
12	UPPER TALARIK	J	45.0	13.02	0.656	6.33	1.000	989.	273.5	0.1395	17.909	1.500		0.1456	8.58
13	UPPER TALARIK	Q	44.6	13.02	0.656	6.33	1.000	989.	273.5	0.1395	17.909	1.561		0.0285	7.50
14	UPPER TALARIK	C	38.4	13.14	0.652	6.33	1.000	991.	273.4	0.1199	17.902	1.740		0.0285	7.50
15	UPPER TALARIK	Q	37.6	13.14	0.652	6.33	1.000	991.	273.4	0.1199	17.902	1.760		0.0663	7.50
16	UPPER TALARIK	C	35.8	13.22	0.649	6.33	1.000	993.	273.4	0.0815	17.898	1.881		0.0663	7.50
17	UPPER TALARIK	C	32.9	13.28	0.647	6.33	1.000	994.	273.4	0.0967	17.896	2.071		0.0663	7.50
18	UPPER TALARIK	C	32.3	13.36	0.644	6.33	1.000	995.	273.4	0.0980	17.891	2.112		0.0663	7.50
19	UPPER TALARIK	Q	29.3	13.36	0.644	6.33	1.000	995.	273.4	0.0980	17.891	2.313		0.0768	3.32
20	UPPER TALARIK	C	27.1	13.45	0.640	6.33	1.000	997.	273.4	0.0724	17.887	2.479		0.0768	3.32
21	UPPER TALARIK	C	25.0	13.47	0.639	6.33	1.000	997.	273.4	0.0908	17.887	2.641		0.0768	3.32
22	UPPER TALARIK	B	24.7									2.664			
23	TRIBUTARY 119	H	25.1	13.46	0.640	6.33	1.000	997.	273.4	0.2371	17.887	0.659	5.86	0.0000	3.32
24	TRIBUTARY 119	T	24.7									0.659			
25	UPPER TALARIK	J	24.7	13.54	0.637	6.33	1.000	999.	273.4	0.0908	17.883	3.323		0.0756	3.32
26	UPPER TALARIK	Q	24.5	13.54	0.637	6.33	1.000	999.	273.4	0.0908	17.883	3.341		0.0454	3.32
27	UPPER TALARIK	C	20.8	13.65	0.633	6.33	1.000	1001.	273.4	0.0978	17.877	3.508		0.0454	3.32
28	UPPER TALARIK	C	18.8	13.76	0.629	6.33	1.000	1003.	273.4	0.0872	17.870	3.599		0.0454	3.32
29	UPPER TALARIK	C	14.6	13.93	0.623	6.33	1.000	1006.	273.3	0.1007	17.863	3.790		0.0454	3.32
30	UPPER TALARIK	Q	14.4	13.93	0.623	6.33	1.000	1006.	273.3	0.1007	17.863	3.801		-0.2595	3.32
31	UPPER TALARIK	Q	9.8	13.93	0.623	6.33	1.000	1006.	273.3	0.1007	17.863	2.630		0.3176	3.32
32	UPPER TALARIK	C	9.1	14.14	0.615	6.33	1.000	1010.	273.3	0.1106	17.851	2.860		0.3176	3.32
33	UPPER TALARIK	Q	2.2	14.14	0.615	6.33	1.000	1010.	273.3	0.1106	17.851	5.046		0.0768	3.32
34	UPPER TALARIK	E	0.0									5.218			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.66	0.781	3.58	1.000	975.	159.2	0.3107	17.875	0.064	3.87	0.0461	9.63
2	UPPER TALARIK	Q	60.0	11.66	0.781	3.58	1.000	975.	159.2	0.3107	17.875	0.175		0.0292	9.63
3	UPPER TALARIK	C	59.7	11.96	0.768	3.58	1.000	981.	159.2	0.2291	17.871	0.184		0.0292	9.63
4	UPPER TALARIK	C	56.5	12.11	0.761	3.58	1.000	983.	159.2	0.2093	17.870	0.277		0.0292	9.63
5	UPPER TALARIK	C	55.4	12.18	0.758	3.58	1.000	985.	159.1	0.1696	17.870	0.309		0.0292	9.63
6	UPPER TALARIK	C	51.9	12.29	0.753	3.58	1.000	987.	159.1	0.1732	17.867	0.412		0.0292	9.63
7	UPPER TALARIK	Q	51.6	12.29	0.753	3.58	1.000	987.	159.1	0.1732	17.867	0.419		0.1434	8.79
8	UPPER TALARIK	C	45.9	12.36	0.750	3.58	1.000	988.	159.1	0.1398	17.863	1.237		0.1434	8.79
9	UPPER TALARIK	B	45.0									1.361			
10	TRIBUTARY 135	H	46.4	12.36	0.749	3.58	1.000	988.	159.1	0.1961	17.863	0.111	12.87	0.0000	8.79
11	TRIBUTARY 135	T	45.0									0.111			
12	UPPER TALARIK	J	45.0	12.43	0.746	3.58	1.000	989.	159.1	0.1398	17.857	1.472		0.1432	8.79
13	UPPER TALARIK	Q	44.6	12.43	0.746	3.58	1.000	989.	159.1	0.1398	17.857	1.532		0.0252	7.57
14	UPPER TALARIK	C	38.4	12.55	0.742	3.58	1.000	991.	159.1	0.1201	17.850	1.690		0.0252	7.57
15	UPPER TALARIK	Q	37.6	12.55	0.742	3.58	1.000	991.	159.1	0.1201	17.850	1.708		0.0661	7.57
16	UPPER TALARIK	C	35.8	12.63	0.738	3.58	1.000	993.	159.1	0.0814	17.846	1.829		0.0661	7.57
17	UPPER TALARIK	C	32.9	12.69	0.735	3.58	1.000	994.	159.1	0.0969	17.844	2.018		0.0661	7.57
18	UPPER TALARIK	C	32.3	12.77	0.732	3.58	1.000	995.	159.1	0.0982	17.840	2.059		0.0661	7.57
19	UPPER TALARIK	Q	29.3	12.77	0.732	3.58	1.000	995.	159.1	0.0982	17.840	2.259		0.0764	3.70
20	UPPER TALARIK	C	27.1	12.86	0.728	3.58	1.000	997.	159.1	0.0723	17.835	2.424		0.0764	3.70
21	UPPER TALARIK	C	25.0	12.88	0.727	3.58	1.000	997.	159.1	0.0910	17.835	2.585		0.0764	3.70
22	UPPER TALARIK	B	24.7									2.608			
23	TRIBUTARY 119	H	25.1	12.87	0.728	3.58	1.000	997.	159.1	0.2374	17.835	0.659	5.22	0.0000	3.70
24	TRIBUTARY 119	T	24.7									0.659			
25	UPPER TALARIK	J	24.7	12.95	0.724	3.58	1.000	999.	159.1	0.0910	17.831	3.267		0.0756	3.70
26	UPPER TALARIK	Q	24.5	12.95	0.724	3.58	1.000	999.	159.1	0.0910	17.831	3.285		0.0444	3.70
27	UPPER TALARIK	C	20.8	13.06	0.720	3.58	1.000	1001.	159.1	0.0980	17.826	3.449		0.0444	3.70
28	UPPER TALARIK	C	18.8	13.17	0.715	3.58	1.000	1003.	159.1	0.0874	17.819	3.537		0.0444	3.70
29	UPPER TALARIK	C	14.6	13.34	0.708	3.58	1.000	1006.	159.0	0.1008	17.811	3.724		0.0444	3.70
30	UPPER TALARIK	Q	14.4	13.34	0.708	3.58	1.000	1006.	159.0	0.1008	17.811	3.735		-0.2584	3.70
31	UPPER TALARIK	Q	9.8	13.34	0.708	3.58	1.000	1006.	159.0	0.1008	17.811	2.569		0.3144	3.70
32	UPPER TALARIK	C	9.1	13.55	0.699	3.58	1.000	1010.	159.0	0.1107	17.800	2.797		0.3144	3.70
33	UPPER TALARIK	Q	2.2	13.55	0.699	3.58	1.000	1010.	159.0	0.1107	17.800	4.960		0.0754	3.70
34	UPPER TALARIK	E	0.0									5.129			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.50	0.931	4.40	1.000	975.	71.4	0.3111	17.821	0.073	4.24	0.0519	9.59
2	UPPER TALARIK	Q	60.0	9.50	0.931	4.40	1.000	975.	71.4	0.3111	17.821	0.198		0.0402	9.59
3	UPPER TALARIK	C	59.7	9.80	0.916	4.40	1.000	981.	71.4	0.2295	17.817	0.211		0.0402	9.59
4	UPPER TALARIK	C	56.5	9.95	0.907	4.40	1.000	983.	71.3	0.2096	17.816	0.338		0.0402	9.59
5	UPPER TALARIK	C	55.4	10.02	0.904	4.40	1.000	985.	71.3	0.1697	17.816	0.382		0.0402	9.59
6	UPPER TALARIK	C	51.9	10.13	0.898	4.40	1.000	987.	71.3	0.1735	17.813	0.525		0.0402	9.59
7	UPPER TALARIK	Q	51.6	10.13	0.898	4.40	1.000	987.	71.3	0.1735	17.813	0.534		0.1797	8.73
8	UPPER TALARIK	C	45.9	10.20	0.894	4.40	1.000	988.	71.3	0.1401	17.809	1.560		0.1797	8.73
9	UPPER TALARIK	B	45.0									1.715			
10	TRIBUTARY 135	H	46.4	10.20	0.894	4.40	1.000	988.	71.3	0.1963	17.809	0.140	11.16	0.0000	8.73
11	TRIBUTARY 135	T	45.0									0.140			
12	UPPER TALARIK	J	45.0	10.27	0.890	4.40	1.000	989.	71.3	0.1400	17.804	1.855		0.1790	8.73
13	UPPER TALARIK	Q	44.6	10.27	0.890	4.40	1.000	989.	71.3	0.1400	17.804	1.930		0.0177	7.62
14	UPPER TALARIK	C	38.4	10.39	0.885	4.40	1.000	991.	71.3	0.1204	17.796	2.041		0.0177	7.62
15	UPPER TALARIK	Q	37.6	10.39	0.885	4.40	1.000	991.	71.3	0.1204	17.796	2.054		0.0690	7.62
16	UPPER TALARIK	C	35.8	10.47	0.880	4.40	1.000	993.	71.3	0.0814	17.792	2.180		0.0690	7.62
17	UPPER TALARIK	C	32.9	10.53	0.877	4.40	1.000	994.	71.3	0.0970	17.791	2.378		0.0690	7.62
18	UPPER TALARIK	C	32.3	10.61	0.873	4.40	1.000	995.	71.3	0.0984	17.786	2.420		0.0690	7.62
19	UPPER TALARIK	Q	29.3	10.61	0.873	4.40	1.000	995.	71.3	0.0984	17.786	2.629		0.0796	4.09
20	UPPER TALARIK	C	27.1	10.70	0.868	4.40	1.000	997.	71.3	0.0722	17.782	2.801		0.0796	4.09
21	UPPER TALARIK	C	25.0	10.72	0.867	4.40	1.000	997.	71.3	0.0912	17.782	2.969		0.0796	4.09
22	UPPER TALARIK	B	24.7									2.993			
23	TRIBUTARY 119	H	25.1	10.71	0.868	4.40	1.000	997.	71.3	0.2378	17.782	0.669	4.95	0.0000	4.09
24	TRIBUTARY 119	T	24.7									0.669			
25	UPPER TALARIK	J	24.7	10.79	0.864	4.40	1.000	999.	71.3	0.0912	17.778	3.662		0.0798	4.09
26	UPPER TALARIK	Q	24.5	10.79	0.864	4.40	1.000	999.	71.3	0.0912	17.778	3.681		0.0505	4.09
27	UPPER TALARIK	C	20.8	10.90	0.858	4.40	1.000	1001.	71.3	0.0982	17.772	3.867		0.0505	4.09
28	UPPER TALARIK	C	18.8	11.01	0.853	4.40	1.000	1003.	71.3	0.0876	17.766	3.968		0.0505	4.09
29	UPPER TALARIK	C	14.6	11.18	0.844	4.40	1.000	1006.	71.3	0.1010	17.758	4.181		0.0505	4.09
30	UPPER TALARIK	Q	14.4	11.18	0.844	4.40	1.000	1006.	71.3	0.1010	17.758	4.193		-0.2641	4.09
31	UPPER TALARIK	Q	9.8	11.18	0.844	4.40	1.000	1006.	71.3	0.1010	17.758	3.001		0.3367	4.09
32	UPPER TALARIK	C	9.1	11.39	0.834	4.40	1.000	1010.	71.3	0.1109	17.747	3.245		0.3367	4.09
33	UPPER TALARIK	Q	2.2	11.39	0.834	4.40	1.000	1010.	71.3	0.1109	17.747	5.562		0.0844	4.09
34	UPPER TALARIK	E	0.0									5.751			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.38	0.884	4.48	1.000	975.	117.1	0.3116	17.765	0.070	4.13	0.0494	9.34
2	UPPER TALARIK	Q	60.0	10.38	0.884	4.48	1.000	975.	117.1	0.3116	17.765	0.189		0.0378	9.34
3	UPPER TALARIK	C	59.7	10.68	0.869	4.48	1.000	981.	117.1	0.2299	17.761	0.201		0.0378	9.34
4	UPPER TALARIK	C	56.5	10.83	0.861	4.48	1.000	983.	117.1	0.2100	17.760	0.321		0.0378	9.34
5	UPPER TALARIK	C	55.4	10.90	0.858	4.48	1.000	985.	117.1	0.1699	17.761	0.362		0.0378	9.34
6	UPPER TALARIK	C	51.9	11.01	0.853	4.48	1.000	987.	117.0	0.1738	17.757	0.496		0.0378	9.34
7	UPPER TALARIK	Q	51.6	11.01	0.853	4.48	1.000	987.	117.0	0.1738	17.757	0.505		0.1796	8.56
8	UPPER TALARIK	C	45.9	11.08	0.849	4.48	1.000	988.	117.0	0.1403	17.753	1.530		0.1796	8.56
9	UPPER TALARIK	B	45.0									1.685			
10	TRIBUTARY 135	H	46.4	11.08	0.849	4.48	1.000	988.	117.0	0.1966	17.753	0.139	10.95	0.0000	8.56
11	TRIBUTARY 135	T	45.0									0.139			
12	UPPER TALARIK	J	45.0	11.15	0.845	4.48	1.000	989.	117.0	0.1403	17.748	1.824		0.1790	8.56
13	UPPER TALARIK	Q	44.6	11.15	0.845	4.48	1.000	989.	117.0	0.1403	17.748	1.899		0.0260	7.59
14	UPPER TALARIK	C	38.4	11.27	0.840	4.48	1.000	991.	117.0	0.1206	17.741	2.062		0.0260	7.59
15	UPPER TALARIK	Q	37.6	11.27	0.840	4.48	1.000	991.	117.0	0.1206	17.741	2.081		0.0739	7.59
16	UPPER TALARIK	C	35.8	11.35	0.836	4.48	1.000	993.	117.0	0.0814	17.737	2.216		0.0739	7.59
17	UPPER TALARIK	C	32.9	11.41	0.833	4.48	1.000	994.	117.0	0.0972	17.735	2.428		0.0739	7.59
18	UPPER TALARIK	C	32.3	11.49	0.829	4.48	1.000	995.	117.0	0.0986	17.731	2.473		0.0739	7.59
19	UPPER TALARIK	Q	29.3	11.49	0.829	4.48	1.000	995.	117.0	0.0986	17.731	2.697		0.0855	4.36
20	UPPER TALARIK	C	27.1	11.58	0.824	4.48	1.000	997.	117.0	0.0721	17.727	2.882		0.0855	4.36
21	UPPER TALARIK	C	25.0	11.60	0.823	4.48	1.000	997.	117.0	0.0914	17.726	3.063		0.0855	4.36
22	UPPER TALARIK	B	24.7									3.088			
23	TRIBUTARY 119	H	25.1	11.59	0.824	4.48	1.000	997.	117.0	0.2382	17.726	0.658	5.18	0.0000	4.36
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	11.67	0.820	4.48	1.000	999.	117.0	0.0914	17.723	3.746		0.0840	4.36
26	UPPER TALARIK	Q	24.5	11.67	0.820	4.48	1.000	999.	117.0	0.0914	17.723	3.766		0.0519	4.36
27	UPPER TALARIK	C	20.8	11.78	0.815	4.48	1.000	1001.	117.0	0.0985	17.717	3.957		0.0519	4.36
28	UPPER TALARIK	C	18.8	11.89	0.810	4.48	1.000	1003.	117.0	0.0878	17.710	4.061		0.0519	4.36
29	UPPER TALARIK	C	14.6	12.06	0.802	4.48	1.000	1006.	117.0	0.1011	17.703	4.280		0.0519	4.36
30	UPPER TALARIK	Q	14.4	12.06	0.802	4.48	1.000	1006.	117.0	0.1011	17.703	4.292		-0.2650	4.36
31	UPPER TALARIK	Q	9.8	12.06	0.802	4.48	1.000	1006.	117.0	0.1011	17.703	3.096		0.3412	4.36
32	UPPER TALARIK	C	9.1	12.27	0.792	4.48	1.000	1010.	117.0	0.1111	17.692	3.343		0.3412	4.36
33	UPPER TALARIK	Q	2.2	12.27	0.792	4.48	1.000	1010.	117.0	0.1111	17.692	5.691		0.0866	4.36
34	UPPER TALARIK	E	0.0									5.885			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.09	0.828	3.79	1.000	975.	110.7	0.3121	17.707	0.067	3.82	0.0474	9.12
2	UPPER TALARIK	Q	60.0	11.09	0.828	3.79	1.000	975.	110.7	0.3121	17.707	0.181		0.0328	9.12
3	UPPER TALARIK	C	59.7	11.39	0.814	3.79	1.000	981.	110.7	0.2303	17.703	0.191		0.0328	9.12
4	UPPER TALARIK	C	56.5	11.54	0.806	3.79	1.000	983.	110.7	0.2103	17.702	0.295		0.0328	9.12
5	UPPER TALARIK	C	55.4	11.61	0.803	3.79	1.000	985.	110.6	0.1700	17.703	0.331		0.0328	9.12
6	UPPER TALARIK	C	51.9	11.72	0.798	3.79	1.000	987.	110.6	0.1741	17.700	0.447		0.0328	9.12
7	UPPER TALARIK	Q	51.6	11.72	0.798	3.79	1.000	987.	110.6	0.1741	17.700	0.455		0.1606	8.53
8	UPPER TALARIK	C	45.9	11.79	0.795	3.79	1.000	988.	110.6	0.1406	17.696	1.371		0.1606	8.53
9	UPPER TALARIK	B	45.0									1.510			
10	TRIBUTARY 135	H	46.4	11.79	0.795	3.79	1.000	988.	110.6	0.1968	17.695	0.125	10.74	0.0000	8.53
11	TRIBUTARY 135	T	45.0									0.125			
12	UPPER TALARIK	J	45.0	11.86	0.791	3.79	1.000	989.	110.6	0.1405	17.690	1.635		0.1599	8.53
13	UPPER TALARIK	Q	44.6	11.86	0.791	3.79	1.000	989.	110.6	0.1405	17.690	1.702		0.0271	7.55
14	UPPER TALARIK	C	38.4	11.98	0.786	3.79	1.000	991.	110.6	0.1209	17.683	1.872		0.0271	7.55
15	UPPER TALARIK	Q	37.6	11.98	0.786	3.79	1.000	991.	110.6	0.1209	17.683	1.891		0.0719	7.55
16	UPPER TALARIK	C	35.8	12.06	0.782	3.79	1.000	993.	110.6	0.0814	17.679	2.022		0.0719	7.55
17	UPPER TALARIK	C	32.9	12.12	0.780	3.79	1.000	994.	110.6	0.0974	17.678	2.228		0.0719	7.55
18	UPPER TALARIK	C	32.3	12.20	0.776	3.79	1.000	995.	110.6	0.0988	17.673	2.272		0.0719	7.55
19	UPPER TALARIK	Q	29.3	12.20	0.776	3.79	1.000	995.	110.6	0.0988	17.673	2.490		0.0831	4.54
20	UPPER TALARIK	C	27.1	12.29	0.772	3.79	1.000	997.	110.6	0.0721	17.669	2.670		0.0831	4.54
21	UPPER TALARIK	C	25.0	12.31	0.771	3.79	1.000	997.	110.6	0.0916	17.669	2.845		0.0831	4.54
22	UPPER TALARIK	B	24.7									2.870			
23	TRIBUTARY 119	H	25.1	12.30	0.772	3.79	1.000	997.	110.6	0.2387	17.669	0.650	5.49	0.0000	4.54
24	TRIBUTARY 119	T	24.7									0.650			
25	UPPER TALARIK	J	24.7	12.38	0.768	3.79	1.000	999.	110.6	0.0916	17.665	3.520		0.0840	4.54
26	UPPER TALARIK	Q	24.5	12.38	0.768	3.79	1.000	999.	110.6	0.0916	17.665	3.540		0.0483	4.54
27	UPPER TALARIK	C	20.8	12.49	0.763	3.79	1.000	1001.	110.6	0.0987	17.660	3.718		0.0483	4.54
28	UPPER TALARIK	C	18.8	12.60	0.758	3.79	1.000	1003.	110.6	0.0880	17.654	3.815		0.0483	4.54
29	UPPER TALARIK	C	14.6	12.77	0.751	3.79	1.000	1006.	110.6	0.1013	17.646	4.018		0.0483	4.54
30	UPPER TALARIK	Q	14.4	12.77	0.751	3.79	1.000	1006.	110.6	0.1013	17.646	4.030		-0.2626	4.54
31	UPPER TALARIK	Q	9.8	12.77	0.751	3.79	1.000	1006.	110.6	0.1013	17.646	2.845		0.3290	4.54
32	UPPER TALARIK	C	9.1	12.98	0.741	3.79	1.000	1010.	110.6	0.1113	17.636	3.083		0.3290	4.54
33	UPPER TALARIK	Q	2.2	12.98	0.741	3.79	1.000	1010.	110.6	0.1113	17.636	5.347		0.0812	4.54
34	UPPER TALARIK	E	0.0									5.529			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.24	0.771	5.75	1.000	975.	186.7	0.3125	17.648	0.064	3.26	0.0457	9.09
2	UPPER TALARIK	Q	60.0	12.24	0.771	5.75	1.000	975.	186.7	0.3125	17.648	0.174		0.0298	9.09
3	UPPER TALARIK	C	59.7	12.54	0.758	5.75	1.000	981.	186.6	0.2307	17.644	0.183		0.0298	9.09
4	UPPER TALARIK	C	56.5	12.69	0.751	5.75	1.000	983.	186.5	0.2107	17.643	0.278		0.0298	9.09
5	UPPER TALARIK	C	55.4	12.76	0.749	5.75	1.000	985.	186.5	0.1702	17.643	0.310		0.0298	9.09
6	UPPER TALARIK	C	51.9	12.87	0.744	5.75	1.000	987.	186.5	0.1745	17.640	0.416		0.0298	9.09
7	UPPER TALARIK	Q	51.6	12.87	0.744	5.75	1.000	987.	186.5	0.1745	17.640	0.423		0.1513	8.75
8	UPPER TALARIK	C	45.9	12.94	0.741	5.75	1.000	988.	186.5	0.1409	17.636	1.286		0.1513	8.75
9	UPPER TALARIK	B	45.0									1.417			
10	TRIBUTARY 135	H	46.4	12.94	0.740	5.75	1.000	988.	186.5	0.1971	17.636	0.118	11.35	0.0000	8.75
11	TRIBUTARY 135	T	45.0									0.118			
12	UPPER TALARIK	J	45.0	13.01	0.737	5.75	1.000	989.	186.5	0.1408	17.631	1.535		0.1504	8.75
13	UPPER TALARIK	Q	44.6	13.01	0.737	5.75	1.000	989.	186.5	0.1408	17.631	1.598		0.0262	7.58
14	UPPER TALARIK	C	38.4	13.13	0.733	5.75	1.000	991.	186.5	0.1211	17.624	1.762		0.0262	7.58
15	UPPER TALARIK	Q	37.6	13.13	0.733	5.75	1.000	991.	186.5	0.1211	17.624	1.781		0.0696	7.58
16	UPPER TALARIK	C	35.8	13.21	0.729	5.75	1.000	993.	186.5	0.0814	17.620	1.908		0.0696	7.58
17	UPPER TALARIK	C	32.9	13.27	0.726	5.75	1.000	994.	186.5	0.0976	17.619	2.108		0.0696	7.58
18	UPPER TALARIK	C	32.3	13.35	0.723	5.75	1.000	995.	186.5	0.0991	17.614	2.150		0.0696	7.58
19	UPPER TALARIK	Q	29.3	13.35	0.723	5.75	1.000	995.	186.5	0.0991	17.614	2.361		0.0803	4.67
20	UPPER TALARIK	C	27.1	13.44	0.719	5.75	1.000	997.	186.5	0.0720	17.610	2.534		0.0803	4.67
21	UPPER TALARIK	C	25.0	13.46	0.718	5.75	1.000	997.	186.5	0.0918	17.610	2.704		0.0803	4.67
22	UPPER TALARIK	B	24.7									2.728			
23	TRIBUTARY 119	H	25.1	13.45	0.719	5.75	1.000	997.	186.5	0.2391	17.610	0.651	5.56	0.0000	4.67
24	TRIBUTARY 119	T	24.7									0.651			
25	UPPER TALARIK	J	24.7	13.53	0.715	5.75	1.000	999.	186.5	0.0918	17.607	3.379		0.0798	4.67
26	UPPER TALARIK	Q	24.5	13.53	0.715	5.75	1.000	999.	186.5	0.0918	17.607	3.398		0.0461	4.67
27	UPPER TALARIK	C	20.8	13.64	0.711	5.75	1.000	1001.	186.5	0.0990	17.601	3.568		0.0461	4.67
28	UPPER TALARIK	C	18.8	13.75	0.706	5.75	1.000	1003.	186.5	0.0883	17.595	3.660		0.0461	4.67
29	UPPER TALARIK	C	14.6	13.92	0.699	5.75	1.000	1006.	186.4	0.1015	17.588	3.855		0.0461	4.67
30	UPPER TALARIK	Q	14.4	13.92	0.699	5.75	1.000	1006.	186.4	0.1015	17.588	3.866		-0.2604	4.67
31	UPPER TALARIK	Q	9.8	13.92	0.699	5.75	1.000	1006.	186.4	0.1015	17.588	2.691		0.3209	4.67
32	UPPER TALARIK	C	9.1	14.13	0.691	5.75	1.000	1010.	186.4	0.1114	17.577	2.924		0.3209	4.67
33	UPPER TALARIK	Q	2.2	14.13	0.691	5.75	1.000	1010.	186.4	0.1114	17.577	5.132		0.0777	4.67
34	UPPER TALARIK	E	0.0									5.306			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.46	0.734	5.11	1.000	975.	273.5	0.3130	17.587	0.062	2.99	0.0445	9.31
2	UPPER TALARIK	Q	60.0	13.46	0.734	5.11	1.000	975.	273.5	0.3130	17.587	0.169		0.0271	9.31
3	UPPER TALARIK	C	59.7	13.76	0.721	5.11	1.000	981.	273.5	0.2312	17.583	0.177		0.0271	9.31
4	UPPER TALARIK	C	56.5	13.91	0.715	5.11	1.000	983.	273.4	0.2111	17.582	0.263		0.0271	9.31
5	UPPER TALARIK	C	55.4	13.98	0.712	5.11	1.000	985.	273.4	0.1704	17.582	0.293		0.0271	9.31
6	UPPER TALARIK	C	51.9	14.09	0.707	5.11	1.000	987.	273.3	0.1749	17.579	0.389		0.0271	9.31
7	UPPER TALARIK	Q	51.6	14.09	0.707	5.11	1.000	987.	273.3	0.1749	17.579	0.395		0.1399	9.11
8	UPPER TALARIK	C	45.9	14.16	0.704	5.11	1.000	988.	273.3	0.1411	17.575	1.193		0.1399	9.11
9	UPPER TALARIK	B	45.0									1.314			
10	TRIBUTARY 135	H	46.4	14.16	0.704	5.11	1.000	988.	273.3	0.1974	17.575	0.109	13.17	0.0000	9.11
11	TRIBUTARY 135	T	45.0									0.109			
12	UPPER TALARIK	J	45.0	14.23	0.701	5.11	1.000	989.	273.3	0.1411	17.570	1.423		0.1384	9.11
13	UPPER TALARIK	Q	44.6	14.23	0.701	5.11	1.000	989.	273.3	0.1411	17.570	1.481		0.0295	7.79
14	UPPER TALARIK	C	38.4	14.35	0.697	5.11	1.000	991.	273.3	0.1214	17.563	1.666		0.0295	7.79
15	UPPER TALARIK	Q	37.6	14.35	0.697	5.11	1.000	991.	273.3	0.1214	17.563	1.687		0.0680	7.79
16	UPPER TALARIK	C	35.8	14.43	0.693	5.11	1.000	993.	273.3	0.0814	17.560	1.811		0.0680	7.79
17	UPPER TALARIK	C	32.9	14.49	0.691	5.11	1.000	994.	273.3	0.0979	17.558	2.006		0.0680	7.79
18	UPPER TALARIK	C	32.3	14.57	0.688	5.11	1.000	995.	273.3	0.0993	17.554	2.048		0.0680	7.79
19	UPPER TALARIK	Q	29.3	14.57	0.688	5.11	1.000	995.	273.3	0.0993	17.554	2.254		0.0785	4.84
20	UPPER TALARIK	C	27.1	14.66	0.684	5.11	1.000	997.	273.3	0.0719	17.550	2.424		0.0785	4.84
21	UPPER TALARIK	C	25.0	14.68	0.683	5.11	1.000	997.	273.3	0.0920	17.549	2.590		0.0785	4.84
22	UPPER TALARIK	B	24.7									2.613			
23	TRIBUTARY 119	H	25.1	14.67	0.684	5.11	1.000	997.	273.3	0.2396	17.550	0.653	5.88	0.0000	4.84
24	TRIBUTARY 119	T	24.7									0.653			
25	UPPER TALARIK	J	24.7	14.75	0.680	5.11	1.000	999.	273.3	0.0920	17.546	3.266		0.0798	4.84
26	UPPER TALARIK	Q	24.5	14.75	0.680	5.11	1.000	999.	273.3	0.0920	17.546	3.285		0.0444	4.84
27	UPPER TALARIK	C	20.8	14.86	0.676	5.11	1.000	1001.	273.3	0.0992	17.541	3.449		0.0444	4.84
28	UPPER TALARIK	C	18.8	14.97	0.672	5.11	1.000	1003.	273.3	0.0885	17.534	3.537		0.0444	4.84
29	UPPER TALARIK	C	14.6	15.14	0.665	5.11	1.000	1006.	273.2	0.1017	17.528	3.724		0.0444	4.84
30	UPPER TALARIK	Q	14.4	15.14	0.665	5.11	1.000	1006.	273.2	0.1017	17.528	3.735		-0.2584	4.84
31	UPPER TALARIK	Q	9.8	15.14	0.665	5.11	1.000	1006.	273.2	0.1017	17.528	2.569		0.3144	4.84
32	UPPER TALARIK	C	9.1	15.35	0.657	5.11	1.000	1010.	273.2	0.1116	17.517	2.797		0.3144	4.84
33	UPPER TALARIK	Q	2.2	15.35	0.657	5.11	1.000	1010.	273.2	0.1116	17.517	4.960		0.0754	4.84
34	UPPER TALARIK	E	0.0									5.129			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.64	0.809	4.02	1.000	975.	107.0	0.3136	17.524	0.062	3.47	0.0440	9.65
2	UPPER TALARIK	Q	60.0	11.64	0.809	4.02	1.000	975.	107.0	0.3136	17.524	0.168		0.0261	9.65
3	UPPER TALARIK	C	59.7	11.94	0.795	4.02	1.000	981.	107.0	0.2317	17.520	0.176		0.0261	9.65
4	UPPER TALARIK	C	56.5	12.09	0.788	4.02	1.000	983.	107.0	0.2115	17.519	0.259		0.0261	9.65
5	UPPER TALARIK	C	55.4	12.16	0.785	4.02	1.000	985.	107.0	0.1706	17.520	0.287		0.0261	9.65
6	UPPER TALARIK	C	51.9	12.27	0.780	4.02	1.000	987.	107.0	0.1752	17.516	0.380		0.0261	9.65
7	UPPER TALARIK	Q	51.6	12.27	0.780	4.02	1.000	987.	107.0	0.1752	17.516	0.386		0.1309	9.38
8	UPPER TALARIK	C	45.9	12.34	0.777	4.02	1.000	988.	107.0	0.1414	17.513	1.133		0.1309	9.38
9	UPPER TALARIK	B	45.0									1.246			
10	TRIBUTARY 135	H	46.4	12.34	0.777	4.02	1.000	988.	107.0	0.1977	17.512	0.102	12.98	0.0000	9.38
11	TRIBUTARY 135	T	45.0									0.102			
12	UPPER TALARIK	J	45.0	12.41	0.773	4.02	1.000	989.	107.0	0.1414	17.508	1.348		0.1289	9.38
13	UPPER TALARIK	Q	44.6	12.41	0.773	4.02	1.000	989.	107.0	0.1414	17.508	1.402		0.0293	8.21
14	UPPER TALARIK	C	38.4	12.53	0.768	4.02	1.000	991.	107.0	0.1217	17.501	1.586		0.0293	8.21
15	UPPER TALARIK	Q	37.6	12.53	0.768	4.02	1.000	991.	107.0	0.1217	17.501	1.607		0.0693	8.21
16	UPPER TALARIK	C	35.8	12.61	0.764	4.02	1.000	993.	106.9	0.0814	17.497	1.733		0.0693	8.21
17	UPPER TALARIK	C	32.9	12.67	0.762	4.02	1.000	994.	106.9	0.0981	17.496	1.933		0.0693	8.21
18	UPPER TALARIK	C	32.3	12.75	0.758	4.02	1.000	995.	106.9	0.0996	17.491	1.975		0.0693	8.21
19	UPPER TALARIK	Q	29.3	12.75	0.758	4.02	1.000	995.	106.9	0.0996	17.491	2.185		0.0803	5.09
20	UPPER TALARIK	C	27.1	12.84	0.754	4.02	1.000	997.	106.9	0.0719	17.488	2.358		0.0803	5.09
21	UPPER TALARIK	C	25.0	12.86	0.753	4.02	1.000	997.	106.9	0.0923	17.487	2.528		0.0803	5.09
22	UPPER TALARIK	B	24.7									2.552			
23	TRIBUTARY 119	H	25.1	12.85	0.754	4.02	1.000	997.	106.9	0.2401	17.487	0.657	5.18	0.0000	5.09
24	TRIBUTARY 119	T	24.7									0.657			
25	UPPER TALARIK	J	24.7	12.93	0.750	4.02	1.000	999.	106.9	0.0923	17.484	3.209		0.0798	5.09
26	UPPER TALARIK	Q	24.5	12.93	0.750	4.02	1.000	999.	106.9	0.0923	17.484	3.228		0.0436	5.09
27	UPPER TALARIK	C	20.8	13.04	0.746	4.02	1.000	1001.	106.9	0.0995	17.479	3.389		0.0436	5.09
28	UPPER TALARIK	C	18.8	13.15	0.741	4.02	1.000	1003.	106.9	0.0888	17.472	3.476		0.0436	5.09
29	UPPER TALARIK	C	14.6	13.32	0.734	4.02	1.000	1006.	106.9	0.1019	17.466	3.660		0.0436	5.09
30	UPPER TALARIK	Q	14.4	13.32	0.734	4.02	1.000	1006.	106.9	0.1019	17.466	3.670		-0.2573	5.09
31	UPPER TALARIK	Q	9.8	13.32	0.734	4.02	1.000	1006.	106.9	0.1019	17.466	2.509		0.3109	5.09
32	UPPER TALARIK	C	9.1	13.53	0.725	4.02	1.000	1010.	106.9	0.1119	17.456	2.734		0.3109	5.09
33	UPPER TALARIK	Q	2.2	13.53	0.725	4.02	1.000	1010.	106.9	0.1119	17.456	4.874		0.0741	5.09
34	UPPER TALARIK	E	0.0									5.040			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.13	0.734	2.84	1.000	975.	123.5	0.3141	17.459	0.061	3.57	0.0440	9.82
2	UPPER TALARIK	Q	60.0	13.13	0.734	2.84	1.000	975.	123.5	0.3141	17.459	0.167		0.0266	9.82
3	UPPER TALARIK	C	59.7	13.43	0.721	2.84	1.000	981.	123.4	0.2323	17.456	0.175		0.0266	9.82
4	UPPER TALARIK	C	56.5	13.58	0.715	2.84	1.000	983.	123.4	0.2119	17.455	0.260		0.0266	9.82
5	UPPER TALARIK	C	55.4	13.65	0.712	2.84	1.000	985.	123.4	0.1708	17.455	0.289		0.0266	9.82
6	UPPER TALARIK	C	51.9	13.76	0.707	2.84	1.000	987.	123.4	0.1756	17.452	0.383		0.0266	9.82
7	UPPER TALARIK	Q	51.6	13.76	0.707	2.84	1.000	987.	123.4	0.1756	17.452	0.389		0.1318	9.35
8	UPPER TALARIK	C	45.9	13.83	0.704	2.84	1.000	988.	123.4	0.1417	17.448	1.141		0.1318	9.35
9	UPPER TALARIK	B	45.0									1.255			
10	TRIBUTARY 135	H	46.4	13.83	0.704	2.84	1.000	988.	123.4	0.1980	17.448	0.102	11.85	0.0000	9.35
11	TRIBUTARY 135	T	45.0									0.102			
12	UPPER TALARIK	J	45.0	13.90	0.701	2.84	1.000	989.	123.4	0.1417	17.443	1.357		0.1337	9.35
13	UPPER TALARIK	Q	44.6	13.90	0.701	2.84	1.000	989.	123.4	0.1417	17.443	1.413		0.0295	8.71
14	UPPER TALARIK	C	38.4	14.02	0.697	2.84	1.000	991.	123.4	0.1220	17.437	1.598		0.0295	8.71
15	UPPER TALARIK	Q	37.6	14.02	0.697	2.84	1.000	991.	123.4	0.1220	17.437	1.619		0.0705	8.71
16	UPPER TALARIK	C	35.8	14.10	0.693	2.84	1.000	993.	123.4	0.0814	17.433	1.748		0.0705	8.71
17	UPPER TALARIK	C	32.9	14.16	0.691	2.84	1.000	994.	123.4	0.0983	17.432	1.950		0.0705	8.71
18	UPPER TALARIK	C	32.3	14.24	0.688	2.84	1.000	995.	123.4	0.0998	17.428	1.993		0.0705	8.71
19	UPPER TALARIK	Q	29.3	14.24	0.688	2.84	1.000	995.	123.4	0.0998	17.428	2.207		0.0816	5.35
20	UPPER TALARIK	C	27.1	14.33	0.684	2.84	1.000	997.	123.4	0.0718	17.424	2.383		0.0816	5.35
21	UPPER TALARIK	C	25.0	14.35	0.683	2.84	1.000	997.	123.4	0.0926	17.423	2.556		0.0816	5.35
22	UPPER TALARIK	B	24.7									2.580			
23	TRIBUTARY 119	H	25.1	14.34	0.684	2.84	1.000	997.	123.4	0.2407	17.424	0.657	5.17	0.0000	5.35
24	TRIBUTARY 119	T	24.7									0.657			
25	UPPER TALARIK	J	24.7	14.42	0.680	2.84	1.000	999.	123.4	0.0926	17.420	3.237		0.0798	5.35
26	UPPER TALARIK	Q	24.5	14.42	0.680	2.84	1.000	999.	123.4	0.0926	17.420	3.256		0.0441	5.35
27	UPPER TALARIK	C	20.8	14.53	0.676	2.84	1.000	1001.	123.4	0.0998	17.415	3.419		0.0441	5.35
28	UPPER TALARIK	C	18.8	14.64	0.672	2.84	1.000	1003.	123.4	0.0890	17.409	3.507		0.0441	5.35
29	UPPER TALARIK	C	14.6	14.81	0.665	2.84	1.000	1006.	123.4	0.1021	17.402	3.692		0.0441	5.35
30	UPPER TALARIK	Q	14.4	14.81	0.665	2.84	1.000	1006.	123.4	0.1021	17.402	3.703		-0.2579	5.35
31	UPPER TALARIK	Q	9.8	14.81	0.665	2.84	1.000	1006.	123.4	0.1021	17.402	2.539		0.3126	5.35
32	UPPER TALARIK	C	9.1	15.02	0.657	2.84	1.000	1010.	123.4	0.1121	17.392	2.766		0.3126	5.35
33	UPPER TALARIK	Q	2.2	15.02	0.657	2.84	1.000	1010.	123.4	0.1121	17.392	4.917		0.0746	5.35
34	UPPER TALARIK	E	0.0									5.084			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.95	0.724	2.74	1.000	975.	170.1	0.3147	17.393	0.073	3.89	0.0523	9.90
2	UPPER TALARIK	Q	60.0	14.95	0.724	2.74	1.000	975.	170.1	0.3147	17.393	0.199		0.0265	9.90
3	UPPER TALARIK	C	59.7	15.25	0.712	2.74	1.000	981.	170.1	0.2329	17.390	0.207		0.0265	9.90
4	UPPER TALARIK	C	56.5	15.40	0.706	2.74	1.000	983.	170.0	0.2124	17.389	0.291		0.0265	9.90
5	UPPER TALARIK	C	55.4	15.47	0.703	2.74	1.000	985.	170.0	0.1710	17.389	0.320		0.0265	9.90
6	UPPER TALARIK	C	51.9	15.58	0.698	2.74	1.000	987.	170.0	0.1760	17.386	0.414		0.0265	9.90
7	UPPER TALARIK	Q	51.6	15.58	0.698	2.74	1.000	987.	170.0	0.1760	17.386	0.420		0.1452	9.09
8	UPPER TALARIK	C	45.9	15.65	0.695	2.74	1.000	988.	170.0	0.1421	17.383	1.249		0.1452	9.09
9	UPPER TALARIK	B	45.0									1.374			
10	TRIBUTARY 135	H	46.4	15.65	0.695	2.74	1.000	988.	170.0	0.1983	17.382	0.113	12.40	0.0000	9.09
11	TRIBUTARY 135	T	45.0									0.113			
12	UPPER TALARIK	J	45.0	15.72	0.692	2.74	1.000	989.	170.0	0.1420	17.378	1.487		0.1432	9.09
13	UPPER TALARIK	Q	44.6	15.72	0.692	2.74	1.000	989.	170.0	0.1420	17.378	1.547		0.0162	9.21
14	UPPER TALARIK	C	38.4	15.84	0.688	2.74	1.000	991.	170.0	0.1223	17.371	1.648		0.0162	9.21
15	UPPER TALARIK	Q	37.6	15.84	0.688	2.74	1.000	991.	170.0	0.1223	17.371	1.660		0.0655	9.21
16	UPPER TALARIK	C	35.8	15.92	0.684	2.74	1.000	993.	170.0	0.0814	17.368	1.779		0.0655	9.21
17	UPPER TALARIK	C	32.9	15.98	0.682	2.74	1.000	994.	170.0	0.0986	17.366	1.968		0.0655	9.21
18	UPPER TALARIK	C	32.3	16.06	0.679	2.74	1.000	995.	170.0	0.1001	17.362	2.008		0.0655	9.21
19	UPPER TALARIK	Q	29.3	16.06	0.679	2.74	1.000	995.	170.0	0.1001	17.362	2.206		0.0757	5.60
20	UPPER TALARIK	C	27.1	16.15	0.675	2.74	1.000	997.	170.0	0.0717	17.358	2.370		0.0757	5.60
21	UPPER TALARIK	C	25.0	16.17	0.674	2.74	1.000	997.	170.0	0.0928	17.358	2.529		0.0757	5.60
22	UPPER TALARIK	B	24.7									2.552			
23	TRIBUTARY 119	H	25.1	16.16	0.675	2.74	1.000	997.	170.0	0.2412	17.358	0.658	5.94	0.0000	5.60
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	16.24	0.672	2.74	1.000	999.	170.0	0.0928	17.355	3.210		0.0756	5.60
26	UPPER TALARIK	Q	24.5	16.24	0.672	2.74	1.000	999.	170.0	0.0928	17.355	3.228		0.0436	5.60
27	UPPER TALARIK	C	20.8	16.35	0.668	2.74	1.000	1001.	170.0	0.1001	17.350	3.389		0.0436	5.60
28	UPPER TALARIK	C	18.8	16.46	0.663	2.74	1.000	1003.	170.0	0.0893	17.344	3.476		0.0436	5.60
29	UPPER TALARIK	C	14.6	16.63	0.657	2.74	1.000	1006.	169.9	0.1024	17.337	3.660		0.0436	5.60
30	UPPER TALARIK	Q	14.4	16.63	0.657	2.74	1.000	1006.	169.9	0.1024	17.337	3.670		-0.2573	5.60
31	UPPER TALARIK	Q	9.8	16.63	0.657	2.74	1.000	1006.	169.9	0.1024	17.337	2.509		0.3109	5.60
32	UPPER TALARIK	C	9.1	16.84	0.649	2.74	1.000	1010.	169.9	0.1123	17.328	2.734		0.3109	5.60
33	UPPER TALARIK	Q	2.2	16.84	0.649	2.74	1.000	1010.	169.9	0.1123	17.328	4.874		0.0741	5.60
34	UPPER TALARIK	E	0.0									5.040			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.77	0.913	3.79	1.000	975.	81.4	0.3153	17.326	0.075	4.46	0.0540	9.89
2	UPPER TALARIK	Q	60.0	9.77	0.913	3.79	1.000	975.	81.4	0.3153	17.326	0.205		0.0298	9.89
3	UPPER TALARIK	C	59.7	10.07	0.897	3.79	1.000	981.	81.4	0.2335	17.323	0.214		0.0298	9.89
4	UPPER TALARIK	C	56.5	10.22	0.889	3.79	1.000	983.	81.3	0.2128	17.322	0.309		0.0298	9.89
5	UPPER TALARIK	C	55.4	10.29	0.885	3.79	1.000	985.	81.3	0.1712	17.322	0.341		0.0298	9.89
6	UPPER TALARIK	C	51.9	10.40	0.880	3.79	1.000	987.	81.3	0.1764	17.319	0.447		0.0298	9.89
7	UPPER TALARIK	Q	51.6	10.40	0.880	3.79	1.000	987.	81.3	0.1764	17.319	0.454		0.1823	8.68
8	UPPER TALARIK	C	45.9	10.47	0.876	3.79	1.000	988.	81.3	0.1424	17.316	1.494		0.1823	8.68
9	UPPER TALARIK	B	45.0									1.652			
10	TRIBUTARY 135	H	46.4	10.47	0.876	3.79	1.000	988.	81.3	0.1987	17.315	0.142	11.49	0.0000	8.68
11	TRIBUTARY 135	T	45.0									0.142			
12	UPPER TALARIK	J	45.0	10.54	0.872	3.79	1.000	989.	81.3	0.1423	17.311	1.794		0.1814	8.68
13	UPPER TALARIK	Q	44.6	10.54	0.872	3.79	1.000	989.	81.3	0.1423	17.311	1.870		0.0218	9.55
14	UPPER TALARIK	C	38.4	10.66	0.867	3.79	1.000	991.	81.3	0.1226	17.304	2.006		0.0218	9.55
15	UPPER TALARIK	Q	37.6	10.66	0.867	3.79	1.000	991.	81.3	0.1226	17.304	2.022		0.0663	9.55
16	UPPER TALARIK	C	35.8	10.74	0.862	3.79	1.000	993.	81.3	0.0814	17.301	2.143		0.0663	9.55
17	UPPER TALARIK	C	32.9	10.80	0.859	3.79	1.000	994.	81.3	0.0989	17.299	2.333		0.0663	9.55
18	UPPER TALARIK	C	32.3	10.88	0.855	3.79	1.000	995.	81.3	0.1004	17.295	2.374		0.0663	9.55
19	UPPER TALARIK	Q	29.3	10.88	0.855	3.79	1.000	995.	81.3	0.1004	17.295	2.575		0.0766	5.74
20	UPPER TALARIK	C	27.1	10.97	0.851	3.79	1.000	997.	81.3	0.0717	17.292	2.740		0.0766	5.74
21	UPPER TALARIK	C	25.0	10.99	0.850	3.79	1.000	997.	81.3	0.0931	17.291	2.902		0.0766	5.74
22	UPPER TALARIK	B	24.7									2.925			
23	TRIBUTARY 119	H	25.1	10.98	0.851	3.79	1.000	997.	81.3	0.2418	17.292	0.653	5.27	0.0000	5.74
24	TRIBUTARY 119	T	24.7									0.653			
25	UPPER TALARIK	J	24.7	11.06	0.846	3.79	1.000	999.	81.3	0.0931	17.288	3.578		0.0756	5.74
26	UPPER TALARIK	Q	24.5	11.06	0.846	3.79	1.000	999.	81.3	0.0931	17.288	3.596		0.0492	5.74
27	UPPER TALARIK	C	20.8	11.17	0.841	3.79	1.000	1001.	81.3	0.1004	17.283	3.778		0.0492	5.74
28	UPPER TALARIK	C	18.8	11.28	0.836	3.79	1.000	1003.	81.3	0.0896	17.277	3.876		0.0492	5.74
29	UPPER TALARIK	C	14.6	11.45	0.827	3.79	1.000	1006.	81.3	0.1026	17.271	4.083		0.0492	5.74
30	UPPER TALARIK	Q	14.4	11.45	0.827	3.79	1.000	1006.	81.3	0.1026	17.271	4.095		-0.2632	5.74
31	UPPER TALARIK	Q	9.8	11.45	0.827	3.79	1.000	1006.	81.3	0.1026	17.271	2.907		0.3321	5.74
32	UPPER TALARIK	C	9.1	11.66	0.817	3.79	1.000	1010.	81.3	0.1125	17.261	3.148		0.3321	5.74
33	UPPER TALARIK	Q	2.2	11.66	0.817	3.79	1.000	1010.	81.3	0.1125	17.261	5.433		0.0826	5.74
34	UPPER TALARIK	E	0.0									5.618			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.73	0.941	5.81	1.000	975.	51.2	0.3159	17.257	0.072	4.54	0.0511	9.55
2	UPPER TALARIK	Q	60.0	7.73	0.941	5.81	1.000	975.	51.2	0.3159	17.257	0.195		0.0295	9.55
3	UPPER TALARIK	C	59.7	8.03	0.925	5.81	1.000	981.	51.2	0.2341	17.254	0.204		0.0295	9.55
4	UPPER TALARIK	C	56.5	8.18	0.916	5.81	1.000	983.	51.2	0.2134	17.253	0.298		0.0295	9.55
5	UPPER TALARIK	C	55.4	8.25	0.913	5.81	1.000	985.	51.2	0.1715	17.253	0.330		0.0295	9.55
6	UPPER TALARIK	C	51.9	8.36	0.907	5.81	1.000	987.	51.2	0.1769	17.250	0.434		0.0295	9.55
7	UPPER TALARIK	Q	51.6	8.36	0.907	5.81	1.000	987.	51.2	0.1769	17.250	0.441		0.1590	8.14
8	UPPER TALARIK	C	45.9	8.43	0.903	5.81	1.000	988.	51.2	0.1427	17.247	1.349		0.1590	8.14
9	UPPER TALARIK	B	45.0									1.486			
10	TRIBUTARY 135	H	46.4	8.43	0.903	5.81	1.000	988.	51.2	0.1990	17.247	0.124	9.73	0.0000	8.14
11	TRIBUTARY 135	T	45.0									0.124			
12	UPPER TALARIK	J	45.0	8.50	0.899	5.81	1.000	989.	51.2	0.1427	17.242	1.610		0.1575	8.14
13	UPPER TALARIK	Q	44.6	8.50	0.899	5.81	1.000	989.	51.2	0.1427	17.242	1.676		0.0263	9.60
14	UPPER TALARIK	C	38.4	8.62	0.894	5.81	1.000	991.	51.2	0.1229	17.236	1.841		0.0263	9.60
15	UPPER TALARIK	Q	37.6	8.62	0.894	5.81	1.000	991.	51.2	0.1229	17.236	1.860		0.0693	9.60
16	UPPER TALARIK	C	35.8	8.70	0.889	5.81	1.000	993.	51.2	0.0814	17.233	1.986		0.0693	9.60
17	UPPER TALARIK	C	32.9	8.76	0.886	5.81	1.000	994.	51.2	0.0991	17.231	2.186		0.0693	9.60
18	UPPER TALARIK	C	32.3	8.84	0.882	5.81	1.000	995.	51.2	0.1007	17.227	2.228		0.0693	9.60
19	UPPER TALARIK	Q	29.3	8.84	0.882	5.81	1.000	995.	51.2	0.1007	17.227	2.438		0.0801	5.62
20	UPPER TALARIK	C	27.1	8.93	0.877	5.81	1.000	997.	51.2	0.0716	17.224	2.611		0.0801	5.62
21	UPPER TALARIK	C	25.0	8.95	0.876	5.81	1.000	997.	51.2	0.0934	17.223	2.780		0.0801	5.62
22	UPPER TALARIK	B	24.7									2.804			
23	TRIBUTARY 119	H	25.1	8.94	0.877	5.81	1.000	997.	51.2	0.2424	17.223	0.660	4.79	0.0000	5.62
24	TRIBUTARY 119	T	24.7									0.660			
25	UPPER TALARIK	J	24.7	9.02	0.872	5.81	1.000	999.	51.2	0.0934	17.220	3.464		0.0798	5.62
26	UPPER TALARIK	Q	24.5	9.02	0.872	5.81	1.000	999.	51.2	0.0934	17.220	3.483		0.0474	5.62
27	UPPER TALARIK	C	20.8	9.13	0.867	5.81	1.000	1001.	51.2	0.1007	17.215	3.658		0.0474	5.62
28	UPPER TALARIK	C	18.8	9.24	0.862	5.81	1.000	1003.	51.2	0.0899	17.210	3.753		0.0474	5.62
29	UPPER TALARIK	C	14.6	9.41	0.853	5.81	1.000	1006.	51.2	0.1028	17.203	3.953		0.0474	5.62
30	UPPER TALARIK	Q	14.4	9.41	0.853	5.81	1.000	1006.	51.2	0.1028	17.203	3.964		-0.2617	5.62
31	UPPER TALARIK	Q	9.8	9.41	0.853	5.81	1.000	1006.	51.2	0.1028	17.203	2.783		0.3258	5.62
32	UPPER TALARIK	C	9.1	9.62	0.843	5.81	1.000	1010.	51.2	0.1128	17.194	3.019		0.3258	5.62
33	UPPER TALARIK	Q	2.2	9.62	0.843	5.81	1.000	1010.	51.2	0.1128	17.194	5.261		0.0799	5.62
34	UPPER TALARIK	E	0.0									5.440			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.59	0.941	5.95	1.000	975.	52.1	0.3165	17.187	0.099	4.54	0.0702	8.90
2	UPPER TALARIK	Q	60.0	8.59	0.941	5.95	1.000	975.	52.1	0.3165	17.187	0.268		0.0576	8.90
3	UPPER TALARIK	C	59.7	8.89	0.925	5.95	1.000	981.	52.1	0.2348	17.184	0.286		0.0576	8.90
4	UPPER TALARIK	C	56.5	9.04	0.916	5.95	1.000	983.	52.1	0.2140	17.183	0.469		0.0576	8.90
5	UPPER TALARIK	C	55.4	9.11	0.913	5.95	1.000	985.	52.1	0.1717	17.183	0.532		0.0576	8.90
6	UPPER TALARIK	C	51.9	9.22	0.907	5.95	1.000	987.	52.1	0.1773	17.181	0.736		0.0576	8.90
7	UPPER TALARIK	Q	51.6	9.22	0.907	5.95	1.000	987.	52.1	0.1773	17.181	0.749		0.2856	7.66
8	UPPER TALARIK	C	45.9	9.29	0.903	5.95	1.000	988.	52.1	0.1431	17.177	2.379		0.2856	7.66
9	UPPER TALARIK	B	45.0									2.626			
10	TRIBUTARY 135	H	46.4	9.29	0.903	5.95	1.000	988.	52.1	0.1994	17.177	0.222	8.92	0.0000	7.66
11	TRIBUTARY 135	T	45.0									0.222			
12	UPPER TALARIK	J	45.0	9.36	0.899	5.95	1.000	989.	52.1	0.1430	17.173	2.848		0.2840	7.66
13	UPPER TALARIK	Q	44.6	9.36	0.899	5.95	1.000	989.	52.1	0.1430	17.173	2.967		-0.0335	9.33
14	UPPER TALARIK	C	38.4	9.48	0.894	5.95	1.000	991.	52.1	0.1233	17.166	2.757		-0.0335	9.33
15	UPPER TALARIK	Q	37.6	9.48	0.894	5.95	1.000	991.	52.1	0.1233	17.166	2.733		0.0589	9.33
16	UPPER TALARIK	C	35.8	9.56	0.889	5.95	1.000	993.	52.1	0.0814	17.163	2.840		0.0589	9.33
17	UPPER TALARIK	C	32.9	9.62	0.886	5.95	1.000	994.	52.1	0.0994	17.162	3.010		0.0589	9.33
18	UPPER TALARIK	C	32.3	9.70	0.882	5.95	1.000	995.	52.1	0.1010	17.158	3.046		0.0589	9.33
19	UPPER TALARIK	Q	29.3	9.70	0.882	5.95	1.000	995.	52.1	0.1010	17.158	3.224		0.0680	5.24
20	UPPER TALARIK	C	27.1	9.79	0.877	5.95	1.000	997.	52.1	0.0715	17.154	3.371		0.0680	5.24
21	UPPER TALARIK	C	25.0	9.81	0.876	5.95	1.000	997.	52.1	0.0937	17.154	3.515		0.0680	5.24
22	UPPER TALARIK	B	24.7									3.535			
23	TRIBUTARY 119	H	25.1	9.80	0.877	5.95	1.000	997.	52.1	0.2431	17.154	0.668	4.84	0.0000	5.24
24	TRIBUTARY 119	T	24.7									0.668			
25	UPPER TALARIK	J	24.7	9.88	0.872	5.95	1.000	999.	52.1	0.0937	17.151	4.203		0.0672	5.24
26	UPPER TALARIK	Q	24.5	9.88	0.872	5.95	1.000	999.	52.1	0.0937	17.151	4.219		0.0589	5.24
27	UPPER TALARIK	C	20.8	9.99	0.867	5.95	1.000	1001.	52.1	0.1011	17.146	4.436		0.0589	5.24
28	UPPER TALARIK	C	18.8	10.10	0.862	5.95	1.000	1003.	52.1	0.0902	17.140	4.554		0.0589	5.24
29	UPPER TALARIK	C	14.6	10.27	0.853	5.95	1.000	1006.	52.1	0.1031	17.134	4.802		0.0589	5.24
30	UPPER TALARIK	Q	14.4	10.27	0.853	5.95	1.000	1006.	52.1	0.1031	17.134	4.816		-0.2661	5.24
31	UPPER TALARIK	Q	9.8	10.27	0.853	5.95	1.000	1006.	52.1	0.1031	17.134	3.615		0.3634	5.24
32	UPPER TALARIK	C	9.1	10.48	0.843	5.95	1.000	1010.	52.1	0.1130	17.125	3.878		0.3634	5.24
33	UPPER TALARIK	Q	2.2	10.48	0.843	5.95	1.000	1010.	52.1	0.1130	17.125	6.379		0.0969	5.24
34	UPPER TALARIK	E	0.0									6.596			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.31	0.847	7.13	1.000	975.	103.3	0.3171	17.116	0.089	4.37	0.0636	8.30
2	UPPER TALARIK	Q	60.0	10.31	0.847	7.13	1.000	975.	103.3	0.3171	17.116	0.242		0.0538	8.30
3	UPPER TALARIK	C	59.7	10.61	0.832	7.13	1.000	981.	103.3	0.2355	17.113	0.259		0.0538	8.30
4	UPPER TALARIK	C	56.5	10.76	0.825	7.13	1.000	983.	103.3	0.2146	17.112	0.430		0.0538	8.30
5	UPPER TALARIK	C	55.4	10.83	0.822	7.13	1.000	985.	103.2	0.1720	17.112	0.488		0.0538	8.30
6	UPPER TALARIK	C	51.9	10.94	0.816	7.13	1.000	987.	103.2	0.1778	17.109	0.678		0.0538	8.30
7	UPPER TALARIK	Q	51.6	10.94	0.816	7.13	1.000	987.	103.2	0.1778	17.109	0.691		0.2943	7.45
8	UPPER TALARIK	C	45.9	11.01	0.813	7.13	1.000	988.	103.2	0.1434	17.106	2.371		0.2943	7.45
9	UPPER TALARIK	B	45.0									2.625			
10	TRIBUTARY 135	H	46.4	11.01	0.813	7.13	1.000	988.	103.2	0.1998	17.106	0.229	9.04	0.0000	7.45
11	TRIBUTARY 135	T	45.0									0.229			
12	UPPER TALARIK	J	45.0	11.08	0.809	7.13	1.000	989.	103.2	0.1434	17.101	2.854		0.2936	7.45
13	UPPER TALARIK	Q	44.6	11.08	0.809	7.13	1.000	989.	103.2	0.1434	17.101	2.977		-0.0057	8.84
14	UPPER TALARIK	C	38.4	11.20	0.804	7.13	1.000	991.	103.2	0.1236	17.095	2.941		-0.0057	8.84
15	UPPER TALARIK	Q	37.6	11.20	0.804	7.13	1.000	991.	103.2	0.1236	17.095	2.937		0.0793	8.84
16	UPPER TALARIK	C	35.8	11.28	0.800	7.13	1.000	993.	103.2	0.0815	17.092	3.082		0.0793	8.84
17	UPPER TALARIK	C	32.9	11.34	0.797	7.13	1.000	994.	103.2	0.0997	17.091	3.309		0.0793	8.84
18	UPPER TALARIK	C	32.3	11.42	0.794	7.13	1.000	995.	103.2	0.1014	17.087	3.358		0.0793	8.84
19	UPPER TALARIK	Q	29.3	11.42	0.794	7.13	1.000	995.	103.2	0.1014	17.087	3.598		0.0917	4.72
20	UPPER TALARIK	C	27.1	11.51	0.789	7.13	1.000	997.	103.2	0.0715	17.084	3.796		0.0917	4.72
21	UPPER TALARIK	C	25.0	11.53	0.788	7.13	1.000	997.	103.2	0.0940	17.083	3.990		0.0917	4.72
22	UPPER TALARIK	B	24.7									4.017			
23	TRIBUTARY 119	H	25.1	11.52	0.789	7.13	1.000	997.	103.2	0.2437	17.083	0.662	5.07	0.0000	4.72
24	TRIBUTARY 119	T	24.7									0.662			
25	UPPER TALARIK	J	24.7	11.60	0.785	7.13	1.000	999.	103.2	0.0940	17.080	4.679		0.0924	4.72
26	UPPER TALARIK	Q	24.5	11.60	0.785	7.13	1.000	999.	103.2	0.0940	17.080	4.701		0.0664	4.72
27	UPPER TALARIK	C	20.8	11.71	0.780	7.13	1.000	1001.	103.2	0.1014	17.075	4.946		0.0664	4.72
28	UPPER TALARIK	C	18.8	11.82	0.775	7.13	1.000	1003.	103.2	0.0905	17.070	5.078		0.0664	4.72
29	UPPER TALARIK	C	14.6	11.99	0.768	7.13	1.000	1006.	103.2	0.1034	17.064	5.358		0.0664	4.72
30	UPPER TALARIK	Q	14.4	11.99	0.768	7.13	1.000	1006.	103.2	0.1034	17.064	5.374		-0.2626	4.72
31	UPPER TALARIK	Q	9.8	11.99	0.768	7.13	1.000	1006.	103.2	0.1034	17.064	4.189		0.3843	4.72
32	UPPER TALARIK	C	9.1	12.20	0.758	7.13	1.000	1010.	103.2	0.1133	17.055	4.468		0.3843	4.72
33	UPPER TALARIK	Q	2.2	12.20	0.758	7.13	1.000	1010.	103.2	0.1133	17.055	7.112		0.1085	4.72
34	UPPER TALARIK	E	0.0									7.355			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.05	0.621	6.07	1.000	975.	127.1	0.3177	17.044	0.075	4.01	0.0536	8.03
2	UPPER TALARIK	Q	60.0	14.05	0.621	6.07	1.000	975.	127.1	0.3177	17.044	0.204		0.0441	8.03
3	UPPER TALARIK	C	59.7	14.35	0.610	6.07	1.000	981.	127.0	0.2362	17.040	0.218		0.0441	8.03
4	UPPER TALARIK	C	56.5	14.50	0.605	6.07	1.000	983.	127.0	0.2153	17.039	0.358		0.0441	8.03
5	UPPER TALARIK	C	55.4	14.57	0.602	6.07	1.000	985.	127.0	0.1723	17.040	0.406		0.0441	8.03
6	UPPER TALARIK	C	51.9	14.68	0.599	6.07	1.000	987.	127.0	0.1783	17.037	0.562		0.0441	8.03
7	UPPER TALARIK	Q	51.6	14.68	0.599	6.07	1.000	987.	127.0	0.1783	17.037	0.572		0.2452	7.64
8	UPPER TALARIK	C	45.9	14.75	0.596	6.07	1.000	988.	127.0	0.1438	17.034	1.971		0.2452	7.64
9	UPPER TALARIK	B	45.0									2.183			
10	TRIBUTARY 135	H	46.4	14.75	0.596	6.07	1.000	988.	127.0	0.2002	17.033	0.190	10.10	0.0000	7.64
11	TRIBUTARY 135	T	45.0									0.190			
12	UPPER TALARIK	J	45.0	14.82	0.593	6.07	1.000	989.	127.0	0.1437	17.029	2.373		0.2458	7.64
13	UPPER TALARIK	Q	44.6	14.82	0.593	6.07	1.000	989.	127.0	0.1437	17.029	2.476		0.0137	8.33
14	UPPER TALARIK	C	38.4	14.94	0.590	6.07	1.000	991.	127.0	0.1240	17.023	2.562		0.0137	8.33
15	UPPER TALARIK	Q	37.6	14.94	0.590	6.07	1.000	991.	127.0	0.1240	17.023	2.572		0.0815	8.33
16	UPPER TALARIK	C	35.8	15.02	0.587	6.07	1.000	993.	127.0	0.0815	17.020	2.721		0.0815	8.33
17	UPPER TALARIK	C	32.9	15.08	0.585	6.07	1.000	994.	127.0	0.1000	17.019	2.954		0.0815	8.33
18	UPPER TALARIK	C	32.3	15.16	0.582	6.07	1.000	995.	127.0	0.1017	17.015	3.004		0.0815	8.33
19	UPPER TALARIK	Q	29.3	15.16	0.582	6.07	1.000	995.	127.0	0.1017	17.015	3.251		0.0941	4.25
20	UPPER TALARIK	C	27.1	15.25	0.579	6.07	1.000	997.	127.0	0.0714	17.012	3.454		0.0941	4.25
21	UPPER TALARIK	C	25.0	15.27	0.578	6.07	1.000	997.	127.0	0.0943	17.011	3.653		0.0941	4.25
22	UPPER TALARIK	B	24.7									3.681			
23	TRIBUTARY 119	H	25.1	15.26	0.579	6.07	1.000	997.	127.0	0.2444	17.011	0.658	5.33	0.0000	4.25
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	15.34	0.576	6.07	1.000	999.	127.0	0.0943	17.008	4.339		0.0924	4.25
26	UPPER TALARIK	Q	24.5	15.34	0.576	6.07	1.000	999.	127.0	0.0943	17.008	4.361		0.0610	4.25
27	UPPER TALARIK	C	20.8	15.45	0.572	6.07	1.000	1001.	127.0	0.1017	17.004	4.586		0.0610	4.25
28	UPPER TALARIK	C	18.8	15.56	0.569	6.07	1.000	1003.	127.0	0.0909	16.998	4.708		0.0610	4.25
29	UPPER TALARIK	C	14.6	15.73	0.563	6.07	1.000	1006.	127.0	0.1037	16.992	4.965		0.0610	4.25
30	UPPER TALARIK	Q	14.4	15.73	0.563	6.07	1.000	1006.	127.0	0.1037	16.992	4.980		-0.2657	4.25
31	UPPER TALARIK	Q	9.8	15.73	0.563	6.07	1.000	1006.	127.0	0.1037	16.992	3.781		0.3700	4.25
32	UPPER TALARIK	C	9.1	15.94	0.556	6.07	1.000	1010.	127.0	0.1135	16.983	4.049		0.3700	4.25
33	UPPER TALARIK	Q	2.2	15.94	0.556	6.07	1.000	1010.	127.0	0.1135	16.983	6.595		0.1004	4.25
34	UPPER TALARIK	E	0.0									6.820			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	15.95	0.630	3.70	1.000	975.	188.3	0.3184	16.970	0.067	3.33	0.0478	8.26
2	UPPER TALARIK	Q	60.0	15.95	0.630	3.70	1.000	975.	188.3	0.3184	16.970	0.182		0.0341	8.26
3	UPPER TALARIK	C	59.7	16.25	0.620	3.70	1.000	981.	188.2	0.2370	16.967	0.193		0.0341	8.26
4	UPPER TALARIK	C	56.5	16.40	0.614	3.70	1.000	983.	188.2	0.2159	16.966	0.301		0.0341	8.26
5	UPPER TALARIK	C	55.4	16.47	0.612	3.70	1.000	985.	188.2	0.1726	16.966	0.338		0.0341	8.26
6	UPPER TALARIK	C	51.9	16.58	0.608	3.70	1.000	987.	188.1	0.1787	16.963	0.459		0.0341	8.26
7	UPPER TALARIK	Q	51.6	16.58	0.608	3.70	1.000	987.	188.1	0.1787	16.963	0.467		0.1895	8.24
8	UPPER TALARIK	C	45.9	16.65	0.605	3.70	1.000	988.	188.1	0.1442	16.960	1.548		0.1895	8.24
9	UPPER TALARIK	B	45.0									1.712			
10	TRIBUTARY 135	H	46.4	16.65	0.605	3.70	1.000	988.	188.1	0.2007	16.960	0.147	11.47	0.0000	8.24
11	TRIBUTARY 135	T	45.0									0.147			
12	UPPER TALARIK	J	45.0	16.72	0.602	3.70	1.000	989.	188.2	0.1441	16.956	1.859		0.1885	8.24
13	UPPER TALARIK	Q	44.6	16.72	0.602	3.70	1.000	989.	188.2	0.1441	16.956	1.938		0.0268	8.00
14	UPPER TALARIK	C	38.4	16.84	0.599	3.70	1.000	991.	188.2	0.1244	16.950	2.106		0.0268	8.00
15	UPPER TALARIK	Q	37.6	16.84	0.599	3.70	1.000	991.	188.2	0.1244	16.950	2.125		0.0771	8.00
16	UPPER TALARIK	C	35.8	16.92	0.595	3.70	1.000	993.	188.2	0.0815	16.947	2.266		0.0771	8.00
17	UPPER TALARIK	C	32.9	16.98	0.594	3.70	1.000	994.	188.1	0.1004	16.945	2.487		0.0771	8.00
18	UPPER TALARIK	C	32.3	17.06	0.591	3.70	1.000	995.	188.2	0.1021	16.942	2.534		0.0771	8.00
19	UPPER TALARIK	Q	29.3	17.06	0.591	3.70	1.000	995.	188.2	0.1021	16.942	2.768		0.0893	3.95
20	UPPER TALARIK	C	27.1	17.15	0.588	3.70	1.000	997.	188.1	0.0714	16.939	2.961		0.0893	3.95
21	UPPER TALARIK	C	25.0	17.17	0.587	3.70	1.000	997.	188.1	0.0947	16.938	3.149		0.0893	3.95
22	UPPER TALARIK	B	24.7									3.176			
23	TRIBUTARY 119	H	25.1	17.16	0.587	3.70	1.000	997.	188.1	0.2451	16.938	0.654	5.66	0.0000	3.95
24	TRIBUTARY 119	T	24.7									0.654			
25	UPPER TALARIK	J	24.7	17.24	0.584	3.70	1.000	999.	188.1	0.0947	16.935	3.830		0.0882	3.95
26	UPPER TALARIK	Q	24.5	17.24	0.584	3.70	1.000	999.	188.1	0.0947	16.935	3.851		0.0532	3.95
27	UPPER TALARIK	C	20.8	17.35	0.581	3.70	1.000	1001.	188.1	0.1021	16.931	4.047		0.0532	3.95
28	UPPER TALARIK	C	18.8	17.46	0.577	3.70	1.000	1003.	188.1	0.0912	16.926	4.153		0.0532	3.95
29	UPPER TALARIK	C	14.6	17.63	0.571	3.70	1.000	1006.	188.1	0.1040	16.920	4.377		0.0532	3.95
30	UPPER TALARIK	Q	14.4	17.63	0.571	3.70	1.000	1006.	188.1	0.1040	16.920	4.390		-0.2655	3.95
31	UPPER TALARIK	Q	9.8	17.63	0.571	3.70	1.000	1006.	188.1	0.1040	16.920	3.192		0.3455	3.95
32	UPPER TALARIK	C	9.1	17.84	0.564	3.70	1.000	1010.	188.1	0.1138	16.911	3.442		0.3455	3.95
33	UPPER TALARIK	Q	2.2	17.84	0.564	3.70	1.000	1010.	188.1	0.1138	16.911	5.820		0.0884	3.95
34	UPPER TALARIK	E	0.0									6.018			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	17.94	0.677	5.15	1.000	975.	169.0	0.3191	16.895	0.065	2.81	0.0465	9.11
2	UPPER TALARIK	Q	60.0	17.94	0.677	5.15	1.000	975.	169.0	0.3191	16.895	0.177		0.0298	9.11
3	UPPER TALARIK	C	59.7	18.24	0.666	5.15	1.000	981.	169.0	0.2378	16.892	0.186		0.0298	9.11
4	UPPER TALARIK	C	56.5	18.39	0.660	5.15	1.000	983.	169.0	0.2166	16.891	0.281		0.0298	9.11
5	UPPER TALARIK	C	55.4	18.46	0.657	5.15	1.000	985.	168.9	0.1729	16.891	0.313		0.0298	9.11
6	UPPER TALARIK	C	51.9	18.57	0.653	5.15	1.000	987.	168.9	0.1792	16.889	0.419		0.0298	9.11
7	UPPER TALARIK	Q	51.6	18.57	0.653	5.15	1.000	987.	168.9	0.1792	16.889	0.426		0.1654	9.13
8	UPPER TALARIK	C	45.9	18.64	0.650	5.15	1.000	988.	168.9	0.1446	16.886	1.370		0.1654	9.13
9	UPPER TALARIK	B	45.0									1.513			
10	TRIBUTARY 135	H	46.4	18.64	0.650	5.15	1.000	988.	168.9	0.2011	16.885	0.129	13.57	0.0000	9.13
11	TRIBUTARY 135	T	45.0									0.129			
12	UPPER TALARIK	J	45.0	18.71	0.647	5.15	1.000	989.	168.9	0.1445	16.881	1.642		0.1647	9.13
13	UPPER TALARIK	Q	44.6	18.71	0.647	5.15	1.000	989.	168.9	0.1445	16.881	1.711		0.0296	8.00
14	UPPER TALARIK	C	38.4	18.83	0.643	5.15	1.000	991.	168.9	0.1247	16.876	1.897		0.0296	8.00
15	UPPER TALARIK	Q	37.6	18.83	0.643	5.15	1.000	991.	168.9	0.1247	16.876	1.918		0.0761	8.00
16	UPPER TALARIK	C	35.8	18.91	0.640	5.15	1.000	993.	168.9	0.0816	16.873	2.057		0.0761	8.00
17	UPPER TALARIK	C	32.9	18.97	0.638	5.15	1.000	994.	168.9	0.1007	16.871	2.275		0.0761	8.00
18	UPPER TALARIK	C	32.3	19.05	0.635	5.15	1.000	995.	168.9	0.1024	16.868	2.322		0.0761	8.00
19	UPPER TALARIK	Q	29.3	19.05	0.635	5.15	1.000	995.	168.9	0.1024	16.868	2.552		0.0877	3.92
20	UPPER TALARIK	C	27.1	19.14	0.631	5.15	1.000	997.	168.9	0.0713	16.864	2.741		0.0877	3.92
21	UPPER TALARIK	C	25.0	19.16	0.631	5.15	1.000	997.	168.9	0.0950	16.864	2.927		0.0877	3.92
22	UPPER TALARIK	B	24.7									2.953			
23	TRIBUTARY 119	H	25.1	19.15	0.631	5.15	1.000	997.	168.9	0.2459	16.864	0.651	5.68	0.0000	3.92
24	TRIBUTARY 119	T	24.7									0.651			
25	UPPER TALARIK	J	24.7	19.23	0.628	5.15	1.000	999.	168.9	0.0950	16.861	3.604		0.0882	3.92
26	UPPER TALARIK	Q	24.5	19.23	0.628	5.15	1.000	999.	168.9	0.0950	16.861	3.625		0.0496	3.92
27	UPPER TALARIK	C	20.8	19.34	0.624	5.15	1.000	1001.	168.9	0.1025	16.857	3.808		0.0496	3.92
28	UPPER TALARIK	C	18.8	19.45	0.620	5.15	1.000	1003.	168.9	0.0916	16.852	3.907		0.0496	3.92
29	UPPER TALARIK	C	14.6	19.62	0.614	5.15	1.000	1006.	168.9	0.1043	16.846	4.116		0.0496	3.92
30	UPPER TALARIK	Q	14.4	19.62	0.614	5.15	1.000	1006.	168.9	0.1043	16.846	4.128		-0.2637	3.92
31	UPPER TALARIK	Q	9.8	19.62	0.614	5.15	1.000	1006.	168.9	0.1043	16.846	2.938		0.3337	3.92
32	UPPER TALARIK	C	9.1	19.83	0.607	5.15	1.000	1010.	168.9	0.1141	16.837	3.180		0.3337	3.92
33	UPPER TALARIK	Q	2.2	19.83	0.607	5.15	1.000	1010.	168.9	0.1141	16.837	5.476		0.0830	3.92
34	UPPER TALARIK	E	0.0									5.662			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.90	0.771	5.91	1.000	975.	229.3	0.3198	16.819	0.067	3.04	0.0474	10.47
2	UPPER TALARIK	Q	60.0	14.90	0.771	5.91	1.000	975.	229.3	0.3198	16.819	0.181		0.0304	10.47
3	UPPER TALARIK	C	59.7	15.20	0.758	5.91	1.000	981.	229.2	0.2386	16.816	0.191		0.0304	10.47
4	UPPER TALARIK	C	56.5	15.35	0.751	5.91	1.000	983.	229.2	0.2173	16.815	0.287		0.0304	10.47
5	UPPER TALARIK	C	55.4	15.42	0.748	5.91	1.000	985.	229.2	0.1733	16.816	0.320		0.0304	10.47
6	UPPER TALARIK	C	51.9	15.53	0.744	5.91	1.000	987.	229.2	0.1798	16.813	0.428		0.0304	10.47
7	UPPER TALARIK	Q	51.6	15.53	0.744	5.91	1.000	987.	229.2	0.1798	16.813	0.435		0.1679	10.06
8	UPPER TALARIK	C	45.9	15.60	0.741	5.91	1.000	988.	229.2	0.1450	16.810	1.393		0.1679	10.06
9	UPPER TALARIK	B	45.0									1.538			
10	TRIBUTARY 135	H	46.4	15.60	0.740	5.91	1.000	988.	229.2	0.2016	16.810	0.130	14.83	0.0000	10.06
11	TRIBUTARY 135	T	45.0									0.130			
12	UPPER TALARIK	J	45.0	15.67	0.737	5.91	1.000	989.	229.2	0.1449	16.806	1.668		0.1671	10.06
13	UPPER TALARIK	Q	44.6	15.67	0.737	5.91	1.000	989.	229.2	0.1449	16.806	1.738		0.0248	8.36
14	UPPER TALARIK	C	38.4	15.79	0.733	5.91	1.000	991.	229.2	0.1251	16.800	1.893		0.0248	8.36
15	UPPER TALARIK	Q	37.6	15.79	0.733	5.91	1.000	991.	229.2	0.1251	16.800	1.911		0.0722	8.36
16	UPPER TALARIK	C	35.8	15.87	0.729	5.91	1.000	993.	229.2	0.0816	16.797	2.043		0.0722	8.36
17	UPPER TALARIK	C	32.9	15.93	0.726	5.91	1.000	994.	229.2	0.1011	16.796	2.250		0.0722	8.36
18	UPPER TALARIK	C	32.3	16.01	0.723	5.91	1.000	995.	229.2	0.1028	16.792	2.294		0.0722	8.36
19	UPPER TALARIK	Q	29.3	16.01	0.723	5.91	1.000	995.	229.2	0.1028	16.792	2.513		0.0836	4.18
20	UPPER TALARIK	C	27.1	16.10	0.719	5.91	1.000	997.	229.2	0.0713	16.789	2.694		0.0836	4.18
21	UPPER TALARIK	C	25.0	16.12	0.718	5.91	1.000	997.	229.2	0.0954	16.789	2.870		0.0836	4.18
22	UPPER TALARIK	B	24.7									2.895			
23	TRIBUTARY 119	H	25.1	16.11	0.719	5.91	1.000	997.	229.2	0.2466	16.789	0.653	6.06	0.0000	4.18
24	TRIBUTARY 119	T	24.7									0.653			
25	UPPER TALARIK	J	24.7	16.19	0.715	5.91	1.000	999.	229.2	0.0954	16.786	3.548		0.0840	4.18
26	UPPER TALARIK	Q	24.5	16.19	0.715	5.91	1.000	999.	229.2	0.0954	16.786	3.568		0.0487	4.18
27	UPPER TALARIK	C	20.8	16.30	0.711	5.91	1.000	1001.	229.2	0.1028	16.782	3.748		0.0487	4.18
28	UPPER TALARIK	C	18.8	16.41	0.706	5.91	1.000	1003.	229.2	0.0919	16.777	3.845		0.0487	4.18
29	UPPER TALARIK	C	14.6	16.58	0.699	5.91	1.000	1006.	229.2	0.1046	16.771	4.050		0.0487	4.18
30	UPPER TALARIK	Q	14.4	16.58	0.699	5.91	1.000	1006.	229.2	0.1046	16.771	4.062		-0.2628	4.18
31	UPPER TALARIK	Q	9.8	16.58	0.699	5.91	1.000	1006.	229.2	0.1046	16.771	2.876		0.3305	4.18
32	UPPER TALARIK	C	9.1	16.79	0.691	5.91	1.000	1010.	229.2	0.1144	16.763	3.116		0.3305	4.18
33	UPPER TALARIK	Q	2.2	16.79	0.691	5.91	1.000	1010.	229.2	0.1144	16.763	5.390		0.0817	4.18
34	UPPER TALARIK	E	0.0									5.573			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.35	0.790	5.67	1.000	975.	199.1	0.3205	16.742	0.064	3.42	0.0457	11.99
2	UPPER TALARIK	Q	60.0	14.35	0.790	5.67	1.000	975.	199.1	0.3205	16.742	0.174		0.0265	11.99
3	UPPER TALARIK	C	59.7	14.65	0.777	5.67	1.000	981.	199.1	0.2395	16.739	0.182		0.0265	11.99
4	UPPER TALARIK	C	56.5	14.80	0.770	5.67	1.000	983.	199.0	0.2181	16.739	0.266		0.0265	11.99
5	UPPER TALARIK	C	55.4	14.87	0.767	5.67	1.000	985.	199.0	0.1736	16.739	0.295		0.0265	11.99
6	UPPER TALARIK	C	51.9	14.98	0.762	5.67	1.000	987.	199.0	0.1803	16.736	0.389		0.0265	11.99
7	UPPER TALARIK	Q	51.6	14.98	0.762	5.67	1.000	987.	199.0	0.1803	16.736	0.395		0.1455	10.65
8	UPPER TALARIK	C	45.9	15.05	0.759	5.67	1.000	988.	199.0	0.1454	16.733	1.225		0.1455	10.65
9	UPPER TALARIK	B	45.0									1.351			
10	TRIBUTARY 135	H	46.4	15.05	0.758	5.67	1.000	988.	199.0	0.2022	16.733	0.113	15.08	0.0000	10.65
11	TRIBUTARY 135	T	45.0									0.113			
12	UPPER TALARIK	J	45.0	15.12	0.755	5.67	1.000	989.	199.0	0.1453	16.729	1.464		0.1456	10.65
13	UPPER TALARIK	Q	44.6	15.12	0.755	5.67	1.000	989.	199.0	0.1453	16.729	1.525		0.0326	8.98
14	UPPER TALARIK	C	38.4	15.24	0.750	5.67	1.000	991.	199.0	0.1255	16.724	1.730		0.0326	8.98
15	UPPER TALARIK	Q	37.6	15.24	0.750	5.67	1.000	991.	199.0	0.1255	16.724	1.753		0.0753	8.98
16	UPPER TALARIK	C	35.8	15.32	0.747	5.67	1.000	993.	199.0	0.0817	16.721	1.890		0.0753	8.98
17	UPPER TALARIK	C	32.9	15.38	0.744	5.67	1.000	994.	199.0	0.1014	16.720	2.107		0.0753	8.98
18	UPPER TALARIK	C	32.3	15.46	0.741	5.67	1.000	995.	199.0	0.1032	16.716	2.153		0.0753	8.98
19	UPPER TALARIK	Q	29.3	15.46	0.741	5.67	1.000	995.	199.0	0.1032	16.716	2.381		0.0871	4.69
20	UPPER TALARIK	C	27.1	15.55	0.737	5.67	1.000	997.	199.0	0.0713	16.713	2.569		0.0871	4.69
21	UPPER TALARIK	C	25.0	15.57	0.736	5.67	1.000	997.	199.0	0.0957	16.713	2.753		0.0871	4.69
22	UPPER TALARIK	B	24.7									2.779			
23	TRIBUTARY 119	H	25.1	15.56	0.737	5.67	1.000	997.	199.0	0.2474	16.713	0.655	5.84	0.0000	4.69
24	TRIBUTARY 119	T	24.7									0.655			
25	UPPER TALARIK	J	24.7	15.64	0.733	5.67	1.000	999.	199.0	0.0957	16.710	3.434		0.0882	4.69
26	UPPER TALARIK	Q	24.5	15.64	0.733	5.67	1.000	999.	199.0	0.0957	16.710	3.455		0.0469	4.69
27	UPPER TALARIK	C	20.8	15.75	0.728	5.67	1.000	1001.	199.0	0.1032	16.706	3.628		0.0469	4.69
28	UPPER TALARIK	C	18.8	15.86	0.724	5.67	1.000	1003.	199.0	0.0923	16.701	3.722		0.0469	4.69
29	UPPER TALARIK	C	14.6	16.03	0.716	5.67	1.000	1006.	199.0	0.1050	16.695	3.920		0.0469	4.69
30	UPPER TALARIK	Q	14.4	16.03	0.716	5.67	1.000	1006.	199.0	0.1050	16.695	3.931		-0.2612	4.69
31	UPPER TALARIK	Q	9.8	16.03	0.716	5.67	1.000	1006.	199.0	0.1050	16.695	2.752		0.3242	4.69
32	UPPER TALARIK	C	9.1	16.24	0.708	5.67	1.000	1010.	199.0	0.1147	16.687	2.987		0.3242	4.69
33	UPPER TALARIK	Q	2.2	16.24	0.708	5.67	1.000	1010.	199.0	0.1147	16.687	5.218		0.0790	4.69
34	UPPER TALARIK	E	0.0									5.395			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.95	0.875	3.49	1.000	975.	105.9	0.3213	16.665	0.064	3.78	0.0453	13.28
2	UPPER TALARIK	Q	60.0	12.95	0.875	3.49	1.000	975.	105.9	0.3213	16.665	0.173		0.0255	13.28
3	UPPER TALARIK	C	59.7	13.25	0.860	3.49	1.000	981.	105.9	0.2404	16.662	0.181		0.0255	13.28
4	UPPER TALARIK	C	56.5	13.40	0.852	3.49	1.000	983.	105.9	0.2189	16.661	0.262		0.0255	13.28
5	UPPER TALARIK	C	55.4	13.47	0.849	3.49	1.000	985.	105.9	0.1740	16.661	0.290		0.0255	13.28
6	UPPER TALARIK	C	51.9	13.58	0.843	3.49	1.000	987.	105.9	0.1808	16.659	0.380		0.0255	13.28
7	UPPER TALARIK	Q	51.6	13.58	0.843	3.49	1.000	987.	105.9	0.1808	16.659	0.386		0.1351	10.68
8	UPPER TALARIK	C	45.9	13.65	0.840	3.49	1.000	988.	105.9	0.1458	16.656	1.157		0.1351	10.68
9	UPPER TALARIK	B	45.0									1.274			
10	TRIBUTARY 135	H	46.4	13.65	0.840	3.49	1.000	988.	105.9	0.2029	16.656	0.105	14.37	0.0000	10.68
11	TRIBUTARY 135	T	45.0									0.105			
12	UPPER TALARIK	J	45.0	13.72	0.836	3.49	1.000	989.	105.9	0.1457	16.652	1.379		0.1360	10.68
13	UPPER TALARIK	Q	44.6	13.72	0.836	3.49	1.000	989.	105.9	0.1457	16.652	1.436		0.0329	9.71
14	UPPER TALARIK	C	38.4	13.84	0.831	3.49	1.000	991.	105.9	0.1259	16.646	1.643		0.0329	9.71
15	UPPER TALARIK	Q	37.6	13.84	0.831	3.49	1.000	991.	105.9	0.1259	16.646	1.666		0.0752	9.71
16	UPPER TALARIK	C	35.8	13.92	0.827	3.49	1.000	993.	105.9	0.0818	16.643	1.803		0.0752	9.71
17	UPPER TALARIK	C	32.9	13.98	0.824	3.49	1.000	994.	105.9	0.1018	16.642	2.019		0.0752	9.71
18	UPPER TALARIK	C	32.3	14.06	0.820	3.49	1.000	995.	105.9	0.1036	16.639	2.065		0.0752	9.71
19	UPPER TALARIK	Q	29.3	14.06	0.820	3.49	1.000	995.	105.9	0.1036	16.639	2.293		0.0869	5.28
20	UPPER TALARIK	C	27.1	14.15	0.816	3.49	1.000	997.	105.9	0.0712	16.636	2.481		0.0869	5.28
21	UPPER TALARIK	C	25.0	14.17	0.815	3.49	1.000	997.	105.9	0.0961	16.636	2.664		0.0869	5.28
22	UPPER TALARIK	B	24.7									2.690			
23	TRIBUTARY 119	H	25.1	14.16	0.815	3.49	1.000	997.	105.9	0.2483	16.636	0.659	5.56	0.0000	5.28
24	TRIBUTARY 119	T	24.7									0.659			
25	UPPER TALARIK	J	24.7	14.24	0.811	3.49	1.000	999.	105.9	0.0961	16.633	3.349		0.0882	5.28
26	UPPER TALARIK	Q	24.5	14.24	0.811	3.49	1.000	999.	105.9	0.0961	16.633	3.370		0.0457	5.28
27	UPPER TALARIK	C	20.8	14.35	0.806	3.49	1.000	1001.	105.9	0.1036	16.629	3.538		0.0457	5.28
28	UPPER TALARIK	C	18.8	14.46	0.801	3.49	1.000	1003.	105.9	0.0927	16.624	3.630		0.0457	5.28
29	UPPER TALARIK	C	14.6	14.63	0.793	3.49	1.000	1006.	105.9	0.1054	16.618	3.822		0.0457	5.28
30	UPPER TALARIK	Q	14.4	14.63	0.793	3.49	1.000	1006.	105.9	0.1054	16.618	3.833		-0.2599	5.28
31	UPPER TALARIK	Q	9.8	14.63	0.793	3.49	1.000	1006.	105.9	0.1054	16.618	2.660		0.3194	5.28
32	UPPER TALARIK	C	9.1	14.84	0.784	3.49	1.000	1010.	105.9	0.1150	16.610	2.892		0.3194	5.28
33	UPPER TALARIK	Q	2.2	14.84	0.784	3.49	1.000	1010.	105.9	0.1150	16.610	5.089		0.0772	5.28
34	UPPER TALARIK	E	0.0									5.262			

YEAR: 2007 TIME PERIOD: 31-Jul PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.00	0.894	6.53	1.000	975.	90.4	0.3220	16.586	0.064	3.79	0.0457	14.03
2	UPPER TALARIK	Q	60.0	11.00	0.894	6.53	1.000	975.	90.4	0.3220	16.586	0.174		0.0250	14.03
3	UPPER TALARIK	C	59.7	11.30	0.879	6.53	1.000	981.	90.4	0.2413	16.583	0.182		0.0250	14.03
4	UPPER TALARIK	C	56.5	11.45	0.871	6.53	1.000	983.	90.4	0.2197	16.582	0.261		0.0250	14.03
5	UPPER TALARIK	C	55.4	11.52	0.867	6.53	1.000	985.	90.3	0.1744	16.583	0.289		0.0250	14.03
6	UPPER TALARIK	C	51.9	11.63	0.862	6.53	1.000	987.	90.3	0.1814	16.580	0.377		0.0250	14.03
7	UPPER TALARIK	Q	51.6	11.63	0.862	6.53	1.000	987.	90.3	0.1814	16.580	0.383		0.1324	10.16
8	UPPER TALARIK	C	45.9	11.70	0.858	6.53	1.000	988.	90.3	0.1462	16.577	1.139		0.1324	10.16
9	UPPER TALARIK	B	45.0									1.253			
10	TRIBUTARY 135	H	46.4	11.70	0.858	6.53	1.000	988.	90.3	0.2036	16.577	0.103	13.16	0.0000	10.16
11	TRIBUTARY 135	T	45.0									0.103			
12	UPPER TALARIK	J	45.0	11.77	0.854	6.53	1.000	989.	90.3	0.1462	16.573	1.356		0.1313	10.16
13	UPPER TALARIK	Q	44.6	11.77	0.854	6.53	1.000	989.	90.3	0.1462	16.573	1.411		0.0336	10.38
14	UPPER TALARIK	C	38.4	11.89	0.849	6.53	1.000	991.	90.4	0.1264	16.568	1.622		0.0336	10.38
15	UPPER TALARIK	Q	37.6	11.89	0.849	6.53	1.000	991.	90.4	0.1264	16.568	1.646		0.0755	10.38
16	UPPER TALARIK	C	35.8	11.97	0.844	6.53	1.000	993.	90.4	0.0818	16.565	1.784		0.0755	10.38
17	UPPER TALARIK	C	32.9	12.03	0.842	6.53	1.000	994.	90.4	0.1022	16.564	2.000		0.0755	10.38
18	UPPER TALARIK	C	32.3	12.11	0.838	6.53	1.000	995.	90.4	0.1040	16.561	2.046		0.0755	10.38
19	UPPER TALARIK	Q	29.3	12.11	0.838	6.53	1.000	995.	90.4	0.1040	16.561	2.275		0.0871	5.78
20	UPPER TALARIK	C	27.1	12.20	0.833	6.53	1.000	997.	90.4	0.0712	16.558	2.463		0.0871	5.78
21	UPPER TALARIK	C	25.0	12.22	0.832	6.53	1.000	997.	90.4	0.0965	16.557	2.647		0.0871	5.78
22	UPPER TALARIK	B	24.7									2.673			
23	TRIBUTARY 119	H	25.1	12.21	0.833	6.53	1.000	997.	90.4	0.2493	16.558	0.647	5.30	0.0000	5.78
24	TRIBUTARY 119	T	24.7									0.647			
25	UPPER TALARIK	J	24.7	12.29	0.829	6.53	1.000	999.	90.4	0.0965	16.555	3.320		0.0882	5.78
26	UPPER TALARIK	Q	24.5	12.29	0.829	6.53	1.000	999.	90.4	0.0965	16.555	3.341		0.0454	5.78
27	UPPER TALARIK	C	20.8	12.40	0.824	6.53	1.000	1001.	90.4	0.1040	16.551	3.508		0.0454	5.78
28	UPPER TALARIK	C	18.8	12.51	0.818	6.53	1.000	1003.	90.4	0.0931	16.546	3.599		0.0454	5.78
29	UPPER TALARIK	C	14.6	12.68	0.810	6.53	1.000	1006.	90.4	0.1058	16.541	3.790		0.0454	5.78
30	UPPER TALARIK	Q	14.4	12.68	0.810	6.53	1.000	1006.	90.4	0.1058	16.541	3.801		-0.2595	5.78
31	UPPER TALARIK	Q	9.8	12.68	0.810	6.53	1.000	1006.	90.4	0.1058	16.541	2.630		0.3176	5.78
32	UPPER TALARIK	C	9.1	12.89	0.800	6.53	1.000	1010.	90.4	0.1153	16.533	2.860		0.3176	5.78
33	UPPER TALARIK	Q	2.2	12.89	0.800	6.53	1.000	1010.	90.4	0.1153	16.533	5.046		0.0768	5.78
34	UPPER TALARIK	E	0.0									5.218			

YEAR: 2007 TIME PERIOD: 1-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.61	0.866	13.23	1.000	975.	61.2	0.3228	16.506	0.064	3.51	0.0457	14.02
2	UPPER TALARIK	Q	60.0	9.61	0.866	13.23	1.000	975.	61.2	0.3228	16.506	0.174		0.0241	14.02
3	UPPER TALARIK	C	59.7	9.91	0.851	13.23	1.000	981.	61.2	0.2423	16.504	0.182		0.0241	14.02
4	UPPER TALARIK	C	56.5	10.06	0.843	13.23	1.000	983.	61.1	0.2206	16.503	0.258		0.0241	14.02
5	UPPER TALARIK	C	55.4	10.13	0.840	13.23	1.000	985.	61.1	0.1748	16.503	0.284		0.0241	14.02
6	UPPER TALARIK	C	51.9	10.24	0.834	13.23	1.000	987.	61.1	0.1820	16.501	0.369		0.0241	14.02
7	UPPER TALARIK	Q	51.6	10.24	0.834	13.23	1.000	987.	61.1	0.1820	16.501	0.375		0.1283	9.30
8	UPPER TALARIK	C	45.9	10.31	0.831	13.23	1.000	988.	61.1	0.1467	16.498	1.107		0.1283	9.30
9	UPPER TALARIK	B	45.0									1.218			
10	TRIBUTARY 135	H	46.4	10.31	0.831	13.23	1.000	988.	61.1	0.2044	16.498	0.100	11.08	0.0000	9.30
11	TRIBUTARY 135	T	45.0									0.100			
12	UPPER TALARIK	J	45.0	10.38	0.827	13.23	1.000	989.	61.1	0.1466	16.494	1.318		0.1265	9.30
13	UPPER TALARIK	Q	44.6	10.38	0.827	13.23	1.000	989.	61.1	0.1466	16.494	1.371		0.0343	10.86
14	UPPER TALARIK	C	38.4	10.50	0.822	13.23	1.000	991.	61.1	0.1268	16.489	1.587		0.0343	10.86
15	UPPER TALARIK	Q	37.6	10.50	0.822	13.23	1.000	991.	61.1	0.1268	16.489	1.611		0.0786	10.86
16	UPPER TALARIK	C	35.8	10.58	0.818	13.23	1.000	993.	61.1	0.0819	16.486	1.754		0.0786	10.86
17	UPPER TALARIK	C	32.9	10.64	0.815	13.23	1.000	994.	61.1	0.1026	16.485	1.980		0.0786	10.86
18	UPPER TALARIK	C	32.3	10.72	0.811	13.23	1.000	995.	61.1	0.1044	16.482	2.028		0.0786	10.86
19	UPPER TALARIK	Q	29.3	10.72	0.811	13.23	1.000	995.	61.1	0.1044	16.482	2.266		0.0908	6.08
20	UPPER TALARIK	C	27.1	10.81	0.807	13.23	1.000	997.	61.1	0.0713	16.479	2.462		0.0908	6.08
21	UPPER TALARIK	C	25.0	10.83	0.806	13.23	1.000	997.	61.1	0.0969	16.479	2.654		0.0908	6.08
22	UPPER TALARIK	B	24.7									2.681			
23	TRIBUTARY 119	H	25.1	10.82	0.807	13.23	1.000	997.	61.1	0.2503	16.479	0.638	5.32	0.0000	6.08
24	TRIBUTARY 119	T	24.7									0.638			
25	UPPER TALARIK	J	24.7	10.90	0.803	13.23	1.000	999.	61.1	0.0969	16.476	3.319		0.0924	6.08
26	UPPER TALARIK	Q	24.5	10.90	0.803	13.23	1.000	999.	61.1	0.0969	16.476	3.341		0.0454	6.08
27	UPPER TALARIK	C	20.8	11.01	0.798	13.23	1.000	1001.	61.1	0.1045	16.472	3.508		0.0454	6.08
28	UPPER TALARIK	C	18.8	11.12	0.793	13.23	1.000	1003.	61.2	0.0935	16.467	3.599		0.0454	6.08
29	UPPER TALARIK	C	14.6	11.29	0.785	13.23	1.000	1006.	61.1	0.1063	16.462	3.790		0.0454	6.08
30	UPPER TALARIK	Q	14.4	11.29	0.785	13.23	1.000	1006.	61.1	0.1063	16.462	3.801		-0.2595	6.08
31	UPPER TALARIK	Q	9.8	11.29	0.785	13.23	1.000	1006.	61.1	0.1063	16.462	2.630		0.3176	6.08
32	UPPER TALARIK	C	9.1	11.50	0.775	13.23	1.000	1010.	61.2	0.1156	16.455	2.860		0.3176	6.08
33	UPPER TALARIK	Q	2.2	11.50	0.775	13.23	1.000	1010.	61.2	0.1156	16.455	5.046		0.0768	6.08
34	UPPER TALARIK	E	0.0									5.218			

YEAR: 2007 TIME PERIOD: 2-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.62	0.913	14.54	1.000	975.	50.2	0.3236	16.426	0.065	3.30	0.0465	13.29
2	UPPER TALARIK	Q	60.0	9.62	0.913	14.54	1.000	975.	50.2	0.3236	16.426	0.177		0.0249	13.29
3	UPPER TALARIK	C	59.7	9.92	0.897	14.54	1.000	981.	50.2	0.2432	16.423	0.185		0.0249	13.29
4	UPPER TALARIK	C	56.5	10.07	0.889	14.54	1.000	983.	50.2	0.2215	16.422	0.264		0.0249	13.29
5	UPPER TALARIK	C	55.4	10.14	0.885	14.54	1.000	985.	50.2	0.1753	16.423	0.291		0.0249	13.29
6	UPPER TALARIK	C	51.9	10.25	0.880	14.54	1.000	987.	50.2	0.1826	16.420	0.379		0.0249	13.29
7	UPPER TALARIK	Q	51.6	10.25	0.880	14.54	1.000	987.	50.2	0.1826	16.420	0.385		0.1287	8.47
8	UPPER TALARIK	C	45.9	10.32	0.876	14.54	1.000	988.	50.2	0.1471	16.418	1.120		0.1287	8.47
9	UPPER TALARIK	B	45.0									1.231			
10	TRIBUTARY 135	H	46.4	10.32	0.876	14.54	1.000	988.	50.2	0.2051	16.417	0.100	9.93	0.0000	8.47
11	TRIBUTARY 135	T	45.0									0.100			
12	UPPER TALARIK	J	45.0	10.39	0.872	14.54	1.000	989.	50.2	0.1471	16.414	1.331		0.1289	8.47
13	UPPER TALARIK	Q	44.6	10.39	0.872	14.54	1.000	989.	50.2	0.1471	16.414	1.385		0.0356	11.09
14	UPPER TALARIK	C	38.4	10.51	0.867	14.54	1.000	991.	50.2	0.1272	16.409	1.609		0.0356	11.09
15	UPPER TALARIK	Q	37.6	10.51	0.867	14.54	1.000	991.	50.2	0.1272	16.409	1.634		0.0805	11.09
16	UPPER TALARIK	C	35.8	10.59	0.862	14.54	1.000	993.	50.2	0.0821	16.406	1.781		0.0805	11.09
17	UPPER TALARIK	C	32.9	10.65	0.859	14.54	1.000	994.	50.2	0.1030	16.405	2.012		0.0805	11.09
18	UPPER TALARIK	C	32.3	10.73	0.855	14.54	1.000	995.	50.2	0.1048	16.402	2.061		0.0805	11.09
19	UPPER TALARIK	Q	29.3	10.73	0.855	14.54	1.000	995.	50.2	0.1048	16.402	2.305		0.0932	6.13
20	UPPER TALARIK	C	27.1	10.82	0.851	14.54	1.000	997.	50.2	0.0713	16.399	2.506		0.0932	6.13
21	UPPER TALARIK	C	25.0	10.84	0.850	14.54	1.000	997.	50.2	0.0973	16.399	2.703		0.0932	6.13
22	UPPER TALARIK	B	24.7									2.731			
23	TRIBUTARY 119	H	25.1	10.83	0.851	14.54	1.000	997.	50.2	0.2514	16.399	0.645	5.30	0.0000	6.13
24	TRIBUTARY 119	T	24.7									0.645			
25	UPPER TALARIK	J	24.7	10.91	0.846	14.54	1.000	999.	50.2	0.0973	16.396	3.376		0.0924	6.13
26	UPPER TALARIK	Q	24.5	10.91	0.846	14.54	1.000	999.	50.2	0.0973	16.396	3.398		0.0461	6.13
27	UPPER TALARIK	C	20.8	11.02	0.841	14.54	1.000	1001.	50.2	0.1049	16.392	3.568		0.0461	6.13
28	UPPER TALARIK	C	18.8	11.13	0.836	14.54	1.000	1003.	50.2	0.0939	16.388	3.660		0.0461	6.13
29	UPPER TALARIK	C	14.6	11.30	0.827	14.54	1.000	1006.	50.2	0.1067	16.383	3.855		0.0461	6.13
30	UPPER TALARIK	Q	14.4	11.30	0.827	14.54	1.000	1006.	50.2	0.1067	16.383	3.866		-0.2604	6.13
31	UPPER TALARIK	Q	9.8	11.30	0.827	14.54	1.000	1006.	50.2	0.1067	16.383	2.691		0.3209	6.13
32	UPPER TALARIK	C	9.1	11.51	0.817	14.54	1.000	1010.	50.2	0.1159	16.375	2.924		0.3209	6.13
33	UPPER TALARIK	Q	2.2	11.51	0.817	14.54	1.000	1010.	50.2	0.1159	16.375	5.132		0.0777	6.13
34	UPPER TALARIK	E	0.0									5.306			

YEAR: 2007 TIME PERIOD: 3-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.43	0.913	10.70	1.000	975.	56.6	0.3244	16.345	0.066	3.75	0.0474	12.21
2	UPPER TALARIK	Q	60.0	10.43	0.913	10.70	1.000	975.	56.6	0.3244	16.345	0.180		0.0262	12.21
3	UPPER TALARIK	C	59.7	10.73	0.897	10.70	1.000	981.	56.6	0.2442	16.342	0.188		0.0262	12.21
4	UPPER TALARIK	C	56.5	10.88	0.889	10.70	1.000	983.	56.6	0.2225	16.341	0.272		0.0262	12.21
5	UPPER TALARIK	C	55.4	10.95	0.885	10.70	1.000	985.	56.5	0.1757	16.342	0.300		0.0262	12.21
6	UPPER TALARIK	C	51.9	11.06	0.880	10.70	1.000	987.	56.5	0.1832	16.339	0.393		0.0262	12.21
7	UPPER TALARIK	Q	51.6	11.06	0.880	10.70	1.000	987.	56.5	0.1832	16.339	0.399		0.1362	7.99
8	UPPER TALARIK	C	45.9	11.13	0.876	10.70	1.000	988.	56.5	0.1476	16.337	1.176		0.1362	7.99
9	UPPER TALARIK	B	45.0									1.294			
10	TRIBUTARY 135	H	46.4	11.13	0.876	10.70	1.000	988.	56.5	0.2059	16.337	0.106	10.53	0.0000	7.99
11	TRIBUTARY 135	T	45.0									0.106			
12	UPPER TALARIK	J	45.0	11.20	0.872	10.70	1.000	989.	56.6	0.1475	16.333	1.400		0.1360	7.99
13	UPPER TALARIK	Q	44.6	11.20	0.872	10.70	1.000	989.	56.6	0.1475	16.333	1.457		0.0349	11.06
14	UPPER TALARIK	C	38.4	11.32	0.867	10.70	1.000	991.	56.6	0.1277	16.328	1.676		0.0349	11.06
15	UPPER TALARIK	Q	37.6	11.32	0.867	10.70	1.000	991.	56.6	0.1277	16.328	1.701		0.0823	11.06
16	UPPER TALARIK	C	35.8	11.40	0.862	10.70	1.000	993.	56.6	0.0822	16.326	1.851		0.0823	11.06
17	UPPER TALARIK	C	32.9	11.46	0.859	10.70	1.000	994.	56.6	0.1034	16.324	2.087		0.0823	11.06
18	UPPER TALARIK	C	32.3	11.54	0.855	10.70	1.000	995.	56.6	0.1053	16.321	2.138		0.0823	11.06
19	UPPER TALARIK	Q	29.3	11.54	0.855	10.70	1.000	995.	56.6	0.1053	16.321	2.387		0.0949	5.96
20	UPPER TALARIK	C	27.1	11.63	0.851	10.70	1.000	997.	56.6	0.0714	16.319	2.592		0.0949	5.96
21	UPPER TALARIK	C	25.0	11.65	0.850	10.70	1.000	997.	56.6	0.0978	16.318	2.793		0.0949	5.96
22	UPPER TALARIK	B	24.7									2.821			
23	TRIBUTARY 119	H	25.1	11.64	0.851	10.70	1.000	997.	56.6	0.2525	16.318	0.639	5.33	0.0000	5.96
24	TRIBUTARY 119	T	24.7									0.639			
25	UPPER TALARIK	J	24.7	11.72	0.846	10.70	1.000	999.	56.6	0.0978	16.316	3.460		0.0966	5.96
26	UPPER TALARIK	Q	24.5	11.72	0.846	10.70	1.000	999.	56.6	0.0978	16.316	3.483		0.0474	5.96
27	UPPER TALARIK	C	20.8	11.83	0.841	10.70	1.000	1001.	56.6	0.1053	16.312	3.658		0.0474	5.96
28	UPPER TALARIK	C	18.8	11.94	0.836	10.70	1.000	1003.	56.6	0.0943	16.308	3.753		0.0474	5.96
29	UPPER TALARIK	C	14.6	12.11	0.827	10.70	1.000	1006.	56.6	0.1072	16.303	3.953		0.0474	5.96
30	UPPER TALARIK	Q	14.4	12.11	0.827	10.70	1.000	1006.	56.6	0.1072	16.303	3.964		-0.2617	5.96
31	UPPER TALARIK	Q	9.8	12.11	0.827	10.70	1.000	1006.	56.6	0.1072	16.303	2.783		0.3258	5.96
32	UPPER TALARIK	C	9.1	12.32	0.817	10.70	1.000	1010.	56.6	0.1162	16.295	3.019		0.3258	5.96
33	UPPER TALARIK	Q	2.2	12.32	0.817	10.70	1.000	1010.	56.6	0.1162	16.295	5.261		0.0799	5.96
34	UPPER TALARIK	E	0.0									5.440			

YEAR: 2007 TIME PERIOD: 4-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.29	0.941	12.57	1.000	975.	26.5	0.3252	16.263	0.102	4.65	0.0731	11.16
2	UPPER TALARIK	Q	60.0	10.29	0.941	12.57	1.000	975.	26.5	0.3252	16.263	0.278		0.0735	11.16
3	UPPER TALARIK	C	59.7	10.59	0.925	12.57	1.000	981.	26.5	0.2452	16.260	0.301		0.0735	11.16
4	UPPER TALARIK	C	56.5	10.74	0.916	12.57	1.000	983.	26.4	0.2234	16.260	0.535		0.0735	11.16
5	UPPER TALARIK	C	55.4	10.81	0.913	12.57	1.000	985.	26.4	0.1762	16.260	0.615		0.0735	11.16
6	UPPER TALARIK	C	51.9	10.92	0.907	12.57	1.000	987.	26.4	0.1838	16.258	0.875		0.0735	11.16
7	UPPER TALARIK	Q	51.6	10.92	0.907	12.57	1.000	987.	26.4	0.1838	16.258	0.892		0.2395	7.89
8	UPPER TALARIK	C	45.9	10.99	0.903	12.57	1.000	988.	26.4	0.1481	16.255	2.259		0.2395	7.89
9	UPPER TALARIK	B	45.0									2.466			
10	TRIBUTARY 135	H	46.4	10.99	0.903	12.57	1.000	988.	26.4	0.2067	16.255	0.186	10.50	0.0000	7.89
11	TRIBUTARY 135	T	45.0									0.186			
12	UPPER TALARIK	J	45.0	11.06	0.899	12.57	1.000	989.	26.4	0.1480	16.251	2.652		0.2387	7.89
13	UPPER TALARIK	Q	44.6	11.06	0.899	12.57	1.000	989.	26.4	0.1480	16.251	2.752		-0.0351	10.82
14	UPPER TALARIK	C	38.4	11.18	0.893	12.57	1.000	991.	26.4	0.1281	16.247	2.532		-0.0351	10.82
15	UPPER TALARIK	Q	37.6	11.18	0.893	12.57	1.000	991.	26.4	0.1281	16.247	2.507		0.0761	10.82
16	UPPER TALARIK	C	35.8	11.26	0.889	12.57	1.000	993.	26.4	0.0824	16.244	2.646		0.0761	10.82
17	UPPER TALARIK	C	32.9	11.32	0.886	12.57	1.000	994.	26.4	0.1039	16.243	2.864		0.0761	10.82
18	UPPER TALARIK	C	32.3	11.40	0.882	12.57	1.000	995.	26.4	0.1057	16.240	2.911		0.0761	10.82
19	UPPER TALARIK	Q	29.3	11.40	0.882	12.57	1.000	995.	26.4	0.1057	16.240	3.141		0.0877	5.66
20	UPPER TALARIK	C	27.1	11.49	0.877	12.57	1.000	997.	26.4	0.0715	16.237	3.330		0.0877	5.66
21	UPPER TALARIK	C	25.0	11.51	0.876	12.57	1.000	997.	26.4	0.0982	16.237	3.516		0.0877	5.66
22	UPPER TALARIK	B	24.7									3.542			
23	TRIBUTARY 119	H	25.1	11.50	0.877	12.57	1.000	997.	26.4	0.2536	16.237	0.656	5.31	0.0000	5.66
24	TRIBUTARY 119	T	24.7									0.656			
25	UPPER TALARIK	J	24.7	11.58	0.872	12.57	1.000	999.	26.4	0.0982	16.235	4.198		0.0882	5.66
26	UPPER TALARIK	Q	24.5	11.58	0.872	12.57	1.000	999.	26.4	0.0982	16.235	4.219		0.0589	5.66
27	UPPER TALARIK	C	20.8	11.69	0.867	12.57	1.000	1001.	26.5	0.1058	16.231	4.436		0.0589	5.66
28	UPPER TALARIK	C	18.8	11.80	0.862	12.57	1.000	1003.	26.5	0.0947	16.227	4.554		0.0589	5.66
29	UPPER TALARIK	C	14.6	11.97	0.853	12.57	1.000	1006.	26.5	0.1077	16.222	4.802		0.0589	5.66
30	UPPER TALARIK	Q	14.4	11.97	0.853	12.57	1.000	1006.	26.5	0.1077	16.222	4.816		-0.2661	5.66
31	UPPER TALARIK	Q	9.8	11.97	0.853	12.57	1.000	1006.	26.5	0.1077	16.222	3.615		0.3634	5.66
32	UPPER TALARIK	C	9.1	12.18	0.843	12.57	1.000	1010.	26.5	0.1166	16.215	3.878		0.3634	5.66
33	UPPER TALARIK	Q	2.2	12.18	0.843	12.57	1.000	1010.	26.5	0.1166	16.215	6.379		0.0969	5.66
34	UPPER TALARIK	E	0.0									6.596			

YEAR: 2007 TIME PERIOD: 5-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.92	0.931	11.40	1.000	975.	57.5	0.3261	16.180	0.097	4.86	0.0690	10.33
2	UPPER TALARIK	Q	60.0	10.92	0.931	11.40	1.000	975.	57.5	0.3261	16.180	0.263		0.0644	10.33
3	UPPER TALARIK	C	59.7	11.22	0.916	11.40	1.000	981.	57.4	0.2462	16.178	0.283		0.0644	10.33
4	UPPER TALARIK	C	56.5	11.37	0.907	11.40	1.000	983.	57.4	0.2244	16.177	0.488		0.0644	10.33
5	UPPER TALARIK	C	55.4	11.44	0.904	11.40	1.000	985.	57.4	0.1767	16.177	0.558		0.0644	10.33
6	UPPER TALARIK	C	51.9	11.55	0.898	11.40	1.000	987.	57.4	0.1844	16.175	0.786		0.0644	10.33
7	UPPER TALARIK	Q	51.6	11.55	0.898	11.40	1.000	987.	57.4	0.1844	16.175	0.801		0.2946	8.02
8	UPPER TALARIK	C	45.9	11.62	0.894	11.40	1.000	988.	57.4	0.1486	16.173	2.482		0.2946	8.02
9	UPPER TALARIK	B	45.0									2.737			
10	TRIBUTARY 135	H	46.4	11.62	0.894	11.40	1.000	988.	57.4	0.2076	16.172	0.229	10.34	0.0000	8.02
11	TRIBUTARY 135	T	45.0									0.229			
12	UPPER TALARIK	J	45.0	11.69	0.890	11.40	1.000	989.	57.4	0.1485	16.169	2.966		0.2936	8.02
13	UPPER TALARIK	Q	44.6	11.69	0.890	11.40	1.000	989.	57.4	0.1485	16.169	3.089		-0.0031	10.40
14	UPPER TALARIK	C	38.4	11.81	0.885	11.40	1.000	991.	57.4	0.1286	16.164	3.069		-0.0031	10.40
15	UPPER TALARIK	Q	37.6	11.81	0.885	11.40	1.000	991.	57.4	0.1286	16.164	3.067		0.1008	10.40
16	UPPER TALARIK	C	35.8	11.89	0.880	11.40	1.000	993.	57.4	0.0826	16.162	3.251		0.1008	10.40
17	UPPER TALARIK	C	32.9	11.95	0.877	11.40	1.000	994.	57.4	0.1043	16.161	3.540		0.1008	10.40
18	UPPER TALARIK	C	32.3	12.03	0.873	11.40	1.000	995.	57.4	0.1062	16.158	3.602		0.1008	10.40
19	UPPER TALARIK	Q	29.3	12.03	0.873	11.40	1.000	995.	57.4	0.1062	16.158	3.907		0.1164	5.27
20	UPPER TALARIK	C	27.1	12.12	0.868	11.40	1.000	997.	57.4	0.0715	16.155	4.158		0.1164	5.27
21	UPPER TALARIK	C	25.0	12.14	0.867	11.40	1.000	997.	57.4	0.0986	16.155	4.404		0.1164	5.27
22	UPPER TALARIK	B	24.7									4.439			
23	TRIBUTARY 119	H	25.1	12.13	0.868	11.40	1.000	997.	57.4	0.2548	16.155	0.658	5.35	0.0000	5.27
24	TRIBUTARY 119	T	24.7									0.658			
25	UPPER TALARIK	J	24.7	12.21	0.864	11.40	1.000	999.	57.4	0.0986	16.153	5.097		0.1176	5.27
26	UPPER TALARIK	Q	24.5	12.21	0.864	11.40	1.000	999.	57.4	0.0986	16.153	5.125		0.0733	5.27
27	UPPER TALARIK	C	20.8	12.32	0.858	11.40	1.000	1001.	57.4	0.1062	16.149	5.395		0.0733	5.27
28	UPPER TALARIK	C	18.8	12.43	0.853	11.40	1.000	1003.	57.5	0.0952	16.145	5.542		0.0733	5.27
29	UPPER TALARIK	C	14.6	12.60	0.844	11.40	1.000	1006.	57.5	0.1082	16.140	5.850		0.0733	5.27
30	UPPER TALARIK	Q	14.4	12.60	0.844	11.40	1.000	1006.	57.5	0.1082	16.140	5.868		-0.2557	5.27
31	UPPER TALARIK	Q	9.8	12.60	0.844	11.40	1.000	1006.	57.5	0.1082	16.140	4.714		0.4002	5.27
32	UPPER TALARIK	C	9.1	12.81	0.834	11.40	1.000	1010.	57.5	0.1169	16.133	5.004		0.4002	5.27
33	UPPER TALARIK	Q	2.2	12.81	0.834	11.40	1.000	1010.	57.5	0.1169	16.133	7.758		0.1183	5.27
34	UPPER TALARIK	E	0.0									8.023			

YEAR: 2007 TIME PERIOD: 6-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.10	0.790	11.09	1.000	975.	181.5	0.3270	16.097	0.087	4.47	0.0619	9.75
2	UPPER TALARIK	Q	60.0	11.10	0.790	11.09	1.000	975.	181.5	0.3270	16.097	0.236		0.0582	9.75
3	UPPER TALARIK	C	59.7	11.40	0.777	11.09	1.000	981.	181.4	0.2473	16.095	0.254		0.0582	9.75
4	UPPER TALARIK	C	56.5	11.55	0.770	11.09	1.000	983.	181.4	0.2254	16.094	0.439		0.0582	9.75
5	UPPER TALARIK	C	55.4	11.62	0.767	11.09	1.000	985.	181.4	0.1773	16.094	0.502		0.0582	9.75
6	UPPER TALARIK	C	51.9	11.73	0.762	11.09	1.000	987.	181.4	0.1851	16.092	0.708		0.0582	9.75
7	UPPER TALARIK	Q	51.6	11.73	0.762	11.09	1.000	987.	181.4	0.1851	16.092	0.722		0.2785	8.19
8	UPPER TALARIK	C	45.9	11.80	0.759	11.09	1.000	988.	181.4	0.1491	16.090	2.311		0.2785	8.19
9	UPPER TALARIK	B	45.0									2.552			
10	TRIBUTARY 135	H	46.4	11.80	0.759	11.09	1.000	988.	181.4	0.2085	16.089	0.216	11.22	0.0000	8.19
11	TRIBUTARY 135	T	45.0									0.216			
12	UPPER TALARIK	J	45.0	11.87	0.755	11.09	1.000	989.	181.4	0.1490	16.086	2.768		0.2792	8.19
13	UPPER TALARIK	Q	44.6	11.87	0.755	11.09	1.000	989.	181.4	0.1490	16.086	2.885		0.0086	9.87
14	UPPER TALARIK	C	38.4	11.99	0.750	11.09	1.000	991.	181.4	0.1291	16.082	2.939		0.0086	9.87
15	UPPER TALARIK	Q	37.6	11.99	0.750	11.09	1.000	991.	181.4	0.1291	16.082	2.945		0.1067	9.87
16	UPPER TALARIK	C	35.8	12.07	0.747	11.09	1.000	993.	181.4	0.0828	16.079	3.139		0.1067	9.87
17	UPPER TALARIK	C	32.9	12.13	0.744	11.09	1.000	994.	181.4	0.1048	16.078	3.446		0.1067	9.87
18	UPPER TALARIK	C	32.3	12.21	0.741	11.09	1.000	995.	181.4	0.1066	16.075	3.511		0.1067	9.87
19	UPPER TALARIK	Q	29.3	12.21	0.741	11.09	1.000	995.	181.4	0.1066	16.075	3.834		0.1234	4.85
20	UPPER TALARIK	C	27.1	12.30	0.737	11.09	1.000	997.	181.4	0.0716	16.073	4.101		0.1234	4.85
21	UPPER TALARIK	C	25.0	12.32	0.736	11.09	1.000	997.	181.4	0.0991	16.072	4.361		0.1234	4.85
22	UPPER TALARIK	B	24.7									4.398			
23	TRIBUTARY 119	H	25.1	12.31	0.737	11.09	1.000	997.	181.4	0.2560	16.072	0.642	5.74	0.0000	4.85
24	TRIBUTARY 119	T	24.7									0.642			
25	UPPER TALARIK	J	24.7	12.39	0.733	11.09	1.000	999.	181.4	0.0991	16.070	5.040		0.1218	4.85
26	UPPER TALARIK	Q	24.5	12.39	0.733	11.09	1.000	999.	181.4	0.0991	16.070	5.069		0.0723	4.85
27	UPPER TALARIK	C	20.8	12.50	0.728	11.09	1.000	1001.	181.5	0.1067	16.067	5.336		0.0723	4.85
28	UPPER TALARIK	C	18.8	12.61	0.724	11.09	1.000	1003.	181.5	0.0956	16.062	5.480		0.0723	4.85
29	UPPER TALARIK	C	14.6	12.78	0.716	11.09	1.000	1006.	181.5	0.1087	16.058	5.785		0.0723	4.85
30	UPPER TALARIK	Q	14.4	12.78	0.716	11.09	1.000	1006.	181.5	0.1087	16.058	5.802		-0.2568	4.85
31	UPPER TALARIK	Q	9.8	12.78	0.716	11.09	1.000	1006.	181.5	0.1087	16.058	4.643		0.3982	4.85
32	UPPER TALARIK	C	9.1	12.99	0.708	11.09	1.000	1010.	181.5	0.1173	16.051	4.932		0.3982	4.85
33	UPPER TALARIK	Q	2.2	12.99	0.708	11.09	1.000	1010.	181.5	0.1173	16.051	7.672		0.1170	4.85
34	UPPER TALARIK	E	0.0									7.934			

YEAR: 2007 TIME PERIOD: 7-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.84	0.762	9.53	1.000	975.	207.9	0.3278	16.013	0.072	3.84	0.0511	9.33
2	UPPER TALARIK	Q	60.0	11.84	0.762	9.53	1.000	975.	207.9	0.3278	16.013	0.195		0.0400	9.33
3	UPPER TALARIK	C	59.7	12.14	0.749	9.53	1.000	981.	207.8	0.2484	16.011	0.208		0.0400	9.33
4	UPPER TALARIK	C	56.5	12.29	0.742	9.53	1.000	983.	207.8	0.2264	16.010	0.335		0.0400	9.33
5	UPPER TALARIK	C	55.4	12.36	0.739	9.53	1.000	985.	207.8	0.1778	16.010	0.378		0.0400	9.33
6	UPPER TALARIK	C	51.9	12.47	0.735	9.53	1.000	987.	207.8	0.1857	16.008	0.520		0.0400	9.33
7	UPPER TALARIK	Q	51.6	12.47	0.735	9.53	1.000	987.	207.8	0.1857	16.008	0.529		0.2041	8.28
8	UPPER TALARIK	C	45.9	12.54	0.732	9.53	1.000	988.	207.8	0.1496	16.006	1.694		0.2041	8.28
9	UPPER TALARIK	B	45.0									1.870			
10	TRIBUTARY 135	H	46.4	12.54	0.731	9.53	1.000	988.	207.8	0.2094	16.006	0.159	11.93	0.0000	8.28
11	TRIBUTARY 135	T	45.0									0.159			
12	UPPER TALARIK	J	45.0	12.61	0.728	9.53	1.000	989.	207.8	0.1495	16.003	2.029		0.2029	8.28
13	UPPER TALARIK	Q	44.6	12.61	0.728	9.53	1.000	989.	207.8	0.1495	16.003	2.114		0.0316	9.25
14	UPPER TALARIK	C	38.4	12.73	0.724	9.53	1.000	991.	207.8	0.1296	15.998	2.312		0.0316	9.25
15	UPPER TALARIK	Q	37.6	12.73	0.724	9.53	1.000	991.	207.8	0.1296	15.998	2.335		0.0962	9.25
16	UPPER TALARIK	C	35.8	12.81	0.720	9.53	1.000	993.	207.8	0.0830	15.996	2.510		0.0962	9.25
17	UPPER TALARIK	C	32.9	12.87	0.718	9.53	1.000	994.	207.8	0.1053	15.995	2.787		0.0962	9.25
18	UPPER TALARIK	C	32.3	12.95	0.714	9.53	1.000	995.	207.8	0.1071	15.992	2.846		0.0962	9.25
19	UPPER TALARIK	Q	29.3	12.95	0.714	9.53	1.000	995.	207.8	0.1071	15.992	3.137		0.1114	4.38
20	UPPER TALARIK	C	27.1	13.04	0.710	9.53	1.000	997.	207.8	0.0718	15.989	3.378		0.1114	4.38
21	UPPER TALARIK	C	25.0	13.06	0.709	9.53	1.000	997.	207.8	0.0996	15.989	3.613		0.1114	4.38
22	UPPER TALARIK	B	24.7									3.646			
23	TRIBUTARY 119	H	25.1	13.05	0.710	9.53	1.000	997.	207.8	0.2573	15.989	0.632	5.71	0.0000	4.38
24	TRIBUTARY 119	T	24.7									0.632			
25	UPPER TALARIK	J	24.7	13.13	0.707	9.53	1.000	999.	207.8	0.0996	15.987	4.278		0.1092	4.38
26	UPPER TALARIK	Q	24.5	13.13	0.707	9.53	1.000	999.	207.8	0.0996	15.987	4.304		0.0603	4.38
27	UPPER TALARIK	C	20.8	13.24	0.702	9.53	1.000	1001.	207.8	0.1072	15.983	4.526		0.0603	4.38
28	UPPER TALARIK	C	18.8	13.35	0.698	9.53	1.000	1003.	207.9	0.0961	15.979	4.647		0.0603	4.38
29	UPPER TALARIK	C	14.6	13.52	0.691	9.53	1.000	1006.	207.9	0.1093	15.975	4.901		0.0603	4.38
30	UPPER TALARIK	Q	14.4	13.52	0.691	9.53	1.000	1006.	207.9	0.1093	15.975	4.915		-0.2659	4.38
31	UPPER TALARIK	Q	9.8	13.52	0.691	9.53	1.000	1006.	207.9	0.1093	15.975	3.715		0.3673	4.38
32	UPPER TALARIK	C	9.1	13.73	0.682	9.53	1.000	1010.	207.9	0.1176	15.968	3.981		0.3673	4.38
33	UPPER TALARIK	Q	2.2	13.73	0.682	9.53	1.000	1010.	207.9	0.1176	15.968	6.509		0.0991	4.38
34	UPPER TALARIK	E	0.0									6.731			

YEAR: 2007 TIME PERIOD: 8-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.17	0.753	6.68	1.000	975.	155.9	0.3288	15.929	0.067	3.37	0.0474	8.97
2	UPPER TALARIK	Q	60.0	13.17	0.753	6.68	1.000	975.	155.9	0.3288	15.929	0.181		0.0328	8.97
3	UPPER TALARIK	C	59.7	13.47	0.740	6.68	1.000	981.	155.8	0.2495	15.926	0.191		0.0328	8.97
4	UPPER TALARIK	C	56.5	13.62	0.733	6.68	1.000	983.	155.8	0.2275	15.926	0.295		0.0328	8.97
5	UPPER TALARIK	C	55.4	13.69	0.730	6.68	1.000	985.	155.8	0.1784	15.926	0.331		0.0328	8.97
6	UPPER TALARIK	C	51.9	13.80	0.726	6.68	1.000	987.	155.8	0.1864	15.924	0.447		0.0328	8.97
7	UPPER TALARIK	Q	51.6	13.80	0.726	6.68	1.000	987.	155.8	0.1864	15.924	0.455		0.1691	8.31
8	UPPER TALARIK	C	45.9	13.87	0.723	6.68	1.000	988.	155.8	0.1501	15.922	1.420		0.1691	8.31
9	UPPER TALARIK	B	45.0									1.566			
10	TRIBUTARY 135	H	46.4	13.87	0.722	6.68	1.000	988.	155.8	0.2103	15.921	0.131	12.90	0.0000	8.31
11	TRIBUTARY 135	T	45.0									0.131			
12	UPPER TALARIK	J	45.0	13.94	0.719	6.68	1.000	989.	155.8	0.1500	15.918	1.697		0.1695	8.31
13	UPPER TALARIK	Q	44.6	13.94	0.719	6.68	1.000	989.	155.8	0.1500	15.918	1.768		0.0351	8.62
14	UPPER TALARIK	C	38.4	14.06	0.715	6.68	1.000	991.	155.8	0.1301	15.914	1.988		0.0351	8.62
15	UPPER TALARIK	Q	37.6	14.06	0.715	6.68	1.000	991.	155.8	0.1301	15.914	2.013		0.0931	8.62
16	UPPER TALARIK	C	35.8	14.14	0.711	6.68	1.000	993.	155.8	0.0832	15.912	2.183		0.0931	8.62
17	UPPER TALARIK	C	32.9	14.20	0.709	6.68	1.000	994.	155.8	0.1058	15.911	2.450		0.0931	8.62
18	UPPER TALARIK	C	32.3	14.28	0.705	6.68	1.000	995.	155.8	0.1076	15.908	2.507		0.0931	8.62
19	UPPER TALARIK	Q	29.3	14.28	0.705	6.68	1.000	995.	155.8	0.1076	15.908	2.789		0.1076	3.91
20	UPPER TALARIK	C	27.1	14.37	0.702	6.68	1.000	997.	155.8	0.0719	15.905	3.021		0.1076	3.91
21	UPPER TALARIK	C	25.0	14.39	0.701	6.68	1.000	997.	155.8	0.1001	15.905	3.249		0.1076	3.91
22	UPPER TALARIK	B	24.7									3.281			
23	TRIBUTARY 119	H	25.1	14.38	0.701	6.68	1.000	997.	155.8	0.2586	15.905	0.629	5.69	0.0000	3.91
24	TRIBUTARY 119	T	24.7									0.629			
25	UPPER TALARIK	J	24.7	14.46	0.698	6.68	1.000	999.	155.8	0.1001	15.903	3.910		0.1092	3.91
26	UPPER TALARIK	Q	24.5	14.46	0.698	6.68	1.000	999.	155.8	0.1001	15.903	3.936		0.0544	3.91
27	UPPER TALARIK	C	20.8	14.57	0.694	6.68	1.000	1001.	155.8	0.1077	15.900	4.137		0.0544	3.91
28	UPPER TALARIK	C	18.8	14.68	0.689	6.68	1.000	1003.	155.9	0.0966	15.896	4.246		0.0544	3.91
29	UPPER TALARIK	C	14.6	14.85	0.682	6.68	1.000	1006.	155.9	0.1098	15.891	4.475		0.0544	3.91
30	UPPER TALARIK	Q	14.4	14.85	0.682	6.68	1.000	1006.	155.9	0.1098	15.891	4.488		-0.2659	3.91
31	UPPER TALARIK	Q	9.8	14.85	0.682	6.68	1.000	1006.	155.9	0.1098	15.891	3.288		0.3499	3.91
32	UPPER TALARIK	C	9.1	15.06	0.674	6.68	1.000	1010.	155.9	0.1180	15.885	3.542		0.3499	3.91
33	UPPER TALARIK	Q	2.2	15.06	0.674	6.68	1.000	1010.	155.9	0.1180	15.885	5.949		0.0906	3.91
34	UPPER TALARIK	E	0.0									6.152			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	15.13	0.677	4.39	1.000	975.	236.9	0.3297	15.844	0.064	2.92	0.0461	8.58
2	UPPER TALARIK	Q	60.0	15.13	0.677	4.39	1.000	975.	236.9	0.3297	15.844	0.175		0.0290	8.58
3	UPPER TALARIK	C	59.7	15.43	0.666	4.39	1.000	981.	236.8	0.2506	15.841	0.184		0.0290	8.58
4	UPPER TALARIK	C	56.5	15.58	0.660	4.39	1.000	983.	236.8	0.2286	15.841	0.276		0.0290	8.58
5	UPPER TALARIK	C	55.4	15.65	0.657	4.39	1.000	985.	236.8	0.1792	15.841	0.308		0.0290	8.58
6	UPPER TALARIK	C	51.9	15.76	0.653	4.39	1.000	987.	236.8	0.1871	15.839	0.410		0.0290	8.58
7	UPPER TALARIK	Q	51.6	15.76	0.653	4.39	1.000	987.	236.8	0.1871	15.839	0.417		0.1497	8.33
8	UPPER TALARIK	C	45.9	15.83	0.650	4.39	1.000	988.	236.8	0.1506	15.837	1.272		0.1497	8.33
9	UPPER TALARIK	B	45.0									1.401			
10	TRIBUTARY 135	H	46.4	15.83	0.650	4.39	1.000	988.	236.8	0.2113	15.836	0.116	13.81	0.0000	8.33
11	TRIBUTARY 135	T	45.0									0.116			
12	UPPER TALARIK	J	45.0	15.90	0.647	4.39	1.000	989.	236.8	0.1505	15.834	1.517		0.1504	8.33
13	UPPER TALARIK	Q	44.6	15.90	0.647	4.39	1.000	989.	236.8	0.1505	15.834	1.580		0.0359	8.05
14	UPPER TALARIK	C	38.4	16.02	0.643	4.39	1.000	991.	236.8	0.1306	15.829	1.805		0.0359	8.05
15	UPPER TALARIK	Q	37.6	16.02	0.643	4.39	1.000	991.	236.8	0.1306	15.829	1.831		0.0899	8.05
16	UPPER TALARIK	C	35.8	16.10	0.640	4.39	1.000	993.	236.9	0.0835	15.827	1.995		0.0899	8.05
17	UPPER TALARIK	C	32.9	16.16	0.638	4.39	1.000	994.	236.8	0.1063	15.826	2.253		0.0899	8.05
18	UPPER TALARIK	C	32.3	16.24	0.635	4.39	1.000	995.	236.9	0.1082	15.823	2.308		0.0899	8.05
19	UPPER TALARIK	Q	29.3	16.24	0.635	4.39	1.000	995.	236.9	0.1082	15.823	2.580		0.1037	3.54
20	UPPER TALARIK	C	27.1	16.33	0.631	4.39	1.000	997.	236.9	0.0720	15.821	2.804		0.1037	3.54
21	UPPER TALARIK	C	25.0	16.35	0.631	4.39	1.000	997.	236.9	0.1006	15.821	3.023		0.1037	3.54
22	UPPER TALARIK	B	24.7									3.054			
23	TRIBUTARY 119	H	25.1	16.34	0.631	4.39	1.000	997.	236.9	0.2600	15.821	0.631	5.81	0.0000	3.54
24	TRIBUTARY 119	T	24.7									0.631			
25	UPPER TALARIK	J	24.7	16.42	0.628	4.39	1.000	999.	236.9	0.1006	15.819	3.685		0.1050	3.54
26	UPPER TALARIK	Q	24.5	16.42	0.628	4.39	1.000	999.	236.9	0.1006	15.819	3.710		0.0509	3.54
27	UPPER TALARIK	C	20.8	16.53	0.624	4.39	1.000	1001.	236.9	0.1082	15.815	3.898		0.0509	3.54
28	UPPER TALARIK	C	18.8	16.64	0.620	4.39	1.000	1003.	236.9	0.0971	15.812	3.999		0.0509	3.54
29	UPPER TALARIK	C	14.6	16.81	0.614	4.39	1.000	1006.	236.9	0.1104	15.807	4.214		0.0509	3.54
30	UPPER TALARIK	Q	14.4	16.81	0.614	4.39	1.000	1006.	236.9	0.1104	15.807	4.226		-0.2643	3.54
31	UPPER TALARIK	Q	9.8	16.81	0.614	4.39	1.000	1006.	236.9	0.1104	15.807	3.033		0.3382	3.54
32	UPPER TALARIK	C	9.1	17.02	0.607	4.39	1.000	1010.	237.0	0.1184	15.801	3.278		0.3382	3.54
33	UPPER TALARIK	Q	2.2	17.02	0.607	4.39	1.000	1010.	237.0	0.1184	15.801	5.605		0.0853	3.54
34	UPPER TALARIK	E	0.0									5.796			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	17.10	0.555	3.43	1.000	975.	237.8	0.3306	15.758	0.063	2.71	0.0453	8.28
2	UPPER TALARIK	Q	60.0	17.10	0.555	3.43	1.000	975.	237.8	0.3306	15.758	0.172		0.0262	8.28
3	UPPER TALARIK	C	59.7	17.40	0.546	3.43	1.000	981.	237.7	0.2517	15.756	0.180		0.0262	8.28
4	UPPER TALARIK	C	56.5	17.55	0.541	3.43	1.000	983.	237.7	0.2297	15.755	0.264		0.0262	8.28
5	UPPER TALARIK	C	55.4	17.62	0.539	3.43	1.000	985.	237.6	0.1801	15.755	0.292		0.0262	8.28
6	UPPER TALARIK	C	51.9	17.73	0.535	3.43	1.000	987.	237.6	0.1878	15.754	0.385		0.0262	8.28
7	UPPER TALARIK	Q	51.6	17.73	0.535	3.43	1.000	987.	237.6	0.1878	15.754	0.391		0.1373	8.40
8	UPPER TALARIK	C	45.9	17.80	0.533	3.43	1.000	988.	237.6	0.1511	15.751	1.174		0.1373	8.40
9	UPPER TALARIK	B	45.0									1.293			
10	TRIBUTARY 135	H	46.4	17.80	0.533	3.43	1.000	988.	237.6	0.2124	15.751	0.107	14.07	0.0000	8.40
11	TRIBUTARY 135	T	45.0									0.107			
12	UPPER TALARIK	J	45.0	17.87	0.530	3.43	1.000	989.	237.7	0.1511	15.748	1.400		0.1360	8.40
13	UPPER TALARIK	Q	44.6	17.87	0.530	3.43	1.000	989.	237.7	0.1511	15.748	1.457		0.0369	7.66
14	UPPER TALARIK	C	38.4	17.99	0.527	3.43	1.000	991.	237.7	0.1311	15.744	1.689		0.0369	7.66
15	UPPER TALARIK	Q	37.6	17.99	0.527	3.43	1.000	991.	237.7	0.1311	15.744	1.715		0.0881	7.66
16	UPPER TALARIK	C	35.8	18.07	0.524	3.43	1.000	993.	237.7	0.0837	15.742	1.876		0.0881	7.66
17	UPPER TALARIK	C	32.9	18.13	0.523	3.43	1.000	994.	237.7	0.1068	15.741	2.128		0.0881	7.66
18	UPPER TALARIK	C	32.3	18.21	0.520	3.43	1.000	995.	237.7	0.1087	15.738	2.182		0.0881	7.66
19	UPPER TALARIK	Q	29.3	18.21	0.520	3.43	1.000	995.	237.7	0.1087	15.738	2.449		0.1019	3.37
20	UPPER TALARIK	C	27.1	18.30	0.517	3.43	1.000	997.	237.7	0.0721	15.736	2.669		0.1019	3.37
21	UPPER TALARIK	C	25.0	18.32	0.517	3.43	1.000	997.	237.7	0.1011	15.736	2.885		0.1019	3.37
22	UPPER TALARIK	B	24.7									2.915			
23	TRIBUTARY 119	H	25.1	18.31	0.517	3.43	1.000	997.	237.7	0.2614	15.736	0.629	5.58	0.0000	3.37
24	TRIBUTARY 119	T	24.7									0.629			
25	UPPER TALARIK	J	24.7	18.39	0.515	3.43	1.000	999.	237.7	0.1011	15.734	3.544		0.1008	3.37
26	UPPER TALARIK	Q	24.5	18.39	0.515	3.43	1.000	999.	237.7	0.1011	15.734	3.568		0.0487	3.37
27	UPPER TALARIK	C	20.8	18.50	0.511	3.43	1.000	1001.	237.8	0.1087	15.731	3.748		0.0487	3.37
28	UPPER TALARIK	C	18.8	18.61	0.508	3.43	1.000	1003.	237.8	0.0976	15.727	3.845		0.0487	3.37
29	UPPER TALARIK	C	14.6	18.78	0.503	3.43	1.000	1006.	237.8	0.1110	15.723	4.050		0.0487	3.37
30	UPPER TALARIK	Q	14.4	18.78	0.503	3.43	1.000	1006.	237.8	0.1110	15.723	4.062		-0.2628	3.37
31	UPPER TALARIK	Q	9.8	18.78	0.503	3.43	1.000	1006.	237.8	0.1110	15.723	2.876		0.3305	3.37
32	UPPER TALARIK	C	9.1	18.99	0.497	3.43	1.000	1010.	237.9	0.1188	15.717	3.116		0.3305	3.37
33	UPPER TALARIK	Q	2.2	18.99	0.497	3.43	1.000	1010.	237.9	0.1188	15.717	5.390		0.0817	3.37
34	UPPER TALARIK	E	0.0									5.573			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	16.36	0.630	2.66	1.000	975.	158.4	0.3316	15.672	0.063	2.72	0.0449	8.21
2	UPPER TALARIK	Q	60.0	16.36	0.630	2.66	1.000	975.	158.4	0.3316	15.672	0.171		0.0244	8.21
3	UPPER TALARIK	C	59.7	16.66	0.620	2.66	1.000	981.	158.4	0.2529	15.670	0.179		0.0244	8.21
4	UPPER TALARIK	C	56.5	16.81	0.614	2.66	1.000	983.	158.4	0.2308	15.669	0.256		0.0244	8.21
5	UPPER TALARIK	C	55.4	16.88	0.612	2.66	1.000	985.	158.4	0.1810	15.669	0.283		0.0244	8.21
6	UPPER TALARIK	C	51.9	16.99	0.608	2.66	1.000	987.	158.4	0.1885	15.668	0.369		0.0244	8.21
7	UPPER TALARIK	Q	51.6	16.99	0.608	2.66	1.000	987.	158.4	0.1885	15.668	0.375		0.1292	8.55
8	UPPER TALARIK	C	45.9	17.06	0.605	2.66	1.000	988.	158.4	0.1517	15.665	1.112		0.1292	8.55
9	UPPER TALARIK	B	45.0									1.224			
10	TRIBUTARY 135	H	46.4	17.06	0.605	2.66	1.000	988.	158.4	0.2134	15.665	0.100	13.65	0.0000	8.55
11	TRIBUTARY 135	T	45.0									0.100			
12	UPPER TALARIK	J	45.0	17.13	0.602	2.66	1.000	989.	158.4	0.1516	15.662	1.324		0.1289	8.55
13	UPPER TALARIK	Q	44.6	17.13	0.602	2.66	1.000	989.	158.4	0.1516	15.662	1.378		0.0374	7.56
14	UPPER TALARIK	C	38.4	17.25	0.599	2.66	1.000	991.	158.4	0.1316	15.658	1.612		0.0374	7.56
15	UPPER TALARIK	Q	37.6	17.25	0.599	2.66	1.000	991.	158.4	0.1316	15.658	1.639		0.0876	7.56
16	UPPER TALARIK	C	35.8	17.33	0.595	2.66	1.000	993.	158.4	0.0840	15.656	1.799		0.0876	7.56
17	UPPER TALARIK	C	32.9	17.39	0.594	2.66	1.000	994.	158.4	0.1074	15.655	2.050		0.0876	7.56
18	UPPER TALARIK	C	32.3	17.47	0.591	2.66	1.000	995.	158.4	0.1092	15.653	2.104		0.0876	7.56
19	UPPER TALARIK	Q	29.3	17.47	0.591	2.66	1.000	995.	158.4	0.1092	15.653	2.369		0.1013	3.49
20	UPPER TALARIK	C	27.1	17.56	0.588	2.66	1.000	997.	158.4	0.0723	15.651	2.588		0.1013	3.49
21	UPPER TALARIK	C	25.0	17.58	0.587	2.66	1.000	997.	158.4	0.1016	15.650	2.802		0.1013	3.49
22	UPPER TALARIK	B	24.7									2.832			
23	TRIBUTARY 119	H	25.1	17.57	0.587	2.66	1.000	997.	158.4	0.2629	15.650	0.627	5.42	0.0000	3.49
24	TRIBUTARY 119	T	24.7									0.627			
25	UPPER TALARIK	J	24.7	17.65	0.584	2.66	1.000	999.	158.4	0.1016	15.648	3.459		0.1008	3.49
26	UPPER TALARIK	Q	24.5	17.65	0.584	2.66	1.000	999.	158.4	0.1016	15.648	3.483		0.0474	3.49
27	UPPER TALARIK	C	20.8	17.76	0.581	2.66	1.000	1001.	158.5	0.1092	15.645	3.658		0.0474	3.49
28	UPPER TALARIK	C	18.8	17.87	0.577	2.66	1.000	1003.	158.5	0.0981	15.642	3.753		0.0474	3.49
29	UPPER TALARIK	C	14.6	18.04	0.571	2.66	1.000	1006.	158.5	0.1116	15.638	3.953		0.0474	3.49
30	UPPER TALARIK	Q	14.4	18.04	0.571	2.66	1.000	1006.	158.5	0.1116	15.638	3.964		-0.2617	3.49
31	UPPER TALARIK	Q	9.8	18.04	0.571	2.66	1.000	1006.	158.5	0.1116	15.638	2.783		0.3258	3.49
32	UPPER TALARIK	C	9.1	18.25	0.564	2.66	1.000	1010.	158.5	0.1192	15.632	3.019		0.3258	3.49
33	UPPER TALARIK	Q	2.2	18.25	0.564	2.66	1.000	1010.	158.5	0.1192	15.632	5.261		0.0799	3.49
34	UPPER TALARIK	E	0.0									5.440			

YEAR: 2007 TIME PERIOD: 12-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	17.67	0.828	3.75	1.000	975.	113.8	0.3326	15.585	0.064	2.34	0.0457	8.47
2	UPPER TALARIK	Q	60.0	17.67	0.828	3.75	1.000	975.	113.8	0.3326	15.585	0.174		0.0254	8.47
3	UPPER TALARIK	C	59.7	17.97	0.814	3.75	1.000	981.	113.7	0.2541	15.583	0.182		0.0254	8.47
4	UPPER TALARIK	C	56.5	18.12	0.806	3.75	1.000	983.	113.7	0.2320	15.583	0.263		0.0254	8.47
5	UPPER TALARIK	C	55.4	18.19	0.803	3.75	1.000	985.	113.7	0.1820	15.583	0.290		0.0254	8.47
6	UPPER TALARIK	C	51.9	18.30	0.798	3.75	1.000	987.	113.7	0.1893	15.581	0.380		0.0254	8.47
7	UPPER TALARIK	Q	51.6	18.30	0.798	3.75	1.000	987.	113.7	0.1893	15.581	0.386		0.1319	8.73
8	UPPER TALARIK	C	45.9	18.37	0.795	3.75	1.000	988.	113.7	0.1522	15.579	1.139		0.1319	8.73
9	UPPER TALARIK	B	45.0									1.253			
10	TRIBUTARY 135	H	46.4	18.37	0.795	3.75	1.000	988.	113.7	0.2146	15.579	0.103	14.05	0.0000	8.73
11	TRIBUTARY 135	T	45.0									0.103			
12	UPPER TALARIK	J	45.0	18.44	0.791	3.75	1.000	989.	113.7	0.1522	15.576	1.356		0.1313	8.73
13	UPPER TALARIK	Q	44.6	18.44	0.791	3.75	1.000	989.	113.7	0.1522	15.576	1.411		0.0355	7.77
14	UPPER TALARIK	C	38.4	18.56	0.786	3.75	1.000	991.	113.7	0.1322	15.572	1.634		0.0355	7.77
15	UPPER TALARIK	Q	37.6	18.56	0.786	3.75	1.000	991.	113.7	0.1322	15.572	1.659		0.0863	7.77
16	UPPER TALARIK	C	35.8	18.64	0.782	3.75	1.000	993.	113.7	0.0843	15.570	1.816		0.0863	7.77
17	UPPER TALARIK	C	32.9	18.70	0.780	3.75	1.000	994.	113.7	0.1079	15.569	2.064		0.0863	7.77
18	UPPER TALARIK	C	32.3	18.78	0.776	3.75	1.000	995.	113.8	0.1098	15.567	2.117		0.0863	7.77
19	UPPER TALARIK	Q	29.3	18.78	0.776	3.75	1.000	995.	113.8	0.1098	15.567	2.378		0.0995	3.88
20	UPPER TALARIK	C	27.1	18.87	0.772	3.75	1.000	997.	113.8	0.0725	15.565	2.593		0.0995	3.88
21	UPPER TALARIK	C	25.0	18.89	0.771	3.75	1.000	997.	113.8	0.1021	15.564	2.803		0.0995	3.88
22	UPPER TALARIK	B	24.7									2.833			
23	TRIBUTARY 119	H	25.1	18.88	0.772	3.75	1.000	997.	113.8	0.2643	15.564	0.626	5.61	0.0000	3.88
24	TRIBUTARY 119	T	24.7									0.626			
25	UPPER TALARIK	J	24.7	18.96	0.768	3.75	1.000	999.	113.8	0.1021	15.562	3.459		0.1008	3.88
26	UPPER TALARIK	Q	24.5	18.96	0.768	3.75	1.000	999.	113.8	0.1021	15.562	3.483		0.0474	3.88
27	UPPER TALARIK	C	20.8	19.07	0.763	3.75	1.000	1001.	113.8	0.1097	15.559	3.658		0.0474	3.88
28	UPPER TALARIK	C	18.8	19.18	0.758	3.75	1.000	1003.	113.8	0.0986	15.556	3.753		0.0474	3.88
29	UPPER TALARIK	C	14.6	19.35	0.750	3.75	1.000	1006.	113.8	0.1122	15.552	3.953		0.0474	3.88
30	UPPER TALARIK	Q	14.4	19.35	0.750	3.75	1.000	1006.	113.8	0.1122	15.552	3.964		-0.2617	3.88
31	UPPER TALARIK	Q	9.8	19.35	0.750	3.75	1.000	1006.	113.8	0.1122	15.552	2.783		0.3258	3.88
32	UPPER TALARIK	C	9.1	19.56	0.741	3.75	1.000	1010.	113.8	0.1196	15.546	3.019		0.3258	3.88
33	UPPER TALARIK	Q	2.2	19.56	0.741	3.75	1.000	1010.	113.8	0.1196	15.546	5.261		0.0799	3.88
34	UPPER TALARIK	E	0.0									5.440			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	18.51	0.771	3.97	1.000	975.	182.9	0.3336	15.498	0.064	2.60	0.0457	9.22
2	UPPER TALARIK	Q	60.0	18.51	0.771	3.97	1.000	975.	182.9	0.3336	15.498	0.174		0.0244	9.22
3	UPPER TALARIK	C	59.7	18.81	0.758	3.97	1.000	981.	182.8	0.2554	15.496	0.182		0.0244	9.22
4	UPPER TALARIK	C	56.5	18.96	0.751	3.97	1.000	983.	182.8	0.2331	15.496	0.259		0.0244	9.22
5	UPPER TALARIK	C	55.4	19.03	0.748	3.97	1.000	985.	182.8	0.1829	15.496	0.286		0.0244	9.22
6	UPPER TALARIK	C	51.9	19.14	0.744	3.97	1.000	987.	182.8	0.1901	15.494	0.372		0.0244	9.22
7	UPPER TALARIK	Q	51.6	19.14	0.744	3.97	1.000	987.	182.8	0.1901	15.494	0.378		0.1310	8.87
8	UPPER TALARIK	C	45.9	19.21	0.741	3.97	1.000	988.	182.8	0.1528	15.492	1.126		0.1310	8.87
9	UPPER TALARIK	B	45.0									1.239			
10	TRIBUTARY 135	H	46.4	19.21	0.740	3.97	1.000	988.	182.8	0.2158	15.492	0.102	14.68	0.0000	8.87
11	TRIBUTARY 135	T	45.0									0.102			
12	UPPER TALARIK	J	45.0	19.28	0.737	3.97	1.000	989.	182.8	0.1527	15.489	1.341		0.1289	8.87
13	UPPER TALARIK	Q	44.6	19.28	0.737	3.97	1.000	989.	182.8	0.1527	15.489	1.395		0.0361	8.28
14	UPPER TALARIK	C	38.4	19.40	0.733	3.97	1.000	991.	182.8	0.1327	15.486	1.621		0.0361	8.28
15	UPPER TALARIK	Q	37.6	19.40	0.733	3.97	1.000	991.	182.8	0.1327	15.486	1.647		0.0871	8.28
16	UPPER TALARIK	C	35.8	19.48	0.729	3.97	1.000	993.	182.9	0.0846	15.484	1.806		0.0871	8.28
17	UPPER TALARIK	C	32.9	19.54	0.726	3.97	1.000	994.	182.9	0.1085	15.483	2.056		0.0871	8.28
18	UPPER TALARIK	C	32.3	19.62	0.723	3.97	1.000	995.	182.9	0.1103	15.480	2.109		0.0871	8.28
19	UPPER TALARIK	Q	29.3	19.62	0.723	3.97	1.000	995.	182.9	0.1103	15.480	2.373		0.1006	4.47
20	UPPER TALARIK	C	27.1	19.71	0.719	3.97	1.000	997.	182.9	0.0727	15.478	2.590		0.1006	4.47
21	UPPER TALARIK	C	25.0	19.73	0.718	3.97	1.000	997.	182.9	0.1027	15.478	2.803		0.1006	4.47
22	UPPER TALARIK	B	24.7									2.833			
23	TRIBUTARY 119	H	25.1	19.72	0.719	3.97	1.000	997.	182.9	0.2658	15.478	0.626	5.88	0.0000	4.47
24	TRIBUTARY 119	T	24.7									0.626			
25	UPPER TALARIK	J	24.7	19.80	0.715	3.97	1.000	999.	182.9	0.1027	15.476	3.459		0.1008	4.47
26	UPPER TALARIK	Q	24.5	19.80	0.715	3.97	1.000	999.	182.9	0.1027	15.476	3.483		0.0474	4.47
27	UPPER TALARIK	C	20.8	19.91	0.711	3.97	1.000	1001.	182.9	0.1103	15.473	3.658		0.0474	4.47
28	UPPER TALARIK	C	18.8	20.02	0.706	3.97	1.000	1003.	182.9	0.0991	15.470	3.753		0.0474	4.47
29	UPPER TALARIK	C	14.6	20.19	0.699	3.97	1.000	1006.	182.9	0.1129	15.466	3.953		0.0474	4.47
30	UPPER TALARIK	Q	14.4	20.19	0.699	3.97	1.000	1006.	182.9	0.1129	15.466	3.964		-0.2617	4.47
31	UPPER TALARIK	Q	9.8	20.19	0.699	3.97	1.000	1006.	182.9	0.1129	15.466	2.783		0.3258	4.47
32	UPPER TALARIK	C	9.1	20.40	0.691	3.97	1.000	1010.	183.0	0.1200	15.460	3.019		0.3258	4.47
33	UPPER TALARIK	Q	2.2	20.40	0.691	3.97	1.000	1010.	183.0	0.1200	15.460	5.261		0.0799	4.47
34	UPPER TALARIK	E	0.0									5.440			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.48	0.913	5.15	1.000	975.	65.5	0.3346	15.411	0.068	3.97	0.0482	10.29
2	UPPER TALARIK	Q	60.0	9.48	0.913	5.15	1.000	975.	65.5	0.3346	15.411	0.184		0.0266	10.29
3	UPPER TALARIK	C	59.7	9.78	0.897	5.15	1.000	981.	65.5	0.2566	15.409	0.192		0.0266	10.29
4	UPPER TALARIK	C	56.5	9.93	0.889	5.15	1.000	983.	65.5	0.2344	15.408	0.277		0.0266	10.29
5	UPPER TALARIK	C	55.4	10.00	0.885	5.15	1.000	985.	65.5	0.1840	15.409	0.306		0.0266	10.29
6	UPPER TALARIK	C	51.9	10.11	0.880	5.15	1.000	987.	65.5	0.1908	15.407	0.400		0.0266	10.29
7	UPPER TALARIK	Q	51.6	10.11	0.880	5.15	1.000	987.	65.5	0.1908	15.407	0.406		0.1342	8.80
8	UPPER TALARIK	C	45.9	10.18	0.876	5.15	1.000	988.	65.5	0.1534	15.405	1.172		0.1342	8.80
9	UPPER TALARIK	B	45.0									1.288			
10	TRIBUTARY 135	H	46.4	10.18	0.876	5.15	1.000	988.	65.5	0.2172	15.405	0.104	13.61	0.0000	8.80
11	TRIBUTARY 135	T	45.0									0.104			
12	UPPER TALARIK	J	45.0	10.25	0.872	5.15	1.000	989.	65.5	0.1533	15.402	1.392		0.1337	8.80
13	UPPER TALARIK	Q	44.6	10.25	0.872	5.15	1.000	989.	65.5	0.1533	15.402	1.448		0.0349	8.99
14	UPPER TALARIK	C	38.4	10.37	0.867	5.15	1.000	991.	65.5	0.1333	15.398	1.667		0.0349	8.99
15	UPPER TALARIK	Q	37.6	10.37	0.867	5.15	1.000	991.	65.5	0.1333	15.398	1.692		0.0859	8.99
16	UPPER TALARIK	C	35.8	10.45	0.862	5.15	1.000	993.	65.5	0.0849	15.397	1.849		0.0859	8.99
17	UPPER TALARIK	C	32.9	10.51	0.859	5.15	1.000	994.	65.5	0.1091	15.396	2.095		0.0859	8.99
18	UPPER TALARIK	C	32.3	10.59	0.855	5.15	1.000	995.	65.5	0.1109	15.393	2.148		0.0859	8.99
19	UPPER TALARIK	Q	29.3	10.59	0.855	5.15	1.000	995.	65.5	0.1109	15.393	2.408		0.0993	5.09
20	UPPER TALARIK	C	27.1	10.68	0.851	5.15	1.000	997.	65.5	0.0728	15.391	2.623		0.0993	5.09
21	UPPER TALARIK	C	25.0	10.70	0.850	5.15	1.000	997.	65.5	0.1032	15.391	2.832		0.0993	5.09
22	UPPER TALARIK	B	24.7									2.862			
23	TRIBUTARY 119	H	25.1	10.69	0.851	5.15	1.000	997.	65.5	0.2674	15.391	0.625	5.26	0.0000	5.09
24	TRIBUTARY 119	T	24.7									0.625			
25	UPPER TALARIK	J	24.7	10.77	0.846	5.15	1.000	999.	65.5	0.1032	15.389	3.487		0.1008	5.09
26	UPPER TALARIK	Q	24.5	10.77	0.846	5.15	1.000	999.	65.5	0.1032	15.389	3.511		0.0479	5.09
27	UPPER TALARIK	C	20.8	10.88	0.841	5.15	1.000	1001.	65.5	0.1108	15.386	3.688		0.0479	5.09
28	UPPER TALARIK	C	18.8	10.99	0.836	5.15	1.000	1003.	65.5	0.0997	15.383	3.783		0.0479	5.09
29	UPPER TALARIK	C	14.6	11.16	0.827	5.15	1.000	1006.	65.5	0.1135	15.379	3.985		0.0479	5.09
30	UPPER TALARIK	Q	14.4	11.16	0.827	5.15	1.000	1006.	65.5	0.1135	15.379	3.997		-0.2621	5.09
31	UPPER TALARIK	Q	9.8	11.16	0.827	5.15	1.000	1006.	65.5	0.1135	15.379	2.814		0.3274	5.09
32	UPPER TALARIK	C	9.1	11.37	0.817	5.15	1.000	1010.	65.5	0.1204	15.374	3.051		0.3274	5.09
33	UPPER TALARIK	Q	2.2	11.37	0.817	5.15	1.000	1010.	65.5	0.1204	15.374	5.304		0.0804	5.09
34	UPPER TALARIK	E	0.0									5.484			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.46	0.922	7.75	1.000	975.	69.1	0.3356	15.323	0.072	4.27	0.0511	11.11
2	UPPER TALARIK	Q	60.0	10.46	0.922	7.75	1.000	975.	69.1	0.3356	15.323	0.195		0.0321	11.11
3	UPPER TALARIK	C	59.7	10.76	0.906	7.75	1.000	981.	69.1	0.2579	15.321	0.205		0.0321	11.11
4	UPPER TALARIK	C	56.5	10.91	0.898	7.75	1.000	983.	69.1	0.2356	15.321	0.307		0.0321	11.11
5	UPPER TALARIK	C	55.4	10.98	0.895	7.75	1.000	985.	69.1	0.1850	15.321	0.342		0.0321	11.11
6	UPPER TALARIK	C	51.9	11.09	0.889	7.75	1.000	987.	69.1	0.1916	15.319	0.455		0.0321	11.11
7	UPPER TALARIK	Q	51.6	11.09	0.889	7.75	1.000	987.	69.1	0.1916	15.319	0.463		0.1645	8.26
8	UPPER TALARIK	C	45.9	11.16	0.885	7.75	1.000	988.	69.1	0.1540	15.317	1.402		0.1645	8.26
9	UPPER TALARIK	B	45.0									1.544			
10	TRIBUTARY 135	H	46.4	11.16	0.885	7.75	1.000	988.	69.1	0.2185	15.317	0.128	11.41	0.0000	8.26
11	TRIBUTARY 135	T	45.0									0.128			
12	UPPER TALARIK	J	45.0	11.23	0.881	7.75	1.000	989.	69.1	0.1539	15.315	1.672		0.1623	8.26
13	UPPER TALARIK	Q	44.6	11.23	0.881	7.75	1.000	989.	69.1	0.1539	15.315	1.740		0.0328	9.73
14	UPPER TALARIK	C	38.4	11.35	0.876	7.75	1.000	991.	69.1	0.1338	15.311	1.946		0.0328	9.73
15	UPPER TALARIK	Q	37.6	11.35	0.876	7.75	1.000	991.	69.1	0.1338	15.311	1.969		0.0887	9.73
16	UPPER TALARIK	C	35.8	11.43	0.871	7.75	1.000	993.	69.1	0.0852	15.309	2.131		0.0887	9.73
17	UPPER TALARIK	C	32.9	11.49	0.868	7.75	1.000	994.	69.1	0.1097	15.308	2.385		0.0887	9.73
18	UPPER TALARIK	C	32.3	11.57	0.864	7.75	1.000	995.	69.1	0.1115	15.306	2.439		0.0887	9.73
19	UPPER TALARIK	Q	29.3	11.57	0.864	7.75	1.000	995.	69.1	0.1115	15.306	2.708		0.1024	5.55
20	UPPER TALARIK	C	27.1	11.66	0.860	7.75	1.000	997.	69.1	0.0731	15.304	2.929		0.1024	5.55
21	UPPER TALARIK	C	25.0	11.68	0.858	7.75	1.000	997.	69.1	0.1038	15.304	3.145		0.1024	5.55
22	UPPER TALARIK	B	24.7									3.176			
23	TRIBUTARY 119	H	25.1	11.67	0.859	7.75	1.000	997.	69.1	0.2689	15.304	0.623	5.30	0.0000	5.55
24	TRIBUTARY 119	T	24.7									0.623			
25	UPPER TALARIK	J	24.7	11.75	0.855	7.75	1.000	999.	69.1	0.1038	15.302	3.799		0.1008	5.55
26	UPPER TALARIK	Q	24.5	11.75	0.855	7.75	1.000	999.	69.1	0.1038	15.302	3.823		0.0527	5.55
27	UPPER TALARIK	C	20.8	11.86	0.850	7.75	1.000	1001.	69.1	0.1114	15.299	4.017		0.0527	5.55
28	UPPER TALARIK	C	18.8	11.97	0.844	7.75	1.000	1003.	69.1	0.1003	15.296	4.122		0.0527	5.55
29	UPPER TALARIK	C	14.6	12.14	0.836	7.75	1.000	1006.	69.2	0.1142	15.292	4.344		0.0527	5.55
30	UPPER TALARIK	Q	14.4	12.14	0.836	7.75	1.000	1006.	69.2	0.1142	15.292	4.357		-0.2652	5.55
31	UPPER TALARIK	Q	9.8	12.14	0.836	7.75	1.000	1006.	69.2	0.1142	15.292	3.160		0.3441	5.55
32	UPPER TALARIK	C	9.1	12.35	0.826	7.75	1.000	1010.	69.2	0.1208	15.287	3.409		0.3441	5.55
33	UPPER TALARIK	Q	2.2	12.35	0.826	7.75	1.000	1010.	69.2	0.1208	15.287	5.777		0.0879	5.55
34	UPPER TALARIK	E	0.0									5.974			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.98	0.800	2.65	1.000	975.	185.4	0.3367	15.235	0.068	3.93	0.0490	11.68
2	UPPER TALARIK	Q	60.0	12.98	0.800	2.65	1.000	975.	185.4	0.3367	15.235	0.186		0.0292	11.68
3	UPPER TALARIK	C	59.7	13.28	0.786	2.65	1.000	981.	185.4	0.2591	15.233	0.195		0.0292	11.68
4	UPPER TALARIK	C	56.5	13.43	0.779	2.65	1.000	983.	185.4	0.2369	15.233	0.288		0.0292	11.68
5	UPPER TALARIK	C	55.4	13.50	0.776	2.65	1.000	985.	185.3	0.1861	15.233	0.320		0.0292	11.68
6	UPPER TALARIK	C	51.9	13.61	0.771	2.65	1.000	987.	185.3	0.1924	15.231	0.423		0.0292	11.68
7	UPPER TALARIK	Q	51.6	13.61	0.771	2.65	1.000	987.	185.3	0.1924	15.231	0.430		0.1462	7.42
8	UPPER TALARIK	C	45.9	13.68	0.768	2.65	1.000	988.	185.4	0.1546	15.229	1.265		0.1462	7.42
9	UPPER TALARIK	B	45.0									1.391			
10	TRIBUTARY 135	H	46.4	13.68	0.768	2.65	1.000	988.	185.4	0.2199	15.229	0.114	12.16	0.0000	7.42
11	TRIBUTARY 135	T	45.0									0.114			
12	UPPER TALARIK	J	45.0	13.75	0.764	2.65	1.000	989.	185.4	0.1545	15.227	1.505		0.1456	7.42
13	UPPER TALARIK	Q	44.6	13.75	0.764	2.65	1.000	989.	185.4	0.1545	15.227	1.566		0.0369	10.43
14	UPPER TALARIK	C	38.4	13.87	0.759	2.65	1.000	991.	185.4	0.1344	15.223	1.798		0.0369	10.43
15	UPPER TALARIK	Q	37.6	13.87	0.759	2.65	1.000	991.	185.4	0.1344	15.223	1.824		0.0890	10.43
16	UPPER TALARIK	C	35.8	13.95	0.756	2.65	1.000	993.	185.4	0.0856	15.221	1.986		0.0890	10.43
17	UPPER TALARIK	C	32.9	14.01	0.753	2.65	1.000	994.	185.4	0.1103	15.220	2.242		0.0890	10.43
18	UPPER TALARIK	C	32.3	14.09	0.749	2.65	1.000	995.	185.5	0.1121	15.218	2.296		0.0890	10.43
19	UPPER TALARIK	Q	29.3	14.09	0.749	2.65	1.000	995.	185.5	0.1121	15.218	2.566		0.1028	5.84
20	UPPER TALARIK	C	27.1	14.18	0.745	2.65	1.000	997.	185.5	0.0733	15.216	2.788		0.1028	5.84
21	UPPER TALARIK	C	25.0	14.20	0.744	2.65	1.000	997.	185.5	0.1044	15.216	3.005		0.1028	5.84
22	UPPER TALARIK	B	24.7									3.036			
23	TRIBUTARY 119	H	25.1	14.19	0.745	2.65	1.000	997.	185.5	0.2705	15.216	0.621	5.36	0.0000	5.84
24	TRIBUTARY 119	T	24.7									0.621			
25	UPPER TALARIK	J	24.7	14.27	0.741	2.65	1.000	999.	185.5	0.1044	15.214	3.657		0.1008	5.84
26	UPPER TALARIK	Q	24.5	14.27	0.741	2.65	1.000	999.	185.5	0.1044	15.214	3.681		0.0505	5.84
27	UPPER TALARIK	C	20.8	14.38	0.737	2.65	1.000	1001.	185.5	0.1120	15.212	3.867		0.0505	5.84
28	UPPER TALARIK	C	18.8	14.49	0.732	2.65	1.000	1003.	185.5	0.1008	15.209	3.968		0.0505	5.84
29	UPPER TALARIK	C	14.6	14.66	0.725	2.65	1.000	1006.	185.6	0.1149	15.205	4.181		0.0505	5.84
30	UPPER TALARIK	Q	14.4	14.66	0.725	2.65	1.000	1006.	185.6	0.1149	15.205	4.193		-0.2641	5.84
31	UPPER TALARIK	Q	9.8	14.66	0.725	2.65	1.000	1006.	185.6	0.1149	15.205	3.001		0.3367	5.84
32	UPPER TALARIK	C	9.1	14.87	0.716	2.65	1.000	1010.	185.6	0.1213	15.200	3.245		0.3367	5.84
33	UPPER TALARIK	Q	2.2	14.87	0.716	2.65	1.000	1010.	185.6	0.1213	15.200	5.562		0.0844	5.84
34	UPPER TALARIK	E	0.0									5.751			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.38	0.781	8.10	1.000	975.	110.0	0.3378	15.146	0.065	3.61	0.0461	12.12
2	UPPER TALARIK	Q	60.0	11.38	0.781	8.10	1.000	975.	110.0	0.3378	15.146	0.176		0.0261	12.12
3	UPPER TALARIK	C	59.7	11.68	0.768	8.10	1.000	981.	109.9	0.2605	15.145	0.184		0.0261	12.12
4	UPPER TALARIK	C	56.5	11.83	0.761	8.10	1.000	983.	109.9	0.2382	15.144	0.267		0.0261	12.12
5	UPPER TALARIK	C	55.4	11.90	0.758	8.10	1.000	985.	109.9	0.1873	15.144	0.295		0.0261	12.12
6	UPPER TALARIK	C	51.9	12.01	0.753	8.10	1.000	987.	109.9	0.1933	15.143	0.388		0.0261	12.12
7	UPPER TALARIK	Q	51.6	12.01	0.753	8.10	1.000	987.	109.9	0.1933	15.143	0.394		0.1301	6.47
8	UPPER TALARIK	C	45.9	12.08	0.750	8.10	1.000	988.	109.9	0.1552	15.141	1.137		0.1301	6.47
9	UPPER TALARIK	B	45.0									1.249			
10	TRIBUTARY 135	H	46.4	12.08	0.749	8.10	1.000	988.	109.9	0.2214	15.141	0.101	12.11	0.0000	6.47
11	TRIBUTARY 135	T	45.0									0.101			
12	UPPER TALARIK	J	45.0	12.15	0.746	8.10	1.000	989.	109.9	0.1551	15.138	1.350		0.1313	6.47
13	UPPER TALARIK	Q	44.6	12.15	0.746	8.10	1.000	989.	109.9	0.1551	15.138	1.405		0.0392	11.11
14	UPPER TALARIK	C	38.4	12.27	0.742	8.10	1.000	991.	110.0	0.1350	15.135	1.651		0.0392	11.11
15	UPPER TALARIK	Q	37.6	12.27	0.742	8.10	1.000	991.	110.0	0.1350	15.135	1.679		0.0883	11.11
16	UPPER TALARIK	C	35.8	12.35	0.738	8.10	1.000	993.	110.0	0.0860	15.133	1.840		0.0883	11.11
17	UPPER TALARIK	C	32.9	12.41	0.735	8.10	1.000	994.	110.0	0.1109	15.132	2.094		0.0883	11.11
18	UPPER TALARIK	C	32.3	12.49	0.732	8.10	1.000	995.	110.0	0.1128	15.130	2.148		0.0883	11.11
19	UPPER TALARIK	Q	29.3	12.49	0.732	8.10	1.000	995.	110.0	0.1128	15.130	2.415		0.1019	6.06
20	UPPER TALARIK	C	27.1	12.58	0.728	8.10	1.000	997.	110.0	0.0735	15.128	2.635		0.1019	6.06
21	UPPER TALARIK	C	25.0	12.60	0.727	8.10	1.000	997.	110.0	0.1050	15.128	2.851		0.1019	6.06
22	UPPER TALARIK	B	24.7									2.881			
23	TRIBUTARY 119	H	25.1	12.59	0.728	8.10	1.000	997.	110.0	0.2722	15.128	0.635	5.35	0.0000	6.06
24	TRIBUTARY 119	T	24.7									0.635			
25	UPPER TALARIK	J	24.7	12.67	0.724	8.10	1.000	999.	110.0	0.1050	15.127	3.516		0.1008	6.06
26	UPPER TALARIK	Q	24.5	12.67	0.724	8.10	1.000	999.	110.0	0.1050	15.127	3.540		0.0483	6.06
27	UPPER TALARIK	C	20.8	12.78	0.720	8.10	1.000	1001.	110.0	0.1125	15.124	3.718		0.0483	6.06
28	UPPER TALARIK	C	18.8	12.89	0.715	8.10	1.000	1003.	110.0	0.1014	15.121	3.815		0.0483	6.06
29	UPPER TALARIK	C	14.6	13.06	0.708	8.10	1.000	1006.	110.0	0.1156	15.118	4.018		0.0483	6.06
30	UPPER TALARIK	Q	14.4	13.06	0.708	8.10	1.000	1006.	110.0	0.1156	15.118	4.030		-0.2626	6.06
31	UPPER TALARIK	Q	9.8	13.06	0.708	8.10	1.000	1006.	110.0	0.1156	15.118	2.845		0.3290	6.06
32	UPPER TALARIK	C	9.1	13.27	0.699	8.10	1.000	1010.	110.1	0.1217	15.112	3.083		0.3290	6.06
33	UPPER TALARIK	Q	2.2	13.27	0.699	8.10	1.000	1010.	110.1	0.1217	15.112	5.347		0.0812	6.06
34	UPPER TALARIK	E	0.0									5.529			

YEAR: 2007 TIME PERIOD: 18-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.43	0.800	17.84	1.000	975.	59.0	0.3388	15.057	0.067	3.25	0.0482	12.24
2	UPPER TALARIK	Q	60.0	10.43	0.800	17.84	1.000	975.	59.0	0.3388	15.057	0.183		0.0269	12.24
3	UPPER TALARIK	C	59.7	10.73	0.786	17.84	1.000	981.	59.0	0.2618	15.056	0.191		0.0269	12.24
4	UPPER TALARIK	C	56.5	10.88	0.779	17.84	1.000	983.	59.0	0.2395	15.055	0.277		0.0269	12.24
5	UPPER TALARIK	C	55.4	10.95	0.776	17.84	1.000	985.	59.0	0.1885	15.055	0.306		0.0269	12.24
6	UPPER TALARIK	C	51.9	11.06	0.771	17.84	1.000	987.	59.0	0.1941	15.054	0.402		0.0269	12.24
7	UPPER TALARIK	Q	51.6	11.06	0.771	17.84	1.000	987.	59.0	0.1941	15.054	0.408		0.1304	5.57
8	UPPER TALARIK	C	45.9	11.13	0.768	17.84	1.000	988.	59.0	0.1558	15.052	1.152		0.1304	5.57
9	UPPER TALARIK	B	45.0									1.265			
10	TRIBUTARY 135	H	46.4	11.13	0.768	17.84	1.000	988.	59.0	0.2229	15.052	0.101	10.60	0.0000	5.57
11	TRIBUTARY 135	T	45.0									0.101			
12	UPPER TALARIK	J	45.0	11.20	0.764	17.84	1.000	989.	59.0	0.1557	15.050	1.366		0.1313	5.57
13	UPPER TALARIK	Q	44.6	11.20	0.764	17.84	1.000	989.	59.0	0.1557	15.050	1.421		0.0392	11.70
14	UPPER TALARIK	C	38.4	11.32	0.759	17.84	1.000	991.	59.0	0.1356	15.046	1.667		0.0392	11.70
15	UPPER TALARIK	Q	37.6	11.32	0.759	17.84	1.000	991.	59.0	0.1356	15.046	1.695		0.0929	11.70
16	UPPER TALARIK	C	35.8	11.40	0.756	17.84	1.000	993.	59.0	0.0865	15.045	1.864		0.0929	11.70
17	UPPER TALARIK	C	32.9	11.46	0.753	17.84	1.000	994.	59.0	0.1116	15.044	2.131		0.0929	11.70
18	UPPER TALARIK	C	32.3	11.54	0.750	17.84	1.000	995.	59.1	0.1134	15.042	2.188		0.0929	11.70
19	UPPER TALARIK	Q	29.3	11.54	0.750	17.84	1.000	995.	59.1	0.1134	15.042	2.469		0.1074	6.20
20	UPPER TALARIK	C	27.1	11.63	0.746	17.84	1.000	997.	59.1	0.0738	15.040	2.701		0.1074	6.20
21	UPPER TALARIK	C	25.0	11.65	0.745	17.84	1.000	997.	59.1	0.1056	15.040	2.928		0.1074	6.20
22	UPPER TALARIK	B	24.7									2.960			
23	TRIBUTARY 119	H	25.1	11.64	0.745	17.84	1.000	997.	59.1	0.2738	15.040	0.668	5.34	0.0000	6.20
24	TRIBUTARY 119	T	24.7									0.668			
25	UPPER TALARIK	J	24.7	11.72	0.741	17.84	1.000	999.	59.1	0.1056	15.038	3.628		0.1050	6.20
26	UPPER TALARIK	Q	24.5	11.72	0.741	17.84	1.000	999.	59.1	0.1056	15.038	3.653		0.0501	6.20
27	UPPER TALARIK	C	20.8	11.83	0.737	17.84	1.000	1001.	59.1	0.1131	15.036	3.838		0.0501	6.20
28	UPPER TALARIK	C	18.8	11.94	0.732	17.84	1.000	1003.	59.1	0.1020	15.033	3.938		0.0501	6.20
29	UPPER TALARIK	C	14.6	12.11	0.725	17.84	1.000	1006.	59.1	0.1163	15.030	4.149		0.0501	6.20
30	UPPER TALARIK	Q	14.4	12.11	0.725	17.84	1.000	1006.	59.1	0.1163	15.030	4.161		-0.2639	6.20
31	UPPER TALARIK	Q	9.8	12.11	0.725	17.84	1.000	1006.	59.1	0.1163	15.030	2.970		0.3351	6.20
32	UPPER TALARIK	C	9.1	12.32	0.716	17.84	1.000	1010.	59.1	0.1222	15.025	3.213		0.3351	6.20
33	UPPER TALARIK	Q	2.2	12.32	0.716	17.84	1.000	1010.	59.1	0.1222	15.025	5.519		0.0839	6.20
34	UPPER TALARIK	E	0.0									5.707			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.38	0.753	14.87	1.000	975.	101.7	0.3400	14.968	0.065	3.20	0.0465	11.98
2	UPPER TALARIK	Q	60.0	12.38	0.753	14.87	1.000	975.	101.7	0.3400	14.968	0.177		0.0265	11.98
3	UPPER TALARIK	C	59.7	12.68	0.740	14.87	1.000	981.	101.7	0.2632	14.967	0.185		0.0265	11.98
4	UPPER TALARIK	C	56.5	12.83	0.733	14.87	1.000	983.	101.7	0.2408	14.966	0.269		0.0265	11.98
5	UPPER TALARIK	C	55.4	12.90	0.730	14.87	1.000	985.	101.6	0.1897	14.966	0.298		0.0265	11.98
6	UPPER TALARIK	C	51.9	13.01	0.726	14.87	1.000	987.	101.6	0.1950	14.965	0.392		0.0265	11.98
7	UPPER TALARIK	Q	51.6	13.01	0.726	14.87	1.000	987.	101.6	0.1950	14.965	0.398		0.1297	4.92
8	UPPER TALARIK	C	45.9	13.08	0.723	14.87	1.000	988.	101.7	0.1565	14.963	1.138		0.1297	4.92
9	UPPER TALARIK	B	45.0									1.250			
10	TRIBUTARY 135	H	46.4	13.08	0.722	14.87	1.000	988.	101.7	0.2245	14.963	0.101	10.69	0.0000	4.92
11	TRIBUTARY 135	T	45.0									0.101			
12	UPPER TALARIK	J	45.0	13.15	0.719	14.87	1.000	989.	101.7	0.1564	14.961	1.351		0.1289	4.92
13	UPPER TALARIK	Q	44.6	13.15	0.719	14.87	1.000	989.	101.7	0.1564	14.961	1.405		0.0419	12.20
14	UPPER TALARIK	C	38.4	13.27	0.715	14.87	1.000	991.	101.7	0.1362	14.958	1.668		0.0419	12.20
15	UPPER TALARIK	Q	37.6	13.27	0.715	14.87	1.000	991.	101.7	0.1362	14.958	1.698		0.0927	12.20
16	UPPER TALARIK	C	35.8	13.35	0.711	14.87	1.000	993.	101.7	0.0869	14.956	1.867		0.0927	12.20
17	UPPER TALARIK	C	32.9	13.41	0.709	14.87	1.000	994.	101.7	0.1122	14.955	2.133		0.0927	12.20
18	UPPER TALARIK	C	32.3	13.49	0.705	14.87	1.000	995.	101.7	0.1140	14.953	2.190		0.0927	12.20
19	UPPER TALARIK	Q	29.3	13.49	0.705	14.87	1.000	995.	101.7	0.1140	14.953	2.471		0.1074	6.26
20	UPPER TALARIK	C	27.1	13.58	0.702	14.87	1.000	997.	101.7	0.0741	14.951	2.703		0.1074	6.26
21	UPPER TALARIK	C	25.0	13.60	0.701	14.87	1.000	997.	101.7	0.1063	14.951	2.930		0.1074	6.26
22	UPPER TALARIK	B	24.7									2.962			
23	TRIBUTARY 119	H	25.1	13.59	0.701	14.87	1.000	997.	101.7	0.2755	14.951	0.666	5.46	0.0000	6.26
24	TRIBUTARY 119	T	24.7									0.666			
25	UPPER TALARIK	J	24.7	13.67	0.698	14.87	1.000	999.	101.7	0.1063	14.950	3.628		0.1050	6.26
26	UPPER TALARIK	Q	24.5	13.67	0.698	14.87	1.000	999.	101.7	0.1063	14.950	3.653		0.0501	6.26
27	UPPER TALARIK	C	20.8	13.78	0.694	14.87	1.000	1001.	101.8	0.1138	14.947	3.838		0.0501	6.26
28	UPPER TALARIK	C	18.8	13.89	0.689	14.87	1.000	1003.	101.8	0.1026	14.944	3.938		0.0501	6.26
29	UPPER TALARIK	C	14.6	14.06	0.682	14.87	1.000	1006.	101.8	0.1171	14.941	4.149		0.0501	6.26
30	UPPER TALARIK	Q	14.4	14.06	0.682	14.87	1.000	1006.	101.8	0.1171	14.941	4.161		-0.2639	6.26
31	UPPER TALARIK	Q	9.8	14.06	0.682	14.87	1.000	1006.	101.8	0.1171	14.941	2.970		0.3351	6.26
32	UPPER TALARIK	C	9.1	14.27	0.674	14.87	1.000	1010.	101.8	0.1226	14.937	3.213		0.3351	6.26
33	UPPER TALARIK	Q	2.2	14.27	0.674	14.87	1.000	1010.	101.8	0.1226	14.937	5.519		0.0839	6.26
34	UPPER TALARIK	E	0.0									5.707			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.36	0.875	8.10	1.000	975.	58.1	0.3411	14.879	0.071	3.97	0.0511	11.55
2	UPPER TALARIK	Q	60.0	10.36	0.875	8.10	1.000	975.	58.1	0.3411	14.879	0.194		0.0292	11.55
3	UPPER TALARIK	C	59.7	10.66	0.860	8.10	1.000	981.	58.1	0.2646	14.877	0.203		0.0292	11.55
4	UPPER TALARIK	C	56.5	10.81	0.852	8.10	1.000	983.	58.1	0.2422	14.877	0.296		0.0292	11.55
5	UPPER TALARIK	C	55.4	10.88	0.849	8.10	1.000	985.	58.1	0.1910	14.877	0.328		0.0292	11.55
6	UPPER TALARIK	C	51.9	10.99	0.843	8.10	1.000	987.	58.1	0.1959	14.875	0.431		0.0292	11.55
7	UPPER TALARIK	Q	51.6	10.99	0.843	8.10	1.000	987.	58.1	0.1959	14.875	0.438		0.1377	4.63
8	UPPER TALARIK	C	45.9	11.06	0.840	8.10	1.000	988.	58.1	0.1571	14.874	1.224		0.1377	4.63
9	UPPER TALARIK	B	45.0									1.343			
10	TRIBUTARY 135	H	46.4	11.06	0.840	8.10	1.000	988.	58.1	0.2262	14.874	0.107	10.97	0.0000	4.63
11	TRIBUTARY 135	T	45.0									0.107			
12	UPPER TALARIK	J	45.0	11.13	0.836	8.10	1.000	989.	58.1	0.1570	14.871	1.450		0.1384	4.63
13	UPPER TALARIK	Q	44.6	11.13	0.836	8.10	1.000	989.	58.1	0.1570	14.871	1.508		0.0366	12.58
14	UPPER TALARIK	C	38.4	11.25	0.831	8.10	1.000	991.	58.1	0.1368	14.868	1.738		0.0366	12.58
15	UPPER TALARIK	Q	37.6	11.25	0.831	8.10	1.000	991.	58.1	0.1368	14.868	1.764		0.0956	12.58
16	UPPER TALARIK	C	35.8	11.33	0.827	8.10	1.000	993.	58.1	0.0874	14.867	1.938		0.0956	12.58
17	UPPER TALARIK	C	32.9	11.39	0.824	8.10	1.000	994.	58.1	0.1129	14.866	2.213		0.0956	12.58
18	UPPER TALARIK	C	32.3	11.47	0.820	8.10	1.000	995.	58.1	0.1147	14.864	2.271		0.0956	12.58
19	UPPER TALARIK	Q	29.3	11.47	0.820	8.10	1.000	995.	58.1	0.1147	14.864	2.561		0.1107	6.25
20	UPPER TALARIK	C	27.1	11.56	0.816	8.10	1.000	997.	58.1	0.0744	14.862	2.800		0.1107	6.25
21	UPPER TALARIK	C	25.0	11.58	0.815	8.10	1.000	997.	58.1	0.1069	14.862	3.034		0.1107	6.25
22	UPPER TALARIK	B	24.7									3.067			
23	TRIBUTARY 119	H	25.1	11.57	0.816	8.10	1.000	997.	58.1	0.2772	14.862	0.673	5.36	0.0000	6.25
24	TRIBUTARY 119	T	24.7									0.673			
25	UPPER TALARIK	J	24.7	11.65	0.811	8.10	1.000	999.	58.1	0.1069	14.861	3.740		0.1092	6.25
26	UPPER TALARIK	Q	24.5	11.65	0.811	8.10	1.000	999.	58.1	0.1069	14.861	3.766		0.0519	6.25
27	UPPER TALARIK	C	20.8	11.76	0.806	8.10	1.000	1001.	58.1	0.1144	14.858	3.957		0.0519	6.25
28	UPPER TALARIK	C	18.8	11.87	0.801	8.10	1.000	1003.	58.1	0.1033	14.856	4.061		0.0519	6.25
29	UPPER TALARIK	C	14.6	12.04	0.793	8.10	1.000	1006.	58.1	0.1179	14.853	4.280		0.0519	6.25
30	UPPER TALARIK	Q	14.4	12.04	0.793	8.10	1.000	1006.	58.1	0.1179	14.853	4.292		-0.2650	6.25
31	UPPER TALARIK	Q	9.8	12.04	0.793	8.10	1.000	1006.	58.1	0.1179	14.853	3.096		0.3412	6.25
32	UPPER TALARIK	C	9.1	12.25	0.784	8.10	1.000	1010.	58.2	0.1231	14.848	3.343		0.3412	6.25
33	UPPER TALARIK	Q	2.2	12.25	0.784	8.10	1.000	1010.	58.2	0.1231	14.848	5.691		0.0866	6.25
34	UPPER TALARIK	E	0.0									5.885			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.66	0.903	8.59	1.000	975.	28.1	0.3423	14.789	0.073	4.37	0.0519	10.92
2	UPPER TALARIK	Q	60.0	9.66	0.903	8.59	1.000	975.	28.1	0.3423	14.789	0.198		0.0321	10.92
3	UPPER TALARIK	C	59.7	9.96	0.888	8.59	1.000	981.	28.1	0.2660	14.787	0.208		0.0321	10.92
4	UPPER TALARIK	C	56.5	10.11	0.880	8.59	1.000	983.	28.1	0.2436	14.787	0.310		0.0321	10.92
5	UPPER TALARIK	C	55.4	10.18	0.876	8.59	1.000	985.	28.1	0.1923	14.787	0.345		0.0321	10.92
6	UPPER TALARIK	C	51.9	10.29	0.871	8.59	1.000	987.	28.1	0.1968	14.786	0.458		0.0321	10.92
7	UPPER TALARIK	Q	51.6	10.29	0.871	8.59	1.000	987.	28.1	0.1968	14.786	0.466		0.1469	4.48
8	UPPER TALARIK	C	45.9	10.36	0.867	8.59	1.000	988.	28.1	0.1578	14.784	1.304		0.1469	4.48
9	UPPER TALARIK	B	45.0									1.431			
10	TRIBUTARY 135	H	46.4	10.36	0.867	8.59	1.000	988.	28.1	0.2279	14.784	0.114	10.34	0.0000	4.48
11	TRIBUTARY 135	T	45.0									0.114			
12	UPPER TALARIK	J	45.0	10.43	0.863	8.59	1.000	989.	28.1	0.1577	14.782	1.545		0.1456	4.48
13	UPPER TALARIK	Q	44.6	10.43	0.863	8.59	1.000	989.	28.1	0.1577	14.782	1.606		0.0375	12.79
14	UPPER TALARIK	C	38.4	10.55	0.858	8.59	1.000	991.	28.1	0.1375	14.779	1.841		0.0375	12.79
15	UPPER TALARIK	Q	37.6	10.55	0.858	8.59	1.000	991.	28.1	0.1375	14.779	1.868		0.0944	12.79
16	UPPER TALARIK	C	35.8	10.63	0.853	8.59	1.000	993.	28.1	0.0879	14.777	2.040		0.0944	12.79
17	UPPER TALARIK	C	32.9	10.69	0.851	8.59	1.000	994.	28.1	0.1136	14.777	2.311		0.0944	12.79
18	UPPER TALARIK	C	32.3	10.77	0.847	8.59	1.000	995.	28.1	0.1154	14.775	2.369		0.0944	12.79
19	UPPER TALARIK	Q	29.3	10.77	0.847	8.59	1.000	995.	28.1	0.1154	14.775	2.655		0.1092	6.13
20	UPPER TALARIK	C	27.1	10.86	0.842	8.59	1.000	997.	28.1	0.0747	14.773	2.891		0.1092	6.13
21	UPPER TALARIK	C	25.0	10.88	0.841	8.59	1.000	997.	28.1	0.1076	14.773	3.121		0.1092	6.13
22	UPPER TALARIK	B	24.7									3.154			
23	TRIBUTARY 119	H	25.1	10.87	0.842	8.59	1.000	997.	28.1	0.2789	14.773	0.671	4.94	0.0000	6.13
24	TRIBUTARY 119	T	24.7									0.671			
25	UPPER TALARIK	J	24.7	10.95	0.837	8.59	1.000	999.	28.1	0.1076	14.772	3.825		0.1092	6.13
26	UPPER TALARIK	Q	24.5	10.95	0.837	8.59	1.000	999.	28.1	0.1076	14.772	3.851		0.0532	6.13
27	UPPER TALARIK	C	20.8	11.06	0.832	8.59	1.000	1001.	28.1	0.1150	14.769	4.047		0.0532	6.13
28	UPPER TALARIK	C	18.8	11.17	0.827	8.59	1.000	1003.	28.1	0.1039	14.767	4.153		0.0532	6.13
29	UPPER TALARIK	C	14.6	11.34	0.819	8.59	1.000	1006.	28.2	0.1186	14.764	4.377		0.0532	6.13
30	UPPER TALARIK	Q	14.4	11.34	0.819	8.59	1.000	1006.	28.2	0.1186	14.764	4.390		-0.2655	6.13
31	UPPER TALARIK	Q	9.8	11.34	0.819	8.59	1.000	1006.	28.2	0.1186	14.764	3.192		0.3455	6.13
32	UPPER TALARIK	C	9.1	11.55	0.809	8.59	1.000	1010.	28.2	0.1236	14.759	3.442		0.3455	6.13
33	UPPER TALARIK	Q	2.2	11.55	0.809	8.59	1.000	1010.	28.2	0.1236	14.759	5.820		0.0884	6.13
34	UPPER TALARIK	E	0.0									6.018			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.52	0.931	8.79	1.000	975.	29.0	0.3434	14.699	0.077	4.53	0.0544	10.17
2	UPPER TALARIK	Q	60.0	9.52	0.931	8.79	1.000	975.	29.0	0.3434	14.699	0.208		0.0380	10.17
3	UPPER TALARIK	C	59.7	9.82	0.916	8.79	1.000	981.	29.0	0.2675	14.697	0.220		0.0380	10.17
4	UPPER TALARIK	C	56.5	9.97	0.907	8.79	1.000	983.	29.0	0.2451	14.697	0.340		0.0380	10.17
5	UPPER TALARIK	C	55.4	10.04	0.904	8.79	1.000	985.	29.0	0.1937	14.697	0.382		0.0380	10.17
6	UPPER TALARIK	C	51.9	10.15	0.898	8.79	1.000	987.	29.0	0.1977	14.696	0.516		0.0380	10.17
7	UPPER TALARIK	Q	51.6	10.15	0.898	8.79	1.000	987.	29.0	0.1977	14.696	0.525		0.1444	4.32
8	UPPER TALARIK	C	45.9	10.22	0.894	8.79	1.000	988.	29.0	0.1584	14.694	1.349		0.1444	4.32
9	UPPER TALARIK	B	45.0									1.474			
10	TRIBUTARY 135	H	46.4	10.22	0.894	8.79	1.000	988.	29.0	0.2297	14.694	0.112	9.90	0.0000	4.32
11	TRIBUTARY 135	T	45.0									0.112			
12	UPPER TALARIK	J	45.0	10.29	0.890	8.79	1.000	989.	29.0	0.1583	14.692	1.586		0.1456	4.32
13	UPPER TALARIK	Q	44.6	10.29	0.890	8.79	1.000	989.	29.0	0.1583	14.692	1.647		0.0352	12.79
14	UPPER TALARIK	C	38.4	10.41	0.885	8.79	1.000	991.	29.0	0.1381	14.689	1.868		0.0352	12.79
15	UPPER TALARIK	Q	37.6	10.41	0.885	8.79	1.000	991.	29.0	0.1381	14.689	1.893		0.0942	12.79
16	UPPER TALARIK	C	35.8	10.49	0.880	8.79	1.000	993.	29.0	0.0885	14.688	2.065		0.0942	12.79
17	UPPER TALARIK	C	32.9	10.55	0.877	8.79	1.000	994.	29.0	0.1143	14.687	2.335		0.0942	12.79
18	UPPER TALARIK	C	32.3	10.63	0.873	8.79	1.000	995.	29.0	0.1161	14.685	2.393		0.0942	12.79
19	UPPER TALARIK	Q	29.3	10.63	0.873	8.79	1.000	995.	29.0	0.1161	14.685	2.678		0.1087	5.86
20	UPPER TALARIK	C	27.1	10.72	0.868	8.79	1.000	997.	29.0	0.0751	14.684	2.913		0.1087	5.86
21	UPPER TALARIK	C	25.0	10.74	0.867	8.79	1.000	997.	29.0	0.1083	14.684	3.143		0.1087	5.86
22	UPPER TALARIK	B	24.7									3.175			
23	TRIBUTARY 119	H	25.1	10.73	0.868	8.79	1.000	997.	29.0	0.2807	14.684	0.678	5.04	0.0000	5.86
24	TRIBUTARY 119	T	24.7									0.678			
25	UPPER TALARIK	J	24.7	10.81	0.864	8.79	1.000	999.	29.0	0.1083	14.682	3.853		0.1092	5.86
26	UPPER TALARIK	Q	24.5	10.81	0.864	8.79	1.000	999.	29.0	0.1083	14.682	3.879		0.0536	5.86
27	UPPER TALARIK	C	20.8	10.92	0.858	8.79	1.000	1001.	29.0	0.1156	14.680	4.077		0.0536	5.86
28	UPPER TALARIK	C	18.8	11.03	0.853	8.79	1.000	1003.	29.0	0.1046	14.677	4.184		0.0536	5.86
29	UPPER TALARIK	C	14.6	11.20	0.844	8.79	1.000	1006.	29.1	0.1194	14.675	4.410		0.0536	5.86
30	UPPER TALARIK	Q	14.4	11.20	0.844	8.79	1.000	1006.	29.1	0.1194	14.675	4.423		-0.2657	5.86
31	UPPER TALARIK	Q	9.8	11.20	0.844	8.79	1.000	1006.	29.1	0.1194	14.675	3.224		0.3470	5.86
32	UPPER TALARIK	C	9.1	11.41	0.834	8.79	1.000	1010.	29.1	0.1241	14.670	3.476		0.3470	5.86
33	UPPER TALARIK	Q	2.2	11.41	0.834	8.79	1.000	1010.	29.1	0.1241	14.670	5.863		0.0893	5.86
34	UPPER TALARIK	E	0.0									6.063			

YEAR: 2007 TIME PERIOD: 23-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.62	0.865	4.72	1.000	975.	77.9	0.3446	14.609	0.086	4.62	0.0615	9.47
2	UPPER TALARIK	Q	60.0	10.62	0.865	4.72	1.000	975.	77.9	0.3446	14.609	0.234		0.0666	9.47
3	UPPER TALARIK	C	59.7	10.92	0.851	4.72	1.000	981.	77.9	0.2690	14.607	0.255		0.0666	9.47
4	UPPER TALARIK	C	56.5	11.07	0.843	4.72	1.000	983.	77.9	0.2466	14.607	0.466		0.0666	9.47
5	UPPER TALARIK	C	55.4	11.14	0.840	4.72	1.000	985.	77.9	0.1951	14.607	0.539		0.0666	9.47
6	UPPER TALARIK	C	51.9	11.25	0.834	4.72	1.000	987.	77.9	0.1986	14.606	0.774		0.0666	9.47
7	UPPER TALARIK	Q	51.6	11.25	0.834	4.72	1.000	987.	77.9	0.1986	14.606	0.790		0.1919	4.11
8	UPPER TALARIK	C	45.9	11.32	0.831	4.72	1.000	988.	77.9	0.1591	14.604	1.885		0.1919	4.11
9	UPPER TALARIK	B	45.0									2.051			
10	TRIBUTARY 135	H	46.4	11.32	0.831	4.72	1.000	988.	77.9	0.2315	14.604	0.149	9.84	0.0000	4.11
11	TRIBUTARY 135	T	45.0									0.149			
12	UPPER TALARIK	J	45.0	11.39	0.827	4.72	1.000	989.	77.9	0.1590	14.602	2.200		0.1909	4.11
13	UPPER TALARIK	Q	44.6	11.39	0.827	4.72	1.000	989.	77.9	0.1590	14.602	2.280		0.0183	12.60
14	UPPER TALARIK	C	38.4	11.51	0.822	4.72	1.000	991.	78.0	0.1388	14.599	2.395		0.0183	12.60
15	UPPER TALARIK	Q	37.6	11.51	0.822	4.72	1.000	991.	78.0	0.1388	14.599	2.408		0.0899	12.60
16	UPPER TALARIK	C	35.8	11.59	0.818	4.72	1.000	993.	78.0	0.0890	14.598	2.572		0.0899	12.60
17	UPPER TALARIK	C	32.9	11.65	0.815	4.72	1.000	994.	78.0	0.1150	14.597	2.830		0.0899	12.60
18	UPPER TALARIK	C	32.3	11.73	0.811	4.72	1.000	995.	78.0	0.1168	14.596	2.885		0.0899	12.60
19	UPPER TALARIK	Q	29.3	11.73	0.811	4.72	1.000	995.	78.0	0.1168	14.596	3.157		0.1037	5.47
20	UPPER TALARIK	C	27.1	11.82	0.807	4.72	1.000	997.	78.0	0.0756	14.594	3.381		0.1037	5.47
21	UPPER TALARIK	C	25.0	11.84	0.806	4.72	1.000	997.	78.0	0.1089	14.594	3.600		0.1037	5.47
22	UPPER TALARIK	B	24.7									3.631			
23	TRIBUTARY 119	H	25.1	11.83	0.807	4.72	1.000	997.	78.0	0.2825	14.594	0.676	5.07	0.0000	5.47
24	TRIBUTARY 119	T	24.7									0.676			
25	UPPER TALARIK	J	24.7	11.91	0.803	4.72	1.000	999.	78.0	0.1089	14.593	4.307		0.1050	5.47
26	UPPER TALARIK	Q	24.5	11.91	0.803	4.72	1.000	999.	78.0	0.1089	14.593	4.332		0.0606	5.47
27	UPPER TALARIK	C	20.8	12.02	0.798	4.72	1.000	1001.	78.0	0.1163	14.590	4.556		0.0606	5.47
28	UPPER TALARIK	C	18.8	12.13	0.793	4.72	1.000	1003.	78.0	0.1052	14.588	4.677		0.0606	5.47
29	UPPER TALARIK	C	14.6	12.30	0.785	4.72	1.000	1006.	78.0	0.1202	14.585	4.932		0.0606	5.47
30	UPPER TALARIK	Q	14.4	12.30	0.785	4.72	1.000	1006.	78.0	0.1202	14.585	4.947		-0.2657	5.47
31	UPPER TALARIK	Q	9.8	12.30	0.785	4.72	1.000	1006.	78.0	0.1202	14.585	3.748		0.3687	5.47
32	UPPER TALARIK	C	9.1	12.51	0.775	4.72	1.000	1010.	78.1	0.1246	14.581	4.015		0.3687	5.47
33	UPPER TALARIK	Q	2.2	12.51	0.775	4.72	1.000	1010.	78.1	0.1246	14.581	6.552		0.0996	5.47
34	UPPER TALARIK	E	0.0									6.775			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.30	0.837	5.59	1.000	975.	106.9	0.3459	14.518	0.072	4.28	0.0519	8.96
2	UPPER TALARIK	Q	60.0	12.30	0.837	5.59	1.000	975.	106.9	0.3459	14.518	0.197		0.0447	8.96
3	UPPER TALARIK	C	59.7	12.60	0.823	5.59	1.000	981.	106.9	0.2705	14.517	0.211		0.0447	8.96
4	UPPER TALARIK	C	56.5	12.75	0.816	5.59	1.000	983.	106.8	0.2481	14.516	0.353		0.0447	8.96
5	UPPER TALARIK	C	55.4	12.82	0.812	5.59	1.000	985.	106.8	0.1966	14.517	0.401		0.0447	8.96
6	UPPER TALARIK	C	51.9	12.93	0.807	5.59	1.000	987.	106.8	0.1996	14.515	0.560		0.0447	8.96
7	UPPER TALARIK	Q	51.6	12.93	0.807	5.59	1.000	987.	106.8	0.1996	14.515	0.570		0.1767	3.89
8	UPPER TALARIK	C	45.9	13.00	0.804	5.59	1.000	988.	106.9	0.1598	14.514	1.578		0.1767	3.89
9	UPPER TALARIK	B	45.0									1.731			
10	TRIBUTARY 135	H	46.4	13.00	0.804	5.59	1.000	988.	106.9	0.2334	14.514	0.137	10.66	0.0000	3.89
11	TRIBUTARY 135	T	45.0									0.137			
12	UPPER TALARIK	J	45.0	13.07	0.800	5.59	1.000	989.	106.9	0.1597	14.512	1.868		0.1766	3.89
13	UPPER TALARIK	Q	44.6	13.07	0.800	5.59	1.000	989.	106.9	0.1597	14.512	1.942		0.0375	12.25
14	UPPER TALARIK	C	38.4	13.19	0.795	5.59	1.000	991.	106.9	0.1394	14.509	2.177		0.0375	12.25
15	UPPER TALARIK	Q	37.6	13.19	0.795	5.59	1.000	991.	106.9	0.1394	14.509	2.204		0.0924	12.25
16	UPPER TALARIK	C	35.8	13.27	0.791	5.59	1.000	993.	106.9	0.0897	14.508	2.372		0.0924	12.25
17	UPPER TALARIK	C	32.9	13.33	0.788	5.59	1.000	994.	106.9	0.1158	14.507	2.638		0.0924	12.25
18	UPPER TALARIK	C	32.3	13.41	0.785	5.59	1.000	995.	106.9	0.1176	14.506	2.694		0.0924	12.25
19	UPPER TALARIK	Q	29.3	13.41	0.785	5.59	1.000	995.	106.9	0.1176	14.506	2.974		0.1068	4.99
20	UPPER TALARIK	C	27.1	13.50	0.781	5.59	1.000	997.	107.0	0.0760	14.504	3.205		0.1068	4.99
21	UPPER TALARIK	C	25.0	13.52	0.780	5.59	1.000	997.	107.0	0.1097	14.504	3.430		0.1068	4.99
22	UPPER TALARIK	B	24.7									3.462			
23	TRIBUTARY 119	H	25.1	13.51	0.780	5.59	1.000	997.	107.0	0.2844	14.504	0.676	5.22	0.0000	4.99
24	TRIBUTARY 119	T	24.7									0.676			
25	UPPER TALARIK	J	24.7	13.59	0.776	5.59	1.000	999.	107.0	0.1097	14.503	4.138		0.1050	4.99
26	UPPER TALARIK	Q	24.5	13.59	0.776	5.59	1.000	999.	107.0	0.1097	14.503	4.163		0.0579	4.99
27	UPPER TALARIK	C	20.8	13.70	0.772	5.59	1.000	1001.	107.0	0.1170	14.501	4.377		0.0579	4.99
28	UPPER TALARIK	C	18.8	13.81	0.767	5.59	1.000	1003.	107.0	0.1059	14.498	4.492		0.0579	4.99
29	UPPER TALARIK	C	14.6	13.98	0.759	5.59	1.000	1006.	107.0	0.1211	14.496	4.736		0.0579	4.99
30	UPPER TALARIK	Q	14.4	13.98	0.759	5.59	1.000	1006.	107.0	0.1211	14.496	4.750		-0.2661	4.99
31	UPPER TALARIK	Q	9.8	13.98	0.759	5.59	1.000	1006.	107.0	0.1211	14.496	3.549		0.3608	4.99
32	UPPER TALARIK	C	9.1	14.19	0.750	5.59	1.000	1010.	107.1	0.1251	14.492	3.811		0.3608	4.99
33	UPPER TALARIK	Q	2.2	14.19	0.750	5.59	1.000	1010.	107.1	0.1251	14.492	6.293		0.0955	4.99
34	UPPER TALARIK	E	0.0									6.507			

YEAR: 2007 TIME PERIOD: 25-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.95	0.856	4.05	1.000	975.	134.9	0.3471	14.427	0.070	3.95	0.0494	8.63
2	UPPER TALARIK	Q	60.0	11.95	0.856	4.05	1.000	975.	134.9	0.3471	14.427	0.189		0.0398	8.63
3	UPPER TALARIK	C	59.7	12.25	0.842	4.05	1.000	981.	134.9	0.2721	14.426	0.201		0.0398	8.63
4	UPPER TALARIK	C	56.5	12.40	0.834	4.05	1.000	983.	134.8	0.2496	14.426	0.328		0.0398	8.63
5	UPPER TALARIK	C	55.4	12.47	0.831	4.05	1.000	985.	134.8	0.1982	14.426	0.371		0.0398	8.63
6	UPPER TALARIK	C	51.9	12.58	0.825	4.05	1.000	987.	134.8	0.2006	14.425	0.512		0.0398	8.63
7	UPPER TALARIK	Q	51.6	12.58	0.825	4.05	1.000	987.	134.8	0.2006	14.425	0.521		0.1800	3.68
8	UPPER TALARIK	C	45.9	12.65	0.822	4.05	1.000	988.	134.9	0.1605	14.423	1.548		0.1800	3.68
9	UPPER TALARIK	B	45.0									1.704			
10	TRIBUTARY 135	H	46.4	12.65	0.822	4.05	1.000	988.	134.9	0.2353	14.423	0.140	11.46	0.0000	3.68
11	TRIBUTARY 135	T	45.0									0.140			
12	UPPER TALARIK	J	45.0	12.72	0.818	4.05	1.000	989.	134.9	0.1604	14.421	1.844		0.1790	3.68
13	UPPER TALARIK	Q	44.6	12.72	0.818	4.05	1.000	989.	134.9	0.1604	14.421	1.919		0.0422	11.80
14	UPPER TALARIK	C	38.4	12.84	0.813	4.05	1.000	991.	134.9	0.1401	14.419	2.184		0.0422	11.80
15	UPPER TALARIK	Q	37.6	12.84	0.813	4.05	1.000	991.	134.9	0.1401	14.419	2.214		0.0917	11.80
16	UPPER TALARIK	C	35.8	12.92	0.809	4.05	1.000	993.	134.9	0.0903	14.418	2.381		0.0917	11.80
17	UPPER TALARIK	C	32.9	12.98	0.806	4.05	1.000	994.	134.9	0.1166	14.417	2.644		0.0917	11.80
18	UPPER TALARIK	C	32.3	13.06	0.802	4.05	1.000	995.	135.0	0.1183	14.415	2.700		0.0917	11.80
19	UPPER TALARIK	Q	29.3	13.06	0.802	4.05	1.000	995.	135.0	0.1183	14.415	2.978		0.1061	4.47
20	UPPER TALARIK	C	27.1	13.15	0.798	4.05	1.000	997.	135.0	0.0765	14.414	3.207		0.1061	4.47
21	UPPER TALARIK	C	25.0	13.17	0.797	4.05	1.000	997.	135.0	0.1104	14.414	3.431		0.1061	4.47
22	UPPER TALARIK	B	24.7									3.463			
23	TRIBUTARY 119	H	25.1	13.16	0.798	4.05	1.000	997.	135.0	0.2862	14.414	0.675	5.32	0.0000	4.47
24	TRIBUTARY 119	T	24.7									0.675			
25	UPPER TALARIK	J	24.7	13.24	0.794	4.05	1.000	999.	135.0	0.1104	14.413	4.138		0.1050	4.47
26	UPPER TALARIK	Q	24.5	13.24	0.794	4.05	1.000	999.	135.0	0.1104	14.413	4.163		0.0579	4.47
27	UPPER TALARIK	C	20.8	13.35	0.789	4.05	1.000	1001.	135.0	0.1177	14.411	4.377		0.0579	4.47
28	UPPER TALARIK	C	18.8	13.46	0.784	4.05	1.000	1003.	135.1	0.1066	14.408	4.492		0.0579	4.47
29	UPPER TALARIK	C	14.6	13.63	0.776	4.05	1.000	1006.	135.1	0.1219	14.406	4.736		0.0579	4.47
30	UPPER TALARIK	Q	14.4	13.63	0.776	4.05	1.000	1006.	135.1	0.1219	14.406	4.750		-0.2661	4.47
31	UPPER TALARIK	Q	9.8	13.63	0.776	4.05	1.000	1006.	135.1	0.1219	14.406	3.549		0.3608	4.47
32	UPPER TALARIK	C	9.1	13.84	0.767	4.05	1.000	1010.	135.1	0.1256	14.402	3.811		0.3608	4.47
33	UPPER TALARIK	Q	2.2	13.84	0.767	4.05	1.000	1010.	135.1	0.1256	14.402	6.293		0.0955	4.47
34	UPPER TALARIK	E	0.0									6.507			

YEAR: 2007 TIME PERIOD: 26-Aug PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.80	0.734	4.71	1.000	975.	136.6	0.3484	14.337	0.065	3.52	0.0461	8.37
2	UPPER TALARIK	Q	60.0	11.80	0.734	4.71	1.000	975.	136.6	0.3484	14.337	0.176		0.0333	8.37
3	UPPER TALARIK	C	59.7	12.10	0.721	4.71	1.000	981.	136.6	0.2737	14.335	0.186		0.0333	8.37
4	UPPER TALARIK	C	56.5	12.25	0.715	4.71	1.000	983.	136.6	0.2512	14.335	0.292		0.0333	8.37
5	UPPER TALARIK	C	55.4	12.32	0.712	4.71	1.000	985.	136.6	0.1998	14.335	0.328		0.0333	8.37
6	UPPER TALARIK	C	51.9	12.43	0.707	4.71	1.000	987.	136.6	0.2016	14.334	0.446		0.0333	8.37
7	UPPER TALARIK	Q	51.6	12.43	0.707	4.71	1.000	987.	136.6	0.2016	14.334	0.454		0.1484	3.53
8	UPPER TALARIK	C	45.9	12.50	0.704	4.71	1.000	988.	136.6	0.1612	14.333	1.301		0.1484	3.53
9	UPPER TALARIK	B	45.0									1.429			
10	TRIBUTARY 135	H	46.4	12.50	0.704	4.71	1.000	988.	136.6	0.2373	14.332	0.115	10.70	0.0000	3.53
11	TRIBUTARY 135	T	45.0									0.115			
12	UPPER TALARIK	J	45.0	12.57	0.701	4.71	1.000	989.	136.6	0.1611	14.331	1.544		0.1480	3.53
13	UPPER TALARIK	Q	44.6	12.57	0.701	4.71	1.000	989.	136.6	0.1611	14.331	1.606		0.0447	11.31
14	UPPER TALARIK	C	38.4	12.69	0.697	4.71	1.000	991.	136.7	0.1408	14.328	1.886		0.0447	11.31
15	UPPER TALARIK	Q	37.6	12.69	0.697	4.71	1.000	991.	136.7	0.1408	14.328	1.918		0.0949	11.31
16	UPPER TALARIK	C	35.8	12.77	0.693	4.71	1.000	993.	136.7	0.0910	14.327	2.091		0.0949	11.31
17	UPPER TALARIK	C	32.9	12.83	0.691	4.71	1.000	994.	136.7	0.1173	14.326	2.364		0.0949	11.31
18	UPPER TALARIK	C	32.3	12.91	0.688	4.71	1.000	995.	136.7	0.1191	14.325	2.422		0.0949	11.31
19	UPPER TALARIK	Q	29.3	12.91	0.688	4.71	1.000	995.	136.7	0.1191	14.325	2.709		0.1098	3.97
20	UPPER TALARIK	C	27.1	13.00	0.684	4.71	1.000	997.	136.7	0.0770	14.324	2.946		0.1098	3.97
21	UPPER TALARIK	C	25.0	13.02	0.683	4.71	1.000	997.	136.7	0.1111	14.323	3.178		0.1098	3.97
22	UPPER TALARIK	B	24.7									3.211			
23	TRIBUTARY 119	H	25.1	13.01	0.684	4.71	1.000	997.	136.8	0.2882	14.324	0.671	5.21	0.0000	3.97
24	TRIBUTARY 119	T	24.7									0.671			
25	UPPER TALARIK	J	24.7	13.09	0.680	4.71	1.000	999.	136.8	0.1111	14.322	3.882		0.1092	3.97
26	UPPER TALARIK	Q	24.5	13.09	0.680	4.71	1.000	999.	136.8	0.1111	14.322	3.908		0.0539	3.97
27	UPPER TALARIK	C	20.8	13.20	0.676	4.71	1.000	1001.	136.8	0.1184	14.320	4.107		0.0539	3.97
28	UPPER TALARIK	C	18.8	13.31	0.672	4.71	1.000	1003.	136.8	0.1074	14.318	4.215		0.0539	3.97
29	UPPER TALARIK	C	14.6	13.48	0.665	4.71	1.000	1006.	136.9	0.1228	14.316	4.442		0.0539	3.97
30	UPPER TALARIK	Q	14.4	13.48	0.665	4.71	1.000	1006.	136.9	0.1228	14.316	4.455		-0.2657	3.97
31	UPPER TALARIK	Q	9.8	13.48	0.665	4.71	1.000	1006.	136.9	0.1228	14.316	3.256		0.3484	3.97
32	UPPER TALARIK	C	9.1	13.69	0.657	4.71	1.000	1010.	136.9	0.1261	14.312	3.509		0.3484	3.97
33	UPPER TALARIK	Q	2.2	13.69	0.657	4.71	1.000	1010.	136.9	0.1261	14.312	5.906		0.0897	3.97
34	UPPER TALARIK	E	0.0									6.107			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	13.38	0.640	3.85	1.000	975.	151.9	0.3497	14.246	0.064	3.25	0.0453	8.21
2	UPPER TALARIK	Q	60.0	13.38	0.640	3.85	1.000	975.	151.9	0.3497	14.246	0.173		0.0311	8.21
3	UPPER TALARIK	C	59.7	13.68	0.629	3.85	1.000	981.	151.9	0.2753	14.244	0.183		0.0311	8.21
4	UPPER TALARIK	C	56.5	13.83	0.623	3.85	1.000	983.	151.9	0.2529	14.244	0.282		0.0311	8.21
5	UPPER TALARIK	C	55.4	13.90	0.621	3.85	1.000	985.	151.9	0.2014	14.244	0.316		0.0311	8.21
6	UPPER TALARIK	C	51.9	14.01	0.617	3.85	1.000	987.	151.9	0.2026	14.243	0.426		0.0311	8.21
7	UPPER TALARIK	Q	51.6	14.01	0.617	3.85	1.000	987.	151.9	0.2026	14.243	0.433		0.1392	3.50
8	UPPER TALARIK	C	45.9	14.08	0.614	3.85	1.000	988.	151.9	0.1619	14.242	1.228		0.1392	3.50
9	UPPER TALARIK	B	45.0									1.348			
10	TRIBUTARY 135	H	46.4	14.08	0.614	3.85	1.000	988.	151.9	0.2393	14.242	0.108	10.83	0.0000	3.50
11	TRIBUTARY 135	T	45.0									0.108			
12	UPPER TALARIK	J	45.0	14.15	0.611	3.85	1.000	989.	151.9	0.1619	14.240	1.456		0.1384	3.50
13	UPPER TALARIK	Q	44.6	14.15	0.611	3.85	1.000	989.	151.9	0.1619	14.240	1.514		0.0425	10.85
14	UPPER TALARIK	C	38.4	14.27	0.608	3.85	1.000	991.	152.0	0.1415	14.238	1.781		0.0425	10.85
15	UPPER TALARIK	Q	37.6	14.27	0.608	3.85	1.000	991.	152.0	0.1415	14.238	1.811		0.0906	10.85
16	UPPER TALARIK	C	35.8	14.35	0.604	3.85	1.000	993.	152.0	0.0917	14.236	1.976		0.0906	10.85
17	UPPER TALARIK	C	32.9	14.41	0.602	3.85	1.000	994.	152.0	0.1182	14.236	2.236		0.0906	10.85
18	UPPER TALARIK	C	32.3	14.49	0.600	3.85	1.000	995.	152.1	0.1199	14.234	2.292		0.0906	10.85
19	UPPER TALARIK	Q	29.3	14.49	0.600	3.85	1.000	995.	152.1	0.1199	14.234	2.566		0.1048	3.60
20	UPPER TALARIK	C	27.1	14.58	0.596	3.85	1.000	997.	152.1	0.0776	14.233	2.792		0.1048	3.60
21	UPPER TALARIK	C	25.0	14.60	0.596	3.85	1.000	997.	152.1	0.1119	14.233	3.014		0.1048	3.60
22	UPPER TALARIK	B	24.7									3.045			
23	TRIBUTARY 119	H	25.1	14.59	0.596	3.85	1.000	997.	152.1	0.2901	14.233	0.668	5.09	0.0000	3.60
24	TRIBUTARY 119	T	24.7									0.668			
25	UPPER TALARIK	J	24.7	14.67	0.593	3.85	1.000	999.	152.1	0.1119	14.232	3.713		0.1050	3.60
26	UPPER TALARIK	Q	24.5	14.67	0.593	3.85	1.000	999.	152.1	0.1119	14.232	3.738		0.0514	3.60
27	UPPER TALARIK	C	20.8	14.78	0.590	3.85	1.000	1001.	152.1	0.1191	14.230	3.928		0.0514	3.60
28	UPPER TALARIK	C	18.8	14.89	0.586	3.85	1.000	1003.	152.2	0.1081	14.228	4.030		0.0514	3.60
29	UPPER TALARIK	C	14.6	15.06	0.580	3.85	1.000	1006.	152.2	0.1237	14.226	4.247		0.0514	3.60
30	UPPER TALARIK	Q	14.4	15.06	0.580	3.85	1.000	1006.	152.2	0.1237	14.226	4.259		-0.2648	3.60
31	UPPER TALARIK	Q	9.8	15.06	0.580	3.85	1.000	1006.	152.2	0.1237	14.226	3.064		0.3397	3.60
32	UPPER TALARIK	C	9.1	15.27	0.573	3.85	1.000	1010.	152.3	0.1267	14.222	3.310		0.3397	3.60
33	UPPER TALARIK	Q	2.2	15.27	0.573	3.85	1.000	1010.	152.3	0.1267	14.222	5.648		0.0857	3.60
34	UPPER TALARIK	E	0.0									5.840			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	14.42	0.583	3.45	1.000	975.	188.9	0.3510	14.154	0.062	3.00	0.0440	8.25
2	UPPER TALARIK	Q	60.0	14.42	0.583	3.45	1.000	975.	188.9	0.3510	14.154	0.168		0.0281	8.25
3	UPPER TALARIK	C	59.7	14.72	0.573	3.45	1.000	981.	188.9	0.2770	14.153	0.177		0.0281	8.25
4	UPPER TALARIK	C	56.5	14.87	0.568	3.45	1.000	983.	188.9	0.2545	14.153	0.266		0.0281	8.25
5	UPPER TALARIK	C	55.4	14.94	0.566	3.45	1.000	985.	188.8	0.2033	14.153	0.297		0.0281	8.25
6	UPPER TALARIK	C	51.9	15.05	0.562	3.45	1.000	987.	188.8	0.2036	14.152	0.396		0.0281	8.25
7	UPPER TALARIK	Q	51.6	15.05	0.562	3.45	1.000	987.	188.8	0.2036	14.152	0.403		0.1351	3.62
8	UPPER TALARIK	C	45.9	15.12	0.560	3.45	1.000	988.	188.9	0.1627	14.151	1.174		0.1351	3.62
9	UPPER TALARIK	B	45.0									1.291			
10	TRIBUTARY 135	H	46.4	15.12	0.560	3.45	1.000	988.	188.9	0.2413	14.150	0.105	10.95	0.0000	3.62
11	TRIBUTARY 135	T	45.0									0.105			
12	UPPER TALARIK	J	45.0	15.19	0.557	3.45	1.000	989.	188.9	0.1626	14.149	1.396		0.1360	3.62
13	UPPER TALARIK	Q	44.6	15.19	0.557	3.45	1.000	989.	188.9	0.1626	14.149	1.453		0.0411	10.51
14	UPPER TALARIK	C	38.4	15.31	0.554	3.45	1.000	991.	189.0	0.1422	14.147	1.711		0.0411	10.51
15	UPPER TALARIK	Q	37.6	15.31	0.554	3.45	1.000	991.	189.0	0.1422	14.147	1.740		0.0895	10.51
16	UPPER TALARIK	C	35.8	15.39	0.551	3.45	1.000	993.	189.0	0.0924	14.145	1.903		0.0895	10.51
17	UPPER TALARIK	C	32.9	15.45	0.549	3.45	1.000	994.	189.0	0.1190	14.145	2.160		0.0895	10.51
18	UPPER TALARIK	C	32.3	15.53	0.547	3.45	1.000	995.	189.1	0.1207	14.144	2.215		0.0895	10.51
19	UPPER TALARIK	Q	29.3	15.53	0.547	3.45	1.000	995.	189.1	0.1207	14.144	2.486		0.1035	3.43
20	UPPER TALARIK	C	27.1	15.62	0.544	3.45	1.000	997.	189.1	0.0781	14.142	2.710		0.1035	3.43
21	UPPER TALARIK	C	25.0	15.64	0.543	3.45	1.000	997.	189.1	0.1127	14.142	2.928		0.1035	3.43
22	UPPER TALARIK	B	24.7									2.959			
23	TRIBUTARY 119	H	25.1	15.63	0.544	3.45	1.000	997.	189.1	0.2922	14.142	0.669	5.13	0.0000	3.43
24	TRIBUTARY 119	T	24.7									0.669			
25	UPPER TALARIK	J	24.7	15.71	0.541	3.45	1.000	999.	189.1	0.1127	14.141	3.628		0.1050	3.43
26	UPPER TALARIK	Q	24.5	15.71	0.541	3.45	1.000	999.	189.1	0.1127	14.141	3.653		0.0501	3.43
27	UPPER TALARIK	C	20.8	15.82	0.538	3.45	1.000	1001.	189.2	0.1198	14.139	3.838		0.0501	3.43
28	UPPER TALARIK	C	18.8	15.93	0.534	3.45	1.000	1003.	189.2	0.1088	14.137	3.938		0.0501	3.43
29	UPPER TALARIK	C	14.6	16.10	0.529	3.45	1.000	1006.	189.3	0.1246	14.135	4.149		0.0501	3.43
30	UPPER TALARIK	Q	14.4	16.10	0.529	3.45	1.000	1006.	189.3	0.1246	14.135	4.161		-0.2639	3.43
31	UPPER TALARIK	Q	9.8	16.10	0.529	3.45	1.000	1006.	189.3	0.1246	14.135	2.970		0.3351	3.43
32	UPPER TALARIK	C	9.1	16.31	0.522	3.45	1.000	1010.	189.4	0.1272	14.132	3.213		0.3351	3.43
33	UPPER TALARIK	Q	2.2	16.31	0.522	3.45	1.000	1010.	189.4	0.1272	14.132	5.519		0.0839	3.43
34	UPPER TALARIK	E	0.0									5.707			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	12.52	0.828	8.73	1.000	975.	149.9	0.3523	14.063	0.061	3.10	0.0440	8.56
2	UPPER TALARIK	Q	60.0	12.52	0.828	8.73	1.000	975.	149.9	0.3523	14.063	0.167		0.0267	8.56
3	UPPER TALARIK	C	59.7	12.82	0.814	8.73	1.000	981.	149.9	0.2787	14.062	0.175		0.0267	8.56
4	UPPER TALARIK	C	56.5	12.97	0.806	8.73	1.000	983.	149.9	0.2562	14.061	0.260		0.0267	8.56
5	UPPER TALARIK	C	55.4	13.04	0.803	8.73	1.000	985.	149.9	0.2054	14.061	0.289		0.0267	8.56
6	UPPER TALARIK	C	51.9	13.15	0.798	8.73	1.000	987.	149.9	0.2047	14.060	0.384		0.0267	8.56
7	UPPER TALARIK	Q	51.6	13.15	0.798	8.73	1.000	987.	149.9	0.2047	14.060	0.390		0.1233	3.84
8	UPPER TALARIK	C	45.9	13.22	0.795	8.73	1.000	988.	149.9	0.1634	14.059	1.093		0.1233	3.84
9	UPPER TALARIK	B	45.0									1.200			
10	TRIBUTARY 135	H	46.4	13.22	0.795	8.73	1.000	988.	149.9	0.2435	14.059	0.096	12.36	0.0000	3.84
11	TRIBUTARY 135	T	45.0									0.096			
12	UPPER TALARIK	J	45.0	13.29	0.791	8.73	1.000	989.	150.0	0.1633	14.058	1.296		0.1217	3.84
13	UPPER TALARIK	Q	44.6	13.29	0.791	8.73	1.000	989.	150.0	0.1633	14.058	1.347		0.0421	10.33
14	UPPER TALARIK	C	38.4	13.41	0.786	8.73	1.000	991.	150.0	0.1430	14.056	1.611		0.0421	10.33
15	UPPER TALARIK	Q	37.6	13.41	0.786	8.73	1.000	991.	150.0	0.1430	14.056	1.641		0.0884	10.33
16	UPPER TALARIK	C	35.8	13.49	0.782	8.73	1.000	993.	150.0	0.0932	14.054	1.802		0.0884	10.33
17	UPPER TALARIK	C	32.9	13.55	0.780	8.73	1.000	994.	150.0	0.1198	14.054	2.056		0.0884	10.33
18	UPPER TALARIK	C	32.3	13.63	0.776	8.73	1.000	995.	150.1	0.1215	14.053	2.110		0.0884	10.33
19	UPPER TALARIK	Q	29.3	13.63	0.776	8.73	1.000	995.	150.1	0.1215	14.053	2.378		0.1022	3.46
20	UPPER TALARIK	C	27.1	13.72	0.772	8.73	1.000	997.	150.1	0.0787	14.051	2.599		0.1022	3.46
21	UPPER TALARIK	C	25.0	13.74	0.771	8.73	1.000	997.	150.1	0.1135	14.051	2.815		0.1022	3.46
22	UPPER TALARIK	B	24.7									2.845			
23	TRIBUTARY 119	H	25.1	13.73	0.772	8.73	1.000	997.	150.1	0.2942	14.051	0.671	5.75	0.0000	3.46
24	TRIBUTARY 119	T	24.7									0.671			
25	UPPER TALARIK	J	24.7	13.81	0.768	8.73	1.000	999.	150.1	0.1135	14.050	3.516		0.1008	3.46
26	UPPER TALARIK	Q	24.5	13.81	0.768	8.73	1.000	999.	150.1	0.1135	14.050	3.540		0.0483	3.46
27	UPPER TALARIK	C	20.8	13.92	0.763	8.73	1.000	1001.	150.2	0.1205	14.049	3.718		0.0483	3.46
28	UPPER TALARIK	C	18.8	14.03	0.758	8.73	1.000	1003.	150.2	0.1096	14.047	3.815		0.0483	3.46
29	UPPER TALARIK	C	14.6	14.20	0.751	8.73	1.000	1006.	150.2	0.1256	14.045	4.018		0.0483	3.46
30	UPPER TALARIK	Q	14.4	14.20	0.751	8.73	1.000	1006.	150.2	0.1256	14.045	4.030		-0.2626	3.46
31	UPPER TALARIK	Q	9.8	14.20	0.751	8.73	1.000	1006.	150.2	0.1256	14.045	2.845		0.3290	3.46
32	UPPER TALARIK	C	9.1	14.41	0.741	8.73	1.000	1010.	150.3	0.1278	14.041	3.083		0.3290	3.46
33	UPPER TALARIK	Q	2.2	14.41	0.741	8.73	1.000	1010.	150.3	0.1278	14.041	5.347		0.0812	3.46
34	UPPER TALARIK	E	0.0									5.529			

YEAR: 2007 TIME PERIOD: 30-Aug

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.43	0.818	5.45	1.000	975.	110.1	0.3537	13.971	0.061	3.44	0.0436	8.99
2	UPPER TALARIK	Q	60.0	11.43	0.818	5.45	1.000	975.	110.1	0.3537	13.971	0.166		0.0260	8.99
3	UPPER TALARIK	C	59.7	11.73	0.805	5.45	1.000	981.	110.1	0.2804	13.970	0.174		0.0260	8.99
4	UPPER TALARIK	C	56.5	11.88	0.797	5.45	1.000	983.	110.1	0.2580	13.970	0.257		0.0260	8.99
5	UPPER TALARIK	C	55.4	11.95	0.794	5.45	1.000	985.	110.1	0.2075	13.970	0.285		0.0260	8.99
6	UPPER TALARIK	C	51.9	12.06	0.789	5.45	1.000	987.	110.1	0.2058	13.969	0.377		0.0260	8.99
7	UPPER TALARIK	Q	51.6	12.06	0.789	5.45	1.000	987.	110.1	0.2058	13.969	0.383		0.1176	4.00
8	UPPER TALARIK	C	45.9	12.13	0.786	5.45	1.000	988.	110.1	0.1642	13.968	1.054		0.1176	4.00
9	UPPER TALARIK	B	45.0									1.156			
10	TRIBUTARY 135	H	46.4	12.13	0.786	5.45	1.000	988.	110.1	0.2456	13.968	0.091	12.06	0.0000	4.00
11	TRIBUTARY 135	T	45.0									0.091			
12	UPPER TALARIK	J	45.0	12.20	0.782	5.45	1.000	989.	110.2	0.1641	13.966	1.247		0.1193	4.00
13	UPPER TALARIK	Q	44.6	12.20	0.782	5.45	1.000	989.	110.2	0.1641	13.966	1.297		0.0421	10.28
14	UPPER TALARIK	C	38.4	12.32	0.777	5.45	1.000	991.	110.2	0.1437	13.964	1.561		0.0421	10.28
15	UPPER TALARIK	Q	37.6	12.32	0.777	5.45	1.000	991.	110.2	0.1437	13.964	1.591		0.0876	10.28
16	UPPER TALARIK	C	35.8	12.40	0.773	5.45	1.000	993.	110.2	0.0940	13.963	1.751		0.0876	10.28
17	UPPER TALARIK	C	32.9	12.46	0.771	5.45	1.000	994.	110.2	0.1207	13.963	2.002		0.0876	10.28
18	UPPER TALARIK	C	32.3	12.54	0.767	5.45	1.000	995.	110.2	0.1223	13.962	2.056		0.0876	10.28
19	UPPER TALARIK	Q	29.3	12.54	0.767	5.45	1.000	995.	110.2	0.1223	13.962	2.321		0.1013	3.67
20	UPPER TALARIK	C	27.1	12.63	0.763	5.45	1.000	997.	110.3	0.0793	13.960	2.540		0.1013	3.67
21	UPPER TALARIK	C	25.0	12.65	0.762	5.45	1.000	997.	110.3	0.1143	13.960	2.754		0.1013	3.67
22	UPPER TALARIK	B	24.7									2.784			
23	TRIBUTARY 119	H	25.1	12.64	0.763	5.45	1.000	997.	110.3	0.2963	13.960	0.675	5.33	0.0000	3.67
24	TRIBUTARY 119	T	24.7									0.675			
25	UPPER TALARIK	J	24.7	12.72	0.759	5.45	1.000	999.	110.3	0.1143	13.959	3.459		0.1008	3.67
26	UPPER TALARIK	Q	24.5	12.72	0.759	5.45	1.000	999.	110.3	0.1143	13.959	3.483		0.0474	3.67
27	UPPER TALARIK	C	20.8	12.83	0.754	5.45	1.000	1001.	110.3	0.1213	13.958	3.658		0.0474	3.67
28	UPPER TALARIK	C	18.8	12.94	0.750	5.45	1.000	1003.	110.3	0.1104	13.956	3.753		0.0474	3.67
29	UPPER TALARIK	C	14.6	13.11	0.742	5.45	1.000	1006.	110.4	0.1265	13.954	3.953		0.0474	3.67
30	UPPER TALARIK	Q	14.4	13.11	0.742	5.45	1.000	1006.	110.4	0.1265	13.954	3.964		-0.2617	3.67
31	UPPER TALARIK	Q	9.8	13.11	0.742	5.45	1.000	1006.	110.4	0.1265	13.954	2.783		0.3258	3.67
32	UPPER TALARIK	C	9.1	13.32	0.733	5.45	1.000	1010.	110.4	0.1283	13.951	3.019		0.3258	3.67
33	UPPER TALARIK	Q	2.2	13.32	0.733	5.45	1.000	1010.	110.4	0.1283	13.951	5.261		0.0799	3.67
34	UPPER TALARIK	E	0.0									5.440			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	11.43	0.828	2.98	1.000	975.	135.3	0.3551	13.880	0.061	3.60	0.0436	9.29
2	UPPER TALARIK	Q	60.0	11.43	0.828	2.98	1.000	975.	135.3	0.3551	13.880	0.166		0.0256	9.29
3	UPPER TALARIK	C	59.7	11.73	0.814	2.98	1.000	981.	135.3	0.2822	13.879	0.174		0.0256	9.29
4	UPPER TALARIK	C	56.5	11.88	0.806	2.98	1.000	983.	135.3	0.2597	13.878	0.255		0.0256	9.29
5	UPPER TALARIK	C	55.4	11.95	0.803	2.98	1.000	985.	135.3	0.2097	13.878	0.283		0.0256	9.29
6	UPPER TALARIK	C	51.9	12.06	0.798	2.98	1.000	987.	135.3	0.2069	13.877	0.374		0.0256	9.29
7	UPPER TALARIK	Q	51.6	12.06	0.798	2.98	1.000	987.	135.3	0.2069	13.877	0.380		0.1170	4.09
8	UPPER TALARIK	C	45.9	12.13	0.795	2.98	1.000	988.	135.3	0.1650	13.876	1.048		0.1170	4.09
9	UPPER TALARIK	B	45.0									1.149			
10	TRIBUTARY 135	H	46.4	12.13	0.795	2.98	1.000	988.	135.3	0.2478	13.876	0.091	11.45	0.0000	4.09
11	TRIBUTARY 135	T	45.0									0.091			
12	UPPER TALARIK	J	45.0	12.20	0.791	2.98	1.000	989.	135.3	0.1649	13.875	1.240		0.1169	4.09
13	UPPER TALARIK	Q	44.6	12.20	0.791	2.98	1.000	989.	135.3	0.1649	13.875	1.289		0.0416	10.32
14	UPPER TALARIK	C	38.4	12.32	0.786	2.98	1.000	991.	135.4	0.1445	13.873	1.550		0.0416	10.32
15	UPPER TALARIK	Q	37.6	12.32	0.786	2.98	1.000	991.	135.4	0.1445	13.873	1.580		0.0887	10.32
16	UPPER TALARIK	C	35.8	12.40	0.782	2.98	1.000	993.	135.4	0.0949	13.872	1.742		0.0887	10.32
17	UPPER TALARIK	C	32.9	12.46	0.780	2.98	1.000	994.	135.4	0.1216	13.872	1.996		0.0887	10.32
18	UPPER TALARIK	C	32.3	12.54	0.776	2.98	1.000	995.	135.5	0.1232	13.870	2.050		0.0887	10.32
19	UPPER TALARIK	Q	29.3	12.54	0.776	2.98	1.000	995.	135.5	0.1232	13.870	2.319		0.1026	4.00
20	UPPER TALARIK	C	27.1	12.63	0.772	2.98	1.000	997.	135.5	0.0800	13.869	2.541		0.1026	4.00
21	UPPER TALARIK	C	25.0	12.65	0.771	2.98	1.000	997.	135.5	0.1151	13.869	2.757		0.1026	4.00
22	UPPER TALARIK	B	24.7									2.788			
23	TRIBUTARY 119	H	25.1	12.64	0.772	2.98	1.000	997.	135.5	0.2985	13.869	0.671	4.93	0.0000	4.00
24	TRIBUTARY 119	T	24.7									0.671			
25	UPPER TALARIK	J	24.7	12.72	0.768	2.98	1.000	999.	135.5	0.1151	13.868	3.459		0.1008	4.00
26	UPPER TALARIK	Q	24.5	12.72	0.768	2.98	1.000	999.	135.5	0.1151	13.868	3.483		0.0474	4.00
27	UPPER TALARIK	C	20.8	12.83	0.763	2.98	1.000	1001.	135.5	0.1220	13.867	3.658		0.0474	4.00
28	UPPER TALARIK	C	18.8	12.94	0.758	2.98	1.000	1003.	135.6	0.1112	13.865	3.753		0.0474	4.00
29	UPPER TALARIK	C	14.6	13.11	0.751	2.98	1.000	1006.	135.6	0.1275	13.863	3.953		0.0474	4.00
30	UPPER TALARIK	Q	14.4	13.11	0.751	2.98	1.000	1006.	135.6	0.1275	13.863	3.964		-0.2617	4.00
31	UPPER TALARIK	Q	9.8	13.11	0.751	2.98	1.000	1006.	135.6	0.1275	13.863	2.783		0.3258	4.00
32	UPPER TALARIK	C	9.1	13.32	0.741	2.98	1.000	1010.	135.7	0.1289	13.860	3.019		0.3258	4.00
33	UPPER TALARIK	Q	2.2	13.32	0.741	2.98	1.000	1010.	135.7	0.1289	13.860	5.261		0.0799	4.00
34	UPPER TALARIK	E	0.0									5.440			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.46	0.875	3.51	1.000	975.	89.3	0.3565	13.788	0.061	3.78	0.0432	9.42
2	UPPER TALARIK	Q	60.0	10.46	0.875	3.51	1.000	975.	89.3	0.3565	13.788	0.165		0.0261	9.42
3	UPPER TALARIK	C	59.7	10.76	0.860	3.51	1.000	981.	89.2	0.2840	13.787	0.173		0.0261	9.42
4	UPPER TALARIK	C	56.5	10.91	0.852	3.51	1.000	983.	89.2	0.2616	13.786	0.256		0.0261	9.42
5	UPPER TALARIK	C	55.4	10.98	0.849	3.51	1.000	985.	89.2	0.2120	13.787	0.284		0.0261	9.42
6	UPPER TALARIK	C	51.9	11.09	0.843	3.51	1.000	987.	89.2	0.2080	13.786	0.377		0.0261	9.42
7	UPPER TALARIK	Q	51.6	11.09	0.843	3.51	1.000	987.	89.2	0.2080	13.786	0.383		0.1251	4.19
8	UPPER TALARIK	C	45.9	11.16	0.840	3.51	1.000	988.	89.2	0.1658	13.785	1.097		0.1251	4.19
9	UPPER TALARIK	B	45.0									1.205			
10	TRIBUTARY 135	H	46.4	11.16	0.840	3.51	1.000	988.	89.3	0.2501	13.785	0.097	10.99	0.0000	4.19
11	TRIBUTARY 135	T	45.0									0.097			
12	UPPER TALARIK	J	45.0	11.23	0.836	3.51	1.000	989.	89.3	0.1657	13.783	1.302		0.1265	4.19
13	UPPER TALARIK	Q	44.6	11.23	0.836	3.51	1.000	989.	89.3	0.1657	13.783	1.355		0.0405	10.43
14	UPPER TALARIK	C	38.4	11.35	0.831	3.51	1.000	991.	89.3	0.1452	13.781	1.609		0.0405	10.43
15	UPPER TALARIK	Q	37.6	11.35	0.831	3.51	1.000	991.	89.3	0.1452	13.781	1.638		0.0865	10.43
16	UPPER TALARIK	C	35.8	11.43	0.827	3.51	1.000	993.	89.3	0.0958	13.781	1.796		0.0865	10.43
17	UPPER TALARIK	C	32.9	11.49	0.824	3.51	1.000	994.	89.3	0.1225	13.780	2.044		0.0865	10.43
18	UPPER TALARIK	C	32.3	11.57	0.820	3.51	1.000	995.	89.4	0.1241	13.779	2.097		0.0865	10.43
19	UPPER TALARIK	Q	29.3	11.57	0.820	3.51	1.000	995.	89.4	0.1241	13.779	2.359		0.0998	4.45
20	UPPER TALARIK	C	27.1	11.66	0.816	3.51	1.000	997.	89.4	0.0807	13.778	2.574		0.0998	4.45
21	UPPER TALARIK	C	25.0	11.68	0.815	3.51	1.000	997.	89.4	0.1160	13.778	2.785		0.0998	4.45
22	UPPER TALARIK	B	24.7									2.815			
23	TRIBUTARY 119	H	25.1	11.67	0.816	3.51	1.000	997.	89.4	0.3007	13.778	0.672	4.91	0.0000	4.45
24	TRIBUTARY 119	T	24.7									0.672			
25	UPPER TALARIK	J	24.7	11.75	0.811	3.51	1.000	999.	89.4	0.1160	13.777	3.487		0.1008	4.45
26	UPPER TALARIK	Q	24.5	11.75	0.811	3.51	1.000	999.	89.4	0.1160	13.777	3.511		0.0479	4.45
27	UPPER TALARIK	C	20.8	11.86	0.806	3.51	1.000	1001.	89.4	0.1228	13.775	3.688		0.0479	4.45
28	UPPER TALARIK	C	18.8	11.97	0.801	3.51	1.000	1003.	89.4	0.1120	13.774	3.783		0.0479	4.45
29	UPPER TALARIK	C	14.6	12.14	0.793	3.51	1.000	1006.	89.5	0.1285	13.772	3.985		0.0479	4.45
30	UPPER TALARIK	Q	14.4	12.14	0.793	3.51	1.000	1006.	89.5	0.1285	13.772	3.997		-0.2621	4.45
31	UPPER TALARIK	Q	9.8	12.14	0.793	3.51	1.000	1006.	89.5	0.1285	13.772	2.814		0.3274	4.45
32	UPPER TALARIK	C	9.1	12.35	0.784	3.51	1.000	1010.	89.5	0.1295	13.769	3.051		0.3274	4.45
33	UPPER TALARIK	Q	2.2	12.35	0.784	3.51	1.000	1010.	89.5	0.1295	13.769	5.304		0.0804	4.45
34	UPPER TALARIK	E	0.0									5.484			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.09	0.875	2.24	1.000	975.	97.3	0.3579	13.696	0.061	4.07	0.0436	9.40
2	UPPER TALARIK	Q	60.0	10.09	0.875	2.24	1.000	975.	97.3	0.3579	13.696	0.166		0.0251	9.40
3	UPPER TALARIK	C	59.7	10.39	0.860	2.24	1.000	981.	97.3	0.2859	13.695	0.174		0.0251	9.40
4	UPPER TALARIK	C	56.5	10.54	0.852	2.24	1.000	983.	97.3	0.2634	13.695	0.254		0.0251	9.40
5	UPPER TALARIK	C	55.4	10.61	0.849	2.24	1.000	985.	97.3	0.2143	13.695	0.281		0.0251	9.40
6	UPPER TALARIK	C	51.9	10.72	0.843	2.24	1.000	987.	97.3	0.2092	13.694	0.370		0.0251	9.40
7	UPPER TALARIK	Q	51.6	10.72	0.843	2.24	1.000	987.	97.3	0.2092	13.694	0.376		0.1208	4.29
8	UPPER TALARIK	C	45.9	10.79	0.840	2.24	1.000	988.	97.3	0.1666	13.693	1.066		0.1208	4.29
9	UPPER TALARIK	B	45.0									1.170			
10	TRIBUTARY 135	H	46.4	10.79	0.840	2.24	1.000	988.	97.3	0.2525	13.693	0.094	10.55	0.0000	4.29
11	TRIBUTARY 135	T	45.0									0.094			
12	UPPER TALARIK	J	45.0	10.86	0.836	2.24	1.000	989.	97.3	0.1665	13.692	1.264		0.1193	4.29
13	UPPER TALARIK	Q	44.6	10.86	0.836	2.24	1.000	989.	97.3	0.1665	13.692	1.314		0.0425	10.56
14	UPPER TALARIK	C	38.4	10.98	0.831	2.24	1.000	991.	97.4	0.1460	13.690	1.581		0.0425	10.56
15	UPPER TALARIK	Q	37.6	10.98	0.831	2.24	1.000	991.	97.4	0.1460	13.690	1.611		0.0884	10.56
16	UPPER TALARIK	C	35.8	11.06	0.827	2.24	1.000	993.	97.4	0.0967	13.689	1.772		0.0884	10.56
17	UPPER TALARIK	C	32.9	11.12	0.824	2.24	1.000	994.	97.4	0.1234	13.689	2.026		0.0884	10.56
18	UPPER TALARIK	C	32.3	11.20	0.820	2.24	1.000	995.	97.4	0.1250	13.687	2.080		0.0884	10.56
19	UPPER TALARIK	Q	29.3	11.20	0.820	2.24	1.000	995.	97.4	0.1250	13.687	2.348		0.1022	4.99
20	UPPER TALARIK	C	27.1	11.29	0.816	2.24	1.000	997.	97.4	0.0814	13.687	2.569		0.1022	4.99
21	UPPER TALARIK	C	25.0	11.31	0.815	2.24	1.000	997.	97.4	0.1169	13.686	2.785		0.1022	4.99
22	UPPER TALARIK	B	24.7									2.815			
23	TRIBUTARY 119	H	25.1	11.30	0.816	2.24	1.000	997.	97.4	0.3030	13.686	0.672	5.09	0.0000	4.99
24	TRIBUTARY 119	T	24.7									0.672			
25	UPPER TALARIK	J	24.7	11.38	0.811	2.24	1.000	999.	97.5	0.1169	13.686	3.487		0.1008	4.99
26	UPPER TALARIK	Q	24.5	11.38	0.811	2.24	1.000	999.	97.5	0.1169	13.686	3.511		0.0479	4.99
27	UPPER TALARIK	C	20.8	11.49	0.806	2.24	1.000	1001.	97.5	0.1236	13.684	3.688		0.0479	4.99
28	UPPER TALARIK	C	18.8	11.60	0.801	2.24	1.000	1003.	97.5	0.1128	13.683	3.783		0.0479	4.99
29	UPPER TALARIK	C	14.6	11.77	0.793	2.24	1.000	1006.	97.5	0.1296	13.681	3.985		0.0479	4.99
30	UPPER TALARIK	Q	14.4	11.77	0.793	2.24	1.000	1006.	97.5	0.1296	13.681	3.997		-0.2621	4.99
31	UPPER TALARIK	Q	9.8	11.77	0.793	2.24	1.000	1006.	97.5	0.1296	13.681	2.814		0.3274	4.99
32	UPPER TALARIK	C	9.1	11.98	0.784	2.24	1.000	1010.	97.6	0.1301	13.678	3.051		0.3274	4.99
33	UPPER TALARIK	Q	2.2	11.98	0.784	2.24	1.000	1010.	97.6	0.1301	13.678	5.304		0.0804	4.99
34	UPPER TALARIK	E	0.0									5.484			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.26	0.790	2.76	1.000	975.	106.2	0.3594	13.604	0.066	4.21	0.0469	9.26
2	UPPER TALARIK	Q	60.0	10.26	0.790	2.76	1.000	975.	106.2	0.3594	13.604	0.179		0.0296	9.26
3	UPPER TALARIK	C	59.7	10.56	0.777	2.76	1.000	981.	106.2	0.2878	13.603	0.188		0.0296	9.26
4	UPPER TALARIK	C	56.5	10.71	0.770	2.76	1.000	983.	106.2	0.2653	13.603	0.282		0.0296	9.26
5	UPPER TALARIK	C	55.4	10.78	0.767	2.76	1.000	985.	106.2	0.2168	13.603	0.314		0.0296	9.26
6	UPPER TALARIK	C	51.9	10.89	0.762	2.76	1.000	987.	106.2	0.2104	13.602	0.419		0.0296	9.26
7	UPPER TALARIK	Q	51.6	10.89	0.762	2.76	1.000	987.	106.2	0.2104	13.602	0.426		0.1300	4.43
8	UPPER TALARIK	C	45.9	10.96	0.759	2.76	1.000	988.	106.2	0.1674	13.601	1.168		0.1300	4.43
9	UPPER TALARIK	B	45.0									1.280			
10	TRIBUTARY 135	H	46.4	10.96	0.759	2.76	1.000	988.	106.2	0.2548	13.601	0.101	10.22	0.0000	4.43
11	TRIBUTARY 135	T	45.0									0.101			
12	UPPER TALARIK	J	45.0	11.03	0.755	2.76	1.000	989.	106.3	0.1673	13.600	1.381		0.1289	4.43
13	UPPER TALARIK	Q	44.6	11.03	0.755	2.76	1.000	989.	106.3	0.1673	13.600	1.435		0.0439	10.69
14	UPPER TALARIK	C	38.4	11.15	0.751	2.76	1.000	991.	106.3	0.1468	13.598	1.711		0.0439	10.69
15	UPPER TALARIK	Q	37.6	11.15	0.751	2.76	1.000	991.	106.3	0.1468	13.598	1.742		0.0915	10.69
16	UPPER TALARIK	C	35.8	11.23	0.747	2.76	1.000	993.	106.3	0.0977	13.597	1.909		0.0915	10.69
17	UPPER TALARIK	C	32.9	11.29	0.744	2.76	1.000	994.	106.3	0.1244	13.597	2.172		0.0915	10.69
18	UPPER TALARIK	C	32.3	11.37	0.741	2.76	1.000	995.	106.4	0.1259	13.596	2.228		0.0915	10.69
19	UPPER TALARIK	Q	29.3	11.37	0.741	2.76	1.000	995.	106.4	0.1259	13.596	2.505		0.1059	5.57
20	UPPER TALARIK	C	27.1	11.46	0.737	2.76	1.000	997.	106.4	0.0822	13.595	2.734		0.1059	5.57
21	UPPER TALARIK	C	25.0	11.48	0.736	2.76	1.000	997.	106.4	0.1178	13.595	2.957		0.1059	5.57
22	UPPER TALARIK	B	24.7									2.989			
23	TRIBUTARY 119	H	25.1	11.47	0.737	2.76	1.000	997.	106.4	0.3053	13.595	0.696	5.06	0.0000	5.57
24	TRIBUTARY 119	T	24.7									0.696			
25	UPPER TALARIK	J	24.7	11.55	0.733	2.76	1.000	999.	106.4	0.1178	13.594	3.685		0.1050	5.57
26	UPPER TALARIK	Q	24.5	11.55	0.733	2.76	1.000	999.	106.4	0.1178	13.594	3.710		0.0509	5.57
27	UPPER TALARIK	C	20.8	11.66	0.728	2.76	1.000	1001.	106.4	0.1244	13.593	3.898		0.0509	5.57
28	UPPER TALARIK	C	18.8	11.77	0.724	2.76	1.000	1003.	106.5	0.1137	13.591	3.999		0.0509	5.57
29	UPPER TALARIK	C	14.6	11.94	0.717	2.76	1.000	1006.	106.5	0.1307	13.590	4.214		0.0509	5.57
30	UPPER TALARIK	Q	14.4	11.94	0.717	2.76	1.000	1006.	106.5	0.1307	13.590	4.226		-0.2643	5.57
31	UPPER TALARIK	Q	9.8	11.94	0.717	2.76	1.000	1006.	106.5	0.1307	13.590	3.033		0.3382	5.57
32	UPPER TALARIK	C	9.1	12.15	0.708	2.76	1.000	1010.	106.6	0.1307	13.587	3.278		0.3382	5.57
33	UPPER TALARIK	Q	2.2	12.15	0.708	2.76	1.000	1010.	106.6	0.1307	13.587	5.605		0.0853	5.57
34	UPPER TALARIK	E	0.0									5.796			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.44	0.696	3.27	1.000	975.	115.2	0.3609	13.512	0.068	4.16	0.0486	9.07
2	UPPER TALARIK	Q	60.0	10.44	0.696	3.27	1.000	975.	115.2	0.3609	13.512	0.185		0.0376	9.07
3	UPPER TALARIK	C	59.7	10.74	0.684	3.27	1.000	981.	115.2	0.2897	13.511	0.197		0.0376	9.07
4	UPPER TALARIK	C	56.5	10.89	0.678	3.27	1.000	983.	115.1	0.2672	13.511	0.316		0.0376	9.07
5	UPPER TALARIK	C	55.4	10.96	0.676	3.27	1.000	985.	115.1	0.2193	13.511	0.357		0.0376	9.07
6	UPPER TALARIK	C	51.9	11.07	0.671	3.27	1.000	987.	115.1	0.2116	13.510	0.490		0.0376	9.07
7	UPPER TALARIK	Q	51.6	11.07	0.671	3.27	1.000	987.	115.1	0.2116	13.510	0.499		0.1689	4.66
8	UPPER TALARIK	C	45.9	11.14	0.668	3.27	1.000	988.	115.2	0.1682	13.509	1.463		0.1689	4.66
9	UPPER TALARIK	B	45.0									1.609			
10	TRIBUTARY 135	H	46.4	11.14	0.668	3.27	1.000	988.	115.2	0.2573	13.509	0.131	9.47	0.0000	4.66
11	TRIBUTARY 135	T	45.0									0.131			
12	UPPER TALARIK	J	45.0	11.21	0.665	3.27	1.000	989.	115.2	0.1681	13.508	1.740		0.1695	4.66
13	UPPER TALARIK	Q	44.6	11.21	0.665	3.27	1.000	989.	115.2	0.1681	13.508	1.811		0.0467	10.81
14	UPPER TALARIK	C	38.4	11.33	0.661	3.27	1.000	991.	115.3	0.1476	13.506	2.104		0.0467	10.81
15	UPPER TALARIK	Q	37.6	11.33	0.661	3.27	1.000	991.	115.3	0.1476	13.506	2.137		0.0959	10.81
16	UPPER TALARIK	C	35.8	11.41	0.658	3.27	1.000	993.	115.3	0.0987	13.506	2.312		0.0959	10.81
17	UPPER TALARIK	C	32.9	11.47	0.656	3.27	1.000	994.	115.3	0.1254	13.505	2.587		0.0959	10.81
18	UPPER TALARIK	C	32.3	11.55	0.653	3.27	1.000	995.	115.3	0.1268	13.504	2.646		0.0959	10.81
19	UPPER TALARIK	Q	29.3	11.55	0.653	3.27	1.000	995.	115.3	0.1268	13.504	2.936		0.1107	6.14
20	UPPER TALARIK	C	27.1	11.64	0.649	3.27	1.000	997.	115.3	0.0830	13.503	3.175		0.1107	6.14
21	UPPER TALARIK	C	25.0	11.66	0.648	3.27	1.000	997.	115.3	0.1187	13.503	3.409		0.1107	6.14
22	UPPER TALARIK	B	24.7									3.442			
23	TRIBUTARY 119	H	25.1	11.65	0.649	3.27	1.000	997.	115.3	0.3077	13.503	0.695	5.04	0.0000	6.14
24	TRIBUTARY 119	T	24.7									0.695			
25	UPPER TALARIK	J	24.7	11.73	0.646	3.27	1.000	999.	115.4	0.1187	13.502	4.137		0.1092	6.14
26	UPPER TALARIK	Q	24.5	11.73	0.646	3.27	1.000	999.	115.4	0.1187	13.502	4.163		0.0579	6.14
27	UPPER TALARIK	C	20.8	11.84	0.642	3.27	1.000	1001.	115.4	0.1252	13.501	4.377		0.0579	6.14
28	UPPER TALARIK	C	18.8	11.95	0.638	3.27	1.000	1003.	115.5	0.1146	13.500	4.492		0.0579	6.14
29	UPPER TALARIK	C	14.6	12.12	0.631	3.27	1.000	1006.	115.5	0.1317	13.498	4.736		0.0579	6.14
30	UPPER TALARIK	Q	14.4	12.12	0.631	3.27	1.000	1006.	115.5	0.1317	13.498	4.750		-0.2661	6.14
31	UPPER TALARIK	Q	9.8	12.12	0.631	3.27	1.000	1006.	115.5	0.1317	13.498	3.549		0.3608	6.14
32	UPPER TALARIK	C	9.1	12.33	0.624	3.27	1.000	1010.	115.6	0.1313	13.496	3.811		0.3608	6.14
33	UPPER TALARIK	Q	2.2	12.33	0.624	3.27	1.000	1010.	115.6	0.1313	13.496	6.293		0.0955	6.14
34	UPPER TALARIK	E	0.0									6.507			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.46	0.753	3.33	1.000	975.	111.5	0.3624	13.419	0.065	4.06	0.0465	8.91
2	UPPER TALARIK	Q	60.0	10.46	0.753	3.33	1.000	975.	111.5	0.3624	13.419	0.177		0.0377	8.91
3	UPPER TALARIK	C	59.7	10.76	0.740	3.33	1.000	981.	111.5	0.2917	13.419	0.189		0.0377	8.91
4	UPPER TALARIK	C	56.5	10.91	0.733	3.33	1.000	983.	111.5	0.2692	13.418	0.309		0.0377	8.91
5	UPPER TALARIK	C	55.4	10.98	0.730	3.33	1.000	985.	111.5	0.2219	13.418	0.350		0.0377	8.91
6	UPPER TALARIK	C	51.9	11.09	0.726	3.33	1.000	987.	111.5	0.2128	13.418	0.483		0.0377	8.91
7	UPPER TALARIK	Q	51.6	11.09	0.726	3.33	1.000	987.	111.5	0.2128	13.418	0.492		0.1529	5.02
8	UPPER TALARIK	C	45.9	11.16	0.723	3.33	1.000	988.	111.5	0.1691	13.417	1.365		0.1529	5.02
9	UPPER TALARIK	B	45.0									1.497			
10	TRIBUTARY 135	H	46.4	11.16	0.722	3.33	1.000	988.	111.5	0.2598	13.417	0.119	10.28	0.0000	5.02
11	TRIBUTARY 135	T	45.0									0.119			
12	UPPER TALARIK	J	45.0	11.23	0.719	3.33	1.000	989.	111.5	0.1690	13.416	1.616		0.1527	5.02
13	UPPER TALARIK	Q	44.6	11.23	0.719	3.33	1.000	989.	111.5	0.1690	13.416	1.680		0.0789	10.90
14	UPPER TALARIK	C	38.4	11.35	0.715	3.33	1.000	991.	111.6	0.1484	13.414	2.175		0.0789	10.90
15	UPPER TALARIK	Q	37.6	11.35	0.715	3.33	1.000	991.	111.6	0.1484	13.414	2.231		0.1074	10.90
16	UPPER TALARIK	C	35.8	11.43	0.711	3.33	1.000	993.	111.6	0.0998	13.414	2.427		0.1074	10.90
17	UPPER TALARIK	C	32.9	11.49	0.709	3.33	1.000	994.	111.6	0.1264	13.413	2.735		0.1074	10.90
18	UPPER TALARIK	C	32.3	11.57	0.705	3.33	1.000	995.	111.6	0.1278	13.412	2.801		0.1074	10.90
19	UPPER TALARIK	Q	29.3	11.57	0.705	3.33	1.000	995.	111.6	0.1278	13.412	3.126		0.1240	6.65
20	UPPER TALARIK	C	27.1	11.66	0.702	3.33	1.000	997.	111.7	0.0839	13.412	3.394		0.1240	6.65
21	UPPER TALARIK	C	25.0	11.68	0.701	3.33	1.000	997.	111.7	0.1196	13.412	3.656		0.1240	6.65
22	UPPER TALARIK	B	24.7									3.693			
23	TRIBUTARY 119	H	25.1	11.67	0.702	3.33	1.000	997.	111.7	0.3101	13.412	0.695	5.22	0.0000	6.65
24	TRIBUTARY 119	T	24.7									0.695			
25	UPPER TALARIK	J	24.7	11.75	0.698	3.33	1.000	999.	111.7	0.1196	13.411	4.388		0.1218	6.65
26	UPPER TALARIK	Q	24.5	11.75	0.698	3.33	1.000	999.	111.7	0.1196	13.411	4.417		0.0620	6.65
27	UPPER TALARIK	C	20.8	11.86	0.694	3.33	1.000	1001.	111.7	0.1260	13.410	4.646		0.0620	6.65
28	UPPER TALARIK	C	18.8	11.97	0.689	3.33	1.000	1003.	111.8	0.1154	13.408	4.770		0.0620	6.65
29	UPPER TALARIK	C	14.6	12.14	0.682	3.33	1.000	1006.	111.8	0.1329	13.407	5.031		0.0620	6.65
30	UPPER TALARIK	Q	14.4	12.14	0.682	3.33	1.000	1006.	111.8	0.1329	13.407	5.046		-0.2652	6.65
31	UPPER TALARIK	Q	9.8	12.14	0.682	3.33	1.000	1006.	111.8	0.1329	13.407	3.849		0.3723	6.65
32	UPPER TALARIK	C	9.1	12.35	0.674	3.33	1.000	1010.	111.9	0.1320	13.405	4.119		0.3723	6.65
33	UPPER TALARIK	Q	2.2	12.35	0.674	3.33	1.000	1010.	111.9	0.1320	13.405	6.681		0.1018	6.65
34	UPPER TALARIK	E	0.0									6.909			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.99	0.837	4.02	1.000	975.	85.4	0.3639	13.327	0.067	4.19	0.0478	8.79
2	UPPER TALARIK	Q	60.0	8.99	0.837	4.02	1.000	975.	85.4	0.3639	13.327	0.182		0.0475	8.79
3	UPPER TALARIK	C	59.7	9.29	0.823	4.02	1.000	981.	85.3	0.2938	13.326	0.197		0.0475	8.79
4	UPPER TALARIK	C	56.5	9.44	0.816	4.02	1.000	983.	85.3	0.2713	13.326	0.348		0.0475	8.79
5	UPPER TALARIK	C	55.4	9.51	0.812	4.02	1.000	985.	85.3	0.2247	13.326	0.400		0.0475	8.79
6	UPPER TALARIK	C	51.9	9.62	0.807	4.02	1.000	987.	85.3	0.2141	13.326	0.568		0.0475	8.79
7	UPPER TALARIK	Q	51.6	9.62	0.807	4.02	1.000	987.	85.3	0.2141	13.326	0.579		0.2697	5.51
8	UPPER TALARIK	C	45.9	9.69	0.804	4.02	1.000	988.	85.4	0.1699	13.325	2.118		0.2697	5.51
9	UPPER TALARIK	B	45.0									2.351			
10	TRIBUTARY 135	H	46.4	9.69	0.804	4.02	1.000	988.	85.4	0.2624	13.325	0.209	9.47	0.0000	5.51
11	TRIBUTARY 135	T	45.0									0.209			
12	UPPER TALARIK	J	45.0	9.76	0.800	4.02	1.000	989.	85.4	0.1698	13.324	2.560		0.2697	5.51
13	UPPER TALARIK	Q	44.6	9.76	0.800	4.02	1.000	989.	85.4	0.1698	13.324	2.673		0.0588	10.96
14	UPPER TALARIK	C	38.4	9.88	0.795	4.02	1.000	991.	85.4	0.1492	13.322	3.042		0.0588	10.96
15	UPPER TALARIK	Q	37.6	9.88	0.795	4.02	1.000	991.	85.4	0.1492	13.322	3.084		0.1401	10.96
16	UPPER TALARIK	C	35.8	9.96	0.791	4.02	1.000	993.	85.4	0.1009	13.322	3.339		0.1401	10.96
17	UPPER TALARIK	C	32.9	10.02	0.789	4.02	1.000	994.	85.4	0.1274	13.321	3.742		0.1401	10.96
18	UPPER TALARIK	C	32.3	10.10	0.785	4.02	1.000	995.	85.5	0.1288	13.321	3.828		0.1401	10.96
19	UPPER TALARIK	Q	29.3	10.10	0.785	4.02	1.000	995.	85.5	0.1288	13.321	4.252		0.1619	7.07
20	UPPER TALARIK	C	27.1	10.19	0.781	4.02	1.000	997.	85.5	0.0849	13.320	4.602		0.1619	7.07
21	UPPER TALARIK	C	25.0	10.21	0.780	4.02	1.000	997.	85.5	0.1206	13.320	4.944		0.1619	7.07
22	UPPER TALARIK	B	24.7									4.992			
23	TRIBUTARY 119	H	25.1	10.20	0.780	4.02	1.000	997.	85.5	0.3126	13.320	0.690	5.00	0.0000	7.07
24	TRIBUTARY 119	T	24.7									0.690			
25	UPPER TALARIK	J	24.7	10.28	0.776	4.02	1.000	999.	85.5	0.1206	13.319	5.682		0.1597	7.07
26	UPPER TALARIK	Q	24.5	10.28	0.776	4.02	1.000	999.	85.5	0.1206	13.319	5.720		0.0827	7.07
27	UPPER TALARIK	C	20.8	10.39	0.772	4.02	1.000	1001.	85.5	0.1269	13.318	6.025		0.0827	7.07
28	UPPER TALARIK	C	18.8	10.50	0.767	4.02	1.000	1003.	85.6	0.1164	13.317	6.190		0.0827	7.07
29	UPPER TALARIK	C	14.6	10.67	0.759	4.02	1.000	1006.	85.6	0.1340	13.315	6.539		0.0827	7.07
30	UPPER TALARIK	Q	14.4	10.67	0.759	4.02	1.000	1006.	85.6	0.1340	13.315	6.559		-0.2402	7.07
31	UPPER TALARIK	Q	9.8	10.67	0.759	4.02	1.000	1006.	85.6	0.1340	13.315	5.475		0.4191	7.07
32	UPPER TALARIK	C	9.1	10.88	0.750	4.02	1.000	1010.	85.7	0.1326	13.313	5.779		0.4191	7.07
33	UPPER TALARIK	Q	2.2	10.88	0.750	4.02	1.000	1010.	85.7	0.1326	13.313	8.663		0.1321	7.07
34	UPPER TALARIK	E	0.0									8.959			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.75	0.866	15.22	1.000	975.	30.5	0.3655	13.235	0.079	4.73	0.0565	8.67
2	UPPER TALARIK	Q	60.0	8.75	0.866	15.22	1.000	975.	30.5	0.3655	13.235	0.215		0.0595	8.67
3	UPPER TALARIK	C	59.7	9.05	0.851	15.22	1.000	981.	30.5	0.2958	13.234	0.234		0.0595	8.67
4	UPPER TALARIK	C	56.5	9.20	0.843	15.22	1.000	983.	30.5	0.2733	13.234	0.423		0.0595	8.67
5	UPPER TALARIK	C	55.4	9.27	0.840	15.22	1.000	985.	30.5	0.2275	13.234	0.487		0.0595	8.67
6	UPPER TALARIK	C	51.9	9.38	0.834	15.22	1.000	987.	30.5	0.2154	13.233	0.698		0.0595	8.67
7	UPPER TALARIK	Q	51.6	9.38	0.834	15.22	1.000	987.	30.5	0.2154	13.233	0.712		0.2773	6.02
8	UPPER TALARIK	C	45.9	9.45	0.831	15.22	1.000	988.	30.5	0.1708	13.233	2.294		0.2773	6.02
9	UPPER TALARIK	B	45.0									2.534			
10	TRIBUTARY 135	H	46.4	9.45	0.831	15.22	1.000	988.	30.5	0.2651	13.232	0.215	8.99	0.0000	6.02
11	TRIBUTARY 135	T	45.0									0.215			
12	UPPER TALARIK	J	45.0	9.52	0.827	15.22	1.000	989.	30.5	0.1707	13.232	2.749		0.2769	6.02
13	UPPER TALARIK	Q	44.6	9.52	0.827	15.22	1.000	989.	30.5	0.1707	13.232	2.865		0.0415	10.98
14	UPPER TALARIK	C	38.4	9.64	0.822	15.22	1.000	991.	30.6	0.1501	13.230	3.125		0.0415	10.98
15	UPPER TALARIK	Q	37.6	9.64	0.822	15.22	1.000	991.	30.6	0.1501	13.230	3.155		0.1326	10.98
16	UPPER TALARIK	C	35.8	9.72	0.818	15.22	1.000	993.	30.6	0.1020	13.230	3.397		0.1326	10.98
17	UPPER TALARIK	C	32.9	9.78	0.815	15.22	1.000	994.	30.6	0.1285	13.229	3.777		0.1326	10.98
18	UPPER TALARIK	C	32.3	9.86	0.811	15.22	1.000	995.	30.6	0.1298	13.229	3.858		0.1326	10.98
19	UPPER TALARIK	Q	29.3	9.86	0.811	15.22	1.000	995.	30.6	0.1298	13.229	4.260		0.1531	7.36
20	UPPER TALARIK	C	27.1	9.95	0.807	15.22	1.000	997.	30.6	0.0858	13.228	4.591		0.1531	7.36
21	UPPER TALARIK	C	25.0	9.97	0.806	15.22	1.000	997.	30.6	0.1216	13.228	4.914		0.1531	7.36
22	UPPER TALARIK	B	24.7									4.960			
23	TRIBUTARY 119	H	25.1	9.96	0.807	15.22	1.000	997.	30.6	0.3151	13.228	0.696	5.03	0.0000	7.36
24	TRIBUTARY 119	T	24.7									0.696			
25	UPPER TALARIK	J	24.7	10.04	0.803	15.22	1.000	999.	30.6	0.1216	13.227	5.656		0.1513	7.36
26	UPPER TALARIK	Q	24.5	10.04	0.803	15.22	1.000	999.	30.6	0.1216	13.227	5.692		0.0822	7.36
27	UPPER TALARIK	C	20.8	10.15	0.798	15.22	1.000	1001.	30.6	0.1278	13.226	5.995		0.0822	7.36
28	UPPER TALARIK	C	18.8	10.26	0.793	15.22	1.000	1003.	30.6	0.1173	13.225	6.160		0.0822	7.36
29	UPPER TALARIK	C	14.6	10.43	0.785	15.22	1.000	1006.	30.6	0.1352	13.224	6.506		0.0822	7.36
30	UPPER TALARIK	Q	14.4	10.43	0.785	15.22	1.000	1006.	30.6	0.1352	13.224	6.526		-0.2411	7.36
31	UPPER TALARIK	Q	9.8	10.43	0.785	15.22	1.000	1006.	30.6	0.1352	13.224	5.438		0.4184	7.36
32	UPPER TALARIK	C	9.1	10.64	0.775	15.22	1.000	1010.	30.6	0.1333	13.222	5.741		0.4184	7.36
33	UPPER TALARIK	Q	2.2	10.64	0.775	15.22	1.000	1010.	30.6	0.1333	13.222	8.620		0.1317	7.36
34	UPPER TALARIK	E	0.0									8.915			

YEAR: 2007 TIME PERIOD: 8-Sep PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.69	0.922	11.00	1.000	975.	26.0	0.3671	13.142	0.164	5.89	0.1167	8.52
2	UPPER TALARIK	Q	60.0	10.69	0.922	11.00	1.000	975.	26.0	0.3671	13.142	0.445		0.2051	8.52
3	UPPER TALARIK	C	59.7	10.99	0.906	11.00	1.000	981.	26.0	0.2980	13.141	0.509		0.2051	8.52
4	UPPER TALARIK	C	56.5	11.14	0.898	11.00	1.000	983.	26.0	0.2755	13.141	1.161		0.2051	8.52
5	UPPER TALARIK	C	55.4	11.21	0.895	11.00	1.000	985.	26.0	0.2304	13.141	1.384		0.2051	8.52
6	UPPER TALARIK	C	51.9	11.32	0.889	11.00	1.000	987.	26.0	0.2167	13.141	2.110		0.2051	8.52
7	UPPER TALARIK	Q	51.6	11.32	0.889	11.00	1.000	987.	26.0	0.2167	13.141	2.158		0.5381	6.49
8	UPPER TALARIK	C	45.9	11.39	0.885	11.00	1.000	988.	26.0	0.1717	13.140	5.229		0.5381	6.49
9	UPPER TALARIK	B	45.0									5.694			
10	TRIBUTARY 135	H	46.4	11.39	0.885	11.00	1.000	988.	26.0	0.2678	13.140	0.418	9.39	0.0000	6.49
11	TRIBUTARY 135	T	45.0									0.418			
12	UPPER TALARIK	J	45.0	11.46	0.881	11.00	1.000	989.	26.0	0.1716	13.139	6.112		0.5370	6.49
13	UPPER TALARIK	Q	44.6	11.46	0.881	11.00	1.000	989.	26.0	0.1716	13.139	6.337		-0.0521	10.98
14	UPPER TALARIK	C	38.4	11.58	0.876	11.00	1.000	991.	26.0	0.1509	13.138	6.010		-0.0521	10.98
15	UPPER TALARIK	Q	37.6	11.58	0.876	11.00	1.000	991.	26.0	0.1509	13.138	5.973		0.2554	10.98
16	UPPER TALARIK	C	35.8	11.66	0.871	11.00	1.000	993.	26.0	0.1032	13.138	6.439		0.2554	10.98
17	UPPER TALARIK	C	32.9	11.72	0.868	11.00	1.000	994.	26.0	0.1296	13.137	7.172		0.2554	10.98
18	UPPER TALARIK	C	32.3	11.80	0.864	11.00	1.000	995.	26.1	0.1308	13.137	7.328		0.2554	10.98
19	UPPER TALARIK	Q	29.3	11.80	0.864	11.00	1.000	995.	26.1	0.1308	13.137	8.102		0.2951	7.50
20	UPPER TALARIK	C	27.1	11.89	0.860	11.00	1.000	997.	26.1	0.0868	13.136	8.739		0.2951	7.50
21	UPPER TALARIK	C	25.0	11.91	0.858	11.00	1.000	997.	26.1	0.1226	13.136	9.363		0.2951	7.50
22	UPPER TALARIK	B	24.7									9.451			
23	TRIBUTARY 119	H	25.1	11.90	0.859	11.00	1.000	997.	26.1	0.3176	13.136	0.786	5.65	0.0000	7.50
24	TRIBUTARY 119	T	24.7									0.786			
25	UPPER TALARIK	J	24.7	11.98	0.855	11.00	1.000	999.	26.1	0.1226	13.135	10.237		0.2941	7.50
26	UPPER TALARIK	Q	24.5	11.98	0.855	11.00	1.000	999.	26.1	0.1226	13.135	10.307		0.1596	7.50
27	UPPER TALARIK	C	20.8	12.09	0.850	11.00	1.000	1001.	26.1	0.1287	13.134	10.896		0.1596	7.50
28	UPPER TALARIK	C	18.8	12.20	0.844	11.00	1.000	1003.	26.1	0.1182	13.133	11.215		0.1596	7.50
29	UPPER TALARIK	C	14.6	12.37	0.836	11.00	1.000	1006.	26.1	0.1364	13.132	11.888		0.1596	7.50
30	UPPER TALARIK	Q	14.4	12.37	0.836	11.00	1.000	1006.	26.1	0.1364	13.132	11.926		0.0660	7.50
31	UPPER TALARIK	Q	9.8	12.37	0.836	11.00	1.000	1006.	26.1	0.1364	13.132	12.224		0.4519	7.50
32	UPPER TALARIK	C	9.1	12.58	0.826	11.00	1.000	1010.	26.1	0.1339	13.130	12.552		0.4519	7.50
33	UPPER TALARIK	Q	2.2	12.58	0.826	11.00	1.000	1010.	26.1	0.1339	13.130	15.661		0.2406	7.50
34	UPPER TALARIK	E	0.0									16.200			

YEAR: 2007 TIME PERIOD: 9-Sep

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	10.08	0.894	4.98	1.000	975.	60.9	0.3687	13.050	0.129	5.98	0.0918	8.37
2	UPPER TALARIK	Q	60.0	10.08	0.894	4.98	1.000	975.	60.9	0.3687	13.050	0.350		0.1657	8.37
3	UPPER TALARIK	C	59.7	10.38	0.879	4.98	1.000	981.	60.9	0.3002	13.049	0.402		0.1657	8.37
4	UPPER TALARIK	C	56.5	10.53	0.871	4.98	1.000	983.	60.9	0.2776	13.049	0.928		0.1657	8.37
5	UPPER TALARIK	C	55.4	10.60	0.867	4.98	1.000	985.	60.9	0.2335	13.049	1.109		0.1657	8.37
6	UPPER TALARIK	C	51.9	10.71	0.862	4.98	1.000	987.	60.9	0.2181	13.048	1.695		0.1657	8.37
7	UPPER TALARIK	Q	51.6	10.71	0.862	4.98	1.000	987.	60.9	0.2181	13.048	1.734		0.5634	6.79
8	UPPER TALARIK	C	45.9	10.78	0.858	4.98	1.000	988.	60.9	0.1726	13.048	4.949		0.5634	6.79
9	UPPER TALARIK	B	45.0									5.436			
10	TRIBUTARY 135	H	46.4	10.78	0.858	4.98	1.000	988.	61.0	0.2706	13.048	0.438	9.48	0.0000	6.79
11	TRIBUTARY 135	T	45.0									0.438			
12	UPPER TALARIK	J	45.0	10.85	0.854	4.98	1.000	989.	61.0	0.1725	13.047	5.874		0.5609	6.79
13	UPPER TALARIK	Q	44.6	10.85	0.854	4.98	1.000	989.	61.0	0.1725	13.047	6.109		-0.0176	11.01
14	UPPER TALARIK	C	38.4	10.97	0.849	4.98	1.000	991.	61.0	0.1518	13.046	5.999		-0.0176	11.01
15	UPPER TALARIK	Q	37.6	10.97	0.849	4.98	1.000	991.	61.0	0.1518	13.046	5.986		0.2241	11.01
16	UPPER TALARIK	C	35.8	11.05	0.844	4.98	1.000	993.	61.0	0.1045	13.045	6.395		0.2241	11.01
17	UPPER TALARIK	C	32.9	11.11	0.842	4.98	1.000	994.	61.0	0.1307	13.045	7.038		0.2241	11.01
18	UPPER TALARIK	C	32.3	11.19	0.838	4.98	1.000	995.	61.0	0.1319	13.044	7.175		0.2241	11.01
19	UPPER TALARIK	Q	29.3	11.19	0.838	4.98	1.000	995.	61.0	0.1319	13.044	7.854		0.2590	7.53
20	UPPER TALARIK	C	27.1	11.28	0.833	4.98	1.000	997.	61.1	0.0879	13.044	8.413		0.2590	7.53
21	UPPER TALARIK	C	25.0	11.30	0.832	4.98	1.000	997.	61.1	0.1236	13.044	8.961		0.2590	7.53
22	UPPER TALARIK	B	24.7									9.038			
23	TRIBUTARY 119	H	25.1	11.29	0.833	4.98	1.000	997.	61.1	0.3202	13.044	0.727	5.13	0.0000	7.53
24	TRIBUTARY 119	T	24.7									0.727			
25	UPPER TALARIK	J	24.7	11.37	0.829	4.98	1.000	999.	61.1	0.1236	13.043	9.765		0.2563	7.53
26	UPPER TALARIK	Q	24.5	11.37	0.829	4.98	1.000	999.	61.1	0.1236	13.043	9.826		0.1514	7.53
27	UPPER TALARIK	C	20.8	11.48	0.824	4.98	1.000	1001.	61.1	0.1296	13.042	10.384		0.1514	7.53
28	UPPER TALARIK	C	18.8	11.59	0.819	4.98	1.000	1003.	61.1	0.1192	13.042	10.687		0.1514	7.53
29	UPPER TALARIK	C	14.6	11.76	0.810	4.98	1.000	1006.	61.1	0.1376	13.040	11.325		0.1514	7.53
30	UPPER TALARIK	Q	14.4	11.76	0.810	4.98	1.000	1006.	61.1	0.1376	13.040	11.361		0.0202	7.53
31	UPPER TALARIK	Q	9.8	11.76	0.810	4.98	1.000	1006.	61.1	0.1376	13.040	11.452		0.4567	7.53
32	UPPER TALARIK	C	9.1	11.97	0.800	4.98	1.000	1010.	61.2	0.1346	13.039	11.783		0.4567	7.53
33	UPPER TALARIK	Q	2.2	11.97	0.800	4.98	1.000	1010.	61.2	0.1346	13.039	14.926		0.2290	7.53
34	UPPER TALARIK	E	0.0									15.439			

YEAR: 2007 TIME PERIOD: 10-Sep PAGE NO. 1

NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.90	0.847	7.15	1.000	975.	103.0	0.3703	12.957	0.100	5.22	0.0710	8.23
2	UPPER TALARIK	Q	60.0	9.90	0.847	7.15	1.000	975.	103.0	0.3703	12.957	0.271		0.1142	8.23
3	UPPER TALARIK	C	59.7	10.20	0.832	7.15	1.000	981.	103.0	0.3024	12.956	0.307		0.1142	8.23
4	UPPER TALARIK	C	56.5	10.35	0.825	7.15	1.000	983.	103.0	0.2799	12.956	0.670		0.1142	8.23
5	UPPER TALARIK	C	55.4	10.42	0.822	7.15	1.000	985.	102.9	0.2368	12.956	0.794		0.1142	8.23
6	UPPER TALARIK	C	51.9	10.53	0.816	7.15	1.000	987.	103.0	0.2194	12.956	1.198		0.1142	8.23
7	UPPER TALARIK	Q	51.6	10.53	0.816	7.15	1.000	987.	103.0	0.2194	12.956	1.225		0.4681	6.87
8	UPPER TALARIK	C	45.9	10.60	0.813	7.15	1.000	988.	103.0	0.1735	12.955	3.897		0.4681	6.87
9	UPPER TALARIK	B	45.0									4.301			
10	TRIBUTARY 135	H	46.4	10.60	0.813	7.15	1.000	988.	103.0	0.2735	12.955	0.364	8.96	0.0000	6.87
11	TRIBUTARY 135	T	45.0									0.364			
12	UPPER TALARIK	J	45.0	10.67	0.809	7.15	1.000	989.	103.0	0.1734	12.955	4.665		0.4654	6.87
13	UPPER TALARIK	Q	44.6	10.67	0.809	7.15	1.000	989.	103.0	0.1734	12.955	4.860		-0.0054	11.09
14	UPPER TALARIK	C	38.4	10.79	0.804	7.15	1.000	991.	103.1	0.1527	12.954	4.826		-0.0054	11.09
15	UPPER TALARIK	Q	37.6	10.79	0.804	7.15	1.000	991.	103.1	0.1527	12.954	4.822		0.1664	11.09
16	UPPER TALARIK	C	35.8	10.87	0.800	7.15	1.000	993.	103.1	0.1058	12.953	5.125		0.1664	11.09
17	UPPER TALARIK	C	32.9	10.93	0.797	7.15	1.000	994.	103.1	0.1319	12.953	5.603		0.1664	11.09
18	UPPER TALARIK	C	32.3	11.01	0.794	7.15	1.000	995.	103.2	0.1330	12.952	5.705		0.1664	11.09
19	UPPER TALARIK	Q	29.3	11.01	0.794	7.15	1.000	995.	103.2	0.1330	12.952	6.209		0.1923	7.52
20	UPPER TALARIK	C	27.1	11.10	0.789	7.15	1.000	997.	103.2	0.0890	12.952	6.624		0.1923	7.52
21	UPPER TALARIK	C	25.0	11.12	0.788	7.15	1.000	997.	103.2	0.1247	12.952	7.031		0.1923	7.52
22	UPPER TALARIK	B	24.7									7.088			
23	TRIBUTARY 119	H	25.1	11.11	0.789	7.15	1.000	997.	103.2	0.3229	12.952	0.710	5.15	0.0000	7.52
24	TRIBUTARY 119	T	24.7									0.710			
25	UPPER TALARIK	J	24.7	11.19	0.785	7.15	1.000	999.	103.2	0.1247	12.951	7.798		0.1933	7.52
26	UPPER TALARIK	Q	24.5	11.19	0.785	7.15	1.000	999.	103.2	0.1247	12.951	7.844		0.1177	7.52
27	UPPER TALARIK	C	20.8	11.30	0.780	7.15	1.000	1001.	103.3	0.1305	12.950	8.278		0.1177	7.52
28	UPPER TALARIK	C	18.8	11.41	0.775	7.15	1.000	1003.	103.3	0.1202	12.950	8.513		0.1177	7.52
29	UPPER TALARIK	C	14.6	11.58	0.768	7.15	1.000	1006.	103.3	0.1389	12.949	9.010		0.1177	7.52
30	UPPER TALARIK	Q	14.4	11.58	0.768	7.15	1.000	1006.	103.3	0.1389	12.949	9.038		-0.1365	7.52
31	UPPER TALARIK	Q	9.8	11.58	0.768	7.15	1.000	1006.	103.3	0.1389	12.949	8.422		0.4573	7.52
32	UPPER TALARIK	C	9.1	11.79	0.758	7.15	1.000	1010.	103.4	0.1353	12.947	8.754		0.4573	7.52
33	UPPER TALARIK	Q	2.2	11.79	0.758	7.15	1.000	1010.	103.4	0.1353	12.947	11.900		0.1821	7.52
34	UPPER TALARIK	E	0.0									12.308			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.51	0.856	20.76	1.000	975.	25.9	0.3720	12.864	0.091	5.05	0.0644	8.09
2	UPPER TALARIK	Q	60.0	8.51	0.856	20.76	1.000	975.	25.9	0.3720	12.864	0.246		0.0879	8.09
3	UPPER TALARIK	C	59.7	8.81	0.842	20.76	1.000	981.	25.9	0.3047	12.864	0.274		0.0879	8.09
4	UPPER TALARIK	C	56.5	8.96	0.834	20.76	1.000	983.	25.9	0.2821	12.864	0.553		0.0879	8.09
5	UPPER TALARIK	C	55.4	9.03	0.831	20.76	1.000	985.	25.9	0.2403	12.864	0.648		0.0879	8.09
6	UPPER TALARIK	C	51.9	9.14	0.825	20.76	1.000	987.	25.9	0.2208	12.863	0.959		0.0879	8.09
7	UPPER TALARIK	Q	51.6	9.14	0.825	20.76	1.000	987.	25.9	0.2208	12.863	0.980		0.3981	6.86
8	UPPER TALARIK	C	45.9	9.21	0.822	20.76	1.000	988.	26.0	0.1744	12.863	3.252		0.3981	6.86
9	UPPER TALARIK	B	45.0									3.596			
10	TRIBUTARY 135	H	46.4	9.21	0.822	20.76	1.000	988.	26.0	0.2764	12.863	0.309	8.62	0.0000	6.86
11	TRIBUTARY 135	T	45.0									0.309			
12	UPPER TALARIK	J	45.0	9.28	0.818	20.76	1.000	989.	26.0	0.1743	12.862	3.905		0.3986	6.86
13	UPPER TALARIK	Q	44.6	9.28	0.818	20.76	1.000	989.	26.0	0.1743	12.862	4.072		-0.0056	11.26
14	UPPER TALARIK	C	38.4	9.40	0.813	20.76	1.000	991.	26.0	0.1536	12.861	4.037		-0.0056	11.26
15	UPPER TALARIK	Q	37.6	9.40	0.813	20.76	1.000	991.	26.0	0.1536	12.861	4.033		0.1313	11.26
16	UPPER TALARIK	C	35.8	9.48	0.809	20.76	1.000	993.	26.0	0.1072	12.861	4.272		0.1313	11.26
17	UPPER TALARIK	C	32.9	9.54	0.806	20.76	1.000	994.	26.0	0.1330	12.861	4.649		0.1313	11.26
18	UPPER TALARIK	C	32.3	9.62	0.802	20.76	1.000	995.	26.0	0.1341	12.860	4.729		0.1313	11.26
19	UPPER TALARIK	Q	29.3	9.62	0.802	20.76	1.000	995.	26.0	0.1341	12.860	5.127		0.1516	7.50
20	UPPER TALARIK	C	27.1	9.71	0.798	20.76	1.000	997.	26.0	0.0902	12.860	5.454		0.1516	7.50
21	UPPER TALARIK	C	25.0	9.73	0.797	20.76	1.000	997.	26.0	0.1258	12.860	5.775		0.1516	7.50
22	UPPER TALARIK	B	24.7									5.820			
23	TRIBUTARY 119	H	25.1	9.72	0.798	20.76	1.000	997.	26.0	0.3256	12.860	0.714	5.10	0.0000	7.50
24	TRIBUTARY 119	T	24.7									0.714			
25	UPPER TALARIK	J	24.7	9.80	0.794	20.76	1.000	999.	26.0	0.1258	12.859	6.534		0.1513	7.50
26	UPPER TALARIK	Q	24.5	9.80	0.794	20.76	1.000	999.	26.0	0.1258	12.859	6.570		0.0965	7.50
27	UPPER TALARIK	C	20.8	9.91	0.789	20.76	1.000	1001.	26.0	0.1314	12.858	6.926		0.0965	7.50
28	UPPER TALARIK	C	18.8	10.02	0.784	20.76	1.000	1003.	26.0	0.1212	12.858	7.119		0.0965	7.50
29	UPPER TALARIK	C	14.6	10.19	0.776	20.76	1.000	1006.	26.0	0.1402	12.857	7.526		0.0965	7.50
30	UPPER TALARIK	Q	14.4	10.19	0.776	20.76	1.000	1006.	26.0	0.1402	12.857	7.549		-0.2074	7.50
31	UPPER TALARIK	Q	9.8	10.19	0.776	20.76	1.000	1006.	26.0	0.1402	12.857	6.613		0.4397	7.50
32	UPPER TALARIK	C	9.1	10.40	0.767	20.76	1.000	1010.	26.1	0.1360	12.855	6.932		0.4397	7.50
33	UPPER TALARIK	Q	2.2	10.40	0.767	20.76	1.000	1010.	26.1	0.1360	12.855	9.957		0.1522	7.50
34	UPPER TALARIK	E	0.0									10.298			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	9.08	0.847	8.68	1.000	975.	112.6	0.3737	12.772	0.174	5.88	0.1246	7.90
2	UPPER TALARIK	Q	60.0	9.08	0.847	8.68	1.000	975.	112.6	0.3737	12.772	0.474		0.2099	7.90
3	UPPER TALARIK	C	59.7	9.38	0.832	8.68	1.000	981.	112.6	0.3070	12.771	0.540		0.2099	7.90
4	UPPER TALARIK	C	56.5	9.53	0.825	8.68	1.000	983.	112.6	0.2845	12.771	1.207		0.2099	7.90
5	UPPER TALARIK	C	55.4	9.60	0.822	8.68	1.000	985.	112.6	0.2439	12.771	1.435		0.2099	7.90
6	UPPER TALARIK	C	51.9	9.71	0.816	8.68	1.000	987.	112.6	0.2223	12.771	2.178		0.2099	7.90
7	UPPER TALARIK	Q	51.6	9.71	0.816	8.68	1.000	987.	112.6	0.2223	12.771	2.227		0.7621	6.79
8	UPPER TALARIK	C	45.9	9.78	0.813	8.68	1.000	988.	112.7	0.1754	12.770	6.577		0.7621	6.79
9	UPPER TALARIK	B	45.0									7.235			
10	TRIBUTARY 135	H	46.4	9.78	0.813	8.68	1.000	988.	112.7	0.2794	12.770	0.592	8.96	0.0000	6.79
11	TRIBUTARY 135	T	45.0									0.592			
12	UPPER TALARIK	J	45.0	9.85	0.809	8.68	1.000	989.	112.7	0.1752	12.770	7.827		0.7590	6.79
13	UPPER TALARIK	Q	44.6	9.85	0.809	8.68	1.000	989.	112.7	0.1752	12.770	8.145		-0.0784	11.49
14	UPPER TALARIK	C	38.4	9.97	0.804	8.68	1.000	991.	112.8	0.1545	12.769	7.653		-0.0784	11.49
15	UPPER TALARIK	Q	37.6	9.97	0.804	8.68	1.000	991.	112.8	0.1545	12.769	7.597		0.2463	11.49
16	UPPER TALARIK	C	35.8	10.05	0.800	8.68	1.000	993.	112.8	0.1086	12.769	8.046		0.2463	11.49
17	UPPER TALARIK	C	32.9	10.11	0.797	8.68	1.000	994.	112.8	0.1342	12.768	8.753		0.2463	11.49
18	UPPER TALARIK	C	32.3	10.19	0.794	8.68	1.000	995.	112.8	0.1352	12.768	8.904		0.2463	11.49
19	UPPER TALARIK	Q	29.3	10.19	0.794	8.68	1.000	995.	112.8	0.1352	12.768	9.650		0.2844	7.47
20	UPPER TALARIK	C	27.1	10.28	0.789	8.68	1.000	997.	112.9	0.0915	12.767	10.264		0.2844	7.47
21	UPPER TALARIK	C	25.0	10.30	0.788	8.68	1.000	997.	112.9	0.1269	12.767	10.865		0.2844	7.47
22	UPPER TALARIK	B	24.7									10.950			
23	TRIBUTARY 119	H	25.1	10.29	0.789	8.68	1.000	997.	112.9	0.3284	12.767	0.762	5.48	0.0000	7.47
24	TRIBUTARY 119	T	24.7									0.762			
25	UPPER TALARIK	J	24.7	10.37	0.785	8.68	1.000	999.	112.9	0.1269	12.767	11.712		0.2857	7.47
26	UPPER TALARIK	Q	24.5	10.37	0.785	8.68	1.000	999.	112.9	0.1269	12.767	11.780		0.1851	7.47
27	UPPER TALARIK	C	20.8	10.48	0.780	8.68	1.000	1001.	113.0	0.1324	12.766	12.463		0.1851	7.47
28	UPPER TALARIK	C	18.8	10.59	0.775	8.68	1.000	1003.	113.0	0.1223	12.766	12.832		0.1851	7.47
29	UPPER TALARIK	C	14.6	10.76	0.768	8.68	1.000	1006.	113.1	0.1415	12.765	13.613		0.1851	7.47
30	UPPER TALARIK	Q	14.4	10.76	0.768	8.68	1.000	1006.	113.1	0.1415	12.765	13.657		0.2234	7.47
31	UPPER TALARIK	Q	9.8	10.76	0.768	8.68	1.000	1006.	113.1	0.1415	12.765	14.665		0.4269	7.47
32	UPPER TALARIK	C	9.1	10.97	0.758	8.68	1.000	1010.	113.2	0.1367	12.764	14.975		0.4269	7.47
33	UPPER TALARIK	Q	2.2	10.97	0.758	8.68	1.000	1010.	113.2	0.1367	12.764	17.912		0.2754	7.47
34	UPPER TALARIK	E	0.0									18.529			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.40	0.903	4.85	1.000	975.	43.8	0.3755	12.679	0.133	6.01	0.0947	7.63
2	UPPER TALARIK	Q	60.0	7.40	0.903	4.85	1.000	975.	43.8	0.3755	12.679	0.361		0.1248	7.63
3	UPPER TALARIK	C	59.7	7.70	0.888	4.85	1.000	981.	43.8	0.3094	12.679	0.400		0.1248	7.63
4	UPPER TALARIK	C	56.5	7.85	0.880	4.85	1.000	983.	43.8	0.2869	12.678	0.796		0.1248	7.63
5	UPPER TALARIK	C	55.4	7.92	0.876	4.85	1.000	985.	43.7	0.2476	12.678	0.932		0.1248	7.63
6	UPPER TALARIK	C	51.9	8.03	0.871	4.85	1.000	987.	43.8	0.2238	12.678	1.374		0.1248	7.63
7	UPPER TALARIK	Q	51.6	8.03	0.871	4.85	1.000	987.	43.8	0.2238	12.678	1.403		0.5966	6.59
8	UPPER TALARIK	C	45.9	8.10	0.867	4.85	1.000	988.	43.8	0.1763	12.678	4.808		0.5966	6.59
9	UPPER TALARIK	B	45.0									5.323			
10	TRIBUTARY 135	H	46.4	8.10	0.867	4.85	1.000	988.	43.8	0.2826	12.678	0.463	8.75	0.0000	6.59
11	TRIBUTARY 135	T	45.0									0.463			
12	UPPER TALARIK	J	45.0	8.17	0.863	4.85	1.000	989.	43.8	0.1762	12.677	5.786		0.5967	6.59
13	UPPER TALARIK	Q	44.6	8.17	0.863	4.85	1.000	989.	43.8	0.1762	12.677	6.036		-0.0229	11.77
14	UPPER TALARIK	C	38.4	8.29	0.858	4.85	1.000	991.	43.8	0.1554	12.677	5.892		-0.0229	11.77
15	UPPER TALARIK	Q	37.6	8.29	0.858	4.85	1.000	991.	43.8	0.1554	12.677	5.876		0.2038	11.77
16	UPPER TALARIK	C	35.8	8.37	0.853	4.85	1.000	993.	43.8	0.1100	12.676	6.248		0.2038	11.77
17	UPPER TALARIK	C	32.9	8.43	0.851	4.85	1.000	994.	43.8	0.1355	12.676	6.833		0.2038	11.77
18	UPPER TALARIK	C	32.3	8.51	0.847	4.85	1.000	995.	43.8	0.1364	12.676	6.958		0.2038	11.77
19	UPPER TALARIK	Q	29.3	8.51	0.847	4.85	1.000	995.	43.8	0.1364	12.676	7.575		0.2354	7.42
20	UPPER TALARIK	C	27.1	8.60	0.842	4.85	1.000	997.	43.9	0.0928	12.675	8.083		0.2354	7.42
21	UPPER TALARIK	C	25.0	8.62	0.841	4.85	1.000	997.	43.9	0.1280	12.675	8.581		0.2354	7.42
22	UPPER TALARIK	B	24.7									8.651			
23	TRIBUTARY 119	H	25.1	8.61	0.842	4.85	1.000	997.	43.9	0.3312	12.675	0.723	4.89	0.0000	7.42
24	TRIBUTARY 119	T	24.7									0.723			
25	UPPER TALARIK	J	24.7	8.69	0.838	4.85	1.000	999.	43.9	0.1280	12.675	9.374		0.2353	7.42
26	UPPER TALARIK	Q	24.5	8.69	0.838	4.85	1.000	999.	43.9	0.1280	12.675	9.430		0.1446	7.42
27	UPPER TALARIK	C	20.8	8.80	0.833	4.85	1.000	1001.	43.9	0.1333	12.674	9.963		0.1446	7.42
28	UPPER TALARIK	C	18.8	8.91	0.827	4.85	1.000	1003.	43.9	0.1233	12.674	10.252		0.1446	7.42
29	UPPER TALARIK	C	14.6	9.08	0.819	4.85	1.000	1006.	43.9	0.1429	12.673	10.861		0.1446	7.42
30	UPPER TALARIK	Q	14.4	9.08	0.819	4.85	1.000	1006.	43.9	0.1429	12.673	10.896		-0.0155	7.42
31	UPPER TALARIK	Q	9.8	9.08	0.819	4.85	1.000	1006.	43.9	0.1429	12.673	10.826		0.4595	7.42
32	UPPER TALARIK	C	9.1	9.29	0.809	4.85	1.000	1010.	44.0	0.1375	12.672	11.159		0.4595	7.42
33	UPPER TALARIK	Q	2.2	9.29	0.809	4.85	1.000	1010.	44.0	0.1375	12.672	14.321		0.2196	7.42
34	UPPER TALARIK	E	0.0									14.813			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.99	0.847	3.69	1.000	975.	87.4	0.3772	12.586	0.154	5.57	0.1101	7.30
2	UPPER TALARIK	Q	60.0	6.99	0.847	3.69	1.000	975.	87.4	0.3772	12.586	0.419		0.1367	7.30
3	UPPER TALARIK	C	59.7	7.29	0.832	3.69	1.000	981.	87.4	0.3119	12.586	0.462		0.1367	7.30
4	UPPER TALARIK	C	56.5	7.44	0.825	3.69	1.000	983.	87.4	0.2893	12.586	0.896		0.1367	7.30
5	UPPER TALARIK	C	55.4	7.51	0.822	3.69	1.000	985.	87.4	0.2515	12.586	1.045		0.1367	7.30
6	UPPER TALARIK	C	51.9	7.62	0.816	3.69	1.000	987.	87.4	0.2253	12.585	1.529		0.1367	7.30
7	UPPER TALARIK	Q	51.6	7.62	0.816	3.69	1.000	987.	87.4	0.2253	12.585	1.561		0.5880	6.22
8	UPPER TALARIK	C	45.9	7.69	0.813	3.69	1.000	988.	87.5	0.1773	12.585	4.917		0.5880	6.22
9	UPPER TALARIK	B	45.0									5.425			
10	TRIBUTARY 135	H	46.4	7.69	0.813	3.69	1.000	988.	87.5	0.2858	12.585	0.457	8.25	0.0000	6.22
11	TRIBUTARY 135	T	45.0									0.457			
12	UPPER TALARIK	J	45.0	7.76	0.809	3.69	1.000	989.	87.5	0.1772	12.585	5.882		0.5847	6.22
13	UPPER TALARIK	Q	44.6	7.76	0.809	3.69	1.000	989.	87.5	0.1772	12.585	6.127		-0.0435	12.05
14	UPPER TALARIK	C	38.4	7.88	0.804	3.69	1.000	991.	87.6	0.1564	12.584	5.854		-0.0435	12.05
15	UPPER TALARIK	Q	37.6	7.88	0.804	3.69	1.000	991.	87.6	0.1564	12.584	5.823		0.1963	12.05
16	UPPER TALARIK	C	35.8	7.96	0.800	3.69	1.000	993.	87.6	0.1116	12.584	6.181		0.1963	12.05
17	UPPER TALARIK	C	32.9	8.02	0.797	3.69	1.000	994.	87.6	0.1368	12.584	6.745		0.1963	12.05
18	UPPER TALARIK	C	32.3	8.10	0.794	3.69	1.000	995.	87.6	0.1376	12.583	6.864		0.1963	12.05
19	UPPER TALARIK	Q	29.3	8.10	0.794	3.69	1.000	995.	87.6	0.1376	12.583	7.459		0.2269	7.30
20	UPPER TALARIK	C	27.1	8.19	0.789	3.69	1.000	997.	87.7	0.0942	12.583	7.949		0.2269	7.30
21	UPPER TALARIK	C	25.0	8.21	0.788	3.69	1.000	997.	87.7	0.1292	12.583	8.428		0.2269	7.30
22	UPPER TALARIK	B	24.7									8.496			
23	TRIBUTARY 119	H	25.1	8.20	0.789	3.69	1.000	997.	87.7	0.3341	12.583	0.738	4.83	0.0000	7.30
24	TRIBUTARY 119	T	24.7									0.738			
25	UPPER TALARIK	J	24.7	8.28	0.785	3.69	1.000	999.	87.7	0.1292	12.583	9.234		0.2269	7.30
26	UPPER TALARIK	Q	24.5	8.28	0.785	3.69	1.000	999.	87.7	0.1292	12.583	9.288		0.1421	7.30
27	UPPER TALARIK	C	20.8	8.39	0.780	3.69	1.000	1001.	87.7	0.1343	12.582	9.812		0.1421	7.30
28	UPPER TALARIK	C	18.8	8.50	0.776	3.69	1.000	1003.	87.8	0.1244	12.582	10.096		0.1421	7.30
29	UPPER TALARIK	C	14.6	8.67	0.768	3.69	1.000	1006.	87.8	0.1443	12.581	10.695		0.1421	7.30
30	UPPER TALARIK	Q	14.4	8.67	0.768	3.69	1.000	1006.	87.8	0.1443	12.581	10.729		-0.0275	7.30
31	UPPER TALARIK	Q	9.8	8.67	0.768	3.69	1.000	1006.	87.8	0.1443	12.581	10.605		0.4600	7.30
32	UPPER TALARIK	C	9.1	8.88	0.758	3.69	1.000	1010.	87.9	0.1382	12.580	10.939		0.4600	7.30
33	UPPER TALARIK	Q	2.2	8.88	0.758	3.69	1.000	1010.	87.9	0.1382	12.580	14.104		0.2165	7.30
34	UPPER TALARIK	E	0.0									14.589			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.21	0.809	8.18	1.000	975.	132.8	0.3790	12.493	0.112	4.88	0.0794	7.00
2	UPPER TALARIK	Q	60.0	6.21	0.809	8.18	1.000	975.	132.8	0.3790	12.493	0.303		0.0897	7.00
3	UPPER TALARIK	C	59.7	6.51	0.795	8.18	1.000	981.	132.8	0.3144	12.493	0.331		0.0897	7.00
4	UPPER TALARIK	C	56.5	6.66	0.788	8.18	1.000	983.	132.8	0.2919	12.493	0.616		0.0897	7.00
5	UPPER TALARIK	C	55.4	6.73	0.785	8.18	1.000	985.	132.8	0.2555	12.493	0.714		0.0897	7.00
6	UPPER TALARIK	C	51.9	6.84	0.780	8.18	1.000	987.	132.8	0.2268	12.493	1.031		0.0897	7.00
7	UPPER TALARIK	Q	51.6	6.84	0.780	8.18	1.000	987.	132.8	0.2268	12.493	1.052		0.4896	5.75
8	UPPER TALARIK	C	45.9	6.91	0.777	8.18	1.000	988.	132.9	0.1783	12.492	3.846		0.4896	5.75
9	UPPER TALARIK	B	45.0									4.269			
10	TRIBUTARY 135	H	46.4	6.91	0.777	8.18	1.000	988.	132.9	0.2890	12.492	0.380	7.59	0.0000	5.75
11	TRIBUTARY 135	T	45.0									0.380			
12	UPPER TALARIK	J	45.0	6.98	0.773	8.18	1.000	989.	132.9	0.1782	12.492	4.649		0.4893	5.75
13	UPPER TALARIK	Q	44.6	6.98	0.773	8.18	1.000	989.	132.9	0.1782	12.492	4.854		-0.0157	12.36
14	UPPER TALARIK	C	38.4	7.10	0.768	8.18	1.000	991.	133.0	0.1573	12.492	4.755		-0.0157	12.36
15	UPPER TALARIK	Q	37.6	7.10	0.768	8.18	1.000	991.	133.0	0.1573	12.492	4.744		0.1579	12.36
16	UPPER TALARIK	C	35.8	7.18	0.765	8.18	1.000	993.	133.0	0.1132	12.491	5.032		0.1579	12.36
17	UPPER TALARIK	C	32.9	7.24	0.762	8.18	1.000	994.	133.1	0.1381	12.491	5.485		0.1579	12.36
18	UPPER TALARIK	C	32.3	7.32	0.758	8.18	1.000	995.	133.1	0.1388	12.491	5.582		0.1579	12.36
19	UPPER TALARIK	Q	29.3	7.32	0.758	8.18	1.000	995.	133.1	0.1388	12.491	6.060		0.1825	7.12
20	UPPER TALARIK	C	27.1	7.41	0.754	8.18	1.000	997.	133.2	0.0956	12.491	6.454		0.1825	7.12
21	UPPER TALARIK	C	25.0	7.43	0.753	8.18	1.000	997.	133.2	0.1304	12.491	6.840		0.1825	7.12
22	UPPER TALARIK	B	24.7									6.894			
23	TRIBUTARY 119	H	25.1	7.42	0.754	8.18	1.000	997.	133.2	0.3371	12.491	0.709	4.55	0.0000	7.12
24	TRIBUTARY 119	T	24.7									0.709			
25	UPPER TALARIK	J	24.7	7.50	0.750	8.18	1.000	999.	133.2	0.1304	12.490	7.603		0.1807	7.12
26	UPPER TALARIK	Q	24.5	7.50	0.750	8.18	1.000	999.	133.2	0.1304	12.490	7.646		0.1144	7.12
27	UPPER TALARIK	C	20.8	7.61	0.746	8.18	1.000	1001.	133.3	0.1353	12.490	8.068		0.1144	7.12
28	UPPER TALARIK	C	18.8	7.72	0.741	8.18	1.000	1003.	133.3	0.1256	12.490	8.296		0.1144	7.12
29	UPPER TALARIK	C	14.6	7.89	0.734	8.18	1.000	1006.	133.4	0.1458	12.489	8.779		0.1144	7.12
30	UPPER TALARIK	Q	14.4	7.89	0.734	8.18	1.000	1006.	133.4	0.1458	12.489	8.806		-0.1491	7.12
31	UPPER TALARIK	Q	9.8	7.89	0.734	8.18	1.000	1006.	133.4	0.1458	12.489	8.133		0.4556	7.12
32	UPPER TALARIK	C	9.1	8.10	0.725	8.18	1.000	1010.	133.5	0.1390	12.488	8.463		0.4556	7.12
33	UPPER TALARIK	Q	2.2	8.10	0.725	8.18	1.000	1010.	133.5	0.1390	12.488	11.598		0.1777	7.12
34	UPPER TALARIK	E	0.0									11.996			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.57	0.800	5.97	1.000	975.	110.4	0.3809	12.400	0.099	4.54	0.0710	6.82
2	UPPER TALARIK	Q	60.0	7.57	0.800	5.97	1.000	975.	110.4	0.3809	12.400	0.270		0.0727	6.82
3	UPPER TALARIK	C	59.7	7.87	0.786	5.97	1.000	981.	110.4	0.3170	12.400	0.293		0.0727	6.82
4	UPPER TALARIK	C	56.5	8.02	0.779	5.97	1.000	983.	110.4	0.2945	12.400	0.524		0.0727	6.82
5	UPPER TALARIK	C	55.4	8.09	0.776	5.97	1.000	985.	110.4	0.2597	12.400	0.603		0.0727	6.82
6	UPPER TALARIK	C	51.9	8.20	0.771	5.97	1.000	987.	110.4	0.2284	12.400	0.860		0.0727	6.82
7	UPPER TALARIK	Q	51.6	8.20	0.771	5.97	1.000	987.	110.4	0.2284	12.400	0.877		0.4266	5.30
8	UPPER TALARIK	C	45.9	8.27	0.768	5.97	1.000	988.	110.5	0.1793	12.400	3.311		0.4266	5.30
9	UPPER TALARIK	B	45.0									3.680			
10	TRIBUTARY 135	H	46.4	8.27	0.768	5.97	1.000	988.	110.5	0.2924	12.400	0.331	7.44	0.0000	5.30
11	TRIBUTARY 135	T	45.0									0.331			
12	UPPER TALARIK	J	45.0	8.34	0.764	5.97	1.000	989.	110.5	0.1792	12.400	4.011		0.4248	5.30
13	UPPER TALARIK	Q	44.6	8.34	0.764	5.97	1.000	989.	110.5	0.1792	12.400	4.189		-0.0116	12.69
14	UPPER TALARIK	C	38.4	8.46	0.759	5.97	1.000	991.	110.6	0.1583	12.399	4.116		-0.0116	12.69
15	UPPER TALARIK	Q	37.6	8.46	0.759	5.97	1.000	991.	110.6	0.1583	12.399	4.108		0.1225	12.69
16	UPPER TALARIK	C	35.8	8.54	0.756	5.97	1.000	993.	110.6	0.1148	12.399	4.331		0.1225	12.69
17	UPPER TALARIK	C	32.9	8.60	0.753	5.97	1.000	994.	110.6	0.1394	12.399	4.683		0.1225	12.69
18	UPPER TALARIK	C	32.3	8.68	0.750	5.97	1.000	995.	110.7	0.1401	12.399	4.758		0.1225	12.69
19	UPPER TALARIK	Q	29.3	8.68	0.750	5.97	1.000	995.	110.7	0.1401	12.399	5.129		0.1413	6.92
20	UPPER TALARIK	C	27.1	8.77	0.746	5.97	1.000	997.	110.7	0.0971	12.398	5.434		0.1413	6.92
21	UPPER TALARIK	C	25.0	8.79	0.745	5.97	1.000	997.	110.7	0.1316	12.398	5.733		0.1413	6.92
22	UPPER TALARIK	B	24.7									5.775			
23	TRIBUTARY 119	H	25.1	8.78	0.745	5.97	1.000	997.	110.7	0.3402	12.398	0.704	4.76	0.0000	6.92
24	TRIBUTARY 119	T	24.7									0.704			
25	UPPER TALARIK	J	24.7	8.86	0.742	5.97	1.000	999.	110.7	0.1316	12.398	6.479		0.1429	6.92
26	UPPER TALARIK	Q	24.5	8.86	0.742	5.97	1.000	999.	110.7	0.1316	12.398	6.513		0.0957	6.92
27	UPPER TALARIK	C	20.8	8.97	0.737	5.97	1.000	1001.	110.8	0.1363	12.398	6.866		0.0957	6.92
28	UPPER TALARIK	C	18.8	9.08	0.732	5.97	1.000	1003.	110.9	0.1267	12.397	7.057		0.0957	6.92
29	UPPER TALARIK	C	14.6	9.25	0.725	5.97	1.000	1006.	110.9	0.1473	12.397	7.460		0.0957	6.92
30	UPPER TALARIK	Q	14.4	9.25	0.725	5.97	1.000	1006.	110.9	0.1473	12.397	7.483		-0.2101	6.92
31	UPPER TALARIK	Q	9.8	9.25	0.725	5.97	1.000	1006.	110.9	0.1473	12.397	6.535		0.4386	6.92
32	UPPER TALARIK	C	9.1	9.46	0.716	5.97	1.000	1010.	111.0	0.1397	12.396	6.853		0.4386	6.92
33	UPPER TALARIK	Q	2.2	9.46	0.716	5.97	1.000	1010.	111.0	0.1397	12.396	9.871		0.1509	6.92
34	UPPER TALARIK	E	0.0									10.209			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.03	0.847	4.40	1.000	975.	62.3	0.3828	12.308	0.096	4.54	0.0690	6.78
2	UPPER TALARIK	Q	60.0	7.03	0.847	4.40	1.000	975.	62.3	0.3828	12.308	0.262		0.0654	6.78
3	UPPER TALARIK	C	59.7	7.33	0.832	4.40	1.000	981.	62.3	0.3196	12.307	0.283		0.0654	6.78
4	UPPER TALARIK	C	56.5	7.48	0.825	4.40	1.000	983.	62.3	0.2971	12.307	0.490		0.0654	6.78
5	UPPER TALARIK	C	55.4	7.55	0.822	4.40	1.000	985.	62.3	0.2641	12.307	0.561		0.0654	6.78
6	UPPER TALARIK	C	51.9	7.66	0.816	4.40	1.000	987.	62.3	0.2300	12.307	0.793		0.0654	6.78
7	UPPER TALARIK	Q	51.6	7.66	0.816	4.40	1.000	987.	62.3	0.2300	12.307	0.808		0.3876	4.90
8	UPPER TALARIK	C	45.9	7.73	0.813	4.40	1.000	988.	62.3	0.1803	12.307	3.020		0.3876	4.90
9	UPPER TALARIK	B	45.0									3.355			
10	TRIBUTARY 135	H	46.4	7.73	0.813	4.40	1.000	988.	62.3	0.2959	12.307	0.301	7.68	0.0000	4.90
11	TRIBUTARY 135	T	45.0									0.301			
12	UPPER TALARIK	J	45.0	7.80	0.809	4.40	1.000	989.	62.3	0.1802	12.307	3.656		0.3866	4.90
13	UPPER TALARIK	Q	44.6	7.80	0.809	4.40	1.000	989.	62.3	0.1802	12.307	3.818		-0.0037	13.02
14	UPPER TALARIK	C	38.4	7.92	0.804	4.40	1.000	991.	62.4	0.1593	12.307	3.795		-0.0037	13.02
15	UPPER TALARIK	Q	37.6	7.92	0.804	4.40	1.000	991.	62.4	0.1593	12.307	3.792		0.1106	13.02
16	UPPER TALARIK	C	35.8	8.00	0.800	4.40	1.000	993.	62.4	0.1166	12.306	3.994		0.1106	13.02
17	UPPER TALARIK	C	32.9	8.06	0.797	4.40	1.000	994.	62.4	0.1408	12.306	4.311		0.1106	13.02
18	UPPER TALARIK	C	32.3	8.14	0.794	4.40	1.000	995.	62.4	0.1414	12.306	4.379		0.1106	13.02
19	UPPER TALARIK	Q	29.3	8.14	0.794	4.40	1.000	995.	62.4	0.1414	12.306	4.714		0.1280	6.70
20	UPPER TALARIK	C	27.1	8.23	0.789	4.40	1.000	997.	62.4	0.0987	12.306	4.990		0.1280	6.70
21	UPPER TALARIK	C	25.0	8.25	0.788	4.40	1.000	997.	62.4	0.1329	12.306	5.261		0.1280	6.70
22	UPPER TALARIK	B	24.7									5.299			
23	TRIBUTARY 119	H	25.1	8.24	0.789	4.40	1.000	997.	62.4	0.3433	12.306	0.702	4.67	0.0000	6.70
24	TRIBUTARY 119	T	24.7									0.702			
25	UPPER TALARIK	J	24.7	8.32	0.785	4.40	1.000	999.	62.5	0.1329	12.306	6.001		0.1261	6.70
26	UPPER TALARIK	Q	24.5	8.32	0.785	4.40	1.000	999.	62.5	0.1329	12.306	6.031		0.0879	6.70
27	UPPER TALARIK	C	20.8	8.43	0.780	4.40	1.000	1001.	62.5	0.1374	12.306	6.355		0.0879	6.70
28	UPPER TALARIK	C	18.8	8.54	0.776	4.40	1.000	1003.	62.5	0.1279	12.305	6.531		0.0879	6.70
29	UPPER TALARIK	C	14.6	8.71	0.768	4.40	1.000	1006.	62.6	0.1488	12.305	6.901		0.0879	6.70
30	UPPER TALARIK	Q	14.4	8.71	0.768	4.40	1.000	1006.	62.6	0.1488	12.305	6.922		-0.2298	6.70
31	UPPER TALARIK	Q	9.8	8.71	0.768	4.40	1.000	1006.	62.6	0.1488	12.305	5.885		0.4277	6.70
32	UPPER TALARIK	C	9.1	8.92	0.758	4.40	1.000	1010.	62.6	0.1405	12.305	6.195		0.4277	6.70
33	UPPER TALARIK	Q	2.2	8.92	0.758	4.40	1.000	1010.	62.6	0.1405	12.305	9.138		0.1397	6.70
34	UPPER TALARIK	E	0.0									9.451			

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NODE NO.	STREAM NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.80	0.884	13.54	1.000	975.	22.2	0.3847	12.215	0.128	4.99	0.0910	6.80
2	UPPER TALARIK	Q	60.0	8.80	0.884	13.54	1.000	975.	22.2	0.3847	12.215	0.347		0.0947	6.80
3	UPPER TALARIK	C	59.7	9.10	0.869	13.54	1.000	981.	22.2	0.3223	12.215	0.377		0.0947	6.80
4	UPPER TALARIK	C	56.5	9.25	0.861	13.54	1.000	983.	22.2	0.2998	12.215	0.678		0.0947	6.80
5	UPPER TALARIK	C	55.4	9.32	0.858	13.54	1.000	985.	22.2	0.2686	12.215	0.781		0.0947	6.80
6	UPPER TALARIK	C	51.9	9.43	0.853	13.54	1.000	987.	22.2	0.2316	12.215	1.116		0.0947	6.80
7	UPPER TALARIK	Q	51.6	9.43	0.853	13.54	1.000	987.	22.2	0.2316	12.215	1.138		0.4132	4.52
8	UPPER TALARIK	C	45.9	9.50	0.849	13.54	1.000	988.	22.2	0.1814	12.214	3.496		0.4132	4.52
9	UPPER TALARIK	B	45.0									3.853			
10	TRIBUTARY 135	H	46.4	9.50	0.849	13.54	1.000	988.	22.2	0.2994	12.214	0.321	7.68	0.0000	4.52
11	TRIBUTARY 135	T	45.0									0.321			
12	UPPER TALARIK	J	45.0	9.57	0.845	13.54	1.000	989.	22.2	0.1812	12.214	4.174		0.4105	4.52
13	UPPER TALARIK	Q	44.6	9.57	0.845	13.54	1.000	989.	22.2	0.1812	12.214	4.346		-0.0293	13.30
14	UPPER TALARIK	C	38.4	9.69	0.840	13.54	1.000	991.	22.2	0.1603	12.214	4.162		-0.0293	13.30
15	UPPER TALARIK	Q	37.6	9.69	0.840	13.54	1.000	991.	22.2	0.1603	12.214	4.141		0.1291	13.30
16	UPPER TALARIK	C	35.8	9.77	0.836	13.54	1.000	993.	22.3	0.1184	12.214	4.376		0.1291	13.30
17	UPPER TALARIK	C	32.9	9.83	0.833	13.54	1.000	994.	22.3	0.1422	12.214	4.747		0.1291	13.30
18	UPPER TALARIK	C	32.3	9.91	0.829	13.54	1.000	995.	22.3	0.1427	12.214	4.826		0.1291	13.30
19	UPPER TALARIK	Q	29.3	9.91	0.829	13.54	1.000	995.	22.3	0.1427	12.214	5.217		0.1494	6.45
20	UPPER TALARIK	C	27.1	10.00	0.825	13.54	1.000	997.	22.3	0.1004	12.214	5.540		0.1494	6.45
21	UPPER TALARIK	C	25.0	10.02	0.823	13.54	1.000	997.	22.3	0.1342	12.214	5.855		0.1494	6.45
22	UPPER TALARIK	B	24.7									5.900			
23	TRIBUTARY 119	H	25.1	10.01	0.824	13.54	1.000	997.	22.3	0.3465	12.214	0.748	5.12	0.0000	6.45
24	TRIBUTARY 119	T	24.7									0.748			
25	UPPER TALARIK	J	24.7	10.09	0.820	13.54	1.000	999.	22.3	0.1342	12.213	6.648		0.1471	6.45
26	UPPER TALARIK	Q	24.5	10.09	0.820	13.54	1.000	999.	22.3	0.1342	12.213	6.683		0.0985	6.45
27	UPPER TALARIK	C	20.8	10.20	0.815	13.54	1.000	1001.	22.3	0.1385	12.213	7.046		0.0985	6.45
28	UPPER TALARIK	C	18.8	10.31	0.810	13.54	1.000	1003.	22.3	0.1291	12.213	7.243		0.0985	6.45
29	UPPER TALARIK	C	14.6	10.48	0.802	13.54	1.000	1006.	22.3	0.1504	12.213	7.658		0.0985	6.45
30	UPPER TALARIK	Q	14.4	10.48	0.802	13.54	1.000	1006.	22.3	0.1504	12.213	7.682		-0.2023	6.45
31	UPPER TALARIK	Q	9.8	10.48	0.802	13.54	1.000	1006.	22.3	0.1504	12.213	6.769		0.4419	6.45
32	UPPER TALARIK	C	9.1	10.69	0.792	13.54	1.000	1010.	22.3	0.1413	12.213	7.089		0.4419	6.45
33	UPPER TALARIK	Q	2.2	10.69	0.792	13.54	1.000	1010.	22.3	0.1413	12.213	10.130		0.1549	6.45
34	UPPER TALARIK	E	0.0									10.477			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	8.36	0.894	9.30	1.000	975.	43.5	0.3866	12.122	0.249	5.88	0.1774	6.83
2	UPPER TALARIK	Q	60.0	8.36	0.894	9.30	1.000	975.	43.5	0.3866	12.122	0.676		0.2991	6.83
3	UPPER TALARIK	C	59.7	8.66	0.879	9.30	1.000	981.	43.5	0.3251	12.122	0.770		0.2991	6.83
4	UPPER TALARIK	C	56.5	8.81	0.871	9.30	1.000	983.	43.5	0.3026	12.122	1.720		0.2991	6.83
5	UPPER TALARIK	C	55.4	8.88	0.867	9.30	1.000	985.	43.5	0.2733	12.122	2.045		0.2991	6.83
6	UPPER TALARIK	C	51.9	8.99	0.862	9.30	1.000	987.	43.5	0.2333	12.122	3.104		0.2991	6.83
7	UPPER TALARIK	Q	51.6	8.99	0.862	9.30	1.000	987.	43.5	0.2333	12.122	3.174		0.9038	4.16
8	UPPER TALARIK	C	45.9	9.06	0.858	9.30	1.000	988.	43.5	0.1824	12.122	8.332		0.9038	4.16
9	UPPER TALARIK	B	45.0									9.113			
10	TRIBUTARY 135	H	46.4	9.06	0.858	9.30	1.000	988.	43.5	0.3030	12.122	0.702	8.02	0.0000	4.16
11	TRIBUTARY 135	T	45.0									0.702			
12	UPPER TALARIK	J	45.0	9.13	0.854	9.30	1.000	989.	43.5	0.1823	12.122	9.815		0.9022	4.16
13	UPPER TALARIK	Q	44.6	9.13	0.854	9.30	1.000	989.	43.5	0.1823	12.122	10.193		-0.1264	13.51
14	UPPER TALARIK	C	38.4	9.25	0.849	9.30	1.000	991.	43.6	0.1613	12.121	9.400		-0.1264	13.51
15	UPPER TALARIK	Q	37.6	9.25	0.849	9.30	1.000	991.	43.6	0.1613	12.121	9.310		0.3477	13.51
16	UPPER TALARIK	C	35.8	9.33	0.845	9.30	1.000	993.	43.6	0.1202	12.121	9.944		0.3477	13.51
17	UPPER TALARIK	C	32.9	9.39	0.842	9.30	1.000	994.	43.6	0.1436	12.121	10.942		0.3477	13.51
18	UPPER TALARIK	C	32.3	9.47	0.838	9.30	1.000	995.	43.6	0.1441	12.121	11.155		0.3477	13.51
19	UPPER TALARIK	Q	29.3	9.47	0.838	9.30	1.000	995.	43.6	0.1441	12.121	12.208		0.4019	6.20
20	UPPER TALARIK	C	27.1	9.56	0.833	9.30	1.000	997.	43.6	0.1022	12.121	13.076		0.4019	6.20
21	UPPER TALARIK	C	25.0	9.58	0.832	9.30	1.000	997.	43.6	0.1355	12.121	13.925		0.4019	6.20
22	UPPER TALARIK	B	24.7									14.045			
23	TRIBUTARY 119	H	25.1	9.57	0.833	9.30	1.000	997.	43.6	0.3498	12.121	0.783	5.39	0.0000	6.20
24	TRIBUTARY 119	T	24.7									0.783			
25	UPPER TALARIK	J	24.7	9.65	0.829	9.30	1.000	999.	43.6	0.1355	12.121	14.828		0.3992	6.20
26	UPPER TALARIK	Q	24.5	9.65	0.829	9.30	1.000	999.	43.6	0.1355	12.121	14.923		0.2407	6.20
27	UPPER TALARIK	C	20.8	9.76	0.824	9.30	1.000	1001.	43.7	0.1395	12.121	15.811		0.2407	6.20
28	UPPER TALARIK	C	18.8	9.87	0.819	9.30	1.000	1003.	43.7	0.1303	12.121	16.292		0.2407	6.20
29	UPPER TALARIK	C	14.6	10.04	0.810	9.30	1.000	1006.	43.7	0.1520	12.121	17.306		0.2407	6.20
30	UPPER TALARIK	Q	14.4	10.04	0.810	9.30	1.000	1006.	43.7	0.1520	12.121	17.364		0.6393	6.20
31	UPPER TALARIK	Q	9.8	10.04	0.810	9.30	1.000	1006.	43.7	0.1520	12.121	20.249		0.3250	6.20
32	UPPER TALARIK	C	9.1	10.25	0.801	9.30	1.000	1010.	43.8	0.1422	12.121	20.485		0.3250	6.20
33	UPPER TALARIK	Q	2.2	10.25	0.801	9.30	1.000	1010.	43.8	0.1422	12.121	22.721		0.3504	6.20
34	UPPER TALARIK	E	0.0									23.506			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.35	0.894	8.27	1.000	975.	43.4	0.3886	12.029	0.220	6.00	0.1575	6.78
2	UPPER TALARIK	Q	60.0	7.35	0.894	8.27	1.000	975.	43.4	0.3886	12.029	0.599		0.2718	6.78
3	UPPER TALARIK	C	59.7	7.65	0.879	8.27	1.000	981.	43.4	0.3279	12.029	0.684		0.2718	6.78
4	UPPER TALARIK	C	56.5	7.80	0.871	8.27	1.000	983.	43.4	0.3055	12.029	1.548		0.2718	6.78
5	UPPER TALARIK	C	55.4	7.87	0.867	8.27	1.000	985.	43.4	0.2781	12.029	1.843		0.2718	6.78
6	UPPER TALARIK	C	51.9	7.98	0.862	8.27	1.000	987.	43.4	0.2350	12.029	2.805		0.2718	6.78
7	UPPER TALARIK	Q	51.6	7.98	0.862	8.27	1.000	987.	43.4	0.2350	12.029	2.869		1.0883	3.85
8	UPPER TALARIK	C	45.9	8.05	0.858	8.27	1.000	988.	43.5	0.1835	12.029	9.080		1.0883	3.85
9	UPPER TALARIK	B	45.0									10.020			
10	TRIBUTARY 135	H	46.4	8.05	0.858	8.27	1.000	988.	43.5	0.3068	12.029	0.845	7.60	0.0000	3.85
11	TRIBUTARY 135	T	45.0									0.845			
12	UPPER TALARIK	J	45.0	8.12	0.854	8.27	1.000	989.	43.5	0.1834	12.029	10.865		1.0859	3.85
13	UPPER TALARIK	Q	44.6	8.12	0.854	8.27	1.000	989.	43.5	0.1834	12.029	11.320		-0.0291	13.62
14	UPPER TALARIK	C	38.4	8.24	0.849	8.27	1.000	991.	43.5	0.1624	12.029	11.138		-0.0291	13.62
15	UPPER TALARIK	Q	37.6	8.24	0.849	8.27	1.000	991.	43.5	0.1624	12.029	11.117		0.5722	13.62
16	UPPER TALARIK	C	35.8	8.32	0.845	8.27	1.000	993.	43.5	0.1222	12.029	12.160		0.5722	13.62
17	UPPER TALARIK	C	32.9	8.38	0.842	8.27	1.000	994.	43.5	0.1451	12.029	13.803		0.5722	13.62
18	UPPER TALARIK	C	32.3	8.46	0.838	8.27	1.000	995.	43.6	0.1454	12.029	14.153		0.5722	13.62
19	UPPER TALARIK	Q	29.3	8.46	0.838	8.27	1.000	995.	43.6	0.1454	12.029	15.886		0.6611	5.95
20	UPPER TALARIK	C	27.1	8.55	0.833	8.27	1.000	997.	43.6	0.1040	12.029	17.314		0.6611	5.95
21	UPPER TALARIK	C	25.0	8.57	0.832	8.27	1.000	997.	43.6	0.1368	12.029	18.711		0.6611	5.95
22	UPPER TALARIK	B	24.7									18.908			
23	TRIBUTARY 119	H	25.1	8.56	0.833	8.27	1.000	997.	43.6	0.3532	12.029	0.870	5.44	0.0000	5.95
24	TRIBUTARY 119	T	24.7									0.870			
25	UPPER TALARIK	J	24.7	8.64	0.829	8.27	1.000	999.	43.6	0.1368	12.029	19.778		0.6597	5.95
26	UPPER TALARIK	Q	24.5	8.64	0.829	8.27	1.000	999.	43.6	0.1368	12.029	19.935		0.3315	5.95
27	UPPER TALARIK	C	20.8	8.75	0.824	8.27	1.000	1001.	43.6	0.1407	12.029	21.158		0.3315	5.95
28	UPPER TALARIK	C	18.8	8.86	0.819	8.27	1.000	1003.	43.6	0.1315	12.029	21.820		0.3315	5.95
29	UPPER TALARIK	C	14.6	9.03	0.810	8.27	1.000	1006.	43.7	0.1536	12.029	23.217		0.3315	5.95
30	UPPER TALARIK	Q	14.4	9.03	0.810	8.27	1.000	1006.	43.7	0.1536	12.029	23.297		0.7782	5.95
31	UPPER TALARIK	Q	9.8	9.03	0.810	8.27	1.000	1006.	43.7	0.1536	12.029	26.809		0.4721	5.95
32	UPPER TALARIK	C	9.1	9.24	0.801	8.27	1.000	1010.	43.7	0.1430	12.029	27.151		0.4721	5.95
33	UPPER TALARIK	Q	2.2	9.24	0.801	8.27	1.000	1010.	43.7	0.1430	12.029	30.400		0.4701	5.95
34	UPPER TALARIK	E	0.0									31.453			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	7.58	0.856	6.81	1.000	975.	102.7	0.3906	11.936	0.194	5.55	0.1388	6.65
2	UPPER TALARIK	Q	60.0	7.58	0.856	6.81	1.000	975.	102.7	0.3906	11.936	0.528		0.2033	6.65
3	UPPER TALARIK	C	59.7	7.88	0.842	6.81	1.000	981.	102.7	0.3308	11.936	0.592		0.2033	6.65
4	UPPER TALARIK	C	56.5	8.03	0.834	6.81	1.000	983.	102.7	0.3084	11.936	1.238		0.2033	6.65
5	UPPER TALARIK	C	55.4	8.10	0.831	6.81	1.000	985.	102.7	0.2831	11.936	1.459		0.2033	6.65
6	UPPER TALARIK	C	51.9	8.21	0.825	6.81	1.000	987.	102.7	0.2368	11.936	2.178		0.2033	6.65
7	UPPER TALARIK	Q	51.6	8.21	0.825	6.81	1.000	987.	102.7	0.2368	11.936	2.226		0.9630	3.63
8	UPPER TALARIK	C	45.9	8.28	0.822	6.81	1.000	988.	102.8	0.1846	11.936	7.722		0.9630	3.63
9	UPPER TALARIK	B	45.0									8.554			
10	TRIBUTARY 135	H	46.4	8.28	0.822	6.81	1.000	988.	102.8	0.3106	11.936	0.748	7.42	0.0000	3.63
11	TRIBUTARY 135	T	45.0									0.748			
12	UPPER TALARIK	J	45.0	8.35	0.818	6.81	1.000	989.	102.8	0.1844	11.936	9.302		0.9594	3.63
13	UPPER TALARIK	Q	44.6	8.35	0.818	6.81	1.000	989.	102.8	0.1844	11.936	9.704		-0.0186	13.65
14	UPPER TALARIK	C	38.4	8.47	0.813	6.81	1.000	991.	102.9	0.1634	11.936	9.587		-0.0186	13.65
15	UPPER TALARIK	Q	37.6	8.47	0.813	6.81	1.000	991.	102.9	0.1634	11.936	9.574		0.4810	13.65
16	UPPER TALARIK	C	35.8	8.55	0.809	6.81	1.000	993.	102.9	0.1242	11.936	10.451		0.4810	13.65
17	UPPER TALARIK	C	32.9	8.61	0.806	6.81	1.000	994.	103.0	0.1467	11.936	11.832		0.4810	13.65
18	UPPER TALARIK	C	32.3	8.69	0.802	6.81	1.000	995.	103.0	0.1469	11.936	12.126		0.4810	13.65
19	UPPER TALARIK	Q	29.3	8.69	0.802	6.81	1.000	995.	103.0	0.1469	11.936	13.583		0.5559	5.73
20	UPPER TALARIK	C	27.1	8.78	0.798	6.81	1.000	997.	103.0	0.1059	11.936	14.784		0.5559	5.73
21	UPPER TALARIK	C	25.0	8.80	0.797	6.81	1.000	997.	103.0	0.1382	11.936	15.958		0.5559	5.73
22	UPPER TALARIK	B	24.7									16.124			
23	TRIBUTARY 119	H	25.1	8.79	0.798	6.81	1.000	997.	103.0	0.3567	11.936	0.762	5.06	0.0000	5.73
24	TRIBUTARY 119	T	24.7									0.762			
25	UPPER TALARIK	J	24.7	8.87	0.794	6.81	1.000	999.	103.1	0.1382	11.937	16.886		0.5546	5.73
26	UPPER TALARIK	Q	24.5	8.87	0.794	6.81	1.000	999.	103.1	0.1382	11.937	17.018		0.2784	5.73
27	UPPER TALARIK	C	20.8	8.98	0.789	6.81	1.000	1001.	103.1	0.1418	11.937	18.045		0.2784	5.73
28	UPPER TALARIK	C	18.8	9.09	0.784	6.81	1.000	1003.	103.2	0.1328	11.937	18.601		0.2784	5.73
29	UPPER TALARIK	C	14.6	9.26	0.776	6.81	1.000	1006.	103.3	0.1553	11.937	19.774		0.2784	5.73
30	UPPER TALARIK	Q	14.4	9.26	0.776	6.81	1.000	1006.	103.3	0.1553	11.937	19.841		0.7554	5.73
31	UPPER TALARIK	Q	9.8	9.26	0.776	6.81	1.000	1006.	103.3	0.1553	11.937	23.250		0.3524	5.73
32	UPPER TALARIK	C	9.1	9.47	0.767	6.81	1.000	1010.	103.4	0.1438	11.937	23.505		0.3524	5.73
33	UPPER TALARIK	Q	2.2	9.47	0.767	6.81	1.000	1010.	103.4	0.1438	11.937	25.930		0.4004	5.73
34	UPPER TALARIK	E	0.0									26.827			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.35	0.847	6.94	1.000	975.	41.6	0.3926	11.843	0.160	4.96	0.1138	6.50
2	UPPER TALARIK	Q	60.0	6.35	0.847	6.94	1.000	975.	41.6	0.3926	11.843	0.434		0.1328	6.50
3	UPPER TALARIK	C	59.7	6.65	0.832	6.94	1.000	981.	41.6	0.3337	11.843	0.476		0.1328	6.50
4	UPPER TALARIK	C	56.5	6.80	0.825	6.94	1.000	983.	41.6	0.3114	11.843	0.897		0.1328	6.50
5	UPPER TALARIK	C	55.4	6.87	0.822	6.94	1.000	985.	41.6	0.2883	11.843	1.042		0.1328	6.50
6	UPPER TALARIK	C	51.9	6.98	0.816	6.94	1.000	987.	41.6	0.2386	11.843	1.512		0.1328	6.50
7	UPPER TALARIK	Q	51.6	6.98	0.816	6.94	1.000	987.	41.6	0.2386	11.843	1.543		0.7104	3.52
8	UPPER TALARIK	C	45.9	7.05	0.813	6.94	1.000	988.	41.6	0.1857	11.844	5.597		0.7104	3.52
9	UPPER TALARIK	B	45.0									6.211			
10	TRIBUTARY 135	H	46.4	7.05	0.813	6.94	1.000	988.	41.6	0.3146	11.844	0.552	6.48	0.0000	3.52
11	TRIBUTARY 135	T	45.0									0.552			
12	UPPER TALARIK	J	45.0	7.12	0.809	6.94	1.000	989.	41.6	0.1856	11.844	6.763		0.7088	3.52
13	UPPER TALARIK	Q	44.6	7.12	0.809	6.94	1.000	989.	41.6	0.1856	11.844	7.060		-0.0042	13.61
14	UPPER TALARIK	C	38.4	7.24	0.804	6.94	1.000	991.	41.7	0.1645	11.844	7.034		-0.0042	13.61
15	UPPER TALARIK	Q	37.6	7.24	0.804	6.94	1.000	991.	41.7	0.1645	11.844	7.031		0.2903	13.61
16	UPPER TALARIK	C	35.8	7.32	0.800	6.94	1.000	993.	41.7	0.1263	11.844	7.560		0.2903	13.61
17	UPPER TALARIK	C	32.9	7.38	0.797	6.94	1.000	994.	41.7	0.1482	11.844	8.394		0.2903	13.61
18	UPPER TALARIK	C	32.3	7.46	0.794	6.94	1.000	995.	41.7	0.1483	11.844	8.572		0.2903	13.61
19	UPPER TALARIK	Q	29.3	7.46	0.794	6.94	1.000	995.	41.7	0.1483	11.844	9.451		0.3354	5.56
20	UPPER TALARIK	C	27.1	7.55	0.789	6.94	1.000	997.	41.7	0.1079	11.844	10.175		0.3354	5.56
21	UPPER TALARIK	C	25.0	7.57	0.788	6.94	1.000	997.	41.7	0.1397	11.844	10.884		0.3354	5.56
22	UPPER TALARIK	B	24.7									10.984			
23	TRIBUTARY 119	H	25.1	7.56	0.789	6.94	1.000	997.	41.7	0.3603	11.844	0.744	4.46	0.0000	5.56
24	TRIBUTARY 119	T	24.7									0.744			
25	UPPER TALARIK	J	24.7	7.64	0.785	6.94	1.000	999.	41.7	0.1397	11.844	11.728		0.3361	5.56
26	UPPER TALARIK	Q	24.5	7.64	0.785	6.94	1.000	999.	41.7	0.1397	11.844	11.808		0.1857	5.56
27	UPPER TALARIK	C	20.8	7.75	0.781	6.94	1.000	1001.	41.7	0.1429	11.844	12.493		0.1857	5.56
28	UPPER TALARIK	C	18.8	7.86	0.776	6.94	1.000	1003.	41.8	0.1342	11.844	12.864		0.1857	5.56
29	UPPER TALARIK	C	14.6	8.03	0.768	6.94	1.000	1006.	41.8	0.1571	11.845	13.646		0.1857	5.56
30	UPPER TALARIK	Q	14.4	8.03	0.768	6.94	1.000	1006.	41.8	0.1571	11.845	13.691		0.2267	5.56
31	UPPER TALARIK	Q	9.8	8.03	0.768	6.94	1.000	1006.	41.8	0.1571	11.845	14.714		0.4261	5.56
32	UPPER TALARIK	C	9.1	8.24	0.758	6.94	1.000	1010.	41.8	0.1447	11.845	15.023		0.4261	5.56
33	UPPER TALARIK	Q	2.2	8.24	0.758	6.94	1.000	1010.	41.8	0.1447	11.845	17.955		0.2763	5.56
34	UPPER TALARIK	E	0.0									18.574			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	6.50	0.884	5.60	1.000	975.	41.5	0.3947	11.750	0.189	4.91	0.1350	6.38
2	UPPER TALARIK	Q	60.0	6.50	0.884	5.60	1.000	975.	41.5	0.3947	11.750	0.514		0.1776	6.38
3	UPPER TALARIK	C	59.7	6.80	0.869	5.60	1.000	981.	41.5	0.3367	11.751	0.570		0.1776	6.38
4	UPPER TALARIK	C	56.5	6.95	0.861	5.60	1.000	983.	41.5	0.3145	11.751	1.134		0.1776	6.38
5	UPPER TALARIK	C	55.4	7.02	0.858	5.60	1.000	985.	41.5	0.2936	11.751	1.327		0.1776	6.38
6	UPPER TALARIK	C	51.9	7.13	0.853	5.60	1.000	987.	41.5	0.2404	11.751	1.955		0.1776	6.38
7	UPPER TALARIK	Q	51.6	7.13	0.853	5.60	1.000	987.	41.5	0.2404	11.751	1.997		0.8175	3.48
8	UPPER TALARIK	C	45.9	7.20	0.849	5.60	1.000	988.	41.5	0.1868	11.751	6.663		0.8175	3.48
9	UPPER TALARIK	B	45.0									7.369			
10	TRIBUTARY 135	H	46.4	7.20	0.849	5.60	1.000	988.	41.5	0.3186	11.751	0.635	6.64	0.0000	3.48
11	TRIBUTARY 135	T	45.0									0.635			
12	UPPER TALARIK	J	45.0	7.27	0.845	5.60	1.000	989.	41.6	0.1867	11.751	8.004		0.8162	3.48
13	UPPER TALARIK	Q	44.6	7.27	0.845	5.60	1.000	989.	41.6	0.1867	11.751	8.346		-0.0653	13.50
14	UPPER TALARIK	C	38.4	7.39	0.840	5.60	1.000	991.	41.6	0.1656	11.751	7.937		-0.0653	13.50
15	UPPER TALARIK	Q	37.6	7.39	0.840	5.60	1.000	991.	41.6	0.1656	11.751	7.890		0.3094	13.50
16	UPPER TALARIK	C	35.8	7.47	0.836	5.60	1.000	993.	41.6	0.1285	11.751	8.454		0.3094	13.50
17	UPPER TALARIK	C	32.9	7.53	0.833	5.60	1.000	994.	41.6	0.1499	11.751	9.343		0.3094	13.50
18	UPPER TALARIK	C	32.3	7.61	0.829	5.60	1.000	995.	41.6	0.1498	11.752	9.532		0.3094	13.50
19	UPPER TALARIK	Q	29.3	7.61	0.829	5.60	1.000	995.	41.6	0.1498	11.752	10.469		0.3575	5.41
20	UPPER TALARIK	C	27.1	7.70	0.825	5.60	1.000	997.	41.7	0.1100	11.752	11.241		0.3575	5.41
21	UPPER TALARIK	C	25.0	7.72	0.823	5.60	1.000	997.	41.7	0.1411	11.752	11.996		0.3575	5.41
22	UPPER TALARIK	B	24.7									12.103			
23	TRIBUTARY 119	H	25.1	7.71	0.824	5.60	1.000	997.	41.7	0.3639	11.752	0.781	4.78	0.0000	5.41
24	TRIBUTARY 119	T	24.7									0.781			
25	UPPER TALARIK	J	24.7	7.79	0.820	5.60	1.000	999.	41.7	0.1411	11.752	12.884		0.3571	5.41
26	UPPER TALARIK	Q	24.5	7.79	0.820	5.60	1.000	999.	41.7	0.1411	11.752	12.969		0.2060	5.41
27	UPPER TALARIK	C	20.8	7.90	0.815	5.60	1.000	1001.	41.7	0.1441	11.752	13.729		0.2060	5.41
28	UPPER TALARIK	C	18.8	8.01	0.810	5.60	1.000	1003.	41.7	0.1355	11.752	14.140		0.2060	5.41
29	UPPER TALARIK	C	14.6	8.18	0.802	5.60	1.000	1006.	41.8	0.1589	11.753	15.009		0.2060	5.41
30	UPPER TALARIK	Q	14.4	8.18	0.802	5.60	1.000	1006.	41.8	0.1589	11.753	15.058		0.3685	5.41
31	UPPER TALARIK	Q	9.8	8.18	0.802	5.60	1.000	1006.	41.8	0.1589	11.753	16.721		0.3957	5.41
32	UPPER TALARIK	C	9.1	8.39	0.792	5.60	1.000	1010.	41.8	0.1456	11.753	17.008		0.3957	5.41
33	UPPER TALARIK	Q	2.2	8.39	0.792	5.60	1.000	1010.	41.8	0.1456	11.753	19.731		0.3036	5.41
34	UPPER TALARIK	E	0.0									20.411			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.95	0.884	6.63	1.000	975.	38.8	0.3968	11.658	0.178	4.93	0.1271	6.28
2	UPPER TALARIK	Q	60.0	5.95	0.884	6.63	1.000	975.	38.8	0.3968	11.658	0.484		0.1571	6.28
3	UPPER TALARIK	C	59.7	6.25	0.869	6.63	1.000	981.	38.8	0.3398	11.658	0.533		0.1571	6.28
4	UPPER TALARIK	C	56.5	6.40	0.862	6.63	1.000	983.	38.8	0.3177	11.658	1.032		0.1571	6.28
5	UPPER TALARIK	C	55.4	6.47	0.858	6.63	1.000	985.	38.8	0.2991	11.658	1.203		0.1571	6.28
6	UPPER TALARIK	C	51.9	6.58	0.853	6.63	1.000	987.	38.8	0.2423	11.658	1.759		0.1571	6.28
7	UPPER TALARIK	Q	51.6	6.58	0.853	6.63	1.000	987.	38.8	0.2423	11.658	1.796		0.7944	3.48
8	UPPER TALARIK	C	45.9	6.65	0.849	6.63	1.000	988.	38.8	0.1880	11.658	6.330		0.7944	3.48
9	UPPER TALARIK	B	45.0									7.016			
10	TRIBUTARY 135	H	46.4	6.65	0.849	6.63	1.000	988.	38.8	0.3228	11.658	0.617	6.83	0.0000	3.48
11	TRIBUTARY 135	T	45.0									0.617			
12	UPPER TALARIK	J	45.0	6.72	0.845	6.63	1.000	989.	38.9	0.1878	11.658	7.633		0.7924	3.48
13	UPPER TALARIK	Q	44.6	6.72	0.845	6.63	1.000	989.	38.9	0.1878	11.658	7.965		-0.0395	13.32
14	UPPER TALARIK	C	38.4	6.84	0.840	6.63	1.000	991.	38.9	0.1667	11.659	7.717		-0.0395	13.32
15	UPPER TALARIK	Q	37.6	6.84	0.840	6.63	1.000	991.	38.9	0.1667	11.659	7.689		0.3233	13.32
16	UPPER TALARIK	C	35.8	6.92	0.836	6.63	1.000	993.	38.9	0.1308	11.659	8.278		0.3233	13.32
17	UPPER TALARIK	C	32.9	6.98	0.833	6.63	1.000	994.	38.9	0.1515	11.659	9.207		0.3233	13.32
18	UPPER TALARIK	C	32.3	7.06	0.829	6.63	1.000	995.	38.9	0.1514	11.659	9.405		0.3233	13.32
19	UPPER TALARIK	Q	29.3	7.06	0.829	6.63	1.000	995.	38.9	0.1514	11.659	10.384		0.3734	5.26
20	UPPER TALARIK	C	27.1	7.15	0.825	6.63	1.000	997.	39.0	0.1122	11.659	11.191		0.3734	5.26
21	UPPER TALARIK	C	25.0	7.17	0.823	6.63	1.000	997.	39.0	0.1426	11.659	11.980		0.3734	5.26
22	UPPER TALARIK	B	24.7									12.091			
23	TRIBUTARY 119	H	25.1	7.16	0.824	6.63	1.000	997.	39.0	0.3677	11.659	0.732	4.75	0.0000	5.26
24	TRIBUTARY 119	T	24.7									0.732			
25	UPPER TALARIK	J	24.7	7.24	0.820	6.63	1.000	999.	39.0	0.1426	11.660	12.823		0.3739	5.26
26	UPPER TALARIK	Q	24.5	7.24	0.820	6.63	1.000	999.	39.0	0.1426	11.660	12.912		0.2050	5.26
27	UPPER TALARIK	C	20.8	7.35	0.815	6.63	1.000	1001.	39.0	0.1453	11.660	13.668		0.2050	5.26
28	UPPER TALARIK	C	18.8	7.46	0.810	6.63	1.000	1003.	39.0	0.1369	11.660	14.078		0.2050	5.26
29	UPPER TALARIK	C	14.6	7.63	0.802	6.63	1.000	1006.	39.1	0.1607	11.661	14.942		0.2050	5.26
30	UPPER TALARIK	Q	14.4	7.63	0.802	6.63	1.000	1006.	39.1	0.1607	11.661	14.991		0.3614	5.26
31	UPPER TALARIK	Q	9.8	7.63	0.802	6.63	1.000	1006.	39.1	0.1607	11.661	16.622		0.3973	5.26
32	UPPER TALARIK	C	9.1	7.84	0.792	6.63	1.000	1010.	39.1	0.1465	11.661	16.910		0.3973	5.26
33	UPPER TALARIK	Q	2.2	7.84	0.792	6.63	1.000	1010.	39.1	0.1465	11.661	19.644		0.3022	5.26
34	UPPER TALARIK	E	0.0									20.321			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.54	0.894	7.44	1.000	975.	59.9	0.3990	11.565	0.204	4.80	0.1458	6.18
2	UPPER TALARIK	Q	60.0	5.54	0.894	7.44	1.000	975.	59.9	0.3990	11.565	0.555		0.1717	6.18
3	UPPER TALARIK	C	59.7	5.84	0.879	7.44	1.000	981.	59.9	0.3430	11.565	0.609		0.1717	6.18
4	UPPER TALARIK	C	56.5	5.99	0.871	7.44	1.000	983.	59.9	0.3210	11.565	1.154		0.1717	6.18
5	UPPER TALARIK	C	55.4	6.06	0.867	7.44	1.000	985.	59.9	0.3048	11.565	1.341		0.1717	6.18
6	UPPER TALARIK	C	51.9	6.17	0.862	7.44	1.000	987.	59.9	0.2443	11.565	1.949		0.1717	6.18
7	UPPER TALARIK	Q	51.6	6.17	0.862	7.44	1.000	987.	59.9	0.2443	11.565	1.989		0.8912	3.49
8	UPPER TALARIK	C	45.9	6.24	0.858	7.44	1.000	988.	60.0	0.1891	11.565	7.075		0.8912	3.49
9	UPPER TALARIK	B	45.0									7.845			
10	TRIBUTARY 135	H	46.4	6.24	0.858	7.44	1.000	988.	60.0	0.3271	11.565	0.692	6.56	0.0000	3.49
11	TRIBUTARY 135	T	45.0									0.692			
12	UPPER TALARIK	J	45.0	6.31	0.854	7.44	1.000	989.	60.0	0.1890	11.566	8.537		0.8878	3.49
13	UPPER TALARIK	Q	44.6	6.31	0.854	7.44	1.000	989.	60.0	0.1890	11.566	8.909		-0.0475	13.05
14	UPPER TALARIK	C	38.4	6.43	0.849	7.44	1.000	991.	60.0	0.1678	11.566	8.611		-0.0475	13.05
15	UPPER TALARIK	Q	37.6	6.43	0.849	7.44	1.000	991.	60.0	0.1678	11.566	8.577		0.3796	13.05
16	UPPER TALARIK	C	35.8	6.51	0.845	7.44	1.000	993.	60.1	0.1332	11.566	9.269		0.3796	13.05
17	UPPER TALARIK	C	32.9	6.57	0.842	7.44	1.000	994.	60.1	0.1532	11.567	10.359		0.3796	13.05
18	UPPER TALARIK	C	32.3	6.65	0.838	7.44	1.000	995.	60.1	0.1529	11.567	10.591		0.3796	13.05
19	UPPER TALARIK	Q	29.3	6.65	0.838	7.44	1.000	995.	60.1	0.1529	11.567	11.741		0.4389	5.11
20	UPPER TALARIK	C	27.1	6.74	0.833	7.44	1.000	997.	60.1	0.1145	11.567	12.689		0.4389	5.11
21	UPPER TALARIK	C	25.0	6.76	0.832	7.44	1.000	997.	60.1	0.1442	11.567	13.616		0.4389	5.11
22	UPPER TALARIK	B	24.7									13.747			
23	TRIBUTARY 119	H	25.1	6.75	0.833	7.44	1.000	997.	60.1	0.3715	11.567	0.704	4.74	0.0000	5.11
24	TRIBUTARY 119	T	24.7									0.704			
25	UPPER TALARIK	J	24.7	6.83	0.829	7.44	1.000	999.	60.2	0.1442	11.567	14.451		0.4370	5.11
26	UPPER TALARIK	Q	24.5	6.83	0.829	7.44	1.000	999.	60.2	0.1442	11.567	14.555		0.2341	5.11
27	UPPER TALARIK	C	20.8	6.94	0.824	7.44	1.000	1001.	60.2	0.1465	11.568	15.419		0.2341	5.11
28	UPPER TALARIK	C	18.8	7.05	0.819	7.44	1.000	1003.	60.2	0.1383	11.568	15.886		0.2341	5.11
29	UPPER TALARIK	C	14.6	7.22	0.810	7.44	1.000	1006.	60.3	0.1626	11.568	16.873		0.2341	5.11
30	UPPER TALARIK	Q	14.4	7.22	0.810	7.44	1.000	1006.	60.3	0.1626	11.568	16.929		0.5852	5.11
31	UPPER TALARIK	Q	9.8	7.22	0.810	7.44	1.000	1006.	60.3	0.1626	11.568	19.570		0.3401	5.11
32	UPPER TALARIK	C	9.1	7.43	0.801	7.44	1.000	1010.	60.4	0.1474	11.569	19.817		0.3401	5.11
33	UPPER TALARIK	Q	2.2	7.43	0.801	7.44	1.000	1010.	60.4	0.1474	11.569	22.157		0.3415	5.11
34	UPPER TALARIK	E	0.0									22.922			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.29	0.884	3.99	1.000	975.	59.8	0.4012	11.472	0.179	4.59	0.1275	6.07
2	UPPER TALARIK	Q	60.0	5.29	0.884	3.99	1.000	975.	59.8	0.4012	11.472	0.486		0.1311	6.07
3	UPPER TALARIK	C	59.7	5.59	0.869	3.99	1.000	981.	59.8	0.3462	11.472	0.527		0.1311	6.07
4	UPPER TALARIK	C	56.5	5.74	0.862	3.99	1.000	983.	59.8	0.3243	11.472	0.944		0.1311	6.07
5	UPPER TALARIK	C	55.4	5.81	0.858	3.99	1.000	985.	59.8	0.3105	11.472	1.086		0.1311	6.07
6	UPPER TALARIK	C	51.9	5.92	0.853	3.99	1.000	987.	59.9	0.2463	11.472	1.550		0.1311	6.07
7	UPPER TALARIK	Q	51.6	5.92	0.853	3.99	1.000	987.	59.9	0.2463	11.472	1.581		0.7475	3.47
8	UPPER TALARIK	C	45.9	5.99	0.849	3.99	1.000	988.	59.9	0.1903	11.473	5.847		0.7475	3.47
9	UPPER TALARIK	B	45.0									6.493			
10	TRIBUTARY 135	H	46.4	5.99	0.849	3.99	1.000	988.	59.9	0.3315	11.473	0.581	6.47	0.0000	3.47
11	TRIBUTARY 135	T	45.0									0.581			
12	UPPER TALARIK	J	45.0	6.06	0.845	3.99	1.000	989.	59.9	0.1902	11.473	7.074		0.7446	3.47
13	UPPER TALARIK	Q	44.6	6.06	0.845	3.99	1.000	989.	59.9	0.1902	11.473	7.386		-0.0182	12.71
14	UPPER TALARIK	C	38.4	6.18	0.840	3.99	1.000	991.	60.0	0.1690	11.474	7.272		-0.0182	12.71
15	UPPER TALARIK	Q	37.6	6.18	0.840	3.99	1.000	991.	60.0	0.1690	11.474	7.259		0.3230	12.71
16	UPPER TALARIK	C	35.8	6.26	0.836	3.99	1.000	993.	60.0	0.1356	11.474	7.848		0.3230	12.71
17	UPPER TALARIK	C	32.9	6.32	0.833	3.99	1.000	994.	60.0	0.1550	11.474	8.775		0.3230	12.71
18	UPPER TALARIK	C	32.3	6.40	0.829	3.99	1.000	995.	60.0	0.1545	11.474	8.973		0.3230	12.71
19	UPPER TALARIK	Q	29.3	6.40	0.829	3.99	1.000	995.	60.0	0.1545	11.474	9.951		0.3730	4.98
20	UPPER TALARIK	C	27.1	6.49	0.825	3.99	1.000	997.	60.1	0.1169	11.475	10.757		0.3730	4.98
21	UPPER TALARIK	C	25.0	6.51	0.823	3.99	1.000	997.	60.1	0.1458	11.475	11.545		0.3730	4.98
22	UPPER TALARIK	B	24.7									11.656			
23	TRIBUTARY 119	H	25.1	6.50	0.824	3.99	1.000	997.	60.1	0.3755	11.475	0.686	4.58	0.0000	4.98
24	TRIBUTARY 119	T	24.7									0.686			
25	UPPER TALARIK	J	24.7	6.58	0.820	3.99	1.000	999.	60.1	0.1457	11.475	12.342		0.3739	4.98
26	UPPER TALARIK	Q	24.5	6.58	0.820	3.99	1.000	999.	60.1	0.1457	11.475	12.431		0.1965	4.98
27	UPPER TALARIK	C	20.8	6.69	0.815	3.99	1.000	1001.	60.1	0.1478	11.475	13.156		0.1965	4.98
28	UPPER TALARIK	C	18.8	6.80	0.810	3.99	1.000	1003.	60.2	0.1398	11.476	13.548		0.1965	4.98
29	UPPER TALARIK	C	14.6	6.97	0.802	3.99	1.000	1006.	60.2	0.1646	11.476	14.377		0.1965	4.98
30	UPPER TALARIK	Q	14.4	6.97	0.802	3.99	1.000	1006.	60.2	0.1646	11.476	14.424		0.3009	4.98
31	UPPER TALARIK	Q	9.8	6.97	0.802	3.99	1.000	1006.	60.2	0.1646	11.476	15.782		0.4110	4.98
32	UPPER TALARIK	C	9.1	7.18	0.792	3.99	1.000	1010.	60.3	0.1484	11.477	16.080		0.4110	4.98
33	UPPER TALARIK	Q	2.2	7.18	0.792	3.99	1.000	1010.	60.3	0.1484	11.477	18.908		0.2911	4.98
34	UPPER TALARIK	E	0.0									19.560			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	4.94	0.866	7.50	1.000	975.	53.6	0.4034	11.379	0.164	4.37	0.1172	5.96
2	UPPER TALARIK	Q	60.0	4.94	0.866	7.50	1.000	975.	53.6	0.4034	11.379	0.446		0.1096	5.96
3	UPPER TALARIK	C	59.7	5.24	0.851	7.50	1.000	981.	53.6	0.3495	11.379	0.480		0.1096	5.96
4	UPPER TALARIK	C	56.5	5.39	0.843	7.50	1.000	983.	53.6	0.3278	11.380	0.828		0.1096	5.96
5	UPPER TALARIK	C	55.4	5.46	0.840	7.50	1.000	985.	53.6	0.3164	11.379	0.948		0.1096	5.96
6	UPPER TALARIK	C	51.9	5.57	0.835	7.50	1.000	987.	53.6	0.2483	11.380	1.335		0.1096	5.96
7	UPPER TALARIK	Q	51.6	5.57	0.835	7.50	1.000	987.	53.6	0.2483	11.380	1.361		0.6518	3.43
8	UPPER TALARIK	C	45.9	5.64	0.831	7.50	1.000	988.	53.6	0.1915	11.380	5.081		0.6518	3.43
9	UPPER TALARIK	B	45.0									5.644			
10	TRIBUTARY 135	H	46.4	5.64	0.831	7.50	1.000	988.	53.6	0.3361	11.380	0.506	6.03	0.0000	3.43
11	TRIBUTARY 135	T	45.0									0.506			
12	UPPER TALARIK	J	45.0	5.71	0.827	7.50	1.000	989.	53.7	0.1914	11.381	6.150		0.6516	3.43
13	UPPER TALARIK	Q	44.6	5.71	0.827	7.50	1.000	989.	53.7	0.1914	11.381	6.423		-0.0229	12.32
14	UPPER TALARIK	C	38.4	5.83	0.822	7.50	1.000	991.	53.7	0.1702	11.381	6.279		-0.0229	12.32
15	UPPER TALARIK	Q	37.6	5.83	0.822	7.50	1.000	991.	53.7	0.1702	11.381	6.263		0.2621	12.32
16	UPPER TALARIK	C	35.8	5.91	0.818	7.50	1.000	993.	53.7	0.1382	11.382	6.741		0.2621	12.32
17	UPPER TALARIK	C	32.9	5.97	0.815	7.50	1.000	994.	53.8	0.1568	11.382	7.494		0.2621	12.32
18	UPPER TALARIK	C	32.3	6.05	0.811	7.50	1.000	995.	53.8	0.1562	11.382	7.654		0.2621	12.32
19	UPPER TALARIK	Q	29.3	6.05	0.811	7.50	1.000	995.	53.8	0.1562	11.382	8.448		0.3030	4.91
20	UPPER TALARIK	C	27.1	6.14	0.807	7.50	1.000	997.	53.8	0.1194	11.382	9.102		0.3030	4.91
21	UPPER TALARIK	C	25.0	6.16	0.806	7.50	1.000	997.	53.8	0.1474	11.382	9.743		0.3030	4.91
22	UPPER TALARIK	B	24.7									9.833			
23	TRIBUTARY 119	H	25.1	6.15	0.807	7.50	1.000	997.	53.8	0.3796	11.382	0.686	4.35	0.0000	4.91
24	TRIBUTARY 119	T	24.7									0.686			
25	UPPER TALARIK	J	24.7	6.23	0.803	7.50	1.000	999.	53.8	0.1474	11.383	10.519		0.3025	4.91
26	UPPER TALARIK	Q	24.5	6.23	0.803	7.50	1.000	999.	53.8	0.1474	11.383	10.591		0.1645	4.91
27	UPPER TALARIK	C	20.8	6.34	0.798	7.50	1.000	1001.	53.9	0.1491	11.383	11.198		0.1645	4.91
28	UPPER TALARIK	C	18.8	6.45	0.793	7.50	1.000	1003.	53.9	0.1412	11.384	11.526		0.1645	4.91
29	UPPER TALARIK	C	14.6	6.62	0.785	7.50	1.000	1006.	54.0	0.1666	11.384	12.220		0.1645	4.91
30	UPPER TALARIK	Q	14.4	6.62	0.785	7.50	1.000	1006.	54.0	0.1666	11.384	12.259		0.0942	4.91
31	UPPER TALARIK	Q	9.8	6.62	0.785	7.50	1.000	1006.	54.0	0.1666	11.384	12.684		0.4483	4.91
32	UPPER TALARIK	C	9.1	6.83	0.775	7.50	1.000	1010.	54.0	0.1493	11.385	13.009		0.4483	4.91
33	UPPER TALARIK	Q	2.2	6.83	0.775	7.50	1.000	1010.	54.0	0.1493	11.385	16.094		0.2473	4.91
34	UPPER TALARIK	E	0.0									16.648			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	4.50	0.894	9.12	1.000	975.	29.0	0.4057	11.286	0.226	4.30	0.1612	5.85
2	UPPER TALARIK	Q	60.0	4.50	0.894	9.12	1.000	975.	29.0	0.4057	11.286	0.614		0.1802	5.85
3	UPPER TALARIK	C	59.7	4.80	0.879	9.12	1.000	981.	29.0	0.3530	11.287	0.671		0.1802	5.85
4	UPPER TALARIK	C	56.5	4.95	0.871	9.12	1.000	983.	29.0	0.3313	11.287	1.243		0.1802	5.85
5	UPPER TALARIK	C	55.4	5.02	0.867	9.12	1.000	985.	29.0	0.3225	11.287	1.439		0.1802	5.85
6	UPPER TALARIK	C	51.9	5.13	0.862	9.12	1.000	987.	29.0	0.2504	11.287	2.077		0.1802	5.85
7	UPPER TALARIK	Q	51.6	5.13	0.862	9.12	1.000	987.	29.0	0.2504	11.287	2.119		0.7834	3.39
8	UPPER TALARIK	C	45.9	5.20	0.858	9.12	1.000	988.	29.0	0.1927	11.288	6.590		0.7834	3.39
9	UPPER TALARIK	B	45.0									7.267			
10	TRIBUTARY 135	H	46.4	5.20	0.858	9.12	1.000	988.	29.0	0.3408	11.288	0.608	5.72	0.0000	3.39
11	TRIBUTARY 135	T	45.0									0.608			
12	UPPER TALARIK	J	45.0	5.27	0.854	9.12	1.000	989.	29.0	0.1926	11.288	7.875		0.7828	3.39
13	UPPER TALARIK	Q	44.6	5.27	0.854	9.12	1.000	989.	29.0	0.1926	11.288	8.203		-0.0668	11.90
14	UPPER TALARIK	C	38.4	5.39	0.849	9.12	1.000	991.	29.0	0.1713	11.289	7.784		-0.0668	11.90
15	UPPER TALARIK	Q	37.6	5.39	0.849	9.12	1.000	991.	29.0	0.1713	11.289	7.736		0.3646	11.90
16	UPPER TALARIK	C	35.8	5.47	0.845	9.12	1.000	993.	29.0	0.1409	11.289	8.401		0.3646	11.90
17	UPPER TALARIK	C	32.9	5.53	0.842	9.12	1.000	994.	29.0	0.1587	11.289	9.448		0.3646	11.90
18	UPPER TALARIK	C	32.3	5.61	0.838	9.12	1.000	995.	29.1	0.1579	11.290	9.671		0.3646	11.90
19	UPPER TALARIK	Q	29.3	5.61	0.838	9.12	1.000	995.	29.1	0.1579	11.290	10.775		0.4214	4.91
20	UPPER TALARIK	C	27.1	5.70	0.833	9.12	1.000	997.	29.1	0.1221	11.290	11.685		0.4214	4.91
21	UPPER TALARIK	C	25.0	5.72	0.832	9.12	1.000	997.	29.1	0.1491	11.290	12.575		0.4214	4.91
22	UPPER TALARIK	B	24.7									12.701			
23	TRIBUTARY 119	H	25.1	5.71	0.833	9.12	1.000	997.	29.1	0.3837	11.290	0.734	4.51	0.0000	4.91
24	TRIBUTARY 119	T	24.7									0.734			
25	UPPER TALARIK	J	24.7	5.79	0.829	9.12	1.000	999.	29.1	0.1490	11.291	13.435		0.4202	4.91
26	UPPER TALARIK	Q	24.5	5.79	0.829	9.12	1.000	999.	29.1	0.1490	11.291	13.535		0.2161	4.91
27	UPPER TALARIK	C	20.8	5.90	0.824	9.12	1.000	1001.	29.1	0.1504	11.291	14.332		0.2161	4.91
28	UPPER TALARIK	C	18.8	6.01	0.819	9.12	1.000	1003.	29.1	0.1428	11.292	14.763		0.2161	4.91
29	UPPER TALARIK	C	14.6	6.18	0.811	9.12	1.000	1006.	29.2	0.1686	11.293	15.674		0.2161	4.91
30	UPPER TALARIK	Q	14.4	6.18	0.811	9.12	1.000	1006.	29.2	0.1686	11.293	15.726		0.4429	4.91
31	UPPER TALARIK	Q	9.8	6.18	0.811	9.12	1.000	1006.	29.2	0.1686	11.293	17.725		0.3776	4.91
32	UPPER TALARIK	C	9.1	6.39	0.801	9.12	1.000	1010.	29.2	0.1503	11.294	17.999		0.3776	4.91
33	UPPER TALARIK	Q	2.2	6.39	0.801	9.12	1.000	1010.	29.2	0.1503	11.294	20.597		0.3174	4.91
34	UPPER TALARIK	E	0.0									21.308			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	5.19	0.875	4.67	1.000	975.	64.8	0.4081	11.194	0.192	4.26	0.1371	5.76
2	UPPER TALARIK	Q	60.0	5.19	0.875	4.67	1.000	975.	64.8	0.4081	11.194	0.522		0.1477	5.76
3	UPPER TALARIK	C	59.7	5.49	0.860	4.67	1.000	981.	64.9	0.3565	11.194	0.568		0.1477	5.76
4	UPPER TALARIK	C	56.5	5.64	0.852	4.67	1.000	983.	64.8	0.3349	11.194	1.038		0.1477	5.76
5	UPPER TALARIK	C	55.4	5.71	0.849	4.67	1.000	985.	64.8	0.3287	11.194	1.198		0.1477	5.76
6	UPPER TALARIK	C	51.9	5.82	0.844	4.67	1.000	987.	64.9	0.2525	11.195	1.721		0.1477	5.76
7	UPPER TALARIK	Q	51.6	5.82	0.844	4.67	1.000	987.	64.9	0.2525	11.195	1.756		0.8014	3.38
8	UPPER TALARIK	C	45.9	5.89	0.840	4.67	1.000	988.	64.9	0.1940	11.195	6.330		0.8014	3.38
9	UPPER TALARIK	B	45.0									7.022			
10	TRIBUTARY 135	H	46.4	5.89	0.840	4.67	1.000	988.	64.9	0.3456	11.195	0.622	5.45	0.0000	3.38
11	TRIBUTARY 135	T	45.0									0.622			
12	UPPER TALARIK	J	45.0	5.96	0.836	4.67	1.000	989.	64.9	0.1938	11.196	7.644		0.7995	3.38
13	UPPER TALARIK	Q	44.6	5.96	0.836	4.67	1.000	989.	64.9	0.1938	11.196	7.979		-0.0352	11.46
14	UPPER TALARIK	C	38.4	6.08	0.831	4.67	1.000	991.	65.0	0.1726	11.196	7.758		-0.0352	11.46
15	UPPER TALARIK	Q	37.6	6.08	0.831	4.67	1.000	991.	65.0	0.1726	11.196	7.733		0.3780	11.46
16	UPPER TALARIK	C	35.8	6.16	0.827	4.67	1.000	993.	65.0	0.1437	11.197	8.422		0.3780	11.46
17	UPPER TALARIK	C	32.9	6.22	0.824	4.67	1.000	994.	65.0	0.1606	11.197	9.508		0.3780	11.46
18	UPPER TALARIK	C	32.3	6.30	0.820	4.67	1.000	995.	65.1	0.1597	11.198	9.739		0.3780	11.46
19	UPPER TALARIK	Q	29.3	6.30	0.820	4.67	1.000	995.	65.1	0.1597	11.198	10.884		0.4369	4.97
20	UPPER TALARIK	C	27.1	6.39	0.816	4.67	1.000	997.	65.1	0.1249	11.198	11.828		0.4369	4.97
21	UPPER TALARIK	C	25.0	6.41	0.815	4.67	1.000	997.	65.1	0.1508	11.198	12.751		0.4369	4.97
22	UPPER TALARIK	B	24.7									12.881			
23	TRIBUTARY 119	H	25.1	6.40	0.816	4.67	1.000	997.	65.1	0.3880	11.198	0.720	4.35	0.0000	4.97
24	TRIBUTARY 119	T	24.7									0.720			
25	UPPER TALARIK	J	24.7	6.48	0.811	4.67	1.000	999.	65.1	0.1508	11.198	13.601		0.4370	4.97
26	UPPER TALARIK	Q	24.5	6.48	0.811	4.67	1.000	999.	65.1	0.1508	11.198	13.705		0.2190	4.97
27	UPPER TALARIK	C	20.8	6.59	0.807	4.67	1.000	1001.	65.2	0.1517	11.199	14.513		0.2190	4.97
28	UPPER TALARIK	C	18.8	6.70	0.801	4.67	1.000	1003.	65.2	0.1443	11.200	14.950		0.2190	4.97
29	UPPER TALARIK	C	14.6	6.87	0.793	4.67	1.000	1006.	65.3	0.1708	11.201	15.873		0.2190	4.97
30	UPPER TALARIK	Q	14.4	6.87	0.793	4.67	1.000	1006.	65.3	0.1708	11.201	15.926		0.4660	4.97
31	UPPER TALARIK	Q	9.8	6.87	0.793	4.67	1.000	1006.	65.3	0.1708	11.201	18.029		0.3718	4.97
32	UPPER TALARIK	C	9.1	7.08	0.784	4.67	1.000	1010.	65.4	0.1513	11.202	18.299		0.3718	4.97
33	UPPER TALARIK	Q	2.2	7.08	0.784	4.67	1.000	1010.	65.4	0.1513	11.202	20.857		0.3214	4.97
34	UPPER TALARIK	E	0.0									21.577			

YEAR: 2007 TIME PERIOD: 30-Sep PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	4.22	0.922	5.95	1.000	975.	26.2	0.4104	11.101	0.219	4.36	0.1558	5.66
2	UPPER TALARIK	Q	60.0	4.22	0.922	5.95	1.000	975.	26.2	0.4104	11.101	0.594		0.1695	5.66
3	UPPER TALARIK	C	59.7	4.52	0.906	5.95	1.000	981.	26.3	0.3601	11.101	0.647		0.1695	5.66
4	UPPER TALARIK	C	56.5	4.67	0.898	5.95	1.000	983.	26.3	0.3387	11.102	1.186		0.1695	5.66
5	UPPER TALARIK	C	55.4	4.74	0.895	5.95	1.000	985.	26.2	0.3350	11.102	1.370		0.1695	5.66
6	UPPER TALARIK	C	51.9	4.85	0.889	5.95	1.000	987.	26.3	0.2547	11.102	1.970		0.1695	5.66
7	UPPER TALARIK	Q	51.6	4.85	0.889	5.95	1.000	987.	26.3	0.2547	11.102	2.010		0.8122	3.38
8	UPPER TALARIK	C	45.9	4.92	0.885	5.95	1.000	988.	26.3	0.1953	11.102	6.645		0.8122	3.38
9	UPPER TALARIK	B	45.0									7.347			
10	TRIBUTARY 135	H	46.4	4.92	0.885	5.95	1.000	988.	26.3	0.3506	11.102	0.631	5.71	0.0000	3.38
11	TRIBUTARY 135	T	45.0									0.631			
12	UPPER TALARIK	J	45.0	4.99	0.881	5.95	1.000	989.	26.3	0.1951	11.103	7.978		0.8091	3.38
13	UPPER TALARIK	Q	44.6	4.99	0.881	5.95	1.000	989.	26.3	0.1951	11.103	8.317		-0.0643	11.01
14	UPPER TALARIK	C	38.4	5.11	0.876	5.95	1.000	991.	26.3	0.1738	11.104	7.914		-0.0643	11.01
15	UPPER TALARIK	Q	37.6	5.11	0.876	5.95	1.000	991.	26.3	0.1738	11.104	7.868		0.3551	11.01
16	UPPER TALARIK	C	35.8	5.19	0.871	5.95	1.000	993.	26.3	0.1466	11.105	8.515		0.3551	11.01
17	UPPER TALARIK	C	32.9	5.25	0.868	5.95	1.000	994.	26.3	0.1626	11.105	9.535		0.3551	11.01
18	UPPER TALARIK	C	32.3	5.33	0.864	5.95	1.000	995.	26.3	0.1615	11.105	9.752		0.3551	11.01
19	UPPER TALARIK	Q	29.3	5.33	0.864	5.95	1.000	995.	26.3	0.1615	11.105	10.828		0.4106	5.08
20	UPPER TALARIK	C	27.1	5.42	0.860	5.95	1.000	997.	26.4	0.1278	11.106	11.715		0.4106	5.08
21	UPPER TALARIK	C	25.0	5.44	0.859	5.95	1.000	997.	26.4	0.1525	11.106	12.583		0.4106	5.08
22	UPPER TALARIK	B	24.7									12.705			
23	TRIBUTARY 119	H	25.1	5.43	0.860	5.95	1.000	997.	26.4	0.3925	11.106	0.733	4.44	0.0000	5.08
24	TRIBUTARY 119	T	24.7									0.733			
25	UPPER TALARIK	J	24.7	5.51	0.855	5.95	1.000	999.	26.4	0.1525	11.106	13.438		0.4076	5.08
26	UPPER TALARIK	Q	24.5	5.51	0.855	5.95	1.000	999.	26.4	0.1525	11.106	13.535		0.2161	5.08
27	UPPER TALARIK	C	20.8	5.62	0.850	5.95	1.000	1001.	26.4	0.1531	11.107	14.332		0.2161	5.08
28	UPPER TALARIK	C	18.8	5.73	0.845	5.95	1.000	1003.	26.4	0.1459	11.108	14.763		0.2161	5.08
29	UPPER TALARIK	C	14.6	5.90	0.836	5.95	1.000	1006.	26.4	0.1730	11.109	15.674		0.2161	5.08
30	UPPER TALARIK	Q	14.4	5.90	0.836	5.95	1.000	1006.	26.4	0.1730	11.109	15.726		0.4429	5.08
31	UPPER TALARIK	Q	9.8	5.90	0.836	5.95	1.000	1006.	26.4	0.1730	11.109	17.725		0.3776	5.08
32	UPPER TALARIK	C	9.1	6.11	0.826	5.95	1.000	1010.	26.5	0.1523	11.110	17.999		0.3776	5.08
33	UPPER TALARIK	Q	2.2	6.11	0.826	5.95	1.000	1010.	26.5	0.1523	11.110	20.597		0.3174	5.08
34	UPPER TALARIK	E	0.0									21.308			

YEAR: 2007 TIME PERIOD: 1-Oct PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	4.30	0.884	6.86	1.000	975.	55.9	0.4129	11.008	0.213	4.31	0.1521	5.50
2	UPPER TALARIK	Q	60.0	4.30	0.884	6.86	1.000	975.	55.9	0.4129	11.008	0.579		0.1724	5.50
3	UPPER TALARIK	C	59.7	4.60	0.869	6.86	1.000	981.	55.9	0.3638	11.009	0.633		0.1724	5.50
4	UPPER TALARIK	C	56.5	4.75	0.862	6.86	1.000	983.	55.9	0.3425	11.009	1.181		0.1724	5.50
5	UPPER TALARIK	C	55.4	4.82	0.858	6.86	1.000	985.	55.9	0.3415	11.009	1.368		0.1724	5.50
6	UPPER TALARIK	C	51.9	4.93	0.853	6.86	1.000	987.	55.9	0.2569	11.009	1.979		0.1724	5.50
7	UPPER TALARIK	Q	51.6	4.93	0.853	6.86	1.000	987.	55.9	0.2569	11.009	2.019		0.9055	3.38
8	UPPER TALARIK	C	45.9	5.00	0.849	6.86	1.000	988.	56.0	0.1966	11.010	7.187		0.9055	3.38
9	UPPER TALARIK	B	45.0									7.969			
10	TRIBUTARY 135	H	46.4	5.00	0.849	6.86	1.000	988.	56.0	0.3558	11.010	0.703	5.71	0.0000	3.38
11	TRIBUTARY 135	T	45.0									0.703			
12	UPPER TALARIK	J	45.0	5.07	0.845	6.86	1.000	989.	56.0	0.1964	11.011	8.672		0.9045	3.38
13	UPPER TALARIK	Q	44.6	5.07	0.845	6.86	1.000	989.	56.0	0.1964	11.011	9.051		-0.0437	10.52
14	UPPER TALARIK	C	38.4	5.19	0.840	6.86	1.000	991.	56.1	0.1750	11.012	8.777		-0.0437	10.52
15	UPPER TALARIK	Q	37.6	5.19	0.840	6.86	1.000	991.	56.1	0.1750	11.012	8.746		0.4270	10.52
16	UPPER TALARIK	C	35.8	5.27	0.836	6.86	1.000	993.	56.1	0.1496	11.012	9.524		0.4270	10.52
17	UPPER TALARIK	C	32.9	5.33	0.833	6.86	1.000	994.	56.1	0.1646	11.012	10.751		0.4270	10.52
18	UPPER TALARIK	C	32.3	5.41	0.829	6.86	1.000	995.	56.1	0.1633	11.013	11.012		0.4270	10.52
19	UPPER TALARIK	Q	29.3	5.41	0.829	6.86	1.000	995.	56.1	0.1633	11.013	12.305		0.4935	5.18
20	UPPER TALARIK	C	27.1	5.50	0.825	6.86	1.000	997.	56.2	0.1308	11.014	13.371		0.4935	5.18
21	UPPER TALARIK	C	25.0	5.52	0.823	6.86	1.000	997.	56.2	0.1543	11.014	14.414		0.4935	5.18
22	UPPER TALARIK	B	24.7									14.561			
23	TRIBUTARY 119	H	25.1	5.51	0.824	6.86	1.000	997.	56.2	0.3970	11.014	0.726	4.45	0.0000	5.18
24	TRIBUTARY 119	T	24.7									0.726			
25	UPPER TALARIK	J	24.7	5.59	0.820	6.86	1.000	999.	56.2	0.1543	11.014	15.287		0.4916	5.18
26	UPPER TALARIK	Q	24.5	5.59	0.820	6.86	1.000	999.	56.2	0.1543	11.014	15.404		0.2493	5.18
27	UPPER TALARIK	C	20.8	5.70	0.815	6.86	1.000	1001.	56.2	0.1544	11.015	16.324		0.2493	5.18
28	UPPER TALARIK	C	18.8	5.81	0.810	6.86	1.000	1003.	56.3	0.1476	11.016	16.821		0.2493	5.18
29	UPPER TALARIK	C	14.6	5.98	0.802	6.86	1.000	1006.	56.3	0.1752	11.017	17.872		0.2493	5.18
30	UPPER TALARIK	Q	14.4	5.98	0.802	6.86	1.000	1006.	56.3	0.1752	11.017	17.932		0.7119	5.18
31	UPPER TALARIK	Q	9.8	5.98	0.802	6.86	1.000	1006.	56.3	0.1752	11.017	21.145		0.3041	5.18
32	UPPER TALARIK	C	9.1	6.19	0.792	6.86	1.000	1010.	56.4	0.1533	11.018	21.365		0.3041	5.18
33	UPPER TALARIK	Q	2.2	6.19	0.792	6.86	1.000	1010.	56.4	0.1533	11.018	23.458		0.3616	5.18
34	UPPER TALARIK	E	0.0									24.268			

YEAR: 2007 TIME PERIOD: 2-Oct PAGE NO. 1

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	2.77	0.875	12.81	1.000	975.	44.5	0.4153	10.916	0.185	4.02	0.1325	5.23
2	UPPER TALARIK	Q	60.0	2.77	0.875	12.81	1.000	975.	44.5	0.4153	10.916	0.504		0.1343	5.23
3	UPPER TALARIK	C	59.7	3.07	0.860	12.81	1.000	981.	44.5	0.3676	10.916	0.546		0.1343	5.23
4	UPPER TALARIK	C	56.5	3.22	0.852	12.81	1.000	983.	44.5	0.3465	10.916	0.973		0.1343	5.23
5	UPPER TALARIK	C	55.4	3.29	0.849	12.81	1.000	985.	44.5	0.3481	10.916	1.119		0.1343	5.23
6	UPPER TALARIK	C	51.9	3.40	0.844	12.81	1.000	987.	44.5	0.2592	10.917	1.595		0.1343	5.23
7	UPPER TALARIK	Q	51.6	3.40	0.844	12.81	1.000	987.	44.5	0.2592	10.917	1.626		0.7585	3.35
8	UPPER TALARIK	C	45.9	3.47	0.840	12.81	1.000	988.	44.5	0.1979	10.918	5.955		0.7585	3.35
9	UPPER TALARIK	B	45.0									6.610			
10	TRIBUTARY 135	H	46.4	3.47	0.840	12.81	1.000	988.	44.5	0.3611	10.918	0.589	5.08	0.0000	3.35
11	TRIBUTARY 135	T	45.0									0.589			
12	UPPER TALARIK	J	45.0	3.54	0.836	12.81	1.000	989.	44.6	0.1977	10.918	7.199		0.7566	3.35
13	UPPER TALARIK	Q	44.6	3.54	0.836	12.81	1.000	989.	44.6	0.1977	10.918	7.516		-0.0525	9.97
14	UPPER TALARIK	C	38.4	3.66	0.831	12.81	1.000	991.	44.6	0.1763	10.919	7.186		-0.0525	9.97
15	UPPER TALARIK	Q	37.6	3.66	0.831	12.81	1.000	991.	44.6	0.1763	10.919	7.149		0.3143	9.97
16	UPPER TALARIK	C	35.8	3.74	0.827	12.81	1.000	993.	44.6	0.1528	10.920	7.722		0.3143	9.97
17	UPPER TALARIK	C	32.9	3.80	0.824	12.81	1.000	994.	44.6	0.1667	10.920	8.625		0.3143	9.97
18	UPPER TALARIK	C	32.3	3.88	0.820	12.81	1.000	995.	44.7	0.1652	10.921	8.817		0.3143	9.97
19	UPPER TALARIK	Q	29.3	3.88	0.820	12.81	1.000	995.	44.7	0.1652	10.921	9.769		0.3632	5.24
20	UPPER TALARIK	C	27.1	3.97	0.816	12.81	1.000	997.	44.7	0.1340	10.922	10.553		0.3632	5.24
21	UPPER TALARIK	C	25.0	3.99	0.815	12.81	1.000	997.	44.7	0.1562	10.922	11.321		0.3632	5.24
22	UPPER TALARIK	B	24.7									11.429			
23	TRIBUTARY 119	H	25.1	3.98	0.816	12.81	1.000	997.	44.7	0.4017	10.922	0.718	4.09	0.0000	5.24
24	TRIBUTARY 119	T	24.7									0.718			
25	UPPER TALARIK	J	24.7	4.06	0.811	12.81	1.000	999.	44.7	0.1562	10.922	12.147		0.3613	5.24
26	UPPER TALARIK	Q	24.5	4.06	0.811	12.81	1.000	999.	44.7	0.1562	10.922	12.233		0.1931	5.24
27	UPPER TALARIK	C	20.8	4.17	0.807	12.81	1.000	1001.	44.7	0.1559	10.923	12.945		0.1931	5.24
28	UPPER TALARIK	C	18.8	4.28	0.801	12.81	1.000	1003.	44.8	0.1493	10.924	13.331		0.1931	5.24
29	UPPER TALARIK	C	14.6	4.45	0.793	12.81	1.000	1006.	44.8	0.1775	10.925	14.145		0.1931	5.24
30	UPPER TALARIK	Q	14.4	4.45	0.793	12.81	1.000	1006.	44.8	0.1775	10.925	14.191		0.2768	5.24
31	UPPER TALARIK	Q	9.8	4.45	0.793	12.81	1.000	1006.	44.8	0.1775	10.925	15.440		0.4161	5.24
32	UPPER TALARIK	C	9.1	4.66	0.784	12.81	1.000	1010.	44.9	0.1544	10.927	15.742		0.4161	5.24
33	UPPER TALARIK	Q	2.2	4.66	0.784	12.81	1.000	1010.	44.9	0.1544	10.927	18.605		0.2862	5.24
34	UPPER TALARIK	E	0.0									19.246			

YEAR: 2007 TIME PERIOD: 3-Oct

NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	2.52	0.837	8.25	1.000	975.	84.5	0.4178	10.823	0.170	3.64	0.1213	4.82
2	UPPER TALARIK	Q	60.0	2.52	0.837	8.25	1.000	975.	84.5	0.4178	10.823	0.462		0.1147	4.82
3	UPPER TALARIK	C	59.7	2.82	0.823	8.25	1.000	981.	84.5	0.3715	10.824	0.498		0.1147	4.82
4	UPPER TALARIK	C	56.5	2.97	0.816	8.25	1.000	983.	84.5	0.3505	10.824	0.862		0.1147	4.82
5	UPPER TALARIK	C	55.4	3.04	0.813	8.25	1.000	985.	84.5	0.3549	10.824	0.987		0.1147	4.82
6	UPPER TALARIK	C	51.9	3.15	0.807	8.25	1.000	987.	84.5	0.2616	10.825	1.393		0.1147	4.82
7	UPPER TALARIK	Q	51.6	3.15	0.807	8.25	1.000	987.	84.5	0.2616	10.825	1.420		0.6801	3.30
8	UPPER TALARIK	C	45.9	3.22	0.804	8.25	1.000	988.	84.5	0.1992	10.825	5.301		0.6801	3.30
9	UPPER TALARIK	B	45.0									5.889			
10	TRIBUTARY 135	H	46.4	3.22	0.804	8.25	1.000	988.	84.5	0.3665	10.825	0.528	4.16	0.0000	3.30
11	TRIBUTARY 135	T	45.0									0.528			
12	UPPER TALARIK	J	45.0	3.29	0.800	8.25	1.000	989.	84.6	0.1990	10.826	6.417		0.6802	3.30
13	UPPER TALARIK	Q	44.6	3.29	0.800	8.25	1.000	989.	84.6	0.1990	10.826	6.702		-0.0399	9.35
14	UPPER TALARIK	C	38.4	3.41	0.795	8.25	1.000	991.	84.7	0.1776	10.827	6.451		-0.0399	9.35
15	UPPER TALARIK	Q	37.6	3.41	0.795	8.25	1.000	991.	84.7	0.1776	10.827	6.423		0.2713	9.35
16	UPPER TALARIK	C	35.8	3.49	0.791	8.25	1.000	993.	84.7	0.1561	10.828	6.918		0.2713	9.35
17	UPPER TALARIK	C	32.9	3.55	0.789	8.25	1.000	994.	84.8	0.1688	10.828	7.697		0.2713	9.35
18	UPPER TALARIK	C	32.3	3.63	0.785	8.25	1.000	995.	84.8	0.1672	10.829	7.862		0.2713	9.35
19	UPPER TALARIK	Q	29.3	3.63	0.785	8.25	1.000	995.	84.8	0.1672	10.829	8.684		0.3137	5.22
20	UPPER TALARIK	C	27.1	3.72	0.781	8.25	1.000	997.	84.9	0.1373	10.830	9.362		0.3137	5.22
21	UPPER TALARIK	C	25.0	3.74	0.780	8.25	1.000	997.	84.9	0.1581	10.830	10.025		0.3137	5.22
22	UPPER TALARIK	B	24.7									10.118			
23	TRIBUTARY 119	H	25.1	3.73	0.781	8.25	1.000	997.	84.9	0.4064	10.830	0.710	3.84	0.0000	5.22
24	TRIBUTARY 119	T	24.7									0.710			
25	UPPER TALARIK	J	24.7	3.81	0.777	8.25	1.000	999.	84.9	0.1581	10.830	10.828		0.3109	5.22
26	UPPER TALARIK	Q	24.5	3.81	0.777	8.25	1.000	999.	84.9	0.1581	10.830	10.902		0.1699	5.22
27	UPPER TALARIK	C	20.8	3.92	0.772	8.25	1.000	1001.	85.0	0.1573	10.831	11.529		0.1699	5.22
28	UPPER TALARIK	C	18.8	4.03	0.767	8.25	1.000	1003.	85.1	0.1510	10.832	11.868		0.1699	5.22
29	UPPER TALARIK	C	14.6	4.20	0.759	8.25	1.000	1006.	85.1	0.1799	10.833	12.584		0.1699	5.22
30	UPPER TALARIK	Q	14.4	4.20	0.759	8.25	1.000	1006.	85.1	0.1799	10.833	12.625		0.1263	5.22
31	UPPER TALARIK	Q	9.8	4.20	0.759	8.25	1.000	1006.	85.1	0.1799	10.833	13.195		0.4437	5.22
32	UPPER TALARIK	C	9.1	4.41	0.750	8.25	1.000	1010.	85.3	0.1555	10.835	13.517		0.4437	5.22
33	UPPER TALARIK	Q	2.2	4.41	0.750	8.25	1.000	1010.	85.3	0.1555	10.835	16.570		0.2545	5.22
34	UPPER TALARIK	E	0.0									17.140			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	1.96	0.856	11.08	1.000	975.	11.3	0.4204	10.731	0.169	3.31	0.1201	4.29
2	UPPER TALARIK	Q	60.0	1.96	0.856	11.08	1.000	975.	11.3	0.4204	10.731	0.458		0.1076	4.29
3	UPPER TALARIK	C	59.7	2.26	0.842	11.08	1.000	981.	11.3	0.3755	10.731	0.492		0.1076	4.29
4	UPPER TALARIK	C	56.5	2.41	0.834	11.08	1.000	983.	11.3	0.3547	10.732	0.834		0.1076	4.29
5	UPPER TALARIK	C	55.4	2.48	0.831	11.08	1.000	985.	11.3	0.3619	10.732	0.951		0.1076	4.29
6	UPPER TALARIK	C	51.9	2.59	0.825	11.08	1.000	987.	11.3	0.2640	10.732	1.332		0.1076	4.29
7	UPPER TALARIK	Q	51.6	2.59	0.825	11.08	1.000	987.	11.3	0.2640	10.732	1.357		0.6125	3.21
8	UPPER TALARIK	C	45.9	2.66	0.822	11.08	1.000	988.	11.3	0.2006	10.733	4.853		0.6125	3.21
9	UPPER TALARIK	B	45.0									5.382			
10	TRIBUTARY 135	H	46.4	2.66	0.822	11.08	1.000	988.	11.3	0.3722	10.733	0.476	3.69	0.0000	3.21
11	TRIBUTARY 135	T	45.0									0.476			
12	UPPER TALARIK	J	45.0	2.73	0.818	11.08	1.000	989.	11.3	0.2004	10.734	5.858		0.6110	3.21
13	UPPER TALARIK	Q	44.6	2.73	0.818	11.08	1.000	989.	11.3	0.2004	10.734	6.114		-0.0279	8.67
14	UPPER TALARIK	C	38.4	2.85	0.813	11.08	1.000	991.	11.3	0.1789	10.735	5.939		-0.0279	8.67
15	UPPER TALARIK	Q	37.6	2.85	0.813	11.08	1.000	991.	11.3	0.1789	10.735	5.919		0.2409	8.67
16	UPPER TALARIK	C	35.8	2.93	0.809	11.08	1.000	993.	11.3	0.1595	10.736	6.358		0.2409	8.67
17	UPPER TALARIK	C	32.9	2.99	0.806	11.08	1.000	994.	11.3	0.1711	10.736	7.050		0.2409	8.67
18	UPPER TALARIK	C	32.3	3.07	0.803	11.08	1.000	995.	11.3	0.1692	10.737	7.197		0.2409	8.67
19	UPPER TALARIK	Q	29.3	3.07	0.803	11.08	1.000	995.	11.3	0.1692	10.737	7.927		0.2785	5.13
20	UPPER TALARIK	C	27.1	3.16	0.798	11.08	1.000	997.	11.4	0.1408	10.738	8.529		0.2785	5.13
21	UPPER TALARIK	C	25.0	3.18	0.797	11.08	1.000	997.	11.4	0.1601	10.738	9.117		0.2785	5.13
22	UPPER TALARIK	B	24.7									9.200			
23	TRIBUTARY 119	H	25.1	3.17	0.798	11.08	1.000	997.	11.4	0.4114	10.738	0.730	3.74	0.0000	5.13
24	TRIBUTARY 119	T	24.7									0.730			
25	UPPER TALARIK	J	24.7	3.25	0.794	11.08	1.000	999.	11.4	0.1601	10.738	9.930		0.2773	5.13
26	UPPER TALARIK	Q	24.5	3.25	0.794	11.08	1.000	999.	11.4	0.1601	10.738	9.996		0.1542	5.13
27	UPPER TALARIK	C	20.8	3.36	0.789	11.08	1.000	1001.	11.4	0.1588	10.739	10.565		0.1542	5.13
28	UPPER TALARIK	C	18.8	3.47	0.784	11.08	1.000	1003.	11.4	0.1528	10.741	10.873		0.1542	5.13
29	UPPER TALARIK	C	14.6	3.64	0.776	11.08	1.000	1006.	11.4	0.1824	10.742	11.523		0.1542	5.13
30	UPPER TALARIK	Q	14.4	3.64	0.776	11.08	1.000	1006.	11.4	0.1824	10.742	11.560		0.0361	5.13
31	UPPER TALARIK	Q	9.8	3.64	0.776	11.08	1.000	1006.	11.4	0.1824	10.742	11.723		0.4553	5.13
32	UPPER TALARIK	C	9.1	3.85	0.767	11.08	1.000	1010.	11.4	0.1566	10.744	12.053		0.4553	5.13
33	UPPER TALARIK	Q	2.2	3.85	0.767	11.08	1.000	1010.	11.4	0.1566	10.744	15.186		0.2330	5.13
34	UPPER TALARIK	E	0.0									15.708			

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NODE NO.	----STREAM---- NAME	NODE TYPE	STREAM DIST. (KM)	AIR TEMP. (C)	REL. HUMD. (DEC)	WIND SPEED (M/S)	POSS. SUN (DEC)	ATM. PRS. (MB)	SOLAR RAD. (J/M2/S)	TOTAL SHADE (DEC)	DAY LIGHT (HR)	INITIAL FLOW (CMS)	INITIAL TEMP. (C)	LATERAL FLOW (CMS/KM)	LATERAL TEMP. (C)
1	UPPER TALARIK	H	62.4	1.58	0.903	11.67	1.000	975.	51.2	0.4230	10.638	0.369	2.75	0.2630	3.69
2	UPPER TALARIK	Q	60.0	1.58	0.903	11.67	1.000	975.	51.2	0.4230	10.638	1.002		0.5194	3.69
3	UPPER TALARIK	C	59.7	1.88	0.888	11.67	1.000	981.	51.2	0.3797	10.639	1.165		0.5194	3.69
4	UPPER TALARIK	C	56.5	2.03	0.880	11.67	1.000	983.	51.2	0.3590	10.639	2.815		0.5194	3.69
5	UPPER TALARIK	C	55.4	2.10	0.876	11.67	1.000	985.	51.2	0.3690	10.639	3.380		0.5194	3.69
6	UPPER TALARIK	C	51.9	2.21	0.871	11.67	1.000	987.	51.2	0.2665	10.640	5.218		0.5194	3.69
7	UPPER TALARIK	Q	51.6	2.21	0.871	11.67	1.000	987.	51.2	0.2665	10.640	5.340		0.9451	3.08
8	UPPER TALARIK	C	45.9	2.28	0.867	11.67	1.000	988.	51.3	0.2019	10.641	10.733		0.9451	3.08
9	UPPER TALARIK	B	45.0									11.550			
10	TRIBUTARY 135	H	46.4	2.28	0.867	11.67	1.000	988.	51.3	0.3780	10.641	0.735	3.62	0.0000	3.08
11	TRIBUTARY 135	T	45.0									0.735			
12	UPPER TALARIK	J	45.0	2.35	0.863	11.67	1.000	989.	51.3	0.2018	10.642	12.294		0.9427	3.08
13	UPPER TALARIK	Q	44.6	2.35	0.863	11.67	1.000	989.	51.3	0.2018	10.642	12.689		-0.1225	7.96
14	UPPER TALARIK	C	38.4	2.47	0.858	11.67	1.000	991.	51.4	0.1803	10.643	11.920		-0.1225	7.96
15	UPPER TALARIK	Q	37.6	2.47	0.858	11.67	1.000	991.	51.4	0.1803	10.643	11.833		0.7537	7.96
16	UPPER TALARIK	C	35.8	2.55	0.854	11.67	1.000	993.	51.4	0.1631	10.644	13.207		0.7537	7.96
17	UPPER TALARIK	C	32.9	2.61	0.851	11.67	1.000	994.	51.4	0.1733	10.644	15.372		0.7537	7.96
18	UPPER TALARIK	C	32.3	2.69	0.847	11.67	1.000	995.	51.4	0.1712	10.645	15.832		0.7537	7.96
19	UPPER TALARIK	Q	29.3	2.69	0.847	11.67	1.000	995.	51.4	0.1712	10.645	18.115		0.8709	4.99
20	UPPER TALARIK	C	27.1	2.78	0.842	11.67	1.000	997.	51.5	0.1445	10.646	19.996		0.8709	4.99
21	UPPER TALARIK	C	25.0	2.80	0.841	11.67	1.000	997.	51.5	0.1621	10.646	21.836		0.8709	4.99
22	UPPER TALARIK	B	24.7									22.096			
23	TRIBUTARY 119	H	25.1	2.79	0.842	11.67	1.000	997.	51.5	0.4163	10.646	0.973	4.04	0.0000	4.99
24	TRIBUTARY 119	T	24.7									0.973			
25	UPPER TALARIK	J	24.7	2.87	0.838	11.67	1.000	999.	51.5	0.1621	10.647	23.069		0.8697	4.99
26	UPPER TALARIK	Q	24.5	2.87	0.838	11.67	1.000	999.	51.5	0.1621	10.647	23.276		0.3935	4.99
27	UPPER TALARIK	C	20.8	2.98	0.833	11.67	1.000	1001.	51.5	0.1603	10.648	24.727		0.3935	4.99
28	UPPER TALARIK	C	18.8	3.09	0.827	11.67	1.000	1003.	51.6	0.1546	10.649	25.513		0.3935	4.99
29	UPPER TALARIK	C	14.6	3.26	0.819	11.67	1.000	1006.	51.6	0.1849	10.650	27.172		0.3935	4.99
30	UPPER TALARIK	Q	14.4	3.26	0.819	11.67	1.000	1006.	51.6	0.1849	10.650	27.266		0.7882	4.99
31	UPPER TALARIK	Q	9.8	3.26	0.819	11.67	1.000	1006.	51.6	0.1849	10.650	30.823		0.6183	4.99
32	UPPER TALARIK	C	9.1	3.47	0.809	11.67	1.000	1010.	51.7	0.1577	10.652	31.271		0.6183	4.99
33	UPPER TALARIK	Q	2.2	3.47	0.809	11.67	1.000	1010.	51.7	0.1577	10.652	35.526		0.5504	4.99
34	UPPER TALARIK	E	0.0									36.759			

NORMAL COMPLETION OF 'METROL'.

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****************************************** TABLE VIII: WATER TEMPERATURE DATA ******************************************
    BEGIN INSTREAM WATER TEMPERATURE CALCULATIONS VERIFICATION OF 'NETWRK' PROGRAM. THE PURPOSE OF THIS PROGRAM IS TO:
       (1) DETERMINE THE PREDICTED WATER TEMPERATURE FOR EACH YEAR & TIME PERIOD AT EVERY NODE IN THE COMPOSITE NETWORK;
       (2) GENERATE THE VERIFICATION TABLE;
       (3) GENERATE THE UNFORMATTED OUTPUT FILE FOR THE OUTPUT REPORT GENERATOR AND/OR LINKAGE TO OTHER PROGRAMS.
 THIS VERIFICATION IS THE FORMATTED VERSION OF 'KTRNSPT' FILE.

                             ** JOB CONTROL DATA **
 JOB CONTROL FILE: UPPER TALARIK CREEK, ALASKA
 PEBBLE PROJECT
 TFFFFFFFFFFFTFFFFFFF                                  FFFFTFFFFFFFFFFFFFFFTTTF
       1.      0.      0.    142.     10.     25.     19.     10.     34.      3.
       2.     15.      0.      1.      3.      2.      0.      0.      2.      0.
       9.      0.      0.      0.      0.      1.      1.      1.    142.     10.
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
     0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000    0.00  0.0000
 UTTME.DAT       UTMET.DAT       UTSKL.DAT       UTSTR.DAT       UTSTD.DAT
 UTHDR.DAT       UTHYD.DAT       UTSHD.DAT
 UPPER TALARIK       61.4     0.0
 TRIBUTARY 135       46.4    45.0
 TRIBUTARY 119       25.1    24.7
  STR. NAME #   4     0.0     0.0
  STR. NAME #   5     0.0     0.0
  STR. NAME #   6     0.0     0.0
  STR. NAME #   7     0.0     0.0
  STR. NAME #   8     0.0     0.0
  STR. NAME #   9     0.0     0.0
  STR. NAME #  10     0.0     0.0
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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.29	3.29	6.11:	6.44	36.03	-0.459:	9.31	39.09:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.60	7.54:	6.68	36.26	-0.475:	9.53	39.34:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.65	7.61:	6.98	36.64	-0.481:	10.01	39.99:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.21	8.24:	7.10	36.81	-0.489:	10.18	40.23:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.30	8.08:	7.29	37.02	-0.494:	10.46	40.60:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.53	8.05:	7.32	37.08	-0.496:	10.47	40.65:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.55	8.13:	7.32	37.08	-0.496:	10.47	40.65:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.48	7.19:	7.61	37.40	-0.502:	10.82	41.10:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.49	7.17:			:	10.82	41.10:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.61	5.61	7.53:	7.19	36.97	-0.494:	10.31	40.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.83	7.97:			:	10.31	40.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.52	7.23:	7.74	37.56	-0.505:	10.95	41.28:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.52	7.22:	7.76	37.57	-0.505:	10.96	41.29:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.85	7.60:	7.97	37.84	-0.512:	11.21	41.64:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.89	8.03:	7.97	37.83	-0.513:	11.20	41.64:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.88	7.95:	8.19	38.10	-0.517:	11.51	42.06:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.88	7.94:	8.25	38.18	-0.519:	11.52	42.10:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.88	7.99:	8.15	38.09	-0.517:	11.43	42.00:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.88	7.80:	8.18	38.12	-0.517:	11.46	42.03:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.95	7.81:	8.28	38.26	-0.520:	11.62	42.27:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.01	7.78:	8.16	38.13	-0.518:	11.45	42.06:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.01	7.72:			:	11.45	42.06:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.08	5.08	7.74:	7.88	37.83	-0.503:	10.86	41.29:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.15	8.37:			:	10.86	41.29:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.93	7.78:	8.48	38.50	-0.524:	11.75	42.48:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.94	7.86:	8.49	38.51	-0.524:	11.76	42.48:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.09	7.97:	8.53	38.58	-0.527:	11.78	42.55:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.17	8.08:	8.62	38.71	-0.529:	11.89	42.72:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.33	8.24:	8.66	38.80	-0.532:	11.90	42.79:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.35	8.30:	8.66	38.80	-0.532:	11.91	42.79:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.59	8.62:	8.60	38.74	-0.533:	11.86	42.73:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.56	8.55:	8.51	38.69	-0.531:	11.76	42.65:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.41	8.08:	8.61	38.81	-0.532:	11.85	42.78:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.46	8.14:	8.61	38.81	-0.532:	11.85	42.78:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.20	3.20	6.71:	7.94	26.85	-0.328:	11.65	29.81:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.69	8.40:	8.25	27.07	-0.341:	11.92	30.06:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.75	8.48:	8.67	27.43	-0.347:	12.57	30.71:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.45	9.26:	8.82	27.57	-0.354:	12.78	30.94:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.57	8.95:	9.09	27.79	-0.358:	13.17	31.32:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.88	8.87:	9.10	27.82	-0.361:	13.16	31.34:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.90	8.98:	9.11	27.82	-0.361:	13.16	31.34:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.63	7.52:	9.51	28.15	-0.365:	13.63	31.81:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.63	7.49:			:	13.63	31.81:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.60	5.60	7.62:	8.90	27.68	-0.356:	12.91	31.11:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.92	8.36:			:	12.91	31.11:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.66	7.56:	9.68	28.30	-0.367:	13.79	31.98:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.66	7.54:	9.69	28.31	-0.368:	13.80	32.00:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.09	8.02:	9.98	28.56	-0.375:	14.12	32.35:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.15	8.57:	9.98	28.56	-0.375:	14.12	32.34:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.18	8.52:	10.28	28.82	-0.380:	14.53	32.78:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.24	8.56:	10.35	28.88	-0.381:	14.53	32.79:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.25	8.63:	10.19	28.77	-0.379:	14.39	32.66:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.30	8.43:	10.23	28.80	-0.380:	14.42	32.70:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.38	8.44:	10.36	28.92	-0.383:	14.63	32.94:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.45	8.41:	10.17	28.78	-0.380:	14.40	32.69:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.46	8.33:			:	14.40	32.69:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.91	4.91	8.00:	9.70	28.39	-0.363:	13.51	31.78:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.00	9.07:			:	13.51	31.78:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.32	8.40:	10.60	29.14	-0.386:	14.78	33.11:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.33	8.48:	10.61	29.15	-0.386:	14.78	33.11:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.52	8.61:	10.64	29.20	-0.388:	14.80	33.15:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.62	8.74:	10.74	29.30	-0.390:	14.92	33.30:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.82	8.93:	10.75	29.34	-0.392:	14.90	33.31:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.85	9.01:	10.75	29.34	-0.392:	14.90	33.31:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.14	9.39:	10.69	29.29	-0.393:	14.84	33.25:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.11	9.31:	10.50	29.17	-0.390:	14.66	33.09:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.94	8.76:	10.64	29.29	-0.391:	14.78	33.22:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.00	8.83:	10.64	29.29	-0.391:	14.78	33.22:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.24	3.24	6.46:	8.73	27.93	-0.346:	12.08	30.77:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.93	8.52:	9.00	28.14	-0.361:	12.32	31.00:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.00	8.61:	9.36	28.48	-0.366:	12.89	31.60:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.83	9.50:	9.49	28.61	-0.374:	13.08	31.81:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.98	9.25:	9.73	28.82	-0.379:	13.41	32.16:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.33	9.23:	9.75	28.85	-0.381:	13.41	32.18:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.35	9.34:	9.75	28.85	-0.382:	13.41	32.18:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.86	7.78:	10.09	29.14	-0.383:	13.81	32.61:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.86	7.75:			:	13.81	32.61:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.16	6.16	8.17:	9.58	28.73	-0.378:	13.21	31.99:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.57	8.99:			:	13.21	31.99:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.92	7.85:	10.23	29.28	-0.386:	13.95	32.76:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.92	7.83:	10.25	29.29	-0.386:	13.96	32.77:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.46	8.37:	10.51	29.54	-0.394:	14.26	33.11:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.54	8.90:	10.51	29.53	-0.395:	14.26	33.10:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.59	8.89:	10.78	29.78	-0.399:	14.61	33.50:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.69	8.95:	10.84	29.84	-0.401:	14.62	33.52:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.71	9.03:	10.71	29.75	-0.399:	14.51	33.41:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.79	8.86:	10.75	29.78	-0.400:	14.54	33.45:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.87	8.88:	10.86	29.89	-0.403:	14.72	33.66:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.94	8.85:	10.71	29.76	-0.401:	14.53	33.45:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.95	8.78:			:	14.53	33.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.70	4.70	7.55:	10.39	29.49	-0.380:	13.83	32.72:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.81	8.74:			:	13.83	32.72:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.72	8.77:	11.09	30.11	-0.405:	14.87	33.84:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.73	8.82:	11.09	30.12	-0.405:	14.87	33.85:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.95	8.98:	11.13	30.17	-0.408:	14.89	33.89:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.07	9.12:	11.22	30.27	-0.410:	15.01	34.04:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.30	9.35:	11.25	30.32	-0.412:	15.00	34.06:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.33	9.43:	11.25	30.32	-0.413:	15.00	34.06:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.67	9.88:	11.17	30.26	-0.414:	14.93	33.99:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.62	9.77:	11.03	30.17	-0.411:	14.79	33.87:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.36	9.14:	11.17	30.29	-0.412:	14.91	34.00:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.44	9.22:	11.17	30.29	-0.412:	14.91	34.00:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY EQUILIBRIUM PARAMETERS TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY EQUILIBRIUM PARAMETERS K1 (J/M2/S/C)	AVG. DAILY EQUILIBRIUM PARAMETERS K2: (J/M2: (C)	MAX. DAILY EQUILIBRIUM PARAMETERS TE (J/M2: (C)	MAX. DAILY EQUILIBRIUM PARAMETERS K1: (J/M2: (C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.23	3.23	6.19:	6.81	21.93-0.253:	10.01	23.83:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.57	7.43:	7.15	22.12-0.263:	10.32	24.03:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.63	7.50:	7.34	22.26-0.265:	10.71	24.34:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.16	8.07:	7.44	22.34-0.269:	10.86	24.46:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.25	7.81:	7.60	22.44-0.271:	11.12	24.65:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.46	7.70:	7.64	22.48-0.272:	11.14	24.68:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.48	7.79:	7.64	22.48-0.272:	11.14	24.68:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.34	6.76:	7.96	22.67-0.275:	11.52	24.96:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.34	6.72:		:	11.52	24.96:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.60	5.60	7.24:	7.48	22.40-0.271:	10.95	24.55:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.78	7.63:		:	10.95	24.55:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.38	6.80:	8.14	22.79-0.277:	11.69	25.09:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.38	6.78:	8.15	22.80-0.277:	11.70	25.10:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.66	7.08:	8.43	22.97-0.282:	12.00	25.33:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.70	7.48:	8.42	22.97-0.282:	12.00	25.33:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.77	7.49:	8.63	23.11-0.284:	12.30	25.56:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.86	7.55:	8.76	23.19-0.286:	12.37	25.62:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.88	7.62:	8.60	23.11-0.285:	12.22	25.52:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.96	7.51:	8.64	23.13-0.286:	12.26	25.55:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.04	7.53:	8.69	23.18-0.287:	12.38	25.66:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.10	7.51:	8.56	23.10-0.285:	12.21	25.53:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.11	7.46:		:	12.21	25.53:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.85	4.85	7.31:	8.60	23.12-0.279:	11.88	25.28:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.91	7.92:		:	11.88	25.28:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.98	7.51:	9.04	23.40-0.290:	12.65	25.87:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.99	7.54:	9.05	23.41-0.290:	12.66	25.87:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.13	7.64:	9.11	23.46-0.292:	12.70	25.92:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.21	7.74:	9.19	23.52-0.293:	12.80	26.01:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.36	7.89:	9.23	23.58-0.294:	12.82	26.05:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.38	7.96:	9.23	23.58-0.294:	12.82	26.05:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.58	8.26:	9.14	23.52-0.294:	12.73	25.99:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.57	8.20:	8.97	23.44-0.293:	12.57	25.89:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.52	7.84:	9.14	23.55-0.294:	12.72	26.01:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.57	7.90:	9.14	23.55-0.294:	12.72	26.01:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.30	3.30	6.82:	8.51	30.42-0.383:		12.12	33.82:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.22	9.23:	8.74	30.62-0.401:		12.32	34.04:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.30	9.32:	9.23	31.10-0.409:		13.02	34.85:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.20	10.28:	9.39	31.28-0.419:		13.24	35.12:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.35	10.06:	9.67	31.54-0.425:		13.61	35.56:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.72	10.07:	9.69	31.58-0.428:		13.62	35.59:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.75	10.18:	9.69	31.58-0.428:		13.62	35.59:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.02	8.34:	10.04	31.92-0.428:		14.03	36.08:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.02	8.30:			:	14.03	36.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.40	6.40	8.79:	9.51	31.44-0.422:		13.39	35.35:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.85	9.71:			:	13.39	35.35:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.09	8.42:	10.16	32.05-0.431:		14.15	36.23:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.09	8.39:	10.17	32.06-0.431:		14.16	36.24:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.69	8.97:	10.45	32.34-0.441:		14.46	36.63:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.77	9.56:	10.45	32.34-0.442:		14.46	36.63:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.89	9.59:	10.75	32.65-0.448:		14.86	37.13:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.07	9.73:	10.78	32.69-0.450:		14.83	37.11:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.10	9.82:	10.68	32.60-0.448:		14.74	37.01:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.24	9.68:	10.71	32.63-0.450:		14.76	37.05:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.32	9.69:	10.86	32.80-0.454:		14.98	37.34:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.40	9.66:	10.69	32.64-0.451:		14.78	37.09:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.41	9.57:			:	14.78	37.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.07	5.07	8.24:	10.21	32.18-0.424:		13.90	36.04:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.18	9.50:			:	13.90	36.04:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.16	9.56:	11.03	32.99-0.455:		15.08	37.47:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.17	9.61:	11.03	32.99-0.455:		15.08	37.47:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.40	9.77:	11.06	33.04-0.458:		15.09	37.50:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.51	9.92:	11.17	33.16-0.461:		15.21	37.69:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.75	10.15:	11.17	33.20-0.463:		15.19	37.69:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.78	10.24:	11.17	33.20-0.463:		15.19	37.69:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.13	10.72:	11.10	33.13-0.465:		15.12	37.61:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.07	10.60:	10.98	33.06-0.462:		15.00	37.50:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.79	9.89:	11.10	33.18-0.462:		15.10	37.63:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.87	9.97:	11.10	33.18-0.462:		15.10	37.63:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.65	3.65	5.89:	4.48	38.62-0.491:		6.74	41.03:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.69	6.79:	4.66	38.80-0.435:		6.91	41.23:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.73	6.85:	4.78	39.01-0.522:		7.13	41.57:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		4.93	7.10:	4.86	39.14-0.514:		7.23	41.74:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		4.96	7.02:	4.94	39.24-0.511:		7.35	41.91:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.03	6.94:	4.99	39.33-0.475:		7.40	42.00:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.03	6.99:	4.99	39.33-0.493:		7.40	42.00:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.97	6.35:	5.16	39.53-0.517:		7.60	42.26:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.98	6.32:				7.60	42.26:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.88	5.88	7.53:	4.95	39.31-0.522:		7.34	41.95:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.71	7.36:				7.34	41.95:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.04	6.40:	5.28	39.68-0.521:		7.71	42.42:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.04	6.39:	5.28	39.68-0.521:		7.72	42.43:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.08	6.45:	5.45	39.90-0.525:		7.91	42.69:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.09	6.72:	5.45	39.90-0.525:		7.90	42.69:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.19	6.77:	5.56	40.03-0.528:		8.05	42.90:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.31	6.86:	5.66	40.16-0.532:		8.13	43.01:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.34	6.93:	5.59	40.12-0.531:		8.07	42.96:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.43	6.88:	5.62	40.14-0.531:		8.09	42.99:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.49	6.91:	5.65	40.20-0.534:		8.15	43.10:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.54	6.88:	5.60	40.16-0.533:		8.09	43.02:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.55	6.85:				8.09	43.02:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.61	4.61	6.72:	5.76	40.33-0.526:		8.08	43.00:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.64	6.95:				8.08	43.00:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.44	6.86:	5.88	40.49-0.537:		8.36	43.38:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.45	6.90:	5.89	40.49-0.538:		8.36	43.38:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.52	6.94:	5.96	40.60-0.540:		8.42	43.49:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.56	7.01:	6.02	40.71-0.541:		8.50	43.62:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.64	7.08:	6.10	40.85-0.545:		8.57	43.77:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.64	7.13:	6.11	40.85-0.544:		8.57	43.77:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.70	7.28:	6.05	40.79-0.544:		8.51	43.70:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.73	7.27:	6.02	40.83-0.544:		8.49	43.74:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.90	7.18:	6.12	40.94-0.548:		8.58	43.85:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.92	7.20:	6.12	40.94-0.548:		8.58	43.85:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:(C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.81	3.81	5.78:	4.99	41.14	-0.532:	6.97	43.43:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.97	6.86:	5.16	41.32	-0.549:	7.13	43.62:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.01	6.92:	5.25	41.52	-0.551:	7.30	43.93:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.25	7.19:	5.32	41.65	-0.545:	7.39	44.10:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.29	7.12:	5.37	41.73	-0.563:	7.48	44.23:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.35	7.06:	5.43	41.84	-0.548:	7.53	44.34:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.36	7.11:	5.43	41.84	-0.550:	7.53	44.34:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.11	6.37:	5.57	42.02	-0.558:	7.70	44.58:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.11	6.34:			:	7.70	44.58:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.53	5.53	7.03:	5.40	41.83	-0.557:	7.49	44.31:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.50	7.04:			:	7.49	44.31:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.14	6.39:	5.68	42.17	-0.561:	7.81	44.74:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.14	6.38:	5.69	42.18	-0.561:	7.82	44.75:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.25	6.50:	5.84	42.39	-0.566:	7.98	45.00:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.26	6.75:	5.84	42.39	-0.566:	7.98	45.00:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.38	6.83:	5.93	42.51	-0.569:	8.10	45.18:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.54	6.95:	6.03	42.65	-0.573:	8.18	45.32:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.57	7.02:	5.97	42.61	-0.573:	8.13	45.27:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.69	7.01:	5.99	42.64	-0.574:	8.15	45.30:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.75	7.04:	6.01	42.69	-0.575:	8.20	45.39:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.79	7.02:	5.98	42.66	-0.573:	8.15	45.33:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.80	6.99:			:	8.15	45.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.70	4.70	6.58:	6.20	42.91	-0.568:	8.23	45.44:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.74	6.85:			:	8.23	45.44:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.68	6.97:	6.25	43.00	-0.580:	8.41	45.70:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.69	7.01:	6.25	43.00	-0.580:	8.41	45.70:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.77	7.06:	6.32	43.12	-0.583:	8.47	45.82:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.81	7.13:	6.38	43.22	-0.585:	8.54	45.95:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.90	7.22:	6.47	43.39	-0.587:	8.62	46.12:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.90	7.26:	6.47	43.39	-0.588:	8.62	46.12:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.98	7.42:	6.41	43.32	-0.587:	8.57	46.05:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.01	7.40:	6.41	43.39	-0.587:	8.56	46.11:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.14	7.32:	6.50	43.50	-0.591:	8.65	46.23:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.16	7.34:	6.50	43.50	-0.591:	8.65	46.23:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.86	3.86	5.41:	4.62	43.77-0.568:		6.18	45.66:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.91	6.37:	4.79	43.97-0.581:		6.34	45.86:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.96	6.42:	4.80	44.09-0.583:		6.40	46.05:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.12	6.59:	4.85	44.21-0.587:		6.47	46.19:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.14	6.55:	4.87	44.25-0.588:		6.51	46.26:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.16	6.47:	4.93	44.36-0.589:		6.57	46.39:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.16	6.51:	4.93	44.36-0.591:		6.57	46.39:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.97	5.95:	5.04	44.51-0.597:		6.69	46.57:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.96	5.92:		:		6.69	46.57:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	4.90	4.90	6.10:	4.92	44.38-0.432:		6.55	46.39:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		4.90	6.13:		:		6.55	46.39:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.96	5.94:	5.15	44.67-0.593:		6.80	46.74:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.96	5.93:	5.15	44.68-0.592:		6.81	46.75:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.00	5.99:	5.28	44.87-0.596:		6.94	46.97:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.01	6.17:	5.28	44.87-0.597:		6.94	46.97:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.14	6.27:	5.33	44.96-0.600:		7.01	47.09:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.30	6.40:	5.44	45.12-0.607:		7.11	47.25:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.33	6.46:	5.39	45.09-0.595:		7.07	47.22:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.45	6.49:	5.41	45.11-0.620:		7.09	47.25:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.50	6.52:	5.40	45.14-0.606:		7.10	47.29:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.54	6.50:	5.39	45.13-0.604:		7.08	47.28:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.55	6.48:		:		7.08	47.28:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.60	4.60	6.10:	5.74	45.54-0.603:		7.34	47.62:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.63	6.28:		:		7.34	47.62:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.44	6.46:	5.65	45.47-0.612:		7.33	47.64:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.45	6.49:	5.65	45.48-0.613:		7.33	47.64:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.51	6.53:	5.73	45.61-0.614:		7.41	47.79:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.54	6.58:	5.78	45.71-0.616:		7.47	47.91:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.60	6.64:	5.89	45.90-0.619:		7.57	48.11:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.61	6.68:	5.89	45.91-0.620:		7.57	48.11:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.65	6.78:	5.83	45.84-0.617:		7.52	48.04:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.68	6.79:	5.84	45.93-0.617:		7.53	48.14:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.87	6.81:	5.93	46.04-0.629:		7.62	48.25:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.89	6.83:	5.93	46.04-0.629:		7.62	48.25:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.72	3.72	5.49:	6.50	23.62-0.280:	8.40	24.80:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.12	6.77:	6.83	23.82-0.291:	8.71	25.01:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.19	6.84:	6.73	23.80-0.290:	8.71	25.05:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.59	7.22:	6.76	23.85-0.293:	8.77	25.12:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.65	7.07:	6.77	23.86-0.293:	8.82	25.16:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.77	6.99:	6.83	23.91-0.294:	8.88	25.22:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.78	7.05:	6.83	23.92-0.294:	8.88	25.22:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.32	6.12:	7.03	24.05-0.294:	9.11	25.39:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.31	6.08:		:	9.11	25.39:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.17	5.17	6.15:	6.75	23.88-0.290:	8.79	25.17:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.32	6.38:		:	8.79	25.17:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.31	6.11:	7.22	24.17-0.296:	9.29	25.52:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.31	6.09:	7.24	24.18-0.296:	9.31	25.53:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.51	6.32:	7.42	24.32-0.300:	9.51	25.69:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.53	6.55:	7.42	24.31-0.300:	9.50	25.69:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.68	6.66:	7.47	24.36-0.301:	9.60	25.77:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.88	6.82:	7.66	24.49-0.305:	9.76	25.90:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.92	6.90:	7.51	24.41-0.303:	9.62	25.81:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.07	6.95:	7.55	24.43-0.304:	9.66	25.84:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.13	6.98:	7.50	24.41-0.304:	9.64	25.84:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.18	6.98:	7.45	24.38-0.304:	9.57	25.79:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.19	6.96:		:	9.57	25.79:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.49	4.49	6.01:	7.99	24.73-0.301:	9.95	26.06:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.55	6.37:		:	9.95	26.06:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.02	6.90:	7.92	24.69-0.308:	10.03	26.13:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.02	6.91:	7.92	24.70-0.309:	10.03	26.13:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.13	6.99:	8.01	24.77-0.310:	10.11	26.21:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.19	7.07:	8.06	24.82-0.311:	10.17	26.27:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.31	7.18:	8.16	24.91-0.313:	10.26	26.36:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.32	7.23:	8.16	24.91-0.313:	10.26	26.36:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.45	7.42:	8.07	24.85-0.313:	10.18	26.30:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.46	7.40:	7.95	24.81-0.311:	10.07	26.25:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.52	7.28:	8.11	24.92-0.314:	10.22	26.37:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.55	7.32:	8.11	24.92-0.314:	10.22	26.37:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.77	3.77	5.62:	5.71	33.55	-0.424:	7.59	35.30:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.08	6.87:	5.93	33.75	-0.439:	7.80	35.51:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.14	6.94:	5.99	33.87	-0.440:	7.95	35.74:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.48	7.28:	6.05	33.97	-0.444:	8.04	35.87:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.53	7.19:	6.11	34.04	-0.446:	8.14	35.98:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.63	7.12:	6.16	34.12	-0.447:	8.19	36.06:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.64	7.17:	6.17	34.12	-0.447:	8.19	36.06:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.34	6.37:	6.34	34.30	-0.448:	8.40	36.29:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.34	6.34:			:	8.40	36.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.99	5.99	7.24:	6.10	34.08	-0.453:	8.12	36.00:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.01	7.30:			:	8.12	36.00:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.39	6.42:	6.48	34.44	-0.451:	8.53	36.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.39	6.40:	6.49	34.45	-0.451:	8.54	36.46:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.55	6.59:	6.66	34.64	-0.455:	8.73	36.69:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.57	6.84:	6.66	34.64	-0.456:	8.73	36.68:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.72	6.94:	6.75	34.74	-0.459:	8.86	36.84:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.90	7.10:	6.88	34.88	-0.462:	8.96	36.97:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.94	7.17:	6.78	34.81	-0.461:	8.88	36.90:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.09	7.20:	6.81	34.84	-0.463:	8.90	36.93:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.13	7.21:	6.81	34.86	-0.463:	8.94	36.99:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.16	7.18:	6.76	34.82	-0.463:	8.87	36.92:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.16	7.16:			:	8.87	36.92:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.65	4.65	6.37:	7.02	35.05	-0.454:	8.96	37.02:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.70	6.71:			:	8.96	37.02:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.01	7.11:	7.10	35.16	-0.468:	9.20	37.29:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.02	7.14:	7.11	35.16	-0.468:	9.20	37.29:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.10	7.20:	7.18	35.26	-0.470:	9.27	37.39:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.15	7.27:	7.24	35.34	-0.471:	9.34	37.50:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.24	7.36:	7.32	35.47	-0.474:	9.41	37.62:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.25	7.41:	7.32	35.47	-0.474:	9.41	37.63:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.37	7.58:	7.26	35.41	-0.474:	9.35	37.56:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.37	7.55:	7.20	35.41	-0.473:	9.30	37.56:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.41	7.40:	7.32	35.52	-0.475:	9.41	37.68:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.44	7.43:	7.32	35.52	-0.475:	9.41	37.68:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.86	3.86	6.37:	7.25	37.32-0.486:	9.78	40.16:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.52	8.25:	7.44	37.51-0.506:	9.96	40.37:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.59	8.32:	7.76	37.94-0.513:	10.43	41.04:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.21	8.99:	7.88	38.11-0.522:	10.59	41.28:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.31	8.89:	8.06	38.32-0.527:	10.83	41.61:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.55	8.91:	8.09	38.39-0.530:	10.86	41.68:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.56	8.99:	8.10	38.39-0.530:	10.86	41.68:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.95	7.67:	8.35	38.69-0.529:	11.16	42.09:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.94	7.63:		:	11.16	42.09:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.58	6.58	8.46:	7.98	38.29-0.528:	10.71	41.51:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.82	8.89:		:	10.71	41.51:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.01	7.73:	8.46	38.84-0.532:	11.27	42.25:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.01	7.72:	8.47	38.85-0.532:	11.28	42.26:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.44	8.15:	8.68	39.12-0.541:	11.52	42.61:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.50	8.55:	8.68	39.12-0.542:	11.52	42.61:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.67	8.66:	8.88	39.37-0.548:	11.78	42.99:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.90	8.85:	8.94	39.46-0.552:	11.80	43.04:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.94	8.94:	8.87	39.39-0.551:	11.73	42.97:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.12	8.93:	8.89	39.42-0.553:	11.76	43.00:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.15	8.92:	8.98	39.54-0.555:	11.89	43.21:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.19	8.87:	8.88	39.44-0.554:	11.76	43.04:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.19	8.82:		:	11.76	43.04:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.36	5.36	7.75:	8.67	39.19-0.530:	11.29	42.40:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.44	8.46:		:	11.29	42.40:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.00	8.78:	9.17	39.79-0.558:	12.03	43.43:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.00	8.83:	9.17	39.79-0.558:	12.04	43.43:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.15	8.93:	9.21	39.87-0.561:	12.07	43.50:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.23	9.03:	9.30	40.00-0.563:	12.17	43.68:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.39	9.19:	9.33	40.09-0.566:	12.19	43.75:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.40	9.25:	9.34	40.09-0.566:	12.19	43.75:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.64	9.58:	9.27	40.02-0.567:	12.13	43.67:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.60	9.49:	9.21	40.00-0.565:	12.06	43.64:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.39	8.99:	9.31	40.12-0.565:	12.16	43.77:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.45	9.05:	9.31	40.12-0.565:	12.16	43.77:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.81	3.81	6.34:	6.12	35.28-0.451:		8.67	37.88:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.31	7.85:	6.31	35.46-0.468:		8.85	38.08:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.37	7.92:	6.61	35.83-0.474:		9.29	38.66:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.84	8.47:	6.73	35.99-0.481:		9.44	38.87:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.92	8.38:	6.89	36.17-0.485:		9.67	39.16:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.10	8.38:	6.93	36.24-0.487:		9.71	39.23:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.11	8.45:	6.93	36.24-0.487:		9.71	39.23:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.72	7.38:	7.18	36.50-0.488:		10.00	39.58:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.72	7.35:			:	10.00	39.58:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.84	6.84	8.73:	6.83	36.15-0.584:		9.57	39.09:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.84	8.80:			:	9.57	39.09:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.81	7.47:	7.29	36.63-0.491:		10.11	39.74:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.81	7.45:	7.30	36.64-0.491:		10.11	39.74:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.08	7.71:	7.51	36.89-0.498:		10.36	40.06:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.11	8.08:	7.51	36.89-0.499:		10.35	40.06:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.27	8.17:	7.70	37.11-0.504:		10.61	40.39:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.48	8.35:	7.77	37.19-0.507:		10.64	40.45:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.52	8.43:	7.69	37.14-0.506:		10.57	40.39:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.68	8.41:	7.72	37.16-0.508:		10.59	40.42:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.70	8.39:	7.80	37.27-0.510:		10.72	40.60:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.72	8.33:	7.71	37.18-0.509:		10.60	40.46:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.72	8.27:			:	10.60	40.46:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.97	4.97	7.35:	7.56	37.03-0.489:		10.20	39.97:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.03	7.88:			:	10.20	39.97:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.52	8.23:	8.00	37.51-0.512:		10.88	40.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.52	8.27:	8.00	37.51-0.513:		10.88	40.82:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.63	8.33:	8.05	37.59-0.515:		10.91	40.89:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.69	8.42:	8.13	37.71-0.517:		11.01	41.05:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.80	8.53:	8.18	37.80-0.519:		11.04	41.13:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.82	8.59:	8.18	37.80-0.519:		11.04	41.13:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.99	8.87:	8.11	37.73-0.519:		10.98	41.05:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.96	8.79:	8.05	37.73-0.518:		10.92	41.03:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.83	8.37:	8.16	37.84-0.519:		11.01	41.15:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.87	8.41:	8.16	37.84-0.519:		11.01	41.15:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.67	3.67	6.49:	6.79	25.74-0.312:	9.71	27.84:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.39	8.17:	7.04	25.91-0.325:	9.94	28.03:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.46	8.25:	7.33	26.15-0.329:	10.39	28.44:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.04	8.91:	7.44	26.26-0.334:	10.54	28.59:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.13	8.74:	7.61	26.39-0.337:	10.79	28.81:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.35	8.71:	7.65	26.44-0.339:	10.83	28.86:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.37	8.79:	7.65	26.44-0.339:	10.83	28.86:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.84	7.48:	7.92	26.64-0.339:	11.15	29.15:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.84	7.44:		:	11.15	29.15:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.26	6.26	8.14:	7.52	26.36-0.337:	10.66	28.73:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.44	8.51:		:	10.66	28.73:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.89	7.52:	8.06	26.75-0.341:	11.28	29.27:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.88	7.51:	8.07	26.75-0.341:	11.29	29.28:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.23	7.82:	8.32	26.96-0.347:	11.57	29.54:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.28	8.23:	8.32	26.96-0.347:	11.57	29.54:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.45	8.33:	8.53	27.12-0.351:	11.84	29.80:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.68	8.51:	8.62	27.20-0.354:	11.89	29.85:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.72	8.61:	8.51	27.13-0.353:	11.80	29.78:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.89	8.58:	8.54	27.16-0.354:	11.83	29.81:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.90	8.54:	8.62	27.23-0.356:	11.95	29.94:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.91	8.46:	8.51	27.15-0.354:	11.82	29.82:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.91	8.40:		:	11.82	29.82:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.89	4.89	7.33:	8.47	27.13-0.340:	11.47	29.51:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.95	7.96:		:	11.47	29.51:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.66	8.35:	8.88	27.44-0.358:	12.16	30.14:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.67	8.36:	8.88	27.44-0.358:	12.16	30.14:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.78	8.43:	8.94	27.50-0.359:	12.20	30.19:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.84	8.52:	9.02	27.58-0.361:	12.30	30.30:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.97	8.65:	9.06	27.64-0.362:	12.32	30.35:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.99	8.71:	9.06	27.64-0.362:	12.32	30.35:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.19	9.06:	8.96	27.57-0.362:	12.23	30.27:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.15	8.96:	8.87	27.54-0.361:	12.13	30.22:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.94	8.41:	9.01	27.64-0.361:	12.26	30.34:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.99	8.46:	9.01	27.64-0.361:	12.26	30.34:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.81	3.81	6.26:	7.08	27.04	-0.332:	9.60	28.96:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.58	8.05:	7.32	27.21	-0.347:	9.82	29.14:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.66	8.13:	7.52	27.41	-0.350:	10.17	29.48:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.24	8.77:	7.61	27.50	-0.355:	10.29	29.61:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.34	8.64:	7.74	27.61	-0.358:	10.48	29.79:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.55	8.63:	7.79	27.66	-0.360:	10.52	29.85:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.56	8.71:	7.79	27.66	-0.360:	10.52	29.85:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.91	7.40:	8.01	27.84	-0.358:	10.79	30.09:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.90	7.35:			:	10.79	30.09:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.08	7.08	8.78:	7.69	27.60	-0.362:	10.39	29.75:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.18	8.99:			:	10.39	29.75:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.00	7.48:	8.14	27.95	-0.361:	10.91	30.21:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.00	7.47:	8.14	27.96	-0.361:	10.92	30.22:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.37	7.81:	8.37	28.15	-0.367:	11.17	30.46:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.43	8.17:	8.37	28.15	-0.367:	11.17	30.46:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.60	8.28:	8.54	28.29	-0.371:	11.39	30.68:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.82	8.46:	8.63	28.37	-0.374:	11.45	30.75:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.87	8.55:	8.54	28.32	-0.373:	11.37	30.69:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.04	8.55:	8.57	28.34	-0.374:	11.40	30.71:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.02	8.50:	8.62	28.40	-0.375:	11.50	30.82:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.02	8.41:	8.54	28.34	-0.374:	11.39	30.73:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.02	8.36:			:	11.39	30.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.90	4.90	7.05:	8.67	28.44	-0.361:	11.26	30.61:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.97	7.64:			:	11.26	30.61:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.74	8.26:	8.89	28.62	-0.377:	11.71	31.04:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.75	8.26:	8.89	28.63	-0.377:	11.72	31.04:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.86	8.34:	8.95	28.69	-0.379:	11.76	31.10:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.92	8.43:	9.02	28.77	-0.380:	11.85	31.21:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.05	8.55:	9.08	28.85	-0.382:	11.89	31.28:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.06	8.61:	9.08	28.85	-0.382:	11.89	31.28:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.28	8.95:	8.98	28.77	-0.382:	11.80	31.19:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.22	8.85:	8.92	28.76	-0.381:	11.74	31.17:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.96	8.28:	9.05	28.87	-0.381:	11.86	31.29:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.01	8.34:	9.05	28.87	-0.381:	11.86	31.29:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2/ C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.85	3.85	5.89:	5.54	29.56-0.365:		7.61	31.23:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.37	7.29:	5.75	29.72-0.379:		7.82	31.40:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.43	7.35:	5.84	29.85-0.381:		8.00	31.63:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.75	7.72:	5.90	29.94-0.382:		8.09	31.74:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.80	7.63:	5.97	30.01-0.386:		8.21	31.85:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.90	7.57:	6.03	30.07-0.388:		8.26	31.93:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.90	7.62:	6.03	30.07-0.391:		8.26	31.93:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.46	6.68:	6.19	30.22-0.387:		8.45	32.11:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.45	6.63:		:		8.45	32.11:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.91	6.91	8.37:	5.97	30.05-0.394:		8.19	31.88:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.74	8.21:		:		8.19	31.88:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.55	6.76:	6.31	30.33-0.389:		8.57	32.24:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.55	6.74:	6.32	30.33-0.389:		8.58	32.24:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.73	6.90:	6.50	30.50-0.394:		8.78	32.45:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.75	7.17:	6.50	30.51-0.394:		8.78	32.45:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.92	7.29:	6.60	30.61-0.396:		8.92	32.60:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.13	7.46:	6.72	30.71-0.400:		9.02	32.70:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.17	7.54:	6.64	30.67-0.399:		8.95	32.65:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.33	7.57:	6.67	30.69-0.401:		8.97	32.68:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.30	7.51:	6.69	30.72-0.401:		9.02	32.74:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.28	7.42:	6.64	30.69-0.400:		8.96	32.69:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.28	7.39:		:		8.96	32.69:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.54	4.54	6.37:	6.96	30.95-0.392:		9.10	32.82:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.59	6.71:		:		9.10	32.82:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.05	7.30:	6.97	30.97-0.403:		9.27	32.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.06	7.29:	6.97	30.97-0.403:		9.27	32.99:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.11	7.33:	7.04	31.05-0.405:		9.33	33.08:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.15	7.38:	7.10	31.13-0.406:		9.41	33.17:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.22	7.45:	7.18	31.24-0.408:		9.48	33.28:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.22	7.50:	7.18	31.24-0.408:		9.48	33.28:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.34	7.72:	7.09	31.16-0.407:		9.40	33.20:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.32	7.65:	7.06	31.18-0.407:		9.37	33.22:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.22	7.31:	7.19	31.29-0.408:		9.48	33.33:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.25	7.35:	7.19	31.29-0.408:		9.48	33.33:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.82	3.82	5.69:	4.84	32.78-0.409:		6.73	34.45:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.23	6.95:	5.03	32.94-0.425:		6.91	34.62:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.28	7.01:	5.08	33.06-0.425:		7.04	34.82:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.48	7.25:	5.14	33.15-0.428:		7.12	34.93:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.51	7.18:	5.19	33.20-0.430:		7.20	35.02:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.56	7.10:	5.25	33.28-0.430:		7.26	35.11:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.56	7.14:	5.25	33.28-0.430:		7.26	35.11:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.23	6.38:	5.38	33.41-0.430:		7.42	35.28:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.22	6.34:		:		7.42	35.28:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.90	5.90	7.31:	5.22	33.27-0.433:		7.21	35.09:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.76	7.17:		:		7.21	35.09:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.27	6.41:	5.49	33.53-0.431:		7.53	35.41:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.26	6.40:	5.50	33.54-0.433:		7.53	35.41:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.37	6.49:	5.66	33.71-0.436:		7.71	35.62:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.38	6.71:	5.66	33.71-0.436:		7.71	35.62:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.56	6.85:	5.74	33.80-0.440:		7.82	35.75:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.78	7.02:	5.86	33.91-0.444:		7.92	35.86:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.82	7.10:	5.79	33.88-0.490:		7.86	35.83:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.98	7.14:	5.82	33.90-0.442:		7.89	35.85:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.95	7.08:	5.83	33.93-0.449:		7.92	35.91:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.92	7.00:	5.80	33.91-0.446:		7.88	35.87:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.92	6.96:		:		7.88	35.87:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.56	4.56	6.28:	6.15	34.23-0.438:		8.10	36.09:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.60	6.51:		:		8.10	36.09:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.74	6.90:	6.09	34.20-0.446:		8.16	36.17:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.74	6.91:	6.10	34.20-0.446:		8.16	36.18:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.77	6.91:	6.17	34.29-0.448:		8.23	36.27:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.79	6.96:	6.23	34.37-0.449:		8.30	36.37:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.83	7.00:	6.32	34.50-0.452:		8.39	36.50:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.83	7.04:	6.32	34.50-0.452:		8.39	36.51:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.90	7.20:	6.24	34.43-0.450:		8.31	36.43:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.89	7.16:	6.23	34.48-0.450:		8.31	36.48:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.87	6.92:	6.34	34.58-0.452:		8.41	36.59:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.89	6.94:	6.34	34.58-0.452:		8.41	36.59:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.83	3.83	6.09:	5.99	26.64-0.324:		8.32	28.32:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.49	7.63:	6.23	26.80-0.337:		8.54	28.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.55	7.70:	6.36	26.95-0.339:		8.79	28.75:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.96	8.17:	6.44	27.03-0.343:		8.90	28.86:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.02	8.05:	6.53	27.11-0.345:		9.04	28.99:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.16	8.01:	6.58	27.17-0.347:		9.09	29.05:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.17	8.07:	6.58	27.17-0.347:		9.09	29.06:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.61	6.94:	6.78	27.32-0.345:		9.32	29.26:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.60	6.89:		:		9.32	29.26:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.22	6.22	7.80:	6.51	27.13-0.346:		8.99	28.99:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.27	7.93:		:		8.99	28.99:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.65	6.97:	6.90	27.42-0.347:		9.44	29.37:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.65	6.96:	6.91	27.42-0.347:		9.45	29.38:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.92	7.20:	7.12	27.60-0.352:		9.68	29.59:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.95	7.51:	7.12	27.60-0.352:		9.68	29.59:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.14	7.64:	7.25	27.71-0.355:		9.86	29.75:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.38	7.84:	7.36	27.80-0.358:		9.94	29.84:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.42	7.93:	7.27	27.75-0.357:		9.87	29.78:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.60	7.95:	7.30	27.77-0.359:		9.89	29.81:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.57	7.89:	7.33	27.81-0.359:		9.96	29.88:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.55	7.79:	7.27	27.77-0.358:		9.88	29.82:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.55	7.75:		:		9.88	29.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.94	4.94	6.93:	7.52	27.95-0.351:		9.91	29.84:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.99	7.31:		:		9.91	29.84:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.33	7.69:	7.61	28.04-0.362:		10.20	30.11:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.34	7.68:	7.62	28.04-0.362:		10.21	30.11:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.40	7.72:	7.68	28.11-0.363:		10.26	30.18:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.44	7.78:	7.75	28.18-0.364:		10.34	30.27:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.52	7.86:	7.82	28.26-0.366:		10.40	30.35:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.53	7.91:	7.82	28.26-0.366:		10.40	30.35:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.67	8.18:	7.72	28.19-0.366:		10.31	30.27:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.63	8.09:	7.67	28.19-0.365:		10.26	30.27:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.43	7.62:	7.81	28.30-0.365:		10.39	30.38:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.47	7.66:	7.81	28.30-0.365:		10.39	30.38:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.88	3.88	6.52:	8.60	22.01	-0.260:	11.38	23.72:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.96	8.65:	8.89	22.17	-0.273:	11.64	23.89:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.04	8.75:	9.11	22.34	-0.276:	12.03	24.20:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.81	9.57:	9.21	22.41	-0.281:	12.17	24.31:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.94	9.39:	9.36	22.52	-0.283:	12.39	24.48:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.23	9.41:	9.41	22.56	-0.285:	12.43	24.52:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.25	9.50:	9.41	22.56	-0.285:	12.43	24.52:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.33	7.85:	9.67	22.72	-0.283:	12.74	24.75:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.31	7.80:			:	12.74	24.75:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.70	7.70	9.41:	9.27	22.49	-0.286:	12.26	24.41:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.92	9.81:			:	12.26	24.41:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.43	7.96:	9.81	22.82	-0.286:	12.87	24.86:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.42	7.93:	9.82	22.82	-0.286:	12.88	24.86:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.92	8.39:	10.07	22.99	-0.291:	13.17	25.09:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.99	8.81:	10.07	23.00	-0.292:	13.17	25.09:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.19	8.94:	10.27	23.13	-0.295:	13.42	25.29:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.46	9.15:	10.37	23.20	-0.297:	13.49	25.35:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.51	9.26:	10.25	23.14	-0.296:	13.39	25.28:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.71	9.27:	10.29	23.16	-0.298:	13.42	25.30:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.68	9.19:	10.35	23.21	-0.298:	13.53	25.40:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.66	9.09:	10.24	23.15	-0.297:	13.40	25.30:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.65	9.03:			:	13.40	25.30:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.42	5.42	7.62:	10.38	23.23	-0.287:	13.23	25.18:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.50	8.34:			:	13.23	25.18:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.35	8.93:	10.64	23.41	-0.300:	13.77	25.59:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.36	8.91:	10.65	23.41	-0.300:	13.77	25.60:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.49	9.01:	10.70	23.46	-0.301:	13.81	25.64:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.56	9.11:	10.78	23.52	-0.303:	13.91	25.73:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.71	9.25:	10.82	23.58	-0.304:	13.93	25.77:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.73	9.32:	10.83	23.58	-0.304:	13.93	25.77:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.02	9.76:	10.70	23.50	-0.304:	13.82	25.69:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.92	9.60:	10.61	23.47	-0.303:	13.73	25.64:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.43	8.78:	10.77	23.57	-0.302:	13.87	25.76:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.50	8.85:	10.77	23.57	-0.302:	13.87	25.76:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:C)	AVG. DAILY K1 /S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.97	3.97	5.71:	7.24	32.61	-0.417:	9.00	34.26:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.97	7.77:	7.43	32.78	-0.437:	9.19	34.44:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.04	7.85:	7.50	32.91	-0.438:	9.34	34.66:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.59	8.39:	7.56	33.00	-0.444:	9.42	34.78:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.67	8.34:	7.61	33.07	-0.446:	9.51	34.89:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.83	8.35:	7.67	33.14	-0.448:	9.56	34.97:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.84	8.41:	7.67	33.14	-0.448:	9.56	34.97:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.17	7.31:	7.81	33.29	-0.445:	9.73	35.15:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.16	7.26:			:	9.73	35.15:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.64	7.64	8.96:	7.63	33.12	-0.701:	9.50	34.93:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.64	8.99:			:	9.50	34.93:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.27	7.40:	7.92	33.41	-0.448:	9.84	35.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.26	7.38:	7.93	33.42	-0.448:	9.84	35.29:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.58	7.69:	8.09	33.59	-0.453:	10.02	35.50:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.63	7.95:	8.09	33.59	-0.454:	10.02	35.50:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.81	8.09:	8.17	33.69	-0.457:	10.14	35.65:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.04	8.29:	8.28	33.81	-0.461:	10.23	35.76:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.09	8.37:	8.22	33.76	-0.460:	10.17	35.71:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.26	8.43:	8.24	33.79	-0.462:	10.19	35.74:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.22	8.35:	8.25	33.82	-0.462:	10.23	35.80:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.18	8.26:	8.22	33.79	-0.461:	10.18	35.75:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.18	8.23:			:	10.18	35.75:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.86	4.86	6.47:	8.55	34.11	-0.447:	10.38	35.95:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.94	6.97:			:	10.38	35.95:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.87	8.05:	8.51	34.08	-0.463:	10.46	36.07:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.87	8.04:	8.51	34.09	-0.464:	10.46	36.07:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.97	8.11:	8.58	34.18	-0.466:	10.53	36.16:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.02	8.19:	8.63	34.26	-0.467:	10.60	36.26:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.13	8.30:	8.72	34.38	-0.470:	10.67	36.39:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.14	8.35:	8.72	34.38	-0.470:	10.67	36.39:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.35	8.65:	8.64	34.30	-0.470:	10.60	36.30:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.28	8.55:	8.62	34.34	-0.469:	10.59	36.34:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.97	8.02:	8.74	34.45	-0.469:	10.69	36.46:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.02	8.07:	8.74	34.45	-0.469:	10.69	36.46:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.16	4.16	5.93:	5.84	45.37-0.602:		7.61	47.70:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.79	7.52:	6.00	45.56-0.625:		7.76	47.91:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.86	7.59:	6.13	45.84-0.630:		7.97	48.31:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.18	7.94:	6.21	46.00-0.665:		8.07	48.51:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.22	7.91:	6.28	46.11-0.643:		8.18	48.68:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.30	7.88:	6.34	46.23-0.593:		8.23	48.80:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.31	7.92:	6.34	46.23-0.592:		8.23	48.80:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.88	7.09:	6.49	46.45-0.639:		8.41	49.08:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.87	7.05:			:	8.41	49.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.46	7.46	8.88:	6.29	46.19-0.655:		8.17	48.74:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.23	8.61:			:	8.17	48.74:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.98	7.17:	6.60	46.62-0.643:		8.51	49.26:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.97	7.16:	6.61	46.63-0.644:		8.52	49.27:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.10	7.32:	6.75	46.85-0.649:		8.68	49.54:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.12	7.56:	6.75	46.85-0.649:		8.68	49.54:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.28	7.68:	6.84	47.01-0.654:		8.80	49.76:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.48	7.85:	6.93	47.14-0.658:		8.87	49.89:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.52	7.93:	6.88	47.11-0.658:		8.83	49.85:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.68	7.97:	6.90	47.13-0.660:		8.85	49.88:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.63	7.91:	6.92	47.20-0.661:		8.90	49.99:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.60	7.82:	6.89	47.16-0.660:		8.85	49.92:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.60	7.79:			:	8.85	49.92:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.93	4.93	6.67:	7.01	47.32-0.641:		8.84	49.91:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.99	7.06:			:	8.84	49.91:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.41	7.70:	7.13	47.51-0.663:		9.08	50.30:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.41	7.73:	7.13	47.51-0.663:		9.08	50.30:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.46	7.76:	7.19	47.64-0.665:		9.14	50.43:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.49	7.81:	7.26	47.76-0.667:		9.22	50.58:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.55	7.87:	7.34	47.93-0.670:		9.29	50.75:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.56	7.92:	7.34	47.93-0.670:		9.29	50.75:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.68	8.11:	7.28	47.86-0.671:		9.24	50.68:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.65	8.04:	7.28	47.93-0.670:		9.24	50.76:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.50	7.70:	7.36	48.05-0.671:		9.32	50.88:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.54	7.74:	7.36	48.05-0.671:		9.32	50.88:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.18	4.18	6.94:	9.96	32.85	-0.430:	12.76	35.77:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.69	9.98:	10.16	33.04	-0.455:	12.95	35.99:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.79	10.08:	10.59	33.53	-0.463:	13.53	36.73:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.77	11.06:	10.74	33.71	-0.475:	13.71	36.98:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.93	10.93:	10.97	33.95	-0.481:	14.01	37.35:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.29	11.00:	11.00	34.01	-0.485:	14.04	37.42:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.32	11.10:	11.00	34.01	-0.485:	14.04	37.42:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.09	9.08:	11.30	34.34	-0.479:	14.39	37.86:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.07	9.03:			:	14.39	37.86:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.55	8.55	10.58:	10.84	33.86	-0.484:	13.85	37.19:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.93	11.26:			:	13.85	37.19:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.22	9.21:	11.42	34.47	-0.483:	14.50	38.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.21	9.19:	11.42	34.48	-0.483:	14.51	38.02:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.91	9.86:	11.67	34.76	-0.494:	14.78	38.39:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.99	10.36:	11.67	34.76	-0.495:	14.78	38.39:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.21	10.50:	11.91	35.04	-0.502:	15.08	38.80:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.51	10.75:	11.96	35.10	-0.506:	15.09	38.83:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.57	10.87:	11.87	35.03	-0.504:	15.02	38.75:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.80	10.87:	11.90	35.05	-0.507:	15.04	38.78:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.78	10.81:	12.00	35.19	-0.509:	15.19	39.00:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.78	10.71:	11.89	35.07	-0.507:	15.05	38.82:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.78	10.64:			:	15.05	38.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.62	5.62	8.18:	11.53	34.69	-0.471:	14.42	38.00:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.75	9.45:			:	14.42	38.00:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.40	10.49:	12.18	35.41	-0.509:	15.32	39.19:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.40	10.51:	12.19	35.41	-0.509:	15.32	39.19:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.61	10.66:	12.22	35.47	-0.512:	15.34	39.24:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.71	10.79:	12.31	35.59	-0.515:	15.46	39.41:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.93	11.00:	12.32	35.64	-0.517:	15.44	39.43:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.96	11.08:	12.32	35.64	-0.517:	15.44	39.43:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.36	11.61:	12.24	35.56	-0.520:	15.37	39.34:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.23	11.42:	12.16	35.51	-0.517:	15.29	39.27:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.56	10.41:	12.27	35.63	-0.513:	15.39	39.41:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.66	10.50:	12.27	35.63	-0.513:	15.39	39.41:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.02	4.02	6.43:	7.20	40.23-0.531:		9.62	43.17:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.19	8.75:	7.36	40.41-0.558:		9.76	43.37:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.27	8.83:	7.67	40.87-0.566:		10.20	44.04:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.89	9.49:	7.79	41.05-0.575:		10.35	44.28:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.99	9.46:	7.95	41.26-0.580:		10.56	44.59:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.20	9.52:	8.00	41.35-0.584:		10.60	44.69:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.21	9.59:	8.00	41.35-0.584:		10.60	44.69:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.44	8.27:	8.22	41.63-0.580:		10.86	45.07:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.44	8.23:			:	10.86	45.07:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.28	8.28	10.27:	7.90	41.26-0.593:		10.48	44.54:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.19	10.21:			:	10.48	44.54:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.58	8.39:	8.31	41.77-0.584:		10.95	45.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.57	8.37:	8.32	41.78-0.584:		10.96	45.23:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.97	8.74:	8.52	42.05-0.593:		11.17	45.57:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.02	9.11:	8.52	42.05-0.594:		11.17	45.58:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.20	9.23:	8.70	42.30-0.600:		11.40	45.93:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.43	9.43:	8.75	42.38-0.604:		11.43	45.98:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.48	9.51:	8.70	42.34-0.603:		11.38	45.94:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.65	9.52:	8.71	42.36-0.606:		11.40	45.97:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.61	9.44:	8.80	42.50-0.607:		11.52	46.17:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.59	9.34:	8.72	42.41-0.605:		11.42	46.04:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.58	9.29:			:	11.42	46.04:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.93	4.93	7.25:	8.57	42.22-0.571:		11.06	45.51:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.03	8.05:			:	11.06	45.51:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.23	9.12:	8.96	42.73-0.607:		11.65	46.39:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.24	9.13:	8.96	42.73-0.607:		11.65	46.39:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.37	9.22:	9.01	42.82-0.610:		11.68	46.47:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.43	9.31:	9.09	42.96-0.612:		11.78	46.65:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.57	9.44:	9.13	43.06-0.615:		11.80	46.74:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.59	9.50:	9.13	43.06-0.615:		11.80	46.74:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.83	9.87:	9.07	42.98-0.617:		11.74	46.65:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.75	9.74:	9.04	43.02-0.615:		11.72	46.68:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.36	9.06:	9.13	43.13-0.613:		11.80	46.80:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.43	9.12:	9.13	43.13-0.613:		11.80	46.80:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.88	3.88	6.36:	6.36	31.21-0.393:		8.87	33.44:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.94	8.36:	6.55	31.38-0.412:		9.05	33.62:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.02	8.44:	6.85	31.69-0.417:		9.48	34.10:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.51	9.01:	6.96	31.82-0.423:		9.62	34.28:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.59	8.95:	7.12	31.97-0.426:		9.83	34.51:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.77	8.96:	7.16	32.04-0.429:		9.88	34.58:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.78	9.02:	7.16	32.04-0.429:		9.88	34.58:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.18	7.82:	7.39	32.25-0.427:		10.15	34.87:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.17	7.78:			:	10.15	34.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.17	7.17	9.06:	7.06	31.96-0.435:		9.74	34.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.15	9.10:			:	9.74	34.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.25	7.88:	7.50	32.37-0.430:		10.26	35.00:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.24	7.87:	7.51	32.37-0.430:		10.26	35.01:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.53	8.12:	7.73	32.59-0.436:		10.50	35.28:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.57	8.48:	7.73	32.59-0.436:		10.50	35.28:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.73	8.58:	7.91	32.78-0.441:		10.74	35.55:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.95	8.75:	7.98	32.85-0.444:		10.78	35.61:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.99	8.84:	7.91	32.81-0.443:		10.72	35.56:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.14	8.83:	7.93	32.83-0.445:		10.74	35.59:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.10	8.75:	8.01	32.92-0.446:		10.85	35.73:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.07	8.64:	7.93	32.85-0.444:		10.75	35.63:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.07	8.59:			:	10.75	35.63:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.86	4.86	7.13:	7.88	32.80-0.425:		10.46	35.31:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.93	7.69:			:	10.46	35.31:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.77	8.46:	8.22	33.13-0.447:		11.02	35.93:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.77	8.46:	8.22	33.13-0.447:		11.02	35.94:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.86	8.52:	8.27	33.20-0.448:		11.06	36.00:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.91	8.59:	8.35	33.30-0.450:		11.16	36.14:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.01	8.69:	8.39	33.38-0.452:		11.19	36.20:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.02	8.75:	8.39	33.38-0.452:		11.19	36.20:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.20	9.08:	8.31	33.30-0.452:		11.11	36.12:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.14	8.96:	8.27	33.31-0.451:		11.07	36.12:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.86	8.37:	8.38	33.42-0.450:		11.17	36.23:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.91	8.42:	8.38	33.42-0.450:		11.17	36.23:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.72	3.72	6.09:	6.98	25.42	-0.308:	9.42	27.14:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.12	8.41:	7.22	25.58	-0.325:	9.65	27.31:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.21	8.51:	7.43	25.77	-0.328:	9.99	27.62:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.80	9.16:	7.52	25.86	-0.333:	10.11	27.74:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.90	9.07:	7.66	25.96	-0.335:	10.30	27.91:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.10	9.08:	7.70	26.01	-0.337:	10.35	27.96:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.11	9.15:	7.71	26.01	-0.337:	10.35	27.96:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.45	7.88:	7.93	26.18	-0.336:	10.62	28.19:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.44	7.84:			:	10.62	28.19:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.00	7.00	8.68:	7.60	25.96	-0.335:	10.22	27.87:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.10	8.88:			:	10.22	27.87:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.49	7.92:	8.05	26.27	-0.338:	10.73	28.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.49	7.90:	8.06	26.28	-0.338:	10.74	28.30:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.79	8.17:	8.28	26.46	-0.343:	10.99	28.52:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.83	8.51:	8.29	26.46	-0.343:	10.99	28.53:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.98	8.60:	8.45	26.59	-0.346:	11.20	28.72:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.17	8.75:	8.54	26.66	-0.349:	11.27	28.78:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.20	8.83:	8.45	26.62	-0.348:	11.19	28.73:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.35	8.82:	8.48	26.64	-0.349:	11.22	28.76:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.30	8.73:	8.53	26.69	-0.349:	11.31	28.85:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.27	8.63:	8.46	26.64	-0.348:	11.21	28.77:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.26	8.58:			:	11.21	28.77:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.67	4.67	6.74:	8.61	26.74	-0.334:	11.12	28.69:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.74	7.31:			:	11.12	28.69:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.89	8.39:	8.80	26.90	-0.350:	11.53	29.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.90	8.37:	8.80	26.90	-0.350:	11.53	29.05:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.99	8.43:	8.86	26.96	-0.352:	11.58	29.11:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.05	8.51:	8.93	27.03	-0.353:	11.67	29.21:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.16	8.63:	8.98	27.10	-0.355:	11.71	29.27:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.17	8.68:	8.98	27.10	-0.355:	11.71	29.27:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.38	9.04:	8.88	27.02	-0.355:	11.61	29.18:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.31	8.91:	8.82	27.02	-0.353:	11.56	29.18:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.98	8.28:	8.96	27.12	-0.353:	11.68	29.29:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.03	8.34:	8.96	27.12	-0.353:	11.68	29.29:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.90	3.90	6.39:	12.18	38.07	-0.514:	14.68	41.32:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.92	11.35:	12.34	38.27	-0.558:	14.82	41.52:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.08	11.49:	12.72	38.81	-0.568:	15.33	42.32:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.60	12.89:	12.85	39.00	-0.588:	15.49	42.59:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.84	12.86:	13.04	39.26	-0.595:	15.74	42.97:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.34	13.10:	13.08	39.34	-0.602:	15.77	43.05:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.37	13.19:	13.08	39.34	-0.602:	15.77	43.05:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.66	10.89:	13.32	39.66	-0.588:	16.05	43.49:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.64	10.84:			:	16.05	43.49:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.86	9.86	11.96:	12.96	39.20	-0.593:	15.62	42.84:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.60	13.10:			:	15.62	42.84:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.79	11.01:	13.40	39.79	-0.592:	16.13	43.63:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.78	10.99:	13.41	39.80	-0.592:	16.14	43.64:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.81	11.91:	13.62	40.09	-0.609:	16.37	44.02:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.94	12.42:	13.62	40.10	-0.610:	16.37	44.02:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.10	12.51:	13.83	40.39	-0.618:	16.63	44.44:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.34	12.71:	13.86	40.44	-0.621:	16.63	44.46:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.38	12.80:	13.81	40.40	-0.620:	16.59	44.41:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.56	12.77:	13.82	40.42	-0.623:	16.60	44.44:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.52	12.68:	13.93	40.58	-0.625:	16.74	44.68:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.50	12.58:	13.84	40.46	-0.623:	16.63	44.51:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.50	12.52:			:	16.63	44.51:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.05	6.05	8.41:	13.59	40.13	-0.567:	16.15	43.76:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.23	10.16:			:	16.15	43.76:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.84	12.15:	14.06	40.79	-0.620:	16.84	44.86:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.85	12.11:	14.07	40.79	-0.621:	16.85	44.86:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.17	12.35:	14.10	40.85	-0.625:	16.87	44.92:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.32	12.53:	14.18	41.00	-0.629:	16.97	45.11:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.64	12.83:	14.20	41.06	-0.633:	16.97	45.15:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.68	12.91:	14.20	41.06	-0.634:	16.97	45.15:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.26	13.64:	14.13	40.97	-0.639:	16.90	45.05:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.99	13.33:	14.10	40.97	-0.635:	16.87	45.04:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.82	11.84:	14.19	41.10	-0.623:	16.95	45.17:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.00	12.01:	14.19	41.10	-0.623:	16.95	45.17:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.47	4.47	6.89:	9.93	34.80	-0.463:	12.37	37.49:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.68	10.47:	10.10	34.97	-0.495:	12.52	37.68:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.80	10.59:	10.49	35.45	-0.504:	13.05	38.39:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.82	11.61:	10.62	35.62	-0.517:	13.21	38.62:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.97	11.59:	10.82	35.85	-0.522:	13.47	38.96:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.32	11.75:	10.86	35.92	-0.527:	13.51	39.04:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.34	11.83:	10.86	35.92	-0.527:	13.51	39.04:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.14	10.05:	11.11	36.21	-0.520:	13.80	39.43:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.12	10.01:			:	13.80	39.43:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.26	11.26	13.25:	10.73	35.80	-0.544:	13.35	38.86:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.14	13.15:			:	13.35	38.86:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.36	10.26:	11.20	36.33	-0.524:	13.89	39.56:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.34	10.24:	11.20	36.34	-0.524:	13.89	39.57:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.95	10.78:	11.42	36.61	-0.535:	14.14	39.92:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.02	11.20:	11.42	36.61	-0.536:	14.14	39.92:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.12	11.24:	11.64	36.87	-0.541:	14.40	40.29:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.27	11.36:	11.67	36.92	-0.543:	14.41	40.32:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.30	11.44:	11.62	36.88	-0.543:	14.37	40.27:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.41	11.37:	11.64	36.90	-0.544:	14.38	40.29:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.35	11.27:	11.74	37.04	-0.546:	14.53	40.51:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.31	11.16:	11.65	36.94	-0.543:	14.41	40.36:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.31	11.09:			:	14.41	40.36:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.81	5.81	8.10:	11.41	36.66	-0.504:	13.92	39.71:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.94	9.25:			:	13.92	39.71:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.79	10.81:	11.89	37.24	-0.543:	14.64	40.68:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.80	10.79:	11.89	37.24	-0.543:	14.64	40.69:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.01	10.95:	11.93	37.30	-0.546:	14.67	40.74:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.11	11.08:	12.02	37.43	-0.549:	14.77	40.91:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.33	11.29:	12.03	37.49	-0.552:	14.77	40.95:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.36	11.36:	12.03	37.49	-0.552:	14.77	40.95:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.78	11.93:	11.96	37.40	-0.555:	14.70	40.86:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.58	11.69:	11.92	37.40	-0.552:	14.66	40.85:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.74	10.52:	12.02	37.52	-0.545:	14.75	40.97:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.86	10.64:	12.02	37.52	-0.545:	14.75	40.97:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.44	4.44	6.17:	5.20	25.22-0.304:		6.98	26.37:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.68	8.13:	5.43	25.36-0.321:		7.20	26.53:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.75	8.20:	5.43	25.41-0.321:		7.28	26.63:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.89	8.39:	5.47	25.46-0.322:		7.34	26.70:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.90	8.31:	5.50	25.49-0.323:		7.40	26.76:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.90	8.20:	5.56	25.55-0.323:		7.46	26.82:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.90	8.24:	5.56	25.55-0.323:		7.46	26.82:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.69	7.63:	5.69	25.65-0.324:		7.62	26.95:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.68	7.59:		:		7.62	26.95:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.93	8.93	10.15:	5.52	25.55-0.336:		7.42	26.80:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.31	9.43:		:		7.42	26.80:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.81	7.74:	5.81	25.74-0.326:		7.74	27.05:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.80	7.72:	5.82	25.75-0.326:		7.75	27.05:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.67	7.58:	5.99	25.88-0.327:		7.94	27.21:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.65	7.75:	6.00	25.88-0.327:		7.94	27.21:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.68	7.75:	6.06	25.94-0.328:		8.03	27.29:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.73	7.76:	6.20	26.04-0.330:		8.16	27.39:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.74	7.81:	6.12	26.00-0.330:		8.09	27.36:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.77	7.74:	6.15	26.02-0.330:		8.11	27.38:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.68	7.62:	6.14	26.03-0.329:		8.13	27.41:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.60	7.50:	6.11	26.02-0.328:		8.09	27.38:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.59	7.46:		:		8.09	27.38:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.84	4.84	6.35:	6.66	26.38-0.324:		8.50	27.68:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.87	6.56:		:		8.50	27.68:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.34	7.33:	6.46	26.26-0.330:		8.42	27.64:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.34	7.31:	6.46	26.26-0.329:		8.42	27.64:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.33	7.28:	6.54	26.33-0.332:		8.50	27.72:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.33	7.31:	6.59	26.38-0.332:		8.56	27.78:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.34	7.32:	6.69	26.48-0.335:		8.66	27.88:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.34	7.35:	6.69	26.48-0.335:		8.66	27.88:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.38	7.50:	6.58	26.41-0.332:		8.55	27.81:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.36	7.44:	6.56	26.44-0.332:		8.54	27.84:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.27	7.14:	6.70	26.53-0.334:		8.67	27.94:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.28	7.15:	6.70	26.53-0.334:		8.67	27.94:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.96	3.96	6.21:	7.95	22.97	-0.274:	10.28	24.44:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.01	9.16:	8.20	23.12	-0.293:	10.51	24.61:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.11	9.27:	8.35	23.25	-0.295:	10.79	24.84:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.80	10.00:	8.42	23.32	-0.300:	10.89	24.93:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.91	9.92:	8.52	23.39	-0.302:	11.05	25.05:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.13	9.95:	8.58	23.44	-0.303:	11.10	25.10:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.14	10.02:	8.58	23.44	-0.303:	11.10	25.10:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.51	8.82:	8.78	23.58	-0.302:	11.34	25.29:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.50	8.77:			:	11.34	25.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.00	8.00	9.56:	8.49	23.40	-0.302:	10.98	25.03:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.08	9.73:			:	10.98	25.03:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.54	8.85:	8.90	23.66	-0.304:	11.46	25.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.54	8.83:	8.91	23.67	-0.304:	11.47	25.39:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.75	9.01:	9.13	23.82	-0.308:	11.71	25.58:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.78	9.31:	9.13	23.83	-0.308:	11.71	25.58:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.82	9.31:	9.28	23.93	-0.310:	11.90	25.74:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.89	9.34:	9.39	24.01	-0.312:	11.99	25.81:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.90	9.40:	9.30	23.96	-0.311:	11.91	25.76:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.96	9.30:	9.33	23.98	-0.311:	11.94	25.78:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.87	9.18:	9.36	24.02	-0.311:	12.01	25.85:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.81	9.04:	9.30	23.98	-0.310:	11.92	25.79:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.80	9.00:			:	11.92	25.79:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.87	4.87	6.77:	9.60	24.17	-0.297:	11.99	25.84:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.95	7.38:			:	11.99	25.84:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.37	8.75:	9.66	24.22	-0.312:	12.26	26.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.37	8.71:	9.66	24.22	-0.312:	12.27	26.06:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.47	8.78:	9.72	24.28	-0.313:	12.32	26.11:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.52	8.86:	9.79	24.34	-0.314:	12.41	26.19:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.64	8.98:	9.85	24.41	-0.316:	12.45	26.25:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.66	9.04:	9.85	24.41	-0.316:	12.45	26.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.89	9.42:	9.73	24.33	-0.316:	12.34	26.17:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.80	9.27:	9.68	24.32	-0.315:	12.29	26.16:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.35	8.53:	9.83	24.42	-0.314:	12.43	26.27:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.41	8.60:	9.83	24.42	-0.314:	12.43	26.27:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.48	3.48	5.66:	9.83	28.90	-0.364:	12.04	30.83:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.33	9.77:	10.03	29.06	-0.395:	12.22	31.01:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.47	9.91:	10.23	29.28	-0.399:	12.53	31.36:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.55	10.96:	10.31	29.38	-0.408:	12.64	31.49:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.72	10.94:	10.43	29.49	-0.412:	12.81	31.66:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.06	11.08:	10.48	29.55	-0.415:	12.85	31.73:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.08	11.16:	10.48	29.55	-0.415:	12.86	31.73:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.24	9.76:	10.67	29.73	-0.412:	13.08	31.97:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.22	9.71:			:	13.08	31.97:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.66	9.66	11.33:	10.39	29.50	-0.419:	12.75	31.64:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.81	11.59:			:	12.75	31.64:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.35	9.86:	10.77	29.83	-0.414:	13.18	32.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.34	9.84:	10.78	29.84	-0.414:	13.19	32.09:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.76	10.21:	10.97	30.03	-0.421:	13.40	32.33:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.82	10.56:	10.97	30.03	-0.421:	13.40	32.33:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.84	10.53:	11.12	30.17	-0.424:	13.59	32.53:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.88	10.54:	11.20	30.26	-0.426:	13.65	32.61:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.90	10.60:	11.14	30.22	-0.425:	13.59	32.56:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.94	10.48:	11.16	30.24	-0.425:	13.62	32.59:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.84	10.35:	11.21	30.30	-0.426:	13.70	32.69:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.77	10.21:	11.15	30.25	-0.424:	13.62	32.61:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.77	10.15:			:	13.62	32.61:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.37	5.37	7.33:	11.30	30.38	-0.400:	13.56	32.55:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.49	8.26:			:	13.56	32.55:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.27	9.86:	11.44	30.52	-0.425:	13.90	32.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.27	9.83:	11.44	30.53	-0.425:	13.90	32.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.45	9.96:	11.50	30.59	-0.427:	13.94	32.98:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.54	10.08:	11.57	30.68	-0.429:	14.03	33.09:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.73	10.26:	11.62	30.76	-0.432:	14.07	33.16:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.75	10.33:	11.62	30.76	-0.432:	14.07	33.16:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.13	10.86:	11.53	30.67	-0.433:	13.98	33.07:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.96	10.64:	11.50	30.69	-0.431:	13.95	33.08:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.21	9.59:	11.62	30.79	-0.427:	14.06	33.19:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.31	9.70:	11.62	30.79	-0.427:	14.06	33.19:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.13	3.13	5.53:	13.34	44.63	-0.611:	15.74	48.47:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.74	12.40:	13.47	44.83	-0.681:	15.86	48.67:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.95	12.58:	13.88	45.52	-0.696:	16.39	49.67:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.88	14.23:	14.01	45.77	-0.726:	16.55	50.00:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.16	14.26:	14.21	46.09	-0.736:	16.79	50.46:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.73	14.58:	14.24	46.18	-0.745:	16.83	50.56:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.77	14.67:	14.25	46.18	-0.745:	16.83	50.56:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.17	12.59:	14.47	46.56	-0.729:	17.09	51.07:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.16	12.56:			:	17.09	51.07:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.26	11.26	13.45:	14.13	46.02	-0.735:	16.69	50.32:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.12	14.70:			:	16.69	50.32:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.32	12.72:	14.55	46.70	-0.734:	17.17	51.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.31	12.72:	14.55	46.71	-0.734:	17.17	51.23:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.39	13.64:	14.74	47.05	-0.755:	17.38	51.67:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.52	14.13:	14.75	47.05	-0.757:	17.39	51.67:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.51	14.07:	14.95	47.41	-0.763:	17.64	52.17:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.55	14.09:	14.97	47.46	-0.765:	17.63	52.18:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.56	14.15:	14.94	47.43	-0.764:	17.61	52.15:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.61	14.00:	14.95	47.45	-0.765:	17.62	52.18:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.50	13.84:	15.06	47.66	-0.767:	17.76	52.48:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.43	13.69:	14.98	47.53	-0.763:	17.66	52.29:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.43	13.62:			:	17.66	52.29:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.28	6.28	8.63:	14.64	46.98	-0.683:	17.11	51.24:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.53	10.90:			:	17.11	51.24:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.68	13.21:	15.17	47.86	-0.758:	17.84	52.65:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.69	13.15:	15.18	47.87	-0.758:	17.84	52.66:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.09	13.46:	15.20	47.94	-0.765:	17.86	52.72:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.28	13.67:	15.29	48.12	-0.771:	17.96	52.95:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.66	14.02:	15.30	48.18	-0.777:	17.95	52.98:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.71	14.11:	15.30	48.19	-0.777:	17.96	52.99:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.42	14.94:	15.24	48.08	-0.786:	17.90	52.88:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.06	14.55:	15.22	48.11	-0.780:	17.87	52.89:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.58	12.80:	15.30	48.23	-0.761:	17.94	53.02:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.81	13.02:	15.30	48.23	-0.761:	17.94	53.02:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.70	3.70	6.05:	11.28	39.69	-0.535:	13.64	42.81:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.19	11.22:	11.43	39.86	-0.585:	13.77	43.00:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.35	11.37:	11.77	40.38	-0.595:	14.23	43.74:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.75	12.65:	11.89	40.57	-0.615:	14.37	44.00:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.96	12.68:	12.06	40.80	-0.621:	14.59	44.34:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.39	12.92:	12.11	40.89	-0.628:	14.63	44.43:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.42	13.00:	12.11	40.89	-0.628:	14.63	44.43:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.47	11.53:	12.32	41.18	-0.622:	14.88	44.83:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.47	11.50:			:	14.88	44.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.79	11.79	13.86:	12.01	40.78	-0.645:	14.51	44.26:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.85	14.00:			:	14.51	44.26:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.66	11.70:	12.40	41.31	-0.626:	14.96	44.97:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.65	11.69:	12.40	41.32	-0.626:	14.96	44.98:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.27	12.22:	12.59	41.60	-0.639:	15.18	45.33:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.35	12.63:	12.59	41.60	-0.640:	15.18	45.34:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.30	12.54:	12.78	41.87	-0.644:	15.41	45.72:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.29	12.51:	12.81	41.94	-0.645:	15.42	45.75:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.29	12.56:	12.78	41.91	-0.644:	15.39	45.73:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.30	12.39:	12.80	41.93	-0.644:	15.40	45.75:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.18	12.23:	12.89	42.08	-0.645:	15.53	45.97:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.11	12.08:	12.82	41.99	-0.642:	15.44	45.84:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.10	12.01:			:	15.44	45.84:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.00	6.00	8.26:	12.61	41.71	-0.589:	15.03	45.19:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.18	9.81:			:	15.03	45.19:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.49	11.67:	13.03	42.29	-0.640:	15.63	46.17:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.50	11.63:	13.03	42.30	-0.640:	15.64	46.17:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.78	11.85:	13.06	42.37	-0.645:	15.66	46.24:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.92	12.01:	13.15	42.52	-0.649:	15.76	46.43:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.19	12.27:	13.18	42.60	-0.653:	15.77	46.49:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.23	12.35:	13.18	42.60	-0.653:	15.77	46.49:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.77	13.03:	13.11	42.50	-0.658:	15.71	46.39:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.49	12.71:	13.09	42.54	-0.654:	15.69	46.41:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.32	11.26:	13.18	42.66	-0.642:	15.77	46.54:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.50	11.42:	13.18	42.66	-0.642:	15.77	46.54:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.29	4.29	6.41:	7.67	25.30-0.311:	9.84	26.84:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.22	9.22:	7.90	25.46-0.331:	10.07	27.01:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.33	9.33:	8.07	25.62-0.334:	10.35	27.28:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.93	9.97:	8.14	25.70-0.338:	10.46	27.39:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.02	9.90:	8.25	25.79-0.340:	10.62	27.52:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.19	9.91:	8.31	25.84-0.340:	10.67	27.58:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.20	9.97:	8.31	25.84-0.346:	10.67	27.58:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.24	9.46:	8.51	25.99-0.346:	10.91	27.78:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.24	9.44:		:	10.91	27.78:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.93	9.93	11.44:	8.21	25.79-0.353:	10.55	27.50:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.63	11.10:		:	10.55	27.50:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.35	9.57:	8.63	26.09-0.349:	11.03	27.89:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.35	9.56:	8.64	26.09-0.348:	11.03	27.90:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.37	9.57:	8.85	26.26-0.351:	11.26	28.10:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.38	9.84:	8.85	26.26-0.351:	11.26	28.10:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.31	9.73:	8.99	26.37-0.353:	11.45	28.27:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.23	9.63:	9.09	26.45-0.353:	11.53	28.34:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.22	9.66:	9.00	26.41-0.352:	11.45	28.29:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.17	9.48:	9.03	26.43-0.352:	11.48	28.31:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.03	9.32:	9.07	26.47-0.352:	11.55	28.39:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.93	9.15:	9.00	26.43-0.350:	11.47	28.33:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.92	9.10:		:	11.47	28.33:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.09	5.09	6.95:	9.23	26.59-0.335:	11.48	28.33:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.16	7.51:		:	11.48	28.33:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.51	8.87:	9.34	26.68-0.352:	11.78	28.60:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.51	8.84:	9.34	26.68-0.352:	11.79	28.60:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.57	8.87:	9.40	26.75-0.353:	11.84	28.66:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.61	8.93:	9.47	26.82-0.355:	11.93	28.76:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.68	9.01:	9.53	26.89-0.356:	11.97	28.82:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.70	9.07:	9.53	26.89-0.356:	11.97	28.82:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.91	9.42:	9.42	26.81-0.356:	11.87	28.74:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.79	9.25:	9.38	26.81-0.355:	11.83	28.74:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.24	8.43:	9.52	26.91-0.353:	11.96	28.85:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.30	8.49:	9.52	26.91-0.353:	11.96	28.85:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.84	3.84	6.16:	10.52	24.20	-0.296:	12.91	25.92:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.66	10.18:	10.76	24.36	-0.321:	13.13	26.09:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.81	10.33:	11.00	24.57	-0.324:	13.51	26.43:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.93	11.45:	11.09	24.65	-0.332:	13.63	26.55:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.10	11.38:	11.24	24.76	-0.335:	13.84	26.73:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.48	11.52:	11.28	24.81	-0.338:	13.88	26.78:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.50	11.61:	11.29	24.81	-0.339:	13.88	26.78:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.21	10.66:	11.52	24.99	-0.340:	14.16	27.02:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.22	10.63:			:	14.16	27.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.20	9.20	10.84:	11.17	24.74	-0.335:	13.74	26.67:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.53	11.36:			:	13.74	26.67:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.24	10.69:	11.64	25.08	-0.342:	14.28	27.12:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.24	10.68:	11.65	25.09	-0.342:	14.28	27.13:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.57	10.97:	11.88	25.27	-0.347:	14.54	27.36:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.61	11.32:	11.88	25.27	-0.347:	14.54	27.36:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.55	11.21:	12.05	25.41	-0.349:	14.76	27.56:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.49	11.12:	12.14	25.48	-0.350:	14.82	27.62:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.48	11.17:	12.05	25.43	-0.349:	14.75	27.57:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.45	10.97:	12.08	25.45	-0.349:	14.77	27.59:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.32	10.80:	12.14	25.51	-0.349:	14.87	27.69:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.22	10.62:	12.06	25.45	-0.347:	14.77	27.60:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.21	10.57:			:	14.77	27.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.47	5.47	7.48:	12.15	25.52	-0.325:	14.61	27.47:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.58	8.45:			:	14.61	27.47:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.67	10.25:	12.40	25.71	-0.348:	15.09	27.89:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.67	10.21:	12.40	25.72	-0.348:	15.09	27.89:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.82	10.32:	12.45	25.77	-0.350:	15.13	27.94:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.91	10.43:	12.53	25.84	-0.352:	15.23	28.04:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.08	10.60:	12.57	25.90	-0.353:	15.25	28.08:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.10	10.67:	12.57	25.90	-0.353:	15.25	28.09:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.49	11.21:	12.46	25.81	-0.354:	15.14	27.99:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.30	10.97:	12.39	25.80	-0.352:	15.08	27.97:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.43	9.79:	12.54	25.90	-0.349:	15.21	28.09:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.52	9.89:	12.54	25.90	-0.349:	15.21	28.09:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	2.73	2.73	4.91:	14.51	46.80	-0.643:	16.70	50.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.47	13.03:	14.63	47.00	-0.731:	16.81	50.76:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.71	13.23:	15.02	47.70	-0.746:	17.30	51.76:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.86	15.02:	15.14	47.95	-0.781:	17.45	52.09:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.15	15.07:	15.32	48.28	-0.792:	17.68	52.55:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.74	15.41:	15.36	48.37	-0.802:	17.72	52.65:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		12.78	15.50:	15.36	48.37	-0.803:	17.72	52.65:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.41	13.63:	15.58	48.76	-0.789:	17.97	53.16:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.41	13.60:			:	17.97	53.16:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.52	11.52	13.52:	15.25	48.21	-0.780:	17.58	52.41:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.60	15.07:			:	17.58	52.41:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.50	13.72:	15.65	48.91	-0.792:	18.04	53.33:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.50	13.71:	15.65	48.91	-0.793:	18.04	53.33:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.63	14.71:	15.84	49.26	-0.816:	18.25	53.77:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		12.78	15.19:	15.84	49.26	-0.818:	18.25	53.77:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		12.73	15.10:	16.03	49.62	-0.824:	18.48	54.27:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.72	15.08:	16.05	49.67	-0.825:	18.48	54.28:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.72	15.13:	16.02	49.64	-0.823:	18.45	54.25:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.74	14.97:	16.03	49.66	-0.824:	18.47	54.28:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.61	14.81:	16.13	49.86	-0.826:	18.60	54.57:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.54	14.66:	16.06	49.74	-0.822:	18.50	54.39:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.53	14.59:			:	18.50	54.39:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.36	6.36	8.52:	15.75	49.20	-0.723:	18.00	53.37:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.64	11.03:			:	18.00	53.37:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.63	14.05:	16.24	50.08	-0.814:	18.68	54.76:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.64	13.98:	16.24	50.08	-0.814:	18.68	54.76:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		12.06	14.31:	16.27	50.16	-0.821:	18.70	54.83:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		12.26	14.53:	16.35	50.34	-0.827:	18.79	55.06:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.66	14.89:	16.36	50.41	-0.834:	18.79	55.11:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.71	14.98:	16.37	50.42	-0.835:	18.79	55.11:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.46	15.83:	16.31	50.31	-0.845:	18.74	55.00:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		13.06	15.41:	16.29	50.34	-0.838:	18.72	55.01:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		11.42	13.55:	16.36	50.47	-0.815:	18.78	55.15:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		11.67	13.78:	16.36	50.47	-0.815:	18.78	55.15:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	2.55	2.55	4.66:	14.24	53.50	-0.743:	16.35	57.68:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.95	13.38:	14.34	53.69	-0.856:	16.44	57.88:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.20	13.58:	14.68	54.42	-0.872:	16.88	58.90:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		12.24	15.20:	14.79	54.70	-0.911:	17.01	59.25:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.49	15.25:	14.95	55.02	-0.922:	17.21	59.71:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.99	15.55:	14.99	55.14	-0.932:	17.25	59.83:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		13.02	15.62:	14.99	55.14	-0.933:	17.25	59.83:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.80	14.04:	15.18	55.52	-0.918:	17.47	60.34:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.81	14.02:			:	17.47	60.34:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.90	13.90	15.92:	14.91	55.00	-0.946:	17.15	59.63:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		14.26	16.44:			:	17.15	59.63:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		12.00	14.21:	15.24	55.67	-0.924:	17.53	60.51:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.99	14.21:	15.25	55.68	-0.924:	17.53	60.52:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.99	15.07:	15.41	56.04	-0.948:	17.71	60.96:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		13.13	15.49:	15.41	56.04	-0.951:	17.71	60.96:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		13.02	15.36:	15.58	56.40	-0.956:	17.92	61.46:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.96	15.29:	15.60	56.47	-0.955:	17.92	61.49:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.95	15.32:	15.58	56.45	-0.954:	17.91	61.48:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.93	15.16:	15.59	56.48	-0.954:	17.92	61.51:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.78	14.98:	15.68	56.69	-0.955:	18.04	61.81:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.69	14.83:	15.62	56.58	-0.951:	17.96	61.64:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.68	14.77:			:	17.96	61.64:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.79	6.79	8.90:	15.40	56.12	-0.842:	17.56	60.72:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		7.08	11.37:			:	17.56	60.72:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.78	14.22:	15.79	56.93	-0.941:	18.11	62.02:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.80	14.13:	15.79	56.94	-0.941:	18.11	62.02:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		12.23	14.48:	15.82	57.03	-0.950:	18.14	62.12:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		12.44	14.70:	15.90	57.23	-0.957:	18.23	62.36:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.83	15.06:	15.92	57.34	-0.966:	18.24	62.45:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.88	15.14:	15.92	57.34	-0.966:	18.24	62.45:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.61	15.94:	15.87	57.24	-0.978:	18.19	62.34:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		13.20	15.53:	15.88	57.31	-0.971:	18.19	62.40:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		11.62	13.77:	15.94	57.44	-0.944:	18.25	62.54:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		11.89	14.02:	15.94	57.44	-0.944:	18.25	62.54:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.38	3.38	5.55:	12.27	41.31	-0.560:	14.44	44.39:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.21	12.07:	12.40	41.48	-0.627:	14.56	44.57:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.40	12.25:	12.70	41.96	-0.637:	14.96	45.26:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.94	13.60:	12.80	42.15	-0.659:	15.09	45.50:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.15	13.66:	12.95	42.36	-0.666:	15.28	45.81:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.57	13.91:	12.99	42.45	-0.673:	15.32	45.91:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.60	13.98:	12.99	42.46	-0.673:	15.32	45.91:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.81	12.74:	13.18	42.73	-0.668:	15.54	46.28:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.81	12.72:			:	15.54	46.28:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.51	13.51	15.47:	12.91	42.36	-0.697:	15.22	45.77:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		13.32	15.27:			:	15.22	45.77:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.01	12.92:	13.25	42.86	-0.672:	15.61	46.42:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.00	12.91:	13.26	42.86	-0.672:	15.61	46.42:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.55	13.39:	13.43	43.13	-0.684:	15.80	46.76:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.62	13.75:	13.43	43.13	-0.685:	15.80	46.76:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.55	13.64:	13.59	43.38	-0.689:	16.00	47.11:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.50	13.57:	13.63	43.46	-0.689:	16.02	47.16:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.50	13.61:	13.60	43.44	-0.688:	16.00	47.14:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.48	13.45:	13.61	43.46	-0.689:	16.01	47.17:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.34	13.27:	13.70	43.60	-0.689:	16.12	47.37:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.25	13.11:	13.64	43.52	-0.686:	16.05	47.25:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.24	13.05:			:	16.05	47.25:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.28	6.28	8.38:	13.55	43.39	-0.622:	15.77	46.79:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.48	10.01:			:	15.77	46.79:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.44	12.54:	13.84	43.83	-0.681:	16.23	47.58:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.45	12.47:	13.84	43.83	-0.681:	16.24	47.59:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.75	12.72:	13.88	43.91	-0.686:	16.27	47.67:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.90	12.88:	13.95	44.06	-0.690:	16.36	47.85:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.19	13.16:	13.99	44.15	-0.695:	16.38	47.93:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.23	13.24:	13.99	44.16	-0.696:	16.38	47.93:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.78	13.92:	13.92	44.06	-0.701:	16.32	47.82:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.50	13.60:	13.92	44.11	-0.697:	16.31	47.87:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.37	12.20:	14.00	44.23	-0.685:	16.39	48.00:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.55	12.38:	14.00	44.23	-0.685:	16.39	48.00:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.22	4.22	5.78:	5.98	24.38	-0.292:	7.57	25.39:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.46	8.76:	6.20	24.51	-0.314:	7.79	25.53:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.55	8.86:	6.15	24.53	-0.314:	7.80	25.59:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.79	9.12:	6.17	24.57	-0.316:	7.85	25.65:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.82	9.07:	6.18	24.58	-0.316:	7.88	25.68:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.82	8.98:	6.24	24.64	-0.317:	7.94	25.74:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.82	9.01:	6.24	24.64	-0.317:	7.94	25.74:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.12	8.97:	6.34	24.71	-0.320:	8.06	25.83:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.13	8.94:			:	8.06	25.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.47	10.47	11.60:	6.23	24.65	-0.333:	7.92	25.74:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.61	10.61:			:	7.92	25.74:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.25	9.07:	6.46	24.80	-0.322:	8.18	25.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.24	9.07:	6.46	24.80	-0.322:	8.18	25.93:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.92	8.74:	6.61	24.92	-0.322:	8.35	26.06:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.89	8.87:	6.62	24.92	-0.321:	8.35	26.06:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.85	8.81:	6.66	24.96	-0.322:	8.42	26.12:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.82	8.75:	6.80	25.06	-0.323:	8.54	26.22:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.81	8.77:	6.73	25.03	-0.322:	8.48	26.19:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.79	8.66:	6.76	25.05	-0.323:	8.51	26.21:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.67	8.53:	6.74	25.05	-0.322:	8.51	26.23:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.58	8.39:	6.73	25.04	-0.321:	8.49	26.22:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.57	8.35:			:	8.49	26.22:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.93	4.93	6.27:	7.44	25.50	-0.314:	9.09	26.64:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.97	6.51:			:	9.09	26.64:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.13	8.04:	7.06	25.27	-0.325:	8.81	26.46:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.13	8.00:	7.06	25.27	-0.314:	8.81	26.46:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.12	7.98:	7.15	25.34	-0.404:	8.90	26.53:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.12	8.00:	7.19	25.39	-0.307:	8.95	26.59:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.13	8.01:	7.30	25.49	-0.326:	9.06	26.70:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.13	8.04:	7.30	25.49	-0.323:	9.06	26.70:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.15	8.18:	7.18	25.41	-0.309:	8.95	26.62:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.15	8.14:	7.19	25.45	-0.295:	8.96	26.66:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.14	7.93:	7.33	25.54	-0.324:	9.09	26.76:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.15	7.94:	7.33	25.54	-0.324:	9.09	26.76:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.42	4.42	5.68:	5.69	48.77-0.655:		6.95	50.53:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.04	8.11:	5.86	49.00-0.695:		7.11	50.76:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.13	8.20:	5.83	49.07-0.695:		7.11	50.88:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.30	8.37:	5.87	49.18-0.699:		7.16	51.02:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.30	8.37:	5.86	49.21-0.699:		7.17	51.05:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.28	8.30:	5.92	49.33-0.700:		7.23	51.19:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.27	8.32:	5.92	49.34-0.700:		7.24	51.19:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.26	8.11:	5.99	49.46-0.702:		7.31	51.34:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.26	8.08:		:		7.31	51.34:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.00	8.00	9.08:	5.93	49.37-0.710:		7.24	51.23:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.47	8.46:		:		7.24	51.23:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.28	8.11:	6.09	49.62-0.705:		7.41	51.51:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.28	8.11:	6.09	49.63-0.705:		7.41	51.52:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.98	7.84:	6.19	49.81-0.703:		7.52	51.72:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.95	7.93:	6.19	49.81-0.703:		7.52	51.72:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.99	7.95:	6.22	49.88-0.704:		7.56	51.81:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.03	7.98:	6.32	50.05-0.708:		7.66	51.98:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.04	8.02:	6.29	50.04-0.707:		7.63	51.98:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.08	7.99:	6.31	50.06-0.708:		7.65	52.00:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.02	7.92:	6.31	50.09-0.707:		7.65	52.05:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.97	7.83:	6.31	50.10-0.706:		7.65	52.05:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.97	7.81:		:		7.65	52.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.76	4.76	6.00:	6.73	50.69-0.688:		8.03	52.63:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.82	6.29:		:		8.03	52.63:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.67	7.60:	6.53	50.44-0.704:		7.87	52.41:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.67	7.59:	6.53	50.44-0.708:		7.87	52.41:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.68	7.59:	6.60	50.59-0.715:		7.94	52.57:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.68	7.62:	6.65	50.70-0.642:		8.00	52.70:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.71	7.64:	6.76	50.92-0.731:		8.11	52.94:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.71	7.67:	6.76	50.92-0.726:		8.11	52.94:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.72	7.74:	6.70	50.85-0.704:		8.06	52.86:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.74	7.74:	6.74	50.99 0.000:		8.10	53.01:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.89	7.75:	6.82	51.10-0.719:		8.18	53.13:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.90	7.76:	6.82	51.10-0.719:		8.18	53.13:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.50	4.50	6.13:	6.46	41.93-0.558:		8.11	43.94:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.79	8.30:	6.68	42.19-0.593:		8.32	44.21:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.89	8.40:	6.71	42.32-0.593:		8.42	44.44:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.28	8.79:	6.77	42.44-0.597:		8.49	44.58:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.33	8.76:	6.81	42.51-0.599:		8.56	44.70:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.41	8.72:	6.87	42.61-0.601:		8.62	44.81:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.41	8.76:	6.87	42.62-0.601:		8.62	44.81:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.98	7.96:	7.03	42.82-0.615:		8.79	45.06:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.97	7.92:		:		8.79	45.06:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.04	7.04	8.24:	6.81	42.57-0.597:		8.55	44.75:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.00	8.23:		:		8.55	44.75:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.97	7.94:	7.15	43.00-0.602:		8.92	45.26:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.97	7.93:	7.16	43.02-0.604:		8.93	45.27:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.00	8.01:	7.30	43.22-0.607:		9.08	45.51:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.01	8.21:	7.30	43.22-0.607:		9.08	45.51:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.11	8.28:	7.38	43.34-0.610:		9.18	45.67:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.25	8.39:	7.49	43.50-0.613:		9.28	45.83:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.28	8.45:	7.42	43.43-0.613:		9.21	45.77:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.38	8.45:	7.44	43.46-0.608:		9.24	45.80:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.37	8.42:	7.44	43.50-0.622:		9.26	45.86:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.36	8.35:	7.41	43.46-0.616:		9.21	45.80:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.35	8.33:		:		9.21	45.80:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.91	4.91	6.50:	7.61	43.71-0.589:		9.32	45.94:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.98	6.93:		:		9.32	45.94:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.11	8.18:	7.70	43.85-0.617:		9.50	46.22:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.11	8.21:	7.70	43.85-0.617:		9.50	46.22:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.17	8.24:	7.77	43.97-0.620:		9.57	46.35:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.19	8.29:	7.83	44.08-0.622:		9.63	46.48:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.26	8.35:	7.91	44.24-0.624:		9.71	46.64:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.26	8.39:	7.91	44.24-0.625:		9.71	46.65:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.34	8.51:	7.87	44.18-0.625:		9.67	46.59:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.34	8.49:	7.83	44.21-0.623:		9.64	46.61:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.35	8.34:	7.92	44.33-0.626:		9.73	46.74:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.38	8.36:	7.92	44.33-0.626:		9.73	46.74:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.14	4.14	5.90:	6.82	41.02	-0.542:	8.59	43.15:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.46	8.21:	6.99	41.21	-0.571:	8.75	43.35:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.54	8.30:	7.11	41.44	-0.575:	8.94	43.69:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.99	8.76:	7.18	41.57	-0.583:	9.03	43.85:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.05	8.75:	7.25	41.67	-0.585:	9.13	44.00:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.17	8.76:	7.30	41.77	-0.584:	9.18	44.11:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.18	8.81:	7.30	41.77	-0.591:	9.18	44.11:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.60	7.80:	7.46	41.97	-0.584:	9.36	44.37:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.59	7.76:			:	9.36	44.37:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.79	7.79	9.18:	7.26	41.74	-0.593:	9.13	44.06:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.69	9.08:			:	9.13	44.06:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.68	7.87:	7.57	42.13	-0.587:	9.47	44.53:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.67	7.86:	7.57	42.14	-0.587:	9.47	44.54:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.86	8.06:	7.72	42.35	-0.593:	9.63	44.79:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.88	8.30:	7.72	42.34	-0.593:	9.63	44.79:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.02	8.40:	7.81	42.48	-0.597:	9.75	44.98:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.20	8.55:	7.90	42.61	-0.601:	9.83	45.11:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.24	8.62:	7.85	42.58	-0.601:	9.79	45.07:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.37	8.64:	7.87	42.60	-0.603:	9.81	45.10:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.37	8.61:	7.90	42.66	-0.603:	9.85	45.19:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.37	8.55:	7.86	42.62	-0.603:	9.81	45.13:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.37	8.52:			:	9.81	45.13:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.06	5.06	6.76:	8.03	42.83	-0.580:	9.85	45.19:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.14	7.27:			:	9.85	45.19:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.09	8.37:	8.12	42.96	-0.605:	10.05	45.49:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.10	8.38:	8.12	42.96	-0.605:	10.05	45.50:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.19	8.45:	8.18	43.08	-0.608:	10.11	45.61:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.24	8.52:	8.24	43.19	-0.610:	10.18	45.75:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.34	8.62:	8.32	43.34	-0.613:	10.25	45.90:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.36	8.66:	8.32	43.34	-0.613:	10.26	45.90:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.50	8.89:	8.26	43.26	-0.614:	10.20	45.82:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.48	8.84:	8.25	43.32	-0.613:	10.19	45.88:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.42	8.57:	8.34	43.43	-0.615:	10.28	46.00:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.46	8.61:	8.34	43.43	-0.615:	10.28	46.00:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	TEMP. OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.42	3.42	6.11:	11.45	32.42	-0.421:	14.17	35.31:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.13	10.61:	11.64	32.61	-0.454:	14.35	35.51:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.28	10.76:	12.09	33.11	-0.464:	14.94	36.27:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.75	12.18:	12.22	33.28	-0.480:	15.11	36.51:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.99	12.12:	12.46	33.53	-0.486:	15.40	36.88:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.52	12.37:	12.49	33.59	-0.492:	15.44	36.95:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.56	12.48:	12.49	33.60	-0.492:	15.44	36.95:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.02	10.21:	12.78	33.91	-0.484:	15.77	37.38:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.00	10.15:			:	15.77	37.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.98	8.98	11.11:	12.34	33.45	-0.484:	15.25	36.73:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.66	12.20:			:	15.25	36.73:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.13	10.31:	12.88	34.03	-0.487:	15.86	37.51:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.12	10.29:	12.88	34.03	-0.487:	15.87	37.52:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.03	11.09:	13.13	34.32	-0.500:	16.14	37.89:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.14	11.63:	13.13	34.32	-0.501:	16.14	37.89:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.32	11.72:	13.37	34.60	-0.508:	16.43	38.29:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.56	11.92:	13.40	34.65	-0.511:	16.44	38.31:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.60	12.02:	13.34	34.59	-0.510:	16.38	38.25:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.79	11.98:	13.36	34.62	-0.512:	16.40	38.28:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.80	11.94:	13.47	34.76	-0.514:	16.56	38.50:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.83	11.86:	13.36	34.65	-0.512:	16.43	38.33:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.83	11.80:			:	16.43	38.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.34	5.34	7.82:	13.03	34.28	-0.465:	15.82	37.55:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.50	9.46:			:	15.82	37.55:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.20	11.45:	13.63	34.96	-0.512:	16.67	38.68:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.21	11.42:	13.64	34.96	-0.512:	16.67	38.68:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.51	11.66:	13.66	35.01	-0.516:	16.69	38.72:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.66	11.84:	13.76	35.14	-0.519:	16.80	38.90:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.97	12.13:	13.76	35.18	-0.522:	16.78	38.90:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.01	12.21:	13.76	35.18	-0.522:	16.78	38.90:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.52	12.88:	13.68	35.09	-0.526:	16.71	38.80:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.34	12.65:	13.61	35.06	-0.523:	16.64	38.76:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.55	11.49:	13.72	35.18	-0.517:	16.74	38.89:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.69	11.62:	13.72	35.18	-0.517:	16.74	38.89:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.45	3.45	6.20:	13.56	30.70	-0.398:	16.34	33.61:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.73	11.63:	13.75	30.88	-0.434:	16.51	33.80:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.91	11.81:	14.21	31.39	-0.443:	17.13	34.57:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.80	13.59:	14.35	31.55	-0.462:	17.30	34.81:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.11	13.53:	14.59	31.81	-0.469:	17.60	35.18:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.80	13.87:	14.62	31.86	-0.476:	17.64	35.24:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.84	14.00:	14.63	31.87	-0.476:	17.64	35.24:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.92	11.32:	14.91	32.17	-0.465:	17.97	35.67:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.90	11.26:			:	17.97	35.67:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.83	10.83	13.03:	14.46	31.71	-0.473:	17.44	35.02:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.61	14.28:			:	17.44	35.02:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.11	11.50:	15.00	32.28	-0.468:	18.06	35.79:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.09	11.47:	15.01	32.29	-0.468:	18.07	35.80:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.19	12.41:	15.26	32.57	-0.482:	18.34	36.16:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.32	13.00:	15.26	32.57	-0.484:	18.34	36.17:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.52	13.12:	15.51	32.85	-0.490:	18.64	36.57:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.81	13.38:	15.53	32.88	-0.493:	18.63	36.57:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.86	13.49:	15.46	32.83	-0.493:	18.58	36.51:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.09	13.48:	15.48	32.85	-0.495:	18.59	36.53:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.13	13.47:	15.60	33.00	-0.498:	18.76	36.76:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.19	13.42:	15.49	32.88	-0.496:	18.62	36.59:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.19	13.35:			:	18.62	36.59:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.64	5.64	8.13:	15.18	32.54	-0.443:	18.03	35.83:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.82	10.15:			:	18.03	35.83:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.25	12.79:	15.74	33.17	-0.493:	18.85	36.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.27	12.70:	15.75	33.17	-0.493:	18.86	36.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.66	13.01:	15.77	33.21	-0.497:	18.87	36.94:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.85	13.23:	15.87	33.34	-0.501:	18.98	37.11:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.24	13.60:	15.86	33.36	-0.504:	18.96	37.11:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.29	13.69:	15.86	33.36	-0.505:	18.96	37.11:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.98	14.58:	15.77	33.26	-0.509:	18.88	37.00:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.66	14.20:	15.72	33.24	-0.505:	18.82	36.96:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.33	12.48:	15.83	33.36	-0.495:	18.91	37.09:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.54	12.67:	15.83	33.36	-0.495:	18.91	37.09:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.85	3.85	5.67:	8.21	24.41	-0.296:	10.08	25.68:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.78	8.58:	8.45	24.57	-0.315:	10.30	25.84:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.88	8.69:	8.47	24.63	-0.316:	10.41	25.97:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.58	9.41:	8.51	24.68	-0.321:	10.48	26.04:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.69	9.36:	8.55	24.71	-0.322:	10.56	26.11:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.91	9.42:	8.61	24.77	-0.324:	10.61	26.17:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.92	9.48:	8.61	24.77	-0.324:	10.61	26.17:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.27	8.39:	8.74	24.87	-0.322:	10.78	26.30:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.26	8.34:			:	10.78	26.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.51	10.51	11.83:	8.56	24.75	-0.340:	10.56	26.14:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.13	11.40:			:	10.56	26.14:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.48	8.58:	8.86	24.96	-0.324:	10.89	26.40:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.47	8.56:	8.87	24.96	-0.324:	10.90	26.40:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.68	8.73:	9.05	25.10	-0.328:	11.09	26.57:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.71	8.98:	9.05	25.10	-0.328:	11.10	26.57:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.75	8.99:	9.12	25.17	-0.330:	11.20	26.66:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.81	9.03:	9.24	25.25	-0.331:	11.30	26.75:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.83	9.08:	9.17	25.22	-0.331:	11.24	26.71:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.88	9.03:	9.19	25.23	-0.331:	11.26	26.73:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.83	8.96:	9.19	25.25	-0.331:	11.29	26.76:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.80	8.86:	9.16	25.23	-0.330:	11.24	26.73:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.80	8.83:			:	11.24	26.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.15	5.15	6.69:	9.75	25.64	-0.322:	11.67	27.06:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.22	7.19:			:	11.67	27.06:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.32	8.53:	9.48	25.46	-0.331:	11.55	26.98:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.33	8.47:	9.48	25.46	-0.331:	11.55	26.98:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.44	8.56:	9.55	25.53	-0.333:	11.62	27.05:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.51	8.65:	9.61	25.58	-0.334:	11.69	27.12:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.63	8.77:	9.69	25.67	-0.336:	11.76	27.21:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.65	8.83:	9.70	25.67	-0.336:	11.76	27.21:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.91	9.23:	9.58	25.59	-0.336:	11.65	27.12:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.79	9.06:	9.57	25.62	-0.336:	11.65	27.16:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.29	8.31:	9.71	25.72	-0.334:	11.78	27.26:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.36	8.39:	9.71	25.72	-0.334:	11.78	27.26:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.63	3.63	6.47:	13.56	31.23	-0.408:	16.43	34.30:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.31	12.25:	13.75	31.41	-0.447:	16.59	34.49:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.50	12.43:	14.26	31.99	-0.458:	17.27	35.35:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.42	14.26:	14.41	32.17	-0.478:	17.46	35.61:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.74	14.23:	14.68	32.46	-0.486:	17.79	36.04:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.44	14.60:	14.71	32.51	-0.493:	17.81	36.09:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.48	14.73:	14.71	32.51	-0.494:	17.82	36.09:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.66	12.19:	15.01	32.84	-0.483:	18.17	36.55:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.65	12.14:			:	18.17	36.55:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.24	11.24	13.58:	14.54	32.34	-0.488:	17.61	35.84:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.02	14.83:			:	17.61	35.84:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.83	12.35:	15.10	32.94	-0.486:	18.25	36.67:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.82	12.33:	15.10	32.95	-0.486:	18.25	36.68:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.78	13.13:	15.36	33.24	-0.500:	18.53	37.06:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.90	13.71:	15.36	33.25	-0.501:	18.53	37.07:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.04	13.79:	15.63	33.56	-0.508:	18.86	37.52:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.26	13.99:	15.63	33.57	-0.510:	18.83	37.49:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.30	14.09:	15.57	33.52	-0.509:	18.79	37.44:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.48	14.03:	15.59	33.54	-0.511:	18.80	37.46:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.46	13.96:	15.73	33.71	-0.514:	18.98	37.72:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.47	13.87:	15.61	33.58	-0.512:	18.84	37.54:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.47	13.79:			:	18.84	37.54:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.64	5.64	8.21:	15.22	33.15	-0.453:	18.15	36.63:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.82	10.32:			:	18.15	36.63:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.41	13.14:	15.85	33.86	-0.506:	19.06	37.84:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.42	13.03:	15.85	33.86	-0.507:	19.06	37.84:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.81	13.33:	15.86	33.90	-0.511:	19.06	37.87:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.01	13.55:	15.97	34.04	-0.515:	19.19	38.05:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.39	13.92:	15.95	34.05	-0.518:	19.15	38.03:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.44	14.01:	15.95	34.05	-0.519:	19.15	38.03:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.18	14.97:	15.87	33.95	-0.524:	19.07	37.93:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.76	14.50:	15.82	33.93	-0.519:	19.01	37.89:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.10	12.43:	15.92	34.05	-0.505:	19.10	38.01:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.33	12.66:	15.92	34.05	-0.505:	19.10	38.01:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.59	3.59	5.88:	11.00	26.36	-0.329:	13.33	28.24:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.74	10.36:	11.21	26.52	-0.357:	13.53	28.41:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.89	10.52:	11.47	26.76	-0.362:	13.92	28.81:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.19	11.83:	11.57	26.86	-0.372:	14.05	28.95:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.41	11.82:	11.72	26.99	-0.376:	14.26	29.15:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.87	12.06:	11.76	27.04	-0.380:	14.30	29.20:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.90	12.15:	11.76	27.04	-0.380:	14.30	29.20:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.79	10.47:	11.98	27.23	-0.376:	14.56	29.45:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.78	10.42:			:	14.56	29.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.62	11.62	13.41:	11.66	26.97	-0.373:	14.17	29.09:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.63	13.48:			:	14.17	29.09:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.00	10.65:	12.08	27.32	-0.379:	14.66	29.55:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.98	10.63:	12.08	27.32	-0.379:	14.66	29.56:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.42	10.99:	12.30	27.52	-0.385:	14.90	29.80:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.48	11.38:	12.30	27.52	-0.386:	14.91	29.81:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.52	11.38:	12.48	27.67	-0.389:	15.13	30.03:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.61	11.44:	12.53	27.73	-0.390:	15.16	30.07:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.62	11.51:	12.47	27.69	-0.389:	15.11	30.03:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.69	11.42:	12.49	27.71	-0.390:	15.13	30.05:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.60	11.29:	12.56	27.78	-0.390:	15.24	30.17:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.53	11.15:	12.49	27.72	-0.389:	15.14	30.08:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.53	11.09:			:	15.14	30.08:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.31	5.31	7.30:	12.62	27.83	-0.362:	15.02	29.97:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.43	8.39:			:	15.02	29.97:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.73	10.57:	12.77	27.96	-0.387:	15.40	30.35:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.74	10.48:	12.77	27.97	-0.387:	15.40	30.35:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.96	10.65:	12.81	28.02	-0.390:	15.44	30.40:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.07	10.80:	12.89	28.10	-0.392:	15.54	30.51:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.31	11.03:	12.93	28.16	-0.394:	15.56	30.56:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.35	11.11:	12.93	28.16	-0.394:	15.56	30.56:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.86	11.82:	12.82	28.07	-0.396:	15.46	30.46:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.55	11.45:	12.80	28.08	-0.394:	15.43	30.47:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.26	9.82:	12.92	28.19	-0.386:	15.54	30.58:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.42	9.98:	12.92	28.19	-0.386:	15.54	30.58:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.47	3.47	5.61:	10.78	26.93	-0.336:	12.96	28.72:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.83	10.26:	10.99	27.09	-0.367:	13.15	28.89:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.98	10.41:	11.17	27.28	-0.371:	13.45	29.20:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.23	11.64:	11.25	27.36	-0.381:	13.56	29.32:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.43	11.65:	11.36	27.46	-0.384:	13.72	29.48:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.85	11.87:	11.41	27.52	-0.388:	13.76	29.54:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.88	11.95:	11.41	27.52	-0.388:	13.77	29.54:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.85	10.41:	11.59	27.68	-0.383:	13.98	29.75:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.84	10.36:			:	13.98	29.75:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.89	10.89	12.57:	11.33	27.47	-0.394:	13.66	29.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.99	12.76:			:	13.66	29.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.00	10.54:	11.68	27.77	-0.386:	14.08	29.85:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.99	10.52:	11.69	27.77	-0.386:	14.08	29.86:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.36	10.82:	11.89	27.95	-0.392:	14.30	30.08:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.42	11.17:	11.89	27.95	-0.392:	14.30	30.08:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.45	11.17:	12.03	28.08	-0.394:	14.48	30.27:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.51	11.21:	12.09	28.14	-0.396:	14.53	30.32:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.53	11.27:	12.04	28.11	-0.395:	14.48	30.29:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.59	11.18:	12.06	28.13	-0.396:	14.50	30.30:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.46	11.03:	12.11	28.19	-0.396:	14.58	30.40:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.36	10.86:	12.05	28.14	-0.394:	14.51	30.33:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.35	10.81:			:	14.51	30.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.13	5.13	7.00:	12.33	28.37	-0.369:	14.57	30.39:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.25	8.01:			:	14.57	30.39:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.54	10.25:	12.32	28.38	-0.392:	14.76	30.59:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.54	10.16:	12.33	28.38	-0.392:	14.76	30.59:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.74	10.32:	12.38	28.44	-0.395:	14.81	30.65:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.85	10.45:	12.45	28.52	-0.397:	14.90	30.76:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.06	10.66:	12.50	28.60	-0.399:	14.93	30.82:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.10	10.74:	12.50	28.60	-0.399:	14.94	30.82:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.61	11.44:	12.40	28.51	-0.401:	14.84	30.73:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.26	11.04:	12.39	28.54	-0.399:	14.83	30.75:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.88	9.35:	12.51	28.64	-0.390:	14.94	30.86:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.04	9.52:	12.51	28.64	-0.390:	14.94	30.86:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:C)	AVG. DAILY K1 /S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.27	3.27	5.60:	13.35	30.74	-0.398:	15.70	33.16:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.60	11.73:	13.53	30.91	-0.441:	15.87	33.35:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.80	11.93:	13.84	31.27	-0.448:	16.31	33.89:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.67	13.68:	13.94	31.40	-0.466:	16.44	34.07:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.98	13.72:	14.11	31.58	-0.472:	16.66	34.35:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.60	14.10:	14.15	31.64	-0.479:	16.70	34.41:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.64	14.20:	14.15	31.64	-0.479:	16.70	34.41:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.03	12.04:	14.36	31.87	-0.468:	16.96	34.72:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.01	11.99:			:	16.96	34.72:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.15	11.15	13.10:	14.05	31.55	-0.472:	16.57	34.27:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.89	14.17:			:	16.57	34.27:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.16	12.15:	14.45	31.97	-0.471:	17.04	34.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.15	12.13:	14.45	31.97	-0.471:	17.04	34.84:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.88	12.75:	14.66	32.20	-0.482:	17.27	35.13:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.98	13.20:	14.66	32.21	-0.483:	17.27	35.14:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.07	13.24:	14.85	32.41	-0.487:	17.51	35.43:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.21	13.36:	14.88	32.46	-0.489:	17.52	35.46:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.24	13.45:	14.83	32.43	-0.488:	17.48	35.42:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.36	13.38:	14.85	32.44	-0.490:	17.49	35.44:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.22	13.21:	14.94	32.55	-0.490:	17.62	35.61:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.13	13.05:	14.86	32.47	-0.488:	17.52	35.49:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.12	12.98:			:	17.52	35.49:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.39	5.39	7.50:	14.86	32.46	-0.439:	17.27	35.19:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.57	9.20:			:	17.27	35.19:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.00	12.21:	15.10	32.73	-0.482:	17.74	35.78:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.01	12.09:	15.10	32.74	-0.482:	17.74	35.78:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.34	12.36:	15.13	32.79	-0.486:	17.77	35.83:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.51	12.55:	15.22	32.90	-0.489:	17.86	35.97:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.84	12.87:	15.24	32.96	-0.493:	17.87	36.01:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.89	12.96:	15.24	32.96	-0.493:	17.87	36.01:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.63	13.91:	15.15	32.86	-0.498:	17.79	35.91:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.12	13.35:	15.14	32.88	-0.493:	17.77	35.92:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.12	11.03:	15.24	32.99	-0.477:	17.86	36.04:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.37	11.28:	15.24	32.99	-0.477:	17.86	36.04:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.63	3.63	5.89:	13.38	30.28	-0.393:	15.66	32.58:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.74	11.74:	13.56	30.45	-0.434:	15.83	32.77:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.93	11.93:	13.84	30.77	-0.441:	16.24	33.27:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.75	13.64:	13.94	30.89	-0.458:	16.36	33.43:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.04	13.69:	14.10	31.06	-0.463:	16.57	33.68:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.66	14.06:	14.14	31.12	-0.470:	16.61	33.74:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.70	14.16:	14.14	31.12	-0.470:	16.61	33.74:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.11	12.04:	14.34	31.33	-0.460:	16.85	34.04:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.09	11.99:			:	16.85	34.04:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.34	12.34	14.23:	14.04	31.03	-0.474:	16.49	33.62:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.78	14.89:			:	16.49	33.62:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.30	12.21:	14.42	31.43	-0.463:	16.94	34.14:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.28	12.19:	14.43	31.43	-0.463:	16.94	34.15:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.99	12.78:	14.63	31.65	-0.473:	17.16	34.43:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.08	13.22:	14.63	31.66	-0.474:	17.17	34.43:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.16	13.24:	14.80	31.85	-0.478:	17.39	34.71:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.28	13.35:	14.84	31.90	-0.480:	17.40	34.74:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.31	13.42:	14.80	31.86	-0.479:	17.36	34.70:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.42	13.35:	14.81	31.88	-0.480:	17.38	34.72:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.23	13.14:	14.90	31.98	-0.480:	17.50	34.88:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.09	12.93:	14.82	31.91	-0.477:	17.40	34.77:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.08	12.86:			:	17.40	34.77:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.70	5.70	7.73:	14.88	31.96	-0.433:	17.22	34.55:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.87	9.32:			:	17.22	34.55:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.02	12.14:	15.06	32.17	-0.472:	17.63	35.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.03	12.02:	15.06	32.17	-0.473:	17.63	35.05:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.33	12.27:	15.10	32.23	-0.476:	17.66	35.11:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.49	12.45:	15.18	32.33	-0.479:	17.75	35.24:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.80	12.75:	15.21	32.39	-0.482:	17.77	35.29:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.85	12.84:	15.21	32.39	-0.483:	17.77	35.29:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.59	13.78:	15.12	32.30	-0.488:	17.68	35.19:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.05	13.19:	15.11	32.32	-0.483:	17.67	35.20:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.94	10.78:	15.21	32.43	-0.466:	17.76	35.32:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.20	11.03:	15.21	32.43	-0.466:	17.76	35.32:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.22	4.22	5.89:	9.81	34.03	-0.448:	11.50	35.80:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.91	9.72:	10.02	34.24	-0.485:	11.70	36.02:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.05	9.86:	10.07	34.35	-0.487:	11.82	36.23:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.95	10.71:	10.12	34.44	-0.497:	11.90	36.34:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.08	10.70:	10.17	34.51	-0.499:	11.98	36.45:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.32	10.79:	10.22	34.58	-0.502:	12.03	36.54:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.34	10.85:	10.22	34.59	-0.502:	12.03	36.54:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.62	9.78:	10.35	34.73	-0.498:	12.18	36.73:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.61	9.73:			:	12.18	36.73:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.36	11.36	12.69:	10.17	34.55	-0.522:	11.97	36.48:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.10	12.39:			:	11.97	36.48:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.79	9.93:	10.45	34.85	-0.502:	12.28	36.86:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.78	9.91:	10.46	34.86	-0.502:	12.29	36.87:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.12	10.25:	10.61	35.04	-0.508:	12.45	37.08:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.16	10.50:	10.61	35.04	-0.508:	12.45	37.08:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.19	10.51:	10.68	35.14	-0.510:	12.56	37.23:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.24	10.55:	10.77	35.24	-0.513:	12.63	37.32:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.26	10.60:	10.72	35.21	-0.512:	12.58	37.29:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.30	10.55:	10.73	35.22	-0.512:	12.60	37.30:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.11	10.35:	10.75	35.26	-0.511:	12.64	37.37:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.97	10.15:	10.71	35.23	-0.509:	12.59	37.33:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.95	10.11:			:	12.59	37.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.33	5.33	6.88:	11.07	35.61	-0.482:	12.82	37.58:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.45	7.68:			:	12.82	37.58:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.35	9.69:	10.96	35.51	-0.508:	12.83	37.62:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.35	9.63:	10.97	35.51	-0.508:	12.83	37.63:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.41	9.67:	11.03	35.60	-0.510:	12.89	37.72:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.46	9.74:	11.08	35.69	-0.511:	12.96	37.83:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.56	9.84:	11.16	35.81	-0.514:	13.03	37.95:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.58	9.90:	11.16	35.82	-0.514:	13.03	37.95:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.00	10.43:	11.08	35.73	-0.516:	12.95	37.86:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.66	10.07:	11.09	35.78	-0.513:	12.97	37.92:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.21	8.42:	11.19	35.89	-0.501:	13.06	38.03:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.35	8.56:	11.19	35.89	-0.501:	13.06	38.03:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.11	4.11	6.12:	11.18	30.47-0.396:	13.22	32.43:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.04	10.38:	11.39	30.66-0.429:	13.42	32.63:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.19	10.53:	11.55	30.87-0.433:	13.69	32.97:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.35	11.64:	11.63	30.97-0.444:	13.79	33.11:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.53	11.62:	11.74	31.08-0.448:	13.95	33.29:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.90	11.77:	11.78	31.14-0.452:	13.99	33.35:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.92	11.85:	11.78	31.14-0.452:	13.99	33.35:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.87	10.31:	11.96	31.33-0.446:	14.21	33.60:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.85	10.26:		:	14.21	33.60:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.52	10.52	12.07:	11.70	31.08-0.456:	13.89	33.26:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.76	12.43:		:	13.89	33.26:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.00	10.42:	12.07	31.44-0.449:	14.31	33.72:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.99	10.40:	12.07	31.45-0.449:	14.31	33.73:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.52	10.88:	12.27	31.65-0.457:	14.52	33.98:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.59	11.23:	12.27	31.65-0.458:	14.53	33.98:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.67	11.28:	12.40	31.79-0.461:	14.70	34.19:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.79	11.38:	12.47	31.87-0.463:	14.75	34.26:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.81	11.45:	12.40	31.83-0.462:	14.69	34.21:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.91	11.41:	12.42	31.84-0.463:	14.71	34.23:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.71	11.19:	12.47	31.90-0.462:	14.78	34.33:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.55	10.98:	12.40	31.85-0.460:	14.71	34.25:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.53	10.91:		:	14.71	34.25:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.07	5.07	6.89:	12.59	32.03-0.426:	14.70	34.23:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.22	8.03:		:	14.70	34.23:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.82	10.44:	12.68	32.13-0.459:	14.96	34.55:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.82	10.37:	12.68	32.13-0.459:	14.97	34.55:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.95	10.46:	12.73	32.20-0.461:	15.01	34.62:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.02	10.56:	12.80	32.29-0.463:	15.09	34.74:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.17	10.71:	12.85	32.38-0.465:	15.13	34.82:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.21	10.79:	12.86	32.38-0.465:	15.14	34.82:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.72	11.45:	12.76	32.29-0.468:	15.05	34.72:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.34	11.03:	12.74	32.31-0.464:	15.03	34.74:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.67	9.11:	12.86	32.42-0.452:	15.13	34.85:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.82	9.26:	12.86	32.42-0.452:	15.13	34.85:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.91	3.91	6.10:	10.50	25.95	-0.323:	12.75	27.71:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.63	10.03:	10.73	26.13	-0.350:	12.97	27.90:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.77	10.18:	10.89	26.29	-0.353:	13.25	28.18:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.87	11.27:	10.97	26.37	-0.361:	13.36	28.30:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.05	11.22:	11.08	26.47	-0.364:	13.52	28.45:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.41	11.37:	11.13	26.52	-0.367:	13.56	28.51:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.44	11.45:	11.13	26.52	-0.367:	13.57	28.51:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.51	9.97:	11.32	26.68	-0.364:	13.80	28.72:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.49	9.92:			:	13.80	28.72:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.58	10.58	12.20:	11.04	26.46	-0.374:	13.45	28.42:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.67	12.38:			:	13.45	28.42:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.66	10.11:	11.43	26.77	-0.366:	13.90	28.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.65	10.09:	11.44	26.78	-0.366:	13.91	28.83:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.09	10.47:	11.64	26.96	-0.372:	14.14	29.06:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.15	10.83:	11.65	26.96	-0.373:	14.14	29.06:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.22	10.86:	11.78	27.08	-0.375:	14.33	29.24:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.34	10.95:	11.86	27.15	-0.377:	14.38	29.30:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.36	11.02:	11.79	27.11	-0.376:	14.32	29.25:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.46	10.97:	11.81	27.12	-0.377:	14.34	29.27:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.22	10.71:	11.86	27.18	-0.376:	14.42	29.36:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.04	10.47:	11.79	27.13	-0.374:	14.33	29.29:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.01	10.40:			:	14.33	29.29:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.19	5.19	7.09:	12.05	27.33	-0.352:	14.36	29.31:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.31	8.05:			:	14.36	29.31:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.37	9.99:	12.09	27.38	-0.374:	14.62	29.56:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.36	9.91:	12.10	27.38	-0.374:	14.62	29.56:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.46	9.97:	12.15	27.44	-0.375:	14.66	29.62:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.51	10.06:	12.22	27.51	-0.377:	14.75	29.72:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.64	10.18:	12.28	27.59	-0.378:	14.79	29.78:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.67	10.26:	12.28	27.59	-0.379:	14.79	29.78:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.14	10.90:	12.17	27.50	-0.380:	14.69	29.69:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.75	10.47:	12.14	27.51	-0.377:	14.66	29.70:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.11	8.53:	12.27	27.61	-0.368:	14.78	29.81:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.24	8.68:	12.27	27.61	-0.368:	14.78	29.81:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.68	3.68	6.24:	12.30	23.47	-0.286:	14.95	25.39:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.79	10.78:	12.55	23.64	-0.311:	15.18	25.57:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.95	10.95:	12.77	23.82	-0.315:	15.55	25.90:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.38	12.37:	12.85	23.90	-0.324:	15.66	26.02:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.63	12.30:	13.00	24.01	-0.327:	15.87	26.20:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.15	12.53:	13.04	24.06	-0.331:	15.91	26.24:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.19	12.64:	13.04	24.06	-0.331:	15.91	26.24:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.99	10.74:	13.27	24.22	-0.327:	16.18	26.48:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.97	10.68:			:	16.18	26.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.82	10.82	12.66:	12.93	23.99	-0.334:	15.77	26.13:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.20	13.28:			:	15.77	26.13:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.14	10.88:	13.38	24.31	-0.329:	16.29	26.57:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.13	10.86:	13.39	24.32	-0.329:	16.30	26.58:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.74	11.38:	13.62	24.50	-0.336:	16.55	26.81:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.82	11.82:	13.62	24.50	-0.337:	16.55	26.81:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.92	11.87:	13.79	24.64	-0.340:	16.78	27.02:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.08	12.00:	13.86	24.70	-0.341:	16.82	27.06:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.11	12.08:	13.78	24.65	-0.341:	16.75	27.01:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.24	12.02:	13.80	24.66	-0.342:	16.77	27.03:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.00	11.76:	13.87	24.72	-0.341:	16.88	27.14:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.82	11.50:	13.79	24.66	-0.339:	16.77	27.04:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.80	11.42:			:	16.77	27.04:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.29	5.29	7.43:	13.99	24.81	-0.315:	16.69	26.97:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.42	8.73:			:	16.69	26.97:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.01	10.94:	14.11	24.91	-0.338:	17.07	27.31:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.01	10.83:	14.11	24.91	-0.338:	17.07	27.31:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.16	10.94:	14.16	24.96	-0.340:	17.10	27.36:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.24	11.06:	14.23	25.03	-0.341:	17.20	27.46:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.43	11.24:	14.28	25.09	-0.343:	17.22	27.50:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.47	11.33:	14.28	25.09	-0.343:	17.22	27.50:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.05	12.13:	14.16	25.00	-0.345:	17.11	27.40:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.59	11.61:	14.11	24.99	-0.342:	17.07	27.39:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.65	9.32:	14.25	25.10	-0.332:	17.19	27.50:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.82	9.49:	14.25	25.10	-0.332:	17.19	27.50:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.73	3.73	5.45:	10.29	29.72-0.380:		12.03	31.29:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.65	9.58:	10.49	29.89-0.412:		12.22	31.48:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.79	9.72:	10.55	30.00-0.414:		12.37	31.68:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.86	10.75:	10.60	30.07-0.423:		12.44	31.78:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.03	10.76:	10.66	30.13-0.425:		12.54	31.88:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.35	10.92:	10.71	30.20-0.429:		12.59	31.95:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.37	10.99:	10.71	30.20-0.429:		12.59	31.95:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.56	9.76:	10.84	30.33-0.425:		12.75	32.12:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.55	9.71:			:	12.75	32.12:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.02	11.02	12.36:	10.67	30.18-0.442:		12.53	31.91:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.94	12.30:			:	12.53	31.91:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.73	9.91:	10.94	30.43-0.428:		12.85	32.23:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.72	9.89:	10.95	30.44-0.428:		12.85	32.24:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.11	10.25:	11.11	30.61-0.434:		13.03	32.44:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.16	10.52:	11.11	30.61-0.434:		13.03	32.44:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.22	10.55:	11.20	30.70-0.436:		13.15	32.58:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.30	10.61:	11.29	30.79-0.438:		13.22	32.66:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.32	10.67:	11.23	30.76-0.438:		13.17	32.63:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.39	10.63:	11.25	30.77-0.438:		13.19	32.64:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.13	10.36:	11.27	30.81-0.437:		13.24	32.71:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.94	10.11:	11.23	30.78-0.434:		13.19	32.66:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.91	10.05:			:	13.19	32.66:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.18	5.18	6.72:	11.65	31.16-0.412:		13.45	32.93:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.30	7.54:			:	13.45	32.93:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.27	9.60:	11.50	31.04-0.434:		13.44	32.94:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.26	9.53:	11.50	31.04-0.434:		13.45	32.94:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.35	9.59:	11.57	31.12-0.435:		13.51	33.02:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.40	9.67:	11.62	31.19-0.437:		13.57	33.12:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.52	9.79:	11.70	31.30-0.439:		13.64	33.22:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.55	9.86:	11.70	31.30-0.439:		13.64	33.22:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.02	10.46:	11.61	31.21-0.442:		13.55	33.13:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.63	10.03:	11.61	31.25-0.438:		13.56	33.17:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.97	8.16:	11.72	31.36-0.427:		13.67	33.28:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.12	8.31:	11.72	31.36-0.427:		13.67	33.28:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.61	3.61	5.96:	10.62	29.82	-0.381:	13.00	32.04:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.82	10.51:	10.82	29.99	-0.415:	13.19	32.22:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.97	10.66:	11.07	30.26	-0.421:	13.57	32.67:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.20	11.87:	11.16	30.38	-0.432:	13.69	32.82:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.40	11.86:	11.31	30.52	-0.436:	13.89	33.05:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.80	12.06:	11.35	30.58	-0.440:	13.93	33.11:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.83	12.14:	11.35	30.58	-0.441:	13.93	33.11:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.98	10.72:	11.55	30.78	-0.437:	14.17	33.38:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.97	10.68:			:	14.17	33.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.90	10.90	12.77:	11.25	30.51	-0.448:	13.81	33.00:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.98	12.95:			:	13.81	33.00:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.13	10.85:	11.64	30.88	-0.440:	14.27	33.50:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.12	10.84:	11.65	30.88	-0.440:	14.27	33.50:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.54	11.18:	11.86	31.09	-0.447:	14.50	33.77:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.60	11.57:	11.86	31.10	-0.448:	14.50	33.77:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.66	11.58:	12.02	31.27	-0.451:	14.72	34.03:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.75	11.65:	12.07	31.33	-0.453:	14.74	34.07:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.77	11.72:	12.02	31.29	-0.452:	14.69	34.03:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.85	11.64:	12.04	31.31	-0.453:	14.71	34.04:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.59	11.36:	12.11	31.39	-0.452:	14.82	34.19:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.40	11.11:	12.04	31.33	-0.449:	14.73	34.08:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.37	11.03:			:	14.73	34.08:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.23	5.23	7.34:	12.12	31.41	-0.417:	14.57	33.91:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.36	8.50:			:	14.57	33.91:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.64	10.57:	12.30	31.59	-0.447:	14.97	34.37:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.64	10.49:	12.30	31.59	-0.447:	14.97	34.37:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.77	10.57:	12.34	31.65	-0.449:	15.01	34.43:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.84	10.68:	12.42	31.75	-0.451:	15.10	34.55:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.00	10.83:	12.46	31.82	-0.453:	15.13	34.62:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.04	10.91:	12.46	31.82	-0.454:	15.13	34.62:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.57	11.63:	12.37	31.73	-0.456:	15.04	34.52:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.13	11.15:	12.35	31.75	-0.452:	15.02	34.53:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.33	9.05:	12.46	31.86	-0.439:	15.12	34.65:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.50	9.22:	12.46	31.86	-0.439:	15.12	34.65:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.38	3.38	5.56:	11.24	29.72	-0.379:	13.45	31.79:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.09	10.65:	11.43	29.89	-0.417:	13.63	31.97:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.25	10.82:	11.62	30.11	-0.421:	13.94	32.34:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.61	12.13:	11.70	30.21	-0.433:	14.05	32.48:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.83	12.14:	11.82	30.32	-0.437:	14.22	32.67:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.27	12.39:	11.86	30.38	-0.442:	14.26	32.73:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.29	12.47:	11.86	30.38	-0.442:	14.26	32.73:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.47	11.12:	12.03	30.56	-0.438:	14.47	32.97:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.46	11.07:			:	14.47	32.97:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.27	11.27	13.05:	11.79	30.33	-0.449:	14.16	32.64:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.40	13.28:			:	14.16	32.64:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.60	11.24:	12.13	30.65	-0.441:	14.56	33.07:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.59	11.23:	12.13	30.66	-0.441:	14.56	33.08:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.98	11.54:	12.32	30.85	-0.447:	14.77	33.32:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.04	11.89:	12.32	30.86	-0.448:	14.77	33.33:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.07	11.88:	12.46	31.00	-0.451:	14.96	33.55:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.13	11.92:	12.52	31.07	-0.452:	15.00	33.60:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.15	11.99:	12.47	31.04	-0.451:	14.95	33.56:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.20	11.89:	12.49	31.05	-0.452:	14.97	33.58:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.93	11.60:	12.55	31.13	-0.451:	15.06	33.70:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.73	11.34:	12.49	31.08	-0.448:	14.98	33.62:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.71	11.27:			:	14.98	33.62:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.18	5.18	7.13:	12.70	31.27	-0.415:	14.97	33.60:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.32	8.32:			:	14.97	33.60:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.86	10.70:	12.74	31.33	-0.445:	15.22	33.89:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.86	10.60:	12.74	31.33	-0.445:	15.22	33.89:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.03	10.72:	12.79	31.40	-0.448:	15.26	33.96:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.12	10.84:	12.86	31.49	-0.450:	15.35	34.08:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.31	11.03:	12.92	31.57	-0.452:	15.39	34.15:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.35	11.11:	12.92	31.57	-0.453:	15.39	34.15:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.92	11.86:	12.83	31.48	-0.456:	15.30	34.05:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.45	11.36:	12.82	31.51	-0.452:	15.29	34.08:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.58	9.20:	12.93	31.62	-0.438:	15.39	34.19:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.78	9.39:	12.93	31.62	-0.438:	15.39	34.19:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.40	3.40	6.04:	12.93	37.73-0.506:	15.59	41.21:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.02	12.60:	13.08	37.91-0.565:	15.72	41.41:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.22	12.78:	13.52	38.52-0.577:	16.31	42.32:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.07	14.48:	13.65	38.72-0.601:	16.48	42.61:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.36	14.54:	13.88	39.02-0.610:	16.76	43.06:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.96	14.91:	13.90	39.08-0.618:	16.79	43.12:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.99	15.00:	13.90	39.08-0.618:	16.79	43.12:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.74	13.21:	14.15	39.41-0.609:	17.08	43.59:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.73	13.19:		:	17.08	43.59:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.65	12.65	15.04:	13.78	38.94-0.623:	16.63	42.90:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		13.01	15.60:		:	16.63	42.90:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.91	13.38:	14.22	39.52-0.613:	17.15	43.71:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.90	13.37:	14.22	39.53-0.613:	17.15	43.72:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.56	13.88:	14.44	39.83-0.626:	17.39	44.12:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.65	14.36:	14.44	39.84-0.627:	17.39	44.12:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.70	14.35:	14.67	40.17-0.634:	17.69	44.61:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.80	14.46:	14.67	40.18-0.635:	17.66	44.58:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.82	14.52:	14.64	40.15-0.635:	17.63	44.55:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.91	14.41:	14.65	40.17-0.636:	17.64	44.57:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.65	14.14:	14.78	40.37-0.636:	17.82	44.87:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.49	13.91:	14.68	40.24-0.632:	17.69	44.67:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.47	13.81:		:	17.69	44.67:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.86	5.86	8.36:	14.39	39.84-0.562:	17.12	43.76:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.06	10.43:		:	17.12	43.76:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.39	13.14:	14.88	40.52-0.623:	17.87	44.97:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.40	13.02:	14.88	40.52-0.624:	17.87	44.98:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.73	13.27:	14.90	40.58-0.628:	17.88	45.02:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.89	13.45:	14.99	40.73-0.632:	17.99	45.22:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.22	13.76:	15.00	40.78-0.637:	17.98	45.25:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.27	13.86:	15.00	40.78-0.637:	17.98	45.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.04	14.82:	14.93	40.68-0.645:	17.91	45.14:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.44	14.20:	14.91	40.71-0.637:	17.88	45.14:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.17	11.64:	14.99	40.82-0.612:	17.96	45.26:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.47	11.92:	14.99	40.82-0.612:	17.96	45.26:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.87	3.87	6.23:	11.58	27.13	-0.343:	13.99	29.18:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.54	11.21:	11.79	27.30	-0.377:	14.19	29.36:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.69	11.38:	12.03	27.54	-0.381:	14.56	29.76:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.02	12.71:	12.11	27.63	-0.393:	14.68	29.89:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.25	12.71:	12.26	27.76	-0.396:	14.89	30.10:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.72	12.97:	12.30	27.81	-0.401:	14.92	30.15:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.74	13.06:	12.30	27.81	-0.401:	14.92	30.15:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.00	11.74:	12.50	27.99	-0.398:	15.16	30.40:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.00	11.70:			:	15.16	30.40:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.87	12.87	14.77:	12.21	27.75	-0.416:	14.80	30.05:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.71	14.62:			:	14.80	30.05:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.20	11.92:	12.59	28.08	-0.401:	15.25	30.50:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.19	11.91:	12.59	28.08	-0.401:	15.26	30.51:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.50	12.15:	12.80	28.27	-0.407:	15.49	30.75:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.55	12.52:	12.80	28.27	-0.407:	15.49	30.75:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.54	12.47:	12.97	28.43	-0.410:	15.71	30.99:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.56	12.47:	13.02	28.48	-0.411:	15.74	31.02:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.56	12.53:	12.97	28.45	-0.410:	15.69	30.99:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.58	12.38:	12.98	28.47	-0.411:	15.71	31.00:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.32	12.09:	13.06	28.55	-0.410:	15.83	31.14:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.12	11.83:	12.99	28.49	-0.407:	15.73	31.04:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.10	11.75:			:	15.73	31.04:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.22	5.22	7.28:	13.15	28.62	-0.374:	15.62	30.94:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.36	8.52:			:	15.62	30.94:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.14	11.10:	13.25	28.73	-0.404:	15.97	31.31:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.14	10.99:	13.25	28.73	-0.404:	15.97	31.31:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.33	11.13:	13.30	28.78	-0.406:	16.01	31.36:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.43	11.26:	13.38	28.87	-0.408:	16.10	31.47:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.64	11.47:	13.42	28.94	-0.410:	16.13	31.53:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.68	11.55:	13.42	28.94	-0.411:	16.13	31.53:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.26	12.34:	13.32	28.85	-0.413:	16.04	31.43:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.80	11.84:	13.30	28.87	-0.410:	16.02	31.44:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.99	9.69:	13.42	28.97	-0.398:	16.12	31.55:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.19	9.89:	13.42	28.97	-0.398:	16.12	31.55:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.24	4.24	5.86:	8.53	27.34	-0.343:	10.20	28.64:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.94	9.49:	8.76	27.51	-0.371:	10.42	28.82:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.06	9.61:	8.74	27.55	-0.372:	10.48	28.92:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.73	10.28:	8.77	27.60	-0.369:	10.53	29.00:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.82	10.26:	8.79	27.63	-0.361:	10.59	29.06:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.99	10.30:	8.85	27.69	-0.379:	10.64	29.12:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.00	10.35:	8.85	27.69	-0.382:	10.64	29.12:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.82	9.80:	8.96	27.79	-0.382:	10.78	29.25:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.81	9.77:			:	10.78	29.25:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.16	11.16	12.39:	8.82	27.68	-0.396:	10.60	29.10:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.66	11.81:			:	10.60	29.10:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.95	9.92:	9.07	27.88	-0.381:	10.89	29.35:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.95	9.91:	9.08	27.89	-0.382:	10.89	29.36:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.91	9.85:	9.23	28.03	-0.385:	11.06	29.53:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.91	10.05:	9.24	28.03	-0.384:	11.07	29.53:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.86	9.98:	9.29	28.09	-0.386:	11.16	29.62:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.80	9.91:	9.40	28.19	-0.387:	11.25	29.71:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.80	9.94:	9.34	28.15	-0.386:	11.19	29.68:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.76	9.81:	9.36	28.17	-0.386:	11.21	29.70:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.52	9.56:	9.36	28.18	-0.384:	11.24	29.73:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.33	9.32:	9.33	28.17	-0.382:	11.20	29.71:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.31	9.27:			:	11.20	29.71:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.95	4.95	6.38:	9.92	28.63	-0.367:	11.65	30.10:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.04	6.91:			:	11.65	30.10:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.71	8.84:	9.62	28.41	-0.382:	11.48	29.96:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.70	8.78:	9.63	28.41	-0.382:	11.48	29.97:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.72	8.77:	9.70	28.49	-0.383:	11.55	30.05:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.74	8.82:	9.75	28.55	-0.384:	11.61	30.12:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.79	8.87:	9.84	28.65	-0.386:	11.70	30.23:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.81	8.92:	9.84	28.66	-0.386:	11.70	30.23:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.09	9.34:	9.74	28.57	-0.387:	11.60	30.14:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.83	9.04:	9.75	28.62	-0.385:	11.62	30.19:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.71	7.71:	9.87	28.72	-0.379:	11.73	30.30:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.80	7.80:	9.87	28.72	-0.379:	11.73	30.30:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.13	4.13	6.08:	10.10	28.81	-0.368:	12.09	30.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.13	10.20:	10.31	28.98	-0.400:	12.29	30.73:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.27	10.34:	10.42	29.13	-0.403:	12.51	31.00:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.25	11.32:	10.49	29.21	-0.411:	12.60	31.11:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.41	11.31:	10.57	29.30	-0.414:	12.74	31.25:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.71	11.45:	10.62	29.36	-0.417:	12.78	31.32:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.72	11.52:	10.62	29.36	-0.417:	12.78	31.32:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.23	10.55:	10.77	29.50	-0.416:	12.97	31.52:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.23	10.51:			:	12.97	31.52:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.95	10.95	12.47:	10.56	29.32	-0.426:	12.70	31.25:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.86	12.41:			:	12.70	31.25:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.35	10.66:	10.88	29.60	-0.419:	13.07	31.63:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.35	10.65:	10.88	29.61	-0.419:	13.08	31.63:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.53	10.78:	11.07	29.79	-0.423:	13.28	31.85:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.56	11.07:	11.07	29.79	-0.423:	13.28	31.85:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.55	11.03:	11.18	29.90	-0.425:	13.44	32.03:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.56	11.02:	11.26	29.99	-0.427:	13.50	32.10:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.56	11.07:	11.20	29.95	-0.426:	13.45	32.06:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.58	10.96:	11.22	29.96	-0.426:	13.46	32.08:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.37	10.73:	11.26	30.01	-0.425:	13.54	32.16:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.21	10.52:	11.21	29.97	-0.423:	13.47	32.10:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.19	10.46:			:	13.47	32.10:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.18	5.18	6.92:	11.52	30.25	-0.397:	13.58	32.21:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.30	7.79:			:	13.58	32.21:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.51	9.99:	11.48	30.23	-0.422:	13.73	32.38:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.51	9.92:	11.48	30.23	-0.422:	13.73	32.38:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.61	9.99:	11.54	30.30	-0.424:	13.78	32.45:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.67	10.08:	11.61	30.38	-0.425:	13.86	32.55:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.80	10.21:	11.67	30.47	-0.427:	13.91	32.64:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.83	10.28:	11.67	30.47	-0.428:	13.91	32.64:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.24	10.84:	11.58	30.39	-0.429:	13.82	32.54:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.94	10.50:	11.57	30.42	-0.427:	13.81	32.57:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.65	8.95:	11.68	30.52	-0.418:	13.92	32.69:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.77	9.07:	11.68	30.52	-0.418:	13.92	32.69:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.82	3.82	5.84:	10.19	26.73	-0.334:	12.26	28.39:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.92	10.07:	10.41	26.89	-0.364:	12.47	28.56:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.06	10.22:	10.50	27.01	-0.366:	12.68	28.79:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.11	11.27:	10.56	27.08	-0.374:	12.76	28.89:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.28	11.26:	10.64	27.16	-0.377:	12.89	29.02:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.62	11.42:	10.69	27.21	-0.380:	12.93	29.07:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.64	11.49:	10.69	27.21	-0.380:	12.94	29.07:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.22	10.57:	10.84	27.34	-0.379:	13.12	29.25:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.21	10.53:			:	13.12	29.25:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.74	10.74	12.30:	10.63	27.18	-0.393:	12.86	29.02:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.72	12.32:			:	12.86	29.02:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.33	10.67:	10.94	27.43	-0.381:	13.22	29.35:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.32	10.66:	10.95	27.44	-0.382:	13.23	29.36:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.51	10.79:	11.13	27.60	-0.386:	13.43	29.56:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.54	11.08:	11.13	27.60	-0.386:	13.43	29.56:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.53	11.04:	11.24	27.70	-0.387:	13.59	29.72:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.53	11.02:	11.33	27.78	-0.389:	13.65	29.79:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.53	11.07:	11.27	27.75	-0.388:	13.60	29.75:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.55	10.95:	11.29	27.76	-0.388:	13.62	29.77:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.34	10.72:	11.32	27.81	-0.387:	13.69	29.85:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.19	10.51:	11.27	27.77	-0.385:	13.62	29.79:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.17	10.45:			:	13.62	29.79:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.49	5.49	7.25:	11.66	28.08	-0.365:	13.79	29.95:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.60	8.07:			:	13.79	29.95:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.51	10.01:	11.56	28.01	-0.385:	13.89	30.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.51	9.93:	11.56	28.01	-0.385:	13.89	30.05:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.62	10.01:	11.62	28.08	-0.387:	13.94	30.12:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.69	10.11:	11.68	28.15	-0.388:	14.02	30.21:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.83	10.24:	11.75	28.24	-0.390:	14.08	30.29:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.86	10.31:	11.75	28.24	-0.390:	14.08	30.29:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.27	10.90:	11.65	28.15	-0.392:	13.98	30.20:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.96	10.54:	11.64	28.18	-0.389:	13.97	30.23:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.68	8.98:	11.77	28.28	-0.382:	14.09	30.34:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.81	9.11:	11.77	28.28	-0.382:	14.09	30.34:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.26	3.26	5.55:	12.13	34.84	-0.459:	14.44	37.53:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.50	11.43:	12.30	35.02	-0.509:	14.60	37.72:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.68	11.61:	12.57	35.39	-0.516:	15.00	38.30:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.31	13.14:	12.67	35.53	-0.534:	15.13	38.50:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.57	13.19:	12.82	35.71	-0.540:	15.34	38.79:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.09	13.51:	12.86	35.78	-0.547:	15.37	38.85:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.12	13.59:	12.86	35.78	-0.547:	15.37	38.85:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.30	12.24:	13.05	36.01	-0.542:	15.61	39.17:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.29	12.21:			:	15.61	39.17:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.35	11.35	13.35:	12.78	35.70	-0.548:	15.26	38.72:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.76	13.95:			:	15.26	38.72:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.41	12.35:	13.13	36.12	-0.545:	15.69	39.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.40	12.34:	13.13	36.12	-0.545:	15.69	39.30:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.90	12.73:	13.32	36.36	-0.555:	15.90	39.60:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.97	13.13:	13.32	36.36	-0.555:	15.90	39.61:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.98	13.10:	13.49	36.58	-0.559:	16.13	39.93:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.04	13.14:	13.52	36.63	-0.561:	16.13	39.95:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.05	13.20:	13.49	36.60	-0.560:	16.10	39.93:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.10	13.08:	13.50	36.62	-0.561:	16.11	39.94:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.91	12.87:	13.59	36.75	-0.561:	16.24	40.15:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.78	12.68:	13.52	36.67	-0.558:	16.14	40.01:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.77	12.60:			:	16.14	40.01:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.56	5.56	7.70:	13.52	36.66	-0.506:	15.90	39.67:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.74	9.24:			:	15.90	39.67:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.80	11.95:	13.73	36.94	-0.552:	16.34	40.31:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.81	11.86:	13.73	36.94	-0.552:	16.35	40.31:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.08	12.08:	13.77	37.01	-0.556:	16.37	40.37:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.23	12.24:	13.85	37.12	-0.559:	16.47	40.52:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.51	12.51:	13.89	37.21	-0.563:	16.49	40.59:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.55	12.60:	13.89	37.21	-0.564:	16.49	40.59:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.18	13.41:	13.81	37.11	-0.569:	16.42	40.49:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.75	12.94:	13.81	37.15	-0.564:	16.41	40.52:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.09	10.98:	13.90	37.26	-0.549:	16.49	40.64:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.31	11.19:	13.90	37.26	-0.549:	16.49	40.64:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	2.99	2.99	5.78:	14.71	35.50	-0.471:	17.51	39.07:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.27	13.37:	14.87	35.68	-0.531:	17.66	39.27:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.51	13.60:	15.33	36.29	-0.543:	18.28	40.22:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.85	15.73:	15.47	36.49	-0.571:	18.46	40.51:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.23	15.78:	15.71	36.81	-0.581:	18.78	40.99:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		13.02	16.27:	15.73	36.85	-0.590:	18.79	41.03:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		13.06	16.37:	15.73	36.85	-0.591:	18.79	41.03:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.73	14.40:	15.99	37.19	-0.582:	19.10	41.52:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.73	14.38:			:	19.10	41.52:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.17	13.17	15.66:	15.60	36.70	-0.589:	18.62	40.80:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		13.92	16.79:			:	18.62	40.80:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.90	14.57:	16.06	37.29	-0.586:	19.17	41.64:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.89	14.56:	16.06	37.30	-0.586:	19.18	41.65:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.68	15.16:	16.28	37.60	-0.600:	19.43	42.05:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		12.78	15.71:	16.29	37.61	-0.601:	19.43	42.06:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		12.83	15.69:	16.54	37.96	-0.608:	19.75	42.58:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.93	15.80:	16.53	37.95	-0.609:	19.71	42.52:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.95	15.86:	16.49	37.92	-0.608:	19.67	42.48:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		13.04	15.72:	16.50	37.94	-0.609:	19.68	42.50:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.85	15.50:	16.65	38.15	-0.611:	19.88	42.84:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.74	15.31:	16.54	38.00	-0.607:	19.73	42.60:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.72	15.20:			:	19.73	42.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.88	5.88	8.48:	16.20	37.56	-0.527:	19.09	41.60:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.11	10.99:			:	19.09	41.60:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.40	14.36:	16.74	38.28	-0.596:	19.92	42.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.42	14.22:	16.74	38.28	-0.597:	19.92	42.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.85	14.55:	16.76	38.32	-0.602:	19.92	42.94:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		12.07	14.79:	16.85	38.47	-0.607:	20.04	43.14:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.49	15.18:	16.86	38.51	-0.612:	20.02	43.15:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.54	15.28:	16.86	38.51	-0.612:	20.02	43.15:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.39	16.35:	16.78	38.41	-0.620:	19.95	43.04:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.81	15.74:	16.75	38.41	-0.613:	19.91	43.01:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.64	13.20:	16.84	38.53	-0.590:	19.99	43.14:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.95	13.50:	16.84	38.53	-0.590:	19.99	43.14:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.47	3.47	5.48:	10.41	27.62	-0.346:	12.46	29.34:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.22	10.39:	10.61	27.78	-0.381:	12.65	29.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.36	10.54:	10.70	27.90	-0.383:	12.86	29.74:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.49	11.66:	10.76	27.97	-0.393:	12.94	29.84:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.68	11.69:	10.84	28.05	-0.395:	13.07	29.97:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.04	11.89:	10.88	28.10	-0.399:	13.11	30.03:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.06	11.96:	10.88	28.10	-0.399:	13.11	30.03:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.89	11.30:	11.02	28.23	-0.400:	13.28	30.20:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.89	11.28:			:	13.28	30.20:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.98	12.98	14.62:	10.84	28.08	-0.422:	13.04	29.98:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.40	13.95:			:	13.04	29.98:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.08	11.48:	11.11	28.31	-0.402:	13.37	30.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.07	11.47:	11.11	28.32	-0.403:	13.37	30.30:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.13	11.46:	11.28	28.48	-0.406:	13.56	30.50:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.14	11.74:	11.29	28.48	-0.406:	13.57	30.50:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.10	11.67:	11.39	28.58	-0.407:	13.72	30.66:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.07	11.62:	11.47	28.65	-0.408:	13.77	30.72:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.07	11.66:	11.42	28.63	-0.407:	13.73	30.70:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.06	11.51:	11.44	28.65	-0.408:	13.75	30.72:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.82	11.25:	11.48	28.70	-0.406:	13.83	30.81:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.64	11.01:	11.44	28.67	-0.404:	13.76	30.75:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.62	10.94:			:	13.76	30.75:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.18	5.18	6.93:	11.86	29.02	-0.378:	13.97	30.94:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.30	7.83:			:	13.97	30.94:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.73	10.31:	11.70	28.90	-0.402:	14.01	31.00:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.73	10.21:	11.71	28.90	-0.402:	14.01	31.00:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.89	10.33:	11.77	28.97	-0.404:	14.06	31.07:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.97	10.44:	11.83	29.04	-0.405:	14.14	31.16:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.15	10.61:	11.90	29.13	-0.408:	14.20	31.25:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.18	10.68:	11.90	29.13	-0.408:	14.20	31.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.61	11.30:	11.80	29.05	-0.410:	14.11	31.16:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.30	10.94:	11.81	29.09	-0.408:	14.12	31.20:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.08	9.42:	11.93	29.19	-0.400:	14.22	31.31:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.22	9.57:	11.93	29.19	-0.400:	14.22	31.31:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.57	3.57	5.87:	11.65	24.75	-0.305:	14.02	26.55:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.52	11.07:	11.87	24.91	-0.336:	14.23	26.72:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.68	11.24:	12.01	25.05	-0.339:	14.51	26.99:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.03	12.59:	12.08	25.12	-0.349:	14.60	27.09:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.26	12.59:	12.18	25.21	-0.352:	14.77	27.24:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.72	12.84:	12.22	25.25	-0.355:	14.81	27.29:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.75	12.93:	12.23	25.25	-0.355:	14.81	27.29:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.29	11.89:	12.39	25.38	-0.355:	15.02	27.48:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.29	11.85:			:	15.02	27.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.85	11.85	13.65:	12.16	25.22	-0.362:	14.71	27.22:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.92	13.82:			:	14.71	27.22:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.41	12.00:	12.49	25.47	-0.357:	15.11	27.57:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.41	11.99:	12.49	25.47	-0.357:	15.12	27.58:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.67	12.17:	12.68	25.63	-0.361:	15.33	27.78:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.71	12.52:	12.69	25.63	-0.362:	15.33	27.78:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.72	12.48:	12.82	25.75	-0.364:	15.53	27.97:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.75	12.48:	12.90	25.81	-0.365:	15.57	28.01:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.75	12.54:	12.84	25.78	-0.364:	15.52	27.98:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.79	12.40:	12.86	25.79	-0.365:	15.54	27.99:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.54	12.14:	12.92	25.85	-0.364:	15.64	28.10:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.37	11.89:	12.85	25.81	-0.362:	15.55	28.02:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.34	11.82:			:	15.55	28.02:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.17	5.17	7.11:	13.23	26.09	-0.334:	15.66	28.12:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.30	8.21:			:	15.66	28.12:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.32	11.08:	13.14	26.04	-0.359:	15.82	28.27:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.32	10.97:	13.15	26.04	-0.359:	15.82	28.27:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.51	11.12:	13.20	26.10	-0.361:	15.87	28.33:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.61	11.24:	13.27	26.16	-0.362:	15.95	28.42:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.82	11.45:	13.33	26.24	-0.365:	16.00	28.49:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.85	11.53:	13.33	26.24	-0.365:	16.00	28.49:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.35	12.24:	13.22	26.15	-0.367:	15.89	28.39:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.01	11.84:	13.21	26.17	-0.364:	15.88	28.41:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.66	10.14:	13.34	26.27	-0.357:	15.99	28.51:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.82	10.30:	13.34	26.27	-0.357:	15.99	28.51:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:C)	AVG. DAILY K1 /S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.89	3.89	6.46:	14.43	26.52	-0.337:	17.08	28.87:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.08	12.31:	14.67	26.72	-0.373:	17.30	29.08:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.27	12.52:	14.91	26.96	-0.378:	17.71	29.52:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.15	14.41:	14.99	27.05	-0.393:	17.83	29.66:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.50	14.43:	15.16	27.20	-0.398:	18.07	29.91:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.26	14.91:	15.19	27.24	-0.404:	18.09	29.94:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		12.31	15.02:	15.19	27.24	-0.404:	18.09	29.94:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.13	13.15:	15.40	27.44	-0.399:	18.36	30.23:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.11	13.10:			:	18.36	30.23:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.40	12.40	14.44:	15.08	27.16	-0.403:	17.95	29.82:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		13.02	15.39:			:	17.95	29.82:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.26	13.27:	15.50	27.53	-0.401:	18.45	30.33:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.25	13.26:	15.50	27.53	-0.401:	18.45	30.34:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.06	13.96:	15.71	27.73	-0.411:	18.69	30.60:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		12.16	14.46:	15.71	27.73	-0.412:	18.69	30.60:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		12.25	14.49:	15.91	27.91	-0.416:	18.95	30.89:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.40	14.61:	15.94	27.95	-0.417:	18.95	30.90:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.43	14.69:	15.88	27.91	-0.417:	18.90	30.85:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.55	14.60:	15.90	27.93	-0.418:	18.92	30.87:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.34	14.37:	16.00	28.03	-0.418:	19.07	31.05:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.21	14.15:	15.91	27.95	-0.415:	18.94	30.91:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.19	14.06:			:	18.94	30.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.94	5.94	8.17:	16.00	28.04	-0.372:	18.73	30.68:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.11	9.87:			:	18.73	30.68:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.94	13.21:	16.17	28.20	-0.410:	19.18	31.18:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.95	13.06:	16.17	28.20	-0.410:	19.19	31.18:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.25	13.30:	16.21	28.25	-0.413:	19.21	31.23:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.41	13.49:	16.29	28.34	-0.415:	19.31	31.35:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.73	13.79:	16.33	28.39	-0.418:	19.32	31.39:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.78	13.89:	16.33	28.40	-0.419:	19.32	31.39:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.47	14.83:	16.22	28.30	-0.423:	19.23	31.28:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.00	14.30:	16.20	28.31	-0.418:	19.20	31.28:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.17	12.08:	16.32	28.41	-0.406:	19.30	31.39:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.40	12.30:	16.32	28.41	-0.406:	19.30	31.39:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.46	4.46	6.27:	8.89	25.78-0.321:		10.76	27.17:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.21	9.91:	9.14	25.96-0.348:		11.00	27.36:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.31	10.02:	9.13	26.00-0.349:		11.09	27.47:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.94	10.71:	9.15	26.04-0.354:		11.14	27.54:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.05	10.68:	9.19	26.08-0.355:		11.23	27.62:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.25	10.76:	9.24	26.13-0.628:		11.28	27.68:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.26	10.81:	9.24	26.14-0.234:		11.28	27.68:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.91	9.99:	9.37	26.24-0.356:		11.44	27.82:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.90	9.96:			:	11.44	27.82:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.49	11.49	12.81:	9.21	26.12-0.372:		11.23	27.65:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.03	12.29:			:	11.23	27.65:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.07	10.14:	9.48	26.33-0.359:		11.55	27.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.06	10.12:	9.49	26.34-0.358:		11.56	27.93:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.17	10.20:	9.66	26.48-0.362:		11.75	28.10:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.19	10.44:	9.66	26.48-0.362:		11.75	28.10:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.24	10.46:	9.74	26.55-0.364:		11.87	28.21:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.31	10.51:	9.84	26.64-0.365:		11.95	28.29:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.32	10.57:	9.78	26.60-0.365:		11.89	28.26:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.38	10.52:	9.79	26.62-0.366:		11.91	28.27:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.20	10.32:	9.80	26.64-0.364:		11.95	28.32:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.05	10.12:	9.77	26.62-0.363:		11.90	28.28:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.03	10.07:			:	11.90	28.28:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.27	5.27	6.83:	10.32	27.03-0.345:		12.26	28.58:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.36	7.40:			:	12.26	28.58:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.36	9.58:	10.07	26.85-0.362:		12.18	28.53:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.35	9.51:	10.07	26.85-0.362:		12.18	28.53:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.39	9.53:	10.14	26.92-0.363:		12.25	28.61:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.42	9.58:	10.19	26.98-0.364:		12.32	28.68:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.48	9.64:	10.28	27.08-0.366:		12.39	28.78:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.50	9.70:	10.28	27.08-0.366:		12.40	28.78:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.74	10.09:	10.17	26.99-0.366:		12.29	28.69:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.55	9.85:	10.18	27.03-0.365:		12.30	28.73:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.72	8.77:	10.31	27.13-0.361:		12.42	28.83:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.79	8.85:	10.31	27.13-0.361:		12.42	28.83:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.54	4.54	6.05:	6.49	29.81-0.377:		8.04	31.07:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.61	8.91:	6.70	29.97-0.403:		8.24	31.24:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.67	8.97:	6.64	29.99-0.403:		8.25	31.31:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.79	9.15:	6.66	30.03-0.404:		8.28	31.38:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.80	9.10:	6.66	30.05-0.404:		8.31	31.42:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.80	9.02:	6.72	30.12-0.405:		8.37	31.49:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.79	9.05:	6.72	30.12-0.405:		8.37	31.49:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.75	8.68:	6.80	30.20-0.406:		8.47	31.60:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.75	8.65:		:		8.47	31.60:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.73	9.73	10.93:	6.72	30.14-0.421:		8.37	31.51:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.97	10.06:		:		8.37	31.51:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.84	8.76:	6.90	30.29-0.408:		8.57	31.70:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.83	8.75:	6.90	30.30-0.408:		8.57	31.70:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.77	8.66:	7.04	30.43-0.410:		8.72	31.86:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.76	8.82:	7.04	30.43-0.410:		8.73	31.86:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.82	8.85:	7.08	30.48-0.411:		8.78	31.93:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.88	8.89:	7.19	30.58-0.413:		8.88	32.04:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.90	8.94:	7.15	30.57-0.413:		8.85	32.02:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.95	8.91:	7.16	30.58-0.413:		8.86	32.04:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.74	8.68:	7.15	30.59-0.412:		8.88	32.07:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.57	8.47:	7.15	30.59-0.410:		8.86	32.06:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.54	8.43:		:		8.86	32.06:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.79	4.79	6.14:	7.79	31.12-0.399:		9.39	32.54:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.85	6.46:		:		9.39	32.54:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.03	8.05:	7.41	30.82-0.410:		9.12	32.30:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.03	8.00:	7.41	30.83-0.410:		9.12	32.31:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.00	7.96:	7.49	30.91-0.411:		9.19	32.40:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.00	7.98:	7.54	30.98-0.412:		9.25	32.47:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.00	7.99:	7.65	31.10-0.413:		9.36	32.61:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.01	8.03:	7.65	31.10-0.413:		9.36	32.61:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.11	8.25:	7.55	31.02-0.413:		9.26	32.52:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.01	8.11:	7.59	31.10-0.413:		9.31	32.61:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.58	7.48:	7.70	31.19-0.411:		9.41	32.70:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.62	7.52:	7.70	31.19-0.411:		9.41	32.70:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2):	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.54	4.54	6.01:	7.40	30.94	-0.397:	8.92	32.27:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.42	8.75:	7.67	31.16	-0.423:	9.18	32.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.52	8.85:	7.56	31.13	-0.455:	9.14	32.53:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.98	9.32:	7.57	31.17	-0.427:	9.17	32.59:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.05	9.28:	7.56	31.18	-0.427:	9.19	32.63:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.15	9.26:	7.62	31.26	-0.429:	9.25	32.70:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.15	9.30:	7.62	31.26	-0.429:	9.25	32.71:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.77	8.58:	7.73	31.37	-0.385:	9.38	32.84:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.76	8.54:			:	9.38	32.84:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.92	8.92	9.94:	7.60	31.25	-0.435:	9.21	32.69:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.70	9.70:			:	9.21	32.69:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.83	8.63:	7.86	31.49	-0.520:	9.50	32.98:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.83	8.62:	7.87	31.50	-0.471:	9.51	32.98:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.83	8.65:	8.00	31.64	-0.433:	9.65	33.15:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.84	8.82:	8.00	31.64	-0.432:	9.65	33.14:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.90	8.87:	8.02	31.68	-0.437:	9.70	33.21:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.99	8.94:	8.14	31.79	-0.438:	9.81	33.33:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.01	8.99:	8.07	31.75	-0.445:	9.75	33.28:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.08	8.99:	8.08	31.76	0.000:	9.76	33.30:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.96	8.87:	8.06	31.76	-0.429:	9.76	33.31:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.86	8.72:	8.04	31.75	-0.435:	9.73	33.30:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.85	8.69:			:	9.73	33.30:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.84	4.84	6.18:	8.63	32.27	-0.419:	10.21	33.75:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.92	6.59:			:	10.21	33.75:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.38	8.36:	8.33	32.02	-0.434:	10.01	33.58:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.39	8.33:	8.33	32.02	-0.435:	10.01	33.58:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.38	8.30:	8.41	32.11	-0.436:	10.09	33.68:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.38	8.33:	8.46	32.18	-0.437:	10.14	33.76:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.40	8.35:	8.56	32.31	-0.439:	10.24	33.89:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.41	8.39:	8.56	32.31	-0.439:	10.24	33.89:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.57	8.65:	8.47	32.23	-0.439:	10.16	33.81:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.44	8.48:	8.48	32.29	-0.438:	10.17	33.87:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.82	7.69:	8.60	32.39	-0.434:	10.28	33.98:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.87	7.74:	8.60	32.39	-0.434:	10.28	33.98:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.37	4.37	6.18:	9.31	36.21	-0.482:	11.15	38.26:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.51	9.44:	9.52	36.43	-0.516:	11.35	38.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.62	9.56:	9.57	36.56	-0.518:	11.49	38.74:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.43	10.35:	9.62	36.65	-0.527:	11.57	38.87:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.55	10.33:	9.68	36.73	-0.529:	11.67	39.01:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.79	10.41:	9.73	36.81	-0.533:	11.71	39.09:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.80	10.47:	9.73	36.81	-0.533:	11.71	39.09:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.13	9.32:	9.88	36.99	-0.529:	11.89	39.33:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.12	9.27:			:	11.89	39.33:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.04	9.04	10.39:	9.68	36.78	-0.535:	11.65	39.04:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.16	10.59:			:	11.65	39.04:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.20	9.38:	9.99	37.13	-0.532:	12.00	39.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.19	9.36:	9.99	37.14	-0.533:	12.01	39.49:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.53	9.69:	10.15	37.34	-0.539:	12.18	39.74:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.57	9.96:	10.15	37.34	-0.540:	12.18	39.74:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.69	10.05:	10.23	37.45	-0.543:	12.30	39.91:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.85	10.20:	10.32	37.56	-0.546:	12.37	40.01:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.88	10.27:	10.26	37.51	-0.545:	12.31	39.96:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.02	10.29:	10.27	37.53	-0.547:	12.33	39.98:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.89	10.15:	10.29	37.57	-0.546:	12.38	40.06:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.79	10.00:	10.25	37.53	-0.544:	12.31	39.99:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.78	9.95:			:	12.31	39.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.07	5.07	6.77:	10.53	37.84	-0.513:	12.43	40.13:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.20	7.60:			:	12.43	40.13:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.27	9.62:	10.51	37.84	-0.544:	12.56	40.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.27	9.59:	10.51	37.85	-0.544:	12.57	40.33:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.33	9.63:	10.58	37.94	-0.546:	12.62	40.43:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.37	9.69:	10.63	38.04	-0.548:	12.69	40.55:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.46	9.78:	10.71	38.17	-0.551:	12.76	40.68:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.49	9.84:	10.71	38.17	-0.551:	12.76	40.68:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.81	10.27:	10.64	38.09	-0.553:	12.69	40.59:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.60	10.03:	10.63	38.13	-0.551:	12.69	40.64:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.64	8.85:	10.73	38.25	-0.543:	12.78	40.76:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.73	8.94:	10.73	38.25	-0.543:	12.78	40.76:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (J/M2: (C) /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.01	4.01	6.16:	11.09	34.77	-0.461:	13.27	37.23:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.75	10.34:	11.27	34.97	-0.498:	13.44	37.44:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.89	10.48:	11.39	35.16	-0.502:	13.66	37.78:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.09	11.61:	11.45	35.26	-0.515:	13.76	37.93:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.27	11.58:	11.54	35.37	-0.519:	13.89	38.11:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.65	11.74:	11.58	35.44	-0.523:	13.93	38.18:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.67	11.82:	11.58	35.44	-0.524:	13.93	38.18:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.80	10.35:	11.74	35.63	-0.518:	14.12	38.44:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.79	10.30:			:	14.12	38.44:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.10	10.10	11.74:	11.53	35.40	-0.527:	13.86	38.11:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.39	12.19:			:	13.86	38.11:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.92	10.45:	11.84	35.76	-0.521:	14.22	38.58:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.91	10.43:	11.85	35.77	-0.522:	14.23	38.59:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.47	10.94:	12.02	35.98	-0.531:	14.42	38.86:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.56	11.32:	12.02	35.98	-0.532:	14.42	38.86:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.67	11.39:	12.13	36.12	-0.535:	14.57	39.08:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.83	11.53:	12.20	36.22	-0.538:	14.62	39.15:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.86	11.60:	12.14	36.17	-0.537:	14.57	39.10:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.99	11.59:	12.16	36.19	-0.539:	14.58	39.12:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.83	11.40:	12.20	36.25	-0.538:	14.66	39.24:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.70	11.21:	12.14	36.19	-0.536:	14.58	39.14:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.69	11.15:			:	14.58	39.14:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.33	5.33	7.31:	12.37	36.44	-0.498:	14.60	39.16:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.49	8.53:			:	14.60	39.16:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.05	10.75:	12.40	36.50	-0.535:	14.82	39.48:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.05	10.70:	12.40	36.50	-0.535:	14.82	39.48:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.18	10.79:	12.46	36.59	-0.537:	14.87	39.56:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.25	10.89:	12.52	36.69	-0.539:	14.95	39.69:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.41	11.04:	12.59	36.81	-0.542:	15.00	39.80:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.44	11.12:	12.59	36.81	-0.543:	15.00	39.80:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.91	11.72:	12.51	36.72	-0.546:	14.93	39.70:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.60	11.37:	12.51	36.76	-0.543:	14.92	39.74:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.23	9.75:	12.61	36.87	-0.531:	15.01	39.86:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.37	9.89:	12.61	36.87	-0.531:	15.01	39.86:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.33	3.33	6.06:	14.49	30.09	-0.389:	17.27	32.97:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.38	12.17:	14.69	30.28	-0.429:	17.45	33.18:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.59	12.38:	14.97	30.60	-0.436:	17.90	33.75:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.61	14.28:	15.08	30.73	-0.454:	18.05	33.94:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.94	14.24:	15.26	30.92	-0.461:	18.31	34.26:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.65	14.61:	15.28	30.96	-0.467:	18.32	34.29:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.70	14.73:	15.28	30.96	-0.468:	18.32	34.29:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.38	12.58:	15.51	31.20	-0.460:	18.60	34.65:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.37	12.53:			:	18.60	34.65:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.47	11.47	13.57:	15.18	30.87	-0.464:	18.18	34.14:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.25	14.81:			:	18.18	34.14:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.52	12.71:	15.60	31.31	-0.463:	18.69	34.77:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.51	12.69:	15.61	31.31	-0.463:	18.70	34.78:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.36	13.40:	15.82	31.55	-0.475:	18.94	35.09:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.47	13.94:	15.83	31.56	-0.476:	18.94	35.10:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.58	13.99:	16.03	31.78	-0.481:	19.22	35.46:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.76	14.15:	16.06	31.82	-0.483:	19.21	35.45:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.79	14.23:	15.99	31.77	-0.482:	19.15	35.39:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.94	14.15:	16.01	31.79	-0.484:	19.16	35.41:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.74	13.92:	16.12	31.91	-0.484:	19.33	35.63:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.60	13.70:	16.01	31.80	-0.481:	19.18	35.45:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.58	13.60:			:	19.18	35.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.66	5.66	8.08:	15.98	31.77	-0.431:	18.83	35.01:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.85	10.12:			:	18.83	35.01:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.60	13.01:	16.27	32.09	-0.477:	19.42	35.77:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.61	12.90:	16.27	32.09	-0.477:	19.42	35.77:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.88	13.10:	16.31	32.15	-0.480:	19.44	35.81:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.03	13.28:	16.39	32.25	-0.483:	19.54	35.96:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.32	13.56:	16.43	32.32	-0.486:	19.55	36.00:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.37	13.67:	16.43	32.32	-0.487:	19.55	36.00:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.10	14.60:	16.33	32.22	-0.492:	19.47	35.90:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.61	14.06:	16.30	32.22	-0.486:	19.43	35.87:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.54	11.63:	16.41	32.33	-0.470:	19.53	36.00:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.77	11.85:	16.41	32.33	-0.470:	19.53	36.00:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	2.81	2.81	5.06:	15.90	37.09	-0.496:	18.17	40.16:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.44	13.00:	16.05	37.29	-0.562:	18.31	40.37:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.71	13.25:	16.28	37.63	-0.570:	18.66	40.95:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		12.22	15.47:	16.36	37.78	-0.599:	18.78	41.16:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.61	15.54:	16.50	37.97	-0.607:	18.98	41.48:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		13.38	16.03:	16.53	38.03	-0.617:	19.00	41.53:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		13.43	16.13:	16.53	38.03	-0.618:	19.00	41.53:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.86	13.98:	16.70	38.27	-0.604:	19.22	41.88:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.86	13.93:			:	19.22	41.88:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.57	13.57	15.51:	16.46	37.96	-0.618:	18.91	41.40:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		14.38	16.67:			:	18.91	41.40:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		12.05	14.15:	16.78	38.39	-0.608:	19.29	42.01:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		12.04	14.13:	16.78	38.39	-0.608:	19.30	42.01:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.94	14.88:	16.95	38.65	-0.622:	19.49	42.34:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		13.05	15.36:	16.95	38.65	-0.624:	19.49	42.34:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		13.11	15.36:	17.11	38.88	-0.628:	19.71	42.70:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		13.21	15.44:	17.14	38.93	-0.631:	19.71	42.71:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		13.23	15.51:	17.10	38.89	-0.630:	19.67	42.67:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		13.33	15.41:	17.12	38.91	-0.631:	19.69	42.69:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		13.07	15.13:	17.20	39.05	-0.630:	19.82	42.92:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.89	14.89:	17.13	38.95	-0.626:	19.71	42.75:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.87	14.79:			:	19.71	42.75:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.68	5.68	7.78:	17.16	39.00	-0.550:	19.50	42.41:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.94	10.15:			:	19.50	42.41:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.62	13.95:	17.34	39.25	-0.617:	19.91	43.08:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.63	13.82:	17.34	39.25	-0.617:	19.91	43.08:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		12.02	14.14:	17.38	39.33	-0.622:	19.94	43.14:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		12.22	14.36:	17.45	39.45	-0.626:	20.02	43.30:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.61	14.73:	17.49	39.54	-0.632:	20.05	43.38:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.67	14.83:	17.49	39.55	-0.633:	20.05	43.38:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.56	15.88:	17.42	39.44	-0.642:	19.98	43.27:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.94	15.24:	17.41	39.48	-0.634:	19.97	43.29:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.53	12.56:	17.50	39.60	-0.608:	20.05	43.42:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.85	12.86:	17.50	39.60	-0.608:	20.05	43.42:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.04	3.04	5.59:	15.14	39.01	-0.527:	17.71	42.68:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		10.00	13.75:	15.29	39.21	-0.601:	17.85	42.89:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.26	13.98:	15.63	39.73	-0.613:	18.34	43.74:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		12.54	16.02:	15.74	39.92	-0.643:	18.50	44.02:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.90	16.09:	15.94	40.20	-0.652:	18.78	44.48:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		13.60	16.54:	15.96	40.25	-0.662:	18.78	44.52:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		13.65	16.63:	15.96	40.25	-0.662:	18.78	44.52:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		12.31	14.69:	16.17	40.57	-0.651:	19.05	44.99:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		12.31	14.66:			:	19.05	44.99:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	14.83	14.83	17.09:	15.86	40.14	-0.675:	18.65	44.32:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		15.14	17.59:			:	18.65	44.32:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		12.53	14.89:	16.25	40.69	-0.656:	19.13	45.12:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		12.52	14.88:	16.25	40.70	-0.656:	19.13	45.13:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		13.26	15.48:	16.44	40.99	-0.671:	19.35	45.52:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		13.36	15.98:	16.45	41.00	-0.672:	19.35	45.53:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		13.37	15.94:	16.66	41.32	-0.678:	19.64	46.04:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		13.44	16.02:	16.66	41.33	-0.679:	19.60	45.98:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		13.45	16.07:	16.62	41.29	-0.678:	19.56	45.94:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		13.51	15.92:	16.63	41.31	-0.679:	19.57	45.96:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		13.23	15.63:	16.76	41.52	-0.679:	19.76	46.30:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		13.05	15.39:	16.65	41.37	-0.673:	19.61	46.05:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		13.02	15.28:			:	19.61	46.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	6.06	6.06	8.48:	16.47	41.10	-0.587:	19.13	45.22:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.31	10.97:			:	19.13	45.22:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.79	14.49:	16.85	41.67	-0.663:	19.79	46.38:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.80	14.36:	16.85	41.67	-0.663:	19.80	46.38:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		12.16	14.64:	16.88	41.74	-0.668:	19.81	46.43:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		12.34	14.84:	16.96	41.88	-0.673:	19.91	46.63:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.70	15.18:	16.99	41.96	-0.678:	19.91	46.67:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.76	15.28:	16.99	41.96	-0.679:	19.91	46.67:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.60	16.30:	16.92	41.85	-0.688:	19.85	46.56:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.98	15.66:	16.90	41.88	-0.679:	19.82	46.56:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.61	13.00:	16.99	42.00	-0.652:	19.90	46.69:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.92	13.29:	16.99	42.00	-0.652:	19.90	46.69:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.42	3.42	5.88:	14.35	37.11	-0.499:	16.82	40.38:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		10.60	13.82:	14.50	37.30	-0.573:	16.96	40.58:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.83	14.03:	14.79	37.73	-0.582:	17.40	41.29:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		12.77	15.81:	14.89	37.89	-0.607:	17.55	41.53:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		13.07	15.90:	15.07	38.13	-0.615:	17.80	41.92:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		13.66	16.30:	15.09	38.18	-0.623:	17.81	41.96:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		13.69	16.37:	15.09	38.18	-0.623:	17.81	41.96:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		12.46	14.64:	15.29	38.44	-0.613:	18.06	42.36:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		12.46	14.62:			:	18.06	42.36:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	15.08	15.08	17.26:	15.01	38.09	-0.636:	17.70	41.80:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		15.06	17.31:			:	17.70	41.80:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		12.66	14.83:	15.36	38.56	-0.617:	18.13	42.48:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		12.65	14.81:	15.36	38.56	-0.617:	18.13	42.49:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		13.05	15.10:	15.55	38.83	-0.627:	18.35	42.84:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		13.11	15.52:	15.55	38.83	-0.628:	18.35	42.84:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		13.08	15.45:	15.74	39.10	-0.632:	18.61	43.27:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		13.09	15.46:	15.76	39.13	-0.633:	18.59	43.25:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		13.09	15.50:	15.72	39.10	-0.632:	18.56	43.21:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		13.11	15.33:	15.74	39.12	-0.632:	18.57	43.23:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.79	14.99:	15.85	39.29	-0.631:	18.74	43.52:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.56	14.71:	15.75	39.17	-0.626:	18.61	43.32:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.54	14.61:			:	18.61	43.32:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.84	5.84	8.14:	15.68	39.07	-0.551:	18.24	42.74:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.07	10.27:			:	18.24	42.74:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.30	13.78:	15.96	39.46	-0.616:	18.79	43.63:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.31	13.65:	15.96	39.46	-0.616:	18.79	43.63:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.64	13.91:	15.99	39.53	-0.621:	18.81	43.68:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.81	14.10:	16.07	39.66	-0.625:	18.91	43.86:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.15	14.42:	16.11	39.75	-0.630:	18.92	43.92:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.20	14.52:	16.11	39.75	-0.631:	18.93	43.92:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.96	15.47:	16.03	39.64	-0.638:	18.86	43.81:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.41	14.89:	16.03	39.68	-0.631:	18.84	43.83:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.31	12.48:	16.11	39.80	-0.609:	18.92	43.96:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.59	12.75:	16.11	39.80	-0.609:	18.92	43.96:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.78	3.78	5.86:	12.16	27.30	-0.346:	14.30	29.14:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		10.47	12.62:	12.37	27.47	-0.394:	14.49	29.32:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.65	12.80:	12.46	27.59	-0.397:	14.72	29.57:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.90	14.04:	12.52	27.66	-0.408:	14.80	29.68:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.11	14.09:	12.60	27.74	-0.411:	14.96	29.83:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.49	14.33:	12.64	27.79	-0.413:	14.99	29.88:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		12.50	14.39:	12.64	27.79	-0.413:	14.99	29.88:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.52	12.96:	12.79	27.92	-0.409:	15.18	30.07:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.50	12.91:			:	15.18	30.07:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	14.37	14.37	16.03:	12.60	27.76	-0.429:	14.92	29.82:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		13.90	15.51:			:	14.92	29.82:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.68	13.11:	12.88	28.01	-0.412:	15.26	30.17:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.67	13.09:	12.88	28.01	-0.412:	15.27	30.17:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.72	13.08:	13.06	28.18	-0.415:	15.47	30.38:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.74	13.37:	13.06	28.18	-0.415:	15.47	30.39:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.70	13.29:	13.18	28.29	-0.417:	15.65	30.58:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.67	13.24:	13.25	28.37	-0.418:	15.69	30.63:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.66	13.28:	13.20	28.34	-0.417:	15.64	30.59:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.65	13.12:	13.22	28.35	-0.417:	15.66	30.61:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.30	12.75:	13.27	28.41	-0.415:	15.76	30.72:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.04	12.44:	13.21	28.37	-0.412:	15.67	30.64:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.01	12.36:			:	15.67	30.64:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.56	5.56	7.35:	13.61	28.71	-0.379:	15.81	30.78:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.70	8.43:			:	15.81	30.78:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.96	11.59:	13.48	28.61	-0.408:	15.93	30.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.96	11.48:	13.49	28.61	-0.408:	15.93	30.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.11	11.59:	13.54	28.68	-0.410:	15.97	30.97:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.19	11.70:	13.61	28.75	-0.412:	16.05	31.07:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.37	11.87:	13.68	28.84	-0.415:	16.11	31.15:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.40	11.95:	13.68	28.84	-0.415:	16.11	31.15:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.90	12.63:	13.57	28.75	-0.417:	16.01	31.05:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.52	12.20:	13.58	28.79	-0.414:	16.01	31.08:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.98	10.37:	13.69	28.89	-0.404:	16.12	31.19:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.14	10.53:	13.69	28.89	-0.404:	16.12	31.19:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.79	3.79	5.56:	10.07	35.17	-0.463:	11.86	37.13:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		10.54	12.16:	10.24	35.34	-0.531:	12.01	37.31:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.67	12.29:	10.31	35.48	-0.534:	12.18	37.57:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.28	12.91:	10.36	35.57	-0.541:	12.25	37.70:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.36	12.95:	10.41	35.64	-0.542:	12.35	37.83:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.48	13.02:	10.46	35.72	-0.545:	12.40	37.91:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.48	13.05:	10.46	35.72	-0.545:	12.40	37.91:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.49	11.79:	10.56	35.84	-0.547:	12.53	38.09:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.46	11.75:			:	12.53	38.09:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.16	13.16	14.71:	10.44	35.72	-0.563:	12.36	37.89:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.26	13.67:			:	12.36	37.89:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.60	11.89:	10.64	35.95	-0.547:	12.61	38.20:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.58	11.88:	10.64	35.95	-0.524:	12.61	38.21:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.58	11.82:	10.78	36.13	-0.543:	12.77	38.43:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.58	12.04:	10.79	36.13	-0.542:	12.78	38.43:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.59	12.01:	10.87	36.24	-0.543:	12.90	38.60:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.61	12.02:	10.94	36.33	-0.545:	12.95	38.68:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.61	12.05:	10.91	36.32	-0.546:	12.93	38.67:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.64	11.96:	10.93	36.34	-0.545:	12.94	38.69:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.30	11.62:	10.96	36.40	-0.543:	13.01	38.79:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.06	11.34:	10.94	36.37	-0.540:	12.96	38.74:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.03	11.27:			:	12.96	38.74:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.30	5.30	6.93:	11.30	36.78	-0.500:	13.15	38.97:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.44	7.81:			:	13.15	38.97:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.14	10.59:	11.15	36.63	-0.535:	13.17	39.01:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.14	10.51:	11.16	36.63	-0.535:	13.17	39.02:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.25	10.60:	11.22	36.73	-0.537:	13.23	39.11:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.31	10.69:	11.27	36.82	-0.539:	13.29	39.22:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.45	10.82:	11.36	36.95	-0.542:	13.37	39.35:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.47	10.88:	11.36	36.95	-0.543:	13.37	39.36:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.84	11.39:	11.28	36.86	-0.545:	13.29	39.26:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.56	11.08:	11.31	36.94	-0.543:	13.32	39.35:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.50	9.77:	11.40	37.05	-0.534:	13.41	39.46:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.63	9.91:	11.40	37.05	-0.534:	13.41	39.46:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.51	3.51	4.95:	8.11	52.73	-0.717:	9.55	55.09:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.96	11.07:	8.22	52.90	-0.818:	9.65	55.27:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.02	11.13:	8.27	53.11	-0.821:	9.75	55.56:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.83	11.01:	8.32	53.25	-0.819:	9.82	55.74:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.79	11.03:	8.34	53.31	-0.819:	9.86	55.84:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.71	10.97:	8.40	53.44	-0.820:	9.92	55.99:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.69	10.97:	8.40	53.45	-0.820:	9.92	55.99:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.99	10.19:	8.46	53.57	-0.810:	10.00	56.15:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.98	10.15:			:	10.00	56.15:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.08	11.08	12.46:	8.42	53.50	-0.844:	9.93	56.03:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.86	11.10:			:	9.93	56.03:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.04	10.23:	8.53	53.71	-0.813:	10.06	56.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.03	10.22:	8.53	53.71	-0.813:	10.07	56.30:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.03	10.18:	8.63	53.92	-0.816:	10.18	56.55:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.03	10.31:	8.63	53.93	-0.816:	10.18	56.55:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.11	10.37:	8.68	54.03	-0.819:	10.25	56.71:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.19	10.44:	8.75	54.17	-0.823:	10.31	56.84:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.21	10.47:	8.75	54.20	-0.823:	10.31	56.88:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.27	10.46:	8.76	54.22	-0.824:	10.32	56.90:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.96	10.15:	8.78	54.29	-0.820:	10.36	57.01:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.74	9.91:	8.78	54.31	-0.805:	10.35	57.00:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.71	9.86:			:	10.35	57.00:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.32	5.32	6.75:	9.11	54.83	-0.773:	10.59	57.42:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.46	7.41:			:	10.59	57.42:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.09	9.39:	8.94	54.60	-0.811:	10.51	57.31:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.09	9.34:	8.94	54.60	-0.811:	10.51	57.31:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.16	9.39:	9.01	54.75	-0.814:	10.57	57.46:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.21	9.45:	9.06	54.88	-0.817:	10.63	57.62:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.30	9.54:	9.16	55.11	-0.821:	10.73	57.86:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.31	9.59:	9.16	55.11	-0.822:	10.73	57.86:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.55	9.92:	9.10	55.02	-0.824:	10.67	57.76:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.38	9.73:	9.17	55.21	-0.823:	10.74	57.98:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.80	8.99:	9.23	55.32	-0.816:	10.80	58.08:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.91	9.09:	9.23	55.32	-0.816:	10.80	58.08:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.30	3.30	4.61:	8.41	57.07	-0.780:	9.73	59.43:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.71	10.80:	8.52	57.24	-0.889:	9.82	59.61:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.78	10.86:	8.56	57.45	-0.892:	9.91	59.90:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.75	10.88:	8.61	57.60	-0.893:	9.97	60.08:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.74	10.91:	8.62	57.66	-0.894:	10.01	60.18:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.69	10.88:	8.68	57.80	-0.895:	10.06	60.34:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.68	10.88:	8.68	57.81	-0.895:	10.07	60.34:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.71	9.86:	8.73	57.93	-1.039:	10.13	60.49:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.69	9.83:			:	10.13	60.49:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.93	9.93	11.21:	8.70	57.88	-0.900:	10.08	60.40:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.34	10.56:			:	10.08	60.40:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.74	9.88:	8.80	58.07	-0.865:	10.20	60.65:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.73	9.88:	8.80	58.08	-0.871:	10.20	60.66:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.01	10.10:	8.90	58.30	-0.886:	10.30	60.91:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.03	10.24:	8.90	58.30	-0.896:	10.31	60.91:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.17	10.35:	8.94	58.41	-0.894:	10.36	61.06:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.31	10.47:	9.01	58.56	-0.900:	10.43	61.21:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.33	10.52:	9.01	58.60	-0.901:	10.43	61.25:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.43	10.54:	9.02	58.62	-0.902:	10.44	61.27:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.12	10.24:	9.04	58.69	-0.893:	10.47	61.38:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.90	10.00:	9.04	58.71	-0.896:	10.47	61.38:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.88	9.95:			:	10.47	61.38:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.30	5.30	6.62:	9.37	59.29	-0.843:	10.73	61.88:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.46	7.33:			:	10.73	61.88:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.22	9.45:	9.19	59.01	-0.887:	10.62	61.70:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.23	9.40:	9.20	59.01	-0.887:	10.62	61.71:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.33	9.49:	9.26	59.18	-0.891:	10.68	61.88:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.39	9.56:	9.31	59.32	-0.894:	10.74	62.04:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.50	9.67:	9.41	59.57	-0.899:	10.84	62.30:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.51	9.72:	9.41	59.57	-0.900:	10.84	62.31:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.78	10.06:	9.36	59.47	-0.903:	10.79	62.21:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.60	9.87:	9.43	59.70	-0.902:	10.86	62.45:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.00	9.13:	9.48	59.80	-0.893:	10.92	62.56:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.12	9.24:	9.48	59.80	-0.893:	10.92	62.56:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.75	3.75	5.15:	9.19	46.85	-0.637:	10.60	48.93:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.52	10.85:	9.32	47.03	-0.716:	10.72	49.11:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.62	10.95:	9.35	47.17	-0.719:	10.80	49.34:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.03	11.35:	9.39	47.28	-0.726:	10.86	49.49:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.08	11.39:	9.41	47.33	-0.727:	10.90	49.58:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.13	11.42:	9.46	47.45	-0.729:	10.96	49.70:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.13	11.44:	9.46	47.45	-0.730:	10.96	49.70:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.84	10.01:	9.52	47.56	-0.713:	11.04	49.85:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.81	9.97:			:	11.04	49.85:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.53	10.53	11.84:	9.48	47.49	-0.736:	10.96	49.73:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.11	11.37:			:	10.96	49.73:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.91	10.07:	9.59	47.69	-0.716:	11.11	49.99:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.90	10.06:	9.60	47.70	-0.716:	11.11	50.00:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.36	10.46:	9.71	47.89	-0.725:	11.23	50.22:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.41	10.65:	9.71	47.89	-0.726:	11.23	50.23:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.57	10.78:	9.75	47.99	-0.730:	11.30	50.36:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.75	10.94:	9.83	48.12	-0.742:	11.37	50.49:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.79	10.99:	9.82	48.13	-0.698:	11.36	50.51:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.91	11.03:	9.83	48.15	-0.741:	11.37	50.53:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.60	10.72:	9.85	48.20	-0.734:	11.41	50.62:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.38	10.47:	9.85	48.21	-0.730:	11.39	50.60:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.36	10.42:			:	11.39	50.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.33	5.33	6.70:	10.22	48.76	-0.685:	11.67	51.05:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.48	7.45:			:	11.67	51.05:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.64	9.87:	10.02	48.50	-0.724:	11.57	50.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.64	9.81:	10.02	48.50	-0.724:	11.57	50.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.75	9.90:	10.09	48.63	-0.728:	11.63	51.05:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.81	9.98:	10.14	48.75	-0.730:	11.69	51.18:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.93	10.10:	10.23	48.95	-0.735:	11.78	51.39:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.95	10.15:	10.23	48.95	-0.735:	11.78	51.39:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.26	10.56:	10.17	48.85	-0.738:	11.72	51.30:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.05	10.32:	10.23	49.01	-0.736:	11.78	51.47:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.25	9.36:	10.30	49.12	-0.727:	11.85	51.58:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.38	9.48:	10.30	49.12	-0.727:	11.85	51.58:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.65	4.65	5.82:	9.00	52.18	-0.729:	10.18	54.13:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.08	10.20:	9.16	52.44	-0.795:	10.33	54.39:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.23	10.35:	9.11	52.48	-0.795:	10.32	54.48:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.84	10.92:	9.14	52.59	-0.813:	10.36	54.62:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.91	10.94:	9.13	52.59	-0.813:	10.36	54.64:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.98	10.95:	9.19	52.73	-0.816:	10.42	54.79:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.98	10.97:	9.19	52.73	-0.817:	10.42	54.79:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.73	9.58:	9.24	52.84	-0.798:	10.48	54.92:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.68	9.51:			:	10.48	54.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.50	10.50	11.52:	9.19	52.76	-0.825:	10.42	54.82:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.11	11.08:			:	10.42	54.82:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.78	9.62:	9.32	53.01	-0.801:	10.57	55.10:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.76	9.60:	9.33	53.02	-0.801:	10.57	55.11:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.92	9.78:	9.42	53.20	-0.807:	10.66	55.31:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.94	9.93:	9.41	53.20	-0.807:	10.66	55.31:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.08	10.05:	9.43	53.25	-0.810:	10.69	55.39:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.26	10.20:	9.52	53.43	-0.815:	10.78	55.57:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.29	10.26:	9.50	53.42	-0.814:	10.76	55.57:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.43	10.33:	9.51	53.44	-0.820:	10.77	55.59:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.23	10.13:	9.50	53.46	-0.814:	10.77	55.63:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.08	9.95:	9.51	53.48	-0.811:	10.78	55.65:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.06	9.92:			:	10.78	55.65:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.31	5.31	6.48:	9.92	54.15	-0.767:	11.14	56.28:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.47	7.15:			:	11.14	56.28:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.50	9.49:	9.69	53.81	-0.809:	10.96	55.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.50	9.45:	9.69	53.82	-0.809:	10.96	55.99:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.56	9.49:	9.76	53.97	-0.812:	11.03	56.16:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.59	9.55:	9.81	54.09	-0.814:	11.08	56.29:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.67	9.63:	9.91	54.32	-0.819:	11.18	56.55:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.69	9.67:	9.91	54.33	-0.819:	11.18	56.55:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.96	10.01:	9.85	54.23	-0.822:	11.13	56.45:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.78	9.81:	9.91	54.41	-0.820:	11.19	56.64:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.02	8.93:	9.98	54.52	-0.810:	11.26	56.76:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.13	9.03:	9.98	54.52	-0.810:	11.26	56.76:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.86	4.86	6.22:	9.90	50.04	-0.703:	11.26	52.24:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.94	10.37:	10.06	50.29	-0.767:	11.41	52.50:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.08	10.51:	10.06	50.39	-0.768:	11.47	52.69:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.83	11.20:	10.10	50.51	-0.782:	11.52	52.85:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.93	11.23:	10.11	50.55	-0.782:	11.56	52.94:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.08	11.29:	10.16	50.68	-0.785:	11.61	53.07:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.08	11.33:	10.16	50.68	-0.779:	11.61	53.07:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.92	9.92:	10.25	50.84	-0.772:	11.72	53.27:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.89	9.86:			:	11.72	53.27:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.34	10.34	11.46:	10.15	50.69	-0.791:	11.60	53.07:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.29	11.43:			:	11.60	53.07:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.00	9.98:	10.34	51.01	-0.776:	11.81	53.46:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.99	9.96:	10.35	51.02	-0.776:	11.81	53.47:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.31	10.28:	10.46	51.24	-0.785:	11.94	53.73:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.35	10.49:	10.46	51.24	-0.785:	11.94	53.73:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.51	10.61:	10.50	51.34	-0.789:	12.00	53.87:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.70	10.78:	10.59	51.51	-0.795:	12.08	54.03:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.74	10.85:	10.55	51.47	-0.794:	12.05	54.00:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.89	10.91:	10.57	51.50	-0.797:	12.06	54.02:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.68	10.70:	10.57	51.53	-0.794:	12.08	54.09:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.52	10.50:	10.56	51.52	-0.791:	12.06	54.06:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.50	10.45:			:	12.06	54.06:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.35	5.35	6.69:	10.87	52.02	-0.739:	12.28	54.44:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.53	7.56:			:	12.28	54.44:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.98	10.08:	10.77	51.89	-0.789:	12.27	54.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.98	10.06:	10.77	51.89	-0.789:	12.27	54.45:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.04	10.09:	10.84	52.04	-0.792:	12.33	54.61:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.08	10.15:	10.88	52.15	-0.795:	12.39	54.75:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.16	10.23:	10.97	52.36	-0.799:	12.47	54.97:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.18	10.29:	10.97	52.36	-0.799:	12.48	54.97:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.51	10.67:	10.92	52.28	-0.803:	12.43	54.88:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.31	10.45:	10.94	52.39	-0.800:	12.45	55.00:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.39	9.40:	11.02	52.52	-0.788:	12.52	55.13:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.49	9.50:	11.02	52.52	-0.788:	12.52	55.13:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.47	4.47	6.66:	10.50	50.01-0.701:		12.70	53.71:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.79	11.28:	10.65	50.25-0.766:		12.83	53.96:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.94	11.42:	10.84	50.66-0.774:		13.15	54.65:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.92	12.35:	10.93	50.86-0.792:		13.28	54.93:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.05	12.36:	11.06	51.09-0.798:		13.47	55.32:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.32	12.50:	11.09	51.18-0.804:		13.50	55.40:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.33	12.55:	11.09	51.18-0.804:		13.50	55.40:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.29	11.05:	11.26	51.48-0.793:		13.71	55.83:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.27	11.01:			:	13.71	55.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.22	11.22	13.09:	11.03	51.11-0.819:		13.41	55.26:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.17	13.09:			:	13.41	55.26:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.42	11.17:	11.35	51.65-0.798:		13.79	56.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.41	11.16:	11.35	51.66-0.798:		13.80	56.03:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.90	11.60:	11.51	51.96-0.811:		13.98	56.42:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.96	11.96:	11.51	51.96-0.812:		13.98	56.42:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.10	12.05:	11.65	52.23-0.819:		14.19	56.85:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.28	12.22:	11.69	52.32-0.823:		14.19	56.88:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.32	12.29:	11.65	52.28-0.822:		14.15	56.84:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.46	12.27:	11.67	52.30-0.825:		14.17	56.86:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.22	12.02:	11.74	52.47-0.824:		14.30	57.15:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.04	11.80:	11.67	52.35-0.818:		14.19	56.95:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.02	11.72:			:	14.19	56.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.74	5.74	7.90:	11.61	52.24-0.751:		13.89	56.36:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.94	9.31:			:	13.89	56.36:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.50	11.41:	11.88	52.72-0.816:		14.38	57.35:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.50	11.40:	11.88	52.73-0.816:		14.38	57.35:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.59	11.46:	11.92	52.84-0.819:		14.42	57.46:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.65	11.54:	11.99	53.00-0.823:		14.50	57.67:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.77	11.67:	12.05	53.16-0.827:		14.54	57.80:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.80	11.74:	12.05	53.16-0.827:		14.54	57.81:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.22	12.24:	12.00	53.07-0.832:		14.49	57.71:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.96	11.96:	12.00	53.15-0.828:		14.49	57.78:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.79	10.57:	12.07	53.27-0.812:		14.56	57.91:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.92	10.69:	12.07	53.27-0.812:		14.56	57.91:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.84	3.84	6.30:	11.42	46.41	-0.641:	13.89	50.36:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.79	11.83:	11.55	46.61	-0.708:	14.01	50.57:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.96	11.99:	11.81	47.09	-0.717:	14.42	51.38:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.28	13.22:	11.92	47.30	-0.739:	14.57	51.68:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.47	13.25:	12.08	47.57	-0.747:	14.81	52.15:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.86	13.48:	12.11	47.65	-0.753:	14.82	52.21:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.88	13.54:	12.11	47.65	-0.754:	14.82	52.21:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.79	11.94:	12.29	47.95	-0.743:	15.06	52.67:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.78	11.91:			:	15.06	52.67:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.93	11.93	14.11:	12.04	47.56	-0.771:	14.72	52.03:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.96	14.23:			:	14.72	52.03:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.95	12.10:	12.37	48.10	-0.748:	15.14	52.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.95	12.09:	12.37	48.11	-0.748:	15.14	52.84:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.56	12.59:	12.55	48.41	-0.763:	15.34	53.24:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.64	13.01:	12.55	48.42	-0.764:	15.34	53.25:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.74	13.05:	12.72	48.72	-0.771:	15.60	53.75:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.90	13.20:	12.74	48.77	-0.774:	15.57	53.72:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.92	13.26:	12.71	48.74	-0.773:	15.54	53.69:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.04	13.19:	12.72	48.76	-0.775:	15.55	53.71:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.75	12.89:	12.83	48.96	-0.774:	15.72	54.06:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.55	12.65:	12.74	48.83	-0.768:	15.59	53.81:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.53	12.54:			:	15.59	53.81:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.71	5.71	8.11:	12.60	48.60	-0.697:	15.16	53.01:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.92	9.85:			:	15.16	53.01:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.85	12.14:	12.93	49.16	-0.764:	15.77	54.18:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.85	12.10:	12.94	49.17	-0.764:	15.77	54.18:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.03	12.23:	12.97	49.26	-0.768:	15.79	54.26:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.13	12.35:	13.05	49.42	-0.772:	15.89	54.48:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.33	12.55:	13.10	49.55	-0.776:	15.91	54.58:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.37	12.63:	13.10	49.55	-0.777:	15.91	54.58:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.91	13.30:	13.04	49.45	-0.783:	15.86	54.47:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.54	12.92:	13.04	49.52	-0.778:	15.85	54.53:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.02	11.13:	13.12	49.65	-0.757:	15.92	54.66:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.21	11.31:	13.12	49.65	-0.757:	15.92	54.66:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.37	3.37	5.75:	12.01	37.81	-0.505:	14.41	40.88:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.49	11.48:	12.17	38.00	-0.559:	14.56	41.08:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.67	11.66:	12.36	38.30	-0.565:	14.89	41.62:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.22	13.11:	12.45	38.44	-0.584:	15.02	41.83:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.46	13.13:	12.58	38.61	-0.590:	15.23	42.15:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.93	13.41:	12.61	38.68	-0.596:	15.25	42.20:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.96	13.49:	12.61	38.68	-0.597:	15.25	42.20:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.94	11.91:	12.77	38.90	-0.589:	15.47	42.54:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		9.93	11.87:			:	15.47	42.54:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.90	12.90	14.92:	12.55	38.62	-0.619:	15.15	42.08:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.80	14.86:			:	15.15	42.08:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.15	12.10:	12.85	39.02	-0.593:	15.54	42.67:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.14	12.09:	12.86	39.02	-0.593:	15.55	42.68:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		10.70	12.52:	13.03	39.26	-0.604:	15.75	42.99:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.76	12.94:	13.03	39.27	-0.604:	15.75	43.00:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.82	12.93:	13.18	39.48	-0.609:	15.97	43.35:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.91	13.01:	13.22	39.54	-0.611:	15.97	43.36:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.93	13.06:	13.18	39.51	-0.610:	15.93	43.33:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.01	12.95:	13.20	39.54	-0.611:	15.95	43.35:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.67	12.60:	13.28	39.66	-0.610:	16.09	43.59:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.44	12.31:	13.21	39.57	-0.605:	15.98	43.42:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.41	12.21:			:	15.98	43.42:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.69	5.69	7.91:	13.25	39.63	-0.554:	15.73	43.05:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.88	9.46:			:	15.73	43.05:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.68	11.77:	13.43	39.87	-0.602:	16.18	43.75:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.68	11.70:	13.43	39.88	-0.602:	16.18	43.75:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.88	11.85:	13.48	39.96	-0.605:	16.22	43.82:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.99	11.98:	13.55	40.08	-0.608:	16.30	43.98:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.21	12.20:	13.60	40.19	-0.612:	16.34	44.08:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.25	12.28:	13.60	40.19	-0.612:	16.34	44.08:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.84	13.04:	13.53	40.10	-0.618:	16.27	43.97:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.43	12.59:	13.53	40.15	-0.613:	16.27	44.02:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.71	10.58:	13.62	40.27	-0.595:	16.35	44.15:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.91	10.78:	13.62	40.27	-0.595:	16.35	44.15:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	2.92	2.92	6.21:	15.02	33.17	-0.435:	18.35	37.19:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.79	13.52:	15.19	33.36	-0.486:	18.51	37.39:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.03	13.74:	15.57	33.84	-0.496:	19.10	38.25:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.39	15.93:	15.70	34.01	-0.521:	19.29	38.54:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.79	15.90:	15.96	34.32	-0.531:	19.67	39.10:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.62	16.38:	15.97	34.35	-0.539:	19.65	39.09:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		12.67	16.50:	15.97	34.35	-0.540:	19.66	39.09:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.15	14.12:	16.22	34.65	-0.530:	19.99	39.60:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.14	14.09:			:	19.99	39.60:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.81	13.81	16.55:	15.84	34.21	-0.549:	19.47	38.84:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		14.38	17.53:			:	19.47	38.84:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.39	14.35:	16.30	34.76	-0.534:	20.07	39.72:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.38	14.33:	16.31	34.77	-0.534:	20.07	39.72:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.24	14.97:	16.53	35.05	-0.548:	20.33	40.13:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		12.35	15.63:	16.53	35.05	-0.549:	20.33	40.13:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		12.40	15.57:	16.80	35.39	-0.555:	20.71	40.72:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.50	15.67:	16.78	35.38	-0.556:	20.63	40.60:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.52	15.73:	16.73	35.33	-0.555:	20.58	40.55:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.60	15.51:	16.75	35.36	-0.556:	20.60	40.57:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.26	15.13:	16.92	35.58	-0.557:	20.86	40.98:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.03	14.82:	16.77	35.40	-0.551:	20.64	40.66:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.00	14.67:			:	20.64	40.66:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.81	5.81	8.77:	16.47	35.04	-0.486:	19.90	39.55:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.04	11.46:			:	19.90	39.55:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.98	14.12:	17.00	35.70	-0.545:	20.85	40.98:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.98	14.00:	17.00	35.70	-0.545:	20.85	40.99:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.34	14.26:	17.03	35.75	-0.549:	20.85	41.01:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.53	14.48:	17.12	35.88	-0.553:	20.97	41.21:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.90	14.83:	17.13	35.93	-0.558:	20.95	41.21:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.96	14.94:	17.14	35.93	-0.558:	20.95	41.21:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		12.81	16.05:	17.05	35.83	-0.565:	20.87	41.10:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.23	15.42:	17.02	35.83	-0.559:	20.83	41.07:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.90	12.66:	17.12	35.95	-0.537:	20.92	41.21:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.18	12.92:	17.12	35.95	-0.537:	20.92	41.21:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	2.71	2.71	6.29:	15.81	30.36	-0.390:	19.46	34.40:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.62	13.86:	16.00	30.54	-0.437:	19.63	34.61:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.87	14.11:	16.39	30.99	-0.446:	20.25	35.45:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.47	16.54:	16.52	31.15	-0.470:	20.45	35.72:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		11.92	16.48:	16.80	31.45	-0.479:	20.86	36.27:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.89	17.03:	16.80	31.47	-0.488:	20.84	36.27:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		12.95	17.16:	16.80	31.47	-0.489:	20.84	36.27:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.45	14.68:	17.07	31.76	-0.480:	21.20	36.76:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.45	14.65:			:	21.20	36.76:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	14.07	14.07	17.00:	16.66	31.33	-0.496:	20.64	36.01:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		14.78	18.23:			:	20.64	36.01:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.70	14.92:	17.15	31.86	-0.484:	21.27	36.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.69	14.90:	17.16	31.87	-0.484:	21.27	36.88:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.54	15.49:	17.39	32.14	-0.496:	21.55	37.27:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		12.65	16.20:	17.40	32.14	-0.497:	21.55	37.28:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		12.66	16.11:	17.68	32.47	-0.503:	21.95	37.86:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.73	16.17:	17.66	32.45	-0.504:	21.86	37.74:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.74	16.23:	17.60	32.41	-0.503:	21.81	37.68:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.81	15.95:	17.63	32.43	-0.504:	21.83	37.70:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.44	15.55:	17.81	32.65	-0.504:	22.10	38.11:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.21	15.22:	17.65	32.47	-0.498:	21.87	37.79:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.18	15.05:			:	21.87	37.79:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.58	5.58	8.71:	17.34	32.13	-0.437:	21.08	36.68:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.81	11.69:			:	21.08	36.68:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.05	14.45:	17.89	32.75	-0.493:	22.08	38.10:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.05	14.30:	17.89	32.76	-0.493:	22.09	38.10:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.46	14.60:	17.91	32.80	-0.497:	22.08	38.12:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.66	14.84:	18.01	32.92	-0.501:	22.21	38.31:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.08	15.23:	18.02	32.96	-0.505:	22.18	38.29:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.15	15.35:	18.02	32.96	-0.505:	22.18	38.30:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.06	16.57:	17.93	32.86	-0.512:	22.10	38.18:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.44	15.89:	17.90	32.86	-0.506:	22.05	38.15:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.96	12.92:	18.00	32.98	-0.485:	22.14	38.28:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.27	13.20:	18.00	32.98	-0.485:	22.14	38.28:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	2.72	2.72	5.77:	14.38	26.19	-0.325:	17.54	28.98:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.02	12.00:	14.59	26.36	-0.360:	17.73	29.17:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.23	12.23:	14.81	26.58	-0.364:	18.16	29.63:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.40	14.37:	14.90	26.67	-0.380:	18.30	29.79:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.80	14.34:	15.08	26.83	-0.386:	18.60	30.11:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		11.63	14.84:	15.10	26.87	-0.392:	18.60	30.13:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		11.68	14.96:	15.10	26.87	-0.393:	18.61	30.13:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.75	13.15:	15.31	27.05	-0.389:	18.89	30.44:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.75	13.11:			:	18.89	30.44:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.65	13.65	16.03:	15.01	26.80	-0.406:	18.45	29.98:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		14.00	16.65:			:	18.45	29.98:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.99	13.38:	15.40	27.14	-0.392:	18.98	30.53:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.98	13.36:	15.40	27.14	-0.392:	18.98	30.54:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.52	13.71:	15.62	27.34	-0.400:	19.23	30.82:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.59	14.26:	15.62	27.34	-0.400:	19.23	30.82:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.56	14.15:	15.82	27.53	-0.403:	19.54	31.16:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.57	14.13:	15.86	27.57	-0.404:	19.51	31.14:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.57	14.18:	15.80	27.53	-0.403:	19.46	31.09:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.59	13.94:	15.82	27.55	-0.403:	19.48	31.12:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.23	13.53:	15.94	27.66	-0.403:	19.68	31.35:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.97	13.19:	15.83	27.57	-0.399:	19.50	31.16:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.94	13.06:			:	19.50	31.16:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.42	5.42	7.98:	15.91	27.64	-0.362:	19.15	30.77:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.60	9.94:			:	19.15	30.77:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.97	12.49:	16.11	27.82	-0.396:	19.75	31.44:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.97	12.36:	16.11	27.83	-0.396:	19.76	31.45:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.27	12.59:	16.15	27.88	-0.399:	19.78	31.48:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.43	12.78:	16.23	27.96	-0.401:	19.88	31.61:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.75	13.09:	16.27	28.03	-0.404:	19.89	31.64:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.80	13.19:	16.27	28.03	-0.405:	19.89	31.65:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.56	14.23:	16.17	27.93	-0.409:	19.79	31.54:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.03	13.63:	16.15	27.94	-0.404:	19.76	31.54:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.90	11.06:	16.27	28.05	-0.391:	19.87	31.66:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.14	11.30:	16.27	28.05	-0.391:	19.87	31.66:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: (J/M2: S/C):	MAX. DAILY TE (J/M2: S/C):	MAX. DAILY K1: (J/M2: S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	2.34	2.34	4.48:	16.27	32.07-0.415:		18.44	34.56:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.81	12.05:	16.44	32.26-0.468:		18.61	34.76:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.08	12.32:	16.56	32.44-0.473:		18.86	35.12:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.77	14.82:	16.62	32.53-0.498:		18.96	35.27:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.22	14.93:	16.72	32.65-0.504:		19.14	35.51:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		13.13	15.55:	16.76	32.70-0.513:		19.16	35.55:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		13.18	15.66:	16.76	32.70-0.514:		19.16	35.56:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		11.77	13.66:	16.89	32.87-0.503:		19.36	35.81:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		11.76	13.62:			:	19.36	35.81:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	14.05	14.05	15.84:	16.70	32.66-0.522:		19.08	35.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		14.82	16.89:			:	19.08	35.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		11.99	13.87:	16.97	32.97-0.507:		19.43	35.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		11.98	13.85:	16.98	32.97-0.507:		19.44	35.93:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		12.77	14.49:	17.14	33.17-0.518:		19.62	36.19:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		12.87	14.94:	17.14	33.18-0.519:		19.62	36.19:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		12.85	14.86:	17.27	33.33-0.521:		19.82	36.47:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		12.85	14.84:	17.32	33.40-0.523:		19.84	36.49:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		12.86	14.89:	17.28	33.37-0.522:		19.80	36.46:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.90	14.73:	17.30	33.39-0.523:		19.82	36.48:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		12.55	14.35:	17.36	33.48-0.521:		19.94	36.66:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		12.32	14.05:	17.30	33.41-0.517:		19.83	36.52:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		12.29	13.96:			:	19.83	36.52:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.61	5.61	7.52:	17.52	33.66-0.462:		19.77	36.43:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.85	9.49:			:	19.77	36.43:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		11.13	13.15:	17.54	33.69-0.511:		20.05	36.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		11.13	13.02:	17.54	33.70-0.511:		20.05	36.83:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		11.54	13.37:	17.59	33.77-0.516:		20.09	36.89:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		11.75	13.60:	17.65	33.86-0.519:		20.17	37.02:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		12.17	14.00:	17.71	33.96-0.524:		20.21	37.10:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		12.23	14.11:	17.71	33.96-0.525:		20.21	37.10:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		13.13	15.19:	17.62	33.85-0.532:		20.13	36.99:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		12.53	14.55:	17.63	33.89-0.526:		20.13	37.02:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		10.19	11.91:	17.73	34.01-0.506:		20.22	37.15:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.49	12.21:	17.73	34.01-0.506:		20.22	37.15:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	2.60	2.60	5.31:	17.81	34.72	-0.459:	20.55	38.33:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.80	14.22:	17.97	34.92	-0.524:	20.70	38.54:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.11	14.51:	18.23	35.29	-0.532:	21.14	39.23:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		13.20	17.30:	18.33	35.43	-0.566:	21.29	39.48:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		13.72	17.38:	18.52	35.68	-0.576:	21.58	39.93:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		14.77	18.06:	18.54	35.72	-0.588:	21.58	39.95:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		14.84	18.19:	18.54	35.72	-0.588:	21.59	39.96:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		12.77	15.46:	18.73	35.99	-0.571:	21.86	40.38:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		12.76	15.42:			:	21.86	40.38:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	14.68	14.68	17.03:	18.44	35.62	-0.584:	21.44	39.75:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		15.85	18.72:			:	21.44	39.75:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		12.99	15.67:	18.81	36.09	-0.575:	21.92	40.50:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		12.98	15.66:	18.81	36.10	-0.575:	21.93	40.51:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		14.04	16.47:	19.00	36.36	-0.591:	22.15	40.87:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		14.17	17.08:	19.00	36.36	-0.592:	22.15	40.87:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		14.17	17.00:	19.20	36.65	-0.597:	22.45	41.36:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		14.23	17.04:	19.21	36.66	-0.598:	22.40	41.29:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		14.24	17.09:	19.17	36.62	-0.597:	22.36	41.24:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		14.31	16.88:	19.19	36.65	-0.598:	22.38	41.27:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		13.97	16.51:	19.32	36.83	-0.598:	22.59	41.62:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		13.76	16.22:	19.20	36.69	-0.592:	22.41	41.35:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		13.73	16.09:			:	22.41	41.35:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.88	5.88	8.34:	19.10	36.55	-0.512:	21.93	40.58:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		6.16	11.30:			:	21.93	40.58:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		12.36	15.22:	19.42	36.98	-0.582:	22.61	41.67:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		12.37	15.06:	19.42	36.99	-0.583:	22.61	41.67:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		12.90	15.49:	19.45	37.05	-0.589:	22.62	41.71:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		13.16	15.77:	19.53	37.17	-0.594:	22.72	41.89:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		13.68	16.25:	19.56	37.23	-0.600:	22.72	41.92:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		13.75	16.37:	19.56	37.24	-0.601:	22.72	41.92:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		14.78	17.62:	19.48	37.13	-0.611:	22.65	41.80:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		14.11	16.92:	19.47	37.15	-0.603:	22.63	41.81:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		11.56	14.00:	19.56	37.28	-0.577:	22.72	41.95:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		11.92	14.34:	19.56	37.28	-0.577:	22.72	41.95:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.97	3.97	5.80:	8.24	29.32	-0.370:	10.12	30.91:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.21	9.88:	8.44	29.48	-0.403:	10.31	31.09:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.30	9.98:	8.42	29.52	-0.408:	10.40	31.22:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.82	10.55:	8.45	29.58	-0.410:	10.46	31.31:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.90	10.52:	8.47	29.61	-0.411:	10.53	31.39:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.03	10.55:	8.53	29.67	-0.413:	10.58	31.46:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.03	10.60:	8.53	29.67	-0.413:	10.58	31.46:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.78	9.95:	8.62	29.76	-0.411:	10.71	31.59:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.78	9.92:			:	10.71	31.59:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	13.61	13.61	15.06:	8.52	29.68	-0.452:	10.55	31.44:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.14	13.37:			:	10.55	31.44:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.03	10.18:	8.71	29.85	-0.415:	10.80	31.69:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.01	10.16:	8.71	29.85	-0.415:	10.81	31.69:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.94	10.04:	8.86	30.00	-0.427:	10.97	31.87:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.94	10.25:	8.86	30.00	-0.426:	10.97	31.87:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.93	10.21:	8.92	30.06	-0.614:	11.08	32.00:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.94	10.19:	9.02	30.16	-0.413:	11.16	32.08:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.94	10.23:	8.98	30.15	-0.381:	11.12	32.06:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.95	10.12:	9.00	30.16	-0.403:	11.14	32.08:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.65	9.80:	9.01	30.19	-0.417:	11.19	32.15:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.41	9.52:	8.99	30.18	-0.415:	11.15	32.11:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.39	9.45:			:	11.15	32.11:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.26	5.26	6.85:	9.53	30.63	-0.399:	11.48	32.42:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.35	7.37:			:	11.48	32.42:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.84	9.08:	9.26	30.42	-0.415:	11.40	32.36:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.83	9.01:	9.26	30.42	-0.415:	11.40	32.37:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.86	9.02:	9.34	30.50	-0.416:	11.47	32.45:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.88	9.06:	9.39	30.57	-0.417:	11.53	32.54:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.93	9.12:	9.48	30.69	-0.419:	11.62	32.65:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.95	9.17:	9.48	30.69	-0.420:	11.62	32.66:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.19	9.57:	9.39	30.60	-0.420:	11.53	32.57:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.99	9.31:	9.41	30.67	-0.419:	11.56	32.64:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.13	8.21:	9.53	30.77	-0.414:	11.66	32.74:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.21	8.29:	9.53	30.77	-0.414:	11.66	32.74:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.27	4.27	5.94:	9.43	38.21	-0.512:	11.11	40.22:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.05	10.68:	9.59	38.40	-0.565:	11.27	40.41:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.17	10.80:	9.61	38.50	-0.567:	11.37	40.62:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.83	11.46:	9.65	38.58	-0.576:	11.44	40.75:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.92	11.47:	9.68	38.63	-0.577:	11.51	40.86:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.06	11.54:	9.73	38.72	-0.579:	11.56	40.95:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.07	11.58:	9.73	38.72	-0.579:	11.56	40.95:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		9.00	10.20:	9.82	38.84	-0.569:	11.68	41.13:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.97	10.15:			:	11.68	41.13:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.41	11.41	12.80:	9.72	38.74	-0.595:	11.54	40.94:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.90	12.23:			:	11.54	40.94:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		9.12	10.31:	9.90	38.96	-0.573:	11.76	41.25:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		9.10	10.29:	9.90	38.96	-0.573:	11.77	41.26:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.37	10.50:	10.04	39.15	-0.578:	11.92	41.48:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.40	10.74:	10.04	39.15	-0.579:	11.92	41.48:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.49	10.79:	10.09	39.24	-0.581:	12.02	41.64:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.59	10.87:	10.18	39.36	-0.584:	12.08	41.74:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.61	10.92:	10.15	39.34	-0.584:	12.06	41.73:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.69	10.89:	10.17	39.36	-0.585:	12.07	41.75:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.43	10.62:	10.18	39.40	-0.583:	12.12	41.84:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.24	10.39:	10.17	39.39	-0.580:	12.08	41.79:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.22	10.32:			:	12.08	41.79:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.30	5.30	6.85:	10.54	39.84	-0.546:	12.29	42.06:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.44	7.61:			:	12.29	42.06:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.60	9.88:	10.39	39.67	-0.578:	12.29	42.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.60	9.83:	10.39	39.68	-0.578:	12.30	42.09:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.68	9.89:	10.46	39.78	-0.581:	12.36	42.20:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.74	9.97:	10.51	39.87	-0.582:	12.42	42.32:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.85	10.08:	10.60	40.03	-0.586:	12.50	42.47:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.87	10.13:	10.60	40.03	-0.586:	12.50	42.48:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.19	10.58:	10.52	39.94	-0.588:	12.43	42.38:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.97	10.32:	10.56	40.04	-0.586:	12.47	42.48:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.06	9.20:	10.65	40.14	-0.578:	12.55	42.60:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.17	9.31:	10.65	40.14	-0.578:	12.55	42.60:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.93	3.93	7.36:	13.71	25.63	-0.322:	17.31	28.72:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.92	13.76:	13.95	25.81	-0.362:	17.53	28.92:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		10.11	13.96:	14.24	26.08	-0.368:	18.07	29.50:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		11.76	15.68:	14.35	26.19	-0.381:	18.25	29.70:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		12.06	15.60:	14.59	26.40	-0.387:	18.65	30.11:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		12.69	15.94:	14.61	26.43	-0.392:	18.64	30.12:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		12.72	16.05:	14.61	26.43	-0.392:	18.64	30.12:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		10.11	12.71:	14.87	26.65	-0.377:	19.01	30.51:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		10.05	12.62:			:	19.01	30.51:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.16	12.16	14.73:	14.47	26.32	-0.386:	18.42	29.91:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.68	15.67:			:	18.42	29.91:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		10.25	12.85:	14.97	26.74	-0.380:	19.09	30.61:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		10.22	12.82:	14.98	26.74	-0.380:	19.10	30.62:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		11.18	13.55:	15.22	26.96	-0.390:	19.38	30.94:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		11.29	14.20:	15.22	26.96	-0.391:	19.39	30.94:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		11.49	14.30:	15.49	27.20	-0.397:	19.78	31.39:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		11.78	14.55:	15.49	27.21	-0.399:	19.71	31.31:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		11.83	14.64:	15.42	27.16	-0.398:	19.64	31.25:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		12.04	14.54:	15.44	27.18	-0.400:	19.66	31.27:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		11.78	14.24:	15.60	27.33	-0.401:	19.94	31.59:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		11.61	13.99:	15.45	27.20	-0.397:	19.70	31.33:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		11.58	13.84:			:	19.70	31.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.36	5.36	8.23:	15.30	27.08	-0.353:	19.01	30.58:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.53	10.26:			:	19.01	30.58:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		10.56	13.23:	15.74	27.46	-0.394:	19.95	31.62:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		10.56	13.13:	15.74	27.46	-0.394:	19.96	31.62:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		10.82	13.31:	15.78	27.51	-0.396:	19.96	31.64:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		10.95	13.48:	15.86	27.60	-0.399:	20.08	31.79:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		11.23	13.75:	15.89	27.64	-0.401:	20.06	31.79:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		11.27	13.85:	15.89	27.65	-0.401:	20.06	31.79:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		11.88	14.75:	15.78	27.55	-0.404:	19.97	31.69:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		11.51	14.29:	15.75	27.55	-0.401:	19.93	31.67:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.98	12.26:	15.87	27.66	-0.392:	20.04	31.79:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		10.16	12.44:	15.87	27.66	-0.392:	20.04	31.79:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.61	3.61	5.73:	9.75	39.66	-0.529:	11.89	42.38:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.53	11.60:	9.90	39.83	-0.595:	12.03	42.56:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.66	11.73:	10.00	40.04	-0.600:	12.25	42.95:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.36	12.45:	10.07	40.16	-0.610:	12.35	43.13:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.46	12.48:	10.14	40.27	-0.613:	12.49	43.35:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.62	12.59:	10.19	40.36	-0.616:	12.53	43.43:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.63	12.62:	10.19	40.36	-0.616:	12.53	43.43:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.38	10.15:	10.30	40.51	-0.592:	12.69	43.68:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.33	10.08:			:	12.69	43.68:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.11	12.11	14.00:	10.16	40.35	-0.634:	12.47	43.37:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.40	13.19:			:	12.47	43.37:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.56	10.31:	10.37	40.63	-0.596:	12.77	43.80:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.53	10.29:	10.38	40.63	-0.596:	12.77	43.81:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.40	11.01:	10.52	40.84	-0.609:	12.94	44.08:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.48	11.36:	10.52	40.84	-0.610:	12.94	44.08:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.73	11.54:	10.62	40.99	-0.616:	13.10	44.34:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.02	11.79:	10.68	41.08	-0.621:	13.13	44.39:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.07	11.86:	10.66	41.07	-0.621:	13.11	44.38:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.26	11.90:	10.68	41.10	-0.623:	13.12	44.41:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.97	11.59:	10.73	41.19	-0.621:	13.23	44.59:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.76	11.33:	10.69	41.15	-0.618:	13.15	44.48:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.73	11.25:			:	13.15	44.48:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.35	5.35	7.32:	10.92	41.43	-0.573:	13.13	44.44:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.50	8.32:			:	13.13	44.44:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.97	10.72:	10.89	41.42	-0.613:	13.34	44.78:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.97	10.66:	10.90	41.42	-0.613:	13.34	44.78:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.11	10.76:	10.95	41.53	-0.616:	13.39	44.88:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.18	10.86:	11.02	41.64	-0.619:	13.47	45.02:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.33	11.01:	11.09	41.78	-0.623:	13.52	45.16:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.36	11.07:	11.09	41.78	-0.623:	13.53	45.16:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.71	11.59:	11.02	41.69	-0.625:	13.46	45.06:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.48	11.31:	11.06	41.80	-0.624:	13.49	45.17:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.58	10.13:	11.14	41.90	-0.615:	13.57	45.28:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.71	10.26:	11.14	41.90	-0.615:	13.57	45.28:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.25	3.25	4.72:	8.34	66.61-0.921:	9.80	69.74:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.24	10.52:	8.43	66.80-1.041:	9.89	69.93:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.31	10.59:	8.49	67.08-1.045:	10.00	70.33:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.36	10.68:	8.55	67.28-1.049:	10.07	70.57:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.36	10.72:	8.57	67.35-1.050:	10.12	70.71:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.35	10.72:	8.63	67.53-1.052:	10.17	70.90:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.34	10.73:	8.63	67.53-1.052:	10.17	70.90:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.39	8.82:	8.68	67.68-1.013:	10.25	71.10:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.37	8.78:		:	10.25	71.10:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.60	10.60	12.05:	8.65	67.62-1.080:	10.19	70.96:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.56	10.90:		:	10.19	70.96:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.53	8.93:	8.74	67.85-1.019:	10.31	71.28:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.51	8.92:	8.74	67.85-1.018:	10.31	71.28:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.51	9.80:	8.84	68.11-1.043:	10.41	71.58:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.59	10.01:	8.84	68.11-1.046:	10.42	71.58:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.88	10.25:	8.88	68.25 0.000:	10.48	71.79:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.19	10.52:	8.95	68.42-1.063:	10.54	71.95:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.24	10.58:	8.95	68.47-1.063:	10.55	72.01:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.42	10.68:	8.96	68.49-1.067:	10.56	72.03:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.08	10.35:	8.99	68.59-1.065:	10.60	72.18:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.86	10.11:	8.99	68.61-1.059:	10.59	72.17:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.84	10.06:		:	10.59	72.17:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.34	5.34	6.81:	9.27	69.19-0.997:	10.77	72.59:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.51	7.59:		:	10.77	72.59:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.22	9.61:	9.13	68.95-1.049:	10.73	72.53:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.22	9.56:	9.13	68.95-1.050:	10.73	72.53:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.34	9.65:	9.20	69.14-1.055:	10.79	72.73:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.39	9.72:	9.25	69.31-1.058:	10.85	72.93:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.51	9.84:	9.34	69.61-1.065:	10.94	73.23:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.53	9.89:	9.34	69.61-1.065:	10.94	73.23:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.78	10.22:	9.30	69.51-1.068:	10.90	73.14:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.63	10.04:	9.37	69.78-1.068:	10.97	73.42:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.08	9.35:	9.42	69.89-1.059:	11.02	73.54:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.19	9.46:	9.42	69.89-1.059:	11.02	73.54:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.20	3.20	4.94:	10.14	61.24	-0.852:	11.88	64.82:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.80	11.60:	10.24	61.42	-0.973:	11.97	65.02:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.92	11.71:	10.34	61.76	-0.979:	12.16	65.55:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.56	12.31:	10.41	61.96	-0.994:	12.24	65.81:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.64	12.38:	10.46	62.10	-0.999:	12.34	66.06:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.75	12.49:	10.51	62.25	-1.002:	12.39	66.21:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.75	12.51:	10.51	62.25	-1.002:	12.39	66.21:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.06	9.86:	10.59	62.44	-0.953:	12.50	66.49:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		8.03	9.82:			:	12.50	66.49:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.69	10.69	12.40:	10.51	62.28	-1.000:	12.36	66.19:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.60	12.32:			:	12.36	66.19:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.22	10.01:	10.65	62.60	-0.959:	12.56	66.67:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.20	10.00:	10.66	62.60	-0.958:	12.56	66.67:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.69	11.27:	10.77	62.87	-0.991:	12.69	67.00:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.81	11.58:	10.77	62.87	-0.994:	12.69	67.01:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.16	11.86:	10.84	63.06	-1.004:	12.81	67.31:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.53	12.19:	10.89	63.20	-1.014:	12.84	67.40:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.59	12.26:	10.89	63.23	-1.014:	12.84	67.44:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.82	12.37:	10.90	63.25	-1.021:	12.85	67.47:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.46	12.02:	10.95	63.39	-1.015:	12.93	67.70:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.23	11.76:	10.93	63.36	-1.009:	12.88	67.60:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.20	11.69:			:	12.88	67.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.46	5.46	7.19:	11.11	63.73	-0.926:	12.91	67.65:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.68	8.42:			:	12.91	67.65:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.37	11.09:	11.08	63.70	-0.998:	13.02	67.96:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.38	11.03:	11.08	63.70	-0.998:	13.03	67.96:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.59	11.20:	11.14	63.86	-1.004:	13.08	68.13:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.69	11.32:	11.19	64.03	-1.009:	13.14	68.33:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.88	11.50:	11.27	64.27	-1.016:	13.21	68.57:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.91	11.56:	11.27	64.27	-1.017:	13.21	68.57:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.31	12.05:	11.23	64.18	-1.023:	13.17	68.47:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.06	11.79:	11.29	64.40	-1.020:	13.23	68.70:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		9.17	10.72:	11.34	64.51	-1.005:	13.28	68.82:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		9.34	10.88:	11.34	64.51	-1.005:	13.28	68.82:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.97	3.97	5.62:	8.75	38.50-0.511:		10.42	40.48:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		9.05	10.57:	8.91	38.69-0.570:		10.58	40.67:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		9.15	10.68:	8.91	38.76-0.568:		10.65	40.84:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.61	11.16:	8.94	38.84-0.575:		10.71	40.96:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.67	11.16:	8.96	38.88-0.576:		10.77	41.05:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.75	11.18:	9.01	38.97-0.578:		10.82	41.15:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.75	11.21:	9.01	38.97-0.578:		10.82	41.15:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.91	8.21:	9.08	39.07-0.548:		10.92	41.29:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.84	8.10:			:	10.92	41.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.97	10.97	12.39:	9.02	39.00-0.592:		10.81	41.15:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.30	11.64:			:	10.81	41.15:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.09	8.37:	9.16	39.18-0.551:		11.00	41.42:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.05	8.33:	9.16	39.18-0.551:		11.00	41.42:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.24	9.40:	9.29	39.36-0.567:		11.14	41.63:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.35	9.71:	9.29	39.36-0.568:		11.15	41.63:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.79	10.09:	9.33	39.43-0.574:		11.23	41.77:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.29	10.54:	9.43	39.56-0.586:		11.30	41.88:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.38	10.65:	9.40	39.56-0.575:		11.28	41.87:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.71	10.86:	9.42	39.58-0.587:		11.30	41.90:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.40	10.53:	9.43	39.61-0.599:		11.34	41.98:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.16	10.25:	9.43	39.61-0.582:		11.32	41.95:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.14	10.19:			:	11.32	41.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.36	5.36	6.87:	9.90	40.17-0.550:		11.63	42.35:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.47	7.47:			:	11.63	42.35:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.48	9.70:	9.65	39.89-0.578:		11.53	42.24:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.47	9.65:	9.65	39.89-0.578:		11.53	42.25:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.52	9.67:	9.72	40.00-0.580:		11.59	42.36:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.56	9.73:	9.77	40.09-0.581:		11.65	42.47:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.63	9.80:	9.87	40.26-0.585:		11.74	42.64:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.64	9.85:	9.87	40.26-0.585:		11.74	42.64:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.88	10.21:	9.79	40.17-0.586:		11.67	42.54:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.72	10.01:	9.83	40.28-0.585:		11.72	42.66:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.06	9.14:	9.92	40.38-0.579:		11.80	42.77:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.14	9.22:	9.92	40.38-0.579:		11.80	42.77:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.37	4.37	5.73:	7.83	38.92-0.518:		9.21	40.51:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.58	9.79:	8.00	39.10-0.566:		9.37	40.70:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.67	9.88:	7.94	39.12-0.566:		9.36	40.77:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.93	10.16:	7.96	39.19-0.569:		9.40	40.86:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.96	10.14:	7.93	39.18-0.569:		9.40	40.88:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.97	10.08:	8.00	39.28-0.570:		9.46	40.99:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.96	10.11:	8.00	39.28-0.570:		9.46	40.99:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.37	7.37:	8.04	39.34-0.542:		9.52	41.08:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.29	7.27:			:	9.52	41.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.34	10.34	11.48:	8.02	39.33-0.587:		9.48	41.03:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.57	10.63:			:	9.48	41.03:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.54	7.51:	8.12	39.46-0.546:		9.60	41.20:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.50	7.48:	8.12	39.46-0.546:		9.60	41.21:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.60	8.49:	8.23	39.62-0.560:		9.72	41.39:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.70	8.75:	8.24	39.62-0.561:		9.73	41.39:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.15	9.15:	8.24	39.65-0.569:		9.76	41.45:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.65	9.60:	8.36	39.80-0.575:		9.86	41.60:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.74	9.72:	8.34	39.80-0.575:		9.84	41.60:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.08	9.97:	8.35	39.82-0.580:		9.86	41.62:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.78	9.65:	8.33	39.82-0.576:		9.86	41.64:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.55	9.39:	8.35	39.85-0.572:		9.87	41.66:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.52	9.34:			:	9.87	41.66:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.94	4.94	6.18:	8.94	40.53-0.547:		10.37	42.29:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.04	6.64:			:	10.37	42.29:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.91	8.86:	8.58	40.13-0.571:		10.08	41.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.91	8.81:	8.58	40.13-0.571:		10.08	41.96:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.91	8.80:	8.65	40.25-0.573:		10.16	42.08:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.92	8.83:	8.70	40.33-0.574:		10.21	42.18:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.95	8.86:	8.81	40.51-0.577:		10.32	42.37:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.96	8.90:	8.81	40.51-0.577:		10.32	42.37:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.12	9.16:	8.74	40.42-0.577:		10.25	42.28:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.00	9.01:	8.78	40.54-0.577:		10.30	42.40:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.49	8.33:	8.87	40.64-0.573:		10.39	42.51:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.55	8.39:	8.87	40.64-0.573:		10.39	42.51:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: (C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.53	4.53	5.87:	7.97	39.65	-0.531:	9.33	41.26:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.27	9.51:	8.13	39.84	-0.577:	9.49	41.46:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.37	9.60:	8.08	39.86	-0.574:	9.48	41.53:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.74	9.98:	8.10	39.93	-0.580:	9.52	41.62:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.79	9.96:	8.08	39.92	-0.580:	9.52	41.64:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.83	9.93:	8.14	40.02	-0.582:	9.58	41.75:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.83	9.96:	8.14	40.02	-0.581:	9.58	41.76:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.40	7.39:	8.18	40.09	-0.555:	9.64	41.85:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.32	7.29:			:	9.64	41.85:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.90	9.90	11.03:	8.16	40.07	-0.595:	9.60	41.79:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.31	10.39:			:	9.60	41.79:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.54	7.51:	8.26	40.20	-0.558:	9.72	41.97:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.50	7.47:	8.26	40.21	-0.558:	9.73	41.98:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.59	8.48:	8.37	40.37	-0.573:	9.85	42.16:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.69	8.74:	8.37	40.37	-0.574:	9.85	42.16:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.15	9.15:	8.38	40.41	-0.580:	9.88	42.23:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.66	9.62:	8.50	40.56	-0.588:	9.98	42.38:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.76	9.73:	8.48	40.55	-0.589:	9.96	42.38:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.11	9.99:	8.49	40.57	-0.593:	9.98	42.40:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.79	9.67:	8.47	40.57	-0.589:	9.98	42.42:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.56	9.39:	8.49	40.60	-0.600:	9.99	42.44:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.53	9.34:			:	9.99	42.44:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.04	5.04	6.27:	9.07	41.29	-0.561:	10.47	43.07:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.14	6.73:			:	10.47	43.07:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.93	8.88:	8.71	40.89	-0.584:	10.20	42.74:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.93	8.83:	8.71	40.89	-0.584:	10.20	42.74:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.93	8.82:	8.79	41.01	-0.586:	10.28	42.87:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.95	8.86:	8.83	41.09	-0.587:	10.33	42.97:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.98	8.89:	8.94	41.27	-0.590:	10.44	43.16:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.99	8.93:	8.94	41.28	-0.590:	10.44	43.16:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.17	9.21:	8.87	41.19	-0.591:	10.37	43.07:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.03	9.04:	8.91	41.30	-0.590:	10.42	43.20:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.44	8.29:	9.00	41.41	-0.585:	10.50	43.31:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.51	8.35:	9.00	41.41	-0.585:	10.50	43.31:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/C)	AVG. DAILY K1 S/C)	AVG. DAILY K2: S/C2)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.62	4.62	6.69:	9.24	28.84	-0.370:	11.43	30.73:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.09	10.04:	9.49	29.05	-0.399:	11.66	30.95:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.23	10.18:	9.46	29.08	-0.400:	11.77	31.10:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.00	10.92:	9.50	29.14	-0.406:	11.85	31.20:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.10	10.81:	9.54	29.18	-0.408:	11.96	31.32:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.28	10.80:	9.59	29.25	-0.409:	12.01	31.39:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.29	10.86:	9.59	29.25	-0.410:	12.01	31.39:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.64	7.91:	9.70	29.35	-0.391:	12.18	31.56:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.53	7.77:			:	12.18	31.56:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.84	9.84	11.32:	9.53	29.21	-0.414:	11.90	31.30:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.77	11.30:			:	11.90	31.30:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.75	8.01:	9.81	29.46	-0.394:	12.28	31.68:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.70	7.96:	9.82	29.46	-0.394:	12.29	31.69:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.48	8.69:	9.99	29.63	-0.402:	12.48	31.89:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.57	9.05:	9.99	29.63	-0.403:	12.48	31.90:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.02	9.43:	10.06	29.70	-0.407:	12.63	32.05:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.58	9.95:	10.17	29.81	-0.414:	12.69	32.13:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.68	10.09:	10.10	29.76	-0.413:	12.63	32.08:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.12	10.37:	10.12	29.78	-0.417:	12.65	32.10:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.94	10.18:	10.12	29.80	-0.416:	12.72	32.19:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.81	9.99:	10.08	29.77	-0.414:	12.63	32.11:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.79	9.92:			:	12.63	32.11:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.07	5.07	6.83:	10.58	30.20	-0.394:	12.83	32.30:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.17	7.52:			:	12.83	32.30:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.22	9.55:	10.39	30.05	-0.415:	12.92	32.41:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.22	9.50:	10.39	30.05	-0.415:	12.92	32.41:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.28	9.53:	10.47	30.13	-0.416:	12.98	32.49:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.32	9.60:	10.52	30.20	-0.417:	13.05	32.58:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.41	9.68:	10.61	30.31	-0.420:	13.12	32.68:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.43	9.74:	10.61	30.31	-0.420:	13.12	32.68:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.70	10.16:	10.51	30.23	-0.420:	13.03	32.59:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.53	9.94:	10.51	30.26	-0.419:	13.03	32.63:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.73	8.88:	10.63	30.37	-0.415:	13.14	32.74:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.80	8.96:	10.63	30.37	-0.415:	13.14	32.74:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.28	4.28	6.58:	11.14	33.27	-0.440:	13.50	35.82:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.30	10.85:	11.33	33.47	-0.478:	13.67	36.02:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.45	10.99:	11.40	33.61	-0.481:	13.90	36.35:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.56	12.08:	11.47	33.70	-0.493:	14.01	36.51:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.73	12.02:	11.55	33.80	-0.496:	14.18	36.73:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.06	12.14:	11.60	33.87	-0.500:	14.22	36.80:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.08	12.22:	11.60	33.87	-0.500:	14.22	36.80:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.04	8.78:	11.73	34.03	-0.475:	14.42	37.06:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.95	8.67:			:	14.42	37.06:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.66	10.66	12.43:	11.54	33.83	-0.505:	14.11	36.68:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.88	12.79:			:	14.11	36.68:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.24	8.97:	11.83	34.14	-0.478:	14.51	37.19:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.20	8.93:	11.83	34.15	-0.478:	14.52	37.19:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.62	10.19:	12.00	34.35	-0.495:	14.71	37.46:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.77	10.67:	12.00	34.35	-0.496:	14.72	37.46:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.23	11.06:	12.11	34.48	-0.503:	14.91	37.72:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.82	11.59:	12.18	34.57	-0.510:	14.93	37.76:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.92	11.73:	12.13	34.53	-0.510:	14.88	37.72:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.36	11.97:	12.15	34.55	-0.514:	14.90	37.74:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.12	11.70:	12.20	34.62	-0.513:	15.02	37.91:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.94	11.47:	12.14	34.57	-0.510:	14.91	37.77:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.92	11.38:			:	14.91	37.77:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.22	5.22	7.22:	12.42	34.87	-0.472:	14.86	37.70:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.37	8.36:			:	14.86	37.70:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.17	10.89:	12.40	34.86	-0.508:	15.15	38.09:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.17	10.83:	12.40	34.86	-0.508:	15.15	38.10:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.32	10.93:	12.46	34.95	-0.511:	15.20	38.18:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.40	11.04:	12.52	35.04	-0.513:	15.28	38.30:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.56	11.20:	12.59	35.15	-0.516:	15.32	38.40:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.59	11.27:	12.59	35.15	-0.516:	15.32	38.40:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.04	11.88:	12.51	35.06	-0.519:	15.25	38.30:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.76	11.55:	12.51	35.11	-0.516:	15.25	38.35:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.53	10.03:	12.62	35.23	-0.506:	15.35	38.47:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.67	10.16:	12.62	35.23	-0.506:	15.35	38.47:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.95	3.95	6.78:	11.68	28.76	-0.369:	14.63	31.51:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.04	11.20:	11.89	28.94	-0.401:	14.83	31.70:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.19	11.36:	12.04	29.12	-0.405:	15.17	32.11:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.49	12.66:	12.12	29.21	-0.416:	15.31	32.29:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.70	12.55:	12.26	29.35	-0.420:	15.58	32.58:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.13	12.72:	12.30	29.40	-0.424:	15.62	32.64:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.16	12.83:	12.30	29.41	-0.424:	15.62	32.64:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.85	8.93:	12.50	29.59	-0.402:	15.90	32.96:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.76	8.82:			:	15.90	32.96:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.46	11.46	13.50:	12.20	29.32	-0.433:	15.43	32.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.62	13.84:			:	15.43	32.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.13	9.20:	12.60	29.69	-0.406:	15.99	33.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.08	9.15:	12.60	29.70	-0.405:	16.00	33.08:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.57	10.44:	12.81	29.90	-0.420:	16.25	33.38:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.73	11.02:	12.81	29.91	-0.421:	16.25	33.38:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.19	11.39:	12.98	30.07	-0.428:	16.53	33.71:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.79	11.93:	13.03	30.13	-0.434:	16.51	33.70:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.89	12.07:	12.96	30.08	-0.433:	16.45	33.64:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.34	12.27:	12.98	30.10	-0.437:	16.47	33.66:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.11	12.00:	13.07	30.20	-0.437:	16.66	33.89:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.93	11.77:	12.97	30.11	-0.434:	16.48	33.70:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.91	11.66:			:	16.48	33.70:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.32	5.32	7.68:	13.13	30.25	-0.401:	16.16	33.34:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.46	9.00:			:	16.16	33.34:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.18	11.22:	13.26	30.39	-0.433:	16.74	34.01:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.18	11.16:	13.26	30.39	-0.433:	16.75	34.01:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.34	11.26:	13.32	30.46	-0.435:	16.78	34.07:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.42	11.38:	13.39	30.55	-0.437:	16.87	34.20:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.60	11.56:	13.44	30.63	-0.439:	16.89	34.24:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.64	11.64:	13.44	30.63	-0.440:	16.89	34.24:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.13	12.34:	13.34	30.54	-0.442:	16.80	34.14:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.82	11.96:	13.33	30.56	-0.439:	16.79	34.16:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.41	10.18:	13.45	30.67	-0.430:	16.90	34.29:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.55	10.33:	13.45	30.67	-0.430:	16.90	34.29:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.52	3.52	6.46:	10.47	29.84-0.380:	13.51	32.73:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.62	10.83:	10.66	30.01-0.414:	13.68	32.91:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.77	10.98:	10.81	30.20-0.417:	14.03	33.34:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.96	12.20:	10.89	30.30-0.428:	14.17	33.52:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.15	12.11:	11.02	30.43-0.432:	14.43	33.81:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.55	12.26:	11.07	30.49-0.436:	14.47	33.88:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.57	12.37:	11.07	30.49-0.436:	14.48	33.88:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.60	8.84:	11.25	30.66-0.415:	14.74	34.19:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.53	8.75:		:	14.74	34.19:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.70	10.70	12.96:	10.98	30.42-0.444:	14.30	33.70:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.77	13.17:		:	14.30	33.70:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.85	9.08:	11.34	30.76-0.419:	14.83	34.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.80	9.03:	11.34	30.77-0.419:	14.83	34.30:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.33	10.31:	11.54	30.97-0.434:	15.07	34.59:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.48	10.89:	11.54	30.97-0.435:	15.07	34.59:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.92	11.23:	11.70	31.13-0.442:	15.34	34.92:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.47	11.71:	11.75	31.19-0.447:	15.32	34.91:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.57	11.84:	11.70	31.16-0.447:	15.27	34.87:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.96	11.98:	11.72	31.18-0.451:	15.29	34.89:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.62	11.60:	11.81	31.28-0.450:	15.48	35.13:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.36	11.29:	11.72	31.20-0.446:	15.32	34.94:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.33	11.17:		:	15.32	34.94:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.21	5.21	7.67:	11.90	31.36-0.416:	15.02	34.59:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.34	8.86:		:	15.02	34.59:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.64	10.77:	12.00	31.47-0.445:	15.56	35.24:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.64	10.69:	12.00	31.47-0.445:	15.57	35.24:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.76	10.77:	12.05	31.54-0.447:	15.60	35.30:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.83	10.87:	12.12	31.63-0.449:	15.70	35.44:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.98	11.02:	12.18	31.72-0.451:	15.71	35.49:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.01	11.10:	12.18	31.72-0.451:	15.71	35.49:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.46	11.78:	12.09	31.63-0.453:	15.63	35.39:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.13	11.38:	12.09	31.67-0.451:	15.63	35.43:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.71	9.58:	12.20	31.78-0.441:	15.73	35.55:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.85	9.72:	12.20	31.78-0.441:	15.73	35.55:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.25	3.25	6.57:	11.47	27.93	-0.351:	14.93	31.07:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.63	11.39:	11.67	28.09	-0.384:	15.12	31.25:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.80	11.56:	11.86	28.30	-0.388:	15.53	31.73:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.24	13.03:	11.95	28.40	-0.400:	15.68	31.92:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.48	12.91:	12.11	28.54	-0.404:	15.99	32.25:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.99	13.13:	12.16	28.60	-0.409:	16.03	32.32:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.02	13.25:	12.16	28.60	-0.409:	16.04	32.32:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.94	9.52:	12.36	28.79	-0.389:	16.34	32.66:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.87	9.42:			:	16.34	32.66:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.83	10.83	13.34:	12.04	28.52	-0.413:	15.82	32.10:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.14	13.93:			:	15.82	32.10:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.18	9.75:	12.45	28.88	-0.392:	16.43	32.76:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.14	9.71:	12.45	28.88	-0.392:	16.43	32.77:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.71	11.00:	12.66	29.08	-0.407:	16.68	33.07:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.87	11.66:	12.67	29.09	-0.408:	16.68	33.07:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.31	11.97:	12.85	29.27	-0.415:	17.00	33.44:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.85	12.44:	12.89	29.31	-0.420:	16.96	33.40:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.94	12.56:	12.84	29.27	-0.419:	16.91	33.35:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.33	12.66:	12.86	29.29	-0.423:	16.93	33.38:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.97	12.26:	12.97	29.41	-0.422:	17.16	33.66:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.72	11.94:	12.86	29.31	-0.418:	16.96	33.43:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.69	11.80:			:	16.96	33.43:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.09	5.09	7.80:	12.97	29.41	-0.386:	16.51	32.93:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.23	9.30:			:	16.51	32.93:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.89	11.35:	13.14	29.58	-0.416:	17.20	33.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.88	11.25:	13.14	29.58	-0.416:	17.21	33.73:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.05	11.36:	13.20	29.64	-0.418:	17.23	33.78:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.15	11.50:	13.27	29.73	-0.420:	17.34	33.91:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.35	11.69:	13.32	29.80	-0.423:	17.34	33.94:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.39	11.78:	13.32	29.80	-0.423:	17.34	33.94:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.94	12.61:	13.22	29.71	-0.426:	17.25	33.84:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.54	12.14:	13.22	29.75	-0.423:	17.25	33.87:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.88	10.03:	13.34	29.86	-0.412:	17.35	33.99:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.05	10.20:	13.34	29.86	-0.412:	17.35	33.99:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.00	3.00	6.88:	12.77	27.66-0.348:	16.81	31.46:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.88	12.55:	12.97	27.82-0.382:	16.99	31.65:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.07	12.75:	13.24	28.10-0.388:	17.53	32.28:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.86	14.55:	13.36	28.23-0.403:	17.72	32.52:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.17	14.41:	13.58	28.43-0.409:	18.12	32.98:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.83	14.72:	13.63	28.49-0.415:	18.16	33.04:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.88	14.87:	13.63	28.49-0.415:	18.16	33.05:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.52	10.72:	13.88	28.72-0.394:	18.54	33.49:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.45	10.63:		:	18.54	33.49:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.95	10.95	13.89:	13.46	28.36-0.413:	17.87	32.73:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.59	15.05:		:	17.87	32.73:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.76	10.97:	13.97	28.82-0.397:	18.62	33.60:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.72	10.92:	13.97	28.82-0.397:	18.63	33.60:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.40	12.24:	14.20	29.04-0.413:	18.90	33.95:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.58	13.04:	14.21	29.05-0.415:	18.91	33.95:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.01	13.31:	14.45	29.28-0.422:	19.31	34.45:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.54	13.77:	14.46	29.30-0.426:	19.21	34.34:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.64	13.90:	14.40	29.26-0.426:	19.16	34.29:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.02	13.91:	14.42	29.28-0.430:	19.18	34.32:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.66	13.50:	14.59	29.44-0.430:	19.48	34.70:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.40	13.18:	14.43	29.31-0.425:	19.22	34.39:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.37	13.00:		:	19.22	34.39:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.13	5.13	8.26:	14.33	29.21-0.384:	18.45	33.46:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.29	10.31:		:	18.45	33.46:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.44	12.50:	14.71	29.57-0.422:	19.46	34.69:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.43	12.38:	14.71	29.57-0.422:	19.46	34.69:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.68	12.55:	14.75	29.63-0.425:	19.47	34.72:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.81	12.72:	14.84	29.73-0.427:	19.59	34.88:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.08	12.98:	14.86	29.78-0.430:	19.56	34.87:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.13	13.08:	14.86	29.78-0.430:	19.56	34.87:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.80	14.08:	14.76	29.68-0.434:	19.47	34.76:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.33	13.53:	14.76	29.71-0.430:	19.47	34.79:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.42	11.08:	14.88	29.82-0.417:	19.57	34.91:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.63	11.28:	14.88	29.82-0.417:	19.57	34.91:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1: (C) /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.10	3.10	5.57:	11.77	44.29	-0.601:	14.25	48.09:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.50	11.62:	11.89	44.47	-0.668:	14.36	48.28:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.68	11.79:	12.07	44.81	-0.675:	14.69	48.91:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		10.29	13.27:	12.15	44.97	-0.699:	14.82	49.17:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		10.52	13.33:	12.27	45.16	-0.706:	15.04	49.56:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.96	13.62:	12.32	45.27	-0.713:	15.09	49.69:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.99	13.70:	12.32	45.27	-0.714:	15.09	49.69:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		8.02	10.49:	12.46	45.50	-0.678:	15.31	50.09:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.99	10.44:			:	15.31	50.09:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.36	12.36	14.62:	12.25	45.19	-0.730:	14.95	49.47:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		12.32	14.64:			:	14.95	49.47:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		8.31	10.75:	12.53	45.62	-0.683:	15.37	50.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		8.28	10.73:	12.53	45.63	-0.683:	15.38	50.23:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		9.95	12.10:	12.68	45.88	-0.710:	15.56	50.58:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		10.11	12.62:	12.69	45.88	-0.712:	15.56	50.59:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		10.45	12.86:	12.82	46.12	-0.721:	15.79	51.03:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		10.84	13.21:	12.85	46.18	-0.727:	15.76	50.99:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		10.91	13.29:	12.83	46.17	-0.727:	15.75	50.99:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		11.18	13.34:	12.85	46.19	-0.732:	15.76	51.01:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		10.74	12.89:	12.94	46.36	-0.728:	15.94	51.36:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		10.46	12.57:	12.87	46.26	-0.722:	15.80	51.12:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		10.42	12.45:			:	15.80	51.12:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.75	5.75	8.04:	12.92	46.34	-0.662:	15.48	50.54:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.95	9.57:			:	15.48	50.54:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		9.57	11.90:	13.06	46.56	-0.715:	15.97	51.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		9.57	11.82:	13.06	46.57	-0.715:	15.97	51.45:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		9.84	12.03:	13.10	46.67	-0.720:	16.01	51.54:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		9.98	12.19:	13.17	46.80	-0.724:	16.09	51.73:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		10.25	12.45:	13.23	46.94	-0.730:	16.12	51.83:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		10.29	12.53:	13.23	46.94	-0.730:	16.12	51.83:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		10.95	13.37:	13.16	46.84	-0.738:	16.06	51.72:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		10.46	12.85:	13.20	46.97	-0.732:	16.10	51.86:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.61	10.71:	13.28	47.08	-0.708:	16.17	51.98:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.87	10.96:	13.28	47.08	-0.708:	16.17	51.98:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.44	3.44	5.99:	10.22	31.94	-0.411:	12.83	34.58:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.97	10.69:	10.39	32.10	-0.451:	12.99	34.75:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.11	10.84:	10.49	32.26	-0.454:	13.25	35.11:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.25	12.00:	10.55	32.35	-0.465:	13.37	35.27:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.43	11.97:	10.64	32.45	-0.468:	13.56	35.50:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.78	12.16:	10.70	32.53	-0.472:	13.62	35.59:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.80	12.25:	10.70	32.53	-0.473:	13.62	35.59:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.08	9.12:	10.83	32.67	-0.451:	13.83	35.85:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.02	9.04:			:	13.83	35.85:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	12.06	12.06	14.15:	10.64	32.49	-0.493:	13.48	35.45:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.59	13.66:			:	13.48	35.45:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.35	9.38:	10.91	32.76	-0.455:	13.91	35.96:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.31	9.34:	10.92	32.77	-0.455:	13.91	35.96:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.66	10.46:	11.08	32.95	-0.469:	14.11	36.22:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.78	10.95:	11.08	32.95	-0.471:	14.11	36.22:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.12	11.19:	11.20	33.09	-0.476:	14.33	36.49:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.53	11.54:	11.26	33.16	-0.481:	14.33	36.51:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.60	11.64:	11.23	33.14	-0.481:	14.30	36.49:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.87	11.70:	11.25	33.16	-0.484:	14.32	36.51:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.47	11.28:	11.31	33.25	-0.481:	14.47	36.71:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.19	10.94:	11.26	33.19	-0.478:	14.35	36.57:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.15	10.82:			:	14.35	36.57:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.33	5.33	7.47:	11.56	33.50	-0.450:	14.24	36.44:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.46	8.48:			:	14.24	36.44:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.43	10.36:	11.50	33.45	-0.475:	14.57	36.85:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.42	10.28:	11.50	33.45	-0.475:	14.57	36.85:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.57	10.38:	11.56	33.54	-0.478:	14.62	36.93:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.65	10.49:	11.62	33.62	-0.480:	14.70	37.05:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.81	10.65:	11.70	33.73	-0.482:	14.74	37.13:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.85	10.73:	11.70	33.73	-0.483:	14.74	37.13:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.33	11.43:	11.61	33.64	-0.486:	14.66	37.04:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.95	11.00:	11.64	33.71	-0.483:	14.69	37.12:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.45	9.15:	11.74	33.82	-0.471:	14.78	37.23:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.62	9.32:	11.74	33.82	-0.471:	14.78	37.23:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	3.60	3.60	6.88:	11.12	24.83	-0.305:	14.60	27.54:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		8.15	11.57:	11.34	24.99	-0.335:	14.80	27.72:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.29	11.73:	11.50	25.15	-0.338:	15.21	28.12:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		9.57	13.12:	11.58	25.23	-0.347:	15.36	28.28:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.79	13.00:	11.73	25.35	-0.351:	15.67	28.56:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		10.26	13.22:	11.79	25.41	-0.354:	15.74	28.64:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		10.29	13.35:	11.79	25.41	-0.355:	15.74	28.64:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.30	9.73:	11.99	25.56	-0.338:	16.06	28.95:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.22	9.64:			:	16.06	28.95:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	11.45	11.45	13.91:	11.67	25.32	-0.360:	15.49	28.43:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		11.51	14.15:			:	15.49	28.43:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.54	9.97:	12.09	25.64	-0.341:	16.14	29.04:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.50	9.93:	12.09	25.65	-0.341:	16.15	29.05:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.86	11.02:	12.30	25.82	-0.352:	16.41	29.31:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		9.00	11.64:	12.31	25.82	-0.353:	16.41	29.31:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		9.36	11.88:	12.49	25.98	-0.358:	16.74	29.64:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		9.79	12.25:	12.54	26.02	-0.362:	16.69	29.61:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.87	12.36:	12.48	25.99	-0.361:	16.64	29.57:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		10.18	12.38:	12.51	26.01	-0.364:	16.66	29.59:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.81	11.97:	12.62	26.11	-0.363:	16.91	29.84:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.55	11.64:	12.51	26.03	-0.360:	16.70	29.64:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.51	11.50:			:	16.70	29.64:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.93	4.93	7.48:	12.71	26.18	-0.333:	16.27	29.23:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.05	8.78:			:	16.27	29.23:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.65	10.97:	12.81	26.27	-0.358:	16.96	29.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.64	10.86:	12.81	26.27	-0.358:	16.96	29.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.82	10.98:	12.86	26.32	-0.360:	16.99	29.95:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.91	11.11:	12.94	26.40	-0.361:	17.10	30.07:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		9.11	11.30:	12.99	26.46	-0.363:	17.09	30.10:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		9.14	11.39:	12.99	26.46	-0.364:	17.10	30.10:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		9.66	12.20:	12.87	26.37	-0.366:	17.00	30.00:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		9.29	11.74:	12.88	26.41	-0.363:	17.00	30.03:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.77	9.75:	13.01	26.51	-0.355:	17.12	30.15:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.93	9.92:	13.01	26.51	-0.355:	17.12	30.15:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	3.78	3.78	6.32:	9.37	25.28	-0.311:	12.07	27.29:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.92	10.36:	9.59	25.43	-0.338:	12.27	27.45:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.04	10.49:	9.63	25.50	-0.339:	12.49	27.68:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.91	11.45:	9.67	25.56	-0.346:	12.59	27.78:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		9.05	11.36:	9.74	25.61	-0.348:	12.76	27.94:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.33	11.46:	9.80	25.67	-0.350:	12.83	28.02:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.34	11.55:	9.80	25.67	-0.351:	12.83	28.02:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.60	8.32:	9.93	25.78	-0.334:	13.05	28.21:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.53	8.22:			:	13.05	28.21:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.99	10.99	12.86:	9.75	25.65	-0.361:	12.69	27.91:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.67	12.55:			:	12.69	27.91:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.84	8.54:	10.02	25.86	-0.337:	13.14	28.30:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.79	8.50:	10.03	25.86	-0.337:	13.15	28.31:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.95	9.48:	10.21	26.01	-0.347:	13.36	28.51:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.06	9.94:	10.21	26.01	-0.347:	13.37	28.52:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.41	10.21:	10.31	26.10	-0.351:	13.57	28.71:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.84	10.57:	10.41	26.17	-0.355:	13.60	28.74:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.91	10.68:	10.35	26.15	-0.355:	13.55	28.71:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.21	10.78:	10.38	26.17	-0.357:	13.57	28.73:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.90	10.44:	10.42	26.21	-0.356:	13.71	28.87:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.67	10.15:	10.37	26.18	-0.354:	13.59	28.76:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.64	10.05:			:	13.59	28.76:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.91	4.91	6.89:	10.89	26.56	-0.336:	13.65	28.81:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.01	7.67:			:	13.65	28.81:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.94	9.59:	10.67	26.41	-0.353:	13.86	29.02:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.93	9.51:	10.67	26.41	-0.353:	13.87	29.02:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.03	9.56:	10.74	26.48	-0.354:	13.92	29.09:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.08	9.65:	10.80	26.54	-0.356:	14.00	29.18:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.20	9.77:	10.88	26.63	-0.357:	14.05	29.24:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.22	9.83:	10.88	26.63	-0.358:	14.05	29.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.59	10.41:	10.77	26.54	-0.359:	13.94	29.15:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.32	10.08:	10.78	26.59	-0.357:	13.96	29.20:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.19	8.60:	10.91	26.68	-0.351:	14.08	29.31:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.30	8.72:	10.91	26.68	-0.351:	14.08	29.31:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.07	4.07	6.98:	9.29	21.37-0.252:		12.48	23.32:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.90	10.57:	9.54	21.52-0.273:		12.71	23.47:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.01	10.70:	9.59	21.58-0.274:		12.98	23.70:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.82	11.66:	9.63	21.62-0.279:		13.10	23.79:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.96	11.51:	9.72	21.68-0.281:		13.32	23.96:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.25	11.58:	9.78	21.73-0.283:		13.40	24.03:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.26	11.69:	9.78	21.73-0.283:		13.40	24.03:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.58	8.41:	9.94	21.83-0.271:		13.68	24.23:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.50	8.31:		:		13.68	24.23:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.55	10.55	12.57:	9.70	21.69-0.289:		13.20	23.90:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.36	12.44:		:		13.20	23.90:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.78	8.62:	10.05	21.90-0.273:		13.78	24.31:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.74	8.57:	10.06	21.91-0.273:		13.78	24.32:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.90	9.53:	10.27	22.04-0.281:		14.04	24.52:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.01	10.03:	10.27	22.04-0.282:		14.04	24.52:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.37	10.30:	10.40	22.13-0.285:		14.30	24.72:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.80	10.67:	10.49	22.20-0.288:		14.31	24.74:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.88	10.78:	10.42	22.16-0.288:		14.25	24.70:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.19	10.87:	10.45	22.18-0.290:		14.28	24.72:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.91	10.55:	10.51	22.23-0.289:		14.46	24.87:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.70	10.27:	10.44	22.18-0.287:		14.29	24.74:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.67	10.16:		:		14.29	24.74:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.09	5.09	7.23:	10.98	22.51-0.274:		14.24	24.71:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.17	7.99:		:		14.24	24.71:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.00	9.75:	10.78	22.40-0.287:		14.60	24.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.99	9.66:	10.79	22.40-0.287:		14.61	24.99:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.08	9.70:	10.86	22.46-0.288:		14.66	25.04:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.12	9.78:	10.92	22.51-0.289:		14.75	25.12:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.23	9.89:	11.00	22.58-0.291:		14.77	25.17:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.25	9.95:	11.00	22.58-0.291:		14.78	25.17:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.57	10.53:	10.86	22.50-0.291:		14.66	25.08:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.34	10.21:	10.86	22.52-0.290:		14.66	25.11:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.35	8.83:	11.01	22.62-0.286:		14.80	25.21:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.44	8.92:	11.01	22.62-0.286:		14.80	25.21:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.21	4.21	7.25:	9.03	22.79	-0.274:	12.35	24.99:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.82	10.61:	9.28	22.95	-0.296:	12.59	25.16:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.92	10.74:	9.34	23.02	-0.297:	12.87	25.41:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.69	11.64:	9.39	23.07	-0.302:	12.99	25.53:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.81	11.47:	9.48	23.14	-0.304:	13.23	25.72:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		9.08	11.50:	9.55	23.20	-0.307:	13.31	25.79:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		9.09	11.62:	9.55	23.20	-0.307:	13.32	25.80:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.61	8.53:	9.72	23.31	-0.294:	13.60	26.03:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.53	8.43:			:	13.60	26.03:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.22	10.22	12.35:	9.45	23.15	-0.312:	13.09	25.64:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.05	12.25:			:	13.09	25.64:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.79	8.71:	9.82	23.39	-0.297:	13.70	26.11:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.75	8.67:	9.83	23.39	-0.296:	13.70	26.12:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.86	9.58:	10.04	23.54	-0.305:	13.96	26.33:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.96	10.09:	10.05	23.54	-0.306:	13.96	26.34:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.32	10.35:	10.18	23.64	-0.309:	14.23	26.57:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.75	10.73:	10.27	23.70	-0.313:	14.23	26.58:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.83	10.84:	10.20	23.67	-0.313:	14.17	26.54:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.14	10.91:	10.23	23.69	-0.315:	14.20	26.56:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.91	10.64:	10.29	23.74	-0.314:	14.39	26.72:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.74	10.40:	10.21	23.69	-0.312:	14.21	26.58:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.72	10.30:			:	14.21	26.58:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.06	5.06	7.32:	10.70	24.01	-0.297:	14.08	26.48:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.14	8.12:			:	14.08	26.48:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.04	9.89:	10.55	23.93	-0.312:	14.52	26.85:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.04	9.80:	10.56	23.93	-0.312:	14.52	26.85:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.13	9.85:	10.62	23.99	-0.314:	14.57	26.90:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.18	9.93:	10.69	24.04	-0.315:	14.66	26.99:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.29	10.04:	10.76	24.12	-0.316:	14.68	27.03:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.31	10.11:	10.76	24.12	-0.316:	14.68	27.03:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.60	10.65:	10.64	24.03	-0.317:	14.57	26.94:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.41	10.38:	10.63	24.06	-0.315:	14.57	26.97:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.62	9.17:	10.78	24.16	-0.313:	14.70	27.08:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.70	9.26:	10.78	24.16	-0.313:	14.70	27.08:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.16	4.16	7.37:	8.63	24.07	-0.293:	12.11	26.52:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.64	10.58:	8.88	24.23	-0.315:	12.34	26.70:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.76	10.71:	8.95	24.32	-0.317:	12.64	26.99:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.49	11.53:	9.01	24.38	-0.322:	12.78	27.12:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.60	11.34:	9.11	24.45	-0.324:	13.02	27.33:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.83	11.31:	9.19	24.52	-0.326:	13.11	27.42:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.84	11.43:	9.19	24.52	-0.326:	13.11	27.42:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.47	8.37:	9.37	24.65	-0.315:	13.42	27.68:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.40	8.27:			:	13.42	27.68:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.47	9.47	11.57:	9.07	24.46	-0.329:	12.87	27.23:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.39	11.61:			:	12.87	27.23:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.62	8.52:	9.49	24.74	-0.317:	13.52	27.78:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.58	8.48:	9.49	24.74	-0.317:	13.53	27.79:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.57	9.30:	9.72	24.91	-0.325:	13.80	28.03:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.67	9.82:	9.72	24.91	-0.326:	13.80	28.04:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.01	10.07:	9.86	25.02	-0.330:	14.08	28.29:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.44	10.45:	9.95	25.09	-0.334:	14.08	28.30:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.52	10.56:	9.86	25.05	-0.333:	14.00	28.25:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.84	10.65:	9.89	25.07	-0.336:	14.03	28.27:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.70	10.46:	9.95	25.12	-0.335:	14.22	28.45:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.59	10.29:	9.86	25.06	-0.334:	14.03	28.29:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.58	10.19:			:	14.03	28.29:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.04	5.04	7.47:	10.25	25.33	-0.317:	13.79	28.08:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.12	8.28:			:	13.79	28.08:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.00	9.87:	10.21	25.32	-0.334:	14.34	28.57:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.00	9.81:	10.22	25.32	-0.335:	14.35	28.58:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.08	9.85:	10.29	25.38	-0.336:	14.39	28.63:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.13	9.94:	10.35	25.45	-0.337:	14.49	28.73:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.23	10.04:	10.42	25.52	-0.339:	14.50	28.77:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.25	10.10:	10.42	25.52	-0.339:	14.50	28.77:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.49	10.57:	10.31	25.44	-0.339:	14.40	28.68:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.37	10.37:	10.29	25.46	-0.338:	14.39	28.71:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.80	9.39:	10.43	25.56	-0.336:	14.52	28.82:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.86	9.46:	10.43	25.56	-0.336:	14.52	28.82:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.06	4.06	7.17:	8.99	24.47	-0.299:	12.34	26.90:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.62	10.54:	9.22	24.63	-0.323:	12.55	27.07:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.74	10.67:	9.30	24.73	-0.324:	12.86	27.36:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.55	11.55:	9.36	24.79	-0.330:	12.99	27.50:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.67	11.36:	9.46	24.87	-0.332:	13.22	27.70:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.92	11.35:	9.53	24.93	-0.335:	13.32	27.80:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.93	11.47:	9.53	24.93	-0.335:	13.32	27.80:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.86	8.75:	9.71	25.06	-0.324:	13.61	28.06:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.79	8.66:			:	13.61	28.06:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	10.28	10.28	12.38:	9.42	24.87	-0.342:	13.08	27.61:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		10.10	12.28:			:	13.08	27.61:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.04	8.93:	9.81	25.15	-0.326:	13.71	28.16:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.00	8.89:	9.82	25.15	-0.326:	13.72	28.17:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		8.23	9.86:	10.06	25.34	-0.337:	14.00	28.43:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		8.34	10.37:	10.07	25.34	-0.338:	14.01	28.43:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.63	10.57:	10.20	25.45	-0.342:	14.28	28.69:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.99	10.89:	10.30	25.53	-0.345:	14.29	28.70:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		9.06	10.99:	10.21	25.48	-0.345:	14.21	28.65:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		9.33	11.04:	10.25	25.50	-0.347:	14.24	28.67:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		9.17	10.84:	10.30	25.55	-0.346:	14.42	28.85:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		9.05	10.65:	10.21	25.49	-0.344:	14.24	28.69:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		9.04	10.55:			:	14.24	28.69:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.22	5.22	7.57:	10.59	25.76	-0.325:	14.00	28.48:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.30	8.39:			:	14.00	28.48:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.44	10.21:	10.57	25.76	-0.345:	14.56	28.99:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.44	10.16:	10.57	25.76	-0.345:	14.56	28.99:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.52	10.20:	10.64	25.83	-0.347:	14.61	29.05:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.56	10.27:	10.71	25.89	-0.348:	14.70	29.15:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.65	10.36:	10.77	25.97	-0.349:	14.71	29.19:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.67	10.42:	10.78	25.97	-0.349:	14.71	29.19:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.90	10.85:	10.66	25.89	-0.349:	14.61	29.10:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.78	10.66:	10.64	25.90	-0.348:	14.60	29.12:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.25	9.76:	10.78	26.01	-0.347:	14.73	29.24:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.31	9.82:	10.78	26.01	-0.347:	14.73	29.24:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.19	4.19	6.78:	7.63	25.59	-0.314:	10.40	27.62:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.34	9.64:	7.86	25.75	-0.337:	10.62	27.79:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.46	9.75:	7.87	25.81	-0.338:	10.81	27.99:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.05	10.37:	7.93	25.87	-0.338:	10.92	28.10:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.13	10.20:	7.97	25.91	-0.346:	11.07	28.24:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.26	10.12:	8.04	25.98	-0.345:	11.16	28.33:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.27	10.21:	8.04	25.98	-0.344:	11.17	28.33:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.42	7.70:	8.21	26.11	-0.335:	11.43	28.57:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.38	7.63:			:	11.43	28.57:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.47	9.47	10.94:	7.98	25.95	-0.352:	11.00	28.21:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.25	10.74:			:	11.00	28.21:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.61	7.89:	8.35	26.22	-0.338:	11.56	28.69:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.58	7.85:	8.36	26.23	-0.338:	11.57	28.70:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.29	8.46:	8.59	26.41	-0.346:	11.83	28.94:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.36	8.83:	8.60	26.41	-0.346:	11.84	28.94:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.68	9.08:	8.68	26.49	-0.350:	12.03	29.12:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.07	9.44:	8.83	26.61	-0.354:	12.11	29.20:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.15	9.54:	8.72	26.54	-0.353:	12.00	29.12:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.45	9.68:	8.75	26.56	-0.356:	12.04	29.15:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.36	9.56:	8.74	26.57	-0.355:	12.13	29.25:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.29	9.43:	8.68	26.53	-0.353:	12.00	29.14:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.28	9.36:			:	12.00	29.14:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.00	5.00	6.99:	9.15	26.86	-0.339:	11.98	29.12:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.07	7.54:			:	11.98	29.12:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.89	9.14:	9.09	26.84	-0.357:	12.37	29.48:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.89	9.13:	9.10	26.84	-0.357:	12.38	29.48:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.92	9.14:	9.18	26.92	-0.358:	12.44	29.56:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.95	9.19:	9.23	26.98	-0.359:	12.52	29.64:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.99	9.24:	9.32	27.07	-0.361:	12.56	29.71:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.00	9.29:	9.32	27.07	-0.361:	12.56	29.72:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.12	9.50:	9.23	27.00	-0.360:	12.48	29.64:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.08	9.42:	9.15	26.99	-0.359:	12.43	29.63:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.88	8.97:	9.30	27.10	-0.360:	12.56	29.75:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.91	9.00:	9.30	27.10	-0.360:	12.56	29.75:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.73	4.73	6.12:	6.99	56.62-0.786:		8.39	59.02:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.36	8.66:	7.11	56.82-0.832:		8.50	59.23:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.45	8.75:	7.12	56.97-0.834:		8.56	59.46:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.70	9.00:	7.17	57.12-0.840:		8.62	59.64:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.73	8.98:	7.16	57.14-0.840:		8.63	59.70:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.74	8.92:	7.22	57.28-0.842:		8.69	59.86:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.74	8.95:	7.22	57.28-0.842:		8.70	59.86:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.64	7.59:	7.27	57.41-0.825:		8.77	60.03:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.61	7.54:		:		8.77	60.03:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.99	8.99	10.11:	7.25	57.37-0.865:		8.71	59.92:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.48	9.54:		:		8.71	59.92:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.76	7.70:	7.36	57.59-0.830:		8.86	60.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.74	7.68:	7.37	57.60-0.830:		8.86	60.23:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.20	8.09:	7.48	57.84-0.842:		8.98	60.51:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.25	8.29:	7.48	57.84-0.841:		8.99	60.51:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.52	8.53:	7.50	57.92-0.716:		9.03	60.63:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.84	8.81:	7.61	58.13-0.856:		9.12	60.83:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.89	8.89:	7.58	58.12-0.857:		9.10	60.82:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.12	9.03:	7.60	58.14-0.862:		9.11	60.85:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.02	8.92:	7.58	58.15-0.859:		9.12	60.90:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.94	8.80:	7.59	58.19-0.858:		9.12	60.91:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.93	8.76:		:		9.12	60.91:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.03	5.03	6.36:	7.98	58.85-0.823:		9.41	61.46:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.14	6.79:		:		9.41	61.46:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.58	8.52:	7.80	58.57-0.860:		9.32	61.32:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.58	8.52:	7.80	58.58-0.858:		9.32	61.32:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.60	8.52:	7.87	58.75-0.862:		9.39	61.51:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.62	8.56:	7.92	58.88-0.863:		9.45	61.66:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.65	8.59:	8.03	59.15-0.868:		9.55	61.94:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.66	8.63:	8.03	59.15-0.869:		9.55	61.94:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.73	8.75:	7.99	59.07-0.868:		9.51	61.86:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.71	8.72:	8.01	59.22-0.868:		9.55	62.03:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.68	8.54:	8.08	59.34-0.871:		9.61	62.15:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.70	8.56:	8.08	59.34-0.871:		9.61	62.15:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	5.89	5.89	7.15:	9.24	47.83	-0.679:	10.55	49.81:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.92	9.13:	9.50	48.21	-0.714:	10.80	50.21:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		8.03	9.23:	9.37	48.12	-0.712:	10.72	50.18:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.52	9.62:	9.41	48.23	-0.720:	10.77	50.31:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.58	9.54:	9.37	48.20	-0.720:	10.76	50.31:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.67	9.48:	9.42	48.31	-0.723:	10.82	50.44:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.68	9.53:	9.42	48.31	-0.723:	10.82	50.45:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.59	8.22:	9.50	48.45	-0.710:	10.91	50.62:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.54	8.15:			:	10.91	50.62:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.39	9.39	10.19:	9.37	48.26	-0.596:	10.75	50.37:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.39	10.20:			:	10.75	50.37:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.66	8.29:	9.64	48.68	-0.715:	11.05	50.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.64	8.26:	9.65	48.69	-0.715:	11.06	50.88:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.91	8.54:	9.79	48.95	-0.723:	11.21	51.17:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.95	8.72:	9.79	48.94	-0.723:	11.21	51.16:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.24	8.98:	9.80	48.99	-0.727:	11.24	51.24:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.61	9.32:	9.97	49.27	-0.738:	11.40	51.52:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.68	9.41:	9.86	49.13	-0.736:	11.30	51.39:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.96	9.62:	9.90	49.18	-0.741:	11.33	51.44:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.90	9.54:	9.82	49.11	-0.738:	11.28	51.39:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.85	9.45:	9.82	49.10	-0.737:	11.26	51.37:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.84	9.42:			:	11.26	51.37:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.65	5.65	6.83:	10.23	49.73	-0.704:	11.58	51.90:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.77	7.34:			:	11.58	51.90:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.61	9.27:	10.17	49.67	-0.744:	11.60	51.96:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.61	9.28:	10.17	49.67	-0.744:	11.61	51.97:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.66	9.32:	10.26	49.84	-0.747:	11.69	52.14:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.69	9.37:	10.29	49.93	-0.749:	11.73	52.25:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.76	9.43:	10.40	50.15	-0.753:	11.83	52.48:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.77	9.47:	10.40	50.16	-0.753:	11.83	52.49:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.89	9.58:	10.41	50.17	-0.755:	11.85	52.51:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.87	9.56:	10.31	50.08	-0.752:	11.75	52.43:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.79	9.40:	10.38	50.20	-0.753:	11.83	52.55:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.82	9.42:	10.38	50.20	-0.753:	11.83	52.55:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	5.98	5.98	7.88:	8.66	29.16-0.383:		10.82	31.01:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.70	9.36:	9.01	29.44-0.402:		11.15	31.31:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.81	9.44:	8.86	29.37-0.400:		11.12	31.35:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.24	9.76:	8.91	29.44-0.404:		11.21	31.46:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.30	9.58:	8.89	29.44-0.404:		11.27	31.53:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.38	9.45:	8.95	29.51-0.406:		11.35	31.63:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.39	9.52:	8.96	29.52-0.406:		11.36	31.63:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.45	8.20:	9.13	29.68-0.401:		11.60	31.87:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.41	8.14:		:		11.60	31.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	9.48	9.48	10.41:	8.83	29.43-0.413:		11.16	31.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		9.42	10.38:		:		11.16	31.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.56	8.31:	9.33	29.86-0.406:		11.79	32.07:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.54	8.28:	9.35	29.87-0.406:		11.80	32.09:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.70	8.44:	9.59	30.09-0.411:		12.06	32.36:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.72	8.66:	9.58	30.09-0.411:		12.06	32.36:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.97	8.88:	9.62	30.14-0.413:		12.17	32.48:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.31	9.19:	9.85	30.34-0.420:		12.34	32.67:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.37	9.28:	9.64	30.19-0.417:		12.15	32.50:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.64	9.45:	9.69	30.23-0.420:		12.20	32.54:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.60	9.38:	9.60	30.16-0.418:		12.18	32.54:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.56	9.31:	9.54	30.12-0.417:		12.07	32.44:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.56	9.27:		:		12.07	32.44:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.13	5.13	6.74:	9.96	30.48-0.397:		12.16	32.53:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.22	7.28:		:		12.16	32.53:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.31	9.12:	10.07	30.59-0.424:		12.57	32.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.31	9.15:	10.08	30.60-0.424:		12.58	32.96:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.35	9.16:	10.17	30.70-0.426:		12.66	33.07:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.37	9.21:	10.21	30.75-0.426:		12.71	33.14:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.42	9.26:	10.31	30.88-0.428:		12.79	33.25:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.44	9.30:	10.31	30.88-0.429:		12.79	33.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.54	9.39:	10.32	30.88-0.430:		12.79	33.26:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.53	9.37:	10.10	30.73-0.426:		12.61	33.11:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.45	9.18:	10.23	30.85-0.427:		12.73	33.23:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.47	9.19:	10.23	30.85-0.427:		12.73	33.23:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	5.22	5.22	7.65:	8.89	35.82	-0.482:	11.45	38.68:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.56	9.90:	9.12	36.06	-0.509:	11.66	38.94:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.68	10.00:	9.14	36.16	-0.511:	11.84	39.24:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		8.25	10.48:	9.22	36.28	-0.518:	11.97	39.43:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		8.32	10.29:	9.27	36.35	-0.520:	12.11	39.62:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.45	10.16:	9.34	36.46	-0.523:	12.22	39.79:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.46	10.26:	9.35	36.46	-0.523:	12.22	39.80:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.57	8.76:	9.54	36.68	-0.518:	12.50	40.17:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.54	8.72:			:	12.50	40.17:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.96	8.96	10.34:	9.23	36.35	-0.525:	12.00	39.54:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.99	10.47:			:	12.00	39.54:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.65	8.85:	9.69	36.86	-0.521:	12.64	40.37:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.64	8.83:	9.70	36.87	-0.522:	12.65	40.38:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.90	9.08:	9.90	37.12	-0.528:	12.89	40.71:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.93	9.41:	9.90	37.12	-0.529:	12.89	40.71:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		8.19	9.63:	9.99	37.24	-0.533:	13.07	40.97:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.54	9.94:	10.12	37.40	-0.540:	13.13	41.07:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.60	10.05:	9.99	37.28	-0.538:	13.02	40.95:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.88	10.17:	10.02	37.31	-0.541:	13.05	40.98:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.85	10.11:	10.02	37.34	-0.541:	13.14	41.13:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.82	10.03:	9.95	37.26	-0.539:	13.00	40.95:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.82	9.97:			:	13.00	40.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.15	5.15	7.25:	10.12	37.45	-0.506:	12.74	40.60:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.26	8.05:			:	12.74	40.60:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.50	9.79:	10.32	37.69	-0.544:	13.34	41.43:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.50	9.83:	10.33	37.70	-0.544:	13.35	41.43:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.57	9.87:	10.40	37.81	-0.546:	13.41	41.54:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.61	9.94:	10.45	37.89	-0.548:	13.48	41.66:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.70	10.02:	10.53	38.02	-0.550:	13.52	41.76:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.71	10.07:	10.53	38.02	-0.551:	13.52	41.76:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.88	10.26:	10.49	37.98	-0.552:	13.49	41.72:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.85	10.21:	10.41	37.94	-0.549:	13.42	41.68:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.70	9.86:	10.52	38.06	-0.550:	13.52	41.82:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.73	9.89:	10.52	38.06	-0.550:	13.52	41.82:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	5.05	5.05	6.37:	6.78	71.72-1.019:		8.10	74.64:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.08	8.34:	6.88	71.95-1.066:		8.20	74.87:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.17	8.42:	6.91	72.18-1.069:		8.27	75.19:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.39	8.64:	6.97	72.40-1.076:		8.33	75.43:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.41	8.62:	6.97	72.44-1.077:		8.35	75.51:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.42	8.55:	7.02	72.61-1.079:		8.41	75.71:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.42	8.58:	7.02	72.61-1.079:		8.41	75.71:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.00	7.89:	7.08	72.78-1.059:		8.48	75.93:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.99	7.85:			:	8.48	75.93:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.62	8.62	9.68:	7.05	72.72-1.107:		8.42	75.80:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.19	9.20:			:	8.42	75.80:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.09	7.96:	7.17	73.02-1.089:		8.57	76.18:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.08	7.95:	7.17	73.03-1.083:		8.58	76.19:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.10	7.98:	7.28	73.32-1.081:		8.69	76.52:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.11	8.13:	7.28	73.32-1.086:		8.69	76.52:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.34	8.33:	7.30	73.41-1.088:		8.72	76.65:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.63	8.59:	7.39	73.66-1.099:		8.81	76.91:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.68	8.66:	7.37	73.66-1.101:		8.79	76.90:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.89	8.80:	7.38	73.68-1.105:		8.80	76.93:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.81	8.72:	7.37	73.71-1.103:		8.80	76.99:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.75	8.62:	7.38	73.74-1.102:		8.81	77.01:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.75	8.59:			:	8.81	77.01:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.10	5.10	6.41:	7.69	74.43-1.059:		9.05	77.59:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.22	6.84:			:	9.05	77.59:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.47	8.40:	7.56	74.20-1.101:		8.99	77.49:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.47	8.41:	7.57	74.20-1.109:		8.99	77.49:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.49	8.41:	7.64	74.42-1.106:		9.06	77.73:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.50	8.45:	7.68	74.59-1.112:		9.11	77.92:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.53	8.48:	7.79	74.93-1.116:		9.22	78.28:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.53	8.51:	7.79	74.93-1.115:		9.22	78.28:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.59	8.60:	7.76	74.87-1.115:		9.19	78.22:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.59	8.58:	7.79	75.07-1.119:		9.23	78.44:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.62	8.49:	7.85	75.19-1.121:		9.29	78.57:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.63	8.50:	7.85	75.19-1.121:		9.29	78.57:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	AVG. DAILY TE (J/M2(J/M2/:(C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2:(C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	5.88	5.88	8.24:	8.33	39.74	-0.548:	10.91	42.94:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		7.37	9.51:	8.66	40.12	-0.571:	11.22	43.36:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		7.46	9.58:	8.60	40.13	-0.571:	11.32	43.58:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.85	9.87:	8.66	40.26	-0.577:	11.44	43.79:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.90	9.65:	8.70	40.32	-0.578:	11.56	43.98:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		8.00	9.47:	8.78	40.45	-0.581:	11.69	44.19:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		8.00	9.58:	8.79	40.45	-0.582:	11.69	44.20:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		7.32	8.35:	9.01	40.74	-0.579:	12.00	44.66:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		7.29	8.31:			:	12.00	44.66:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.96	8.96	10.20:	8.61	40.26	-0.589:	11.40	43.82:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.93	10.23:			:	11.40	43.82:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		7.42	8.46:	9.20	40.99	-0.585:	12.18	44.94:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		7.40	8.44:	9.22	41.01	-0.585:	12.19	44.96:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		7.57	8.64:	9.44	41.31	-0.592:	12.45	45.36:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		7.60	8.94:	9.44	41.31	-0.592:	12.44	45.35:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.86	9.16:	9.52	41.44	-0.597:	12.62	45.64:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		8.22	9.49:	9.69	41.66	-0.605:	12.72	45.80:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		8.29	9.59:	9.51	41.47	-0.602:	12.56	45.59:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		8.58	9.74:	9.55	41.51	-0.606:	12.60	45.64:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		8.55	9.68:	9.52	41.50	-0.605:	12.67	45.78:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		8.52	9.61:	9.43	41.40	-0.603:	12.51	45.55:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		8.52	9.55:			:	12.51	45.55:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.48	5.48	7.64:	9.47	41.44	-0.569:	12.11	44.96:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.57	8.32:			:	12.11	44.96:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		8.33	9.47:	9.88	41.98	-0.611:	12.92	46.19:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		8.33	9.54:	9.88	41.98	-0.612:	12.93	46.19:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		8.37	9.55:	9.97	42.12	-0.614:	12.99	46.33:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		8.39	9.60:	10.01	42.21	-0.615:	13.06	46.46:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		8.44	9.64:	10.09	42.35	-0.618:	13.09	46.56:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		8.45	9.69:	10.09	42.36	-0.618:	13.10	46.56:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		8.49	9.69:	10.14	42.42	-0.620:	13.14	46.63:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		8.49	9.68:	9.95	42.25	-0.615:	12.99	46.46:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		8.47	9.53:	10.04	42.35	-0.617:	13.07	46.58:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		8.48	9.54:	10.04	42.35	-0.617:	13.07	46.58:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	6.01	6.01	7.74:	5.80	26.68	-0.337:	7.84	28.13:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.92	8.25:	6.19	26.94	-0.349:	8.21	28.42:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.97	8.30:	5.96	26.84	-0.346:	8.09	28.38:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		7.12	8.41:	5.96	26.87	-0.347:	8.13	28.44:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		7.13	8.24:	5.92	26.85	-0.347:	8.14	28.46:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.14	8.07:	5.96	26.90	-0.347:	8.22	28.54:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.14	8.12:	5.96	26.90	-0.347:	8.22	28.54:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.68	7.27:	6.15	27.04	-0.347:	8.46	28.74:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.66	7.24:			:	8.46	28.74:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.75	8.75	9.53:	5.90	26.88	-0.358:	8.09	28.46:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.52	9.26:			:	8.09	28.46:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.81	7.40:	6.37	27.21	-0.351:	8.67	28.93:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.80	7.38:	6.39	27.23	-0.351:	8.69	28.94:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.77	7.36:	6.62	27.41	-0.351:	8.95	29.17:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.77	7.52:	6.62	27.41	-0.354:	8.94	29.16:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		7.04	7.77:	6.62	27.43	-0.356:	9.01	29.23:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.41	8.11:	6.88	27.62	-0.362:	9.22	29.42:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.48	8.21:	6.67	27.49	-0.359:	9.02	29.27:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.78	8.42:	6.71	27.52	-0.362:	9.07	29.31:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.73	8.35:	6.58	27.44	-0.360:	9.00	29.27:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.68	8.27:	6.54	27.42	-0.359:	8.92	29.21:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.67	8.24:			:	8.92	29.21:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.89	4.89	6.33:	7.15	27.85	-0.348:	9.24	29.47:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.93	6.55:			:	9.24	29.47:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.46	8.11:	7.11	27.84	-0.366:	9.46	29.66:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.46	8.13:	7.11	27.84	-0.365:	9.46	29.67:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.44	8.09:	7.22	27.94	-0.367:	9.56	29.77:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.44	8.10:	7.25	27.98	-0.368:	9.60	29.83:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.43	8.09:	7.37	28.10	-0.344:	9.70	29.94:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.43	8.12:	7.37	28.11	-0.375:	9.70	29.94:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.42	8.12:	7.37	28.10	-0.393:	9.70	29.94:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.42	8.10:	7.14	27.98	-0.365:	9.50	29.82:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.40	7.99:	7.29	28.08	-0.368:	9.64	29.93:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.40	7.98:	7.29	28.08	-0.368:	9.64	29.93:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	5.57	5.57	8.06:	6.11	23.72-0.290:		9.27	25.75:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.64	8.57:	6.62	24.02-0.213:		9.74	26.08:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.70	8.63:	6.38	23.93-0.300:		9.73	26.13:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.93	8.83:	6.39	23.96-0.301:		9.81	26.21:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.96	8.56:	6.40	23.97-0.301:		9.93	26.31:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		7.01	8.36:	6.48	24.04-0.303:		10.08	26.44:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		7.01	8.46:	6.48	24.04-0.302:		10.09	26.44:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		6.46	7.35:	6.76	24.22-0.303:		10.48	26.74:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		6.44	7.32:			:	10.48	26.74:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.25	8.25	9.36:	6.29	23.94-0.308:		9.73	26.20:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		8.11	9.24:			:	9.73	26.20:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.57	7.46:	7.00	24.38-0.306:		10.70	26.93:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.56	7.45:	7.02	24.39-0.307:		10.72	26.94:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.59	7.50:	7.30	24.58-0.310:		11.04	27.20:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.60	7.77:	7.30	24.58-0.310:		11.03	27.20:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.91	8.04:	7.37	24.64-0.312:		11.23	27.37:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.33	8.43:	7.60	24.80-0.319:		11.37	27.49:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.41	8.55:	7.36	24.66-0.298:		11.15	27.33:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.76	8.76:	7.41	24.69-0.318:		11.20	27.37:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.72	8.70:	7.33	24.65-0.317:		11.26	27.43:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.69	8.62:	7.23	24.59-0.315:		11.06	27.28:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.69	8.56:			:	11.06	27.28:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.83	4.83	6.89:	7.60	24.82-0.303:		10.81	27.08:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.87	7.27:			:	10.81	27.08:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.46	8.46:	7.85	25.00-0.322:		11.63	27.74:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.46	8.50:	7.85	25.00-0.322:		11.63	27.74:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.47	8.48:	7.95	25.08-0.323:		11.71	27.82:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.47	8.51:	7.99	25.13-0.323:		11.78	27.90:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.49	8.52:	8.08	25.22-0.325:		11.81	27.95:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.49	8.56:	8.08	25.22-0.325:		11.81	27.95:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.52	8.59:	8.07	25.21-0.325:		11.81	27.95:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.52	8.57:	7.82	25.08-0.322:		11.60	27.82:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.49	8.39:	7.98	25.19-0.323:		11.75	27.94:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.50	8.40:	7.98	25.19-0.323:		11.75	27.94:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.88	4.88	7.87:	5.72	35.61	-0.464:	8.92	38.94:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.19	8.76:	5.97	35.85	-0.482:	9.15	39.20:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.26	8.82:	6.02	35.98	-0.481:	9.41	39.58:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.50	9.12:	6.10	36.09	-0.486:	9.55	39.79:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.53	8.89:	6.17	36.18	-0.488:	9.72	40.01:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.59	8.68:	6.28	36.32	-0.491:	9.91	40.27:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.59	8.82:	6.28	36.32	-0.490:	9.91	40.27:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.99	7.40:	6.52	36.58	-0.489:	10.28	40.74:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.98	7.38:			:	10.28	40.74:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.59	7.59	9.23:	6.12	36.19	-0.497:	9.59	39.91:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.41	9.09:			:	9.59	39.91:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		6.10	7.51:	6.67	36.75	-0.493:	10.42	40.94:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		6.09	7.50:	6.69	36.76	-0.494:	10.43	40.95:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.16	7.59:	6.90	37.01	-0.499:	10.69	41.31:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.18	7.95:	6.90	37.01	-0.499:	10.69	41.31:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.54	8.25:	7.02	37.15	-0.504:	10.93	41.63:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.01	8.69:	7.13	37.28	-0.508:	10.96	41.69:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.10	8.82:	7.01	37.18	-0.509:	10.85	41.58:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.49	9.01:	7.04	37.21	-0.514:	10.88	41.61:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.44	8.94:	7.07	37.27	-0.515:	11.04	41.84:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.41	8.85:	6.98	37.18	-0.512:	10.85	41.60:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.40	8.77:			:	10.85	41.60:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.55	4.55	7.12:	7.00	37.20	-0.485:	10.26	40.86:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.61	7.62:			:	10.26	40.86:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.14	8.66:	7.35	37.58	-0.516:	11.18	42.05:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.14	8.72:	7.35	37.58	-0.518:	11.18	42.06:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.16	8.70:	7.43	37.69	-0.519:	11.24	42.16:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.17	8.74:	7.49	37.78	-0.520:	11.33	42.30:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.19	8.77:	7.55	37.90	-0.522:	11.33	42.36:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.19	8.81:	7.55	37.90	-0.522:	11.34	42.36:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.23	8.89:	7.51	37.86	-0.522:	11.30	42.32:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.23	8.86:	7.45	37.85	-0.521:	11.27	42.33:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.23	8.61:	7.56	37.96	-0.522:	11.37	42.46:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.24	8.62:	7.56	37.96	-0.522:	11.37	42.46:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.54	4.54	7.45:	6.58	30.32-0.385:	9.77	33.12:		HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.15	8.71:	6.85	30.54-0.401:	10.02	33.37:		HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.22	8.78:	6.86	30.61-0.402:	10.23	33.64:		STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.59	9.20:	6.92	30.69-0.406:	10.35	33.80:		STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.65	8.96:	6.97	30.75-0.408:	10.51	33.97:		STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.75	8.78:	7.07	30.86-0.410:	10.69	34.18:		STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.76	8.93:	7.08	30.86-0.409:	10.70	34.18:		HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.81	7.15:	7.31	31.07-0.406:	11.05	34.57:		STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.79	7.12:		:	11.05	34.57:		CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.44	7.44	8.96:	6.94	30.77-0.413:	10.39	33.89:		HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.38	8.99:		:	10.39	33.89:		CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.92	7.27:	7.47	31.21-0.409:	11.20	34.74:		CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.91	7.25:	7.48	31.23-0.409:	11.21	34.75:		HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.10	7.44:	7.69	31.43-0.414:	11.47	35.05:		STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.12	7.82:	7.69	31.43-0.415:	11.47	35.05:		HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.50	8.14:	7.79	31.53-0.419:	11.68	35.30:		STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.01	8.61:	7.91	31.65-0.425:	11.73	35.35:		STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.11	8.75:	7.79	31.57-0.424:	11.62	35.26:		STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.53	8.99:	7.82	31.59-0.428:	11.64	35.28:		HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.51	8.94:	7.83	31.62-0.428:	11.78	35.45:		STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.49	8.87:	7.75	31.55-0.427:	11.61	35.27:		STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.49	8.79:		:	11.61	35.27:		CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.76	4.76	7.13:	7.96	31.73-0.408:	11.19	34.82:		HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.82	7.68:		:	11.19	34.82:		CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.20	8.67:	8.13	31.90-0.430:	11.95	35.66:		CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.20	8.70:	8.13	31.90-0.431:	11.95	35.66:		HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.25	8.71:	8.21	31.99-0.432:	12.02	35.75:		STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.28	8.77:	8.27	32.07-0.434:	12.10	35.87:		STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.33	8.83:	8.34	32.17-0.435:	12.11	35.92:		STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.34	8.88:	8.34	32.17-0.435:	12.11	35.92:		HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.44	9.06:	8.28	32.11-0.435:	12.05	35.86:		HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.43	9.00:	8.21	32.11-0.434:	12.03	35.88:		STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.37	8.68:	8.34	32.22-0.436:	12.14	36.00:		HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.39	8.70:	8.34	32.22-0.436:	12.14	36.00:		MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.54	4.54	6.80:	5.39	25.20-0.305:		7.98	26.94:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.93	7.75:	5.71	25.40-0.317:		8.28	27.15:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.99	7.82:	5.58	25.37-0.316:		8.31	27.23:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.20	8.06:	5.59	25.41-0.318:		8.37	27.30:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.22	7.85:	5.59	25.42-0.317:		8.44	27.36:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.26	7.67:	5.64	25.47-0.318:		8.57	27.48:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.26	7.77:	5.64	25.47-0.318:		8.57	27.48:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.27	6.18:	5.81	25.59-0.314:		8.84	27.69:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.24	6.14:		:		8.84	27.69:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.68	7.68	8.78:	5.60	25.46-0.327:		8.40	27.36:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.45	8.55:		:		8.40	27.36:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.43	6.33:	5.99	25.72-0.318:		9.00	27.83:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.41	6.31:	6.00	25.73-0.317:		9.01	27.84:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.47	6.38:	6.21	25.88-0.321:		9.25	28.04:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.48	6.63:	6.21	25.88-0.321:		9.25	28.04:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.86	6.97:	6.24	25.92-0.323:		9.37	28.15:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.37	7.45:	6.42	26.04-0.324:		9.49	28.26:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.47	7.58:	6.28	25.97-0.329:		9.36	28.17:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.90	7.88:	6.31	25.99-0.331:		9.39	28.19:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.86	7.83:	6.25	25.96-0.330:		9.42	28.24:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.83	7.75:	6.21	25.94-0.329:		9.32	28.16:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.83	7.70:		:		9.32	28.16:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.67	4.67	6.42:	6.86	26.37-0.324:		9.50	28.29:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.71	6.69:		:		9.50	28.29:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.58	7.58:	6.65	26.24-0.340:		9.73	28.49:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.58	7.59:	6.65	26.24-0.335:		9.73	28.49:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.59	7.57:	6.74	26.32-0.336:		9.81	28.58:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.60	7.61:	6.78	26.37-0.334:		9.87	28.65:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.61	7.62:	6.89	26.48-0.336:		9.94	28.73:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.62	7.66:	6.90	26.48-0.336:		9.94	28.73:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.64	7.76:	6.81	26.42-0.338:		9.86	28.67:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.65	7.73:	6.72	26.40-0.337:		9.81	28.66:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.67	7.55:	6.88	26.50-0.338:		9.95	28.78:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.68	7.56:	6.88	26.50-0.338:		9.95	28.78:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	AVG. DAILY K1 S/C2):	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.99	4.99	6.31:	7.11	52.08-0.722:		8.47	54.22:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.43	7.69:	7.30	52.38-0.748:		8.66	54.53:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.48	7.75:	7.24	52.40-0.747:		8.63	54.60:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.82	8.06:	7.26	52.50-0.753:		8.67	54.73:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.87	7.99:	7.25	52.51-0.753:		8.67	54.76:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.94	7.94:	7.28	52.59-0.756:		8.72	54.88:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.95	7.99:	7.28	52.60-0.755:		8.72	54.89:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.57	6.33:	7.34	52.72-0.737:		8.80	55.05:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.53	6.26:		:		8.80	55.05:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.68	7.68	8.58:	7.31	52.67-0.767:		8.73	54.93:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.61	8.51:		:		8.73	54.93:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.69	6.44:	7.45	52.92-0.742:		8.91	55.27:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.67	6.41:	7.46	52.93-0.742:		8.92	55.28:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		6.02	6.76:	7.57	53.15-0.750:		9.04	55.53:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		6.06	6.96:	7.57	53.15-0.751:		9.04	55.53:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.52	7.39:	7.58	53.20-0.758:		9.07	55.61:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		7.11	7.94:	7.71	53.42-0.771:		9.18	55.83:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		7.22	8.07:	7.65	53.37-0.771:		9.13	55.78:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.68	8.45:	7.67	53.40-0.193:		9.15	55.81:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.61	8.37:	7.63	53.37-0.739:		9.13	55.81:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.55	8.27:	7.64	53.40-0.777:		9.13	55.82:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.54	8.24:		:		9.13	55.82:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.12	5.12	6.35:	8.11	54.14-0.754:		9.51	56.47:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.21	6.71:		:		9.51	56.47:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.28	8.07:	7.89	53.81-0.779:		9.37	56.26:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.28	8.07:	7.89	53.82-0.779:		9.37	56.26:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.31	8.08:	7.96	53.98-0.782:		9.45	56.44:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.32	8.12:	8.01	54.09-0.784:		9.50	56.57:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.37	8.16:	8.12	54.35-0.788:		9.61	56.83:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.37	8.19:	8.12	54.35-0.788:		9.61	56.83:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.48	8.34:	8.08	54.29-0.789:		9.57	56.77:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.45	8.29:	8.08	54.37-0.788:		9.58	56.87:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.30	8.02:	8.15	54.49-0.788:		9.65	57.00:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.32	8.04:	8.15	54.49-0.788:		9.65	57.00:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	5.88	5.88	7.38:	7.03	40.05	-0.547:	8.78	42.11:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.56	7.81:	7.48	40.56	-0.564:	9.20	42.64:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.61	7.84:	7.21	40.34	-0.559:	9.02	42.50:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.79	7.93:	7.23	40.40	-0.561:	9.06	42.60:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.81	7.78:	7.18	40.37	-0.561:	9.05	42.61:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.85	7.64:	7.22	40.45	-0.562:	9.13	42.74:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.85	7.70:	7.23	40.45	-0.562:	9.14	42.75:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		5.28	5.86:	7.38	40.65	-0.548:	9.34	43.02:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		5.21	5.78:			:	9.34	43.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	8.02	8.02	8.76:	7.09	40.33	-0.572:	8.95	42.53:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.94	8.69:			:	8.95	42.53:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		5.40	5.98:	7.60	40.93	-0.555:	9.55	43.32:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		5.37	5.95:	7.62	40.95	-0.555:	9.56	43.34:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.54	6.14:	7.83	41.22	-0.561:	9.78	43.66:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.57	6.33:	7.82	41.22	-0.561:	9.78	43.66:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		6.09	6.82:	7.84	41.26	-0.567:	9.84	43.76:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.78	7.46:	8.08	41.57	-0.581:	10.05	44.06:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.91	7.62:	7.87	41.34	-0.577:	9.85	43.82:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.47	8.09:	7.92	41.40	-0.585:	9.90	43.88:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.40	8.01:	7.80	41.29	-0.581:	9.83	43.82:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.33	7.91:	7.75	41.24	-0.579:	9.75	43.72:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.33	7.88:			:	9.75	43.72:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.39	5.39	6.81:	8.06	41.60	-0.565:	9.84	43.84:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.45	7.12:			:	9.84	43.84:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.23	7.84:	8.29	41.90	-0.591:	10.27	44.44:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.22	7.88:	8.30	41.91	-0.591:	10.27	44.44:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.22	7.85:	8.40	42.07	-0.593:	10.37	44.61:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.22	7.87:	8.43	42.13	-0.594:	10.41	44.69:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.22	7.87:	8.54	42.32	-0.597:	10.50	44.88:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.23	7.90:	8.54	42.33	-0.597:	10.51	44.88:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.15	7.78:	8.67	42.49	-0.599:	10.63	45.05:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.15	7.79:	8.38	42.20	-0.592:	10.37	44.76:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.16	7.74:	8.44	42.27	-0.594:	10.43	44.84:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.16	7.73:	8.44	42.27	-0.594:	10.43	44.84:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	6.00	6.00	7.57:	6.00	36.13	0.000:	7.85	38.01:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.46	7.69:	6.45	36.56	-0.402:	8.28	38.48:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.50	7.72:	6.18	36.38	-0.491:	8.10	38.37:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.61	7.74:	6.20	36.44	-0.493:	8.15	38.47:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.62	7.57:	6.16	36.42	-0.492:	8.14	38.47:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.63	7.41:	6.19	36.48	-0.493:	8.23	38.60:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.63	7.47:	6.20	36.49	-0.493:	8.23	38.60:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.77	5.30:	6.42	36.73	-0.480:	8.50	38.92:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.70	5.22:			:	8.50	38.92:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.60	7.60	8.27:	6.08	36.39	-0.500:	8.04	38.42:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.50	8.17:			:	8.04	38.42:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.91	5.44:	6.68	37.01	-0.486:	8.75	39.22:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.88	5.41:	6.70	37.03	-0.486:	8.77	39.25:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		5.00	5.53:	6.99	37.36	-0.493:	9.07	39.63:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.01	5.69:	6.99	37.35	-0.493:	9.07	39.62:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.72	6.35:	7.02	37.41	-0.500:	9.14	39.73:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.61	7.20:	7.36	37.78	-0.516:	9.45	40.10:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.77	7.39:	7.06	37.49	-0.512:	9.17	39.80:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.47	8.00:	7.15	37.58	-0.521:	9.25	39.89:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.34	7.85:	6.98	37.43	-0.516:	9.14	39.79:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.23	7.70:	6.91	37.37	-0.514:	9.04	39.68:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.21	7.67:			:	9.04	39.68:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.44	5.44	6.83:	7.20	37.66	-0.501:	9.08	39.73:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.47	7.02:			:	9.08	39.73:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.14	7.64:	7.65	38.16	-0.527:	9.74	40.53:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.13	7.68:	7.66	38.17	-0.528:	9.75	40.54:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.08	7.61:	7.79	38.33	-0.530:	9.87	40.71:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.06	7.61:	7.80	38.38	-0.530:	9.90	40.78:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.02	7.57:	7.92	38.56	-0.532:	9.99	40.95:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.02	7.59:	7.92	38.56	-0.532:	10.00	40.95:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.92	7.45:	8.09	38.74	-0.535:	10.16	41.15:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.91	7.45:	7.64	38.32	-0.525:	9.75	40.71:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.85	7.34:	7.74	38.42	-0.526:	9.84	40.82:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.84	7.32:	7.74	38.42	-0.526:	9.84	40.82:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	5.55	5.55	8.02:	6.95	32.97	-0.434:	9.91	35.86:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		6.35	8.41:	7.39	33.37	-0.449:	10.31	36.29:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		6.39	8.45:	7.22	33.29	-0.446:	10.33	36.39:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.62	8.60:	7.26	33.36	-0.449:	10.44	36.54:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.65	8.33:	7.27	33.38	-0.449:	10.51	36.64:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.71	8.10:	7.37	33.51	-0.452:	10.74	36.92:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.72	8.24:	7.38	33.51	-0.452:	10.75	36.92:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.64	5.59:	7.69	33.82	-0.440:	11.18	37.43:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.58	5.51:			:	11.18	37.43:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	7.42	7.42	8.47:	7.16	33.33	-0.455:	10.35	36.50:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		7.40	8.53:			:	10.35	36.50:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.80	5.75:	7.94	34.07	-0.445:	11.41	37.71:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.77	5.72:	7.97	34.09	-0.446:	11.43	37.74:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.98	5.93:	8.28	34.42	-0.453:	11.78	38.17:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		5.01	6.23:	8.28	34.42	-0.453:	11.77	38.17:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.73	6.87:	8.37	34.53	-0.461:	11.96	38.42:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		6.64	7.73:	8.66	34.83	-0.475:	12.17	38.68:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		6.81	7.93:	8.37	34.57	-0.471:	11.91	38.39:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		7.53	8.48:	8.46	34.65	-0.479:	11.99	38.48:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		7.41	8.33:	8.36	34.58	-0.476:	12.01	38.53:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		7.30	8.17:	8.24	34.47	-0.473:	11.82	38.31:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		7.29	8.11:			:	11.82	38.31:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	5.06	5.06	7.25:	8.17	34.39	-0.452:	11.16	37.53:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		5.12	7.75:			:	11.16	37.53:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		7.19	8.10:	8.95	35.18	-0.485:	12.46	39.10:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		7.18	8.18:	8.96	35.19	-0.485:	12.47	39.11:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		7.16	8.13:	9.07	35.32	-0.487:	12.56	39.25:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		7.15	8.15:	9.10	35.38	-0.488:	12.62	39.35:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		7.15	8.14:	9.18	35.50	-0.489:	12.64	39.42:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		7.16	8.17:	9.18	35.51	-0.490:	12.64	39.42:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		7.03	7.97:	9.36	35.69	-0.492:	12.81	39.63:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		7.03	7.98:	8.95	35.32	-0.484:	12.47	39.26:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		7.02	7.90:	9.03	35.40	-0.485:	12.54	39.35:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		7.02	7.88:	9.03	35.40	-0.485:	12.54	39.35:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2:	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.96	4.96	6.68:	4.53	31.30-0.396:		6.56	32.99:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.79	7.11:	4.93	31.61-0.408:		6.93	33.32:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.84	7.16:	4.69	31.50-0.405:		6.80	33.27:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.94	7.23:	4.69	31.53-0.406:		6.82	33.33:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.95	7.06:	4.66	31.52-0.405:		6.83	33.35:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.95	6.88:	4.68	31.56-0.406:		6.91	33.45:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.94	6.94:	4.68	31.57-0.406:		6.91	33.46:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.17	4.79:	4.86	31.73-0.395:		7.15	33.69:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.12	4.72:		:		7.15	33.69:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.48	6.48	7.24:	4.65	31.56-0.409:		6.80	33.37:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.33	7.09:		:		6.80	33.37:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.30	4.91:	5.08	31.92-0.399:		7.36	33.90:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.27	4.88:	5.10	31.94-0.399:		7.38	33.92:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.34	4.94:	5.34	32.16-0.403:		7.64	34.19:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		4.35	5.12:	5.34	32.16-0.404:		7.64	34.19:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.96	5.69:	5.36	32.20-0.409:		7.70	34.27:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.76	6.45:	5.62	32.43-0.424:		7.93	34.50:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.91	6.63:	5.40	32.27-0.417:		7.73	34.33:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.55	7.17:	5.46	32.32-0.423:		7.78	34.38:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.45	7.06:	5.33	32.23-0.420:		7.71	34.33:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.36	6.93:	5.29	32.21-0.419:		7.64	34.27:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.35	6.90:		:		7.64	34.27:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.46	4.46	5.93:	5.79	32.62-0.412:		7.85	34.46:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.49	6.09:		:		7.85	34.46:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.23	6.85:	5.87	32.70-0.428:		8.18	34.81:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.23	6.87:	5.87	32.71-0.427:		8.19	34.81:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.18	6.81:	5.98	32.83-0.427:		8.29	34.94:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.15	6.80:	6.01	32.88-0.428:		8.33	35.01:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.11	6.76:	6.14	33.03-0.504:		8.43	35.15:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.11	6.78:	6.14	33.03-0.539:		8.43	35.15:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.08	6.73:	6.20	33.09-0.427:		8.49	35.21:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.07	6.71:	5.93	32.90-0.425:		8.26	35.03:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.98	6.55:	6.04	33.00-0.435:		8.36	35.13:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.97	6.54:	6.04	33.00-0.435:		8.36	35.13:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.91	4.91	6.55:	4.93	28.08	-0.625:	7.02	29.63:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.77	7.01:	5.43	28.44	-0.362:	7.49	30.01:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.83	7.06:	5.10	28.26	-0.357:	7.27	29.89:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		6.00	7.17:	5.07	28.28	-0.358:	7.29	29.94:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		6.01	7.00:	5.03	28.26	-0.358:	7.28	29.95:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		6.03	6.84:	5.04	28.29	-0.358:	7.37	30.04:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		6.03	6.91:	5.05	28.29	-0.358:	7.37	30.05:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.25	4.79:	5.26	28.46	-0.349:	7.65	30.29:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.18	4.71:			:	7.65	30.29:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.64	6.64	7.32:	4.96	28.25	-0.361:	7.19	29.92:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.53	7.21:			:	7.19	29.92:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.37	4.91:	5.53	28.67	-0.353:	7.90	30.51:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.34	4.87:	5.55	28.69	-0.353:	7.93	30.53:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.42	4.97:	5.81	28.90	-0.358:	8.21	30.79:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		4.43	5.13:	5.81	28.90	-0.358:	8.20	30.78:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		5.01	5.68:	5.81	28.92	-0.362:	8.26	30.86:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.77	6.41:	6.12	29.16	-0.372:	8.53	31.09:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.92	6.57:	5.85	28.97	-0.368:	8.27	30.89:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.54	7.11:	5.91	29.02	-0.374:	8.33	30.94:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.45	7.00:	5.75	28.92	-0.371:	8.24	30.88:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.37	6.89:	5.69	28.88	-0.370:	8.14	30.81:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.36	6.86:			:	8.14	30.81:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.78	4.78	6.18:	6.24	29.29	-0.366:	8.36	30.99:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.80	6.34:			:	8.36	30.99:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.26	6.82:	6.37	29.41	-0.380:	8.79	31.37:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.26	6.85:	6.38	29.41	-0.379:	8.79	31.38:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.22	6.80:	6.50	29.52	-0.380:	8.90	31.50:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.20	6.79:	6.52	29.56	-0.380:	8.94	31.56:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.17	6.76:	6.65	29.70	-0.382:	9.04	31.68:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.17	6.78:	6.65	29.70	-0.382:	9.04	31.68:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		6.12	6.70:	6.76	29.79	-0.384:	9.15	31.77:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		6.11	6.69:	6.39	29.55	-0.379:	8.83	31.54:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		6.03	6.56:	6.50	29.63	-0.379:	8.93	31.63:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		6.02	6.54:	6.50	29.63	-0.379:	8.93	31.63:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.93	4.93	6.55:	4.39	30.39	-0.381:	6.38	31.98:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.66	6.88:	4.84	30.73	-0.394:	6.80	32.34:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.70	6.92:	4.56	30.58	-0.390:	6.62	32.25:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.80	6.99:	4.54	30.60	-0.390:	6.64	32.30:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.81	6.81:	4.51	30.59	-0.390:	6.63	32.31:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.81	6.64:	4.51	30.63	-0.390:	6.71	32.41:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.81	6.70:	4.52	30.63	-0.390:	6.71	32.41:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.12	4.67:	4.72	30.80	-0.380:	6.97	32.65:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.06	4.60:			:	6.97	32.65:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.83	6.83	7.52:	4.47	30.61	-0.397:	6.58	32.31:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.66	7.33:			:	6.58	32.31:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.27	4.82:	4.96	31.00	-0.385:	7.20	32.87:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.24	4.78:	4.98	31.02	-0.385:	7.22	32.89:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.30	4.85:	5.23	31.24	-0.389:	7.49	33.16:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		4.30	5.00:	5.23	31.24	-0.389:	7.49	33.15:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.91	5.57:	5.24	31.27	-0.394:	7.55	33.23:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.70	6.32:	5.53	31.52	-0.407:	7.80	33.47:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.84	6.49:	5.28	31.34	-0.402:	7.57	33.28:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.48	7.04:	5.35	31.39	-0.408:	7.63	33.34:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.36	6.91:	5.20	31.29	-0.405:	7.54	33.28:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.26	6.77:	5.15	31.26	-0.403:	7.46	33.21:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.25	6.74:			:	7.46	33.21:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.75	4.75	6.17:	5.63	31.64	-0.399:	7.65	33.37:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.77	6.28:			:	7.65	33.37:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.16	6.71:	5.78	31.78	-0.413:	8.06	33.78:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.16	6.74:	5.79	31.79	-0.412:	8.06	33.78:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.09	6.67:	5.90	31.91	-0.412:	8.17	33.91:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.06	6.65:	5.93	31.95	-0.416:	8.21	33.97:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.01	6.60:	6.06	32.10	-0.397:	8.31	34.11:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.01	6.62:	6.06	32.10	-0.404:	8.32	34.11:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.94	6.52:	6.16	32.19	-0.417:	8.41	34.20:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.93	6.51:	5.83	31.96	-0.408:	8.13	33.98:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.83	6.36:	5.93	32.05	-0.406:	8.22	34.08:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.82	6.34:	5.93	32.05	-0.406:	8.22	34.08:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.80	4.80	6.69:	4.55	32.61	-0.414:	6.86	34.65:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.58	7.02:	5.01	33.00	-0.428:	7.30	35.07:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.62	7.07:	4.74	32.85	-0.424:	7.16	35.01:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.75	7.16:	4.73	32.88	-0.425:	7.20	35.09:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.76	6.96:	4.71	32.88	-0.424:	7.20	35.11:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.77	6.77:	4.75	32.95	-0.425:	7.36	35.29:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.77	6.87:	4.76	32.95	-0.425:	7.36	35.30:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.13	4.79:	5.00	33.17	-0.416:	7.69	35.63:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		4.08	4.73:			:	7.69	35.63:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.56	6.56	7.37:	4.65	32.88	-0.430:	7.12	35.08:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.43	7.23:			:	7.12	35.08:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.27	4.93:	5.24	33.40	-0.421:	7.92	35.88:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.24	4.90:	5.27	33.42	-0.421:	7.94	35.91:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.31	4.99:	5.53	33.67	-0.426:	8.23	36.23:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		4.32	5.18:	5.53	33.67	-0.426:	8.23	36.22:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.94	5.76:	5.57	33.73	-0.432:	8.33	36.35:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.74	6.51:	5.85	33.99	-0.441:	8.56	36.61:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.89	6.69:	5.60	33.79	-0.441:	8.33	36.39:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.53	7.22:	5.66	33.85	-0.447:	8.39	36.45:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.40	7.07:	5.54	33.76	-0.444:	8.34	36.43:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.29	6.92:	5.47	33.71	-0.442:	8.23	36.31:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.28	6.88:			:	8.23	36.31:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.74	4.74	6.46:	5.69	33.89	-0.432:	8.04	36.11:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.76	6.61:			:	8.04	36.11:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.21	6.87:	6.11	34.29	-0.446:	8.83	36.96:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.20	6.92:	6.12	34.30	-0.457:	8.83	36.96:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		6.13	6.84:	6.23	34.43	-0.461:	8.94	37.10:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		6.11	6.83:	6.26	34.48	-0.455:	8.98	37.18:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		6.06	6.78:	6.37	34.63	-0.456:	9.06	37.30:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		6.06	6.80:	6.37	34.63	-0.455:	9.06	37.30:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.95	6.64:	6.52	34.77	-0.457:	9.20	37.45:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.94	6.64:	6.16	34.50	-0.451:	8.90	37.19:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.87	6.51:	6.24	34.57	-0.451:	8.97	37.27:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.85	6.49:	6.24	34.57	-0.451:	8.97	37.27:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2:	MAX. DAILY TE (J/M2: (C) /S/C)	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.59	4.59	6.62:	4.14	23.40-0.276:		6.95	25.06:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.43	6.91:	4.72	23.72-0.286:		7.49	25.41:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.47	6.96:	4.35	23.56-0.283:		7.29	25.33:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.59	7.07:	4.30	23.56-0.283:		7.30	25.37:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.60	6.84:	4.26	23.55-0.282:		7.31	25.38:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.61	6.63:	4.30	23.59-0.283:		7.51	25.53:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.60	6.74:	4.30	23.59-0.283:		7.51	25.54:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		4.03	4.69:	4.59	23.76-0.277:		7.92	25.82:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.98	4.63:		:		7.92	25.82:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.47	6.47	7.27:	4.18	23.54-0.286:		7.19	25.34:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		6.33	7.14:		:		7.19	25.34:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.17	4.83:	4.87	23.94-0.281:		8.18	26.02:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		4.14	4.80:	4.90	23.95-0.281:		8.21	26.03:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.19	4.85:	5.22	24.16-0.285:		8.56	26.30:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		4.20	5.06:	5.22	24.15-0.285:		8.56	26.30:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.80	5.61:	5.25	24.19-0.289:		8.68	26.39:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.58	6.35:	5.60	24.40-0.348:		8.95	26.60:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.73	6.53:	5.28	24.23-0.294:		8.66	26.41:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.35	7.04:	5.36	24.28-0.299:		8.74	26.46:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		6.23	6.90:	5.20	24.20-0.296:		8.68	26.43:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		6.12	6.75:	5.11	24.15-0.295:		8.53	26.33:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		6.11	6.71:		:		8.53	26.33:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.58	4.58	6.32:	5.50	24.37-0.290:		8.33	26.19:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.59	6.47:		:		8.33	26.19:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		6.03	6.70:	5.89	24.62-0.301:		9.25	26.86:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		6.02	6.74:	5.90	24.63-0.303:		9.26	26.87:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.96	6.66:	6.02	24.72-0.322:		9.37	26.97:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.93	6.65:	6.05	24.75-0.303:		9.42	27.02:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.88	6.60:	6.17	24.86-0.305:		9.48	27.10:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.88	6.62:	6.17	24.86-0.305:		9.48	27.10:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.82	6.52:	6.28	24.93-0.306:		9.58	27.17:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.80	6.51:	5.85	24.70-0.311:		9.24	26.95:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.69	6.32:	5.99	24.79-0.302:		9.36	27.05:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.67	6.30:	5.99	24.79-0.302:		9.36	27.05:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C) S/C2)	AVG. DAILY K1 (J/M2/S/C)	AVG. DAILY K2: (J/M2: (C) /S/C):	MAX. DAILY TE (J/M2: (C) /S/C):	MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.37	4.37	6.29:	3.61	32.02-0.398:		5.90	33.94:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.19	6.64:	4.01	32.33-0.411:		6.27	34.27:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.23	6.69:	3.79	32.23-0.408:		6.18	34.26:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.26	6.74:	3.78	32.26-0.408:		6.21	34.33:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.26	6.54:	3.77	32.27-0.407:		6.22	34.36:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.23	6.32:	3.80	32.32-0.408:		6.36	34.52:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.23	6.42:	3.80	32.33-0.408:		6.37	34.52:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.86	4.58:	3.99	32.49-0.404:		6.64	34.79:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.82	4.52:		:		6.64	34.79:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	6.03	6.03	6.91:	3.76	32.32-0.414:		6.19	34.38:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.83	6.69:		:		6.19	34.38:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		3.99	4.70:	4.19	32.68-0.403:		6.83	34.99:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.96	4.68:	4.21	32.69-0.405:		6.85	35.01:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		3.99	4.71:	4.43	32.90-0.408:		7.10	35.28:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		3.99	4.91:	4.43	32.90-0.407:		7.10	35.27:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.55	5.42:	4.46	32.95-0.415:		7.18	35.38:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.26	6.09:	4.70	33.16-0.422:		7.37	35.58:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.39	6.25:	4.51	33.02-0.420:		7.20	35.44:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.96	6.71:	4.56	33.07-0.426:		7.25	35.48:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.84	6.57:	4.46	33.01-0.423:		7.23	35.48:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.74	6.42:	4.42	32.98-0.422:		7.14	35.41:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.73	6.38:		:		7.14	35.41:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.35	4.35	6.03:	4.81	33.30-0.417:		7.13	35.39:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.36	6.13:		:		7.13	35.39:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.64	6.37:	4.94	33.43-0.429:		7.63	35.90:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.63	6.40:	4.94	33.44-0.430:		7.63	35.91:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.56	6.31:	5.05	33.55-0.431:		7.73	36.03:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.53	6.30:	5.08	33.61-0.431:		7.78	36.11:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.47	6.24:	5.20	33.76-0.432:		7.86	36.23:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.47	6.27:	5.20	33.76-0.433:		7.86	36.24:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.43	6.22:	5.23	33.78-0.434:		7.89	36.26:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.42	6.20:	5.02	33.65-0.429:		7.73	36.15:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.29	5.98:	5.13	33.75-0.433:		7.83	36.26:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.28	5.96:	5.13	33.75-0.433:		7.83	36.26:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	TEMP. OBS. (C)	TEMP. AVG. DAILY PRED. (C)	TEMP. MAX. DAILY PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4	4.30	4.30	5.73	3.10	35.67	-0.448	4.85	37.28	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0		5.08	6.12	3.56	36.08	-0.463	5.29	37.71	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7		5.12	6.17	3.26	35.90	-0.458	5.05	37.57	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5		5.17	6.19	3.23	35.92	-0.458	5.05	37.61	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4		5.17	6.04	3.20	35.91	-0.457	5.03	37.62	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9		5.15	5.87	3.18	35.93	-0.457	5.08	37.70	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6		5.14	5.92	3.18	35.93	-0.457	5.08	37.70	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9		3.86	4.36	3.33	36.08	-0.448	5.27	37.90	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0		3.81	4.29				5.27	37.90	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4	5.72	5.72	6.39	3.16	35.93	-0.462	4.99	37.63	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0		5.50	6.14				4.99	37.63	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0		3.94	4.43	3.54	36.30	-0.452	5.48	38.14	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6		3.91	4.41	3.56	36.31	-0.452	5.50	38.15	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4		3.88	4.39	3.77	36.53	-0.456	5.72	38.41	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6		3.88	4.52	3.77	36.53	-0.460	5.72	38.41	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8		4.46	5.07	3.79	36.58	-0.461	5.77	38.48	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9		5.20	5.76	4.06	36.84	-0.473	6.01	38.75	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3		5.33	5.92	3.85	36.67	-0.470	5.82	38.58	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3		5.90	6.42	3.91	36.73	-0.477	5.87	38.64	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1		5.77	6.27	3.78	36.64	-0.473	5.78	38.57	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0		5.66	6.12	3.75	36.61	-0.472	5.73	38.53	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7		5.64	6.09				5.73	38.53	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1	4.51	4.51	5.83	4.21	37.03	-0.470	5.99	38.78	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7		4.50	5.84				5.99	38.78	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7		5.58	6.08	4.31	37.16	-0.481	6.27	39.11	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5		5.57	6.10	4.32	37.16	-0.481	6.28	39.12	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8		5.48	6.00	4.43	37.30	-0.483	6.39	39.26	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8		5.44	5.97	4.46	37.36	-0.483	6.43	39.34	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6		5.36	5.89	4.59	37.54	-0.485	6.54	39.51	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4		5.36	5.91	4.60	37.54	-0.485	6.55	39.52	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8		5.27	5.79	4.70	37.64	-0.486	6.65	39.62	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1		5.26	5.78	4.41	37.43	-0.480	6.39	39.42	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2		5.15	5.63	4.49	37.50	-0.481	6.47	39.50	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0		5.13	5.60	4.49	37.50	-0.481	6.47	39.50	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	AVG. DAILY OBS. (C)	AVG. DAILY PRED. (C)	MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ C) /S/C)	AVG. DAILY K1 S/C2)	AVG. DAILY K2: (J/M2: C)	MAX. DAILY TE (J/M2: C)	MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.26	4.26	6.35:	4.15	25.15-0.298:		7.02	27.02:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.14	6.68:	4.72	25.50-0.311:		7.55	27.40:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.18	6.74:	4.36	25.34-0.307:		7.37	27.33:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.33	6.87:	4.32	25.34-0.308:		7.40	27.37:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.35	6.63:	4.29	25.34-0.307:		7.39	27.38:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.37	6.42:	4.34	25.39-0.308:		7.64	27.58:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.37	6.55:	4.34	25.39-0.308:		7.64	27.58:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.92	4.61:	4.63	25.58-0.303:		8.06	27.91:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.88	4.56:		:		8.06	27.91:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.45	5.45	6.28:	4.21	25.32-0.307:		7.27	27.33:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.38	6.23:		:		7.27	27.33:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		4.00	4.69:	4.92	25.77-0.307:		8.33	28.12:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.98	4.67:	4.94	25.78-0.307:		8.35	28.14:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		4.03	4.74:	5.25	26.00-0.311:		8.70	28.43:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		4.04	4.95:	5.25	26.00-0.311:		8.69	28.43:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.63	5.48:	5.30	26.05-0.315:		8.82	28.54:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.37	6.17:	5.64	26.28-0.324:		9.09	28.76:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.51	6.34:	5.33	26.09-0.320:		8.81	28.56:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		6.09	6.81:	5.42	26.15-0.326:		8.89	28.62:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.98	6.68:	5.26	26.07-0.323:		8.84	28.60:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.90	6.55:	5.17	26.01-0.321:		8.69	28.49:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.89	6.51:		:		8.69	28.49:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.35	4.35	6.15:	5.48	26.21-0.316:		8.37	28.24:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.37	6.33:		:		8.37	28.24:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.81	6.50:	5.96	26.53-0.329:		9.41	29.07:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.80	6.55:	5.97	26.54-0.330:		9.42	29.08:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.76	6.49:	6.09	26.64-0.332:		9.54	29.19:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.74	6.49:	6.11	26.68-0.333:		9.58	29.25:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.71	6.46:	6.23	26.79-0.334:		9.63	29.32:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.71	6.48:	6.23	26.79-0.333:		9.63	29.32:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.65	6.37:	6.39	26.89-0.335:		9.77	29.44:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.64	6.37:	5.94	26.63-0.329:		9.42	29.19:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.58	6.23:	6.05	26.71-0.330:		9.52	29.28:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.56	6.22:	6.05	26.71-0.330:		9.52	29.28:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	4.36	4.36	5.71:	2.79	27.55	-0.330:	4.63	28.79:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		5.00	5.94:	3.37	27.93	-0.342:	5.19	29.20:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		5.03	5.98:	2.94	27.71	-0.337:	4.84	29.01:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.06	5.99:	2.88	27.70	-0.336:	4.81	29.02:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.06	5.83:	2.84	27.69	-0.336:	4.78	29.01:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		5.03	5.66:	2.78	27.68	-0.335:	4.81	29.05:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		5.03	5.71:	2.78	27.68	-0.335:	4.81	29.06:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.78	4.20:	2.96	27.81	-0.329:	5.05	29.24:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.74	4.14:			:	5.05	29.24:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.71	5.71	6.27:	2.77	27.68	-0.339:	4.71	29.00:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.52	6.05:			:	4.71	29.00:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		3.88	4.29:	3.24	28.00	-0.333:	5.31	29.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.85	4.26:	3.26	28.02	-0.333:	5.33	29.47:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		3.82	4.24:	3.52	28.21	-0.335:	5.60	29.70:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		3.81	4.35:	3.51	28.21	-0.336:	5.60	29.69:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.32	4.83:	3.52	28.24	-0.340:	5.64	29.74:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		4.96	5.44:	3.86	28.48	-0.348:	5.95	29.99:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.08	5.58:	3.57	28.30	-0.345:	5.68	29.80:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.59	6.02:	3.65	28.35	-0.350:	5.75	29.86:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.51	5.93:	3.46	28.25	-0.347:	5.61	29.77:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.44	5.83:	3.41	28.22	-0.346:	5.54	29.73:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.43	5.80:			:	5.54	29.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.44	4.44	5.65:	4.04	28.64	-0.347:	5.91	30.00:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.43	5.66:			:	5.91	30.00:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.37	5.80:	4.14	28.73	-0.355:	6.23	30.27:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.37	5.82:	4.14	28.73	-0.355:	6.24	30.28:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.31	5.75:	4.26	28.84	-0.356:	6.36	30.39:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.29	5.74:	4.28	28.88	-0.356:	6.39	30.44:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.24	5.69:	4.44	29.02	-0.358:	6.52	30.58:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.23	5.70:	4.44	29.02	-0.358:	6.52	30.58:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.18	5.63:	4.58	29.12	-0.360:	6.65	30.69:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.18	5.62:	4.15	28.87	-0.354:	6.28	30.44:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.11	5.51:	4.26	28.95	-0.355:	6.38	30.52:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.09	5.49:	4.26	28.95	-0.355:	6.38	30.52:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/ (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	4.31	4.31	6.19:	3.26	30.13-0.369:		5.71	32.04:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.91	6.28:	3.78	30.52-0.381:		6.19	32.45:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.95	6.32:	3.45	30.35-0.376:		6.00	32.36:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		5.00	6.35:	3.43	30.37-0.376:		6.03	32.41:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		5.00	6.14:	3.40	30.36-0.376:		6.01	32.41:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		4.99	5.92:	3.43	30.41-0.376:		6.20	32.61:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		4.99	6.03:	3.43	30.41-0.376:		6.21	32.61:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.78	4.39:	3.68	30.61-0.374:		6.56	32.94:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.74	4.34:			:	6.56	32.94:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.71	5.71	6.47:	3.33	30.36-0.380:		5.92	32.39:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		5.56	6.31:			:	5.92	32.39:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		3.89	4.50:	3.95	30.83-0.357:		6.81	33.18:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.87	4.48:	3.97	30.85-0.381:		6.83	33.20:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		3.87	4.50:	4.26	31.09-0.380:		7.15	33.50:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		3.87	4.68:	4.25	31.09-0.380:		7.14	33.50:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		4.39	5.15:	4.30	31.14-0.391:		7.24	33.61:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		5.04	5.75:	4.62	31.41-0.394:		7.51	33.88:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		5.16	5.90:	4.33	31.21-0.391:		7.25	33.65:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		5.66	6.30:	4.42	31.27-0.396:		7.33	33.72:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		5.60	6.22:	4.27	31.18-0.393:		7.26	33.68:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		5.54	6.12:	4.19	31.12-0.392:		7.14	33.58:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		5.54	6.09:			:	7.14	33.58:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.45	4.45	6.13:	4.46	31.33-0.620:		6.93	33.39:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.45	6.18:			:	6.93	33.39:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		5.48	6.09:	4.91	31.70-0.402:		7.82	34.22:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		5.48	6.14:	4.92	31.71-0.403:		7.82	34.23:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		5.45	6.09:	5.04	31.83-0.405:		7.94	34.37:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		5.43	6.10:	5.07	31.88-0.404:		7.98	34.43:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		5.40	6.06:	5.19	32.02-0.404:		8.05	34.54:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		5.40	6.08:	5.19	32.02-0.405:		8.05	34.54:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		5.36	5.99:	5.39	32.18-0.476:		8.23	34.72:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		5.36	5.99:	4.95	31.88-0.402:		7.88	34.43:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		5.32	5.91:	5.03	31.94-0.403:		7.95	34.50:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		5.31	5.89:	5.03	31.94-0.403:		7.95	34.50:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2):	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C):	REMARKS
1	UPPER TALARIK	H	62.4:	4.02	4.02	5.76:	1.62	43.29	-0.544:	3.58	45.44:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.35	5.64:	1.94	43.63	-0.555:	3.88	45.81:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.37	5.66:	1.80	43.60	-0.552:	3.82	45.84:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		4.20	5.50:	1.81	43.67	-0.550:	3.86	45.95:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		4.16	5.31:	1.81	43.69	-0.550:	3.86	45.98:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		4.07	5.05:	1.83	43.75	-0.549:	3.98	46.16:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		4.06	5.13:	1.83	43.75	-0.549:	3.98	46.16:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.35	4.01:	1.98	43.94	-0.544:	4.19	46.45:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.33	3.97:			:	4.19	46.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	5.08	5.08	5.94:	1.82	43.78	-0.560:	3.87	46.06:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		4.73	5.54:			:	3.87	46.06:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		3.44	4.10:	2.16	44.16	-0.549:	4.37	46.69:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.43	4.08:	2.17	44.18	-0.549:	4.38	46.71:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		3.29	3.96:	2.36	44.42	-0.552:	4.59	47.00:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		3.28	4.12:	2.36	44.42	-0.552:	4.58	47.00:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		3.71	4.51:	2.39	44.49	-0.557:	4.65	47.12:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		4.25	5.01:	2.60	44.74	-0.568:	4.83	47.36:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		4.35	5.14:	2.45	44.61	-0.566:	4.70	47.23:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		4.77	5.46:	2.49	44.66	-0.572:	4.74	47.28:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		4.72	5.40:	2.42	44.62	-0.569:	4.71	47.28:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		4.68	5.31:	2.39	44.59	-0.568:	4.66	47.22:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		4.67	5.28:			:	4.66	47.22:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.09	4.09	5.68:	2.72	44.94	-0.569:	4.70	47.27:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.05	5.57:			:	4.70	47.27:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		4.63	5.30:	2.83	45.10	-0.578:	5.08	47.78:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		4.63	5.35:	2.84	45.11	-0.578:	5.08	47.78:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		4.56	5.26:	2.93	45.26	-0.579:	5.18	47.95:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		4.53	5.25:	2.97	45.35	-0.580:	5.23	48.06:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		4.47	5.19:	3.10	45.56	-0.582:	5.32	48.25:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		4.46	5.20:	3.10	45.56	-0.582:	5.33	48.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		4.43	5.14:	3.16	45.62	-0.583:	5.38	48.32:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		4.43	5.14:	2.98	45.51	-0.579:	5.25	48.24:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		4.41	5.05:	3.06	45.59	-0.580:	5.32	48.33:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		4.39	5.03:	3.06	45.59	-0.580:	5.32	48.33:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST. (C)	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/: (C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2):	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C) /S/C):	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.64	3.64	6.14:	1.77	32.45-0.390:		4.80	34.95:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		4.10	5.93:	2.17	32.76-0.400:		5.18	35.29:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		4.11	5.96:	2.00	32.71-0.397:		5.16	35.36:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		4.03	5.92:	2.00	32.76-0.397:		5.23	35.47:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		4.01	5.64:	1.99	32.77-0.397:		5.21	35.47:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		3.94	5.31:	2.10	32.88-0.398:		5.58	35.84:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		3.94	5.50:	2.10	32.88-0.398:		5.58	35.84:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.34	4.25:	2.35	33.09-0.397:		5.98	36.24:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.32	4.23:			:	5.98	36.24:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	4.16	4.16	5.27:	1.97	32.80-0.397:		5.17	35.48:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		3.97	5.08:			:	5.17	35.48:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		3.38	4.30:	2.55	33.27-0.400:		6.18	36.45:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.37	4.29:	2.57	33.29-0.400:		6.19	36.47:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		3.29	4.24:	2.81	33.51-0.404:		6.47	36.78:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		3.29	4.49:	2.81	33.50-0.404:		6.47	36.77:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		3.68	4.83:	2.86	33.57-0.407:		6.59	36.91:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		4.18	5.28:	3.09	33.77-0.415:		6.76	37.10:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		4.28	5.41:	2.90	33.64-0.413:		6.60	36.96:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		4.67	5.67:	2.95	33.68-0.417:		6.64	37.01:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		4.66	5.63:	2.89	33.66-0.416:		6.67	37.06:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		4.65	5.55:	2.82	33.61-0.415:		6.55	36.95:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		4.64	5.51:			:	6.55	36.95:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	3.84	3.84	5.98:	3.01	33.76-0.411:		6.04	36.44:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		3.82	5.97:			:	6.04	36.44:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		4.59	5.54:	3.34	34.05-0.423:		7.03	37.45:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		4.59	5.61:	3.35	34.06-0.423:		7.04	37.46:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		4.56	5.56:	3.45	34.17-0.424:		7.14	37.59:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		4.55	5.58:	3.50	34.24-0.425:		7.20	37.69:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		4.53	5.56:	3.59	34.37-0.426:		7.22	37.75:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		4.53	5.57:	3.60	34.37-0.426:		7.22	37.76:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		4.50	5.53:	3.63	34.40-0.427:		7.25	37.79:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		4.51	5.53:	3.43	34.30-0.424:		7.15	37.74:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		4.55	5.45:	3.54	34.39-0.426:		7.25	37.84:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		4.54	5.44:	3.54	34.39-0.426:		7.25	37.84:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/:C) /S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 S/C2)	EQUILIBRIUM PARAMETERS AVG. DAILY K2:	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: C) /S/C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1:	REMARKS
1	UPPER TALARIK	H	62.4:	3.31	3.31	4.64:	0.19	37.87-0.453:		1.73	39.24:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		3.43	4.37:	0.53	38.16-0.460:		2.06	39.55:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		3.43	4.38:	0.34	38.09-0.457:		1.90	39.50:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		3.13	4.09:	0.32	38.13-0.454:		1.90	39.55:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		3.07	3.91:	0.33	38.17-0.453:		1.91	39.59:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		2.93	3.65:	0.25	38.13-0.451:		1.86	39.58:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		2.92	3.68:	0.25	38.14-0.451:		1.87	39.59:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		2.83	3.29:	0.33	38.23-0.451:		1.97	39.71:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		2.82	3.26:			:	1.97	39.71:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	3.69	3.69	4.33:	0.36	38.26-0.460:		1.94	39.68:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		3.32	3.92:			:	1.94	39.68:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		2.86	3.32:	0.51	38.41-0.455:		2.14	39.90:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		2.86	3.31:	0.52	38.42-0.455:		2.16	39.91:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		2.59	3.05:	0.69	38.61-0.455:		2.33	40.12:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		2.57	3.14:	0.69	38.61-0.455:		2.33	40.12:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		2.90	3.44:	0.72	38.66-0.459:		2.37	40.18:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		3.31	3.83:	0.92	38.86-0.466:		2.57	40.40:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		3.39	3.93:	0.78	38.77-0.464:		2.43	40.30:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		3.71	4.19:	0.82	38.80-0.468:		2.47	40.34:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		3.70	4.16:	0.73	38.75-0.466:		2.40	40.29:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		3.68	4.11:	0.72	38.75-0.466:		2.38	40.29:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		3.68	4.10:			:	2.38	40.29:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	3.74	3.74	4.91:	1.39	39.35-0.479:		2.96	40.85:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		3.68	4.76:			:	2.96	40.85:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		3.68	4.15:	1.15	39.16-0.474:		2.80	40.73:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		3.68	4.17:	1.16	39.17-0.474:		2.81	40.73:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		3.61	4.09:	1.25	39.29-0.475:		2.91	40.86:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		3.58	4.07:	1.29	39.36-0.475:		2.95	40.95:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		3.51	4.00:	1.45	39.57-0.478:		3.10	41.16:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		3.49	4.01:	1.45	39.57-0.478:		3.11	41.17:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		3.36	3.87:	1.46	39.58-0.477:		3.11	41.17:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		3.38	3.89:	1.30	39.50-0.474:		2.97	41.11:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		3.52	3.96:	1.40	39.59-0.477:		3.07	41.20:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		3.50	3.94:	1.40	39.59-0.477:		3.07	41.20:	MOUTH OF UPPER TALARIK CREEK

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NODE NO.	STREAM NAME	NODE TYPE	STRM. DIST.	WATER TEMP. AVG. DAILY OBS. (C)	WATER TEMP. AVG. DAILY PRED. (C)	WATER TEMP. MAX. PRED. (C)	EQUILIBRIUM PARAMETERS AVG. DAILY TE (J/M2(J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K1 (J/M2/S/C)	EQUILIBRIUM PARAMETERS AVG. DAILY K2: S/C2)	EQUILIBRIUM PARAMETERS MAX. DAILY TE (J/M2: (C)	EQUILIBRIUM PARAMETERS MAX. DAILY K1: /S/C)	REMARKS
1	UPPER TALARIK	H	62.4:	2.75	2.75	4.37:	0.98	39.95	-0.481:	3.12	42.07:	HEADWATERS OF UPPER TALARIK CREEK
2	UPPER TALARIK	Q	60.0:		3.17	4.32:	1.60	40.54	-0.497:	3.71	42.70:	HYDROLOGY GAGE UT100E
3	UPPER TALARIK	C	59.7:		3.22	4.35:	1.21	40.27	-0.490:	3.42	42.49:	STREAM GEOMETRY NODE UTSG1
4	UPPER TALARIK	C	56.5:		3.33	4.32:	1.24	40.36	-0.491:	3.49	42.62:	STREAM GEOMETRY NODE UTSG2
5	UPPER TALARIK	C	55.4:		3.33	4.15:	1.19	40.33	-0.490:	3.43	42.58:	STREAM GEOMETRY NODE UTSG3
6	UPPER TALARIK	C	51.9:		3.33	3.97:	1.22	40.40	-0.491:	3.61	42.82:	STREAM GEOMETRY NODE UTSG4
7	UPPER TALARIK	Q	51.6:		3.33	4.05:	1.22	40.41	-0.491:	3.61	42.82:	HYDROLOGY GAGE UT100D
8	UPPER TALARIK	C	45.9:		3.08	3.61:	1.34	40.54	-0.491:	3.83	43.08:	STREAM GEOMETRY NODE UTSG5
9	UPPER TALARIK	B	45.0:		3.06	3.58:			:	3.83	43.08:	CONFLUENCE WITH TRIBUTARY UT 1.135
10	TRIBUTARY 135	H	46.4:	3.62	3.62	4.41:	0.97	40.20	-0.489:	3.22	42.43:	HYDROLOGY GAGE UT135A
11	TRIBUTARY 135	T	45.0:		3.40	4.17:			:	3.22	42.43:	CONFLUENCE WITH UPPER TALARIK CREEK
12	UPPER TALARIK	J	45.0:		3.08	3.61:	1.59	40.81	-0.496:	4.06	43.37:	CONFLUENCE WITH TRIBUTARY UT 1.135
13	UPPER TALARIK	Q	44.6:		3.07	3.61:	1.61	40.83	-0.496:	4.08	43.39:	HYDROLOGY GAGE UT100C2
14	UPPER TALARIK	C	38.4:		2.97	3.53:	1.87	41.12	-0.500:	4.37	43.75:	STREAM GEOMETRY NODE UTSG6
15	UPPER TALARIK	Q	37.6:		2.96	3.67:	1.87	41.12	-0.500:	4.36	43.75:	HYDROLOGY GAGE UT100C1
16	UPPER TALARIK	C	35.8:		3.43	4.10:	1.93	41.21	-0.506:	4.45	43.88:	STREAM GEOMETRY NODE UTSG7
17	UPPER TALARIK	C	32.9:		3.99	4.60:	2.29	41.59	-0.519:	4.77	44.27:	STREAM GEOMETRY NODE UTSG8
18	UPPER TALARIK	C	32.3:		4.09	4.73:	2.00	41.33	-0.514:	4.50	43.99:	STREAM GEOMETRY NODE UTSG9
19	UPPER TALARIK	Q	29.3:		4.50	5.05:	2.10	41.43	-0.520:	4.60	44.10:	HYDROLOGY GAGE UT100C
20	UPPER TALARIK	C	27.1:		4.50	5.02:	1.95	41.32	-0.517:	4.51	44.03:	STREAM GEOMETRY NODE UTSG10
21	UPPER TALARIK	C	25.0:		4.49	4.98:	1.87	41.25	-0.516:	4.41	43.92:	STREAM GEOMETRY NODE UTSG11
22	UPPER TALARIK	B	24.7:		4.49	4.96:			:	4.41	43.92:	CONFLUENCE WITH TRIBUTARY UT 1.119
23	TRIBUTARY 119	H	25.1:	4.04	4.04	5.56:	2.13	41.49	-0.516:	4.29	43.78:	HYDROLOGY GAGE UT119A
24	TRIBUTARY 119	T	24.7:		4.00	5.44:			:	4.29	43.78:	CONFLUENCE WITH UPPER TALARIK CREEK
25	UPPER TALARIK	J	24.7:		4.47	4.98:	2.64	42.04	-0.531:	5.14	44.80:	CONFLUENCE WITH TRIBUTARY UT 1.119
26	UPPER TALARIK	Q	24.5:		4.47	5.03:	2.66	42.06	-0.531:	5.14	44.81:	HYDROLOGY GAGE UT100B
27	UPPER TALARIK	C	20.8:		4.44	4.99:	2.78	42.22	-0.534:	5.27	45.00:	STREAM GEOMETRY NODE UTSG12
28	UPPER TALARIK	C	18.8:		4.43	5.00:	2.81	42.29	-0.534:	5.31	45.08:	STREAM GEOMETRY NODE UTSG13
29	UPPER TALARIK	C	14.6:		4.41	4.97:	2.93	42.49	-0.537:	5.39	45.25:	STREAM GEOMETRY NODE UTSG14
30	UPPER TALARIK	Q	14.4:		4.40	4.98:	2.94	42.49	-0.537:	5.40	45.25:	HYDROLOGY GAGE UT100APC1
31	UPPER TALARIK	Q	9.8:		4.41	4.96:	3.09	42.65	-0.540:	5.54	45.42:	HYDROLOGY GAGE UT100APC2
32	UPPER TALARIK	C	9.1:		4.41	4.96:	2.64	42.26	-0.530:	5.16	45.05:	STREAM GEOMETRY NODE UTSG15
33	UPPER TALARIK	Q	2.2:		4.39	4.88:	2.75	42.37	-0.533:	5.27	45.17:	HYDROLOGY GAGE UT100APC3
34	UPPER TALARIK	E	0.0:		4.38	4.87:	2.75	42.37	-0.533:	5.27	45.17:	MOUTH OF UPPER TALARIK CREEK

NORMAL COMPLETION OF 'TRNSPT'.

APPENDIX 15.1F

Fluvial Geomorphology Studies

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
DEM	digital elevation model
D_k	the particle size for which *k* percent is finer
EBD	environmental baseline document
FG site	Fluvial Geomorphology Study site
GIS	geographic information system
GPS	global positioning system
HDR	HDR Alaska, Inc.
HEC-RAS	Hydraulic Engineering Center River Analysis System
IFI	Inter-Fluve Inc.
IF Study	Instream Flow: Main Channel Habitat Study
NFK	North Fork Koktuli River
R2	R2 Resource Consultants, Inc.
SFK	South Fork Koktuli River
SG site	Spawning Gravel Study site
USGS	U.S. Geological Survey
UT	Upper Talarik Creek

FLUVIAL GEOMORPHOLOGY STUDIES

1. INTRODUCTION

Fluvial geomorphology is the study of river form and the physical and biological conditions and processes influencing channel morphology. Channel morphology can be characterized in terms of numerous parameters, including: measures of channel geometry (width, depth, and slope), cross-section shape, riverbed grain size distribution, planform shape, channel conveyance, sediment transport capacity, and measures of the ways in which each of these features may change. Fundamental conditions and processes influencing channel morphology, and the ways in which it may change, include: the underlying local and upstream geology, hydrology, hydraulics, sediment supply, sediment transport, and biophysical influences. In turn, these various characteristics of channel form and function influence the quantity and quality of aquatic and terrestrial habitat for plants and animals that depend on the river environment for all or part of their life history. For example, habitat availability at different stream flows will reflect channel size and form and their influences on hydraulic conditions, as represented in the Instream Flow: Main Channel Habitat Study (IF Study; Appendix 15.1E). Accordingly, this Fluvial Geomorphology Study (study) was conceived in large part to be linked with the IF Study results, to provide a means for linking predicted changes in hydrology and drainage area with changes in fish and aquatic habitat. This study is also intended to characterize general fluvial geomorphic conditions in the study area.

This appendix describes the current channel conditions and processes influencing channel morphology in the Pebble Project fluvial geomorphology study area, with a particular emphasis on the features that influence aquatic and riparian habitat quantity and quality.

2. STUDY OBJECTIVES

The goal of this study is to describe, as completely and concisely as possible, dominant fluvial geomorphic conditions and processes found in the study area. Channel morphologic variations are defined based on large-scale physical characteristics influencing channel form, and in terms of site-specific channel characteristics. Physical controls on local channel form and processes are also described. Emphasis is placed on describing channel characteristics that are most likely to be affected by changes in hydrology and sediment supply associated with the Pebble Project, and providing the underlying basis for subsequent assessments of potential effects to channels and aquatic habitat. This study is, thus, closely linked with the IF Study where habitat quantity is controlled in part by channel size and form.

3. STUDY AREA

The fluvial geomorphology study area is defined here as the region bounded and drained by the mainstem channels of three rivers: the North Fork Koktuli River (NFK), the South Fork Koktuli River (SFK), and Upper Talarik Creek (UT; Figure 1). This is the area within which the Pebble Deposit is located. The NFK and SFK merge to form the Koktuli River. Most fluvial geomorphology data have been collected in

the three main river channels, with limited data also collected in selected tributaries draining to each mainstem from primarily the bounded area, and in one site in the Koktuli River below the confluence of the two forks. More detailed information has been developed for channels within the Pebble Deposit area than in outlying areas.

4. PREVIOUS STUDIES

The fluvial geomorphology of the study area does not appear to have been previously studied. An assessment of streams draining into Bristol Bay presented only large scale geology maps (TNC, 2004). This study represents the first detailed assessment of channel form and process in the study area. In addition, information is compiled from studies of geomorphic processes that have been conducted in other Alaska and northern clime streams and, more generally, in gravel bed rivers. These studies have results that are generally applicable to describing geomorphic processes in the study area. Such studies are referred to, as necessary, in Section 7 below.

5. SCOPE OF WORK

A combination of field studies and comparative literature-based evaluation was used to characterize fluvial geomorphology in the study area. Fluvial geomorphology field surveys were conducted in 2005, 2007, and 2008. Field studies were conducted by HDR Alaska, Inc. (HDR) and Inter-Fluve Inc. (IFI) in 2005 and 2007, and by R2 Resource Consultants, Inc. (R2) with assistance from HDR in 2008. Pacific Hydrologic Inc. provided technical support and review capacity over the course of the study. Results presented in this document are based on the review of relevant studies and literature from other similar streams to generally evaluate key geomorphic processes, and from the analysis of data collected from 2004-2008 in the context of this information.

In the summer of 2005, IFI was contracted by HDR to initiate a pilot fluvial geomorphology study. Field work was conducted in the SFK and UT, and focused on describing channel geometry relationships and hydraulic modeling. The data were analyzed and evaluated to determine whether the general approach and data collected could be used to assess channel responses to changes in discharge, primarily in support of the IF Study. The results from the 2005 pilot study suggested more mobile riverbed conditions were present than expected based on published research. The analysis of the 2005 data also suggested that simple hydraulic approximations of stage-discharge relationships could not be applied to accurately model hydraulic conditions influencing channel stability and sediment transport. Therefore, additional field data were needed from more sites to better describe the relation between channel geometry and geomorphic processes.

Work was reinitiated in 2007 and expanded on the 2005 channel geometry and hydraulic modeling by including the addition of field data from the NFK and re-sampling of the 2005 fluvial geomorphology study sites (FG sites). The objective of the 2007 field work was to collect more information that could be used for better establishing relationships between stream channel geometry and stream hydrology in the study area. These relationships were intended to support the IF Study and to describe baseline conditions. The effort involved measuring and assessing channel geometry dimensions and identifying a characteristic discharge approximating bankfull flow conditions (Leopold and Maddock, 1953). The bankfull discharge is a representative flow parameter that has been related to hydrologic and hydraulic

conditions influencing channel form, primarily in alluvial channels, and may be used under certain circumstances to relate changes. The 2007 work also included collecting single gravel samples from FG sites to begin assessing fine sediment levels in the river bed substrates as part of a pilot study. Those data were inconclusive, leading to subsequent replicate sampling in spawning gravels (Section 6.4). In 2007, a radio rock study was also conducted to evaluate riverbed mobility in more detail. The particle mobility study focused on a single site in the NFK.

In 2008, single gravel samples were collected in additional FG sites to add to the pilot study data set, and in new sites containing spawning habitat. Replicate gravel samples were also collected in sites with spawning habitat to:

- Statistically assess pre- and post-spawning fine sediment levels.
- Address the question of how the particle size distribution in known salmon spawning locations is affected by fall high flow events and subsequent resorting of bed materials.

6. METHODS

The fluvial geomorphology study results are used to describe important channel processes and characteristics over a range of scales, from basin-wide variation down to site-specific features. There is, necessarily, some overlap in the presentation of methods in this section, where results from a specific study element can be applied at both basin-wide and site specific scales, particularly in the case of field sites. The primary sources of relevant information and data collected and assessed included:

- Published geologic and United States Geological Survey (USGS) topographic maps of the study area.
- Literature pertinent to important geomorphic processes occurring in the study area rivers, supplemented with field-based visual observations where appropriate.
- Geographic information system (GIS) analysis of a Digital Elevation Model (DEM).
- GIS analysis of georeferenced aerial photographs taken in 2004.
- Field data collected at forty-nine (49) mainstem river and three (3) tributary sites for detailed hydraulic modeling and channel size analysis, with sites located to describe basin-wide variation in site-specific geomorphic and hydraulic geometry characteristics.
- Hydrology data used to assess geomorphically effective flows at the field sites.
- Field data collected in selected tributaries to describe general aquatic habitat and channel size characteristics that are also relevant to describing general geomorphic conditions.
- A detailed field study of particle mobility in the NFK.
- A detailed field study of fine sediment levels in spawning gravel at three (3) sites in each mainstem river channel for a total of nine (9) sites.

Methods employed for each of these study elements are described in greater detail below. In general, basin-wide characterizations focus on upstream-downstream variation in characteristics across field sites, whereas site-specific characterizations focus primarily on site-scale conditions and processes.

6.1 REVIEW AND ANALYSIS OF EXISTING DATA SOURCES AND PUBLICATIONS

Available published information specific to the study area was limited and consisted primarily of geologic mapping. Geologic maps of surface units by Detterman and Reed (1973) provide information on the underlying geology and geologic history of the study area. These data were supplemented by more detailed mapping of the area surrounding the Pebble Deposit prepared by Hamilton (2007).

Geophysical and aquatic science literature databases were searched for published work relevant to fluvial geomorphic processes in similar river systems in the southwest region or State of Alaska, in northern climes, and in gravel bed rivers in general. Emphasis was placed on identifying peer-reviewed papers and summary treatises describing: 1) development of hydraulic geometry relations and 2) the inter-relationships between ice processes and beaver activity with channel form and function, and with fish habitat. Papers focusing on hydraulic geometry were compared against results derived from the field studies described below.

The following sources of information and data used in fluvial geomorphology analyses were developed specifically in support of the Pebble Project.

6.1.1 DIGITAL ELEVATION MODEL

A DEM was created for the Pebble Project by Eagle Mapping Inc. from 2004 orthophotos. The Pebble DEM was used to create longitudinal distance-elevation profiles of each mainstem river channel, determine sinuosity (ratio of channel length to valley length), and measure valley widths to support an assessment of channel confinement (valley width/channel width). The DEM was also used in conjunction with USGS topographic maps to derive drainage area for sites of interest.

6.1.2 AERIAL PHOTOGRAPH INTERPRETATION

Aerial photographs were used in conjunction with site photographs and the DEM to derive channel confinement (valley width/channel width) and sinuosity (river channel length/valley length) data for each mainstem FG site. The bankfull width estimates from the FG sites were used in calculating the confinement ratio, where valley width was set equal to visible floodplain extent using the aerial photographs and DEM contour lines as guides in GIS. The valley length evaluated for sinuosity was set to 500 meters up-valley and 500 meters down-valley of each FG site, and the corresponding length of river was calculated from perpendicularly clipped stream segments in GIS.

6.1.3 HYDROLOGIC DATA

Hydrologic data were evaluated for the study area in conjunction with channel geometry data (Section 6.2) to provide a framework for establishing quantitative linkages between project effects on stream flow, channel size, and fish habitat availability. In essence, if channel form reflects hydrology, changes in the stream flow regime will result in changes in channel hydraulic geometry parameters such as bankfull depth and width. These parameters, in turn, are related to fish habitat quantity. Functionally, channel bankfull geometry may be correlated with bankfull flow magnitude, which in turn may be correlated with hydrologic metrics. Because estimating bankfull flow magnitude involves extensive, site-specific data

collection, use of a more readily estimated surrogate hydrologic flow parameter would permit more extensive assessment of project hydrologic effects. The problem thus becomes identifying a suitable hydrologic flow parameter that is either indirectly correlated with bankfull channel geometry characteristics through a bankfull or channel forming discharge estimate, or is directly correlated thus obviating the need to accurately estimate bankfull flow itself.

Accordingly, Knight-Piesold, Ltd. used available gaging data to estimate the 5 percent and 1 percent exceedence flow levels and the 2-year and 10-year flood event peak flows for fluvial geomorphology sites where channel forming flow and bankfull width and depth estimates were developed. These combined flow magnitudes represent a range of sediment transporting flows that may influence channel morphology. Stream flow statistics were estimated for most sites by scaling values from the Pebble gaging station network. Flow statistics were not estimated for FG sites located in the lower reaches of UT below Gaging Station UT100B, because of the short periods of record at gaging stations located in the lower watershed.

The daily discharge exceedence analysis was based on station records encompassing the 4 water years from October 1, 2004, through September 30, 2008. The period of record of available data appears to be reasonable for estimating the higher frequency flow statistics. The record is, however, relatively short for other parameters. Therefore, the longest recurrence interval parameter evaluated, the 10-year flood flow estimate, has the greatest uncertainty of the hydrologic statistics evaluated. The records for some stations were extended by regression analysis to cover the complete 4-year period.

Flow duration curves were developed for each station and the 1 and 5 percent exceedence values were extracted. Peak flow estimates were derived from previous analyses for each gaging station using a combined local and regional approach, as described in Appendix 7.1C of the Environmental Baseline Document (EDB, December 2008). Local gage records were used to estimate the 2-year peak flow values at each station, and regional scaling factors were applied to derive peak flow magnitudes for longer return periods.

The peak flow analysis presented in the EBD found that peak flows along the mainstem channels generally scaled by the ratio of drainage areas raised to the power of 0.97, or close to 1. This means that flood intensity (peak discharge per unit area) is roughly proportional to drainage area in the study area. This result appears to reflect the relatively uniform snowmelt and frontal precipitation inputs that generate floods in this area, as well as the relatively long time for water to flow through the basin due to thick surficial materials, thick tundra vegetation, and abundant pond storage over much of the landscape. However, steeper upland tributary basins generated distinctly higher flood intensities that were scaled by the ratio of drainage areas raised to the power of 0.80. The higher unit discharge values and the different scaling behavior in the upland tributary basins appear to reflect shorter times of concentration associated with near-surface bedrock, thin vegetation, and lack of storage features.

Most of the FG sites are situated along mainstem channels between gaging stations. The estimated 1 and 5 percent exceedence values and the 2-year and 10-year peak flows were interpolated from gaging station values by prorating the drainage area. For FG sites on tributaries, the exceedence and peak flow estimates were scaled by prorated drainage area from the most representative gaged basin, including either gaged tributaries or incremental basins between two gaging stations. Peak flows were scaled by the ratio of drainage areas raised to the power of 0.8 or 1.0 for steep, upland tributaries or flat, lowland tributaries, respectively, as supported by the peak flow analysis in the EBD.

6.2 CHANNEL GEOMETRY AND HYDRAULIC MODELING

The three major rivers in the study area are primarily single-thread, alluvial gravel bed channels. The rivers, therefore, have distinct channel and floodplain profiles such that flows spill from the channel onto the floodplain at a defined 'bankfull' flow (Parker et al., 2007). There is evidence of underfit channels in the study area, reflecting valleys formed by meltwater runoff during glaciation (Hamilton, 2007).The existing mainstem channels, however, appear to have evolved since glaciation into an alluvial morphology that reflects the geologically recent, post-glacial flow regime. Given this, the bankfull flow in alluvial channels can be used as an approximation of a characteristic geomorphically effective, 'channel forming' flow. This flow represents an integration of the effects of the range of flows transporting sediments and influencing the channel boundary shape and dimensions. The channel-forming flow is lower in magnitude than occurs during extreme runoff events, but it occurs frequently enough that it tends to transport the greatest sediment volume over time (Leopold and Maddock, 1953; Wolman and Miller, 1960; Williams, 1978; Copeland et al., 2000). In practice, the channel-forming flow estimate is correlated with the shape and physical dimensions of the river channel.

General relationships may be established between measures of channel size and geomorphically effective discharge(s) that exhibit a degree of similarity across spatial scales (Leopold and Maddock, 1953; Castro and Jackson, 2001; Pitlick and Cress, 2002). Overall, such relationships can exhibit variability for a given channel dimension and flow rate, reflecting differences in bank strength, channel flow resistance, and gravel supply. General trends, however, appear to remain consistent across different channel types and regions (Parker et al., 2007; Wohl and David, 2008).

Hydraulic geometry relationships may be used to scale up and down across basin size and flow rates. This may provide a tool for assessing potential effects of changes in hydrology and sediment supply on future channel instream conditions. In turn, such predictions may be linked to changes in aquatic habitat quantity, a primary focus of the IF Study. Where possible, basin-specific relations are most appropriate for extrapolating from present to future conditions.

With this in mind, the study was designed to collect appropriate hydraulic geometry data from the three major rivers in the study area. Data included various measures of channel cross-section dimension, as determined by hydraulic modeling and characterization of riverbed surface grain size distribution via pebble counts.

6.2.1 FLUVIAL GEOMORPHOLOGY SITE SELECTION

Detailed data were collected at 52 FG sites: 49 on the mainstem rivers and three on tributaries (Figure 2). Of the 49 mainstem sites, 15 were on the North Fork Koktuli, 16 on the South Fork Koktuli, 1 on the Koktuli River below the confluence of the forks, and 17 were on UT. Two of the three tributary sites were in the SFK drainage and the third was in the NFK drainage.

The FG sites were selected to reflect basin-wide variation in channel (hydraulics), flow (hydrology), and sediment (geology and grain size) conditions in fish producing river segments. Site selection included consideration of sites used in the IF Study or that were associated with active flow gages. Sites were selected within single-thread riffle (or glide) channel segments, with the assumption made that split channel dimensions should reflect single channel dimensions. Channel segments with closed or aggraded

secondary channel inlets and dense floodplain vegetation were also considered acceptable, based on the observation that high hydraulic roughness created by riparian vegetation results in most bankfull flow being concentrated in the main channel.

Areas with strong localized beaver dam influences were avoided because of varied backwater and sediment trapping effects; however, many sections of the river support active beaver colonies and to some extent are affected by beaver activity. Channel segments with bedrock boundaries were also avoided because they were geologically controlled and have different magnitude channel geometry relationships from alluvial channels (e.g., Wohl and David, 2008). Such sites exist, but are generally uncommon within the study area.

Candidate sites were identified on maps and aerial photographs and then reviewed in the field during helicopter flyovers and/or by landing and walking the area. Once a site was considered suitable by IFI and HDR personnel, its location was marked by a waypoint on a handheld global positioning system (GPS) unit.

The specific site location was selected in the field by three IFI/HDR staff to generally include a single riffle serving as a "reference reach." In a few cases, other channel type units with approximately uniform flow conditions were chosen to be the reference reach where well-defined riffles did not exist, did not meet the site selection criteria for being single-threaded with alluvial banks, or were not considered suitable based on field evaluation of flow conditions. Transects were placed:

- Across the reference reach.
- At a downstream boundary cross-section that provided a degree of hydraulic control upstream; transects were typically placed at the crest of the first pool tailout or riffle downstream of the reference cross-section used to define channel forming flow.
- At intervening channel locations describing changes in channel width and depth for hydraulic modeling purposes.

There were a few exceptions in sites located within reaches lacking extensive, distinct pool-riffle sequences. For example, the upper SFK consisted mostly of pools separated by pool crests. In these situations, field personnel selected a pool crest in which the substrate and geometry were judged to best represent the rest of the reach for a pebble count. The site survey would generally extend a few channel units upstream and downstream, capturing all locations where stream-wise water surface slope changed. Sites that lacked any bedforms (FGSK11, FGSK12, and FGNK12 – Figure 2) had transects placed far enough apart for a normal depth approximation.

Table 1 lists the FG sites and associated physiographic characteristics. The majority of the FG sites lie in alluvial surface deposits (Detterman and Reed, 1973; Hamilton, 2007).

6.2.2 FIELD DATA COLLECTION

The FG sites were sampled by two, three-person field crews. Data collected at each FG site included:

- Survey information required for hydraulic modeling.
- Pebble count data.

- Site photographs.
- Visual-based Manning's n roughness coefficient estimates.
- Bank material composition.
- Field notes.
- Qualitative estimates of bank vegetation type and density.

Survey teams walked each site, flagging from five to 11 individual cross-sections for the creation of a hydraulic model. Cross-sections were located that reflected breaks in slope, changes in channel or floodplain roughness, and channel expansion or contraction. Each topographic survey included: reference reach cross-sections, a downstream hydraulic boundary, vegetative lines, tops of banks, longitudinal profiles, water surface profiles, and temporary benchmarks.

Survey data were collected using a Sokkia Total Station survey instrument recording X, Y, Z data sets, which provided each recorded point with a vertical and horizontal location (based on a relative datum). A Garmin GPS Map 76CSx, handheld GPS was used to document the locations of established temporary benchmarks, pebble counts, and bulk samples.

A site sketch was completed at each site showing the channel, location of the model cross-sections, location of the bank soil profile, and location of the pebble count. Detailed map books of the aerial photographs, created and provided by HDR, were used to mark the sites and illustrate the locations of the cross-sections.

Details on specific field measurement procedures are provided below.

6.2.2.1 TEMPORARY BENCHMARK ESTABLISHMENT AND GPS LOCATIONS

At least two temporary rebar benchmarks were established at each FG site in case supplemental survey work was required. Benchmarks were considered reliable only for the 2007 field season due to frost heave. Their locations were surveyed and entered into a handheld GPS unit to incorporate the location and relative survey data into ArcMap for analysis and presentation.

6.2.2.2 REFERENCE REACH CROSS-SECTIONS

Reference reach cross-sections were generally located at the upstream segment of each FG site over a riffle channel unit. The reference reach was identified by the team as representative of the general area. At a minimum, cross-sections at the upstream and downstream ends of the riffle were surveyed to represent the reference reach. Other channel units or cross-sections were included where the riffle was not well-defined and/or where the team determined that the units/sections were also suitable for calculating hydraulic geometry parameters.

6.2.2.3 DOWNSTREAM HYDRAULIC MODEL BOUNDARY CROSS-SECTION

A downstream hydraulic boundary condition cross-section was surveyed for the hydraulic model. The cross section was typically located at the crest of a pool tailout, or riffle crest where a normal depth approximation was assumed in the modeling. In some cases, additional cross sections were surveyed downstream of the hydraulic boundary cross-section when there appeared to be noticeable backwater

effects. Surveyed water surface profiles (hydraulic grade slopes) were compared with reach-average slopes obtained from the DEM. The DEM model slope was used for the downstream boundary condition instead of the field surveyed water surface slope in a few cases with noticeable backwater effects.

6.2.2.4 VEGETATION LINES

Vegetative indicators were surveyed to describe locations on the cross-section where changes in roughness occurred for input to the hydraulic model, and to assist in identifying the stage corresponding to bankfull flow as predicted by the hydraulic models. Vegetative indicators included the transition from channel to grass or willow, changes from grass to willow communities, and the presence of mature trees.

6.2.2.5 TOPS OF BANKS

The locations of the tops of streambanks were noted on the cross-section on each side of the channel, reflecting the approximate bankfull flow level and changes in hydraulic modeling roughness conditions.

6.2.2.6 LONGITUDINAL PROFILES

The longitudinal bed and water surface profiles were surveyed through all cross-sections. The profile survey continued downstream to include a downstream riffle. Bed profile data were surveyed along the thalweg (deepest part of the channel). The water surface profiles were used to estimate energy grade slope for the hydraulic model at the downstream boundary transect.

6.2.2.7 STAGE-DISCHARGE DATA

Instantaneous discharge measurements and water surface data were collected for a range of discharges at three FG sites located near active stream gages to develop stage-discharge rating curves for use in hydraulic model calibration.

6.2.2.8 PEBBLE COUNT

Wolman pebble counts were conducted across each reference reach (generally in a riffle) between the edges of right and left bank vegetation. Counts involved measuring the b-axis (intermediate diameter) of 100 randomly selected rocks across the bar or bed feature (Wolman, 1954; Kondolf, 1997). In some cases, more than one pebble count was conducted to assess grain size distributions at different locations near the FG site, such as point bars (gravel bars located at the inside of a meander bend generally adjacent to a pool), or at developing banks above point bars. The data were ranked and various percentile particle sizes computed including D_{50} and D_{84}, where D_k is the particle size for which *k* percent is finer (e.g., D_{50} is the rock size where 50 percent of the rocks are smaller).

6.2.3 REMOTE SENSING ANALYSIS

Stream centerline shape files were converted to points in ESRI's ArcView v9.2 and used to extract elevation values from the DEM in order to create a longitudinal profile of the NFK, SFK, the mainstem Koktuli River just below the confluence of NFK and SFK, UT, and the three tributaries where fluvial geomorphology study sites were located. The drainage area was defined for each field data site as the portion of the watershed contributing water to that location along the individual river network. HDR

calculated drainage area for sites sampled by HDR and IFI using ArcHydro, an ESRI ArcView extension, and the Pebble Project DEM.

6.2.4 HYDRAULIC MODELING

Hydraulic model development consisted of reducing the field data into a form that could be input into Hydraulic Engineering Center River Analysis System (HEC-RAS), a 1-dimensional hydraulic model. The model was calibrated at selected sites where sufficient suitable data existed and the results used to guide model parameter specification at the other sites. The models were run to predict stage and discharge, and the results interpreted to identify a 'channel forming' flow estimate. Details regarding each step in the analysis are provided below.

6.2.4.1 FIELD DATA REDUCTION

Cross-section **s**urvey data coordinates were converted to a common horizontal datum (North American Datum [NAD] 83 Alaska State Plane Zone 5), but kept to a local vertical datum specific to the site. Survey data were collected as three-dimensional (X,Y,Z) coordinates and converted into station elevation data characteristic of cross-section profiles running perpendicular to the stream. Since the raw survey data were not collected along a perfectly straight line extending perpendicular to the stream-wise direction, as required for hydraulic modeling, the horizontal (X,Y) coordinates were first adjusted to fit a straight line by projecting each point perpendicularly onto the line. Apparent errors in field data recording (e.g., rod height errors and incorrect stationing based on the proximity of survey points to each other) were corrected during this process. Locations were noted along each cross-section corresponding to toe and top of bank, approximate bankfull location based on field observations, thalweg, water's edge, and overbank. Thalweg and water surface elevation data and the intervening upstream-downstream distance between point locations were used to calculate bed and estimated energy grade slopes, respectively.

6.2.4.2 HEC-RAS MODEL DEVELOPMENT

A steady-flow HEC-RAS hydraulic model was created for each site. A geometry data file was created that included cross-section station-elevation coordinates, channel roughness, and bank stationing. The data file also included a definition of any ineffective or blocked flows determined in the field. A steady-flow data file was created that defined simulation discharges and downstream boundary conditions.

Cross-sections were labeled in increasing order from downstream to upstream, and were defined by station elevation pairs progressing from left to right across the channel as viewed looking downstream. Within each model, the top-of-bank stations, or the location on each bank defining the active channel width, were noted. These locations were chosen based on three indicators: an inflection point in the geometry of the channel, a vegetative line, or survey notes indicating top of bank. Generally, at least two of these indicators correlated well. For a few FG sites, the bank stationing locations were not clearly distinguishable. For these sites, the best indicator representing the active channel width was identified through consensus discussions of available visual evidence.

Channel and floodplain roughness were quantified as "Mannings n-coefficients", with horizontal variation across the channel described using a model option in HEC-RAS. Vegetative lines were delineated in the survey to define the location of changes in roughness coefficient value across the cross-section profile. The channel roughness coefficient was derived for the known stage and discharge given known cross-

section properties (also see section 6.2.4.4). Floodplain roughness was determined for general vegetation classes through professional judgment of three IFI hydraulic engineers, based on a combination of experience and methods described in Arcement and Schneider (1987) and Barnes (1967). Attachments 1 and 2 summarize the results for channel and floodplain, respectively. The attachments present results for selected sites that were relied on for estimates of Mannings n values that could be applied to other sites.

Ineffective flow boundaries were defined in the geometry file for selected cross-sections where portions of the profile did not appear to contribute significantly to conveyance around the bankfull flow level (e.g., in backwater areas with only one connection to the main channel). In locations where flow was confined by natural levees (elevated depositional features running parallel to the stream), the natural longitudinal embankments were modeled using the levee feature in HEC-RAS.

The HEC-RAS hydraulic model requires assignment of a downstream boundary condition for sub-critical flow modeling. The normal-depth approximation was applied as the boundary condition using either the field surveyed or DEM-derived estimate of the reach energy slope. Field surveyed slopes were either locally determined at well-defined downstream hydraulic control locations, or the average slope value for the site or between riffle crests. An initial independent review for the Pebble Project by N. Braithwaite (Pacific Hydrologic Inc.) indicated that the exact value of the slope did not substantially change upstream predictions of water surface elevation at the reference transect.

6.2.4.3 HEC-RAS MODEL FLOWS

The HEC-RAS backwater models were run for a range of discharges in order to develop an understanding between flow and other channel hydraulic characteristics including width, depth, and incipient motion criteria. The models were initially run using a wide range of flows and subsequently refined to reflect a narrow range of flows surrounding a channel forming flow estimated from the three active channel indicators described in Section 6.2.4.2. Reference reach hydraulic data from the backwater models were subsequently used for an incipient motion analysis to verify that the channel forming flows estimated from active channel indicators were adequate to exceed incipient motion criteria. The magnitude of the channel forming flow in gravel bed rivers is expected to be larger than the incipient motion flow magnitude, because sediment transport typically begins somewhere between 60 to 100 percent of the bankfull flow (Wolman and Miller, 1960; Schmidt and Potyondy, 2004).

6.2.4.4 HEC-RAS MODEL CALIBRATION AND SIMULATION

Manning's roughness coefficient, *n*, was calibrated to the narrower flow range about the initial estimate of the channel forming flow at three sites, using established stage discharge rating curves. The results of the calibration were used to adjust visual-based estimates of roughness coefficients at other sites. Roughness values were chosen for other sites based first on the calibrated roughness values. The values were compared with a range of values derived using several methods including comparison with empirical measurements (Barnes, 1967; Jarrett, 1984; Hicks and Mason, 1991) and following a roughness partitioning approach (Chow, 1959; Arcement and Schneider, 1987).

6.2.5 DEVELOPMENT OF HYDRAULIC GEOMETRY RELATIONSHIPS

Values of wetted width and hydraulic depth (area/width) were derived from the HEC-RAS modeling for the estimated channel forming flow. Channel width was calculated as the effective top width of the

reference reach during the nominal channel forming discharge. This corresponded roughly to the top width of flow confined between the top-of-bank stations within the active channel. A nominal channel width was determined as the average of all reported top widths at reference reach cross-sections through the range of channel forming discharges as a way to account for variability and uncertainty. Sections where ineffective flow areas were defined in the model were not included. Additional exceptions exist where bedforms were not clear and a well-formed riffle was absent. In these cases, all cross-sections through the site, with the exception of Section 1 which served as the downstream boundary, were averaged over the range of flows. The nominal wetted channel cross-sectional area was determined in the same way as nominal width. A nominal hydraulic depth was computed by dividing the nominal width value into the nominal cross-section area value.

The resulting channel forming flow, width, and depth estimates were converted to dimensionless form via (Parker et al., 2007):

$$\hat{B} = \frac{B_{bf}}{D_{50}} \quad [1]$$

$$\hat{H} = \frac{H_{bf}}{D_{50}} \quad [2]$$

$$\hat{Q} = \frac{Q_{bf}}{\sqrt{gD_{50}}\,D_{50}^{2}} \quad [3]$$

Where:

B_{bf} = bankfull width

D_{50} = particle size in the riverbed surface for which 50 percent of the material is finer

H_{bf} = bankfull hydraulic depth (area/width)

Q_{bf} = bankfull flow

g = acceleration due to gravity

The resulting dimensionless quantities were compared with published data from other gravel bed rivers, and regressed for various groupings of sites.

The dimensionless channel morphology parameters were plotted and regressed with channel slope against the dimensionless channel forming flow estimate. These values were also regressed with other dimensionless hydrologic flow parameters representing potentially geomorphically relevant flow levels. These included the estimated 5 percent and 1 percent exceedence flow levels (general range of onset of motion conditions in alluvial channels), and the 2-year and 10-year flood event peak flows (general range of geomorphically effective flows for a variety of channel types; Williams 1978). Two sites (FGSK124-1 and FGSK6) were excluded from further analysis after it was determined that the hydraulic model data were insufficient for estimating minimum channel forming discharge.

6.2.6 TRIBUTARY HABITAT DATA

Tributary habitat surveys conducted by HDR and, subsequently, R2, included data useful for describing broad spatial trends in selected characteristics of sediment supply to the three main study rivers, including general grain size and sediment transport potential. Field methods for collecting the habitat data are described in Chapter 15 of the EBD. Relevant data collected included: pebble counts, general substrate composition expressed as percent of streambed area, approximate bankfull width and depth in the vicinity of pebble counts, and local stream slope. The bankfull width, depth, slope, and grain size data were used to compute dimensionless bankfull width and depth using equations [1] and [2], and flow using equation [3], where flow rate was approximated using Mannings equation with an assumed bankfull Mannings n_{bf} =0.07 (SI Units):

$$Q_{bf} \approx B_{bf} D_{bf} \frac{1}{n_{bf}} D_{bf}^{2/3} \sqrt{S} \qquad [4]$$

Where:

D_{bf} = bankfull depth

S = Reach slope estimate

The results were compared with the quasi-universal hydraulic geometry data of Parker et al. (2007) to evaluate whether the field observations of bankfull were reasonable and could be used in future assessments of tributary sediment supply to the mainstem river channels.

As a screening level assessment, the pebble count D_{50}, and ocular estimates of percent sand and percent gravel, were plotted spatially in GIS to evaluate spatial patterns in potential fine and coarse sediment inputs to the mainstem channels within the area bounded by the three study rivers.

6.3 PARTICLE MOBILITY STUDY

During a flood, the water imparts shear stresses on the riverbed that at some threshold flow become sufficiently strong to begin moving the river bed material. This is termed the process of incipient motion. The absolute value of shear stress required to move a bed particle generally depends on the particle's size and how it is packed in the bed surface. This process of incipient motion is not strictly an 'all-or-none' threshold. In natural riverbeds, incipient motion can be assessed in terms of specific measures of the bed grain size distribution and an estimate of the shear stress acting on the bed. Typically, incipient motion is described using a dimensionless representation of shear stress, termed the critical dimensionless, or Shields (1936), shear stress t^*_{cr}:

$$\tau_{cr}^{*} = \frac{\tau_{cr}}{(\gamma_s - \gamma)D} \qquad [5]$$

Where:

t_{cr} = the critical shear stress on the bed

γ_s = the specific weight of the bed particles

γ = the specific weight of water

D = a characteristic particle size, usually expressed as the D_{50} value for the bed.

Conceptually, the Shields stress represents a balance between the mobilizing force (shear stress) and resistance to motion (particle weight). Given that incipient motion typically occurs somewhere between 60 to 100 percent of the bankfull flow (Schmidt and Potyondy, 2004), knowledge of the value of t^*_{cr} is useful for:

- Assessing the minimum possible channel forming flow magnitude estimates.
- Assessing channel stability and computing sediment transport rates in general when analyzing flow scenarios.

A pilot analysis of incipient motion conditions conducted in 2005 suggested general immobility of the bed during the initial estimated channel forming flow, based on an average published value of t^*_{cr} equal to 0.047 (Buffington and Montgomery, 1997). This result did not appear to be consistent with field observations of general bed mobility conditions, which suggested a lower value of t^*_{cr} might be possible. A particle mobility study using radio-tagged rocks was, therefore, conducted in 2007 to investigate this further at one site on the NFK.

6.3.1 STUDY SITE

The radio rock study was conducted at FG site FGNK2 (Figure 3). The site was selected because it was co-located with a USGS stream gage on the NFK, and had a relatively straight section of channel near the gage to simplify the hydraulic conditions as much as possible. The downstream portion of the site is in a bend of the river.

6.3.2 RADIO ROCK PREPARATION AND DEPLOYMENT

Nineteen radio-tagged rocks were deployed on September 15, 2007, and were spaced approximately 10 feet apart across the bed along two transects (Figure 3). The transects were located approximately 200 feet downstream of USGS gaging station 15302250. The rocks were selected to represent the D_{50} and D_{84} surface sediment size classes determined from a pebble count conducted across the reference riffle at FGNK2 during the July 2007 field work.

A Lotek Wireless radio telemetry system was employed to track the movement of selected rocks at the site. The system used coded motion sensor radio transmitters or radio tags (Model SR-M11-12) with a motion reset switch, a stationary receiver/datalogger (SRX600), and a five-element Yagi antenna (F150-5FB). The Lotek system uses a unique code to identify each radio tag. Because the radio tags were always in contact with the SRX600, and the SRX600 could only read one tag at a time, the 19 codes were spread out over five frequencies to ensure the receipt of each code (Table 2). The radio tags included a motion sensor reset switch to sense rock movement when the rock changed planes. Therefore, slight shifting in the same position would not activate the motion sensor; only the rolling of rocks would be recorded as movement. Once rock movement occurred, the radio tag transmitted an altered code value. The tag continued to transmit the altered code for 1 minute and then reset to the immobile code. The radio tags were programmed with the most sensitive activity criterion possible and with a 5.5-second burst rate.

The individual A-, B-, and C-axis dimensions of each rock were measured before drilling, and the weight and volume of each rock were measured before and after rock drilling and radio tag implanting (Table 2). Rocks were drilled using a 12.7-millimeter (mm) diameter, diamond core drill bit. The drilling depth was between 42 millimeters and 45millimeters. The transmitters or radio tags used in this study were 11millimeters in diameter and 41millimeters in length. Nine D_{50}-sized rocks and 10 D_{84}-sized rocks were successfully drilled and radio tagged. Radio tags were placed in the drilled holes and held in place with liquid epoxy glue. The radio tag antennas were 355millimeters long and were wrapped around the rocks and glued in place with more epoxy glue. The remaining void space left between the drilled hole and radio tag was left open to ensure no air was trapped within the rock. A rock of similar size was removed from the bed and the tagged rock was put in its place. The tagged rock was firmly pushed down into the adjacent substrate to approximate the condition of the untagged rock that was pulled out of the bed. The position of each rock was surveyed using a total station relative to the location of the hydraulic model transects.

The SRX600 was programmed to automatically scan through all five frequencies every 6 seconds for a total scan time of 30 seconds. During each scan period, the SRX600 logged each radio tag at least one time. The continuous record time out option was enabled, which compressed the data to a specified time interval. For this study, a 15-minute period was chosen to match the real-time discharge data from the USGS gage on site. The compressed data summarized the output from each unique code over the 15-minute interval. This provided the: code, time of the first reading, signal strength, number of events logged, and duration of the events.

A custom-built box was used to house the SRX600 and for mounting the antenna. The housing box was located 20 feet from the top of the right bank and slightly downstream of the initial rock placement. The SRX600 was set to pick up the highest number of radio tags with the least amount of noise. On-site evaluation of the radio tag reception and logging revealed that, at times, individual tag signals would overlap, logging noise instead of the radio tag codes. A 12-volt deep-cycle battery was connected to the SRX600 and placed with the SRX600 in the housing box. A solar panel provided a continuous charge to the battery. A second solar panel charged a bear exclusion fence surrounding the housing box and associated equipment.

6.3.3 DATA RECORDING AND ANALYSIS

The radio rocks were monitored from September 15 to 30, 2007, at which time the data were retrieved from the data logger. Preliminary, provisional 15-minute discharge data for this period were downloaded from the USGS web page in tabular format for the North Fork Koktuli USGS gage. Active and inactive codes were graphed for the same tag to evaluate data consistency. Discharge data were plotted alongside the instances of rock movement to provide a visual interpretation of the incipient motion of each particle. This information helped evaluate the initial rock movement for the incipient motion analysis.

To qualify as incipient motion, each radio rock had to:

- Move within the time frame of a flow event during the ascending limb of a peak flow event hydrograph (Wilcock and McArdell, 1997; Lisle et al., 2000; DeVries et al., 2001; Haschenburger and Wilcock, 2003; McNamara and Borden, 2004).

- Move at least once during subsequent events with flow levels as high or higher than the first flow at which the rock moved.
- Exhibit repeated motion.

Movements occurring before the first flow event were interpreted as the readjustment of the rock on the bed after initial placement. Rocks that moved a small number of times and/or in inconsistent manners compared with the periods of mobility suggested by the hydrograph were assumed to have been temporarily displaced through forcing—rather than the general shear stress associated with incipient motion conditions. This motion likely resulted from: impact by one or more smaller rocks, rolling and resettling to a more stable position, suspended debris catching the wrapped radio wire, or other extraneous influences. Additionally, mobility codes not preceded by consistent, immobile codes were disregarded. Without a signal from a given rock, mobile or immobile, it would be impossible to know if the rock began movement before the first mobile code.

Once a rock became immobile, the initiation of its next movement was counted as incipient motion subject to the conditions above. The date and time of incipient motion for each rock were matched with the lowest corresponding flow on the ascending limb of the hydrograph to identify an incipient motion discharge.

The position of the tagged rock on the transect was used to estimate the depth at the rock location at the incipient motion flow. The two cross-sections of radio-tagged D_{50} and D_{84} rocks were added into the existing hydraulic model and the predicted depth used to estimate local shear stress (τ_b), with depth substituted for hydraulic radius (R) in the uniform flow approximation:

$$\tau_b = \gamma RS \qquad [6]$$

The corresponding average critical Shields stress τ^*_{cr} was calculated as in equation [5] for each rock for the transect on which it was placed, based on the intermediate axis diameter where the specific weight of each rock was calculated by:

$$\gamma_S = \frac{w}{V}, \qquad [7]$$

Where:

w = weight

V = volume of the rock as measured before deployment

For rocks that did not move, the peak shear stress was calculated at the highest flow rate recorded during the radio rock study. The local shear stress at the rock location was estimated by first computing the average active bed shear stress in the HEC-RAS model, between the toe of the right bank and near the edge of the active gravel bar on the left bank. The estimated average bed shear stress was then multiplied by a ratio accounting for position along the cross-section profile, ignoring the additional effects of position along a bend on shear stress amplification (e.g., Chen and Cotton, 1988). The ratio was based on

the normal depth approximation of shear stress, and was equal to depth at the rock divided by the hydraulic depth. This yielded an approximation of the local shear stress at each radio rock's location.

Radio rocks were identified as having not moved, moved in a consistent manner with hydrograph timing and magnitude, or moved where movement may have been induced by a factor other than shear stress ('questionable'). The results were plotted in a histogram to assess the range of estimated Shields stresses over which movement did or did not occur.

6.4 FINE SEDIMENT LEVELS IN SPAWNING GRAVELS

The pilot study gravel samples collected in 2007 indicated the presence of relatively low levels of fines of the size influencing survival within the gravel (incubation stage). However, the sampling did not include replication. A more intensive study was, therefore, conducted by R2 in 2008 to assess statistically whether fine sediment levels within gravels used by salmon before spawning occurs were representative of conditions at the same location after streambed re-working through the combined effects of spawning fish, and high flows resulting from fall rains. Replicate spawning gravel samples were collected at sites on each of the three main river systems in the study area

6.4.1 SPAWNING GRAVEL STUDY SITES

Three Spawning Gravel Study (SG) sites were sampled on each of the mainstems of the SFK, NFK, and UT, for a total of nine sites (Figure 4). The sites were distributed upstream to downstream in known salmon spawning areas, where spawning activity was observed during sample collection. To the maximum extent possible, while still maintaining an even spacing along the river network, the SG sites were co-located with IF Study sites or with FG sites, as follows:

- The two lower sites on each of the SFK and NFK, and the upper site on the UT, were also IF Study sites.
- The upper sites on the NFK, SFK, and the middle site on the UT, were proximal to FG sites.

6.4.2 FIELD DATA

Fieldwork was conducted on two occasions to represent fine sediment levels: in spawning habitat before spawning-related disturbance of the bed, and following spawning and bed redistribution by high flows associated with fall rains. Because peak flows are generally associated with spring-runoff events, collecting samples during the first period provides a worst-case condition. The concentrations of fine sediments within the gravel matrix, in which fine sediments have infiltrated over a full annual cycle after spawning the previous year, would be the concentrations encountered by salmon as they commence spawning.

Samples collected post-spawning and post-fall rains were hypothesized to potentially contain different fine sediment concentrations than before spawning, because of both spawning activity and mobilization during high flows. In addition, flows resulting from the fall rains are generally of smaller magnitude than spring runoff, and were hypothesized to be more prone to fine sediment intrusion. Sampling gravel post-spawning and post fall-rains would reflect a set of conditions directly experienced by incubating eggs. Sediment levels within such samples would be more representative of conditions within the incubation

environment than the pre-spawning samples. Fine sediment concentrations within the spawning gravels could continue to increase throughout the incubation period, and would be expected to achieve sediment levels similar to those in adjoining, undisturbed areas. The sampling strategy selected was designed, in part, to determine how rapidly fine sediment levels in cleaned spawning gravels might return to background (mid-summer) levels.

6.4.2.1 SAMPLE SIZE

Six replicate gravel samples were collected from each SG site during the pre-spawning sampling. The number of replicates reflected a balance between precision and cost. A statistical power analysis conducted on the single sample/site pilot data collected in 2007 indicated that six replicates permitted evaluation of intra-site variability of fine sediment levels across the nine SG sites. Thus, a total of 54 samples (i.e., nine sites times six replicates) were collected to represent ambient conditions.

The number of post-spawning samples was minimized in consideration of possible impacts to developing embryos. The power analysis indicated that single post-spawning samples collected from each of the nine SG sites would be sufficient to identify temporal changes in spawning gravel conditions across the entire study area, assuming all sites exhibited similar variation. A contingency was developed in which if results of the pre-spawning sampling indicated significant differences existed in sediment levels between rivers, then the number of post-spawning samples could be increased up to a maximum of three replicates per site (27 samples total) if all rivers had significantly different levels of pre-spawning sediment. In the field, it was determined that the sampling could be conducted in a way to minimize impact to embryos (see next section) such that it was possible to collect up to three replicate samples per site.

6.4.2.2 SEDIMENT SAMPLING

Bulk gravel samples were collected using a plastic 30-gallon drum with both ends cut off, with sample weights of approximately 23 to 34 kilograms (50 to 75 pounds) for each replicate. This sample weight generally provides an unbiased measure of percent fines for a single sample (Church et al., 1987; Bunte and Abt, 2001). The drum was worked into the bed by rotating and pushing it simultaneously until water flow inside was negligible. Continuous pressure was kept on the edges of the drum as the substrate was excavated by hand and transferred to a sample bag provided by Alaska Test Labs. The bag was sufficiently porous to allow water exfiltration with minimal loss of a small amount of ultrafine sediment.

Sample collection was consistent with the pilot study, where the surface and subsurface layers were collected and stored separately. The main difference with the pilot study was that the sieving results from the two spawning gravel sample layers were combined to meet a 5 percent unbiased sample weight criterion (Church et al., 1987). The surface armor layer was collected first and placed in a labeled sample bag and sealed. The exposed sub-surface layer was then excavated and placed in a separate labeled sample bag and sealed. The sub-surface layer sample typically included fines material that settled downwards from the surface layer during sample collection.

Post-spawning sampling involved collecting samples from redd tailspills. Excavation of the subsurface sample continued until either: 1) a depth of approximately 15 cm was reached, which corresponds roughly to the top of salmon egg pockets (DeVries, 1997), or 2) more than two to three embryos were encountered. In both cases, the collected sample weight for the combined surface and subsurface layers

was sufficient for an unbiased estimate of percent fines following the 5 percent criterion of Church et al. (1987).

A pebble count was conducted at each site according to the methodology outlined by Wolman (1954). Pebble counts were performed to provide 1) a quality assurance/quality control (QA/QC) comparison with bulk sample results and 2) a more cost-effective and accurate characterization of streambed surface particle size distribution than bulk samples in coarser substrates.

For one sample at each FG and SG site, water inside the bulk sample collector was decanted after the subsurface layer sample was collected and a 1-liter sub-sample was drawn and poured into an Imhoff cone. The water-sediment suspension was allowed to settle for 30 minutes and the level of the deposited sediments recorded. The result served as an index of sediment concentration of finer suspended grain sizes, because the bulk sampler method does not allow an accurate characterization of ultrafine suspended sediment concentrations.

6.4.2.3 SIEVING AND DATA ANALYSIS

Sieving of the bulk samples was performed by Alaska Test Labs. Sieving methods were based on standards developed by the American Association of State Highway and Transportation Officials (AASHTO), and included:

- AASHTO T 255/T265 Moisture Content of Aggregate and Soils
- AASHTO T 248 Reducing Samples of Aggregate to Test Size
- AASHTO T 27/T11 Sieve Analysis of Aggregates and Soils

Sieve sizes used are listed in Table 3.

Cumulative grain size distributions (percent finer versus grain size) were computed for use in the present and in future geomorphology analyses. Distributions were computed for the: bulk sample surface layer, bulk sample subsurface layer, total bulk sample for both layers combined, and pebble count. For the SG study, the total bulk sample distribution was evaluated. The following metrics were calculated that are relevant to assessing the influence of fine sediments (cf. Lotspeich and Everest, 1981; Platts et al., 1979; Shirazi et al., 1981):

- Percent of total weight for sizes less than 0.84 and 6.4 millimeters
- Sorting coefficient $S_0 = \sqrt{D_{75}/D_{25}}$ [8]
- Geometric mean diameter $D_g = d_1^{p_1} * d_2^{p_2} * ... * d_n^{p_n}$ [9]
- Fredle index = D_g / S_0 [10]

Where:

d^{Y}_{X} = Average grain size of class X, raised to the power Y where Y is the proportion by weight of the total mix represented by class X.

These metrics were compared with published research related to spawning gravel quality and survival-to-emergence results (Kondolf, 2000; Chapman and McLeod, 1987; Shirazi et al., 1981; Lotspeich and Everest, 1981; Reiser and White, 1988). The 0.84- and 6.4-millimeter criteria are generally associated with effects to incubation and emergence, respectively, where high levels of fines equate to low survival for each phase of the intragravel life stage. Substrates with higher geometric mean diameter and Fredle index values are generally associated with higher survival-to-emergence overall. Evaluating these various metrics provides a screening level indication of the quality of spawning gravels within the three major study area rivers, and an associated estimate of the range of expected survival-to-emergence within the rivers.

The amount of fines in spawning gravel samples collected before spawning was compared with those collected post-spawning and post-fall rains using a paired t-test. Results of these comparisons were used to assess temporal changes in gravel quality, as influenced by spawning activities and high flows associated with fall-rains.

6.4.2.4 SPECIFIC GRAVITY AND GRAVEL SOURCE LITHOLOGY

The specific gravity of gravel sub-samples from each SG site and selected FG sites were measured. This was done to assess if upstream-downstream differences existed that might reflect spatial variation in source lithology and sediment transport potential. Alaska Test Labs soaked samples in water for 24 hours, weighed the rocks in water, dried the rocks, weighed them again, and then calculated specific gravity and absorption values. The sub-samples were of stones retained by the 2-inch, 1.5-inch, 1-inch, and ¾-inch sieve sizes combined from surface and sub-surface samples from the following sites (Figures 2 and 4):

- SFK: SGSK1, SGSK2, SGSK3, FGSK12, and FGSK15
- NFK: SGNK1, SGNK3, and FGNK13
- UT: SGUT1, SGUT3, and FGUT10

The intent of this study element was to assess large scale trends across the study area. More samples were collected from the SFK because of the lower gradient and associated greater potential for spatial variation in response to tributary inputs compared with the other two streams.

7. RESULTS AND DISCUSSION

Fluvial geomorphic processes and conditions are manifest over a range of scales. This section begins with an overview of important geomorphic processes at the study area and basin scales (Section 1.1.7.1). Conditions and processes occurring at the river reach and site scales that are important to local channel morphology and fish habitat are investigated via a series of field-based studies focusing on channel geometry and hydraulic modeling (Section 7.2), particle mobility (Section 7.3), and fine sediment in spawning gravel (Section 7.4).

7.1 GEOMORPHIC VARIATION WITHIN AND BETWEEN MAINSTEM RIVERS

The results of the analyses and literature review indicate five ways in which fluvial geomorphic processes are manifest in each of the three primary river basins in the study area:

- **Physiographic and Planform Features.** There are geologic and morphologic differences at the segment scale between and across basins evident in plots of longitudinal profiles of elevation, geologic units, channel slope, valley confinement, and sinuosity. These differences influence physiographic and planform features, including channel migration patterns and processes.
- **Reach Scale hydraulic Geometry and Sediment Characteristics.** There are patterns in upstream-downstream variation in site-scale hydraulic geometry and sediment characteristics, evident in plots of bankfull dimensions and substrate characteristics.
- **Ice Processes.** There are upstream-downstream differences in ice-forming processes that reflect some of the physiographic features listed above and that, in turn, influence fish habitat quantity and quality during the critical winter survival period.
- **Beaver Activity.** Beaver activity in the mainstem and side channels reflects upstream-downstream location in the channel network, as determined primarily by channel size. This may influence the distribution of fish habitat quantity and quality during both the critical winter survival and spring and summer growth periods.
- **Sediment Sources.** Mainstem sediment sources include both tributaries and variously distributed eroding terraces, but the relative importance and input rates are unquantified. Fine sediment and gravel quantities in the three rivers appear to reflect tributary contributions to some extent.

These five processes are presented and discussed below.

7.1.1 PHYSIOGRAPHIC AND PLANFORM FEATURES

The NFK and SFK flow through glacial-origin valley bottoms with probable Holocene era alluvial sediment deposits, and their channels appear to be small (i.e., underfit) relative to the multiple stream terraces documented by geologic mapping (Detterman and Reed, 1973; Hamilton, 2007). Large amounts of sediment were flushed rapidly down the valleys during periods of deglaciation after the Kvichak and Liamna Stades of the Brooks Lake Glaciation, forming broad floodplains that the rivers subsequently cut through as the sediment load decreased. Like other streams entering Iliamna Lake, the UT is steeper and more deeply entrenched than the NFK and SFK and, thus, has a greater erosional tendency (Detterman and Reed, 1973; Hamilton, 2007). The lower elevation portions of each mainstem river generally flow through alluvial surface deposits.

Slopes in all three rivers are generally characteristic of pool-riffle and plane bed channels in gravel bed rivers (Montgomery and Buffington, 1997). Channel slopes are gentlest in the SFK and steepest in the UT (Figure 5). Channel slopes in the SFK range from 0.03 to 0.60 percent and average 0.22 percent in the FG sites. The portion of the mainstem SFK that flows through lacustrine surficial deposits has a relatively low gradient compared to the rest of the mainstem (Figure 6), with channel slopes on the order of 0.03 to

0.07 percent. This segment would be expected to have the greatest tendency towards sediment deposition and storage, which may limit gravel supply to downstream segments.

Channel slopes in the FG sites ranged from 0.09 to 0.84 percent and averaged 0.35 percent over the length of the NFK (Figure 7). There is a lower gradient segment (0.08 percent) downstream from Big Wiggly Lake (River Kilometer 85 to 89) that flows across mixed glacial outwash, drift, and lacustrine deposits upstream of a glacial moraine (Figure 7). This area represents an important geomorphic gradient break, where substrates are substantially finer than upstream and downstream. Within the silt ice rich surface geology mapping unit, the majority of the riverbed is composed of fine sand and silt, with intermittent fine gravel waves (D_{50} approximately 13 millimeters) present. All coarser material transported from upstream appears to deposit near the junction between the silt ice rich and upstream glacial outwash mapping units.

Channel slopes are steepest in the UT, ranging from 0.10 to 2.0 percent and averaging 0.45 percent in the FG sites (Figure 8). This reflects a greater net elevation change and the presence of bedrock controls and coarse riverbed material. Like the NFK and SFK, the headwaters of the UT flow across glacial lake deposits.

Channel forming flow estimates and channel slope data for the FG sites (see Section 7.1.2) were compared with slope: discharge relationships derived from rivers around the world (Leopold et al. 1995). Results suggests that the downstream portions of the NFK and UT tend towards a braided planform (Figure 9; downstream sites are associated with larger bankfull flows). Much of the SFK, and the headwater areas of the other two study rivers, appears to tend towards a meandering planform. There are departures towards a straight channel near the transition line of Figure 9. Whether a given segment possesses a meandering or braided versus a straight planform appears to reflect the relative extent of channel confinement by valley walls or relict upland terraces from glaciation. The degree of entrenchment is also a possible factor.

The sinuosity and confinement data indicate that the study rivers are generally straighter and less sinuous where the confinement is smaller because of valley width constraints (Figures 6, 7, and 8). The rivers meander more where floodplain width is substantially greater than the channel width. The UT generally tends towards straight channels, except where the valley width is greater and multiple channels can be found in these locations.

7.1.2 REACH SCALE HYDRAULIC GEOMETRY AND SEDIMENT CHARACTERISTICS

Longitudinal profiles of channel geometry (bankfull width and depth) and grain size distribution (D_{50}) parameters indicate broad scale sections of river exist where D_{50}, D_{84}, and bankfull width and depths tend to be similar (Figures 10, 11, and 12). Channel width to depth ratios tend to be larger in magnitude in downstream alluvial areas, and smaller in headwater areas with glacial lake and outwash influences, although the approximate change point in the figures does not appear to be completely linked to geology. It remains to be confirmed through ice modeling, but a current hypothesis is that the breakpoints may be related to differences in ice-forming processes, with complete freezing upstream and ice cover formation downstream of the general break point location (Best et al., 2005; see Section 7.1.3).

Dimensionless widths and depths are generally smaller in magnitude in the respective lower gradient sections of the NFK and SFK, although the magnitude is several times larger in the SFK than in the NFK (Figures 10 and 11, respectively). Upstream-downstream differences in channel geometry and grain size are more uniform in the UT, which also contains coarser substrates than the other two study rivers (Figure 12).

7.1.3 ICE PROCESSES

Much of the length of each study river freezes every year during the winter. The physical patterns and locations of freezing influence suitability of over-wintering habitat for fish to varying extents throughout the channel network. Ice-free segments have been documented in all rivers, particularly where pronounced groundwater inflows exist (HDR, unpublished data), and likely represent important refugia for overwintering fish.

There are currently insufficient data to quantitatively describe upstream-downstream variation in ice forming processes in the study area with confidence. Therefore, this section describes ice-forming processes and linkages with fluvial geomorphology in the study area in a qualitative context, relying primarily on general knowledge in the scientific and engineering literature, but with site-specific, opportunistic observations included where possible.

7.1.3.1 VARIATION IN ICE PROCESSES ACROSS SPATIAL SCALES

At the basin scale, there is likely to be a general location in each of the three major river channels upstream of which the entire water column becomes frozen, and downstream of which a floating ice cover forms and is maintained until spring melt. The location will reflect a balance between channel depth and potential ice thickness that reflects air temperature and the number of degree days below freezing (USACE, 1981; Prowse, 2003a; Ettema and Daly, 2004; Best et al., 2005). Thus, the location will essentially reflect channel size, elevation, flow, and local climate. Within the upstream reach, there may be a sub-reach transition location where upstream the entire channel becomes frozen, and downstream pools may have a thick ice cover while riffles and runs freeze completely.

Within the larger scale downstream reach where an ice cover predominates, the thickness of the cover relative to flow depth will generally decrease in the downstream direction (Ettema, 2002). Therefore, the influence of ice breakup and ice jams on the channel bed and banks may be expected to vary from upstream to downstream. Steeper, turbulent riffle locations in the upstream sub-reach may experience development of frazil and anchor ice sooner and more extensively in the winter than downstream riffles (Shen, 2003), and frazil ice transport may have greater influence on freezing processes and fish habitat availability in pools upstream compared with downstream (Prowse, 2003b).

While channel geometry at the reach scale has been determined to influence ice formation and breakup processes, it is unclear at present the extent to which channel geometry properties, in turn, may be affected by ice processes (Ettema, 2002; Prowse, 2003a; Ettema and Daly, 2004; McNamara and Kane, 2009). At the broadest scale, there may be a discontinuity in plots of hydraulic geometry parameters against measures of channel size corresponding to the transition location from complete freezing of the water column to establishment of an ice cover (Best et al., 2005). There is no general agreement to date, however, on whether the processes whereby ice contributions to bank erosion may lead to a general channel widening tendency compared with open water channels (Ettema, 2002; Prowse, 2003a; Ettema

and Daly, 2004). There are various processes acting in opposition, the interaction and net effect of which on reach scale channel form are not well understood.

For example, willows and other vegetation appear to recolonize exposed surfaces quickly in the study area. Therefore, any widening that does occur locally may be balanced by deposition and vegetation establishment on the opposite bank, and the channel may adjust back to its more or less open water condition (Ettema, 2002; Prowse, 2003b). Actively eroding banks are frequently found on the outside of meander scrolls associated with willow thickets growing on point bars. Willows that become established on gravel bars form distinct succession lines along the stream margin (Photo 1) and trap sediments that continue to build the bar (Photo 2).

In some cases, ice jams that form at meander bends may cause erosion along the inside of the bend by the rerouted water (Smith and Pearce, 2002; Prowse, 2003a). Conversely, overbank flow associated with ice jam formation may favor channel narrowing because of reduced sediment transport capacity (Ettema, 2002). Available evidence to date does not indicate a strong effect of ice on channel geometry that results in substantially different relations from alluvial channels in general (Ettema, 2002). Instead, the rate and style of channel migration may be influenced by ice formation and breakup more than the size of the channel at the reach scale is. Boucher et al. (2009) recently suggested that the frequency of ice jam formation may be an important control on whether or not an influence of ice on hydraulic geometry is apparent in smaller watersheds, but it remains to be seen the extent to which this may apply to the study area rivers.

At the site scale, ice formation and breakup may influence local channel depth, bank stability, riparian vegetation, and channel migration mechanism. Ice jam development and induced bank scour appear to be localized conditions that vary in intensity and location across years in the study area. Bank ice formation can lead to local bank collapse, and ice jam formation may result in local bank and bed erosion. However, banks in the study rivers also freeze, which together with woody riparian vegetation such as willows may provide resistance and stability countering more widespread erosion. In addition, scour holes that form under ice jams tend to fill after breakup, such that the geomorphic signature and influence of the jam may not be obvious (Ettema, 2002; Prowse, 2003a, b).

Ice jams that form in channel segments with tight meander loops and split channels can be prone to building up, such that the river avulses and creates a new channel around the jam location. In segments with a broader meander, ice jams may lead to deposition along the banks and formation of elevated and over-steepened banks (Ettema, 2002; Prowse, 2003a, b). These processes appear to occur in various segments of the three study rivers based on visual observation.

Miscellaneous effects of ice formation and breakup on bedload transport include the entrainment of cobble and gravel by anchor ice sheets, and the entrainment of larger cobble and boulders through the formation of ice skirts or shells that effectively increase fluid drag forces (Oatley, 2002; Prowse and Culp, 2003). Cobble and gravel entrained by anchor ice has been observed in the study area to have been deposited on the floodplain surface, likely in response to ice jam formation. This deposition can lead to development of a stable floodplain surface (Prowse and Culp, 2003). Ice skirts and shells could be a primary mode of mobilization of larger lag deposits from the Brooks Lake Glaciation (Hamilton, 2007). These deposits appear to be distributed particularly in the lower segments of all three rivers (extending roughly downstream of sites FGNK7, FGSK7, and FGUT5), and downstream of larger landslide deposits.

These effects are probably minor in the study area from a larger scale geomorphic perspective but, nonetheless, contribute to overall mobility of the river bed.

7.1.3.2 INFLUENCES OF ICE PROCESSES ON FISH AND RIPARIAN HABITATS

Stream-wise and channel size-dependent differences in freezing and breakup processes have varying implications on channel morphology and survival of different life stages of salmonids. In general, complete freezing of the water column reduces habitat space. Unless groundwater influence is sufficient, both juvenile and intra-gravel incubation life stages of salmonids can experience substantial mortality. Thus over-winter survival in upstream spawning reaches that freeze down to the bed in the three study rivers may strongly depend on groundwater input to the channel. Anchor ice that forms from penetrating frazil ice can extend downward into spawning substrates. Juveniles are known to seek shelter within the riverbed substrate or in pools and, like developing embryos, may be vulnerable to freezing in such reaches (Prowse, 2003a, 2003b; Prowse and Culp, 2003).

In intermediate channel reaches where the water column is frozen, except in pools, the amount of frazil ice entering the pool may limit suitable over-wintering habitat space that fish key in on to minimize energy expenditure. In larger channel reaches, development of frazil ice can lead to avoidance behavior by some species such as Arctic grayling that may migrate downstream to more favorable habitat (Prowse, 2003b).

Prowse (2003b) noted that the upper limit to ice action can determine the lower limit of tree growth along river banks. However, willows can re-establish rapidly from residual roots in the banks, thus revegetation bank sections denuded by ice scour.

7.1.4 BEAVER ACTIVITY

7.1.4.1 VARIATION IN BEAVER DAM LOCATION ACROSS SPATIAL SCALES

Beaver can have a significant influence on channel morphology and hydraulics. Beaver dams are typically built across streams in places where the depth is less than about 0.6 meters, and generally not found where depth exceeds about 1 meter (Collen and Gibson, 2001). This is generally consistent with available habitat data collected in the study area, where beaver are ubiquitous throughout the river systems, and appear to have a profound effect on flow and habitat conditions. Analysis of aerial photos indicates that beaver may build dams spanning the main channel in the headwaters of all three river systems.

Similar to ice forming processes, there appears to be a transition location in each of the three study rivers, downstream of which the channel is too big and hydraulic and/or ice forces are too strong for beaver to successfully maintain dams. Identifying the downstream-most location of beaver dams that span the main channel indicates that this transition location occurs at a drainage area of approximately 10, 18, and 11 square miles in the NFK, SFK, and UT, respectively. The location of the downstream limit to main channel dams appears to be roughly associated with the downstream extent of lower gradient segments flowing through glacial lake deposit mapping units in the NFK and UT, and near the junction between glacial lake deposit and alluvium with sand content mapping units in the SFK (Figures 6, 7, and 8; Hamilton, 2007). The larger drainage area in the SFK may reflect hydrology differences and flood attenuation effects of Frying Pan Lake. Downstream of the transition point, the geomorphic influence of

beaver shifts primarily to off-channel habitats, where they dam abandoned channels and create off-channel ponds.

Relationships between beaver activity and fluvial geomorphic processes are not documented quantitatively for the study area, but beaver can be important influences on fish production when geomorphic and riparian conditions support them. Beaver require access to water with sufficient depth to allow construction of a winter food cache and to ensure the entrance to their burrow or lodge remains submerged. In addition, their range and distribution are controlled by the availability of woody plants to use in dam construction and for food, particularly willows, birch, and poplar/cottonwood. Where alder prevails, they use it primarily for dam building rather than food. They can build dams in a variety of streams from flat to steep gradient, and tend to use up local woody plant resources and then move on. Dam construction can influence stream channel morphology through local deposition of fines and trapping of gravel, and the death of submerged riparian vegetation and re-establishment of new vegetation at the margins of the impoundment. Flood hydrographs may be attenuated with enough cross-stream dams, although flooding may become more severe downstream temporarily during a dam burst (Murphy et al., 1989; Collen and Gibson, 2001). There may also be subsequent increases in sediment transport and channel erosion through dam bursts.

7.1.4.2 INFLUENCES OF BEAVER ACTIVITY ON FISH AND RIPARIAN HABITATS

Beaver ponds in the study area can provide important overwintering habitat for juvenile salmon and, in smaller stream channels, may provide the majority of unfrozen habitat (Murphy et al., 1989; Collen and Gibson, 2001). In addition, beaver ponds may be associated with increased growth rates of juvenile salmon compared with main channel fish, and support more fish per unit area. In some cases, beaver dams may impede or delay upstream passage of early fall spawning salmon to spawning grounds. However, species that migrate upstream during higher flows are often able to negotiate beaver dams. Juveniles are sometimes able to swim through leaks in the dams.

Beaver dams constructed across spawning grounds can remove those grounds from production through subsequent siltation of spawning gravels in lower gradient streams. At the same time, beaver dams may in some cases enhance spawning habitat by trapping fine sediments and reducing infiltration in redds some distance downstream. In streams with higher gradients (up to about 15 percent), beaver dams may contribute to spawning habitat formation by providing increased depositional opportunities in reaches with otherwise high sediment transport potential that tend to rapidly route gravel downstream, (Olson and Hubert, 1994; Collen and Gibson, 2001).

7.1.5 SEDIMENT SOURCES

The overall topography of the study area is relatively gentle. Sediment appears to be delivered to mainstem river channels from tributary streams, as well as from the erosion of alluvial banks and high streamside terraces adjacent to mainstem channels. Sediment sources and input volumes influence both sediment transport rates and aquatic habitats, particularly spawning areas. The major sediment sources identified within the study area are described below.

7.1.5.1 TRIBUTARY SEDIMENT SOURCE CHARACTERISTICS

Tributaries deliver fine and coarse sediments to the mainstem rivers. Transport capacity and the way in which the tributary drainage network is connected to the mainstem can influence channel morphology and habitat quality downstream. The location, size, and physical characteristics of each tributary determine its relative importance to mainstem fluvial geomorphic processes and conditions. This study relied on data collected primarily from tributaries draining the area in the vicinity of the Pebble Deposit in support of fish habitat assessments. Tributary sediment transport characteristics are also discussed further in Section 7.2 in relation to channel geometry.

Pebble counts and ocular surveys of bed composition suggest that tributary sediment inputs to the mainstem rivers vary across the study area, but may influence fine sediment concentrations and spawning gravel availability in the mainstem channels. Pebble counts of in-channel deposits indicate relatively smaller substrates in many UT tributaries and larger substrates in NFK tributaries, as represented by the bed material D_{50} (Figure 13). In the SFK drainage, pebble counts indicate smaller substrates in tributaries above Frying Pan Lake. Substrates in Tributary 1.190, downstream of Frying Pan Lake, are generally larger which may reflect the size of the stream. Several surveyed tributaries in the UT drainage appear to have relatively high sand and silt contents, whereas surveyed tributaries in the NFK drainage generally appear to have low sand and silt contents (Figure 14). All tributaries contain and likely convey gravel of a size suitable for spawning to varying extents (Figure 15), but the rates of supply to mainstem channels are unquantified. Notably, tributaries north of Frying Pan Lake contain relatively large quantities of gravel that are intercepted by the lake (Figure 15). In general, tributaries with steeper gradient or higher flows would be expected to export more sediment than smaller, lower gradient tributaries

7.1.5.2 MASS-WASTING AND BANK EROSION

In addition to tributaries, other potentially notable point sources of gravel and fine sediments include sections of the mainstem cutting into glacial outwash terraces. The outwash terraces consist of older surficial deposits and are higher in elevation than the geologically younger alluvial river banks. Vegetative cover on the terraces is generally thinner and consists primarily of tundra scrub vegetation. The rooting depth is shallow relative to the height of the terraces, providing relatively poor bank protection as compared to the more deeply-rooted shrubs common on lower alluvial banks. As a result, when river channels are located adjacent to high terraces, they rapidly undercut the toe slopes. This results in oversteepened side slopes with greater bank exposure than alluvial banks. Such areas tend to be prone to ravel and small landslides, as well as to contribute gravel and fine sediment directly to the channel where they occur (Photo 3). The total amount of sediment contributed by the exposed surfaces is unknown and has not been quantified for relative importance via a sediment budget.

Geologic mapping efforts also identified several deep-seated landslide deposits along the east side of the UT on the southeast side of Groundhog Mountain (Hamilton, 2007). These deposits may represent important local sources of sediment consisting of angular cobble and gravel within a matrix of finer sediment.

7.2 CHANNEL GEOMETRY AND HYDRAULIC MODELING

Initial or nominal estimates of channel forming discharge, width, and hydraulic (mean) depth are listed in Table 4 for the FG sites, as derived using the HEC-RAS models. Estimates of channel-forming discharge

were based, in part, on the requirement that they (at a minimum) equaled or exceeded flows approximating the condition of incipient motion of the D_{84} particle size. These estimates likely define a lower bound, because the condition of incipient motion in gravel bed streams occurs somewhere between 60 to 100 percent of the bankfull flow, which roughly corresponds to the characteristic channel forming flow (Schmidt and Potyondy, 2004). There appears to be considerable uncertainty in the nominal channel forming flow, width, and area estimates, as indicated by the range of possible values given in Table 4. In general, the uncertainty about the channel-forming flow estimate was greater at sites where incipient motion analysis results were least consistent with perceived channel geometry and inundation patterns. Summaries are provided in Attachment 3, including hydraulic modeling data and results and an overview of the selection of the nominal value and range of channel forming discharges.

Comparison of the channel-forming flow and hydraulic geometry estimates for mainstem channels, with a range of data compiled and analyzed by Parker et al. (2007), indicates that channels in the study area are representative of typical gravel bed rivers (Figure 16). The Parker et al. (2007) data include rivers from Alberta, Idaho, and Colorado that variously freeze in the winter and where ice is expected to have similar interactions with channel morphology. In general, the study area rivers appear to have hydraulic geometry relationships consistent with other gravel bed streams and may, therefore, be analyzed and described through regression analysis.

Comparison of the dimensionless hydraulic geometry parameter approximations for tributary fluvial geomorphology study sites with the data of Parker et al. (2007) suggests that the tributaries follow similar patterns as the main channels (Figure 17). The estimates of bankfull depth and width could be used in future more detailed analyses of sediment transport potential. However, the large scatter and positive bias seen in the slope data points suggest that the estimates of slope derived using clinometers are of low accuracy for evaluating bankfull discharge characteristics. Therefore, future studies of tributary inputs would require more detailed data collection.

7.2.1 CHANNEL FORMING FLOW REGRESSIONS CLASSIFIED BY BASIN

Estimates of bankfull wetted width and hydraulic depth (area/width) derived from the HEC-RAS modeling were plotted and regressed against the channel forming flow estimate and other hydrologic metrics representing potentially geomorphically relevant flow levels. Each regression for a given basin is statistically significant ($P<0.001$; adjusted r^2 values are 80 percent and better). However, the data do not indicate significant differences exist in channel geometry relationships between study river basins (Figure 18). The regression intercepts and slopes are not significantly different (alpha = 0.05). Therefore, the three basins appear to exhibit similar channel-forming processes and responses to changes in geology, hydrology, and sediment supply.

7.2.2 CHANNEL FORMING FLOW REGRESSIONS CLASSIFIED BY CHANNEL SLOPE

Parker et al. (2007) identified three major factors potentially influencing the relationship between the hydraulic geometry and bankfull flow depicted in Figure 17:

- **Bank strength**: Influenced by riparian vegetation, material properties, and freezing, where more resistant banks will tend to be associated with deeper and narrower channels.

- **Channel resistance**: Influenced by channel bottom cross-section and longitudinal profile irregularity (or, 'bedform drag'), where greater resistance is associated with deeper, less steep channels but does not appear to influence width.
- **Gravel yield**: Influenced by supply and transport from upstream and local bank and bed deposit sources, where increased gravel supply is associated with wider, shallower, and steeper channels.

The factors can be used to classify streams into different groups for which hydraulic geometry regression relations can be developed. The regression relations can then be used in subsequent assessments of potential effects of changes in hydrology and sediment supply on channel size and, subsequently, fish habitat quantity as determined in conjunction with the IF Study.

Regressions of channel size are expected to be of greatest potential utility in assessing future geomorphic responses, and representative results for width and depth are presented below.

Of the three potential influences on the relationship between hydraulic geometry and bankfull flow in the three study rivers (Figure 16), gravel yield may be the most influential. Visual observations of vegetative community composition on the river banks in the study area did not suggest that variation in vegetative type substantially influenced channel geometry. Similarly, there was little visual difference in channel bedform morphology between the NFK and SFK and, potentially, the UT. However, the available data indicate that the UT is generally steeper and more confined than the other two study rivers, and slope influences gravel yield (Parker et al., 2007). Slope changes tend to occur over a much longer geological time frame, on the order of thousands of years and longer (Parker et al., 2003, 2007); therefore, this parameter is a reasonably consistent means for classifying streams according to gravel yield potential.

To investigate the potential influence of channel slope, the data were classified into three categories, based on an initial visual assessment of patterns in plots of cross-sectional area against channel forming discharge. The categories were:

- Slope less than 0.1 percent—four sites
- Slope between 0.1 and 0.3 percent—21 sites
- Slope greater than 0.3 percent—26 sites

The regressions do not indicate significant differences between slope classes for either width or depth (Figure 19; alpha = 0.05). The width and depth regression lines for slopes less than 0.001 follow expected patterns relative to the lines for steeper sites, as depicted for decreasing gravel yield in Parker et al. (2007), but the number of data points (four sites) is too small for a significant difference to be detected. Collection and analysis of bankfull data for additional sites representative of low channel slopes could potentially lead to a significant difference in regression equation compared with steeper slopes. However, the total length of such segments are relatively short (Figures 6, 7, and 8) overall, and the regression equation slope appears to be similar for all sites. Hence, the influence of channel slope may not be sufficient to warrant classifying stream hydraulic geometry relations based on channel slope classes. A single, universal regression relationship may be reasonable for predicting future channel changes in the three study area rivers.

7.2.3 CHANNEL GEOMETRY RELATIVE TO ALTERNATIVE HYDROLOGIC METRICS

Because making estimates of bankfull flow magnitude involves considerably greater effort and uncertainty than estimates of bankfull width and depth, a possible alternative approach is to plot channel geometry parameters directly against hydrologic-based statistics representing the range of flows influencing channel form. The four metrics evaluated (1 and 5 percent exceedence flow and the 2- and 10-year flood) encompass a substantial range of bedload transporting flows (Wolman and Miller, 1960). Figure 20 shows the correlations between the nominal bankfull flow estimate and the four hydrologic metrics. Figures 21 and 22 indicate that bankfull channel geometry metrics are also correlated directly with any of the four hydrologic metrics. More work is needed to evaluate the relations more precisely, but the initial results suggest that it should be possible to relate changes in hydrology with changes in channel geometry metrics.

7.3 PARTICLE MOBILITY STUDY

The particle mobility study was conducted to resolve some of the initial uncertainty regarding channel forming flows and incipient motion. Eight radio rocks logged movement at times that were generally consistent with hydrograph timing and magnitude, generally moving on the ascending limb of the hydrograph and at comparable flow rates across events (Figure 23; Table 5). Two of the five events had peak discharges slightly greater than 1,000 cubic feet per second, which corresponds approximately to the 4 percent daily exceedence flow. The first event (September 18 to 20) had the highest peak flow, with the river rising 1.24 feet (835 cubic feet per second) during 19 hours and peaking at 1,090 cubic feet per second. Four of the eight rocks (NK5.19, NK5.22, NK8.22, and NK8.5 in Table 5, ID Numbers 19, 6, 3, and 2, respectively, in Figure 23) logged active codes before the first high flow event and were assumed to have readjusted their position in response to unknown factors other than the critical shear stress. Of the rocks used in the study one rock was rejected outright from the analysis due to apparent transmitter malfunctioning of the device itself. (Figure 23, Table 5).

The results for incipient motion were not definitive. The range of Shields stresses calculated for the three incipient motion conditions (no movement, questionable movement, and consistent movement) overlapped considerably (Figure 24); therefore, there was no clearly defined threshold value. The highest Shields stress at which a stone did not move was calculated to be 0.031, and the highest value at which the cause of incipient motion due to shear was classified as questionable was 0.033. The range of Shields stresses computed for stones that were thought to have moved in response to general shear was between 0.015 and 0.043.

These results generally do not contradict the generally accepted threshold range of 0.031 to 0.035 reported by Wilcock et al. (1996) in a thorough field study and summarized by Buffington and Montgomery (1997) for field and flume studies, or the range of 0.027 to 0.063 reported by McNamara and Borden (2004) based on five radio rocks. Dimensionless shear stress estimates with magnitudes below about 0.03 likely reflect a combination of enhanced exposure to the flow of larger particles in the bed grain size distribution (Andrews, 1983) and inaccuracies in shear stress estimation, rather than a real phenomenon. Hence, a critical Shields stress equal to approximately 0.035, based on the bed surface grain size distribution D_{50} value, appears reasonable for use in future assessments of sediment transport in the study area.

7.4 FINE SEDIMENT LEVELS IN SPAWNING GRAVEL

Sediment sampling conducted in support of this study raised the question of whether samples collected in summer, prior to the spawning season, were representative of conditions that would be experienced by eggs and alevins during the fall and winter. A comparison of gravel composition before and after spawning was conducted to address this uncertainty.

The pre-spawning samples were collected in early August 2008. Spawning activity was underway at all sites, but was not overly extensive. Samples could still be collected in undisturbed spawning substrates in the vicinity of redds. A second set of 24 samples was collected in redds in October 2008 after spawning and fall freshets had occurred and just prior to river freeze-up. Fertilized eggs were encountered in seven samples and sac fry in an eighth sample. The eggs were most likely from sockeye salmon. The sac fry were most likely from chum salmon given their states of development in October and observations of predominant species spawning at the spawning gravel sample sites in August.

The results indicated that, in general, the concentrations of fine sediments in the upper 15 centimeters of redds were not significantly different (alpha = 0.05) from background concentrations in late summer and after spawning and fall rains in all three study rivers (Figure 25). The only site with significant before/after differences was the most downstream site sampled in the UT (SGUT1). However, this result was suspected to reflect a bias in sampling locations, where two-thirds and one-third of the samples collected in August and October, respectively were from large-sized substrates containing relatively less fines compared with smaller-sized substrates. Frazil and anchor ice formation were greater in areas with large-sized substrates and limited access to redds (it was notable that the larger-sized substrates were used extensively by spawning sockeye salmon). This difference in sampling distribution resulted in a significantly larger geometric-mean diameter and smaller amount of fines less than 6.4 millimeters in size in the August samples compared with the October samples at SGUT1 (Figure 26).

Average fines concentrations, geometric mean diameter, and Fredle Index values were not significantly different between sites in each of the three study rivers (Figures 27 and 28). The SFK substrates overall were smaller and contained higher fines on average than the NFK and UT substrates, but the differences were not statistically significant (Figure 27). This is also reflected in lower geometric mean diameter and Fredle Index values (Figure 28).

The results generally indicate that gravel quality in the study area is high both before spawning and after fall high flows prior to winter freeze-up. All four gravel quality measures examined predict high survival to emergence on average in all sites except the most upstream site in the UT (Figures 25 and 26). Predicted survival was generally lowest in the SFK (Figures 27 and 28). Of the sites evaluated, the results suggest that fines concentrations and associated survival metrics would be most sensitive to increased fines loading in the upper spawning reaches of the SFK and UT.

8. SUMMARY

The fluvial geomorphology study to date has evaluated broad scale processes and characteristics of the NFK, SFK, UT, and selected tributaries. Most detailed information has been presented for the three mainstem rivers. Descriptions of large-scale physiographic characteristics include: planform, channel confinement, sinuosity, elevation profile, channel bankfull cross-section dimensions, riverbed grain size,

lithology, ice processes, and the influence of beaver. Site-scale characteristics include: bankfull channel cross-section and discharge, sediment transport and particle mobility, and fine sediment concentrations in spawning habitat.

The results indicate that the three study rivers are typical gravel bed channels with bankfull cross-section dimensions, grain size and planform characteristics representative of the range of slopes occurring in the study area. Where local geologic controls exist, the rivers adjust their morphology as expected, such as straightening when confined and fining when the slope decreases. The channel hydraulic geometry relationships are consistent with other alluvial gravel bed channels and do not appear to vary substantially nor sufficiently such that a single universal hydraulic geometry regression relation appears suited for predicting future channel size changes in response to changes in hydrology. The data also suggest that it should be possible to quantitatively relate changes in hydrology to changes in channel size using a direct correlation between various hydrologic flow parameters and bankfull width and depth. Changes in channel slope are not expected to be detectable over geologically short time frames.

The results of a detailed site study of particle mobility conducted on the NFK indicate that incipient motion conditions in the riverbed are typical of gravel bed streams.

Background fine sediment levels in spawning habitat appear to support high survival to emergence in all three study rivers. Fine sediments appear to infiltrate to essentially background levels in the upper approximately 15 centimeters of salmon redds before winter freeze-up.

A literature review of ice formation processes and beaver influences on channels suggest large-scale reach break points may exist, upstream of which the water column freezes completely and beaver are able to construct mainstem dams, respectively. Downstream, ice cover forms and beaver dams are constructed off-channel. These large-scale features may influence characteristic channel cross-section dimensions, riverbed substrate characteristics, and over-wintering and rearing salmonid habitat quantity and quality.

Tributaries draining the Pebble Deposit area contain varying levels of fine sediments and spawning-size gravel that may influence mainstem river fine sediment concentrations and spawning habitat quantity and quality. The relative importance of each tributary source will reflect transport capacity in both the tributary and mainstem channels. The tributary characteristics are reflected, to some extent in mainstem substrate characteristics in each of the three study rivers. The rates at which both fine sediments and spawning sized gravels are supplied to each mainstem channel are unquantified, however, as are input rates of both size classes from eroding mainstem terraces.

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10. GLOSSARY

Aggraded—A progressive buildup or raising of the channel bed and/or floodplain due to sediment deposition in response to upstream-downstream imbalances in sediment transport.

Anchor ice—Ice sheet that forms over and within the streambed surface, typically initiated through formation of frazil ice.

Armor layer—A more stable surface layer of larger particles on the streambed formed through selective removal of finer particles by stream flow.

Avu1sion—A change in channel course that occurs when a stream suddenly breaks through its banks—typically bisecting an over extended meander arc.

Backwater—A hydraulic term referring to the upstream impounding effect of a flow constriction or control.

Bankfull channel depth—The cross-section average flow depth at bankfull discharge.

Bankfull channel width—The wetted width of a stream channel during bankfull discharge.

Bankfull discharge—Flow rate corresponding to the water stage which approximates the elevation of naturally formed, alluvial stream banks and just begins to inundate the floodplain; functionally similar to effective discharge.

Bedform—Morphological formation of riverbed causing flow contraction or expansion locally or at reach scale, e.g., dune or mound (local) or riffle (reach).

Bed load—Sediment moving on or near the stream bed and transported by jumping, rolling, or sliding on the bed layer of a stream. See also suspended load.

Bed roughness—Effect of bed surface irregularity on flow resistance; also see Mannings "n" value.

Bed Slope—The stream-wise inclination of the channel bottom, typically calculated as the drop in bed elevation over a specific distance.

Braided channel—A stream characterized by flow within several channels which successively meet and divide. Irregular channel pattern, with few persistent, clearly defined islands. Flow is shallower than confined/meandering and wandering channels and is distributed more evenly among many channels. Channel tends to move about primarily through avulsion process. Sediment deposits distributed throughout channel net as mid-channel bars. Bedload constitutes a significant fraction of the total sediment transport load. Braiding often occurs when sediment loading is too large to be carried by a single channel.

Channel forming flow—Characteristic, geomorphically effective flow rate representing the range of flows transporting the majority of fluvial sediments and, thus, influencing channel form; analogous to effective discharge.

Confined/meandering channel—Single, sinuous channel at low to bankfull flows with occasional islands and sediment deposits forming point and diagonal bars. Meander pattern sinuosity is generally contained between floodplain terraces and valley side walls. Meander migration in downstream direction is limited.

Confinement—A relative measure of the freedom with which a channel can erode its banks and migrate laterally across the floodplain or valley floor, typically calculated as the ratio of floodplain or valley width to channel bankfull width.

Conveyance—The quantitative ability of a channel to move water downstream.

Critical shear stress—The minimum amount of shear stress exerted by flowing water required to initiate particle motion on the streambed surface.

Degradation—A progressive lowering of the channel bed due to upstream-downstream sediment transport rate imbalances.

Dimensionless—A scaled quantity expressed without needing units of length, mass or time; scale independent.

Drainage area—The total surface area upstream of a point on a stream that drains toward that point. Not to be confused with watershed. The drainage area may include one or more watersheds.

Effective discharge—An index flow rate representing a range of flows transporting the majority of fluvial sediments. Corresponds approximately to the flow rate with a magnitude and duration that transports the greatest sediment volume over a period of time.

Entrenchment—Condition where a stream channel is deeply incised into the floodplain, where relatively large flood flows may be fully contained within the bank tops.

Fining—Process or condition of spatial or temporal reduction in mean grain size of the streambed.

Frazil ice—A slush-like ice that forms in the water column.

Grain size distribution—Statistical, frequency-based representation of range of streambed substrate particle sizes in a non-uniformly sized mixture.

Hydraulic boundary condition—Downstream or upstream bounding cross-section in a hydraulic model such as HEC-RAS.

Hydraulic control—A location in the channel that influences the upstream water surface profile over a range of flows by laterally and/or vertically restricting throughflow; e.g., a riffle crest or channel sidewall constriction.

Hydraulic geometry—The study of the interrelationships exhibited along the course of a river, including the linkage between a characteristic discharge and the mean width, depth and slope of the channel.

Hydraulic radius—The cross-sectional area of a stream divided by the wetted perimeter.

Mannings n—A dimensional coefficient used in fluid mechanics to represent the resistance to flow caused by channel or conduit boundaries. The rougher a boundary, the greater the Mannings n value.

Nominal (discharge/depth/width)—First order, initial estimate of a characteristic quantity.

Normal depth—The depth in prismatic open channels for a given uniform flow rate, calculated using Mannings n.

Orthophoto—An aerial photograph used to identify and quantify elevations of vertical features on a landscape.

Planform—The outline or shape of the channel line in the stream-wise direction, projected on the horizontal plane as viewed from above.

Point bar—The convex side of a meander bend that is formed through sediment deposition.

Ravel—Loose stones mantling a steep hillslope.

Refugia— Locations or habitats that are critical for survival and population maintenance.

Regime—A theory of channel formation that applies to streams that make a part of their boundaries from their transported sediment load and a portion of their transported sediment load from their boundaries. Channels are considered in regime or equilibrium when bank erosion and bank formation are equal and sediment input rate equals output rate.

Stade—A substage of a glacial stage marked by a secondary advance of glaciers.

Stage-discharge rating curve—A continuous curve on a graph defining the relation between flow rate and corresponding water surface elevation at a specific stream channel cross-section location.

Substrate framework—Structural space occupied by larger substrate particles.

Substrate matrix—Interstitial spaces between substrate particle framework, into which fine sediments can fill.

Tailspills— The mound of gravel formed by a spawning salmonid that covers deposited eggs.

Thalweg—Location of the deepest portion across a channel.

Underfit channel—A channel with cross-section dimensions larger than that expected based on assessment of current hydrology and effective discharge; typically a relict expression of a preceding, larger scale geologic event or flow rate.

Uniform flow—Condition of constant flow depth, velocity, and cross-section shape along length of channel.

Valley width—The width of a valley floor, perpendicular to the general stream-wise or valley downslope direction.

Water surface profile—Stream-wise section elevation profile of the water surface.

TABLES

TABLE 1
Summary of Fluvial Geomorphology Detailed Study Site Physiographic Characteristics

Basin	Fluvial Geomorphology Site	River Kilometer	Elevation (meters)	Drainage Area (Km^2)	Surface Geological Unit	
					Code	Description
Koktuli River	FGMK1	46.46	164	588	al	Alluvium
North Fork Koktuli River	FGNK1	47.68	176	277	al	Alluvium
	FGNK2	51.69	187	275	al	Alluvium
	FGNK3	54.60	197	269	al	Alluvium
	FGNKt-1	n/a	210	31	al	Alluvium
	FGNK5	62.38	229	215	al	Alluvium
	FGNK6	64.76	239	197	al	Alluvium
	FGNK7	67.99	254	181	al	Alluvium
	FGNK8	73.19	275	161	al	Alluvium
	FGNK9	77.29	289	132	al	Alluvium
	FGNK10	82.48	309	96	al	Alluvium
	FGNK11	84.21	317	62	al	Alluvium
	FGNK12	85.74	319	60	o1/d1	Glacial outwash
	FGNK13	91.14	327	47	o1b/gl	Glacial outwash associated with drift
	FGNK14	91.97	329	34	o1b/gl	Glacial outwash associated with drift
	FGNK15	97.83	351	16	d1	Drift of Brooks Lake
South Fork Koktuli River	FGSK1	48.24	179	272	al	Alluvium
	FGSKt-1	n/a	182	36	al	Alluvium
	FGSK3	55.30	196	230	al	Alluvium
	FGSK4	60.53	205	210	al	Alluvium
	FGSK5	63.51	211	189	al	Alluvium
	FGSK6	69.74	224	181	al	Alluvium
	FGSK7	71.66	228	179	al	Alluvium
	FGSK8	75.05	236	142	al	Alluvium
	FGSK9	80.41	246	129	al	Alluvium
	FGSK119	n/a	247	28	al	Alluvium
	FGSK11	86.29	254	83	l	Lake deposits
	FGSK12	89.17	255	78	l	Lake deposits
	FGSK13	90.95	259	44	al-sa	Alluvium w/ sand dominating
	FGSK14	94.89	271	41	al-sa	Alluvium w/ sand dominating
	FGSK15	97.31	276	39	al-sa	Alluvium w/ sand dominating
	FGSK16	99.01	281	34	al	Alluvium

Basin	Fluvial Geomorphology Site	River Kilometer	Elevation (meters)	Drainage Area (Km^2)	Surface Geological Unit	
					Code	Description
Upper Talarik Creek	FGUT1	1.20	14	355	al	Alluvium
	FGUT1.4	5.87	31	332	al	Alluvium
	FGUTAPC2	9.72	48	285	al	Alluvium
	FGUTAPC1	14.48	74	264	al	Alluvium
	FGUT1.5	15.84	81	254	al	Alluvium
	FGUT1.6	19.62	101	243	al	Alluvium
	FGUT2	24.33	127	223	al	Alluvium
	FGUT3	29.12	143	184	al	Alluvium
	FGUT4	32.48	158	176	al	Alluvium
	FGUT5	34.19	166	171	al	Alluvium
	FGUT6	41.34	197	132	al	Alluvium
	FGUT7	44.65	206	124	al	Alluvium
	FGUT8	45.73	209	67	al	Alluvium
	FGUT8.1	47.94	215	57	al	Alluvium
	FGUT9	51.66	228	31	al	Alluvium
	FGUT10	57.35	256	16	gl3	Glacial lake deposits
	FGUT11	59.98	298	8	gl3	Glacial lake deposits

Note:
Km^2 = square kilometers.

TABLE 2
Radio Rock Parameters

Rock Number	Radio Tag ID Code		Frequency (MHz)	Channel	Mass (grams)	Volume (ml)	Rock Dimensions (mm)		
	Mobile	Immobile					A Axis	B Axis	C Axis
NK5.30	1	101	149.82	1	256.2	90	35	50	76
NK8.5	2	102	149.82	1	934.8	350	67	77	129
NK8.22	3	103	149.82	1	582.3	230	50	82	85
NK8.17	4	104	149.82	1	630.3	250	56	67	94
NK5.5	5	105	149.86	2	96.5	35	22	27	69
NK5.22	6	106	149.86	2	200.9	80	37	53	54
NK5.8	7	107	149.86	2	177.1	72	33	46	58
NK8.8	8	108	149.86	2	776.5	300	68	71	86
NK8.14	9	109	150.42	3	367.9	120	44	63	78
NK8.11	11	110	150.42	3	966.8	350	64	81	104
NK5.10	12	111	150.42	3	239.9	90	37	51	59
NK5.13	13	112	150.6	4	172.9	62	34	38	65
NK8.4	14	113	150.6	4	595.7	220	56	66	91
NK5.45	15	114	150.6	4	185.4	69	44	49	57
NK5.16	16	115	150.6	4	230.5	98	42	45	79
NK8.15	17	116	151.38	5	436.1	190	46	63	85
NK8.1	18	117	151.38	5	527.1	195	52	63	86
NK5.19	19	118	151.38	5	123.1	49	29	40	71
NK8.20	20	119	151.38	5	742.2	280	57	62	97

Notes:
MHz = megahertz.
ml = milliliter(s).
mm = millimeter(s).

TABLE 3
AASHTO Sieve Sizes and Metric Equivalents

Sieve No	Size (inches)	Size (millimeters)
	3	
	2	50
	1.5	37.5
	1	25
	¾	19
	½	12.5
	3/8	9.5
	¼	6.4
No. 4		4.75
No. 8		2.36
No. 10		2.0
No. 20		0.85

TABLE 4
Nominal Estimates of Bankfull Flow, Width, and Depth in the Fluvial Geomorphology Study Sites

Basin	Fluvial Geomorphology Site	Bankfull Flow (cubic meters per second)		Bankfull Width (meters)		Bankfull Depth (meters)	
		Nominal	Range	Nominal	Range	Nominal	Range
Koktuli River	FGMK1	68.0	56.6 - 79.3	46	38 - 52	1.21	0.90 - 1.71
North Fork Koktuli River	FGNK1	41.1	36.8 - 42.5	23	23 - 24	1.19	1.04 - 1.31
	FGNK2	39.6	36.8 - 42.5	34	30 - 38	0.89	0.64 - 1.19
	FGNK3	38.5	32.8 - 44.2	25	25 - 26	1.02	0.89 - 1.14
	FGNK4	35.4	31.1 - 42.5	29	28 - 31	0.90	0.73 - 1.07
	FGNK5	32.6	26.9 - 38.2	26	23 - 29	0.78	0.51 - 1.08
	FGNK6	29.7	22.7 - 31.1	22	22 - 23	0.82	0.70 - 0.93
	FGNK7	19.1	17.0 - 21.9	18	16 - 21	0.83	0.65 - 1.03
	FGNK8	10.6	9.2 - 14.9	18	16 - 19	0.53	0.36 - 0.74
	FGNK9	9.9	8.8 - 14.2	14	12 - 17	0.75	0.45 - 1.15
	FGNK10	10.2	9.3 - 12.2	13	12 - 13	0.56	0.54 - 0.69
	FGNK11	7.8	7.1 - 9.9	11	10 - 15	0.60	0.35 - 0.89
	FGNK12	7.1	5.0 - 8.5	17	12 - 21	0.60	0.31 - 1.31
	FGNK13	7.1	5.7 - 8.5	7.9	6.8 - 8.9	0.76	0.51 - 1.18
	FGNK14	4.7	3.8 - 5.2	6.8	6.8 - 6.9	0.71	0.64 - 0.78
	FGNK15	4.5	4.0 - 5.1	5.1	4.8 - 5.5	0.59	0.49 - 0.76
	FGNKt-1	4.1	3.5 - 4.7	7.4	7.1 - 7.7	0.47	0.36 - 0.55
South Fork Koktuli River	FGSK1	25.5	22.7 - 28.3	25	23 - 26	0.81	0.66 - 1.01
	FGSK2	19.8	17.0 - 25.5	28	23 - 33	0.64	0.41 - 0.96
	FGSK3	17.7	15.6 - 24.1	15	14 - 16	1.05	0.86 - 1.25
	FGSK4	17.0	14.2 - 19.8	19	18 - 20	0.73	0.59 - 0.90
	FGSK5	17.7	14.2 - 21.2	16	14 - 18	0.83	0.59 - 1.19
	FGSK6	No Estimates Made					
	FGSK7	18.4	15.6 - 22.7	20	14 - 23	0.78	0.53 - 1.36
	FGSK8	14.9	11.3 - 16.3	15	11 - 18	0.78	0.51 - 1.25

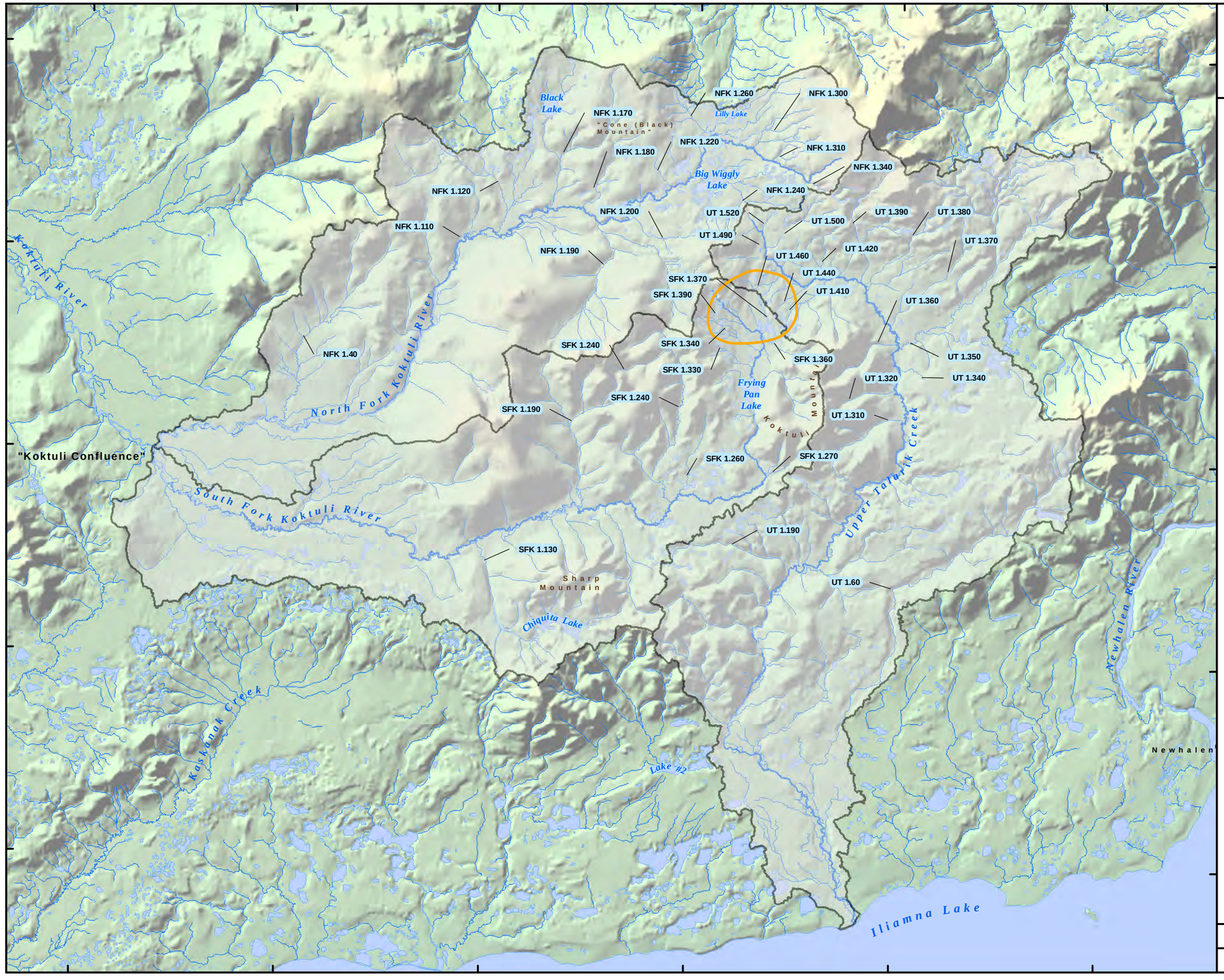
Basin	Fluvial Geomorphology Site	Bankfull Flow (cubic meters per second)		Bankfull Width (meters)		Bankfull Depth (meters)	
		Nominal	Range	Nominal	Range	Nominal	Range
South Fork Koktuli River (continued)	FGSK9	12.7	9.2 - 14.2	14	8 - 16	0.85	0.53 - 2.14
	FGSK10	9.9	7.1 - 11.3	8.1	7.8 - 9	1.18	0.87 - 1.49
	FGSK11	7.1	5.7 - 9.2	8.7	7.6 - 10	1.41	0.90 - 2.05
	FGSK12	7.9	6.8 - 9.6	9.0	5.8 - 11	1.32	0.80 - 2.60
	FGSK13	5.0	3.5 - 9.2	7.2	5.2 - 9.0	0.84	0.38 - 2.00
	FGSK14	4.2	2.8 - 5.7	7.2	5.5 - 10	0.54	0.21 - 1.21
	FGSK15	5.0	3.5 - 6.4	7.1	6.4 - 8.3	0.84	0.49 - 1.28
	FGSK16	2.8	2.3 - 3.4	7.1	7.9 - 7.9	0.53	0.39 - 0.58
	FGSK119	2.8	2.1 - 3.5	9.4	9.9 - 11	0.50	0.31 - 0.63
	FGSKt-1	2.8	2.3 - 3.4	12	23 - 16	0.25	0.16 - 0.17
Upper Talarik Creek	FGUT1	43.9	39.6 - 48.1	27	21 - 31	0.95	0.74 - 1.39
	FGUT1.4	42.5	31.1 - 48.1	20	17 - 23	1.10	0.73 - 1.63
	FGUTAPC2	35.4	28.3 - 38.2	26	24 - 28	0.79	0.68 - 0.93
	FGUTAPC1	32.6	29.7 - 35.4	20	19 - 22	0.96	0.80 - 1.12
	FGUT1.5	32.6	29.7 - 35.4	21	20 - 23	0.89	0.76 - 1.02
	FGUT1.6	29.7	24.1 - 32.6	24	23 - 24	0.77	0.66 - 0.88
	FGUT2	22.7	19.8 - 31.1	20	20 - 21	0.77	0.55 - 0.99
	FGUT3	21.9	19.1 - 24.8	22	21 - 24	0.77	0.63 - 0.91
	FGUT4	19.8	17.0 - 22.7	15	13 - 17	0.70	0.57 - 0.94
	FGUT5	17.0	14.2 - 19.8	18	16 - 20	0.61	0.44 - 0.79
	FGUT6	14.4	11.9 - 16.1	15	14 - 16	0.73	0.59 - 0.91
	FGUT7	14.2	11.3 - 17.0	19	17 - 20	0.69	0.53 - 0.88
	FGUT8	9.2	5.7 - 12.0	8.3	8.1 - 8.4	1.02	0.72 - 1.37
	FGUT8.1	8.5	6.4 - 9.9	10	10 - 11	0.71	0.55 - 0.85
	FGUT9	4.2	3.4 - 5.1	7.3	7.1 - 7.3	0.55	0.46 - 0.65
	FGUT10	3.5	2.1 - 4.2	5.0	4.4 - 5.7	0.54	0.26 - 0.96
	FGUT11	1.3	1.0 - 1.6	4.7	4.3 - 5.1	0.24	0.18 - 0.35

TABLE 5
Results of Radio Rock Study [a]

Rock Number	Radio Tag ID	Specific Gravity	B-Axis Diameter (millimeters)	Initial Movement		Discharge (cubic meters per second)	Average Bed Shear (Pa)	XS Shear Correction Factor	Shields Number
				Date	Time				
NK5.30	**1**	**2.85**	**50**	**9/20/2007**	**7:25**	**21.2**	**17**	**1.32**	**1.166**
NK8.5	2	2.67	77	9/19/2007	0:21	17.8	16	1.17	0.725
				9/28/2007	12:13	27.7	22	1.17	0.960
NK8.22	3	2.53	82	9/19/2007	0:56	20.4	18	1.22	0.839
				9/28/2007	7:58	19.6	17	1.22	0.816
NK8.17	**4**	**2.52**	**67**	**9/19/2007**	**3:15**	**27.5**	**22**	**1.09**	**1.122**
NK5.22	6	2.51	53	9/19/2007	0:01	16.3	14	1.27	1.115
				9/28/2007	~11:30	24.3	18	1.27	1.375
NK5.8	7	2.46	46	9/19/2007	1:54	25.0	18	0.98	1.292
NK8.8	8	2.59	71	No Movement		30.9	23	0.93	0.948
NK8.14	9	2.45	63	No Movement		30.9	23	1.17	1.472
NK8.11	11	2.67	81	No Movement		30.9	23	1.30	1.104
NK5.10	12	2.67	51	9/19/2007	12:04	29.4	20	1.27	1.467
				9/28/2007	16:49	28.1	20	1.27	1.432
NK5.13	13	2.7	38	No Movement		30.9	21	0.68	1.061
NK8.4	14	2.71	66	9/19/2007	6:25	30.0	23	1.30	1.269
				9/28/2007	16:39	28.0	22	1.30	1.242
NK5.45	15	2.69	49	No Movement		30.9	21	0.77	0.938
NK5.16	16	2.35	45	9/19/2007	2:01	25.0	18	1.13	1.652
NK8.15	**17**	**2.30**	**63**	**9/19/2007**	**11:23**	**28.9**	**22**	**1.22**	**1.598**
				9/25/2007	**3:38**	**21.1**	**18**	**1.22**	**1.320**
NK8.1	**18**	**2.70**	**63**	**9/19/2007**	**9:25**	**30.3**	**23**	**1.30**	**1.338**
				9/20/2007	**11:10**	**21.9**	**19**	**1.30**	**1.110**
NK5.19	19	2.51	40	9/20/2007	15:58	24.6	18	1.41	2.072
				9/23/2007	10:03	22.8	17	1.41	1.963
				9/28/2007	7:43	18.9	15	1.41	1.745
NK8.20	20	2.65	62	No Movement		30.9	23	0.78	0.876

a. Data in **bold** denote inconclusive or questionable motion data.

FIGURES



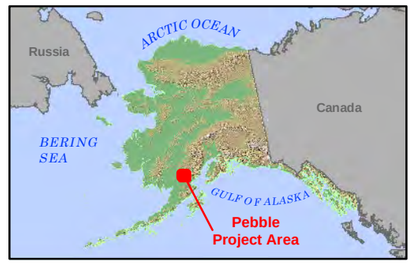
THE pebble PARTNERSHIP

Figure 1
North Fork Koktuli River, South Fork Koktuli River, and Upper Talarik Creek Drainages

Legend

- General Deposit Location
- Study Area Watershed Boundaries

Note:
Stream numbering follows system described in Appendix G.
SFK1.130 Example stream code.



Miles
0 1 2 3 4 5

N

Scale 1:175,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

RDI_R2_StudyAreas_Fig1_11x17_1of1_D02.mxd	Date: February 23, 2011
Version: 2	Author: RDI- MRA

155°50'0"W 155°40'0"W 155°30'0"W 155°20'0"W 155°10'0"W 155°0'0"W

60°0'0"N 59°55'0"N 59°50'0"N 59°45'0"N 59°40'0"N

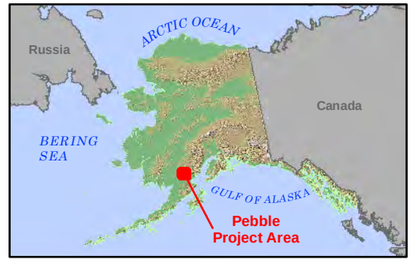
Black Lake
"Cone (Black) Mountain"
Lilly Lake
Wiggly Lake
Frying Pan Lake
Koktuli Mountain
Koktuli River
North Fork Koktuli River
South Fork Koktuli River
Upper Talarik Creek
Sharp Mountain
Chiquita Lake
Kaskanak Creek
Lake #2
Newhalen River
Newhalen
Iliamna Lake

"Koktuli Confluence"
NFK 1.40
SFK 1.90

FGNK15 FGNK13 FGNK14 FGNK9 FGNK12 FGNK8 FGNK10 FGNK11 FGNK7 FGNK6 FGNKt-1 FGNK5 FGMK1 FGNK3 FGNK2 FGNK1 FGNK4

FGUT11 FGUT10 FGUT9 FGUT8.1 FGUT8 FGUT7 FGUT6 FGUT4 FGUT5 FGUT3 FGUT2 FGUT1.6 FGUT1.5 FGUTAPC1 FGUTAPC2 FGUT1.4 FGUT1

FGSK16 FGSK15 FGSK119 FGSK13 FGSK14 FGSK9 FGSK12 FGSK8 FGSK11 FGSK10 FGSK1 FGSKt-1 FGSK2 FGSK3 FGSK4 FGSK7 FGSK5 FGSK6



THE pebble PARTNERSHIP

Figure 2
Locations of Fluvial Geomorphology Study Sites

Legend

Study Sites

- Mainstem
- Tributaries
- General Deposit Location
- Watershed Boundary

Station study site name example: FGMK1

0 1 2 3 4 5 Miles

N

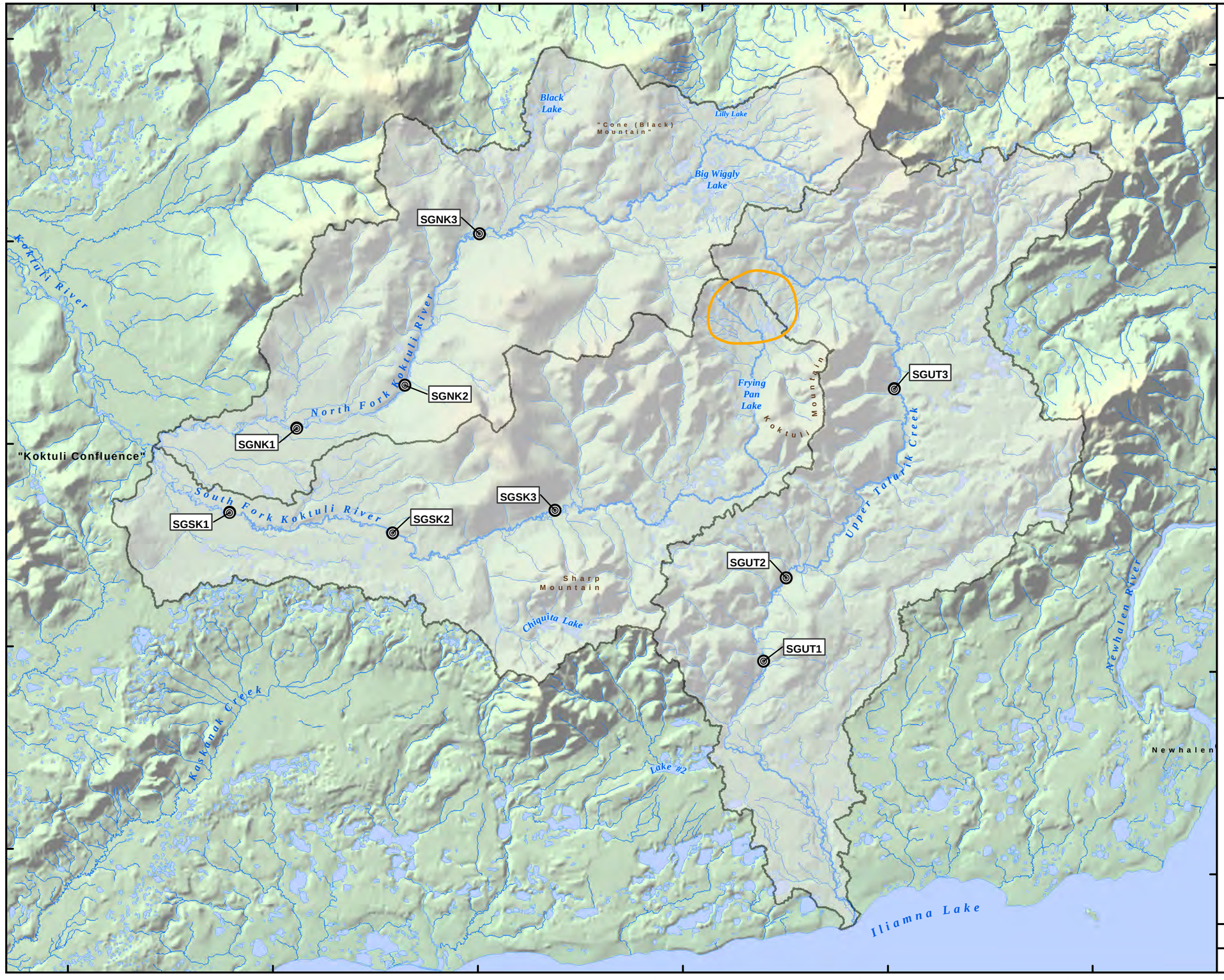
Scale 1:175,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

RDI_R2_FluvGeoMorph_Fig2_11x17_1of1_D02.mxd	Date: February 23, 2011
Version: 2	Author: RDI- MRA

FIGURE 3
Locations of Radio-tagged Rocks Deployed in the FGNK2 Fluvial Geomorphology Study Site.

Note: Flow is from right to left. Rocks were placed at regularly-spaced intervals across transects within the approximate area indicated by the dashed box. The USGS station 15302250 is located in the vicinity of the most upstream transect (6).



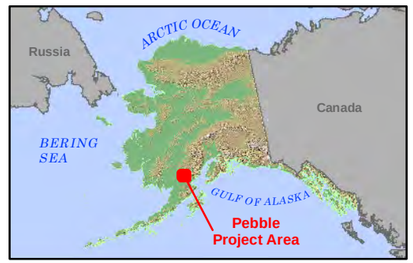
THE pebble PARTNERSHIP

Figure 4
Locations of Spawning Gravel Study Sites

Legend

- General Deposit Location
- Mainstem Study Sites
- Watershed Boundary

Station study site name example: SGNK1



Miles 0 1 2 3 4 5

N

Scale 1:175,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

RDI_R2_SpawnGravelSites_Fig4_11x17_1of1_D02.mxd	Date: February 23, 2011
Version: 2	Author: RDI- MRA

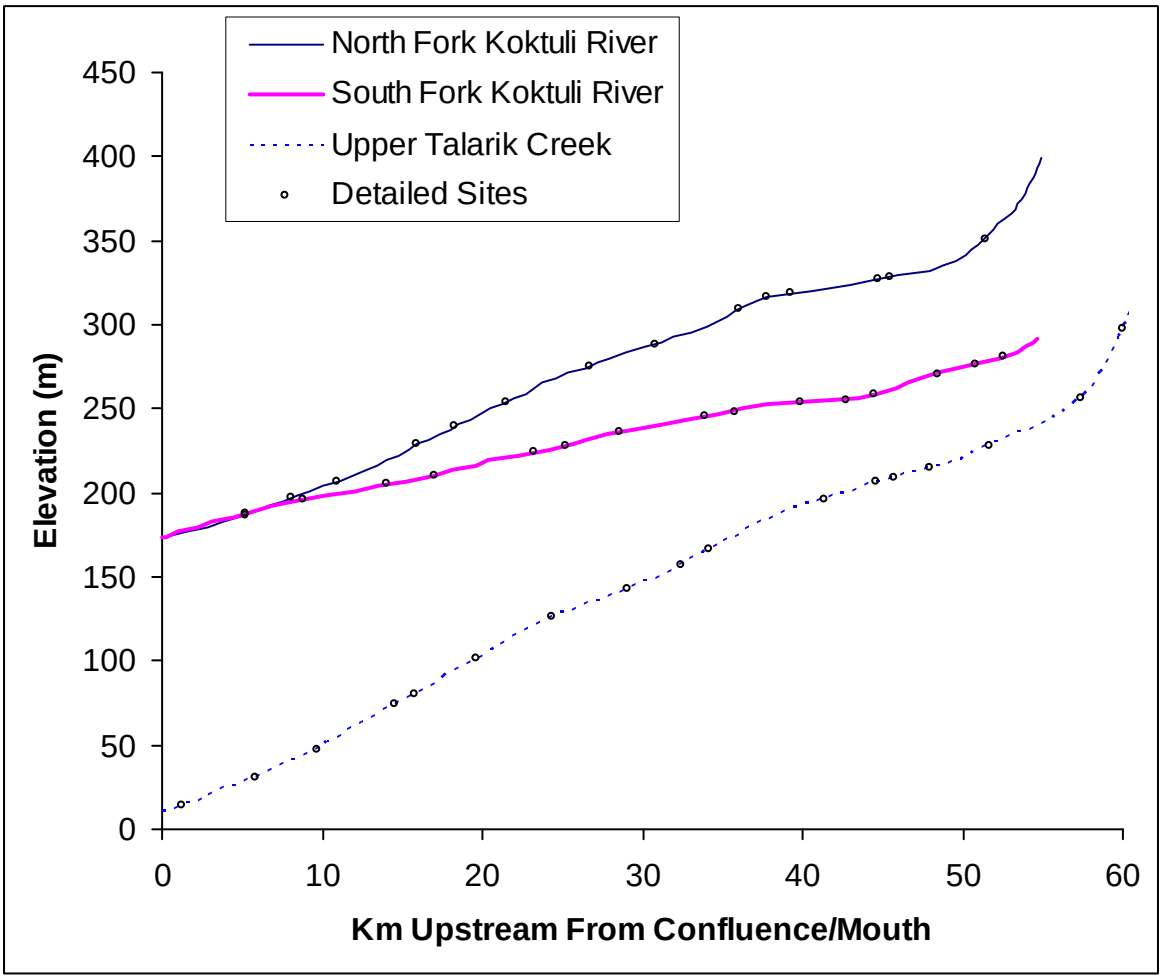


FIGURE 5
Comparison of Longitudinal Elevation Profiles of the Three Study Rivers

Note: Circles represent the locations of the fluvial geomorphology study sites discussed in Section 1.7.1.2.

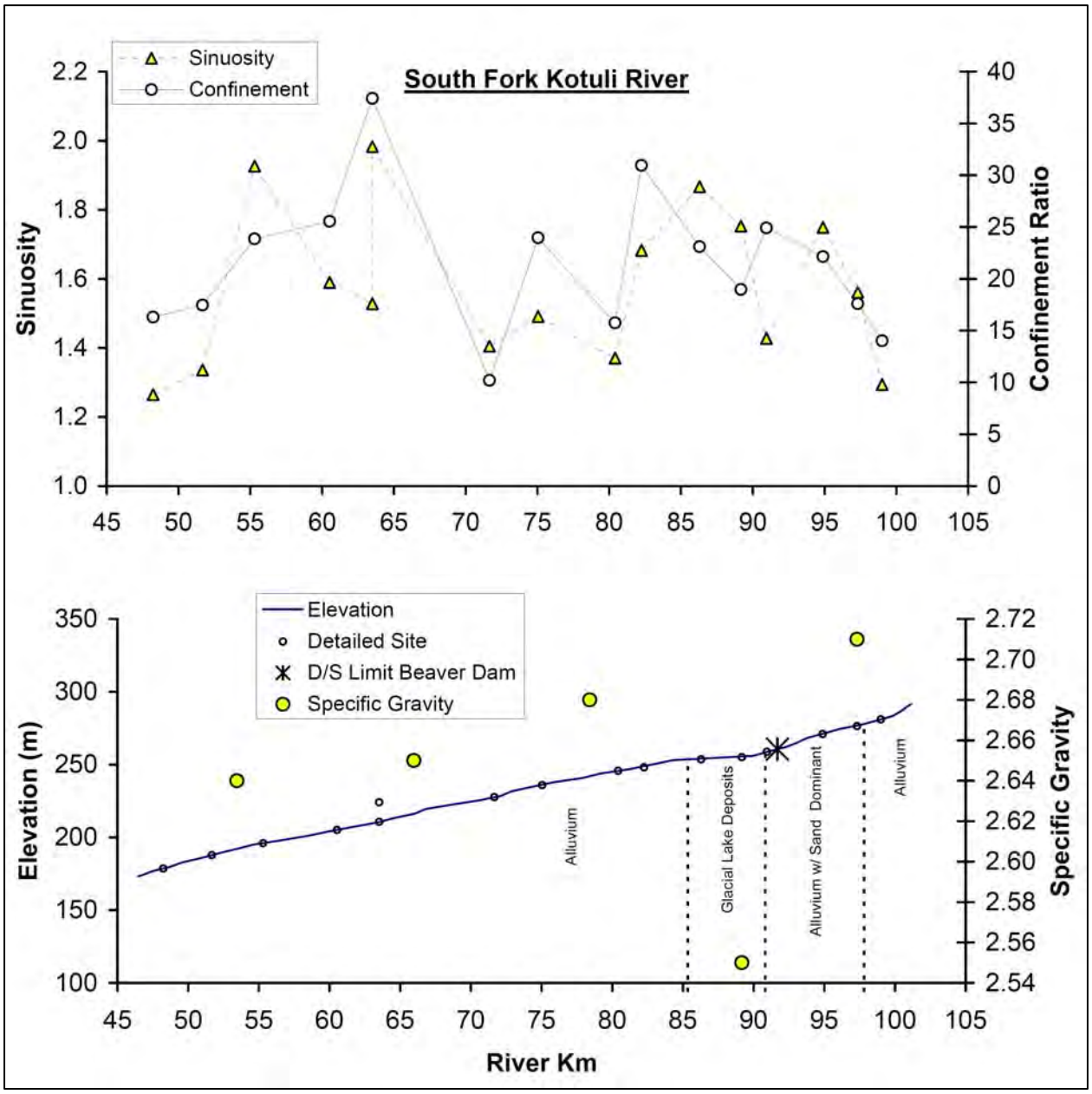


FIGURE 6
Longitudinal Elevation, Sinuosity, and Channel Confinement Ratio Profiles of the SFK

Note: Starts at the confluence with the NFK. Shows the locations of the fluvial geomorphology study sites, changes in surficial geology mapping units, point estimates of riverbed substrate specific gravity, and the downstream-most location above which aerial photography evidence indicates the existence of beaver dam construction across the mainstem channel.

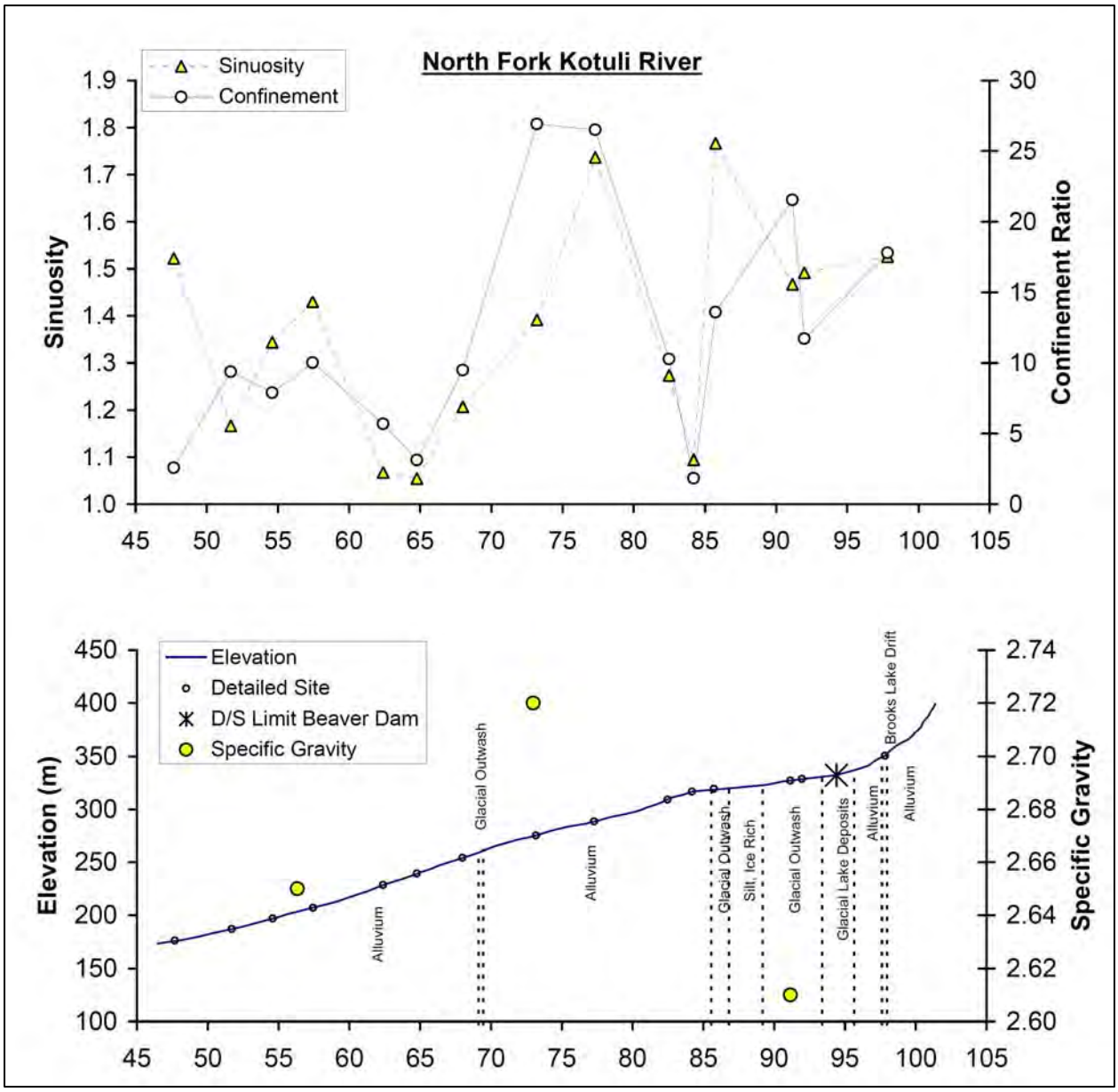


FIGURE 7
Longitudinal Elevation, Sinuosity, and Channel Confinement Ratio Profiles of the NFK

Note: Starts at the confluence with the SFK. Shows the locations of the fluvial geomorphology study sites, changes in surficial geology mapping units, point estimates of riverbed substrate specific gravity, and the downstream-most location above which aerial photography evidence indicates the existence of beaver dam construction across the mainstem channel.

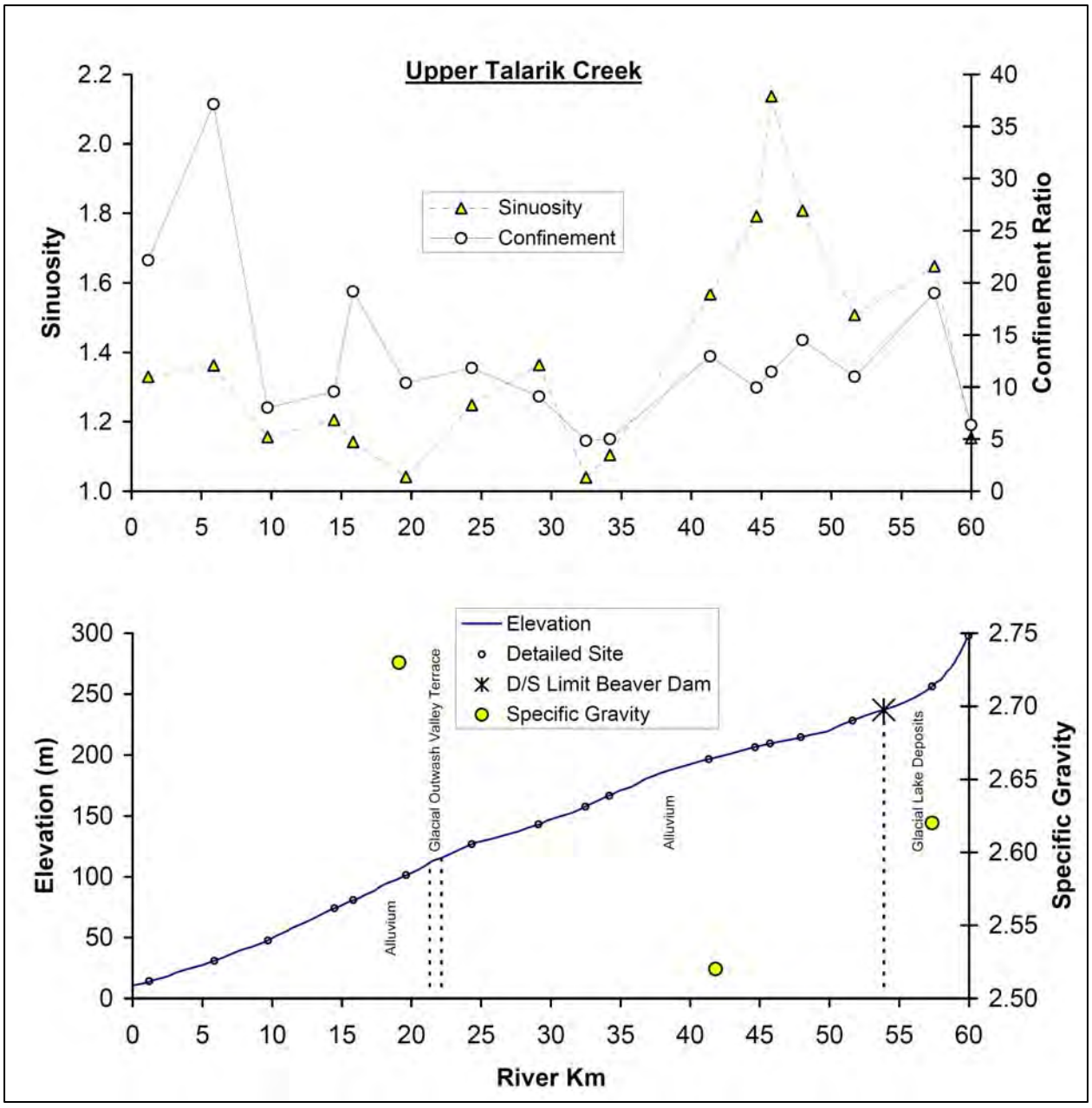


FIGURE 8
Longitudinal Elevation, Sinuosity, and Channel Confinement Ratio Profiles of the UT

Note: Shows the locations of the fluvial geomorphology study sites, changes in surficial geology mapping units, point estimates of riverbed substrate specific gravity, and downstream-most location above which aerial photography evidence indicates the existence of beaver dam construction across the mainstem channel.

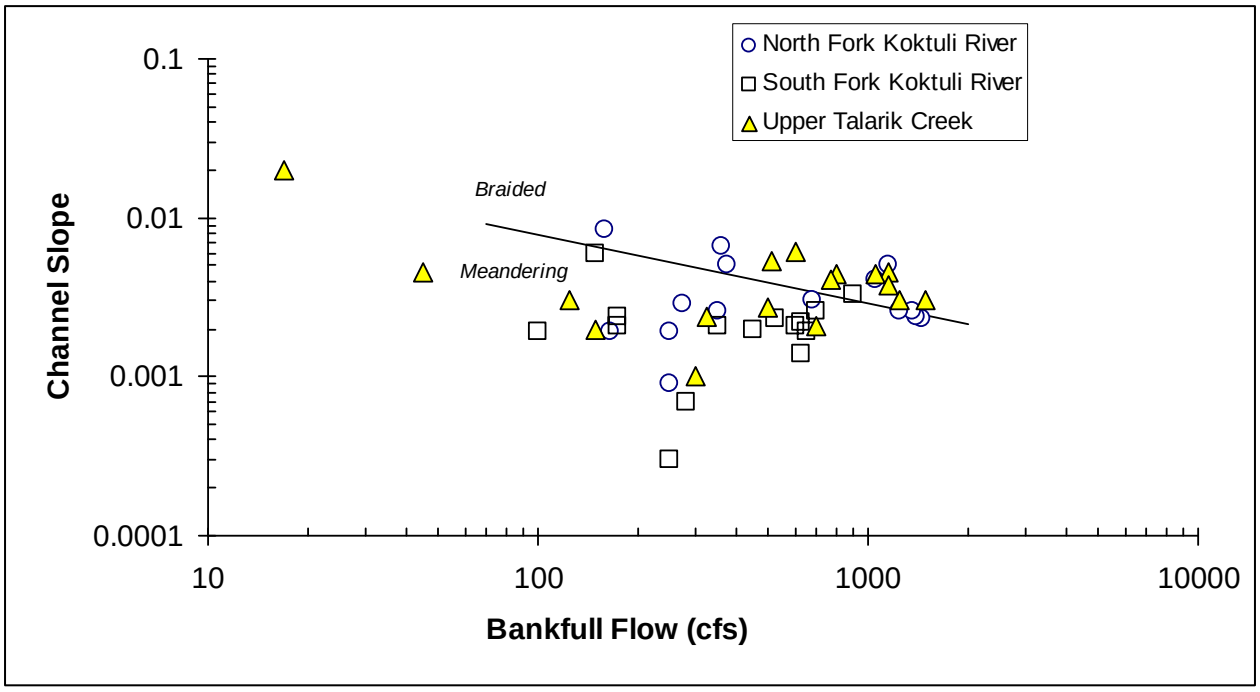


FIGURE 9
Comparison of Fluvial Geomorphology Study Site Bankfull Geometry Data

Note: With ranges reported by Leopold et al. (1995) for different channel planform characteristics. The line depicts the approximate transition region from meandering to braided channel planforms.

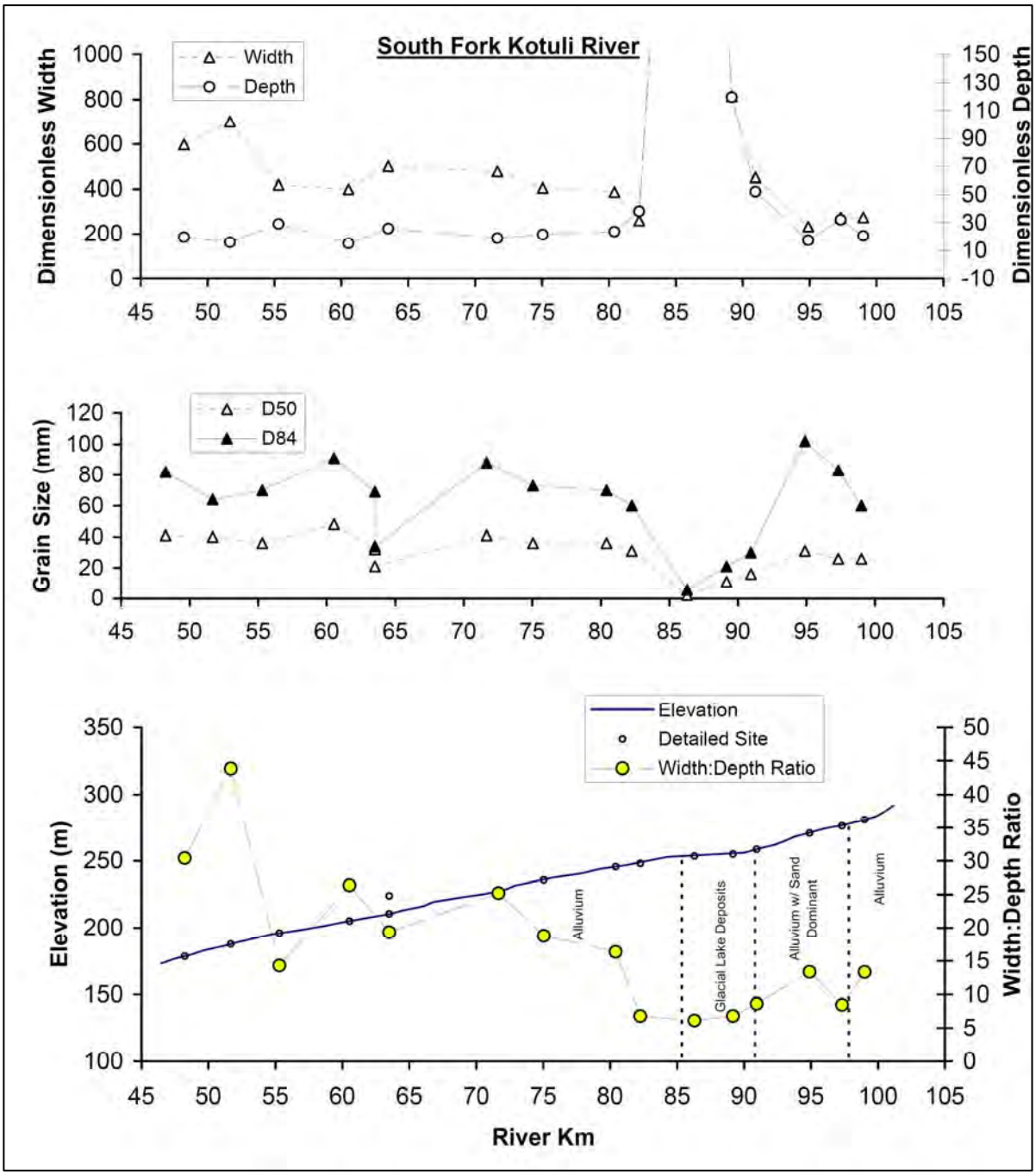


FIGURE 10
Longitudinal Profiles of Elevation and Bankfull Channel Geometry and Riverbed Grain Size Characteristics in the SFK

Note: Starts at the confluence with the NFK. Shows the locations of the fluvial geomorphology study sites and changes in surficial geology map units.

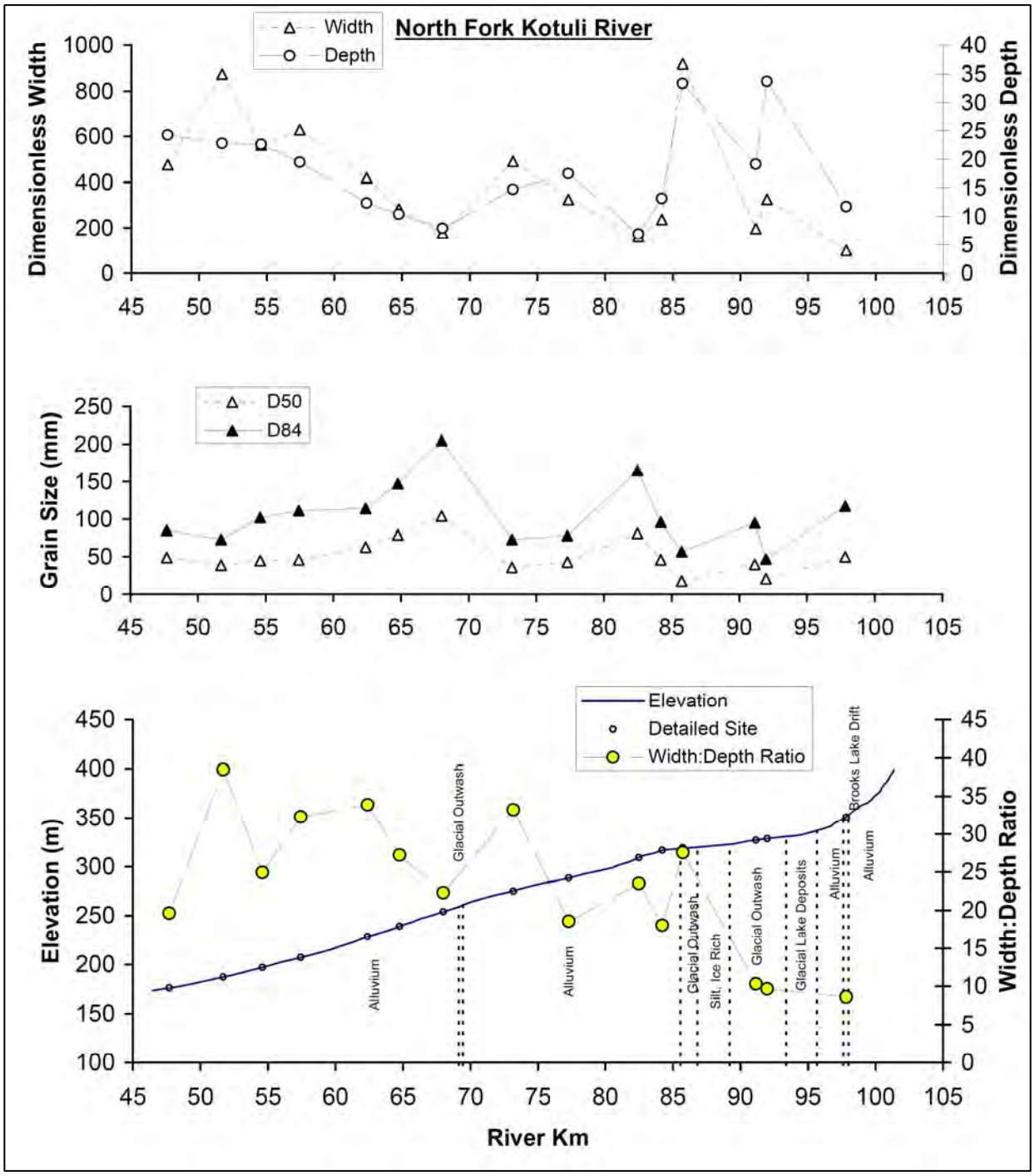


FIGURE 11
Longitudinal Profiles of Elevation and Bankfull Channel Geometry and Riverbed Grain Size Characteristics in the NFK

Note: Starts at the confluence with the SFK. Shows the locations of the fluvial geomorphology study sites and changes in surficial geologic mapping units.

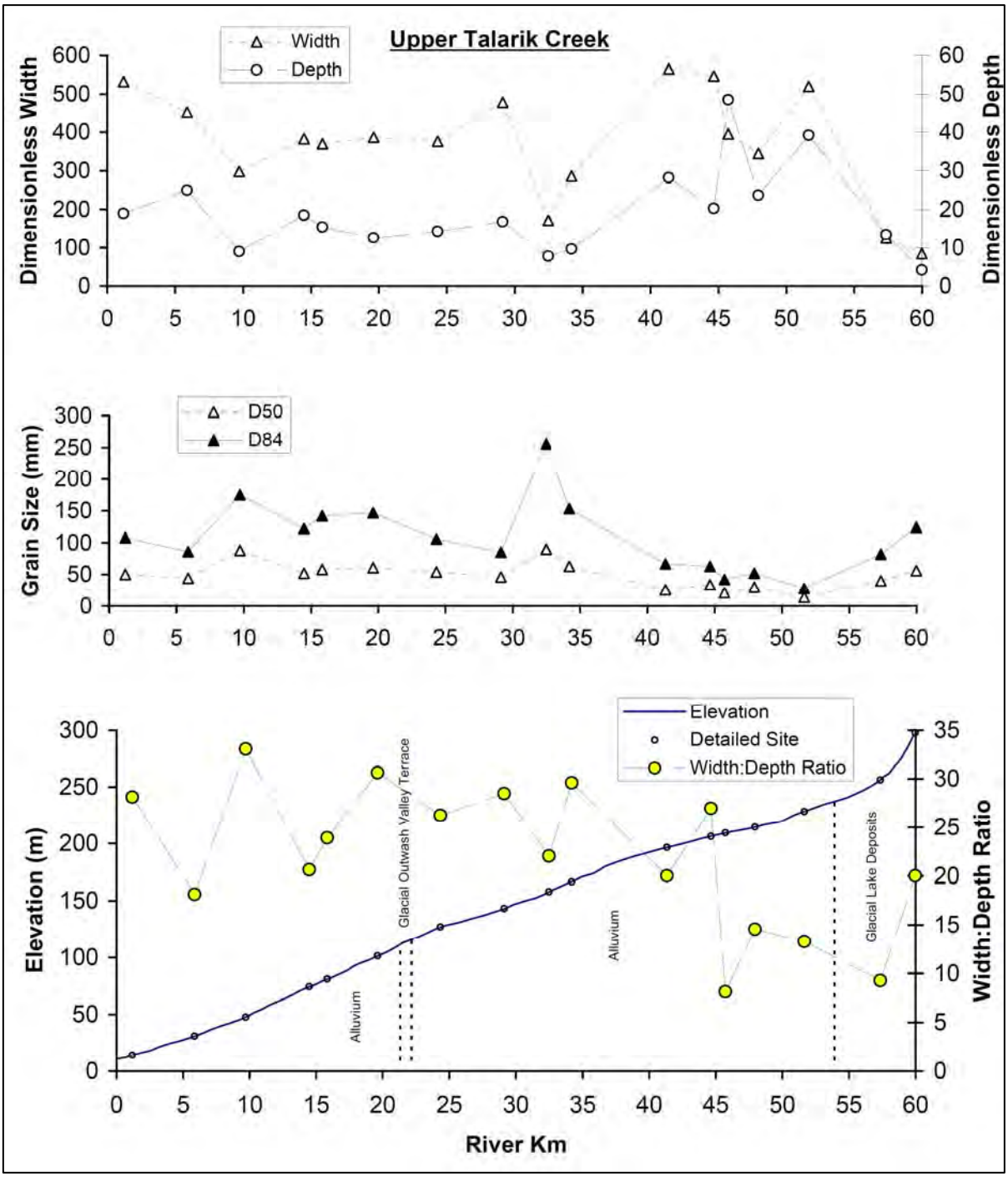
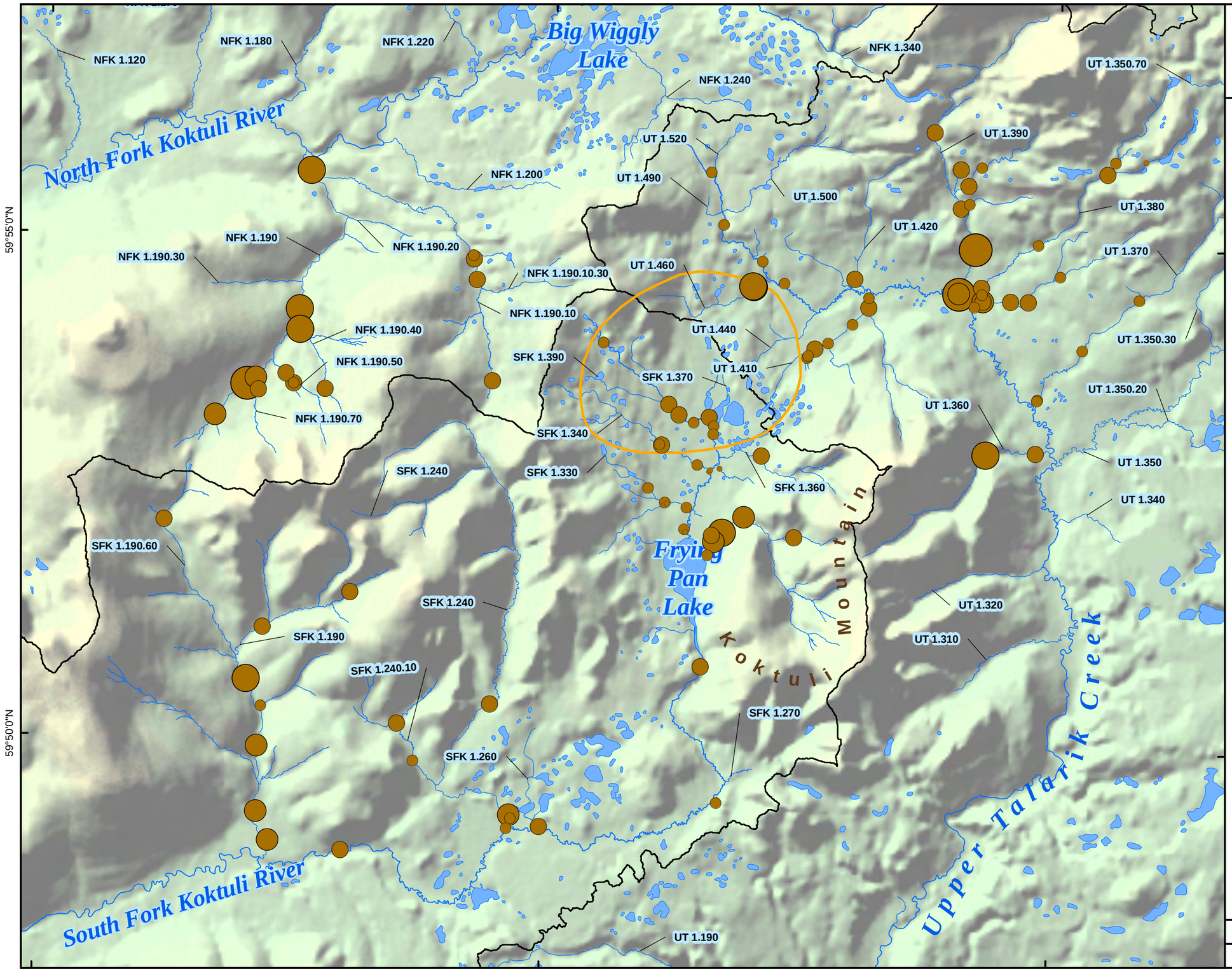


FIGURE 12
Longitudinal Profiles of Elevation and Bankfull Channel Geometry and Riverbed Grain Size Characteristics in the UT

Note: Shows the locations of the fluvial geomorphology study sites and changes in surficial geology map units.



THE pebble PARTNERSHIP

Figure 13
Pebble Count D_{50} Values Sampled in Tributaries

Legend

Pebble Count D_{50} millimeters

- 1 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- Over 60
- General Deposit Location
- Study Area Watershed Boundaries

Note: Spatial distributions of pebble count D_{50} values sampled in tributaries to the three study rivers.
Stream numbering follows system described in Appendix G.
SFK1.130 Example stream code.

Scale 1:70,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

RDI_R2_DistPebbleCntD50_Fig13_11x17_1of1_D02.mxd	Date: February 23, 2011
Version: 2	Author: RDI- MRA

155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N

59°50'0"N

Big Wiggly Lake

North Fork Koktuli River

South Fork Koktuli River

Fryingpan Lake

Koktuli Mountain

Upper Talarik Creek

NFK 1.120
NFK 1.180
NFK 1.220
NFK 1.340
NFK 1.240
UT 1.350.70
UT 1.520
UT 1.390
NFK 1.200
UT 1.490
UT 1.500
UT 1.380
UT 1.420
NFK 1.190
NFK 1.190.20
NFK 1.190.30
UT 1.370
UT 1.460
NFK 1.190.10.30
NFK 1.190.10
UT 1.440
NFK 1.190.40
UT 1.350.30
SFK 1.390
NFK 1.190.50
SFK 1.370
UT 1.410
UT 1.350.20
UT 1.360
NFK 1.190.70
SFK 1.340
SFK 1.240
SFK 1.330
SFK 1.360
UT 1.350
UT 1.340
SFK 1.190.60
UT 1.320
SFK 1.240
SFK 1.190
UT 1.310
SFK 1.240.10
SFK 1.270
SFK 1.260
UT 1.190

THE pebble PARTNERSHIP

Figure 14
Visual Estimates of Percent Sand and Silt in Tributary Streambed Substrates

Legend

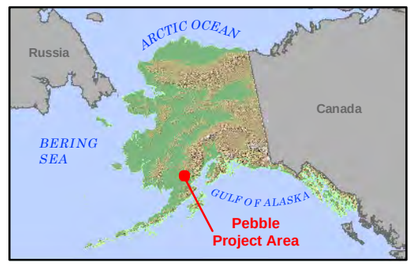
Percent Sand and Silt

- 1 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100

General Deposit Location

Study Area Watershed Boundaries

Note: Spatial distributions of percent sand and silt in streambed substrates, estimated visually in tributaries to the three study rivers.
Stream numbering follows system described in Appendix G.
SFK1.130 Example stream code.



0 1 2 Miles

N

Scale 1:70,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

RDI_R2_DistPercentSand_Fig14_11x17_1of1_D02.mxd	Date: February 23, 2011
Version: 2	Author: RDI- MRA

155°30'0"W 155°20'0"W 155°10'0"W

59°55'0"N

59°50'0"N

NFK 1.120
NFK 1.180
NFK 1.220
NFK 1.340
UT 1.350.70
NFK 1.240
UT 1.390
UT 1.520
NFK 1.200
UT 1.490
UT 1.500
UT 1.380
UT 1.420
NFK 1.190
NFK 1.190.20
NFK 1.190.30
UT 1.370
NFK 1.190.10.30
UT 1.460
NFK 1.190.10
UT 1.440
NFK 1.190.40
UT 1.350.30
SFK 1.390
NFK 1.190.50
SFK 1.370
UT 1.410
UT 1.350.20
UT 1.360
NFK 1.190.70
SFK 1.340
SFK 1.330
UT 1.350
SFK 1.240
SFK 1.360
UT 1.340
SFK 1.190.60
UT 1.320
SFK 1.240
SFK 1.190
UT 1.310
SFK 1.240.10
SFK 1.270
SFK 1.260
UT 1.190

Big Wiggly Lake

North Fork Koktuli River

Fryingpan Lake

Koktuli Mountain

Upper Talarik Creek

South Fork Koktuli River

THE pebble PARTNERSHIP

Figure 15
Visual Estimates of Percent Gravel in Tributary Streambed Substrates

Legend

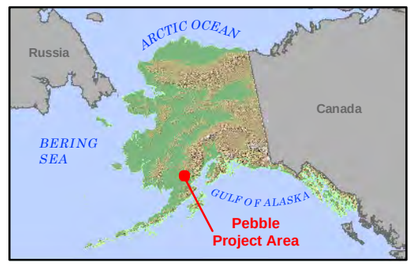
Percent Gravel

- 1 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100

General Deposit Location

Study Area Watershed Boundaries

Note: Spatial distributions of percent gravel in streambed substrates, estimated visually in tributaries to the three study rivers.
Stream numbering follows system described in Appendix G.
SFK1.130 Example stream code.



0 1 2 Miles

N

Scale 1:70,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

RDI_R2_DistPercentGavel_Fig15_11x17_1of1_D02.mxd	Date: February 23, 2011
Version: 2	Author: RDI- MRA

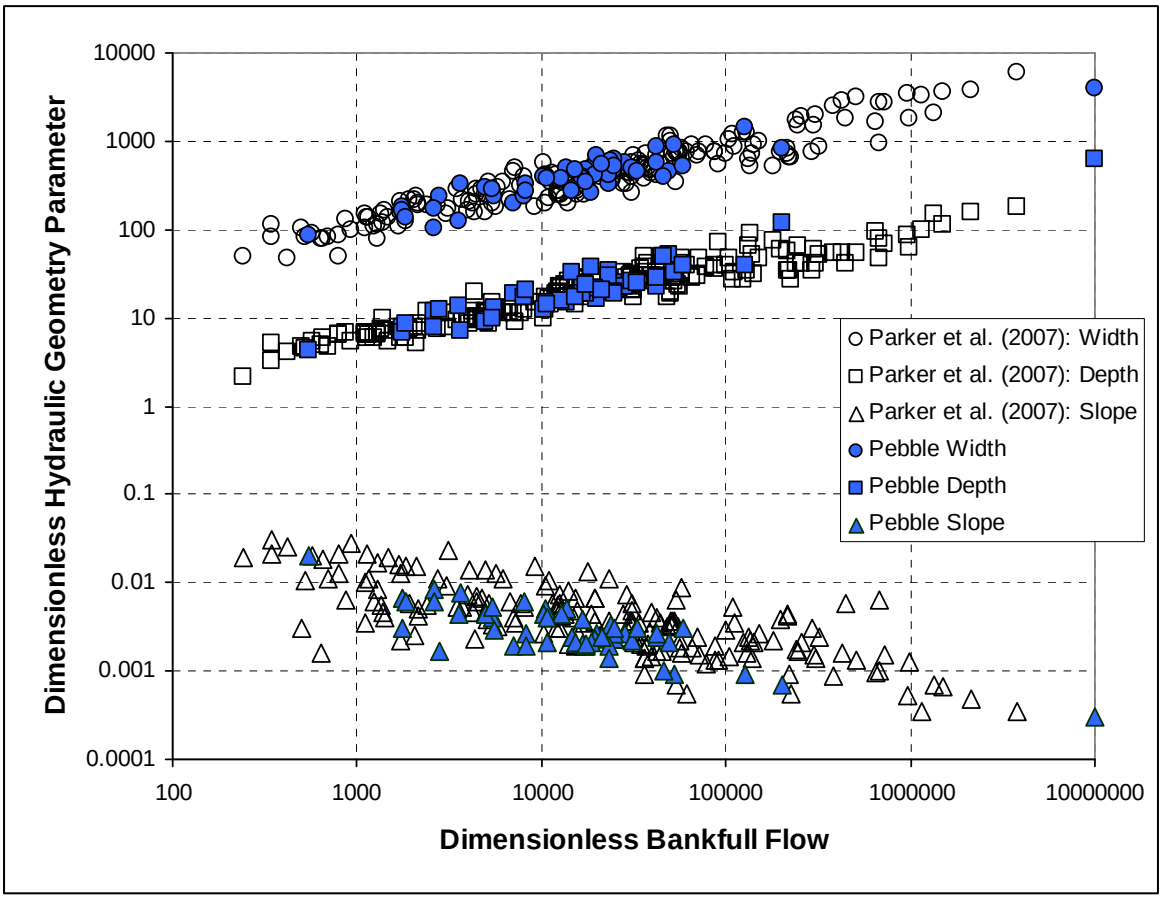


FIGURE 16
Dimensionless Bankfull Widths, Depths, and Slopes Estimated for the Fluvial Geomorphology Study Sites in the Three Study Rivers

Note: Pebble estimates compared to general hydraulic geometry data compiled and analyzed by Parker et al. (2007).

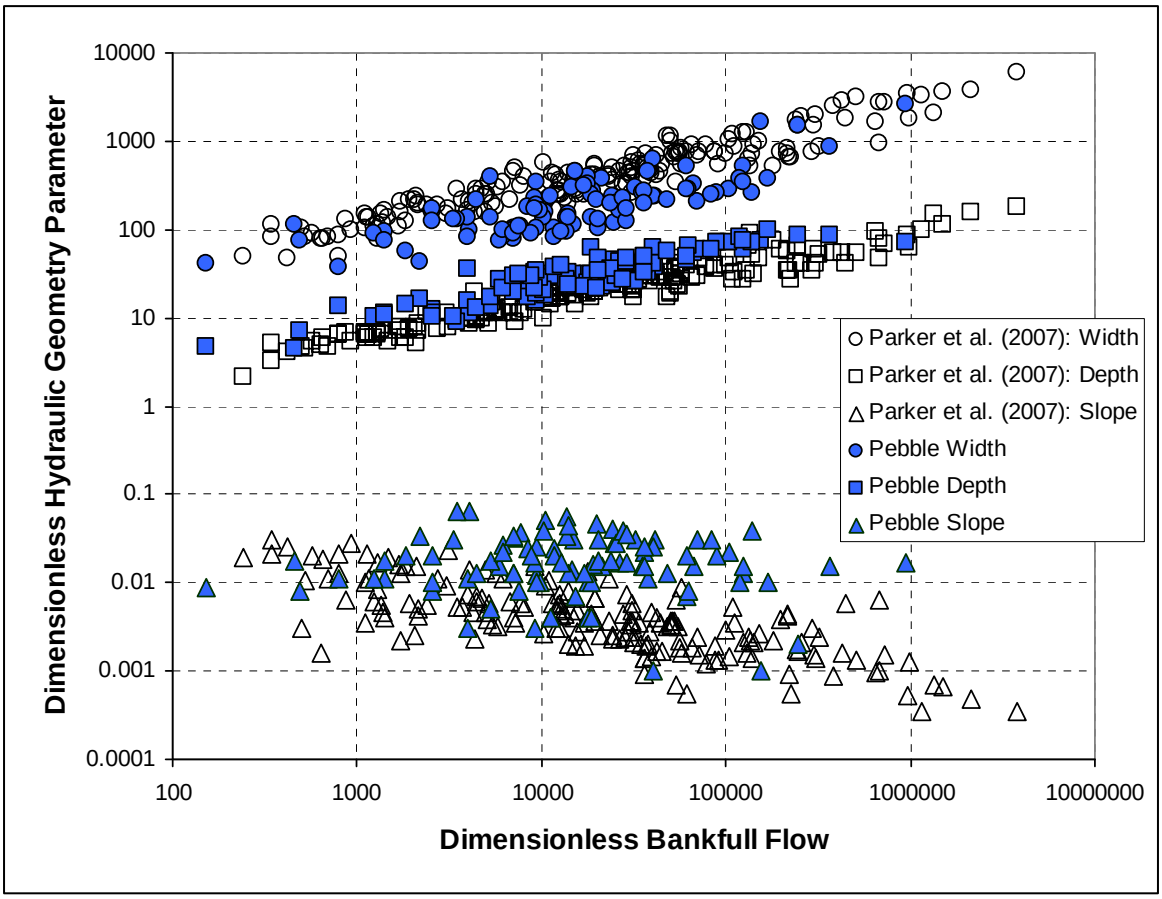


FIGURE 17
Dimensionless Bankfull Widths, Depths, and Slopes Estimated for Tributaries to the Three Study Rivers

Note: Pebble estimates compared to general hydraulic geometry data compiled and analyzed by Parker et al. (2007). The tributaries sampled are all bounded by the three study rivers.

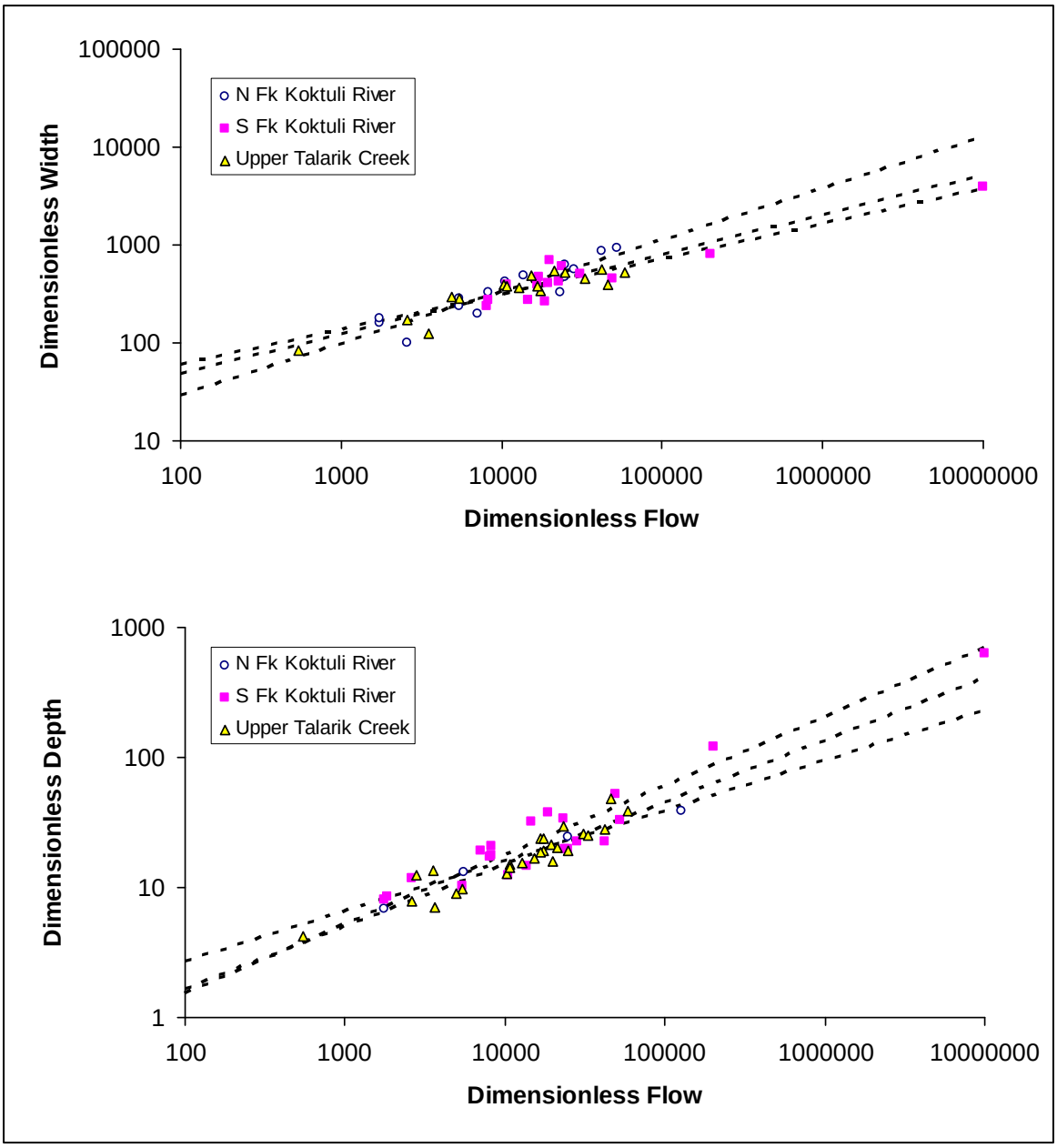


FIGURE 18
Regressions of Dimensionless Bankfull Widths and Depths Estimated for the Fluvial Geomorphology Study Sites, Grouped for Each of the Three Study Rivers

Note: The regressions are not significantly different (alpha = 0.05).

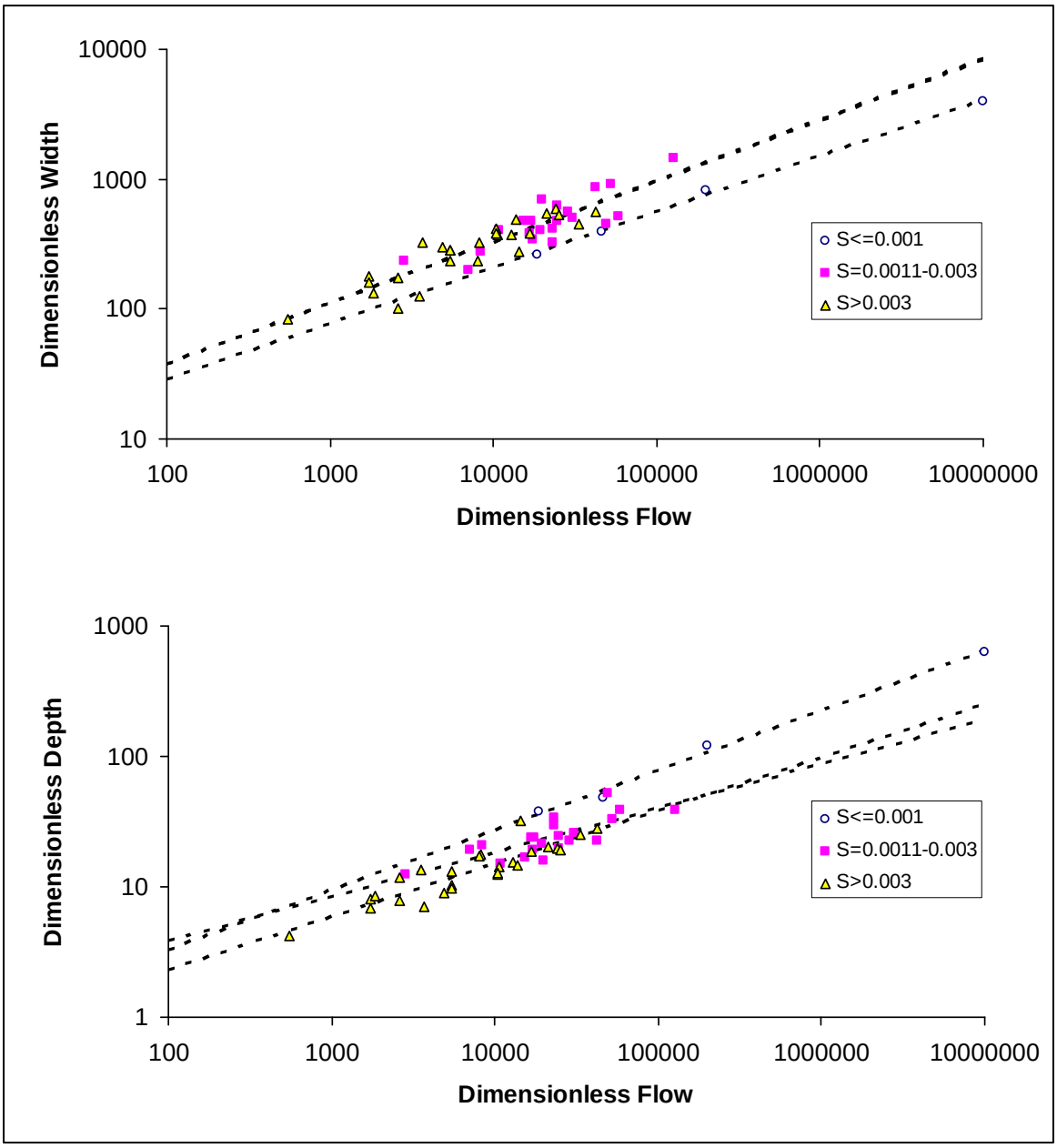


FIGURE 19
Regressions of Dimensionless Bankfull Widths and Depths Estimated for the Fluvial Geomorphology Study Sites, Grouped by Three Site Slope Classes

Note: The regressions are not significantly different (alpha = 0.05).
S = slope

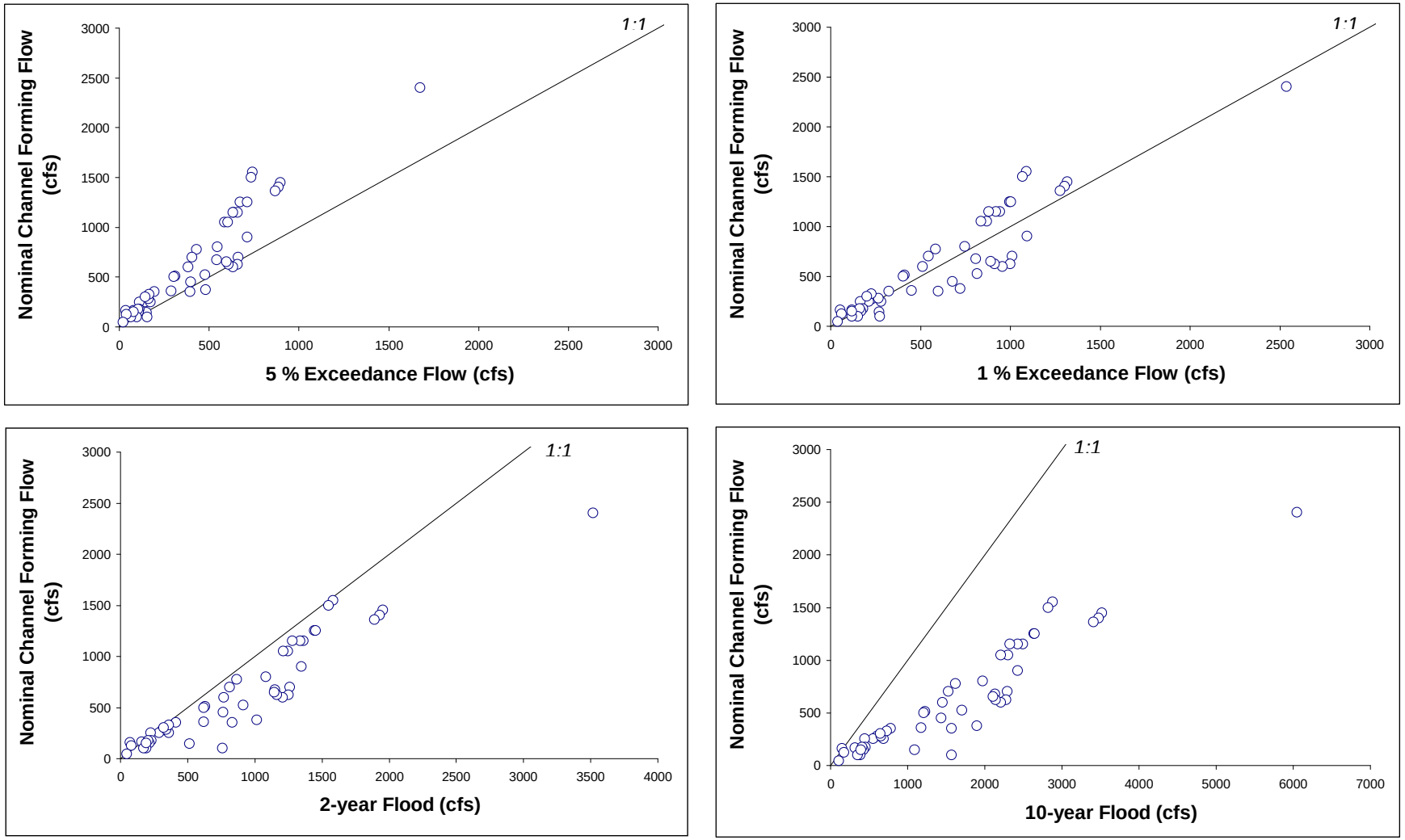
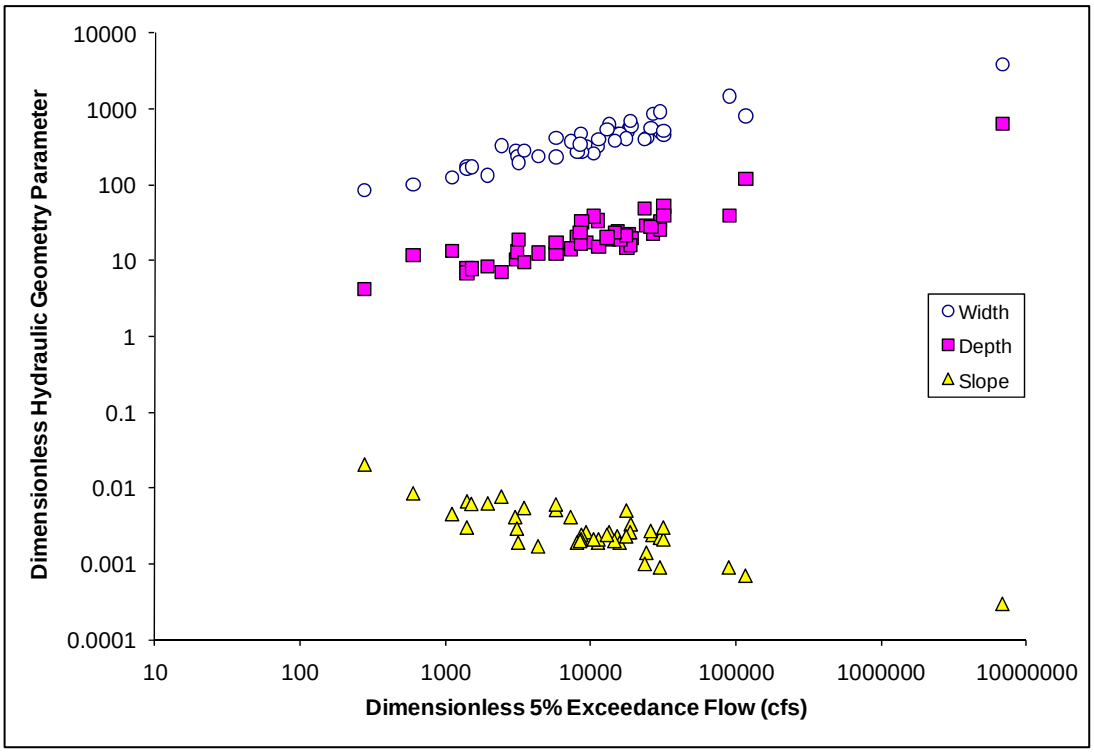


FIGURE 20
Scatterplots of Nominal Channel Forming Flow Estimates for the Fluvial Geomorphology Study Sites versus Hydrologic Flow Parameter Estimates



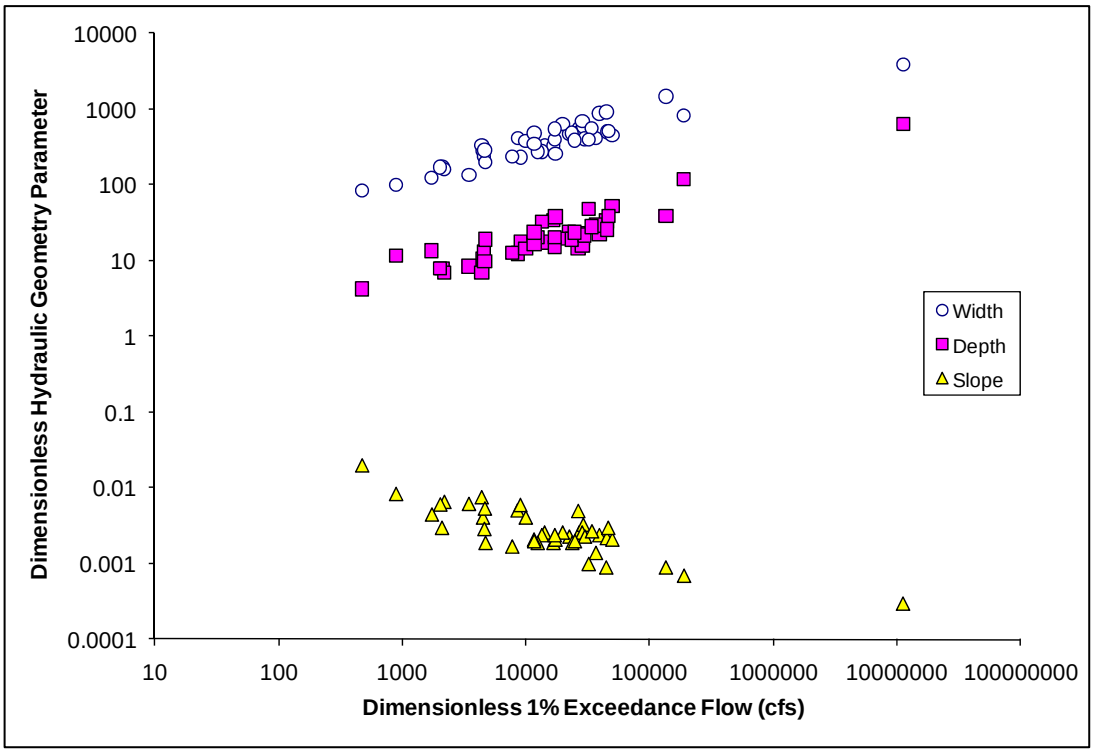


FIGURE 21
Scatter Plots of Estimated Dimensionless Bankfull Widths, Depths, and Slopes versus Two Exceedence Flow Estimates for the Fluvial Geomorphology Study Sites

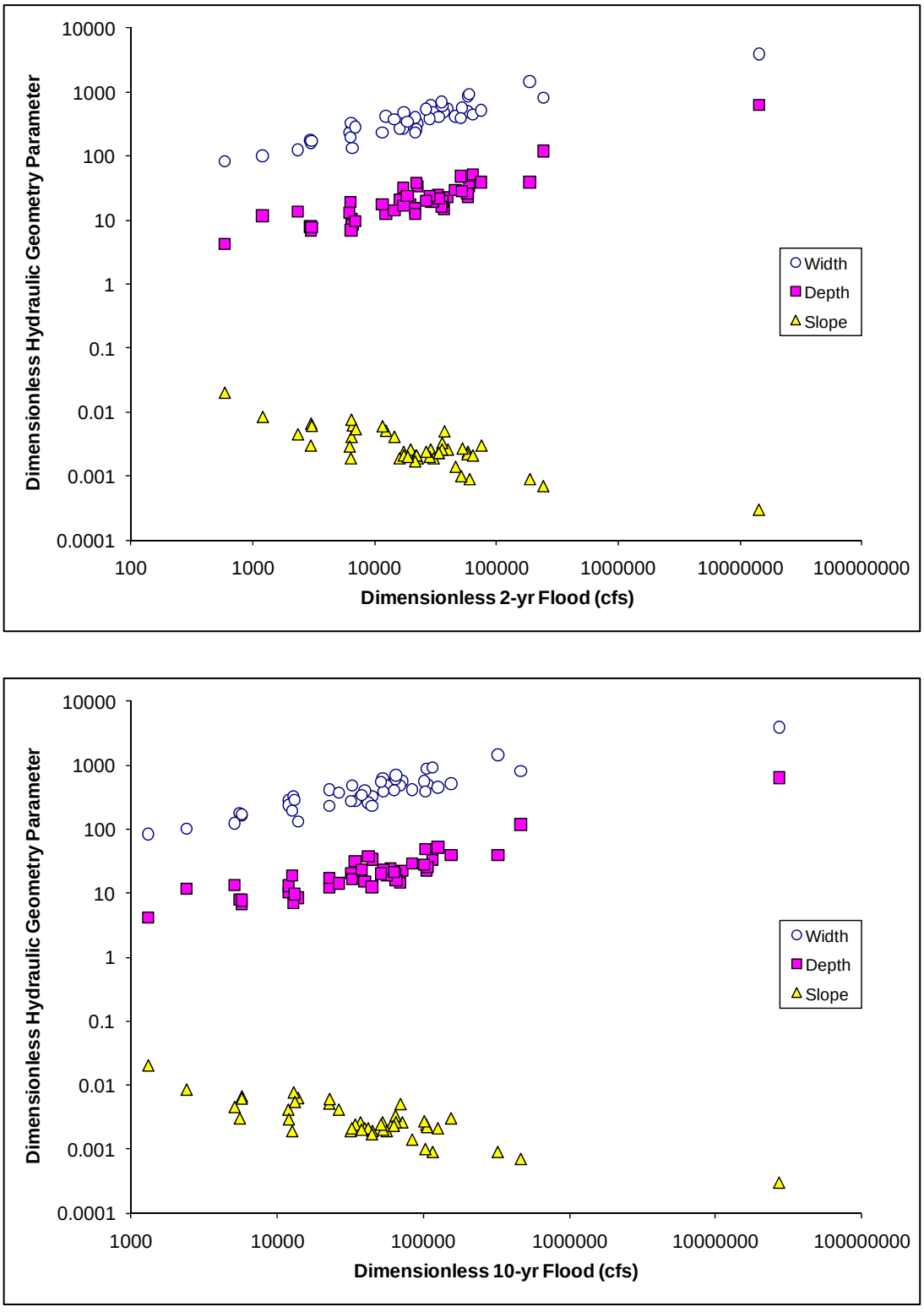


FIGURE 22
Scatter Plots of Estimated Dimensionless Bankfull Widths, Depths, and Slopes versus Two Flood Flow Estimates for the Fluvial Geomorphology Study Sites

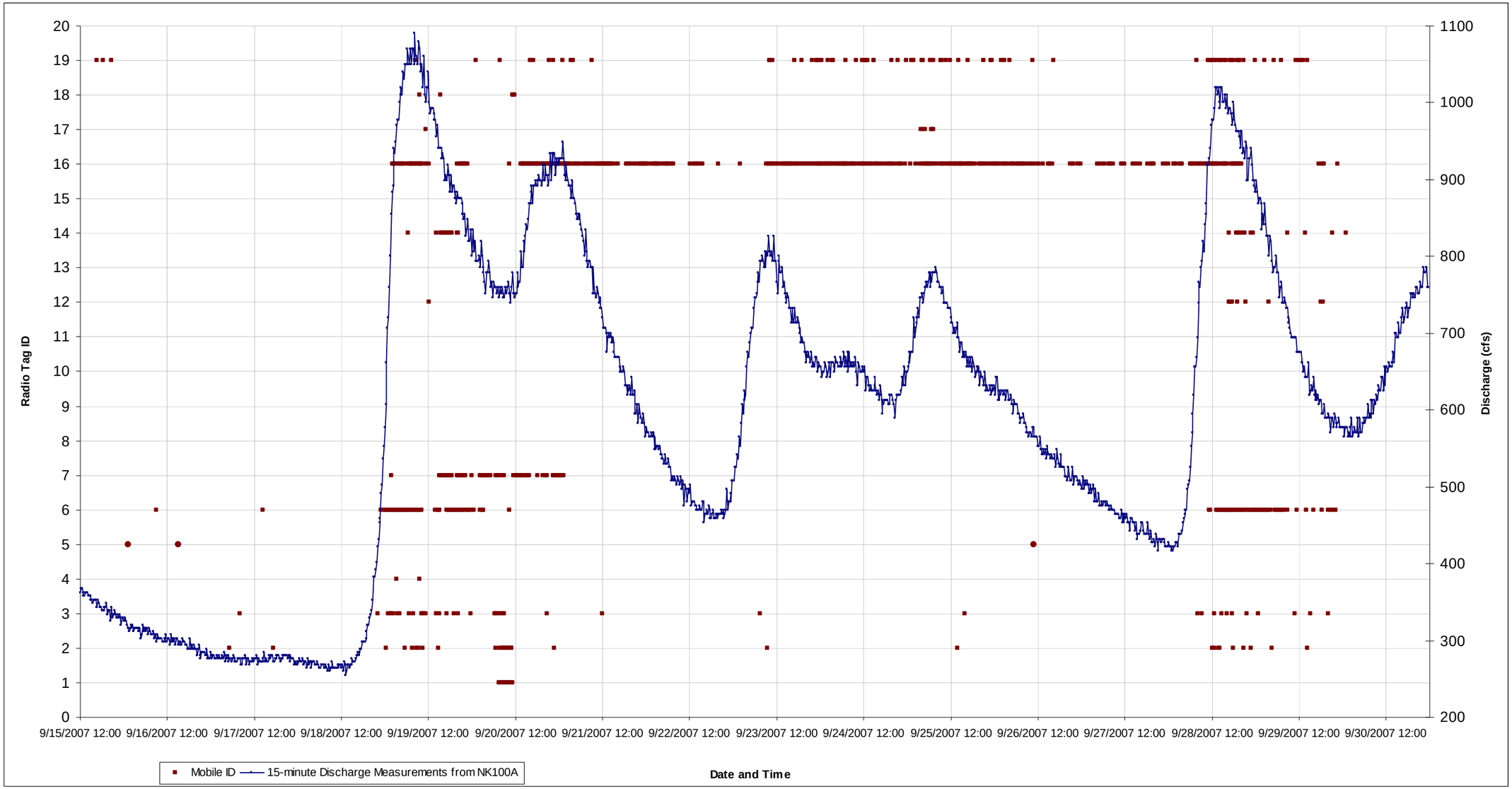


FIGURE 23
Hydrograph at Gaging Station NK100A and Timing of Events When Each Tagged Rock was Mobile

Note: Each “Mobile ID” symbol represents a discrete movement event. Some Mobile ID symbols are squared while others are rounded due to the software used but represent the same type of data. Chart shows hydrograph for the study period (9/15/2007 to 9/30/2007) matched with the logged mobile radio tag identification codes (1-20).

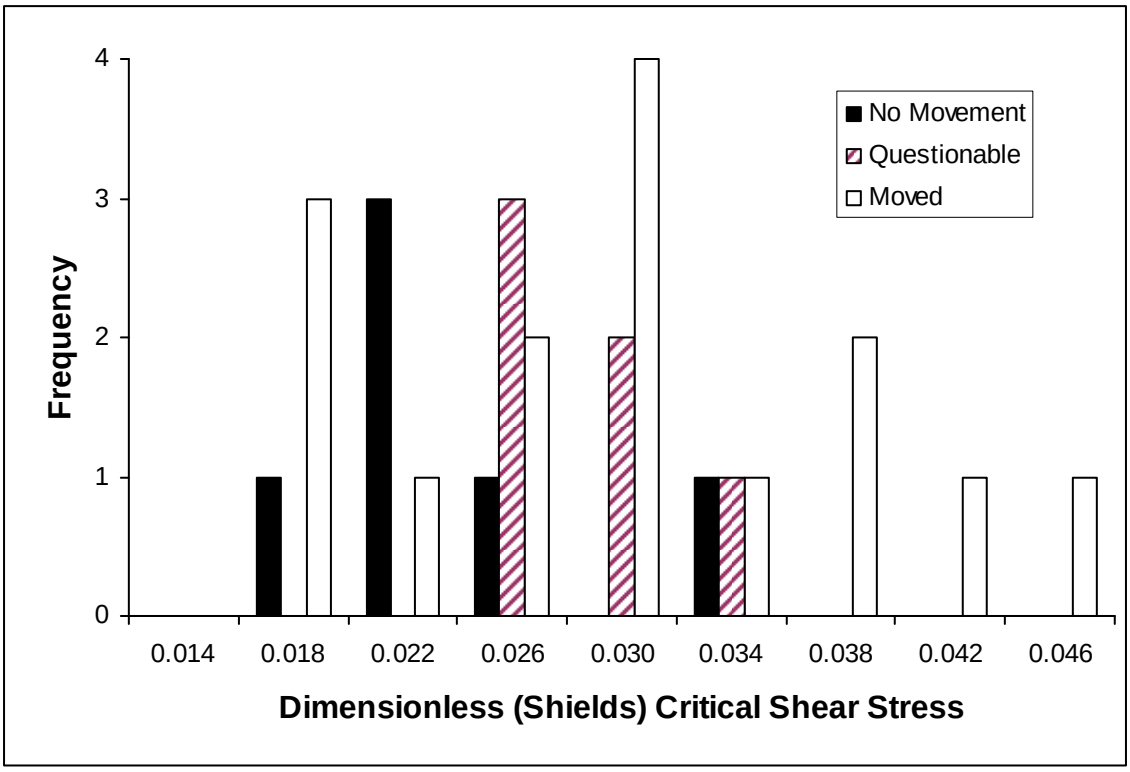
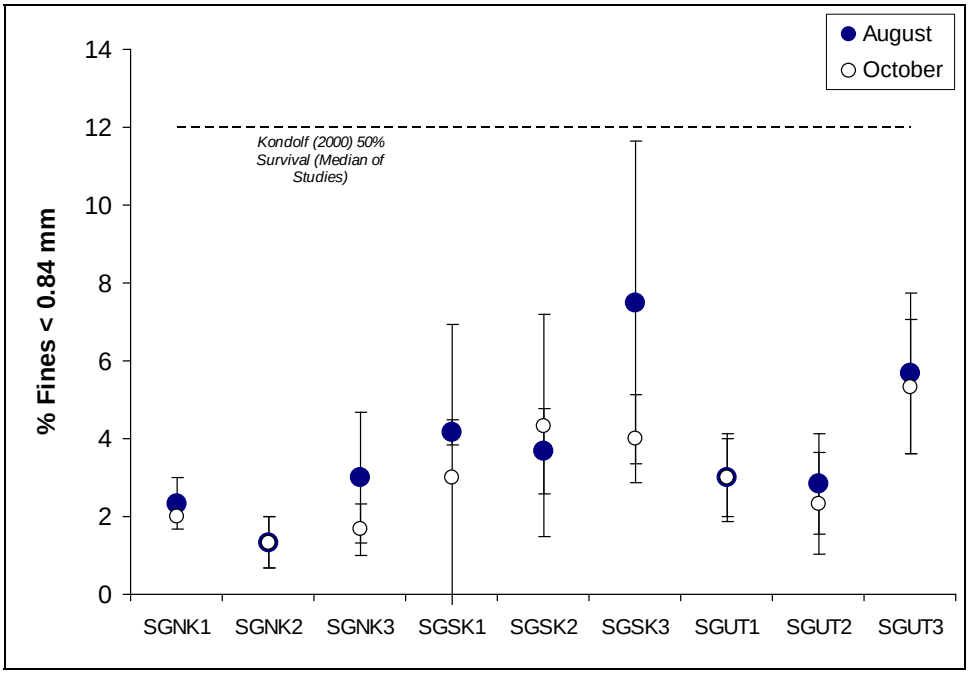


FIGURE 24
Frequency Distributions of Estimates of Dimensionless (Shields) Critical Shear Stress Derived from Radio Tracked Rocks, NFK

Note: Approximates the condition of incipient motion derived from the radio rock study in the FGNK2 fluvial geomorphology study site, NFK.



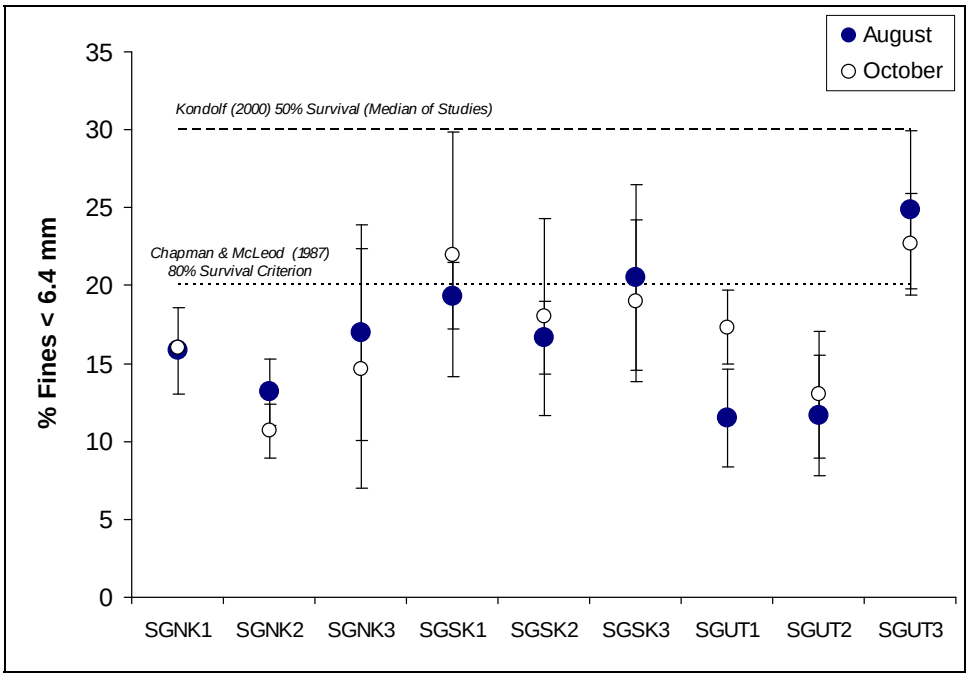


FIGURE 25
Temporal Differences in Two Fine Sediment Levels Sampled in Salmon Spawning Study Sites Before Spawning (August) and After Spawning and Fall Freshets (October)

Note: Nine spawning gravel study sites included three each from the NFK, SFK, and UT. Survival to emergence generally decreases with increasing levels of fine sediment.

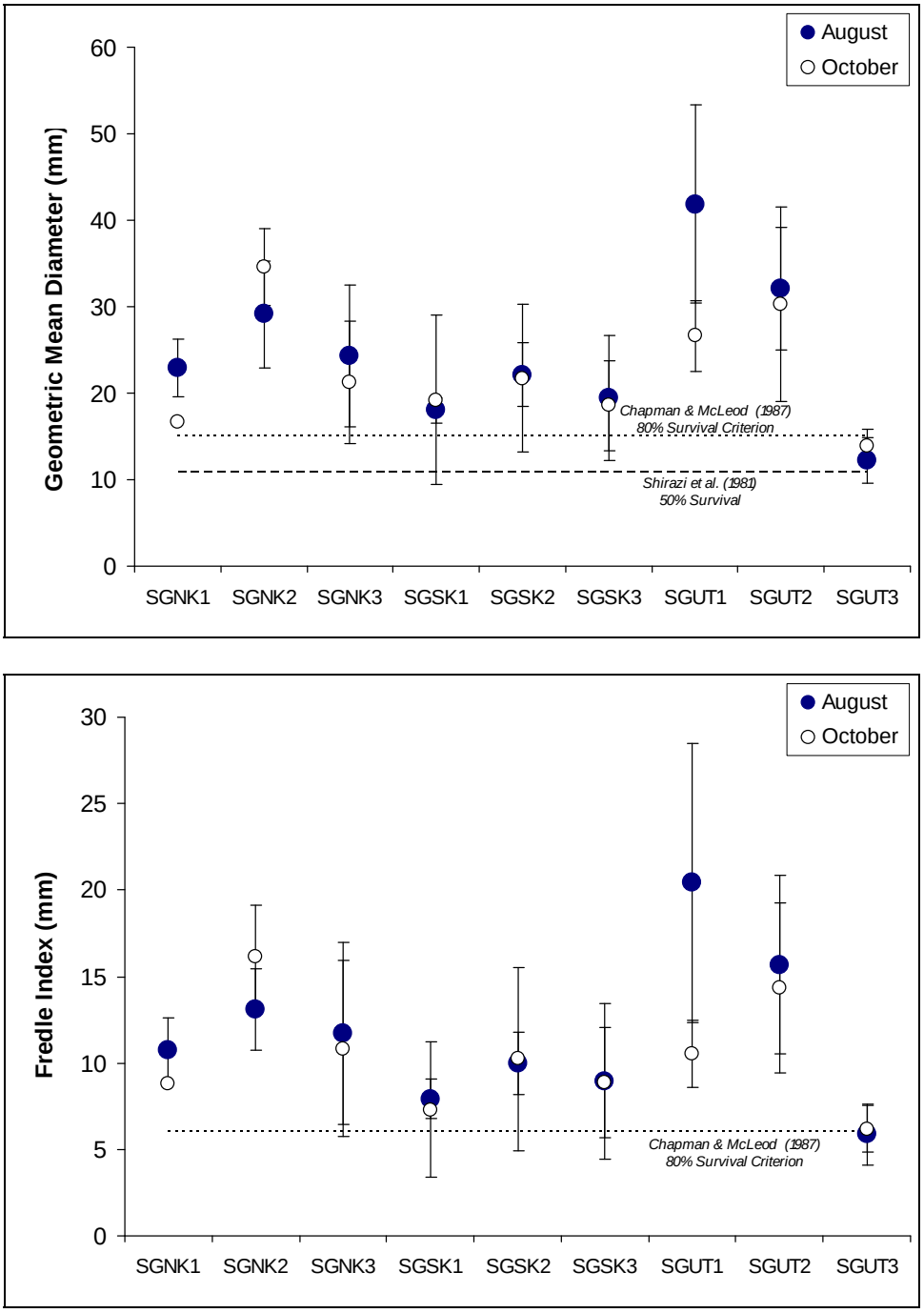
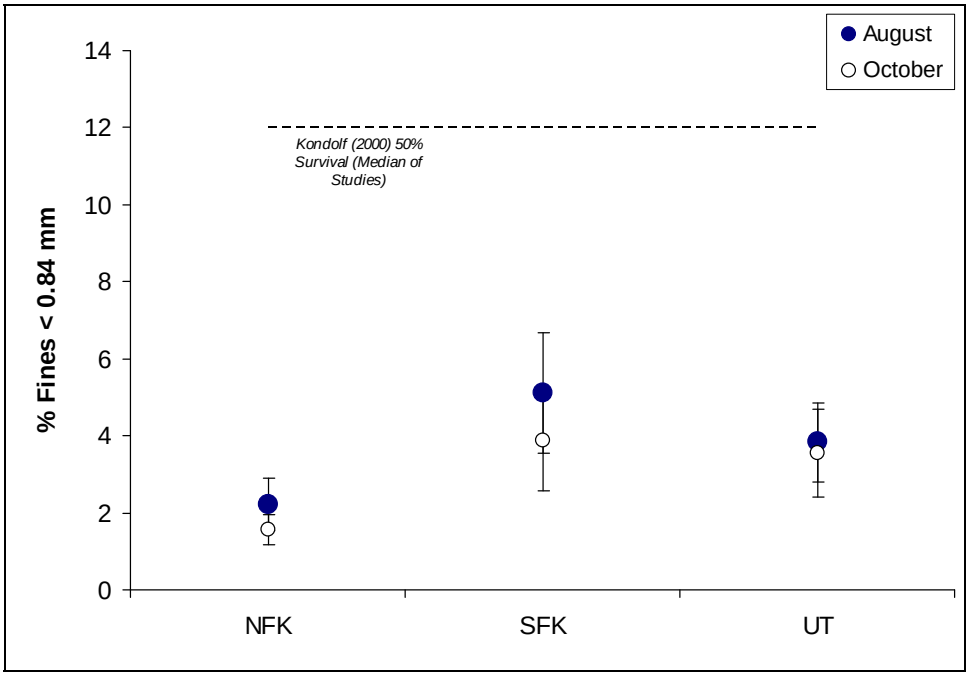


FIGURE 26
Temporal Differences in Geometric Mean Diameter and Fredle Index for Samples Collected from Salmon Spawning Study Sites Before Spawning (August) and After Spawning and Fall Freshets (October)

Note: Nine spawning gravel study sites include three each from the NFK, SFK, and UT. Survival to emergence generally decreases with smaller values of geometric mean diameter and Fredle Index.



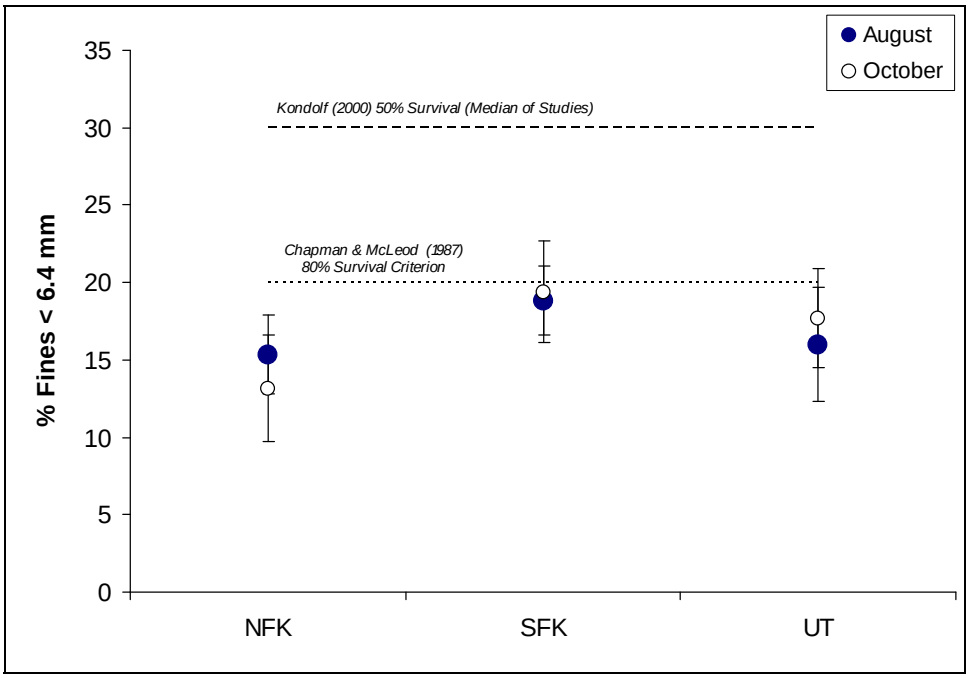


FIGURE 27
Temporal Differences in Two Fine Sediment Levels Sampled in Salmon Spawning Habitat in the Three Study Rivers before Spawning (August) and After Spawning and Fall Freshets (October)

Note: The results for the three spawning gravel sites depicted in Figure 25 are combined for each river (NFK, SFK, and UT). Survival to emergence generally decreases with increasing levels of fine sediment.

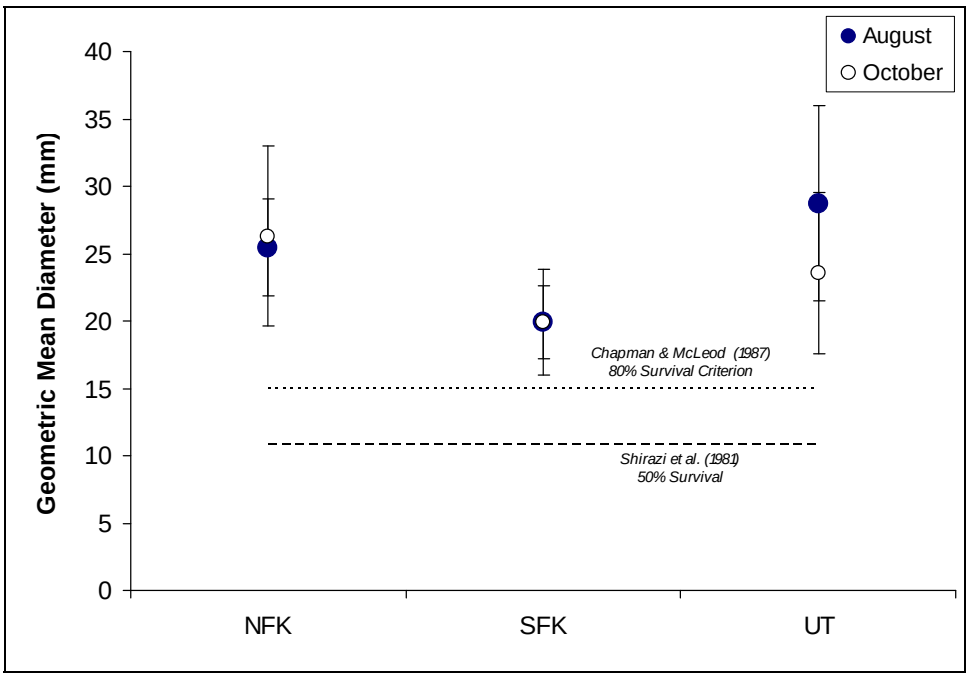


FIGURE 28
Temporal Differences in Geometric Mean Diameter and Fredle Index for Samples Collected from Salmon Spawning Habitat in the Three Study Rivers Before Spawning (August) and After Spawning and Fall Freshets (October)

Note: The results for the three spawning gravel sites depicted in Figure 26 are combined for each river (NFK, SFK, and UT). Survival to emergence generally decreases with smaller values of geometric mean diameter and Fredle Index.

PHOTOGRAPHS

PHOTO 1: Oblique photo of willow lines at FGNK1. Willow lines are evident along the inside of the meander bend. Successive lines of willow show the downstream translation of the bend.

PHOTO 2: Accreting floodplain at FGUT1.4. Photo of accreting floodplain sediments around previously established willows. Photo was taken on the right bank floodplain area of site FGUT1.4 on September 11, 2007.

PHOTO 3: Example of an eroding terrace in the South Fork Koktuli River (Site FGSK1).

ATTACHMENTS

ATTACHMENT 1

Manning's Channel Roughness Calibration

MANNING'S CHANNEL ROUGHNESS CALIBRATION

Overview. HEC-RAS uses Manning's roughness coefficient, *n*, to incorporate resistance to flow within its calculations of energy and hydraulic grade lines at each cross-section within a hydraulic model. Resistance to flow occurs as a result of changes in vegetation, substrate, or floodplain surface materials. To ensure that appropriate *n* values are used, HEC-RAS models should be calibrated. Calibration occurs through an iterative process that compares changes in *n* values to discharge measurements or an established stage rating curve (see section 6.2.4 Roughness Calculations). Roughness values (*n*) are fine-tuned until model output matches discharge measurements or discharge rating curve values.

This model was calibrated using rating curves for the Surface Water Hydrology Team's continuous gages that were located within the model boundaries. The rating curves were generated by Knight-Piesold consulting. At the time of model production, only draft copies of the Knight-Piesold rating curves were available so these were used for model calibration. Of five gages within the FG model boundaries, two gages were used to calibrate the final model: FGUT9 corresponding to gage UT100D and FGSK10 corresponding to gage SK100C. UT100E gage was deemed too close to the downstream boundary of the model to be used for accurate calibration. Further, FGUT2 (corresponding to UT100B) and FGUT7 (corresponding to UT100C2), were not used because rating curve equations were not available at the time of the analysis. The below tables provide information used to calibrate the model. Areas highlighted in yellow represent *n* values where model discharge matches the Knight-Piesold draft rating curves.

TABLE 1
Rating Curve Calibration for FGSK10 using Surface Water Hydrology Gage SK100C

DRAFT Rating Curve for SK100C (January 2008)

Q=17.3(h-91.8)^1.9	Correction Factor Between Hydrology Gage Vertical Datum and Fluvial Geomorphology Vertical Datum	396.97 feet

HEC-RAS Hydraulic Model Output: FGSK10

	Manning's Channel Roughness Values								
	0.039			0.040			0.041		
Q, model	Q, rating curve	h, gage	h, model	Q, rating curve	h, gage	h, model	Q, rating curve	h, gage	h, model
250	254.6	95.9	492.9	259.3	96.0	492.9	264.1	96.0	493.0
260	262.9	96.0	493.0	268.9	96.0	493.0	273.7	96.1	493.1
270	272.5	96.1	493.0	277.4	96.1	493.1	282.3	96.1	493.1
280	281.1	96.1	493.1	286.0	96.2	493.2	292.3	96.2	493.2
290	289.8	96.2	493.2	294.8	96.2	493.2	301.1	96.3	493.3
300	298.6	96.3	493.3	303.7	96.3	493.3	310.1	96.4	493.3
310	306.2	96.3	493.3	312.7	96.4	493.4	319.2	96.4	493.4
320	315.3	96.4	493.4	321.8	96.5	493.4	327.1	96.5	493.5
330	323.1	96.5	493.4	329.7	96.5	493.5	336.4	96.6	493.5
340	332.4	96.5	493.5	339.1	96.6	493.6	344.5	96.6	493.6
350	340.4	96.6	493.6	347.2	96.6	493.6	354.0	96.7	493.7
360	348.5	96.7	493.6	355.4	96.7	493.7	362.3	96.8	493.7
370	356.8	96.7	493.7	363.7	96.8	493.7	370.7	96.8	493.8
380	365.1	96.8	493.8	372.1	96.8	493.8	379.1	96.9	493.9
390	373.5	96.8	493.8	380.6	96.9	493.9	386.3	96.9	493.9
400	380.6	96.9	493.9	387.7	96.9	493.9	394.9	97.0	494.0

Notes:

Rating curve, cross-section data, vertical datum, and field notes provided to IFI by HDR. Rating curve calculated by Knight-Piesold. Version used in the calibration of Manning's channel roughness is a DRAFT copy. Gage cross-section incorporated into FGSK10 hydraulic model between IFI surveyed cross-sections 7 and 8. An iterative process was used whereby a roughness was entered into the model for all in-channel roughness values. The range of discharges of interest was run in the model ("Q, model" in table above). Water surface elevations were then exported at the cross-section of interest ("h, model" in table above), modified by the correction factor calculated between the gage vertical datum and the fluvial geomorphology datum (396.97 feet), and then entered into the rating curve to come up with "Q, rating curve". Channel roughness is calibrated when "Q, model" is equal to "Q, rating curve" (highlighted in yellow).

a. Q = discharge (cubic feet per second)
b. h = stage (feet)

TABLE 2
Rating Curve Calibration for FGUT11 using Surface Water Hydrology Gage UT100E

DRAFT Rating Curve for UT100E (January 2008)

Q=38(h-97.6)^2.44	Correction Factor Between Hydrology Gage Vertical Datum and Fluvial Geomorphology Vertical Datum	363.04 feet

HEC-RAS Hydraulic Model Output: FGUT11

	Manning's Channel Roughness Values								
	0.045			0.047			0.049		
Q, model	Q, rating curve	h, gage	h, model	Q, rating curve	h, gage	h, model	Q, rating curve	h, gage	h, model
45	41.2	98.6	461.7	43.2	98.7	461.7	44.2	98.7	461.7
46	42.2	98.6	461.7	44.2	98.7	461.7	46.2	98.7	461.7
47	44.2	98.7	461.7	45.2	98.7	461.7	47.3	98.7	461.7
48	45.2	98.7	461.7	47.3	98.7	461.7	48.3	98.7	461.7
49	46.2	98.7	461.7	48.3	98.7	461.7	50.5	98.7	461.8
50	48.3	98.7	461.7	49.4	98.7	461.8	51.6	98.7	461.8
51	49.4	98.7	461.8	51.6	98.7	461.8	52.7	98.7	461.8
52	50.5	98.7	461.8	52.7	98.7	461.8	55.0	98.8	461.8
53	52.7	98.7	461.8	53.9	98.8	461.8	56.2	98.8	461.8
54	53.9	98.8	461.8	56.2	98.8	461.8	57.4	98.8	461.8
55	55.0	98.8	461.8	57.4	98.8	461.8	59.7	98.8	461.8

Notes:

Rating curve, cross-section data, vertical datum, and field notes provided to IFI by HDR. Rating curve calculated by Knight-Piesold. Version used in the calibration of Manning's channel roughness is a DRAFT copy. Gage cross-section incorporated into FGSK10 hydraulic model between IFI surveyed cross-sections 7 and 8. An iterative process was used whereby a roughness was entered into the model for all in-channel roughness values. The range of discharges of interest was run in the model ("Q, model" in table above). Water surface elevations were then exported at the cross-section of interest ("h, model" in table above), modified by the correction factor calculated between the gage vertical datum and the fluvial geomorphology datum (396.97 feet), and then entered into the rating curve to come up with "Q, rating curve". Channel roughness is calibrated when "Q, model" is equal to "Q, rating curve" (highlighted in yellow).

a. Q = discharge (cubic feet per second)
b. h = stage (feet)

ATTACHMENT 2

Manning's Floodplain Roughness Reference

MANNING'S FLOODPLAIN ROUGHNESS REFERENCE

Overview. The below 11 locations were used as reference sites to develop Manning's roughness values (*n*) for inclusion in the HEC-RAS model. These locations were chosen as representative of all roughness conditions seen within the project boundaries. Three IFI hydraulic engineers were asked to independently developed a roughness value (utilizing methods described in Arcement and Schneider (1987) and Barnes (1967)). The results of these analyses were then discussed and averaged. The following are each of the 11 reference locations, their reference site ID, finalized roughness values, and a brief site description.

Reference Site	FGNK1
Roughness Value (n)	0.13
Mature willows; 2-3' high grass; low bank	

Reference Site	FGNK6
Roughness Value (n)	0.09
3-4' high grass; clumps of shrubby willows; hummocky ground	

Reference Site	FGNK1
Roughness Value (n)	0.09
Mature spruce; few shrubby willows; low bank	

Reference Site	FGNK5
Roughness Value (n)	0.06
2-3' high grass and horsetails	

Reference Site	FGNK10
Roughness Value (n)	0.09
Trees with medium density grass in understory; low bank	

Reference Site	FGSKt1
Roughness Value (n)	0.06
1-2’ high grass; low bank; slightly hummocky ground.	

Reference Site	FGUT7
Roughness Value (n)	0.07
Low-density mature willows; 2-3' high grass	

Reference Site	FGSK11
Roughness Value (n)	0.07
High banks, very hummocky; 3-4' high grass	

Reference Site	FGNK15
Roughness Value (n)	0.11
Dense shrubby willows; patches of grass 3-4' high; very hummocky ground	

Reference Site	FGNK11
Roughness Value (n)	0.012
Very dense shrubby willows; hummocky ground	

Reference Site	FGNK14
Roughness Value (n)	0.07
Mid-high banks; 3-4' high grassy; hummocky; patches of dense shrubby willow	

ATTACHMENT 3

Fluvial Geomorphology Site Summaries

ACRONYMS AND ABBREVIATIONS

%	percent
cfs	cubic feet per second
D_{50}	particle size for which 50 percent of the distribution is finer
D_{84}	particle size for which 84 percent of the distribution is finer
ft	foot/feet
ft^2	square foot/feet
ft/s	feet per second
lb/ft^3	pound(s) per cubic foot
lb/sq ft`	pound(s) per square foot
mi^2	square mile(s)
mm	millimeter(s)
HEC-RAS	Hydraulic Engineer Center's River Analysis System (modeling software developed by the U.S. Army Corps of Engineers)
K	Koktuli
Rs	River Station
WS	Water Surface
Rt tob	Right Top of Bank
Lt tob	Left Top of Bank
Lat	Latitude
Long	Longitude
Veg	Vegetation

Site Code Descriptions (e.g. FGSK1)

Prefix

FG Fluvial Geomorphology

Basin/Stream Code

NK North Fork Koktuli River
SK South Fork Koktuli River
UT Upper Talarik Creek
MK Main Stem Koktuli

Reach Identifier

1 – X Reference Reaches are labeled numerically
APC- Alaska Peninsula Corporation Gage (followed by number of gage)

Site Summaries: Format & Background

Overview. The following attachment includes a site summary for the three fluvial geomorphology (FG) study drainages: North Fork Koktuli River (NK), South Fork Koktuli River (SK), and Upper Talarik Creek (UT). These site summaries are presented in chronological order and provide a detailed account of data collection and analysis efforts.

Each site summary includes the following information:

(1) *Site Characteristics*. These parameters include: stream discharge, latitude, longitude, slope of stream bed, stream width, stream cross-sectional area, D_{50} sediment size (sediment particle size for which 50 percent of the distribution is finer), D_{84}sediment size (sediment particle size for which 84 percent of the distribution is finer), subbasin drainage area, and percent vegetation type (willow, grass, tree).

(2) *Site Overview.* This includes a brief description of survey efforts, why this segment was chosen as a cross-section, and a summary of sediment transport analyses (see *Incipient Motion* for summary of sediment transport analyses and Shield's number).

(3) *HEC-RAS Summary Output Table.* Stream channel characteristics and how they change with increasing flow (discharge) are displayed including:

a. top width – width of water across the top of a cross section
b. channel area – cross-sectional area of flow
c. hydraulic depth - cross-sectional area of flow divided by wetted perimeter (perimeter of channel that water is touching)
d. max depth – maximum depth in a cross-section
e. energy gradient (E.G.) slope -
f. velocity – channel discharge in cubic feet per second (cfs)
g. Froude # - a dimensionless number that describes stream flow conditions, values indicate:
    - Froude # >1 = supercritical flow (fast, rapids)
    - Froude # = 1, critical flow
    - Froude # <1, subcritical (slow)
h. Shear stress – hydraulic force exerted on the channel boundary
i. weighted Manning's *n* – constant for Manning's equation that indicates resistance to flow

These characteristics change with changes in discharge (e.g. depth typically increases with increase in discharge). Results are presented for each reach (e.g. FGNK1) and for river station (the cross-sections surveyed by Inter-Fluve staff). This output was generated using the U.S. Army Corps of Engineers Hydraulic Engineering Center River Analysis System (HEC-RAS). HEC-RAS is a one-dimensional modeling program that uses topographic data and flow information to simulate streamflow.

(4) *HEC-RAS Longitudinal Profile.* This image is a lengthwise view of the entire length of the stream reach, including a streambed profile (streambed elevations from the downstream end are at Main Channel Distance 0, to the upstream end at Main Channel Distance 410). Water surface (WS) elevation profiles are displayed as blue lines and distinguished both by elevation, with the lowest discharge (e.g. WS 1300 cfs) corresponding to the lowest elevation line displayed, and also by variations in geometric shapes present on the lines. Figure 1 highlights some important features of HEC-RAS longitudinal profiles.

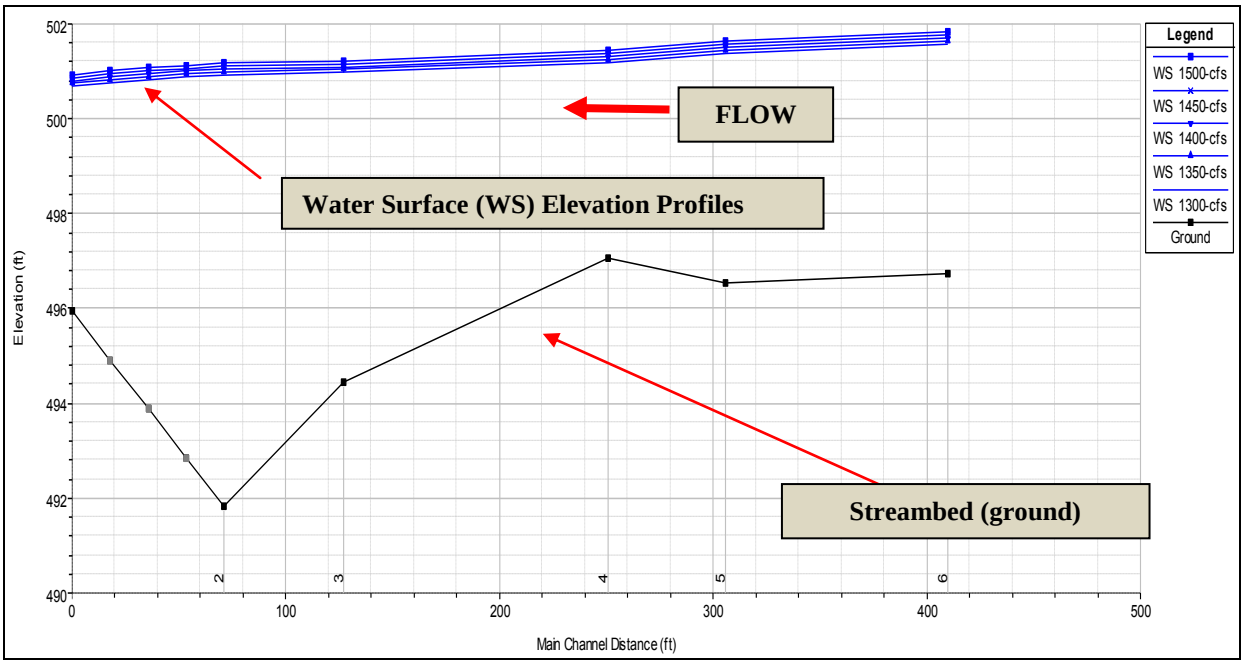


Figure 1 Example HEC-RAS Longitudinal Profile. The streambed ground is represented by a black line and water surface elevation profiles (and how they vary with changing discharges) are represented by the blue lines and referred to in the legend (e.g. WS 1500 cfs)

(5) *HEC-RAS Cross-Section.* These images are channel cross-sections, facing downstream. Station (ft) refers to the total cross-sectional area surveyed from left to right. Figure 2 and Figure 3 demonstrate the relationship between a longitudinal profile and cross-sectional images. Cross-sections are highlighted along the horizontal axis within the longitudinal profile. These numbers correspond to River Station (RS) and within figure labels throughout the document. Again, Water surface (WS) elevation profiles are displayed as blue lines and distinguished both by elevation, with the lowest discharge (e.g. WS 1300 cfs) corresponding to the lowest elevation line displayed, and also by variations in geometric shapes present on the lines. Figure 3 highlights some important features of HEC-RAS cross-sectional images.

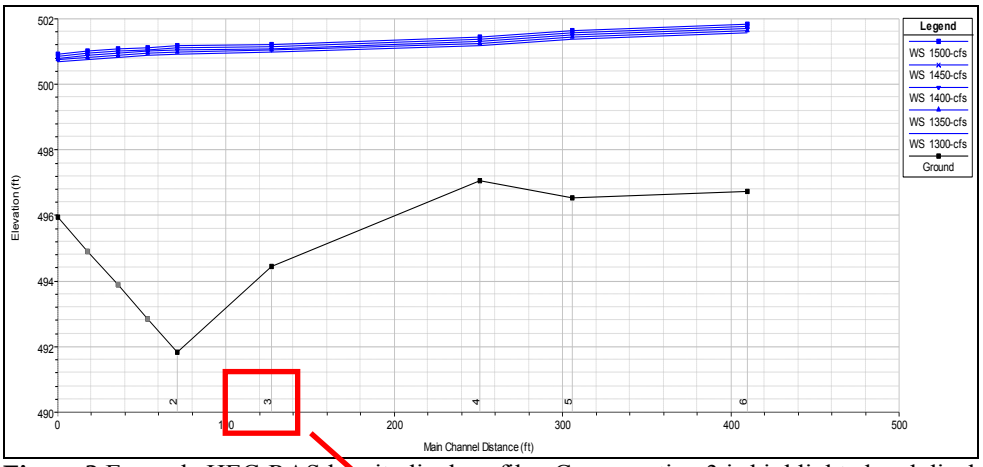


Figure 2 Example HEC-RAS longitudinal profile. Cross-section 3 is highlighted and displayed in figure 3.

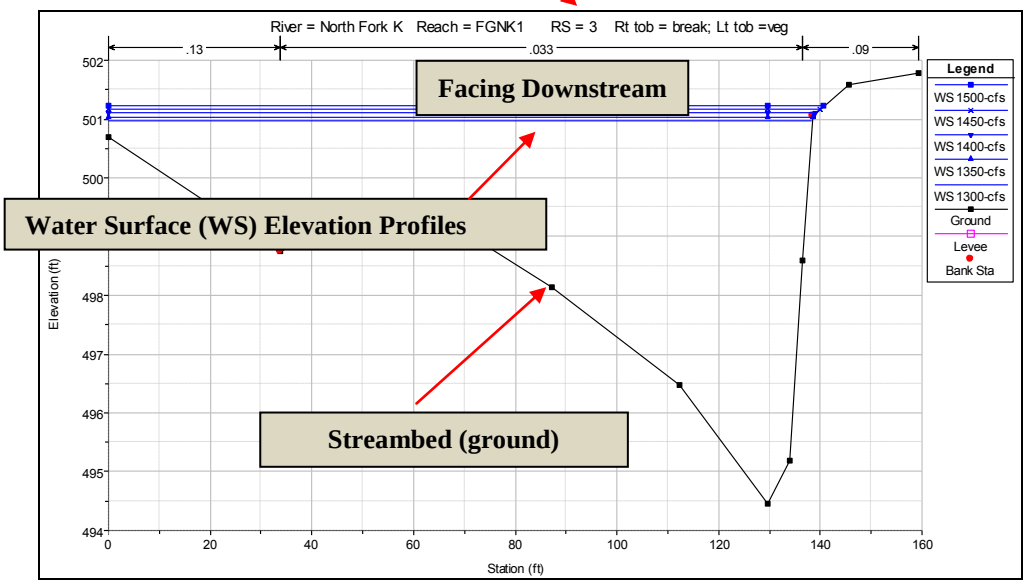


Figure 3 Example HEC-RAS cross-section.

(6) *Incipient Motion Analysis.* The stability of a stream is affected both by the stream's sediment supply and by the pressure exerted by the stream's discharge, or hydraulic force. This hydraulic force, termed *shear stress,* is the force per unit area acting on sediments that make up the channel's streambed and streambank. The channel shear stress affects both the size and quantity of sediments that move through a stream. Shear stress is determined by:

$$\tau_o = \gamma_w R S_f \qquad \text{(Equation T.1)}$$

where:

τ_o = channel bed shear stress (lb/ft^2)
γ_w = unit weight of water, ~62.4 lb/ft^3
R = hydraulic radius (ft)
S_f = friction slope or energy slope

Results from the HEC-RAS model and radio rock study were used to calculate reach-average channel shear stress values for each subreach and for each discharge frequency represented in the model. Hydraulic depth was used for hydraulic radius as an approximation.

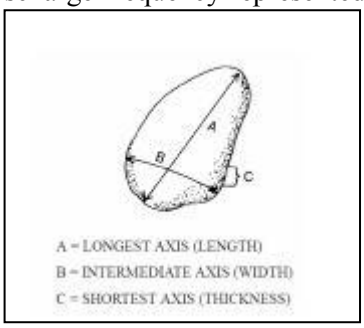


Figure 4 Different axes along a pebble (Wolman 1954)

For this investigation the mobility of the channel bed material was estimated using the Shield's relationship (1936). The Shields equation describes the hydraulic condition at which motion of individual sediment particles may be initiated. This beginning of motion referred to as incipient motion is extensively used in many sediment transport equations and stability relationships. The hydraulic conditions at which incipient motion occurs can be described as the critical shear stress of the bed material. The critical shear stress can be expressed as:

$$\tau_c^* = \frac{\tau_c}{d(\gamma_S - \gamma_W)}, \qquad \text{(Equation T.2)}$$

where:

τ_c = critical shear stress to initiate motion of the bed material (lb/ft^2)
d = diameter of the B axis (see figure 4) of each measured rock before deployment
γ_S = specific weight of radio tagged rocks (weight of rock/volume (lb/ft^3))
γ_W = unit weight of water, ~62.4 lb/ft^3

(7) *Photographic Documentation.* Each site summary provides a detail of the left and right banks, bank composition, and an oblique of the reach.

(8) *Pebble Count Distribution.* This plot and table represent the ranges of pebble (stream substrate) size (from smallest to largest) taken at a given cross-section. One-hundred pebbles are sampled by walking a cross-section and picking up the pebble at your left toe every step for 100 steps (see Fluvial Geomorphology Report 6.1.3) (Wolman 1954).

(9) *Hydrograph.* Where available, USGS flow data (a compilation of measured stream discharges) is presented.

(10) *Site Map.* A reach map displaying the location and River Station (RS) numbering of each HEC-RAS section, points that were surveyed, locations of Wolman pebble count sampling, locations of bulk samples, and surveyed benchmarks.

NORTH KOKTULI BASIN
Fluvial Geomorphology Site Summaries

SITE DESCRIPTION: FGNK1

Site Characteristics.

	Site Name	**FGNK1**	
Discharge (cfs)	**1450 (1300-1500)**	Width (ft)	**76.5 (74.3-78.8)**
Slope	**0.0023**	Cross-sectional Area (ft^2)	**298 (269-319)**
D_{50}	**49**	D_{84}	**85**
Lat/Long Location	**N59.83983 W155.76777**	Drainage Area (mi^2)	**108**
	% Willow	**50**	
	% Grass	**0**	
	% Tree	**50**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 430 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. A side channel along the right bank of the downstream hydraulic control was surveyed in as well. Due to its angle off the main channel and the size and momentum of the main channel, flow causes this side channel to be ineffective during high flows. The right bank was, therefore, interpolated to complete Section 1. Sections 4 through 6 characterize the riffle that serves as the reference reach through which the pebble count was taken (Section 5).

For a Shields number of 0.017, the D_{84} begins to move at 1,500 cfs through Sections 5 and 6 while for a Shields number of 0.026, the D_{50} has begun to move by 1,350 cfs through the same sections. Both the D_{84} and D_{50} have already begun to move before 1300 cfs on Section 4. These results correlate well with the range of channel forming discharges at FGNK2 and the geometry through the reach.

The reference reach sections (Sections 4 through 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK1	6	1300-cfs	1300	74.3	299	4.0	4.9	0.0017	4.3	0.38	0.41	0.035
FGNK1	6	1350-cfs	1350	74.4	304	4.1	4.9	0.0018	4.4	0.38	0.43	0.035
FGNK1	6	1400-cfs	1400	74.4	309	4.2	5.0	0.0018	4.5	0.39	0.45	0.036
FGNK1	6	1450-cfs	1450	74.5	314	4.2	5.1	0.0018	4.5	0.39	0.46	0.036
FGNK1	6	1500-cfs	1500	74.6	319	4.3	5.1	0.0019	4.6	0.39	0.48	0.036
FGNK1	5	1300-cfs	1300	78.8	298	3.8	4.9	0.0019	4.3	0.39	0.42	0.035
FGNK1	5	1350-cfs	1350	78.8	303	3.9	4.9	0.0019	4.4	0.39	0.44	0.035
FGNK1	5	1400-cfs	1400	78.8	308	3.9	5.0	0.0019	4.4	0.40	0.45	0.035
FGNK1	5	1450-cfs	1450	78.8	313	4.0	5.1	0.0019	4.5	0.40	0.46	0.035
FGNK1	5	1500-cfs	1500	78.8	318	4.0	5.1	0.0020	4.6	0.40	0.48	0.035
FGNK1	4	1300-cfs	1300	76.4	269	3.5	4.1	0.0032	4.7	0.44	0.68	0.040
FGNK1	4	1350-cfs	1350	76.4	274	3.6	4.2	0.0032	4.8	0.45	0.70	0.040
FGNK1	4	1400-cfs	1400	76.4	278	3.6	4.3	0.0033	4.9	0.45	0.72	0.040
FGNK1	4	1450-cfs	1450	76.4	283	3.7	4.3	0.0033	5.0	0.46	0.74	0.040
FGNK1	4	1500-cfs	1500	76.4	287	3.8	4.4	0.0034	5.1	0.46	0.77	0.040
FGNK1	3	1300-cfs	1300	104.6	332	3.2	6.5	0.0018	3.9	0.38	0.36	0.035
FGNK1	3	1350-cfs	1350	104.6	338	3.2	6.6	0.0019	3.9	0.38	0.37	0.035
FGNK1	3	1400-cfs	1400	104.6	345	3.3	6.6	0.0019	4.0	0.39	0.38	0.035
FGNK1	3	1450-cfs	1450	104.6	351	3.4	6.7	0.0019	4.0	0.39	0.39	0.035
FGNK1	3	1500-cfs	1500	104.6	357	3.4	6.8	0.0019	4.1	0.39	0.40	0.035
FGNK1	2	1300-cfs	1300	109.0	386	3.5	9.1	0.0012	3.4	0.31	0.25	0.034
FGNK1	2	1350-cfs	1350	109.0	393	3.6	9.2	0.0012	3.4	0.32	0.26	0.034
FGNK1	2	1400-cfs	1400	109.0	400	3.7	9.2	0.0012	3.5	0.32	0.27	0.034
FGNK1	2	1450-cfs	1450	109.0	406	3.7	9.3	0.0012	3.5	0.32	0.27	0.034
FGNK1	2	1500-cfs	1500	109.0	413	3.8	9.3	0.0012	3.6	0.33	0.28	0.034
FGNK1	1	1300-cfs	1300	110.3	299	2.7	4.7	0.0027	4.3	0.46	0.45	0.034
FGNK1	1	1350-cfs	1350	110.3	306	2.8	4.8	0.0027	4.4	0.46	0.45	0.034
FGNK1	1	1400-cfs	1400	110.3	313	2.8	4.9	0.0027	4.5	0.47	0.47	0.034
FGNK1	1	1450-cfs	1450	110.3	319	2.9	4.9	0.0027	4.5	0.47	0.47	0.034
FGNK1	1	1500-cfs	1500	110.3	325	3.0	5.0	0.0027	4.6	0.47	0.48	0.034

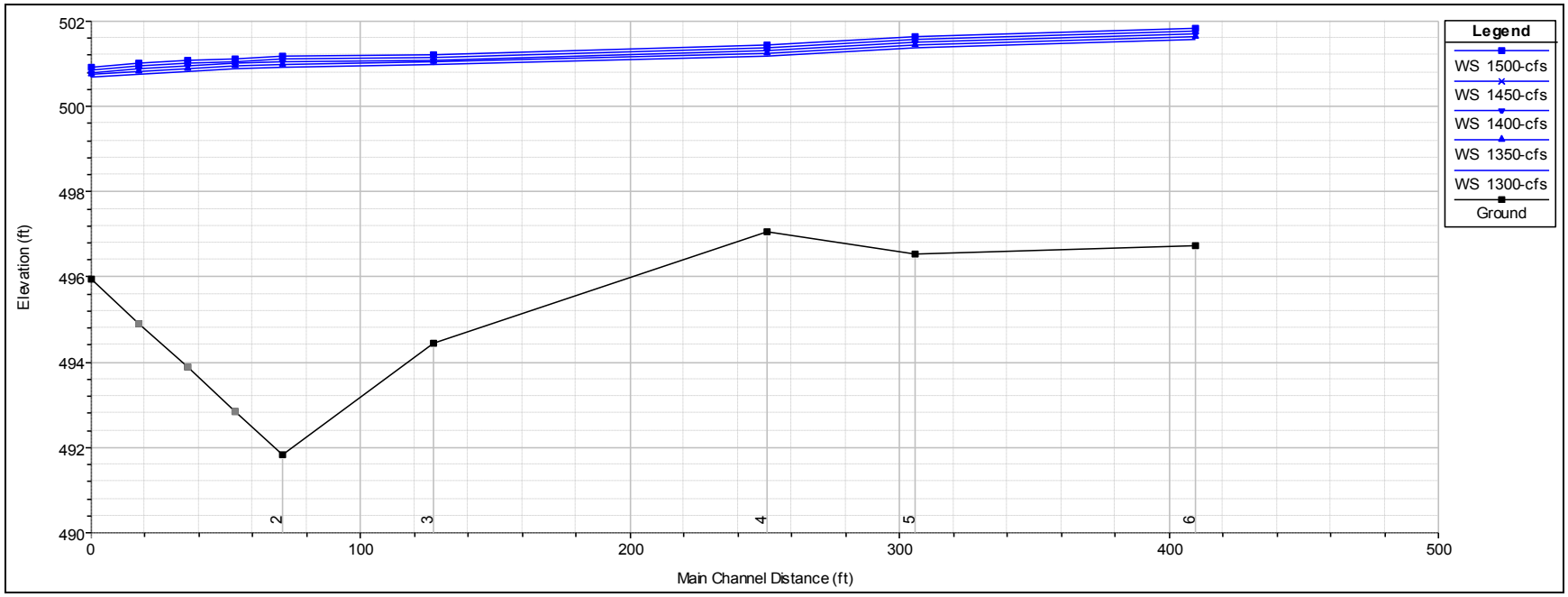


Figure 5 HEC-RAS longitudinal profile output for Reach FGNK1. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

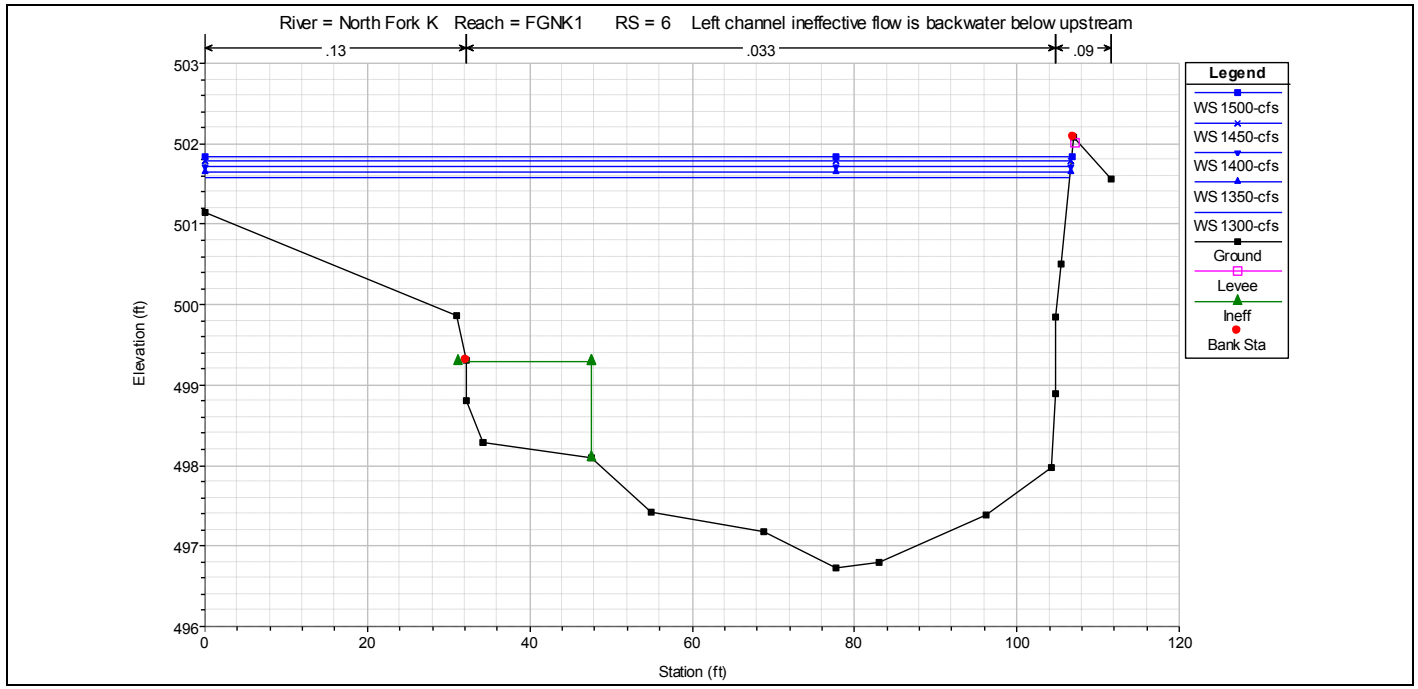


Figure 6. River Station (RS) 6 on River Reach FGNK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

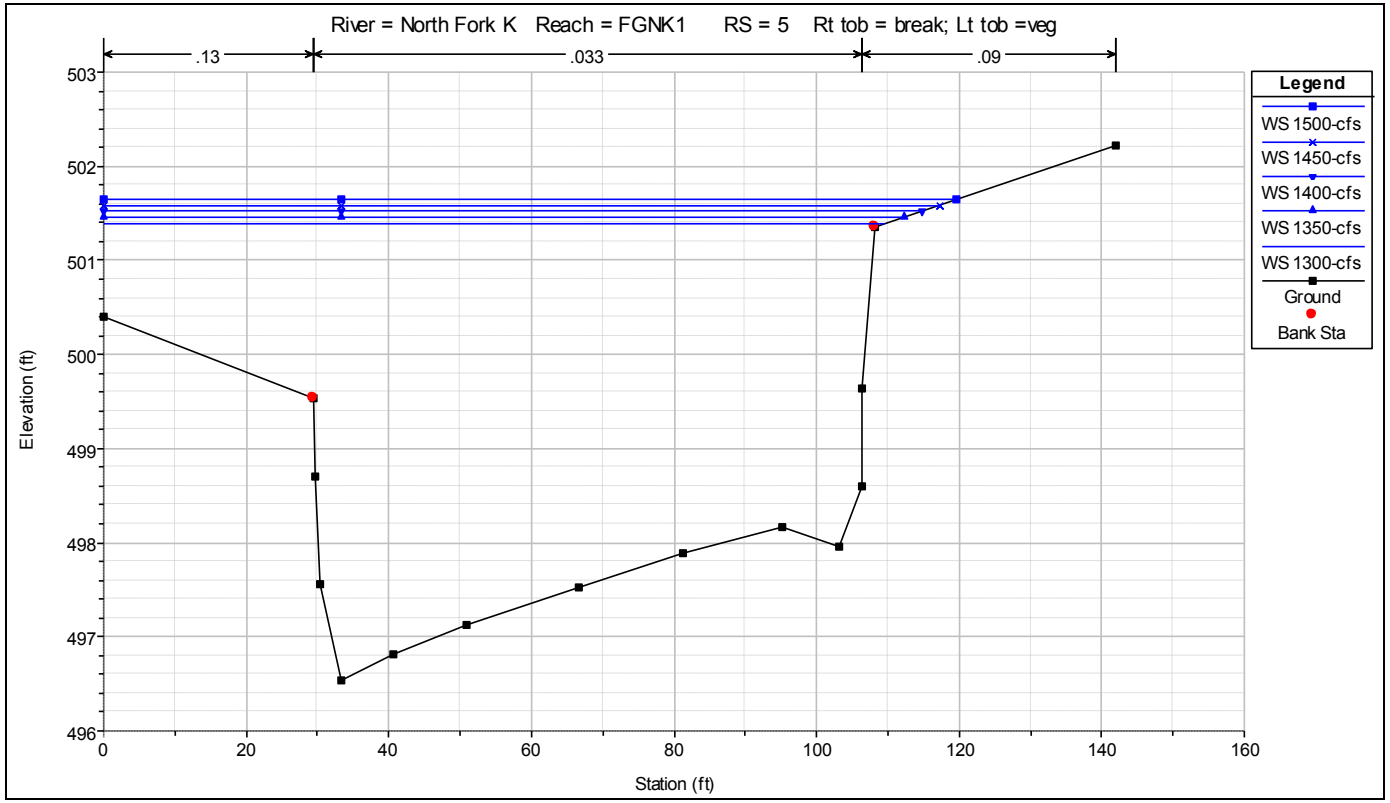


Figure 7 River Station (RS) 5 on River Reach FGNK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

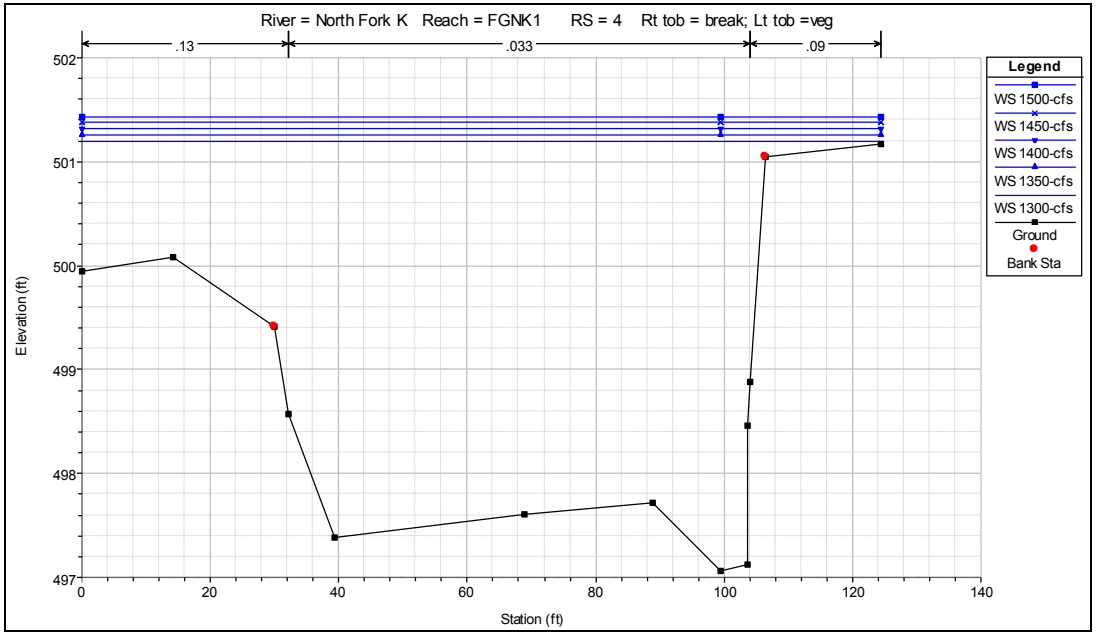


Figure 8 River Station (RS) 4 on River Reach FGNK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

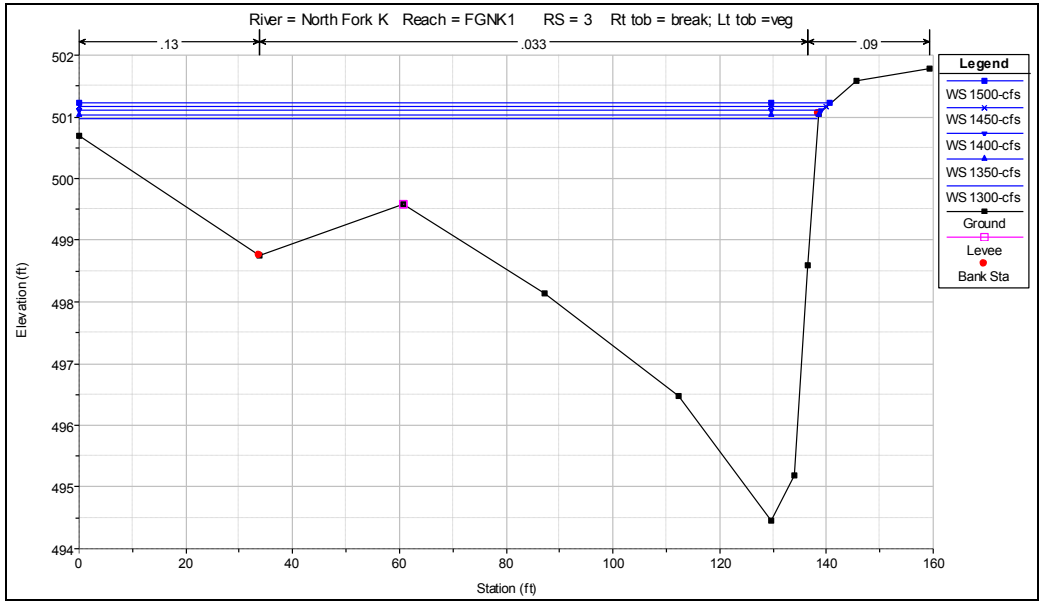


Figure 9 River Station (RS) 3 on River Reach FGNK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

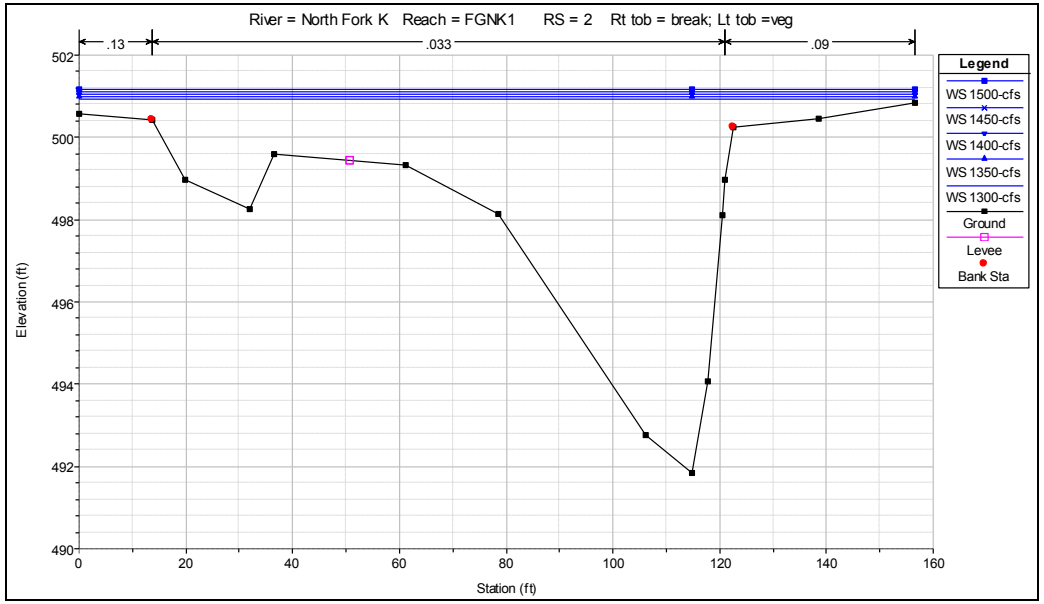


Figure 10 River Station (RS) 2 on River Reach FGNK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

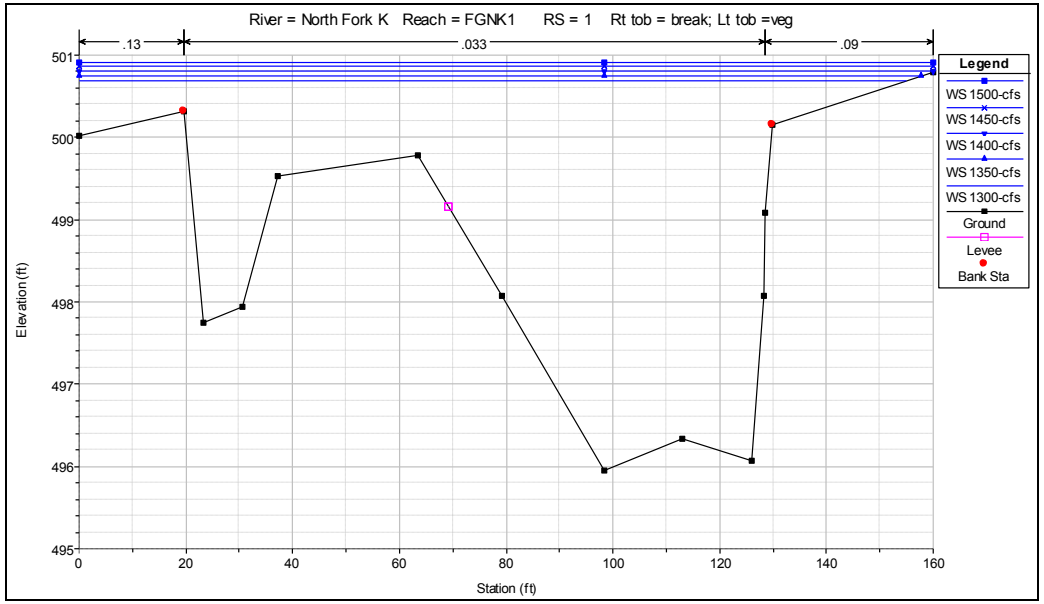


Figure 11 River Station (RS) 1 on River Reach FGNK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK1	6	1300-cfs	0.41	74	60	48
FGNK1	6	1350-cfs	0.43	77	63	51
FGNK1	6	1400-cfs	0.45	81	66	53
FGNK1	6	1450-cfs	0.46	83	67	54
FGNK1	6	1500-cfs	0.48	86	70	57
FGNK1	5	1300-cfs	0.42	76	61	49
FGNK1	5	1350-cfs	0.44	79	64	52
FGNK1	5	1400-cfs	0.45	81	66	53
FGNK1	5	1450-cfs	0.46	83	67	54
FGNK1	5	1500-cfs	0.48	86	70	57
FGNK1	4	1300-cfs	0.68	122	99	80
FGNK1	4	1350-cfs	0.70	126	102	82
FGNK1	4	1400-cfs	0.72	130	105	85
FGNK1	4	1450-cfs	0.74	133	108	87
FGNK1	4	1500-cfs	0.77	139	112	91
FGNK1	3	1300-cfs	0.36	65	52	42
FGNK1	3	1350-cfs	0.37	67	54	44
FGNK1	3	1400-cfs	0.38	68	55	45
FGNK1	3	1450-cfs	0.39	70	57	46
FGNK1	3	1500-cfs	0.40	72	58	47
FGNK1	2	1300-cfs	0.25	45	36	29
FGNK1	2	1350-cfs	0.26	47	38	31
FGNK1	2	1400-cfs	0.27	49	39	32
FGNK1	2	1450-cfs	0.27	49	39	32
FGNK1	2	1500-cfs	0.28	50	41	33
FGNK1	1	1300-cfs	0.45	81	66	53
FGNK1	1	1350-cfs	0.45	81	66	53
FGNK1	1	1400-cfs	0.47	85	68	55
FGNK1	1	1450-cfs	0.47	85	68	55
FGNK1	1	1500-cfs	0.48	86	70	57

PHOTOGRAPH DOCUMENTATION: FGNK1

Left bank along reference reach for FGNK1

Right bank along reference reach for FGNK1

Looking downstream from reference reach for FGNK1

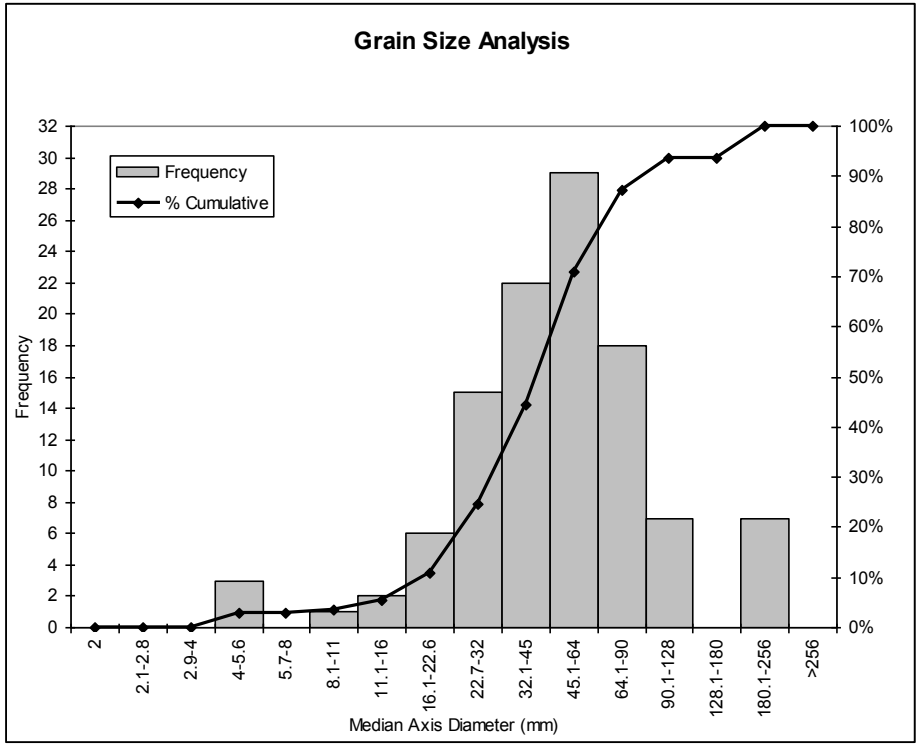
Looking upstream from reference reach for FGNK1

PHOTOGRAPH DOCUMENTATION: FGNK1

Bank composition detail at FGNK1

Oblique of site FGNK1

PEBBLE COUNT DISTRIBUTION: FGNK1



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	3	2.7%
5.7-8	0	2.7%
8.1-11	1	3.6%
11.1-16	2	5.5%
16.1-22.6	6	10.9%
22.7-32	15	24.5%
32.1-45	22	44.5%
45.1-64	29	70.9%
64.1-90	18	87.3%
90.1-128	7	93.6%
128.1-180	0	93.6%
180.1-256	7	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location at FGNK1: Sampled across River Station 5

1,314,128 1,314,528 1,314,928 1,315,328 1,315,728

2,137,953

2,137,553

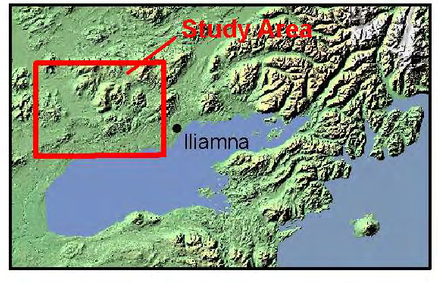
2,137,153

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,314,128 1,314,528 1,314,928 1,315,328 1,315,728

SITE DESCRIPTION: FGNK2

Site Characteristics.

Site Name		**FGNK2**	
Discharge (cfs)	**1400 (1300-1500)**	Width (ft)	**112 (99.9-123.8)**
Slope	**0.0024**	Cross-sectional Area (ft^2)	**326 (259-391)**
D_{50}	**39**	D_{84}	**73**
Lat/Long Location	**N59.8398 W155.7767**	Drainage Area (mi^2)	**106**
% Willow	**80**		
% Grass	**10**		
% Tree	**10**		

Site Overview. Located just downstream of the USGS stream gage and co-located with surface hydrology site NK100A, FGNK2 serves as a point of reference for the North Fork Koktuli River. Roughly two years of hydrology data (9/04 – 6/06) allowed for an estimate of the frequency and magnitude of discharge events (see attached hydrograph). Additionally, the deployment and monitoring of radio-tagged rocks in the fall of 2007 between cross-sections 4 and 5 provided further calibration of the hydraulic model with an incipient motion analysis.

During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 1200 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 4 through 6 characterize the riffle which serves as the reference reach. Recent fish activity within the riffle confined the pebble count and bulk sample to between Sections 4 and 5 along a representative section away from the influence of fish. Since the hydraulics difference between Sections 4 and 5 were great, a section was interpolated within HEC-RAS (Section 4.5*) to account for the location of the pebble count in our incipient motion analysis. The channel is actively eroding along the right bank through the pool (Sections 2-4). A gravel bar has been established at the inside of this bend.

Using Shields numbers of 0.026 for the D_{50} and 0.017 for the D_{84} (see discussion of Radio Tag Study), the D_{84} becomes mobile for a flow not much higher than 1500 cfs on Section 4.5 and between 1400 and 1450 cfs on Section 6. The D_{50} is very mobile throughout the reference reach showing incipient motion prior to 1300 cfs on all sections except Section 5. Geomorphically, the target flow of 1400 cfs shows good agreement with the geometry, notably an inflection point along the left bank of Section 5. This inflection represents the bank and the edge of the willows. Sections 2 and 3 are located in the pool. These inflection points are at the top of the gravel bar where the establishment of young willows effectively acts like a bank, strongly indicating the effectiveness of this range of flows.

SITE DESCRIPTION: FGNK2

The strong agreement between the incipient motion analysis and the site's geomorphic signatures indicate that the channel forming discharge is within the range of 1300-1500 cfs with a target flow of 1400 cfs. This is supported by the hydrology data showing that these flows have occurred three times in the period of record.

The reference reach sections (Sections 4 through 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK2	6	1300-cfs	1300	112.9	315	2.8	3.6	0.0022	4.1	0.43	0.38	0.033
FGNK2	6	1350-cfs	1350	113.0	324	2.9	3.7	0.0022	4.2	0.43	0.39	0.034
FGNK2	6	1400-cfs	1400	113.2	332	2.9	3.8	0.0022	4.2	0.43	0.40	0.034
FGNK2	6	1450-cfs	1450	113.3	339	3.0	3.8	0.0022	4.3	0.43	0.41	0.034
FGNK2	6	1500-cfs	1500	113.5	347	3.1	3.9	0.0023	4.3	0.44	0.42	0.034
FGNK2	5	1300-cfs	1300	121.4	357	3.0	4.5	0.0016	3.6	0.37	0.29	0.033
FGNK2	5	1350-cfs	1350	122.5	366	3.0	4.6	0.0016	3.7	0.38	0.29	0.033
FGNK2	5	1400-cfs	1400	123.5	375	3.0	4.6	0.0016	3.7	0.38	0.30	0.033
FGNK2	5	1450-cfs	1450	123.8	383	3.1	4.7	0.0016	3.8	0.38	0.30	0.033
FGNK2	5	1500-cfs	1500	123.8	391	3.2	4.8	0.0016	3.8	0.38	0.31	0.033
FGNK2	4.5*	1300-cfs	1300	111.9	313	2.8	4.1	0.0022	4.2	0.44	0.38	0.033
FGNK2	4.5*	1350-cfs	1350	112.0	321	2.9	4.1	0.0022	4.2	0.44	0.38	0.033
FGNK2	4.5*	1400-cfs	1400	112.0	328	2.9	4.2	0.0022	4.3	0.44	0.39	0.033
FGNK2	4.5*	1450-cfs	1450	112.0	336	3.0	4.3	0.0022	4.3	0.44	0.40	0.033
FGNK2	4.5*	1500-cfs	1500	112.1	343	3.1	4.4	0.0021	4.4	0.44	0.40	0.033
FGNK2	4	1300-cfs	1300	99.9	259	2.6	3.5	0.0035	5.0	0.55	0.56	0.033
FGNK2	4	1350-cfs	1350	99.9	266	2.7	3.6	0.0035	5.0	0.54	0.57	0.033
FGNK2	4	1400-cfs	1400	100.0	273	2.7	3.7	0.0034	5.1	0.54	0.57	0.033
FGNK2	4	1450-cfs	1450	100.0	279	2.8	3.8	0.0034	5.1	0.54	0.58	0.033
FGNK2	4	1500-cfs	1500	100.1	286	2.9	3.8	0.0033	5.2	0.54	0.59	0.033
FGNK2	3	1300-cfs	1300	89.2	271	3.0	4.7	0.0026	4.8	0.48	0.49	0.033
FGNK2	3	1350-cfs	1350	89.3	278	3.1	4.8	0.0026	4.8	0.48	0.50	0.033
FGNK2	3	1400-cfs	1400	89.3	284	3.2	4.8	0.0026	4.9	0.48	0.51	0.033
FGNK2	3	1450-cfs	1450	89.4	291	3.3	4.9	0.0026	5.0	0.48	0.52	0.033
FGNK2	3	1500-cfs	1500	89.4	297	3.3	5.0	0.0026	5.0	0.49	0.52	0.033
FGNK2	2	1300-cfs	1300	88.9	261	2.9	6.3	0.0030	5.0	0.51	0.54	0.033
FGNK2	2	1350-cfs	1350	90.2	266	3.0	6.3	0.0031	5.1	0.52	0.56	0.033
FGNK2	2	1400-cfs	1400	91.5	272	3.0	6.4	0.0032	5.2	0.53	0.58	0.033

HEC-RAS OUTPUT SUMMARY TABLE: FGNK2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK2	2	1450-cfs	1450	92.8	277	3.0	6.4	0.0033	5.2	0.53	0.59	0.033
FGNK2	2	1500-cfs	1500	94.0	282	3.0	6.5	0.0034	5.3	0.54	0.61	0.033
FGNK2	1	1300-cfs	1300	120.1	253	2.1	2.6	0.0048	5.1	0.62	0.63	0.033
FGNK2	1	1350-cfs	1350	120.1	259	2.2	2.7	0.0048	5.2	0.62	0.64	0.033
FGNK2	1	1400-cfs	1400	120.2	265	2.2	2.7	0.0048	5.3	0.62	0.66	0.033
FGNK2	1	1450-cfs	1450	120.2	270	2.3	2.8	0.0048	5.3	0.63	0.67	0.033
FGNK2	1	1500-cfs	1500	120.3	276	2.3	2.8	0.0048	5.4	0.63	0.68	0.033

HEC-RAS OUTPUT LONGITUDINAL PROFILE: FGNK2

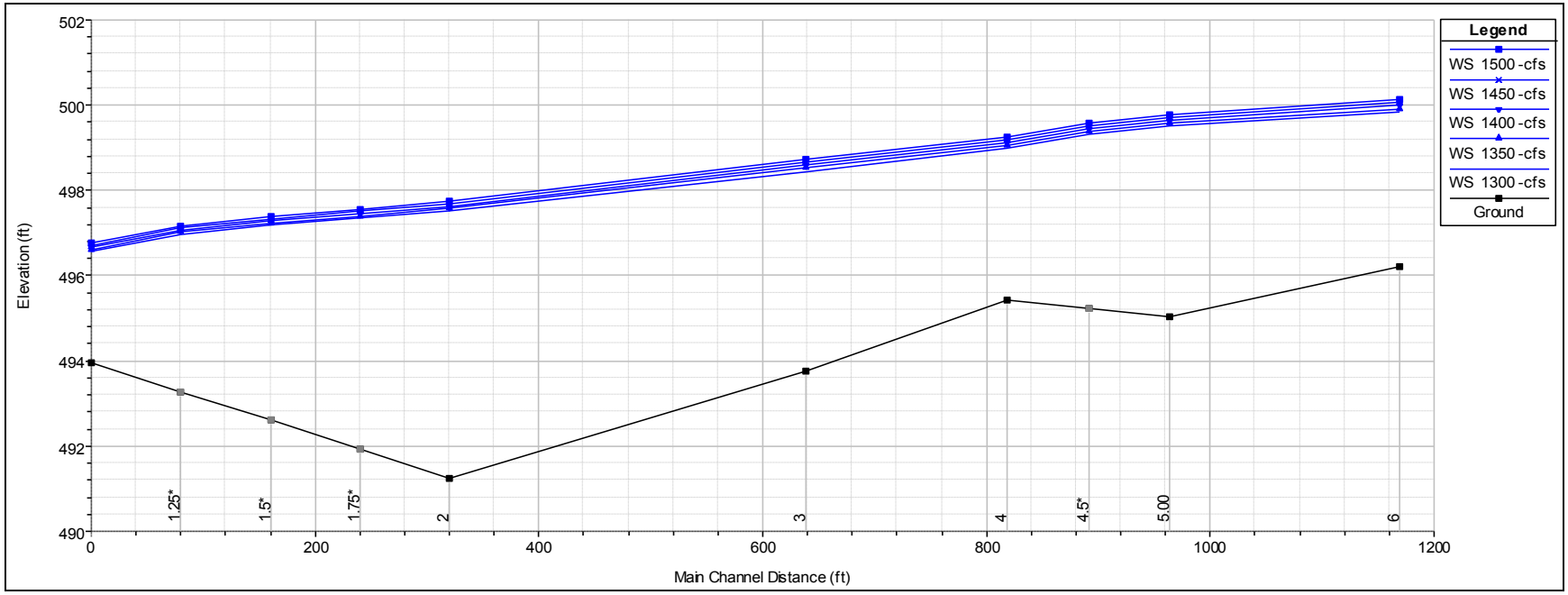


Figure 12 HEC-RAS longitudinal profile output for Reach FGNK2. Numbers 1-6 along the horizontal access correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

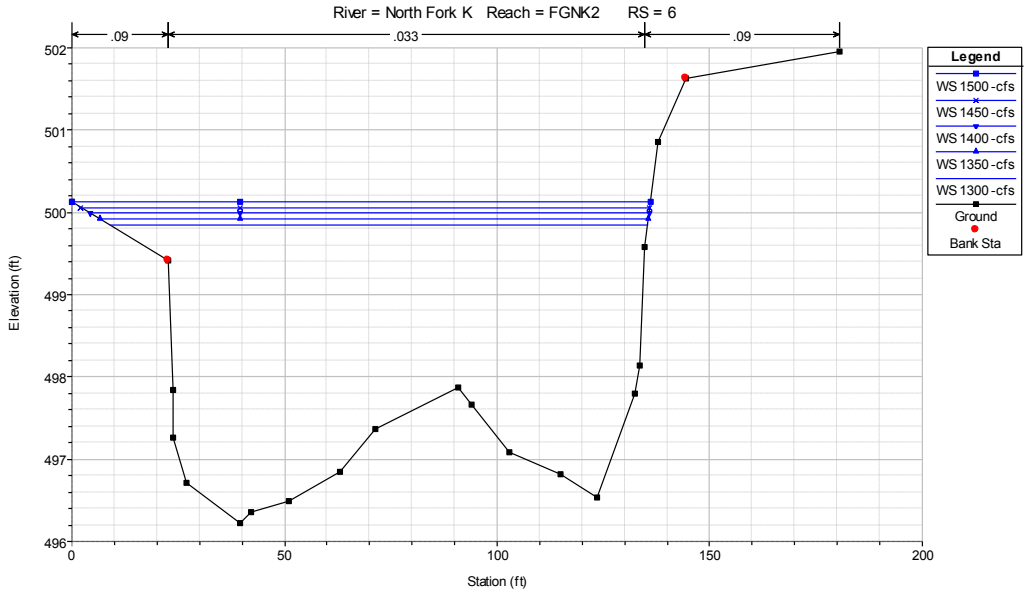


Figure 13 River Station (RS) 6 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

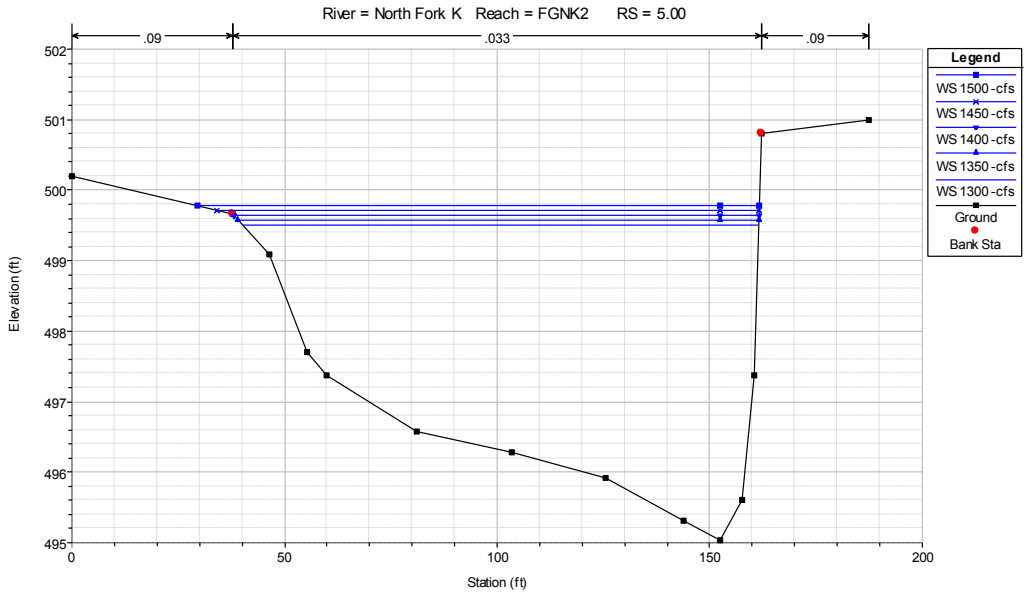


Figure 14 River Station (RS) 5.00 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

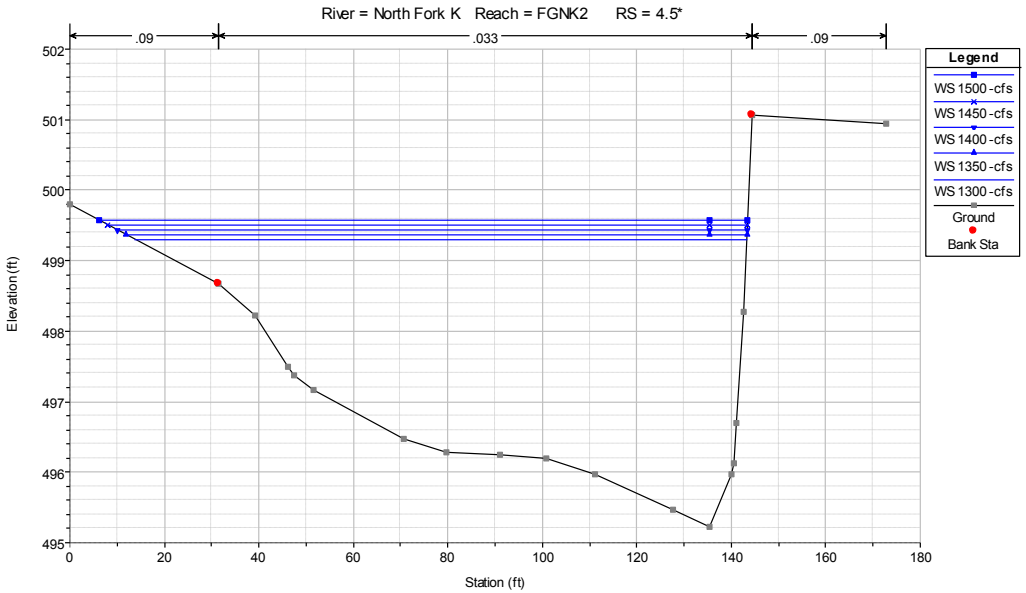


Figure 15 River Station (RS) 4.5 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

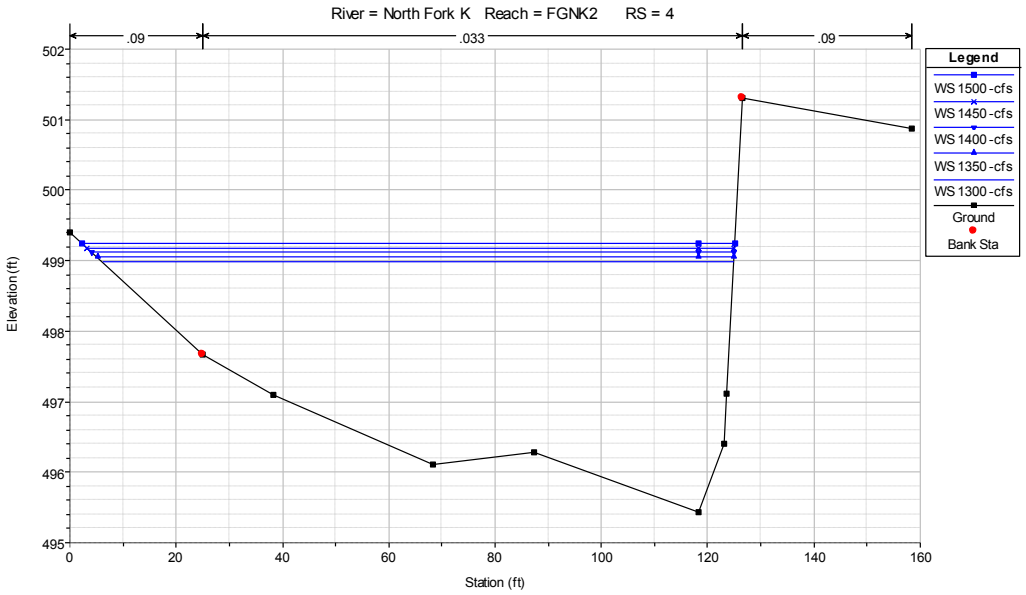


Figure 16 River Station (RS) 4 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

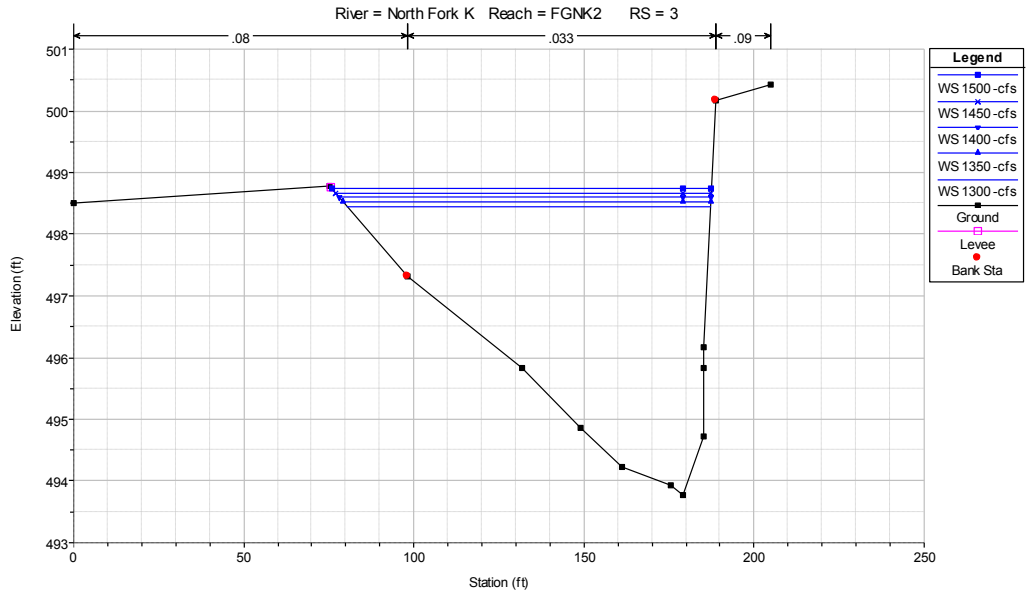


Figure 17 River Station (RS) 3 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

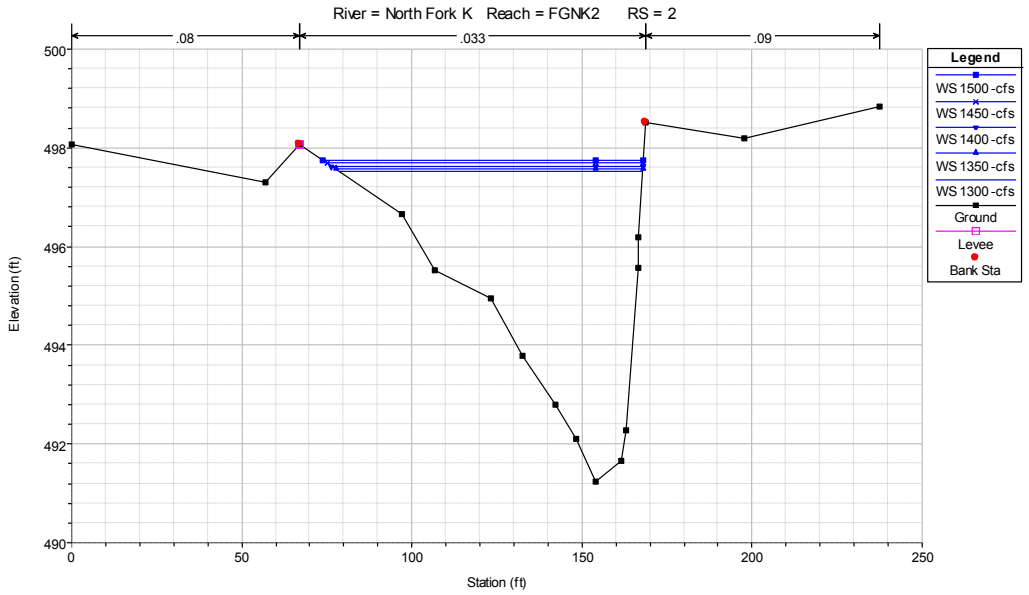


Figure 18 River Station (RS) 2 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK2

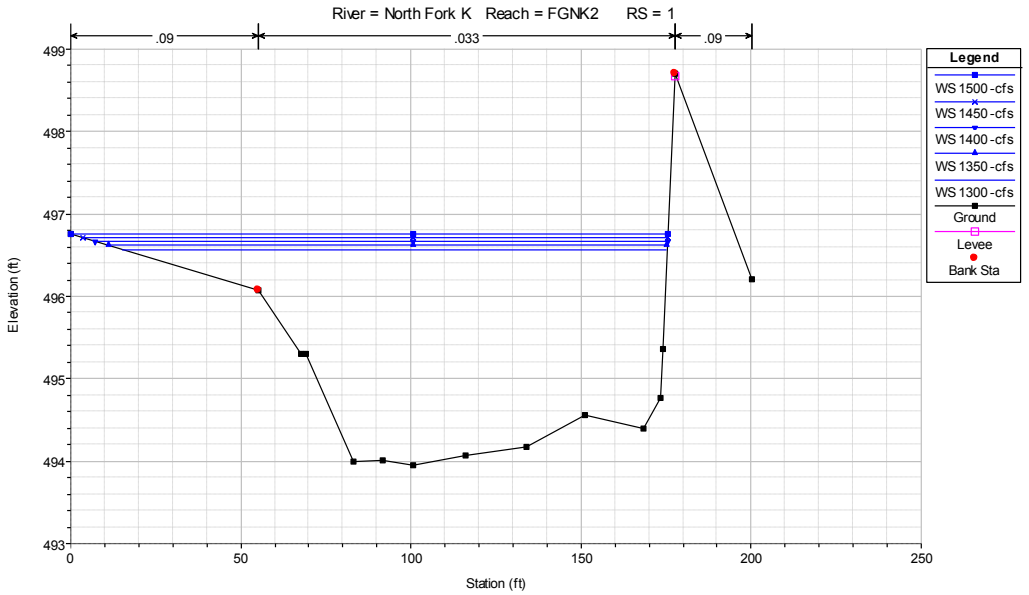


Figure 19 River Station (RS) 1 on River Reach FGNK2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK2

Site	Section	Discharge	Shear (lb/ft^2)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGNK2	6	1300-cfs	0.38	68	55	45
FGNK2	6	1350-cfs	0.39	70	57	46
FGNK2	6	1400-cfs	0.40	72	58	47
FGNK2	6	1450-cfs	0.41	74	60	48
FGNK2	6	1500-cfs	0.42	76	61	49
FGNK2	5	1300-cfs	0.29	52	42	34
FGNK2	5	1350-cfs	0.29	52	42	34
FGNK2	5	1400-cfs	0.30	54	44	35
FGNK2	5	1450-cfs	0.30	54	44	35
FGNK2	5	1500-cfs	0.31	56	45	36
FGNK2	4.5*	1300-cfs	0.38	68	55	45
FGNK2	4.5*	1350-cfs	0.38	68	55	45
FGNK2	4.5*	1400-cfs	0.39	70	57	46
FGNK2	4.5*	1450-cfs	0.40	72	58	47
FGNK2	4.5*	1500-cfs	0.40	72	58	47
FGNK2	4	1300-cfs	0.56	101	82	66
FGNK2	4	1350-cfs	0.57	103	83	67
FGNK2	4	1400-cfs	0.57	103	83	67
FGNK2	4	1450-cfs	0.58	104	85	68
FGNK2	4	1500-cfs	0.59	106	86	69
FGNK2	3	1300-cfs	0.49	88	71	58
FGNK2	3	1350-cfs	0.50	90	73	59
FGNK2	3	1400-cfs	0.51	92	74	60
FGNK2	3	1450-cfs	0.52	94	76	61
FGNK2	3	1500-cfs	0.52	94	76	61
FGNK2	2	1300-cfs	0.54	97	79	64
FGNK2	2	1350-cfs	0.56	101	82	66

INCIPIENT MOTION ANALYSIS: FGNK2

Site	Section	Discharge	Shear (lb/ft^2)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGNK2	2	1400-cfs	0.58	104	85	68
FGNK2	2	1450-cfs	0.59	106	86	69
FGNK2	2	1500-cfs	0.61	110	89	72
FGNK2	1	1300-cfs	0.63	113	92	74
FGNK2	1	1350-cfs	0.64	115	93	75
FGNK2	1	1400-cfs	0.66	119	96	78
FGNK2	1	1450-cfs	0.67	121	98	79
FGNK2	1	1500-cfs	0.68	122	99	80

PHOTOGRAPH DOCUMENTATION: FGNK2

Left bank along reference reach FGNK2

Right bank along reference reach FGNK2

Looking downstream from reference reach FGNK2

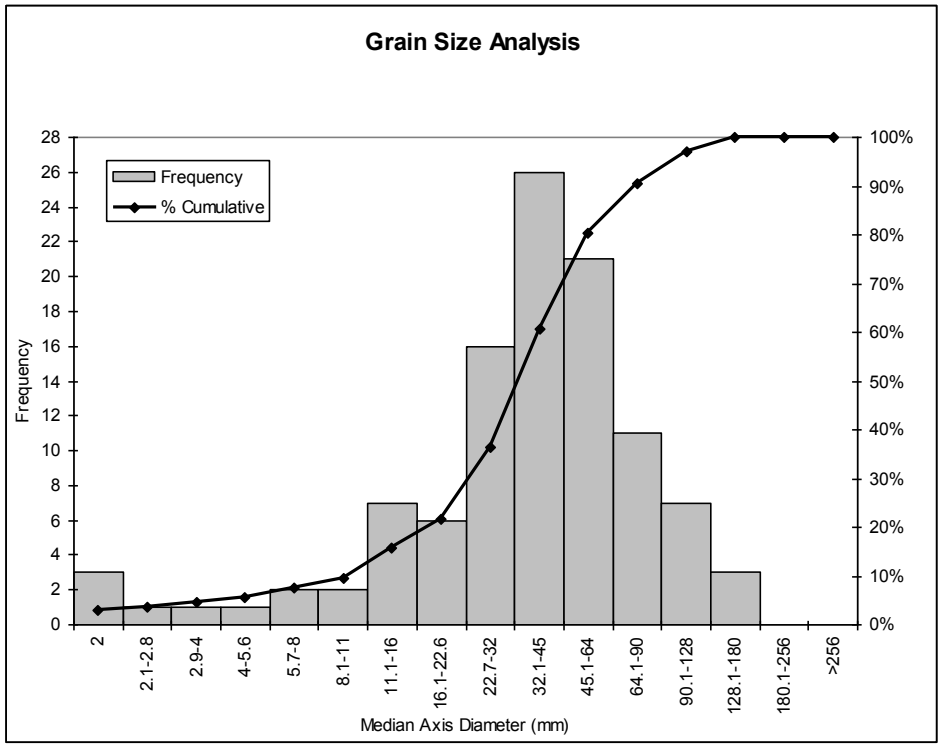
Looking upstream from reference reach FGNK2

PHOTOGRAPH DOCUMENTATION: FGNK2

Bank composition detail at FGNK2

Oblique of site FGNK2

PEBBLE COUNT DISTRIBUTION: FGNK2



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	1	3.7%
2.9-4	1	4.7%
4-5.6	1	5.6%
5.7-8	2	7.5%
8.1-11	2	9.3%
11.1-16	7	15.9%
16.1-22.6	6	21.5%
22.7-32	16	36.4%
32.1-45	26	60.7%
45.1-64	21	80.4%
64.1-90	11	90.7%
90.1-128	7	97.2%
128.1-180	3	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled in between Sections 4 and 5 along riffle

HYDROGRAPH: FGNK2

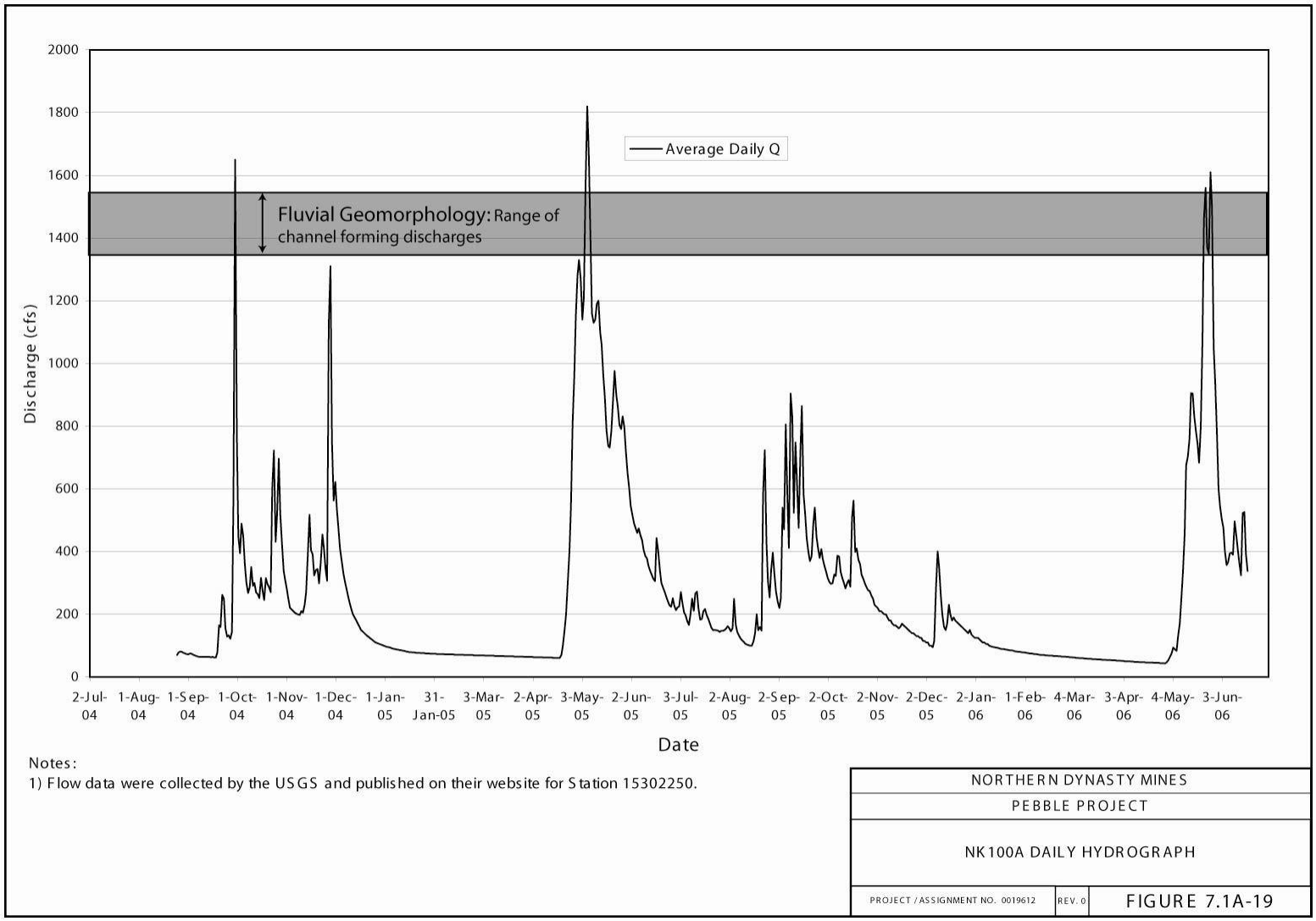
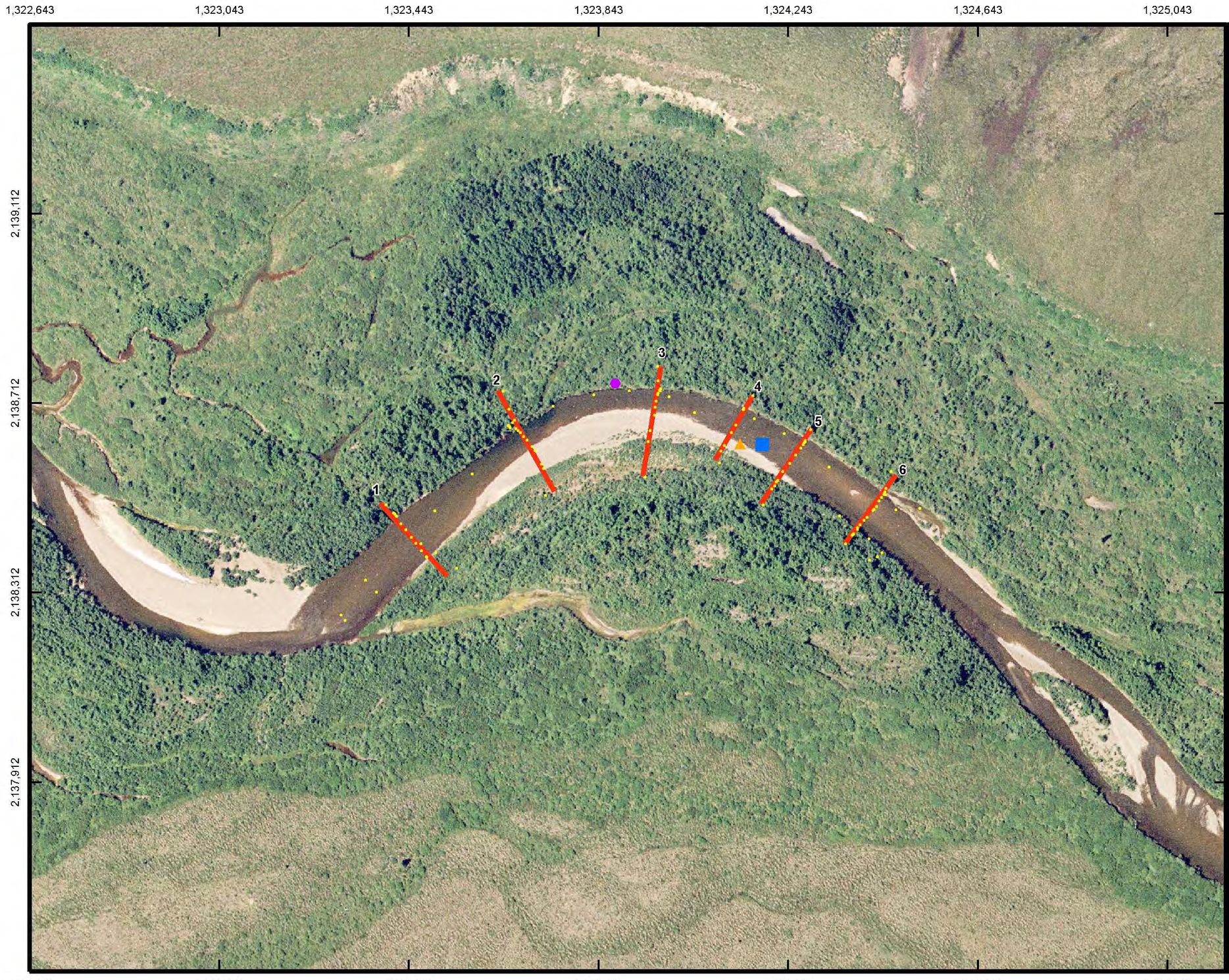


Figure 20 Hydrograph referenced in site description for FGNK3. Data provided by HDR.

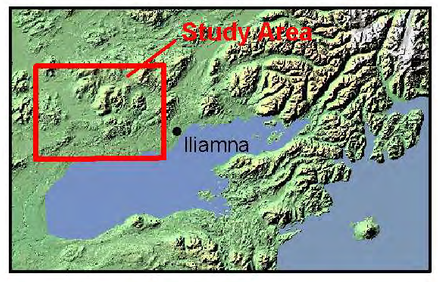


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK2
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 150 300 450 600 Ft

0 50 100 Meters

Scale 1:2,524
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGNK3

Site Characteristics.

	Site Name	**FGNK3**	
Discharge (cfs)	**1360 (1160-1560)**	Width (ft)	**83.1 (81.3-85.0)**
Slope	**0.0026**	Cross-sectional Area (ft^2)	**277 (248-303)**
D_{50}	**45**	D_{84}	**102**
Lat/Long Location	**N59.84681 W155.67949**	Drainage Area (mi^2)	**104**
	% Willow	**80**	
	% Grass	**15**	
	% Tree	**5**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections covering around 540 feet of stream. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Overwidened due to the entrance of a backwater channel along the left bank, Section 1 required the addition of an ineffective flow boundary to account for the lack of conveyance during high flows. Sections 4 and 5 characterize the riffle which serves as the reference reach and the pebble count was taken along Section 5. Obvious lag deposits were noted on site. A broad pebble count distribution is a further indication of the presence of lag. However, the pebble count was not modified because the degree to which lag was captured in the pebble count was not apparent. Aerial photo analysis suggests that this reach may be affected by ice, specific evidence is the presence of a cutoff bend downstream along with a uniquely straight stretch of channel.

For a Shields number of 0.026, the D_{50} begins to move through the upper cross-sections (6 through 4) by 1160 cfs. For a Shields number of 0.017, the D_{84} moves at 1310 cfs on Section 4 but appears to be immobile on Sections 6 and 5. However, for the ranges of flows an average particle size of 84 mm (range of 74-95 mm) will move on Sections 6 and 5. This particle size represents the sediment distribution found just downstream at FGNK1 and FGNK2 (D_{84} of 85 and 73 respectively). Geometrically, the range of flows, 1160-1560 cfs, matches the top of the gravel bar and right bank inflection point along the edge of the pool fairly well (Sections 2 and 3), with 1360 cfs hitting the crest of the gravel bar on Section 2. The higher end of the range matches the left bank inflection point on Section 6.

The reference reach sections (Sections 4 and 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK3	6	1160-cfs	1160	103.5	255	2.5	4.2	0.0028	4.5	0.51	0.43	0.033
FGNK3	6	1210-cfs	1210	104.8	264	2.5	4.3	0.0028	4.6	0.51	0.44	0.033
FGNK3	6	1260-cfs	1260	106.1	272	2.6	4.4	0.0028	4.6	0.51	0.44	0.033
FGNK3	6	1310-cfs	1310	107.4	280	2.6	4.5	0.0028	4.7	0.51	0.45	0.034
FGNK3	6	1360-cfs	1360	108.6	288	2.7	4.5	0.0028	4.7	0.51	0.46	0.034
FGNK3	6	1410-cfs	1410	109.7	296	2.7	4.6	0.0029	4.8	0.51	0.47	0.034
FGNK3	6	1460-cfs	1460	110.9	303	2.7	4.7	0.0029	4.8	0.51	0.48	0.034
FGNK3	6	1510-cfs	1510	112.0	311	2.8	4.7	0.0029	4.9	0.51	0.49	0.034
FGNK3	6	1560-cfs	1560	113.1	318	2.8	4.8	0.0029	4.9	0.51	0.49	0.034
FGNK3	5	1160-cfs	1160	81.3	262	3.2	4.0	0.0021	4.4	0.44	0.41	0.033
FGNK3	5	1210-cfs	1210	81.3	268	3.3	4.0	0.0021	4.5	0.44	0.43	0.033
FGNK3	5	1260-cfs	1260	81.3	274	3.4	4.1	0.0022	4.6	0.44	0.44	0.033
FGNK3	5	1310-cfs	1310	81.3	279	3.4	4.2	0.0022	4.7	0.45	0.45	0.033
FGNK3	5	1360-cfs	1360	81.3	284	3.5	4.2	0.0022	4.8	0.45	0.47	0.033
FGNK3	5	1410-cfs	1410	81.3	289	3.6	4.3	0.0023	4.9	0.46	0.48	0.033
FGNK3	5	1460-cfs	1460	81.3	294	3.6	4.3	0.0023	5.0	0.46	0.50	0.033
FGNK3	5	1510-cfs	1510	81.3	298	3.7	4.4	0.0023	5.1	0.46	0.51	0.033
FGNK3	5	1560-cfs	1560	81.3	303	3.7	4.5	0.0024	5.1	0.47	0.53	0.033
FGNK3	4	1160-cfs	1160	85.0	248	2.9	3.7	0.0030	4.7	0.48	0.53	0.035
FGNK3	4	1210-cfs	1210	85.0	255	3.0	3.8	0.0030	4.8	0.48	0.54	0.035
FGNK3	4	1260-cfs	1260	85.0	261	3.1	3.9	0.0030	4.8	0.49	0.56	0.035
FGNK3	4	1310-cfs	1310	85.0	267	3.1	4.0	0.0030	4.9	0.49	0.57	0.035
FGNK3	4	1360-cfs	1360	85.0	272	3.2	4.0	0.0030	5.0	0.49	0.59	0.035
FGNK3	4	1410-cfs	1410	85.0	277	3.3	4.1	0.0030	5.1	0.50	0.61	0.035
FGNK3	4	1460-cfs	1460	85.0	282	3.3	4.1	0.0031	5.2	0.50	0.62	0.035
FGNK3	4	1510-cfs	1510	85.0	286	3.4	4.2	0.0031	5.2	0.50	0.64	0.035
FGNK3	4	1560-cfs	1560	85.0	291	3.4	4.2	0.0031	5.3	0.51	0.66	0.035
FGNK3	3	1160-cfs	1160	92.6	243	2.6	4.6	0.0030	4.8	0.52	0.48	0.033
FGNK3	3	1210-cfs	1210	92.6	250	2.7	4.7	0.0030	4.8	0.52	0.49	0.033
FGNK3	3	1260-cfs	1260	92.7	257	2.8	4.8	0.0030	4.9	0.52	0.50	0.033

HEC-RAS OUTPUT SUMMARY TABLE: FGNK3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK3	3	1310-cfs	1310	92.8	264	2.8	4.8	0.0030	5.0	0.52	0.51	0.033
FGNK3	3	1360-cfs	1360	92.9	269	2.9	4.9	0.0030	5.1	0.52	0.53	0.033
FGNK3	3	1410-cfs	1410	93.0	274	3.0	4.9	0.0031	5.1	0.53	0.55	0.033
FGNK3	3	1460-cfs	1460	93.0	279	3.0	5.0	0.0031	5.2	0.53	0.56	0.033
FGNK3	3	1510-cfs	1510	93.1	284	3.1	5.0	0.0031	5.3	0.53	0.58	0.033
FGNK3	3	1560-cfs	1560	93.2	289	3.1	5.1	0.0032	5.4	0.54	0.60	0.033
FGNK3	2	1160-cfs	1160	75.7	231	3.1	5.0	0.0030	5.0	0.51	0.55	0.033
FGNK3	2	1210-cfs	1210	77.8	235	3.0	5.1	0.0032	5.1	0.52	0.57	0.033
FGNK3	2	1260-cfs	1260	79.9	240	3.0	5.2	0.0033	5.3	0.53	0.60	0.033
FGNK3	2	1310-cfs	1310	81.9	245	3.0	5.2	0.0035	5.4	0.55	0.62	0.033
FGNK3	2	1460-cfs	1460	84.2	259	3.1	5.4	0.0036	5.6	0.56	0.66	0.033
FGNK3	2	1510-cfs	1510	84.2	263	3.1	5.4	0.0036	5.6	0.56	0.68	0.033
FGNK3	2	1560-cfs	1560	84.2	268	3.2	5.5	0.0036	5.7	0.56	0.69	0.033
FGNK3	1	1160-cfs	1160	168.5	245	1.4	2.3	0.0085	5.4	0.79	0.76	0.035
FGNK3	1	1210-cfs	1210	168.6	252	1.5	2.3	0.0085	5.5	0.79	0.78	0.035
FGNK3	1	1260-cfs	1260	168.7	260	1.5	2.4	0.0085	5.5	0.79	0.81	0.035
FGNK3	1	1310-cfs	1310	168.8	267	1.6	2.4	0.0085	5.6	0.79	0.83	0.035
FGNK3	1	1360-cfs	1360	168.9	274	1.6	2.5	0.0085	5.7	0.79	0.85	0.035
FGNK3	1	1410-cfs	1410	169.0	281	1.7	2.5	0.0085	5.7	0.78	0.87	0.035
FGNK3	1	1460-cfs	1460	169.1	288	1.7	2.5	0.0085	5.8	0.78	0.89	0.035
FGNK3	1	1510-cfs	1510	169.2	294	1.7	2.6	0.0085	5.9	0.78	0.91	0.035
FGNK3	1	1560-cfs	1560	169.3	301	1.8	2.6	0.0085	5.9	0.78	0.93	0.035

HEC-RAS LONGITUDINAL PROFILE: FGNK3

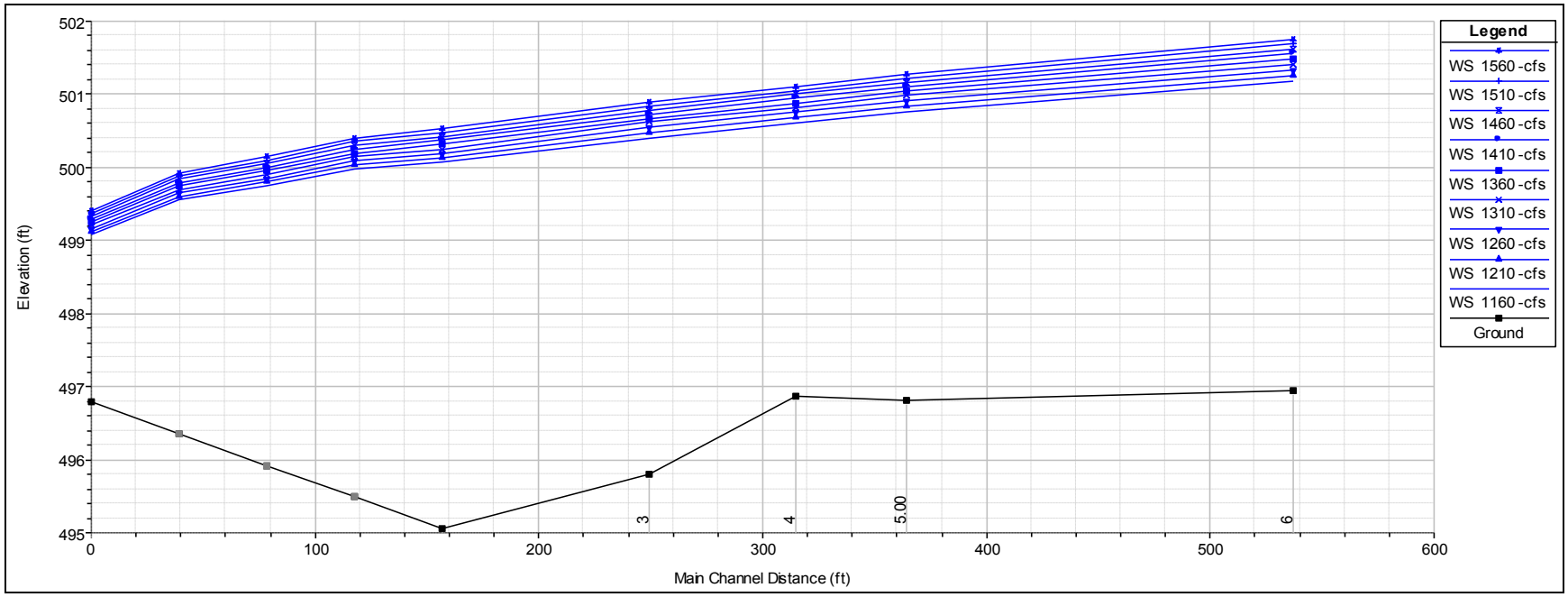


Figure 21 HEC-RAS longitudinal profile output for Reach FGNK3. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK3

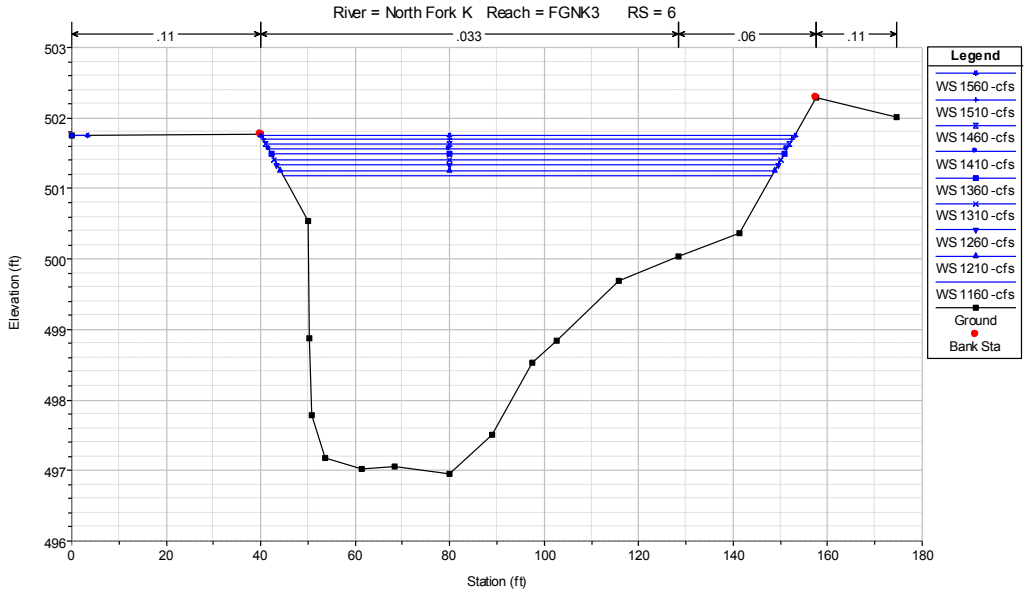


Figure 22 River Station (RS) 6 on River Reach FGNK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK3

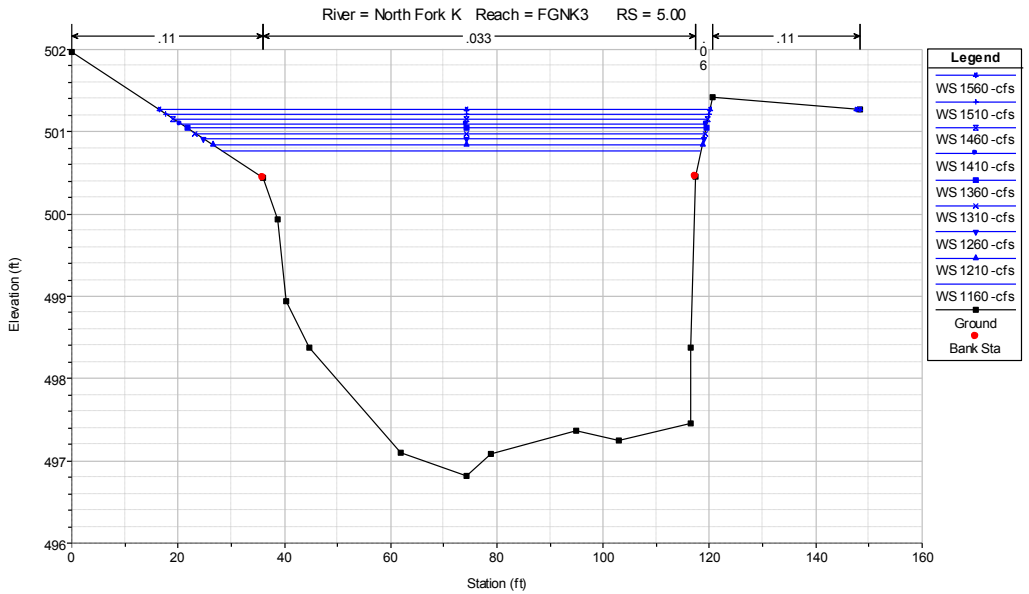


Figure 23 River Station (RS) 5.00 on River Reach FGNK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK3

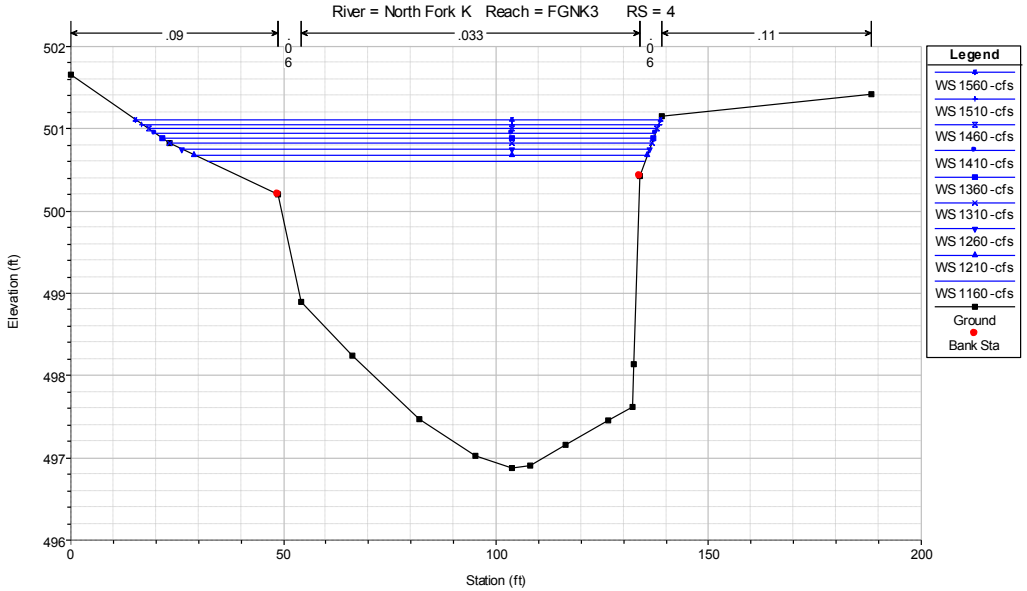


Figure 24 River Station (RS) 4 on River Reach FGNK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK3

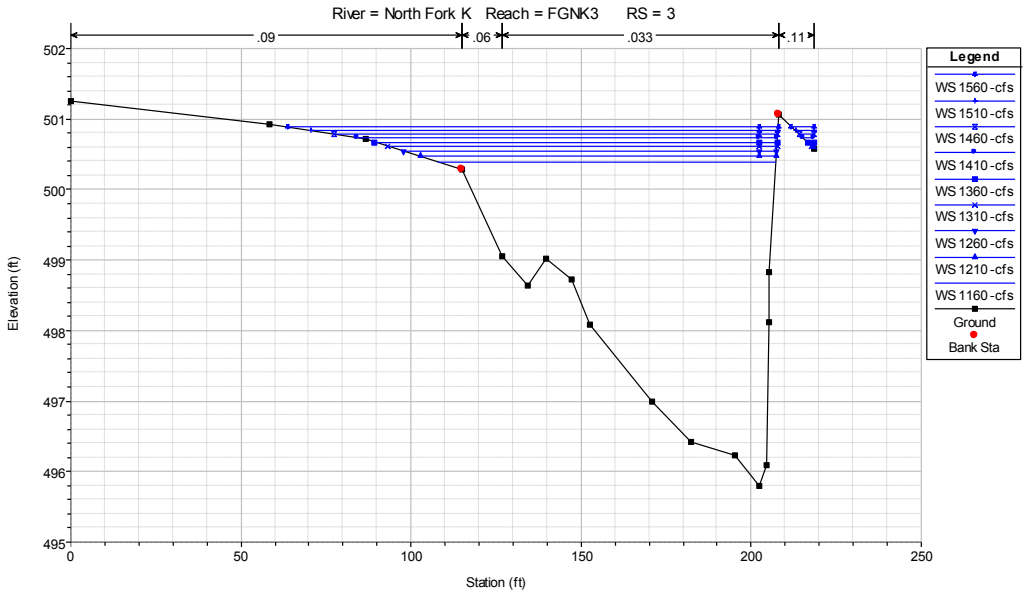


Figure 25 River Station (RS) 3 on River Reach FGNK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK3

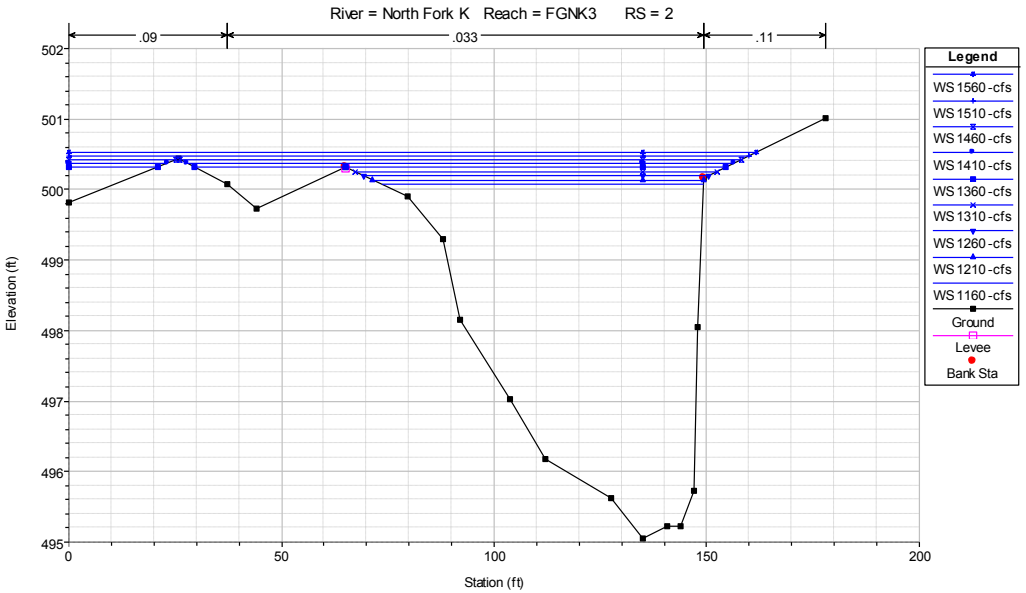


Figure 26 River Station (RS) 6 on River Reach FGNK3. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK3

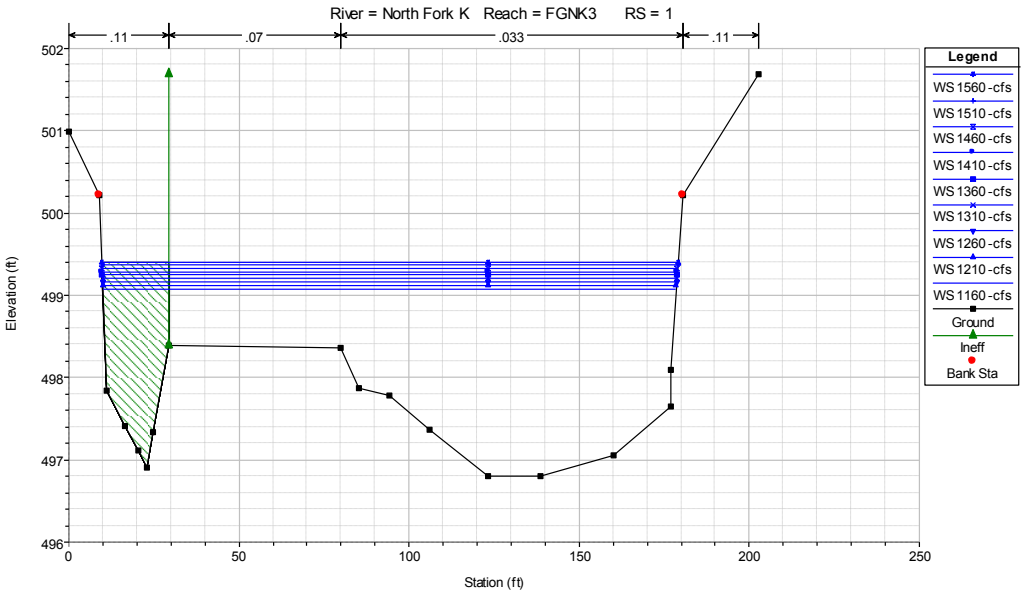


Figure 27 River Station (RS) 6 on River Reach FGNK3. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK3

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK3	6	1160-cfs	0.43	77	63	51
FGNK3	6	1210-cfs	0.44	79	64	52
FGNK3	6	1260-cfs	0.44	79	64	52
FGNK3	6	1310-cfs	0.45	81	66	53
FGNK3	6	1360-cfs	0.46	83	67	54
FGNK3	6	1410-cfs	0.47	85	68	55
FGNK3	6	1460-cfs	0.48	86	70	57
FGNK3	6	1510-cfs	0.49	88	71	58
FGNK3	6	1560-cfs	0.49	88	71	58
FGNK3	5	1160-cfs	0.41	74	60	48
FGNK3	5	1210-cfs	0.43	77	63	51
FGNK3	5	1260-cfs	0.44	79	64	52
FGNK3	5	1310-cfs	0.45	81	66	53
FGNK3	5	1360-cfs	0.47	85	68	55
FGNK3	5	1410-cfs	0.48	86	70	57
FGNK3	5	1460-cfs	0.50	90	73	59
FGNK3	5	1510-cfs	0.51	92	74	60
FGNK3	5	1560-cfs	0.53	95	77	62
FGNK3	4	1160-cfs	0.53	95	77	62
FGNK3	4	1210-cfs	0.54	97	79	64
FGNK3	4	1260-cfs	0.56	101	82	66
FGNK3	4	1310-cfs	0.57	103	83	67
FGNK3	4	1360-cfs	0.59	106	86	69
FGNK3	4	1410-cfs	0.61	110	89	72
FGNK3	4	1460-cfs	0.62	112	90	73
FGNK3	4	1510-cfs	0.64	115	93	75
FGNK3	4	1560-cfs	0.66	119	96	78
FGNK3	3	1160-cfs	0.48	86	70	57

INCIPIENT MOTION ANALYSIS: FGNK3

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK3	3	1210-cfs	0.49	88	71	58
FGNK3	3	1260-cfs	0.50	90	73	59
FGNK3	3	1310-cfs	0.51	92	74	60
FGNK3	3	1360-cfs	0.53	95	77	62
FGNK3	3	1410-cfs	0.55	99	80	65
FGNK3	3	1460-cfs	0.56	101	82	66
FGNK3	3	1510-cfs	0.58	104	85	68
FGNK3	3	1560-cfs	0.60	108	87	71
FGNK3	2	1160-cfs	0.55	99	80	65
FGNK3	2	1210-cfs	0.57	103	83	67
FGNK3	2	1260-cfs	0.60	108	87	71
FGNK3	2	1310-cfs	0.62	112	90	73
FGNK3	2	1460-cfs	0.66	119	96	78
FGNK3	2	1510-cfs	0.68	122	99	80
FGNK3	2	1560-cfs	0.69	124	101	81
FGNK3	1	1160-cfs	0.76	137	111	89
FGNK3	1	1210-cfs	0.78	140	114	92
FGNK3	1	1260-cfs	0.81	146	118	95
FGNK3	1	1310-cfs	0.83	149	121	98
FGNK3	1	1360-cfs	0.85	153	124	100
FGNK3	1	1410-cfs	0.87	157	127	102
FGNK3	1	1460-cfs	0.89	160	130	105
FGNK3	1	1510-cfs	0.91	164	133	107
FGNK3	1	1560-cfs	0.93	167	136	109

PHOTOGRAPH DOCUMENTATION: FGNK3

Left bank along reference reach FGNK3

Right bank along reference reach FGNK3

Looking downstream from reference reach FGNK3

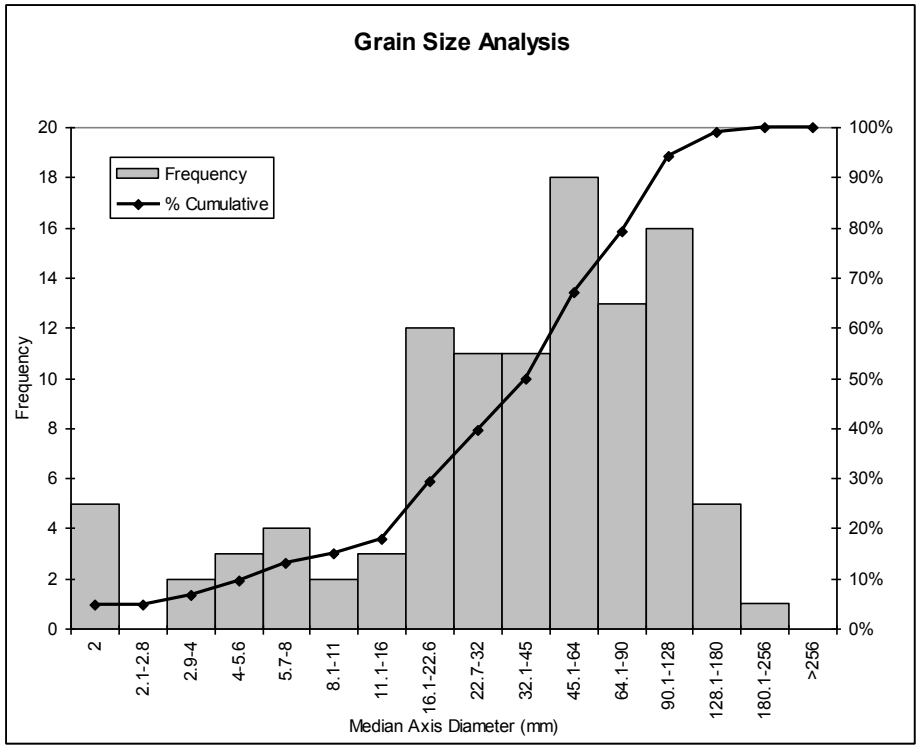
Looking upstream from reference reach FGNK3

PHOTOGRAPH DOCUMENTATION: FGNK3

Bank composition detail FGNK3

Oblique of site FNK3

PEBBLE COUNT DISTRIBUTION: FGNK3



Size Class mm	*Frequency*	*Cumulative %*
2	5	4.7%
2.1-2.8	0	4.7%
2.9-4	2	6.6%
4-5.6	3	9.4%
5.7-8	4	13.2%
8.1-11	2	15.1%
11.1-16	3	17.9%
16.1-22.6	12	29.2%
22.7-32	11	39.6%
32.1-45	11	50.0%
45.1-64	18	67.0%
64.1-90	13	79.2%
90.1-128	16	94.3%
128.1-180	5	99.1%
180.1-256	1	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,336,380 1,336,780 1,337,180 1,337,580 1,337,980

2,140,404

2,140,004

2,139,604

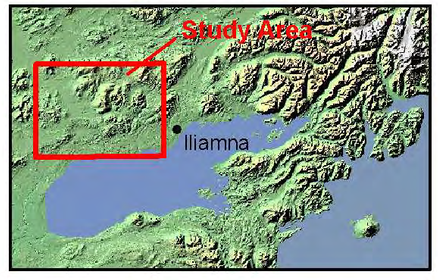
1 2 3 4 5

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK4
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGNK4

Site Characteristics.

	Site Name	**FGNK4**	
Discharge (cfs)	**1250 (1100-1500)**	Width (ft)	**94.9 (90.4-100.7)**
Slope	**0.0026**	Cross-sectional Area (ft^2)	**279 (242 -318)**
D_{50}	**46**	D_{84}	**111**
Lat/Long Location	**N59.84764 W155.64759**	Drainage Area (mi^2)	**87**
	% Willow	**60**	
	% Grass	**40**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed five cross-sections along 490 feet of channel length. Section 1 serves as the downstream hydraulic control for the model. Sections 5 and 4 characterize the riffle which serves as the reference reach and through which the pebble count was taken. A bulk sample was taken upstream of Section 5. Obvious lag deposits were noted on site. A broad pebble count distribution further suggests the presence of lag. However the pebble count was not modified because the immobile size classes were not apparent in the distribution. FGNK4 is close to the 2006 out-of-channel sediment source survey site 06-NKSS11.3.

For a Shields number of 0.026, the D_{50} has begun to move by 1100 cfs for Section 5 and by 1250 cfs through Section 4. For a Shields number of 0.017, the D_{84} from this site does not move within the range of flows. The discrepancy in the incipient motion of the D_{50} and the D_{84} further suggests that some of the bed is made of immobile material which does not frequently make it through this reach. The origin of the larger particle sizes making up the surface sediment sample are suspected to come from the glacial outwash terrace 800 feet upstream from Section 5. It appears that the larger particles originating from the glacial terrace are depositing downstream and behave more similarly to lag deposits than those smaller particle sizes that have been better sorted further downstream. At 1250 cfs on Section 5 and 4, the incipient motion analysis suggests that for a Shields number of 0.017, particles of size 88 and 76 mm will begin movement, respectively. This particle size better represents the sediment distribution found in FGNK1 and FGNK2 (D_{84} of 85 and 73 respectively). Flows between 1100 and 1500 cfs match the inflection points on both the left and right banks of Section 4 and a flow of 1450 cfs matches an inflection point on the left bank of Section 3.

The reference reach sections (Sections 4 and 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT: SUMMARY TABLE

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK4	5	1100-cfs	1100	90.4	242	2.7	3.7	0.0028	4.5	0.49	0.46	0.033
FGNK4	5	1150-cfs	1150	90.4	248	2.8	3.8	0.0028	4.6	0.49	0.47	0.033
FGNK4	5	1200-cfs	1200	90.4	255	2.8	3.8	0.0028	4.7	0.49	0.48	0.033
FGNK4	5	1250-cfs	1250	90.4	261	2.9	3.9	0.0028	4.8	0.49	0.49	0.033
FGNK4	5	1300-cfs	1300	90.4	267	3.0	4.0	0.0028	4.8	0.50	0.51	0.033
FGNK4	5	1350-cfs	1350	90.4	273	3.0	4.0	0.0028	4.9	0.50	0.52	0.033
FGNK4	5	1400-cfs	1400	90.4	279	3.1	4.1	0.0028	5.0	0.50	0.53	0.033
FGNK4	5	1450-cfs	1450	90.4	285	3.2	4.2	0.0028	5.1	0.50	0.54	0.033
FGNK4	5	1500-cfs	1500	90.4	290	3.2	4.2	0.0028	5.1	0.50	0.55	0.033
FGNK4	4	1100-cfs	1100	97.9	264	2.7	3.4	0.0023	4.2	0.45	0.39	0.033
FGNK4	4	1150-cfs	1150	98.3	271	2.8	3.5	0.0023	4.2	0.45	0.40	0.033
FGNK4	4	1200-cfs	1200	98.7	278	2.8	3.5	0.0024	4.3	0.45	0.41	0.033
FGNK4	4	1250-cfs	1250	99.0	285	2.9	3.6	0.0024	4.4	0.46	0.42	0.033
FGNK4	4	1300-cfs	1300	99.4	292	2.9	3.7	0.0024	4.5	0.46	0.43	0.033
FGNK4	4	1350-cfs	1350	99.8	298	3.0	3.7	0.0024	4.5	0.46	0.44	0.033
FGNK4	4	1400-cfs	1400	100.1	305	3.0	3.8	0.0024	4.6	0.46	0.45	0.033
FGNK4	4	1450-cfs	1450	100.5	311	3.1	3.9	0.0024	4.7	0.47	0.46	0.033
FGNK4	4	1500-cfs	1500	100.7	318	3.2	3.9	0.0024	4.7	0.47	0.47	0.033
FGNK4	3	1100-cfs	1100	87.3	251	2.9	3.5	0.0023	4.4	0.46	0.41	0.033
FGNK4	3	1150-cfs	1150	87.4	256	2.9	3.6	0.0024	4.5	0.46	0.43	0.033
FGNK4	3	1200-cfs	1200	87.4	262	3.0	3.7	0.0024	4.6	0.47	0.44	0.033
FGNK4	3	1250-cfs	1250	87.5	267	3.1	3.7	0.0024	4.7	0.47	0.46	0.033
FGNK4	3	1300-cfs	1300	87.6	273	3.1	3.8	0.0025	4.8	0.48	0.47	0.033
FGNK4	3	1350-cfs	1350	87.7	278	3.2	3.9	0.0025	4.9	0.48	0.49	0.033
FGNK4	3	1400-cfs	1400	87.8	283	3.2	3.9	0.0025	4.9	0.49	0.51	0.033
FGNK4	3	1450-cfs	1450	87.9	288	3.3	4.0	0.0026	5.0	0.49	0.52	0.033
FGNK4	3	1500-cfs	1500	87.9	292	3.3	4.0	0.0026	5.1	0.49	0.54	0.033
FGNK4	2	1100-cfs	1100	92.1	254	2.8	3.8	0.0024	4.3	0.46	0.41	0.033
FGNK4	2	1150-cfs	1150	92.2	260	2.8	3.9	0.0024	4.4	0.46	0.43	0.033
FGNK4	2	1200-cfs	1200	92.2	265	2.9	3.9	0.0025	4.5	0.47	0.44	0.033

HEC-RAS OUTPUT: SUMMARY TABLE

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK4	2	1250-cfs	1250	92.3	271	2.9	4.0	0.0025	4.6	0.47	0.45	0.033
FGNK4	2	1300-cfs	1300	92.4	276	3.0	4.0	0.0025	4.7	0.47	0.47	0.033
FGNK4	2	1350-cfs	1350	92.5	282	3.0	4.1	0.0026	4.7	0.48	0.48	0.033
FGNK4	2	1400-cfs	1400	92.6	287	3.1	4.1	0.0026	4.8	0.48	0.49	0.033
FGNK4	2	1450-cfs	1450	92.6	292	3.2	4.2	0.0026	4.9	0.48	0.50	0.033
FGNK4	2	1500-cfs	1500	92.7	297	3.2	4.3	0.0026	5.0	0.49	0.52	0.033
FGNK4	1	1100-cfs	1100	103.0	214	2.1	3.4	0.0052	5.1	0.62	0.66	0.034
FGNK4	1	1150-cfs	1150	103.0	220	2.1	3.4	0.0052	5.2	0.62	0.68	0.034
FGNK4	1	1200-cfs	1200	103.1	226	2.2	3.5	0.0052	5.3	0.63	0.70	0.034
FGNK4	1	1250-cfs	1250	103.1	232	2.3	3.6	0.0052	5.3	0.63	0.72	0.034
FGNK4	1	1300-cfs	1300	103.2	237	2.3	3.6	0.0052	5.4	0.63	0.73	0.034
FGNK4	1	1350-cfs	1350	103.2	243	2.4	3.7	0.0052	5.5	0.63	0.75	0.034
FGNK4	1	1400-cfs	1400	103.2	248	2.4	3.7	0.0052	5.6	0.63	0.77	0.034
FGNK4	1	1450-cfs	1450	103.3	254	2.5	3.8	0.0052	5.6	0.63	0.78	0.034
FGNK4	1	1500-cfs	1500	103.3	259	2.5	3.8	0.0052	5.7	0.63	0.80	0.034

HEC-RAS LONGITUDINAL PROFILE: FGNK4

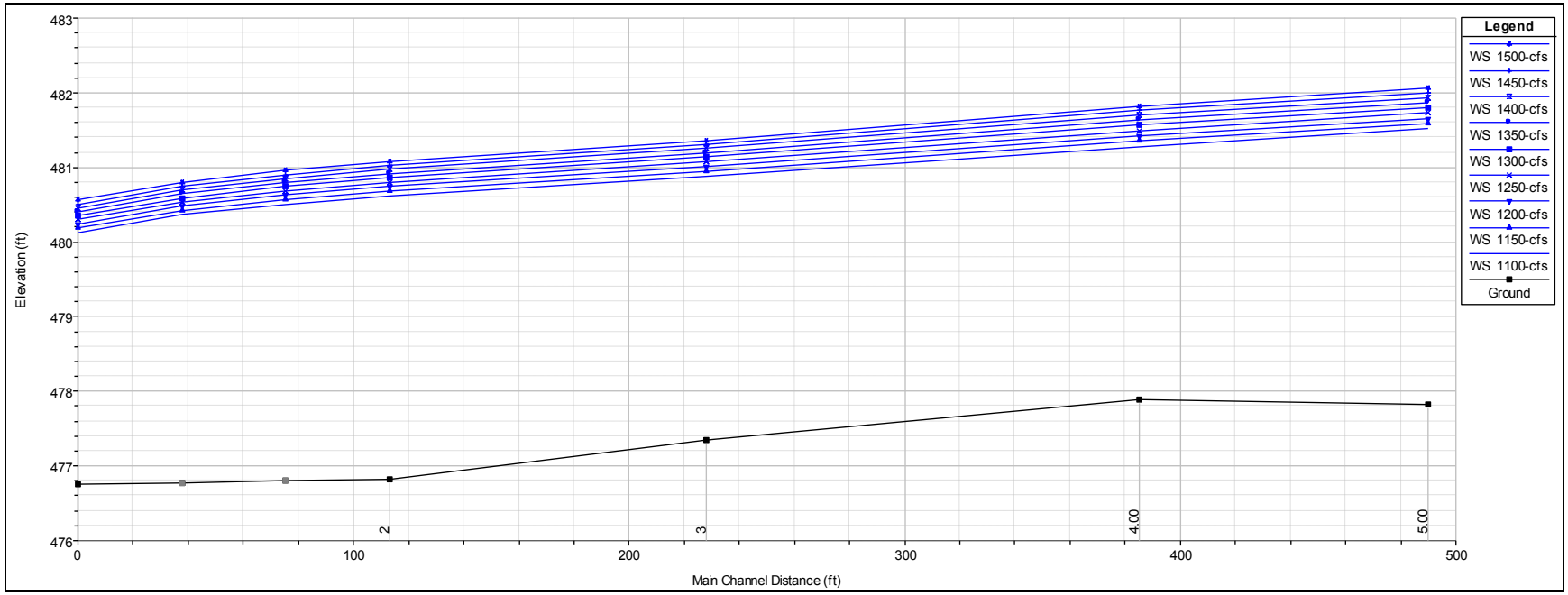


Figure 28 HEC-RAS longitudinal profile output for Reach FGNK4. Numbers 1-5 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

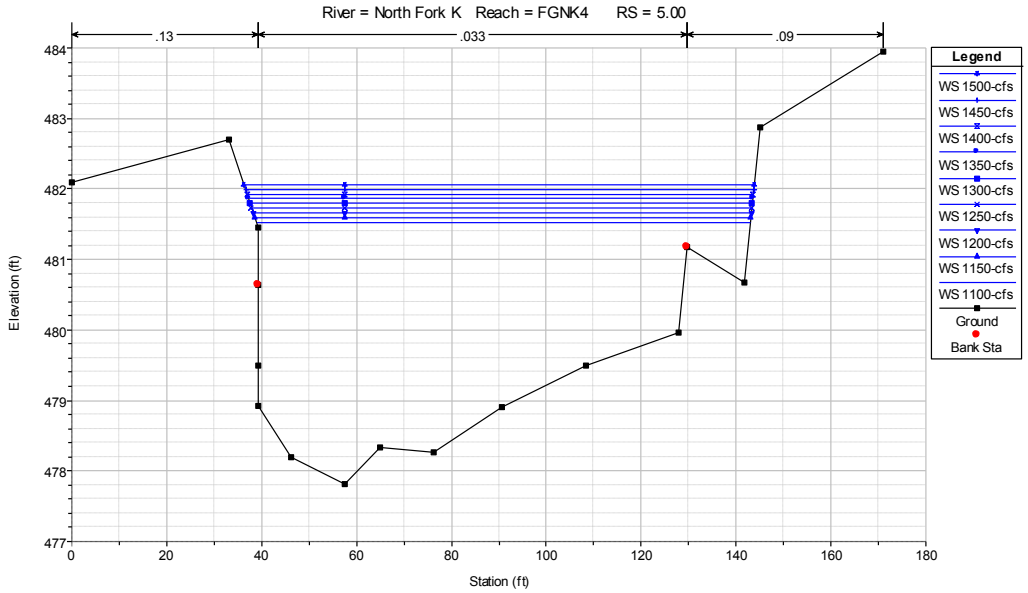


Figure 29 River Station (RS) 5 on River Reach FGNK4. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

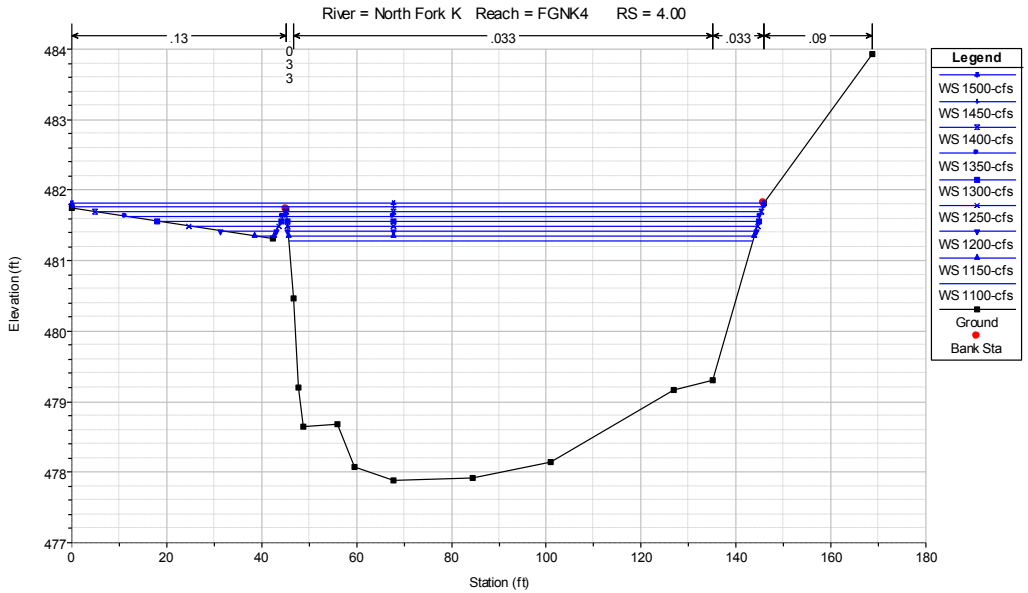


Figure 30 River Station (RS) 4 on River Reach FGNK4. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

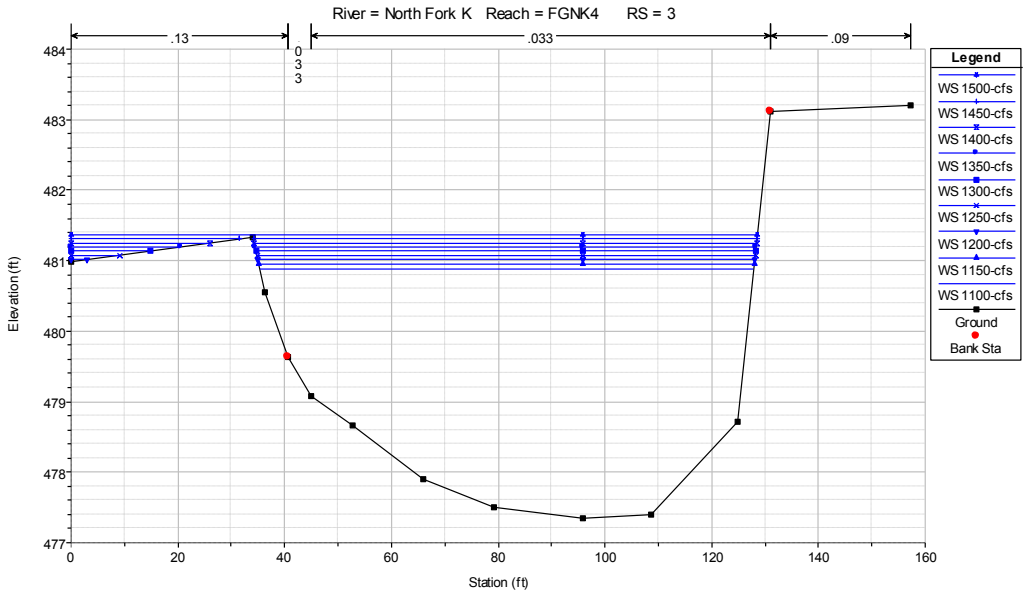


Figure 31 River Station (RS) 3 on River Reach FGNK4. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

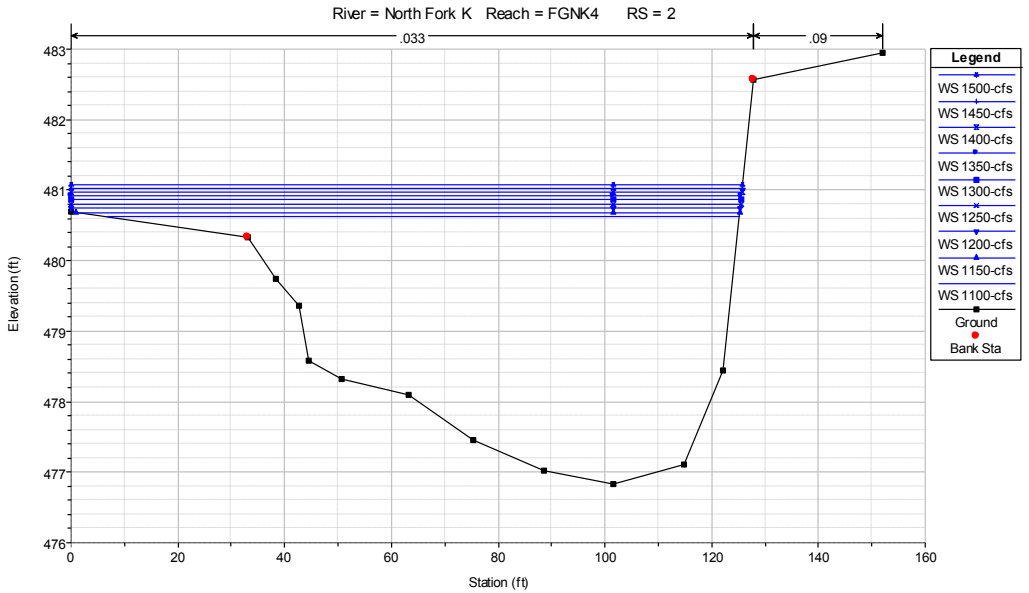


Figure 32 River Station (RS) 2 on River Reach FGNK4. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

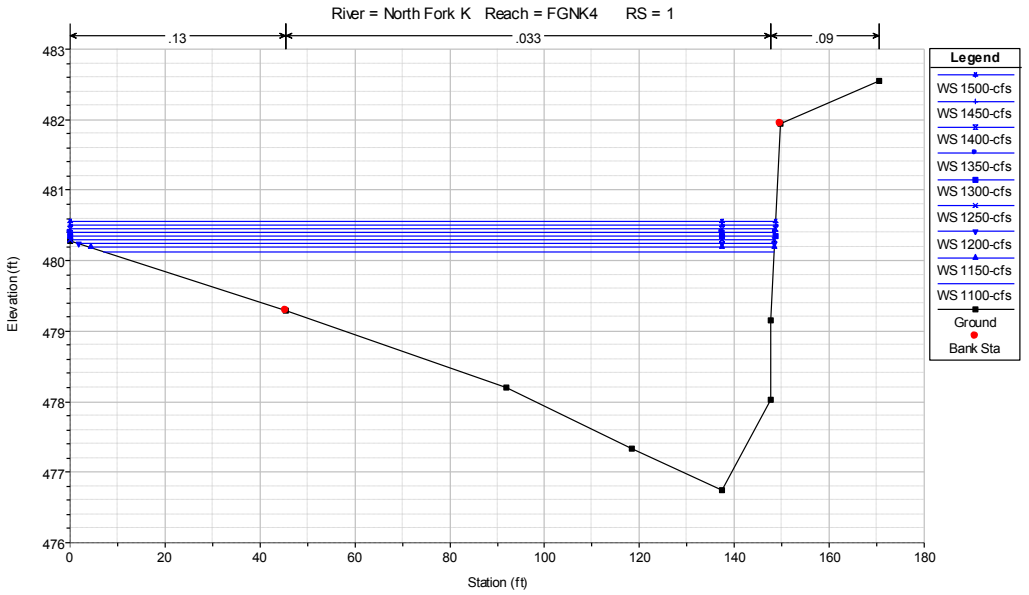


Figure 33 River Station (RS) 3 on River Reach FGNK4. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK4

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK4	5	1100-cfs	0.46	83	67	54
FGNK4	5	1150-cfs	0.47	85	68	55
FGNK4	5	1200-cfs	0.48	86	70	57
FGNK4	5	1250-cfs	0.49	88	71	58
FGNK4	5	1300-cfs	0.51	92	74	60
FGNK4	5	1350-cfs	0.52	94	76	61
FGNK4	5	1400-cfs	0.53	95	77	62
FGNK4	5	1450-cfs	0.54	97	79	64
FGNK4	5	1500-cfs	0.55	99	80	65
FGNK4	4	1100-cfs	0.39	70	57	46
FGNK4	4	1150-cfs	0.40	72	58	47
FGNK4	4	1200-cfs	0.41	74	60	48
FGNK4	4	1250-cfs	0.42	76	61	49
FGNK4	4	1300-cfs	0.43	77	63	51
FGNK4	4	1350-cfs	0.44	79	64	52
FGNK4	4	1400-cfs	0.45	81	66	53
FGNK4	4	1450-cfs	0.46	83	67	54
FGNK4	4	1500-cfs	0.47	85	68	55
FGNK4	3	1100-cfs	0.41	74	60	48
FGNK4	3	1150-cfs	0.43	77	63	51
FGNK4	3	1200-cfs	0.44	79	64	52
FGNK4	3	1250-cfs	0.46	83	67	54
FGNK4	3	1300-cfs	0.47	85	68	55
FGNK4	3	1350-cfs	0.49	88	71	58
FGNK4	3	1400-cfs	0.51	92	74	60
FGNK4	3	1450-cfs	0.52	94	76	61
FGNK4	3	1500-cfs	0.54	97	79	64
FGNK4	2	1100-cfs	0.41	74	60	48
FGNK4	2	1150-cfs	0.43	77	63	51

INCIPIENT MOTION ANALYSIS: FGNK4

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK4	2	1200-cfs	0.44	79	64	52
FGNK4	2	1250-cfs	0.45	81	66	53
FGNK4	2	1300-cfs	0.47	85	68	55
FGNK4	2	1350-cfs	0.48	86	70	57
FGNK4	2	1400-cfs	0.49	88	71	58
FGNK4	2	1450-cfs	0.50	90	73	59
FGNK4	2	1500-cfs	0.52	94	76	61
FGNK4	1	1100-cfs	0.44	79	64	52
FGNK4	1	1150-cfs	0.45	81	66	53
FGNK4	1	1200-cfs	0.47	85	68	55
FGNK4	1	1250-cfs	0.48	86	70	57
FGNK4	1	1300-cfs	0.50	90	73	59
FGNK4	1	1350-cfs	0.51	92	74	60
FGNK4	1	1400-cfs	0.52	94	76	61

PHOTOGRAPH DOCUMENTATION: FGNK4

Left bank along reference reach FGNK4

Right bank along reference reach FGNK4

Looking downstream from reference reach FGNK4

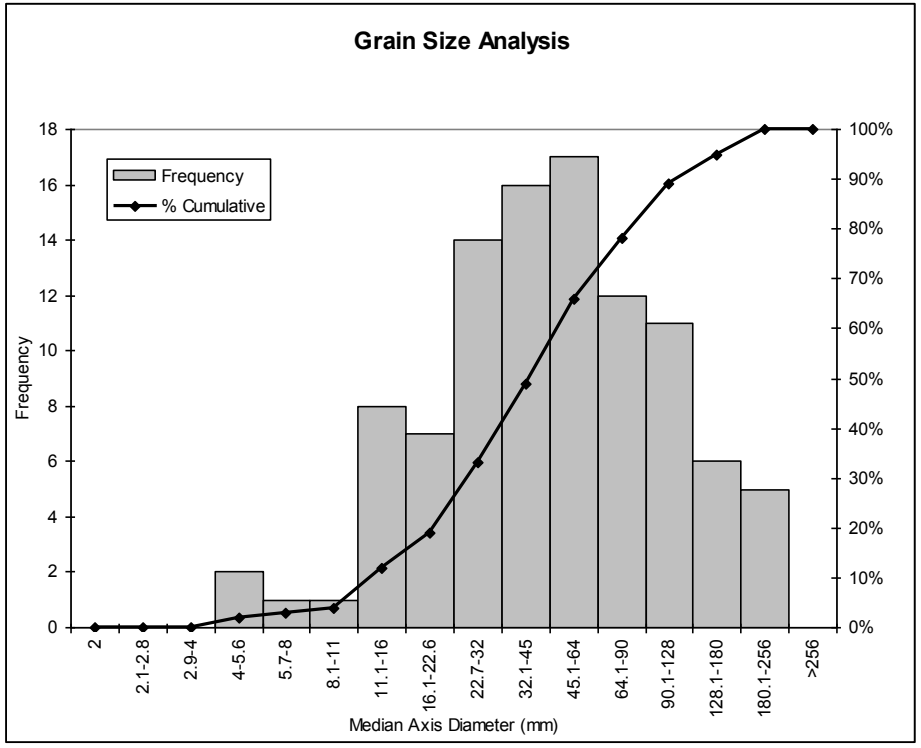
Looking upstream from reference reach FGNK4

PHOTOGRAPH DOCUMENTATION: FGNK4

Bank composition detail FGNK4

Oblique of site FGNK4

PEBBLE COUNT DISTRIBUTION: FGNK4



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	2	2.0%
5.7-8	1	3.0%
8.1-11	1	4.0%
11.1-16	8	12.0%
16.1-22.6	7	19.0%
22.7-32	14	33.0%
32.1-45	16	49.0%
45.1-64	17	66.0%
64.1-90	12	78.0%
90.1-128	11	89.0%
128.1-180	6	95.0%
180.1-256	5	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 4 and 5

1,336,380 1,336,780 1,337,180 1,337,580 1,337,980

2,140,404

2,140,004

2,139,604

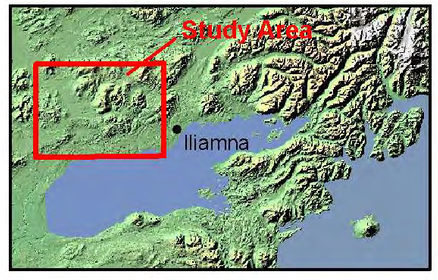
1 2 3 4 5

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK4
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGNK5

Site Characteristics.

Site Name		FGNK5	
Discharge (cfs)	**1150 (950-1350)**	Width (ft)	**86.5 (75.9-96.5)**
Slope	**0.0051**	Cross-sectional Area (ft^2)	**221 (162-270)**
D_{50}	**63**	D_{84}	**114**
Lat/Long Location	**N59.85884 W155.57532**	Drainage Area (mi^2)	**83**
% Willow		**60**	
% Grass		**35**	
% Tree		**5**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed five cross-sections over 300 feet of stream. Section 1 serves as the downstream hydraulic control for the model and represents a break in slope downstream of a pool/glide. Sections 2 and 3 characterize the riffle. Since the riffle was short in length and located along a bend, the pebble count was conducted throughout the entire riffle between Sections 2 and 3. Since the hydraulics difference between Sections 2 and 3 were great, a section was interpolated within HEC-RAS (Section 2.5*) to account for the location of the pebble count in the incipient motion analysis. While the sediment found within the riffle is coarse, and there were obvious lag deposits on site, the pebble count distribution does not show any obvious signs of lag (immobile material). Bank material appears to be closer to what was observed on the bed of the lower North Fork Koktuli sections and that which was shown to be mobile within these sections.

This site shows poor convergence of the geometry and the incipient motion analysis. On Section 2.5, the D_{50} begins movement before 950 cfs for a Shields number of 0.026 while the D_{84} does not move within the range of flows. On Sections 3 and 5, the D_{84} is moving by 950 cfs and moves between 1200 and 1250 cfs on Section 4. The gravel bar along the right bank of the pool, Section 5 and 4, is overtopped at flows of 1100 cfs and 950 cfs respectively. The bench on the right bank of Section 3 is overtopped by 950 cfs while flows in Section 2 remain in the channel, reaching an inflection point around 1300 cfs. Due to the potential presence of immobile material and lack of analytical soundness in the incipient motion analysis, the range of flows is based on the geometry of the surveyed reach.

Due to the lack of convergence within this reach and the length and location of the riffle the reference reach was extended upstream so that channel width and cross-sectional area were averaged over Sections 6 through 3.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK5	5	950-cfs	950	75.9	162	2.1	3.7	0.0070	5.9	0.7	0.9	0.035
FGNK5	5	1000-cfs	1000	77.6	168	2.2	3.8	0.0071	6.0	0.7	1.0	0.035
FGNK5	5	1050-cfs	1050	79.3	174	2.2	3.9	0.0072	6.0	0.7	1.0	0.035
FGNK5	5	1100-cfs	1100	81.2	183	2.3	4.0	0.0062	5.7	0.7	0.9	0.035
FGNK5	5	1150-cfs	1150	81.3	189	2.3	4.1	0.0060	5.7	0.7	0.9	0.035
FGNK5	5	1200-cfs	1200	81.4	195	2.4	4.1	0.0058	5.7	0.7	0.9	0.035
FGNK5	5	1250-cfs	1250	81.6	200	2.5	4.2	0.0056	5.8	0.7	0.9	0.035
FGNK5	5	1300-cfs	1300	81.7	206	2.5	4.3	0.0055	5.8	0.6	0.9	0.035
FGNK5	5	1350-cfs	1350	81.8	212	2.6	4.3	0.0053	5.8	0.6	0.9	0.035
FGNK5	4	950-cfs	950	94.2	203	2.2	5.2	0.0046	4.7	0.6	0.6	0.035
FGNK5	4	1000-cfs	1000	94.6	212	2.2	5.3	0.0045	4.7	0.6	0.6	0.035
FGNK5	4	1050-cfs	1050	94.9	220	2.3	5.3	0.0044	4.8	0.6	0.6	0.035
FGNK5	4	1100-cfs	1100	95.2	228	2.4	5.4	0.0043	4.8	0.6	0.6	0.035
FGNK5	4	1150-cfs	1150	95.5	235	2.5	5.5	0.0042	4.9	0.6	0.6	0.035
FGNK5	4	1200-cfs	1200	95.7	243	2.5	5.6	0.0042	4.9	0.6	0.6	0.035
FGNK5	4	1250-cfs	1250	96.0	250	2.6	5.7	0.0041	5.0	0.6	0.6	0.035
FGNK5	4	1300-cfs	1300	96.3	257	2.7	5.7	0.0040	5.1	0.5	0.7	0.035
FGNK5	4	1350-cfs	1350	96.5	265	2.7	5.8	0.0040	5.1	0.5	0.7	0.035
FGNK5	3	950-cfs	950	82.9	212	2.6	3.6	0.0050	4.5	0.5	0.8	0.044
FGNK5	3	1000-cfs	1000	83.2	221	2.7	3.7	0.0049	4.5	0.5	0.8	0.044
FGNK5	3	1050-cfs	1050	83.4	228	2.7	3.8	0.0049	4.5	0.5	0.8	0.044
FGNK5	3	1100-cfs	1100	83.7	235	2.8	3.9	0.0049	4.6	0.5	0.8	0.044
FGNK5	3	1150-cfs	1150	83.9	243	2.9	4.0	0.0048	4.7	0.5	0.9	0.045
FGNK5	3	1200-cfs	1200	84.2	250	3.0	4.0	0.0048	4.7	0.5	0.9	0.045
FGNK5	3	1250-cfs	1250	84.4	257	3.0	4.1	0.0048	4.8	0.5	0.9	0.045
FGNK5	3	1300-cfs	1300	84.7	263	3.1	4.2	0.0048	4.8	0.5	0.9	0.045
FGNK5	3	1350-cfs	1350	84.9	270	3.2	4.3	0.0048	4.9	0.5	0.9	0.045
FGNK5	2.5*	950-cfs	950	82.4	206	2.5	3.7	0.0035	4.6	0.5	0.5	0.035
FGNK5	2.5*	1000-cfs	1000	82.7	215	2.6	3.8	0.0035	4.7	0.5	0.6	0.035
FGNK5	2.5*	1050-cfs	1050	83.0	222	2.7	3.9	0.0034	4.7	0.5	0.6	0.035

HEC-RAS OUTPUT SUMMARY TABLE: FGNK5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK5	2.5*	1100-cfs	1100	83.2	229	2.8	4.0	0.0034	4.8	0.5	0.6	0.035
FGNK5	2.5*	1150-cfs	1150	83.4	236	2.8	4.0	0.0034	4.9	0.5	0.6	0.035
FGNK5	2.5*	1200-cfs	1200	83.6	243	2.9	4.1	0.0033	4.9	0.5	0.6	0.035
FGNK5	2.5*	1250-cfs	1250	83.8	249	3.0	4.2	0.0033	5.0	0.5	0.6	0.035
FGNK5	2.5*	1300-cfs	1300	84.0	256	3.1	4.3	0.0033	5.1	0.5	0.6	0.035
FGNK5	2.5*	1350-cfs	1350	84.2	262	3.1	4.4	0.0033	5.1	0.5	0.6	0.035
FGNK5	2	950-cfs	950	81.4	201	2.5	3.8	0.0058	4.7	0.5	0.9	0.043
FGNK5	2	1000-cfs	1000	81.7	210	2.6	3.9	0.0058	4.8	0.5	0.9	0.044
FGNK5	2	1050-cfs	1050	82.0	217	2.7	4.0	0.0058	4.8	0.5	0.9	0.044
FGNK5	2	1100-cfs	1100	82.2	224	2.7	4.0	0.0058	4.9	0.5	1.0	0.044
FGNK5	2	1150-cfs	1150	82.5	231	2.8	4.1	0.0059	5.0	0.5	1.0	0.045
FGNK5	2	1200-cfs	1200	82.7	237	2.9	4.2	0.0059	5.1	0.5	1.0	0.045
FGNK5	2	1250-cfs	1250	83.0	243	2.9	4.3	0.0060	5.1	0.5	1.1	0.045
FGNK5	2	1300-cfs	1300	83.2	250	3.0	4.4	0.0060	5.2	0.5	1.1	0.045
FGNK5	2	1350-cfs	1350	83.3	256	3.1	4.4	0.0061	5.3	0.5	1.1	0.046
FGNK5	1	950-cfs	950	74.9	191	2.6	3.7	0.0049	5.0	0.6	0.8	0.038
FGNK5	1	1000-cfs	1000	75.3	199	2.7	3.8	0.0049	5.0	0.5	0.8	0.039
FGNK5	1	1050-cfs	1050	75.5	206	2.7	3.9	0.0049	5.1	0.5	0.8	0.039
FGNK5	1	1100-cfs	1100	75.6	212	2.8	4.0	0.0049	5.2	0.5	0.8	0.039
FGNK5	1	1150-cfs	1150	75.6	218	2.9	4.0	0.0049	5.3	0.6	0.9	0.039
FGNK5	1	1200-cfs	1200	75.6	224	3.0	4.1	0.0049	5.4	0.6	0.9	0.039
FGNK5	1	1250-cfs	1250	75.7	229	3.0	4.2	0.0049	5.5	0.6	0.9	0.039
FGNK5	1	1300-cfs	1300	75.7	235	3.1	4.3	0.0049	5.5	0.6	0.9	0.039
FGNK5	1	1350-cfs	1350	75.7	240	3.2	4.3	0.0049	5.6	0.6	0.9	0.039

HEC-RAS LONGITUDINAL PROFILE: FGNK5

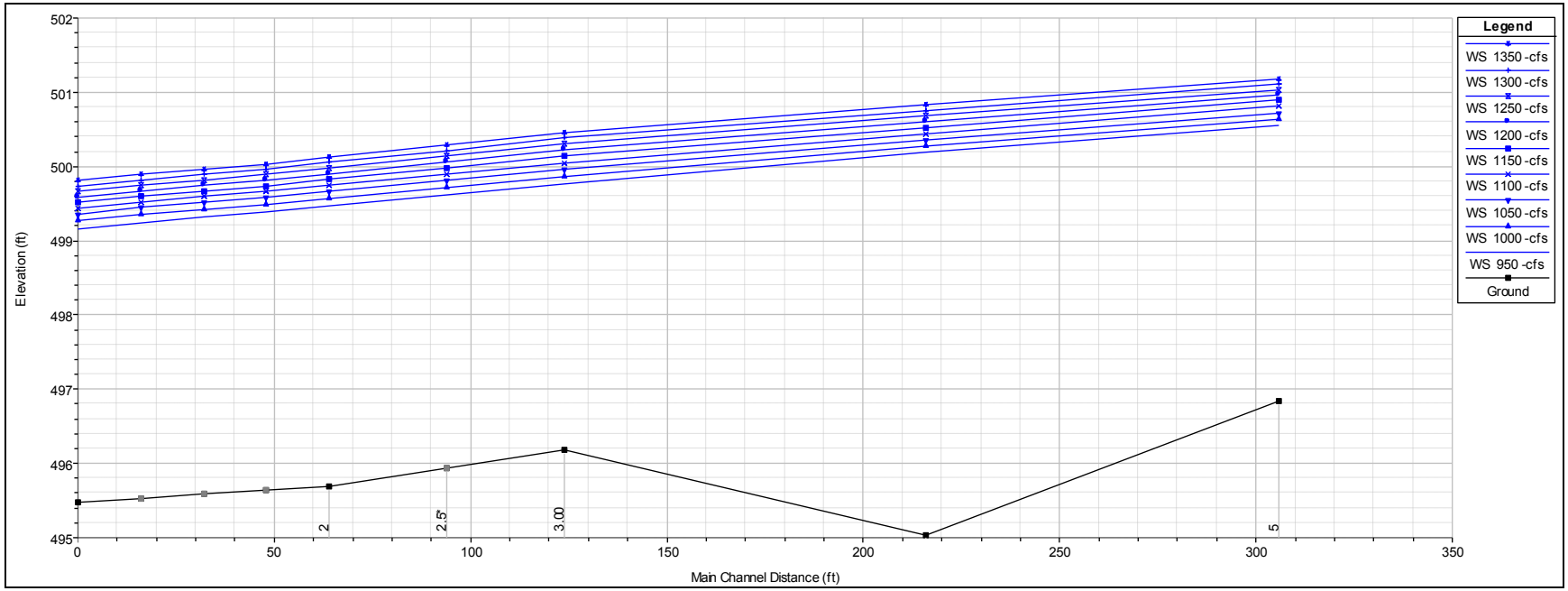


Figure 34 HEC-RAS longitudinal profile output for Reach FGNK5. Numbers 1-5 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0)

HEC-RAS CROSS-SECTIONS: FGNK5

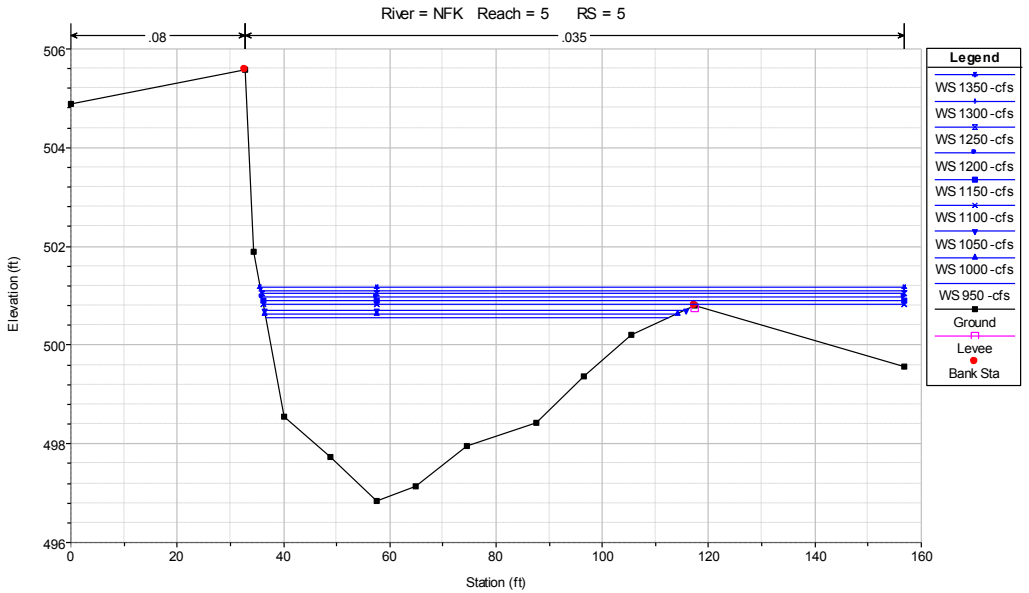


Figure 35 River Station (RS) 5 on River Reach FGNK5. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK5

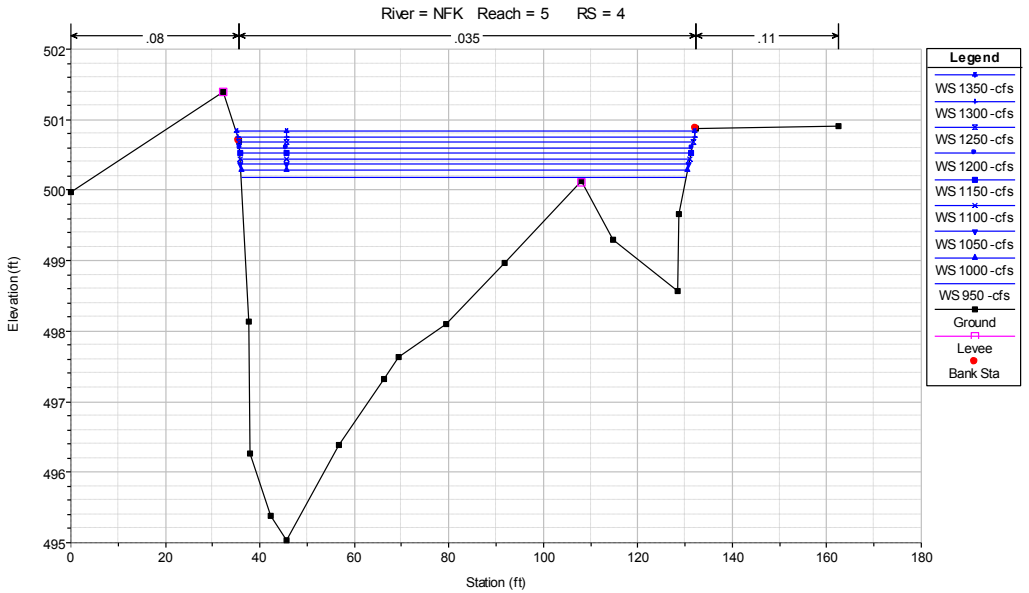


Figure 36 River Station (RS) 4 on River Reach FGNK5. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK5

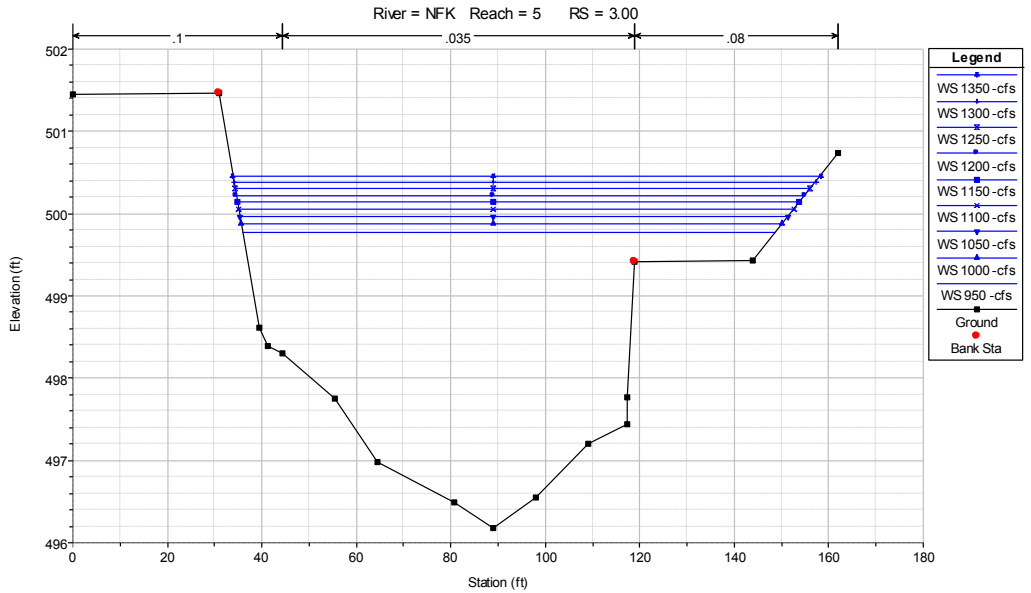


Figure 37 River Station (RS) 3 on River Reach FGNK5. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK5

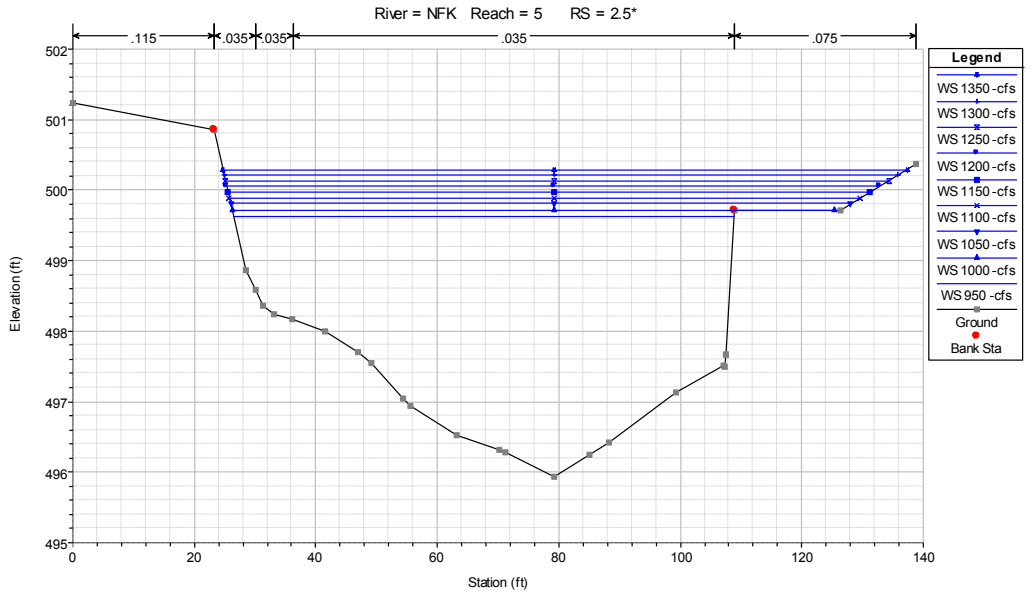


Figure 38 River Station (RS) 2.5* on River Reach FGNK5. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK5

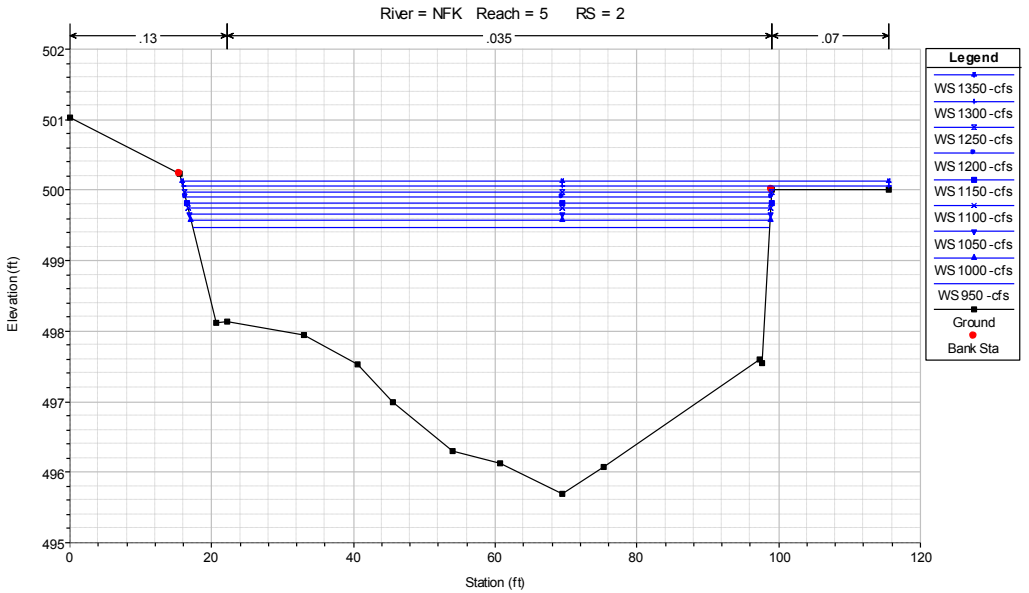


Figure 39 River Station (RS) 2 on River Reach FGNK5. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK5

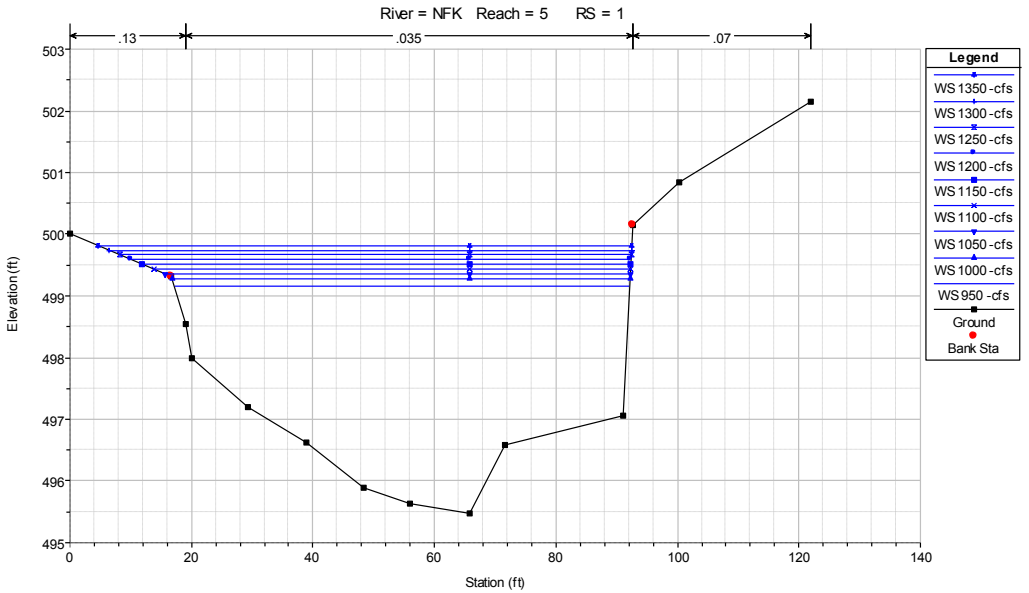


Figure 40 River Station (RS) 1 on River Reach FGNK5. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK5

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK5	5	950-cfs	0.93	167	136	109
FGNK5	5	1000-cfs	0.95	171	138	112
FGNK5	5	1050-cfs	0.97	175	141	114
FGNK5	5	1100-cfs	0.86	155	125	101
FGNK5	5	1150-cfs	0.86	155	125	101
FGNK5	5	1200-cfs	0.86	155	125	101
FGNK5	5	1250-cfs	0.86	155	125	101
FGNK5	5	1300-cfs	0.85	153	124	100
FGNK5	5	1350-cfs	0.85	153	124	100
FGNK5	4	950-cfs	0.59	106	86	69
FGNK5	4	1000-cfs	0.60	108	87	71
FGNK5	4	1050-cfs	0.61	110	89	72
FGNK5	4	1100-cfs	0.61	110	89	72
FGNK5	4	1150-cfs	0.62	112	90	73
FGNK5	4	1200-cfs	0.63	113	92	74
FGNK5	4	1250-cfs	0.64	115	93	75
FGNK5	4	1300-cfs	0.65	117	95	77
FGNK5	4	1350-cfs	0.65	117	95	77
FGNK5	3	950-cfs	0.78	140	114	92
FGNK5	3	1000-cfs	0.80	144	117	94
FGNK5	3	1050-cfs	0.82	148	120	97
FGNK5	3	1100-cfs	0.84	151	122	99
FGNK5	3	1150-cfs	0.86	155	125	101
FGNK5	3	1200-cfs	0.88	158	128	104
FGNK5	3	1250-cfs	0.90	162	131	106
FGNK5	3	1300-cfs	0.92	166	134	108
FGNK5	3	1350-cfs	0.94	169	137	111
FGNK5	2.5*	950-cfs	0.54	97	79	64
FGNK5	2.5*	1000-cfs	0.55	99	80	65

INCIPIENT MOTION ANALYSIS: FGNK5

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK5	2.5*	1050-cfs	0.56	101	82	66
FGNK5	2.5*	1100-cfs	0.57	103	83	67
FGNK5	2.5*	1150-cfs	0.58	104	85	68
FGNK5	2.5*	1200-cfs	0.59	106	86	69
FGNK5	2.5*	1250-cfs	0.60	108	87	71
FGNK5	2.5*	1300-cfs	0.61	110	89	72
FGNK5	2.5*	1350-cfs	0.62	112	90	73
FGNK5	2	950-cfs	0.88	158	128	104
FGNK5	2	1000-cfs	0.90	162	131	106
FGNK5	2	1050-cfs	0.93	167	136	109
FGNK5	2	1100-cfs	0.97	175	141	114
FGNK5	2	1150-cfs	1.00	180	146	118
FGNK5	2	1200-cfs	1.04	187	152	122
FGNK5	2	1250-cfs	1.07	193	156	126
FGNK5	2	1300-cfs	1.11	200	162	131
FGNK5	2	1350-cfs	1.14	205	166	134
FGNK5	1	950-cfs	0.76	137	111	89
FGNK5	1	1000-cfs	0.79	142	115	93
FGNK5	1	1050-cfs	0.82	148	120	97
FGNK5	1	1100-cfs	0.84	151	122	99
FGNK5	1	1150-cfs	0.86	155	125	101
FGNK5	1	1200-cfs	0.88	158	128	104
FGNK5	1	1250-cfs	0.90	162	131	106
FGNK5	1	1300-cfs	0.92	166	134	108
FGNK5	1	1350-cfs	0.94	169	137	111

PHOTOGRAPH DOCUMENTATION: FGNK5

Left bank along reference reach FGNK5

Right bank along reference reach FGNK5

Looking downstream from reference reach FGNK5

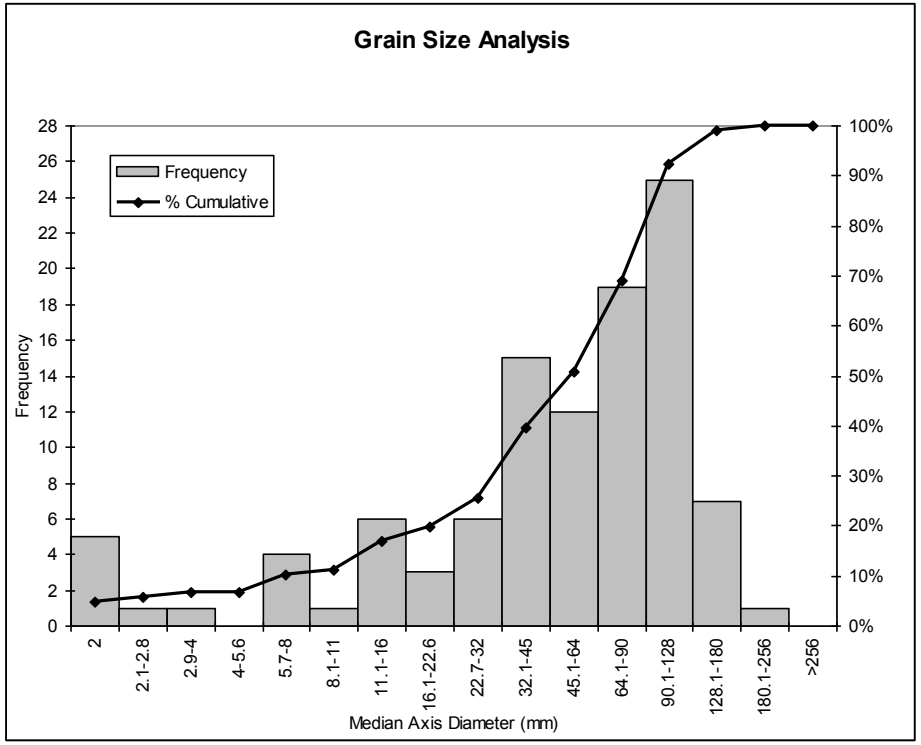
Looking upstream from reference reach FGNK5

PHOTOGRAPH DOCUMENTATION: FGNK5

Bank composition detail FGNK5

Oblique of site FGNK5

PEBBLE COUNT DISTRIBUTION: FGNK5

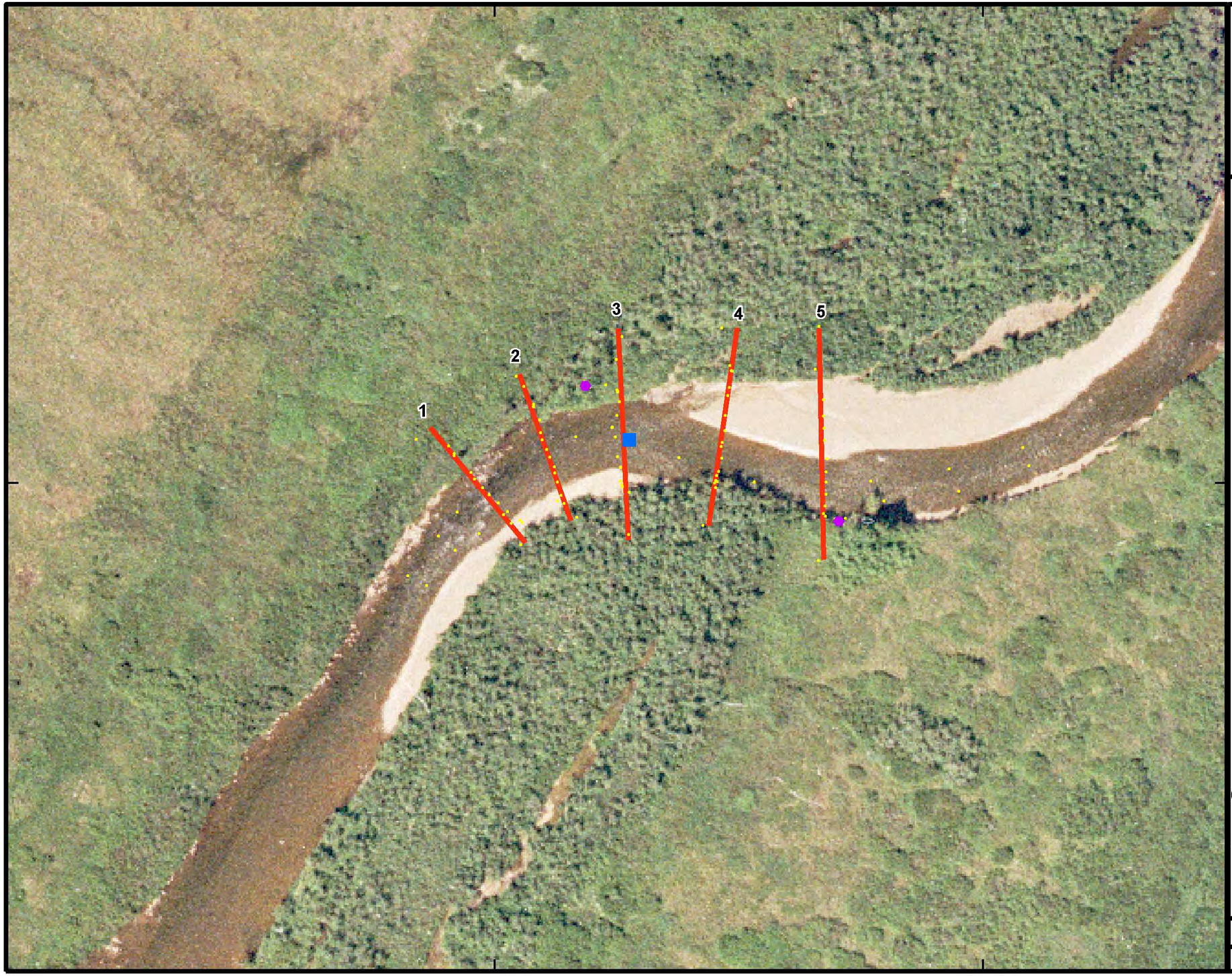


Size Class mm	*Frequency*	*Cumulative %*
2	5	4.7%
2.1-2.8	1	5.7%
2.9-4	1	6.6%
4-5.6	0	6.6%
5.7-8	4	10.4%
8.1-11	1	11.3%
11.1-16	6	17.0%
16.1-22.6	3	19.8%
22.7-32	6	25.5%
32.1-45	15	39.6%
45.1-64	12	50.9%
64.1-90	19	68.9%
90.1-128	25	92.5%
128.1-180	7	99.1%
180.1-256	1	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations 2 and 3

1,350,331 1,350,731 1,351,131

2,143,708

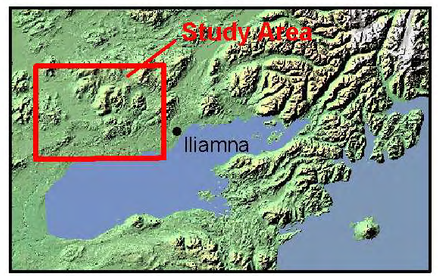


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK5
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,350,331 1,350,731 1,351,131

SITE DESCRIPTION: FGNK5

Site Characteristics.

Site Name		**FGNK6**	
Discharge (cfs)	**1050 (800-1100)**	Width (ft)	**73.4 (72.5-74.7)**
Slope	**0.0041**	Cross-sectional Area (ft^2)	**198 (172-222)**
D_{50}	**79**	D_{84}	**147**
Lat/Long Location	**N59.87726 W155.56157**	Drainage Area (mi^2)	**76**
	% Willow	**65**	
	% Grass	**35**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 840 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. A side channel along the left bank of the downstream hydraulic control was surveyed in as well. Due to its angle off the main channel and the size of the channel the momentum of the main channel causes this side channel to be ineffective during high flows. The left bank was therefore interpolated to complete Section 1. Sections 5 and 4 characterize the riffle which serves as the reference reach. The pebble count was taken through Section 5. Some lag was noted at this site, but was not evident in the pebble count. This site was co-located with the ISF site 05-NFK1-RFI.

The incipient motion analysis shows good agreement with the geometry of the site and the geomorphic indicators surveyed in. For a Shields number of 0.026, the D_{50} moves through Section 6 at 1050 cfs, before 800 cfs on Section 5 and does not move within the range of flows on Section 4. At Section 5, the D_{84} begins movement between 1000 and 1050 cfs with a Shields number of 0.017, but does not move through Section 4 within the range of flows. These flows match the inflection point on the right bank for Section 4.

The reference reach sections (Sections 4 and 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS SUMMARY OUTPUT: FGNK6

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK6	6	800-cfs	800	87.2	179	2.1	2.7	0.0047	4.5	0.55	0.60	0.036
FGNK6	6	850-cfs	850	87.4	187	2.1	2.8	0.0047	4.5	0.55	0.61	0.037
FGNK6	6	900-cfs	900	87.5	195	2.2	2.9	0.0046	4.6	0.54	0.62	0.037
FGNK6	6	950-cfs	950	87.6	203	2.3	3.0	0.0045	4.7	0.54	0.64	0.037
FGNK6	6	1000-cfs	1000	87.7	211	2.4	3.1	0.0044	4.7	0.54	0.65	0.037
FGNK6	6	1050-cfs	1050	87.9	219	2.5	3.2	0.0044	4.8	0.54	0.67	0.037
FGNK6	6	1100-cfs	1100	88.0	226	2.6	3.3	0.0043	4.9	0.53	0.68	0.037
FGNK6	5	800-cfs	800	73.0	172	2.4	3.0	0.0048	4.7	0.54	0.69	0.038
FGNK6	5	850-cfs	850	73.3	179	2.4	3.0	0.0049	4.8	0.54	0.72	0.039
FGNK6	5	900-cfs	900	73.6	185	2.5	3.1	0.0049	4.9	0.54	0.75	0.039
FGNK6	5	950-cfs	950	73.9	192	2.6	3.2	0.0050	5.0	0.54	0.78	0.039
FGNK6	5	1000-cfs	1000	74.2	198	2.7	3.3	0.0050	5.1	0.54	0.81	0.039
FGNK6	5	1050-cfs	1050	74.4	204	2.7	3.4	0.0051	5.1	0.55	0.84	0.039
FGNK6	5	1100-cfs	1100	74.7	210	2.8	3.5	0.0051	5.2	0.55	0.87	0.040
FGNK6	4	800-cfs	800	72.5	186	2.6	3.1	0.0032	4.3	0.47	0.50	0.036
FGNK6	4	850-cfs	850	72.7	192	2.7	3.2	0.0032	4.4	0.48	0.52	0.036
FGNK6	4	900-cfs	900	72.8	199	2.7	3.3	0.0032	4.5	0.48	0.54	0.036
FGNK6	4	950-cfs	950	73.0	205	2.8	3.3	0.0033	4.6	0.49	0.56	0.036
FGNK6	4	1000-cfs	1000	73.1	211	2.9	3.4	0.0033	4.7	0.49	0.58	0.036
FGNK6	4	1050-cfs	1050	73.2	217	3.0	3.5	0.0033	4.9	0.50	0.60	0.036
FGNK6	4	1100-cfs	1100	73.2	222	3.0	3.6	0.0034	5.0	0.50	0.62	0.036
FGNK6	3	800-cfs	800	78.3	195	2.5	3.5	0.0030	4.1	0.46	0.46	0.036
FGNK6	3	850-cfs	850	78.4	202	2.6	3.6	0.0030	4.2	0.46	0.48	0.036
FGNK6	3	900-cfs	900	78.4	209	2.7	3.7	0.0031	4.3	0.46	0.49	0.036
FGNK6	3	950-cfs	950	78.4	216	2.8	3.7	0.0031	4.4	0.47	0.51	0.036
FGNK6	3	1000-cfs	1000	78.4	222	2.8	3.8	0.0031	4.5	0.47	0.53	0.036
FGNK6	3	1050-cfs	1050	78.4	228	2.9	3.9	0.0031	4.6	0.47	0.55	0.036
FGNK6	3	1100-cfs	1100	78.4	234	3.0	4.0	0.0031	4.7	0.48	0.56	0.036

HEC-RAS SUMMARY OUTPUT: FGNK6

FGNK6	2	800-cfs	800	79.6	227	2.9	4.6	0.0018	3.5	0.36	0.31	0.036
FGNK6	2	850-cfs	850	79.6	233	2.9	4.7	0.0018	3.6	0.37	0.33	0.036
FGNK6	2	900-cfs	900	79.6	240	3.0	4.7	0.0019	3.7	0.37	0.34	0.036
FGNK6	2	950-cfs	950	79.7	246	3.1	4.8	0.0019	3.8	0.38	0.36	0.036
FGNK6	2	1000-cfs	1000	79.7	253	3.2	4.9	0.0019	3.8	0.38	0.37	0.036
FGNK6	2	1050-cfs	1050	79.7	259	3.3	5.0	0.0020	3.9	0.38	0.39	0.036
FGNK6	2	1100-cfs	1100	79.7	265	3.3	5.0	0.0020	4.0	0.39	0.40	0.036
FGNK6	1	800-cfs	800	96.4	145	1.5	2.0	0.0105	5.5	0.79	0.98	0.036
FGNK6	1	850-cfs	850	97.0	151	1.6	2.1	0.0105	5.6	0.80	1.01	0.036
FGNK6	1	900-cfs	900	97.6	157	1.6	2.2	0.0105	5.8	0.80	1.04	0.036
FGNK6	1	950-cfs	950	98.2	162	1.7	2.2	0.0105	5.9	0.80	1.07	0.036
FGNK6	1	1000-cfs	1000	98.7	168	1.7	2.3	0.0105	6.0	0.81	1.10	0.036
FGNK6	1	1050-cfs	1050	99.3	173	1.7	2.3	0.0105	6.1	0.81	1.13	0.036
FGNK6	1	1100-cfs	1100	99.8	178	1.8	2.4	0.0105	6.2	0.81	1.16	0.036

HEC-RAS LONGITUDINAL PROFILE: FGNK6

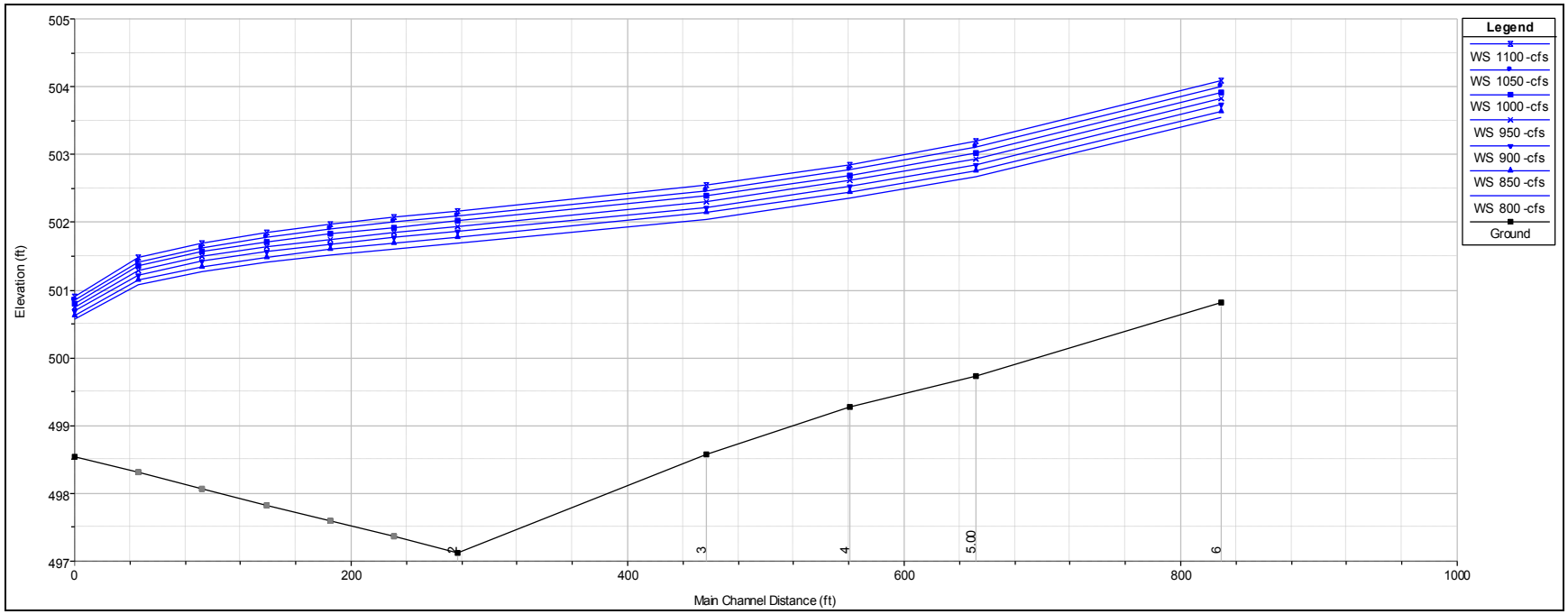


Figure 41 HEC-RAS longitudinal profile output for Reach FGNK6. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK6

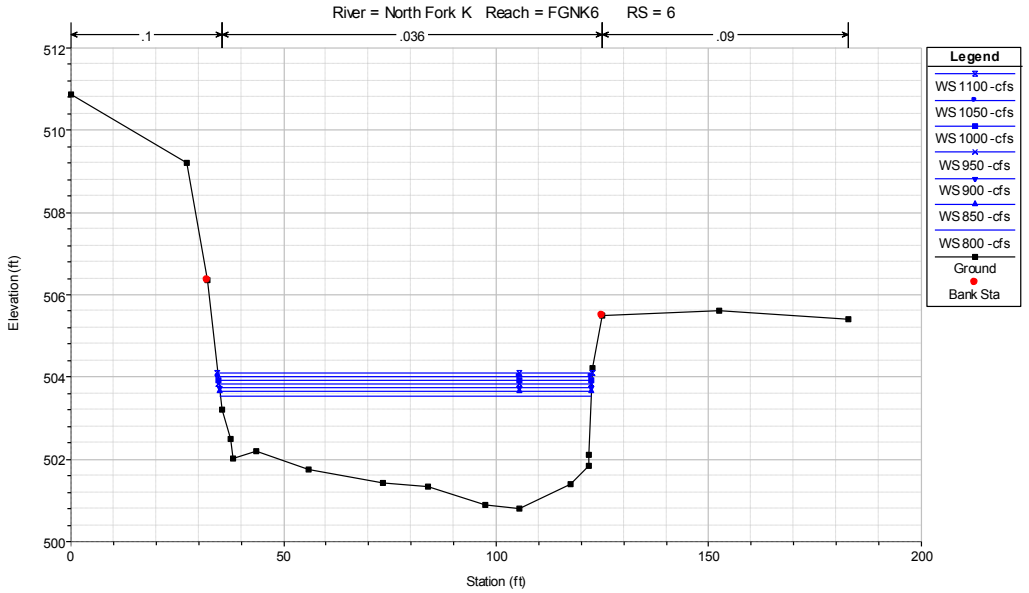


Figure 42 River Station (RS) 6 on River Reach FGNK6. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK6

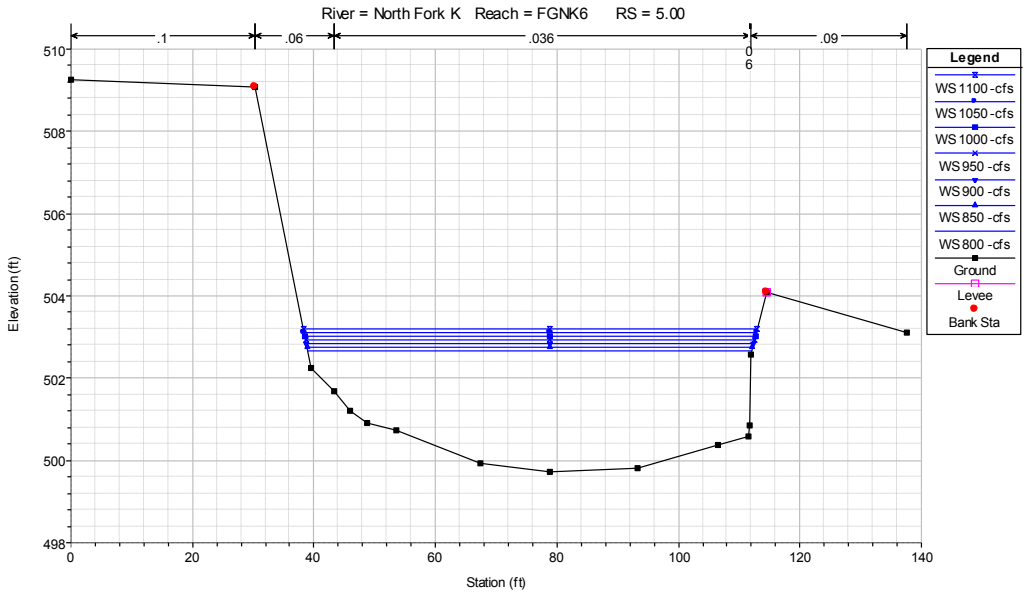


Figure 43 River Station (RS) 5.00 on River Reach FGNK6. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

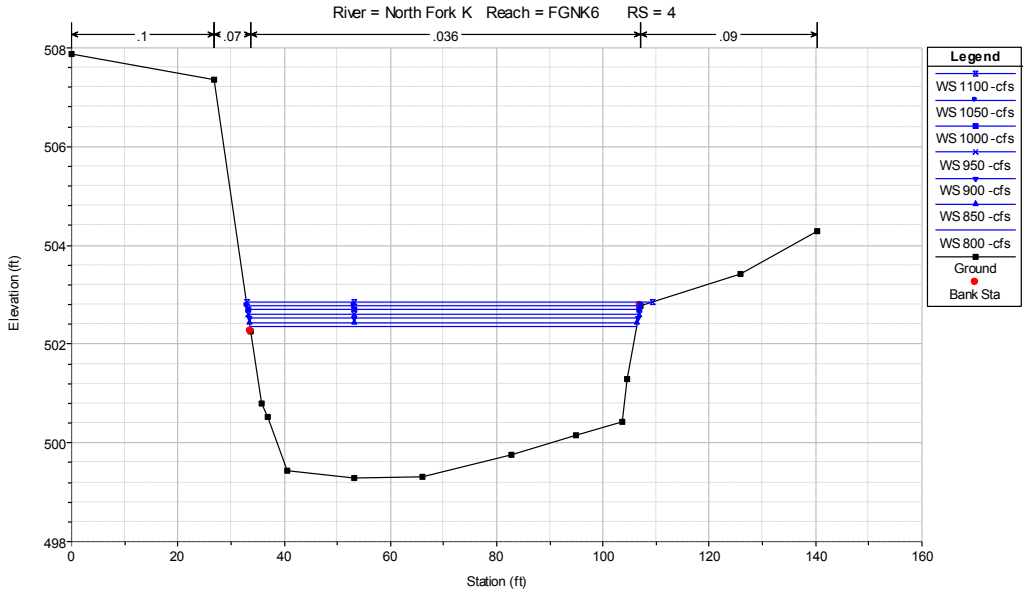


Figure 44 River Station (RS) 4 on River Reach FGNK6. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

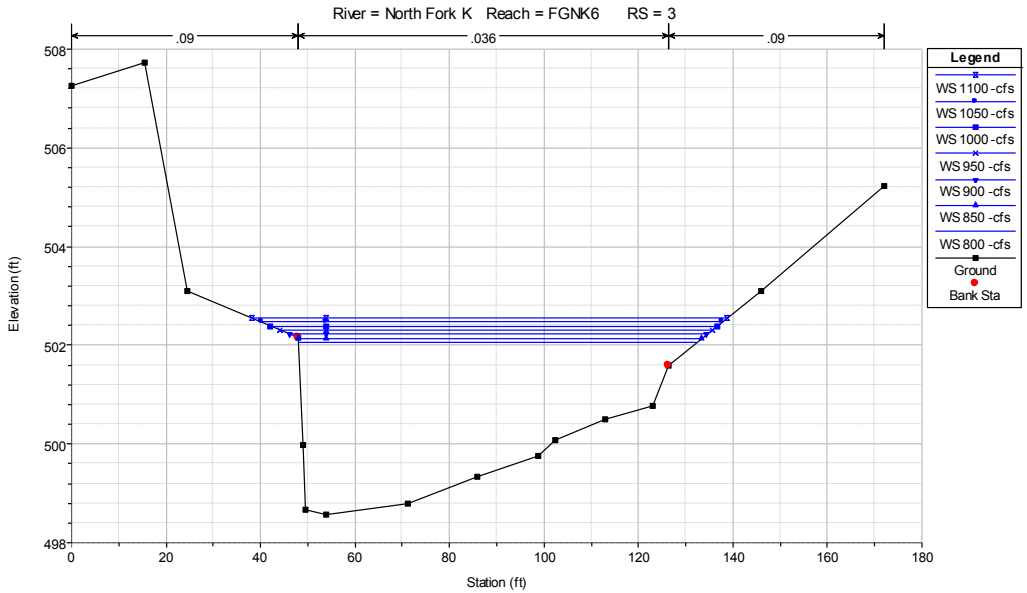


Figure 45 River Station (RS) 3 on River Reach FGNK6. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

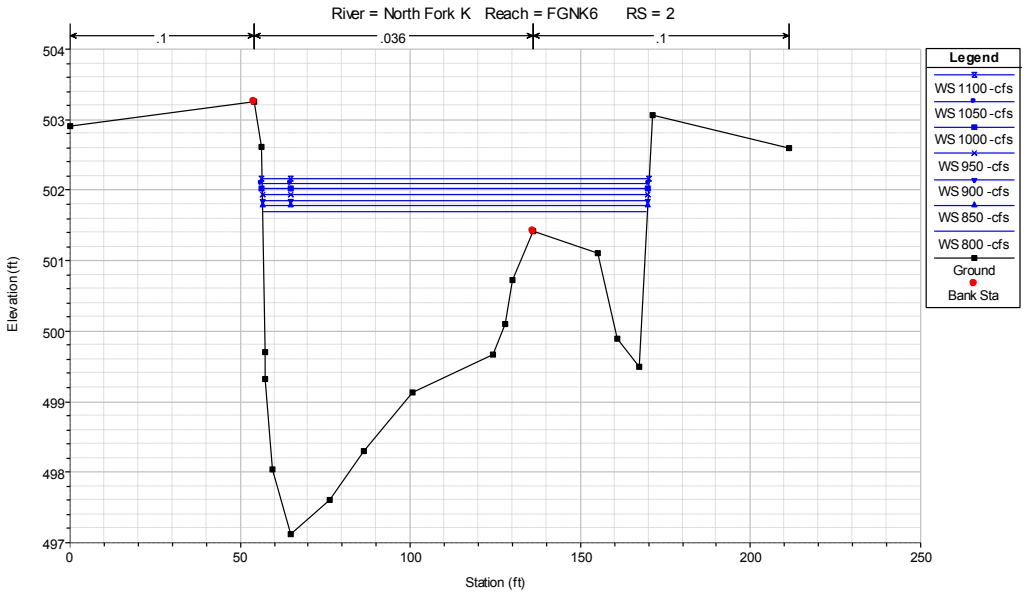


Figure 46 River Station (RS) 2 on River Reach FGNK6. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

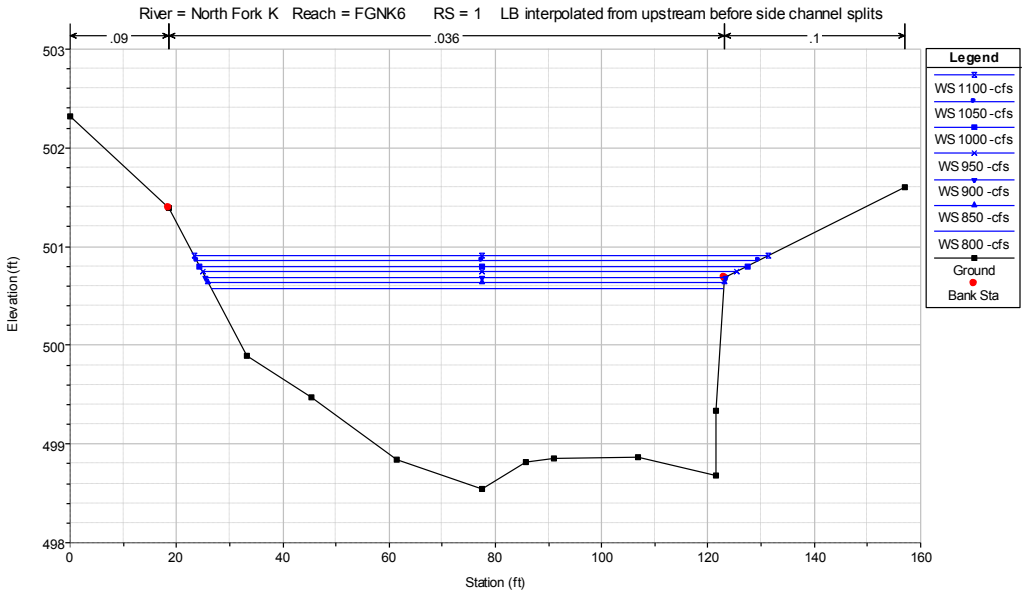


Figure 47 River Station (RS) 1 on River Reach FGNK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK6

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK6	6	800-cfs	0.60	108	87	71
FGNK6	6	850-cfs	0.61	110	89	72
FGNK6	6	900-cfs	0.62	112	90	73
FGNK6	6	950-cfs	0.64	115	93	75
FGNK6	6	1000-cfs	0.65	117	95	77
FGNK6	6	1050-cfs	0.67	121	98	79
FGNK6	6	1100-cfs	0.68	122	99	80
FGNK6	5	800-cfs	0.69	124	101	81
FGNK6	5	850-cfs	0.72	130	105	85
FGNK6	5	900-cfs	0.75	135	109	88
FGNK6	5	950-cfs	0.78	140	114	92
FGNK6	5	1000-cfs	0.81	146	118	95
FGNK6	5	1050-cfs	0.84	151	122	99
FGNK6	5	1100-cfs	0.87	157	127	102
FGNK6	4	800-cfs	0.50	90	73	59
FGNK6	4	850-cfs	0.52	94	76	61
FGNK6	4	900-cfs	0.54	97	79	64
FGNK6	4	950-cfs	0.56	101	82	66
FGNK6	4	1000-cfs	0.58	104	85	68
FGNK6	4	1050-cfs	0.60	108	87	71
FGNK6	4	1100-cfs	0.62	112	90	73
FGNK6	3	800-cfs	0.46	83	67	54
FGNK6	3	850-cfs	0.48	86	70	57
FGNK6	3	900-cfs	0.49	88	71	58
FGNK6	3	950-cfs	0.51	92	74	60
FGNK6	3	1000-cfs	0.53	95	77	62
FGNK6	3	1050-cfs	0.55	99	80	65
FGNK6	3	1100-cfs	0.56	101	82	66

INCIPIENT MOTION ANALYSIS: FGNK6

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK6	2	800-cfs	0.31	56	45	36
FGNK6	2	850-cfs	0.33	59	48	39
FGNK6	2	900-cfs	0.34	61	50	40
FGNK6	2	950-cfs	0.36	65	52	42
FGNK6	2	1000-cfs	0.37	67	54	44
FGNK6	2	1050-cfs	0.39	70	57	46
FGNK6	2	1100-cfs	0.40	72	58	47
FGNK6	1	800-cfs	0.98	176	143	115
FGNK6	1	850-cfs	1.01	182	147	119
FGNK6	1	900-cfs	1.04	187	152	122
FGNK6	1	950-cfs	1.07	193	156	126
FGNK6	1	1000-cfs	1.10	198	160	129
FGNK6	1	1050-cfs	1.13	203	165	133
FGNK6	1	1100-cfs	1.16	209	169	137

PHOTOGRAPH DOCUMENTATION: FGNK6

Left bank along reference reach FGNK6

Right bank along reference reach FGNK6

Looking downstream from reference reach FGNK6

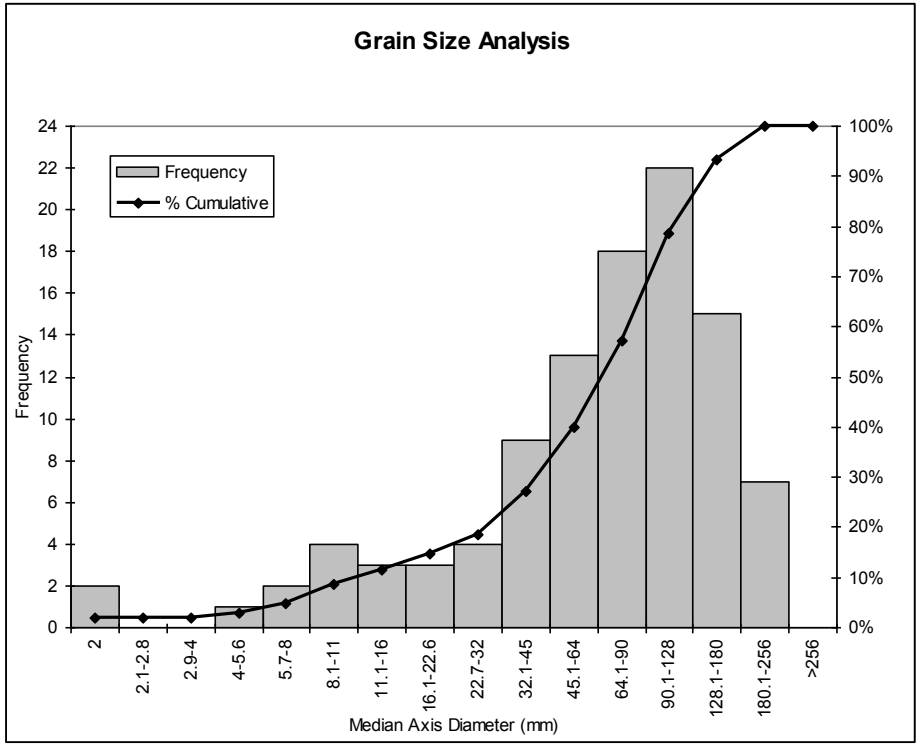
Looking upstream from reference reach FGNK6

PHOTOGRAPH DOCUMENTATION: FGNK6

Bank composition detail FGNK6

Oblique of site FGNK6

PEBBLE COUNT DISTRIBUTION: FGNK6



Size Class mm	*Frequency*	*Cumulative %*
2	2	1.9%
2.1-2.8	0	1.9%
2.9-4	0	1.9%
4-5.6	1	2.9%
5.7-8	2	4.9%
8.1-11	4	8.7%
11.1-16	3	11.7%
16.1-22.6	3	14.6%
22.7-32	4	18.4%
32.1-45	9	27.2%
45.1-64	13	39.8%
64.1-90	18	57.3%
90.1-128	22	78.6%
128.1-180	15	93.2%
180.1-256	7	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled Across River Station (RS) 5

1,352,393 1,352,793 1,353,193 1,353,593 1,353,993

2,150,418

2,150,018

2,149,618

1,352,393 1,352,793 1,353,193 1,353,593 1,353,993

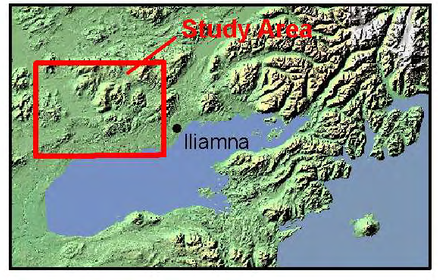
6 5 4 3 2 1

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK6
(Mine Study Area)

Legend

- Benchmark
- Bulk Sample
- Pebble Count
- Survey Point
- HEC-RAS Section



0 120 240 360 480 Ft

0 40 80 Meters

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGNK7

Site Characteristics.

Site Name	**FGNK7**		
Discharge (cfs)	**675 (600-775)**	Width (ft)	**60.5 (53.7-69.9)**
Slope	**0.0030**	Cross-sectional Area (ft^2)	**164 (148-181)**
(1) D_{50}	**104**	D_{84}	**205**
(1 modified) D_{50}	**97**	D_{84}	**156**
(2) D_{50}	**94**	D_{84}	**164**
(2 modified) D_{50}	**93**	D_{84}	**163**
Lat/Long Location	**N59.89958 W155.54845**	Drainage Area (mi^2)	**70**
% Willow	**70**		
% Grass	**30**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 650 feet of channel length. Section 1 serves as the downstream hydraulic control for the model. Sections 6 through 4 characterize the riffle which serves as the reference reach through which the pebble counts were taken. Pebble count 1 was taken upstream of Section 5, before the grade break represented by Section 5. Pebble count 2 was taken downstream of Section 5 in an area that was actively modified by fish. This site has substantial lag deposits as shown in the surface sediment sampled (note the broad pebble count distributions). The D_{50} and D_{84} size classes are nearly double those found in the lower North Fork Koktuli. To account for the potential lag, the pebble counts were modified by removing rocks greater than 256 mm (see below). However, this modification may not account for all of the lag present.

For Shields numbers of 0.017 and 0.026, the D_{84} and D_{50} (respectively) do not move through the reference reach within the range of flows that enter flood prone areas. However, within that range of flows, average rock sizes of 57 mm (Shields number of 0.026) and 87 mm (Shields number of 0.017) move. These particle sizes more closely represent the material size that makes up other lower North Fork Koktuli sites (FGNK1 and FGNK2). The channel appears to be in equilibrium with material moving through the channel. Due to the potential presence of immobile material in the incipient motion analysis, the range of flows is based on the geometry of the surveyed reach. Flows between 600 and 775 cfs match the geometry well through the reach, notably Sections 3 and 4 where 675 cfs match a right bank inflection point.

The reference reach (Sections 6 through 4) provides the best representation of the channel dimensions and was used to find average channel width and cross-sectional area over the range of flows

HEC-RAS OUTPUT SUMMARY TABLE: FGNK7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK7	6	600-cfs	600	57.5	157	2.7	3.7	0.0025	3.8	0.41	0.41	0.037
FGNK7	6	625-cfs	625	57.7	160	2.8	3.8	0.0025	3.9	0.41	0.42	0.037
FGNK7	6	650-cfs	650	57.8	164	2.8	3.9	0.0025	4.0	0.41	0.43	0.037
FGNK7	6	675-cfs	675	58.0	168	2.9	3.9	0.0026	4.0	0.42	0.45	0.037
FGNK7	6	700-cfs	700	58.1	171	2.9	4.0	0.0026	4.1	0.42	0.46	0.037
FGNK7	6	725-cfs	725	58.3	175	3.0	4.0	0.0026	4.2	0.42	0.47	0.037
FGNK7	6	750-cfs	750	58.4	178	3.1	4.1	0.0027	4.2	0.43	0.49	0.037
FGNK7	6	775-cfs	775	58.6	181	3.1	4.1	0.0027	4.3	0.43	0.50	0.037
FGNK7	5	600-cfs	600	69.4	148	2.1	2.5	0.0037	4.0	0.49	0.49	0.037
FGNK7	5	625-cfs	625	69.5	153	2.2	2.6	0.0037	4.1	0.49	0.49	0.037
FGNK7	5	650-cfs	650	69.6	158	2.3	2.7	0.0036	4.1	0.48	0.50	0.037
FGNK7	5	675-cfs	675	69.6	162	2.3	2.7	0.0036	4.2	0.48	0.51	0.037
FGNK7	5	700-cfs	700	69.7	166	2.4	2.8	0.0036	4.2	0.48	0.52	0.037
FGNK7	5	725-cfs	725	69.7	171	2.5	2.8	0.0035	4.3	0.48	0.53	0.037
FGNK7	5	750-cfs	750	69.8	175	2.5	2.9	0.0035	4.3	0.48	0.53	0.037
FGNK7	5	775-cfs	775	69.9	179	2.6	3.0	0.0035	4.3	0.48	0.54	0.037
FGNK7	4	600-cfs	600	53.7	148	2.8	3.6	0.0026	4.0	0.43	0.43	0.036
FGNK7	4	625-cfs	625	53.7	152	2.8	3.7	0.0027	4.1	0.43	0.45	0.036
FGNK7	4	650-cfs	650	53.8	155	2.9	3.8	0.0027	4.2	0.44	0.46	0.036
FGNK7	4	675-cfs	675	53.8	158	2.9	3.8	0.0027	4.3	0.44	0.47	0.036
FGNK7	4	700-cfs	700	53.9	161	3.0	3.9	0.0028	4.3	0.44	0.49	0.036
FGNK7	4	725-cfs	725	53.9	164	3.1	3.9	0.0028	4.4	0.45	0.50	0.036
FGNK7	4	750-cfs	750	53.9	167	3.1	4.0	0.0028	4.5	0.45	0.52	0.036
FGNK7	4	775-cfs	775	53.9	170	3.2	4.0	0.0028	4.6	0.45	0.53	0.036
FGNK7	3	600-cfs	600	59.0	139	2.4	3.5	0.0036	4.3	0.49	0.52	0.036
FGNK7	3	625-cfs	625	59.2	143	2.4	3.6	0.0037	4.4	0.50	0.53	0.036
FGNK7	3	650-cfs	650	59.4	146	2.5	3.6	0.0037	4.5	0.50	0.54	0.036
FGNK7	3	675-cfs	675	59.5	150	2.5	3.7	0.0037	4.5	0.50	0.56	0.036
FGNK7	3	700-cfs	700	59.6	153	2.6	3.7	0.0037	4.6	0.50	0.57	0.036
FGNK7	3	725-cfs	725	59.7	156	2.6	3.8	0.0037	4.7	0.51	0.58	0.036

HEC-RAS OUTPUT SUMMARY TABLE: FGNK7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK7	3	750-cfs	750	59.7	159	2.7	3.9	0.0037	4.7	0.51	0.60	0.036
FGNK7	3	775-cfs	775	59.7	162	2.7	3.9	0.0038	4.8	0.51	0.61	0.036
FGNK7	2	600-cfs	600	56.5	122	2.2	3.8	0.0058	4.9	0.58	0.76	0.038
FGNK7	2	625-cfs	625	56.6	125	2.2	3.8	0.0059	5.0	0.59	0.78	0.038
FGNK7	2	650-cfs	650	56.7	128	2.3	3.9	0.0059	5.0	0.59	0.80	0.038
FGNK7	2	675-cfs	675	56.8	131	2.3	3.9	0.0059	5.1	0.59	0.83	0.038
FGNK7	2	700-cfs	700	56.8	134	2.4	4.0	0.0060	5.2	0.59	0.85	0.038
FGNK7	2	725-cfs	725	56.9	137	2.4	4.0	0.0060	5.2	0.59	0.87	0.038
FGNK7	2	750-cfs	750	57.0	140	2.5	4.1	0.0060	5.3	0.60	0.89	0.039
FGNK7	2	775-cfs	775	57.1	142	2.5	4.1	0.0060	5.4	0.60	0.91	0.039
FGNK7	1	600-cfs	600	46.1	86	1.9	2.4	0.0119	6.7	0.87	1.34	0.036
FGNK7	1	625-cfs	625	46.3	88	1.9	2.5	0.0119	6.8	0.87	1.37	0.036
FGNK7	1	650-cfs	650	46.4	89	1.9	2.5	0.0119	6.9	0.87	1.40	0.036
FGNK7	1	675-cfs	675	46.6	91	2.0	2.6	0.0119	6.9	0.87	1.42	0.036
FGNK7	1	700-cfs	700	46.7	93	2.0	2.6	0.0119	7.0	0.88	1.45	0.036
FGNK7	1	725-cfs	725	46.9	95	2.0	2.6	0.0119	7.1	0.88	1.47	0.036
FGNK7	1	750-cfs	750	47.1	97	2.1	2.7	0.0119	7.1	0.87	1.50	0.036
FGNK7	1	775-cfs	775	47.2	99	2.1	2.7	0.0119	7.2	0.87	1.53	0.037

HEC-RAS LONGITUDINAL PROFILE: FGNK7

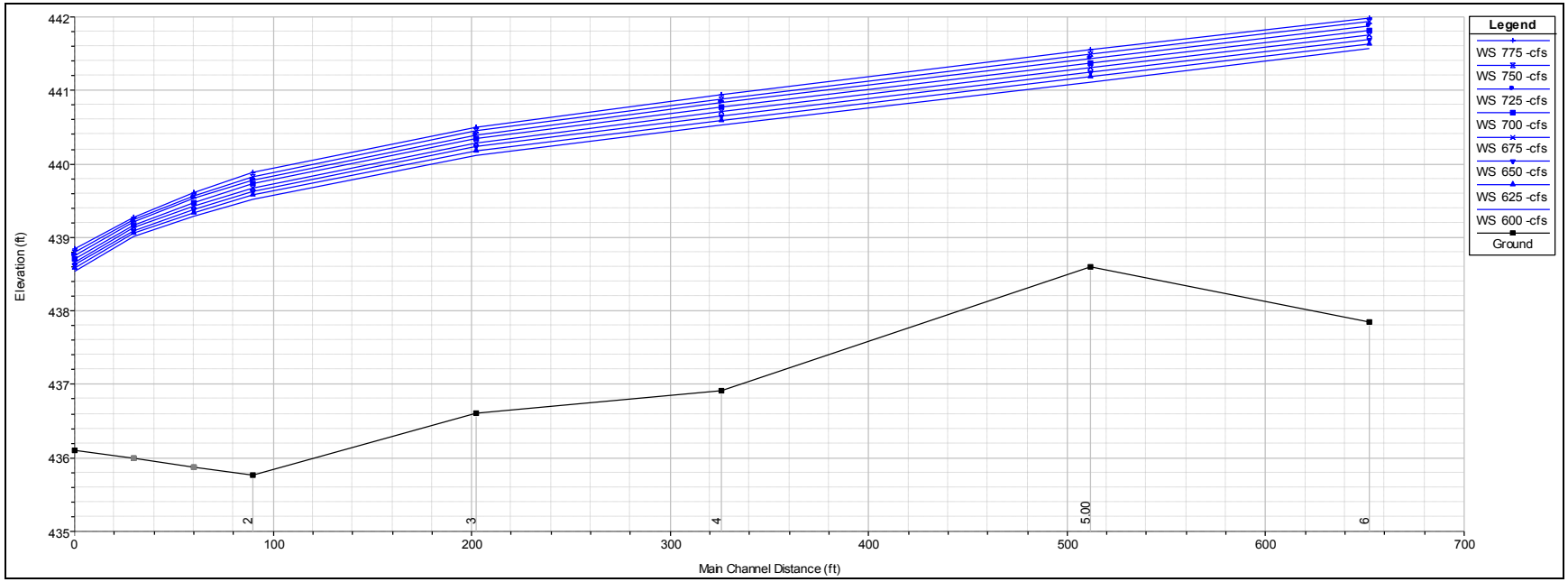


Figure 48 HEC-RAS longitudinal profile output for Reach FGNK7. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK7

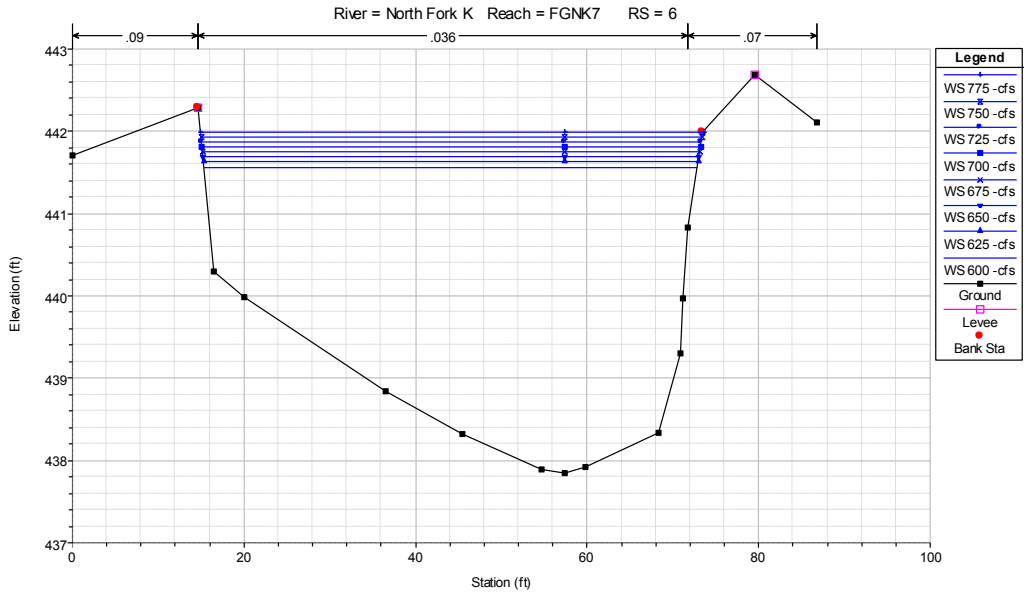


Figure 49 River Station (RS) 6 on River Reach FGNK7. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK7

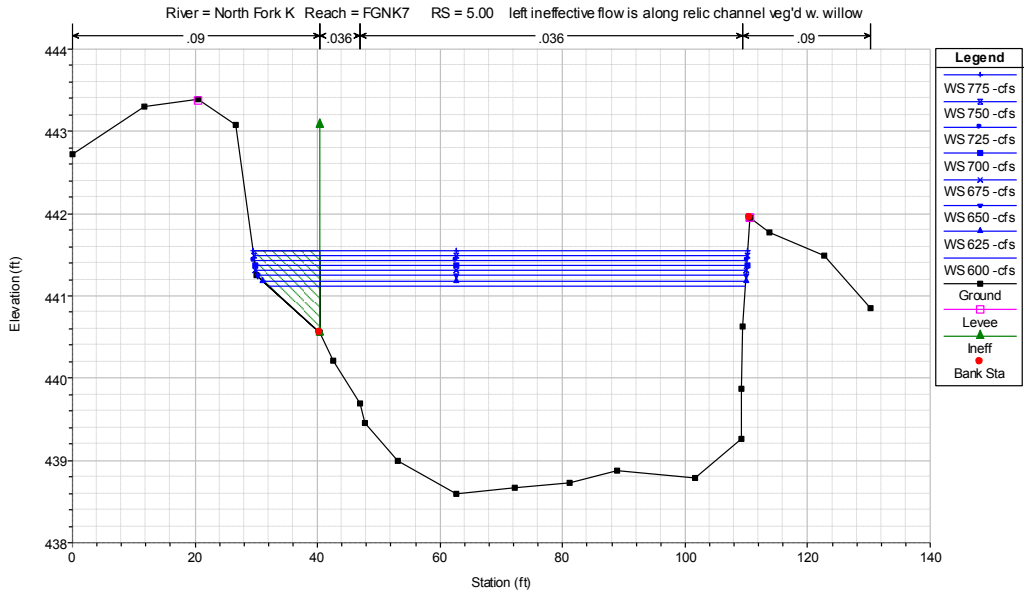


Figure 50 River Station (RS) 5.00 on River Reach FGNK7. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK7

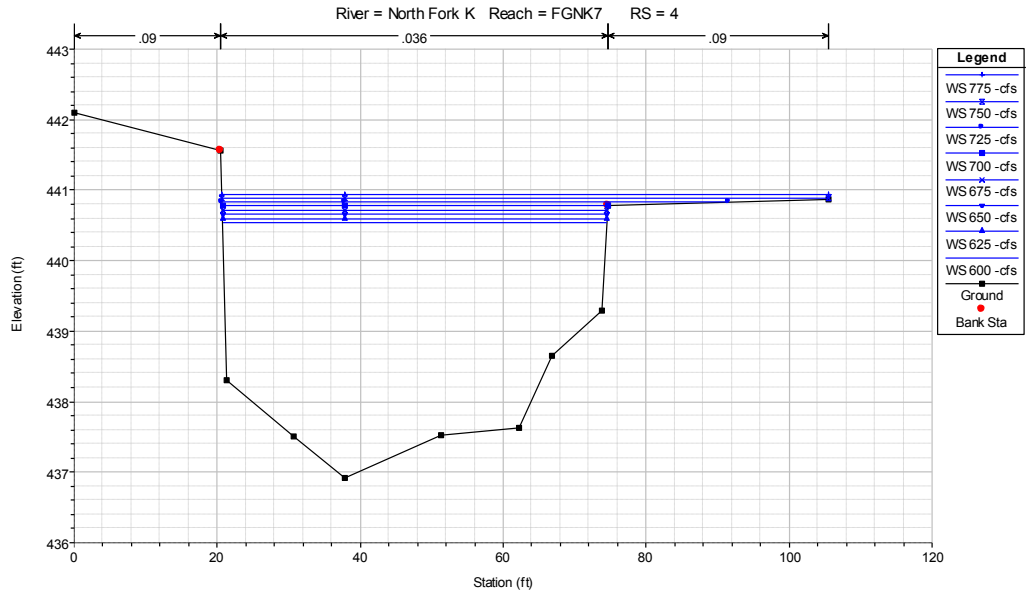


Figure 51 River Station (RS) 4 on River Reach FGNK7. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK7

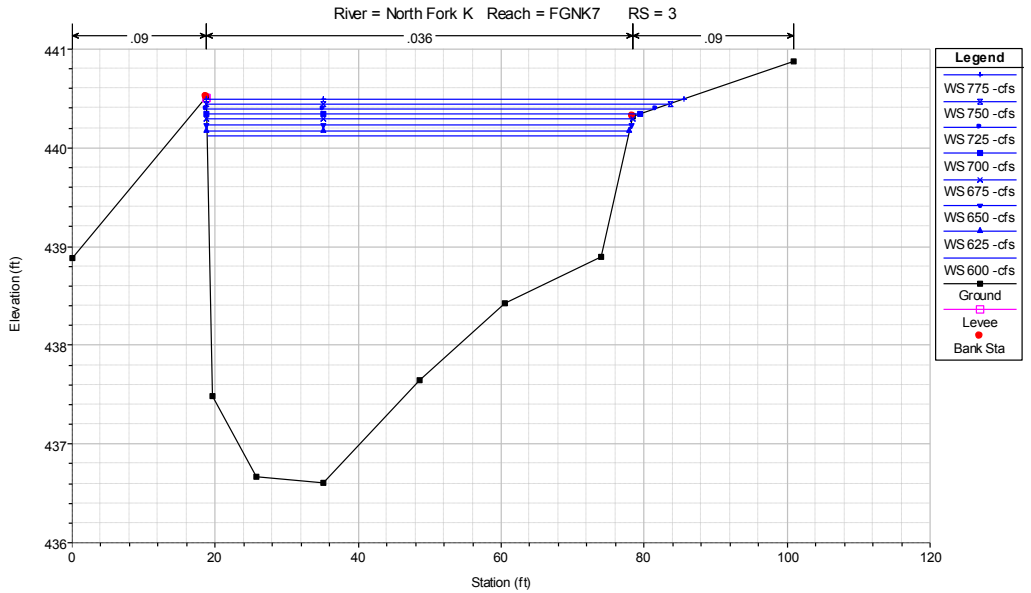


Figure 52 River Station (RS) 3 on River Reach FGNK7. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK7

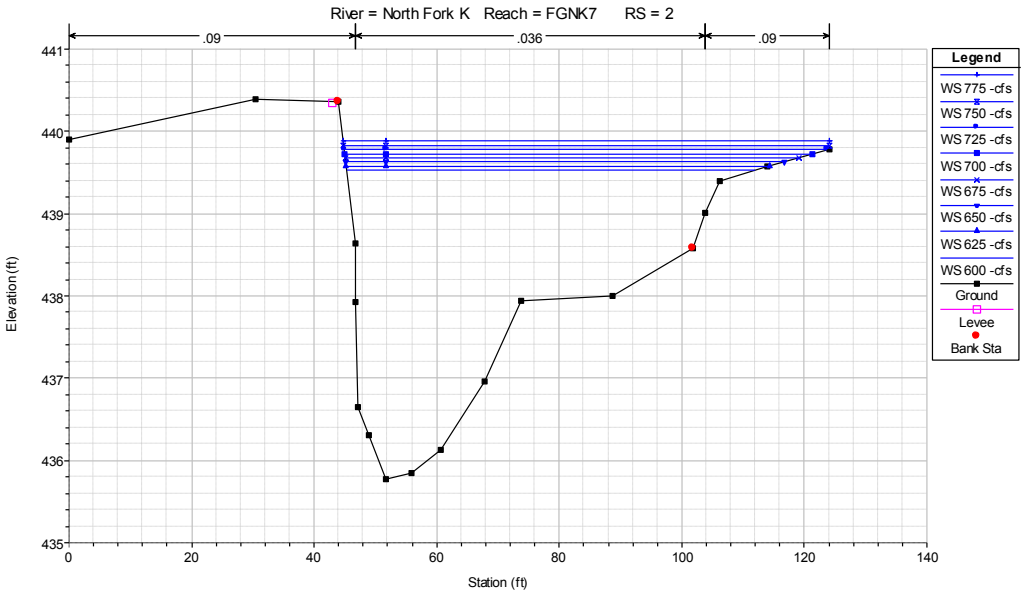


Figure 53 River Station (RS) 2 on River Reach FGNK7. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK7

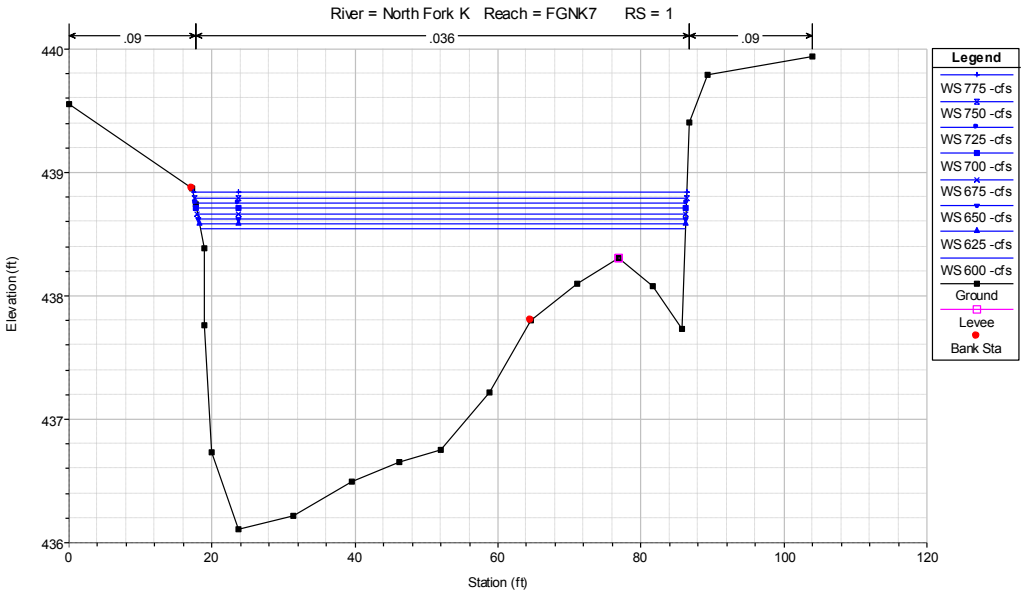


Figure 54 River Station (RS) 1 on River Reach FGNK7. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK7

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK7	6	600-cfs	0.41	74	60	48
FGNK7	6	625-cfs	0.42	76	61	49
FGNK7	6	650-cfs	0.43	77	63	51
FGNK7	6	675-cfs	0.45	81	66	53
FGNK7	6	700-cfs	0.46	83	67	54
FGNK7	6	725-cfs	0.47	85	68	55
FGNK7	6	750-cfs	0.49	88	71	58
FGNK7	6	775-cfs	0.50	90	73	59
FGNK7	5	600-cfs	0.49	88	71	58
FGNK7	5	625-cfs	0.49	88	71	58
FGNK7	5	650-cfs	0.50	90	73	59
FGNK7	5	675-cfs	0.51	92	74	60
FGNK7	5	700-cfs	0.52	94	76	61
FGNK7	5	725-cfs	0.53	95	77	62
FGNK7	5	750-cfs	0.53	95	77	62
FGNK7	5	775-cfs	0.54	97	79	64
FGNK7	4	600-cfs	0.43	77	63	51
FGNK7	4	625-cfs	0.45	81	66	53
FGNK7	4	650-cfs	0.46	83	67	54
FGNK7	4	675-cfs	0.47	85	68	55
FGNK7	4	700-cfs	0.49	88	71	58
FGNK7	4	725-cfs	0.50	90	73	59
FGNK7	4	750-cfs	0.52	94	76	61
FGNK7	4	775-cfs	0.53	95	77	62
FGNK7	3	600-cfs	0.52	94	76	61
FGNK7	3	625-cfs	0.53	95	77	62
FGNK7	3	650-cfs	0.54	97	79	64
FGNK7	3	675-cfs	0.56	101	82	66
FGNK7	3	700-cfs	0.57	103	83	67

INCIPIENT MOTION ANALYSIS: FGNK7

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK7	3	725-cfs	0.58	104	85	68
FGNK7	3	750-cfs	0.60	108	87	71
FGNK7	3	775-cfs	0.61	110	89	72
FGNK7	2	600-cfs	0.76	137	111	89
FGNK7	2	625-cfs	0.78	140	114	92
FGNK7	2	650-cfs	0.80	144	117	94
FGNK7	2	675-cfs	0.83	149	121	98
FGNK7	2	700-cfs	0.85	153	124	100
FGNK7	2	725-cfs	0.87	157	127	102
FGNK7	2	750-cfs	0.89	160	130	105
FGNK7	2	775-cfs	0.91	164	133	107
FGNK7	1	600-cfs	1.34	241	195	158
FGNK7	1	625-cfs	1.37	247	200	161
FGNK7	1	650-cfs	1.40	252	204	165
FGNK7	1	675-cfs	1.42	256	207	167
FGNK7	1	700-cfs	1.45	261	211	171
FGNK7	1	725-cfs	1.47	265	214	173
FGNK7	1	750-cfs	1.50	270	219	177
FGNK7	1	775-cfs	1.53	275	223	180

PHOTOGRAPH DOCUMENTATION: FGNK7

Left bank along reference reach FGNK7

Right bank along reference reach FGNK7

Looking downstream from reference reach FGNK7

Looking upstream from reference reach FGNK7

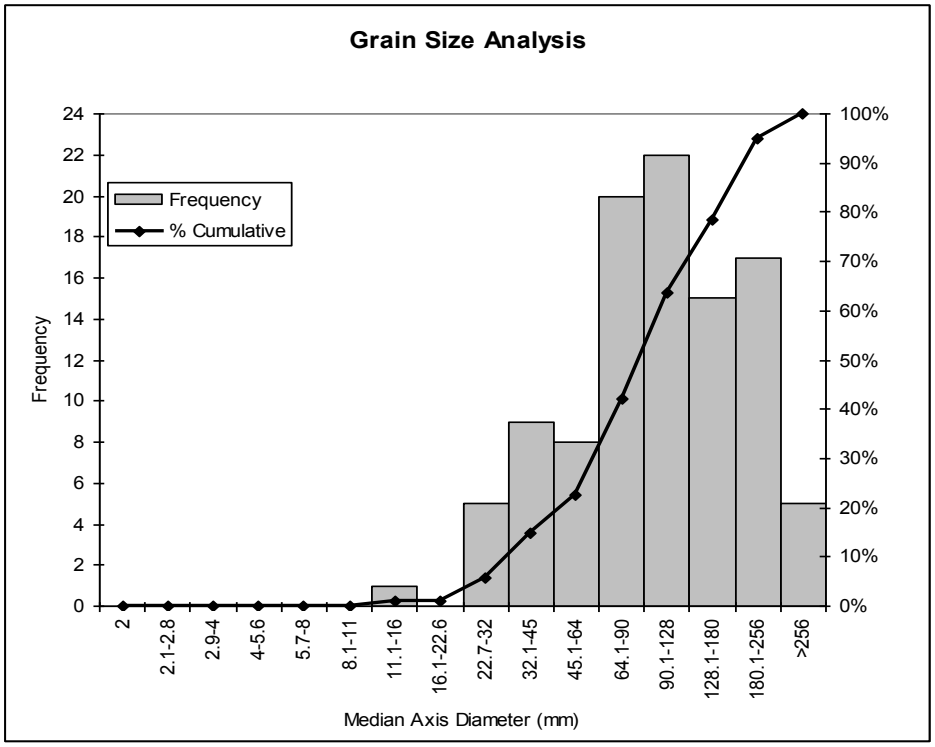
PHOTOGRAPH DOCUMENTATION: FGNK7

Bank composition detail (right bank) FGNK7

Oblique of site FGNK7

PEBBLE COUNT DISTRIBUTION: FNKG7

Pebble Count 1 Original

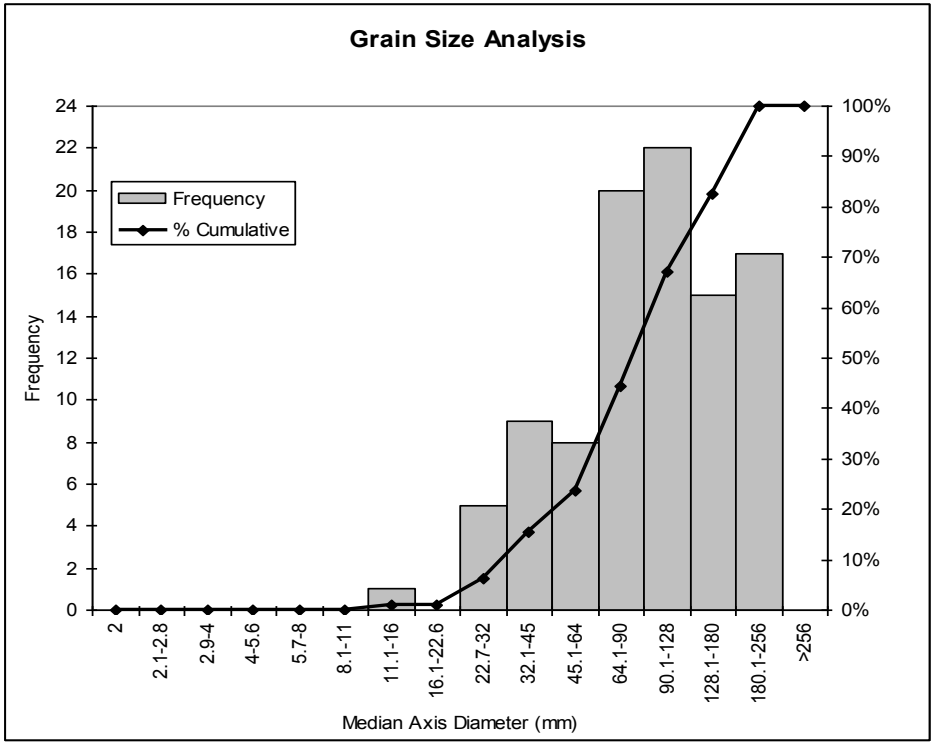


Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	0	.0%
8.1-11	0	.0%
11.1-16	1	1.0%
16.1-22.6	0	1.0%
22.7-32	5	5.9%
32.1-45	9	14.7%
45.1-64	8	22.5%
64.1-90	20	42.2%
90.1-128	22	63.7%
128.1-180	15	78.4%
180.1-256	17	95.1%
>256	5	100.0%

Description of Wolman Pebble Count Location: Sampled upstream of profile grade break at River Station (RS) 5

PEBBLE COUNT DISTRIBUTION: FNKG7

Pebble Count 1 Modified

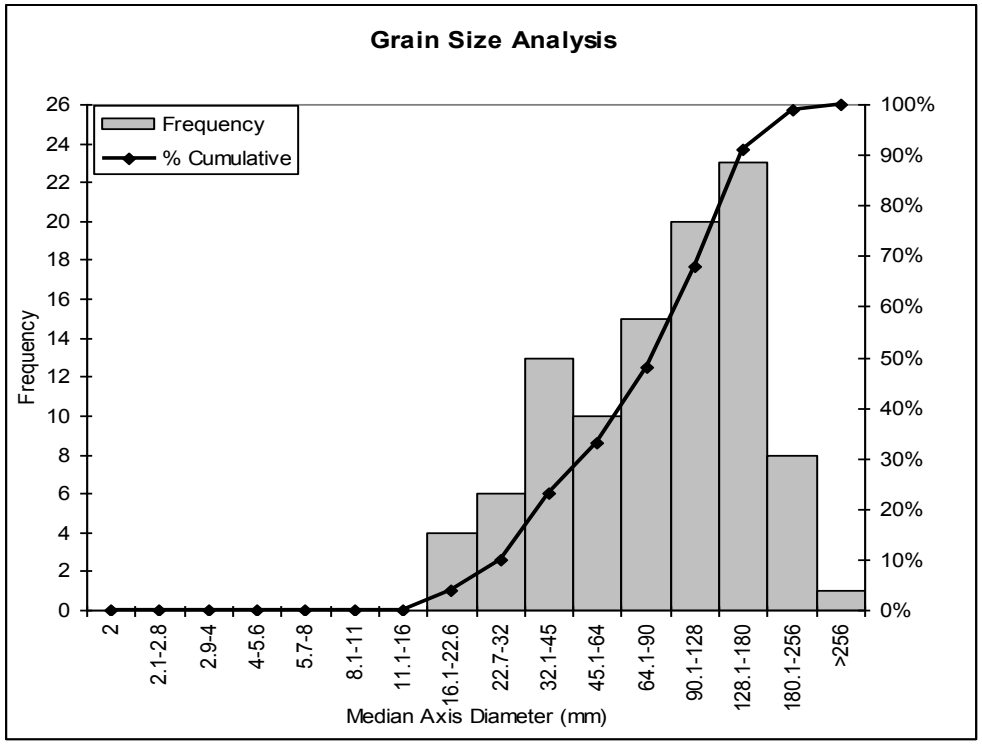


Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	0	.0%
8.1-11	0	.0%
11.1-16	1	1.0%
16.1-22.6	0	1.0%
22.7-32	5	6.2%
32.1-45	9	15.5%
45.1-64	8	23.7%
64.1-90	20	44.3%
90.1-128	22	67.0%
128.1-180	15	82.5%
180.1-256	17	100.0%
>256	0*	100.0%

Description of Wolman Pebble Count Location: Sampled upstream of profile grade break at River Station (RS) 5.
*Potential lag removed from pebble count 1 (count: 5)

PEBBLE COUNT DISTRIBUTION: FNKG7

Pebble Count 2 Original

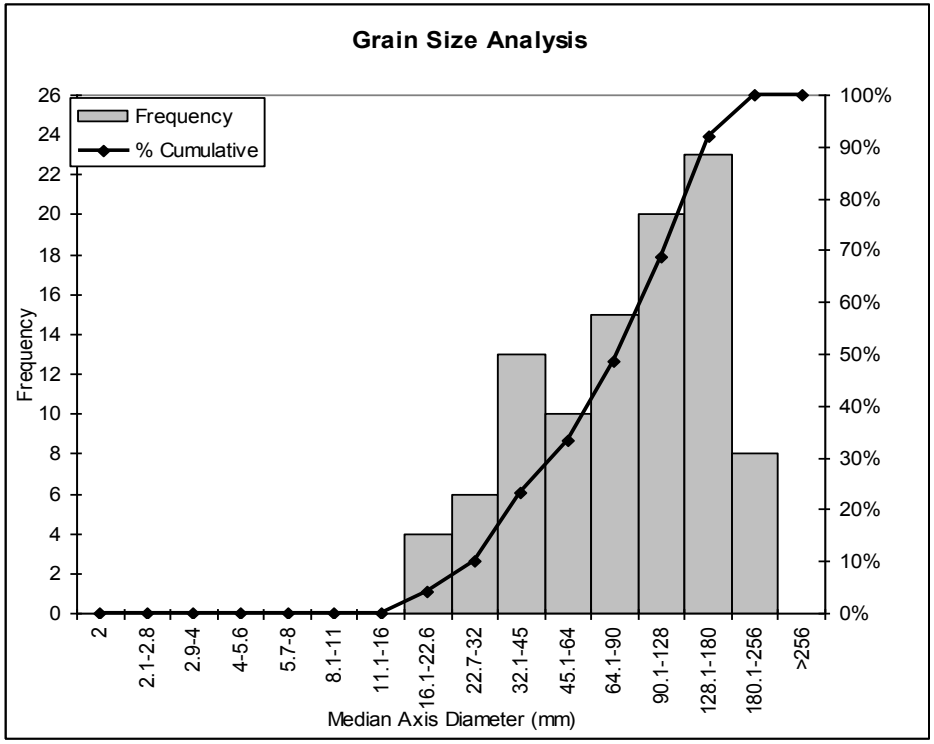


Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	0	.0%
8.1-11	0	.0%
11.1-16	0	.0%
16.1-22.6	4	4.0%
22.7-32	6	10.0%
32.1-45	13	23.0%
45.1-64	10	33.0%
64.1-90	15	48.0%
90.1-128	20	68.0%
128.1-180	23	91.0%
180.1-256	8	99.0%
>256	1	100.0%

Description of Wolman Pebble Count Location: Sampled downstream of profile grade break (River Station (RS) 5)

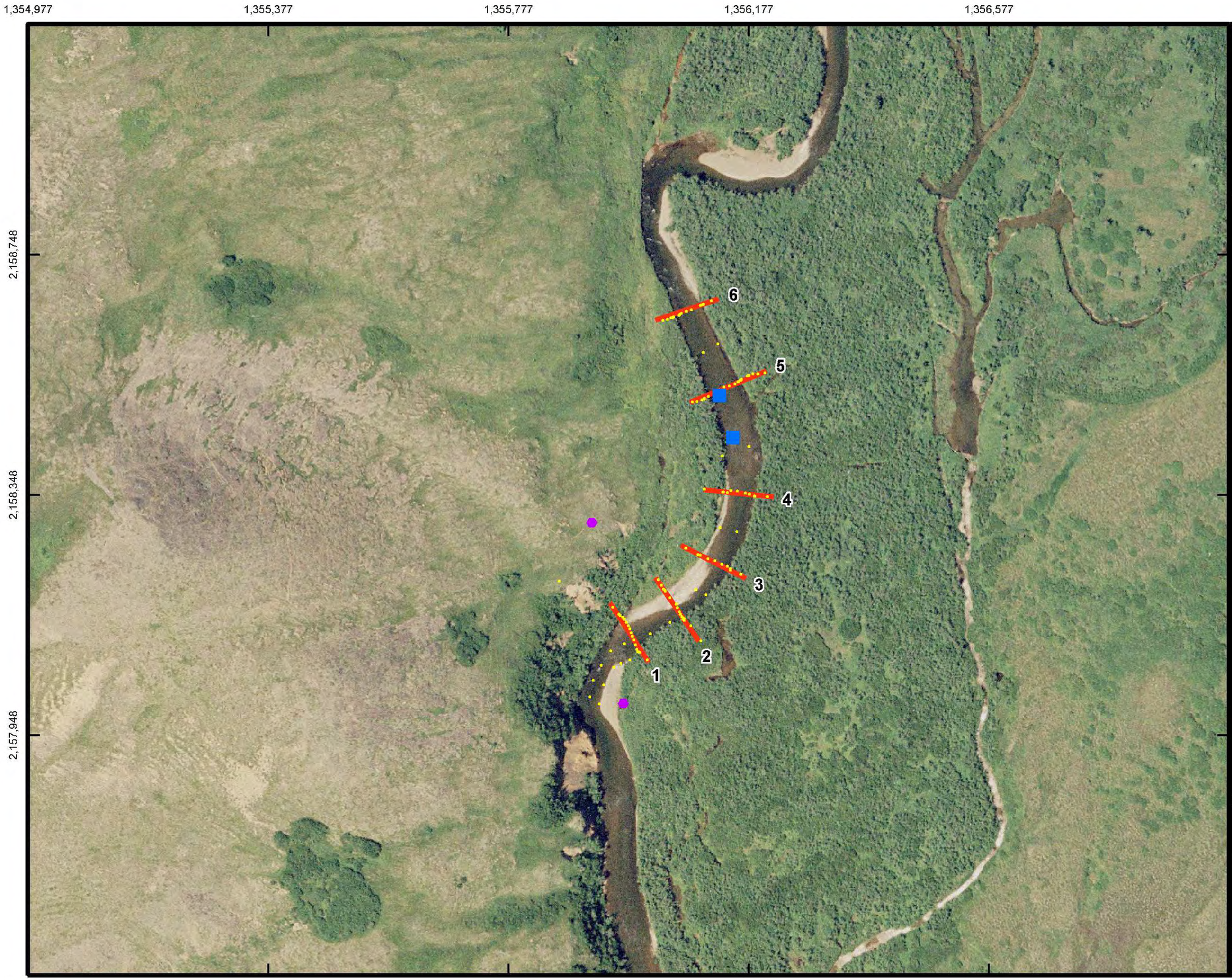
PEBBLE COUNT DISTRIBUTION: FNKG7

Pebble Count 2 Modified



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	0	.0%
8.1-11	0	.0%
11.1-16	0	.0%
16.1-22.6	4	4.0%
22.7-32	6	10.1%
32.1-45	13	23.2%
45.1-64	10	33.3%
64.1-90	15	48.5%
90.1-128	20	68.7%
128.1-180	23	91.9%
180.1-256	8	100.0%
>256	0*	100.0%

Description of Wolman Pebble Count Location: Downstream of profile grade break (River Station (RS) 5)
*****Potential lag removed from pebble count 2 (count: 4)

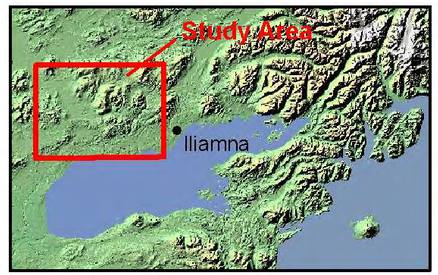


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK7
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGNK8

Site Characteristics.

Site Name		**FGNK8**	
Discharge (cfs)	**375 (325-525)**	Width (ft)	**57.9 (51.3-63.7)**
Slope	**0.0050**	Cross-sectional Area (ft^2)	**101 (75-125)**
D_{50}	**36**	D_{84}	**73**
Lat/Long Location	**N59.92610 W155.51178**	Drainage Area (mi^2)	**62**
	% Willow	**60**	
	% Grass	**40**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 290 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and the crest of the pool. Sections 5 through 3 characterize the riffle which serves as the reference reach. The pebble count was taken through Section 5. Sections 3 through 1 characterize the pool, while Section 6 was taken to capture the run/glide upstream of the reference reach. Surface sediment is slightly smaller than that sampled in the lower river.

For a Shields number of 0.017, the D_{84} moves through Section 5 around 325 cfs and before 325 cfs on Sections 4 and 3. Similarly, for a Shields number of 0.026, the D_{50} moves through all of the reference reach sections (5 through 3) by 325 cfs. A flow between 325 and 375 cfs match an inflection point and the vegetative indicator on the left bank through the reference riffle. Higher flows (425-525 cfs) match right bank inflection points on Sections 3 and 2.

The reference reach sections (Sections 3 through 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK8	6	325-cfs	325	48.1	106	2.2	3.6	0.0020	3.0	0.36	0.26	0.036
FGNK8	6	375-cfs	375	48.2	114	2.4	3.8	0.0021	3.2	0.37	0.29	0.036
FGNK8	6	425-cfs	425	48.2	121	2.5	3.9	0.0022	3.5	0.38	0.33	0.036
FGNK8	6	475-cfs	475	48.3	128	2.6	4.1	0.0023	3.6	0.39	0.36	0.036
FGNK8	6	525-cfs	525	48.4	134	2.8	4.2	0.0024	3.8	0.40	0.39	0.036
FGNK8	5	325-cfs	325	62.7	88	1.4	2.8	0.0048	3.7	0.55	0.41	0.036
FGNK8	5	375-cfs	375	63.6	98	1.6	3.0	0.0046	3.8	0.54	0.43	0.036
FGNK8	5	425-cfs	425	63.6	107	1.7	3.1	0.0044	4.0	0.54	0.45	0.036
FGNK8	5	475-cfs	475	63.6	116	1.8	3.3	0.0043	4.1	0.53	0.47	0.036
FGNK8	5	525-cfs	525	63.7	125	2.0	3.4	0.0041	4.2	0.52	0.49	0.036
FGNK8	4	325-cfs	325	55.5	82	1.5	3.4	0.0056	3.9	0.57	0.50	0.036
FGNK8	4	375-cfs	375	55.6	92	1.7	3.6	0.0051	4.0	0.55	0.51	0.036
FGNK8	4	425-cfs	425	55.7	101	1.8	3.7	0.0047	4.1	0.54	0.52	0.036
FGNK8	4	475-cfs	475	55.8	110	2.0	3.9	0.0044	4.2	0.53	0.53	0.036
FGNK8	4	525-cfs	525	55.9	118	2.1	4.1	0.0042	4.3	0.52	0.54	0.036
FGNK8	3	325-cfs	325	51.3	75	1.5	3.2	0.0070	4.3	0.63	0.61	0.036
FGNK8	3	375-cfs	375	55.1	86	1.6	3.4	0.0064	4.3	0.61	0.60	0.036
FGNK8	3	425-cfs	425	55.5	97	1.8	3.6	0.0056	4.4	0.58	0.59	0.036
FGNK8	3	475-cfs	475	55.6	107	1.9	3.8	0.0051	4.4	0.56	0.59	0.036
FGNK8	3	525-cfs	525	55.6	116	2.1	3.9	0.0047	4.5	0.55	0.59	0.036
FGNK8	2	325-cfs	325	39.7	79	2.0	4.1	0.0046	4.1	0.52	0.52	0.036
FGNK8	2	375-cfs	375	41.8	86	2.1	4.3	0.0048	4.3	0.53	0.56	0.036
FGNK8	2	425-cfs	425	43.9	94	2.2	4.4	0.0049	4.5	0.54	0.60	0.036
FGNK8	2	475-cfs	475	44.4	102	2.3	4.6	0.0048	4.7	0.54	0.62	0.036
FGNK8	2	525-cfs	525	44.4	109	2.5	4.8	0.0047	4.8	0.54	0.65	0.036
FGNK8	1	325-cfs	325	44.1	84	1.9	3.0	0.0041	3.9	0.50	0.45	0.036
FGNK8	1	375-cfs	375	45.7	93	2.0	3.2	0.0041	4.1	0.50	0.48	0.036
FGNK8	1	425-cfs	425	47.2	101	2.2	3.4	0.0041	4.2	0.50	0.51	0.036

HEC-RAS OUTPUT SUMMARY TABLE: FGNK8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK8	1	475-cfs	475	48.6	110	2.3	3.6	0.0041	4.3	0.51	0.54	0.036
FGNK8	1	525-cfs	525	50.0	118	2.4	3.8	0.0041	4.5	0.51	0.56	0.036

HEC-RAS LONGITUDINAL PROFILE: FGNK8

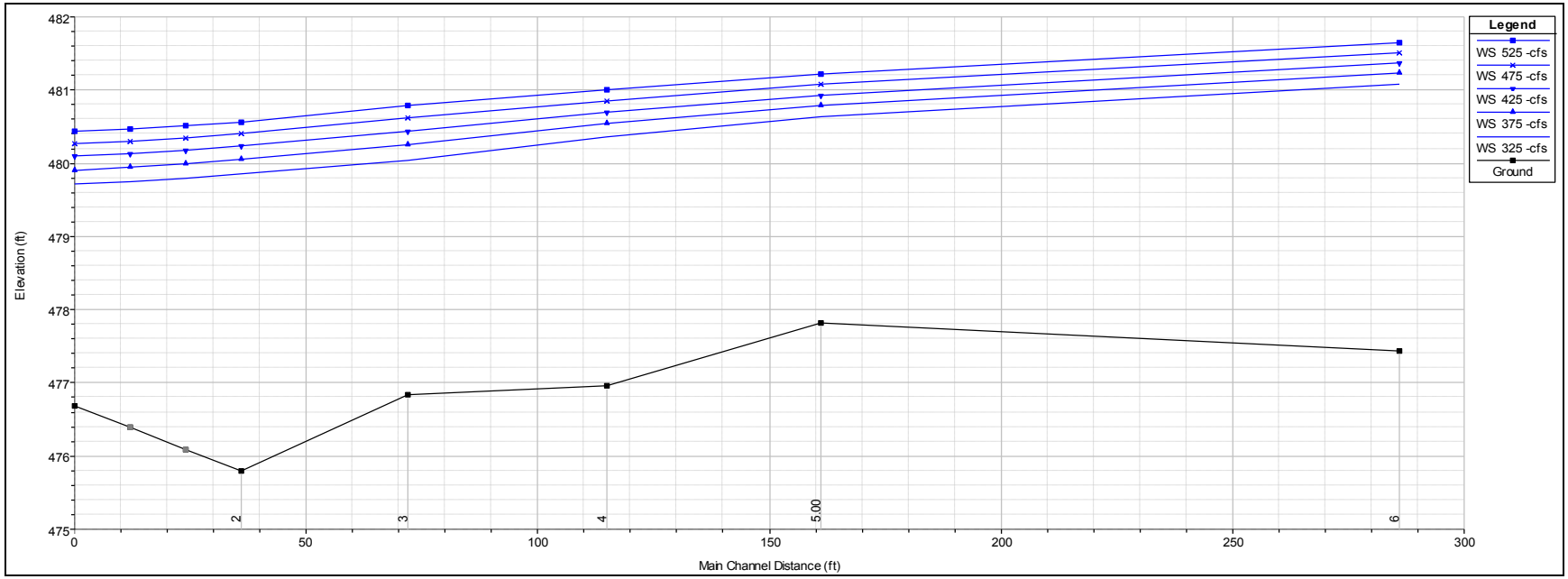


Figure 55 HEC-RAS longitudinal profile output for Reach FGNK7. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK8

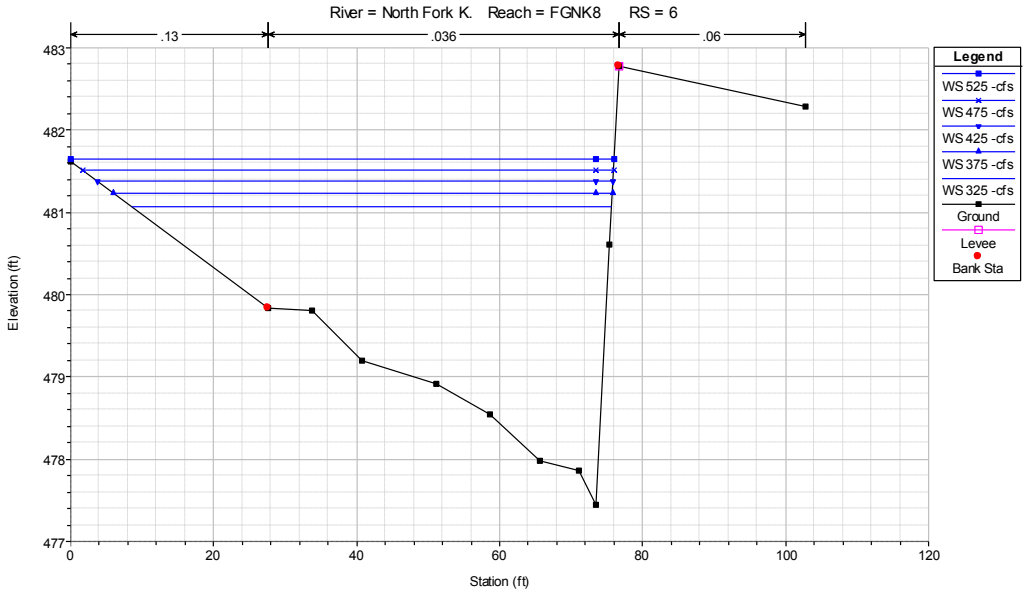


Figure 56 River Station (RS) 6 on River Reach FGNK8. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK8

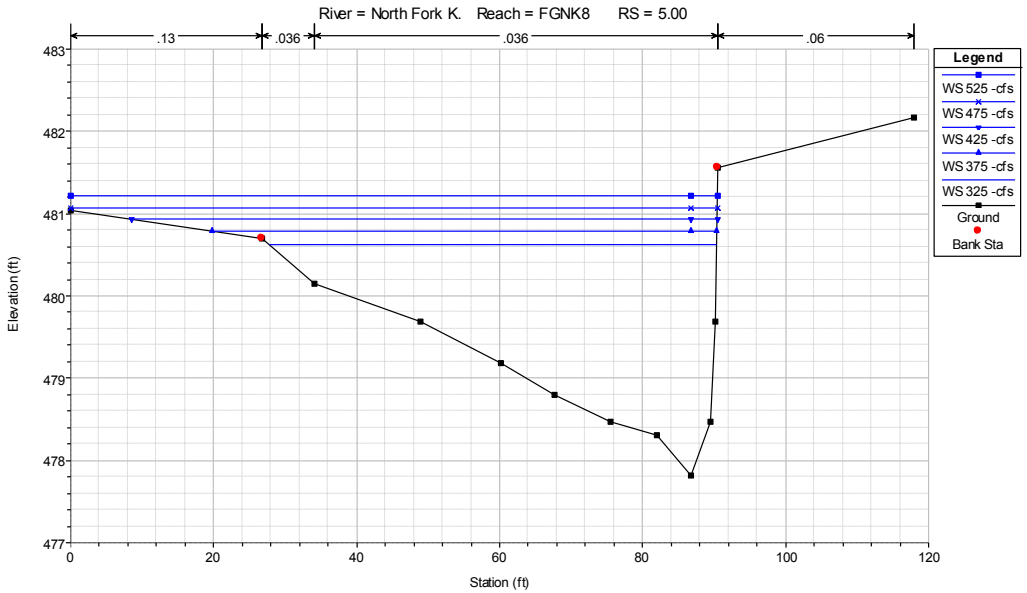


Figure 57 River Station (RS) 5.00 on River Reach FGNK8. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK8

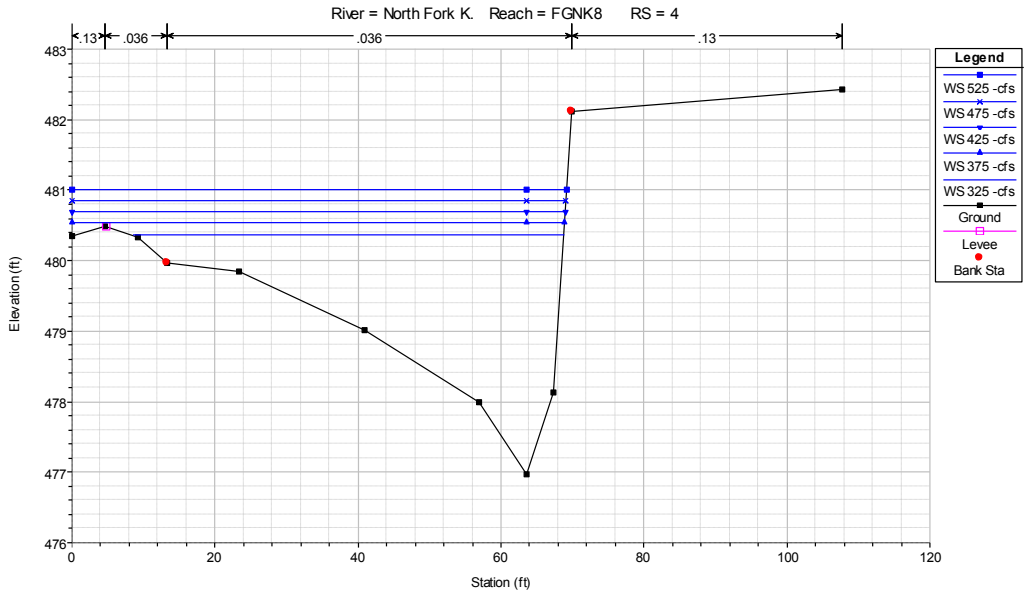


Figure 58 River Station (RS) 4 on River Reach FGNK8. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK8

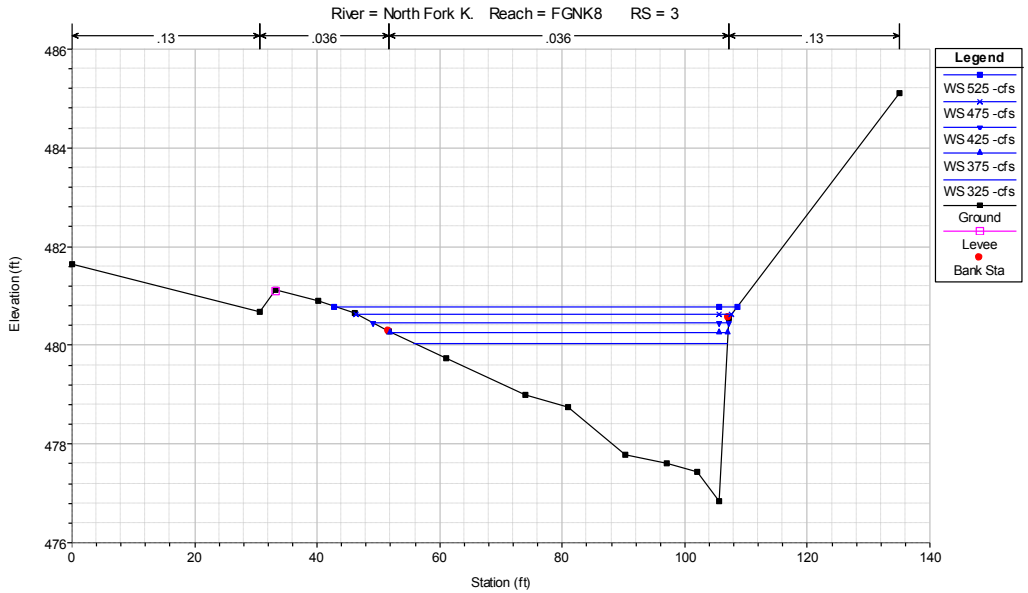


Figure 59 River Station (RS) 3 on River Reach FGNK8. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK8

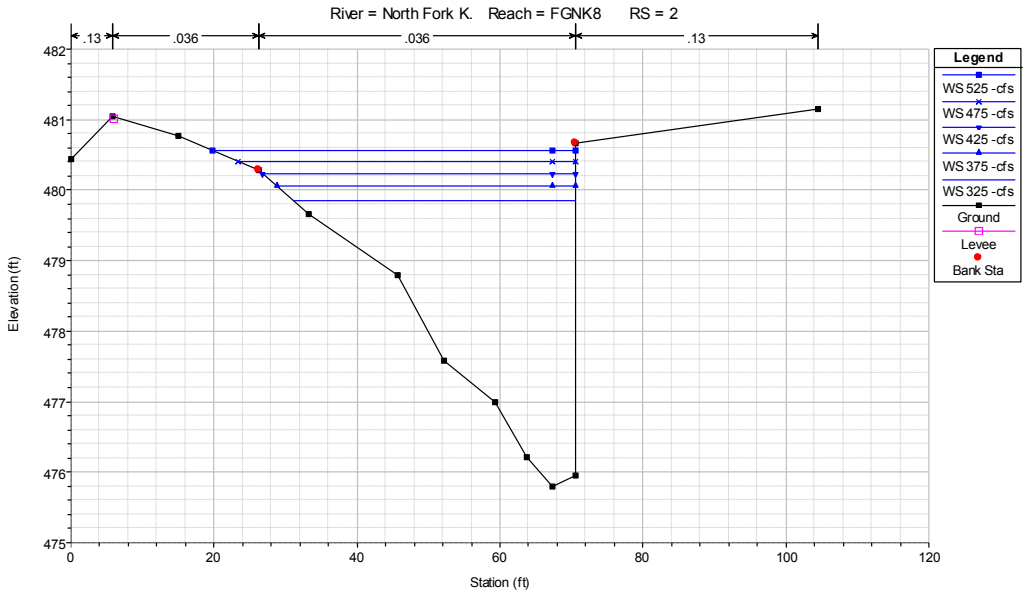


Figure 60 River Station (RS) 2 on River Reach FGNK8. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK8

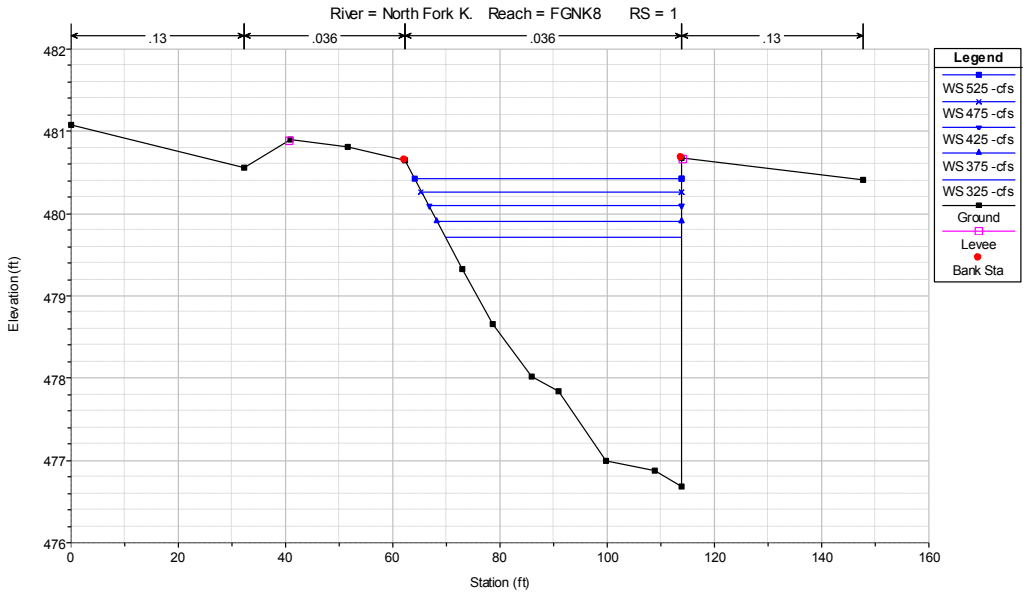


Figure 61 River Station (RS) 1 on River Reach FGNK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK8

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK8	6	325-cfs	0.26	47	38	31
FGNK8	6	375-cfs	0.29	52	42	34
FGNK8	6	425-cfs	0.33	59	48	39
FGNK8	6	475-cfs	0.36	65	52	42
FGNK8	6	525-cfs	0.39	70	57	46
FGNK8	5	325-cfs	0.41	74	60	48
FGNK8	5	375-cfs	0.43	77	63	51
FGNK8	5	425-cfs	0.45	81	66	53
FGNK8	5	475-cfs	0.47	85	68	55
FGNK8	5	525-cfs	0.49	88	71	58
FGNK8	4	325-cfs	0.50	90	73	59
FGNK8	4	375-cfs	0.51	92	74	60
FGNK8	4	425-cfs	0.52	94	76	61
FGNK8	4	475-cfs	0.53	95	77	62
FGNK8	4	525-cfs	0.54	97	79	64
FGNK8	3	325-cfs	0.61	110	89	72
FGNK8	3	375-cfs	0.60	108	87	71
FGNK8	3	425-cfs	0.59	106	86	69
FGNK8	3	475-cfs	0.59	106	86	69
FGNK8	3	525-cfs	0.59	106	86	69
FGNK8	2	325-cfs	0.52	94	76	61
FGNK8	2	375-cfs	0.56	101	82	66
FGNK8	2	425-cfs	0.60	108	87	71
FGNK8	2	475-cfs	0.62	112	90	73
FGNK8	2	525-cfs	0.65	117	95	77
FGNK8	1	325-cfs	0.45	81	66	53
FGNK8	1	375-cfs	0.48	86	70	57

INCIPIENT MOTION ANALYSIS: FGNK8

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK8	1	425-cfs	0.51	92	74	60
FGNK8	1	475-cfs	0.54	97	79	64
FGNK8	1	525-cfs	0.56	101	82	66

PHOTOGRAPH DOCUMENTATION: FGNK8

Left bank along reference reach FGNK8

Right bank along reference reach FGNK8

Looking downstream from reference reach FGNK8

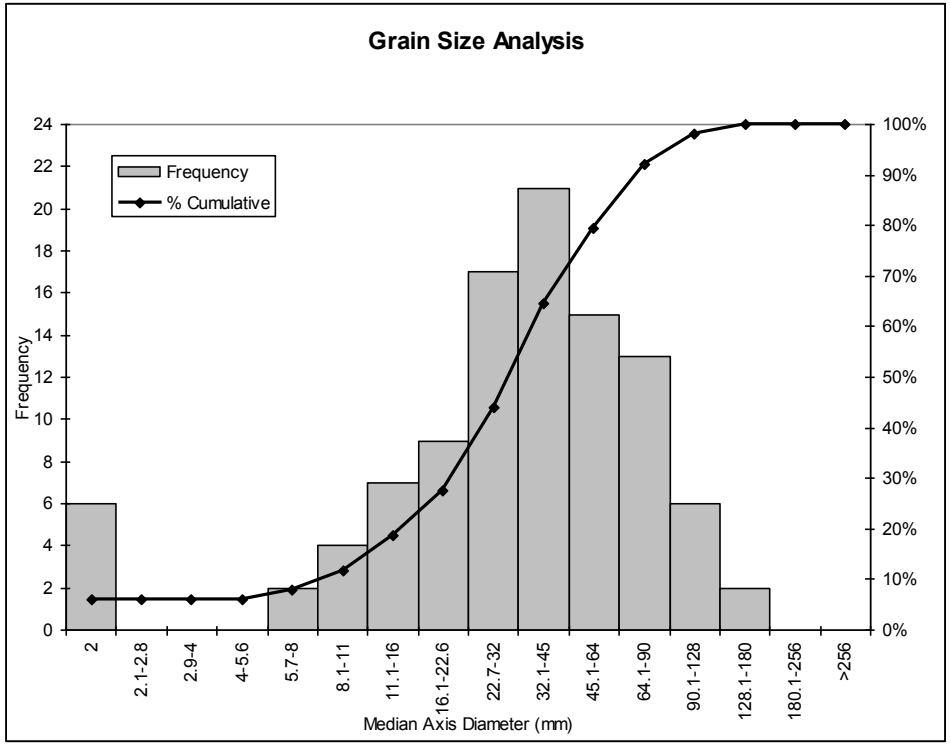
Looking upstream from reference reach FGNK8

PHOTOGRAPH DOCUMENTATION: FGNK8

Bank composition detail FGNK8

Oblique of site FGNK8

PEBBLE COUNT DISTRIBUTION: FGNK8



Size Class mm	*Frequency*	*Cumulative %*
2	6	5.9%
2.1-2.8	0	5.9%
2.9-4	0	5.9%
4-5.6	0	5.9%
5.7-8	2	7.8%
8.1-11	4	11.8%
11.1-16	7	18.6%
16.1-22.6	9	27.5%
22.7-32	17	44.1%
32.1-45	21	64.7%
45.1-64	15	79.4%
64.1-90	13	92.2%
90.1-128	6	98.0%
128.1-180	2	100.0%
180.1-256	0	100.0%
>256	0	100.0%

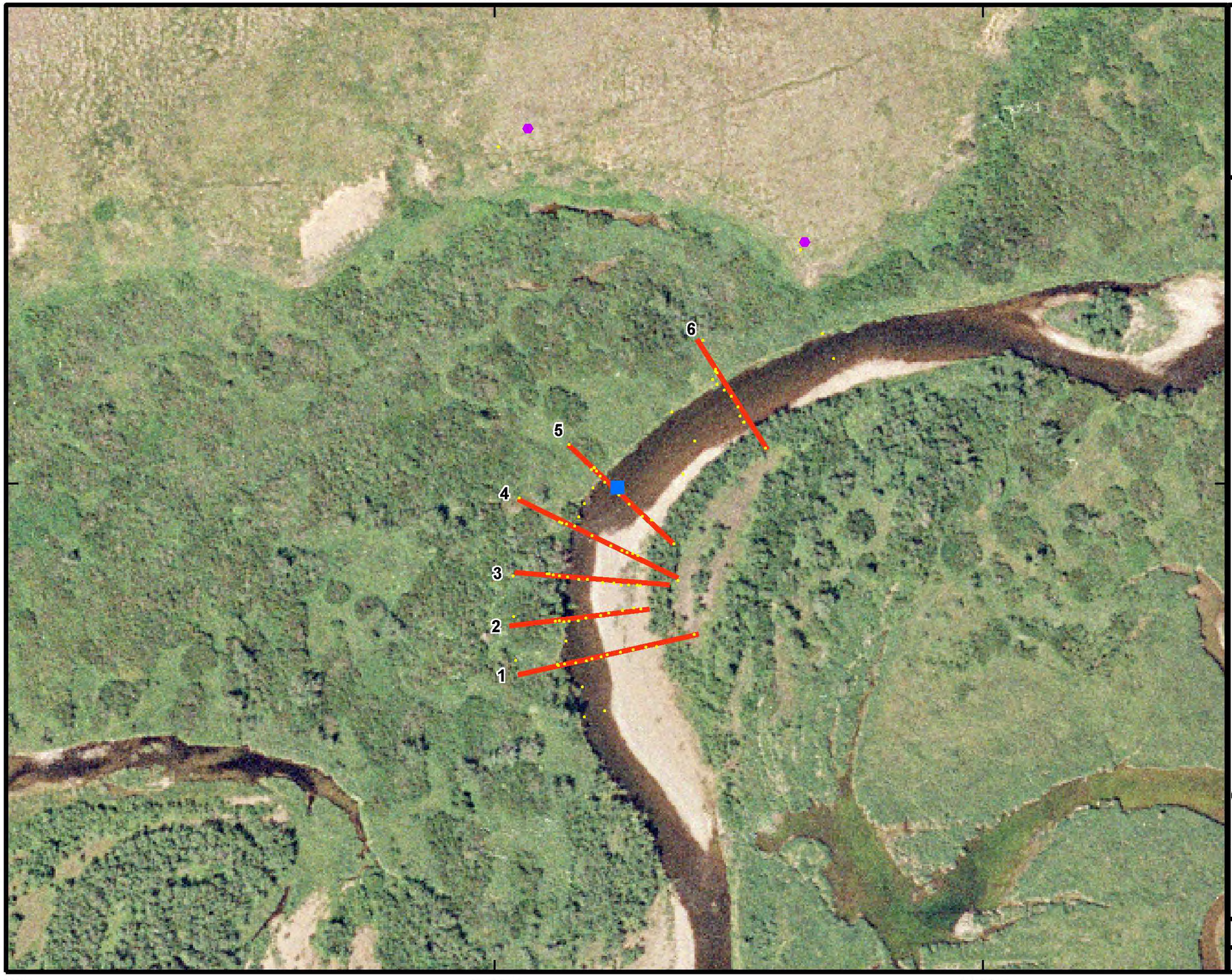
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,362,580

1,362,980

1,363,380

2,168,052

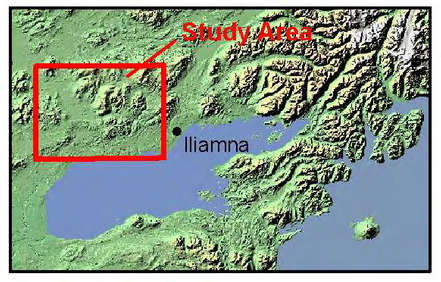


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK8
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,362,580

1,362,980

1,363,380

SITE DESCRIPTION: FGNK9

Site Characteristics.

Site Name	**FGNK9**		
Discharge (cfs)	**350 (310-500)**	Width (ft)	**45.8 (40.5-55.8)**
Slope	**0.0026**	Cross-sectional Area (ft^2)	**113 (83-153)**
(1) D_{50}	**43**	D_{84}	**78**
(2) D_{50}	**41**	D_{84}	**84**
Lat/Long Location	**N59.92610 W155.51178**	Drainage Area (mi^2)	**51**
% Willow	**40**		
% Grass	**60**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 300 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model and the crest of the pool. Sections 6 through 4 characterizes the riffle which serves as the reference reach through which the pebble counts were taken; pebble count 1 was taken through Section 4 and pebble count 2 was taken through Section 6. Sections 4 through 1 characterize the pool. Sediment size fractions were very similar to those found in FGNK1 and FGNK2.

Mobility of the D_{84} and D_{50} through the reference reach bracket the range of channel forming discharges well. For a Shields number of 0.017, the D_{84} of both pebble counts begins to move between 350 and 410 cfs through Section 4 and between 435 and 500 cfs on Section 5. For a Shields number of 0.026, the D_{50} moves between 310 and 385 cfs through the lower sections of the reference reach (Sections 5 and 4). These results correlate well with the geometry and field indicators of channel-forming flow.

The reference reach sections (Sections 4 through 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK9

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK9	6	310-cfs	310	55.2	114	2.1	3.2	0.0019	2.7	0.33	0.24	0.039
FGNK9	6	335-cfs	335	55.3	120	2.2	3.3	0.0019	2.8	0.33	0.26	0.039
FGNK9	6	350-cfs	350	55.4	123	2.2	3.3	0.0020	2.8	0.33	0.27	0.039
FGNK9	6	385-cfs	385	55.5	131	2.4	3.5	0.0020	2.9	0.34	0.29	0.039
FGNK9	6	410-cfs	410	55.5	136	2.4	3.6	0.0020	3.0	0.34	0.30	0.040
FGNK9	6	435-cfs	435	55.6	141	2.5	3.7	0.0020	3.1	0.34	0.31	0.040
FGNK9	6	460-cfs	460	55.7	146	2.6	3.8	0.0020	3.1	0.34	0.32	0.040
FGNK9	6	485-cfs	485	55.8	150	2.7	3.8	0.0020	3.2	0.34	0.33	0.040
FGNK9	6	500-cfs	500	55.8	153	2.7	3.9	0.0020	3.2	0.34	0.34	0.040
FGNK9	5	310-cfs	310	41.4	90	2.2	3.1	0.0026	3.4	0.41	0.33	0.036
FGNK9	5	335-cfs	335	41.4	94	2.3	3.2	0.0026	3.5	0.41	0.35	0.036
FGNK9	5	350-cfs	350	41.4	96	2.3	3.3	0.0027	3.6	0.42	0.36	0.036
FGNK9	5	385-cfs	385	41.4	102	2.5	3.4	0.0027	3.8	0.42	0.39	0.036
FGNK9	5	410-cfs	410	41.4	105	2.5	3.5	0.0027	3.9	0.43	0.41	0.036
FGNK9	5	435-cfs	435	41.4	109	2.6	3.6	0.0027	3.9	0.43	0.42	0.036
FGNK9	5	460-cfs	460	41.4	112	2.7	3.6	0.0027	4.0	0.43	0.44	0.036
FGNK9	5	485-cfs	485	41.4	115	2.8	3.7	0.0027	4.1	0.43	0.45	0.036
FGNK9	5	500-cfs	500	41.4	117	2.8	3.8	0.0027	4.2	0.44	0.46	0.036
FGNK9	4	310-cfs	310	40.5	85	2.1	2.8	0.0031	3.7	0.44	0.39	0.036
FGNK9	4	335-cfs	335	40.5	89	2.2	2.9	0.0032	3.8	0.45	0.41	0.036
FGNK9	4	350-cfs	350	40.5	91	2.2	3.0	0.0032	3.8	0.45	0.42	0.036
FGNK9	4	385-cfs	385	40.5	96	2.4	3.1	0.0032	4.0	0.46	0.45	0.036
FGNK9	4	410-cfs	410	40.5	99	2.5	3.2	0.0033	4.1	0.46	0.47	0.036
FGNK9	4	435-cfs	435	40.5	102	2.5	3.3	0.0033	4.2	0.46	0.48	0.036
FGNK9	4	460-cfs	460	40.5	106	2.6	3.3	0.0033	4.3	0.47	0.50	0.036
FGNK9	4	485-cfs	485	40.5	109	2.7	3.4	0.0033	4.4	0.47	0.52	0.036
FGNK9	4	500-cfs	500	40.5	110	2.7	3.5	0.0033	4.4	0.47	0.53	0.036
FGNK9	3	310-cfs	310	37.9	81	2.1	3.5	0.0038	3.8	0.46	0.48	0.038
FGNK9	3	335-cfs	335	38.0	84	2.2	3.6	0.0040	4.0	0.47	0.52	0.038
FGNK9	3	350-cfs	350	38.1	86	2.3	3.7	0.0041	4.1	0.48	0.54	0.039

HEC-RAS OUTPUT SUMMARY TABLE: FGNK9

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK9	3	385-cfs	385	38.2	90	2.4	3.8	0.0043	4.2	0.49	0.59	0.039
FGNK9	3	410-cfs	410	38.3	93	2.4	3.8	0.0045	4.4	0.49	0.63	0.039
FGNK9	3	435-cfs	435	38.4	96	2.5	3.9	0.0046	4.5	0.50	0.66	0.039
FGNK9	3	460-cfs	460	38.5	99	2.6	4.0	0.0047	4.6	0.50	0.69	0.040
FGNK9	3	485-cfs	485	38.5	102	2.6	4.1	0.0048	4.7	0.51	0.73	0.040
FGNK9	3	500-cfs	500	38.6	103	2.7	4.1	0.0048	4.7	0.51	0.75	0.040
FGNK9	2	310-cfs	310	47.1	89	1.9	3.5	0.0034	3.5	0.45	0.39	0.037
FGNK9	2	335-cfs	335	47.2	92	2.0	3.6	0.0036	3.6	0.46	0.42	0.037
FGNK9	2	350-cfs	350	47.2	94	2.0	3.6	0.0037	3.7	0.47	0.44	0.037
FGNK9	2	385-cfs	385	47.3	99	2.1	3.7	0.0038	3.9	0.48	0.48	0.037
FGNK9	2	410-cfs	410	47.4	102	2.2	3.8	0.0040	4.0	0.48	0.51	0.037
FGNK9	2	435-cfs	435	47.5	105	2.2	3.8	0.0041	4.1	0.49	0.53	0.038
FGNK9	2	460-cfs	460	47.5	108	2.3	3.9	0.0041	4.2	0.50	0.56	0.038
FGNK9	2	485-cfs	485	47.6	112	2.3	4.0	0.0042	4.4	0.50	0.59	0.038
FGNK9	2	500-cfs	500	47.6	113	2.4	4.0	0.0043	4.4	0.50	0.61	0.038
FGNK9	1	310-cfs	310	64.3	91	1.4	1.9	0.0045	3.4	0.51	0.38	0.036
FGNK9	1	335-cfs	335	64.4	95	1.5	1.9	0.0045	3.5	0.51	0.40	0.036
FGNK9	1	350-cfs	350	64.5	98	1.5	2.0	0.0045	3.6	0.51	0.41	0.036
FGNK9	1	385-cfs	385	64.8	104	1.6	2.1	0.0045	3.7	0.51	0.44	0.036
FGNK9	1	410-cfs	410	65.0	109	1.7	2.2	0.0045	3.8	0.51	0.46	0.037
FGNK9	1	435-cfs	435	65.2	114	1.7	2.2	0.0045	3.8	0.51	0.47	0.037
FGNK9	1	460-cfs	460	65.4	118	1.8	2.3	0.0045	3.9	0.51	0.49	0.037
FGNK9	1	485-cfs	485	65.6	123	1.9	2.4	0.0045	4.0	0.51	0.51	0.037
FGNK9	1	500-cfs	500	65.7	125	1.9	2.4	0.0045	4.0	0.51	0.52	0.038

HEC-RAS LONGITUDINAL PROFILE: FGNK9

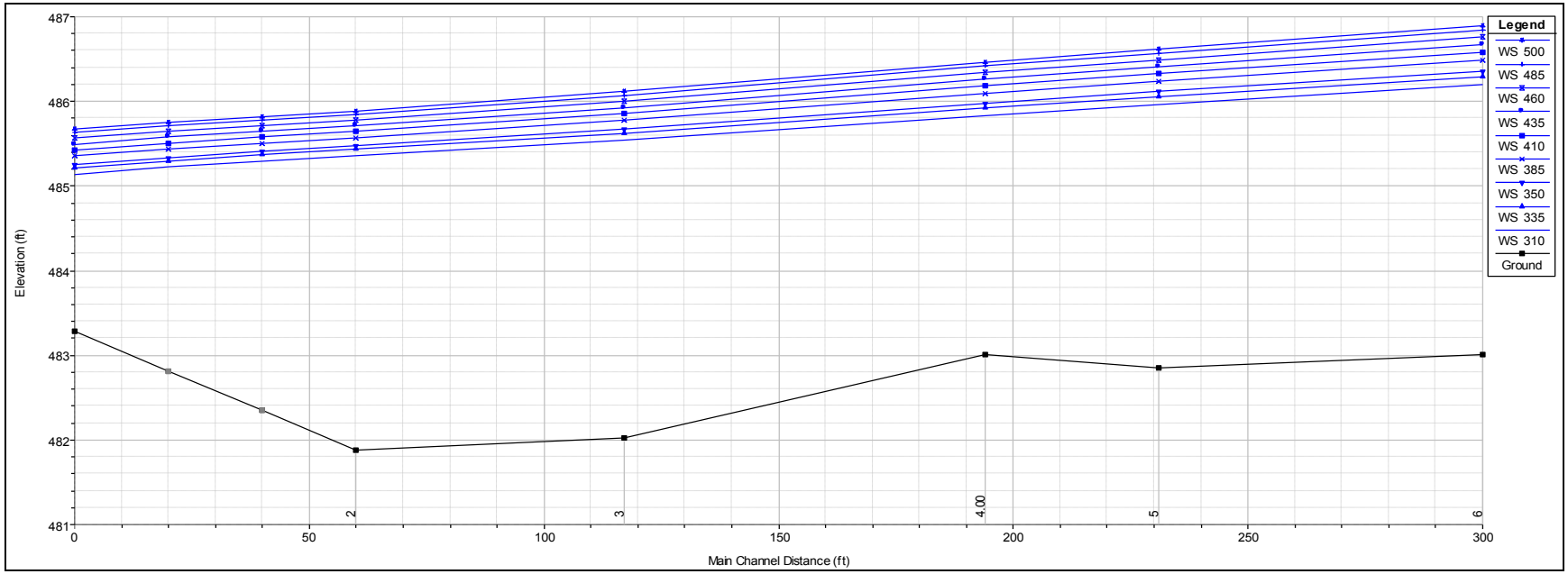


Figure 62 HEC-RAS longitudinal profile output for Reach FGNK9. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK9

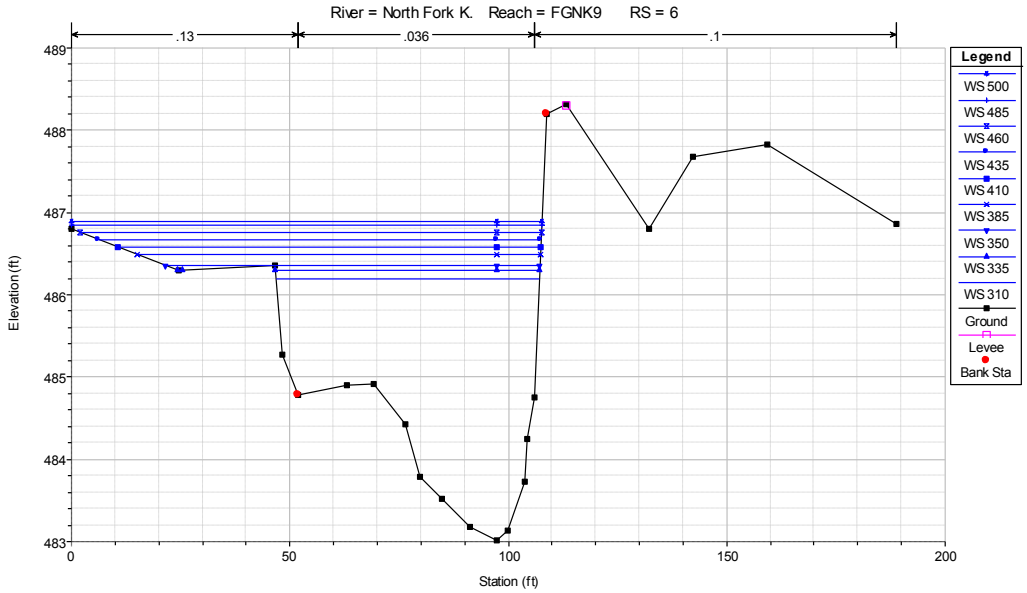


Figure 63 River Station (RS)6 on River Reach FGNK9. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK9

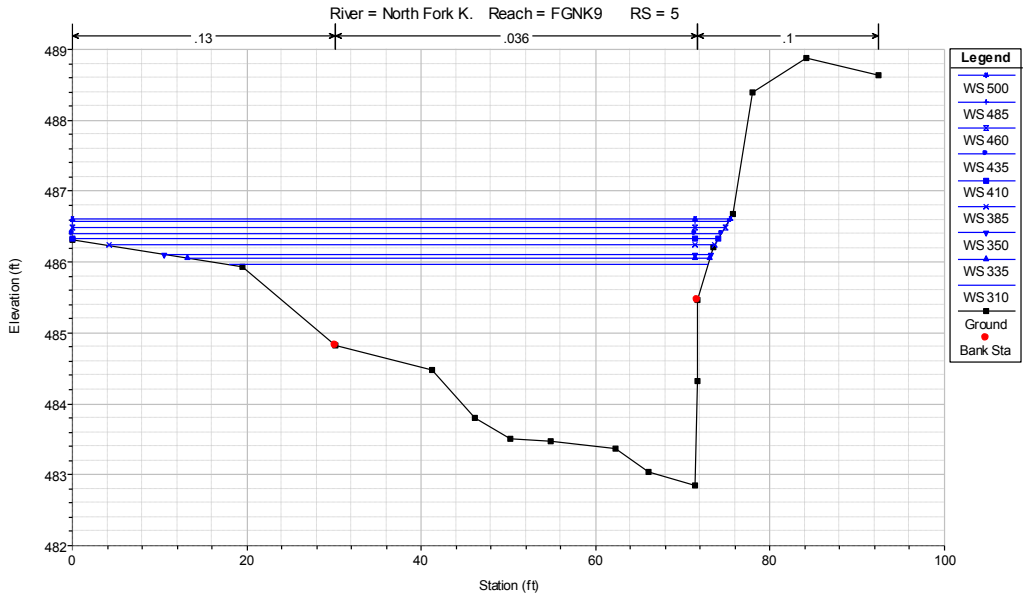


Figure 64 River Station (RS) 5 on River Reach FGNK9. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK9

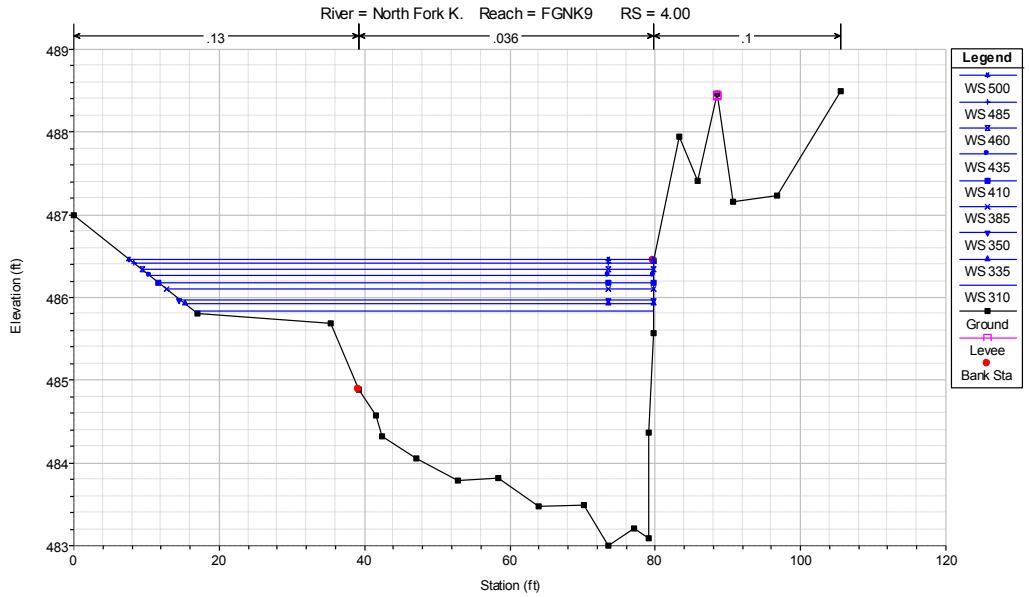


Figure 65 River Station (RS) 4 on River Reach FGNK9. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK9

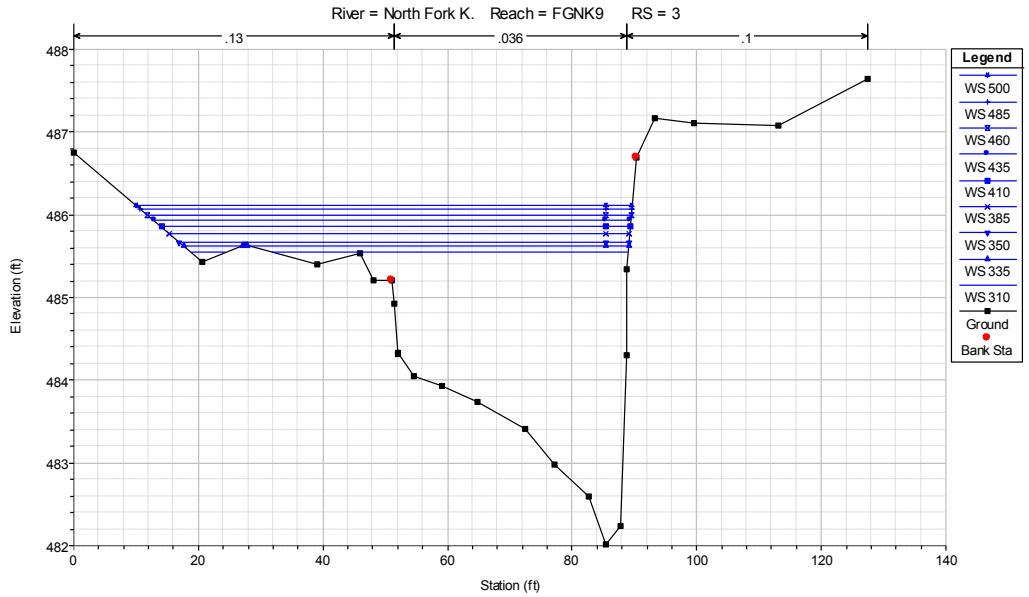


Figure 66 River Station (RS) 3 on River Reach FGNK9. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK9

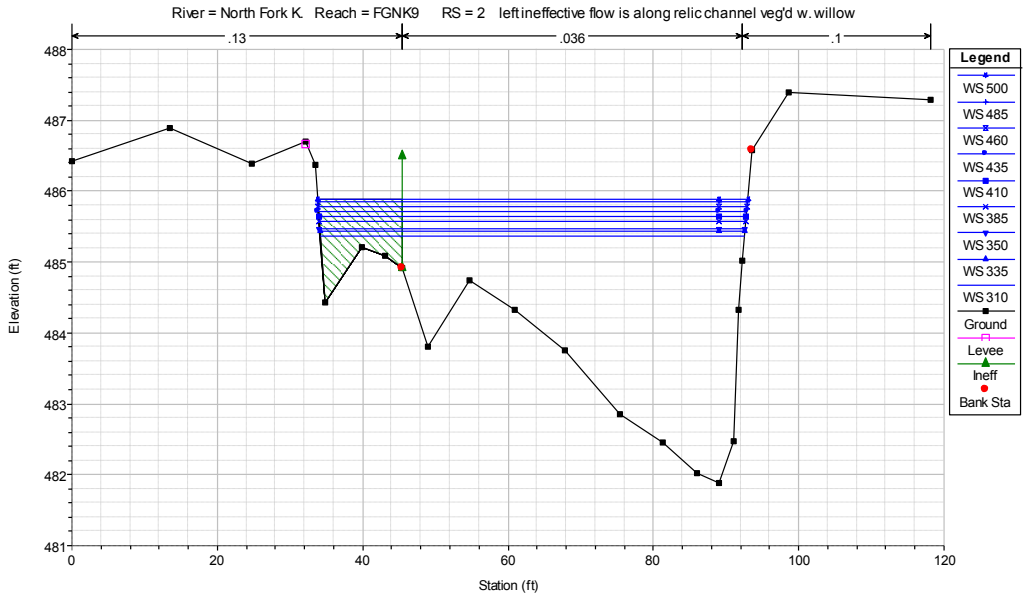


Figure 67 River Station (RS) 2 on River Reach FGNK9. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK9

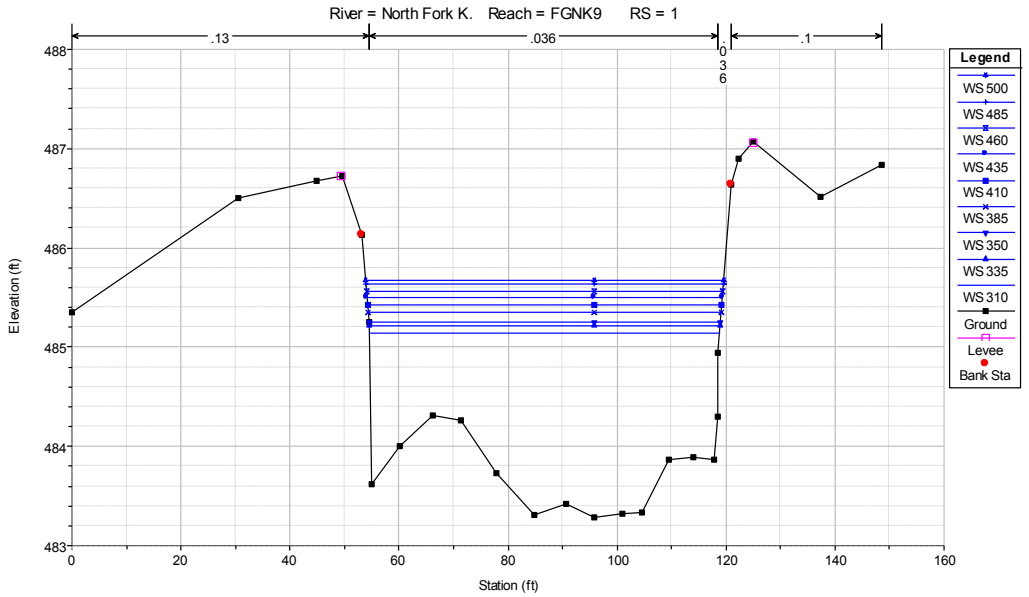


Figure 68 River Station (RS) 1 on River Reach FGNK9. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK9

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK9	6	310-cfs	0.24	43	35	28
FGNK9	6	335-cfs	0.26	47	38	31
FGNK9	6	350-cfs	0.27	49	39	32
FGNK9	6	385-cfs	0.29	52	42	34
FGNK9	6	410-cfs	0.30	54	44	35
FGNK9	6	435-cfs	0.31	56	45	36
FGNK9	6	460-cfs	0.32	58	47	38
FGNK9	6	485-cfs	0.33	59	48	39
FGNK9	6	500-cfs	0.34	61	50	40
FGNK9	5	310-cfs	0.33	59	48	39
FGNK9	5	335-cfs	0.35	63	51	41
FGNK9	5	350-cfs	0.36	65	52	42
FGNK9	5	385-cfs	0.39	70	57	46
FGNK9	5	410-cfs	0.41	74	60	48
FGNK9	5	435-cfs	0.42	76	61	49
FGNK9	5	460-cfs	0.44	79	64	52
FGNK9	5	485-cfs	0.45	81	66	53
FGNK9	5	500-cfs	0.46	83	67	54
FGNK9	4	310-cfs	0.39	70	57	46
FGNK9	4	335-cfs	0.41	74	60	48
FGNK9	4	350-cfs	0.42	76	61	49
FGNK9	4	385-cfs	0.45	81	66	53
FGNK9	4	410-cfs	0.47	85	68	55
FGNK9	4	435-cfs	0.48	86	70	57
FGNK9	4	460-cfs	0.50	90	73	59
FGNK9	4	485-cfs	0.52	94	76	61
FGNK9	4	500-cfs	0.53	95	77	62
FGNK9	3	310-cfs	0.48	86	70	57
FGNK9	3	335-cfs	0.52	94	76	61

INCIPIENT MOTION ANALYSIS: FGNK9

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK9	3	350-cfs	0.54	97	79	64
FGNK9	3	385-cfs	0.59	106	86	69
FGNK9	3	410-cfs	0.63	113	92	74
FGNK9	3	435-cfs	0.66	119	96	78
FGNK9	3	460-cfs	0.69	124	101	81
FGNK9	3	485-cfs	0.73	131	106	86
FGNK9	3	500-cfs	0.75	135	109	88
FGNK9	2	310-cfs	0.39	70	57	46
FGNK9	2	335-cfs	0.42	76	61	49
FGNK9	2	350-cfs	0.44	79	64	52
FGNK9	2	385-cfs	0.48	86	70	57
FGNK9	2	410-cfs	0.51	92	74	60
FGNK9	2	435-cfs	0.53	95	77	62
FGNK9	2	460-cfs	0.56	101	82	66
FGNK9	2	485-cfs	0.59	106	86	69
FGNK9	2	500-cfs	0.61	110	89	72
FGNK9	1	310-cfs	0.38	68	55	45
FGNK9	1	335-cfs	0.40	72	58	47
FGNK9	1	350-cfs	0.41	74	60	48
FGNK9	1	385-cfs	0.44	79	64	52
FGNK9	1	410-cfs	0.46	83	67	54
FGNK9	1	435-cfs	0.47	85	68	55
FGNK9	1	460-cfs	0.49	88	71	58
FGNK9	1	485-cfs	0.51	92	74	60
FGNK9	1	500-cfs	0.52	94	76	61

PHOTOGRAPH DOCUMENTATION: FGNK9

Left bank along reference reach FGNK9

Right bank along reference reach FGNK0

Looking downstream from reference reach FGNK9

Looking upstream from reference reach FGNK9

PHOTOGRAPH DOCUMENTATION: FGNK9

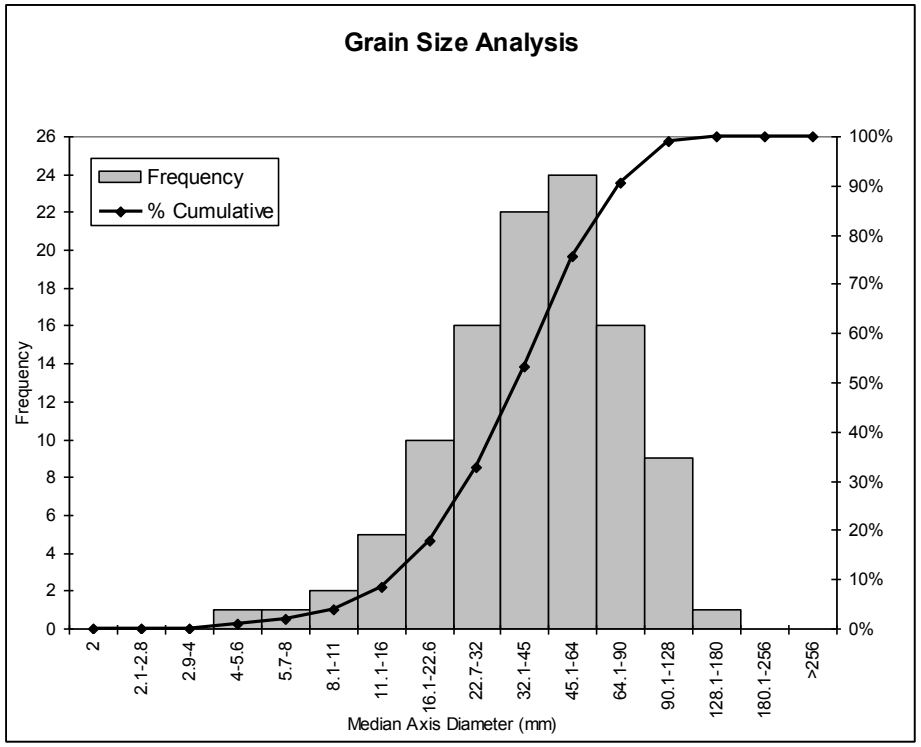
Bank composition detail (left bank) FGNK9

Bank composition detail (right bank) FGNK0

Oblique of site FGNK9

PEBBLE COUNT DISTRIBUTION: FGNK9

Pebble Count 1

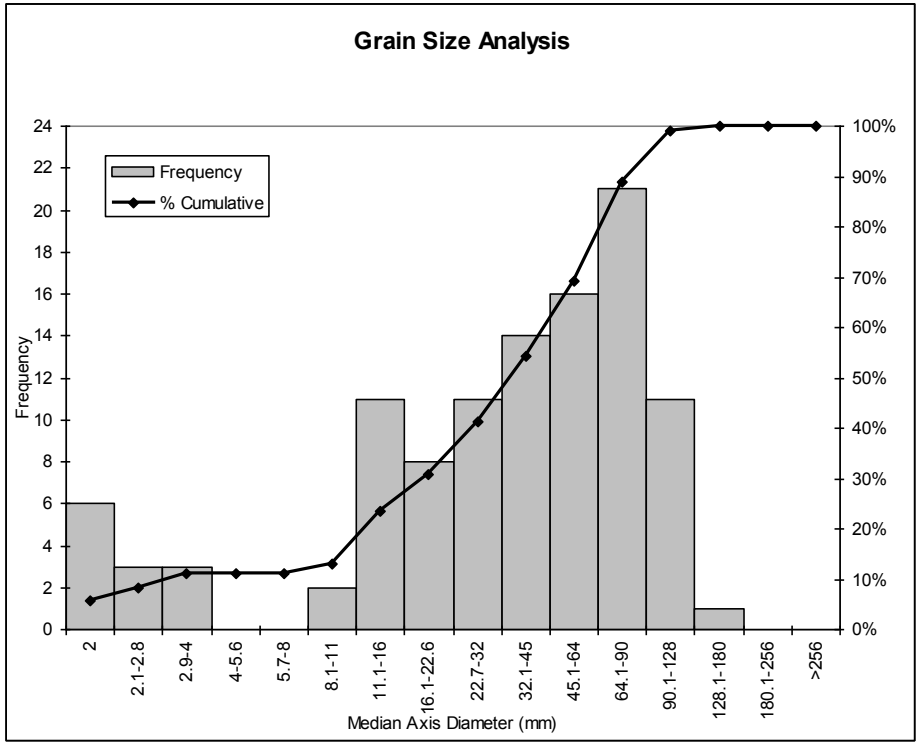


Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	1	.9%
5.7-8	1	1.9%
8.1-11	2	3.7%
11.1-16	5	8.4%
16.1-22.6	10	17.8%
22.7-32	16	32.7%
32.1-45	22	53.3%
45.1-64	24	75.7%
64.1-90	16	90.7%
90.1-128	9	99.1%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4

PEBBLE COUNT DISTRIBUTION: FGNK9

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	6	5.6%
2.1-2.8	3	8.4%
2.9-4	3	11.2%
4-5.6	0	11.2%
5.7-8	0	11.2%
8.1-11	2	13.1%
11.1-16	11	23.4%
16.1-22.6	8	30.8%
22.7-32	11	41.1%
32.1-45	14	54.2%
45.1-64	16	69.2%
64.1-90	21	88.8%
90.1-128	11	99.1%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

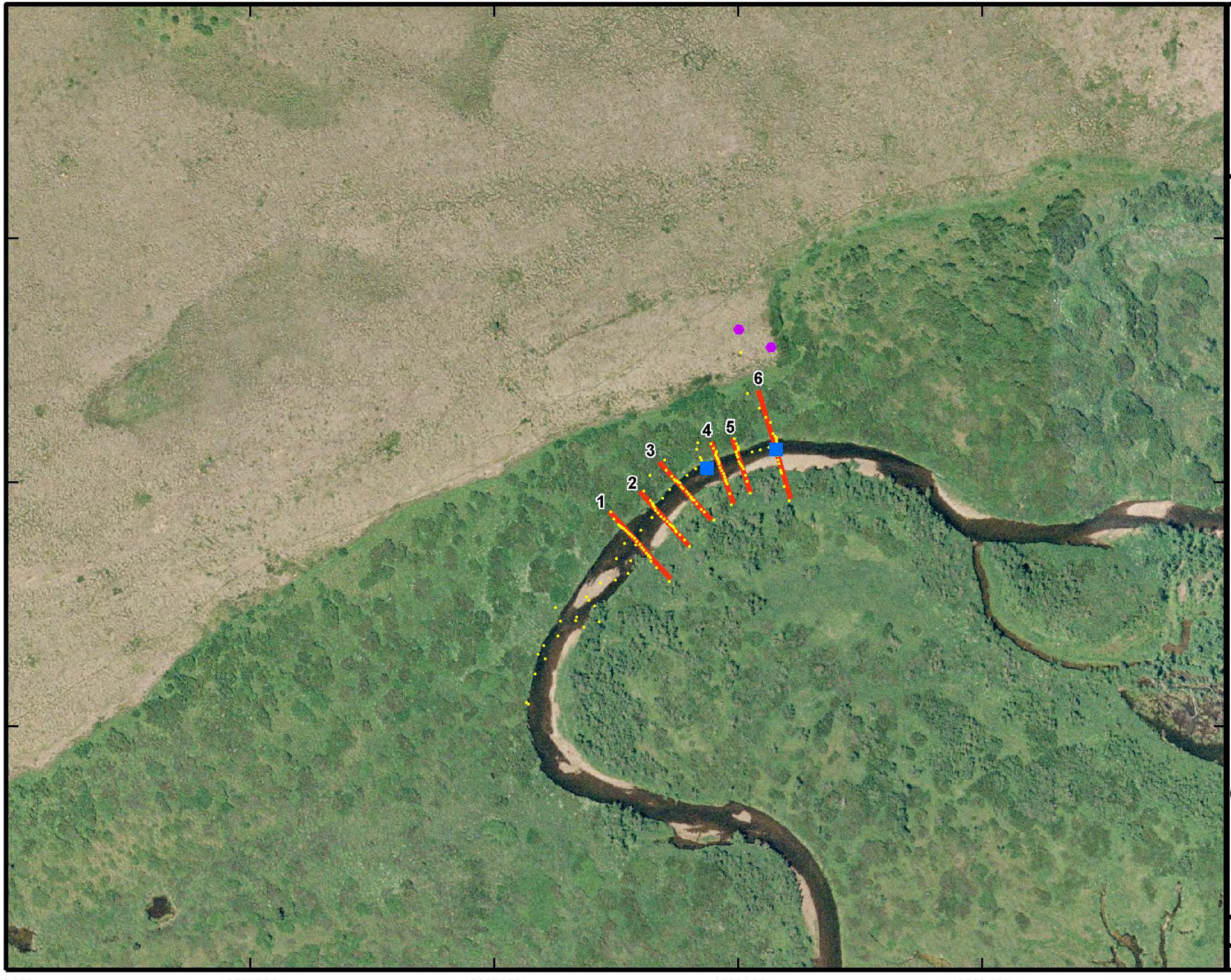
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

1,368,104 1,368,504 1,368,904 1,369,304 1,369,704

2,170,824

2,170,424

2,170,024

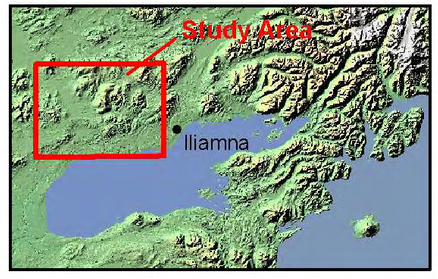


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK9
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,368,104 1,368,504 1,368,904 1,369,304 1,369,704

SITE DESCRIPTION: FGNK10

Site Characteristics.

Site Name	**FGNK10**		
Discharge (cfs)	**360 (330-430)**	Width (ft)	**43.1 (40.8-44.0)**
Slope	**0.0066**	Cross-sectional Area (ft^2)	**79 (78-93)**
D_{50}	**81**	D_{84}	**165**
(modified) D_{50}	**79**	D_{84}	**157**
Lat/Long Location	**N59.93359 W155.42071**	Drainage Area (mi^2)	**37**
% Willow	**60**		
% Grass	**40**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 540 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 8 through 6 characterize the riffle which serves as the reference reach. The pebble count was taken along Section 7. This particular riffle was steep, fairly wide, and comprised of large material. Both the left and right banks were low with mature willows. Section 5 was over widened by a groundwater channel along the left bank, and required the addition of an ineffective flow boundary to account for the lack of conveyance during high flows. From Section 5 on downstream, the channel takes a sharp right turn, forming a deep pool along the left bank were gravel is deposited to bar along the right bank. This gravel bar supports willow bands from young to mature moving away from the river. The width of the pebble count distribution suggests that this site has some lag or generally immobile material. Particles in the >256 mm size class were removed, as they were suspected to be immobile. The modified distribution was used in the following analysis.

The incipient motion analysis through Sections 8, 7 and 6 for a Shields number of 0.017 supports the observation of immobile material. For a Shields number of 0.017, the D_{84} does not move within our range of flows through the reference reach (Section 8 through 6). At a flow of 360 cfs, movement of 124 mm on average can be expected. These mobility results still do not match the D_{84} of the modified distribution, further suggesting the presence of lag beyond what was accounted for in the modified distribution. Geometrically, 360-390 cfs matches the inflection point along the left bank through the reference reach.

The reference reach sections (Sections 8 through 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK10	8	330-cfs	330	43.0	68	1.6	1.8	0.0080	4.9	0.69	0.76	0.036
FGNK10	8	340-cfs	340	43.1	69	1.6	1.8	0.0080	4.9	0.68	0.77	0.036
FGNK10	8	350-cfs	350	43.2	71	1.6	1.8	0.0079	5.0	0.68	0.78	0.036
FGNK10	8	360-cfs	360	43.2	72	1.7	1.9	0.0078	5.0	0.68	0.78	0.036
FGNK10	8	370-cfs	370	43.3	73	1.7	1.9	0.0078	5.0	0.68	0.79	0.036
FGNK10	8	380-cfs	380	43.4	75	1.7	1.9	0.0078	5.1	0.68	0.80	0.036
FGNK10	8	390-cfs	390	43.4	76	1.8	2.0	0.0077	5.1	0.68	0.81	0.036
FGNK10	8	400-cfs	400	43.4	77	1.8	2.0	0.0077	5.2	0.68	0.82	0.036
FGNK10	8	410-cfs	410	43.5	79	1.8	2.0	0.0076	5.2	0.68	0.83	0.036
FGNK10	8	420-cfs	420	43.5	80	1.8	2.1	0.0076	5.3	0.68	0.84	0.036
FGNK10	8	430-cfs	430	43.6	81	1.9	2.1	0.0076	5.3	0.68	0.84	0.036
FGNK10	7	330-cfs	330	42.8	69	1.6	2.0	0.0074	4.8	0.66	0.72	0.036
FGNK10	7	340-cfs	340	43.0	71	1.7	2.0	0.0073	4.8	0.66	0.72	0.036
FGNK10	7	350-cfs	350	43.1	73	1.7	2.0	0.0072	4.8	0.66	0.73	0.036
FGNK10	7	360-cfs	360	43.3	74	1.7	2.1	0.0071	4.9	0.66	0.73	0.036
FGNK10	7	370-cfs	370	43.4	76	1.7	2.1	0.0071	4.9	0.65	0.74	0.036
FGNK10	7	380-cfs	380	43.5	77	1.8	2.1	0.0070	4.9	0.65	0.75	0.036
FGNK10	7	390-cfs	390	43.6	78	1.8	2.2	0.0070	5.0	0.65	0.75	0.036
FGNK10	7	400-cfs	400	43.7	80	1.8	2.2	0.0069	5.0	0.65	0.76	0.036
FGNK10	7	410-cfs	410	43.8	81	1.9	2.2	0.0069	5.0	0.65	0.77	0.036
FGNK10	7	420-cfs	420	43.9	83	1.9	2.3	0.0069	5.1	0.65	0.78	0.036
FGNK10	7	430-cfs	430	44.0	84	1.9	2.3	0.0068	5.1	0.65	0.78	0.036
FGNK10	6	330-cfs	330	40.8	78	1.9	2.3	0.0049	4.3	0.54	0.55	0.036
FGNK10	6	340-cfs	340	41.0	79	1.9	2.3	0.0049	4.3	0.55	0.56	0.036
FGNK10	6	350-cfs	350	41.2	81	2.0	2.3	0.0049	4.3	0.55	0.56	0.036
FGNK10	6	360-cfs	360	42.0	82	2.0	2.4	0.0049	4.4	0.55	0.56	0.036
FGNK10	6	370-cfs	370	42.7	84	2.0	2.4	0.0049	4.4	0.56	0.56	0.036
FGNK10	6	380-cfs	380	43.4	85	2.0	2.4	0.0048	4.5	0.56	0.56	0.036
FGNK10	6	390-cfs	390	43.5	87	2.0	2.5	0.0048	4.5	0.56	0.57	0.036
FGNK10	6	400-cfs	400	43.5	88	2.0	2.5	0.0048	4.5	0.56	0.57	0.036
FGNK10	6	410-cfs	410	43.5	90	2.1	2.5	0.0048	4.6	0.56	0.58	0.036

HEC-RAS OUTPUT SUMMARY TABLE: FGNK10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK10	6	420-cfs	420	43.5	91	2.1	2.6	0.0048	4.6	0.56	0.59	0.036
FGNK10	6	430-cfs	430	43.5	93	2.1	2.6	0.0047	4.6	0.56	0.59	0.036
FGNK10	5	330-cfs	330	44.9	91	2.0	2.4	0.0056	4.9	0.60	0.69	0.036
FGNK10	5	340-cfs	340	45.0	92	2.1	2.4	0.0056	4.9	0.60	0.70	0.036
FGNK10	5	350-cfs	350	45.0	94	2.1	2.5	0.0056	5.0	0.60	0.71	0.036
FGNK10	5	360-cfs	360	45.1	96	2.2	2.5	0.0055	5.0	0.60	0.72	0.036
FGNK10	5	370-cfs	370	45.2	97	2.2	2.5	0.0055	5.1	0.60	0.73	0.036
FGNK10	5	380-cfs	380	45.2	99	2.2	2.6	0.0055	5.1	0.60	0.74	0.036
FGNK10	5	390-cfs	390	45.3	101	2.3	2.6	0.0055	5.2	0.60	0.75	0.036
FGNK10	5	400-cfs	400	45.3	102	2.3	2.7	0.0054	5.2	0.60	0.76	0.036
FGNK10	5	410-cfs	410	45.4	104	2.3	2.7	0.0054	5.2	0.60	0.76	0.036
FGNK10	5	420-cfs	420	45.5	105	2.4	2.7	0.0054	5.3	0.60	0.77	0.036
FGNK10	5	430-cfs	430	45.5	107	2.4	2.8	0.0054	5.3	0.60	0.78	0.036
FGNK10	4	330-cfs	330	40.9	101	2.5	3.2	0.0021	3.3	0.37	0.31	0.037
FGNK10	4	340-cfs	340	40.9	102	2.5	3.3	0.0021	3.3	0.37	0.32	0.037
FGNK10	4	350-cfs	350	40.9	104	2.5	3.3	0.0022	3.4	0.37	0.32	0.037
FGNK10	4	360-cfs	360	40.9	105	2.6	3.3	0.0022	3.4	0.37	0.33	0.037
FGNK10	4	370-cfs	370	41.0	107	2.6	3.4	0.0022	3.4	0.38	0.34	0.037
FGNK10	4	380-cfs	380	41.0	108	2.6	3.4	0.0022	3.5	0.38	0.35	0.037
FGNK10	4	390-cfs	390	41.0	110	2.7	3.5	0.0022	3.5	0.38	0.36	0.037
FGNK10	4	400-cfs	400	41.0	111	2.7	3.5	0.0023	3.6	0.38	0.36	0.037
FGNK10	4	410-cfs	410	41.0	113	2.8	3.5	0.0023	3.6	0.38	0.37	0.037
FGNK10	4	420-cfs	420	41.1	114	2.8	3.6	0.0023	3.6	0.38	0.38	0.037
FGNK10	4	430-cfs	430	41.1	116	2.8	3.6	0.0023	3.7	0.39	0.39	0.037
FGNK10	3	330-cfs	330	38.6	103	2.7	4.0	0.0017	3.2	0.34	0.27	0.036
FGNK10	3	340-cfs	340	38.6	104	2.7	4.0	0.0017	3.2	0.35	0.28	0.036
FGNK10	3	350-cfs	350	38.7	106	2.7	4.0	0.0018	3.3	0.35	0.29	0.036
FGNK10	3	360-cfs	360	38.7	107	2.8	4.1	0.0018	3.3	0.35	0.29	0.036
FGNK10	3	370-cfs	370	38.8	108	2.8	4.1	0.0018	3.4	0.35	0.30	0.036
FGNK10	3	380-cfs	380	38.8	110	2.8	4.1	0.0018	3.4	0.35	0.31	0.036

HEC-RAS OUTPUT SUMMARY TABLE: FGNK10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK10	3	390-cfs	390	38.9	111	2.9	4.2	0.0019	3.4	0.36	0.31	0.036
FGNK10	3	400-cfs	400	38.9	113	2.9	4.2	0.0019	3.5	0.36	0.32	0.036
FGNK10	3	410-cfs	410	39.0	114	2.9	4.3	0.0019	3.5	0.36	0.33	0.036
FGNK10	3	420-cfs	420	39.0	115	3.0	4.3	0.0019	3.5	0.36	0.33	0.037
FGNK10	3	430-cfs	430	39.1	117	3.0	4.3	0.0019	3.6	0.36	0.34	0.037
FGNK10	2	330-cfs	330	34.7	99	2.9	4.1	0.0017	3.3	0.34	0.29	0.036
FGNK10	2	340-cfs	340	34.7	100	2.9	4.2	0.0017	3.3	0.35	0.29	0.036
FGNK10	2	350-cfs	350	34.7	101	2.9	4.2	0.0018	3.4	0.35	0.30	0.036
FGNK10	2	360-cfs	360	34.7	103	3.0	4.2	0.0018	3.4	0.35	0.31	0.036
FGNK10	2	370-cfs	370	34.7	104	3.0	4.3	0.0018	3.5	0.36	0.32	0.036
FGNK10	2	380-cfs	380	34.7	105	3.0	4.3	0.0018	3.5	0.36	0.32	0.036
FGNK10	2	390-cfs	390	34.7	106	3.1	4.3	0.0019	3.6	0.36	0.33	0.036
FGNK10	2	400-cfs	400	34.7	107	3.1	4.4	0.0019	3.6	0.36	0.34	0.036
FGNK10	2	410-cfs	410	34.7	108	3.1	4.4	0.0019	3.7	0.37	0.35	0.036
FGNK10	2	420-cfs	420	34.7	110	3.2	4.4	0.0019	3.7	0.37	0.35	0.036
FGNK10	2	430-cfs	430	34.7	111	3.2	4.5	0.0019	3.8	0.37	0.36	0.036
FGNK10	1	330-cfs	330	56.3	119	2.1	3.4	0.0049	2.8	0.33	0.62	0.061
FGNK10	1	340-cfs	340	56.3	121	2.1	3.4	0.0049	2.8	0.34	0.63	0.061
FGNK10	1	350-cfs	350	56.3	123	2.2	3.4	0.0049	2.8	0.34	0.64	0.061
FGNK10	1	360-cfs	360	56.3	125	2.2	3.5	0.0049	2.9	0.34	0.65	0.061
FGNK10	1	370-cfs	370	56.3	127	2.3	3.5	0.0049	2.9	0.34	0.66	0.061
FGNK10	1	380-cfs	380	56.3	129	2.3	3.6	0.0049	2.9	0.34	0.67	0.061
FGNK10	1	390-cfs	390	56.3	130	2.3	3.6	0.0049	2.9	0.34	0.68	0.061
FGNK10	1	400-cfs	400	56.3	132	2.4	3.6	0.0049	3.0	0.34	0.69	0.061
FGNK10	1	410-cfs	410	56.3	134	2.4	3.7	0.0049	3.0	0.34	0.70	0.061
FGNK10	1	420-cfs	420	56.3	136	2.4	3.7	0.0049	3.0	0.34	0.71	0.061
FGNK10	1	430-cfs	430	56.3	138	2.5	3.7	0.0049	3.1	0.34	0.72	0.061

HEC-RAS OUTPUT: LONGITUDINAL PROFILE

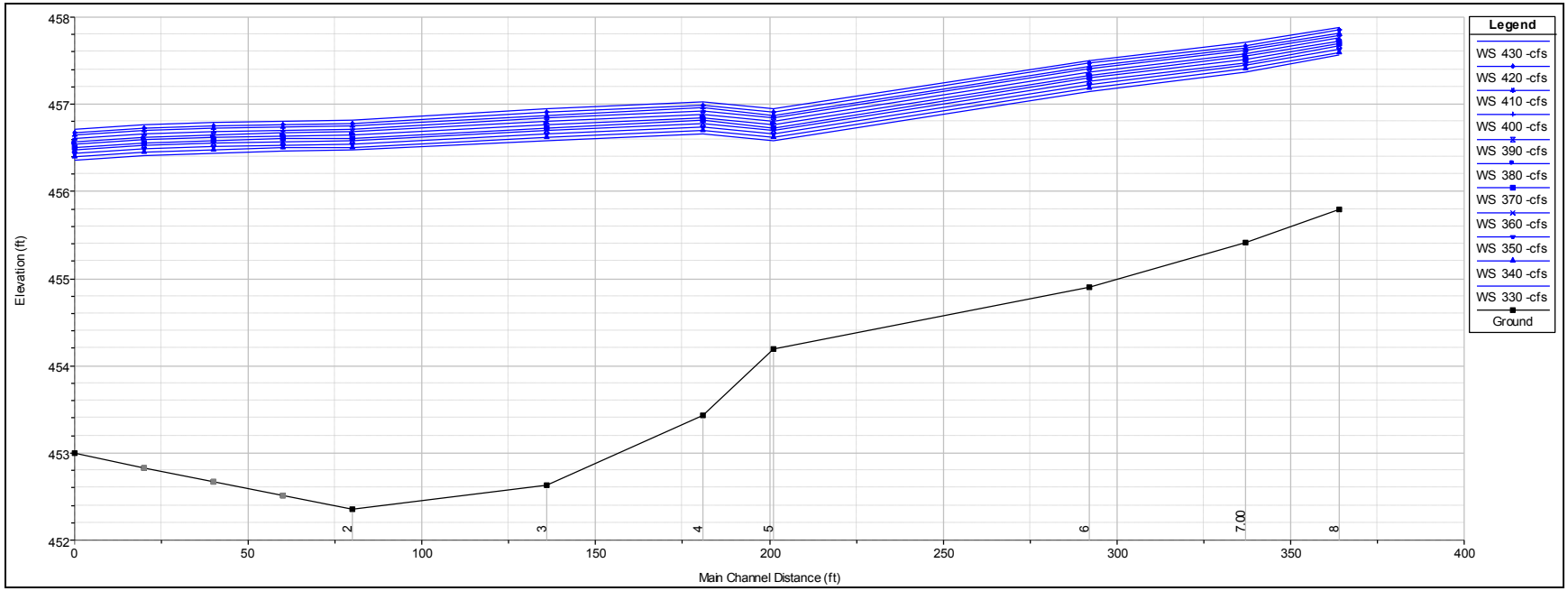


Figure 69 HEC-RAS longitudinal profile output for Reach FGNK10. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

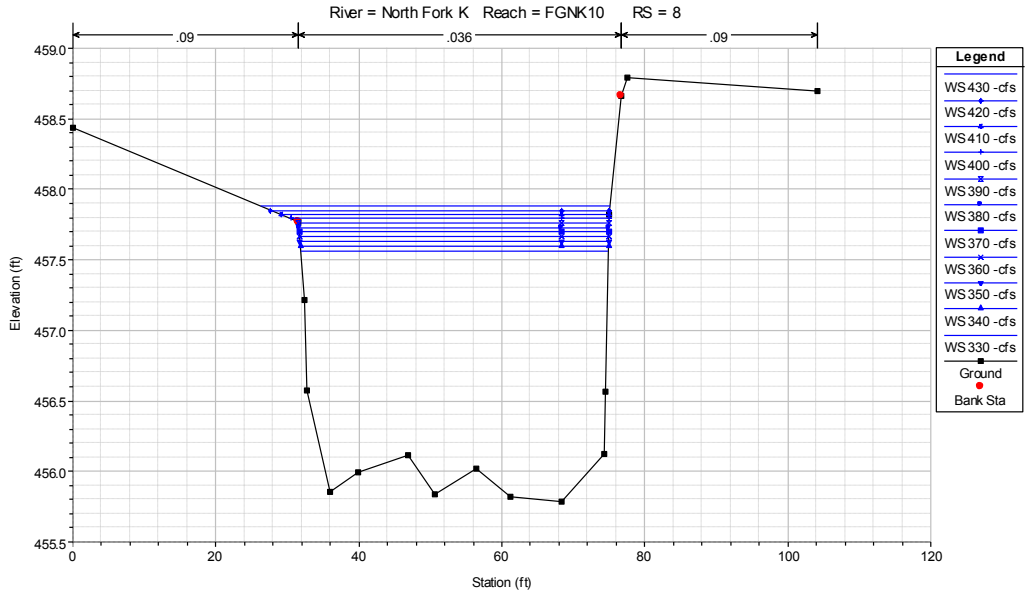


Figure 70 River Station (RS) 8 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges**.**

HEC-RAS OUTPUT: CROSS-SECTIONS

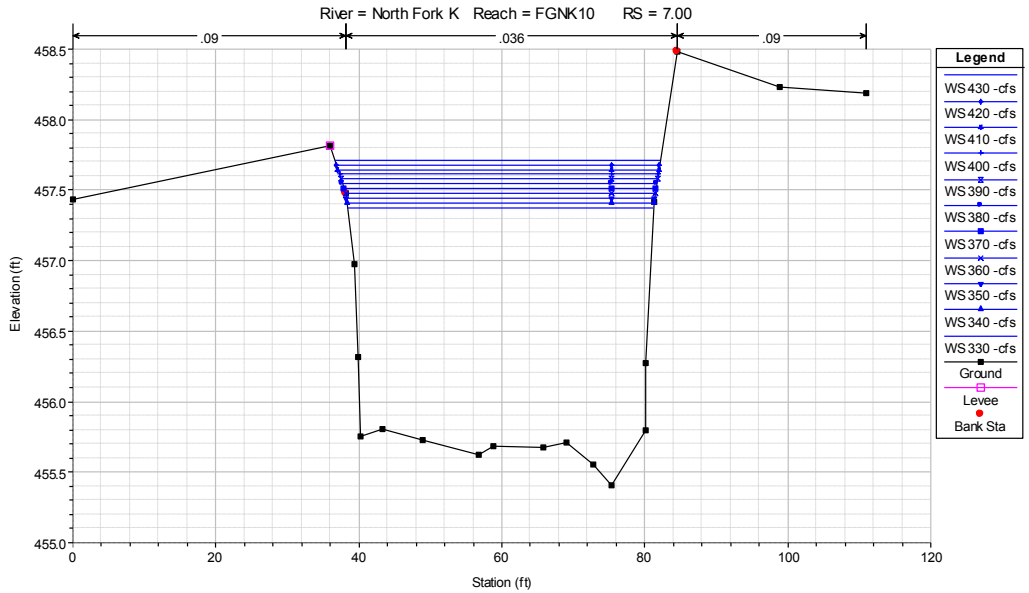


Figure 71 River Station (RS) 7 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

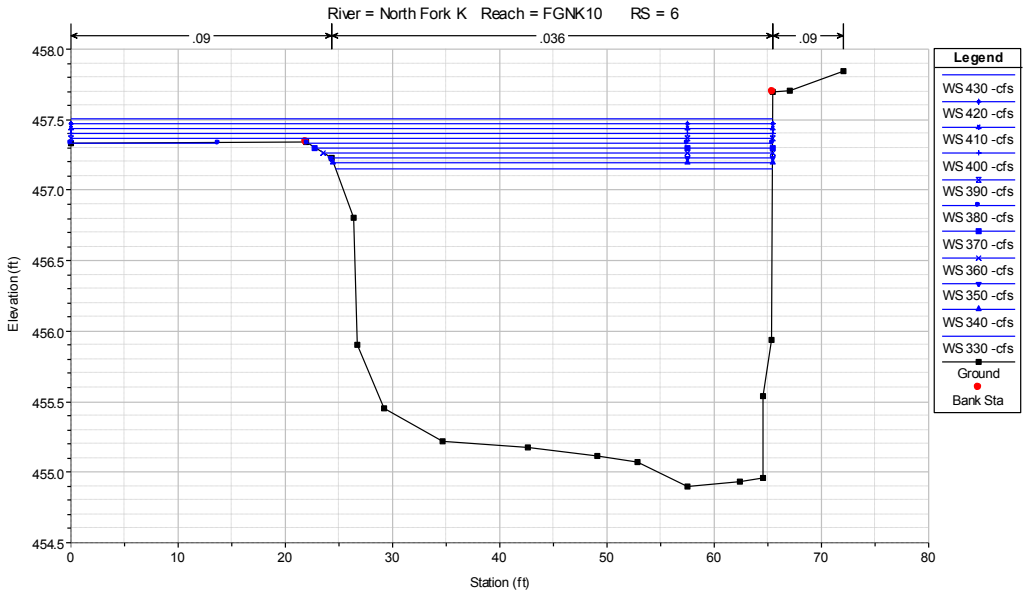


Figure 72 River Station (RS) 6 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

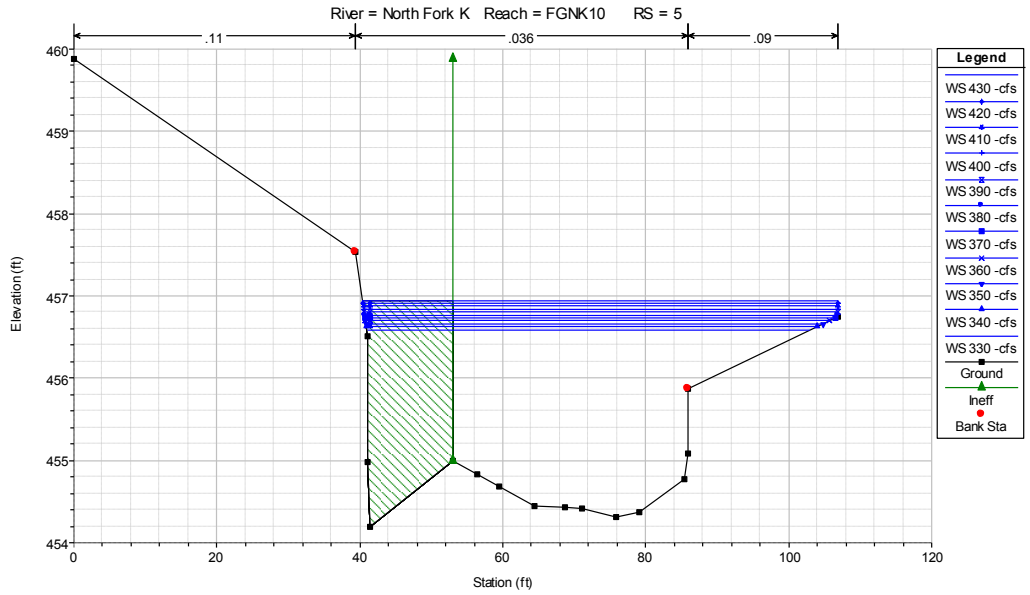


Figure 73 River Station (RS) 5 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

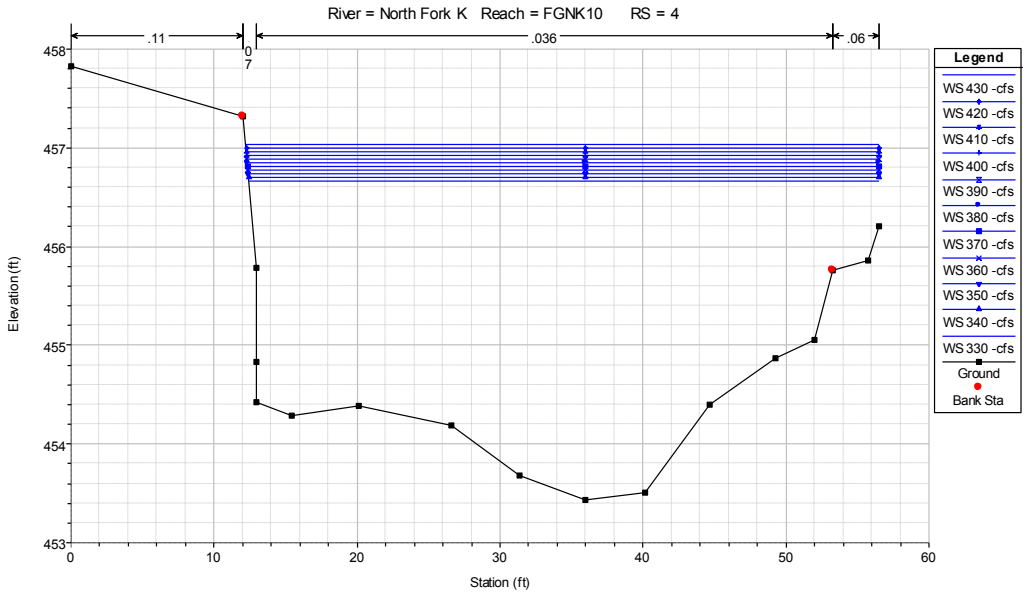


Figure 74 River Station (RS) 4 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

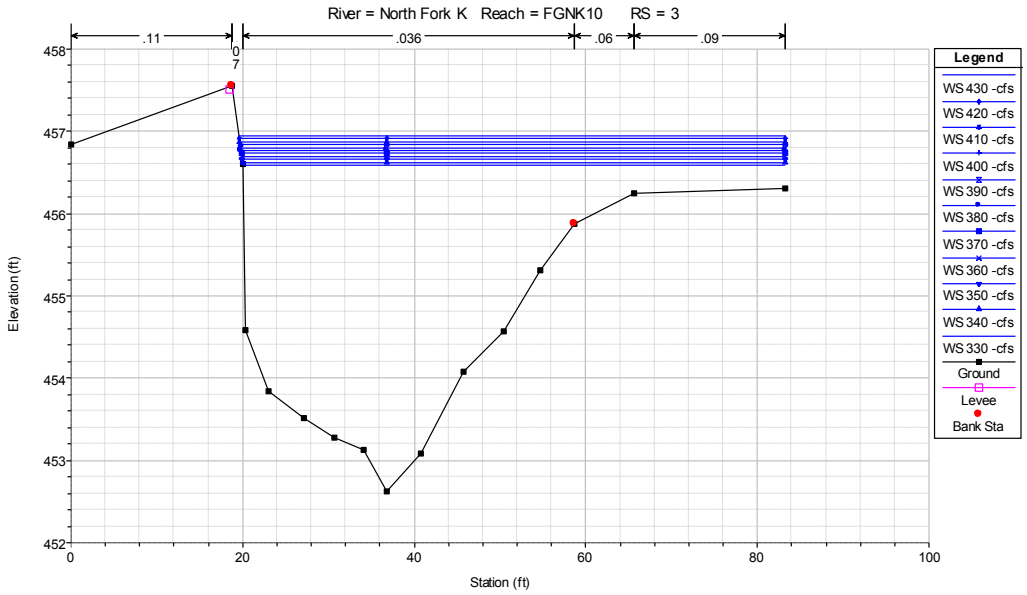


Figure 75 River Station (RS) 3 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

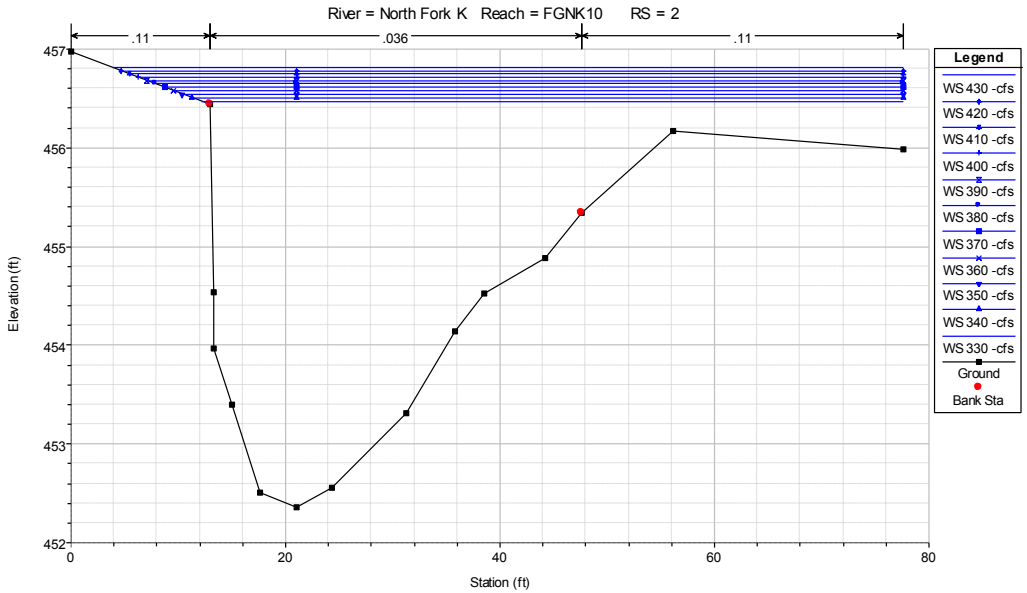


Figure 76 River Station (RS) 2 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS OUTPUT: CROSS-SECTIONS

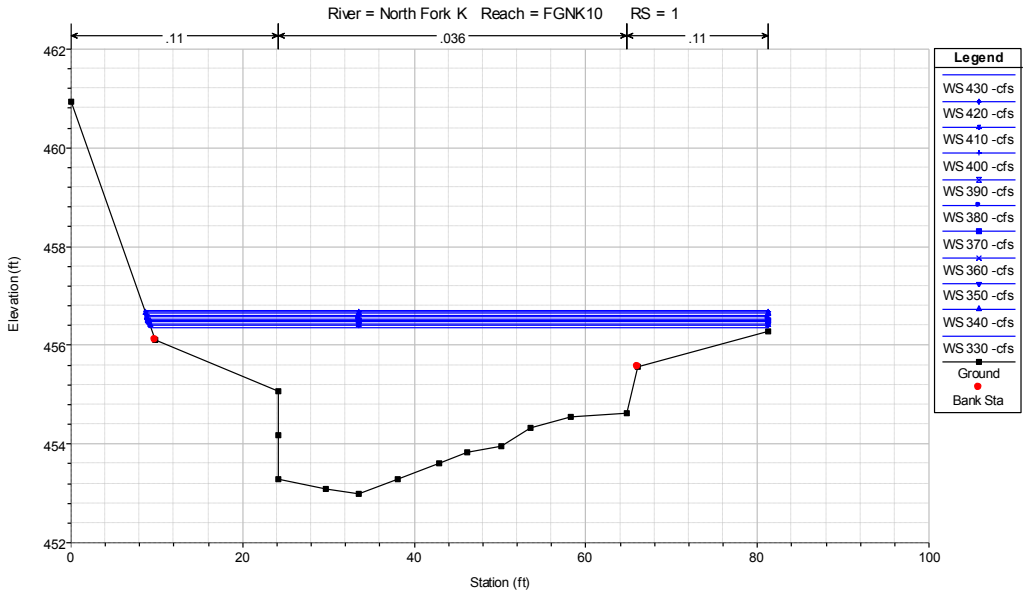


Figure 77 River Station (RS) 1 on River Reach FGNK10. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK10

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK10	8	330-cfs	0.76	137	111	89
FGNK10	8	340-cfs	0.77	139	112	91
FGNK10	8	350-cfs	0.78	140	114	92
FGNK10	8	360-cfs	0.78	140	114	92
FGNK10	8	370-cfs	0.79	142	115	93
FGNK10	8	380-cfs	0.80	144	117	94
FGNK10	8	390-cfs	0.81	146	118	95
FGNK10	8	400-cfs	0.82	148	120	97
FGNK10	8	410-cfs	0.83	149	121	98
FGNK10	8	420-cfs	0.84	151	122	99
FGNK10	8	430-cfs	0.84	151	122	99
FGNK10	7	330-cfs	0.72	130	105	85
FGNK10	7	340-cfs	0.72	130	105	85
FGNK10	7	350-cfs	0.73	131	106	86
FGNK10	7	360-cfs	0.73	131	106	86
FGNK10	7	370-cfs	0.74	133	108	87
FGNK10	7	380-cfs	0.75	135	109	88
FGNK10	7	390-cfs	0.75	135	109	88
FGNK10	7	400-cfs	0.76	137	111	89
FGNK10	7	410-cfs	0.77	139	112	91
FGNK10	7	420-cfs	0.78	140	114	92
FGNK10	7	430-cfs	0.78	140	114	92
FGNK10	6	330-cfs	0.55	99	80	65
FGNK10	6	340-cfs	0.56	101	82	66
FGNK10	6	350-cfs	0.56	101	82	66
FGNK10	6	360-cfs	0.56	101	82	66
FGNK10	6	370-cfs	0.56	101	82	66
FGNK10	6	380-cfs	0.56	101	82	66
FGNK10	6	390-cfs	0.57	103	83	67

INCIPIENT MOTION ANALYSIS: FGNK10

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK10	6	400-cfs	0.57	103	83	67
FGNK10	6	410-cfs	0.58	104	85	68
FGNK10	6	420-cfs	0.59	106	86	69
FGNK10	6	430-cfs	0.59	106	86	69
FGNK10	5	330-cfs	0.69	124	101	81
FGNK10	5	340-cfs	0.70	126	102	82
FGNK10	5	350-cfs	0.71	128	103	84
FGNK10	5	360-cfs	0.72	130	105	85
FGNK10	5	370-cfs	0.73	131	106	86
FGNK10	5	380-cfs	0.74	133	108	87
FGNK10	5	390-cfs	0.75	135	109	88
FGNK10	5	400-cfs	0.76	137	111	89
FGNK10	5	410-cfs	0.76	137	111	89
FGNK10	5	420-cfs	0.77	139	112	91
FGNK10	5	430-cfs	0.78	140	114	92
FGNK10	4	330-cfs	0.31	56	45	36
FGNK10	4	340-cfs	0.32	58	47	38
FGNK10	4	350-cfs	0.32	58	47	38
FGNK10	4	360-cfs	0.33	59	48	39
FGNK10	4	370-cfs	0.34	61	50	40
FGNK10	4	380-cfs	0.35	63	51	41
FGNK10	4	390-cfs	0.36	65	52	42
FGNK10	4	400-cfs	0.36	65	52	42
FGNK10	4	410-cfs	0.37	67	54	44
FGNK10	4	420-cfs	0.38	68	55	45
FGNK10	4	430-cfs	0.39	70	57	46
FGNK10	3	330-cfs	0.27	49	39	32
FGNK10	3	340-cfs	0.28	50	41	33
FGNK10	3	350-cfs	0.29	52	42	34

INCIPIENT MOTION ANALYSIS: FGNK10

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK10	3	360-cfs	0.29	52	42	34
FGNK10	3	370-cfs	0.30	54	44	35
FGNK10	3	380-cfs	0.31	56	45	36
FGNK10	3	390-cfs	0.31	56	45	36
FGNK10	3	400-cfs	0.32	58	47	38
FGNK10	3	410-cfs	0.33	59	48	39
FGNK10	3	420-cfs	0.33	59	48	39
FGNK10	3	430-cfs	0.34	61	50	40
FGNK10	2	330-cfs	0.29	52	42	34
FGNK10	2	340-cfs	0.29	52	42	34
FGNK10	2	350-cfs	0.30	54	44	35
FGNK10	2	360-cfs	0.31	56	45	36
FGNK10	2	370-cfs	0.32	58	47	38
FGNK10	2	380-cfs	0.32	58	47	38
FGNK10	2	390-cfs	0.33	59	48	39
FGNK10	2	400-cfs	0.34	61	50	40
FGNK10	2	410-cfs	0.35	63	51	41
FGNK10	2	420-cfs	0.35	63	51	41
FGNK10	2	430-cfs	0.36	65	52	42
FGNK10	1	330-cfs	0.62	112	90	73
FGNK10	1	340-cfs	0.63	113	92	74
FGNK10	1	350-cfs	0.64	115	93	75
FGNK10	1	360-cfs	0.65	117	95	77
FGNK10	1	370-cfs	0.66	119	96	78
FGNK10	1	380-cfs	0.67	121	98	79
FGNK10	1	390-cfs	0.68	122	99	80
FGNK10	1	400-cfs	0.69	124	101	81
FGNK10	1	410-cfs	0.70	126	102	82
FGNK10	1	420-cfs	0.71	128	103	84
FGNK10	1	430-cfs	0.72	130	105	85

PHOTOGRAPH DOCUMENTATION: FGNK10

Left bank along reference reach FGNK10

Right bank along reference reach FGNK10

Looking downstream from reference reach FGNK10

Looking upstream from reference reach FGNK10

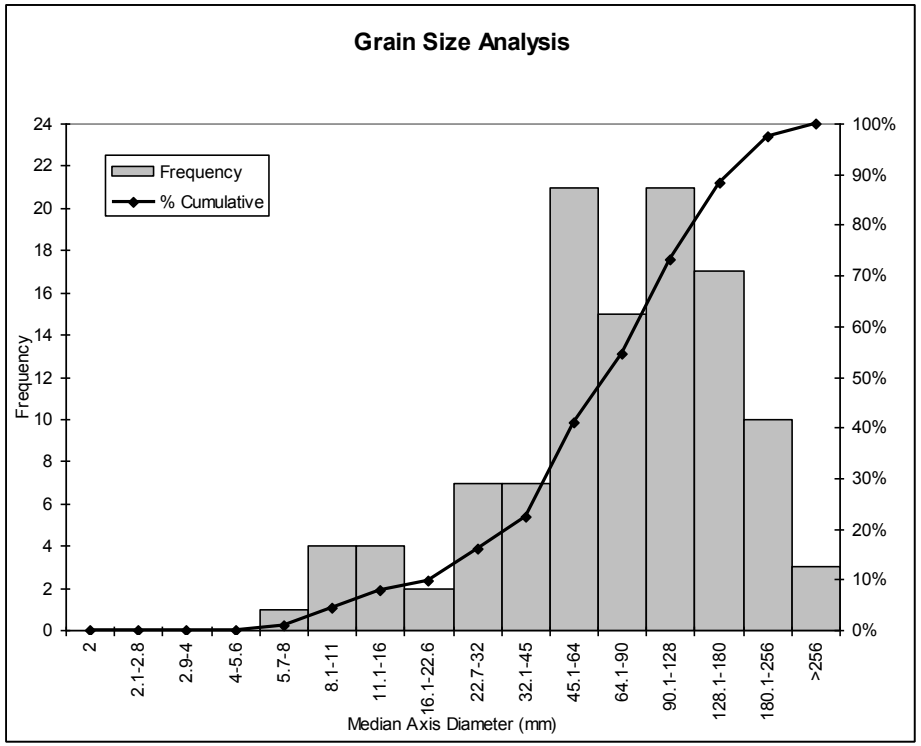
PHOTOGRAPH DOCUMENTATION: FGNK10

Bank composition detail FGNK10

Oblique of site FGNK10

PEBBLE COUNT DISTRIBUTION: FGNK10

Original Distribution

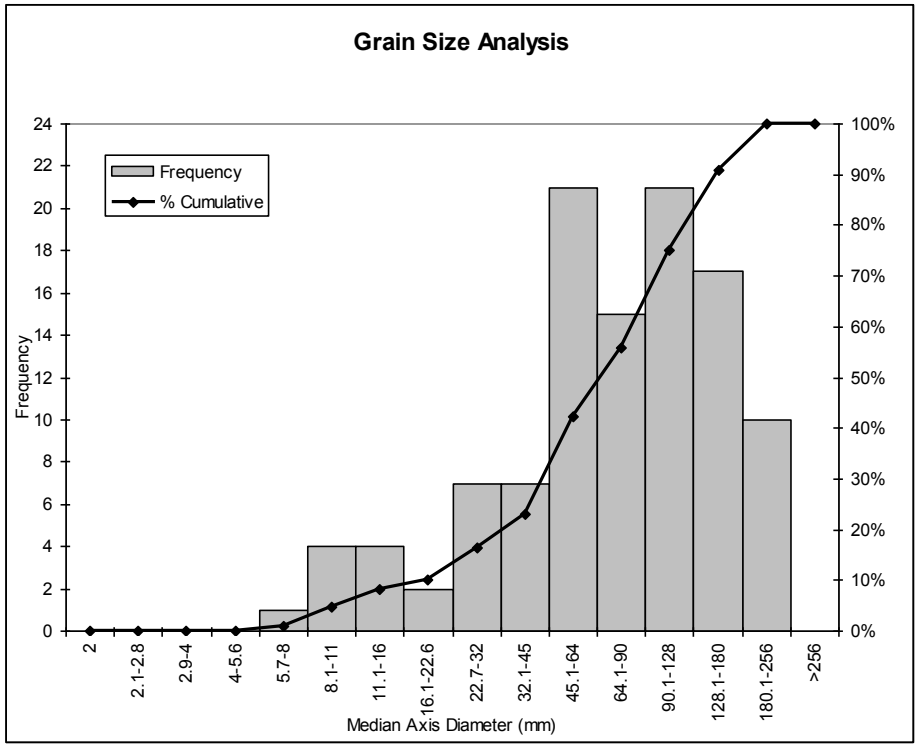


Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	1	.9%
8.1-11	4	4.5%
11.1-16	4	8.0%
16.1-22.6	2	9.8%
22.7-32	7	16.1%
32.1-45	7	22.3%
45.1-64	21	41.1%
64.1-90	15	54.5%
90.1-128	21	73.2%
128.1-180	17	88.4%
180.1-256	10	97.3%
>256	3	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 7

PEBBLE COUNT DISTRIBUTION: FGNK10

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	1	.9%
8.1-11	4	4.6%
11.1-16	4	8.3%
16.1-22.6	2	10.1%
22.7-32	7	16.5%
32.1-45	7	22.9%
45.1-64	21	42.2%
64.1-90	15	56.0%
90.1-128	21	75.2%
128.1-180	17	90.8%
180.1-256	10	100.0%
>256	0*	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 7
*Potential lag removed from pebble count (count: 3)

1,379,238

1,379,638

1,380,038

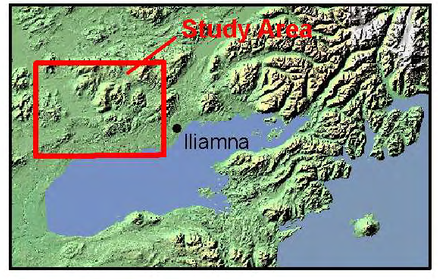
2,170,476

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK10
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,379,238

1,379,638

1,380,038

SITE DESCRIPTION: FGNK11

Site Characteristics.

Site Name	**FGNK11**		
Discharge (cfs)	**275 (250-350)**	Width (ft)	**35.8 (33.9-47.6)**
Slope	**0.0029**	Cross-sectional Area (ft^2)	**71 (54-99)**
D_{50}	**46**	D_{84}	**96**
(modified) D_{50}	**45**	D_{84}	**89**
Lat/Long Location	**N59.93193 W155.39988**	Drainage Area (mi^2)	**24**
% Willow	**70**		
% Grass	**30**		
% Tree	**0**		

Site Overview. Chosen for its proximity to the HDR gage NK100C, the analysis of FGNK11 is calibrated to the roughly 2 years of hydrology data (7/04 – 6/06), allowing for an estimation of the frequency and magnitude of discharge events (see attached hydrograph).

During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 230 feet of channel length. Section 1 serves as the temporary downstream control for the hydraulic model. FGNK11 represents a fairly continuous and relatively steep reach with riffles/runs alternating with scour holes. A fair amount of lag provides structure to this alternating form. Cross-Sections 7 and 6 characterize the riffle which serves as the reference reach. The pebble count was taken through Section 6. The broad distribution of the surface sediment indicates the presence of lag. Particles in the >256 mm and 256 mm size classes were removed, as they were suspected to be immobile. The modified distribution was used in the following analysis.

While the mobility of the D_{50} shows agreement with the channel geometry and field indicators of channel forming discharges, the D_{84} is effectively immobile, further suggesting the presence of lag beyond what was accounted for in the modified distribution. For a Shields number of 0.026, the D_{50} moves between 300 and 350 cfs through Sections 7, 6, and 4. Flows between 250 and 275 cfs match the geometry well, notably through the upper sections (7 and 6). This range of flows correlates well with the hydrograph which within the two-year period of record has matched or exceeded the nominal flow of 300 cfs.

The reference reach sections (Sections 7 and 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK11

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK11	7	250-cfs	200	33.9	62	1.8	2.1	0.0023	3.2	0.42	0.25	0.032
FGNK11	7	225-cfs	225	33.9	65	1.9	2.2	0.0024	3.4	0.43	0.28	0.032
FGNK11	7	250-cfs	250	33.9	69	2.0	2.3	0.0025	3.6	0.45	0.30	0.032
FGNK11	7	275-cfs	275	33.9	72	2.1	2.4	0.0026	3.8	0.46	0.33	0.032
FGNK11	7	300-cfs	300	33.9	75	2.2	2.5	0.0026	4.0	0.47	0.35	0.032
FGNK11	7	325-cfs	325	33.9	78	2.3	2.6	0.0027	4.1	0.48	0.38	0.032
FGNK11	7	350-cfs	350	33.9	81	2.4	2.7	0.0028	4.3	0.49	0.40	0.032
FGNK11	6	250-cfs	200	37.6	58	1.6	2.1	0.0032	3.4	0.48	0.30	0.032
FGNK11	6	225-cfs	225	37.6	62	1.7	2.2	0.0032	3.6	0.49	0.32	0.032
FGNK11	6	250-cfs	250	37.7	66	1.8	2.3	0.0033	3.8	0.50	0.34	0.032
FGNK11	6	275-cfs	275	37.7	70	1.9	2.4	0.0033	3.9	0.51	0.37	0.032
FGNK11	6	300-cfs	300	37.7	73	2.0	2.5	0.0033	4.1	0.51	0.39	0.032
FGNK11	6	325-cfs	325	37.7	77	2.0	2.6	0.0033	4.2	0.52	0.41	0.032
FGNK11	6	350-cfs	350	37.7	80	2.1	2.7	0.0034	4.3	0.52	0.43	0.032
FGNK11	5	250-cfs	200	40.8	75	1.8	2.7	0.0015	2.7	0.34	0.17	0.032
FGNK11	5	225-cfs	225	40.8	80	2.0	2.8	0.0016	2.8	0.36	0.19	0.032
FGNK11	5	250-cfs	250	40.8	84	2.1	2.9	0.0017	3.0	0.37	0.20	0.032
FGNK11	5	275-cfs	275	40.8	88	2.2	3.0	0.0017	3.1	0.38	0.22	0.032
FGNK11	5	300-cfs	300	40.8	92	2.2	3.1	0.0018	3.3	0.38	0.24	0.032
FGNK11	5	325-cfs	325	40.8	95	2.3	3.2	0.0018	3.4	0.39	0.26	0.032
FGNK11	5	350-cfs	350	40.8	99	2.4	3.3	0.0019	3.5	0.40	0.27	0.032
FGNK11	4	250-cfs	200	45.2	55	1.2	2.1	0.0048	3.6	0.58	0.36	0.032
FGNK11	4	225-cfs	225	45.6	60	1.3	2.2	0.0047	3.7	0.57	0.37	0.032
FGNK11	4	250-cfs	250	46.0	65	1.4	2.4	0.0046	3.9	0.57	0.39	0.032
FGNK11	4	275-cfs	275	46.4	69	1.5	2.4	0.0045	4.0	0.57	0.40	0.032
FGNK11	4	300-cfs	300	46.8	74	1.6	2.5	0.0044	4.1	0.57	0.42	0.032
FGNK11	4	325-cfs	325	47.2	78	1.7	2.6	0.0043	4.2	0.57	0.43	0.032
FGNK11	4	350-cfs	350	47.6	82	1.7	2.7	0.0042	4.3	0.57	0.44	0.032

HEC-RAS OUTPUT SUMMARY TABLE: FGNK11

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK11	3	250-cfs	200	41.9	54	1.3	2.0	0.0047	3.7	0.58	0.37	0.032
FGNK11	3	225-cfs	225	41.9	59	1.4	2.1	0.0045	3.8	0.57	0.38	0.032
FGNK11	3	250-cfs	250	41.9	63	1.5	2.2	0.0044	3.9	0.57	0.40	0.032
FGNK11	3	275-cfs	275	41.9	67	1.6	2.3	0.0042	4.1	0.56	0.41	0.032
FGNK11	3	300-cfs	300	41.9	71	1.7	2.4	0.0041	4.2	0.56	0.43	0.032
FGNK11	3	325-cfs	325	41.9	75	1.8	2.5	0.0040	4.3	0.56	0.44	0.032
FGNK11	3	350-cfs	350	41.9	79	1.9	2.6	0.0039	4.4	0.56	0.45	0.032
FGNK11	2	250-cfs	200	37.4	64	1.7	2.1	0.0024	3.1	0.42	0.24	0.032
FGNK11	2	225-cfs	225	37.4	68	1.8	2.3	0.0024	3.3	0.43	0.26	0.032
FGNK11	2	250-cfs	250	37.4	72	1.9	2.4	0.0025	3.5	0.44	0.29	0.032
FGNK11	2	275-cfs	275	37.4	75	2.0	2.5	0.0026	3.6	0.45	0.31	0.032
FGNK11	2	300-cfs	300	37.4	79	2.1	2.5	0.0026	3.8	0.46	0.33	0.032
FGNK11	2	325-cfs	325	37.4	83	2.2	2.6	0.0027	3.9	0.47	0.35	0.032
FGNK11	2	350-cfs	350	37.4	86	2.3	2.7	0.0027	4.1	0.47	0.37	0.032
FGNK11	1	250-cfs	200	37.8	50	1.3	2.2	0.0055	4.0	0.62	0.44	0.032
FGNK11	1	225-cfs	225	37.8	53	1.4	2.3	0.0055	4.2	0.63	0.47	0.032
FGNK11	1	250-cfs	250	37.9	57	1.5	2.4	0.0055	4.4	0.63	0.49	0.032
FGNK11	1	275-cfs	275	37.9	60	1.6	2.5	0.0055	4.6	0.64	0.52	0.032
FGNK11	1	300-cfs	300	37.9	64	1.7	2.6	0.0055	4.7	0.64	0.55	0.032
FGNK11	1	325-cfs	325	37.9	67	1.8	2.7	0.0055	4.9	0.64	0.58	0.032
FGNK11	1	350-cfs	350	37.9	70	1.8	2.7	0.0055	5.0	0.65	0.60	0.032

HEC-RAS LONGITUDINAL PROFILE: FGNK11

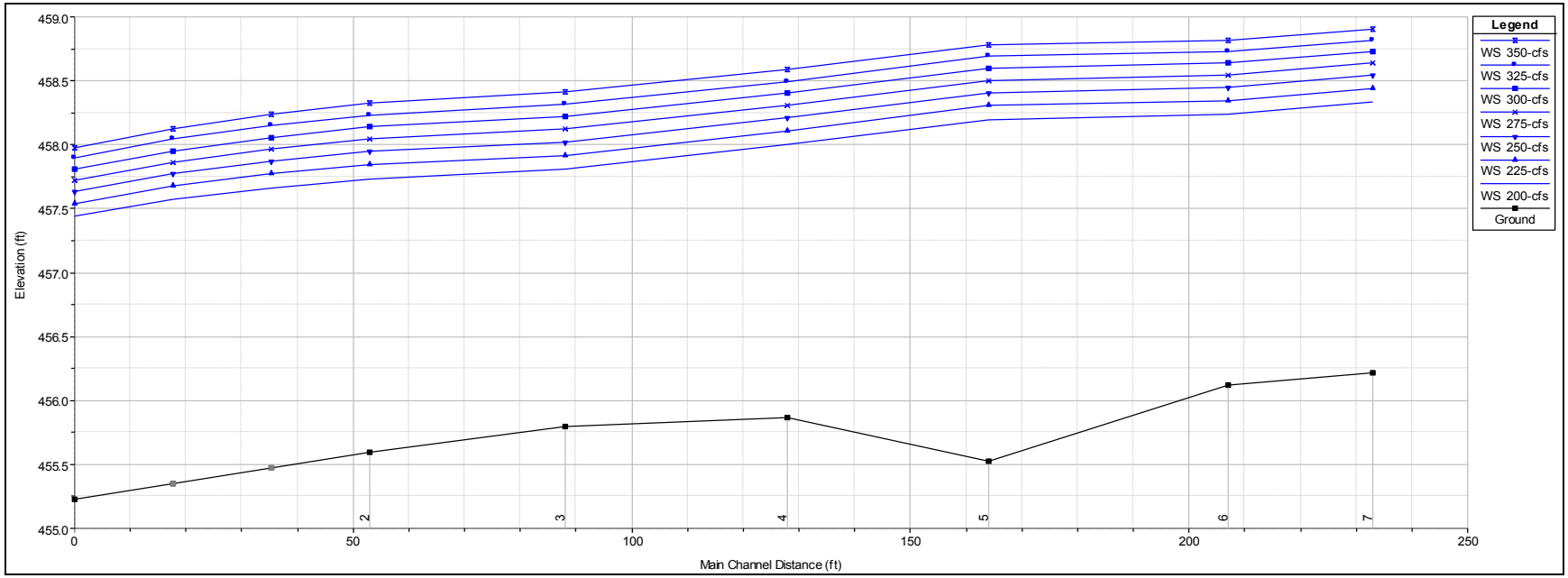


Figure 78 HEC-RAS longitudinal profile output for Reach FGNK11. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK11

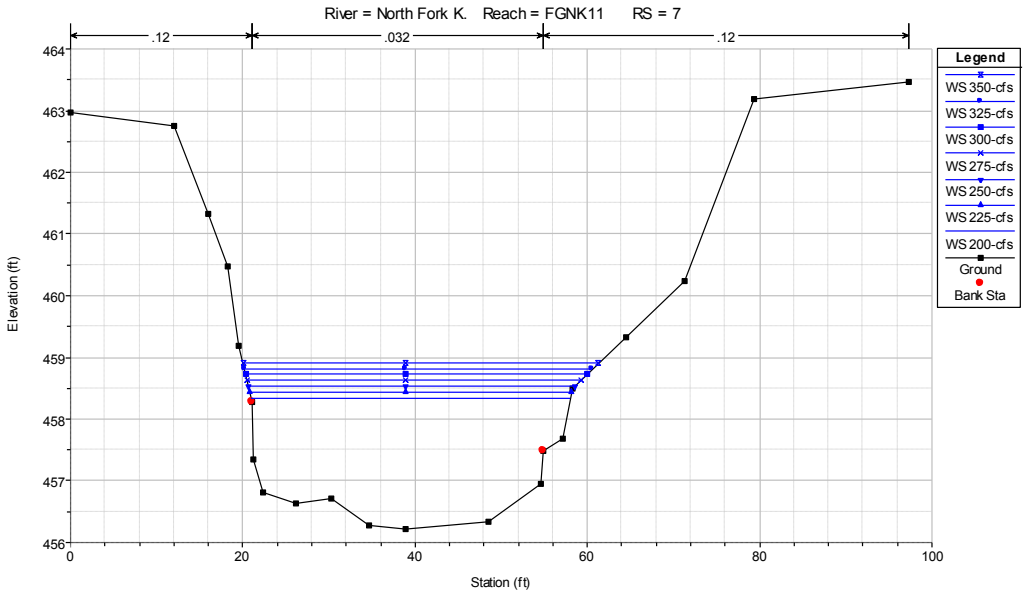


Figure 79 River Station (RS) 7 on River Reach FGNK11. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK11

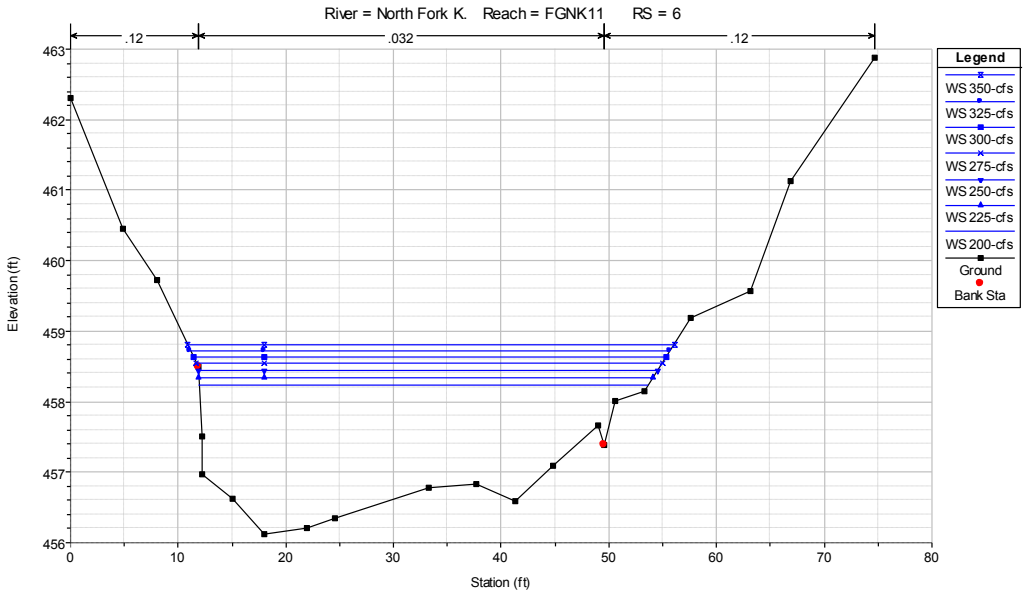


Figure 80 River Station (RS) 6 on River Reach FGNK11. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges**.**

HEC-RAS CROSS-SECTIONS: FGNK11

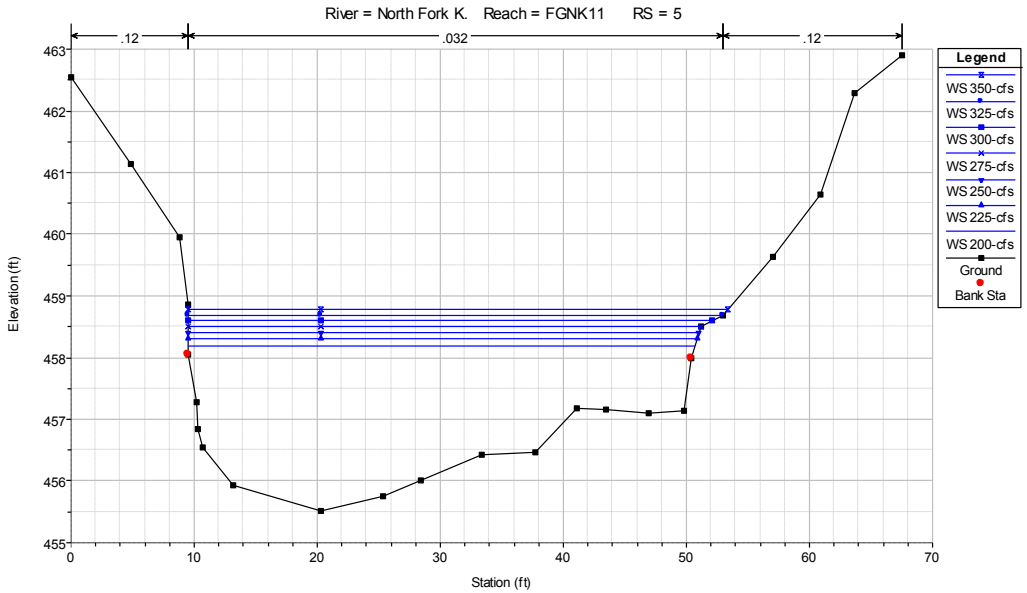


Figure 81 River Station (RS) 1 on River Reach FGNK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK11

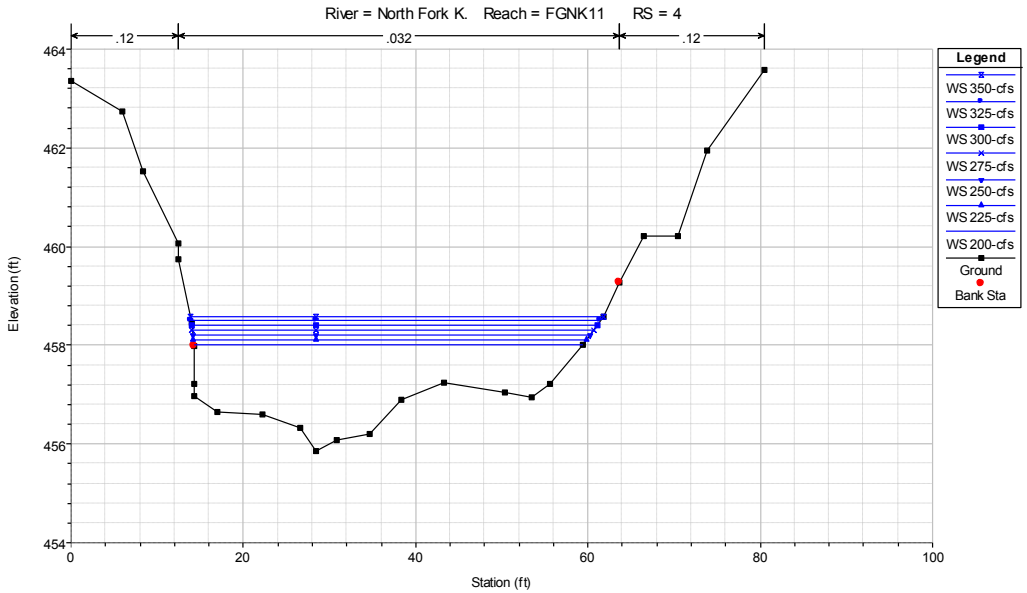


Figure 82 River Station (RS) 4 on River Reach FGNK11. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK11

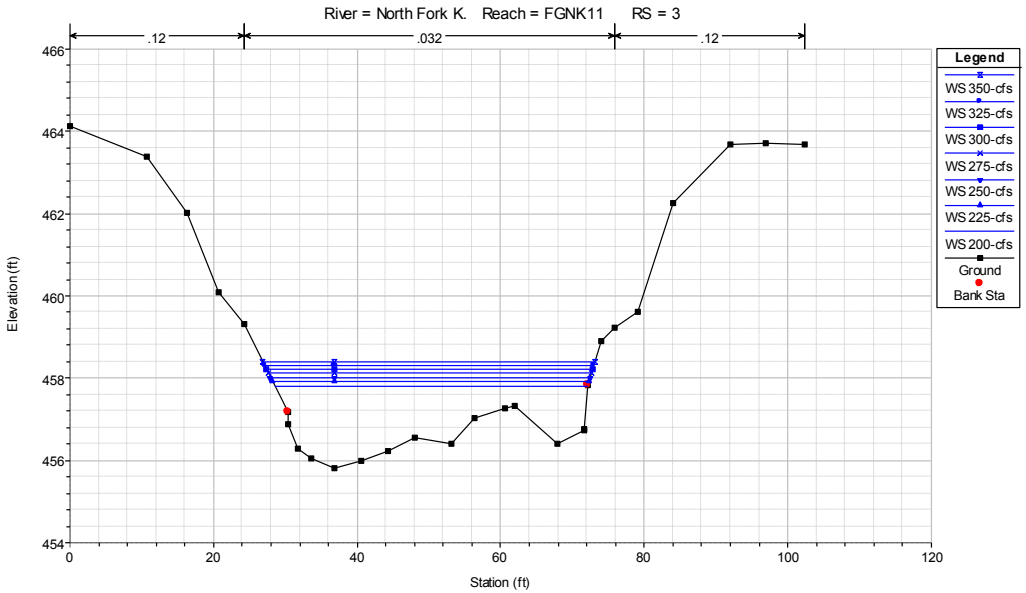


Figure 83 River Station (RS) 3 on River Reach FGNK11. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK11

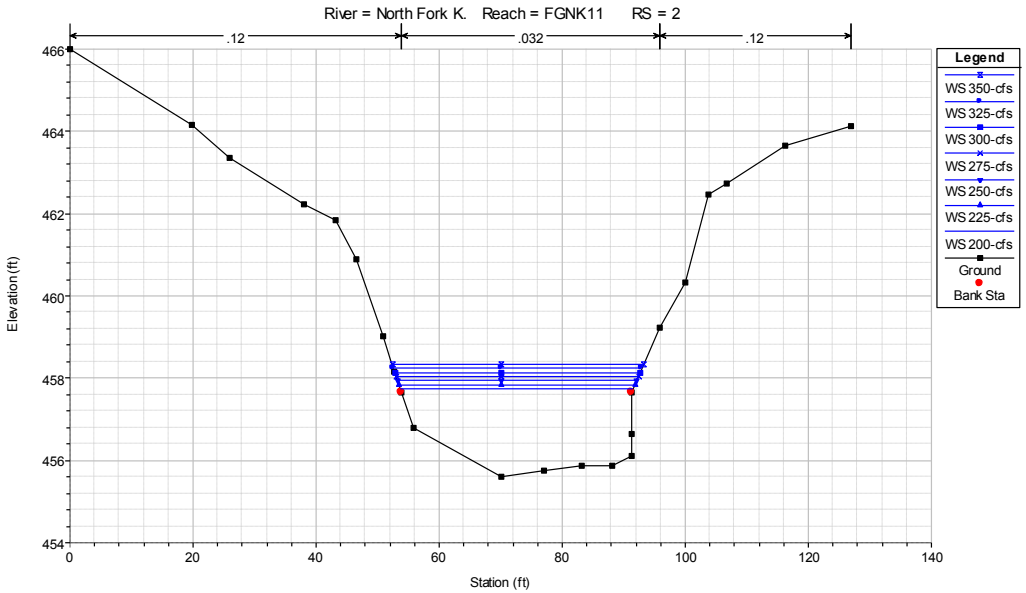


Figure 84 River Station (RS) 2 on River Reach FGNK11. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK11

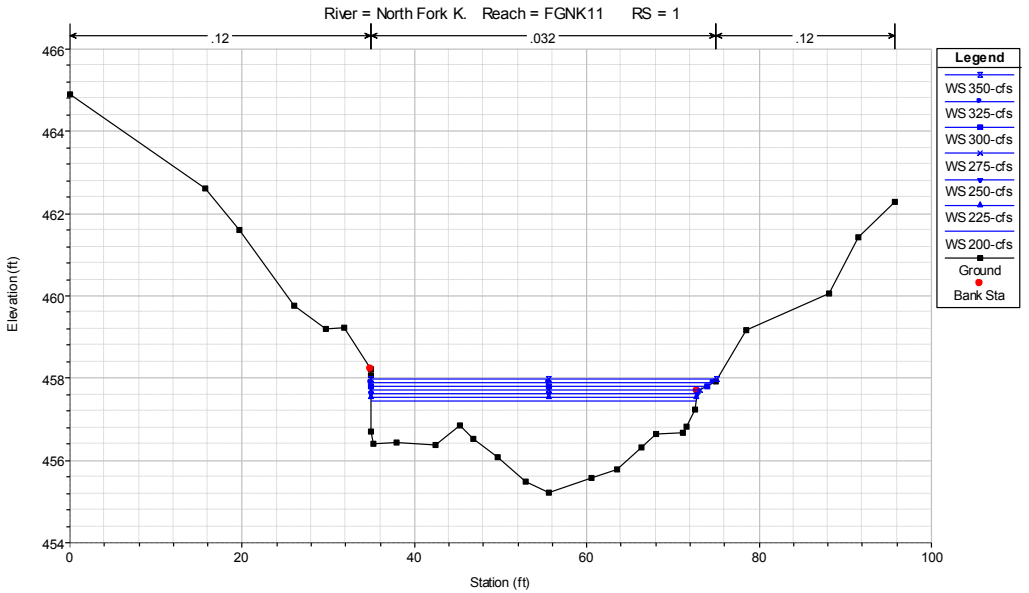


Figure 85 River Station (RS) 1 on River Reach FGNK11. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK11

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK11	7	250-cfs	0.25	45	36	29
FGNK11	7	225-cfs	0.28	50	41	33
FGNK11	7	250-cfs	0.30	54	44	35
FGNK11	7	275-cfs	0.33	59	48	39
FGNK11	7	300-cfs	0.35	63	51	41
FGNK11	7	325-cfs	0.38	68	55	45
FGNK11	7	350-cfs	0.40	72	58	47
FGNK11	6	250-cfs	0.30	54	44	35
FGNK11	6	225-cfs	0.32	58	47	38
FGNK11	6	250-cfs	0.34	61	50	40
FGNK11	6	275-cfs	0.37	67	54	44
FGNK11	6	300-cfs	0.39	70	57	46
FGNK11	6	325-cfs	0.41	74	60	48
FGNK11	6	350-cfs	0.43	77	63	51
FGNK11	5	250-cfs	0.17	31	25	20
FGNK11	5	225-cfs	0.19	34	28	22
FGNK11	5	250-cfs	0.20	36	29	24
FGNK11	5	275-cfs	0.22	40	32	26
FGNK11	5	300-cfs	0.24	43	35	28
FGNK11	5	325-cfs	0.26	47	38	31
FGNK11	5	350-cfs	0.27	49	39	32
FGNK11	4	250-cfs	0.36	65	52	42
FGNK11	4	225-cfs	0.37	67	54	44
FGNK11	4	250-cfs	0.39	70	57	46
FGNK11	4	275-cfs	0.40	72	58	47
FGNK11	4	300-cfs	0.42	76	61	49
FGNK11	4	325-cfs	0.43	77	63	51
FGNK11	4	350-cfs	0.44	79	64	52

INCIPIENT MOTION ANALYSIS: FGNK11

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK11	3	250-cfs	0.37	67	54	44
FGNK11	3	225-cfs	0.38	68	55	45
FGNK11	3	250-cfs	0.40	72	58	47
FGNK11	3	275-cfs	0.41	74	60	48
FGNK11	3	300-cfs	0.43	77	63	51
FGNK11	3	325-cfs	0.44	79	64	52
FGNK11	3	350-cfs	0.45	81	66	53
FGNK11	2	250-cfs	0.24	43	35	28
FGNK11	2	225-cfs	0.26	47	38	31
FGNK11	2	250-cfs	0.29	52	42	34
FGNK11	2	275-cfs	0.31	56	45	36
FGNK11	2	300-cfs	0.33	59	48	39
FGNK11	2	325-cfs	0.35	63	51	41
FGNK11	2	350-cfs	0.37	67	54	44
FGNK11	1	250-cfs	0.44	79	64	52
FGNK11	1	225-cfs	0.47	85	68	55
FGNK11	1	250-cfs	0.49	88	71	58
FGNK11	1	275-cfs	0.52	94	76	61
FGNK11	1	300-cfs	0.55	99	80	65
FGNK11	1	325-cfs	0.58	104	85	68
FGNK11	1	350-cfs	0.60	108	87	71

PHOTOGRAPH DOCUMENTATION: FGNK11

Left bank along reference reach FGNK11

Right bank along reference reach FGNK11

Looking downstream from reference reach FGNK11

Looking upstream from reference reach FGNK11

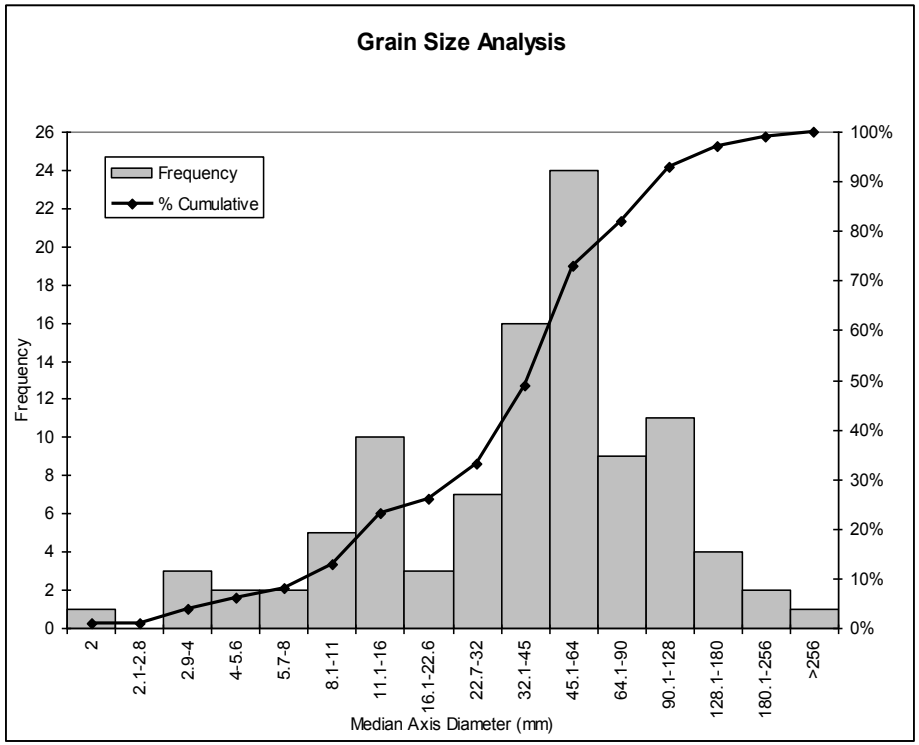
PHOTOGRAPH DOCUMENTATION: FGNK11

Bank composition detail FGNK11

Oblique of site FGNK11

PEBBLE COUNT DISTRIBUTION: FGNK11

Original Distribution

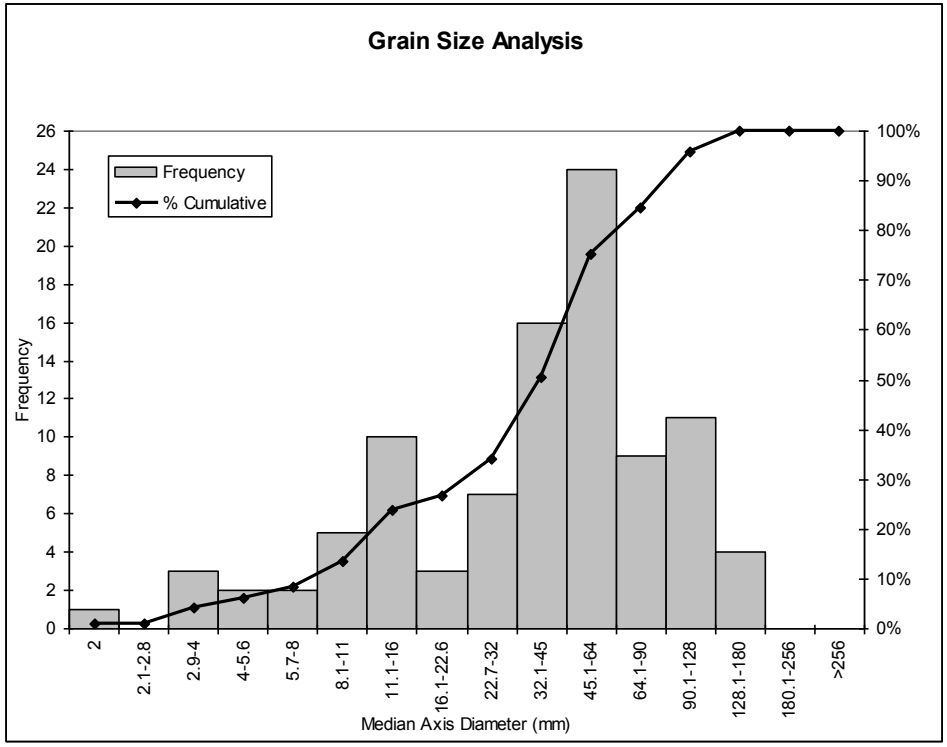


Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	0	1.0%
2.9-4	3	4.0%
4-5.6	2	6.0%
5.7-8	2	8.0%
8.1-11	5	13.0%
11.1-16	10	23.0%
16.1-22.6	3	26.0%
22.7-32	7	33.0%
32.1-45	16	49.0%
45.1-64	24	73.0%
64.1-90	9	82.0%
90.1-128	11	93.0%
128.1-180	4	97.0%
180.1-256	2	99.0%
>256	1	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

PEBBLE COUNT DISTRIBUTION: FGNK11

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	0	1.0%
2.9-4	3	4.0%
4-5.6	2	6.0%
5.7-8	2	8.0%
8.1-11	5	13.0%
11.1-16	10	23.0%
16.1-22.6	3	26.0%
22.7-32	7	33.0%
32.1-45	16	49.0%
45.1-64	24	73.0%
64.1-90	9	82.0%
90.1-128	11	93.0%
128.1-180	4	97.0%
180.1-256	0*	99.0%
>256	0**	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6
*Potential lag removed from pebble count (count: 2)
**Potential lag removed from pebble count (count: 1)

HYDROGRAPH: FGNK11

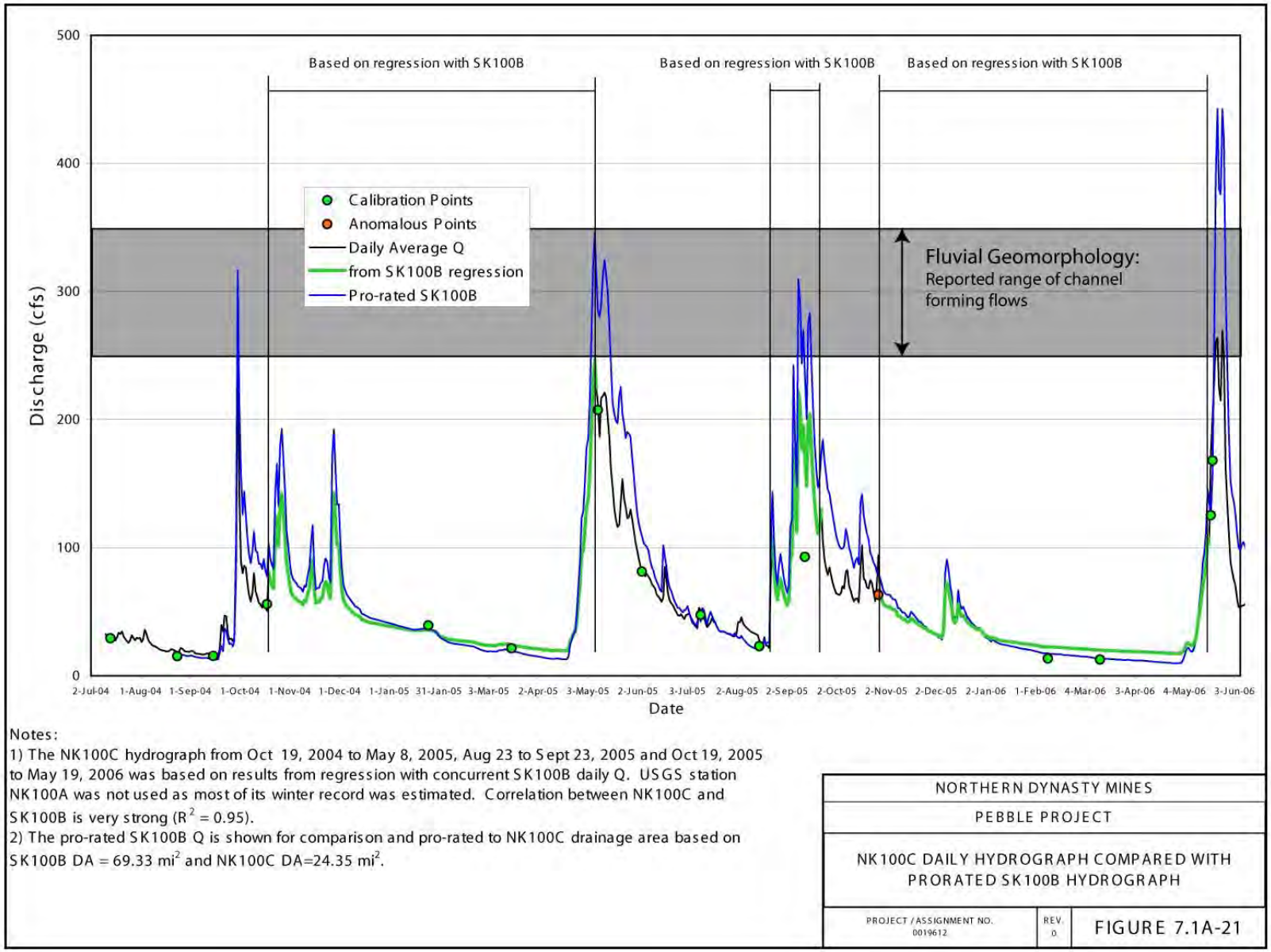


Figure 86 Hydrograph referenced in site description. Data provided by HDR

1,382,808 1,383,208 1,383,608 1,384,008 1,384,408

2,170,061

2,169,661

2,169,261

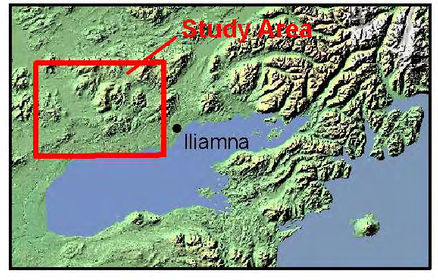
1 2 3 4 5 6 7

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK11
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,382,808 1,383,208 1,383,608 1,384,008 1,384,408

SITE DESCRIPTION: FGNK12

Site Characteristics.

Site Name		FGNK12	
Discharge (cfs)	**250 (175-300)**	Width (ft)	**54.3 (37.9-67.3)**
Slope	**0.0009**	Cross-sectional Area (ft^2)	**107 (68-163)**
D_{50}	**18**	D_{84}	**57**
Lat/Long Location	**N59.93816 W155.39010**	Drainage Area (mi^2)	**23**
	% Willow	**10**	
	% Grass	**90**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 530 feet of channel length. No hydraulic controls or bedforms were observed along the reach. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections were surveyed in at changes in vegetation and channel shape and to capture bends. The bed was extremely loose consisting of mostly fines with some gravel. Long filamentous algae grew across most of the channel. A pebble count was conducted across Section 6 where gravels were slightly more apparent. Sedges and grasses grew along the channel margins, while willows grew on the higher banks.

Even at highest flows modeled, the incipient motion analysis showed no movement of the D_{84} at Shields values 0.017. For a Shields number of 0.026, the D_{50} moves through Sections 6 and 2 at flows of 250 and 275 cfs respectively. The slope through the reach was extremely low (0.0009) causing shear to remain low. The lack of movement of the sediment might be a Shields number issue, for example, it might be lower than 0.017. Most likely this reach functions differently than the rest of the North Fork Koktuli. The banks lack gravels found throughout the downstream sites. A flow of 225 cfs matches a left bank inflection along Sections 6 and 5 and 250 cfs matches an inflection point on the left bank on Section 2. The range of flows fits within the geomorphic indicators found along the reach.

Lacking any well-defined riffle, channel width and cross-sectional area were averaged over all of the surveyed sections, with the exception of Section 1, for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK12

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK12	6	175-cfs	175	37.9	68	1.8	2.6	0.0010	2.6	0.34	0.10	0.026
FGNK12	6	200-cfs	200	38.5	75	1.9	2.8	0.0010	2.7	0.34	0.11	0.026
FGNK12	6	225-cfs	225	39.6	82	2.1	2.9	0.0010	2.7	0.33	0.13	0.028
FGNK12	6	250-cfs	250	41.2	90	2.2	3.1	0.0011	2.8	0.33	0.15	0.029
FGNK12	6	275-cfs	275	42.6	96	2.3	3.3	0.0012	2.9	0.33	0.16	0.030
FGNK12	6	300-cfs	300	44.0	103	2.3	3.4	0.0013	2.9	0.34	0.18	0.031
FGNK12	5	175-cfs	175	46.7	77	1.7	2.4	0.0007	2.3	0.31	0.07	0.025
FGNK12	5	200-cfs	200	47.9	86	1.8	2.6	0.0007	2.3	0.31	0.07	0.025
FGNK12	5	225-cfs	225	49.2	96	1.9	2.8	0.0006	2.4	0.30	0.07	0.025
FGNK12	5	250-cfs	250	49.7	105	2.1	3.0	0.0006	2.4	0.29	0.07	0.025
FGNK12	5	275-cfs	275	50.1	113	2.3	3.1	0.0006	2.4	0.29	0.08	0.025
FGNK12	5	300-cfs	300	51.1	120	2.4	3.3	0.0006	2.5	0.29	0.08	0.025
FGNK12	4	175-cfs	175	55.2	87	1.6	2.1	0.0012	2.0	0.28	0.11	0.033
FGNK12	4	200-cfs	200	56.1	98	1.7	2.3	0.0011	2.1	0.27	0.11	0.034
FGNK12	4	225-cfs	225	56.1	109	2.0	2.5	0.0009	2.1	0.26	0.11	0.034
FGNK12	4	250-cfs	250	56.1	120	2.1	2.7	0.0008	2.1	0.25	0.11	0.034
FGNK12	4	275-cfs	275	56.1	129	2.3	2.9	0.0008	2.1	0.25	0.11	0.034
FGNK12	4	300-cfs	300	56.1	138	2.5	3.0	0.0008	2.2	0.24	0.11	0.034
FGNK12	3	175-cfs	175	63.9	101	1.6	3.1	0.0004	1.7	0.24	0.03	0.025
FGNK12	3	200-cfs	200	65.2	114	1.7	3.3	0.0003	1.8	0.23	0.04	0.026
FGNK12	3	225-cfs	225	66.7	128	1.9	3.5	0.0003	1.8	0.22	0.04	0.026
FGNK12	3	250-cfs	250	67.3	141	2.1	3.7	0.0003	1.8	0.22	0.04	0.026
FGNK12	3	275-cfs	275	67.3	152	2.3	3.8	0.0003	1.8	0.21	0.04	0.026
FGNK12	3	300-cfs	300	67.3	163	2.4	4.0	0.0003	1.8	0.21	0.04	0.026
FGNK12	2	175-cfs	175	51.6	76	1.5	1.8	0.0012	2.3	0.33	0.11	0.029
FGNK12	2	200-cfs	200	52.2	87	1.7	2.0	0.0011	2.3	0.31	0.11	0.029
FGNK12	2	225-cfs	225	59.5	99	1.7	2.2	0.0014	2.3	0.31	0.14	0.034
FGNK12	2	250-cfs	250	65.0	112	1.7	2.4	0.0015	2.2	0.30	0.16	0.036
FGNK12	2	275-cfs	275	65.1	123	1.9	2.6	0.0013	2.2	0.29	0.15	0.036
FGNK12	2	300-cfs	300	65.1	133	2.0	2.8	0.0012	2.3	0.28	0.15	0.036

HEC-RAS OUTPUT SUMMARY TABLE: FGNK12

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK12	1	175-cfs	175	33.8	68	2.0	2.7	0.0008	2.6	0.32	0.10	0.025
FGNK12	1	200-cfs	200	34.2	75	2.2	2.9	0.0008	2.7	0.32	0.10	0.026
FGNK12	1	225-cfs	225	34.5	82	2.4	3.1	0.0008	2.8	0.32	0.11	0.026
FGNK12	1	250-cfs	250	35.1	88	2.5	3.3	0.0008	2.8	0.32	0.12	0.026
FGNK12	1	275-cfs	275	35.6	94	2.6	3.5	0.0008	2.9	0.32	0.12	0.026
FGNK12	1	300-cfs	300	36.0	99	2.8	3.6	0.0008	3.0	0.32	0.13	0.026

HEC-RAS OUTPUT: LONGITUDINAL PROFILE

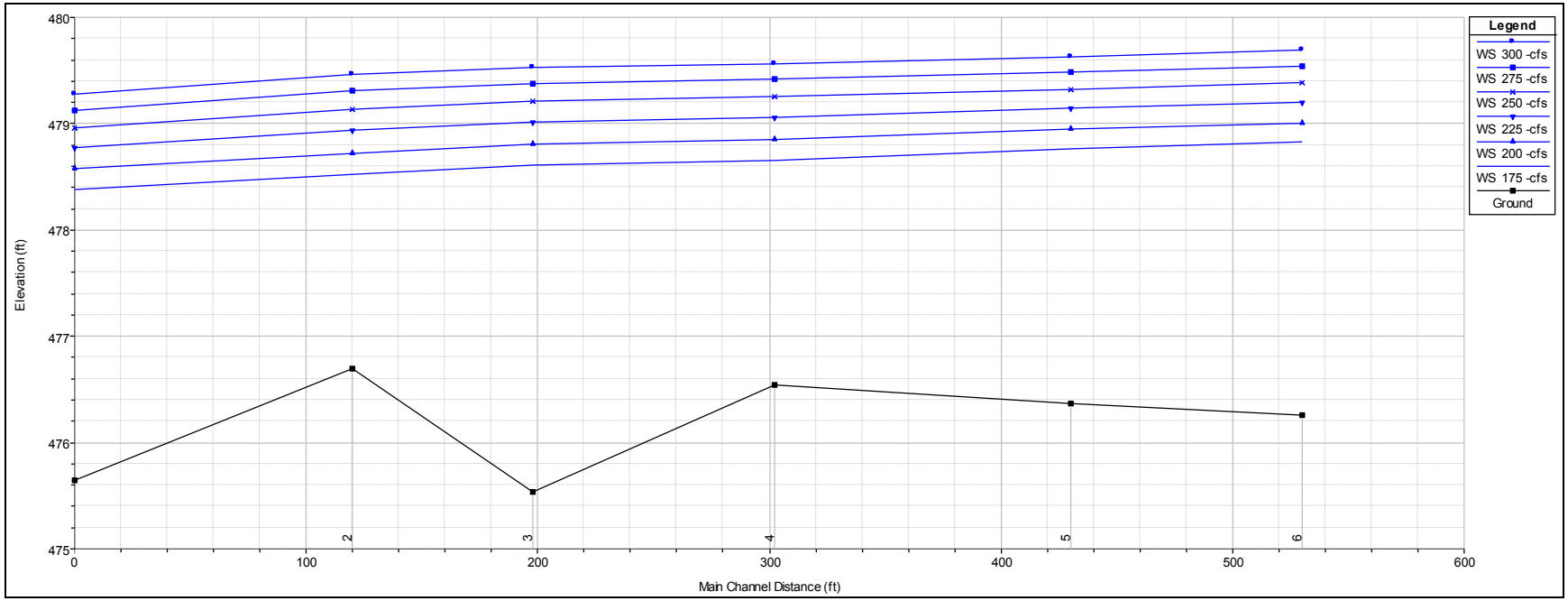


Figure 87 HEC-RAS longitudinal profile output for Reach FGNK12. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK12

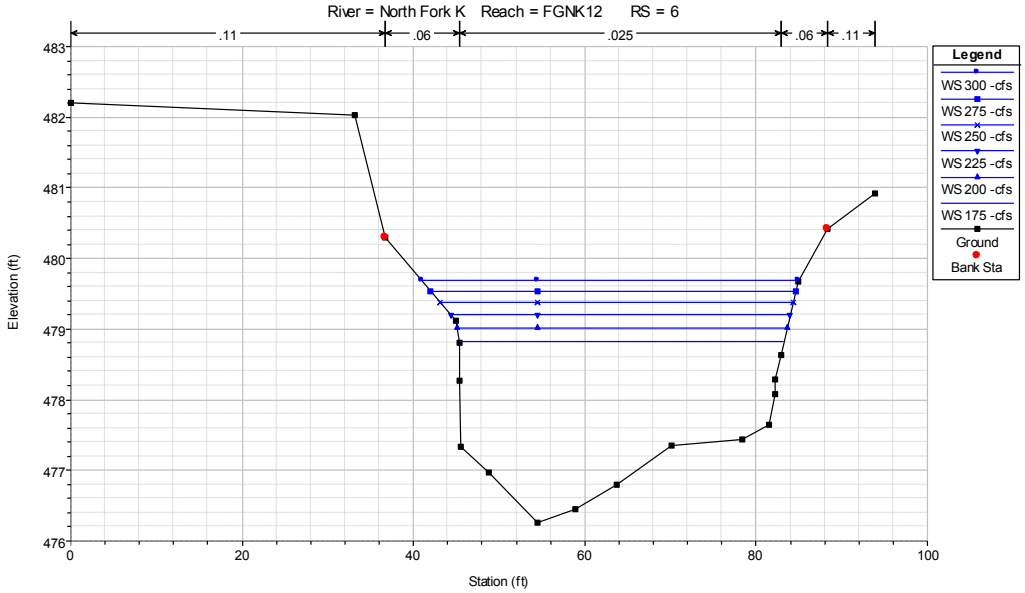


Figure 88 River Station (RS) 6 on River Reach FGNK12. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges**.**

HEC-RAS CROSS-SECTIONS: FGNK12

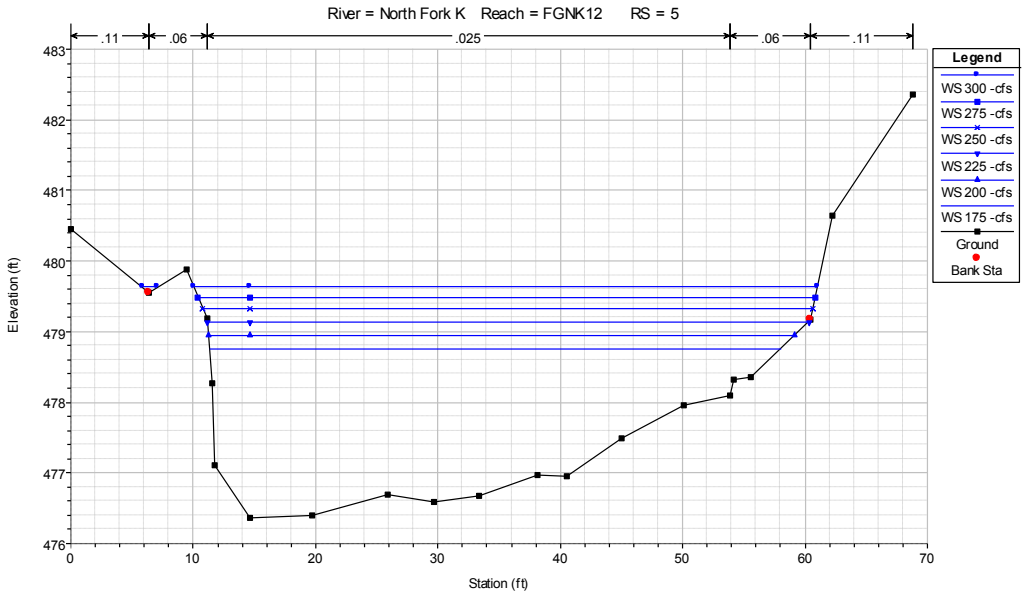


Figure 89 River Station (RS) 5 on River Reach FGNK12. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK12

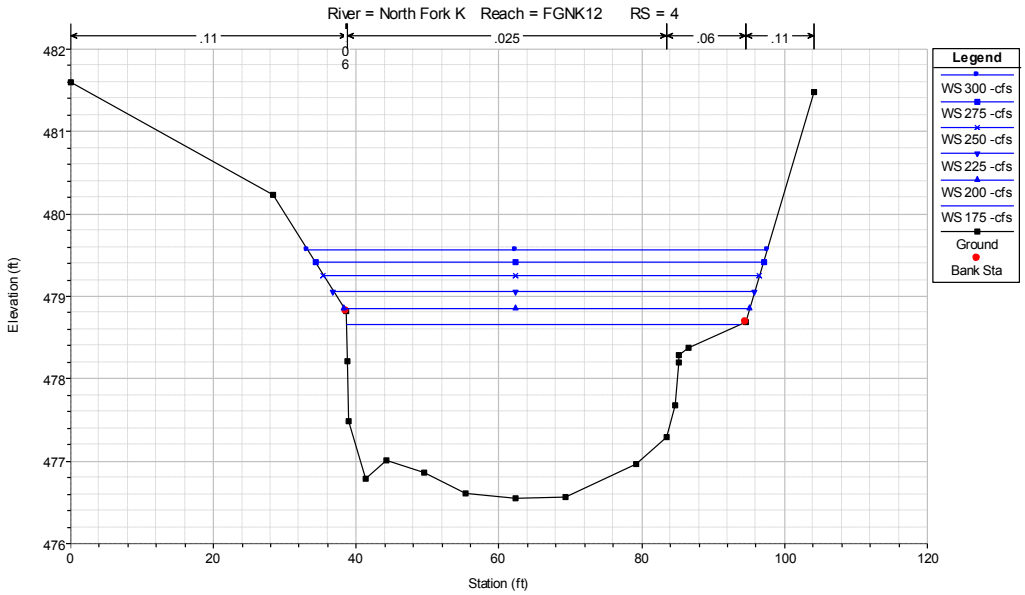


Figure 90 River Station (RS) 4 on River Reach FGNK12. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK12

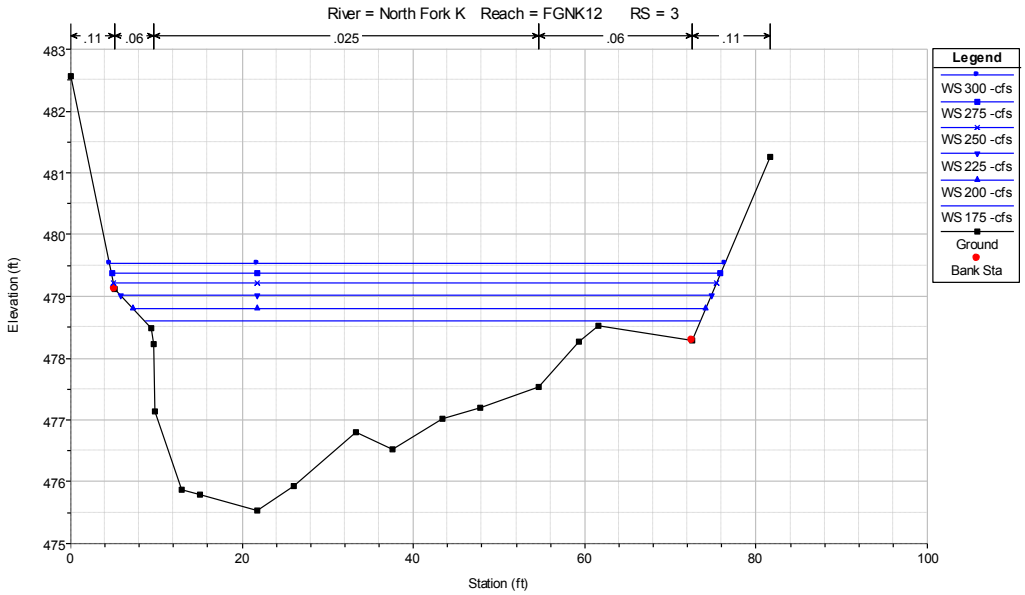


Figure 91 River Station (RS) 3 on River Reach FGNK12. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK12

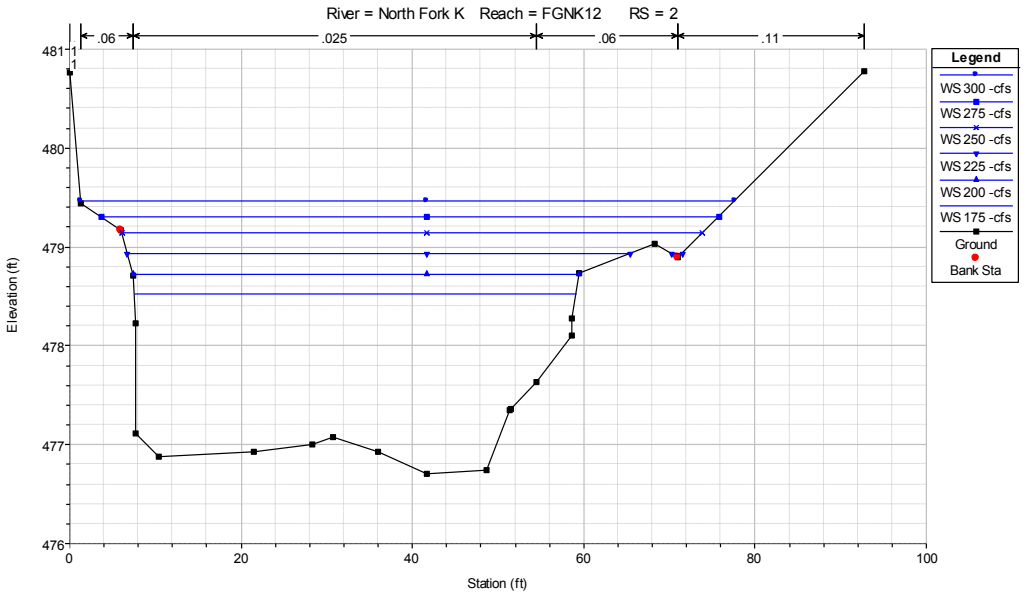


Figure 92 River Station (RS) 2 on River Reach FGNK12. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges**.**

HEC-RAS CROSS-SECTIONS: FGNK12

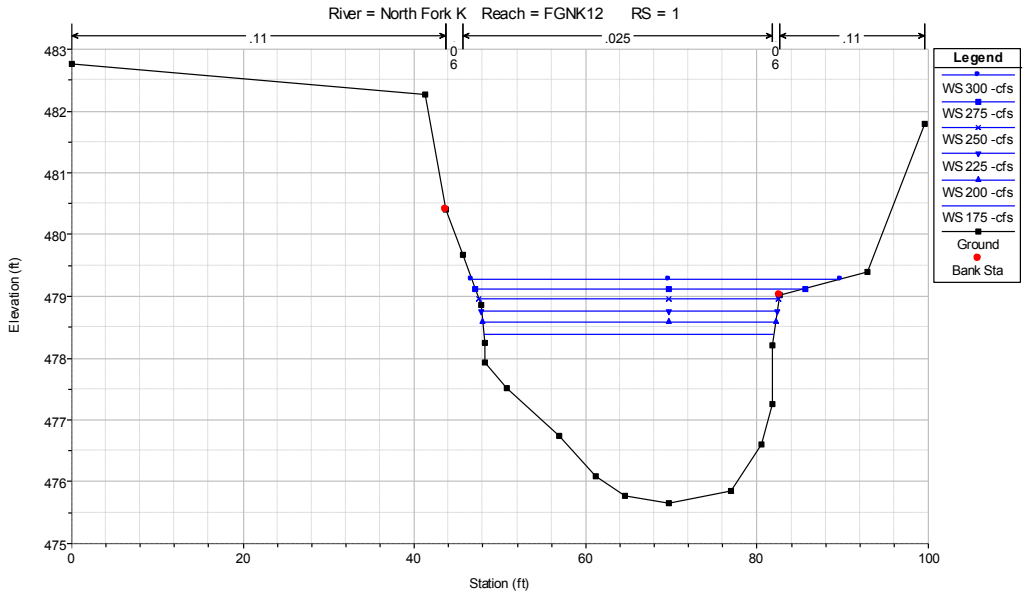


Figure 93 River Station (RS) 1 on River Reach FGNK12. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK12

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK12	6	175-cfs	0.10	18	15	12
FGNK12	6	200-cfs	0.11	20	16	13
FGNK12	6	225-cfs	0.13	23	19	15
FGNK12	6	250-cfs	0.15	27	22	18
FGNK12	6	275-cfs	0.16	29	23	19
FGNK12	6	300-cfs	0.18	32	26	21
FGNK12	5	175-cfs	0.07	13	10	8
FGNK12	5	200-cfs	0.07	13	10	8
FGNK12	5	225-cfs	0.07	13	10	8
FGNK12	5	250-cfs	0.07	13	10	8
FGNK12	5	275-cfs	0.08	14	12	9
FGNK12	5	300-cfs	0.08	14	12	9
FGNK12	4	175-cfs	0.11	20	16	13
FGNK12	4	200-cfs	0.11	20	16	13
FGNK12	4	225-cfs	0.11	20	16	13
FGNK12	4	250-cfs	0.11	20	16	13
FGNK12	4	275-cfs	0.11	20	16	13
FGNK12	4	300-cfs	0.11	20	16	13
FGNK12	3	175-cfs	0.03	5	4	4
FGNK12	3	200-cfs	0.04	7	6	5
FGNK12	3	225-cfs	0.04	7	6	5
FGNK12	3	250-cfs	0.04	7	6	5
FGNK12	3	275-cfs	0.04	7	6	5
FGNK12	3	300-cfs	0.04	7	6	5
FGNK12	2	175-cfs	0.11	20	16	13
FGNK12	2	200-cfs	0.11	20	16	13
FGNK12	2	225-cfs	0.14	25	20	16
FGNK12	2	250-cfs	0.16	29	23	19

INCIPIENT MOTION ANALYSIS: FGNK12

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK12	2	275-cfs	0.15	27	22	18
FGNK12	2	300-cfs	0.15	27	22	18
FGNK12	1	175-cfs	0.10	18	15	12
FGNK12	1	200-cfs	0.10	18	15	12
FGNK12	1	225-cfs	0.11	20	16	13
FGNK12	1	250-cfs	0.12	22	17	14
FGNK12	1	275-cfs	0.12	22	17	14
FGNK12	1	300-cfs	0.13	23	19	15

PHOTOGRAPH DOCUMENTATION: FGNK12

Left bank along pebble count site on reach FGNK12

Right bank along pebble count site on reach FGNK12

Looking downstream from pebble count site on reach FGNK12

Looking upstream from pebble count site on reach FGNK12

PHOTOGRAPH DOCUMENTATION: FGNK12

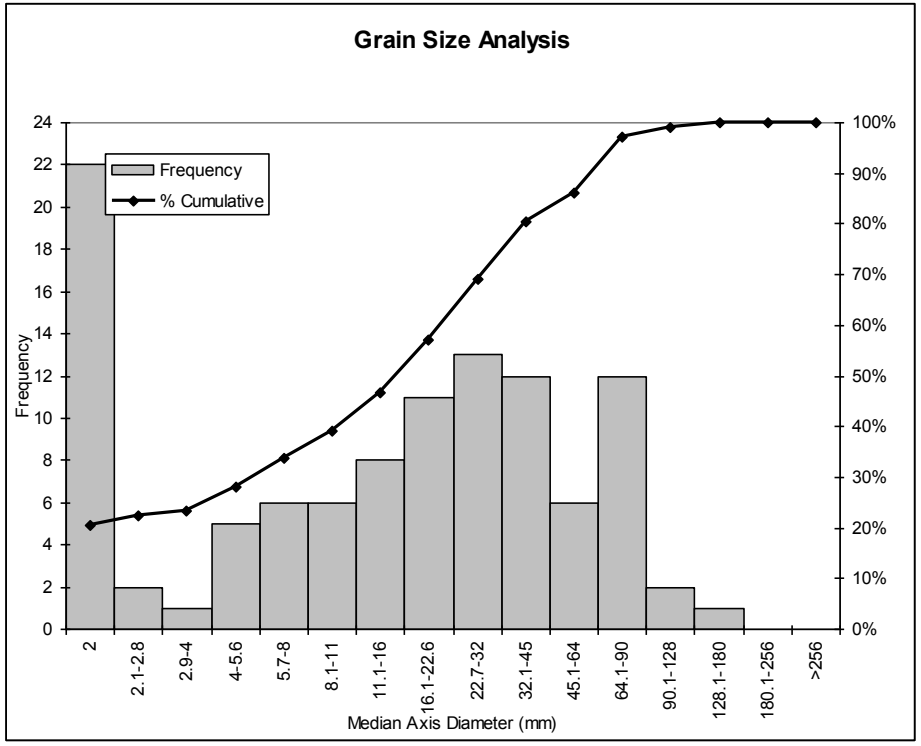
Bank composition detail at FGNK12

Looking upstream towards site from terrace on reach FGNK12

PHOTOGRAPH DOCUMENTATION: FGNK12

Oblique of site FGNK12

PEBBLE COUNT DISTRIBUTION: FGNK12



Size Class mm	*Frequency*	*Cumulative %*
2	22	20.6%
2.1-2.8	2	22.4%
2.9-4	1	23.4%
4-5.6	5	28.0%
5.7-8	6	33.6%
8.1-11	6	39.3%
11.1-16	8	46.7%
16.1-22.6	11	57.0%
22.7-32	13	69.2%
32.1-45	12	80.4%
45.1-64	6	86.0%
64.1-90	12	97.2%
90.1-128	2	99.1%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

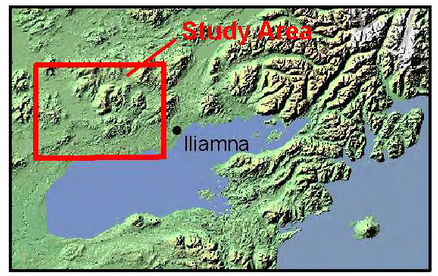
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK12
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Feet
0 110 220 330 440

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGNK13

Site Characteristics.

Site Name	**FGNK13**		
Discharge (cfs)	**250 (200-300)**	Width (ft)	**25.9 (22.4-29.2)**
Slope	**0.0019**	Cross-sectional Area (ft^2)	**65 (49-87)**
(1) D_{50}	**40**	D_{84}	**95**
(1-modified) D_{50}	**39**	D_{84}	**85**
(2) D_{50}	**29**	D_{84}	**51**
Lat/Long Location	**N59.95026 W155.33770**	Drainage Area (mi^2)	**18**
% Willow	**15**		
% Grass	**85**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed 10 cross-sections along 260 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model and represents the crest of the pool. Sections 6-10 represent the riffle which serves as the reference reach. Lag sediments were noted in the field and pebble count 1, sampled between Section 8 and 9, has a wide distribution, also suggests the presence of lag. Rocks in the 256 mm and the greater than 256 mm categories were removed from pebble count 1 in an attempt to remove the immobile fractions from the incipient motion analysis. Pebble count 2 was taken between Sections 6 and 7.

Bed mobility varies considerably through this reach. In the upper sections of the reference reach (Sections 10 and 9) for a Shields number of 0.017, the D_{84} of pebble count 2 moves between 200 and 275 cfs and for a Shields number of 0.026, the D_{50} moves by 200 cfs. The middle two sections of the reference reach (Sections 8 and 7) are not able to move the D_{84} and can only move the D_{50} on Section 8 at 300 cfs from pebble count 2 while Section 6 moves both size classes by 200 cfs. The D_{84} from pebble count 1 is effectively immobile through the reference reach for the range of channel forming discharges further suggesting the presence of lag beyond what is accounted for by the modified distribution. Flows between 225 and 275 cfs match the geometry well, notably the right bank through the reference reach.

The reference reach sections (Sections 6-10) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK13

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK13	10	200-cfs	200	24.4	51	2.1	2.6	0.0024	3.8	0.47	0.30	0.030
FGNK13	10	225-cfs	225	24.4	55	2.2	2.8	0.0023	3.9	0.46	0.31	0.030
FGNK13	10	250-cfs	250	24.4	58	2.4	2.9	0.0023	4.0	0.46	0.32	0.030
FGNK13	10	275-cfs	275	24.4	61	2.5	3.0	0.0023	4.2	0.47	0.34	0.030
FGNK13	10	300-cfs	300	24.4	64	2.6	3.2	0.0022	4.2	0.46	0.34	0.030
FGNK13	9	200-cfs	200	25.5	54	2.1	2.4	0.0022	3.6	0.44	0.27	0.030
FGNK13	9	225-cfs	225	25.5	58	2.3	2.6	0.0021	3.7	0.44	0.28	0.030
FGNK13	9	250-cfs	250	25.5	62	2.4	2.7	0.0020	3.8	0.43	0.28	0.030
FGNK13	9	275-cfs	275	25.5	64	2.5	2.8	0.0020	3.9	0.44	0.29	0.030
FGNK13	9	300-cfs	300	25.5	67	2.6	3.0	0.0020	4.0	0.44	0.30	0.030
FGNK13	8	200-cfs	200	27.6	62	2.2	2.4	0.0015	3.2	0.37	0.20	0.030
FGNK13	8	225-cfs	225	27.6	66	2.4	2.5	0.0015	3.3	0.38	0.21	0.030
FGNK13	8	250-cfs	250	27.6	70	2.5	2.7	0.0015	3.5	0.38	0.23	0.030
FGNK13	8	275-cfs	275	27.6	73	2.7	2.8	0.0015	3.6	0.39	0.24	0.030
FGNK13	8	300-cfs	300	27.6	76	2.8	2.9	0.0016	3.7	0.39	0.25	0.030
FGNK13	7	200-cfs	200	29.2	72	2.5	2.8	0.0010	2.8	0.31	0.15	0.030
FGNK13	7	225-cfs	225	29.2	76	2.6	3.0	0.0010	2.9	0.32	0.16	0.030
FGNK13	7	250-cfs	250	29.2	81	2.8	3.1	0.0011	3.1	0.33	0.17	0.030
FGNK13	7	275-cfs	275	29.2	84	2.9	3.2	0.0011	3.3	0.34	0.19	0.030
FGNK13	7	300-cfs	300	29.2	87	3.0	3.3	0.0012	3.4	0.35	0.21	0.030
FGNK13	6	200-cfs	200	22.4	49	2.2	2.6	0.0027	4.0	0.48	0.33	0.030
FGNK13	6	225-cfs	225	22.6	52	2.3	2.8	0.0027	4.3	0.49	0.36	0.030
FGNK13	6	250-cfs	250	22.8	55	2.4	2.9	0.0028	4.5	0.50	0.39	0.030
FGNK13	6	275-cfs	275	22.9	58	2.6	3.1	0.0027	4.5	0.49	0.39	0.030
FGNK13	6	300-cfs	300	22.9	61	2.7	3.2	0.0026	4.5	0.49	0.39	0.030
FGNK13	5	200-cfs	200	30.6	63	2.1	2.7	0.0016	3.1	0.38	0.19	0.030
FGNK13	5	225-cfs	225	30.6	68	2.2	2.9	0.0015	3.1	0.37	0.20	0.030
FGNK13	5	250-cfs	250	30.6	73	2.4	3.1	0.0014	3.2	0.37	0.20	0.030

HEC-RAS OUTPUT SUMMARY TABLE: FGNK13

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK13	5	275-cfs	275	30.6	77	2.5	3.2	0.0014	3.3	0.36	0.20	0.030
FGNK13	5	300-cfs	300	30.6	80	2.6	3.3	0.0013	3.3	0.36	0.21	0.030
FGNK13	4	200-cfs	200	31.8	68	2.1	3.6	0.0013	2.9	0.34	0.17	0.030
FGNK13	4	225-cfs	225	31.8	73	2.3	3.8	0.0013	3.0	0.35	0.18	0.030
FGNK13	4	250-cfs	250	31.8	78	2.4	3.9	0.0013	3.1	0.35	0.18	0.030
FGNK13	4	275-cfs	275	31.8	82	2.6	4.1	0.0013	3.2	0.35	0.19	0.030
FGNK13	4	300-cfs	300	31.8	86	2.7	4.2	0.0013	3.3	0.35	0.20	0.030
FGNK13	3	200-cfs	200	25.9	73	2.8	3.7	0.0008	2.6	0.27	0.13	0.030
FGNK13	3	225-cfs	225	25.9	77	3.0	3.9	0.0008	2.7	0.28	0.13	0.030
FGNK13	3	250-cfs	250	25.9	81	3.1	4.0	0.0008	2.8	0.28	0.14	0.030
FGNK13	3	275-cfs	275	25.9	84	3.2	4.1	0.0008	2.9	0.28	0.15	0.030
FGNK13	3	300-cfs	300	25.9	87	3.4	4.3	0.0008	2.9	0.28	0.15	0.030
FGNK13	2	200-cfs	200	25.9	66	2.5	3.7	0.0010	2.8	0.30	0.15	0.030
FGNK13	2	225-cfs	225	25.9	70	2.7	3.9	0.0010	2.8	0.30	0.15	0.030
FGNK13	2	250-cfs	250	25.9	74	2.9	4.1	0.0009	2.9	0.30	0.15	0.030
FGNK13	2	275-cfs	275	25.9	77	3.0	4.2	0.0009	2.9	0.30	0.16	0.030
FGNK13	2	300-cfs	300	25.9	81	3.1	4.3	0.0009	3.0	0.30	0.16	0.030
FGNK13	1	200-cfs	200	28.6	62	2.2	2.7	0.0016	3.2	0.38	0.20	0.030
FGNK13	1	225-cfs	225	28.8	67	2.3	2.9	0.0016	3.3	0.38	0.22	0.030
FGNK13	1	250-cfs	250	28.8	71	2.5	3.0	0.0016	3.5	0.39	0.23	0.030
FGNK13	1	275-cfs	275	28.8	74	2.6	3.1	0.0016	3.6	0.39	0.24	0.030
FGNK13	1	300-cfs	300	28.8	78	2.7	3.2	0.0016	3.7	0.39	0.25	0.030

HEC-RAS LONGITUDINAL PROFILE: FGNK13

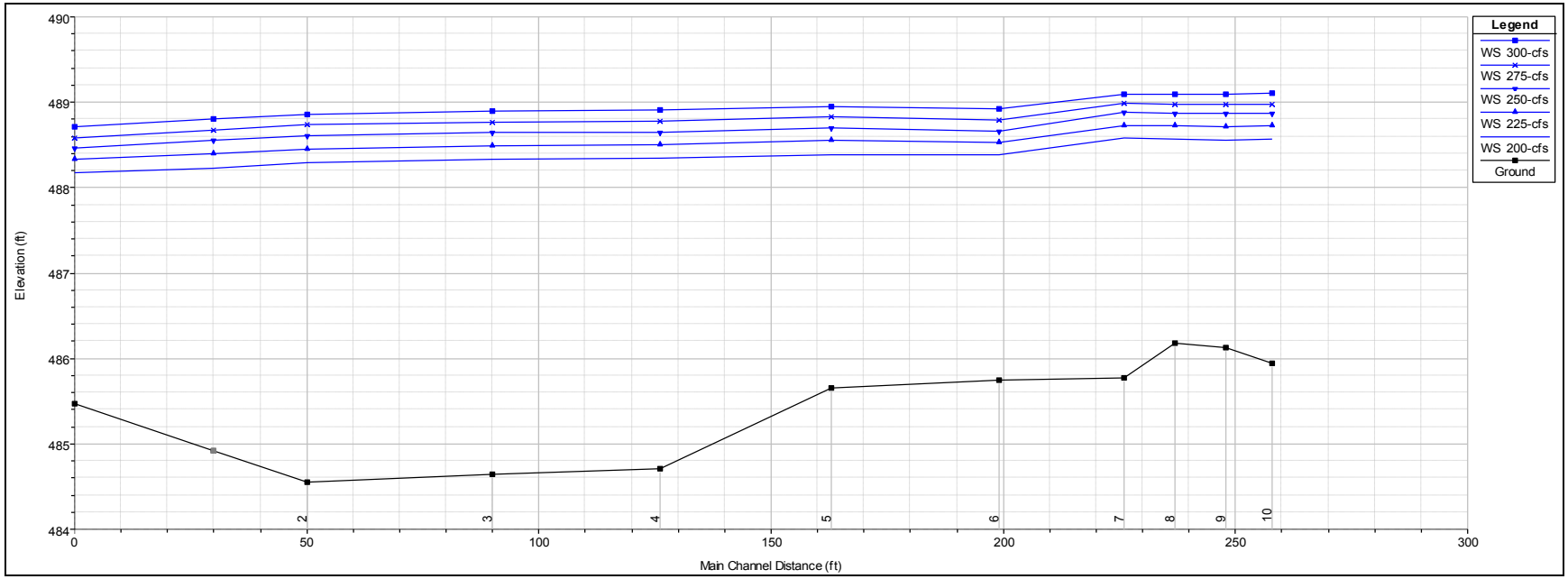


Figure 94 HEC-RAS longitudinal profile output for Reach FGNK13. Numbers 1-10 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

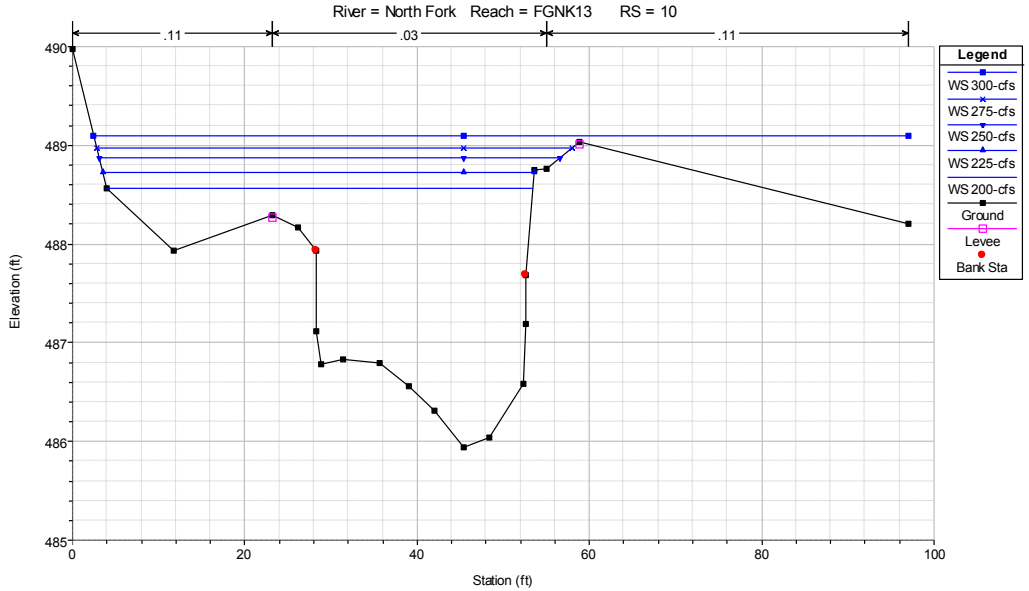


Figure 95 River Station (RS) 10 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

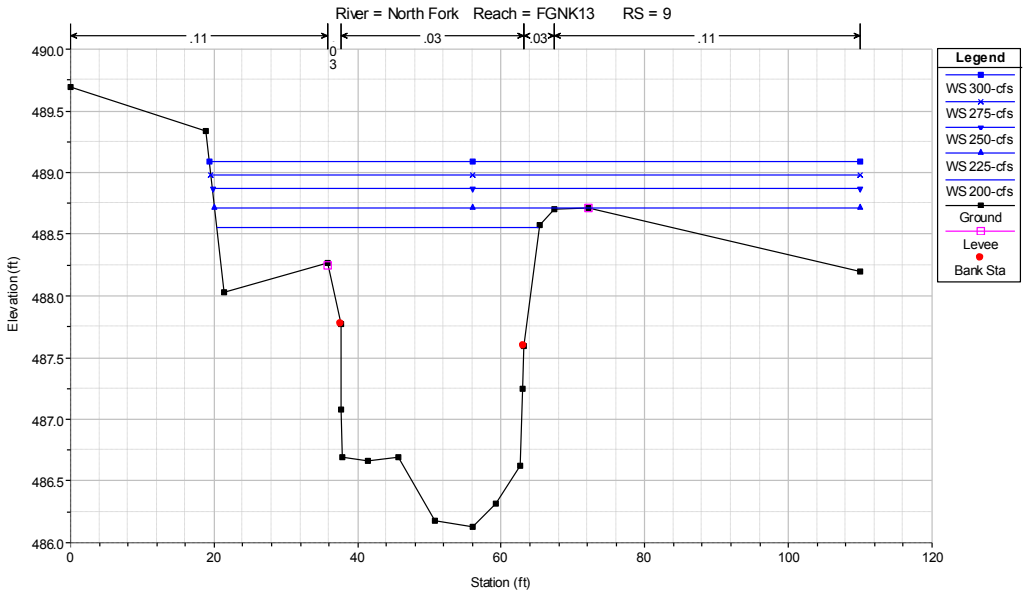


Figure 96 River Station (RS) 9 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

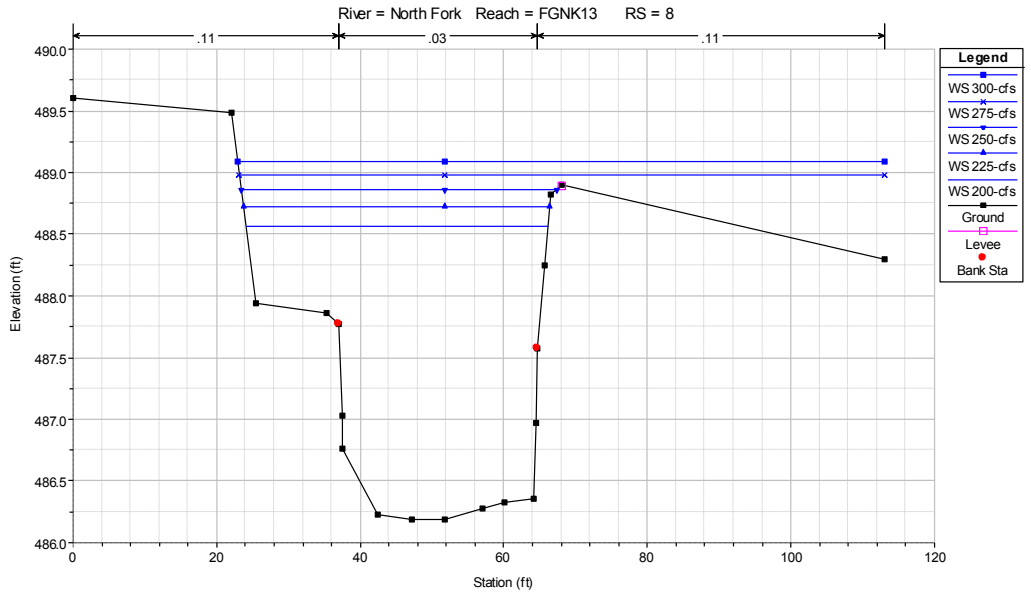


Figure 97 River Station (RS) 8 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

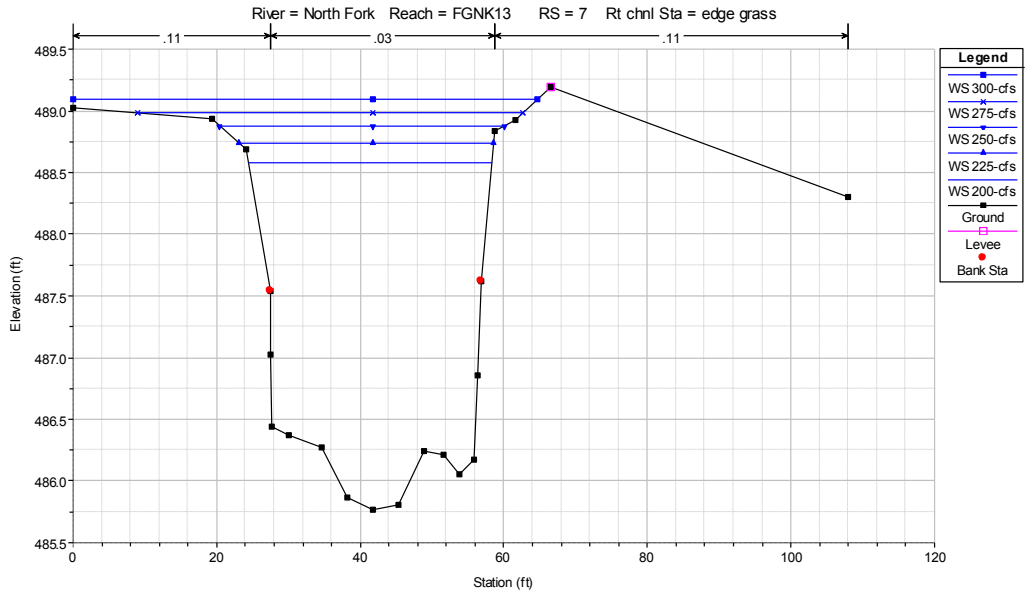


Figure 98 River Station (RS) 7 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

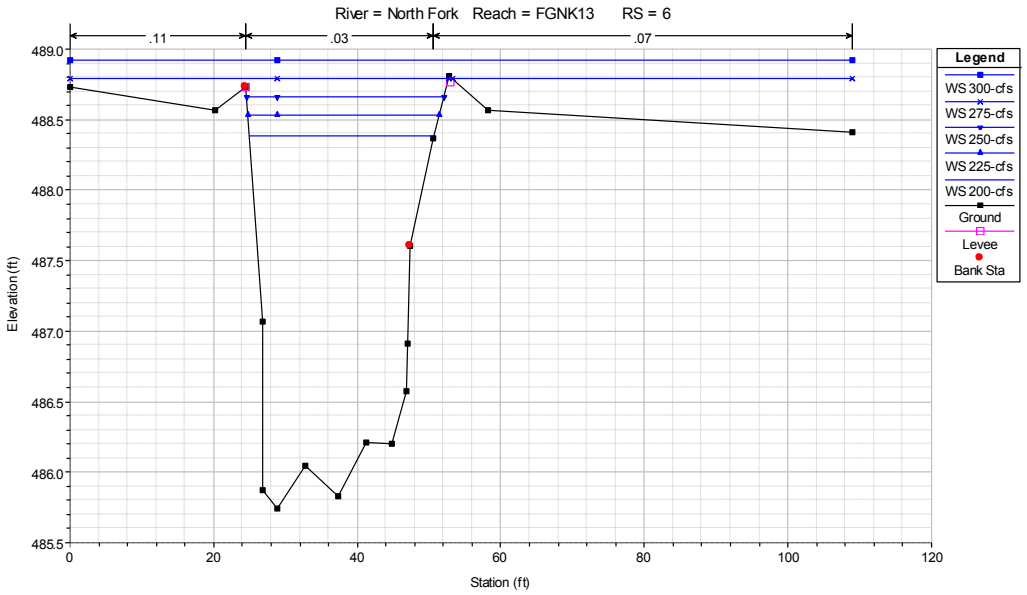


Figure 99 River Station (RS) 6 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

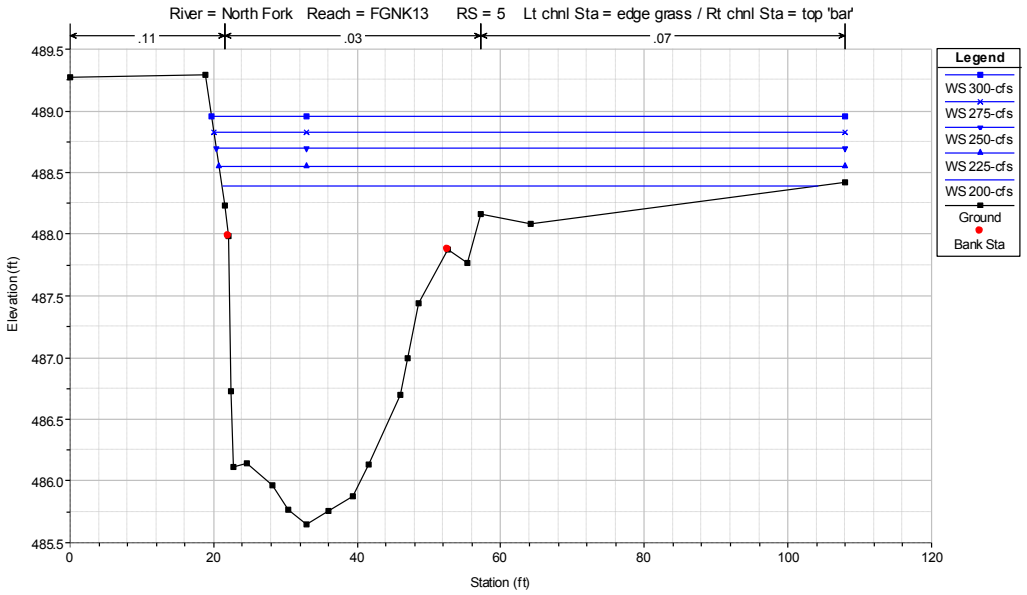


Figure 100 River Station (RS) 5 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

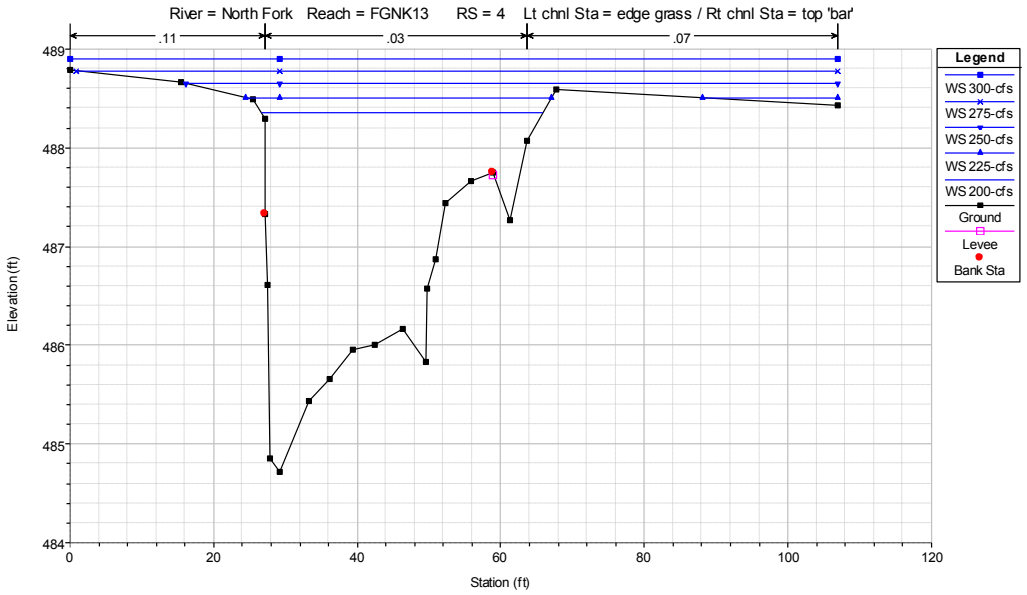


Figure 101 River Station (RS) 4 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

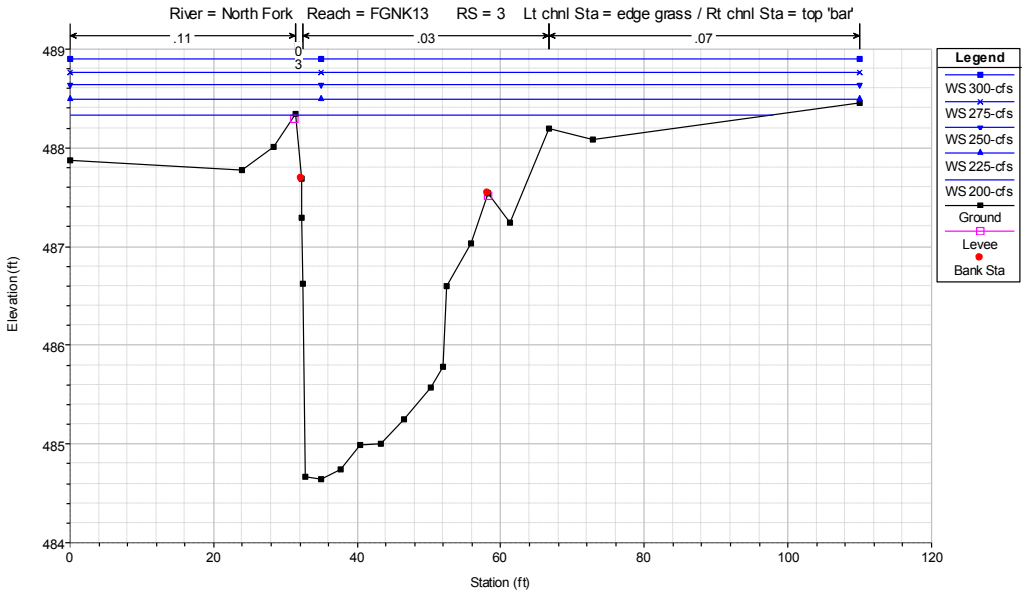


Figure 102 River Station (RS) 3 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

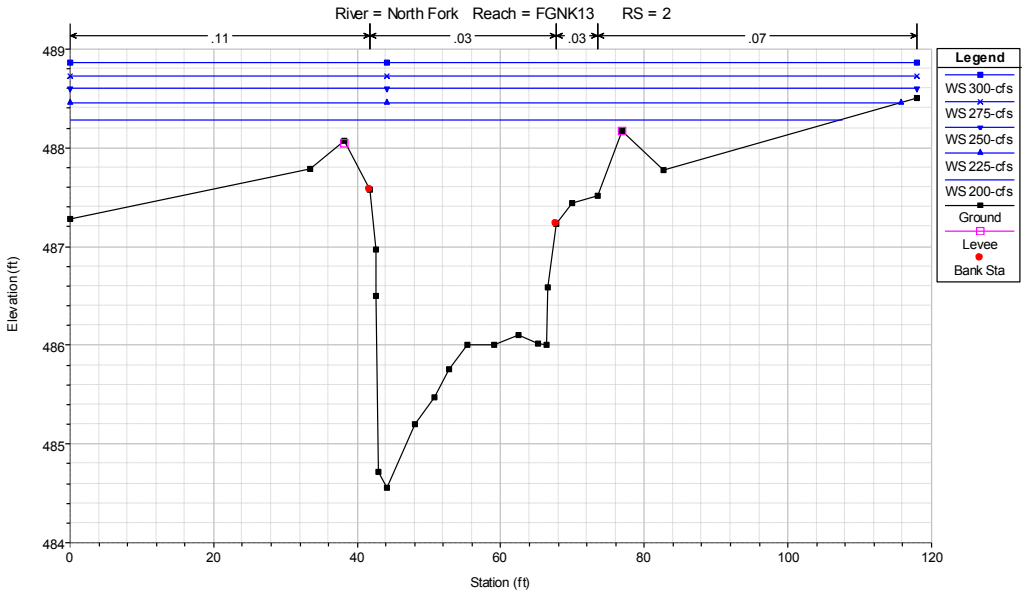


Figure 103 River Station (RS) 2 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK13

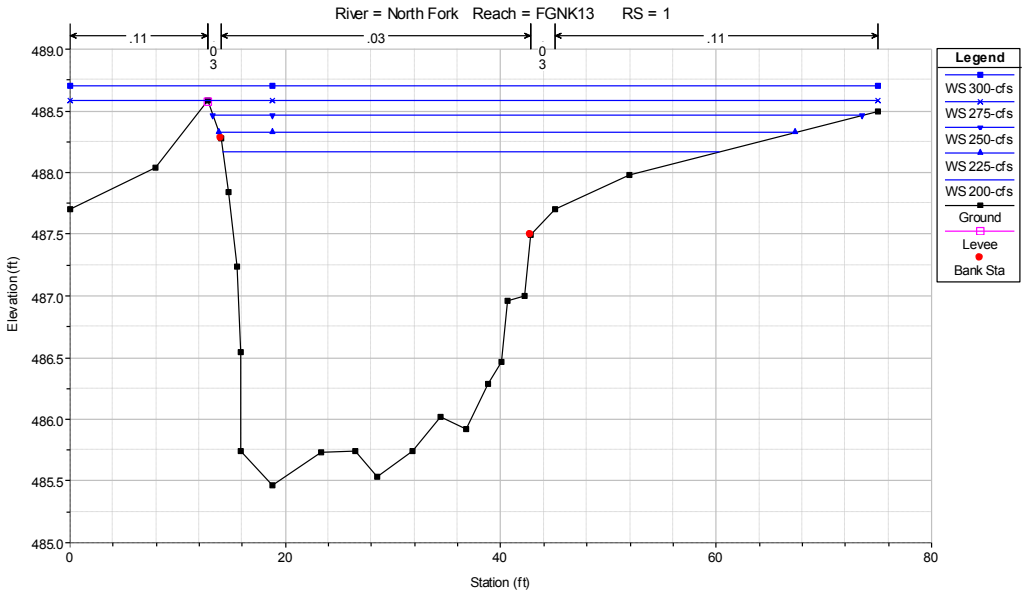


Figure 104 River Station (RS) 1 on River Reach FGNK13. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK13

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK13	10	200-cfs	0.30	54	44	35
FGNK13	10	225-cfs	0.31	56	45	36
FGNK13	10	250-cfs	0.32	58	47	38
FGNK13	10	275-cfs	0.34	61	50	40
FGNK13	10	300-cfs	0.34	61	50	40
FGNK13	9	200-cfs	0.27	49	39	32
FGNK13	9	225-cfs	0.27	49	39	32
FGNK13	9	250-cfs	0.28	50	41	33
FGNK13	9	275-cfs	0.29	52	42	34
FGNK13	9	300-cfs	0.30	54	44	35
FGNK13	8	200-cfs	0.20	36	29	24
FGNK13	8	225-cfs	0.21	38	31	25
FGNK13	8	250-cfs	0.23	41	34	27
FGNK13	8	275-cfs	0.24	43	35	28
FGNK13	8	300-cfs	0.25	45	36	29
FGNK13	7	200-cfs	0.15	27	22	18
FGNK13	7	225-cfs	0.16	29	23	19
FGNK13	7	250-cfs	0.17	31	25	20
FGNK13	7	275-cfs	0.19	34	28	22
FGNK13	7	300-cfs	0.21	38	31	25
FGNK13	6	200-cfs	0.33	59	48	39
FGNK13	6	225-cfs	0.36	65	52	42
FGNK13	6	250-cfs	0.39	70	57	46
FGNK13	6	275-cfs	0.39	70	57	46
FGNK13	6	300-cfs	0.39	70	57	46
FGNK13	5	200-cfs	0.19	34	28	22
FGNK13	5	225-cfs	0.20	36	29	24

INCIPIENT MOTION ANALYSIS: FGNK13

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK13	5	250-cfs	0.20	36	29	24
FGNK13	5	275-cfs	0.20	36	29	24
FGNK13	5	300-cfs	0.21	38	31	25
FGNK13	4	200-cfs	0.17	31	25	20
FGNK13	4	225-cfs	0.18	32	26	21
FGNK13	4	250-cfs	0.18	32	26	21
FGNK13	4	275-cfs	0.19	34	28	22
FGNK13	4	300-cfs	0.20	36	29	24
FGNK13	3	200-cfs	0.13	23	19	15
FGNK13	3	225-cfs	0.13	23	19	15
FGNK13	3	250-cfs	0.14	25	20	16
FGNK13	3	275-cfs	0.15	27	22	18
FGNK13	3	300-cfs	0.15	27	22	18
FGNK13	2	200-cfs	0.15	27	22	18
FGNK13	2	225-cfs	0.15	27	22	18
FGNK13	2	250-cfs	0.15	27	22	18
FGNK13	2	275-cfs	0.16	29	23	19
FGNK13	2	300-cfs	0.16	29	23	19
FGNK13	1	200-cfs	0.20	36	29	24
FGNK13	1	225-cfs	0.22	40	32	26
FGNK13	1	250-cfs	0.23	41	34	27
FGNK13	1	275-cfs	0.24	43	35	28
FGNK13	1	300-cfs	0.25	45	36	29

PHOTOGRAPH DOCUMENTATION: FGNK13

Left bank along reference reach FGNK13

Right bank along reference reach FGNK13

Looking downstream from reference reach FGNK13

Looking upstream from reference reach FGNK13

PHOTOGRAPH DOCUMENTATION: FGNK13

Bank composition detail (right bank) FGNK13

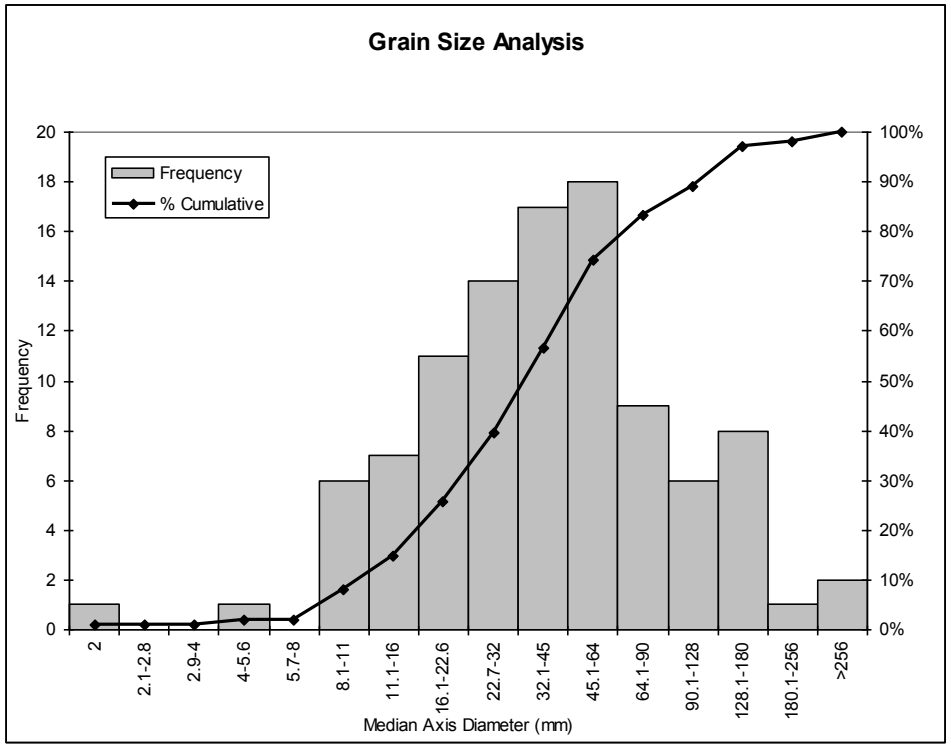
Bank composition detail (left bank) FGNK13

PHOTOGRAPH DOCUMENTATION: FGNK13

Oblique of site

PEBBLE COUNT DISTRIBUTION: FGNK13

Pebble Count 1 Original

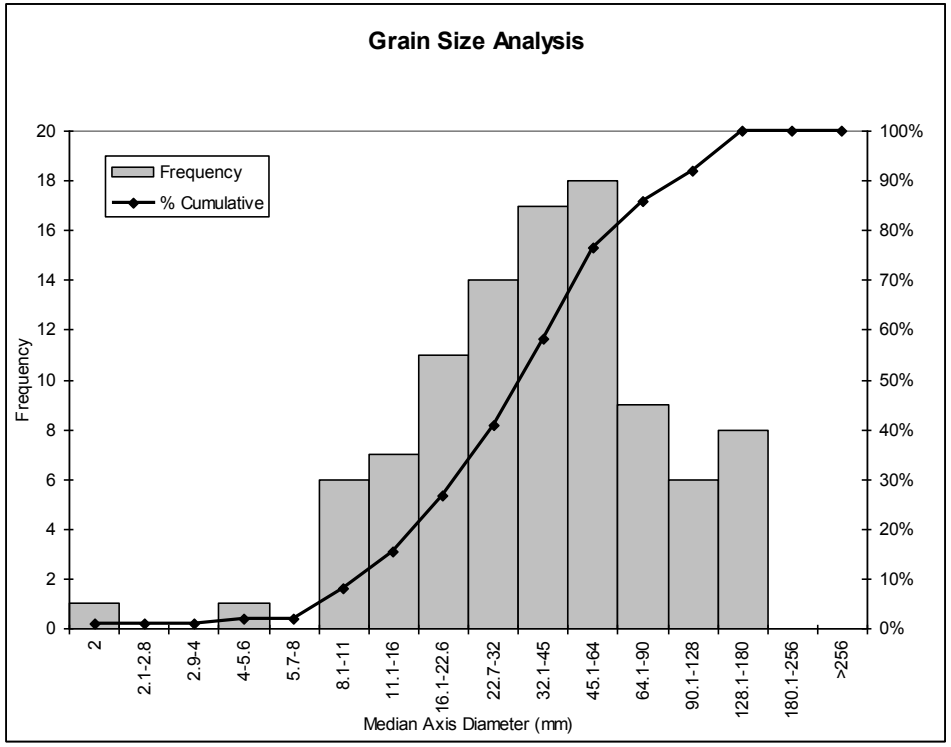


Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	0	1.0%
2.9-4	0	1.0%
4-5.6	1	2.0%
5.7-8	0	2.0%
8.1-11	6	7.9%
11.1-16	7	14.9%
16.1-22.6	11	25.7%
22.7-32	14	39.6%
32.1-45	17	56.4%
45.1-64	18	74.3%
64.1-90	9	83.2%
90.1-128	6	89.1%
128.1-180	8	97.0%
180.1-256	1	98.0%
>256	2	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 8 and 9

PEBBLE COUNT DISTRIBUTION: FGNK13

Pebble Count 1 Modified

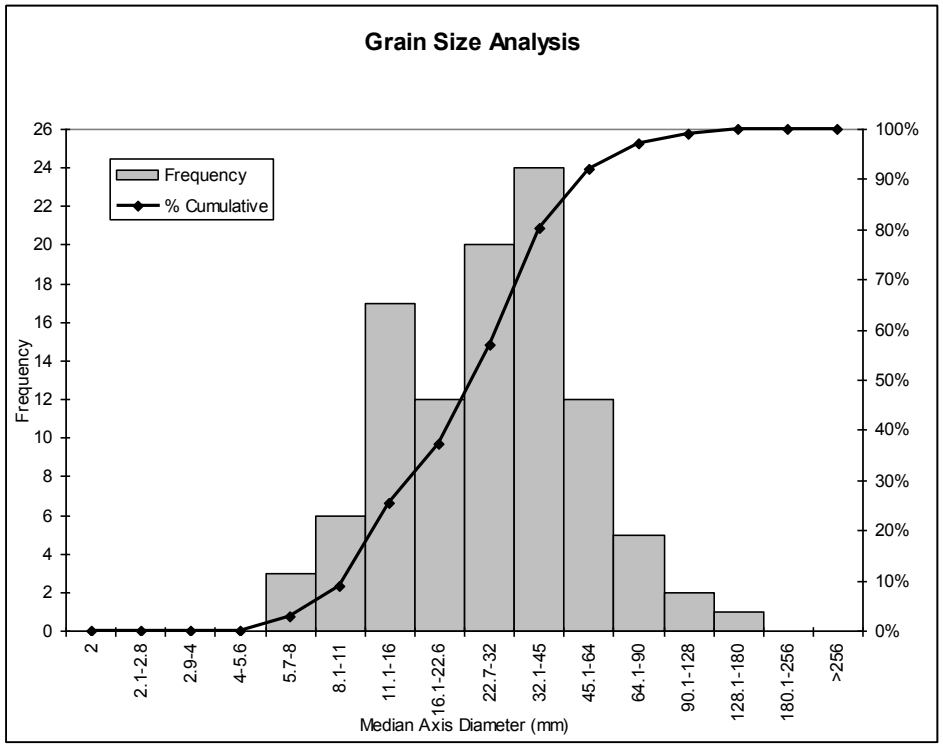


Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	0	1.0%
2.9-4	0	1.0%
4-5.6	1	2.0%
5.7-8	0	2.0%
8.1-11	6	8.2%
11.1-16	7	15.3%
16.1-22.6	11	26.5%
22.7-32	14	40.8%
32.1-45	17	58.2%
45.1-64	18	76.5%
64.1-90	9	85.7%
90.1-128	6	91.8%
128.1-180	8	100.0%
180.1-256	0*	100.0%
>256	0**	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 8 and 9
*Potential lag removed from pebble count 1(count: 1)
** Potential lag removed from pebble count 1 (count: 2)

PEBBLE COUNT DISTRIBUTION: FGNK13

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	3	2.9%
8.1-11	6	8.8%
11.1-16	17	25.5%
16.1-22.6	12	37.3%
22.7-32	20	56.9%
32.1-45	24	80.4%
45.1-64	12	92.2%
64.1-90	5	97.1%
90.1-128	2	99.0%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

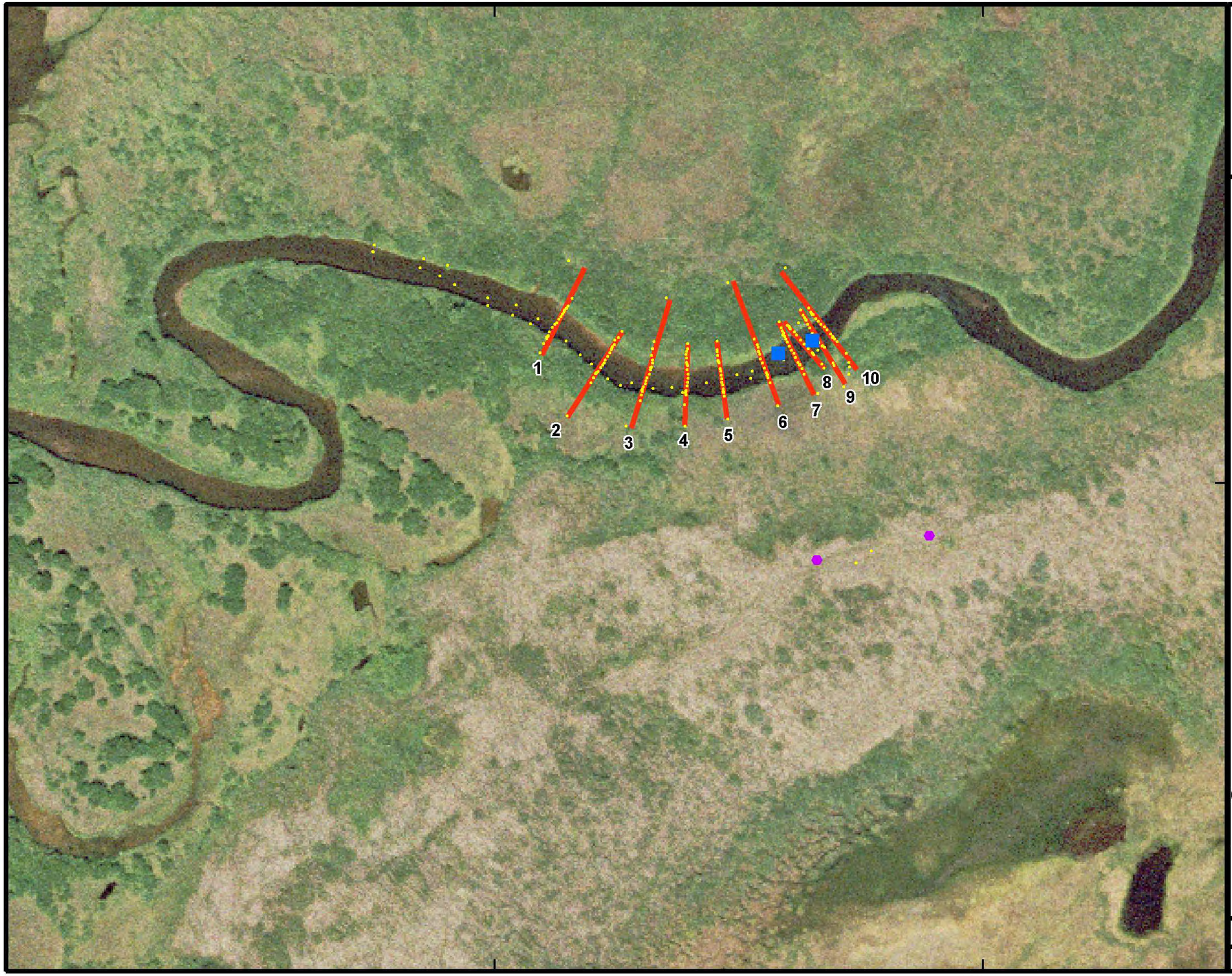
Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 5 and 6

1,394,531

1,394,931

1,395,331

2,176,074

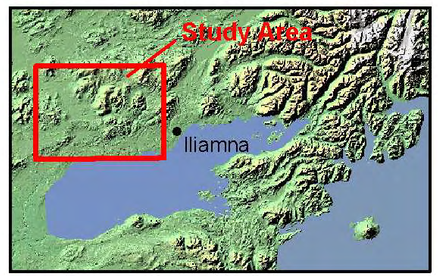


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK13
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,394,531

1,394,931

1,395,331

SITE DESCRIPTION: FGNK14

Site Characteristics.

	Site Name	**FGNK14**	
Discharge (cfs)	**165 (135-185)**	Width (ft)	**22.4 (22.4-22.5)**
Slope	**0.0019**	Cross-sectional Area (ft^2)	**52 (47-57)**
D_{50}	**21**	D_{84}	**47**
Lat/Long Location	**N59.95538 W155.33292**	Drainage Area (mi^2)	**13**
	% Willow	**15**	
	% Grass	**85**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 120 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model and the crest of the pool. Sections 5 through 4 characterize the riffle which serves as the reference reach through which the pebble count was taken. Sections 4 through 1 characterize the pool.

The incipient motion analysis show strong agreement within the reference reach (Sections 4 and 5). For a Shields number of 0.017, the D_{84} particle begins movement between 160 and 175 cfs and for a Shields number of 0.026, the D_{50} is mobile by 135 cfs. For a Shields number of 0.017, the D_{84} is also mobile through Section 6 at a flow of 160 cfs. While the geometry and field indicators of channel forming discharges (including natural levees) through the reference reach match flows closer to 185 cfs or greater, the bed mobility was more convincing. Features like levees may be a remnant of a recent large flood. Through the lower pool sections (3 through 1), the range of channel forming discharges matches the top of the gravel bar well.

The reference reach sections (Sections 4 and 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK14

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK14	6	135-cfs	135	15.1	47	3.1	3.4	0.0014	2.9	0.29	0.21	0.035
FGNK14	6	145-cfs	145	15.1	48	3.2	3.5	0.0014	3.0	0.30	0.23	0.035
FGNK14	6	155-cfs	155	15.1	49	3.2	3.6	0.0015	3.2	0.31	0.25	0.035
FGNK14	6	160-cfs	160	15.1	50	3.3	3.6	0.0015	3.2	0.31	0.26	0.035
FGNK14	6	165-cfs	165	15.1	50	3.3	3.6	0.0016	3.3	0.32	0.27	0.035
FGNK14	6	175-cfs	175	15.1	51	3.4	3.7	0.0017	3.4	0.33	0.29	0.035
FGNK14	6	185-cfs	185	15.1	52	3.5	3.8	0.0017	3.5	0.34	0.31	0.035
FGNK14	5	135-cfs	135	22.5	47	2.1	2.3	0.0019	2.9	0.35	0.23	0.035
FGNK14	5	145-cfs	145	22.5	49	2.2	2.4	0.0019	3.0	0.35	0.24	0.035
FGNK14	5	155-cfs	155	22.5	51	2.3	2.5	0.0019	3.0	0.36	0.25	0.035
FGNK14	5	160-cfs	160	22.5	52	2.3	2.6	0.0020	3.1	0.36	0.26	0.035
FGNK14	5	165-cfs	165	22.5	52	2.3	2.6	0.0020	3.1	0.36	0.26	0.035
FGNK14	5	175-cfs	175	22.5	54	2.4	2.7	0.0020	3.2	0.37	0.28	0.035
FGNK14	5	185-cfs	185	22.5	55	2.5	2.7	0.0021	3.3	0.37	0.29	0.035
FGNK14	4	135-cfs	135	22.4	48	2.2	2.6	0.0017	2.8	0.33	0.21	0.035
FGNK14	4	145-cfs	145	22.4	50	2.2	2.7	0.0017	2.9	0.34	0.22	0.035
FGNK14	4	155-cfs	155	22.4	52	2.3	2.8	0.0018	3.0	0.34	0.24	0.035
FGNK14	4	160-cfs	160	22.4	53	2.4	2.8	0.0018	3.0	0.34	0.24	0.035
FGNK14	4	165-cfs	165	22.4	54	2.4	2.8	0.0018	3.1	0.35	0.25	0.035
FGNK14	4	175-cfs	175	22.4	55	2.5	2.9	0.0018	3.2	0.35	0.26	0.035
FGNK14	4	185-cfs	185	22.4	57	2.5	3.0	0.0019	3.2	0.36	0.27	0.035
FGNK14	3	135-cfs	135	22.1	43	2.0	3.1	0.0025	3.1	0.39	0.27	0.035
FGNK14	3	145-cfs	145	22.1	45	2.1	3.2	0.0025	3.2	0.39	0.29	0.035
FGNK14	3	155-cfs	155	22.1	47	2.1	3.3	0.0025	3.3	0.40	0.30	0.035
FGNK14	3	160-cfs	160	22.1	48	2.2	3.3	0.0025	3.3	0.40	0.30	0.035
FGNK14	3	165-cfs	165	22.1	49	2.2	3.4	0.0025	3.4	0.40	0.31	0.035
FGNK14	3	175-cfs	175	22.1	50	2.3	3.4	0.0025	3.5	0.41	0.33	0.035
FGNK14	3	185-cfs	185	22.1	52	2.3	3.5	0.0025	3.5	0.41	0.34	0.035

HEC-RAS OUTPUT SUMMARY TABLE: FGNK14

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK14	2	135-cfs	135	15.2	51	3.4	4.1	0.0009	2.5	0.24	0.16	0.035
FGNK14	2	145-cfs	145	15.2	52	3.4	4.2	0.0010	2.6	0.25	0.17	0.035
FGNK14	2	155-cfs	155	15.2	54	3.5	4.3	0.0010	2.7	0.26	0.18	0.035
FGNK14	2	160-cfs	160	15.2	54	3.6	4.3	0.0010	2.8	0.26	0.19	0.035
FGNK14	2	165-cfs	165	15.2	55	3.6	4.4	0.0011	2.8	0.26	0.19	0.035
FGNK14	2	175-cfs	175	15.2	56	3.7	4.4	0.0011	2.9	0.27	0.21	0.035
FGNK14	2	185-cfs	185	15.2	57	3.7	4.5	0.0011	3.0	0.28	0.22	0.035
FGNK14	1	135-cfs	135	24.6	50	2.0	2.4	0.0016	2.7	0.33	0.19	0.035
FGNK14	1	145-cfs	145	24.6	52	2.1	2.5	0.0016	2.7	0.33	0.20	0.035
FGNK14	1	155-cfs	155	24.6	54	2.2	2.6	0.0016	2.8	0.33	0.21	0.035
FGNK14	1	160-cfs	160	24.6	55	2.2	2.6	0.0016	2.8	0.33	0.21	0.035
FGNK14	1	165-cfs	165	24.6	56	2.3	2.7	0.0016	2.8	0.33	0.22	0.035
FGNK14	1	175-cfs	175	24.6	57	2.3	2.7	0.0016	2.9	0.34	0.22	0.035
FGNK14	1	185-cfs	185	24.6	59	2.4	2.8	0.0016	3.0	0.34	0.23	0.035

HEC-RAS LONGITUDINAL PROFILE: FGNK14

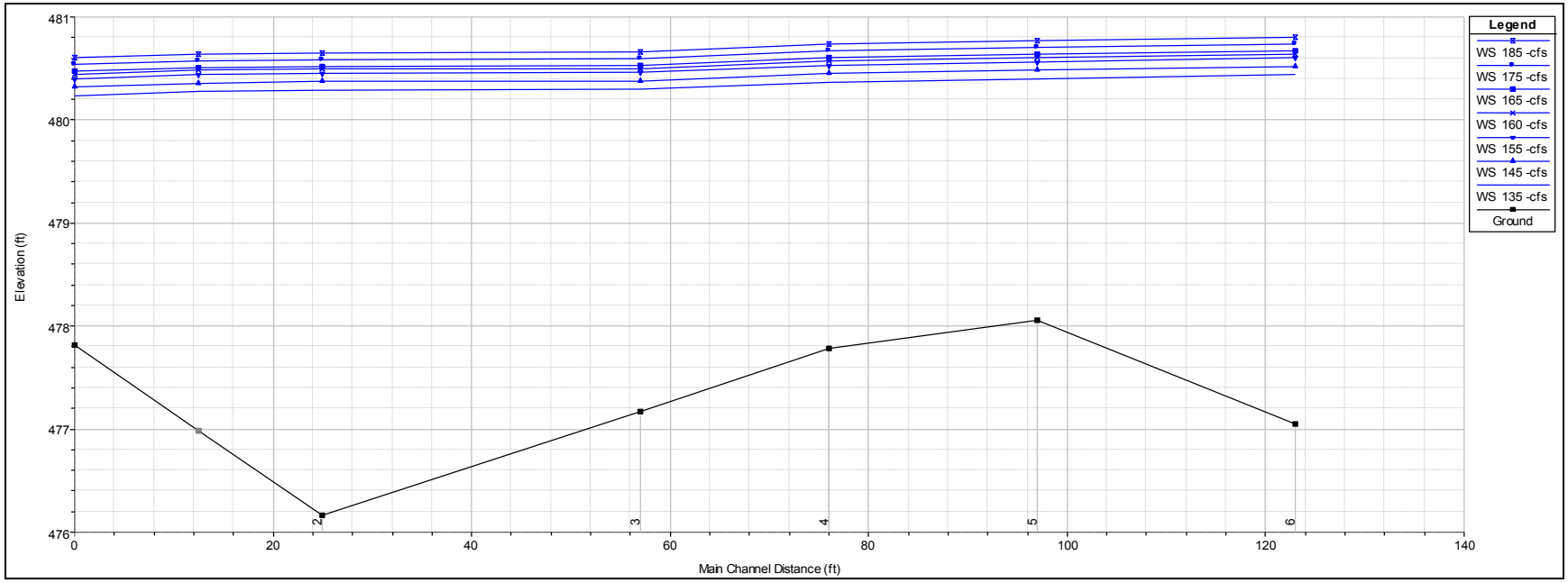


Figure 105 HEC-RAS longitudinal profile output for Reach FGNK14. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK14

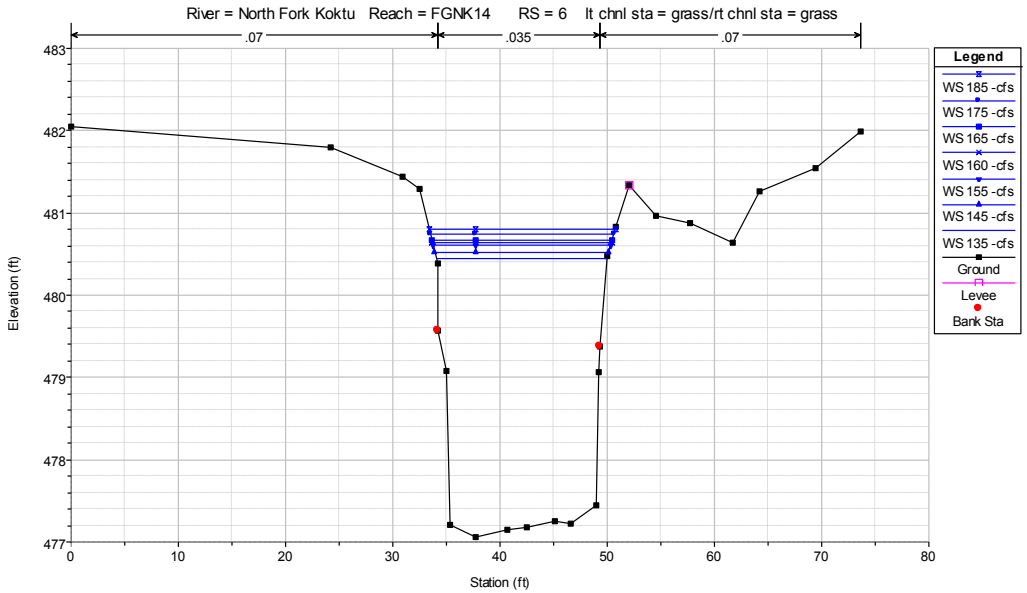


Figure 106 River Station (RS) 6 on River Reach FGNK14. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK14

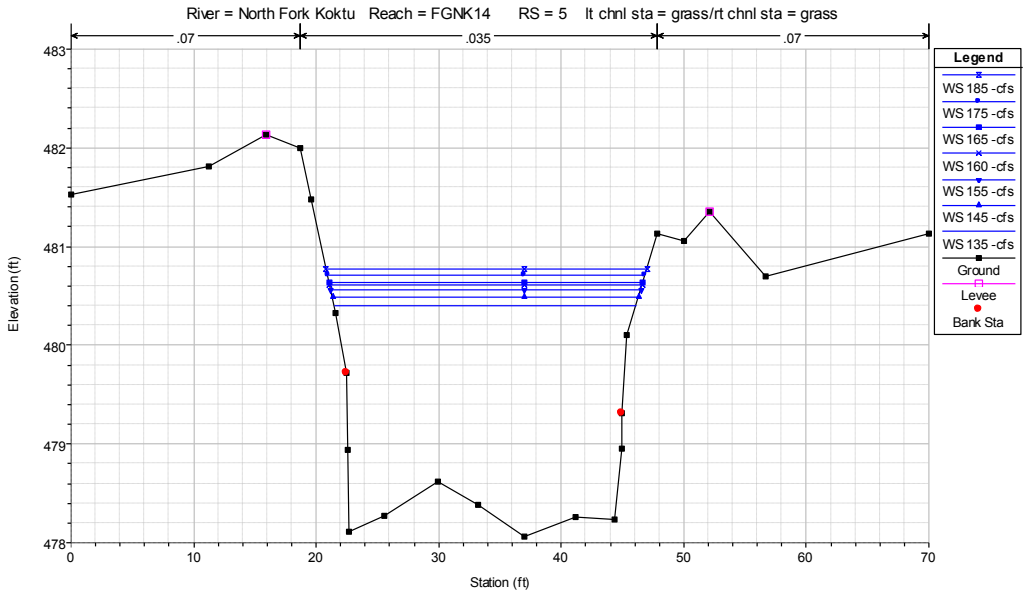


Figure 107 River Station (RS) 5 on River Reach FGNK14. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK14

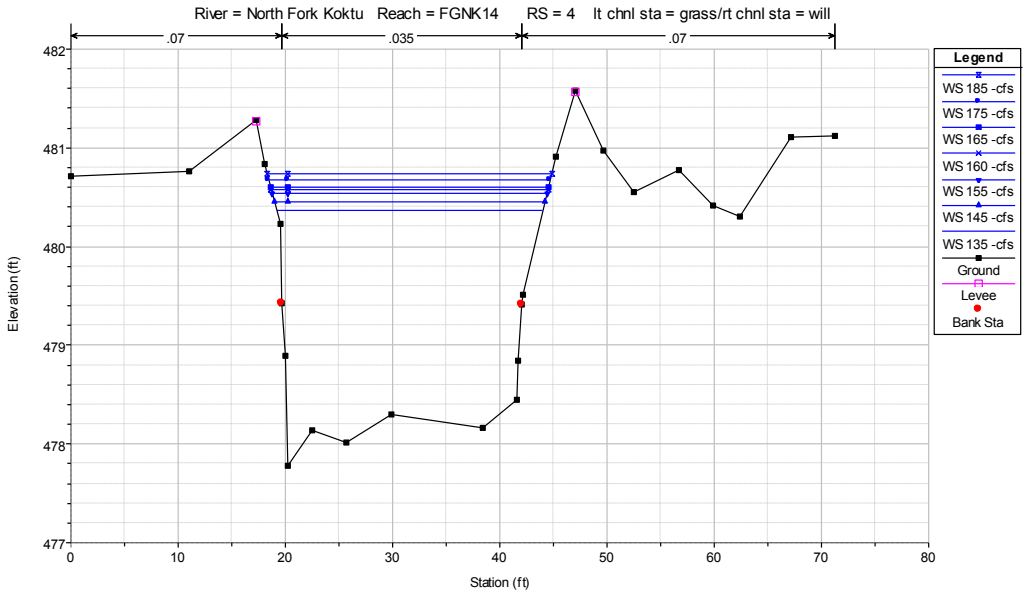


Figure 108 River Station (RS) 4 on River Reach FGNK14. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK14

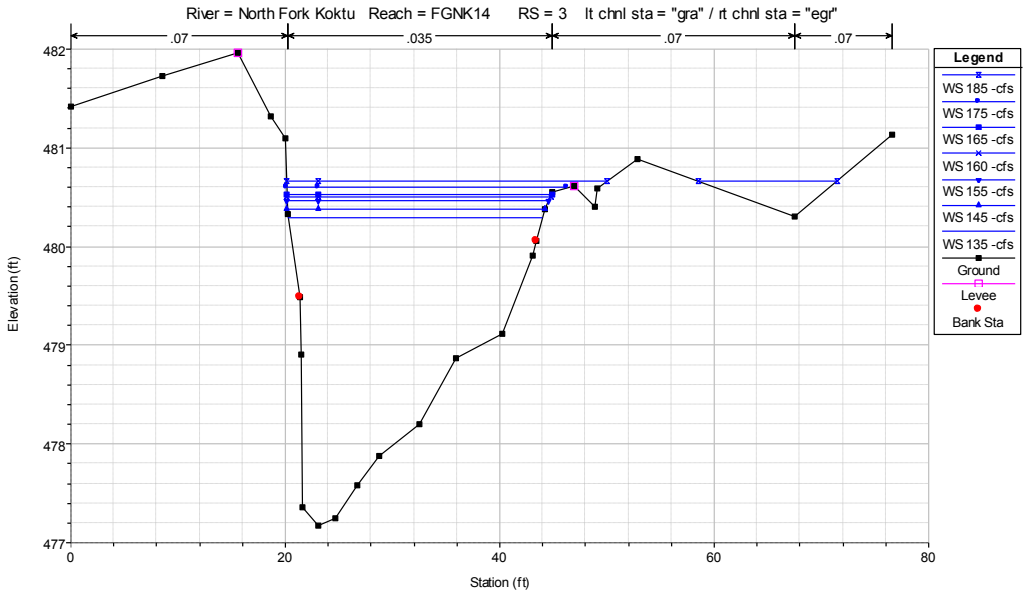


Figure 109 River Station (RS) 3 on River Reach FGNK14. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK14

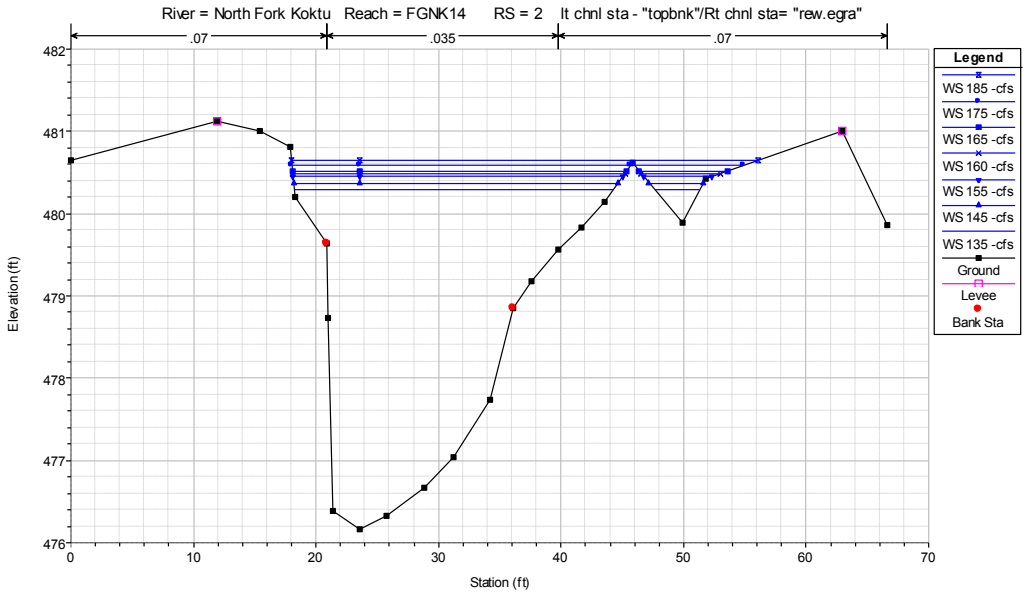


Figure 110 River Station (RS) 2 on River Reach FGNK14. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK14

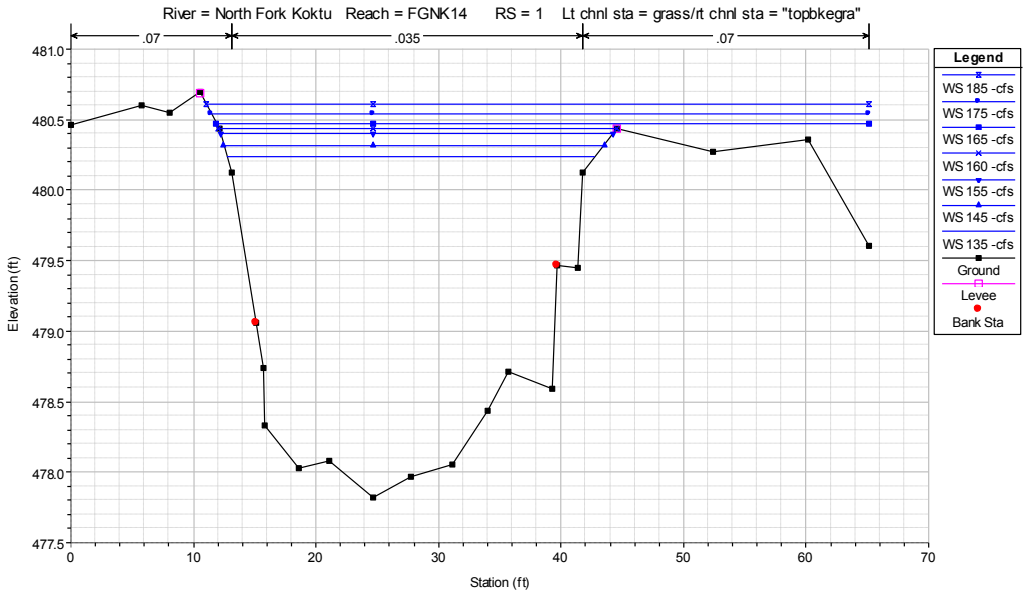


Figure 111 River Station (RS) 1 on River Reach FGNK14. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK14

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK14	6	135-cfs	0.21	38	31	25
FGNK14	6	145-cfs	0.23	41	34	27
FGNK14	6	155-cfs	0.25	45	36	29
FGNK14	6	160-cfs	0.26	47	38	31
FGNK14	6	165-cfs	0.27	49	39	32
FGNK14	6	175-cfs	0.29	52	42	34
FGNK14	6	185-cfs	0.31	56	45	36
FGNK14	5	135-cfs	0.23	41	34	27
FGNK14	5	145-cfs	0.24	43	35	28
FGNK14	5	155-cfs	0.25	45	36	29
FGNK14	5	160-cfs	0.26	47	38	31
FGNK14	5	165-cfs	0.26	47	38	31
FGNK14	5	175-cfs	0.28	50	41	33
FGNK14	5	185-cfs	0.29	52	42	34
FGNK14	4	135-cfs	0.21	38	31	25
FGNK14	4	145-cfs	0.22	40	32	26
FGNK14	4	155-cfs	0.24	43	35	28
FGNK14	4	160-cfs	0.24	43	35	28
FGNK14	4	165-cfs	0.25	45	36	29
FGNK14	4	175-cfs	0.26	47	38	31
FGNK14	4	185-cfs	0.27	49	39	32
FGNK14	3	135-cfs	0.27	49	39	32
FGNK14	3	145-cfs	0.29	52	42	34
FGNK14	3	155-cfs	0.30	54	44	35
FGNK14	3	160-cfs	0.30	54	44	35
FGNK14	3	165-cfs	0.31	56	45	36
FGNK14	3	175-cfs	0.33	59	48	39
FGNK14	3	185-cfs	0.34	61	50	40

INCIPIENT MOTION ANALYSIS: FGNK14

FGNK14	2	135-cfs	0.16	29	23	19
FGNK14	2	145-cfs	0.17	31	25	20
FGNK14	2	155-cfs	0.18	32	26	21
FGNK14	2	160-cfs	0.19	34	28	22
FGNK14	2	165-cfs	0.19	34	28	22
FGNK14	2	175-cfs	0.21	38	31	25
FGNK14	2	185-cfs	0.22	40	32	26
FGNK14	1	135-cfs	0.19	34	28	22
FGNK14	1	145-cfs	0.20	36	29	24
FGNK14	1	155-cfs	0.21	38	31	25
FGNK14	1	160-cfs	0.21	38	31	25
FGNK14	1	165-cfs	0.22	40	32	26
FGNK14	1	175-cfs	0.22	40	32	26
FGNK14	1	185-cfs	0.23	41	34	27

PHOTOGRAPH DOCUMENTATION: FGNK14

Left bank along reference reach FGNK14

Right bank along reference reach FGNK14

Looking downstream from reference reach FGNK14

Looking upstream from reference reach FGNK14

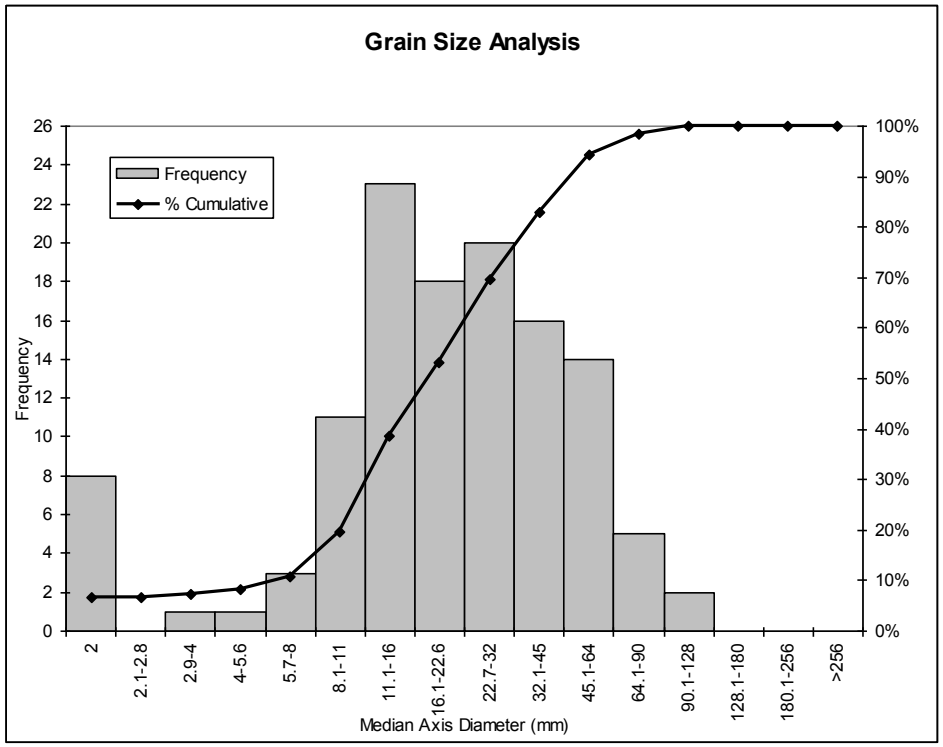
PHOTOGRAPH DOCUMENTATION: FGNK14

Bank composition detail (right bank) FGNK14

Bank composition detail (left bank) FGNK14

Oblique of site FGNK14

PEBBLE COUNT DISTRIBUTION: FGNK14



Size Class mm	*Frequency*	*Cumulative %*
2	8	6.6%
2.1-2.8	0	6.6%
2.9-4	1	7.4%
4-5.6	1	8.2%
5.7-8	3	10.7%
8.1-11	11	19.7%
11.1-16	23	38.5%
16.1-22.6	18	53.3%
22.7-32	20	69.7%
32.1-45	16	82.8%
45.1-64	14	94.3%
64.1-90	5	98.4%
90.1-128	2	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

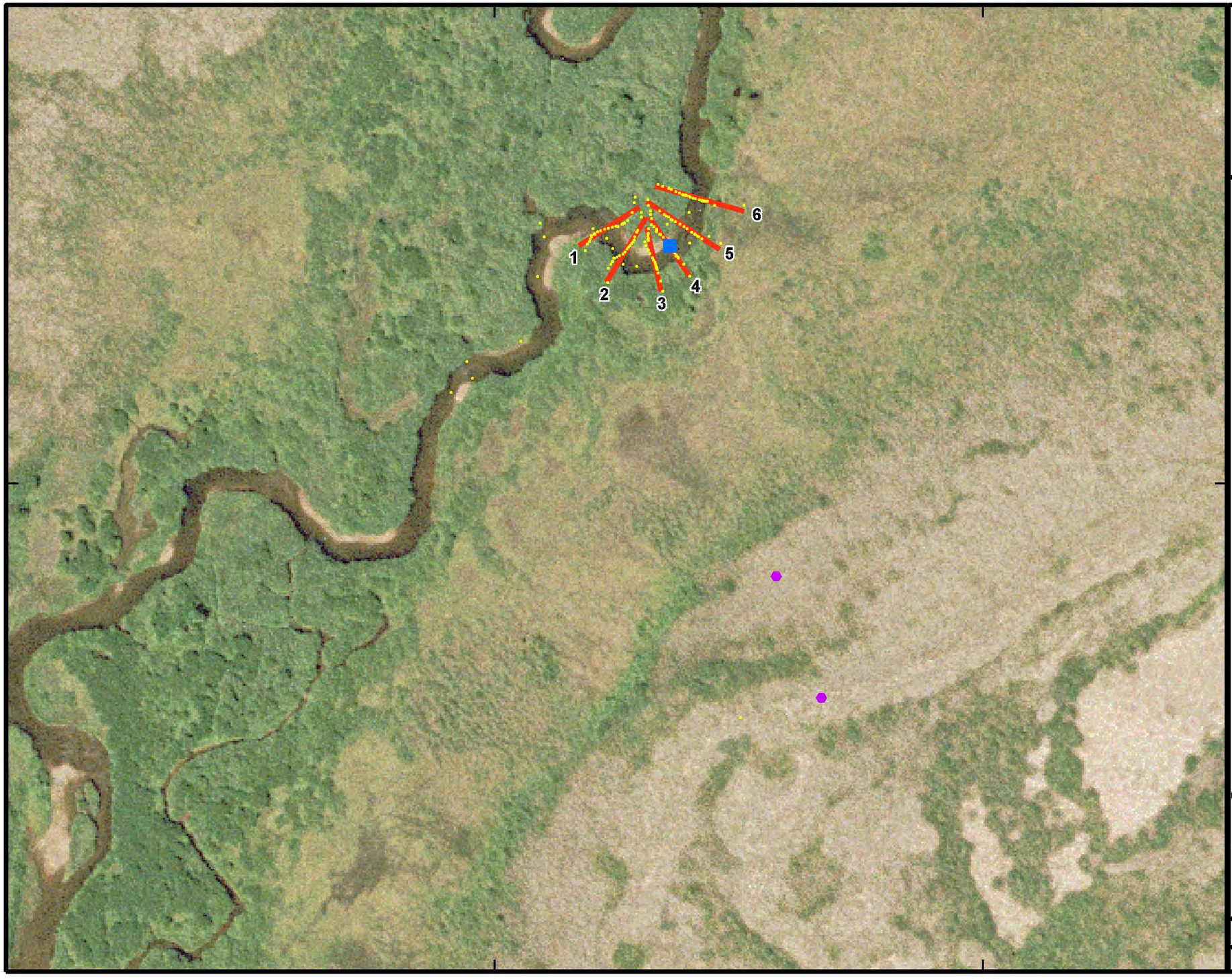
Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 4 and 5

1,395,659

1,396,059

1,396,459

2,177,626

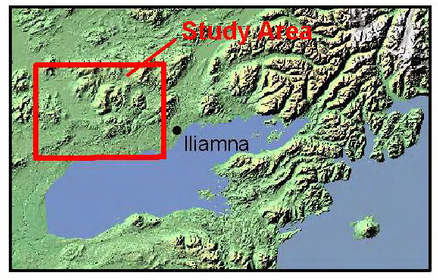


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK14
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,395,659

1,396,059

1,396,459

SITE DESCRIPTION: FGNK15

Site Characteristics.

Site Name	**FGNK15**		
Discharge (cfs)	**160 (140-180)**	Width (ft)	**16.6 (15.7-18.1)**
Slope	**0.0084**	Cross-sectional Area (ft^2)	**32 (29-39)**
D_{50}	**50**	D_{84}	**117**
Lat/Long Location	**N59.96288 W155.28932**	Watershed Area (mi^2)	**6**
% Willow	**20**		
% Grass	**80**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 150 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model and represents the crest of the pool. Sections 8 through 4 characterize the riffle which serves as the reference reach. Multiple grade breaks through the reference reach were captured with these sections. The pebble count was taken between Sections 7 and 6. The substrate comprising the channel bed was not as loose as that of other sites along the North Fork Koktuli.

Using the higher end of Shields numbers found with the Radio Rock Study, 0.026 which is a value closer to those reported for gravel-bed rivers in the lower 48 states, for the incipient motion analysis, the D_{84} moves at 150 cfs through Section 5 and before 140 cfs through Section 4 within the reference reach. Flows between 160 and 170 cfs match an inflection point along the entire reference reach.

The reference reach sections (Sections 8 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNK15

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK15	8	140-cfs	140	16.1	29	1.8	2.3	0.0067	4.6	0.60	0.70	0.037
FGNK15	8	150-cfs	150	16.1	31	1.9	2.4	0.0063	4.6	0.58	0.69	0.037
FGNK15	8	160-cfs	160	16.1	32	2.0	2.5	0.0060	4.6	0.57	0.69	0.037
FGNK15	8	170-cfs	170	16.1	34	2.1	2.6	0.0058	4.6	0.57	0.69	0.037
FGNK15	8	180-cfs	180	16.1	35	2.2	2.7	0.0054	4.6	0.55	0.67	0.037
FGNK15	7	140-cfs	140	17.8	32	1.8	2.3	0.0074	4.3	0.56	0.76	0.041
FGNK15	7	150-cfs	150	18.0	34	1.9	2.4	0.0073	4.4	0.56	0.78	0.042
FGNK15	7	160-cfs	160	18.1	36	2.0	2.5	0.0072	4.4	0.56	0.80	0.042
FGNK15	7	170-cfs	170	18.1	37	2.1	2.5	0.0068	4.4	0.55	0.80	0.042
FGNK15	7	180-cfs	180	18.1	39	2.2	2.6	0.0064	4.4	0.53	0.78	0.042
FGNK15	6	140-cfs	140	16.3	29	1.8	2.2	0.0092	4.8	0.63	0.90	0.040
FGNK15	6	150-cfs	150	16.5	30	1.9	2.3	0.0093	4.9	0.64	0.94	0.040
FGNK15	6	160-cfs	160	16.6	32	1.9	2.4	0.0095	5.0	0.64	0.99	0.041
FGNK15	6	170-cfs	170	16.6	33	2.0	2.4	0.0095	5.1	0.64	1.02	0.041
FGNK15	6	180-cfs	180	16.6	34	2.1	2.5	0.0095	5.3	0.65	1.06	0.041
FGNK15	5	140-cfs	140	15.7	29	1.9	2.2	0.0095	4.8	0.62	0.96	0.042
FGNK15	5	150-cfs	150	15.8	30	1.9	2.3	0.0097	4.9	0.63	1.02	0.042
FGNK15	5	160-cfs	160	15.9	32	2.0	2.4	0.0099	5.1	0.63	1.07	0.042
FGNK15	5	170-cfs	170	15.9	33	2.1	2.4	0.0100	5.2	0.64	1.12	0.042
FGNK15	5	180-cfs	180	15.9	34	2.1	2.5	0.0100	5.3	0.64	1.15	0.042
FGNK15	4	140-cfs	140	16.4	29	1.7	2.1	0.0103	4.9	0.65	1.04	0.043
FGNK15	4	150-cfs	150	16.4	30	1.8	2.2	0.0103	5.0	0.65	1.07	0.043
FGNK15	4	160-cfs	160	16.4	31	1.9	2.3	0.0102	5.1	0.66	1.11	0.043
FGNK15	4	170-cfs	170	16.4	32	2.0	2.3	0.0102	5.2	0.66	1.15	0.043
FGNK15	4	180-cfs	180	16.4	33	2.0	2.4	0.0102	5.3	0.66	1.19	0.043
FGNK15	3	140-cfs	140	17.6	33	1.9	2.7	0.0061	4.2	0.55	0.62	0.038
FGNK15	3	150-cfs	150	17.6	34	1.9	2.7	0.0060	4.3	0.55	0.64	0.038
FGNK15	3	160-cfs	160	17.6	36	2.0	2.8	0.0059	4.4	0.55	0.66	0.038

HEC-RAS OUTPUT SUMMARY TABLE: FGNK15

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNK15	3	170-cfs	170	17.6	37	2.1	2.9	0.0058	4.5	0.55	0.67	0.038
FGNK15	3	180-cfs	180	17.6	38	2.2	3.0	0.0057	4.6	0.54	0.68	0.038
FGNK15	2	140-cfs	140	18.6	29	1.5	2.6	0.0188	4.9	0.69	1.67	0.053
FGNK15	2	150-cfs	150	18.8	30	1.6	2.7	0.0194	5.0	0.69	1.78	0.054
FGNK15	2	160-cfs	160	18.9	32	1.7	2.7	0.0196	5.1	0.69	1.87	0.054
FGNK15	2	170-cfs	170	19.1	33	1.7	2.8	0.0201	5.2	0.69	1.97	0.055
FGNK15	2	180-cfs	180	19.2	34	1.8	2.9	0.0201	5.3	0.69	2.04	0.055
FGNK15	1	140-cfs	140	20.5	26	1.3	2.4	0.0135	5.3	0.83	1.01	0.037
FGNK15	1	150-cfs	150	20.7	28	1.4	2.5	0.0135	5.4	0.81	1.06	0.038
FGNK15	1	160-cfs	160	20.8	30	1.4	2.5	0.0135	5.4	0.79	1.12	0.039
FGNK15	1	170-cfs	170	21.0	31	1.5	2.6	0.0135	5.4	0.78	1.17	0.040
FGNK15	1	180-cfs	180	21.2	33	1.6	2.7	0.0135	5.4	0.76	1.22	0.041

HEC-RAS LONGITUDINAL PROFILE: FGNK15

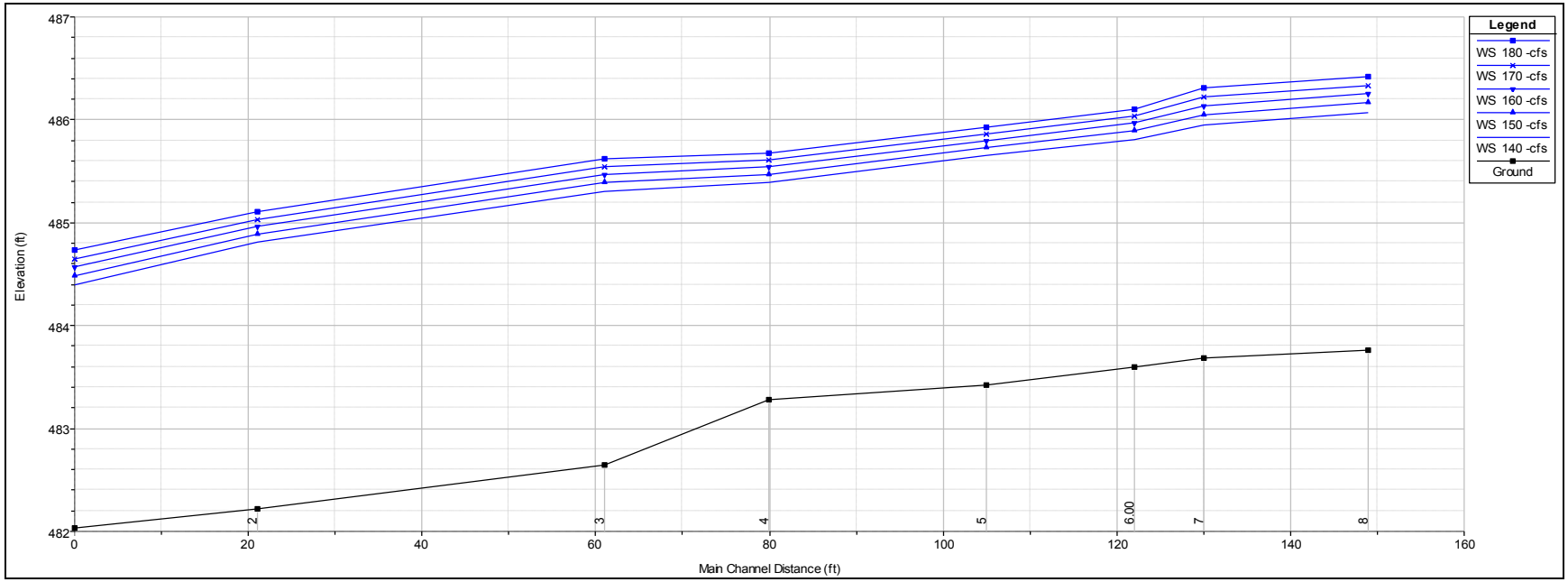


Figure 112 HEC-RAS longitudinal profile output for Reach FGNK14. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

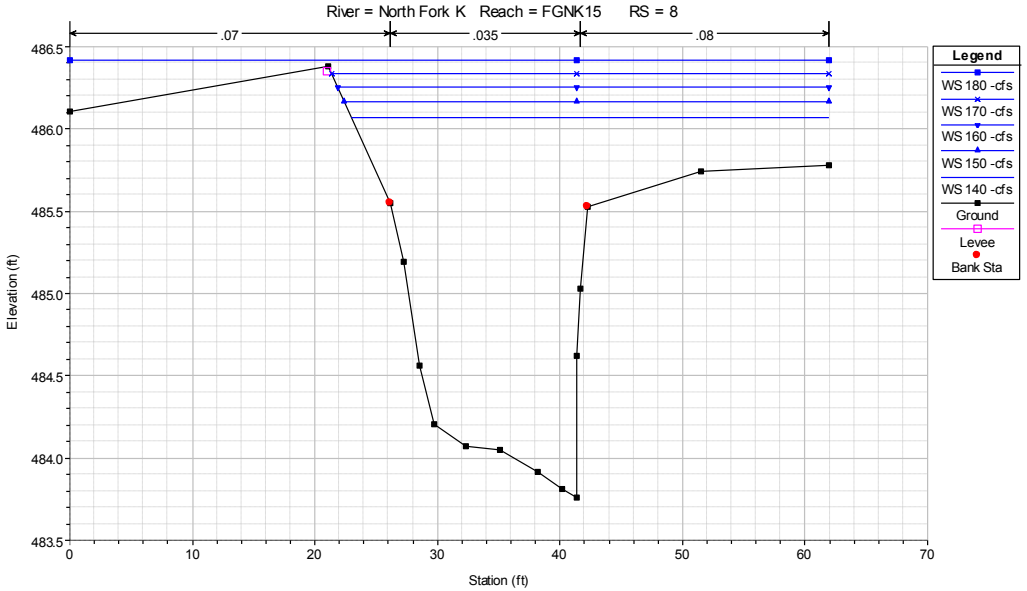


Figure 113 River Station (RS) 8 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

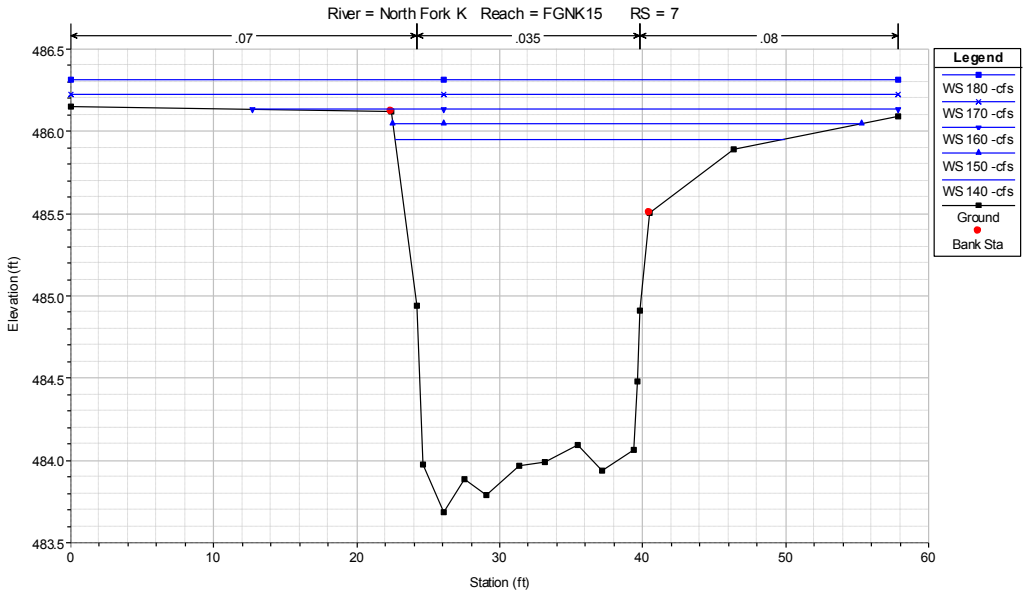


Figure 114 River Station (RS) 7 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

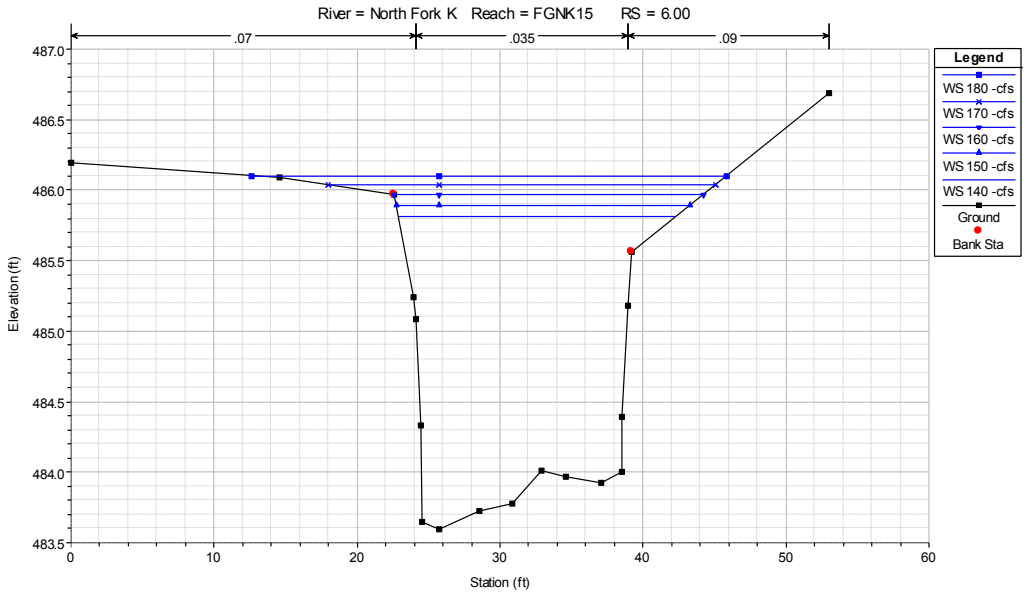


Figure 115 River Station (RS) 6.00 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

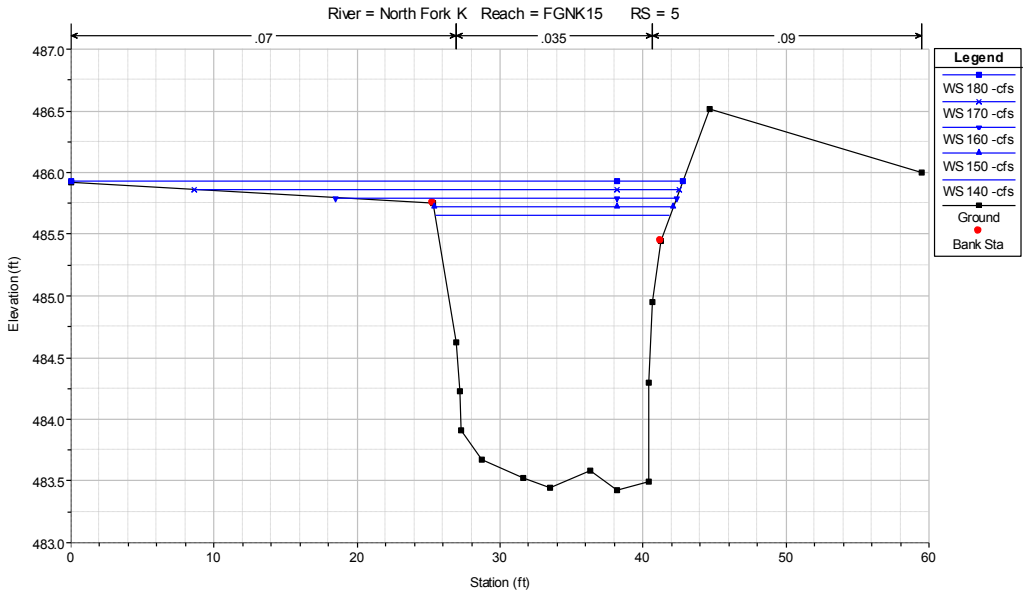


Figure 116 River Station (RS) 5 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

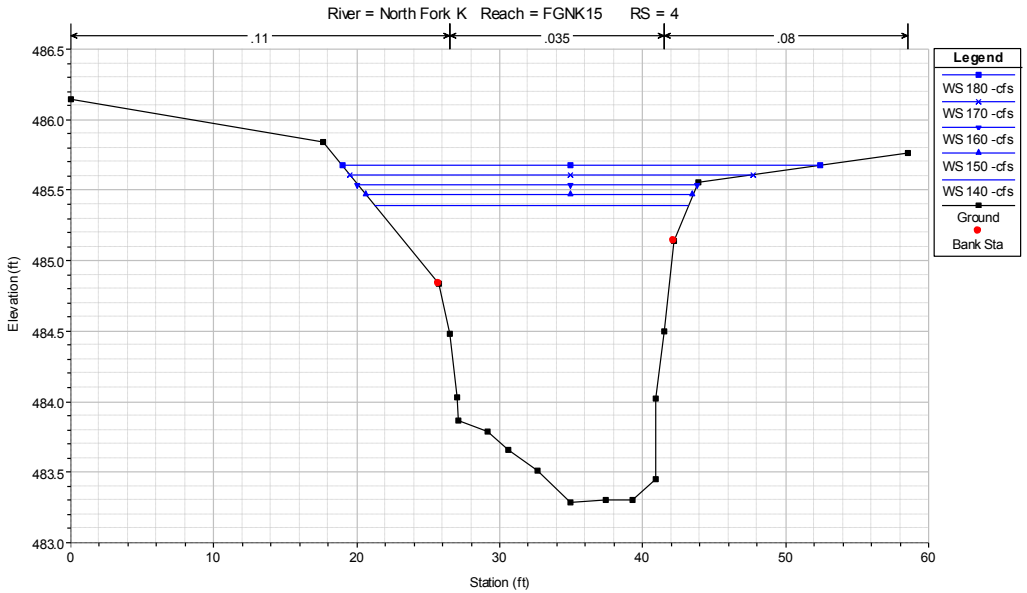


Figure 117 River Station (RS) 4 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

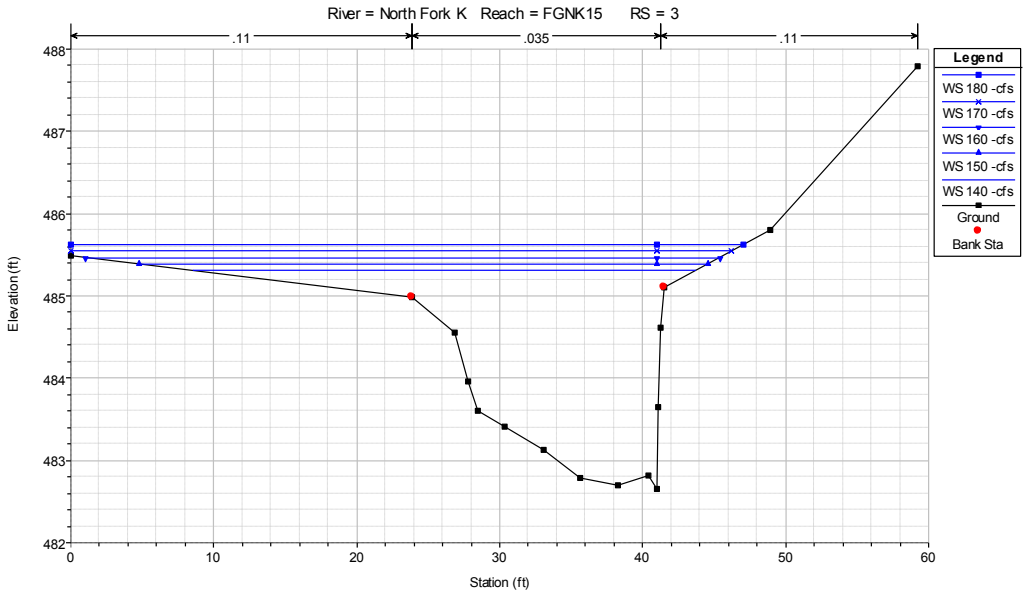


Figure 118 River Station (RS) 3 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

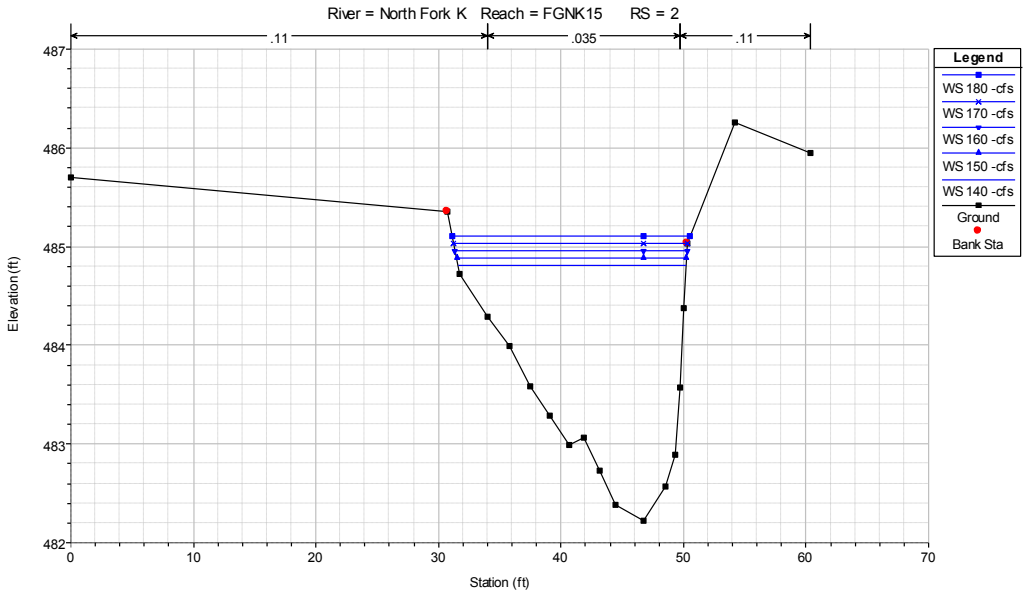


Figure 119 River Station (RS) 2 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNK15

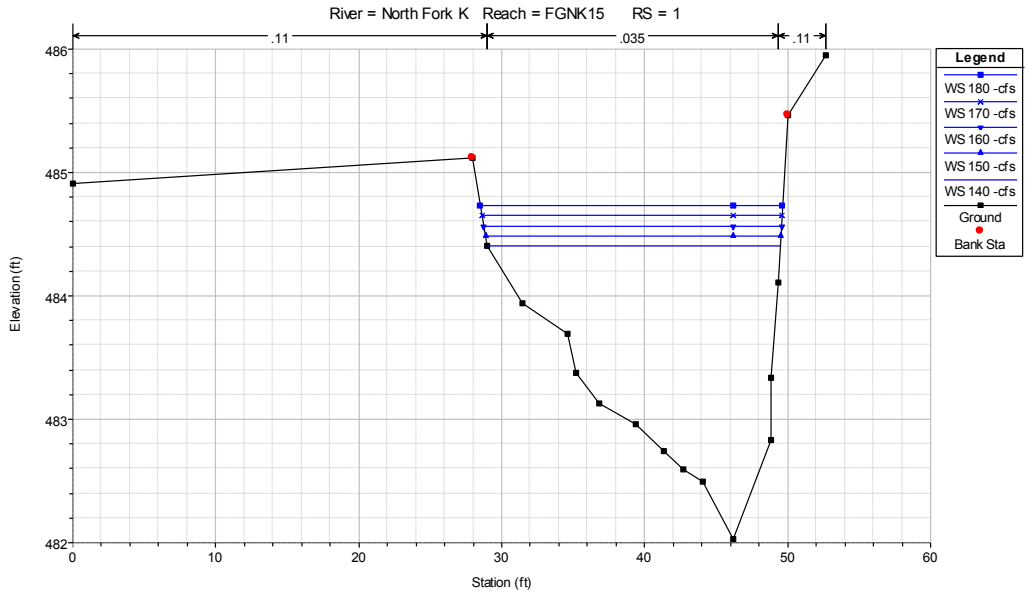


Figure 120 River Station (RS) 1 on River Reach FGNK15. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNK15

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK15	8	140-cfs	0.70	126	102	82
FGNK15	8	150-cfs	0.69	124	101	81
FGNK15	8	160-cfs	0.69	124	101	81
FGNK15	8	170-cfs	0.69	124	101	81
FGNK15	8	180-cfs	0.67	121	98	79
FGNK15	7	140-cfs	0.76	137	111	89
FGNK15	7	150-cfs	0.78	140	114	92
FGNK15	7	160-cfs	0.80	144	117	94
FGNK15	7	170-cfs	0.80	144	117	94
FGNK15	7	180-cfs	0.78	140	114	92
FGNK15	6	140-cfs	0.90	162	131	106
FGNK15	6	150-cfs	0.94	169	137	111
FGNK15	6	160-cfs	0.99	178	144	117
FGNK15	6	170-cfs	1.02	184	149	120
FGNK15	6	180-cfs	1.06	191	154	125
FGNK15	5	140-cfs	0.96	173	140	113
FGNK15	5	150-cfs	1.02	184	149	120
FGNK15	5	160-cfs	1.07	193	156	126
FGNK15	5	170-cfs	1.12	202	163	132
FGNK15	5	180-cfs	1.15	207	168	135
FGNK15	4	140-cfs	1.04	187	152	122
FGNK15	4	150-cfs	1.07	193	156	126
FGNK15	4	160-cfs	1.11	200	162	131
FGNK15	4	170-cfs	1.15	207	168	135
FGNK15	4	180-cfs	1.19	214	173	140
FGNK15	3	140-cfs	0.62	112	90	73
FGNK15	3	150-cfs	0.64	115	93	75

INCIPIENT MOTION ANALYSIS: FGNK15

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNK15	3	160-cfs	0.66	119	96	78
FGNK15	3	170-cfs	0.67	121	98	79
FGNK15	3	180-cfs	0.68	122	99	80
FGNK15	2	140-cfs	1.67	301	243	197
FGNK15	2	150-cfs	1.78	320	259	210
FGNK15	2	160-cfs	1.87	337	273	220
FGNK15	2	170-cfs	1.97	355	287	232
FGNK15	2	180-cfs	2.04	367	297	240
FGNK15	1	140-cfs	1.01	182	147	119
FGNK15	1	150-cfs	1.06	191	154	125
FGNK15	1	160-cfs	1.12	202	163	132
FGNK15	1	170-cfs	1.17	211	171	138
FGNK15	1	180-cfs	1.22	220	178	144

PHOTOGRAPH DOCUMENTATION: FGNK15

Left bank along reference reach FG NK15

Right bank along reference reach FGNK15

Looking downstream from reference reach FGNK15

Looking upstream from reference reach FGNK15

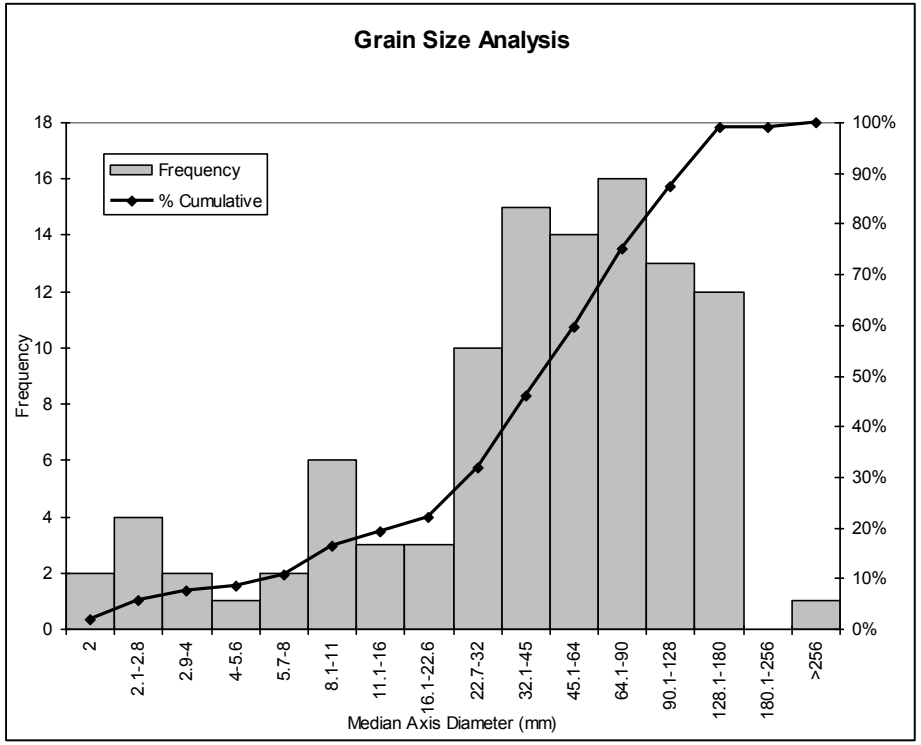
PHOTOGRAPH DOCUMENTATION: FGNK15

Bank composition detail (right bank) FGNK15

Bank composition detail (left bank) FGNK15

Oblique of site FGNK15

PEBBLE COUNT DISTRIBUTION: FGNK15



Size Class mm	*Frequency*	*Cumulative %*
2	2	1.9%
2.1-2.8	4	5.8%
2.9-4	2	7.7%
4-5.6	1	8.7%
5.7-8	2	10.6%
8.1-11	6	16.3%
11.1-16	3	19.2%
16.1-22.6	3	22.1%
22.7-32	10	31.7%
32.1-45	15	46.2%
45.1-64	14	59.6%
64.1-90	16	75.0%
90.1-128	13	87.5%
128.1-180	12	99.0%
180.1-256	0	99.0%
>256	1	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 6 and 7

1,403,619

1,404,019

1,404,419

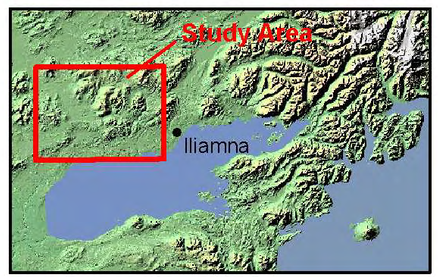
2,180,586

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNK15
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,403,619

1,404,019

1,404,419

SITE DESCRIPTION: FGNKt-1

Site Characteristics.

Site Name		**FGNKt-1**	
Discharge (cfs)	**145 (125-165)**	Width (ft)	**24.2 (23.2-25.4)**
Slope	**0.0062**	Cross-sectional Area (ft^2)	**37 (30-42)**
D_{50}	**55**	D_{84}	**107**
Lat/Long Location	**N59.85534 W155.66553**	Drainage Area (mi^2)	**12**
% Willow		**50**	
% Grass		**50**	
% Tree		**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 140 feet of channel length. Sections 1 and 2 serve as the temporary downstream hydraulic control for the model and represent the crest of the pool as it transitions to a transverse riffle. Sections 7 through 5 characterize the riffle which serves as the reference reach. The channel turns to the right downstream of Section 5 and dropping into a pool at Section 4. According to the model, this drop creates supercritical flow through Section 4 (the pool). By Section 5, the downstream boundary condition and hydraulics through the pool have stabilized. Therefore, this analysis focused on the upstream three sections through the reference reach.

The variability in the incipient motion analysis and cross-section geometry is represented by the range of flows chosen. At cross-Section 7 and 6 for a Shields number of 0.017, the D_{84} particle moves close to a flow of 165 cfs, and for a Shields number of 0.026, the D_{50} moves before125 cfs through Sections 6 and 5. A flow of 125 cfs matches the inflection points well on cross-Section 5 as well as an inflection point found on the right bank of both Section 6 and 7. A flow of 165 cfs matches an inflection point on the left bank for both Sections 6 and 7.

The reference reach sections (Sections 7 through 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGNKt-1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNKt-1	7	125-cfs	125	23.2	30	1.3	1.7	0.0074	4.1	0.64	0.56	0.035
FGNKt-1	7	135-cfs	135	23.5	32	1.4	1.8	0.0072	4.2	0.64	0.57	0.035
FGNKt-1	7	145-cfs	145	23.7	34	1.4	1.8	0.0070	4.3	0.63	0.58	0.035
FGNKt-1	7	155-cfs	155	24.0	36	1.5	1.9	0.0068	4.3	0.63	0.59	0.035
FGNKt-1	7	165-cfs	165	24.2	37	1.6	2.0	0.0066	4.4	0.62	0.59	0.035
FGNKt-1	6	125-cfs	125	24.5	34	1.4	1.7	0.0059	3.7	0.55	0.48	0.037
FGNKt-1	6	135-cfs	135	24.7	36	1.5	1.8	0.0060	3.7	0.54	0.51	0.038
FGNKt-1	6	145-cfs	145	25.0	38	1.5	1.8	0.0061	3.8	0.54	0.54	0.038
FGNKt-1	6	155-cfs	155	25.3	40	1.6	1.9	0.0062	3.9	0.54	0.57	0.039
FGNKt-1	6	165-cfs	165	25.4	42	1.7	2.0	0.0062	3.9	0.54	0.60	0.040
FGNKt-1	5	125-cfs	125	23.9	35	1.5	1.8	0.0059	3.6	0.53	0.49	0.038
FGNKt-1	5	135-cfs	135	23.9	37	1.5	1.9	0.0057	3.7	0.52	0.51	0.038
FGNKt-1	5	145-cfs	145	23.9	38	1.6	2.0	0.0056	3.8	0.52	0.52	0.038
FGNKt-1	5	155-cfs	155	23.9	40	1.7	2.1	0.0055	3.8	0.52	0.53	0.038
FGNKt-1	5	165-cfs	165	23.9	42	1.8	2.1	0.0054	3.9	0.52	0.54	0.038
FGNKt-1	4	125-cfs	125	17.8	21	1.2	1.8	0.0177	6.1	0.99	1.23	0.035
FGNKt-1	4	135-cfs	135	17.9	22	1.2	1.9	0.0171	6.2	0.98	1.25	0.035
FGNKt-1	4	145-cfs	145	18.1	23	1.3	1.9	0.0166	6.3	0.97	1.27	0.035
FGNKt-1	4	155-cfs	155	18.3	24	1.3	2.0	0.0166	6.4	0.98	1.31	0.035
FGNKt-1	4	165-cfs	165	18.6	25	1.4	2.0	0.0173	6.5	0.98	1.40	0.036
FGNKt-1	3	125-cfs	125	21.8	47	2.2	3.7	0.0017	2.7	0.32	0.20	0.035
FGNKt-1	3	135-cfs	135	22.6	48	2.1	3.7	0.0018	2.8	0.34	0.22	0.035
FGNKt-1	3	145-cfs	145	23.4	50	2.2	3.8	0.0020	2.9	0.35	0.23	0.035
FGNKt-1	3	155-cfs	155	23.5	52	2.2	3.9	0.0020	3.0	0.36	0.25	0.035
FGNKt-1	3	165-cfs	165	23.5	53	2.3	3.9	0.0021	3.1	0.36	0.26	0.035
FGNKt-1	2	125-cfs	125	23.5	26	1.1	1.8	0.0079	4.8	0.80	0.51	0.030
FGNKt-1	2	135-cfs	135	23.6	27	1.2	1.8	0.0079	4.9	0.81	0.54	0.030
FGNKt-1	2	145-cfs	145	23.7	29	1.2	1.9	0.0079	5.0	0.81	0.56	0.030

HEC-RAS OUTPUT SUMMARY TABLE: FGNKt-1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGNKt-1	2	155-cfs	155	23.8	30	1.3	2.0	0.0079	5.2	0.81	0.58	0.030
FGNKt-1	2	165-cfs	165	23.9	31	1.3	2.0	0.0079	5.3	0.81	0.61	0.030
FGNKt-1	1	125-cfs	125	22.3	27	1.2	1.7	0.0102	4.6	0.74	0.71	0.035
FGNKt-1	1	135-cfs	135	22.3	28	1.3	1.7	0.0102	4.8	0.74	0.74	0.035
FGNKt-1	1	145-cfs	145	22.3	30	1.3	1.8	0.0102	4.9	0.75	0.78	0.035
FGNKt-1	1	155-cfs	155	22.3	31	1.4	1.9	0.0102	5.0	0.75	0.81	0.035
FGNKt-1	1	165-cfs	165	22.3	32	1.4	1.9	0.0102	5.2	0.76	0.84	0.035

HEC-RAS LONGITUDINAL PROFILE: FGNKt-1

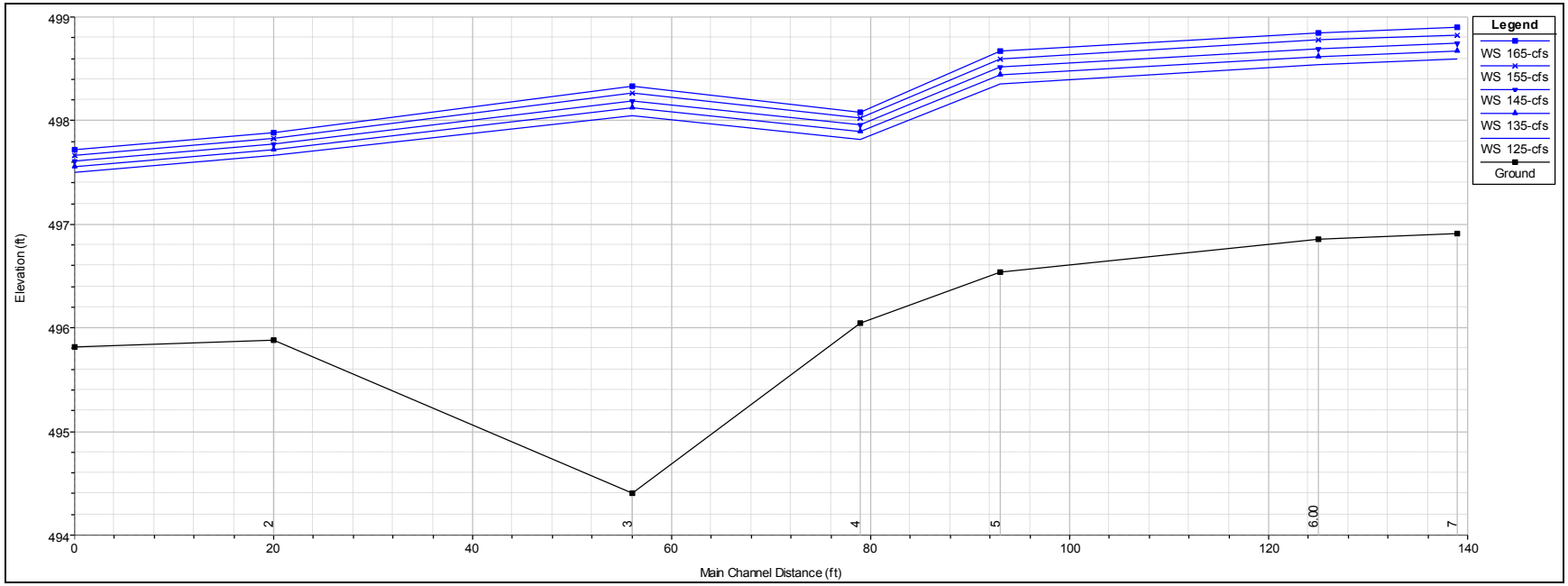


Figure 121 HEC-RAS longitudinal profile output for Reach FGNKt-1. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

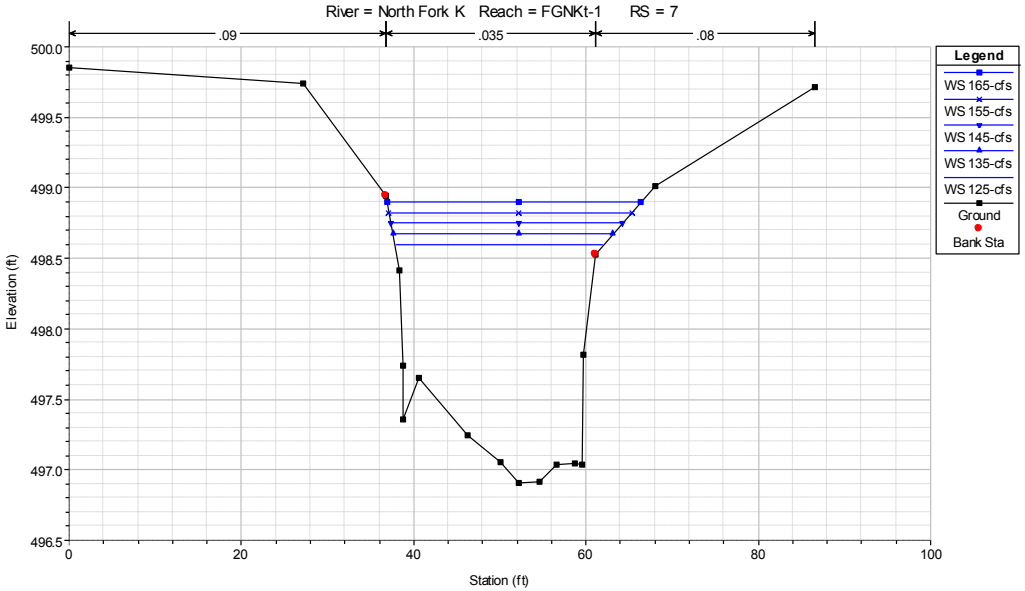


Figure 122 River Station (RS) 7 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

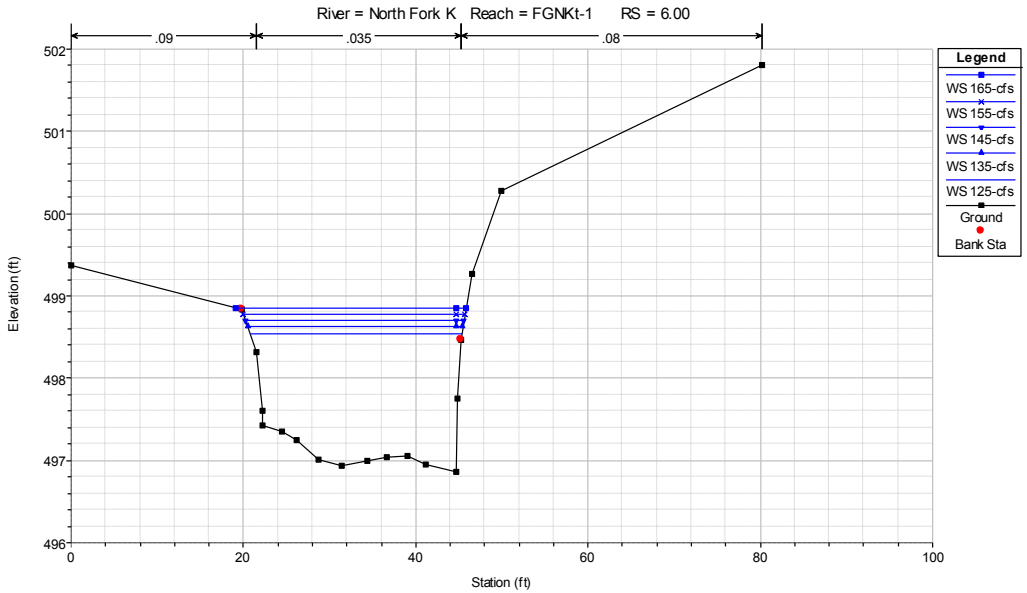


Figure 123 River Station (RS) 6.00 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

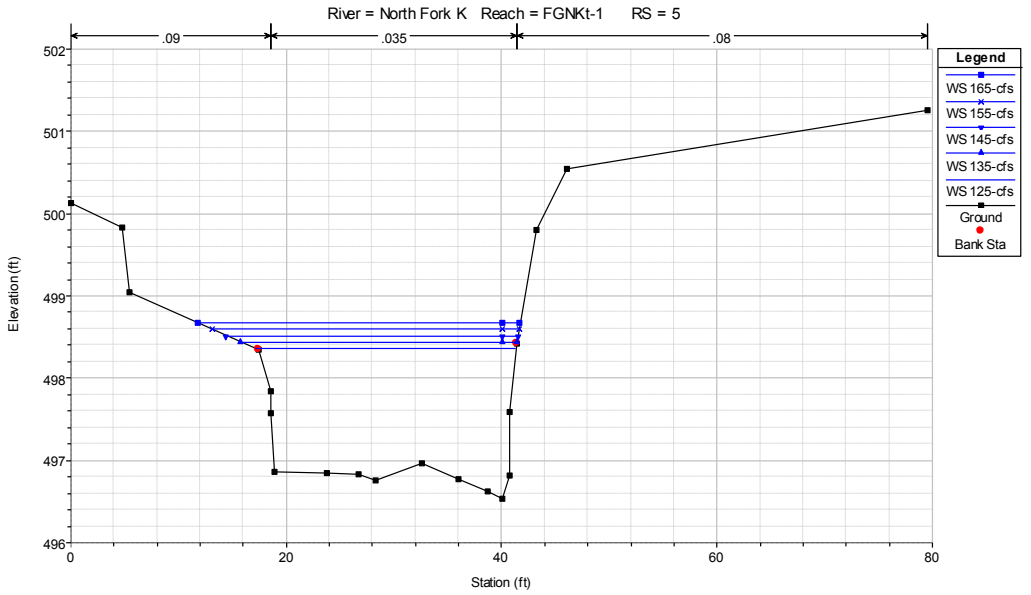


Figure 124 River Station (RS) 5 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

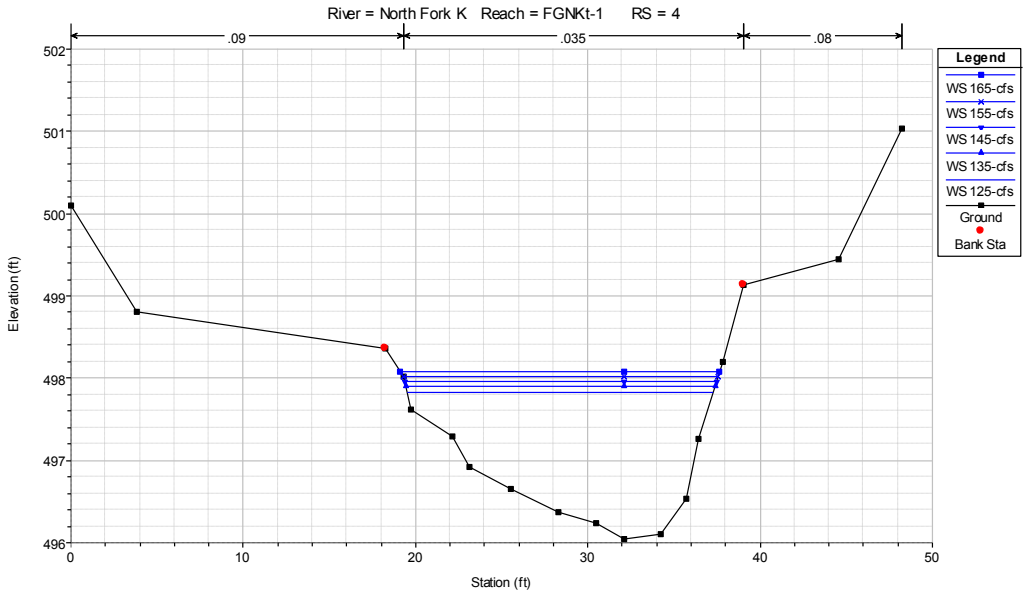


Figure 125 River Station (RS) 4 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

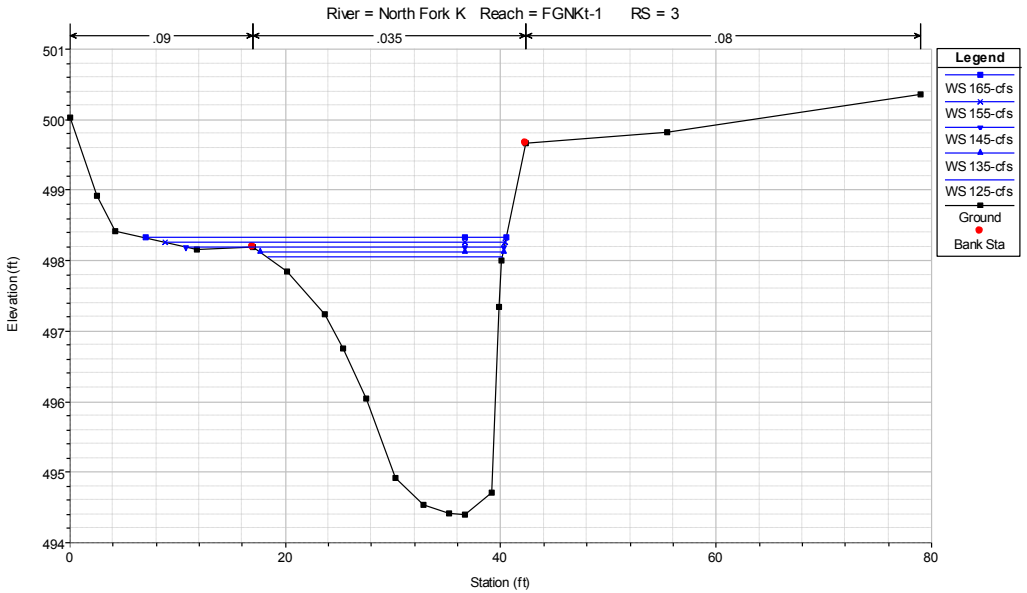


Figure 126 River Station (RS) 3 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

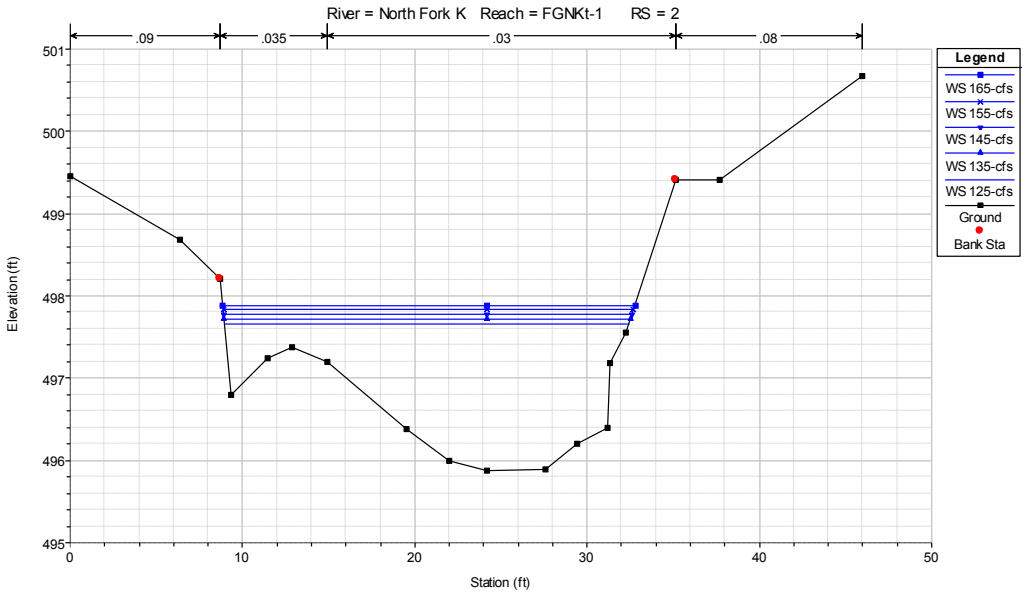


Figure 127 River Station (RS) 2 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGNKt-1

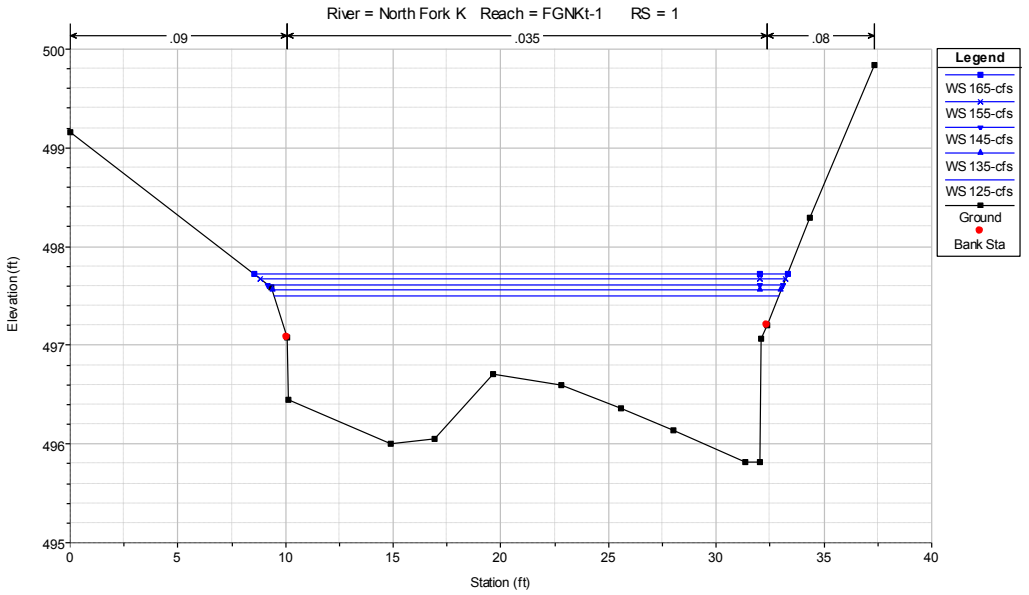


Figure 128 River Station (RS) 1 on River Reach FGNKt-1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGNKt-1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNKt-1	7	125-cfs	0.56	101	82	66
FGNKt-1	7	135-cfs	0.57	103	83	67
FGNKt-1	7	145-cfs	0.58	104	85	68
FGNKt-1	7	155-cfs	0.59	106	86	69
FGNKt-1	7	165-cfs	0.59	106	86	69
FGNKt-1	6	125-cfs	0.48	86	70	57
FGNKt-1	6	135-cfs	0.51	92	74	60
FGNKt-1	6	145-cfs	0.54	97	79	64
FGNKt-1	6	155-cfs	0.57	103	83	67
FGNKt-1	6	165-cfs	0.6	108	87	71
FGNKt-1	5	125-cfs	0.49	88	71	58
FGNKt-1	5	135-cfs	0.51	92	74	60
FGNKt-1	5	145-cfs	0.52	94	76	61
FGNKt-1	5	155-cfs	0.53	95	77	62
FGNKt-1	5	165-cfs	0.54	97	79	64
FGNKt-1	4	125-cfs	1.23	214	173	140
FGNKt-1	4	135-cfs	1.25	218	176	142
FGNKt-1	4	145-cfs	1.27	221	179	145
FGNKt-1	4	155-cfs	1.31	228	185	149
FGNKt-1	4	165-cfs	1.4	244	197	159
FGNKt-1	3	125-cfs	0.2	35	28	23
FGNKt-1	3	135-cfs	0.22	38	31	25
FGNKt-1	3	145-cfs	0.23	40	32	26
FGNKt-1	3	155-cfs	0.25	44	35	28
FGNKt-1	3	165-cfs	0.26	45	37	30
FGNKt-1	2	125-cfs	0.51	89	72	58
FGNKt-1	2	135-cfs	0.54	94	76	61

INCIPIENT MOTION ANALYSIS: FGNKt-1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGNKt-1	2	145-cfs	0.56	98	79	64
FGNKt-1	2	155-cfs	0.58	101	82	66
FGNKt-1	2	165-cfs	0.61	106	86	69
FGNKt-1	1	125-cfs	0.71	124	100	81
FGNKt-1	1	135-cfs	0.74	129	104	84
FGNKt-1	1	145-cfs	0.78	136	110	89
FGNKt-1	1	155-cfs	0.81	141	114	92
FGNKt-1	1	165-cfs	0.84	146	118	96

PHOTOGRAPH DOCUMENTATION: FGNKt-1

Left bank along reference reach FGNKt-1

Right bank along reference reach FGNKt-1

Looking downstream from reference reach FGNKt-1

Looking upstream from reference reach FGNKt-1

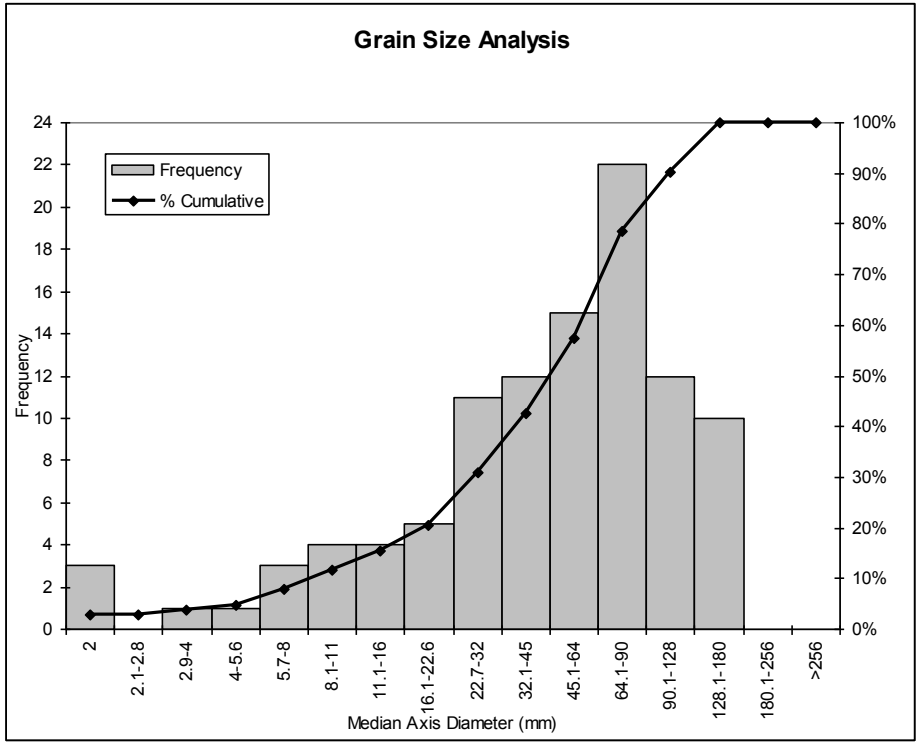
PHOTOGRAPH DOCUMENTATION: FGNKt-1

Bank composition detail (right bank) FGNKt-1

Bank composition detail (left bank) FGNKt-1

Oblique of site FGNKt-1

PEBBLE COUNT DISTRIBUTION: FGNKt-1



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.9%
2.1-2.8	0	2.9%
2.9-4	1	3.9%
4-5.6	1	4.9%
5.7-8	3	7.8%
8.1-11	4	11.7%
11.1-16	4	15.5%
16.1-22.6	5	20.4%
22.7-32	11	31.1%
32.1-45	12	42.7%
45.1-64	15	57.3%
64.1-90	22	78.6%
90.1-128	12	90.3%
128.1-180	10	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

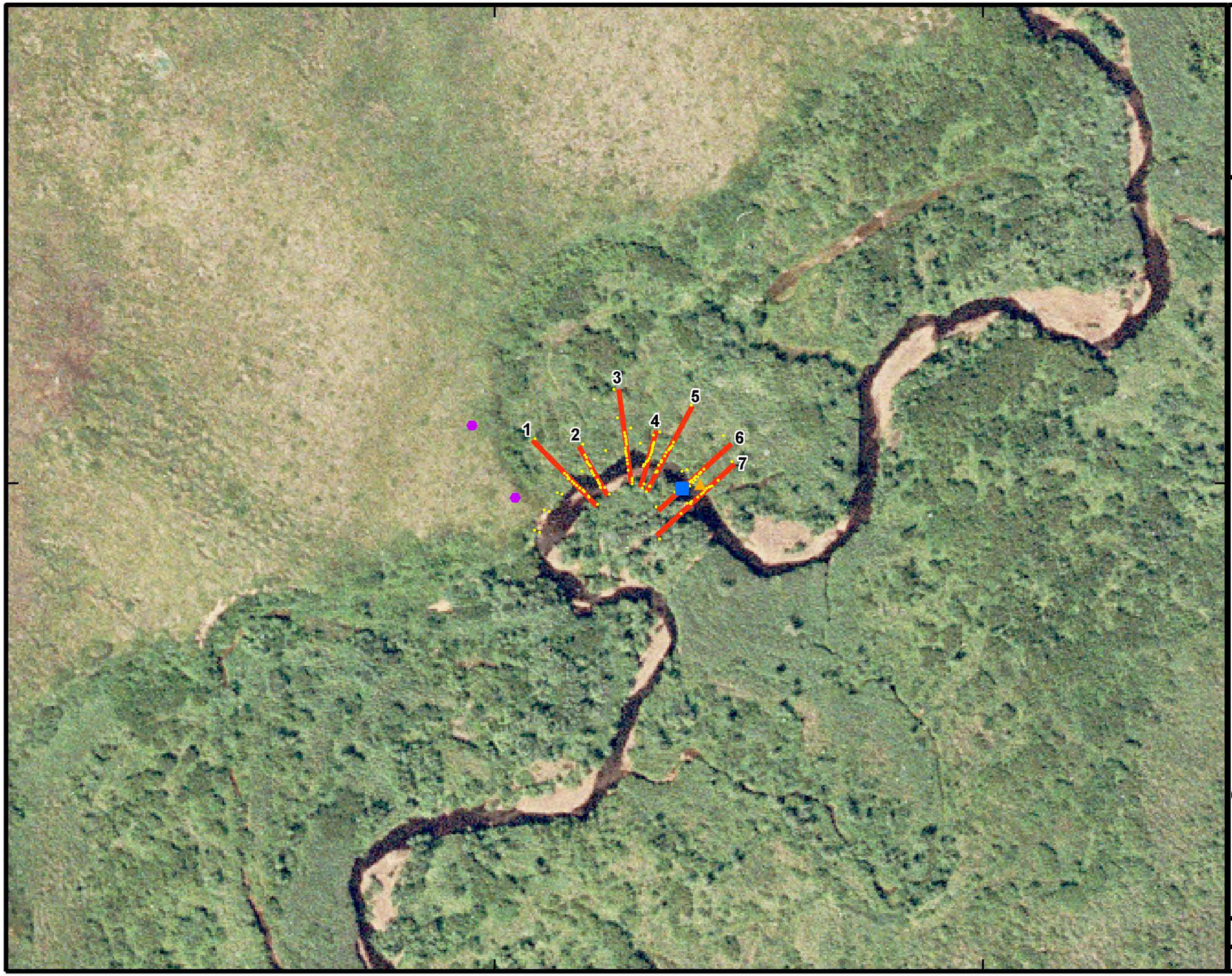
SOUTH KOKTULI BASIN
Fluvial Geomorphology Site Summaries

1,333,671

1,334,071

1,334,471

2,142,892

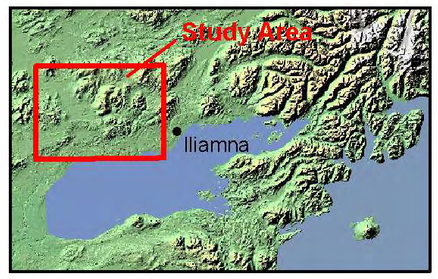


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGNKt-1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,333,671

1,334,071

1,334,471

SITE DESCRIPTION: FGSK1

Site Characteristics.

Site Name	FGSK1		
Discharge (cfs)	**900 (800-1000)**	Width (ft)	**80.5 (75.7-84.0)**
Slope	**0.0033**	Cross-sectional Area (ft^2)	**213 (181-251)**
D_{50}	**41**	D_{84}	**82**
(modified) D_{50}	**40**	D_{84}	**80**
Lat/Long Location	**N59.82210 W155.76777**	Drainage Area (mi^2)	**105**
% Willow	**80**		
% Grass	**20**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 650 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 6 through 4 characterize a riffle which serves as the reference reach. The left bank through the riffle and downstream to Section 3 is a high terrace that is being undercut contributing large gravel to the stream. Between Sections 3 and 4 is an exposed portion of the terrace actively being eroded away by the river. The right bank through the riffle was well defined with mature willows and grass.

An HDR stream gage (SK100A) downstream of the site, just upstream of the confluence with the North Fork Koktuli, provided roughly two years of hydrology data (07/04 – 06/06) to compare the range of channel forming discharges determined for this site. Due to the suspected presence of lag, the pebble count was adjusted. Those rocks in the 256 mm and the greater than 256 mm (one each) were removed. Based on a Shields number of 0.017, the D_{84} moves in Section 6 and 5 at discharges of 850 and 800 cfs respectively, while the critical shear to move the D_{50} for a Shields of 0.026 has already been exceeded by 800 cfs. Flows of 1000 cfs and 850 cfs match the right bank inflection points for Section 6 and 5 respectively. Additionally, flows between 900 and 950 match the right bank inflection points through the pool (Section 3 and 2).

The reference reach, which include riffle Sections 6 through 4, provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK1	6	800-cfs	800	83.2	202	2.4	3.1	0.0029	4.0	0.45	0.44	0.036
FGSK1	6	850-cfs	850	83.4	210	2.5	3.2	0.0029	4.0	0.45	0.45	0.036
FGSK1	6	900-cfs	900	83.5	219	2.6	3.3	0.0029	4.1	0.45	0.47	0.037
FGSK1	6	950-cfs	950	83.7	227	2.7	3.4	0.0029	4.2	0.45	0.48	0.037
FGSK1	6	1000-cfs	1000	83.8	235	2.8	3.5	0.0029	4.3	0.45	0.50	0.037
FGSK1	6	1050-cfs	1050	83.9	243	2.9	3.6	0.0029	4.3	0.45	0.51	0.037
FGSK1	6	1100-cfs	1100	84.0	251	3.0	3.7	0.0029	4.4	0.45	0.53	0.037
FGSK1	5	800-cfs	800	75.7	181	2.4	3.1	0.0032	4.4	0.50	0.47	0.034
FGSK1	5	850-cfs	850	75.9	189	2.5	3.2	0.0032	4.5	0.50	0.49	0.034
FGSK1	5	900-cfs	900	76.0	196	2.6	3.3	0.0032	4.6	0.50	0.51	0.034
FGSK1	5	950-cfs	950	76.2	203	2.7	3.3	0.0032	4.7	0.50	0.53	0.034
FGSK1	5	1000-cfs	1000	76.3	211	2.8	3.4	0.0033	4.8	0.50	0.55	0.035
FGSK1	5	1050-cfs	1050	76.4	217	2.9	3.5	0.0033	4.8	0.50	0.57	0.035
FGSK1	5	1100-cfs	1100	76.6	224	2.9	3.6	0.0033	4.9	0.50	0.59	0.035
FGSK1	4	800-cfs	800	80.6	188	2.3	3.0	0.0035	4.3	0.49	0.51	0.036
FGSK1	4	850-cfs	850	81.0	195	2.4	3.1	0.0036	4.4	0.49	0.54	0.037
FGSK1	4	900-cfs	900	81.3	202	2.5	3.2	0.0037	4.5	0.50	0.57	0.037
FGSK1	4	950-cfs	950	81.7	209	2.6	3.2	0.0038	4.5	0.50	0.60	0.037
FGSK1	4	1000-cfs	1000	82.0	216	2.6	3.3	0.0039	4.6	0.50	0.63	0.038
FGSK1	4	1050-cfs	1050	82.3	223	2.7	3.4	0.0040	4.7	0.51	0.66	0.038
FGSK1	4	1100-cfs	1100	82.6	229	2.8	3.5	0.0040	4.8	0.51	0.69	0.038
FGSK1	3	800-cfs	800	81.2	179	2.2	3.4	0.0035	4.5	0.53	0.48	0.033
FGSK1	3	850-cfs	850	81.4	185	2.3	3.5	0.0036	4.6	0.54	0.50	0.033
FGSK1	3	900-cfs	900	81.7	192	2.4	3.6	0.0036	4.7	0.54	0.51	0.033
FGSK1	3	950-cfs	950	81.9	198	2.4	3.6	0.0036	4.8	0.54	0.53	0.033
FGSK1	3	1000-cfs	1000	81.9	204	2.5	3.7	0.0036	4.9	0.55	0.55	0.033
FGSK1	3	1050-cfs	1050	81.9	210	2.6	3.8	0.0036	5.0	0.55	0.57	0.033
FGSK1	3	1100-cfs	1100	81.9	215	2.6	3.8	0.0036	5.1	0.55	0.59	0.033
FGSK1	2	800-cfs	800	82.0	190	2.3	4.0	0.0029	4.2	0.49	0.41	0.033

HEC-RAS OUTPUT SUMMARY TABLE: FGSK1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK1	2	850-cfs	850	82.2	197	2.4	4.1	0.0030	4.3	0.49	0.43	0.033
FGSK1	2	900-cfs	900	82.4	203	2.5	4.1	0.0030	4.4	0.50	0.45	0.033
FGSK1	2	950-cfs	950	82.5	209	2.5	4.2	0.0030	4.5	0.50	0.47	0.033
FGSK1	2	1000-cfs	1000	82.5	215	2.6	4.3	0.0031	4.7	0.51	0.49	0.033
FGSK1	2	1050-cfs	1050	82.5	221	2.7	4.4	0.0031	4.8	0.51	0.50	0.033
FGSK1	2	1100-cfs	1100	82.5	226	2.7	4.4	0.0031	4.9	0.52	0.52	0.033
FGSK1	1	800-cfs	800	87.4	138	1.6	2.3	0.0104	5.8	0.81	1.02	0.035
FGSK1	1	850-cfs	850	88.0	144	1.6	2.4	0.0104	5.9	0.81	1.06	0.036
FGSK1	1	900-cfs	900	88.6	150	1.7	2.4	0.0104	6.0	0.81	1.09	0.036
FGSK1	1	950-cfs	950	89.1	156	1.8	2.5	0.0104	6.1	0.81	1.12	0.036
FGSK1	1	1000-cfs	1000	89.7	161	1.8	2.6	0.0104	6.2	0.82	1.16	0.036
FGSK1	1	1050-cfs	1050	90.2	167	1.9	2.6	0.0104	6.3	0.82	1.19	0.036
FGSK1	1	1100-cfs	1100	90.8	172	1.9	2.7	0.0104	6.4	0.82	1.22	0.036

HEC-RAS LONGITUDINAL PROFILE: FGSK1

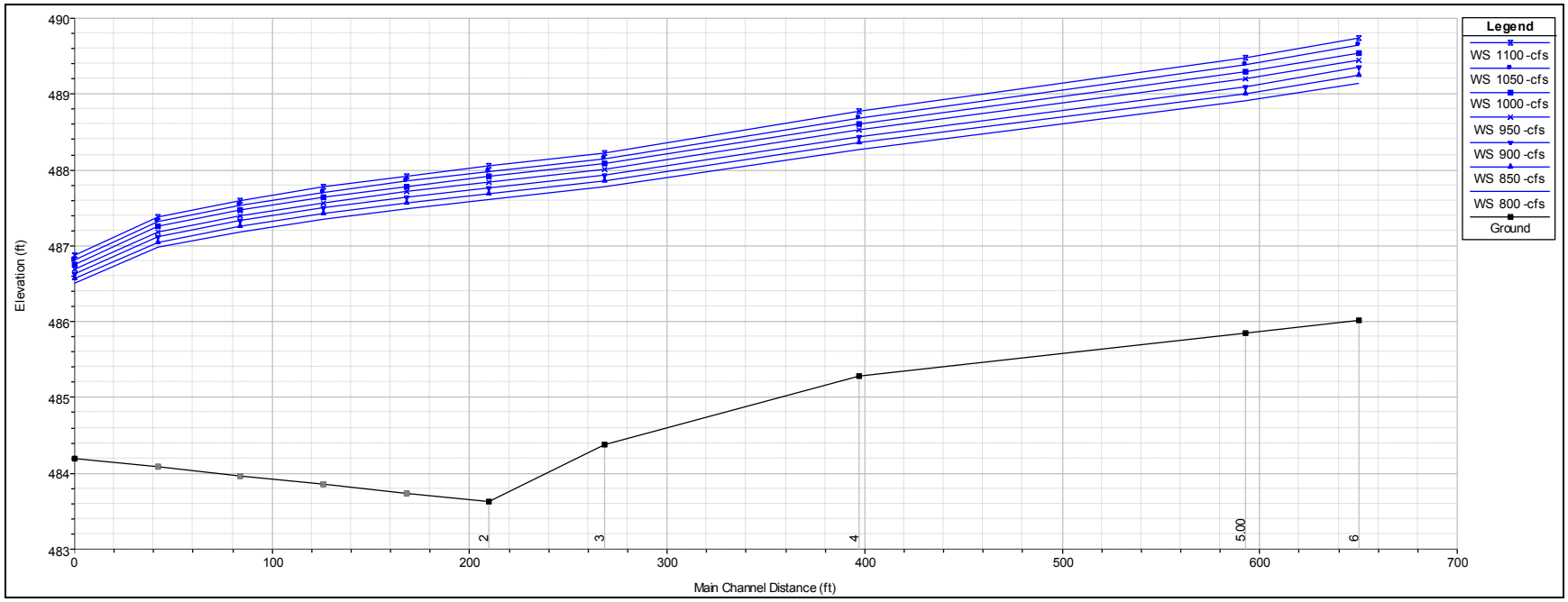


Figure 1 HEC-RAS longitudinal profile output for Reach FGSK1. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK1

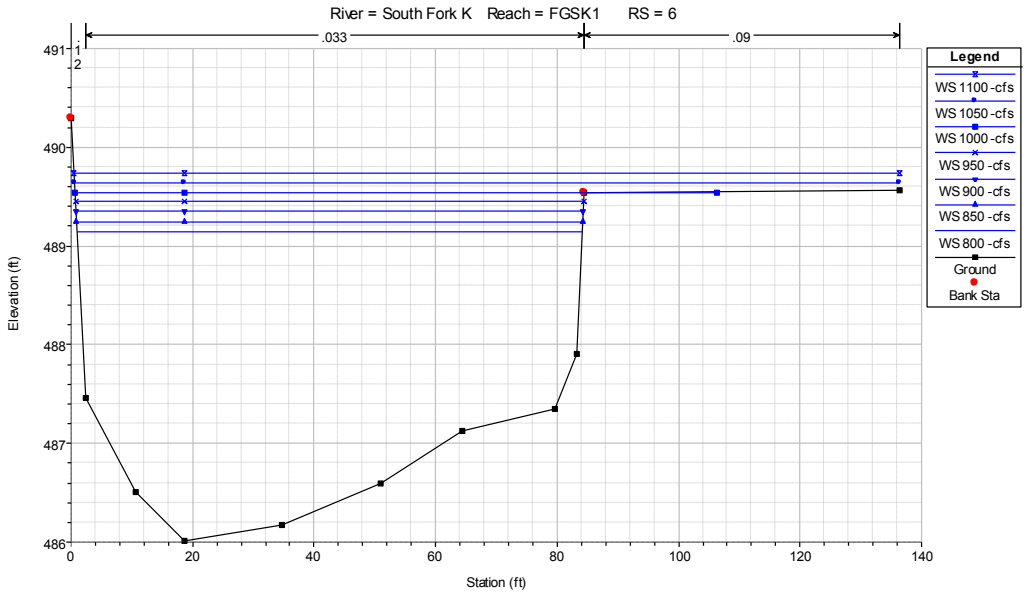


Figure 2 River Station (RS) 6 on River Reach FGSK1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK1

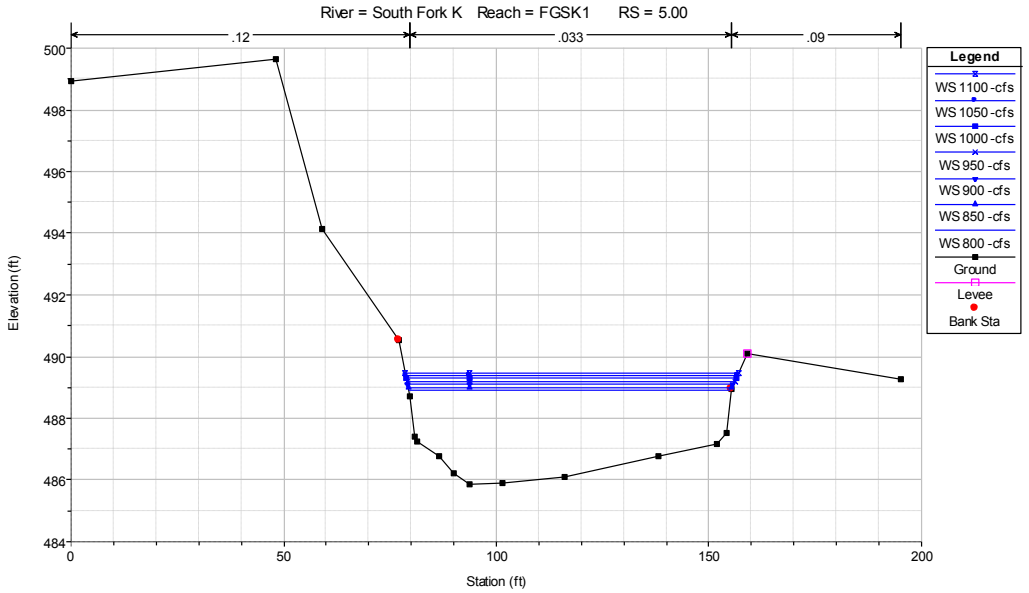


Figure 3 River Station (RS) 5 on River Reach FGSK1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK1

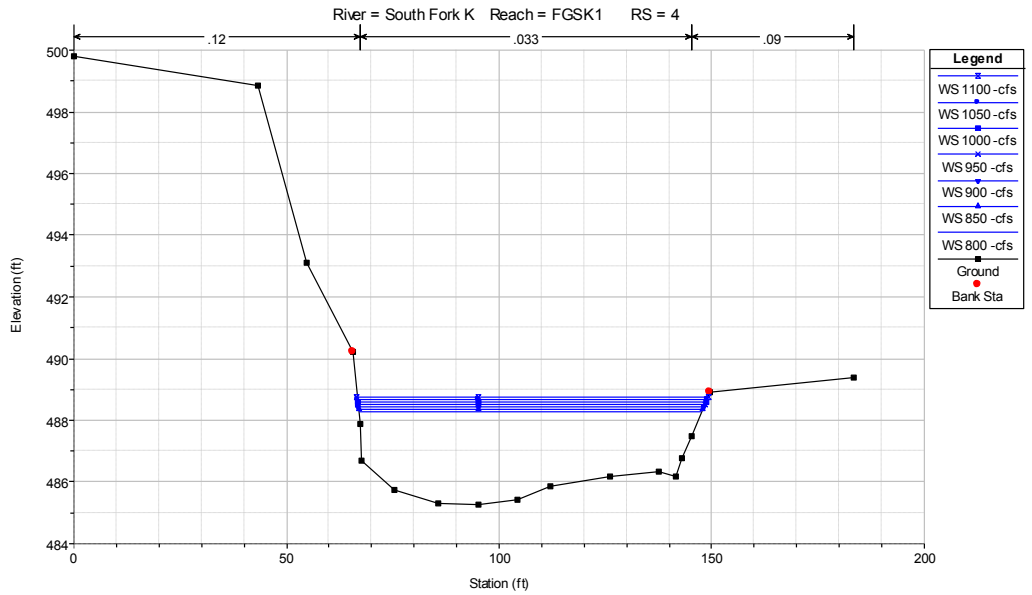


Figure 4 River Station (RS) 4 on River Reach FGSK1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK1

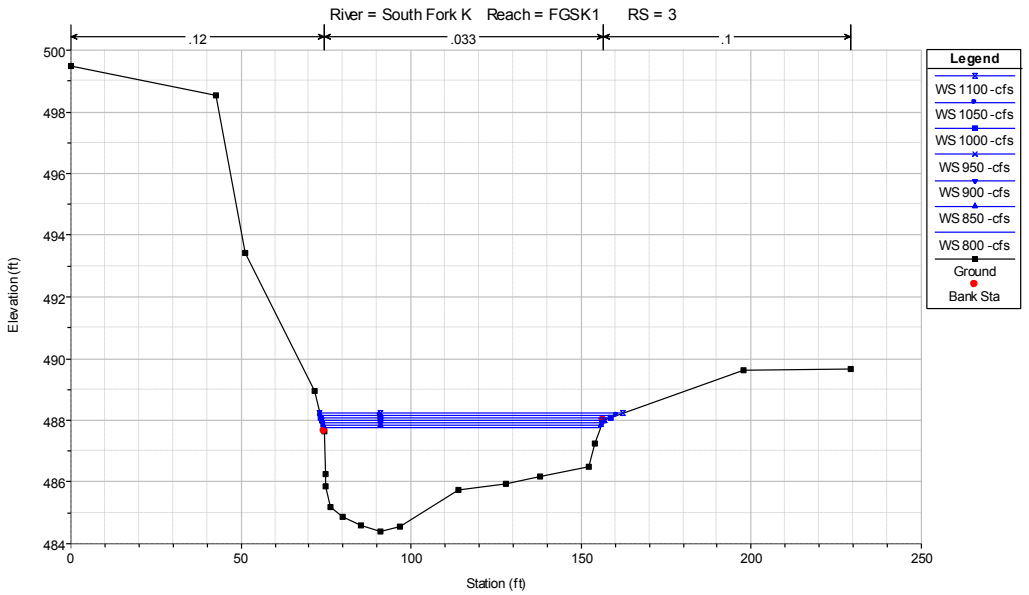


Figure 5 River Station (RS) 3 on River Reach FGSK1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK1

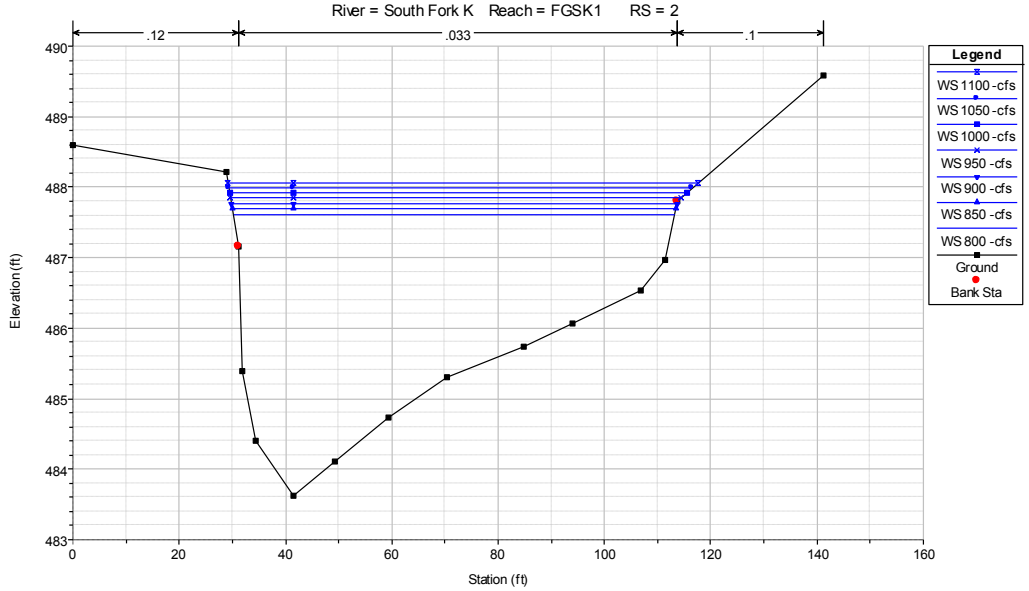


Figure 6 River Station (RS) 2 on River Reach FGSK1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK1

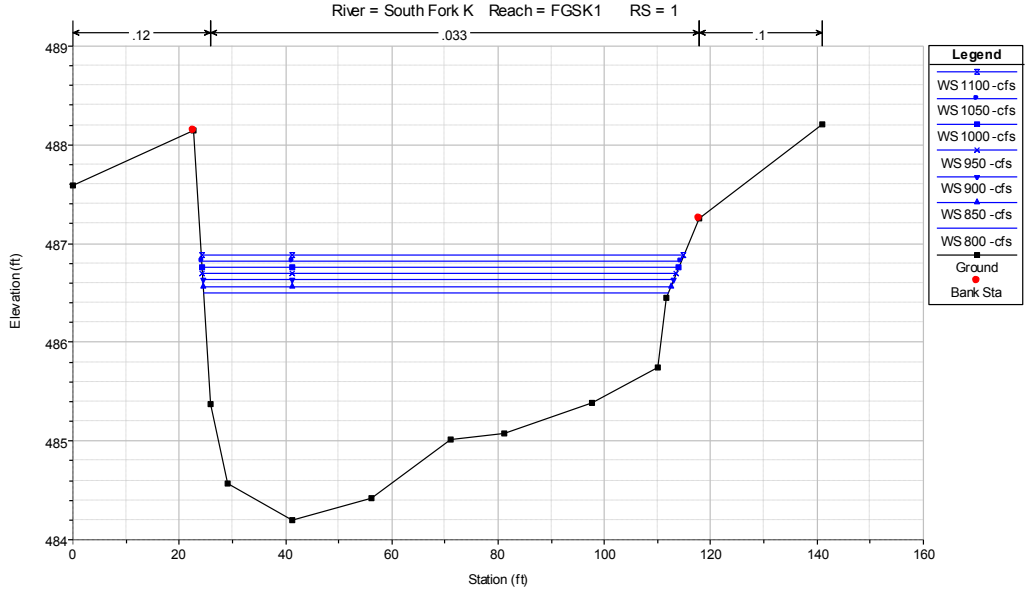


Figure 7 River Station (RS) 1 on River Reach FGSK1. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

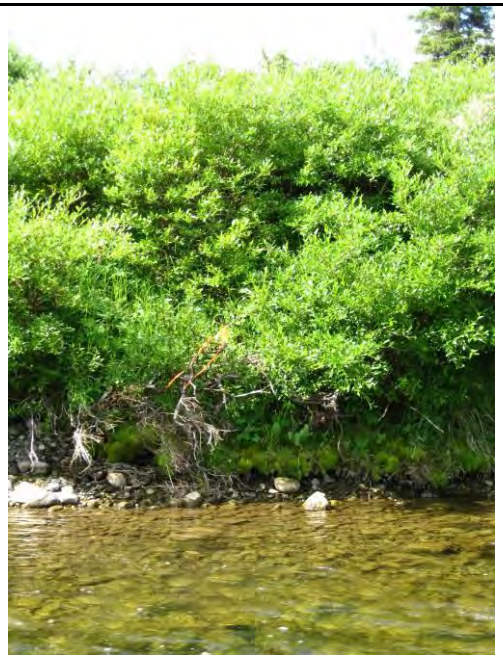
INCIPIENT MOTION ANALYSIS: FGSK1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK1	6	800-cfs	0.44	79	64	52
FGSK1	6	850-cfs	0.45	81	66	53
FGSK1	6	900-cfs	0.47	85	68	55
FGSK1	6	950-cfs	0.48	86	70	57
FGSK1	6	1000-cfs	0.50	90	73	59
FGSK1	6	1050-cfs	0.51	92	74	60
FGSK1	6	1100-cfs	0.53	95	77	62
FGSK1	5	800-cfs	0.47	85	68	55
FGSK1	5	850-cfs	0.49	88	71	58
FGSK1	5	900-cfs	0.51	92	74	60
FGSK1	5	950-cfs	0.53	95	77	62
FGSK1	5	1000-cfs	0.55	99	80	65
FGSK1	5	1050-cfs	0.57	103	83	67
FGSK1	5	1100-cfs	0.59	106	86	69
FGSK1	4	800-cfs	0.51	92	74	60
FGSK1	4	850-cfs	0.54	97	79	64
FGSK1	4	900-cfs	0.57	103	83	67
FGSK1	4	950-cfs	0.60	108	87	71
FGSK1	4	1000-cfs	0.63	113	92	74
FGSK1	4	1050-cfs	0.66	119	96	78
FGSK1	4	1100-cfs	0.69	124	101	81
FGSK1	3	800-cfs	0.48	86	70	57
FGSK1	3	850-cfs	0.5	90	73	59
FGSK1	3	900-cfs	0.51	92	74	60
FGSK1	3	950-cfs	0.53	95	77	62
FGSK1	3	1000-cfs	0.55	99	80	65
FGSK1	3	1050-cfs	0.57	103	83	67
FGSK1	3	1100-cfs	0.59	106	86	69

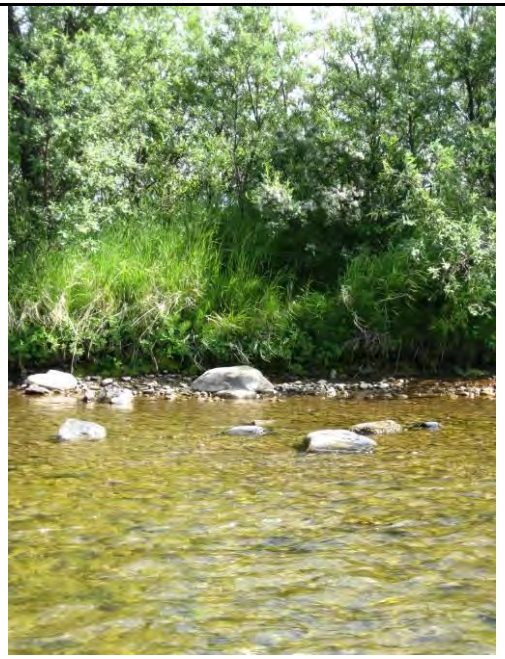
INCIPIENT MOTION ANALYSIS: FGSK1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK1	2	800-cfs	0.41	74	60	48
FGSK1	2	850-cfs	0.43	77	63	51
FGSK1	2	900-cfs	0.45	81	66	53
FGSK1	2	950-cfs	0.47	85	68	55
FGSK1	2	1000-cfs	0.49	88	71	58
FGSK1	2	1050-cfs	0.50	90	73	59
FGSK1	2	1100-cfs	0.52	94	76	61
FGSK1	1	800-cfs	1.02	184	149	120
FGSK1	1	850-cfs	1.06	191	154	125
FGSK1	1	900-cfs	1.09	196	159	128
FGSK1	1	950-cfs	1.12	202	163	132
FGSK1	1	1000-cfs	1.16	209	169	137
FGSK1	1	1050-cfs	1.19	214	173	140
FGSK1	1	1100-cfs	1.22	220	178	144

PHOTOGRAPH DOCUMENTATION: FGSK1



Left bank along reference reach FGSK1



Right bank along reference reach FGSK1

Looking downstream from reference reach FGSK1

Looking upstream from reference reach FGSK1

PHOTOGRAPH DOCUMENTATION: FGSK1

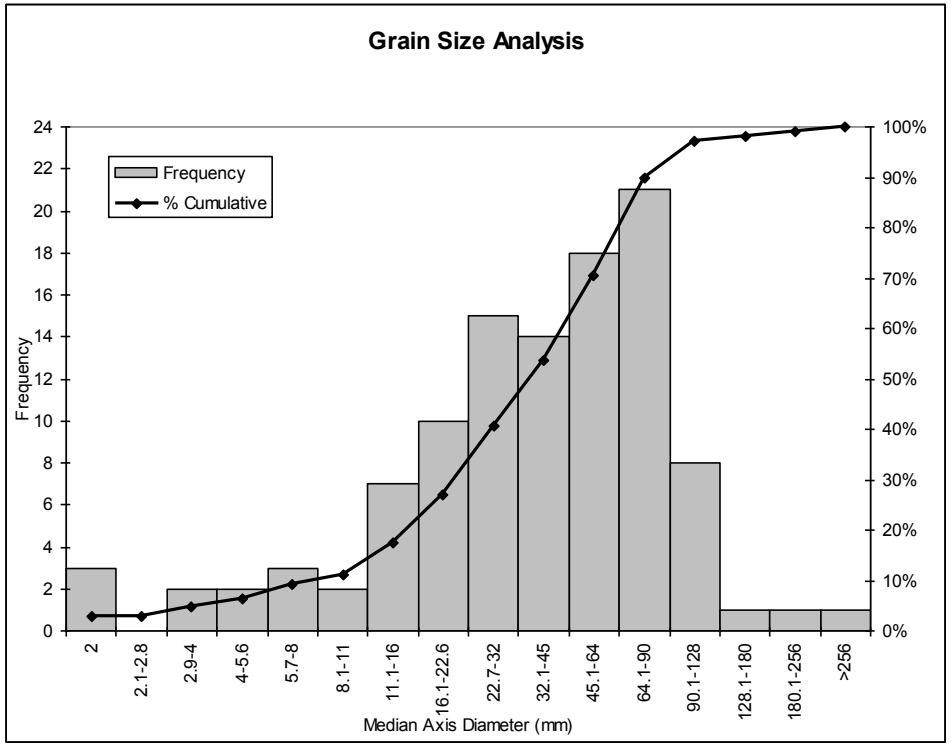
Bank composition detail (right bank) FGSK1

Bank composition detail (left bank) FGSK1

Looking upstream from left terrace FGSK1

PEBBLE COUNT DISTRIBUTION: FGSK1

Original Distribution

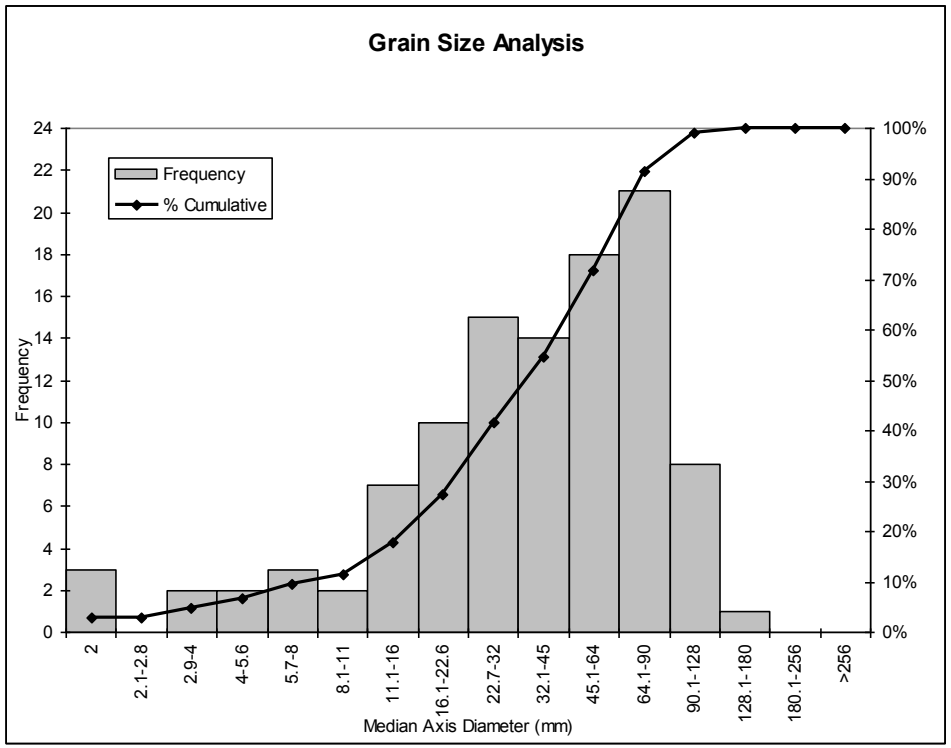


Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	0	2.8%
2.9-4	2	4.6%
4-5.6	2	6.5%
5.7-8	3	9.3%
8.1-11	2	11.1%
11.1-16	7	17.6%
16.1-22.6	10	26.9%
22.7-32	15	40.7%
32.1-45	14	53.7%
45.1-64	18	70.4%
64.1-90	21	89.8%
90.1-128	8	97.2%
128.1-180	1	98.1%
180.1-256	1	99.1%
>256	1	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

PEBBLE COUNT DISTRIBUTION: FGSK1

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	0	2.8%
2.9-4	2	4.7%
4-5.6	2	6.6%
5.7-8	3	9.4%
8.1-11	2	11.3%
11.1-16	7	17.9%
16.1-22.6	10	27.4%
22.7-32	15	41.5%
32.1-45	14	54.7%
45.1-64	18	71.7%
64.1-90	21	91.5%
90.1-128	8	99.1%
128.1-180	1	100.0%
180.1-256	0*	100.0%
>256	0**	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5
*Potential lag removed from pebble count (count: 1)
**Potential lag removed from pebble count (count: 1)

HYDROGRAPH: FGSK1

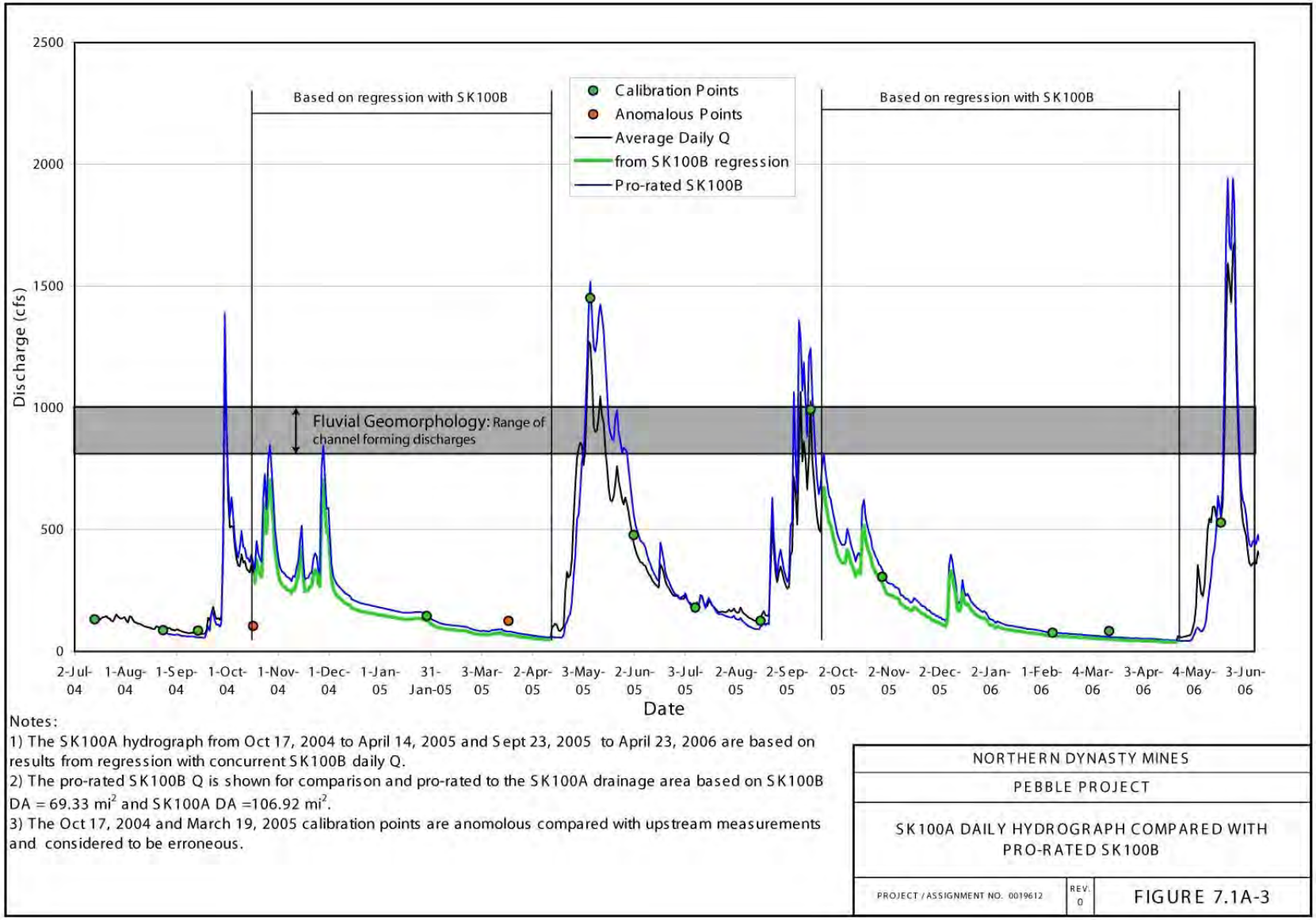


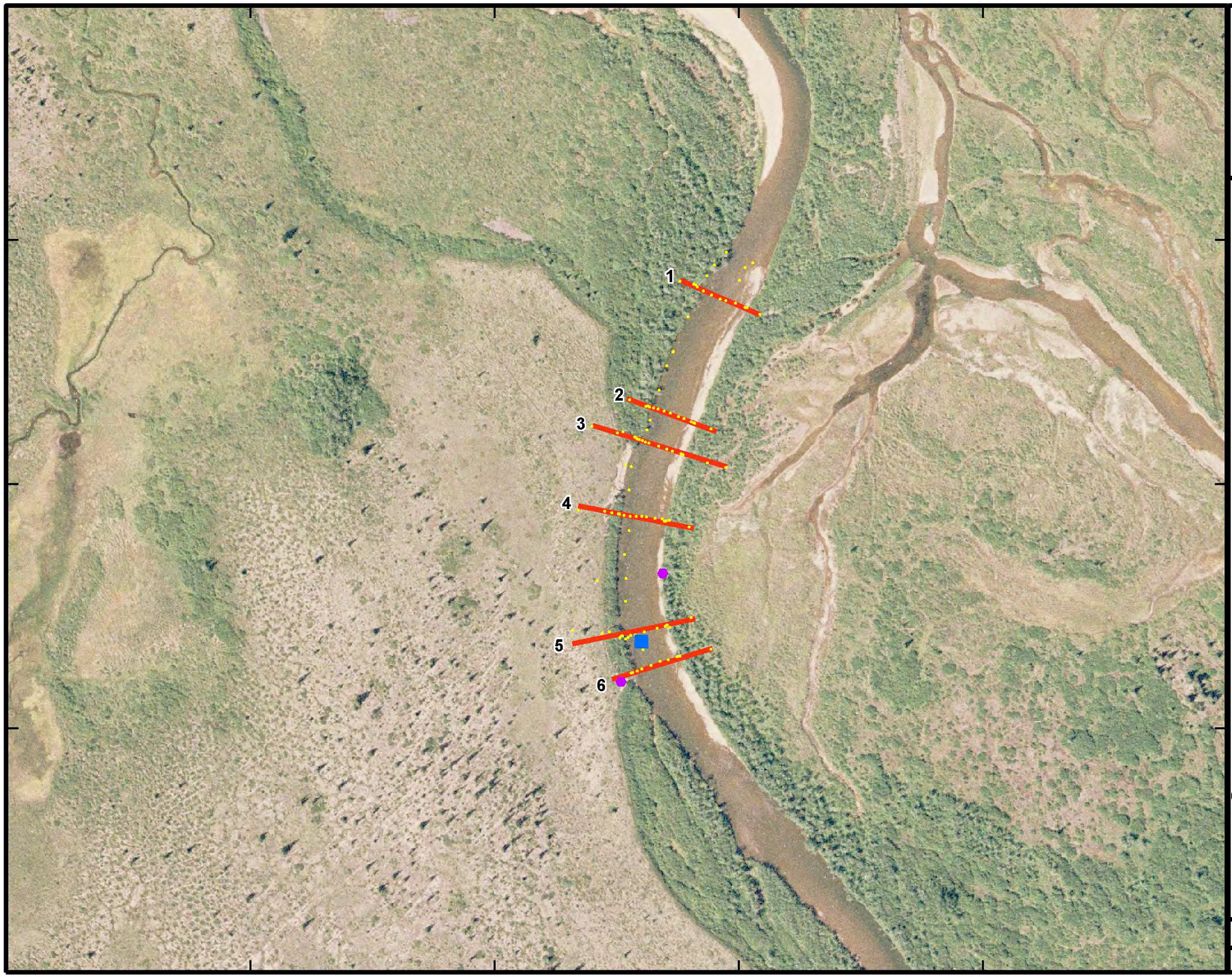
Figure 8 Hydrograph referenced in site description FGSK1. Data provided by HDR

1,314,072 1,314,472 1,314,872 1,315,272 1,315,672

2,131,870

2,131,470

2,131,070



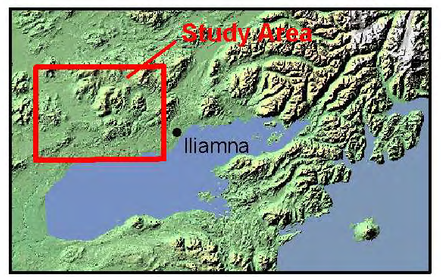
1,314,072 1,314,472 1,314,872 1,315,272 1,315,672

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGSK2

Site Characteristics.

	Site Name	**FGSK2**	
Discharge (cfs)	**700 (600-900)**	Width (ft)	**92.0 (75.6-109.0)**
Slope	**0.0026**	Cross-sectional Area (ft^2)	**193 (146-238)**
(1) D_{50}	**40**	D_{84}	**64**
(2) D_{50}	**27**	D_{84}	**56**
Lat/Long Location	**N59.81125 W155.73512**	Drainage Area (mi^2)	**90**
	% Willow	**70**	
	% Grass	**30**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 430 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 5 and 4 characterize a riffle located along a bend. Pebble count 1 was taken across River Station (RS) 4 which may be overly wide due to its location potentially causing ineffective flow. As another indicator of channel-forming flows, another section upstream was surveyed. Section 6 characterizes a glide upstream of the riffle which is a straight stretch with well-formed banks. Pebble count 2 was taken through this glide. The reference reach includes Sections 6 through 4. Sections 4 through 1 characterize the pool.

For a Shields number of 0.017, the D_{84} of pebble count 1 begins to move from Section 4 by 600 cfs while the D_{84} of pebble count 2 begins to move at a discharge of 850 cfs. A discharge of 700 cfs matches the geometry of Section 6 well and discharges between 600 and 700 cfs match the geometry of Sections 5 and 4.

The reference reach including a riffle and upstream glide sections (Sections 6 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK2	6	600-cfs	600	75.6	178	2.4	3.3	0.0016	3.4	0.39	0.23	0.031
FGSK2	6	650-cfs	650	75.7	186	2.5	3.4	0.0017	3.5	0.39	0.25	0.031
FGSK2	6	700-cfs	700	75.8	192	2.5	3.5	0.0018	3.6	0.40	0.27	0.031
FGSK2	6	750-cfs	750	75.8	199	2.6	3.6	0.0018	3.8	0.41	0.28	0.031
FGSK2	6	800-cfs	800	75.9	205	2.7	3.6	0.0019	3.9	0.42	0.30	0.031
FGSK2	6	850-cfs	850	75.9	211	2.8	3.7	0.0019	4.0	0.42	0.32	0.031
FGSK2	6	900-cfs	900	75.9	217	2.9	3.8	0.0019	4.1	0.43	0.33	0.031
FGSK2	5	600-cfs	600	109.0	178	1.6	2.8	0.0026	3.4	0.47	0.26	0.031
FGSK2	5	650-cfs	650	109.0	188	1.7	2.9	0.0025	3.5	0.46	0.27	0.031
FGSK2	5	700-cfs	700	109.0	199	1.8	3.0	0.0024	3.5	0.46	0.28	0.031
FGSK2	5	750-cfs	750	109.0	209	1.9	3.1	0.0024	3.6	0.45	0.28	0.031
FGSK2	5	800-cfs	800	109.0	219	2.0	3.2	0.0023	3.6	0.45	0.28	0.031
FGSK2	5	850-cfs	850	109.0	228	2.1	3.2	0.0022	3.7	0.45	0.29	0.031
FGSK2	5	900-cfs	900	109.0	238	2.2	3.3	0.0022	3.7	0.44	0.29	0.031
FGSK2	4	600-cfs	600	91.2	146	1.6	2.4	0.0038	4.1	0.57	0.37	0.031
FGSK2	4	650-cfs	650	91.2	155	1.7	2.5	0.0037	4.2	0.57	0.39	0.032
FGSK2	4	700-cfs	700	91.3	164	1.8	2.6	0.0036	4.3	0.56	0.40	0.032
FGSK2	4	750-cfs	750	91.3	172	1.9	2.7	0.0036	4.4	0.56	0.42	0.032
FGSK2	4	800-cfs	800	91.3	180	2.0	2.8	0.0035	4.4	0.56	0.43	0.032
FGSK2	4	850-cfs	850	91.3	188	2.1	2.9	0.0035	4.5	0.55	0.44	0.032
FGSK2	4	900-cfs	900	91.3	195	2.1	3.0	0.0034	4.6	0.55	0.45	0.032
FGSK2	3	600-cfs	600	70.8	163	2.3	3.5	0.0020	3.7	0.42	0.28	0.031
FGSK2	3	650-cfs	650	70.8	170	2.4	3.6	0.0021	3.8	0.43	0.30	0.031
FGSK2	3	700-cfs	700	70.9	176	2.5	3.7	0.0021	3.9	0.44	0.32	0.031
FGSK2	3	750-cfs	750	70.9	182	2.6	3.8	0.0022	4.1	0.45	0.33	0.031
FGSK2	3	800-cfs	800	70.9	188	2.7	3.8	0.0022	4.2	0.46	0.35	0.031
FGSK2	3	850-cfs	850	70.9	194	2.7	3.9	0.0023	4.3	0.46	0.37	0.031
FGSK2	3	900-cfs	900	70.9	199	2.8	4.0	0.0023	4.5	0.47	0.39	0.031
FGSK2	2	600-cfs	600	68.9	134	2.0	4.2	0.0037	4.5	0.56	0.43	0.031

HEC-RAS OUTPUT SUMMARY TABLE: FGSK2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK2	2	650-cfs	650	69.0	140	2.0	4.3	0.0038	4.6	0.57	0.46	0.031
FGSK2	2	700-cfs	700	69.1	145	2.1	4.4	0.0040	4.8	0.59	0.50	0.031
FGSK2	2	750-cfs	750	69.2	150	2.2	4.5	0.0041	5.0	0.60	0.53	0.031
FGSK2	2	800-cfs	800	69.2	155	2.2	4.5	0.0042	5.2	0.61	0.56	0.031
FGSK2	2	850-cfs	850	69.3	159	2.3	4.6	0.0043	5.3	0.62	0.59	0.031
FGSK2	2	900-cfs	900	69.4	164	2.4	4.7	0.0044	5.5	0.63	0.62	0.031
FGSK2	1	600-cfs	600	92.5	128	1.4	2.5	0.0063	4.7	0.70	0.53	0.031
FGSK2	1	650-cfs	650	92.7	135	1.5	2.5	0.0063	4.8	0.70	0.56	0.031
FGSK2	1	700-cfs	700	92.9	141	1.5	2.6	0.0063	5.0	0.71	0.58	0.032
FGSK2	1	750-cfs	750	93.1	148	1.6	2.7	0.0063	5.1	0.71	0.61	0.032
FGSK2	1	800-cfs	800	93.3	154	1.7	2.7	0.0063	5.2	0.71	0.63	0.032
FGSK2	1	850-cfs	850	93.5	160	1.7	2.8	0.0063	5.3	0.72	0.66	0.032
FGSK2	1	900-cfs	900	93.7	166	1.8	2.9	0.0063	5.4	0.72	0.68	0.032

HEC-RAS LONGITUDINAL PROFILE: FGSK2

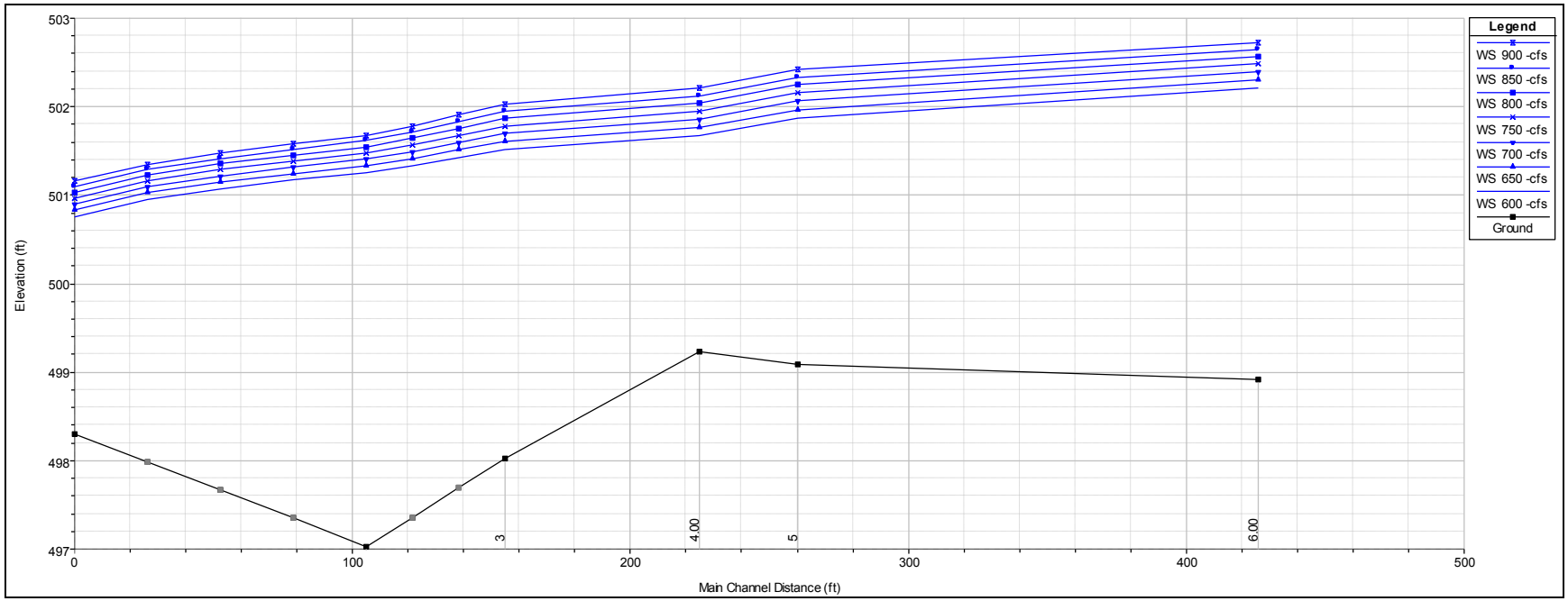


Figure 9 HEC-RAS longitudinal profile output for Reach FGSK2. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK2

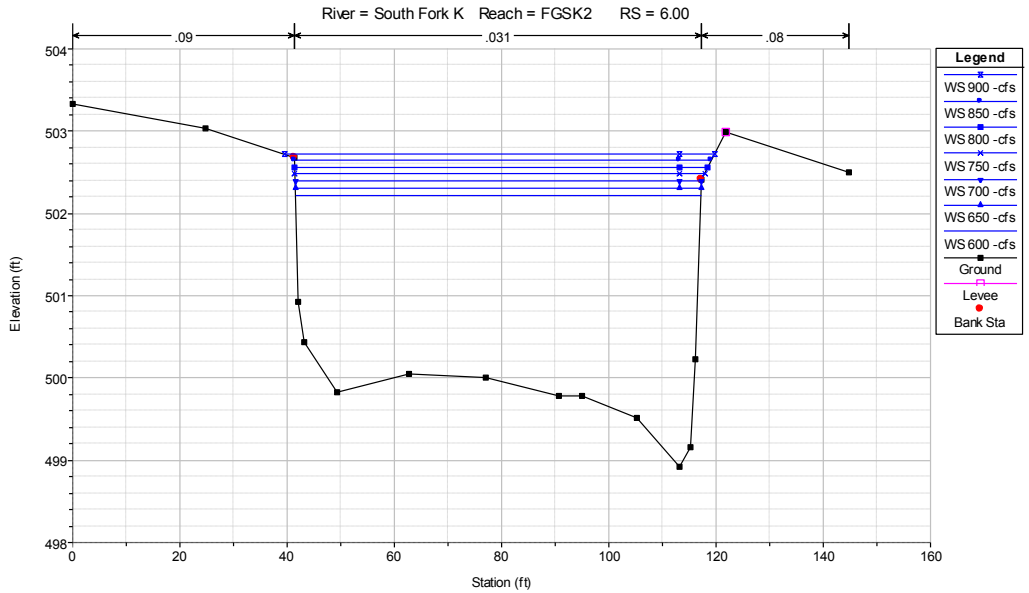


Figure 10 River Station (RS) 6 on River Reach FGSK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK2

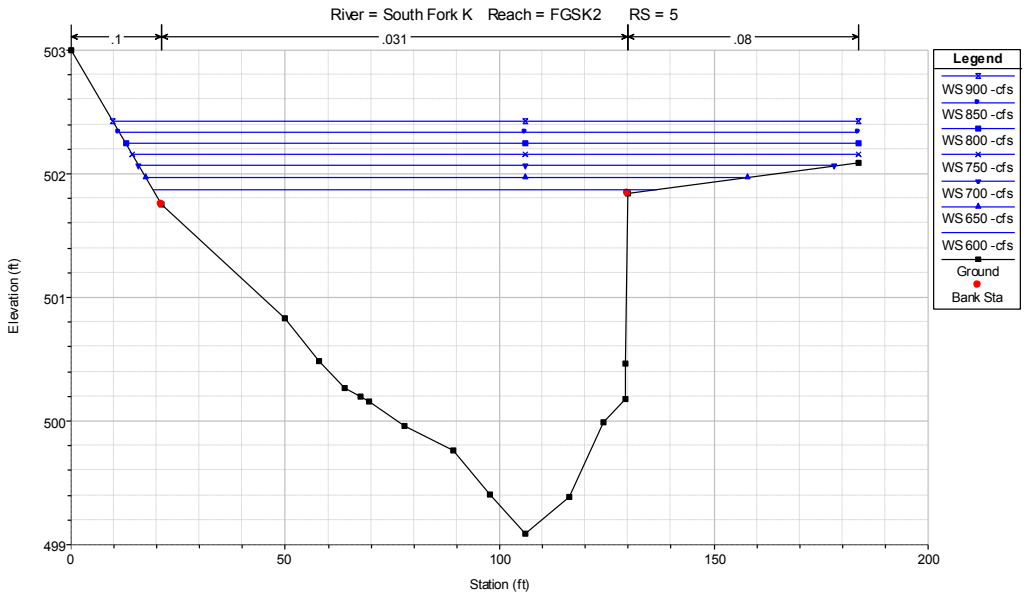


Figure 11 River Station (RS) 5 on River Reach FGSK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK2

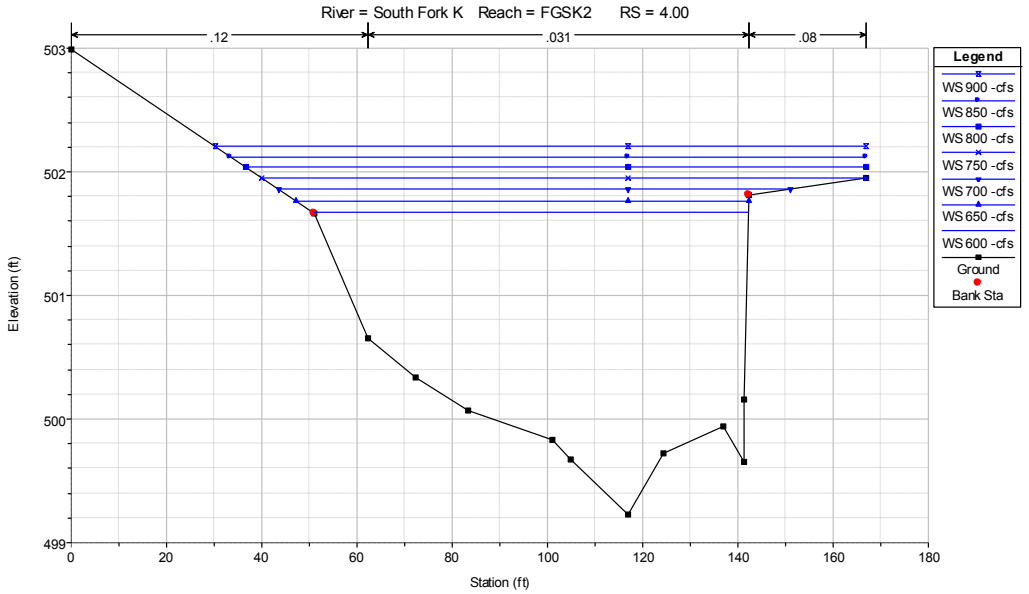


Figure 12 River Station (RS) 4 on River Reach FGSK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK2

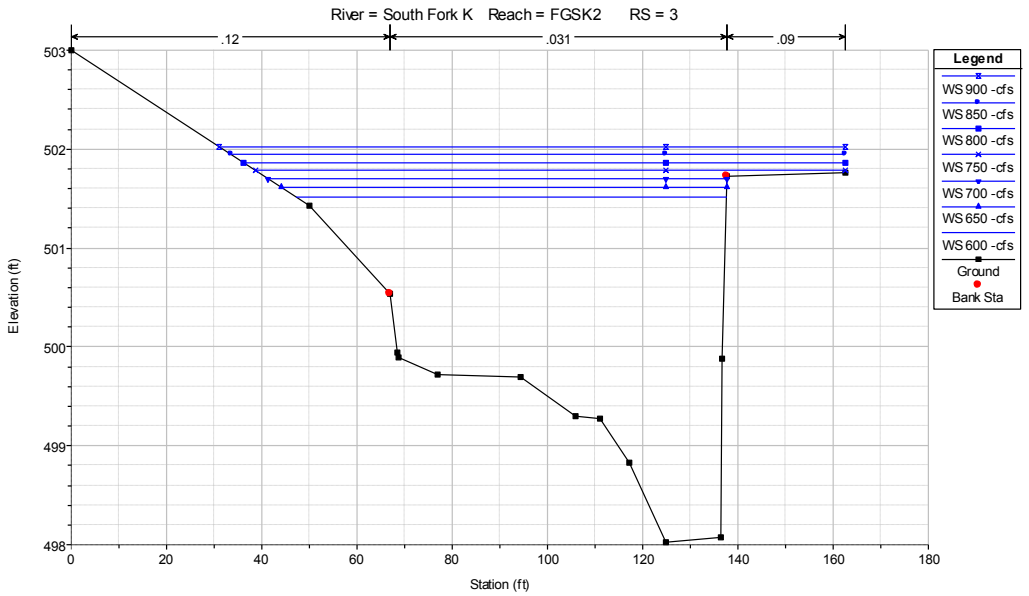


Figure 13 River Station (RS) 3 on River Reach FGSK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK2

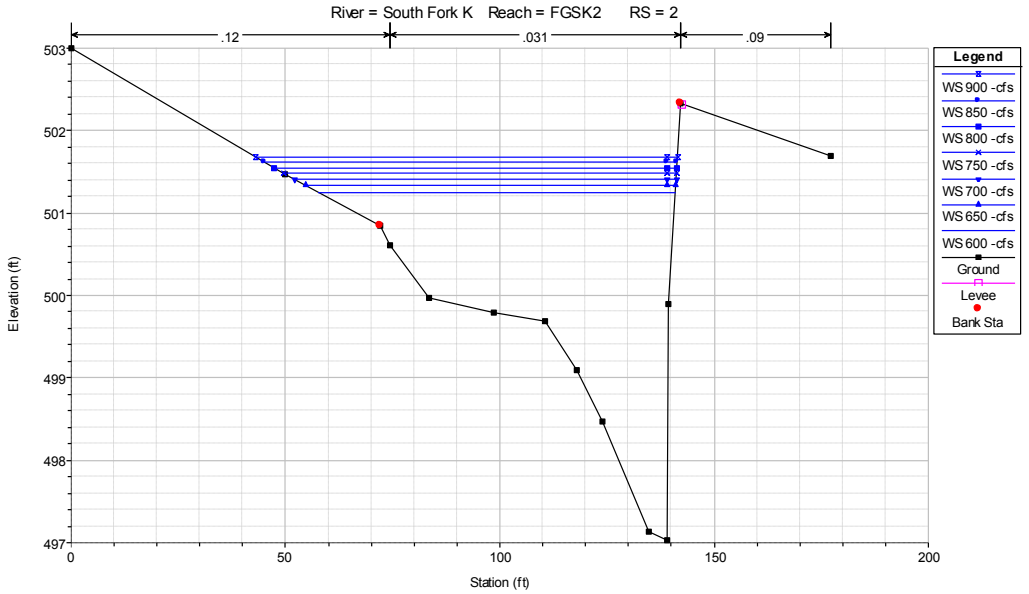


Figure 14 River Station (RS) 2 on River Reach FGSK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK2

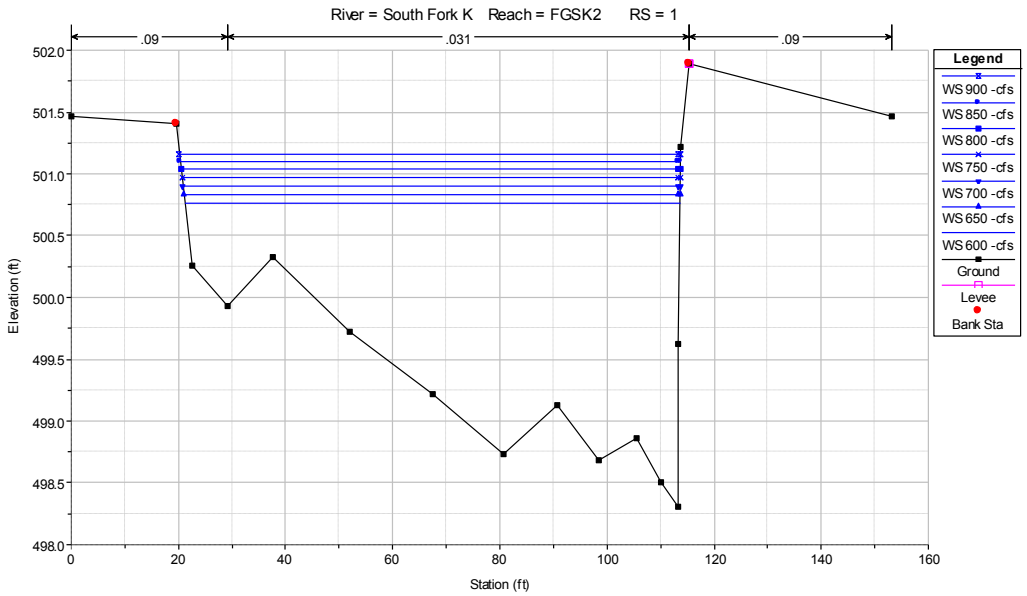


Figure 15 River Station (RS) 1 on River Reach FGSK2. The black line represents the channel ground, facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK2

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK2	6	600-cfs	0.23	41	34	27
FGSK2	6	650-cfs	0.25	45	36	29
FGSK2	6	700-cfs	0.27	49	39	32
FGSK2	6	750-cfs	0.28	50	41	33
FGSK2	6	800-cfs	0.30	54	44	35
FGSK2	6	850-cfs	0.32	58	47	38
FGSK2	6	900-cfs	0.33	59	48	39
FGSK2	5	600-cfs	0.26	47	38	31
FGSK2	5	650-cfs	0.27	49	39	32
FGSK2	5	700-cfs	0.28	50	41	33
FGSK2	5	750-cfs	0.28	50	41	33
FGSK2	5	800-cfs	0.28	50	41	33
FGSK2	5	850-cfs	0.29	52	42	34
FGSK2	5	900-cfs	0.29	52	42	34
FGSK2	4	600-cfs	0.37	67	54	44
FGSK2	4	650-cfs	0.39	70	57	46
FGSK2	4	700-cfs	0.40	72	58	47
FGSK2	4	750-cfs	0.42	76	61	49
FGSK2	4	800-cfs	0.43	77	63	51
FGSK2	4	850-cfs	0.44	79	64	52
FGSK2	4	900-cfs	0.45	81	66	53
FGSK2	3	600-cfs	0.28	50	41	33
FGSK2	3	650-cfs	0.30	54	44	35
FGSK2	3	700-cfs	0.32	58	47	38
FGSK2	3	750-cfs	0.33	59	48	39
FGSK2	3	800-cfs	0.35	63	51	41
FGSK2	3	850-cfs	0.37	67	54	44
FGSK2	3	900-cfs	0.39	70	57	46

INCIPIENT MOTION ANALYSIS: FGSK2

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK2	2	600-cfs	0.43	77	63	51
FGSK2	2	650-cfs	0.46	83	67	54
FGSK2	2	700-cfs	0.50	90	73	59
FGSK2	2	750-cfs	0.53	95	77	62
FGSK2	2	800-cfs	0.56	101	82	66
FGSK2	2	850-cfs	0.59	106	86	69
FGSK2	2	900-cfs	0.62	112	90	73
FGSK2	1	600-cfs	0.53	95	77	62
FGSK2	1	650-cfs	0.56	101	82	66
FGSK2	1	700-cfs	0.58	104	85	68
FGSK2	1	750-cfs	0.61	110	89	72
FGSK2	1	800-cfs	0.63	113	92	74
FGSK2	1	850-cfs	0.66	119	96	78
FGSK2	1	900-cfs	0.68	122	99	80

PHOTOGRAPH DOCUMENTATION: FGSK2

Left bank along reference reach FGSK2

Right bank along reference reach FGSK2

Looking downstream from reference reach FGSK2

Looking upstream from reference reach FGSK2

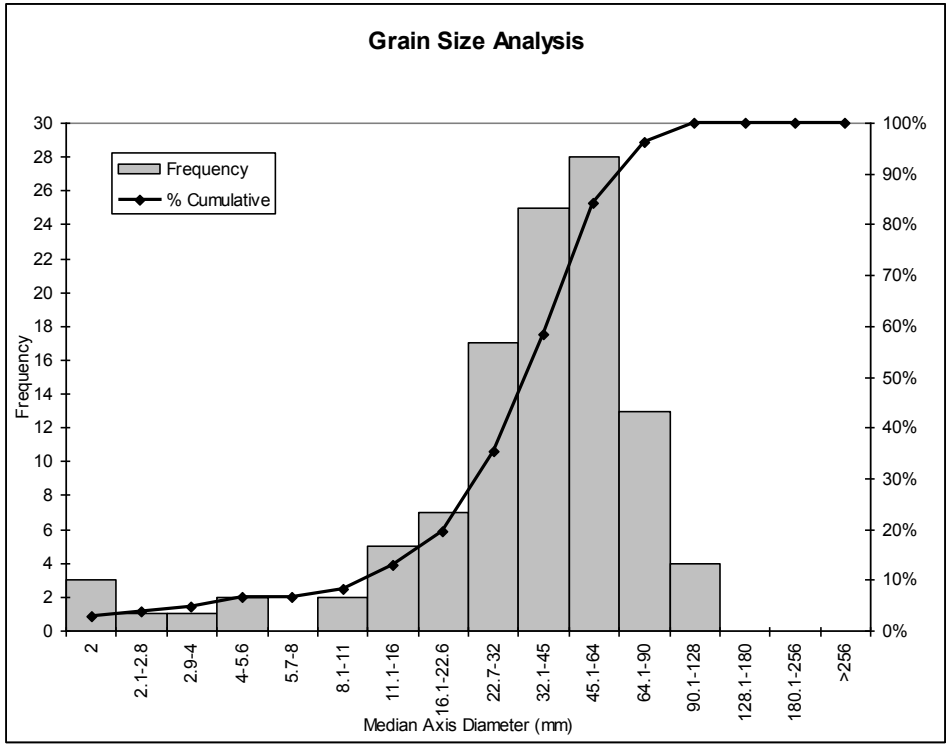
PHOTOGRAPH DOCUMENTATION: FGSK2

Bank composition detail (right bank) FGSK2

Bank composition detail (left bank) FGSK2

PEBBLE COUNT DISTRIBUTION: FGSK2

Pebble Count 1

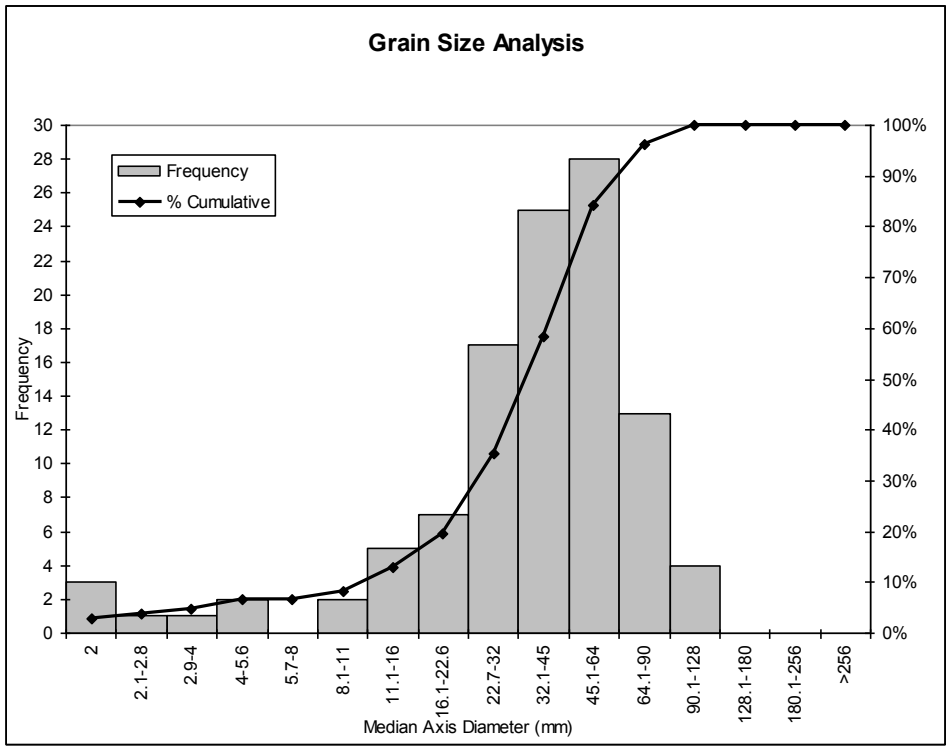


Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	1	3.7%
2.9-4	1	4.6%
4-5.6	2	6.5%
5.7-8	0	6.5%
8.1-11	2	8.3%
11.1-16	5	13.0%
16.1-22.6	7	19.4%
22.7-32	17	35.2%
32.1-45	25	58.3%
45.1-64	28	84.3%
64.1-90	13	96.3%
90.1-128	4	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4

PEBBLE COUNT DISTRIBUTION: FGSK2

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	1	3.7%
2.9-4	1	4.6%
4-5.6	2	6.5%
5.7-8	0	6.5%
8.1-11	2	8.3%
11.1-16	5	13.0%
16.1-22.6	7	19.4%
22.7-32	17	35.2%
32.1-45	25	58.3%
45.1-64	28	84.3%
64.1-90	13	96.3%
90.1-128	4	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

1,319,960 1,320,360 1,320,760 1,321,160 1,321,560

2,127,426

2,127,026

2,126,626

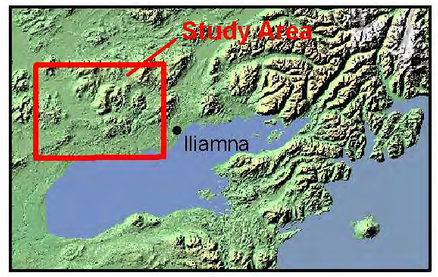
1,319,960 1,320,360 1,320,760 1,321,160 1,321,560

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK2
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGSK3

Site Characteristics.

Site Name	**FGSK3**		
Discharge (cfs)	**625 (550-850)**	Width (ft)	**49.5 (46.4-53.0)**
Slope	**0.0014**	Cross-sectional Area (ft^2)	**171 (150-190)**
(1) D_{50}	**27**	D_{84}	**48**
(2) D_{50}	**36**	D_{84}	**70**
Lat/Long Location	**N59.80290 W155.69198**	Drainage Area (mi^2)	**89**
% Willow	**30**		
% Grass	**60**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 430 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 6 and 5 characterize a riffle and serve as the reference reach. Sections 5 through 1 characterize the downstream pool. Pebble count 1 was taken at River Station (RS) 6 while pebble count 2 was taken just upstream of Section 5 through the lower 20% of the riffle. Pebble count 1's distribution is tighter than those sampled from the surrounding sites (FGSK4, 5 and 7) and observations were made that the sampled area included recent fish spawning activity. Pebble count 2's distribution is wider and more similar to those of the nearby sites. The following analysis is based on both distributions.

For a Shields number of 0.017, the D_{84} from pebble count 1 begins to move from Section 5 at 700 cfs and pebble count 2 at 625 cfs. The D_{84} from pebble count 2 is immobile at River Station 5. For a Shields number of 0.026 the D_{50} from pebble count 1 moves before 550 cfs on Section 6 and 600 cfs on Section 5. It is unclear as to why the incipient motion analysis corresponds well with the pebble count apparently influenced by recent fish spawning activity. There may be lag present in pebble count 2 that was unable to be accounted for as it is unclear within the distribution which particle sizes are immobile. However, these results match the geometry well notably on Section 6 where a discharge of 625 cfs overtops the left bank as well as matches the left floodplain elevation and right bank levee on Section 4.

The reference reach, which include riffle Sections 6 through 5, provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK3	6	550-cfs	550	52.4	150	2.9	3.4	0.0015	3.6	0.38	0.26	0.031
FGSK3	6	600-cfs	600	52.5	157	3.0	3.5	0.0015	3.8	0.38	0.27	0.031
FGSK3	6	625-cfs	625	52.5	160	3.1	3.6	0.0015	3.8	0.39	0.28	0.031
FGSK3	6	650-cfs	650	52.6	164	3.1	3.6	0.0015	3.9	0.39	0.29	0.031
FGSK3	6	700-cfs	700	52.7	170	3.2	3.8	0.0015	4.0	0.39	0.30	0.031
FGSK3	6	750-cfs	750	52.8	177	3.4	3.9	0.0015	4.1	0.40	0.31	0.031
FGSK3	6	800-cfs	800	52.9	183	3.5	4.0	0.0015	4.2	0.40	0.32	0.031
FGSK3	6	850-cfs	850	53.0	190	3.6	4.1	0.0015	4.3	0.40	0.33	0.031
FGSK3	5	550-cfs	550	46.4	158	3.4	3.8	0.0011	3.5	0.33	0.22	0.031
FGSK3	5	600-cfs	600	46.4	164	3.5	4.0	0.0012	3.7	0.34	0.24	0.031
FGSK3	5	625-cfs	625	46.4	167	3.6	4.0	0.0012	3.7	0.35	0.25	0.031
FGSK3	5	650-cfs	650	46.4	170	3.7	4.1	0.0012	3.8	0.35	0.26	0.031
FGSK3	5	700-cfs	700	46.4	175	3.8	4.2	0.0013	4.0	0.36	0.28	0.031
FGSK3	5	750-cfs	750	46.4	180	3.9	4.3	0.0013	4.1	0.37	0.30	0.031
FGSK3	5	800-cfs	800	46.4	185	4.0	4.4	0.0014	4.3	0.38	0.32	0.031
FGSK3	5	850-cfs	850	46.4	190	4.1	4.5	0.0014	4.4	0.39	0.34	0.031
FGSK3	4	550-cfs	550	51.3	178	3.5	4.7	0.0008	3.1	0.29	0.17	0.031
FGSK3	4	600-cfs	600	51.3	184	3.6	4.8	0.0009	3.3	0.30	0.19	0.031
FGSK3	4	625-cfs	625	51.3	187	3.7	4.9	0.0009	3.3	0.31	0.20	0.031
FGSK3	4	650-cfs	650	51.3	190	3.7	4.9	0.0009	3.4	0.31	0.20	0.031
FGSK3	4	700-cfs	700	51.3	196	3.8	5.0	0.0010	3.5	0.32	0.22	0.031
FGSK3	4	750-cfs	750	51.3	202	3.9	5.1	0.0010	3.7	0.32	0.23	0.031
FGSK3	4	800-cfs	800	51.3	208	4.1	5.3	0.0010	3.8	0.33	0.25	0.031
FGSK3	4	850-cfs	850	51.3	213	4.2	5.4	0.0010	3.9	0.34	0.26	0.031
FGSK3	3	550-cfs	550	58.1	290	5.0	8.8	0.0002	1.9	0.15	0.06	0.031
FGSK3	3	600-cfs	600	58.1	298	5.1	8.9	0.0002	2.0	0.16	0.07	0.031
FGSK3	3	625-cfs	625	58.1	301	5.2	9.0	0.0002	2.1	0.16	0.07	0.031
FGSK3	3	650-cfs	650	58.1	305	5.3	9.1	0.0002	2.1	0.16	0.07	0.031
FGSK3	3	700-cfs	700	58.1	312	5.4	9.2	0.0003	2.2	0.17	0.08	0.031
FGSK3	3	750-cfs	750	58.1	319	5.5	9.3	0.0003	2.3	0.18	0.09	0.031

HEC-RAS OUTPUT SUMMARY TABLE: FGSK3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK3	3	800-cfs	800	58.1	325	5.6	9.4	0.0003	2.4	0.18	0.09	0.031
FGSK3	3	850-cfs	850	58.1	331	5.7	9.5	0.0003	2.5	0.19	0.10	0.031
FGSK3	2	550-cfs	550	76.2	242	3.2	4.4	0.0005	2.3	0.22	0.10	0.031
FGSK3	2	600-cfs	600	76.2	252	3.3	4.5	0.0005	2.4	0.23	0.10	0.031
FGSK3	2	625-cfs	625	76.2	257	3.4	4.6	0.0005	2.4	0.23	0.11	0.031
FGSK3	2	650-cfs	650	76.2	261	3.4	4.6	0.0005	2.5	0.23	0.11	0.031
FGSK3	2	700-cfs	700	76.2	270	3.6	4.8	0.0005	2.6	0.24	0.12	0.031
FGSK3	2	750-cfs	750	76.2	279	3.7	4.9	0.0006	2.6	0.24	0.12	0.031
FGSK3	2	800-cfs	800	76.2	288	3.8	5.0	0.0006	2.7	0.25	0.13	0.031
FGSK3	2	850-cfs	850	76.2	296	3.9	5.1	0.0006	2.8	0.25	0.14	0.031
FGSK3	1	550-cfs	550	68.1	156	2.3	3.5	0.0018	3.5	0.41	0.26	0.031
FGSK3	1	600-cfs	600	68.1	164	2.4	3.6	0.0018	3.6	0.41	0.27	0.031
FGSK3	1	625-cfs	625	68.1	168	2.5	3.7	0.0018	3.7	0.41	0.28	0.031
FGSK3	1	650-cfs	650	68.1	172	2.5	3.7	0.0018	3.8	0.42	0.28	0.031
FGSK3	1	700-cfs	700	68.1	180	2.6	3.8	0.0018	3.9	0.42	0.29	0.031
FGSK3	1	750-cfs	750	68.1	187	2.8	4.0	0.0018	4.0	0.42	0.31	0.031
FGSK3	1	800-cfs	800	68.1	194	2.9	4.1	0.0018	4.1	0.42	0.32	0.031
FGSK3	1	850-cfs	850	68.1	201	3.0	4.2	0.0018	4.2	0.43	0.33	0.031

HEC-RAS LONGITUDINAL PROFILE: FGSK3

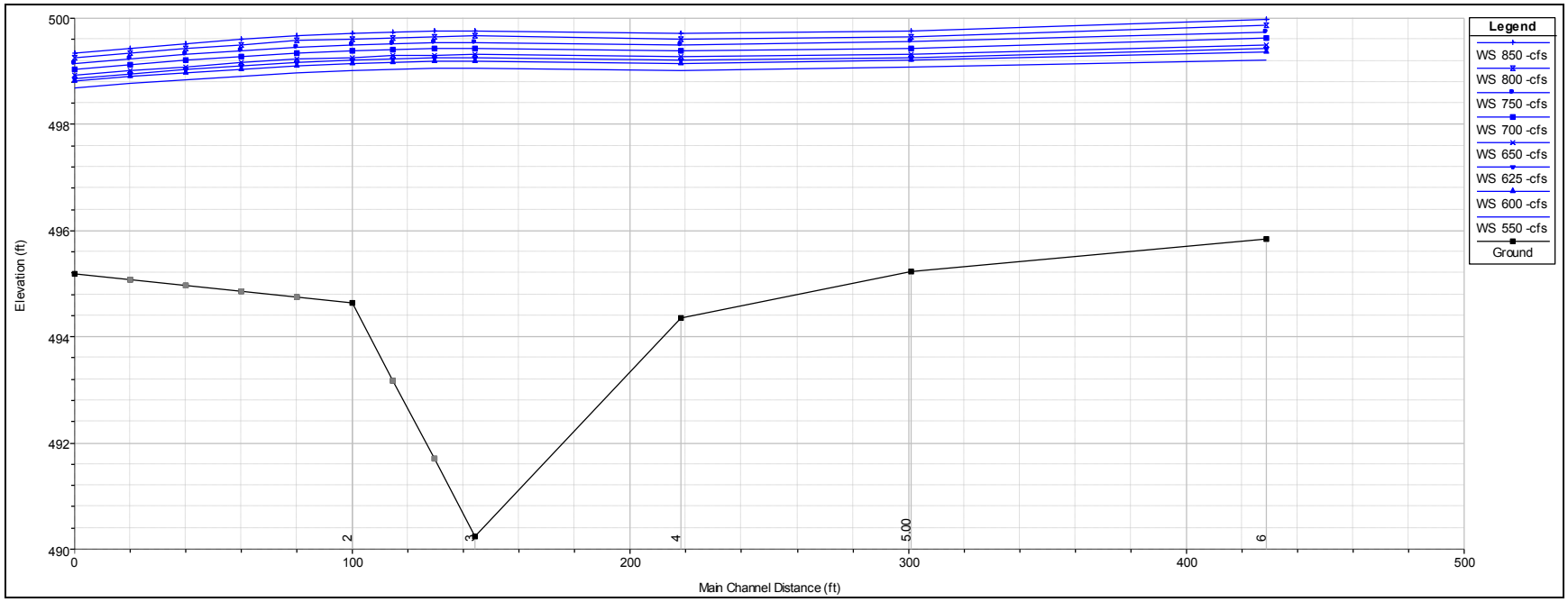


Figure 16 HEC-RAS longitudinal profile output for Reach FGSK3. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK3

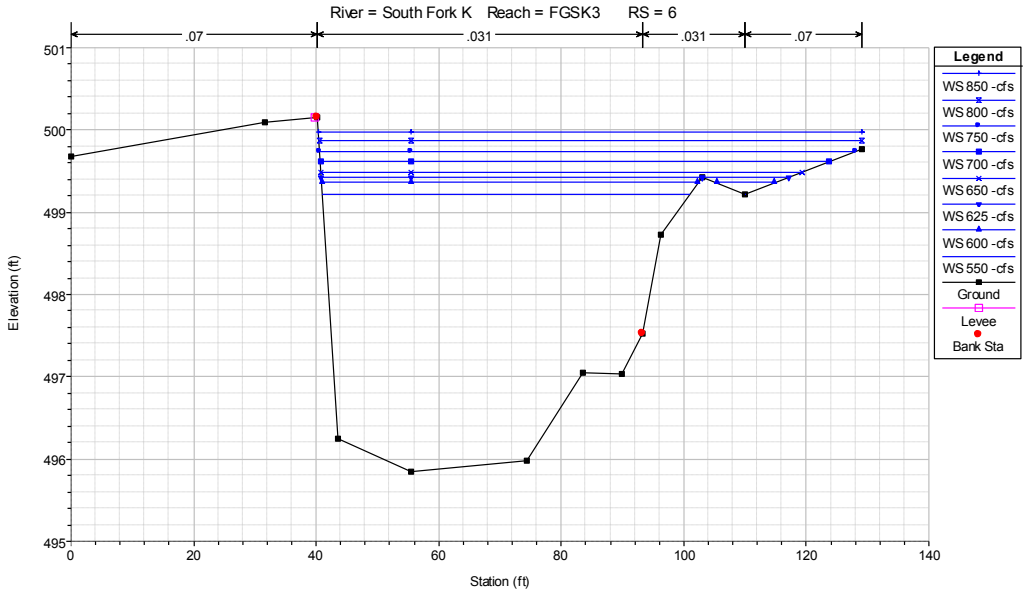


Figure 17 River Station (RS) 6 on River Reach FGSK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK3

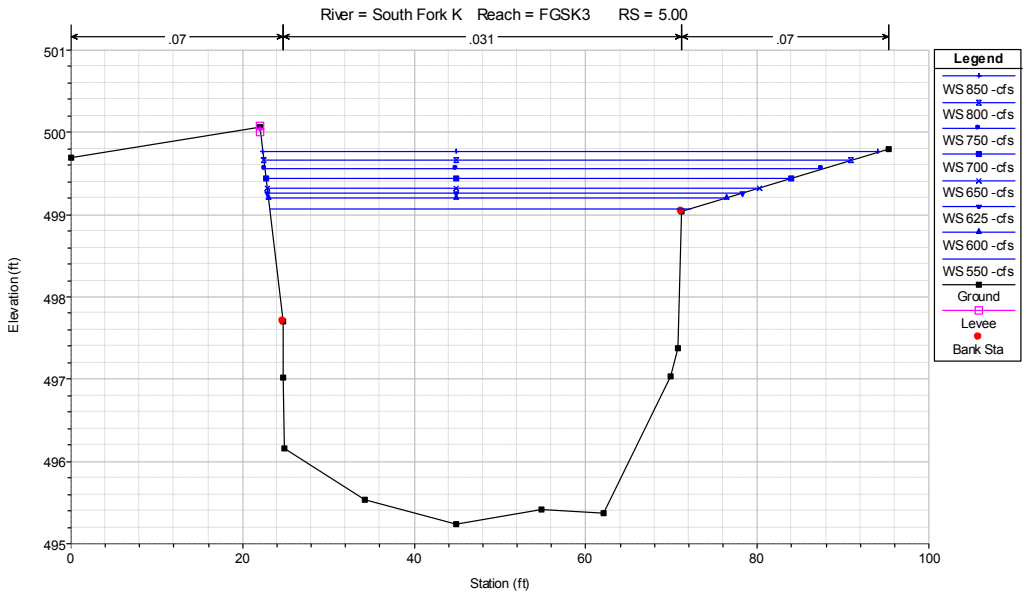


Figure 18 River Station (RS) 5 on River Reach FGSK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK3

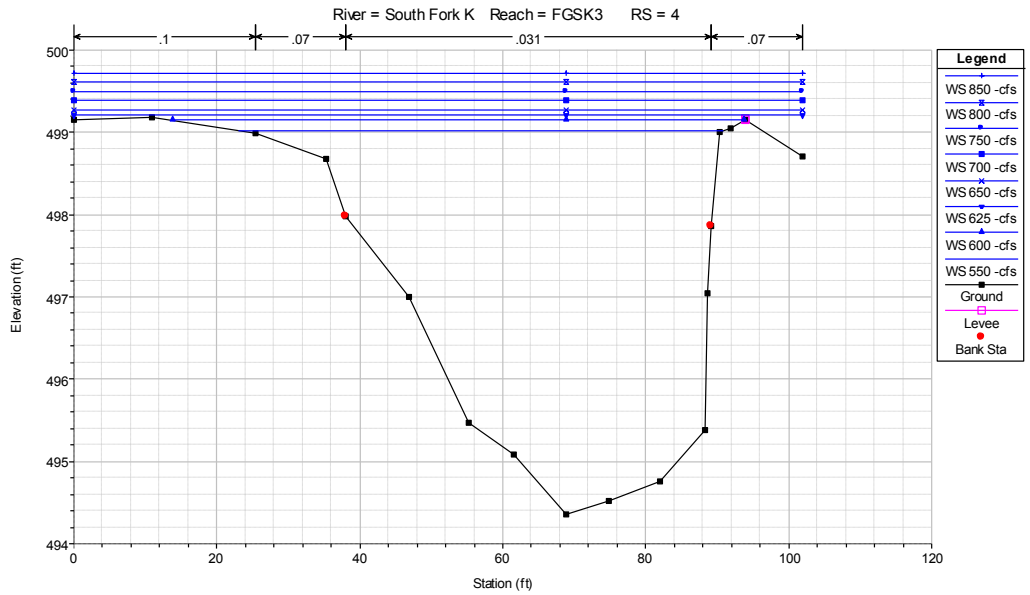


Figure 19 River Station (RS) 4 on River Reach FGSK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK3

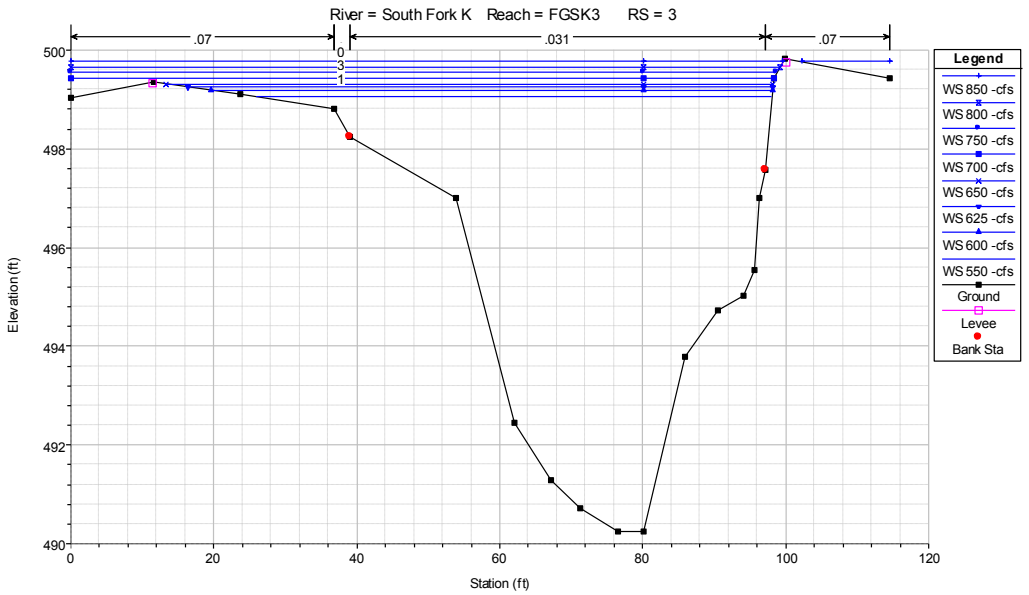


Figure 20 River Station (RS) 3 on River Reach FGSK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK3

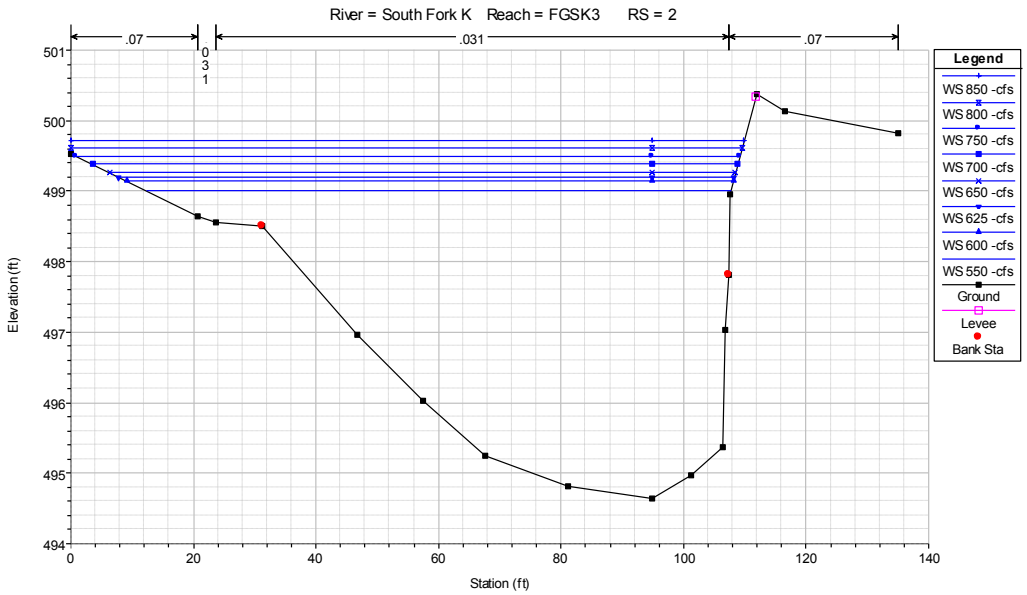


Figure 21 River Station (RS) 2 on River Reach FGSK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK3

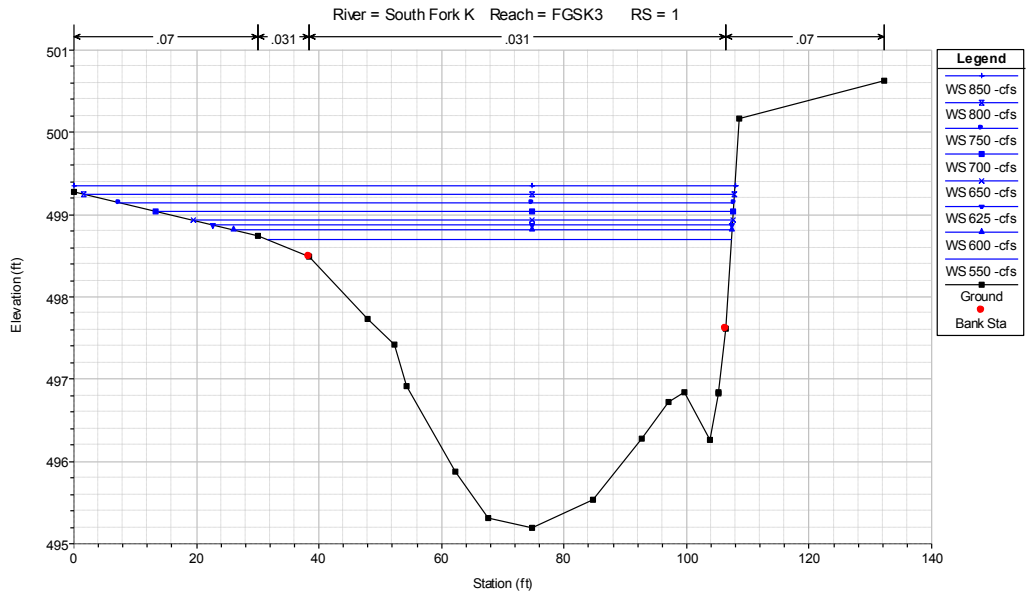


Figure 22 River Station (RS) 1 on River Reach FGSK3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK3

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK3	6	550-cfs	0.26	47	38	31
FGSK3	6	600-cfs	0.27	49	39	32
FGSK3	6	625-cfs	0.28	50	41	33
FGSK3	6	650-cfs	0.29	52	42	34
FGSK3	6	700-cfs	0.30	54	44	35
FGSK3	6	750-cfs	0.31	56	45	36
FGSK3	6	800-cfs	0.32	58	47	38
FGSK3	6	850-cfs	0.33	59	48	39
FGSK3	5	550-cfs	0.22	40	32	26
FGSK3	5	600-cfs	0.24	43	35	28
FGSK3	5	625-cfs	0.25	45	36	29
FGSK3	5	650-cfs	0.26	47	38	31
FGSK3	5	700-cfs	0.28	50	41	33
FGSK3	5	750-cfs	0.30	54	44	35
FGSK3	5	800-cfs	0.32	58	47	38
FGSK3	5	850-cfs	0.34	61	50	40
FGSK3	4	550-cfs	0.17	31	25	20
FGSK3	4	600-cfs	0.19	34	28	22
FGSK3	4	625-cfs	0.20	36	29	24
FGSK3	4	650-cfs	0.20	36	29	24
FGSK3	4	700-cfs	0.22	40	32	26
FGSK3	4	750-cfs	0.23	41	34	27
FGSK3	4	800-cfs	0.25	45	36	29
FGSK3	4	850-cfs	0.26	47	38	31
FGSK3	3	550-cfs	0.06	11	9	7
FGSK3	3	600-cfs	0.07	13	10	8
FGSK3	3	625-cfs	0.07	13	10	8
FGSK3	3	650-cfs	0.07	13	10	8
FGSK3	3	700-cfs	0.08	14	12	9

INCIPIENT MOTION ANALYSIS: FGSK3

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK3	3	750-cfs	0.09	16	13	11
FGSK3	3	800-cfs	0.09	16	13	11
FGSK3	3	850-cfs	0.10	18	15	12
FGSK3	2	550-cfs	0.10	18	15	12
FGSK3	2	600-cfs	0.10	18	15	12
FGSK3	2	625-cfs	0.11	20	16	13
FGSK3	2	650-cfs	0.11	20	16	13
FGSK3	2	700-cfs	0.12	22	17	14
FGSK3	2	750-cfs	0.12	22	17	14
FGSK3	2	800-cfs	0.13	23	19	15
FGSK3	2	850-cfs	0.14	25	20	16
FGSK3	1	550-cfs	0.26	47	38	31
FGSK3	1	600-cfs	0.27	49	39	32
FGSK3	1	625-cfs	0.28	50	41	33
FGSK3	1	650-cfs	0.28	50	41	33
FGSK3	1	700-cfs	0.29	52	42	34
FGSK3	1	750-cfs	0.31	56	45	36
FGSK3	1	800-cfs	0.32	58	47	38
FGSK3	1	850-cfs	0.33	59	48	39

PHOTOGRAPH DOCUMENTATION: FGSK3

Left bank along reference reach FGSK3

Right bank along reference reach FGSK3

Looking downstream from reference reach FGSK3

Looking upstream from reference reach FGSK3

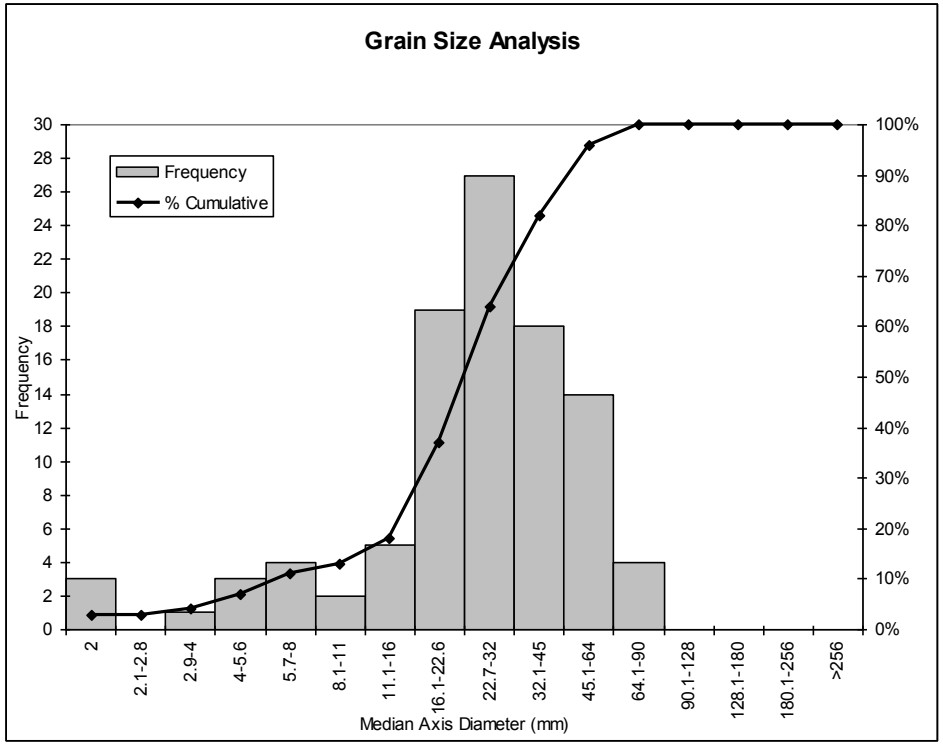
PHOTOGRAPH DOCUMENTATION: FGSK3

Bank composition detail FGSK3

Looking downstream from upstream boundary FGSK3

PEBBLE COUNT DISTRIBUTION: FGSK3

Pebble Count 1

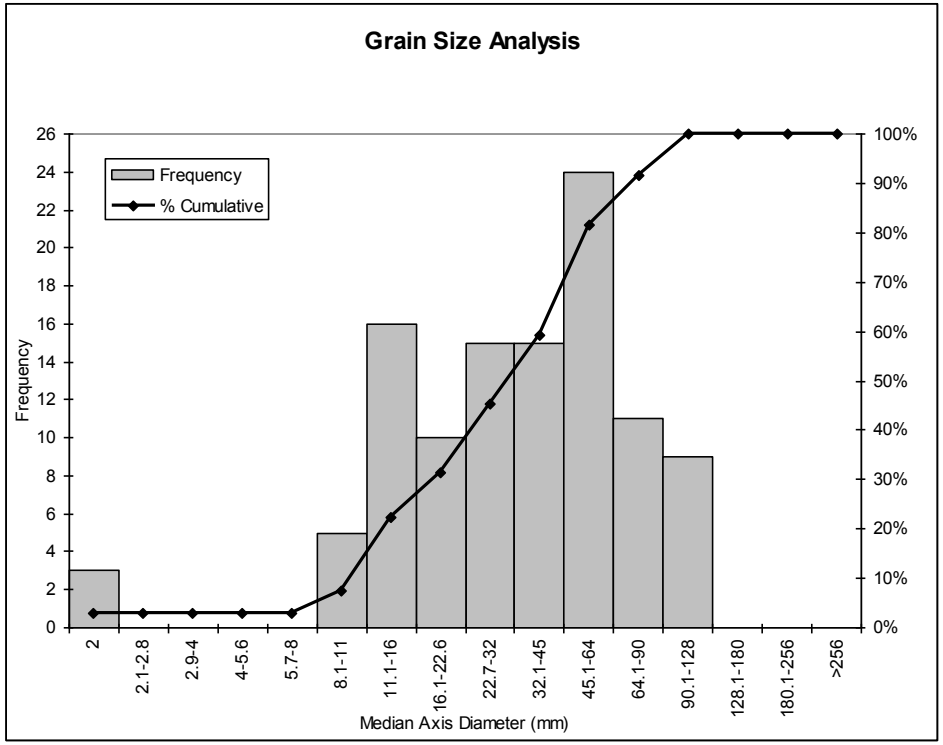


Size Class mm	*Frequency*	*Cumulative %*
2	3	3.0%
2.1-2.8	0	3.0%
2.9-4	1	4.0%
4-5.6	3	7.0%
5.7-8	4	11.0%
8.1-11	2	13.0%
11.1-16	5	18.0%
16.1-22.6	19	37.0%
22.7-32	27	64.0%
32.1-45	18	82.0%
45.1-64	14	96.0%
64.1-90	4	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

PEBBLE COUNT DISTRIBUTION: FGSK3

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	0	2.8%
2.9-4	0	2.8%
4-5.6	0	2.8%
5.7-8	0	2.8%
8.1-11	5	7.4%
11.1-16	16	22.2%
16.1-22.6	10	31.5%
22.7-32	15	45.4%
32.1-45	15	59.3%
45.1-64	24	81.5%
64.1-90	11	91.7%
90.1-128	9	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

1,328,521

1,328,921

1,329,321

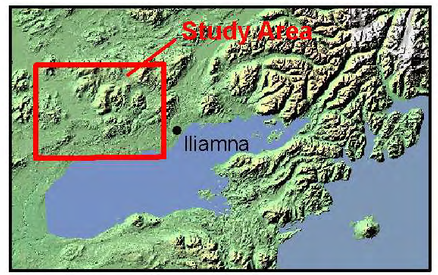
2,123,766

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK3
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,328,521

1,328,921

1,329,321

SITE DESCRIPTION: FGSK4

Site Characteristics.

	Site Name	**FGSK4**	
Discharge (cfs)	**600 (500-700)**	Width (ft)	**62.9 (59.3-66.4)**
Slope	**0.0021**	Cross-sectional Area (ft^2)	**150 (128-175)**
D_{50}	**48**	D_{84}	**91**
Lat/Long Location	**N59.80467 W155.63528**	Drainage Area (mi^2)	**81**
	% Willow	**30**	
	% Grass	**70**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 480 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the downstream pool. At the downstream end of the reach a backwater channel with evidence of beaver activity enters along the left bank. Sections 1 and 2 required the addition of an ineffective flow boundary to account for the lack of conveyance during high flows. Sections 7 and 6 characterize a riffle which serves as the reference reach. The pebble count was taken along Section 6.

The incipient motion analysis through the riffle to the slipface of the pool (Sections 7 through 5) shows that for a Shields number of 0.017, the D_{84} does not move, even for the upper end of the range of flows (700 cfs). For a Shields number of 0.026, the D_{50} is also immobile through the riffle. These results may indicate the presence of lag in the pebble count that was unable to be accounted for as it is unclear within the distribution which particle sizes are immobile. However, the presence of two peaks in the pebble count may be indicative in the presence of some immobile material. Without a strong INCIPIENT MOTION ANALYSIS: , channel forming discharges were chosen based on channel geometry and field indicators. The right bank along the riffle is overtopped by 600 cfs on Section 7 and by 500 cfs on Section 6. A discharge of 600 cfs matches the geometry of Section 4 well.

The reference reach, which include riffle Sections 7 through 6, provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK4

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK4	7	500-cfs	500	66.2	143	2.2	2.9	0.0020	3.5	0.42	0.26	0.031
FGSK4	7	550-cfs	550	66.2	152	2.3	3.0	0.0020	3.6	0.42	0.27	0.031
FGSK4	7	575-cfs	575	66.2	156	2.4	3.1	0.0020	3.7	0.42	0.28	0.031
FGSK4	7	600-cfs	600	66.3	160	2.4	3.2	0.0020	3.7	0.42	0.29	0.031
FGSK4	7	650-cfs	650	66.3	168	2.5	3.3	0.0020	3.9	0.43	0.30	0.031
FGSK4	7	700-cfs	700	66.4	175	2.6	3.4	0.0020	4.0	0.43	0.31	0.031
FGSK4	6	500-cfs	500	59.3	128	2.2	2.8	0.0022	3.9	0.47	0.29	0.031
FGSK4	6	550-cfs	550	59.4	135	2.3	2.9	0.0023	4.1	0.47	0.31	0.031
FGSK4	6	575-cfs	575	59.4	139	2.3	2.9	0.0023	4.1	0.48	0.33	0.031
FGSK4	6	600-cfs	600	59.5	142	2.4	3.0	0.0023	4.2	0.48	0.34	0.031
FGSK4	6	650-cfs	650	59.5	149	2.5	3.1	0.0024	4.3	0.48	0.36	0.031
FGSK4	6	700-cfs	700	59.5	156	2.6	3.2	0.0024	4.5	0.49	0.38	0.031
FGSK4	5	500-cfs	500	62.0	132	2.1	3.4	0.0021	3.8	0.45	0.28	0.031
FGSK4	5	550-cfs	550	62.0	140	2.3	3.5	0.0022	3.9	0.46	0.30	0.031
FGSK4	5	575-cfs	575	62.1	144	2.3	3.6	0.0022	4.0	0.46	0.31	0.031
FGSK4	5	600-cfs	600	62.1	147	2.4	3.6	0.0022	4.0	0.46	0.32	0.031
FGSK4	5	650-cfs	650	62.2	154	2.5	3.7	0.0022	4.2	0.46	0.33	0.031
FGSK4	5	700-cfs	700	62.2	161	2.6	3.8	0.0022	4.3	0.47	0.35	0.031
FGSK4	4	500-cfs	500	76.9	163	2.1	3.8	0.0018	3.1	0.37	0.23	0.033
FGSK4	4	550-cfs	550	77.1	173	2.2	4.0	0.0018	3.2	0.38	0.24	0.033
FGSK4	4	575-cfs	575	77.1	177	2.3	4.0	0.0018	3.2	0.38	0.25	0.033
FGSK4	4	600-cfs	600	77.2	182	2.4	4.1	0.0018	3.3	0.38	0.26	0.033
FGSK4	4	650-cfs	650	77.4	190	2.5	4.2	0.0018	3.4	0.38	0.27	0.033
FGSK4	4	700-cfs	700	77.5	199	2.6	4.3	0.0018	3.5	0.39	0.28	0.033
FGSK4	3	500-cfs	500	61.7	148	2.4	3.0	0.0016	3.4	0.39	0.24	0.031
FGSK4	3	550-cfs	550	61.9	155	2.5	3.1	0.0017	3.6	0.40	0.26	0.031
FGSK4	3	575-cfs	575	61.9	158	2.6	3.1	0.0017	3.6	0.40	0.27	0.031
FGSK4	3	600-cfs	600	62.0	161	2.6	3.2	0.0018	3.7	0.41	0.28	0.031
FGSK4	3	650-cfs	650	62.0	168	2.7	3.3	0.0018	3.9	0.41	0.30	0.031
FGSK4	3	700-cfs	700	62.0	174	2.8	3.4	0.0018	4.0	0.42	0.31	0.031

HEC-RAS OUTPUT SUMMARY TABLE: FGSK4

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK4	2	500-cfs	500	88.9	167	2.0	3.0	0.0024	3.7	0.46	0.30	0.031
FGSK4	2	550-cfs	550	89.1	177	2.1	3.1	0.0024	3.9	0.47	0.32	0.031
FGSK4	2	575-cfs	575	89.3	182	2.2	3.2	0.0025	3.9	0.47	0.32	0.031
FGSK4	2	600-cfs	600	89.4	187	2.2	3.2	0.0025	4.0	0.47	0.33	0.031
FGSK4	2	650-cfs	650	89.6	196	2.3	3.3	0.0025	4.1	0.48	0.35	0.031
FGSK4	2	700-cfs	700	89.8	205	2.4	3.4	0.0025	4.3	0.48	0.37	0.031
FGSK4	1	500-cfs	500	83.3	118	1.5	2.0	0.0074	5.4	0.77	0.68	0.031
FGSK4	1	550-cfs	550	83.4	125	1.6	2.1	0.0074	5.6	0.78	0.72	0.031
FGSK4	1	575-cfs	575	83.5	129	1.6	2.1	0.0074	5.7	0.78	0.74	0.031
FGSK4	1	600-cfs	600	83.6	132	1.7	2.1	0.0074	5.8	0.79	0.76	0.031
FGSK4	1	650-cfs	650	83.7	139	1.7	2.2	0.0074	5.9	0.79	0.80	0.031
FGSK4	1	700-cfs	700	83.7	146	1.8	2.3	0.0074	6.1	0.80	0.83	0.031

HEC-RAS LONGITUDINAL PROFILE: FGSK4

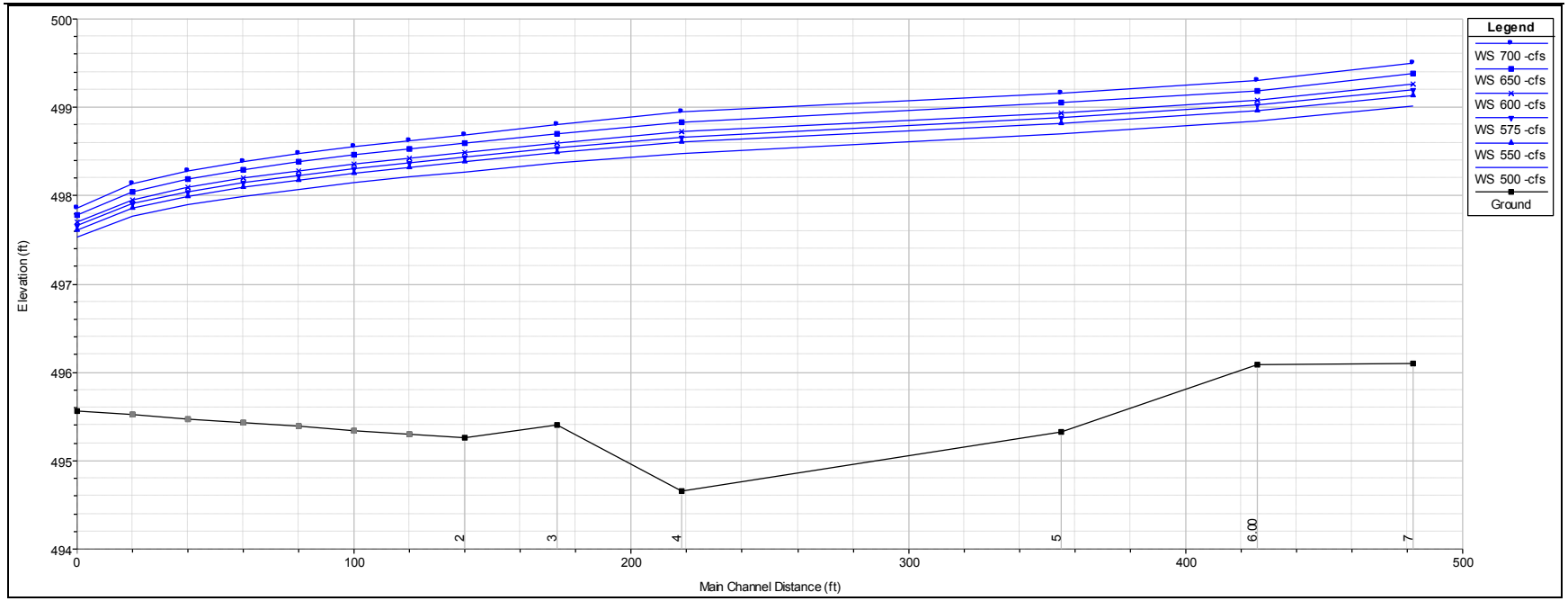


Figure 23 HEC-RAS longitudinal profile output for Reach FGSK4. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK4

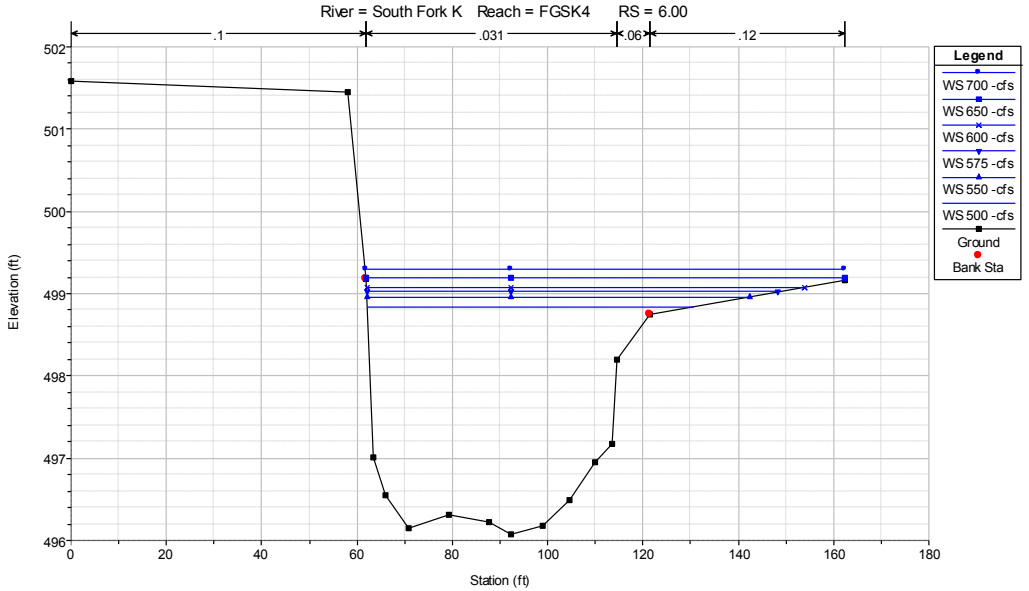


Figure 24 River Station (RS) 6 on River Reach FGSK4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK4

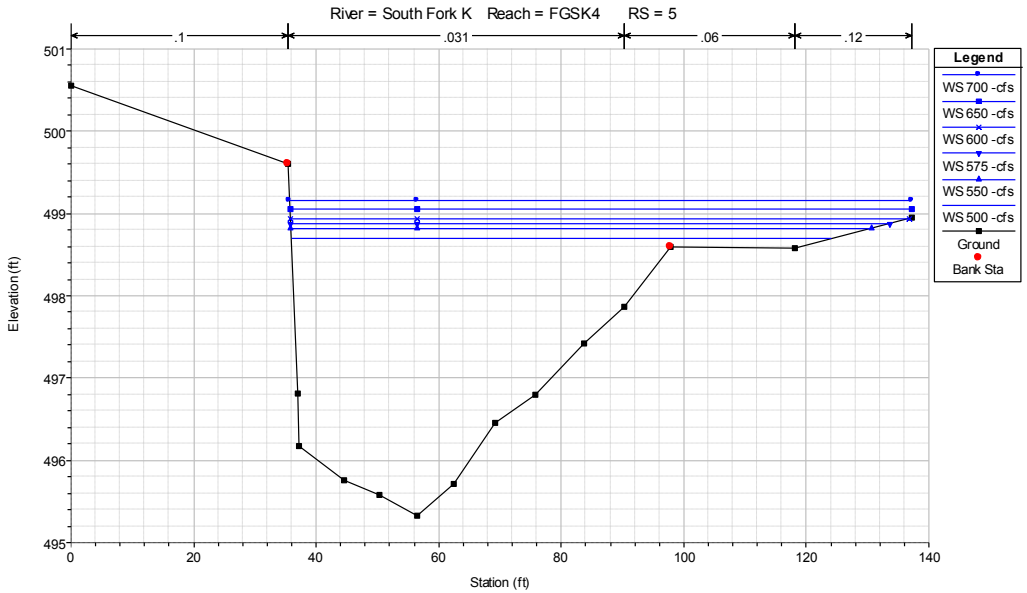


Figure 25 River Station (RS) 5 on River Reach FGSK4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK4

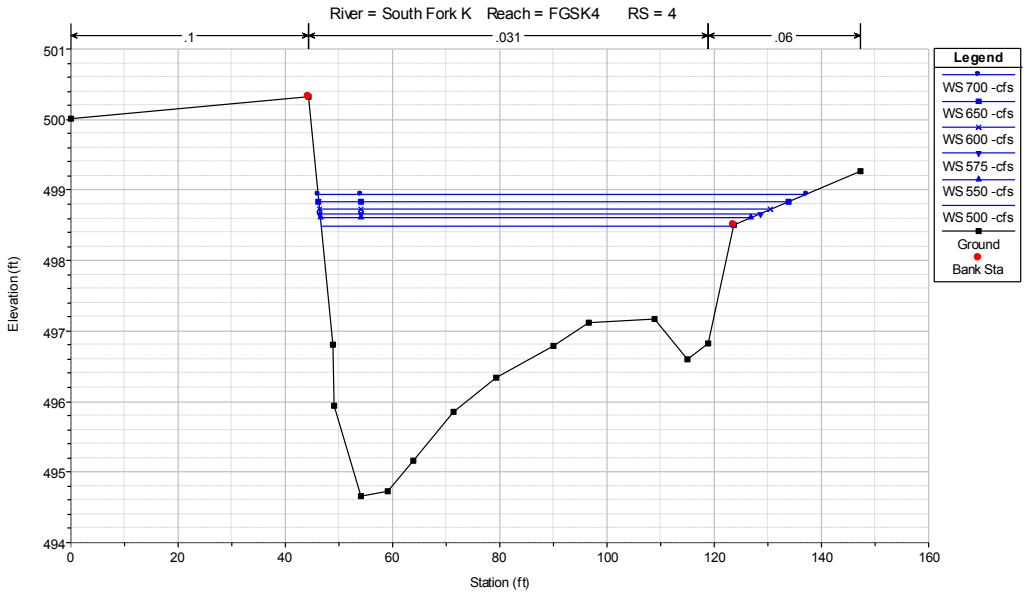


Figure 26 River Station (RS) 4 on River Reach FGSK4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK4

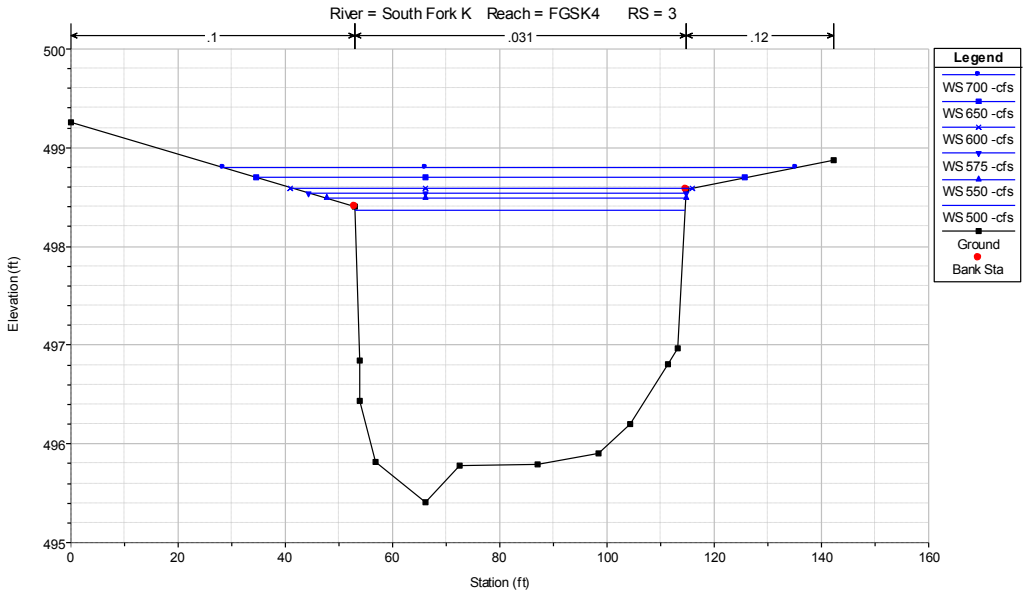


Figure 27 River Station (RS) 3 on River Reach FGSK4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK4

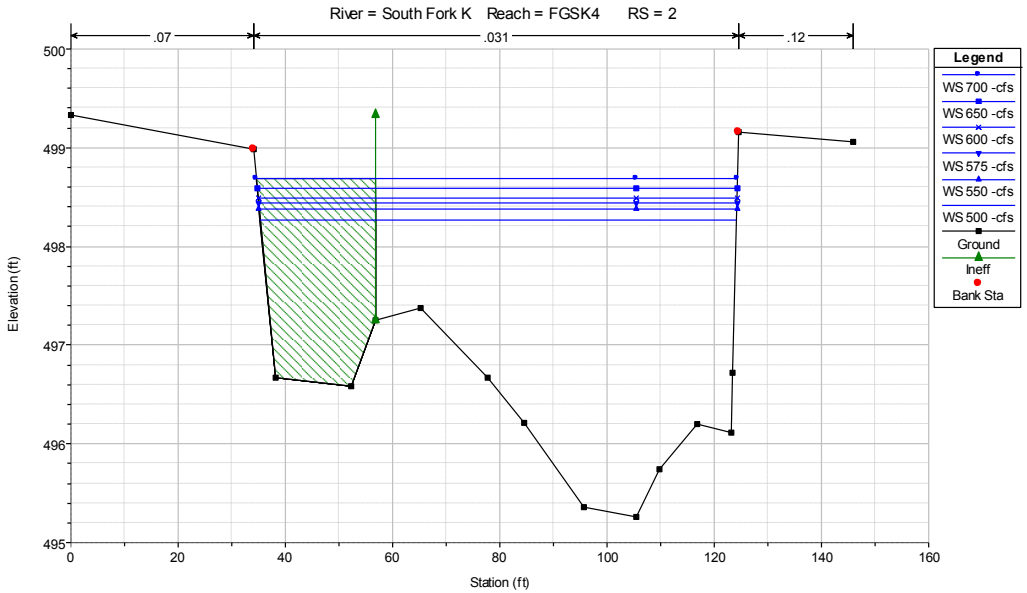


Figure 28 River Station (RS) 2 on River Reach FGSK4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK4

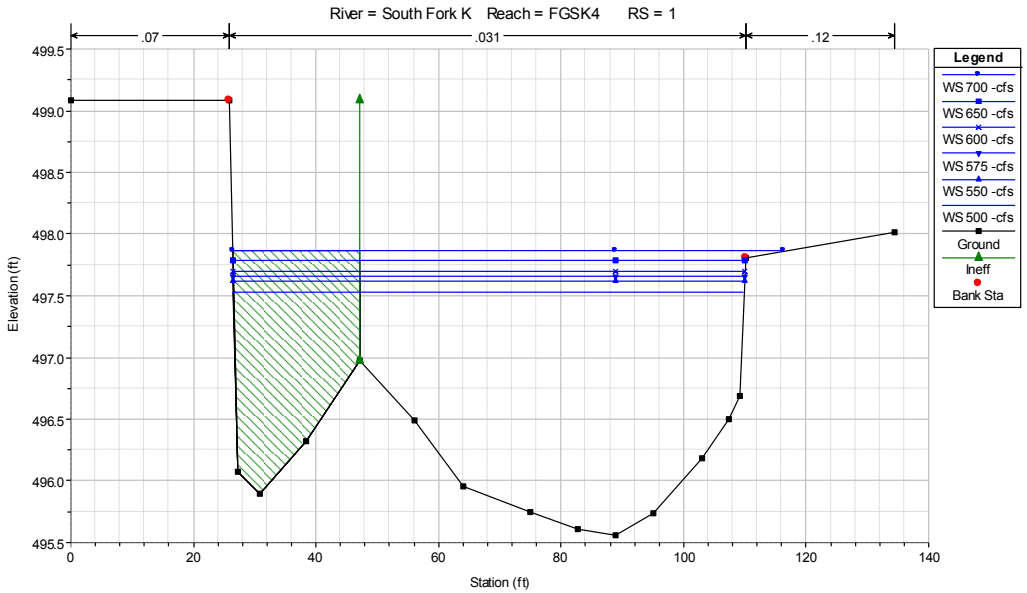


Figure 29 River Station (RS) 1 on River Reach FGSK4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK4

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK4	7	500-cfs	0.26	47	38	31
FGSK4	7	550-cfs	0.27	49	39	32
FGSK4	7	575-cfs	0.28	50	41	33
FGSK4	7	600-cfs	0.29	52	42	34
FGSK4	7	650-cfs	0.30	54	44	35
FGSK4	7	700-cfs	0.31	56	45	36
FGSK4	6	500-cfs	0.29	52	42	34
FGSK4	6	550-cfs	0.31	56	45	36
FGSK4	6	575-cfs	0.33	59	48	39
FGSK4	6	600-cfs	0.34	61	50	40
FGSK4	6	650-cfs	0.36	65	52	42
FGSK4	6	700-cfs	0.38	68	55	45
FGSK4	5	500-cfs	0.28	50	41	33
FGSK4	5	550-cfs	0.30	54	44	35
FGSK4	5	575-cfs	0.31	56	45	36
FGSK4	5	600-cfs	0.32	58	47	38
FGSK4	5	650-cfs	0.33	59	48	39
FGSK4	5	700-cfs	0.35	63	51	41
FGSK4	4	500-cfs	0.23	41	34	27
FGSK4	4	550-cfs	0.24	43	35	28
FGSK4	4	575-cfs	0.25	45	36	29
FGSK4	4	600-cfs	0.26	47	38	31
FGSK4	4	650-cfs	0.27	49	39	32
FGSK4	4	700-cfs	0.28	50	41	33
FGSK4	3	500-cfs	0.24	43	35	28
FGSK4	3	550-cfs	0.26	47	38	31
FGSK4	3	575-cfs	0.27	49	39	32
FGSK4	3	600-cfs	0.28	50	41	33

INCIPIENT MOTION ANALYSIS: FGSK4

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK4	3	650-cfs	0.30	54	44	35
FGSK4	3	700-cfs	0.31	56	45	36
FGSK4	2	500-cfs	0.30	54	44	35
FGSK4	2	550-cfs	0.32	58	47	38
FGSK4	2	575-cfs	0.32	58	47	38
FGSK4	2	600-cfs	0.33	59	48	39
FGSK4	2	650-cfs	0.35	63	51	41
FGSK4	2	700-cfs	0.37	67	54	44
FGSK4	1	500-cfs	0.68	122	99	80
FGSK4	1	550-cfs	0.72	130	105	85
FGSK4	1	575-cfs	0.74	133	108	87
FGSK4	1	600-cfs	0.76	137	111	89
FGSK4	1	650-cfs	0.80	144	117	94
FGSK4	1	700-cfs	0.83	149	121	98

PHOTOGRAPH DOCUMENTATION: FGSK4

Left bank along reference reach FGSK4

Right bank along reference reach FGSK4

Looking downstream from reference reach FGSK4

Looking upstream from reference reach FGSK4

PHOTOGRAPH DOCUMENTATION: FGSK4

Bank composition detail (right bank) FGSK4

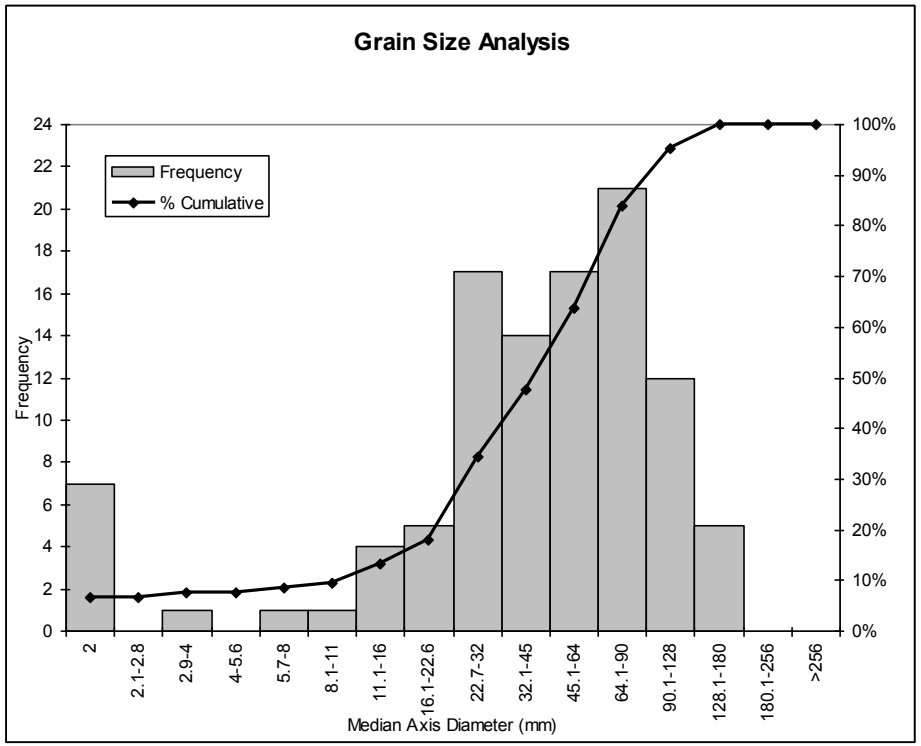
Bank composition detail (left bank) FGSK4

PHOTOGRAPH DOCUMENTATION: FGSK4

Backwater/beaver pond along left bank FGSK4

Looking upstream from left bank terrace FGSK4

PEBBLE COUNT DISTRIBUTION: FGSK4



Size Class mm	*Frequency*	*Cumulative %*
2	7	6.7%
2.1-2.8	0	6.7%
2.9-4	1	7.6%
4-5.6	0	7.6%
5.7-8	1	8.6%
8.1-11	1	9.5%
11.1-16	4	13.3%
16.1-22.6	5	18.1%
22.7-32	17	34.3%
32.1-45	14	47.6%
45.1-64	17	63.8%
64.1-90	21	83.8%
90.1-128	12	95.2%
128.1-180	5	100.0%
180.1-256	0	100.0%
>256	0	100.0%

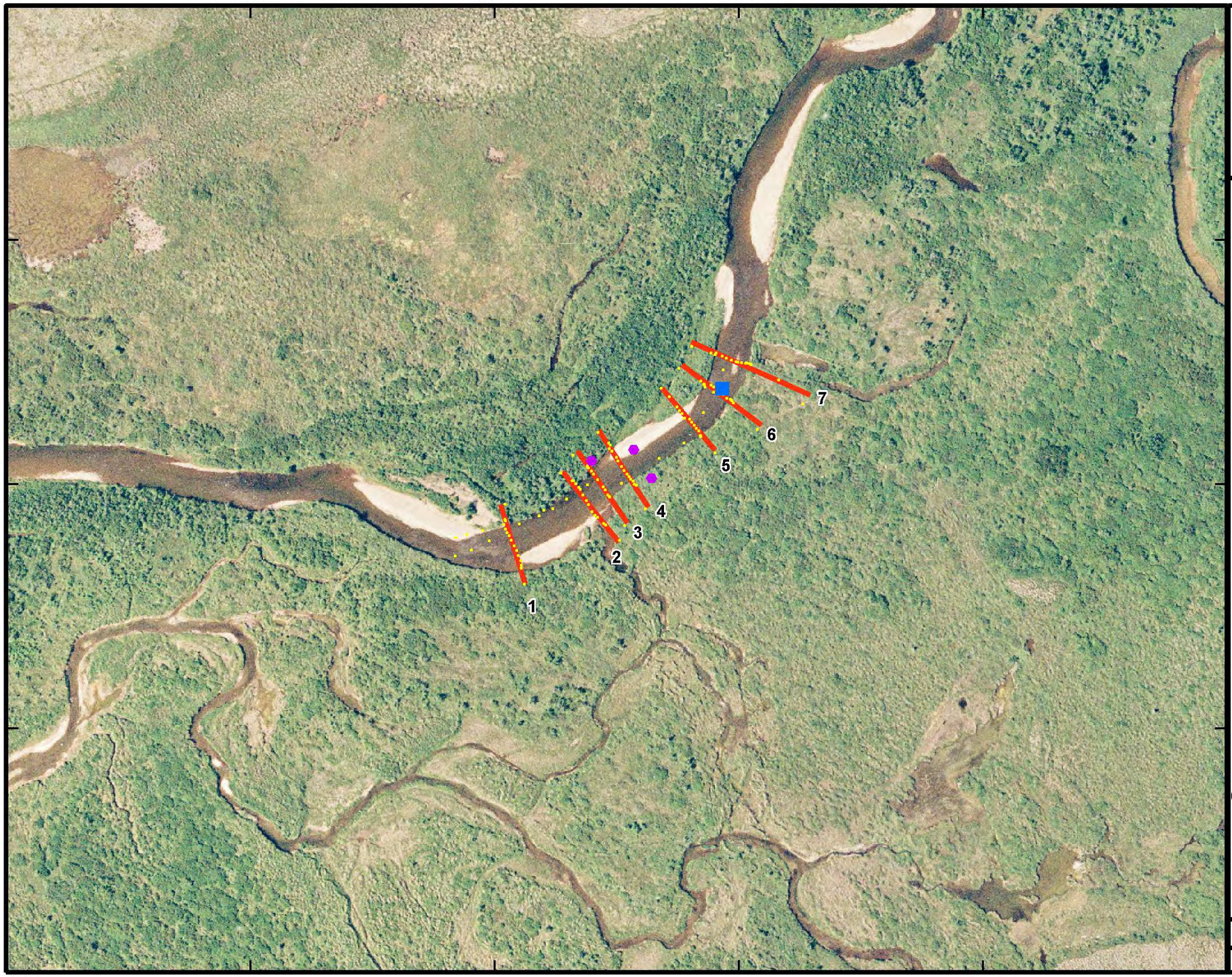
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

1,338,159 1,338,559 1,338,959 1,339,359 1,339,759

2,124,460

2,124,060

2,123,660



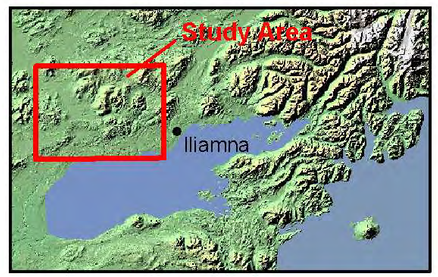
1,338,159 1,338,559 1,338,959 1,339,359 1,339,759

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK4
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 120 240 360 480 Ft

0 40 80 Meters

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGSK5

Site Characteristics.

	Site Name	**FGSK5**	
Discharge (cfs)	**625 (500-750)**	Width (ft)	**52.6 (45.7-60.3)**
Slope	**0.0022**	Cross-sectional Area (ft^2)	**143 (117-179)**
D_{50}	**32**	D_{84}	**69**
Lat/Long Location	**N59.80510 W155.60694**	Drainage Area (mi^2)	**73**
	% Willow	**30**	
	% Grass	**70**	
	% Tree	**10**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 530 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and crest of the pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 8 through 4 characterize the reference reach which includes a riffle (Sections 8 to 7) and run (Sections 7 to 6). Sections 6 to 5 constitute a glide followed by a steep riffle (Sections 5 and 4). The pebble count was taken between Sections 7 and 8. A relic channel is evident along the left bank at Section 5 where a depositional bar has formed at this local widening. The ineffective flow option was used in the HEC-RAS model to account for the zone downstream of the bar which ponds water but does not contribute to conveyance area. Sections 4 through 1 characterize the pool.

For a Shields number of 0.017, the D_{84} moves from Section 8 between 550 and 575 cfs, between 650 and 700 cfs on Section 6 and between 575 and 600 cfs on Section 4. For a Shields number of 0.026, the D_{50} moves from Section 7 by 500 cfs, Section 5 at 550 cfs and before 500 cfs on the rest of the sections within the reference reach. The channel geometry and field indicators match discharges between 650 and 750 cfs well matching inflection points and floodplain elevations through the reference reach.

The reference reach sections (Sections 8 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK5	8	500-cfs	500	46.7	117	2.5	3.0	0.0024	4.2	0.47	0.36	0.031
FGSK5	8	550-cfs	550	46.7	123	2.6	3.1	0.0024	4.4	0.48	0.38	0.031
FGSK5	8	575-cfs	575	46.7	126	2.7	3.2	0.0024	4.5	0.48	0.39	0.031
FGSK5	8	600-cfs	600	46.7	130	2.8	3.3	0.0024	4.6	0.48	0.4	0.031
FGSK5	8	650-cfs	650	46.7	136	2.9	3.4	0.0024	4.7	0.49	0.43	0.031
FGSK5	8	700-cfs	700	46.7	141	3.0	3.5	0.0024	4.9	0.49	0.45	0.031
FGSK5	8	750-cfs	750	46.7	147	3.1	3.6	0.0024	5.0	0.5	0.47	0.031
FGSK5	7	500-cfs	500	50.8	134	2.6	3.7	0.0017	3.7	0.41	0.27	0.031
FGSK5	7	550-cfs	550	50.8	141	2.8	3.8	0.0017	3.9	0.41	0.29	0.031
FGSK5	7	575-cfs	575	50.8	144	2.8	3.9	0.0018	4.0	0.42	0.3	0.031
FGSK5	7	600-cfs	600	50.8	147	2.9	3.9	0.0018	4.1	0.42	0.31	0.031
FGSK5	7	650-cfs	650	50.8	154	3.0	4.1	0.0018	4.2	0.43	0.33	0.031
FGSK5	7	700-cfs	700	50.8	160	3.2	4.2	0.0018	4.4	0.43	0.35	0.031
FGSK5	7	750-cfs	750	50.8	166	3.3	4.3	0.0019	4.5	0.44	0.37	0.031
FGSK5	6	500-cfs	500	45.7	122	2.7	3.8	0.0020	4.1	0.44	0.32	0.031
FGSK5	6	550-cfs	550	45.7	128	2.8	3.9	0.0020	4.2	0.44	0.34	0.031
FGSK5	6	575-cfs	575	45.7	131	2.9	4.0	0.0020	4.3	0.45	0.35	0.031
FGSK5	6	600-cfs	600	45.7	134	2.9	4.0	0.0021	4.4	0.45	0.36	0.031
FGSK5	6	650-cfs	650	45.7	140	3.1	4.2	0.0021	4.5	0.45	0.38	0.031
FGSK5	6	700-cfs	700	45.7	145	3.2	4.3	0.0021	4.7	0.46	0.4	0.031
FGSK5	6	750-cfs	750	45.7	151	3.3	4.4	0.0021	4.8	0.46	0.42	0.031
FGSK5	5	500-cfs	500	59.6	140	2.4	2.7	0.0018	3.5	0.41	0.26	0.031
FGSK5	5	550-cfs	550	59.6	149	2.5	2.8	0.0018	3.7	0.41	0.27	0.031
FGSK5	5	575-cfs	575	59.6	153	2.6	2.9	0.0018	3.7	0.41	0.28	0.031
FGSK5	5	600-cfs	600	59.6	157	2.6	2.9	0.0018	3.8	0.41	0.29	0.031
FGSK5	5	650-cfs	650	59.6	164	2.8	3.1	0.0018	3.9	0.42	0.3	0.031
FGSK5	5	700-cfs	700	59.6	172	2.9	3.2	0.0018	4.1	0.42	0.32	0.031
FGSK5	5	750-cfs	750	59.6	179	3.0	3.3	0.0018	4.2	0.42	0.33	0.031

HEC-RAS OUTPUT SUMMARY TABLE: FGSK5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK5	4	500-cfs	500	60.3	122	2.0	2.7	0.0029	4.1	0.51	0.36	0.031
FGSK5	4	550-cfs	550	60.3	131	2.2	2.8	0.0028	4.2	0.5	0.37	0.031
FGSK5	4	575-cfs	575	60.3	135	2.2	2.9	0.0028	4.3	0.5	0.38	0.031
FGSK5	4	600-cfs	600	60.3	139	2.3	3.0	0.0027	4.3	0.5	0.39	0.031
FGSK5	4	650-cfs	650	60.3	147	2.4	3.1	0.0027	4.4	0.5	0.4	0.031
FGSK5	4	700-cfs	700	60.3	154	2.6	3.2	0.0026	4.5	0.5	0.41	0.031
FGSK5	4	750-cfs	750	60.3	162	2.7	3.3	0.0026	4.6	0.5	0.42	0.031
FGSK5	3	500-cfs	500	64.5	149	2.3	5.5	0.0017	3.4	0.39	0.24	0.031
FGSK5	3	550-cfs	550	64.7	158	2.5	5.6	0.0017	3.5	0.39	0.25	0.031
FGSK5	3	575-cfs	575	64.8	163	2.5	5.7	0.0017	3.5	0.39	0.25	0.031
FGSK5	3	600-cfs	600	64.9	168	2.6	5.8	0.0016	3.6	0.39	0.26	0.031
FGSK5	3	650-cfs	650	65.0	177	2.7	5.9	0.0016	3.7	0.39	0.26	0.031
FGSK5	3	700-cfs	700	65.2	185	2.8	6.0	0.0016	3.8	0.39	0.27	0.031
FGSK5	3	750-cfs	750	65.3	193	3.0	6.2	0.0016	3.8	0.39	0.28	0.031
FGSK5	2	500-cfs	500	47.4	141	3.0	4.9	0.0014	3.5	0.36	0.24	0.031
FGSK5	2	550-cfs	550	47.4	147	3.1	5.0	0.0014	3.7	0.37	0.26	0.031
FGSK5	2	575-cfs	575	47.4	151	3.2	5.1	0.0015	3.8	0.37	0.27	0.031
FGSK5	2	600-cfs	600	47.4	154	3.2	5.1	0.0015	3.9	0.38	0.28	0.031
FGSK5	2	650-cfs	650	47.4	160	3.4	5.3	0.0015	4.0	0.38	0.3	0.031
FGSK5	2	700-cfs	700	47.4	166	3.5	5.4	0.0015	4.1	0.39	0.31	0.031
FGSK5	2	750-cfs	750	47.4	172	3.6	5.5	0.0015	4.2	0.39	0.32	0.031
FGSK5	1	500-cfs	500	54.4	127	2.3	3.0	0.0023	4.0	0.46	0.32	0.031
FGSK5	1	550-cfs	550	54.5	134	2.5	3.2	0.0023	4.1	0.46	0.34	0.031
FGSK5	1	575-cfs	575	54.5	138	2.5	3.2	0.0023	4.2	0.46	0.35	0.031
FGSK5	1	600-cfs	600	54.5	142	2.6	3.3	0.0023	4.2	0.46	0.36	0.031
FGSK5	1	650-cfs	650	54.6	148	2.7	3.4	0.0023	4.4	0.47	0.38	0.031
FGSK5	1	700-cfs	700	54.6	155	2.8	3.6	0.0023	4.5	0.47	0.39	0.031
FGSK5	1	750-cfs	750	54.6	162	3.0	3.7	0.0023	4.6	0.47	0.41	0.031

HEC-RAS LONGITUDINAL PROFILE: FGSK5

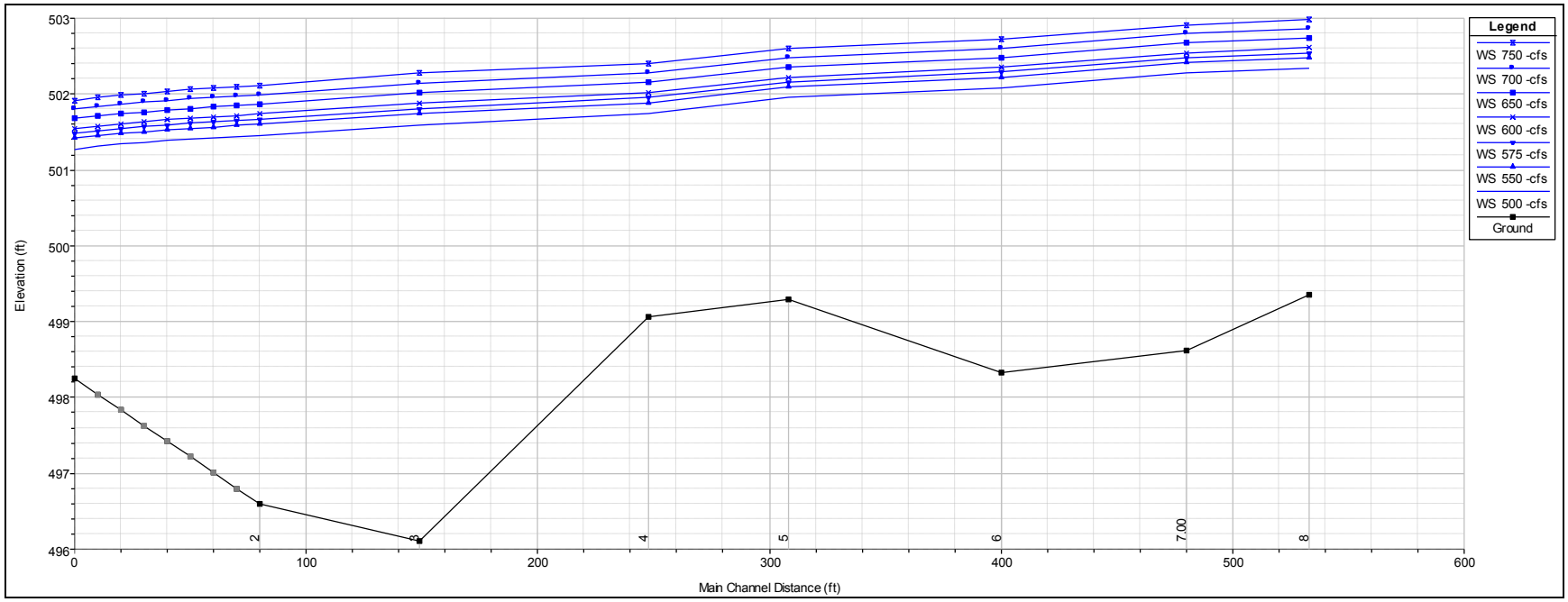


Figure 30 HEC-RAS longitudinal profile output for Reach FGSK5. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

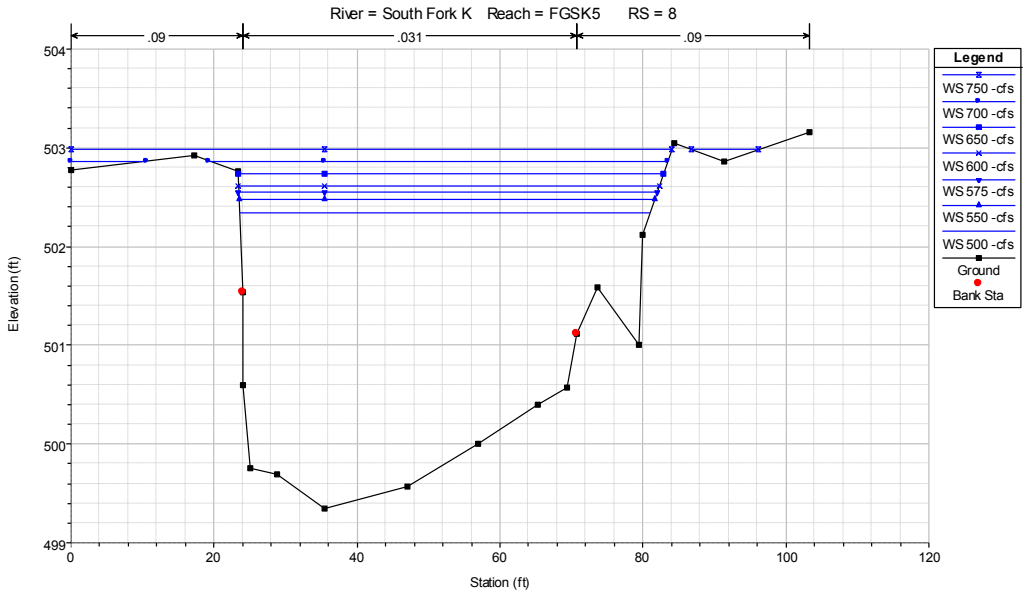


Figure 31 River Station (RS) 8 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

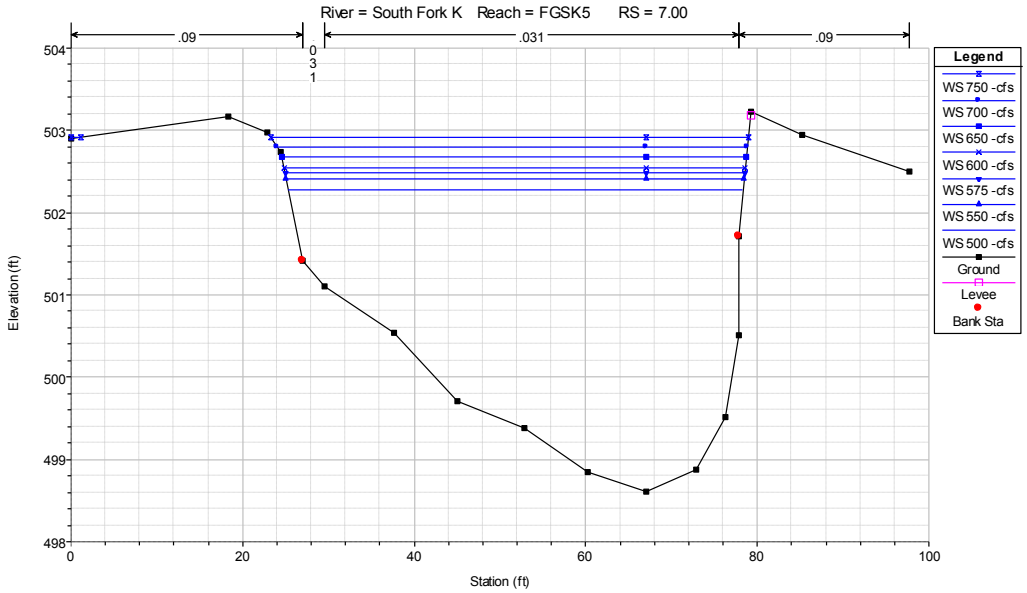


Figure 32 River Station (RS) 7 on River Reach FNSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

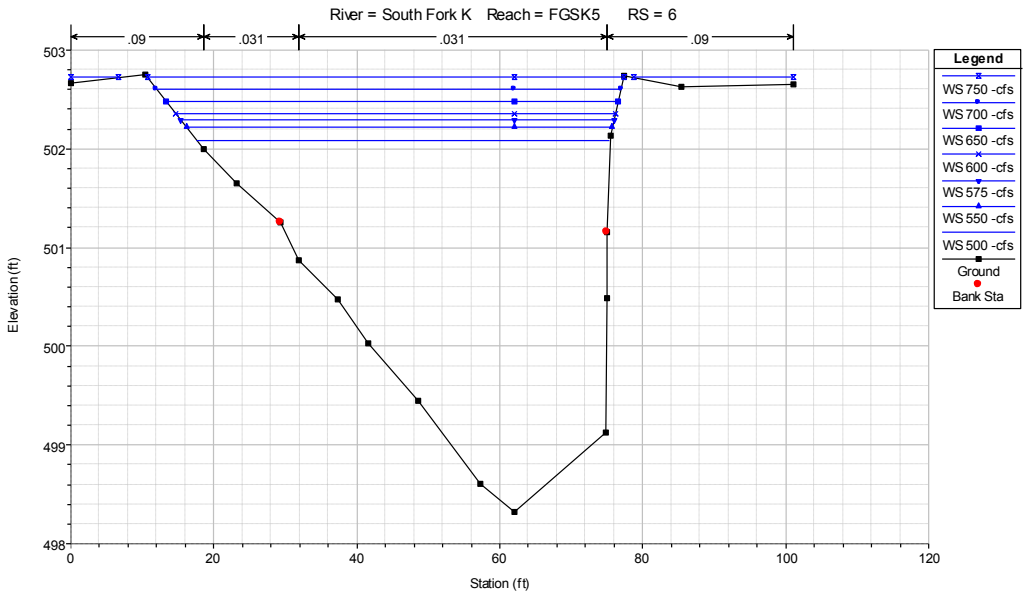


Figure 33 River Station (RS) 6 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

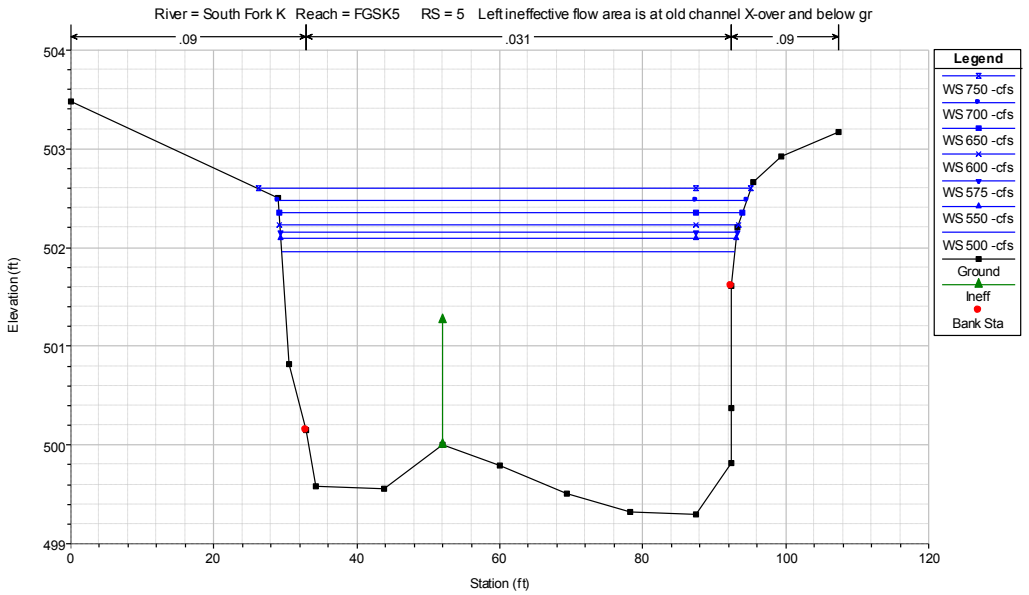


Figure 34 River Station (RS) 5 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

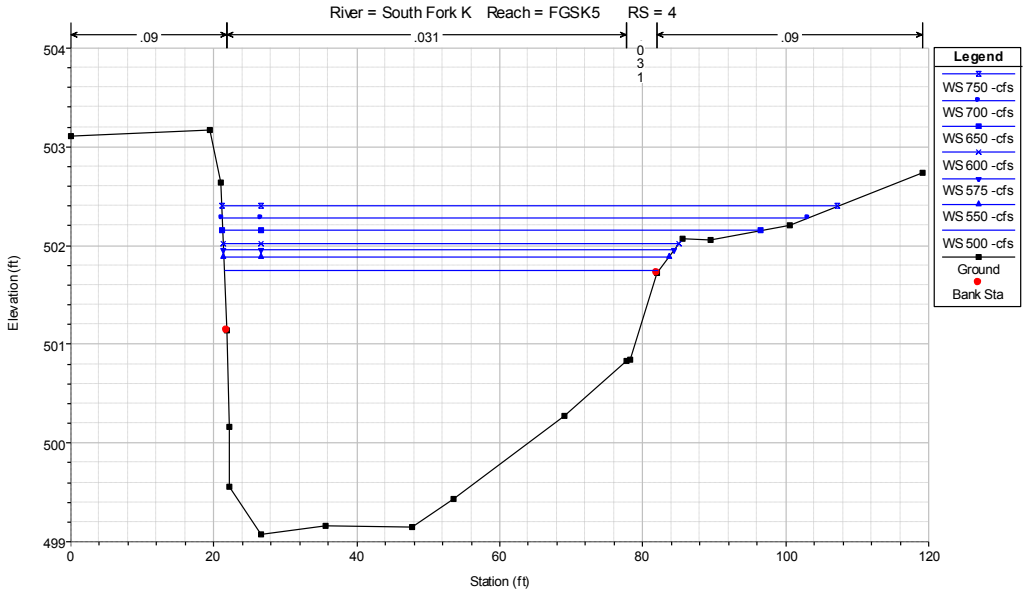


Figure 35 River Station (RS) 4 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

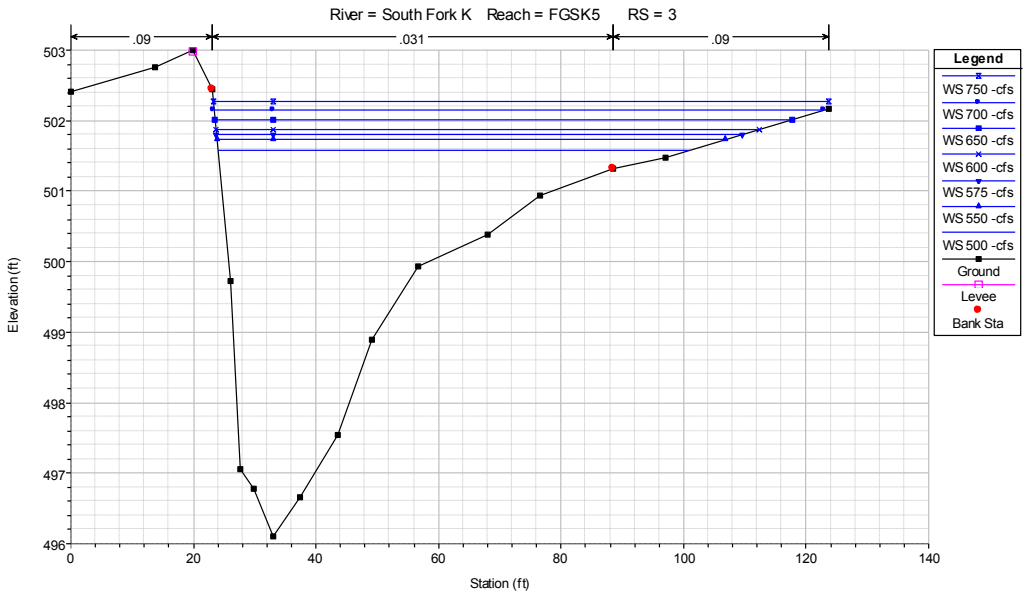


Figure 36 River Station (RS) 3 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

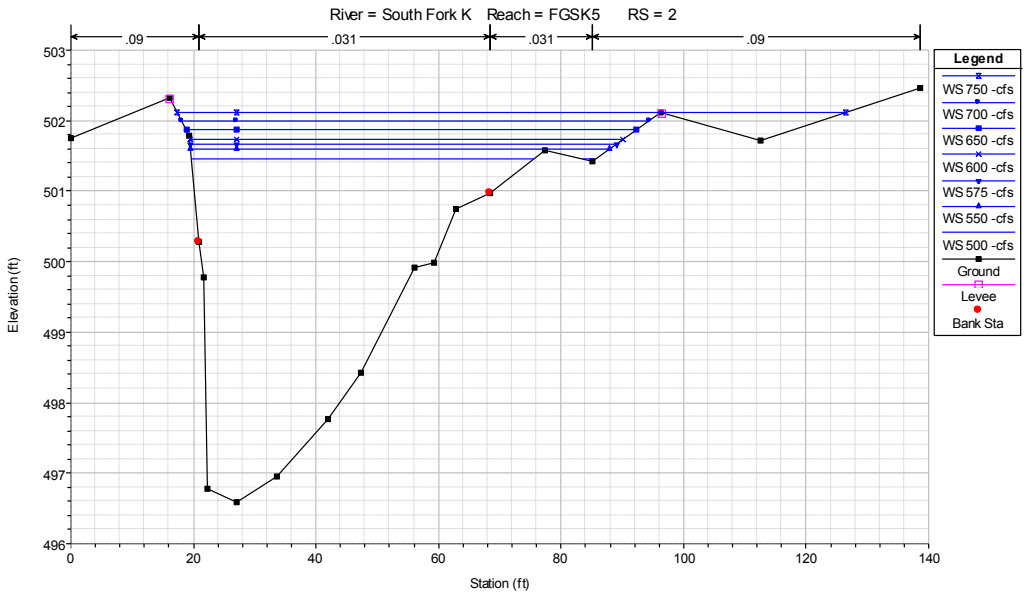


Figure 37 River Station (RS) 2 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK5

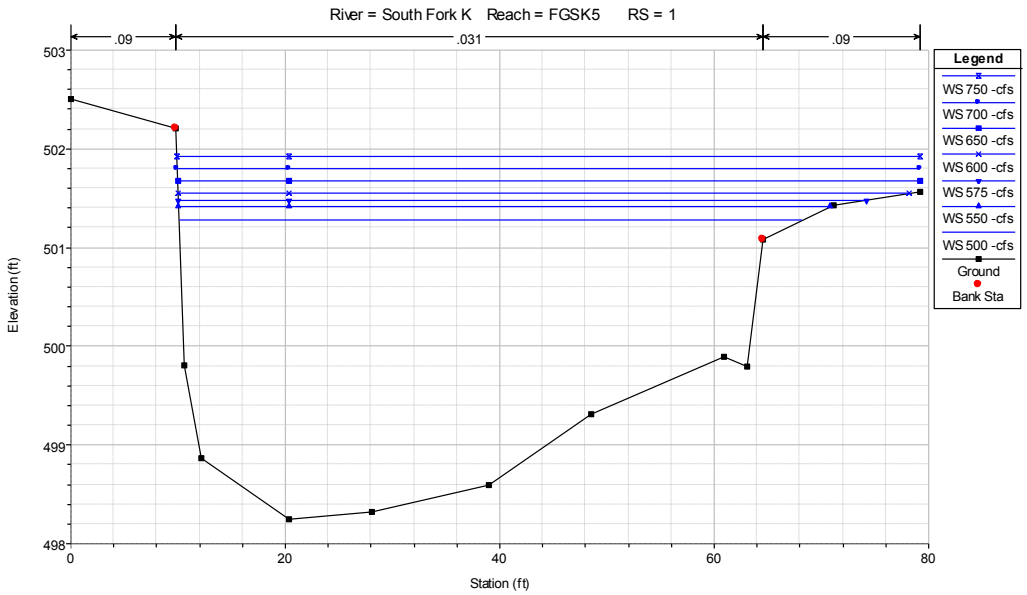


Figure 38 River Station (RS) 1 on River Reach FGSK5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK5

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK5	8	500-cfs	0.36	65	52	42
FGSK5	8	550-cfs	0.38	68	55	45
FGSK5	8	575-cfs	0.39	70	57	46
FGSK5	8	600-cfs	0.40	72	58	47
FGSK5	8	650-cfs	0.43	77	63	51
FGSK5	8	700-cfs	0.45	81	66	53
FGSK5	8	750-cfs	0.47	85	68	55
FGSK5	7	500-cfs	0.27	49	39	32
FGSK5	7	550-cfs	0.29	52	42	34
FGSK5	7	575-cfs	0.30	54	44	35
FGSK5	7	600-cfs	0.31	56	45	36
FGSK5	7	650-cfs	0.33	59	48	39
FGSK5	7	700-cfs	0.35	63	51	41
FGSK5	7	750-cfs	0.37	67	54	44
FGSK5	6	500-cfs	0.32	58	47	38
FGSK5	6	550-cfs	0.34	61	50	40
FGSK5	6	575-cfs	0.35	63	51	41
FGSK5	6	600-cfs	0.36	65	52	42
FGSK5	6	650-cfs	0.38	68	55	45
FGSK5	6	700-cfs	0.40	72	58	47
FGSK5	6	750-cfs	0.42	76	61	49
FGSK5	5	500-cfs	0.26	47	38	31
FGSK5	5	550-cfs	0.27	49	39	32
FGSK5	5	575-cfs	0.28	50	41	33
FGSK5	5	600-cfs	0.29	52	42	34
FGSK5	5	650-cfs	0.30	54	44	35
FGSK5	5	700-cfs	0.32	58	47	38
FGSK5	5	750-cfs	0.33	59	48	39

INCIPIENT MOTION ANALYSIS: FGSK5

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK5	4	500-cfs	0.36	65	52	42
FGSK5	4	550-cfs	0.37	67	54	44
FGSK5	4	575-cfs	0.38	68	55	45
FGSK5	4	600-cfs	0.39	70	57	46
FGSK5	4	650-cfs	0.40	72	58	47
FGSK5	4	700-cfs	0.41	74	60	48
FGSK5	4	750-cfs	0.42	76	61	49
FGSK5	3	500-cfs	0.24	43	35	28
FGSK5	3	550-cfs	0.25	45	36	29
FGSK5	3	575-cfs	0.25	45	36	29
FGSK5	3	600-cfs	0.26	47	38	31
FGSK5	3	650-cfs	0.26	47	38	31
FGSK5	3	700-cfs	0.27	49	39	32
FGSK5	3	750-cfs	0.28	50	41	33
FGSK5	2	500-cfs	0.24	43	35	28
FGSK5	2	550-cfs	0.26	47	38	31
FGSK5	2	575-cfs	0.27	49	39	32
FGSK5	2	600-cfs	0.28	50	41	33
FGSK5	2	650-cfs	0.30	54	44	35
FGSK5	2	700-cfs	0.31	56	45	36
FGSK5	2	750-cfs	0.32	58	47	38
FGSK5	1	500-cfs	0.32	58	47	38
FGSK5	1	550-cfs	0.34	61	50	40
FGSK5	1	575-cfs	0.35	63	51	41
FGSK5	1	600-cfs	0.36	65	52	42
FGSK5	1	650-cfs	0.38	68	55	45
FGSK5	1	700-cfs	0.39	70	57	46
FGSK5	1	750-cfs	0.41	74	60	48

PHOTOGRAPH DOCUMENTATION: FGSK5

Left bank along reference reach FGSK5

Right bank along reference reach FGSK5

Looking downstream from reference reach FGSK5

Looking upstream from reference reach FGSK5

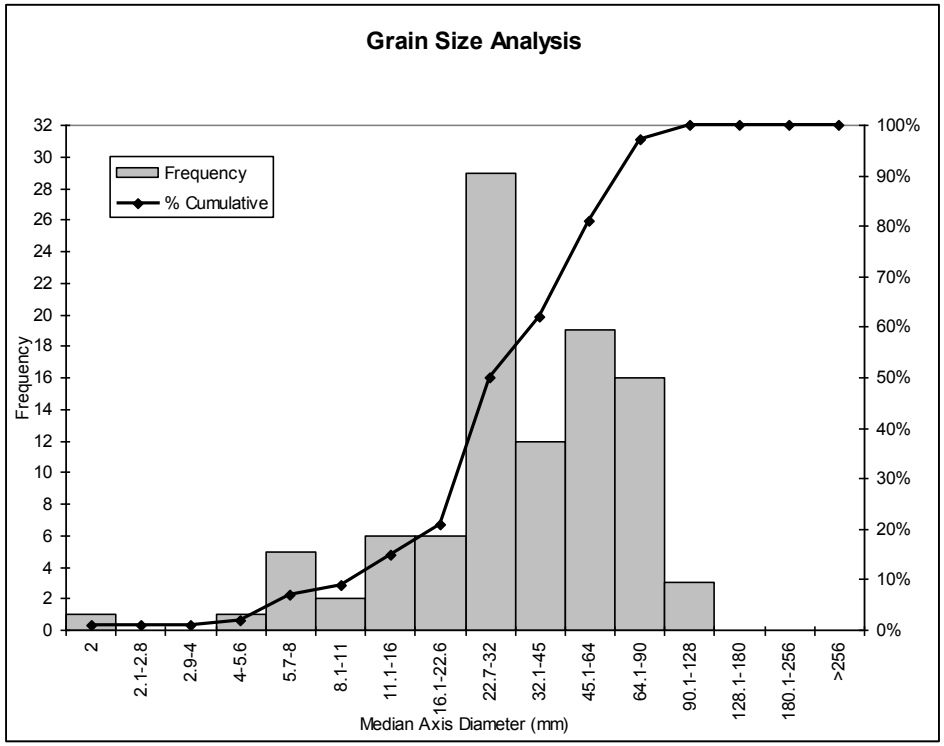
PHOTOGRAPH DOCUMENTATION: FGSK5

Bank composition detail (left bank) FGSK5

Looking downstream from upstream boundary FGSK5

Looking upstream from downstream boundary FGSK5

PEBBLE COUNT DISTRIBUTION: FGSK5



Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	0	1.0%
2.9-4	0	1.0%
4-5.6	1	2.0%
5.7-8	5	7.0%
8.1-11	2	9.0%
11.1-16	6	15.0%
16.1-22.6	6	21.0%
22.7-32	29	50.0%
32.1-45	12	62.0%
45.1-64	19	81.0%
64.1-90	16	97.0%
90.1-128	3	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Between Sections 7 and 8

1,343,372 1,343,772 1,344,172 1,344,572 1,344,972

2,124,680

2,124,280

2,123,880

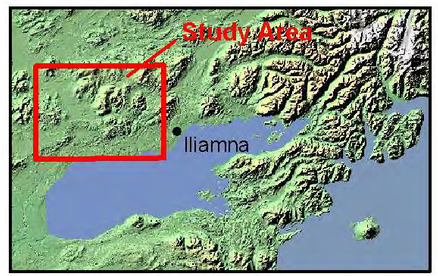
1 2 3 4 5 6 7 8

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK5
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 120 240 360 480 Ft

0 40 80 Meters

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,343,372 1,343,772 1,344,172 1,344,572 1,344,972

SITE DESCRIPTION: FGSK6

Site Characteristics.

	Site Name	**FGSK6**	
Discharge (cfs)	**N/A**	Width (ft)	**N/A**
Slope	**N/A**	Cross-sectional Area (ft^2)	**N/A**
D_{50}	**21**	D_{84}	**34**
Lat/Long Location	**N59.79264 W155.54395**	Drainage Area (mi^2)	**70**
	% Willow	**35**	
	% Grass	**65**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections over 575 feet of stream. Section 1 serves as the downstream hydraulic control for the pool. Sections 6 through 4 characterize a riffle. The pebble count was taken across River Station (RS) 5. Sections 1 through 4 capture a deep pool which has a noticeable amount of fines. The bed through the riffle was noted as fairly embedded and relatively plane bed, generally a depositional feature. The presence of moss along the channel bed was also noted at the time of the survey.

Due to FGSK6's location just upstream of a mature meander bend, the channel geometry is believed to be a result of a backwater environment. Due to this backwatering during channel forming discharges, water stacks up and finds alternate paths. One such path is apparent on the air photo along the left bank downstream of Section 1. Due to this complex hydraulic condition and its difficulty in capturing in a step-backwater model, FGSK6 was not analyzed further for incorporation into the regression data set.

PHOTOGRAPH DOCUMENTATION: FGSK6

Left bank along the reference reach FGSK6

Right bank along the reference reach FGSK6

Looking downstream from the reference reach FGSK6

Looking upstream from the reference reach FGSK6

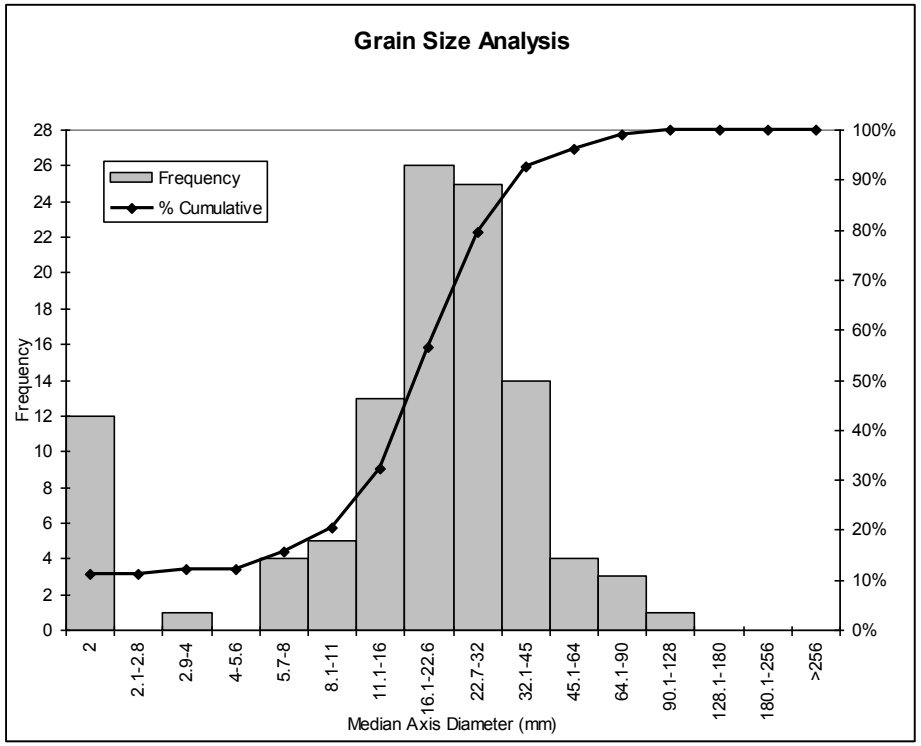
PHOTOGRAPH DOCUMENTATION: FGSK6

Bank composition detail (left bank) FGSK6

Bank composition detail (right bank) FGSK6

Looking downstream from upstream boundary FGSK6

PEBBLE COUNT DISTRIBUTION: FGSK6



Size Class mm	*Frequency*	*Cumulative %*
2	12	11.1%
2.1-2.8	0	11.1%
2.9-4	1	12.0%
4-5.6	0	12.0%
5.7-8	4	15.7%
8.1-11	5	20.4%
11.1-16	13	32.4%
16.1-22.6	26	56.5%
22.7-32	25	79.6%
32.1-45	14	92.6%
45.1-64	4	96.3%
64.1-90	3	99.1%
90.1-128	1	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,354,855 1,355,255 1,355,655 1,356,055 1,356,455

2,119,647

2,119,247

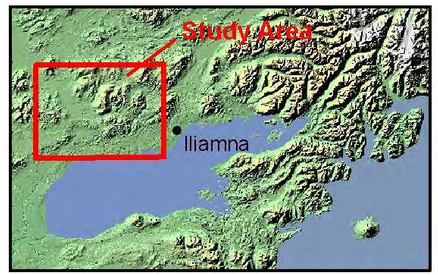
2,118,847

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK6
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 120 240 360 480 Ft

0 40 80 Meters

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,354,855 1,355,255 1,355,655 1,356,055 1,356,455

SITE DESCRIPTION: FGSK7

Site Characteristics.

	Site Name	**FGSK7**	
Discharge (cfs)	**650 (550-800)**	Width (ft)	**64.3 (55.5-77.0)**
Slope	**0.0019**	Cross-sectional Area (ft^2)	**164 (134-200)**
D_{50}	**41**	D_{84}	**88**
Lat/Long Location	**N59.79509 W155.52489**	Drainage Area (mi^2)	**69**
	% Willow	**50**	
	% Grass	**50**	
	% Tree	**0**	

Site Overview. While not incorporated into the hydraulic model, the HDR hydrology gage SK100B is located close enough to FGSK7 to provide an idea of the frequency and magnitude of discharge events (see attached HYDROGRAPH:) and calibrate the hydraulic model. This site was resurveyed during Inter-Fluve, Inc.'s September 2007 field efforts which happened to coincide with a high flow event (~445 cfs on 9/8/2007). Water surface elevations at each section were used to calibrate the roughness through the model. A channel roughness Manning's n value of 0.029 most closely matched the surveyed water surface elevations for a discharge of 445 cfs.

During Inter-Fluve, Inc.'s field efforts in September 2007, field personnel surveyed nine cross-sections along 815' of channel length. Section 1 serves as the downstream hydraulic control for the model. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Cross Sections 7 through 9 represent a pool/glide at the bottom of a riffle. Section 7 characterizes the pool crest and the beginning of the next pool/glide which is characterized by Sections 7 through 4. Cross-sections 4 through 1 characterize a steeper glide. The pebble count and bulk sample were taken around cross-Section 7.

According to the hydrograph , channel forming discharges most likely fall between 600 and 800 cfs based on the frequency and duration of events. The incipient motion analysis , based on average boundary shear, concludes that the D_{84} does not move through this reach at a Shields number of 0.017. Mobility for the range of Shields numbers used more closely resembles the D_{50} Sampled across River Stations (RS) 7 and 6. Observations by HDR personnel on site during high flows note seeing strips of bedload movement. This might suggest that a portion of the bed is immobile or lag material. Therefore, there may be lag present in the pebble count that was unable to be accounted for as it is unclear within the distribution

SITE DESCRIPTION: FGSK7

which particle sizes are immobile. Discharges between 550 and 800 cfs match most inflection points through the reach and specifically a discharge of 650 cfs matches inflection points on Sections 8 through 5.

Due to the lack of a well-defined riffle and the relative homogeneity within the reach, all surveyed cross-sections (with the exception of Section 1 as it serves as the downstream boundary) were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK7	9	550-cfs	550	56.3	142	2.5	3.9	0.0017	3.9	0.43	0.26	0.029
FGSK7	9	600-cfs	600	56.6	150	2.7	4.1	0.0017	4.0	0.43	0.28	0.029
FGSK7	9	625-cfs	625	56.6	153	2.7	4.1	0.0018	4.1	0.44	0.29	0.029
FGSK7	9	650-cfs	650	56.7	156	2.8	4.2	0.0018	4.2	0.44	0.30	0.029
FGSK7	9	700-cfs	700	56.9	163	2.9	4.3	0.0018	4.3	0.45	0.31	0.029
FGSK7	9	750-cfs	750	57.1	169	3.0	4.4	0.0018	4.4	0.45	0.33	0.029
FGSK7	9	800-cfs	800	57.2	175	3.1	4.5	0.0019	4.6	0.46	0.35	0.029
FGSK7	8	550-cfs	550	63.4	147	2.3	4.0	0.0018	3.8	0.43	0.26	0.029
FGSK7	8	600-cfs	600	64.8	155	2.4	4.1	0.0019	3.9	0.44	0.27	0.029
FGSK7	8	625-cfs	625	65.3	159	2.4	4.2	0.0019	3.9	0.45	0.28	0.029
FGSK7	8	650-cfs	650	65.4	162	2.5	4.3	0.0019	4.0	0.45	0.28	0.029
FGSK7	8	700-cfs	700	65.7	170	2.6	4.4	0.0019	4.1	0.45	0.30	0.029
FGSK7	8	750-cfs	750	66.0	177	2.7	4.5	0.0019	4.2	0.46	0.31	0.029
FGSK7	8	800-cfs	800	66.3	184	2.8	4.6	0.0019	4.3	0.46	0.32	0.029
FGSK7	7	550-cfs	550	68.5	153	2.2	3.3	0.0018	3.6	0.43	0.24	0.029
FGSK7	7	600-cfs	600	69.2	161	2.3	3.4	0.0018	3.7	0.43	0.25	0.029
FGSK7	7	625-cfs	625	69.4	165	2.4	3.4	0.0018	3.8	0.43	0.26	0.029
FGSK7	7	650-cfs	650	69.5	169	2.4	3.5	0.0018	3.8	0.43	0.26	0.029
FGSK7	7	700-cfs	700	69.7	177	2.5	3.6	0.0018	4.0	0.44	0.27	0.029
FGSK7	7	750-cfs	750	69.9	185	2.6	3.7	0.0018	4.1	0.44	0.29	0.029
FGSK7	7	800-cfs	800	70.2	193	2.8	3.8	0.0018	4.2	0.44	0.30	0.029
FGSK7	6	550-cfs	550	71.2	154	2.2	3.4	0.0018	3.6	0.43	0.24	0.029
FGSK7	6	600-cfs	600	71.4	163	2.3	3.5	0.0018	3.7	0.43	0.25	0.029
FGSK7	6	625-cfs	625	71.5	167	2.3	3.5	0.0018	3.7	0.43	0.25	0.029
FGSK7	6	650-cfs	650	71.6	171	2.4	3.6	0.0018	3.8	0.43	0.26	0.029
FGSK7	6	700-cfs	700	72.3	180	2.5	3.7	0.0018	3.9	0.43	0.27	0.029
FGSK7	6	750-cfs	750	73.0	188	2.6	3.8	0.0018	4.0	0.44	0.28	0.029
FGSK7	6	800-cfs	800	73.7	196	2.7	3.9	0.0018	4.1	0.44	0.29	0.029

HEC-RAS OUTPUT SUMMARY TABLE: FGSK7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK7	5	550-cfs	550	61.24	133.65	2.18	3.35	0.002405	4.12	0.49	0.31	0.029
FGSK7	5	600-cfs	600	62.18	140.83	2.26	3.46	0.002453	4.26	0.5	0.33	0.029
FGSK7	5	625-cfs	625	62.63	144.33	2.3	3.52	0.002476	4.33	0.5	0.34	0.029
FGSK7	5	650-cfs	650	63.06	147.88	2.35	3.58	0.002485	4.39	0.51	0.35	0.029
FGSK7	5	700-cfs	700	63.4	154.77	2.44	3.68	0.002491	4.51	0.51	0.36	0.029
FGSK7	5	750-cfs	750	63.73	161.58	2.54	3.79	0.002492	4.63	0.51	0.38	0.029
FGSK7	5	800-cfs	800	64.06	168.23	2.63	3.9	0.002493	4.74	0.52	0.39	0.029
FGSK7	4	550-cfs	550	55.76	135.96	2.44	3.22	0.002002	4.05	0.46	0.29	0.029
FGSK7	4	600-cfs	600	55.84	142.06	2.54	3.33	0.002063	4.22	0.47	0.31	0.029
FGSK7	4	625-cfs	625	55.88	144.99	2.59	3.39	0.002094	4.31	0.47	0.33	0.029
FGSK7	4	650-cfs	650	55.91	147.93	2.65	3.44	0.00212	4.39	0.48	0.34	0.029
FGSK7	4	700-cfs	700	55.98	153.57	2.74	3.54	0.002174	4.55	0.48	0.36	0.029
FGSK7	4	750-cfs	750	56.05	159.12	2.84	3.64	0.002221	4.7	0.49	0.38	0.029
FGSK7	4	800-cfs	800	56.12	164.52	2.93	3.73	0.002264	4.85	0.5	0.4	0.029
FGSK7	3	550-cfs	550	55.51	150	2.7	3.15	0.001453	3.67	0.39	0.23	0.029
FGSK7	3	600-cfs	600	55.56	156.03	2.81	3.26	0.00152	3.84	0.4	0.25	0.029
FGSK7	3	625-cfs	625	55.59	158.92	2.86	3.31	0.001553	3.93	0.41	0.26	0.029
FGSK7	3	650-cfs	650	55.61	161.82	2.91	3.36	0.001582	4.01	0.41	0.27	0.029
FGSK7	3	700-cfs	700	55.66	167.47	3.01	3.46	0.001639	4.17	0.42	0.29	0.029
FGSK7	3	750-cfs	750	55.7	172.95	3.1	3.56	0.001693	4.33	0.43	0.31	0.029
FGSK7	3	800-cfs	800	55.75	178.27	3.2	3.66	0.001743	4.48	0.44	0.33	0.029
FGSK7	2	550-cfs	550	76.08	159.96	2.1	2.74	0.001725	3.44	0.42	0.22	0.029
FGSK7	2	600-cfs	600	76.27	168.41	2.21	2.86	0.001738	3.56	0.42	0.23	0.029
FGSK7	2	625-cfs	625	76.37	172.53	2.26	2.91	0.001744	3.62	0.42	0.24	0.029
FGSK7	2	650-cfs	650	76.46	176.64	2.31	2.96	0.001749	3.68	0.43	0.25	0.029
FGSK7	2	700-cfs	700	76.64	184.66	2.41	3.07	0.001757	3.79	0.43	0.26	0.029
FGSK7	2	750-cfs	750	76.82	192.47	2.51	3.17	0.001765	3.9	0.43	0.27	0.029
FGSK7	2	800-cfs	800	76.99	200.1	2.6	3.27	0.001772	4	0.44	0.28	0.029

HEC-RAS OUTPUT SUMMARY TABLE: FGSK7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK7	1	550-cfs	550	73.05	142.84	1.96	2.3	0.0024	3.85	0.49	0.28	0.029
FGSK7	1	600-cfs	600	73.13	150.68	2.06	2.41	0.0024	3.98	0.49	0.3	0.029
FGSK7	1	625-cfs	625	73.18	154.44	2.11	2.46	0.002404	4.05	0.49	0.31	0.029
FGSK7	1	650-cfs	650	73.24	158.24	2.16	2.51	0.002403	4.11	0.49	0.31	0.029
FGSK7	1	700-cfs	700	73.35	165.67	2.26	2.61	0.002401	4.23	0.5	0.33	0.029
FGSK7	1	750-cfs	750	73.46	172.9	2.35	2.71	0.0024	4.34	0.5	0.34	0.029
FGSK7	1	800-cfs	800	73.57	179.95	2.45	2.81	0.0024	4.45	0.5	0.35	0.029

HEC-RAS LONGITUDINAL PROFILE: FGSK7

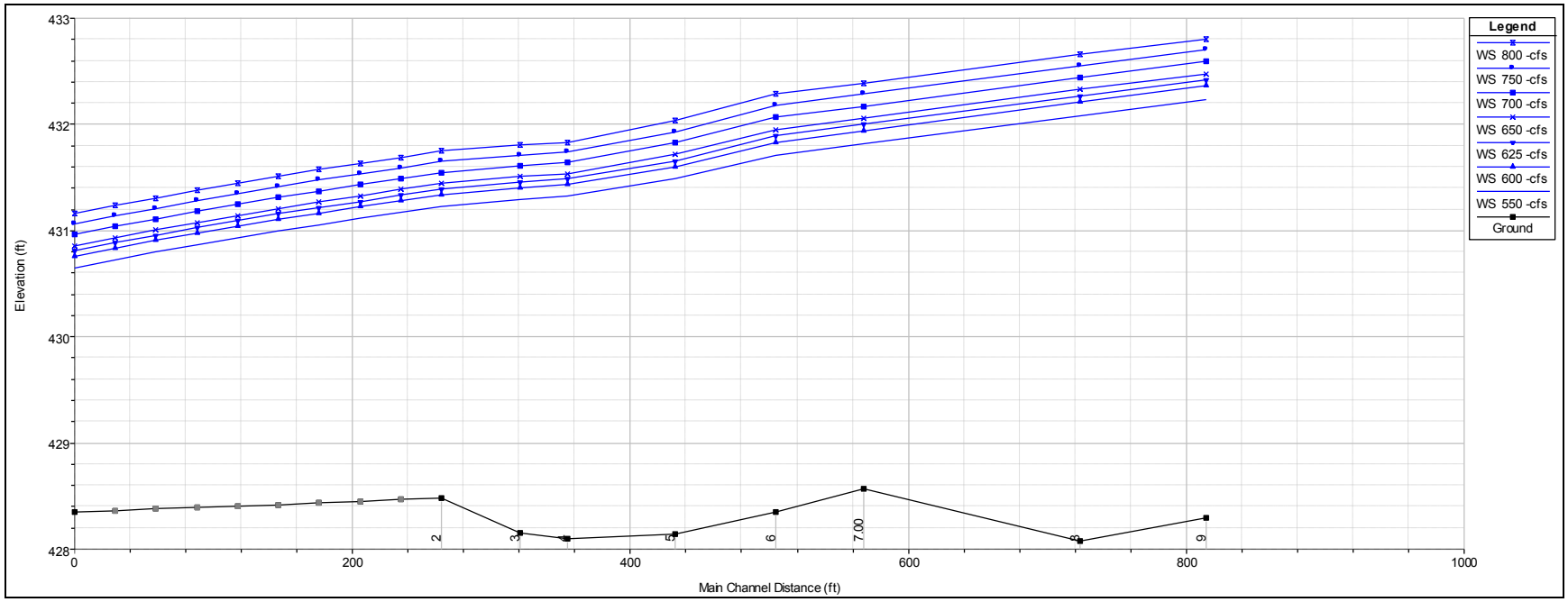


Figure 39 HEC-RAS longitudinal profile output for Reach FGSK7. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

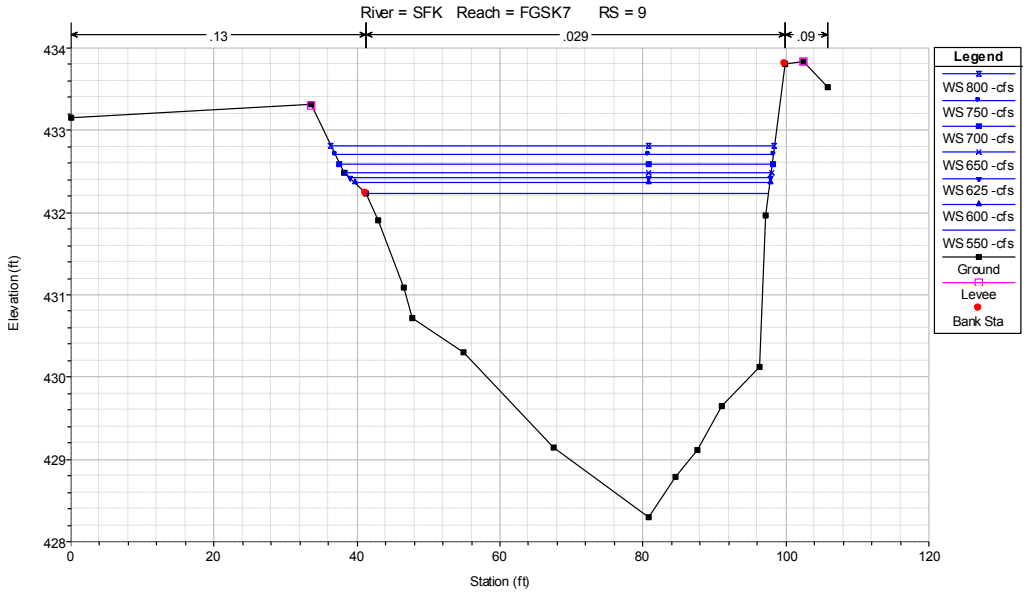


Figure 40 River Station (RS) 9 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

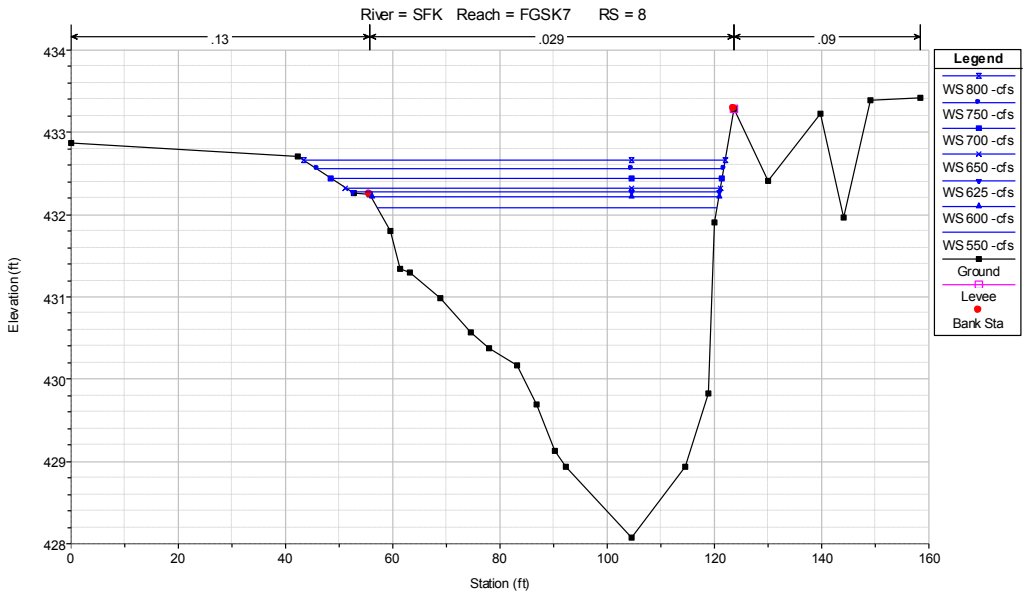


Figure 41 River Station (RS) 8 on River Reach FSGK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

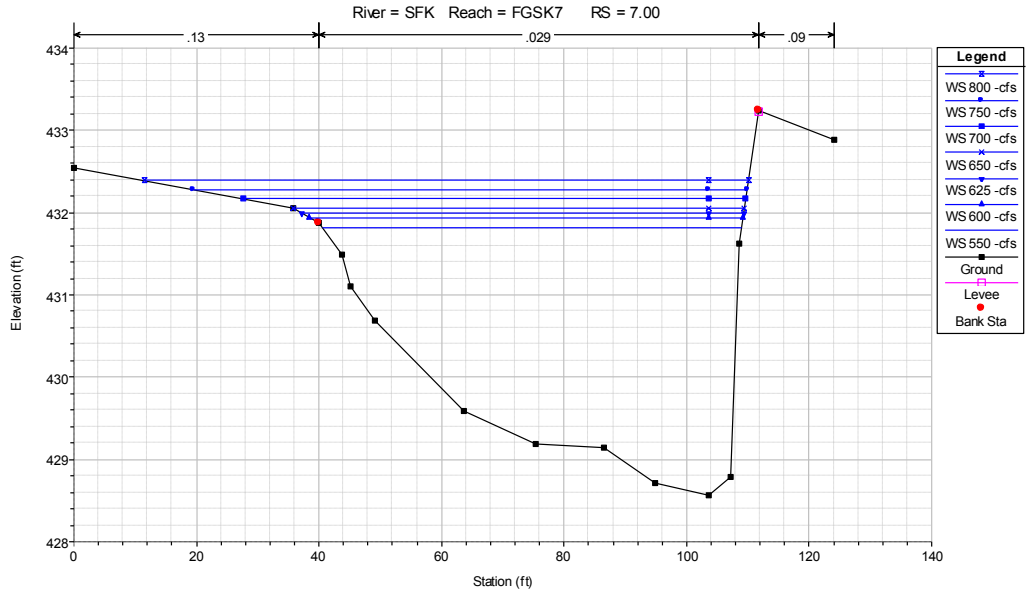


Figure 42 River Station (RS) 7 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

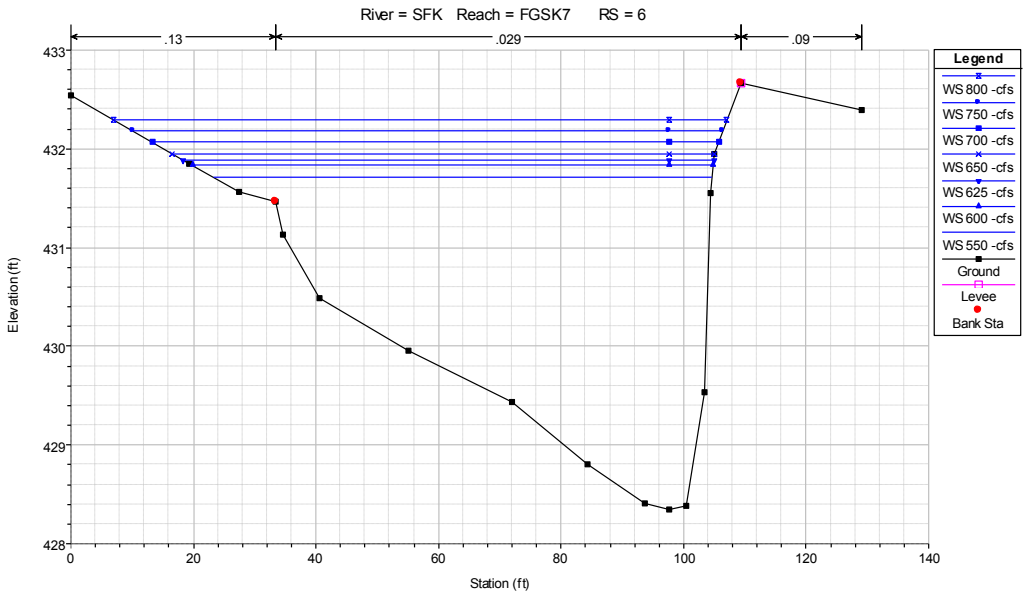


Figure 43 River Station (RS) 6 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

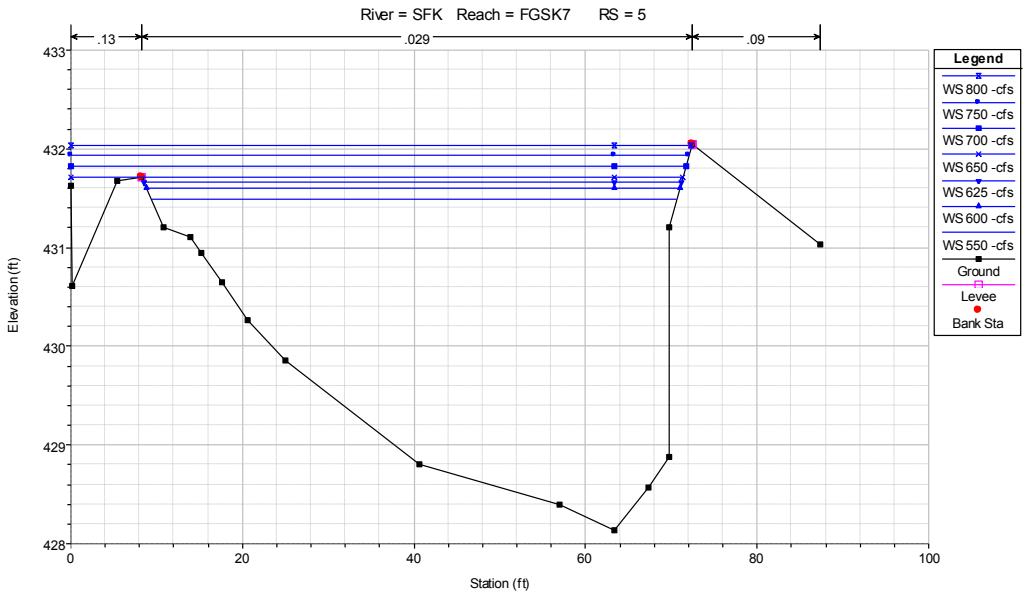


Figure 44 River Station (RS) 5 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

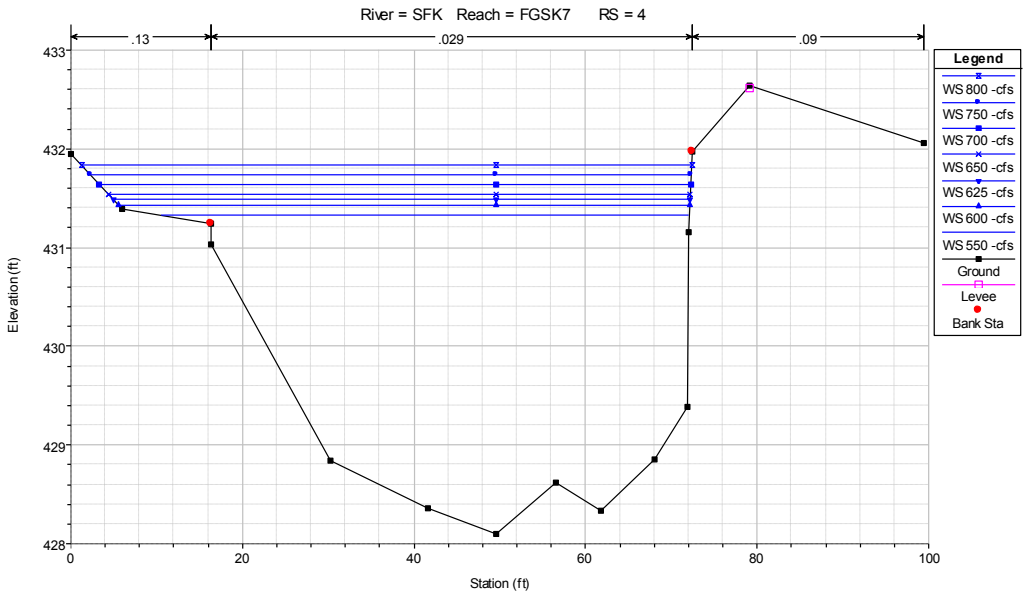


Figure 45 River Station (RS) 4 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

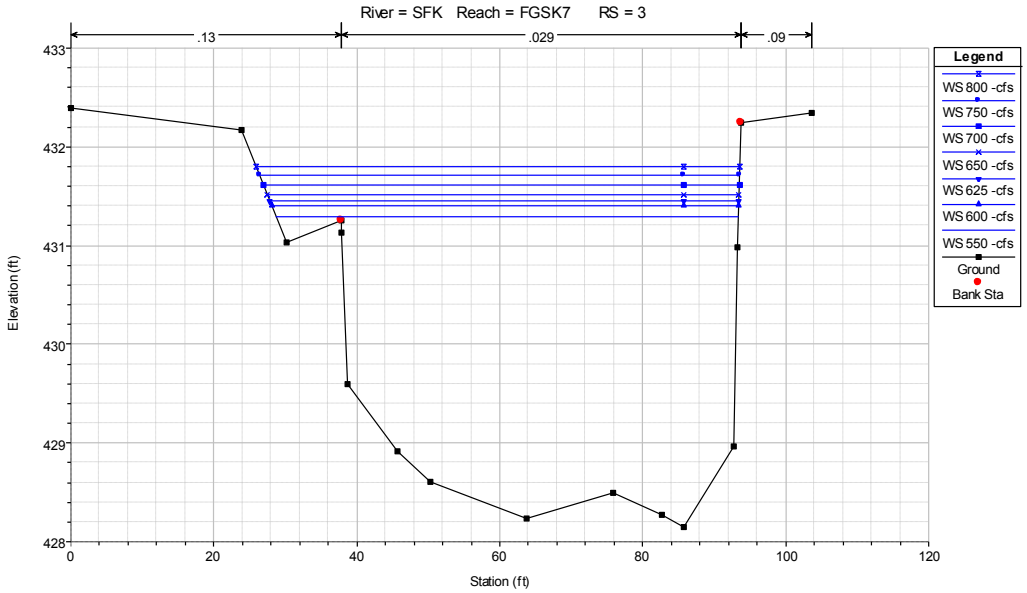


Figure 46 River Station (RS) 3 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

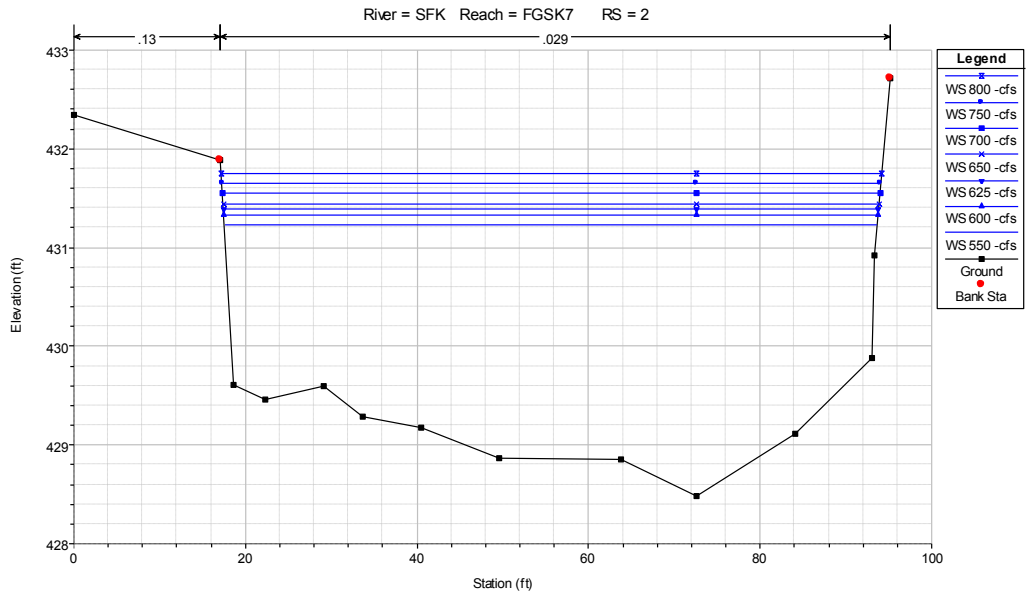


Figure 47 River Station (RS) 2 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK7

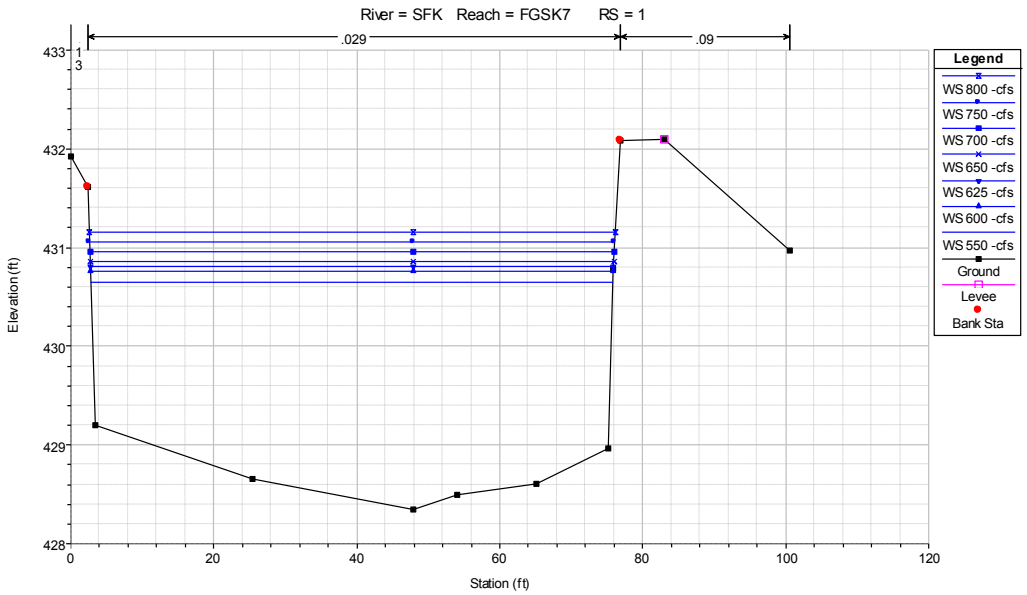


Figure 48 River Station (RS) 1 on River Reach FGSK7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK7

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK7	9	550-cfs	0.26	47	38	31
FGSK7	9	600-cfs	0.28	50	41	33
FGSK7	9	625-cfs	0.29	52	42	34
FGSK7	9	650-cfs	0.30	54	44	35
FGSK7	9	700-cfs	0.31	56	45	36
FGSK7	9	750-cfs	0.33	59	48	39
FGSK7	9	800-cfs	0.35	63	51	41
FGSK7	8	550-cfs	0.26	47	38	31
FGSK7	8	600-cfs	0.27	49	39	32
FGSK7	8	625-cfs	0.28	50	41	33
FGSK7	8	650-cfs	0.28	50	41	33
FGSK7	8	700-cfs	0.30	54	44	35
FGSK7	8	750-cfs	0.31	56	45	36
FGSK7	8	800-cfs	0.32	58	47	38
FGSK7	7	550-cfs	0.24	43	35	28
FGSK7	7	600-cfs	0.25	45	36	29
FGSK7	7	625-cfs	0.26	47	38	31
FGSK7	7	650-cfs	0.26	47	38	31
FGSK7	7	700-cfs	0.27	49	39	32
FGSK7	7	750-cfs	0.29	52	42	34
FGSK7	7	800-cfs	0.30	54	44	35
FGSK7	6	550-cfs	0.24	43	35	28
FGSK7	6	600-cfs	0.25	45	36	29
FGSK7	6	625-cfs	0.25	45	36	29
FGSK7	6	650-cfs	0.26	47	38	31
FGSK7	6	700-cfs	0.27	49	39	32
FGSK7	6	750-cfs	0.28	50	41	33
FGSK7	6	800-cfs	0.29	52	42	34

INCIPIENT MOTION ANALYSIS: FGSK7

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK7	5	550-cfs	0.31	56	45	36
FGSK7	5	600-cfs	0.33	59	48	39
FGSK7	5	625-cfs	0.34	61	50	40
FGSK7	5	650-cfs	0.35	63	51	41
FGSK7	5	700-cfs	0.36	65	52	42
FGSK7	5	750-cfs	0.38	68	55	45
FGSK7	5	800-cfs	0.39	70	57	46
FGSK7	4	550-cfs	0.29	52	42	34
FGSK7	4	600-cfs	0.31	56	45	36
FGSK7	4	625-cfs	0.33	59	48	39
FGSK7	4	650-cfs	0.34	61	50	40
FGSK7	4	700-cfs	0.36	65	52	42
FGSK7	4	750-cfs	0.38	68	55	45
FGSK7	4	800-cfs	0.40	72	58	47
FGSK7	3	550-cfs	0.23	41	34	27
FGSK7	3	600-cfs	0.25	45	36	29
FGSK7	3	625-cfs	0.26	47	38	31
FGSK7	3	650-cfs	0.27	49	39	32
FGSK7	3	700-cfs	0.29	52	42	34
FGSK7	3	750-cfs	0.31	56	45	36
FGSK7	3	800-cfs	0.33	59	48	39
FGSK7	2	550-cfs	0.22	40	32	26
FGSK7	2	600-cfs	0.23	41	34	27
FGSK7	2	625-cfs	0.24	43	35	28
FGSK7	2	650-cfs	0.25	45	36	29
FGSK7	2	700-cfs	0.26	47	38	31
FGSK7	2	750-cfs	0.27	49	39	32
FGSK7	2	800-cfs	0.28	50	41	33

INCIPIENT MOTION ANALYSIS: FGSK7

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK7	1	550-cfs	0.28	50	41	33
FGSK7	1	600-cfs	0.30	54	44	35
FGSK7	1	625-cfs	0.31	56	45	36
FGSK7	1	650-cfs	0.31	56	45	36
FGSK7	1	700-cfs	0.33	59	48	39
FGSK7	1	750-cfs	0.34	61	50	40
FGSK7	1	800-cfs	0.35	63	51	41

PHOTOGRAPH DOCUMENTATION: FGSK7

Left bank along pebble count/bulk sample site FGSK7

Right bank along pebble count/bulk sample site FGSK7

Looking downstream towards pebble count/bulk sample site FGSK7

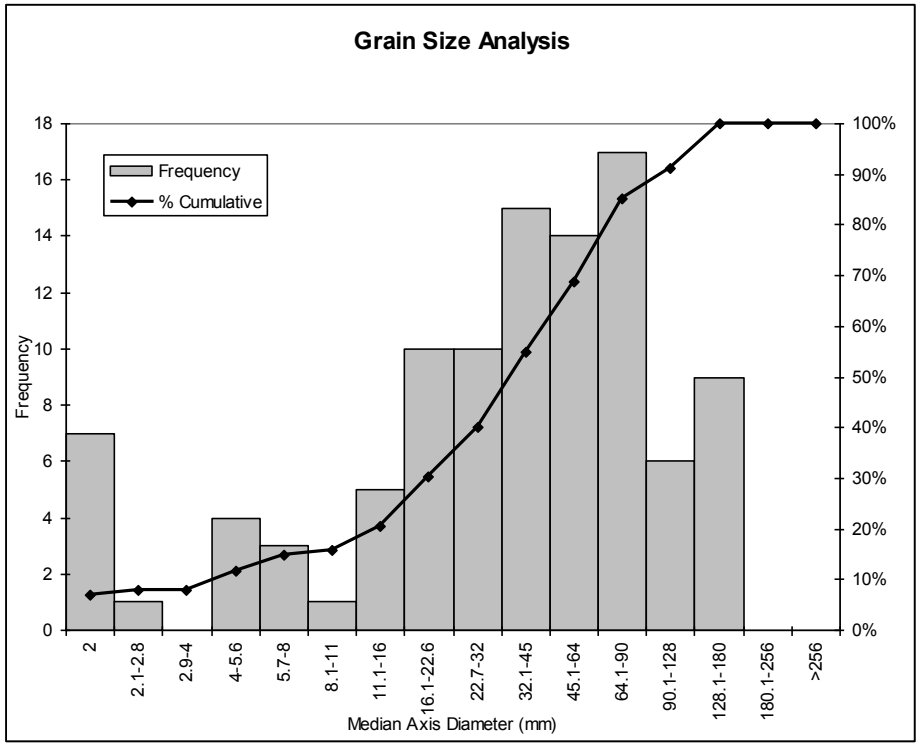
Looking upstream from pebble count/bulk sample site FGSK7

PHOTOGRAPH DOCUMENTATION: FGSK7

Bank composition detail (right bank) FGSK7

Looking upstream from downstream boundary FGSK7

PEBBLE COUNT DISTRIBUTION: FGSK7



Size Class mm	*Frequency*	*Cumulative %*
2	7	6.9%
2.1-2.8	1	7.8%
2.9-4	0	7.8%
4-5.6	4	11.8%
5.7-8	3	14.7%
8.1-11	1	15.7%
11.1-16	5	20.6%
16.1-22.6	10	30.4%
22.7-32	10	40.2%
32.1-45	15	54.9%
45.1-64	14	68.6%
64.1-90	17	85.3%
90.1-128	6	91.2%
128.1-180	9	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 7

HYDROGRAPH: FGSK7

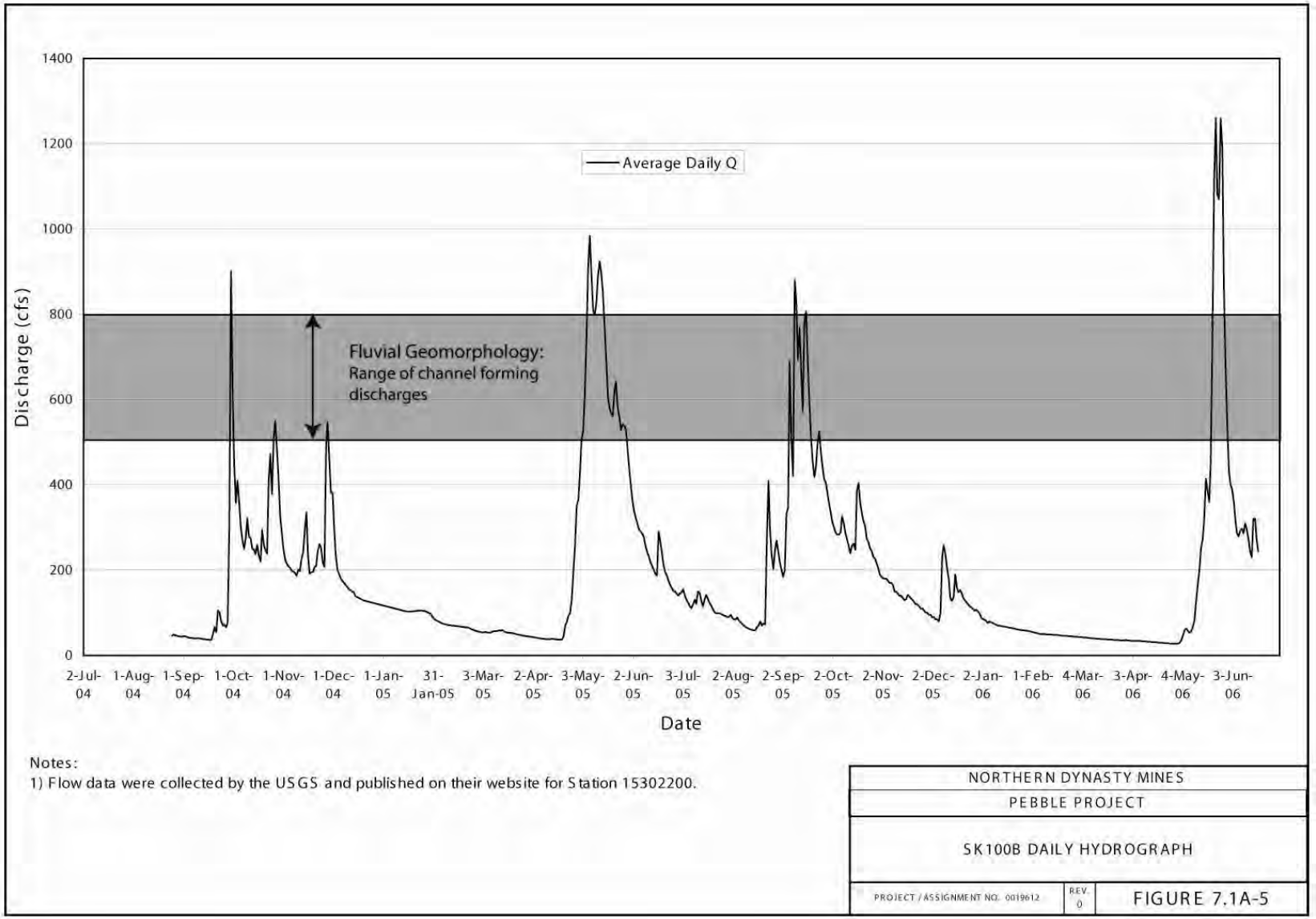


Figure 49 Hydrograph referenced in site description FGSK7. Data provided by HDR

1,358,617 1,359,017 1,359,417 1,359,817 1,360,217

2,120,295

2,119,895

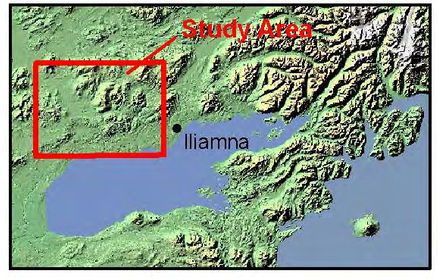
2,119,495

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK7
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,358,617 1,359,017 1,359,417 1,359,817 1,360,217

SITE DESCRIPTION: FGSK8

Site Characteristics.

Site Name		FGSK8	
Discharge (cfs)	**525 (400-575)**	Width (ft)	**47.9 (44.8-58.1)**
Slope	**0.0023**	Cross-sectional Area (ft^2)	**122 (98-147)**
D_{50}	**36**	D_{84}	**73**
Lat/Long Location	**N59.80368 W155.48153**	Drainage Area (mi^2)	**55**
% Willow		**50**	
% Grass		**50**	
% Tree		**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 460 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model and represents the crest of the pool. Sections 8 through 4 represent the reference reach which include a glide (Sections 8 through 7) and a riffle (Sections 7 through 5). The pebble count was taken between Sections 6 and 5. Sections 4 through 1 characterize the downstream pool. While not incorporated into the hydraulic model, the HDR hydrology gage SK100B1 is located close enough to FGSK8 to provide an idea of the frequency and magnitude of discharge events (see attached hydrograph).

In general there is good agreement between the incipient motion analysis Sampled across River Stations (RS) 6 and 5 and the geometry and channel-forming indicators found through the reach. For a Shields number of 0.017 the D_{84} begins to move between 425 and 550 cfs. A discharge of 525 cfs matches the left bank on Section 8, the right top of bank on Sections 6 and 4, and the top of the gravel bar through the pool (Sections 3 through 1).

The reference reach, which includes a riffle and the upstream run/glide (Sections 8 through 4), provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK8	8	400-cfs	400	45.4	124	2.7	4.1	0.0013	3.2	0.34	0.22	0.032
FGSK8	8	425-cfs	425	45.4	128	2.8	4.2	0.0014	3.3	0.35	0.23	0.032
FGSK8	8	450-cfs	450	45.4	131	2.9	4.3	0.0014	3.4	0.36	0.24	0.032
FGSK8	8	475-cfs	475	45.4	134	3.0	4.3	0.0014	3.5	0.36	0.25	0.032
FGSK8	8	500-cfs	500	45.4	138	3.0	4.4	0.0014	3.6	0.37	0.26	0.032
FGSK8	8	525-cfs	525	45.4	141	3.1	4.5	0.0015	3.7	0.37	0.28	0.032
FGSK8	8	550-cfs	550	45.4	144	3.2	4.5	0.0015	3.8	0.38	0.29	0.032
FGSK8	8	575-cfs	575	45.4	147	3.2	4.6	0.0015	3.9	0.38	0.30	0.032
FGSK8	7	400-cfs	400	57.1	111	1.9	3.0	0.0026	3.6	0.46	0.30	0.032
FGSK8	7	425-cfs	425	57.6	116	2.0	3.1	0.0026	3.7	0.46	0.31	0.032
FGSK8	7	450-cfs	450	58.1	120	2.1	3.2	0.0025	3.7	0.46	0.32	0.032
FGSK8	7	475-cfs	475	58.1	125	2.1	3.3	0.0025	3.8	0.46	0.33	0.032
FGSK8	7	500-cfs	500	58.1	129	2.2	3.4	0.0025	3.9	0.46	0.34	0.032
FGSK8	7	525-cfs	525	58.1	133	2.3	3.4	0.0025	3.9	0.46	0.34	0.032
FGSK8	7	550-cfs	550	58.1	137	2.4	3.5	0.0024	4.0	0.46	0.35	0.032
FGSK8	7	575-cfs	575	58.1	141	2.4	3.6	0.0024	4.1	0.46	0.36	0.032
FGSK8	6	400-cfs	400	45.4	98	2.2	3.8	0.0030	4.1	0.49	0.38	0.032
FGSK8	6	425-cfs	425	45.5	101	2.2	3.8	0.0030	4.2	0.50	0.40	0.032
FGSK8	6	450-cfs	450	45.5	104	2.3	3.9	0.0030	4.3	0.50	0.41	0.032
FGSK8	6	475-cfs	475	45.5	108	2.4	4.0	0.0031	4.4	0.50	0.43	0.032
FGSK8	6	500-cfs	500	45.5	111	2.4	4.0	0.0031	4.5	0.51	0.44	0.032
FGSK8	6	525-cfs	525	45.5	114	2.5	4.1	0.0031	4.6	0.51	0.46	0.032
FGSK8	6	550-cfs	550	45.5	117	2.6	4.2	0.0031	4.7	0.52	0.47	0.032
FGSK8	6	575-cfs	575	45.5	119	2.6	4.2	0.0031	4.8	0.52	0.49	0.032
FGSK8	5	400-cfs	400	45.8	104	2.3	2.9	0.0024	3.9	0.45	0.33	0.032
FGSK8	5	425-cfs	425	45.8	107	2.3	3.0	0.0025	4.0	0.46	0.35	0.032
FGSK8	5	450-cfs	450	45.8	110	2.4	3.1	0.0025	4.1	0.46	0.36	0.032
FGSK8	5	475-cfs	475	45.8	114	2.5	3.2	0.0025	4.2	0.47	0.37	0.032
FGSK8	5	500-cfs	500	45.8	117	2.6	3.2	0.0025	4.3	0.47	0.39	0.032

HEC-RAS OUTPUT SUMMARY TABLE: FGSK8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK8	5	525-cfs	525	45.8	120	2.6	3.3	0.0025	4.3	0.47	0.40	0.032
FGSK8	5	550-cfs	550	45.8	123	2.7	3.4	0.0026	4.4	0.48	0.41	0.032
FGSK8	5	575-cfs	575	45.8	126	2.7	3.4	0.0026	4.5	0.48	0.43	0.032
FGSK8	4	400-cfs	400	44.8	113	2.5	3.5	0.0017	3.5	0.39	0.27	0.032
FGSK8	4	425-cfs	425	44.8	116	2.6	3.6	0.0018	3.7	0.40	0.28	0.032
FGSK8	4	450-cfs	450	44.8	119	2.7	3.6	0.0018	3.8	0.41	0.30	0.032
FGSK8	4	475-cfs	475	44.8	122	2.7	3.7	0.0019	3.9	0.41	0.31	0.032
FGSK8	4	500-cfs	500	44.8	125	2.8	3.8	0.0019	4.0	0.42	0.33	0.032
FGSK8	4	525-cfs	525	44.8	128	2.9	3.8	0.0020	4.1	0.43	0.34	0.032
FGSK8	4	550-cfs	550	44.8	131	2.9	3.9	0.0020	4.2	0.43	0.36	0.032
FGSK8	4	575-cfs	575	44.8	133	3.0	3.9	0.0020	4.3	0.44	0.37	0.032
FGSK8	3	400-cfs	400	56.2	164	2.9	4.3	0.0007	2.4	0.25	0.12	0.032
FGSK8	3	425-cfs	425	56.2	168	3.0	4.4	0.0007	2.5	0.26	0.13	0.032
FGSK8	3	450-cfs	450	56.3	172	3.1	4.4	0.0007	2.6	0.26	0.14	0.032
FGSK8	3	475-cfs	475	56.3	176	3.1	4.5	0.0008	2.7	0.27	0.15	0.032
FGSK8	3	500-cfs	500	56.4	180	3.2	4.6	0.0008	2.8	0.27	0.15	0.032
FGSK8	3	525-cfs	525	56.4	183	3.3	4.6	0.0008	2.9	0.28	0.16	0.032
FGSK8	3	550-cfs	550	56.4	187	3.3	4.7	0.0008	2.9	0.28	0.17	0.032
FGSK8	3	575-cfs	575	56.5	190	3.4	4.8	0.0009	3.0	0.29	0.18	0.032
FGSK8	2	400-cfs	400	54.5	111	2.0	2.9	0.0024	3.6	0.44	0.30	0.032
FGSK8	2	425-cfs	425	54.5	114	2.1	2.9	0.0024	3.7	0.45	0.31	0.032
FGSK8	2	450-cfs	450	54.6	118	2.2	3.0	0.0025	3.8	0.46	0.33	0.032
FGSK8	2	475-cfs	475	54.7	121	2.2	3.0	0.0025	3.9	0.47	0.34	0.032
FGSK8	2	500-cfs	500	54.7	124	2.3	3.1	0.0026	4.0	0.47	0.36	0.032
FGSK8	2	525-cfs	525	54.8	127	2.3	3.2	0.0026	4.1	0.48	0.37	0.032
FGSK8	2	550-cfs	550	54.8	130	2.4	3.2	0.0027	4.2	0.48	0.39	0.032
FGSK8	2	575-cfs	575	54.9	133	2.4	3.3	0.0027	4.3	0.49	0.40	0.032
FGSK8	1	400-cfs	400	61.6	101	1.6	2.5	0.0038	4.0	0.54	0.38	0.032

HEC-RAS OUTPUT SUMMARY TABLE: FGSK8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK8	1	425-cfs	425	61.6	105	1.7	2.5	0.0038	4.0	0.55	0.40	0.032
FGSK8	1	450-cfs	450	61.7	109	1.8	2.6	0.0038	4.1	0.55	0.41	0.032
FGSK8	1	475-cfs	475	61.7	112	1.8	2.7	0.0038	4.2	0.55	0.43	0.032
FGSK8	1	500-cfs	500	61.7	116	1.9	2.7	0.0038	4.3	0.55	0.44	0.032
FGSK8	1	525-cfs	525	61.8	119	1.9	2.8	0.0038	4.4	0.56	0.45	0.032
FGSK8	1	550-cfs	550	61.8	123	2.0	2.8	0.0038	4.5	0.56	0.46	0.032
FGSK8	1	575-cfs	575	61.8	126	2.0	2.9	0.0038	4.6	0.56	0.48	0.032

HEC-RAS LONGITUDINAL PROFILE: FGSK8

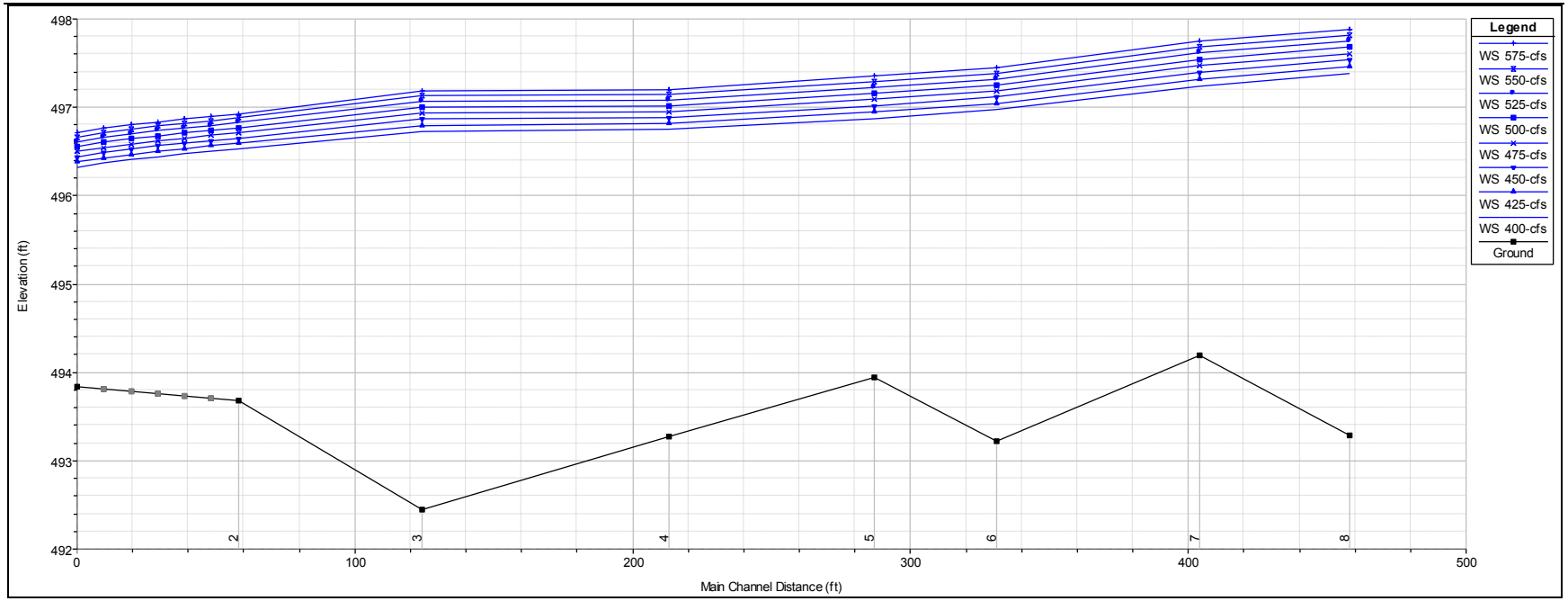


Figure 50 HEC-RAS longitudinal profile output for Reach FGSK8. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

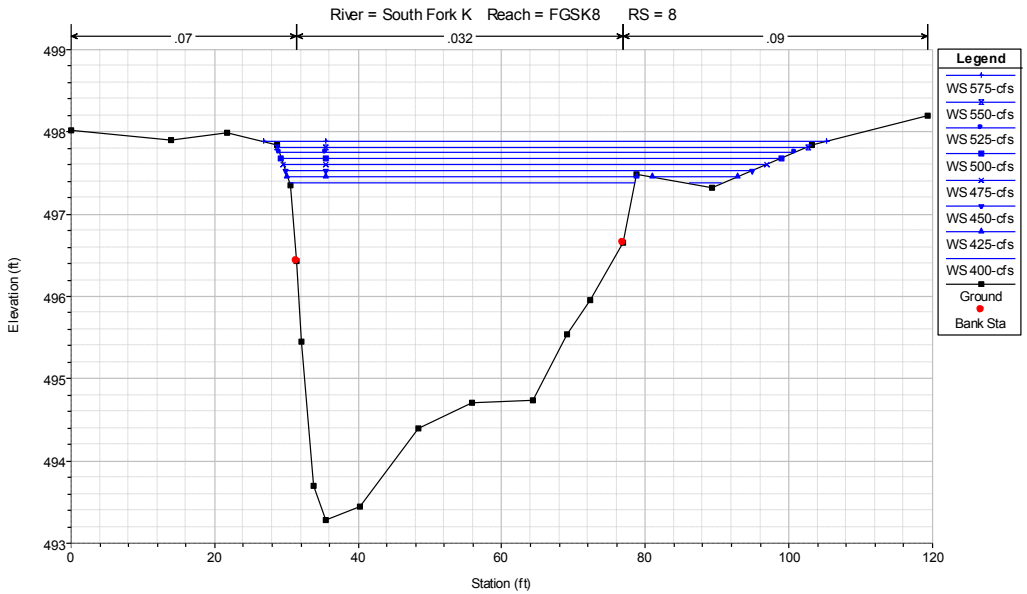


Figure 51 River Station (RS) 8 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

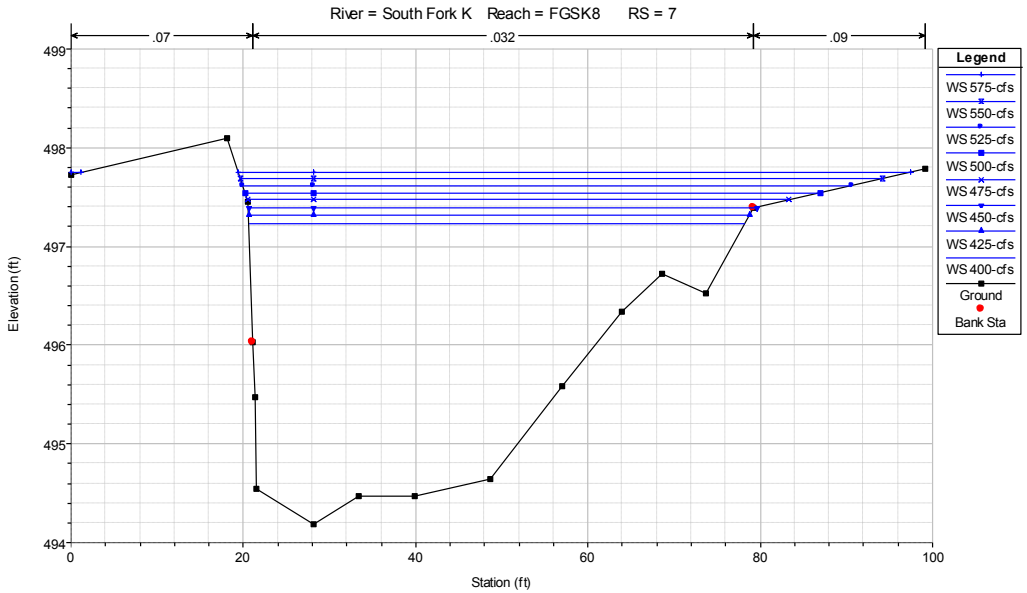


Figure 52 River Station (RS) 7 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

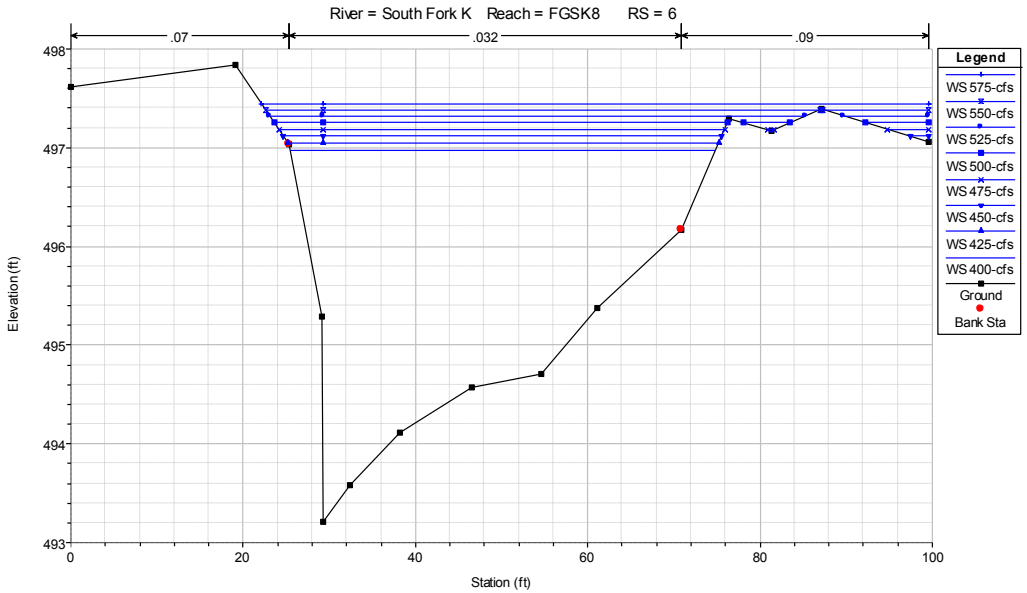


Figure 53 River Station (RS) 6 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

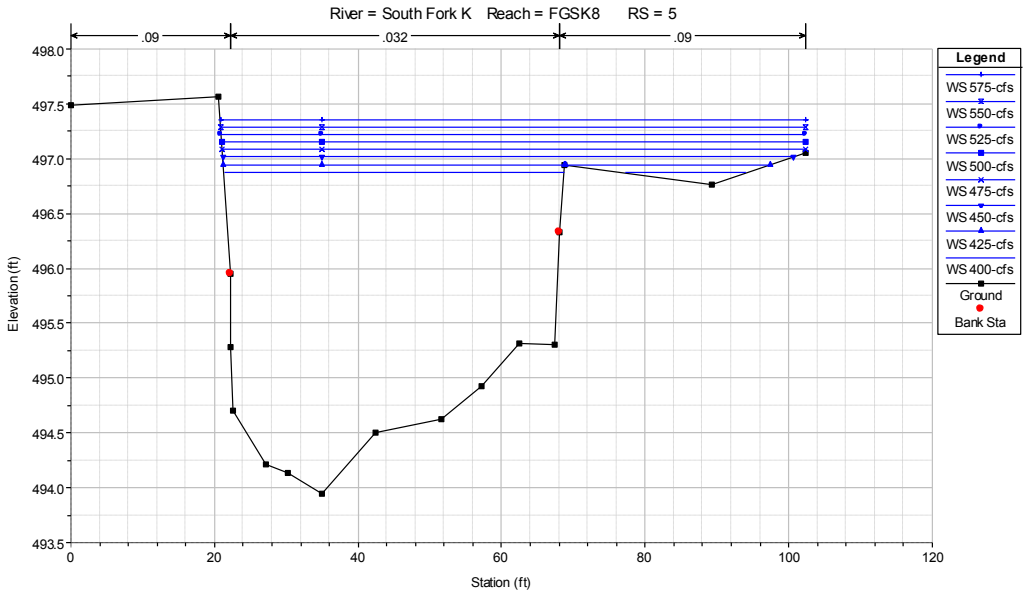


Figure 54 River Station (RS) 5 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

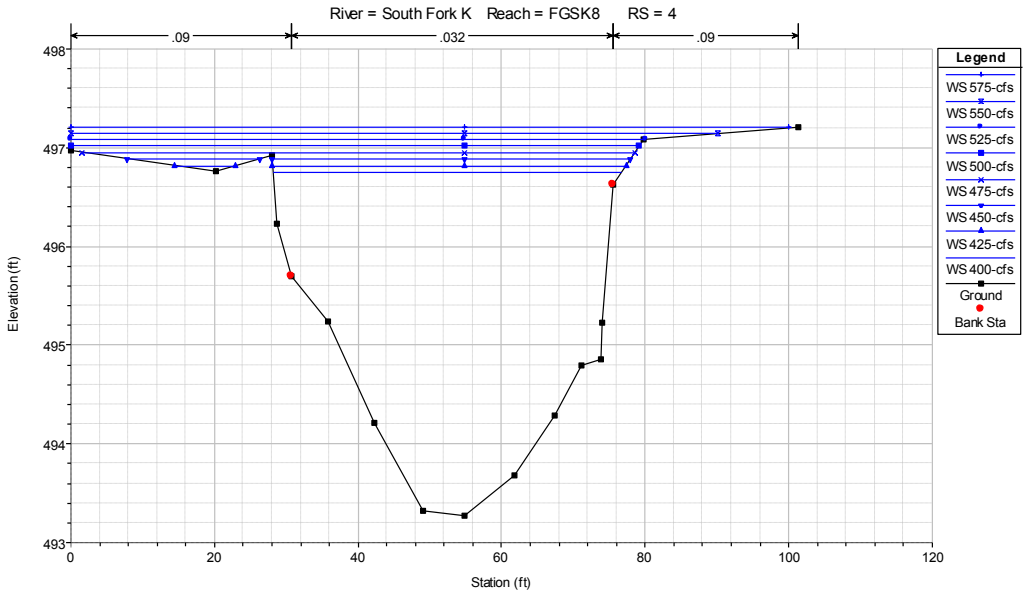


Figure 55 River Station (RS) 4 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

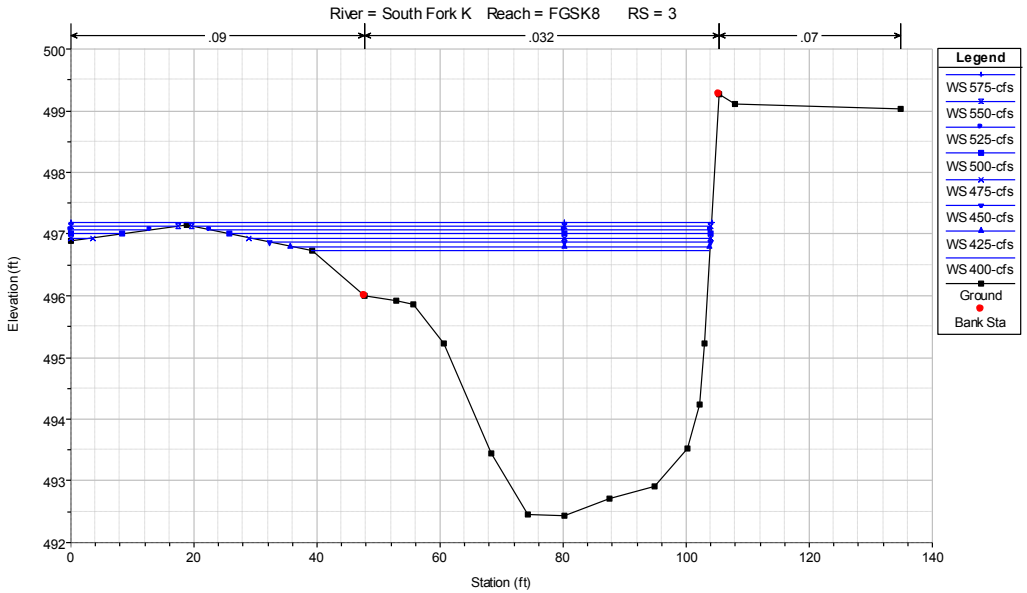


Figure 56 River Station (RS) 3 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

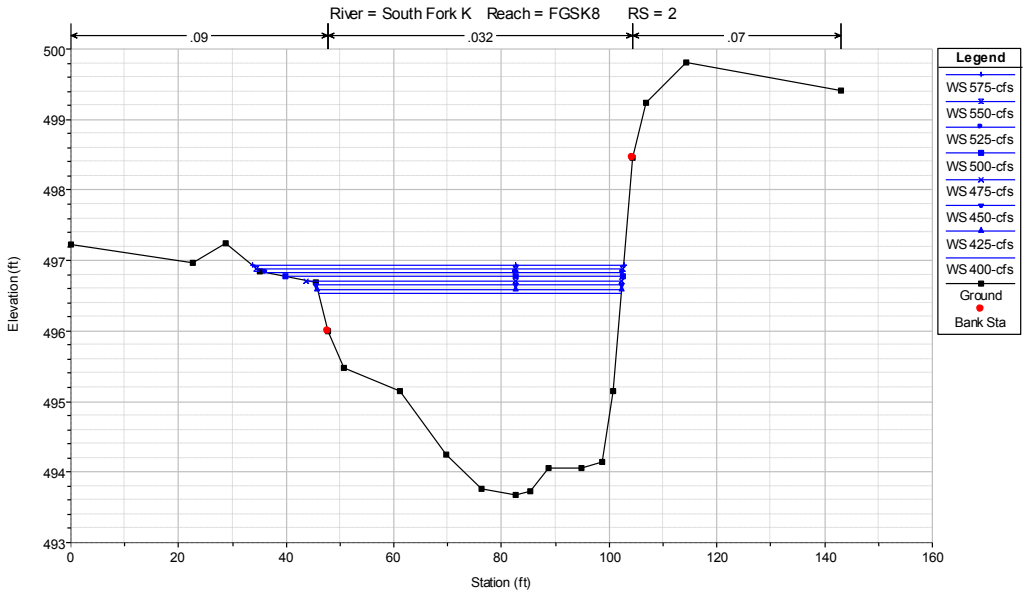


Figure 57 River Station (RS) 2 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK8

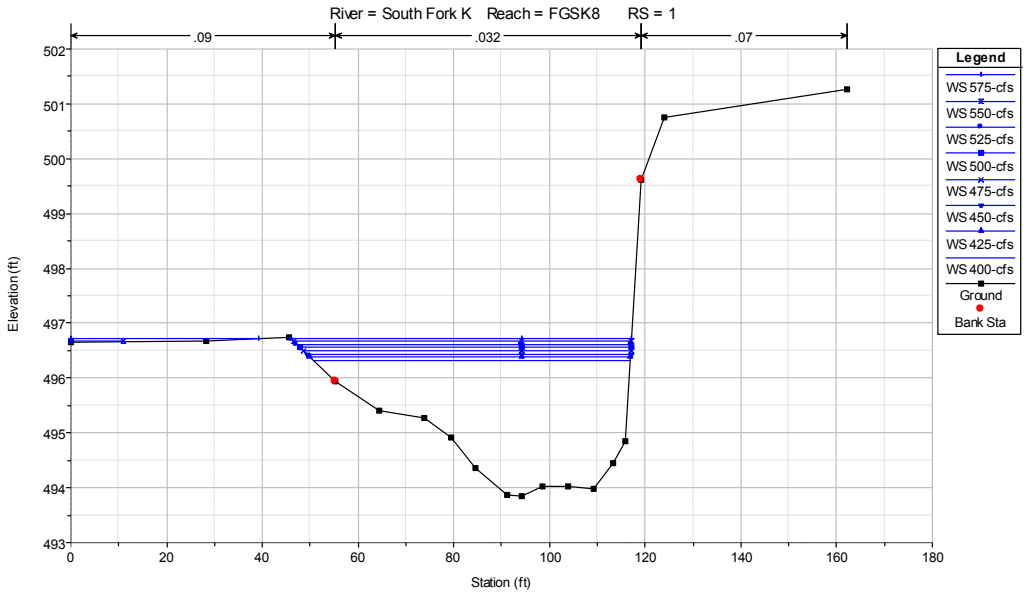


Figure 58 River Station (RS) 1 on River Reach FGSK8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK8

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK8	8	400-cfs	0.22	40	32	26
FGSK8	8	425-cfs	0.23	41	34	27
FGSK8	8	450-cfs	0.24	43	35	28
FGSK8	8	475-cfs	0.25	45	36	29
FGSK8	8	500-cfs	0.26	47	38	31
FGSK8	8	525-cfs	0.28	50	41	33
FGSK8	8	550-cfs	0.29	52	42	34
FGSK8	8	575-cfs	0.30	54	44	35
FGSK8	7	400-cfs	0.30	54	44	35
FGSK8	7	425-cfs	0.31	56	45	36
FGSK8	7	450-cfs	0.32	58	47	38
FGSK8	7	475-cfs	0.33	59	48	39
FGSK8	7	500-cfs	0.34	61	50	40
FGSK8	7	525-cfs	0.34	61	50	40
FGSK8	7	550-cfs	0.35	63	51	41
FGSK8	7	575-cfs	0.36	65	52	42
FGSK8	6	400-cfs	0.38	68	55	45
FGSK8	6	425-cfs	0.40	72	58	47
FGSK8	6	450-cfs	0.41	74	60	48
FGSK8	6	475-cfs	0.43	77	63	51
FGSK8	6	500-cfs	0.44	79	64	52
FGSK8	6	525-cfs	0.46	83	67	54
FGSK8	6	550-cfs	0.47	85	68	55
FGSK8	6	575-cfs	0.49	88	71	58
FGSK8	5	400-cfs	0.33	59	48	39
FGSK8	5	425-cfs	0.35	63	51	41
FGSK8	5	450-cfs	0.36	65	52	42
FGSK8	5	475-cfs	0.37	67	54	44
FGSK8	5	500-cfs	0.39	70	57	46

INCIPIENT MOTION ANALYSIS: FGSK8

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK8	5	525-cfs	0.40	72	58	47
FGSK8	5	550-cfs	0.41	74	60	48
FGSK8	5	575-cfs	0.43	77	63	51
FGSK8	4	400-cfs	0.27	49	39	32
FGSK8	4	425-cfs	0.28	50	41	33
FGSK8	4	450-cfs	0.30	54	44	35
FGSK8	4	475-cfs	0.31	56	45	36
FGSK8	4	500-cfs	0.33	59	48	39
FGSK8	4	525-cfs	0.34	61	50	40
FGSK8	4	550-cfs	0.36	65	52	42
FGSK8	4	575-cfs	0.37	67	54	44
FGSK8	3	400-cfs	0.12	22	17	14
FGSK8	3	425-cfs	0.13	23	19	15
FGSK8	3	450-cfs	0.14	25	20	16
FGSK8	3	475-cfs	0.15	27	22	18
FGSK8	3	500-cfs	0.15	27	22	18
FGSK8	3	525-cfs	0.16	29	23	19
FGSK8	3	550-cfs	0.17	31	25	20
FGSK8	3	575-cfs	0.18	32	26	21
FGSK8	2	400-cfs	0.30	54	44	35
FGSK8	2	425-cfs	0.31	56	45	36
FGSK8	2	450-cfs	0.33	59	48	39
FGSK8	2	475-cfs	0.34	61	50	40
FGSK8	2	500-cfs	0.36	65	52	42
FGSK8	2	525-cfs	0.37	67	54	44
FGSK8	2	550-cfs	0.39	70	57	46
FGSK8	2	575-cfs	0.40	72	58	47
FGSK8	1	400-cfs	0.38	68	55	45
FGSK8	1	425-cfs	0.40	72	58	47

INCIPIENT MOTION ANALYSIS: FGSK8

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK8	1	450-cfs	0.41	74	60	48
FGSK8	1	475-cfs	0.43	77	63	51
FGSK8	1	500-cfs	0.44	79	64	52
FGSK8	1	525-cfs	0.45	81	66	53
FGSK8	1	550-cfs	0.46	83	67	54
FGSK8	1	575-cfs	0.48	86	70	57

PHOTOGRAPH DOCUMENTATION: FGSK8

Left bank along reference reach FGSK8

Right bank along reference reach FGSK8

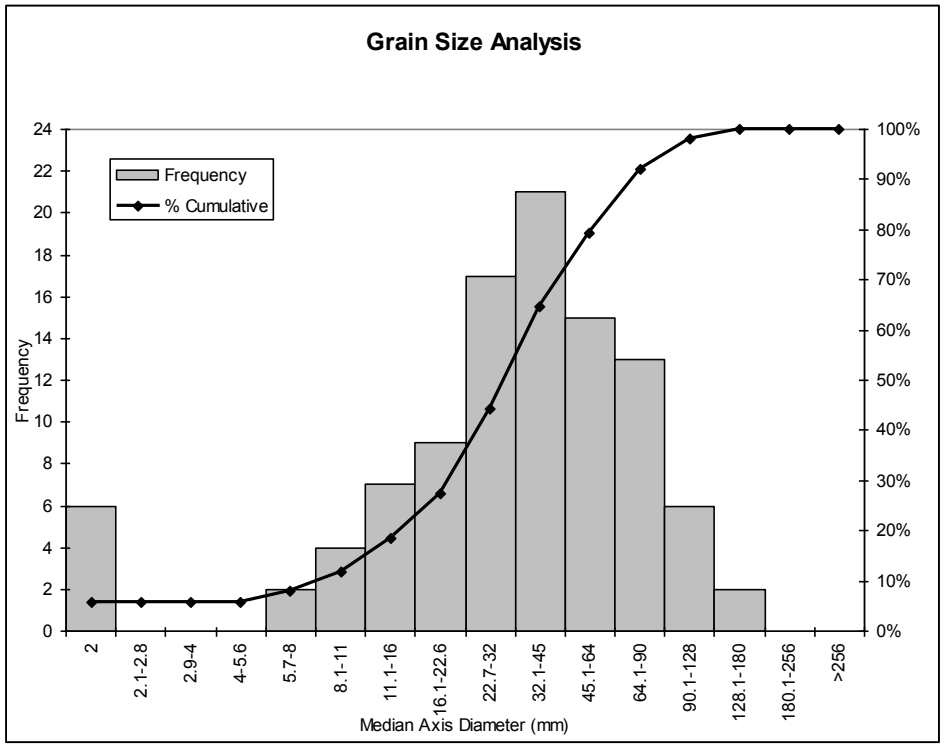
Looking downstream from reference reach FGSK8

Looking upstream from reference reach FGSK8

PHOTOGRAPH DOCUMENTATION: FGSK8

Bank composition detail (left bank) FGSK8

PEBLE COUNT DISTRIBUTION: FGSK8



Size Class mm	*Frequency*	*Cumulative %*
2	6	5.9%
2.1-2.8	0	5.9%
2.9-4	0	5.9%
4-5.6	0	5.9%
5.7-8	2	7.8%
8.1-11	4	11.8%
11.1-16	7	18.6%
16.1-22.6	9	27.5%
22.7-32	17	44.1%
32.1-45	21	64.7%
45.1-64	15	79.4%
64.1-90	13	92.2%
90.1-128	6	98.0%
128.1-180	2	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Between Sections 5 and 6

HYDROGRAPH: FGSK8

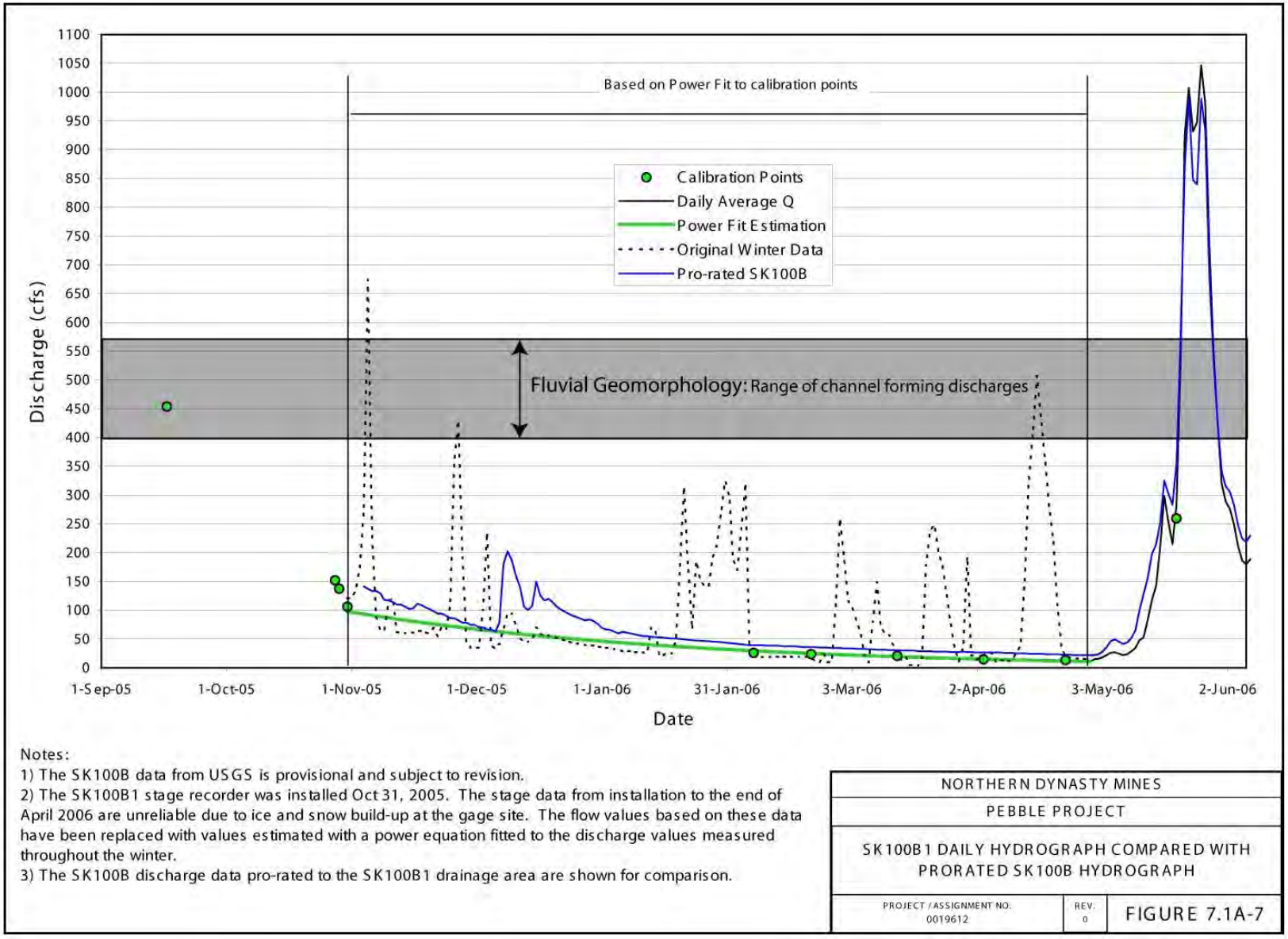


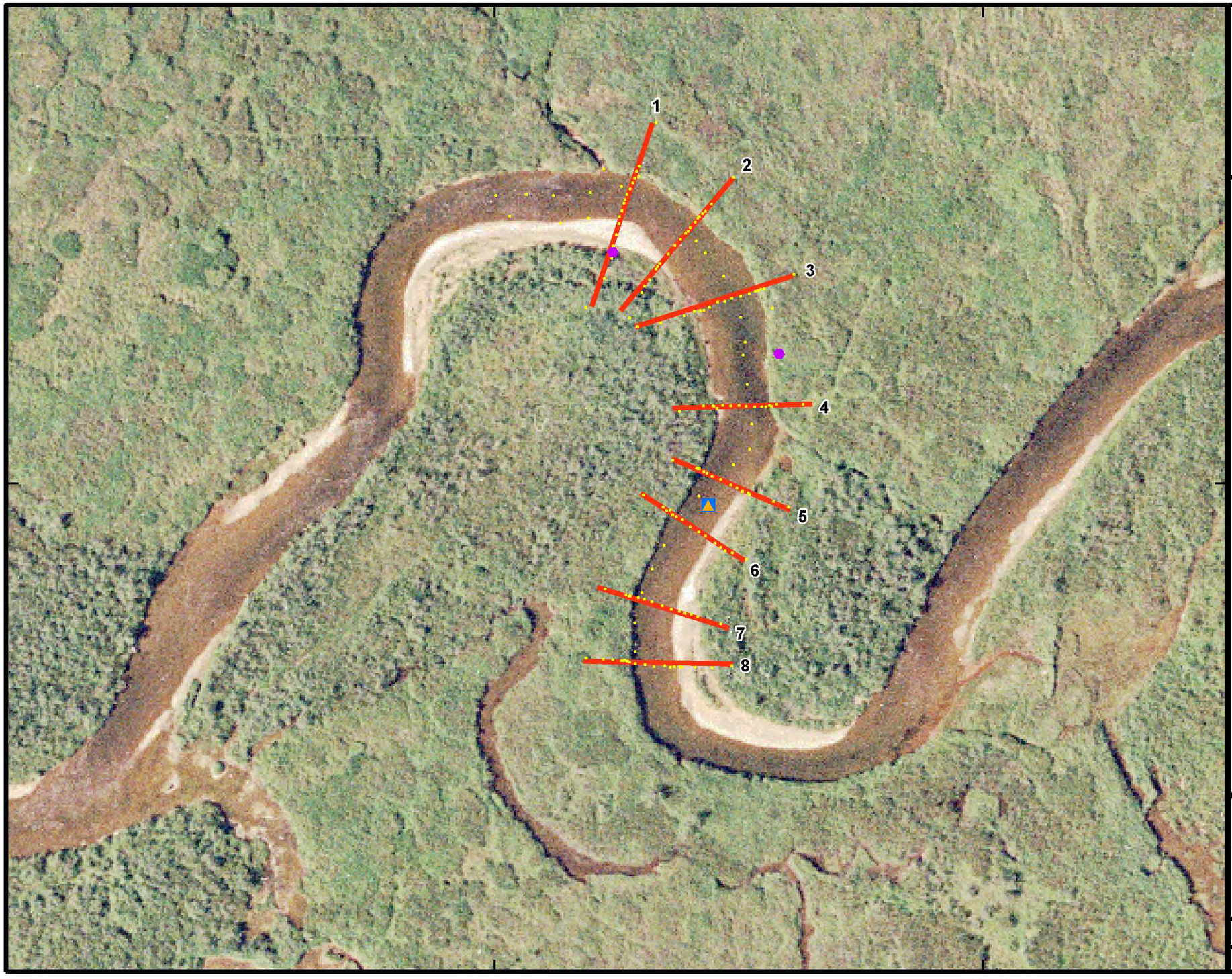
Figure 59 Hydrograph referenced in site description FGSK8. Data provided by HDR

1,367,084

1,367,484

1,367,884

2,123,238

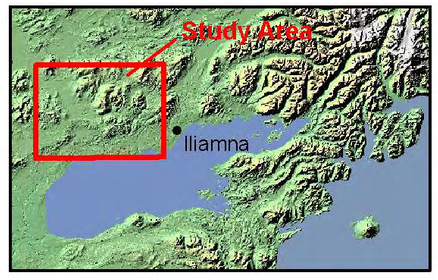


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK8
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 60 120 180 240 Ft

0 20 40 Meters

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,367,084

1,367,484

1,367,884

SITE DESCRIPTION: FGSK9

Site Characteristics.

Site Name		**FGSK9**	
Discharge (cfs)	**450 (325-500)**	Width (ft)	**45.8 (35.7-51.9)**
Slope	**0.0020**	Cross-sectional Area (ft^2)	**128 (90-176)**
D_{50}	**36**	D_{84}	**70**
Lat/Long Location	**N59.81525 W155.43006**	Drainage Area (mi^2)	**50**
% Willow		**85**	
% Grass		**15**	
% Tree		**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 360 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model and represents the crest of the downstream pool. Lacking any well-formed riffles, the crest of a pool/glide (Section 5) served as the reference section and pebble count location. Upwelling from the bed was observed in this reach. Large mats of moss covered around 65% of the channel bottom (see photo) increasing the roughness of the channel. Manning's n was increased to 0.035. Portions of the bed not covered by moss were extremely loose.

The incipient motion analysis shows that for a Shields number of 0.017, the D_{84} moves between 425 and 450 cfs on Section 6. The D_{84}'s mobility through the rest of the site is variable, ranging from greater than 500 cfs to less than 325 cfs. For a Shields number of 0.026, the D_{50} moves at 325 cfs on Section 6 and 450 cfs on Section 5. The potential affect of the moss on the mobility of the bed is unknown and therefore has not been taken into account in the incipient motion analysis. A target flow of 450 cfs matches the geometry well on Section 6 where it hits an inflection point on the right bank and Section 4 where it just overtops the gravel bar along the right bank.

Lacking a well-defined riffle, channel width and cross-sectional area were averaged across Sections 7 through 3 for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK9

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK9	7	325-cfs	325	51.5	141	2.7	3.7	0.0008	2.3	0.24	0.13	0.035
FGSK9	7	350-cfs	350	51.5	147	2.9	3.8	0.0008	2.4	0.25	0.13	0.035
FGSK9	7	375-cfs	375	51.5	152	3.0	3.9	0.0008	2.4	0.25	0.14	0.035
FGSK9	7	400-cfs	400	51.5	157	3.1	4.0	0.0008	2.5	0.25	0.15	0.035
FGSK9	7	425-cfs	425	51.5	162	3.2	4.1	0.0008	2.6	0.26	0.16	0.035
FGSK9	7	450-cfs	450	51.5	167	3.2	4.2	0.0008	2.6	0.26	0.16	0.035
FGSK9	7	475-cfs	475	51.5	171	3.3	4.3	0.0008	2.7	0.26	0.17	0.035
FGSK9	7	500-cfs	500	51.5	176	3.4	4.4	0.0008	2.8	0.26	0.18	0.035
FGSK9	6	325-cfs	325	45.7	118	2.6	3.8	0.0020	2.8	0.30	0.31	0.044
FGSK9	6	350-cfs	350	45.7	123	2.7	3.9	0.0020	2.9	0.31	0.33	0.044
FGSK9	6	375-cfs	375	45.8	127	2.8	4.0	0.0021	2.9	0.31	0.34	0.044
FGSK9	6	400-cfs	400	45.9	132	2.9	4.1	0.0021	3.0	0.31	0.36	0.044
FGSK9	6	425-cfs	425	46.0	136	3.0	4.2	0.0021	3.1	0.32	0.38	0.044
FGSK9	6	450-cfs	450	46.0	140	3.0	4.3	0.0022	3.2	0.32	0.40	0.044
FGSK9	6	475-cfs	475	46.1	144	3.1	4.3	0.0022	3.3	0.33	0.41	0.044
FGSK9	6	500-cfs	500	46.1	147	3.2	4.4	0.0023	3.4	0.33	0.43	0.044
FGSK9	5	325-cfs	325	43.6	104	2.4	3.2	0.0017	3.1	0.35	0.25	0.035
FGSK9	5	350-cfs	350	43.6	109	2.5	3.3	0.0017	3.2	0.35	0.26	0.035
FGSK9	5	375-cfs	375	43.6	113	2.6	3.4	0.0017	3.3	0.36	0.27	0.035
FGSK9	5	400-cfs	400	43.6	117	2.7	3.5	0.0017	3.4	0.36	0.28	0.035
FGSK9	5	425-cfs	425	43.6	121	2.8	3.6	0.0018	3.4	0.36	0.30	0.035
FGSK9	5	450-cfs	450	43.6	125	2.9	3.7	0.0018	3.5	0.37	0.31	0.035
FGSK9	5	475-cfs	475	43.6	128	3.0	3.7	0.0018	3.6	0.37	0.32	0.035
FGSK9	5	500-cfs	500	43.6	132	3.0	3.8	0.0018	3.7	0.37	0.33	0.035
FGSK9	4	325-cfs	325	35.7	90	2.5	3.5	0.0034	3.6	0.40	0.50	0.042
FGSK9	4	350-cfs	350	35.9	93	2.6	3.6	0.0037	3.8	0.41	0.55	0.043
FGSK9	4	375-cfs	375	36.1	96	2.7	3.6	0.0039	3.9	0.42	0.60	0.044
FGSK9	4	400-cfs	400	36.2	99	2.8	3.7	0.0041	4.0	0.43	0.64	0.044
FGSK9	4	425-cfs	425	36.2	102	2.8	3.8	0.0042	4.2	0.44	0.68	0.044
FGSK9	4	450-cfs	450	36.2	105	2.9	3.9	0.0043	4.3	0.44	0.72	0.044

HEC-RAS OUTPUT SUMMARY TABLE: FGSK9

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK9	4	475-cfs	475	36.2	107	3.0	3.9	0.0044	4.4	0.45	0.75	0.044
FGSK9	4	500-cfs	500	36.2	110	3.0	4.0	0.0045	4.5	0.46	0.79	0.044
FGSK9	3	325-cfs	325	51.9	112	2.2	2.8	0.0015	2.5	0.30	0.19	0.037
FGSK9	3	350-cfs	350	51.9	117	2.3	2.9	0.0014	2.5	0.30	0.19	0.037
FGSK9	3	375-cfs	375	51.9	122	2.4	3.0	0.0013	2.6	0.29	0.19	0.037
FGSK9	3	400-cfs	400	51.9	127	2.5	3.1	0.0013	2.6	0.29	0.19	0.037
FGSK9	3	425-cfs	425	51.9	132	2.5	3.2	0.0013	2.6	0.29	0.19	0.037

HEC-RAS LONGITUDINAL PROFILE: FGSK9

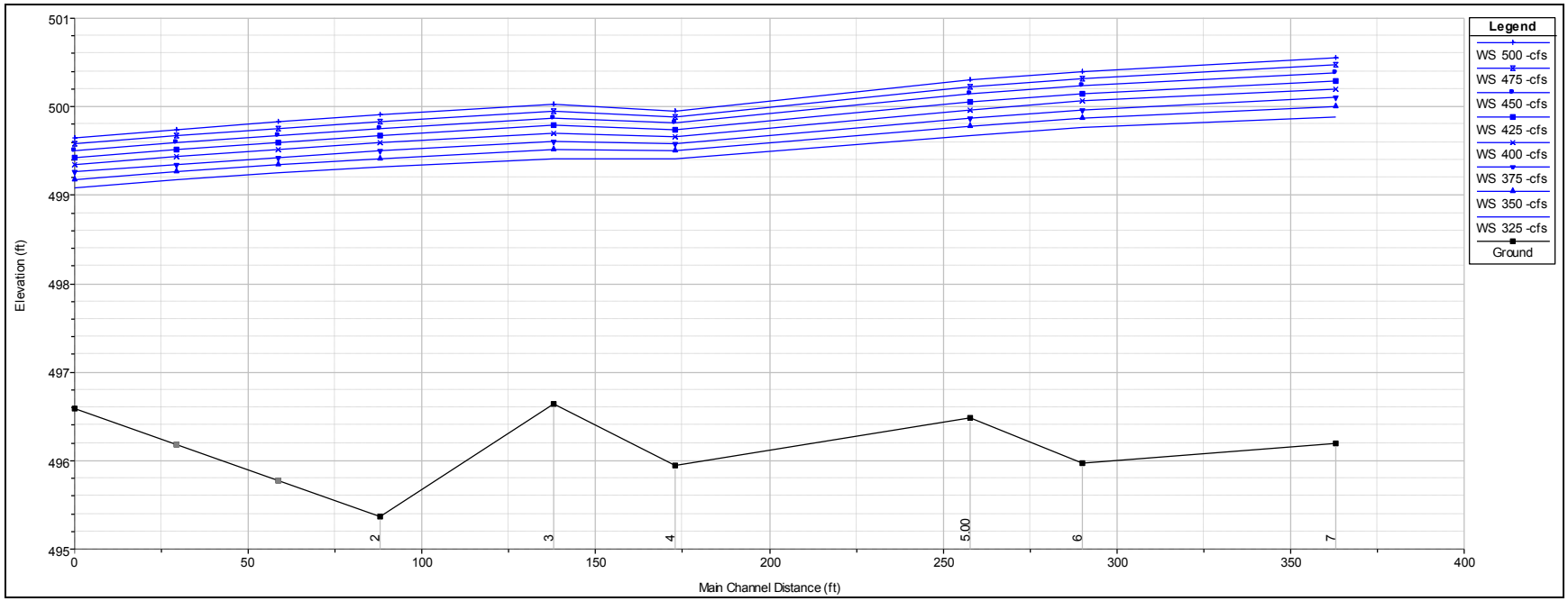


Figure 60 HEC-RAS longitudinal profile output for Reach FGSK9. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

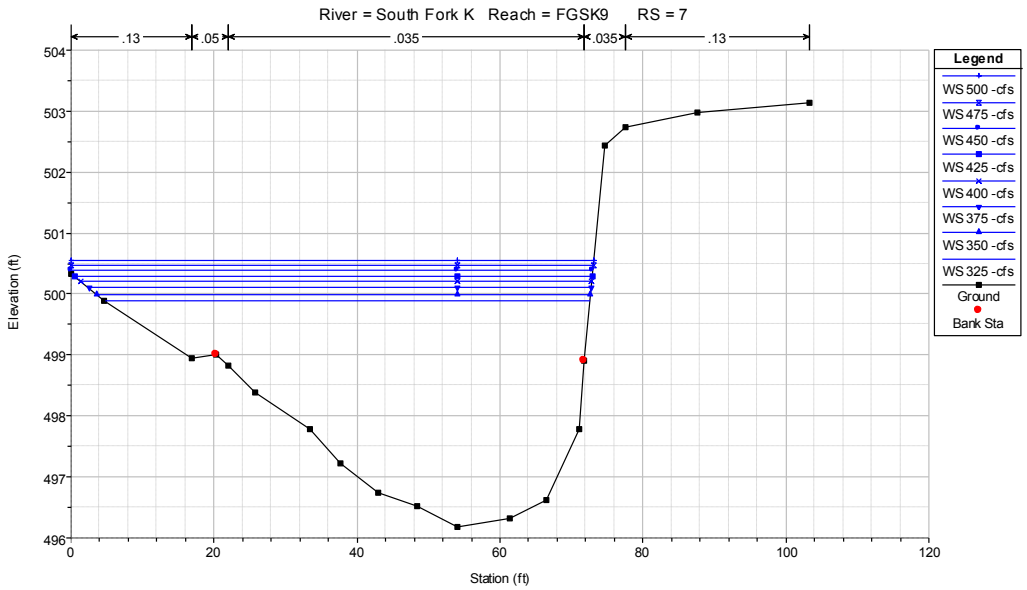


Figure 61 River Station (RS) 7 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

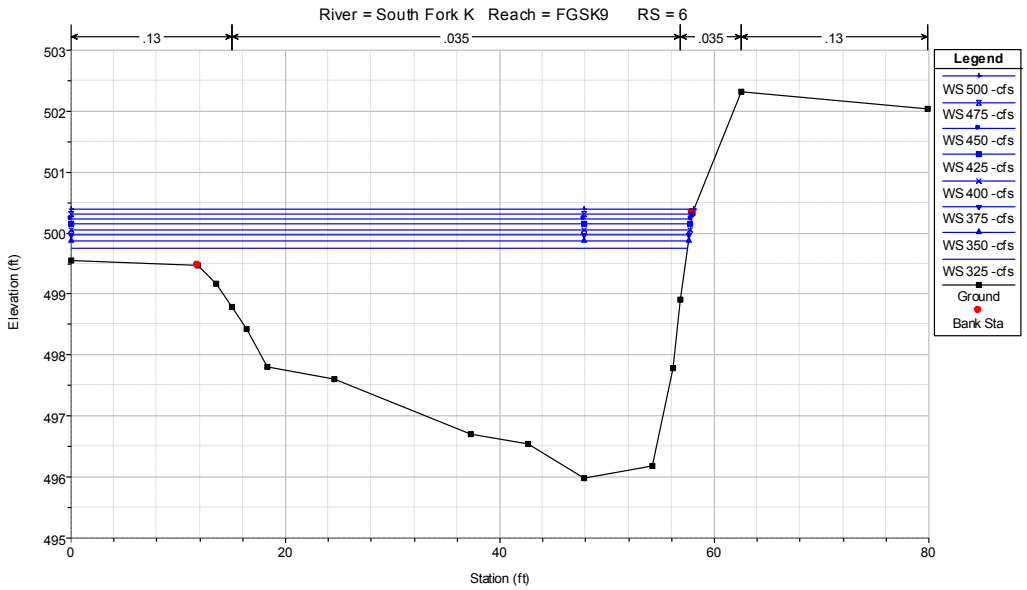


Figure 62 River Station (RS) 6 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

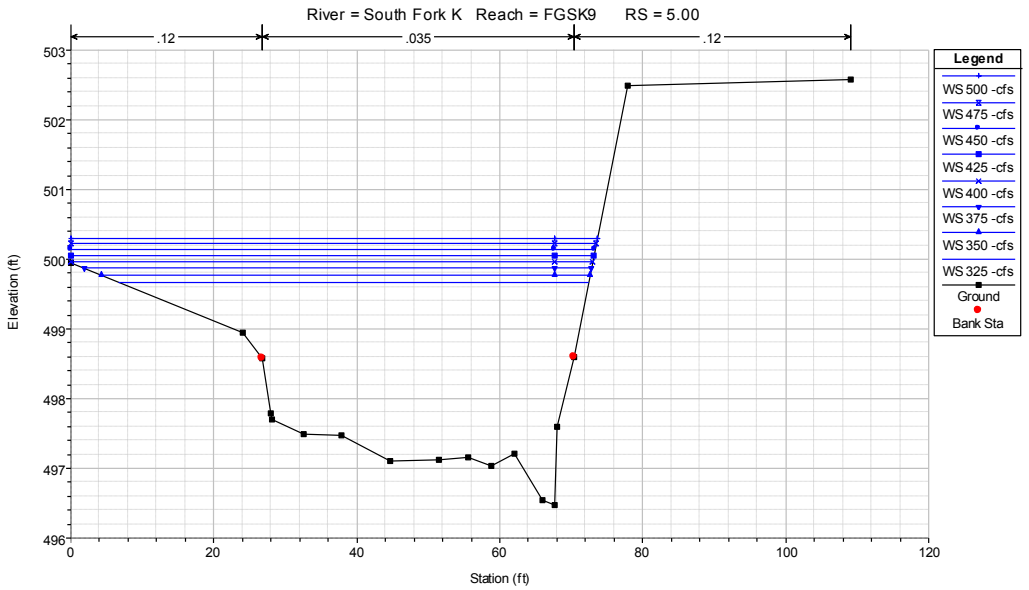


Figure 63 River Station (RS) 5 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

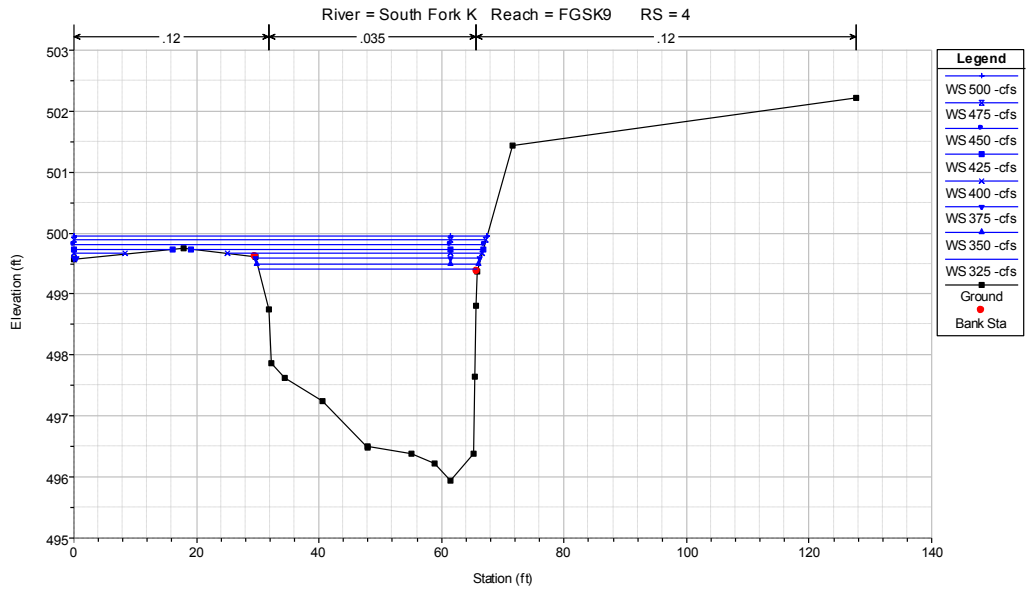


Figure 64 River Station (RS) 4 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

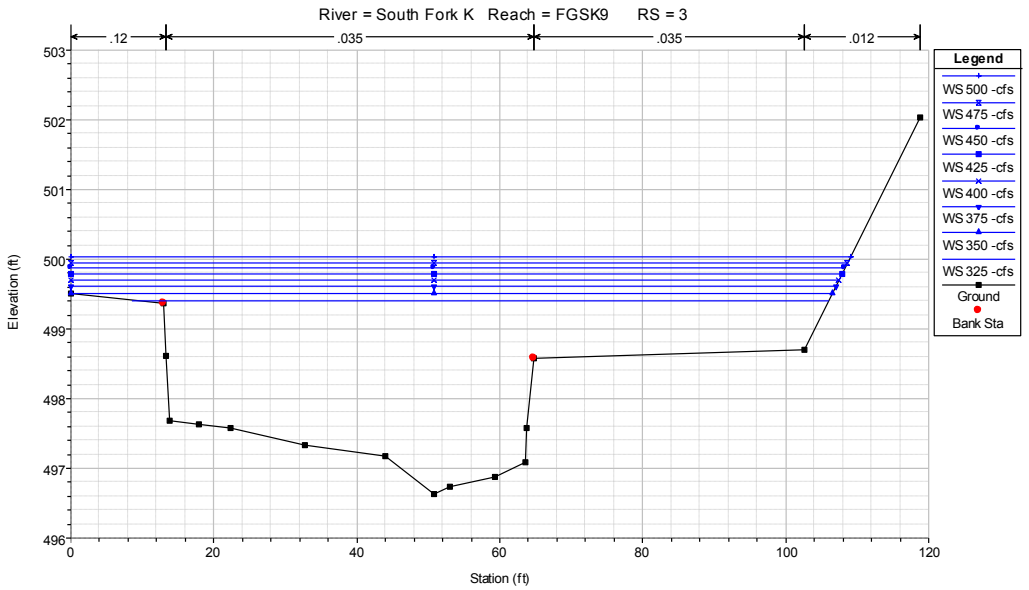


Figure 65 River Station (RS) 3 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

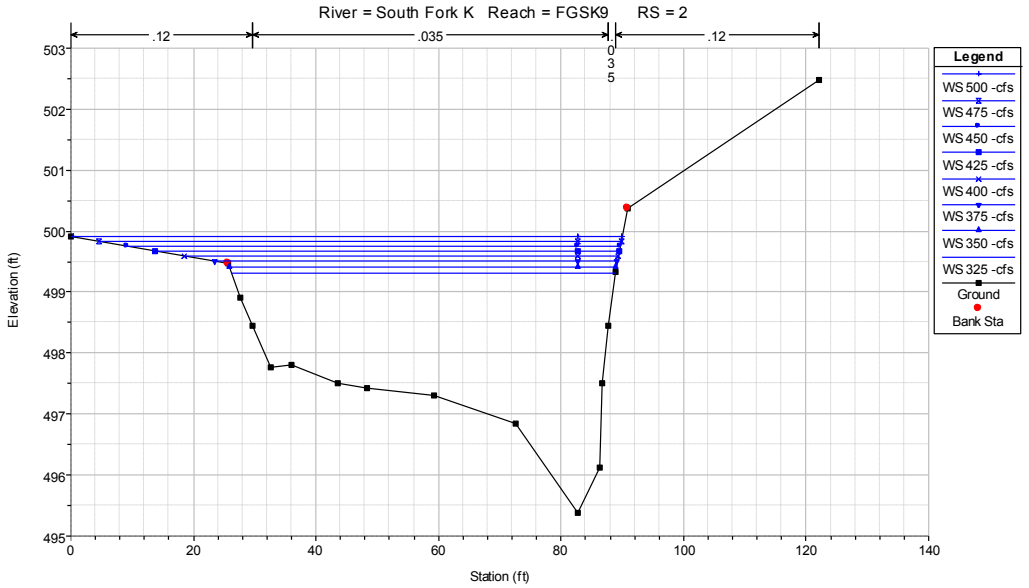


Figure 66 River Station (RS) 2 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK9

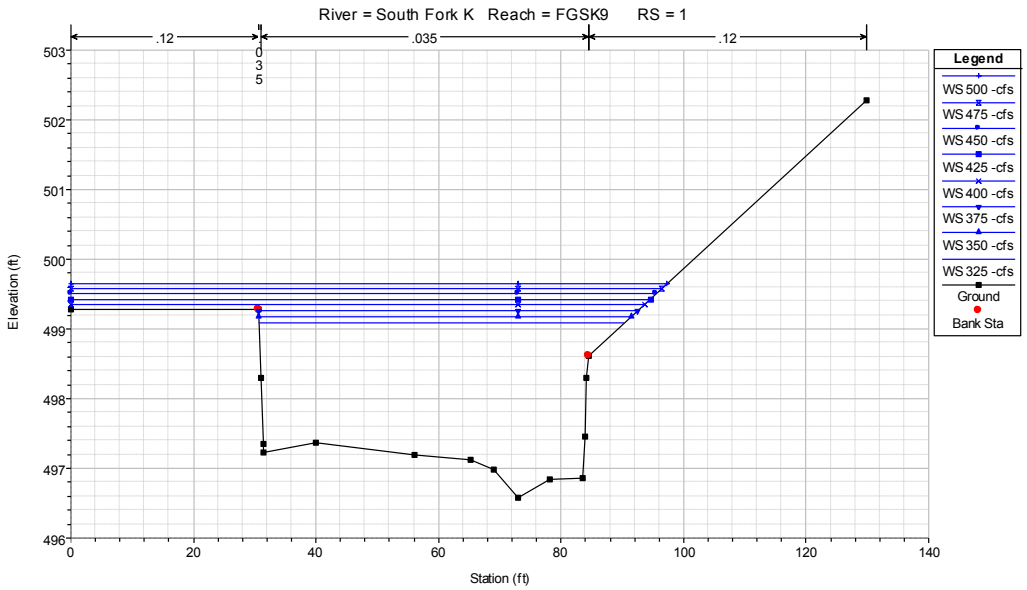


Figure 67 River Station (RS) 1 on River Reach FGSK9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK9

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK9	7	325-cfs	0.13	23	19	15
FGSK9	7	350-cfs	0.13	23	19	15
FGSK9	7	375-cfs	0.14	25	20	16
FGSK9	7	400-cfs	0.15	27	22	18
FGSK9	7	425-cfs	0.16	29	23	19
FGSK9	7	450-cfs	0.16	29	23	19
FGSK9	7	475-cfs	0.17	31	25	20
FGSK9	7	500-cfs	0.18	32	26	21
FGSK9	6	325-cfs	0.31	56	45	36
FGSK9	6	350-cfs	0.33	59	48	39
FGSK9	6	375-cfs	0.34	61	50	40
FGSK9	6	400-cfs	0.36	65	52	42
FGSK9	6	425-cfs	0.38	68	55	45
FGSK9	6	450-cfs	0.40	72	58	47
FGSK9	6	475-cfs	0.41	74	60	48
FGSK9	6	500-cfs	0.43	77	63	51
FGSK9	5	325-cfs	0.25	45	36	29
FGSK9	5	350-cfs	0.26	47	38	31
FGSK9	5	375-cfs	0.27	49	39	32
FGSK9	5	400-cfs	0.28	50	41	33
FGSK9	5	425-cfs	0.30	54	44	35
FGSK9	5	450-cfs	0.31	56	45	36
FGSK9	5	475-cfs	0.32	58	47	38
FGSK9	5	500-cfs	0.33	59	48	39
FGSK9	4	325-cfs	0.50	90	73	59
FGSK9	4	350-cfs	0.55	99	80	65
FGSK9	4	375-cfs	0.60	108	87	71
FGSK9	4	400-cfs	0.64	115	93	75
FGSK9	4	425-cfs	0.68	122	99	80

INCIPIENT MOTION ANALYSIS: FGSK9

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK9	4	450-cfs	0.72	130	105	85
FGSK9	4	475-cfs	0.75	135	109	88
FGSK9	4	500-cfs	0.79	142	115	93
FGSK9	3	325-cfs	0.19	34	28	22
FGSK9	3	350-cfs	0.19	34	28	22
FGSK9	3	375-cfs	0.19	34	28	22
FGSK9	3	400-cfs	0.19	34	28	22
FGSK9	3	425-cfs	0.19	34	28	22
FGSK9	3	450-cfs	0.20	36	29	24
FGSK9	3	475-cfs	0.20	36	29	24
FGSK9	3	500-cfs	0.20	36	29	24
FGSK9	2	325-cfs	0.24	43	35	28
FGSK9	2	350-cfs	0.26	47	38	31
FGSK9	2	375-cfs	0.28	50	41	33
FGSK9	2	400-cfs	0.30	54	44	35
FGSK9	2	425-cfs	0.31	56	45	36
FGSK9	2	450-cfs	0.33	59	48	39
FGSK9	2	475-cfs	0.35	63	51	41
FGSK9	2	500-cfs	0.36	65	52	42
FGSK9	1	325-cfs	0.27	49	39	32
FGSK9	1	350-cfs	0.28	50	41	33
FGSK9	1	375-cfs	0.29	52	42	34
FGSK9	1	400-cfs	0.30	54	44	35
FGSK9	1	425-cfs	0.31	56	45	36
FGSK9	1	450-cfs	0.32	58	47	38
FGSK9	1	475-cfs	0.33	59	48	39
FGSK9	1	500-cfs	0.34	61	50	40

PHOTOGRAPH DOCUMENTATION: FGSK9

Left bank along reference section FGSK9

Right bank along reference section FGSK9

Looking downstream from reference section FGSK9

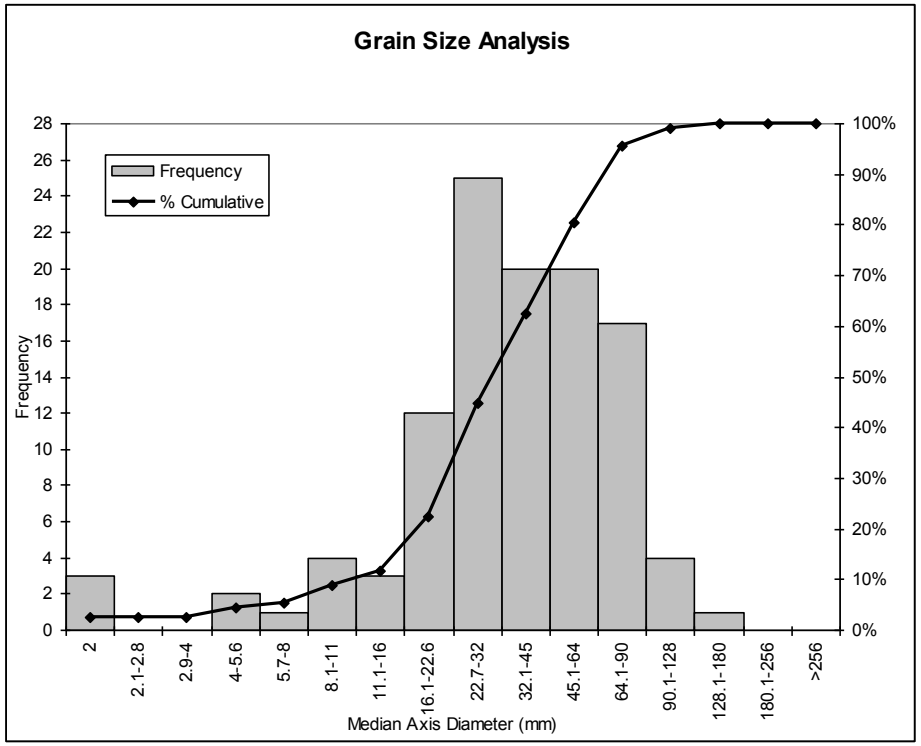
Looking upstream from reference section FGSK9

PHOTOGRAPH DOCUMENTATION: FGSK9

Bank composition detail (left bank) FGSK9

Close-up of moss found on channel bed FGSK9

PEBBLE COUNT DISTRIBUTION: FGSK9



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.7%
2.1-2.8	0	2.7%
2.9-4	0	2.7%
4-5.6	2	4.5%
5.7-8	1	5.4%
8.1-11	4	8.9%
11.1-16	3	11.6%
16.1-22.6	12	22.3%
22.7-32	25	44.6%
32.1-45	20	62.5%
45.1-64	20	80.4%
64.1-90	17	95.5%
90.1-128	4	99.1%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

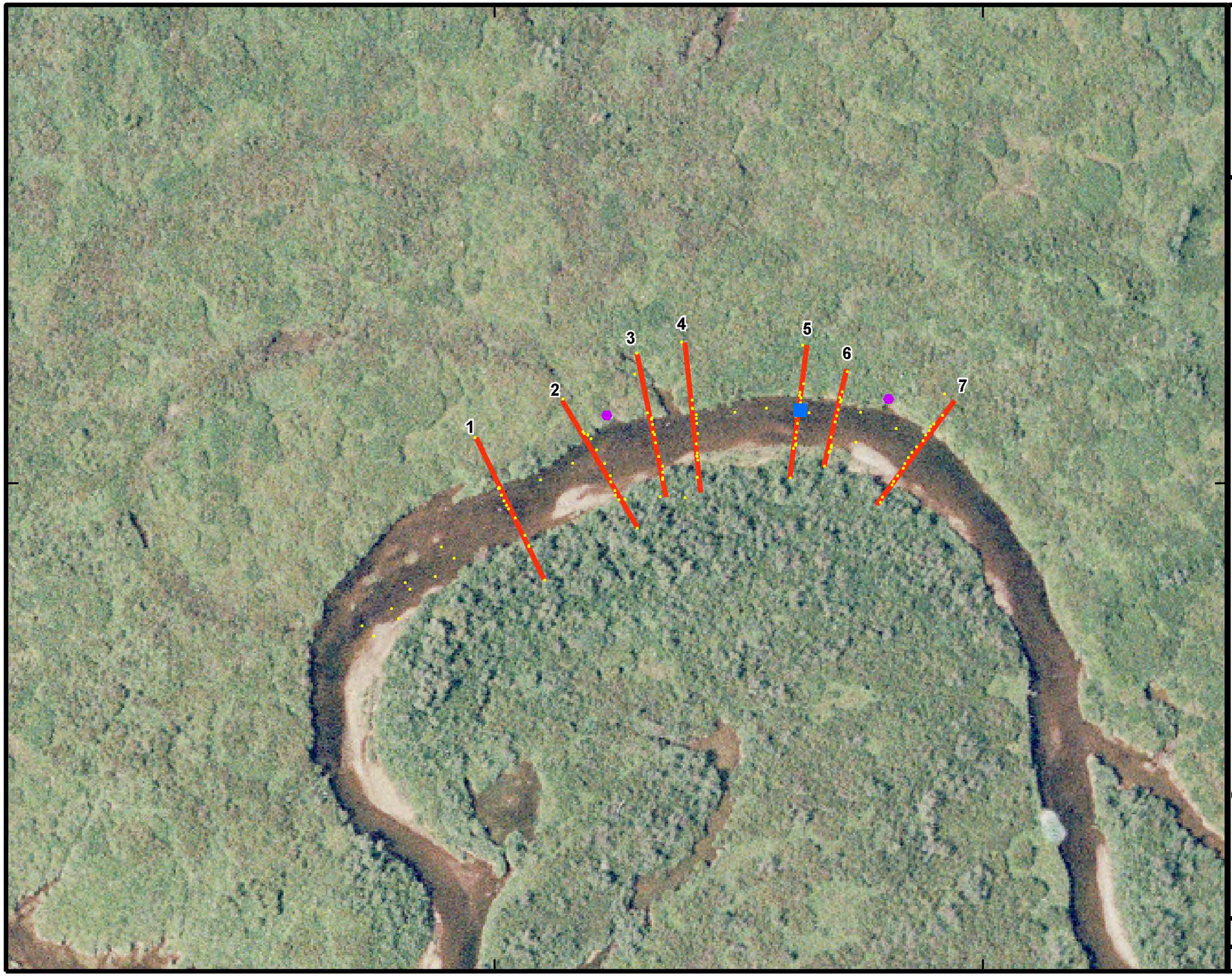
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,376,546

1,376,946

1,377,346

2,127,149

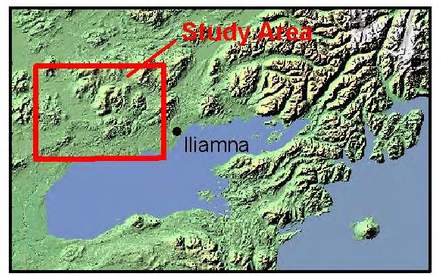


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK9
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,376,546

1,376,946

1,377,346

SITE DESCRIPTION: FGSK10

Site Characteristics.

Site Name		**FGSK10**	
Discharge (cfs)	**350 (250-400)**	Width (ft)	**26.5 (25.1-28.8)**
Slope	**0.0021**	Cross-sectional Area (ft^2)	**103 (82-126)**
D_{50}	**31**	D_{84}	**60**
Lat/Long Location	**N59.81280 W155.41438**	Drainage Area (mi^2)	**38**
	% Willow	**30**	
	% Grass	**70**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 300 feet of channel length. Section 1 serves as the temporary downstream hydraulic control for the model. At the time of the survey, the channel was completely dry. Therefore, for this site, the DEM-derived reach-average slope was used as the suitable boundary condition. Sections 6 through 4 characterize the riffle which serves as the reference reach. The pebble count was taken sampled across River Station (RS) 5. Sections 8 through 6 captured the pool upstream. An HDR surface water gage (SK100C) sits between Sections 8 and 7 within the pool. Below the riffle, Sections 4 through 2 characterize another pool. Large gravels on the bed, absent of fines underlain by sand and small gravels suggest a classic armor layer (see photos). Tributary SK119 enters the South Fork Koktuli below this site.

A preliminary rating curve formulated by Knight-Piesold and based on the instantaneous discharge measurements collected by HDR was provided to IFI by HDR on 2/11/2008. Incorporation of the cross-section taken by HDR through the gage into the FGSK10 hydraulic model allowed for the calibration of Manning's channel roughness based on the stage discharge relationship defined by the rating curve (See Attachment 1 for details). Based on the results of this exercise, channel roughness for the flows of interest are roughly equal 0.040. Additionally, HDR provided a rating two years of hydrology (07/04 - 06/06) from SK100C which were used to as a check on the frequency and magnitude of the range of flows chosen.

For a Shields number of 0.017, the D_{84} moves between 325 and 350 cfs, but does not move within the range of flows at any of the other cross-sections. For a Shields number of 0.026, the D_{50} moves by 250 cfs on Section 6 and 400 cfs on Section 5. While the geometry through most of the reach suggest flows on the lower end of the range, the incipient motion analysis and a reference to "top of bank" being matched for a flow around 340 cfs on the rating curve (see below), provides confidence in the nominal value and range.

SITE DESCRIPTION: FGSK10

The reference reach sections (Sections 6 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK10	8	250-cfs	250	30.4	90	3.0	4.1	0.0015	2.8	0.28	0.26	0.041
FGSK10	8	275-cfs	275	30.5	96	3.1	4.3	0.0015	2.9	0.29	0.28	0.041
FGSK10	8	300-cfs	300	30.5	101	3.3	4.5	0.0015	3.0	0.29	0.29	0.041
FGSK10	8	325-cfs	325	30.5	106	3.5	4.6	0.0015	3.0	0.29	0.30	0.041
FGSK10	8	350-cfs	350	30.5	111	3.6	4.8	0.0014	3.1	0.28	0.31	0.041
FGSK10	8	375-cfs	375	30.5	116	3.8	4.9	0.0014	3.2	0.28	0.32	0.041
FGSK10	8	400-cfs	400	30.5	120	3.9	5.1	0.0014	3.2	0.29	0.32	0.041
FGSK10	7	250-cfs	250	22.5	88	3.9	5.4	0.0011	2.8	0.25	0.23	0.040
FGSK10	7	275-cfs	275	22.5	92	4.1	5.6	0.0011	2.9	0.25	0.25	0.040
FGSK10	7	300-cfs	300	22.5	96	4.3	5.7	0.0011	3.0	0.26	0.27	0.040
FGSK10	7	325-cfs	325	22.5	100	4.4	5.9	0.0012	3.1	0.26	0.28	0.040
FGSK10	7	350-cfs	350	22.5	103	4.6	6.1	0.0012	3.3	0.27	0.30	0.040
FGSK10	7	375-cfs	375	22.5	107	4.7	6.2	0.0012	3.4	0.27	0.32	0.040
FGSK10	7	400-cfs	400	22.5	110	4.9	6.3	0.0013	3.5	0.28	0.33	0.040
FGSK10	6	250-cfs	250	25.6	82	3.2	4.1	0.0015	3.0	0.29	0.28	0.040
FGSK10	6	275-cfs	275	25.6	87	3.4	4.2	0.0015	3.1	0.30	0.30	0.040
FGSK10	6	300-cfs	300	25.6	91	3.6	4.4	0.0015	3.2	0.30	0.31	0.040
FGSK10	6	325-cfs	325	25.6	95	3.7	4.6	0.0015	3.3	0.30	0.33	0.040
FGSK10	6	350-cfs	350	25.6	99	3.9	4.7	0.0015	3.4	0.30	0.34	0.040
FGSK10	6	375-cfs	375	25.6	103	4.0	4.9	0.0015	3.5	0.31	0.36	0.040
FGSK10	6	400-cfs	400	25.6	107	4.2	5.0	0.0015	3.6	0.31	0.37	0.040
FGSK10	5	250-cfs	250	25.1	87	3.5	3.8	0.0011	2.7	0.25	0.22	0.040
FGSK10	5	275-cfs	275	25.1	92	3.7	4.0	0.0011	2.7	0.25	0.23	0.040
FGSK10	5	300-cfs	300	25.1	96	3.8	4.2	0.0011	2.8	0.25	0.23	0.040
FGSK10	5	325-cfs	325	25.1	100	4.0	4.3	0.0011	2.9	0.25	0.24	0.040
FGSK10	5	350-cfs	350	25.1	104	4.2	4.5	0.0010	3.0	0.26	0.25	0.040
FGSK10	5	375-cfs	375	25.1	108	4.3	4.7	0.0010	3.0	0.26	0.26	0.040
FGSK10	5	400-cfs	400	25.1	112	4.5	4.8	0.0010	3.1	0.26	0.27	0.040

HEC-RAS OUTPUT SUMMARY TABLE: FGSK10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK10	4	250-cfs	250	28.8	98	3.4	3.9	0.0010	2.5	0.24	0.19	0.040
FGSK10	4	275-cfs	275	28.8	104	3.6	4.1	0.0010	2.6	0.24	0.21	0.040
FGSK10	4	300-cfs	300	28.8	109	3.8	4.2	0.0010	2.7	0.24	0.22	0.040
FGSK10	4	325-cfs	325	28.8	113	3.9	4.4	0.0010	2.8	0.25	0.23	0.040
FGSK10	4	350-cfs	350	28.8	118	4.1	4.6	0.0010	2.9	0.25	0.24	0.040
FGSK10	4	375-cfs	375	28.8	122	4.3	4.7	0.0010	3.0	0.25	0.25	0.040
FGSK10	4	400-cfs	400	28.8	126	4.4	4.9	0.0010	3.0	0.25	0.26	0.040
FGSK10	3	250-cfs	250	28.1	102	3.6	4.6	0.0009	2.5	0.23	0.18	0.040
FGSK10	3	275-cfs	275	28.1	107	3.8	4.7	0.0009	2.6	0.23	0.20	0.040
FGSK10	3	300-cfs	300	28.1	112	4.0	4.9	0.0009	2.7	0.23	0.21	0.040
FGSK10	3	325-cfs	325	28.1	116	4.1	5.1	0.0009	2.8	0.24	0.22	0.040
FGSK10	3	350-cfs	350	28.1	121	4.3	5.2	0.0010	2.8	0.24	0.23	0.040
FGSK10	3	375-cfs	375	28.1	125	4.5	5.4	0.0010	2.9	0.24	0.24	0.040
FGSK10	3	400-cfs	400	28.1	129	4.6	5.5	0.0010	3.0	0.25	0.25	0.040
FGSK10	2	250-cfs	250	25.0	78	3.1	3.7	0.0018	3.2	0.32	0.33	0.040
FGSK10	2	275-cfs	275	25.0	82	3.3	3.9	0.0018	3.3	0.32	0.35	0.040
FGSK10	2	300-cfs	300	25.0	86	3.5	4.1	0.0018	3.5	0.33	0.37	0.040
FGSK10	2	325-cfs	325	25.0	90	3.6	4.2	0.0019	3.6	0.33	0.38	0.040
FGSK10	2	350-cfs	350	25.0	94	3.8	4.4	0.0019	3.7	0.33	0.40	0.040
FGSK10	2	375-cfs	375	25.0	98	3.9	4.5	0.0019	3.8	0.34	0.42	0.040
FGSK10	2	400-cfs	400	25.0	101	4.1	4.6	0.0019	3.9	0.34	0.44	0.040
FGSK10	1	250-cfs	250	26.8	87	3.2	3.7	0.0014	2.9	0.28	0.26	0.040
FGSK10	1	275-cfs	275	26.8	92	3.4	3.8	0.0014	3.0	0.28	0.27	0.040
FGSK10	1	300-cfs	300	26.8	96	3.6	4.0	0.0014	3.1	0.28	0.28	0.040
FGSK10	1	325-cfs	325	26.8	101	3.8	4.2	0.0014	3.1	0.29	0.30	0.040
FGSK10	1	350-cfs	350	26.8	105	3.9	4.3	0.0014	3.2	0.29	0.31	0.040
FGSK10	1	375-cfs	375	26.8	109	4.1	4.5	0.0014	3.3	0.29	0.32	0.040
FGSK10	1	400-cfs	400	26.8	113	4.2	4.6	0.0014	3.4	0.29	0.33	0.040

HEC-RAS LONGITUDINAL PROFILE: FGSK10

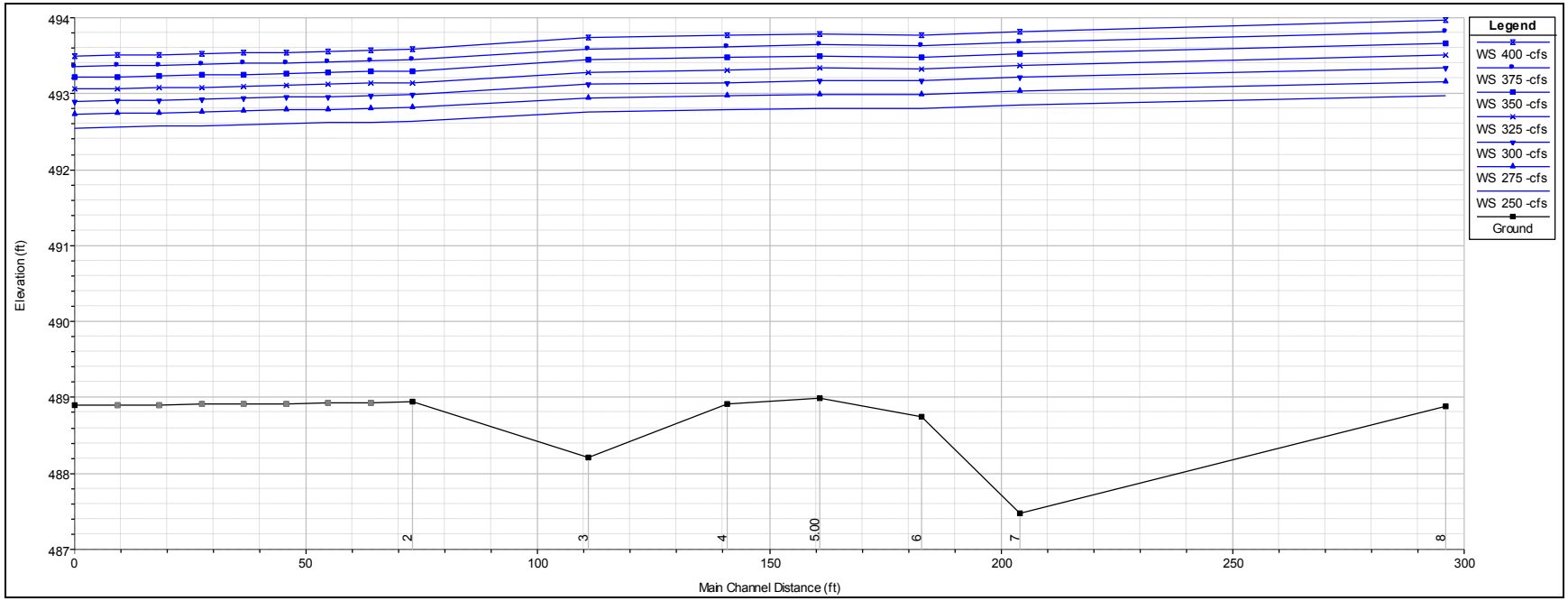


Figure 68 HEC-RAS longitudinal profile output for Reach FGSK10. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

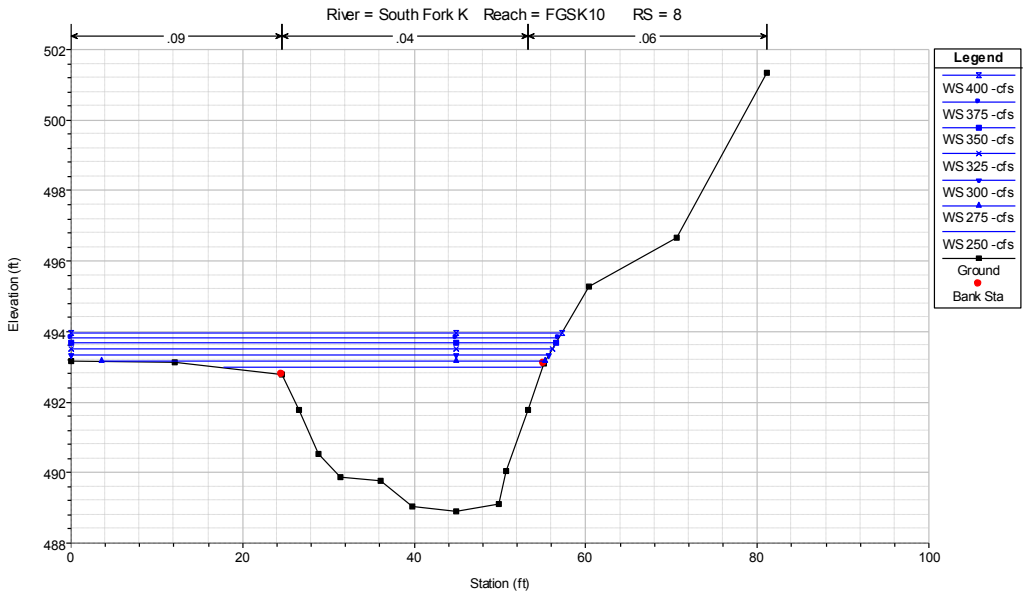


Figure 69 River Station (RS) 8 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

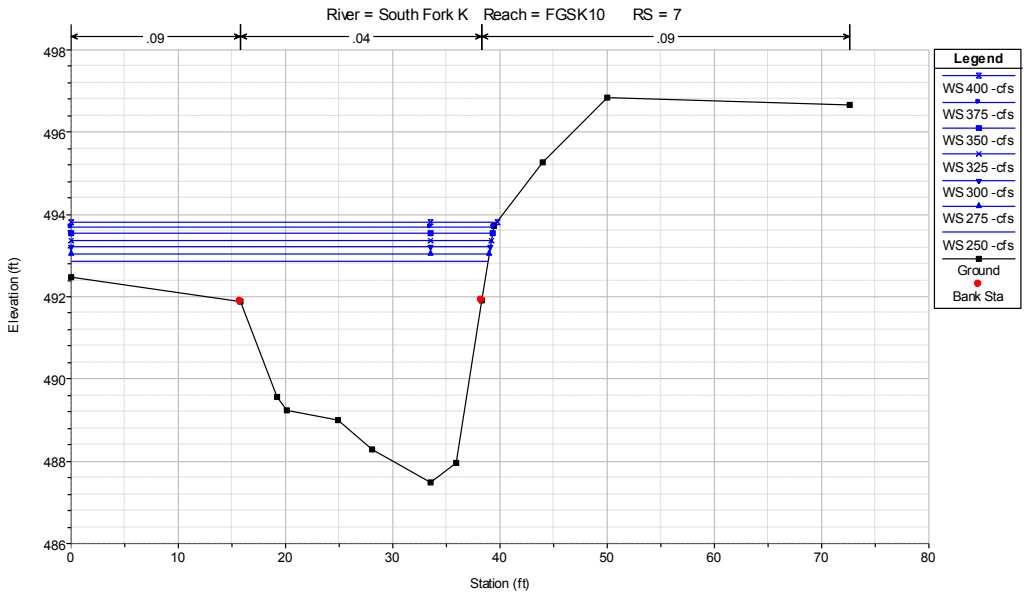


Figure 70 River Station (RS) 7 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

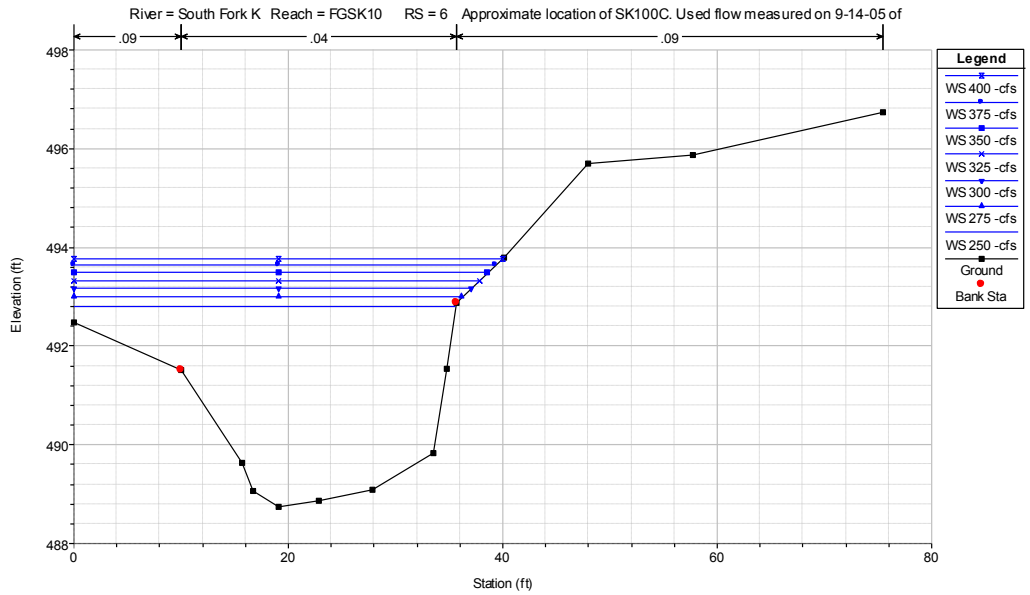


Figure 71 River Station (RS) 6 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

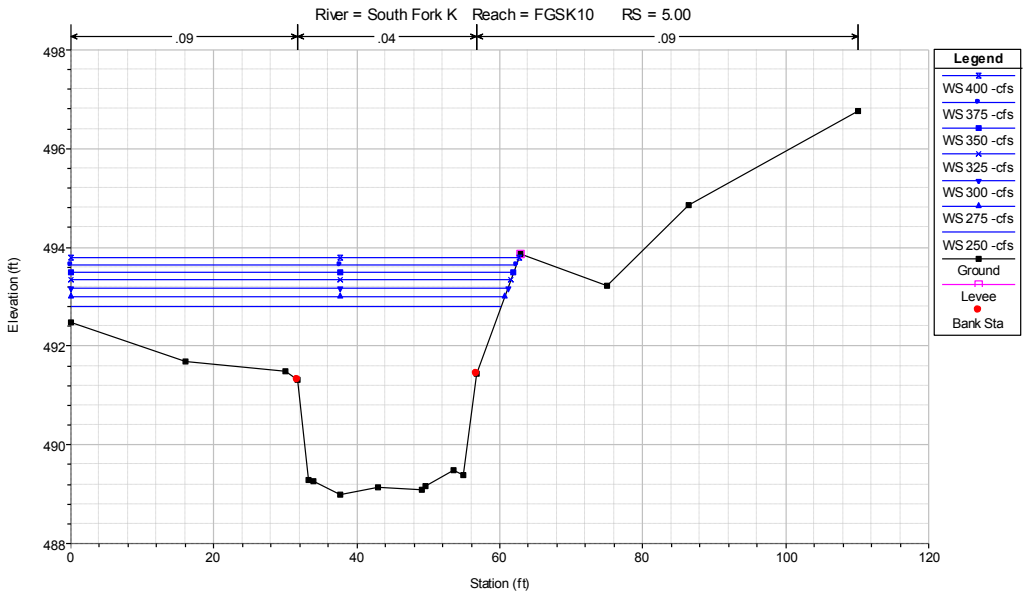


Figure 72 River Station (RS) 5 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

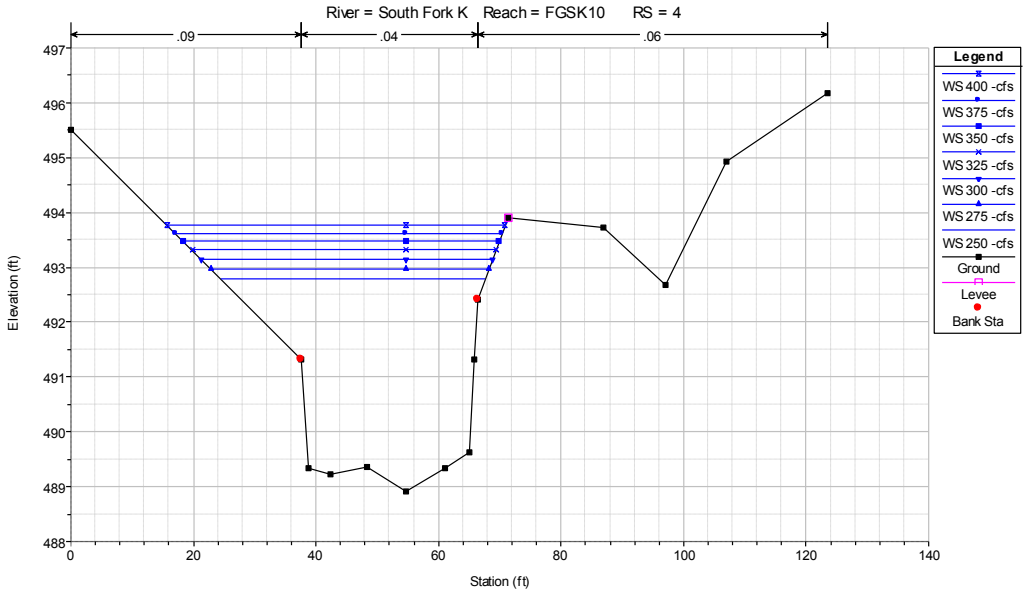


Figure 73 River Station (RS) 4 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

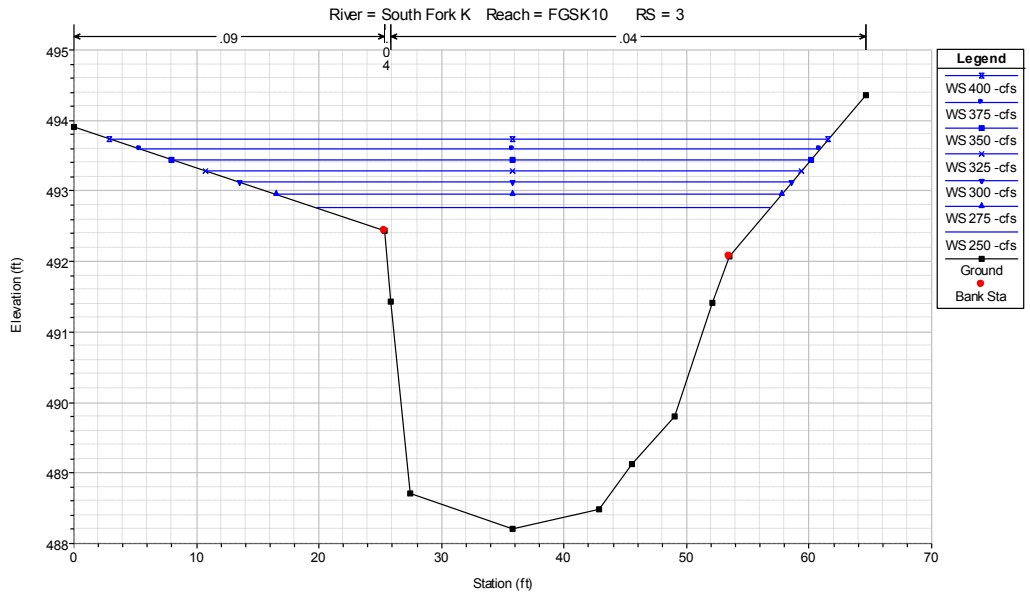


Figure 74 River Station (RS) 3 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

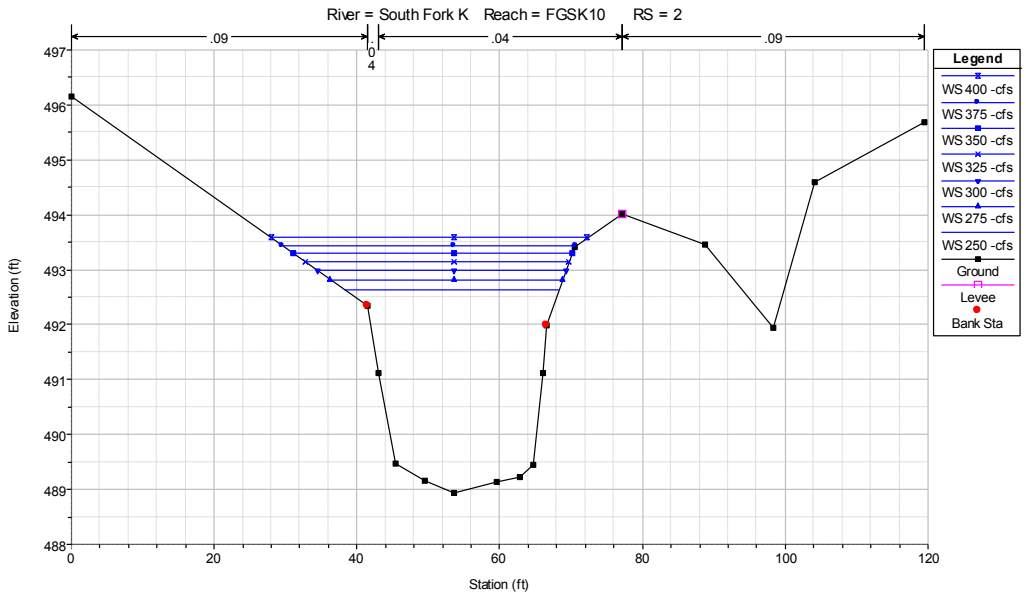


Figure 75 River Station (RS) 2 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK10

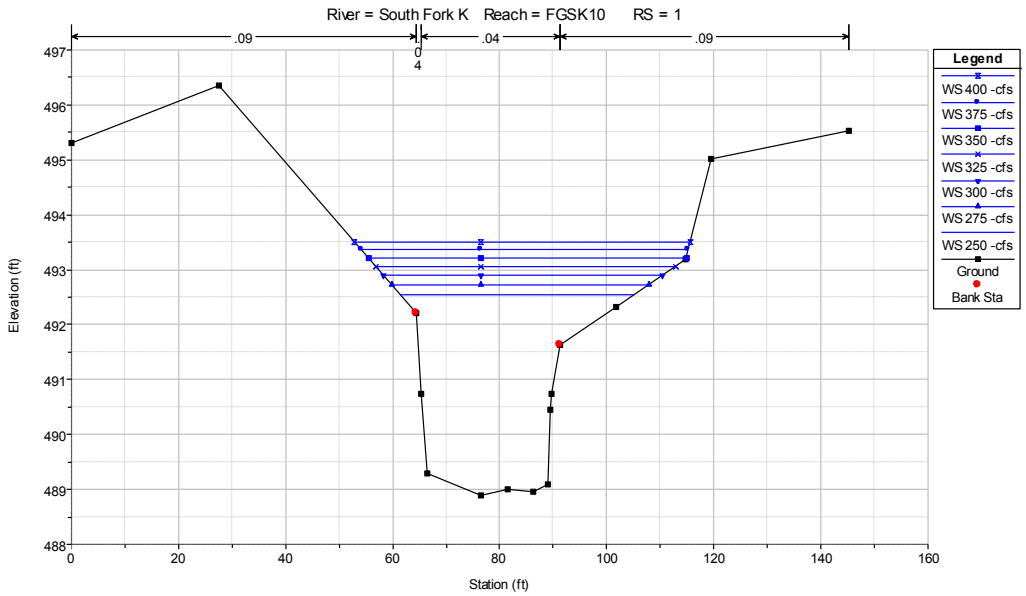


Figure 76 River Station (RS) 1 on River Reach FGSK10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK10

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK10	8	250-cfs	0.26	47	38	31
FGSK10	8	275-cfs	0.28	50	41	33
FGSK10	8	300-cfs	0.29	52	42	34
FGSK10	8	325-cfs	0.30	54	44	35
FGSK10	8	350-cfs	0.31	56	45	36
FGSK10	8	375-cfs	0.32	58	47	38
FGSK10	8	400-cfs	0.32	58	47	38
FGSK10	7	250-cfs	0.23	41	34	27
FGSK10	7	275-cfs	0.25	45	36	29
FGSK10	7	300-cfs	0.27	49	39	32
FGSK10	7	325-cfs	0.28	50	41	33
FGSK10	7	350-cfs	0.30	54	44	35
FGSK10	7	375-cfs	0.32	58	47	38
FGSK10	7	400-cfs	0.33	59	48	39
FGSK10	6	250-cfs	0.28	50	41	33
FGSK10	6	275-cfs	0.30	54	44	35
FGSK10	6	300-cfs	0.31	56	45	36
FGSK10	6	325-cfs	0.33	59	48	39
FGSK10	6	350-cfs	0.34	61	50	40
FGSK10	6	375-cfs	0.36	65	52	42
FGSK10	6	400-cfs	0.37	67	54	44
FGSK10	5	250-cfs	0.22	40	32	26
FGSK10	5	275-cfs	0.23	41	34	27
FGSK10	5	300-cfs	0.23	41	34	27
FGSK10	5	325-cfs	0.24	43	35	28
FGSK10	5	350-cfs	0.25	45	36	29
FGSK10	5	375-cfs	0.26	47	38	31
FGSK10	5	400-cfs	0.27	49	39	32

INCIPIENT MOTION ANALYSIS: FGSK10

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK10	4	250-cfs	0.19	34	28	22
FGSK10	4	275-cfs	0.21	38	31	25
FGSK10	4	300-cfs	0.22	40	32	26
FGSK10	4	325-cfs	0.23	41	34	27
FGSK10	4	350-cfs	0.24	43	35	28
FGSK10	4	375-cfs	0.25	45	36	29
FGSK10	4	400-cfs	0.26	47	38	31
FGSK10	3	250-cfs	0.18	32	26	21
FGSK10	3	275-cfs	0.20	36	29	24
FGSK10	3	300-cfs	0.21	38	31	25
FGSK10	3	325-cfs	0.22	40	32	26
FGSK10	3	350-cfs	0.23	41	34	27
FGSK10	3	375-cfs	0.24	43	35	28
FGSK10	3	400-cfs	0.25	45	36	29
FGSK10	2	250-cfs	0.33	59	48	39
FGSK10	2	275-cfs	0.35	63	51	41
FGSK10	2	300-cfs	0.37	67	54	44
FGSK10	2	325-cfs	0.38	68	55	45
FGSK10	2	350-cfs	0.40	72	58	47
FGSK10	2	375-cfs	0.42	76	61	49
FGSK10	2	400-cfs	0.44	79	64	52
FGSK10	1	250-cfs	0.26	47	38	31
FGSK10	1	275-cfs	0.27	49	39	32
FGSK10	1	300-cfs	0.28	50	41	33
FGSK10	1	325-cfs	0.30	54	44	35
FGSK10	1	350-cfs	0.31	56	45	36
FGSK10	1	375-cfs	0.32	58	47	38
FGSK10	1	400-cfs	0.33	59	48	39

PHOTOGRAPH DOCUMENTATION: FGSK10

Left bank along reference reach FGSK10

Right bank along reference reach FGSK10

Looking downstream from reference reach FGSK10

Looking upstream from reference reach FGSK10

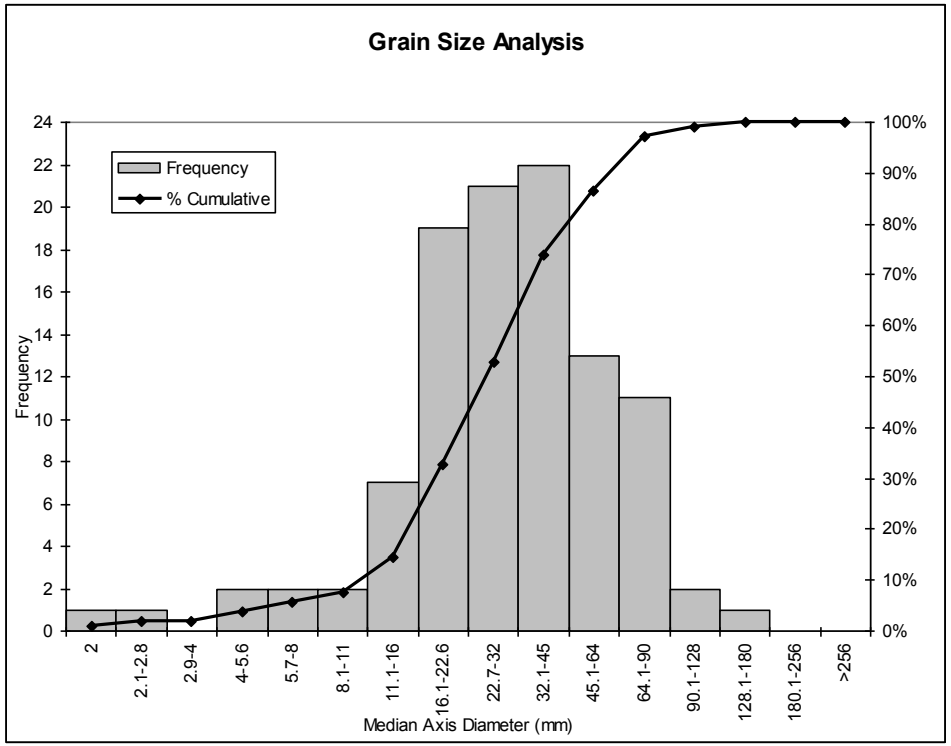
PHOTOGRAPH DOCUMENTATION: FGSK10

Bank composition detail (left bank) FGSK10

Bulk sample armor layer FGSK10

Bulk sample sub-armor layer FGSK10

PEBBLE COUNT DISTRIBUTION: FGSK10



Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	1	1.9%
2.9-4	0	1.9%
4-5.6	2	3.8%
5.7-8	2	5.8%
8.1-11	2	7.7%
11.1-16	7	14.4%
16.1-22.6	19	32.7%
22.7-32	21	52.9%
32.1-45	22	74.0%
45.1-64	13	86.5%
64.1-90	11	97.1%
90.1-128	2	99.0%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4

HYDROGRAPH: FGSK10

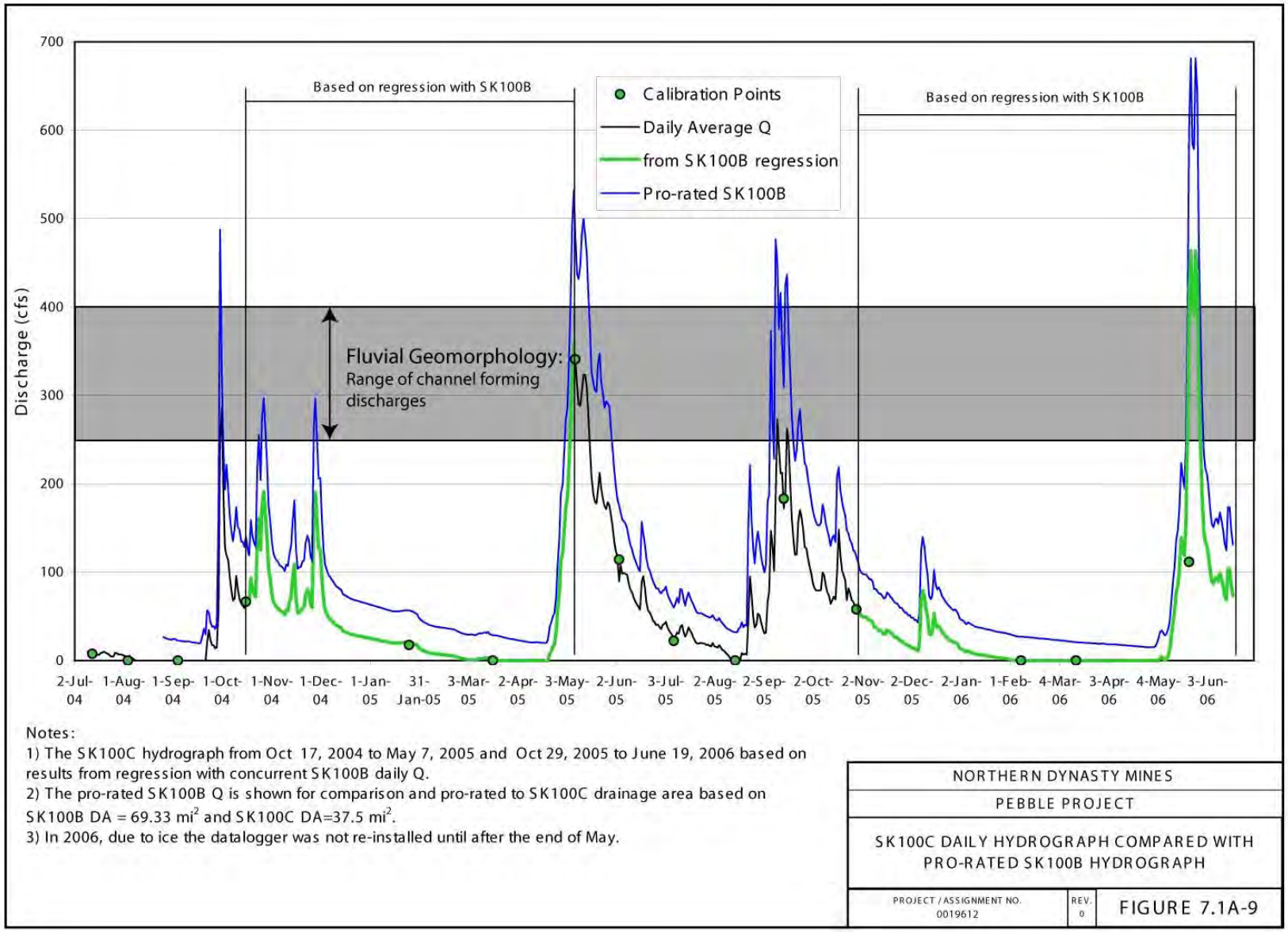


Figure 77 Hydrograph referenced in site description FGSK10. Data provided by HDR.

HYDROGRAPH: FGSK10

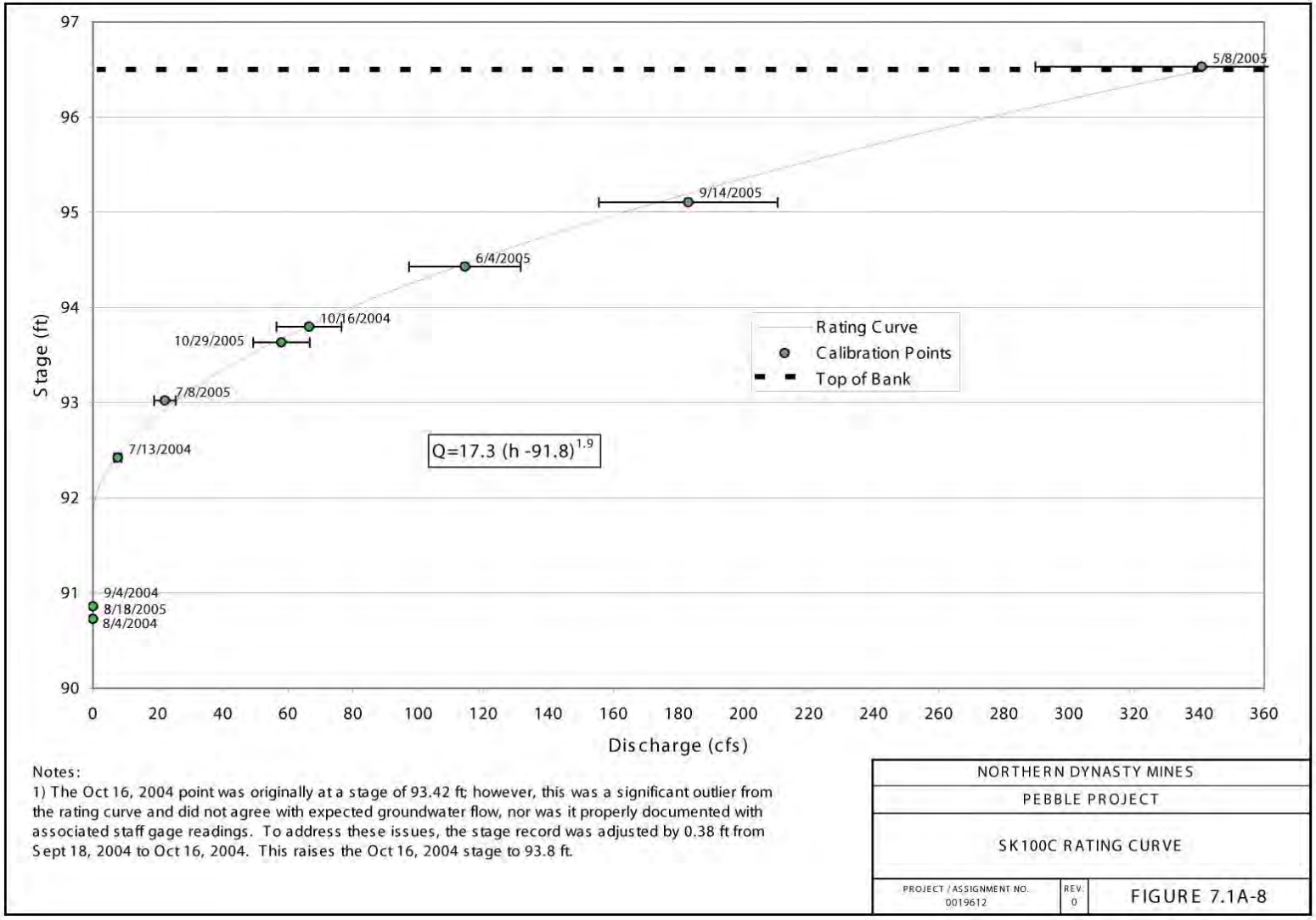
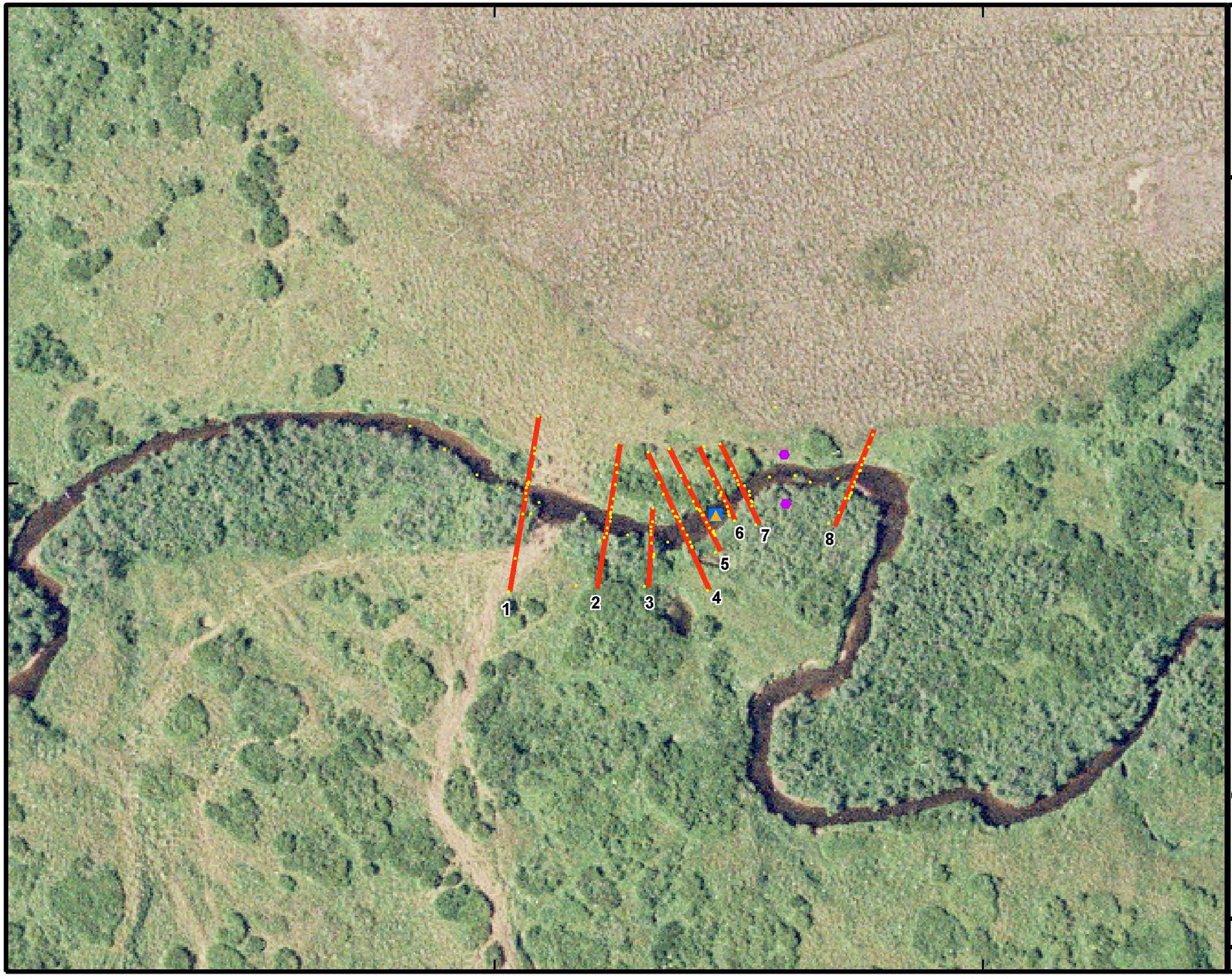


Figure 78 Rating curve referenced in site description FGSK10. Data provided by HDR.

1,379,482 1,379,882 1,380,282

2,126,278

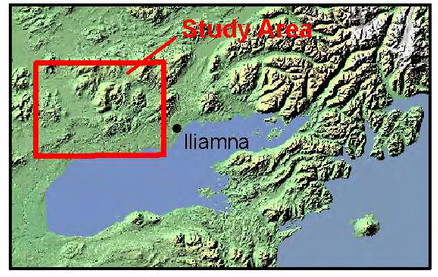


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK10
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,379,482 1,379,882 1,380,282

SITE DESCRIPTION: FGSK11

Site Characteristics.

	Site Name	FGSK11	
Discharge (cfs)	**250 (200-325)**	Width (ft)	**28.4 (25.7-33.1)**
Slope	**0.0003**	Cross-sectional Area (ft^2)	**131 (98-167)**
D_{50}	**2.2**	D_{84}	**5.7**
Lat/Long Location	**N59.80780 W155.37241**	Drainage Area (mi^2)	**32**
	% Willow	**0**	
	% Grass	**100**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 470 feet of channel length. Lacking well-defined bedforms, cross-sections were chosen based on planform and bank conditions. Silt and clay covered the bed with extremely small deposits of sand and small gravels locally exposed. A pebble count was performed across one such section (Section 5). Since no hydraulic controls exist within this reach, the downstream-most section was determined based on distance from the pebble count section. The channel banks were tall and irregular due to frequent failure, composed of fines and covered with tall grass.

The incipient motion analysis showed that at a flow of 250 cfs, for a Shields number of 0.017, particles of 13 mm or less would be mobile. The geometry through the reach was fairly consistent. The range of flows chosen hit inflection points along all sections along both banks. Notably 250 cfs matches inflection points on Sections 5, 4, and 2.

Without a well-defined riffle, channel width and cross-sectional area were averaged across surveyed cross-Sections 6 through 2 for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK11

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK11	6	200-cfs	200	26.52	108	4.07	6.05	0.000266	1.85	0.16	0.06	0.03
FGSK11	6	225-cfs	225	26.76	117.75	4.4	6.42	0.000258	1.91	0.16	0.06	0.03
FGSK11	6	250-cfs	250	26.95	127.07	4.71	6.76	0.000251	1.97	0.16	0.06	0.03
FGSK11	6	275-cfs	275	27.12	135.3	4.99	7.07	0.000249	2.03	0.16	0.06	0.03
FGSK11	6	300-cfs	300	27.28	142.89	5.24	7.35	0.000249	2.09	0.16	0.07	0.03
FGSK11	6	325-cfs	325	27.42	150.15	5.48	7.61	0.000249	2.15	0.16	0.07	0.03
FGSK11	5	200-cfs	200	25.69	99.37	3.87	4.92	0.000325	2.01	0.18	0.07	0.03
FGSK11	5	225-cfs	225	25.89	108.84	4.2	5.28	0.000307	2.06	0.18	0.07	0.03
FGSK11	5	250-cfs	250	26.09	117.9	4.52	5.63	0.000292	2.1	0.17	0.07	0.03
FGSK11	5	275-cfs	275	26.09	125.89	4.83	5.94	0.000279	2.14	0.17	0.07	0.03
FGSK11	5	300-cfs	300	26.09	133.25	5.11	6.22	0.000268	2.18	0.17	0.07	0.03
FGSK11	5	325-cfs	325	26.09	140.25	5.38	6.49	0.000258	2.21	0.17	0.07	0.03
FGSK11	4	200-cfs	200	29.49	118.48	4.02	5.71	0.000215	1.69	0.15	0.05	0.03
FGSK11	4	225-cfs	225	30.28	129.47	4.28	6.08	0.000211	1.74	0.15	0.05	0.03
FGSK11	4	250-cfs	250	30.97	140.16	4.53	6.42	0.000207	1.78	0.15	0.05	0.03
FGSK11	4	275-cfs	275	31.5	149.73	4.75	6.73	0.000206	1.84	0.15	0.05	0.03
FGSK11	4	300-cfs	300	31.52	158.6	5.03	7.01	0.000202	1.89	0.15	0.06	0.03
FGSK11	4	325-cfs	325	31.52	167.03	5.3	7.28	0.000198	1.94	0.15	0.06	0.03
FGSK11	3	200-cfs	200	30.08	113.36	3.77	5.53	0.000246	1.76	0.16	0.05	0.03
FGSK11	3	225-cfs	225	30.86	124.59	4.04	5.9	0.000237	1.81	0.16	0.05	0.03
FGSK11	3	250-cfs	250	31.6	135.51	4.29	6.25	0.00023	1.84	0.16	0.06	0.03
FGSK11	3	275-cfs	275	32.25	145.3	4.51	6.55	0.000228	1.89	0.16	0.06	0.03
FGSK11	3	300-cfs	300	32.77	154.46	4.71	6.83	0.000227	1.94	0.16	0.06	0.03
FGSK11	3	325-cfs	325	33.05	163.27	4.94	7.1	0.000224	1.99	0.16	0.06	0.03
FGSK11	2	200-cfs	200	25.97	98.34	3.79	5.43	0.000346	2.03	0.18	0.07	0.03
FGSK11	2	225-cfs	225	26.55	108.02	4.07	5.8	0.000335	2.08	0.18	0.07	0.03
FGSK11	2	250-cfs	250	26.77	117.36	4.38	6.15	0.000319	2.13	0.18	0.07	0.03
FGSK11	2	275-cfs	275	26.77	125.57	4.69	6.45	0.000306	2.18	0.18	0.08	0.03
FGSK11	2	300-cfs	300	26.77	133.12	4.97	6.74	0.000295	2.23	0.18	0.08	0.03
FGSK11	2	325-cfs	325	26.77	140.32	5.24	7.01	0.000286	2.27	0.17	0.08	0.03

HEC-RAS OUTPUT SUMMARY TABLE: FGSK11

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK11	1	200-cfs	200	27.65	118.73	4.29	6.11	0.0002	1.68	0.14	0.05	0.03
FGSK11	1	225-cfs	225	28.35	129.08	4.55	6.48	0.0002	1.74	0.14	0.05	0.03
FGSK11	1	250-cfs	250	29.02	139.14	4.8	6.83	0.0002	1.8	0.14	0.05	0.03
FGSK11	1	275-cfs	275	29.24	148.1	5.06	7.14	0.0002	1.86	0.15	0.05	0.03
FGSK11	1	300-cfs	300	29.39	156.39	5.32	7.42	0.0002	1.91	0.15	0.06	0.03
FGSK11	1	325-cfs	325	29.53	164.32	5.56	7.69	0.0002	1.97	0.15	0.06	0.03

HEC-RAS LONGITUDINAL PROFILE: FGSK11

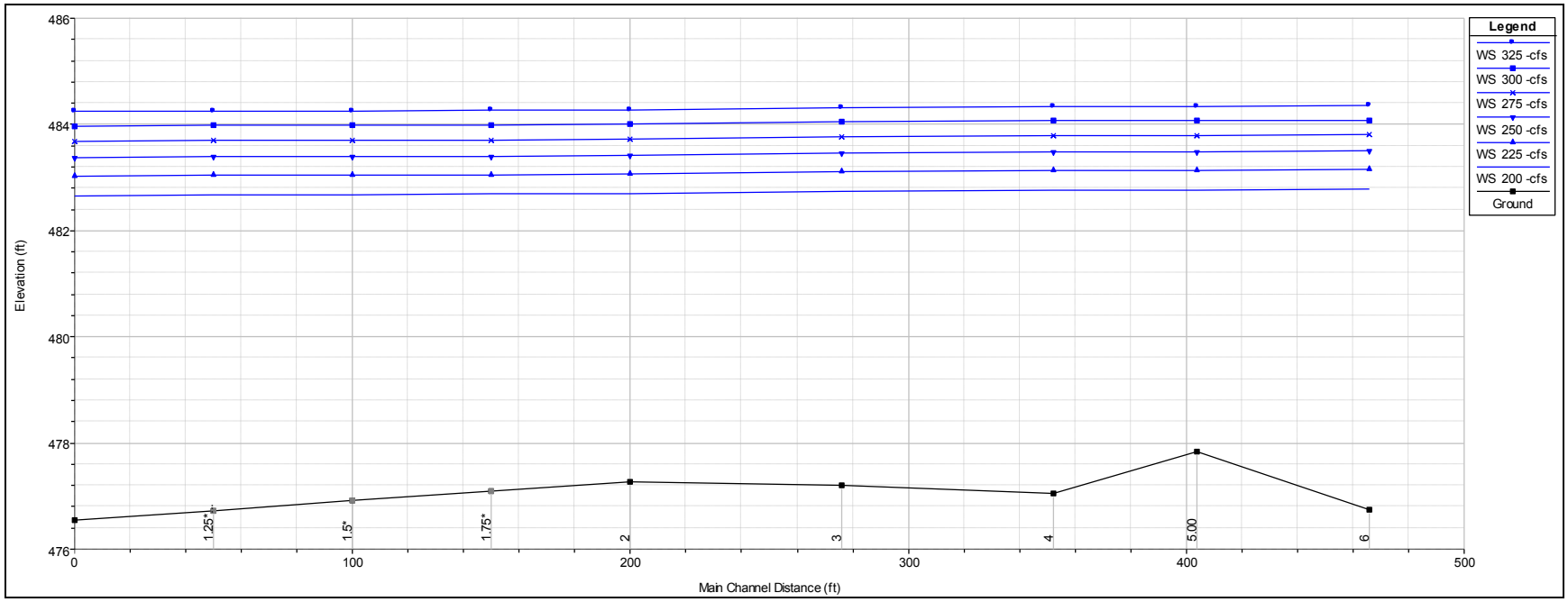


Figure 79 HEC-RAS longitudinal profile output for Reach FGSK11. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK11

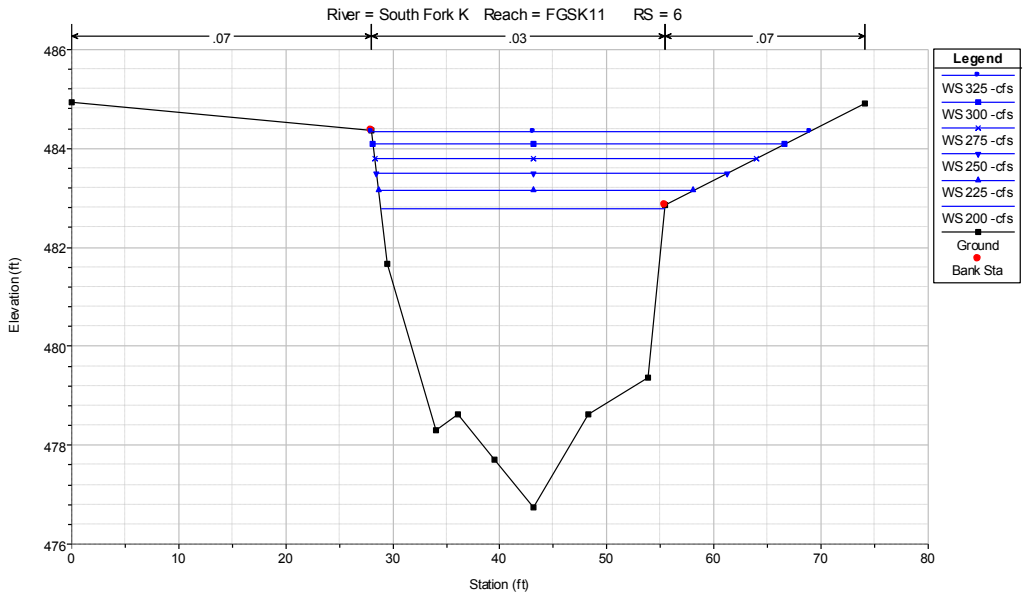


Figure 80 River Station (RS) 6 on River Reach FGSK11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK11

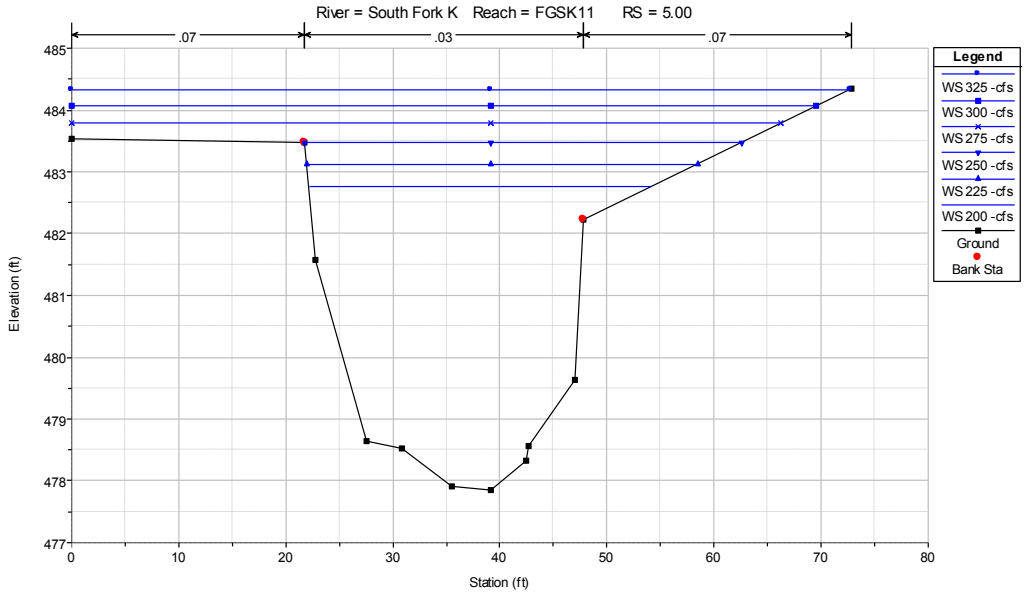


Figure 81 River Station (RS) 5 on River Reach FGSK11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK11

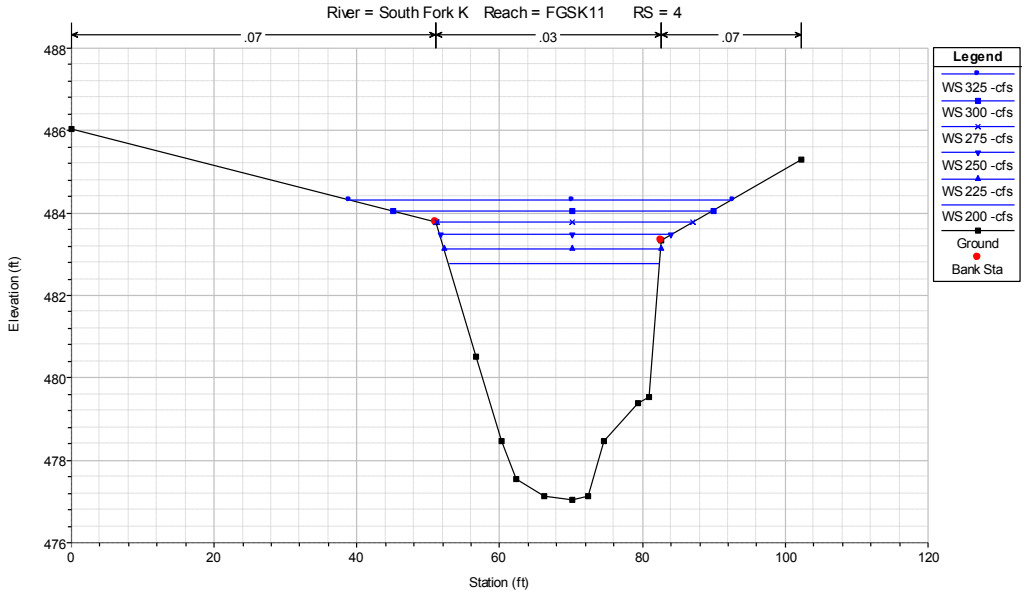


Figure 82 River Station (RS) 4 on River Reach FGSK11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK11

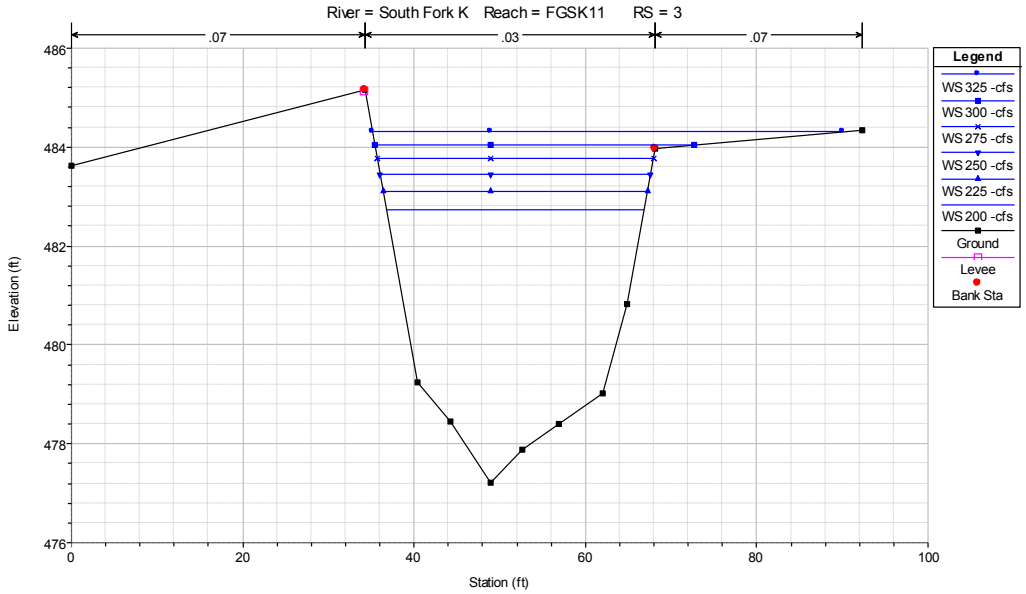


Figure 83 River Station (RS) 3 on River Reach FGSK11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK11

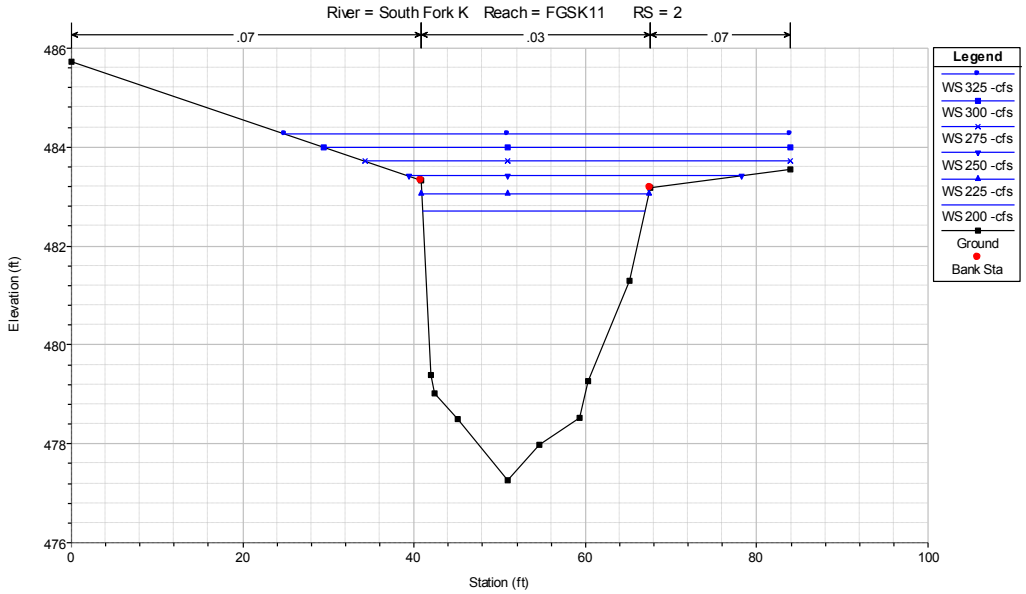


Figure 84 River Station (RS) 2 on River Reach FGSK11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK11

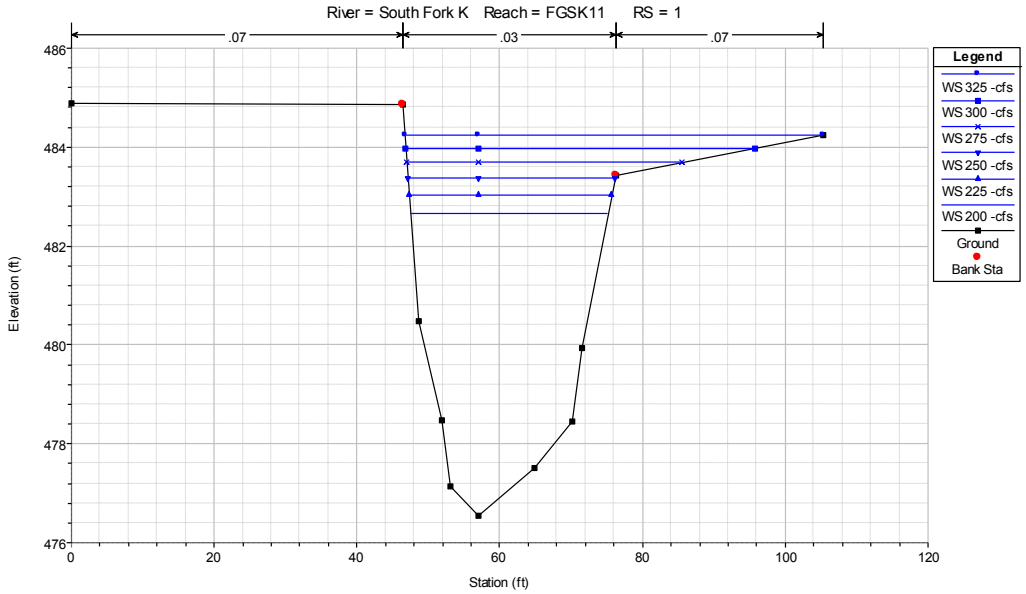


Figure 85 River Station (RS) 1 on River Reach FGSK11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK11

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK11	6	200 -cfs	0.06	11	9	7
FGSK11	6	225 -cfs	0.06	11	9	7
FGSK11	6	250 -cfs	0.06	11	9	7
FGSK11	6	275 -cfs	0.06	11	9	7
FGSK11	6	300 -cfs	0.07	13	10	8
FGSK11	6	325 -cfs	0.07	13	10	8
FGSK11	5	200 -cfs	0.07	13	10	8
FGSK11	5	225 -cfs	0.07	13	10	8
FGSK11	5	250 -cfs	0.07	13	10	8
FGSK11	5	275 -cfs	0.07	13	10	8
FGSK11	5	300 -cfs	0.07	13	10	8
FGSK11	5	325 -cfs	0.07	13	10	8
FGSK11	4	200 -cfs	0.05	9	7	6
FGSK11	4	225 -cfs	0.05	9	7	6
FGSK11	4	250 -cfs	0.05	9	7	6
FGSK11	4	275 -cfs	0.05	9	7	6
FGSK11	4	300 -cfs	0.06	11	9	7
FGSK11	4	325 -cfs	0.06	11	9	7
FGSK11	3	200 -cfs	0.05	9	7	6
FGSK11	3	225 -cfs	0.05	9	7	6
FGSK11	3	250 -cfs	0.06	11	9	7
FGSK11	3	275 -cfs	0.06	11	9	7
FGSK11	3	300 -cfs	0.06	11	9	7
FGSK11	3	325 -cfs	0.06	11	9	7
FGSK11	2	200 -cfs	0.07	13	10	8
FGSK11	2	225 -cfs	0.07	13	10	8
FGSK11	2	250 -cfs	0.07	13	10	8
FGSK11	2	275 -cfs	0.08	14	12	9

INCIPIENT MOTION ANALYSIS: FGSK11

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK11	2	300 -cfs	0.08	14	12	9
FGSK11	2	325 -cfs	0.08	14	12	9
FGSK11	1	200 -cfs	0.05	9	7	6
FGSK11	1	225 -cfs	0.05	9	7	6
FGSK11	1	250 -cfs	0.05	9	7	6
FGSK11	1	275 -cfs	0.05	9	7	6
FGSK11	1	300 -cfs	0.06	11	9	7
FGSK11	1	325 -cfs	0.06	11	9	7

PHOTOGRAPH DOCUMENTATION: FGSK11

Left bank along reference reach FGSK11

Right bank along reference reach FGSK11

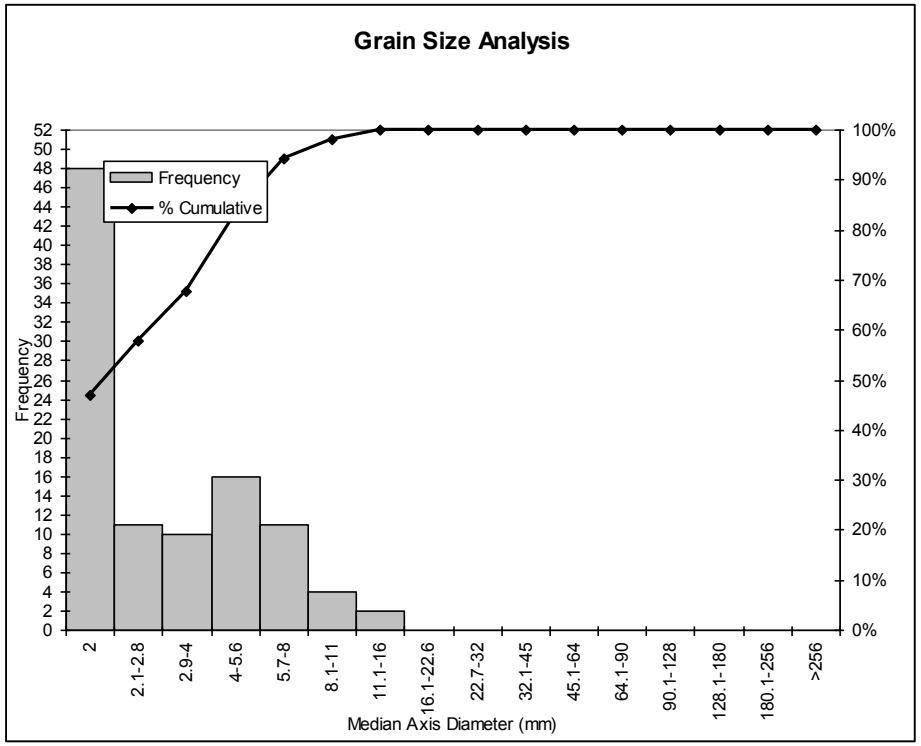
Looking downstream from reference reach FGSK11

Looking upstream from reference reach FGSK11

PHOTOGRAPH DOCUMENTATION: FGSK11

Bank composition detail (left bank) FGSK11

PEBBLE COUNT DISTRIBUTION: FGSK11



Size Class mm	*Frequency*	*Cumulative %*
2	48	47.1%
2.1-2.8	11	57.8%
2.9-4	10	67.6%
4-5.6	16	83.3%
5.7-8	11	94.1%
8.1-11	4	98.0%
11.1-16	2	100.0%
16.1-22.6	0	100.0%
22.7-32	0	100.0%
32.1-45	0	100.0%
45.1-64	0	100.0%
64.1-90	0	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

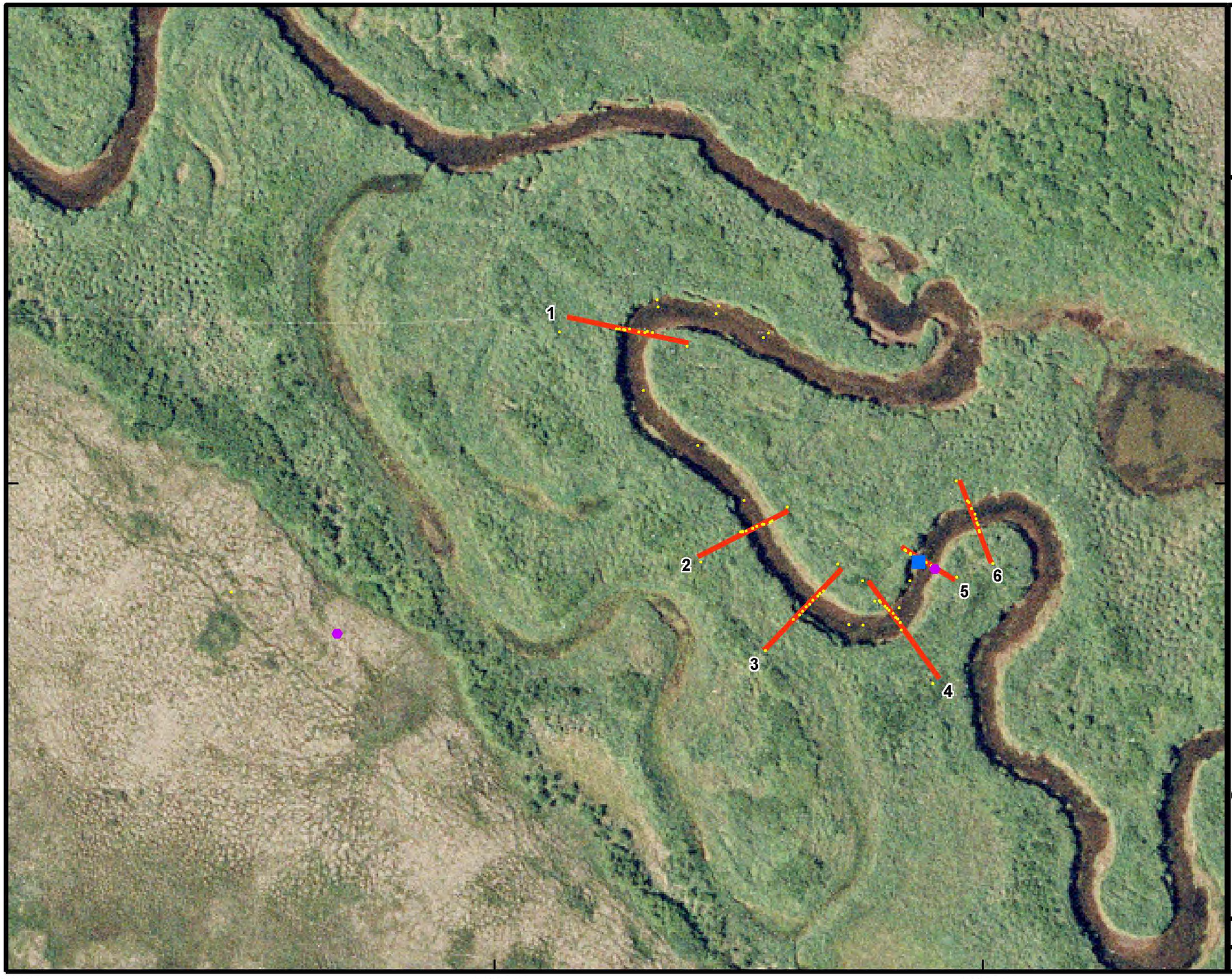
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,387,003

1,387,403

1,387,803

2,124,326

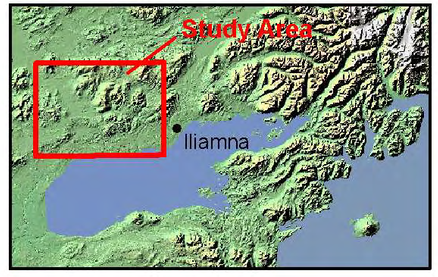


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK11
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,387,003

1,387,403

1,387,803

SITE DESCRIPTION: FGSK12

Site Characteristics.

	Site Name	**FGSK12**	
Discharge (cfs)	**280 (240-340)**	Width (ft)	**29.4 (24.8-37.4)**
Slope	**0.0007**	Cross-sectional Area (ft^2)	**127 (98-162)**
D_{50}	**11**	D_{84}	**21**
Lat/Long Location	**N59.81406 W155.35215**	Drainage Area (mi^2)	**30**
	% Willow	**0**	
	% Grass	**100**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 415 feet of channel length. Section 1 serves as the downstream control for the hydraulic model and is the crest of the downstream pool. Consisting mostly of pools, a pebble count was taken along a short riffle/pool crest (Sections 5 and 6). Pools were covered with fines while the pool crests and gravel bars had sand and small gravels. The channel banks were tall and irregular due to frequent failure, composed of fines and covered with tall grass.

For a Shields number of 0.017, the D_{84} moves in the reference reach (Sections 6 and 5) at a flow of 280 and 240 cfs respectively and moves through the pools at flows lower than the range of flows reported here. Flows between 260 and 300 cfs match the right bank in the reference reach. The right bank along Sections 3 and 4 (the inner bend) are overtopped at flows above 240 cfs.

Without a well-defined riffle, channel width and cross-sectional area were averaged across surveyed cross-Sections 6 through 2 for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK12

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK12	6	240-cfs	240	27.0	110	4.1	5.4	0.0005	2.0	0.18	0.11	0.038
FGSK12	6	260-cfs	260	27.2	115	4.2	5.6	0.0005	2.1	0.18	0.11	0.038
FGSK12	6	280-cfs	280	27.4	120	4.4	5.8	0.0005	2.1	0.18	0.12	0.039
FGSK12	6	300-cfs	300	27.6	124	4.5	5.9	0.0005	2.2	0.18	0.12	0.039
FGSK12	6	320-cfs	320	27.6	129	4.7	6.1	0.0005	2.2	0.18	0.13	0.039
FGSK12	6	340-cfs	340	27.6	133	4.8	6.2	0.0005	2.3	0.18	0.13	0.039
FGSK12	5	240-cfs	240	29.7	122	4.1	5.3	0.0005	1.9	0.17	0.12	0.042
FGSK12	5	260-cfs	260	29.9	128	4.3	5.5	0.0005	2.0	0.17	0.13	0.042
FGSK12	5	280-cfs	280	29.9	133	4.4	5.6	0.0005	2.0	0.17	0.13	0.042
FGSK12	5	300-cfs	300	29.9	138	4.6	5.8	0.0005	2.1	0.17	0.14	0.042
FGSK12	5	320-cfs	320	29.9	142	4.8	6.0	0.0005	2.1	0.17	0.14	0.042
FGSK12	5	340-cfs	340	29.9	146	4.9	6.1	0.0005	2.2	0.17	0.15	0.042
FGSK12	4	240-cfs	240	24.8	98	4.0	6.6	0.0010	2.4	0.21	0.20	0.042
FGSK12	4	260-cfs	260	25.0	103	4.1	6.7	0.0010	2.4	0.21	0.20	0.043
FGSK12	4	280-cfs	280	25.2	107	4.3	6.9	0.0010	2.5	0.21	0.21	0.043
FGSK12	4	300-cfs	300	25.3	112	4.4	7.1	0.0009	2.5	0.21	0.21	0.043
FGSK12	4	320-cfs	320	25.3	116	4.6	7.2	0.0009	2.5	0.21	0.21	0.043
FGSK12	4	340-cfs	340	25.3	119	4.7	7.4	0.0009	2.5	0.21	0.21	0.043
FGSK12	3	240-cfs	240	28.0	108	3.8	5.2	0.0007	2.2	0.20	0.15	0.041
FGSK12	3	260-cfs	260	28.0	113	4.0	5.4	0.0007	2.3	0.20	0.16	0.041
FGSK12	3	280-cfs	280	28.0	118	4.2	5.5	0.0007	2.3	0.20	0.16	0.041
FGSK12	3	300-cfs	300	28.0	122	4.4	5.7	0.0007	2.3	0.20	0.17	0.041
FGSK12	3	320-cfs	320	28.0	127	4.5	5.8	0.0007	2.4	0.20	0.17	0.041
FGSK12	3	340-cfs	340	28.0	131	4.7	6.0	0.0007	2.4	0.20	0.17	0.041
FGSK12	2	240-cfs	240	35.4	132	3.7	6.3	0.0006	1.8	0.17	0.12	0.045
FGSK12	2	260-cfs	260	36.0	139	3.9	6.5	0.0006	1.9	0.17	0.13	0.045
FGSK12	2	280-cfs	280	36.5	145	4.0	6.7	0.0006	1.9	0.17	0.14	0.046
FGSK12	2	300-cfs	300	37.0	151	4.1	6.9	0.0007	2.0	0.17	0.15	0.046
FGSK12	2	320-cfs	320	37.2	157	4.2	7.0	0.0007	2.0	0.17	0.16	0.046
FGSK12	2	340-cfs	340	37.4	162	4.3	7.2	0.0007	2.1	0.17	0.16	0.046

HEC-RAS OUTPUT SUMMARY TABLE: FGSK12

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK12	1	240-cfs	240	29.3	122	4.2	5.5	0.0005	2.0	0.17	0.11	0.040
FGSK12	1	260-cfs	260	29.3	128	4.4	5.6	0.0005	2.0	0.17	0.12	0.040
FGSK12	1	280-cfs	280	29.3	133	4.5	5.8	0.0005	2.1	0.17	0.12	0.040
FGSK12	1	300-cfs	300	29.3	137	4.7	6.0	0.0005	2.1	0.17	0.13	0.040
FGSK12	1	320-cfs	320	29.3	142	4.8	6.1	0.0005	2.2	0.17	0.13	0.040
FGSK12	1	340-cfs	340	29.3	146	5.0	6.3	0.0005	2.2	0.17	0.13	0.040

HEC-RAS LONGITUDINAL PROFILE: FGSK12

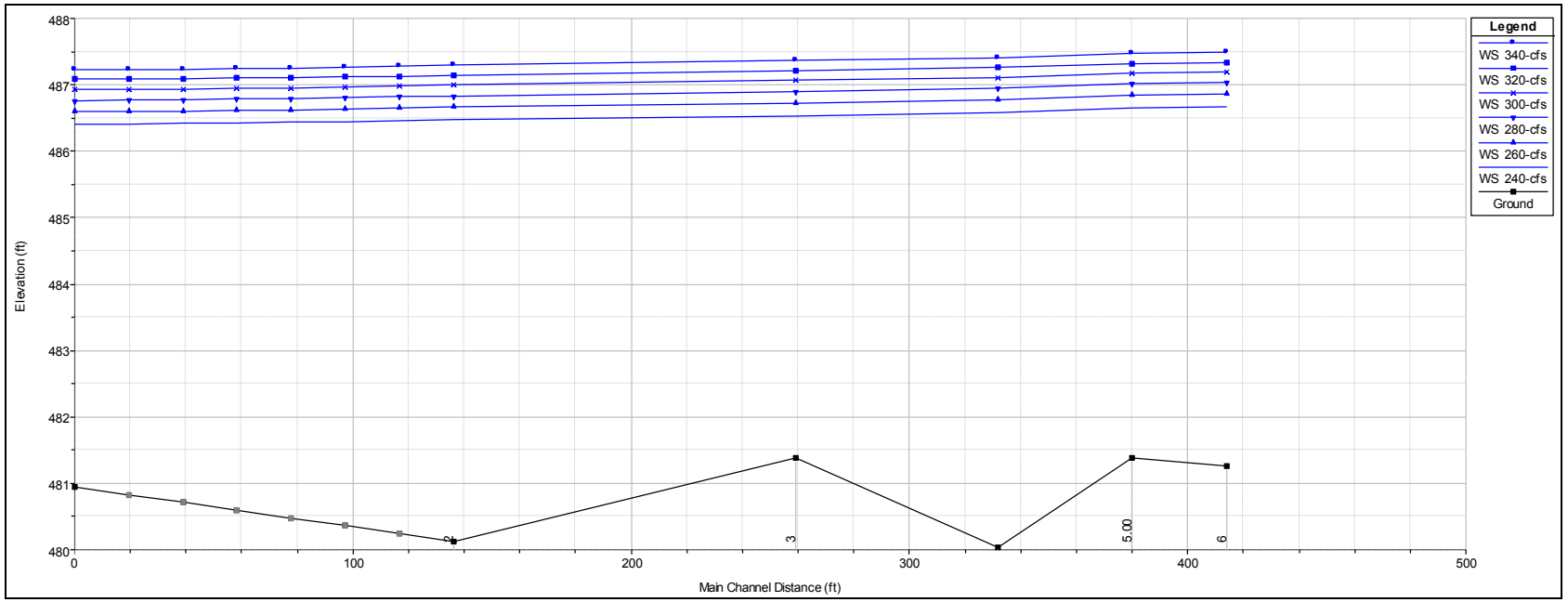


Figure 86 HEC-RAS longitudinal profile output for Reach FGSK12. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK12

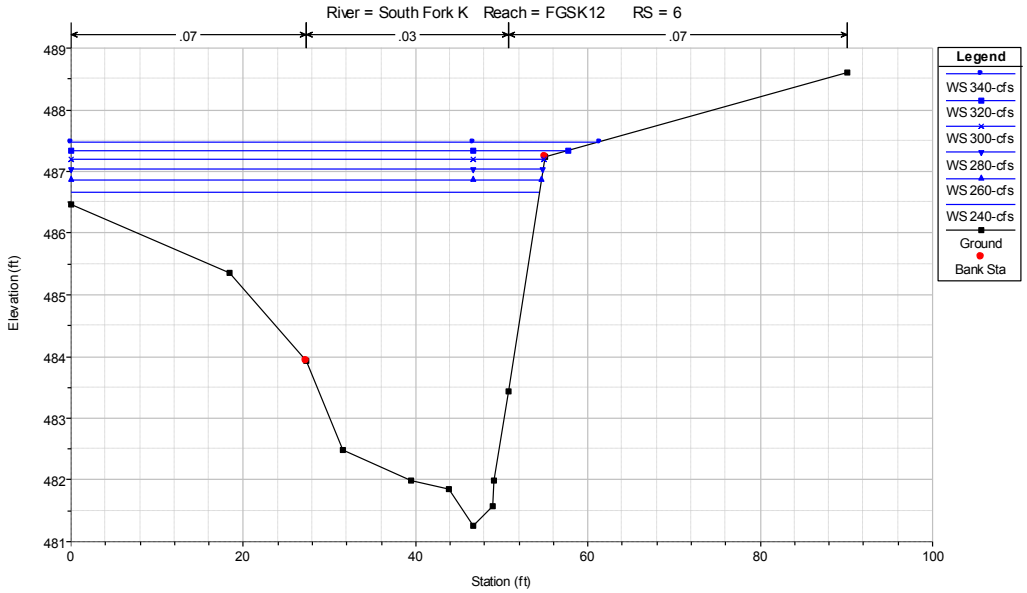


Figure 87 River Station (RS) 6 on River Reach FGSK12. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK12

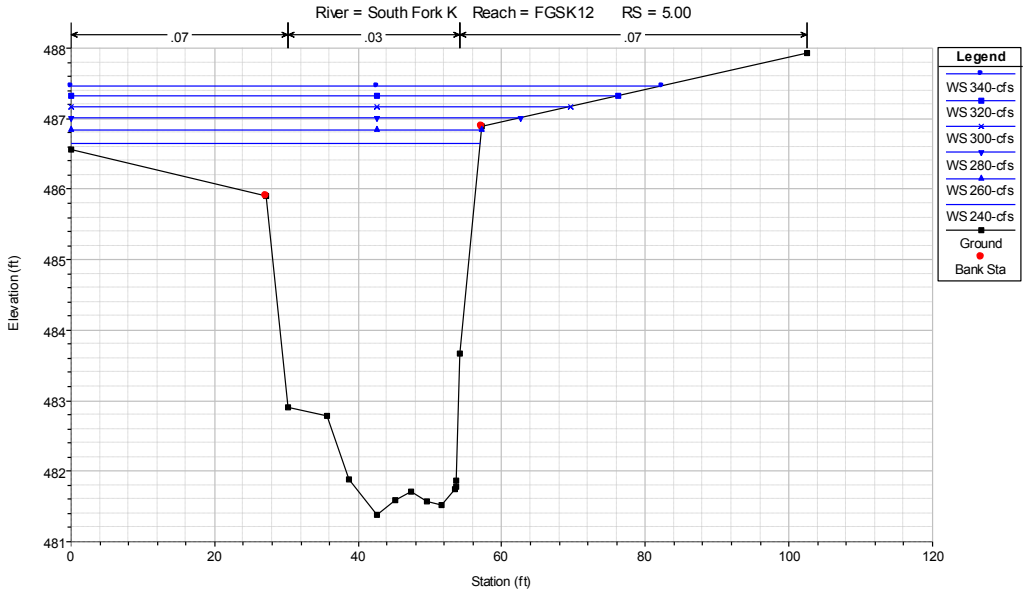


Figure 88 River Station (RS) 5 on River Reach FGSK12. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK12

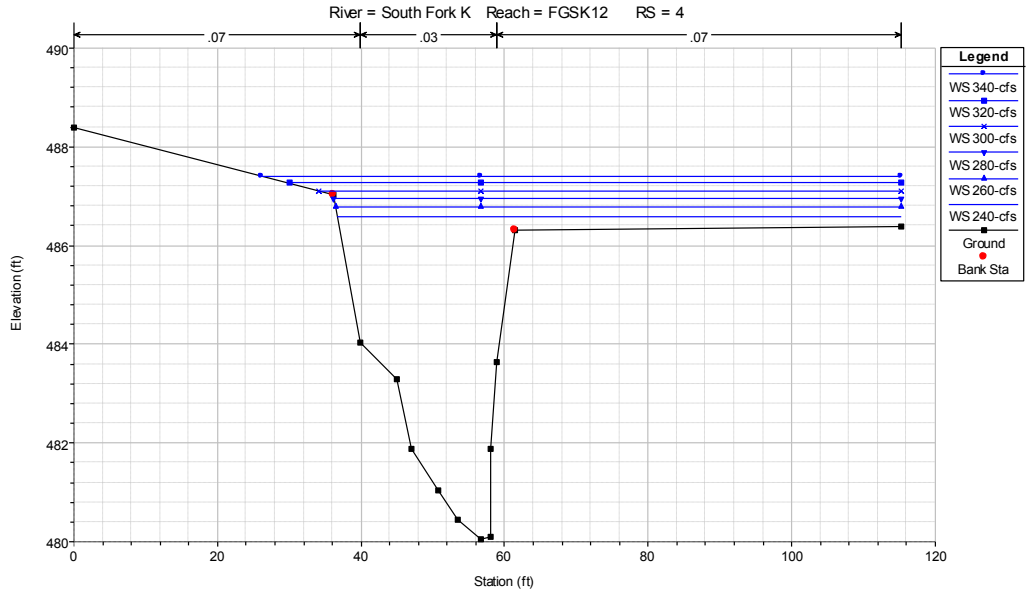


Figure 89 River Station (RS) 4 on River Reach FGSK12. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK12

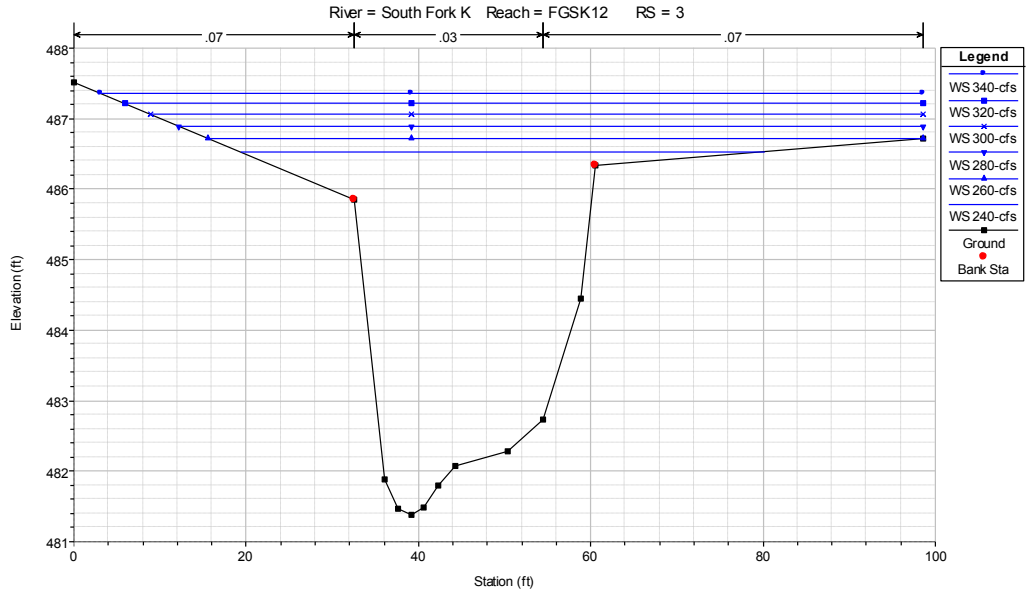


Figure 90 River Station (RS) 3 on River Reach FGSK12. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK12

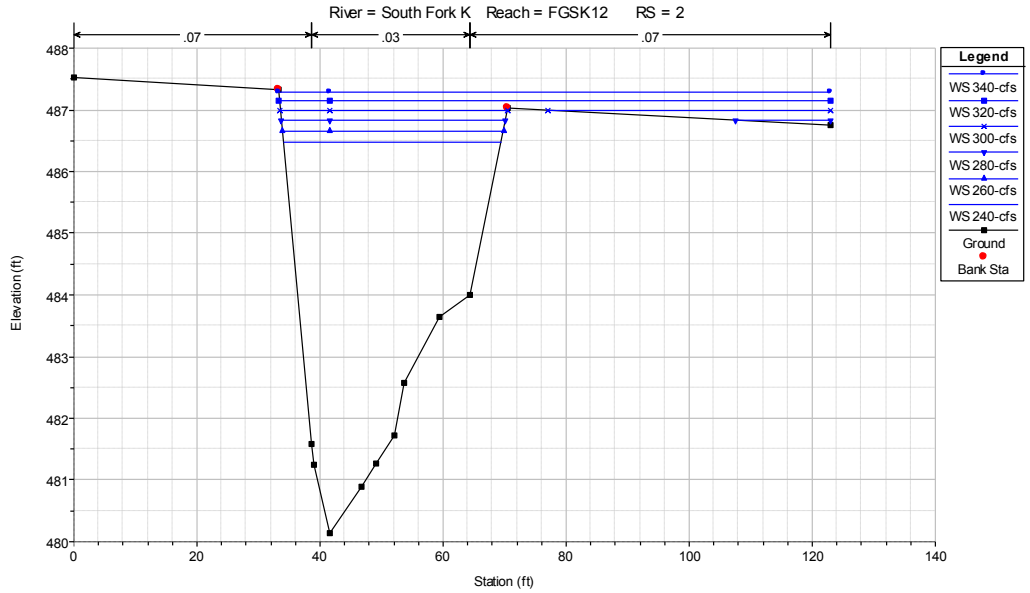


Figure 91 River Station (RS) 2 on River Reach FGSK12. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK12

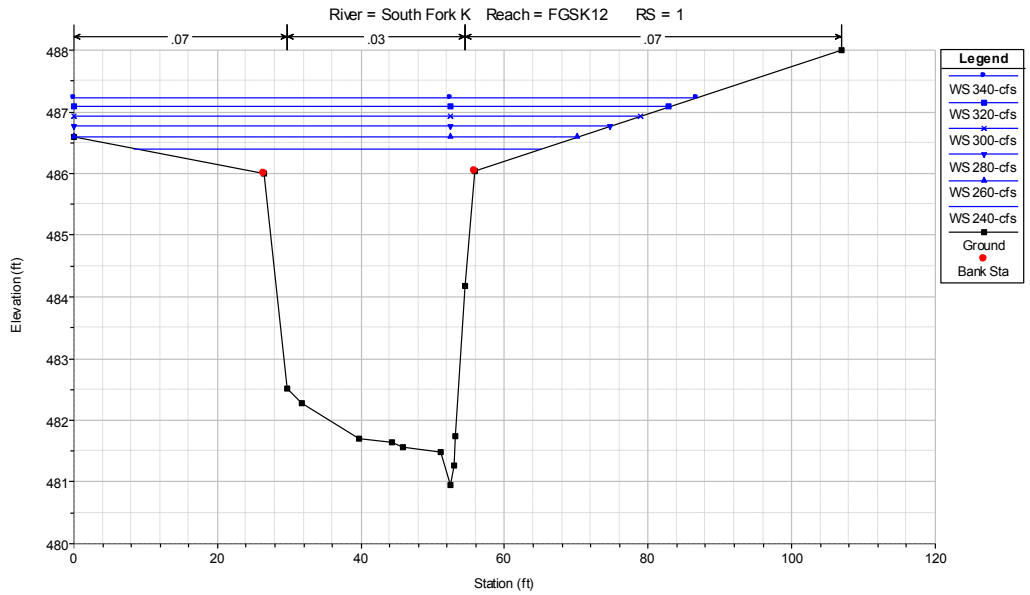


Figure 92 River Station (RS) 1 on River Reach FGSK12. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK12

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK12	6	240-cfs	0.11	20	16	13
FGSK12	6	260-cfs	0.11	20	16	13
FGSK12	6	280-cfs	0.12	22	17	14
FGSK12	6	300-cfs	0.12	22	17	14
FGSK12	6	320-cfs	0.13	23	19	15
FGSK12	6	340-cfs	0.13	23	19	15
FGSK12	5	240-cfs	0.12	22	17	14
FGSK12	5	260-cfs	0.13	23	19	15
FGSK12	5	280-cfs	0.13	23	19	15
FGSK12	5	300-cfs	0.14	25	20	16
FGSK12	5	320-cfs	0.14	25	20	16
FGSK12	5	340-cfs	0.15	27	22	18
FGSK12	4	240-cfs	0.20	36	29	24
FGSK12	4	260-cfs	0.20	36	29	24
FGSK12	4	280-cfs	0.21	38	31	25
FGSK12	4	300-cfs	0.21	38	31	25
FGSK12	4	320-cfs	0.21	38	31	25
FGSK12	4	340-cfs	0.21	38	31	25
FGSK12	3	240-cfs	0.15	27	22	18
FGSK12	3	260-cfs	0.16	29	23	19
FGSK12	3	280-cfs	0.16	29	23	19
FGSK12	3	300-cfs	0.17	31	25	20
FGSK12	3	320-cfs	0.17	31	25	20
FGSK12	3	340-cfs	0.17	31	25	20
FGSK12	2	240-cfs	0.12	22	17	14
FGSK12	2	260-cfs	0.13	23	19	15
FGSK12	2	280-cfs	0.14	25	20	16
FGSK12	2	300-cfs	0.15	27	22	18

INCIPIENT MOTION ANALYSIS: FGSK12

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK12	2	320-cfs	0.16	29	23	19
FGSK12	2	340-cfs	0.16	29	23	19
FGSK12	1	240-cfs	0.11	20	16	13
FGSK12	1	260-cfs	0.12	22	17	14
FGSK12	1	280-cfs	0.12	22	17	14
FGSK12	1	300-cfs	0.13	23	19	15
FGSK12	1	320-cfs	0.13	23	19	15
FGSK12	1	340-cfs	0.13	23	19	15

PHOTOGRAPH DOCUMENTATION: FGSK12

Left bank along reference reach FGSK12

Right bank along reference reach FGSK12

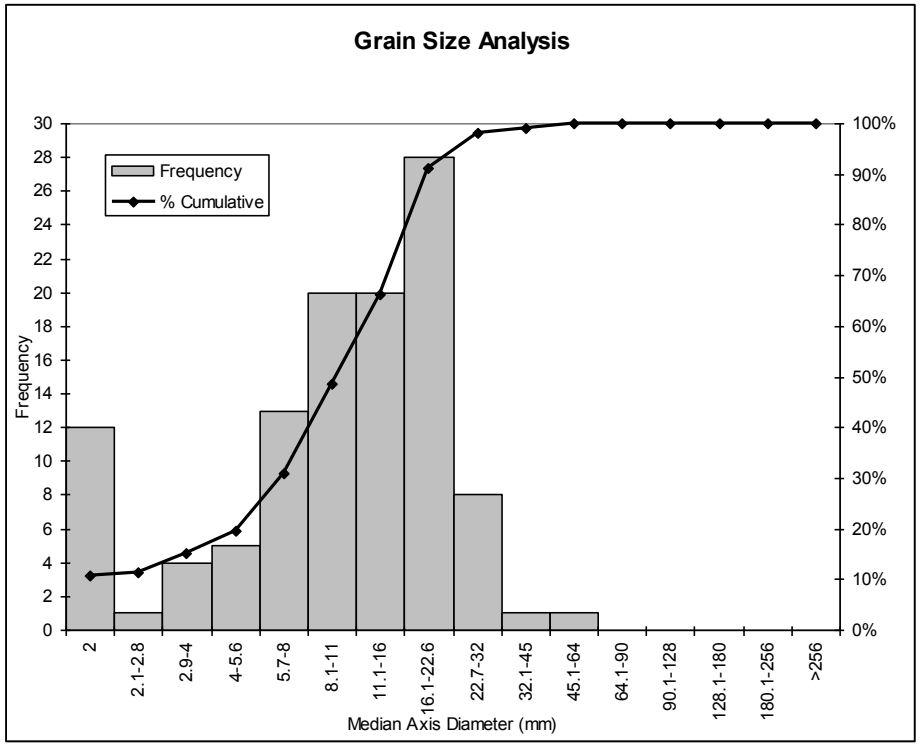
Looking downstream from reference reach FGSK12

Looking upstream from reference reach FGSK12

PHOTOGRAPH DOCUMENTATION: FGSK12

Bank composition detail (right bank) FGSK12

PEBBLE COUNT DISTRIBUTION: FGSK12



Size Class mm	*Frequency*	*Cumulative %*
2	12	10.6%
2.1-2.8	1	11.5%
2.9-4	4	15.0%
4-5.6	5	19.5%
5.7-8	13	31.0%
8.1-11	20	48.7%
11.1-16	20	66.4%
16.1-22.6	28	91.2%
22.7-32	8	98.2%
32.1-45	1	99.1%
45.1-64	1	100.0%
64.1-90	0	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

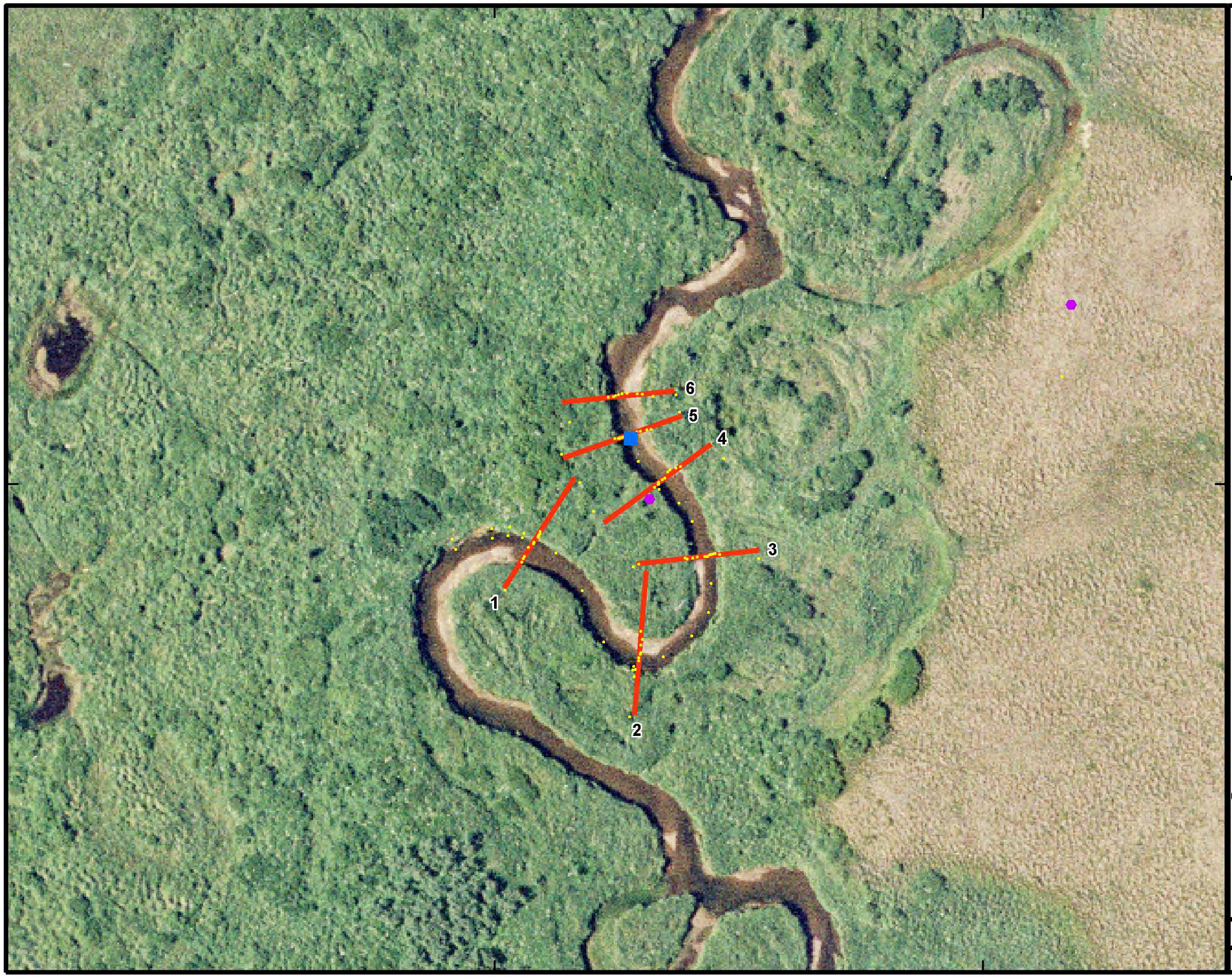
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,391,015

1,391,415

1,391,815

2,126,435

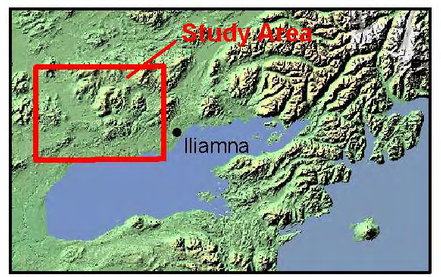


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK12
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 60 120 180 240 Ft

0 20 40 Meters

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,391,015

1,391,415

1,391,815

SITE DESCRIPTION: FGSK13

Site Characteristics.

Site Name	**FGSK13**		
Discharge (cfs)	**175 (125-325)**	Width (ft)	**23.7 (19.0-29.6)**
Slope	**0.0021**	Cross-sectional Area (ft^2)	**65 (37-111)**
D_{50}	**16**	D_{84}	**30**
Lat/Long Location	**N59.81901 W155.33682**	Drainage Area (mi^2)	**17**
% Willow	**20**		
% Grass	**80**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 355 feet of channel length. Section 1 serves as the downstream control for the hydraulic model and is the crest of the downstream pool. Consisting mostly of pools, a pebble count was taken along a short riffle/pool crest (Sections 5 and 6). This feature serves as the reference reach. Pools were covered with fines while the pool crests and gravel bars had sand and small gravels. The channel banks were tall and irregular due to frequent failure, composed of fines and covered with tall grass with few willows.

The incipient motion analysis shows a great deal of variability between sections ranging in competency for a Shields number of 0.017 from around 130 mm particle along Section 6 (the slip face of a riffle) to 22 mm in Section 4 (a scour pool which is most likely backwatered during high flows). For a Shields number of 0.017, the D_{84} moves in the reference reach (Sections 6 and 5) by 125 cfs. A flow of 200 cfs matches the geometry well of Sections 8, 6 and 2. The range of flows chosen for this site is large, encompassing the range in geometry found through the reach.

Without a well-defined riffle and high variability through the reach, channel width and cross-sectional area were averaged across surveyed cross-Sections 6 through 2 for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK13

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK13	8	125-cfs	125	22.0	44	2.0	2.7	0.0016	2.8	0.35	0.19	0.032
FGSK13	8	150-cfs	150	22.7	50	2.2	2.9	0.0016	3.0	0.35	0.20	0.032
FGSK13	8	175-cfs	175	23.2	56	2.4	3.2	0.0016	3.1	0.36	0.22	0.032
FGSK13	8	200-cfs	200	23.2	61	2.6	3.4	0.0015	3.3	0.36	0.23	0.032
FGSK13	8	225-cfs	225	23.2	66	2.8	3.6	0.0015	3.4	0.36	0.24	0.032
FGSK13	8	250-cfs	250	23.2	70	3.0	3.8	0.0015	3.5	0.36	0.25	0.032
FGSK13	8	275-cfs	275	23.2	75	3.2	4.0	0.0014	3.6	0.36	0.26	0.032
FGSK13	8	300-cfs	300	23.2	79	3.4	4.2	0.0014	3.7	0.35	0.27	0.032
FGSK13	8	325-cfs	325	23.2	82	3.6	4.3	0.0014	3.8	0.35	0.28	0.032
FGSK13	7	125-cfs	125	20.2	40	2.0	3.5	0.0022	3.1	0.39	0.24	0.032
FGSK13	7	150-cfs	150	20.9	45	2.2	3.8	0.0022	3.3	0.40	0.26	0.032
FGSK13	7	175-cfs	175	21.7	50	2.3	4.0	0.0023	3.5	0.40	0.29	0.033
FGSK13	7	200-cfs	200	22.4	55	2.5	4.2	0.0024	3.6	0.41	0.33	0.034
FGSK13	7	225-cfs	225	23.1	60	2.6	4.4	0.0025	3.8	0.41	0.36	0.034
FGSK13	7	250-cfs	250	23.8	64	2.7	4.6	0.0026	3.9	0.42	0.39	0.035
FGSK13	7	275-cfs	275	24.4	68	2.8	4.8	0.0027	4.0	0.42	0.42	0.035
FGSK13	7	300-cfs	300	24.9	72	2.9	5.0	0.0028	4.1	0.43	0.45	0.035
FGSK13	7	325-cfs	325	25.5	76	3.0	5.1	0.0029	4.3	0.43	0.47	0.036
FGSK13	6	125-cfs	125	19.0	37	1.9	2.5	0.0048	3.4	0.44	0.52	0.043
FGSK13	6	150-cfs	150	19.5	41	2.1	2.8	0.0049	3.7	0.44	0.58	0.044
FGSK13	6	175-cfs	175	20.0	46	2.3	3.0	0.0051	3.8	0.45	0.64	0.044
FGSK13	6	200-cfs	200	20.0	50	2.5	3.2	0.0049	4.0	0.45	0.69	0.044
FGSK13	6	225-cfs	225	20.0	54	2.7	3.4	0.0049	4.2	0.45	0.73	0.044
FGSK13	6	250-cfs	250	20.0	57	2.9	3.6	0.0048	4.3	0.45	0.76	0.044
FGSK13	6	275-cfs	275	20.0	61	3.0	3.8	0.0047	4.5	0.45	0.79	0.044
FGSK13	6	300-cfs	300	20.0	64	3.2	3.9	0.0046	4.6	0.45	0.82	0.044
FGSK13	6	325-cfs	325	20.0	67	3.4	4.1	0.0045	4.7	0.45	0.84	0.044
FGSK13	5	125-cfs	125	24.3	46	1.9	2.7	0.0017	2.7	0.35	0.18	0.032
FGSK13	5	150-cfs	150	24.5	52	2.1	2.9	0.0017	2.9	0.35	0.20	0.032
FGSK13	5	175-cfs	175	24.6	57	2.3	3.1	0.0016	3.1	0.35	0.21	0.032

HEC-RAS OUTPUT SUMMARY TABLE: FGSK13

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK13	5	200-cfs	200	24.6	62	2.5	3.4	0.0016	3.2	0.35	0.23	0.032
FGSK13	5	225-cfs	225	24.7	67	2.7	3.5	0.0016	3.3	0.36	0.24	0.032
FGSK13	5	250-cfs	250	24.8	72	2.9	3.7	0.0016	3.5	0.36	0.25	0.032
FGSK13	5	275-cfs	275	24.9	76	3.1	3.9	0.0016	3.6	0.36	0.27	0.032
FGSK13	5	300-cfs	300	24.9	80	3.2	4.1	0.0016	3.7	0.36	0.28	0.032
FGSK13	5	325-cfs	325	25.0	84	3.4	4.2	0.0016	3.8	0.37	0.30	0.032
FGSK13	4	125-cfs	125	28.4	64	2.2	4.5	0.0007	2.0	0.23	0.09	0.032
FGSK13	4	150-cfs	150	28.8	71	2.5	4.7	0.0008	2.1	0.24	0.10	0.032
FGSK13	4	175-cfs	175	29.1	78	2.7	5.0	0.0008	2.3	0.24	0.11	0.032
FGSK13	4	200-cfs	200	29.4	84	2.9	5.2	0.0008	2.4	0.25	0.12	0.032
FGSK13	4	225-cfs	225	29.5	90	3.1	5.4	0.0008	2.5	0.25	0.13	0.032
FGSK13	4	250-cfs	250	29.6	96	3.2	5.6	0.0008	2.6	0.26	0.14	0.032
FGSK13	4	275-cfs	275	29.6	101	3.4	5.7	0.0008	2.7	0.26	0.15	0.032
FGSK13	4	300-cfs	300	29.6	106	3.6	5.9	0.0008	2.8	0.26	0.16	0.032
FGSK13	4	325-cfs	325	29.6	111	3.7	6.1	0.0008	2.9	0.26	0.17	0.032
FGSK13	3	125-cfs	125	20.3	39	1.9	2.6	0.0023	3.2	0.41	0.25	0.032
FGSK13	3	150-cfs	150	20.6	44	2.1	2.8	0.0022	3.4	0.41	0.27	0.032
FGSK13	3	175-cfs	175	20.9	48	2.3	3.1	0.0021	3.6	0.41	0.28	0.032
FGSK13	3	200-cfs	200	21.1	53	2.5	3.3	0.0021	3.7	0.41	0.29	0.032
FGSK13	3	225-cfs	225	21.3	57	2.7	3.5	0.0020	3.8	0.40	0.30	0.032
FGSK13	3	250-cfs	250	21.6	61	2.8	3.7	0.0019	3.8	0.40	0.31	0.032
FGSK13	3	275-cfs	275	21.8	65	3.0	3.9	0.0018	3.9	0.40	0.31	0.032
FGSK13	3	300-cfs	300	22.0	69	3.2	4.0	0.0018	3.9	0.39	0.32	0.032
FGSK13	3	325-cfs	325	22.2	73	3.3	4.2	0.0017	4.0	0.39	0.32	0.032
FGSK13	2	125-cfs	125	22.3	46	2.1	4.0	0.0015	2.7	0.33	0.17	0.032
FGSK13	2	150-cfs	150	23.1	52	2.3	4.3	0.0016	2.9	0.34	0.19	0.032
FGSK13	2	175-cfs	175	23.9	57	2.4	4.5	0.0017	3.1	0.35	0.21	0.032
FGSK13	2	200-cfs	200	24.3	62	2.6	4.7	0.0018	3.2	0.35	0.24	0.033
FGSK13	2	225-cfs	225	24.7	67	2.7	4.9	0.0018	3.4	0.36	0.27	0.034
FGSK13	2	250-cfs	250	25.1	72	2.9	5.1	0.0019	3.5	0.36	0.30	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGSK13

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK13	2	275-cfs	275	25.5	77	3.0	5.3	0.0020	3.6	0.36	0.32	0.035
FGSK13	2	300-cfs	300	25.9	81	3.1	5.5	0.0021	3.7	0.37	0.35	0.035
FGSK13	2	325-cfs	325	26.1	85	3.3	5.6	0.0021	3.8	0.37	0.37	0.036
FGSK13	1	125-cfs	125	18.6	34	1.8	2.4	0.0033	3.7	0.48	0.33	0.032
FGSK13	1	150-cfs	150	18.9	38	2.0	2.6	0.0033	3.9	0.48	0.37	0.032
FGSK13	1	175-cfs	175	19.2	43	2.2	2.8	0.0033	4.1	0.49	0.40	0.032
FGSK13	1	200-cfs	200	19.5	46	2.4	3.0	0.0033	4.3	0.49	0.42	0.032
FGSK13	1	225-cfs	225	19.8	50	2.5	3.2	0.0033	4.5	0.49	0.45	0.032
FGSK13	1	250-cfs	250	20.1	54	2.7	3.4	0.0033	4.6	0.50	0.47	0.032
FGSK13	1	275-cfs	275	20.3	58	2.8	3.6	0.0033	4.8	0.50	0.49	0.032
FGSK13	1	300-cfs	300	20.3	61	3.0	3.7	0.0033	4.9	0.50	0.52	0.032
FGSK13	1	325-cfs	325	20.4	64	3.1	3.9	0.0033	5.1	0.51	0.54	0.032

HEC-RAS LONGITUDINAL PROFILE: FGSK13

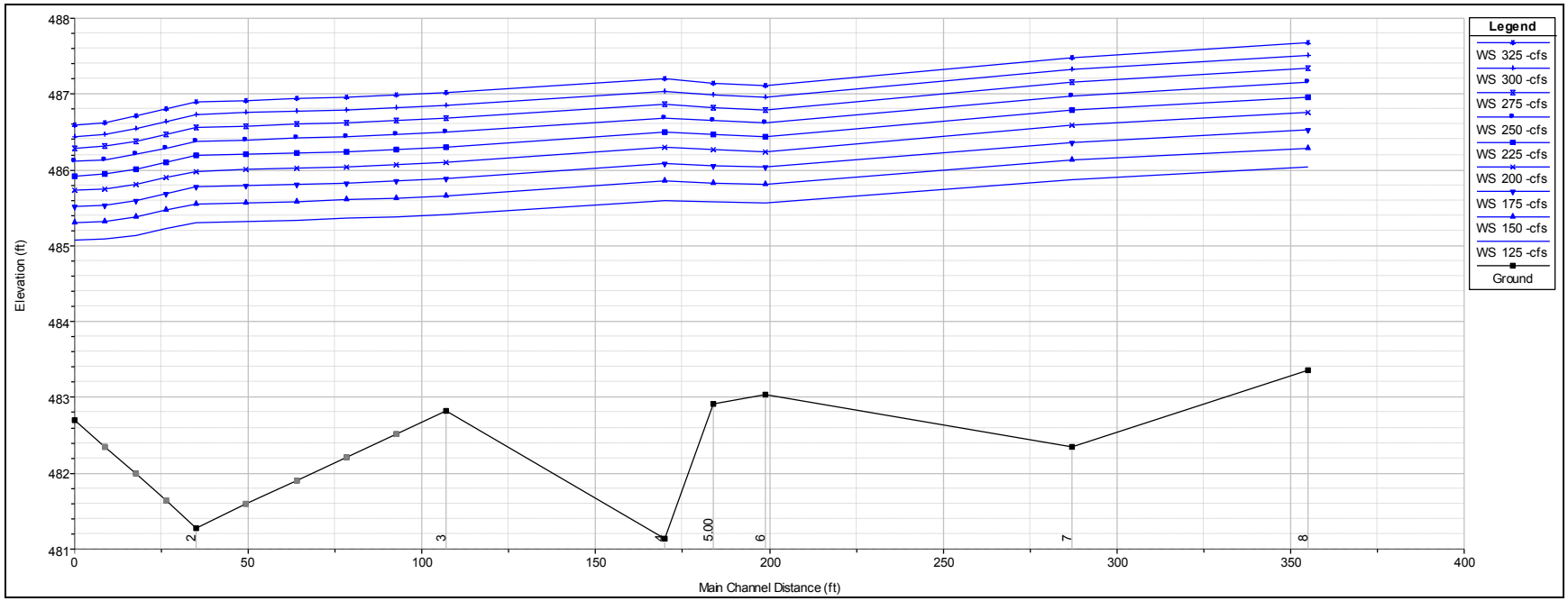


Figure 93 HEC-RAS longitudinal profile output for Reach FGSK12. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

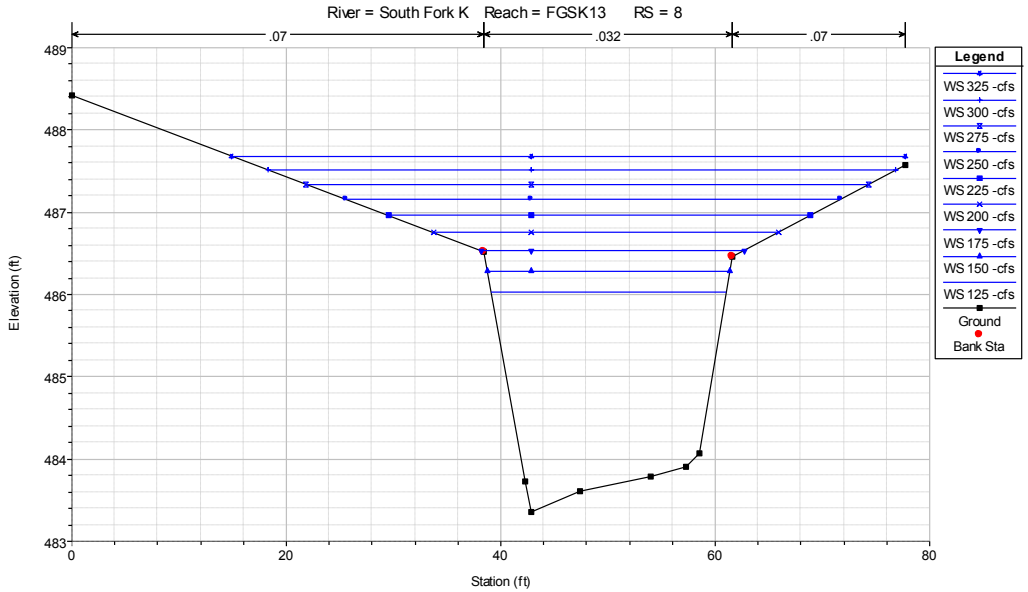


Figure 94 River Station (RS) 8 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

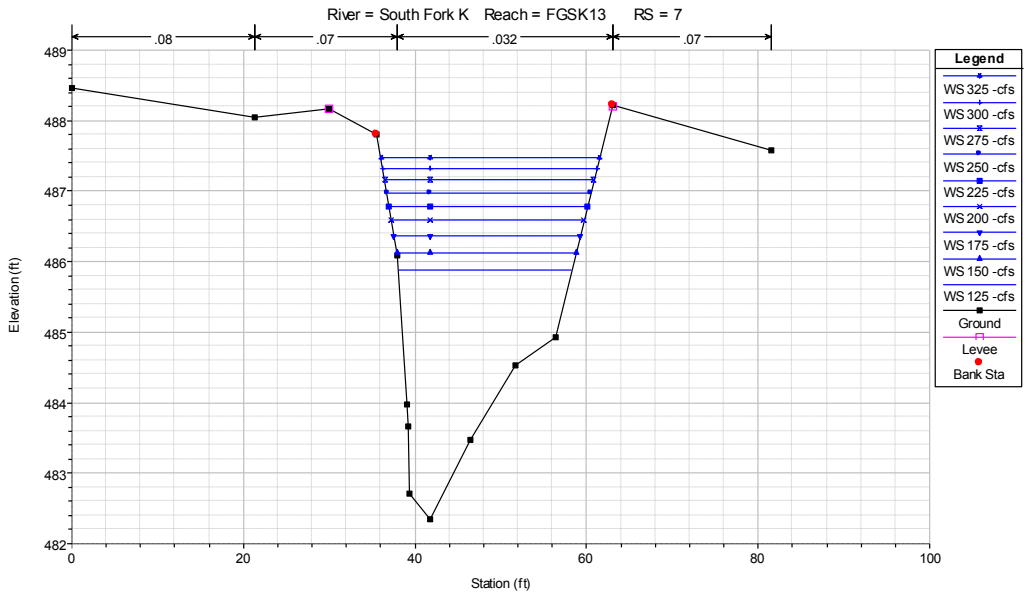


Figure 95 River Station (RS) 7 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

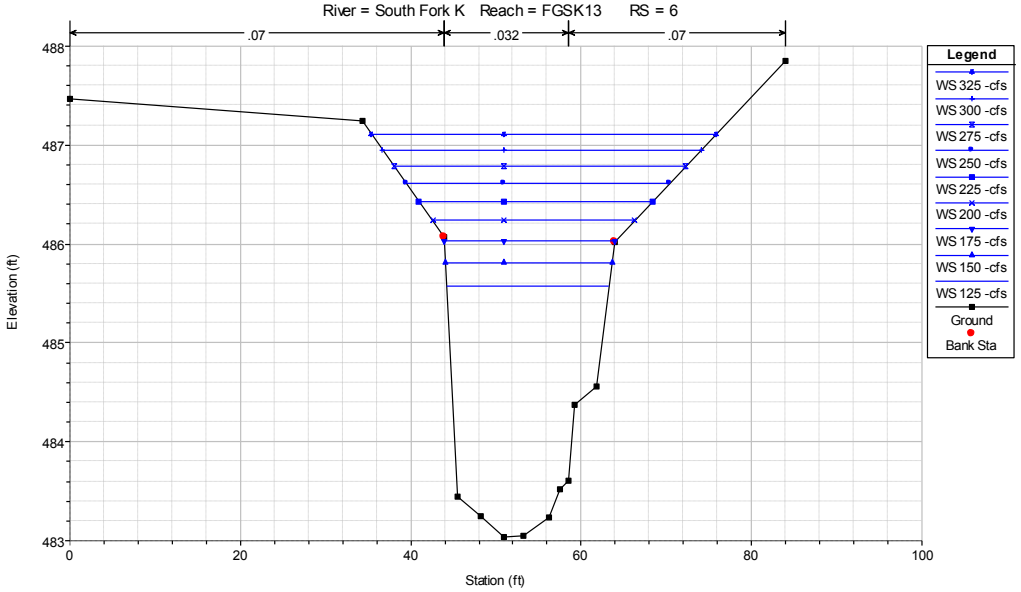


Figure 96 River Station (RS) 6 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

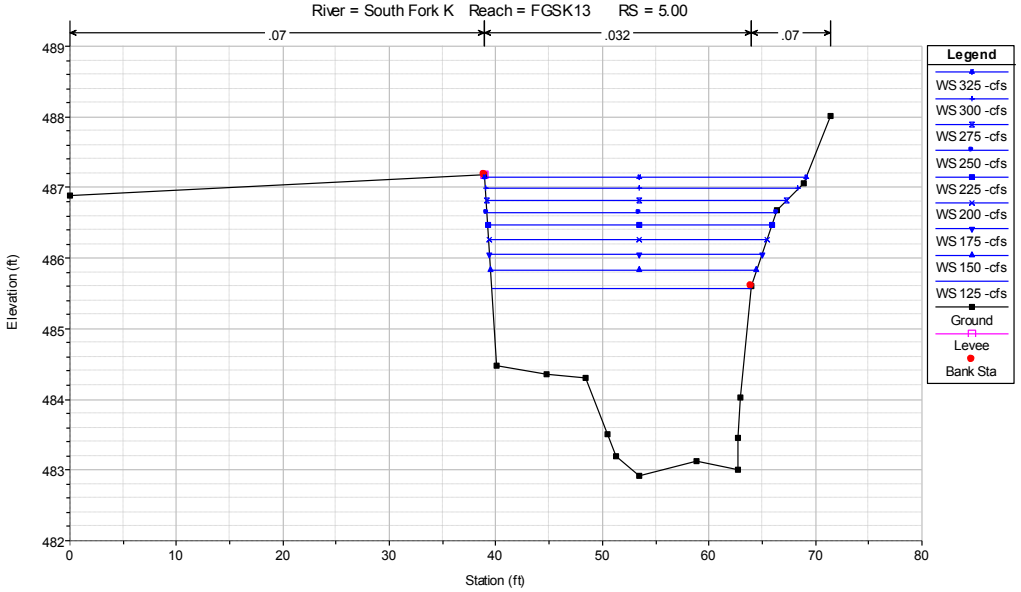


Figure 97 River Station (RS) 5 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

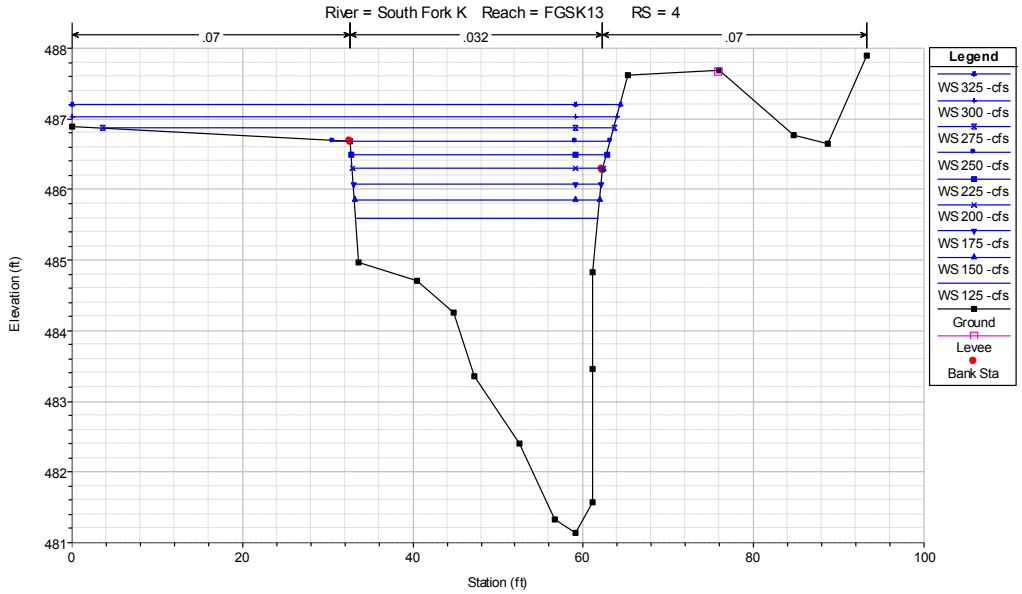


Figure 98 River Station (RS) 4 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

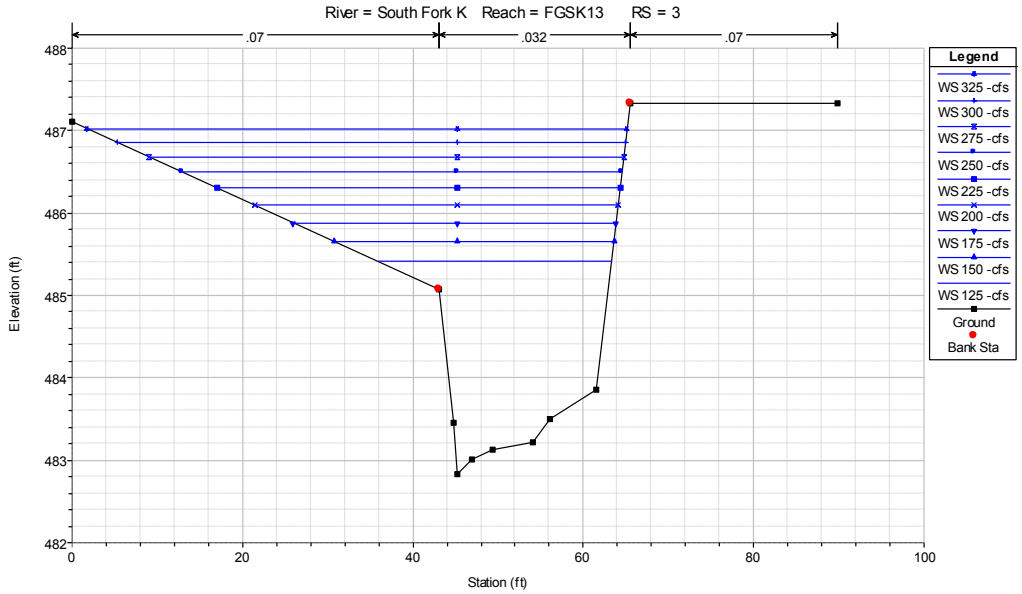


Figure 99 River Station (RS) 3 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

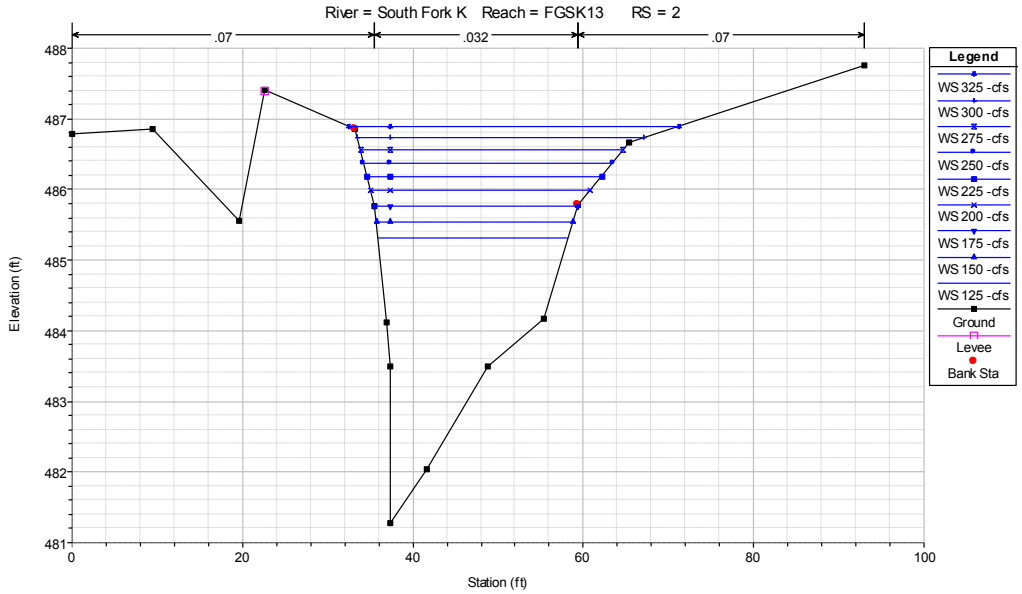


Figure 100 River Station (RS) 2 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK13

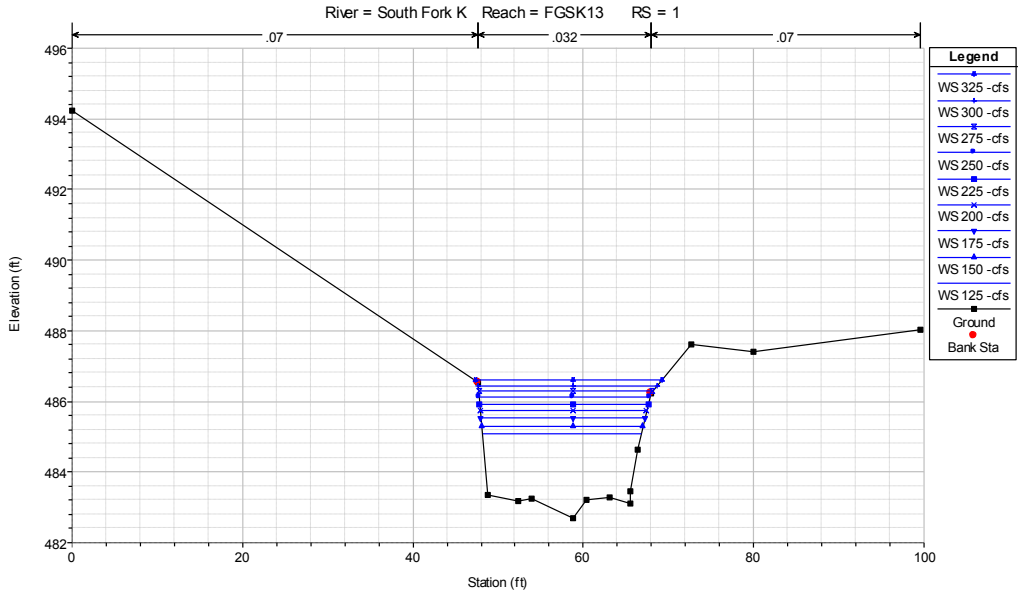


Figure 101 River Station (RS) 1 on River Reach FGSK13. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK13

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK13	8	125-cfs	0.19	34	28	22
FGSK13	8	150-cfs	0.20	36	29	24
FGSK13	8	175-cfs	0.22	40	32	26
FGSK13	8	200-cfs	0.23	41	34	27
FGSK13	8	225-cfs	0.24	43	35	28
FGSK13	8	250-cfs	0.25	45	36	29
FGSK13	8	275-cfs	0.26	47	38	31
FGSK13	8	300-cfs	0.27	49	39	32
FGSK13	8	325-cfs	0.28	50	41	33
FGSK13	7	125-cfs	0.24	43	35	28
FGSK13	7	150-cfs	0.26	47	38	31
FGSK13	7	175-cfs	0.29	52	42	34
FGSK13	7	200-cfs	0.33	59	48	39
FGSK13	7	225-cfs	0.36	65	52	42
FGSK13	7	250-cfs	0.39	70	57	46
FGSK13	7	275-cfs	0.42	76	61	49
FGSK13	7	300-cfs	0.45	81	66	53
FGSK13	7	325-cfs	0.47	85	68	55
FGSK13	6	125-cfs	0.52	94	76	61
FGSK13	6	150-cfs	0.58	104	85	68
FGSK13	6	175-cfs	0.64	115	93	75
FGSK13	6	200-cfs	0.69	124	101	81
FGSK13	6	225-cfs	0.73	131	106	86
FGSK13	6	250-cfs	0.76	137	111	89
FGSK13	6	275-cfs	0.79	142	115	93
FGSK13	6	300-cfs	0.82	148	120	97
FGSK13	6	325-cfs	0.84	151	122	99
FGSK13	5	125-cfs	0.18	32	26	21
FGSK13	5	150-cfs	0.20	36	29	24

INCIPIENT MOTION ANALYSIS: FGSK13

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK13	5	175-cfs	0.21	38	31	25
FGSK13	5	200-cfs	0.23	41	34	27
FGSK13	5	225-cfs	0.24	43	35	28
FGSK13	5	250-cfs	0.25	45	36	29
FGSK13	5	275-cfs	0.27	49	39	32
FGSK13	5	300-cfs	0.28	50	41	33
FGSK13	5	325-cfs	0.30	54	44	35
FGSK13	4	125-cfs	0.09	16	13	11
FGSK13	4	150-cfs	0.10	18	15	12
FGSK13	4	175-cfs	0.11	20	16	13
FGSK13	4	200-cfs	0.12	22	17	14
FGSK13	4	225-cfs	0.13	23	19	15
FGSK13	4	250-cfs	0.14	25	20	16
FGSK13	4	275-cfs	0.15	27	22	18
FGSK13	4	300-cfs	0.16	29	23	19
FGSK13	4	325-cfs	0.17	31	25	20
FGSK13	3	125-cfs	0.25	45	36	29
FGSK13	3	150-cfs	0.27	49	39	32
FGSK13	3	175-cfs	0.28	50	41	33
FGSK13	3	200-cfs	0.29	52	42	34
FGSK13	3	225-cfs	0.30	54	44	35
FGSK13	3	250-cfs	0.31	56	45	36
FGSK13	3	275-cfs	0.31	56	45	36
FGSK13	3	300-cfs	0.32	58	47	38
FGSK13	3	325-cfs	0.32	58	47	38
FGSK13	2	125-cfs	0.17	31	25	20
FGSK13	2	150-cfs	0.19	34	28	22
FGSK13	2	175-cfs	0.21	38	31	25
FGSK13	2	200-cfs	0.24	43	35	28
FGSK13	2	225-cfs	0.27	49	39	32

INCIPIENT MOTION ANALYSIS: FGSK13

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK13	2	250-cfs	0.30	54	44	35
FGSK13	2	275-cfs	0.32	58	47	38
FGSK13	2	300-cfs	0.35	63	51	41
FGSK13	2	325-cfs	0.37	67	54	44
FGSK13	1	125-cfs	0.33	59	48	39
FGSK13	1	150-cfs	0.37	67	54	44
FGSK13	1	175-cfs	0.40	72	58	47
FGSK13	1	200-cfs	0.42	76	61	49
FGSK13	1	225-cfs	0.45	81	66	53
FGSK13	1	250-cfs	0.47	85	68	55
FGSK13	1	275-cfs	0.49	88	71	58
FGSK13	1	300-cfs	0.52	94	76	61
FGSK13	1	325-cfs	0.54	97	79	64

PHOTOGRAPH DOCUMENTATION: FGSK13

Left bank along reference reach FGSK13

Right bank along reference reach FGSK13

Looking downstream from reference reach FGSK13

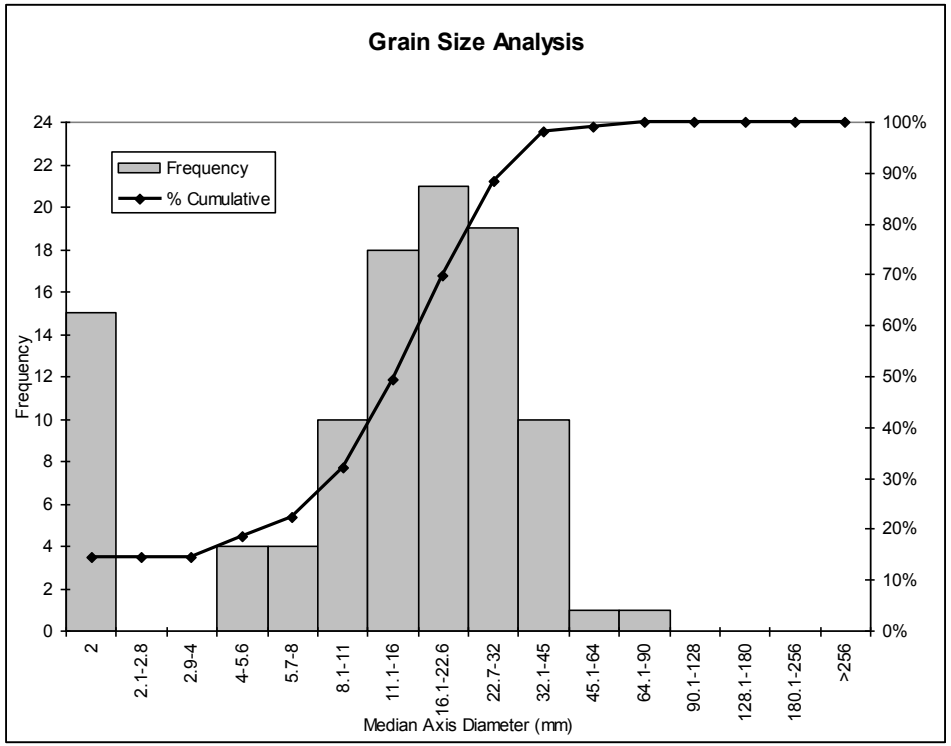
Looking upstream from reference reach FGSK13

PHOTOGRAPH DOCUMENTATION: FGSK13

Bank composition detail (left bank) FGSK13

Looking upstream form terrace along left bank at downstream boundary FGSK13

PEBBLE COUNT DISTRIBUTION: FGSK13



Size Class mm	*Frequency*	*Cumulative %*
2	15	14.6%
2.1-2.8	0	14.6%
2.9-4	0	14.6%
4-5.6	4	18.4%
5.7-8	4	22.3%
8.1-11	10	32.0%
11.1-16	18	49.5%
16.1-22.6	21	69.9%
22.7-32	19	88.3%
32.1-45	10	98.1%
45.1-64	1	99.0%
64.1-90	1	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

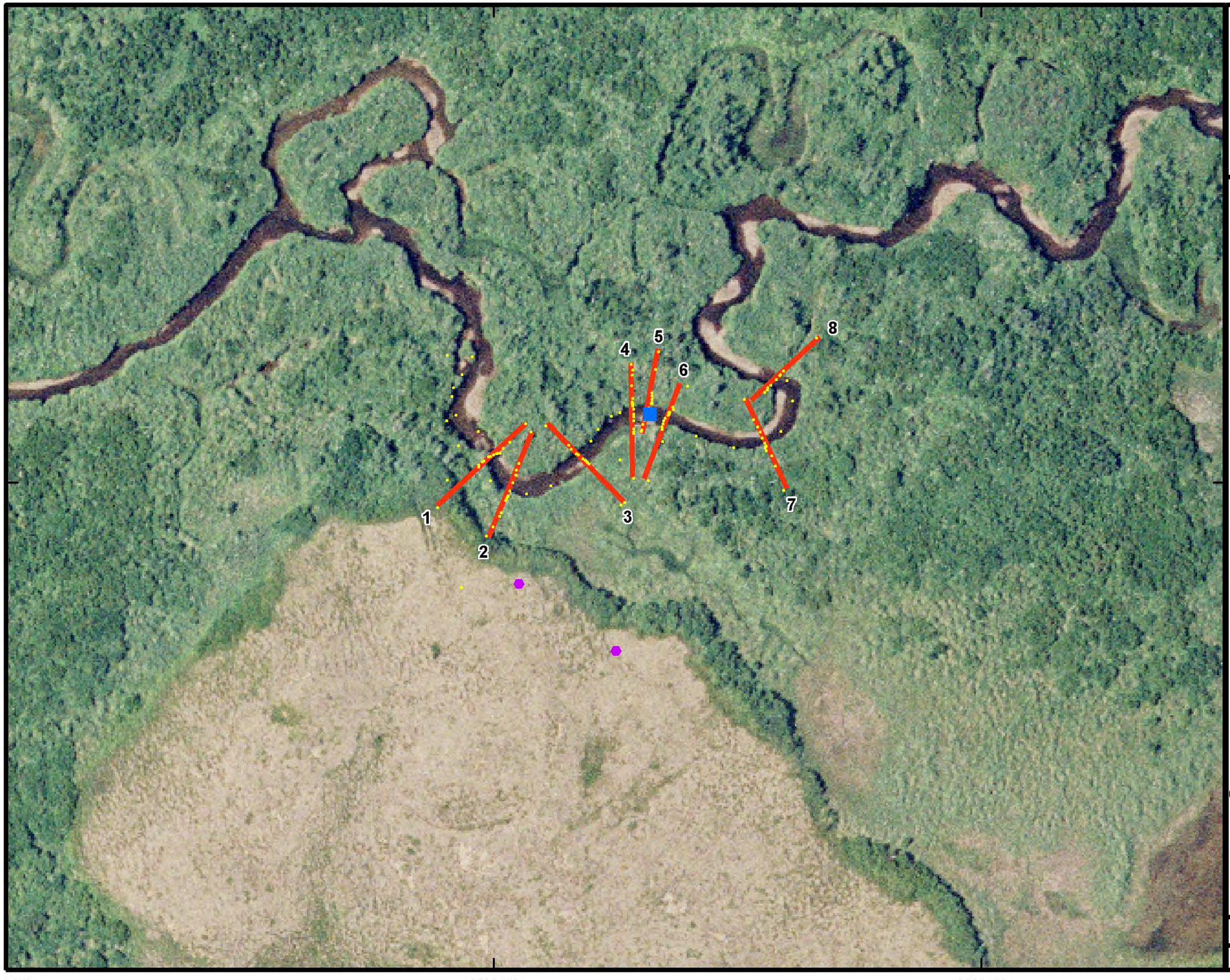
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,393,856

1,394,256

1,394,656

2,128,168

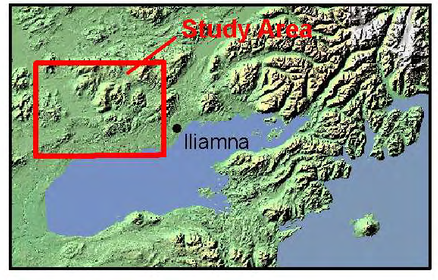


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK13
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,393,856

1,394,256

1,394,656

SITE DESCRIPTION: FGSK14

Site Characteristics.

	Site Name	**FGSK14**	
Discharge (cfs)	**150 (100-200)**	Width (ft)	**23.7 (16.9-32.2)**
Slope	**0.0060**	Cross-sectional Area (ft^2)	**42 (22-71)**
D_{50}	**26**	D_{84}	**93**
(modified) D_{50}	**31**	D_{84}	**102**
Lat/Long Location	**N59.81899 W155.29575**	Drainage Area (mi^2)	**16**
	% Willow	**35**	
	% Grass	**65**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 355 feet of channel length. Section 1 serves as the downstream control for the hydraulic model and is the crest of the downstream pool. Consisting mostly of pools, a pebble count was taken along a short riffle/pool crest (Section 5). This feature served as the reference reach. Substrate changed from fines in the pools to cobbles and gravels at the crests and along the bars. An abundance of fines (< 2 mm) in the pebble count along with a wide distribution may indicate a falling limb signature. To account for this, the distribution was modified by removing the < 2 mm size class. Both the original data as well as the modified distribution are included. Channel banks were composed of silts with mostly grass and some willows.

For a Shields number of 0.017, the D_{84} of the modified pebble count (102 mm) moves through the upper cross-sections (7 through 5) at flows between 100 and 150 cfs. Below that, the range at which mobility takes place greatly varies and may be a function of the variability of bed-forms and bank conditions. There is not good agreement between the incipient motion analysis and the geometry. Flows between 100 and 150 cfs remain well within the banks for all of the sections. These flows do match a bench along the left bank of Section 4. Lacking strong geomorphic indicators due to potential ice and snow effects on the geometry of this reach, the flows chosen based on the incipient motion analysis along the top three Sections (7 through 5).

Without a well-defined riffle and high variability through the reach, channel width and cross-sectional area were averaged across surveyed cross Sections 6 through 2 for the range of flows.

HEC-RAS OUPUT SUMMARY TABLE: FGSK14

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK14	7	100-cfs	16.9	28	1.7	2.2	0.0044	3.6	0.48	0.41	0.036	16.9
FGSK14	7	120-cfs	17.6	31	1.8	2.3	0.0049	3.8	0.51	0.48	0.037	17.6
FGSK14	7	140-cfs	18.2	34	1.9	2.5	0.0052	4.1	0.52	0.54	0.037	18.2
FGSK14	7	150-cfs	18.5	36	1.9	2.6	0.0054	4.2	0.53	0.58	0.037	18.5
FGSK14	7	160-cfs	18.8	37	2.0	2.7	0.0055	4.3	0.54	0.61	0.037	18.8
FGSK14	7	180-cfs	19.4	40	2.1	2.8	0.0058	4.5	0.55	0.67	0.038	19.4
FGSK14	7	200-cfs	19.9	43	2.1	2.9	0.0061	4.7	0.57	0.72	0.038	19.9
FGSK14	6	100-cfs	18.6	27	1.5	2.9	0.0053	3.7	0.54	0.43	0.035	18.6
FGSK14	6	120-cfs	19.2	30	1.6	3.1	0.0057	4.0	0.57	0.50	0.035	19.2
FGSK14	6	140-cfs	19.8	33	1.7	3.2	0.0059	4.3	0.58	0.55	0.035	19.8
FGSK14	6	150-cfs	20.0	34	1.7	3.3	0.0060	4.4	0.60	0.58	0.035	20.0
FGSK14	6	160-cfs	20.2	35	1.8	3.3	0.0062	4.5	0.60	0.61	0.035	20.2
FGSK14	6	180-cfs	20.7	38	1.8	3.5	0.0064	4.8	0.62	0.66	0.035	20.7
FGSK14	6	200-cfs	21.1	40	1.9	3.6	0.0066	5.0	0.63	0.71	0.035	21.1
FGSK14	5	100-cfs	21.7	24	1.1	1.4	0.0084	4.1	0.68	0.57	0.035	21.7
FGSK14	5	120-cfs	22.0	27	1.3	1.6	0.0083	4.4	0.69	0.62	0.035	22.0
FGSK14	5	140-cfs	22.4	32	1.4	1.8	0.0072	4.4	0.65	0.61	0.035	22.4
FGSK14	5	150-cfs	22.5	33	1.5	1.8	0.0072	4.5	0.66	0.63	0.035	22.5
FGSK14	5	160-cfs	22.6	35	1.5	1.9	0.0072	4.6	0.66	0.65	0.035	22.6
FGSK14	5	180-cfs	22.9	38	1.6	2.0	0.0071	4.8	0.66	0.69	0.035	22.9
FGSK14	5	200-cfs	23.1	40	1.8	2.2	0.0070	5.0	0.66	0.72	0.035	23.1
FGSK14	4	100-cfs	22.4	22	1.0	1.8	0.0140	4.6	0.82	0.82	0.037	22.4
FGSK14	4	120-cfs	23.2	26	1.1	1.9	0.0124	4.6	0.76	0.84	0.038	23.2
FGSK14	4	140-cfs	29.7	32	1.1	2.2	0.0164	4.3	0.73	1.07	0.045	29.7
FGSK14	4	150-cfs	30.1	35	1.2	2.3	0.0152	4.3	0.70	1.05	0.046	30.1
FGSK14	4	160-cfs	30.6	37	1.2	2.3	0.0142	4.3	0.68	1.04	0.046	30.6
FGSK14	4	180-cfs	31.4	42	1.4	2.5	0.0128	4.3	0.65	1.03	0.047	31.4
FGSK14	4	200-cfs	32.2	47	1.5	2.6	0.0118	4.3	0.62	1.02	0.047	32.2

HEC-RAS OUPUT SUMMARY TABLE: FGSK14

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK14	3	100-cfs	25.9	42	1.6	2.8	0.0018	2.4	0.32	0.17	0.035	25.9
FGSK14	3	120-cfs	26.2	47	1.8	3.0	0.0018	2.6	0.33	0.19	0.035	26.2
FGSK14	3	140-cfs	26.5	52	2.0	3.1	0.0019	2.7	0.34	0.21	0.035	26.5
FGSK14	3	150-cfs	26.6	54	2.0	3.2	0.0019	2.8	0.35	0.22	0.035	26.6
FGSK14	3	160-cfs	26.8	56	2.1	3.3	0.0019	2.9	0.35	0.23	0.035	26.8
FGSK14	3	180-cfs	27.2	60	2.2	3.4	0.0020	3.0	0.36	0.25	0.035	27.2
FGSK14	3	200-cfs	27.6	64	2.3	3.6	0.0020	3.2	0.37	0.27	0.035	27.6
FGSK14	2	100-cfs	24.1	50	2.1	3.5	0.0009	2.0	0.24	0.11	0.035	24.1
FGSK14	2	120-cfs	25.1	55	2.2	3.7	0.0011	2.2	0.26	0.13	0.035	25.1
FGSK14	2	140-cfs	26.0	59	2.3	3.9	0.0012	2.4	0.28	0.15	0.035	26.0
FGSK14	2	150-cfs	26.5	61	2.3	4.0	0.0012	2.5	0.29	0.16	0.035	26.5
FGSK14	2	160-cfs	26.9	63	2.3	4.0	0.0013	2.6	0.29	0.17	0.035	26.9
FGSK14	2	180-cfs	27.7	67	2.4	4.2	0.0014	2.7	0.31	0.19	0.035	27.7
FGSK14	2	200-cfs	27.7	71	2.6	4.3	0.0014	2.8	0.31	0.21	0.035	27.7
FGSK14	1	100-cfs	23.9	31	1.3	1.7	0.0045	3.3	0.50	0.34	0.035	23.9
FGSK14	1	120-cfs	24.2	35	1.4	1.8	0.0045	3.5	0.51	0.38	0.035	24.2
FGSK14	1	140-cfs	24.5	38	1.6	2.0	0.0045	3.7	0.52	0.41	0.035	24.5
FGSK14	1	150-cfs	24.6	40	1.6	2.0	0.0045	3.8	0.52	0.43	0.035	24.6
FGSK14	1	160-cfs	24.7	42	1.7	2.1	0.0045	3.9	0.52	0.44	0.035	24.7
FGSK14	1	180-cfs	25.0	45	1.8	2.2	0.0045	4.0	0.53	0.47	0.035	25.0
FGSK14	1	200-cfs	25.2	48	1.9	2.4	0.0045	4.2	0.53	0.50	0.035	25.2

HEC-RAS LONGITUDINAL PROFILE: FGSK14

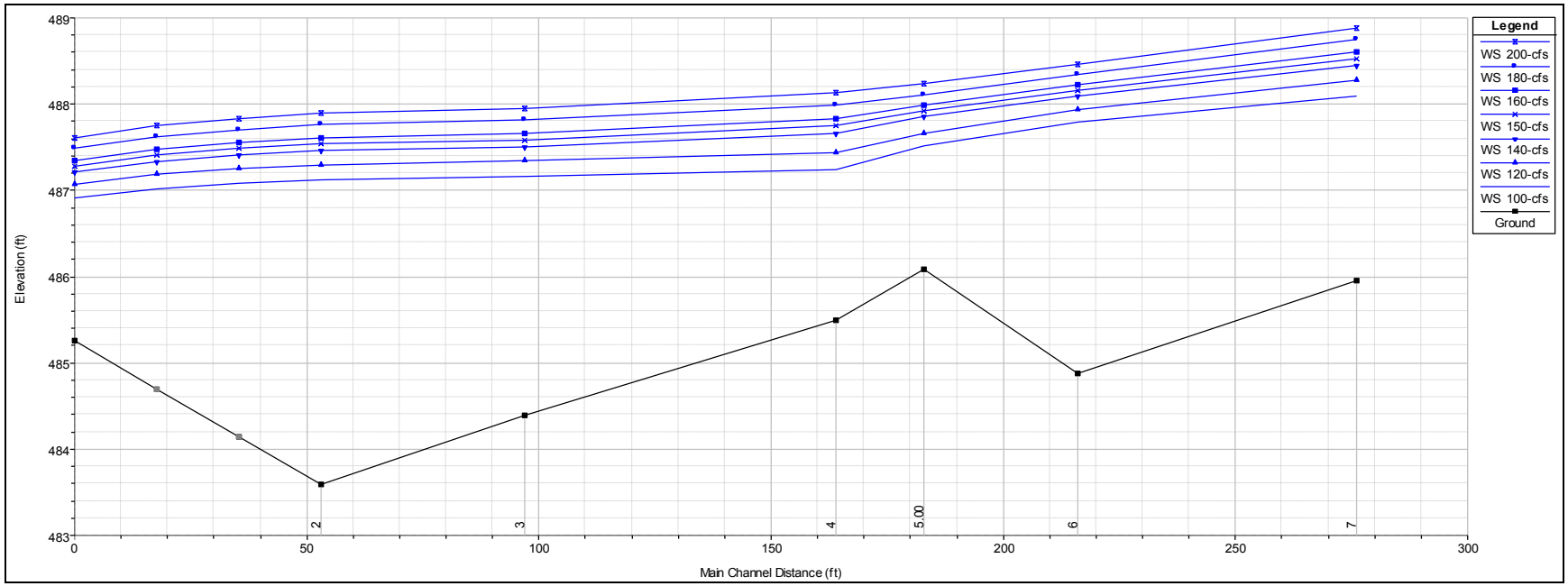


Figure 102 HEC-RAS longitudinal profile output for Reach FGSK14. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

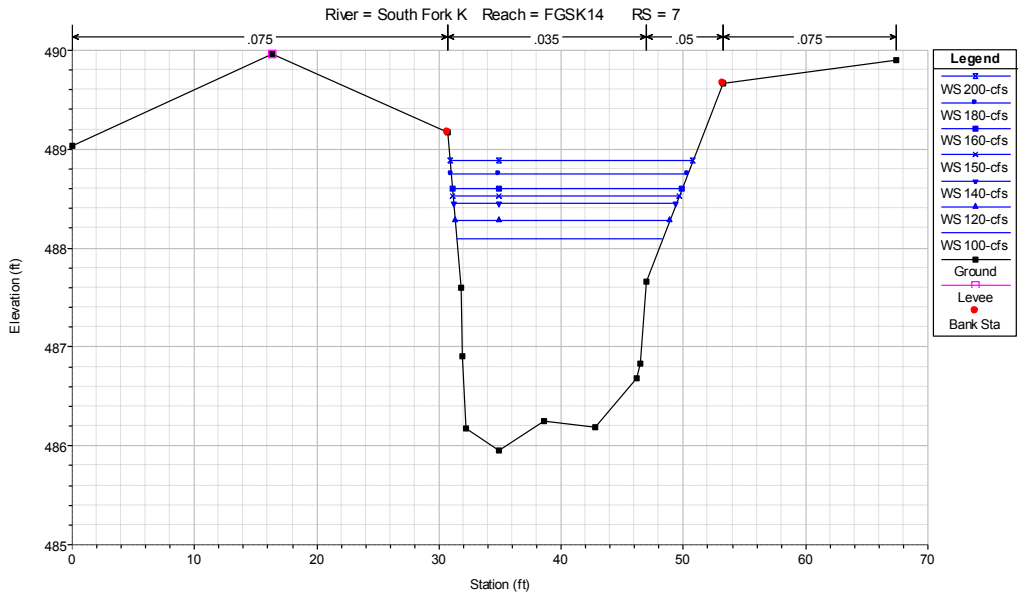


Figure 103 River Station (RS) 7 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

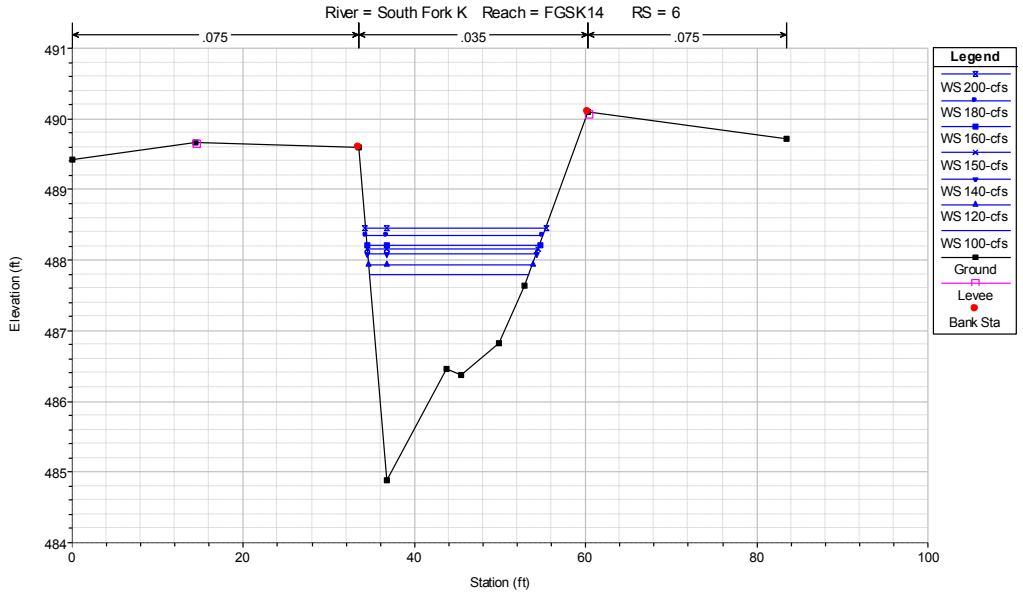


Figure 104 River Station (RS) 6 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

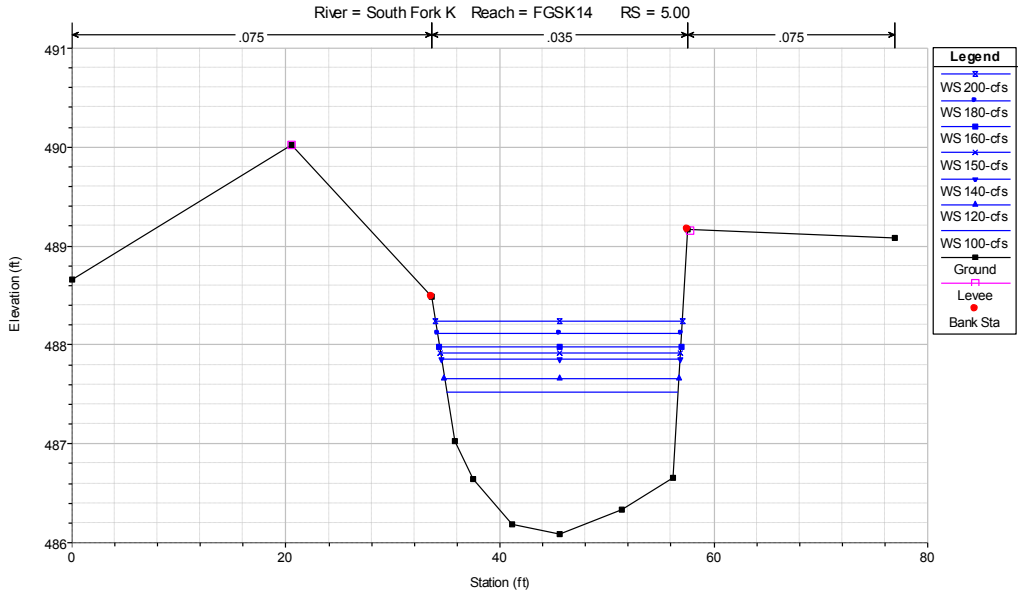


Figure 105 River Station (RS) 5 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

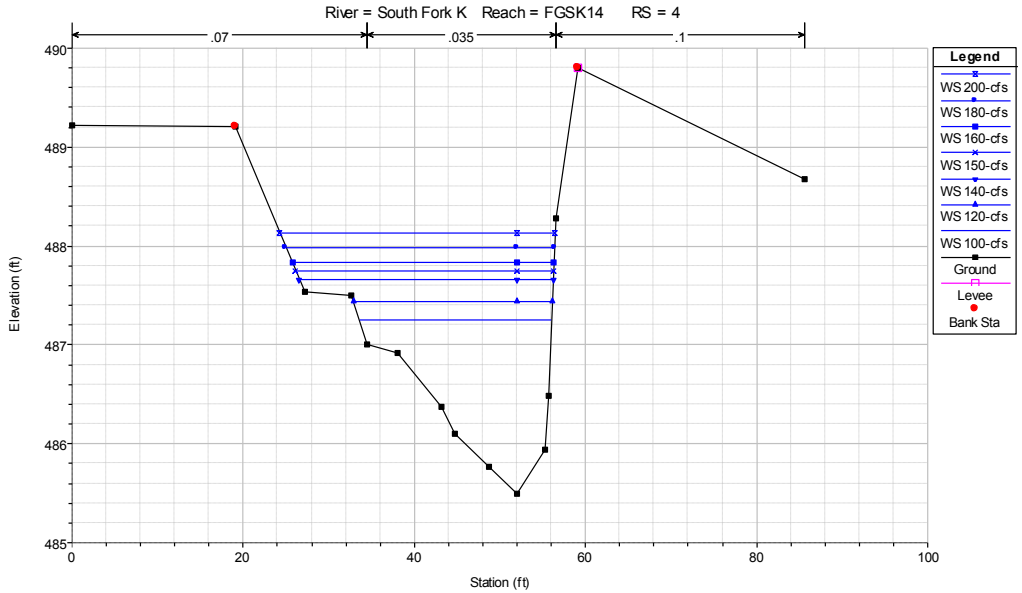


Figure 106 River Station (RS) 4 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

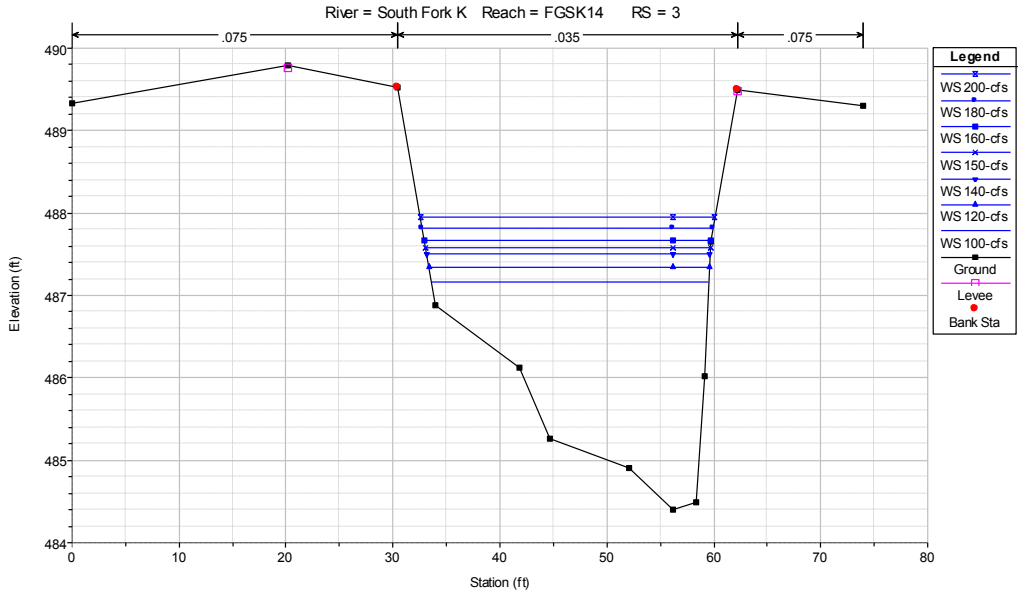


Figure 107 River Station (RS) 3 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

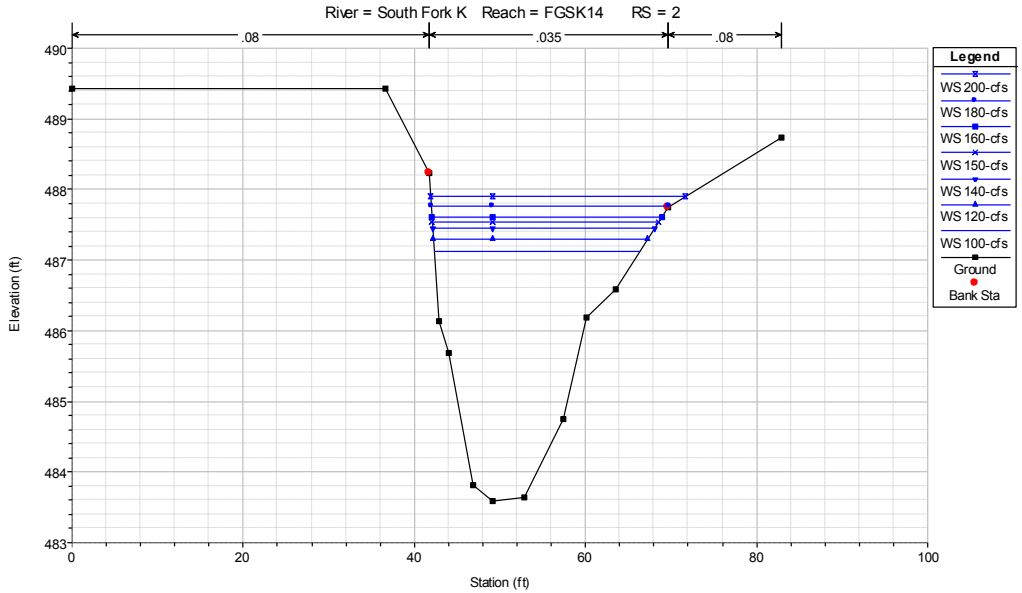


Figure 108 River Station (RS) 2 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGSK14

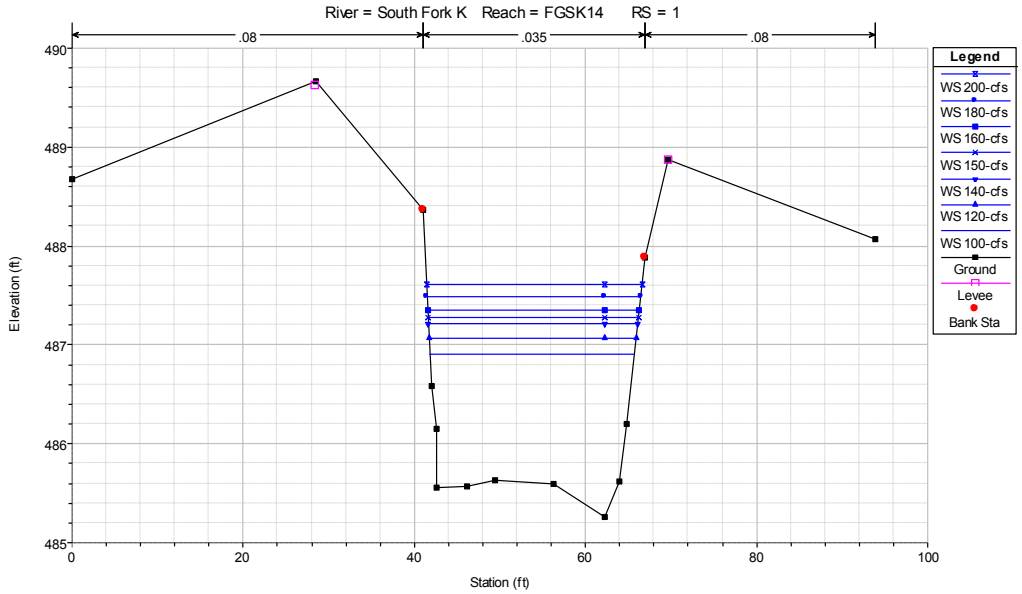


Figure 109 River Station (RS) 1 on River Reach FGSK14. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK14

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK14	7	100-cfs	0.41	74	60	48
FGSK14	7	120-cfs	0.48	86	70	57
FGSK14	7	140-cfs	0.54	97	79	64
FGSK14	7	150-cfs	0.58	104	85	68
FGSK14	7	160-cfs	0.61	110	89	72
FGSK14	7	180-cfs	0.67	121	98	79
FGSK14	7	200-cfs	0.72	130	105	85
FGSK14	6	100-cfs	0.43	77	63	51
FGSK14	6	120-cfs	0.50	90	73	59
FGSK14	6	140-cfs	0.55	99	80	65
FGSK14	6	150-cfs	0.58	104	85	68
FGSK14	6	160-cfs	0.61	110	89	72
FGSK14	6	180-cfs	0.66	119	96	78
FGSK14	6	200-cfs	0.71	128	103	84
FGSK14	5	100-cfs	0.57	103	83	67
FGSK14	5	120-cfs	0.62	112	90	73
FGSK14	5	140-cfs	0.61	110	89	72
FGSK14	5	150-cfs	0.63	113	92	74
FGSK14	5	160-cfs	0.65	117	95	77
FGSK14	5	180-cfs	0.69	124	101	81
FGSK14	5	200-cfs	0.72	130	105	85
FGSK14	4	100-cfs	0.82	148	120	97
FGSK14	4	120-cfs	0.84	151	122	99
FGSK14	4	140-cfs	1.07	193	156	126
FGSK14	4	150-cfs	1.05	189	153	124
FGSK14	4	160-cfs	1.04	187	152	122
FGSK14	4	180-cfs	1.03	185	150	121
FGSK14	4	200-cfs	1.02	184	149	120

INCIPIENT MOTION ANALYSIS: FGSK14

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK14	3	100-cfs	0.17	31	25	20
FGSK14	3	120-cfs	0.19	34	28	22
FGSK14	3	140-cfs	0.21	38	31	25
FGSK14	3	150-cfs	0.22	40	32	26
FGSK14	3	160-cfs	0.23	41	34	27
FGSK14	3	180-cfs	0.25	45	36	29
FGSK14	3	200-cfs	0.27	49	39	32
FGSK14	2	100-cfs	0.11	20	16	13
FGSK14	2	120-cfs	0.13	23	19	15
FGSK14	2	140-cfs	0.15	27	22	18
FGSK14	2	150-cfs	0.16	29	23	19
FGSK14	2	160-cfs	0.17	31	25	20
FGSK14	2	180-cfs	0.19	34	28	22
FGSK14	2	200-cfs	0.21	38	31	25
FGSK14	1	100-cfs	0.34	61	50	40
FGSK14	1	120-cfs	0.38	68	55	45
FGSK14	1	140-cfs	0.41	74	60	48
FGSK14	1	150-cfs	0.43	77	63	51
FGSK14	1	160-cfs	0.44	79	64	52
FGSK14	1	180-cfs	0.47	85	68	55
FGSK14	1	200-cfs	0.50	90	73	59

PHOTOGRAPH DOCUMENTATION: FGSK14

Left bank along reference reach FGSK14

Right bank along reference reach FGSK14

Looking downstream from reference reach FGSK14

Looking upstream from reference reach FGSK14

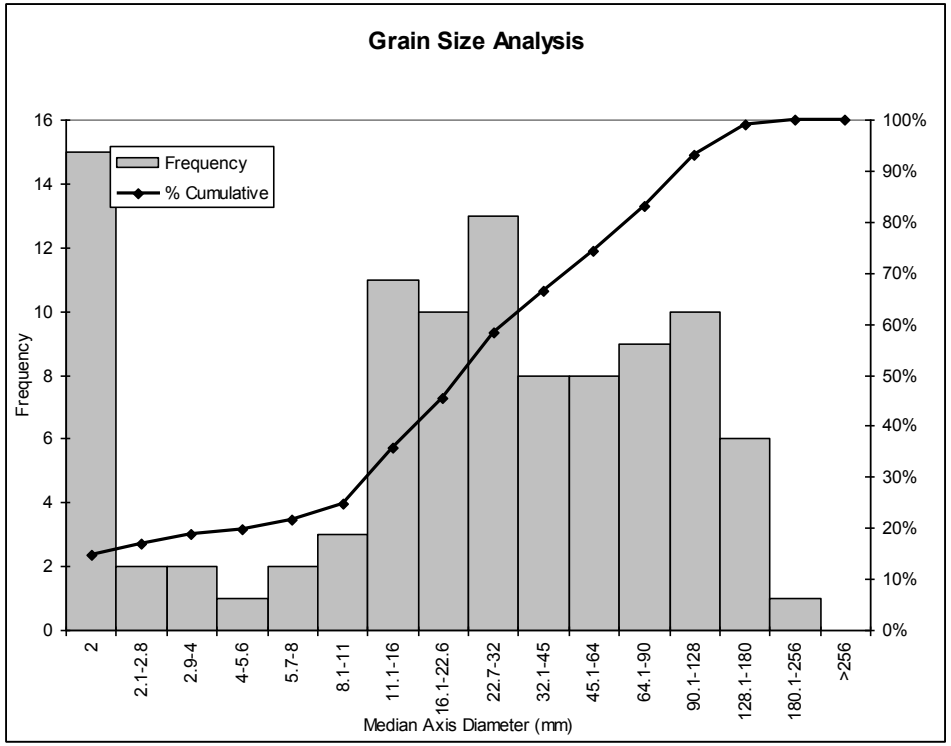
PHOTOGRAPH DOCUMENTATION: FGSK14

Bank composition detail (left bank) FGSK14

Bank composition detail (right bank) FGSK14

PEBBLE COUNT DISTRIBUTION: FGSK14

Original Data

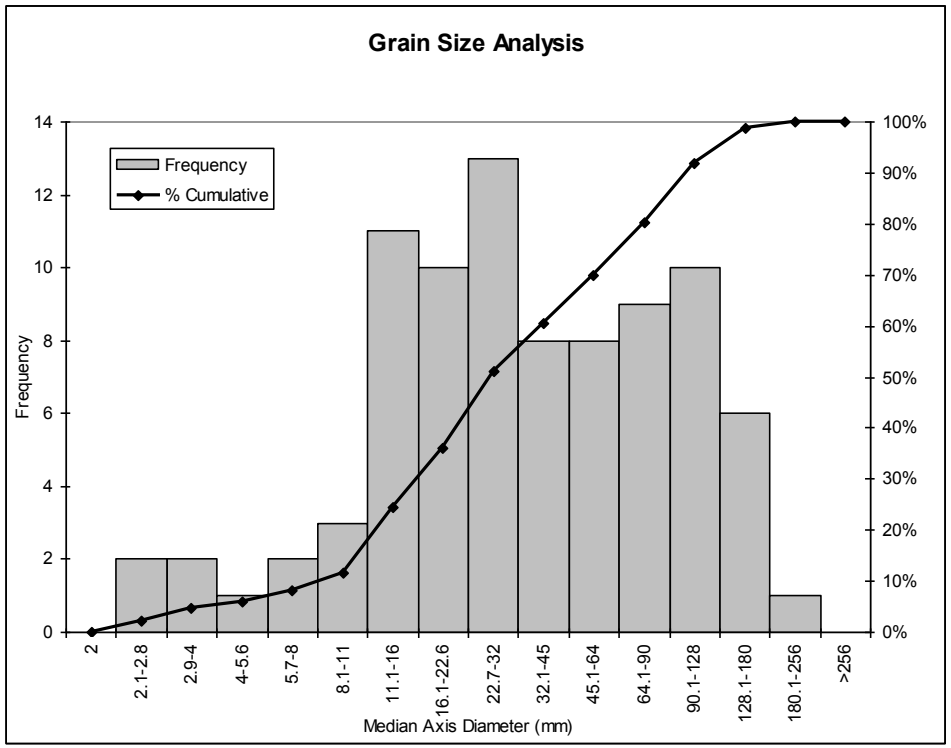


Size Class mm	*Frequency*	*Cumulative %*
2	15	14.9%
2.1-2.8	2	16.8%
2.9-4	2	18.8%
4-5.6	1	19.8%
5.7-8	2	21.8%
8.1-11	3	24.8%
11.1-16	11	35.6%
16.1-22.6	10	45.5%
22.7-32	13	58.4%
32.1-45	8	66.3%
45.1-64	8	74.3%
64.1-90	9	83.2%
90.1-128	10	93.1%
128.1-180	6	99.0%
180.1-256	1	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

PEBBLE COUNT DISTRIBUTION: FGSK14

Modified Data



Size Class mm	*Frequency*	*Cumulative %*
2	0*	.0%
2.1-2.8	2	2.3%
2.9-4	2	4.7%
4-5.6	1	5.8%
5.7-8	2	8.1%
8.1-11	3	11.6%
11.1-16	11	24.4%
16.1-22.6	10	36.0%
22.7-32	13	51.2%
32.1-45	8	60.5%
45.1-64	8	69.8%
64.1-90	9	80.2%
90.1-128	10	91.9%
128.1-180	6	98.8%
180.1-256	1	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5
*Potential falling limb signature removed from pebble count (count: 15)

1,401,428

1,401,828

1,402,228

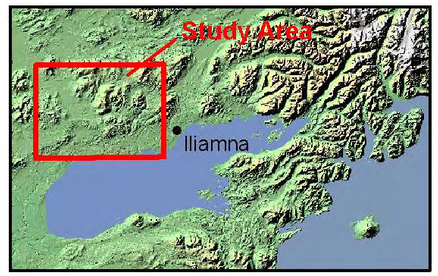
2,127,997

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK14
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,401,428

1,401,828

1,402,228

SITE DESCRIPTION: FGSK15

Site Characteristics.

Site Name	**FGSK15**		
Discharge (cfs)	**175 (125-225)**	Width (ft)	**23.3 (17.9-27.3)**
Slope	**0.0024**	Cross-sectional Area (ft^2)	**64 (44-88)**
D_{50}	**26**	D_{84}	**83**
Lat/Long Location	**N59.82555 W155.27640**	Drainage Area (mi^2)	**15**
% Willow	**50**		
% Grass	**50**		
% Tree	**0**		

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 260 feet of channel length. Cross-section 1 serves as the downstream control for the hydraulic model and is the crest of the small pool (Section 3 through 1). Sections 3 through 5 characterize the riffle which serves as the reference reach and the upstream Sections (5 through 7) represent a more well-defined pool. The current bedforms along the lower part of this reach are not-well formed, composed of loose gravels on top of a solid clay layer (possible evidence of past beaver activity), suggesting that a wave of sediment moves from River Station 5 through 1 having possibly been eroded from the adjacent banks. The pebble count was taken along Section 4.

For a Shields number of 0.017, the D_{84} moves between at 175 cfs along Section 4, but does not move from any of the other sections in the reference reach. The geometry of the left bank along Sections 5 through 2 matches flows of 175-225 cfs. The right bank of Section 6 matches 175 cfs

Without a well-defined riffle and high variability through the reach, channel width and cross-sectional area were averaged across surveyed cross-Sections 7 through 2 for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK15

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK15	7	125-cfs	125	25.7	50	2.0	2.6	0.0021	2.5	0.31	0.23	0.040
FGSK15	7	150-cfs	150	26.0	58	2.3	2.9	0.0018	2.6	0.30	0.23	0.040
FGSK15	7	175-cfs	175	26.3	68	2.6	3.3	0.0016	2.6	0.28	0.23	0.040
FGSK15	7	200-cfs	200	26.8	77	2.9	3.6	0.0014	2.6	0.27	0.22	0.040
FGSK15	7	225-cfs	225	27.3	86	3.2	3.9	0.0013	2.6	0.26	0.22	0.040
FGSK15	6	125-cfs	125	21.0	51	2.4	3.5	0.0016	2.5	0.28	0.22	0.041
FGSK15	6	150-cfs	150	22.2	57	2.6	3.8	0.0017	2.6	0.29	0.25	0.042
FGSK15	6	175-cfs	175	23.5	66	2.8	4.2	0.0017	2.7	0.28	0.27	0.043
FGSK15	6	200-cfs	200	23.9	74	3.1	4.6	0.0016	2.7	0.27	0.27	0.043
FGSK15	6	225-cfs	225	24.1	82	3.4	4.9	0.0014	2.7	0.26	0.27	0.043
FGSK15	5	125-cfs	125	24.6	52	2.1	2.5	0.0019	2.4	0.29	0.23	0.042
FGSK15	5	150-cfs	150	25.2	60	2.4	2.8	0.0020	2.5	0.28	0.27	0.045
FGSK15	5	175-cfs	175	26.0	70	2.7	3.2	0.0020	2.5	0.27	0.30	0.048
FGSK15	5	200-cfs	200	26.8	79	3.0	3.6	0.0020	2.5	0.26	0.32	0.050
FGSK15	5	225-cfs	225	27.2	88	3.3	3.9	0.0018	2.5	0.25	0.33	0.051
FGSK15	4	125-cfs	125	22.7	45	2.0	2.6	0.0034	2.8	0.35	0.39	0.047
FGSK15	4	150-cfs	150	23.3	52	2.3	3.0	0.0034	2.9	0.34	0.44	0.049
FGSK15	4	175-cfs	175	24.0	61	2.6	3.3	0.0032	2.9	0.31	0.46	0.052
FGSK15	4	200-cfs	200	24.4	70	2.9	3.7	0.0029	2.9	0.30	0.47	0.053
FGSK15	4	225-cfs	225	24.7	79	3.2	4.0	0.0027	2.9	0.28	0.49	0.055
FGSK15	3	125-cfs	125	21.1	44	2.1	2.7	0.0026	2.8	0.34	0.31	0.041
FGSK15	3	150-cfs	150	21.5	51	2.4	3.1	0.0025	2.9	0.33	0.33	0.042
FGSK15	3	175-cfs	175	22.2	60	2.7	3.4	0.0023	2.9	0.31	0.33	0.043
FGSK15	3	200-cfs	200	23.0	68	3.0	3.8	0.0023	2.9	0.30	0.37	0.046
FGSK15	3	225-cfs	225	23.7	76	3.2	4.2	0.0023	3.0	0.29	0.40	0.048
FGSK15	2	125-cfs	125	17.9	45	2.5	3.1	0.0034	2.8	0.31	0.45	0.051
FGSK15	2	150-cfs	150	18.0	50	2.8	3.4	0.0036	3.0	0.31	0.52	0.052
FGSK15	2	175-cfs	175	18.7	57	3.1	3.8	0.0037	3.1	0.31	0.57	0.054

HEC-RAS OUTPUT SUMMARY TABLE: FGSK15

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK15	2	200-cfs	200	19.0	64	3.4	4.2	0.0036	3.1	0.30	0.61	0.056
FGSK15	2	225-cfs	225	19.0	71	3.7	4.5	0.0035	3.2	0.29	0.65	0.057
FGSK15	1	125-cfs	125	24.8	53	2.1	2.5	0.0017	2.4	0.28	0.20	0.040
FGSK15	1	150-cfs	150	25.3	61	2.4	2.8	0.0017	2.5	0.28	0.22	0.041
FGSK15	1	175-cfs	175	26.5	71	2.7	3.2	0.0017	2.5	0.26	0.25	0.044
FGSK15	1	200-cfs	200	27.7	81	2.9	3.6	0.0017	2.5	0.25	0.27	0.047
FGSK15	1	225-cfs	225	28.9	91	3.2	3.9	0.0017	2.5	0.25	0.29	0.049

HEC-RAS LONGITUDINAL PROFILE: FGSK15

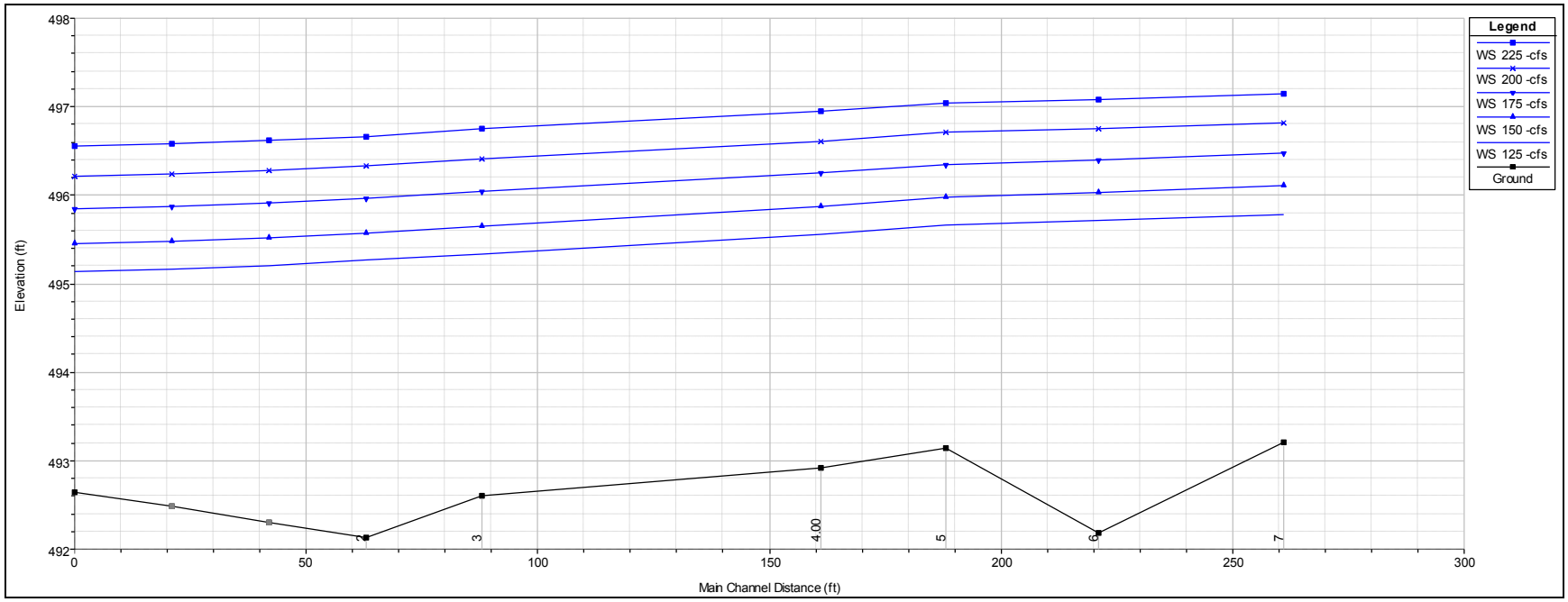


Figure 110 HEC-RAS longitudinal profile output for Reach FGSK15. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

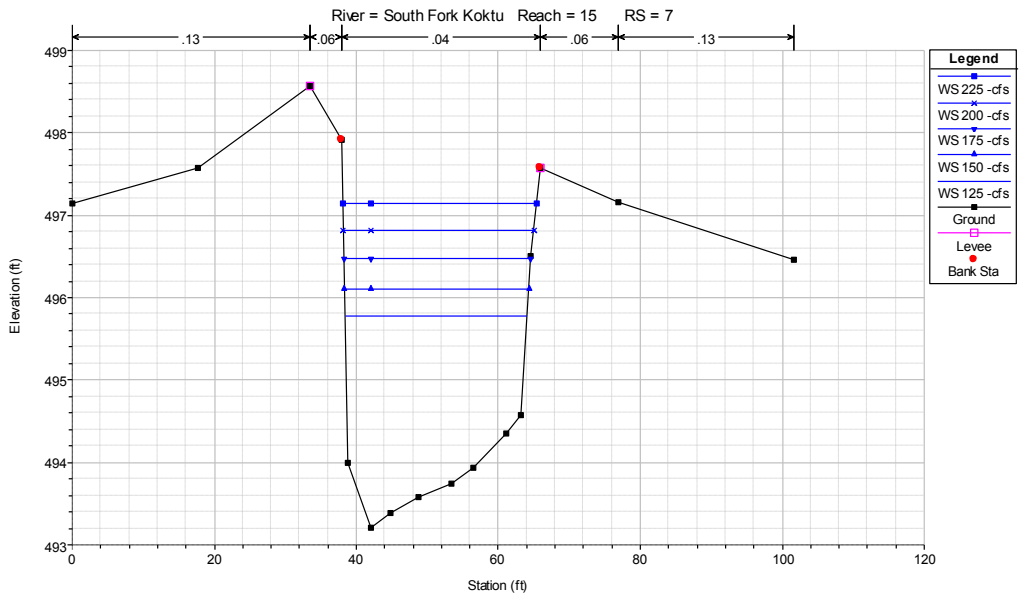


Figure 111 River Station (RS) 7 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

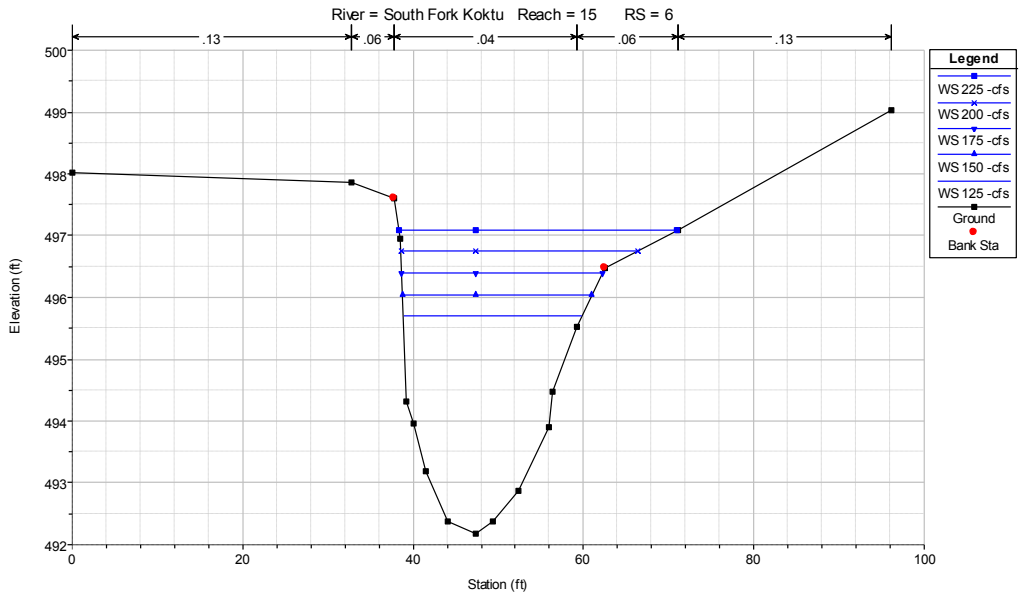


Figure 112 River Station (RS) 6 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

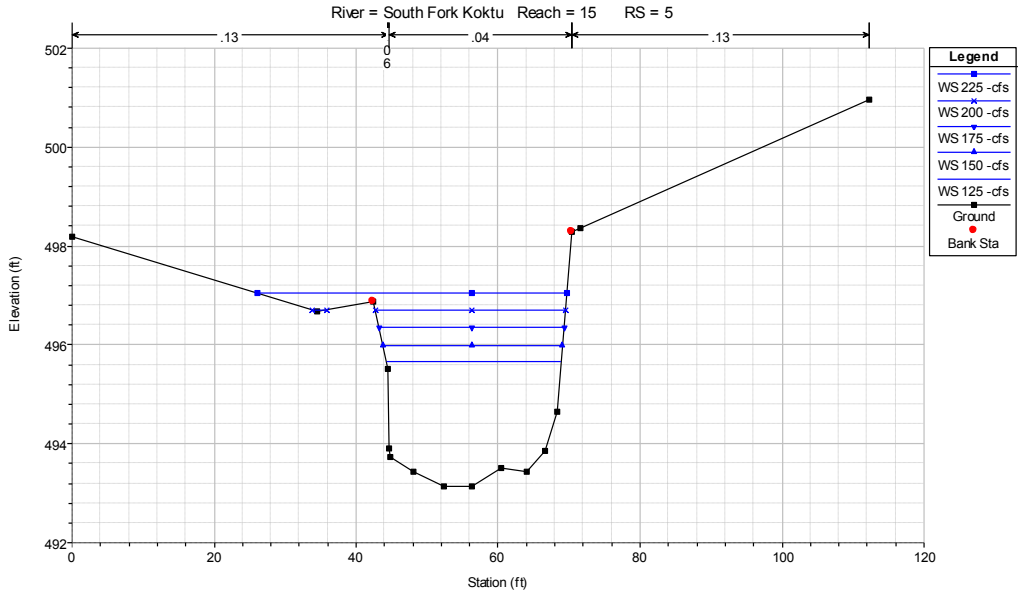


Figure 113 River Station (RS) 5 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

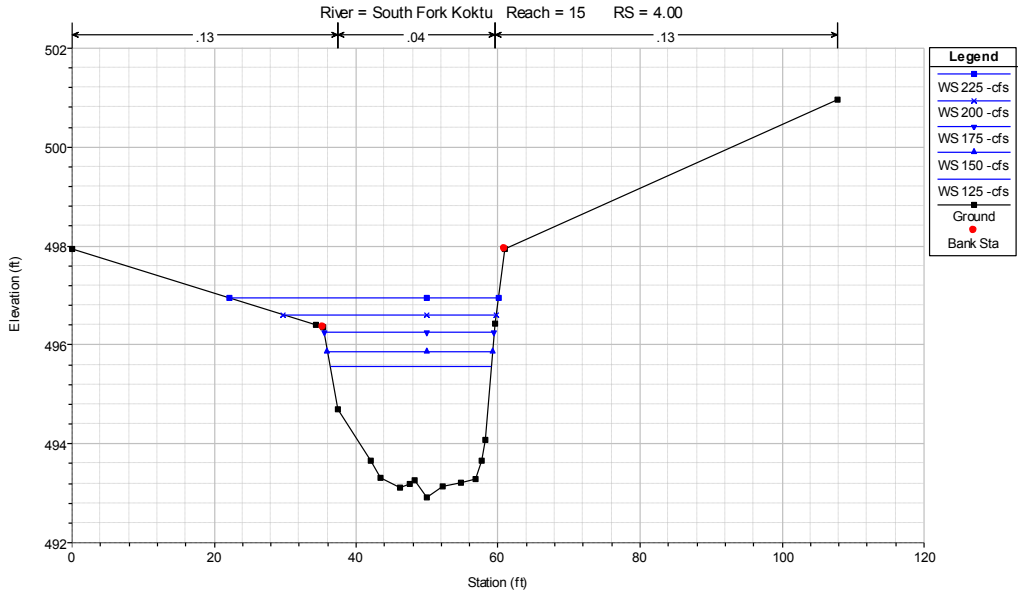


Figure 114 River Station (RS) 4 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

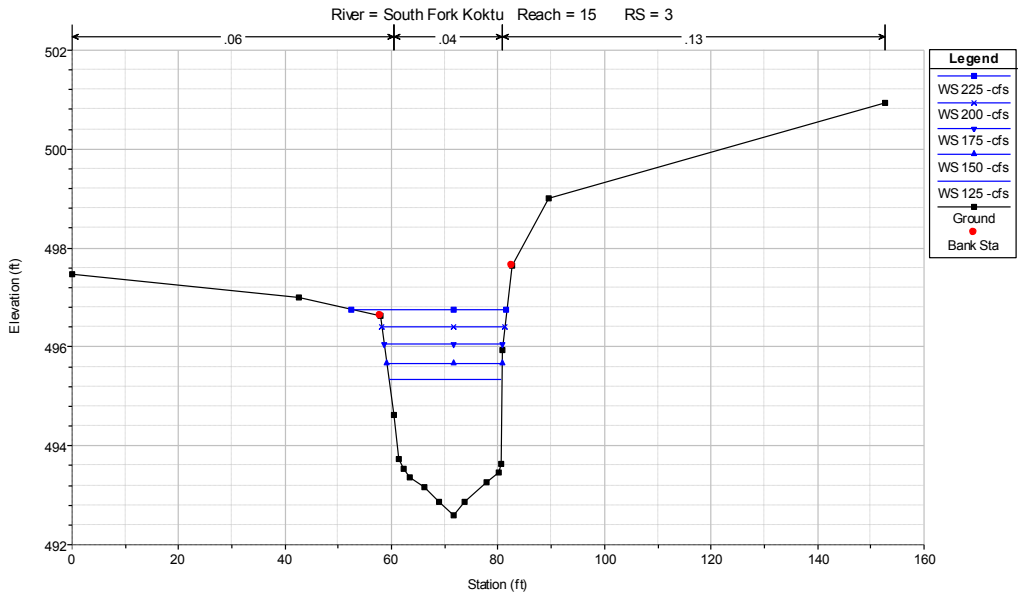


Figure 115 River Station (RS) 3 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

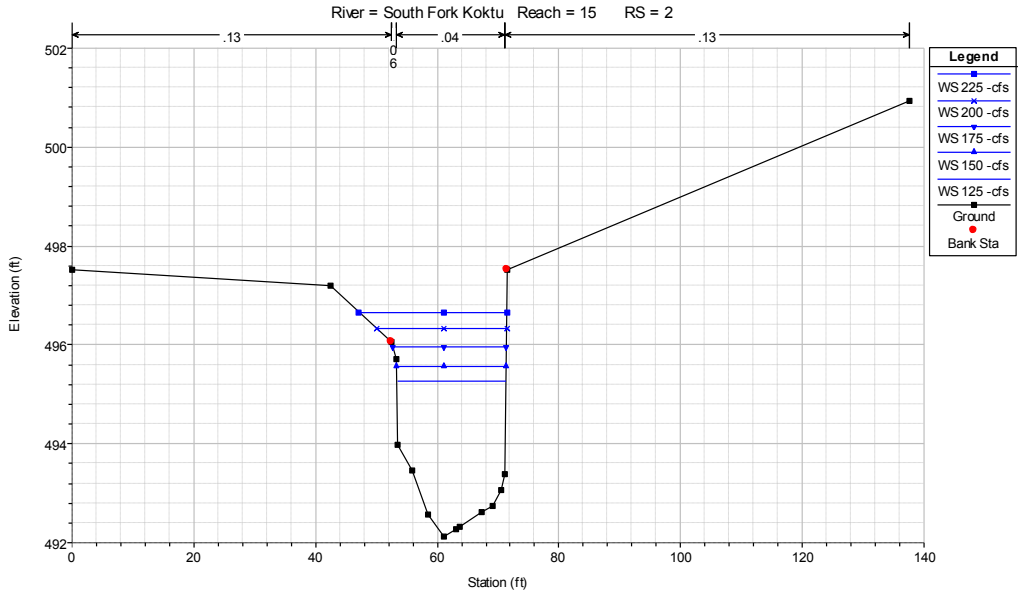


Figure 116 River Station (RS) 2 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK15

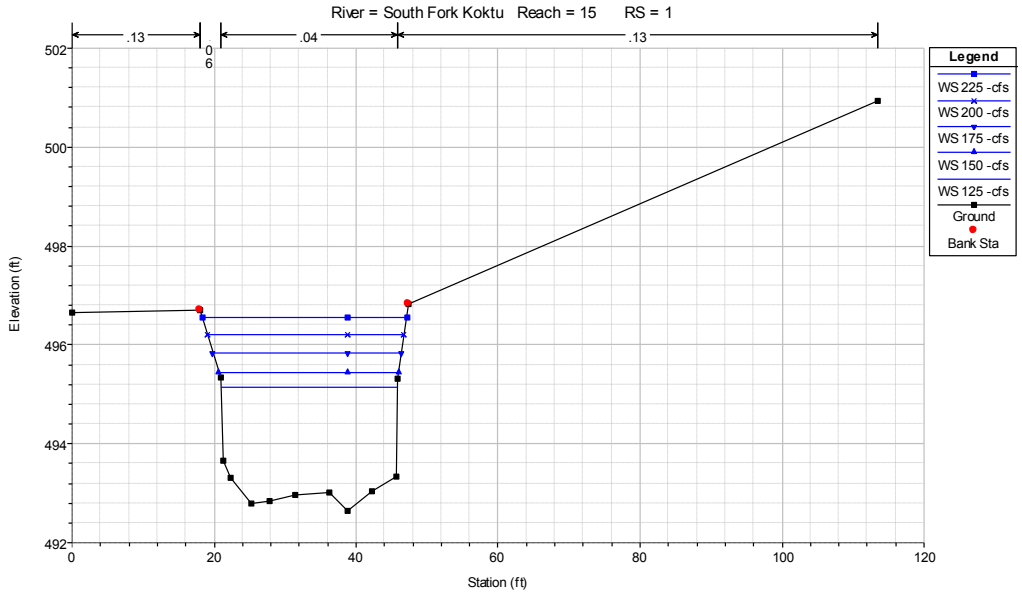


Figure 117 River Station (RS) 1 on River Reach FGSK15. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK15

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
15	7	125-cfs	0.23	41	34	27
15	7	150-cfs	0.23	41	34	27
15	7	175-cfs	0.23	41	34	27
15	7	200-cfs	0.22	40	32	26
15	7	225-cfs	0.22	40	32	26
15	6	125-cfs	0.22	40	32	26
15	6	150-cfs	0.25	45	36	29
15	6	175-cfs	0.27	49	39	32
15	6	200-cfs	0.27	49	39	32
15	6	225-cfs	0.27	49	39	32
15	5	125-cfs	0.23	41	34	27
15	5	150-cfs	0.27	49	39	32
15	5	175-cfs	0.30	54	44	35
15	5	200-cfs	0.32	58	47	38
15	5	225-cfs	0.33	59	48	39
15	4	125-cfs	0.39	70	57	46
15	4	150-cfs	0.44	79	64	52
15	4	175-cfs	0.46	83	67	54
15	4	200-cfs	0.47	85	68	55
15	4	225-cfs	0.49	88	71	58
15	3	125-cfs	0.31	56	45	36
15	3	150-cfs	0.33	59	48	39
15	3	175-cfs	0.33	59	48	39
15	3	200-cfs	0.37	67	54	44
15	3	225-cfs	0.40	72	58	47
15	2	125-cfs	0.45	81	66	53
15	2	150-cfs	0.52	94	76	61

INCIPIENT MOTION ANALYSIS: FGSK15

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
15	2	175-cfs	0.57	103	83	67
15	2	200-cfs	0.61	110	89	72
15	2	225-cfs	0.65	117	95	77
15	1	125-cfs	0.20	36	29	24
15	1	150-cfs	0.22	40	32	26
15	1	175-cfs	0.25	45	36	29
15	1	200-cfs	0.27	49	39	32
15	1	225-cfs	0.29	52	42	34

PHOTOGRAPH DOCUMENTATION: FGSK15

Left bank along reference reach FGSK15

Right bank along reference reach FGSK15

Looking downstream from reference reach FGSK15

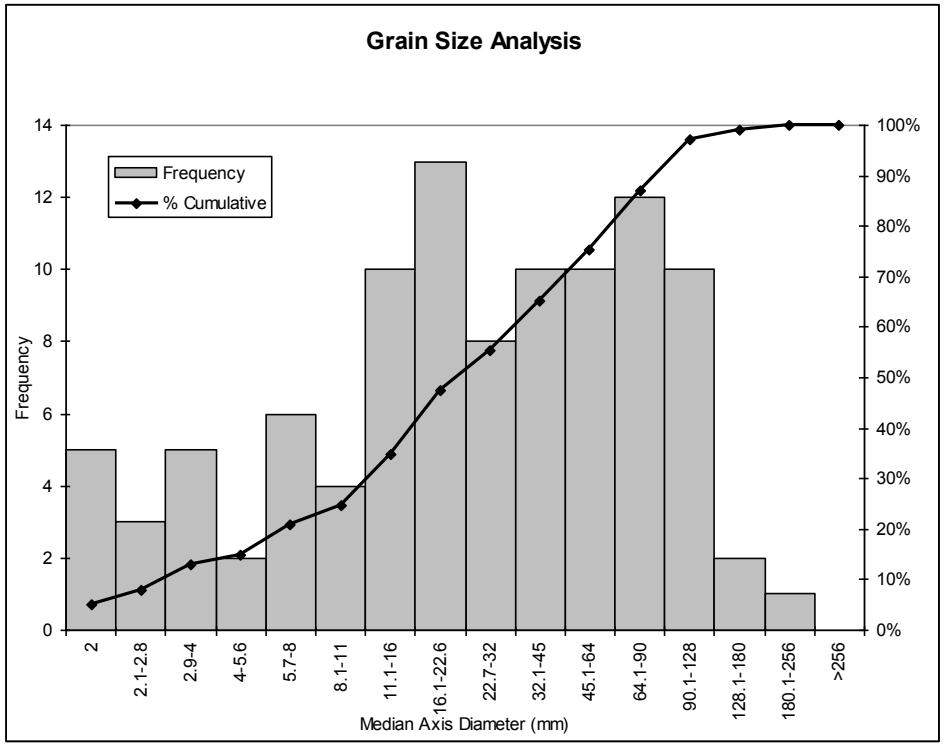
Looking upstream from reference reach FGSK15

PHOTOGRAPH DOCUMENTATION: FGSK15

Bank composition detail (left bank) FGSK15

Bank composition detail (right bank) FGSK15

PEBBLE COUNT DISTRIBUTION: FGSK15



Size Class mm	*Frequency*	*Cumulative %*
2	5	5.0%
2.1-2.8	3	7.9%
2.9-4	5	12.9%
4-5.6	2	14.9%
5.7-8	6	20.8%
8.1-11	4	24.8%
11.1-16	10	34.7%
16.1-22.6	13	47.5%
22.7-32	8	55.4%
32.1-45	10	65.3%
45.1-64	10	75.2%
64.1-90	12	87.1%
90.1-128	10	97.0%
128.1-180	2	99.0%
180.1-256	1	100.0%
>256	0	100.0%

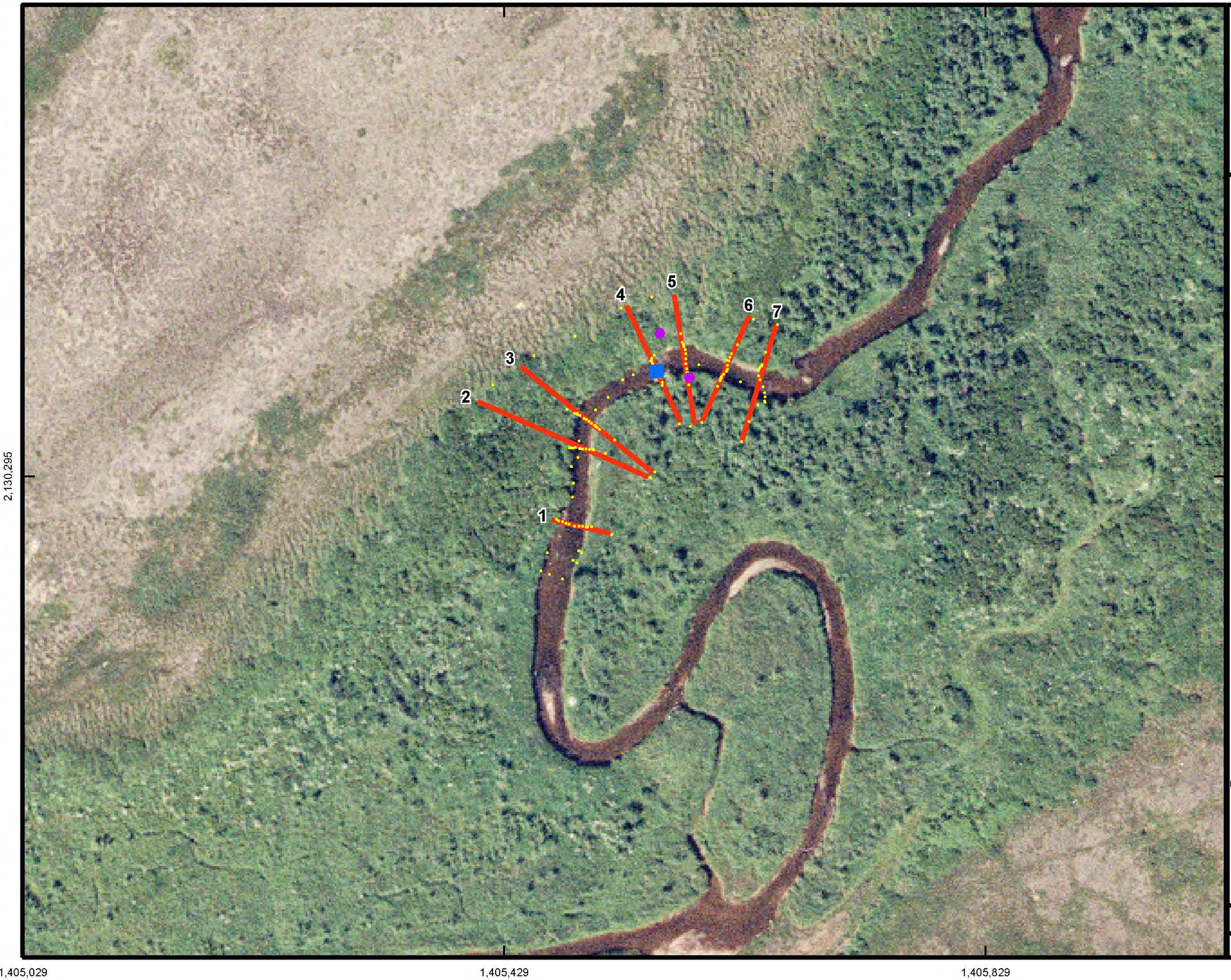
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4

1,405,029

1,405,429

1,405,829

2,130,295

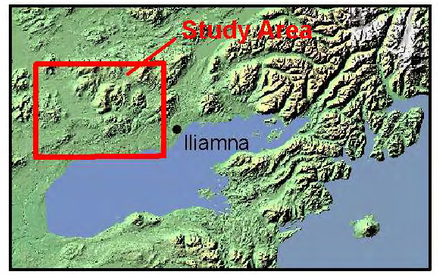


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK15
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,405,029

1,405,429

1,405,829

SITE DESCRIPTION: FGSK16

Site Characteristics.

	Site Name	**FGSK16**	
Discharge (cfs)	**100 (80-120)**	Width (ft)	**23.4 (21.0-25.8)**
Slope	**0.0019**	Cross-sectional Area (ft^2)	**41 (33-49)**
D_{50}	**26**	D_{84}	**60**
Lat/Long Location	**N59.75357 W154.90838**	Drainage Area (mi^2)	**13**
	% Willow	**50**	
	% Grass	**50**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 240 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 7 through 5 characterize a riffle which serves as the reference reach. Sections 3 through 1 characterize the downstream pool. The pebble count was taken sampled across River Station (RS) 6. The broad distribution of the pebble count may suggest lag through this site. A discernable peak in the < 32 mm size class may suggest that the mobile D_{84} is closer to the 32 to 45 mm range.

The incipient motion analysis supports this observation. For a Shields number of 0.017, the D_{84} from the pebble count does not move through the reference reach (Sections 7 through 5) but does move by 105 cfs on Sections 4 and 2. However, for a Shields number of 0.017 at flow of 100 cfs, an average particle size of 35 mm moves through the reference reach. Flows between 90 and 105 cfs match inflection points through the reference reach. The top of the gravel bar along the left bank of Section 2 is matched by a flow of 105 cfs and overtopped thereafter.

The reference riffle sections (Sections 5 through 7) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK16

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK16	7	80-cfs	80	25.8	39	1.5	1.8	0.0017	2.0	0.29	0.15	0.038
FGSK16	7	90-cfs	90	25.8	42	1.6	1.9	0.0017	2.2	0.30	0.16	0.038
FGSK16	7	95-cfs	95	25.8	43	1.7	2.0	0.0018	2.2	0.30	0.17	0.038
FGSK16	7	100-cfs	100	25.8	44	1.7	2.0	0.0018	2.3	0.30	0.18	0.038
FGSK16	7	105-cfs	105	25.8	45	1.8	2.1	0.0018	2.3	0.31	0.18	0.038
FGSK16	7	110-cfs	110	25.8	47	1.8	2.1	0.0018	2.4	0.31	0.19	0.038
FGSK16	7	120-cfs	120	25.8	49	1.9	2.2	0.0019	2.5	0.32	0.20	0.038
FGSK16	6	80-cfs	80	21.0	33	1.6	1.9	0.0021	2.4	0.33	0.20	0.038
FGSK16	6	90-cfs	90	21.0	35	1.7	2.0	0.0023	2.5	0.34	0.22	0.038
FGSK16	6	95-cfs	95	21.1	36	1.7	2.0	0.0023	2.6	0.34	0.23	0.038
FGSK16	6	100-cfs	100	21.1	37	1.8	2.1	0.0023	2.6	0.35	0.24	0.038
FGSK16	6	105-cfs	105	21.1	38	1.8	2.1	0.0024	2.7	0.35	0.25	0.038
FGSK16	6	110-cfs	110	21.1	39	1.8	2.2	0.0024	2.8	0.36	0.26	0.038
FGSK16	6	120-cfs	120	21.1	40	1.9	2.2	0.0025	2.9	0.37	0.28	0.038
FGSK16	5	80-cfs	80	23.0	39	1.7	2.3	0.0014	2.0	0.27	0.14	0.038
FGSK16	5	90-cfs	90	23.1	41	1.8	2.4	0.0015	2.2	0.29	0.16	0.038
FGSK16	5	95-cfs	95	23.1	42	1.8	2.4	0.0016	2.2	0.29	0.17	0.038
FGSK16	5	100-cfs	100	23.2	42	1.8	2.4	0.0016	2.3	0.29	0.17	0.038
FGSK16	5	105-cfs	105	23.2	43	1.9	2.5	0.0016	2.3	0.30	0.18	0.038
FGSK16	5	110-cfs	110	23.3	44	1.9	2.5	0.0017	2.4	0.30	0.19	0.038
FGSK16	5	120-cfs	120	23.4	46	2.0	2.6	0.0018	2.5	0.31	0.21	0.038
FGSK16	4	80-cfs	80	28.2	29	1.1	2.2	0.0048	2.7	0.47	0.30	0.038
FGSK16	4	90-cfs	90	28.3	32	1.1	2.3	0.0048	2.8	0.47	0.32	0.038
FGSK16	4	95-cfs	95	28.3	33	1.2	2.3	0.0048	2.9	0.47	0.33	0.038
FGSK16	4	100-cfs	100	28.3	34	1.2	2.3	0.0047	2.9	0.47	0.34	0.038
FGSK16	4	105-cfs	105	28.3	35	1.2	2.4	0.0047	3.0	0.47	0.34	0.038
FGSK16	4	110-cfs	110	28.3	36	1.3	2.4	0.0047	3.0	0.47	0.35	0.038
FGSK16	4	120-cfs	120	28.3	38	1.3	2.5	0.0047	3.1	0.48	0.37	0.038

HEC-RAS OUTPUT SUMMARY TABLE: FGSK16

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK16	3	80-cfs	80	23.2	19	0.8	1.7	0.0169	4.3	0.84	0.81	0.038
FGSK16	3	90-cfs	90	24.2	21	0.9	1.8	0.0149	4.2	0.80	0.78	0.038
FGSK16	3	95-cfs	95	25.4	23	0.9	1.9	0.0145	4.2	0.79	0.77	0.038
FGSK16	3	100-cfs	100	26.8	24	0.9	1.9	0.0143	4.2	0.78	0.76	0.038
FGSK16	3	105-cfs	105	28.4	25	0.9	2.0	0.0139	4.1	0.77	0.74	0.038
FGSK16	3	110-cfs	110	30.0	27	0.9	2.0	0.0131	4.1	0.75	0.71	0.038
FGSK16	3	120-cfs	120	32.2	30	0.9	2.1	0.0124	4.0	0.74	0.69	0.038
FGSK16	2	80-cfs	80	16.7	31	1.9	3.7	0.0025	2.6	0.33	0.24	0.038
FGSK16	2	90-cfs	90	18.1	32	1.8	3.8	0.0030	2.8	0.37	0.28	0.038
FGSK16	2	95-cfs	95	18.7	33	1.8	3.8	0.0032	2.9	0.38	0.30	0.038
FGSK16	2	100-cfs	100	19.3	34	1.7	3.8	0.0035	3.0	0.40	0.32	0.038
FGSK16	2	105-cfs	105	20.6	34	1.7	3.9	0.0039	3.1	0.42	0.34	0.038
FGSK16	2	110-cfs	110	22.5	35	1.6	3.9	0.0044	3.2	0.45	0.37	0.038
FGSK16	2	120-cfs	120	23.9	36	1.5	4.0	0.0049	3.3	0.47	0.40	0.038
FGSK16	1	80-cfs	80	31.4	32	1.0	1.7	0.0039	2.4	0.42	0.24	0.038
FGSK16	1	90-cfs	90	31.4	34	1.1	1.8	0.0039	2.5	0.43	0.26	0.038
FGSK16	1	95-cfs	95	31.4	35	1.1	1.8	0.0039	2.6	0.43	0.26	0.038
FGSK16	1	100-cfs	100	31.4	36	1.2	1.9	0.0039	2.6	0.43	0.27	0.038
FGSK16	1	105-cfs	105	31.4	37	1.2	1.9	0.0039	2.7	0.43	0.28	0.038
FGSK16	1	110-cfs	110	31.4	38	1.2	1.9	0.0039	2.7	0.43	0.29	0.038
FGSK16	1	120-cfs	120	31.4	40	1.3	2.0	0.0039	2.8	0.44	0.30	0.038

HEC-RAS LONGITUDINAL PROFILE: FGSK16

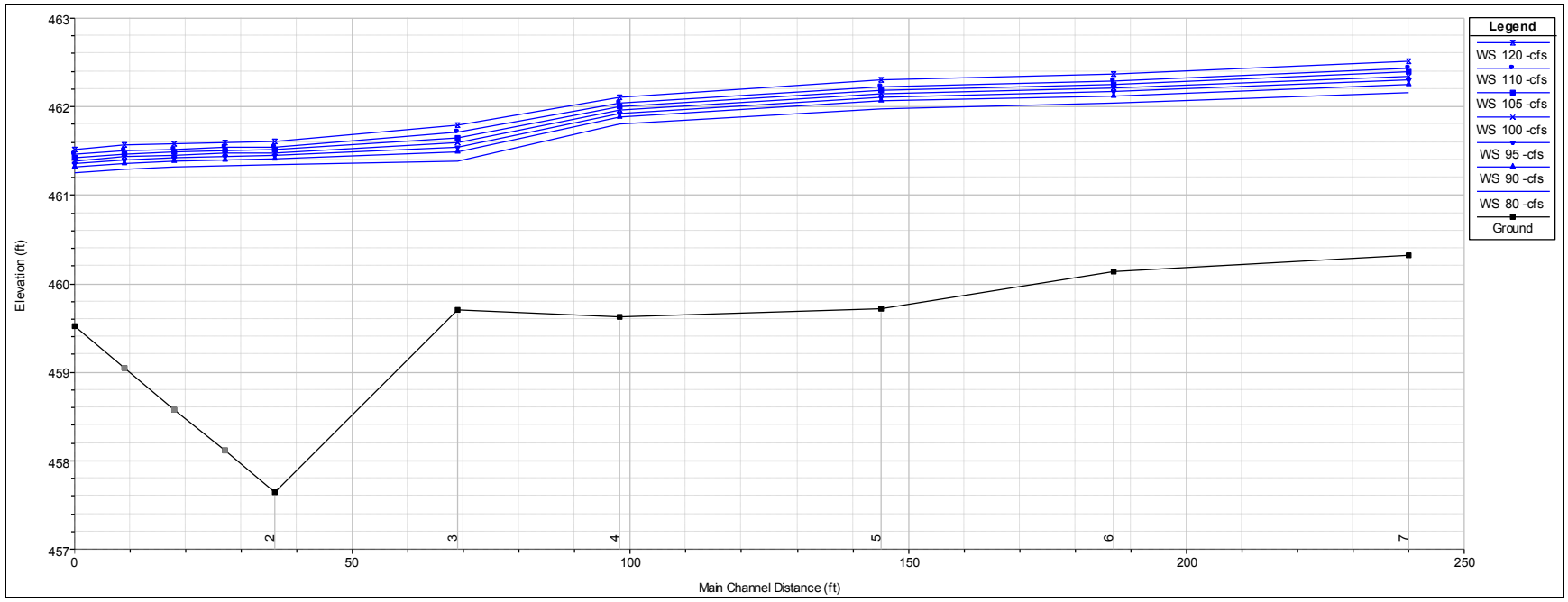


Figure 118 HEC-RAS longitudinal profile output for Reach FGSK16. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

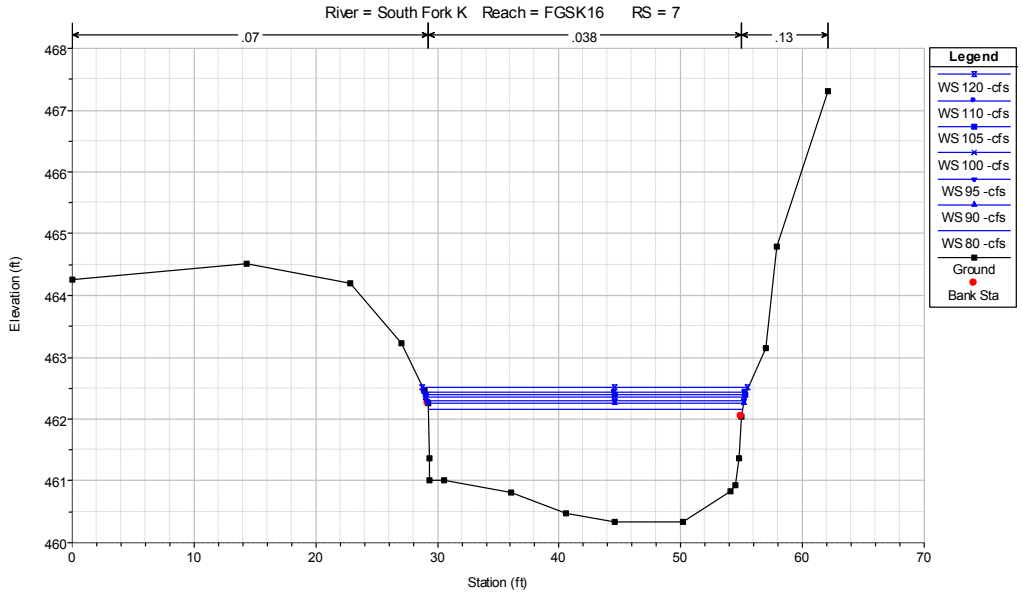


Figure 119 River Station (RS) 7 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

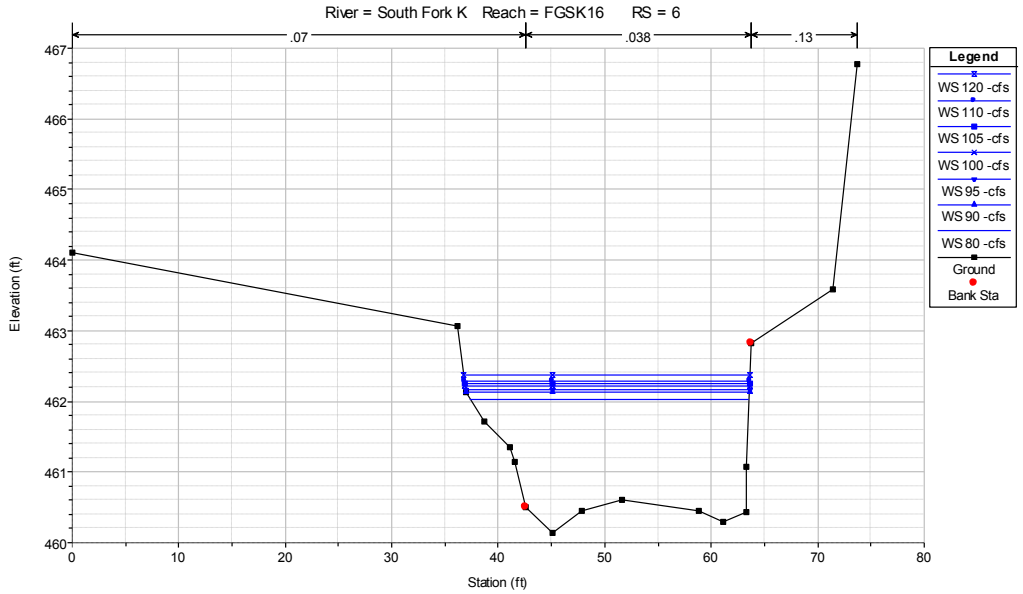


Figure 120 River Station (RS) 6 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

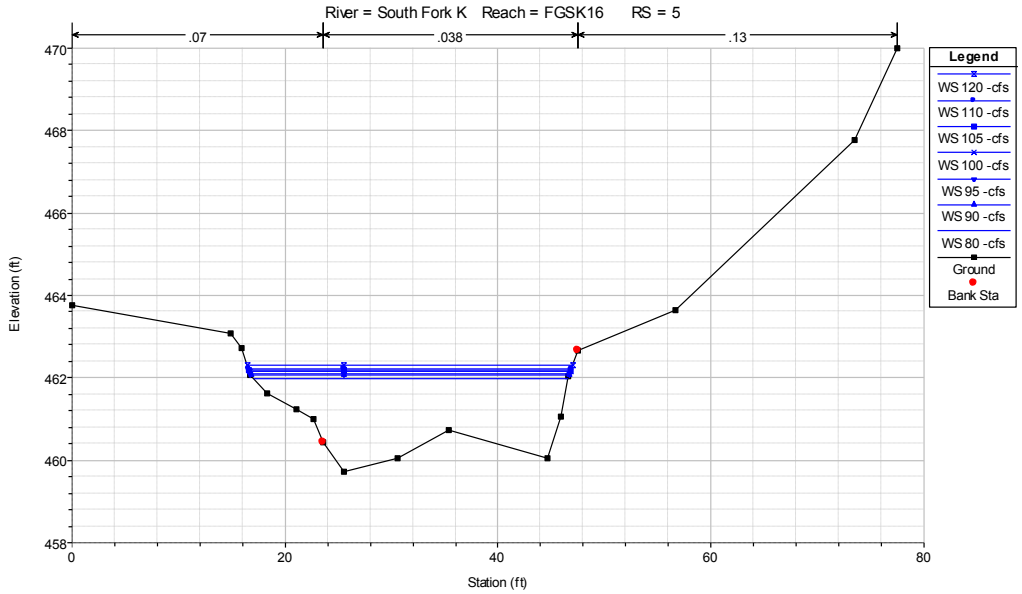


Figure 121 River Station (RS) 5 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

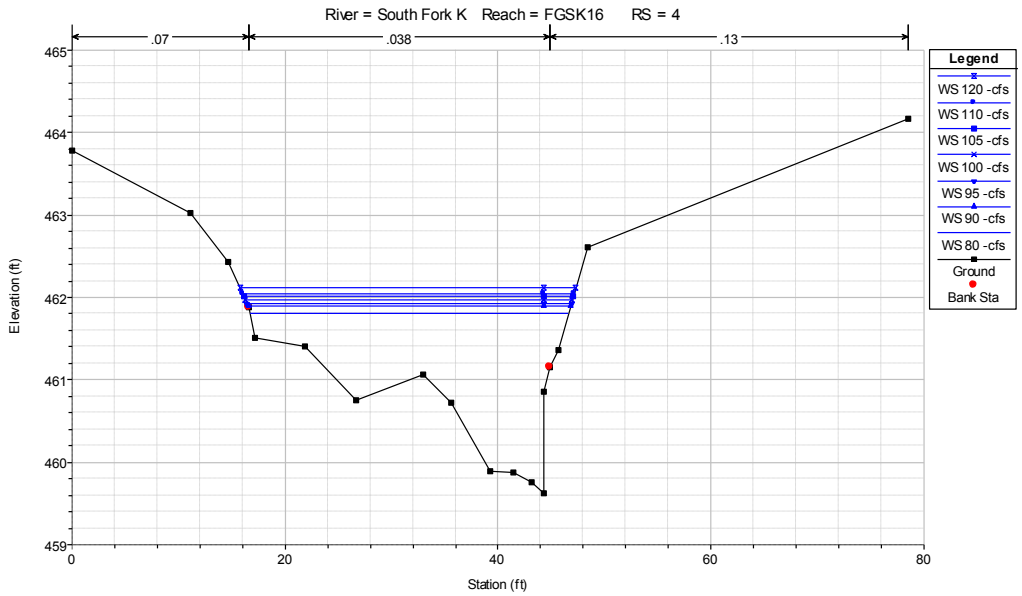


Figure 122 River Station (RS) 4 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

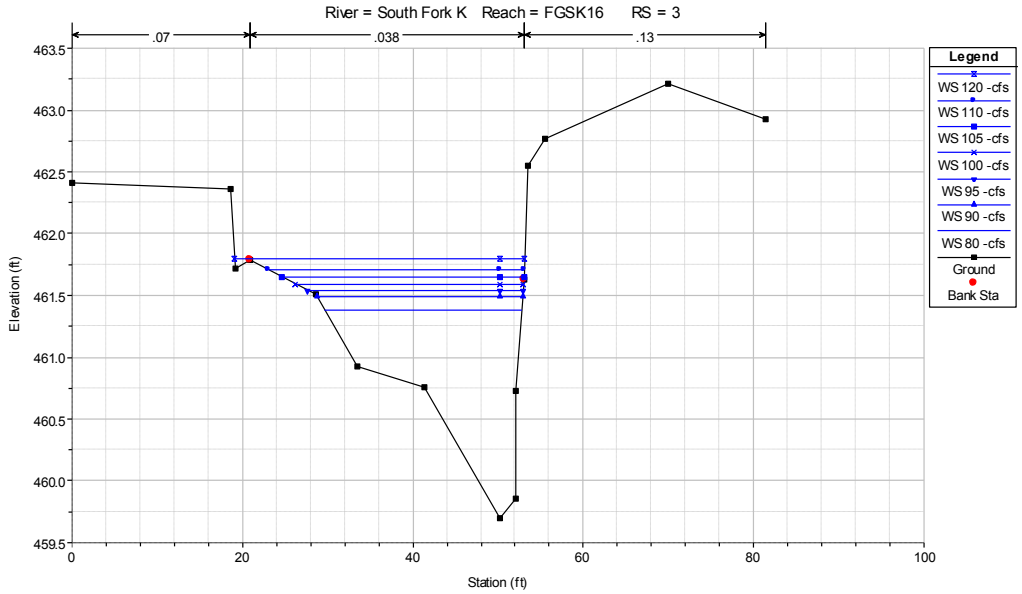


Figure 123 River Station (RS) 3 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

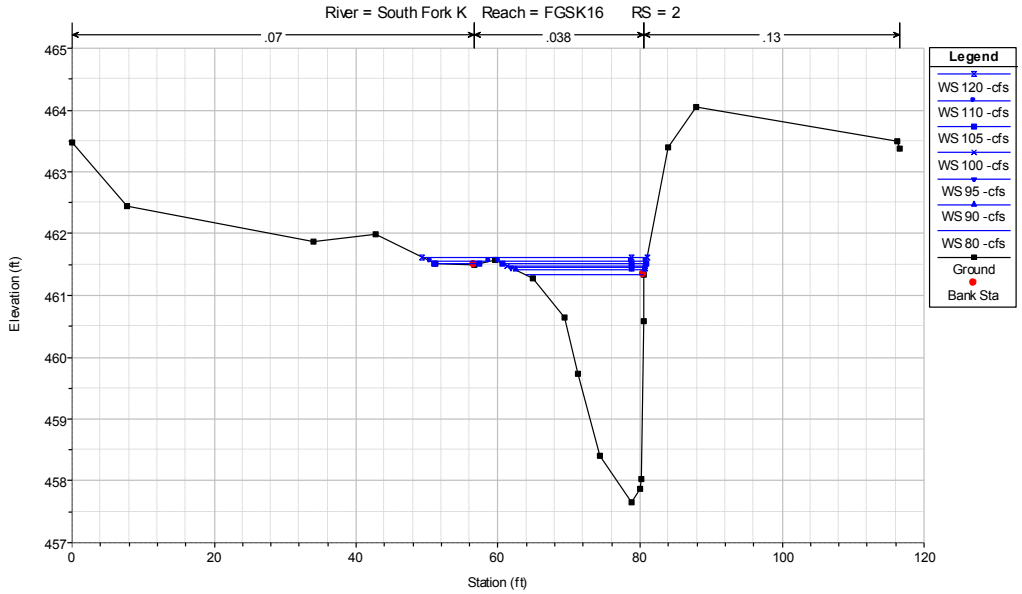


Figure 124 River Station (RS) 2 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK16

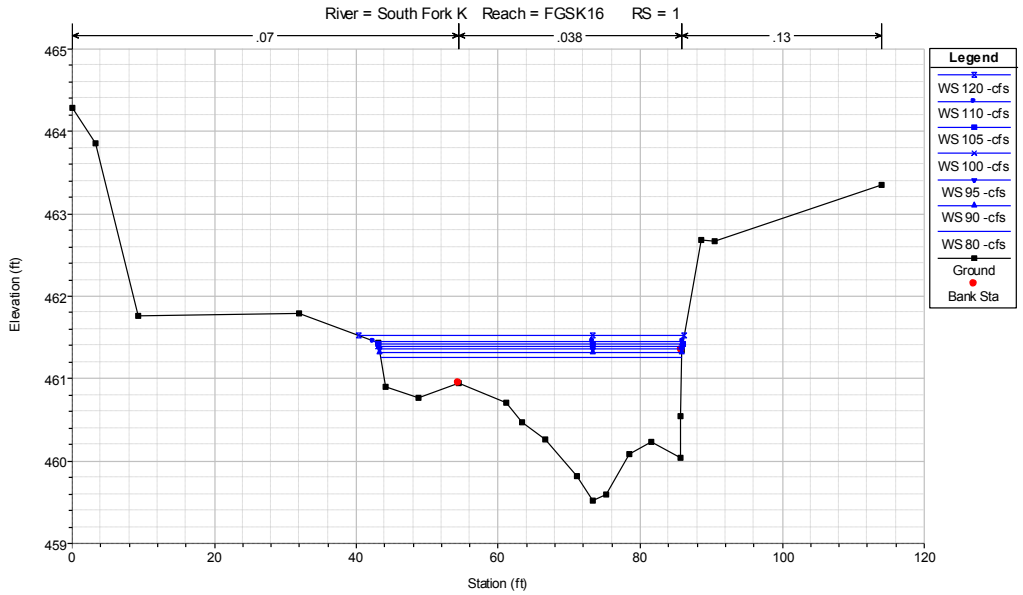


Figure 125 River Station (RS) 1 on River Reach FGSK16. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK16

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK16	7	80-cfs	0.15	27	22	18
FGSK16	7	90-cfs	0.16	29	23	19
FGSK16	7	95-cfs	0.17	31	25	20
FGSK16	7	100-cfs	0.18	32	26	21
FGSK16	7	105-cfs	0.18	32	26	21
FGSK16	7	110-cfs	0.19	34	28	22
FGSK16	7	120-cfs	0.20	36	29	24
FGSK16	6	80-cfs	0.20	36	29	24
FGSK16	6	90-cfs	0.22	40	32	26
FGSK16	6	95-cfs	0.23	41	34	27
FGSK16	6	100-cfs	0.24	43	35	28
FGSK16	6	105-cfs	0.25	45	36	29
FGSK16	6	110-cfs	0.26	47	38	31
FGSK16	6	120-cfs	0.28	50	41	33
FGSK16	5	80-cfs	0.14	25	20	16
FGSK16	5	90-cfs	0.16	29	23	19
FGSK16	5	95-cfs	0.17	31	25	20
FGSK16	5	100-cfs	0.17	31	25	20
FGSK16	5	105-cfs	0.18	32	26	21
FGSK16	5	110-cfs	0.19	34	28	22
FGSK16	5	120-cfs	0.21	38	31	25
FGSK16	4	80-cfs	0.30	54	44	35
FGSK16	4	90-cfs	0.32	58	47	38
FGSK16	4	95-cfs	0.33	59	48	39
FGSK16	4	100-cfs	0.34	61	50	40
FGSK16	4	105-cfs	0.34	61	50	40
FGSK16	4	110-cfs	0.35	63	51	41
FGSK16	4	120-cfs	0.37	67	54	44

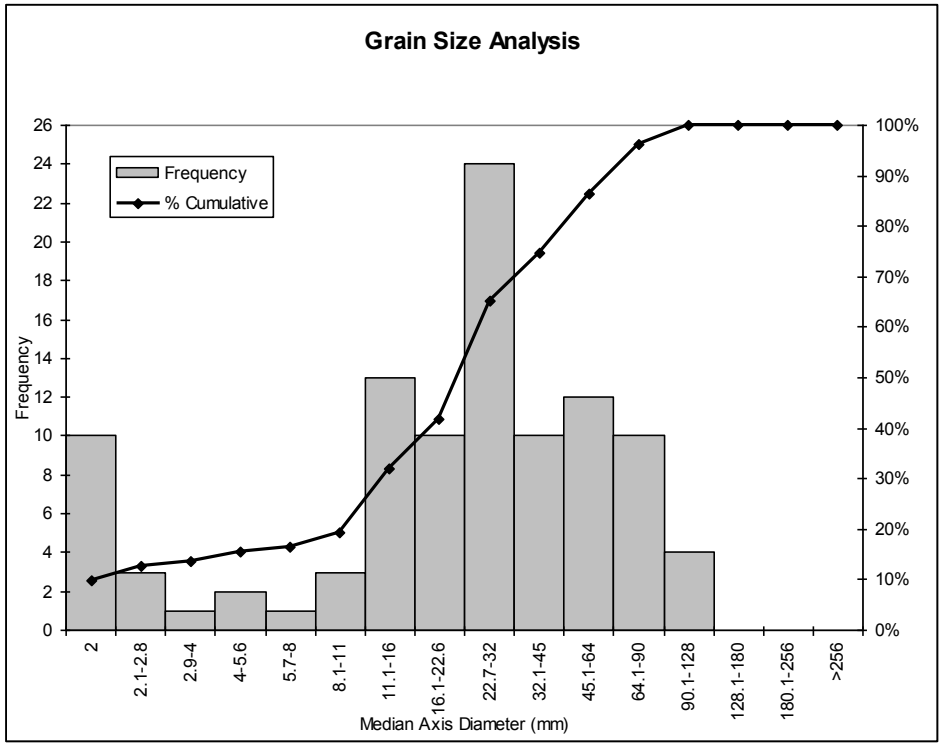
INCIPIENT MOTION ANALYSIS: FGSK16

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK16	3	80-cfs	0.81	146	118	95
FGSK16	3	90-cfs	0.78	140	114	92
FGSK16	3	95-cfs	0.77	139	112	91
FGSK16	3	100-cfs	0.76	137	111	89
FGSK16	3	105-cfs	0.74	133	108	87
FGSK16	3	110-cfs	0.71	128	103	84
FGSK16	3	120-cfs	0.69	124	101	81
FGSK16	2	80-cfs	0.24	43	35	28
FGSK16	2	90-cfs	0.28	50	41	33
FGSK16	2	95-cfs	0.30	54	44	35
FGSK16	2	100-cfs	0.32	58	47	38
FGSK16	2	105-cfs	0.34	61	50	40
FGSK16	2	110-cfs	0.37	67	54	44
FGSK16	2	120-cfs	0.40	72	58	47
FGSK16	1	80-cfs	0.24	43	35	28
FGSK16	1	90-cfs	0.26	47	38	31
FGSK16	1	95-cfs	0.26	47	38	31
FGSK16	1	100-cfs	0.27	49	39	32
FGSK16	1	105-cfs	0.28	50	41	33
FGSK16	1	110-cfs	0.29	52	42	34
FGSK16	1	120-cfs	0.30	54	44	35

PHOTOGRAPH DOCUMENTATION: FGSK16

***NO PHOTOS AVAILABLE FOR FGSK16**

PEBBLE COUNT DISTRIBUTION: FGSK16



Size Class mm	*Frequency*	*Cumulative %*
2	10	9.7%
2.1-2.8	3	12.6%
2.9-4	1	13.6%
4-5.6	2	15.5%
5.7-8	1	16.5%
8.1-11	3	19.4%
11.1-16	13	32.0%
16.1-22.6	10	41.7%
22.7-32	24	65.0%
32.1-45	10	74.8%
45.1-64	12	86.4%
64.1-90	10	96.1%
90.1-128	4	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

1,403,634

1,404,034

1,404,434

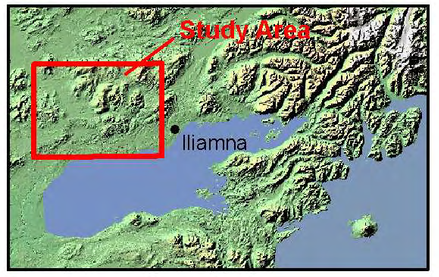
2,133,818

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK16
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,403,634

1,404,034

1,404,434

SITE DESCRIPTION: FGSK119

Site Characteristics.

	Site Name	FGSK119	
Discharge (cfs)	**100 (75-125)**	Width (ft)	**30.9 (25.9-36.2)**
Slope	**0.0017**	Cross-sectional Area (ft^2)	**51 (37-67)**
D_{50}	**40**	D_{84}	**80**
Lat/Long Location	**N59.81674 W155.42369**	Drainage Area (mi^2)	**11**
	% Willow	**80**	
	% Grass	**20**	
	% Tree	**0**	

Site Overview. Located on the South Fork Koktuli tributary SK119, FGSK119 is close enough to the HDR gage SK119A to provide an idea of the frequency and magnitude of discharge events (see attached hydrograph). Upstream of this site, signatures of an old beaver dam since blown out exist. Coming in between FGSK10 and FGSK9, this site is a good indicator of the sediment and water introduced between these two sites. The geomorphology of FGSK119 may not be completely alluvial. Due to its position just upstream of the confluence on the upstream side of its valley, this site most likely has attributes of an alluvial fan and may have size fractions that only move during larger flows. The pebble count distribution graph exhibits a wide shoulder that could be indicative of lag deposits that are less mobile. If this were the case, the surface sample could be skewing D_{50} and D_{84} that are mobilized and responsible for existing channel dimensions. Gravel material in the bed was loose and exhibited signs of recent movement.

During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 170 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 6 through 4 characterize a riffle which serves as the reference reach. The pebble count was taken between Sections 6 and 5 while the bulk sample was taken between Sections 5 and 4. Sections 4 through 1 characterize the pool.

The incipient motion analysis shows no movement through the reference reach for either the D_{50} or D_{84}. The range of flows chosen based on geometry match the cross-sections well, hitting most inflection points and matching the lower portion of levees. Most notably 95-100 cfs matches the right bank on Sections 6 and 4 through the reference reach.

The reference reach sections (Sections 4 through 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSK119

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK119	8	75-cfs	75	21.7	36	1.6	2.6	0.0019	2.1	0.29	0.18	0.040
FGSK119	8	85-cfs	85	22.6	38	1.7	2.7	0.0020	2.2	0.30	0.19	0.040
FGSK119	8	95-cfs	95	23.3	41	1.8	2.8	0.0021	2.3	0.31	0.21	0.040
FGSK119	8	100-cfs	100	23.7	42	1.8	2.9	0.0021	2.4	0.32	0.22	0.040
FGSK119	8	105-cfs	105	24.0	43	1.8	2.9	0.0022	2.4	0.32	0.23	0.040
FGSK119	8	115-cfs	115	24.1	46	1.9	3.0	0.0021	2.5	0.32	0.23	0.040
FGSK119	8	125-cfs	125	24.1	47	2.0	3.1	0.0022	2.6	0.32	0.25	0.040
FGSK119	7	75-cfs	75	19.2	35	1.8	2.4	0.0017	2.1	0.28	0.17	0.040
FGSK119	7	85-cfs	85	19.2	37	1.9	2.6	0.0018	2.2	0.28	0.19	0.040
FGSK119	7	95-cfs	95	19.2	39	2.0	2.7	0.0018	2.4	0.29	0.21	0.040
FGSK119	7	100-cfs	100	19.2	40	2.1	2.7	0.0019	2.4	0.29	0.22	0.040
FGSK119	7	105-cfs	105	19.2	41	2.1	2.8	0.0019	2.5	0.30	0.22	0.040
FGSK119	7	115-cfs	115	19.3	43	2.2	2.9	0.0019	2.6	0.30	0.24	0.040
FGSK119	7	125-cfs	125	19.3	44	2.3	2.9	0.0020	2.7	0.31	0.26	0.040
FGSK119	6	75-cfs	75	25.9	37	1.4	2.2	0.0020	2.0	0.30	0.17	0.040
FGSK119	6	85-cfs	85	26.3	41	1.5	2.3	0.0020	2.1	0.30	0.18	0.040
FGSK119	6	95-cfs	95	26.5	43	1.6	2.4	0.0020	2.2	0.30	0.19	0.040
FGSK119	6	100-cfs	100	26.6	45	1.7	2.4	0.0020	2.2	0.31	0.20	0.040
FGSK119	6	105-cfs	105	26.7	46	1.7	2.5	0.0020	2.3	0.31	0.20	0.040
FGSK119	6	115-cfs	115	26.8	49	1.8	2.6	0.0020	2.3	0.31	0.21	0.040
FGSK119	6	125-cfs	125	26.9	51	1.9	2.7	0.0020	2.4	0.31	0.22	0.040
FGSK119	5	75-cfs	75	29.6	41	1.4	2.0	0.0022	2.2	0.32	0.19	0.040
FGSK119	5	85-cfs	85	30.1	45	1.5	2.2	0.0022	2.3	0.33	0.20	0.040
FGSK119	5	95-cfs	95	30.5	48	1.6	2.3	0.0022	2.4	0.33	0.22	0.040
FGSK119	5	100-cfs	100	30.7	49	1.6	2.3	0.0023	2.4	0.33	0.23	0.040
FGSK119	5	105-cfs	105	30.9	51	1.7	2.4	0.0023	2.5	0.34	0.24	0.040
FGSK119	5	115-cfs	115	31.3	54	1.8	2.5	0.0023	2.6	0.34	0.25	0.040
FGSK119	5	125-cfs	125	31.7	57	1.8	2.6	0.0017	2.2	0.29	0.18	0.040

HEC-RAS OUTPUT SUMMARY TABLE: FGSK119

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSK119	4	75-cfs	75	33.3	49	1.5	2.3	0.0010	1.5	0.23	0.09	0.040
FGSK119	4	85-cfs	85	34.7	53	1.5	2.4	0.0010	1.6	0.23	0.09	0.040
FGSK119	4	95-cfs	95	35.7	57	1.6	2.5	0.0010	1.7	0.23	0.10	0.040
FGSK119	4	100-cfs	100	35.8	58	1.6	2.6	0.0011	1.7	0.24	0.10	0.040
FGSK119	4	105-cfs	105	35.9	60	1.7	2.6	0.0011	1.7	0.24	0.11	0.040
FGSK119	4	115-cfs	115	36.0	64	1.8	2.7	0.0011	1.8	0.24	0.11	0.040
FGSK119	4	125-cfs	125	36.2	67	1.9	2.8	0.0011	1.9	0.24	0.12	0.040
FGSK119	3	75-cfs	75	24.9	42	1.7	2.5	0.0012	1.8	0.24	0.12	0.040
FGSK119	3	85-cfs	85	25.0	45	1.8	2.7	0.0012	1.9	0.25	0.13	0.040
FGSK119	3	95-cfs	95	25.0	48	1.9	2.8	0.0013	2.0	0.25	0.15	0.040
FGSK119	3	100-cfs	100	25.1	49	2.0	2.8	0.0013	2.0	0.26	0.15	0.040
FGSK119	3	105-cfs	105	25.1	50	2.0	2.9	0.0013	2.1	0.26	0.16	0.040
FGSK119	3	115-cfs	115	25.1	52	2.1	3.0	0.0014	2.2	0.27	0.17	0.040
FGSK119	3	125-cfs	125	25.2	54	2.2	3.0	0.0014	2.3	0.27	0.18	0.040
FGSK119	2	75-cfs	75	23.7	50	2.1	4.4	0.0007	1.5	0.18	0.08	0.040
FGSK119	2	85-cfs	85	23.8	53	2.2	4.5	0.0007	1.6	0.19	0.09	0.040
FGSK119	2	95-cfs	95	23.9	56	2.3	4.6	0.0008	1.7	0.20	0.10	0.040
FGSK119	2	100-cfs	100	24.0	57	2.4	4.7	0.0008	1.7	0.20	0.11	0.040
FGSK119	2	105-cfs	105	24.0	58	2.4	4.7	0.0009	1.8	0.20	0.11	0.040
FGSK119	2	115-cfs	115	24.1	60	2.5	4.8	0.0009	1.9	0.21	0.13	0.040
FGSK119	2	125-cfs	125	24.2	62	2.6	4.9	0.0010	2.0	0.22	0.14	0.040
FGSK119	1	75-cfs	75	28.9	37	1.3	2.1	0.0024	2.0	0.32	0.18	0.041
FGSK119	1	85-cfs	85	30.2	41	1.3	2.2	0.0024	2.1	0.32	0.19	0.041
FGSK119	1	95-cfs	95	30.3	43	1.4	2.3	0.0024	2.2	0.32	0.20	0.041
FGSK119	1	100-cfs	100	30.3	45	1.5	2.3	0.0024	2.2	0.32	0.21	0.041
FGSK119	1	105-cfs	105	30.3	46	1.5	2.4	0.0024	2.3	0.32	0.22	0.041
FGSK119	1	115-cfs	115	30.3	49	1.6	2.5	0.0024	2.4	0.33	0.23	0.041
FGSK119	1	125-cfs	125	30.3	51	1.7	2.5	0.0024	2.4	0.33	0.24	0.041

HEC-RAS LONGITUDINAL PROFILE: FGSK119

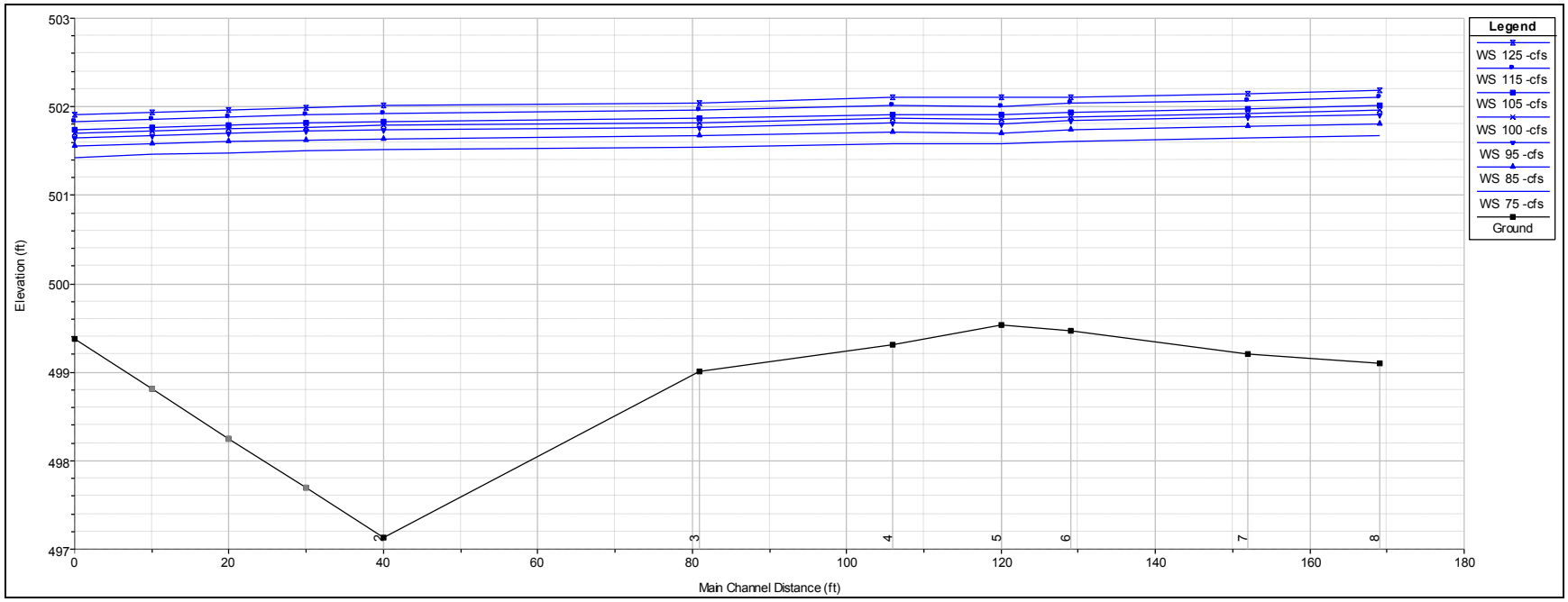


Figure 126 HEC-RAS longitudinal profile output for Reach FGSK119. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

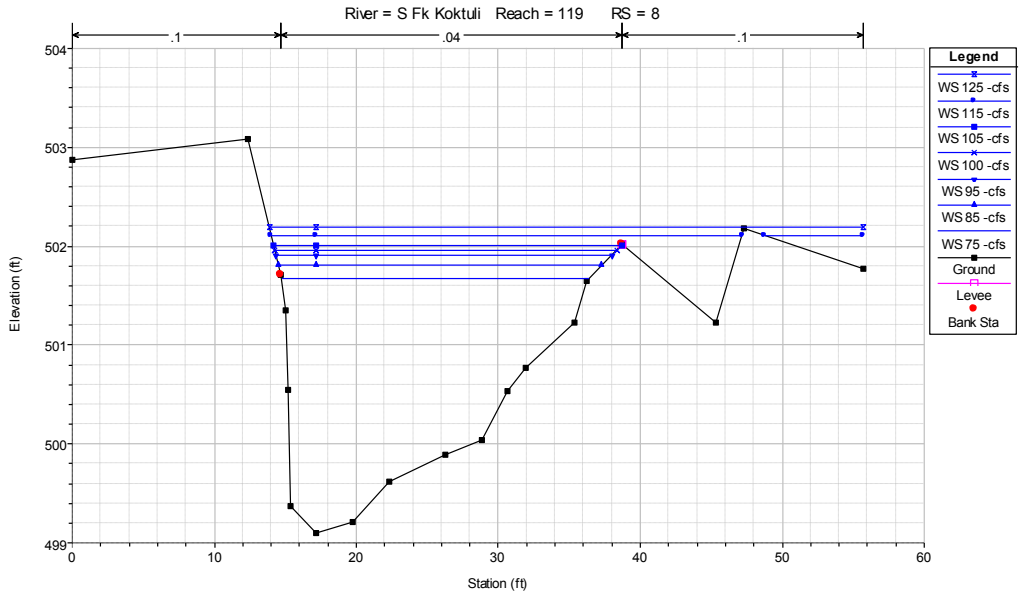


Figure 127 River Station (RS) 8 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

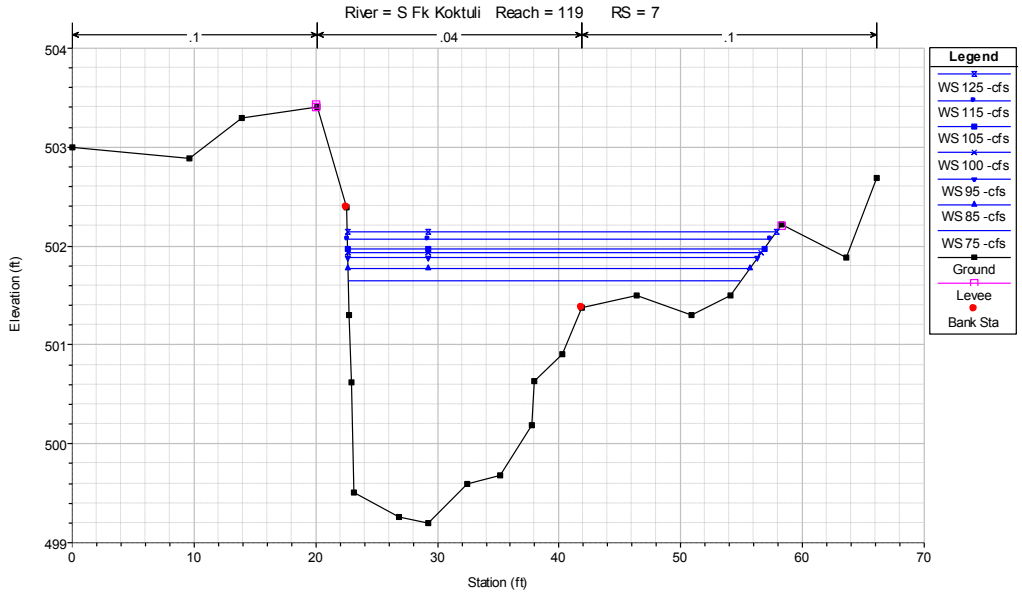


Figure 128 River Station (RS) 7 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

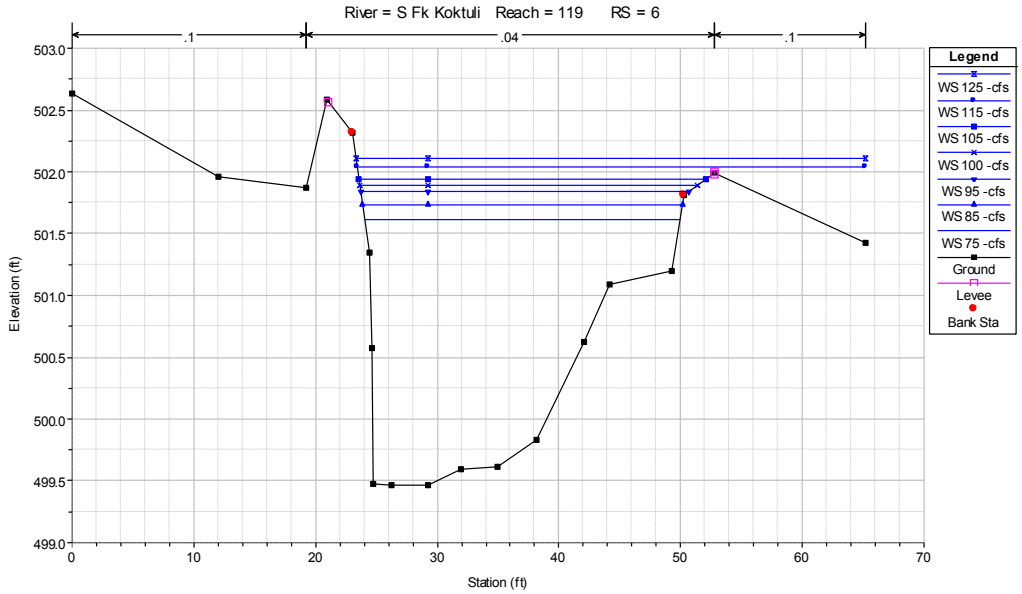


Figure 129 River Station (RS) 6 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

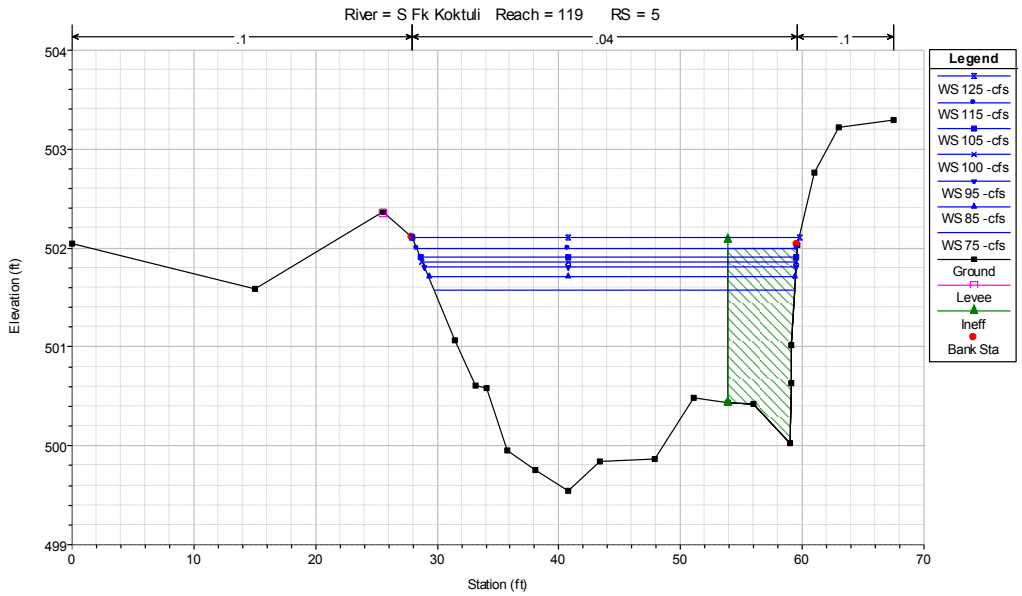


Figure 130 River Station (RS) 5 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

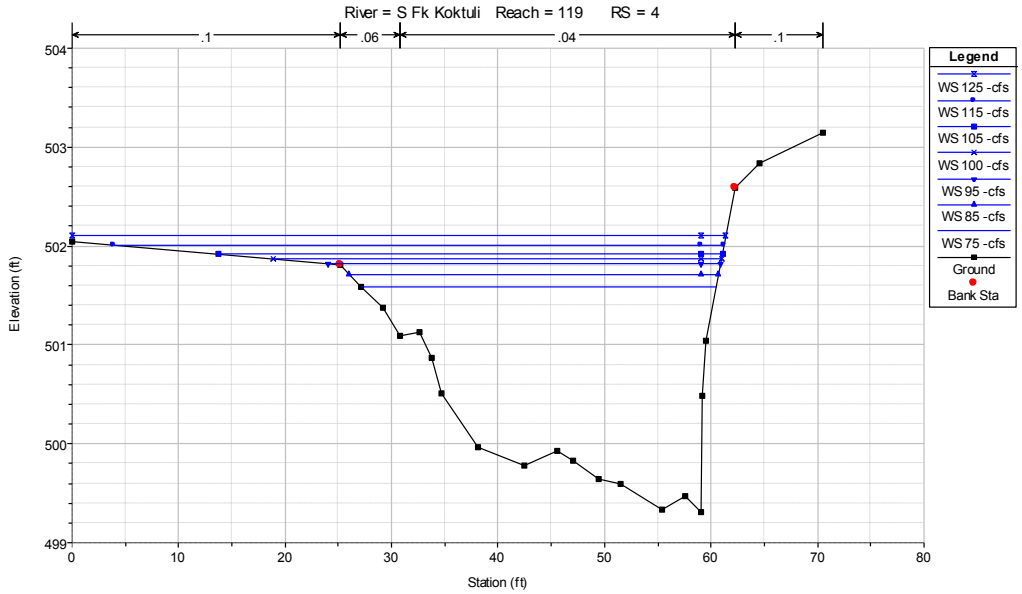


Figure 131 River Station (RS) 4 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

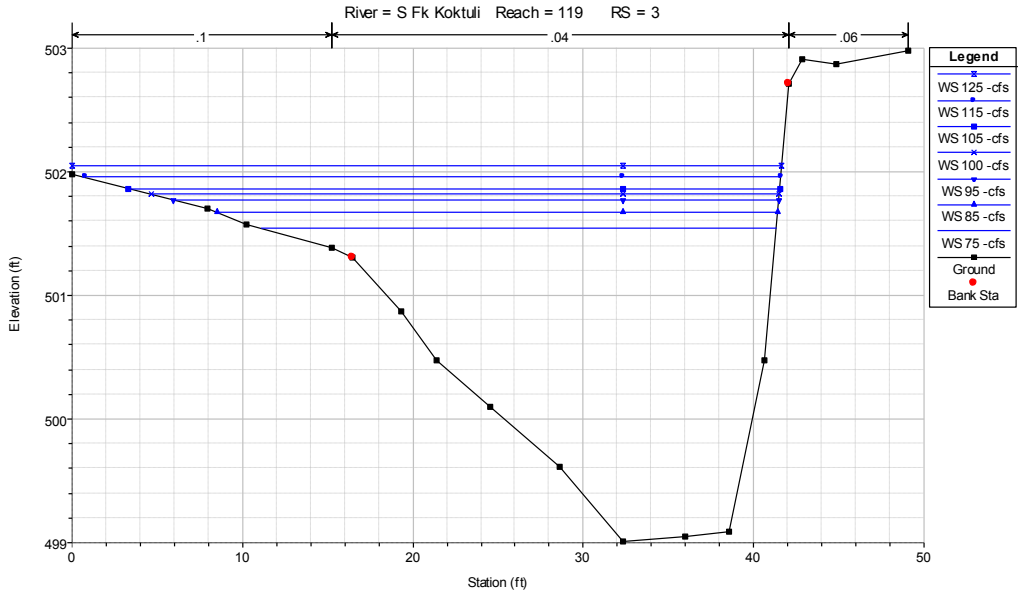


Figure 132 River Station (RS) 3 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

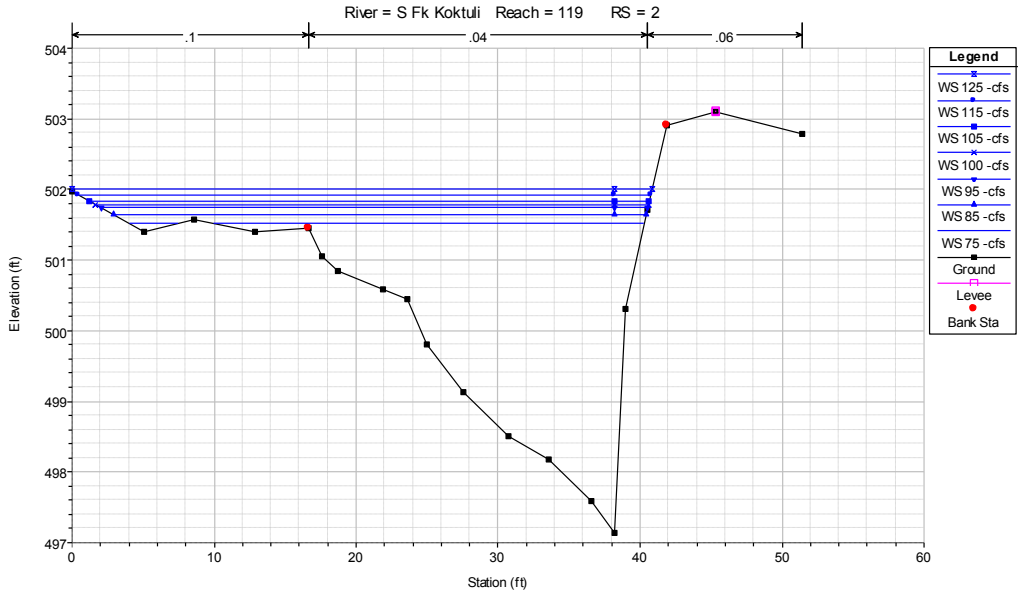


Figure 133 River Station (RS) 2 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSK119

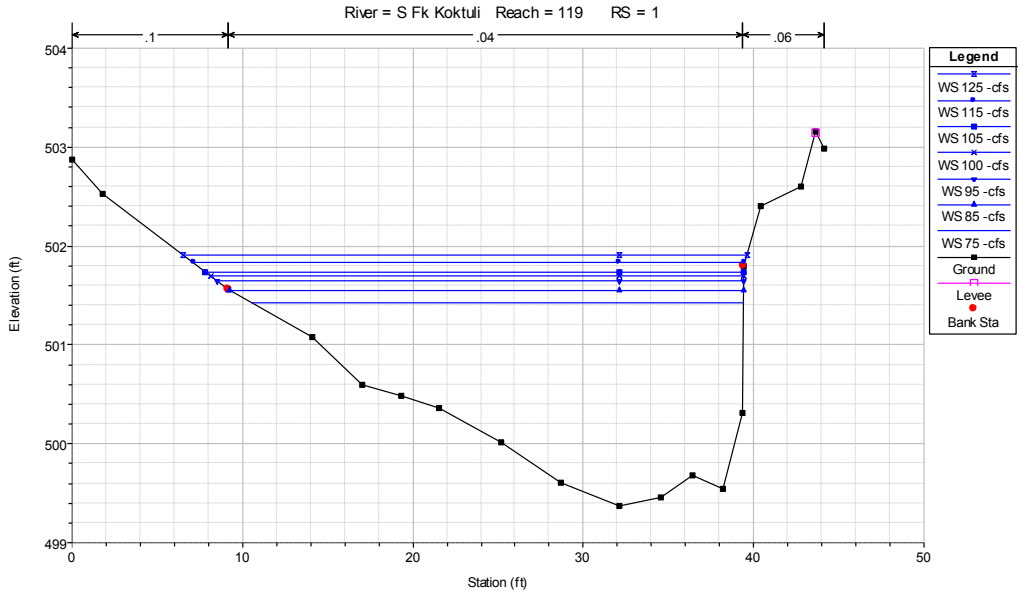


Figure 134 River Station (RS) 1 on River Reach FGSK119. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGSK119

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK119	8	75-cfs	0.18	32	26	21
FGSK119	8	85-cfs	0.19	34	28	22
FGSK119	8	95-cfs	0.21	38	31	25
FGSK119	8	100-cfs	0.22	40	32	26
FGSK119	8	105-cfs	0.23	41	34	27
FGSK119	8	115-cfs	0.23	41	34	27
FGSK119	8	125-cfs	0.25	45	36	29
FGSK119	7	75-cfs	0.17	31	25	20
FGSK119	7	85-cfs	0.19	34	28	22
FGSK119	7	95-cfs	0.21	38	31	25
FGSK119	7	100-cfs	0.22	40	32	26
FGSK119	7	105-cfs	0.22	40	32	26
FGSK119	7	115-cfs	0.24	43	35	28
FGSK119	7	125-cfs	0.26	47	38	31
FGSK119	6	75-cfs	0.17	31	25	20
FGSK119	6	85-cfs	0.18	32	26	21
FGSK119	6	95-cfs	0.19	34	28	22
FGSK119	6	100-cfs	0.20	36	29	24
FGSK119	6	105-cfs	0.20	36	29	24
FGSK119	6	115-cfs	0.21	38	31	25
FGSK119	6	125-cfs	0.22	40	32	26
FGSK119	5	75-cfs	0.19	34	28	22
FGSK119	5	85-cfs	0.20	36	29	24
FGSK119	5	95-cfs	0.22	40	32	26
FGSK119	5	100-cfs	0.23	41	34	27
FGSK119	5	105-cfs	0.24	43	35	28
FGSK119	5	115-cfs	0.25	45	36	29
FGSK119	5	125-cfs	0.18	32	26	21

INCIPIENT MOTION ANALYSIS: FGSK119

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSK119	4	75-cfs	0.09	16	13	11
FGSK119	4	85-cfs	0.09	16	13	11
FGSK119	4	95-cfs	0.10	18	15	12
FGSK119	4	100-cfs	0.10	18	15	12
FGSK119	4	105-cfs	0.11	20	16	13
FGSK119	4	115-cfs	0.11	20	16	13
FGSK119	4	125-cfs	0.12	22	17	14
FGSK119	3	75-cfs	0.12	22	17	14
FGSK119	3	85-cfs	0.13	23	19	15
FGSK119	3	95-cfs	0.15	27	22	18
FGSK119	3	100-cfs	0.15	27	22	18
FGSK119	3	105-cfs	0.16	29	23	19
FGSK119	3	115-cfs	0.17	31	25	20
FGSK119	3	125-cfs	0.18	32	26	21
FGSK119	2	75-cfs	0.08	14	12	9
FGSK119	2	85-cfs	0.09	16	13	11
FGSK119	2	95-cfs	0.10	18	15	12
FGSK119	2	100-cfs	0.11	20	16	13
FGSK119	2	105-cfs	0.11	20	16	13
FGSK119	2	115-cfs	0.13	23	19	15
FGSK119	2	125-cfs	0.14	25	20	16
FGSK119	1	75-cfs	0.18	32	26	21
FGSK119	1	85-cfs	0.19	34	28	22
FGSK119	1	95-cfs	0.20	36	29	24
FGSK119	1	100-cfs	0.21	38	31	25
FGSK119	1	105-cfs	0.22	40	32	26
FGSK119	1	115-cfs	0.23	41	34	27
FGSK119	1	125-cfs	0.24	43	35	28

PHOTOGRAPH DOCUMENTATION: FGSK119

Left bank along reference reach FGSK119

Right bank along reference reach FGSK119

Looking downstream from reference reach FGSK119

Looking upstream from reference reach FGSK119

PHOTOGRAPH DOCUMENTATION: FGSK119

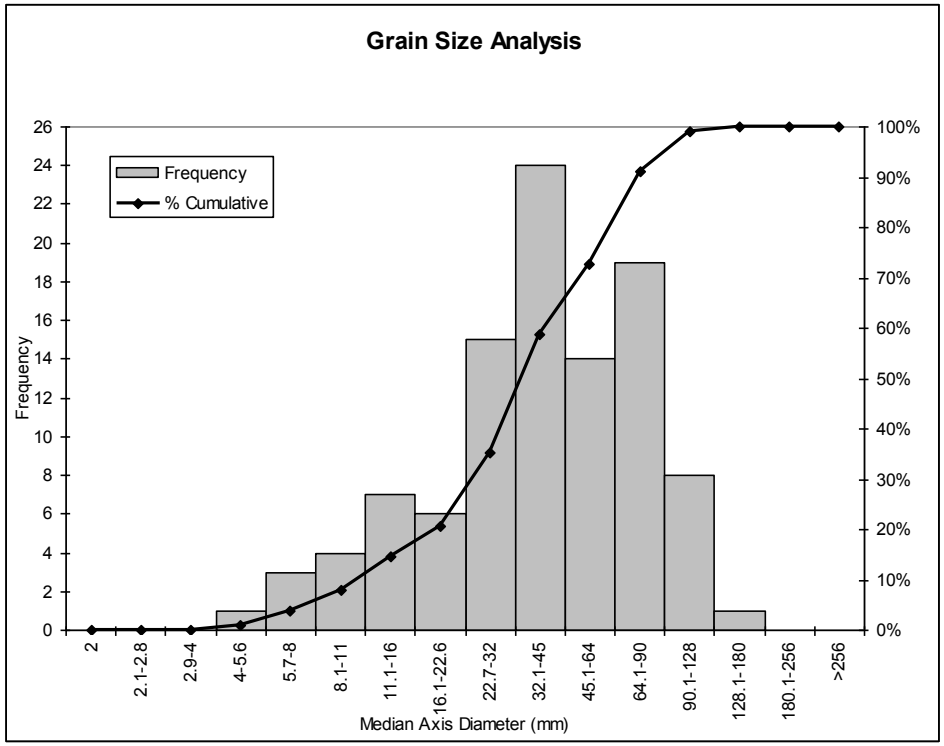
Bank composition detail (left bank) FGSK119

Bank composition detail (right bank) FGSK119

PHOTOGRAPH DOCUMENTATION: FGSK119

Looking downstream from upstream boundary FGSK119

PEBBLE COUNT DISTRIBUTION: FGSK119



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	1	1.0%
5.7-8	3	3.9%
8.1-11	4	7.8%
11.1-16	7	14.7%
16.1-22.6	6	20.6%
22.7-32	15	35.3%
32.1-45	24	58.8%
45.1-64	14	72.5%
64.1-90	19	91.2%
90.1-128	8	99.0%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Between Sections 5 and 6

HYDROGRAPH: FGSK119

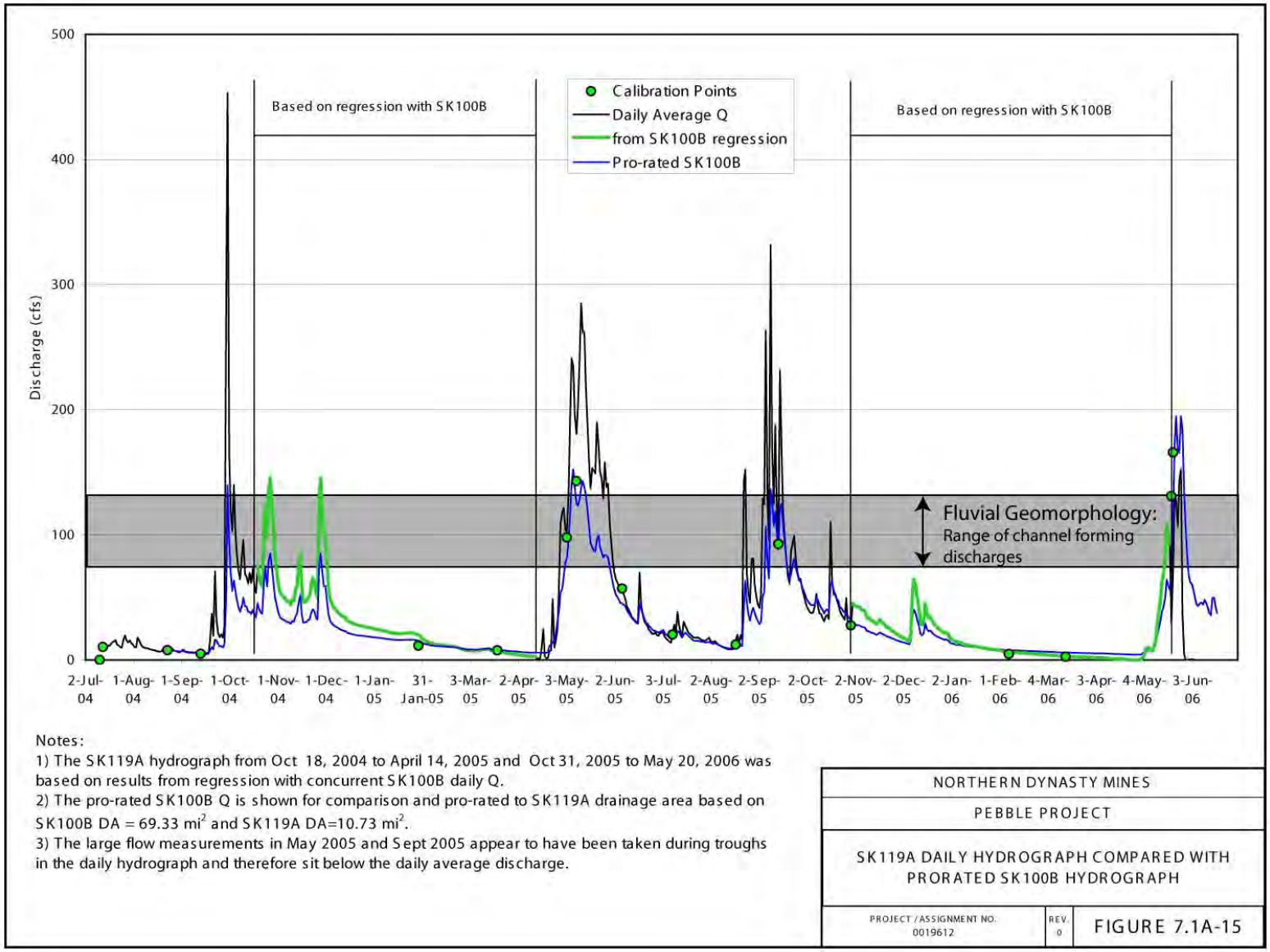


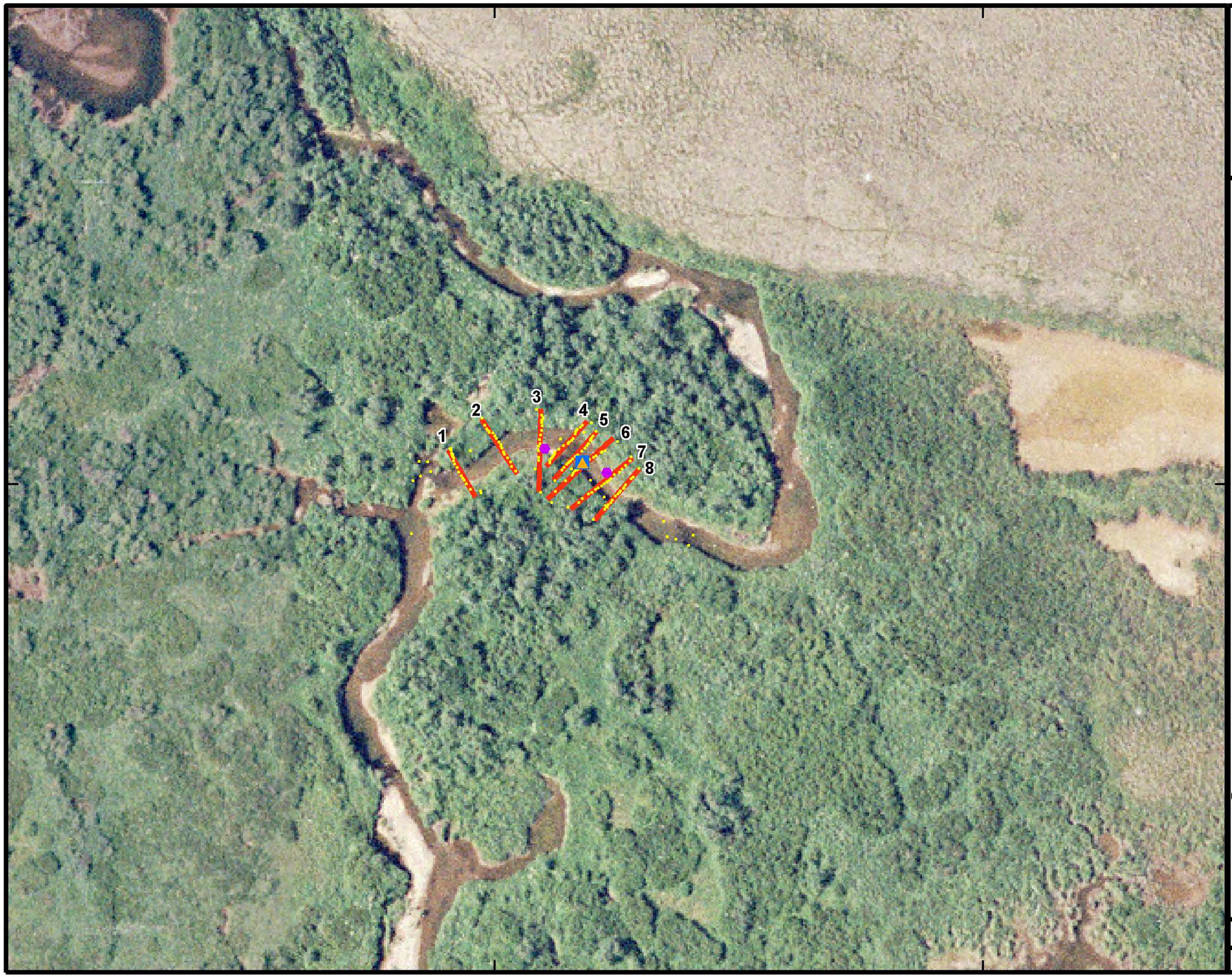
Figure 135 Hydrograph referenced in site description FGSK119. Data provided by HDR

1,377,908

1,378,308

1,378,708

2,127,710

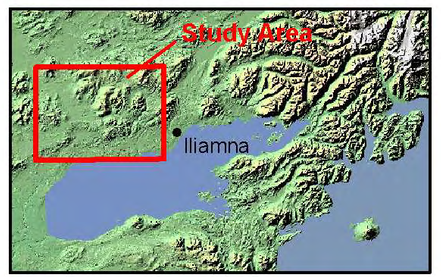


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK119-1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 60 120 180 240 Ft

0 20 40 Meters

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,377,908

1,378,308

1,378,708

SITE DESCRIPTION: FGSKt-1

Site Characteristics.

Site Name		FGSKt-1	
Discharge (cfs)	**100 (80-120)**	Width (ft)	**38.9 (32.4-50.9)**
Slope	**0.0076**	Cross-sectional Area (ft^2)	**32 (26-41)**
D_{50}	**36**	D_{84}	**67**
Lat/Long Location	**N59.85534 W155.66553**	Drainage Area (mi^2)	**12**
	% Willow	**20**	
	% Grass	**80**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 240 feet of channel length. Cross-section 1 serves as the downstream control for the hydraulic model and is the crest of the pool. Sections 6 through 4 characterize a riffle which serves as the reference reach. The pebble count was taken along Section 5. The presence of lag was noted in the pool, but was not apparent in the pebble count. FGSKt-1 is located on a tributary to the South Fork Koktuli that is suspected to be predominately controlled by groundwater-fed baseflow.

For a Shields number of 0.017, the D_{84} moves at River Station 5 at 100 cfs, before 80 cfs on Section 6 and is immobile within the range of flows on Section 4. For a Shields number of 0.026, the D_{50} moves before 80 cfs on Sections 6 and 5 but is immobile on Section 4. The geometry of the right bank through the reference reach was matched at flows between 90 and 120 cfs.

The reference reach sections (Sections 4 through 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGSKt-1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGSKt-1	6	80-cfs	80	33.4	26	0.8	1.3	0.0094	3.1	0.61	0.44	0.039
FGSKt-1	6	90-cfs	90	33.5	28	0.8	1.4	0.0094	3.2	0.62	0.48	0.039
FGSKt-1	6	100-cfs	100	33.5	30	0.9	1.4	0.0095	3.4	0.63	0.51	0.039
FGSKt-1	6	110-cfs	110	33.5	32	0.9	1.5	0.0094	3.5	0.63	0.54	0.039
FGSKt-1	6	120-cfs	120	33.5	33	1.0	1.5	0.0094	3.6	0.64	0.56	0.039
FGSKt-1	5	80-cfs	80	32.4	27	0.8	1.0	0.0064	3.0	0.58	0.32	0.034
FGSKt-1	5	90-cfs	90	32.5	28	0.9	1.1	0.0067	3.2	0.60	0.36	0.034
FGSKt-1	5	100-cfs	100	32.6	30	0.9	1.1	0.0071	3.4	0.62	0.39	0.034
FGSKt-1	5	110-cfs	110	32.7	31	1.0	1.2	0.0074	3.5	0.64	0.43	0.034
FGSKt-1	5	120-cfs	120	32.7	33	1.0	1.2	0.0077	3.7	0.65	0.46	0.034
FGSKt-1	4	80-cfs	80	50.4	31	0.6	0.8	0.0067	2.6	0.59	0.25	0.033
FGSKt-1	4	90-cfs	90	50.5	33	0.7	0.9	0.0064	2.7	0.59	0.26	0.033
FGSKt-1	4	100-cfs	100	50.6	36	0.7	0.9	0.0062	2.8	0.58	0.27	0.033
FGSKt-1	4	110-cfs	110	50.7	38	0.8	1.0	0.0060	2.9	0.58	0.28	0.033
FGSKt-1	4	120-cfs	120	50.9	41	0.8	1.0	0.0059	2.9	0.58	0.29	0.033
FGSKt-1	3	80-cfs	80	52.2	42	0.8	1.3	0.0026	1.9	0.38	0.13	0.034
FGSKt-1	3	90-cfs	90	52.2	45	0.9	1.4	0.0026	2.0	0.39	0.14	0.034
FGSKt-1	3	100-cfs	100	52.2	47	0.9	1.5	0.0026	2.1	0.39	0.15	0.034
FGSKt-1	3	110-cfs	110	52.2	50	1.0	1.5	0.0026	2.2	0.40	0.16	0.034
FGSKt-1	3	120-cfs	120	52.2	53	1.0	1.6	0.0027	2.3	0.40	0.17	0.034
FGSKt-1	2	80-cfs	80	55.2	48	0.9	2.0	0.0017	1.7	0.32	0.09	0.033
FGSKt-1	2	90-cfs	90	55.3	51	0.9	2.1	0.0018	1.8	0.33	0.10	0.033
FGSKt-1	2	100-cfs	100	55.3	54	1.0	2.1	0.0018	1.8	0.33	0.11	0.033
FGSKt-1	2	110-cfs	110	55.3	57	1.0	2.2	0.0018	1.9	0.33	0.11	0.033
FGSKt-1	2	120-cfs	120	55.3	59	1.1	2.2	0.0018	2.0	0.34	0.12	0.033
FGSKt-1	1	80-cfs	80	47.4	30	0.6	1.2	0.0064	2.6	0.58	0.25	0.033
FGSKt-1	1	90-cfs	90	47.8	33	0.7	1.3	0.0064	2.7	0.58	0.27	0.033
FGSKt-1	1	100-cfs	100	47.9	35	0.7	1.3	0.0064	2.9	0.59	0.28	0.033
FGSKt-1	1	110-cfs	110	48.0	37	0.8	1.3	0.0064	3.0	0.59	0.30	0.033
FGSKt-1	1	120-cfs	120	48.2	39	0.8	1.4	0.0064	3.1	0.60	0.32	0.033

HEC-RAS LONGITUDINAL PROFILE: FGSKt-1

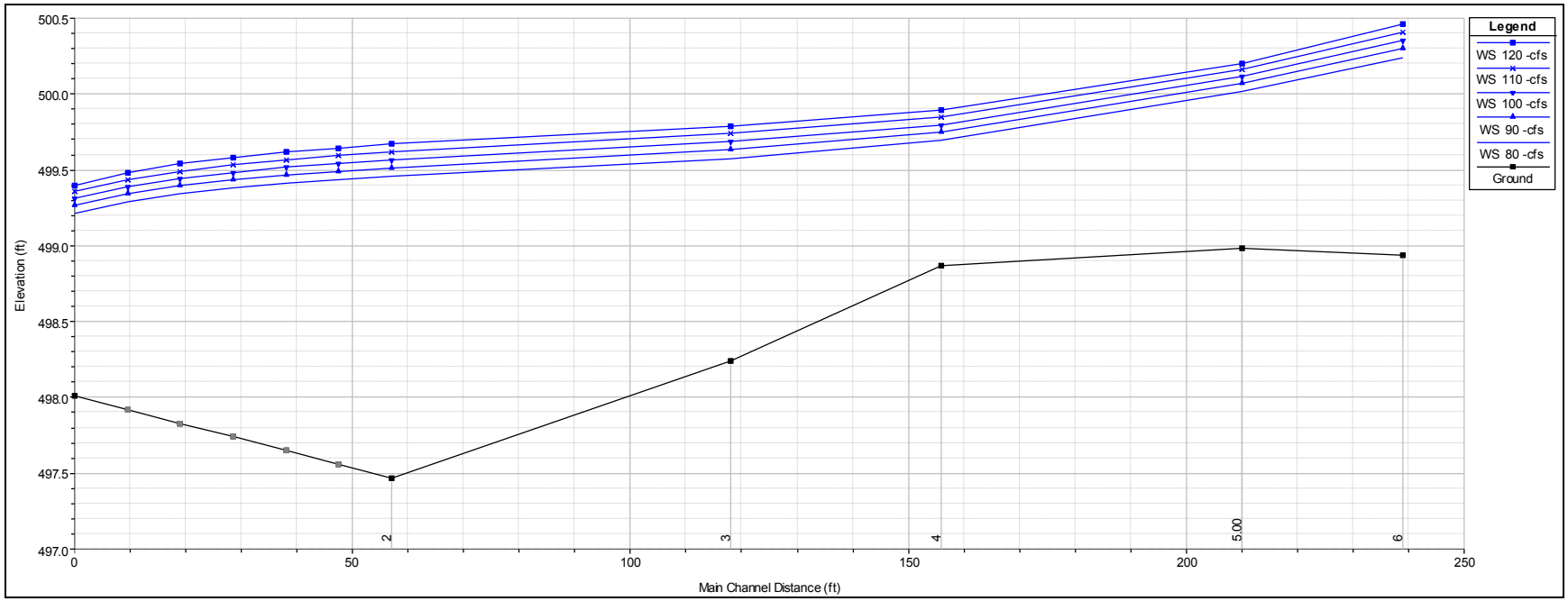


Figure 136 HEC-RAS longitudinal profile output for Reach FGSKt-1. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSKt-1

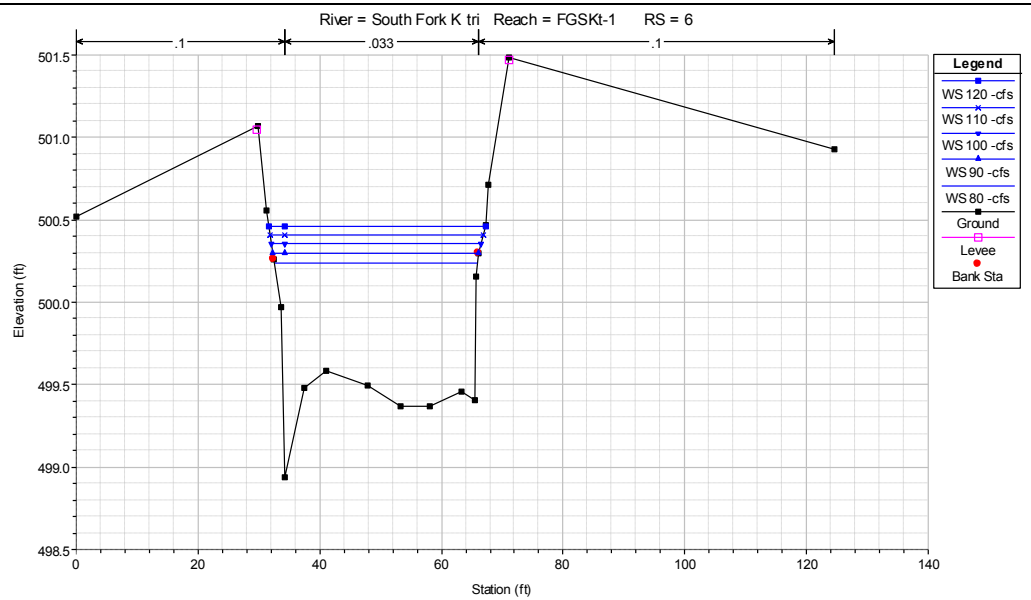


Figure 137 River Station (RS) 6 on River Reach FGSKt-1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSKt-1

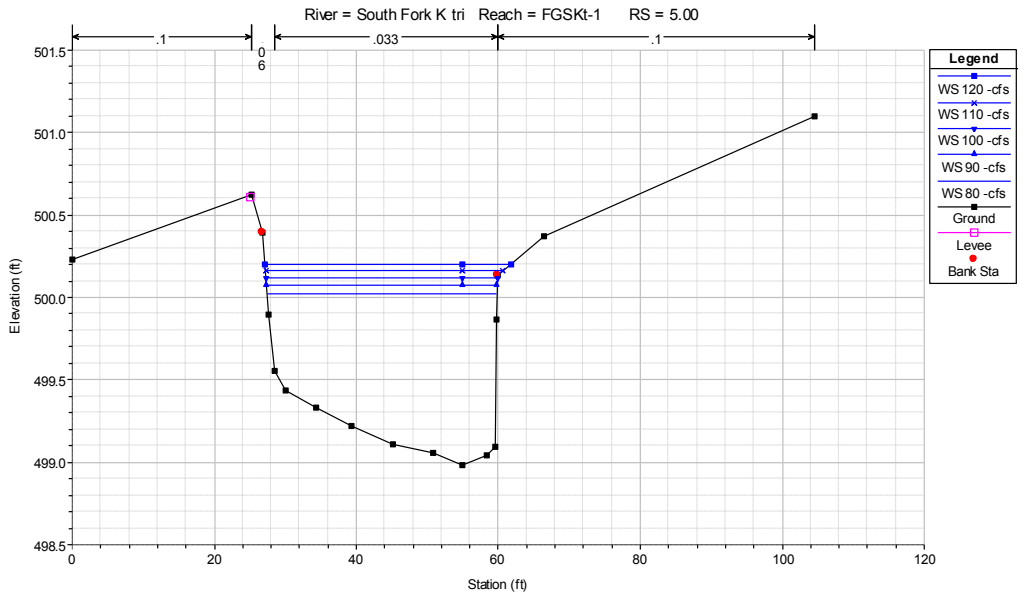


Figure 138 River Station (RS) 5 on River Reach FGSKt-1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSKt-1

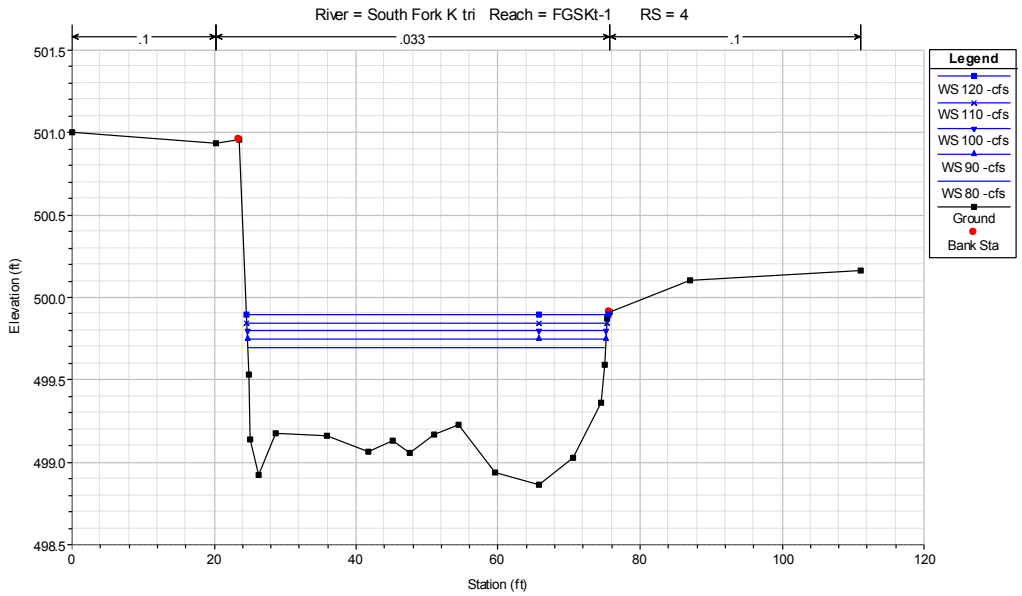


Figure 139 River Station (RS) 4 on River Reach FGSKt-1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSKt-1

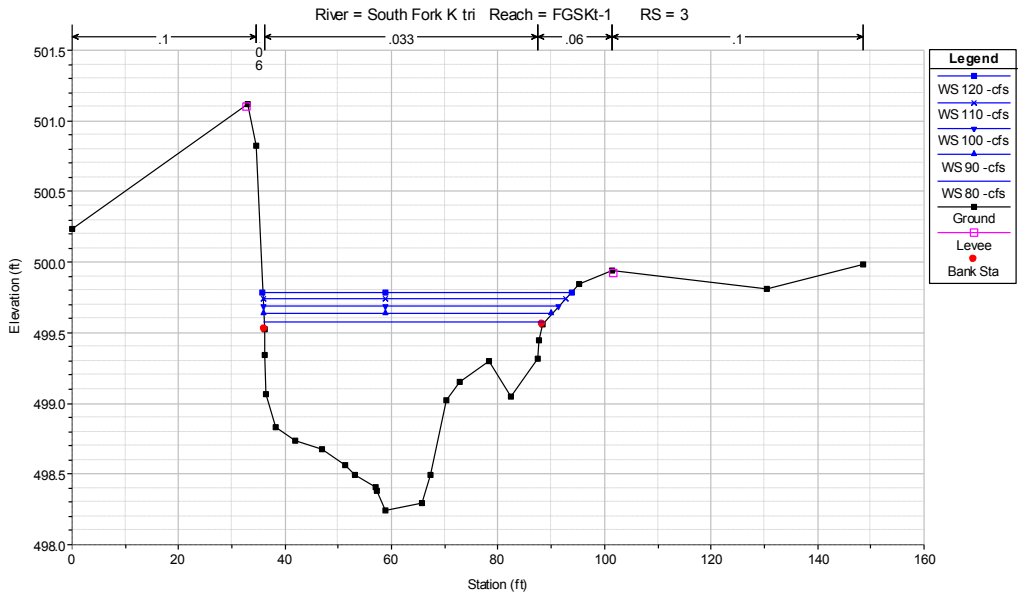


Figure 140 River Station (RS) 3 on River Reach FGSKt-1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSKt-1

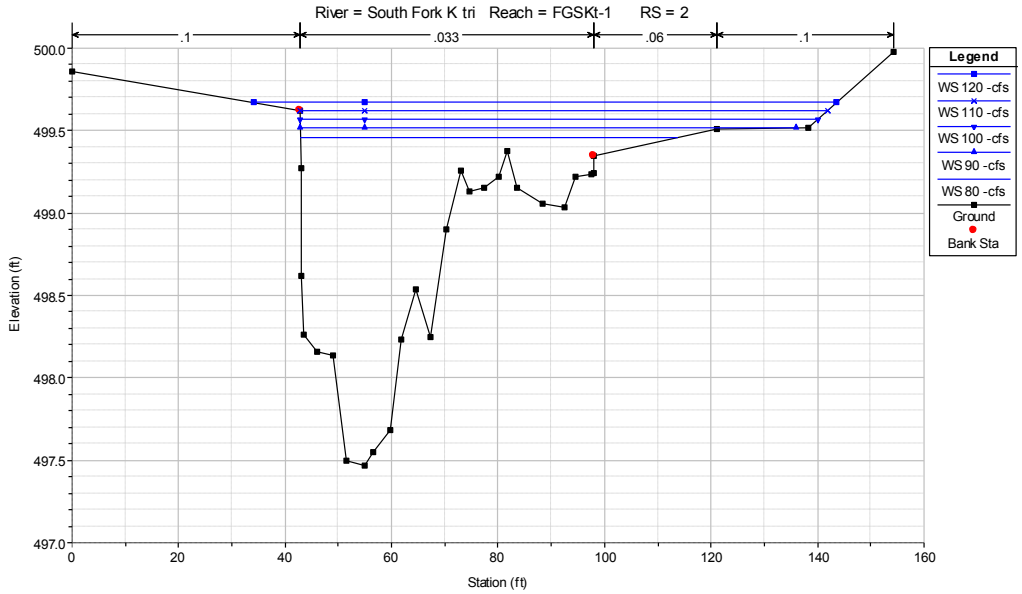


Figure 141 River Station (RS) 2 on River Reach FGSKt-1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS SECTIONS: FGSKt-1

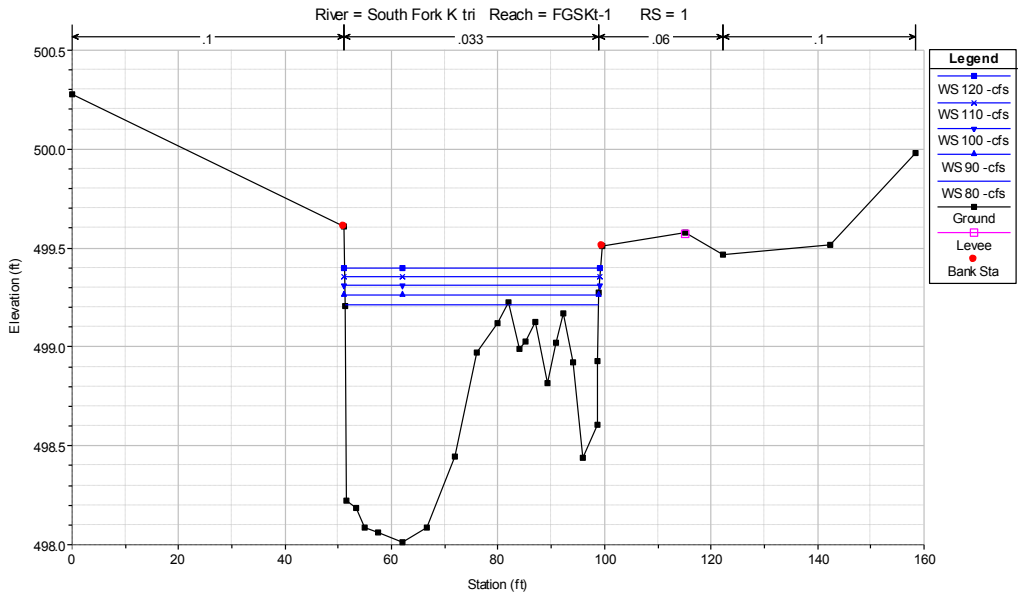


Figure 142 River Station (RS) 1 on River Reach FGSKt-1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

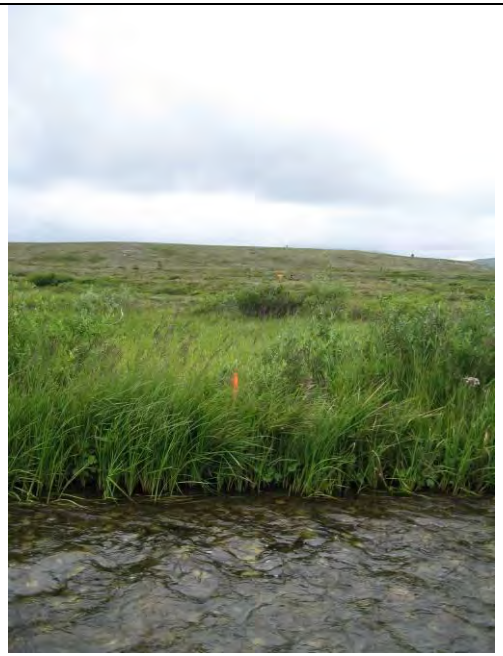
INCIPIENT MOTION ANALYSIS: FGSKt-1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSKt-1	6	80-cfs	0.44	79	64	52
FGSKt-1	6	90-cfs	0.48	86	70	57
FGSKt-1	6	100-cfs	0.51	92	74	60
FGSKt-1	6	110-cfs	0.54	97	79	64
FGSKt-1	6	120-cfs	0.56	101	82	66
FGSKt-1	5	80-cfs	0.32	58	47	38
FGSKt-1	5	90-cfs	0.36	65	52	42
FGSKt-1	5	100-cfs	0.39	70	57	46
FGSKt-1	5	110-cfs	0.43	77	63	51
FGSKt-1	5	120-cfs	0.46	83	67	54
FGSKt-1	4	80-cfs	0.25	45	36	29
FGSKt-1	4	90-cfs	0.26	47	38	31
FGSKt-1	4	100-cfs	0.27	49	39	32
FGSKt-1	4	110-cfs	0.28	50	41	33
FGSKt-1	4	120-cfs	0.29	52	42	34
FGSKt-1	3	80-cfs	0.13	23	19	15
FGSKt-1	3	90-cfs	0.14	25	20	16
FGSKt-1	3	100-cfs	0.15	27	22	18
FGSKt-1	3	110-cfs	0.16	29	23	19
FGSKt-1	3	120-cfs	0.17	31	25	20
FGSKt-1	2	80-cfs	0.09	16	13	11
FGSKt-1	2	90-cfs	0.10	18	15	12
FGSKt-1	2	100-cfs	0.11	20	16	13
FGSKt-1	2	110-cfs	0.11	20	16	13
FGSKt-1	2	120-cfs	0.12	22	18	14
FGSKt-1	1	80-cfs	0.25	45	36	29
FGSKt-1	1	90-cfs	0.27	49	39	32

INCIPIENT MOTION ANALYSIS: FGSKt-1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGSKt-1	1	100-cfs	0.28	50	41	33
FGSKt-1	1	110-cfs	0.30	54	44	35
FGSKt-1	1	120-cfs	0.32	58	47	38

PHOTOGRAPH DOCUMENTATION: FGSKt-1



Left bank along reference reach FGSKt-1

Right bank along reference reach FGSKt-1

Looking downstream from reference reach FGSKt-1

Looking upstream from reference reach FGSKt-1

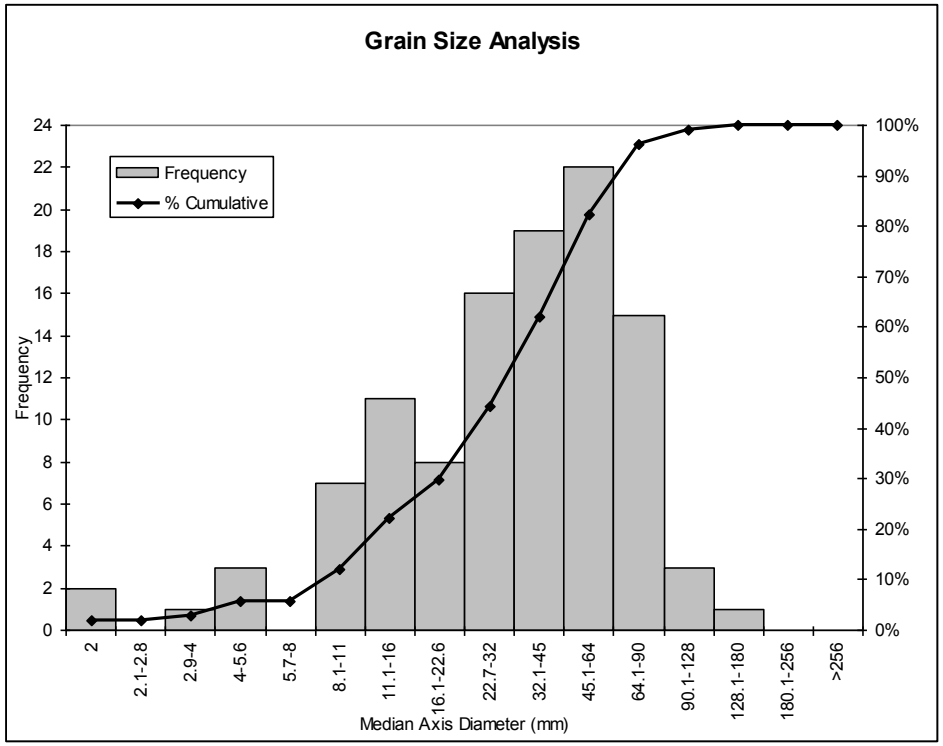
PHOTOGRAPH DOCUMENTATION: FGSKt-1

Bank composition detail (right bank) FGSKt-1

Bank composition detail (right bank) FGSKt-1

Looking upstream from downstream boundary FGSKt-1

PEBBLE COUNT DISTRIBUTION: FGSKt-1



Size Class mm	*Frequency*	*Cumulative %*
2	2	1.9%
2.1-2.8	0	1.9%
2.9-4	1	2.8%
4-5.6	3	5.6%
5.7-8	0	5.6%
8.1-11	7	12.0%
11.1-16	11	22.2%
16.1-22.6	8	29.6%
22.7-32	16	44.4%
32.1-45	19	62.0%
45.1-64	22	82.4%
64.1-90	15	96.3%
90.1-128	3	99.1%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

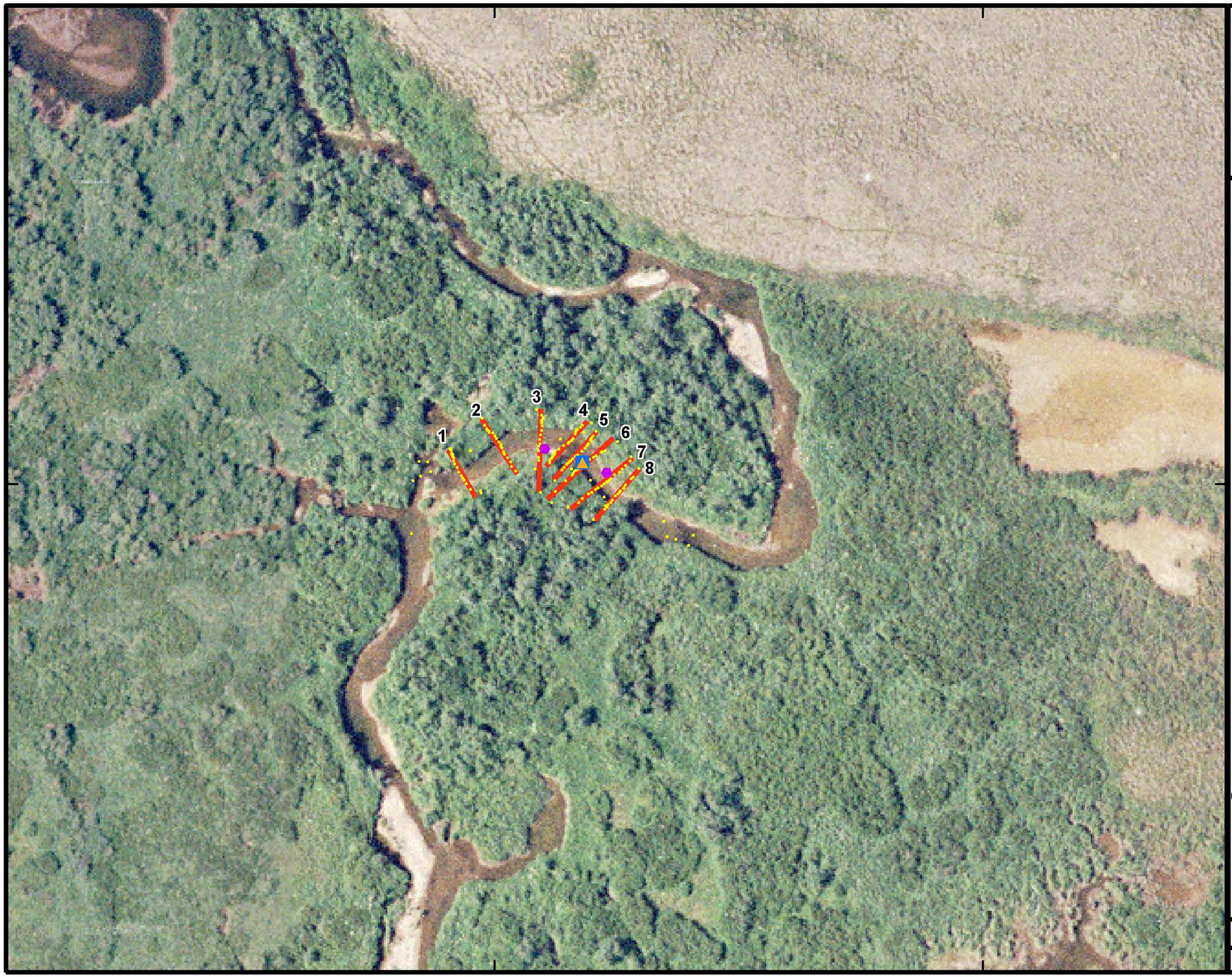
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,377,908

1,378,308

1,378,708

2,127,710

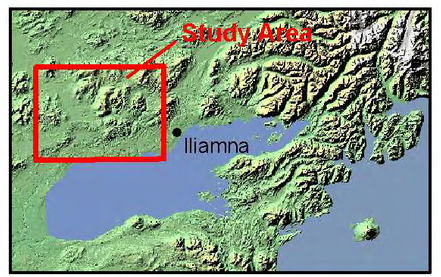


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSK119-1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



0 60 120 180 240 Ft

0 20 40 Meters

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,377,908

1,378,308

1,378,708

SITE DESCRIPTION: FGSK124

Site Characteristics.

	Site Name	**FGSK124**	
Discharge (cfs)	**N/A**	Width (ft)	**N/A**
Slope	**N/A**	Cross-sectional Area (ft^2)	**N/A**
D_{50}	**27**	D_{84}	**51**
Lat/Long Location	**N59.82525 W155.36651**	Drainage Area (mi^2)	**9**
	% Willow	**80**	
	% Grass	**20**	
	% Tree	**0**	

Site Overview. During Inter-Fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 150 feet of channel length. Cross-section 1 serves as the temporary hydraulic control as it the crest of the pool characterized by Sections 5 through 1. Downstream of this cross-section the channel takes a sharp turn. Wood was noted along the bed potentially providing grade control and oversteepening the channel through the bend. Sections 6 through 5 characterize a riffle through which the pebble count was taken. A surface water hydrology gage, SK124A was located in the pool between Sections 8 and 7.

Due to the sharp, oversteepend bend at the downstream boundary of FGSK124, the hydraulics through the site are difficult to model during high flows. Therefore, FGSK124 was not used in the regression analysis.

PHOTOGRAPH DOCUMENTATION: FGSK124

Left bank along reference reach FGSK124

Right bank along reference reach FGSK124

Looking downstream from reference reach FGSK124

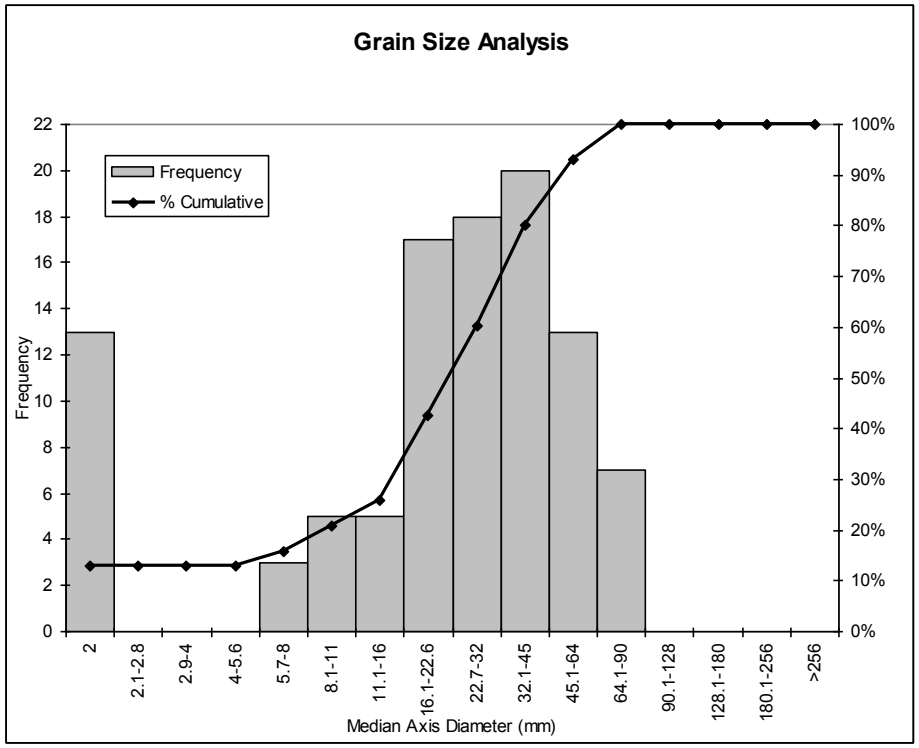
Looking upstream from reference reach FGSK124

PHOTOGRAPH DOCUMENTATION: FGSK124

Bank composition detail (left bank) FGSK124

Bank composition detail (right bank) FGSK124

PEBBLE COUNT DISTRIBUTION: FGSK124



Size Class mm	*Frequency*	*Cumulative %*
2	13	12.9%
2.1-2.8	0	12.9%
2.9-4	0	12.9%
4-5.6	0	12.9%
5.7-8	3	15.8%
8.1-11	5	20.8%
11.1-16	5	25.7%
16.1-22.6	17	42.6%
22.7-32	18	60.4%
32.1-45	20	80.2%
45.1-64	13	93.1%
64.1-90	7	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

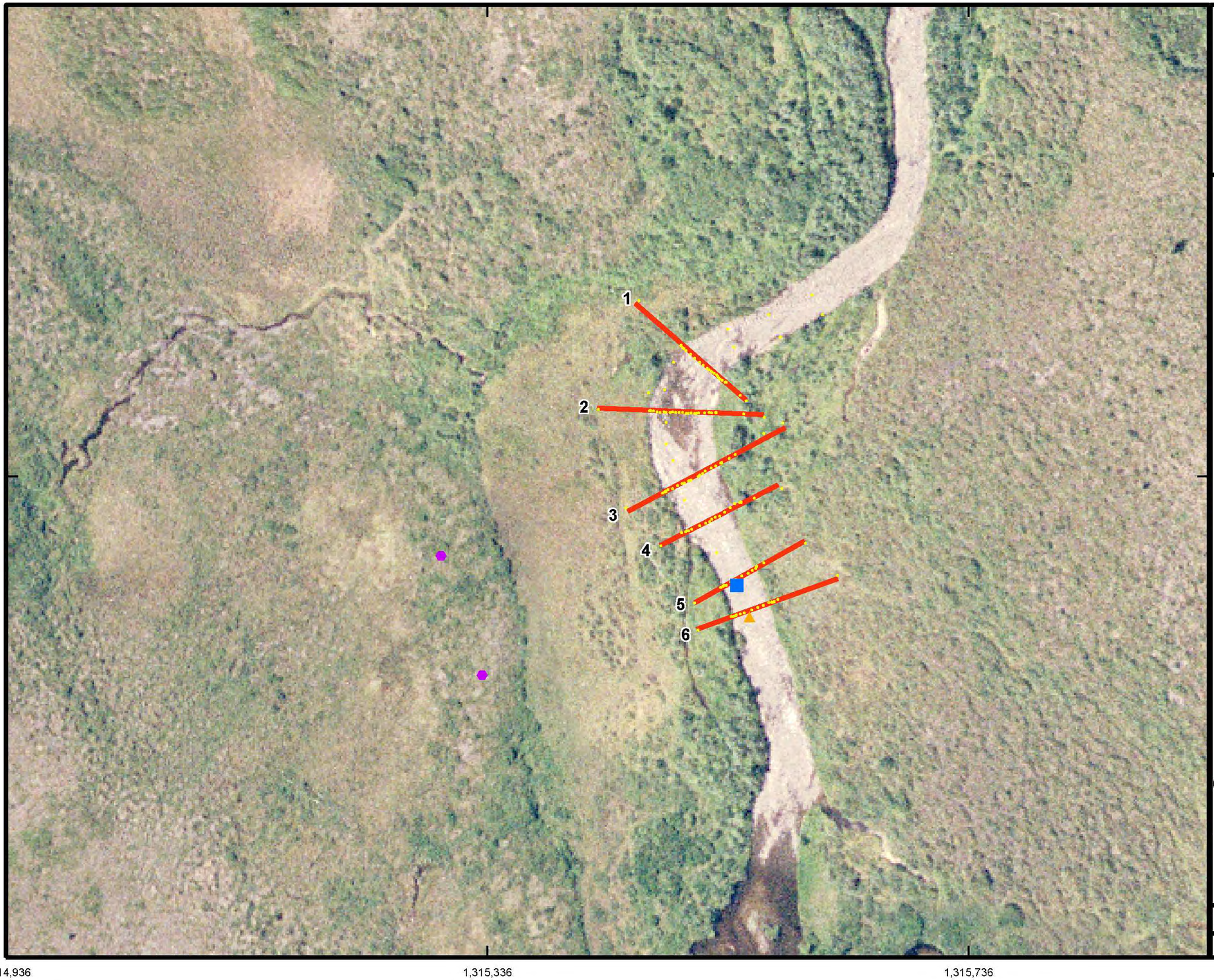
UPPER TALARIK BASIN
Fluvial Geomorphology Site Summaries

1,314,936

1,315,336

1,315,736

2,129,181



THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGSKt-1
(Mine Study Area)

Legend

- HEC-RAS Section
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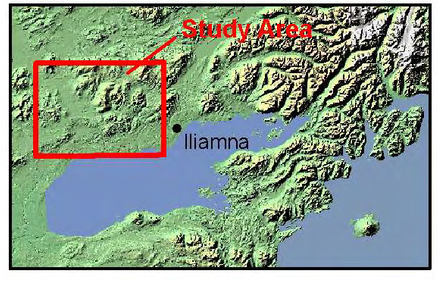
- Pebble Count
- Bulk Sample
- Benchmark



Ft
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Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,314,936

1,315,336

1,315,736

SITE DESCRIPTION: FGUT1

Site Characteristics.

	Site Name	FGUT1	
Discharge (cfs)	**1550 (1400-1700)**	Width (ft)	**87.3 (70.4-101.7)**
Slope	**0.003**	Cross-sectional Area (ft^2)	**271 (246-320)**
D_{50}	**50**	D_{84}	**108**
Lat/Long Location	**N59.65055 W155.19891**	Drainage Area (mi^2)	**137**
	% Willow	**30**	
	% Grass	**70**	
	% Tree	**10**	

Site Overview. During Inter-fluve, Inc.'s field efforts in September 2007, field personnel surveyed seven cross-sections along 560 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 7 through 4 characterize the reference reach, which includes a glide (Sections 7 and 6) and a riffle (Sections 5 and 4). All four sections were included in the analysis because the presence of backwater areas along the left bank of Sections 5 and 4 were not completely representative of the channel geometry through the reach. A pebble count was taken through Section 4. A dry side channel was located on the right bank between Sections 2 and 4. Due to the roughness along the bank from the vegetation, the side channel was assumed to be ineffective during high flows and was not included in the hydraulic model.

For a Shields number of 0.017 the D_{84} moves between 1500 and 1600 cfs on the upper sections of the reach (Sections 6 and 7). Below that, incipient motion varies not moving through Section 5 at the lowest discharge in the range and moving through Section 4 by 1400 cfs. For a Shields number of 0.026, the D_{50} moves through Sections 7 through 4 by 1400 cfs. Throughout the reach the right bank inflection point matches discharges between 1450 and 1700 cfs. The left bank inflection point matches discharges around 1400 cfs.

The reference reach, including the riffle and glide sections (Sections 4 through 7), provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1	7	1400-cfs	1400	70.4	249	3.5	5.0	0.0025	5.6	0.53	0.54	0.030
FGUT1	7	1450-cfs	1450	70.5	253	3.6	5.1	0.0026	5.7	0.53	0.55	0.030
FGUT1	7	1500-cfs	1500	70.6	257	3.7	5.2	0.0026	5.8	0.54	0.57	0.030
FGUT1	7	1550-cfs	1550	70.7	262	3.7	5.2	0.0026	5.9	0.54	0.59	0.030
FGUT1	7	1600-cfs	1600	70.9	266	3.8	5.3	0.0027	6.0	0.55	0.60	0.030
FGUT1	7	1650-cfs	1650	71.2	270	3.8	5.3	0.0027	6.1	0.55	0.62	0.030
FGUT1	7	1700-cfs	1700	71.4	274	3.8	5.4	0.0028	6.2	0.56	0.64	0.030
FGUT1	6	1400-cfs	1400	77.6	246	3.2	4.1	0.0030	5.7	0.56	0.57	0.030
FGUT1	6	1450-cfs	1450	77.7	251	3.2	4.1	0.0030	5.8	0.57	0.58	0.030
FGUT1	6	1500-cfs	1500	77.8	255	3.3	4.2	0.0030	5.9	0.57	0.60	0.030
FGUT1	6	1550-cfs	1550	78.0	259	3.3	4.2	0.0031	6.0	0.58	0.62	0.030
FGUT1	6	1600-cfs	1600	78.1	264	3.4	4.3	0.0031	6.1	0.58	0.63	0.030
FGUT1	6	1650-cfs	1650	78.2	268	3.4	4.3	0.0031	6.2	0.59	0.65	0.030
FGUT1	6	1700-cfs	1700	78.3	272	3.5	4.4	0.0032	6.3	0.59	0.66	0.030
FGUT1	5	1400-cfs	1400	100.6	284	2.8	3.4	0.0025	4.9	0.52	0.44	0.030
FGUT1	5	1450-cfs	1450	101.0	290	2.9	3.4	0.0025	5.0	0.52	0.45	0.030
FGUT1	5	1500-cfs	1500	101.1	297	2.9	3.5	0.0025	5.1	0.52	0.46	0.030
FGUT1	5	1550-cfs	1550	101.3	303	3.0	3.6	0.0026	5.1	0.52	0.47	0.030
FGUT1	5	1600-cfs	1600	101.4	308	3.0	3.6	0.0026	5.2	0.52	0.48	0.030
FGUT1	5	1650-cfs	1650	101.6	314	3.1	3.7	0.0026	5.3	0.53	0.48	0.030
FGUT1	5	1700-cfs	1700	101.7	320	3.2	3.7	0.0026	5.3	0.53	0.49	0.030
FGUT1	4	1400-cfs	1400	98.7	246	2.5	3.2	0.0041	5.7	0.64	0.61	0.030
FGUT1	4	1450-cfs	1450	98.8	252	2.6	3.2	0.0040	5.8	0.64	0.62	0.030
FGUT1	4	1500-cfs	1500	99.0	258	2.6	3.3	0.0040	5.8	0.63	0.63	0.030
FGUT1	4	1550-cfs	1550	99.1	264	2.7	3.3	0.0040	5.9	0.63	0.64	0.030
FGUT1	4	1600-cfs	1600	99.2	269	2.7	3.4	0.0039	5.9	0.63	0.65	0.030
FGUT1	4	1650-cfs	1650	99.3	275	2.8	3.5	0.0039	6.0	0.63	0.66	0.030
FGUT1	4	1700-cfs	1700	99.4	281	2.8	3.5	0.0039	6.1	0.63	0.67	0.030
FGUT1	3	1400-cfs	1400	84.9	252	3.0	4.9	0.0031	5.6	0.57	0.55	0.030

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1	3	1450-cfs	1450	85.0	257	3.0	5.0	0.0031	5.6	0.57	0.57	0.030
FGUT1	3	1500-cfs	1500	85.1	262	3.1	5.0	0.0032	5.7	0.58	0.58	0.030
FGUT1	3	1550-cfs	1550	85.2	267	3.1	5.1	0.0032	5.8	0.58	0.60	0.030
FGUT1	3	1600-cfs	1600	85.2	271	3.2	5.1	0.0032	5.9	0.58	0.61	0.030
FGUT1	3	1650-cfs	1650	85.2	276	3.2	5.2	0.0032	6.0	0.59	0.62	0.030
FGUT1	3	1700-cfs	1700	85.2	280	3.3	5.2	0.0032	6.1	0.59	0.64	0.030
FGUT1	2	1400-cfs	1400	88.9	199	2.2	3.5	0.0070	7.0	0.83	0.97	0.030
FGUT1	2	1450-cfs	1450	90.0	205	2.3	3.5	0.0070	7.1	0.83	0.98	0.030
FGUT1	2	1500-cfs	1500	91.2	211	2.3	3.6	0.0069	7.1	0.83	0.98	0.030
FGUT1	2	1550-cfs	1550	92.3	217	2.4	3.7	0.0068	7.2	0.82	0.98	0.030
FGUT1	2	1600-cfs	1600	93.5	223	2.4	3.7	0.0067	7.2	0.82	0.99	0.030
FGUT1	2	1650-cfs	1650	94.6	229	2.4	3.8	0.0066	7.2	0.82	0.99	0.030
FGUT1	2	1700-cfs	1700	95.2	235	2.5	3.9	0.0065	7.3	0.81	0.99	0.030
FGUT1	1	1400-cfs	1400	74.9	216	2.9	4.1	0.0044	6.5	0.67	0.76	0.030
FGUT1	1	1450-cfs	1450	75.0	220	2.9	4.1	0.0044	6.6	0.68	0.78	0.030
FGUT1	1	1500-cfs	1500	75.1	225	3.0	4.2	0.0044	6.7	0.68	0.79	0.030
FGUT1	1	1550-cfs	1550	75.1	230	3.1	4.3	0.0044	6.8	0.68	0.81	0.030
FGUT1	1	1600-cfs	1600	75.2	234	3.1	4.3	0.0044	6.8	0.68	0.82	0.030
FGUT1	1	1700-cfs	1700	75.2	243	3.2	4.4	0.0044	7.0	0.69	0.86	0.030

HEC-RAS LONGITUDINAL PROFILE: FGUT1

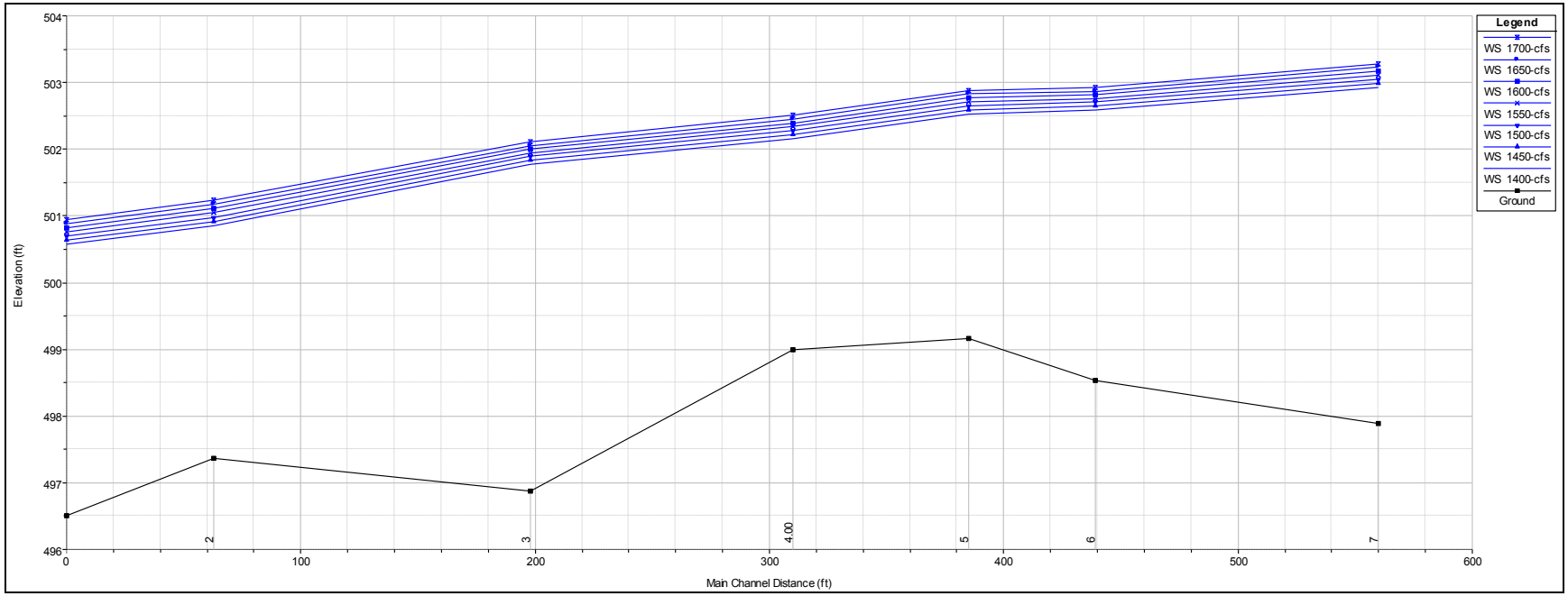


Figure 1 HEC-RAS longitudinal profile output for Reach FGut1. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

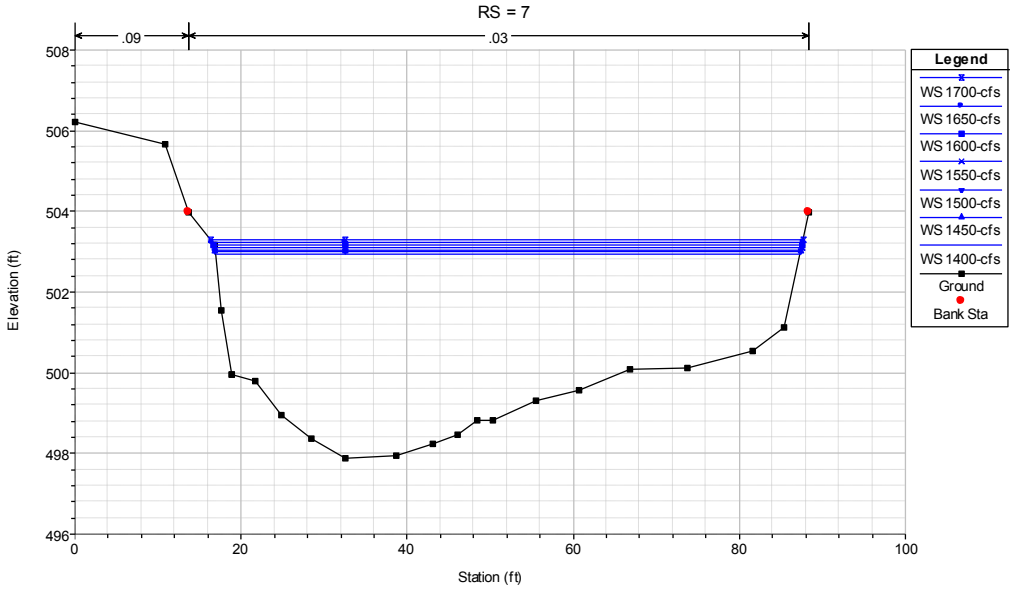


Figure 2 River Station (RS) 7 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

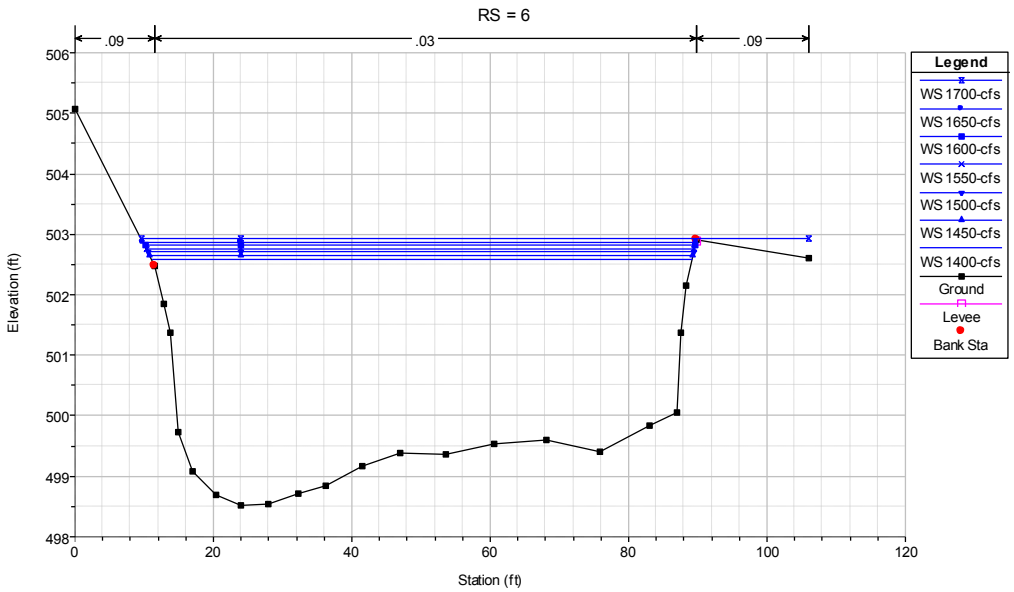


Figure 3 River Station (RS) 6 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

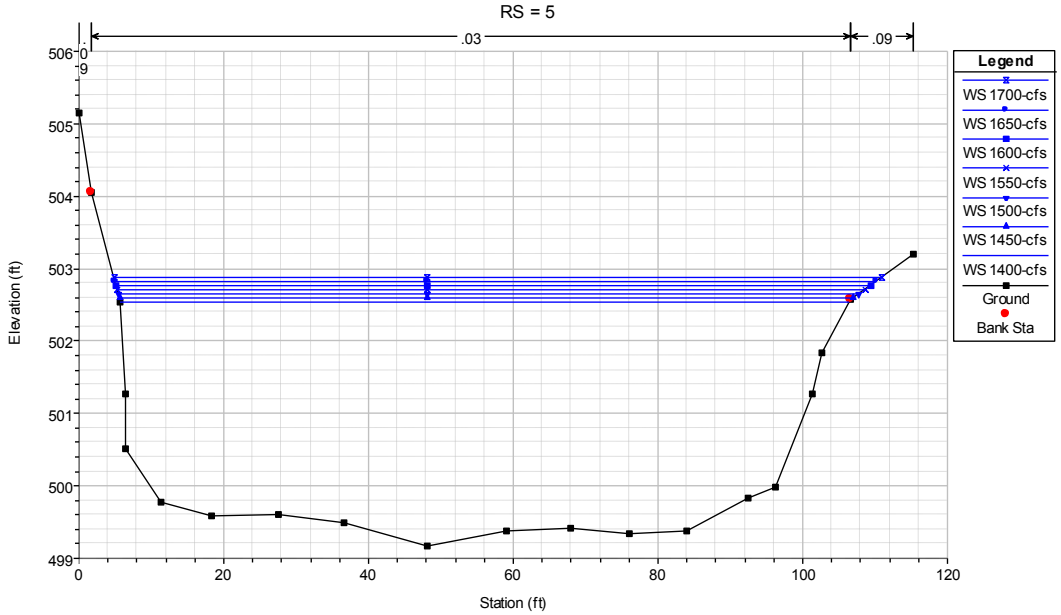


Figure 4 River Station (RS) 5 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

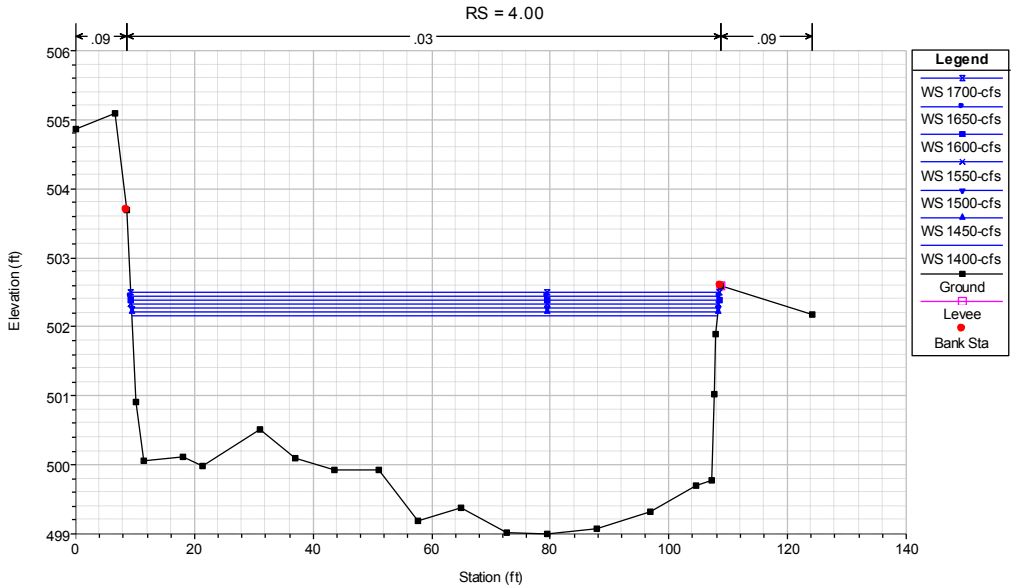


Figure 5 River Station (RS) 4 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

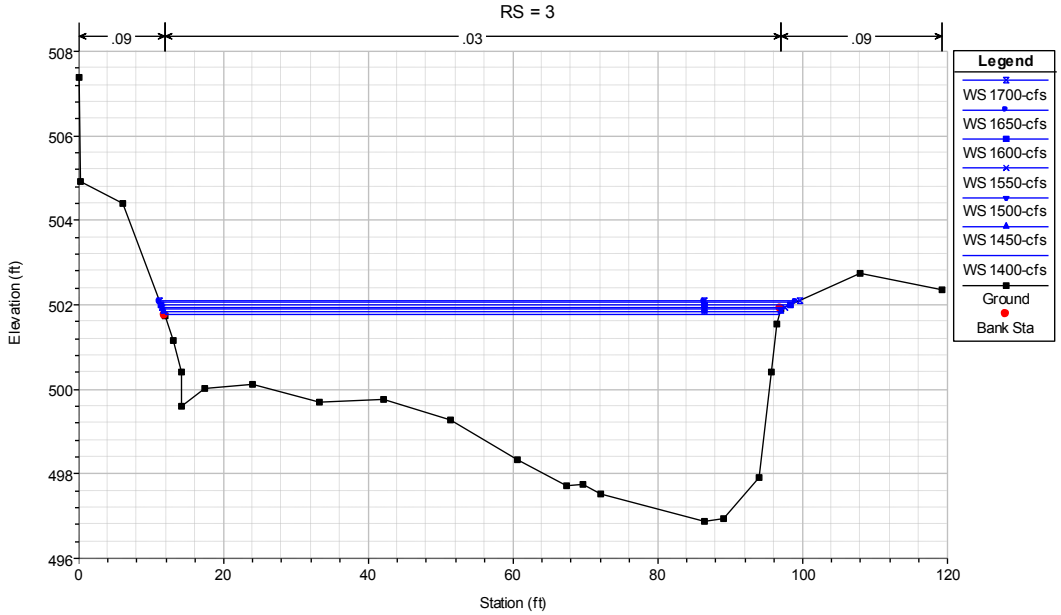


Figure 6 River Station (RS) 3 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

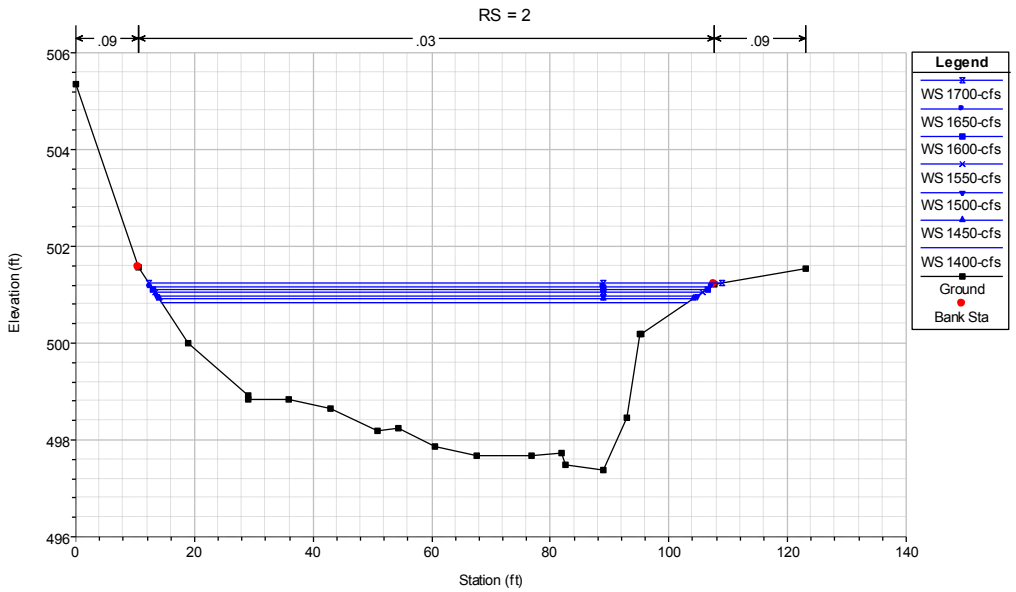


Figure 7 River Station (RS) 2 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1

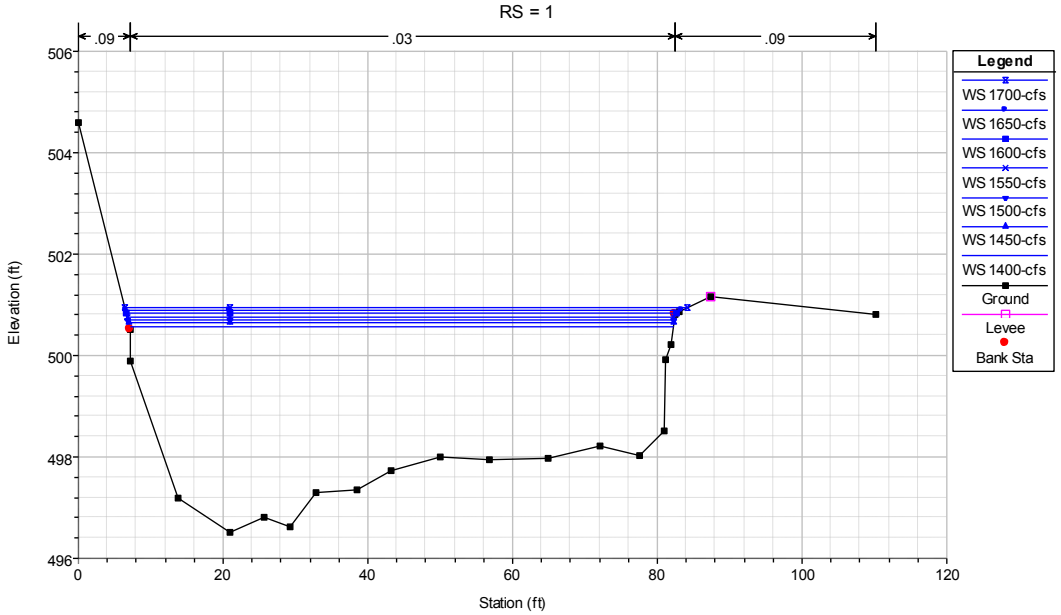


Figure 8 River Station (RS) 1 on River Reach FGUT1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT1

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT1	7	1400-cfs	0.54	97	79	64
FGUT1	7	1450-cfs	0.55	99	80	65
FGUT1	7	1500-cfs	0.57	103	83	67
FGUT1	7	1550-cfs	0.59	106	86	69
FGUT1	7	1600-cfs	0.60	108	87	71
FGUT1	7	1650-cfs	0.62	112	90	73
FGUT1	7	1700-cfs	0.64	115	93	75
FGUT1	6	1400-cfs	0.57	103	83	67
FGUT1	6	1450-cfs	0.58	104	85	68
FGUT1	6	1500-cfs	0.60	108	87	71
FGUT1	6	1550-cfs	0.62	112	90	73
FGUT1	6	1600-cfs	0.63	113	92	74
FGUT1	6	1650-cfs	0.65	117	95	77
FGUT1	6	1700-cfs	0.66	119	96	78
FGUT1	5	1400-cfs	0.44	79	64	52
FGUT1	5	1450-cfs	0.45	81	66	53
FGUT1	5	1500-cfs	0.46	83	67	54
FGUT1	5	1550-cfs	0.47	85	68	55
FGUT1	5	1600-cfs	0.48	86	70	57
FGUT1	5	1650-cfs	0.48	86	70	57
FGUT1	5	1700-cfs	0.49	88	71	58
FGUT1	4	1400-cfs	0.61	110	89	72
FGUT1	4	1450-cfs	0.62	112	90	73
FGUT1	4	1500-cfs	0.63	113	92	74
FGUT1	4	1550-cfs	0.64	115	93	75
FGUT1	4	1600-cfs	0.65	117	95	77
FGUT1	4	1650-cfs	0.66	119	96	78
FGUT1	4	1700-cfs	0.67	121	98	79

INCIPIENT MOTION ANALYSIS: FGUT1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGUT1	3	1400-cfs	0.55	99	80	65
FGUT1	3	1450-cfs	0.57	103	83	67
FGUT1	3	1500-cfs	0.58	104	85	68
FGUT1	3	1550-cfs	0.60	108	87	71
FGUT1	3	1600-cfs	0.61	110	89	72
FGUT1	3	1650-cfs	0.62	112	90	73
FGUT1	3	1700-cfs	0.64	115	93	75
FGUT1	2	1400-cfs	0.97	175	141	114
FGUT1	2	1450-cfs	0.98	176	143	115
FGUT1	2	1500-cfs	0.98	176	143	115
FGUT1	2	1550-cfs	0.98	176	143	115
FGUT1	2	1600-cfs	0.99	178	144	117
FGUT1	2	1650-cfs	0.99	178	144	117
FGUT1	2	1700-cfs	0.99	178	144	117
FGUT1	1	1400-cfs	0.76	137	111	89
FGUT1	1	1450-cfs	0.78	140	114	92
FGUT1	1	1500-cfs	0.79	142	115	93
FGUT1	1	1550-cfs	0.81	146	118	95
FGUT1	1	1600-cfs	0.82	148	120	97
FGUT1	1	1650-cfs	0.84	151	122	99
FGUT1	1	1700-cfs	0.86	155	125	101

PHOTOGRAPH DOCUMENTATION: FGUT1

Left bank along reference reach FGUT1

Right bank along reference reach FGUT1

Looking downstream from reference reach FGUT1

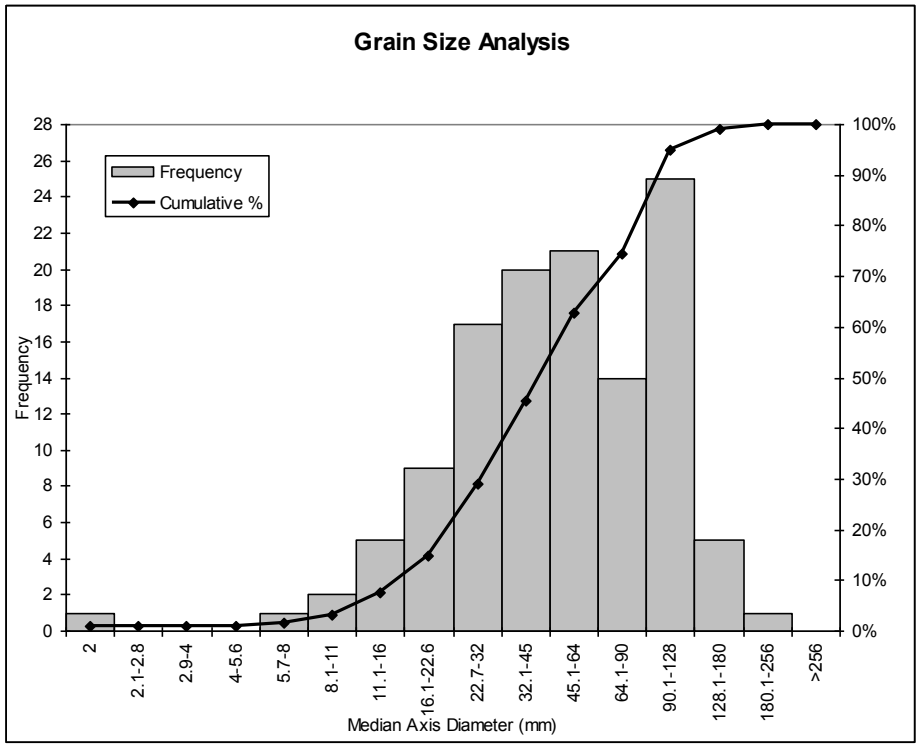
Looking upstream from reference reach FGUT1

PHOTOGRAPH DOCUMENTATION: FGUT1

Bank composition detail (right bank) FGUT1

Oblique of site FGUT1

PEBBLE COUNT DISTRIBUTION: FGUT1



Size Class mm	*Frequency*	*Cumulative %*
2	1	.8%
2.1-2.8	0	.8%
2.9-4	0	.8%
4-5.6	0	.8%
5.7-8	1	1.7%
8.1-11	2	3.3%
11.1-16	5	7.4%
16.1-22.6	9	14.9%
22.7-32	17	28.9%
32.1-45	20	45.5%
45.1-64	21	62.8%
64.1-90	14	74.4%
90.1-128	25	95.0%
128.1-180	5	99.2%
180.1-256	1	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4

1,417,583 1,417,983 1,418,383 1,418,783 1,419,183 1,419,583

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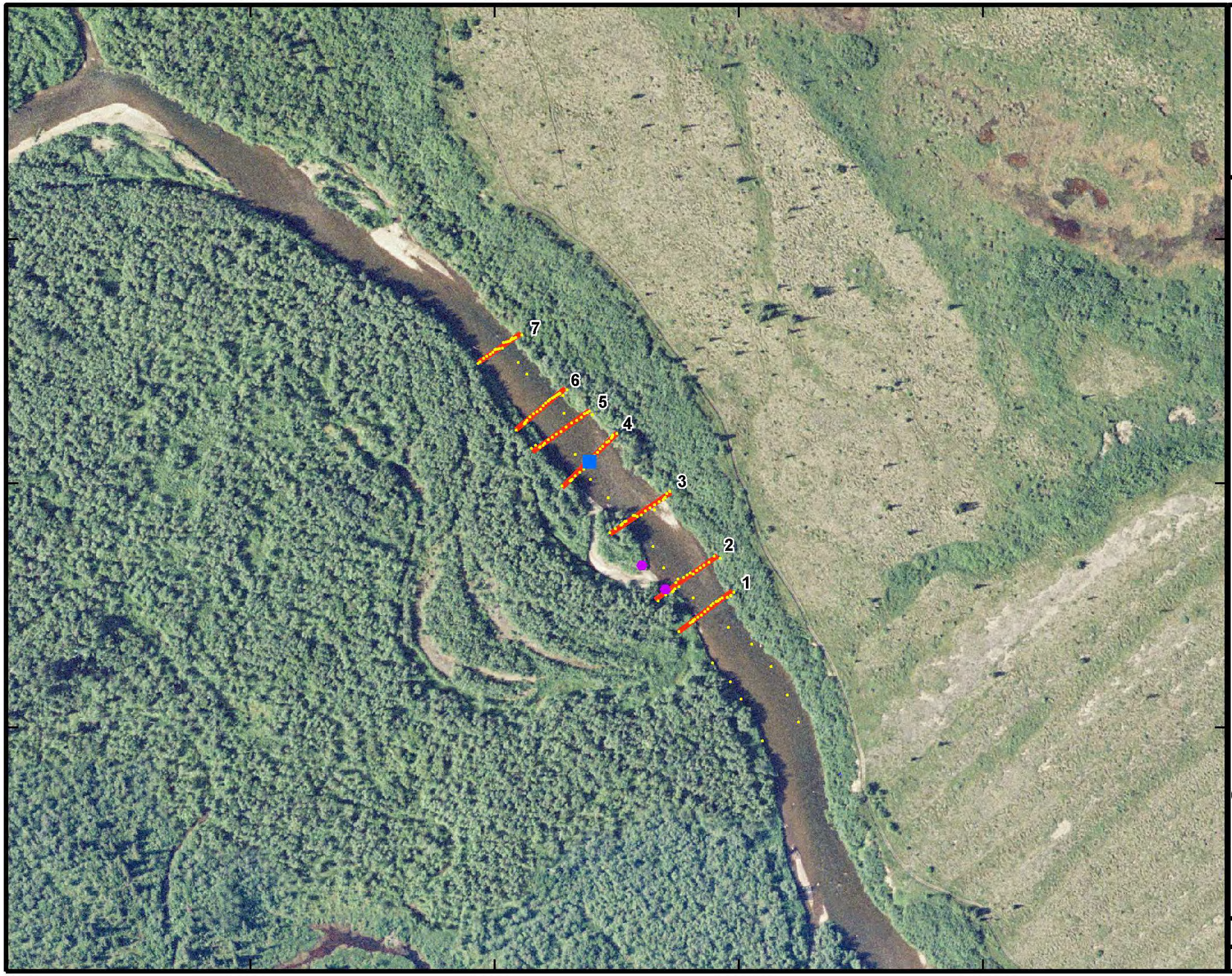
2,066,544

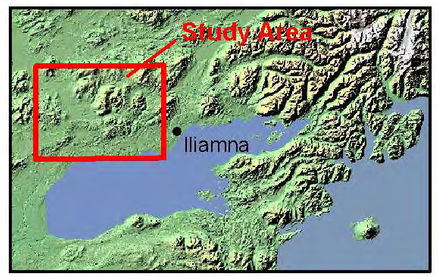


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,417,583 1,417,983 1,418,383 1,418,783 1,419,183 1,419,583

SITE DESCRIPTION: FGUT1.4

Site Characteristics.

Site Name		**FGUT1.4**	
Discharge (cfs)	**1500 (1100-1700)**	Width (ft)	**65.4 (57.1-74.1)**
Slope	**0.003**	Cross-sectional Area (ft^2)	**236 (178-305)**
D_{50}	**44**	D_{84}	**86**
Lat/Long Location	**N59.65055 W155.19891**	Drainage Area (mi^2)	**128**
	% Willow	**60**	
	% Grass	**10**	
	% Tree	**30**	

Site Overview. During Inter-fluve, Inc.'s field efforts in September 2007, seven cross-sections were surveyed along 540 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 7 through 6 characterize the riffle which serves as the reference reach. The pebble count was taken through Section 6. A gravel bar located along the right bank of the pool (Sections 5 through 1) shows signs of bank formation (notably Section 1 and 2). The pebble count distribution is finer than that sampled at the upstream site (FGUTAPC2) and the downstream site (FGUT1).

For a Shields number of 0.017 the D_{84} moves at 1600 cfs and for a Shields number of 0.026 the D_{50} moves before 1100 cfs through Section 7. Along the rest of the cross-sections, the D_{84} moves before 1100 cfs (the lower end of the flow range). A discharge of 1500 cfs matches the geometry of the gravel bar along the lower portions of the pool (Sections 1 and 2) while 1700 cfs fully inundates the gravel bar surface.

The reference reach, which include the riffle sections (Sections 6 and 7), provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1.4

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1.4	7	1100-cfs	1100	72.3	234	3.2	4.3	0.0020	4.7	0.46	0.38	0.030
FGUT1.4	7	1200-cfs	1200	72.6	247	3.4	4.4	0.0020	4.9	0.46	0.40	0.030
FGUT1.4	7	1300-cfs	1300	72.9	259	3.6	4.6	0.0020	5.0	0.47	0.42	0.030
FGUT1.4	7	1400-cfs	1400	73.2	271	3.7	4.8	0.0020	5.1	0.47	0.44	0.030
FGUT1.4	7	1500-cfs	1500	73.5	283	3.9	4.9	0.0020	5.3	0.47	0.46	0.030
FGUT1.4	7	1600-cfs	1600	73.8	294	4.0	5.1	0.0020	5.4	0.48	0.48	0.030
FGUT1.4	7	1700-cfs	1700	74.1	305	4.1	5.2	0.0020	5.5	0.48	0.49	0.030
FGUT1.4	6	1100-cfs	1100	57.1	178	3.1	4.3	0.0036	6.2	0.62	0.67	0.030
FGUT1.4	6	1200-cfs	1200	57.3	186	3.3	4.4	0.0038	6.4	0.63	0.72	0.030
FGUT1.4	6	1300-cfs	1300	57.4	194	3.4	4.6	0.0039	6.7	0.64	0.77	0.030
FGUT1.4	6	1400-cfs	1400	57.6	201	3.5	4.7	0.0040	6.9	0.65	0.82	0.030
FGUT1.4	6	1500-cfs	1500	57.7	209	3.6	4.8	0.0041	7.2	0.67	0.87	0.030
FGUT1.4	6	1600-cfs	1600	57.8	215	3.7	4.9	0.0042	7.4	0.68	0.92	0.030
FGUT1.4	6	1700-cfs	1700	57.9	222	3.8	5.1	0.0043	7.6	0.69	0.97	0.030
FGUT1.4	5	1100-cfs	1100	61.6	185	3.0	4.8	0.0035	5.9	0.60	0.63	0.030
FGUT1.4	5	1200-cfs	1200	61.7	194	3.1	4.9	0.0036	6.2	0.61	0.67	0.030
FGUT1.4	5	1300-cfs	1300	61.7	202	3.3	5.1	0.0036	6.4	0.62	0.71	0.030
FGUT1.4	5	1400-cfs	1400	61.7	210	3.4	5.2	0.0037	6.6	0.63	0.75	0.030
FGUT1.4	5	1500-cfs	1500	61.7	217	3.5	5.3	0.0038	6.8	0.64	0.79	0.030
FGUT1.4	5	1600-cfs	1600	61.7	224	3.6	5.4	0.0038	7.1	0.65	0.84	0.030
FGUT1.4	5	1700-cfs	1700	61.7	232	3.8	5.6	0.0039	7.3	0.66	0.87	0.030
FGUT1.4	4	1100-cfs	1100	80.2	205	2.6	4.6	0.0035	5.4	0.59	0.54	0.030
FGUT1.4	4	1200-cfs	1200	80.3	217	2.7	4.7	0.0034	5.5	0.59	0.56	0.030
FGUT1.4	4	1300-cfs	1300	80.4	229	2.9	4.9	0.0034	5.7	0.59	0.58	0.030
FGUT1.4	4	1400-cfs	1400	80.5	240	3.0	5.0	0.0034	5.8	0.59	0.61	0.030
FGUT1.4	4	1500-cfs	1500	80.5	251	3.1	5.1	0.0033	6.0	0.60	0.63	0.030
FGUT1.4	4	1600-cfs	1600	80.6	261	3.2	5.3	0.0033	6.1	0.60	0.65	0.030
FGUT1.4	4	1700-cfs	1700	80.7	271	3.4	5.4	0.0033	6.2	0.60	0.67	0.030

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1.4

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1.4	3	1100-cfs	1100	80.5	210	2.6	4.8	0.0032	5.2	0.57	0.51	0.030
FGUT1.4	3	1200-cfs	1200	80.8	224	2.8	4.9	0.0031	5.3	0.56	0.52	0.030
FGUT1.4	3	1300-cfs	1300	81.1	236	2.9	5.1	0.0030	5.5	0.56	0.54	0.030
FGUT1.4	3	1400-cfs	1400	81.1	248	3.1	5.2	0.0030	5.6	0.56	0.55	0.030
FGUT1.4	3	1500-cfs	1500	81.1	261	3.2	5.4	0.0029	5.7	0.56	0.56	0.030
FGUT1.4	3	1600-cfs	1600	81.1	272	3.4	5.5	0.0028	5.8	0.55	0.57	0.030
FGUT1.4	3	1700-cfs	1700	81.1	283	3.5	5.7	0.0028	5.9	0.55	0.58	0.030
FGUT1.4	2	1100-cfs	1100	80.9	214	2.7	4.3	0.0030	5.1	0.56	0.49	0.030
FGUT1.4	2	1200-cfs	1200	81.8	228	2.8	4.5	0.0030	5.3	0.56	0.51	0.030
FGUT1.4	2	1300-cfs	1300	82.1	241	2.9	4.7	0.0029	5.4	0.56	0.52	0.030
FGUT1.4	2	1400-cfs	1400	82.5	254	3.1	4.8	0.0029	5.5	0.55	0.54	0.030
FGUT1.4	2	1500-cfs	1500	82.7	266	3.2	5.0	0.0028	5.6	0.55	0.55	0.030
FGUT1.4	2	1600-cfs	1600	82.7	278	3.4	5.1	0.0028	5.8	0.55	0.57	0.030
FGUT1.4	2	1700-cfs	1700	82.7	289	3.5	5.2	0.0027	5.9	0.55	0.58	0.030
FGUT1.4	1	1100-cfs	1100	70.7	193	2.7	4.8	0.0037	5.7	0.61	0.60	0.030
FGUT1.4	1	1200-cfs	1200	71.4	204	2.9	4.9	0.0037	5.9	0.61	0.63	0.030
FGUT1.4	1	1300-cfs	1300	72.2	215	3.0	5.1	0.0037	6.0	0.62	0.66	0.030
FGUT1.4	1	1400-cfs	1400	72.9	226	3.1	5.2	0.0037	6.2	0.62	0.68	0.030
FGUT1.4	1	1500-cfs	1500	73.6	237	3.2	5.4	0.0037	6.3	0.62	0.71	0.030
FGUT1.4	1	1600-cfs	1600	73.8	246	3.3	5.5	0.0037	6.5	0.63	0.73	0.030
FGUT1.4	1	1700-cfs	1700	73.8	255	3.5	5.6	0.0037	6.7	0.63	0.76	0.030

HEC-RAS LONGITUDINAL PROFILE: FGUT1.4

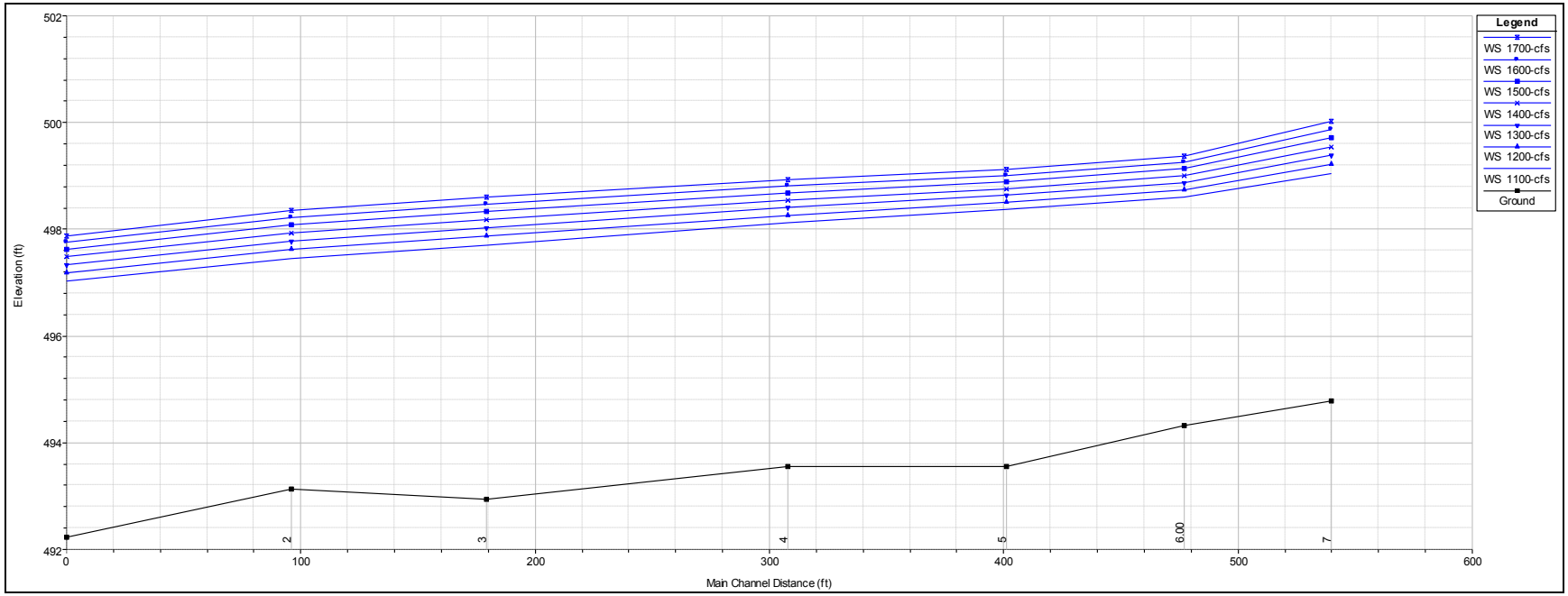


Figure 9 HEC-RAS longitudinal profile output for Reach FGUT1.4. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

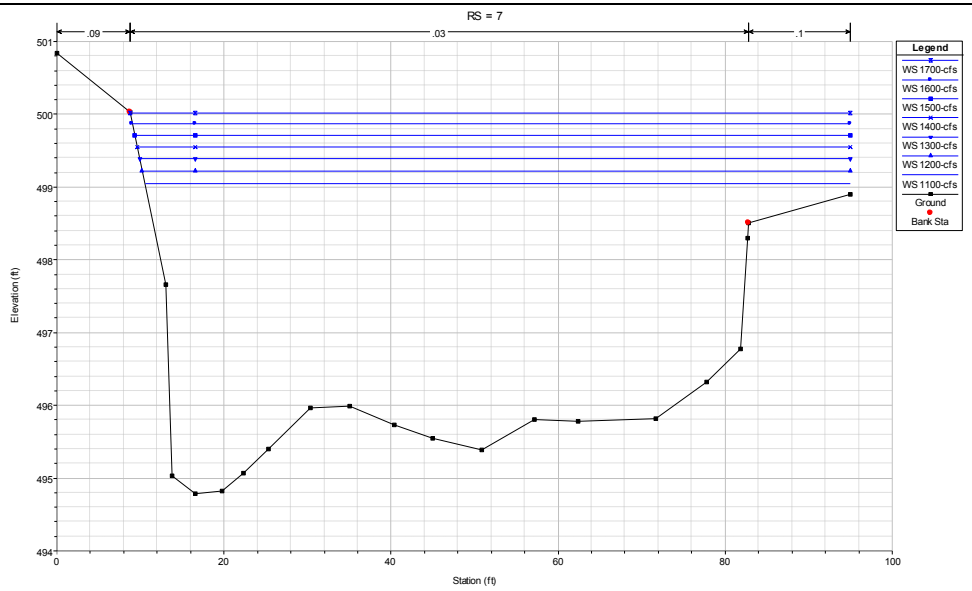


Figure 10 River Station (RS) 7 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

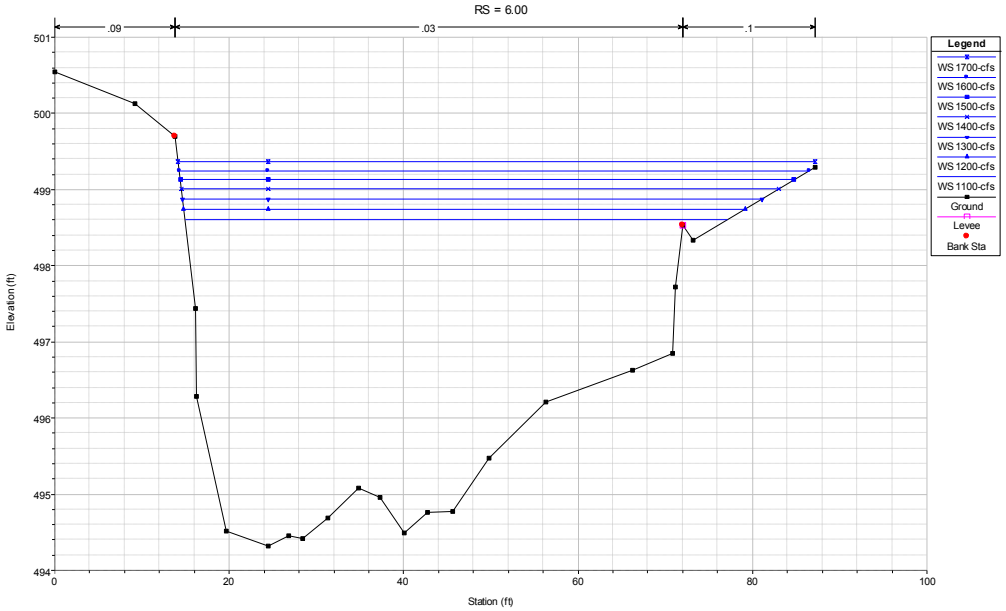


Figure 11 River Station (RS) 6 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

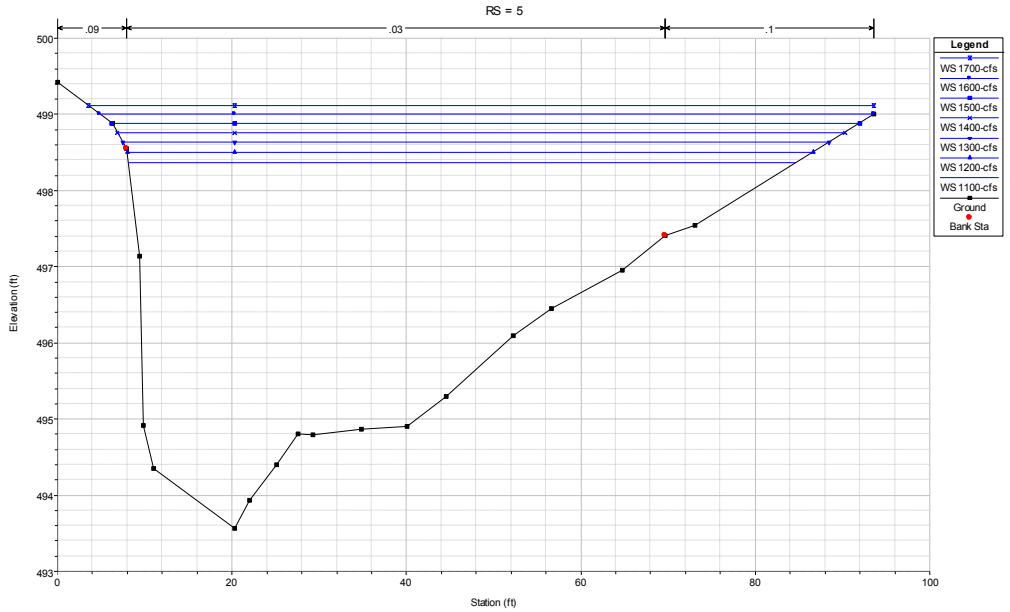


Figure 12 River Station (RS) 5 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

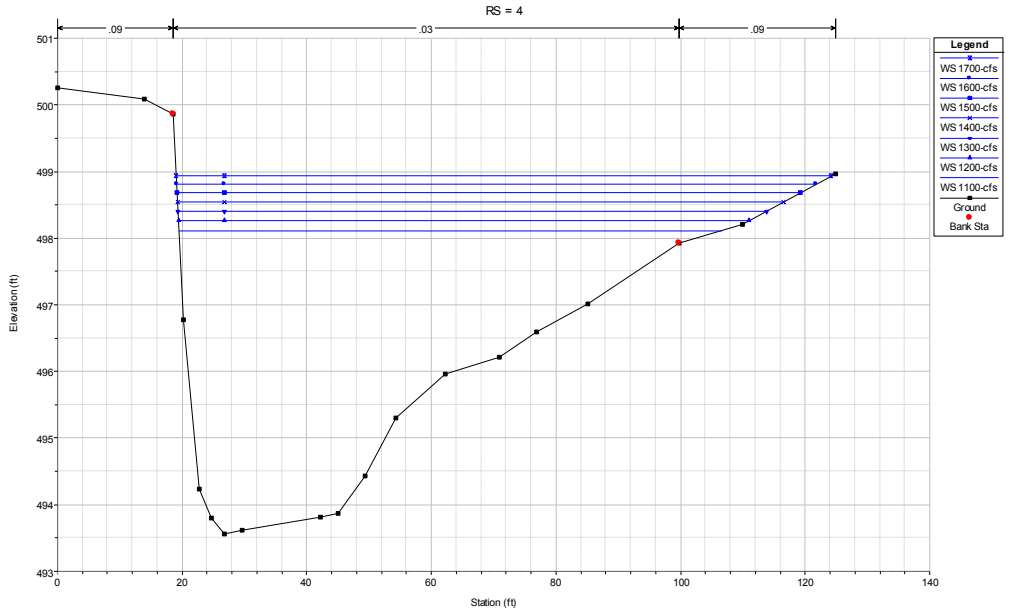


Figure 13 River Station (RS) 4 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

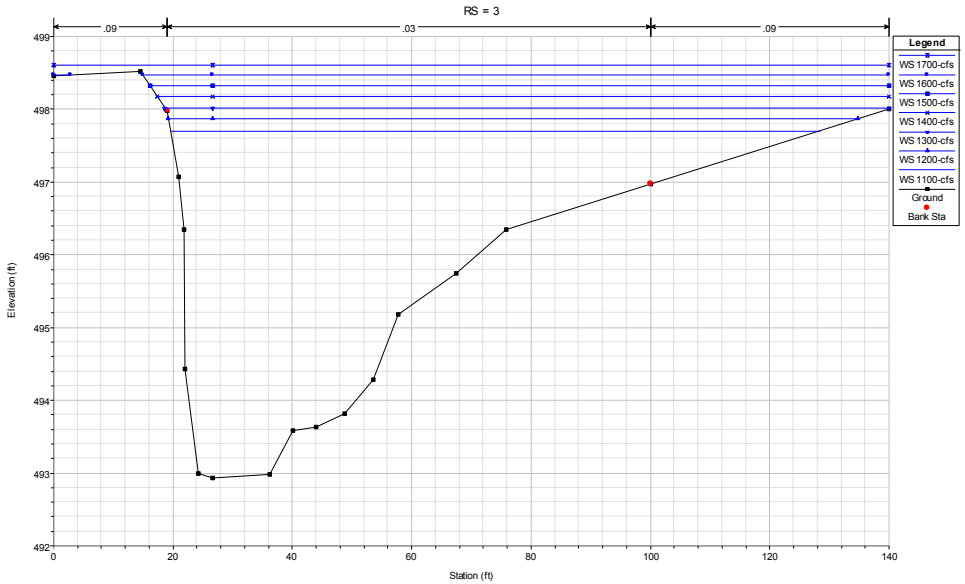


Figure 14 River Station (RS) 3 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

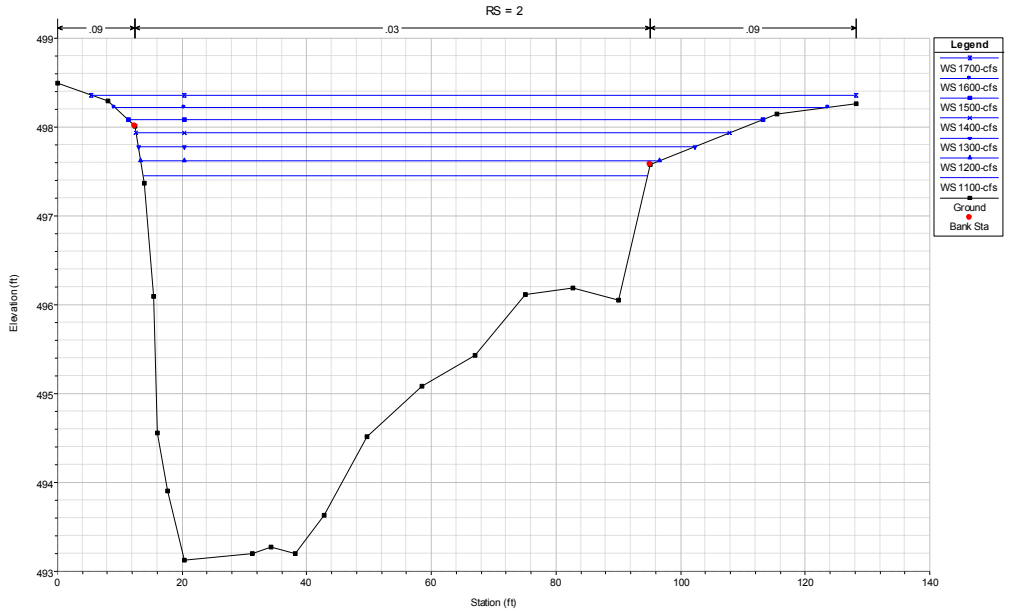


Figure 15 River Station (RS) 2 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.4

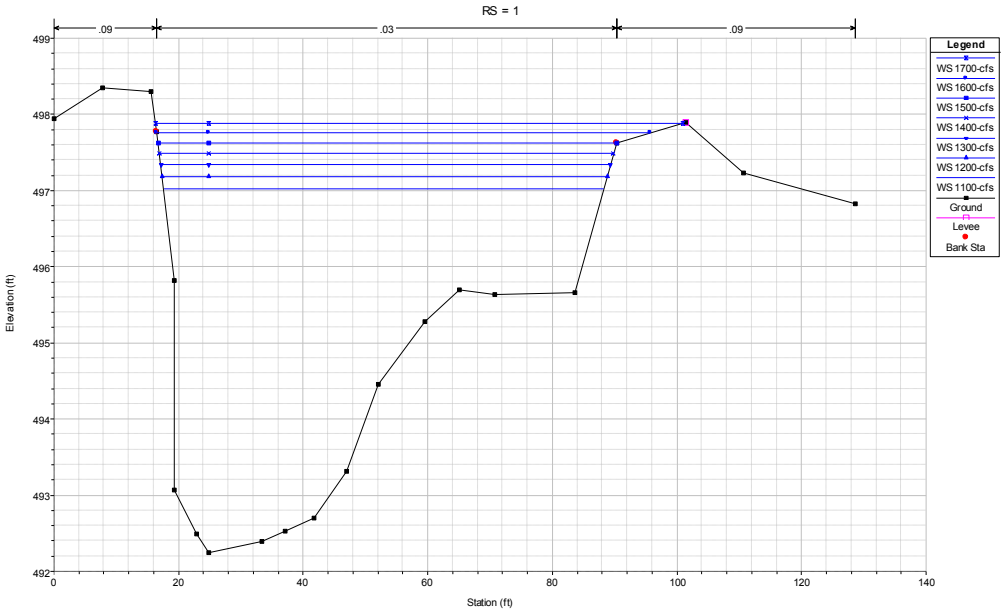


Figure 16 River Station (RS) 1 on River Reach FGUT1.4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT1.4

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT1.4	7	1100-cfs	0.38	68	55	45
FGUT1.4	7	1200-cfs	0.40	72	58	47
FGUT1.4	7	1300-cfs	0.42	76	61	49
FGUT1.4	7	1400-cfs	0.44	79	64	52
FGUT1.4	7	1500-cfs	0.46	83	67	54
FGUT1.4	7	1600-cfs	0.48	86	70	57
FGUT1.4	7	1700-cfs	0.49	88	71	58
FGUT1.4	6	1100-cfs	0.67	121	98	79
FGUT1.4	6	1200-cfs	0.72	130	105	85
FGUT1.4	6	1300-cfs	0.77	139	112	91
FGUT1.4	6	1400-cfs	0.82	148	120	97
FGUT1.4	6	1500-cfs	0.87	157	127	102
FGUT1.4	6	1600-cfs	0.92	166	134	108
FGUT1.4	6	1700-cfs	0.97	175	141	114
FGUT1.4	5	1100-cfs	0.63	113	92	74
FGUT1.4	5	1200-cfs	0.67	121	98	79
FGUT1.4	5	1300-cfs	0.71	128	103	84
FGUT1.4	5	1400-cfs	0.75	135	109	88
FGUT1.4	5	1500-cfs	0.79	142	115	93
FGUT1.4	5	1600-cfs	0.84	151	122	99
FGUT1.4	5	1700-cfs	0.87	157	127	102
FGUT1.4	4	1100-cfs	0.54	97	79	64
FGUT1.4	4	1200-cfs	0.56	101	82	66
FGUT1.4	4	1300-cfs	0.58	104	85	68
FGUT1.4	4	1400-cfs	0.61	110	89	72
FGUT1.4	4	1500-cfs	0.63	113	92	74
FGUT1.4	4	1600-cfs	0.65	117	95	77
FGUT1.4	4	1700-cfs	0.67	121	98	79

INCIPIENT MOTION ANALYSIS: FGUT1.4

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGUT1.4	3	1100-cfs	0.51	92	74	60
FGUT1.4	3	1200-cfs	0.52	94	76	61
FGUT1.4	3	1300-cfs	0.54	97	79	64
FGUT1.4	3	1400-cfs	0.55	99	80	65
FGUT1.4	3	1500-cfs	0.56	101	82	66
FGUT1.4	3	1600-cfs	0.57	103	83	67
FGUT1.4	3	1700-cfs	0.58	104	85	68
FGUT1.4	2	1100-cfs	0.49	88	71	58
FGUT1.4	2	1200-cfs	0.51	92	74	60
FGUT1.4	2	1300-cfs	0.52	94	76	61
FGUT1.4	2	1400-cfs	0.54	97	79	64
FGUT1.4	2	1500-cfs	0.55	99	80	65
FGUT1.4	2	1600-cfs	0.57	103	83	67
FGUT1.4	2	1700-cfs	0.58	104	85	68
FGUT1.4	1	1100-cfs	0.60	108	87	71
FGUT1.4	1	1200-cfs	0.63	113	92	74
FGUT1.4	1	1300-cfs	0.66	119	96	78
FGUT1.4	1	1400-cfs	0.68	122	99	80
FGUT1.4	1	1500-cfs	0.71	128	103	84
FGUT1.4	1	1600-cfs	0.73	131	106	86
FGUT1.4	1	1700-cfs	0.76	137	111	89

PHOTOGRAPH DOCUMENTATION: FGUT1.4

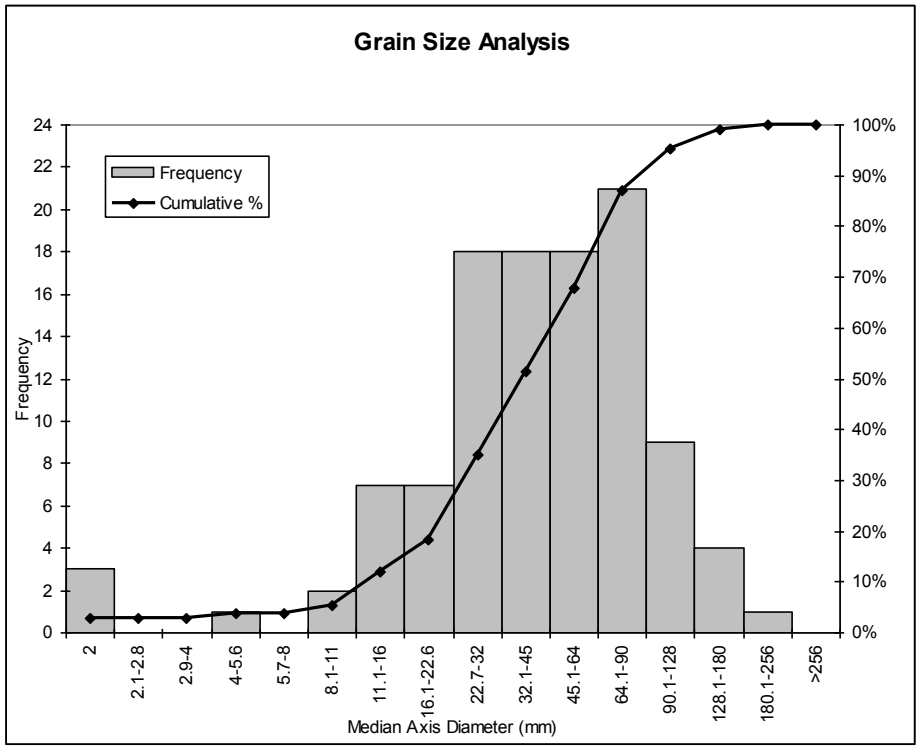
Looking downstream from reference reach FGUT1.4

Looking upstream towards reference reach FGUT1.4

Right bank along section 3 FGUT1.4

Looking upstream from downstream boundary FGUT1.4

PEBBLE COUNT DISTRIBUTION: FGUT1.4



Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	0	2.8%
2.9-4	0	2.8%
4-5.6	1	3.7%
5.7-8	0	3.7%
8.1-11	2	5.5%
11.1-16	7	11.9%
16.1-22.6	7	18.3%
22.7-32	18	34.9%
32.1-45	18	51.4%
45.1-64	18	67.9%
64.1-90	21	87.2%
90.1-128	9	95.4%
128.1-180	4	99.1%
180.1-256	1	100.0%
>256	0	100.0%

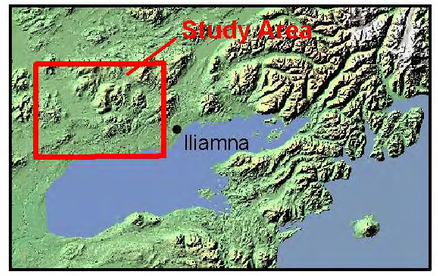
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 6

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT1.4
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGUTAPC2

Site Characteristics.

Site Name	FGUTAPC2		
Discharge (cfs)	**1250 (1100-1350)**	Width (ft)	**85.9 (80.0-91.1)**
Slope	**0.0045**	Cross-sectional Area (ft^2)	**223 (204-245)**
D_{50}	**88**	D_{84}	**175**
(modified) D_{50}	**83**	D_{84}	**167**
Lat/Long Location	**N59.7007 W155.2467**	Drainage Area (mi^2)	**110**
	% Willow	**70**	
	% Grass	**20**	
	% Tree	**10**	

Site Overview. During Inter-fluve, Inc.'s field efforts in September 2007, field personnel surveyed nine cross-sections along 960 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 6 through 4 characterize the riffle which serves as the reference reach. The pebble count was taken between Sections 5 and 4. An Alaska Peninsula Corporation gage (APC2) was located just upstream of Section 9. Sections 9 through 7 were included in order to incorporate this gage into the model once a rating curve is established. These sections are bedrock confined. Lag was noted in the field and suspected particle size classes were removed from the pebble count (see pebble count). A pebble count distribution may suggest the presence of greater amounts of lag than accounted for.

According to the incipient motion analysis, the D_{84} does not move through the reference reach within the range of channel forming discharges. For a Shields number of 0.026, the D_{50} moves through Section 6 and 5 by 1100 cfs. If the site does have unaccounted for lag, then these numbers would be in strong agreement with the geometry which shows 1150 cfs matching well with a right bank inflection point on Section 6 and 5.

The reference reach sections (Sections 6 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUTAPC2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUTAPC2	9	1100-cfs	1100	78.9	226	2.9	3.8	0.0031	4.9	0.51	0.55	0.034
FGUTAPC2	9	1150-cfs	1150	78.9	231	2.9	3.8	0.0032	5.0	0.51	0.57	0.034
FGUTAPC2	9	1200-cfs	1200	79.0	236	3.0	3.9	0.0032	5.1	0.52	0.59	0.034
FGUTAPC2	9	1250-cfs	1250	79.0	241	3.1	4.0	0.0033	5.2	0.52	0.61	0.034
FGUTAPC2	9	1300-cfs	1300	79.0	246	3.1	4.0	0.0033	5.3	0.53	0.63	0.034
FGUTAPC2	9	1350-cfs	1350	79.0	251	3.2	4.1	0.0033	5.4	0.53	0.65	0.034
FGUTAPC2	8	1100-cfs	1100	88.3	229	2.6	3.9	0.0035	4.8	0.53	0.55	0.034
FGUTAPC2	8	1150-cfs	1150	88.3	235	2.7	4.0	0.0035	4.9	0.53	0.57	0.034
FGUTAPC2	8	1200-cfs	1200	88.3	240	2.7	4.1	0.0035	5.0	0.53	0.59	0.034
FGUTAPC2	8	1250-cfs	1250	88.3	245	2.8	4.1	0.0036	5.1	0.54	0.61	0.034
FGUTAPC2	8	1300-cfs	1300	88.3	251	2.8	4.2	0.0036	5.2	0.54	0.62	0.034
FGUTAPC2	8	1350-cfs	1350	88.3	256	2.9	4.2	0.0036	5.3	0.55	0.64	0.034
FGUTAPC2	7	1100-cfs	1100	87.5	160	1.8	2.4	0.0113	6.9	0.89	1.27	0.034
FGUTAPC2	7	1150-cfs	1150	87.5	166	1.9	2.5	0.0110	6.9	0.89	1.28	0.034
FGUTAPC2	7	1200-cfs	1200	87.6	172	2.0	2.6	0.0107	7.0	0.88	1.28	0.034
FGUTAPC2	7	1250-cfs	1250	87.6	177	2.0	2.6	0.0105	7.1	0.87	1.29	0.034
FGUTAPC2	7	1300-cfs	1300	87.7	183	2.1	2.7	0.0103	7.1	0.87	1.30	0.034
FGUTAPC2	7	1350-cfs	1350	87.7	188	2.2	2.8	0.0101	7.2	0.86	1.32	0.034
FGUTAPC2	6	1100-cfs	1100	80.0	204	2.5	3.0	0.0046	5.4	0.60	0.71	0.034
FGUTAPC2	6	1150-cfs	1150	80.1	209	2.6	3.1	0.0046	5.5	0.60	0.73	0.034
FGUTAPC2	6	1200-cfs	1200	80.2	214	2.7	3.2	0.0047	5.6	0.60	0.75	0.034
FGUTAPC2	6	1250-cfs	1250	80.4	219	2.7	3.2	0.0047	5.7	0.61	0.77	0.034
FGUTAPC2	6	1300-cfs	1300	80.5	224	2.8	3.3	0.0047	5.8	0.61	0.79	0.034
FGUTAPC2	6	1350-cfs	1350	80.6	229	2.8	3.4	0.0047	5.9	0.62	0.81	0.034
FGUTAPC2	5	1100-cfs	1100	90.9	206	2.3	2.7	0.0051	5.3	0.62	0.71	0.034
FGUTAPC2	5	1150-cfs	1150	90.9	213	2.3	2.8	0.0051	5.4	0.62	0.72	0.034
FGUTAPC2	5	1200-cfs	1200	91.0	219	2.4	2.8	0.0050	5.5	0.62	0.74	0.034
FGUTAPC2	5	1250-cfs	1250	91.0	226	2.5	2.9	0.0049	5.5	0.62	0.75	0.034
FGUTAPC2	5	1300-cfs	1300	91.0	232	2.6	3.0	0.0049	5.6	0.62	0.76	0.034
FGUTAPC2	5	1350-cfs	1350	91.1	238	2.6	3.0	0.0048	5.7	0.62	0.77	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGUTAPC2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUTAPC2	4	1100-cfs	1100	86.4	214	2.5	3.1	0.0040	5.2	0.58	0.59	0.034
FGUTAPC2	4	1150-cfs	1150	86.5	220	2.6	3.2	0.0040	5.2	0.58	0.61	0.034
FGUTAPC2	4	1200-cfs	1200	86.5	227	2.6	3.3	0.0040	5.3	0.58	0.62	0.034
FGUTAPC2	4	1250-cfs	1250	86.6	233	2.7	3.4	0.0039	5.4	0.58	0.64	0.034
FGUTAPC2	4	1300-cfs	1300	86.7	239	2.8	3.4	0.0039	5.4	0.58	0.65	0.034
FGUTAPC2	4	1350-cfs	1350	86.7	245	2.8	3.5	0.0039	5.5	0.58	0.67	0.034
FGUTAPC2	3	1100-cfs	1100	85.3	238	2.8	4.4	0.0030	4.6	0.49	0.50	0.034
FGUTAPC2	3	1150-cfs	1150	85.7	244	2.9	4.4	0.0030	4.7	0.49	0.52	0.034
FGUTAPC2	3	1200-cfs	1200	86.0	250	2.9	4.5	0.0030	4.8	0.50	0.53	0.034
FGUTAPC2	3	1250-cfs	1250	86.4	256	3.0	4.6	0.0030	4.9	0.50	0.55	0.034
FGUTAPC2	3	1300-cfs	1300	86.7	262	3.0	4.7	0.0030	5.0	0.50	0.56	0.034
FGUTAPC2	3	1350-cfs	1350	87.0	268	3.1	4.7	0.0031	5.0	0.51	0.57	0.034
FGUTAPC2	2	1100-cfs	1100	82.6	223	2.7	3.3	0.0035	4.9	0.53	0.58	0.034
FGUTAPC2	2	1150-cfs	1150	82.6	229	2.8	3.4	0.0035	5.0	0.53	0.59	0.034
FGUTAPC2	2	1200-cfs	1200	82.7	234	2.8	3.5	0.0035	5.1	0.54	0.61	0.034
FGUTAPC2	2	1250-cfs	1250	82.8	240	2.9	3.5	0.0035	5.2	0.54	0.63	0.034
FGUTAPC2	2	1300-cfs	1300	82.8	246	3.0	3.6	0.0036	5.3	0.54	0.64	0.034
FGUTAPC2	2	1350-cfs	1350	82.9	251	3.0	3.7	0.0036	5.4	0.54	0.66	0.034
FGUTAPC2	1	1100-cfs	1100	87.3	213	2.4	2.9	0.0044	5.2	0.58	0.65	0.034
FGUTAPC2	1	1150-cfs	1150	87.4	219	2.5	3.0	0.0044	5.3	0.58	0.67	0.034
FGUTAPC2	1	1200-cfs	1200	87.5	225	2.6	3.0	0.0044	5.3	0.59	0.69	0.034
FGUTAPC2	1	1250-cfs	1250	87.5	231	2.6	3.1	0.0044	5.4	0.59	0.70	0.034
FGUTAPC2	1	1300-cfs	1300	87.6	236	2.7	3.2	0.0044	5.5	0.59	0.72	0.034
FGUTAPC2	1	1350-cfs	1350	87.7	242	2.8	3.2	0.0044	5.6	0.59	0.73	0.034

HEC-RAS LONGITUDINAL PROFILE: FGUTAPC2

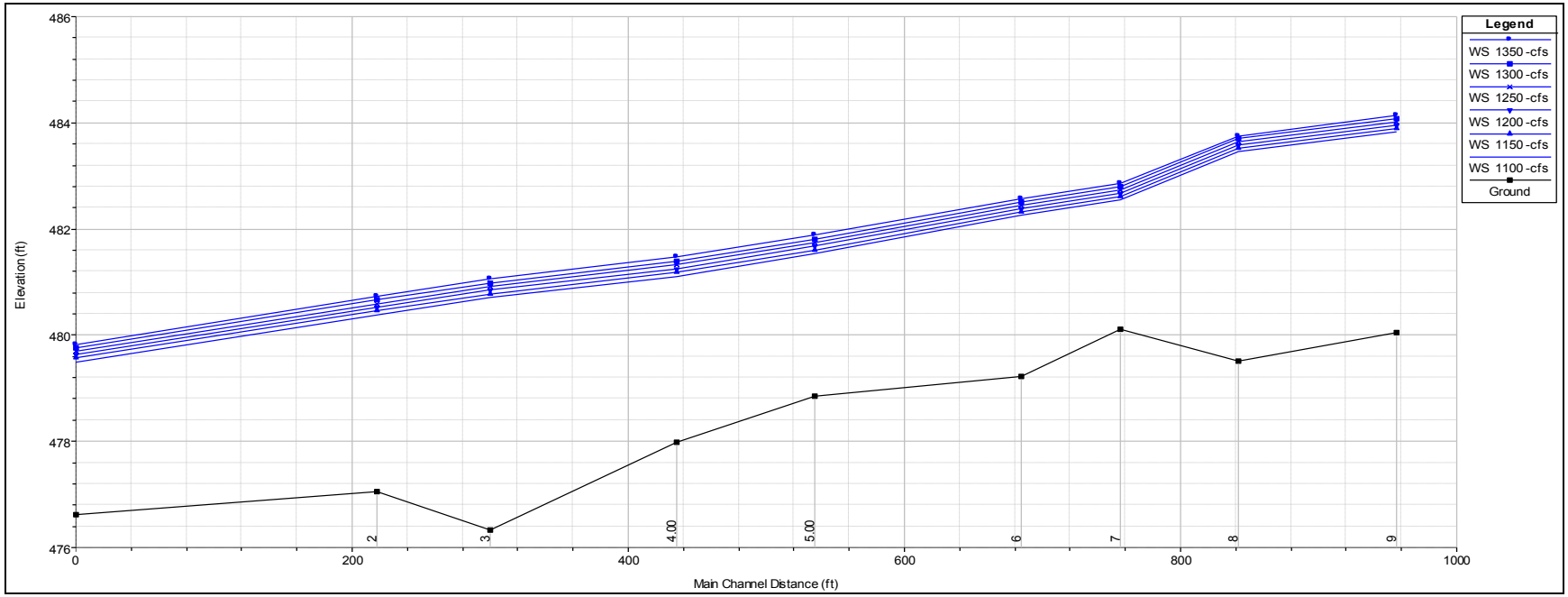


Figure 17 HEC-RAS longitudinal profile output for Reach FGUTAPC2. Numbers 1-9 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

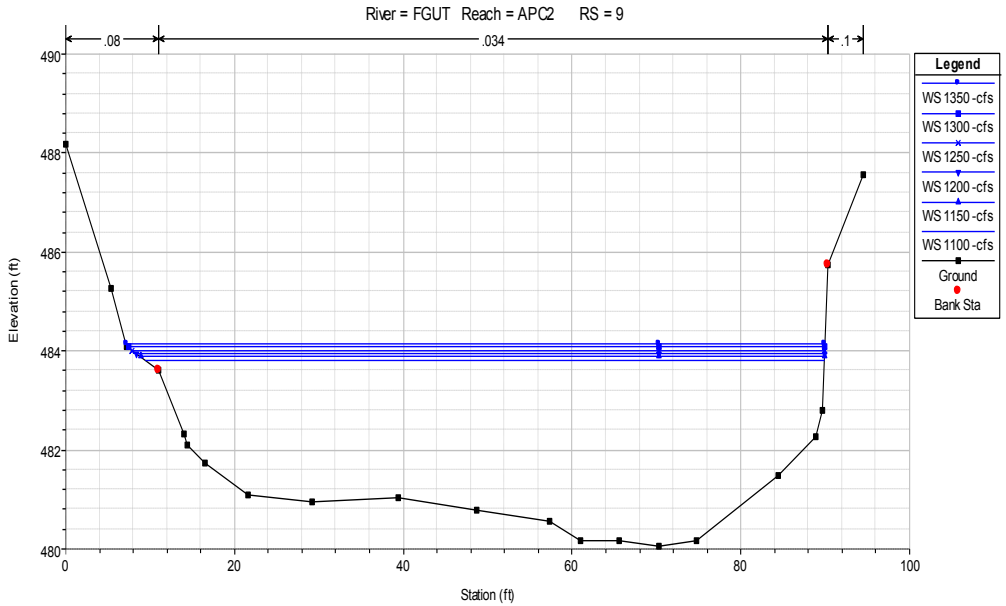


Figure 18 River Station (RS) 9 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

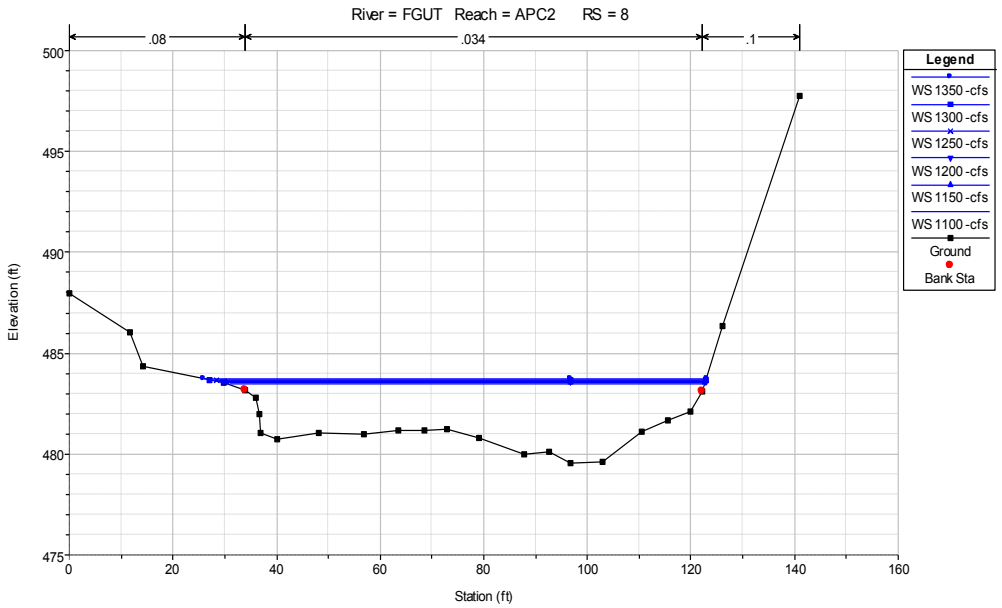


Figure 19 River Station (RS) 8 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

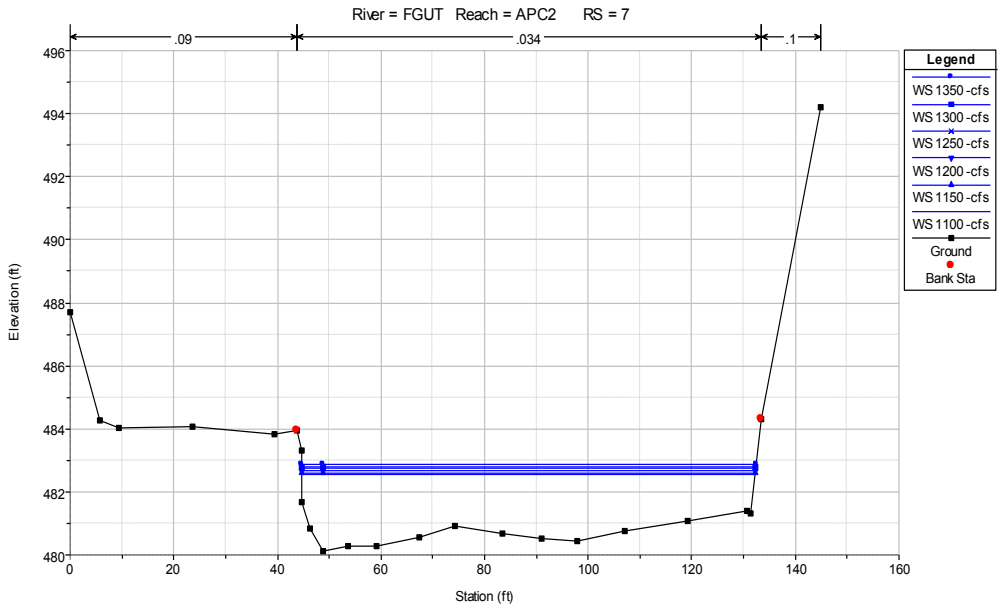


Figure 20 River Station (RS) 7 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

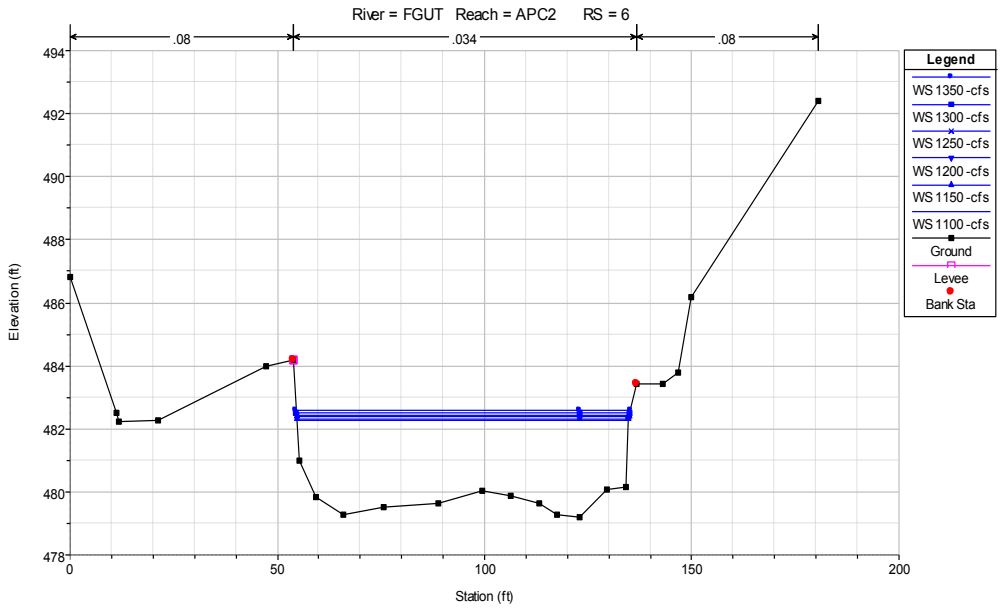


Figure 21 River Station (RS) 6 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

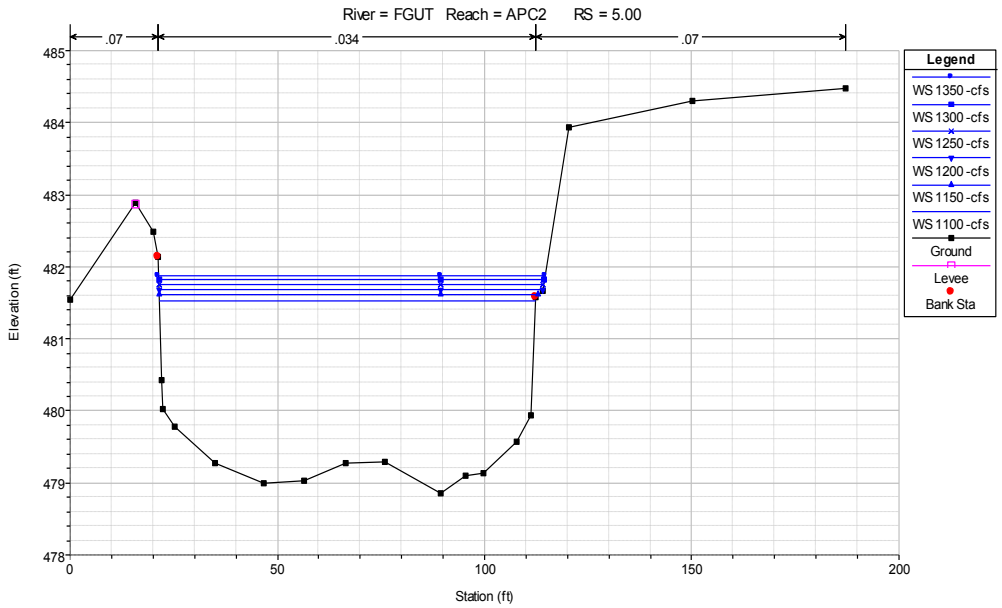


Figure 22 River Station (RS) 5 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

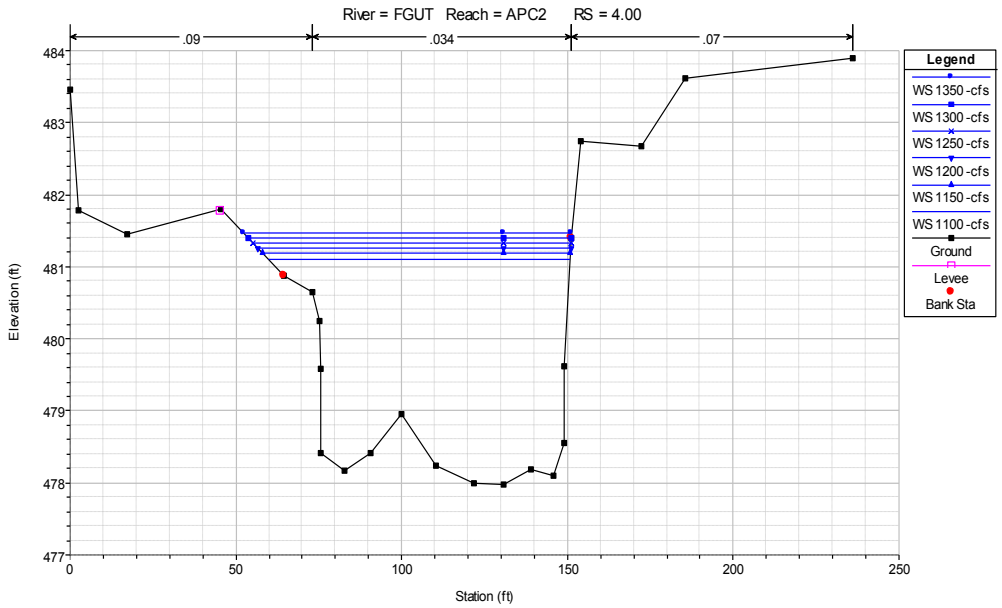


Figure 23 River Station (RS) 4 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

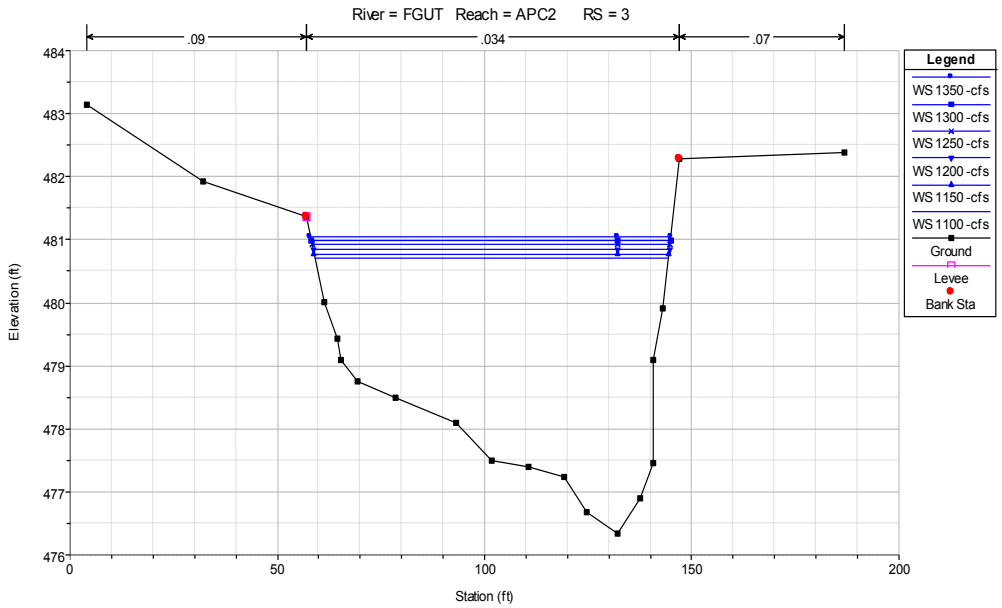


Figure 24 River Station (RS) 3 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

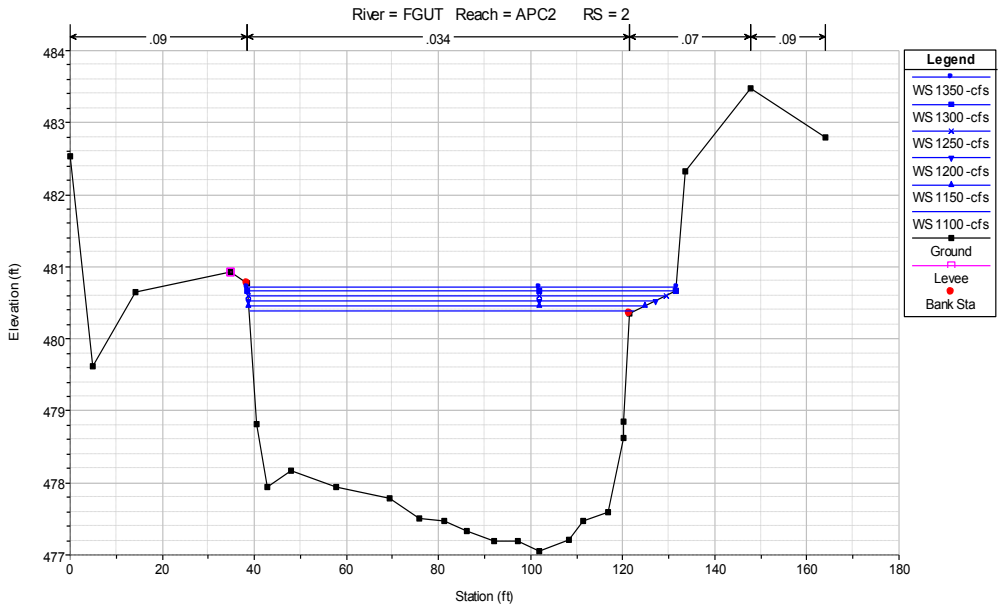


Figure 25 River Station (RS) 2 on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC2

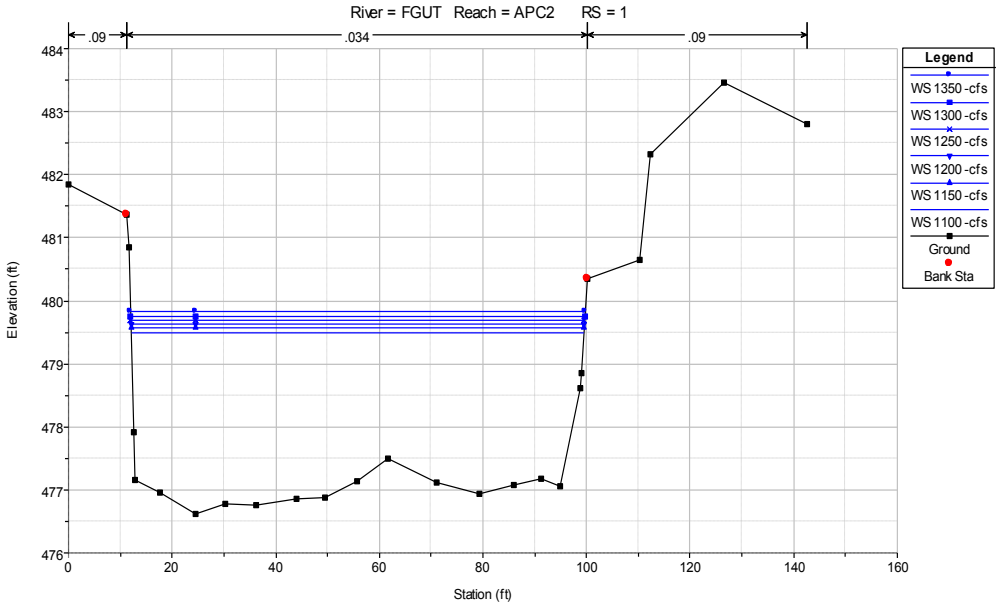


Figure 26 River Station (RS) 1on River Reach FGUTAPC2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUTAPC2

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUTAPC2	9	1100-cfs	0.55	99	80	65
FGUTAPC2	9	1150-cfs	0.57	103	83	67
FGUTAPC2	9	1200-cfs	0.59	106	86	69
FGUTAPC2	9	1250-cfs	0.61	110	89	72
FGUTAPC2	9	1300-cfs	0.63	113	92	74
FGUTAPC2	9	1350-cfs	0.65	117	95	77
FGUTAPC2	8	1100-cfs	0.55	99	80	65
FGUTAPC2	8	1150-cfs	0.57	103	83	67
FGUTAPC2	8	1200-cfs	0.59	106	86	69
FGUTAPC2	8	1250-cfs	0.61	110	89	72
FGUTAPC2	8	1300-cfs	0.62	112	90	73
FGUTAPC2	8	1350-cfs	0.64	115	93	75
FGUTAPC2	7	1100-cfs	1.27	229	185	149
FGUTAPC2	7	1150-cfs	1.28	230	187	151
FGUTAPC2	7	1200-cfs	1.28	230	187	151
FGUTAPC2	7	1250-cfs	1.29	232	188	152
FGUTAPC2	7	1300-cfs	1.30	234	189	153
FGUTAPC2	7	1350-cfs	1.32	238	192	155
FGUTAPC2	6	1100-cfs	0.71	128	103	84
FGUTAPC2	6	1150-cfs	0.73	131	106	86
FGUTAPC2	6	1200-cfs	0.75	135	109	88
FGUTAPC2	6	1250-cfs	0.77	139	112	91
FGUTAPC2	6	1300-cfs	0.79	142	115	93
FGUTAPC2	6	1350-cfs	0.81	146	118	95
FGUTAPC2	5	1100-cfs	0.71	128	103	84
FGUTAPC2	5	1150-cfs	0.72	130	105	85
FGUTAPC2	5	1200-cfs	0.74	133	108	87
FGUTAPC2	5	1250-cfs	0.75	135	109	88

INCIPIENT MOTION ANALYSIS: FGUTAPC2

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUTAPC2	5	1300-cfs	0.76	137	111	89
FGUTAPC2	5	1350-cfs	0.77	139	112	91
FGUTAPC2	4	1100-cfs	0.59	106	86	69
FGUTAPC2	4	1150-cfs	0.61	110	89	72
FGUTAPC2	4	1200-cfs	0.62	112	90	73
FGUTAPC2	4	1250-cfs	0.64	115	93	75
FGUTAPC2	4	1300-cfs	0.65	117	95	77
FGUTAPC2	4	1350-cfs	0.67	121	98	79
FGUTAPC2	3	1100-cfs	0.50	90	73	59
FGUTAPC2	3	1150-cfs	0.52	94	76	61
FGUTAPC2	3	1200-cfs	0.53	95	77	62
FGUTAPC2	3	1250-cfs	0.55	99	80	65
FGUTAPC2	3	1300-cfs	0.56	101	82	66
FGUTAPC2	3	1350-cfs	0.57	103	83	67
FGUTAPC2	2	1100-cfs	0.58	104	85	68
FGUTAPC2	2	1150-cfs	0.59	106	86	69
FGUTAPC2	2	1200-cfs	0.61	110	89	72
FGUTAPC2	2	1250-cfs	0.63	113	92	74
FGUTAPC2	2	1300-cfs	0.64	115	93	75
FGUTAPC2	2	1350-cfs	0.66	119	96	78
FGUTAPC2	1	1100-cfs	0.65	117	95	77
FGUTAPC2	1	1150-cfs	0.67	121	98	79
FGUTAPC2	1	1200-cfs	0.69	124	101	81
FGUTAPC2	1	1250-cfs	0.70	126	102	82
FGUTAPC2	1	1300-cfs	0.72	130	105	85
FGUTAPC2	1	1350-cfs	0.73	131	106	86

PHOTOGRAPH DOCUMENTATION: FGUTAPC2

Left bank along reference reach FGUTAPC2

Right bank along reference reach FGUTAPC2

Downstream from reference reach FGUTAPC2

Upstream from reference reach FGUTAPC2

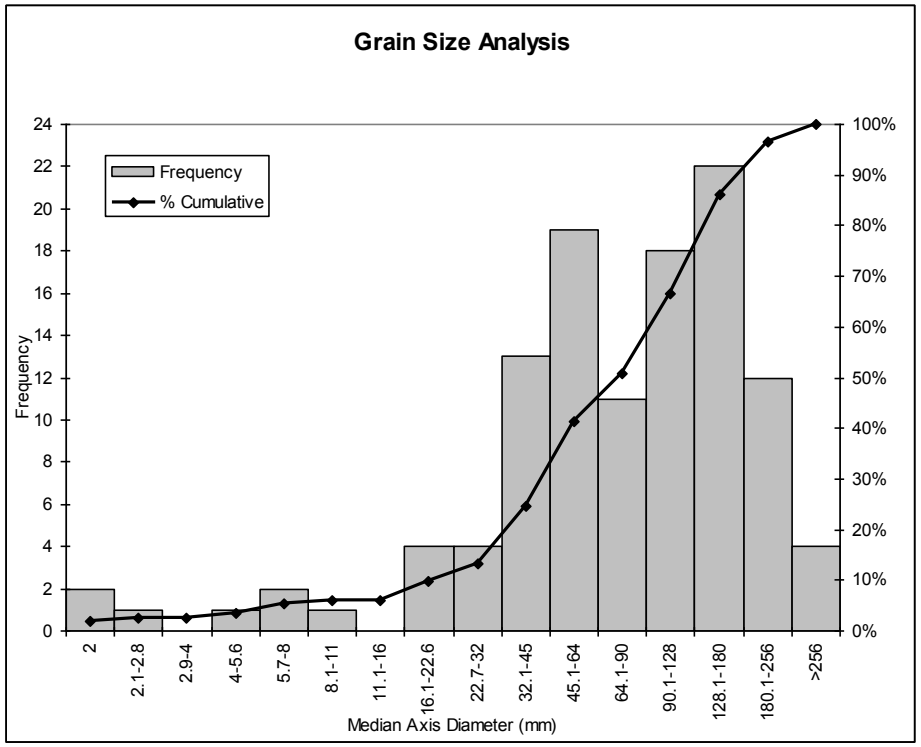
PHOTOGRAPH DOCUMENTATION: FGUTAPC2

Bank composition detail (right bank) FGUTAPC2

Oblique of site FGUTAPC2

PEBBLE COUNT DISTRIBUTION: FGUTAPC2

Original Distribution

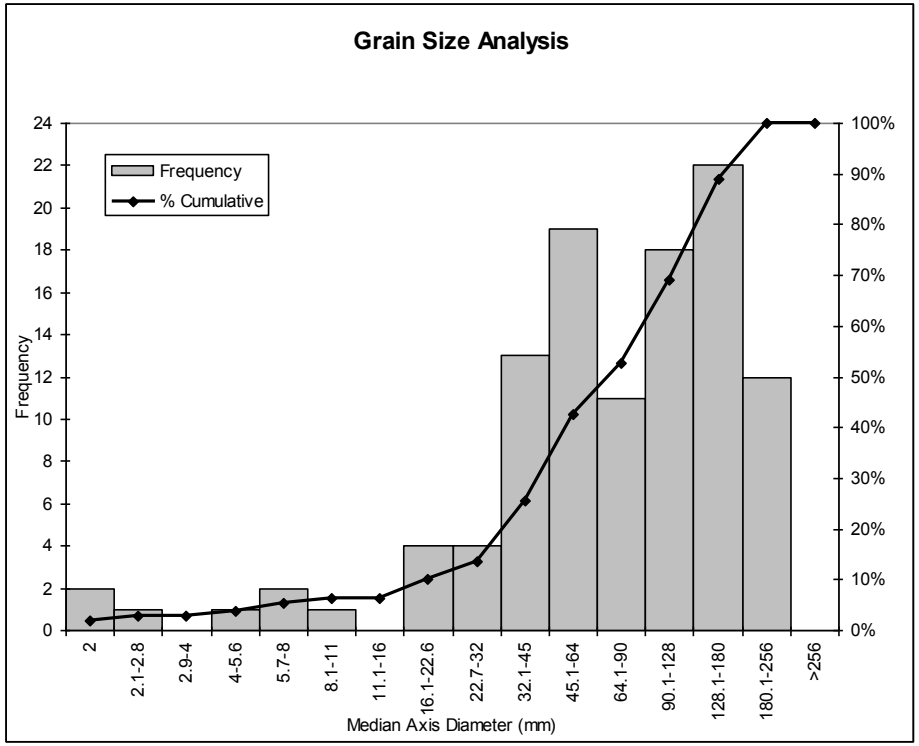


Size Class mm	*Frequency*	*Cumulative %*
2	2	1.8%
2.1-2.8	1	2.6%
2.9-4	0	2.6%
4-5.6	1	3.5%
5.7-8	2	5.3%
8.1-11	1	6.1%
11.1-16	0	6.1%
16.1-22.6	4	9.6%
22.7-32	4	13.2%
32.1-45	13	24.6%
45.1-64	19	41.2%
64.1-90	11	50.9%
90.1-128	18	66.7%
128.1-180	22	86.0%
180.1-256	12	96.5%
>256	4	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 4 and 5

PEBBLE COUNT DISTRIBUTION: FGUTAPC2

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	2	1.8%
2.1-2.8	1	2.6%
2.9-4	0	2.6%
4-5.6	1	3.5%
5.7-8	2	5.3%
8.1-11	1	6.1%
11.1-16	0	6.1%
16.1-22.6	4	9.6%
22.7-32	4	13.2%
32.1-45	13	24.6%
45.1-64	19	41.2%
64.1-90	11	50.9%
90.1-128	18	66.7%
128.1-180	22	86.0%
180.1-256	12	96.5%
>256	0*	100.0%

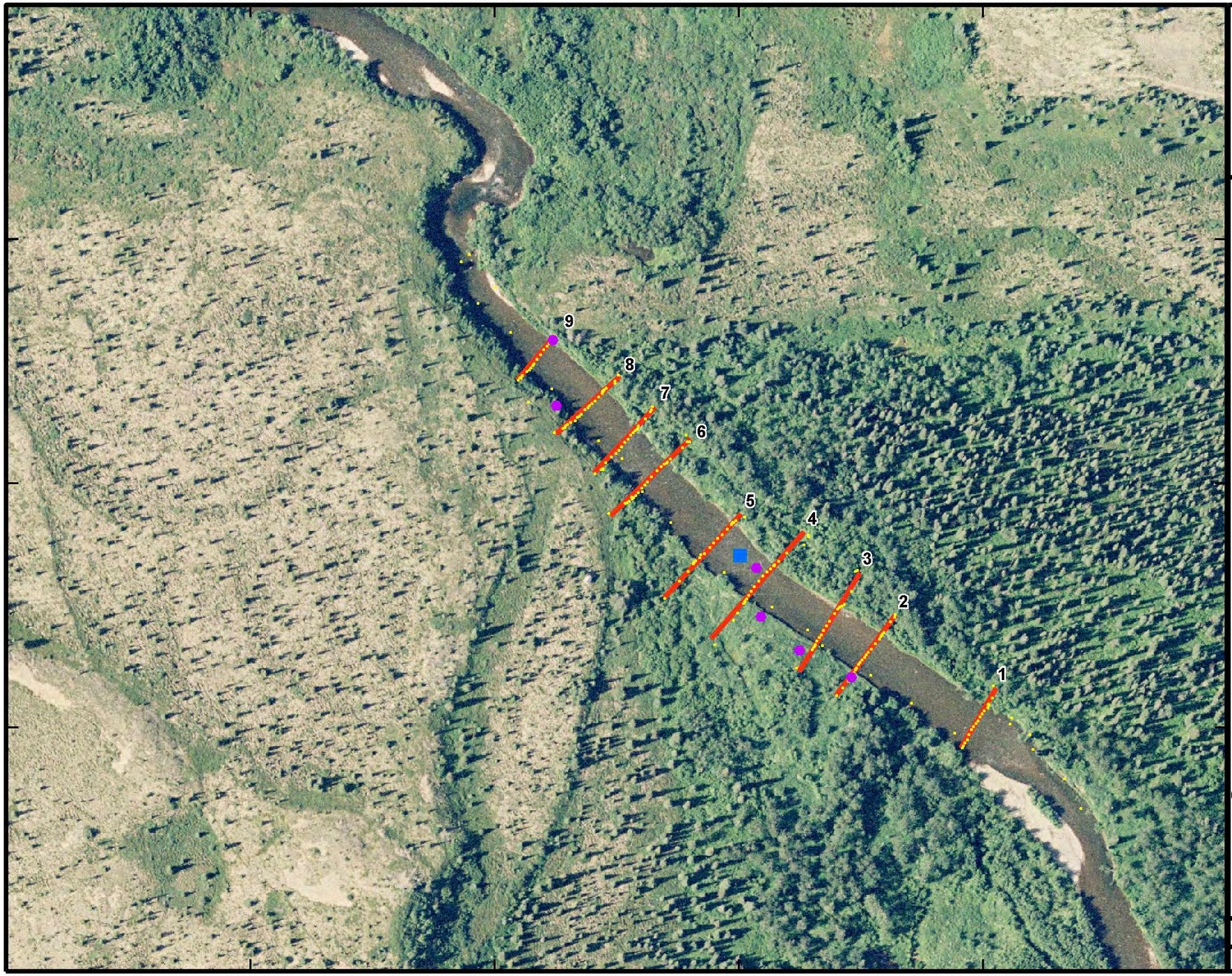
Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 4 and 5
*Removed potential lag from pebble count (count:4)

1,408,949 1,409,349 1,409,749 1,410,149 1,410,549 1,410,949

2,085,220

2,084,820

2,084,420



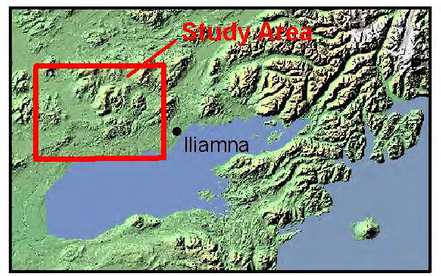
1,408,949 1,409,349 1,409,749 1,410,149 1,410,549 1,410,949

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUTAPC2
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGUTAPC1

Site Characteristics.

		Site Name	**FGUTAPC1**	
Discharge (cfs)		**1150 (1050-1250)**	Width (ft)	**65.2 (61.0-70.8)**
Slope		**0.0038**	Cross-sectional Area (ft^2)	**206 (186-225)**
(1)	D_{50}	**52**	D_{84}	**122**
(2)	D_{50}	**43**	D_{84}	**87**
Lat/Long Location		**N59.7007 W155.2467**	Drainage Area (mi^2)	**102**
			% Willow	**60**
			% Grass	**15**
			% Tree	**25**

Site Overview. During Inter-fluve, Inc.'s field efforts in September 2007, field personnel surveyed six cross-sections along 530 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 6 through 4 characterize the riffle which serves as the reference reach. Pebble count 1 was taken between Sections 5 and 4. Pebble count 2 was taken at the downstream boundary (Section 1), but was not used in the analysis due to its location on the downstream boundary. An Alaska Peninsula Corporation gage (APC1) was located between Sections 1 and 2.

The incipient motion analysis is in strong agreement with the geometry through the reference reach. For a Shields number of 0.017, the D_{84} moves through Section 4 at 1100 cfs and through Section 5 at 1250 cfs. The geometry of all three reference reach sections (6 through 4), matches 1150 cfs well.

The reference reach sections (Sections 6 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUTAPC1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUTAPC1	6	1050-cfs	1050	61.0	186	3.1	3.6	0.0040	5.7	0.57	0.73	0.034
FGUTAPC1	6	1100-cfs	1100	61.0	191	3.1	3.7	0.0041	5.8	0.57	0.76	0.034
FGUTAPC1	6	1150-cfs	1150	61.0	195	3.2	3.8	0.0041	5.9	0.58	0.78	0.034
FGUTAPC1	6	1200-cfs	1200	61.0	200	3.3	3.9	0.0042	6.0	0.58	0.81	0.034
FGUTAPC1	6	1250-cfs	1250	61.0	204	3.3	3.9	0.0042	6.1	0.59	0.83	0.034
FGUTAPC1	5	1050-cfs	1050	64.1	206	3.2	3.8	0.0031	5.1	0.50	0.59	0.034
FGUTAPC1	5	1100-cfs	1100	64.3	211	3.3	3.9	0.0032	5.2	0.51	0.61	0.034
FGUTAPC1	5	1150-cfs	1150	64.4	215	3.4	4.0	0.0033	5.3	0.51	0.64	0.034
FGUTAPC1	5	1200-cfs	1200	64.5	220	3.4	4.0	0.0033	5.5	0.52	0.66	0.034
FGUTAPC1	5	1250-cfs	1250	64.5	224	3.5	4.1	0.0034	5.6	0.53	0.68	0.034
FGUTAPC1	4	1050-cfs	1050	69.6	198	2.8	3.5	0.0038	5.3	0.55	0.66	0.034
FGUTAPC1	4	1100-cfs	1100	70.0	203	2.9	3.5	0.0039	5.4	0.56	0.68	0.034
FGUTAPC1	4	1150-cfs	1150	70.3	208	3.0	3.6	0.0039	5.5	0.56	0.70	0.034
FGUTAPC1	4	1200-cfs	1200	70.6	214	3.0	3.7	0.0040	5.6	0.57	0.72	0.034
FGUTAPC1	4	1250-cfs	1250	70.8	218	3.1	3.8	0.0040	5.7	0.57	0.74	0.034
FGUTAPC1	3	1050-cfs	1050	79.1	213	2.7	4.0	0.0035	4.9	0.53	0.57	0.034
FGUTAPC1	3	1100-cfs	1100	79.2	220	2.8	4.1	0.0035	5.0	0.53	0.59	0.034
FGUTAPC1	3	1150-cfs	1150	79.2	226	2.9	4.1	0.0035	5.1	0.53	0.60	0.034
FGUTAPC1	3	1200-cfs	1200	79.2	231	2.9	4.2	0.0035	5.2	0.53	0.62	0.034
FGUTAPC1	3	1250-cfs	1250	79.2	237	3.0	4.3	0.0035	5.3	0.54	0.63	0.034
FGUTAPC1	2	1050-cfs	1050	73.3	188	2.6	4.5	0.0048	5.6	0.62	0.75	0.034
FGUTAPC1	2	1100-cfs	1100	73.6	193	2.6	4.6	0.0049	5.7	0.62	0.78	0.034
FGUTAPC1	2	1150-cfs	1150	73.9	198	2.7	4.7	0.0049	5.8	0.63	0.80	0.034
FGUTAPC1	2	1200-cfs	1200	73.9	203	2.8	4.8	0.0049	5.9	0.63	0.82	0.034
FGUTAPC1	2	1250-cfs	1250	73.9	208	2.8	4.8	0.0049	6.0	0.63	0.85	0.034
FGUTAPC1	1	1050-cfs	1050	82.0	183	2.2	2.6	0.0042	5.8	0.68	0.57	0.028
FGUTAPC1	1	1100-cfs	1100	82.1	188	2.3	2.7	0.0042	5.9	0.68	0.58	0.028
FGUTAPC1	1	1150-cfs	1150	82.2	193	2.4	2.8	0.0042	6.0	0.69	0.60	0.028
FGUTAPC1	1	1200-cfs	1200	82.3	198	2.4	2.8	0.0042	6.1	0.69	0.61	0.028
FGUTAPC1	1	1250-cfs	1250	82.3	203	2.5	2.9	0.0042	6.2	0.69	0.63	0.028

HEC-RAS LONGITUDINAL PROFILE: FGUTAPC1

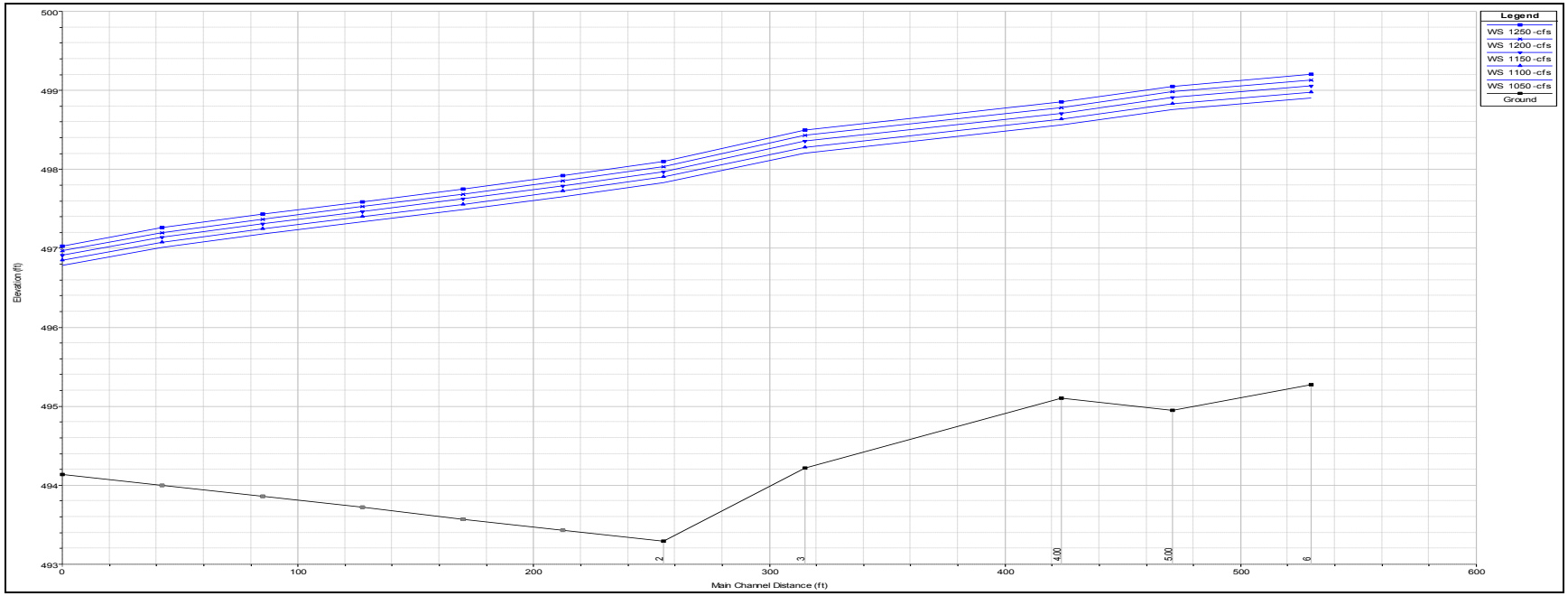


Figure 27 HEC-RAS longitudinal profile output for Reach FGUTAPC1. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC1

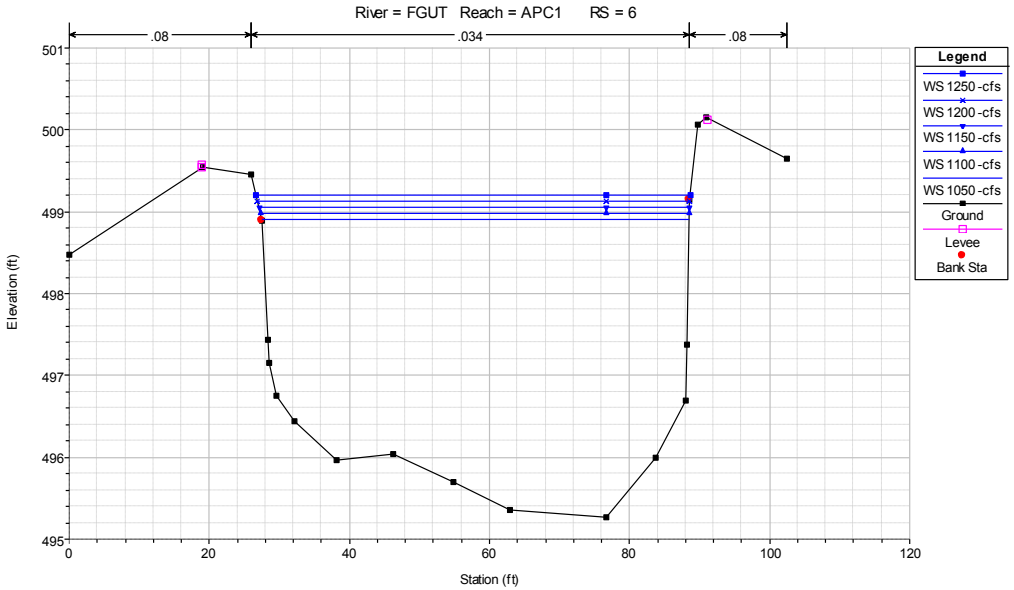


Figure 28 River Station (RS) 6 on River Reach FGUTAPC1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC1

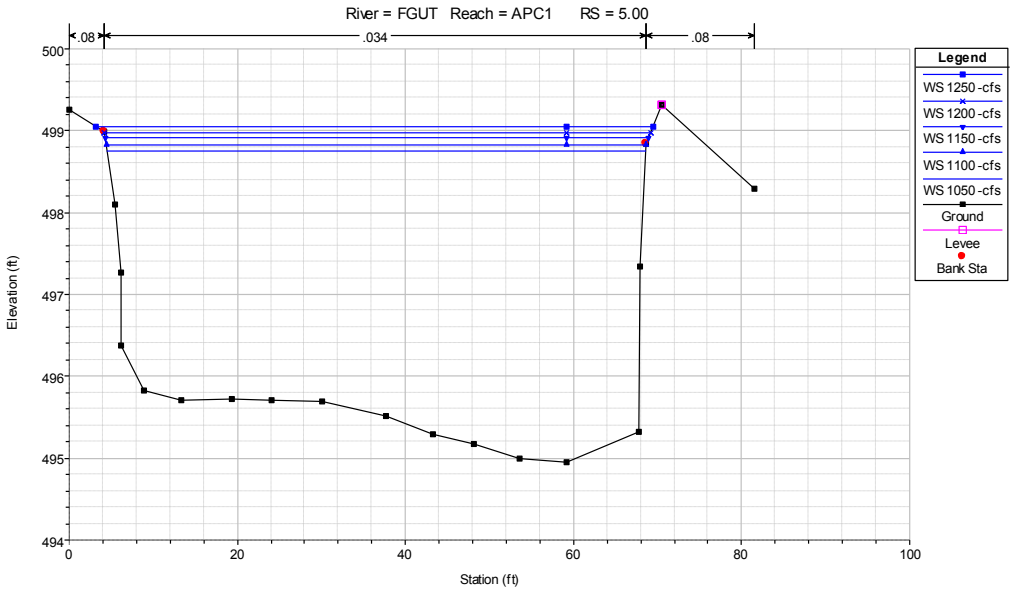


Figure 29 River Station (RS) 5 on River Reach FGUTAPC1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC1

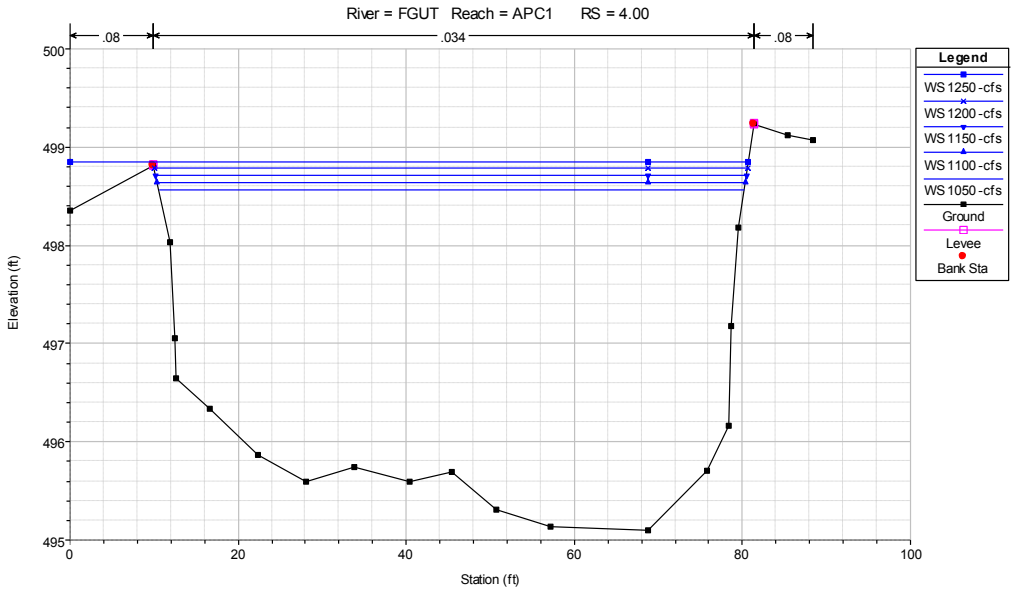


Figure 30 River Station (RS) 4 on River Reach FGUTAPC1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC1

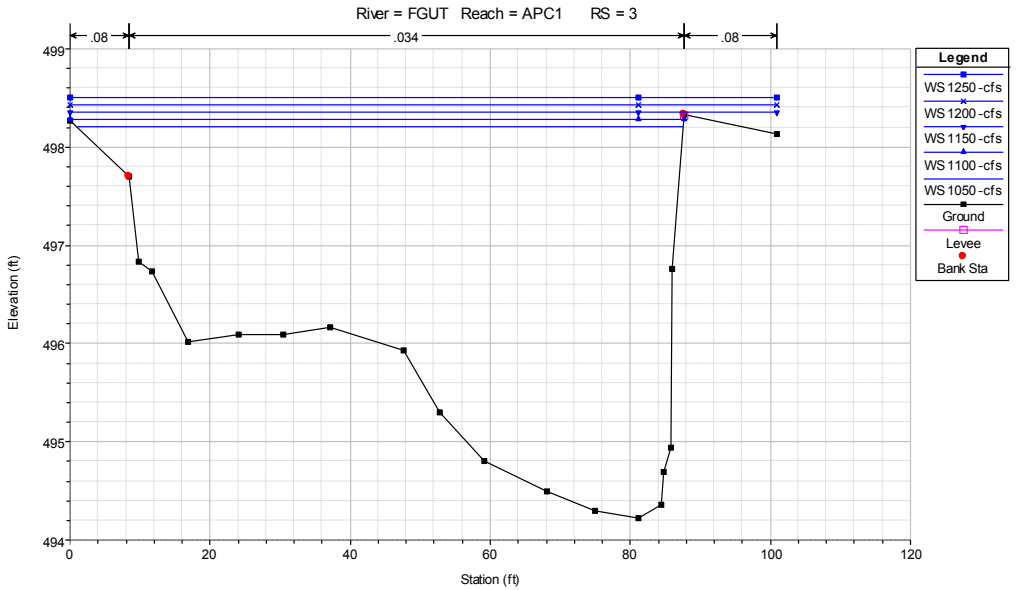


Figure 31 River Station (RS) 3 on River Reach FGUTAPC1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC1

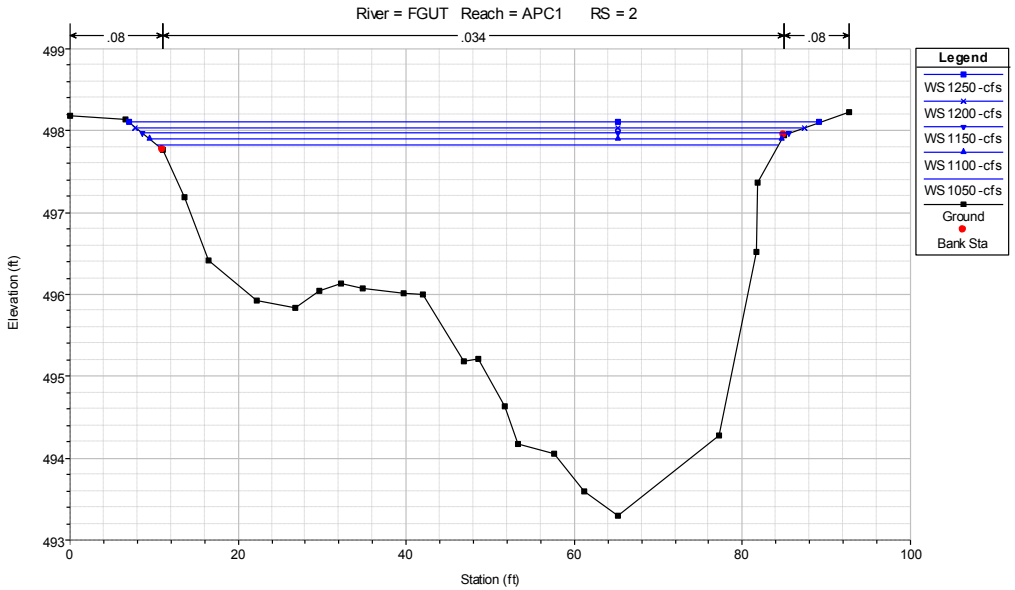


Figure 32 River Station (RS) 2 on River Reach FGUTAPC1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUTAPC1

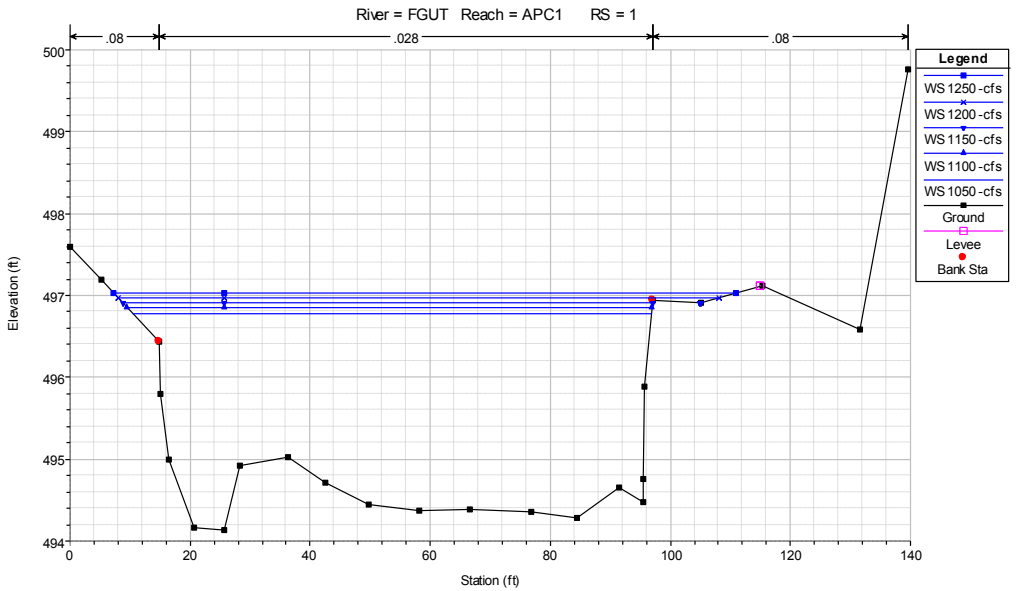


Figure 33 River Station (RS) 1 on River Reach FGUTAPC1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUTAPC1

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUTAPC1	6	1050-cfs	0.73	131	106	86
FGUTAPC1	6	1100-cfs	0.76	137	111	89
FGUTAPC1	6	1150-cfs	0.78	140	114	92
FGUTAPC1	6	1200-cfs	0.81	146	118	95
FGUTAPC1	6	1250-cfs	0.83	149	121	98
FGUTAPC1	5	1050-cfs	0.59	106	86	69
FGUTAPC1	5	1100-cfs	0.61	110	89	72
FGUTAPC1	5	1150-cfs	0.64	115	93	75
FGUTAPC1	5	1200-cfs	0.66	119	96	78
FGUTAPC1	5	1250-cfs	0.68	122	99	80
FGUTAPC1	4	1050-cfs	0.66	119	96	78
FGUTAPC1	4	1100-cfs	0.68	122	99	80
FGUTAPC1	4	1150-cfs	0.70	126	102	82
FGUTAPC1	4	1200-cfs	0.72	130	105	85
FGUTAPC1	4	1250-cfs	0.74	133	108	87
FGUTAPC1	3	1050-cfs	0.57	103	83	67
FGUTAPC1	3	1100-cfs	0.59	106	86	69
FGUTAPC1	3	1150-cfs	0.60	108	87	71
FGUTAPC1	3	1200-cfs	0.62	112	90	73
FGUTAPC1	3	1250-cfs	0.63	113	92	74
FGUTAPC1	2	1050-cfs	0.75	135	109	88
FGUTAPC1	2	1100-cfs	0.78	140	114	92
FGUTAPC1	2	1150-cfs	0.80	144	117	94
FGUTAPC1	2	1200-cfs	0.82	148	120	97
FGUTAPC1	2	1250-cfs	0.85	153	124	100
FGUTAPC1	1	1050-cfs	0.57	103	83	67
FGUTAPC1	1	1100-cfs	0.58	104	85	68

INCIPIENT MOTION ANALYSIS: FGUTAPC1

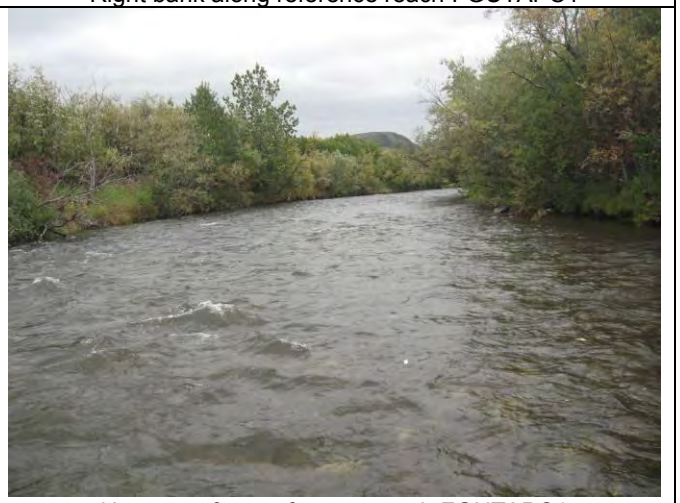
Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUTAPC1	1	1150-cfs	0.60	108	87	71
FGUTAPC1	1	1200-cfs	0.61	110	89	72
FGUTAPC1	1	1250-cfs	0.63	113	92	74

PHOTOGRAPH DOCUMENTATION: FGUTAPC1

Left bank along reference reach FGUTAPC1

Right bank along reference reach FGUTAPC1

Downstream from reference reach FGUTAPC1



Upstream from reference reach FGUTAPC1

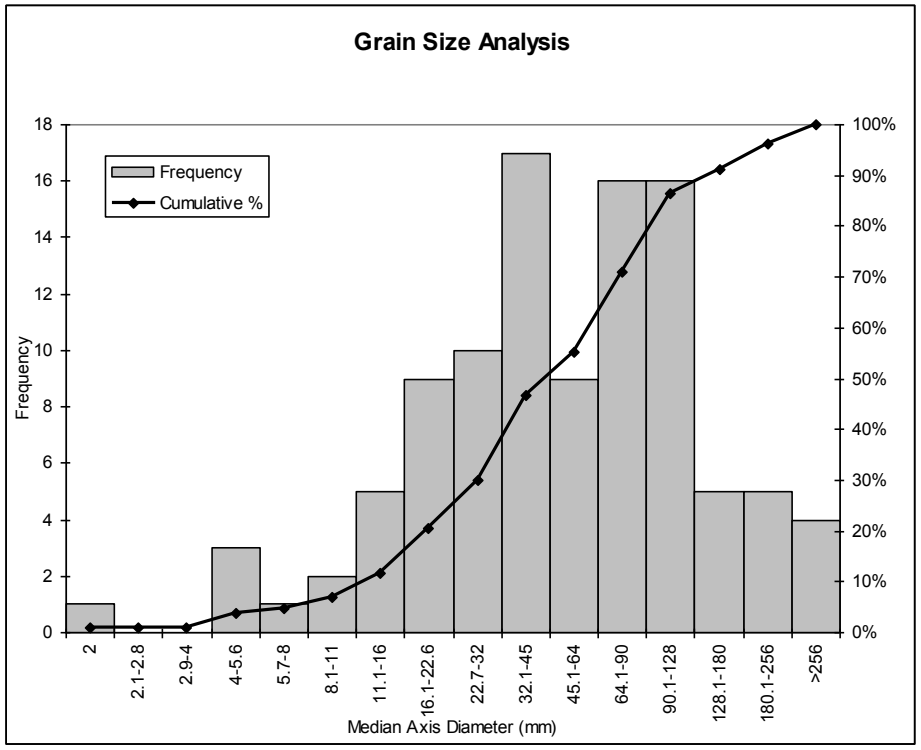
PHOTOGRAPH DOCUMENTATION: FGUTAPC1

Bank composition detail (right bank) FGUTAPC1

Oblique of site FGUTAPC1

PEBBLE COUNT DISTRIBUTION: FGUTAPC1

Pebble Count 1

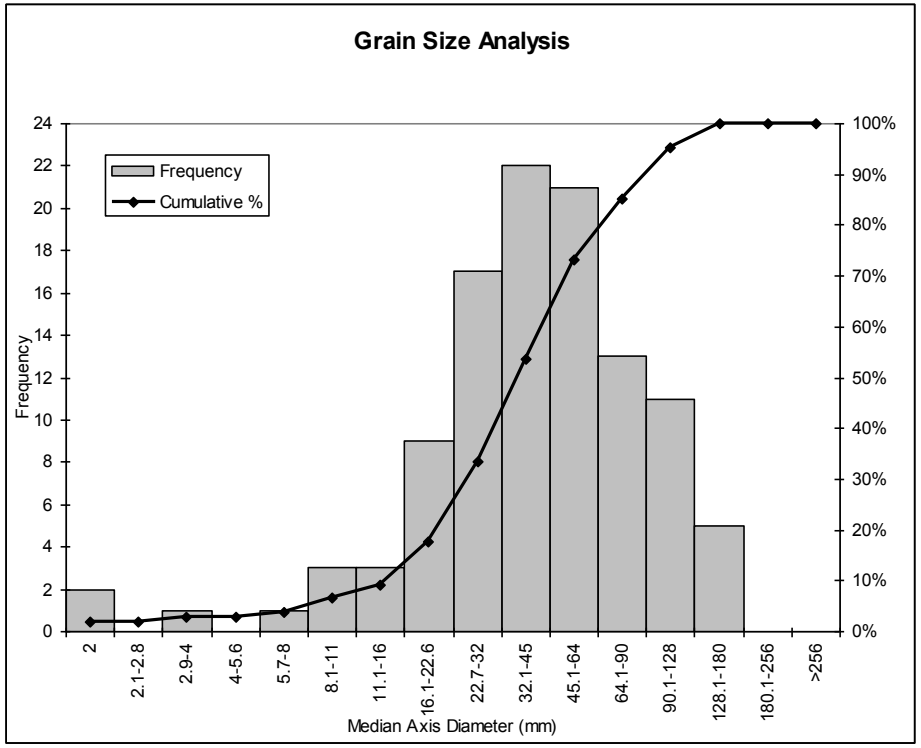


Size Class mm	*Frequency*	*Cumulative %*
2	2	1.8%
2.1-2.8	1	2.6%
2.9-4	0	2.6%
4-5.6	1	3.5%
5.7-8	2	5.3%
8.1-11	1	6.1%
11.1-16	0	6.1%
16.1-22.6	4	9.6%
22.7-32	4	13.2%
32.1-45	13	24.6%
45.1-64	19	41.2%
64.1-90	11	50.9%
90.1-128	18	66.7%
128.1-180	22	86.0%
180.1-256	12	96.5%
>256	4	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 4 and 5

PEBBLE COUNT DISTRIBUTION: FGUTAPC1

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	2	1.9%
2.1-2.8	0	1.9%
2.9-4	1	2.8%
4-5.6	0	2.8%
5.7-8	1	3.7%
8.1-11	3	6.5%
11.1-16	3	9.3%
16.1-22.6	9	17.6%
22.7-32	17	33.3%
32.1-45	22	53.7%
45.1-64	21	73.1%
64.1-90	13	85.2%
90.1-128	11	95.4%
128.1-180	5	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 1

1,398,793 1,399,193 1,399,593 1,399,993 1,400,393 1,400,793

2,091,619

2,091,219

2,090,819

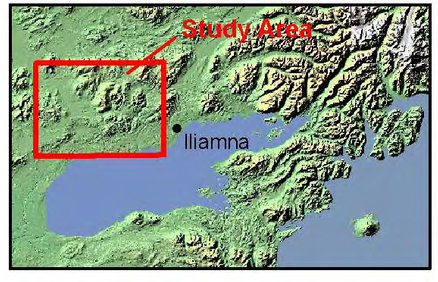
6
5
4
3
2
1

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUTAPC1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,398,793 1,399,193 1,399,593 1,399,993 1,400,393 1,400,793

SITE DESCRIPTION: FGUT1.5

Site Characteristics.

Discharge (cfs)	**1150 (1050-1250)**	Width (ft)	**70.2 (65.9-76.5)**
Slope	**0.0044**	Cross-sectional Area (ft^2)	**206 (190-220)**
(1) D_{50}	**58**	D_{84}	**142**
(1-modified) D_{50}	**55**	D_{84}	**122**
(2) D_{50}	**43**	D_{84}	**121**
Lat/Long Location	**N59.7283 W155.2973**	Drainage Area (mi^2)	**98**
	% Willow	**50**	
	% Grass	**15**	
	% Tree	**35**	

Site Overview. During Inter-fluve, Inc.'s field efforts in September 2007, field personnel surveyed 12 cross-sections along 890 feet of channel length. Sections 1 through 5 were disregarded for the analysis due to their difficulty to survey during high water conditions. This analysis relies on Sections 6 through 12. Section 6 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 12 through 10 characterize the riffle which serves as the reference reach. Pebble count 1 was taken between Sections 11 and 10. A second pebble count was conducted on the gravel bar adjacent to the pool (Sections 7 through 9). Coarse bed material through the riffle was thought to be immobile. Therefore, pebble count 1 was modified to account for this by removing those size classes which were thought to be lag. Both the original distribution as well as the modified one are included in the analysis.

For a Shields number of 0.017, the D_{84} of the modified distribution move through the reference sections (12 through 10) by 1050 cfs while the D_{84} for the unmodified distribution moves between 1100 and 1150 cfs. on Sections 12 and 10. For a Shields number of 0.026, the D_{50} moves at discharges below those included in the target range. These discharges match the geometry well. Lacking a well-defined bank along the right bank and a high terrace on the left bank, the assumption that flows overtopping the bar along the right bank 0.5'-1'above the surface are sufficient to establish these surfaces.

The reference reach sections (Sections 12 through 10) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1.5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1.5	12	1050-cfs	1050	65.9	190	2.9	4.0	0.0043	5.5	0.57	0.76	0.035
FGUT1.5	12	1100-cfs	1100	65.9	195	3.0	4.0	0.0044	5.6	0.58	0.79	0.035
FGUT1.5	12	1150-cfs	1150	66.0	200	3.0	4.1	0.0044	5.7	0.58	0.81	0.036
FGUT1.5	12	1200-cfs	1200	66.1	204	3.1	4.2	0.0044	5.8	0.58	0.84	0.036
FGUT1.5	12	1250-cfs	1250	66.1	209	3.2	4.2	0.0045	5.9	0.59	0.86	0.036
FGUT1.5	11	1050-cfs	1050	68.0	196	2.9	4.3	0.0040	5.3	0.55	0.71	0.036
FGUT1.5	11	1100-cfs	1100	68.1	202	3.0	4.3	0.0040	5.4	0.55	0.73	0.036
FGUT1.5	11	1150-cfs	1150	68.2	207	3.0	4.4	0.0040	5.4	0.55	0.74	0.036
FGUT1.5	11	1200-cfs	1200	68.2	212	3.1	4.5	0.0040	5.5	0.55	0.76	0.036
FGUT1.5	11	1250-cfs	1250	68.3	217	3.2	4.6	0.0040	5.6	0.55	0.78	0.036
FGUT1.5	10	1050-cfs	1050	76.3	200	2.6	3.8	0.0046	5.3	0.57	0.73	0.036
FGUT1.5	10	1100-cfs	1100	76.4	205	2.7	3.9	0.0046	5.4	0.58	0.76	0.036
FGUT1.5	10	1150-cfs	1150	76.4	210	2.8	4.0	0.0047	5.5	0.58	0.79	0.036
FGUT1.5	10	1200-cfs	1200	76.4	215	2.8	4.0	0.0047	5.6	0.58	0.81	0.036
FGUT1.5	10	1250-cfs	1250	76.5	220	2.9	4.1	0.0048	5.7	0.59	0.84	0.036
FGUT1.5	9	1050-cfs	1050	77.9	208	2.7	4.0	0.0036	5.0	0.54	0.59	0.034
FGUT1.5	9	1100-cfs	1100	78.0	213	2.7	4.0	0.0037	5.1	0.54	0.61	0.034
FGUT1.5	9	1150-cfs	1150	78.0	219	2.8	4.1	0.0037	5.2	0.55	0.63	0.034
FGUT1.5	9	1200-cfs	1200	78.0	224	2.9	4.2	0.0037	5.3	0.55	0.65	0.034
FGUT1.5	9	1250-cfs	1250	78.0	229	2.9	4.2	0.0038	5.4	0.56	0.67	0.034
FGUT1.5	8	1050-cfs	1050	81.6	187	2.3	4.3	0.0066	5.6	0.65	0.91	0.037
FGUT1.5	8	1100-cfs	1100	81.7	193	2.4	4.3	0.0065	5.6	0.65	0.93	0.037
FGUT1.5	8	1150-cfs	1150	81.7	198	2.4	4.4	0.0064	5.7	0.65	0.95	0.037
FGUT1.5	8	1200-cfs	1200	81.7	204	2.5	4.5	0.0064	5.8	0.64	0.97	0.037
FGUT1.5	8	1250-cfs	1250	81.7	210	2.6	4.5	0.0063	5.9	0.64	0.99	0.037
FGUT1.5	7	1050-cfs	1050	64.2	170	2.7	4.4	0.0066	6.0	0.65	1.06	0.037
FGUT1.5	7	1100-cfs	1100	64.3	174	2.7	4.4	0.0067	6.2	0.66	1.09	0.038
FGUT1.5	7	1150-cfs	1150	64.3	179	2.8	4.5	0.0067	6.3	0.66	1.12	0.038

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1.5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1.5	7	1200-cfs	1200	64.3	183	2.8	4.6	0.0068	6.4	0.66	1.16	0.038
FGUT1.5	7	1250-cfs	1250	64.3	187	2.9	4.6	0.0068	6.5	0.67	1.19	0.038
FGUT1.5	6	1050-cfs	1050	95.1	252	2.7	3.7	0.0024	4.1	0.44	0.39	0.034
FGUT1.5	6	1100-cfs	1100	95.1	259	2.7	3.8	0.0024	4.1	0.44	0.40	0.034
FGUT1.5	6	1150-cfs	1150	95.1	266	2.8	3.8	0.0024	4.2	0.44	0.41	0.034
FGUT1.5	6	1200-cfs	1200	95.1	272	2.9	3.9	0.0024	4.3	0.45	0.42	0.034
FGUT1.5	6	1250-cfs	1250	95.1	279	2.9	4.0	0.0024	4.3	0.45	0.43	0.034

HEC-RAS LONGITUDINAL PROFILE: FGUT1.5

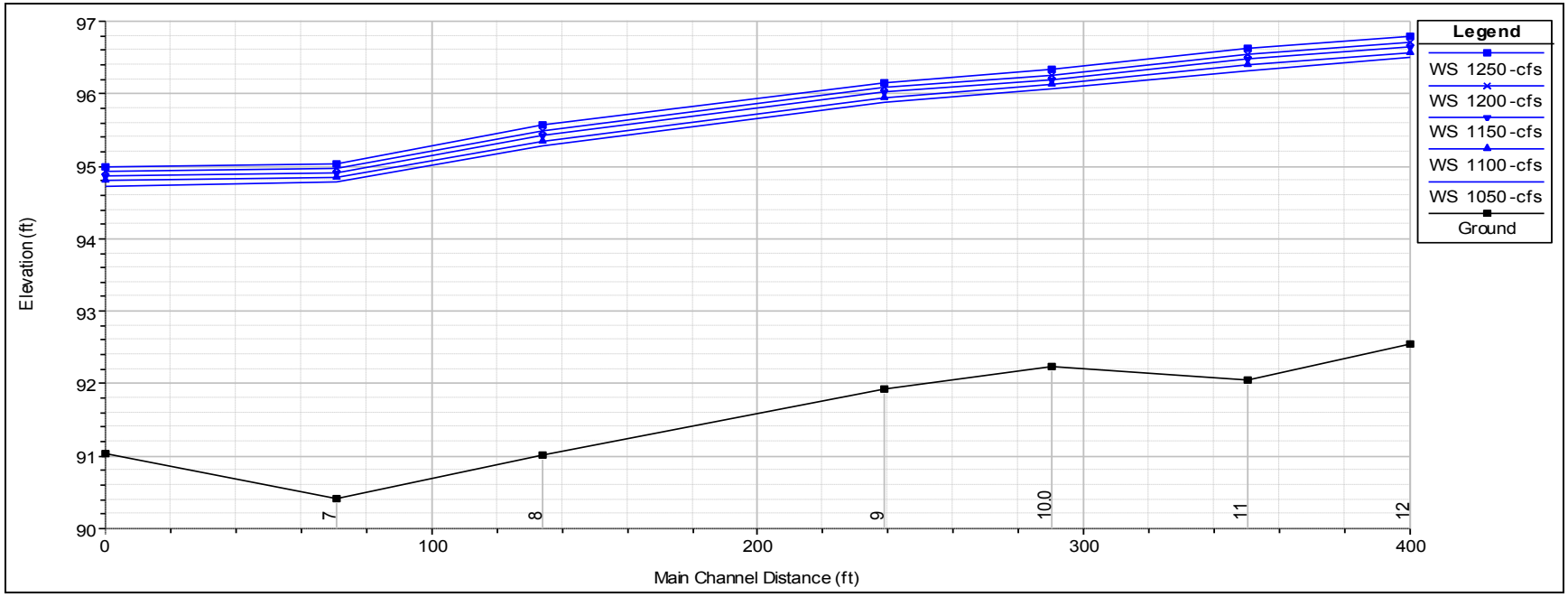


Figure 34 HEC-RAS longitudinal profile output for Reach FGUT1.5. Numbers 1-12 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

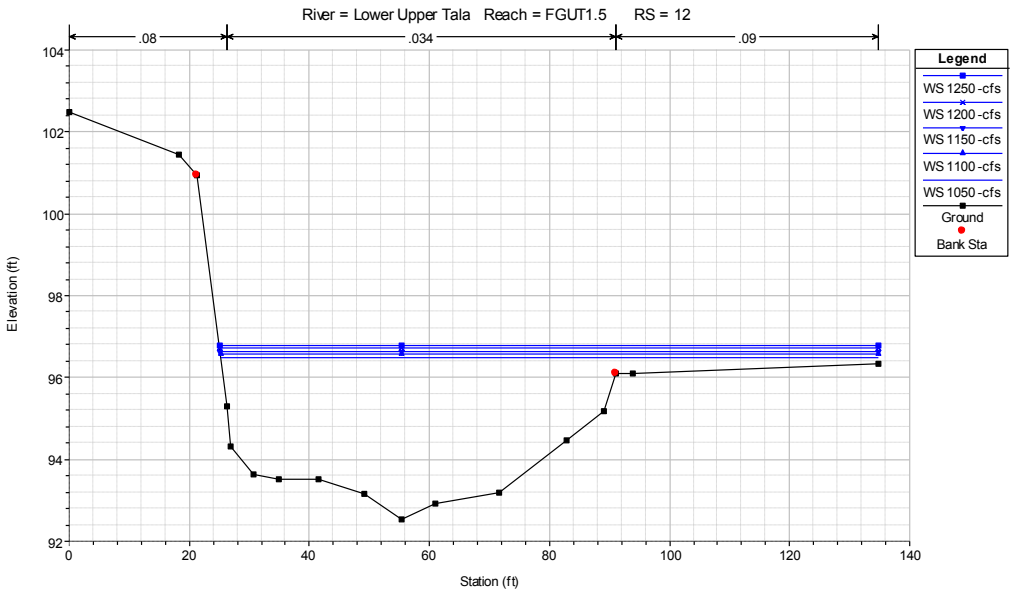


Figure 35 River Station (RS) 12 on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

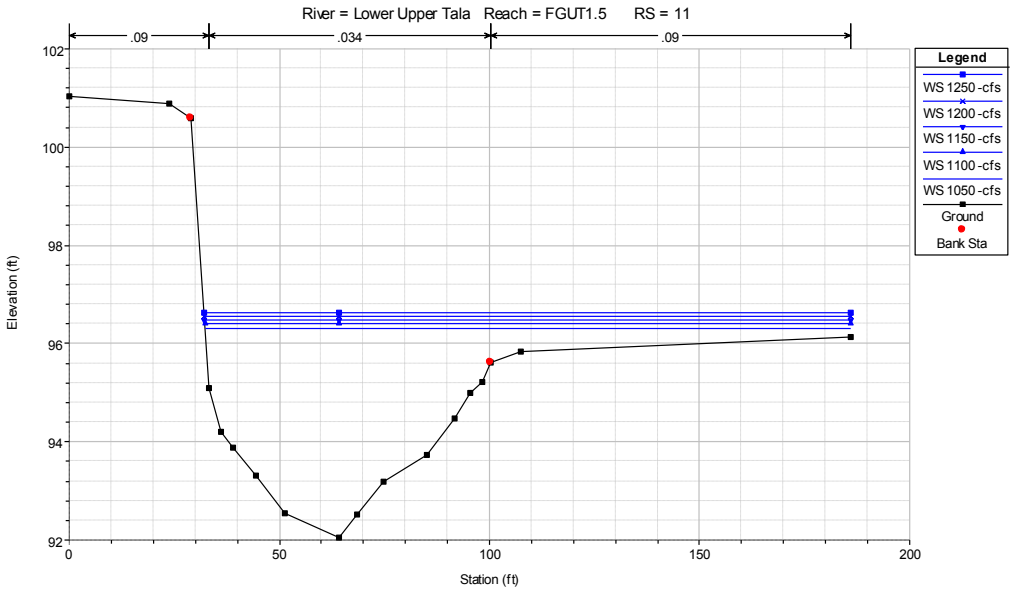


Figure 36 River Station (RS) 11 on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

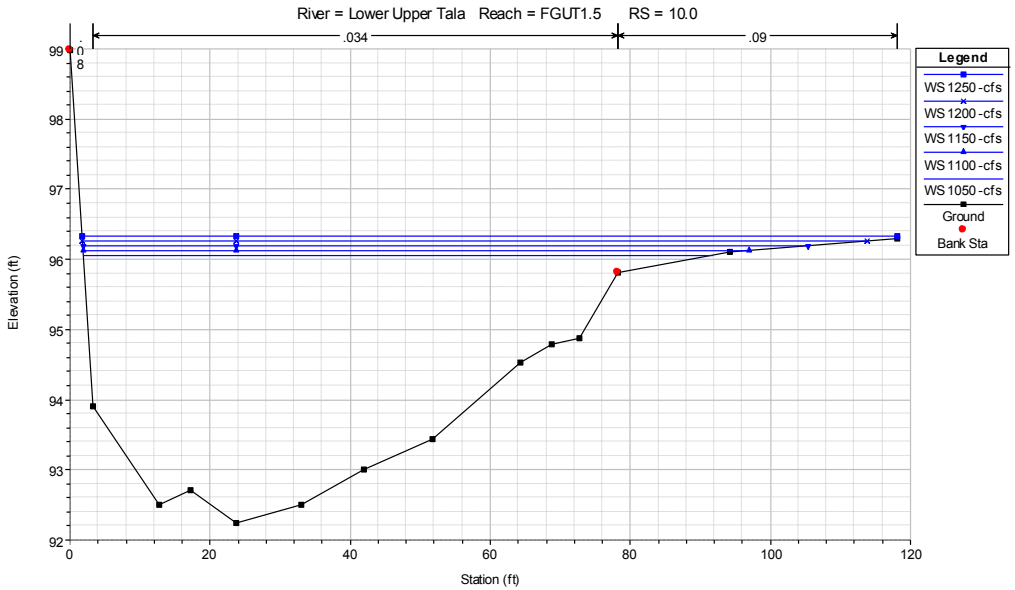


Figure 37 River Station (RS) 10 on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

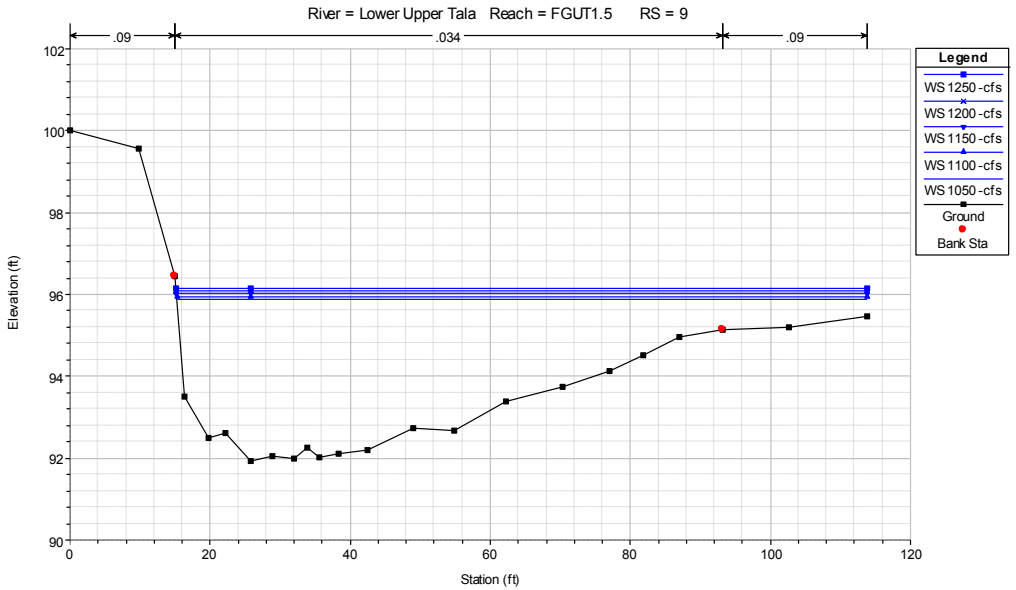


Figure 38 River Station (RS) 9 on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

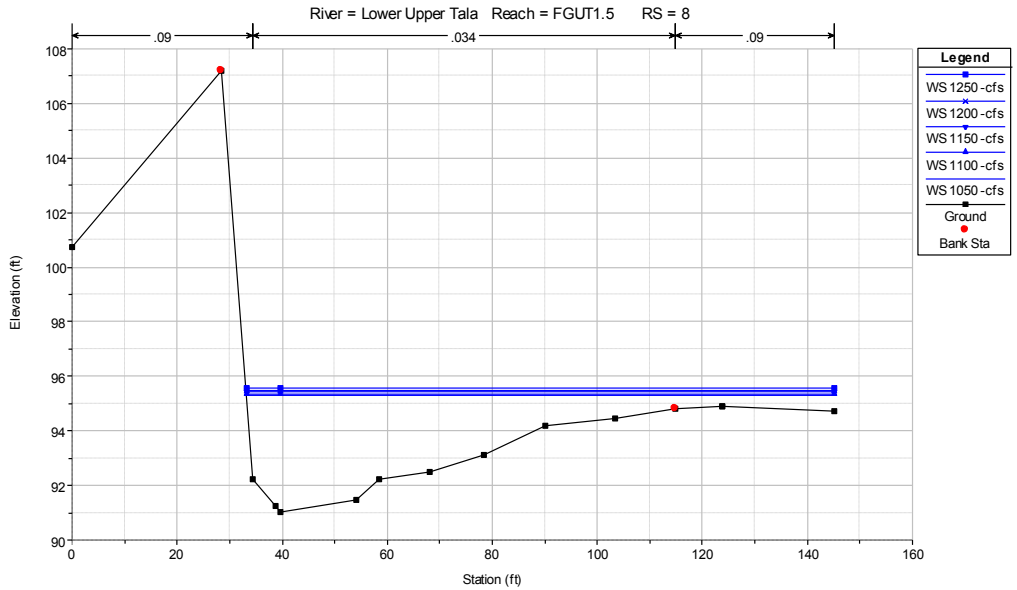


Figure 39 River Station (RS) 8 on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

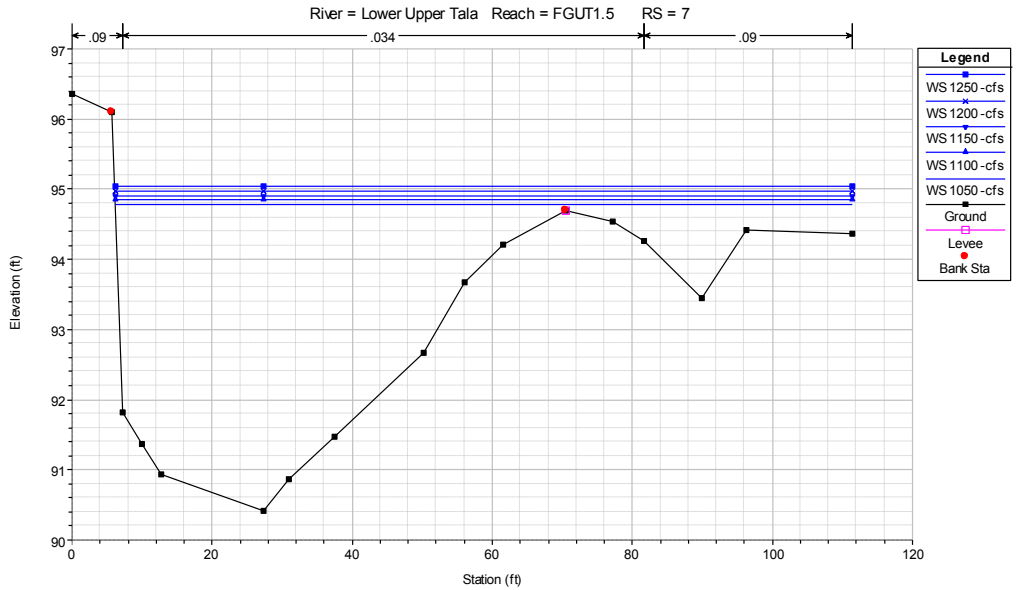


Figure 40 River Station (RS) 7 on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.5

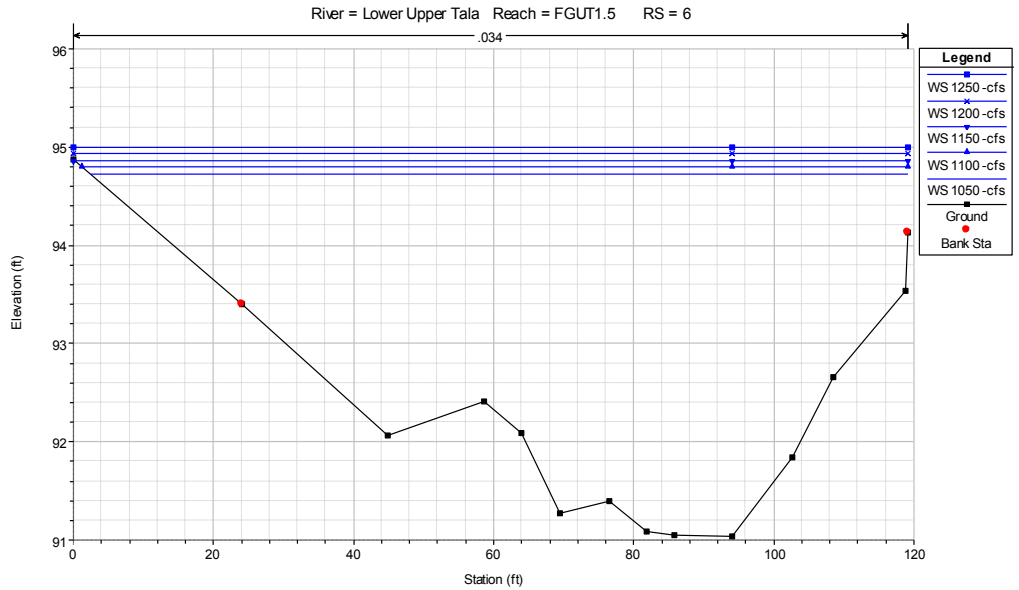


Figure 41 River Station (RS) 6on River Reach FGUT1.5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT1.5

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT1.5	12	1050-cfs	0.76	137	111	89
FGUT1.5	12	1100-cfs	0.79	142	115	93
FGUT1.5	12	1150-cfs	0.81	146	118	95
FGUT1.5	12	1200-cfs	0.84	151	122	99
FGUT1.5	12	1250-cfs	0.86	155	125	101
FGUT1.5	11	1050-cfs	0.71	128	103	84
FGUT1.5	11	1100-cfs	0.73	131	106	86
FGUT1.5	11	1150-cfs	0.74	133	108	87
FGUT1.5	11	1200-cfs	0.76	137	111	89
FGUT1.5	11	1250-cfs	0.78	140	114	92
FGUT1.5	10	1050-cfs	0.73	131	106	86
FGUT1.5	10	1100-cfs	0.76	137	111	89
FGUT1.5	10	1150-cfs	0.79	142	115	93
FGUT1.5	10	1200-cfs	0.81	146	118	95
FGUT1.5	10	1250-cfs	0.84	151	122	99
FGUT1.5	9	1050-cfs	0.59	106	86	69
FGUT1.5	9	1100-cfs	0.61	110	89	72
FGUT1.5	9	1150-cfs	0.63	113	92	74
FGUT1.5	9	1200-cfs	0.65	117	95	77
FGUT1.5	9	1250-cfs	0.67	121	98	79
FGUT1.5	8	1050-cfs	0.91	164	133	107
FGUT1.5	8	1100-cfs	0.93	167	136	109
FGUT1.5	8	1150-cfs	0.95	171	138	112
FGUT1.5	8	1200-cfs	0.97	175	141	114
FGUT1.5	8	1250-cfs	0.99	178	144	117
FGUT1.5	7	1050-cfs	1.06	191	154	125
FGUT1.5	7	1100-cfs	1.09	196	159	128

INCIPIENT MOTION ANALYSIS: FGUT1.5

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT1.5	7	1150-cfs	1.12	202	163	132
FGUT1.5	7	1200-cfs	1.16	209	169	137
FGUT1.5	7	1250-cfs	1.19	214	173	140
FGUT1.5	6	1050-cfs	0.39	70	57	46
FGUT1.5	6	1100-cfs	0.40	72	58	47
FGUT1.5	6	1150-cfs	0.41	74	60	48
FGUT1.5	6	1200-cfs	0.42	76	61	49
FGUT1.5	6	1250-cfs	0.43	77	63	51

PHOTOGRAPH DOCUMENTATION: FGUT1.5

Left bank along reference reach FGUT1.5

Right bank along reference reach FGUT1.5

Downstream from reference reach FGUT1.5

Upstream from reference reach FGUT1.5

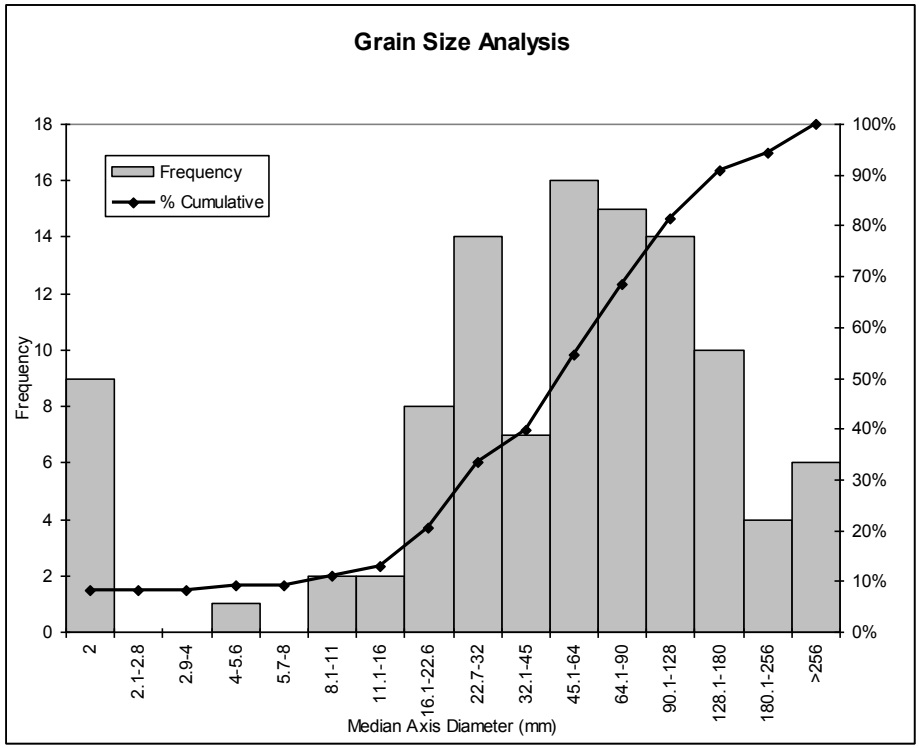
PHOTOGRAPH DOCUMENTATION: FGUT1.5

Bank composition detail (right bank) FGUT1.5

Oblique of site FGUT1.5

PHOTOGRAPH DOCUMENTATION: FGUT1.5

Pebble Count 1

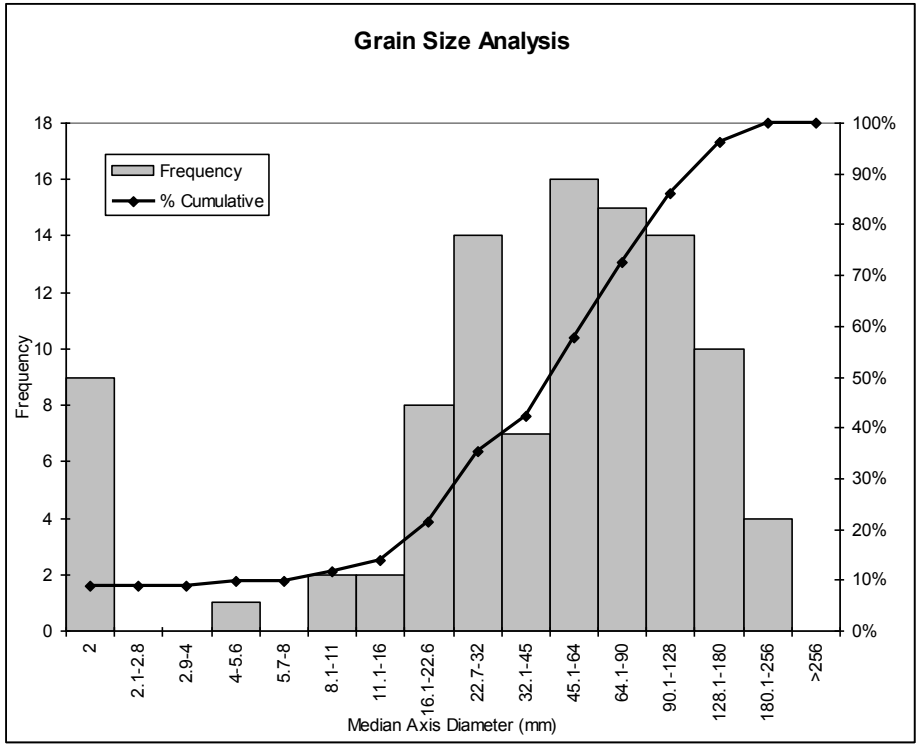


Size Class mm	*Frequency*	*Cumulative %*
2	9	8.3%
2.1-2.8	0	8.3%
2.9-4	0	8.3%
4-5.6	1	9.3%
5.7-8	0	9.3%
8.1-11	2	11.1%
11.1-16	2	13.0%
16.1-22.6	8	20.4%
22.7-32	14	33.3%
32.1-45	7	39.8%
45.1-64	16	54.6%
64.1-90	15	68.5%
90.1-128	14	81.5%
128.1-180	10	90.7%
180.1-256	4	94.4%
>256	6	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 10 and 11

PHOTOGRAPH DOCUMENTATION: FGUT1.5

Pebble Count 1 (modified)

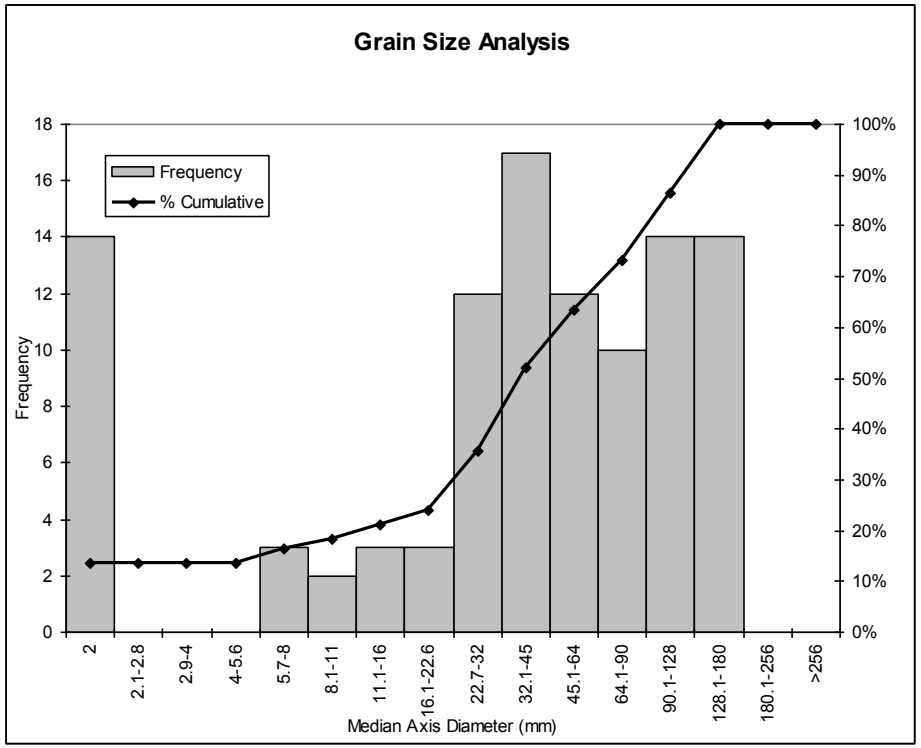


Size Class mm	*Frequency*	*Cumulative %*
2	9	8.8%
2.1-2.8	0	8.8%
2.9-4	0	8.8%
4-5.6	1	9.8%
5.7-8	0	9.8%
8.1-11	2	11.8%
11.1-16	2	13.7%
16.1-22.6	8	21.6%
22.7-32	14	35.3%
32.1-45	7	42.2%
45.1-64	16	57.8%
64.1-90	15	72.5%
90.1-128	14	86.3%
128.1-180	10	96.1%
180.1-256	4	100.0%
>256	0*	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 10 and 11
*Removed potential lag from pebble count 1 (count: 6)

PHOTOGRAPH DOCUMENTATION: FGUT1.5

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	14	13.5%
2.1-2.8	0	13.5%
2.9-4	0	13.5%
4-5.6	0	13.5%
5.7-8	3	16.3%
8.1-11	2	18.3%
11.1-16	3	21.2%
16.1-22.6	3	24.0%
22.7-32	12	35.6%
32.1-45	17	51.9%
45.1-64	12	63.5%
64.1-90	10	73.1%
90.1-128	14	86.5%
128.1-180	14	100.0%
180.1-256	0	100.0%
>256	0	100.0%

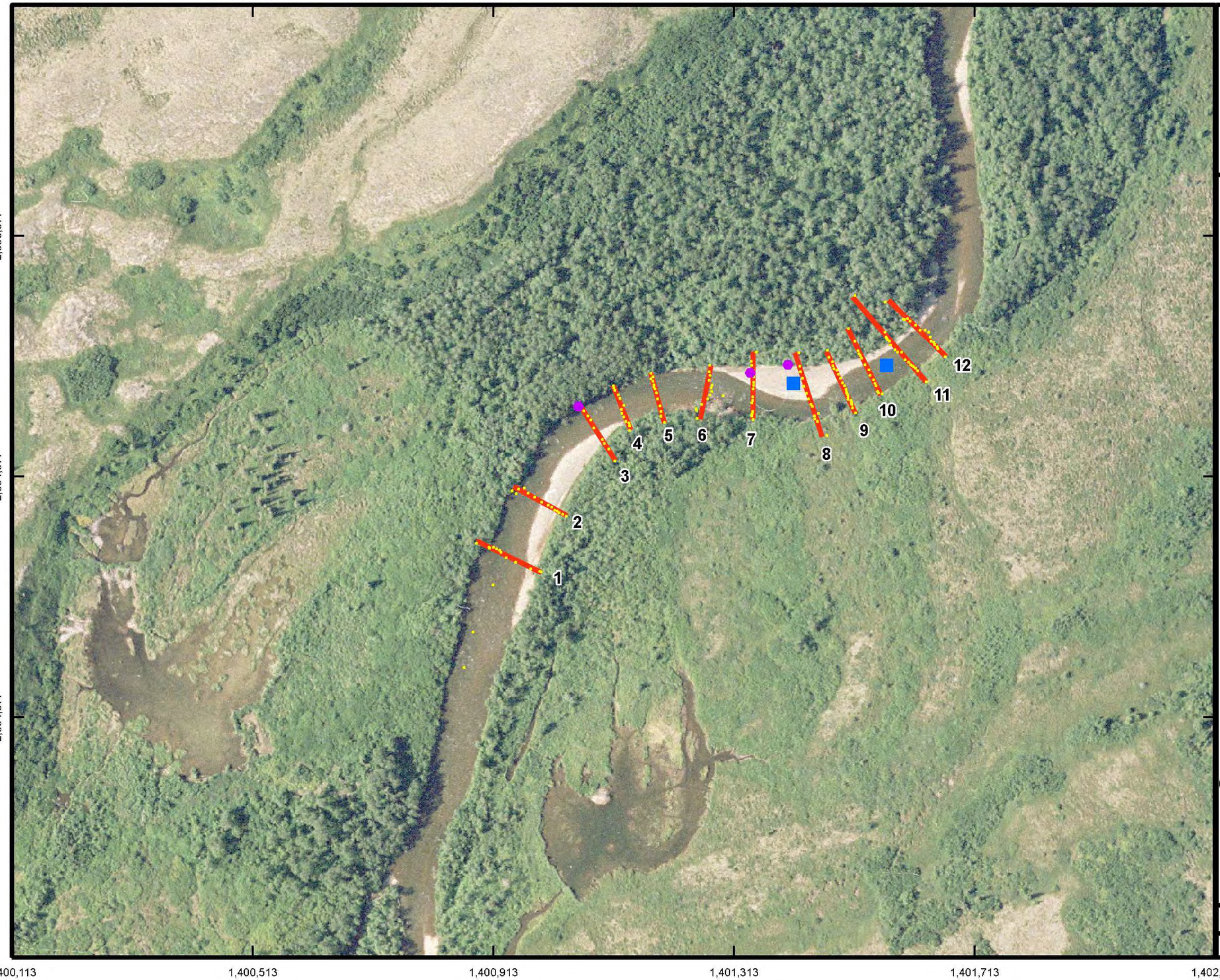
Description of Location: Sampled on bar adjacent to River Stations (RS) 7-9

1,400,113 1,400,513 1,400,913 1,401,313 1,401,713 1,402,113

2,095,377

2,094,977

2,094,577

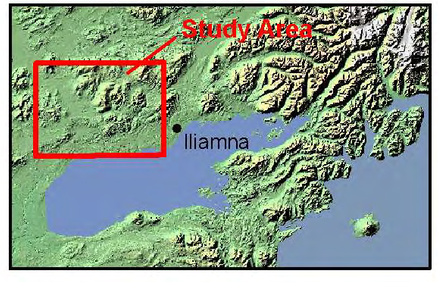


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT1.5
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,400,113 1,400,513 1,400,913 1,401,313 1,401,713 1,402,113

SITE DESCRIPTION: FGUT1.6

Site Characteristics.

Site Name		FGUT1.6	
Discharge (cfs)	**1050 (850-1150)**	Width (ft)	**77.3 (75.6-79.1)**
Slope	**0.0044**	Cross-sectional Area (ft^2)	**195 (172-218)**
D_{50}	**61**	D_{84}	**147**
(modified) D_{50}	**60**	D_{84}	**141**
Lat/Long Location	**N59.7556 W155.2741**	Drainage Area (mi^2)	**94**
% Willow		**35**	
% Grass		**5**	
% Tree		**60**	

Site Overview. During Inter-fluve, Inc.'s field efforts in September 2007, field personnel surveyed six cross-sections along 580 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. A portion of the pool (Sections 3 and 2) was up against bedrock outcrop along the left bank. Sections 6 through 5 characterize the riffle which serves as the reference reach. The pebble count was taken between Sections 5 and 6. Coarse bed material through the riffle was thought to be immobile. Pebble count 1 was modified to account for this and both the original distribution as well as the modified one are included in the analysis.

For a Shields number of 0.017, the D_{84} of the modified distribution moves through Section 5 between 1050 and 1100 cfs. The D_{84}, however, does not move through Section 6. For a Shields number of 0.026, the D_{50} moves before 850 cfs on Sections 6 and 5. Discharges between 900 and 1000 cfs match the geometry of Sections 5 and 6 well.

The reference reach sections (Sections 6 and 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1.6

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1.6	6	850-cfs	850	75.6	184	2.4	2.8	0.0036	4.6	0.52	0.53	0.034
FGUT1.6	6	900-cfs	900	75.7	190	2.5	2.9	0.0036	4.7	0.53	0.55	0.034
FGUT1.6	6	950-cfs	950	75.8	196	2.6	3.0	0.0036	4.9	0.53	0.57	0.034
FGUT1.6	6	1000-cfs	1000	75.8	202	2.7	3.1	0.0036	5.0	0.54	0.59	0.034
FGUT1.6	6	1050-cfs	1050	75.8	207	2.7	3.1	0.0037	5.1	0.54	0.61	0.034
FGUT1.6	6	1100-cfs	1100	75.8	212	2.8	3.2	0.0037	5.2	0.55	0.63	0.034
FGUT1.6	6	1150-cfs	1150	75.9	218	2.9	3.3	0.0038	5.3	0.55	0.65	0.034
FGUT1.6	5	850-cfs	850	78.5	172	2.2	2.5	0.0049	4.9	0.59	0.65	0.035
FGUT1.6	5	900-cfs	900	78.7	178	2.3	2.6	0.0050	5.1	0.59	0.68	0.035
FGUT1.6	5	950-cfs	950	78.9	184	2.3	2.7	0.0051	5.2	0.60	0.71	0.035
FGUT1.6	5	1000-cfs	1000	79.0	189	2.4	2.8	0.0051	5.3	0.60	0.74	0.035
FGUT1.6	5	1050-cfs	1050	79.0	195	2.5	2.8	0.0052	5.4	0.61	0.77	0.035
FGUT1.6	5	1100-cfs	1100	79.1	200	2.5	2.9	0.0052	5.5	0.61	0.79	0.035
FGUT1.6	5	1150-cfs	1150	79.1	205	2.6	3.0	0.0052	5.6	0.61	0.82	0.035
FGUT1.6	4	850-cfs	850	84.1	146	1.7	2.3	0.0089	5.8	0.78	0.95	0.034
FGUT1.6	4	900-cfs	900	84.3	153	1.8	2.3	0.0089	5.9	0.77	0.98	0.035
FGUT1.6	4	950-cfs	950	84.5	159	1.9	2.4	0.0088	6.0	0.77	1.00	0.035
FGUT1.6	4	1000-cfs	1000	84.6	165	2.0	2.5	0.0087	6.1	0.77	1.03	0.035
FGUT1.6	4	1050-cfs	1050	84.8	171	2.0	2.6	0.0087	6.2	0.76	1.06	0.035
FGUT1.6	4	1100-cfs	1100	84.9	177	2.1	2.6	0.0086	6.2	0.76	1.08	0.035
FGUT1.6	4	1150-cfs	1150	85.0	182	2.1	2.7	0.0086	6.3	0.76	1.11	0.036
FGUT1.6	3	850-cfs	850	88.8	186	2.1	2.7	0.0042	4.6	0.56	0.54	0.034
FGUT1.6	3	900-cfs	900	88.8	193	2.2	2.8	0.0042	4.7	0.56	0.55	0.034
FGUT1.6	3	950-cfs	950	88.8	201	2.3	2.8	0.0041	4.7	0.56	0.56	0.034
FGUT1.6	3	1000-cfs	1000	88.9	208	2.3	2.9	0.0040	4.8	0.55	0.58	0.034
FGUT1.6	3	1050-cfs	1050	88.9	215	2.4	3.0	0.0040	4.9	0.55	0.59	0.034
FGUT1.6	3	1100-cfs	1100	88.9	222	2.5	3.1	0.0040	5.0	0.55	0.60	0.034
FGUT1.6	3	1150-cfs	1150	88.9	228	2.6	3.1	0.0039	5.0	0.55	0.61	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGUT1.6

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT1.6	2	850-cfs	850	73.5	184	2.5	3.5	0.0034	4.6	0.52	0.52	0.034
FGUT1.6	2	900-cfs	900	73.8	189	2.6	3.6	0.0034	4.8	0.52	0.54	0.034
FGUT1.6	2	950-cfs	950	74.1	195	2.6	3.6	0.0035	4.9	0.53	0.57	0.034
FGUT1.6	2	1000-cfs	1000	74.3	200	2.7	3.7	0.0036	5.0	0.54	0.59	0.034
FGUT1.6	2	1050-cfs	1050	74.6	205	2.8	3.8	0.0036	5.1	0.54	0.61	0.034
FGUT1.6	2	1100-cfs	1100	74.8	210	2.8	3.8	0.0037	5.2	0.55	0.64	0.034
FGUT1.6	2	1150-cfs	1150	75.1	215	2.9	3.9	0.0038	5.3	0.56	0.66	0.034
FGUT1.6	1	850-cfs	850	86.0	157	1.8	2.5	0.0072	5.4	0.71	0.80	0.034
FGUT1.6	1	900-cfs	900	86.1	162	1.9	2.6	0.0072	5.6	0.71	0.82	0.034
FGUT1.6	1	950-cfs	950	86.2	168	1.9	2.6	0.0072	5.7	0.72	0.85	0.034
FGUT1.6	1	1000-cfs	1000	86.2	173	2.0	2.7	0.0072	5.8	0.72	0.88	0.034
FGUT1.6	1	1050-cfs	1050	86.2	178	2.1	2.7	0.0072	5.9	0.72	0.90	0.034
FGUT1.6	1	1100-cfs	1100	86.2	183	2.1	2.8	0.0072	6.0	0.73	0.93	0.034
FGUT1.6	1	1150-cfs	1150	86.2	188	2.2	2.9	0.0072	6.1	0.73	0.95	0.034

HEC-RAS LONGITUDINAL PROFILE: FGUT1.6

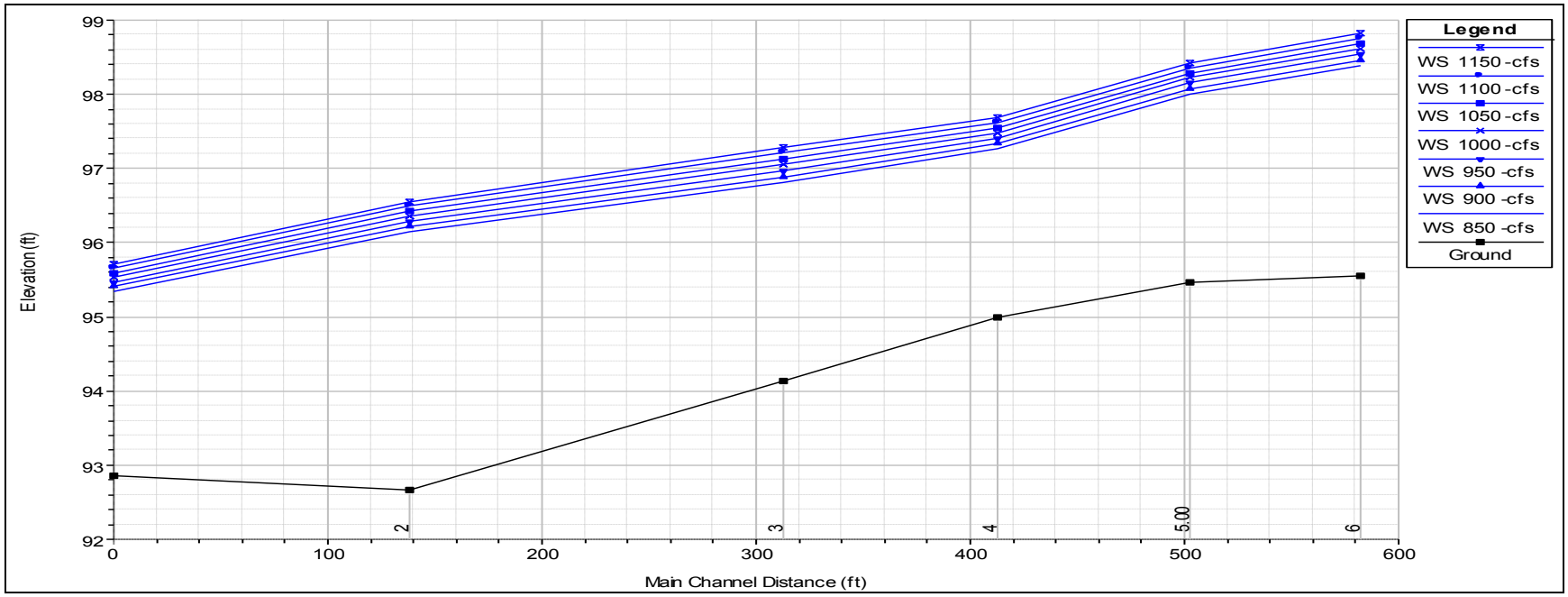


Figure 42 HEC-RAS longitudinal profile output for Reach FGUT1.6. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.6

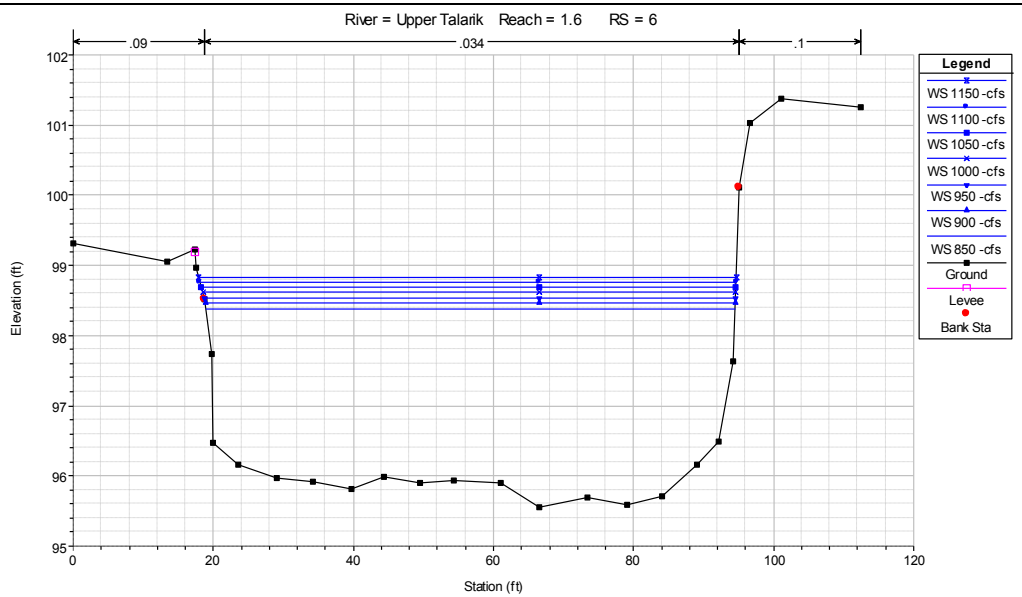


Figure 43 River Station (RS) 6 on River Reach FGUT1.6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.6

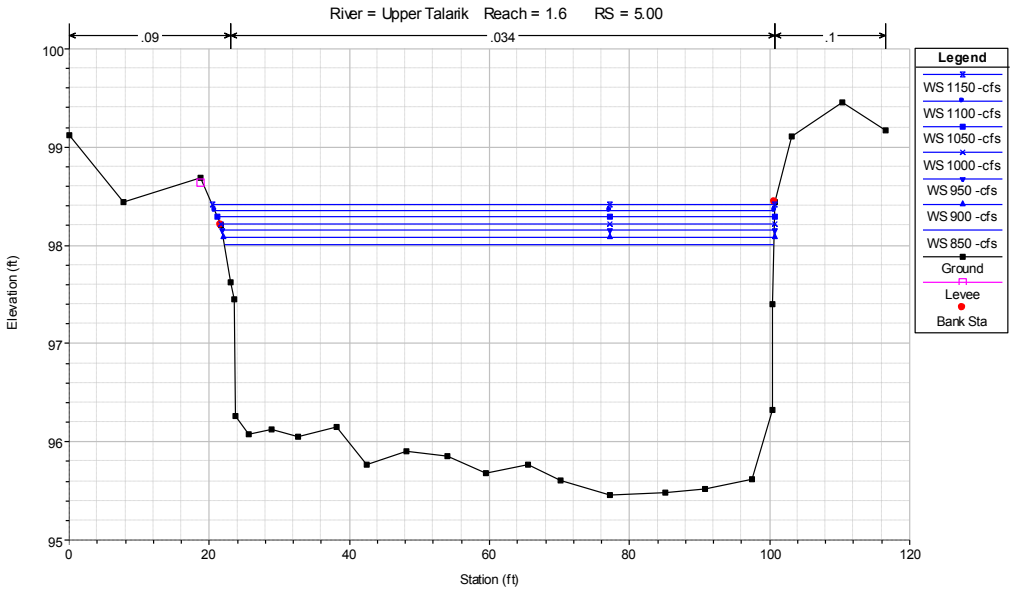


Figure 44 River Station (RS) 5 on River Reach FGUT1.6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.6

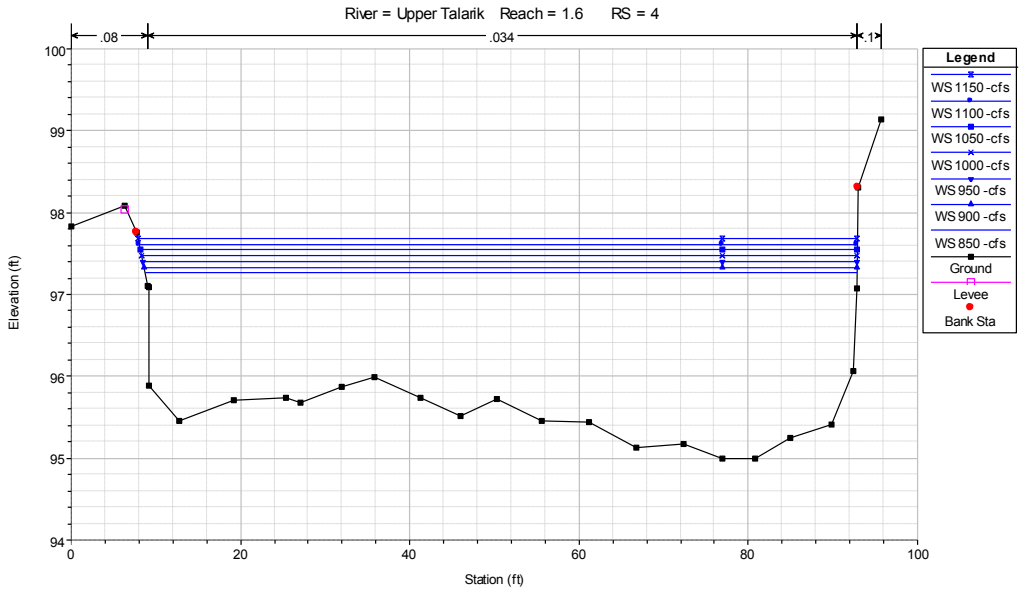


Figure 45 River Station (RS) 4on River Reach FGUT1.6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.6

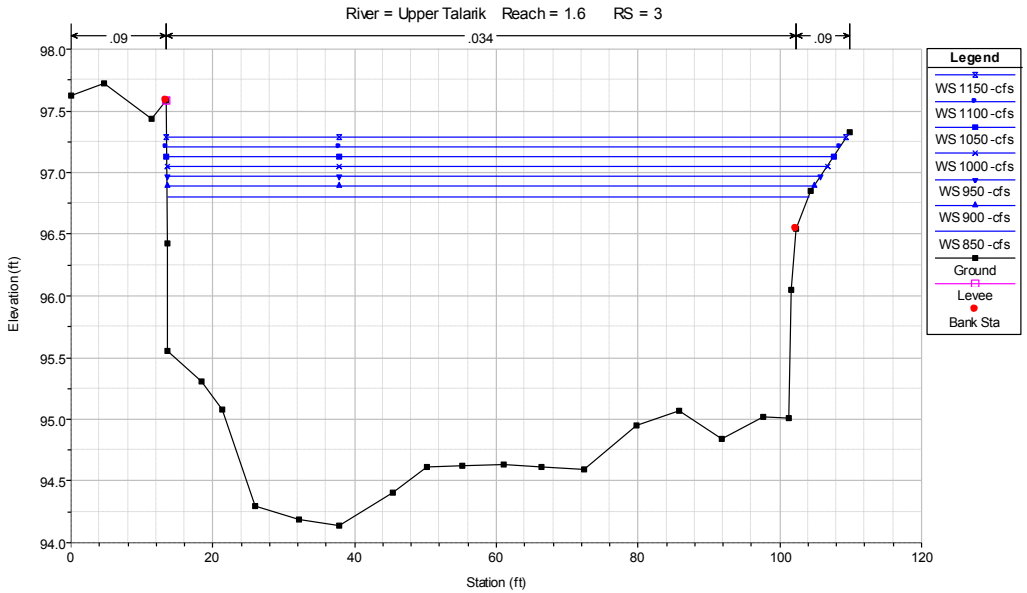


Figure 46 River Station (RS) 3 on River Reach FGUT1.6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.6

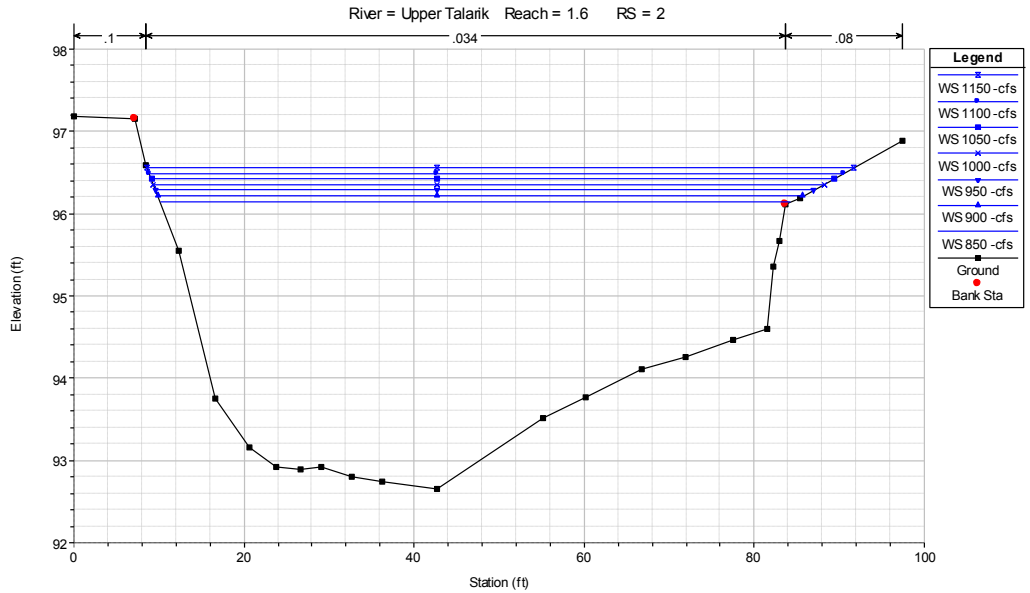


Figure 47 River Station (RS) 2 on River Reach FGUT1.6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT1.6

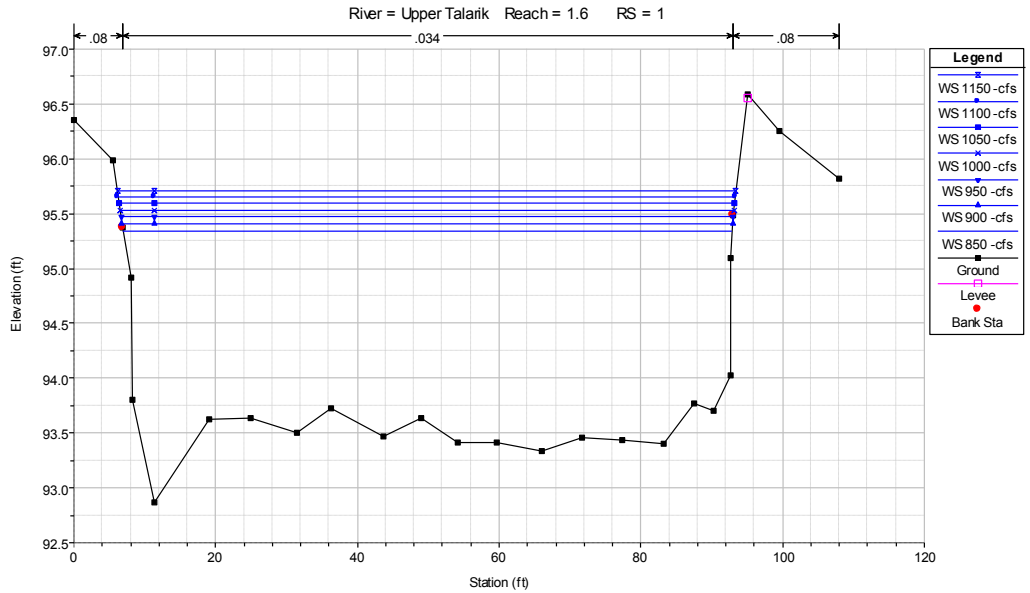


Figure 48 River Station (RS) 1 on River Reach FGUT1.6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT1.6

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT1.6	6	850-cfs	0.53	95	77	62
FGUT1.6	6	900-cfs	0.55	99	80	65
FGUT1.6	6	950-cfs	0.57	103	83	67
FGUT1.6	6	1000-cfs	0.59	106	86	69
FGUT1.6	6	1050-cfs	0.61	110	89	72
FGUT1.6	6	1100-cfs	0.63	113	92	74
FGUT1.6	6	1150-cfs	0.65	117	95	77
FGUT1.6	5	850-cfs	0.65	117	95	77
FGUT1.6	5	900-cfs	0.68	122	99	80
FGUT1.6	5	950-cfs	0.71	128	103	84
FGUT1.6	5	1000-cfs	0.74	133	108	87
FGUT1.6	5	1050-cfs	0.77	139	112	91
FGUT1.6	5	1100-cfs	0.79	142	115	93
FGUT1.6	5	1150-cfs	0.82	148	120	97
FGUT1.6	4	850-cfs	0.95	171	138	112
FGUT1.6	4	900-cfs	0.98	176	143	115
FGUT1.6	4	950-cfs	1.00	180	146	118
FGUT1.6	4	1000-cfs	1.03	185	150	121
FGUT1.6	4	1050-cfs	1.06	191	154	125
FGUT1.6	4	1100-cfs	1.08	194	157	127
FGUT1.6	4	1150-cfs	1.11	200	162	131
FGUT1.6	3	850-cfs	0.54	97	79	64
FGUT1.6	3	900-cfs	0.55	99	80	65
FGUT1.6	3	950-cfs	0.56	101	82	66
FGUT1.6	3	1000-cfs	0.58	104	85	68
FGUT1.6	3	1050-cfs	0.59	106	86	69
FGUT1.6	3	1100-cfs	0.60	108	87	71
FGUT1.6	3	1150-cfs	0.61	110	89	72

INCIPIENT MOTION ANALYSIS: FGUT1.6

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT1.6	2	850-cfs	0.52	94	76	61
FGUT1.6	2	900-cfs	0.54	97	79	64
FGUT1.6	2	950-cfs	0.57	103	83	67
FGUT1.6	2	1000-cfs	0.59	106	86	69
FGUT1.6	2	1050-cfs	0.61	110	89	72
FGUT1.6	2	1100-cfs	0.64	115	93	75
FGUT1.6	2	1150-cfs	0.66	119	96	78
FGUT1.6	1	850-cfs	0.80	144	117	94
FGUT1.6	1	900-cfs	0.82	148	120	97
FGUT1.6	1	950-cfs	0.85	153	124	100
FGUT1.6	1	1000-cfs	0.88	158	128	104
FGUT1.6	1	1050-cfs	0.90	162	131	106
FGUT1.6	1	1100-cfs	0.93	167	136	109
FGUT1.6	1	1150-cfs	0.95	171	138	112

PHOTOGRAPH DOCUMENTATION: FGUT1.6

Left bank along reference reach FGUT1.6

Right bank along reference reach FGUT1.6

Upstream from reference reach FGUT1.6

Bedrock outcrop along left bank FGUT1.6

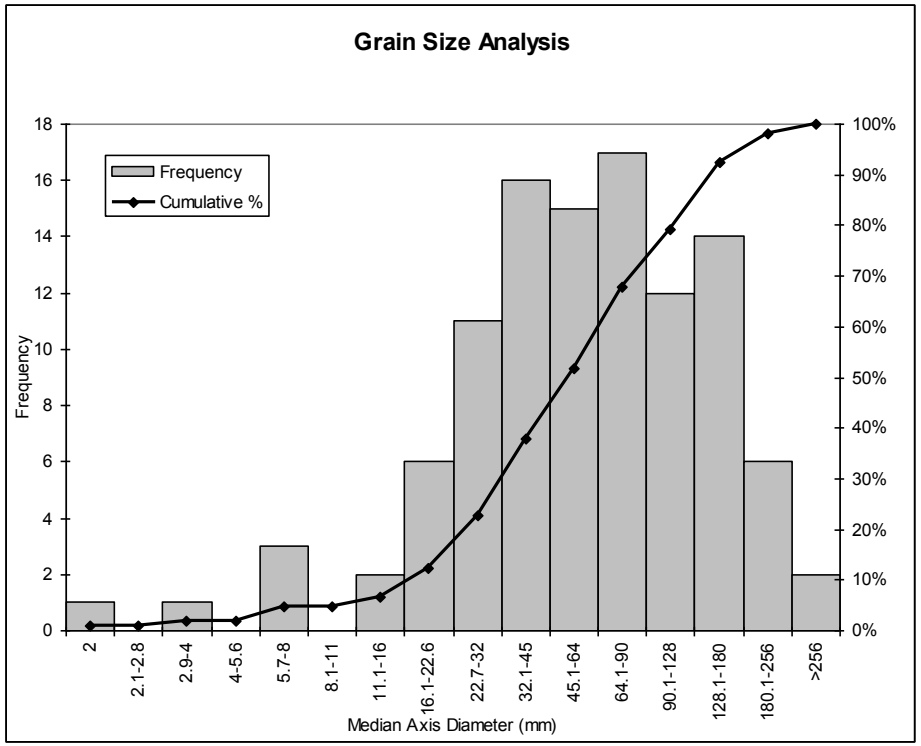
PHOTOGRAPH DOCUMENTATION: FGUT1.6

Bank composition detail (left bank) FGUT1.6

Oblique of site FGUT1.6

PEBBLE COUNT DISTRIBUTION: FGUT1.6

Original Distribution

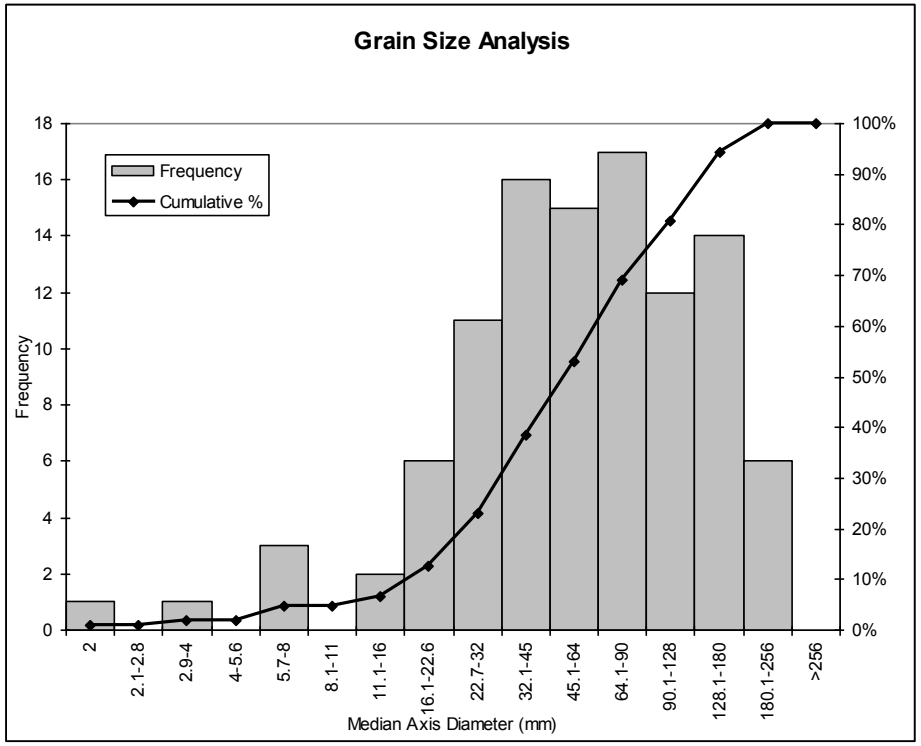


Size Class mm	*Frequency*	*Cumulative %*
2	1	.9%
2.1-2.8	0	.9%
2.9-4	1	1.9%
4-5.6	0	1.9%
5.7-8	3	4.7%
8.1-11	0	4.7%
11.1-16	2	6.6%
16.1-22.6	6	12.3%
22.7-32	11	22.6%
32.1-45	16	37.7%
45.1-64	15	51.9%
64.1-90	17	67.9%
90.1-128	12	79.2%
128.1-180	14	92.5%
180.1-256	6	98.1%
>256	2	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

PEBBLE COUNT DISTRIBUTION: FGUT1.6

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	1	1.0%
2.1-2.8	0	1.0%
2.9-4	1	1.9%
4-5.6	0	1.9%
5.7-8	3	4.8%
8.1-11	0	4.8%
11.1-16	2	6.7%
16.1-22.6	6	12.5%
22.7-32	11	23.1%
32.1-45	16	38.5%
45.1-64	15	52.9%
64.1-90	17	69.2%
90.1-128	12	80.8%
128.1-180	14	94.2%
180.1-256	6	100.0%
>256	0*	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5
*Removed potential lag from pebble count (count: 2)

1,404,320 1,404,720 1,405,120 1,405,520 1,405,920 1,406,320 1,406,720

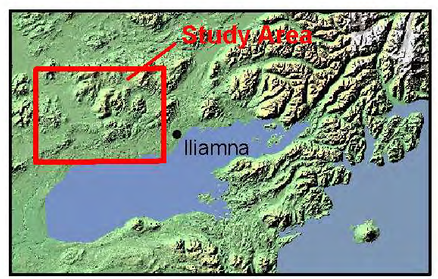
2,105,320
2,104,920
2,104,520
2,104,120

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT1.6
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 150 300 450 600

Meters
0 50 100

Scale 1:2,524
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,404,320 1,404,720 1,405,120 1,405,520 1,405,920 1,406,320 1,406,720

SITE DESCRIPTION: FGUT2

Site Characteristics.

Site Name		FGUT2	
Discharge (cfs)	**800 (700-1100)**	Width (ft)	**66.6 (65.5-68.0)**
Slope	**0.0041**	Cross-sectional Area (ft^2)	**169 (123-213)**
D_{50}	**54**	D_{84}	**106**
Lat/Long Location	**N59.78578 W155.25538**	Drainage Area (mi^2)	**86**
	% Willow	**85**	
	% Grass	**5**	
	% Tree	**10**	

Site Overview. By incorporating the USGS stream gage UT100B into the hydraulic model, FGUT2 serves as a point of reference for the Upper Talarik Creek. Roughly two years of hydrology data (9/04 – 6/06) allowed for an idea of the frequency and magnitude of discharge events (see attached hydrograph).

During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed 11 cross-sections along 700 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 6 and 5 characterize the riffle which serves as the reference reach. Sections 6 through 1 characterize the downstream pool. Section 9 captures UT100B and Sections 6 through 9 characterize the pool downstream of the gage.

According to the hydrograph, channel-forming discharges most likely do not exceed 800-900 cfs because of the frequency and duration of events. For Section 6, shear increases with decreasing discharge. This phenomenon may be attributed to a steep slope and narrow channel which causes supercritical conditions during lower discharges and therefore artificially high shear. For a Shields number of 0.017, the D_{84} begins movement between 800 and 900 cfs through the upper sections (Sections 11-7) and by 900 cfs on Section 4. For a Shields number of 0.026, the D_{50} begins to move between 700 and 800 cfs through many of the sections. The height of the deposition on the gravel bar provides a good indication of channel forming discharges. A flow of 700 cfs comes close to matching the top of the upper gravel bar (Sections 11-6) while 1100 cfs overtops the bar by 0.5-1'.

The reference reach sections (Sections 5 and 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT2	11	700-cfs	700	52.6	148	2.8	3.7	0.0030	4.6	0.49	0.50	0.034
FGUT2	11	800-cfs	800	52.7	157	3.0	3.9	0.0032	5.0	0.51	0.57	0.034
FGUT2	11	900-cfs	900	52.8	166	3.1	4.1	0.0033	5.3	0.53	0.63	0.034
FGUT2	11	1000-cfs	1000	53.0	174	3.3	4.2	0.0035	5.6	0.54	0.69	0.034
FGUT2	11	1100-cfs	1100	53.0	182	3.4	4.4	0.0036	5.9	0.56	0.75	0.034
FGUT2	10	700-cfs	700	52.9	137	2.6	3.9	0.0037	4.9	0.54	0.58	0.034
FGUT2	10	800-cfs	800	53.0	144	2.7	4.0	0.0040	5.3	0.56	0.66	0.034
FGUT2	10	900-cfs	900	53.0	153	2.9	4.2	0.0041	5.6	0.58	0.72	0.034
FGUT2	10	1000-cfs	1000	53.1	161	3.0	4.3	0.0042	5.8	0.59	0.77	0.034
FGUT2	10	1100-cfs	1100	53.1	169	3.2	4.5	0.0043	6.0	0.60	0.82	0.034
FGUT2	9	700-cfs	700	61.4	144	2.4	3.3	0.0037	4.7	0.54	0.54	0.034
FGUT2	9	800-cfs	800	61.5	150	2.4	3.4	0.0043	5.1	0.58	0.64	0.034
FGUT2	9	900-cfs	900	61.6	160	2.6	3.5	0.0043	5.3	0.58	0.68	0.034
FGUT2	9	1000-cfs	1000	61.7	169	2.8	3.7	0.0043	5.5	0.59	0.71	0.034
FGUT2	9	1100-cfs	1100	61.8	179	2.9	3.9	0.0042	5.7	0.59	0.75	0.034
FGUT2	8	700-cfs	700	54.0	150	2.8	4.5	0.0027	4.3	0.45	0.44	0.034
FGUT2	8	800-cfs	800	54.4	154	2.8	4.5	0.0032	4.7	0.49	0.54	0.035
FGUT2	8	900-cfs	900	55.0	163	3.0	4.7	0.0035	4.9	0.51	0.62	0.036
FGUT2	8	1000-cfs	1000	55.7	172	3.1	4.9	0.0037	5.1	0.51	0.69	0.036
FGUT2	8	1100-cfs	1100	56.4	181	3.2	5.0	0.0039	5.3	0.52	0.75	0.037
FGUT2	7	700-cfs	700	59.3	148	2.5	3.5	0.0032	4.4	0.49	0.48	0.034
FGUT2	7	800-cfs	800	59.3	149	2.5	3.5	0.0040	5.0	0.56	0.61	0.034
FGUT2	7	900-cfs	900	59.4	159	2.7	3.7	0.0040	5.2	0.56	0.64	0.034
FGUT2	7	1000-cfs	1000	59.4	169	2.8	3.8	0.0038	5.3	0.55	0.66	0.034
FGUT2	7	1100-cfs	1100	59.5	179	3.0	4.0	0.0037	5.4	0.55	0.66	0.034
FGUT2	6	700-cfs	700	67.5	123	1.8	2.5	0.0079	5.7	0.75	0.88	0.034
FGUT2	6	800-cfs	800	67.7	140	2.1	2.7	0.0054	5.1	0.63	0.68	0.034
FGUT2	6	900-cfs	900	67.8	154	2.3	2.9	0.0048	5.1	0.60	0.66	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGUT2

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT2	6	1000-cfs	1000	67.9	167	2.5	3.1	0.0043	5.2	0.58	0.65	0.034
FGUT2	6	1100-cfs	1100	68.0	179	2.6	3.3	0.0040	5.2	0.56	0.64	0.034
FGUT2	5	700-cfs	700	65.5	159	2.4	3.7	0.0032	4.4	0.49	0.47	0.034
FGUT2	5	800-cfs	800	65.5	174	2.7	4.0	0.0031	4.6	0.50	0.50	0.034
FGUT2	5	900-cfs	900	65.5	187	2.9	4.2	0.0030	4.8	0.49	0.52	0.034
FGUT2	5	1000-cfs	1000	65.5	200	3.1	4.4	0.0029	4.9	0.49	0.54	0.034
FGUT2	5	1100-cfs	1100	65.5	213	3.2	4.6	0.0028	5.0	0.49	0.56	0.034
FGUT2	4	700-cfs	700	44.4	144	3.2	4.5	0.0027	4.8	0.47	0.52	0.034
FGUT2	4	800-cfs	800	44.4	152	3.4	4.7	0.0028	5.1	0.49	0.57	0.034
FGUT2	4	900-cfs	900	44.4	161	3.6	4.9	0.0029	5.4	0.50	0.62	0.034
FGUT2	4	1000-cfs	1000	44.4	169	3.8	5.1	0.0029	5.6	0.51	0.67	0.034
FGUT2	4	1100-cfs	1100	44.4	177	4.0	5.3	0.0029	5.8	0.51	0.70	0.034
FGUT2	3	700-cfs	700	50.5	147	2.9	4.8	0.0029	4.8	0.49	0.52	0.034
FGUT2	3	800-cfs	800	50.5	156	3.1	5.0	0.0032	5.1	0.51	0.59	0.034
FGUT2	3	900-cfs	900	50.5	163	3.2	5.2	0.0034	5.5	0.54	0.67	0.034
FGUT2	3	1000-cfs	1000	50.5	171	3.4	5.3	0.0036	5.8	0.56	0.74	0.034
FGUT2	3	1100-cfs	1100	50.5	179	3.5	5.4	0.0037	6.1	0.57	0.80	0.034
FGUT2	2	700-cfs	700	50.6	146	2.9	5.0	0.0030	4.8	0.50	0.53	0.034
FGUT2	2	800-cfs	800	50.6	154	3.0	5.1	0.0033	5.2	0.53	0.62	0.034
FGUT2	2	900-cfs	900	50.6	160	3.2	5.2	0.0037	5.6	0.55	0.70	0.034
FGUT2	2	1000-cfs	1000	50.6	167	3.3	5.4	0.0040	6.0	0.58	0.79	0.034
FGUT2	2	1100-cfs	1100	50.6	173	3.4	5.5	0.0042	6.3	0.60	0.88	0.034
FGUT2	1	700-cfs	700	76.0	135	1.8	2.7	0.0067	5.2	0.69	0.73	0.034
FGUT2	1	800-cfs	800	77.0	147	1.9	2.9	0.0067	5.5	0.70	0.79	0.034
FGUT2	1	900-cfs	900	77.0	158	2.1	3.0	0.0067	5.7	0.70	0.84	0.034
FGUT2	1	1000-cfs	1000	77.0	168	2.2	3.1	0.0067	6.0	0.71	0.90	0.034
FGUT2	1	1100-cfs	1100	77.0	178	2.3	3.3	0.0067	6.2	0.72	0.95	0.034

HEC-RAS LONGITUDINAL PROFILE: FGUT2

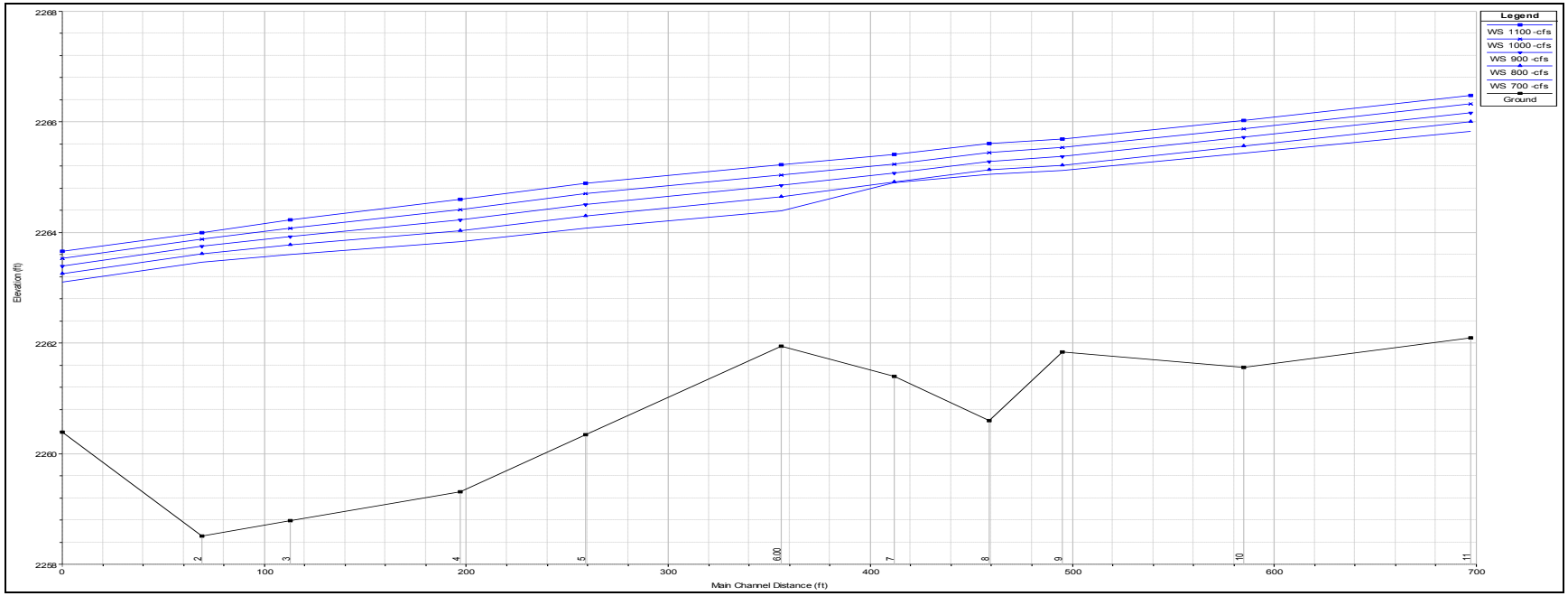


Figure 49 HEC-RAS longitudinal profile output for ReachFGUT2. Numbers 1-11 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

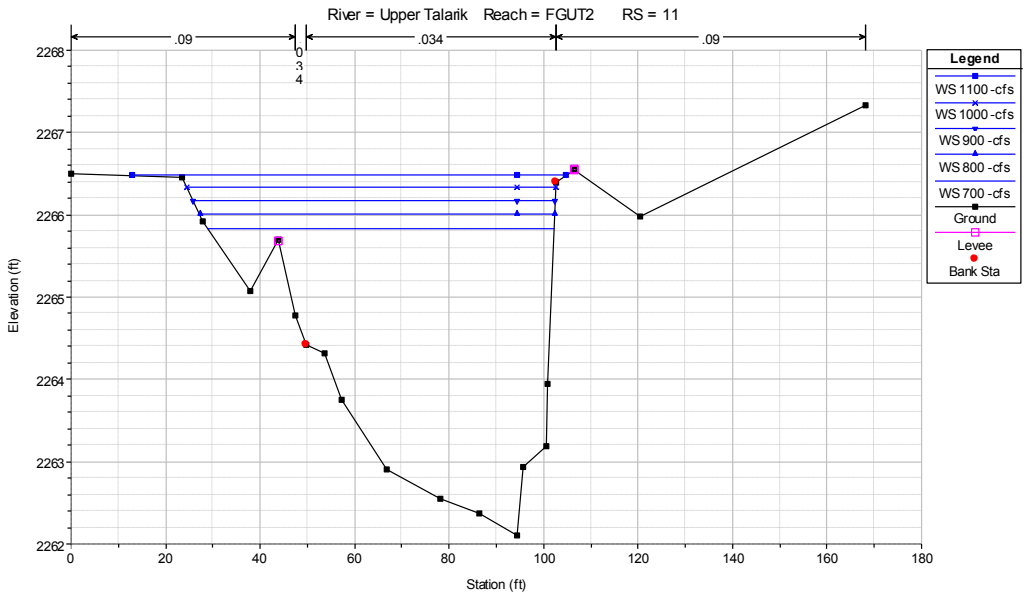


Figure 50 River Station (RS) 11 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

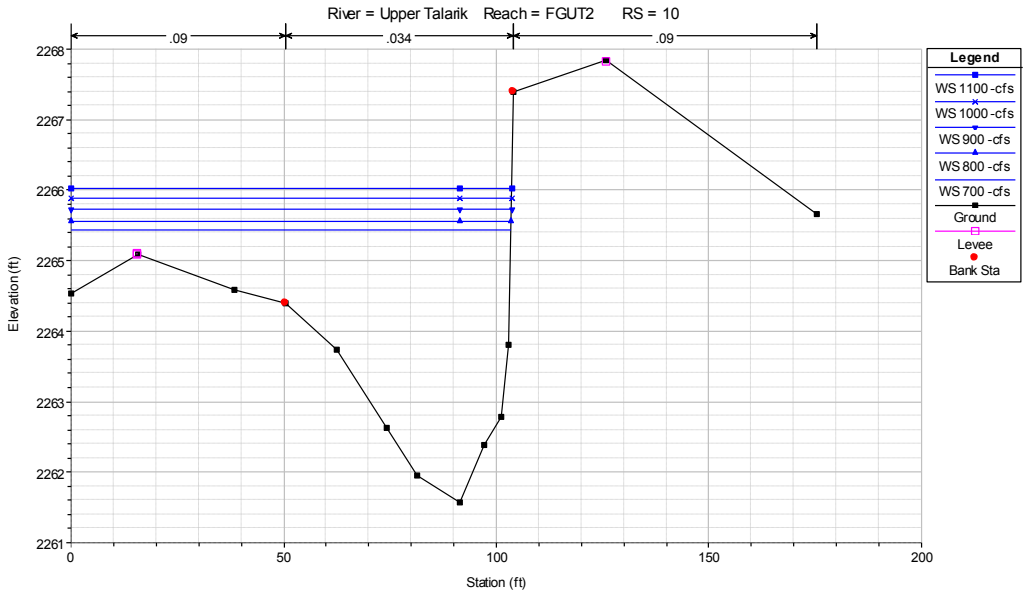


Figure 51 River Station (RS) 10 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

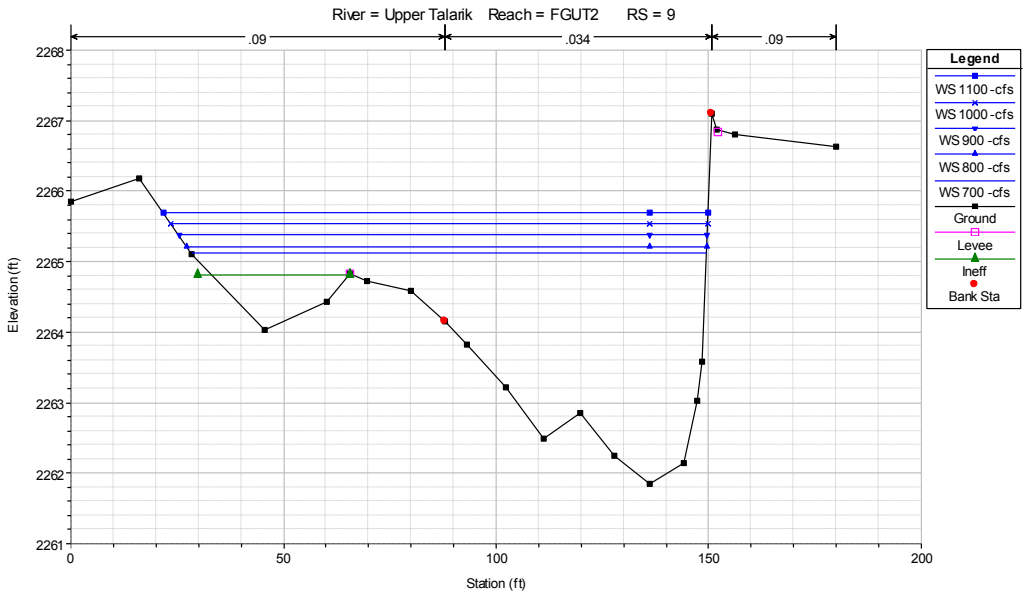


Figure 52 River Station (RS) 9 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

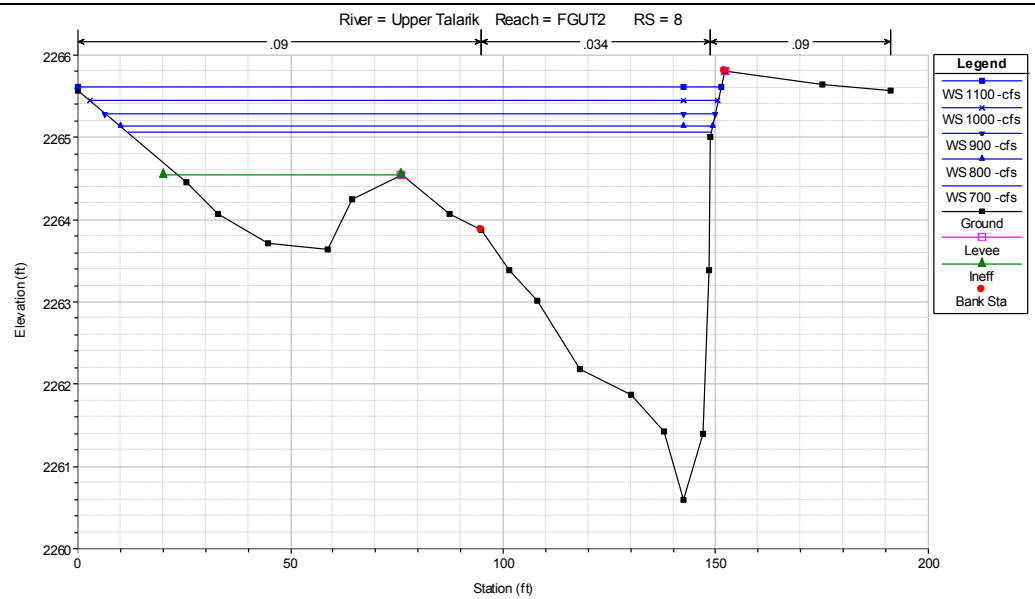


Figure 53 River Station (RS) 8 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

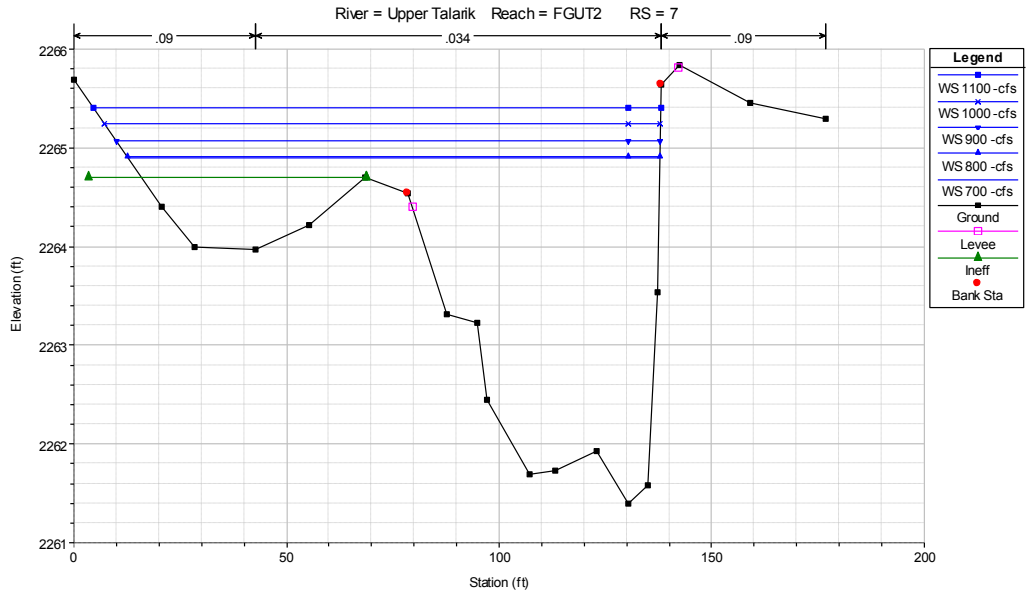


Figure 54 River Station (RS) 7 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

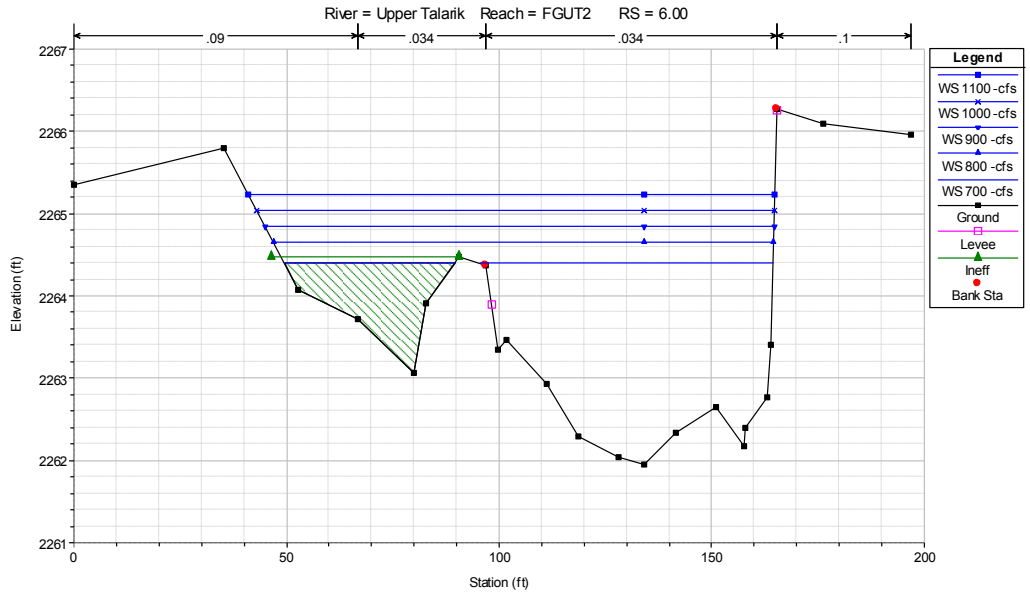


Figure 55 River Station (RS) 6 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

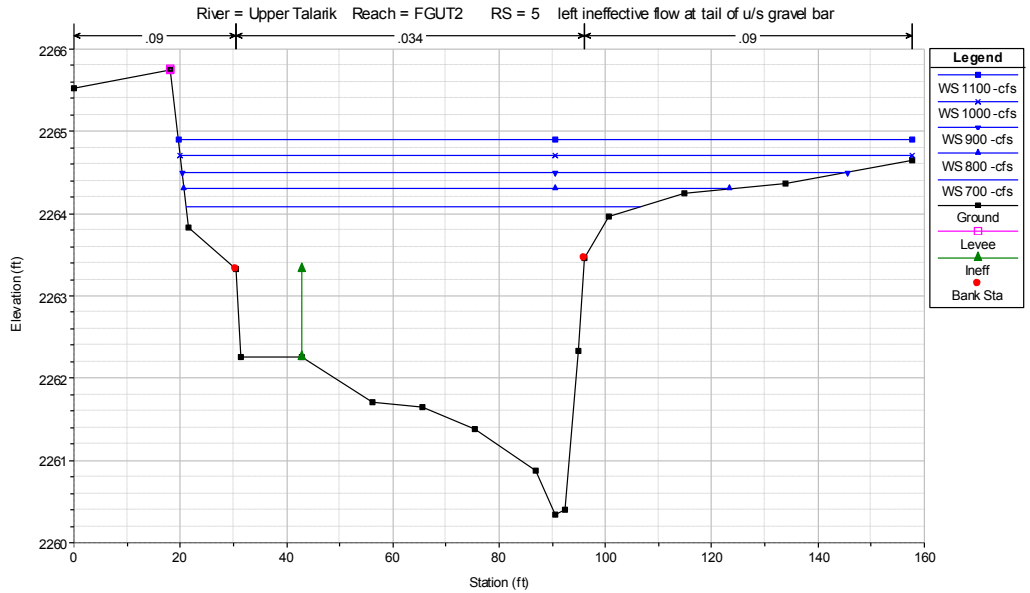


Figure 56 River Station (RS) 5 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

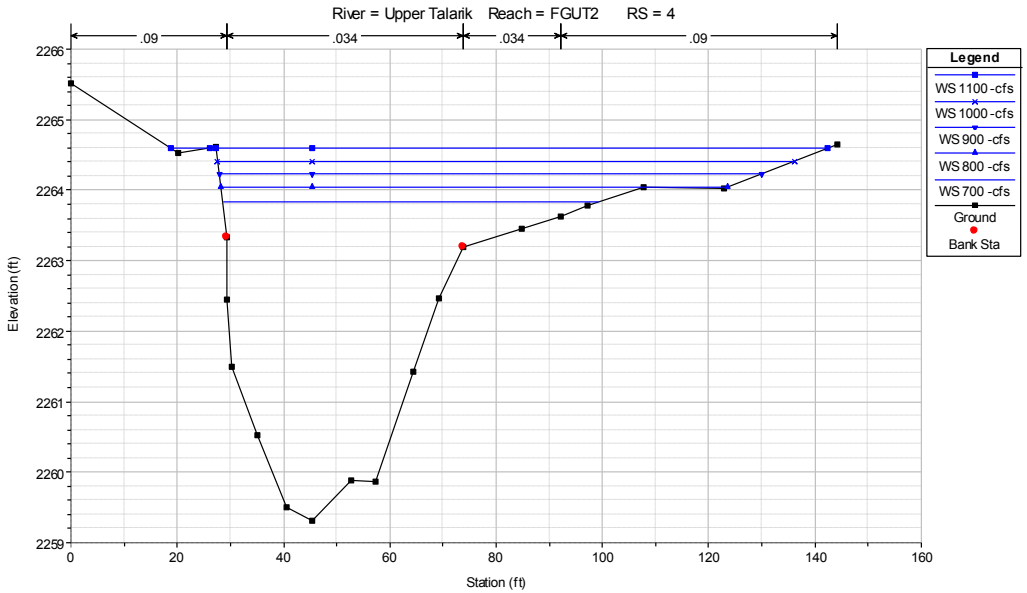


Figure 57 River Station (RS) 4 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

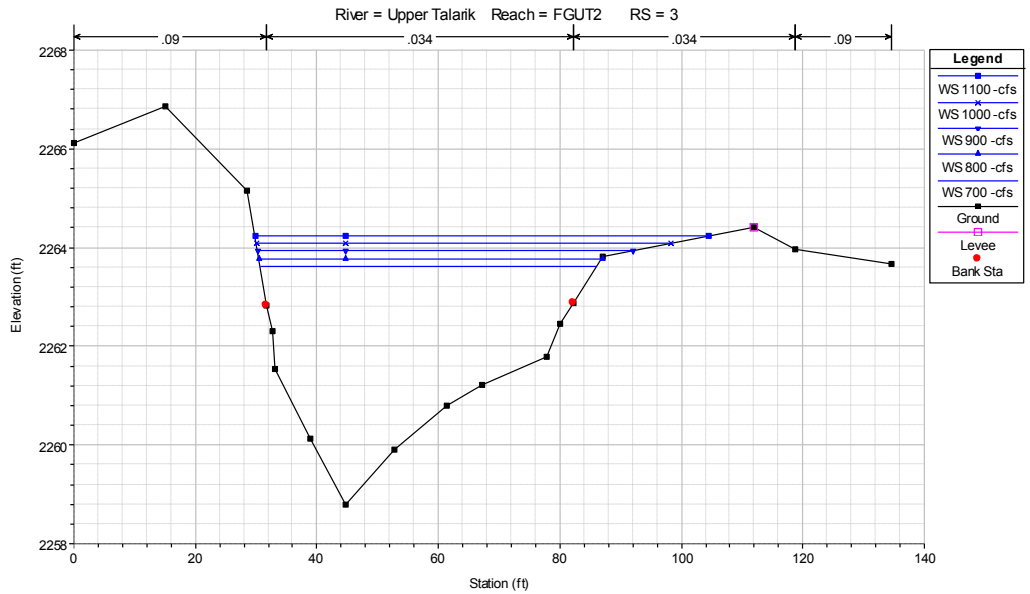


Figure 58 River Station (RS) 3 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

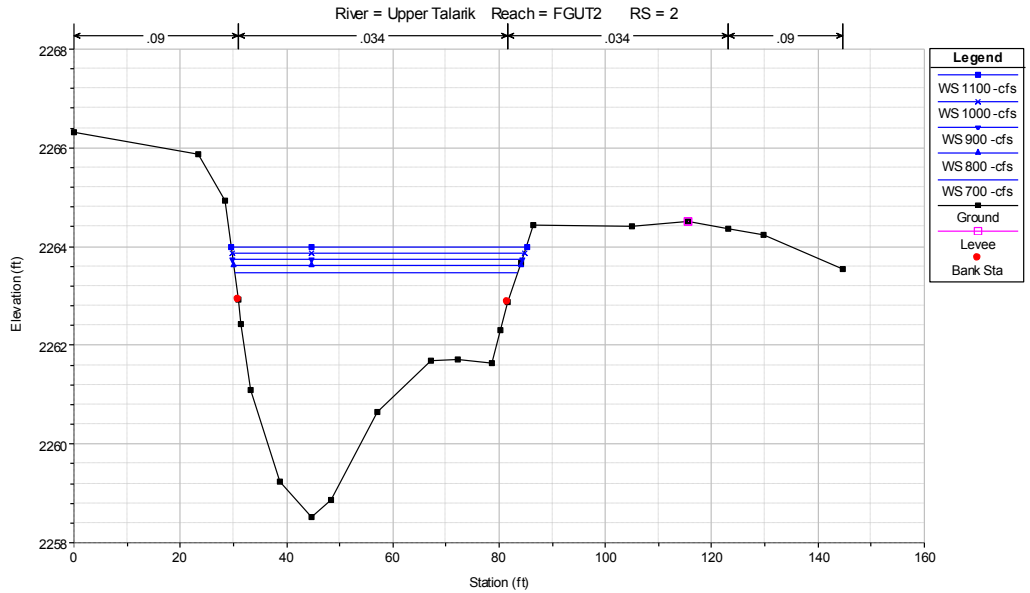


Figure 59 River Station (RS) 2 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT2

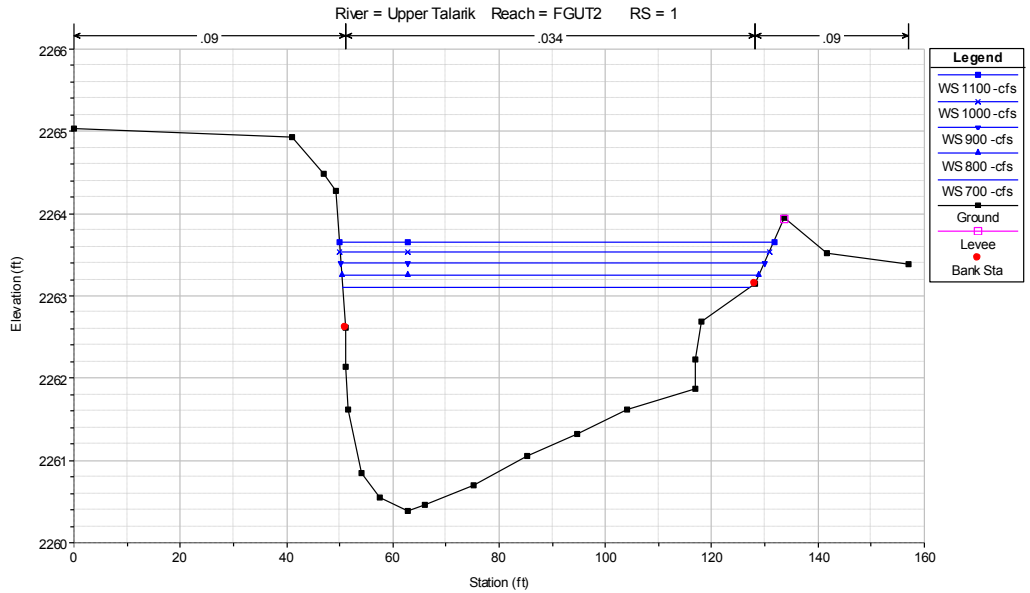


Figure 60 River Station (RS) 1 on River Reach FGUT2. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT2

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT2	11	700-cfs	0.50	90	73	59
FGUT2	11	800-cfs	0.57	103	83	67
FGUT2	11	900-cfs	0.63	113	92	74
FGUT2	11	1000-cfs	0.69	124	101	81
FGUT2	11	1100-cfs	0.75	135	109	88
FGUT2	10	700-cfs	0.58	104	85	68
FGUT2	10	800-cfs	0.66	119	96	78
FGUT2	10	900-cfs	0.72	130	105	85
FGUT2	10	1000-cfs	0.77	139	112	91
FGUT2	10	1100-cfs	0.82	148	120	97
FGUT2	9	700-cfs	0.54	97	79	64
FGUT2	9	800-cfs	0.64	115	93	75
FGUT2	9	900-cfs	0.68	122	99	80
FGUT2	9	1000-cfs	0.71	128	103	84
FGUT2	9	1100-cfs	0.75	135	109	88
FGUT2	8	700-cfs	0.44	79	64	52
FGUT2	8	800-cfs	0.54	97	79	64
FGUT2	8	900-cfs	0.62	112	90	73
FGUT2	8	1000-cfs	0.69	124	101	81
FGUT2	8	1100-cfs	0.75	135	109	88
FGUT2	7	700-cfs	0.48	86	70	57
FGUT2	7	800-cfs	0.61	110	89	72
FGUT2	7	900-cfs	0.64	115	93	75
FGUT2	7	1000-cfs	0.66	119	96	78
FGUT2	7	1100-cfs	0.66	119	96	78
FGUT2	6	700-cfs	0.88	158	128	104
FGUT2	6	800-cfs	0.68	122	99	80

INCIPIENT MOTION ANALYSIS: FGUT2

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGUT2	6	900-cfs	0.66	119	96	78
FGUT2	6	1000-cfs	0.65	117	95	77
FGUT2	6	1100-cfs	0.64	115	93	75
FGUT2	5	700-cfs	0.47	85	68	55
FGUT2	5	800-cfs	0.50	90	73	59
FGUT2	5	900-cfs	0.52	94	76	61
FGUT2	5	1000-cfs	0.54	97	79	64
FGUT2	5	1100-cfs	0.56	101	82	66
FGUT2	4	700-cfs	0.52	94	76	61
FGUT2	4	800-cfs	0.57	103	83	67
FGUT2	4	900-cfs	0.62	112	90	73
FGUT2	4	1000-cfs	0.67	121	98	79
FGUT2	4	1100-cfs	0.70	126	102	82
FGUT2	3	700-cfs	0.52	94	76	61
FGUT2	3	800-cfs	0.59	106	86	69
FGUT2	3	900-cfs	0.67	121	98	79
FGUT2	3	1000-cfs	0.74	133	108	87
FGUT2	3	1100-cfs	0.80	144	117	94
FGUT2	2	700-cfs	0.53	95	77	62
FGUT2	2	800-cfs	0.62	112	90	73
FGUT2	2	900-cfs	0.70	126	102	82
FGUT2	2	1000-cfs	0.79	142	115	93
FGUT2	2	1100-cfs	0.88	158	128	104
FGUT2	1	700-cfs	0.73	131	106	86
FGUT2	1	800-cfs	0.79	142	115	93
FGUT2	1	900-cfs	0.84	151	122	99
FGUT2	1	1000-cfs	0.90	162	131	106
FGUT2	1	1100-cfs	0.95	171	138	112

PHOTOGRAPH DOCUMENTATION: FGUT2

Left bank along reference reach FGUT2

Right bank along reference reach FGUT2

Looking downstream from reference reach FGUT2

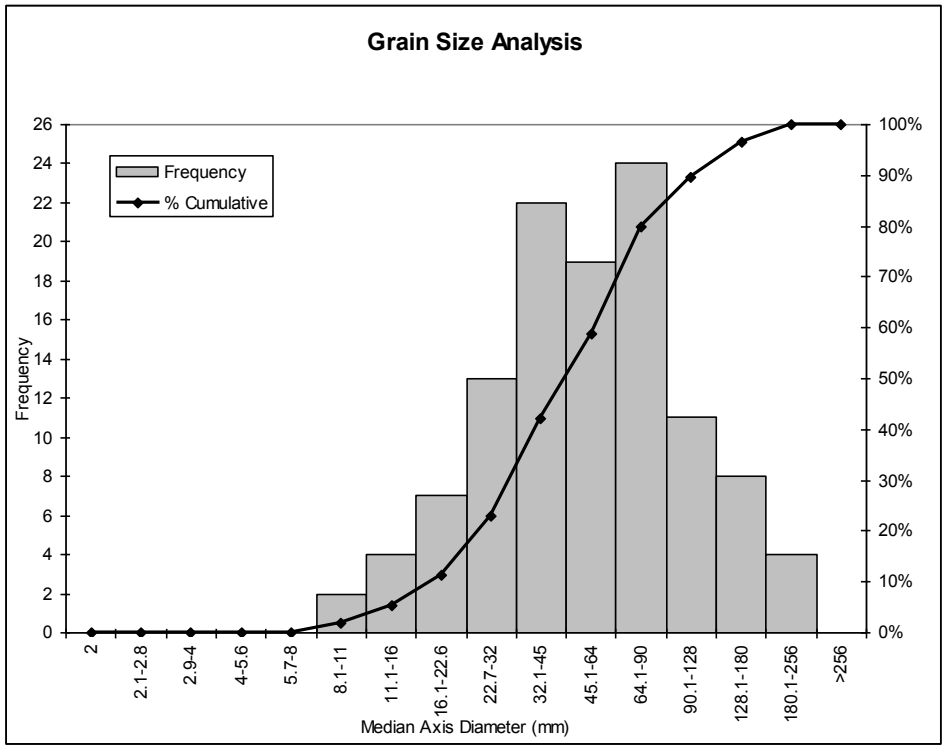
Looking upstream from reference reach FGUT2

PHOTOGRAPH DOCUMENTATION: FGUT2

Bank composition detail (right bank) FGUT2

Looking upstream from downstream boundary FGUT2

PEBBLE COUNT DISTRIBUTION: FGUT2



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	0	.0%
8.1-11	2	1.8%
11.1-16	4	5.3%
16.1-22.6	7	11.4%
22.7-32	13	22.8%
32.1-45	22	42.1%
45.1-64	19	58.8%
64.1-90	24	79.8%
90.1-128	11	89.5%
128.1-180	8	96.5%
180.1-256	4	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 5 and 6

HYDROGRAPH: FGUT2

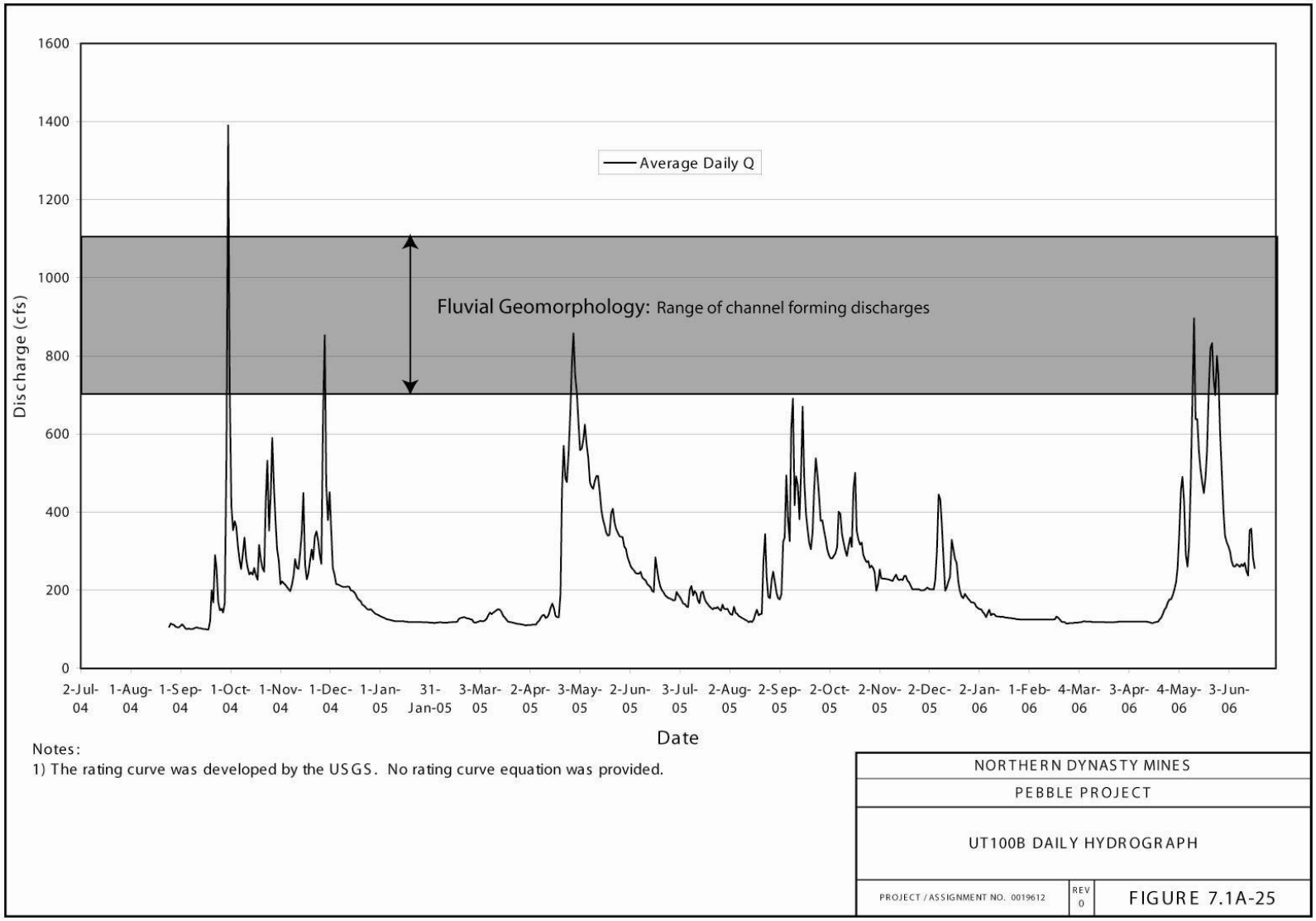
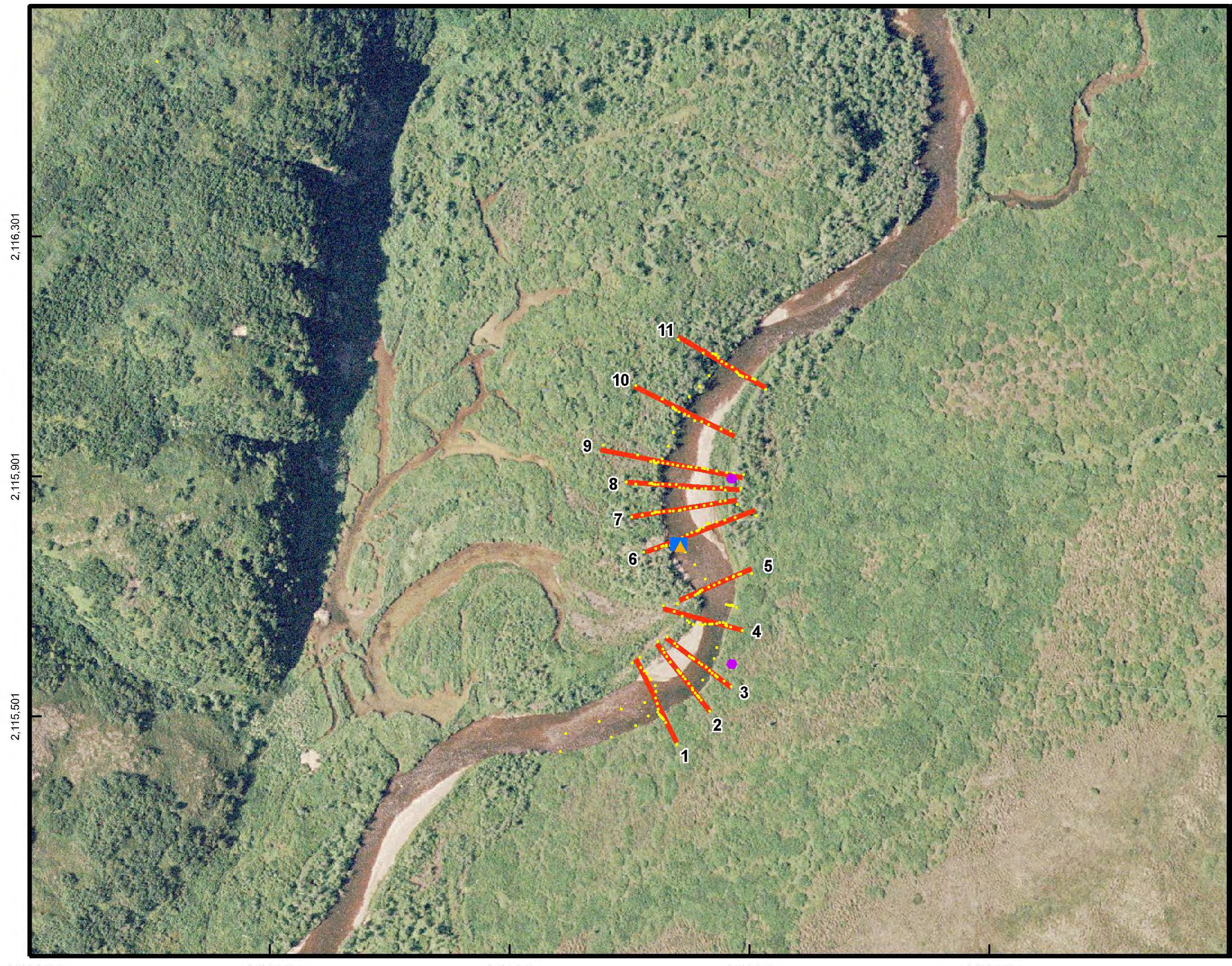


Figure 61: Hydrograph referenced in site description for reach FGUT2. Data provided by HDR.

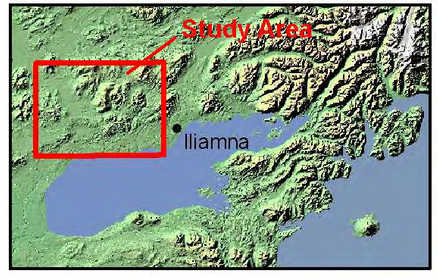


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT2
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Feet
0 110 220 330 440

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGUT3

Site Characteristics.

Site Name	**FGUT3**		
Discharge (cfs)	**775 (675-875)**	Width (ft)	**72.2 (69.0-77.6)**
Slope	**0.0021**	Cross-sectional Area (ft^2)	**183 (161-207)**
D_{50}	**46**	D_{84}	**85**
Lat/Long Location	**N59.80240 W155.21755**	Drainage Area (mi^2)	**80**
% Willow	**95**		
% Grass	**5**		
% Tree	**0**		

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 415 feet of channel length. Section 1 serves as the downstream hydraulic control for the model. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 7 through 4 characterize the riffle which serves as the reference reach. A pebble count was taken between Sections 6 and 7. Overwidened due to the entrance of a backwater/side channel along the left bank, Sections 7 and 8 required the addition of an ineffective flow boundary to account for the lack of conveyance during high flows. Lacking a pool downstream of the reference riffle, Sections 4 through 1 capture a series of grade breaks associated with riffles and glides.

Mobility of the D_{84} and D_{50} through the reference reach is limited to Section 7 where for a Shields of 0.017, the D_{84} moves at 850 cfs and for a Shields number of 0.026, the D_{50} moves before 675 cfs. The INCIPIENT MOTION ANALYSIS: provides some evidence for a range of channel forming discharges. The cross-section geometry and channel forming indicators through the reach further support this range. A right bank inflection point and the edge of the willows along Sections 7 and 8 matches a discharge of 725 cfs. A left bank inflection point and the edge of the willows along Sections 5 and 4 match a flow of 875 cfs. Discharges between 675 and 875 cfs overtop the gravel bar up to 0.5' along Sections 1 and 2.

The reference reach sections (Sections 7 through 4), with the exception of Section 7, provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT3	8	675-cfs	675	51.5	122	2.6	3.7	0.0039	5.9	0.64	0.61	0.029
FGUT3	8	700-cfs	700	51.6	125	2.7	3.7	0.0040	6.0	0.65	0.63	0.029
FGUT3	8	725-cfs	725	51.6	127	2.7	3.8	0.0041	6.1	0.66	0.65	0.029
FGUT3	8	750-cfs	750	51.7	133	2.6	3.9	0.0037	5.7	0.62	0.56	0.029
FGUT3	8	775-cfs	775	51.7	135	2.6	3.9	0.0037	5.7	0.63	0.58	0.029
FGUT3	8	800-cfs	800	51.7	137	2.7	4.0	0.0037	5.8	0.63	0.59	0.029
FGUT3	8	825-cfs	825	51.7	139	2.7	4.0	0.0037	5.9	0.63	0.60	0.029
FGUT3	8	850-cfs	850	51.7	142	2.7	4.1	0.0037	6.0	0.63	0.61	0.029
FGUT3	8	875-cfs	875	51.7	143	2.8	4.1	0.0039	6.1	0.65	0.64	0.029
FGUT3	7	675-cfs	675	85.9	167	2.1	2.6	0.0033	4.7	0.57	0.42	0.029
FGUT3	7	700-cfs	700	86.1	172	2.2	2.7	0.0032	4.8	0.57	0.43	0.029
FGUT3	7	725-cfs	725	86.2	176	2.2	2.7	0.0032	4.9	0.57	0.43	0.029
FGUT3	7	750-cfs	750	86.3	180	2.3	2.8	0.0032	4.9	0.57	0.44	0.029
FGUT3	7	775-cfs	775	86.4	185	2.3	2.8	0.0032	5.0	0.57	0.45	0.029
FGUT3	7	800-cfs	800	86.4	189	2.4	2.9	0.0032	5.0	0.58	0.45	0.029
FGUT3	7	825-cfs	825	86.5	193	2.4	2.9	0.0031	5.1	0.58	0.46	0.029
FGUT3	7	850-cfs	850	86.6	197	2.5	2.9	0.0031	5.1	0.58	0.47	0.029
FGUT3	7	875-cfs	875	86.7	204	2.5	3.0	0.0028	5.0	0.55	0.43	0.029
FGUT3	6	675-cfs	675	69.0	161	2.3	2.6	0.0022	4.2	0.48	0.32	0.029
FGUT3	6	700-cfs	700	69.0	165	2.4	2.6	0.0022	4.2	0.48	0.32	0.029
FGUT3	6	725-cfs	725	69.0	169	2.4	2.7	0.0022	4.3	0.48	0.33	0.029
FGUT3	6	750-cfs	750	69.0	172	2.5	2.7	0.0022	4.3	0.48	0.33	0.029
FGUT3	6	775-cfs	775	69.0	176	2.6	2.8	0.0022	4.4	0.48	0.34	0.029
FGUT3	6	800-cfs	800	69.0	179	2.6	2.8	0.0022	4.4	0.48	0.34	0.029
FGUT3	6	825-cfs	825	69.0	183	2.7	2.9	0.0022	4.5	0.48	0.35	0.029
FGUT3	6	850-cfs	850	69.0	186	2.7	2.9	0.0021	4.5	0.48	0.35	0.029
FGUT3	6	875-cfs	875	69.0	190	2.8	3.0	0.0021	4.6	0.48	0.36	0.029
FGUT3	5	675-cfs	675	77.0	163	2.1	2.5	0.0025	4.2	0.50	0.32	0.029
FGUT3	5	700-cfs	700	77.2	167	2.2	2.6	0.0024	4.2	0.50	0.32	0.029
FGUT3	5	725-cfs	725	77.2	171	2.2	2.7	0.0024	4.2	0.50	0.33	0.029

HEC-RAS OUTPUT SUMMARY TABLE: FGUT3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT3	5	750-cfs	750	77.3	176	2.3	2.7	0.0024	4.3	0.50	0.33	0.029
FGUT3	5	775-cfs	775	77.4	180	2.3	2.8	0.0023	4.3	0.50	0.33	0.029
FGUT3	5	800-cfs	800	77.4	184	2.4	2.8	0.0023	4.3	0.50	0.34	0.029
FGUT3	5	825-cfs	825	77.5	188	2.4	2.9	0.0023	4.4	0.49	0.34	0.029
FGUT3	5	850-cfs	850	77.5	192	2.5	2.9	0.0023	4.4	0.49	0.34	0.029
FGUT3	5	875-cfs	875	77.6	196	2.5	3.0	0.0022	4.4	0.49	0.35	0.029
FGUT3	4	675-cfs	675	70.0	177	2.5	3.2	0.0017	3.8	0.42	0.25	0.029
FGUT3	4	700-cfs	700	70.1	181	2.6	3.2	0.0017	3.9	0.42	0.26	0.029
FGUT3	4	725-cfs	725	70.2	185	2.6	3.3	0.0017	3.9	0.42	0.27	0.029
FGUT3	4	750-cfs	750	70.2	189	2.7	3.3	0.0017	4.0	0.42	0.27	0.029
FGUT3	4	775-cfs	775	70.3	193	2.7	3.4	0.0017	4.0	0.43	0.27	0.029
FGUT3	4	800-cfs	800	70.3	196	2.8	3.4	0.0017	4.1	0.43	0.28	0.029
FGUT3	4	825-cfs	825	70.4	200	2.8	3.5	0.0017	4.1	0.43	0.28	0.029
FGUT3	4	825-cfs	825	70.4	200	2.8	3.5	0.0017	4.1	0.43	0.28	0.029
FGUT3	4	850-cfs	850	70.5	204	2.9	3.5	0.0017	4.1	0.43	0.29	0.029
FGUT3	4	875-cfs	875	70.5	207	2.9	3.6	0.0017	4.2	0.43	0.29	0.029
FGUT3	3	675-cfs	675	66.5	170	2.6	3.2	0.0017	4.0	0.43	0.27	0.029
FGUT3	3	700-cfs	700	66.5	174	2.6	3.3	0.0017	4.0	0.44	0.28	0.029
FGUT3	3	725-cfs	725	66.5	178	2.7	3.3	0.0017	4.1	0.44	0.29	0.029
FGUT3	3	750-cfs	750	66.5	181	2.7	3.4	0.0017	4.1	0.44	0.29	0.029
FGUT3	3	775-cfs	775	66.5	185	2.8	3.4	0.0017	4.2	0.44	0.30	0.029
FGUT3	3	800-cfs	800	66.5	188	2.8	3.5	0.0017	4.2	0.44	0.30	0.029
FGUT3	3	825-cfs	825	66.5	192	2.9	3.5	0.0017	4.3	0.44	0.31	0.029
FGUT3	3	850-cfs	850	66.5	195	2.9	3.6	0.0017	4.3	0.44	0.31	0.029
FGUT3	3	875-cfs	875	66.5	198	3.0	3.6	0.0017	4.4	0.44	0.32	0.029
FGUT3	2	675-cfs	675	40.8	113	2.8	3.3	0.0035	5.8	0.61	0.57	0.029
FGUT3	2	700-cfs	700	40.9	115	2.8	3.4	0.0036	5.9	0.62	0.59	0.029
FGUT3	2	725-cfs	725	40.9	116	2.8	3.4	0.0036	6.0	0.62	0.61	0.029
FGUT3	2	750-cfs	750	41.0	118	2.9	3.5	0.0037	6.1	0.63	0.62	0.029

HEC-RAS OUTPUT SUMMARY TABLE: FGUT3

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT3	2	775-cfs	775	41.0	120	2.9	3.5	0.0037	6.1	0.63	0.64	0.029
FGUT3	2	800-cfs	800	41.0	122	3.0	3.6	0.0037	6.2	0.64	0.65	0.029
FGUT3	2	825-cfs	825	41.1	123	3.0	3.6	0.0038	6.3	0.64	0.67	0.029
FGUT3	2	850-cfs	850	41.1	125	3.0	3.6	0.0038	6.4	0.65	0.69	0.029
FGUT3	2	875-cfs	875	41.2	127	3.1	3.7	0.0039	6.5	0.65	0.70	0.029
FGUT3	1	675-cfs	675	61.2	132	2.2	3.6	0.0037	5.1	0.61	0.48	0.029
FGUT3	1	700-cfs	700	61.4	136	2.2	3.6	0.0037	5.2	0.61	0.49	0.029
FGUT3	1	725-cfs	725	61.6	138	2.3	3.7	0.0037	5.2	0.61	0.50	0.029
FGUT3	1	750-cfs	750	61.8	141	2.3	3.7	0.0037	5.3	0.62	0.51	0.029
FGUT3	1	775-cfs	775	62.0	144	2.3	3.8	0.0037	5.3	0.62	0.52	0.029
FGUT3	1	800-cfs	800	62.1	147	2.4	3.8	0.0037	5.4	0.62	0.53	0.029
FGUT3	1	825-cfs	825	62.2	149	2.4	3.9	0.0037	5.5	0.62	0.54	0.029
FGUT3	1	850-cfs	850	62.2	152	2.4	3.9	0.0037	5.5	0.62	0.55	0.029
FGUT3	1	875-cfs	875	62.2	154	2.5	3.9	0.0037	5.6	0.62	0.55	0.029

HEC-RAS LONGITUDINAL PROFILE: FGUT3

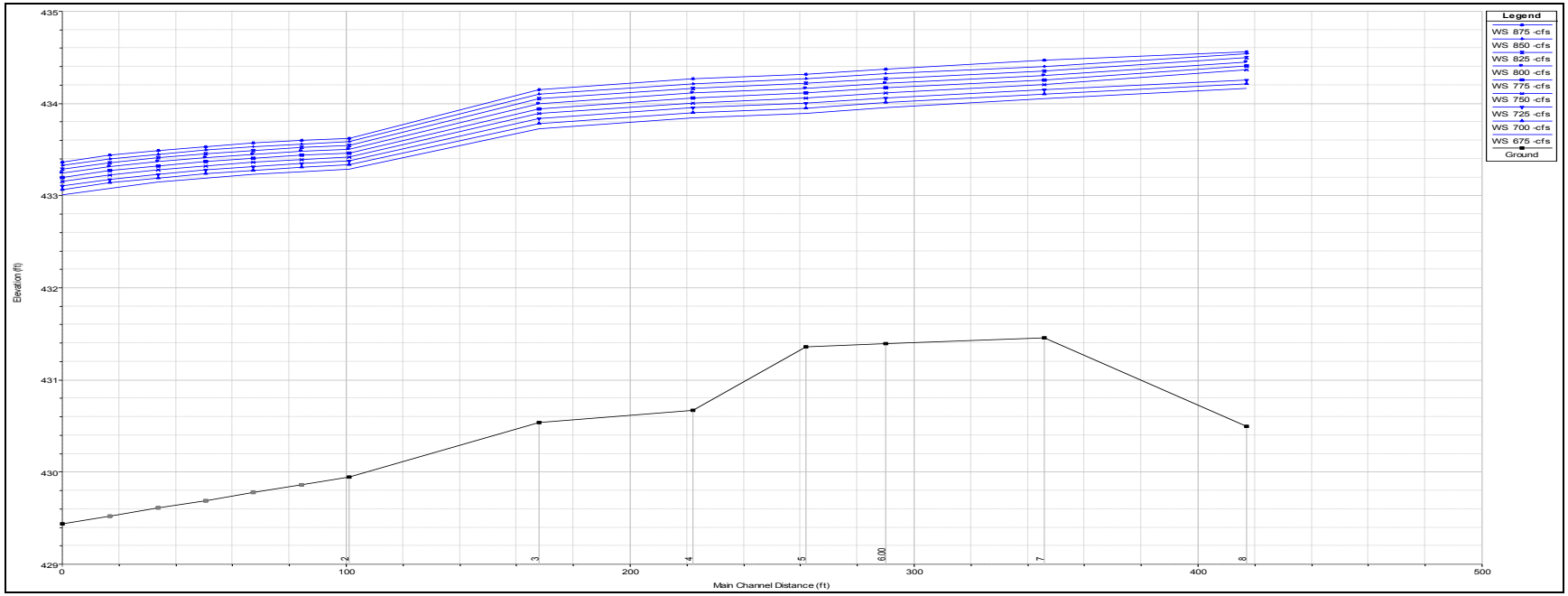


Figure 62 HEC-RAS longitudinal profile output for Reach FGUT3. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

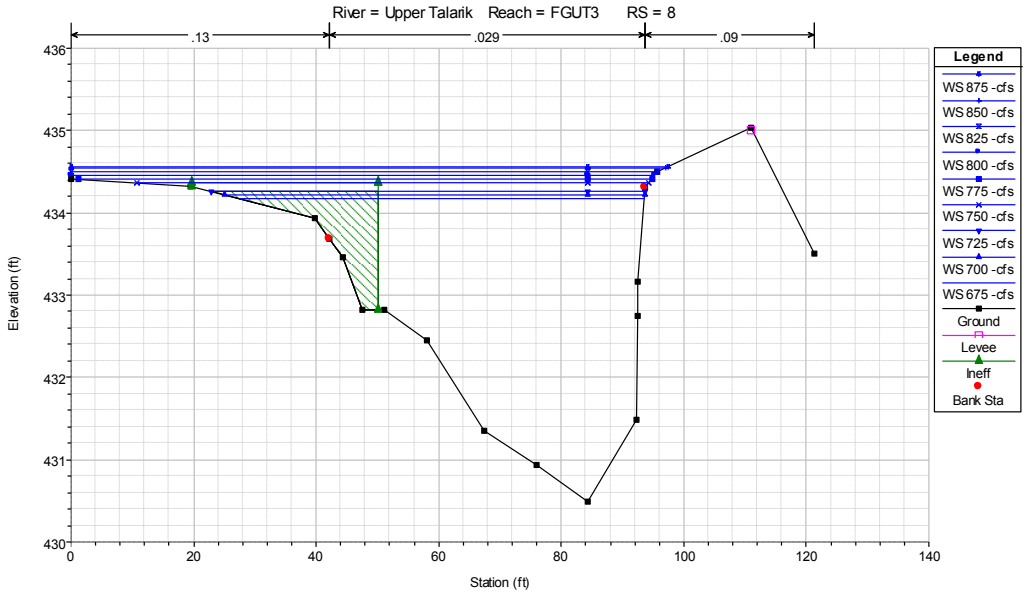


Figure 63 River Station (RS) 8 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

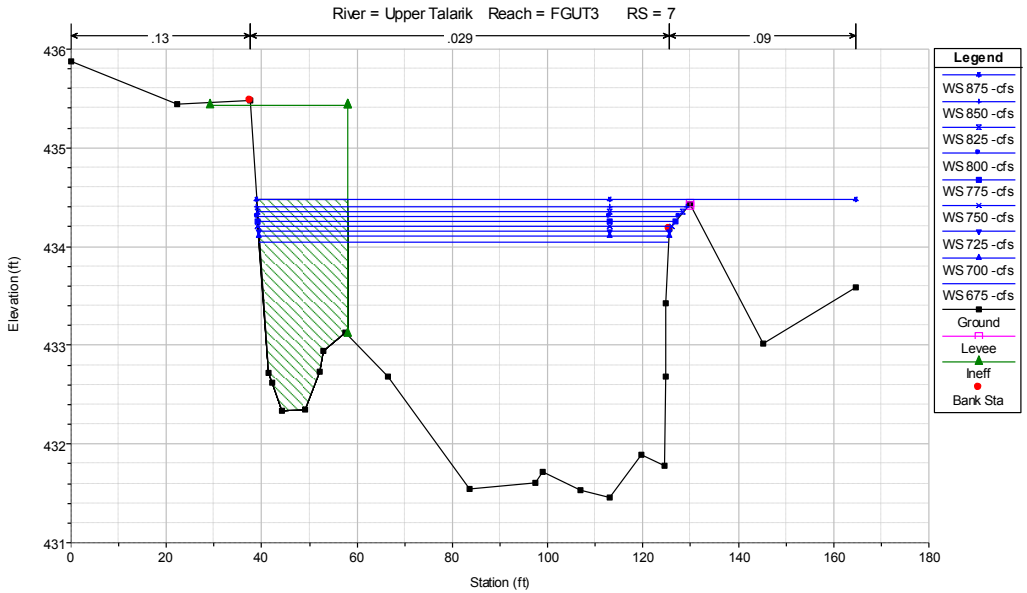


Figure 64 River Station (RS) 7 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

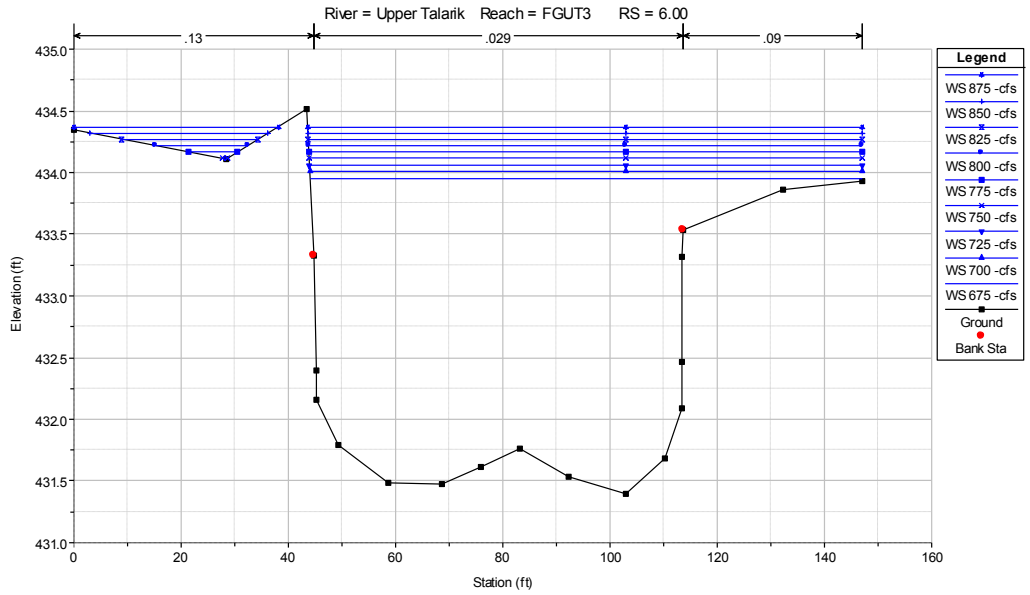


Figure 65 River Station (RS) 6 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

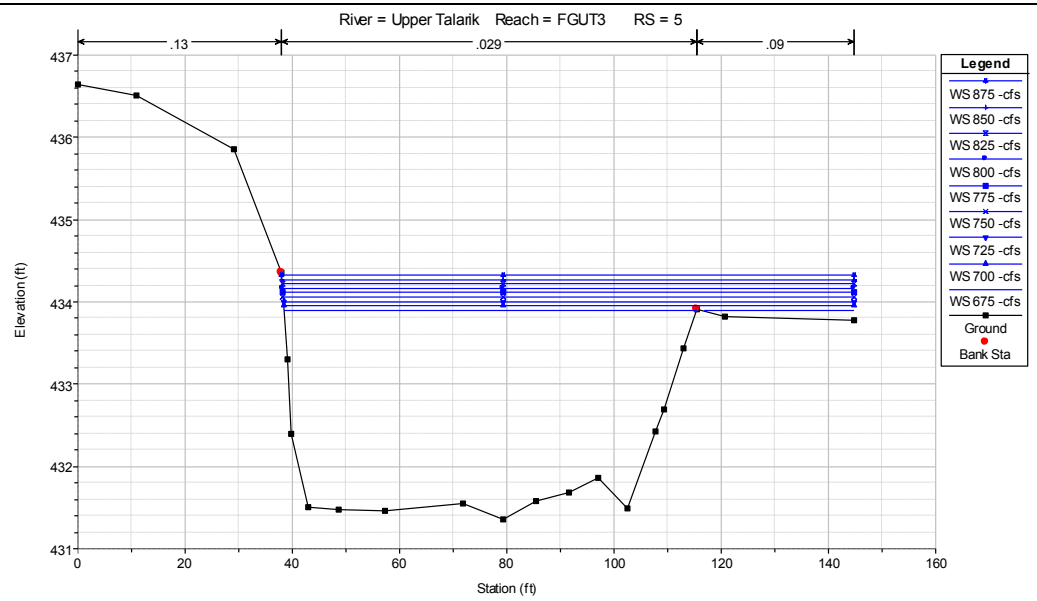


Figure 66 River Station (RS) 5 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

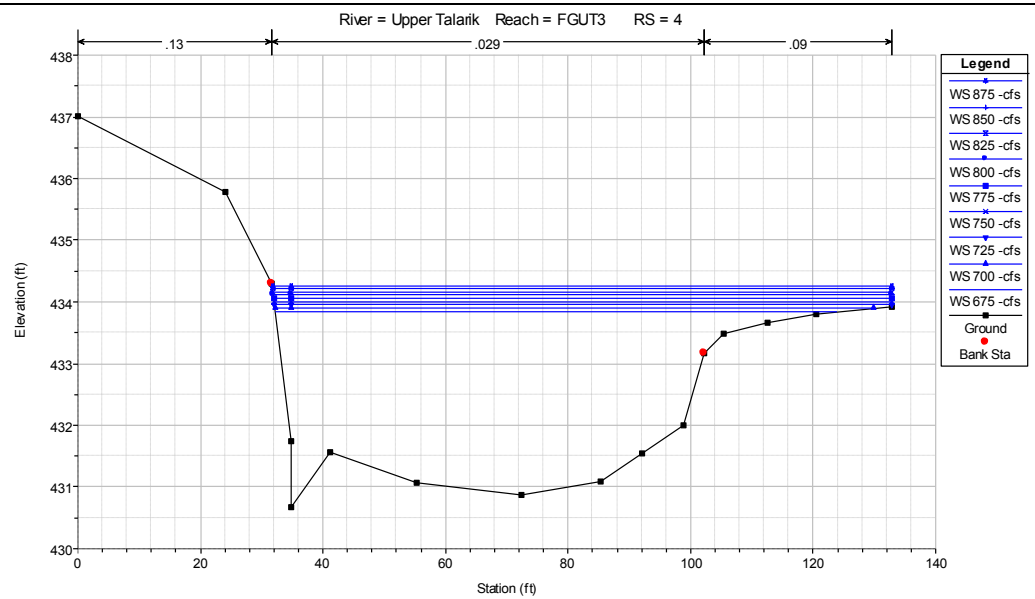


Figure 67 River Station (RS) 4 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

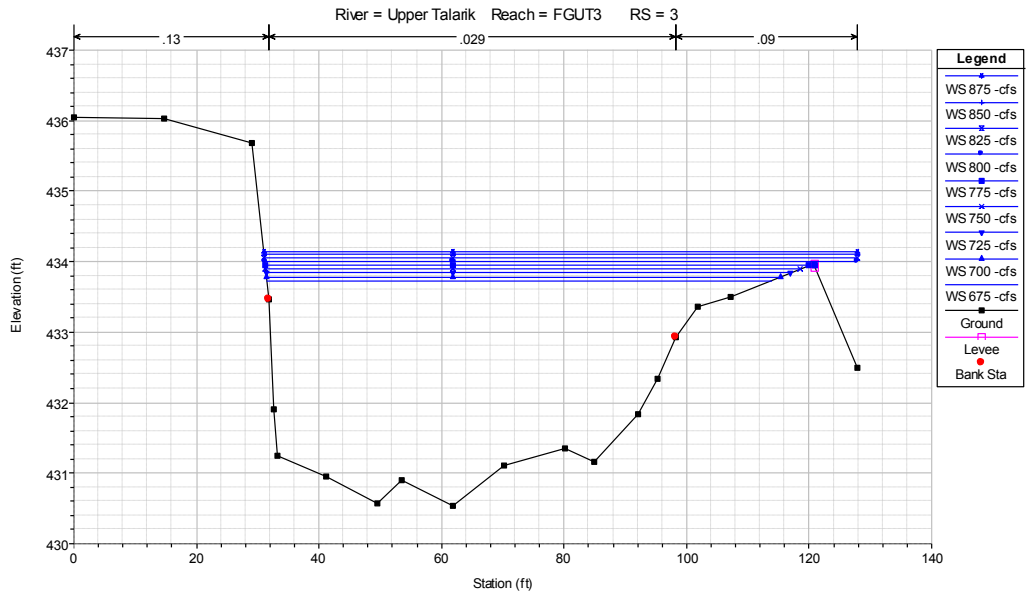


Figure 68 River Station (RS) 3 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

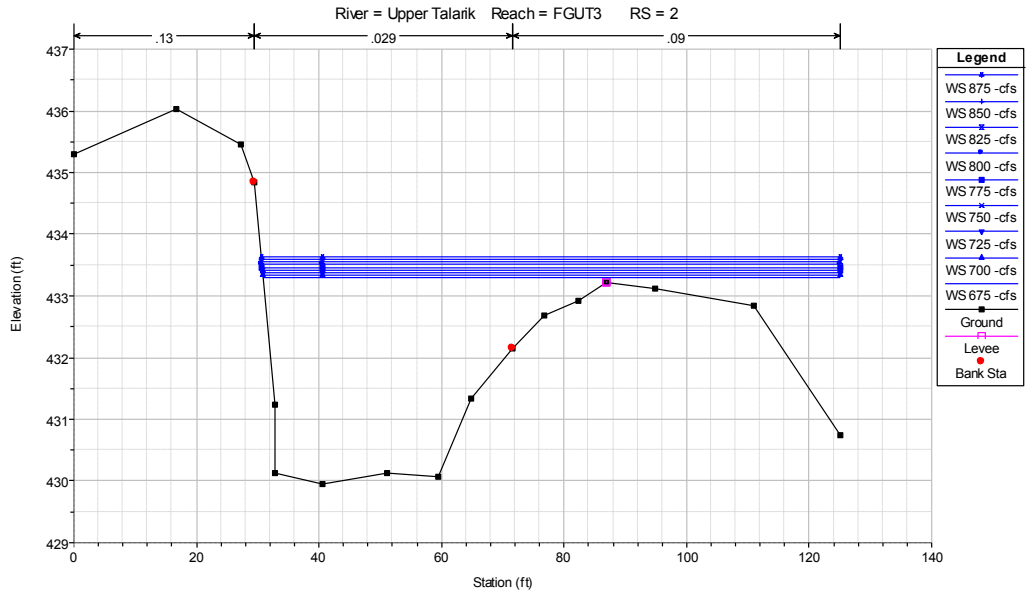


Figure 69 River Station (RS) 2 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT3

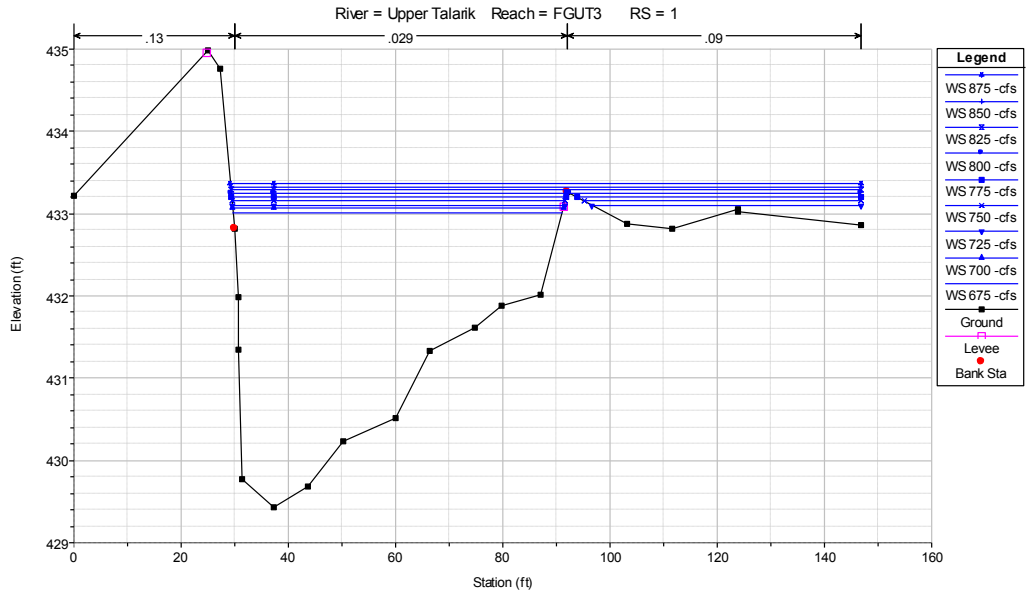


Figure 70 River Station (RS) 1 on River Reach FGUT3. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT3

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT3	8	675-cfs	0.61	110	89	72
FGUT3	8	700-cfs	0.63	113	92	74
FGUT3	8	725-cfs	0.65	117	95	77
FGUT3	8	750-cfs	0.56	101	82	66
FGUT3	8	775-cfs	0.58	104	85	68
FGUT3	8	800-cfs	0.59	106	86	69
FGUT3	8	825-cfs	0.60	108	87	71
FGUT3	8	850-cfs	0.61	110	89	72
FGUT3	8	875-cfs	0.64	115	93	75
FGUT3	7	675-cfs	0.42	76	61	49
FGUT3	7	700-cfs	0.43	77	63	51
FGUT3	7	725-cfs	0.43	77	63	51
FGUT3	7	750-cfs	0.44	79	64	52
FGUT3	7	775-cfs	0.45	81	66	53
FGUT3	7	800-cfs	0.45	81	66	53
FGUT3	7	825-cfs	0.46	83	67	54
FGUT3	7	850-cfs	0.47	85	68	55
FGUT3	7	875-cfs	0.43	77	63	51
FGUT3	6	675-cfs	0.32	58	47	38
FGUT3	6	700-cfs	0.32	58	47	38
FGUT3	6	725-cfs	0.33	59	48	39
FGUT3	6	750-cfs	0.33	59	48	39
FGUT3	6	775-cfs	0.34	61	50	40
FGUT3	6	800-cfs	0.34	61	50	40
FGUT3	6	825-cfs	0.35	63	51	41
FGUT3	6	850-cfs	0.35	63	51	41
FGUT3	6	875-cfs	0.36	65	52	42
FGUT3	5	675-cfs	0.32	58	47	38
FGUT3	5	700-cfs	0.32	58	47	38

INCIPIENT MOTION ANALYSIS: FGUT3

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT3	5	725-cfs	0.33	59	48	39
FGUT3	5	750-cfs	0.33	59	48	39
FGUT3	5	775-cfs	0.33	59	48	39
FGUT3	5	800-cfs	0.34	61	50	40
FGUT3	5	825-cfs	0.34	61	50	40
FGUT3	5	850-cfs	0.34	61	50	40
FGUT3	5	875-cfs	0.35	63	51	41
FGUT3	4	675-cfs	0.25	45	36	29
FGUT3	4	700-cfs	0.26	47	38	31
FGUT3	4	725-cfs	0.27	49	39	32
FGUT3	4	750-cfs	0.27	49	39	32
FGUT3	4	775-cfs	0.27	49	39	32
FGUT3	4	800-cfs	0.28	50	41	33
FGUT3	4	825-cfs	0.28	50	41	33
FGUT3	4	850-cfs	0.29	52	42	34
FGUT3	4	875-cfs	0.29	52	42	34
FGUT3	3	675-cfs	0.27	49	39	32
FGUT3	3	700-cfs	0.28	50	41	33
FGUT3	3	725-cfs	0.29	52	42	34
FGUT3	3	750-cfs	0.29	52	42	34
FGUT3	3	775-cfs	0.30	54	44	35
FGUT3	3	800-cfs	0.30	54	44	35
FGUT3	3	825-cfs	0.31	56	45	36
FGUT3	3	850-cfs	0.31	56	45	36
FGUT3	3	875-cfs	0.32	58	47	38
FGUT3	2	675-cfs	0.57	103	83	67
FGUT3	2	700-cfs	0.59	106	86	69
FGUT3	2	725-cfs	0.61	110	89	72
FGUT3	2	750-cfs	0.62	112	90	73
FGUT3	2	775-cfs	0.64	115	93	75

INCIPIENT MOTION ANALYSIS: FGUT3

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT3	2	800-cfs	0.65	117	95	77
FGUT3	2	825-cfs	0.67	121	98	79
FGUT3	2	850-cfs	0.69	124	101	81
FGUT3	2	875-cfs	0.70	126	102	82
FGUT3	1	675-cfs	0.48	86	70	57
FGUT3	1	700-cfs	0.49	88	71	58
FGUT3	1	725-cfs	0.50	90	73	59
FGUT3	1	750-cfs	0.51	92	74	60
FGUT3	1	775-cfs	0.52	94	76	61
FGUT3	1	800-cfs	0.53	95	77	62
FGUT3	1	825-cfs	0.54	97	79	64
FGUT3	1	850-cfs	0.55	99	80	65
FGUT3	1	875-cfs	0.55	99	80	65

PHOTOGRAPH DOCUMENTATION: FGUT3

Left bank along reference reach FGUT3

Right bank along reference reach FGUT3

Downstream from reference reach FGUT3

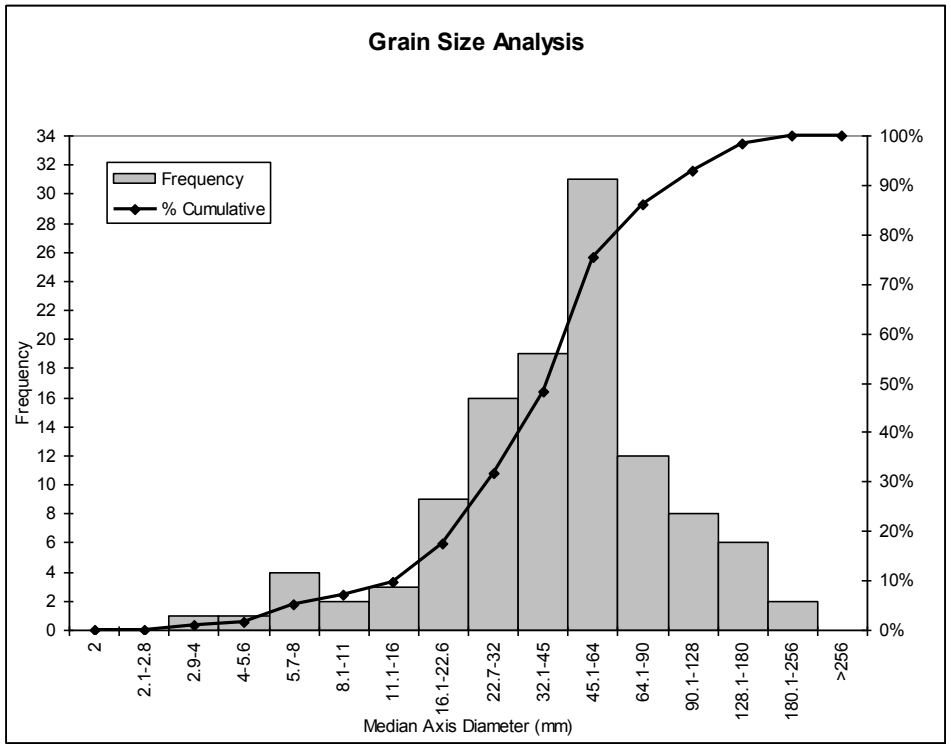
Upstream from reference reach FGUT3

PHOTOGRAPH DOCUMENTATION: FGUT3

Bank composition detail (right bank) FGUT3

Looking downstream from upstream boundary FGUT3

PEBBLE COUNT DISTRIBUTION: FGUT3



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	1	.9%
4-5.6	1	1.8%
5.7-8	4	5.3%
8.1-11	2	7.0%
11.1-16	3	9.6%
16.1-22.6	9	17.5%
22.7-32	16	31.6%
32.1-45	19	48.2%
45.1-64	31	75.4%
64.1-90	12	86.0%
90.1-128	8	93.0%
128.1-180	6	98.2%
180.1-256	2	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 6 and 7

1,415,235 1,415,635 1,416,035 1,416,435 1,416,835

2,122,015

2,121,615

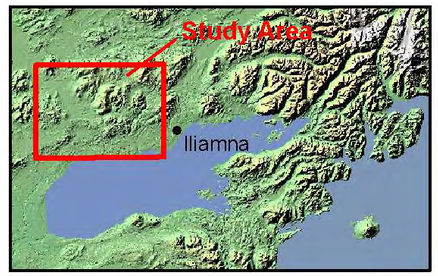
2,121,215

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT3
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Feet
0 110 220 330 440

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,415,235 1,415,635 1,416,035 1,416,435 1,416,835

SITE DESCRIPTION: FGUT4

Site Characteristics.

	Site Name	**FGUT4**	
Discharge (cfs)	**700 (600-800)**	Width (ft)	**50.8 (42.4-55.9)**
Slope	**0.0061**	Cross-sectional Area (ft^2)	**117 (104-131)**
D_{50}	**90**	D_{84}	**256**
(modified) D_{50}	**59**	D_{84}	**168**
Lat/Long Location	**N59.81958 W155.19571**	Drainage Area (mi^2)	**68**
	% Willow	**95**	
	% Grass	**5**	
	% Tree	**0**	

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 415 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. This cross-section was co-located with ISF site 05-UTC2-RF1. Sections 6 through 4 characterize the riffle which serves as the reference reach. Cross-section 5 was resurveyed in September 2007. The pebble count was taken through Section 5. Coarse bed material through the riffle was thought to be immobile. Pebble count 1 was modified to account for this and both the original distribution as well as the modified one are included in the analysis.

For a Shields number of 0.017, the D_{84} of the modified distribution moves through Section 5 between 750 and 800 cfs but does not move through Sections 6 or 4 within the range of channel forming discharges. For a Shields number of 0.026, the D_{50} moves well before 600 cfs through the reference reach. Discharges between 700 and 750 cfs match the geometry at Sections 4, 3 and 2 well.

The reference reach sections (Sections 6 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT4

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT4	6	600-cfs	600	55.0	104	1.9	3.2	0.0075	5.8	0.74	0.85	0.033
FGUT4	6	650-cfs	650	55.3	110	2.0	3.3	0.0072	5.9	0.74	0.87	0.033
FGUT4	6	700-cfs	700	55.5	117	2.1	3.5	0.0069	6.0	0.73	0.88	0.033
FGUT4	6	750-cfs	750	55.7	124	2.2	3.6	0.0066	6.1	0.72	0.88	0.033
FGUT4	6	800-cfs	800	55.9	129	2.3	3.7	0.0065	6.2	0.72	0.90	0.033
FGUT4	5	600-cfs	600	42.4	106	2.5	3.3	0.0052	5.7	0.64	0.75	0.033
FGUT4	5	650-cfs	650	42.5	110	2.6	3.4	0.0054	5.9	0.65	0.81	0.033
FGUT4	5	700-cfs	700	42.5	113	2.7	3.5	0.0055	6.2	0.67	0.86	0.033
FGUT4	5	750-cfs	750	42.6	117	2.8	3.6	0.0057	6.4	0.68	0.92	0.033
FGUT4	5	800-cfs	800	42.7	121	2.8	3.7	0.0059	6.6	0.69	0.98	0.033
FGUT4	4	600-cfs	600	53.7	111	2.1	3.3	0.0057	5.4	0.67	0.72	0.033
FGUT4	4	650-cfs	650	54.1	116	2.1	3.4	0.0058	5.6	0.68	0.76	0.033
FGUT4	4	700-cfs	700	54.4	121	2.2	3.5	0.0059	5.8	0.68	0.80	0.033
FGUT4	4	750-cfs	750	54.7	126	2.3	3.6	0.0059	6.0	0.69	0.83	0.033
FGUT4	4	800-cfs	800	54.7	131	2.4	3.7	0.0060	6.1	0.70	0.87	0.033
FGUT4	3	600-cfs	600	63.0	119	1.9	3.9	0.0058	5.0	0.65	0.64	0.033
FGUT4	3	650-cfs	650	63.1	126	2.0	4.0	0.0056	5.2	0.64	0.66	0.033
FGUT4	3	700-cfs	700	63.2	133	2.1	4.2	0.0055	5.3	0.64	0.68	0.033
FGUT4	3	750-cfs	750	63.2	139	2.2	4.3	0.0055	5.4	0.64	0.71	0.033
FGUT4	3	800-cfs	800	63.3	145	2.3	4.3	0.0054	5.5	0.64	0.73	0.033
FGUT4	2	600-cfs	600	57.6	135	2.4	4.0	0.0032	4.4	0.51	0.46	0.033
FGUT4	2	650-cfs	650	57.7	141	2.5	4.1	0.0033	4.6	0.52	0.49	0.033
FGUT4	2	700-cfs	700	57.7	147	2.6	4.2	0.0033	4.8	0.52	0.51	0.033
FGUT4	2	750-cfs	750	57.8	153	2.7	4.3	0.0034	4.9	0.53	0.54	0.033
FGUT4	2	800-cfs	800	57.8	158	2.7	4.4	0.0034	5.1	0.54	0.57	0.033
FGUT4	1	600-cfs	600	65.8	91	1.4	2.0	0.0141	6.6	0.99	1.21	0.033
FGUT4	1	650-cfs	650	66.0	96	1.5	2.1	0.0141	6.8	1.00	1.26	0.033
FGUT4	1	700-cfs	700	66.2	100	1.5	2.1	0.0141	7.0	1.00	1.32	0.033
FGUT4	1	750-cfs	750	66.3	104	1.6	2.2	0.0141	7.2	1.01	1.37	0.033
FGUT4	1	800-cfs	800	66.5	109	1.6	2.3	0.0139	7.3	1.01	1.41	0.033

HEC-RAS LONGITUDINAL PROFILE: FGUT4

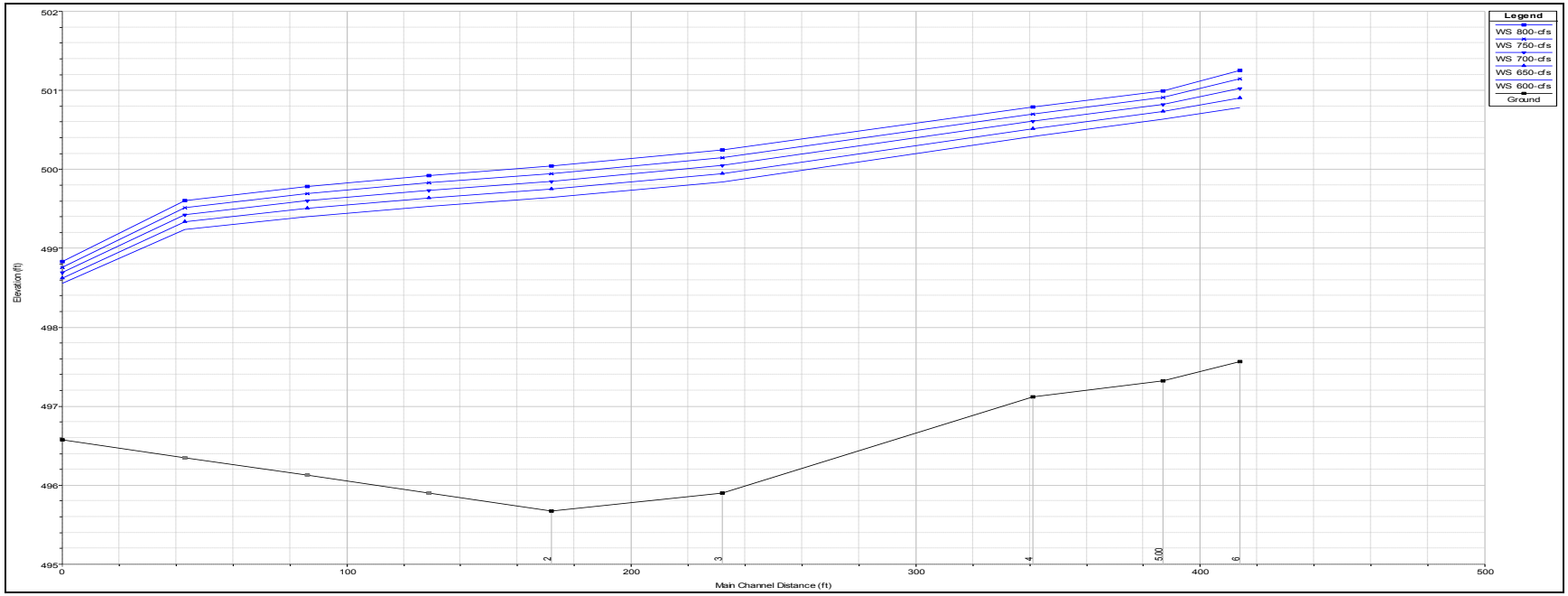


Figure 71 HEC-RAS longitudinal profile output for Reach FGUT4. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT4

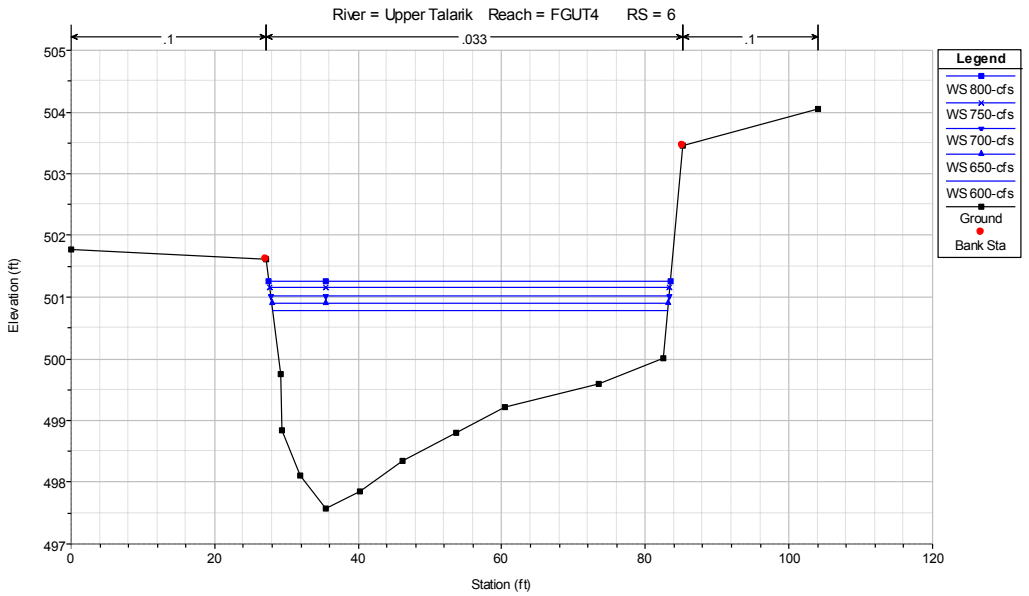


Figure 72 River Station (RS) 6 on River Reach FGUT4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT4

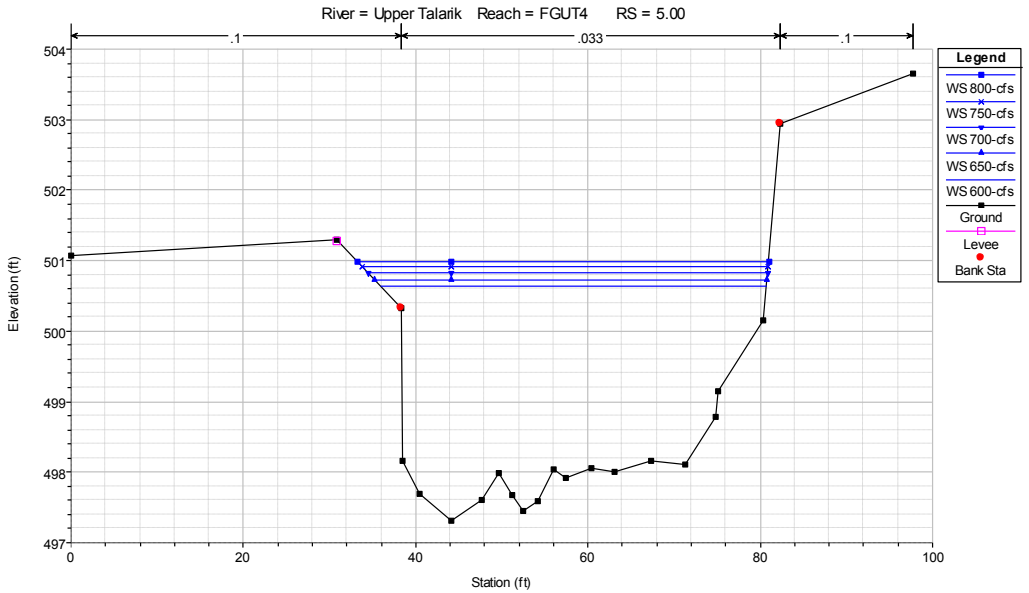


Figure 73 River Station (RS) 5 on River Reach FGUT4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT4

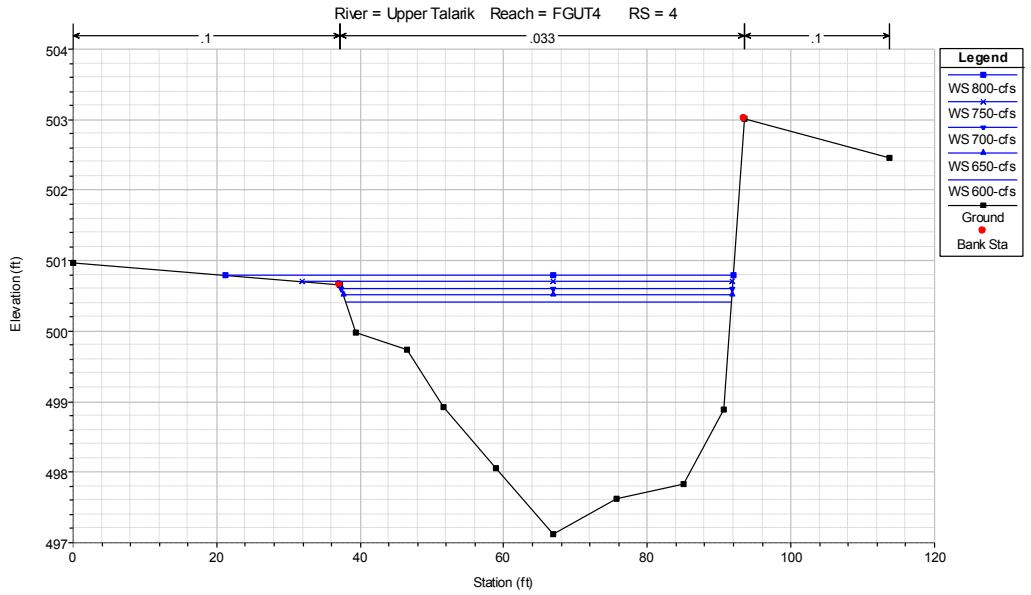


Figure 74 River Station (RS) 4 on River Reach FGUT4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT4

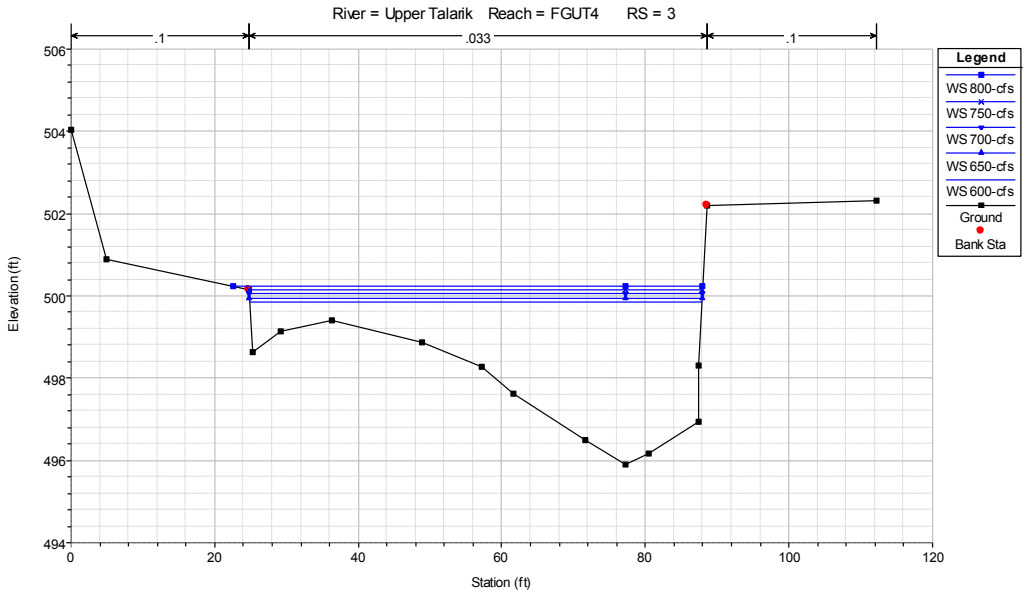


Figure 75 River Station (RS) 3 on River Reach FGUT4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT4

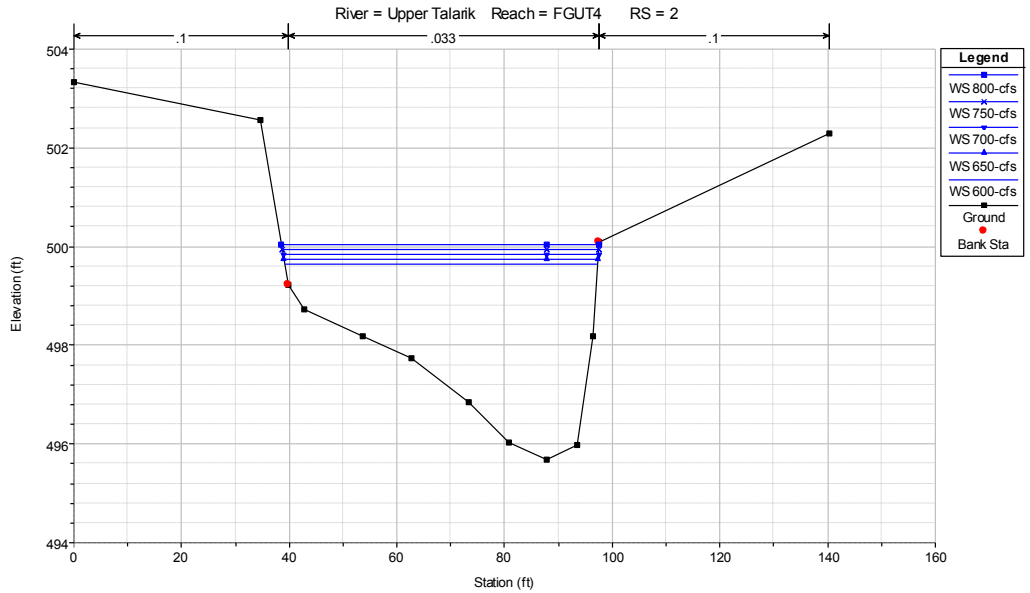


Figure 76 River Station (RS) 2 on River Reach FGUT4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT4

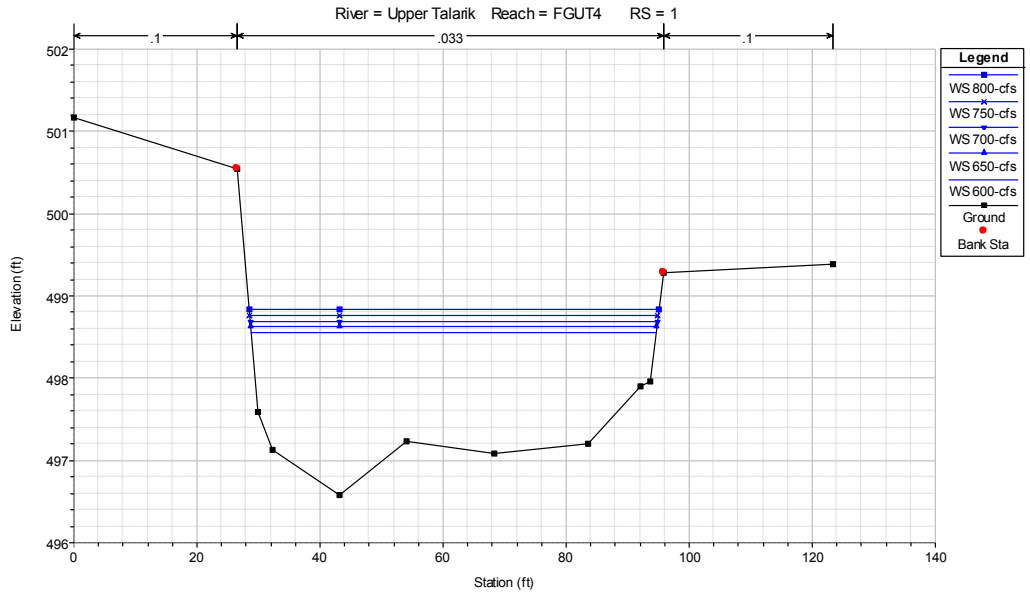


Figure 77 River Station (RS) 1 on River Reach FGUT4. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT4

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT4	6	600-cfs	0.85	153	124	100
FGUT4	6	650-cfs	0.87	157	127	102
FGUT4	6	700-cfs	0.88	158	128	104
FGUT4	6	750-cfs	0.88	158	128	104
FGUT4	6	800-cfs	0.90	162	131	106
FGUT4	5	600-cfs	0.75	135	109	88
FGUT4	5	650-cfs	0.81	146	118	95
FGUT4	5	700-cfs	0.86	155	125	101
FGUT4	5	750-cfs	0.92	166	134	108
FGUT4	5	800-cfs	0.98	176	143	115
FGUT4	4	600-cfs	0.72	130	105	85
FGUT4	4	650-cfs	0.76	137	111	89
FGUT4	4	700-cfs	0.80	144	117	94
FGUT4	4	750-cfs	0.83	149	121	98
FGUT4	4	800-cfs	0.87	157	127	102
FGUT4	3	600-cfs	0.64	115	93	75
FGUT4	3	650-cfs	0.66	119	96	78
FGUT4	3	700-cfs	0.68	122	99	80
FGUT4	3	750-cfs	0.71	128	103	84
FGUT4	3	800-cfs	0.73	131	106	86
FGUT4	2	600-cfs	0.46	83	67	54
FGUT4	2	650-cfs	0.49	88	71	58
FGUT4	2	700-cfs	0.51	92	74	60
FGUT4	2	750-cfs	0.54	97	79	64
FGUT4	2	800-cfs	0.57	103	83	67
FGUT4	1	600-cfs	1.21	218	176	142
FGUT4	1	650-cfs	1.26	227	184	148

INCIPIENT MOTION ANALYSIS: FGUT4

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT4	1	700-cfs	1.32	238	192	155
FGUT4	1	750-cfs	1.37	247	200	161
FGUT4	1	800-cfs	1.41	254	205	166

PHOTOGRAPH DOCUMENTATION: FGUT4

Left bank along reference reach FGUT4

Right bank along reference reach FGUT4

Downstream from reference reach FGUT4

Upstream from reference reach FGUT4

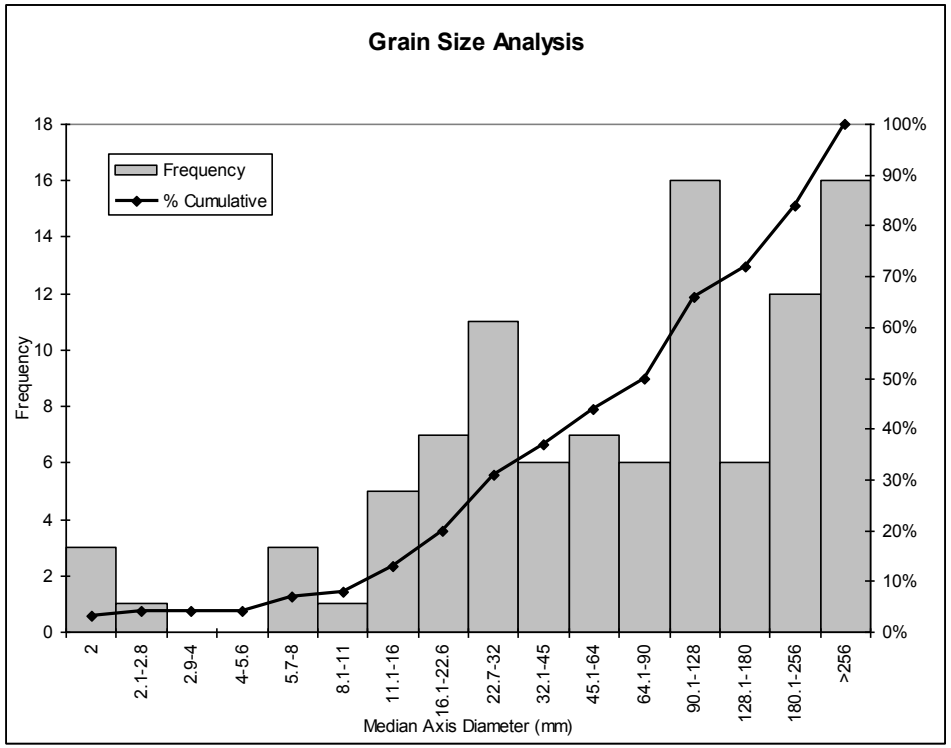
PHOTOGRAPH DOCUMENTATION: FGUT4

Bank composition detail (right bank) FGUT4

Looking upstream towards downstream boundary FGUT4

PEBBLE COUNT DISTRIBUTION: FGUT4

Original Distribution

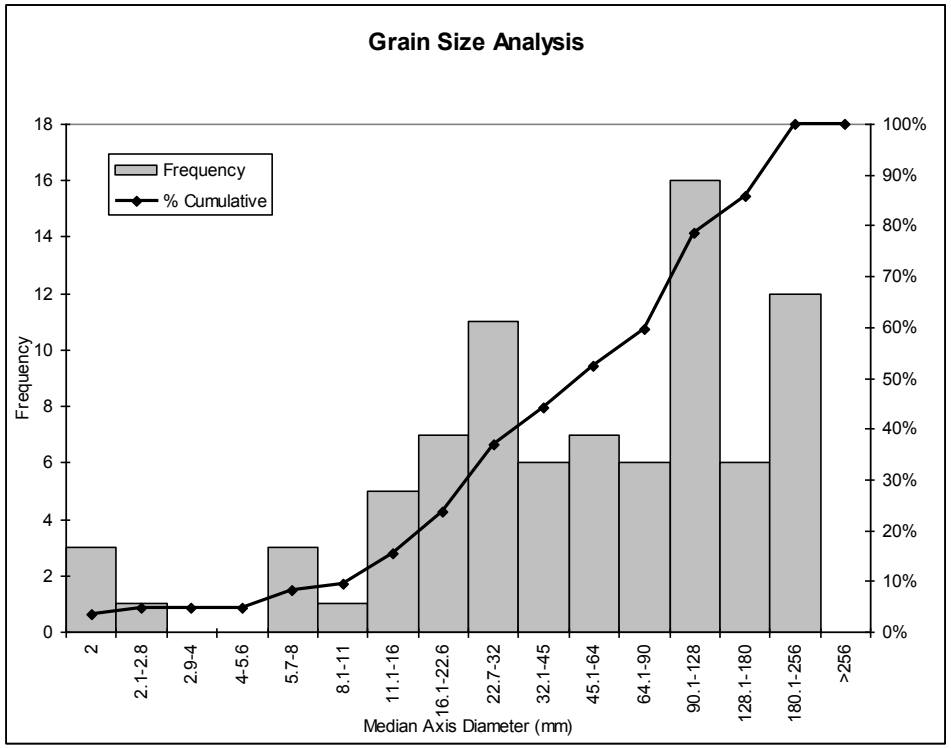


Size Class mm	*Frequency*	*Cumulative %*
2	3	3.0%
2.1-2.8	1	4.0%
2.9-4	0	4.0%
4-5.6	0	4.0%
5.7-8	3	7.0%
8.1-11	1	8.0%
11.1-16	5	13.0%
16.1-22.6	7	20.0%
22.7-32	11	31.0%
32.1-45	6	37.0%
45.1-64	7	44.0%
64.1-90	6	50.0%
90.1-128	16	66.0%
128.1-180	6	72.0%
180.1-256	12	84.0%
>256	16	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

PEBBLE COUNT DISTRIBUTION: FGUT4

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	3	3.6%
2.1-2.8	1	4.8%
2.9-4	0	4.8%
4-5.6	0	4.8%
5.7-8	3	8.3%
8.1-11	1	9.5%
11.1-16	5	15.5%
16.1-22.6	7	23.8%
22.7-32	11	36.9%
32.1-45	6	44.0%
45.1-64	7	52.4%
64.1-90	6	59.5%
90.1-128	16	78.6%
128.1-180	6	85.7%
180.1-256	12	100.0%
>256	0*	100.0%

Description of Location: Sampled across River Station (RS) 6
*Removed potential lag from pebble count (count:16)

1,419,462 1,419,862 1,420,262 1,420,662 1,421,062

2,128,249

2,127,849

2,127,449

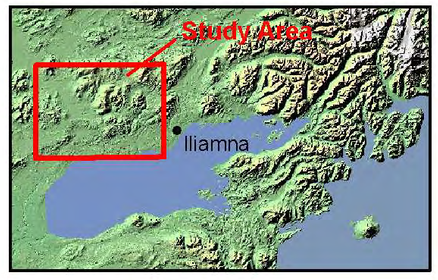
1,419,462 1,419,862 1,420,262 1,420,662 1,421,062

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT4
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Feet
0 110 220 330 440

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

SITE DESCRIPTION: FGUT5

Site Characteristics.

	Site Name	**FGUT5**	
Discharge (cfs)	**600 (500-700)**	Width (ft)	**59.1 (52.9-64.9)**
Slope	**0.0054**	Cross-sectional Area (ft^2)	**118 (94-137)**
D_{50}	**63**	D_{84}	**153**
(modified) D_{50}	**60**	D_{84}	**138**
Lat/Long Location	**N59.82572 W155.18202**	Drainage Area (mi^2)	**66**
	% Willow	**70**	
	% Grass	**30**	
	% Tree	**0**	

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed five cross-sections along 200 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. This cross-section was co-located with ISF site 05-UTC2-RF1. Sections 5 through 3 characterize the riffle which serves as the reference reach. The pebble count was taken through Section 4. Coarse bed material through the riffle was thought to be immobile. Pebble count 1 was modified to account for this and both the original distribution as well as the modified one are included in the analysis.

For a Shields number of 0.017, the D_{84} of the modified pebble count distribution move through Section 4 by 600 cfs but does not move through Sections 5 or 3 within the range of channel forming discharges. For a Shields number of 0.026, the D_{50} of both distributions moves by 550 cfs through the reference reach. Discharges between 500 and 650 cfs match an inflection point along the right bank through the reference reach.

The reference reach sections (Sections 5 through 3) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT5

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT5	5	500-cfs	500	64.7	111	1.7	2.5	0.0050	4.5	0.61	0.52	0.033
FGUT5	5	550-cfs	550	64.7	118	1.8	2.7	0.0050	4.7	0.61	0.55	0.033
FGUT5	5	600-cfs	600	64.8	125	1.9	2.8	0.0049	4.8	0.61	0.58	0.033
FGUT5	5	650-cfs	650	64.9	131	2.0	2.9	0.0049	5.0	0.62	0.60	0.033
FGUT5	5	700-cfs	700	64.9	137	2.1	2.9	0.0049	5.1	0.62	0.63	0.033
FGUT5	4	500-cfs	500	59.4	94	1.6	2.6	0.0077	5.3	0.74	0.75	0.033
FGUT5	4	550-cfs	550	59.5	102	1.7	2.7	0.0072	5.4	0.73	0.76	0.033
FGUT5	4	600-cfs	600	59.5	108	1.8	2.8	0.0071	5.6	0.73	0.78	0.033
FGUT5	4	650-cfs	650	59.5	114	1.9	2.9	0.0069	5.7	0.73	0.81	0.033
FGUT5	4	700-cfs	700	59.5	119	2.0	3.0	0.0069	5.9	0.73	0.84	0.033
FGUT5	3	500-cfs	500	52.9	110	2.1	2.8	0.0039	4.5	0.55	0.50	0.033
FGUT5	3	550-cfs	550	53.0	117	2.2	2.9	0.0039	4.7	0.55	0.52	0.033
FGUT5	3	600-cfs	600	53.1	123	2.3	3.0	0.0040	4.9	0.57	0.56	0.033
FGUT5	3	650-cfs	650	53.2	128	2.4	3.1	0.0042	5.1	0.58	0.60	0.033
FGUT5	3	700-cfs	700	53.3	132	2.5	3.2	0.0043	5.3	0.59	0.64	0.033
FGUT5	2	500-cfs	500	58.5	111	1.9	3.2	0.0044	4.5	0.57	0.51	0.033
FGUT5	2	550-cfs	550	59.6	119	2.0	3.3	0.0043	4.6	0.57	0.52	0.033
FGUT5	2	600-cfs	600	60.3	125	2.1	3.4	0.0045	4.8	0.59	0.56	0.033
FGUT5	2	650-cfs	650	61.0	131	2.1	3.5	0.0046	5.0	0.60	0.59	0.033
FGUT5	2	700-cfs	700	61.8	136	2.2	3.6	0.0047	5.2	0.61	0.62	0.033
FGUT5	1	500-cfs	500	64.4	107	1.7	2.2	0.0057	4.7	0.64	0.58	0.033
FGUT5	1	550-cfs	550	69.9	117	1.7	2.4	0.0057	4.7	0.64	0.58	0.033
FGUT5	1	600-cfs	600	70.2	123	1.8	2.5	0.0057	4.9	0.65	0.61	0.033
FGUT5	1	650-cfs	650	70.3	129	1.8	2.6	0.0057	5.0	0.65	0.64	0.033
FGUT5	1	700-cfs	700	70.5	135	1.9	2.7	0.0057	5.2	0.66	0.67	0.033

HEC-RAS LONGITUDINAL PROFILE: FGUT5

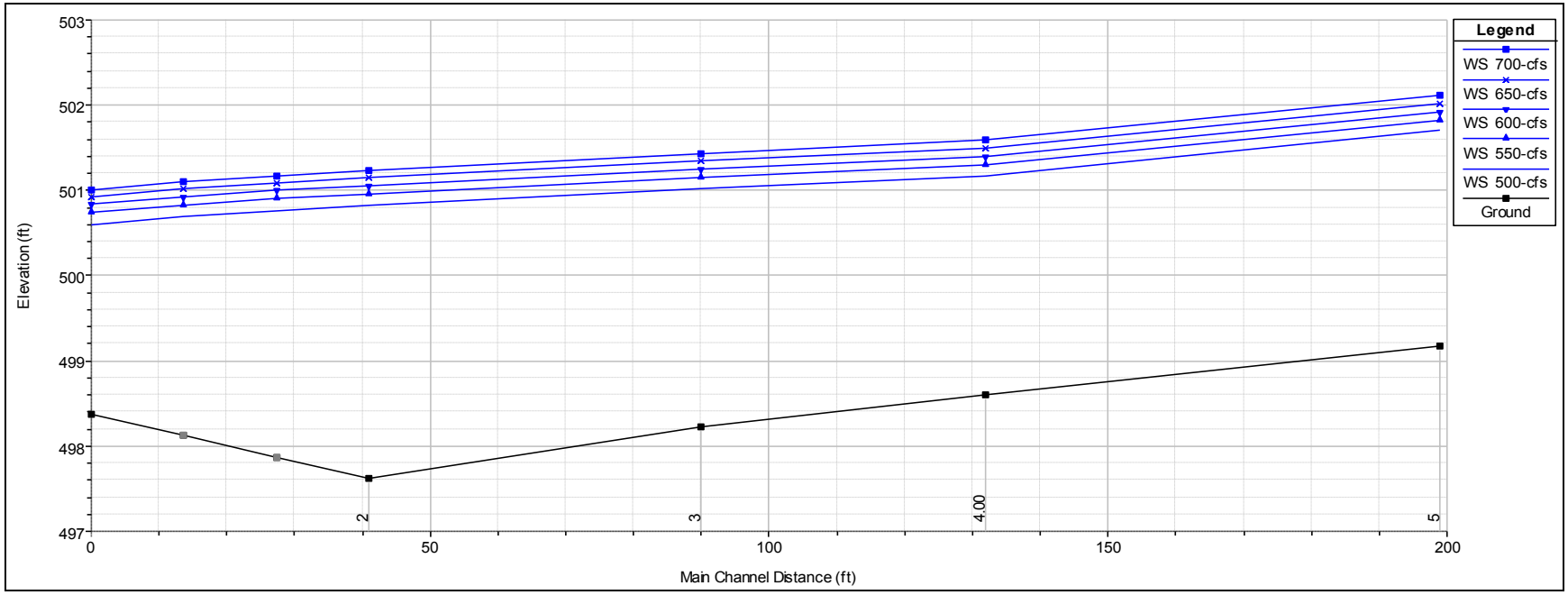


Figure 78 HEC-RAS longitudinal profile output for Reach FGUT5. Numbers 1-5 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT5

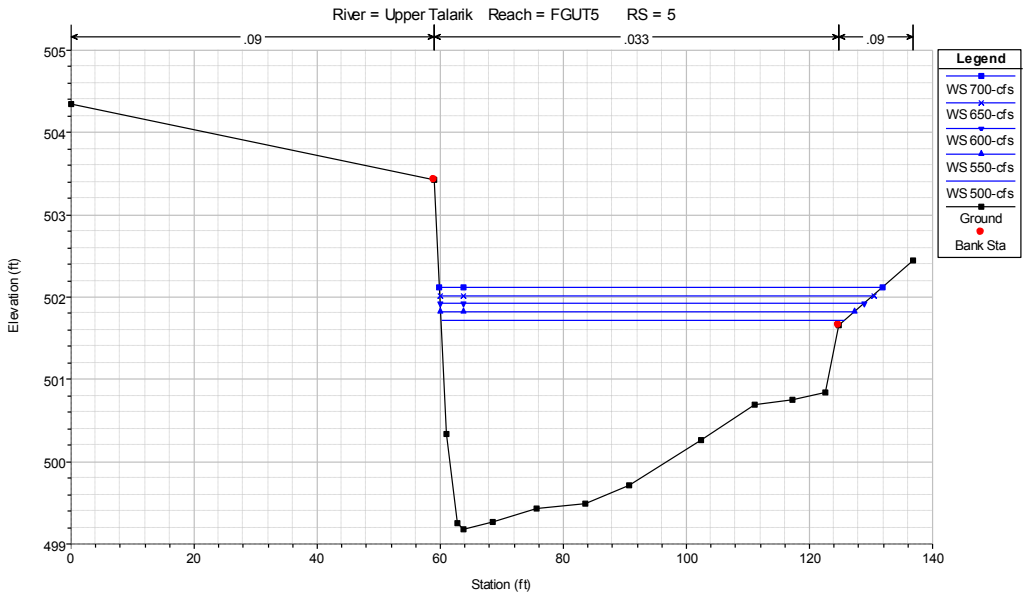


Figure 79 River Station (RS) 5 on River Reach FGUT5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT5

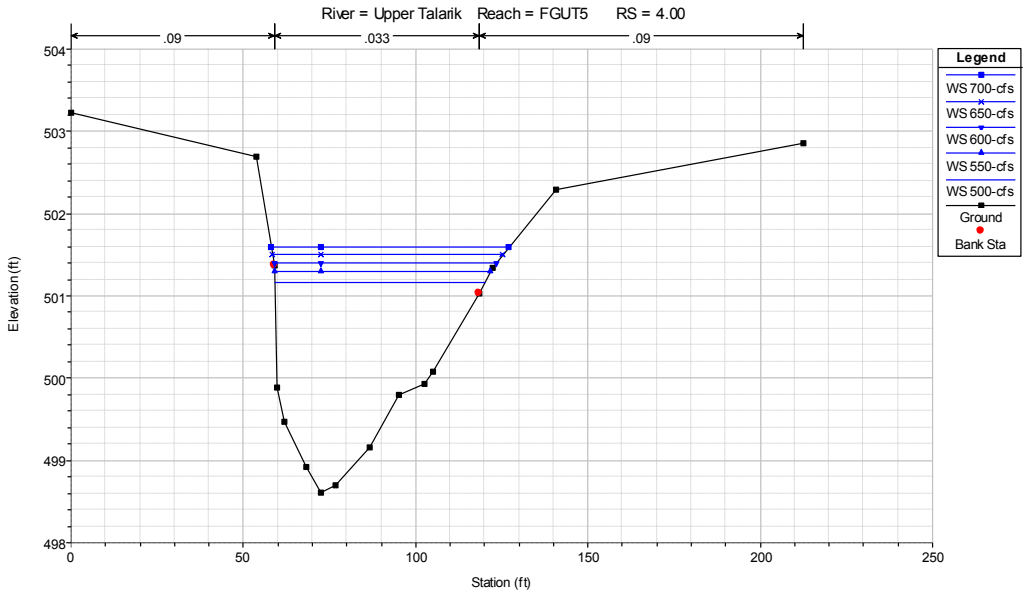


Figure 80 River Station (RS) 4 on River Reach FGUT5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT5

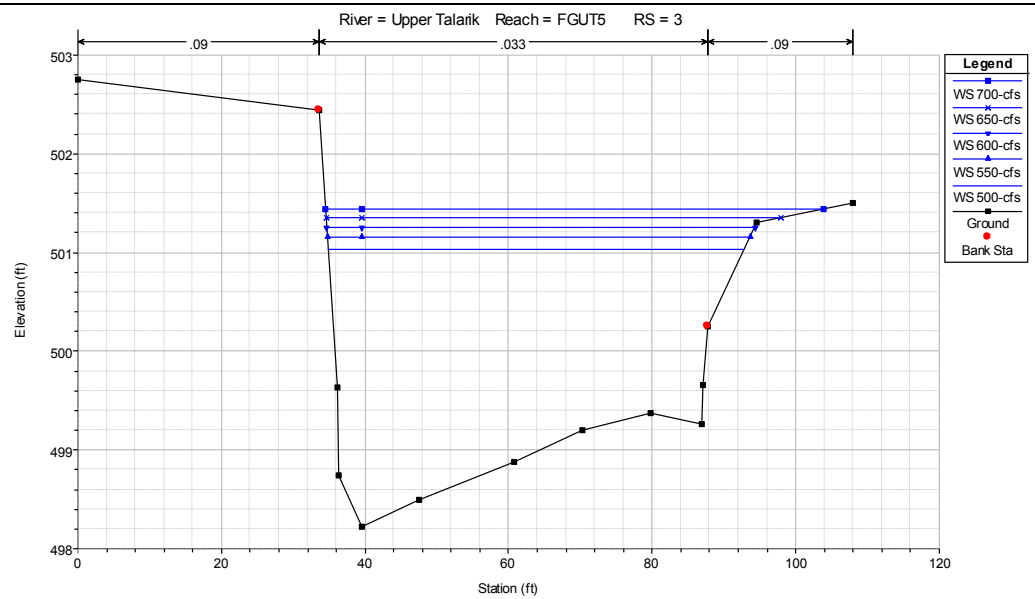


Figure 81 River Station (RS) 3 on River Reach FGUT5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT5

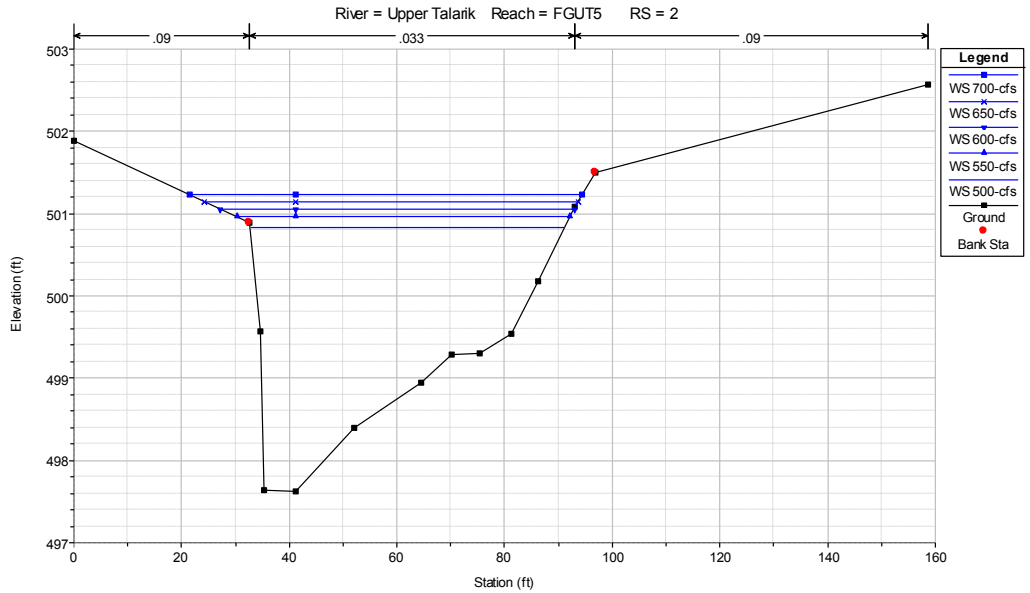


Figure 82 River Station (RS) 2 on River Reach FGUT5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT5

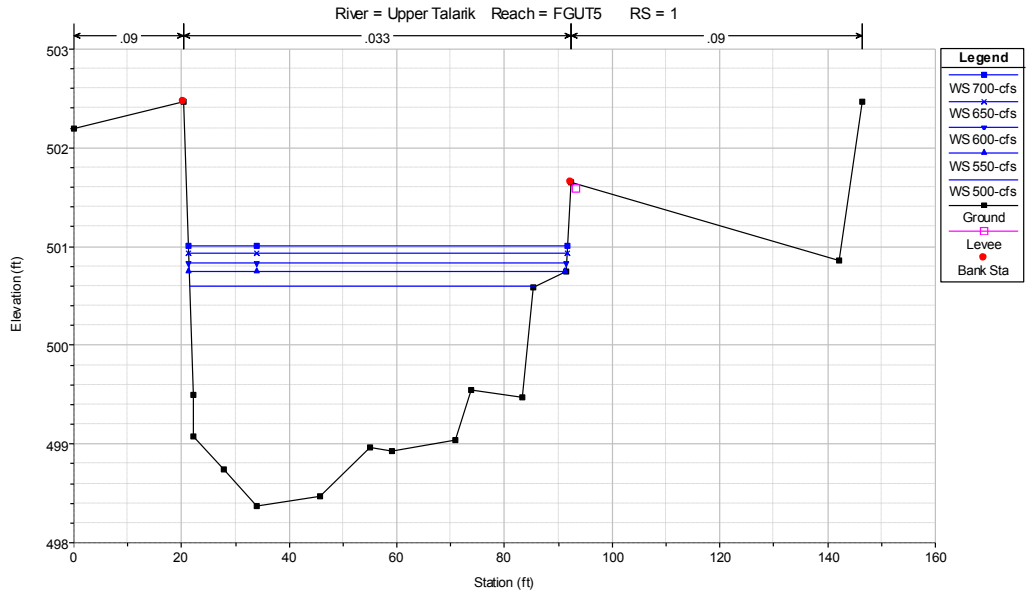


Figure 83 River Station (RS) 1 on River Reach FGUT5. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT5

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT5	5	500-cfs	0.52	94	76	61
FGUT5	5	550-cfs	0.55	99	80	65
FGUT5	5	600-cfs	0.58	104	85	68
FGUT5	5	650-cfs	0.60	108	87	71
FGUT5	5	700-cfs	0.63	113	92	74
FGUT5	4	500-cfs	0.75	135	109	88
FGUT5	4	550-cfs	0.76	137	111	89
FGUT5	4	600-cfs	0.78	140	114	92
FGUT5	4	650-cfs	0.81	146	118	95
FGUT5	4	700-cfs	0.84	151	122	99
FGUT5	3	500-cfs	0.50	90	73	59
FGUT5	3	550-cfs	0.52	94	76	61
FGUT5	3	600-cfs	0.56	101	82	66
FGUT5	3	650-cfs	0.60	108	87	71
FGUT5	3	700-cfs	0.64	115	93	75
FGUT5	2	500-cfs	0.51	92	74	60
FGUT5	2	550-cfs	0.52	94	76	61
FGUT5	2	600-cfs	0.56	101	82	66
FGUT5	2	650-cfs	0.59	106	86	69
FGUT5	2	700-cfs	0.62	112	90	73
FGUT5	1	500-cfs	0.58	104	85	68
FGUT5	1	550-cfs	0.58	104	85	68
FGUT5	1	600-cfs	0.61	110	89	72
FGUT5	1	650-cfs	0.64	115	93	75
FGUT5	1	700-cfs	0.67	121	98	79

PHOTOGRAPH DOCUMENTATION: FGUT5

Left bank along reference reach FGUT5

Right bank along reference reach FGUT5

Downstream from reference reach FGUT5

Upstream from reference reach FGUT5

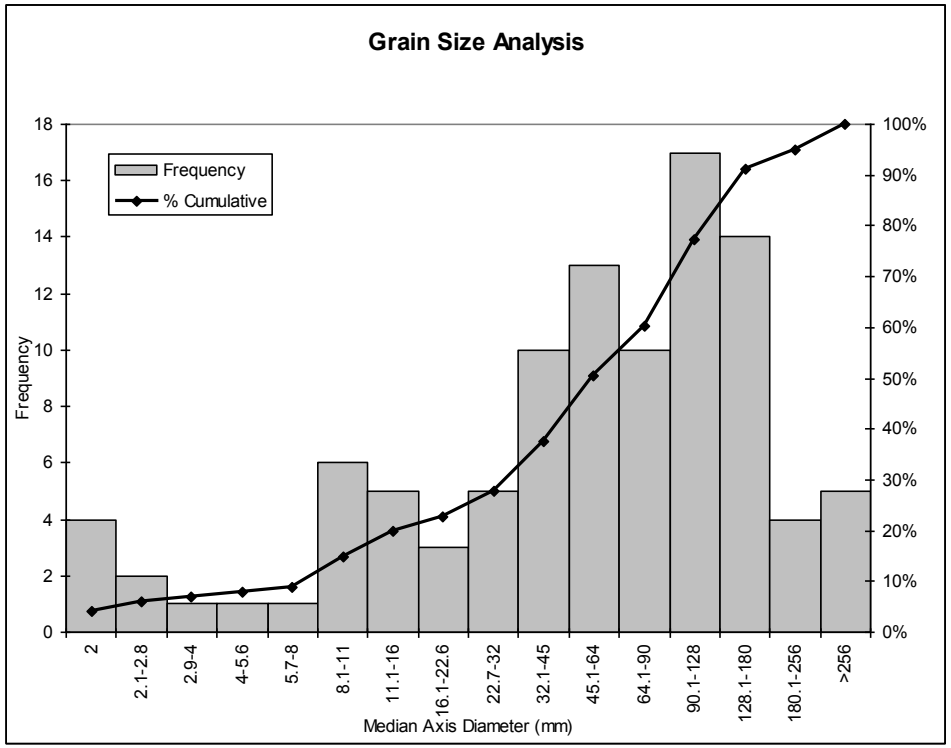
PHOTOGRAPH DOCUMENTATION: FGUT5

Bank composition detail (right bank) FGUT5

Bank composition detail (left bank) FGUT5

PEBBLE COUNT DISTRIBUTION: FGUT5

Original Distribution

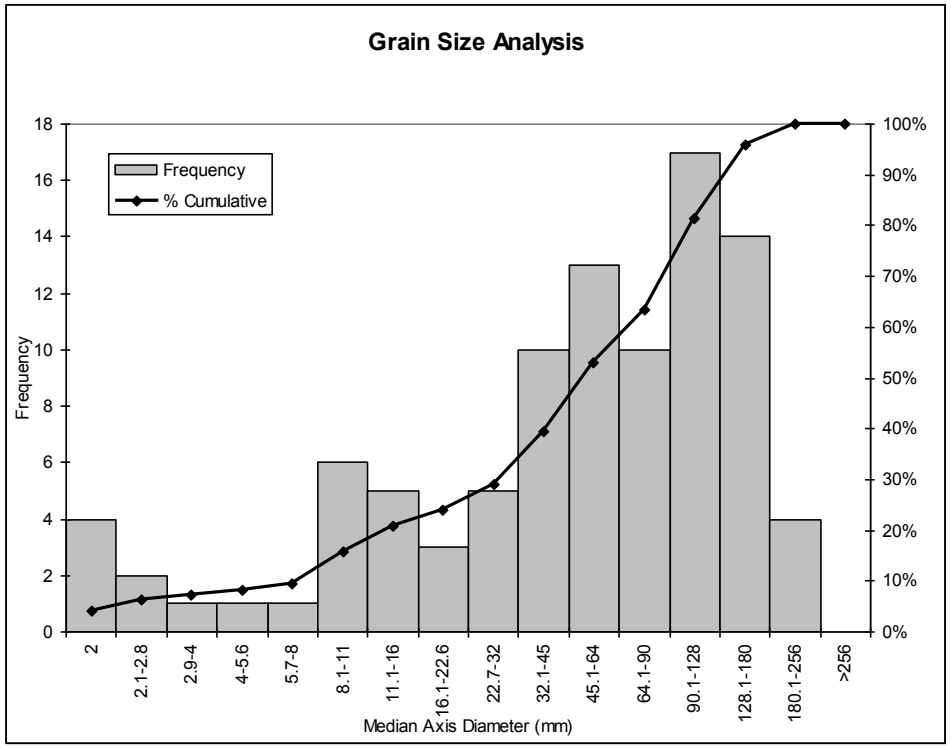


Size Class mm	*Frequency*	*Cumulative %*
2	4	4.0%
2.1-2.8	2	5.9%
2.9-4	1	6.9%
4-5.6	1	7.9%
5.7-8	1	8.9%
8.1-11	6	14.9%
11.1-16	5	19.8%
16.1-22.6	3	22.8%
22.7-32	5	27.7%
32.1-45	10	37.6%
45.1-64	13	50.5%
64.1-90	10	60.4%
90.1-128	17	77.2%
128.1-180	14	91.1%
180.1-256	4	95.0%
>256	5	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4

PEBBLE COUNT DISTRIBUTION: FGUT5

Modified Distribution



Size Class mm	*Frequency*	*Cumulative %*
2	4	4.2%
2.1-2.8	2	6.3%
2.9-4	1	7.3%
4-5.6	1	8.3%
5.7-8	1	9.4%
8.1-11	6	15.6%
11.1-16	5	20.8%
16.1-22.6	3	24.0%
22.7-32	5	29.2%
32.1-45	10	39.6%
45.1-64	13	53.1%
64.1-90	10	63.5%
90.1-128	17	81.3%
128.1-180	14	95.8%
180.1-256	4	100.0%
>256	0*	100.0%

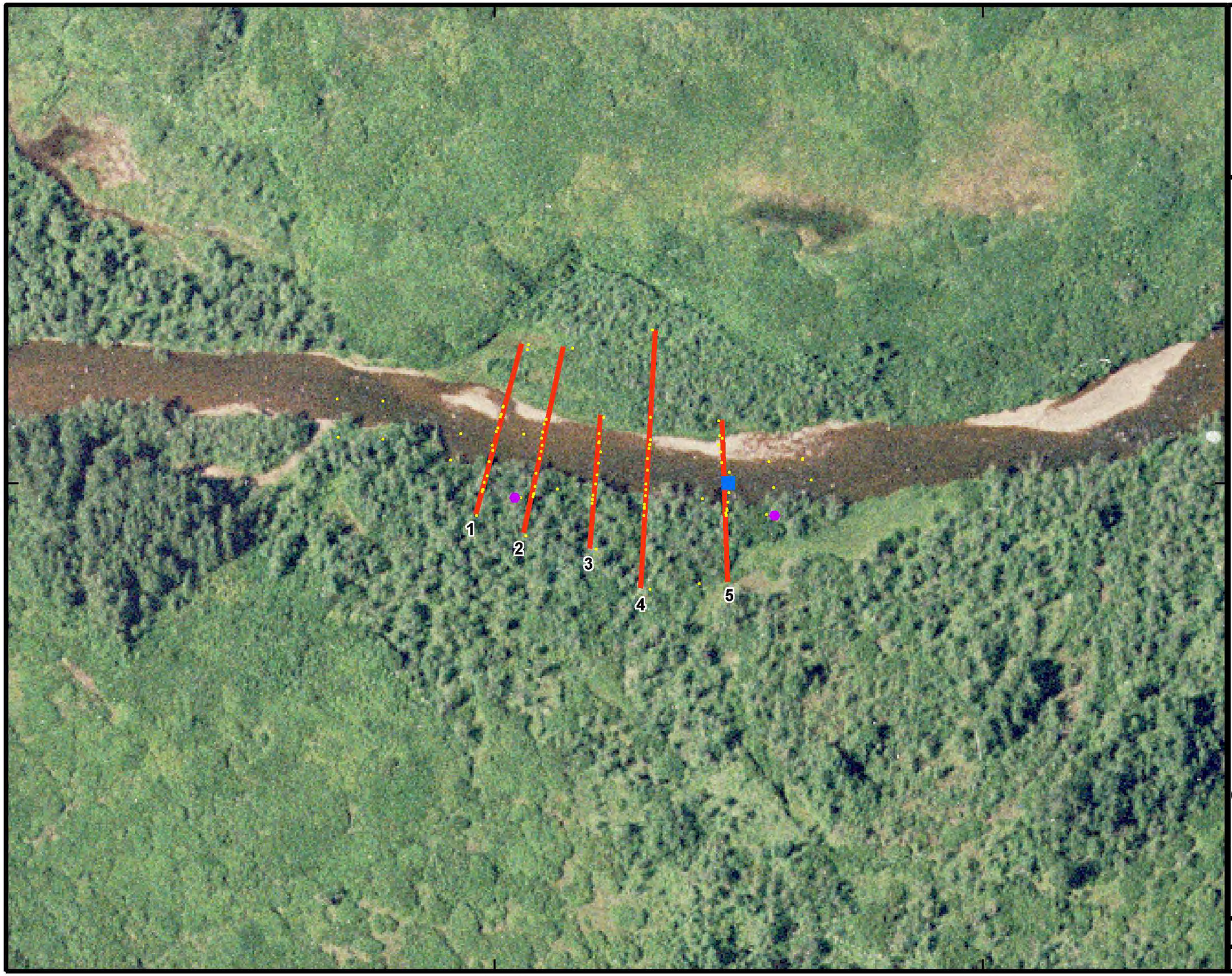
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 4
*Removed potential lag from pebble count (count: 5)

1,422,324

1,422,724

1,423,124

2,130,135

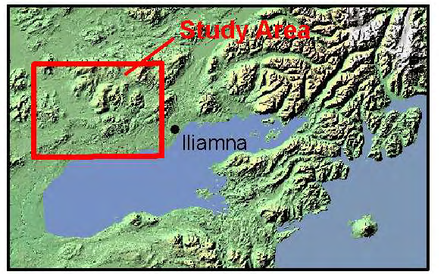


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT5
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,422,324

1,422,724

1,423,124

SITE DESCRIPTION: FGUT6

Site Characteristics.

Site Name	**FGUT6**		
Discharge (cfs)	**510 (420-570)**	Width (ft)	**48.2 (44.5-50.9)**
Slope	**0.0027**	Cross-sectional Area (ft^2)	**116 (98-133)**
D_{50}	**26**	D_{84}	**67**
Lat/Long Location	**N59.86240 W155.16731**	Drainage Area (mi^2)	**51**
% Willow	**70**		
% Grass	**30**		
% Tree	**0**		

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 370 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Lacking any well-formed riffle, the pebble count was conducted on the crest of a pool/glide (Section 5). Sections 7 through 5 characterize that pool/glide which serve as the reference reach. Sections 4 through 1 characterize the pool.

For a Shields number of 0.017, the D_{84} moves through Section 5 before 420 cfs, through Section 7 at 500 cfs, and through Section 6 at 570 cfs. For a Shields number of 0.026, the D_{50} moves by 420 cfs through all cross-sections. A discharge of 530 cfs matches the right bank through the upper glide/pool (Sections 7 and 6). The height of the deposition on the gravel bar provides a good indication of channel forming discharges. Discharges between 480 and 500 cfs overtop the gravel bar along the right bank of the downstream pool (Section 2) while a discharge of 570 matches the left bank inflection point of the same section.

Without a well-defined riffle, channel width and cross-sectional area were averaged through the upstream pool/glide (Sections 7 through 5) for the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT6

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT6	7	420-cfs	420	50.7	107	2.1	3.6	0.0026	3.9	0.47	0.33	0.032
FGUT6	7	440-cfs	440	50.8	110	2.2	3.7	0.0026	4.0	0.48	0.34	0.032
FGUT6	7	460-cfs	460	50.8	114	2.2	3.7	0.0026	4.1	0.48	0.35	0.032
FGUT6	7	480-cfs	480	50.8	117	2.3	3.8	0.0026	4.1	0.48	0.36	0.032
FGUT6	7	500-cfs	500	50.9	120	2.4	3.8	0.0026	4.2	0.48	0.37	0.032
FGUT6	7	510-cfs	510	50.9	121	2.4	3.9	0.0026	4.2	0.48	0.38	0.032
FGUT6	7	530-cfs	530	50.9	124	2.4	3.9	0.0026	4.3	0.48	0.39	0.032
FGUT6	7	550-cfs	550	50.9	127	2.5	4.0	0.0026	4.3	0.48	0.39	0.032
FGUT6	7	570-cfs	570	50.9	129	2.5	4.0	0.0027	4.4	0.49	0.40	0.032
FGUT6	6	420-cfs	420	49.1	111	2.3	3.4	0.0021	3.8	0.44	0.29	0.032
FGUT6	6	440-cfs	440	49.2	115	2.3	3.4	0.0021	3.8	0.44	0.30	0.032
FGUT6	6	460-cfs	460	49.2	118	2.4	3.5	0.0022	3.9	0.45	0.31	0.032
FGUT6	6	480-cfs	480	49.2	121	2.5	3.6	0.0022	4.0	0.45	0.32	0.032
FGUT6	6	500-cfs	500	49.3	123	2.5	3.6	0.0022	4.0	0.45	0.33	0.032
FGUT6	6	510-cfs	510	49.3	125	2.5	3.6	0.0022	4.1	0.45	0.34	0.032
FGUT6	6	530-cfs	530	49.3	127	2.6	3.7	0.0022	4.1	0.45	0.35	0.032
FGUT6	6	550-cfs	550	49.3	130	2.6	3.7	0.0023	4.2	0.46	0.36	0.032
FGUT6	6	570-cfs	570	49.3	133	2.7	3.8	0.0023	4.3	0.46	0.37	0.032
FGUT6	5	420-cfs	420	44.5	98	2.2	2.6	0.0032	4.3	0.51	0.41	0.032
FGUT6	5	440-cfs	440	44.5	100	2.3	2.7	0.0032	4.4	0.51	0.42	0.032
FGUT6	5	460-cfs	460	44.5	103	2.3	2.7	0.0032	4.4	0.51	0.44	0.032
FGUT6	5	480-cfs	480	44.5	106	2.4	2.8	0.0032	4.5	0.51	0.45	0.032
FGUT6	5	500-cfs	500	44.5	108	2.4	2.9	0.0032	4.6	0.52	0.46	0.032
FGUT6	5	510-cfs	510	44.5	109	2.5	2.9	0.0032	4.6	0.52	0.46	0.032
FGUT6	5	530-cfs	530	44.5	112	2.5	2.9	0.0032	4.7	0.52	0.47	0.032
FGUT6	5	550-cfs	550	44.5	114	2.6	3.0	0.0032	4.7	0.52	0.48	0.032
FGUT6	5	570-cfs	570	44.5	116	2.6	3.0	0.0032	4.8	0.52	0.49	0.032
FGUT6	4	420-cfs	420	38.8	95	2.5	3.1	0.0029	4.4	0.50	0.43	0.032
FGUT6	4	440-cfs	440	38.8	97	2.5	3.1	0.0030	4.5	0.50	0.44	0.032
FGUT6	4	460-cfs	460	38.8	99	2.6	3.2	0.0031	4.6	0.51	0.46	0.032
FGUT6	4	480-cfs	480	38.8	101	2.6	3.2	0.0031	4.7	0.52	0.48	0.032
FGUT6	4	500-cfs	500	38.8	103	2.7	3.3	0.0032	4.8	0.52	0.50	0.032

HEC-RAS OUTPUT SUMMARY TABLE: FGUT6

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT6	4	510-cfs	510	38.8	104	2.7	3.3	0.0032	4.9	0.53	0.51	0.032
FGUT6	4	530-cfs	530	38.8	106	2.7	3.3	0.0033	5.0	0.53	0.52	0.032
FGUT6	4	550-cfs	550	38.8	107	2.8	3.4	0.0033	5.1	0.54	0.54	0.032
FGUT6	4	570-cfs	570	38.8	109	2.8	3.4	0.0034	5.2	0.54	0.56	0.032
FGUT6	3	420-cfs	420	42.6	110	2.6	3.5	0.0019	3.7	0.41	0.30	0.032
FGUT6	3	440-cfs	440	42.7	112	2.6	3.5	0.0019	3.8	0.41	0.31	0.032
FGUT6	3	460-cfs	460	42.7	114	2.7	3.6	0.0020	3.9	0.42	0.32	0.032
FGUT6	3	480-cfs	480	42.7	117	2.7	3.6	0.0020	3.9	0.42	0.33	0.032
FGUT6	3	500-cfs	500	42.7	119	2.8	3.7	0.0020	4.0	0.42	0.33	0.032
FGUT6	3	510-cfs	510	42.7	120	2.8	3.7	0.0020	4.0	0.42	0.34	0.032
FGUT6	3	530-cfs	530	42.7	122	2.9	3.8	0.0020	4.1	0.43	0.35	0.032
FGUT6	3	550-cfs	550	42.7	124	2.9	3.8	0.0020	4.2	0.43	0.36	0.032
FGUT6	3	570-cfs	570	42.7	126	3.0	3.8	0.0020	4.2	0.43	0.36	0.032
FGUT6	2	420-cfs	420	60.2	124	2.1	4.7	0.0020	3.4	0.41	0.25	0.032
FGUT6	2	440-cfs	440	60.6	127	2.1	4.8	0.0020	3.5	0.42	0.26	0.032
FGUT6	2	460-cfs	460	61.0	130	2.1	4.8	0.0020	3.5	0.43	0.26	0.032
FGUT6	2	480-cfs	480	61.4	133	2.2	4.9	0.0021	3.6	0.43	0.27	0.032
FGUT6	2	500-cfs	500	61.7	136	2.2	4.9	0.0021	3.7	0.43	0.28	0.032
FGUT6	2	510-cfs	510	61.7	138	2.2	5.0	0.0021	3.7	0.44	0.29	0.032
FGUT6	2	530-cfs	530	61.8	141	2.3	5.0	0.0021	3.8	0.44	0.30	0.032
FGUT6	2	550-cfs	550	61.9	144	2.3	5.0	0.0022	3.8	0.44	0.31	0.032
FGUT6	2	570-cfs	570	62.0	146	2.4	5.1	0.0022	3.9	0.45	0.31	0.032
FGUT6	1	420-cfs	420	60.9	92	1.5	2.0	0.0060	4.6	0.65	0.56	0.033
FGUT6	1	440-cfs	440	61.0	95	1.6	2.0	0.0060	4.6	0.65	0.58	0.033
FGUT6	1	460-cfs	460	61.1	98	1.6	2.0	0.0060	4.7	0.65	0.59	0.033
FGUT6	1	480-cfs	480	61.3	101	1.6	2.1	0.0060	4.8	0.66	0.61	0.033
FGUT6	1	500-cfs	500	61.4	103	1.7	2.1	0.0060	4.8	0.66	0.62	0.033
FGUT6	1	510-cfs	510	61.4	105	1.7	2.2	0.0060	4.9	0.66	0.63	0.034
FGUT6	1	530-cfs	530	61.6	107	1.7	2.2	0.0060	4.9	0.66	0.65	0.034
FGUT6	1	550-cfs	550	61.7	110	1.8	2.2	0.0060	5.0	0.66	0.66	0.034
FGUT6	1	570-cfs	570	61.8	112	1.8	2.3	0.0060	5.1	0.66	0.67	0.034

HEC-RAS LONGITUDINAL PROFILE: FGUT6

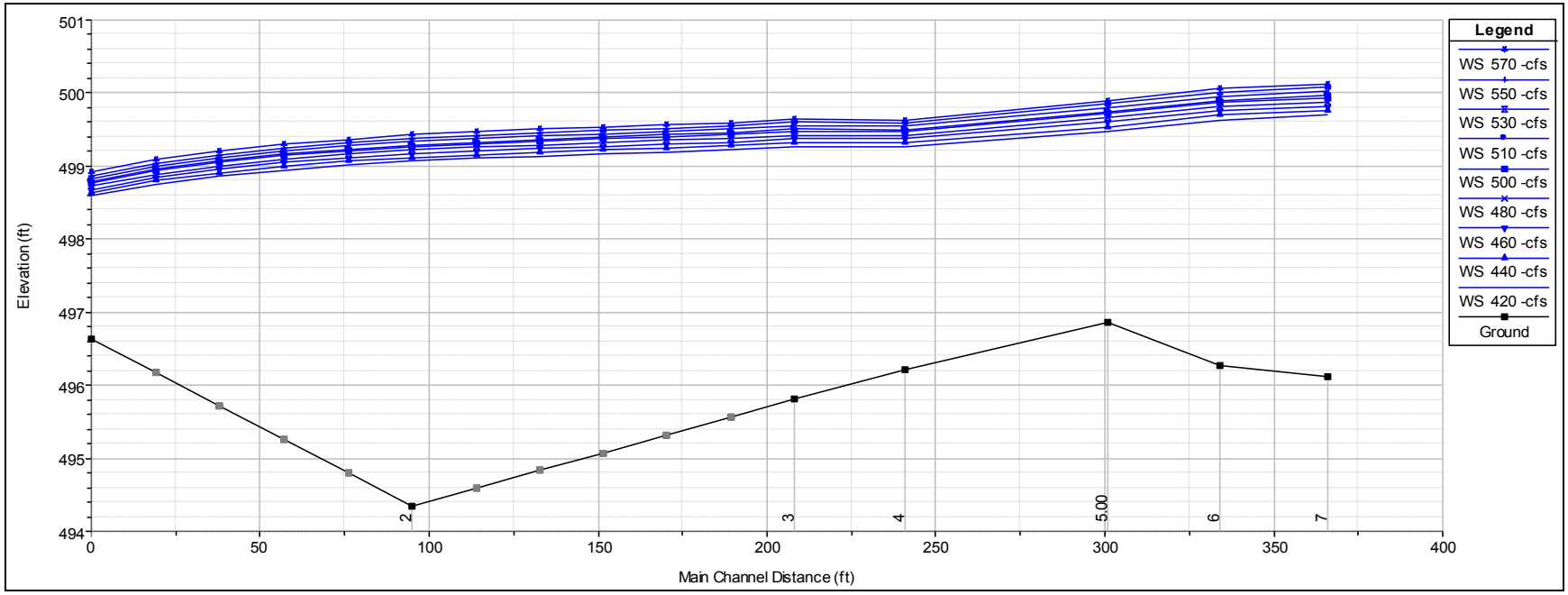


Figure 84 HEC-RAS longitudinal profile output for Reach FGUT6. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

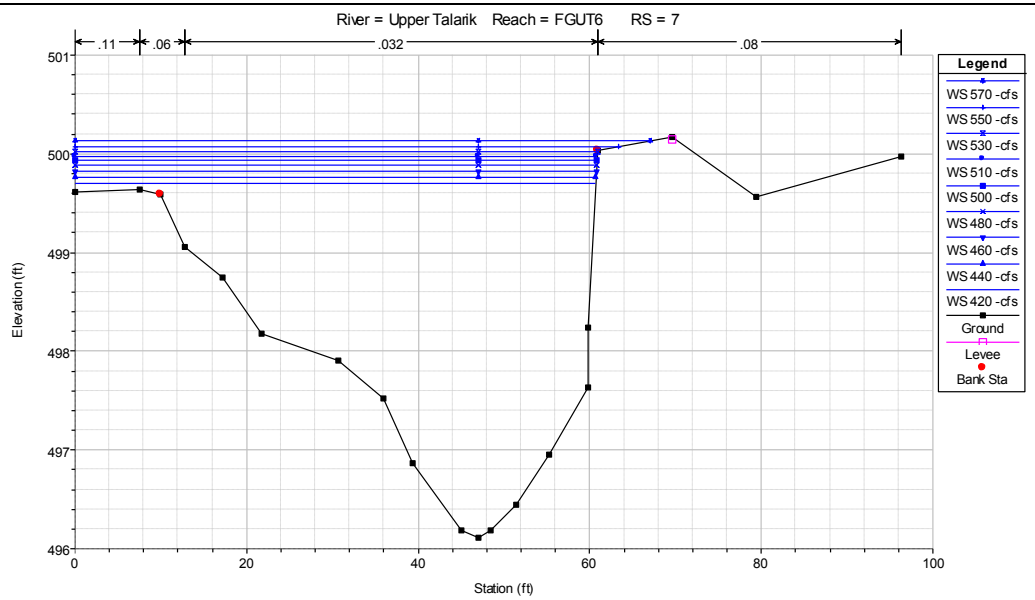


Figure 85 River Station (RS) 7 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

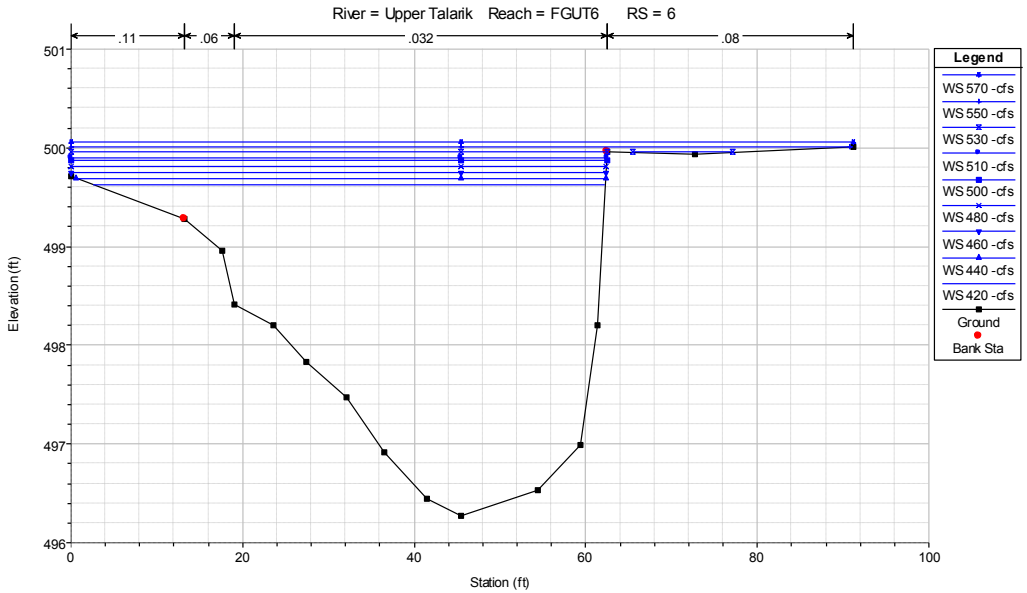


Figure 86 River Station (RS) 6 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

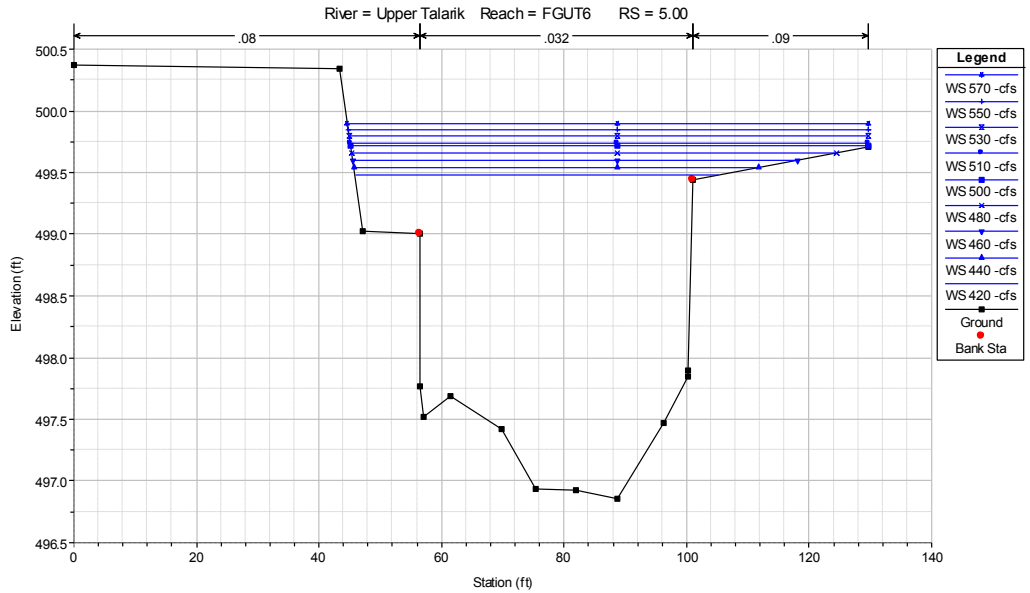


Figure 87 River Station (RS) 5 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

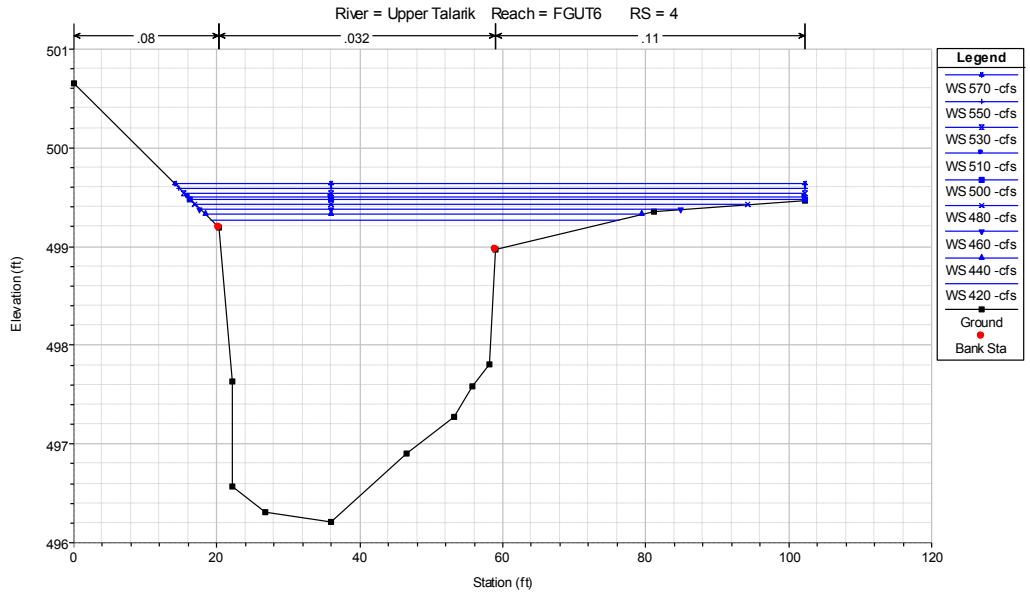


Figure 88 River Station (RS) 4 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

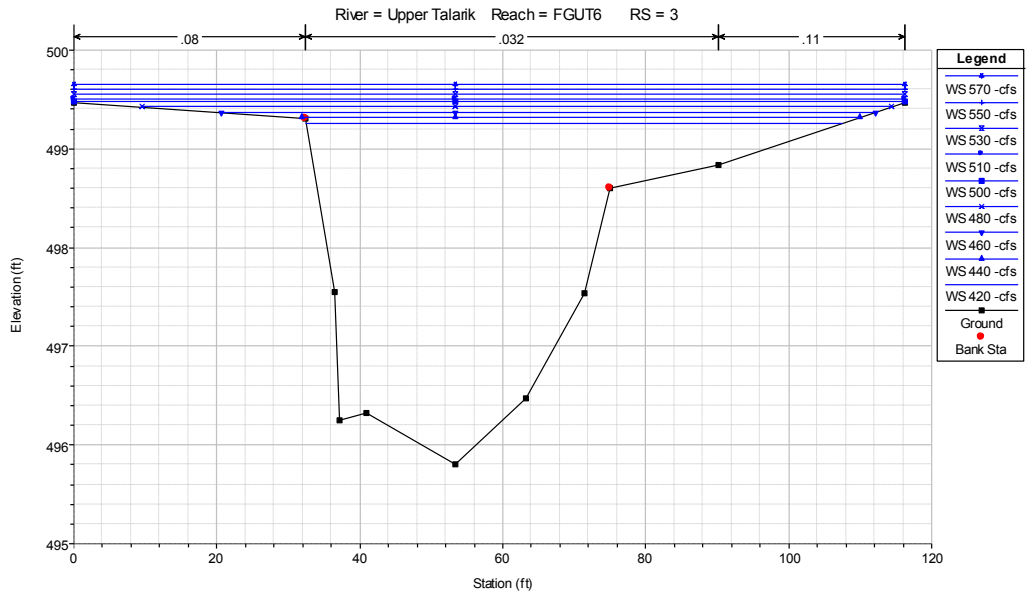


Figure 89 River Station (RS) 3 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

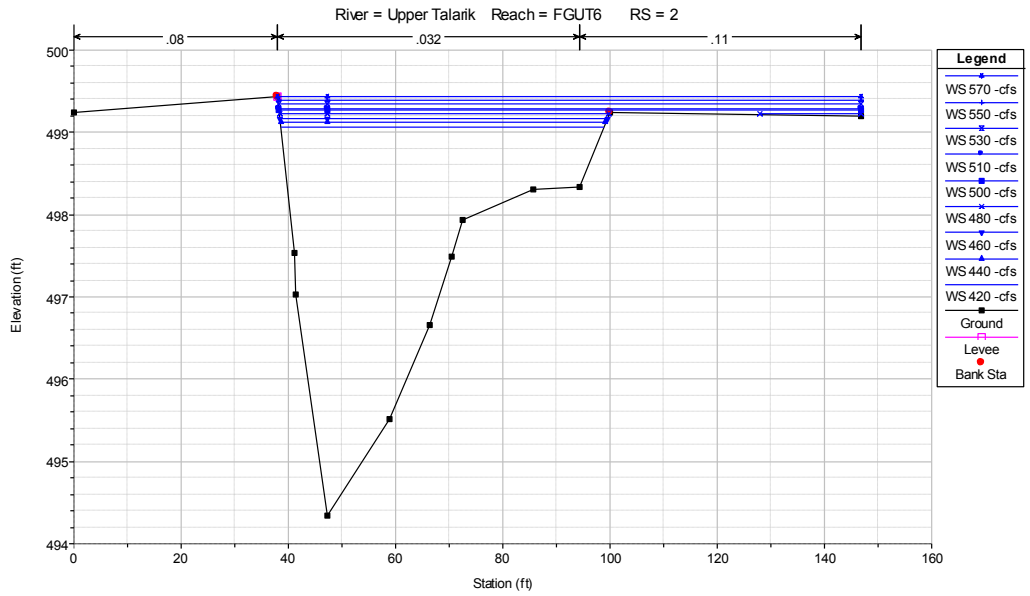


Figure 90 River Station (RS) 2 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT6

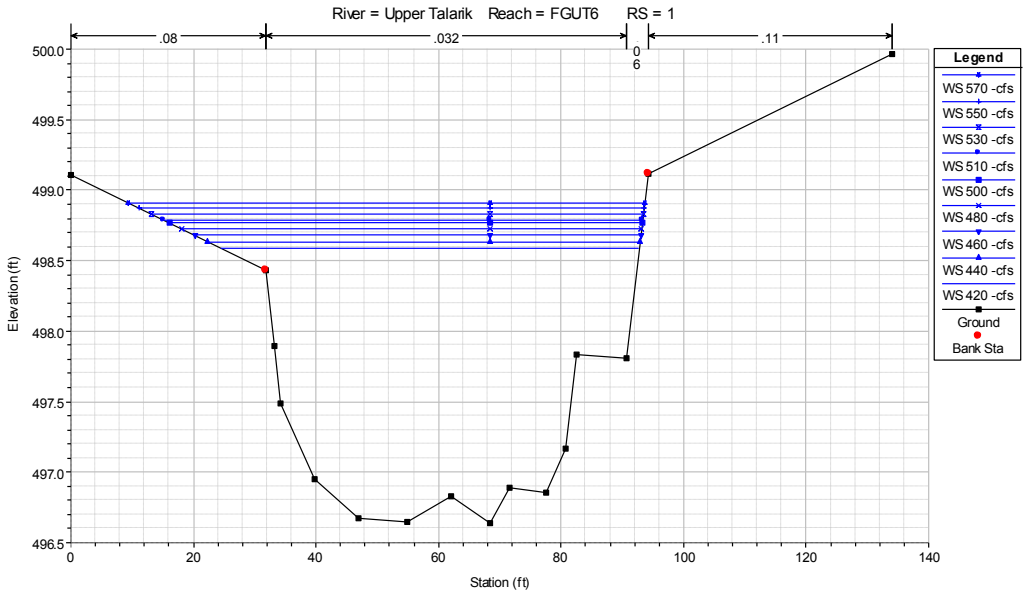


Figure 91 River Station (RS) 1 on River Reach FGUT6. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT6

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT6	7	420-cfs	0.33	59	48	39
FGUT6	7	440-cfs	0.34	61	50	40
FGUT6	7	460-cfs	0.35	63	51	41
FGUT6	7	480-cfs	0.36	65	52	42
FGUT6	7	500-cfs	0.37	67	54	44
FGUT6	7	510-cfs	0.38	68	55	45
FGUT6	7	530-cfs	0.39	70	57	46
FGUT6	7	550-cfs	0.39	70	57	46
FGUT6	7	570-cfs	0.40	72	58	47
FGUT6	6	420-cfs	0.29	52	42	34
FGUT6	6	440-cfs	0.30	54	44	35
FGUT6	6	460-cfs	0.31	56	45	36
FGUT6	6	480-cfs	0.32	58	47	38
FGUT6	6	500-cfs	0.33	59	48	39
FGUT6	6	510-cfs	0.34	61	50	40
FGUT6	6	530-cfs	0.35	63	51	41
FGUT6	6	550-cfs	0.36	65	52	42
FGUT6	6	570-cfs	0.37	67	54	44
FGUT6	5	420-cfs	0.41	74	60	48
FGUT6	5	440-cfs	0.42	76	61	49
FGUT6	5	460-cfs	0.44	79	64	52
FGUT6	5	480-cfs	0.45	81	66	53
FGUT6	5	500-cfs	0.46	83	67	54
FGUT6	5	510-cfs	0.46	83	67	54
FGUT6	5	530-cfs	0.47	85	68	55
FGUT6	5	550-cfs	0.48	86	70	57
FGUT6	5	570-cfs	0.49	88	71	58
FGUT6	4	420-cfs	0.43	77	63	51
FGUT6	4	440-cfs	0.44	79	64	52

INCIPIENT MOTION ANALYSIS: FGUT6

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT6	4	460-cfs	0.46	83	67	54
FGUT6	4	480-cfs	0.48	86	70	57
FGUT6	4	500-cfs	0.50	90	73	59
FGUT6	4	510-cfs	0.51	92	74	60
FGUT6	4	530-cfs	0.52	94	76	61
FGUT6	4	550-cfs	0.54	97	79	64
FGUT6	4	570-cfs	0.56	101	82	66
FGUT6	3	420-cfs	0.30	54	44	35
FGUT6	3	440-cfs	0.31	56	45	36
FGUT6	3	460-cfs	0.32	58	47	38
FGUT6	3	480-cfs	0.33	59	48	39
FGUT6	3	500-cfs	0.33	59	48	39
FGUT6	3	510-cfs	0.34	61	50	40
FGUT6	3	530-cfs	0.35	63	51	41
FGUT6	3	550-cfs	0.36	65	52	42
FGUT6	3	570-cfs	0.36	65	52	42
FGUT6	2	420-cfs	0.25	45	36	29
FGUT6	2	440-cfs	0.26	47	38	31
FGUT6	2	460-cfs	0.26	47	38	31
FGUT6	2	480-cfs	0.27	49	39	32
FGUT6	2	500-cfs	0.28	50	41	33
FGUT6	2	510-cfs	0.29	52	42	34
FGUT6	2	530-cfs	0.30	54	44	35
FGUT6	2	550-cfs	0.31	56	45	36
FGUT6	2	570-cfs	0.31	56	45	36
FGUT6	1	420-cfs	0.56	101	82	66
FGUT6	1	440-cfs	0.58	104	85	68
FGUT6	1	460-cfs	0.59	106	86	69
FGUT6	1	480-cfs	0.61	110	89	72
FGUT6	1	500-cfs	0.62	112	90	73

INCIPIENT MOTION ANALYSIS: FGUT6

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT6	1	510-cfs	0.63	113	92	74
FGUT6	1	530-cfs	0.65	117	95	77
FGUT6	1	550-cfs	0.66	119	96	78
FGUT6	1	570-cfs	0.67	121	98	79

PHOTOGRAPH DOCUMENTATION: FGUT6

Left bank along reference reach FGUT6

Right bank along reference reach FGUT6

Downstream from reference reach FGUT6

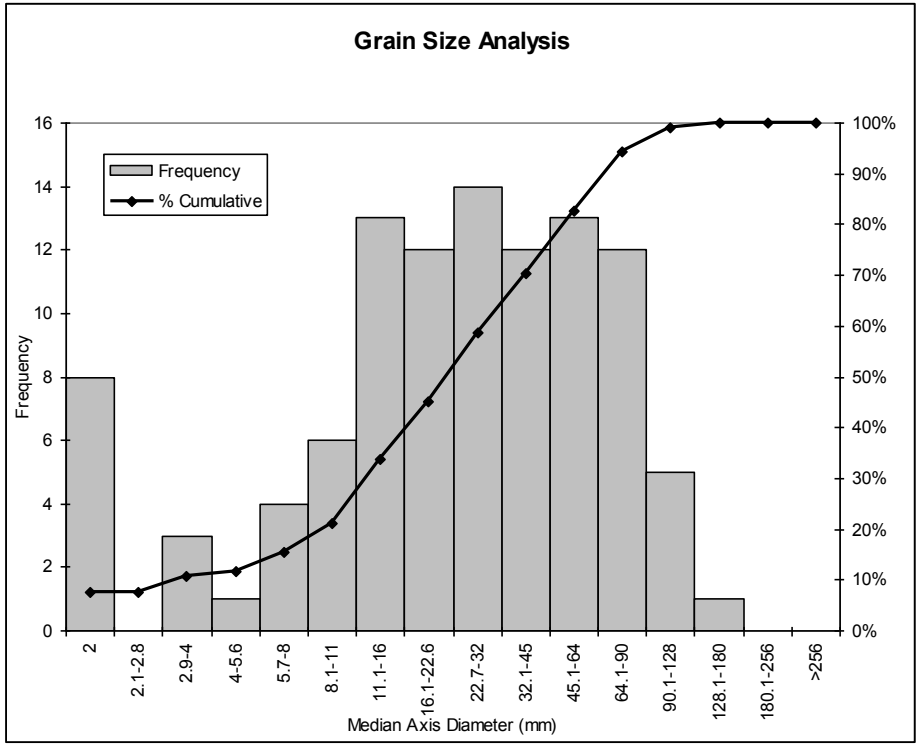
Upstream from reference reach FGUT6

PHOTOGRAPH DOCUMENTATION: FGUT6

Bank composition detail (right bank) FGUT6

Bank composition detail (left bank) FGUT6

PEBBLE COUNT DISTRIBUTION: FGUT6



Size Class mm	*Frequency*	*Cumulative %*
2	8	7.7%
2.1-2.8	0	7.7%
2.9-4	3	10.6%
4-5.6	1	11.5%
5.7-8	4	15.4%
8.1-11	6	21.2%
11.1-16	13	33.7%
16.1-22.6	12	45.2%
22.7-32	14	58.7%
32.1-45	12	70.2%
45.1-64	13	82.7%
64.1-90	12	94.2%
90.1-128	5	99.0%
128.1-180	1	100.0%
180.1-256	0	100.0%
>256	0	100.0%

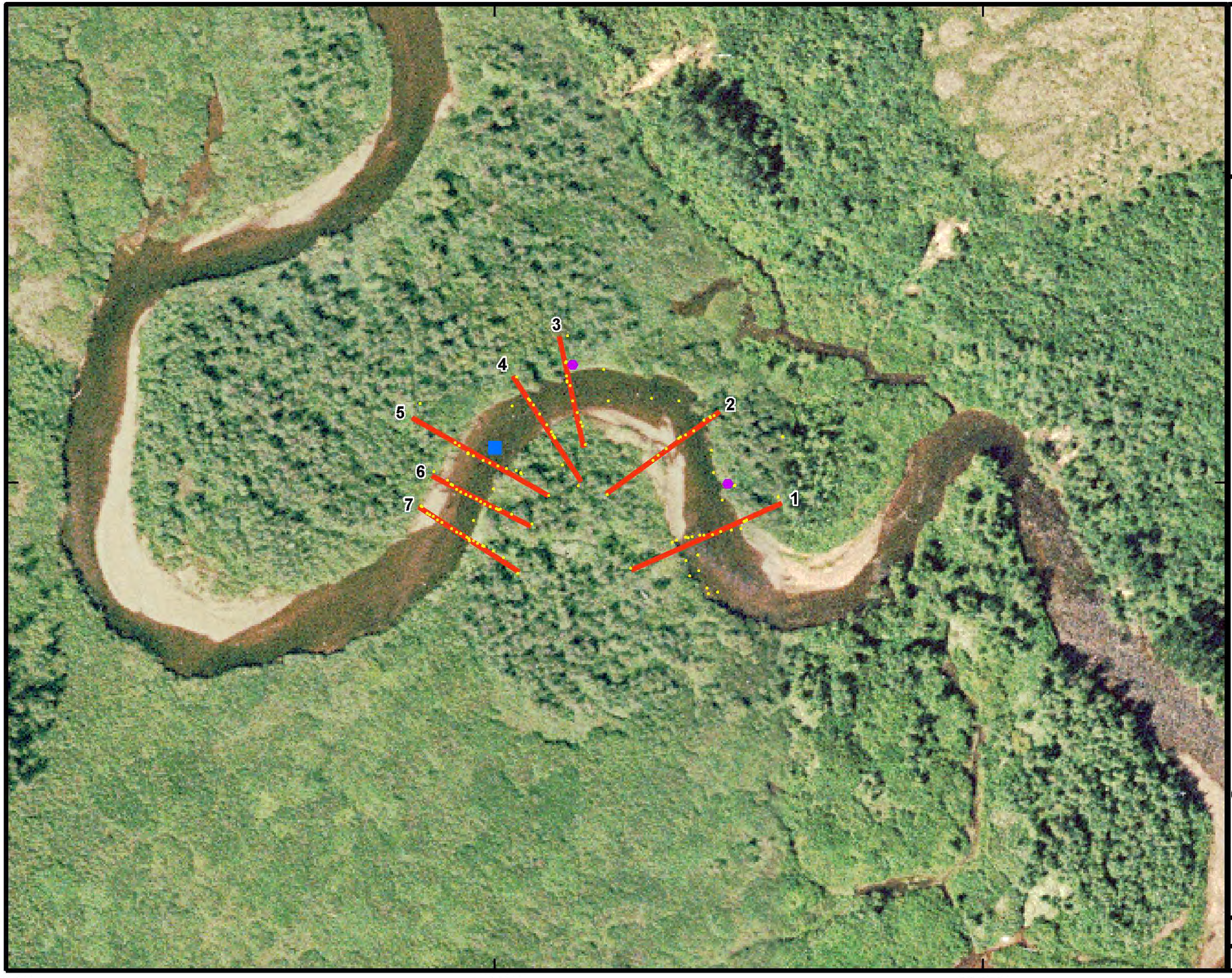
Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

1,425,458

1,425,858

1,426,258

2,143,463

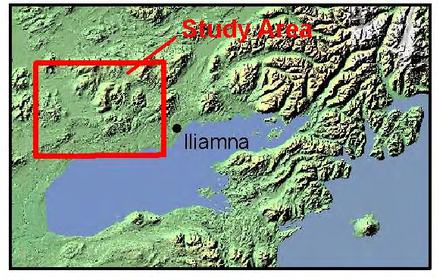


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT6
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,425,458

1,425,858

1,426,258

SITE DESCRIPTION: FGUT7

Site Characteristics.

Site Name		FGUT7	
Discharge (cfs)	**500 (400-600)**	Width (ft)	**61.0 (55.0-64.9)**
Slope	**0.0024**	Cross-sectional Area (ft^2)	**138 (112-159)**
D_{50}	**34**	D_{84}	**63**
Lat/Long Location	**N59.88017 W155.16960**	Drainage Area (mi^2)	**48**
% Willow	**80**		
% Grass	**20**		
% Tree	**0**		

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 360 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool/run. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 6 and 5 characterize a riffle while Section 7 was taken through a run/glide. Both the riffle and run/glide serve as the reference reach for this site. Sections 4 through 1 characterize a pool. A vegetated island close to the right bank is captured in Sections 2 and 3. The HDR hydrology gage (UT100C2) is located just upstream of Section 3, as the channel widens. Section 4 is co-located with ISF site 07-UTC2-RN4.

For a Shields number of 0.017, the D_{84} moves through Sections 5 and 4 before 400 cfs, but do not move through Sections 7 and 6 by 600 cfs. For a Shields number of 0.026, the D_{50} moves through Sections 5 and 4 by 400 cfs and by 550 cfs through Sections 7 and 6. Flows between 500 and 600 cfs match a right bank inflection point and willow line through the reference reach and Section 7. Flows between 400 and 500 cfs overtop the left bank through the same sections. The top of the island is matched by flows between 400 and 550 cfs. While the incipient motion analysis through Sections 5 and 4 shows low flows mobilizing the substrate, higher flows were chosen for the channel forming discharge based on the incipient motion through Sections 6 and 7 and the geometry which was in strong agreement through the reach.

The reference reach sections (Sections 7 through 5) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT7	7	400-cfs	400	55.0	125	2.3	2.6	0.0018	3.2	0.37	0.24	0.033
FGUT7	7	450-cfs	450	55.1	134	2.4	2.8	0.0018	3.4	0.38	0.26	0.033
FGUT7	7	500-cfs	500	55.1	142	2.6	2.9	0.0018	3.5	0.38	0.27	0.033
FGUT7	7	550-cfs	550	55.1	150	2.7	3.1	0.0018	3.6	0.39	0.29	0.033
FGUT7	7	600-cfs	600	55.1	157	2.8	3.2	0.0018	3.8	0.40	0.31	0.033
FGUT7	6	400-cfs	400	63.4	121	1.9	2.4	0.0023	3.3	0.42	0.26	0.033
FGUT7	6	450-cfs	450	63.5	132	2.1	2.6	0.0022	3.4	0.42	0.27	0.033
FGUT7	6	500-cfs	500	63.5	142	2.2	2.7	0.0021	3.5	0.41	0.28	0.033
FGUT7	6	550-cfs	550	63.6	151	2.4	2.9	0.0021	3.6	0.41	0.30	0.033
FGUT7	6	600-cfs	600	63.6	159	2.5	3.0	0.0020	3.7	0.41	0.31	0.033
FGUT7	5	400-cfs	400	63.4	112	1.8	2.3	0.0035	3.6	0.47	0.37	0.035
FGUT7	5	450-cfs	450	64.7	124	1.9	2.5	0.0034	3.6	0.46	0.40	0.036
FGUT7	5	500-cfs	500	64.9	134	2.1	2.6	0.0033	3.7	0.46	0.41	0.036
FGUT7	5	550-cfs	550	64.9	143	2.2	2.8	0.0032	3.8	0.45	0.42	0.036
FGUT7	5	600-cfs	600	64.9	152	2.3	2.9	0.0031	3.9	0.45	0.43	0.036
FGUT7	4	400-cfs	400	49.7	106	2.1	2.9	0.0031	3.8	0.45	0.40	0.036
FGUT7	4	450-cfs	450	50.1	115	2.3	3.1	0.0030	3.9	0.46	0.42	0.036
FGUT7	4	500-cfs	500	50.4	123	2.4	3.3	0.0030	4.1	0.46	0.45	0.036
FGUT7	4	550-cfs	550	50.6	129	2.6	3.4	0.0031	4.2	0.47	0.47	0.035
FGUT7	4	600-cfs	600	50.9	135	2.7	3.5	0.0032	4.4	0.48	0.51	0.035
FGUT7	3	400-cfs	400	61.8	131	2.1	2.9	0.0020	3.0	0.37	0.25	0.034
FGUT7	3	450-cfs	450	65.2	141	2.2	3.1	0.0026	3.2	0.38	0.32	0.038
FGUT7	3	500-cfs	500	68.3	150	2.2	3.2	0.0032	3.3	0.40	0.40	0.040
FGUT7	3	550-cfs	550	70.3	158	2.3	3.3	0.0036	3.5	0.41	0.46	0.042
FGUT7	3	600-cfs	600	70.8	167	2.4	3.5	0.0036	3.6	0.41	0.49	0.042
FGUT7	2	400-cfs	400	63.1	118	1.9	2.7	0.0040	3.4	0.44	0.44	0.041
FGUT7	2	450-cfs	450	66.2	127	1.9	2.9	0.0048	3.6	0.45	0.54	0.043

HEC-RAS OUTPUT SUMMARY TABLE: FGUT7

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT7	2	500-cfs	500	66.4	135	2.0	3.0	0.0048	3.7	0.46	0.58	0.043
FGUT7	2	550-cfs	550	66.8	143	2.1	3.1	0.0048	3.8	0.46	0.61	0.043
FGUT7	2	600-cfs	600	67.3	151	2.3	3.2	0.0049	4.0	0.47	0.65	0.043
FGUT7	1	400-cfs	400	68.6	114	1.7	2.3	0.0030	3.5	0.48	0.31	0.032
FGUT7	1	450-cfs	450	68.9	123	1.8	2.5	0.0030	3.7	0.48	0.33	0.032
FGUT7	1	500-cfs	500	69.1	132	1.9	2.6	0.0030	3.8	0.49	0.35	0.032
FGUT7	1	550-cfs	550	69.4	140	2.0	2.7	0.0030	3.9	0.49	0.37	0.033
FGUT7	1	600-cfs	600	69.6	148	2.1	2.8	0.0030	4.1	0.49	0.39	0.033

HEC-RAS LONGITUDINAL PROFILE: FGUT7

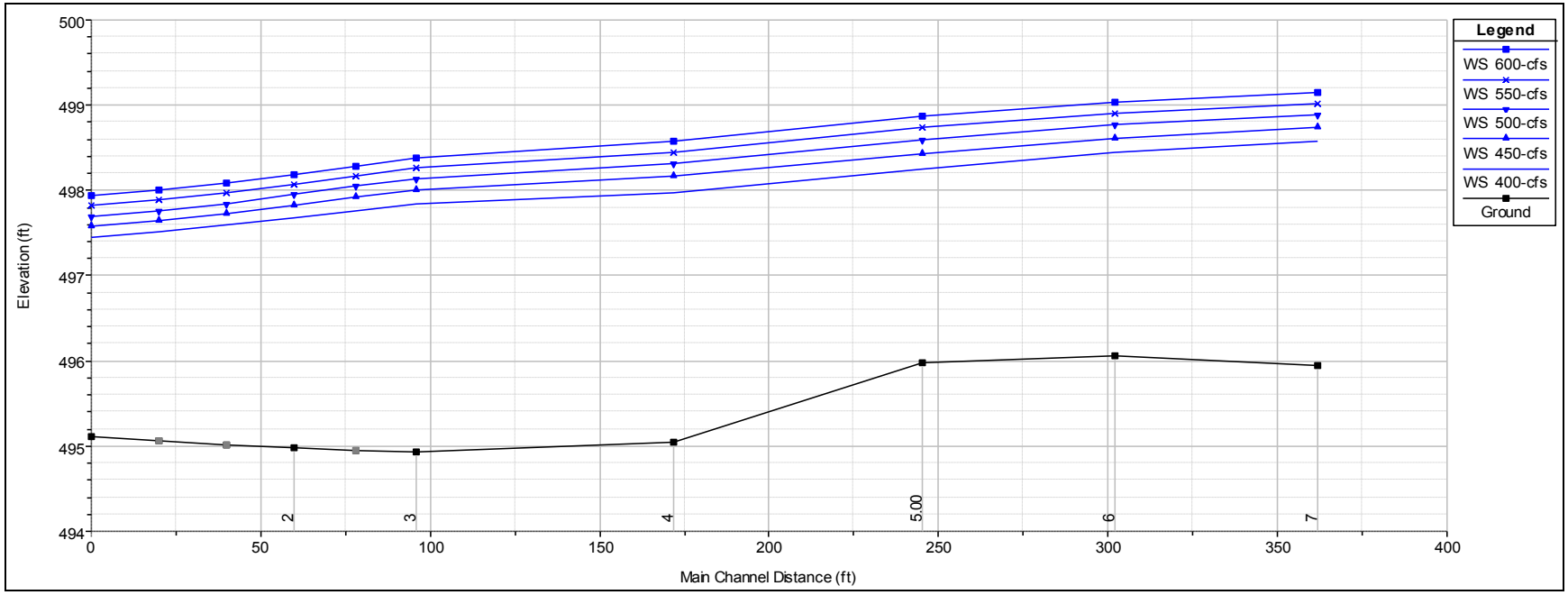


Figure 92 HEC-RAS longitudinal profile output for Reach FGUT7. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

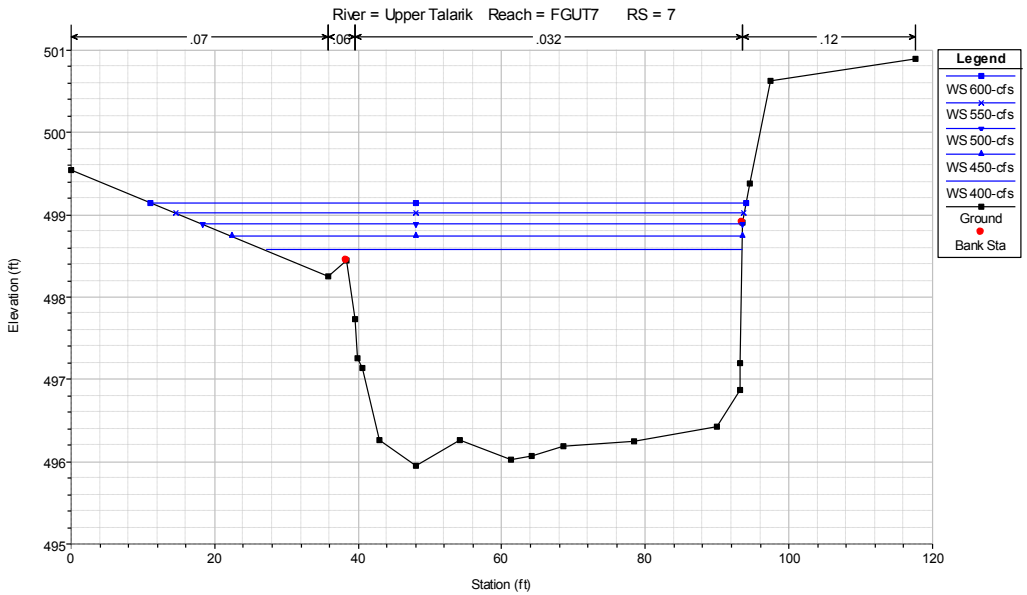


Figure 93 River Station (RS) 7 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

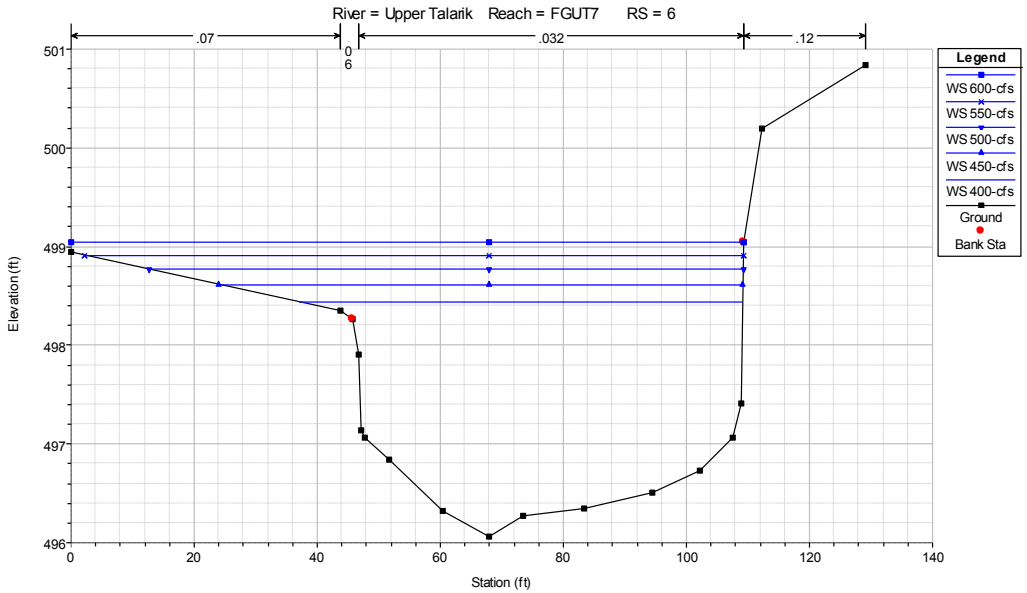


Figure 94 River Station (RS) 6 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

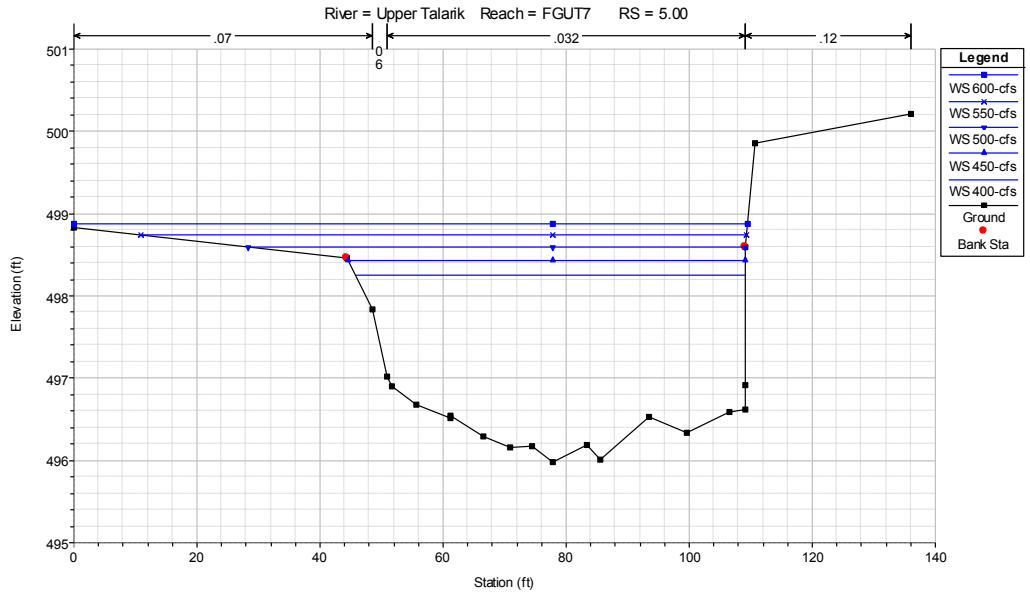


Figure 95 River Station (RS) 5 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

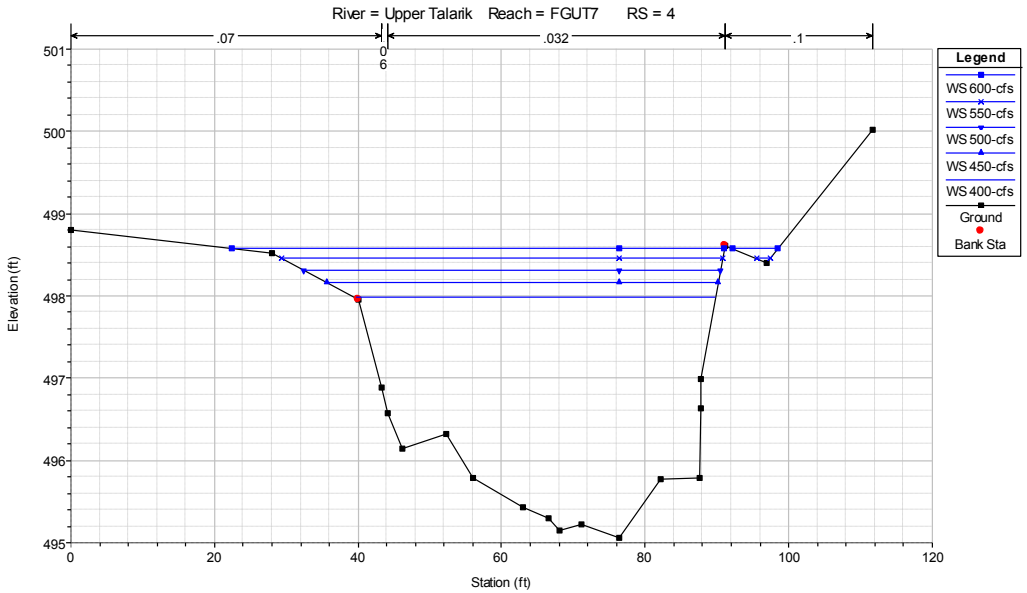


Figure 96 River Station (RS) 4 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

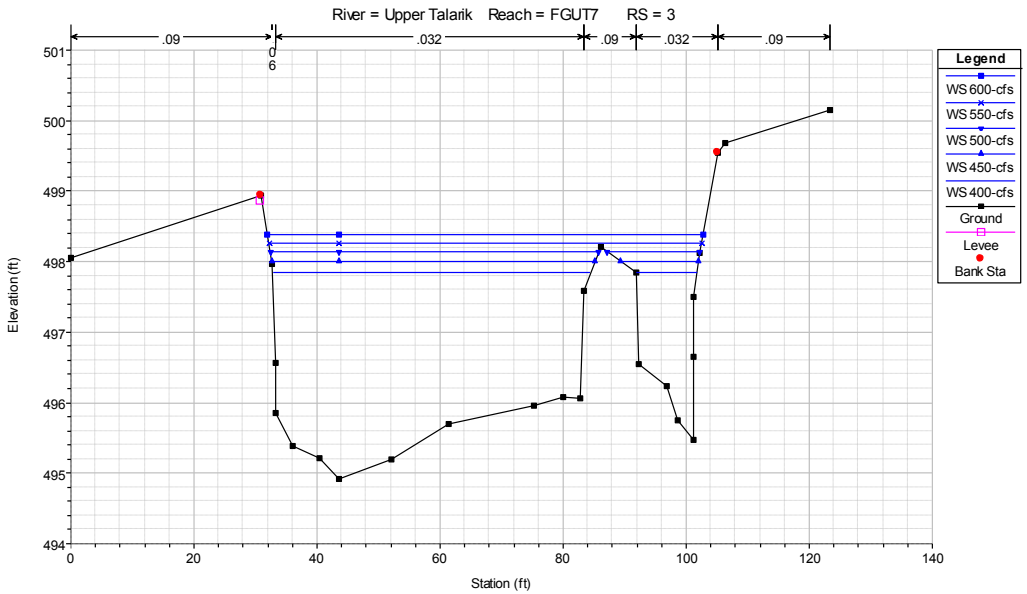


Figure 97 River Station (RS) 3 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

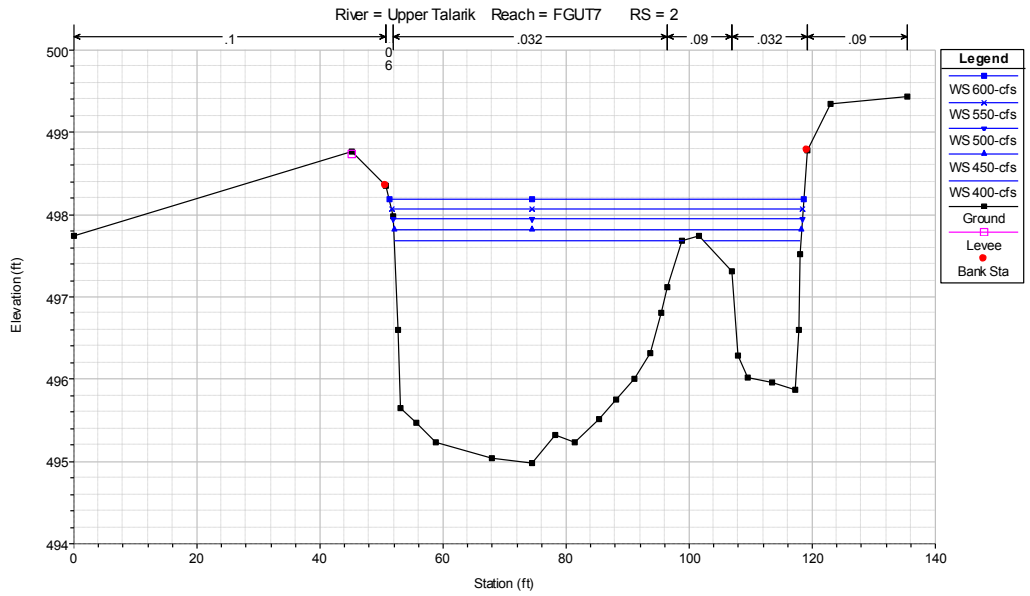


Figure 98 River Station (RS) 2 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT7

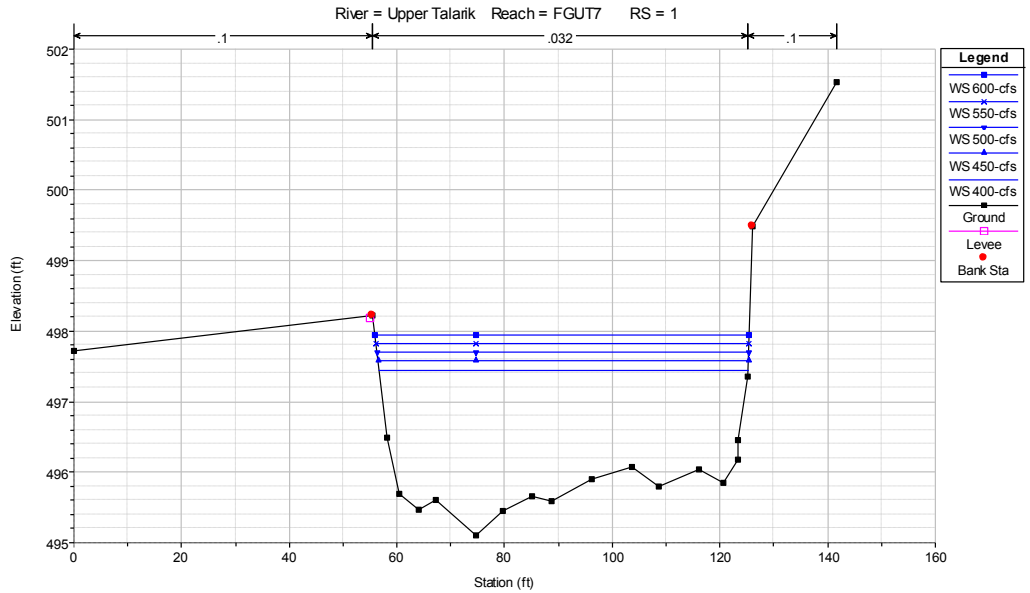


Figure 99 River Station (RS) 1 on River Reach FGUT7. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT7

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT7	7	400-cfs	0.24	43	35	28
FGUT7	7	450-cfs	0.26	47	38	31
FGUT7	7	500-cfs	0.27	49	39	32
FGUT7	7	550-cfs	0.29	52	42	34
FGUT7	7	600-cfs	0.31	56	45	36
FGUT7	6	400-cfs	0.26	47	38	31
FGUT7	6	450-cfs	0.27	49	39	32
FGUT7	6	500-cfs	0.28	50	41	33
FGUT7	6	550-cfs	0.30	54	44	35
FGUT7	6	600-cfs	0.31	56	45	36
FGUT7	5	400-cfs	0.37	67	54	44
FGUT7	5	450-cfs	0.40	72	58	47
FGUT7	5	500-cfs	0.41	74	60	48
FGUT7	5	550-cfs	0.42	76	61	49
FGUT7	5	600-cfs	0.43	77	63	51
FGUT7	4	400-cfs	0.40	72	58	47
FGUT7	4	450-cfs	0.42	76	61	49
FGUT7	4	500-cfs	0.45	81	66	53
FGUT7	4	550-cfs	0.47	85	68	55
FGUT7	4	600-cfs	0.51	92	74	60
FGUT7	3	400-cfs	0.25	45	36	29
FGUT7	3	450-cfs	0.32	58	47	38
FGUT7	3	500-cfs	0.40	72	58	47
FGUT7	3	550-cfs	0.46	83	67	54
FGUT7	3	600-cfs	0.49	88	71	58
FGUT7	2	400-cfs	0.44	79	64	52
FGUT7	2	450-cfs	0.54	97	79	64

INCIPIENT MOTION ANALYSIS: FGUT7

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT7	2	500-cfs	0.58	104	85	68
FGUT7	2	550-cfs	0.61	110	89	72
FGUT7	2	600-cfs	0.65	117	95	77
FGUT7	1	400-cfs	0.31	56	45	36
FGUT7	1	450-cfs	0.33	59	48	39
FGUT7	1	500-cfs	0.35	63	51	41
FGUT7	1	550-cfs	0.37	67	54	44
FGUT7	1	600-cfs	0.39	70	57	46

PHOTOGRAPH DOCUMENTATION: FGUT7

Left bank along reference reach FGUT7

Right bank along reference reach FGUT7

Downstream from reference reach FGUT7

Upstream from reference reach FGUT7

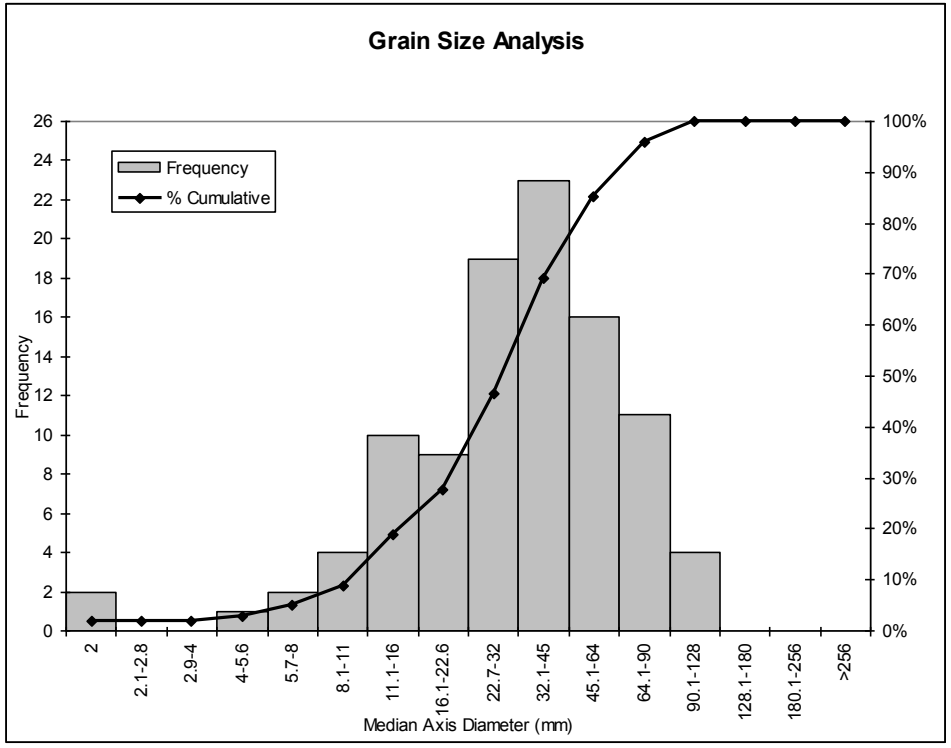
PHOTOGRAPH DOCUMENTATION: FGUT7

Bank composition detail (right bank) FGUT7

Bank composition detail (left bank) FGUT7

Looking downstream towards hydrology gage (UT100C2) from IFS site 07-UTC2-RN4 FGUT7

PEBBLE COUNT DISTRIBUTION: FGUT7



Size Class mm	*Frequency*	*Cumulative %*
2	2	2.0%
2.1-2.8	0	2.0%
2.9-4	0	2.0%
4-5.6	1	3.0%
5.7-8	2	5.0%
8.1-11	4	8.9%
11.1-16	10	18.8%
16.1-22.6	9	27.7%
22.7-32	19	46.5%
32.1-45	23	69.3%
45.1-64	16	85.1%
64.1-90	11	96.0%
90.1-128	4	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Through Section 5

1,424,432 1,424,832 1,425,232 1,425,632 1,426,032

2,150,381

2,149,981

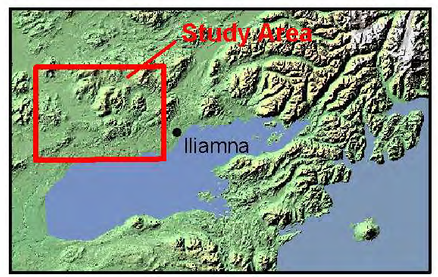
2,149,581

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT7
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,424,432 1,424,832 1,425,232 1,425,632 1,426,032

SITE DESCRIPTION: FGUT8

Site Characteristics.

Site Name	**FGUT8**		
Discharge (cfs)	**325 (200-425)**	Width (ft)	**27.2 (26.7-27.7)**
Slope	**0.0010**	Cross-sectional Area (ft^2)	**91 (65-120)**
(1) D_{50}	**21**	D_{84}	**42**
(2) D_{50}	**26**	D_{84}	**44**
Lat/Long Location	**N59.88474 W155.16846**	Drainage Area (mi^2)	**26**
% Willow	**50**		
% Grass	**50**		
% Tree	**0**		

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 185 feet of channel length. Sections 5 through 7 represent a short riffle beginning with a pool tailout at the upstream boundary (Section 7). These sections serve as the reference reach. Sections 2 through 4 represent the downstream pool and Section 1 represents the downstream hydraulic control for the area surveyed. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Pebble counts were taken along Sections 6 and 7. The first pebble count was taken at the pool tailout near Section 7. The second pebble count was taken between Sections 5 and 6 through the short riffle.

For a Shields number of 0.017, the D_{84} of both pebble count's 1 and 2 move through Sections 6 and 5 between 350 and 425 cfs but is immobile through Section 7. For a Shields number of 0.026, the D_{50} for both pebble counts moves through Sections 6 and 5 between 200 and 325 cfs. Flows between 200 and 275 cfs match inflection points on all cross-sections. Higher flows, which include those flows ranging from 300 to 400 cfs match inflection points on Sections 7, 6 and 1. A flow of 325 cfs was chosen as the channel forming discharge, as it splits the difference between the higher flows which the incipient motion analysis suggests and the lower flows supported by the channel geometries.

The reference reach sections (Sections 7 through 5), provides the best representation of the channel dimensions and was used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT8	7	200-cfs	200	26.7	87	3.2	4.3	0.0005	2.2	0.22	0.09	0.030
FGUT8	7	225-cfs	225	26.7	91	3.4	4.5	0.0005	2.4	0.22	0.10	0.030
FGUT8	7	250-cfs	250	26.7	95	3.6	4.6	0.0005	2.5	0.23	0.10	0.030
FGUT8	7	275-cfs	275	26.7	100	3.7	4.8	0.0005	2.6	0.23	0.11	0.030
FGUT8	7	300-cfs	300	26.7	103	3.9	4.9	0.0005	2.6	0.24	0.12	0.030
FGUT8	7	325-cfs	325	26.7	107	4.0	5.1	0.0005	2.7	0.24	0.12	0.030
FGUT8	7	350-cfs	350	26.7	111	4.2	5.2	0.0005	2.8	0.24	0.13	0.030
FGUT8	7	375-cfs	375	26.7	114	4.3	5.4	0.0005	2.9	0.24	0.13	0.030
FGUT8	7	400-cfs	400	26.7	118	4.4	5.5	0.0005	2.9	0.24	0.13	0.030
FGUT8	7	425-cfs	425	26.7	120	4.5	5.6	0.0005	3.0	0.25	0.14	0.030
FGUT8	6	200-cfs	200	27.3	68	2.5	3.4	0.0011	2.9	0.33	0.16	0.030
FGUT8	6	225-cfs	225	27.3	72	2.7	3.5	0.0011	3.1	0.33	0.18	0.030
FGUT8	6	250-cfs	250	27.3	77	2.8	3.7	0.0012	3.2	0.34	0.19	0.030
FGUT8	6	275-cfs	275	27.3	81	3.0	3.8	0.0012	3.3	0.34	0.20	0.030
FGUT8	6	300-cfs	300	27.3	85	3.1	4.0	0.0012	3.4	0.34	0.21	0.030
FGUT8	6	325-cfs	325	27.3	88	3.2	4.1	0.0012	3.5	0.34	0.22	0.030
FGUT8	6	350-cfs	350	27.3	92	3.4	4.2	0.0011	3.6	0.34	0.22	0.030
FGUT8	6	375-cfs	375	27.3	96	3.5	4.4	0.0011	3.7	0.34	0.23	0.030
FGUT8	6	400-cfs	400	27.3	99	3.6	4.5	0.0011	3.7	0.34	0.24	0.030
FGUT8	6	425-cfs	425	27.3	101	3.7	4.6	0.0012	3.9	0.35	0.25	0.030
FGUT8	5	200-cfs	200	27.7	65	2.3	2.8	0.0013	3.1	0.35	0.18	0.030
FGUT8	5	225-cfs	225	27.7	69	2.5	2.9	0.0013	3.2	0.35	0.19	0.030
FGUT8	5	250-cfs	250	27.7	74	2.7	3.1	0.0013	3.3	0.36	0.20	0.030
FGUT8	5	275-cfs	275	27.7	78	2.8	3.2	0.0013	3.4	0.36	0.21	0.030
FGUT8	5	300-cfs	300	27.7	82	3.0	3.4	0.0013	3.5	0.36	0.22	0.030
FGUT8	5	325-cfs	325	27.7	85	3.1	3.5	0.0013	3.6	0.36	0.23	0.030
FGUT8	5	350-cfs	350	27.7	89	3.2	3.7	0.0013	3.7	0.37	0.24	0.030
FGUT8	5	375-cfs	375	27.7	93	3.3	3.8	0.0012	3.8	0.37	0.25	0.030
FGUT8	5	400-cfs	400	27.7	96	3.5	3.9	0.0012	3.9	0.37	0.26	0.030
FGUT8	5	425-cfs	425	27.7	98	3.5	4.0	0.0013	4.1	0.38	0.28	0.030

HEC-RAS OUTPUT SUMMARY TABLE: FGUT8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT8	4	200-cfs	200	32.8	80	2.4	3.9	0.0008	2.5	0.28	0.12	0.030
FGUT8	4	225-cfs	225	33.1	86	2.6	4.1	0.0008	2.6	0.29	0.13	0.030
FGUT8	4	250-cfs	250	33.1	91	2.7	4.2	0.0009	2.8	0.29	0.14	0.030
FGUT8	4	275-cfs	275	33.1	96	2.9	4.4	0.0009	2.9	0.30	0.15	0.030
FGUT8	4	300-cfs	300	33.1	100	3.0	4.5	0.0009	3.0	0.30	0.16	0.030
FGUT8	4	325-cfs	325	33.1	105	3.2	4.6	0.0009	3.1	0.31	0.17	0.030
FGUT8	4	350-cfs	350	33.1	109	3.3	4.8	0.0009	3.2	0.31	0.18	0.030
FGUT8	4	375-cfs	375	33.1	113	3.4	4.9	0.0009	3.3	0.31	0.18	0.030
FGUT8	4	400-cfs	400	33.1	117	3.6	5.0	0.0009	3.3	0.31	0.19	0.030
FGUT8	4	425-cfs	425	33.1	119	3.6	5.1	0.0010	3.5	0.32	0.21	0.030
FGUT8	3	200-cfs	200	31.4	75	2.4	3.8	0.0010	2.7	0.30	0.14	0.030
FGUT8	3	225-cfs	225	31.4	80	2.6	3.9	0.0010	2.8	0.31	0.15	0.030
FGUT8	3	250-cfs	250	31.4	85	2.7	4.1	0.0010	2.9	0.31	0.16	0.030
FGUT8	3	275-cfs	275	31.4	90	2.9	4.2	0.0010	3.0	0.32	0.17	0.030
FGUT8	3	300-cfs	300	31.4	94	3.0	4.4	0.0010	3.2	0.32	0.18	0.030
FGUT8	3	325-cfs	325	31.4	99	3.1	4.5	0.0010	3.3	0.32	0.19	0.030
FGUT8	3	350-cfs	350	31.4	103	3.3	4.6	0.0010	3.3	0.33	0.20	0.030
FGUT8	3	375-cfs	375	31.4	107	3.4	4.8	0.0010	3.4	0.33	0.20	0.030
FGUT8	3	400-cfs	400	31.4	111	3.5	4.9	0.0010	3.5	0.33	0.21	0.030
FGUT8	3	425-cfs	425	31.4	112	3.6	5.0	0.0011	3.7	0.34	0.23	0.030
FGUT8	2	200-cfs	200	30.0	57	1.9	3.3	0.0023	3.5	0.45	0.26	0.030
FGUT8	2	225-cfs	225	30.0	62	2.1	3.5	0.0023	3.6	0.44	0.27	0.030
FGUT8	2	250-cfs	250	30.0	67	2.2	3.6	0.0022	3.7	0.44	0.28	0.030
FGUT8	2	275-cfs	275	30.0	71	2.4	3.8	0.0021	3.9	0.44	0.29	0.030
FGUT8	2	300-cfs	300	30.0	75	2.5	3.9	0.0021	4.0	0.45	0.31	0.030
FGUT8	2	325-cfs	325	30.0	79	2.6	4.0	0.0021	4.1	0.45	0.32	0.030
FGUT8	2	350-cfs	350	30.0	83	2.8	4.2	0.0021	4.2	0.45	0.33	0.030
FGUT8	2	375-cfs	375	30.0	86	2.9	4.3	0.0020	4.3	0.45	0.34	0.030
FGUT8	2	400-cfs	400	30.0	90	3.0	4.4	0.0020	4.4	0.45	0.35	0.030
FGUT8	2	425-cfs	425	30.0	91	3.0	4.4	0.0022	4.6	0.47	0.38	0.030

HEC-RAS OUTPUT SUMMARY TABLE: FGUT8

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT8	1	200-cfs	200	27.4	58	2.1	3.9	0.0021	3.5	0.42	0.25	0.030
FGUT8	1	225-cfs	225	27.5	62	2.3	4.1	0.0021	3.6	0.43	0.26	0.030
FGUT8	1	250-cfs	250	27.7	66	2.4	4.2	0.0021	3.8	0.43	0.28	0.030
FGUT8	1	275-cfs	275	27.7	70	2.5	4.3	0.0021	3.9	0.43	0.30	0.030
FGUT8	1	300-cfs	300	27.7	74	2.7	4.5	0.0021	4.1	0.44	0.31	0.030
FGUT8	1	325-cfs	325	27.7	77	2.8	4.6	0.0021	4.2	0.44	0.33	0.030
FGUT8	1	350-cfs	350	27.7	81	2.9	4.7	0.0021	4.3	0.44	0.34	0.030
FGUT8	1	375-cfs	375	27.7	84	3.0	4.9	0.0021	4.4	0.45	0.36	0.030
FGUT8	1	400-cfs	400	27.7	87	3.2	5.0	0.0021	4.5	0.45	0.37	0.030
FGUT8	1	425-cfs	425	27.7	89	3.2	5.0	0.0021	4.6	0.45	0.38	0.030

HEC-RAS LONGITUDINAL PROFILE: FGUT8

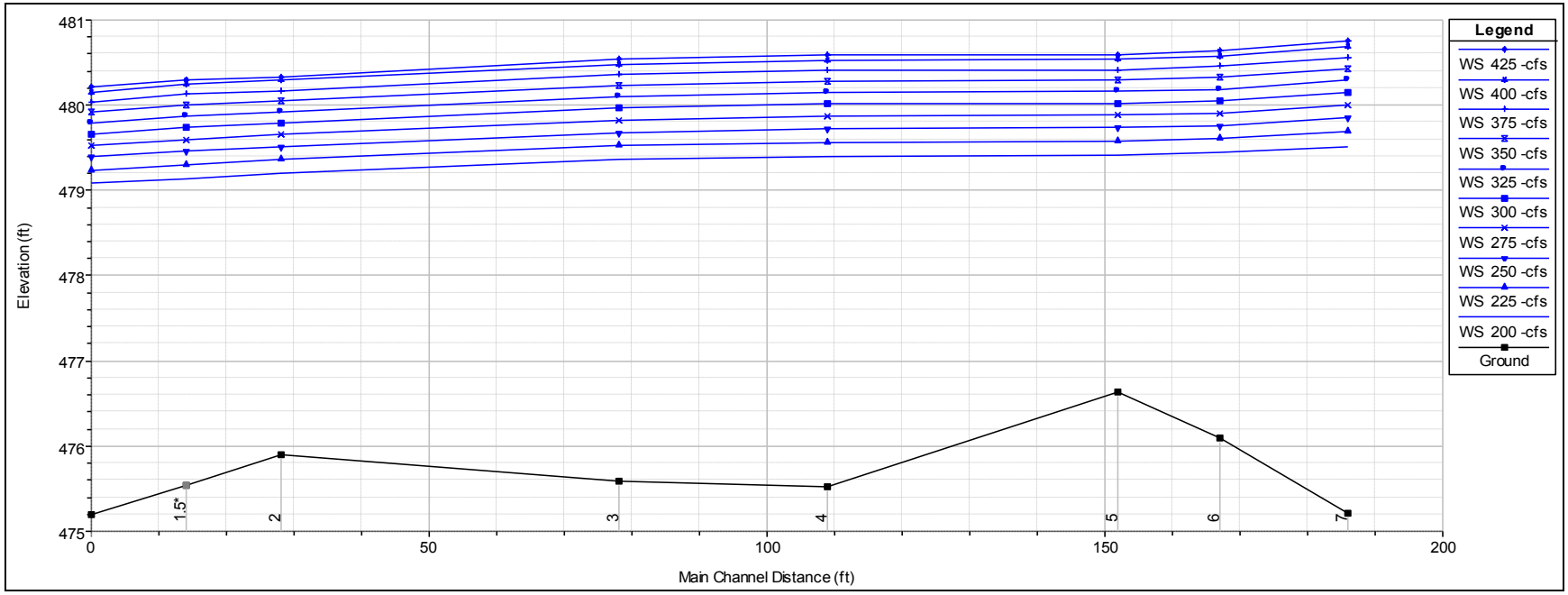


Figure 100 HEC-RAS longitudinal profile output for Reach FGUT8. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

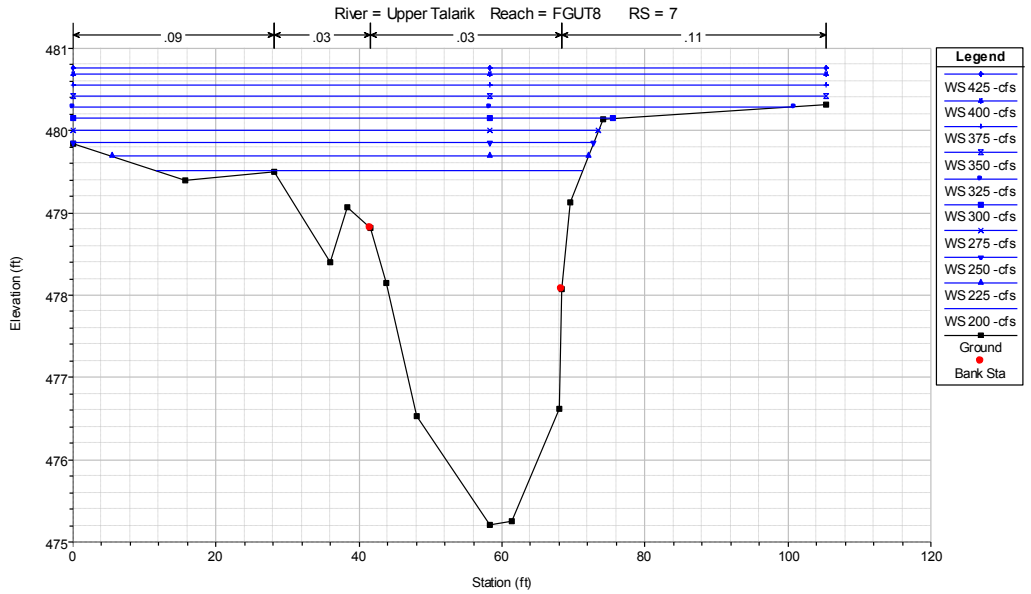


Figure 101 River Station (RS) 7 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

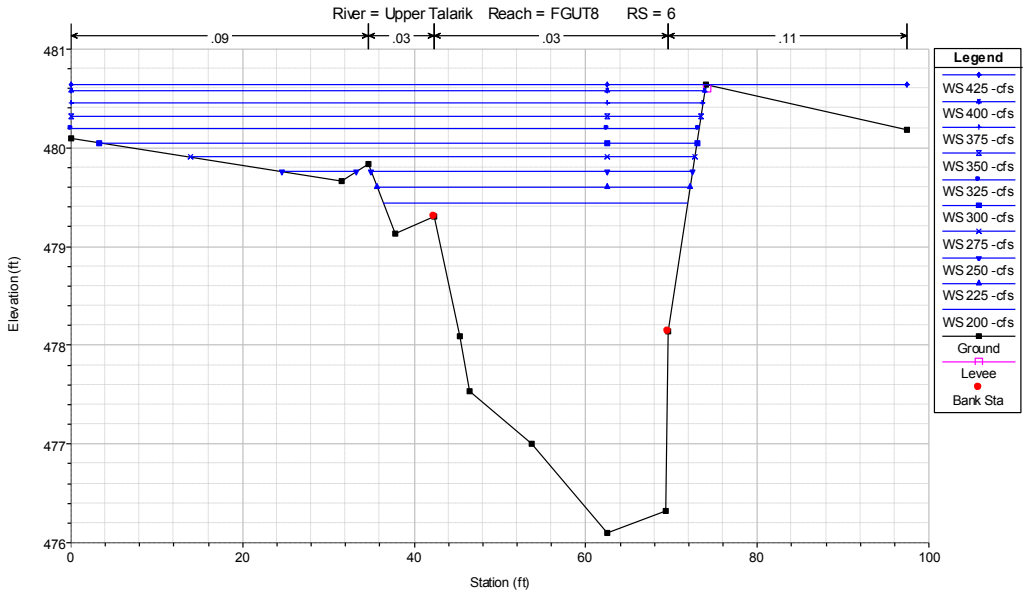


Figure 102 River Station (RS) 6 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

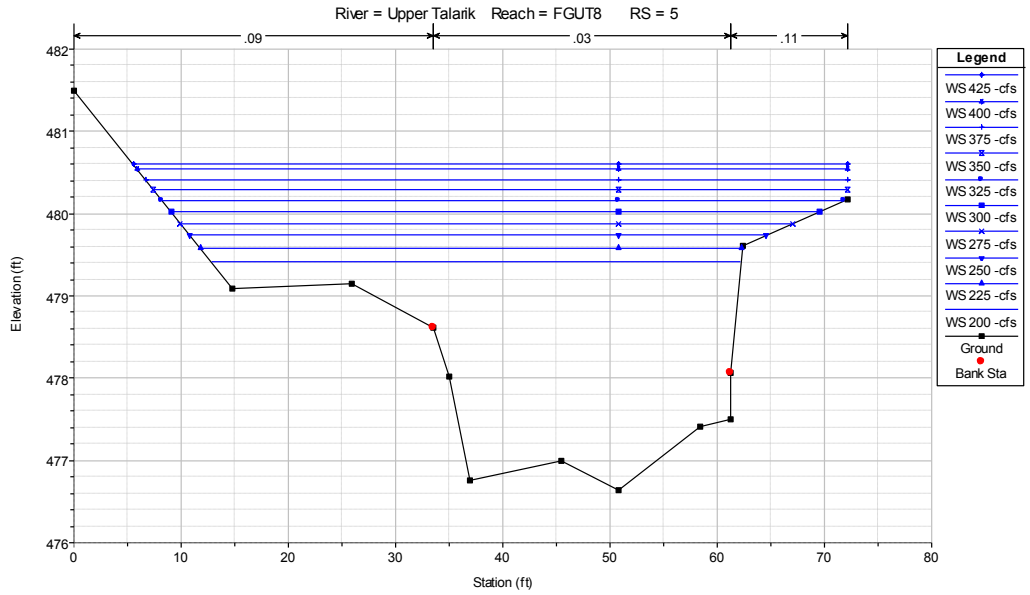


Figure 103 River Station (RS) 5 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

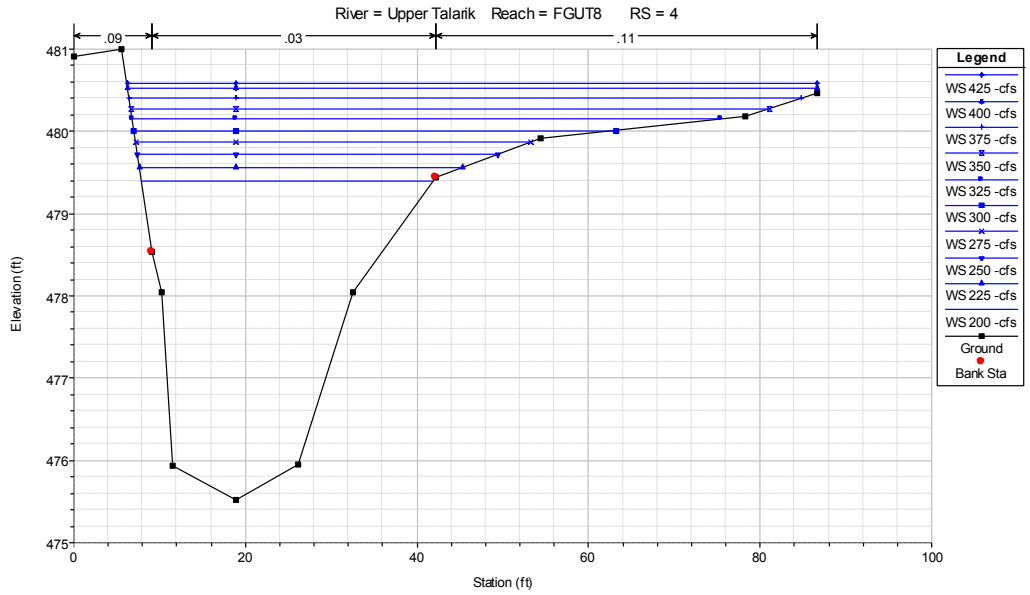


Figure 104 River Station (RS) 4 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

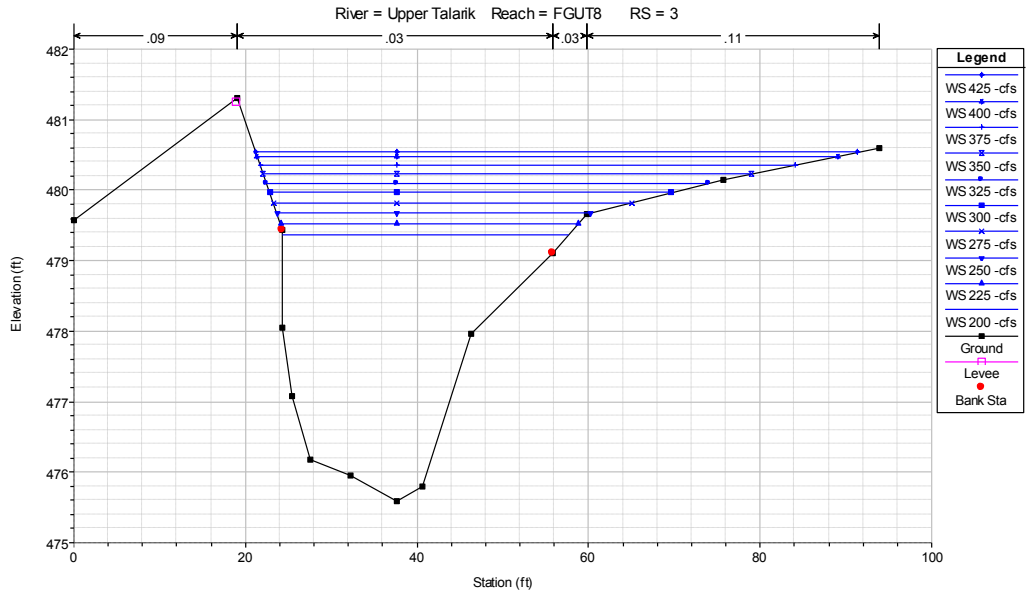


Figure 105 River Station (RS) 3 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

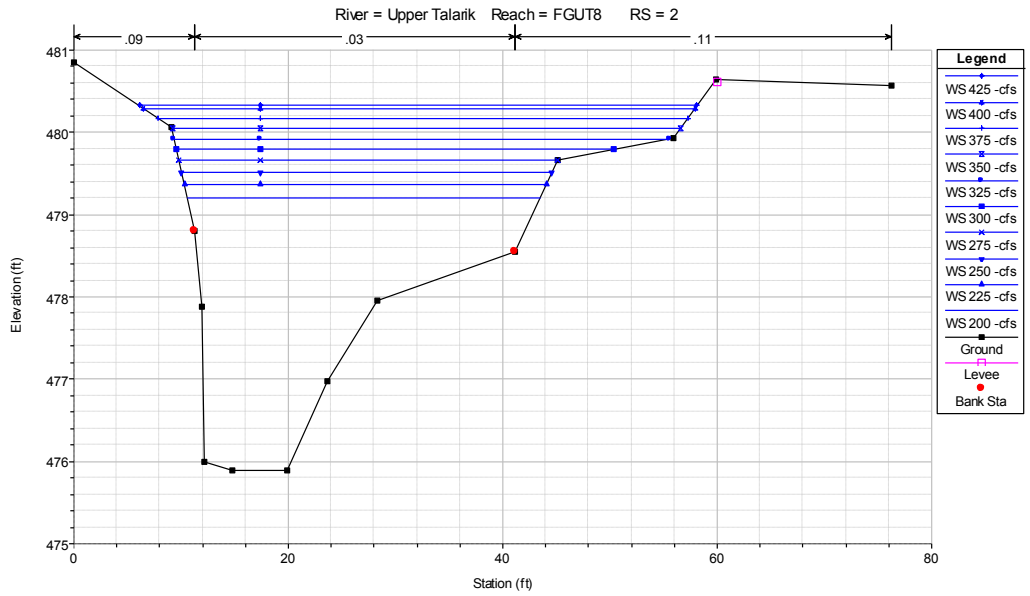


Figure 106 River Station (RS) 2 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8

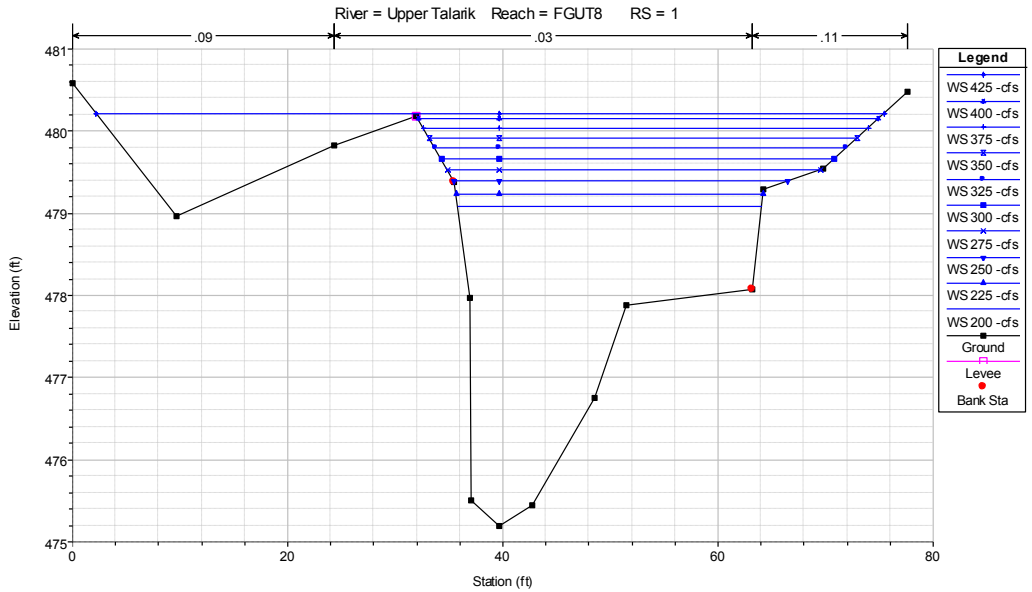


Figure 107 River Station (RS) 1 on River Reach FGUT8. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT8

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT8	7	200-cfs	0.09	16	13	11
FGUT8	7	225-cfs	0.10	18	15	12
FGUT8	7	250-cfs	0.10	18	15	12
FGUT8	7	275-cfs	0.11	20	16	13
FGUT8	7	300-cfs	0.12	22	17	14
FGUT8	7	325-cfs	0.12	22	17	14
FGUT8	7	350-cfs	0.13	23	19	15
FGUT8	7	375-cfs	0.13	23	19	15
FGUT8	7	400-cfs	0.13	23	19	15
FGUT8	7	425-cfs	0.14	25	20	16
FGUT8	6	200-cfs	0.16	29	23	19
FGUT8	6	225-cfs	0.18	32	26	21
FGUT8	6	250-cfs	0.19	34	28	22
FGUT8	6	275-cfs	0.20	36	29	24
FGUT8	6	300-cfs	0.21	38	31	25
FGUT8	6	325-cfs	0.22	40	32	26
FGUT8	6	350-cfs	0.22	40	32	26
FGUT8	6	375-cfs	0.23	41	34	27
FGUT8	6	400-cfs	0.24	43	35	28
FGUT8	6	425-cfs	0.25	45	36	29
FGUT8	5	200-cfs	0.18	32	26	21
FGUT8	5	225-cfs	0.19	34	28	22
FGUT8	5	250-cfs	0.20	36	29	24
FGUT8	5	275-cfs	0.21	38	31	25
FGUT8	5	300-cfs	0.22	40	32	26
FGUT8	5	325-cfs	0.23	41	34	27
FGUT8	5	350-cfs	0.24	43	35	28
FGUT8	5	375-cfs	0.25	45	36	29
FGUT8	5	400-cfs	0.26	47	38	31
FGUT8	5	425-cfs	0.28	50	41	33

INCIPIENT MOTION ANALYSIS: FGUT8

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT8	4	200-cfs	0.12	22	17	14
FGUT8	4	225-cfs	0.13	23	19	15
FGUT8	4	250-cfs	0.14	25	20	16
FGUT8	4	275-cfs	0.15	27	22	18
FGUT8	4	300-cfs	0.16	29	23	19
FGUT8	4	325-cfs	0.17	31	25	20
FGUT8	4	350-cfs	0.18	32	26	21
FGUT8	4	375-cfs	0.18	32	26	21
FGUT8	4	400-cfs	0.19	34	28	22
FGUT8	4	425-cfs	0.21	38	31	25
FGUT8	3	200-cfs	0.14	25	20	16
FGUT8	3	225-cfs	0.15	27	22	18
FGUT8	3	250-cfs	0.16	29	23	19
FGUT8	3	275-cfs	0.17	31	25	20
FGUT8	3	300-cfs	0.18	32	26	21
FGUT8	3	325-cfs	0.19	34	28	22
FGUT8	3	350-cfs	0.20	36	29	24
FGUT8	3	375-cfs	0.20	36	29	24
FGUT8	3	400-cfs	0.21	38	31	25
FGUT8	3	425-cfs	0.23	41	34	27
FGUT8	2	200-cfs	0.26	47	38	31
FGUT8	2	225-cfs	0.27	49	39	32
FGUT8	2	250-cfs	0.28	50	41	33
FGUT8	2	275-cfs	0.29	52	42	34
FGUT8	2	300-cfs	0.31	56	45	36
FGUT8	2	325-cfs	0.32	58	47	38
FGUT8	2	350-cfs	0.33	59	48	39
FGUT8	2	375-cfs	0.34	61	50	40
FGUT8	2	400-cfs	0.35	63	51	41
FGUT8	2	425-cfs	0.38	68	55	45

INCIPIENT MOTION ANALYSIS: FGUT8

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT8	1	200-cfs	0.25	45	36	29
FGUT8	1	225-cfs	0.26	47	38	31
FGUT8	1	250-cfs	0.28	50	41	33
FGUT8	1	275-cfs	0.30	54	44	35
FGUT8	1	300-cfs	0.31	56	45	36
FGUT8	1	325-cfs	0.33	59	48	39
FGUT8	1	350-cfs	0.34	61	50	40
FGUT8	1	375-cfs	0.36	65	52	42
FGUT8	1	400-cfs	0.37	67	54	44
FGUT8	1	425-cfs	0.38	68	55	45

PEBBLE COUNT DISTRIBUTION: FGUT8

Left bank along reference reach FGUT8

Right bank along reference reach FGUT8

Downstream from reference reach FGUT8

Upstream from reference reach FGUT8

PEBBLE COUNT DISTRIBUTION: FGUT8

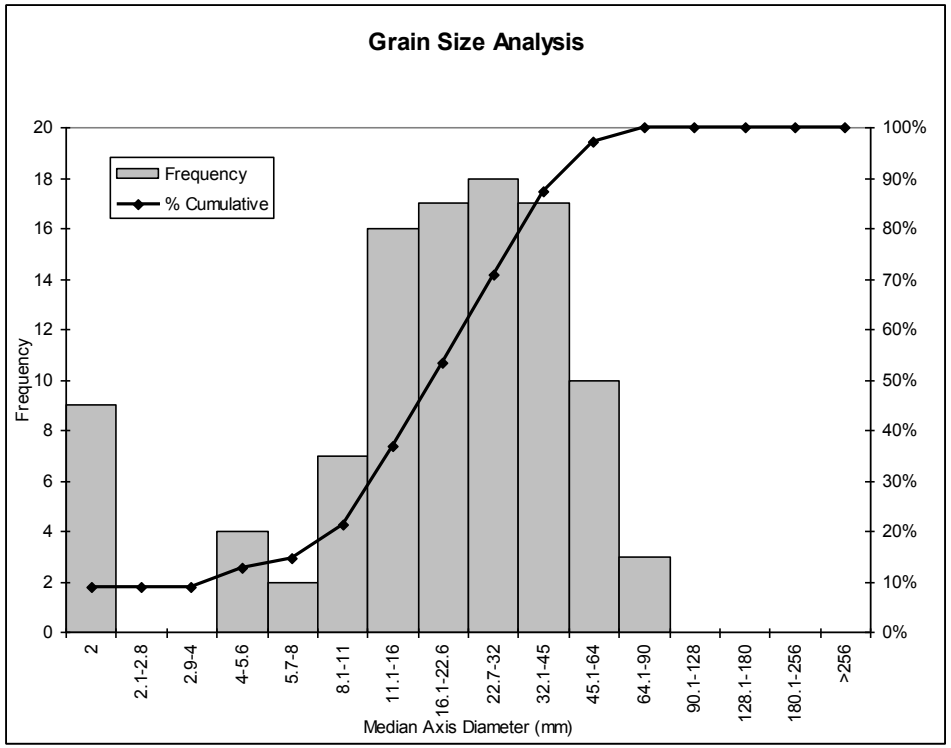
Bank composition detail (right bank) FGUT8

Bank composition detail (left bank) FGUT8

Looking upstream from downstream boundary FGUT8

PEBBLE COUNT DISTRIBUTION: FGUT8

Pebble Count 1

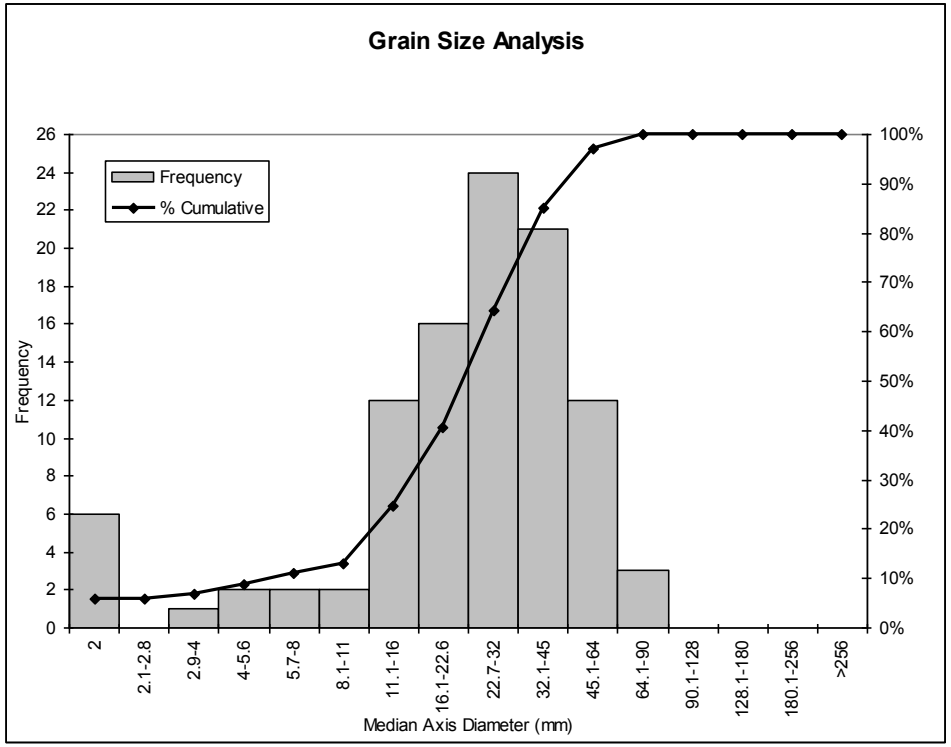


Size Class mm	*Frequency*	*Cumulative %*
2	9	8.7%
2.1-2.8	0	8.7%
2.9-4	0	8.7%
4-5.6	4	12.6%
5.7-8	2	14.6%
8.1-11	7	21.4%
11.1-16	16	36.9%
16.1-22.6	17	53.4%
22.7-32	18	70.9%
32.1-45	17	87.4%
45.1-64	10	97.1%
64.1-90	3	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Pool tail-out near River Station (RS) 7

PEBBLE COUNT DISTRIBUTION: FGUT8

Pebble Count 2



Size Class mm	*Frequency*	*Cumulative %*
2	6	5.9%
2.1-2.8	0	5.9%
2.9-4	1	6.9%
4-5.6	2	8.9%
5.7-8	2	10.9%
8.1-11	2	12.9%
11.1-16	12	24.8%
16.1-22.6	16	40.6%
22.7-32	24	64.4%
32.1-45	21	85.1%
45.1-64	12	97.0%
64.1-90	3	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Mid to lower-end of riffle between River Stations (RS) 5 and 6

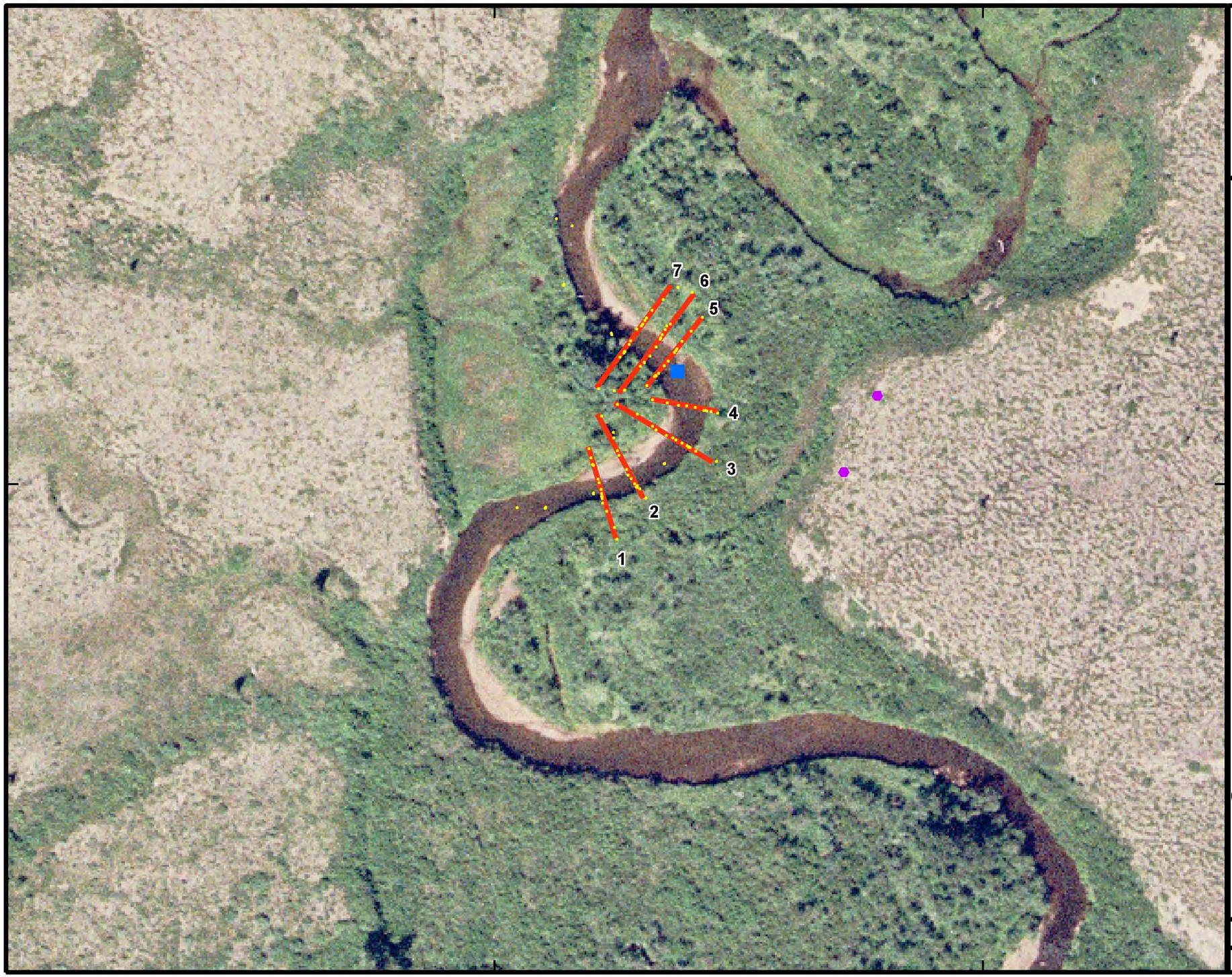
.

1,425,241

1,425,641

1,426,041

2,151,567

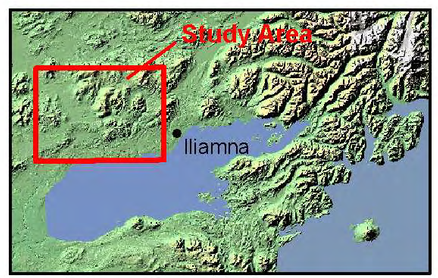


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT8
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,425,241

1,425,641

1,426,041

SITE DESCRIPTION: FGUT8.1

Site Characteristics.

Site Name	FGUT8.1		
Discharge (cfs)	**300 (225-350)**	Width (ft)	**33.9 (32.6-36.8)**
Slope	**0.0020**	Cross-sectional Area (ft^2)	**79 (66-91)**
D_{50}	**30**	D_{84}	**52**
Lat/Long Location	**N59.89273 W155.17953**	Drainage Area (mi^2)	**22**
	% Willow	**40**	
	% Grass	**60**	
	% Tree	**0**	

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 220 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. The downstream control was taken through a transverse bar. A scour hole and a scalloped bank existed at the downstream face of the transverse bar. To account for this, Section 1 was modeled to follow the crest of the transverse bar, adjusting the width to match average channel width. Sections 3 through 5 characterize the riffle which serves as the reference reach. A relic channel exists behind a gravel bar along the right bank of the riffle. Sections 5 through 6 characterize a run/glide upstream of the riffle. Sections 3 through 1 characterize the downstream pool.

The incipient motion analysis and the geometry through the reach show strong agreement. For a Shields number of 0.017, the D_{84} begins to move through Sections 3 and 5 at a flow of 350 cfs, at a flow of 250 cfs through Section 6 and 300 cfs through Section 4. For a Shields number of 0.026, the D_{50} begins to move through the riffle within the range of channel forming discharges. Flows between 275 and 325 cfs matches the geometry well, overtopping the mid-channel bar on Section 1, the right bank on Section 2, and the left bank on Sections 3, 5 and 6.

The reference reach sections (Sections 5 through 3) along with the upstream glide (Section 6) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT8.1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT 8.1	6	225-cfs	225	32.6	66	2.0	2.5	0.0024	3.4	0.43	0.28	0.032
FGUT 8.1	6	250-cfs	250	32.7	69	2.1	2.6	0.0024	3.6	0.44	0.30	0.032
FGUT 8.1	6	275-cfs	275	32.8	73	2.2	2.7	0.0025	3.8	0.44	0.32	0.032
FGUT 8.1	6	300-cfs	300	32.8	76	2.3	2.8	0.0026	3.9	0.45	0.35	0.032
FGUT 8.1	6	325-cfs	325	32.8	79	2.4	2.9	0.0027	4.1	0.46	0.37	0.032
FGUT 8.1	6	350-cfs	350	32.8	82	2.5	3.0	0.0028	4.3	0.47	0.40	0.032
FGUT 8.1	5	225-cfs	225	33.5	74	2.2	2.8	0.0016	3.0	0.36	0.21	0.032
FGUT 8.1	5	250-cfs	250	33.5	78	2.3	2.9	0.0016	3.2	0.36	0.22	0.032
FGUT 8.1	5	275-cfs	275	33.6	82	2.4	3.0	0.0017	3.3	0.37	0.24	0.032
FGUT 8.1	5	300-cfs	300	33.6	85	2.5	3.1	0.0017	3.4	0.38	0.25	0.032
FGUT 8.1	5	325-cfs	325	33.6	88	2.6	3.2	0.0018	3.6	0.39	0.27	0.032
FGUT 8.1	5	350-cfs	350	33.6	91	2.7	3.3	0.0018	3.7	0.40	0.29	0.032
FGUT 8.1	4	225-cfs	225	35.3	69	2.0	2.6	0.0020	3.2	0.41	0.24	0.032
FGUT 8.1	4	250-cfs	250	35.6	73	2.0	2.7	0.0021	3.4	0.41	0.26	0.032
FGUT 8.1	4	275-cfs	275	36.0	77	2.1	2.8	0.0021	3.5	0.42	0.28	0.032
FGUT 8.1	4	300-cfs	300	36.3	80	2.2	2.9	0.0022	3.6	0.43	0.29	0.032
FGUT 8.1	4	325-cfs	325	36.6	84	2.3	3.0	0.0022	3.8	0.44	0.31	0.032
FGUT 8.1	4	350-cfs	350	36.8	87	2.4	3.1	0.0023	3.9	0.45	0.33	0.032
FGUT 8.1	3	225-cfs	225	33.3	73	2.2	2.7	0.0016	3.0	0.36	0.21	0.032
FGUT 8.1	3	250-cfs	250	33.3	77	2.3	2.8	0.0016	3.2	0.37	0.23	0.032
FGUT 8.1	3	275-cfs	275	33.3	80	2.4	2.9	0.0017	3.4	0.38	0.24	0.032
FGUT 8.1	3	300-cfs	300	33.3	83	2.5	3.0	0.0017	3.5	0.39	0.26	0.032
FGUT 8.1	3	325-cfs	325	33.3	86	2.6	3.1	0.0018	3.6	0.40	0.28	0.032
FGUT 8.1	3	350-cfs	350	33.3	89	2.7	3.2	0.0019	3.8	0.41	0.30	0.032
FGUT 8.1	2	225-cfs	225	39.5	96	2.4	5.0	0.0008	2.3	0.26	0.12	0.032
FGUT 8.1	2	250-cfs	250	39.5	101	2.6	5.1	0.0009	2.5	0.27	0.13	0.032
FGUT 8.1	2	275-cfs	275	39.5	105	2.7	5.2	0.0009	2.6	0.28	0.15	0.032
FGUT 8.1	2	300-cfs	300	39.5	109	2.8	5.3	0.0010	2.7	0.29	0.16	0.032
FGUT 8.1	2	325-cfs	325	39.5	113	2.9	5.4	0.0010	2.8	0.29	0.16	0.032
FGUT 8.1	2	350-cfs	350	39.5	116	2.9	5.5	0.0010	2.9	0.30	0.18	0.032

HEC-RAS OUTPUT SUMMARY TABLE: FGUT8.1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT 8.1	1	225-cfs	225	45.6	63	1.4	2.9	0.0042	3.5	0.53	0.33	0.032
FGUT 8.1	1	250-cfs	250	47.7	69	1.4	3.0	0.0042	3.6	0.53	0.35	0.032
FGUT 8.1	1	275-cfs	275	49.6	74	1.5	3.1	0.0042	3.7	0.54	0.36	0.032
FGUT 8.1	1	300-cfs	300	51.4	79	1.5	3.2	0.0042	3.8	0.54	0.37	0.032
FGUT 8.1	1	325-cfs	325	51.5	83	1.6	3.3	0.0042	3.9	0.55	0.39	0.032
FGUT 8.1	1	350-cfs	350	51.5	86	1.7	3.4	0.0042	4.0	0.55	0.41	0.032

HEC-RAS LONGITUDINAL PROFILE: FGUT8.1

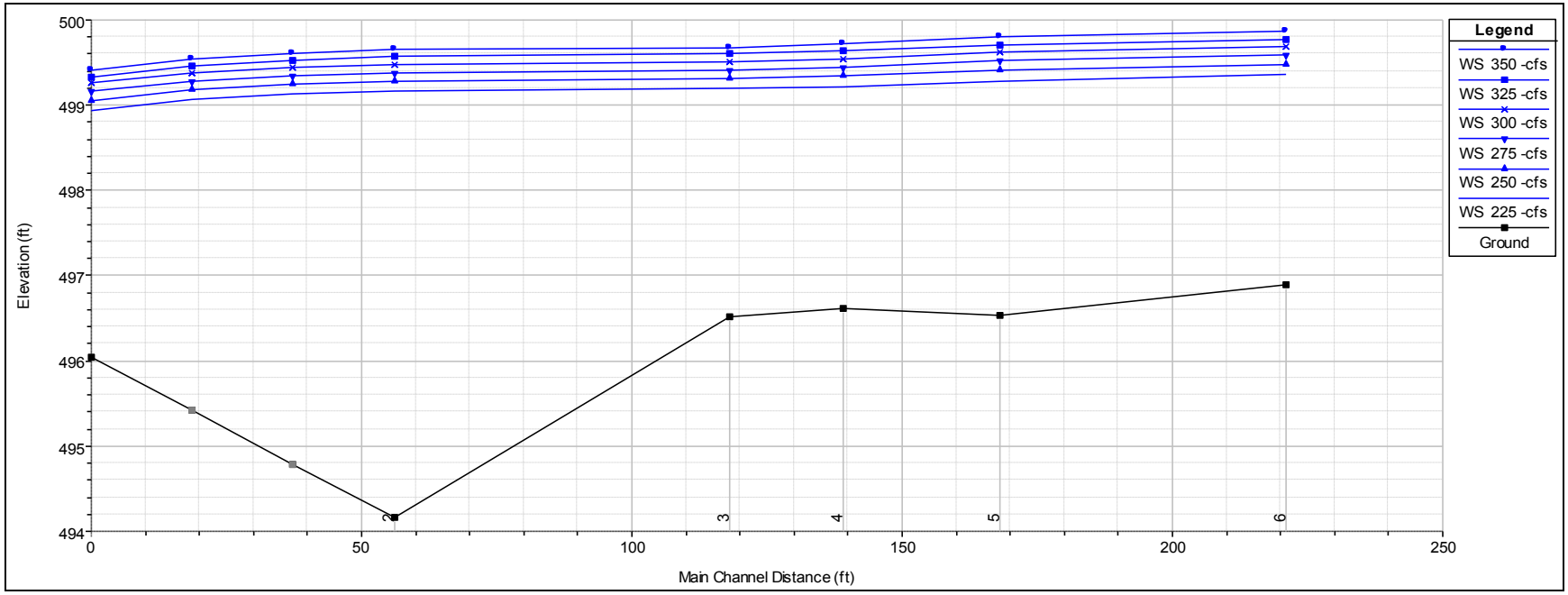


Figure 108 HEC-RAS longitudinal profile output for Reach FGUT8.1. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8.1

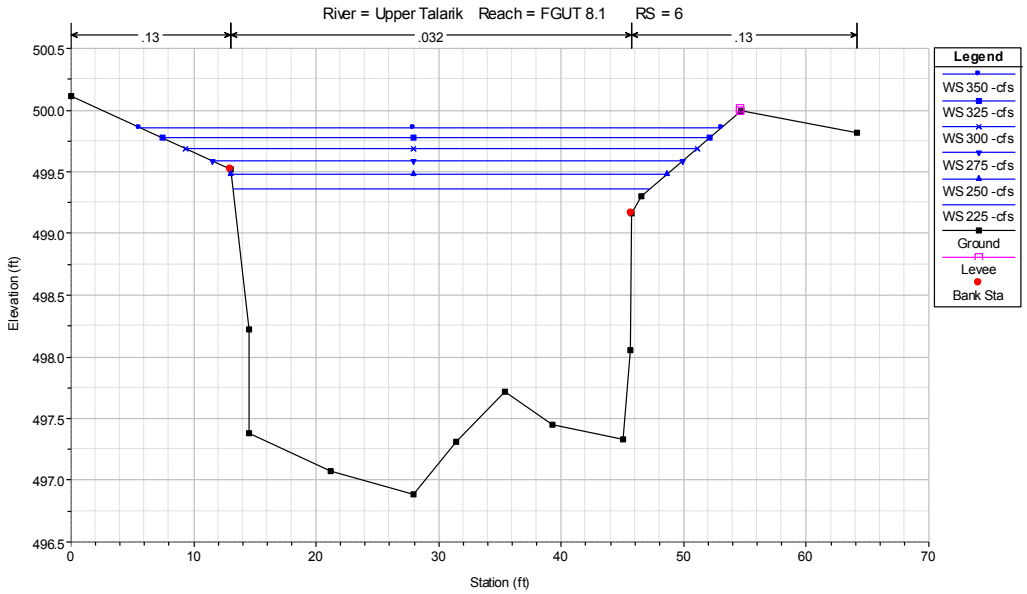


Figure 109 River Station (RS) 6 on River Reach FGUT8.1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8.1

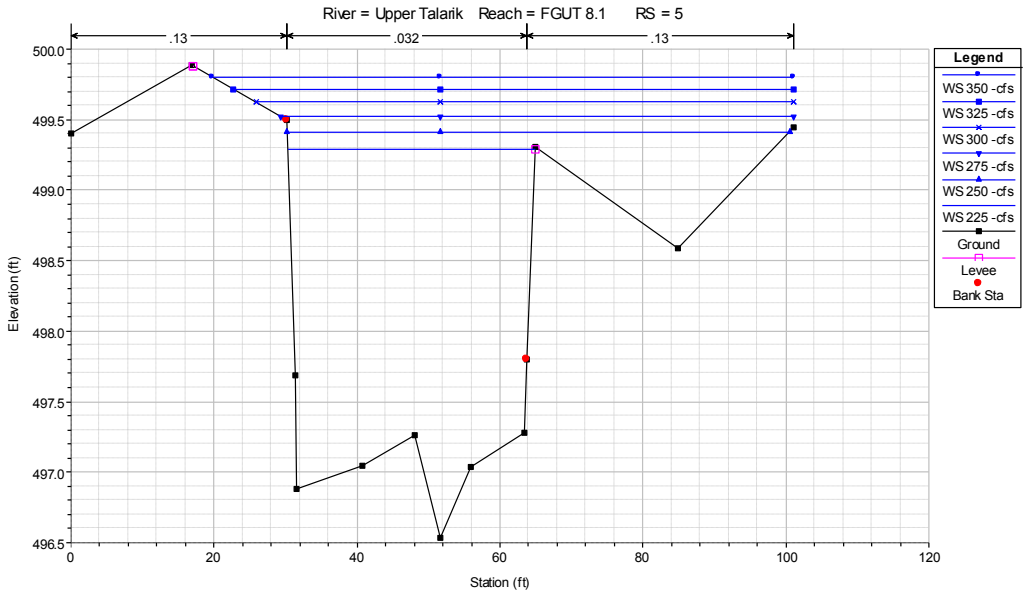


Figure 110 River Station (RS) 5 on River Reach FGUT8.1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8.1

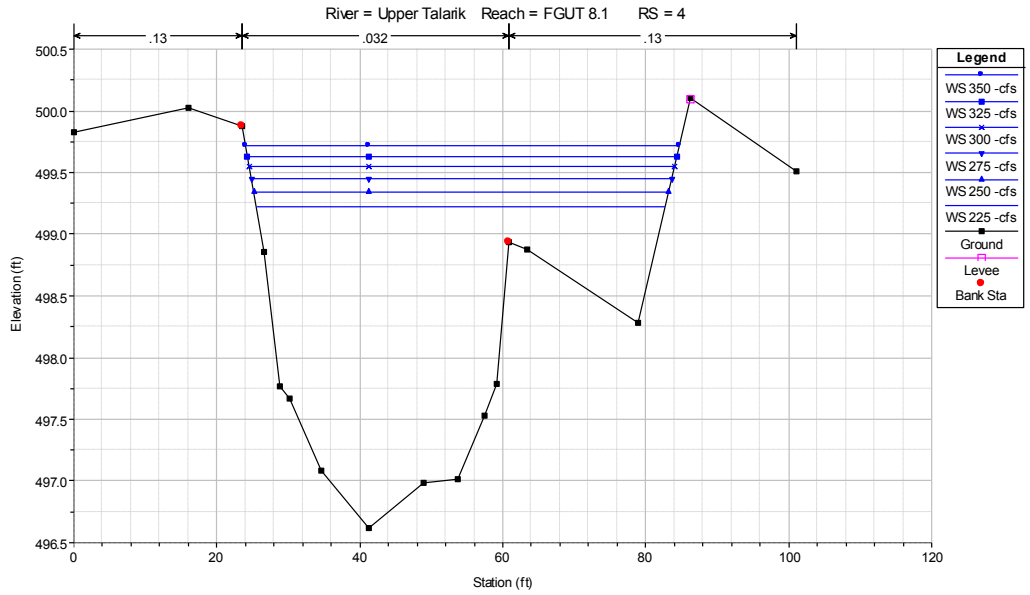


Figure 111 River Station (RS) 4 on River Reach FGUT8.1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8.1

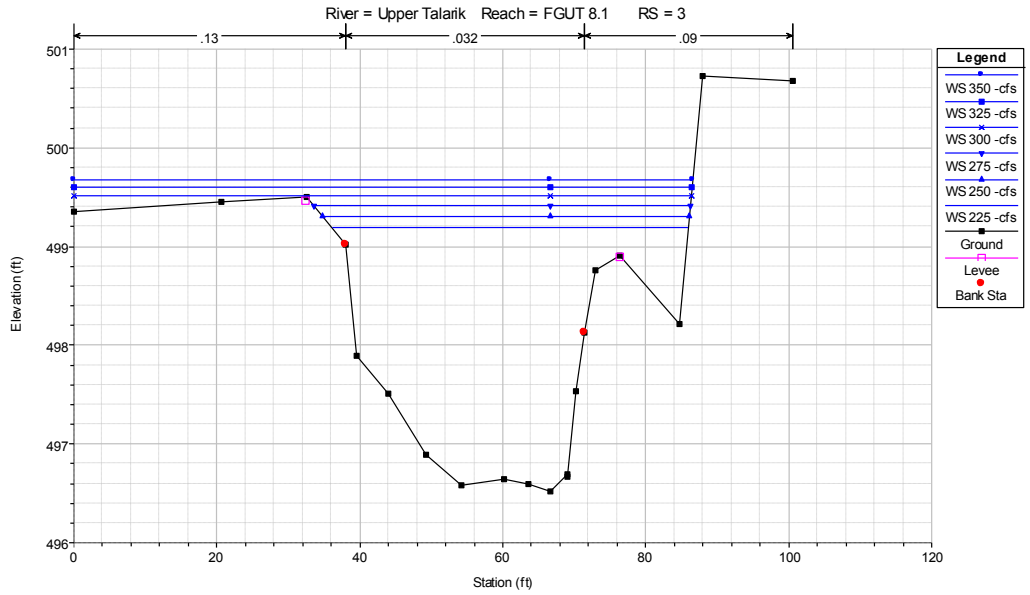


Figure 112 River Station (RS) 3 on River Reach FGUT8.1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8.1

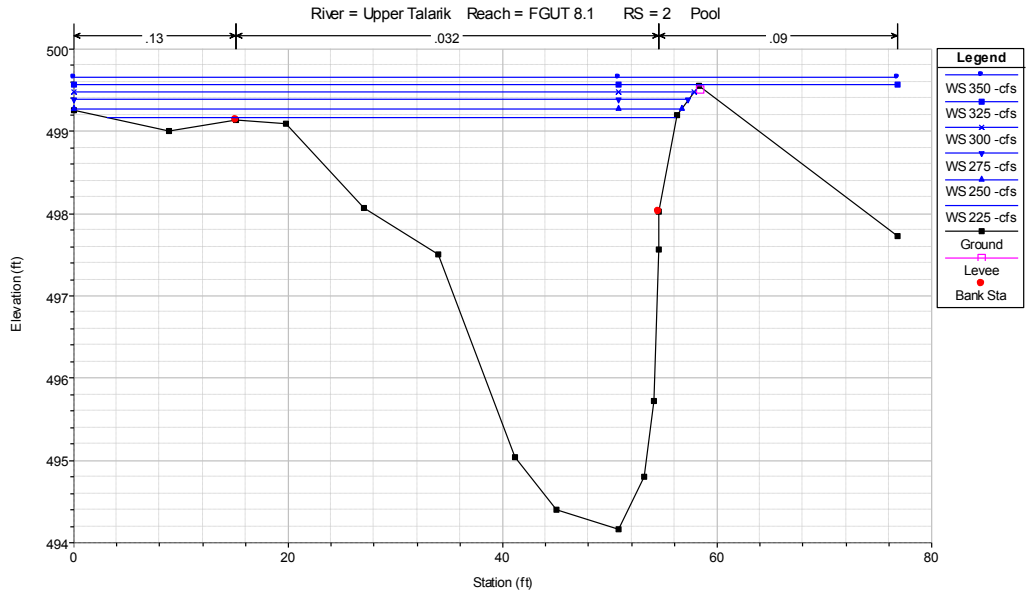


Figure 113 River Station (RS) 2 on River Reach FGUT8.1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT8.1

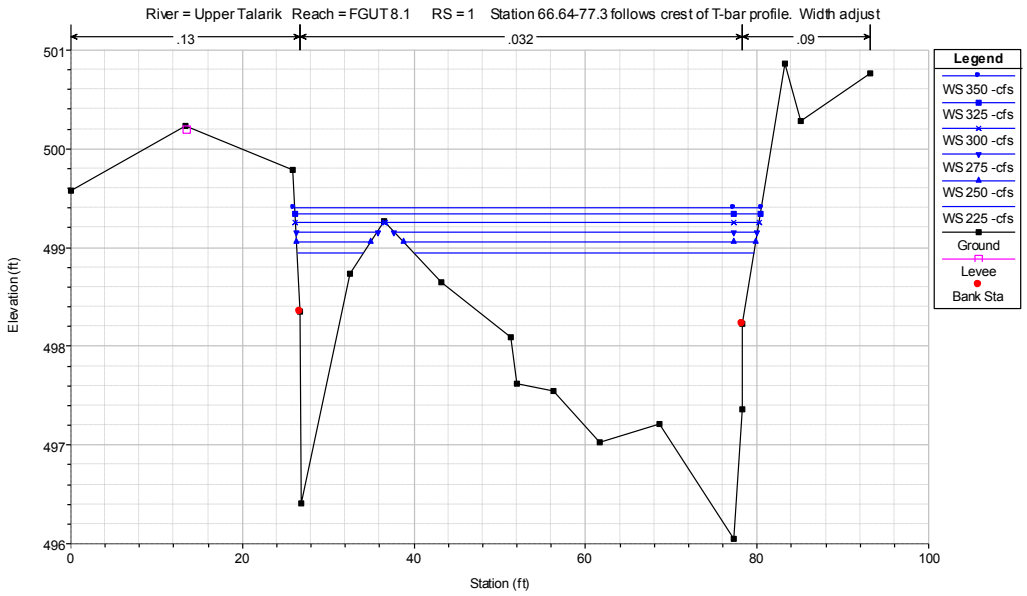


Figure 114 River Station (RS) 1 on River Reach FGUT8.1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGUT8.1

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT 8.1	6	225-cfs	0.28	50	41	33
FGUT 8.1	6	250-cfs	0.30	54	44	35
FGUT 8.1	6	275-cfs	0.32	58	47	38
FGUT 8.1	6	300-cfs	0.35	63	51	41
FGUT 8.1	6	325-cfs	0.37	67	54	44
FGUT 8.1	6	350-cfs	0.40	72	58	47
FGUT 8.1	5	225-cfs	0.21	38	31	25
FGUT 8.1	5	250-cfs	0.22	40	32	26
FGUT 8.1	5	275-cfs	0.24	43	35	28
FGUT 8.1	5	300-cfs	0.25	45	36	29
FGUT 8.1	5	325-cfs	0.27	49	39	32
FGUT 8.1	5	350-cfs	0.29	52	42	34
FGUT 8.1	4	225-cfs	0.24	43	35	28
FGUT 8.1	4	250-cfs	0.26	47	38	31
FGUT 8.1	4	275-cfs	0.28	50	41	33
FGUT 8.1	4	300-cfs	0.29	52	42	34
FGUT 8.1	4	325-cfs	0.31	56	45	36
FGUT 8.1	4	350-cfs	0.33	59	48	39
FGUT 8.1	3	225-cfs	0.21	38	31	25
FGUT 8.1	3	250-cfs	0.23	41	34	27
FGUT 8.1	3	275-cfs	0.24	43	35	28
FGUT 8.1	3	300-cfs	0.26	47	38	31
FGUT 8.1	3	325-cfs	0.28	50	41	33
FGUT 8.1	3	350-cfs	0.30	54	44	35
FGUT 8.1	2	225-cfs	0.12	22	17	14
FGUT 8.1	2	250-cfs	0.13	23	19	15
FGUT 8.1	2	275-cfs	0.15	27	22	18
FGUT 8.1	2	300-cfs	0.16	29	23	19

INCIPIENT MOTION ANALYSIS: FGUT8.1

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGUT 8.1	2	325-cfs	0.16	29	23	19
FGUT 8.1	2	350-cfs	0.18	32	26	21
FGUT 8.1	1	225-cfs	0.33	59	48	39
FGUT 8.1	1	250-cfs	0.35	63	51	41
FGUT 8.1	1	275-cfs	0.36	65	52	42
FGUT 8.1	1	300-cfs	0.37	67	54	44
FGUT 8.1	1	325-cfs	0.39	70	57	46
FGUT 8.1	1	350-cfs	0.41	74	60	48

PHOTOGRAPH DOCUMENTATION: FGUT8.1

Left bank along reference reach FGUT8.1

Right bank along reference reach FGUT8.1

Downstream from reference reach FGUT8.1

Upstream from reference reach FGUT8.1

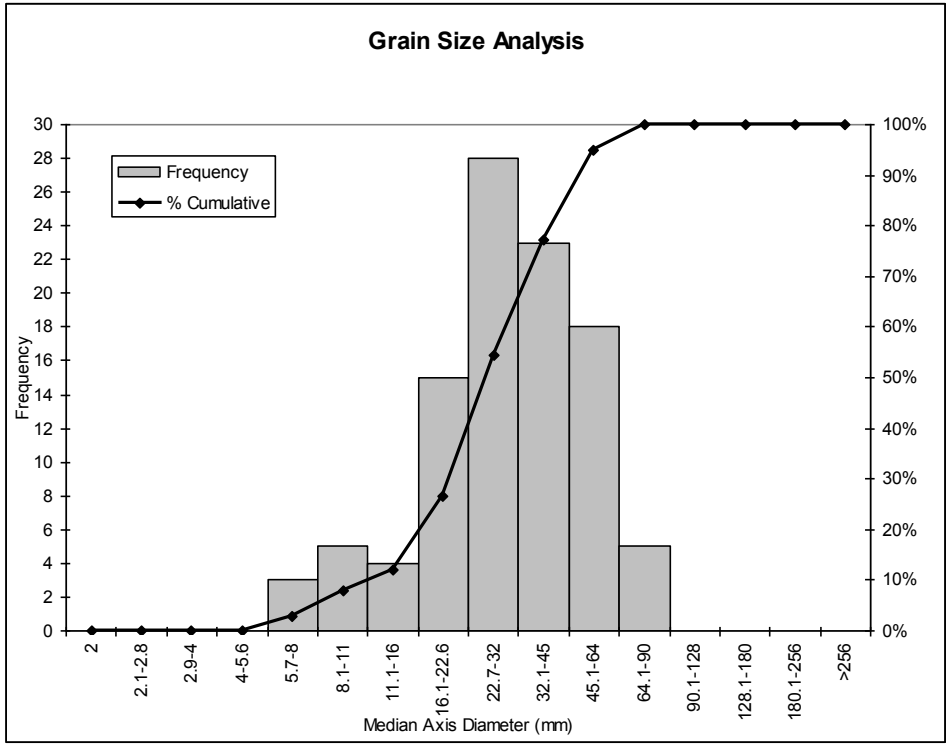
PHOTOGRAPH DOCUMENTATION: FGUT8.1

Bank composition detail (right bank) FGUT8.1

Bank composition detail (left bank) FGUT8.1

Looking downstream from upstream boundary FGUT8.1

PEBBLE COUNT DISTRIBUTION: FGUT8.1



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	0	.0%
5.7-8	3	3.0%
8.1-11	5	7.9%
11.1-16	4	11.9%
16.1-22.6	15	26.7%
22.7-32	28	54.5%
32.1-45	23	77.2%
45.1-64	18	95.0%
64.1-90	5	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 3 and 4

1,423,244

1,423,644

1,424,044

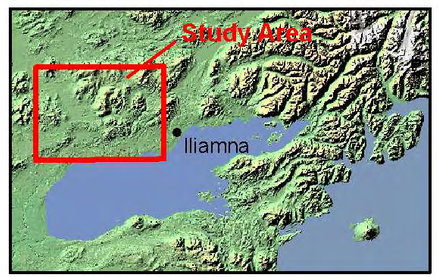
2,154,561

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT8.1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,423,244

1,423,644

1,424,044

SITE DESCRIPTION: FGUT9

Site Characteristics.

Site Name		FGUT9	
Discharge (cfs)	**150 (120-180)**	Width (ft)	**23.9 (23.3-24.1)**
Slope	**0.0030**	Cross-sectional Area (ft^2)	**43 (36-50)**
D_{50}	**14**	D_{84}	**28**
Lat/Long Location	**N59.90818 W155.20040**	Drainage Area (mi^2)	**12**
% Willow		**50**	
% Grass		**50**	
% Tree		**0**	

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed six cross-sections along 230 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the downstream pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 4 and 3 characterize the riffle through which the pebble count was taken. This riffle also serves as the reference reach. Sections 6 through 4 and Sections 3 through 1 characterize the two pools surveyed within this reach. The HDR hydrology gage (UT100D) is located between Sections 1 and 2. Roughly two years of hydrology data (7/04 – 6/06) allowed for an idea of the frequency and magnitude of discharge events (see attached hydrograph).

According to the two years of hydrology data documented in the UT100D hydrograph, flows between 130 and 150 cfs appear to approximate the frequency of a channel-forming discharge. The incipient motion analysis shows that both the D_{50} and D_{84} move through the reach well before 120 cfs. Therefore, the choice of channel forming discharges relies on the hydrology and geometry through this reach. Flows between 150 and 180 cfs match the inflection point along the left bank throughout the reach. On cross-section 3, flows between 130 and 150 cfs overtop both banks.

The reference reach sections (Sections 4 and 3) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT9

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT9	6	120-cfs	120	30.8	47	1.5	2.4	0.0019	2.6	0.37	0.17	0.032
FGUT9	6	130-cfs	130	31.2	50	1.6	2.5	0.0018	2.6	0.36	0.17	0.032
FGUT9	6	140-cfs	140	31.5	53	1.7	2.6	0.0018	2.7	0.36	0.18	0.032
FGUT9	6	150-cfs	150	31.8	55	1.7	2.7	0.0017	2.7	0.36	0.18	0.032
FGUT9	6	160-cfs	160	32.2	58	1.8	2.8	0.0017	2.8	0.36	0.18	0.032
FGUT9	6	170-cfs	170	32.5	61	1.9	2.8	0.0017	2.8	0.36	0.19	0.032
FGUT9	6	180-cfs	180	32.7	63	1.9	2.9	0.0017	2.9	0.36	0.19	0.032
FGUT9	5	120-cfs	120	25.4	39	1.6	2.5	0.0033	3.1	0.43	0.29	0.035
FGUT9	5	130-cfs	130	25.6	42	1.6	2.5	0.0033	3.1	0.43	0.31	0.036
FGUT9	5	140-cfs	140	25.9	44	1.7	2.6	0.0034	3.2	0.43	0.33	0.036
FGUT9	5	150-cfs	150	26.2	46	1.8	2.7	0.0034	3.2	0.43	0.34	0.037
FGUT9	5	160-cfs	160	26.4	48	1.8	2.8	0.0035	3.3	0.43	0.36	0.037
FGUT9	5	170-cfs	170	26.6	50	1.9	2.9	0.0036	3.4	0.43	0.38	0.038
FGUT9	5	180-cfs	180	26.8	52	1.9	2.9	0.0036	3.5	0.44	0.40	0.038
FGUT9	4	120-cfs	120	23.3	36	1.5	2.0	0.0033	3.3	0.47	0.30	0.033
FGUT9	4	130-cfs	130	23.4	38	1.6	2.1	0.0032	3.4	0.47	0.30	0.033
FGUT9	4	140-cfs	140	23.6	40	1.7	2.2	0.0031	3.5	0.47	0.31	0.033
FGUT9	4	150-cfs	150	23.7	42	1.8	2.3	0.0030	3.5	0.46	0.31	0.033
FGUT9	4	160-cfs	160	23.8	44	1.9	2.4	0.0029	3.5	0.46	0.31	0.033
FGUT9	4	170-cfs	170	23.9	46	1.9	2.4	0.0028	3.6	0.46	0.32	0.033
FGUT9	4	180-cfs	180	24.0	48	2.0	2.5	0.0028	3.6	0.45	0.32	0.033
FGUT9	3	120-cfs	120	24.0	37	1.6	2.2	0.0032	3.2	0.46	0.29	0.033
FGUT9	3	130-cfs	130	24.1	39	1.6	2.3	0.0032	3.3	0.45	0.30	0.033
FGUT9	3	140-cfs	140	24.1	42	1.7	2.4	0.0031	3.4	0.45	0.31	0.034
FGUT9	3	150-cfs	150	24.1	44	1.8	2.5	0.0030	3.4	0.44	0.31	0.034
FGUT9	3	160-cfs	160	24.1	46	1.9	2.6	0.0029	3.5	0.44	0.31	0.034
FGUT9	3	170-cfs	170	24.1	48	2.0	2.7	0.0028	3.5	0.44	0.32	0.034
FGUT9	3	180-cfs	180	24.1	50	2.1	2.7	0.0027	3.5	0.43	0.32	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGUT9

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT9	2	120-cfs	120	20.4	38	1.9	3.7	0.0023	3.2	0.41	0.23	0.032
FGUT9	2	130-cfs	130	20.6	40	2.0	3.8	0.0024	3.3	0.41	0.25	0.032
FGUT9	2	140-cfs	140	20.7	42	2.0	3.8	0.0024	3.4	0.42	0.26	0.032
FGUT9	2	150-cfs	150	20.9	44	2.1	3.9	0.0024	3.4	0.42	0.27	0.032
FGUT9	2	160-cfs	160	21.1	46	2.2	4.0	0.0025	3.5	0.42	0.29	0.032
FGUT9	2	170-cfs	170	21.2	47	2.2	4.1	0.0024	3.5	0.41	0.28	0.032
FGUT9	2	180-cfs	180	21.2	49	2.3	4.2	0.0023	3.6	0.41	0.29	0.032
FGUT9	1	120-cfs	120	20.5	34	1.7	1.9	0.0034	3.5	0.48	0.31	0.032
FGUT9	1	130-cfs	130	20.5	36	1.8	2.0	0.0034	3.6	0.48	0.33	0.032
FGUT9	1	140-cfs	140	20.6	38	1.8	2.1	0.0034	3.7	0.48	0.34	0.032
FGUT9	1	150-cfs	150	20.9	40	1.9	2.2	0.0034	3.8	0.48	0.36	0.032
FGUT9	1	160-cfs	160	21.1	41	2.0	2.3	0.0034	3.9	0.49	0.37	0.032
FGUT9	1	170-cfs	170	21.3	43	2.0	2.3	0.0034	3.9	0.49	0.38	0.032
FGUT9	1	180-cfs	180	21.5	45	2.1	2.4	0.0034	4.0	0.49	0.39	0.032

HEC-RAS LONGITUDINAL PROFILE: FGUT9

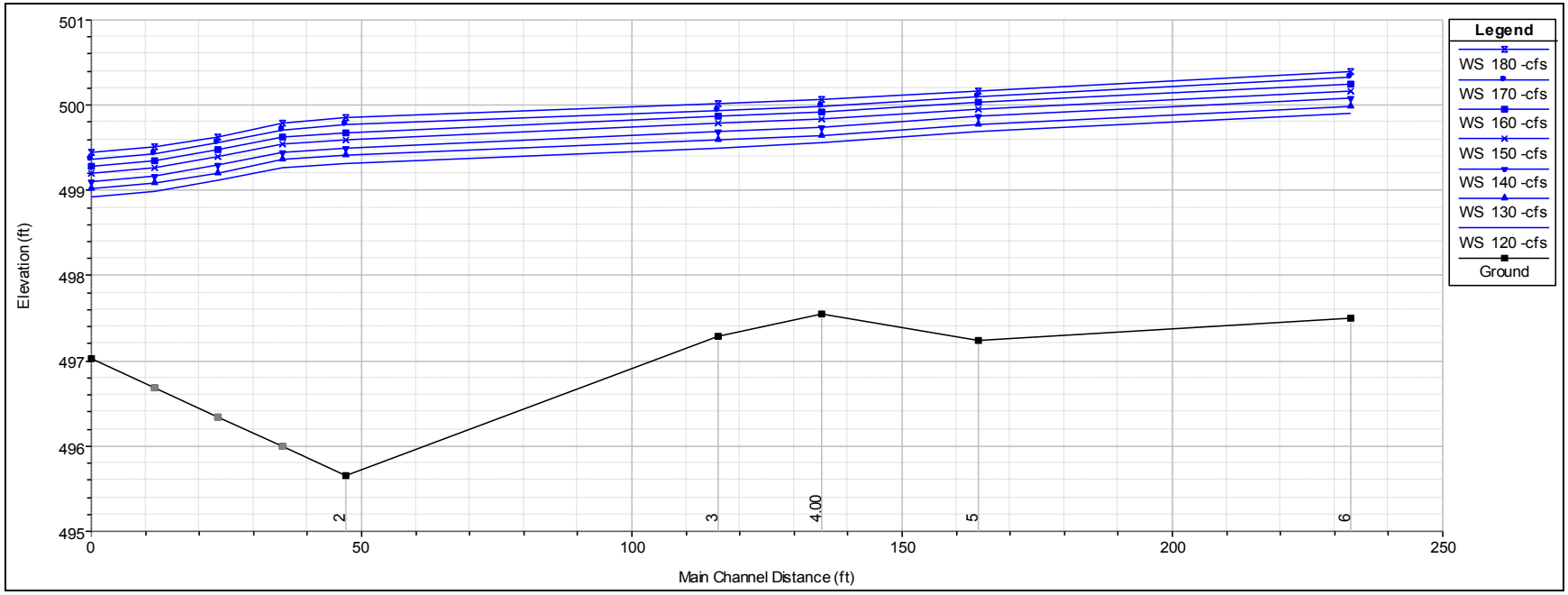


Figure 115 HEC-RAS longitudinal profile output for Reach FGUT9. Numbers 1-6 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT9

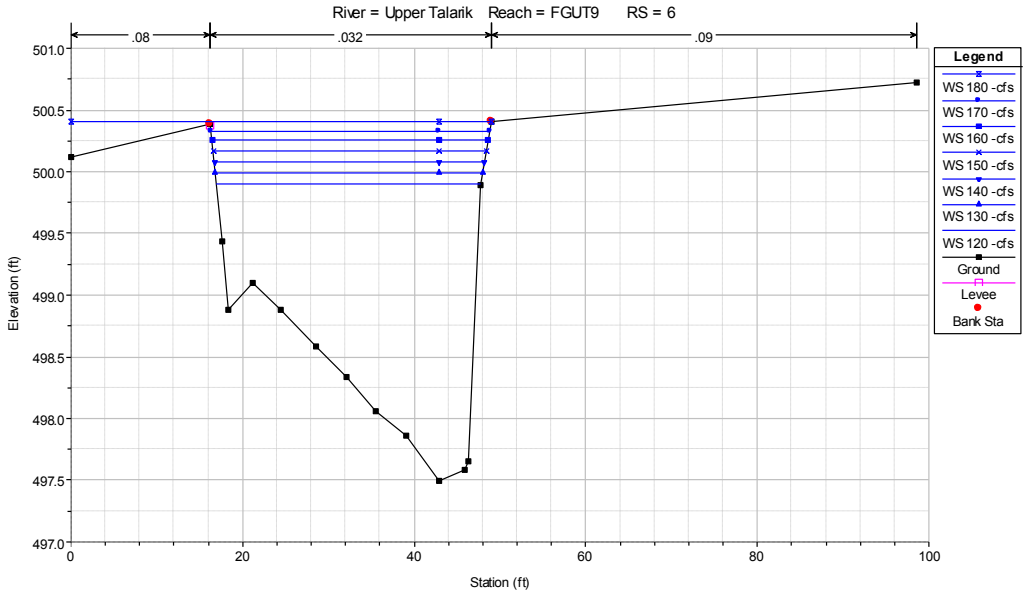


Figure 116 River Station (RS) 6 on River Reach FGUT9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT9

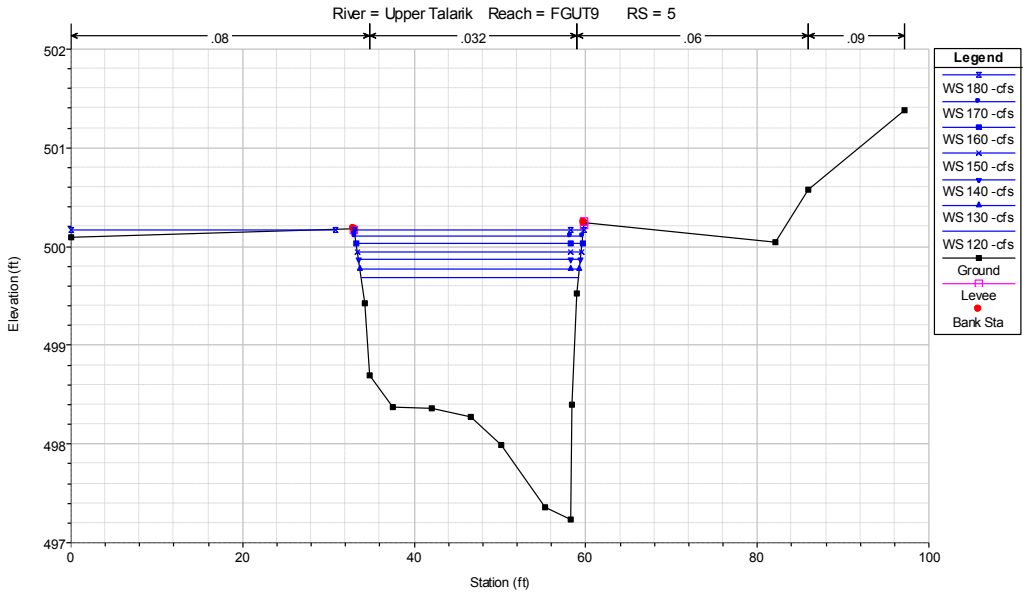


Figure 117 River Station (RS) 5 on River Reach FGUT9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT9

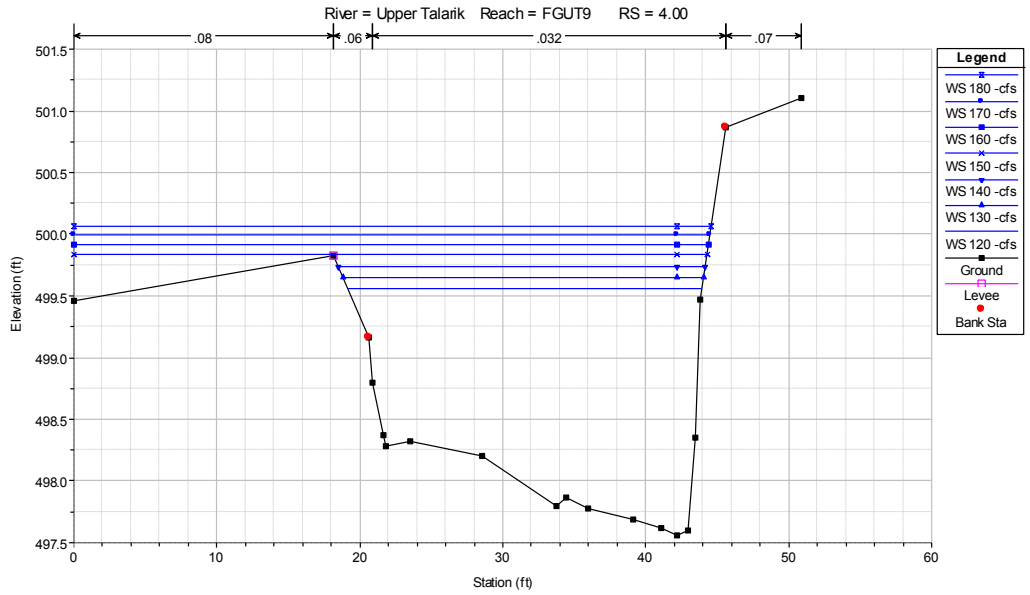


Figure 118 River Station (RS) 4 on River Reach FGUT9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT9

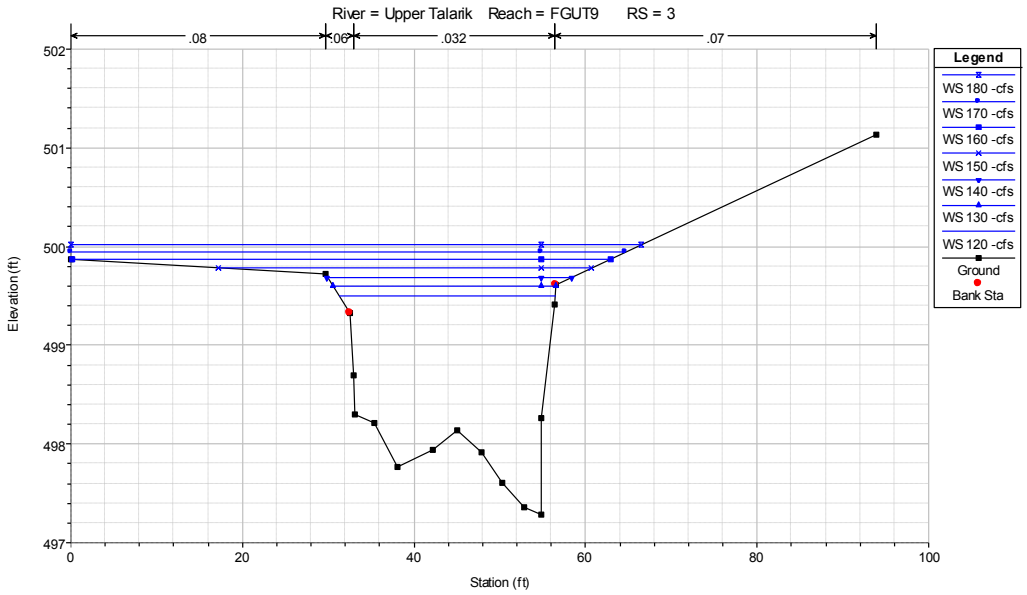


Figure 119 River Station (RS) 3 on River Reach FGUT9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT9

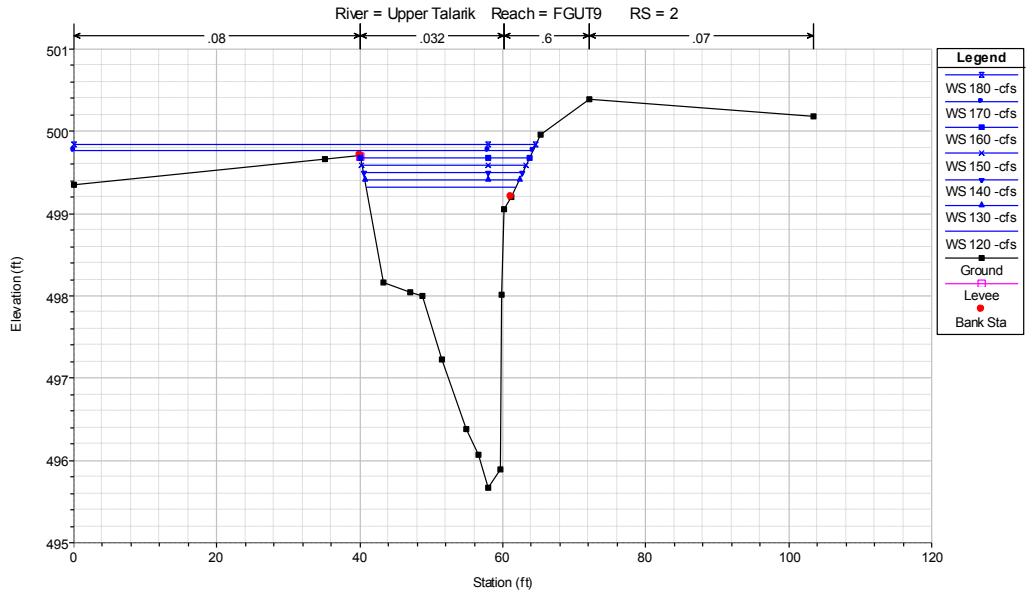


Figure 120 River Station (RS) 2 on River Reach FGUT9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT9

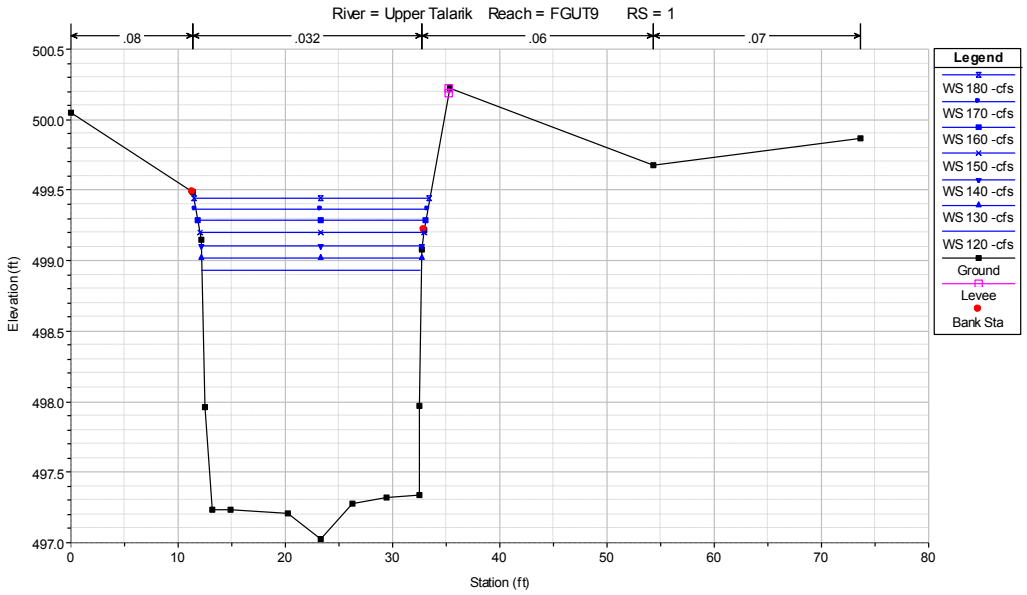


Figure 121 River Station (RS) 1 on River Reach FGUT9. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANLYSIS: FGUT9

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT9	6	120-cfs	0.17	31	25	20
FGUT9	6	130-cfs	0.17	31	25	20
FGUT9	6	140-cfs	0.18	32	26	21
FGUT9	6	150-cfs	0.18	32	26	21
FGUT9	6	160-cfs	0.18	32	26	21
FGUT9	6	170-cfs	0.19	34	28	22
FGUT9	6	180-cfs	0.19	34	28	22
FGUT9	5	120-cfs	0.29	52	42	34
FGUT9	5	130-cfs	0.31	56	45	36
FGUT9	5	140-cfs	0.33	59	48	39
FGUT9	5	150-cfs	0.34	61	50	40
FGUT9	5	160-cfs	0.36	65	52	42
FGUT9	5	170-cfs	0.38	68	55	45
FGUT9	5	180-cfs	0.40	72	58	47
FGUT9	4	120-cfs	0.30	54	44	35
FGUT9	4	130-cfs	0.30	54	44	35
FGUT9	4	140-cfs	0.31	56	45	36
FGUT9	4	150-cfs	0.31	56	45	36
FGUT9	4	160-cfs	0.31	56	45	36
FGUT9	4	170-cfs	0.32	58	47	38
FGUT9	4	180-cfs	0.32	58	47	38
FGUT9	3	120-cfs	0.29	52	42	34
FGUT9	3	130-cfs	0.30	54	44	35
FGUT9	3	140-cfs	0.31	56	45	36
FGUT9	3	150-cfs	0.31	56	45	36
FGUT9	3	160-cfs	0.31	56	45	36
FGUT9	3	170-cfs	0.32	58	47	38
FGUT9	3	180-cfs	0.32	58	47	38

INCIPIENT MOTION ANLYSIS: FGUT9

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT9	2	120-cfs	0.23	41	34	27
FGUT9	2	130-cfs	0.25	45	36	29
FGUT9	2	140-cfs	0.26	47	38	31
FGUT9	2	150-cfs	0.27	49	39	32
FGUT9	2	160-cfs	0.29	52	42	34
FGUT9	2	170-cfs	0.28	50	41	33
FGUT9	2	180-cfs	0.29	52	42	34
FGUT9	1	120-cfs	0.31	56	45	36
FGUT9	1	130-cfs	0.33	59	48	39
FGUT9	1	140-cfs	0.34	61	50	40
FGUT9	1	150-cfs	0.36	65	52	42
FGUT9	1	160-cfs	0.37	67	54	44
FGUT9	1	170-cfs	0.38	68	55	45
FGUT9	1	180-cfs	0.39	70	57	46

PHOTOGRAPH DOCUMENTATION: FGUT9

Left bank along reference reach FGUT9

Right bank along reference reach FGUT9

Downstream from reference reach FGUT9

Upstream from reference reach FGUT9

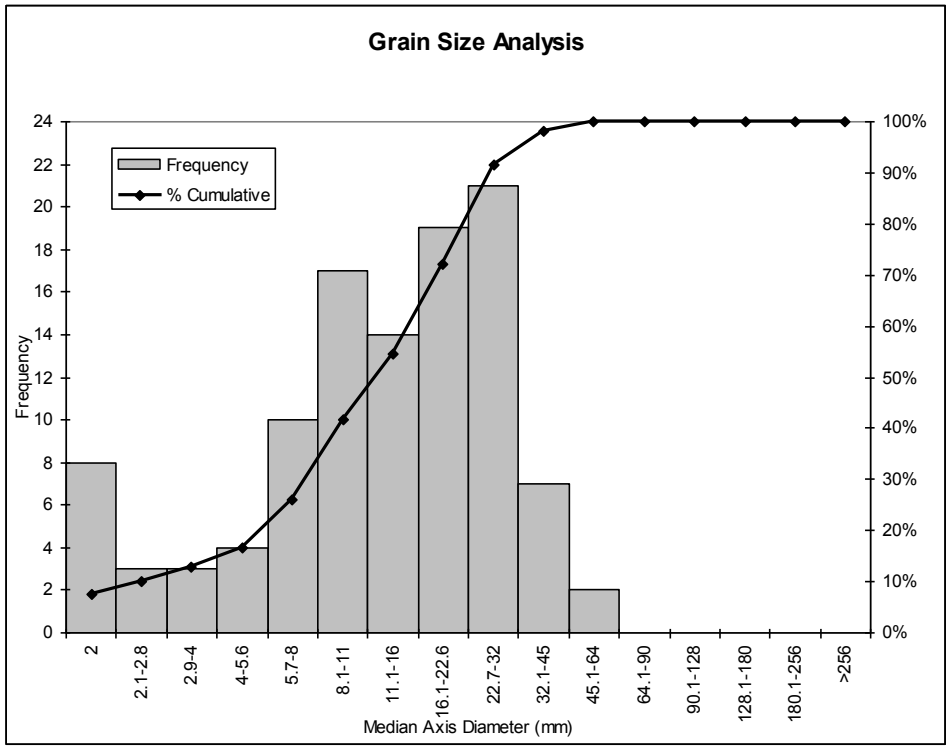
PHOTOGRAPH DOCUMENTATION: FGUT9

Bank composition detail (right bank) FGUT9

Bank composition detail (left bank) FGUT9

Looking downstream from hydrology gage UT100D

PEBBLE COUNT DISTRIBUTION: FGUT9



Size Class mm	*Frequency*	*Cumulative %*
2	8	7.4%
2.1-2.8	3	10.2%
2.9-4	3	13.0%
4-5.6	4	16.7%
5.7-8	10	25.9%
8.1-11	17	41.7%
11.1-16	14	54.6%
16.1-22.6	19	72.2%
22.7-32	21	91.7%
32.1-45	7	98.1%
45.1-64	2	100.0%
64.1-90	0	100.0%
90.1-128	0	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled between River Stations (RS) 3 and 4

HYDROGRAPH: FGUT9

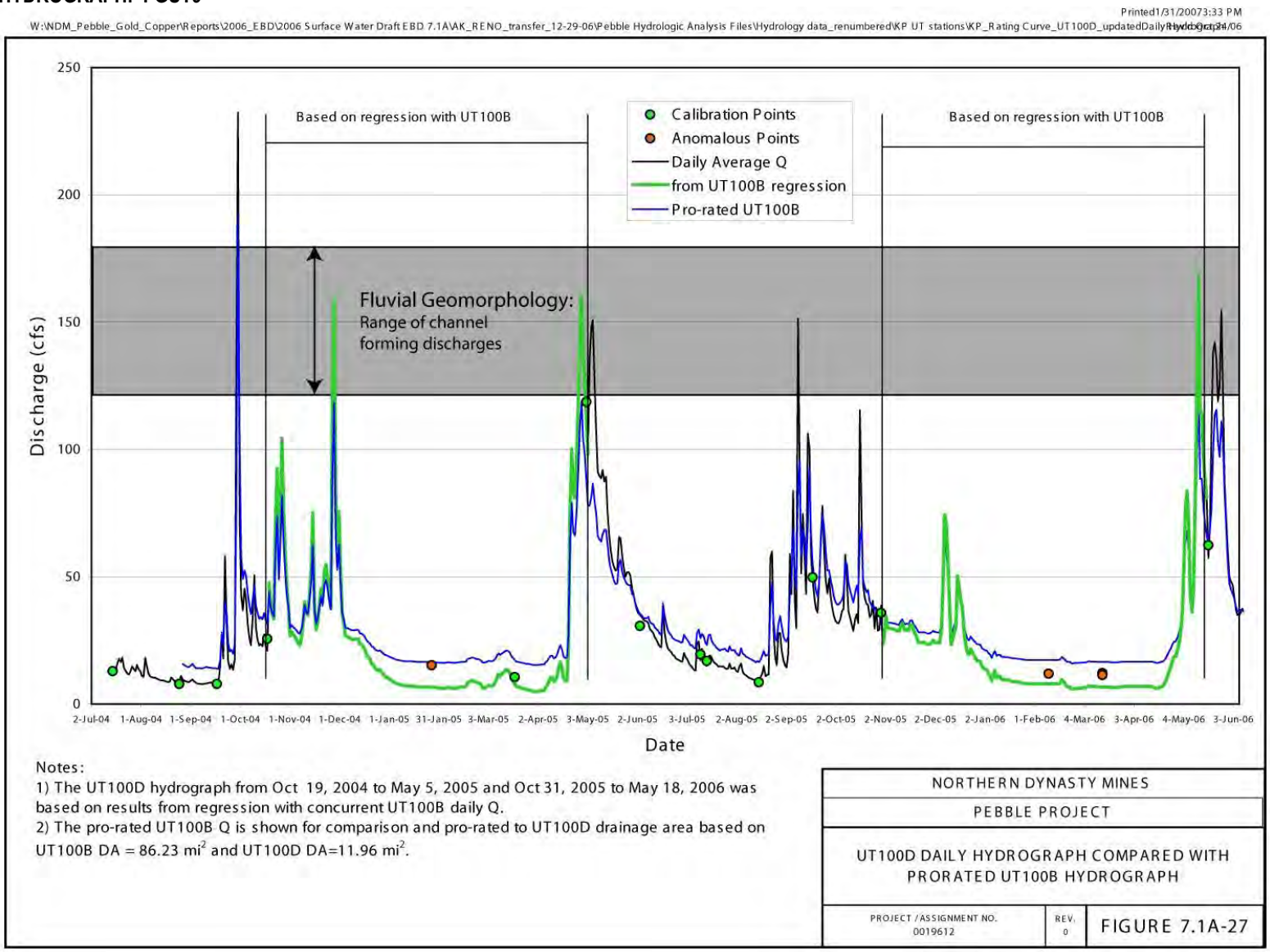


Figure 122 Hydrograph referenced in site description for FGUT9. Data provided by HDR.

1,419,605

1,420,005

1,420,405

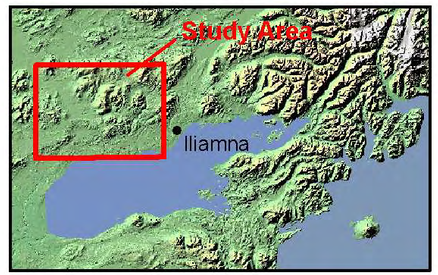
2,160,238

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT9
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,419,605

1,420,005

1,420,405

SITE DESCRIPTION: FGUT10

Site Characteristics.

Site Name		FGUT10	
Discharge (cfs)	**125 (75-150)**	Width (ft)	**16.4 (14.3-18.6)**
Slope	**0.0045**	Cross-sectional Area (ft^2)	**29 (16-45)**
D_{50}	**40**	D_{84}	**82**
Lat/Long Location	**N59.90897 W155.25470**	Drainage Area (mi^2)	**6**
% Willow		**40**	
% Grass		**60**	
% Tree		**0**	

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed seven cross-sections along 110 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the downstream pool. For this site, the DEM-derived reach-average slope is a more suitable boundary condition than the surveyed water surface slope, as the surveyed water surface slope appears to artificially backwater the model. Sections 3 through 7 characterize the riffle which serves as the reference reach. Sections 1 through 3 characterize the downstream pool. The pebble count was taken between Sections 5 and 6.

For a Shields number of 0.017, the D_{84} begins to move through Sections 7 and 6 before 75 cfs but does not move through the rest of the sections in the reference reach within the range of channel forming flows. For Sections 7 through 5, shear increases with decreasing flow. This phenomenon may be attributed to a steep slope and narrow channel which causes supercritical conditions during lower flows and therefore artificially high shear. A flow of 125 cfs matches the geometry through the reach well, hitting the inflection point along the left bank for most sections. At the lower end of the range of channel forming discharges, 75 cfs matches a lower inflection point and vegetation line along the left bank.

The reference reach sections (Sections 7 through 3) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT10	7	75-cfs	75	17.3	16	0.9	1.3	0.0128	4.6	0.83	0.71	0.034
FGUT10	7	85-cfs	85	17.3	18	1.1	1.5	0.0111	4.6	0.79	0.69	0.034
FGUT10	7	95-cfs	95	17.4	20	1.2	1.6	0.0099	4.6	0.75	0.68	0.034
FGUT10	7	105-cfs	105	17.4	22	1.3	1.7	0.0089	4.7	0.73	0.67	0.034
FGUT10	7	115-cfs	115	17.5	24	1.4	1.8	0.0082	4.7	0.70	0.66	0.034
FGUT10	7	125-cfs	125	17.5	26	1.5	1.9	0.0076	4.7	0.68	0.65	0.034
FGUT10	7	135-cfs	135	17.5	28	1.6	2.0	0.0071	4.8	0.67	0.65	0.034
FGUT10	7	145-cfs	145	17.5	29	1.7	2.1	0.0067	4.8	0.65	0.65	0.034
FGUT10	7	150-cfs	150	17.5	30	1.7	2.1	0.0065	4.8	0.65	0.65	0.034
FGUT10	6	75-cfs	75	17.5	20	1.1	1.6	0.0068	3.8	0.63	0.46	0.034
FGUT10	6	85-cfs	85	17.9	22	1.2	1.7	0.0062	3.9	0.61	0.46	0.034
FGUT10	6	95-cfs	95	18.1	24	1.3	1.9	0.0058	3.9	0.59	0.46	0.034
FGUT10	6	105-cfs	105	18.3	26	1.4	2.0	0.0054	4.0	0.58	0.46	0.034
FGUT10	6	115-cfs	115	18.5	29	1.5	2.1	0.0051	4.0	0.57	0.47	0.034
FGUT10	6	125-cfs	125	18.6	31	1.6	2.2	0.0048	4.1	0.56	0.47	0.034
FGUT10	6	135-cfs	135	18.6	32	1.7	2.3	0.0046	4.2	0.55	0.48	0.034
FGUT10	6	145-cfs	145	18.6	34	1.8	2.4	0.0044	4.2	0.55	0.48	0.034
FGUT10	6	150-cfs	150	18.6	35	1.9	2.4	0.0042	4.2	0.54	0.47	0.034
FGUT10	5	75-cfs	75	14.3	20	1.4	1.8	0.0055	3.7	0.56	0.42	0.034
FGUT10	5	85-cfs	85	14.5	22	1.5	1.9	0.0052	3.8	0.55	0.44	0.034
FGUT10	5	95-cfs	95	14.5	23	1.6	2.1	0.0049	3.9	0.54	0.45	0.034
FGUT10	5	105-cfs	105	14.5	25	1.7	2.2	0.0046	4.0	0.53	0.45	0.034
FGUT10	5	115-cfs	115	14.5	27	1.9	2.3	0.0043	4.0	0.52	0.45	0.034
FGUT10	5	125-cfs	125	14.5	29	2.0	2.4	0.0040	4.1	0.51	0.45	0.034
FGUT10	5	135-cfs	135	14.5	30	2.1	2.5	0.0039	4.1	0.50	0.45	0.034
FGUT10	5	145-cfs	145	14.5	32	2.2	2.6	0.0036	4.1	0.49	0.44	0.034
FGUT10	5	150-cfs	150	14.5	32	2.2	2.7	0.0035	4.1	0.48	0.44	0.034
FGUT10	4	75-cfs	75	15.0	23	1.5	1.8	0.0033	3.2	0.46	0.29	0.034
FGUT10	4	85-cfs	85	15.0	25	1.7	2.0	0.0030	3.2	0.44	0.29	0.034
FGUT10	4	95-cfs	95	15.0	27	1.8	2.1	0.0028	3.3	0.43	0.30	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGUT10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT10	4	105-cfs	105	15.0	29	1.9	2.3	0.0026	3.3	0.42	0.30	0.034
FGUT10	4	115-cfs	115	15.0	31	2.1	2.4	0.0025	3.4	0.41	0.30	0.034
FGUT10	4	125-cfs	125	15.0	33	2.2	2.5	0.0023	3.4	0.41	0.30	0.034
FGUT10	4	135-cfs	135	15.0	35	2.3	2.6	0.0021	3.4	0.39	0.29	0.034
FGUT10	4	145-cfs	145	15.0	36	2.4	2.7	0.0020	3.4	0.38	0.28	0.034
FGUT10	4	150-cfs	150	15.0	37	2.5	2.8	0.0019	3.4	0.38	0.28	0.034
FGUT10	3	75-cfs	75	16.9	28	1.7	1.9	0.0019	2.6	0.35	0.18	0.034
FGUT10	3	85-cfs	85	16.9	31	1.8	2.0	0.0018	2.7	0.35	0.19	0.034
FGUT10	3	95-cfs	95	16.9	33	2.0	2.2	0.0017	2.7	0.34	0.20	0.034
FGUT10	3	105-cfs	105	16.9	36	2.1	2.3	0.0017	2.8	0.34	0.21	0.034
FGUT10	3	115-cfs	115	16.9	38	2.2	2.4	0.0016	2.9	0.34	0.21	0.034
FGUT10	3	125-cfs	125	16.9	40	2.4	2.6	0.0016	2.9	0.34	0.22	0.034
FGUT10	3	135-cfs	135	16.9	42	2.5	2.7	0.0015	3.0	0.33	0.22	0.034
FGUT10	3	145-cfs	145	16.9	44	2.6	2.8	0.0015	3.0	0.33	0.22	0.034
FGUT10	3	150-cfs	150	16.9	44	2.6	2.8	0.0015	3.1	0.33	0.23	0.034
FGUT10	2	75-cfs	75	11.1	23	2.1	3.2	0.0042	3.2	0.39	0.40	0.040
FGUT10	2	85-cfs	85	11.2	25	2.2	3.3	0.0045	3.4	0.40	0.45	0.040
FGUT10	2	95-cfs	95	11.2	26	2.3	3.5	0.0049	3.6	0.42	0.52	0.041
FGUT10	2	105-cfs	105	11.2	27	2.5	3.6	0.0052	3.8	0.42	0.57	0.041
FGUT10	2	115-cfs	115	11.2	29	2.6	3.7	0.0054	3.9	0.43	0.62	0.042
FGUT10	2	125-cfs	125	11.2	30	2.7	3.8	0.0056	4.0	0.43	0.66	0.043
FGUT10	2	135-cfs	135	11.3	31	2.8	3.9	0.0058	4.1	0.44	0.71	0.043
FGUT10	2	145-cfs	145	11.3	32	2.9	4.0	0.0060	4.2	0.44	0.75	0.044
FGUT10	2	150-cfs	150	11.3	33	2.9	4.1	0.0060	4.3	0.44	0.77	0.044
FGUT10	1	75-cfs	75	11.0	12	1.1	1.3	0.0190	6.0	0.99	1.18	0.034
FGUT10	1	85-cfs	85	11.0	14	1.2	1.4	0.0187	6.3	1.00	1.25	0.034
FGUT10	1	95-cfs	95	11.0	15	1.3	1.5	0.0181	6.5	0.99	1.30	0.034
FGUT10	1	105-cfs	105	11.1	16	1.4	1.5	0.0177	6.7	0.99	1.36	0.034
FGUT10	1	115-cfs	115	11.1	17	1.5	1.6	0.0175	6.9	0.99	1.41	0.034
FGUT10	1	125-cfs	125	11.1	18	1.6	1.7	0.0172	7.0	0.98	1.46	0.034

HEC-RAS OUTPUT SUMMARY TABLE: FGUT10

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT10	1	135-cfs	135	11.1	19	1.7	1.8	0.0170	7.2	0.98	1.51	0.034
FGUT10	1	145-cfs	145	11.1	20	1.8	1.9	0.0165	7.3	0.97	1.53	0.034
FGUT10	1	150-cfs	150	11.1	20	1.8	1.9	0.0163	7.4	0.97	1.55	0.034

HEC-RAS LONGITUDINAL PROFILE: FGUT10

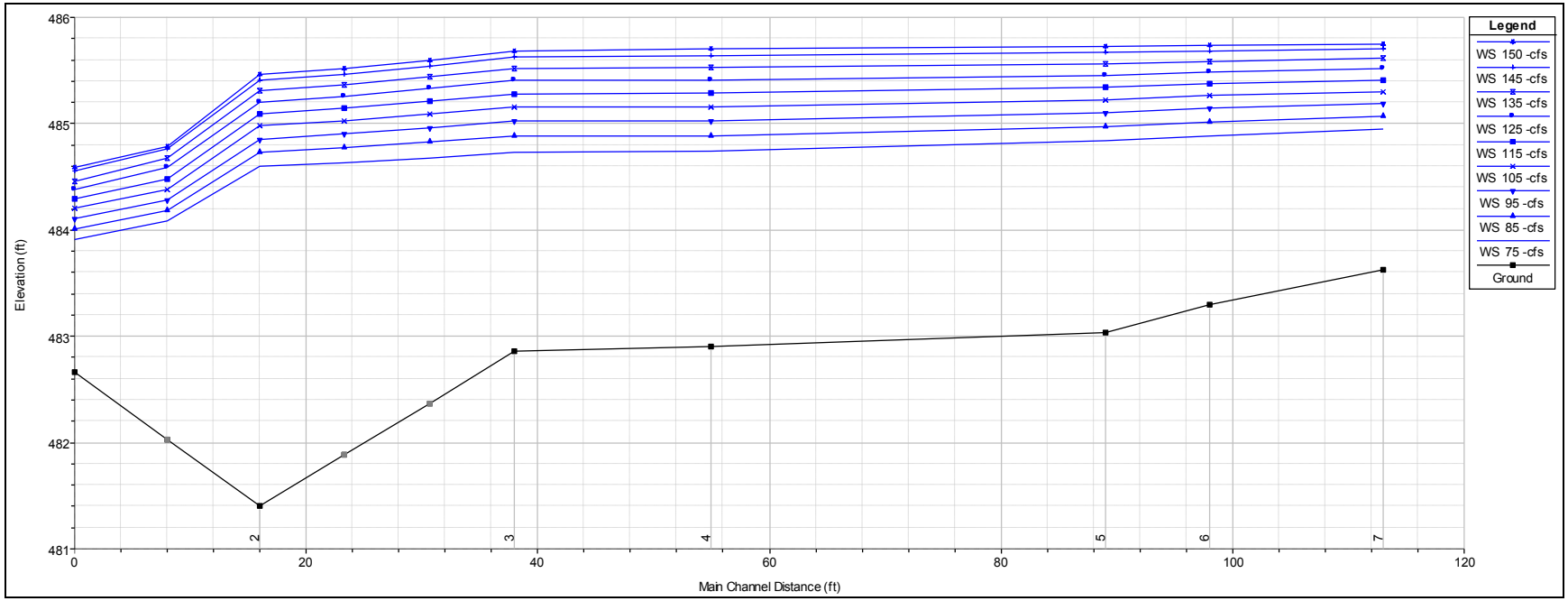


Figure 123 HEC-RAS longitudinal profile output for Reach FGUT10. Numbers 1-7 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

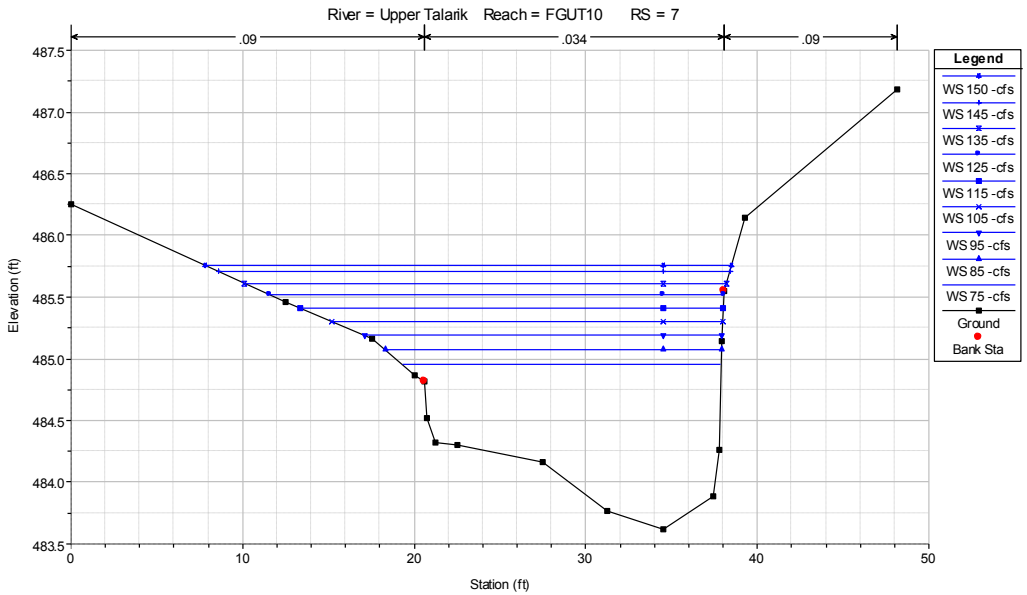


Figure 124 River Station (RS) 7 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

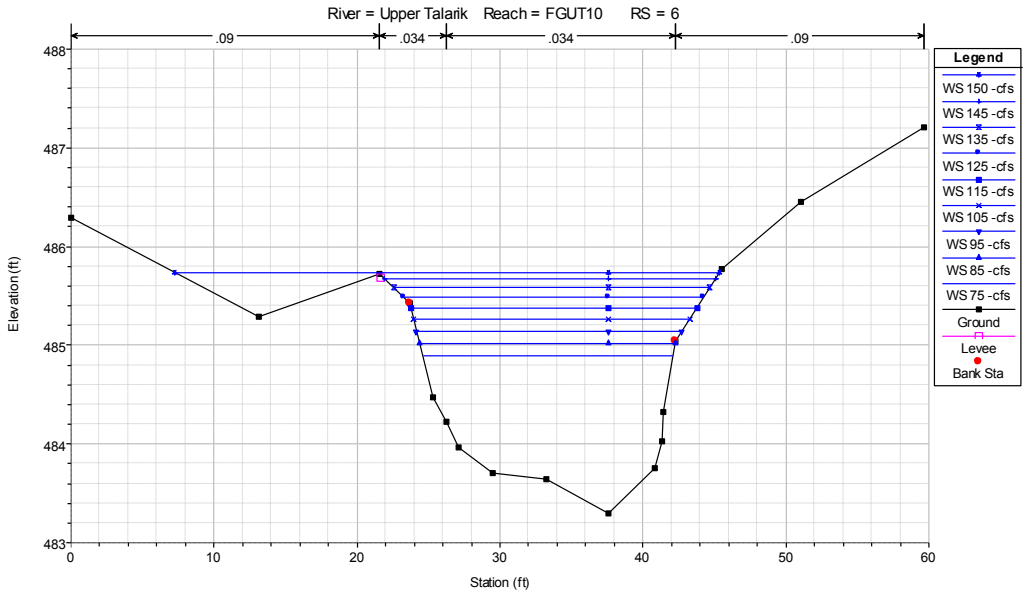


Figure 125 River Station (RS) 6 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

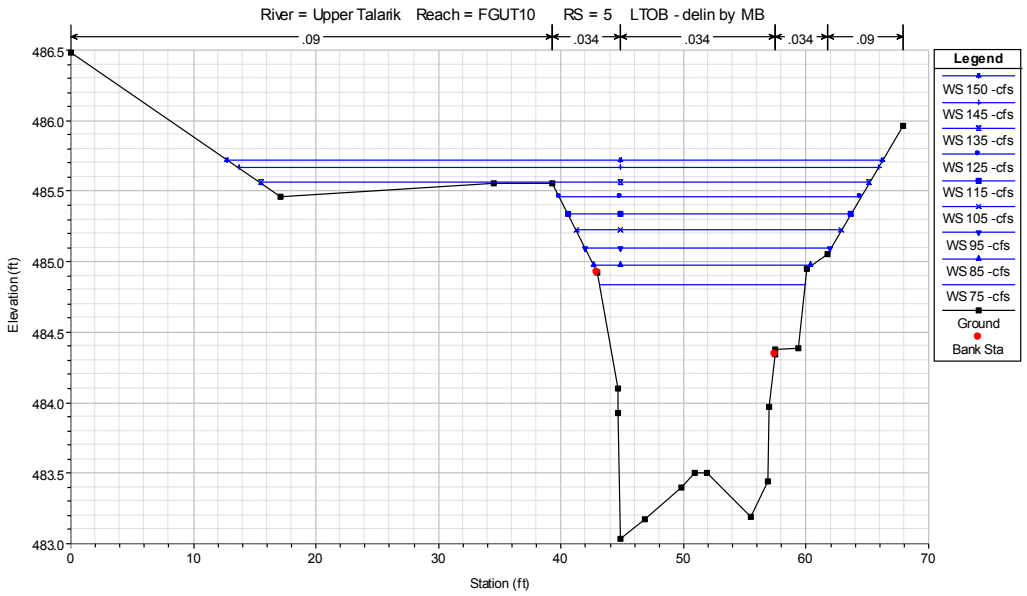


Figure 126 River Station (RS) 5 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

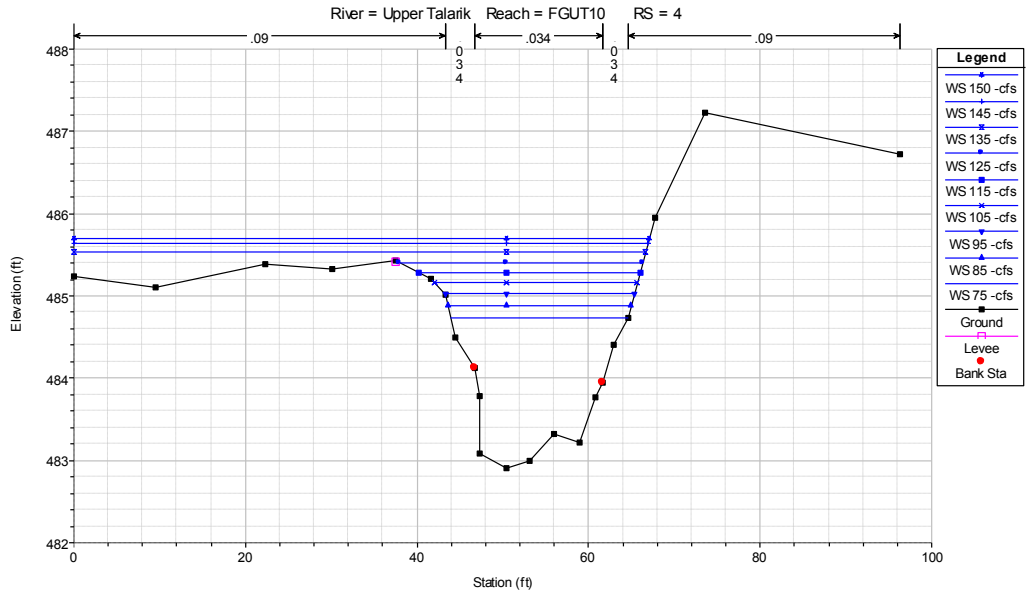


Figure 127 River Station (RS) 4 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

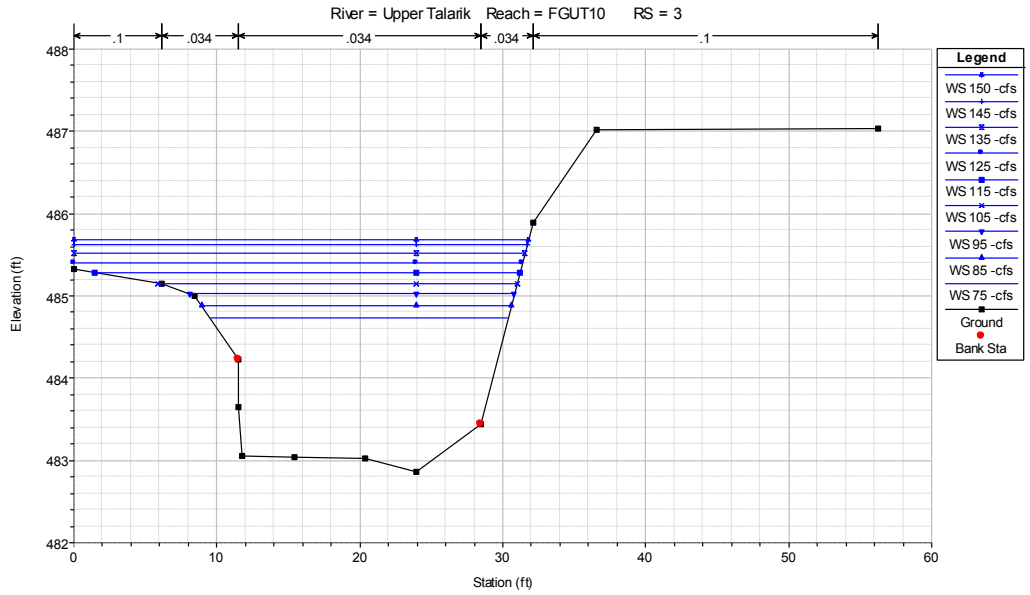


Figure 128 River Station (RS) 3 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

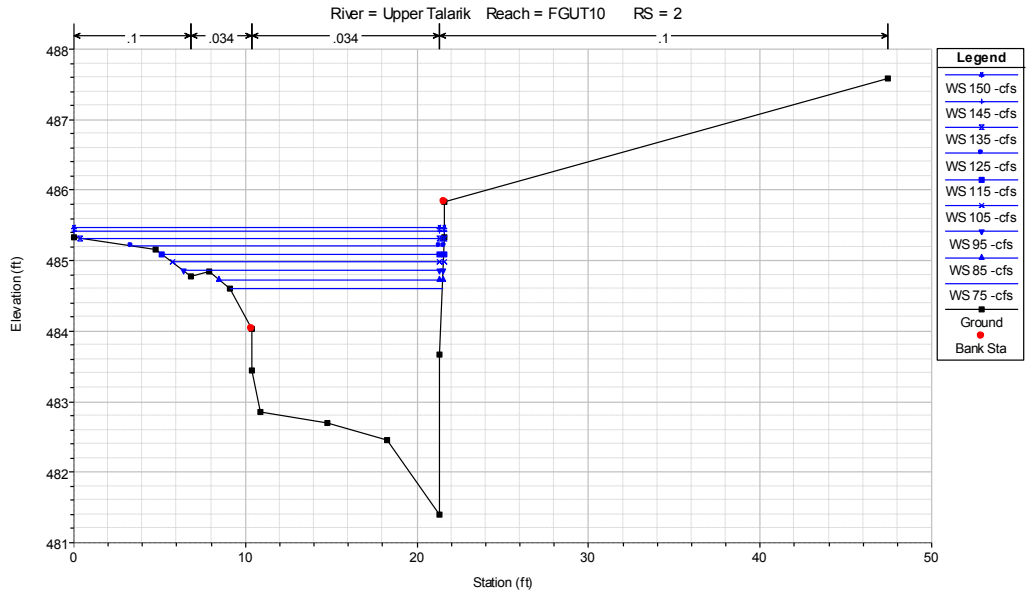


Figure 129 River Station (RS) 2 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT10

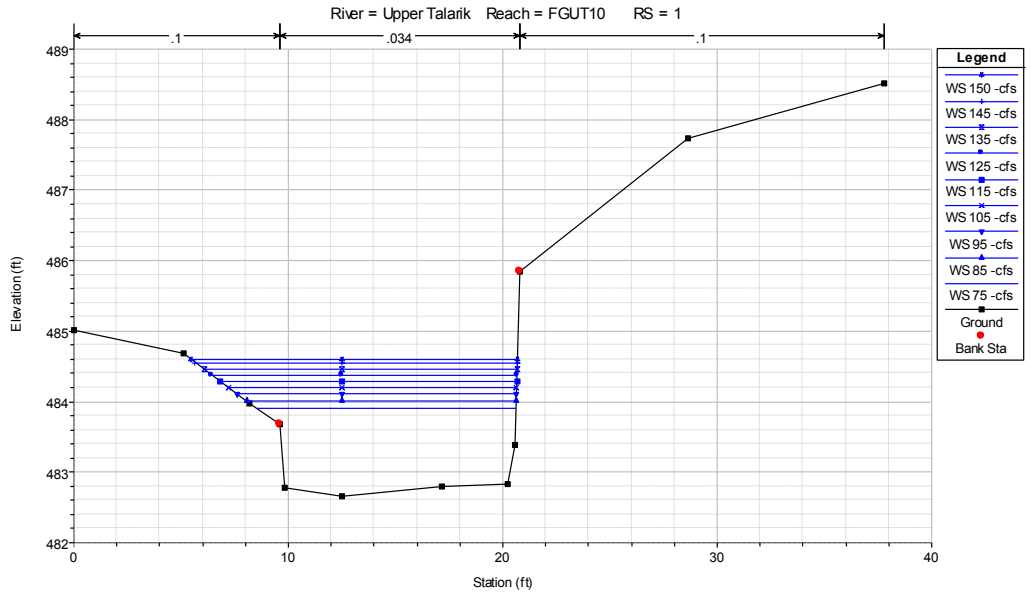


Figure 130 River Station (RS) 1 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANLYSIS: FGUT10

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT10	7	75-cfs	0.71	128	103	84
FGUT10	7	85-cfs	0.69	124	101	81
FGUT10	7	95-cfs	0.68	122	99	80
FGUT10	7	105-cfs	0.67	121	98	79
FGUT10	7	115-cfs	0.66	119	96	78
FGUT10	7	125-cfs	0.65	117	95	77
FGUT10	7	135-cfs	0.65	117	95	77
FGUT10	7	145-cfs	0.65	117	95	77
FGUT10	7	150-cfs	0.65	117	95	77
FGUT10	6	75-cfs	0.46	83	67	54
FGUT10	6	85-cfs	0.46	83	67	54
FGUT10	6	95-cfs	0.46	83	67	54
FGUT10	6	105-cfs	0.46	83	67	54
FGUT10	6	115-cfs	0.47	85	68	55
FGUT10	6	125-cfs	0.47	85	68	55
FGUT10	6	135-cfs	0.48	86	70	57
FGUT10	6	145-cfs	0.48	86	70	57
FGUT10	6	150-cfs	0.47	85	68	55
FGUT10	5	75-cfs	0.42	76	61	49
FGUT10	5	85-cfs	0.44	79	64	52
FGUT10	5	95-cfs	0.45	81	66	53
FGUT10	5	105-cfs	0.45	81	66	53
FGUT10	5	115-cfs	0.45	81	66	53
FGUT10	5	125-cfs	0.45	81	66	53
FGUT10	5	135-cfs	0.45	81	66	53
FGUT10	5	145-cfs	0.44	79	64	52
FGUT10	5	150-cfs	0.44	79	64	52
FGUT10	4	75-cfs	0.29	52	42	34
FGUT10	4	85-cfs	0.29	52	42	34

INCIPIENT MOTION ANLYSIS: FGUT10

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGUT10	4	95-cfs	0.30	54	44	35
FGUT10	4	105-cfs	0.30	54	44	35
FGUT10	4	115-cfs	0.30	54	44	35
FGUT10	4	125-cfs	0.30	54	44	35
FGUT10	4	135-cfs	0.29	52	42	34
FGUT10	4	145-cfs	0.28	50	41	33
FGUT10	4	150-cfs	0.28	50	41	33
FGUT10	3	75-cfs	0.18	32	26	21
FGUT10	3	85-cfs	0.19	34	28	22
FGUT10	3	95-cfs	0.20	36	29	24
FGUT10	3	105-cfs	0.21	38	31	25
FGUT10	3	115-cfs	0.21	38	31	25
FGUT10	3	125-cfs	0.22	40	32	26
FGUT10	3	135-cfs	0.22	40	32	26
FGUT10	3	145-cfs	0.22	40	32	26
FGUT10	3	150-cfs	0.23	41	34	27
FGUT10	2	75-cfs	0.40	72	58	47
FGUT10	2	85-cfs	0.45	81	66	53
FGUT10	2	95-cfs	0.52	94	76	61
FGUT10	2	105-cfs	0.57	103	83	67
FGUT10	2	115-cfs	0.62	112	90	73
FGUT10	2	125-cfs	0.66	119	96	78
FGUT10	2	135-cfs	0.71	128	103	84
FGUT10	2	145-cfs	0.75	135	109	88
FGUT10	2	150-cfs	0.77	139	112	91
FGUT10	1	75-cfs	1.18	212	172	139
FGUT10	1	85-cfs	1.25	225	182	147
FGUT10	1	95-cfs	1.30	234	189	153
FGUT10	1	105-cfs	1.36	245	198	160
FGUT10	1	115-cfs	1.41	254	205	166

INCIPIENT MOTION ANLYSIS: FGUT10

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT10	1	125-cfs	1.46	263	213	172
FGUT10	1	135-cfs	1.51	272	220	178
FGUT10	1	145-cfs	1.53	275	223	180
FGUT10	1	150-cfs	1.55	279	226	182

PHOTOGRAPH DOCUMENTATION: FGUT10

Left bank along reference reach FGUT10

Right bank along reference reach FGUT10

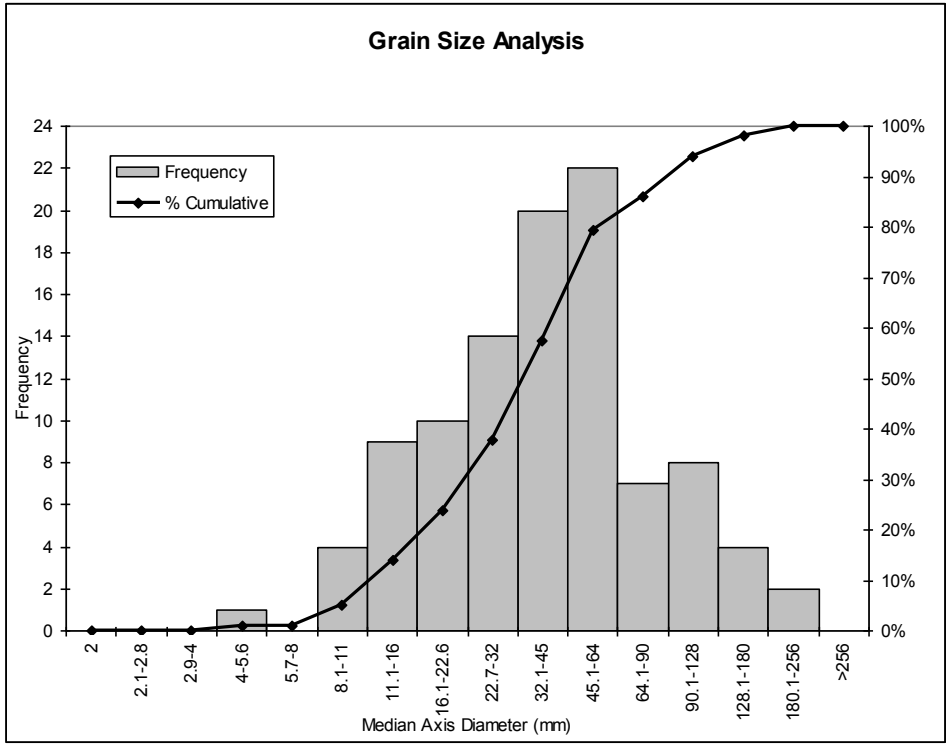
Downstream towards reference reach FGUT10

Upstream towards reference reach FGUT10

PHOTOGRAPH DOCUMENTATION: FGUT10

Bank composition detail (left bank) FGUT10

PEBBLE COUNT DISTRIBUTION: FGUT10



Size Class mm	*Frequency*	*Cumulative %*
2	0	.0%
2.1-2.8	0	.0%
2.9-4	0	.0%
4-5.6	1	1.0%
5.7-8	0	1.0%
8.1-11	4	5.0%
11.1-16	9	13.9%
16.1-22.6	10	23.8%
22.7-32	14	37.6%
32.1-45	20	57.4%
45.1-64	22	79.2%
64.1-90	7	86.1%
90.1-128	8	94.1%
128.1-180	4	98.0%
180.1-256	2	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Between Sections 5 and 6

1,409,726

1,410,126

1,410,526

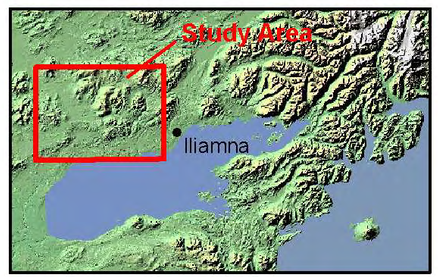
2,160,858

THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT10
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,409,726

1,410,126

1,410,526

SITE DESCRIPTION: FGUT11

Site Characteristics.

	Site Name	**FGUT11**	
Discharge (cfs)	**45 (35-55)**	Width (ft)	**15.5 (14.1-16.8)**
Slope	**0.020**	Cross-sectional Area (ft^2)	**12 (10-16)**
D_{50}	**56**	D_{84}	**124**
Lat/Long Location	**N59.91826 W155.27733**	Drainage Area (mi^2)	**3**
	% Willow	**30**	
	% Grass	**70**	
	% Tree	**0**	

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed eight cross-sections along 100 feet of channel length. Section 1 serves as the downstream hydraulic control for the model, while Section 2 represents the hydraulic control for the pool. Sections 4 through 6 characterize the riffle, which serves as the reference reach, and through which the pebble count was taken (along Section 5). The HDR hydrology gage (UT100E) is located between Sections 2 and 3. Roughly two years of hydrology data (7/04 – 6/06) allowed for an idea of the frequency and magnitude of discharge events (see attached hydrograph). A preliminary rating curve formulated by Knight-Piesold and based on the instantaneous discharge measurements collected by HDR was provided to IFI by HDR on 2/11/2008. Incorporation of the cross-section taken by HDR through the gage into the FGUT11 hydraulic model allowed for the calibration of Manning's channel roughness based on the stage discharge relationship defined by the rating curve (See Attachment 1 for details). Based on the results of this exercise, channel roughness for the flows of interest are roughly equal 0.047. While this value was greater than any other values chosen for the remainder of the 51 FG sites, the high gradient and coarse bed material support its use.

Flows between 35 and 55 cfs match the geometry through the entire reach well. These flows are in agreement with the limited hydrology data. For a Shields number of 0.017, the D_{84} begins movement through the upper sections of the reference reach (6 and 5) before 35 cfs but does not move through Section 4 by 55 cfs. Similar to the D_{84}, the D_{50} is extremely mobile through all of the reference reach sections.

The reference reach sections (Sections 6 through 4) provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGUT11

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT11	8	35-cfs	35	10.8	10	0.9	1.3	0.0148	3.5	0.63	0.80	0.044
FGUT11	8	40-cfs	40	11.0	11	1.0	1.4	0.0154	3.7	0.65	0.88	0.044
FGUT11	8	45-cfs	45	11.1	12	1.1	1.5	0.0154	3.8	0.66	0.94	0.044
FGUT11	8	50-cfs	50	11.1	12	1.1	1.6	0.0152	4.0	0.66	0.98	0.044
FGUT11	8	55-cfs	55	11.2	13	1.2	1.6	0.0150	4.1	0.66	1.02	0.044
FGUT11	7	35-cfs	35	11.0	10	0.9	1.3	0.0179	3.7	0.69	0.89	0.043
FGUT11	7	40-cfs	40	11.1	10	0.9	1.3	0.0191	3.9	0.72	1.01	0.043
FGUT11	7	45-cfs	45	11.1	11	1.0	1.4	0.0203	4.2	0.74	1.12	0.043
FGUT11	7	50-cfs	50	11.2	11	1.0	1.4	0.0214	4.4	0.76	1.23	0.043
FGUT11	7	55-cfs	55	11.2	12	1.1	1.5	0.0224	4.6	0.79	1.34	0.043
FGUT11	6	35-cfs	35	16.5	10	0.6	1.2	0.0217	3.4	0.75	0.84	0.043
FGUT11	6	40-cfs	40	16.6	11	0.7	1.2	0.0221	3.6	0.77	0.91	0.043
FGUT11	6	45-cfs	45	16.7	12	0.7	1.3	0.0227	3.8	0.78	1.00	0.043
FGUT11	6	50-cfs	50	16.7	13	0.8	1.3	0.0230	3.9	0.80	1.07	0.043
FGUT11	6	55-cfs	55	16.8	13	0.8	1.4	0.0229	4.1	0.80	1.13	0.043
FGUT11	5	35-cfs	35	15.5	10	0.6	0.9	0.0279	3.7	0.83	1.01	0.043
FGUT11	5	40-cfs	40	15.5	11	0.7	1.0	0.0254	3.8	0.80	1.02	0.043
FGUT11	5	45-cfs	45	15.5	12	0.8	1.1	0.0234	3.8	0.78	1.03	0.043
FGUT11	5	50-cfs	50	15.5	13	0.8	1.1	0.0217	3.9	0.76	1.04	0.043
FGUT11	5	55-cfs	55	15.5	14	0.9	1.2	0.0203	4.0	0.74	1.05	0.043
FGUT11	4	35-cfs	35	14.1	12	0.8	1.0	0.0136	3.0	0.59	0.64	0.043
FGUT11	4	40-cfs	40	14.2	13	0.9	1.1	0.0128	3.1	0.58	0.66	0.043
FGUT11	4	45-cfs	45	14.2	14	1.0	1.2	0.0122	3.2	0.58	0.68	0.043
FGUT11	4	50-cfs	50	14.2	15	1.1	1.3	0.0117	3.3	0.57	0.70	0.043
FGUT11	4	55-cfs	55	14.2	16	1.1	1.3	0.0114	3.4	0.57	0.73	0.043
FGUT11	3	35-cfs	35	11.5	15	1.3	2.0	0.0045	2.3	0.36	0.32	0.043
FGUT11	3	40-cfs	40	11.8	16	1.4	2.1	0.0050	2.5	0.38	0.37	0.043
FGUT11	3	45-cfs	45	12.0	17	1.4	2.2	0.0054	2.7	0.40	0.41	0.043

HEC-RAS OUTPUT SUMMARY TABLE: FGUT11

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGUT11	3	50-cfs	50	12.2	18	1.5	2.3	0.0058	2.8	0.41	0.46	0.043
FGUT11	3	55-cfs	55	12.3	19	1.5	2.3	0.0061	3.0	0.43	0.50	0.043
FGUT11	2	35-cfs	35	12.5	11	0.9	1.2	0.0140	3.2	0.61	0.70	0.043
FGUT11	2	40-cfs	40	12.6	12	0.9	1.3	0.0148	3.5	0.64	0.79	0.043
FGUT11	2	45-cfs	45	12.7	12	1.0	1.3	0.0156	3.7	0.66	0.87	0.043
FGUT11	2	50-cfs	50	12.8	13	1.0	1.4	0.0164	3.9	0.68	0.96	0.043
FGUT11	2	55-cfs	55	12.8	13	1.1	1.4	0.0172	4.1	0.70	1.05	0.043
FGUT11	1	35-cfs	35	16.3	10	0.6	0.9	0.0234	3.5	0.78	0.89	0.043
FGUT11	1	40-cfs	40	16.6	11	0.7	1.0	0.0234	3.6	0.79	0.95	0.043
FGUT11	1	45-cfs	45	16.8	12	0.7	1.0	0.0234	3.8	0.79	1.01	0.043
FGUT11	1	50-cfs	50	17.0	13	0.8	1.1	0.0234	3.9	0.80	1.08	0.043
FGUT11	1	55-cfs	55	17.1	14	0.8	1.1	0.0234	4.1	0.80	1.13	0.043

HEC-RAS LONGITUDINAL PROFILE: FGUT11

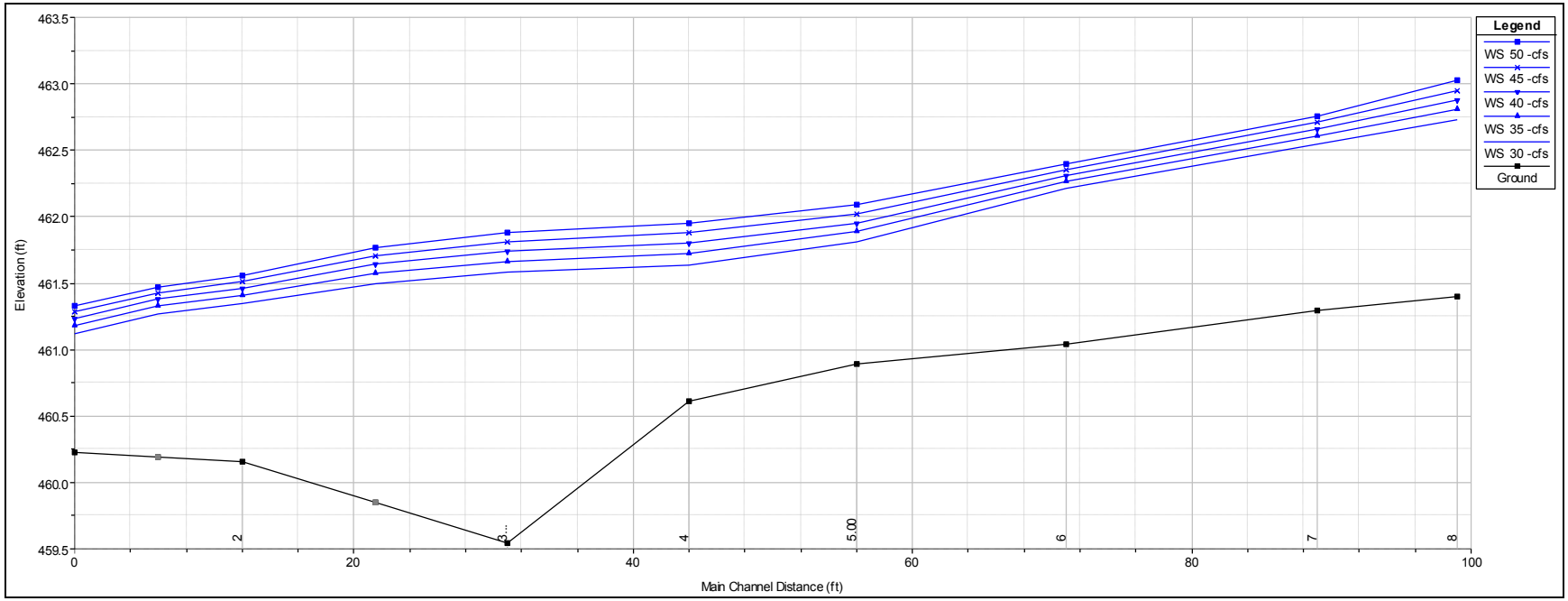


Figure 131 HEC-RAS longitudinal profile output for Reach FGUT10. Numbers 1-8 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

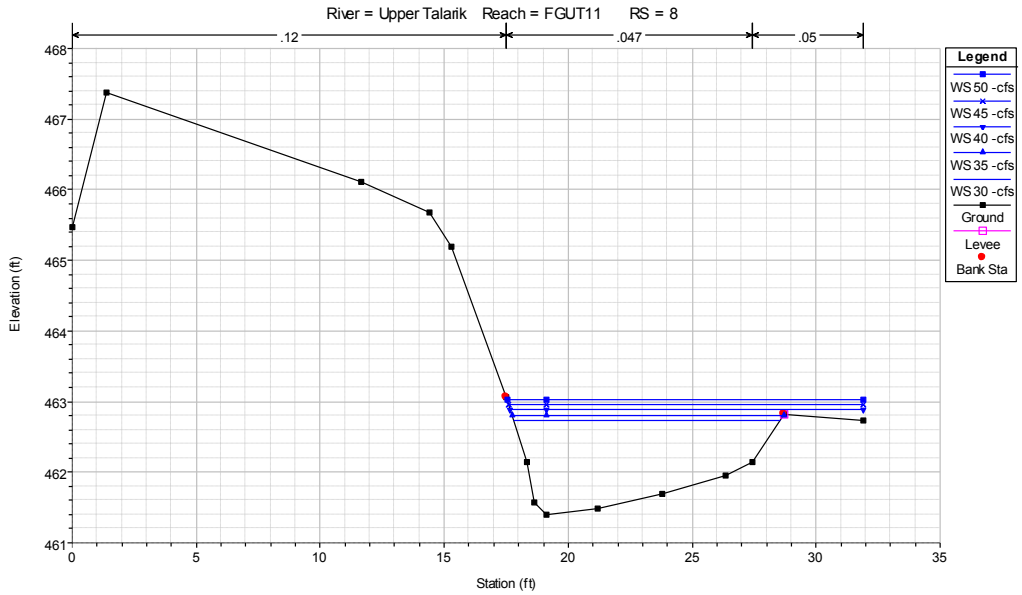


Figure 132 River Station (RS) 8 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

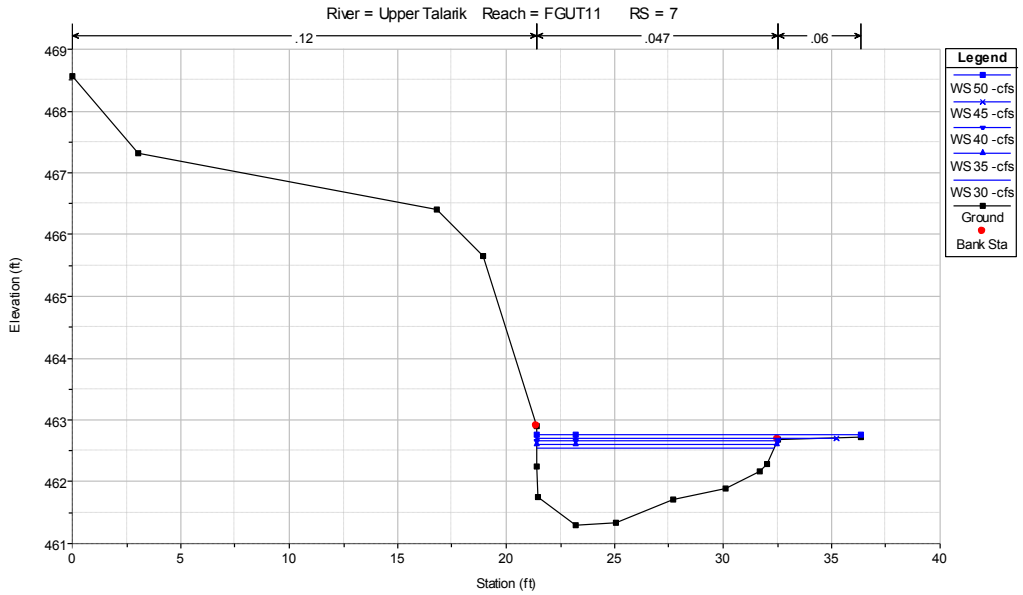


Figure 133 River Station (RS) 7 on River Reach FGUT10. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

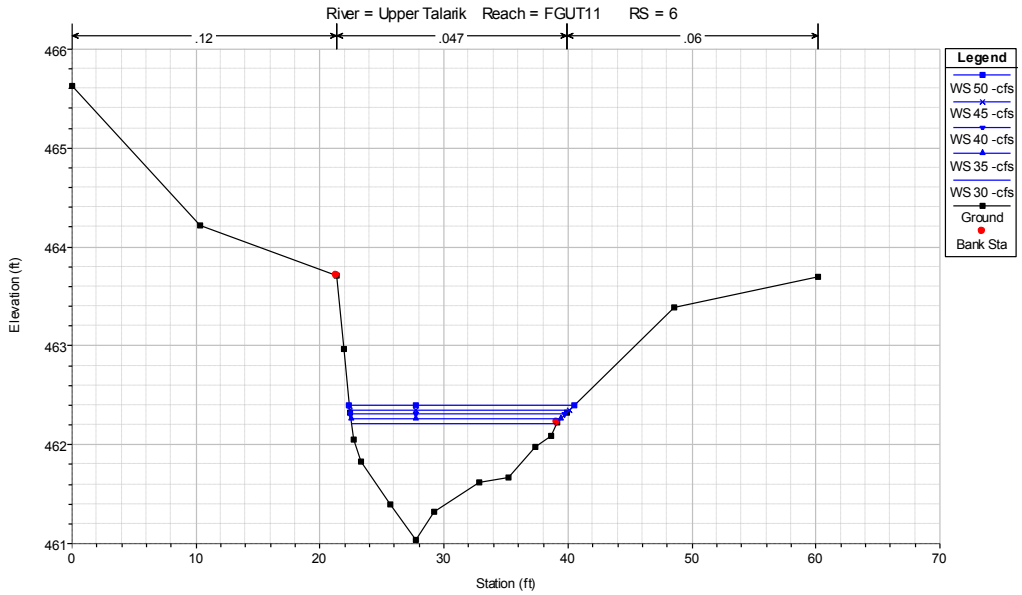


Figure 134 River Station (RS) 6 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

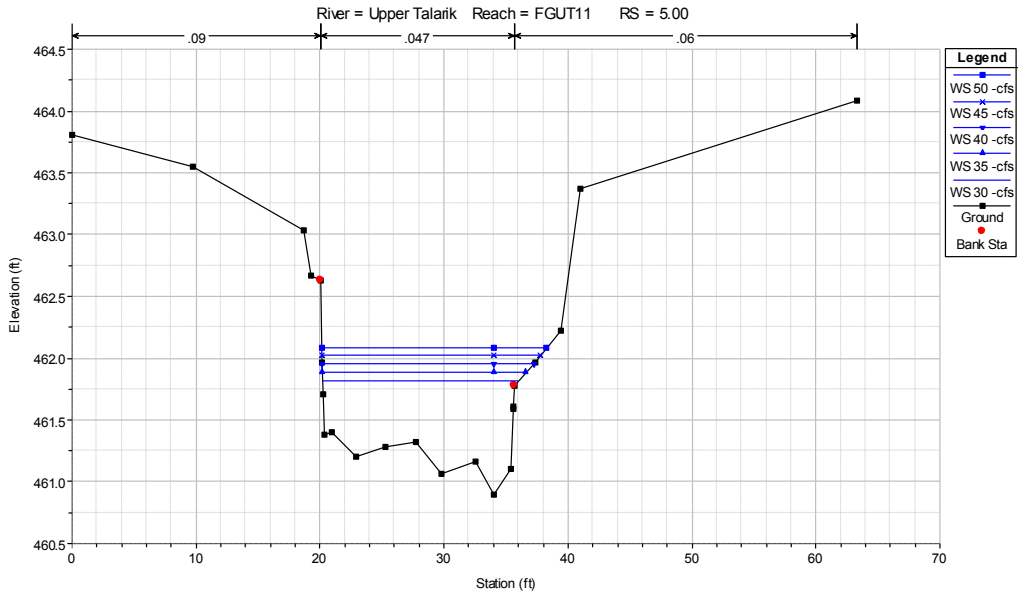


Figure 135 River Station (RS) 5 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

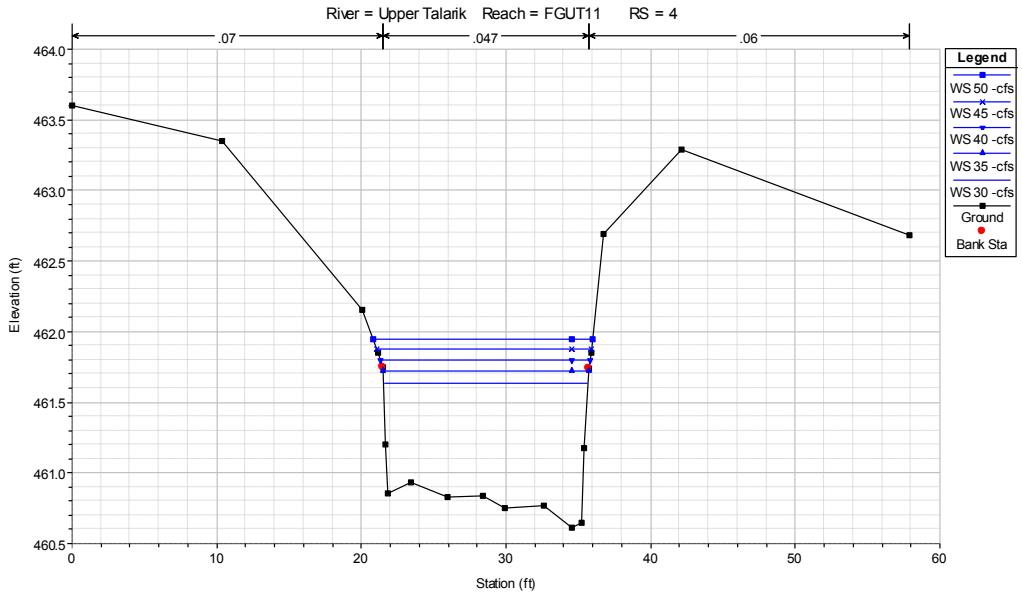


Figure 136 River Station (RS) 4 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

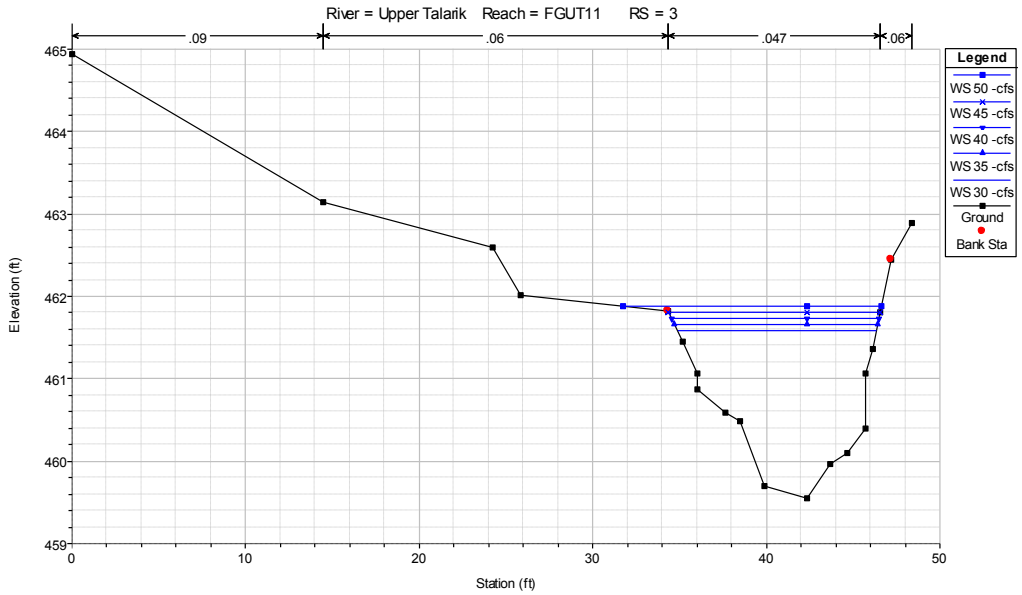


Figure 137 River Station (RS) 3 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

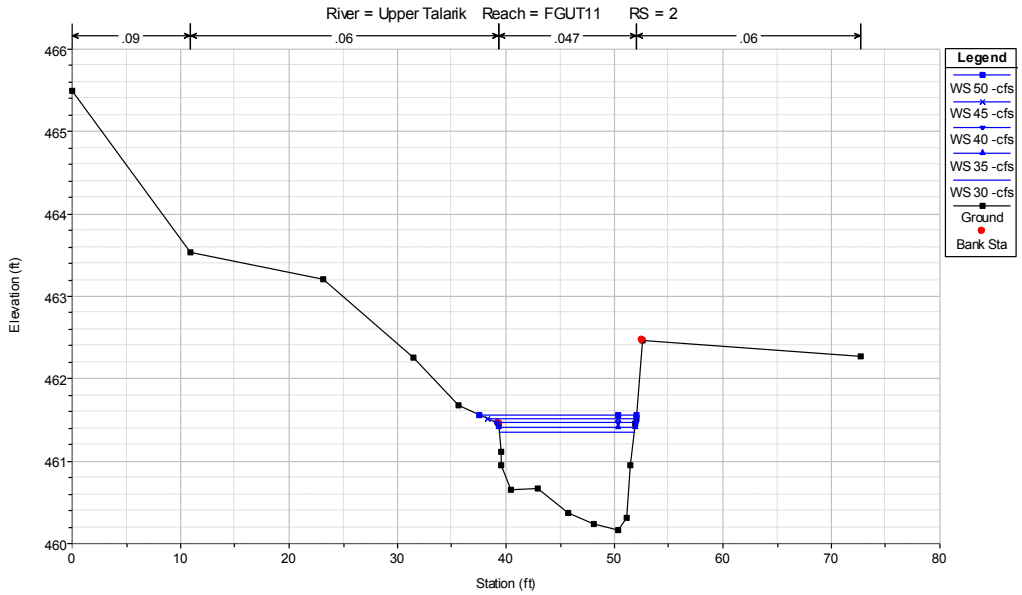


Figure 138 River Station (RS) 2 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGUT11

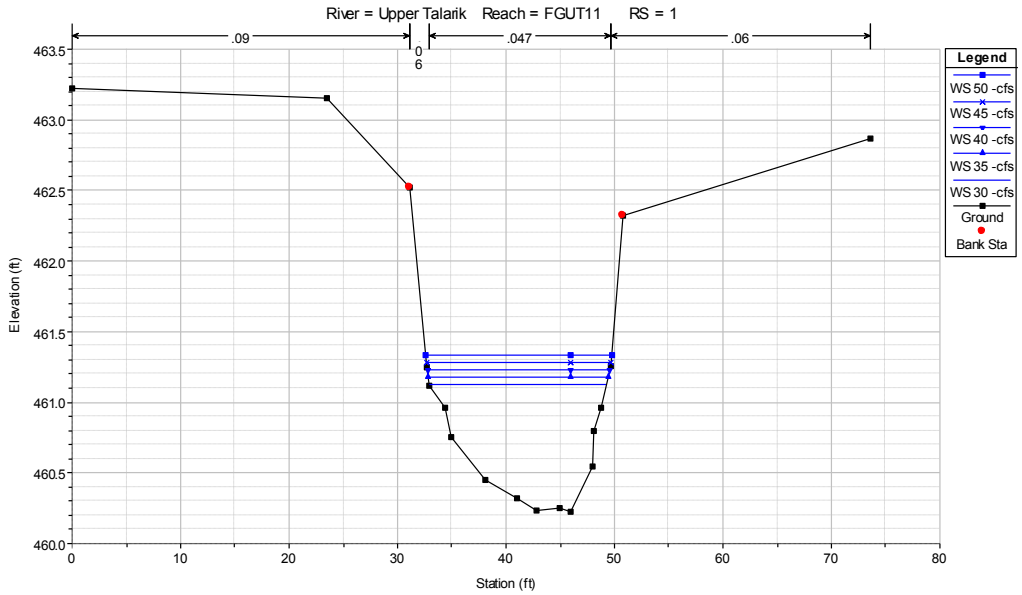


Figure 139 River Station (RS) 1 on River Reach FGUT11. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANLYSIS: FGUT11

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT11	8	35-cfs	0.76	137	111	89
FGUT11	8	40-cfs	0.84	151	122	99
FGUT11	8	45-cfs	0.89	160	130	105
FGUT11	8	50-cfs	0.93	167	136	109
FGUT11	8	55-cfs	0.95	171	138	112
FGUT11	7	35-cfs	0.84	151	122	99
FGUT11	7	40-cfs	0.95	171	138	112
FGUT11	7	45-cfs	1.05	189	153	124
FGUT11	7	50-cfs	1.15	207	168	135
FGUT11	7	55-cfs	1.26	227	184	148
FGUT11	6	35-cfs	0.75	135	109	88
FGUT11	6	40-cfs	0.83	149	121	98
FGUT11	6	45-cfs	0.91	164	133	107
FGUT11	6	50-cfs	1.00	180	146	118
FGUT11	6	55-cfs	1.07	193	156	126
FGUT11	5	35-cfs	1.03	185	150	121
FGUT11	5	40-cfs	1.04	187	152	122
FGUT11	5	45-cfs	1.05	189	153	124
FGUT11	5	50-cfs	1.05	189	153	124
FGUT11	5	55-cfs	1.05	189	153	124
FGUT11	4	35-cfs	0.61	110	89	72
FGUT11	4	40-cfs	0.62	112	90	73
FGUT11	4	45-cfs	0.64	115	93	75
FGUT11	4	50-cfs	0.66	119	96	78
FGUT11	4	55-cfs	0.68	122	99	80
FGUT11	3	35-cfs	0.29	52	42	34
FGUT11	3	40-cfs	0.33	59	48	39

INCIPIENT MOTION ANLYSIS: FGUT11

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGUT11	3	45-cfs	0.37	67	54	44
FGUT11	3	50-cfs	0.40	72	58	47
FGUT11	3	55-cfs	0.44	79	64	52
FGUT11	2	35-cfs	0.62	112	90	73
FGUT11	2	40-cfs	0.69	124	101	81
FGUT11	2	45-cfs	0.76	137	111	89
FGUT11	2	50-cfs	0.84	151	122	99
FGUT11	2	55-cfs	0.91	164	133	107
FGUT11	1	35-cfs	0.86	155	125	101
FGUT11	1	40-cfs	0.91	164	133	107
FGUT11	1	45-cfs	0.97	175	141	114
FGUT11	1	50-cfs	1.02	184	149	120
FGUT11	1	55-cfs	1.08	194	157	127

PHOTOGRAPH DOCUMENTATION: FGUT11

Left bank along reference reach FGUT11

Right bank along reference reach FGUT11

Downstream from reference reach FGUT11

Upstream from reference reach FGUT11

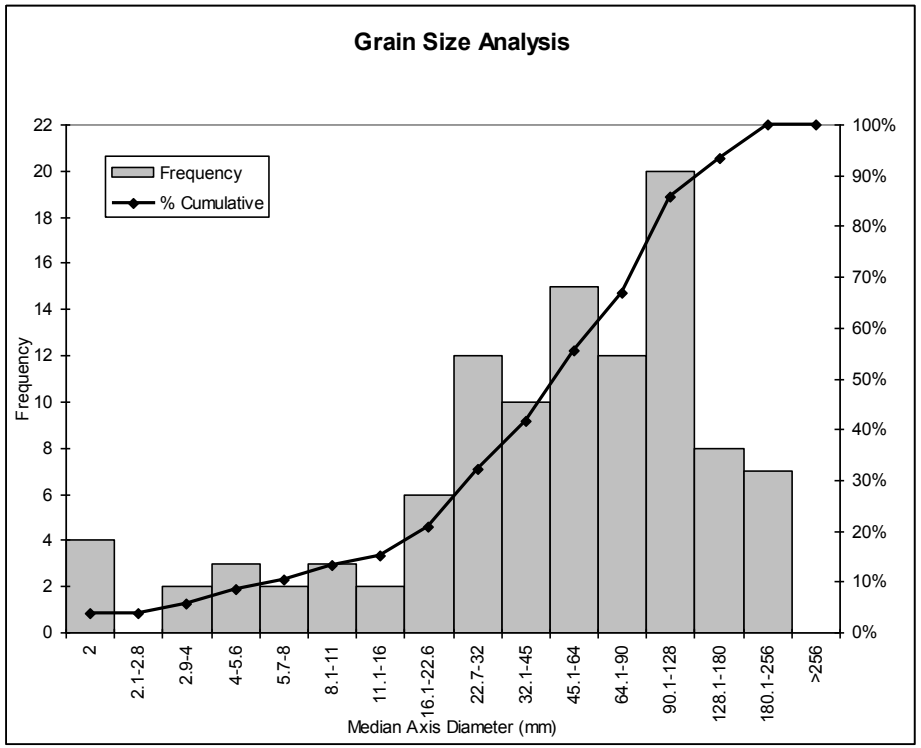
PHOTOGRAPH DOCUMENTATION: FGUT11

Bank composition detail (right bank) FGUT11

Bank composition detail (left bank) FGUT11

Looking downstream towards hydrology gage UT100E

PEBBLE COUNT DISTRIBUTION: FGUT11



Size Class mm	*Frequency*	*Cumulative %*
2	4	3.8%
2.1-2.8	0	3.8%
2.9-4	2	5.7%
4-5.6	3	8.5%
5.7-8	2	10.4%
8.1-11	3	13.2%
11.1-16	2	15.1%
16.1-22.6	6	20.8%
22.7-32	12	32.1%
32.1-45	10	41.5%
45.1-64	15	55.7%
64.1-90	12	67.0%
90.1-128	20	85.8%
128.1-180	8	93.4%
180.1-256	7	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 5

HYDROGRAPH: FGUT11

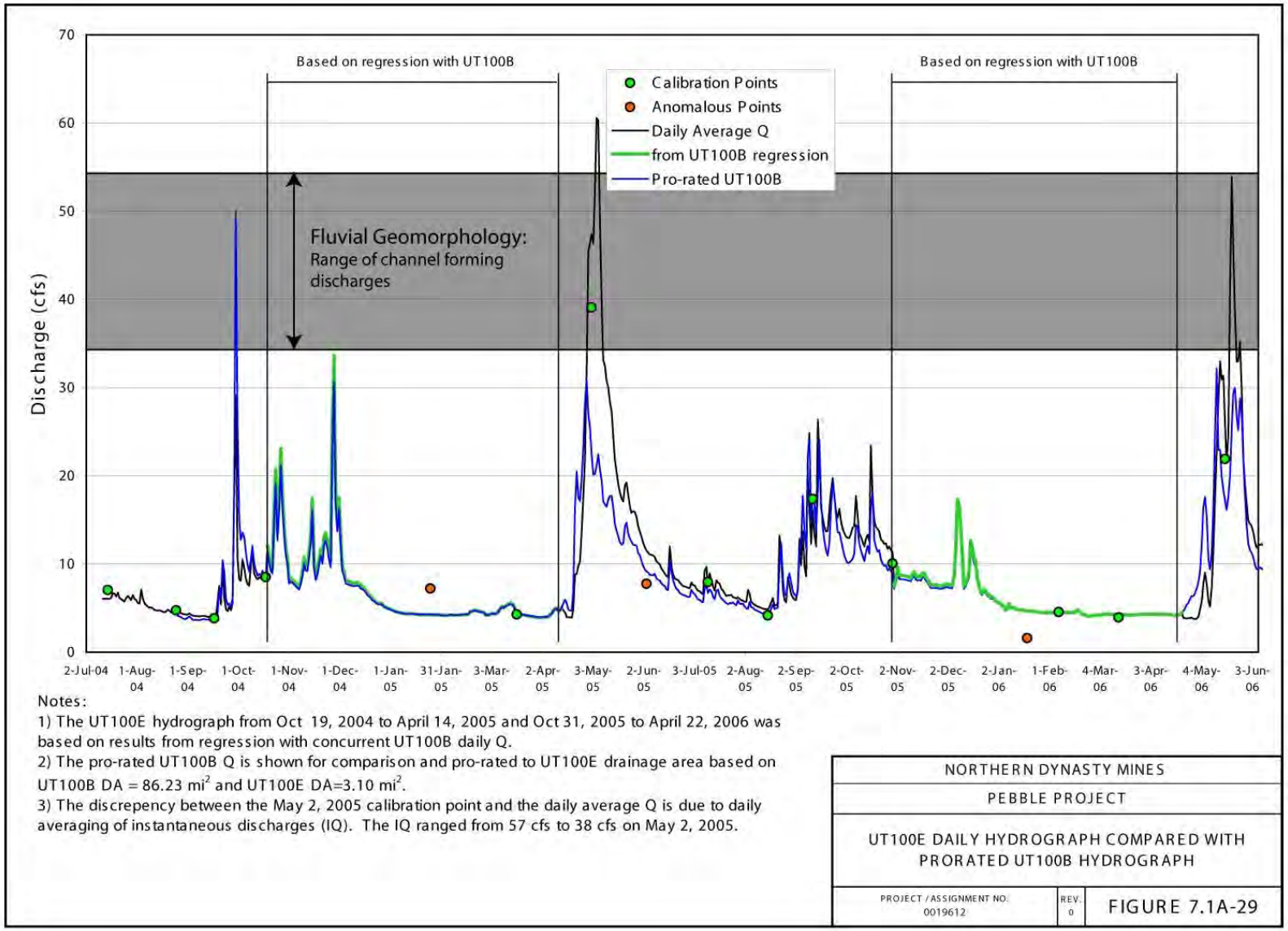


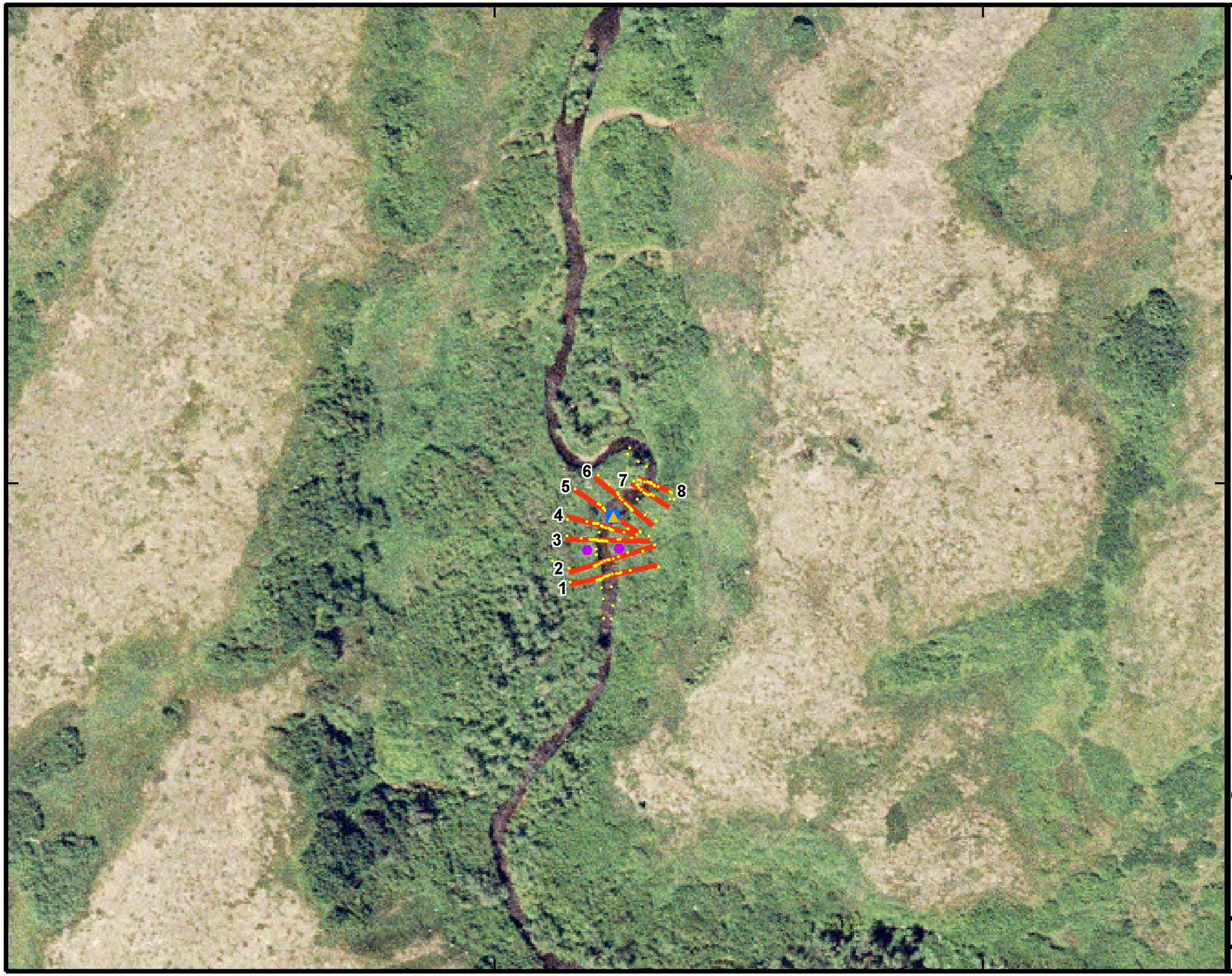
Figure 140 Hydrograph referenced in site description for FGUT11. Data provided by HDR.

1,405,546

1,405,946

1,406,346

2,164,295

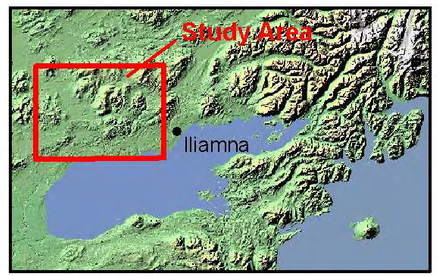


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGUT11
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 60 120 180 240

Meters
0 20 40

Scale 1:1,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

1,405,546

1,405,946

1,406,346

SITE DESCRIPTION: FGMK1

Site Name	**FGMK1**		
Discharge (cfs)	**2400 (2000-2800)**	Width (ft)	**149.5 (124.2-170.5)**
Slope	**0.0009**	Cross-sectional Area (ft^2)	**595 (502-697)**
(1) D_{50}	**31**	D_{84}	**60**
(2) D_{50}	**51**	D_{84}	**80**
(3) D_{50}	**41**	D_{84}	**82**
Lat/Long Location	**N59.85521 W155.82410**	Drainage Area (mi^2)	**227**
% Willow	**45**		
% Grass	**5**		
% Tree	**50**		

Site Overview. During Inter-fluve, Inc.'s field efforts in July 2007, field personnel surveyed nine cross-sections along 1330 feet of channel length. Section 1 serves as the downstream hydraulic control for the model and represents the crest of the pool. Sections 7 and 6 characterize a riffle. A side channel comes in just upstream of Section 6. During low flow conditions a mid-channel bar between Sections 6 and 7 causes transverse flow. Once flows increase, the bar likely gets washed away straightening out flow through the riffle. Sections 6 through 1 characterize the pool. Upstream of Section 7, two sections were surveyed through a glide. Sections 9 through 7 serve as the reference reach due to the overwidening of Section 6. Three pebble counts were conducted at this site; the first through and just upstream of Section 7 along the riffle crest, the second along the exposed gravel bar on the left bank, and the third just upstream of the bulk sample around the mid-channel bar between Sections 6 and 7.

Using those Shield's numbers determined experimentally on the North Fork Koktuli (0.016 and 0.024), besides the D_{50} from pebble count 1 (31 mm) moving through Section 9, the remainder of the D_{50} and D_{84}'s (for all of the three pebble counts) do not move through the riffle or upstream glide. Without empirical incipient motion data to calibrate these numbers with, and the observation that the sediment on the bed is in fact mobile, the incipient motion analysis is inconclusive. The left bank and top of the gravel bar on the left bank for all sections match flows between 2000 and 2200. Higher flows (2400-2800) correlate well with the right bank along Section 8 through 4, and Section 2.

Due to the overwidening of Section 6 because of the entrance of a side-channel, the deposition of material and the resultant transverse flow, Sections 9 through 7 provide the best representation of the channel dimensions and were used to find average channel width and cross-sectional area over the range of flows.

HEC-RAS OUTPUT SUMMARY TABLE: FGMK1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGMK1	9	2000-cfs	2000	124.2	502	4.0	6.1	0.0009	4.0	0.35	0.22	0.028
FGMK1	9	2100-cfs	2100	124.2	516	4.2	6.3	0.0009	4.0	0.35	0.22	0.028
FGMK1	9	2200-cfs	2200	124.2	529	4.3	6.4	0.0009	4.1	0.35	0.23	0.028
FGMK1	9	2300-cfs	2300	124.2	542	4.4	6.5	0.0009	4.2	0.35	0.24	0.028
FGMK1	9	2400-cfs	2400	124.2	556	4.5	6.6	0.0009	4.3	0.36	0.25	0.028
FGMK1	9	2500-cfs	2500	124.2	568	4.6	6.7	0.0009	4.3	0.36	0.25	0.028
FGMK1	9	2600-cfs	2600	124.2	580	4.7	6.8	0.0009	4.4	0.36	0.26	0.028
FGMK1	9	2700-cfs	2700	124.2	593	4.8	6.9	0.0009	4.5	0.36	0.27	0.028
FGMK1	9	2800-cfs	2800	124.2	604	4.9	7.0	0.0009	4.6	0.36	0.27	0.028
FGMK1	8	2000-cfs	2000	153.2	567	3.7	4.9	0.0008	3.5	0.32	0.18	0.028
FGMK1	8	2100-cfs	2100	153.4	585	3.8	5.0	0.0008	3.6	0.32	0.18	0.028
FGMK1	8	2200-cfs	2200	153.5	601	3.9	5.2	0.0008	3.6	0.32	0.19	0.028
FGMK1	8	2300-cfs	2300	153.6	618	4.0	5.3	0.0008	3.7	0.33	0.19	0.028
FGMK1	8	2400-cfs	2400	153.8	635	4.1	5.4	0.0008	3.8	0.33	0.20	0.028
FGMK1	8	2500-cfs	2500	153.9	651	4.2	5.5	0.0008	3.8	0.33	0.20	0.028
FGMK1	8	2600-cfs	2600	154.1	667	4.3	5.6	0.0008	3.9	0.33	0.21	0.028
FGMK1	8	2700-cfs	2700	154.2	682	4.4	5.7	0.0008	3.9	0.33	0.21	0.028
FGMK1	8	2800-cfs	2800	154.3	697	4.5	5.8	0.0008	4.0	0.33	0.21	0.028
FGMK1	7	2000-cfs	2000	170.3	520	3.1	4.4	0.0012	3.8	0.39	0.23	0.028
FGMK1	7	2100-cfs	2100	170.5	540	3.2	4.6	0.0012	3.9	0.38	0.23	0.028
FGMK1	7	2200-cfs	2200	170.5	559	3.3	4.7	0.0011	3.9	0.38	0.23	0.028
FGMK1	7	2300-cfs	2300	170.5	578	3.4	4.8	0.0011	4.0	0.38	0.23	0.028
FGMK1	7	2400-cfs	2400	170.5	597	3.5	4.9	0.0011	4.0	0.38	0.24	0.028
FGMK1	7	2500-cfs	2500	170.5	615	3.6	5.0	0.0011	4.1	0.38	0.24	0.028
FGMK1	7	2600-cfs	2600	170.5	633	3.7	5.1	0.0010	4.1	0.37	0.24	0.028
FGMK1	7	2700-cfs	2700	170.5	650	3.8	5.2	0.0010	4.1	0.37	0.24	0.028
FGMK1	7	2800-cfs	2800	170.5	667	3.9	5.3	0.0010	4.2	0.37	0.25	0.028
FGMK1	6	2000-cfs	2000	183.7	632	3.4	4.5	0.0007	3.2	0.30	0.15	0.028
FGMK1	6	2100-cfs	2100	183.7	654	3.6	4.6	0.0007	3.2	0.30	0.15	0.028
FGMK1	6	2200-cfs	2200	183.7	674	3.7	4.7	0.0007	3.2	0.30	0.15	0.028

HEC-RAS OUTPUT SUMMARY TABLE: FGMK1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGMK1	6	2300-cfs	2300	183.7	696	3.8	4.8	0.0007	3.3	0.30	0.15	0.028
FGMK1	6	2400-cfs	2400	183.7	717	3.9	4.9	0.0006	3.3	0.30	0.16	0.028
FGMK1	6	2500-cfs	2500	183.7	736	4.0	5.0	0.0006	3.4	0.29	0.16	0.028
FGMK1	6	2600-cfs	2600	183.7	757	4.1	5.1	0.0006	3.4	0.29	0.16	0.028
FGMK1	6	2700-cfs	2700	183.7	776	4.2	5.2	0.0006	3.4	0.29	0.16	0.028
FGMK1	6	2800-cfs	2800	183.7	794	4.3	5.3	0.0006	3.5	0.29	0.16	0.028
FGMK1	5	2000-cfs	2000	113.3	439	3.9	5.7	0.0012	4.5	0.40	0.28	0.028
FGMK1	5	2100-cfs	2100	113.3	452	4.0	5.8	0.0012	4.5	0.40	0.29	0.028
FGMK1	5	2200-cfs	2200	113.3	466	4.1	5.9	0.0011	4.5	0.39	0.29	0.028
FGMK1	5	2300-cfs	2300	113.3	479	4.2	6.0	0.0011	4.6	0.39	0.29	0.028
FGMK1	5	2400-cfs	2400	113.3	492	4.3	6.2	0.0011	4.6	0.39	0.29	0.028
FGMK1	5	2500-cfs	2500	113.3	504	4.4	6.3	0.0011	4.7	0.39	0.30	0.028
FGMK1	5	2600-cfs	2600	113.3	516	4.6	6.4	0.0011	4.8	0.39	0.30	0.028
FGMK1	5	2700-cfs	2700	113.3	528	4.7	6.5	0.0011	4.8	0.39	0.31	0.028
FGMK1	5	2800-cfs	2800	113.3	539	4.8	6.6	0.0011	4.9	0.39	0.31	0.028
FGMK1	4	2000-cfs	2000	78.1	330	4.2	5.4	0.0020	6.0	0.52	0.50	0.028
FGMK1	4	2100-cfs	2100	78.1	337	4.3	5.5	0.0020	6.2	0.52	0.53	0.028
FGMK1	4	2200-cfs	2200	78.1	344	4.4	5.6	0.0020	6.3	0.53	0.55	0.028
FGMK1	4	2300-cfs	2300	78.1	351	4.5	5.7	0.0021	6.5	0.54	0.57	0.028
FGMK1	4	2400-cfs	2400	78.1	358	4.6	5.8	0.0021	6.6	0.55	0.59	0.028
FGMK1	4	2500-cfs	2500	78.1	366	4.7	5.9	0.0021	6.7	0.55	0.60	0.028
FGMK1	4	2600-cfs	2600	78.1	373	4.8	5.9	0.0021	6.8	0.55	0.62	0.028
FGMK1	4	2700-cfs	2700	78.1	380	4.9	6.0	0.0021	6.9	0.55	0.64	0.028
FGMK1	4	2800-cfs	2800	78.1	386	5.0	6.1	0.0022	7.1	0.56	0.65	0.028
FGMK1	3	2000-cfs	2000	97.8	392	4.0	6.5	0.0015	5.1	0.45	0.37	0.028
FGMK1	3	2100-cfs	2100	98.6	400	4.1	6.6	0.0016	5.3	0.46	0.39	0.028
FGMK1	3	2200-cfs	2200	99.5	409	4.1	6.7	0.0016	5.4	0.47	0.40	0.028
FGMK1	3	2300-cfs	2300	101.1	418	4.1	6.8	0.0017	5.5	0.48	0.42	0.028
FGMK1	3	2400-cfs	2400	103.6	427	4.1	6.9	0.0018	5.6	0.49	0.44	0.028
FGMK1	3	2500-cfs	2500	106.0	436	4.1	6.9	0.0018	5.7	0.50	0.46	0.028

HEC-RAS OUTPUT SUMMARY TABLE: FGMK1

Reach	River Station	Profile	Discharge	Top Width	Area Channel	Hydraulic Depth	Max Depth	E.G. Slope	Velocity	Froude #	Shear	Weighted Manning's n
			(cfs)	(ft)	(ft^2)	(ft)	(ft)	(ft/ft)	(ft/s)		(lb/ft^2)	
FGMK1	3	2600-cfs	2600	108.4	445	4.1	7.0	0.0019	5.8	0.51	0.48	0.028
FGMK1	3	2700-cfs	2700	110.8	454	4.1	7.1	0.0020	5.9	0.52	0.49	0.028
FGMK1	3	2800-cfs	2800	112.8	462	4.1	7.2	0.0020	6.1	0.53	0.51	0.028
FGMK1	2	2000-cfs	2000	128.2	389	3.0	6.3	0.0022	5.1	0.52	0.41	0.028
FGMK1	2	2100-cfs	2100	128.2	400	3.1	6.3	0.0022	5.3	0.52	0.42	0.028
FGMK1	2	2200-cfs	2200	128.2	410	3.2	6.4	0.0022	5.4	0.53	0.43	0.028
FGMK1	2	2300-cfs	2300	128.2	421	3.3	6.5	0.0022	5.5	0.53	0.45	0.028
FGMK1	2	2400-cfs	2400	128.2	431	3.4	6.6	0.0022	5.6	0.54	0.46	0.028
FGMK1	2	2500-cfs	2500	128.2	441	3.4	6.7	0.0022	5.7	0.54	0.48	0.028
FGMK1	2	2600-cfs	2600	128.2	450	3.5	6.7	0.0023	5.8	0.54	0.49	0.028
FGMK1	2	2700-cfs	2700	128.2	460	3.6	6.8	0.0023	5.9	0.55	0.50	0.028
FGMK1	2	2800-cfs	2800	128.2	471	3.7	6.9	0.0022	5.9	0.54	0.50	0.028
FGMK1	1	2000-cfs	2000	149.6	439	2.9	5.0	0.0018	4.6	0.47	0.32	0.028
FGMK1	1	2100-cfs	2100	149.6	452	3.0	5.1	0.0018	4.7	0.47	0.33	0.028
FGMK1	1	2200-cfs	2200	149.6	464	3.1	5.1	0.0018	4.7	0.47	0.34	0.028
FGMK1	1	2300-cfs	2300	149.6	477	3.2	5.2	0.0018	4.8	0.48	0.35	0.028
FGMK1	1	2400-cfs	2400	149.6	489	3.3	5.3	0.0018	4.9	0.48	0.36	0.028
FGMK1	1	2500-cfs	2500	149.6	501	3.4	5.4	0.0018	5.0	0.48	0.37	0.028
FGMK1	1	2600-cfs	2600	149.6	513	3.4	5.5	0.0018	5.1	0.48	0.38	0.028
FGMK1	1	2700-cfs	2700	149.6	525	3.5	5.5	0.0018	5.1	0.48	0.39	0.028
FGMK1	1	2800-cfs	2800	149.6	536	3.6	5.6	0.0018	5.2	0.48	0.40	0.028

HEC-RAS LONGITUDINAL PROFILE: FGMK1

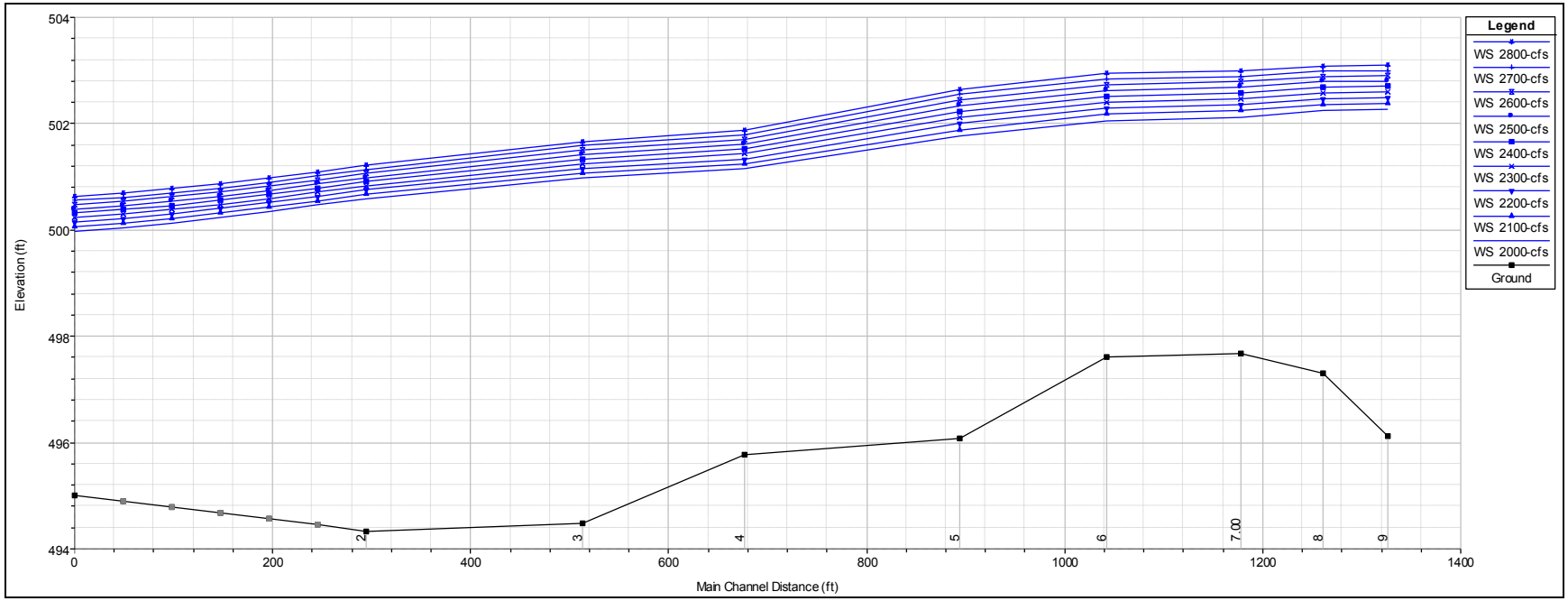


Figure 141 HEC-RAS longitudinal profile output for Reach FGMK1. Numbers 1-9 along the horizontal axis correlate to hydraulic cross-sections within the model. Main channel distance (ft) is distance upstream from cross-section 1 (at Main Channel Distance (ft) 0). Blue profile lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

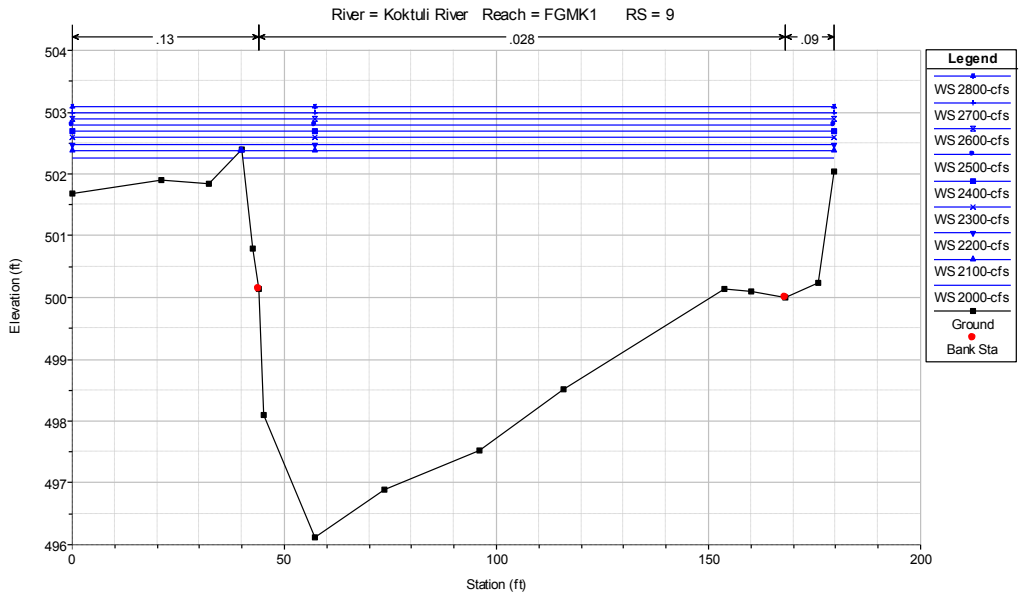


Figure 142 River Station (RS) 9 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

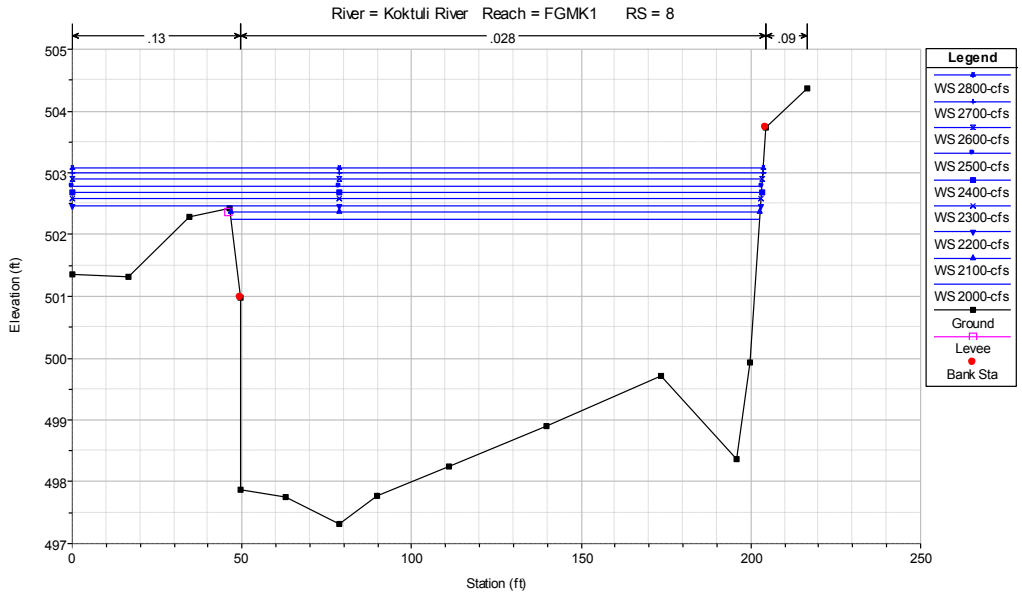


Figure 143 River Station (RS) 8 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

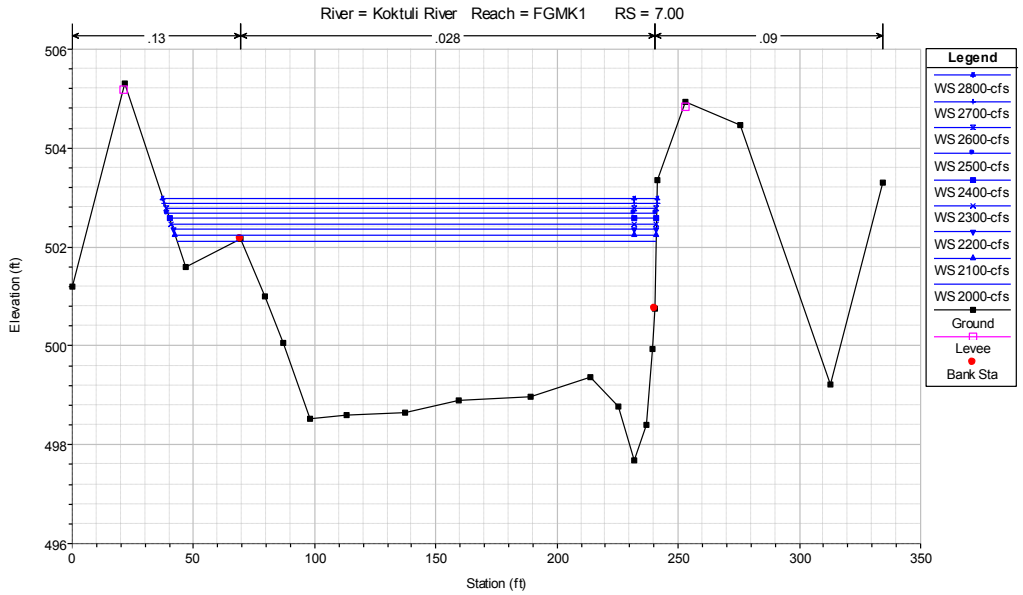


Figure 144 River Station (RS) 7 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

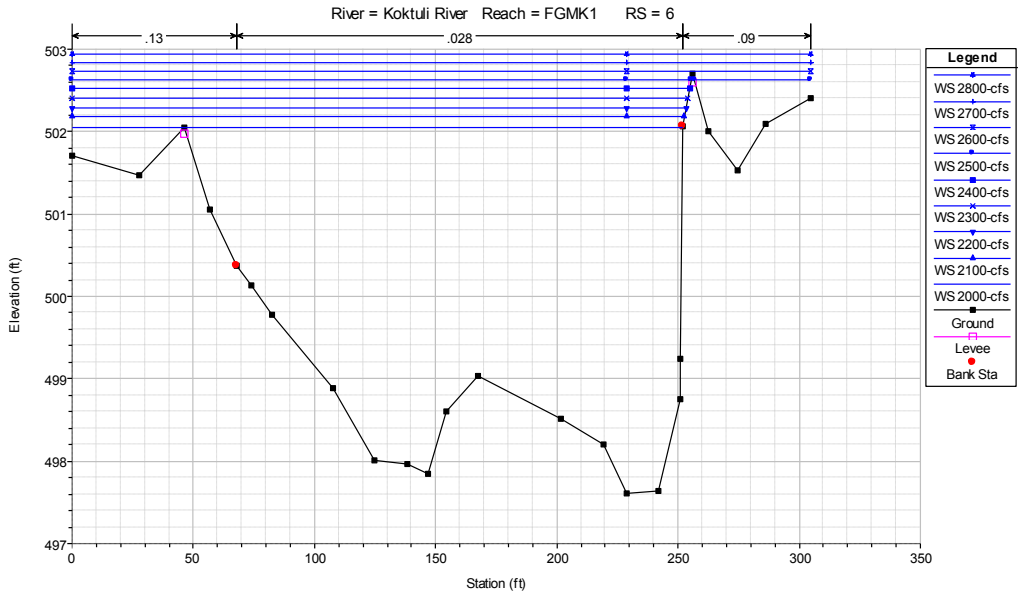


Figure 145 River Station (RS) 6 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

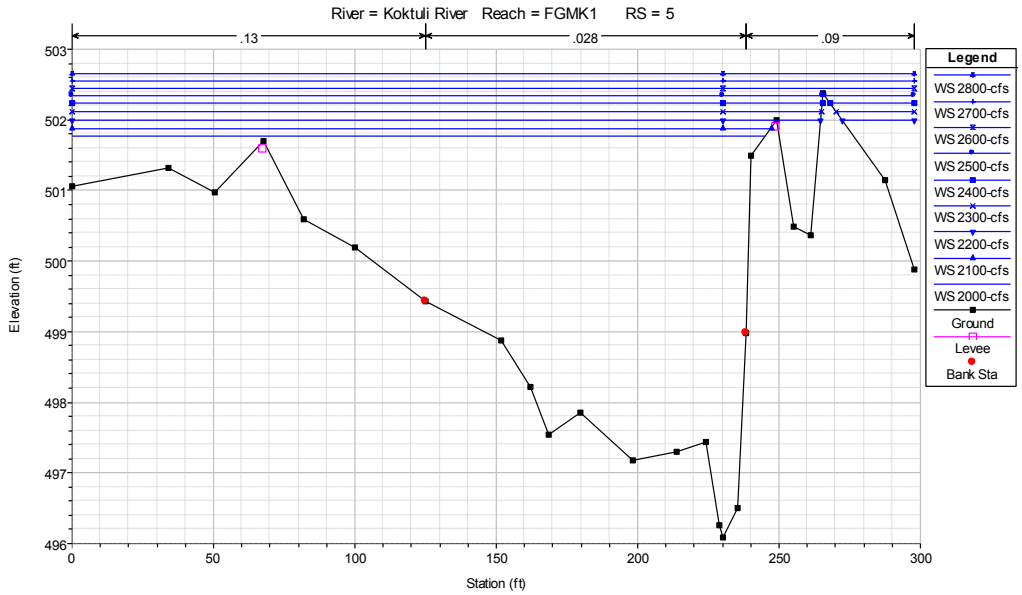


Figure 146 River Station (RS) 5 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

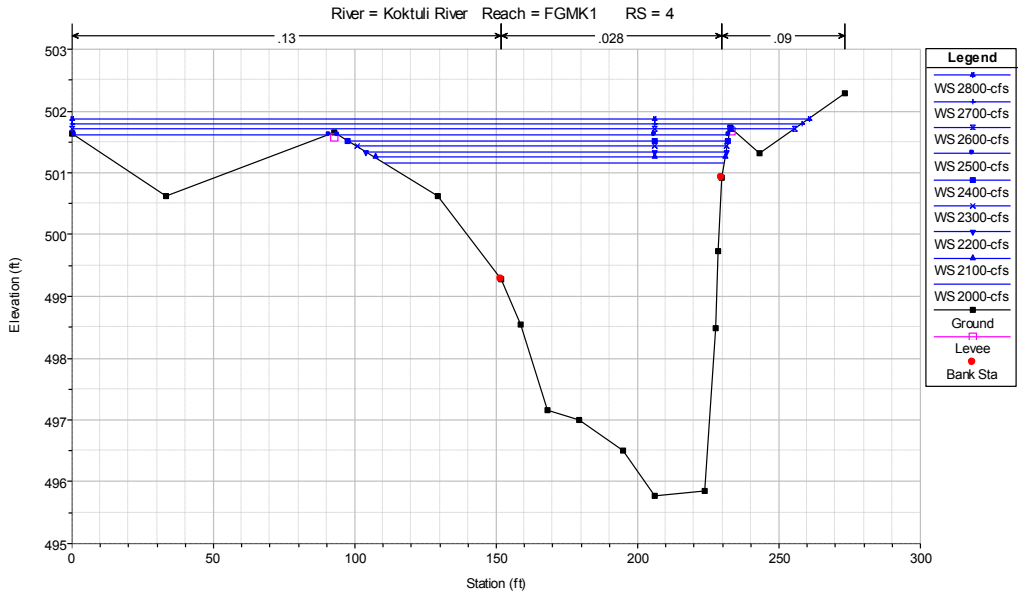


Figure 147 River Station (RS) 4 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

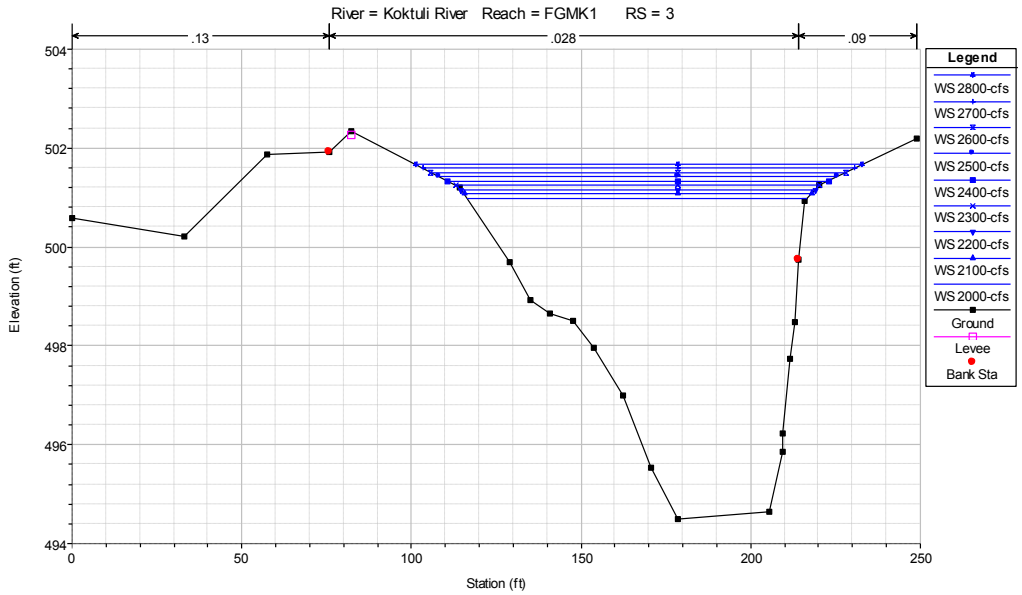


Figure 148 River Station (RS) 3 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

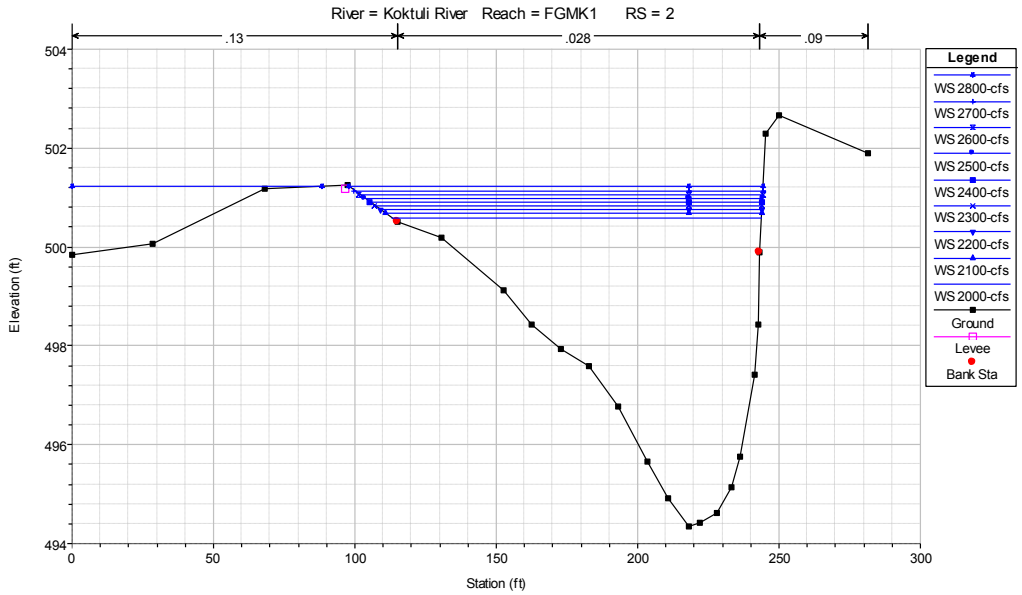


Figure 149 River Station (RS) 2 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

HEC-RAS CROSS-SECTIONS: FGMK1

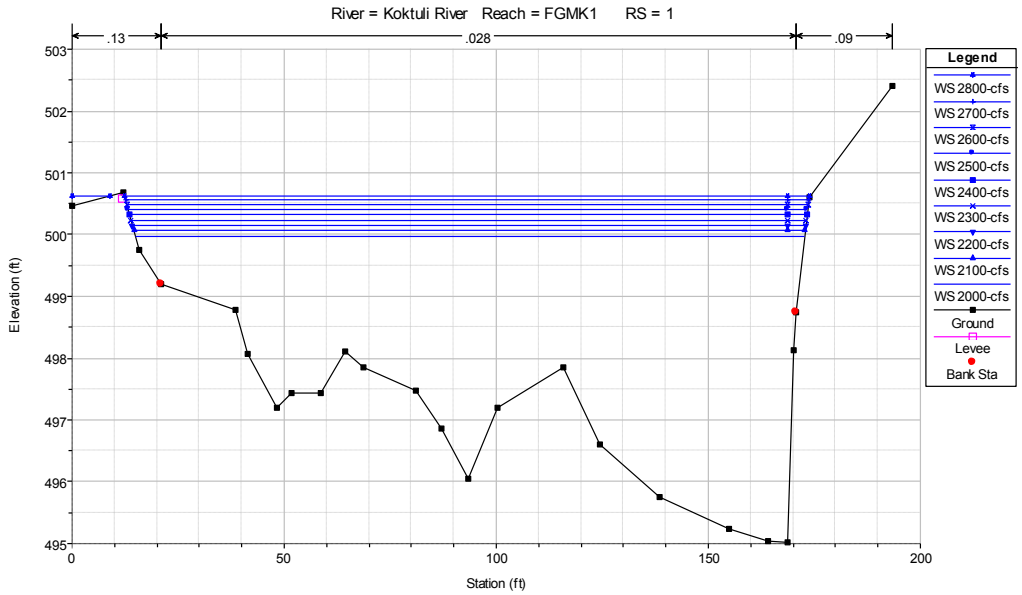


Figure 150 River Station (RS) 1 on River Reach FGMK1. Black line represents the channel ground facing downstream. Station (ft) is distance from the start of the cross-section (station 0). Blue lines represent water surface elevations at selected discharges.

INCIPIENT MOTION ANALYSIS: FGMK1

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number		
				0.017	0.021	0.026
FGMK1	9	2000-cfs	0.22	40	32	26
FGMK1	9	2100-cfs	0.22	40	32	26
FGMK1	9	2200-cfs	0.23	41	34	27
FGMK1	9	2300-cfs	0.24	43	35	28
FGMK1	9	2400-cfs	0.25	45	36	29
FGMK1	9	2500-cfs	0.25	45	36	29
FGMK1	9	2600-cfs	0.26	47	38	31
FGMK1	9	2700-cfs	0.27	49	39	32
FGMK1	9	2800-cfs	0.27	49	39	32
FGMK1	8	2000-cfs	0.18	32	26	21
FGMK1	8	2100-cfs	0.18	32	26	21
FGMK1	8	2200-cfs	0.19	34	28	22
FGMK1	8	2300-cfs	0.19	34	28	22
FGMK1	8	2400-cfs	0.20	36	29	24
FGMK1	8	2500-cfs	0.20	36	29	24
FGMK1	8	2600-cfs	0.21	38	31	25
FGMK1	8	2700-cfs	0.21	38	31	25
FGMK1	8	2800-cfs	0.21	38	31	25
FGMK1	7	2000-cfs	0.23	41	34	27
FGMK1	7	2100-cfs	0.23	41	34	27
FGMK1	7	2200-cfs	0.23	41	34	27
FGMK1	7	2300-cfs	0.23	41	34	27
FGMK1	7	2400-cfs	0.24	43	35	28
FGMK1	7	2500-cfs	0.24	43	35	28
FGMK1	7	2600-cfs	0.24	43	35	28
FGMK1	7	2700-cfs	0.24	43	35	28
FGMK1	7	2800-cfs	0.25	45	36	29
FGMK1	6	2000-cfs	0.15	27	22	18
FGMK1	6	2100-cfs	0.15	27	22	18

INCIPIENT MOTION ANALYSIS: FGMK1

Site	Section	Discharge	Shear	Mobile particle size (mm) for the given Shield's number		
			(lb/sq ft)	0.017	0.021	0.026
FGMK1	6	2200-cfs	0.15	27	22	18
FGMK1	6	2300-cfs	0.15	27	22	18
FGMK1	6	2400-cfs	0.16	29	23	19
FGMK1	6	2500-cfs	0.16	29	23	19
FGMK1	6	2600-cfs	0.16	29	23	19
FGMK1	6	2700-cfs	0.16	29	23	19
FGMK1	6	2800-cfs	0.16	29	23	19
FGMK1	5	2000-cfs	0.28	50	41	33
FGMK1	5	2100-cfs	0.29	52	42	34
FGMK1	5	2200-cfs	0.29	52	42	34
FGMK1	5	2300-cfs	0.29	52	42	34
FGMK1	5	2400-cfs	0.29	52	42	34
FGMK1	5	2500-cfs	0.30	54	44	35
FGMK1	5	2600-cfs	0.30	54	44	35
FGMK1	5	2700-cfs	0.31	56	45	36
FGMK1	5	2800-cfs	0.31	56	45	36
FGMK1	4	2000-cfs	0.50	90	73	59
FGMK1	4	2100-cfs	0.53	95	77	62
FGMK1	4	2200-cfs	0.55	99	80	65
FGMK1	4	2300-cfs	0.57	103	83	67
FGMK1	4	2400-cfs	0.59	106	86	69
FGMK1	4	2500-cfs	0.60	108	87	71
FGMK1	4	2600-cfs	0.62	112	90	73
FGMK1	4	2700-cfs	0.64	115	93	75
FGMK1	4	2800-cfs	0.65	117	95	77
FGMK1	3	2000-cfs	0.37	67	54	44
FGMK1	3	2100-cfs	0.39	70	57	46
FGMK1	3	2200-cfs	0.40	72	58	47
FGMK1	3	2300-cfs	0.42	76	61	49
FGMK1	3	2400-cfs	0.44	79	64	52

INCIPIENT MOTION ANALYSIS: FGMK1

Site	Section	Discharge	Shear (lb/sq ft)	Mobile particle size (mm) for the given Shield's number 0.017	0.021	0.026
FGMK1	3	2500-cfs	0.46	83	67	54
FGMK1	3	2600-cfs	0.48	86	70	57
FGMK1	3	2700-cfs	0.49	88	71	58
FGMK1	3	2800-cfs	0.51	92	74	60
FGMK1	2	2000-cfs	0.41	74	60	48
FGMK1	2	2100-cfs	0.42	76	61	49
FGMK1	2	2200-cfs	0.43	77	63	51
FGMK1	2	2300-cfs	0.45	81	66	53
FGMK1	2	2400-cfs	0.46	83	67	54
FGMK1	2	2500-cfs	0.48	86	70	57
FGMK1	2	2600-cfs	0.49	88	71	58
FGMK1	2	2700-cfs	0.50	90	73	59
FGMK1	2	2800-cfs	0.50	90	73	59
FGMK1	1	2000-cfs	0.32	58	47	38
FGMK1	1	2100-cfs	0.33	59	48	39
FGMK1	1	2200-cfs	0.34	61	50	40
FGMK1	1	2300-cfs	0.35	63	51	41
FGMK1	1	2400-cfs	0.36	65	52	42
FGMK1	1	2500-cfs	0.37	67	54	44
FGMK1	1	2600-cfs	0.38	68	55	45
FGMK1	1	2700-cfs	0.39	70	57	46
FGMK1	1	2800-cfs	0.40	72	58	47

PHOTOGRAPH DOCUMENTATION: FGMK1

Left bank along reference reach FGMK1

Right bank along reference reach FGMK1

Downstream from reference reach FGMK1

Upstream from reference reach FGMK1

PHOTOGRAPH DOCUMENTATION: FGMK1

Bank composition detail (left bank) FGMK1

Bank composition detail (right bank) FGMK1

Location of pebble count 2 FGMK1

Looking downstream from section 5
Pebble count 3 taken on the bar in the foreground and bulk sample taken to the left of the bar. FGMK1

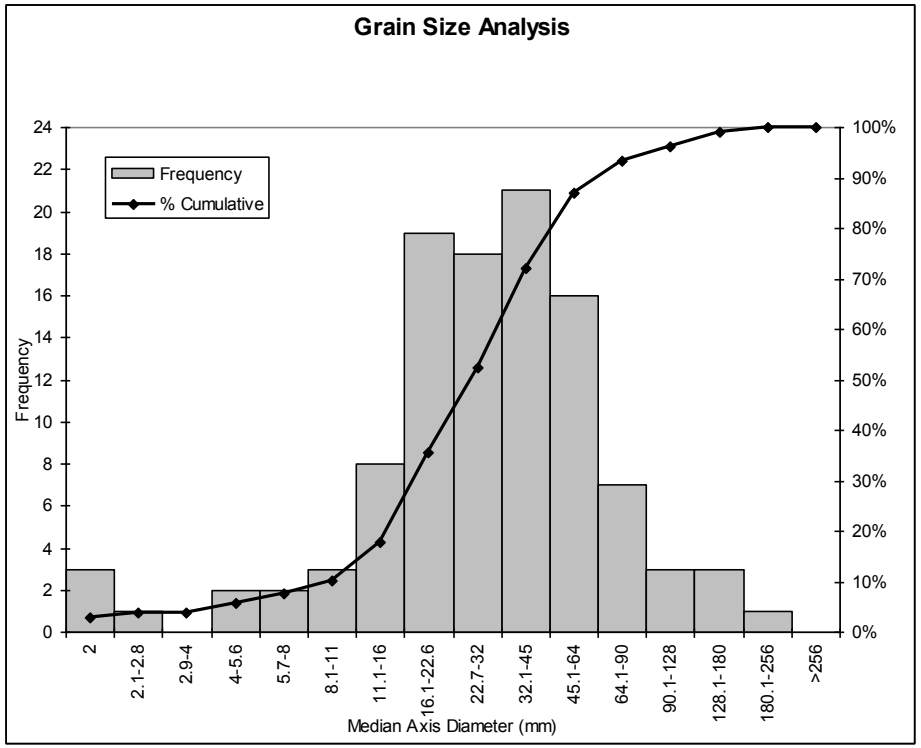
PHOTOGRAPH DOCUMENTATION: FGMK1

Oblique of site
From the upstream end looking downstream FGMK1

Oblique of site
From the downstream end looking upstream FGMK1

PEBBLE COUNT DISTRIBUTION: FGMK1

Pebble Count 1

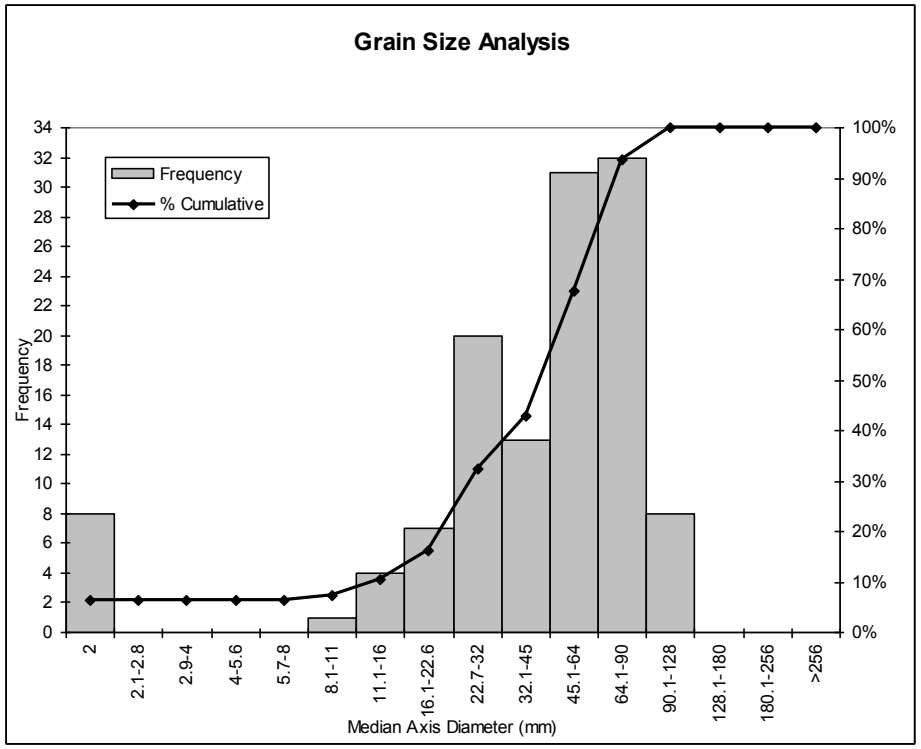


Size Class mm	*Frequency*	*Cumulative %*
2	3	2.8%
2.1-2.8	1	3.7%
2.9-4	0	3.7%
4-5.6	2	5.6%
5.7-8	2	7.5%
8.1-11	3	10.3%
11.1-16	8	17.8%
16.1-22.6	19	35.5%
22.7-32	18	52.3%
32.1-45	21	72.0%
45.1-64	16	86.9%
64.1-90	7	93.5%
90.1-128	3	96.3%
128.1-180	3	99.1%
180.1-256	1	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled across River Station (RS) 7

PEBBLE COUNT DISTRIBUTION: FGMK1

Pebble Count 2

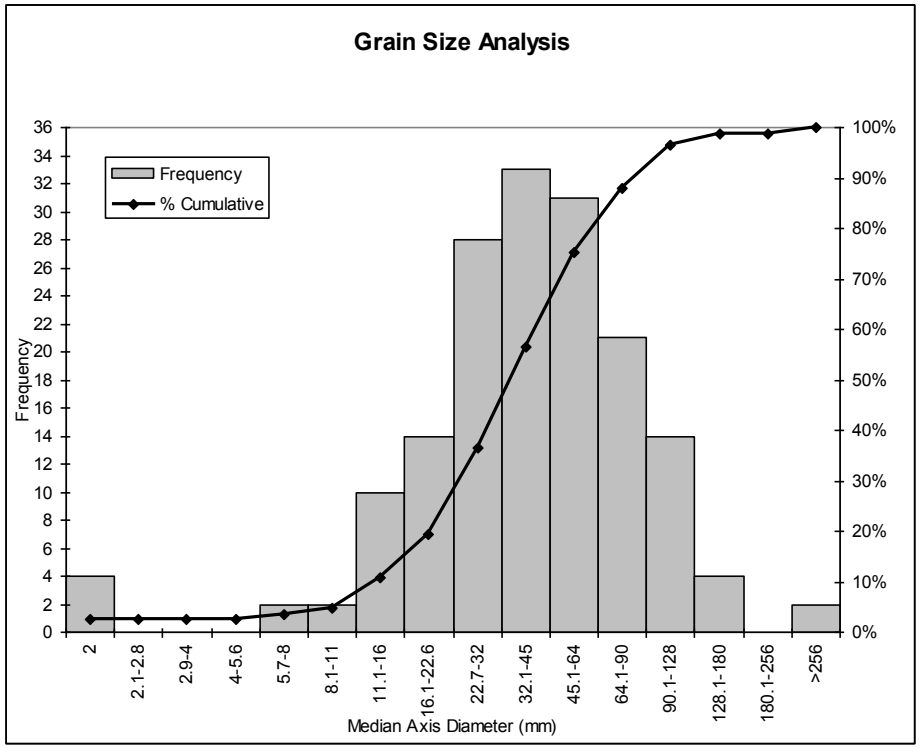


Size Class mm	*Frequency*	*Cumulative %*
2	8	6.5%
2.1-2.8	0	6.5%
2.9-4	0	6.5%
4-5.6	0	6.5%
5.7-8	0	6.5%
8.1-11	1	7.3%
11.1-16	4	10.5%
16.1-22.6	7	16.1%
22.7-32	20	32.3%
32.1-45	13	42.7%
45.1-64	31	67.7%
64.1-90	32	93.5%
90.1-128	8	100.0%
128.1-180	0	100.0%
180.1-256	0	100.0%
>256	0	100.0%

Description of Wolman Pebble Count Location: Sampled on bar along left bank of FGMK1

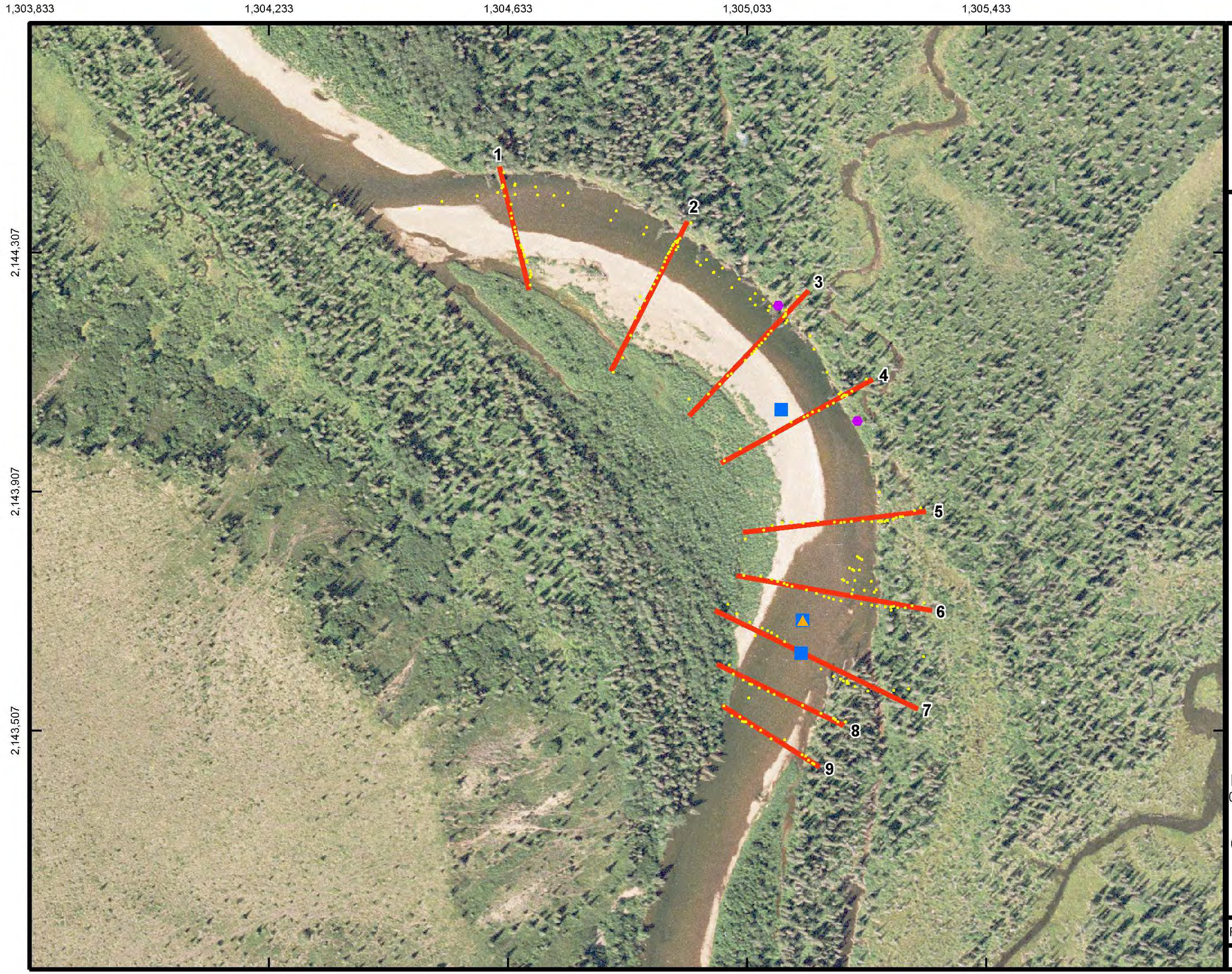
PEBBLE COUNT DISTRIBUTION: FGMK1

Pebble Count 3



Size Class mm	*Frequency*	*Cumulative %*
2	4	2.4%
2.1-2.8	0	2.4%
2.9-4	0	2.4%
4-5.6	0	2.4%
5.7-8	2	3.6%
8.1-11	2	4.8%
11.1-16	10	10.9%
16.1-22.6	14	19.4%
22.7-32	28	36.4%
32.1-45	33	56.4%
45.1-64	31	75.2%
64.1-90	21	87.9%
90.1-128	14	96.4%
128.1-180	4	98.8%
180.1-256	0	98.8%
>256	2	100.0%

Description of Wolman Pebble Count Location: On mid-channel bar, downstream of River Station (RS) 7

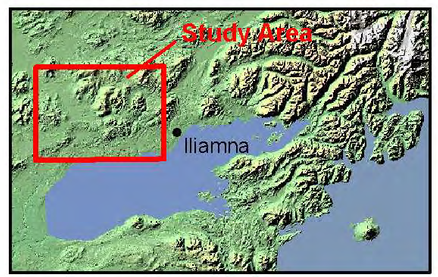


THE pebble PARTNERSHIP

Appendix 15.1F Fluvial Geomorphology
Attachment 3
Site FGMK1
(Mine Study Area)

Legend

- HEC-RAS Section
- Survey Point
- Pebble Count
- Bulk Sample
- Benchmark



Ft
0 120 240 360 480

Meters
0 40 80

Scale 1:2,000
Alaska State Plane Zone 5 (units feet)
1983 North American Datum

N

File:2007DraftReportMaps.mxd	Date: April 20, 2011
Version: 1	Author: IFI

APPENDIX 15.G

Naming Convention used for Waterbodies in the Mine Study Area

TABLE

Table 1, Examples of Common Names and associated Stream Codes of Waterbodies in the Mine Study Area

LIST OF FIGURES

Figure 1, Example of hydrography and designated stream codes for streams in the mine study area

Figure 2, Example of hydrography and designated stream codes for waterbodies in the mine study area

ACRONYMS AND ABBREVIATIONS

EBD	environmental baseline document for Pebble Project
DLG	digital line graph
GIS	geographic information system
NFK	North Fork Koktuli River
SFK	South Fork Koktuli River
USGS	U.S. Geological Survey
UT	Upper Talarik Creek

DESCRIPTION OF WATERBODY NAMING CONVENTION

A hydrography dataset of the study area was created from 1:63,360 USGS DLG features as well as hand-digitized streams to be used as a base layer for maps and to create a continuous line network to facilitate linear referencing of features. Because the majority of the streams within the study area did not have official names or have multiple local names, stream codes were designated to allow for organization of data across all years of collection and all disciplines, as well as linear referencing. The stream code naming convention applied is an alpha-numeric system separated by periods which indicate a streams relative position within the stream network based on the hydrography of the stream from its outlet upstream to its headwaters.

In the study area, three streams were considered to be mainstem channels: North Fork Koktuli (NFK), South Fork Koktuli (SFK) and Upper Talarik Creek (UT). The first segment of the stream code consists of alphabetic characters and the number one, representing the mainstem channel. The numbers following the first period represent tributaries to the mainstem moving in an upstream direction; the number zero is used to represent the mainstem of the stream. For example, in Figure 1, UT1.0 represents Upper Talarik Creek mainstem, while UT1.410 identifies a tributary to Upper Talarik Creek. Given the length of the mainstems, a three-digit code was used to represent the tributaries of the mainstems because they were initially numbered based on maps, which may only include larger tributaries. The third digit in the naming convention allows for streams that are found during field reconnaissance to be numbered in a sequential upstream direction without changing the numbers of existing streams. For instance, a tributary to South Fork Koktuli downstream of SFK1.240 and upstream of SFK1.230, was designated a stream code of SFK1.235. The two-digit numbers following the second period identify tributaries of tributaries to the mainstem, numbered sequentially in an upstream direction. Accordingly, all subsequent two-digit numbers separated by periods represent tributaries to the stream indicated to the left of the respective period. For example, UT1.410.10 identifies a tributary to UT1.410, while UT1.410.10.10 represents a tributary to UT1.410.10 (Figure 1).

Ephemeral streams can be common in the headwater areas of the study area, varying with annual changes in precipitation. The stream naming convention requires that a placeholder be left for the stream to accommodate historical and potential future data collection. In Figure 1, note that a placeholder has been left for UT1.410.20, an ephemeral stream historically noted as being present between UT1.410.10 and UT1.410.30.

Stream codes for ponds and lakes located within stream channels were also designated in a similar manner. The codes were based on the stream code of the catchment, followed by a “P” and a number indicating the sequential order of the pond/lake in an upstream direction. For example, NFK 1.240.P1 indicates the first in-stream pond located on NFK 1.240 (Figure 2). By using the stream codes, use of local names, for which a single waterbody could have several, is avoided. For instance, NFK1.240.P1 is also known as Big Wiggly Lake as well as Butterfly Lake (Table 1).

TABLE

TABLE 1
Examples of Common Names and associated Stream Codes of Waterbodies in the Mine Study Area

Common Name	Stream Code
Black Lake	NFK 1.170.40.P1
Big Wiggly Lake, Butterfly Lake	NFK 1.240.P1
First Creek, Otter Creek	UT 1.60
Northeast Trib	UT 1.350
Frying Pan Lake	SFK 1.0.P1
Chiquita Lake	SFK 1.130.P1

FIGURES

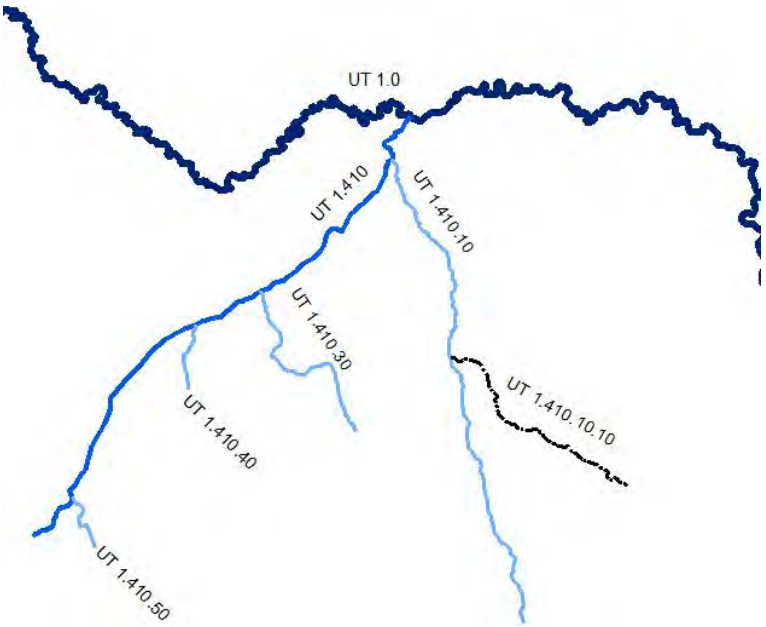


Figure 1
Example of hydrography and designated stream codes for streams in the mine study area

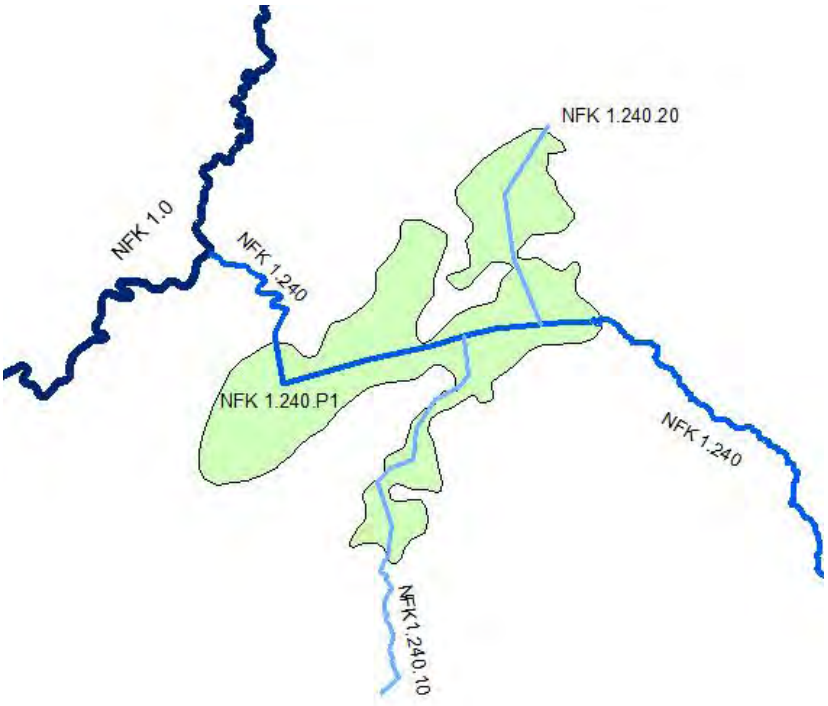


Figure 2
Example of hydrography and designated stream codes for waterbodies in the mine study area

15.2 Macroinvertebrates and Periphyton—Mine Study Area

15.2.1 Introduction

The macroinvertebrate and periphyton studies in the vicinity of the Pebble Deposit are part of the overall program of baseline investigations to describe the current aquatic conditions in the mine study area. Baseline information on macroinvertebrate and periphyton community assemblages is valued because they are essential components of the aquatic food web and their community structure, particularly with respect to the more sensitive taxa, is an indicator of habitat and water quality (Barbour et al., 1999; Merritt and Cummins, 1996). The streams in the area support commercial and sport fisheries that rely on the productivity of organisms lower on the food web, such as macroinvertebrates and periphyton.

Macroinvertebrates are organisms without a backbone and that are large enough to be seen without the aid of a microscope. Sampling of macroinvertebrates typically targets larval and pupal stages of organisms that live in or on the substrate of streams and lakes (De Pauw et al., 2006). Periphyton is micro-algae attached to rocks or other solid surfaces and was sampled in order to describe the primary producers within freshwater habitats in the mine study area. As with macroinvertebrates, periphytic organisms also are sensitive to changes in the aquatic environment and can be used as a monitoring tool for in situ primary productivity (ADF&G, 1998).

The following sections present the methodology for and findings of the macroinvertebrate and periphyton field studies conducted during the summers of 2004, 2005, and 2007. At the time of this writing, 3 years of data have been collected; however, for some data sets (e.g., Alaska Department of Fish and Game [ADF&G] periphyton methods, chlorophyll-*a*), only 2 years of baseline data exist because of a change in the sampling methods leading into the 2005 field season.

A range of macroinvertebrate and periphyton sample-collection methods was employed during the beginning stages of this project to determine which methods would work best in these systems. The variety of methods used contributes greatly to the robustness of the baseline data-collection program.

15.2.2 Study Objectives

The objective of the macroinvertebrate and periphyton field and laboratory program was to characterize diversity, abundance, and density of macroinvertebrates and periphyton within freshwater habitats in the mine study area.

15.2.3 Study Area

The mine study area for macroinvertebrate and periphyton studies includes stream and lake habitats. It is bounded on the west by the confluence of the north and south forks of the Koktuli River and on the east by the Upper Talarik Creek watershed (Figure 15.2-1). Study sites were located on the North Fork Koktuli River (NK), South Fork Koktuli River (SK), Kaskanak Creek (KC), Upper Talarik Creek (UT), Chulitna River (CR), Frying Pan Lake, and Big Wiggly Lake. The macroinvertebrate and periphyton study sites coincided with sampling sites for water quality, hydrology, and fish resources however, macroinvertebrate and periphyton studies were not required at all sites designated for the other studies.

Twenty sites were initially selected for sampling – 18 stream sites and one site each in Frying Pan Lake and Big Wiggly Lake. The number and location of the macroinvertebrate and periphyton study sites have evolved over time In addition, because the sampling program incorporated more sampling methods in 2005, and therefore more samples, the number of biological monitoring sites sampled for macroinvertebrates and periphyton was reduced to eight in 2005 (five in the immediate vicinity of the deposit). In 2007, 10 sites were sampled in the deposit area.

15.2.4 Scope of Work

Information review began in spring 2004 and field work was conducted during the 2004, 2005, and 2007 field seasons. Sample and data analysis was conducted throughout that time and continued into 2008. The macroinvertebrate and periphyton studies were conducted in accordance with the applicable procedures described in Chapter 11 of the consolidated study program for the environmental baseline studies (see Appendix E of this environmental baseline document). Overall quality assurance (QA) and quality control (QC) for the baseline studies can be found in the *Draft Environmental Baseline Studies, Proposed 2004 Quality Assurance Project Plan* (see Appendix G of this environmental baseline document). Andra Love, Isaac Watkins, Lynn Spencer, Josh Hedberg, Brian Cook, Jessica Manifold, and Erin Cunningham of HDR Alaska, Inc., and Sally Morsell of Northern Ecological Services conducted the studies.

The 2004 sampling program consisted of the following tasks:

- Macroinvertebrate sampling, ASCI method. One composite ASCI sample was collected at each site.
- Macroinvertebrate sampling, drift-net method. Five drift nets were employed at each site, and material was combined into one composite sample.
- Macroinvertebrate sampling (lakes) using a modified ASCI method. One composite sample was collected for each site.
- Periphyton sampling modified Rapid Bioassessment Protocol (RBP) method (diatom community). One composite RBP sample was collected at each site.
- Ambient water-quality measurements. One measurement of each parameter was recorded at each site.

Preliminary analysis of 2004 data and discussions on proposed data use and conditions in the study area resulted in a decision to modify the sampling program for 2005 and 2007 to consist of the following tasks:

- Macroinvertebrate sampling (streams) using the ASCI method. One composite sample was collected at each site.
- Macroinvertebrate sampling (streams) using the Surber sampler semi-quantitative method. Five samples were collected at each site.
- Macroinvertebrate sampling (lakes) using a modified ASCI method. One composite sample was collected at each site.

- Periphyton sampling using the ADF&G method. Ten chlorophyll-*a* samples were collected at each site.
- Ambient water-quality measurements. One measurement of each parameter was recorded at each site.

15.2.5 Macroinvertebrate Methods

Detailed descriptions of field protocols for the macroinvertebrate sampling can be found in *Draft Environmental Baseline Studies, 2005 Field Sampling Plan, Fish and Aquatic Habitat* (Appendix F of this environmental baseline document). The number of sampling sites in the study area was reduced from 20 in 2004 to 8 in 2005, and 10 sites were sampled in 2007 (Table 15.2-1). Sampling frequency was reduced from two sampling events in 2004 to one in 2005 and one in 2007. The reduction in sample sites and frequency in 2005 allowed for more intensely sampled stream reaches at selected sites; the addition of Surber sampling required a six-fold increase in the number of samples collected and processed at each site.

15.2.5.1 Field Sampling Protocol

In 2004, sampling occurred from June 1 through June 6 and from August 14 through August 18. In 2005, sampling occurred from June 10 through June 13, and in 2007 sampling was conducted June 13 through June 15. The field team documented the location of each 100-meter-long stream reach using a global positioning system (GPS) and flagged the locations to ensure that subsequent sampling would occur in the same areas. At each site, macroinvertebrate sampling and periphyton sampling were conducted concurrently. Generally, three team members began the collection process at the downstream end of the stream reach and worked upstream for 100 meters. Two team members collected macroinvertebrate samples, and the third member collected periphyton samples. The concurrent sampling of macroinvertebrates and periphyton was intended to avoid site disturbance upstream of sample collection.

For QA and QC, duplicate samples were collected at a minimum of 10 percent of the sample sites on streams during the 2004, 2005, and 2007 sampling events. After sampling, the following items were verified:

- Labeling on all sample bottles was complete and readable.
- All sample bottles were accounted for.
- All samples had sufficient preservative.

ASCI Sampling in 2004, 2005, and 2007

In accordance with ASCI protocols (Major and Barbour, 2001), 20 subsamples were collected in the 100-meter reach at each sampling site and then were combined into a single composite sample for each site. The subsamples were collected from the habitat types within the reach based on proportionate habitat representation; for example, if 50 percent of the stream bottom was estimated to be cobble/riffle habitat, 10 of the 20 subsamples (50 percent) were collected from cobble/riffle habitat. Common in-stream habitats include undercut banks, snags, cobbles/riffles, emergent vegetation, and sand or soft sediment. The calculations of habitat representation were recorded on data sheets similar to those found in the

ASCI protocols. Other parameters noted on the habitat-assessment data sheets include air and water temperature, riparian vegetation, signs of erosion, latitude and longitude, and canopy cover. Pictures were taken at each site to document local conditions.

Samples were collected using a D-frame kick net with 363-micrometer (μm) mesh. The field team collected the samples starting at the downstream end of the 100-meter reach and working upstream to avoid disturbing the substrate before sampling. The team members collected macroinvertebrates by disturbing the substrate immediately in front (upstream) of the D-frame net and scrubbing the substrate with gloved hands. When the water was too deep to dislodge the invertebrates by hand, the substrate was sampled by kicking it with felt-soled wading boots. The contents of the net were emptied into 1-liter Nalgene bottles and preserved with ethanol.

A suite of ambient water-quality measurements was recorded at each site, as required by the ASCI protocols. Parameters measured included temperature in degrees Celsius (°C), dissolved oxygen (DO) measured in both milligrams per liter (mg/L) and percent saturation, specific conductivity in milliSiemens per centimeter (mS/cm), and pH. All parameters were measured using a YSI Model 556 multi-probe system. The multi-probe was serviced before the field season and was calibrated or checked with confidence solution once daily according to manufacturer's specifications.

Drift-net Sampling, 2004

One composite drift net sample was collected at each stream site in 2004. Field staff set five nets with 363-μm mesh and 12-by-18-inch openings across the stream to collect drifting organisms. The nets were positioned at the upstream end of the 100-meter-long reach to avoid disturbance from concurrent ASCI sampling.

The field team recorded the depth of the submerged portion of each net and the stream velocity at each net's mouth for use in calculating the total volume of water that flowed through the net during the sampling interval. The sampling interval was approximately 1 hour. Team members recorded the actual length of time on the field data sheets. They combined the material removed from all nets at a site in a 1-liter Nalgene bottle to obtain a single composite sample for each site.

Surber Sampling, 2005 and 2007

The use of Surber samplers was added to the study program in 2005 to determine the density and composition of macroinvertebrate populations. Surber samples were collected only in riffle/cobble habitats in order to ensure more valid comparison between samples (Parsons and Norris, 1996). The sampler was constructed of 363-μm-mesh netting with a 1-square-foot mouth. A 1-square-foot metal frame attached to the net was folded down over the substrate in front (upstream) of the net to delineate the sampling area. To collect samples, field staff placed the net with the opening facing upstream and disturbed the substrate within the frame.

Five Surber samples were collected from a selected riffle/cobble area at each sampling site. From habitat characterization completed in 2004, researchers determined that riffle/cobble habitat was available at all previously established sampling reaches scheduled for sampling in 2005 and 2007. Samplers placed each Surber sample in a separate Nalgene bottle, preserved it with ethanol, and labeled the sample with site code, date, and number in the series (e.g., 1 of 5).

Modified ASCI Sampling, 2004 and 2005

Big Wiggly and Frying Pan lakes were sampled in August 2004 and June 2005 using a modified ASCI method (Major and Barbour, 2001). The goal of this sampling was reconnaissance only, and the sampling was not intended to be a quantitative sampling of the invertebrate populations in these lakes. Proportional habitat representation in the lake was assessed, and 20 subsamples were collected from each lake with the D-frame kick net. Because there was no flowing water, the field team dragged the net through the habitat substrate. When sampling emergent vegetation, team members positioned the net under the vegetation and disturbed the vegetation to dislodge resident organisms into the net. All 20 subsamples were composited into one sample, were placed in a Nalgene bottle, and were preserved with alcohol for later processing.

15.2.5.2 Laboratory Procedures

All samples were shipped to Anchorage for processing by scientists at HDR Alaska, Inc. Samples were logged on tracking sheets with site information, date sorted, date identified, processor's initials, and quality-control information according to QA/QC procedures as described in the 2005 field sampling plan for fish and aquatic habitat (see Appendix F of this environmental baseline document).

Sorting and Subsampling

ASCI Samples, 2004, 2005, and 2007. Sample material was placed in a numbered 30-square-grid Caton subsampling tray. A computer-generated table of random numbers was used to select the numbered squares for sorting. Organisms were sorted from the sample material until at least 300 specimens were counted and the last square selected for sorting was completely processed, even if the total for the sample exceeded 300 organisms. If macroinvertebrate densities exceeded 300 organisms per square (as determined early in the sorting process), four randomly selected squares were removed from the original volume of sample material and sorted in a second tray using the same random-selection method (Major and Barbour, 2001). This approach was used to ensure complete taxa representation and accurate density calculations. The laboratory team placed all organisms picked from the sample into a vial filled with histological-grade ethanol for later identification.

Drift Samples, 2004. All organisms were separated from the drift-sample debris. If it became evident that a high density of organisms (more than 1,000) was present in the sample, subsampling was used as described above for ASCI samples. The laboratory team placed the organisms into a vial filled with histological-grade ethanol for later identification.

Surber Samples, 2005, and 2007. All organisms were separated from the Surber-sample debris and were placed into a vial filled with histological-grade ethanol for later identification.

Identification

A 40x-power dissecting microscope was used to identify the sorted and preserved organisms to genus. To identify Chironomidae larvae to genus, 10 percent of the total number of Chironomidae larvae per subsample or a minimum of 20 individuals (strictly 10 percent in 2004) were identified. In 2005, all Chironomidae in samples that contained 20 specimens or less were identified. The laboratory team mounted organisms on slides with CMC-10 mounting media and identified them using either an Olympus

Model CX41 or a Bausch and Lomb 400x compound microscope. If it was not possible to identify an organism to genus (or the identification was uncertain) because of missing identifiers or small size, this limitation was noted on the data sheets along with the lowest taxon to which the organism could be identified with certainty. Although most taxa were identified to genus, some were left at a higher taxonomic classification because of the difficulty associated with taking them to higher resolution—a common practice in many macroinvertebrate assessment projects (Ourso, 2001; Bennett, 2001; ENRI, 2002). For example, oligochaetes are often not identified to genus in macroinvertebrate assessments because there are few taxonomic specialists available to perform the identifications and because the information gained from the additional resolution is of relative inconsequence to fish or water-quality assessments. Several macroinvertebrate taxonomic keys were used in the identification process (i.e., McCafferty, 1998; Merritt and Cummins, 1996; Wiederholm, 1983; Needham and Needham, 1962). Each year, independent taxonomic verification by third-party taxonomists was performed on 10 percent of the samples or a reference collection.

15.2.5.3 Data Analysis

Several metrics described in the ASCI protocol (Major and Barbour, 2001) were calculated from the macroinvertebrate data for each site. These metrics are taxa richness; percent Ephemeroptera, Plecoptera, and Trichoptera (EPT); percent Chironomidae; percent other Diptera taxa; percent dominant taxon; and Community Tolerance Index (CTI). These metrics have been documented as indicators of habitat change in previous studies (Major and Barbour, 2001). For the analysis of Surber-sample data, results were averaged from the five samples collected at each sample site, and the standard deviation of the mean was calculated for each result and standard error was calculated for the samples. Data should be interpreted with caution, because the number of samples was small.

Taxa richness was calculated as the total number of taxa found in a sample. Taxa richness scores were generated from the lowest taxonomic classification obtained for each organism. As described above, taxa richness scores were often based on genus-level identifications; however, a few taxa (e.g., Oligochaeta) were left at lower resolution.

Percent EPT is the portion of a sample that is made up of organisms in the orders Ephemeroptera, Plecoptera, and Trichoptera. Because EPT taxa are typically sensitive to changes in water quality, the percent of EPT abundance relative to total abundance is often used to assess the degree of disturbance in a sample (Lenat, 1988; Plafkin et al., 1989). Percent EPT was calculated by dividing the number of EPT organisms in a sample by the total number of organisms in that sample.

Similarly, *percent Chironomidae* and *percent other Diptera* are the proportions of a sample represented by the Family Chironomidae and by other taxa in the order Diptera, respectively. These metrics were calculated in the same manner as described for percent EPT.

Percent dominant taxon is the proportion of the sample represented by the most abundant taxon. Percent dominant taxon was calculated for each sample by determining which taxon represented the largest number of organisms in the sample and dividing that number by the total number of organisms in the sample (Plafkin et al., 1989).

The *Community Tolerance Index* for each site was derived by weighting the established tolerance value (TV) of each taxon identified for the subsample. Regional TVs for some, but not all, taxa of aquatic

macroinvertebrates have been established in the published literature and are available in Appendix B of the Environmental Protection Agency's (EPA's) Rapid Bioassessment Protocol (Barbour et al., 1999). The CTI is therefore calculated based on the numbers of taxa with assigned TVs and not solely on the total number of taxa in the sample.

The CTI value at each station was calculated using the following formula:

$$CTI = \frac{\sum_{t1...tn}\left(N_t \times TV_t\right)}{N_s}$$

Where:

CTI = Community Tolerance Index

N_t = total number of organisms in each taxon with an assigned TV in the subsample

TV_t = tolerance value of each taxon

N_s = total number of macroinvertebrates with an assigned TV in the subsample

Weighted TVs were derived by multiplying the total number of organisms in each taxon by the taxon's TV. All weighted TVs for the station were then summed and that value was divided by the total number of macroinvertebrates in the sample with assigned TVs, resulting in the CTI for that station.

Temporal and spatial trends were analyzed using SPSS and Excel data packages. Macroinvertebrate metric data were tested for differences between drainages, between upstream and downstream sites, and from year to year using a relative significance (*P*) value of 0.05. Test procedures are described in Section 15.2.7.

15.2.6 Periphyton Methods

Detailed descriptions of field protocols for the periphyton sampling can be found in the *Draft Environmental Baseline Studies, 2005 Field Sampling Plan, Fish and Aquatic Habitat* (see Appendix F of this environmental baseline document). Periphyton sampling sites for 2004, 2005, and 2007 are listed in Table 15.2-1, and their locations are depicted on Figure 15.2-1. With the addition of ADF&G methods for periphyton collection in 2005, sampling intensity was increased at each site and frequency was decreased from twice in 2004 to once per year in 2005 and 2007.

15.2.6.1 Field Sampling Protocol

Periphyton sampling was conducted concurrently with the macroinvertebrate sampling: June 1 through 6, and August 14 through 18, 2004; June 10 through 13, 2005; and June 13 through 15, 2007. Field sampling protocols used in 2004 were geared toward collecting diatoms for identification (Barbour et al, 1999), and in 2005 and 2007 toward collecting samples to determine chlorophyll-*a* concentrations (ADF&G, 1998). As described in Section 15.2.5.1, macroinvertebrates and periphyton were sampled concurrently with two team members collecting macroinvertebrate samples, and a third member collecting periphyton samples. Generally, team members began collection at the downstream end of the stream reach and worked upstream for 100 meters. The concurrent sampling was intended to avoid disturbance of the streambed upstream of sampling.

Sampling by Modified EPA Rapid Bioassessment Protocol, 2004

Periphyton sampling methods used in 2004 were modified from the periphyton section of EPA's RBP (Barbour et al., 1999). Modifications to the protocols consisted of sampling five transects instead of four and sampling various periphyton habitats based on proportional representation (similar to ASCI protocols for macroinvertebrates) instead of sampling four riffle/run areas. These modifications improved the ability to standardize stream sampling areas for the macroinvertebrate and periphyton studies. Four periphyton habitat types were documented while performing the habitat-assessment survey: hard removable substrates (woody debris, cobble, gravel), soft removable substrates (mosses and macrophytes), large substrates (boulders, bedrock, logs), and loose substrates (sand, silt, clay).

The field team collected 20 periphyton subsamples from the stream reach at each site and combined them to form one composite sample per site. The proportion of the 20 subsamples collected from each of the four habitat types was based on the percentage of each habitat that existed in the stream reach (as described for macroinvertebrates). Sampling procedures varied depending on the habitat being sampled, as described below. For QA/QC purposes, duplicate samples were collected at 10 percent or more of the sites during each sampling event.

To sample hard removable substrates, cobbles and/or gravel and/or pieces of wood were removed from the stream and placed in a bucket. Each piece removed constituted one of the 20 subsamples. On the stream bank, a rubber sampling band was wrapped around the cobble or gravel with the hole in the band located on the upper surface of the cobble or gravel. The sampling bands were created prior to the first sampling event by cutting a 4.5-centimeter-diameter hole in a bicycle-tire tube and reinforcing the opening with a rubber washer to prevent stretching or tearing. The exposed area of the rock was scrubbed with a small toothbrush, and the loosened material was rinsed into a pan. The pan was then drained into the 1-liter Nalgene bottle containing the composite sample.

When mosses and macrophytes were sampled, approximately 16 square centimeters of material was collected from the stream and was placed in an empty 1-liter Nalgene bottle. The material was rinsed with a small amount of water and the bottle was shaken vigorously to dislodge periphyton from the plant material. The rinse water containing periphyton was transferred to the 1-liter Nalgene sample bottle containing the composite sample.

Large substrates were sampled in situ with a 4.5-centimeter-diameter sampling tube of polyvinyl chloride (PVC) and a toothbrush with a head that was modified to fit inside the PVC tube. Foam lining was attached to the PVC tube to create a "seal" when pressed against the large substrate. This assembly isolated a 4.5-centimeter sample area on the boulder or other large substrate from the stream flow. The modified toothbrush was used to scrub the surface of the substrate inside the PVC tube to dislodge the periphyton. The sample area inside the tube was washed with a small amount of water, and a turkey baster was used to draw out the rinse water containing the periphyton for transfer to the composite sample bottle.

Loose sediments (sand and soft sediments) were sampled with 4.5-centimeter-diameter plastic Petri dishes. The open side of the Petri dish was pushed into the substrate and a flat metal spatula was slid under the Petri dish and used to lift the dish and sample out of the water. The substrate was then removed from the Petri dish and placed in an empty 1-liter bottle. A field team member placed a small amount of water in the bottle, capped the bottle, and shook the material vigorously to dislodge the periphyton. Only

a few seconds were allowed for the sediment to settle before the rinse water containing the periphyton was transferred into the composite sample bottle.

At the end of the collection process at each site, a 1-liter Nalgene bottle marked with 100-milliliter increments contained the composite sample, which consisted of water-and-periphyton rinsate from all 20 subsamples. Enough ambient stream water was added to bring the volume to the next calibrated marker on the bottle, and this volume was recorded on the data sheet. The composite sample was shaken vigorously for 1 minute. Immediately after the composite bottle was shaken, enough water was drawn out to fill a 100-milliliter Nalgene bottle, to which two to three drops of Lugol's solution were added as a preservative. The remaining sample volume was discarded. The 100-milliliter bottles were stored in coolers and were transported to Anchorage by the field team.

Sampling by ADF&G Chlorophyll-a Method, 2005 and 2007

Periphyton samples were collected from the same riffle/cobble area in the stream reach from which the macroinvertebrate samples were collected by Surber sampler. Care was taken to avoid substrate disturbance in the area being sampled by the other team members. Periphyton was removed from 10 cobbles selected from a riffle/cobble area that had not been disturbed by macroinvertebrate sampling.

Sample collection followed ADF&G methods (ADF&G, 1998). A piece of 5-square-centimeter high-density foam was placed on a cobble. After using a toothbrush to scrub the portions of the cobble not covered by foam, all material was washed from around the foam. A clean toothbrush was used to clean the area under the foam square, and the loosened material was rinsed onto a 45-micrometer glass fiber filter attached to a hand vacuum pump. To the extent possible, water was extracted and 1 milliliter of saturated magnesium carbonate ($MgCO_3$) solution was added to the filter as a preservative. The dry filter was wrapped in a larger filter to absorb additional water, and the sample was placed it in a zipper-seal bag with silica gel desiccant. Filters were frozen in a lightproof container with desiccant for shipment to Anchorage in care of the HDR field team.

15.2.6.2 Laboratory Procedures

Diatom Sample Processing, 2004

Periphyton samples collected in 2004 using the EPA RBP method (Barbour et al., 1999) were processed by HDR scientists at Alaska Pacific University facilities. All samples were logged on a tracking sheet and a data-processing sheet.

Acid Digestion. Two 400-milliliter graduated beakers were labeled for each sample. Each sample was then transferred to a beaker. After recording the sample volume, the sample was homogenized with a hand-held blender to thoroughly mix the material and break down large periphyton colonies. The blender and the walls of the beaker were washed with deionized (DI) water into the rinsate. The new volume was recorded as the "working volume."

The beaker was then placed on a stirring plate. While the sample was being stirred, 20 milliliters of the sample were withdrawn and placed in a second, labeled 400-milliliter beaker for acid digestion. The remaining material was returned to the original sample bottle for storage.

Samples were digested using 30 milliliters of nitric acid. The beaker was allowed to heat on a hot plate set at 200ºC for two hours. After digestion was complete, a small amount of potassium dichromate was added to the sample to catalyze the reaction. The beaker was allowed to cool.

After completion of the acid digestion, several contributions of DI water were added to slightly increase the pH. The samples were left undisturbed for 12 hours while the diatoms settled in the bottom of the beaker. After the diatoms had settled, the sample was diluted using DI water until the sample pH increased to at least 6.0. Approximately 25 to 50 milliliters of sample were transferred to a 100-milliliter storage vial. This volume was recorded as the diatom volume "after digestion" (Barbour et al., 1999).

Slide Preparation. After all samples were acid digested, the diatoms were mounted on slides for identification. An initial cover slip was prepared with 10 milliliters of sample water. After the cover slip was dry, the slide was examined with an Olympus CX41 compound microscope under 400x magnification to determine whether the prepared sample had the proper distribution and density of diatoms. If the density of diatoms was too great, a new cover slip was created with less sample material, and the new volume was recorded. If the density was too thin, more sample was added. The volume of material added to the cover slip was recorded as "drip additional." Some of the slips were remade because of large amounts of sand and silt in the samples.

Naphrax was used for mounting diatom samples to slides. A cover slip with the sample was placed sample-side down on the Naphrax and heated to affix the cover slip to the slide. Slides were labeled with the sample identification code (Barbour et al., 1999).

Identification. Samples mounted on slides by HDR scientists were sent to Scott Rollins of the Michigan State University Algal Ecology Laboratory for identification. Diatom counting and identification began in one corner of each slide and continued along a transect until 600 diatoms were identified on that slide.

Chlorophyll-*a *Sample Processing, 2005 and 2007

Frozen periphyton samples were shipped from Anchorage to Bill Morris of the Alaska Department of Natural Resources, Office of Habitat Management and Permitting, in Fairbanks for chlorophyll-*a* analysis. Samples were analyzed with a Shimadzu UVI 601 spectrophotometer. Each sample was inspected and the general condition recorded before sample preparation. The sample filter was cut into small pieces and placed in a 15-milliliter centrifuge tube. Chlorophyll was extracted by adding 10 milliliters of a 90-percent solution of spectrophotometric-grade acetone and soaking overnight inside a dark refrigerator. Vials were wrapped in aluminum foil to ensure they remained completely dark during the extraction. On the day following initial preparation, samples were placed in a centrifuge and spun at 1,600 revolutions per minute for 20 minutes. The samples were decanted individually into cuvettes, and absorption values at 750 nanometers, 664 nanometers, 647 nanometers, and 630 nanometers were recorded. Approximately 0.08 milliliter of 0.1 N hydrochloric acid (HCl) was added to each cuvette, and the samples were allowed to sit in the dark for 90 seconds. Absorption values at 750 and 665 nanometers were recorded (McLean, pers. comm., 2005).

15.2.6.3 Data Analysis

Periphyton results from 2004 and 2005/2007 were analyzed in separate data sets because of differences in sample-collection and processing methods. The EPA RBP method used during the two sampling events in

2004 was designed to gather information on diatom diversity. The ADF&G chlorophyll-*a* method used during the 2005 and 2007 sampling events was designed to determine concentrations of chlorophyll-*a*.

Diatoms

Taxa richness and percent dominant taxon were calculated from the 2004 diatom data. Because only one year of data was collected, analysis of the data was limited to an examination of spatial variability among sample sites.

Taxa richness was calculated as the total number of taxa, usually genera, identified in a sample. Researchers identified 600 diatoms from each slide-mounted sample to the lowest taxon practicable, and from this list, the sum of all taxa for that station was calculated.

Percent dominant taxon is the portion of the sample represented by the most populous taxon. Percent dominant taxon was calculated for each station by determining which taxon represented the largest number of organisms in the sample and dividing the number of organisms of that taxon by the total number of organisms in the sample.

***Chlorophyll*-a**

The ADF&G-preferred method for analyzing periphyton abundance is to determine chlorophyll-*a* concentrations (ADF&G, 1998). Chlorophyll-*a* was reported as milligrams per square meter (mg/m^2). A correction factor was sometimes necessary to account for conversion from chlorophyll-*a* to phaeophyton. This correction factor was applied to the data set as necessary. Temporal and spatial analyses were possible with 2 years of data (2005 and 2007), but results should be interpreted with caution because the number of samples was small.

15.2.7 Results and Discussion

15.2.7.1 Macroinvertebrates

During the course of the program, 132 primary macroinvertebrate samples, plus duplicates on a minimum frequency of 10 percent, were collected at the established biological monitoring sites in the mine study area. Other opportunistic samples were collected during ancillary studies and are reported elsewhere in the EBD (see Fish Resources Section XX and Appendix B, Iliamna Lake Study). Two hundred thirty five macroinvertebrate taxa, including 64 chironomid taxa, have been identified in the Bristol Bay drainages study area (Tables 15.2-2 and 15.2-3). (The Bristol Bay drainages study area includes both the mine and the transportation-corridor study areas, the latter of which is discussed in Section 15.4). Differences in taxa richness occurred between years at sites in the mine study area (e.g., NK100C and UT100D) and between sampling methodologies (Figure 15.2-2 and 15.2-3). At many sampling sites, however, differences were minimal. A combination of modifications to the sampling strategy and naturally occurring seasonal and annual variability could account for the differences between years both in taxa richness and in the types of taxa identified.

As mentioned above, sampling strategies were different in 2004 than in 2005 and 2007, and the number of sampling sites was reduced from 20 in 2004 to eight in 2005, then increased to 10 in 2007. In addition, samples were collected during early and late summer in 2004, whereas samples were collected only in

early summer in subsequent years. Seasonal variability in macroinvertebrate communities is well documented (HDR, 1999; Major et al., 2000, Merritt and Cummins, 1996) and is somewhat evident in Figure 15.2-2. Taxa richness in 2007 was comparable to 2004 levels.

Analysis of data from 2004 indicated that benthic sampling using a kick net (ASCI method) was generally more successful at collecting a variety of macroinvertebrates than the drift-net method of sampling the water column (Figure 15.2-2). The only instances where drift sampling collected equal or greater numbers of taxa than ASCI sampling were in June at CR199A, SK100C, UT100B, and UT119A. Drift sampling was discontinued after 2004 because, generally, fewer organisms were collected by that method than by using kick nets.

Macroinvertebrate metrics were calculated based on the 2004, 2005, and 2007 data for ASCI and Surber samples (Tables 15.2-4 through 15.2-9). Diptera, including the Family Chironomidae, was generally the dominant taxon, and Ephemeroptera typically made up the bulk of EPT taxa (Figures 15.2-4 and 15.2-5). In bioassessment studies in the Lower 48, a high proportion of Chironomidae in the population and/or a high value for percent dominant taxon indicate a more stressful aquatic habitat for macroinvertebrate survival (Barbour et al., 1999); however, conditions in the mine study area are pristine, and high numbers of Chironomidae are considered normal for this region and elsewhere in Alaska (Oswood et al., 1995).

Total taxa richness was lower in 2005 than in 2007 (Figure 15.2-3). Average percent EPT (sensitive taxa) was generally higher for samples collected using the Surber method (riffle/cobble habitat sampling) than percent EPT in ASCI-method samples (multi-habitat sampling) in the mine study area (Tables 15.2-6 through 15.2-9), despite the fact that riffle/cobble habitat composed the largest portion of habitats sampled by the ASCI method.

CTI values are another measure of relative aquatic habitat quality and are based on the relative tolerance of macroinvertebrate taxa to stressful conditions. CTI scores in 2004, 2005, and 2007 ranged from 3.9 through 6.1, 4.9 through 6.0, and 4.5 through 6.6, respectively (Tables 15.2-4 through 15.2-9; possible range of values 0 through 10). ASCI samples produced a wider range of CTI values than Surber samples in both 2005 and 2007 (Tables 15.2-6 through 15.2-9).

To test for temporal and spatial trends in the metric data, Surber-sample data from 2005 and 2007 for the five sites that were consistently sampled in those years—NK100A, NK100C, SK100B, UT100B, and UT100D—were analyzed. For each response variable, a repeated-measures analysis of variance (ANOVA) was performed using Proc Mixed for SPSS with a compound symmetry covariance structure. Each location in each year was considered a subject, and year and river were factors. Response variables that were proportions were first arcsine transformed using the formula 2*arcsine (square root(y)) to equalize the variance, and proportions of zero were converted to 1/(4*n) prior to applying the transformation (Neter et al., 1990). Statistically significant differences were found among rivers for percent Ephemeroptera, percent Diptera, percent other order, and percent EPT taxa (Table 15.2-10). This result would be expected because habitats are quite different between the Upper Talarik and the Koktuli drainages.

To test for differences between upstream sites and downstream sites in the ASCI data, results from two sites each on the Upper Talarik (UT100D and UT100B) and on the North Fork Koktuli (NK100C and NK100A) were compared using a paired t-test. The South Fork Koktuli was not analyzed because only one site (SK100B) was sampled during all years. The sample size for each site was three (2004, 2005, and

2007). Proportions were arcsine transformed before analysis. There were statistically significant differences in percent Ephemeroptera, percent Chironomidae, and percent Diptera between upstream and downstream sites on the Upper Talarik and in percent Chironomidae and percent Diptera between upstream and downstream sites on the North Fork Koktuli (Table 15.2-11).

Differences between upstream sites and downstream sites in the Surber data were tested with repeated-measures ANOVAs for each river separately. Each site in each year (2005 and 2007) was used as a subject with the five Surber samples as a repeated measure. SiteID was the only factor included in the model. Proportions were arcsine transformed before analysis. No statistically significant differences were found between upstream and downstream locations for Surber samples in any of the response variables for either river (Table 15.2-12). The difference between these results and the results from the ASCI tests could be due to one less year of data for Surber sampling or there may be fewer differences among riffle habitats that among more varied habitats.

Water-quality results (Tables 15.2-13 through 15.2-16) were comparable to typical Alaskan cold-water streams (Brabets and Ourso, 2006). It should be noted that results for percent DO indicate frequent supersaturated conditions (i.e., results higher than 100 percent). Supersaturation of DO is not uncommon and occurs as a result of a combination of factors: temperature, atmospheric pressure, turbulence, and production of oxygen during photosynthesis in aquatic plants. Turbulence in shallow water (streams) and oxygen from photosynthesis (lakes) are the most likely contributing factors to DO supersaturation in the mine study area. To evaluate the possibility of instrument error causing the highest readings, the highest percent DO values were recalculated and were compared to values calculated from DO concentrations measured at the same sampling sites during the same months by the water-quality sampling team. The results of these cross-checks indicate that DO supersaturation was indeed occurring, although the meter readings collected in the field tended to be slightly higher (2 to 3 percent) than calculated values. This could be the result of slight instrument error. Data are not presented for instances when an obvious instrument malfunction occurred (e.g., June 2005, see Table 15.2-15). In general, at the time of sampling, all three drainages provided good to optimal levels of DO, temperature, dissolved constituents (conductivity), and pH—water-quality parameters that are important to diverse macroinvertebrate communities.

Water-quality results were compared to total taxa and percent EPT metrics for both Surber and ASCI samples using the statistical procedures described above in the macroinvertebrate discussion. For Surber samples, the repeated-measures ANOVAs used total taxa and percent EPT as response variables and separate tests were conducted for each explanatory variable: DO as milligrams per liter, DO as percent, specific conductivity, relative conductivity, pH, and temperature. Percent EPT was arcsine transformed before analyses.

Contrary to what was expected, percent EPT declined with increasing DO as mg/L (Table 15.2-17); however, if SK100B was removed from the analysis, the relationship between DO as mg/L and percent EPT was no longer significant ($P = 0.119$). SK100B had low pH and temperature, and low percent EPT, a relationship that might be expected because low pH can sometimes have a detrimental effect on the sensitive EPT taxa. When river (NK, SK, UT) was included in the model as a categorical variable, no water-quality variables showed statistically significant relationships with total taxa or percent EPT (all $P > 0.050$), although DO as mg/L was close to significant for percent EPT ($P = 0.051$).

For ASCI samples, simple linear regression was used to evaluate the response of total taxa and percent EPT to changes in DO as mg/L, DO as percent, specific conductivity, relative conductivity, pH, and temperature. Percent EPT was arcsine transformed before analysis.

The taxonomic richness of ASCI samples declined an average of 0.799 taxa for every 1°C increase in temperature, a result which is statistically significant (Table 15.2-18). When river (NK, SK, UT) was included in the model as a categorical variable, temperature was still the only significant ($P = 0.036$) water-quality variable for total taxa, and no water-quality variables were significant with percent EPT (all $P > 0.05$).

Measurements of habitat parameters at each site fall within ranges considered good to optimal for aquatic habitat (Table 15.2-19; Major and Barbour, 2001). The sites sampled in this study were located in a pristine area with few to no human-caused effects.

15.2.7.2 Periphyton

Thirty-six diatom genera and 188 diatom species were present in the 20 samples collected in 2004 in the Bristol Bay drainages study area (Table 15.2-20). (The Bristol Bay drainages study area includes both the mine and transportation-corridor study areas, the latter of which is discussed in Section 15.4.) During the course of the study, 115 primary periphyton samples were collected from the mine site study area biological monitoring sites.

Taxa richness and percent dominant taxon were calculated for periphyton collected in 2004 (Table 15.2-21). The metrics using the 2004 data were calculated from identifications of periphyton genera. Taxa richness was relatively uniform among the sites sampled in 2004, with seasonal differences of four or fewer taxa at each site, except at SK100B, which had a difference of seven taxa (Figure 15.2-6 and Table 15.2-21). The percent dominant taxon in periphyton samples in some instances equaled more than 50 percent, which result is generally considered a negative indicator for stream health (Wehr and Sheath, 2003). However, the stream reaches sampled are considered representative of unimpaired conditions because they are pristine and in a region of negligible human effect. As stated in the macroinvertebrate section above, measurements of water-quality parameters consistently fell within ranges considered good to optimal for aquatic habitat health (Table 15.2-19).

Periphyton samples collected in 2005 and 2007 were analyzed for chlorophyll-*a* concentration as a quantifiable measure of productivity. In 2005, samples were collected from six sites, and in 2007, samples were collected from 10 sites; 10 samples were collected from each site. Samples from UT100D in 2005 were potentially compromised by insufficient freezing time for sample preservation. Data still could be extracted from these samples and are reported in this document, although the usability of those data is in question.

Average chlorophyll-*a* concentrations from samples collected in 2005 ranged from a low of 2.1 ±0.82 mg/m^2 at UT100D to a high of 17.0 mg/m^2 at SK100B (Table 15.2-21; Figure 15.2-7). Variability among the five samples collected at each site was relatively high and was particularly notable at SK100B, UT100B, and UT138A. Chlorophyll-*a* concentrations from samples collected in 2007 ranged from 2.3 mg/m^2 at UT119A to a high of 30.2 mg/m^2 at UT100D (Table 15.2-21; Figure 15.2-7). No consistent temporal trends could be found in the chlorophyll data between the 2005 and 2007 sampling events. Chlorophyll-*a* concentrations in 2007 were similar to concentrations found in 2005 except at two of the

sites—concentrations at UT100D were much higher in 2007 than in 2005, and concentrations at SK100B were much lower in 2007 than in 2005. A possible explanation for the wide difference at UT100D is that the previously described sample preservation issues associated with UT100D in 2005 may have affected the results for that site for that year. Periphyton growth is correlated with nutrient availability, photoperiod, and temperature, and it is possible that differences in habitat parameters from year to year produce variability in periphyton data. Temperatures in 2007 were generally cooler than those in 2005, and this difference could explain the lower chlorophyll-*a* concentrations at SK100B in 2007; however, the lower chlorophyll concentrations in 2007 were not seen at the other sites.

No consistent trend was found between macroinvertebrate taxa richness or percent EPT and chlorophyll-*a* concentrations. However, Chironomidae often comprised a high percentage of the taxa composition at a given site and, in many cases, was the dominant taxon comprising over 50 percent of the sample. Some Chironomidae genera feed on periphyton or prey on taxa that consume periphyton. In 2005, percent Chironomidae was found to be highly correlated with chlorophyll-*a* concentrations ($R^2 = 0.7908$), but this trend was not as evident in 2007 ($R^2 = 0.1157$; Figure 15.2-8).

15.2.8 Summary

Twenty sites in the mine study area were sampled in 2004 for macroinvertebrates and periphyton. During the course of the study, 132 primary macroinvertebrate samples and 115 primary periphyton samples were collected at the mine site biological monitoring sites; additional duplicate samples were collected on approximately 10 percent frequency and other opportunistic samples were collected for ancillary studies or reconnaissance purposes. Of the 21 sites, eight (five in the immediate vicinity of the deposit) were selected for continued sampling in 2005, and 10 were sampled in 2007. The sampling sites included a range of stream sizes and habitats, as well as two sites at lakes. Methods used to sample macroinvertebrates and periphyton differed slightly between 2004 and subsequent sampling years of 2005 and 2007. Beginning in 2005, Surber sampling for macroinvertebrates replaced drift-net sampling in streams, and collection of periphyton samples for analysis of chlorophyll-*a* concentrations replaced sampling by the modified EPA RBP method. ASCI sampling was consistent throughout all 2004, 2005, and 2007 events.

Aquatic-habitat surveys indicate that the sample sites were composed largely of riffle/cobble habitat, which is the preferred habitat of Ephemeroptera, Plecoptera, and Trichoptera taxa. The EPT taxa are the most likely to be used as indicators of the quality of aquatic habitats pre- and post-mine development. The results of the metrics generally indicate low percent EPT, high percent Chironomidae, and high percent dominant taxon, which can sometimes be negative indicators for stream health, although similar results have often been seen in other bioassessment studies in Alaska (ADF&G 2007). No statistically significant relationship was found between most water-quality results and the macroinvertebrate metrics data, but taxa richness in ASCI samples was negatively correlated with temperature, a result that was expected.

A range of macroinvertebrate and periphyton sample-collection methods was employed during the beginning stages of this project to determine which methods would work best in these systems. The variety of methods used contributes greatly to the robustness of the baseline data-collection program.

15.2.9 References

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15.2.10 Glossary

Acid digestion—process by which organic material is separated from inorganic material under low pH conditions.

Diatom—microscopic algae with cells that have two separate halves and walls made of silicon.

Epifaunal substrate—material on a streambed used by organisms that live on the bottom of the stream.

Macroinvertebrates—organisms with no backbone and that are large enough to be seen without the aid of a microscope.

Macrophytes—plants living in lakes, streams, or wetlands and that are large enough to be visible with the naked eye.

Metrics—standards of measurement.

Phaeophyton—a product of chlorophyll degradation that absorbs light at the same wavelength, thereby interfering with measurement of chlorophyll.

Periphyton—micro-algae that attaches to rocks or other solid surfaces.

Taxon (plural: taxa)—a taxonomic category or group, such as a phylum, order, family, genus or species.

TABLES

TABLE 15.2-1
Macroinvertebrate and Periphyton Sampling Sites and Methods, Mine Study Area, 2004 through 2007

Sample Location	Year	Month											
		J	F	M	A	M	J	J	A	S	O	N	D
CR199A	2004						D						
	2005												
	2007												
KC100A	2004						D		D				
	2005												
	2007												
NK100A	2004						D		D				
	2005						S						
	2007						S						
NK100B	2004						D						
	2005												
	2007												
NK100C	2004						D		D				
	2005						S						
	2007						S						
NK119A	2004						D		D				
	2005												
	2007						S						
SK100A	2004						D		D				
	2005												
	2007						S						
SK100B	2004						D		D				
	2005						S						
	2007						S						
SK100C	2004						D						
	2005												
	2007												
SK100F	2004						D		D				
	2005												
	2007												

Sample Location	Year	Month											
		J	F	M	A	M	J	J	A	S	O	N	D
SK100G	2004						D		D				
	2005												
	2007												
SK119A	2004						D		D				
	2005												
	2007												
UT100B	2004						D		D				
	2005						S						
	2007						S						
UT100C	2004						D		D				
	2005												
	2007						S						
UT100D	2004						D		D				
	2005						S						
	2007						S						
UT100E	2004						D		D				
	2005												
	2007												
UT119A	2004						D		D				
	2005												
	2007						S						
UT138A	2004						D		D				
	2005						S						
	2007												
Big Wiggly	2004								M				
	2005						M						
	2007												
Frying Pan Lake	2004								M				
	2005						M						
	2007												

Notes:

D = Macroinvertebrate sites sampled with drift nets AND ASCI methods; periphyton collected with RBP and diatoms were assessed.

M = Macroinvertebrate samples from lakes collected with a modified ASCI approach; periphyton collected with RBP and diatoms were assessed.

S = Macroinvertebrate sites sampled with Surber Sampler AND ASCI methods; periphyton collected with ADNR methods and chlorophyll a was assessed.

TABLE 15.2-2
Macroinvertebrate Taxa Identified in Samples Collected in the Bristol Bay Drainages

Order	Family	Genus
Ephemeroptera	Ephemeroptera	Unidentified
	Ameletidae	*Ameletus*
	Baetidae	*Acentrella*
		Unidentified
		Baetis
		Procloeon
	Ephemerellidae	Unidentified
		Drunella
		Ephemerella
		Serratella
	Heptageniidae	Unidentified
		Cinygmula
		Epeorus
		Rithrogena
	Leptophlebiidae	*Paraleptophlebia*
	Oligoneuriidae	*Lachlania*
Plecoptera	Unidentified	Unidentified
	Capniidae	Unidentified
		Alocapnia
		Capnia
		Nemocapnia
		Paracapnia
	Capniidae/Leuctridae	Unidentified
	Leuctridae	Unidentified
		Despaxia
		Moselia
		Perlomyia
	Chloroperlidae	Unidentified
		Alloperla
		Kathroperla
		Neaviperla
		Plumiperla
		Suwallia
		Sweltsa
	Nemouridae	*Malenka*
		Nemoura
		Zapada

Order	Family	Genus
	Perlodidae	Unidentified
		Arcynopteryx
		Diura
		Isogenoides
		Isoperla
	Pteronarcyidae	*Pteronacys*
		Pteronarcella
	Taeniopterygidae	*Taenionema*
Trichoptera	Unidentified	Unidentified
	Apataniidae	*Apatania*
	Brachycentridae	Unidentified
		Amiocentrus
		Brachycentrus
		Eobrachycentrus
		Micrasema
	Glossosmatidae	Unidentified
		Glossosoma
	Hydroptilidae	*Agraylea*
		Ochrotrichia
		Oxyethira
	Hydrosychidae	*Arctopsyche*
		Hydropsyche
	Lepidostomatidae	*Lepidostoma*
	Leptoceridae	*Ceraclea*
		Oecetis
	Limnephilidae	Unidentified
		Chyranda
		Dicosmoecus
		Ecclisomyia
		Eocosmoecus
		Grensia
		Halesochila
		Hesperophylax
		Ironoquia
		Limnephilus
		Moselyana
		Nemotaulius
		Onocosmoecus
		Pedomeocus
		Psychoglypha

Order	Family	Genus
	Odontoceridae	*Namamyia*
	Polycentropodidae	*Polycentropus*
	Rhyacophilidae	*Rhyacophila*
	Uenoidae	*Neophylax*
Diptera	Unidentified	Unidentified
	Ceratopogoniidae	Unidentified
		Bezzia
		Ceratopogon
		Probezzia
	Chironomidae	(see Table 15.2-3)
	Dixidae	*Dixa*
	Dolichopodidae	Unidentified
	Empididae	Unidentified
		Chelifera
		Clinocera
		Hemerodromia
		Oreogeton
		Rhamphomyia
		Wiedemannia
	Ephydridae	Unidentified
	Muscidae	Unidentified
	Phoridae	Unidentified
	Psychodidae	Unidentified
		Pericoma
		Psychoda
	Sciomyzidae	Unidentified
	Simuliidae	*Gymnopais*
		Prosimullium
		Simullium
	Tabanidae	Unidentified
	Tanyderidae	Unidentified
	Tipulidae	Unidentified
		Dicranota
		Hesperoconopa
		Hexatoma
		Leptotarsus
		Molophilus
		Ormosia
		Pedicia
		Tipula

Order	Family	Genus
Coleoptera	Coleoptera	Unidentified
	Carabidae	Unidentified
	Curculionidae	Unidentified
	Dytiscidae	Unidentified
		Laccophilus
	Elmidae	Unidentified
	Helophoridae	Unidentified
	Hydrophylidae	Unidentified
	Psephenidae	Unidentified
	Salpingidae	Unidentified
	Staphylinidae	Unidentified
Acuriformes	Hydrozetidae	Unidentified
Turbellaria	Turbellaria	*Turbellaria*
Nematoda	Nematoda	*Nematoda*
Oligochaeta	Oligochaeta	*Oligochaeta*
Gastropoda	Unidentified	Unidentified
	Lymnaeidae	*Lymnaea*
	Physidae	*Physa*
	Planorbidae	Unidentified
	Valvatiidae	*Valvata*
Bivalvia	Sphaeriidae	*Sphaeriidae*
Arachnoidea	Hydracarina	Unidentified
	Water spider	Unidentified
Crustacea	Amphipoda	Unidentified
	Conchostraca	Unidentified
	Gammaridae	Unidentified
	Ostracoda	Unidentified
Cladocera	Unidentified	Unidentified
Collembola	Unidentified	Unidentified
	Entomobryidae	Unidentified
	Hypogastruidae	Unidentified
	Isotomidae	Unidentified
	Onychiuridae	Unidentified
	Sminthuirindae	Unidentified
Copepoda	Copepoda	Cyclopidae, unidentified
Hemiptera	Hemiptera	Unidentified
		Corixidae
		Hebridae
		Saldidae
	Homoptera	Unidentified
		Aphididae

Order	Family	Genus
Hirundinea	Hirundinea	Unidentified
Lepidoptera	Unidentified	Unidentified
	Arctiidae	Unidentified
		Estigmene
	Cossidae	*Prionoxystus*
	Noctuidae	Unidentified
	Pyralidae	*Acentria*
		Crambus
Planaria	Planaria	Flatworm, unidentfied
Rotifer	Rotifer	Unidentified
Psephenidae	Unidentified	Unidentified
Salpingidae	Unidentified	Unidentified
Staphylinidae	Unidentified	Unidentified
Entomobryidae	Unidentified	Unidentified

TABLE 15.2-3
Chironomidae Taxa [a] Identified in Samples Collected in the Bristol Bay Drainages

Subfamily	Tribe	Genus
Unidentified	Unidentified	Unidentified
Chironominae	Chironomini	*Dicrotendipes*
		Einfeldia
		Endochironomus
		Parachironomus
		Paracladopelma
		Polypedilum
		Sergentia
	Tanytarsini	Unidentified
		Cladotanytarsus
		Constempellina
		Corynocera
		Micropsectra
		Micropsectra/Tanytarsis
		Paratanytarsus
		Rheotanytarsus
		Stempellina
		Stempellinella
		Sublettea
		Tanytarsini
		Tanytarsus
Diamesinae	Diamesini	*Diamesa*
		Lappodiamesa
		Pagastia
		Potthastia
		Pseudodiamesa
		Syndiamesa
	Protanypini	*Protanypus*
Prodiamesinae [b]		*Prodiamesa*
Tanypodinae	Pentaneurini	*Ablabesmyia*
		Conchapelopia
		Helopelopia
		Krenopelopia
		Larsia
		Paramerina
		Rheopelopia
		Zavrelimyia/Paramerina

Subfamily	Tribe	Genus
	Macropelopiini	*Macropelopia*
	Procladiini	*Procladius*
Podonominae	Boreochlini	*Boreochlus*
Orthocladiinae [b]		Unidentified
		Brillia
		Corynoneura
		Cricotopus/Orthocladius
		Eukiefferiella
		Heterotrissocladius
		Krenosmittia
		Limnophyes
		Lopescladius
		Nanocladius
		Parakeifferiella
		Parakiefferiella/Olivedia
		Paracricotopus
		Parametriocnemus
		Paraphaenocladius
		Parorthocladius
		Psectrocladius
		Psilometriocnemus
		Rheocricotopus
		Rheosmittia
		Smittia
		Synorthocladius
		Thienemanniella
		Tvetenia

Notes:

a. Order: Diptera, Family: Chironomidae

b. No tribe associated with this subfamily.

TABLE 15.2-4
Macroinvertebrate Metrics for Data Collected Using the ASCI Method, Mine Study Area, June and August 2004

	Taxa Richness [a]		Percent EPT		Percent Chironomidae		Percent Other Diptera		Percent Dominant Taxon [b]		CTI	
Site ID	**June**	**Aug**	**June**	**Aug**	**June**	**Aug**	**June**	**Aug**	**June**	**Aug**	**June**	**Aug**
CR199A	19	—	17	—	77	—	4	—	77	—	5.5	—
KC100A	18	17	2	2	89	86	3	2	89	86	5.9	5.9
NK100A	23	31	24	14	60	73	3	12	60	73	4.9	5.4
NK100B	23	—	13	—	84	—	3	—	84	—	5.6	—
NK100C	29	27	8	24	60	22	3	5	60	22	6.2	5.7
NK119A	24	29	20	29	72	49	4	18	72	49	5.3	4.5
SK100A	23	28	24	27	63	47	6	10	63	47	4.9	4.6
SK100B	18	16	14	10	71	58	6	9	71	58	5.4	5.2
SK100C	11	—	3	—	64	—	32	—	64	—	6.0	—
SK100F	9	16	<1	37	2	22	98	4	98	23	6.0	5.3
SK100G	18	27	1	6	76	60	3	12	76	60	5.8	5.7
SK119A	21	18	28	7	66	32	2	44	66	32	5.3	5.2
UT100B	26	22	19	22	78	75	2	<1	78	75	5.2	4.9
UT100C	26	18	17	28	71	67	4	5	71	67	5.4	4.6
UT100D	25	26	4	16	88	65	2	13	88	65	5.8	5.2
UT100E	20	19	16	10	75	43	1	4	75	43	5.9	6.4
UT119A	16	20	55	16	29	66	<1	10	32	66	4.2	5.2
UT138A	—	18	—	47	—	37	—	11	—	37	—	3.8
Big Wiggly	—	16	—	8	—	50	—	0	—	50	—	6.8
Frying Pan	—	12	—	4	—	31	—	4	—	41	—	6.3

Notes:

a. Includes Chironomidae genera.

b. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

— = Samples were not collected.

TABLE 15.2-5
Macroinvertebrate Metrics for Data Collected Using the Drift-net Method [a] Mine Study Area, June and August 2004

	Taxa Richness [b]		Percent EPT		Percent Chironomidae		Percent Other Diptera		Percent Dominant Taxon [a]		CTI	
Site ID	June	Aug	June	Aug	June	Aug	June	Aug	June	Aug	June	Aug
CR199A	22	—	34	—	11	—	4	—	45	—	3.9	—
KC100A	13	8	17	7	55	69	22	12	55	69	5.2	5.7
NK100A	9	7	4	36	92	45	4	0	92	45	5.9	4.5
NK100B	9	—	4	—	82	—	<1	—	82	—	5.9	—
NK100C	21	3	16	91	64	0	13	0	64	82	5.6	1.6
NK119A	5	6	1	70	99	10	<1	3	99	57	6.0	4.5
SK100A	13	22	11	16	60	41	12	14	60	41	5.5	5.1
SK100B	11	16	2	4	96	80	2	2	96	80	5.9	5.8
SK100C	19	—	13	—	65	—	10	—	65	—	5.2	—
SK100F	9	8	0	1	24	3	72	1	72	74	6.1	9.3
SK100G	7	3	0	0	57	41	21	27	57	41	6.1	6.0
SK119A	11	16	48	19	48	62	0	6	48	62	5.0	4.9
UT100B	29	13	6	13	80	79	4	5	80	79	5.8	5.4
UT100C	16	15	8	25	79	73	5	2	79	73	5.9	4.7
UT100D	20	13	29	35	48	42	17	19	48	42	5.1	4.2
UT100E	16	20	49	3	32	87	17	5	46	87	4.9	5.9
UT119A	17	16	70	10	26	80	3	8	68	80	4.5	5.5
UT138A	—	7	—	22	—	19	—	9	—	50	—	3.9

Notes:

a. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

b. Includes Chironomidae genera.

— = Samples were not collected.

TABLE 15.2-6
Macroinvertebrate Metrics for Data Collected Using the ASCI Method, Mine Study Area, June 2005

Site ID	Taxa Richness [a]	Percent EPT	Percent Chironomidae	Percent Other Diptera	Percent Dominant Taxon [b]	CTI
NK100A	22	12	76	7	76	5.5
NK100C	20	26	47	25	47	4.9
SK100B	18	7	90	1	90	5.8
UT100B	17	15	39	46	45	5.7
UT100D	16	15	55	23	55	5.4
UT138A	17	10	72	14	72	5.7
Big Wiggly	20	5	87	<1	87	6.0
Frying Pan	13	0	16	<1	80	5.2

Note:

a. Includes Chironomidae genera.

b. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.2-7
Macroinvertebrate Metrics for Data Collected Using the Surber Method, Mine Study Area, June 2005

Site ID	Taxa Richness [a, b] Mean Value	Percent EPT [a] Mean Value	Percent Chironomidae [a] Mean Value	Percent Other Diptera [a] Mean Value	Percent Dominant Taxon [a, c] Mean Value	CTI [a] Mean Value
NK100A	17	25	64	5	64	5.0
NK100C	24	29	36	20	45	5.4
SK100B	19	3	91	1	91	5.9
UT100B	18	24	64	12	64	5.2
UT100D	17	23	29	46	52	5.4
UT138A	15	31	61	3	61	5.1

Notes:

a. Mean values are averages for five samples per site.

b. Includes Chironomidae genera.

c. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.2-8
Macroinvertebrate Metrics for Data Collected Using the ASCI Method, Mine Study Area, June 2007

Site ID	Taxa Richness [a]	Percent EPT	Percent Chironomidae	Percent Other Diptera	Percent Dominant Taxon [b]	CTI
NK100A	26	23	54	18	54	5.2
NK100C	20	7	42	1	42	6.6
NK119A	28	21	69	2	69	5.5
SK100A	28	14	78	8	78	5.3
SK100B	19	5	77	3	77	5.9
SK100D	15	12	44	44	44	5.6
UT100B	26	35	47	17	47	4.5
UT100D	23	18	30	51	65	5.3
UT100C	17	7	91	2	91	5.7
UT119A	22	26	67	3	67	5.4

Note:

a. Includes Chironomidae genera.

b. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.2-9
Macroinvertebrate Metrics for Data Collected Using the Surber Method, Mine Study Area, June 2007

Site ID	Taxa Richness [a, b] Mean Value	Percent EPT [a] Mean Value	Percent Chironomidae [a] Mean Value	Percent Other Diptera [a] Mean Value	Percent Dominant Taxon [a, c] Mean Value	CTI [a] Mean Value
NK100A	20	22	65	5	65	5.3
NK100C	30	11	70	6	70	5.9
NK119A	15	72	26	1	31	4.7
SK100A	18	18	79	2	79	5.2
SK100B	25	2	84	<1	84	6.0
SK100D	16	40	38	21	43	4.9
UT100B	17	24	74	1	74	5.3
UT100D	22	18	67	11	67	5.4
UT100C	15	18	76	5	76	5.2

Notes:

a. Mean values are averages for five samples per site.

b. Includes Chironomidae genera.

c. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.2-10
P-values of Response Variables for Repeated-measures ANOVA of Surber Samples, 2005 and 2007

Variable	Intercept	Year	River	Year*River
Total Taxa	**<0.001**	0.270	0.459	0.868
Ephemoptera	**<0.001**	0.880	**0.008**	0.890
Plecoptera	**0.011**	0.396	0.571	0.895
Trichoptera	**0.004**	0.525	0.161	0.409
Chironomidae	**<0.001**	0.375	0.154	0.536
Other Diptera	0.200	0.282	0.346	0.732
Total Diptera	**<0.001**	0.967	**0.013**	0.163
Other Taxa	**0.001**	0.151	**0.034**	0.599
EPT	**<0.001**	0.180	**0.005**	0.488
CTI	**<0.001**	0.323	0.111	0.737

Note: Values that are bold are statistically significant.

TABLE 15.2-11
P-values of Response Variables for Paired T-test of ASCI Samples, Upstream versus Downstream Sites on Upper Talarik Creek and the North Fork Koktuli, 2005 and 2007

Variable	Upper Talarik	North Fork Koktuli
Total Taxa	0.130	0.868
Ephemoptera	**0.033**	0.933
Plecoptera	0.127	0.100
Trichoptera	0.074	0.135
Chironomidae	**0.050**	**0.017**
Other Diptera	0.165	0.269
Total Diptera	**0.006**	**0.024**
Other Taxa	0.067	0.136
EPT	0.072	0.582
CTI	0.387	0.402

Note: Values that are bold are statistically significant.

TABLE 15.2-12
P-values of Response Variables for Repeated-measures ANOVA of Surber Samples, Upstream versus Downstream Sites on Upper Talarik Creek and the North Fork Koktuli, 2005 and 2007

Variable	Upper Talarik	North Fork Koktuli
Total Taxa	0.584	0.140
Ephemoptera	0.167	0.909
Plecoptera	0.983	0.068
Trichoptera	0.230	0.306
Chironomidae	0.374	0.557
Other Diptera	0.277	0.434
Total Diptera	0.344	0.757
Other Taxa	0.302	0.060
EPT	0.337	0.635
CTI	0.176	0.212

TABLE 15.2-13
Ambient Water-quality Measurements, Mine Study Area, June 2004

Site ID	Dissolved Oxygen (mg/L)	Dissolved Oxygen (percent)	Temperature (°C)	Relative Conductivity (mS/cm)	Specific Conductivity (mS/cm)	pH
CR199A	10.9	96	9.3	0.05	0.07	7.9
KC100A	10.2	85	7.4	0.03	0.05	7.1
NK100A	12.6	105	7.5	0.03	0.04	7.0
NK100B	14.8	120	6.6	0.03	0.04	7.4
NK100C	11.3	103	11.3	0.03	0.05	7.6
NK119A	11.8	101	8.6	0.02	0.03	6.8
SK100A	12.1	104	8.7	0.03	0.04	6.8
SK100B	12.8	109	8.4	0.03	0.04	6.8
SK100C	11.8	104	10.0	0.03	0.04	7.3
SK100F	9.5	96	15.0	0.03	0.03	6.1
SK100G	9.6	91	12.9	0.04	0.05	7.0
SK119A	13.9	112	6.3	0.02	0.03	6.3
UT100B	11.8	106 [a]	11.1	0.04	0.06	7.4
UT100C	12.1	104	8.8	0.04	0.06	7.1
UT100D	12.2	100	6.9	0.05	0.08	7.7
UT100E	13.7	108	5.1	0.06	0.09	7.0
UT119A	13.4	106	5.3	0.04	0.07	(b)

Notes:

a. Calculated value—there was a recording error on the field data sheet.

b. Instrument malfunction.

TABLE 15.2-14
Ambient Water-quality Measurements, Mine Study Area, August 2004

Site ID	Dissolved Oxygen (mg/L)	Dissolved Oxygen (percent)	Temperature (°C)	Relative Conductivity (mS/cm)	Specific Conductivity (mS/cm)	pH
Big Wiggly	12.6	136	19.0	0.05	0.06	8.5
Frying Pan	11.1	132	23.0	0.06	0.06	7.5
KC100A	12.5	105	7.9	0.04	0.06	6.5
NK100A	10.2	107	18.0	0.05	0.05	8.0
NK100C	10.3	103	15.3	0.05	0.07	7.1
NK119A	10.5	99	11.9	0.03	0.04	7.3
SK100A	12.5	128	16.6	0.04	0.05	6.9
SK100B	14.5	124	7.7	0.03	0.05	6.9
SK100F	10.7	125	23.5	0.06	0.06	7.3
SK100G	8.6	90	16.8	0.07	0.08	6.5
SK119A	11.6	107	11.8	0.04	0.05	7.6
UT100B	13.1	123	15.0	0.06	0.072	7.7
UT100C	10.9	111	15.4	0.06	0.07	6.9
UT100D	10.7	107	15.2	0.09	0.11	6.4
UT100E	14.6	120	7.2	0.06	0.09	7.3
UT119A	13.1	109	7.7	0.05	0.08	6.4
UT138A	(a)	(a)	(a)	(a)	(a)	7.6

Note:

a. Instrument malfunction.

TABLE 15.2-15
Ambient Water-quality Measurements, Mine Study Area, June 2005

Site ID	Dissolved Oxygen (mg/L)	Dissolved Oxygen (percent)	Temperature (°C)	Relative Conductivity (mS/cm)	Specific Conductivity (mS/cm)	pH
Big Wiggly	(a)	(a)	12.6	0.04	0.05	7.5
Frying Pan	(a)	(a)	15.0	0.04	0.04	7.2
NK100A	(a)	(a)	9.9	0.03	0.04	6.8
NK100C	(a)	(a)	10.7	0.05	0.04	7.1
SK100B	(a)	(a)	7.8	0.03	0.04	6.7
UT100B	(a)	(a)	13.6	0.05	0.07	7.6
UT100D	(a)	(a)	11.3	0.06	0.09	7.2
UT138A	11.8	107	11.0	0.05	0.07	7.3

Note:

a. Instrument malfunction.

TABLE 15.2-16
Ambient Water-quality Measurements, Mine Study Area, June 2007

Site ID	Dissolved Oxygen (mg/L)	Dissolved Oxygen (percent)	Temperature (°C)	Relative Conductivity (mS/cm)	Specific Conductivity (mS/cm)	pH
SK100A	8.4	73	8.8	0.03	0.04	6.4
NK100A	12.0	104	9.2	0.03	0.04	6.9
NK100C	10.9	103	12.0	0.04	0.05	7.1
SK100B	12.8	104	6.2	0.03	0.04	6.0
NK119A	11.8	99	7.5	0.02	0.03	6.3
SK100D	7.6	69	11.0	0.03	0.04	6. 7
UT100B	8.6	76	10.4	0.05	0.07	7.1
UT100C	8.2	80	13.9	0.05	0.07	7. 7
UT100D	8.8	76	8.5	0.07	0.10	7.2
UT119A	8.8	75	8.8	0.05	0.08	7.2

TABLE 15.2-17
P-values of Response Variables for Repeated-measures ANOVA of Surber Samples for the Relationship between Water-quality and Macroinvertebrate Metrics for Sites on Upper Talarik Creek, North Fork Koktuli, and South Fork Koktuli, 2005 and 2007

Variable	Total Taxa	Percent EPT
DO mg/L	0.091	**0.035**
DO percent	0.100	0.085
Specific Conductivity	0.454	0.752
Relative Conductivity	0.764	0.377
Temperature	0.413	0.066
pH	0.431	0.152

Note: Values that are bold are statistically significant.

TABLE 15.2-18
P-values of Response Variables for Simple Linear Regression of ASCI Samples for the Relationship between Water-quality and Macroinvertebrate Metrics for Sites on Upper Talarik Creek, North Fork Koktuli, and South Fork Koktuli, 2004, 2005, and 2007

Variable	Total Taxa	Percent EPT
DO mg/L	0.627	0.260
DO percent	0.841	0.084
Specific Conductivity	0.795	0.667
Relative Conductivity	0.762	0.287
Temperature	**0.049**	0.156
pH	0.220	0.395

Note: Values that are bold are statistically significant.

TABLE 15.2-19
Average Scores for Aquatic Habitat-quality Parameters, Mine Study Area, 2004 and 2005

Site ID	Epifaunal Substrate	Embeddedness	Velocity-depth	Sediment Deposition	Channel Flow Status	Channel Alteration	Channel Sinuosity	AVERAGE
CR199A	20	20	20	15	11	20	20	18
KC100A	18	16	17	16	20	20	20	18
NK100A	16	18	14	19	14	20	20	17
NK100C	18	18	19	19	20	20	17	19
NK100B	20	19	14	20	20	20	15	18
NK119A	19	20	19	18	17	20	20	19
SK100A	19	19	17	19	15	20	18	18
SK100B	16	18	19	19	20	20	19	19
SK100C	19	19	13	20	20	20	15	18
SK100F	17	18	18	19	20	20	20	19
SK100G	11	11	14	10	20	20	15	14
SK119A	16	19	18	20	16	20	16	18
UT100B	19	18	16	19	16	20	20	18
UT100C	20	20	18	20	18	20	20	19
UT100D	15	18	18	16	17	20	18	17
UT100E	19	17	18	20	20	20	20	19
UT119A	19	20	17	20	20	20	20	19

SCORE RANKING: Optimal 20-16, Suboptimal (Good) 15-11, Marginal 10-6, Poor 5-1 [a]

Note:

a. Source: Major and Barbour, 2001

TABLE 15.2-20
Periphyton Diatom Taxa Identified in Samples
Collected in the Bristol Bay Drainages, August 2004

Genus	Species
Achnanthes	unknown
	biasolettiana
	chlidanos
	daonensis
	laevis
	lanceolata
	lanceolata subsp. frequentissima
	laterostrata
	linearis
	marginulata
	minutissima
	minutissima var. jackii
	nodosa
	peragalli
	petersonii
	pusilla
	silvahercynia
	subatomoides
	suchlandti
Amphora	unknown
	libyca
	pediculus
Anomoeoneis	*brachysira*
	vitrea
Asterionella	*formosa*
Aulacoseira	*alpigena*
	ambigua
	crenulata
	islandica
	italica
Caloneis	*bacillum*
	schumanniana
Chamaepinnularia	unknown
Cocconeis	unknown
	placentula
	placentula var. euglypta
	placentula var. lineata

Genus	Species
Cyclotella	*atomus*
	meneghiniana.
	pseudostelligera
Cymbella	*affinis*
	caespitosa
	cistula
	gracilis.
	lapponica
	microcephala
	muelleri
	naviculiformis
	reichardtii
Diatoma	*anceps*
	mesodon
	tenuis
	vulgare
Didymosphenia	*geminata*
Diploneis	*parma*
	subovalis
Encyonema	*minutum*
	silesiacum
Epithemia	*adnata*
	turgida
Eunotia	unknown (2)
	arcus
	bilunaris
	denticulata
	incisa
	minor
	muscicola
	paludosa
	praerupta
	soleirolii
Fragilaria	unknown
	brevistriata
	capucina
	capucina var. gracilis
	capucina var. perminutum
	capucina var. rumpens
	capucina var. vaucheriae
	cf. neoproducta

Genus	Species
	construens
	leptostauron.
	Nitzschioides
	parasitica
	pinnata
	tenera
Frustulia	*rhomboides*
	vulgaris
Gomphoneis	*eriense var. variabilis*
	herculeana
Gomphonema	unknown (2)
	acuminatum
	affine
	americobustum
	cf. angustatum
	bipunctatum
	drutelligence
	micropus
	minutum
	olivaceoides
	parvulum
	pumilum
	sarcophagus
Hannaea	*arcus*
Hantzschia	*amphioxys*
Melosira	*varians*
Meridion	*circulare*
	circulare var. constrictum
Navicula	unknown (3)
	antonii
	atomus
	begeri
	bryophila
	capitata
	capitata var. hungarica
	cf. lognicephala
	concentrica
	contenta
	cryptocephala
	cryptotenella
	difficillima

Genus	Species
	gregaria
	halophila
	ignota var. acceptata
	lanceolata
	lapidosa
	leptostriata
	medioconvexa
	menisculus
	minima
	minuscula
	mutica
	pseudoscutiformis
	pseudosilicula
	pupula
	radiosa
	schoenfeldii
	soehrensis
	veneta
Neidium	unknown
Nitzschia	unknown (2)
	acicularis
	acidoclinata
	archibaldii
	bacilliformis
	bacillum
	dissipata
	flexoides
	fonticola
	frustulum
	gracilis
	inconspicua
	liebetruthii
	linearis
	palea
	paleacea
	perminuta
	perspicua
	pura
	pusilla
	recta
	sublinearis

Genus	Species
Opephora	*olsenii*
Pinnularia	unknown
	borealis
	gibba
	subcapitata
Reimeria	*sinuata*
Rhoicosphenia	*curvata*
Rhopalodia	*gibba*
Stauroneis	unknown
	anceps
Stephanodiscus	*parvus*
Synedra	*acus*
	ulna
Tabellaria	*flocculosa*

TABLE 15.2-21
Periphyton Metrics for Data Collected Using the Modified EPA RBP Method in June and August 2004 and Chlorophyll-*a* Sampling in June 2005 and 2007, Mine Study Area

Site ID	Taxa Richness June 2004	Taxa Richness Aug 2004	Percent Dominant Taxon June 2004	Percent Dominant Taxon Aug 2004 [b]	Chlorophyll-*a* (mg/m^2) June 2005 [a]	Chlorophyll-*a* (mg/m^2) June 2007 [a]
CR119A	19	—	49	—	—	—
KC100A	19	18	31	64	—	—
NK100A	14	17	35	53	8.9	6.0
NK100B	12	—	41	—	—	—
NK100C	18	19	41	37	4.7	4.0
NK119A	14	14	24	24	—	3.7
SK100A	19	17	27	45	—	6.4
SK100B	19	12	28	57	17.0	6.7
SK100C	19	—	61	—	—	—
SK100D	—	—	—	—	—	2.5
SK100F	13	17	72	72	—	—
SK100G	19	15	47	38	—	—
SK119A	17	14	43	22	—	—
UT100B	15	13	26	61	8.1	6.4
UT100C	17	15	38	47	—	13.2
UT100D	14	17	49	31	2.1	30.2
UT100E	17	13	32	51	—	—
UT119A	17	16	32	21	—	2.3
UT138A	—	19	—	22	15.6	—
Big Wiggly	—	14	—	65	—	—
Frying Pan	—	13	—	41	—	—

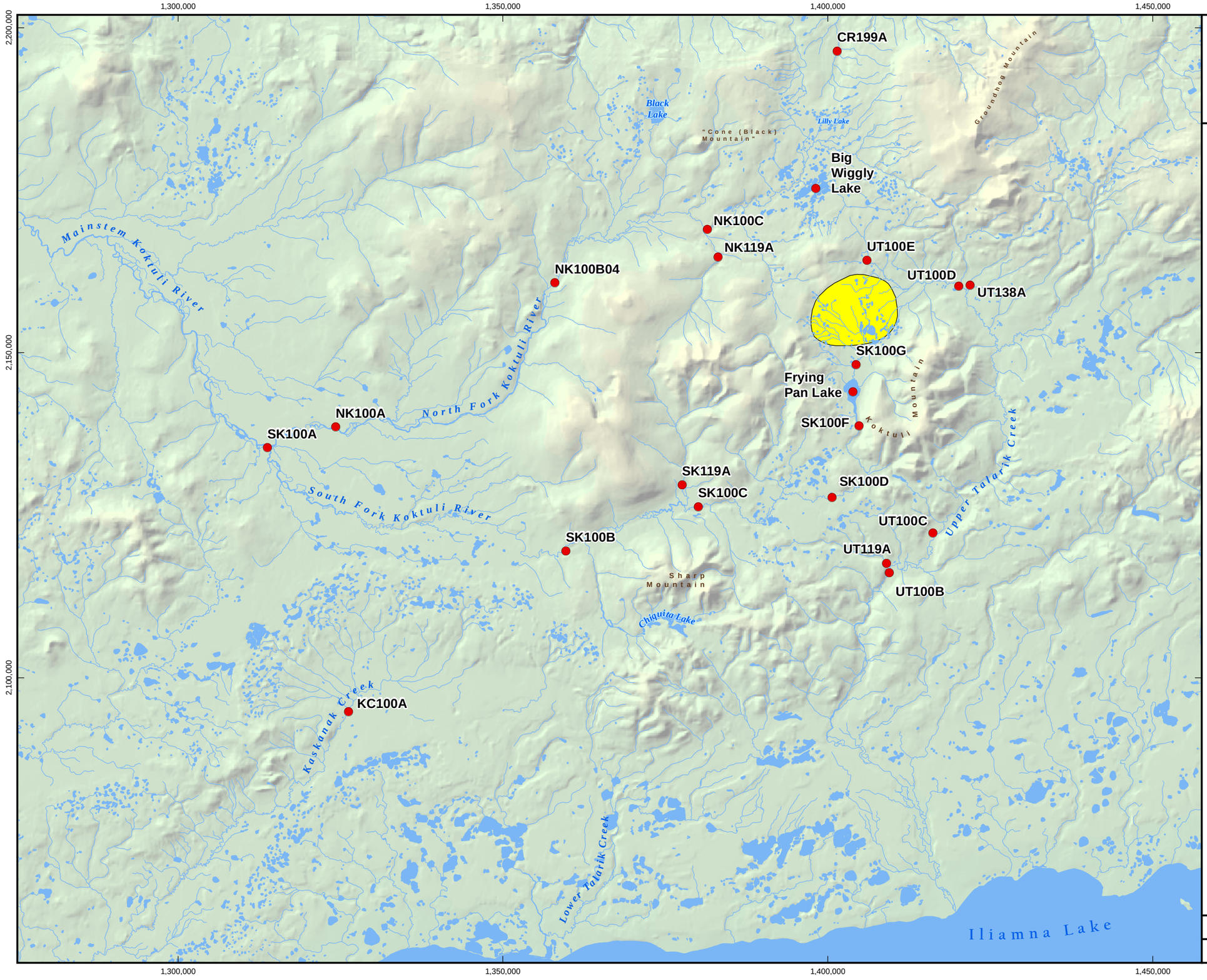
Notes:

a. Values are mean averages for ten samples per site.

b. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

c. — = Samples not collected.

FIGURES



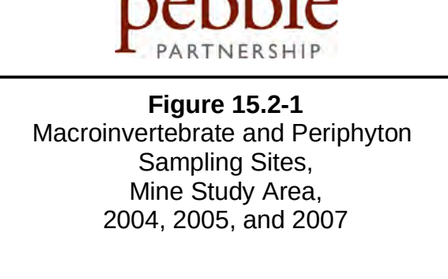


Figure 15.2-1
Macroinvertebrate and Periphyton Sampling Sites,
Mine Study Area,
2004, 2005, and 2007

Legend

- Macroinvertebrate and Periphyton Sampling Site
- General Deposit Location

Miles
0 1.25 2.5 3.75 5

Kilometers
0 1.25 2.5 3.75 5

Scale 1:175,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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Version: 1	Author: HDR - MC

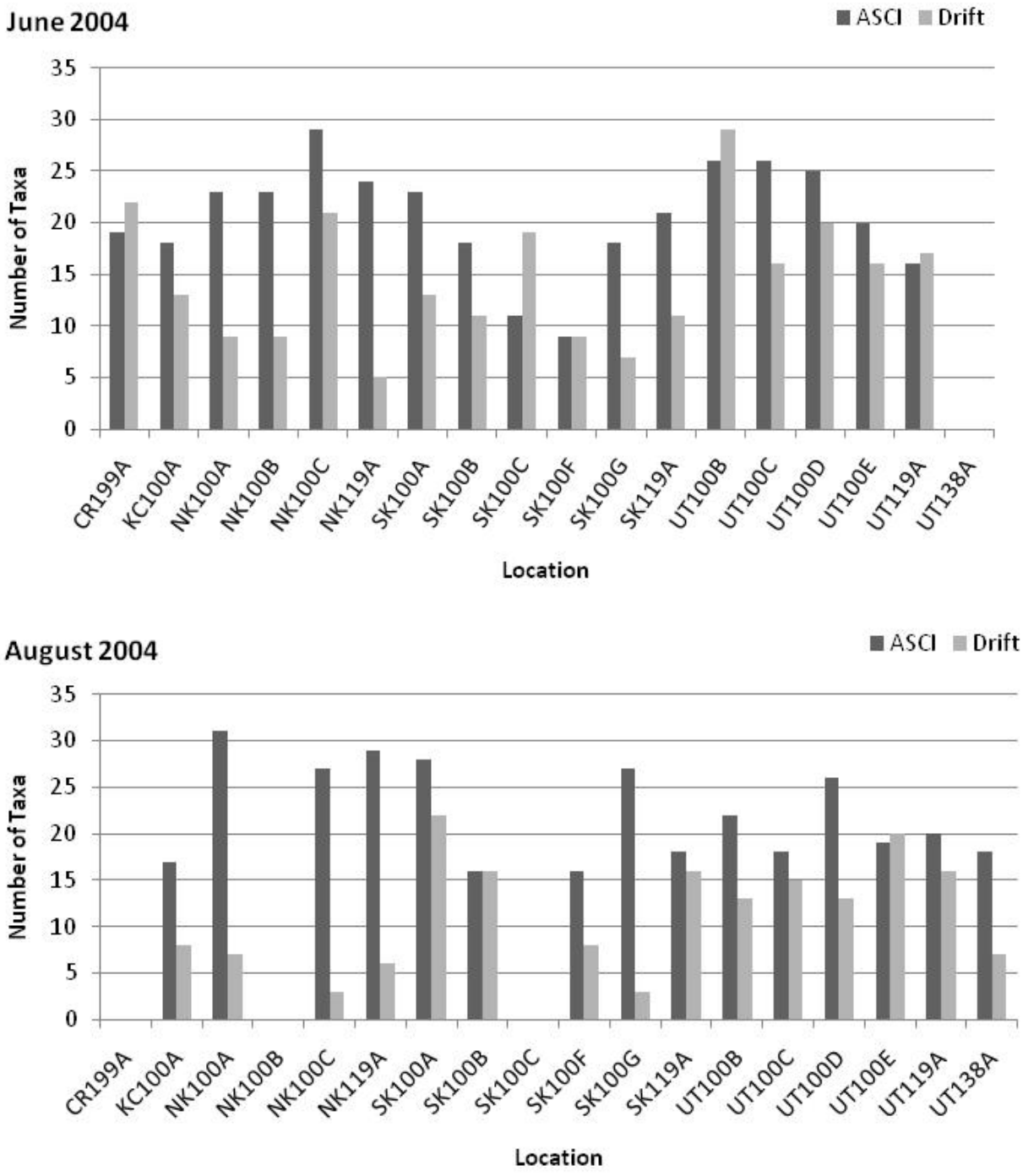
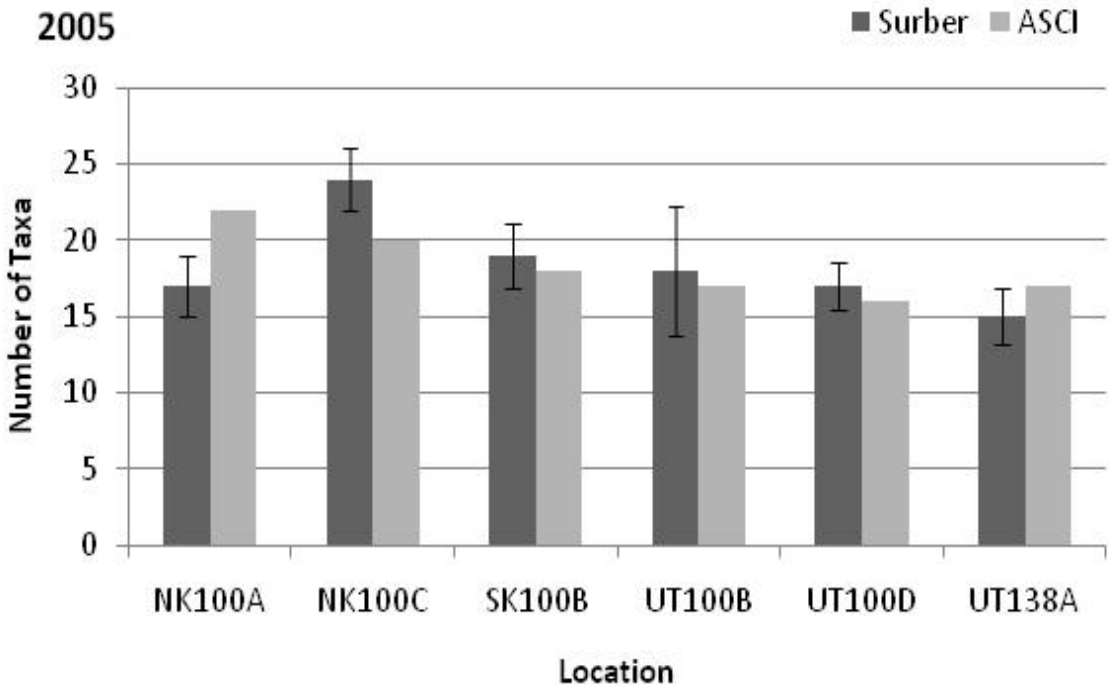


FIGURE 15.2-2
ASCI and Drift Total Taxa Richness, Mine Study Area, June 2004 and August 2004



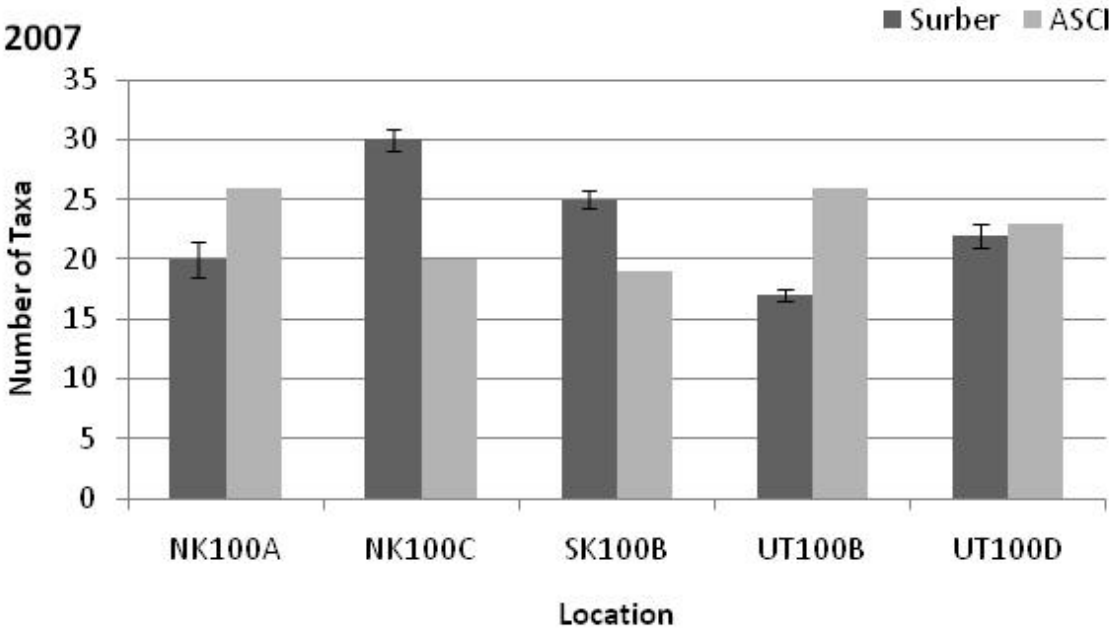


FIGURE 15.2-3
ASCI and Surber (± standard error) Taxa Richness, Mine Study Area, 2005 and 2007

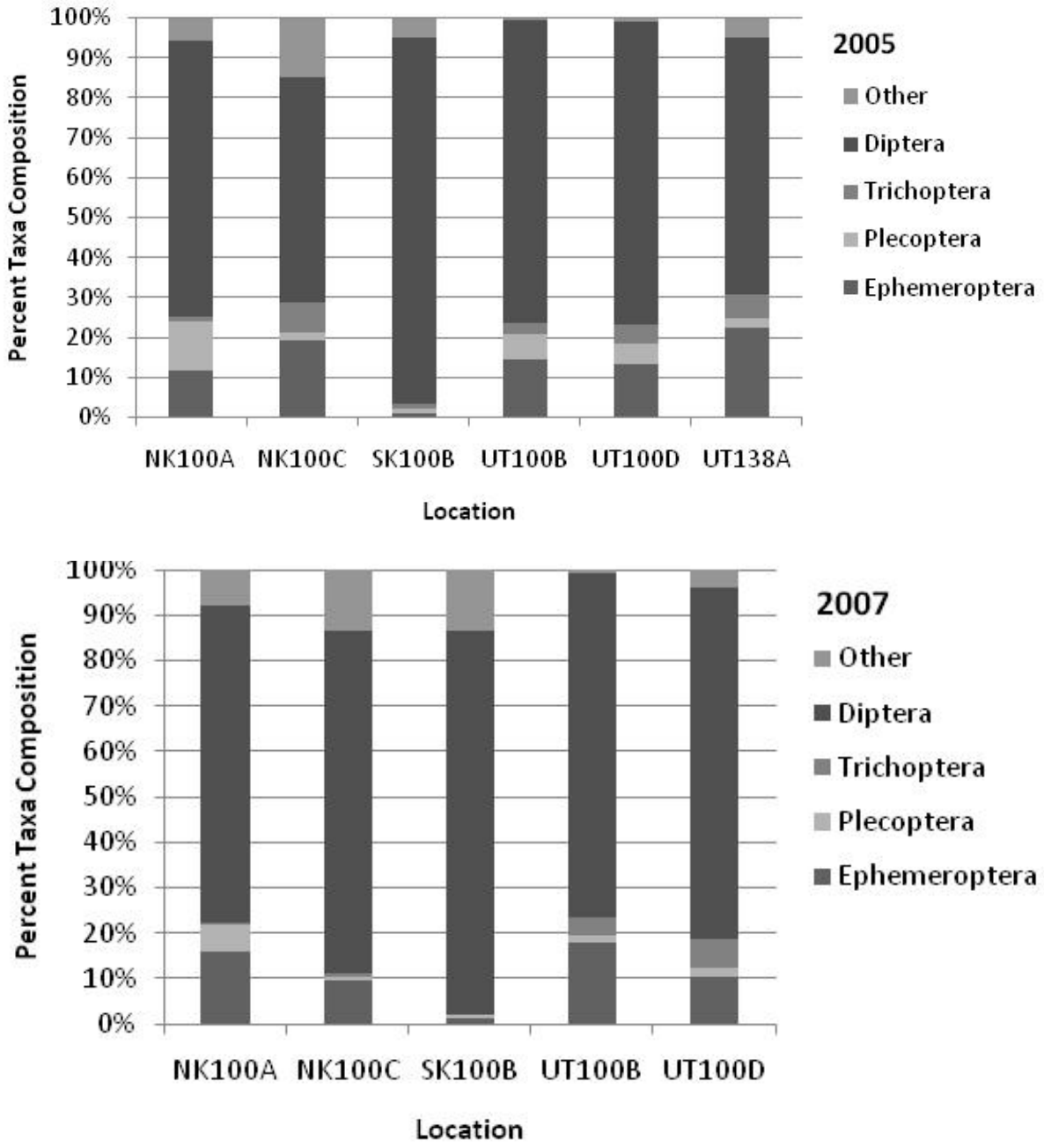


FIGURE 15.2-4
Percent Taxa Composition in Surber Samples, Mine Study Area, 2005 and 2007

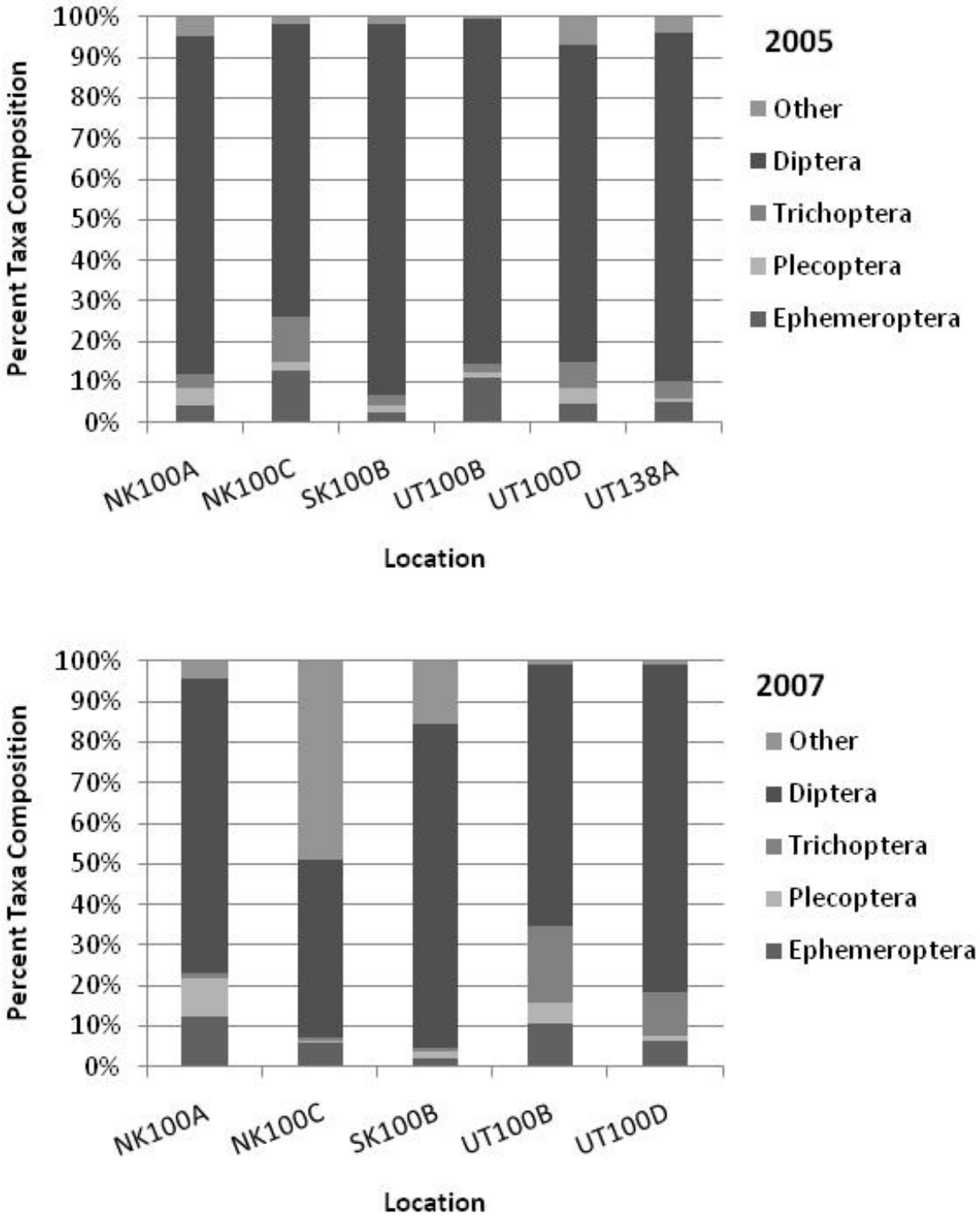


FIGURE 15.2-5
Percent Taxa Composition in ASCI Samples, Mine Study Area, 2005 and 2007

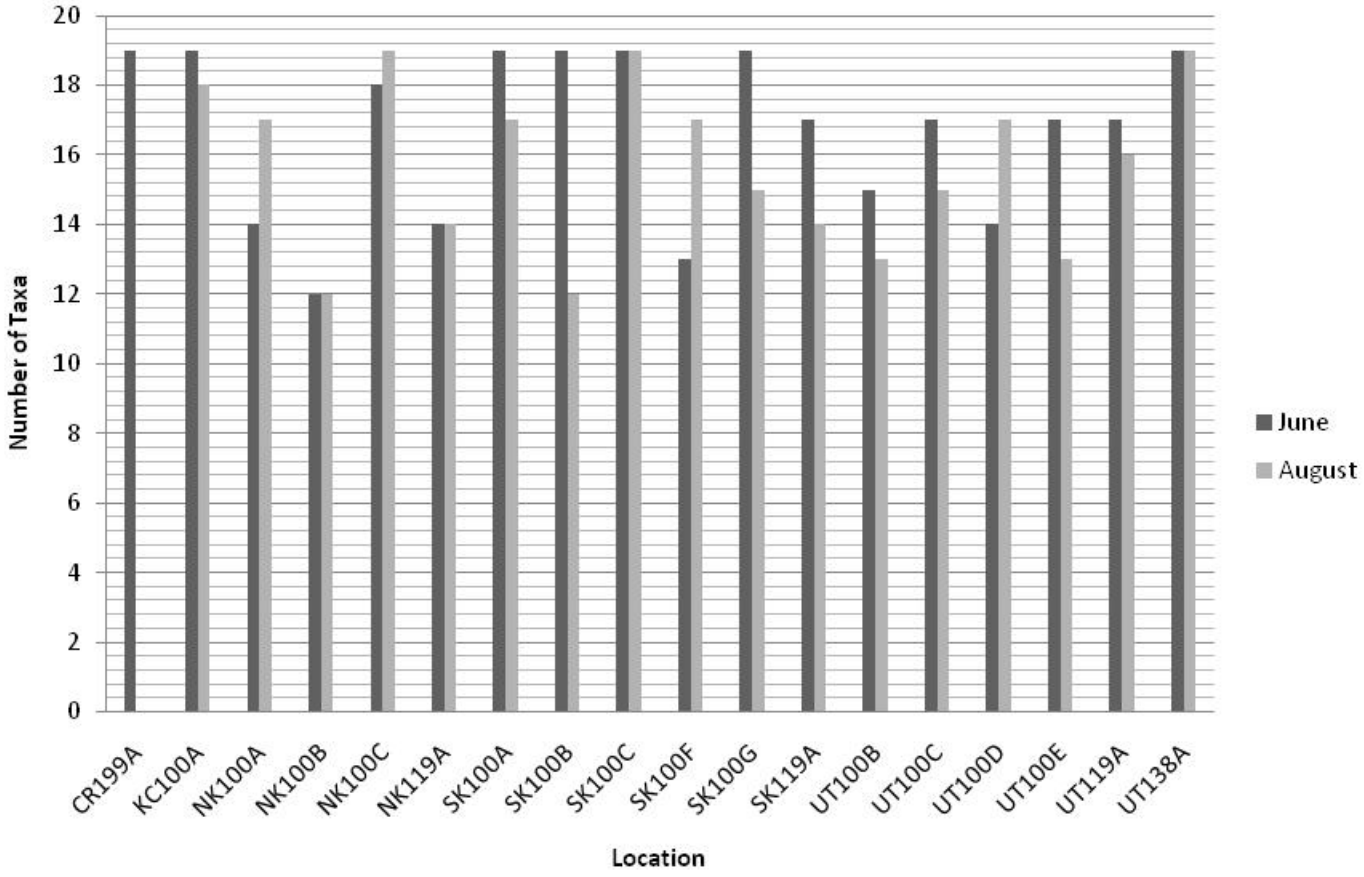


FIGURE 15.2-6
Periphyton Diatom Taxa Richness, Mine Study Area, June and August 2004

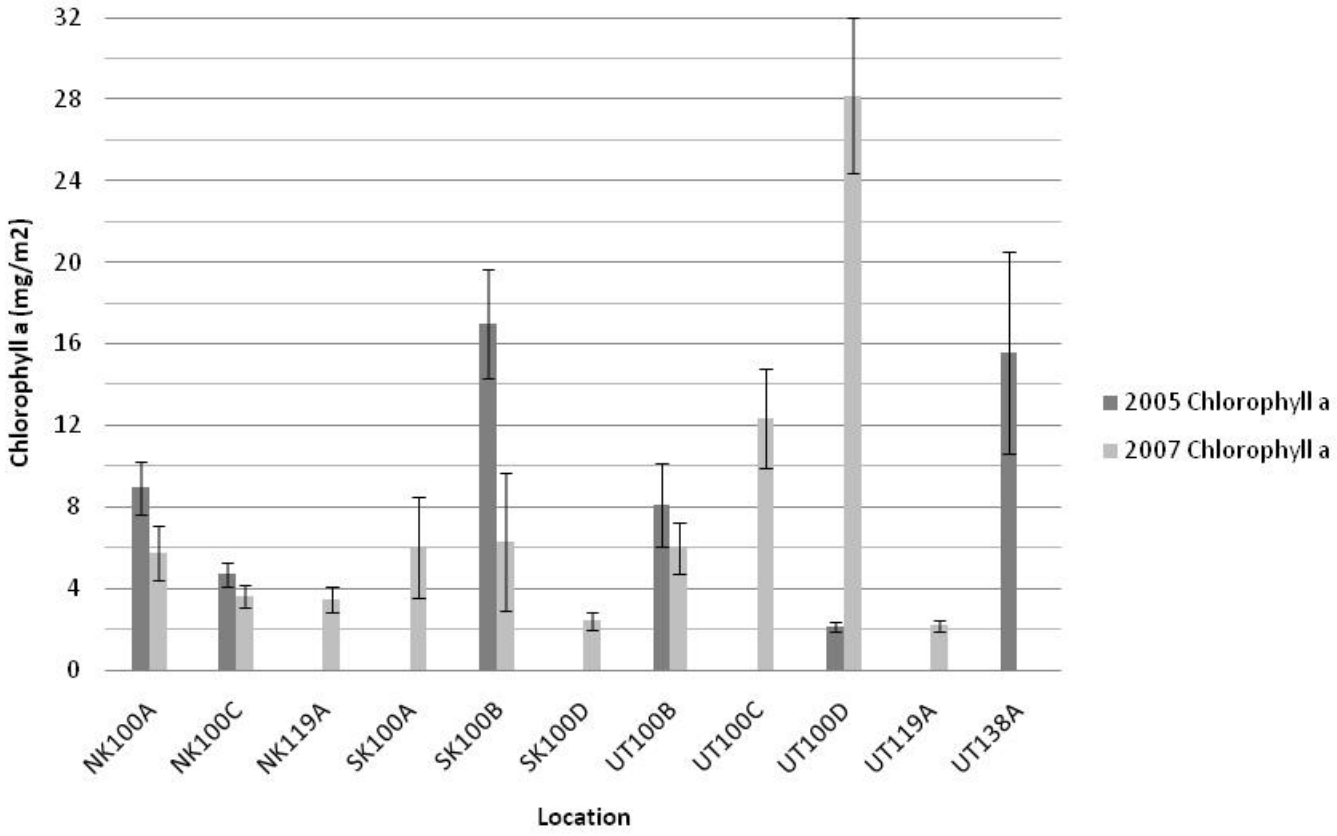
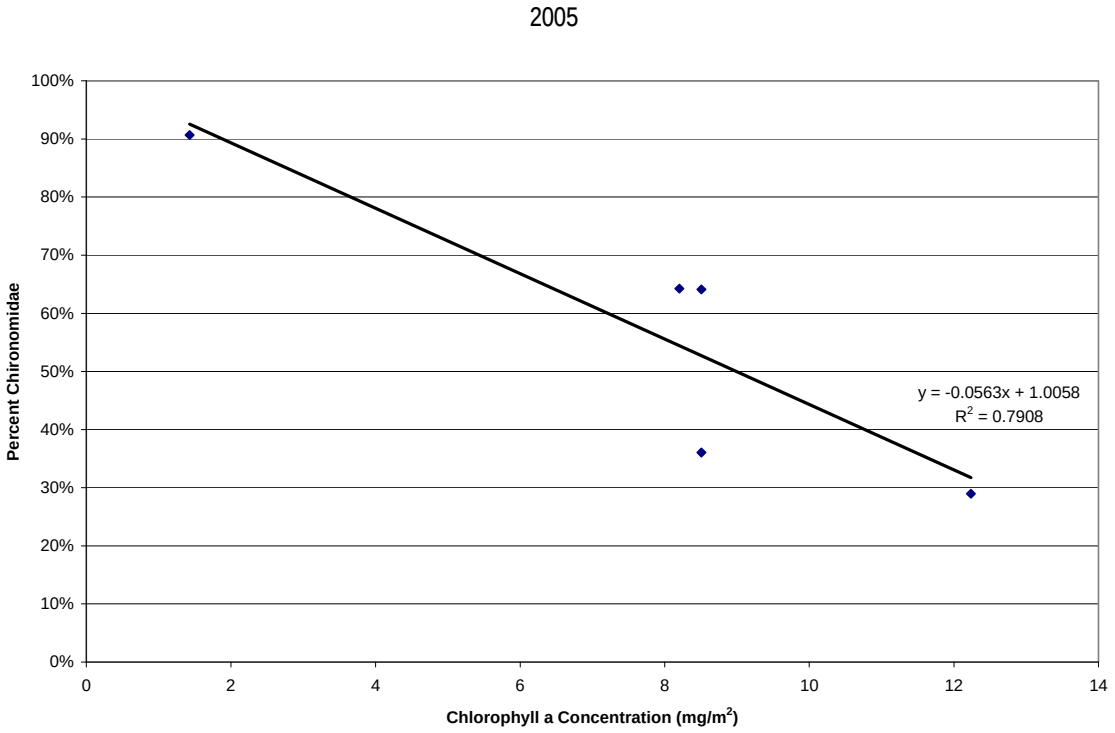


FIGURE 15.2-7
Average Chlorophyll-a Concentrations (± 1 standard error), Mine Study Area, June 2005 and 2007



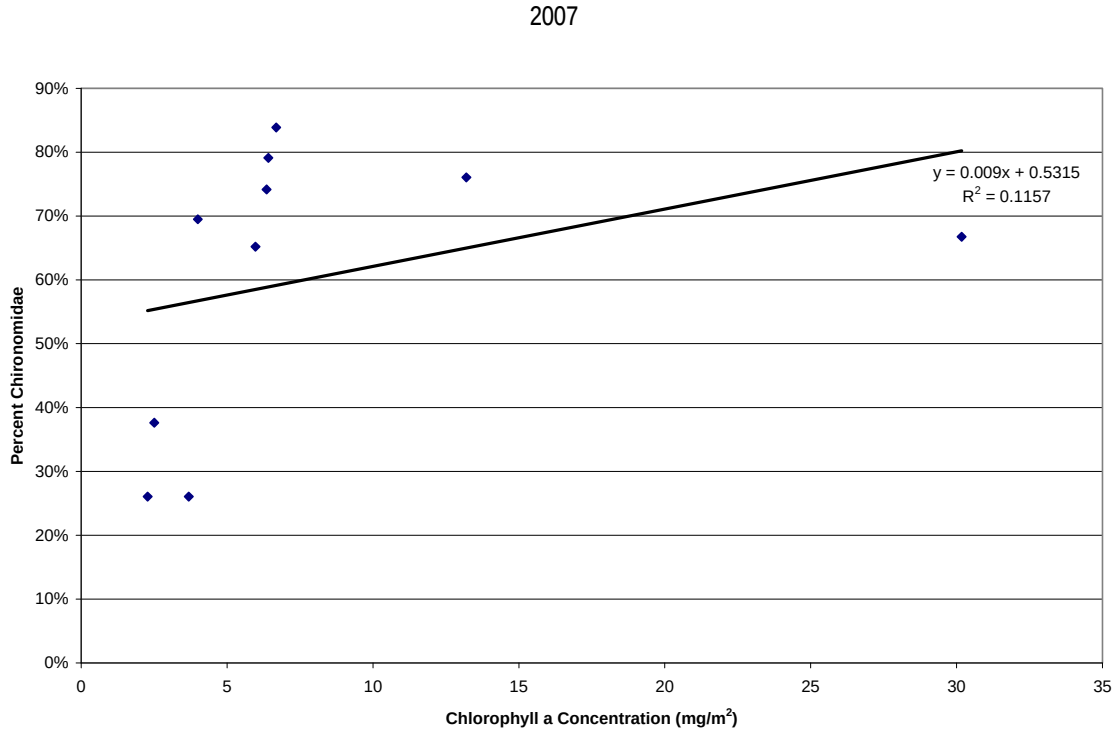


FIGURE 15.2-8
Relationship between Chlorophyll-*a* Concentrations and Percent Chironomidae, Mine Study Area, June 2005 and 2007

15.3 Fish—Transportation Corridor Studies

15.3.1 Introduction

Development of the Pebble Deposit would likely require the construction of an approximately 90-mile (144-kilometer) access road linking the Pebble Deposit to Cook Inlet. To address this possibility, Northern Dynasty Mines, Inc. (NDM), the Pebble Partnership, and the Alaska Department of Transportation and Public Facilities have considered several possible road alignments. This study characterizes typical conditions within the transportation corridor study area by focusing on one representative road alignment**.** Along this route, there are numerous watersheds varying from large rivers (e.g., Newhalen River) to very small, seasonally flowing channels, each of which belongs to one of two major drainage basins: Bristol Bay or Cook Inlet. This chapter section focuses on only those watersheds associated with the Bristol Bay Basin. Watersheds associated with Cook Inlet are addressed in Chapter 40, Section 40.1.

The survey sites selected for this study include primary survey sites located directly on or near the representative road alignment. Each of the primary survey sites corresponds to a milepost along the representative road alignment. Mileposts represent the distance along the representative road alignment between the road alignment's western terminus at the edge of the Pebble Deposit and the primary survey site locations. The naming convention for mileposts consists of "MP" (for "milepost") followed by a number that specifies the distance in miles between the Pebble Deposit and the site location. Additionally, there are support survey sites that are located upstream and/or downstream of the primary survey sites, or on nearby tributaries. Primary sites are regarded as representative of possible stream crossing conditions throughout the study area, and support survey sites provide additional information regarding fish resources at nearby locations in the same watershed. Primary and support survey sites were identified and subsequently surveyed for fish and aquatic habitat conditions (Figure 15.3-1).

This section presents a summary of the study objectives, methods, and results of the transportation corridor fish and aquatic habitat surveys that were conducted in the Bristol Bay Basin from 2004 through 2008. The primary survey sites within the Bristol Bay Basin have been grouped into one of eight watershed groups: Upper Talarik (UT), Newhalen, Isolated Watersheds, Roadhouse/Northeast Bay/Eagle Bay, Youngs/Chekok/ Canyon, Knutson Bay/Pedro Bay, Pile Bay/Lonesome Bay, and Iliamna River (Figure 15.3-2; Table 15.3-1). Within each watershed group, data from the primary survey sites are summarized by watershed. When additional data from support survey sites elsewhere in these watersheds are available, these data are discussed in reference to the nearest primary survey site within the same watershed (Table 15.3-1).

This section also includes two appendices that describe data collected at each survey site during the transportation corridor studies from 2004 through 2008:

- Appendix 15.3A, Transportation Corridor, Bristol Bay Basin Survey Data Summaries: Primary Survey Sites - Data Collected on or near Possible Representative Road Alignment Stream Crossings
- Appendix 15.3B, Transportation Corridor, Bristol Bay Basin Survey Data Summaries: Support Survey Sites - Data Collected Upstream or Downstream of Surveyed Primary Survey Sites

Appendices 15.3A and 15.3B are organized in ascending order of mileposts, from west to east, along the representative road alignment. Appendix 15.3A presents data from primary survey sites located on or near possible stream crossings of the representative road alignment. Appendix 15.3B presents data from support survey sites that are located upstream and/or downstream of primary survey sites that were actually surveyed.

A brief description of watershed characteristics and processes influencing the nature and condition of fish habitat and other aquatic resources in the Bristol Bay area, as well as a general description of the Bristol Bay sport and commercial fisheries, is provided in Chapter 15, Section 15.1. Details on specific watershed characteristics in the Pebble Project study area, including climate, geology, phsyiography, soils, hydrology, and vegetation, are provided in companion studies described in the Pebble Project Environmental Baseline Document (EBD) Chapters 2, 3, 4, 5, 7, and 13, respectively.

15.3.2 Study Objectives

The overall goal of the transportation corridor fish and aquatic resource studies was to describe the baseline characteristics of fish assemblages and aquatic habitats representative of possible stream crossing locations along a representative road alignment. Baseline conditions refer to the habitats and associated fish populations as they currently exist in the watersheds in the absence of any road development. The studies, in combination with resource investigations described in other EBD chapters, were collectively designed to address the following technical questions:

- What are the baseline channel conditions at each primary and support survey site?
- What types of aquatic habitats are present at each primary and support survey site, and how can those habitats be described?
- What are the water quality characteristics at each primary and support survey site?
- What is the composition and distribution of fish species at each primary and support survey site?

15.3.3 Study Area

The Bristol Bay Drainages study area for the transportation corridor fish and aquatic resource surveys consisted of a 2,000-foot (600-meter) wide survey corridor encompassing the representative road alignment, beginning at the northeastern edge of the Pebble Deposit and continuing east to the Chigmit Mountains (Figure 15.3-1). Within the Bristol Bay Basin, the representative road alignment traverses several rivers, streams, and lake outlet channels at 73 different locations. These representative crossing locations are within several different watersheds, including Upper Talarik Creek, Newhalen River, Negro Lake, an unnamed lake in the vicinity of Bear Creek, Roadhouse Creek, an unnamed tributary to Eagle Bay, Eagle Bay Creek, Youngs Creek, Chekok Creek, Canyon Creek, several unnamed tributaries to Knutson Bay, Knutson Creek, an unnamed tributary to Pedro Bay, two unnamed tributaries to Lonesome Bay, Pile River, Iliamna River, and Chinkelyes Creek. Most of these watersheds eventually drain to Iliamna Lake. The exceptions are the isolated watersheds of Negro Lake and the unnamed lake near Bear Creek, where precipitation, evaporation and groundwater exchange, rather than surface water flow, appear to be the dominant hydrologic processes. From Iliamna Lake, water flows for 143 miles (369 kilometers) via the Kvichak River into Bristol Bay. The Kvichak River subbasin is one of nine major river basins draining Southwest Alaska into Bristol Bay. Fifty-five of the 73 representative stream crossings were

surveyed as primary survey sites along the representative road alignment in 2004 through 2008 (Table 15.3-1). The remaining 18 primary survey sites on or near these representative stream crossings were not surveyed during this study period, due to local access constraints.

15.3.4 Scope of Work

Fish and aquatic resource surveys within the transportation corridor study area were initiated in 2004 by NDM and were continued by the Pebble Partnership through 2008. Field studies were carried out by HDR Alaska, Inc. (HDR) from 2004 through 2007 and by R2 Resource Consultants, Inc. (R2) in 2008. Consistent with the study objectives, there were four main study components: channel morphology, aquatic habitat characterization, water quality, and fish distribution.

15.3.5 Methods

Fish abundance and habitat surveys in the Bristol Bay drainages study area were conducted in 2004, 2005, 2007, and 2008. Over the study period, fish presence and habitat surveys were conducted at 55 primary survey sites (Appendix15.3A) and 42 related support survey sites (Appendix 15.3B) (Table 15.3-1). Detailed methods for the aquatic habitat and fish resource studies are described in Appendix E of this EBD. Included here is a brief summary of these methods as they relate to survey site selection, aquatic habitat assessments, water quality sampling, and fish distribution surveys.

Similar survey protocols and methods were used at the primary and support survey sites. Primary and support survey sites were identified remotely via a combination of topographic maps and aerial photography and were subsequently visited to determine if there was a wetted, ephemeral, or dry channel present at the site, or if there was no channel present. Photographs to document channel conditions were taken at the time of visit, and actual survey locations were documented in the field using global positioning system (GPS) units to record coordinate data. For wetted and ephemeral channels, the length of stream sampled at each survey site was 656 feet (200 meters) or 40 times the average bed width, whichever was the lesser of the two values. However, on occasion, survey lengths were greater than this in order to obtain a more comprehensive sample.

15.3.5.1 Aquatic Habitat Assessments

The overall objective of the aquatic habitat assessments was to characterize the type (e.g., pools, riffles, runs/glides, etc.), distribution, and amount of habitat available for fish at each primary and support survey site. To address this objective, aquatic habitat surveys were conducted, with each year's effort focused on specific survey sites, habitat components, or various data gaps. The majority of habitat surveys used modified Tier 1 and Tier 3 habitat survey protocols adapted from Chapter 20 of the United States Forest Service (USFS) FSH 2009–Aquatic Habitat Management Handbook (R-10 Amendment 2090.21-2001-1), *Fish and Aquatic Stream Habitat Survey* (USFS, 2001). This method allows for habitat data collection at multiple tiers (Tiers 1, 2, and 3), with Tier 1 representing the broadest level of classification (e.g., reach-scale), and Tiers 2 and 3 finer levels of classification (e.g., meso- and microhabitat units).

Modified Tier 1 protocols (USFS, 2001) were used to collect information on channel morphology and valley form at each primary and support survey site. Channel morphometry data, such as bankfull width, bankfull depth, bed width, wetted width, and gradient, were collected at transects located within each

survey site. Data collected at these transects are summarized by watershed group in the *Channel Morphology* sections of Section 15.3.6.

Modified Tier 3 habitat surveys (USFS, 2001) were conducted at each primary and support survey site where water was present to document and characterize individual habitat types available to fish (e.g., beaver pond complexes, backwaters/sloughs, pools, runs/glides, riffles, and cascades). Percent habitat composition of each site was determined by calculating the percent of the total wetted area of the site (wetted width multiplied by length) attributed to each habitat type encountered. Habitat composition was scaled up to the watershed group level by summing total wetted areas across represented habitat types divided by the total wetted area surveyed within the watershed. In addition to habitat composition data, locations of special habitat features (e.g., tributaries, springs, seeps, and possible barriers to fish migration) were also recorded in 2008. For tributaries, seeps, and springs, the percent flow contribution to the mainstem was visually estimated, and water temperatures were measured. Habitat survey activities are shown in Photo 15.3-1. Aquatic habitat data are summarized by watershed group in the *Aquatic Habitat* sections of Section 15.3.6.

15.3.5.2 Water Quality Measurements

Several water quality parameters that impact aquatic life were measured during the aquatic habitat assessment, including field measurements of surface water temperature, pH, dissolved oxygen (DO), and specific conductivity. Alaska Department of Environmental Conservation (ADEC) standards for the growth and propagation of fish, shellfish, other aquatic life, and wildlife (ADEC water quality standards for aquatic life) were compared to parameters that were measured during the 2004 through 2008 studies as provided in Table 15.3-2 (ADEC, 2009).

15.3.5.3 Fish Distribution Studies

The main survey method for assessing the presence and relative abundance of stream-dwelling fish was via direct underwater observation using snorkeling. Other methods, such as electrofishing and minnow trapping, were used when survey conditions were not conducive to snorkeling, e.g., in deep, fast, or turbid water. Various fish sampling techniques applied during the fish studies are shown in Photo 15.3-2. To the extent possible, all fish observed and/or captured were identified to species. Fork length was estimated or measured for observed and captured fish, respectively.

15.3.6 Results and Discussion

During the study period, 55 primary survey sites and 42 supporting sites were surveyed (Table 15.3-1). To facilitate the characterization of these survey sites, we have grouped survey sites into the following eight watershed groups: UT, Newhalen, Isolated Watersheds, Roadhouse/Northeast Bay/Eagle Bay, Youngs/Chekok/Canyon, Knutson Bay/Pedro Bay, Pile Bay/Lonesome Bay, and Iliamna River (Figure 15.3-2). Watershed descriptions and results specific to each of these watershed groups are provided in the sections that follow.

15.3.6.1 Upper Talarik Watershed Group

The representative road alignment crosses the upper portion of the UT watershed, near the Pebble Deposit (Figure 15.3-1). Nine primary survey sites and 11 support survey sites were identified and surveyed along

the representative road alignment within the UT Watershed Group from 2004 through 2008. Three of these primary survey sites were located in the upper UT mainstem and six were located in UT tributaries (Table 15.3-3).

The UT watershed drains an area of about 3,767 square feet (350 square kilometers) and is part of the Kvichak River system that flows into Bristol Bay. From its headwaters, located in the immediate vicinity of the Pebble Deposit (Figure 15.3-1), the stream flows in a south-southwesterly direction for about 38.5 miles (62 kilometers) where it enters Iliamna Lake. The highest elevation in the UT watershed is Pig Mountain at 2,808 feet (856 m); the lowest elevation is at the stream outlet to Iliamna Lake at 35 feet (11 meters). The watershed is bounded by a series of low, isolated mountain blocks: Koktuli Peak to the west, Groundhog Mountain to the north, Dalton Mountain to the northeast, and a long unnamed ridge that separates the UT drainage from the Newhalen River to the east. The northwestern surface water drainage divide between the NFK and UT is inconspicuous. A detailed description of aquatic habitat conditions and fish utilization in the UT watershed is provided in Section 15.1.6.3.

Channel Morphology

Channel morphology data collected at the primary survey sites indicated that the stream channels in this upper portion of the UT were both relatively narrow and shallow (Table 15.3-4), with a mean bankfull width of 14.7 feet (4.47 meters; n = 9) and a mean depth of 1 foot (0.31 meters; n = 9). The channel slopes were moderate and slightly variable with a mean gradient of 2.1 percent and ranging from 0 to 4 percent at the primary survey sites (n = 9).

Aquatic Habitat

A total length of 3,041 feet (927 meters) of stream habitat was surveyed at the nine primary survey sites in the UT. This habitat was predominantly fast-water habitat, with approximately 45 percent glide and 31 percent riffle documented (Table 15.3-5). This was consistent with results of the mesohabitat mapping and Tier 3 surveys, which indicated that the uppermost reaches of the UT were dominated by riffle and run/glide habitat types (Chapter 15, Section 15.1, Figures 15.1-71 and 15.1-73). Only one beaver pond was encountered (MP_02.6), but due to extensive wetted area, this comprised 22 percent of the total UT habitat surveyed at primary survey sites. Pools were rare and small, accounting for only 2.4 percent of the habitat surveyed.

Gravel was the dominant substrate at seven of the nine UT primary survey sites (Table 15.3-6). Two of these survey sites (MP_01.2 and MP_02.6) had predominantly smaller substrates, with approximately 75 percent silt/sand, 20 percent organics, and small percentages of gravel and cobble (Appendix 15.3A). The prevalence of gravel substrates and of riffle and run/glide habitats within the UT indicates potential for fish spawning habitat.

Special habitat features that influence fish distribution and abundance, including seeps and springs, intermittent flow reaches, and beaver dams, were recorded during surveys conducted in 2008. As mentioned above, one beaver dam was encountered at primary survey site MP_02.6. All but one of the UT primary survey sites had continuous flow when surveyed. Flow was intermittent at primary survey site MP_01.2 on UT 1.430, accounting for 1.3 percent of the total survey length in the UT Watershed Group (Table 15.3-5). Intermittent flow has been documented elsewhere in the upper UT tributaries during low-flow years. Data collected at support survey sites in the UT Watershed Group indicated that

three of these sites within UT 1.500 were dry at the time of sampling in 2005 and/or 2007 (Appendix 15.3B).

Seeps were observed at two of the UT Watershed Group primary survey sites. One seep was documented at primary survey site MP_02.3, River Kilometer (RK) 55.2 on the mainstem UT. Three seeps were observed at primary survey site MP_02.6 on UT 1.410. Seeps and springs add flow to the river, may help to moderate temperatures, stabilize flows, and thus, may offer favorable habitat refugia for fish during summer and winter low-flow periods.

Water Quality

The UT Watershed Group was characterized by water quality conditions suitable for a variety of fishes. Water temperatures were seasonably appropriate with a mean of 46.4°F (8°C) for eight primary survey sites and a range of 42.1 to 49.8°F (5.6 to 9.9°C) (Table 15.3-7). DO was saturated with a mean of 11.8 milligrams per liter (mg/L). Conductivity was low at all UT primary survey sites, ranging from 16 to 119 microSiemens per centimeter (µS/cm). Field measurements for water temperature and DO met the ADEC water quality standards for aquatic life.

The ADEC surface water temperature criteria for aquatic life in freshwater is specific to the life stage of fish present and the type of fish habitat the station represents, although surface water temperature may not exceed 68 degrees Fahrenheit (°F; 20 degrees Celsius [^{o}C]) at any time, regardless of life stages present (ADEC, 2009). Water temperatures in spawning areas and egg and fry incubation areas may not exceed 55.4°F (13°C), whereas temperatures in rearing habitats and migration corridors may not exceed 59°F (15°C; Table 15.3-2). Observed water temperatures at primary and support survey sites in the UT Watershed Group met the ADEC water temperature criteria for aquatic life (Table 15.3-7).

The mean pH was 8.6 and ranged from 7.7 to 9.7 for the UT primary survey sites (n = 8; Table 15.3-7). The ADEC maximum criterion for pH for aquatic life is 8.5 and was exceeded at four primary survey sites: MP_0.2, MP_02.6, MP_02.8, and MP_05.6 (Table 15.3-8; Figure 15.3-3; Appendix 15.3A). The pH at one site (Mini Creek) was below the ADEC minimum pH criterion for aquatic life of 6.5.

Fish Resources

Six fish species, including two anadromous salmonids, three resident salmonids, and one resident non-salmonid species, were documented at the primary survey sites in the upper UT (Table 15.3-8; Figure 15.3-4). Coho salmon were the dominant species at 89 percent (Figure 15.3-5). Other species present were Chinook salmon, Dolly Varden, sculpin, Arctic grayling, and rainbow trout. The relative abundances of these other species were low, ranging from 0.4 to 4.9 percent of total observations. Although not observed during these fish and aquatic resource surveys, adult and juvenile sockeye salmon, whitefish, and threespine stickleback have also been documented in the upper reaches of the UT during other studies in the Pebble Project study area (Chapter 15, Section 15.1.6.3, Tables 15.1-46 and 15.1-49).

Relatively few fish were observed at the primary survey sites in the UT. The three primary survey sites with the greatest number of fish and diversity of species were MP_02.3, MP_02.6, and MP_05.6 (Appendix 15.3A), which are located on the mainstem UT. The adult coho salmon observed at primary survey sites MP_2.3 and MP_05.6 were the only anadromous adult salmon observed during these surveys in the UT Watershed Group. Resident fishes were observed at multiple primary survey sites (MP_00.2,

MP_02.3, MP_02.6, MP_02.8, and MP_05.6). No fish were observed at two primary survey sites, MP_00.6 and MP_01.2. Site-specific data collected at primary and support survey sites for fish counts, life stage, and fish length are presented in Appendices 15.3A and 15.3B, respectively.

15.3.6.2Newhalen Watershed Group

This watershed group contains mainstem and tributary survey sites within the Newhalen River Watershed. The Newhalen River originates above Lake Clark and flows south for approximately 24.8 miles (40 kilometers) from the outlet of Sixmile Lake before discharging into Iliamna Lake (Figure 15.3-2). This portion of the transportation corridor study area includes primary survey sites between MP 10.9 and 19.0. The elevation of the representative road alignment within this watershed group ranges from approximately 236 feet (72 meters) at the Newhalen River to 787 feet (240 meters) at support survey site A 10.66. From 2004 to 2008, data were collected at four primary survey sites on four unnamed tributaries that enter the lower Newhalen River from the west (Table 15.3-1; Figure15.3-2). In addition, there were nine support survey sites in the Newhalen Watershed Group.

Channel Morphology

Channel morphology data indicated that the tributary channels to the Newhalen River were both relatively narrow and shallow, with a mean bankfull width of 10.5 feet (3.20 meters; n = 4) and a mean depth of 0.66 feet (0.20 meters; n = 4). Channel slopes were low to moderate, ranging from 0 to 2 percent with a mean gradient of 1.3 percent (Table.15.3-4).

Aquatic Habitat

A total length of 1,417 feet (432 meters) of stream habitat was surveyed at the four primary survey sites in the Newhalen Watershed Group (Table 15.3-5). The habitat in this watershed group was predominantly fast-water, with approximately 85 percent of the wetted surface area comprised of riffle and glide (Table 15.3-5). Pool habitat consisted of scour pools located at three primary survey sites (MP_12.2, MP_14.6, and MP_14.9) and accounted for only 15 percent of the habitat surveyed. The nine support survey sites exhibited the same dominance of habitat types; however, backwater pools were also present at A 12.577 and B 13.36a (Appendix 15.3A). All of the primary and support survey sites were located within perennial streams.

Gravel was the dominant substrate at three of the four Newhalen primary survey sites (MP_12.2, MP_14.6, and MP_17.9; Table 15.3-6). One site (MP_14.9) had cobble as the dominant substrate, with lesser amounts of gravel, sand, boulder, and organics (Appendix 15.3A). The prevalence of gravel and cobble substrates and riffle and glide habitats indicates potential for fish spawning and rearing habitat.

Large woody debris was relatively sparse throughout the Newhalen Watershed Group due to a lack of source trees in the riparian zone. No beaver ponds, seeps, or springs were documented at the primary survey sites in the Newhalen Watershed Group (Table 15.3-5).

Water Quality

The Newhalen Watershed Group was characterized by water quality conditions suitable for a variety of fishes. Water temperatures were seasonably cool and uniform across primary survey sites with a mean of

45°F (7.3°C) and a range of 43°F to 50°F (6.2°C to 9.9°C; Table 15.3-7). DO was at a saturated level, with a mean concentration of 11.7 mg/L. Specific conductivity was low and uniform, ranging from 29 to 55 µS/cm. Field measurements for water temperature and DO at all primary survey sites met the ADEC water quality standards for aquatic life.

Overall, water quality data from support survey sites within the Newhalen Watershed Group were similar to data from primary survey sites, with a few notable differences. A field measurement of water temperature at support survey site A 10.21 was 56 °F (13.2 °C; Appendix 15.3B) and thus, exceeded the maximum criterion of 13 °C for spawning and incubation areas. However, given that only non-anadromous fish species were found at this site, it is uncertain if this temperature criterion would apply to site A 10.21. In addition, DO was recorded below the ADEC minimum criterion for aquatic life at three support survey sites: B 13.36b, B 14.06, and B 14.418 (Table 15.3-8).

The mean pH for the four primary survey sites was 8.5 and ranged from 7.2 to 9.2 (Table 15.3-7). Three of the primary survey sites (MP_12.2, MP_14.6, and MP_17.9) had pH measurements that exceeded the ADEC maximum pH criterion of 8.5 for aquatic life (Table 15.3-8). One field measurement at one support survey site (A 12.577) was below the ADEC minimum pH criterion for aquatic life (Appendix 15.3B).

Fish Resources

Three fish species (one anadromous salmonid, one resident salmonid, and one resident non-salmonid species) were documented at the primary survey sites in the Newhalen Watershed Group (Figure 15.3-4; Table 15.3-9). Coho salmon were the dominant species at approximately 96 percent (Figure 15.3-6). Other species present were Arctic grayling and longnose sucker. These species each accounted for approximately 2 percent of total fish observed.

Relatively few fish were observed at the primary survey sites in the Newhalen Watershed Group. For example, there were 31 and 13 juvenile coho salmon observed at primary survey sites MP_14.6 and MP_14.9, respectively. Both Arctic grayling and longnose sucker were found at primary survey site MP_17.9, and no fish were observed at primary survey site MP_12.2 (Appendix 15.3A).

Eight of the nine support survey sites were surveyed for fish presence. A greater diversity of fish species and life stages were observed at these eight support survey sites as compared to the primary survey sites within the Newhalen River watershed. In addition to the species found at primary survey sites, sockeye salmon, Dolly Varden, sculpin, and ninespine stickleback were found at the support survey sites (Table 15.3-9; Figure 15.3-4; Appendix 15.3B). Adult and juvenile sockeye salmon and/or juvenile coho salmon were found at support survey sites A 12.577, B 13.36a, and B 13.36b. These observations extended the anadromous species distribution beyond the current Anadromous Waters Catalog locations (Figure 15.3-4; ADF&G, 2010). Juvenile coho salmon were also documented in the unnamed Newhalen T4 tributary at support survey sites A 12.577, B 13.36b, and B 13.36a.

The lower mainstem Newhalen River is known to support coho salmon, Chinook salmon, sockeye salmon, rainbow trout, and Arctic char (ADF&G, 2010; Map 15.3-3). The Newhalen River rainbow trout population includes an adfluvial component. During a separate radio telemetry study monitoring the movements and site fidelity of adult rainbow trout from the UT, tagged rainbow trout were documented overwintering in the Newhalen River (R2 Resource Consultants, unpublished data).

15.3.6.3Isolated Watershed Group

This watershed group includes two isolated watersheds that lie in the vicinity of Bear Creek (east of the Newhalen River and north/northeast of Roadhouse Creek) and drain the southwest flanks of Roadhouse Mountain. The topography in this area is relatively flat and has been influenced by relatively recent glacial activity, as evidenced by numerous kettle lakes. The isolated watersheds of Negro Lake and an unnamed lake did not appear to have a surface connection with the Newhalen River or Iliamna Lake via Roadhouse Creek, nor any other surface discharge points.

There are three primary and two support survey sites in the Isolated Watershed Group. The representative road alignment crosses one of the tributaries to Negro Lake (i.e., Negro Lake T1) at two locations (Figure 15.3-2, Table 15.3-1). These two primary survey sites range in elevation from 472 feet (144 meters) at site MP_22.5 to 521 feet at MP_23.2 (156 meters). During surveys in 2008, the upper primary survey site (MP_23.2) consisted of a dry stream channel, while no channel was located at the lower primary survey site (MP_22.5), which was also dry. Photographs of both these primary survey sites are presented in Appendix 15.3A. These data call into question the presence of a stream channel at this location as was indicated from preexisting maps. No other data were collected at these Negro Lake tributary primary survey sites. Farther east, the representative road alignment crosses one small tributary to an unnamed lake that lies southwest of the representative road alignment near Bear Creek (Figure 15.3-2, Table 15.3-1). The alignment intersects this tributary near, or perhaps even above, the headwaters that are seasonally inundated by rain events or melting snow from Roadhouse Mountain. The elevation at this primary survey site (D 22.933) is 518 feet (158 meters). D 22.933 was dry in July 2004 for a distance of approximately 1,050 feet (320 meters) downstream of the crossing location. D 22.933 was revisited in October 2007, after a period of rain. At that time, it contained flowing water (Appendix 15.3A). Only one support survey site (D 23.344) in this watershed contained flow (Appendix 15.3B).

Channel Morphology

Channel morphology parameters were measured at the only Isolated Watershed Group primary survey site (D 22.933) with flow. Primary survey site D 22.933 consisted of a small, braided flowing path of water that lacked a defined channel bed (Appendix 15.3A), so only a limited number of parameters could be measured. Flow may have developed from rain events that occurred prior to the survey period, as evidenced by submerged blueberry plants containing ripe fruit. The gradient was 1 percent and wetted width was 13.45 feet (4.1 meters; Table 15.3-4). At support survey site D 23.344, the bankfull width, wetted width, and bed width were 4.4, 2.5 and 1.0 feet (1.33, 0.77, and 0.30 meters), respectively, and the gradient was 1 percent (Appendix 15.3B).

Aquatic Habitat

At the one wetted primary survey site (D 22.933), the 279 feet (85 meters) of aquatic habitat surveyed was characterized as a flowing wetland due to the lack of a clearly defined channel. The substrate consisted entirely of organic matter, including submerged terrestrial vegetation. At support survey site D 23.344, the aquatic habitat was surveyed for 115 feet (35 meters) and was composed entirely of riffle habitat. The substrate was comprised of 50 percent organic matter and 50 percent silt. Large woody debris, overhanging vegetation, and beaver activity were absent from the Isolated Watershed Group due to a lack of source trees in the riparian zone.

Water Quality

Water quality data for the only Isolated Watershed Group primary survey site with flow (D 22.933) are presented in Table 15.3-7. Water temperature was seasonably cool at 42.6°F (5.9°C), DO was 11.2 mg/L, and specific conductivity was 30 µS/cm. The only ADEC water quality criterion for aquatic life that was not met was pH. The pH of 5.75 at D 22.933 and 5.56 at support survey site D 23.344 were below the ADEC minimum pH criterion for aquatic life of 6.5 (ADEC, 2009; Table 15.3-8; Figure 15.3-3).

Fish Resources

No fish were found during October 2007 fish sampling at Isolated Watershed Group primary and support survey sites D 22.933 and D 23.344 (Table 15.3-9). The other primary and support survey sites in this watershed group were dry, and thus were not sampled for fish. This watershed group is composed of isolated waterbodies that do not support anadromous fish species.

15.3.6.4Roadhouse/Northeast Bay/Eagle Bay Watershed Group

This watershed group includes three watersheds that drain into Iliamna Lake from Severson to Eagle Bay: Roadhouse Creek, an unnamed tributary to Eagle Bay (Eagle Bay T1), and Eagle Bay Creek (Figure 15.3-2; Table 15.3-1).

The Roadhouse Creek watershed is a low-gradient system originating at the southwest base of Roadhouse Mountain. The representative road alignment traverses the headwaters of the Roadhouse Creek watershed near the base of Roadhouse Mountain, ranging in elevation from approximately 472 to 620 feet (144 to 189 meters; Figure 15.3-2). One mainstem primary survey site (D 24.166) and six support survey sites were studied in the Roadhouse Creek watershed (Table 15.3-1).

The unnamed Eagle Bay T1 watershed drains the southern side of Roadhouse Mountain. The mainstem originates near the top of Roadhouse Mountain at approximately 2,558 feet (780 meters), where it flows south through a highly confined, steep channel a distance of approximately 2.8 miles (4.5 kilometers) and drops to the base of Roadhouse Mountain at approximately 689 feet (210 meters) in elevation. From the base of the mountain, the stream meanders through lower gradient tundra for approximately 6.2 miles (10 kilometers), before discharging into Iliamna Lake at the west side of Eagle Bay at an elevation of 35 feet (11 meters). The representative road alignment crosses this watershed at the base of Roadhouse Mountain at elevations ranging from 315 to 522 feet (96 to 159 meters). Within the Eagle Bay T1 watershed, there are six primary and three support survey sites (Table 15.3-1). One of the primary survey sites (F 26.46) is located on Eagle Bay T1, and the other sites are located on tributaries to Eagle Bay T1.

The Eagle Bay Creek watershed consists of two significant streams: the west and east branches of Eagle Bay Creek. West Branch Eagle Bay Creek drains the southeast side of Roadhouse Mountain, originating at approximately 2,558 feet (780 meters) in elevation; it is similar in character to Eagle Bay T1. East Branch Eagle Bay Creek drains a low-lying area to the east of Roadhouse Mountain, originating at less than 399 feet (120 meters) elevation. The representative road alignment intersects this watershed group at one location within each of these streams (primary survey sites MP_29.6 and MP_30.7; Table 15.3-1). These two primary survey sites are south of Roadhouse Mountain at elevations ranging 236 to 276 feet (72 to 84 m; Figure 15.3-2). In addition, there are two support survey sites in the Eagle Bay Creek watershed.

Channel Morphology

Channel morphology data indicated that the stream channels in Roadhouse/Northeast Bay/Eagle Bay Watershed Group were both narrow and shallow, with a mean bankfull width of 7.9 feet (2.46 m; n = 7) and a mean depth of 0.5 feet (0.19 meters; n = 5). Channel slopes were variable, ranging from 0 to 5 percent with a mean gradient of 2.1 percent (Table.15.3-4).

In the Roadhouse Creek watershed, channel morphology data were collected at the one primary survey site (D 24.166) and five support survey sites. The channel at D 24.166 was narrow. Mean bankfull width was 5.6 feet (1.7 meters), and stream gradient was 1 percent (Appendix 15.3A).

In the Eagle Bay T1 watershed, channel morphology data were collected at the six primary survey sites and two support survey sites. The primary survey sites consisted of streams that were slightly wider and higher gradient (2 to 5 percent) than those of the Roadhouse Creek watershed. Bankfull widths ranged from 2 to 11.5 feet (0.6 to 3.5 meters), and wetted widths ranged from 2 to 7.2 feet (0.6 to 2.2 meters; Appendix 15.3A). Channel characteristics at the support survey sites were similar those at the primary survey sites (Appendix 15.1B).

Mean bankfull width for the two Eagle Bay Creek primary survey sites (MP_29.6 and MP_30.7) ranged from 7.5 to 11.5 feet (2.3 to 3.5 meters), and wetted width varied from 6.6 to 7.2 feet (2 to 2.2 meters), while mean water depth ranged from 0.5 to 0.9 feet (0.16 to 0.26 meters; Appendix 15.3A). The gradient was 1 percent in West Branch Eagle Bay Creek (MP_29.6) and close to zero in East Branch Eagle Bay Creek (MP_30.7).

Aquatic Habitat

Habitat composition was measured at nine primary survey sites along the representative road alignment in the Roadhouse/Northeast Bay/Eagle Bay Watershed Group, over a total length of 3,746 feet (1,142 meters; Table 15.3-5). In this watershed group, the predominant habitat types were riffles and scour pools, representing 45.3 and 41.3 percent of the total wetted survey area, respectively. Glides were the next most common habitat type at 11.5 percent, and backwater pools accounted for the remaining 1.8 percent.

Similar to habitat composition, substrate composition was also diverse. All substrate types with the exception of bedrock were observed (Table 15.3-6). Sand/silt, gravel, and cobble ranged from zero to greater than 70 percent among the primary survey sites in this watershed group, with gravel and cobble being the most dominant substrate types among all sites. In the Roadhouse Creek and Eagle Bay T1 watersheds, the substrate was dominated by cobble followed by sand/silt and gravel. In Eagle Bay Creek, the substrate was dominated by gravel, followed by sand/silt-sized particles.

Intermittent flow was noted at several primary and support survey sites within this watershed group. Approximately 26 percent of the total length surveyed for aquatic habitat at the primary survey sites consisted of dry channel (Table 15.3-5). Most of this intermittent flow was observed in the Eagle Bay watershed. Two primary survey sites in the Eagle Bay T1 watershed (MP_27.7 and MP_28.8B) had intermittent surface water or were completely dry during the September 2008 surveys and included 984 feet (300 meters) of dry channel. The primary survey site on Eagle Bay T1.1 (F.25.863) was seasonally inundated; the channel was dry in August 2004, yet flowing in October 2007 after rain events (Appendix 15.3A). One of the support survey sites within the Eagle Bay T1 watershed (F 28.75) was also found to be

seasonally inundated (Appendix 15.3B). In the Roadhouse Creek watershed, support survey site D 24.402 was visited in July 2004 and again in October 2007; it was dry on both occasions, and no additional data were collected (Appendix 15.3B). No seeps, springs, or beaver ponds were observed at any survey sites in the Roadhouse/Northeast Bay/Eagle Bay Watershed Group.

Water Quality

Water quality was measured between August and October at eight primary survey sites in the Roadhouse/Northeast Bay/Eagle Bay Watershed Group (Table 15.3-7), as well as nine support survey sites within these watersheds. Water temperatures at primary survey sites were seasonably cool, with a mean of 43.5°F (6.4°C) and a range from 39°F to 49.6°F (3.9°C to 9.8°C). Field measurements of DO generally indicated good oxygen saturation, with a mean of 10.9 mg/L and a range from 7.0 to 13.0 mg/L. The specific conductivity varied throughout the watersheds, ranging from 34 to 111 µS/cm. The mean pH (7.1) for this watershed group was neutral (Table 15.3-7); however, site-specific pH was variable and ranged from 5.9 to 10.5.

Five primary survey sites had pH measurements that were below the minimum ADEC pH criterion for aquatic life of 6.5. These sites were located in the Roadhouse Creek (D 24.166), Eagle Bay T1 (F 26.46, F 28.49, and F 25.863), and Eagle Bay Creek (MP_29.6) watersheds (Table 15.3-8). Five of these low pH measurements occurred in early October 2007 after rain events, which may potentially alter pH away from its steady-state conditions. For example, the pH in August 2004 at sites F 26.46 and F 28.49 was relatively neutral (approximately 7.2), yet in October 2007, measured pH values were approximately 6.1 (Appendix 15.3A). The pH measurements at three support survey sites sampled in early October 2007 were also below the ADEC minimum pH criterion for aquatic life of 6.5 (Table 15.3-8). One Eagle Bay T1 primary survey site (MP_27.7) exceeded the ADEC maximum pH criterion for aquatic life of 8.5, with a pH field measurement of 10.5 in September 2008. In August 2004, primary survey site F 28.49 had a DO concentration of 6.95, which is below the ADEC minimum DO criterion for aquatic life of 7.0 mg/L.

Fish Resources

Four fish species (two resident salmonids and two resident non-salmonid species) were documented at the primary survey sites in the Roadhouse/ Northeast Bay/Eagle Bay Watershed Group (Figure 15.3-4). Sculpin and Dolly Varden were the predominant fish species, accounting for approximately 42 percent and 34 percent of all fish observed, respectively (Figure 15.3-7). Other species present were rainbow trout (19 percent) and ninespine stickleback (7 percent).

Fish counts were low at the primary survey sites, with a total of 65 fish observed at four sites (D 24.166, F 26.46, F 28.49, and MP_30.7). Primary survey site MP_30.7 on Eagle Bay Creek had the greatest species diversity, with three species (rainbow trout, sculpin and ninespine stickleback) observed there. The other primary survey sites had either sculpin or Dolly Varden present. No fish were observed during survey efforts at four of the primary survey sites: three in Eagle Bay T1 (MP_29.6, MP_27.7, and F 26.863) and one in Eagle Bay Creek (MP_29.6). Fish assemblages at the support survey sites were generally similar to those at the primary survey sites with the exception of rainbow trout; five of the eight support sites that were surveyed for fish supported sculpin, Dolly Varden, and/or ninespine stickleback (Appendix 15.3B).

Although no anadromous fish were documented during fish sampling efforts in the Roadhouse/Northeast Bay/Eagle Bay Watershed Group, coho salmon, sockeye salmon, and Arctic char are known to occur in this watershed group (ADF&G, 2010). Both Eagle Bay T1 and Eagle Bay Creek support Arctic char and spawning sockeye salmon within the transportation corridor study area (ADF&G, 2010). The Anadromous Waters Catalog indicates that Roadhouse Creek supports spawning coho and sockeye salmon below River Mile 6.2 (River Kilometer 10), which is more than 3.1 miles (5 kilometers) downstream from the Roadhouse Creek primary survey site. In addition, this primary survey site is located at, or slightly above, the headwaters of this watershed where the habitat is not conducive to supporting larger anadromous salmonids. Thus, it is unlikely that anadromous species occur along the representative road alignment within the Roadhouse Creek watershed.

15.3.6.5 Youngs/Chekok/Canyon Watershed Group

This watershed group includes three watersheds that drain into the northern edge of Iliamna Lake from Chekok Bay to Fox Bay (Figure 15.3-2): Youngs Creek (MP 33.1 to MP 34.6), Chekok Creek (MP 37.7 to MP 38.3), and Canyon Creek (MP 38.7). The representative road alignment crosses within the lower reaches of streams in this watershed group near Iliamna Lake. There are three primary survey sites in this watershed group that were sampled between 2004 and 2008 (Table 15.3-1). Two were located on Chekok Creek (F 39.65 and F 39.59), and one was located on Canyon Creek (F 40.2). There are no support survey sites in this watershed group.

The Youngs Creek watershed includes two major tributaries: a west branch and an each branch. The west branch drains the east side of Roadhouse Mountain for a distance of approximately 8.7 miles (14 kilometers) before joining the east branch, which drains the south side of an unnamed mountain and low-lying areas to the east-northeast for a distance of approximately 10 miles (16 kilometers). Downstream of where these two branches merge, Youngs Creek flows for approximately 3.1 miles (5 kilometers) before discharging into Iliamna Lake at Chekok Bay.

Chekok Creek originates at Chekok Lake, which lies in a valley between unnamed mountains, and flows nearly 18.6 miles (30 kilometers) in a south-southwest direction before discharging into Iliamna Lake. Chekok Creek has a wide and very dynamic channel that frequently shifts in the active floodplain. Chekok Creek T1, one of the significant tributaries within the watershed, is located in the lower portion of the watershed. It originates at approximately 315 feet (96 meters) in elevation and drains low-lying areas to the west of Chekok Creek for nearly 5.6 miles (9 kilometers) before entering Chekok Creek at approximately River Mile 0.1 (River Kilometer 0.2).

Canyon Creek drains the northern side of Knutson Mountain from its headwaters at approximately 3,000 feet (914 meters). From there, it flows through a deep canyon for approximately 10.6 miles (17 kilometers) and into a wide forested valley, where it meanders approximately 6.2 miles (10 kilometers) before discharging into Iliamna Lake at Fox Bay at an elevation of 35 feet (11 meters). The canyon reach of the creek is high gradient and contains several waterfalls of various sizes, which create migration barriers for anadromous fish. The representative road alignment would cross Canyon Creek downstream of the canyon reach, where the stream channel is wide and very dynamic within the floodplain portion of the wide forested valley. The floodplains of Canyon and Chekok creeks overlap in the lower portions of their valleys, and periodically, their channels converge before discharging into Fox Bay.

Within the Youngs/Chekok/Canyon Watershed Group, several of the headwater tributaries originate in the mountains and are steep, highly confined channels flowing from 1,968 feet (600 meters) to the base of the mountains at approximately 984 feet (300 meters). The channel forms transition from highly confined channels to low-gradient meandering channels at elevations below approximately 689 feet (210 meters). The riparian corridor of Youngs Creek is composed of tundra, while the lower valleys of Chekok and Canyon Creek watersheds are composed of forested habitat. The representative road alignment traverses lower gradient, perennial streams in the lower portion of these three watersheds at an elevation of 157.4 feet (48-m; Map 15.3-2).

Fish and aquatic habitat surveys were conducted at three primary survey sites in Chekok and Canyon creeks. Given the dynamic nature of these creeks in the vicinity of the representative road alignment and that anadromous fish presence has been previously documented in these stream reaches (ADF&G, 2010), these three upstream survey sites were designated as representative primary survey sites even though they are located 0.9 miles (1.4 kilometers) to 1.4 miles (2.2 kilometers) upstream from the representative road alignment. There were no support survey sites in the Chekok Creek and Canyon Creek watersheds.

Channel Morphology

The channel morphology data for the Youngs/Chekok/Canyon Watershed Group were highly variable (Table 15.3-4; Appendix 15.3A). Chekok Creek was surveyed at two primary survey sites, one representing the main channel (F 39.65) and the other a side channel (F 39.59). The Chekok Creek side channel primary survey site was relatively narrow, with an 18-foot (5.5-meter) bed width and a moderate slope (1.5 percent). The stream gradient was similar at the main channel Chekok Creek primary survey site. However, the channel was nearly three times wider, as indicated by a mean bed with of 69 feet (21 meters). The Canyon Creek primary survey site (F 40.2) was both steeper and wider, with a gradient of 3 percent and a mean bed width of 80 feet (24.4 meters).

Aquatic Habitat

Habitat composition for the Youngs/Chekok/Canyon Watershed Group is summarized in Table 15.3-5. A total of 2,624 feet (800 meters) of stream was surveyed for habitat in this watershed group. Overall, the surveyed habitat was dominated by riffles (88 percent), with a lesser amount of scour pool habitat (12 percent).

The substrate was dominated by cobbles at the main channel Chekok and Canyon Creek primary survey sites (F 39.65 and F 40.2) and by gravels at the Chekok side channel primary survey site (F 39.59). Wood pieces and overhanging vegetation were present at the sites, and beaver activity was not evident at any of the sites surveyed.

Water Quality

Water quality was measured at the three primary survey sites in August 2004. The water temperature was warm (over 55.4°F [13°C]) at the two wider, main channel primary survey sites (F 39.65 and F 40.2) and resulted in the highest mean water temperature of all watershed groups (Table 15.3-7). Sockeye salmon adults and juveniles were present at the locations, and the field temperature measurement at primary survey site F 40.2 of 55.6°F (13.1°C) exceeded the ADEC maximum temperature criterion for spawning and egg and fry incubation areas (Table 15.3-8). A 61.7°F (16.5°C) field measurement at survey site F

39.65 exceeded the ADEC maximum temperature criteria for spawning, egg and fry incubation, and for rearing areas and migration routes (Table 15.3-8).

The mean pH at the three primary survey sites was 6.7, and DO concentrations at all three primary survey sites were within the acceptable range of values for the ADEC DO criteria for aquatic life (i.e., between 7.0 and 17.0 mg/L in fish bearing waterbodies; Table 15.3-7). Similar to other watershed groups, the specific conductivity was low, ranging from 19 to 49 µS/cm. One pH measurement (6.14), collected at the Chekok Creek primary survey site F 39.59, was below the minimum pH criterion (Table 15.3-8). No other water quality data were outside the ADEC range of criterion for this watershed group.

Fish Resources

Four fish species (one anadromous salmonid, two resident salmonids, and one resident non-salmonid species) were documented at the primary survey sites in the Youngs/Canyon/Chekok Watershed Group (Table 15.3-9; Figure 15.3-4). Sockeye salmon (96.3 percent) were the predominant species observed (Figure 15.3-8). The three other species present were rainbow trout, Dolly Varden, and sculpin at 1.7, 0.1, and 1.9 percent, respectively.

Overall fish counts were highest in this watershed group due to thousands of sockeye salmon adults observed at primary survey sites F 39.65 and F 40.2. These primary survey sites each had three species observed. At the other primary survey site, the side channel on Chekok Creek (F 39.59), only sculpin were present. Although not evident from our sampling, the Anadromous Waters Catalog indicates that spawning sockeye salmon, coho salmon, and Arctic char are present in all three watersheds within this watershed group (ADF&G, 2010).

15.3.6.6Knutson Bay/Pedro Bay Watershed Group

The Knutson Bay/Pedro Bay Watershed Group consists of the Knutson Creek watershed, and 10 small unnamed tributary watersheds that drain the western and southern sides of Knutson Mountain and discharge into Knutson Bay. There is also one unnamed tributary watershed that discharges into Pedro Bay (Figure 15.3-2). The representative road alignment intersects streams within this watershed group from MP 39.8 to MP 51.7 at elevations ranging from approximately 138 to 512 feet (42 to 156 meters). Eighteen primary survey sites within the Knutson Bay/Pedro Bay Watershed Group were surveyed in August 2004 (Table 15.3-1; Figure 15.3-2). Sixteen of these primary survey sites are located in the unnamed watersheds of Knutson Bay. The other two primary survey sites were located on Knutson Creek (F 49.5) and the tributary to Pedro Bay (F 51.85). There are no support survey sites in this watershed group.

Within this watershed group, Knutson Creek is the dominant watershed with respect to drainage area (Figure 15.3-2). The highest elevation in the Knutson Creek drainage is Knutson Mountain at an elevation of approximately 4,133 feet (1,260 meters). The lowest elevation is 46 feet (14 meters) and occurs at the stream outlet to Iliamna Lake. The watershed is bounded by Knutson Mountain to the west and unnamed mountains to the north and east. Knutson Creek originates at an elevation of approximately 2,952 feet (900 meters) and flows southwest through an approximately 8.7-mile (14-kilometer) long, confined valley. The valley then widens, and the creek meanders for approximately 1.9 miles (3 kilometers) before emptying into the eastern end of Knutson Bay.

The remainder of this watershed group consists of the unnamed Knutson and Pedro Bay tributaries. Knutson Bay T1 originates from the southwest side of Knutson Mountain and is the largest of the 10 unnamed tributaries to Knutson Bay. The other nine unnamed tributaries drain the southern side of Knutson Mountain. These streams are relatively small, steep channels flowing through forested habitat; they appear to be seasonally inundated by surface runoff from rain events or snow melt from Knutson Mountain. Pedro Bay T1 originates from an unnamed mountain at an elevation of approximately 1,771 feet (540 meters) and flows about 2.9 miles (4.6 kilometers) west and south discharging into Iliamna Lake near the community of Pedro Bay.

All of the primary survey sites in this watershed group that were surveyed in 2004 consisted of dry channels, except for primary survey site F 49.5 on Knutson Creek (Appendix 15.3A). Channel morphology, aquatic habitat, water quality, and fish presence data were collected at F 49.5, and limited channel morphology and substrate data were collected at one of the dry primary survey sites (F 51.85; MP 50.4) in the Pedro Bay watershed.

Channel Morphology

Channel characteristics largely differed between the Knutson Creek and Pedro Bay T1 primary survey sites (Appendix 15.3A). At the Knutson Creek primary survey site (F 49.5), measured bed width was 168 feet (51.2 meters), whereas bed width at the Pedro Bay T1 primary survey site (F 51.85) was only 9.2 feet (2.8 meters), with a mean bed width for the two sites of 88.5 feet (26.99 meters; Table 15.3-4). Mean channel gradient for these two sites was 4.5 percent. The channel at the Knutson Creek primary survey site had a more moderate gradient (3 percent) than the channel at the Pedro Bay T1 primary survey site (6 percent).

Aquatic Habitat

In the Knutson Bay/Pedro Bay Watershed Group, approximately 1,312 feet (400 meters) of stream were surveyed for aquatic habitat data at the Knutson Creek site F 49.5 (Table 15.3-5). The dominant aquatic habitat type was riffle (75 percent), with scour pools comprising the remainder of the survey area.

Overall, gravel and cobble were the predominant substrate types at the Knutson Creek and Pedro Bay T1 sites (F 49.5 and F 51.85, respectively; Table 15.3-6). Bed material at the Knutson Creek site was predominantly cobble and boulder, with finer substrates (gravel and sand/silt) also present. Gravel (60 percent) dominated the dry channel at the Pedro Bay T1 site, and cobble and sand (20 percent each) comprised the remainder of the surveyed channel area. Overhanging vegetation and large woody debris were present in less than 10 percent of the survey area at both sites. No beaver activity was observed at either site.

Water Quality

Water quality parameters were measured in August 2004 at the Knutson Creek primary survey site F 49.5. Knutson Creek appears to be among the warmer (51.3°F [10.7°C]) primary survey sites documented during the transportation corridor study (Table 15.3-7). The pH (6.5), DO (12.2 mg/L), and specific conductivity (21 µS/cm) measurements were similar to those recorded at other primary survey sites in other watershed groups. The Knutson Creek water quality measurements met the ADEC water quality standards for aquatic life (Table 15.3-2).

Fish Resources

During the Knutson Creek fish survey at F 49.5, sockeye salmon, Dolly Varden, and sculpin were documented (Table 15.3-9). Within the 1,312-foot (400-meter) sample length, 89 adult sockeye salmon (accounting for 81.7 percent of the total fish observations; Figure 15.3-9) were observed spawning and building redds in riffle habitat with mixed substrate sizes. Dolly Varden and sculpin accounted for the remainder of the observations (11 and 7.3 percent, respectively; Figure 15.3-9). The Anadromous Waters Catalog also indicates the presence of Arctic char in Knutson Creek (ADF&G, 2010).

Within the Knutson Bay/Pedro Bay Watershed Group, there are two other watersheds intersected by the representative road alignment that are known to support anadromous fish in their lower reaches (ADF&G, 2010). Knutson Bay T1 supports spawning sockeye salmon and Arctic char presence in the lower mile (1.7 kilometers) of river. While the Pedro Bay T1 primary survey site (F 51.85) was dry at the time of sampling, spawning sockeye salmon have been documented approximately 1,640 feet (500 meters) downstream of this site, and their spawning distribution extends from this location downstream to Iliamna Lake (ADF&G, 2010). The presence of a waterfall downstream may preclude anadromous fish access to site F 51.85.

15.3.6.7Pile Bay/Lonesome Bay Watershed Group

The Pile Bay/Lonesome Bay Watershed Group consists of the Pile River, which discharges into Pile Bay, and two unnamed tributary watersheds that discharge into Lonesome Bay (Figure 15.3-2). The representative road alignment intersects streams within this watershed group from MP 54.3 to MP 59.5 at elevations ranging from less than 80 feet (24 meters) at site F 61.26 on the Pile River to 640 feet (195 meters) at site F 55.75 on the unnamed Lonesome Bay T1 tributary.

The Pile River is the dominant watershed within this group with respect to drainage area (Figure 15.3-2). The Pile River, originating from glaciers in the Lake Clark Wilderness Area, flows southwest through a valley bounded by Three Sisters Mountain to the east and unnamed mountains to the west, for a distance of approximately 47 kilometers before discharging into Iliamna Lake at Pile Bay.

Three primary survey sites within this watershed group were surveyed in August 2004 (Table 15.3-1; Figure 15.3-2). Dry channels were observed at both F 55.75 and F 56.761; therefore, no channel morphology, aquatic habitat, water quality, and fish species data were collected at the primary survey sites in the Lonesome Bay T1 and Lonesome Bay T2 tributaries (Appendix 15.3A). These two Lonesome Bay tributaries have not been mapped by ADF&G as anadromous fish streams (ADF&G, 2010). The dry conditions observed in August 2004 indicate that these streams are seasonally ephemeral at least in dry years and, as such, are unlikely to provide the spawning and rearing habitat that is more commonly found in perennial streams. Channel morphology, aquatic habitat, water quality, and fish presence data were collected at the Pile River primary survey site F 61.26. There are no support survey sites in this watershed group.

Channel Morphology

At the Pile River primary survey site F 61.26, measured bed width was 211 feet (64.2 meters), and wetted width was 233 feet (71 meters; Table 15.3-4). Channel gradient was moderate (2 percent).

Aquatic Habitat

Aquatic habitat data were collected at the Pile River site F 61.26 over a length of 656 feet (200 meters; Table 15.3-5). The aquatic habitat within the area surveyed was composed entirely of glide habitat.

Bed material at the Pile River primary survey site was predominantly cobble (60 percent), and finer substrates (sand/silt) comprised the remainder of the surveyed channel area. Overhanging vegetation and large woody debris were present in less than 10 percent of the survey area. No beaver activity was observed.

Water Quality

Water quality parameters were measured in August 2004 at the Pile River primary survey site F 61.26. The Pile River primary survey site is among the warmer (50.2 °F [10.1 °C]) primary survey sites documented during the transportation corridor study (Table 15.3-7). The pH (6.52), DO (12.05 mg/L), and specific conductivity (22.1 µS/cm) measurements were similar to those recorded at other primary survey sites in other watershed groups. The Pile River water quality measurements met the ADEC water quality standards for aquatic life (Table 15.3-2).

Fish Resources

During the Pile River fish survey at F 61.26, sculpin and threespine stickleback were documented (Table 15.3-9). Due to the large size of the Pile River, portions of the 656-foot (200-meter) long survey area were surveyed for fish along the stream margins; five threespine stickleback and one sculpin were observed (83.3 and 16.7 percent, respectively; Figure 15.3-10). While no salmon were observed during fish surveys, the Anadromous Waters Catalog indicates the presence of spawning sockeye salmon and Arctic char in the Pile River (ADF&G, 2010).

15.3.6.8Iliamna River Watershed Group

The Iliamna River Watershed Group contains six primary and nine support survey sites that were visited during the 2004 through 2008 study period (Table 15.3-1; Figure 15.3-1). The Iliamna River originates on the west side of the Chigmit Mountains and flows southwest for approximately 31 miles (50 kilometers) before emptying into Iliamna Lake. The watershed is bounded by Three Sisters Mountain to the west and unnamed mountains to the north and east. The representative road alignment from MP 64.9 to MP 71.9 crosses the lower end of the Iliamna River watershed at elevations that range from 118 to 374 feet (36 to 144 meters).

One primary survey site (J 68.0; MP 65.4) is located on the mainstem Iliamna River (Figure 15.3-2). The other five primary survey sites are distributed among three subwatersheds, including two unnamed Iliamna River tributaries (I 65.47 and J 67.75; MP 64.9 and MP 65.2, respectively) and Chinkelyes Creek (K 70.14, MP_70.3, and MP_71.9; MP 68.8, MP 70.3, and MP 71.9, respectively). Chinkelyes Creek originates in the Chigmit Mountains and flows for approximately 14.3 miles (23 kilometers) before emptying into the lower reach of Iliamna River. Chinkelyes Creek drains a much larger watershed compared to the other unnamed Iliamna River tributaries. One of the Chinkelyes Creek primary survey sites (MP_71.9) was located on the mainstem, and the other two were located on tributaries. Each of these

six primary survey sites was surveyed in either August 2004 or September 2008. One of these primary survey sites (I 65.47; MP 64.9) was dry when visited in August 2004 (Appendix 15.3A).

Channel Morphology

Within the Iliamna River Watershed Group, the channel characteristics varied between the mainstem and tributary crossing sites. The channels at the Iliamna River and Chinkelyes Creek mainstem crossings were relatively wide and large, compared to the narrower channels present at tributary sites. Channel size was best indicated by bed width for this watershed group. Mean bed width within this watershed group was 64 feet (19.53 meters; Table 15.3-4). Site-specific bed widths ranged from 19.7 feet (6 meters) at primary survey site J 67.75 (MP 65.2) to 170 feet (51.8 meters) at the mainstem Iliamna River primary survey site, J 68.0 (MP 65.4). Channel characteristics at the support survey sites within this watershed group were highly consistent with those observed for the primary survey sites; the mainstem Iliamna River and Chinkelyes Creek were characterized by wide channels, while tributary channels were narrow (Appendix 15.3B).

Channel gradients were more moderate at the Iliamna River sites than at the Chinkelyes Creek sites. Channel slope ranged from 1 to 1.5 percent in the Iliamna River as compared to 3 to 4 percent in Chinkelyes Creek (Appendix 15.3A). The mean channel slope for the primary survey sites within the Iliamna River Watershed Group was 2.7 percent (Table 15.3-4). The support survey sites within this watershed group had a similar gradient ranging from 0.1 to 2.5 percent (Appendix 15.3B).

Water depth was measured at channel morphology transect locations for primary survey sites MP_71.9 and MP_70.3, located on Chinkelyes Creek and Chinkelyes T1, respectively. Mean water depth was 1.3 feet (0.4 meters; Table 15.3-4). The Chinkelyes Creek primary survey site was slightly deeper at 1.6 feet (0.5 meters) than the tributary primary survey site, which had a depth of 1 foot (0.3 meters).

Aquatic Habitat

A total length of 3,588 feet (1,094 meters) of stream habitat was surveyed at four of the primary survey sites in the Iliamna River Watershed Group (J 68.0, K 70.14, MP_70.3, and MP_71.9). The habitat was predominantly fast-water habitat, with approximately 63 percent glide, 26 percent riffle, and 3 percent cascade documented (Table 15.3-5). The mainstem Iliamna River primary survey site (J 68.0) consisted entirely of glide habitat, which accounts for a large percentage of the total wetted surface area for this watershed group. Scour pools (21.9 percent) at primary survey site K 70.14 (MP 68.8) and a single backwater pool at primary survey site MP_71.9 (0.2 percent) accounted for the remainder of the aquatic habitat surveyed. Habitat composition was not recorded at two of the primary survey sites (I 65.47 and J 67.75) due to dry channel conditions.

Within this watershed group, the dominant and subdominant substrates were sand/silt and cobble, respectively (Table 15.3-6), although substrate composition was distinct between the Iliamna River watershed and the Chinkelyes Creek watershed primary survey sites. Sand/silt was the dominant substrate type within the Iliamna River watershed, accounting for 95 percent of the substrate composition at primary survey sites J 67.75 and J 68.0; a small percentage of gravel and boulder was also present (Appendix 15.3A). At the Chinkelyes Creek mainstem and tributary crossing primary survey sites, cobble (20-50 percent) and boulder (19-60 percent) tended to predominate; gravel (10-24 percent) and sand/silt (7-10 percent) accounted for the remainder of the substrate composition. The prevalence of larger

substrates was consistent with the high gradient and high energy nature of the Chinkelyes Creek watershed.

Support survey sites in this watershed group had habitat similar to primary survey sites, including differences between subwatersheds. However, one notable difference was observed. One Iliamna River support survey site (I 65.71) had a different habitat that was comprised of 60 percent riffle and 40 percent scour pool, with an entirely cobble and gravel substrate (Appendix 15.3B).

Two Iliamna River primary survey sites did not have flowing water at the time of the surveys. Primary survey site I 65.47 was completely dry, whereas some ponded water was present at primary survey site J 67.75. Both of these primary survey sites were located on an unnamed tributary to the Iliamna River.

Large woody debris was relatively sparse throughout the Iliamna River Watershed Group due to a lack of source trees from the riparian zone. Overhanging vegetation was relatively sparse at the Iliamna River watershed primary survey sites and altogether absent at the Chinkelyes Creek primary survey sites (Appendix 15.3A). No beaver ponds, seeps, or springs were documented at primary survey sites in the Iliamna River and Chinkelyes Creek watersheds. Culverts were present at primary survey sites J 67.75 and MP_70.3.

Water Quality

Overall, water quality conditions in the Iliamna River Watershed Group were suitable for a variety of fishes (Table 15.3-7). Water temperatures appeared to be seasonably appropriate, with warmer (approximately 54 to 55ºF [12 to13ºC]) and cooler (approximately 44 to 46 ºF [6.5 to 7.5 ºC]) temperatures observed in August 2004 and September 2008, respectively (Appendix 15.3A). The pH was generally neutral (mean = 7.8), and DO was saturated at most sites (mean = 9.6 mg/L). Specific conductivity was low and uniform, ranging from 11 to 43 µS/cm.

In a few instances, the ADEC water quality standards for aquatic life were not met for DO and pH (Table 15.3-8). DO was below the ADEC minimum DO criterion for aquatic life at one primary survey site (J 67.75; MP 65.2), which had a DO concentration of 4.51 mg/L. The sample reach for this site, however, contained shallow and turbid ponded water at the downstream end of a culvert (see photo in Appendix 15.3A). DO within this water source would be expected to be low. DO concentrations at the other primary survey sites met ADEC DO criteria for aquatic life and ranged from 7.82 to 12.1 mg/L. These values were similar to concentrations observed elsewhere in the transportation corridor study area (Table 15.3-7). Two primary survey sites (J 68.0 and MP_70.3) did not meet the ADEC water quality criterion for aquatic life for pH, with pH measurements of 6.4 and 11.0, respectively.

Among the support survey sites within the Iliamna River Watershed Group, there were three instances where the measured pH did not meet the ADEC minimum pH criterion for aquatic life (Table 15.3-8). Field measurements for pH at survey sites I 65.07, I 65.71, and K 73.07 ranged from 5.8 to 6.35. A water temperature of 57ºF (14°C) was observed at survey site I 65.63; it is unclear if this temperature meets the ADEC water temperature criteria for aquatic life, since it is currently unknown if habitat at this site is used for spawning and egg incubation.

Fish Resources

Three fish species (one anadromous salmonid, one resident salmonid, and one resident non-salmonid species) were documented at the primary survey sites in the Iliamna River Watershed Group (Table 15.3-9). Most notably, an estimated count of "thousands" of adult sockeye were observed migrating past the mainstem Iliamna River primary survey site (J 68.0), which accounted for 97.8 percent of the fish observed in this watershed group (Figure 15.3-11). Twenty-one Dolly Varden and one sculpin (approximately 2.1 and 0.1 percent of the species composition, respectively) were observed in one of the Chinkelyes Creek tributary primary survey sites (K 70.14; Figure 15.3-4). No fish were observed at the other primary survey sites.

Fish presence was similar for support survey sites within this watershed group. Sockeye salmon, Dolly Varden, and sculpin were observed among the four Iliamna River support survey sites, and only Dolly Varden and sculpin were present at the support survey sites in Chinkelyes Creek (Appendix 15.3B; Figure 15.3-4). Approximately 3,000 adult sockeye salmon were observed migrating, redd building, and actively spawning at support survey sites I 65.07 and I 65.11 in August 2004 (Appendix 15.3B). Although no anadromous fish were observed during fish sampling efforts in Chinkelyes Creek, sockeye salmon have been documented in Chinkelyes Creek (ADF&G, 2010).

15.3.7 Summary

The Pebble Project transportation corridor Bristol Bay drainages study area (MP 0 to approximately MP 73) traverses multiple rivers, streams, and channels that eventually drain into Iliamna Lake. To characterize these waterways, 55 primary survey sites (located directly on or near the representative road alignment) and 42 support survey sites (located upstream and/or downstream of the primary survey sites or on nearby tributaries) were established. Each site was designated to one of eight watershed groups: Upper Talarik (UT), Newhalen, Isolated Watersheds, Roadhouse/Northeast Bay/Eagle Bay, Youngs/Chekok/Canyon, Knutson Bay/Pedro Bay, Pile Bay/Lonesome Bay, and Iliamna River.

During transportation corridor fish and aquatic habitat surveys along the representative road alignment, there were a variety of stream channels encountered ranging from small shallow channels of headwater reaches and tributaries to the wider and deeper mainstem channels of Canyon Creek, Knutson Creek, Iliamna River, and Pile River. Channel bed widths ranged from approximately 2 to 211 feet (0.6 to 64.2 meters). Stream gradients varied from nearly 0 to 6 percent and tended to be steepest in tributaries to Eagle Bay, Chinkelyes Creek, and Pedro Bay.

Approximately half of the primary survey sites were dry or had intermittent flow at the time of initial sampling. A second visit to dry channels showed that a few of these primary survey sites had flowing water after the fall rains had commenced. Forty-two percent of the primary survey sites were without flowing water in the channel for all observations. All but two of these dry sites were located between Roadhouse Mountain and the Iliamna River, with the majority of them located in Knutson Bay tributaries.

Where the channels contained flowing water, the primary survey sites predominantly consisted of fast-water riffle and/or glide habitats (greater than 85 percent of the total wetted area surveyed) with cobble and gravel as the most prevalent substrates. Pools were present in lesser

amounts accounting for approximately 13 percent of the habitat surveyed. Cascade habitat was encountered only at one Chinkelyes Creek primary survey site.

Water quality was generally good at all sites with seasonally appropriate temperatures and saturated DO. High temperature measurements exceeding the ADEC maximum water temperature criteria for salmon were noted at two primary survey sites. These measurements were taken in early August 2004. The pH overall was neutral, but there were many field measurement that did not meet the ADEC pH criteria for aquatic life. Measurements at nine sites indicated that the pH exceeded these criteria. These sites were located in Upper Talarik Creek and its tributaries (4 exceedences), Newhalen River tributaries (3 exceedences), a tributary to Eagle Bay (1 exceedence), and a tributary to Chinkelyes Creek (1 exceedence). Additionally, there were eight primary survey sites, located in four watershed groups, where the field measurement of pH was too low. Five of these eight field measurements were taken in early October 2007 following rain events, which may potentially alter pH away from its steady-state conditions. Specific conductivity is not included among the ADEC water quality criteria for aquatic life; however specific conductivity was considered to be consistently low across all primary survey sites.

Collectively, ten fish species were documented during the fish surveys conducted at the primary survey sites. Dolly Varden and sculpin were the most common species and found at primary and support survey sites within seven of the eight watershed groups that were surveyed for fish. Rainbow trout were observed in small numbers at four primary survey sites: two sites in the Upper Talarik Creek watershed, one in the Eagle Bay Creek watershed, and one in Chekok Creek. Chinook salmon were documented only in Upper Talarik Creek primary survey sites but are known to be present within the Newhalen River based on ADF&G's Anadromous Waters Catalog (ADF&G, 2010). Coho salmon were found at primary survey sites within the Upper Talarik Creek and Newhalen watershed groups. The Anadromous Waters Catalog indicates coho salmon also have a presence in Youngs, Chekok, and Canyon creeks. Adult sockeye salmon were documented at primary survey sites in Chekok, Canyon, and Knutson Creeks, and the Iliamna River, and at support survey sites in the Iliamna River and a tributary to the Newhalen River. Although not evident during these surveys, sockeye salmon have been observed spawning in Upper Talarik Creek in the vicinity of the downstream-most primary survey sites (Chapter 15, Appendix 15.1B) and in the Pile River and tributaries to the Knutson and Pedro bays (ADF&G, 2010). No fish were observed at primary and support survey sites in the Isolated Watershed Group. This was not surprising as no anadromous fish habitat has been documented in the Isolated Watershed Group.

15.3.8 References

Alaska Department of Environmental Conservation (ADEC). 2009. Water Quality Standards. Alaska Administrative Code. Title 18, Chapter 70. June 26.

Alaska Department of Fish and Game (ADF&G). 2010. Anadromous Waters Catalog.

U.S. Forest Service (USFS). 2001. FSH 2090-Aquatic Habitat Management Handbook, R-10 Amendment 2090.21-2001-1. Chapter 20, Fish and Aquatic Stream Habitat Survey. U.S. Department of Agriculture, U.S. Forest Service.

15.3.9 Glossary

Adfluvial. A migratory population of freshwater fish that move from lake environments where they rear and mature into flowing streams and rivers where they spawn and develop early life history stages.

Anadromous. Fish species that reside in marine waters but migrate into freshwater for spawning and rearing of early life history stages.

Bankfull width. A measure of the width of the wetted channel at the height of bankfull discharge. It is measured as the horizontal distance, perpendicular to the deepest part of the channel, between corresponding bankfull height locations on opposite channel banks.

Bed width. Channel bed width is independent of the current water level, and equates to the distance between the bottom-of-the-left-bank and bottom-of-the-right-bank.

Baseline. For this report; baseline represents the pre-development watershed situation, including physical, chemical and biological conditions, between 2004 and 2008.

Channel morphology. The form or shape of a stream channel, including the contours of its bed.

Ephemeral stream. Streams with temporary surface water flow.

Exceedence. The occurrence of a measured value that is greater than the maximum expected value or criterion for a given parameter.

Gradient. Channel gradient is the change in water surface elevation between end points of a channel segment.

Intermittent Stream. Stream with periodic surface water flows.

Mean. The average value.

Non-salmonid fishes. Fishes belonging to any family other than Salmonidae.

Radio telemetry. The use of various types of radio-transmitters (VHF, satellite, or GPS) attached to species to track their movements.

Resident fishes. Fish that reside their entire life cycle in the local freshwater stream/lake, network.

Salmonid. Fishes belonging to the Family Salmonidae.

Seep. A wet place where a liquid, usually groundwater, oozes from the ground to the surface. Seeps are usually not flowing but may enter or form flowing streams.

Spring. Any natural occurrence where water flows to the surface of the earth from below the surface. Thus, a spring is where the aquifer surface meets the ground surface. Springs usually have a flow rate associated with their surface water discharge.

Substrate. Materials that make up the stream bed, categories include organic material, silt, sand, gravels, cobbles, boulders, and bedrock.

TABLES

TABLE 15.3-1
Watershed Affiliation of Survey Sites along the Representative Road Alignment in the Transportation Corridor, Bristol Bay Drainages Study Area.

Watershed Group	Watershed [a]	Stream [a]	Primary Site Name	Associated Milepost (MP) [b]	Support Survey Sites [c]
Upper Talarik	Upper Talarik Creek	UT 1.0	MP_00.2	0.2	A 0.459, RC07-2
		UT 1.500	MP_00.6	0.6	B Site11, B Site8, B Site10, B 6.3736
		UT 1.430	MP_01.2	1.2	
		UT 1.0	MP_02.3	2.3	
		UT 1.410	MP_02.6	2.6	A 1.54
		UT 1.410.10	MP_02.8	2.8	A 1.96
		UT 1.360	MP_05.4	5.4	A 4.59
		UT 1.0	MP_05.6	5.6	A 4.86
		UT 1.340	MP_06.4	6.4	Mini Creek
Newhalen	Newhalen River	Newhalen T4.3	MP_12.2	12.2	A 10.66, B 13.36b, B 13.36a
		Newhalen T4	MP_14.6	14.6	A 10.21, A 12.577, B 14.418, B 14.06, B 13.36b, B 13.36a
		Newhalen T4.2.1	MP_14.9	14.9	A 13.34, B 14.09, B 13.36b, B 13.36a
		Newhalen T3	MP_17.9	17.9	
Isolated	Negro Lake	Negro Lake T1	MP_22.5	22.5	
		Negro Lake T1	MP_23.2	23.2	
	Unnamed Lake	Unnamed Lake T1	D 22.933	23.9	D 23.344, D 23.539
Roadhouse/ Northeast Bay/ Eagle Bay	Roadhouse Creek	Roadhouse Creek T3	D 24.166	25.2	E 22.78, E 24.71, D 24.402, E 23.46, F 24.72, D 24.68
	Eagle Bay T1	Eagle Bay T1.1	F 25.863	26.05	F 25.86
		Eagle Bay T1	F 26.46	26.4	
		Eagle Bay T1.2.1	MP_27.7	27.7	F 27.78
		Eagle Bay T1.2.2	F 28.49	28.5	
		Eagle Bay T1.2.3	MP_28.8A, MP_28.8B	28.8	F 28.75
	Eagle Bay Creek	West Branch Eagle Bay Creek	MP_29.6	29.6	F 29.68a, F 29.68
		East Branch Eagle Bay Creek	MP_30.7	30.7	
Youngs/Chekok/ Canyon	Chekok Creek	Chekok Creek	F 39.65, F 39.59	38.3	
	Canyon Creek	Canyon Creek	F 40.2	38.7	

Watershed Group	Watershed [a]	Stream [a]	Primary Site Name	Associated Milepost (MP) [b]	Support Survey Sites [c]
Knutson Bay/Pedro Bay	Knutson Bay T1	Knutson Bay T1	F 41.305	39.8	
		Knutson Bay T1.2	F 41.689	39.95	
		Knutson Bay T1.1	F 42.343	40.7	
		Knutson Bay T1.1.2	F 42.632	40.8	
	Knutson Bay T2	Knutson Bay T2	F 43.12	41.3	
		Knutson Bay T2.2	F 43.607	41.7, 41.9	
		Knutson Bay T2.1	F 43.991	42.2	
	Knutson Bay T4	Knutson Bay T4	F 45.366	43.6	
	Knutson Bay T5	Knutson Bay T5	F 45.421	43.7	
		Knutson Bay T5.1	F 45.55	43.8	
	Knutson Bay T6	Knutson Bay T6	F 46.133	44.4	
	Knutson Bay T7	Knutson Bay T7	F 46.815	45.1	
	Knutson Bay T8	Knutson Bay T8	F 47.51	45.8	
	Knutson Bay T9	Knutson Bay T9	F 47.915	46.3	
		Knutson Bay T9.1	F 48.27	46.5	
	Knutson Bay T10	Knutson Bay T10	F 48.815	46.9	
	Knutson Creek	Knutson Creek	F 49.5	47.6	
	Pedro Bay T1	Pedro Bay T1	F 51.85	50.4	
Pile Bay/Lonesome Bay	Lonesome Bay T1	Lonesome Bay T1	F 55.75	54.3	
	Lonesome Bay T2	Lonesome Bay T2	F 56.761	55.3	
	Pile River	Pile River	F 61.26	59.5	
Iliamna River	Iliamna River	Iliamna River T1	I 65.47	64.9	
		Iliamna River T1	J 67.75	65.2	
		Iliamna River	J 68.0	65.4	I 65.11, I 65.07, I 65.71, I 65.63
	Chinkelyes Creek	Chinkelyes T2	K 70.14	68.8	K 69.66, K 70.0, K 70.0B
		Chinkelyes T1	MP_70.3	70.3	K 71.799
		Chinkelyes Creek	MP_71.9	71.9	K 73.07

Notes:

a. T = tributary. This notation is used to denote unnamed tributaries to a specified stream (e.g., Knutson Bay T1 is an unnamed tributary to Knutson Bay, and Knutson Bay T1.1 and T1.2 are two different tributaries to Knutson Bay T1).

b. Milepost (MP), in miles, represents the distance along the representative road alignment between the representative road alignment's western terminus at the edge of the Pebble Deposit and the primary survey site location.

c. Support survey sites are located on the same stream as the primary survey site or on a nearby tributary.

TABLE 15.3-2
Alaska Department of Environmental Conservation Water Quality Standards for Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife in Freshwater

Water Quality Parameter	Water Quality Standard
Water Temperature	May not exceed 20°C at any time. The following maximum temperatures may not be exceeded, where applicable: • Migration routes 15°C • Spawning areas 13°C • Rearing areas 15°C • Egg & fry incubation 13°C • For all other waters, the weekly average temperature may not exceed site-specific requirements needed to preserve normal species diversity or to prevent appearance of nuisance organisms.
Dissolved Oxygen	DO must be greater than 7 mg/L in waters used by anadromous or resident fish. In no case may DO be less than 5 mg/L to a depth of 20 centimeters in the interstitial waters of gravel used by anadromous or resident fish for spawning. For waters not used by anadromous or resident fish, DO must be greater than or equal to 5 mg/L. In no case may DO be greater than 17 mg/L. The concentration of total dissolved gas may not exceed 110 percent of saturation at any point of sample collection.
pH	May not be less than 6.5 or greater than 8.5. May not vary more than 0.5 pH unit from natural conditions.

Source: ADEC, 2009.

°C = degrees Celsius.

DO = dissolved oxygen.

mg/L = milligrams per liter.

TABLE 15.3-3
Locations of Upper Talarik Creek Watershed Representative Road Alignment Primary Survey Sites

	Location [a]	
Site Name	Mainstem Upper Talarik Creek River Kilometer	Tributary
MP_00.2	60.7	
MP_00.6		UT 1.500
MP_01.2		UT 1.430
MP_02.3	55.2	
MP_02.6		UT 1.410
MP_02.8		UT 1.410.10
MP_05.4		UT 1.360
MP_05.6	45.0	
MP_06.4		UT 1.340

Notes:

a. Primary survey sites in the Upper Talarik Creek Watershed are located on the mainstem Upper Talarik Creek (as indicated by the river kilometer) or on a tributary to Upper Talarik Creek (as indicated by the tributary name). River kilometer, in kilometers, represents the distance along the course of the river between the site location and the mouth of the river.

Table 15.3-4

Channel Morphology Data Collected at Representative Road Alignment Primary Survey Sites, Transportation Corridor, Bristol Bay Drainages Study Area

Watershed Group	Gradient (percent)		Mean Bankfull Width (meters)		Mean Bed Width (meters)		Mean Wetted Width (meters)		Mean Water Depth (meters)	
	Mean (Range)	Standard Error	Mean (Range)	Standard Error	Mean (Range)	Standard Error	Mean (Range)	Standard Error	Mean (Range)	Standard Error
Upper Talarik	2.1 (0-4)	0.42	4.47 (1.46-16.7)	1.63	3.16 (1-12.9)	1.26	3.18 (1-12.9)	1.26	0.31 (0.16-0.61)	0.06
Newhalen	1.3 (0-2)	0.48	3.20 (1.4-6)	1.00	2.55 (1.2-4.5)	0.70	1.95 (1.2-2.7)	0.38	0.20 (0.14-0.27)	0.03
Isolated [a]	1.0	—	—	—	—	—	4.10	—	—	—
Roadhouse/ Northeast Bay/ Eagle Bay	2.1 (0-5)	0.49	2.46 (0.6-3.5)	0.39	2.27 (0.6-4.25)	0.41	1.73 (0.6-2.2)	0.19	0.19 (0.12-0.26)	0.03
Youngs/Chekok/ Canyon	2.0 (1.5-3)	0.5	—	—	17.12 (5.48-24.35)	5.88	6.97 (2.5-11)	2.46	—	—
Knutson Bay/ Pedro Bay	4.5 (3-6)	—	—	—	26.99 (2.74-51.25)	—	16.00	—	—	—
Pile Bay/ Lonesome Bay	2.0	—	—	—	64.2	—	71.00	—	—	—
Iliamna River	2.7 (1-4)	0.62	16.25 (7-25.5)	—	19.53 (6-51.75)	8.57	14.30 (2.5-36)	6.49	0.40 (0.3-0.5)	—

Notes:

a. Primary survey site (D 22.933) was surveyed after rain events and consisted of a flooded wetland without a clearly defined channel.

— = no data available or standard error not calculated when the sample size is less than 3.

TABLE 15.3-5
Habitat Composition Data Collected at Representative Road Alignment Primary Survey Sites, Transportation Corridor, Bristol Bay Drainages Study Area

Watershed Group	Total Survey Length (m)	Dry/ Subsurface (% survey length) [a]	Total Wetted Surface Area (m^2)	Habitat Composition (% wetted surface area)						
				Beaver Pond [b]	Backwater Pool	Scour Pool	Glide	Riffle	Cascade	Flowing Wetland
Upper Talarik	927	1.3	5,146	22	0	2.4	44.7	30.9	0	0
Newhalen	432	0	783	0	0	15.1	7.1	77.8	0	0
Isolated[c]	85	0	130	0	0	0	0	0	0	100
Roadhouse/ Northeast Bay/Eagle Bay	1,142	26.3	1,716	0	1.8	41.3	11.5	45.3	0	0
Youngs/Chekok/ Canyon	800	0	7,360	0	0	12	0	88	0	0
Knutson Bay/Pedro Bay	400	0	6,400	0	0	25	0	75	0	0
Pile Bay / Lonesome Bay	200	0	14,200	0	0	0	100	0	0	0
Iliamna River	1,094	0.6	14,839	0	0.4	8.1	62.7	26	2.8	0

Notes:

a. Only applies to dry and subsurface habitat types measured within intermittent streams in 2008; subsurface habitat type includes culvert.
b. Beaver pond habitat type applies to 2008 data only.
c. Primary survey site (D 22.933) was surveyed after rain events and consisted of a flooded wetland without a clearly defined channel.

TABLE 15.3-6
Substrate Composition Data Collected at Representative Road Alignment Primary Survey Sites, Transportation Corridor, Bristol Bay Drainages Study Area

Watershed Group	Dominant Substrate	Subdominant Substrate	Percent Substrate					
			Organics	Sand/Silt	Gravel	Cobble	Boulder	Bedrock
Upper Talarik	gravel	sand/silt	0-22	11-77	2-70	0-29	0-4	0
Newhalen	gravel	sand/silt	5	15-20	16-80	0-55	0-9	0
Isolated	organic	organic	100	0	0	0	0	0
Roadhouse/ Northeast Bay/ Eagle Bay	cobble	gravel	0-30	0-70	0-85	0-90	0-20	0
Youngs/Chekok/ Canyon	cobble	gravel	0-10	5-10	10-75	3-80	2-10	0
Knutson Bay/Pedro Bay	gravel	cobble	0	10-20	20-60	20-40	0-30	0
Pile Bay/ Lonesome Bay	cobble	sand/silt	0	40	0	60	0	0
Iliamna River	sand/silt	cobble	0	7-95	0-24	0-50	0-60	0

TABLE 15.3-7
Water Quality Data Collected at Representative Road Alignment Primary Survey Sites, Transportation Corridor, Bristol Bay Drainages Study Area

Watershed Group	Number of samples	Water Temp (°C)			DO (mg/L)			pH			Specific Conductivity (µS/cm)	
		Mean (Range)	Standard Error	Number of Samples Not Meeting ADEC Standards [a]	Mean (Range)	Standard Error	Number of Samples Not Meeting ADEC Standards [b]	Mean (Range)	Standard Error	Number of Samples Not Meeting ADEC Standards [c]	Mean (Range)	Standard Error
Upper Talarik	8	8.0 (5.6-9.9)	0.53	0	11.8 (10.9-13.2)	0.26	0	8.6 (7.7-9.7)	0.25	4	67 (16-119)	10.9
Newhalen	4	7.3 (6.2-9.9)	0.87	0	11.7 (10.3-12.9)	0.54	0	8.5 (7.2-9.2)	0.45	3	40 (29-55)	5.4
Isolated	1	5.9	—	0	11.2	—	0	5.8	—	1	30	—
Roadhouse/ Northeast Bay/ Eagle Bay	10	6.3 (3.9-9.8)	0.57	0	10.9 (7-13)	0.55	2	7.1 (5.9-10.5)	0.42	6	71 (34-111)	9.3
Youngs/Chekok/ Canyon	3	12.5 (7.9-16.5)	2.5	2	9.3 (7.5-10.9)	0.98	0	6.7 (6.1-7.1)	0.29	1	33 (19-49)	8.6
Knutson Bay/Pedro Bay	1	10.7	—	0	12.2	—	0	6.5	—	0	21	—
Pile Bay / Lonesome Bay	1	10.1	—	0	12.05	—	0	6.52	—	0	22.1	—
Iliamna River	5	10.2 (6.5-12.9)	1.34	0	9.6 (4.5-12.1)	1.49	1	7.8 (6.4-11.0)	0.85	2	20 (11-43)	5.9

Notes:

a. Water temperature may not exceed 20 ^{o}C at any time, 15 ^{o}C within migration routes and rearing areas, or 13 ^{o}C in spawning, egg, and fry incubation areas (ADEC water quality standards for the growth and propagation of fish, aquatic life, and wildlife; ADEC, 2009).

b. Dissolved oxygen must be greater than 7 mg/L in fish bearing waterbodies; may not be less than 5 mg/L in non-fish bearing waterbodies; may not be greater than 17 mg/L in any waterbody (ADEC water quality standards for the growth and propagation of fish, aquatic life, and wildlife; ADEC, 2009).

c. pH may not be less than 6.5 or greater than 8.5 in any freshwater waterbody (ADEC water quality standards for the growth and propagation of fish, aquatic life, and wildlife; ADEC, 2009).

— = no data available or standard error not calculated when the sample size is less than 3.

µS/cm = microSiemens per centimeter

TABLE 15.3-8
Water Quality Measurements at Representative Road Alignment Primary and Support Survey Sites that Do Not Meet Alaska Department of Environmental Conservation Water Quality Standards, Transportation Corridor, Bristol Bay Drainages Study Area

Watershed Group	Watershed	Stream	Site Name	Date	Water Temp-erature (°C) [b]	DO (mg/L) [c]	pH [d]
Upper Talarik	Upper Talarik	UT 1.0	MP_00.2	9/11/08			9.17
		UT 1.0	MP_05.6	9/10/08			9.24
		UT 1.340	Mini Creek [a]	9/28/07			4.43
		UT 1.410	MP_02.6	9/10/08			9.74
		UT 1.410.10	MP_02.8	9/10/08			8.6
Newhalen	Newhalen	Newhalen T3	MP_17.9	9/9/08			8.7
		Newhalen T4	B 13.36b [a]	7/19/05		3.12	
		Newhalen T4	MP_14.6	9/9/08			9.05
		Newhalen T4.2	A 12.577 [a]	9/30/07			6.14
		Newhalen T4.2	B 14.06 [a]	9/5/04		6.38	
		Newhalen T4.2	B 14.418 [a]	7/19/05		3.31	
		Newhalen T4.3	MP_12.2	9/9/08			9.2
		Newhalen T4.4	A 10.21 [a]	9/5/04	13.2		
Isolated	Unnamed Lake	Unnamed Lake T1	D 22.933	10/1/07			5.75
		Unnamed Lake T2	D 23.344 [a]	10/1/07			5.56
Roadhouse/ Northeast Bay/ Eagle Bay	Roadhouse Creek	Roadhouse Creek T2	E 24.71 [a]	10/2/07			5.84
		Roadhouse Creek T2.2	D 24.68 [a]	10/2/07			5.66
		Roadhouse Creek T3	D 24.166	10/1/07			5.93
	Eagle Bay T1	Eagle Bay T1	F 26.46	10/2/07			6.1
		Eagle Bay T1.1	F 25.863	10/2/07			6.41
		Eagle Bay T1.2.1	MP_27.7	9/8/08			10.5
		Eagle Bay T1.2.2	F 28.49	8/15/04		6.95	
		Eagle Bay T1.2.2	F 28.49	10/2/07			6.17
	Eagle Bay Creek	West Branch Eagle Bay Creek	F 29.68[a]	10/2/07			6.45
		West Branch Eagle Bay Creek	MP_29.6	9/7/08			6.4
Youngs/ Chekok/ Canyon	Chekok Creek	Chekok Creek	F 39.59	8/12/04			6.14
		Chekok Creek	F 39.65	8/11/04	16.5		
	Canyon Creek	Canyon Creek	F 40.2	8/11/04	13.1		

Watershed Group	Watershed	Stream	Site Name	Date	Water Temp-erature (°C) [b]	DO (mg/L) [c]	pH [d]
Iliamna River	Iliamna River	Iliamna River	I 65.07 [a]	8/9/04			6.33
		Iliamna River	J 68.0	8/9/04			6.4
		Iliamna River T1	J 67.75	8/9/04		4.51	
		Iliamna River T3	I 65.63 [a]	8/8/04	14		
		Iliamna River T3	I 65.71 [a]	8/8/04			6.35
	Chinkelyes Creek	Chinkelyes Creek	K 73.07 [a]	8/6/04			5.8
		Chinkelyes T1	MP_70.3	9/15/08			11

Notes:

a. Support survey sites for the representative road alignment.

b. Water temperature may not exceed 20 ^{o}C at any time, 15 ^{o}C within migration routes and rearing areas, or 13 ^{o}C in spawning, egg, and fry incubation areas (ADEC water quality standards for the growth and propagation of fish, aquatic life, and wildlife; ADEC, 2009).

c. Dissolved oxygen must be greater than 7 mg/L in fish bearing waterbodies; may not be less than 5 mg/L in non-fish bearing waterbodies; may not be greater than 17 mg/L in any waterbody (ADEC water quality standards for the growth and propagation of fish, aquatic life, and wildlife; ADEC, 2009).

d. pH may not be less than 6.5 or greater than 8.5 in any freshwater waterbody (ADEC water quality standards for the growth and propagation of fish, aquatic life, and wildlife; ADEC, 2009).

Blanks indicate that the measured value met the Alaska Department of Environmental Conservation Water Quality Standards.

TABLE 15.3-9
Fish Species Observed at Representative Road Alignment Primary and Support Survey Sites, Transportation Corridor, Bristol Bay Drainages Study Area

		Watershed Group [a,]						
Common Name	**Scientific Name**	**Upper Talarik**	**Newhalen**	**Roadhouse/ Northeast Bay/Eagle Bay**	**Youngs/ Canyon/ Chekok**	**Knutson Bay/Pedro Bay**	**Pile Bay/ Lonesome Bay**	**Iliamna River**
Chinook salmon	*Oncorhynchus tshawytscha*	**X**						
Coho salmon	*Oncorhynchus kisutch*	**X**	**X**					
Sockeye salmon	*Oncorhynchus nerka*		x		**X**	**X**		**X**
Arctic grayling	*Thymallus arcticus*	**X**	**X**					
Dolly Varden	*Salvelinus malma*	**X**	x	**X**	**X**	**X**		**X**
Rainbow trout	*Oncorhynchus mykiss*	**X**		**X**	**X**			
Sculpin [b]	*Cottus* sp.	**X**	x	**X**	**X**	**X**	**X**	**X**
Ninespine stickleback	*Pungitius pungitius*	x	x	**X**				
Threespine stickleback	*Gasterosteus aculeatus*						**X**	
Longnose sucker	*Catostomus catostomus*		**X**					

Notes:

a. No fish were observed during fish surveys conducted in the Isolated Watershed Group.

b. Identified to genus, may include slimy sculpin and coastrange sculpin.

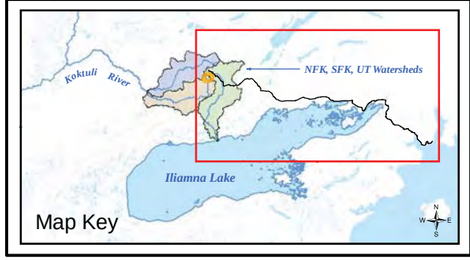
X = Species observed at primary survey site.

x = Species only observed at support survey site.

FIGURES

155°20'0"W
155°0'0"W
154°40'0"W
154°20'0"W
154°0'0"W
153°40'0"W
60°0'0"N
59°50'0"N
59°40'0"N

Lake Clark
Tazimina River
Groundhog Mountain
Nondalton
Frying Pan Lake
Talarik Creek
Upper
Roadhouse Mountain
Chekok Creek
Canyon Creek
Knutson Creek
Pile River
Knutson Mountain
River
Chekok
Knutson Bay
Pedro Bay
Lonesome Bay
Pile Bay
Iliamna
Northeast Bay
Roadhouse Bay
Eagle Bay
Newhalen
Pedro Bay
Flat Island
Porcupine Island
Triangle Island
Iliamna River
Lake #2
Pile Bay
Williamsport
Bristol Bay Basin
Cook Inlet Basin
Iliamna Lake
Cook Inlet



Legend

- Bristol Bay Basin
- Cook Inlet Basin
- Representative Road Alignment
- Bristol Bay/Cook Inlet Basin Divide
- Watershed Boundary
- General Deposit Location

N W E S

Miles
0 2 4 6

Kilometers
0 2 4 6 8

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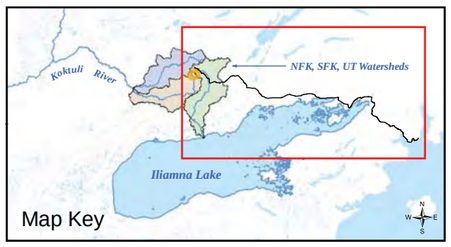
Figure 15.3-1
Primary Survey Sites for the
Representative Road Alignment, 2004-2008

	February 2011
Alaska State Plane Zone 5 (units feet), 1983 North American Datum	Author: R2 - JJZ/BAM

155°20'0"W 155°0'0"W 154°40'0"W 154°20'0"W 154°0'0"W 153°40'0"W

60°0'0"N 59°50'0"N 59°40'0"N

Lake Clark
Tazimina River
Groundhog Mountain
Nondalton
Frying Pan Lake
Talarik Creek
Upper
Roadhouse Mountain
River
Chekok Creek
Canyon Creek
Knutson Creek
Pile River
Knutson Mountain
Chekok
Knutson Bay
Pedro Bay
Lonesome Bay
Pile Bay
Iliamna
Northeast Bay
Roadhouse Bay
Eagle Bay
Newhalen
Newhalen River
Flat Island
Porcupine Island
Triangle Island
Pedro Bay
Pile Bay
Iliamna River
Lake #2
Iliamna Lake
Williamsport
Bristol Bay Basin
Cook Inlet Basin
Cook Inlet



Map Key

Legend

Stream Crossing Sites
Supporting Data Sites

- Upper Talarik
- Newhalen
- Isolated
- Roadhouse/Northeast Bay/Eagle Bay
- Youngs/Chekok/Canyon
- Knutson Bay/Pedro Bay
- Pile Bay/Lonesome Bay
- Iliamna River

- Representative Road Alignment
- Bristol Bay/Cook Inlet Basin Divide
- Watershed Boundary
- General Deposit Location

Miles: 0 2 4 6

Kilometers: 0 2 4 6 8

THE pebble PARTNERSHIP

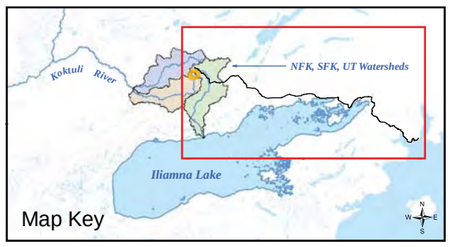
Figure 15.3-2
Primary and Support Survey Sites for the Representative Road Alignment by Bristol Bay Watershed Group

	February 2011
Alaska State Plane Zone 5 (units feet), 1983 North American Datum	Author: R2 - JJZ/BAM

155°20'0"W 155°0'0"W 154°40'0"W 154°20'0"W 154°0'0"W 153°40'0"W

60°0'0"N 59°50'0"N 59°40'0"N

Lake Clark
Tazimina River
Groundhog Mountain
Nondalton
Chekok Creek
Canyon Creek
Knutson Creek
Pile River
Frying Pan Lake
Talarik Creek
Upper
Roadhouse Mountain
River
Knutson Mountain
Chekok
Knutson Bay
Pedro Bay
Lonesome Bay
Pile Bay
Iliamna
Northeast Bay
Eagle Bay
Roadhouse Bay
Newhalen
Flat Island
Porcupine Island
Triangle Island
Iliamna River
Lake #2
Iliamna Lake
Williamsport
Bristol Bay Basin
Cook Inlet Basin
Cook Inlet



Map Key

Legend

Water Quality Sample Sites

- Water Quality Criteria Met
- Temperature Criteria Not Met
- Dissolved Oxygen Criteria Not Met
- pH Criteria Not Met

- Representative Road Alignment
- Bristol Bay/Cook Inlet Basin Divide
- Watershed Boundary
- General Deposit Location

Miles
0 2 4 6

Kilometers
0 2 4 6 8

THE pebble PARTNERSHIP

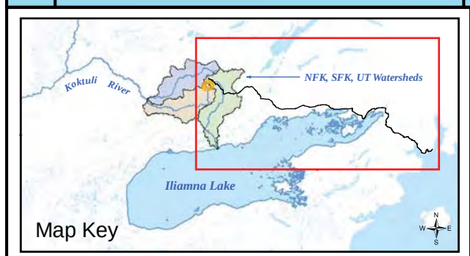
Figure 15.3-3
Locations of Water Quality Data that Do Not Meet ADEC Water Quality Criteria for Aquatic Life, Bristol Bay Basin

	February 2011
Alaska State Plane Zone 5 (units feet), 1983 North American Datum	Author: R2 - JJZ/BAM

155°20'0"W 155°0'0"W 154°40'0"W 154°20'0"W 154°0'0"W 153°40'0"W

60°0'0"N 59°50'0"N 59°40'0"N

Lake Clark
Tazimina River
Groundhog Mountain
Nondalton
Chekok Creek
Canyon Creek
Knutson Creek
Pile River
Frying Pan Lake
Talarik Creek
Upper Talarik Creek
Roadhouse Mountain
Knutson Mountain
Chekok
Knutson Bay
Pedro Bay
Lonesome Bay
Pile Bay
Newhalen River
Iliamna
Northeast Bay
Roadhouse Bay
Eagle Bay
Newhalen
Lake #2
Flat Island
Porcupine Island
Triangle Island
Pile Bay
Iliamna River
Williamsport
Bristol Bay Basin
Cook Inlet Basin
Iliamna Lake
Cook Inlet



Legend

Fish Sampling Sites

- Anadromous Fish
- Resident Fish
- No Fish
- Anadromous Waters Catalogue Stream
- Representative Road Alignment
- Bristol Bay/Cook Inlet Basin Divide
- Watershed Boundary
- General Deposit Location

N W E S

Miles: 0 2 4 6

Kilometers: 0 2 4 6 8

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Figure 15.3-4
Anadromous Fish Presence at Primary and Support Survey Sites for the Representative Road Alignment, Bristol Bay Basin

	February 2011
Alaska State Plane Zone 5 (units feet), 1983 North American Datum	Author: R2 - JJZ/BAM

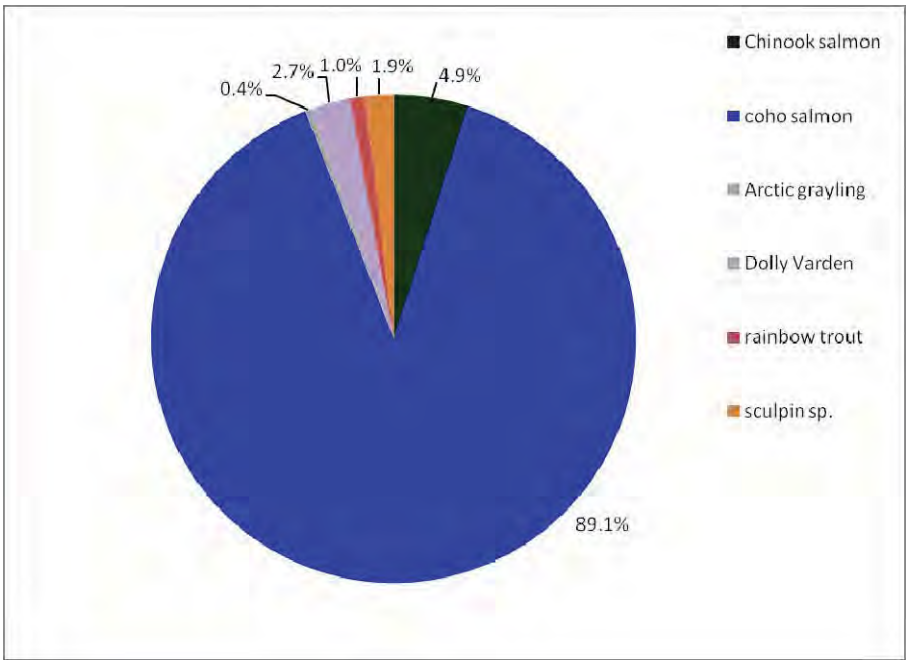


FIGURE 15.3.5
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Upper Talarik Watershed Group

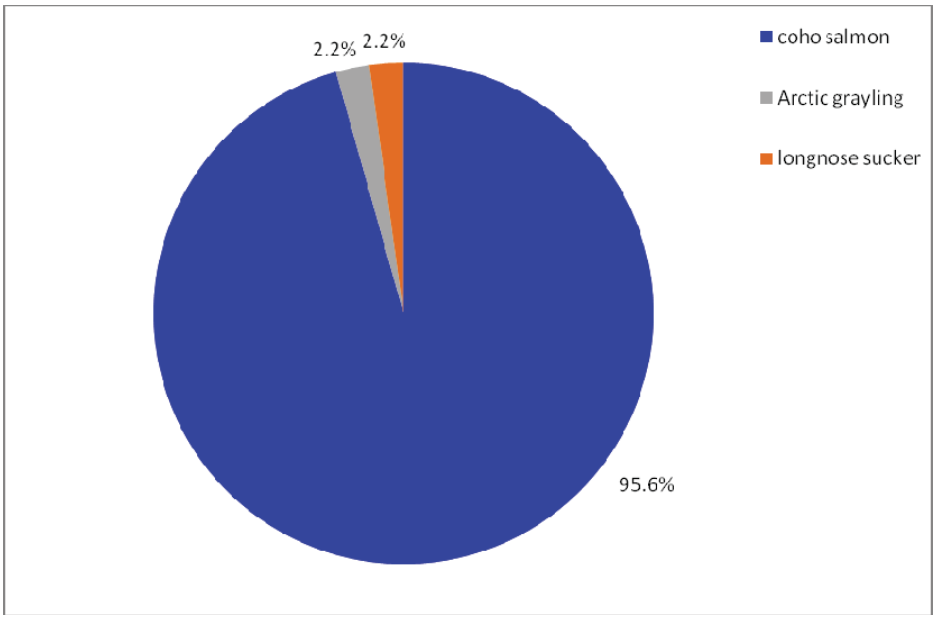


FIGURE 15.3-6
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Newhalen Watershed Group

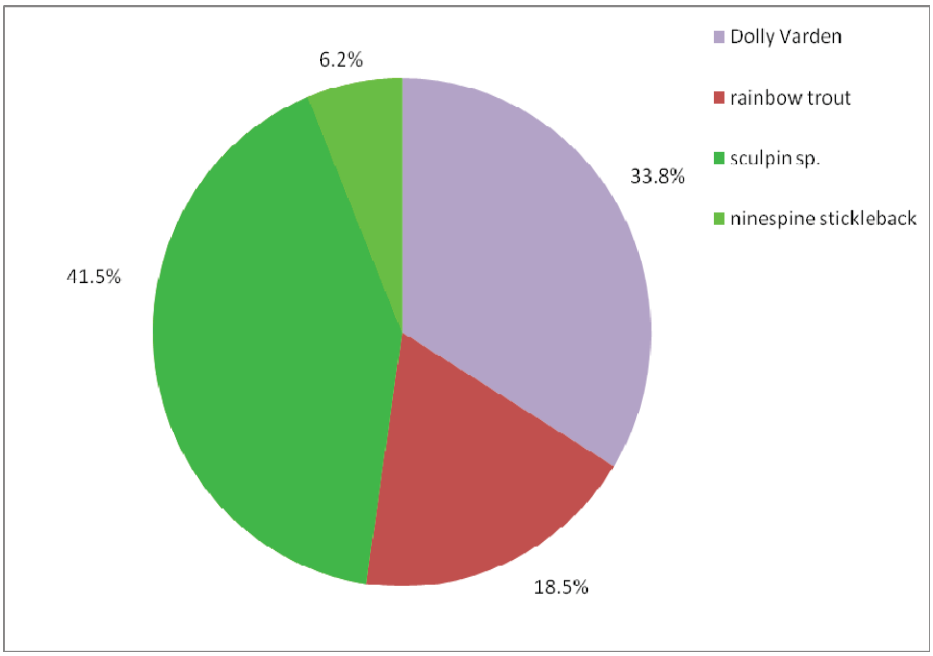


FIGURE 15.3-7
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Roadhouse/Northeast Bay/Eagle Bay Watershed Group

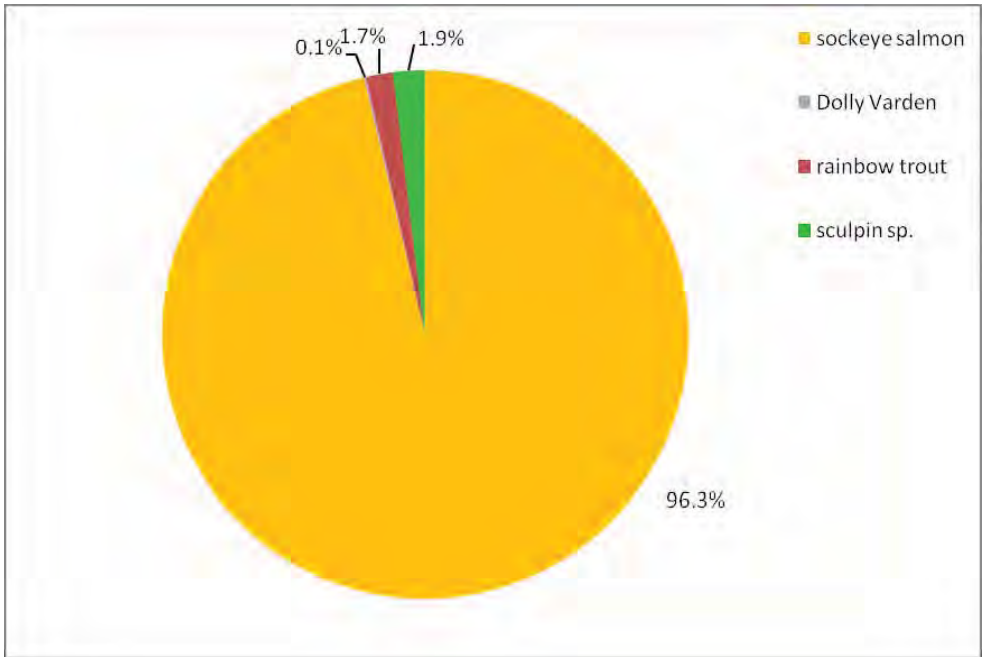


FIGURE 15.3-8
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Youngs/Chekok/Canyon Watershed Group

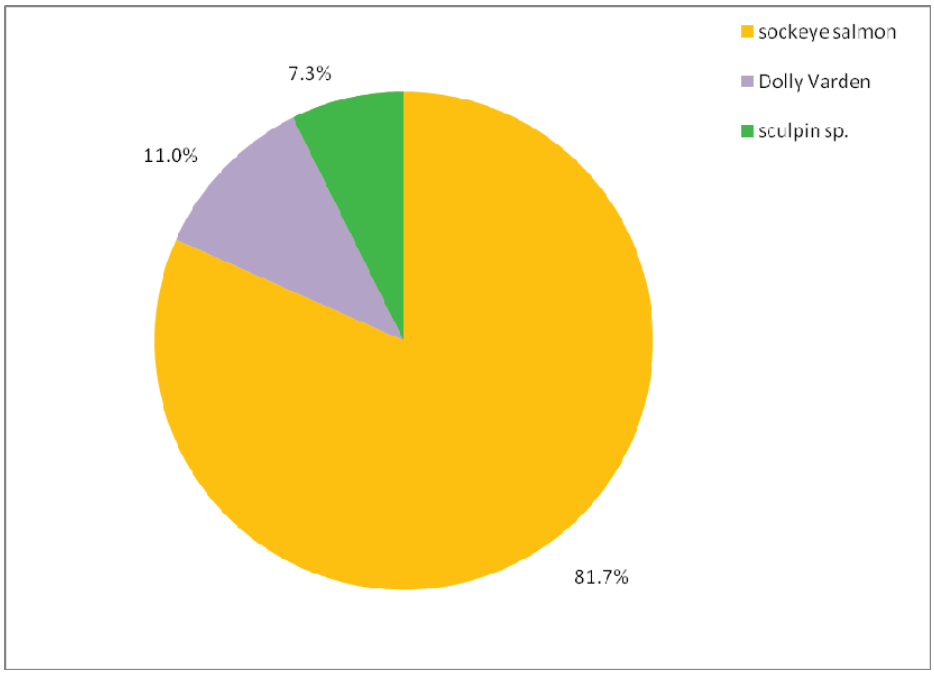


FIGURE 15.3-9
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Knutson Bay/Pedro Bay Watershed Group

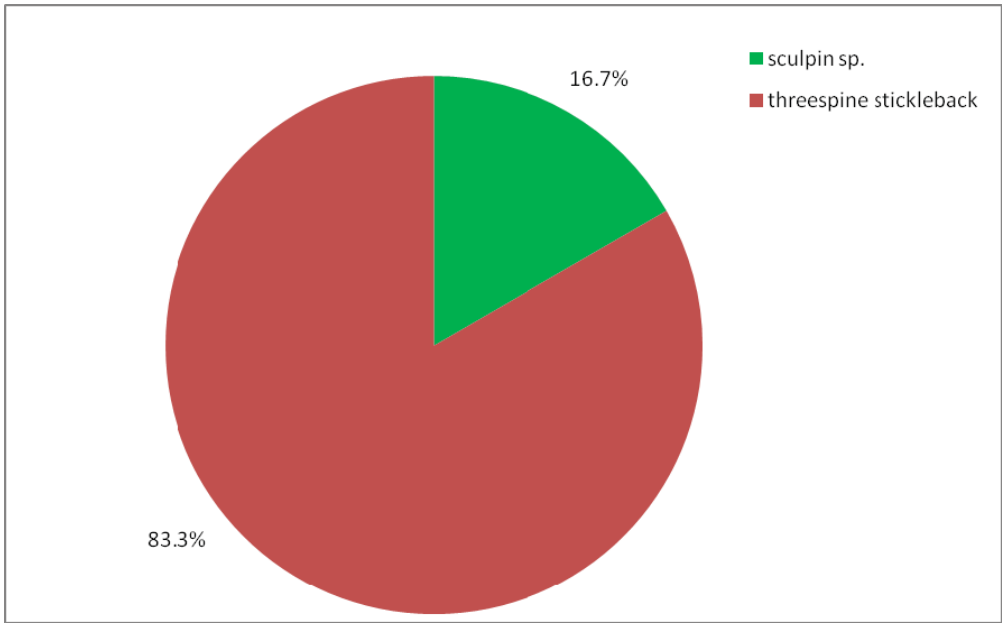


FIGURE 15.3-10
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Pile Bay/Lonesome Bay Watershed Group

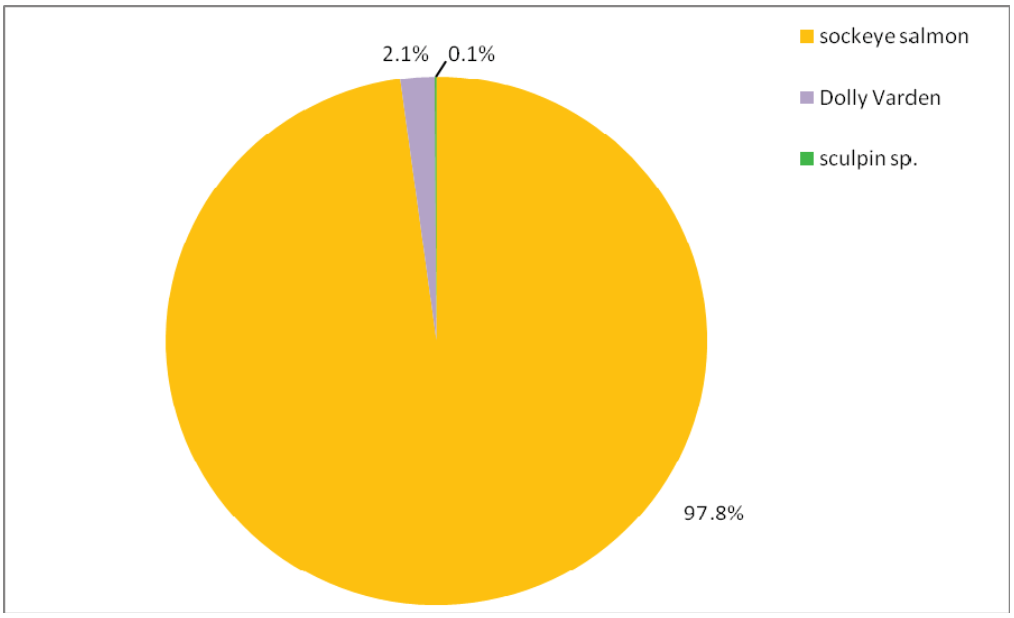


FIGURE 15.3-11
Fish Species Composition at Representative Road Alignment Primary Survey Sites, Iliamna River Watershed Group

PHOTOGRAPHS

PHOTO 15.3-1: Habitat surveys to document the types and quality of aquatic habitats present in the transportation corridor study area were conducted. Habitat unit measurements were collected with a 165-foot (50-meter) Kevlar tape (A) and a stadia rod (B).

PHOTO 15.3-2: To determine fish presence in the transportation corridor study area, snorkel surveys (A and B) and electrofishing surveys (D) were conducted. Fish captured via electrofishing were measured to fork length (C).

APPENDICES

APPENDIX 15.3A

Transportation Corridor, Bristol Bay Basin Survey Data Summaries: Primary Survey Sites - Data Collected on or near Possible Representative Road Alignment Stream Crossings

Upper Talarik Watershed Group

Transportation Corridor Site Survey Data

Location

Site: MP_00.2
Watershed: UT
Field Latitude: 59.92387
Field Longitude: -155.27791
Subwatershed: UT. 1.0
Stream: UT 1.0

Figure 1. Site MP_00.2, taken on 09/11/08.

Channel (surveyed 09/11/08)

Gradient (%): 3
Bankfull depth (m): 0.68
Bankfull width (m): 2.8
Bed width (m): 1.8
Undercut Bank (% Site Length): 0%

Habitat Composition (surveyed 09/11/08)

Site Length (m): 73
Mean wetted width (m): 1.7
Water Depth (m): 0.15 - 0.3

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	5
Backwater Pools:	0	**Silt / Sand:**	35
Scour Pools:	4	**Gravel:**	45
Glide:	42	**Cobble:**	14
Riffle:	54	**Boulder:**	1
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/11/08	7.18	9.17	12.1	77.1

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/11/08	Dolly Varden	juvenile	electrofish	3	NA
09/11/08	sculpin sp.	adult	electrofish	1	NA
09/11/08	sculpin sp.	juvenile	electrofish	4	NA
09/11/08	sculpin sp.	juvenile/adult	visual observation	1	NA
09/11/08	unidentified	no data	visual observation	1	NA

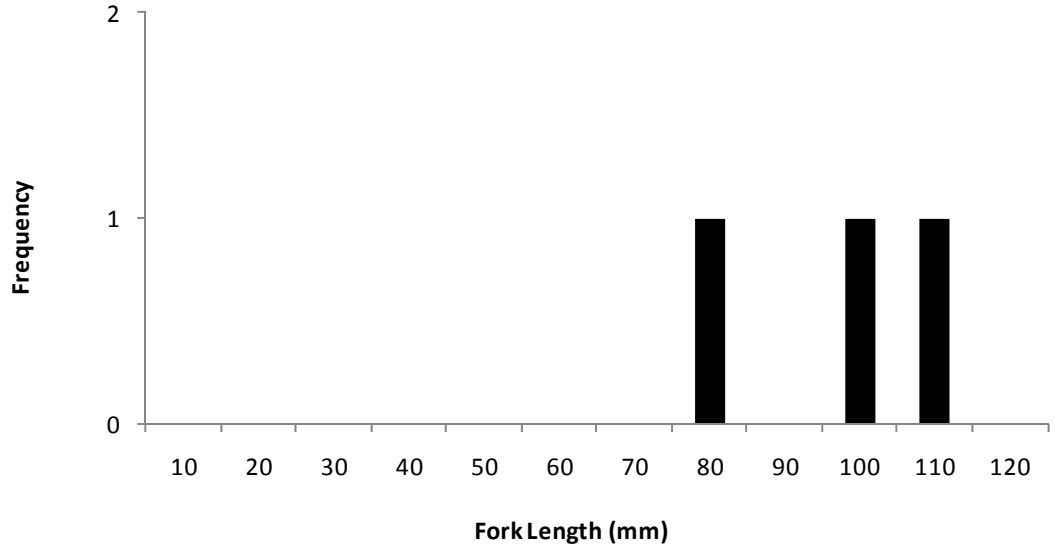


Figure 3. Length frequency distribution for 3 Dolly Varden collected during September 2008 survey.

Transportation Corridor Site Survey Data

Location

Site: MP_00.6 **Field Latitude:** 59.92331 **Subwatershed:** UT 1.500
Watershed: UT **Field Longitude:** -155.26879 **Stream:** UT 1.500

Figure 1. Site MP_00.6, taken on 09/10/08.

Channel (surveyed 09/10/08)

Gradient (%): 3 **Bankfull depth (m):** 0.68
Bankfull width (m): 1.46 **Bed width (m):** 1.0
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/10/08)

Site Length (m): 40 **Mean wetted width (m):** 1.3 **Water Depth (m):** 0.19 - 0.28

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	5
Backwater Pools:	0	**Silt / Sand:**	45
Scour Pools:	0	**Gravel:**	50
Glide:	94	**Cobble:**	0
Riffle:	6	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/10/08	9.85	8.08	11.0	119.1

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/10/08	no fish	NA	snorkel	0	NA

Transportation Corridor Site Survey Data

Location

Site: MP_01.2 **Field Latitude:** 59.91713 **Subwatershed:** UT 1.430
Watershed: UT **Field Longitude:** -155.25648 **Stream:** UT 1.430

Figure 1. Site MP_01.2, taken on 09/12/08.

Channel (surveyed 09/12/08)

Gradient (%): 4 **Bankfull depth (m):** 0.48
Bankfull width (m): 1.62 **Bed width (m):** 1.10
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/12/08)

Site Length (m): 44.6 **Mean wetted width (m):** 0.8 **Water Depth (m):** 0.03 - 0.2

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	22
Backwater Pools:	0	**Silt / Sand:**	74
Scour Pools:	15	**Gravel:**	2
Glide:	69	**Cobble:**	2
Riffle:	16	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	27		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality (no data)

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/12/08	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: MP_02.3
Watershed: UT
Field Latitude: 59.90944
Field Longitude: -155.23293
Subwatershed: UT 1.0
Stream: UT 1.0

Figure 1. Site MP_02.3, taken on 09/10/08.

Channel (surveyed 09/10/08)

Gradient (%): 2
Bankfull depth (m): 0.93
Bankfull width (m): 6.4
Bed width (m): 4.0
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 9/10/08)

Site Length (m): 162.7
Mean wetted width (m): 4.6
Water Depth (m): 0.17 - 0.65

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	0	**Silt / Sand:**	30
Scour Pools:	5	**Gravel:**	60
Glide:	54	**Cobble:**	10
Riffle:	41	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/10/08	9.4	8.19	12.1	89.3

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/10/08	Chinook salmon	juvenile	snorkel	5	NA
09/10/08	coho salmon	adult	snorkel	4	NA
09/10/08	coho salmon	juvenile	snorkel	396	NA
09/10/08	Pacific salmon	adult	snorkel	1	NA
09/10/08	Arctic grayling	juvenile/adult	snorkel	1	NA
09/10/08	sculpin sp.	juvenile/adult	snorkel	4	NA

Transportation Corridor Site Survey Data

Location

Site: MP_02.6
Watershed: UT
Field Latitude: 59.90595
Field Longitude: -155.22995
Subwatershed: UT 1.410
Stream: UT 1.410

Figure 1. Site MP_02.6, taken on 09/10/08.

Channel (surveyed 09/10/08)

Gradient (%): 0
Bankfull depth (m): 0.85
Bankfull width (m): 4.8
Bed width (m): 2.7
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/10/08)

Site Length (m): 204.9
Mean wetted width (m): 6.9
Water Depth (m): 0.28 - 0.68

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	81	**Organics:**	19
Backwater Pools:	0	**Silt / Sand:**	77
Scour Pools:	4	**Gravel:**	3
Glide:	15	**Cobble:**	1
Riffle:	0	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Present
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/10/08	9.04	9.74	10.9	76.58

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/10/08	Chinook salmon	juvenile	snorkel	1	NA
09/10/08	coho salmon	juvenile	snorkel	103	NA
09/10/08	Dolly Varden	juvenile/adult	snorkel	16	NA
09/10/08	rainbow trout	juvenile/adult	snorkel	2	NA
09/10/08	sculpin sp.	juvenile/adult	snorkel	1	NA
09/10/08	unidentified	juvenile/adult	snorkel	3	NA

Transportation Corridor Site Survey Data

Location

Site: MP_02.8
Watershed: UT
Field Latitude: 59.904
Field Longitude: -155.22684
Subwatershed: UT 1.410
Stream: UT 1.410.10

Figure 1. Site MP_02.8, taken on 09/10/08.

Channel (surveyed 09/10/08)

Gradient (%): 3
Bankfull depth (m): 0.57
Bankfull width (m): 1.48
Bed width (m): 1.2
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/10/08)

Site Length (m): 47.7
Mean wetted width (m): 1.4
Water Depth (m): 0.14 - 0.28

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	5
Backwater Pools:	0	**Silt / Sand:**	15
Scour Pools:	0	**Gravel:**	70
Glide:	22	**Cobble:**	10
Riffle:	78	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/10/08	6.38	8.6	11.7	53.61

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/10/08	coho salmon	juvenile	snorkel	1	NA
09/10/08	Dolly Varden	juvenile/adult	snorkel	1	NA

Transportation Corridor Site Survey Data

Location

Site: MP_05.4 **Field Latitude:** 59.88308 **Subwatershed:** UT 1.360
Watershed: UT **Field Longitude:** -155.17105 **Stream:** UT 1.360

Figure 1. Site MP_05.4, taken on 09/09/08.

Channel (surveyed 09/09/08)

Gradient (%): 1 **Bankfull depth (m):** 0.52
Bankfull width (m): 3.1 **Bed width (m):** 2.2
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/09/08)

Site Length (m): 88.5 **Mean wetted width (m):** 1.7 **Water Depth (m):** 0.2 - 0.38

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	0	**Silt / Sand:**	18
Scour Pools:	8	**Gravel:**	63
Glide:	4	**Cobble:**	19
Riffle:	88	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	5.58	7.68	11.9	48.88

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/10/08	coho salmon	juvenile	snorkel	1	NA

Transportation Corridor Site Survey Data

Location

Site: MP_05.6
Watershed: UT
Field Latitude: 59.88151
Field Longitude: -155.16551
Subwatershed: UT 1.0
Stream: UT 1.0

Figure 1. Site MP_05.6, taken on 09/10/08.

Channel (surveyed 09/10/08)

Gradient (%): 1
Bankfull depth (m): 1.03
Bankfull width (m): 16.7
Bed width (m): 12.9
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/10/08)

Site Length (m): 204
Mean wetted width (m): 12.2
Water Depth (m): 0.43 - 1.1

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	3
Backwater Pools:	0	**Silt / Sand:**	22
Scour Pools:	0	**Gravel:**	45
Glide:	61	**Cobble:**	26
Riffle:	39	**Boulder:**	4
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/10/08	7.91	9.24	13.2	59.28

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/10/08	Chinook salmon	juvenile	snorkel	33	NA
09/10/08	coho salmon	adult	snorkel	19	NA
09/10/08	coho salmon	juvenile	snorkel	173	NA
09/10/08	Arctic grayling	adult	snorkel	2	NA
09/10/08	Dolly Varden	juvenile	snorkel	1	NA
09/10/08	rainbow trout	adult	snorkel	2	NA
09/10/08	rainbow trout	juvenile	snorkel	2	NA
09/10/08	rainbow trout	juvenile/adult	snorkel	2	NA
09/10/08	sculpin sp.	juvenile/adult	snorkel	2	NA

Transportation Corridor Site Survey Data

Location

Site: MP_06.4
Watershed: UT
Field Latitude: 59.87219
Field Longitude: -155.16416
Subwatershed: UT 1.340
Stream: UT 1.340

Figure 1. Site MP_06.4, taken on 09/09/08.

Channel (surveyed 09/09/08)

Gradient (%): 2
Bankfull depth (m): 0.53
Bankfull width (m): 1.9
Bed width (m): 1.5
Undercut Bank (% Site Length): 39

Habitat Composition (surveyed 09/09/08)

Site Length (m): 61.1
Mean wetted width (m): 1.2
Water Depth (m): 0.18 - 0.3

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	0	**Silt / Sand:**	11
Scour Pools:	7	**Gravel:**	60
Glide:	20	**Cobble:**	29
Riffle:	73	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	8.6	8.35	11.3	15.7

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/11/08	coho salmon	juvenile	electrofish	7	NA

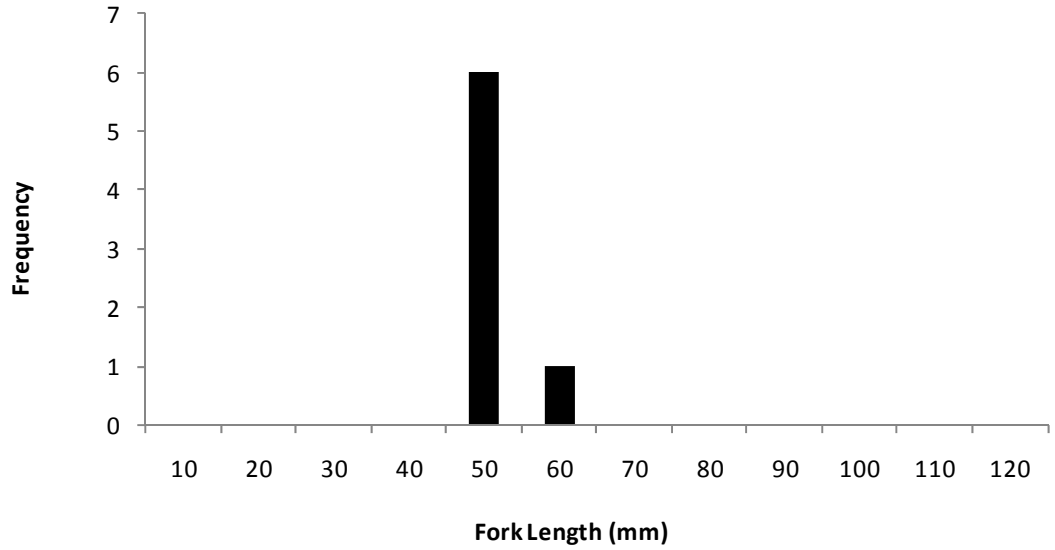


Figure 3. Length frequency distribution for 7 coho salmon collected during September 2008 survey.

Newhalen Watershed Group

Transportation Corridor Site Survey Data

Location

Site: MP_12.2
Watershed: Newhalen R.
Field Latitude: 59.87986
Field Longitude: -155.02037
Subwatershed: Newhalen R. trib
Stream: secondary Newhalen R. trib

Figure 1. Site MP_12.2, taken on 09/09/08.

Channel (surveyed 09/09/08)

Gradient (%): 2
Bankfull depth (m): 0.4
Bankfull width (m): 6
Bed width (m): 4.5
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/09/08)

Site Length (m): 200.2
Mean wetted width (m): 1.9
Water Depth (m): 0.12 - 0.45

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	5
Backwater Pools:	0	**Silt / Sand:**	15
Scour Pools:	18	**Gravel:**	80
Glide:	4	**Cobble:**	0
Riffle:	78	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	6.42	9.2	12.9	54.6

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/09/08	no fish	NA	snorkel	0	NA

Transportation Corridor Site Survey Data

Location

Site: MP_14.6 **Field Latitude:** 59.8956 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.96238 **Stream:** Newhalen R. trib

Figure 1. Site MP_14.6, taken on 09/09/08.

Channel (surveyed 09/09/08)

Gradient (%): 2 **Bankfull depth (m):** 0.5
Bankfull width (m): 3.2 **Bed width (m):** 2.5
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/09/08)

Site Length (m): 100.9 **Mean wetted width (m):** 2.3 **Water Depth (m):** 0.18 - 0.4

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	5
Backwater Pools:	0	**Silt / Sand:**	19
Scour Pools:	10	**Gravel:**	75
Glide:	4	**Cobble:**	1
Riffle:	86	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	6.18	9.05	11.5	42.3

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/09/08	coho salmon	juvenile	snorkel	31	NA

Transportation Corridor Site Survey Data

Location

Site: MP_14.9
Watershed: Newhalen R.
Field Latitude: 59.89575
Field Longitude: -154.95348
Subwatershed: Newhalen R. trib
Stream: tertiary Newhalen R. trib

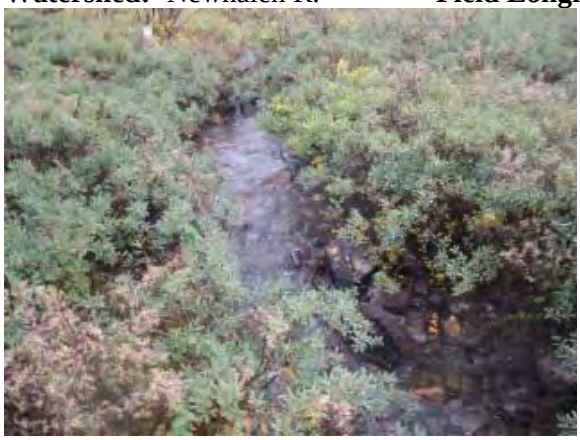


Figure 1. Site MP_14.9, taken on 09/09/08.

Channel (surveyed 09/09/08)

Gradient (%): 0
Bankfull depth (m): 0.42
Bankfull width (m): 2.2
Bed width (m): 2.0
Undercut Bank (% Site Length): 7

Habitat Composition (surveyed 09/09/08)

Site Length (m): 82.1
Mean wetted width (m): 1.4
Water Depth (m): 0.14 - 0.38

Habitat Type (%)	
Beaver Pond:	0
Backwater Pools:	0
Scour Pools:	21
Glide:	10
Riffle:	69
Cascade:	0
Dry:	0
Subsurface:	0
Culvert:	0

Substrate Composition (%)	
Organics:	5
Silt / Sand:	15
Gravel:	16
Cobble:	55
Boulder:	9
Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	6.72	7.23	11.9	35.75

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/09/08	coho salmon	juvenile	snorkel	13	NA

Transportation Corridor Site Survey Data

Location

Site: MP_17.9 **Field Latitude:** 59.87392 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.88704 **Stream:** Newhalen R. trib

Figure 1. Site MP_17.9, taken on 09/09/08.

Channel (surveyed 09/09/08)

Gradient (%): 1 **Bankfull depth (m):** 0.49
Bankfull width (m): 1.4 **Bed width (m):** 1.2
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/09/08)

Site Length (m): 49.1 **Mean wetted width (m):** 1.1 **Water Depth (m):** 0.24 - 0.36

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	5
Backwater Pools:	0	**Silt / Sand:**	20
Scour Pools:	0	**Gravel:**	71
Glide:	36	**Cobble:**	4
Riffle:	64	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Present; 70% covered by overhanging vegetation

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	9.9	8.7	10.3	29.1

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/12/08	Arctic grayling	juvenile	electrofish	1	NA
09/12/08	longnose sucker	juvenile/adult	electrofish	1	NA

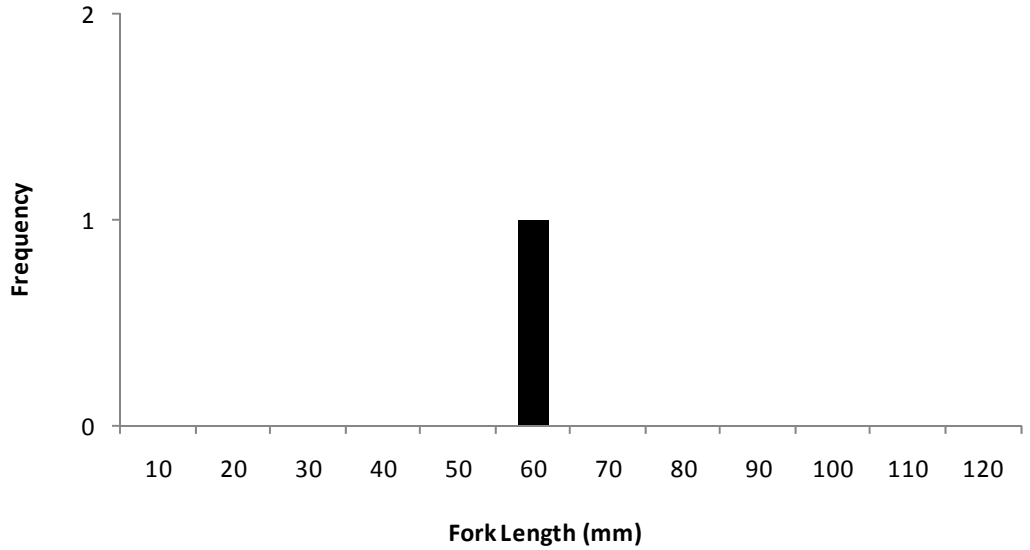


Figure 3. Length frequency distribution for 1 Arctic grayling collected during September 2008 survey.

Isolated Watershed Group

Transportation Corridor Site Survey Data

Location

Site: MP_22.5 **Field Latitude:** 59.84423 **Subwatershed:** Negro Lake trib
Watershed: Negro Lake **Field Longitude:** -154.78964 **Stream:** Negro Lake trib
Site MP_22.5 was dry and lacked a defined channel when visited on 09/08/08; no data was collected.

Figure 1. Site MP_22.5, taken on 09/08/08.

Transportation Corridor Site Survey Data

Location

Site: MP_23.2 **Field Latitude:** 59.83888 **Subwatershed:** Negro Lake trib
Watershed: Negro Lake **Field Longitude:** -154.77419 **Stream:** Negro Lake trib

Site MP_23.5 was dry when visited on 09/08/08; no data was collected.

Figure 1. Site MP_23.2, taken on 09/08/08.

Transportation Corridor Site Survey Data

Location

Site: D 22.933 **Field Latitude:** 59.83078 **Subwatershed:** unnamed lake
Watershed: unnamed lake **Field Longitude:** -154.76723 **Stream:** unnamed lake trib

Site D 22.933 was dry when visited on 07/07/04; no data was collected. When the site was revisited and surveyed on 10/01/07, flowing water was present. The stream was associated with seasonally inundated wetlands and lacked a clearly defined channel. During senior review and Level 3 QC, this site was classified as a flowing wetland.

Figure 1. Site D 22.933, taken on 10/01/07.

Channel (surveyed 10/01/07)

Gradient (%): 1
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): NA
Mean bed width (m): NA
Undercut Bank (% Site Length): 0

Habitat Composition: (surveyed 10/01/07)

Site Length (m): 85 **Mean Wetted Width (m):** 4.1 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	100
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	0
Riffle:	0	**Cobble:**	0
Cascade:	0	**Boulder:**	0
Flowing Wetland:	100	**Bedrock:**	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/01/07	< 0.1	0.6

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/01/07	5.87	5.75	11.19	30

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/02/07	no fish	NA	electrofish	0	NA

Roadhouse / Northeast Bay / Eagle Bay Watershed Group

Transportation Corridor Site Survey Data

Location

Site: D 24.166 **Field Latitude:** 59.81356 **Subwatershed:** Roadhouse Cr. trib
Watershed: Roadhouse Cr. **Field Longitude:** -154.76705 **Stream:** Roadhouse Cr. trib
Site D 24.166 was dry when visited on 07/07/04; no data was collected. The site was revisited and surveyed on 10/01/07, when flowing water was present.

Figure 1. Site D 24.166, taken on 10/01/07.

Channel (surveyed 10/01/07)

Gradient (%): 1 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): 1.7 **Mean bed width (m):** 1
Undercut Bank (% Site Length): 31

Habitat Composition (surveyed 10/01/07)

Site Length (m): 35 **Mean Wetted Width (m):** 1.7 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	50	**Organics:**	0
Scour Pools:	0	**Silt:**	10
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	0
Riffle:	50	**Cobble:**	70
Cascade:	0	**Boulder:**	20
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/01/07	< 0.1	1.6

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/01/07	5.65	5.93	10.54	34

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/02/07	sculpin sp.	adult	electrofish	1	NA
10/02/07	sculpin sp.	juvenile	electrofish	2	NA
10/02/07	sculpin sp.	juvenile/adult	electrofish	6	NA

Transportation Corridor Site Survey Data

Location

Site: F 25.863 **Field Latitude:** 59.80126 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.72284 **Stream:** secondary Eagle Bay trib
Site F 25.863 was dry when visited on 08/15/04; no data was collected. The site was revisited and surveyed on 10/02/07, when flowing water was present and the site consisted of a seasonally inundated ephemeral stream that lacked a well-defined channel.

Figure 1. Site F 25.863, taken on 10/02/07.

Channel (surveyed 10/02/07)

Gradient (%): 2 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): 0.6 **Mean bed width (m):** 0.6
Undercut Bank (% Site Length): no data

Habitat Composition (surveyed 10/02/07)

Site Length (m): 35 **Mean Wetted Width (m):** 0.6 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	40	**Organics:**	30
Scour Pools:	0	**Silt:**	70
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	0
Riffle:	60	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/02/07	< 0.1	< 0.1

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/02/07	5.45	6.41	10.08	55

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/02/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: F 26.46 **Field Latitude:** 59.80082 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.70607 **Stream:** secondary Eagle Bay trib

No photo of Site F 26.46 was available from the 08/15/04 survey; the stream was revisited for photo documentation and additional water quality measurements on 10/02/07.

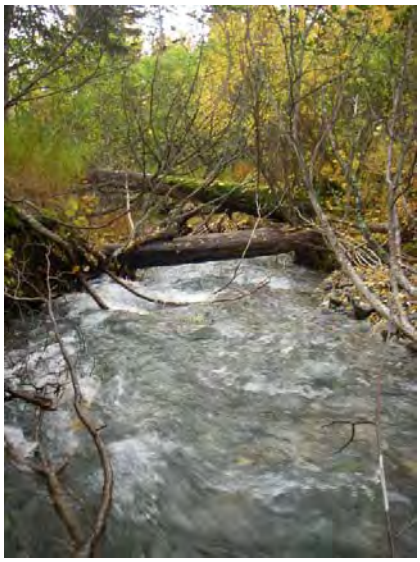


Figure 1. Site F 26.46, taken on 10/02/07.

Channel (surveyed 08/15/04)

Gradient (%): 5 **Bank height (m): Right** > 2 **Left** > 2
Mean bankfull width (m): no data **Mean bed width (m):** 4.2
Undercut Bank (% Site Length): 10

Habitat Composition (surveyed 08/15/04)

Site Length (m): 170 **Mean Wetted Width (m):** 1.9 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	20	**Silt:**	0
Slough Pools:	0	**Sand:**	10
Glide:	0	**Gravel:**	45
Riffle:	80	**Cobble:**	45
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Present
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/15/04	0.1	3.8

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/15/04	7.2	7.2	11	110.7
10/02/07	3.85	6.10	12.44	98

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/15/04	Dolly Varden	adult	electrofish	1	NA
08/15/04	Dolly Varden	juvenile	electrofish	15	NA

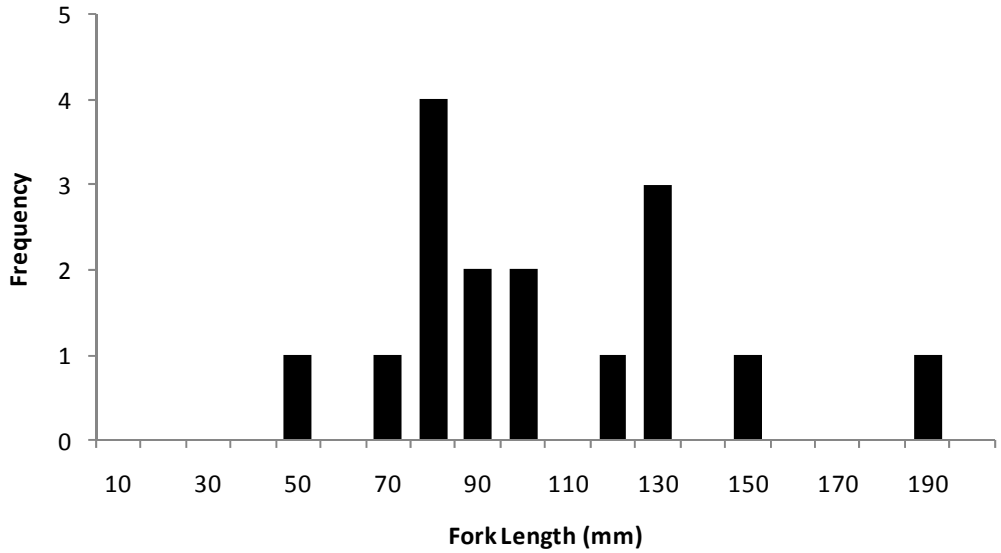


Figure 3. Length frequency distribution for 16 Dolly Varden collected during August 2004 survey

Transportation Corridor Site Survey Data

Location

Site: MP_27.7 **Field Latitude:** 59.80774 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.67297 **Stream:** tertiary Eagle Bay trib

Figure 1. Site MP_27.7, taken on 09/08/08.

Channel (surveyed 09/08/08)

Gradient (%): 3.5 **Bankfull depth (m):** 0.75
Bankfull width (m): 2.8 **Bed width (m):** 2.2
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/08/08)

Site Length (m): 203.5 **Mean wetted width (m):** 2 **Water Depth (m):** 0 - 0.26

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	0	**Silt / Sand:**	5
Scour Pools:	8	**Gravel:**	12
Glide:	0	**Cobble:**	69
Riffle:	92	**Boulder:**	14
Cascade:	0	**Bedrock:**	0
Dry:	79		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/09/08	5.38	10.5	12.2	51.2

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/08/08	no fish	NA	snorkel	0	NA

Transportation Corridor Site Survey Data

Location

Site: F 28.49 **Field Latitude:** 59.80865 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.65016 **Stream:** tertiary Eagle Bay trib

No photo of Site F 28.49 was available from the 08/15/04 survey; the stream was revisited for photo documentation and additional water quality measurements on 10/02/07.

Figure 1. Site F 28.49, taken on 10/02/07.

Channel (surveyed 08/15/04)

Gradient (%): 2.5 **Bank height (m): Right** < 1 **Left** < 1

Mean bankfull width (m): no data **Mean bed width (m):** 1.2

Undercut Bank (% Site Length): 70

Habitat Composition (surveyed 08/15/04)

Site Length (m): 48 **Mean Wetted Width (m):** 1.4 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	40	**Gravel:**	5
Riffle:	60	**Cobble:**	90
Cascade:	0	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/15/04	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/15/04	8.7	7.28	6.95	52.5
10/02/07	4.86	6.17	12.12	56

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/15/04	Dolly Varden	juvenile	electrofish	6	NA

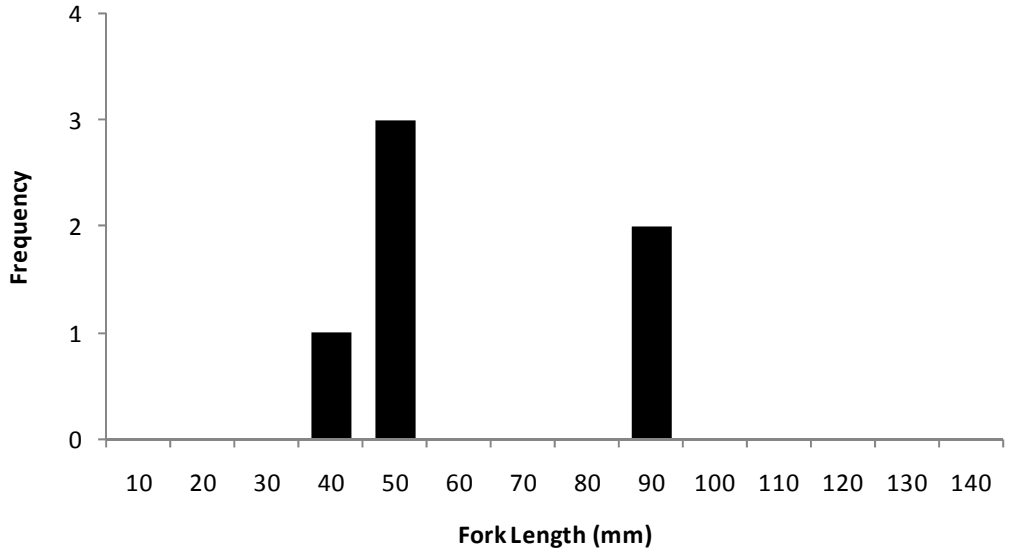


Figure 3. Length frequency distribution for 6 Dolly Varden collected during August 2004 survey

Transportation Corridor Site Survey Data

Location

Site: MP_28.8B **Field Latitude:** 59.80864 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.64161 **Stream:** tertiary Eagle Bay trib
Site MP_28.8B was dry when visited on 09/08/08, but had a clearly defined channel, which was surveyed.

Figure 1. Site MP_28.8B, taken on 09/08/08.

Channel (surveyed 09/08/08)

Gradient (%): 2
Bankfull depth (m): 0.65
Bankfull width (m): 3.5
Bed width (m): 2.4
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/08/08)

Site Length (m): 140 **Mean wetted width (m):** 0 **Water Depth (m):** 0

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	no data
Backwater Pools:	0	**Silt / Sand:**	no data
Scour Pools:	0	**Gravel:**	no data
Glide:	0	**Cobble:**	no data
Riffle:	0	**Boulder:**	no data
Cascade:	0	**Bedrock:**	no data
Dry:	100		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality (no data)

Fish Species Composition (no data)

Transportation Corridor Site Survey Data

Location

Site: MP_28.8A
Watershed: Eagle Bay trib
Field Latitude: 59.8101
Field Longitude: -154.64093
Subwatershed: Eagle Bay trib
Stream: tertiary Eagle Bay trib

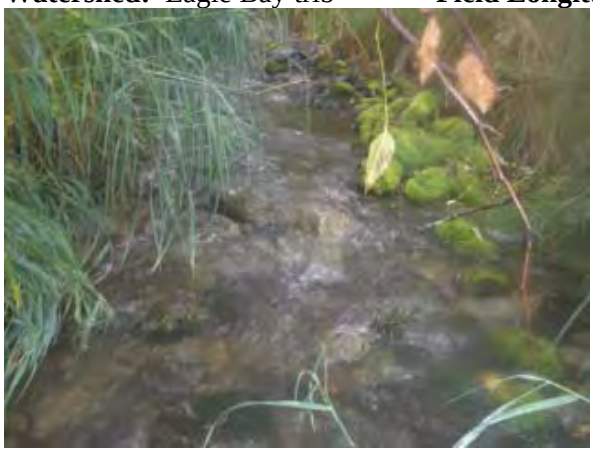


Figure 1. Site MP_28.8A, taken on 09/08/08.

Channel (surveyed 09/08/08)

Gradient (%): 2
Bankfull depth (m): 0.56
Bankfull width (m): 2.8
Bed width (m): 2.8
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/08/08)

Site Length (m): 120.6
Mean wetted width (m): 1.8
Water Depth (m): 0.12 - 0.3

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	10	**Silt / Sand:**	10
Scour Pools:	5	**Gravel:**	25
Glide:	6	**Cobble:**	60
Riffle:	79	**Boulder:**	5
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Present
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/08/08	5.9	7.27	13.0	44.5

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/08/08	no fish	NA	snorkel	0	NA

Transportation Corridor Site Survey Data

Location

Site: MP_29.6 **Field Latitude:** 59.80736 **Subwatershed:** W. Br. Eagle Bay Cr.
Watershed: Eagle Bay Cr. **Field Longitude:** -154.61547 **Stream:** W. Br. Eagle Bay Cr.

Figure 1. Site MP_29.6, taken on 09/07/08.

Channel (surveyed 09/07/08)

Gradient (%): 1 **Bankfull depth (m):** 0.4
Bankfull width (m): 3.5 **Bed width (m):** 3.7
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/07/08)

Site Length (m): 150.3 **Mean wetted width (m):** 2.8 **Water Depth (m):** 0.11 - 0.45

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	0	**Silt / Sand:**	15
Scour Pools:	71	**Gravel:**	85
Glide:	11	**Cobble:**	0
Riffle:	18	**Boulder:**	0
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/07/08	6.3	6.4	11.1	99.75

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/07/08	no fish	NA	snorkel	0	NA

Transportation Corridor Site Survey Data

Location

Site: MP_30.7 **Field Latitude:** 59.8084 **Subwatershed:** E. Br. Eagle Bay Cr.
Watershed: Eagle Bay Cr. **Field Longitude:** -154.58785 **Stream:** Eagle Bay Cr.

Figure 1. Site MP_30.7, taken on 09/07/08.

Channel (surveyed 09/07/08)

Gradient (%): 0 **Bankfull depth (m):** 0.26
Bankfull width (m): 2.3 **Bed width (m):** 2.3
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/07/08)

Site Length (m): 239.35 **Mean wetted width (m):** 2.2 **Water Depth (m):** 0.18 - 0.45

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	6
Backwater Pools:	0	**Silt / Sand:**	31
Scour Pools:	57	**Gravel:**	52
Glide:	21	**Cobble:**	8
Riffle:	22	**Boulder:**	3
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Present

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/07/08	9.76	7.33	10.0	107.7

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/07/08	rainbow trout	juvenile	electrofish	1	NA
09/07/08	rainbow trout	juvenile	snorkel	6	NA
09/07/08	rainbow trout	juvenile/adult	snorkel	5	NA
09/07/08	sculpin sp.	adult	electrofish	3	NA
09/07/08	sculpin sp.	juvenile/adult	snorkel	15	NA
09/07/08	ninespine stickleback	juvenile	electrofish	1	NA
09/07/08	ninespine stickleback	juvenile/adult	snorkel	3	NA

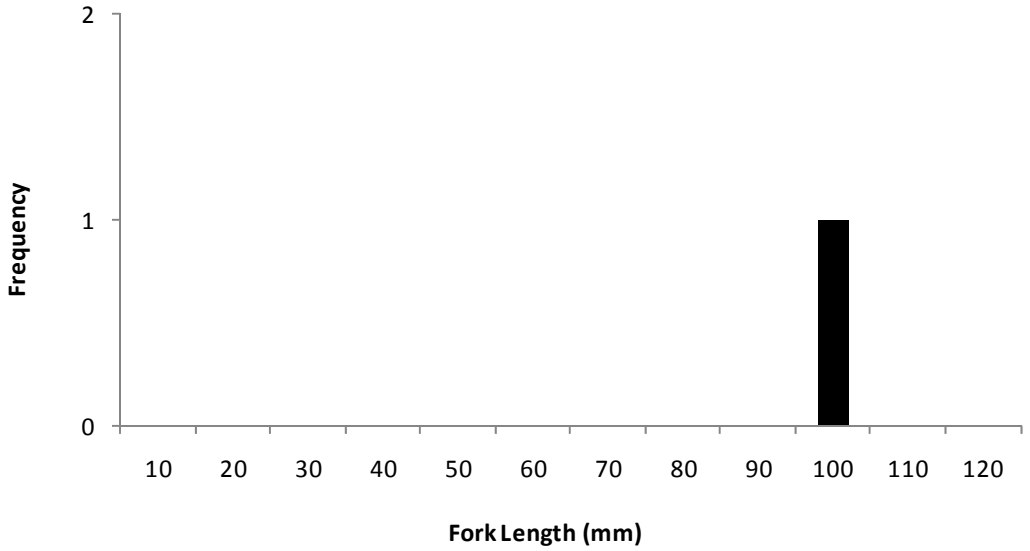


Figure 3. Length frequency distribution for 1 rainbow trout collected during September 2008 survey.

Youngs / Chekok / Canyon Watershed Group

Transportation Corridor Site Survey Data

Location

Site: F 39.59 **Field Latitude:** 59.84031 **Subwatershed:** Chekok Cr.
Watershed: Chekok Cr. **Field Longitude:** -154.38333 **Stream:** Chekok Cr.

Figure 1. Site F 39.59, taken on 08/12/04.

Channel (surveyed 08/12/04)

Gradient (%): 1.5
Bank height (m): Right < 1 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 5.5
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 08/12/04)

Site Length (m): 220 **Mean Wetted Width (m):** 2.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	no data	**Organics:**	10
Scour Pools:	no data	**Silt:**	0
Slough Pools:	no data	**Sand:**	5
Glide:	no data	**Gravel:**	75
Riffle:	no data	**Cobble:**	3
Cascade:	no data	**Boulder:**	2
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/12/04	< 0.1	0.1

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/12/04	7.9	6.14	7.5	19.1

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/12/04	sculpin sp.	juvenile/adult	electrofish	15	NA

Transportation Corridor Site Survey Data

Location

Site: F 39.65
Watershed: Chekok Cr.
Field Latitude: 59.83958
Field Longitude: -154.38171
Subwatershed: Chekok Cr.
Stream: Chekok Cr.

Figure 1. Site F 39.65, taken on 08/11/04.

Channel (surveyed 08/11/04)

Gradient (%): 1.5
Bank height (m): **Right** 1-2 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 21.5
Undercut Bank (% Site Length): 2

Habitat Composition (surveyed 08/11/04)

Site Length (m): 400
Mean Wetted Width (m): 7.4
Mean Water Depth (m): no data

Habitat Type (%)

Backwater Pools:	0
Scour Pools:	0
Slough Pools:	0
Glide:	0
Riffle:	100
Cascade:	0

Substrate Composition (%)

Organics:	0
Silt:	0
Sand:	10
Gravel:	20
Cobble:	60
Boulder:	10
Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/11/04	1.3	46.4

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/11/04	16.5	7.14	9.58	48.6

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/11/04	sockeye salmon	adult	visual observation	683	NA
08/11/04	rainbow trout	juvenile	electrofish	7	NA
08/11/04	rainbow trout	juvenile/adult	visual observation	NA	30-40
08/11/04	sculpin sp.	juvenile/adult	electrofish	4	NA

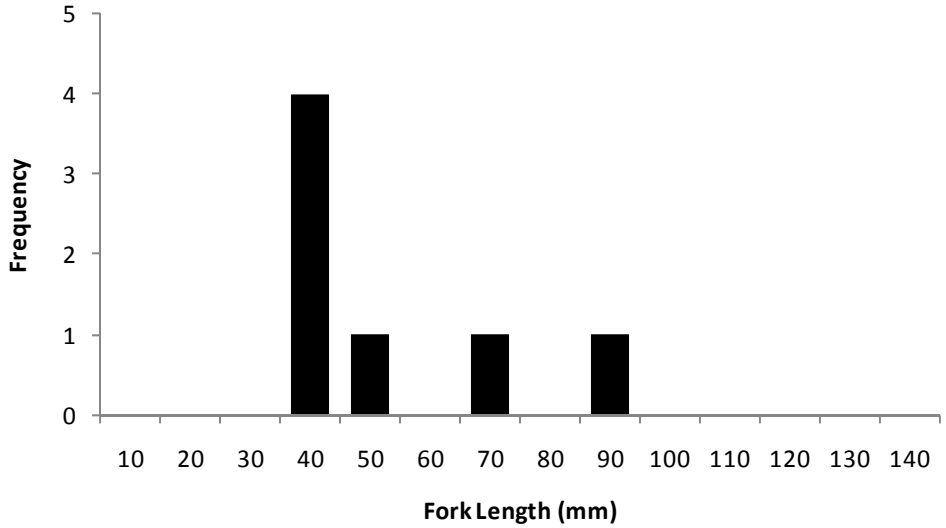


Figure 3. Length frequency distribution for 7 rainbow trout collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: F 40.2
Watershed: Canyon Cr.
Field Latitude: 59.83666
Field Longitude: -154.36778
Subwatershed: Canyon Cr.
Stream: Canyon Cr.

Figure 1. Site F 40.2, taken on 08/11/04.

Channel (surveyed 08/11/04)

Gradient (%): 3
Bank height (m): **Right** > 2 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 24.4
Undercut Bank (% Site Length): 3

Habitat Composition (surveyed 08/11/04)

Site Length (m): 400
Mean Wetted Width (m): 11
Mean Water Depth (m): no data

Habitat Type (%)

Backwater Pools:	0
Scour Pools:	20
Slough Pools:	0
Glide:	0
Riffle:	80
Cascade:	0

Substrate Composition (%)

Organics:	0
Silt:	0
Sand:	5
Gravel:	10
Cobble:	80
Boulder:	5
Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/11/04	1.3	46.3

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/11/04	13.1	6.7	10.88	30.3

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/11/04	sockeye salmon	adult	visual observation	NA	thousands live and 522 carcasses
08/11/04	sockeye salmon	juvenile	electrofish	2	NA
08/11/04	Dolly Varden	juvenile	electrofish	3	NA
08/11/04	sculpin sp.	juvenile/adult	electrofish	25	NA

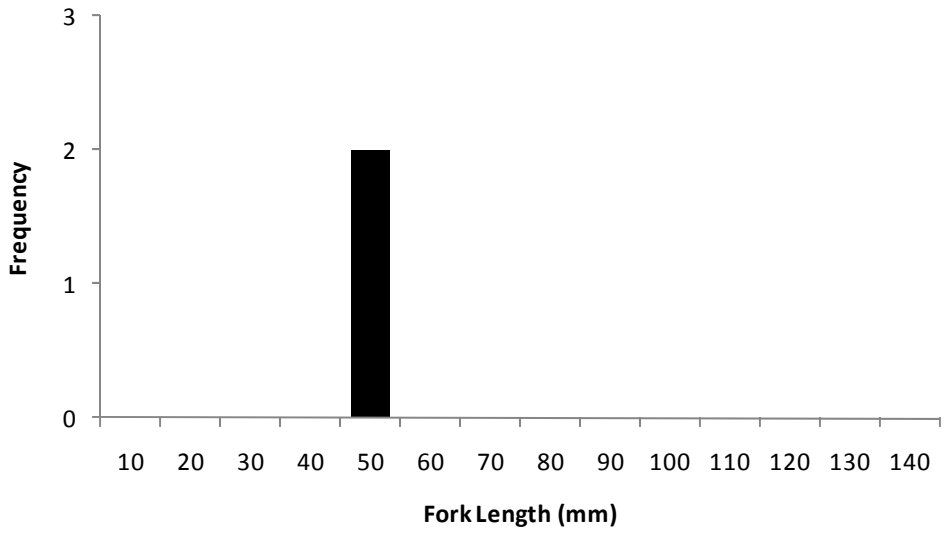


Figure 3. Length frequency distribution for 2 sockeye salmon collected during August 2004 survey.

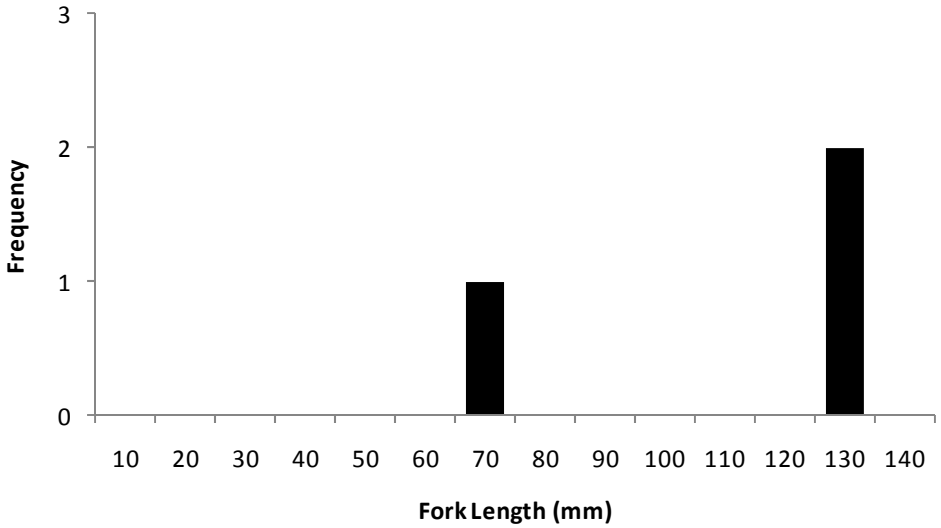


Figure 4. Length frequency distribution for 3 Dolly Varden collected during August 2004 survey.

Knutson Bay / Pedro Bay Watershed Group

Transportation Corridor Site Survey Data

Location

Site: F 41.305 **Field Latitude:** 59.832747 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.336413 **Stream:** Knutson Bay trib
Site F 41.305 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 41.689 **Field Latitude:** 59.830191 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.326539 **Stream:** secondary Knutson Bay trib
Site F 41.689 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 42.343 **Field Latitude:** 59.824595 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.311606 **Stream:** secondary Knutson Bay trib
Site F 42.343 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 42.632 **Field Latitude:** 59.82208 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.30517 **Stream:** tertiary Knutson Bay trib
Site F 42.632 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 43.12 **Field Latitude:** 59.817384 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.296786 **Stream:** Knutson Bay trib
Site F 43.12 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 43.607 **Field Latitude:** 59.813886 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.287208 **Stream:** secondary Knutson Bay trib
Site F 43.607 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 43.991 **Field Latitude:** 59.811303 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.278033 **Stream:** secondary Knutson Bay trib
Site F 43.991 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location:

Site: F 45.366 **Field Latitude:** 59.808559 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.238589 **Stream:** Knutson Bay trib
Site F 45.366 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 45.421 **Field Latitude:** 59.808639 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.237405 **Stream:** Knutson Bay trib
Site F 45.421 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 45.55 **Field Latitude:** 59.808855 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.235011 **Stream:** secondary Knutson Bay trib
Site F 45.55 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 46.133 **Field Latitude:** 59.810092 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.215902 **Stream:** Knutson Bay trib
Site F 46.133 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 46.815 **Field Latitude:** 59.810846 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.197256 **Stream:** Knutson Bay trib
Site F 46.815 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 47.51 **Field Latitude:** 59.812272 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.180601 **Stream:** Knutson Bay trib
Site F 47.51 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 47.915 **Field Latitude:** 59.813698 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.165265 **Stream:** Knutson Bay trib
Site F 47.915 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 48.27 **Field Latitude:** 59.814855 **Subwatershed:** secondary Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.156655 **Stream:** secondary Knutson Bay trib
Site F 48.27 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 48.815 **Field Latitude:** 59.814882 **Subwatershed:** Knutson Bay trib
Watershed: Knutson Bay trib **Field Longitude:** -154.140915 **Stream:** Knutson Bay trib
Site F 48.815 was dry when visited on 08/11/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 49.5
Watershed: Knutson Cr.
Field Latitude: 59.81266
Field Longitude: -154.12366
Subwatershed: Knutson Cr.
Stream: Knutson Cr.

Figure 1. Site F 49.5, taken on 08/11/04.

Channel (surveyed 08/11/04)

Gradient (%): 3
Mean bankfull width (m): no data
Undercut Bank (% Site Length): 0
Bank height (m): Right 1-2 **Left** 1-2
Mean bed width (m): 51.2

Habitat Composition (surveyed 08/11/04)

Site Length (m): 400 **Mean Wetted Width (m):** 16 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	25	**Silt:**	0
Slough Pools:	0	**Sand:**	10
Glide:	0	**Gravel:**	20
Riffle:	75	**Cobble:**	40
Cascade:	0	**Boulder:**	30
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/11/04	2.7	94.5

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/11/04	10.7	6.5	12.15	20.8

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/11/04	sockeye salmon	adult	visual observation	89	NA
08/11/04	Dolly Varden	juvenile	electrofish	1	NA
08/11/04	Dolly Varden	juvenile/adult	visual observation	11	NA
08/11/04	sculpin sp	juvenile/adult	electrofish	8	NA

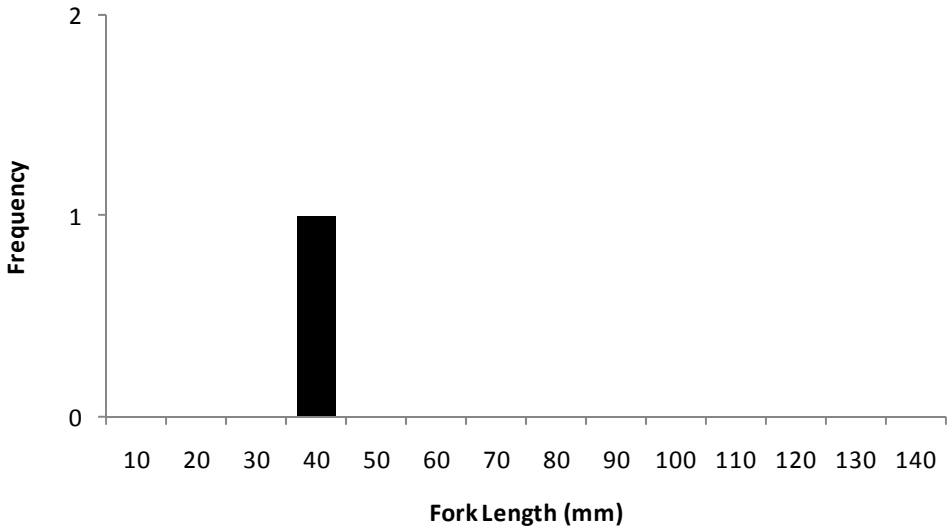


Figure 3. Length frequency distribution for 1 Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: F 51.85 **Field Latitude:** 59.78713 **Subwatershed:** Pedro Bay trib
Watershed: Pedro Bay trib **Field Longitude:** -154.08099 **Stream:** Pedro Bay trib
Site F 51.85 was dry when visited on 08/10/04; limited data was collected.

Figure 1. Site F 51.85, taken on 08/10/04.

Channel (surveyed 08/10/04)

Gradient (%): 6 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 2.8
Undercut Bank (% Site Length): no data

Habitat Composition (surveyed 08/10/04)

Site Length (m): 112 **Mean Wetted Width (m):** 0 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	20
Glide:	0	**Gravel:**	60
Riffle:	0	**Cobble:**	20
Cascade:	0	**Boulder:**	0
Dry:	100	**Bedrock:**	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/10/04	0	0

Water Quality (no data)

Fish Species Composition (no data)

Pile Bay / Lonesome Bay Watershed Group

Transportation Corridor Site Survey Data

Location

Site: F 55.75 **Field Latitude:** 59.78762 **Subwatershed:** Lonesome Bay trib
Watershed: Lonesome Bay trib **Field Longitude:** -154.01232 **Stream:** Lonesome Bay trib
Site F 55.75 was dry when visited on 08/10/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 56.761 **Field Latitude:** 59.79844 **Subwatershed:** Lonesome Bay trib
Watershed: Lonesome Bay trib **Field Longitude:**-153.99344 **Stream:** Lonesome Bay trib
Site F 56.761 was dry when visited on 08/10/04; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location

Site: F 61.26
Watershed: Pile River
Field Latitude: 59.81161
Field Longitude: -153.891
Subwatershed: Pile River
Stream: Pile River

Figure 1. Site F 61.26, taken on 08/09/04.

Channel (surveyed 08/09/04)

Gradient (%): 2
Bank height (m): **Right** > 2 **Left** > 2
Mean bankfull width (m): no data
Mean bed width (m): 64.2
Undercut Bank (% Site Length): no data

Habitat Composition (surveyed 08/09/04)

Site Length (m): 200
Mean Wetted Width (m): 71
Mean Water Depth (m): no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	30
Slough Pools:	0	**Sand:**	10
Glide:	100	**Gravel:**	0
Riffle:	0	**Cobble:**	60
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present, < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/09/04	22.5	795.1

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/09/04	10.1	6.52	12.05	22.1

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/09/04	sculpin sp	juvenile/adult	electrofish	1	NA
08/09/04	threespine stickleback	juvenile/adult	electrofish	5	NA

Iliamna River Watershed Group

Transportation Corridor Site Survey Data

Location

Site: I 65.47
Field Latitude: 59.77178
Subwatershed: Iliamna R. trib
Watershed: Iliamna R.
Field Longitude: -153.84888
Stream: Iliamna R. trib

Site I 65.47 was dry when visited on 08/09/04; no data was collected and no photo is available.

Transportation Corridor Site Survey Data

Location

Site: J 67.75 **Field Latitude:** 59.76044 **Subwatershed:** Iliamna R. trib
Watershed: Iliamna R. **Field Longitude:** -153.85202 **Stream:** Iliamna R. trib
Site J 67.75 consisted of a crushed 5 foot culvert when visited on 08/09/04, and the channel was dry below the culvert.

Figure 1. Site J 67.75, taken on 08/09/04.

Channel (surveyed 08/09/04)

Gradient (%): 1 **Bank height (m): Right** > 2 **Left** > 2
Mean bankfull width (m): no data **Mean bed width (m):** 6
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 08/09/04)

Site Length (m): 200 **Mean Wetted Width (m):** 2.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	no data	**Organics:**	0
Scour Pools:	no data	**Silt:**	95
Slough Pools:	no data	**Sand:**	0
Glide:	no data	**Gravel:**	5
Riffle:	no data	**Cobble:**	0
Cascade:	no data	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge (no data)

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/09/04	12.9	6.74	4.51	42.9

Fish Species Composition (no data)

Transportation Corridor Site Survey Data

Location

Site: J 68.0
Watershed: Iliamna R.
Field Latitude: 59.75839
Field Longitude: -153.8475
Subwatershed: Iliamna R.
Stream: Iliamna R.

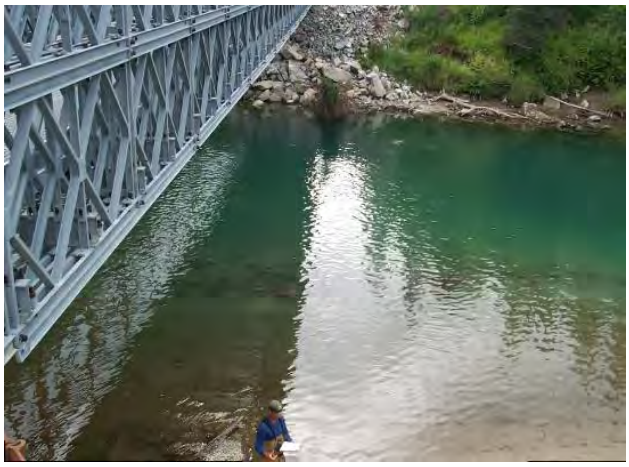


Figure 1. Site J 68.0, taken on 08/09/04.

Channel

Gradient (%): 1.5
Bank height (m): Right > 2 **Left** > 2
Mean bankfull width (m): no data
Mean bed width (m): 51.8
Undercut Bank (% Site Length): 0

Habitat Composition

Site Length (m): 200 **Mean Wetted Width (m):** 36 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	95
Glide:	100	**Gravel:**	0
Riffle:	0	**Cobble:**	0
Cascade:	0	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge (no data)

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/09/04	12.1	6.4	7.82	18.2

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/09/04	sockeye salmon	adult	visual observation	NA	thousands

Transportation Corridor Site Survey Data

Location

Site: K 70.14
Watershed: Chinkelyes Cr.
Field Latitude: 59.72946
Field Longitude: -153.80251
Subwatershed: Chinkelyes Cr. trib
Stream: Chinkelyes Cr. trib

Figure 1. Site K 70.14, taken on 08/08/04.

Channel (surveyed 08/08/04)

Gradient (%): 4
Bank height (m): Right > 2 **Left** > 2
Mean bankfull width (m): no data
Mean bed width (m): 11.8
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 08/08/04)

Site Length (m): 480
Mean Wetted Width (m): 5
Mean Water Depth (m): no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	50	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	20
Riffle:	50	**Cobble:**	20
Cascade:	0	**Boulder:**	60
		Bedrock:	

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/08/04	0.2	7.0

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/08/04	12	6.78	11.52	13

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/08/04	Dolly Varden	adult	electrofish	3	NA
08/08/04	Dolly Varden	juvenile	electrofish	1	NA
08/08/04	Dolly Varden	juvenile	visual observation	1	NA
08/08/04	Dolly Varden	juvenile/adult	visual observation	16	NA
08/08/04	sculpin sp.	juvenile/adult	electrofish	1	NA

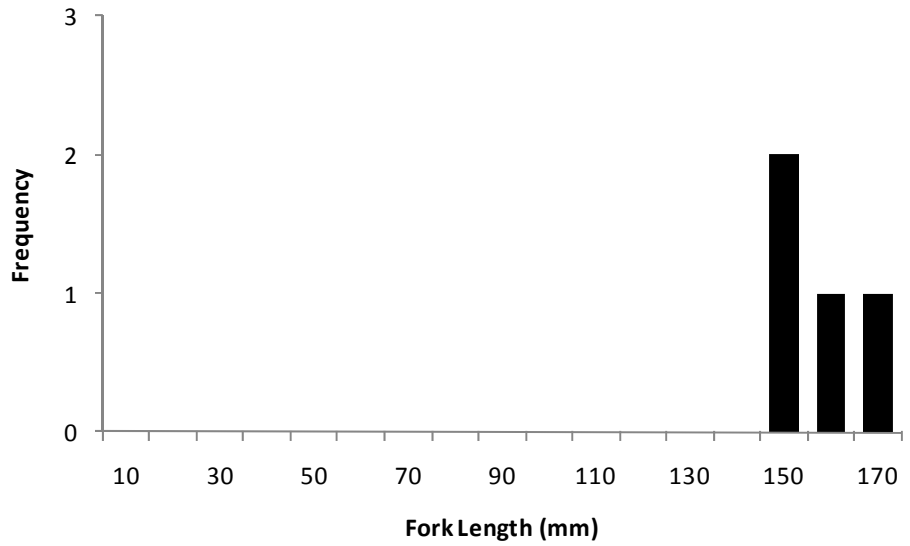


Figure 3. Length frequency distribution for 4 Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: MP_70.3
Watershed: Chinkelyes Cr.
Field Latitude: 59.71178
Field Longitude: -153.77827
Subwatershed: Chinkelyes Cr. trib
Stream: Chinkelyes Cr. trib

Figure 1. Site MP_70.3, taken on 09/15/08.

Channel (surveyed 09/15/08)

Gradient (%): 4
Bankfull depth (m): 0.5
Bankfull width (m): 7
Bed width (m): 6
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/15/08)

Site Length (m): 200
Mean wetted width (m): 6.4
Water Depth (m): 0.2 - 0.25

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	0	**Silt / Sand:**	7
Scour Pools:	0	**Gravel:**	24
Glide:	0	**Cobble:**	50
Riffle:	66	**Boulder:**	19
Cascade:	34	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	4		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/15/08	7.4	11	12.1	14.4

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/15/08	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: MP_71.9
Watershed: Chinkelyes Cr.
Field Latitude: 59.70757
Field Longitude: -153.73903
Subwatershed: Chinkelyes Cr.
Stream: Chinkelyes Cr.

Figure 1. Site MP_71.9, taken on 09/15/08.

Channel (surveyed 09/15/08)

Gradient (%): 3
Bankfull depth (m): 1
Bankfull width (m): 25.5
Bed width (m): 22
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/15/08)

Site Length (m): 214
Mean wetted width (m): 18.7
Water Depth (m): 0.35 - 0.7

Habitat Type (%)		Substrate Composition (%)	
Beaver Pond:	0	**Organics:**	0
Backwater Pools:	1	**Silt / Sand:**	10
Scour Pools:	0	**Gravel:**	10
Glide:	53	**Cobble:**	50
Riffle:	46	**Boulder:**	30
Cascade:	0	**Bedrock:**	0
Dry:	0		
Subsurface:	0		
Culvert:	0		

Wood Pieces: Absent
Beaver Activity: Absent
Cover: Absent

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/15/08	6.5	7.92	11.9	10.8

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/15/08	no fish	NA	snorkel	0	NA

APPENDIX 15.3B

Transportation Corridor, Bristol Bay Basin Survey Data Summaries: Support Survey Sites - Data Collected Upstream or Downstream of Surveyed Primary Survey Sites

Upper Talarik Watershed Group

Transportation Corridor Site Survey Data

Location

Site: A 0.459 **Field Latitude:** 59.91293 **Subwatershed:** UT 1.0
Watershed: UT **Field Longitude:** -155.26379 **Stream:** UT 1.0
No photo of Site A 0.459 was available from the 09/08/04 survey; the stream was revisited for photo documentation on 09/28/07.

Figure 1. Site A 0.459, taken on 09/28/07.

Channel (surveyed 09/08/04)

Gradient (%): 2 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 4.1
Undercut Bank (% Site Length): 50

Habitat Composition (surveyed 09/08/04)

Site Length (m): 163 **Mean Wetted Width (m):** 3.1 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	5
Scour Pools:	15	**Silt:**	0
Slough Pools:	0	**Sand:**	10
Glide:	25	**Gravel:**	60
Riffle:	60	**Cobble:**	20
Cascade:	0	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Present
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/08/04	0.1	3.9

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/08/04	3.2	7.61	14.93	99

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/08/04	coho salmon	juvenile	electrofish	28	NA
09/08/04	coho salmon	juvenile	visual observation	NA	many more than collected
09/08/04	sculpin sp.	juvenile/adult	visual observation	NA	more than 20

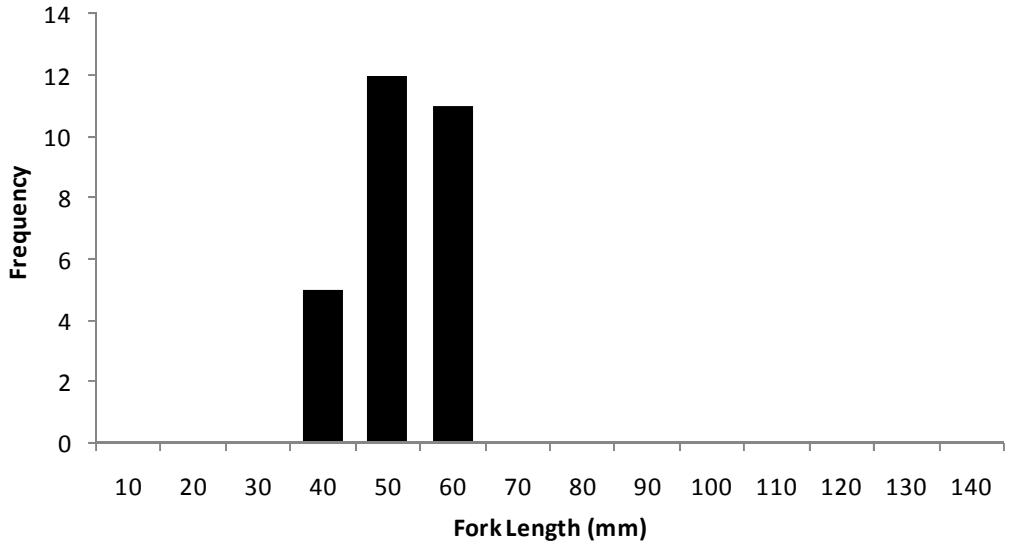


Figure 3. Length frequency distribution for 28 coho salmon collected during September 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: RC07-2
Watershed: UT
Field Latitude: 59.9283
Field Longitude: -155.2826
Subwatershed: UT 1.0
Stream: UT 1.0

Figure 1. Site RC07-2, taken on 09/20/07.

Channel (surveyed 09/20/07)

Gradient (%): 2
Bank height (m): **Right** < 1 **Left** < 1
Mean bankfull width (m): 2.2
Mean bed width (m): 1.8
Undercut Bank (% Site Length): 9

Habitat Composition (surveyed 09/20/07)

Site Length (m): 40 **Mean Wetted Width (m):** 1.8 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	5	**Silt:**	0
Slough Pools:	0	**Sand:**	15
Glide:	0	**Gravel:**	80
Riffle:	95	**Cobble:**	5
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/20/07	0.1	3.8

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/20/07	7.0	no data	11.9	40

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/21/07	coho salmon	juvenile	electrofish	8	NA
09/21/07	coho salmon	juvenile	visual observation	1	NA
09/21/07	Dolly Varden	juvenile	electrofish	1	NA
09/21/07	sculpin sp.	adult	electrofish	2	NA
09/21/07	sculpin sp.	juvenile	electrofish	28	NA
09/21/07	sculpin sp.	juvenile/adult	electrofish	3	NA

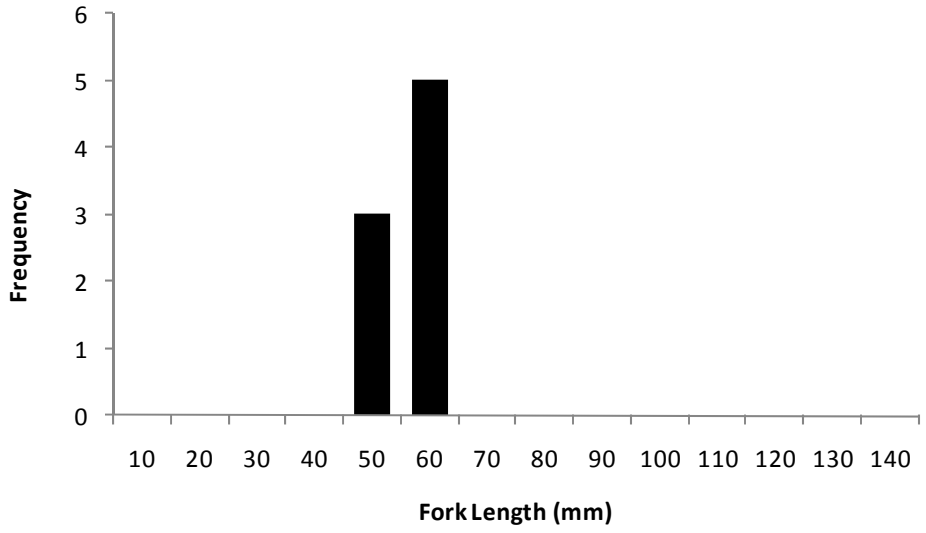


Figure 3. Length frequency distribution for eight coho salmon collected during September 2007 survey

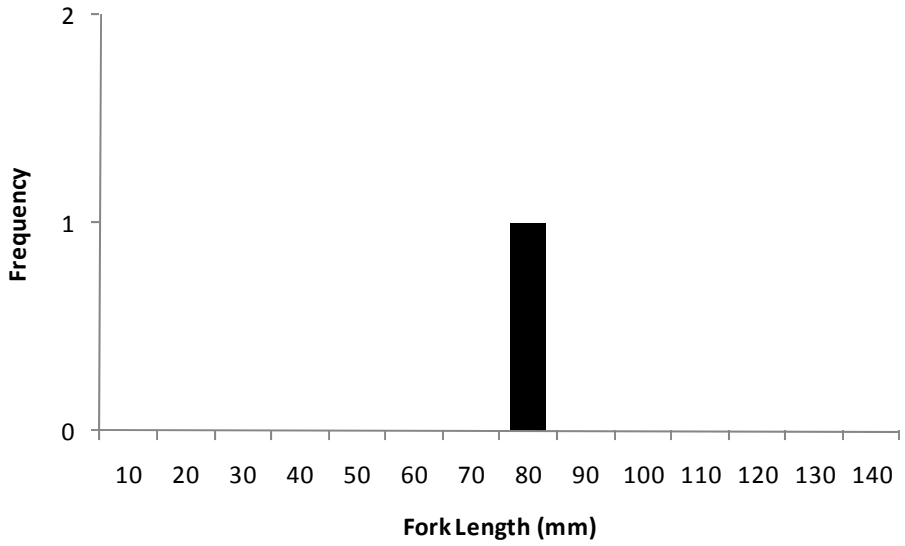


Figure 4. Length frequency distribution for one Dolly Varden collected during September 2007 survey

Transportation Corridor Site Survey Data

Location

Site: B Site 11 **Field Latitude:** 59.93417 **Subwatershed:** UT 1.500
Watershed: UT **Field Longitude:** -155.23871 **Stream:** UT 1.500

Site B Site 11 was dry when visited on 07/21/05; no data was collected. The site was revisited and surveyed on 09/17/07, when flowing water was present.

Figure 1. B Site 11, taken on 09/17/07.

Channel (surveyed 09/17/07)

Gradient (%): 7
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): 1.8
Mean bed width (m): 1.3
Undercut Bank (% Site Length): 14

Habitat Composition (surveyed 09/17/07)

Site Length (m): 35 **Mean Wetted Width (m):** 1.1 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	15	**Organics:**	0
Scour Pools:	20	**Silt:**	0
Slough Pools:	0	**Sand:**	20
Glide:	0	**Gravel:**	35
Riffle:	45	**Cobble:**	40
Cascade:	20	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/17/07	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/17/07	6.9	no data	11.69	67

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/17/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: B Site 8 **Field Latitude:** 59.93536 **Subwatershed:** UT 1.500
Watershed: UT **Field Longitude:** -155.25007 **Stream:** UT 1.500 trib
Site B Site 8 was dry when visited both on 07/21/05 and 09/17/07; no data was collected and no photo is available for this site.

Transportation Corridor Site Survey Data

Location:

Site: B Site 10 **Field Latitude:** 59.93469 **Subwatershed:** UT 1.500
Watershed: UT **Field Longitude:** -155.24306 **Stream:** UT 1.500 trib
Site B Site10 was dry when visited on 07/21/05; no data was collected. The site was revisited and surveyed on 09/29/07, when flowing water was present.

Figure 1. B Site10, taken on 09/29/07.

Channel (surveyed 09/29/07)

Gradient (%): 3.5
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): 1.1
Mean bed width (m): 0.8
Undercut Bank (% Site Length): 20

Habitat Composition (surveyed 09/29/07)

Site Length (m): 35 **Mean Wetted Width (m):** 0.8 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	25
Scour Pools:	10	**Silt:**	25
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	50
Riffle:	90	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/29/07	< 0.1	0.3

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/29/07	4.91	7.31	10.96	105

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/29/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location:

Site: B 6.3736 **Field Latitude:** 59.93551 **Subwatershed:** UT 1.500
Watershed: UT **Field Longitude:** -155.24554 **Stream:** UT 1.500.20

Site B 6.3736 was partially surveyed on 07/22/05; the stream was revisited for a complete survey and photo documentation on 09/30/07.

Figure 1. Site B 6.3736, taken on 09/30/07.

Channel (surveyed 07/22/05, gradient estimated on 09/30/07)

Gradient (%): 2 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 1.3
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 07/22/05)

Site Length (m): 52 **Mean Wetted Width (m):** 1.3 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	10
Scour Pools:	20	**Silt:**	0
Slough Pools:	0	**Sand:**	20
Glide:	0	**Gravel:**	30
Riffle:	80	**Cobble:**	30
Cascade:	0	**Boulder:**	10
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
07/22/05	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
07/22/05	3.32	6.67	11.64	172

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
07/22/05	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: A 1.54 **Field Latitude:** 59.90197 **Subwatershed:** UT 1.410
Watershed: UT **Field Longitude:** -155.23792 **Stream:** UT 1.410

No photo of Site A 1.54 was available from the 09/07/04 survey; the stream was revisited for photo documentation on 09/30/07.

Figure 1. Site A 1.54, taken on 09/30/07.

Channel (surveyed 09/07/04)

Gradient (%): 1.5
Bank height (m): Right < 1 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 1.8
Undercut Bank (% Site Length): 95

Habitat Composition (surveyed 09/07/04)

Site Length (m): 72 **Mean Wetted Width (m):** 2.1 **Mean Water Depth (m):** no data

Habitat Type (%) (surveyed 09/07/04)

Backwater Pools:	0
Scour Pools:	5
Slough Pools:	0
Glide:	80
Riffle:	15
Cascade:	0

Substrate Composition (%) (Surveyed 09/30/07)

Organics:	0
Silt:	15
Sand:	5
Gravel:	80
Cobble:	0
Boulder:	0
Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/07/04	< 0.1	1.3

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/07/04	7.9	7.24	11.84	93.2

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/07/04	coho salmon	juvenile	electrofish	32	NA
09/07/04	coho salmon	juvenile	visual observation	NA	many more, under 60mm
09/07/04	nine-spine stickleback	juvenile	electrofish	1	NA

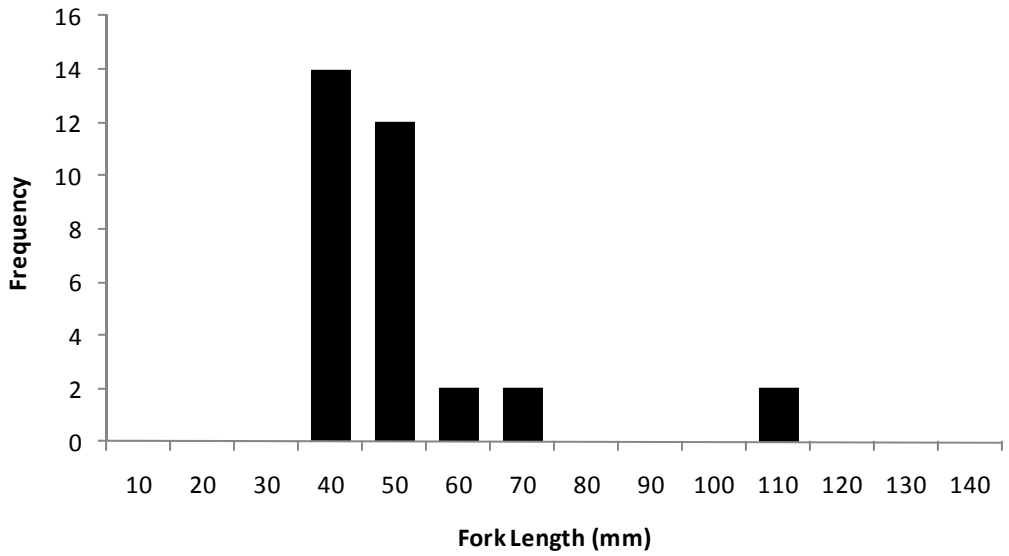


Figure 3. Length frequency distribution for 32 coho salmon collected during September 2004 survey

Transportation Corridor Site Survey Data

Location

Site: A 1.96 **Field Latitude:** 59.90531 **Subwatershed:** UT 1.410
Watershed: UT **Field Longitude:** -155.22839 **Stream:** UT 1.410.10

No photo of Site A 1.96 was available from the 09/06/04 survey; the stream was revisited for photo documentation on 09/30/07.

Figure 1. Photo of Site A 1.96, taken on 9/30/07.

Channel (surveyed 09/06/04; gradient estimated on 09/30/07)

Gradient (%): 1.5 **Bank height (m): Right** < 1 **Left** < 1

Mean bankfull width (m): no data **Mean bed width (m):**1.3

Undercut Bank (% Site Length): 40

Habitat Composition (surveyed 09/06/04)

Site Length (m): 51 **Mean Wetted Width (m):** 1.2 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	10	**Silt:**	0
Slough Pools:	0	**Sand:**	20
Glide:	30	**Gravel:**	60
Riffle:	60	**Cobble:**	20
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/06/04	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/06/04	8	7.33	12.51	58.5

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/06/04	coho salmon	juvenile	electrofish	3	NA
09/06/04	coho salmon	juvenile	visual observation	NA	many more than collected
09/06/04	sculpin sp.	juvenile	electrofish	1	NA

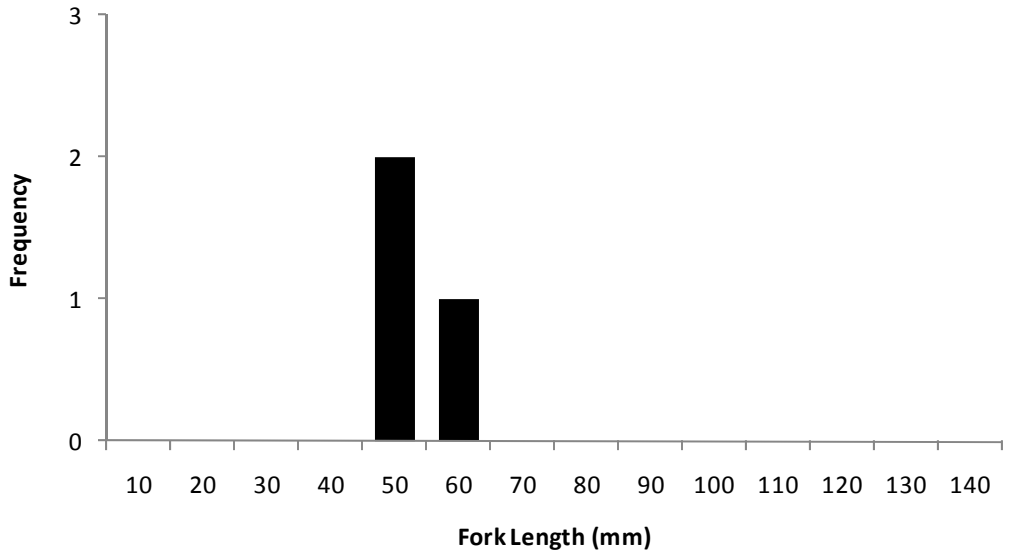


Figure 3. Length frequency distribution for three coho salmon collected during September 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: A 4.59 **Field Latitude:** 59.88292 **Subwatershed:** UT 1.360
Watershed: UT **Field Longitude:** -155.17679 **Stream:** UT 1.360

No photo of Site A 4.59 was available from the 09/07/04 survey; the stream was revisited for photo documentation on 09/29/07.

Figure 1. Site A 4.59, taken on 09/29/07.

Channel (surveyed 09/07/04)

Gradient (%): 2
Bank height (m): **Right** 1-2 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 2.6
Undercut Bank (% Site Length): 65

Habitat Composition (surveyed 09/07/04)

Site Length (m): 104 **Mean Wetted Width (m):** 2.1 **Mean Water Depth (m):** no data

Habitat Type (%)

Backwater Pools: 0
Scour Pools: 0
Slough Pools: 0
Glide: 10
Riffle: 90
Cascade: 0

Substrate Composition (%)

Organics: 0
Silt: 0
Sand: 15
Gravel: 65
Cobble: 20
Boulder: 0
Bedrock: 0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/07/04	< 0.1	0.8

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/07/04	5.2	7.1	13.5	54.2

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/07/04	coho salmon	juvenile	electrofish	2	NA
09/07/04	sculpin sp.	juvenile/adult	visual observation	NA	more than 4

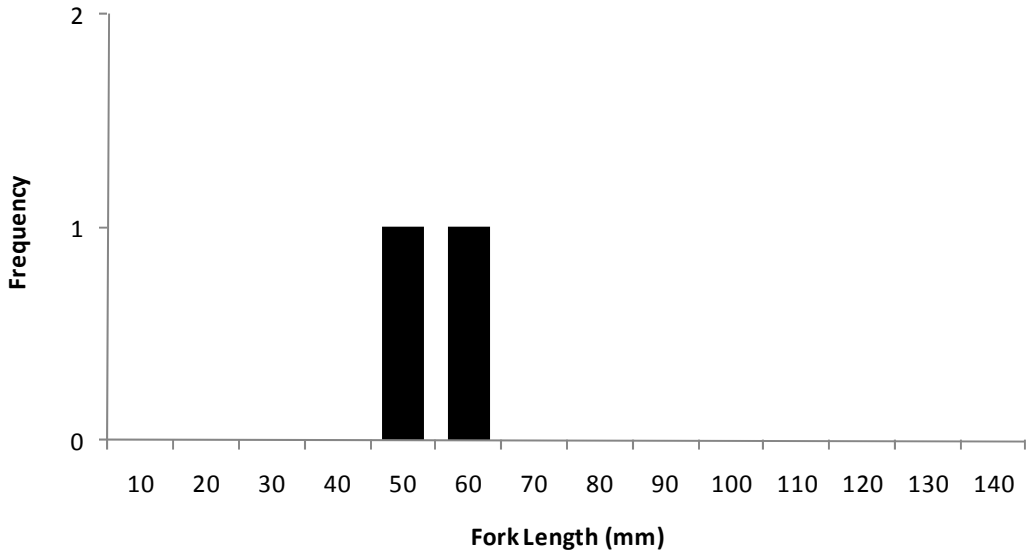


Figure 3. Length frequency distribution for two coho salmon collected during September 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: A 4.86 **Field Latitude:** 59.87932 **Subwatershed:** UT 1.0
Watershed: UT **Field Longitude:** -155.17113 **Stream:** UT 1.0

No photo of Site A 4.86 was available from the 09/06/04 survey; the stream was revisited for photo documentation on 09/30/07.

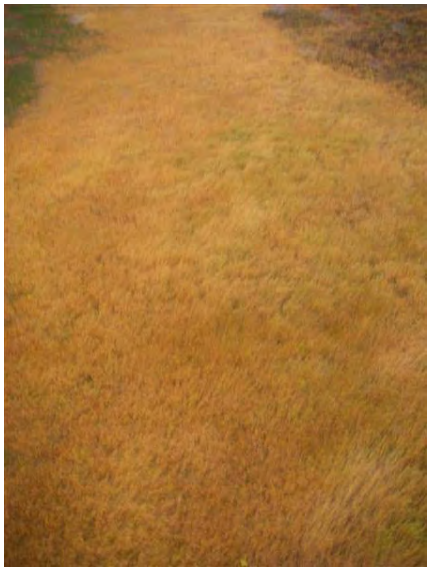


Figure 1. Site A 4.86, taken on 9/30/07.

Channel (surveyed 09/06/04)

Gradient (%): 1 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 18.8
Undercut Bank (% Site Length): 35

Habitat Composition (surveyed 09/06/04)

Site Length (m): 754 **Mean Wetted Width (m):** 8.6 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	5
Scour Pools:	20	**Silt:**	0
Slough Pools:	0	**Sand:**	15
Glide:	40	**Gravel:**	50
Riffle:	40	**Cobble:**	30
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/06/04	0.8	28.4

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/06/04	9	7.44	12.64	81

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/06/04	Chinook salmon	juvenile	electrofish	9	NA
09/06/04	coho salmon	adult	visual observation	18	NA
09/06/04	coho salmon	juvenile	electrofish	21	NA
09/06/04	rainbow trout	adult	electrofish	2	NA
09/06/04	rainbow trout	juvenile	electrofish	2	NA
09/06/04	Arctic grayling	adult	visual observation	NA	more than 8

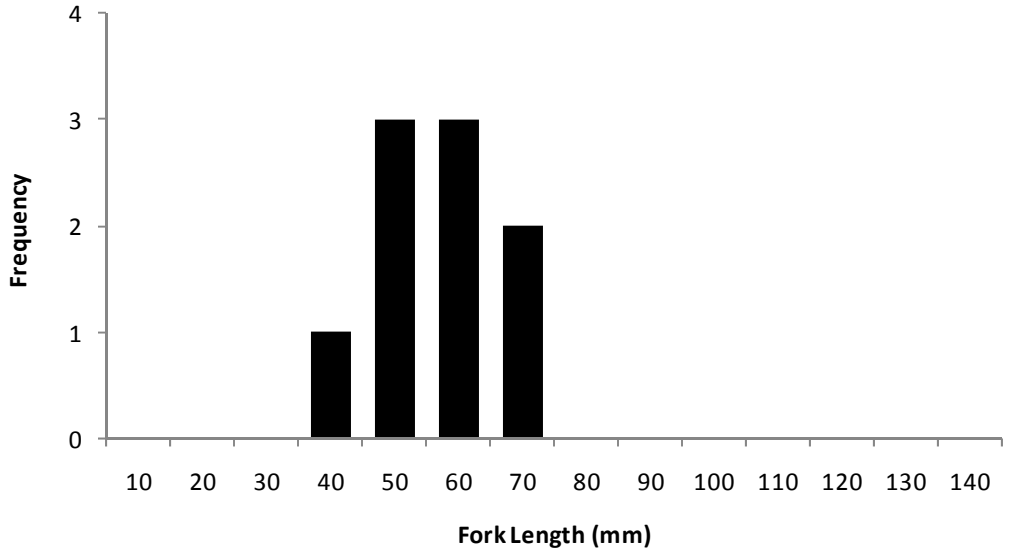


Figure 3. Length frequency distribution for nine Chinook salmon collected during September 2004 survey

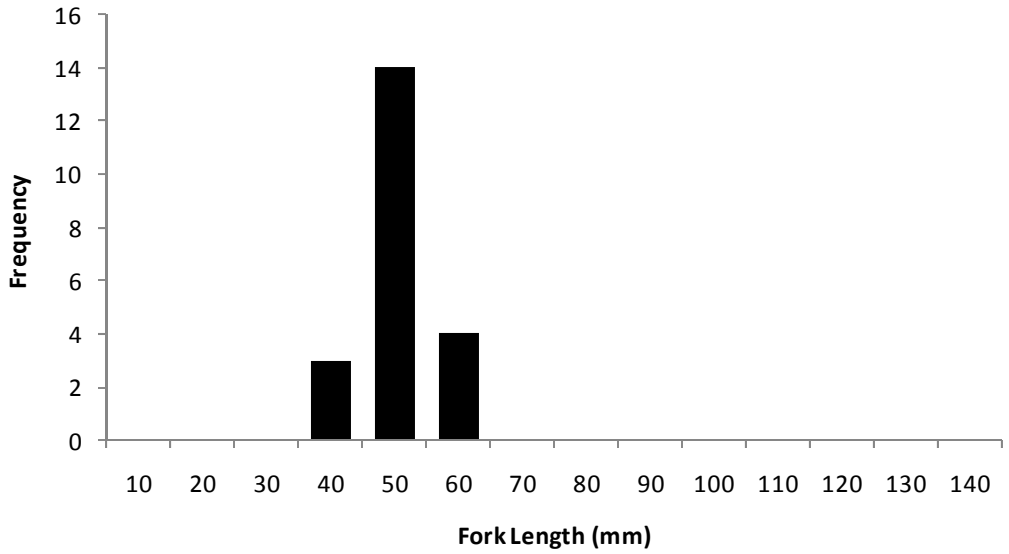


Figure 4. Length frequency distribution for 21 coho salmon collected during September 2004 survey

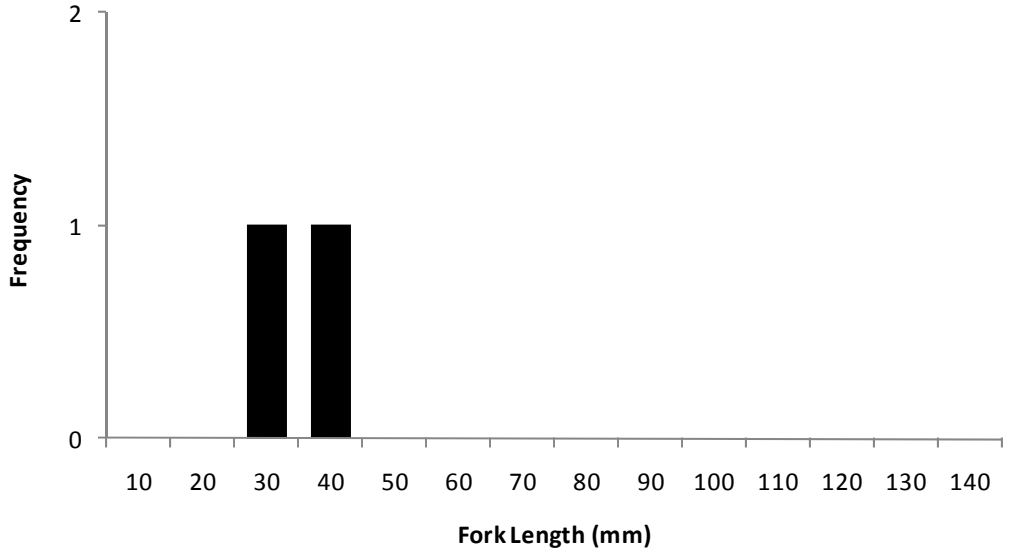


Figure 5. Length frequency distribution for four rainbow trout collected during September 2004 survey

Transportation Corridor Site Survey Data

Location

Site: Mini Creek
Watershed: UT
Field Latitude: 59.87218
Field Longitude: -155.1637
Subwatershed: UT 1.340
Stream: UT 1.340

Figure 1. Site Mini Creek, taken on 09/04/04.

Channel (surveyed 09/28/07)

Gradient (%): 2.75
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): 1.1
Mean bed width (m): 1
Undercut Bank (% Site Length): 57

Habitat Composition (surveyed 09/28/07)

Site Length (m): 35 **Mean Wetted Width (m):** 1 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	5	**Organics:**	0
Scour Pools:	15	**Silt:**	20
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	75
Riffle:	80	**Cobble:**	5
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/28/07	0.1	1.9

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/28/07	5.24	4.43	10.95	16

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/28/07	coho salmon	juvenile	electrofish	1	NA
09/28/07	sculpin sp.	juvenile	electrofish	3	NA

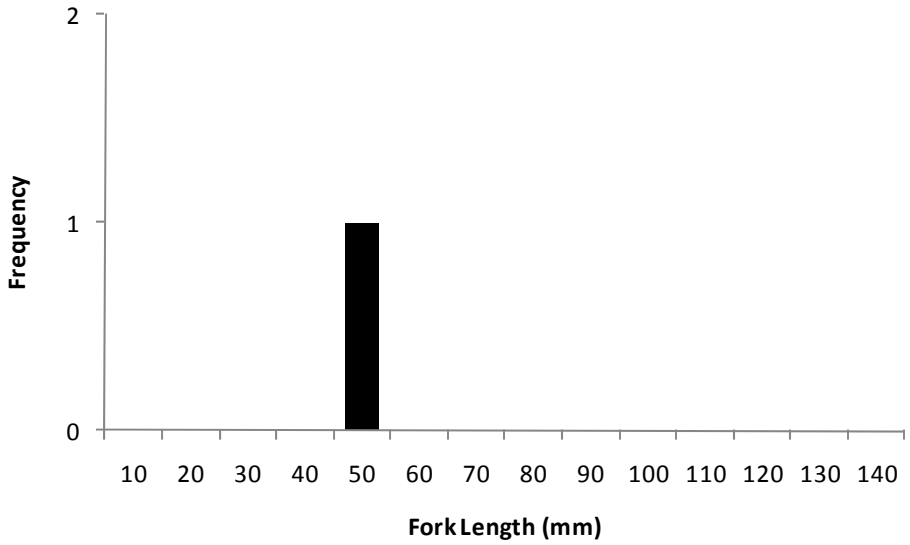


Figure 3. Length frequency distribution for one coho salmon collected during September 2007 survey.

Newhalen Watershed Group

Transportation Corridor Site Survey Data

Location

Site: A 10.21 **Field Latitude:** 59.87809 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -155.03151 **Stream:** secondary Newhalen R. trib

No photo of Site A 10.21 was available from the 09/05/04 survey; the stream was revisited for photo documentation on 09/29/07.

Figure 1. Site A 10.21, taken on 09/29/07.

Channel (surveyed 09/05/04)

Gradient (%): 1.5
Bank height (m): Right <1 **Left** <1
Mean bankfull width (m): no data
Mean bed width (m): 2.9
Undercut Bank (% Site Length): 4

Habitat Composition (surveyed 09/05/04)

Site Length (m): 116 **Mean Wetted Width (m):** 3 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	5
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	20
Glide:	0	**Gravel:**	70
Riffle:	100	**Cobble:**	5
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present within beaver dam
Beaver Activity: Present
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/05/04	< 0.1	1.3

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/05/04	13.2	7.44	11.27	63.8

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/05/04	sculpin sp.	juvenile/adult	visual observation	NA	more than 20
09/05/04	nine-spine stickleback	juvenile/adult	visual observation	NA	more than 20

Transportation Corridor Site Survey Data

Location

Site: A 10.66 **Field Latitude:** 59.88639 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -155.02428 **Stream:** secondary Newhalen R. trib
No photo of Site A 10.66 was available from the 09/06/04 survey; the stream was revisited for photo documentation on 09/29/07.

Figure 1. Site A 10.66, taken on 09/29/07.

Channel (surveyed 09/06/04)

Gradient (%): 1.5 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 1.6
Undercut Bank (% Site Length): 50

Habitat Composition (surveyed 09/06/04)

Site Length (m): 62 **Mean Wetted Width (m):** 1.6 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	10	**Silt:**	0
Slough Pools:	0	**Sand:**	5
Glide:	20	**Gravel:**	70
Riffle:	70	**Cobble:**	20
Cascade:	0	**Boulder:**	0
		Bedrock:	5

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/06/04	< 0.1	0.9

Water Quality:

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/06/04	4.2	7.33	13.74	71.7

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/06/04	Dolly Varden	juvenile	electrofish	1	NA

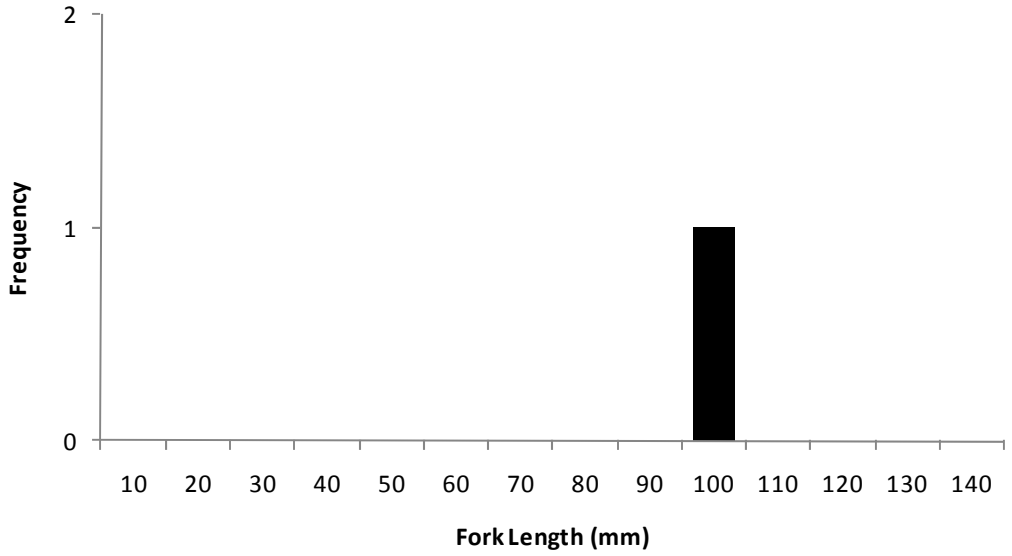


Figure 3. Length frequency distribution for one Dolly Varden collected during September 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: A 12.577 **Field Latitude:** 59.89405 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.97673 **Stream:** secondary Newhalen R. trib

Site A 12.577 was partially surveyed on 09/05/04; the stream was revisited for a complete survey and photo documentation on 09/30/07.

Figure 1. Site A 12.577, taken on 09/30/07.

Channel (surveyed 09/30/07)

Gradient (%): 2 **Bank height (m): Right** < 1 **Left** 1-2
Mean bankfull width (m): 3.4 **Mean bed width (m):** 2.8
Undercut Bank (% Site Length): 29

Habitat Composition (surveyed 09/30/07)

Site Length (m): 60 **Mean Wetted Width (m):** 2.8 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	25	**Silt:**	0
Slough Pools:	0	**Sand:**	10
Glide:	0	**Gravel:**	90
Riffle:	75	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/05/04	< 0.1	0.4
09/30/07	0.3	11.5

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/05/04	4.9	6.76	12.97	46.3
09/30/07	5.0	6.14	12.12	35

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/01/07	coho salmon	juvenile	electrofish	3	NA
10/01/07	sculpin sp.	juvenile	electrofish	9	NA

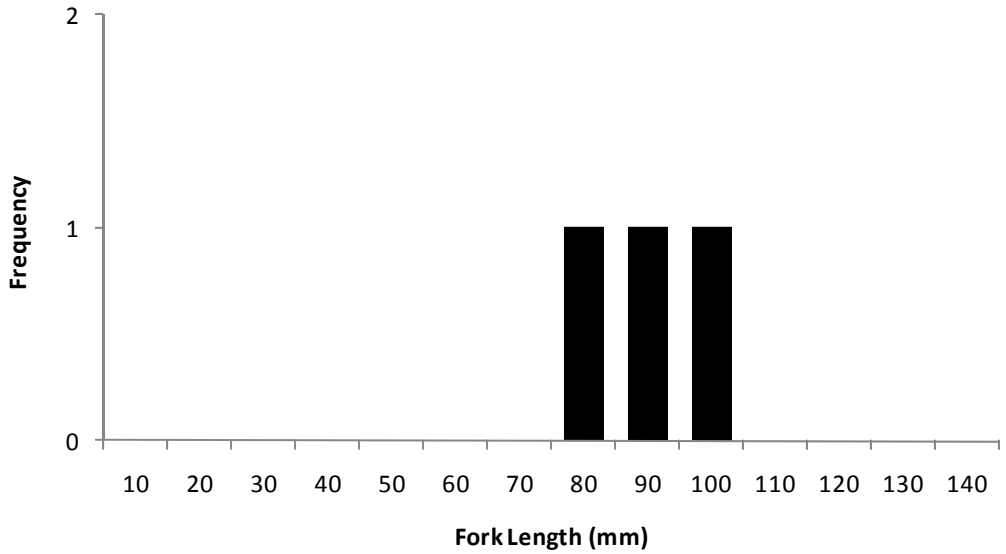


Figure 3. Length frequency distribution for three coho salmon collected during October 2007 survey

Transportation Corridor Site Survey Data

Location

Site: B 14.418 **Field Latitude:** 59.90007 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.93161 **Stream:** secondary Newhalen R. trib

No photo of Site B 14.418 was available from the 07/19/05 survey; the stream was revisited for photo documentation on 09/29/07.

Figure 1. Site B 14.418, taken on 09/29/07.

Channel (surveyed 07/19/05)

Gradient (%): 1.5
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): no data
Mean bed width (m): 3.5
Undercut Bank (% Site Length): 35

Habitat Composition (surveyed 07/19/05)

Site Length (m): 100 **Mean Wetted Width (m):** 2.7 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	5
Scour Pools:	40	**Silt:**	5
Slough Pools:	0	**Sand:**	45
Glide:	20	**Gravel:**	40
Riffle:	40	**Cobble:**	5
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
07/19/05	0.1	5.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
07/19/05	7.8	6.89	3.31	46

Fish Species Composition (no data)

Transportation Corridor Site Survey Data

Location

Site: B 14.06 **Field Latitude:** 59.9001 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.94063 **Stream:** secondary Newhalen R. trib

Figure 1. Site B 14.06, taken on 09/05/04.

Channel (surveyed 09/05/04)

Gradient (%): 1.5 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 2.6
Undercut Bank (% Site Length): 65

Habitat Composition (surveyed 09/05/04)

Site Length (m): 104 **Mean Wetted Width (m):** 1.7 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	5
Scour Pools:	25	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	40	**Gravel:**	85
Riffle:	35	**Cobble:**	10
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/05/04	< 0.1	0.4

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/05/04	6.1	7.3	6.38	47.5

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/05/04	sculpin sp.	juvenile/adult	electrofish	4	NA

Transportation Corridor Site Survey Data

Location

Site: A 13.34 **Field Latitude:** 59.89588 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.95325 **Stream:** tertiary Newhalen R. trib

No photo of Site A 13.34 was available from the 09/05/04 survey; the stream was revisited for photo documentation on 09/30/07.

Figure 1. Site A 13.34, taken on 9/30/07.

Channel (surveyed 09/05/04; gradient estimated on 09/30/07)

Gradient (%): 1.5 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 5.3
Undercut Bank (% Site Length): 10

Habitat Composition (surveyed 09/05/04)

Site Length (m): 213 **Mean Wetted Width (m):** 2.1 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	5
Scour Pools:	15	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	30
Riffle:	85	**Cobble:**	60
Cascade:	0	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/05/04	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/05/04	6.6	7.2	13.51	47.3

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/05/04	sculpin sp.	juvenile/adult	visual observation	NA	more than 20

Transportation Corridor Site Survey Data

Location

Site: B 14.09
Watershed: Newhalen R.
Field Latitude: 59.89951
Field Longitude: -154.94038
Subwatershed: Newhalen R. trib
Stream: tertiary Newhalen R. trib

Figure 1. Site B 14.09, taken on 09/05/04.

Channel (surveyed 09/05/04)

Gradient (%): 1
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): no data
Mean bed width (m): 2.5
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/05/04)

Site Length (m): 100
Mean Wetted Width (m): 1.3
Mean Water Depth (m): no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	10
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	25	**Gravel:**	85
Riffle:	75	**Cobble:**	5
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/05/04	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/05/04	6.8	7.28	7.38	23.2

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/05/04	sculpin sp.	juvenile/adult	electrofish	20	NA

Transportation Corridor Site Survey Data

Location

Site: B 13.36B **Field Latitude:** 59.90773 **Subwatershed:** Newhalen R. trib
Watershed: Newhalen R. **Field Longitude:** -154.94633 **Stream:** Newhalen R. trib
No photo is available for Site B 13.36B.

Channel (surveyed 07/19/05)

Gradient (%): 2 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 7.2
Undercut Bank (% Site Length): 25

Habitat Composition (surveyed 07/19/05)

Site Length (m): 100 **Mean Wetted Width (m):** 6 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	20	**Silt:**	0
Slough Pools:	0	**Sand:**	10
Glide:	5	**Gravel:**	25
Riffle:	75	**Cobble:**	60
Cascade:	0	**Boulder:**	4
		Bedrock:	1

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Absent; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
07/19/05	1.2	43.3

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
07/19/05	10.6	6.72	3.12	72

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
07/19/05	coho salmon	juvenile	electrofish	17	NA
07/19/05	sockeye salmon	adult	visual observation	5	NA
07/19/05	sculpin sp.	juvenile/adult	electrofish	11	NA

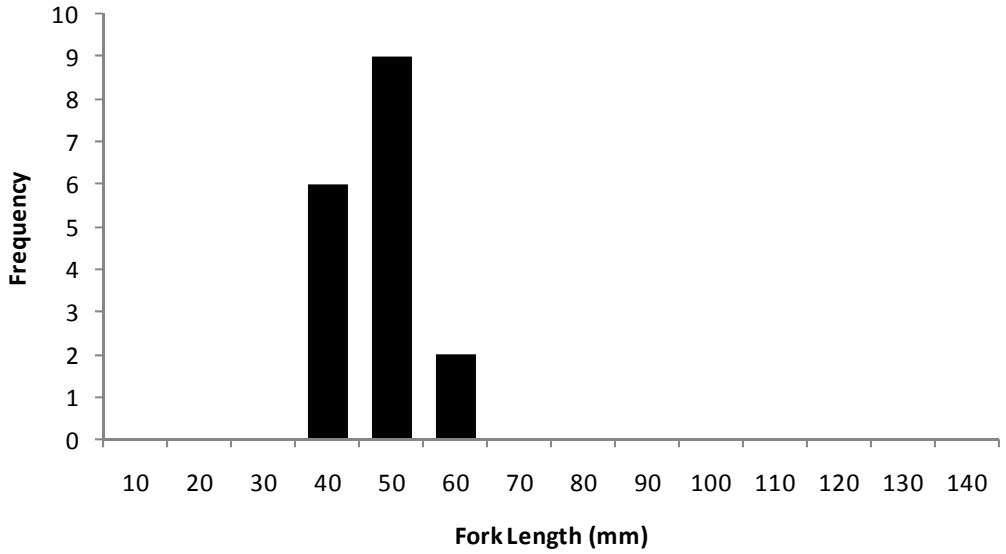


Figure 2. Length frequency distribution for 17 coho salmon surveyed during July 2005 survey.

Transportation Corridor Site Survey Data

Location

Site: B 13.36A
Watershed: Newhalen R.
Field Latitude: 59.90842
Field Longitude: -154.94038
Subwatershed: Newhalen R. trib
Stream: Newhalen R. trib

Figure 1. Site B 13.36A, taken on 09/05/04.

Channel (surveyed 09/05/04)

Gradient (%): 2.5
Mean bankfull width (m): no data
Undercut Bank (% Site Length): 40
Bank height (m): Right > 2 **Left** 1-2
Mean bed width (m): 8.2

Habitat Composition (surveyed 09/05/04)

Site Length (m): 200 **Mean Wetted Width (m):** 10.7 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	5	**Silt:**	0
Slough Pools:	0	**Sand:**	5
Glide:	25	**Gravel:**	80
Riffle:	70	**Cobble:**	14
Cascade:	0	**Boulder:**	1
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/05/04	0.8	29.7

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/23/04	10	no data	no data	no data
08/31/04	8.9	no data	no data	no data
09/05/04	6.8	7.25	7.77	71

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/23/05	coho salmon	juvenile	electrofish	30	NA
08/23/05	coho salmon	juvenile	no data	13	NA
08/31/04	coho salmon	juvenile	electrofish	3	NA
09/05/04	coho salmon	juvenile	electrofish	6	NA
09/06/04	coho salmon	juvenile	electrofish	2	NA
09/07/04	coho salmon	juvenile	electrofish	11	NA
08/23/05	sockeye salmon	juvenile	electrofish	2	NA
09/05/04	Pacific salmon sp.	adult	visual observation	1	NA
09/05/04	Arctic grayling	juvenile	electrofish	4	NA
09/06/04	Arctic grayling	juvenile	electrofish	1	NA
09/07/04	Arctic grayling	juvenile	electrofish	3	NA
08/23/05	Arctic grayling	juvenile	electrofish	3	NA
08/23/05	Dolly Varden	adult	electrofish	1	NA
08/31/04	Dolly Varden	juvenile	electrofish	1	NA
09/05/04	Dolly Varden	juvenile	electrofish	4	NA
09/06/04	Dolly Varden	juvenile	electrofish	3	NA
09/07/04	Dolly Varden	adult	electrofish	1	NA
09/07/04	Dolly Varden	juvenile	electrofish	3	NA
08/31/04	sculpin sp.	juvenile/adult	electrofish	1	NA
09/05/04	sculpin sp.	juvenile/adult	visual observation	NA	many
09/07/04	sculpin sp.	juvenile/adult	electrofish	1	NA
09/05/04	longnose sucker	juvenile	electrofish	2	NA
09/07/04	longnose sucker	juvenile	electrofish	1	NA
09/06/04	longnose sucker	juvenile	electrofish	1	NA

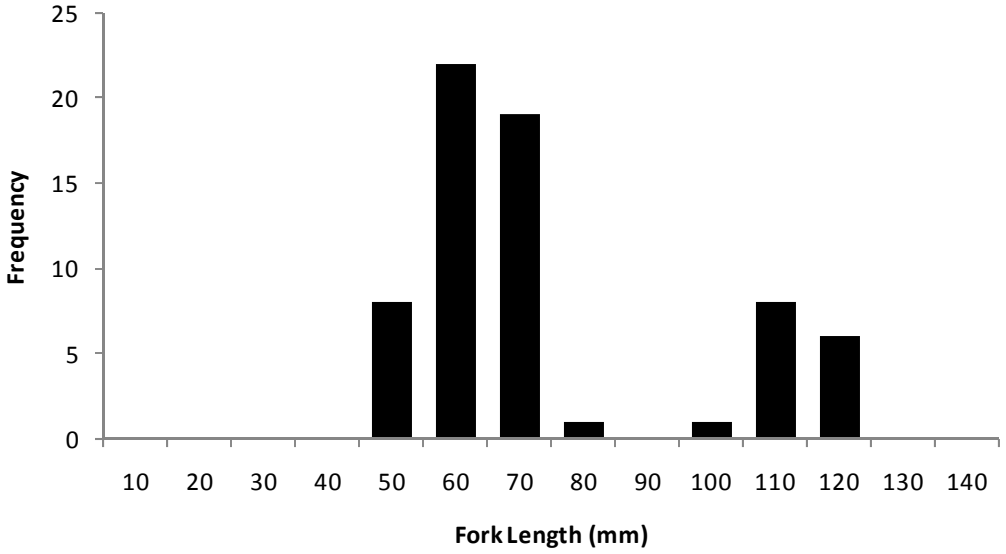


Figure 3. Length frequency distribution for 65 coho salmon collected during August 2004, September 2004, and August 2005 surveys.

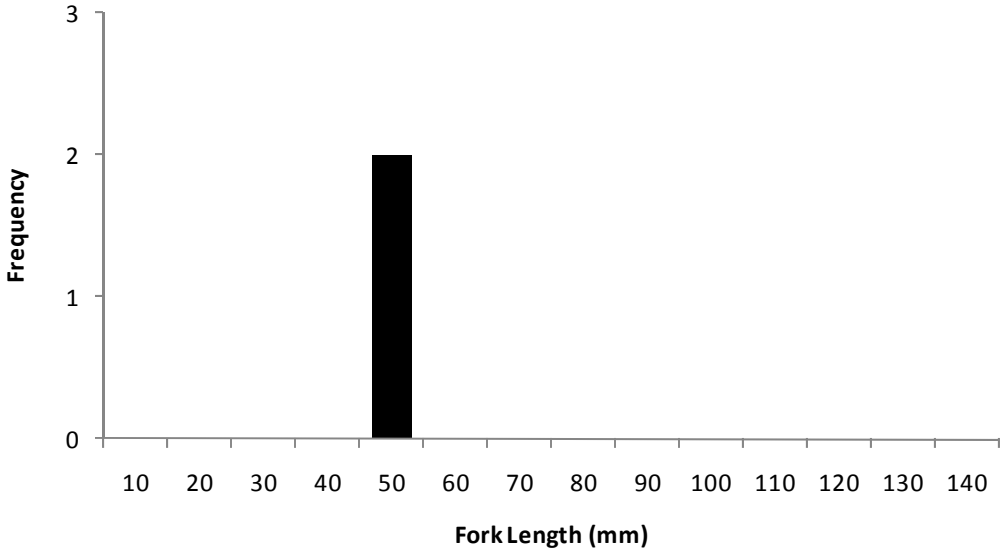


Figure 4. Length frequency distribution for two sockeye salmon collected during August 2005 survey.

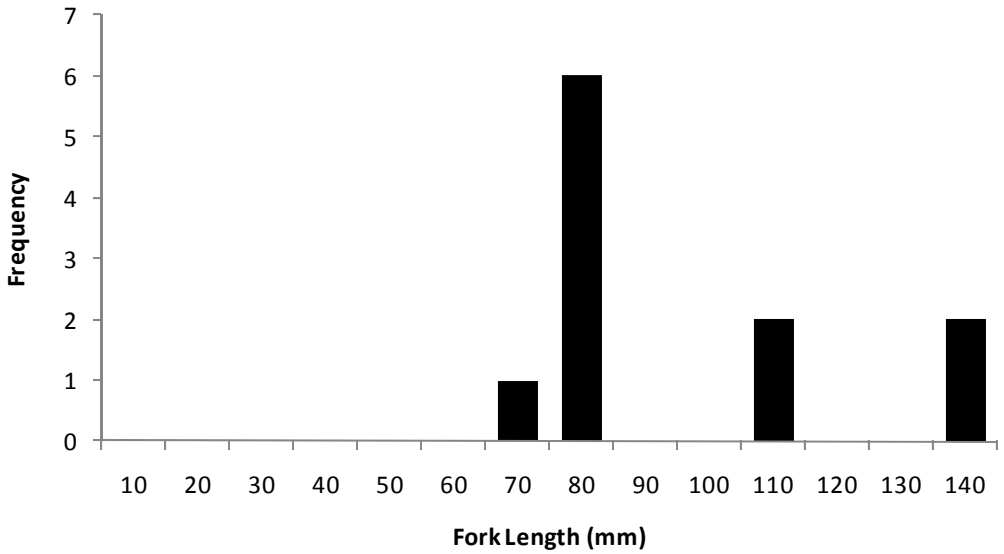


Figure 5. Length frequency distribution for 11 Arctic grayling collected during September 2004 and August 2005 surveys.

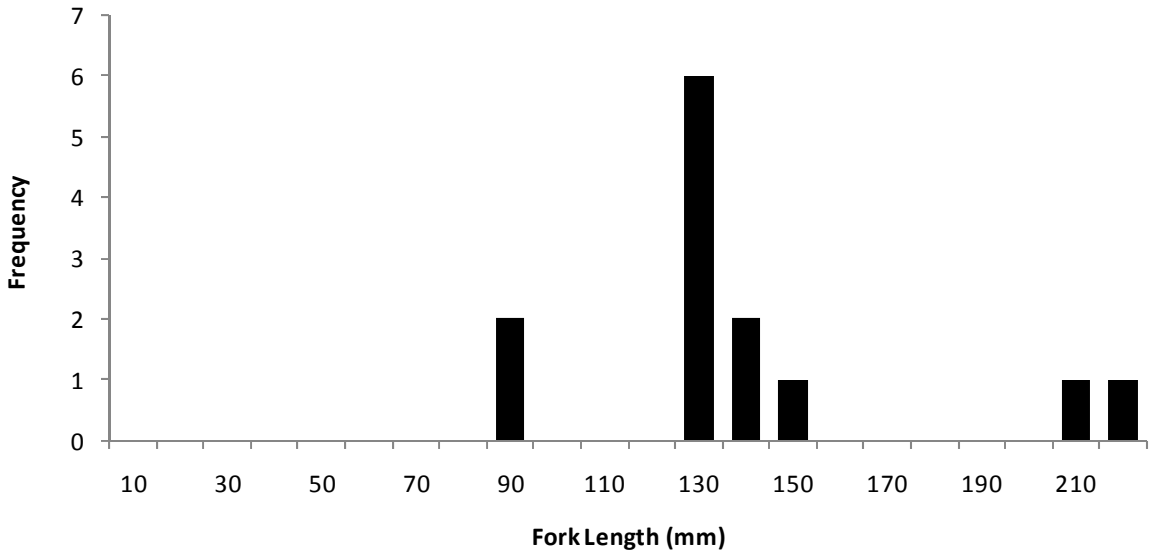


Figure 6. Length frequency distribution for 13 Dolly Varden collected during August 2004, September 2004, and August 2005 surveys.

Isolated Watershed Group

Transportation Corridor Site Survey Data

Location

Site: D 23.344 **Field Latitude:** 59.82481 **Subwatershed:** unnamed lake
Watershed: unnamed lake **Field Longitude:** -154.76566 **Stream:** unnamed lake trib
Site D 23.344 was dry when visited on 07/07/04; no data was collected. When the site was revisited and surveyed on 10/01/07 and 10/02/07, flowing water was present.

Figure 1. Site D 23.344, taken on 10/01/07.

Channel (surveyed 10/01/07)

Gradient (%): 1
Mean bankfull width (m): 1.3
Undercut Bank (% Site Length): 0
Bank height (m): Right < 1 **Left** < 1
Mean bed width (m): 0.3

Habitat Composition (surveyed 10/01/07)

Site Length (m): 35 **Mean Wetted Width (m):** 0.8 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	50
Scour Pools:	0	**Silt:**	50
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	0
Riffle:	100	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/01/07	< 0.1	0.4

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/01/07	5.04	5.56	9.86	38

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/02/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: D 23.539 **Field Latitude:** 59.82211 **Subwatershed:** unnamed lake
Watershed: unnamed lake **Field Longitude:** -154.76724 **Stream:** unnamed lake trib

Site D 23.539 was dry when visited on 07/07/04 and predominately dry with small areas of disconnected ponded water when visited on 10/01/07; no data was collected.

Figure 1. Site D 23.539, taken on 10/01/07.

Roadhouse/ Northeast Bay/ Eagle Bay Watershed Group

Transportation Corridor Site Survey Data

Location

Site: E 22.78 **Field Latitude:** 59.80719 **Subwatershed:** Roadhouse Cr.
Watershed: Roadhouse Cr. **Field Longitude:** -154.80444 **Stream:** Roadhouse Cr.

Figure 1. Site E 22.78, taken on 09/02/04.

Channel (surveyed 09/02/04)

Gradient (%): 1.5 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 2.2
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/02/04)

Site Length (m): 88 **Mean Wetted Width (m):** 2.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	15
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	5	**Gravel:**	10
Riffle:	95	**Cobble:**	70
Cascade:	0	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/02/04	< 0.1	0.4

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/02/04	9.8	7.29	10.34	57.7

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/02/04	sculpin sp.	juvenile/adult	electrofish	12	NA

Transportation Corridor Site Survey Data

Location

Site: E 24.71 **Field Latitude:** 59.80544 **Subwatershed:** Roadhouse Cr. trib
Watershed: Roadhouse Cr. **Field Longitude:** -154.77048 **Stream:** Roadhouse Cr. trib
Site E 24.71 was dry when visited on 07/07/04; no data was collected. The site was revisited and surveyed on 10/02/07, when flowing water was present. The stream lacked a clearly defined channel.

Figure 1. Site E 24.71, taken on 10/02/04.

Channel (surveyed 10/02/07)

Gradient (%): 1 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): 3.3 **Mean bed width (m):** 0.8
Undercut Bank (% Site Length): 30

Habitat Composition (surveyed 10/02/07)

Site Length (m): 50 **Mean Wetted Width (m):** 2.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	60	**Organics:**	50
Scour Pools:	0	**Silt:**	40
Slough Pools:	0	**Sand:**	0
Glide:	20	**Gravel:**	0
Riffle:	20	**Cobble:**	10
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/02/07	< 0.1	0.9

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/02/07	4.61	5.84	11.01	40

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/02/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: D 24.402 **Field Latitude:** 59.80982 **Subwatershed:** Roadhouse Cr. trib
Watershed: Roadhouse Cr. **Field Longitude:** -154.76969 **Stream:** secondary Roadhouse Cr. trib
Site D 24.402 was dry when visited on 07/07/04 and predominately dry with small areas of disconnected ponded water when visited on 10/02/07; no data was collected.

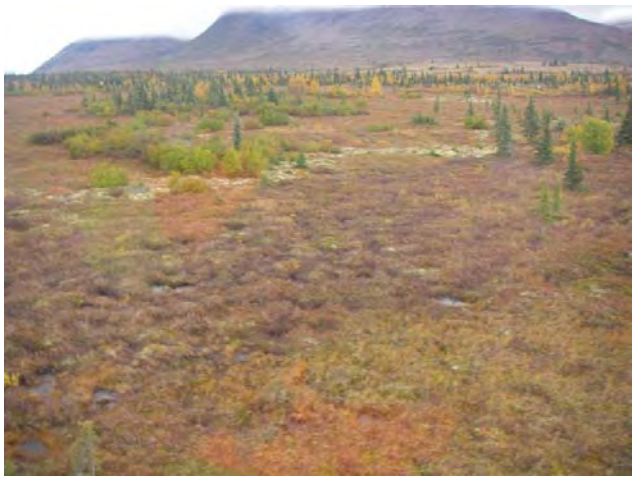


Figure 1. Site D 24.402, taken on 10/02/07.

Transportation Corridor Site Survey Data

Location

Site: E 23.46 **Field Latitude:** 59.80555 **Subwatershed:** Roadhouse Cr. trib
Watershed: Roadhouse Cr. **Field Longitude:** -154.78462 **Stream:** secondary Roadhouse Cr. trib

Figure 1. Site E 23.46, taken on 09/02/04.

Channel (surveyed 09/02/04)

Gradient (%): 1 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 4.5
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 09/02/04)

Site Length (m): 180 **Mean Wetted Width (m):** 2.2 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	10
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	10	**Gravel:**	5
Riffle:	90	**Cobble:**	80
Cascade:	0	**Boulder:**	5
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
09/02/04	< 0.1	0.5

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
09/02/04	8.9	7.2	12	74.8

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
09/02/04	Dolly Varden	juvenile	electrofish	5	NA
09/02/04	sculpin sp.	juvenile/adult	electrofish	20	NA

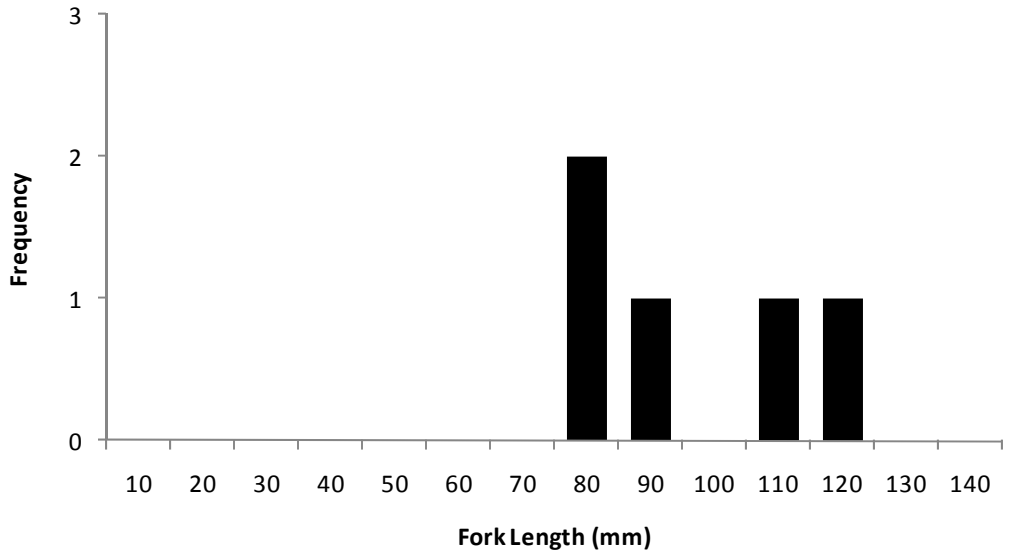


Figure 3. Length frequency distribution for five Dolly Varden collected during September 2004 survey

Transportation Corridor Site Survey Data

Location:

Site: F 24.72 **Field Latitude:** 59.8044 **Subwatershed:** Roadhouse Cr. trib
Watershed: Roadhouse Cr. **Field Longitude:** -154.75993 **Stream:** secondary Roadhouse Cr. trib

No photo of Site F 24.72 was available from the 08/15/04 survey; the stream was revisited for photo documentation on 10/01/07.

Figure 1. Site F 24.72, taken on 10/01/07.

Channel (surveyed 08/15/04)

Gradient (%): 1 **Bank height (m): Right** < 1 **Left** < 1

Mean bankfull width (m): no data **Mean bed width (m):** 1

Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 08/15/04)

Site Length (m): 38 **Mean Wetted Width (m):** 0.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	70
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	95	**Gravel:**	10
Riffle:	5	**Cobble:**	20
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/15/04	< 0.1	< 0.1

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/15/04	10.2	7.2	8.65	87.6

Fish Species Composition (no data)

Transportation Corridor Site Survey Data

Location

Site: D 24.68 **Field Latitude:** 59.80577 **Subwatershed:** Roadhouse Ck. trib
Watershed: Roadhouse Ck. **Field Longitude:** -154.76863 **Stream:** secondary Roadhouse Ck. trib
When visited on 07/07/04, Site D 24.68 was mostly dry with tiny trickles of water; no data was collected. The site was revisited and surveyed on 10/02/07, when flowing water was present at the surveyed site, but the stream had only subsurface flow upstream and downstream of Site D 24.68.

Figure 1. Site D 24.68, taken on 10/02/07.

Channel (surveyed 10/02/07)

Gradient (%): 0.75
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): 3.3
Mean bed width (m): 1
Undercut Bank (% Site Length): 21

Habitat Composition (surveyed 10/02/07)

Site Length (m): 40 **Mean Wetted Width (m):** 2.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	30	**Organics:**	30
Scour Pools:	0	**Silt:**	60
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	10
Riffle:	70	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/02/07	< 0.1	< 0.1

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/02/07	5.06	5.66	9.40	29

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/02/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: F 25.86 **Field Latitude:** 59.80136 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.72307 **Stream:** secondary Eagle Bay trib
Site F 25.86 was dry and lacked a defined stream channel when visited on 08/15/04 and 10/01/07; no data was collected. This area appears to be a wetland.

Figure 1. Site F 25.86, taken on 10/02/07.

Transportation Corridor Site Survey Data

Location

Site: F 27.78 **Field Latitude:** 59.80238 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.67198 **Stream:** tertiary Eagle Bay trib

No photo of Site F 27.78 was available from the 08/15/04 survey; the stream was revisited for photo documentation on 10/02/07.

Figure 1. Site F 27.78, taken on 10/02/07.

Channel (surveyed 08/15/04)

Gradient (%): 1.5 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): no data **Mean bed width (m):** 1.9
Undercut Bank (% Site Length): no data

Habitat Composition (surveyed 08/15/04)

Site Length (m): 76 **Mean Wetted Width (m):** 1.9 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	30
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	50	**Gravel:**	50
Riffle:	50	**Cobble:**	20
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/15/04	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/15/04	4.9	7.18	10.87	59.6

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/15/04	sculpin sp.	juvenile/adult	electrofish	10	NA
08/15/04	ninespine stickleback	juvenile/adult	electrofish	1	NA

Transportation Corridor Site Survey Data

Location

Site: F 28.75 **Field Latitude:** 59.80755 **Subwatershed:** Eagle Bay trib
Watershed: Eagle Bay trib **Field Longitude:** -154.643 **Stream:** tertiary Eagle Bay trib
Site F 28.75 was dry when visited on 08/15/04; no data was collected. The site was revisited and surveyed on 10/04/07, when flowing water was present and the site consisted of a small ephemeral stream flowing through forest habitat. No photo is available for this site.

Channel (surveyed 10/04/07)

Gradient (%): 2
Bank height (m): Right < 1 **Left** < 1
Mean bankfull width (m): 1.7
Mean bed width (m): 1.2
Undercut Bank (% Site Length): 10

Habitat Composition (surveyed 10/04/07)

Site Length (m): 35 **Mean Wetted Width (m):** 1.2 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	20	**Organics:**	90
Scour Pools:	30	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	10
Riffle:	50	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/04/07	< 0.1	0.7

Water Quality:

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/04/07	3.73	6.89	12.22	42

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
10/04/07	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: F 29.68A
Watershed: Eagle Bay Cr.
Field Latitude: 59.80563
Field Longitude: -154.61876
Subwatershed: W. Br. Eagle Bay Cr.
Stream: W. Br. Eagle Bay Cr.

The only available data for Site F 29.68A is fish presence. No photo is available for this site.

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/13/04	Dolly Varden	juvenile	electrofish	7	NA

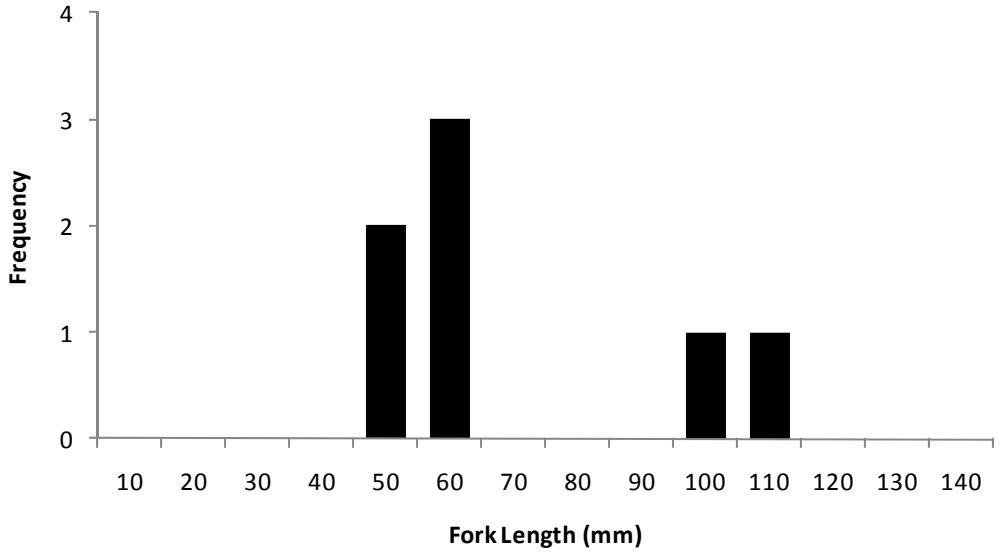


Figure 2. Length frequency distribution for seven Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: F 29.68 **Field Latitude:** 59.80693 **Subwatershed:** W. Br. Eagle Bay Cr.
Watershed: Eagle Bay Cr. **Field Longitude:** -154.61536 **Stream:** W. Br. Eagle Bay Cr.
Site F 29.68 was mostly dry when visited on 08/13/04 and data was collected over a 188 m area. When revisited on 09/01/04, the site was completely dry. The stream was revisited for a complete survey and photo documentation on 10/02/07.

Figure 1. Site F 29.68, taken on 10/02/07.

Channel (surveyed 10/02/07)

Gradient (%): 1 **Bank height (m): Right** < 1 **Left** < 1
Mean bankfull width (m): 6.8 **Mean bed width (m):** 3.9
Undercut Bank (% Site Length): 38

Habitat Composition (surveyed 10/02/07)

Site Length (m): 130 **Mean Wetted Width (m):** 6.8 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	10	**Organics:**	0
Scour Pools:	20	**Silt:**	50
Slough Pools:	5	**Sand:**	10
Glide:	65	**Gravel:**	40
Riffle:	0	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
10/02/07	1.0	36.8

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
10/02/07	4.9	6.45	10.40	82

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/13/04	Dolly Varden	juvenile	electrofish	4	NA
10/02/07	Dolly Varden	juvenile	electrofish	1	NA

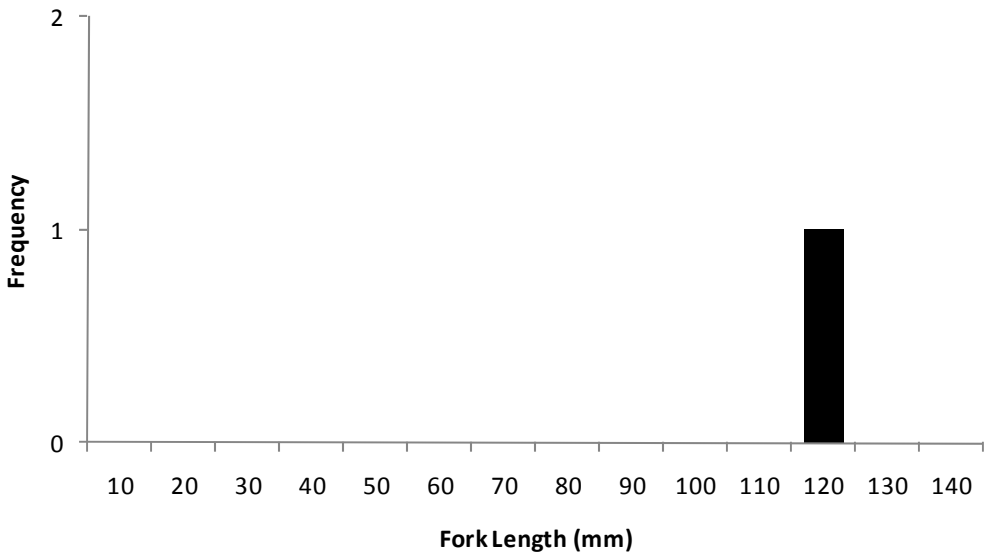


Figure 3. Length frequency distribution for one Dolly Varden collected during the October 2007 survey.

Iliamna River Watershed Group

Transportation Corridor Site Survey Data

Location

Site: I 65.11
Watershed: Iliamna R.
Field Latitude: 59.77761
Field Longitude: -153.8253
Subwatershed: Iliamna R.
Stream: Iliamna R.

Figure 1. Site I 65.11, taken on 08/09/04.

Channel (surveyed 08/09/04)

Gradient (%): 1
Bank height (m): Right > 2 **Left** > 2
Mean bankfull width (m): no data
Mean bed width (m): 62.8
Undercut Bank (% Site Length): 18

Habitat Composition (surveyed 08/09/04)

Site Length (m): 200
Mean Wetted Width (m): 59
Mean Water Depth (m): no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	60
Glide:	100	**Gravel:**	0
Riffle:	0	**Cobble:**	40
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/09/04	12.2	429.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/09/04	11.3	6.9	10.57	16.4

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/09/04	sockeye salmon	adult	visual observation	NA	approximately 3000 in study reach
08/09/04	Dolly Varden	juvenile	electrofish	1	NA
08/09/04	sculpin sp.	juvenile/adult	electrofish	13	NA

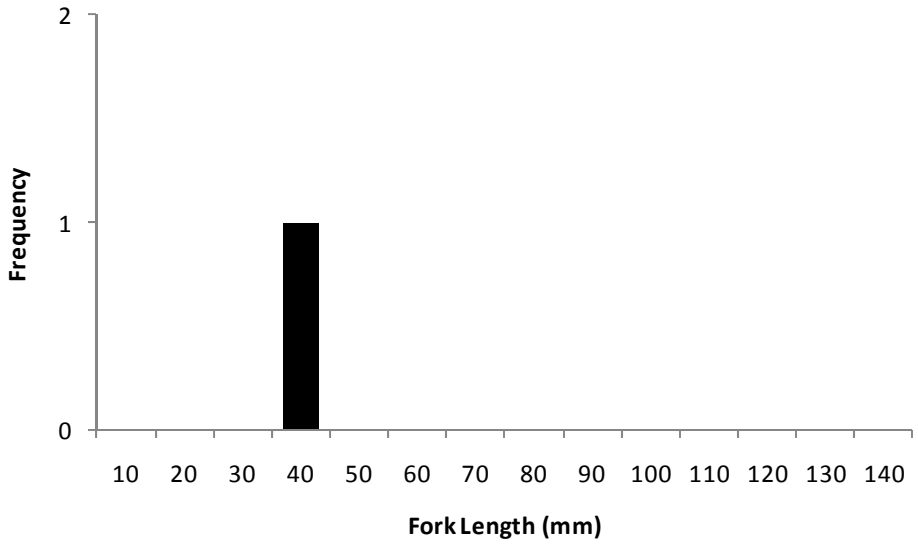


Figure 3. Length frequency distribution for one Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: I 65.07
Watershed: Iliamna R.
Field Latitude: 59.77838
Field Longitude: -153.82471
Subwatershed: Iliamna R.
Stream: Iliamna R. trib

Figure 1. Site I 65.07, taken on 08/09/04.

Channel (surveyed 08/09/04)

Gradient (%): 2
Mean bankfull width (m): no data
Undercut Bank (% Site Length): 0
Bank height (m): Right > 2 **Left** > 2
Mean bed width (m): 19.5

Habitat Composition: (surveyed 08/09/04)

Site Length (m): 200 **Mean Wetted Width (m):** 15.6 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	60
Glide:	90	**Gravel:**	40
Riffle:	10	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/09/04	1.3	45.4

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/09/04	11.7	6.33	8.18	17.2

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/09/04	sockeye salmon	adult	visual observation	166	NA
08/09/04	Dolly Varden	juvenile	electrofish	4	NA
08/09/04	sculpin sp.	juvenile/adult	electrofish	5	NA

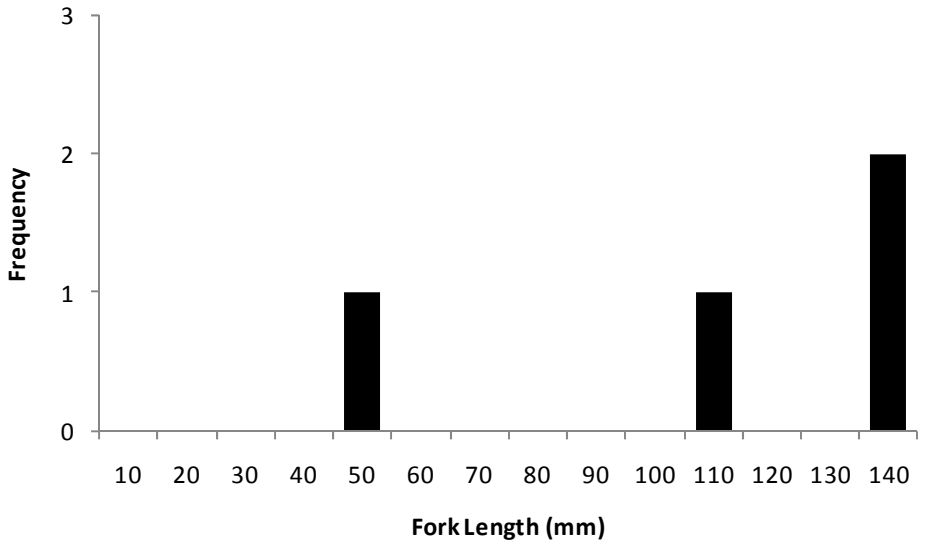


Figure 3. Length frequency distribution for four Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: I 65.71
Watershed: Iliamna R.
Field Latitude: 59.76869
Field Longitude: -153.82381
Subwatershed: Iliamna R. trib
Stream: Iliamna R. trib

Figure 1. Site I 65.71, taken on 08/08/04.

Channel (surveyed 08/08/04)

Gradient (%): 2.5
Bank height (m): Right 1-2 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 25.7
Undercut Bank (% Site Length): 0

Habitat Composition (surveyed 08/08/04)

Site Length (m): 150 **Mean Wetted Width (m):** 4.8 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	40	**Silt:**	0
Slough Pools:	0	**Sand:**	0
Glide:	0	**Gravel:**	20
Riffle:	60	**Cobble:**	80
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/08/04	0.2	8.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/08/04	12.7	6.35	10.94	12.8

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/08/04	Dolly Varden	juvenile	electrofish	1	NA
08/08/04	Dolly Varden	juvenile/adult	visual observation	4	NA
08/08/04	sculpin sp.	juvenile/adult	electrofish	3	NA

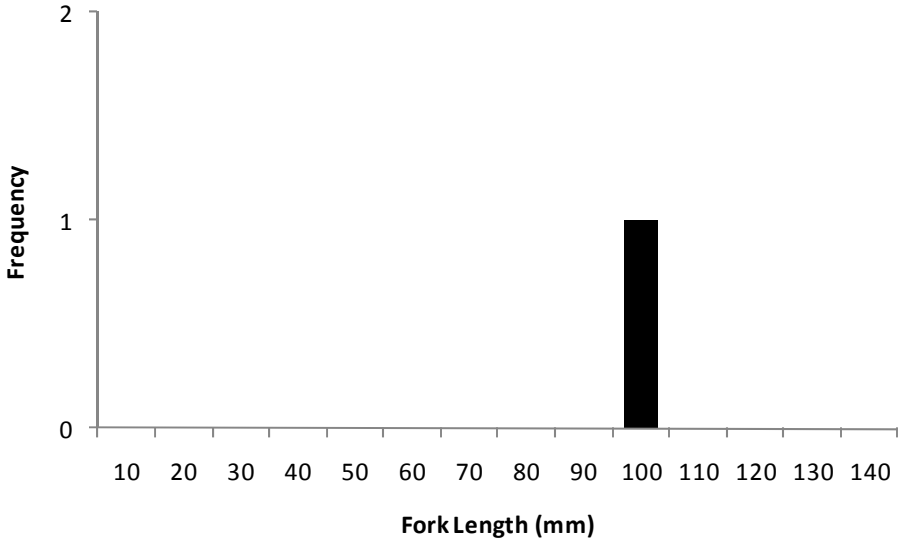


Figure 3. Length frequency distribution for one Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: I 65.63 **Field Latitude:** 59.76991 **Subwatershed:** Iliamna R. trib
Watershed: Iliamna R. **Field Longitude:** -153.82417 **Stream:** Iliamna R. trib
No photo is available for Site I 65.63.

Channel (surveyed 08/08/04)

Gradient (%): 2 **Bank height (m): Right** 1-2 **Left** 1-2
Mean bankfull width (m): no data **Mean bed width (m):** 23.4
Undercut Bank (% Site Length): 2

Habitat Composition (surveyed 08/08/04)

Site Length (m): 200 **Mean Wetted Width (m):** 7.9 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	20
Glide:	50	**Gravel:**	20
Riffle:	50	**Cobble:**	60
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Present
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/08/04	0.5	17.0

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/08/04	14	7.09	10.55	12.3

Fish Species Composition

Date Surveyed	Species	Method	Life Stage	Total Count	Estimated
08/08/04	Dolly Varden	electrofish	juvenile	1	NA
08/08/04	Dolly Varden	visual observation	juvenile/adult	2	NA
08/08/04	sculpin sp.	electrofish	juvenile/adult	1	NA

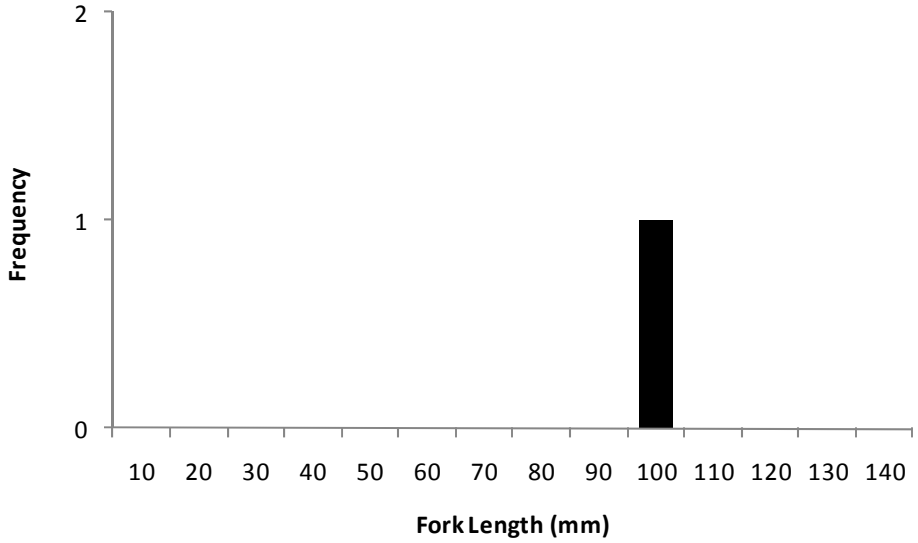


Figure 3. Length frequency distribution for one Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: K 69.66 **Field Latitude:** 59.73289 **Subwatershed:** Chinkelyes Cr.
Watershed: Chinkelyes Cr. **Field Longitude:** -153.80322 **Stream:** Chinkelyes Cr. trib
Site K 69.66 was dry when visited on 08/09/04; no data was collected and no photo is available.

Transportation Corridor Site Survey Data

Location

Site: K 70.0 **Field Latitude:** 59.71869 **Subwatershed:** Chinkelyes Cr.
Watershed: Chinkelyes Cr. **Field Longitude:** -153.79527 **Stream:** Chinkelyes Cr.
Site K 70.0 was found to be ephemeral when visited on 08/08/04 and was surveyed upstream of the culvert.

Figure 1. Site K 70.0, taken on 08/08/04.

Channel (surveyed 08/08/04)

Gradient (%): 0.1 **Bank height (m): Right** 1-2 **Left** 1-2
Mean bankfull width (m): no data **Mean bed width (m):** 1
Undercut Bank (% Site Length): 52

Habitat Composition (surveyed 08/08/04)

Site Length (m): 48 **Mean Wetted Width (m):** 1.5 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	0	**Silt:**	0
Slough Pools:	0	**Sand:**	80
Glide:	90	**Gravel:**	20
Riffle:	10	**Cobble:**	0
Cascade:	0	**Boulder:**	0
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; > 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/08/04	< 0.1	0.2

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/08/04	9.7	6.68	11.15	7.8

Fish Species Composition

Date Surveyed	Species	Life Stage	Method	Total Count	Estimated
08/08/04	no fish	NA	electrofish	0	NA

Transportation Corridor Site Survey Data

Location

Site: K 70.0B **Field Latitude:** 59.71869 **Subwatershed:** Chinkelyes Cr.
Watershed: Chinkelyes Cr. **Field Longitude:** -153.79527 **Stream:** Chinkelyes Cr.
Site K 70.0B was found to be ephemeral when visited on 08/08/04 and was surveyed downstream of the culvert.

Figure 1. Site K 70.0B, taken on 08/08/04.

Channel (surveyed 08/08/04)

Gradient (%): no data
Mean bankfull width (m): no data
Undercut Bank (% Site Length): no data
Bank height (m): no data
Mean bed width (m): 1.6

Habitat Composition (surveyed 08/08/04)

Site Length (m): 64 **Mean Wetted Width (m):** 1.4 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	no data	**Organics:**	no data
Scour Pools:	no data	**Silt:**	no data
Slough Pools:	no data	**Sand:**	no data
Glide:	no data	**Gravel:**	no data
Riffle:	no data	**Cobble:**	no data
Cascade:	no data	**Boulder:**	no data
		Bedrock:	no data

Wood Pieces: no data
Beaver Activity: no data
Overhanging Vegetation: no data

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/08/04	<0.1	0.2

Water Quality (no data)

Fish Species Composition

Date Surveyed	Species	Method	Life Stage	Total Count	Estimated
08/08/04	Dolly Varden	electrofish	juvenile	1	NA
08/08/04	sculpin sp.	electrofish	juvenile/adult	8	NA

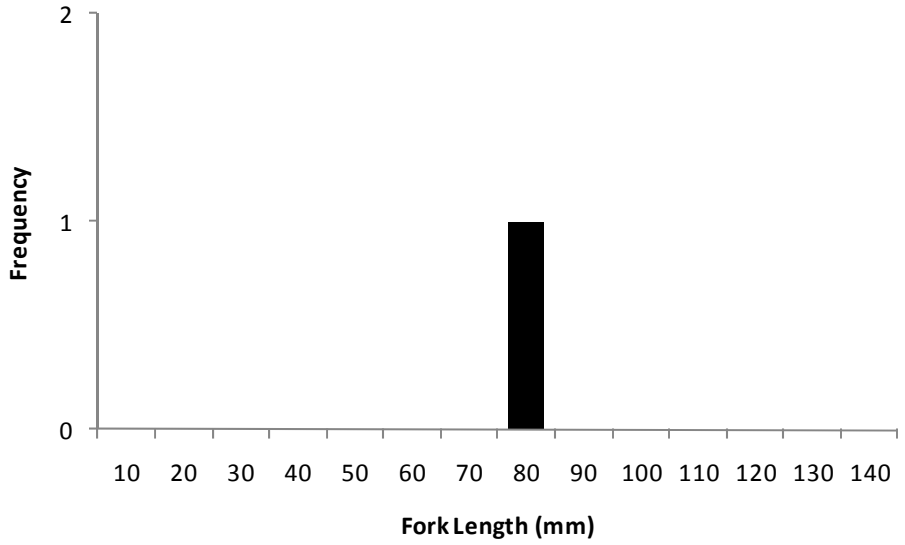


Figure 3. Length frequency distribution for one Dolly Varden collected during August 2004 survey.

Transportation Corridor Site Survey Data

Location

Site: K 71.799 **Field Latitude:** 59.71232 **Subwatershed:** Chinkelyes Cr. trib
Watershed: Chinkelyes Cr. **Field Longitude:** -153.7792 **Stream:** Chinkelyes Cr. trib
Site K 71.799 was dry when visited on 09/04/04; no data was collected and no photo is available.

Transportation Corridor Site Survey Data

Location

Site: K 73.07
Watershed: Chinkelyes Cr.
Field Latitude: 59.70868
Field Longitude: -153.7458
Subwatershed: Chinkelyes Cr.
Stream: Chinkelyes Cr.

Figure 1. Site K 73.07, taken on 08/06/04.

Channel (surveyed 08/06/04)

Gradient (%): 2.5
Bank height (m): Right > 2 **Left** 1-2
Mean bankfull width (m): no data
Mean bed width (m): 32.5
Undercut Bank (% Site Length): no data

Habitat Composition (surveyed 08/06/04)

Site Length (m): 150 **Mean Wetted Width (m):** 30.4 **Mean Water Depth (m):** no data

Habitat Type (%)		Substrate Composition (%)	
Backwater Pools:	0	**Organics:**	0
Scour Pools:	18	**Silt:**	0
Slough Pools:	0	**Sand:**	5
Glide:	2	**Gravel:**	20
Riffle:	80	**Cobble:**	45
Cascade:	0	**Boulder:**	30
		Bedrock:	0

Wood Pieces: Absent
Beaver Activity: Absent
Overhanging Vegetation: Present; < 10%

Estimated Discharge

Date Surveyed	Cubic meters/second (cms)	Cubic feet/second (cfs)
08/06/04	2.6	93.3

Water Quality

Date Surveyed	Water Temp (C)	pH	DO (mg/L)	Specific Conductivity (µS/cm)
08/06/04	11.1	5.8	10.96	8.8

Fish Species Composition

Date Surveyed	Species	Method	Life Stage	Total Count	Estimated
08/06/04	Dolly Varden	electrofish	juvenile	4	NA
08/06/04	sculpin sp.	electrofish	juvenile/adult	7	NA

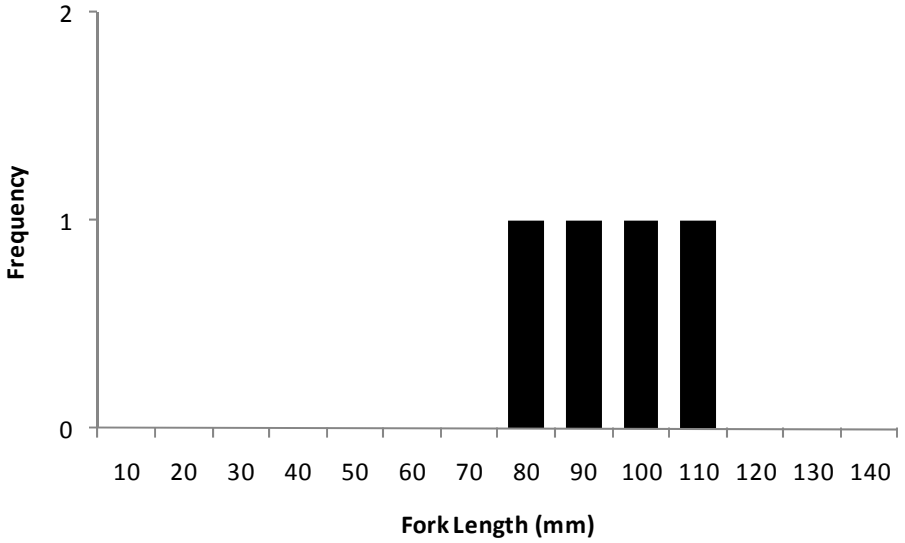


Figure 3. Length frequency distribution for four Dolly Varden collected during August 2004 survey.

15.4 Macroinvertebrates and Periphyton—Transportation Corridor Study Area

15.4.1 Introduction

The macroinvertebrate and periphyton studies in the transportation-corridor study area are part of the overall program of baseline investigations used to describe the current aquatic conditions in the study area. Section 15.2.1 describes what macroinvertebrates and periphyton are, as well as their importance to the environmental baseline studies. The sections below describe the methods for and findings of the macroinvertebrate and periphyton field studies conducted during the summers of 2004 and 2005 in the transportation-corridor study area. Two years of characterization data have been collected; however, for some data sets (e.g., ADF&G methods, chlorophyll-*a*), only one year of baseline data exists because of a change in the sampling methods between 2004 and 2005 (see Section 15.4.4).

15.4.2 Study Objectives

The objectives for the macroinvertebrate and periphyton field and laboratory program were to characterize diversity, abundance, and density of macroinvertebrates and periphyton within freshwater habitats in the transportation corridor study area.

15.4.3 Study Area

The transportation-corridor study area for macroinvertebrates and periphyton in the Bristol Bay drainages consisted of three stream-sampling sites (Figure 15.4-1; Table 15.4-1). These sites were mostly on unnamed streams that were, for reporting purposes, named Bear Den Creek, Red Creek, and Ursa 100B. (The transportation-corridor study area extends eastward beyond the Bristol Bay drainages into the Cook Inlet drainages. Section 40.2 in Chapter 40 describes the macroinvertebrate and periphyton studies in the Cook Inlet drainages study area. Hydrology, water quality, and fish also were studied at all macroinvertebrate and periphyton sites.

15.4.4 Scope of Work

Information review began in spring 2004 and field work was conducted during the 2004 and 2005 field seasons. Sample and data analysis was conducted throughout that time and continued into 2006. The macroinvertebrate and periphyton studies were conducted in accordance with the applicable procedures described in Chapter 11 of the consolidated study program for the environmental baseline studies (see Appendix E of this environmental baseline document). Overall QA/QC for the baseline studies are described in the annual quality assurance project plans (see Appendix G of this environmental baseline document).

The 2004 sampling program in the transportation-corridor study area consisted of the following tasks:

- Macroinvertebrate sampling using the ASCI method. One composite sample was collected at each site.

- Macroinvertebrate sampling using the drift-net method. One composite sample was collected at each site.
- Periphyton sampling using the modified RBP method. One composite diatom sample sample was collected at each site.
- Ambient water-quality measurements. One measurement of each parameter was recorded at each site.

Preliminary analysis of 2004 data and discussions on proposed data use and conditions in the study area resulted in a decision to modify the sampling program for 2005. The 2005 sampling program consisted of the following tasks:

- Macroinvertebrate sampling using the ASCI method. One composite sample was collected at each site.
- Macroinvertebrate sampling using the Surber sampler semi-quantitative method. Five samples were collected at each site.
- Periphyton sampling using the ADF&G method. Ten chlorophyll a samples were collected at each site.
- Ambient water-quality measurements. One measurement of each parameter was recorded at each site.

15.4.5 Macroinvertebrate Methods

In 2004, sampling for macroinvertebrates in the transportation-corridor study area occurred during one event on August 17 and 18. In 2005, sampling occurred on June 11 and 12. Sampling was conducted at the same three sites in both years (Figure 15.4-1). Methods for collection and processing of macroinvertebrates and for analyses of the data were the same as those used for the mine study area in 2004 and 2005 (Section 15.2.5). A duplicate sample was collected at one sample site (10 percent) for QA/QC purposes.

15.4.6 Periphyton Methods

Sampling for periphyton in the transportation-corridor study area was concurrent with sampling for macroinvertebrates (Section 15.4.5). Methods for collection and processing of periphyton samples and analyses of the data were the same as those used in the mine study area in 2004 and 2005 (Section 15.2.6). A duplicate sample was collected at one site (10 percent) for QA/QC purposes.

15.4.7 Results and Discussion

15.4.7.1 Macroinvertebrates

During the 2004 and 2005 sampling events six composite drift samples, nine composite ASCI samples and 15 Surber samples were collected in the transportation-corridor study area. Macroinvertebrates were collected successfully from all sites except Red Creek in 2004; the ASCI sample collected at Red Creek in August 2004 was lost because of a broken sample bottle. Two hundred thirty five macroinvertebrate

taxa, including 64 Chironomidae taxa, have been identified in the Bristol Bay drainages study area (which includes both the mine [Section 15.2] and the transportation-corridor study areas). Tables 15.2-2 and 15.2-3 list all the taxa identified. Three of the non-Chironomidae macroinvertebrate taxa and three of the Chironomidae taxa were identified only in transportation-corridor study area samples. Of the non-Chironomidae taxa identified only in the transportation-corridor study area samples, one taxon was identified only in 2004. One of the Chironomidae taxa identified only in transportation-corridor study area samples was identified only in samples collected in 2004, and two were identified only in samples from 2005. Differences in numbers of taxa collected in 2004 compared to 2005 could be the result of changes in the sampling program. However, the difference in taxa richness between 2004 and 2005 at transportation-corridor study area sites was not as great as the difference in the mine study area. The same number of sites was sampled in the transportation-corridor study area in both years (three total), which could account for the smaller difference in taxa richness, as compared to the mine study area where the number of sites was reduced in 2005 from 20 to eight (offering less opportunity for collecting organisms).

Metrics that describe the macroinvertebrate population at each sample site were calculated as described in Section 15.2.5.3. The results are shown by year and sampling method in Tables 15.4-2 through 15.4-5. Figures 15.4-2 and 15.4-3 illustrate taxa richness at transportation-corridor study area sites in 2004 and 2005, respectively. Slightly more taxa per site were collected using the ASCI method in 2004 than in 2005, indicating possible interannual variability. The number of taxa collected in 2005 from riffle/cobble areas by Surber sampler was generally less than the in ASCI samples, which were collected in more diverse habitats. Habitat data collected at the time of sampling indicated that riffle/cobble areas comprised a large component of the habitats in streams along the transportation-corridor study area. At sites sampled in 2005, the proportion of riffle/cobble habitat in each stream reach ranged from 70 to 85 percent. The non-cobble habitats sampled (using ASCI methods) in the transportation-corridor study area appear to have higher taxa richness than those sampled in the mine study area, where the difference between ASCI and Surber samples was smaller.

Unlike the mine study area, Diptera, including the Family Chironomidae, was not the clearly dominant taxa at sampling sites in the transportation-corridor study area (Figures 15.4-4 and 15.4-5). In 2005, Diptera comprised a higher percentage than EPT in ASCI samples from all the sites, while EPT taxa comprised a higher percentage than Diptera in Surber samples from all the sites. This may indicate that there were more Diptera taxa in the varied habitats sampled using ASCI methods.

Measurements of water-quality and habitat-quality parameters at each site (Tables 15.4-6 through 15.4-8) fall within ranges considered good to optimal for aquatic and riparian habitat (Major and Barbour, 2001). The concentration of DO was consistently high at all sites and supersaturation (DO higher than 100 percent) was found at some sites (see explanation in Section 15.2.7.1). Water temperature ranged from 5.5 to 13.2°C and was much lower in 2005 than in 2004 except at Ursa 100B (Tables 15.4-6 and 15.4-7). No statistical analyses were performed on water-quality and macroinvertebrate metric data because of limited data, and no trends were immediately obvious.

15.4.7.2 Periphyton

Periphyton was collected successfully from all three sites during the 2004 and 2005 sampling events. In 2004, 36 diatom genera and 188 species were found in the Bristol Bay drainages study area (Table 15.2-20). In 2005, periphyton samples were collected for analysis for chlorophyll-*a* concentration as a quantifiable measure of productivity (Table 15.4-9).

Among the three sites sampled in the transportation-corridor study area in 2004, periphyton taxa richness ranged from 13 to 22 (Table 15.4-9 and Figure 15.4-6) and percent dominant taxon ranged from 52 to 68 percent (Table 15.4-9). In 2005, chlorophyll-*a* concentrations were highest at Bear Den Creek and lowest at Ursa 100B (Table 15.4-9 and Figure 15.4-7). All three of these sites were largely dominated by Chironomidae (more than 60 percent), of which some genera feed heavily on periphyton. Statistical analysis of these results was not performed because of the limited data set.

15.4.8 Summary

Three sites were sampled in the transportation-corridor study area during the fall of 2004 and the spring of 2005. Methods for collection and analysis differed between 2004 and 2005 for both macroinvertebrates and periphyton. Sample sites selected varied in stream size and habitat. Aquatic habitat surveys indicate that the sample sites consisted largely of riffle/cobble habitat, which is the highest quality habitat for EPT taxa.

A range of macroinvertebrate and periphyton sample-collection methods was employed during the beginning stages of this project to determine which methods would work best in these systems. The variety of methods used contributes greatly to the robustness of the baseline data-collection. Slightly more taxa per site were collected using the ASCI method in 2004 than in 2005, indicating possible interannual variability. The number of taxa collected in 2005 from riffle/cobble areas by Surber sampler was generally less than the in ASCI samples, which were collected in more diverse habitats. The non-cobble habitats sampled (using ASCI methods) in the transportation-corridor study area appear to have higher taxa richness than those sampled in the mine study area, where the difference between ASCI and Surber samples was smaller.

Unlike the mine study area, Diptera was not the dominant taxa at sampling sites in the transportation-corridor study area. In 2005, Diptera comprised a higher percentage than EPT in ASCI samples from all the sites, while EPT taxa comprised a higher percentage than Diptera in Surber samples from all the sites. This may indicate that there were more Diptera taxa in the varied habitats sampled using ASCI methods.

Periphyton taxa richness and chlorophyll-*a* concentrations were both higher at Bear Den Creek than at the other two sites.

15.4.9 References

Major, E.B., and M.T. Barbour. 2001. The Alaska Stream Condition Index (ASCI): A Modification of the USEPA Rapid Bioassessment Protocols. Prepared for Alaska Department of Environmental Conservation, Anchorage, Alaska.

15.4.10 Glossary

Diatom—microscopic algae with cells that have two separate halves and walls made of silicon.

Macroinvertebrates—organisms with no backbone and that are large enough to be seen without the aid of a microscope.

Metrics—standards of measurement.

Periphyton—micro-algae that attaches to rocks or other solid surfaces.

Taxon (plural: taxa)—a taxonomic category or group, such as a phylum, order, family, genus, or species.

TABLES

TABLE 15.4-1
Macroinvertebrate and Periphyton Sampling Sites, Transportation-corridor Study Area, 2004 and 2005

Sample Location	Year	Month											
		J	F	M	A	M	J	J	A	S	O	N	D
Bear Den Creek	2004								D				
	2005						S						
Red Creek	2004								D				
	2005						S						
Ursa 100B	2004								D				
	2005						S						

Notes:

D = Macroinvertebrate sites sampled with drift nets AND ASCI methods; periphyton collected with RBP, and diatoms were assessed.

S = Macroinvertebrate sites sampled with Surber sampler AND ASCI methods; periphyton collected with ADNR methods, and chlorophyll-*a* was assessed.

TABLE 15.4-2
Macroinvertebrate Metrics for Data Collected Using the ASCI Method, Transportation-corridor Study Area, August 2004

Site ID	Taxa Richness [a]	Percent EPT	Percent Chironomidae	Percent Other Diptera	6. What type and start .	CTI
Bear Den	26	23	64	6	10	4.8
Red Creek [b]	N/A	N/A	N/A	N/A	N/A	N/A
Ursa 100B	26	55	35	6	13	3.8

Notes:

a. Includes Chironomidae genera.

b. Data not available, sample container broke during shipping.

c. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.4-3
Macroinvertebrate Metrics for Data Collected Using the Drift-net Method, Transportation-corridor Study Area, August 2004

Site ID	Taxa Richness [a]	Percent EPT	Percent Chironomidae	Percent Other Diptera	Percent Dominant Taxon [b]	CTI
Bear Den	2	50	50	0	50	3.5
Red Creek	10	11	42	5	29	6.2
Ursa 100B	15	29	24	36	33	5.0

Note:

a. Includes Chironomidae genera.

b. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.4-4
Macroinvertebrate Metrics for Data Collected Using the ASCI Method, Transportation-corridor Study Area, June 2005

Site ID	Taxa Richness [a]	Percent EPT	Percent Chironomidae	Percent Other Diptera	Percent Dominant Taxon [b]	CTI
Bear Den	19	26	69	5	29	5.3
Red Creek	17	37	60	2	31	5.0
Ursa 100B	24	25	63	9	22	4.8

Note:

a. Includes Chironomidae genera

b. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.4-5
Macroinvertebrate Metrics for Data Collected Using the Surber Method, Transportation-corridor Study Area, June 2005

Site ID	Taxa Richness [a, b] Mean Value	Percent EPT [a] Mean Value	Percent Chironomidae [a] Mean Value	Percent Other Diptera [a] Mean Value	Percent Dominant Taxon [a,c] Mean Value	CTI [a] Mean Value
Bear Den	16	61	11	17	28	3.9
Red Creek	8	42	31	2	35	4.9
Ursa 100B	9	64	23	11	31	3.2

Note:

a. Mean values are averages for five samples per site.

b. Includes Chironomidae genera.

c. Note that percent dominant taxon is calculated based on genera, whereas Chironomidae and other metrics are based on family-level taxonomic identifications and, therefore, may not match the percent dominant taxon.

TABLE 15.4-6
Ambient Water-quality Measurements, Transportation-corridor Study Area, August 2004

Site ID	Dissolved Oxygen (mg/L)	Dissolved Oxygen (percent)	Temp (°C)	Relative Conductivity (mS/cm)	Specific Conductivity (mS/cm)	pH
Bear Den	11.8	105	10.2	45	63	7.1
Red Creek	10.4	97	13.2	24	31	6.9
Ursa 100B	13.0	118	11.0	52	71	7.2

TABLE 15.4-7
Ambient Water-quality Measurements, Transportation-corridor Study Area, June 2005

Site ID	Dissolved Oxygen (mg/L)	Dissolved Oxygen (percent)	Temp (°C)	Relative Conductivity (mS/cm)	Specific Conductivity (mS/cm)	pH
Bear Den	12.3	99	6.2	56	36	7.0
Red Creek	12.7	101	5.5	12	20	6.2
Ursa 100B	11.0	97	10.0	49	69	7.2

TABLE 15.4-8
Average Scores for Select Aquatic Habitat-quality Parameters, Transportation-corridor Study Area, August 2004 and June 2005

Site ID	Epifaunal Substrate	Embeddedness	Velocity-depth	Sediment Deposition	Channel Flow Status	Channel Alteration	Channel Sinuosity	AVERAGE
Bear Den Cr	20	20	19	20	18	20	20	20
Red Creek	18	20	15	20	20	20	20	19
Ursa 100B	20	17	20	18	15	20	20	19
SCORE RANKING: Optimal 20-16, Suboptimal (Good) 15-11, Marginal 10-6, Poor 5-1 [a]								

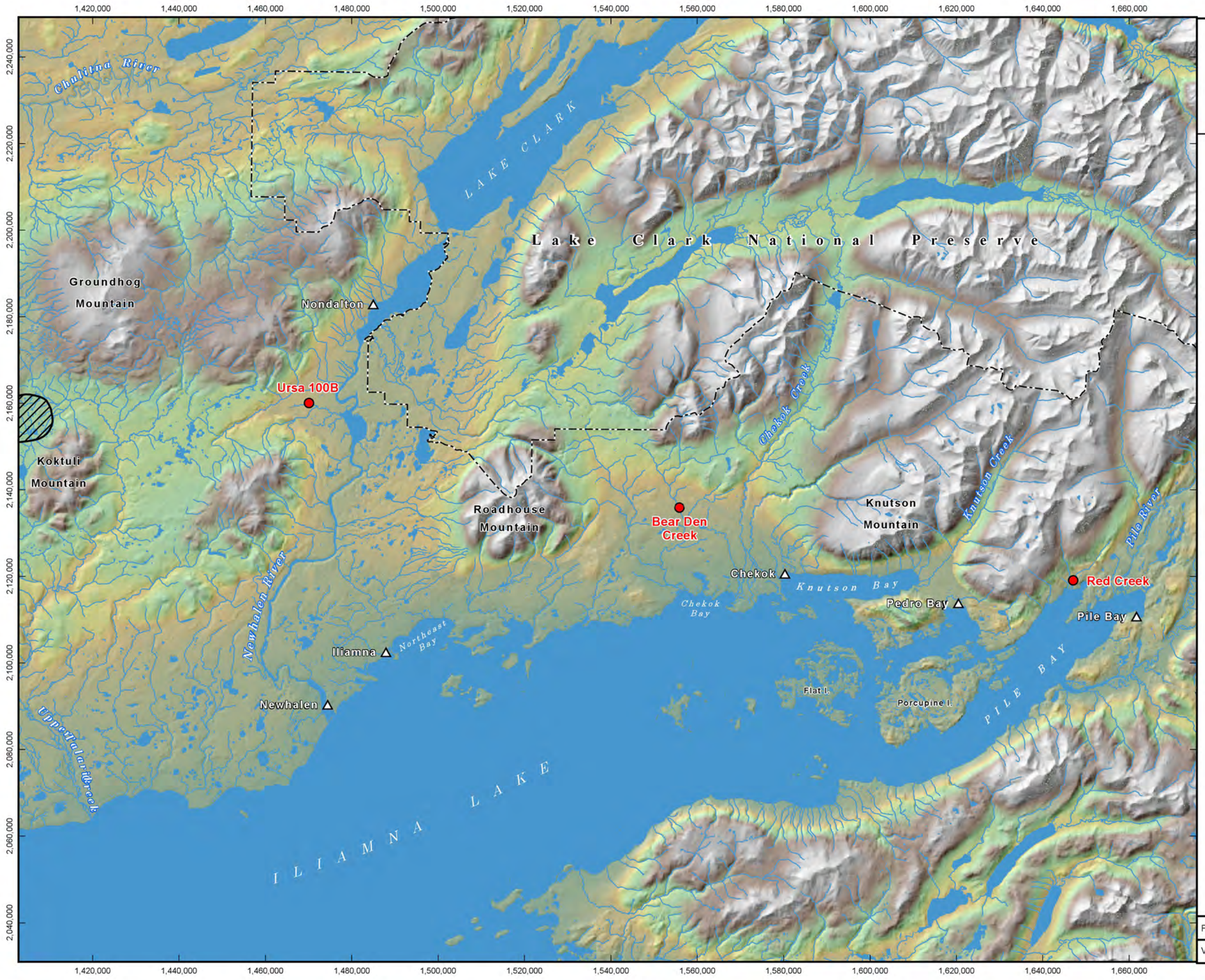
a. Source: Major and Barbour, 2001.

TABLE 15.4-9
Periphyton Metrics for Data Collected Using the Modified EPA RBP Method in August 2004 and Chlorophyll-*a* Sampling in June 2005, Transportation-corridor Study Area

Site ID	Taxa Richness Aug 2004	Percent Dominant Taxon Aug 2004	Chlorophyll-*a* (mg/m^2) June 2005 [a]
Bear Den	22	52	9.6
Red Creek	14	57	9.0
Ursa 100B	13	68	4.4

a. Values are mean averages for ten samples per site.

FIGURES



THE pebble PARTNERSHIP

Figure 15.4-1. Macroinvertebrate and Periphyton Sampling Sites, Transportation-corridor Study Area, Bristol Bay Drainages, 2004 and 2005

Legend

- Macroinvertebrate and Periphyton Sampling Site
- Communities
- General Deposit Location

Miles
0 1 2 3 4 5 6 7 8 9 10
Kilometers
0 2 4 6 8 10 12 14

N

Scale 1:270,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: 15-4-1_Macroinvert_SA_Rd_PebbleCEBD_v01.mxd	Date July 8, 2011
Version: 2	Author: PLP-JG

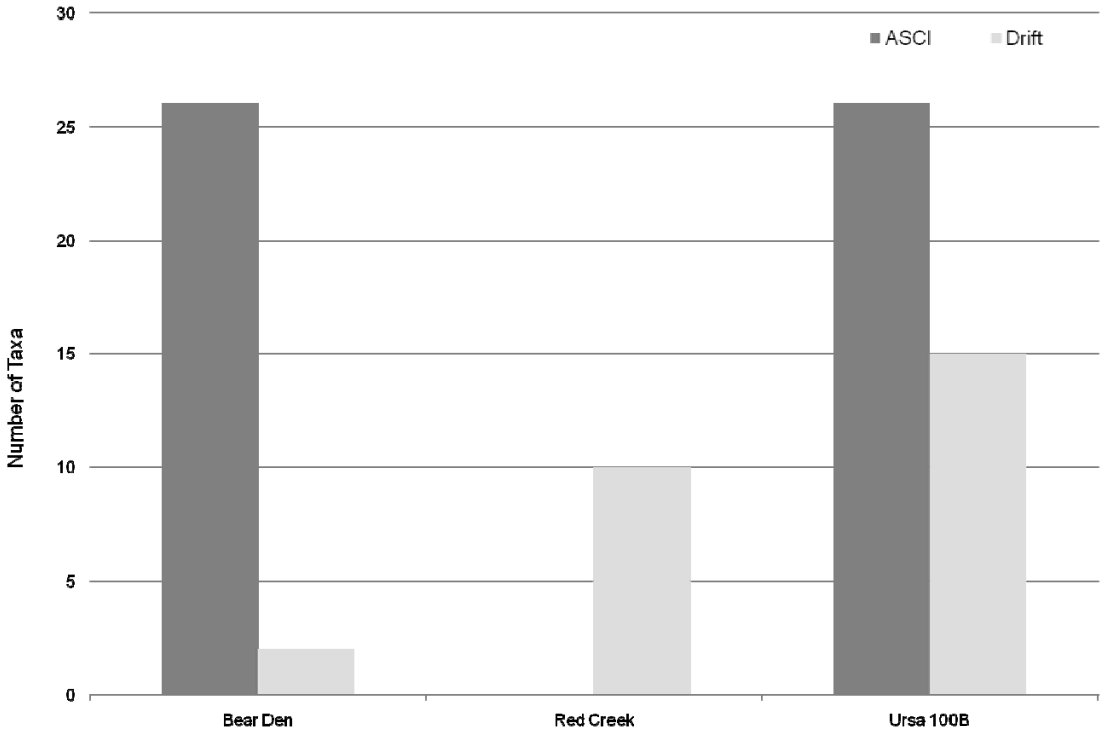


FIGURE 15.4-2
ASCI and Drift Taxa Richness, Transportation-corridor Study Area, August 2004

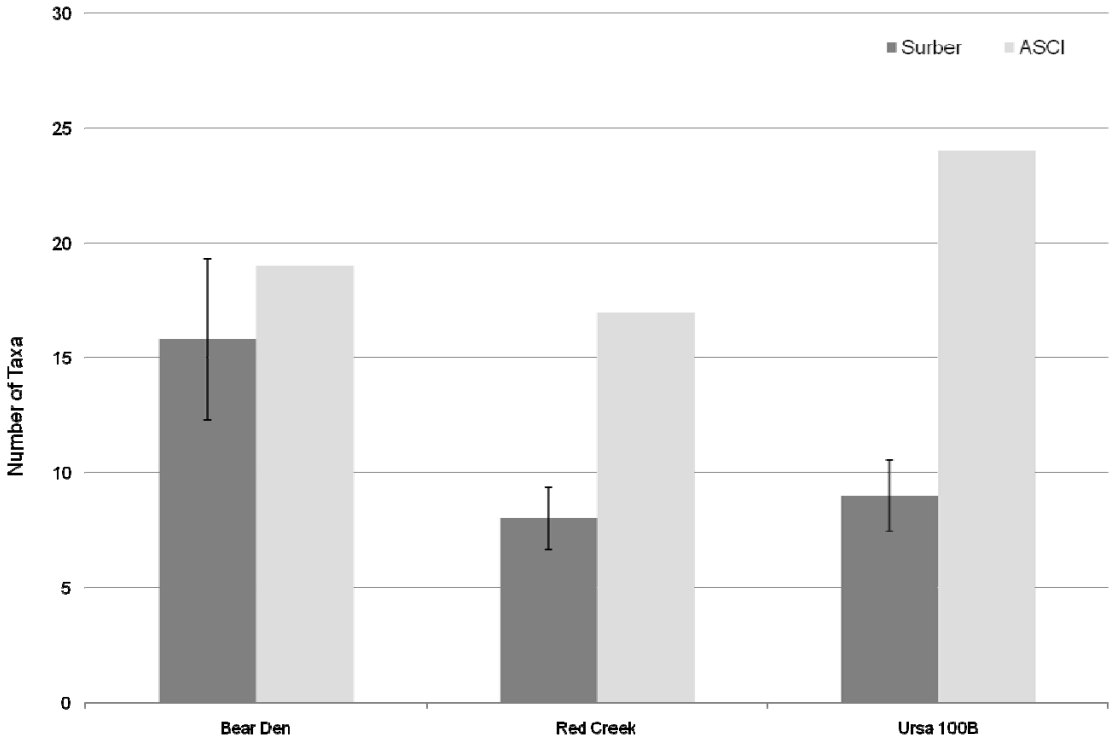


FIGURE 15.4-3
ASCI and Surber Taxa Richness (± 1 standard deviation), Transportation-corridor Study Area, June 2005

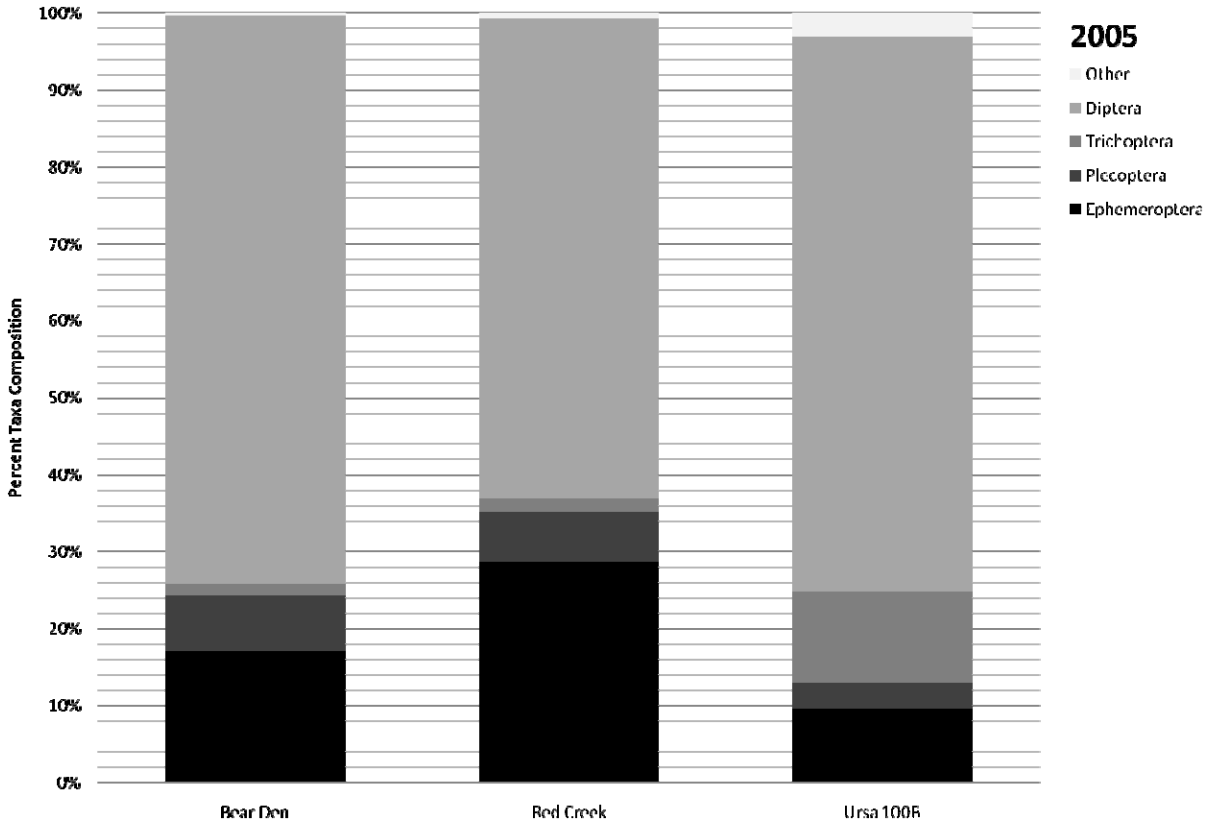


FIGURE 15.4-4
Percent Taxa Composition in ASCI Samples, Transportation-corridor Study Area, June 2005

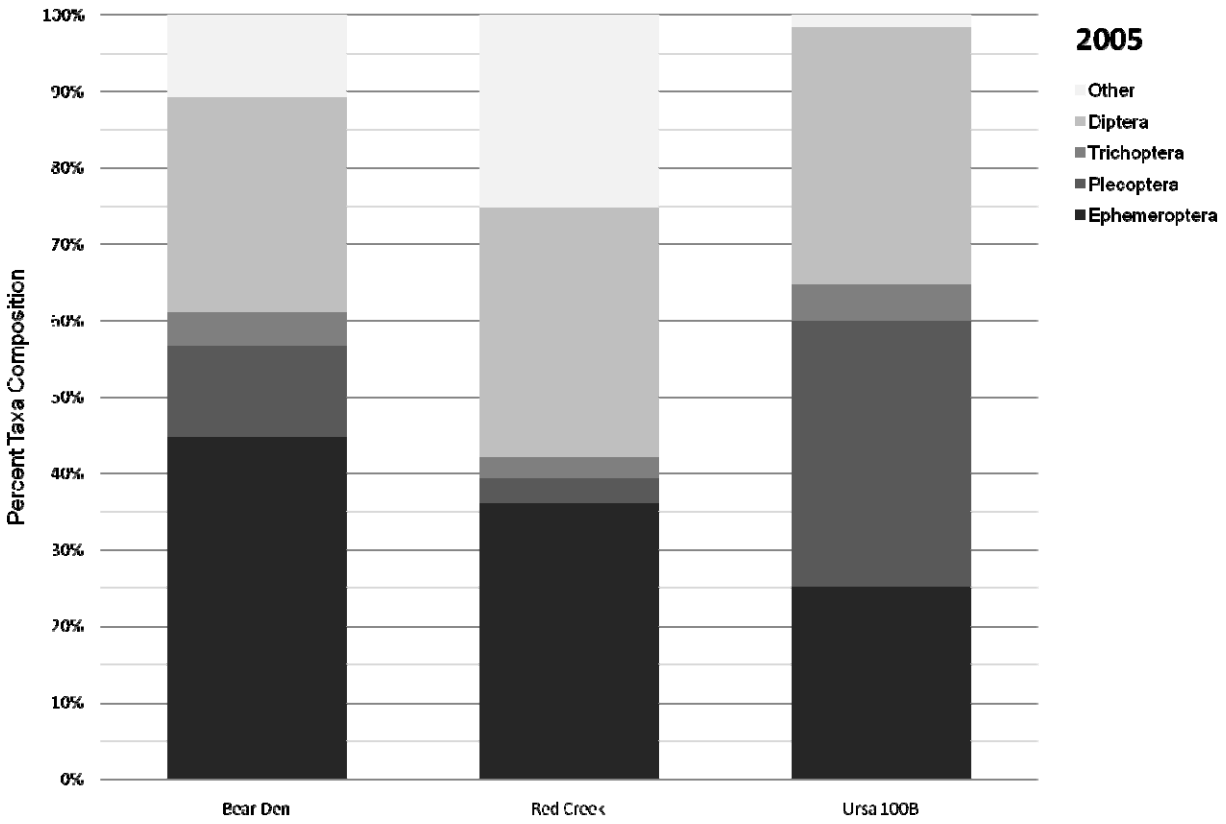


FIGURE 15.4-5
Percent Taxa Composition in Surber Samples, Transportation-corridor Study Area, June 2005

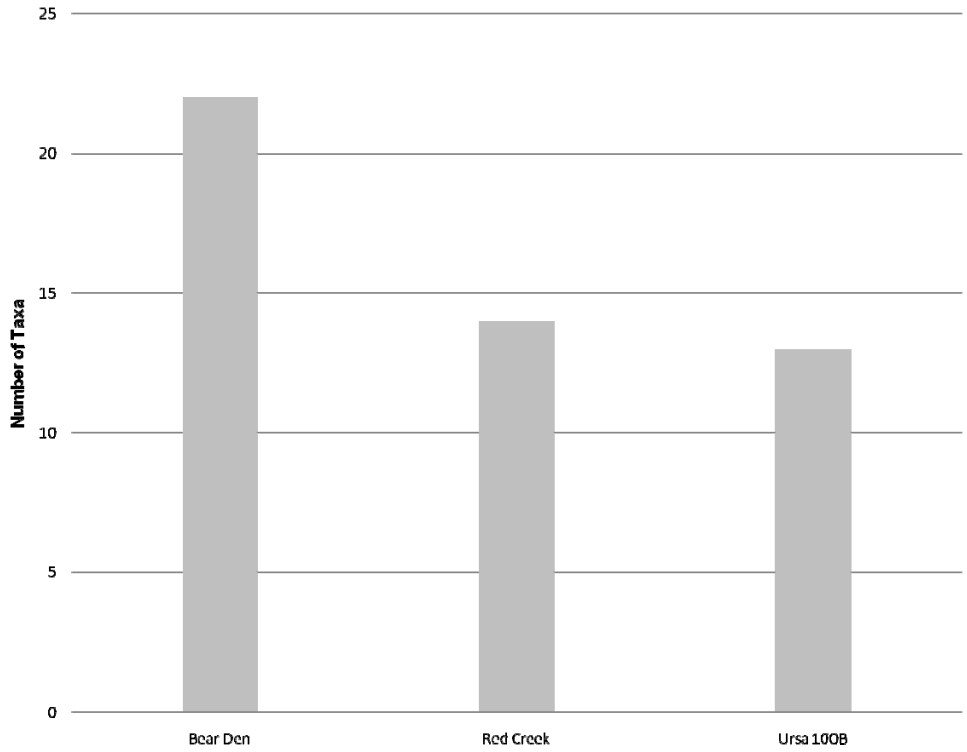


FIGURE 15.4-6
Periphyton Diatom Taxa Richness, Transportation-corridor Study Area, August 2004

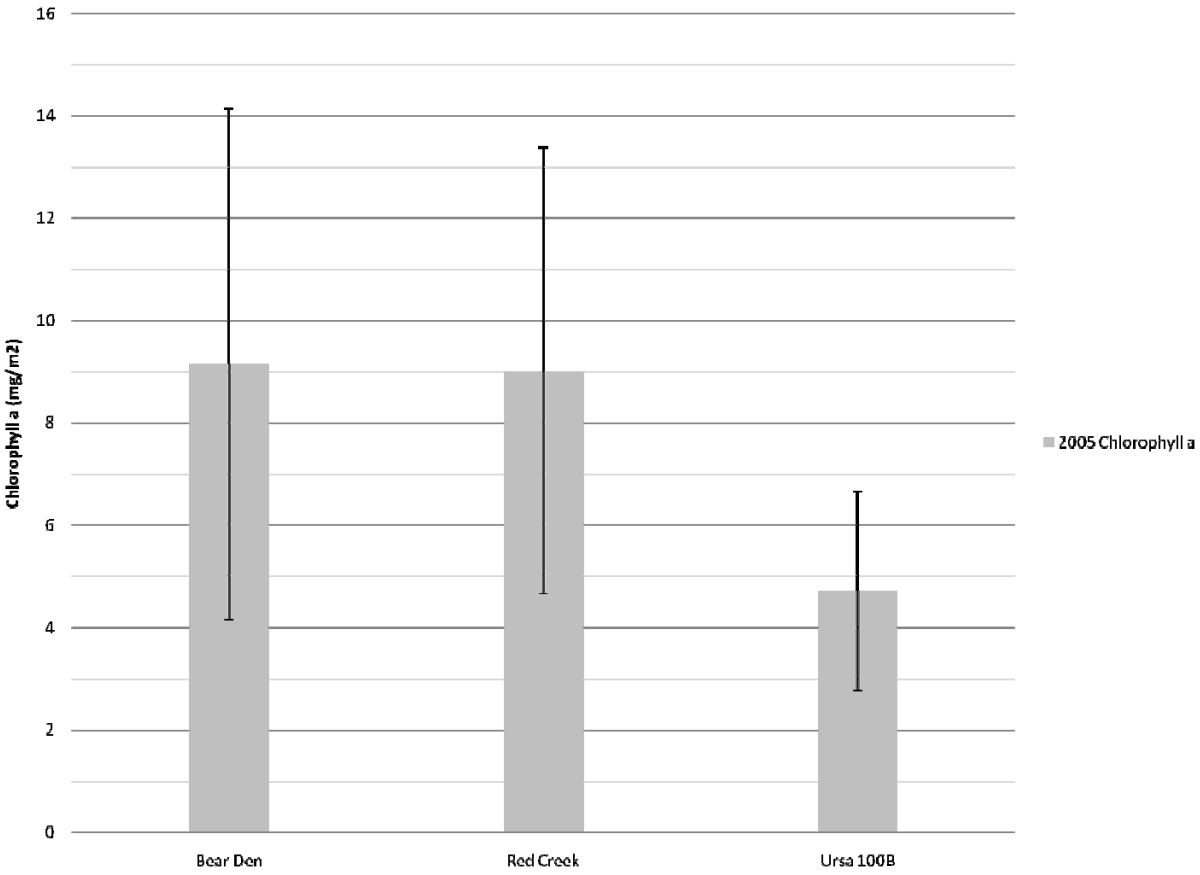
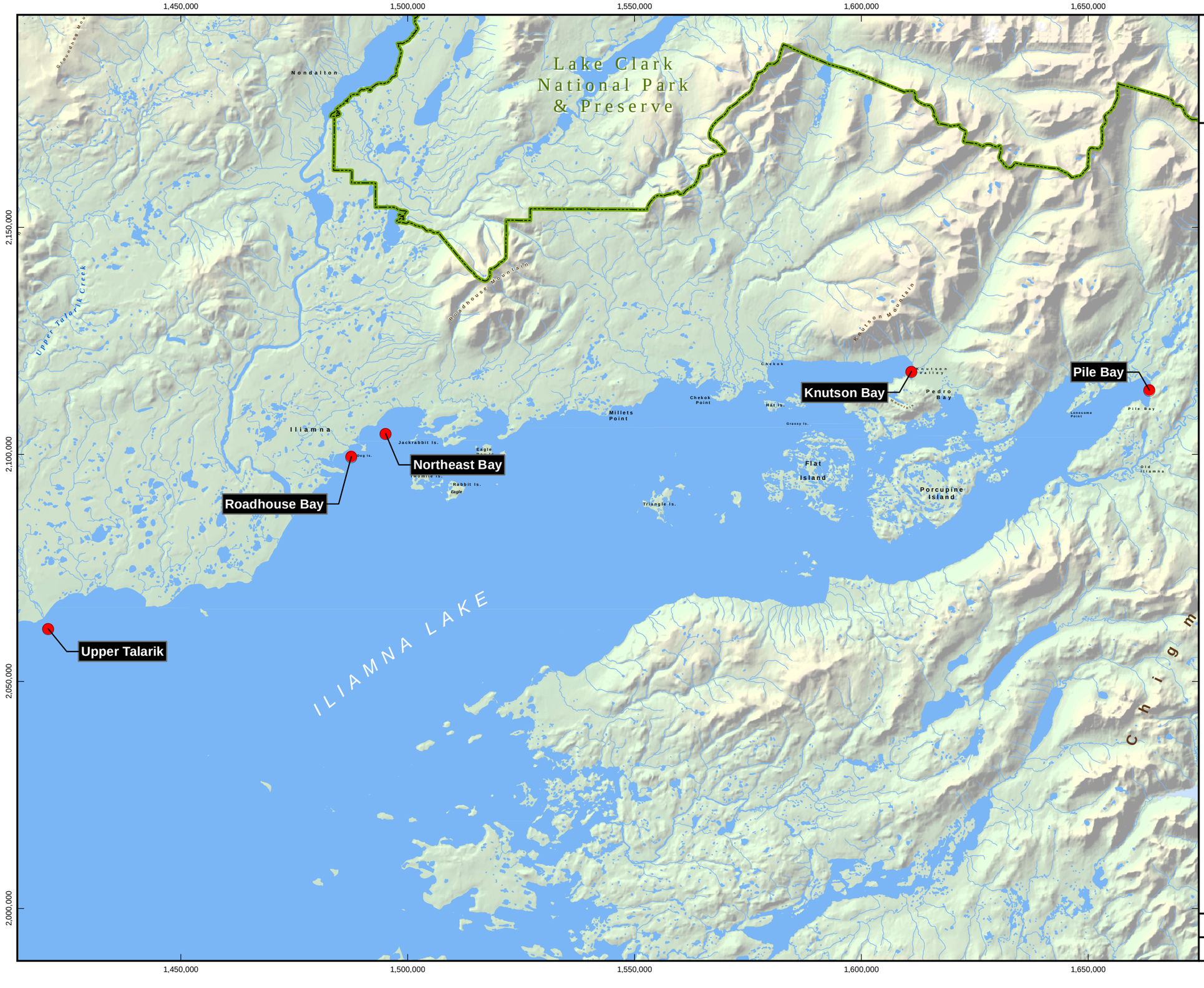


FIGURE 15.4-7
Average Chlorophyll-*a* Concentrations (± 1 standard deviation), Transportation-corridor Study Area, June 2005



THE pebble PARTNERSHIP

Figure 15.4-8
Zooplankton Sampling Sites,
Iliamna Lake,
2005 and 2007

Legend

Sampling Site

Miles
0 2.5 5

Kilometers
0 2.5 5

Scale 1:250,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

File: HDR_Macro_EBDFig15.4-8_v01	Date: December 14, 2010
Version: 1	Author: HDR - MC

15.5 Zooplankton—Iliamna Lake

15.5.1 Introduction

An integrated study of water quality, mussel tissue, sediment, and zooplankton was conducted to characterize baseline conditions for Iliamna Lake. The Iliamna Lake study objectives, study area, scope of work, methods, and results are described in full in Appendix B of this environmental baseline document. A brief overview of the zooplankton portion of the Iliamna Lake study is presented below.

Zooplankton were sampled as part of the Iliamna Lake study because they are indicators of lake-system water quality and are a primary source of food for plankton-eating fish such as juvenile sockeye salmon. The data collected provide baseline information on conditions in the lake. Sampling sites for the Iliamna Lake study were selected based on their proximity to the transportation corridor study area and populated villages. Five sites (Pile Bay, Knutson Bay, Northeast Bay, Roadhouse Bay, and the mouth of Upper Talarik Creek; see Figure 15.4-8) were sampled monthly for zooplankton in May through October 2005 and 2007, except sampling did not take place at the mouth of Upper Talarik Creek in September 2005 because of weather conditions.

15.5.2 Summary of Results and Discussion

In addition to zooplankton taxa in the protozoa group, six zooplankton taxa in the animalia group were identified in the Iliamna Lake samples: Copepoda, Rotifera, Cladocera, Ostracoda, Laevicaudata, and Anostraca. Zooplankton taxa richness at the five Iliamna Lake study sites was similar to taxa richness documented in standard literature (Wetzel, 2001), as well as in previous studies of Iliamna Lake and other lakes in the region (Sweetman, 2001; Lenarz, 1966).

In both 2005 and in 2007, copepods and rotifers were more abundant than the other zooplankton taxa during all months in the season. In 2005, copepods dominated the sample composition in May and June, but were replaced by rotifers later in the summer and fall months. In 2007, however, copepods were the dominant taxa during most of the sampling months, and relative abundance generally increased throughout the season from May to October.

In both years, cladocerans were absent or were found in minimal numbers early in the season (May and June), but increased in numbers later in the summer and fall. Although cladocerans were generally a small percentage of the overall zooplankton community, this taxa was more prevalent at Knutson Bay than at other locations. Cladocerans made up over 50 percent of the taxa composition at Knutson Bay in July and August of 2005 and in August of 2007. Pile Bay had the overall lowest population of cladocera of the sites. With the exception of August 2007, cladocerans at Pile Bay never comprised more than 10 percent of the taxa found at the sampling sites. Ostracoda, Anostraca, and Laevicaudata were seldom found and made up less than one percent of the overall population of zooplankton from all sampling events at all sites.

Appendix B presents a more integrated analysis of the water quality, mussel tissue, sediment, and zooplankton sampling methodologies and results.

15.5.3 References

Wetzel, R.G. 2001. Limnology: Lake and River Ecosystems. Third edition. San Diego: Elsevier Academic Press.

Sweetman, J.N. 2001. Factors Influencing Zooplankton Populations in Alaskan Sockeye Salmon (*Oncorhynchus nerka*) Nursery Lakes: Insights from Limnological and Paleolimnological Analyses. Master's thesis, University of Alaska Fairbanks.

Lenarz, W.H. 1966. Population Dynamics of *Cyclops scutifer* and an Evaluation of a Sampling Program for Estimating the Standing Crop of Zooplankton in Iliamna Lake. Master's thesis, University of Washington.

15.5.4 Glossary

Taxon (plural: taxa)—a taxonomic category or group, such as a phylum, order, family, genus, or species.

Zooplankton—small animals without backbones, mainly crustaceans and fish larvae, that float or drift in salt or fresh waters.